

PLAN SYMBOLS

STATE LINE
 COUNTY LINE
 TOWNSHIP OR RANGE LINE
 SECTION LINE
 QUARTER LINE
 SIXTEENTH LINE
 RIGHT-OF-WAY LINE
 PRESENT RIGHT-OF-WAY LINE
 CONTROL OF ACCESS LINE
 PROPERTY LINE (Except Land Lines)
 VACATED PLATTED PROPERTY
 CORPORATE OR CITY LIMITS

TRUNK HIGHWAY CENTER LINE
 RETAINING WALL
 RAILROAD
 RAILROAD RIGHT-OF-WAY LINE
 RIVER OR CREEK
 DRY RUN
 DRAINAGE DITCH
 DRAIN TILE
 CULVERT
 DROP INLET
 GUARD RAIL
 BARBED WIRE FENCE
 WOVEN WIRE FENCE
 CHAIN LINK FENCE
 RAILROAD SNOW FENCE
 STONE WALL OR FENCE
 HEDGE
 RAILROAD CROSSING SIGN
 RAILROAD CROSSING BELL
 ELECTRIC WARNING SIGN
 CROSSING GATE
 MEANDER CORNER
 SPRINGS
 MARSH/SWAMP
 TIMBER ORCHARD
 BRUSH
 NURSERY

CATTLE GUARD
 OVERPASS (Highway Over)
 UNDERPASS (Highway Under)
 BRIDGE
 BUILDING (One Story Frame)
 F-FRAME C-CONCRETE
 S-STONE T-TILE
 B-BRICK ST-STUCCO
 IRON PIPE OR ROD
 MONUMENT (STONE, CONCRETE, OR METAL)
 WOODEN HUB
 BENCHMARK
 GRAVEL PIT
 SAND PIT
 BORROW PIT
 ROCK QUARRY

UTILITY SYMBOLS

POWER POLE LINE
 TELEPHONE OR TELEGRAPH POLE LINE
 JOINT TELEPHONE AND POWER ON POWER POLES
 ON TELEPHONE POLES
 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 ELECTRIC CABLE
 AERIAL TELEPHONE CABLE
 SEWER (SANITARY)
 SEWER (STORM)
 SEWER MANHOLE
 HANDHOLE
 CATCH BASIN
 FIRE HYDRANT

DATE: 4/1/2024

MINNESOTA DEPARTMENT OF TRANSPORTATION

ANOKA COUNTY

CONSTRUCTION PLAN FOR BRIDGE NO. 02J56 WITH APPROACH GRADING AND BITUMINOUS SURFACING.

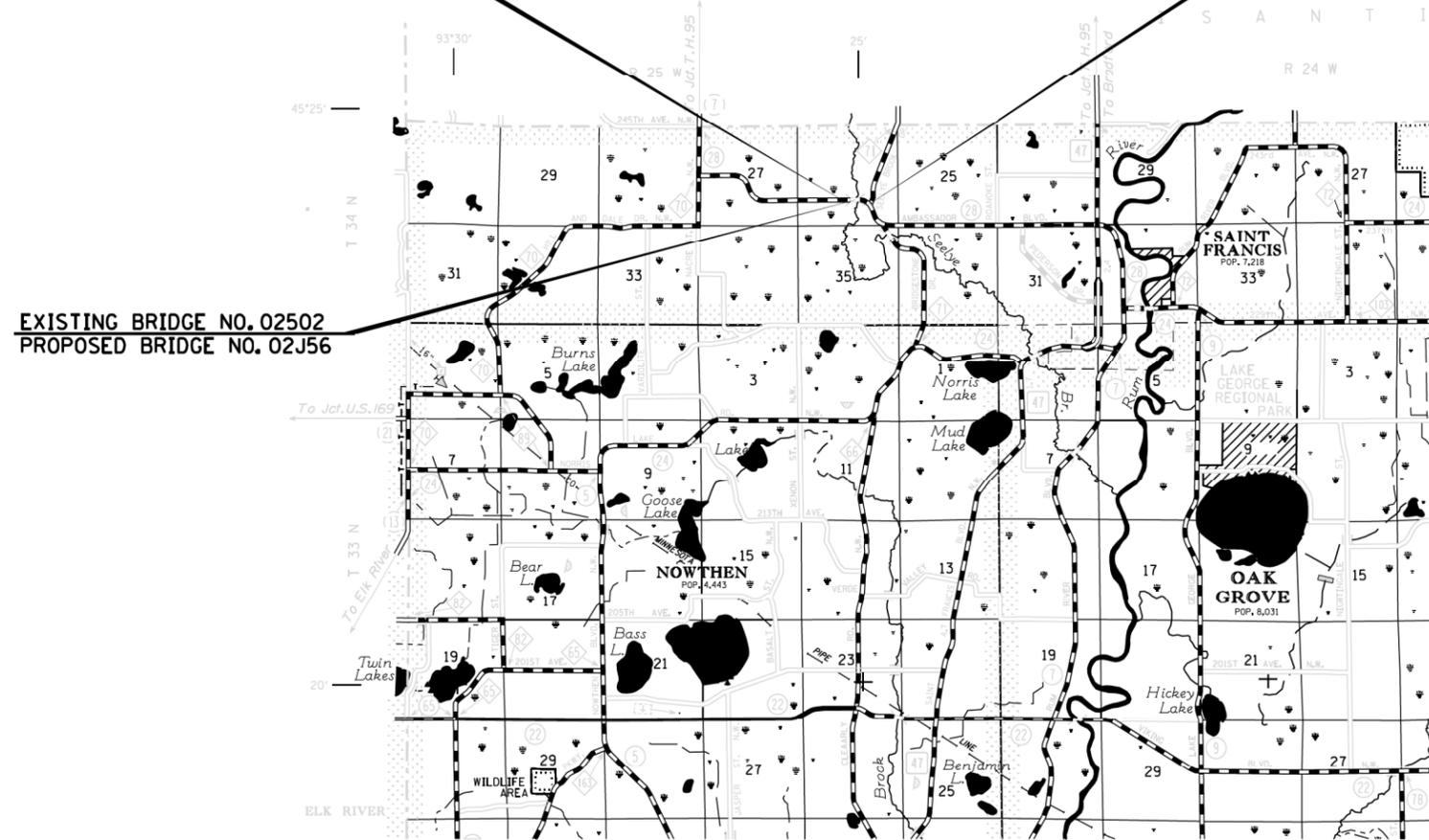
LOCATED ON CSAH 28 FROM 830' WEST OF THE INTERSECTION C.S.A.H. 28 AND SEELYE BROOK DRIVE

BEGIN CONSTRUCTION S.A.P. 002-628-008 CENTERLINE OF CSAH 28 STA 0+36.24

STATE AID PROJ. NO. 002-628-008 (C.S.A.H. 28)

GROSS LENGTH 443.31 FEET 0.084 MILES
 BRIDGES-LENGTH 29.10 FEET 0.006 MILES
 EXCEPTIONS-LENGTH _____ FEET _____ MILES
 NET LENGTH 443.31 FEET 0.084 MILES

END CONSTRUCTION S.A.P. 002-628-008 CENTERLINE C.S.A.H. 28 STA 4+79.55



EXISTING BRIDGE NO. 02502
 PROPOSED BRIDGE NO. 02J56

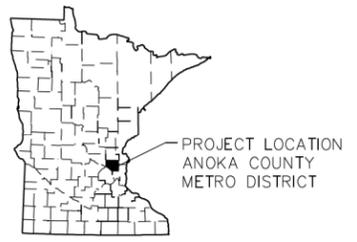
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."



C.S.A.H. 28 DESIGN DESIGNATION
 STATE AID PROJECT NO. 002-628-008

DESIGN ESALS	2044 =	246,000	FUNCTIONAL CLASSIFICATION	=	MAJOR COLLECTOR
ADT (Current Year)	2024 =	750	NO. OF TRAFFIC LANES	=	2
ADT (Future Year)	2044 =	825	NO. OF PARKING LANES	=	0
DHV (Design Hr. Vol.)	=	75	SHOULDER WIDTH (FT.)	=	8
D (Directional Distr.)	=	50/50%	SHOULDER WIDTH-RURAL (FT.)	=	0
T (Heavy Commercial)	=	75	R-VALUE	=	0

DESIGN SPEED: 55 MPH
 BASED ON: STOPPING SIGHT DISTANCE
 HEIGHT OF EYE: 3.5' HEIGHT OF OBJECT: 2.0'



MN. PROJ. NO. STATE FUNDS

GOVERNING SPECIFICATIONS

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT EDITION OF THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), INCLUDING "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS."

SHEET NO.	INDEX
1	TITLE SHEET
2	GENERAL PLAN AND ELEVATION
3	CULVERT SECTION & QUANTITIES
4-8	CULVERT DETAILS
9	BRIDGE SURVEY
10	ROADWAY REMOVAL PLAN
11	ROADWAY TYPICAL SECTION & DETAILS
12	ROADWAY CONSTRUCTION PLAN AND PROFILE
13	ROADWAY SIGNING AND STRIPING PLAN
14-15	TURF ESTABLISHMENT & EROSION CONTROL PLAN
16-18	PERMANENT EROSION CONTROL
19-21	TEMPORARY SEDIMENT CONTROL
22-26	ROADWAY CROSS SECTIONS
27-28	TRAFFIC CONTROL PLAN

THIS PLAN CONTAINS 28 SHEETS

BOLTON & MENK

7533 SUNWOOD DRIVE N.W.
 RAMSEY, MINNESOTA 55303
 Phone: (763) 433-2851
 Email: Ramsey@bolton-menk.com
 www.bolton-menk.com

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.

PRINT NAME: RYAN EVANS LICENSE # 53920
 DATE: 03-27-2024 SIGNATURE:

APPROVED: **Craig J. Jochum**
 CITY OF ST. FRANCIS ENGINEER

Digitally signed by Craig J. Jochum
 DN: cn=Craig J. Jochum, o=Hakanson
 Anderson, ou, email=craigj@haa-
 inc.com, c=US
 Date: 2024.04.05 15:20:35 -05'00'

APPROVED: **Joseph MacPherson**
 ANOKA COUNTY ENGINEER

Digitally signed by Joseph
 MacPherson
 Date: 2024.04.04 10:32:58
 -05'00'

APPROVED: **Lucas Lortie**
 DISTRICT STATE AID ENGINEER

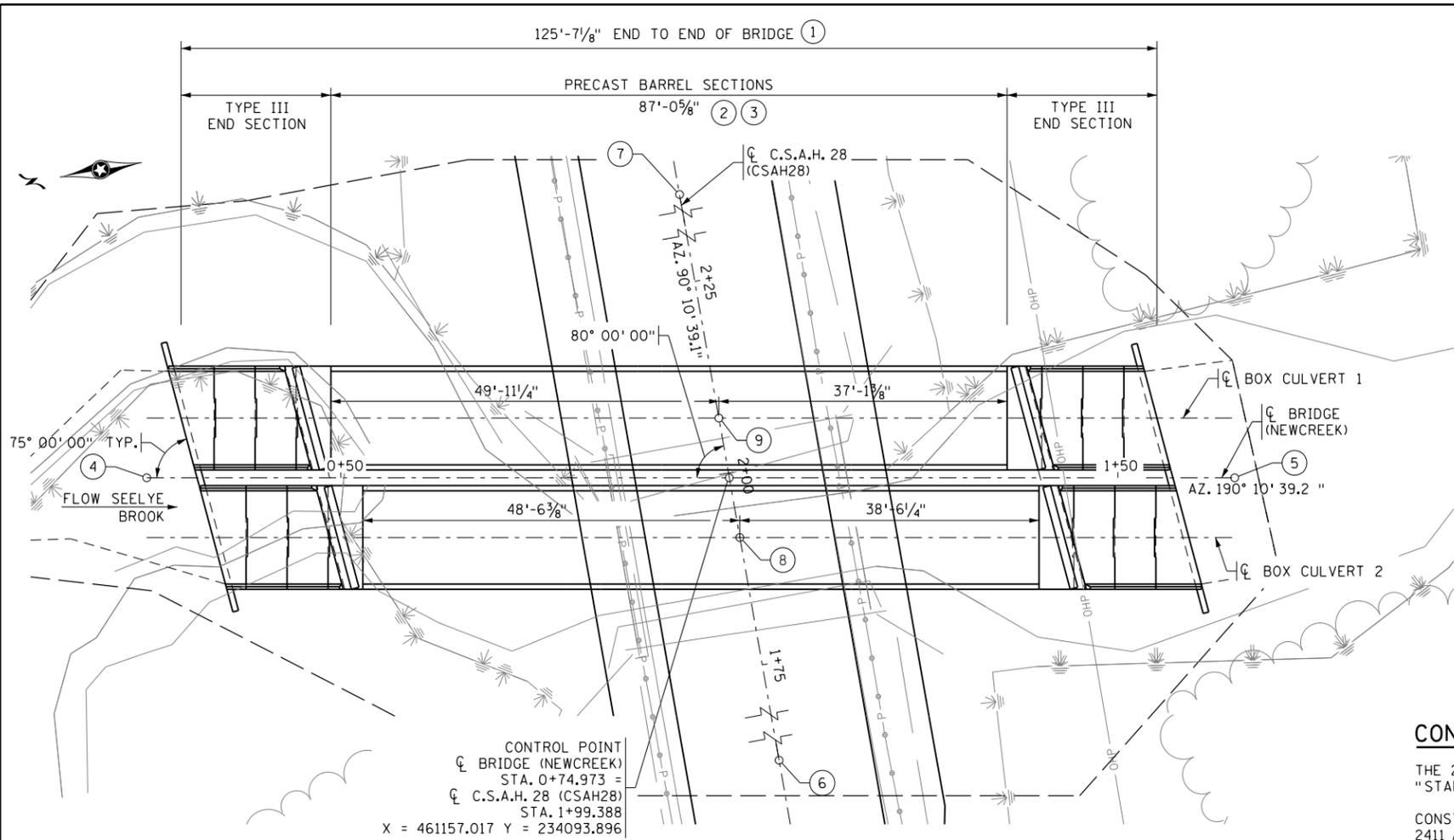
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 Lucas Lortie
 Date: 2024.04.11
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REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY for

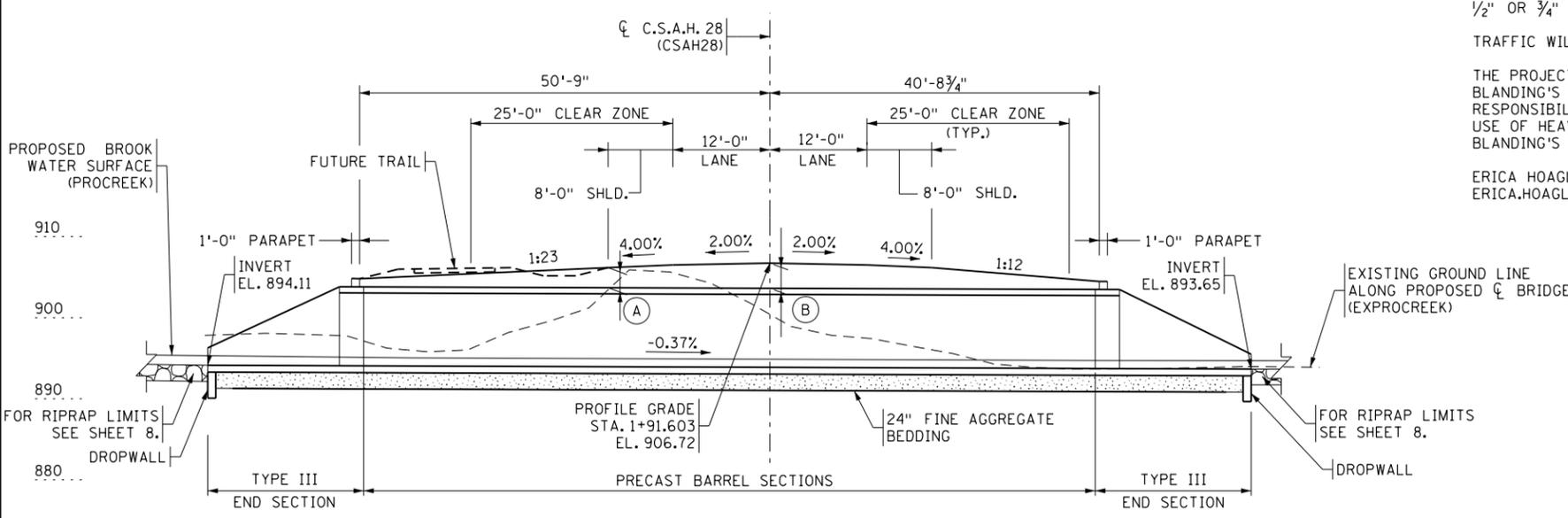
APPROVED: **Lucas Lortie**
 STATE AID ENGINEER

Digitally signed by Lucas
 Lortie
 Date: 2024.04.11 14:06:13
 -05'00'

APPROVED FOR STATE AID AND FEDERAL AID FUNDING for



GENERAL PLAN - DOUBLE 12'-0" X 9'-0" PRECAST CONCRETE BOX CULVERT



GENERAL ELEVATION - DOUBLE 12'-0" X 9'-0" PRECAST CONCRETE BOX CULVERT

ALONG C BOX CULVERT 2 (NEWCREEK)
(BOX CULVERT 1 SIMILAR)

- ① MEASURE ALONG C OF BRIDGE.
- ② INCLUDES APPROXIMATE 1/2" JOINT ALLOWANCE.
- ③ MEASURED ALONG C BOX CULVERT 1 AND C BOX CULVERT 2.
- ④ W.P. "A" ALONG C BRIDGE (NEWCREEK)
X = 461170.265 Y = 234167.689
- ⑤ W.P. "B" ALONG C BRIDGE (NEWCREEK)
X = 461145.527 Y = 234029.892
- ⑥ P.O.T. STA. 0+71.798 C C.S.A.H. 28 (CSAH28)
X = 461029.428 Y = 234094.292
- ⑦ P.O.T. STA. 3+18.696 C C.S.A.H. 28 (CSAH28)
X = 461276.324 Y = 234093.527
- ⑧ INTERSECTION POINT
C BOX CULVERT 2 =
C C.S.A.H. 28 (CSAH28) STA. 1+91.603
X = 461149.233 Y = 234093.921
- ⑨ INTERSECTION POINT
C BOX CULVERT 1 =
C C.S.A.H. 28 (CSAH28) STA. 2+07.173
X = 461164.802 Y = 234093.872

CONSTRUCTION NOTES:

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPEC. 2411 AND 2412, EXCEPT AS NOTED.

THE BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS.

ALL EXPOSED CONCRETE EDGES SHALL BE FORMED WITH A 1/2" OR 3/4" CHAMFER UNLESS OTHERWISE NOTED.

TRAFFIC WILL BE DETOURED DURING CONSTRUCTION.

THE PROJECT SITE EXISTS WITHIN A DEFINED WETLAND HOME TO THE BLANDING'S TURTLE WHICH IS A PROTECTED SPECIES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK FOR TURTLES BEFORE THE USE OF HEAVY EQUIPMENT OR ANY GROUND DISTURBANCE AND TO REPORT BLANDING'S TURTLE SIGHTINGS TO THE MNDNR.

ERICA HOAGLUND, DNR NONGAME SPECIALIST
ERICA.HOAGLUND@STATE.MN.US

DESIGN DATA

DESIGNED IN ACCORDANCE WITH 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

HL-93 LIVE LOAD
BARREL INSIDE WIDTH = 12'-0"
BARREL INSIDE HEIGHT = 9'-0"
BARREL LENGTH = 87'-0 5/8"
EST. MIN. FILL DEPTH A = 2.5'
EST. MAX. FILL DEPTH B = 3.2'
SKEW ANGLE = 10°00'00"

DESIGN SPEED = 55 MPH (ROAD)
CURRENT ADT (2023) = 750
PROJECTED ADT (2043) = 825

HL-93 LRFR
BRIDGE OPERATING RATING FACTOR RF = 1.30

MATERIAL DESIGN PROPERTIES:
PRECAST CONCRETE:
f'c = 5 KSI fy = 60 KSI REINF.
OR fy = 65 KSI STEEL FABRIC

LIST OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL PLAN AND ELEVATION
3	TYPICAL SECTION, STATEMENT OF QUANTITIES
4	CULVERT DETAILS
5	PRECAST CONCRETE BARREL DETAILS
6-7	PRECAST CONCRETE END SECTION
8	RIPRAP DETAILS
9	BRIDGE SURVEY

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:  DATE 02/02/2024
NAME: RYAN R. EVANS LIC NO. 53920

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02J56

C.S.A.H. 28 (AMBASSADOR BLVD. NW)
OVER SEELYE BROOK
330 FEET WEST OF THE INTERSECTION
C.S.A.H. 28 AND SEELYE BROOK DRIVE

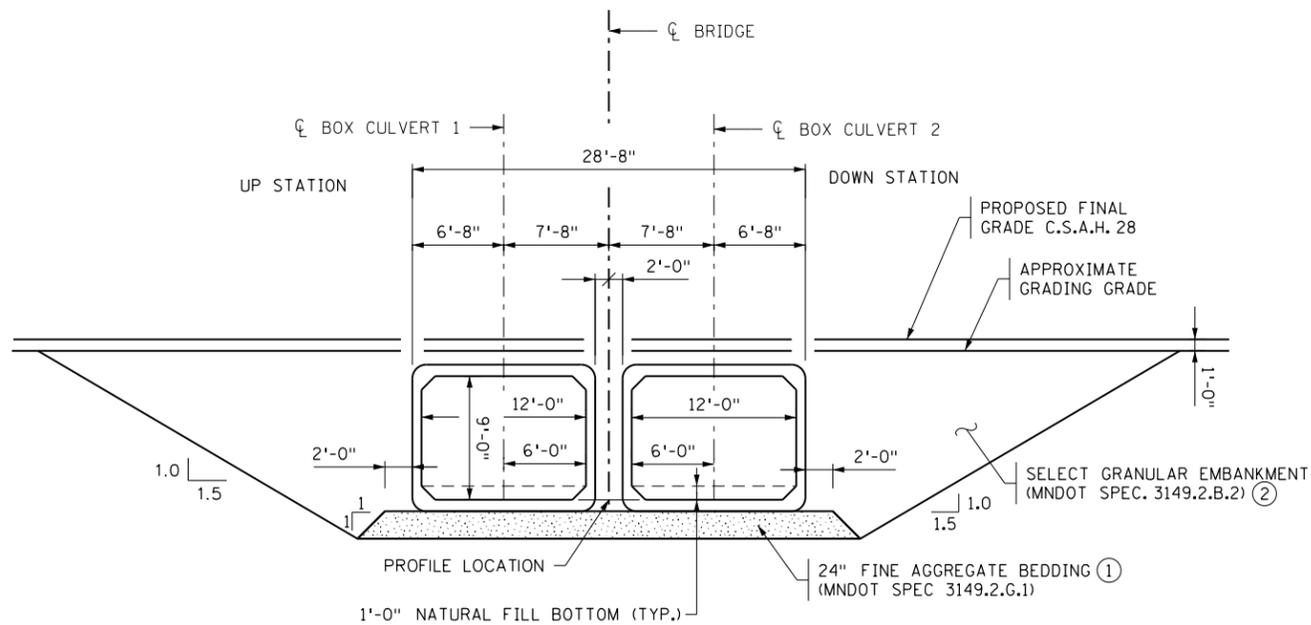
IDENTIFICATION NO. 513
GENERAL PLAN AND ELEVATION

SEC. 26 T 34 N R 25 W
COUNTY ANOKA ST. FRANCIS TOWNSHIP

APPROVED _____ DATE _____
ANOKA COUNTY

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TYPICAL SECTION

- ① ENGINEER SHALL OBSERVE AND CONFIRM THE COMPETENCY OF THE SOILS IN THE ENTIRE EXCAVATION BOTTOM PRIOR TO NEW FILL PLACEMENT FOR CULVERT SUPPORT. BURIED TOPSOIL OR SWAMP DEPOSITS SHALL BE REMOVED FROM BELOW THE CULVERT AS DIRECTED BY THE ENGINEER. IF APPROVED BY THE ENGINEER, IN WET CONDITIONS THE CONTRACTOR MAY SUBSTITUTE 24" OF COARSE FILTER AGGREGATE PER 3149.2.H COMPACTED TO THE QUALITY COMPACTION REQUIREMENTS OF SPEC. 2211.3.D.2.b. WRAP WITH GEOTEXTILE FABRIC TYPE IV PER SPEC. 3733. SEAM ALL FABRIC SIDES AND ENDS PER SPEC TABLE 3733-1 INCLUDING FOOTNOTE (a) OR OVERLAP A MINIMUM OF 3 FT. ALL AT NO ADDITIONAL COST.
- ② CULVERT BACKFILL SHOULD BE PLACED AND COMPACTED PER THE REQUIREMENTS OF MNDOT SPEC. 2105.3.F.1. MAXIMUM EMBANKMENT PARTICLE SIZE WITHIN 2 FT. OF CULVERT IS 3" PER SPEC. TABLE 2105-4.

STANDARD PLATES:

THE FOLLOWING STANDARD PLATES APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION SHALL APPLY ON THIS PROJECT.

PLATE	DESCRIPTION
8000K	TEMPORARY CHANNELIZERS (3 SHEETS)
3040F	CORRUGATED METAL PIPE CULVERT (2 2/3" X 1/2" CORRUGATION)
3123J	METAL APRON FOR C.S. PIPE
3124B	METAL APRON CONNECTION
3125A	INLET PROTECTION FOR METAL CULVERTS (90" DIA. TO 96" DIA.)
3145G	CONCRETE PIPE OR PRECAST BOX CULVERT TIES
3146C	ANTI-SEEPAGE DIAPHRAGM (FOR CMP AND CMP-A)

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE				
ITEM NO.	ITEM	UNIT	S.A.P. 002-628-008 PARTICIPATING BRIDGE	S.A.P. 002-628-008 NON-PARTICIPATING
2021.501	MOBILIZATION	LUMP SUM	1	
2101.505	GRUBBING	ACRE		0.4
2104.502	REMOVE MARKER	EACH		4
2104.502	REMOVE SIGN	EACH		4
(2) 2104.502	REMOVE ENERGY ABSORBING TERMINAL	EACH		4
2104.503	REMOVE GUARDRAIL-PLATE BEAM	LIN FT		460 (P)
(7) 2104.503	REMOVE TEMP PRECAST CONCRETE BARRIER	LIN FT		262 (P)
2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT		53 (P)
2104.503	REMOVE PIPE CULVERTS	LIN FT		38
2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD		733 (P)
2104.601	REMOVE REGULATED WASTE MATERIAL (BRIDGE)	LUMP SUM		1
(6) 2106.507	EXCAVATION - COMMON	CU YD		520
2106.507	COMMON EMBANKMENT (CV)	CU YD		1250 (P)
2106.507	SELECT GRANULAR EMBANKMENT (CV)	CU YD	1010	
2211.507	AGGREGATE BASE (CV) CLASS 5	CU YD		330 (P)
(8) 2357.506	BITUMINOUS MATERIAL FOR TACK COAT	GALLON		100
(9) 2360.509	TYPE SP 12.5 WEARING COURSE MIX (3,C)	TON		167
2411.601	STRUCTURE EXCAVATION	LUMP SUM	1	
2412.502	12X9 PRECAST CONCRETE BOX CULV END SECT	EACH	4	
2412.503	12X9 PRECAST CONCRETE BOX CULVERT	LIN FT	174 (P)	
2442.501	REMOVE EXISTING BRIDGE	LUMP SUM		1
2451.507	FINE AGGREGATE BEDDING (CV)	CU YD	312 (P)	
2501.502	18" GS PIPE APRON	EACH		2
2501.503	18" CS PIPE CULVERT	LIN FT		38
(1) 2511.509	RANDOM RIPRAP CLASS III	TON	90	
(5) 2563.601	TRAFFIC CONTROL	LUMP SUM	1	
2564.502	INSTALL SIGN TYPE C	EACH		1
2573.503	SILT FENCE, TYPE MS	LIN FT		2040
2573.503	FLOTATION SILT CURTAIN TYPE MOVING WATER	LIN FT	123	
2573.601	TEMPORARY STREAM DIVERSION SYSTEM	LUMP SUM	1	
(4) 2574.508	FERTILIZER TYPE 2	POUND		207
2575.501	TURF ESTABLISHMENT	LUMP SUM		1
2575.504	ROLLED EROSION PREVENTION CATEGORY 25	SQ YD		2856 (P)
2575.505	SEEDING	ACRE		0.59 (P)
(3) 2575.508	SEED MIXTURE 34-171	POUND		42
2582.503	4" SOLID LINE MULTI COMP (WR)	LIN FT		1108 (P)

NOTES:

- '(P)' DENOTES PLAN QUANTITY PAY ITEM AS PER MNDOT SPEC. 1901. SEE SPECIAL PROVISIONS FOR ALL XXXX.6XX SERIES PAY ITEMS FOR ADDITIONAL REQUIREMENTS.
- (1) ESTIMATED AT 1.7 TON/CY.
- (2) ET-PLUS.
- (3) ESTIMATED AT 70 LB/ACRE.
- (4) ESTIMATED AT 350 LB/ACRE.
- (5) INCLUDES DETOUR SIGNING AND STRIPING.
- (6) COMMON EXCAVATION IS MATERIAL EXCAVATED FROM THE PROJECT SITE FROM ITS POSITION AFTER BITUMINOUS PAVEMENT IS REMOVED. BASED ON PRE CONSTRUCTION SURVEY INFORMATION AND THE DESIGN GRADING GRADE AS COMPUTED BY THE ENGINEER.
- (7) IMPACT ATTENUATOR REMOVAL INCIDENTAL TO TEMP PRECAST CONCRETE BARRIER REMOVAL.
- (8) ESTIMATED AT 0.14 GAL/SQ. YD.
- (9) ESTIMATED AT 113 LB/SQ. YD./IN.

