EXISTING

- RIGHT OF WAY
- PERMANENT EASEMENT
- PROPERTY LINE
- HORIZONTAL CONTROL POINT
- BENCHMARK
- SURVEY MARKER
- SOIL BORING
- SANITARY SEWER AND MANHOLE
- FORCE MAIN AND LIFT STATION
- SANITARY SEWER SERVICE & CLEANOUT
- WATER MAIN, HYDRANT, VALVE AND MANHOLE
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- GAS MAIN, VALVE, VENT AND METER
- HANDHOLE
- BURIED FIBER OPTIC CABLE AND MANHOLE
- BURIED PHONE CABLE, PEDESTAL AND MANHOLE
- BURIED TV CABLE, PEDESTAL AND MANHOLE
- BURIED ELECTRIC CABLE, PEDESTAL, MANHOLE, TRANSFORMER AND METER
- OVERHEAD WIRE, POLE AND GUY WIRE
- LIGHT POLE
- TRAFFIC SIGNAL
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RAILROAD TRACKS
- DECIDUOUS AND CONIFEROUS TREE
- BUSH / SHRUB AND STUMP
- EDGE OF WOODED AREA
- WETLAND
- BUILDING
- FENCE (UNIDENTIFIED)
- BARBED WIRE FENCE
- CHAIN LINK FENCE
- ELECTRIC WIRE FENCE
- WOOD FENCE
- WOVEN WIRE FENCE
- PLATE BEAM GUARDRAIL
- CABLE GUARDRAIL
- POST / BOLLARD
- RETAINING WALL

PROPOSED

- STREET CENTERLINE
- RIGHT-OF-WAY
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SANITARY SEWER, BULKHEAD AND MANHOLE
- FORCE MAIN
- SANITARY SERVICE AND CLEANOUT
- WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
- WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- DRAIN TILE
- DITCH / SWALE
- RIPRAP
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RETAINING WALL

NOTE:
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 38-22, ENTITLED "STANDARD GUIDELINE FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

THE CONTRACTOR SHALL CALL THE ONE CALL SYSTEM AT 811 BEFORE COMMENCING EXCAVATION.

MINNESOTA DEPARTMENT OF TRANSPORTATION