GEOTEXTILE FILTER MATERIAL TYPE 7 IS TO BE INCLUDED IN THE PRICE BID FOR 'RANDOM RIPRAP CLASS III'.

CHANNEL SHAPING SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR STRUCTURE EXCAVATION.

ALL DEWATERING ITEMS, LABOR, AND EQUIPMENT (INCLUDING ADDITIONS FOR STAGED DIVERSION OF CHANNEL FLOW FOR CONSTRUCTING EACH CULVERT BARREL IN THE DRY) THAT ARE NEEDED TO COMPLETE CONSTRUCTION SHALL BE PAID UNDER THE LUMP SUM BID ITEMS FOR TEMPORARY STREAM DIVERSION SYSTEM. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

NO	DATE	BY	CHK.	REVISIONS
1	3/29/24	TJD	RRE	UPDATED STANDARD PLATES AND SEQ



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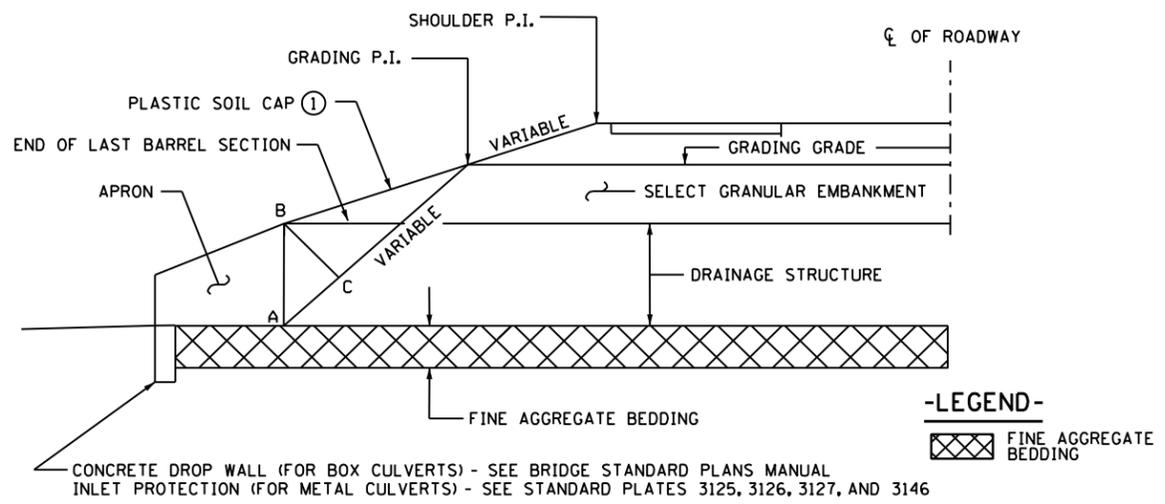
RYAN R. EVANS
 LIC. NO. 53920 DATE 03/27/2024

TYPICAL SECTION & STATEMENT OF QUANTITIES

DESIGNED	TJD	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	RRE	
S.A.P. NO. 002-628-008				
SHEET NO. 3 OF 28 SHEETS				

BRIDGE NO.
02J56

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① PLASTIC SOIL CAP CONSIST OF 50% MIN. PASSING THE NO. 200 SIEVE AND 20% MIN. CLAY SIZE PARTICLES

NOTES:
 PAYMENT FOR ALL COSTS ASSOCIATED WITH CONSTRUCTING THE PLASTIC SOIL CAP SHALL BE INCLUDED IN THE PRICE BID FOR GRANULAR BACKFILL.

WIDTH OF PLASTIC SOIL CAP:
 A) FOR PLASTIC SOIL EMBANKMENT - FULL WIDTH OF THE GRANULAR TREATMENT PLUS 2' ON EACH END.
 B) FOR GRANULAR SOIL EMBANKMENT - A MINIMUM OF ONE DIAMETER OR WIDTH OF STRUCTURE ON EITHER SIDE OF THE STRUCTURE.

THE TREATMENT IS REQUIRED ON THE INLET END.

THE THICKNESS OF THE PLASTIC SOILS CAP (B-C) IS 3' MINIMUM AND 6' MAXIMUM.
 A) FILL HEIGHTS LESS THAN 15'.
 - NORMALLY EXTEND THE LINE THRU (A-C) TO GRADING P.I. HOWEVER, IF THIS RESULTS IN A THICKNESS (B-C) GREATER THAN 6', REDUCE B-C TO 6' OR LESS AND INTERSECTION THE FILL SLOPE RATHER THAN THE P.I..

B) FILL HEIGHTS GREATER THAT 15'.
 - THE LINE THRU A-C NEED NOT INTERSECT THE GRADING P.I. INSTEAD INTERSECT THE FILL AT A POINT NOT LESS THAN 5' ABOVE THE STRUCTURE MAINTAINING AT LEAST A MINIMUM THICKNESS (B-C) OF 3'.

BOX CULVERT BEDDING AND PLASTIC SOIL CAP

NO	DATE	BY	CHK.	REVISIONS



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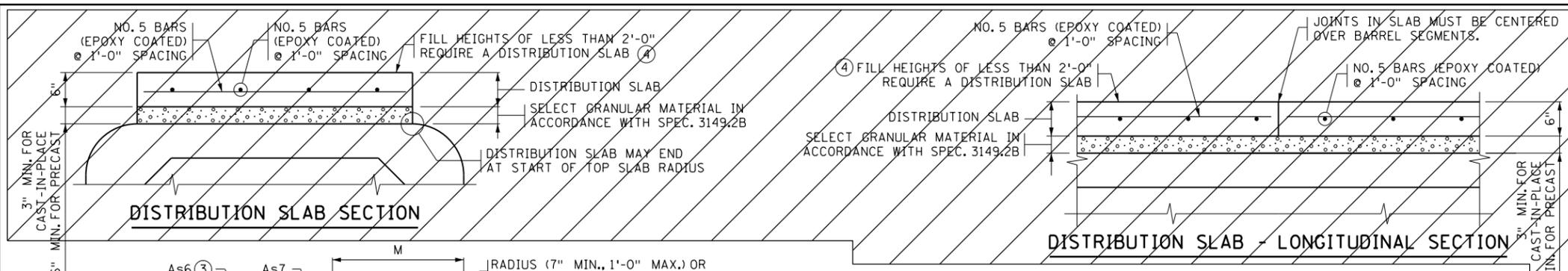
RYAN R. EVANS
 LIC. NO. 53920 DATE 02/02/2024

TITLE:
CULVERT DETAILS

DESIGNED TJD	DRAWN JMR	APPROVED
CHECKED RRE	CHECK RRE	
S.A.P. NO. 002-628-008		
SHEET NO. 4 OF 28 SHEETS		

BRIDGE NO.
02J56

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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.

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.

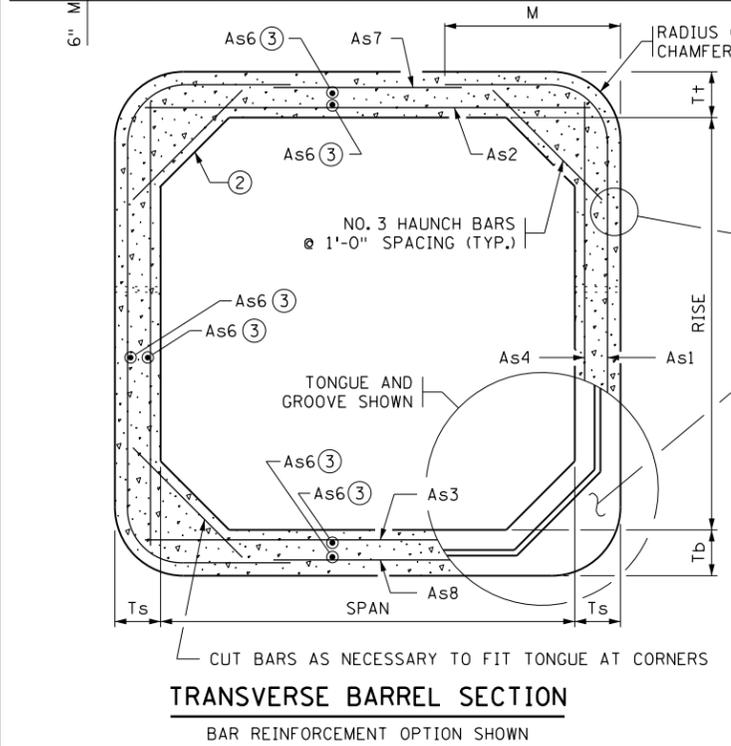
USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL IN ACCORDANCE WITH SPEC. 3238.2A IS REQUIRED.

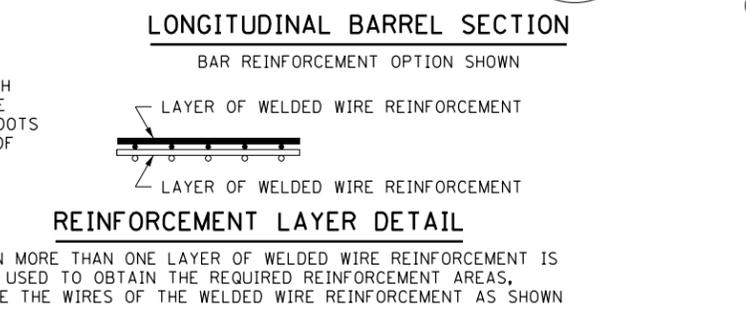
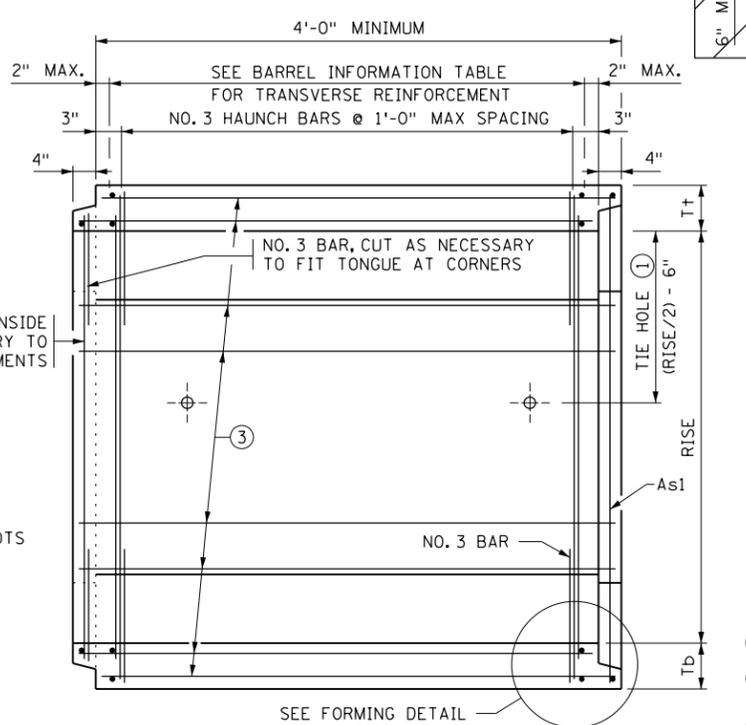
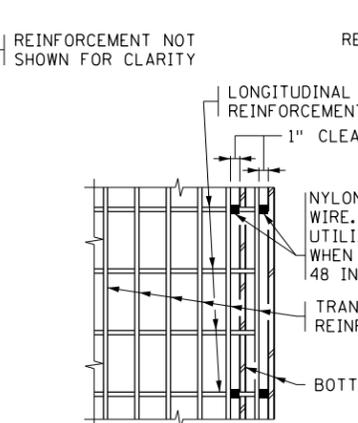
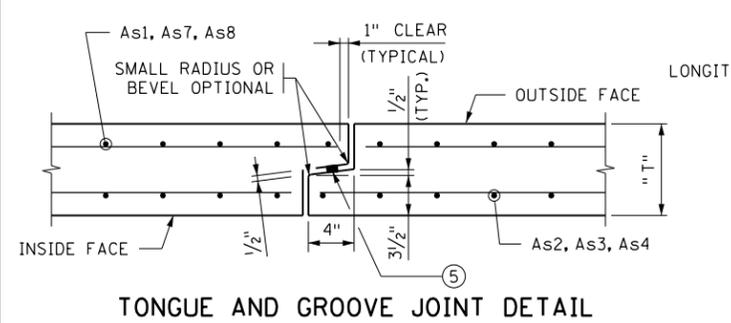
COMPACT THE FIRST 1.5' (LOOSE) OF FILL ABOVE THE BOX WITH LIGHT COMPACTION EQUIPMENT SUCH AS PLATE COMPACTORS OR WALK BEHIND ROLLERS.

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 3552.
 ⑤ REFER TO SPEC. 2412 FOR SEALANT REQUIREMENTS.



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



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.)	T+ (IN.)	Td (IN.)	Ts (IN.)		As1		As2		As3		As4		As7		As8		
													AREA (IN. ² /FT.)	LENGTH (FT.)											
STA. 1+91.603	12 X 9	1	5000	< 3	NO	NO	12	9	9	10	8	5275	0.62	17'-0"	3'-6"	0.92	12'-6"	0.92	12'-6"	0.20	9'-6"	0.24	8'-11"	0.24	8'-11"
STA. 2+07.173	12 X 9	1	5000	< 3	NO	NO	12	9	9	10	8	5275	0.62	17'-0"	3'-6"	0.92	12'-6"	0.92	12'-6"	0.20	9'-6"	0.24	8'-11"	0.24	8'-11"

REVISION: DECEMBER 21, 2022
 APPROVED: MARCH 24, 2011
 Nancy Sibenberger
 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.

STATE AID PROJ. NO 002-628-008

FIG. 5-395.101(A)

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: *Ryan R. Evans* 02/02/2024
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: RYAN R. EVANS LIC. NO. 53920

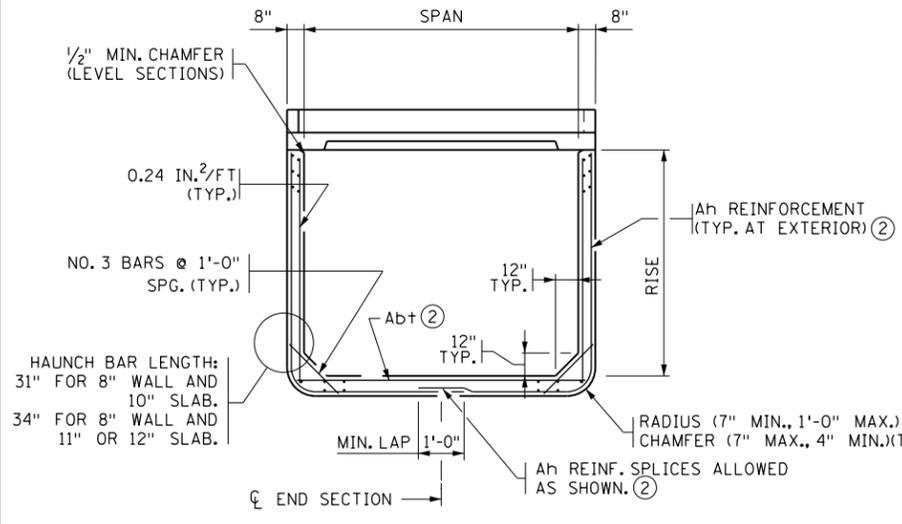
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DES: TJD DR: JMR APPROVED:
 CHK: RRE CHK: RRE

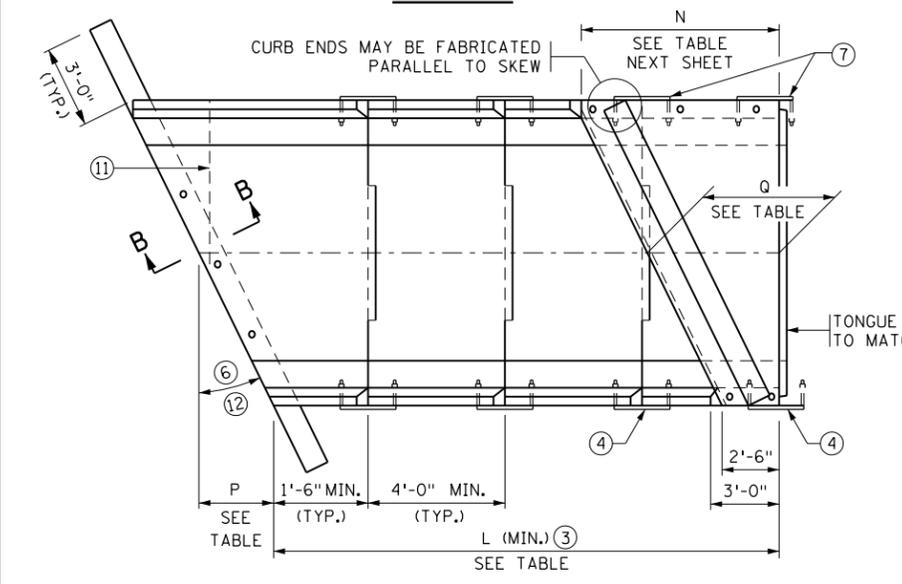
SHEET NO. 5 OF 28 SHEETS

BRIDGE NO. 02J56

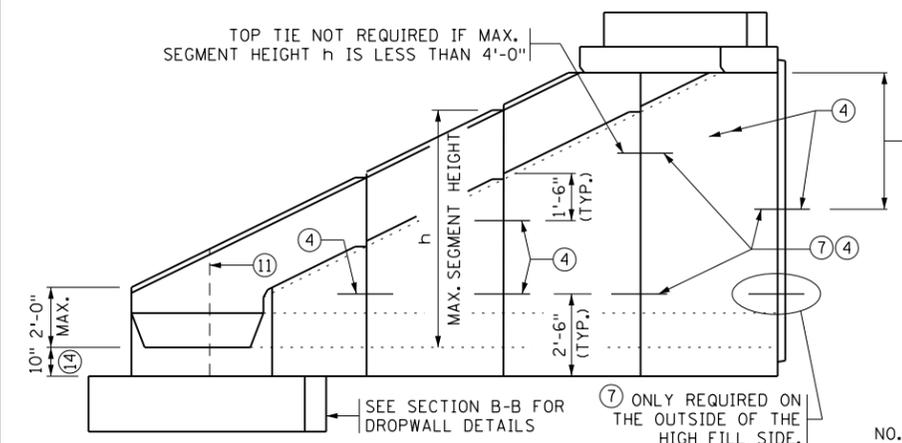
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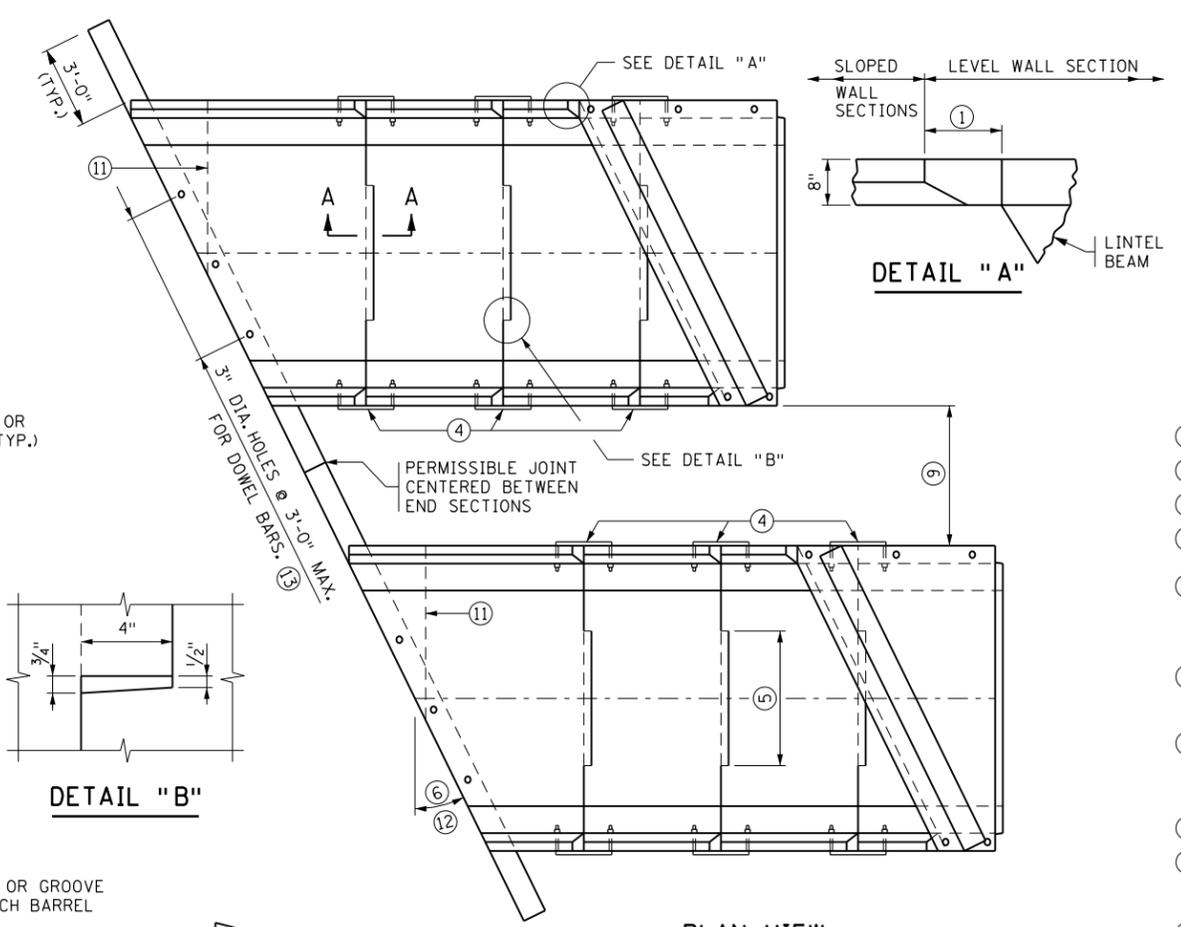
END VIEW



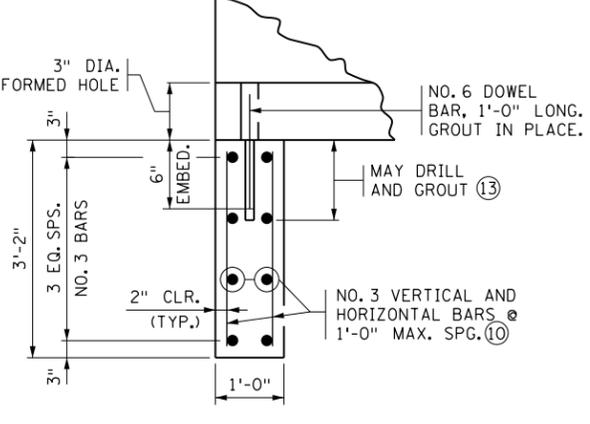
PLAN VIEW
SINGLE BARREL OPTION



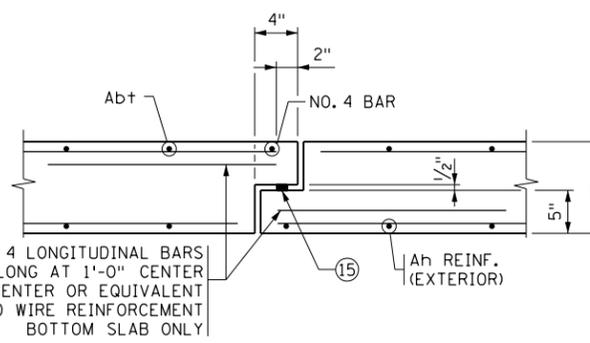
ELEVATION



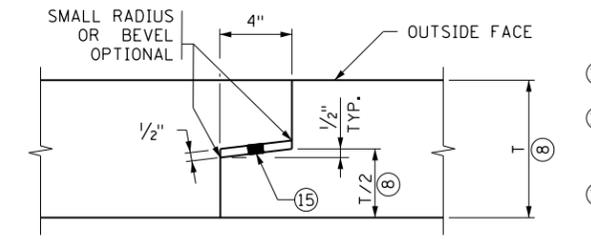
PLAN VIEW
MULTIPLE BARREL OPTION



SECTION B-B

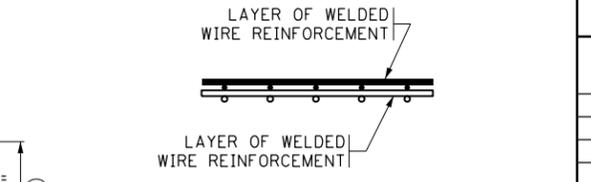


SECTION A-A



TONGUE AND GROOVE JOINT

MAKE DIMENSION OF TONGUE OR GROOVE ON ADJACENT PRECAST BARREL SECTIONS SO INSIDE WALLS ARE FLUSH.



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

- SEE STANDARD FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.
- ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.
- FINISH ALL EXPOSED EDGES OF CONCRETE WITH 1/2" OR 3/4" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.
- USE CONCRETE MIX 3W82 WITH NO CALCIUM CHLORIDE ALLOWED.
- USE DROPWALL CONCRETE MIX 3S52, OR 3Y82 IF PRECAST. LIMITS FOR DROPWALL EXCAVATION TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. FURNISHING AND INSTALLATION OF DROPWALL IS INCLUDED IN PRICE BID FOR END SECTIONS.
- PLACE LONGITUDINAL REINFORCEMENT WITH A MINIMUM OF 0.06 SQ. IN. PER FT. ON BOTH FACES.
- NO TONGUE OR GROOVE REQUIRED IN WALLS BETWEEN END SECTIONS.
- SEE STANDARD FIG. 5-395.115 FOR EMBANKMENT PROTECTION.
- (1) 8 1/8" @ 15"; 10 5/8" @ 30"; 1'-2" @ 45°
- (2) SEE STANDARD FIG. 5-395.110 (2 OF 2) FOR REINFORCEMENT TABLES.
- (3) NUMBER OF SECTIONS VARIES WITH CULVERT RISE.
- (4) EXCEPT AS NOTED, USE 1" DIA. CULVERT TIES. SEE STANDARD PLATE NO. 3145 FOR DETAILS. TWO TIES ARE REQUIRED PER JOINT WHERE h IS GREATER THAN 4'.
- (5) 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.
- (6) FOR SKEW ANGLES OVER 7 1/2° UP TO 22 1/2°, USE A 15° SKEW END SECTION. FOR SKEW ANGLES OVER 22 1/2° UP TO 37 1/2°, USE A 30° SKEW END SECTION. FOR SKEW ANGLES OVER 37 1/2° UP TO 45°, USE A 45° SKEW END SECTION.
- (7) PROVIDE EXTRA STRONG CONNECTION AT LOCATION SHOWN; REQUIRED ONLY ON HIGH FILL SIDE FOR 45° SKEW END SECTIONS OVER 6'-0" HIGH. FOR MULTIPLE BARREL OPTION, ONLY INCLUDE EXTRA STRONG TIES ON THE OUTSIDE OF THE HIGH FILL SIDE. SEE STANDARD FIG. 5-395.110 (2 OF 2) FOR DETAILS.
- (8) DIMENSION "T" IS EQUAL TO Tt, Tb OR Ts.
- (9) 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.
- (10) WELDED WIRE REINFORCEMENT OF EQUAL AREA MAY BE SUBSTITUTED FOR REBAR.
- (11) ON THE LAST SEGMENT OF THE 45° SKEWED APRONS, A TRANSVERSE JOINT IN THE BOTTOM IS PERMITTED. A SPECIAL TIE, SIMILAR TO THE SIDE TIE, MUST BE PROVIDED. THE TIE SHALL BE INSET AND THE SPACE FILLED WITH AN APPROVED GROUT.
- (12) FOR BOX CULVERTS WITH SPANS OF 16' THE MAXIMUM SKEW SHALL BE 30°.
- (13) 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".
- (14) APRON BOTTOM SLAB THICKNESS MAY BE 8" FOR CULVERTS WITH 6' SPANS ONLY. BOTTOM SLAB THICKNESS MAY BE INCREASED UP TO 2" MAX. PROVIDED COVER IS 1 1/2" MIN., 2" MAX.
- (15) REFER TO SPEC. 2412 FOR SEALANT REQUIREMENTS.

LENGTH P				
SPAN (FT.)	15° SKEW	30° SKEW	45° SKEW	
6	0'-11 3/4"	2'-1 3/8"	3'-8"	
8	1'-3"	2'-8 3/8"	4'-8"	
10	1'-6 1/4"	3'-3 1/4"	5'-8"	
12	1'-9 3/8"	3'-10 1/4"	6'-8"	
14	2'-0 5/8"	4'-5 1/8"	7'-8"	
16	2'-3 7/8"	5'-0"	(12)	

MIN. LENGTH L			
RISE (FT.)	15° SKEW	30° SKEW	45° SKEW
4	7'-1 3/4"	7'-7 3/8"	8'-7 7/8"
5	9'-2 1/2"	9'-11 1/8"	11'-5 1/8"
6	11'-3 3/8"	12'-2 7/8"	14'-3 3/4"
7	13'-4 1/4"	14'-6 5/8"	17'-1 1/4"
8	15'-5 1/8"	16'-10 1/4"	19'-11 5/8"
9	17'-5 7/8"	19'-2"	22'-9 5/8"
10	19'-6 3/4"	21'-5 3/4"	25'-7 1/2"
11	21'-7 5/8"	23'-9 3/8"	28'-5 1/2"
12	23'-8 1/2"	26'-1 1/8"	31'-3 3/8"
13	25'-9 3/8"	28'-4 7/8"	34'-1 3/8"
14	27'-10 1/8"	30'-8 1/2"	36'-11 1/4"

LENGTH Q				
SPAN (FT.)	15° SKEW	30° SKEW	45° SKEW	
6	3'-5 3/4"	4'-7 3/8"	6'-2"	
8	3'-9"	5'-2 3/8"	7'-2"	
10	4'-0"	5'-9 1/4"	8'-2"	
12	4'-3 3/8"	6'-4 1/8"	9'-2"	
14	4'-6 5/8"	6'-11 1/8"	10'-2"	
16	4'-9 7/8"	7'-6 1/8"	(12)	

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

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: Ryan R. Evans
 LICENSED PROFESSIONAL ENGINEER
 DATE: 02/02/2024
 NAME: RYAN R. EVANS
 LIC. NO. 53920

STATE AID PROJ. NO 002-628-008

TITLE: PRECAST CONCRETE END SECTION
 TYPE III - SINGLE OR MULTIPLE BARREL
 FOR SKEWS 7 1/2° TO 45°

DES: TJD DR: JMR
 CHK: RRE CHK: RRE
 APPROVED: SHEET NO. 6 OF 28 SHEETS

FIG. 5-395.110 (1 OF 2)

BRIDGE NO. 02J56

Ah REINFORCEMENT		
HEIGHT h (FT.)	Ah (IN ² /FT.)	
	15° & 30° SKEW	45° SKEW
7 OR LESS	0.192	0.192
8	0.20	0.24
9	0.29	0.36
10	0.42	0.53
11	0.60	0.75
12	0.78	0.98
13	1.03	1.36
14	1.38	1.85

Ab† REINFORCEMENT	
SPAN (FT.)	Ab† (IN ² /FT.)
6-10	0.20
12	0.30
14	0.39
16	0.39

LINTEL BEAM REINFORCEMENT		
SPAN (FT.)	BOTTOM REINFORCEMENT	
	A1	A2
6	NO. 4 @ 1'-0"	NO. 4 @ 9"
8	NO. 4 @ 1'-1"	NO. 4 @ 6"
10	NO. 4 @ 9"	NO. 5 @ 6"
12	NO. 5 @ 9"	NO. 6 @ 6"
14	NO. 6 @ 9"	NO. 8 @ 6"
16	NO. 6 @ 9"	NO. 8 @ 6"

LENGTH N			
SPAN (FT.)	15° SKEW	30° SKEW	45° SKEW
6	4'-3 ³ / ₈ "	6'-4 ¹ / ₄ "	9'-2"
8	4'-9 ⁷ / ₈ "	7'-6"	11'-2"
10	5'-4 ¹ / ₄ "	8'-7 ⁷ / ₈ "	13'-2"
12	5'-10 ³ / ₄ "	9'-9 ³ / ₄ "	15'-2"
14	6'-5 ¹ / ₈ "	10'-11 ⁵ / ₈ "	17'-2"
16	6'-11 ⁵ / ₈ "	12'-1 ¹ / ₂ "	NA (7)

LINTEL BEAM THICKNESS			
SPAN (FT.)	15° SKEW	30° SKEW	45° SKEW
≤ 12	9"	9"	9"
14	10" (8)	10" (8)	10" (8)
16	10" (8)	10" (8)	NA (7)

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".

STRUCTURAL STEEL IN ACCORDANCE WITH SPEC. 3306.

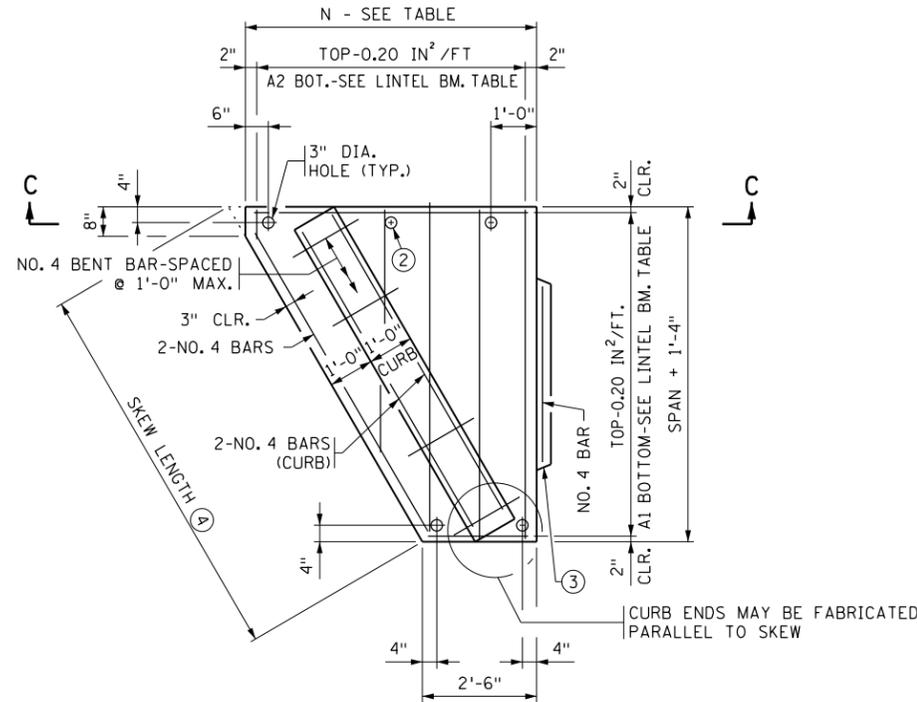
WELDING IN ACCORDANCE WITH SPEC. 2471.

GALVANIZE STRUCTURAL STEEL IN ACCORDANCE WITH SPEC. 3394.

GALVANIZE BOLTS, NUTS AND WASHERS IN ACCORDANCE WITH SPEC. 3392.

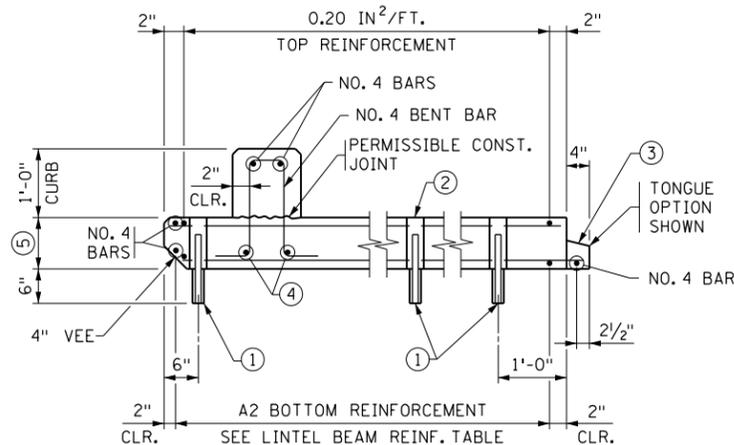
- NO. 8 DOWEL, 1'-0" LONG, 2" DIA. HOLE IN THE TOP OF THE WALL SECTION AND 3" DIA. HOLE IN THE LINTEL. FILL HOLE WITH GROUT.
- PROVIDE ADDITIONAL 3" HOLES AT 4'-0" MAXIMUM SPACING WHEN SIDE OF LINTEL BEAM IS OVER 6 FT.
- CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT CULVERT RADIUS.
- FOR SKEW LENGTH UNDER 10' USE NO. 8 BARS. FOR SKEW LENGTH OF 10' TO 14' USE NO. 9 BARS. FOR SKEW LENGTH OVER 14' TO 18' USE NO. 10 BARS. FOR SKEW LENGTH OVER 18' TO 22' USE NO. 11 BARS OR EQUAL. SKEW LENGTH IS DISTANCE BETWEEN OUTSIDE FACES OF END SECTION ALONG LINTEL BEAM.
- SEE LINTEL BEAM THICKNESS TABLE ON THIS SHEET. USE LINTEL BEAMS WITH 5000 PSI 3W82 CONCRETE UNLESS OTHERWISE SPECIFIED.
- ALTERNATE BAR BEND MAY BE USED FOR NO. 4 BENT BARS.
- FOR CULVERTS WITH SPANS OF 16' THE MAXIMUM SKEW IS 30°.
- ALTERNATIVELY A 9" THICKNESS MAY BE USED WITH 6500 PSI 3W82 CONCRETE.

NOTE: h IS THE LARGEST VERTICAL DIMENSION OF THE SEGMENT.



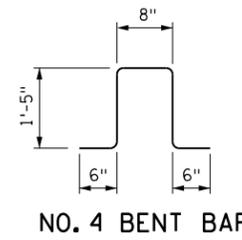
PLAN VIEW

LINTEL BEAM WITH INTEGRAL CURB

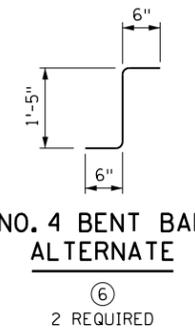


SECTION C-C

LINTEL BEAM WITH INTEGRAL CURB

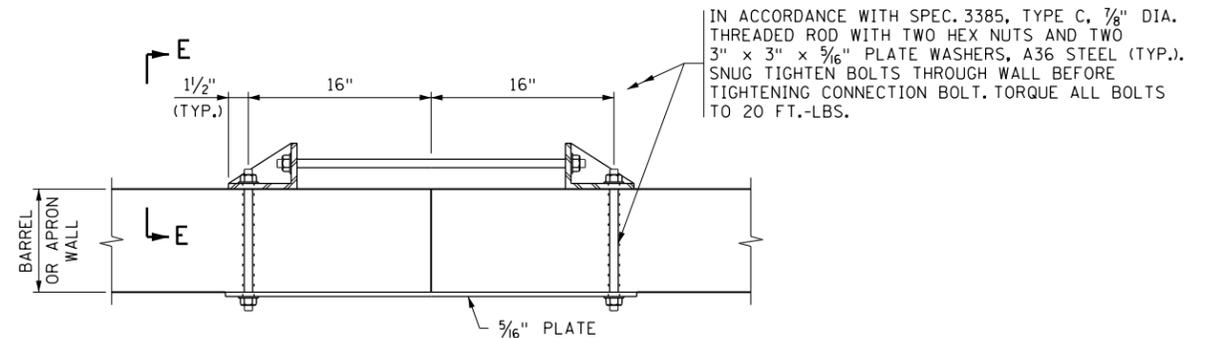


NO. 4 BENT BAR

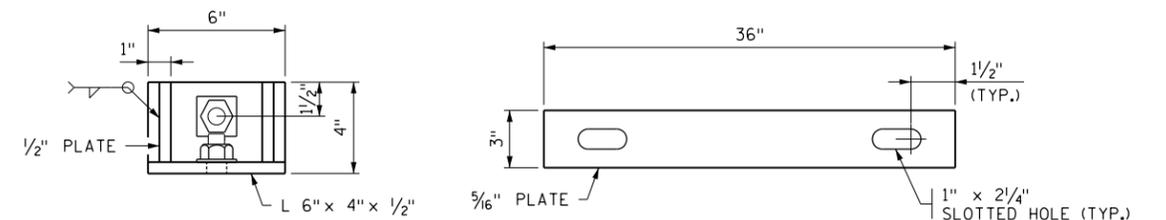


NO. 4 BENT BAR ALTERNATE

(6) 2 REQUIRED



PLAN VIEW



SECTION E-E

PLATE DETAIL

EXTRA STRONG CONNECTION DETAILS

REVISION: DECEMBER 21, 2022
 APPROVED: MARCH 24, 2011
 Nancy Sibenberger
 STATE BRIDGE ENGINEER

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: *[Signature]* 02/02/2024
 LICENSED PROFESSIONAL ENGINEER
 NAME: RYAN R. EVANS LIC. NO. 53920

STATE AID PROJ. NO 002-628-008

TITLE: PRECAST CONCRETE END SECTION TYPE III - SINGLE OR MULTIPLE BARREL FOR SKEWS 7¹/₂° TO 45°

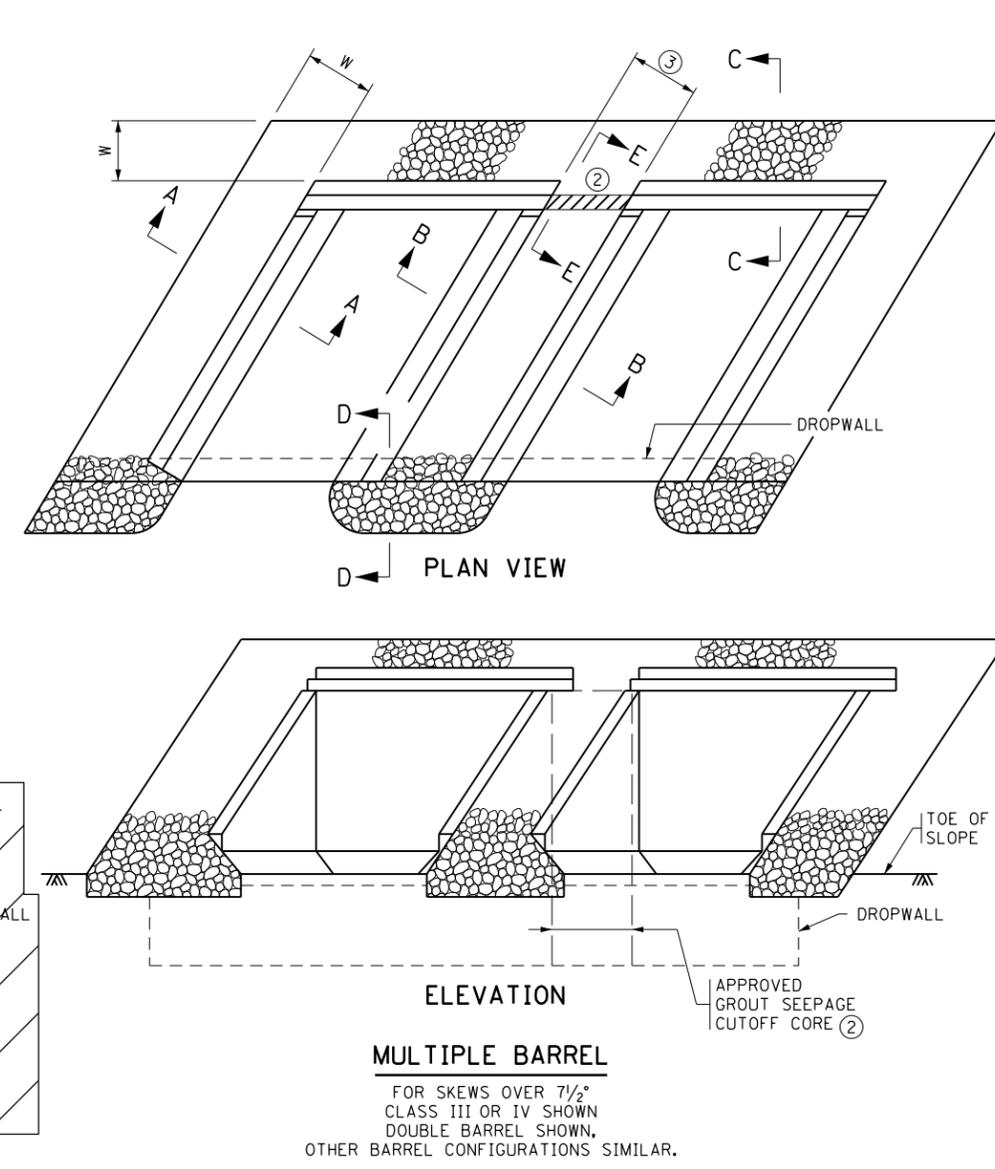
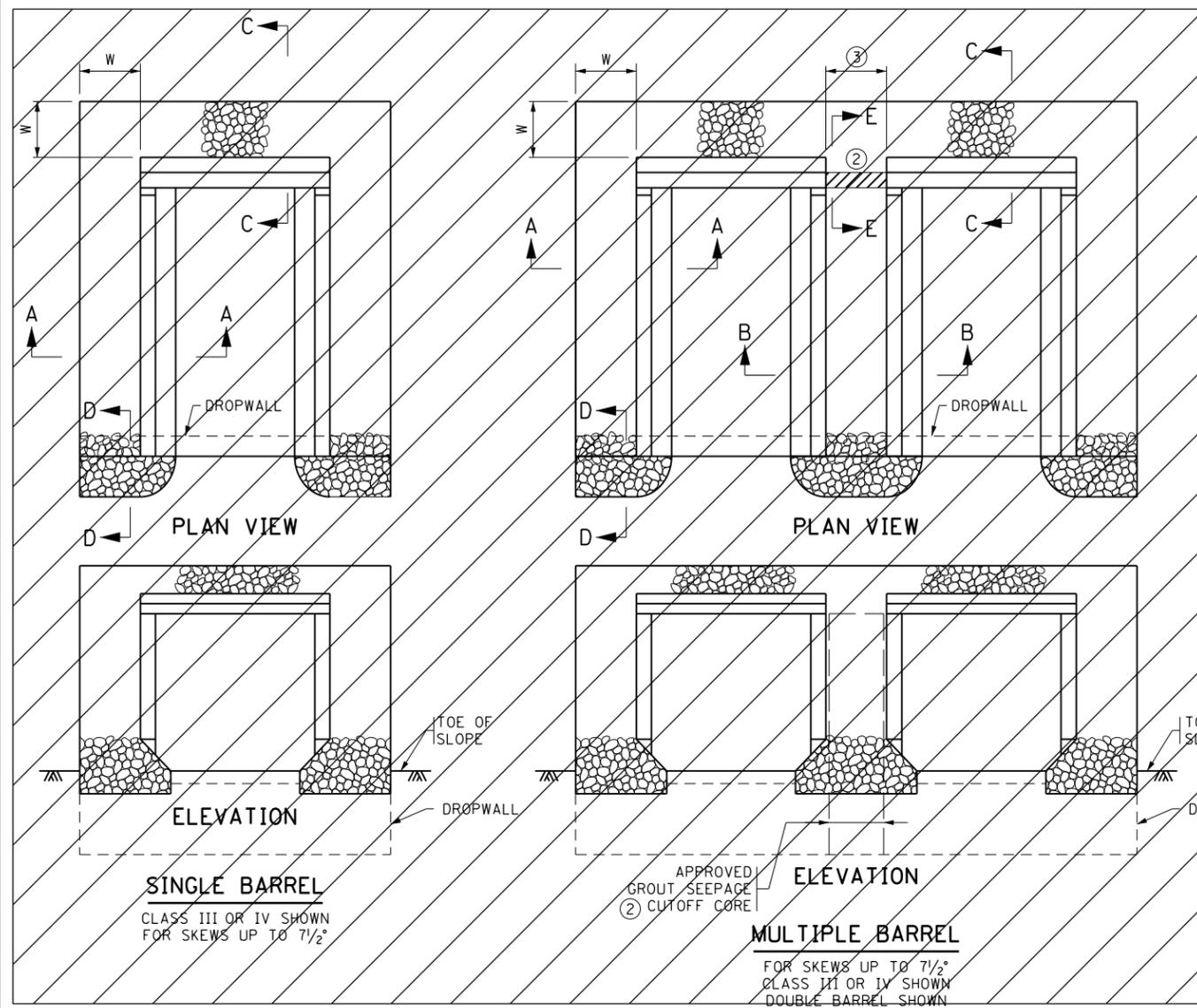
DES: TJD DR: JMR APPROVED:
 CHK: RRE CHK: RRE
 SHEET NO. 7 OF 28 SHEETS

FIG. 5-395.110 (2 OF 2)

BRIDGE NO. 02J56

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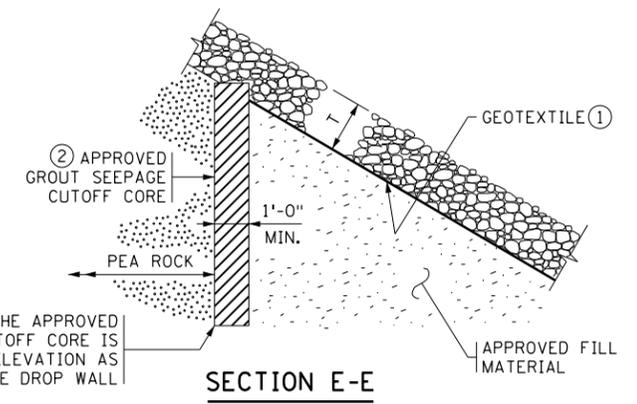
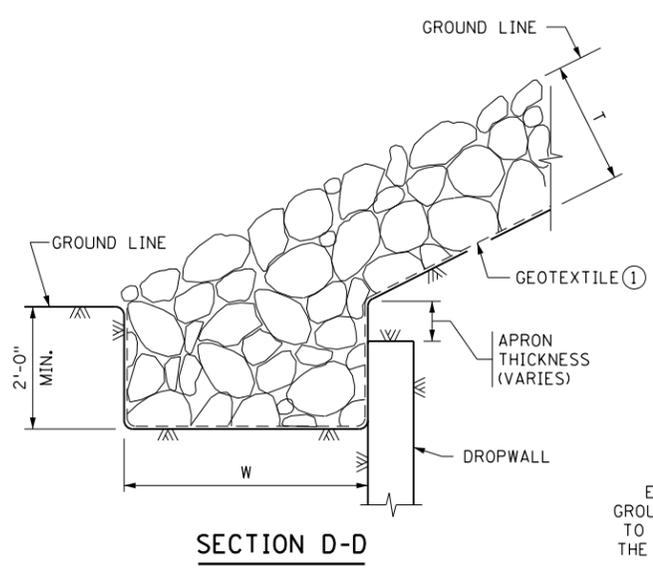
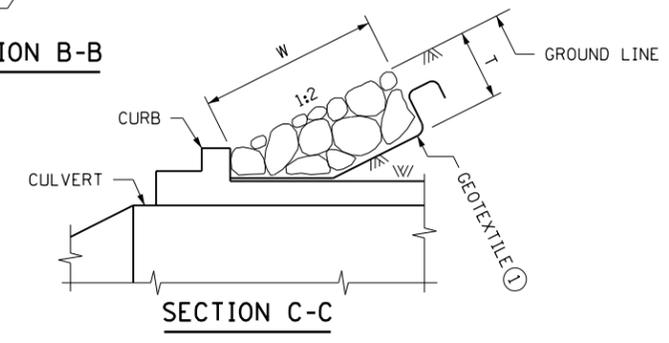
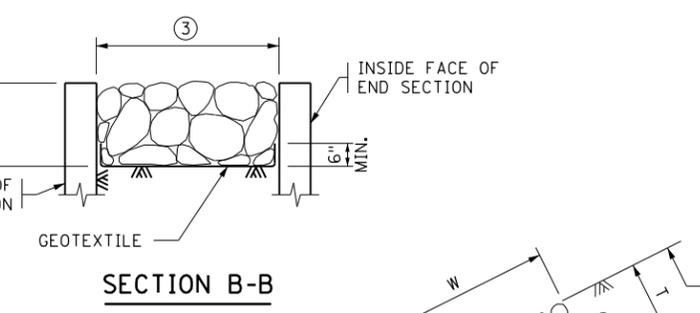
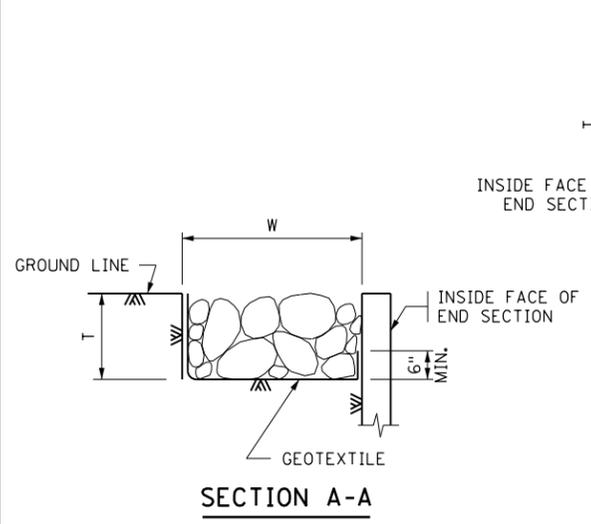


CONSTRUCTION NOTES

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

RIPRAP CLASS

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



REVISION: DECEMBER 21, 2022			
APPROVED: SEPTEMBER 11, 2014			
<i>Nancy D. Sibenberger</i> STATE BRIDGE ENGINEER			
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

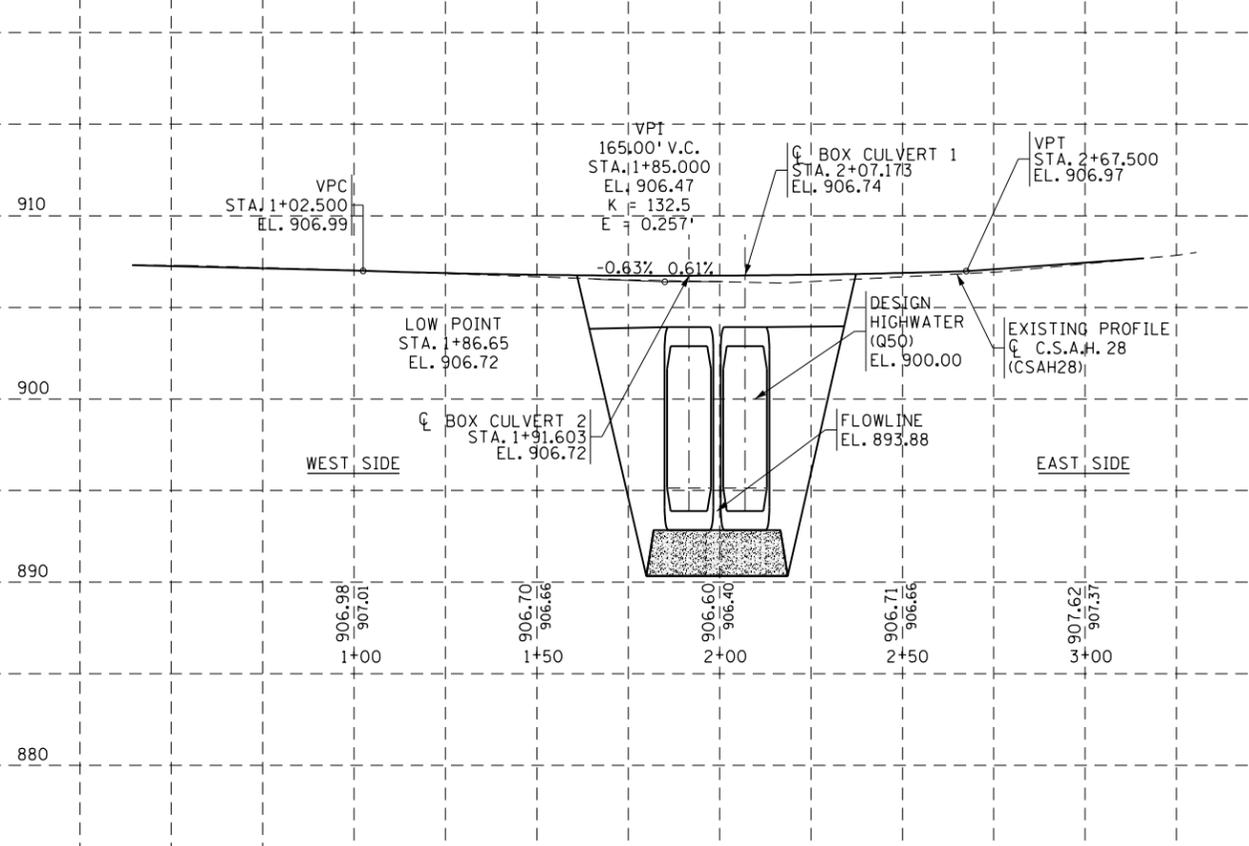
CERTIFIED BY: *[Signature]*
 LICENSED PROFESSIONAL ENGINEER
 NAME: RYAN R. EVANS
 DATE: 02/02/2024
 LIC. NO. 53920

STATE AID PROJ. NO. 002-628-008
EMBANKMENT PROTECTION FOR BOX CULVERTS

FIG. 5-395.115
 DES: TJD DR: TJD APPROVED:
 CHK: RRE CHK: RRE
 SHEET NO. 8 OF 28 SHEETS
BRIDGE NO. 02J56

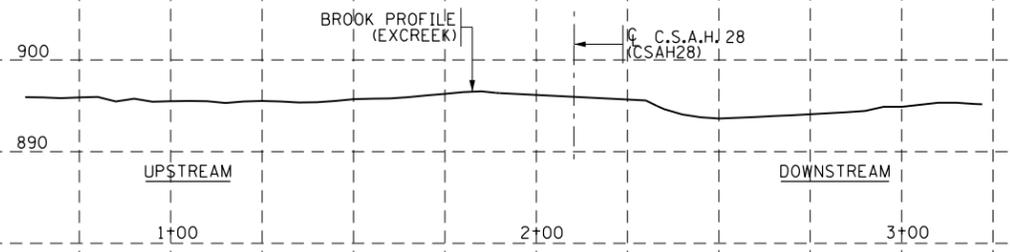
CONTRACTED PROFILE

SCALE : 0 12.5' 25' 0 2.5' 5'
HORIZONTAL VERTICAL

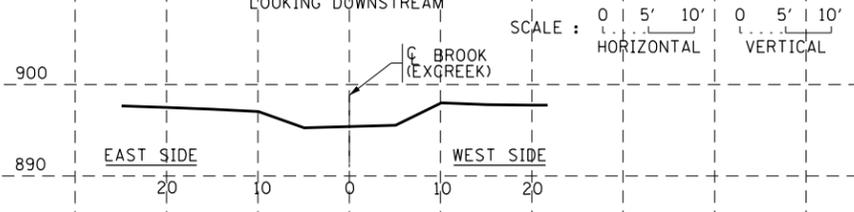


CONTRACTED PROFILE

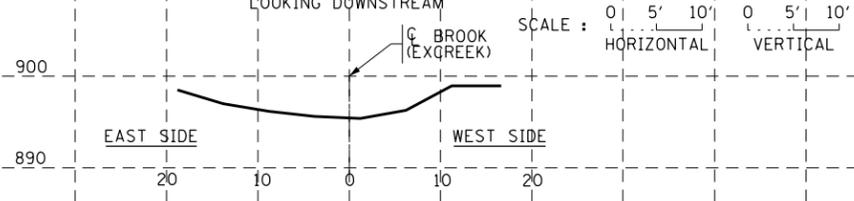
SCALE : 0 12.5' 25' 0 5' 10'
HORIZONTAL VERTICAL



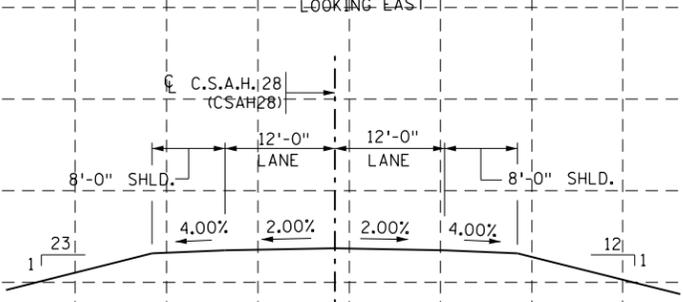
EX-SECTION 50 FT. UPSTREAM



EX-SECTION 104 FT. DOWNSTREAM



ROADWAY SECTION THROUGH BRIDGE AREA



LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
- OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY): GIVEN LOCATION, TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.
- APPARENT HIGHWATER ELEVATION OBTAINED FROM:
- OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: 12-21-22
STREAM OR DITCH DESIGNATION: SEELYE BROOK
DRAINAGE AREA: 29.4 SQ. MI.
MAX. FLOOD ON RECORD: UNK
MAXIMUM OBSERVED HIGHWATER ELEVATION: UNK
DESIGN FLOOD (50 YR. FREQ.): 504 C.F.S.
HEADWATER ELEVATION: 900.0
DESIGN MEAN VELOCITY THROUGH STRUCTURE: 4.3 F.P.S.
TOTAL STAGE INCREASE: 0.20 FT.
LOW MEMBER AT OR ABOVE ELEVATION: 903.1
BASIC FLOOD (100 YR. FREQ.): 1153 C.F.S.
HEADWATER ELEVATION: 902.3
TOTAL STAGE INCREASE: 1.00 FT.
MEAN VELOCITY THROUGH STRUCTURE: 7.6 F.P.S.
FLOWLINE ELEVATION: 895.10 SKEW ANGLE: 10°

SCOUR CONFIRMATION RECOMMENDATION

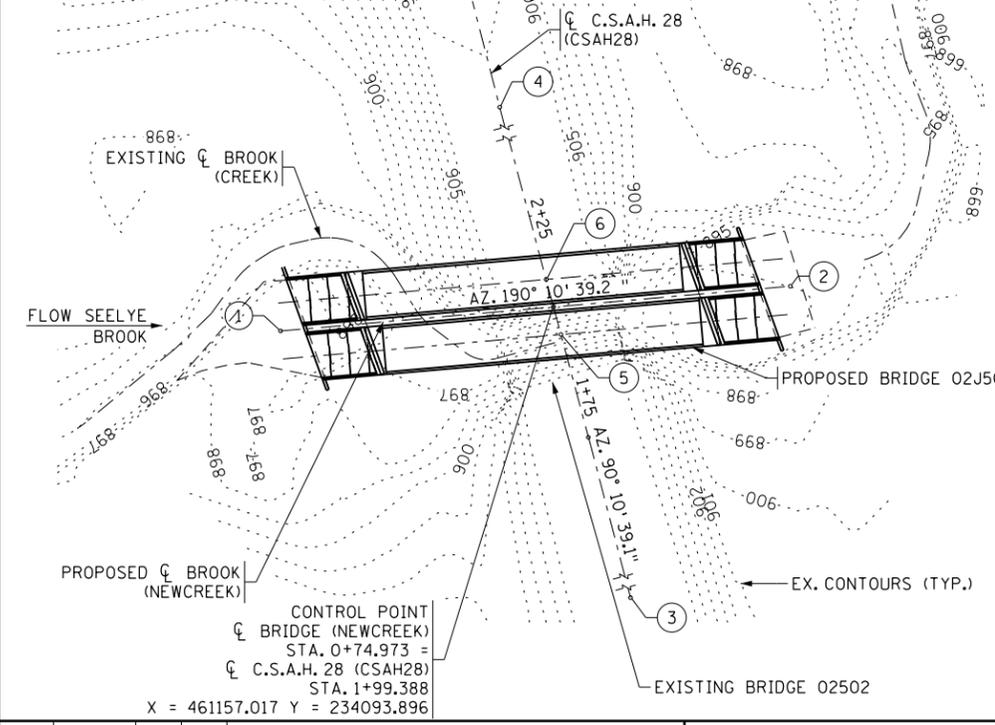
DATE: XX-XX-XX
TOTAL SCOUR AT PIER EL. XXX.XX (500 OR 01 YR. FREQ.)
SCOUR CODE: OBTAIN FROM HYDRAULIC ENGINEER

BRIDGE SURVEY SHEETS MADE FROM :
ALIGN.DGN, TRAIL_GEOMETRY.DGN, EXTOPO.DGN, PROFILE.DGN, JOB006.GPK
BENCHMARK ELEVATION 907.018 (N.A.V.D. 88 ADJ.)
LOCATION:
NORTHING = 234079; EASTING = 461161
(N.A.D. 83 COUNTY PROJECT COORDINATES)
DESCRIPTION:
THE TOP OF THE MOST EASTERLY BOLT ON THE SOUTHEAST SIDE OF THE BRIDGE.

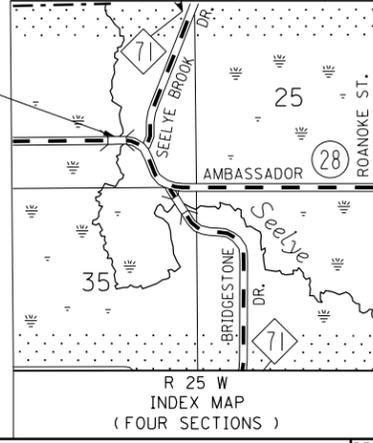
PLAT

SCALE: 0 12.5' 25'

UTILITY INFORMATION
WARNING: DIAL GOPHER STATE ONE CALL AT 1-800-252-1166 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS TO OBTAIN COMPLETE UTILITY PROPERTY OWNERSHIP AND LOCATION INFORMATION. UTILITY INFO PRESENTED ON PLANS IS QUALITY LEVEL D. FIELD VERIFY ALL UTILITIES.



- P.O.T. STA. 0+00.000 C BRIDGE (NEWCREEK)
X = 461170.265 Y = 234167.689
- P.O.T. STA. 1+40.000 C BRIDGE (NEWCREEK)
X = 461145.527 Y = 234029.892
- P.O.T. STA. 0+71.798 C C.S.A.H. 28 (CSAH28)
X = 461029.428 Y = 234094.292
- P.O.T. STA. 3+18.695 C C.S.A.H. 28 (CSAH28)
X = 461276.324 Y = 234093.527
- INTERSECTION POINT
C BOX CULVERT 2 =
C C.S.A.H. 28 (CSAH28) STA. 1+91.603
X = 461149.233 Y = 234093.921
- INTERSECTION POINT
C BOX CULVERT 1 =
C C.S.A.H. 28 (CSAH28) STA. 2+07.175
X = 461164.802 Y = 234093.872



MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

C.S.A.H. 28 (AMBASSADOR BLVD. NW)
OVER SEELYE BROOK
830 FEET WEST OF THE INTERSECTION
C.S.A.H. 28 AND SEELYE BROOK DRIVE

IDENTIFICATION NO. 513

SEC. 26 T 34 N R 25 W
COUNTY ANOKA ST. FRANCIS TOWNSHIP

NO	DATE	BY	CHK.	REVISIONS



7533 SUNWOOD DRIVE N.W.
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

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RYAN R. EVANS
LIC. NO. 53920 DATE 02/02/2024

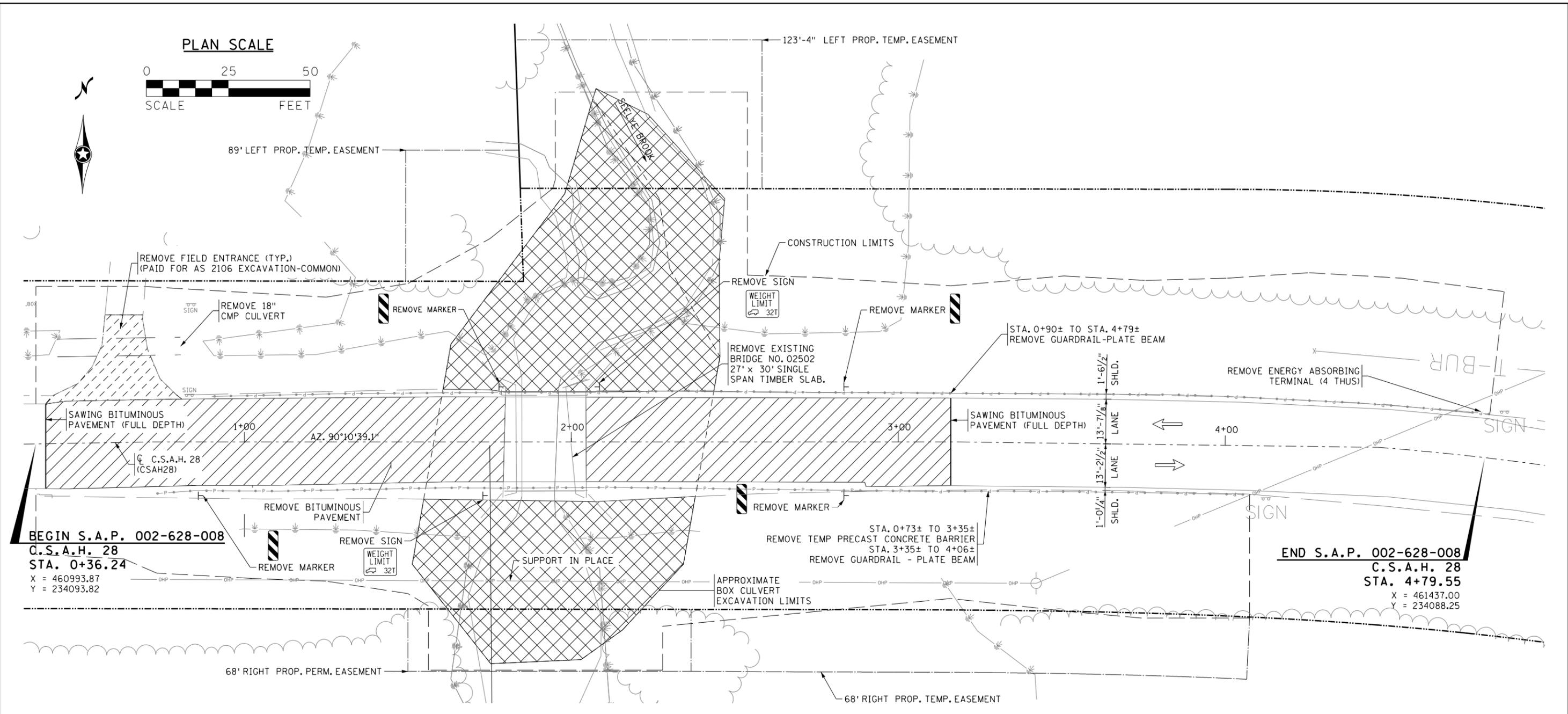
BRIDGE SURVEY

DESIGNED	TJD	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	RRE	
S.A.P. 002-628-008				
SHEET NO. 9 OF 28 SHEETS				

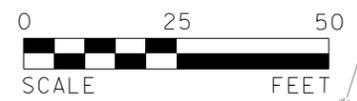
BRIDGE NO.
02J56

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PLAN SCALE



LEGEND

- REMOVE FIELD ENTRANCE
- REMOVE BITUMINOUS PAVEMENT
- CHANNEL SHAPING
- REMOVE SIGN/MARKER
- CONSTRUCTION LIMITS
- EXISTING R/W
- PROPOSED TEMP. EASEMENTS

EXISTING CONDITIONS & UTILITIES AND REMOVALS

UTILITY INFORMATION

WARNING: DIAL GOPHER STATE ONE CALL AT 1-800-252-1166 A MINIMUM OF 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS TO OBTAIN COMPLETE UTILITY PROPERTY OWNERSHIP AND LOCATION INFORMATION.

THE FOLLOWING LIST SHOWS THE UTILITY COMPANIES INVOLVED WITH THIS PROJECT

CENTURYLINK	800-778-9140
CONNEXUS ENERGY	763-323-4215
MIDCONTINENT COMMUNICATIONS	605-271-0202

GENERAL NOTES:

ALL UTILITY WORK SHOWN IN THIS PLAN SHALL BE DONE BY OTHERS UNLESS NOTED.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY 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".

ALL POWER LINES ARE DISTRIBUTION UNLESS NOTED OTHERWISE.

NO.	DATE	BY	CHK.	REVISIONS



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 RAMSEY, MINNESOTA 55303
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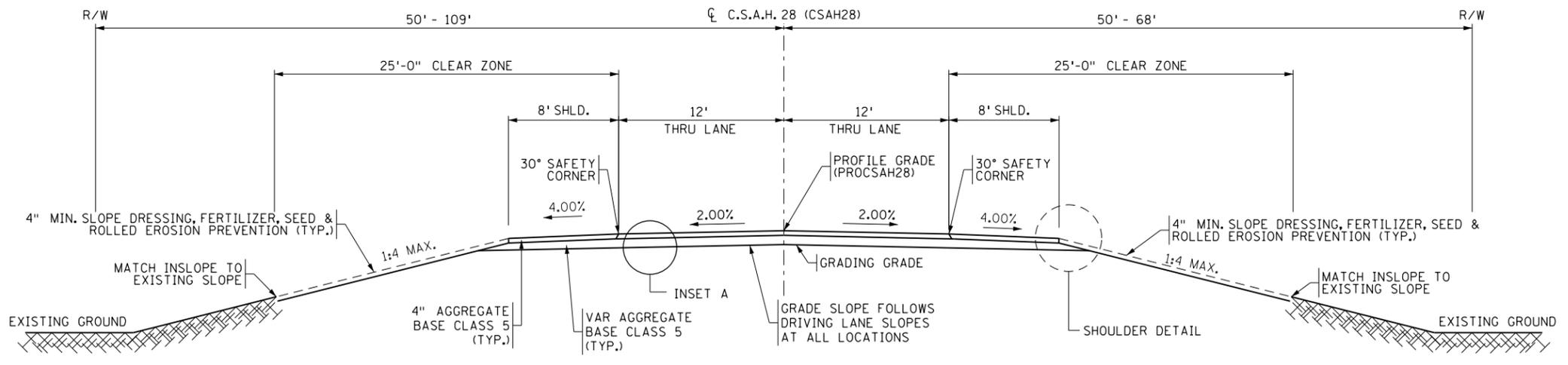
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RYAN R. EVANS
 LIC. NO. 53920 DATE 02/02/2024

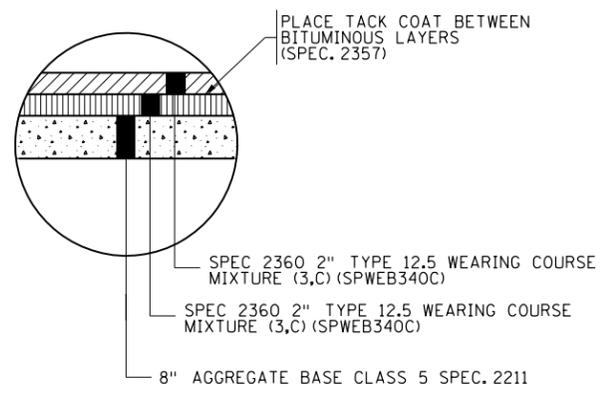
ROADWAY REMOVAL PLAN

DESIGNED TJD	DRAWN JMR	APPROVED
CHECKED RRE	CHECK RRE	
S.A.P. NO. 002-628-008		
SHEET NO. 10 OF 28 SHEETS		

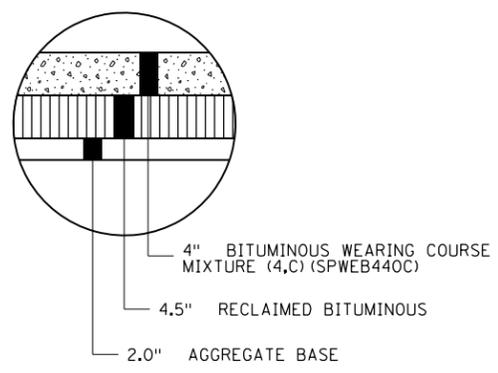
BRIDGE NO.
 02J56



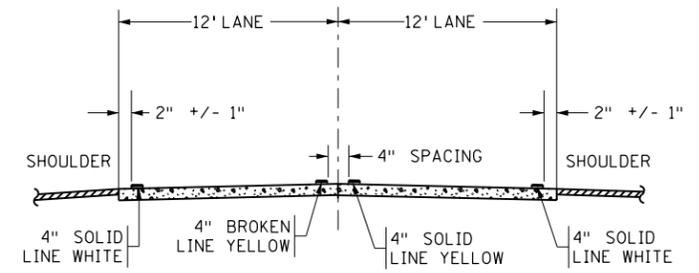
PROPOSED CSAH 28
 STA. 1+02.50 TO STA. 3+16.07
 LOOKING EAST



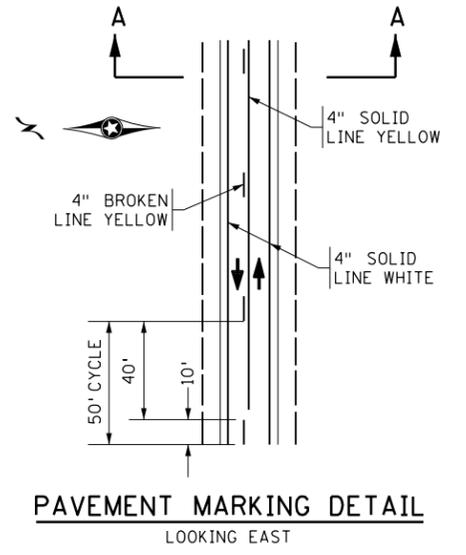
INSET A



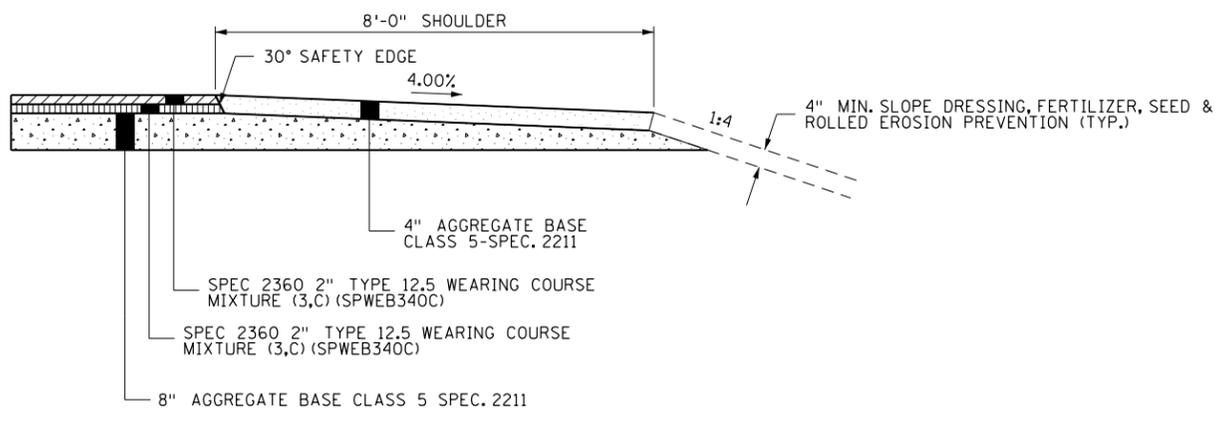
EXISTING PAVEMENT SECTION



SECTION A-A
 LOOKING EAST



PAVEMENT MARKING DETAIL
 LOOKING EAST



SHOULDER DETAIL

ROADWAY CONSTRUCTION NOTES

- ALL EXCAVATION AND EMBANKMENT SHALL BE IN ACCORDANCE WITH MNDOT 2106. FOR ANY AREA DISTURBED BY CONSTRUCTION, PLACE A MINIMUM OF 4" OF SLOPE DRESSING MATERIAL. ANY SLOPE DRESSING NEEDED IN ADDITION TO SALVAGED TOPSOIL SHALL MEET THE REQUIREMENTS OF TOPSOIL MATERIAL (MNDOT SPEC 3877). PAID FOR AS COMMON EMBANKMENT.
- PRIOR TO CONSTRUCTION OR EXCAVATION, STRIP ALL IN-PLACE TOPSOIL AND SLOPE DRESSING MATERIALS IN AREAS TO BE DISTURBED BY CONSTRUCTION.
- TOPSOIL EXCAVATION IS INCLUDED IN EXCAVATION - COMMON. EXCAVATED TOPSOIL SHALL BE REUSED AS SLOPE DRESSING AS DIRECTED BY THE ENGINEER. SLOPE DRESSING IS INCLUDED IN COMMON EMBANKMENT (CV).
- PROVIDE A FULL DEPTH SAWCUT WHERE PLACING NEW PAVEMENT NEXT TO INPLACE PAVEMENT.
- ALL DISTURBED ROADWAY MATERIAL SUCH AS CONCRETE, BITUMINOUS AND AGGREGATES MAY BE UTILIZED ACCORDING TO MNDOT SPECIFICATIONS AND PROJECT SPECIAL PROVISIONS. MATERIALS NOT UTILIZED ON THE PROJECT WILL BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OF OFF THE RIGHT OF WAY IN ACCORDANCE WITH MNDOT SPECIFICATION 2104 AND AS AGREED UPON BY ENGINEER.
- VERIFY EXISTING ELEVATIONS ALONG EDGES WHERE NEW PAVEMENT MATCHES EXISTING.
- WHERE "REMOVE BITUMINOUS PAVEMENT" IS PERFORMED, THE CONTRACTOR SHALL FIRST SAW THE BITUMINOUS PAVEMENT FULL DEPTH ALONG THE REMOVAL LINE.
- PROVIDE TEMPORARY EROSION CONTROL MEASURES DURING AND AFTER BOX CULVERT CONSTRUCTION TO PREVENT SEDIMENTS AND CONTAMINANTS FROM ENTERING THE BROOK.
- FOR SUPERELEVATION DETAILS AND TRANSITIONS, SEE ROADWAY CONSTRUCTION SHEET.

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NO.	DATE	BY	CHK.	REVISIONS

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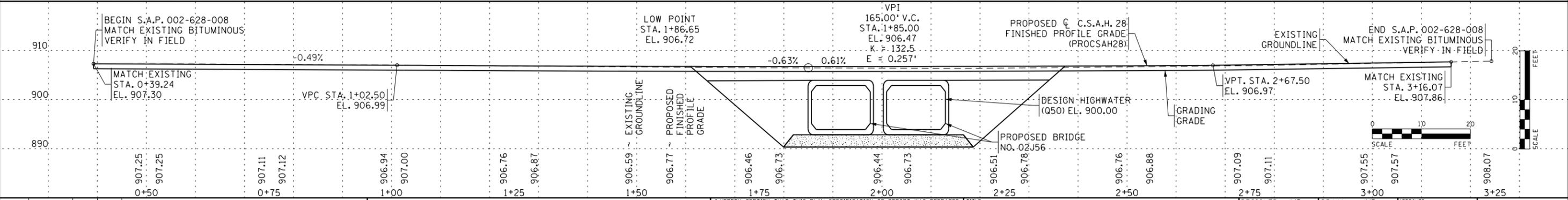
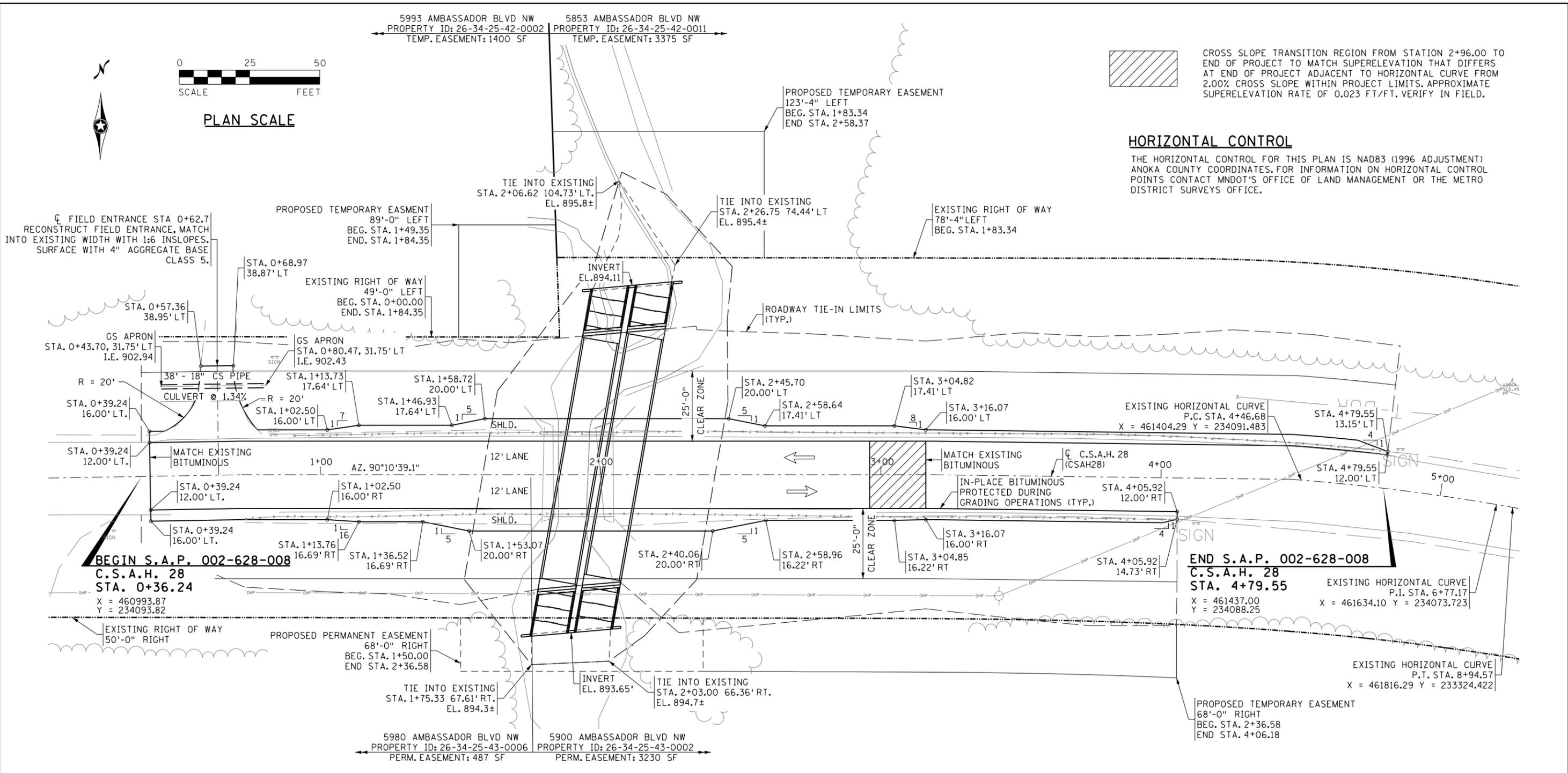
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 RYAN R. EVANS
 LIC. NO. 53920 DATE 02/02/2024

TITLE: **ROADWAY TYPICAL SECTIONS & DETAILS**

DESIGNED TJD	DRAWN JMR	APPROVED
CHECKED RRE	CHECK RRE	
S.A.P. NO. 002-628-008		
SHEET NO. 11 OF 28 SHEETS		

BRIDGE NO.
 02J56

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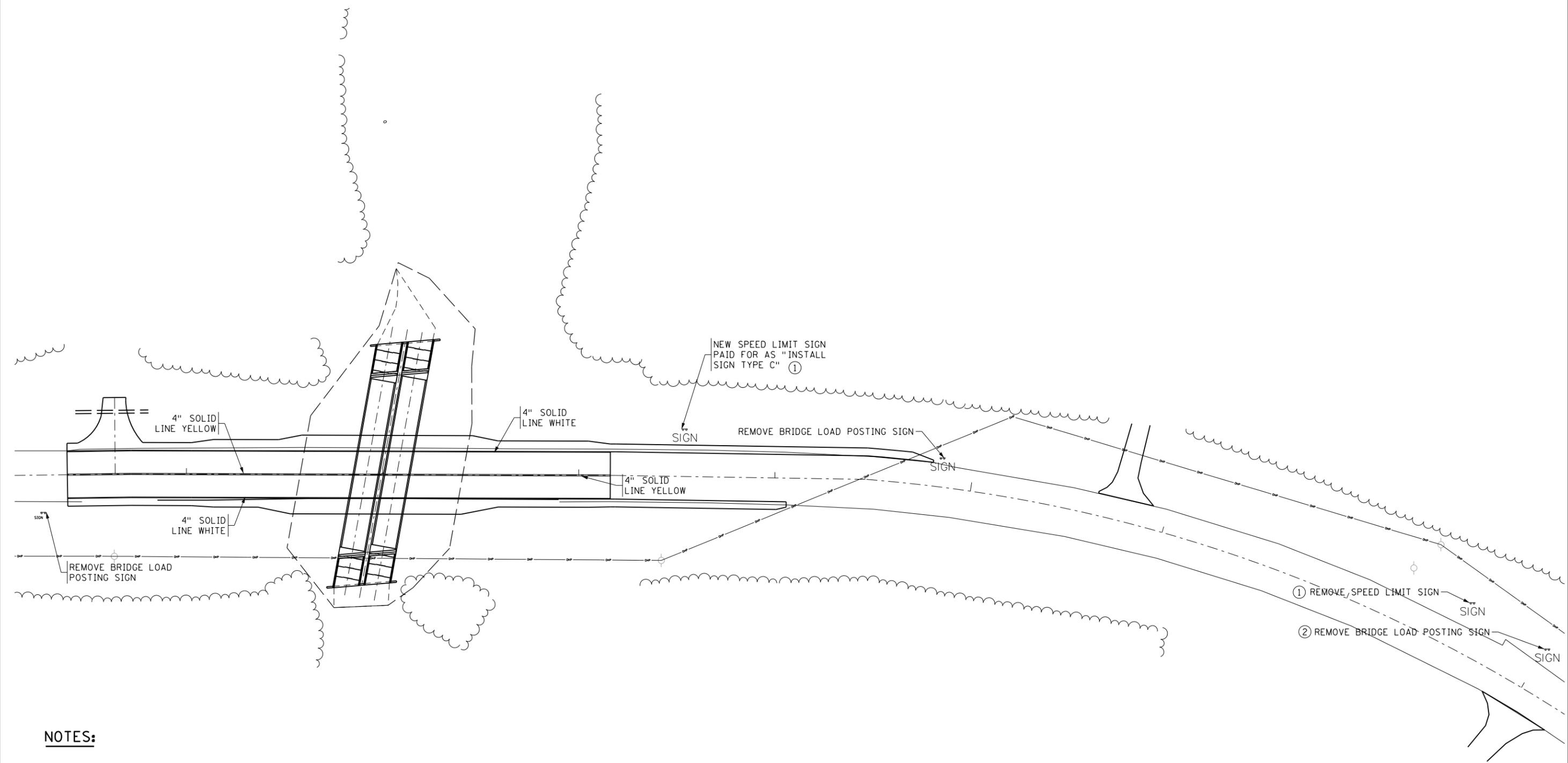
RYAN R. EVANS
 LIC. NO. 53920 DATE 02/02/2024

**ROADWAY CONSTRUCTION
 PLAN AND PROFILE**

DESIGNED JMR	DRAWN JMR	APPROVED
CHECKED RRE	CHECK RRE	
S.A.P. 002-628-008		
SHEET NO. 12 OF 28 SHEETS		

**BRIDGE NO.
 02J56**

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NOTES:

- ① EXISTING SPEED LIMIT SIGN IS LOCATED IN THE MIDDLE OF ROADWAY HORIZONTAL CURVE. REMOVE SIGN. PLACE 55 MPH SPEED LIMIT SIGN AT THE NEW LOCATION AS SHOWN ABOVE. PAID FOR AS "INSTALL SIGN TYPE C".
- ② BRIDGE LOAD POSTING SIGN IS LOCATED AT NW CORNER OF AMBASSADOR BLVD (CSAH28) AND SEELYE BROOK DR NW INTERSECTION.

SIGNING AND STRIPING PLAN

NO	DATE	BY	CHK.	REVISIONS



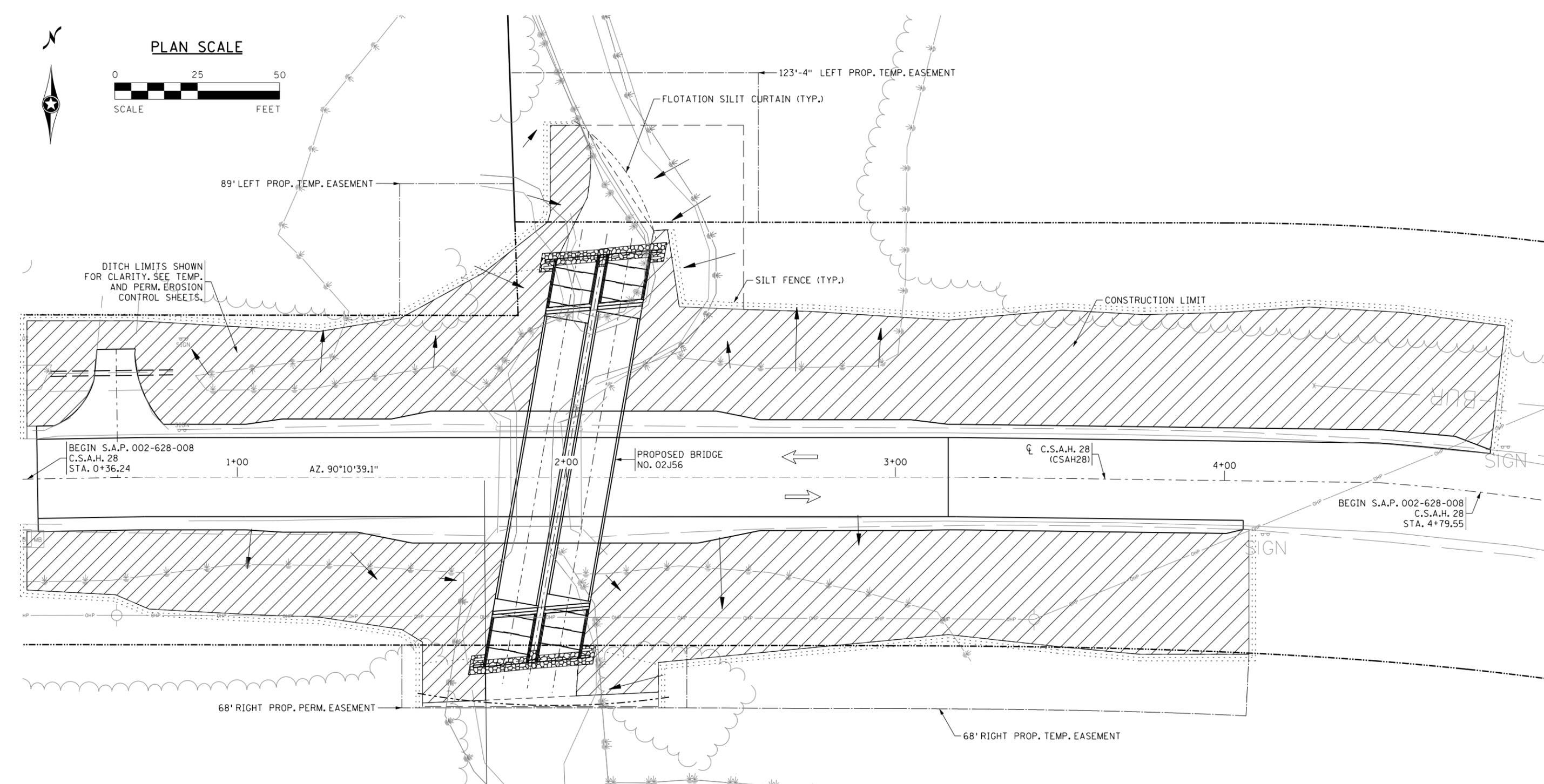
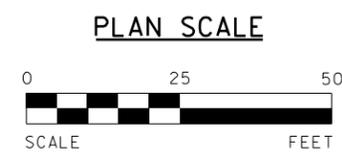
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DESIGNED TJD	DRAWN TJD	APPROVED
CHECKED RRE	CHECK RRE	
S.A.P. NO. 002-628-008		
SHEET NO. 13 OF 28 SHEETS		

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TURF ESTABLISHMENT AND EROSION CONTROL PLAN

LEGEND	
	MNDOT SEED MIXTURE 34-171 (70 LBS./AC) TYPE 2 FERTILIZER AND ROLLED EROSION PREVENTION CATEGORY 25 (WOOD FIBER) PRODUCTS WITHIN 72 HOURS.
	RIPRAP CLASS III
	SILT FENCE
	FLOTATION SILT CURTAIN
	CONSTRUCTION LIMITS
	EXISTING R/W
	PROPOSED R/W
	SURFACE FLOW DIRECTION

NO	DATE	BY	CHK.	REVISIONS
1	3/29/24	TJD	RRE	EROSION CONTROL METHOD UPDATED

BOLTON & MENK

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 RAMSEY, MINNESOTA 55303
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RYAN R. EVANS
 LIC. NO. 53920 DATE 03/27/2024

TITLE:

TURF ESTABLISHMENT & EROSION CONTROL PLAN

SHEET 1 OF 2

DESIGNED	TJD	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	RRE	

S.A.P. NO. 002-628-008

SHEET NO. 14 OF 28 SHEETS

BRIDGE NO.
02J56

CULVERT RIP RAP

THIS QUANTITY IS SHOWING RIPRAP AROUND CULVERT ENDS. SEE SHEET 8 FOR DETAILS.

LOCATION	CU. YARD
S. CULVERT END	25.93
N. CULVERT END	25.93
TOTAL =	51.85

SEEDING

SEED MIXTURE 250, ROLLED EROSION PREVENTION CATEGORY 25 (WOOD FIBER) PRODUCTS, AND FERTILIZER TYPE 2 USED FOR STABILIZATION ON ALL DISTURBED AREAS.

STA. TO STA.	LT/RT	WIDTH	ACRE
0+39 - 1+94	LT	VARIES	0.12
0+39 - 1+81	RT	VARIES	0.09
2+18 - 4+80	LT	VARIES	0.21
2+05 - 4+80	RT	VARIES	0.17
TOTAL =			0.59

SILT FENCE

SILT FENCE TYPE MS

STA. TO STA.	LT/RT	WIDTH	FEET
0+39 - 4+80	LT	VARIES	1216
0+39 - 4+80	RT	VARIES	824
TOTAL =			2040

FLOTATION SILT CURTAIN

FLOTATION SILT CURTAIN, TYPE MOVING WATER

LOCATION	FEET
SOUTH SIDE	78
NORTH SIDE	45
TOTAL =	123

GENERAL NOTES:

PRIOR TO SEEDING OR EROSION CONTROL INSTALLATION, THE CONTRACTOR SHALL MEET THE REQUIREMENTS OF THE PROVISIONS OF MnDOT 2575.3. THE CONTRACTOR SHALL PROVIDE A SMOOTH, MOIST AND EVENLY TEXTURED FOUNDATION OF THE AREA TO BE COVERED. SAID WORK IS INCIDENTAL TO THE PROJECT.

THE QUANTITIES AND LOCATIONS OF ALL ITEMS SHOWN ON THE DETAIL SHEETS ARE APPROXIMATE AND WILL BE VERIFIED IN THE FIELD BY THE ENGINEER.

PLAN BID ITEMS SHALL BE USED TO MEET THE REQUIREMENTS OF THE NPDES PERMIT, THE PLAN AND THE SPECIFICATIONS. NO ADDITIONAL COMPENSATION SHALL BE PAID FOR THE NUMBER OF MOBILIZATIONS REQUIRED OR AREA COVERED DURING MOBILIZATIONS.

FOR TEMPORARY TURF ESTABLISHMENT; RAPID STABILIZATION METHOD 1 SHALL BE PLACED IN AREAS EXPECTED TO LIE UNWORKED FOR MORE THAN 14 DAYS.

FOR PERMANENT TURF ESTABLISHMENT; SEED MIX AND APPLICATION RATE SHALL BE PER SPEC. 3876. SEED MIX SHALL BE A NON-NATIVE MIX. PLACE FERTILIZER TYPE 2 PRIOR TO SEED PLACEMENT AND TILL AS REQUIRED TO 3 INCH MINIMUM DEPTH.

THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE THAT DRAINS WATER FROM ANY PORTION OF THE CONSTRUCTION SITE, OR DIVERTS WATER AROUND THE SITE, MUST BE STABILIZED WITHIN 200 LINEAL FEET FROM THE CONSTRUCTION LIMITS, OR FROM THE POINT OF DISCHARGE INTO ANY SURFACE WATER. STABILIZATION OF THE LAST 200 LINEAL FEET MUST BE COMPLETED WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER.

ALL EXPOSED SOIL AREAS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.

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NO	DATE	BY	CHK.	REVISIONS
1	3/29/24	TJD	RRE	EROSION CONTROL METHOD UPDATED



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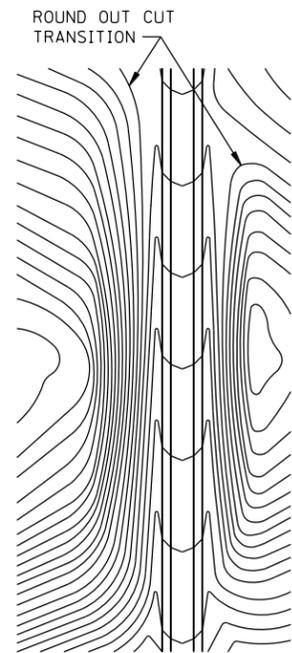
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RYAN R. EVANS
LIC. NO. 53920 DATE 03/27/2024

TITLE:
TURF ESTABLISHMENT
& EROSION CONTROL PLAN
SHEET 2 OF 2

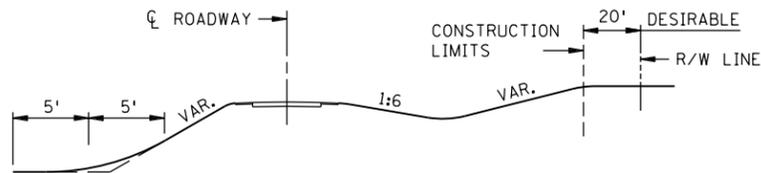
DESIGNED	TJD	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	RRE	
S.A.P. NO. 002-628-008				
SHEET NO. 15 OF 28 SHEETS				

BRIDGE NO.
02J56

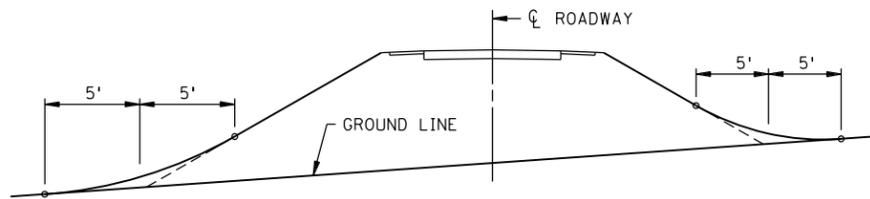
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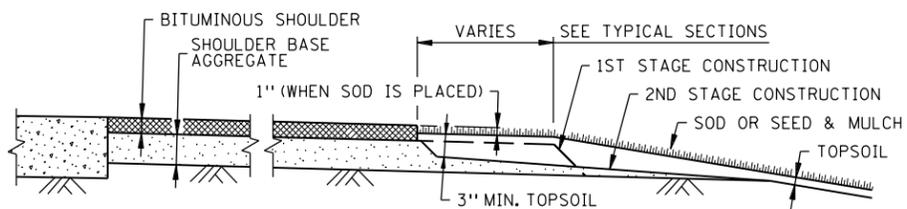
CONTOURING ROAD CUTS



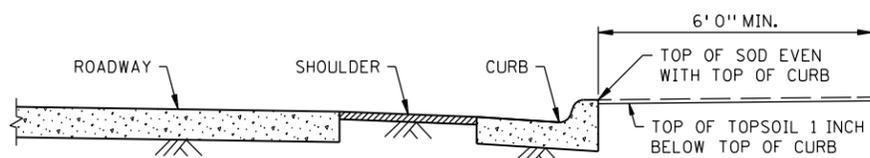
ROUNDING SHOULDERS AND BACKSLOPES



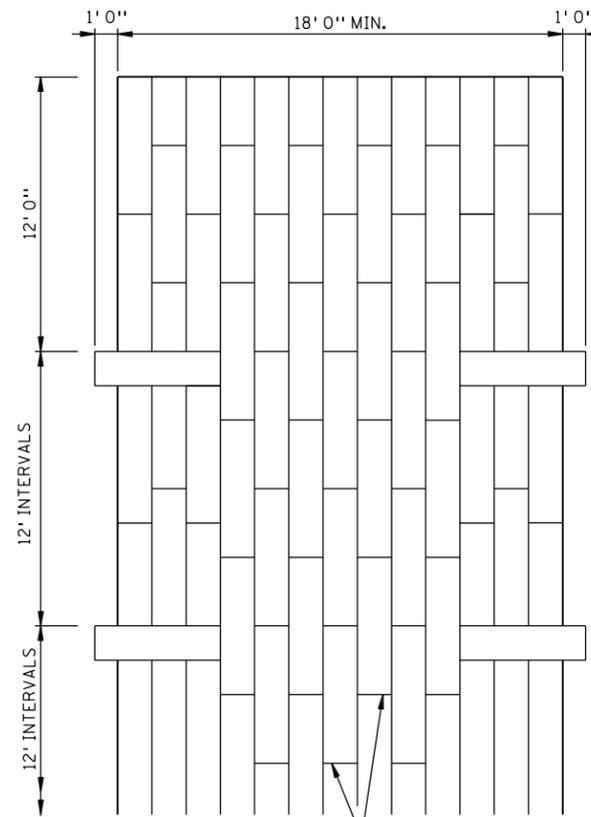
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



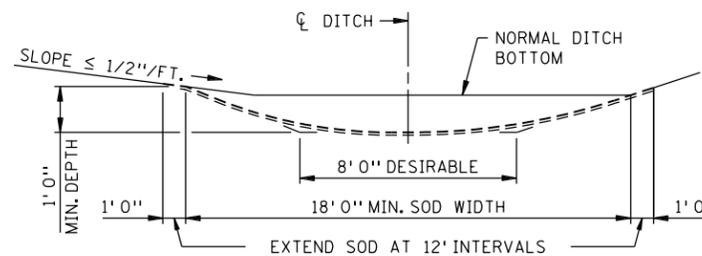
SHAPING AND TOPSOILING INSLOPES



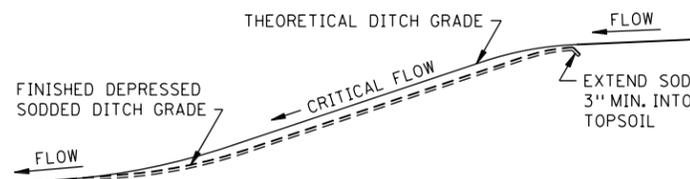
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



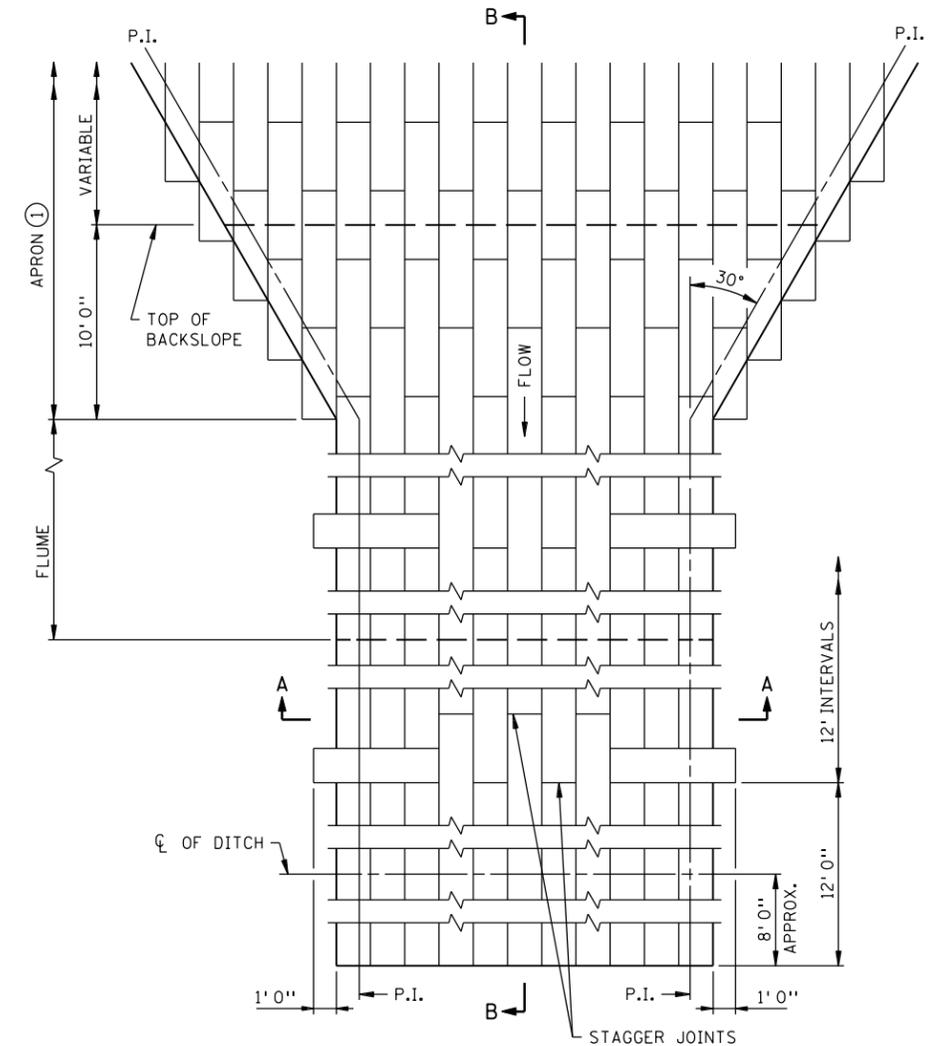
PLAN VIEW



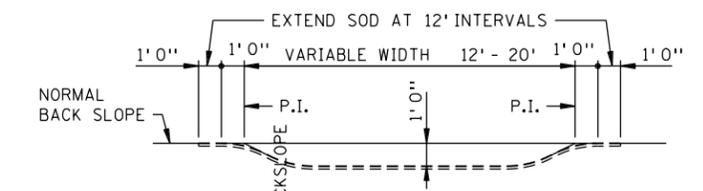
SODDED DITCH CROSS SECTION
 WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.),
 FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



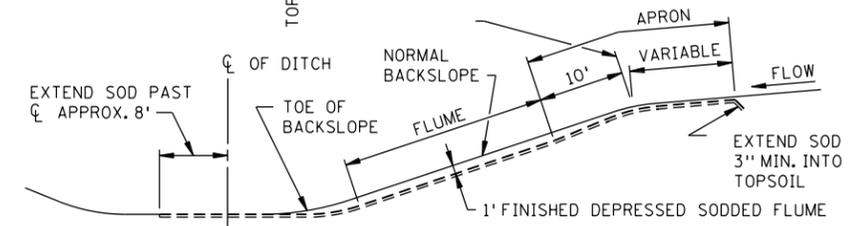
DITCH PROFILE
 SODDED DITCH DETAILS



PLAN VIEW



SECTION A-A



SECTION B-B

SODDED FLUME DETAILS

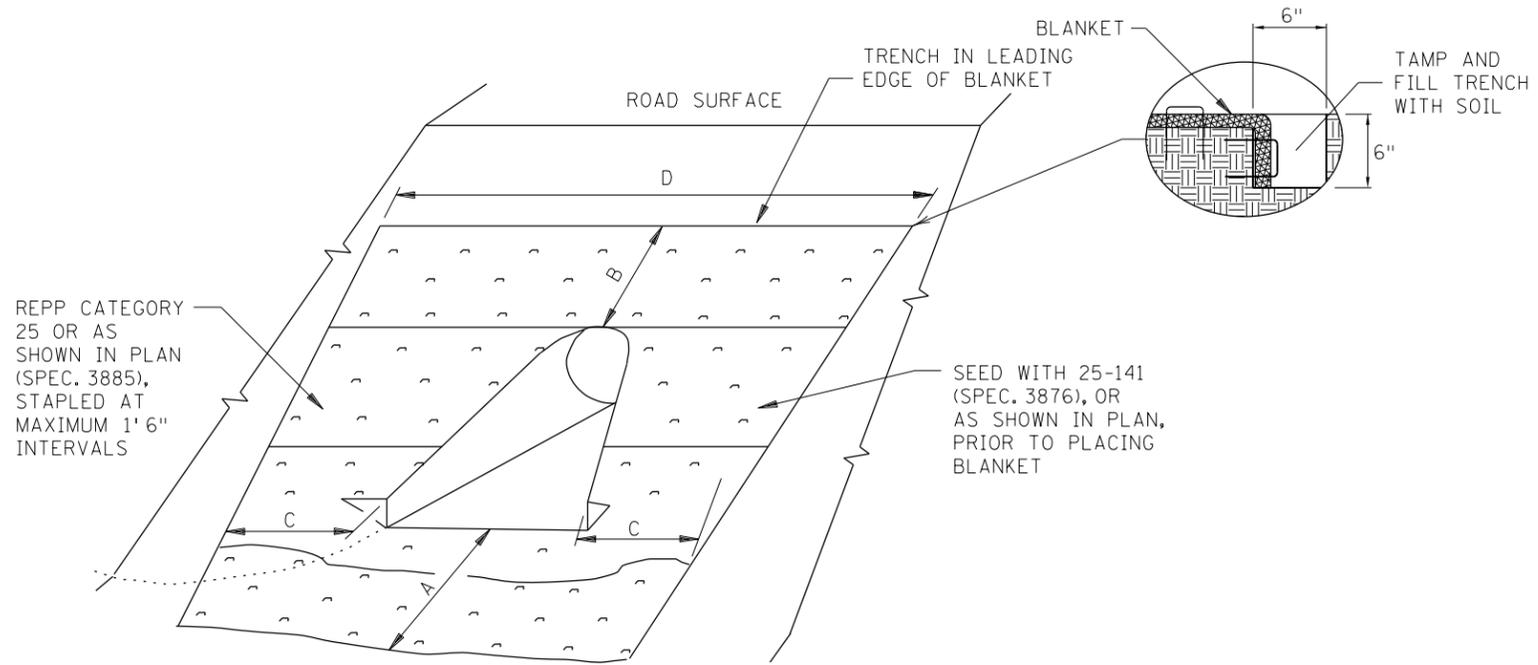
NOTES:
 SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.
 ① CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

REVISION:
 APPROVED: 2-28-2017

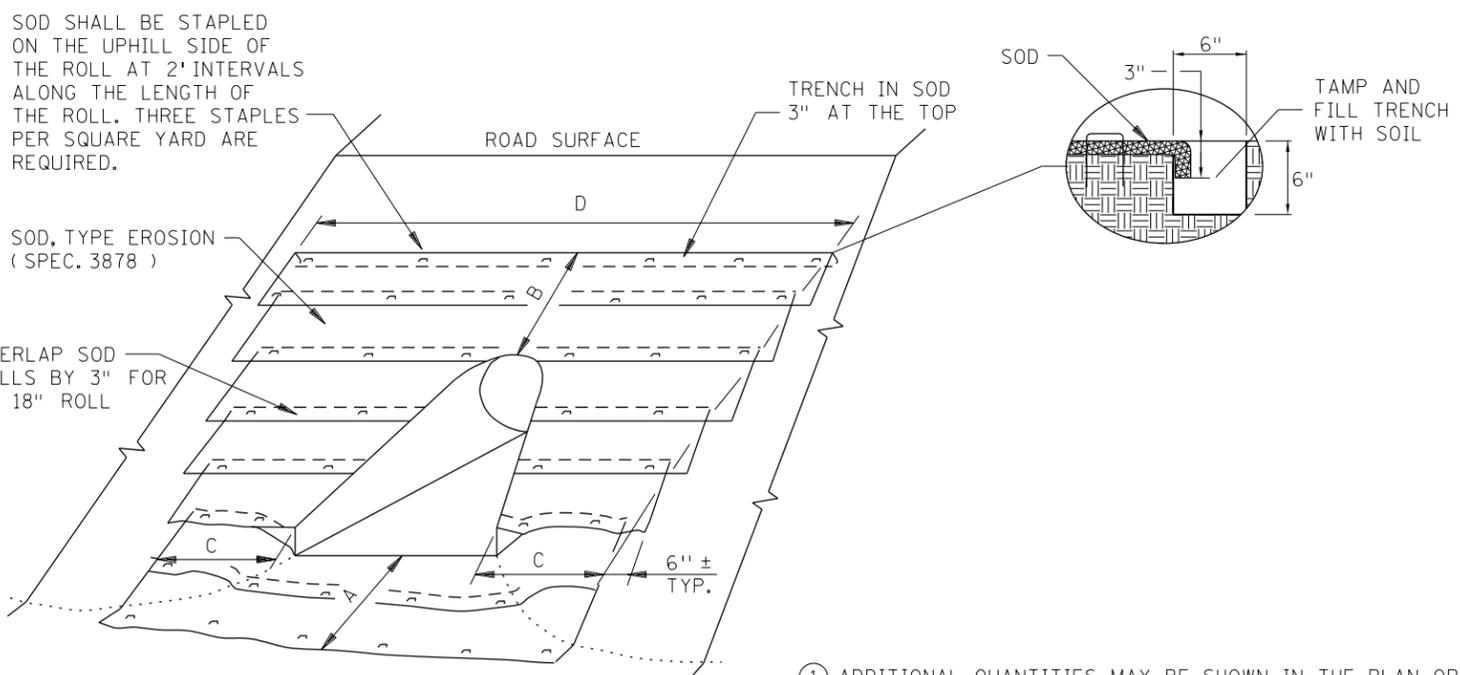
 CHIEF ENVIRONMENTAL OFFICER

 DEPARTMENT OF TRANSPORTATION	STANDARD PLAN 5-297.404	1 OF 3	PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES
	 STATE DESIGN ENGINEER	APPROVED: 2-28-2017 REVISED:	
			SHEET NO. 16 OF 28 SHEETS

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ROLLED EROSION PREVENTION PRODUCT (BLANKET) & SEED DETAIL



SODDING DETAIL

- ① ADDITIONAL QUANTITIES MAY BE SHOWN IN THE PLAN OR REQUIRED BY THE ENGINEER.
- ② FOR ARCH PIPE USE CLOSEST CIRCULAR PIPE DIAMETER AND APRON SLOPE. DIAMETERS LARGER THAN 72" REQUIRE SPECIAL DESIGNS.

CULVERT DIAMETER ②	CULVERT INLET APRON ①						"A"	"B"	"C"	"D"
	SOD OR REPP (SQ. YDS.)									
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	9	9	8	8	N/A	N/A	3'	1.5'	3'	13'
18"	13	12	12	14	16	N/A	3'	3'	3'	16'
21"	14	14	14	16	18	14	3'	3'	3'	17'
24"	16	15	16	19	21	17	3'	3'	3'	18'
27"	N/A	20	N/A	N/A	N/A	N/A	3'	4.5'	3'	20'
30"	23	22	25	30	32	N/A	3'	4.5'	3'	22'
36"	34	34	39	48	51	37	4.5'	4.5'	4.5'	27'
42"	43	40	51	64	N/A	N/A	4.5'	6'	4.5'	30'
48"	54	50	66	82	N/A	N/A	4.5'	7.5'	4.5'	34'
54"	65	58	81	102	N/A	N/A	4.5'	9'	4.5'	37'
60"	69	59	91	115	N/A	N/A	4.5'	9'	4.5'	39'
66"	69	63	N/A	N/A	N/A	N/A	4.5'	9'	4.5'	39'
72"	78	72	99	122	N/A	N/A	4.5'	10.5'	4.5'	41'

CULVERT DIAMETER ②	CULVERT OUTLET APRON ①						"A"	"B"	"C"	"D"
	SOD OR REPP (SQ. YDS.)									
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	10	10	9	10	N/A	N/A	4.5'	1.5'	3'	13'
18"	13	13	12	14	15	N/A	6'	1.5'	3'	14'
21"	16	14	16	18	19	15	6'	1.5'	3'	15'
24"	18	18	18	21	22	18	7.5'	1.5'	3'	16'
27"	N/A	19	N/A	N/A	N/A	N/A	7.5'	1.5'	3'	17'
30"	23	23	24	28	29	N/A	9'	1.5'	3'	18'
36"	36	35	38	47	48	37	10.5'	1.5'	4.5'	23'
42"	43	40	47	58	N/A	N/A	12'	1.5'	4.5'	25'
48"	50	46	57	70	N/A	N/A	13.5'	1.5'	4.5'	27'
54"	57	50	67	84	N/A	N/A	15'	1.5'	4.5'	29'
60"	74	63	90	113	N/A	N/A	16.5'	1.5'	6'	33'
66"	75	67	N/A	N/A	N/A	N/A	16.5'	1.5'	6'	33'
72"	77	70	92	114	N/A	N/A	16.5'	1.5'	6'	34'

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

AREA SHOWN IN SQUARE YARDS IS FOR ONE CULVERT END.

QUANTITIES ARE CALCULATED TO INCLUDE SOD REQUIRED TO PROVIDE A 3" OVERLAP ON ALL 18" WIDE ROLLS. THIS ALLOWS FOR SHRINKAGE OF THE SOD.

FOR PIPE ARCHES USE EQUIVALENT PIPE DIAMETER TO APPROXIMATE AREA.

FOR CORRUGATED POLYETHYLENE PIPE METAL APRON (PLATE 3129), USE THE METAL APRON COLUMN (PLATE 3123).

AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE BASED ON APRON SIDE SLOPES OF NO STEEPER THAN 1:2, UNLESS INDICATED AS FOR SAFETY APRONS.

CARE SHOULD BE TAKEN IN SELECTING SOD TO STABILIZE THE APRON. RIP-RAP SHOULD BE USED FOR FLOW VELOCITIES GREATER THAN 6 FPS.

REVISION:

APPROVED: JANUARY 8, 2020

Marni Karnowski
MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

m MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.404 2 OF 3

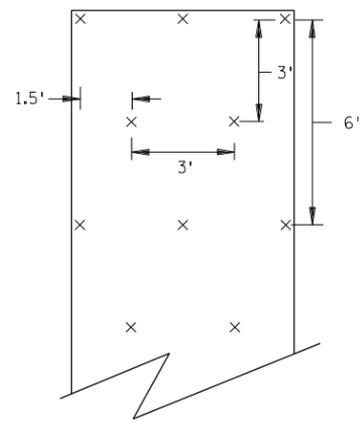
APPROVED: 1-8-2020
REVISED:

Tom Styrbicki
THOMAS STYRBICKI
STATE DESIGN ENGINEER

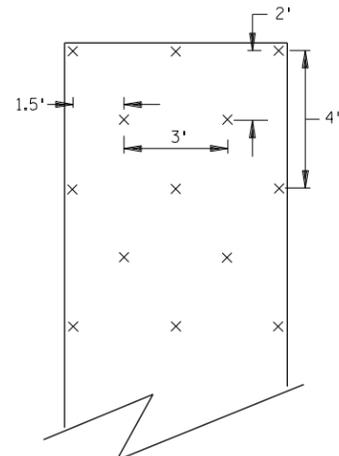
PERMANENT EROSION CONTROL
TURF ESTABLISHMENT DETAIL AT CULVERT ENDS

STATE AID PROJ. NO. 002-628-008 SHEET NO. 17 OF 28 SHEETS

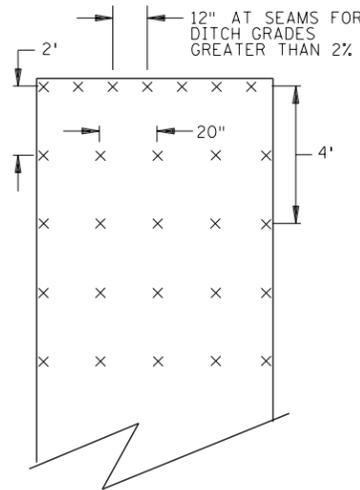
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SLOPES FLATTER THAN 1:2
120 STAPLES PER 100 SQ YD

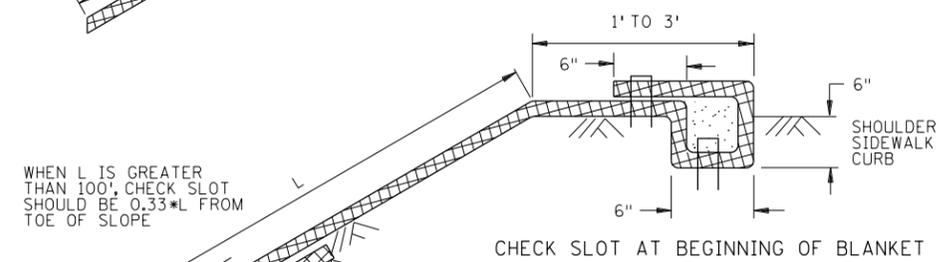
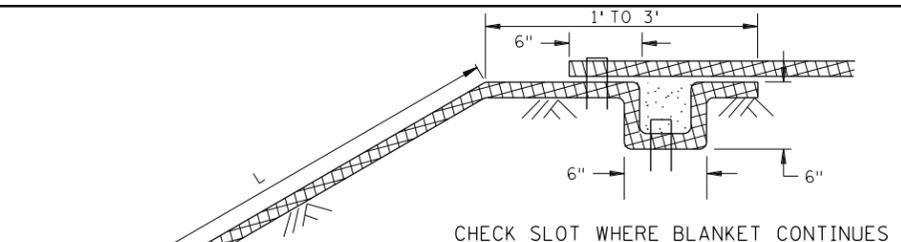


SLOPES 1:2 TO 1:1
170 STAPLES PER 100 SQ YD

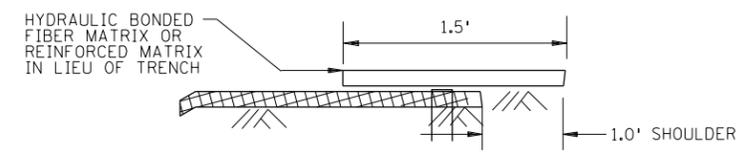


CHANNEL AND DITCH APPLICATIONS
350 STAPLES PER 100 SQ YD

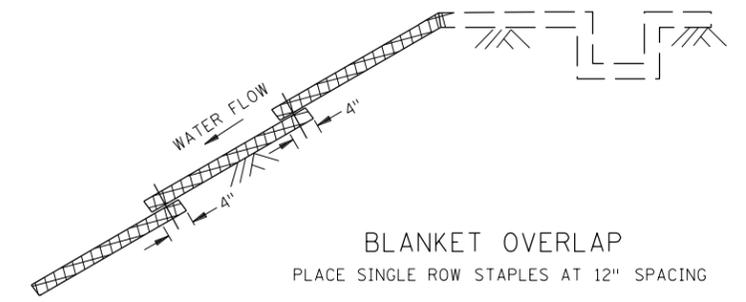
BLANKET STAPLE PATTERN



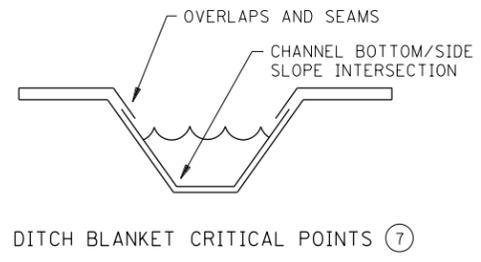
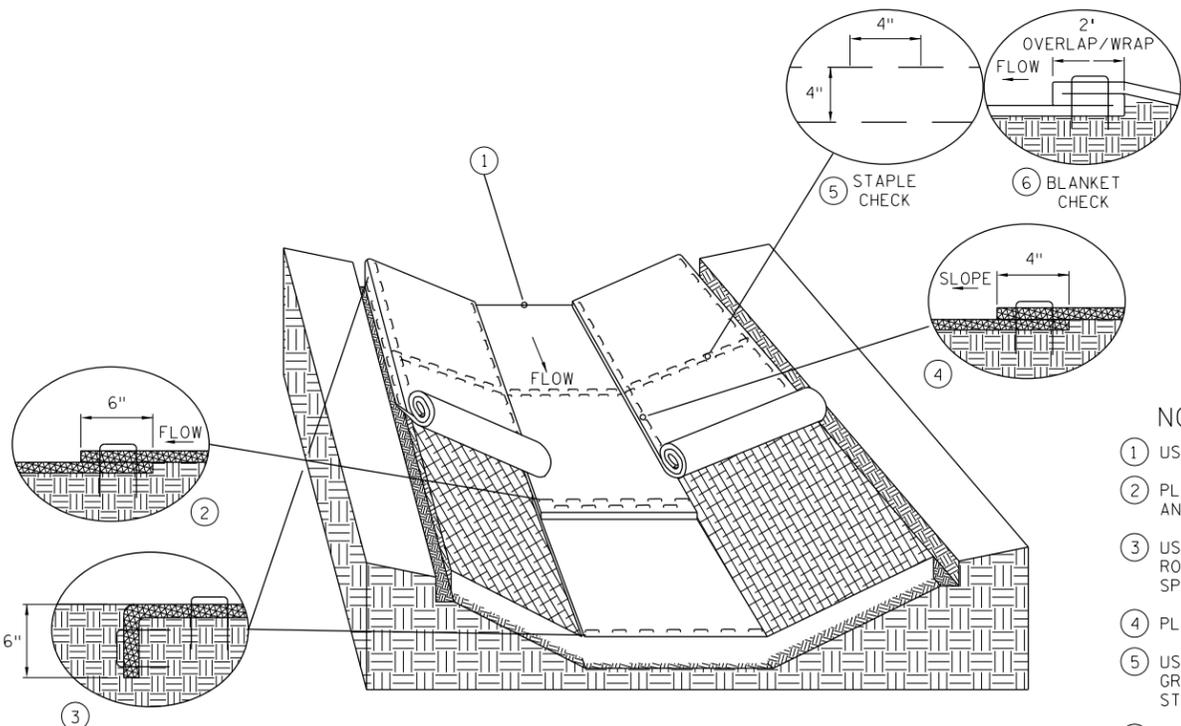
CHECK SLOT REQUIREMENTS
 DIG 6" BY 6" TRENCH.
 INSERT BLANKET INTO ENTIRE TRENCH PERIMETER.
 PLACE SINGLE ROW STAPLES AT 3" SPACING ALONG THE BOTTOM OF THE TRENCH.
 BACKFILL TRENCH WITH SOIL AND TAMP.
 PLACE SINGLE ROW STAPLES AT 3" SPACING ON OVERLAP.



CHECK SLOT ALTERNATIVE
 PLACE SINGLE ROW STAPLES AT 12" SPACING
CHECK SLOT DETAILS



GENERAL BLANKET INSTALLATION REQUIREMENTS
 REPP = ROLLED EROSION PREVENTION PRODUCT.
 PREPARE SOIL AS PER SPECIFICATION 2574.
 LAY PARALLEL OR PERPENDICULAR TO THE DIRECTION OF WATER FLOW.
 OVERLAP ADJACENT STRIP EDGES A MINIMUM OF 4".
 OVERLAP BLANKET 6" (MINIMUM) AT EACH END. OVERLAP BOTTOM END OF UPPER BLANKET OVER TOP END OF LOWER BLANKET. STAPLE ALONG OVERLAP EVERY 1.5".
 THE UPPERMOST BLANKET OF ALL SLOPE APPLICATIONS MUST START IN A CHECK SLOT. IF SLOPE LENGTH (L) IS 100' OR GREATER, INSERT BLANKET INTO A CHECK SLOT 1/3 FROM THE BOTTOM OF THE SLOPE.



- NOTES:**
- ① USE CHECK SLOT DETAIL (NO ALTERNATES).
 - ② PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER.
 - ③ USE 6" X 6" TRENCH TO PLACE BLANKET. PLACE SINGLE ROW OF STAPLES ON TOP AND TRENCH SIDES AT 12" SPACING. BACKFILL TRENCH WITH SOIL AND TAMP.
 - ④ PLACE SINGLE ROW OF STAPLES AT 12" SPACING.
 - ⑤ USE STAPLE CHECK FOR CHANNEL SLOPES LESS THAN 2.5%. GRADE AT 100' INTERVALS. PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND AT 4" SPACING.
 - ⑥ USE BLANKET CHECKS FOR THE FOLLOWING SLOPES:
 2.5%-3% 100' INTERVALS
 3%-5% 50' INTERVALS
 5%-7% 25' INTERVALS
 - ⑦ CRITICAL POINTS SHALL BE SECURED WITH PROPER STAPLE PATTERNS.

DITCH BLANKET STAPLE DETAIL

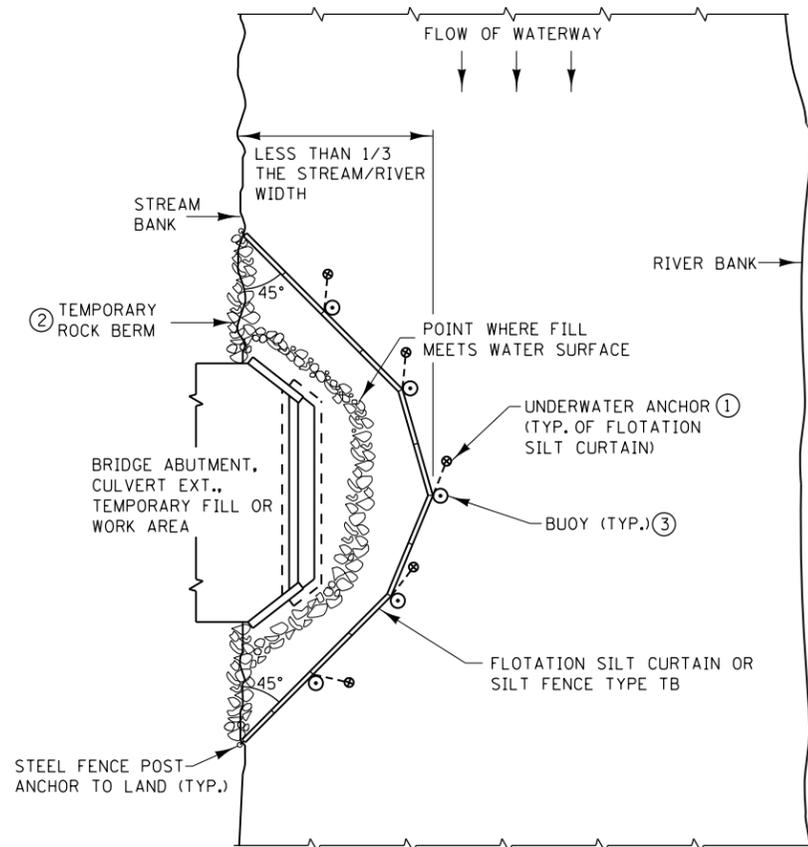
REVISION:
 APPROVED: JANUARY 8, 2020
Marni Karnowski
 MARNI KARNOWSKI
 CHIEF ENVIRONMENTAL OFFICER



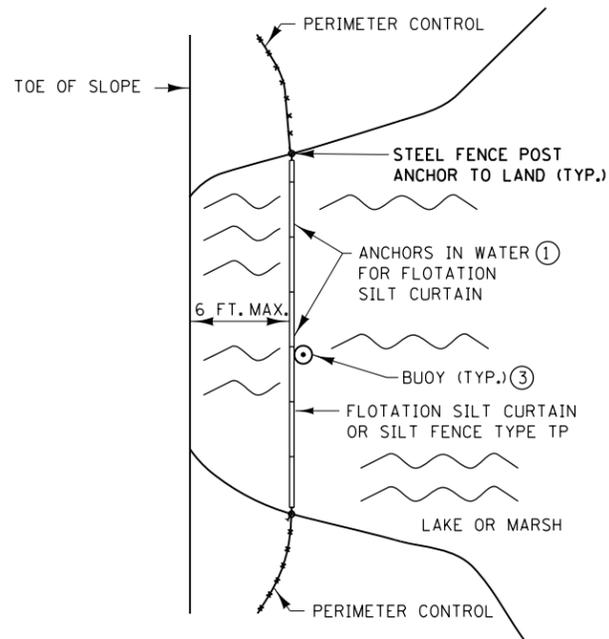
STANDARD PLAN 5-297.404 3 OF 3
 APPROVED: 1-8-2020
 REVISED:
Tom Styrbicki
 THOMAS STYRBICKI
 STATE DESIGN ENGINEER

PERMANENT EROSION CONTROL
REPP (BLANKET) STAPLE PATTERN FOR SLOPES

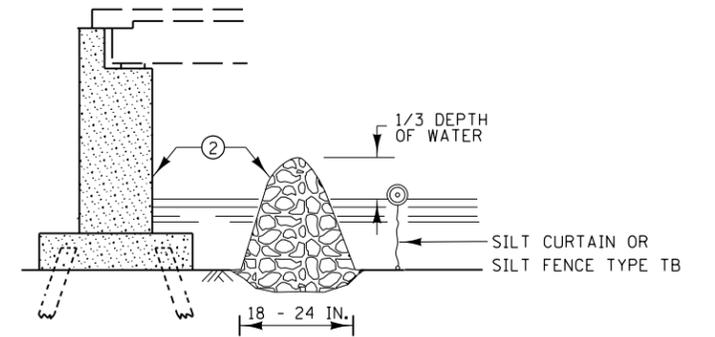
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PLAN VIEW FOR STREAM ⑤



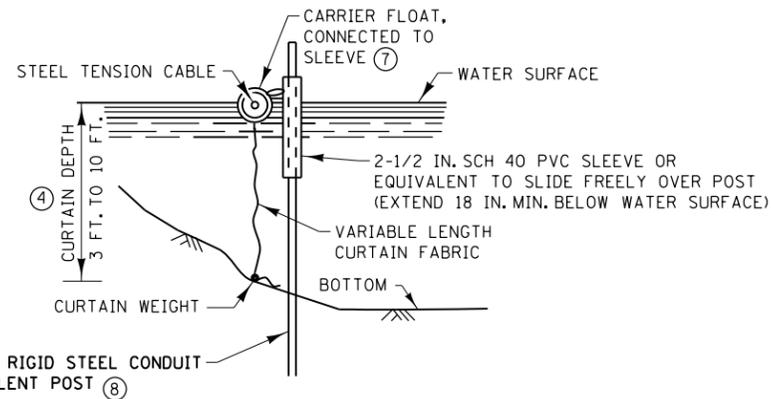
PLAN VIEW FOR LAKE OR MARSH ⑤



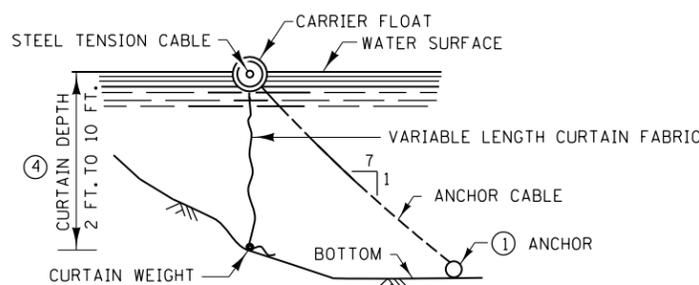
**INSTALLATION GUIDELINES
 SILT FENCE TYPE TB**
 MINIMUM WATER DEPTH: 1 FT.
 MAXIMUM WATER DEPTH: 3 FT.
 MAXIMUM WATER VELOCITY: 5 FT./SEC.

**INSTALLATION GUIDELINES ④
 FLOTATION SILT CURTAIN
 TYPE: STILL WATER**
 MINIMUM WATER DEPTH: 3 FT.
 MAXIMUM WATER DEPTH: 10 FT.
 MAXIMUM WATER VELOCITY: 2 FT./SEC.
 MAXIMUM WAVE HEIGHT: 1 FT

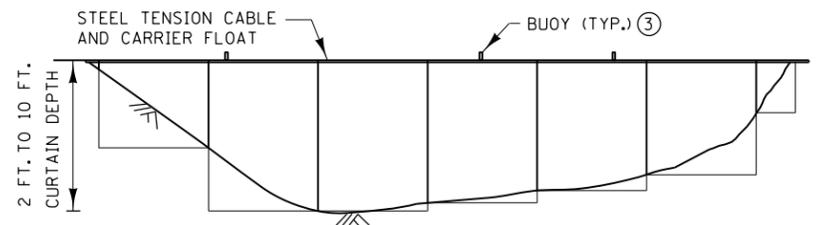
**INSTALLATION GUIDELINES ④
 FLOTATION SILT CURTAIN
 TYPE: MOVING WATER**
 MINIMUM WATER DEPTH: 3 FT.
 MAXIMUM WATER DEPTH: 10 FT.
 MAXIMUM WATER VELOCITY: 5 FT./SEC.
 MAXIMUM WAVE HEIGHT: 2 FT.



ALTERNATE FLOTATION SILT CURTAIN



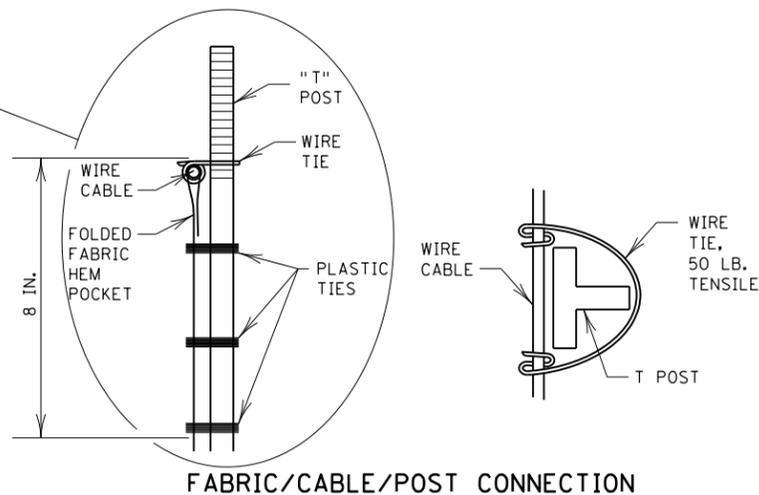
FLOTATION SILT CURTAIN



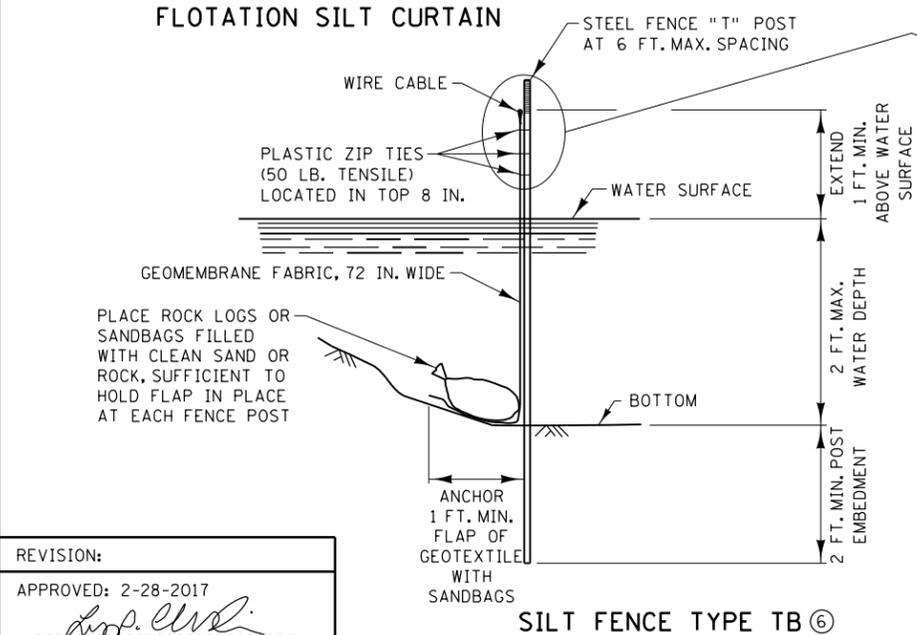
FRONT VIEW FOR FLOTATION SILT CURTAIN

NOTES:

- SEE SPECS. 2573, 3886, 3887 & 3893.
- ① FOR ANCHOR SPACING AND WEIGHT REQUIREMENTS, SEE SPEC. 2573.
- ② IN AREAS WHERE THE PLAN CALLS FOR RIPRAP AT A BRIDGE, CULVERT, OR SLOPE, A TEMPORARY ROCK BERM CONSTRUCTED FROM THE RIPRAP CAN BE USED TO PROVIDE ADDITIONAL PROTECTION. WHEN THE WORK IS COMPLETE THE RIPRAP CAN THEN BE MOVED TO THE PERMANENT LOCATION INDICATED IN THE PLANS. THE TEMPORARY ROCK BERM IS INCIDENTAL.
- ③ ON U.S. COAST GUARD OR OTHER MOTORIZED WATERWAYS, BUOYS ARE REQUIRED TO MARK THE ENDS AND SPECIAL AREAS FOR VISIBILITY. PLACE BUOYS AS REQUIRED FOR NAVIGATIONAL PURPOSES.
- ④ MINIMUM WATER DEPTH APPLIES TO THE DEEPEST POINT ALONG THE FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB FOR DETERMINING APPLICABILITY OF FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB.
- ⑤ SILT CURTAIN SHOULD BE REMOVED WHEN THE AREA CONTRIBUTING DIRECT RUNOFF HAS BEEN TEMPORARILY OR PERMANENTLY STABILIZED. SILT CURTAIN SHOULD ALSO BE REMOVED BEFORE WINTER IF ICE UP OR ICE FLOW IS ANTICIPATED.
- ⑥ EMBED POST INTO BOTTOM A MINIMUM OF 40% OF THE WATER DEPTH (INCLUDING WAVE HEIGHT), BUT IN NO CASE SHALL EMBEDMENT BE LESS THAN 2 FEET.
- ⑦ ANCHOR FLOAT MUST BE CONNECTED SECURELY TO SLEEVE WITH A MINIMUM TENSILE STRENGTH OF 100 LBS. CONNECTION METHOD MUST ALLOW FOR SLEEVE TO MOVE FREELY ON POST.
- ⑧ PROVIDE SUFFICIENT NUMBER OF POST ANCHORS TO MAINTAIN SILT CURTAIN POSITION.



FABRIC/CABLE/POST CONNECTION

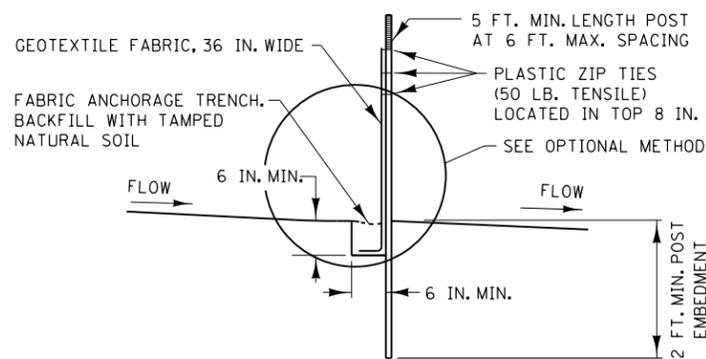


SILT FENCE TYPE TB ⑥

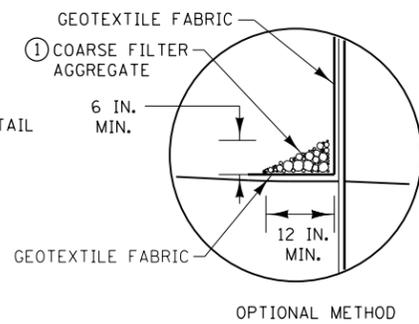
REVISION:
 APPROVED: 2-28-2017
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 CHIEF ENVIRONMENTAL OFFICER

	STANDARD PLAN 5-297.405	1 OF 8	TEMPORARY SEDIMENT CONTROL SILT CURTAIN OR SILT FENCE TYPE TB
		APPROVED: 2-28-2017 REVISID:	
SHEET NO. 19 OF 28 SHEETS			

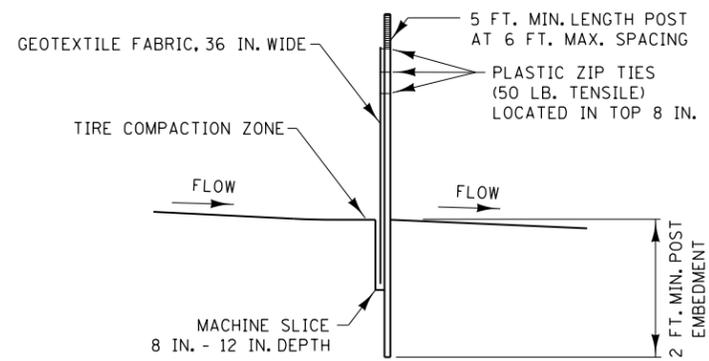
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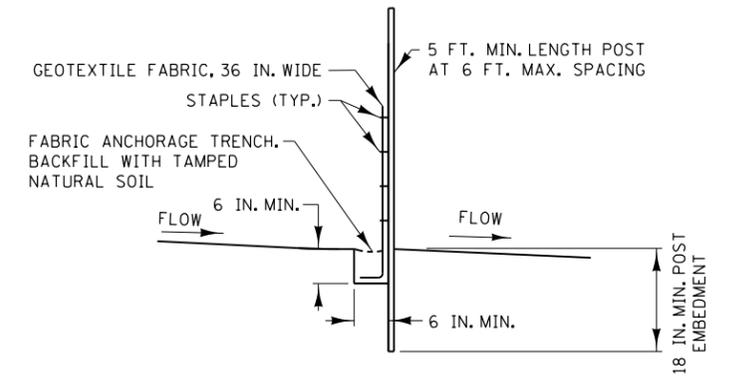
**SILT FENCE TYPE HI ②
(HAND INSTALLED)**



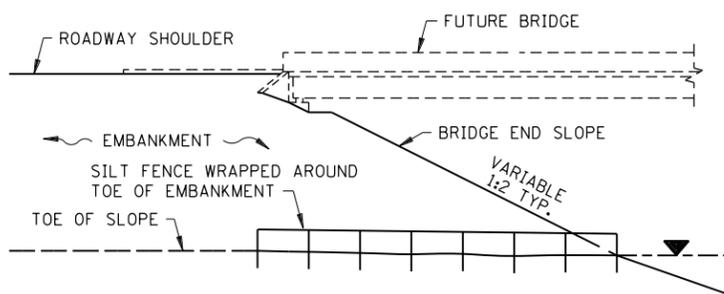
OPTIONAL METHOD



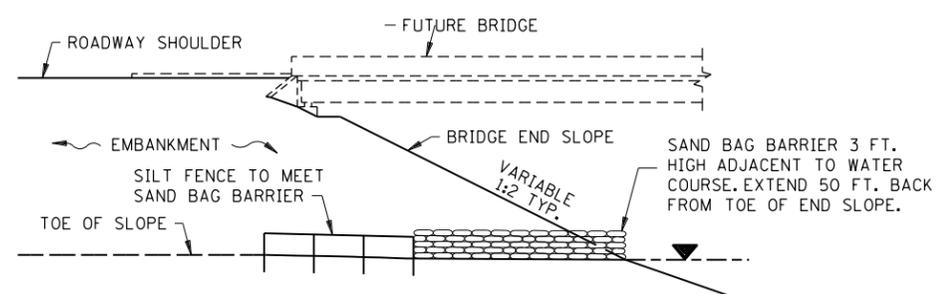
**SILT FENCE TYPE MS ②
(MACHINE SLICED)**



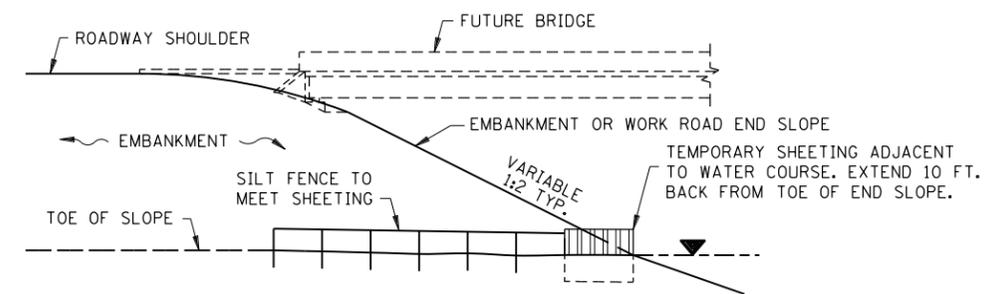
**SILT FENCE TYPE PA ③
(PREASSEMBLED)**



SILT FENCE ONLY ④

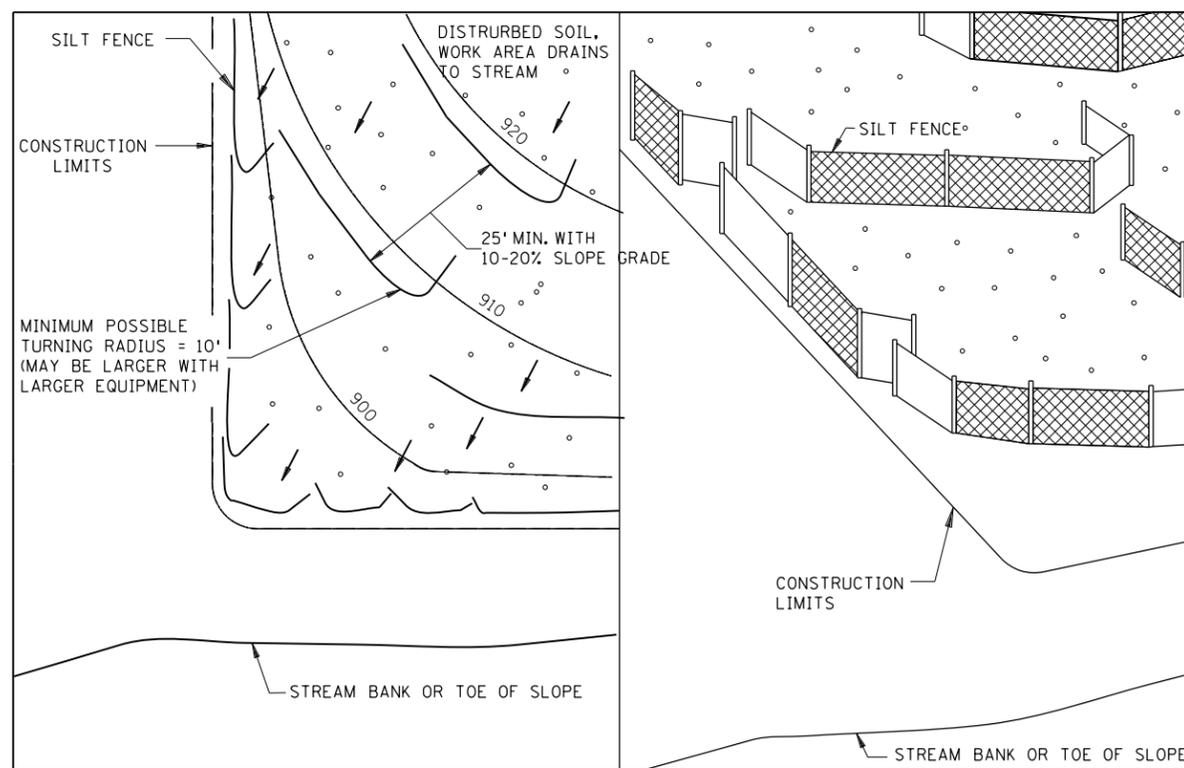


SILT FENCE WITH SAND BAGS ⑤



SILT FENCE WITH SHEETING ⑥

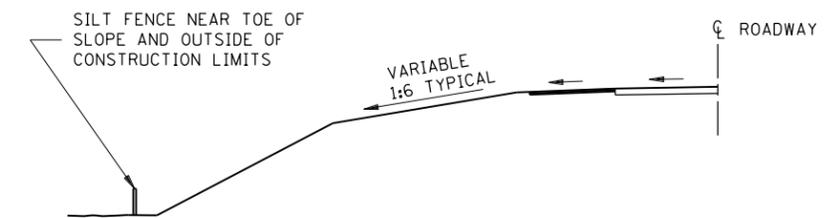
INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER



PLAN VIEW

PERSPECTIVE VIEW

J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

- SEE SPECS. 2573, 3149 & 3886.
- ① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.
- ② TO PROTECT AREAS FROM SHEET FLOW, MAXIMUM CONTRIBUTING AREA: 1 ACRE.
- ③ TO PROTECT AREAS FROM SHEET FLOW, MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.
- ④ WATER COURSE FLOW VELOCITY: STANDING. CONTRIBUTING SLOPE AREA: 1/2 ACRE.
- ⑤ WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC. CONTRIBUTING SLOPE AREA: 1 ACRE.
- ⑥ WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC. CONTRIBUTING SLOPE AREA: 3 ACRES.

REVISION:
 APPROVED: 2-28-2017

 CHIEF ENVIRONMENTAL OFFICER



STANDARD PLAN 5-297.405

6 OF 8

STATE DESIGN ENGINEER

APPROVED: 2-28-2017
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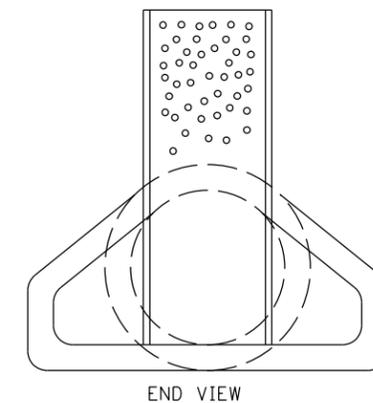
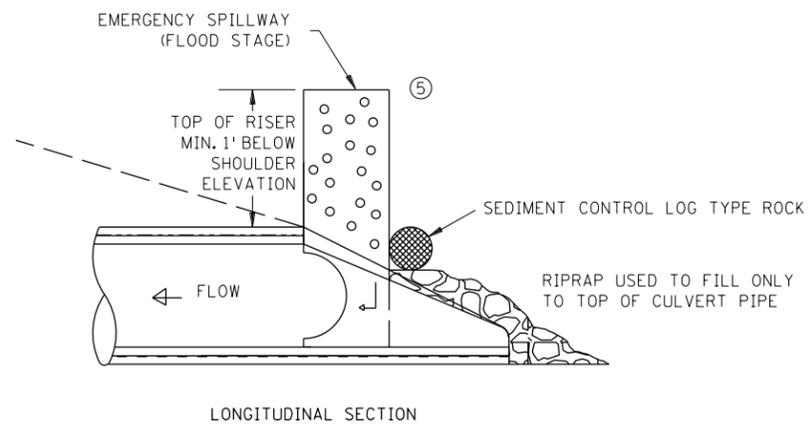
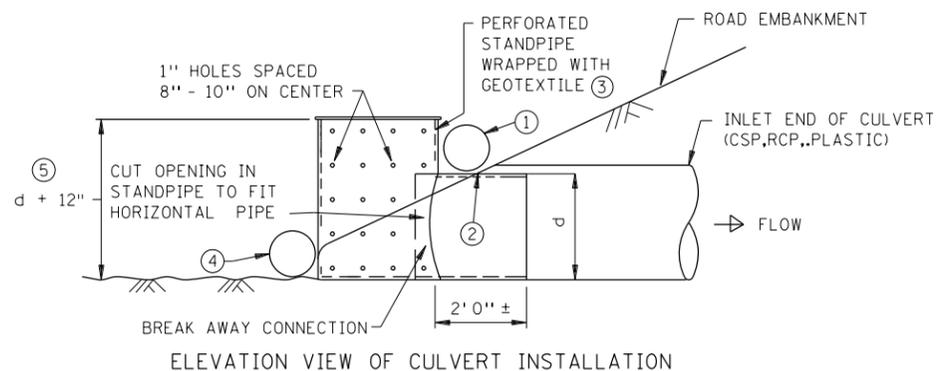
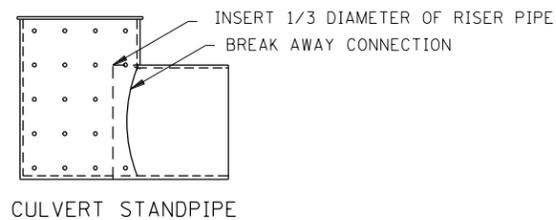
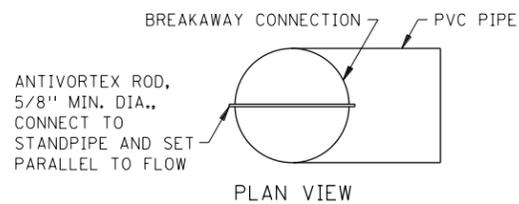
STATE AID PROJ. NO. 002-628-008

TEMPORARY SEDIMENT CONTROL

SILT FENCE

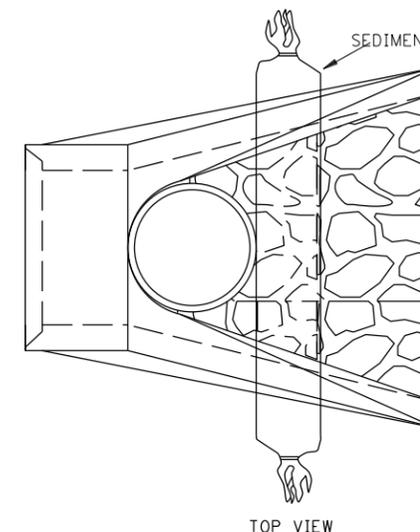
SHEET NO. 20 OF 28 SHEETS

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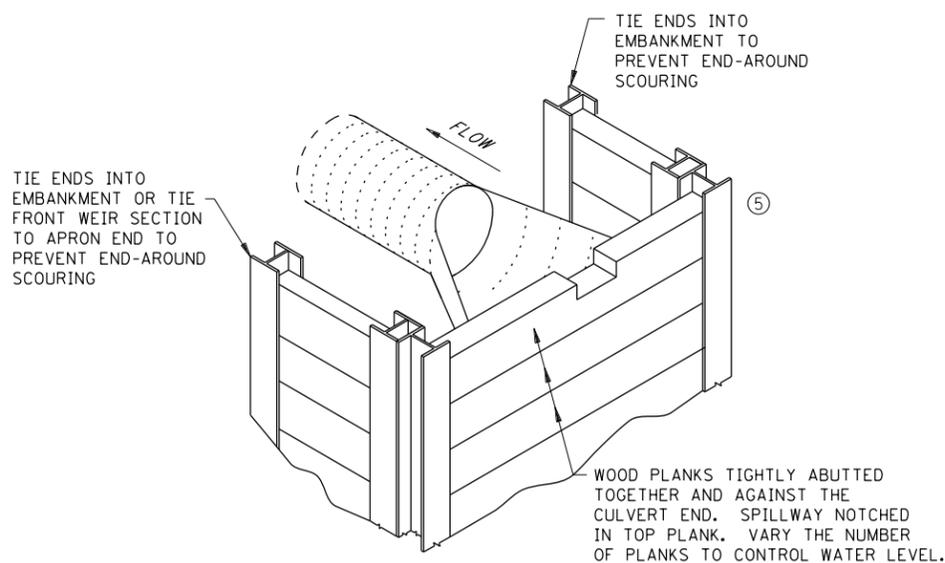
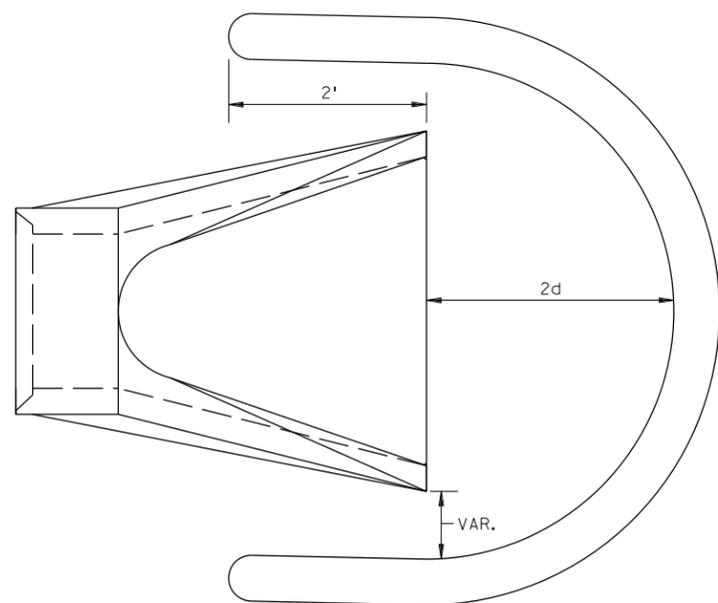
CULVERT STANDPIPE INSERT (D-RISER)

d= CULVERT SIZE: 12" - 36"



CULVERT STANDPIPE INSERT (D-RISER)

NOTE: SEDIMENT CONTROL LOG TYPE ROCK MAY BE WRAPPED AROUND RISER



WOOD PLANK WEIR

NOTES:

- SEE SPECS. 2573, 3891 & 3893.
- FOR USE WHEN TEMPORARY PONDING IS NEEDED IN DITCH SECTIONS FOR SEDIMENT CONTROL.
- MANUFACTURED ALTERNATIVES LISTED ON MnDOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED AT NO ADDITIONAL COST.
- ① ROCK LOG OR SANDBAG TO HOLD STANDPIPE AND ACT AS A SEAL BETWEEN RISER PIPE AND CULVERT.
- ② PLACE CULVERT APRON AND SLIDE TEMPORARY STANDPIPE INTO CSP OR RCP CULVERT.
- ③ ALL GEOTEXTILE USED FOR CULVERT PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886 FOR MACHINE SLICED.
- ④ ROCK LOG OR RIP RAP TO HOLD STANDPIPE AND ACT AS A FILTER BETWEEN RISER PIPE AND CULVERT.
- ⑤ HEIGHT OVERFLOW NOT TO CAUSE FLOODING OF ROAD OR ADJACENT PROPERTIES.

REVISION:
APPROVED: 2-28-2017 <i>[Signature]</i> CHIEF ENVIRONMENTAL OFFICER



STANDARD PLAN 5-297.405

8 OF 8

[Signature]
STATE DESIGN ENGINEER

APPROVED: 2-28-2017
REVISED:

STATE AID PROJ. NO. 002-628-008

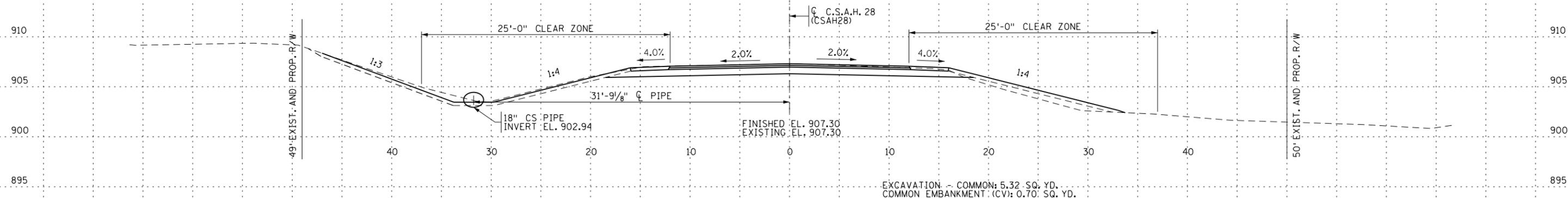
**TEMPORARY SEDIMENT CONTROL
CULVERT END CONTROLS**

SHEET NO. 21 OF 28 SHEETS

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NOTES:
 ALL UTILITIES SHOWN ON CROSS SECTIONS ARE INPLACE.
 UTILITY ELEVATIONS AND LOCATIONS ARE APPROXIMATE.
 SOME UTILITIES MAY HAVE BEEN REMOVED OR ABANDONED, SOME UTILITIES MAY HAVE BEEN RECENTLY CONSTRUCTED AND MAY NOT BE SHOWN.

BRIDGE NOTE:
 SEE BRIDGE SURVEY SHEETS FOR BRIDGE CROSS SECTIONS AND ALIGNMENT DATA.



CROSS SECTION STA. 0+39.24

EXCAVATION - COMMON: 5.32 SQ. YD.
 COMMON EMBANKMENT (CV): 0.70 SQ. YD.

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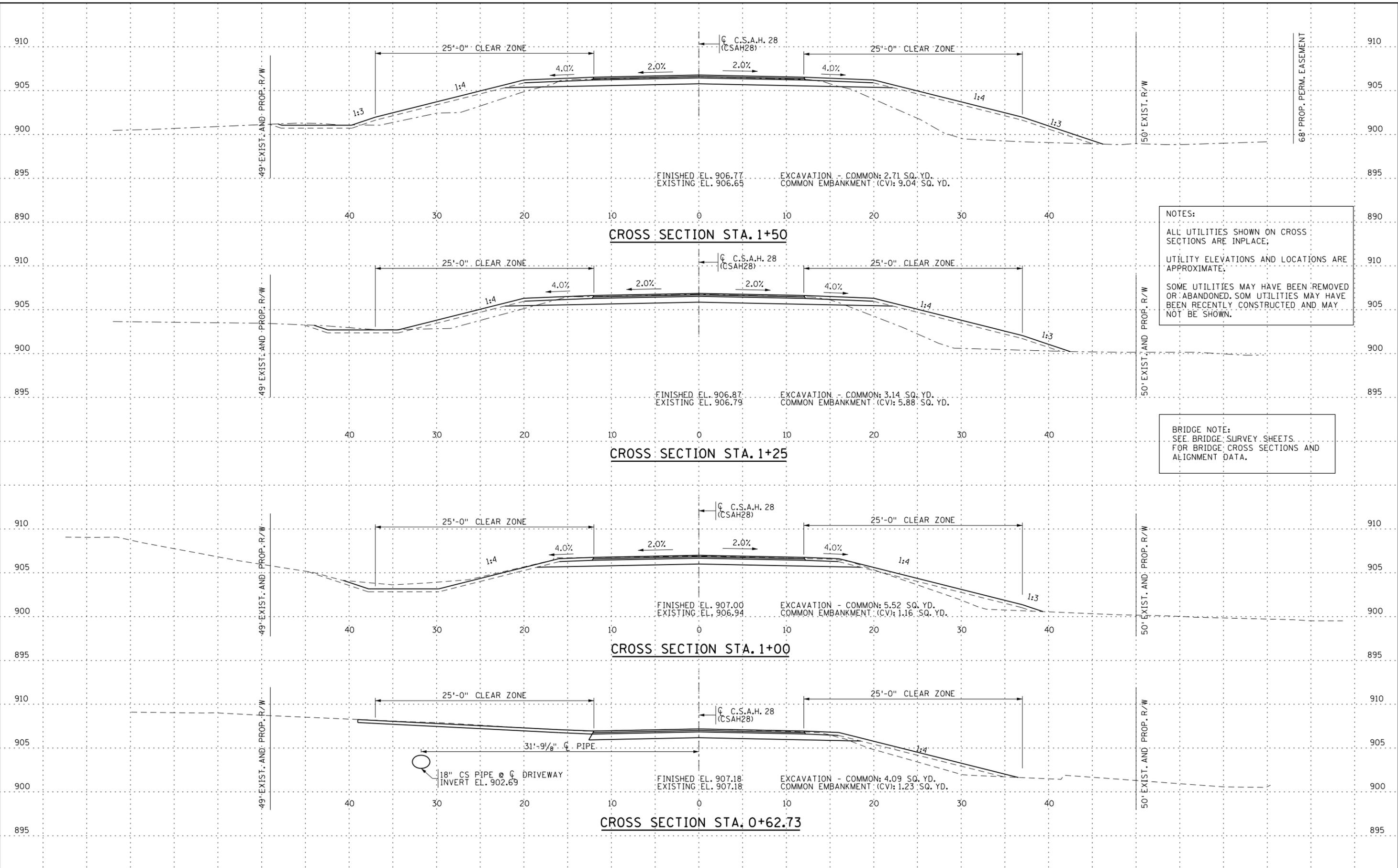


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 www.bolton-menk.com

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CHECKED RRE	CHECK RRE	
S.A.P. 002-628-008		
ROADWAY CROSS SECTIONS		
SHEET NO. 22 OF 28 SHEETS		

BRIDGE NO.
 02J56

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NOTES:
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BRIDGE NOTE:
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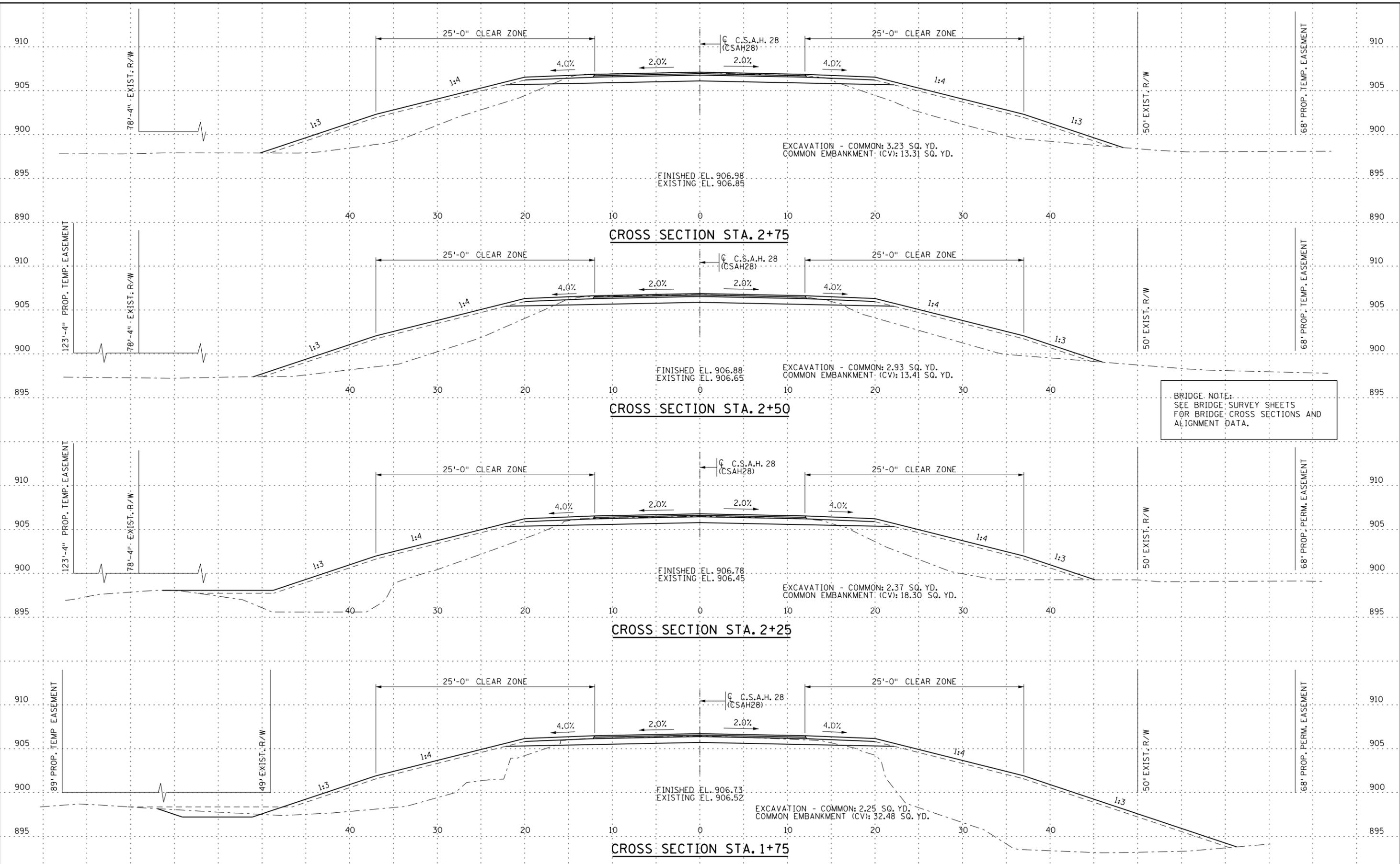


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SHEET NO. 23 OF 28 SHEETS		
BRIDGE NO.		02J56

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BRIDGE NOTE:
 SEE BRIDGE SURVEY SHEETS
 FOR BRIDGE CROSS SECTIONS AND
 ALIGNMENT DATA.

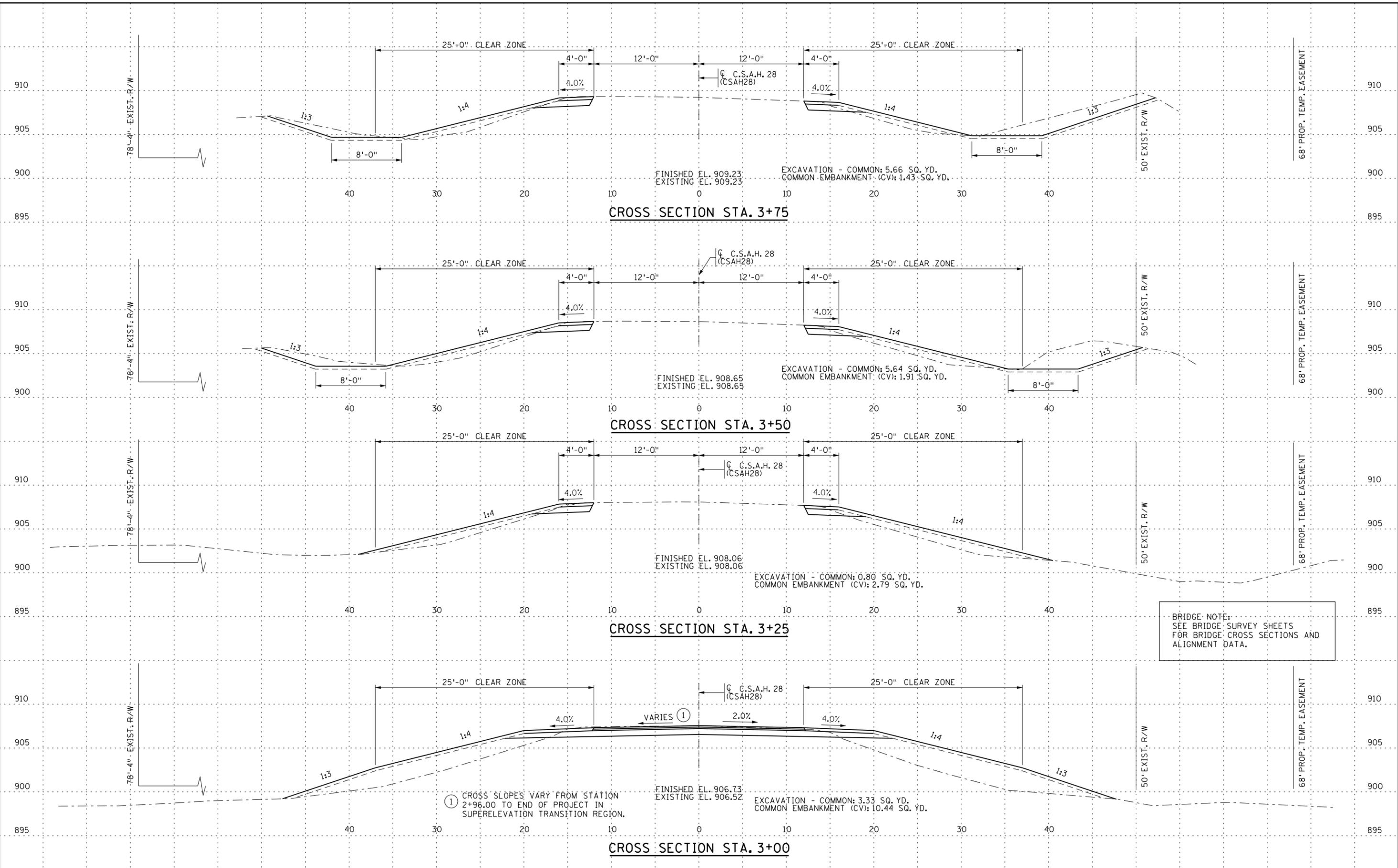
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S.A.P. 002-628-008			
ROADWAY CROSS SECTIONS			
SHEET NO. 24 OF 28 SHEETS			

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BRIDGE NOTE:
 SEE BRIDGE SURVEY SHEETS
 FOR BRIDGE CROSS SECTIONS AND
 ALIGNMENT DATA.

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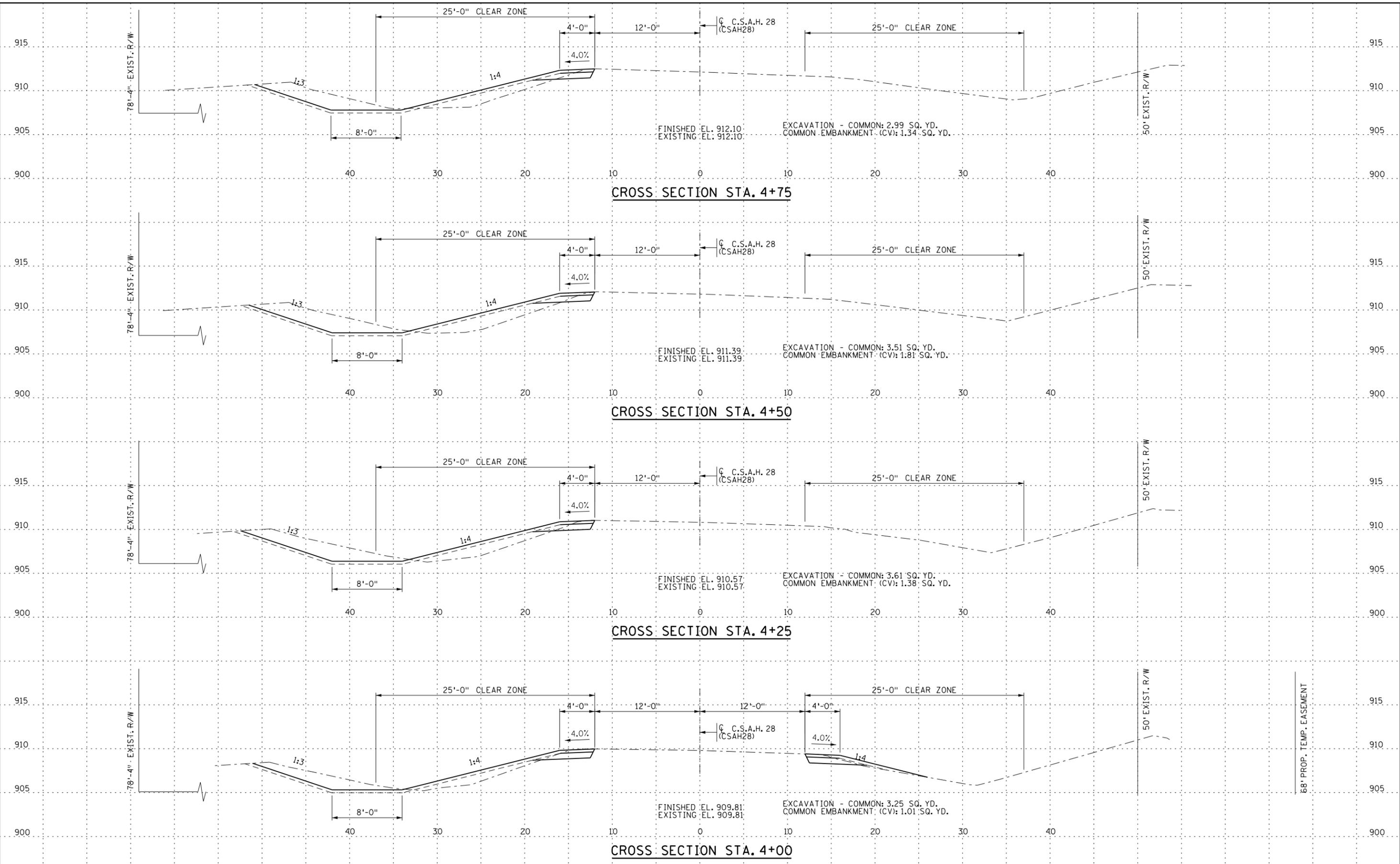
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TITLE:
 ROADWAY CROSS SECTIONS

DESIGNED TJD	DRAWN JMR	APPROVED
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S.A.P. 002-628-008		
SHEET NO. 25 OF 28 SHEETS		

BRIDGE NO.
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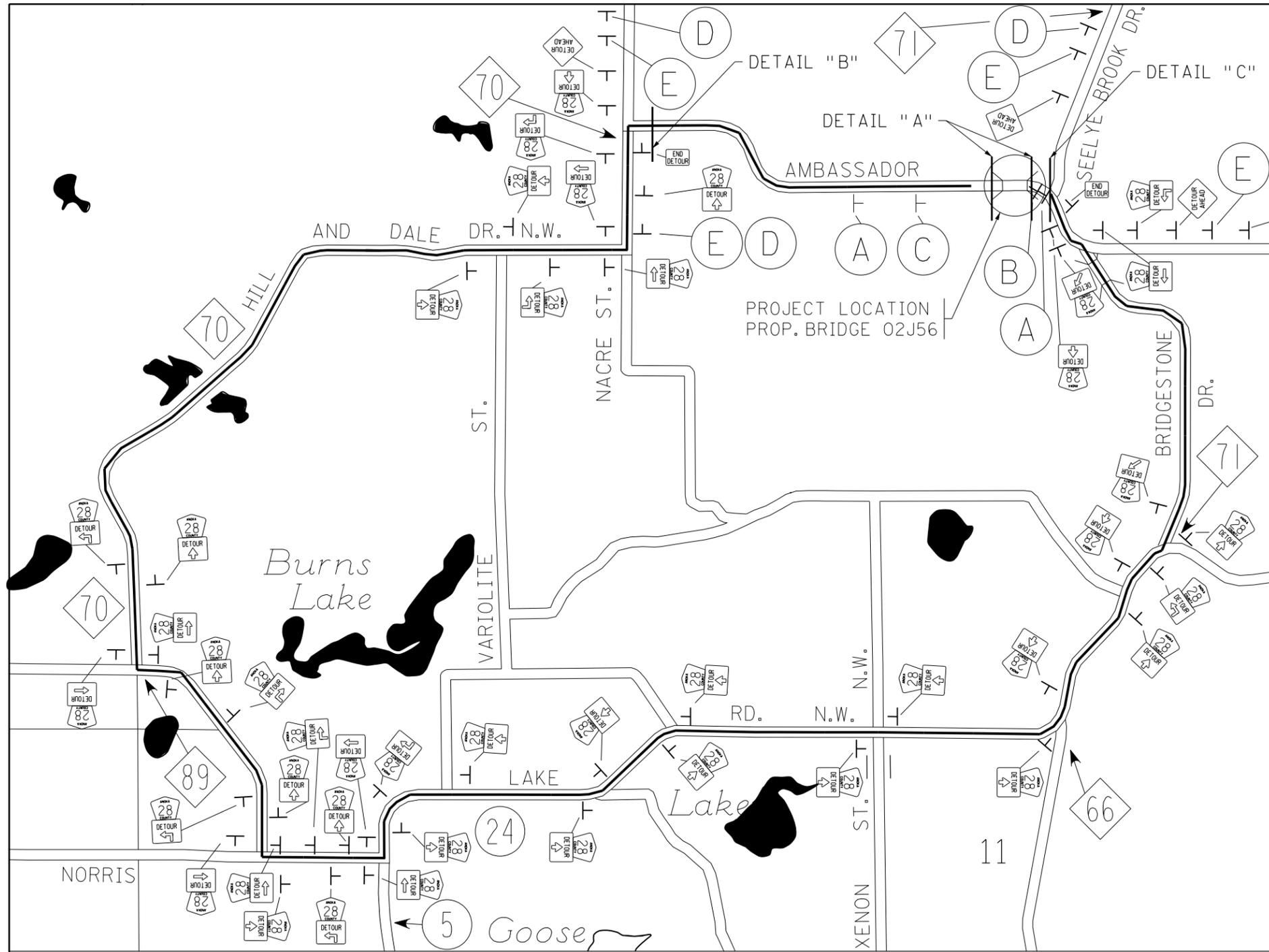
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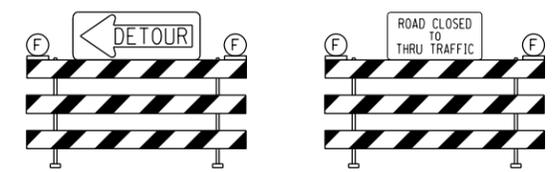
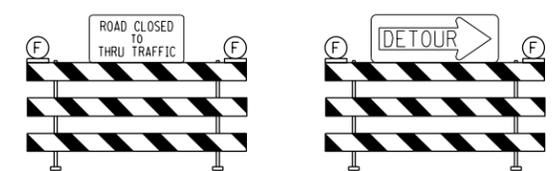
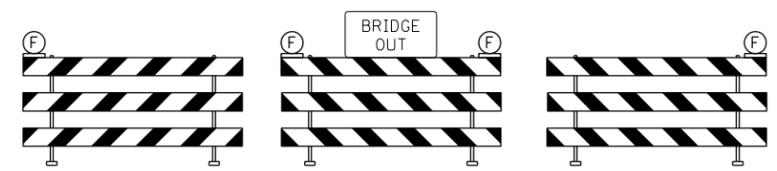
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ROADWAY CROSS SECTIONS			
SHEET NO. 26 OF 28 SHEETS			

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NOTES:
 EXISTING ACCESS TO RESIDENCES SHALL BE MAINTAINED THROUGHOUT PROJECT DURATION.
 ALL COSTS INCURRED FOR MATERIALS, INSTALLATION, MAINTENANCE, AND REMOVAL OF TRAFFIC CONTROL DEVICES AS SHOWN ON THIS SHEET AND RELATED WORK DURING CONSTRUCTION SHALL BE INCLUDED IN PRICE BID FOR ITEM "TRAFFIC CONTROL".
 ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.
 BARRICADE PLACEMENT TO BE DETERMINED IN THE FIELD SO AS NOT TO OBSTRUCT VISION TO OR FROM ROADWAY ENTRANCES.
 EXACT LOCATION OF TRAFFIC CONTROL DEVICES TO BE DETERMINED BY THE ENGINEER IN THE FIELD.
 THE CONTRACTOR SHALL REMOVE, SALVAGE OR COVER & RESTORE AS APPROPRIATE, ALL EXISTING SIGNING THAT CONFLICTS WITH THIS TRAFFIC CONTROL PLAN TO THE SATISFACTION OF THE ENGINEER.
 ALL INSTALLATIONS REQUIRING POSTS SHALL BE A "U" CHANNEL TYPE. MINIMUM WEIGHT PER FOOT - 3.00 LBS.
 ALL TRAFFIC CONTROL DEVICES SHALL HAVE RETROREFLECTIVE SHEETING.
 THE USE OF TEMPORARY ORANGE CONSTRUCTION FENCING MAY BE REQUIRED BY THE ENGINEER TO COMPLETELY CLOSE OFF ANY SPECIFIC WORK AREA.



SIGNING PLAN

 BRIDGE CLOSED AHEAD 500 FEET W20-3M SIGN (A)	 BRIDGE CLOSED BEGINNING MONTH DY G20-X1 SIGN (C)	 ANOKA COUNTY BRIDGE CLOSED CR 70/NACRE ST TO SEELYE BROOK DR BEGINS G20-X2 SIGN (B) INSTALL 2 WEEKS BEFORE CLOSING.	 ROAD WORK AHEAD W20-1 SIGN (D)	 ROAD CLOSED AHEAD W20-3 SIGN (E)	 BRIDGE OUT R11-4 SIGN (1)	 ROAD CLOSED TO THRU TRAFFIC R11-4 SIGN (2)
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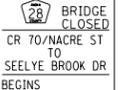
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

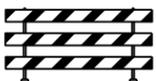
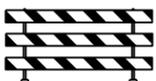
RYAN R. EVANS
 LIC. NO. 53920 DATE 02/02/2024

TRAFFIC CONTROL PLAN SHEET 1 OF 2	DESIGNED TJD CHECKED RRE S.A.P. NO. 002-628-008 SHEET NO. 27 OF 28 SHEETS	DRAWN TJD CHECK RRE APPROVED BRIDGE NO. 02J56
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TRAFFIC CONTROL TABULATION SHEET

"R" SERIES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	R11-4	BLACK ON WHITE	48 x 30
	R11-4	BLACK ON WHITE	48 x 30

"G" SERIES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	G20-X1	BLACK ON ORANGE	72 x 60
	G20-X2	BLACK ON ORANGE	72 x 60

"T" SERIES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	T3L	ORANGE ON WHITE	(6' MINIMUM)
	T3R	ORANGE ON WHITE	(6' MINIMUM)

"W" SERIES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	W20-1	BLACK ON ORANGE	36 x 36
	W20-2	BLACK ON ORANGE	36 x 36
	W20-3	BLACK ON ORANGE	36 x 36
	W20-3M	BLACK ON ORANGE	36 x 36
	W16-8P	BLACK ON YELLOW	XX x 8

"M" SERIES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	M1-X4	BLACK ON WHITE	24 x 24
	M4-10R	BLACK ON ORANGE	48 x 18
	M4-10L	BLACK ON ORANGE	48 x 18
	M4-8A	BLACK ON ORANGE	24 x 18
	M4-9ML	BLACK ON ORANGE	30 x 24
	M4-9MR	BLACK ON ORANGE	30 x 24
	M4-9MT	BLACK ON ORANGE	30 x 24
	M4-9ML90	BLACK ON ORANGE	30 x 24
	M4-9MR90	BLACK ON ORANGE	30 x 24
	M4-9MR45	BLACK ON ORANGE	30 x 24

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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 RYAN R. EVANS
 LIC. NO. 53920 DATE 02/02/2024

TRAFFIC CONTROL PLAN
 SHEET 2 OF 2

DESIGNED TJD	DRAWN TJD	APPROVED
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S.A.P. NO. 002-628-008		
SHEET NO. 28 OF 28 SHEETS		

BRIDGE NO.
 02J56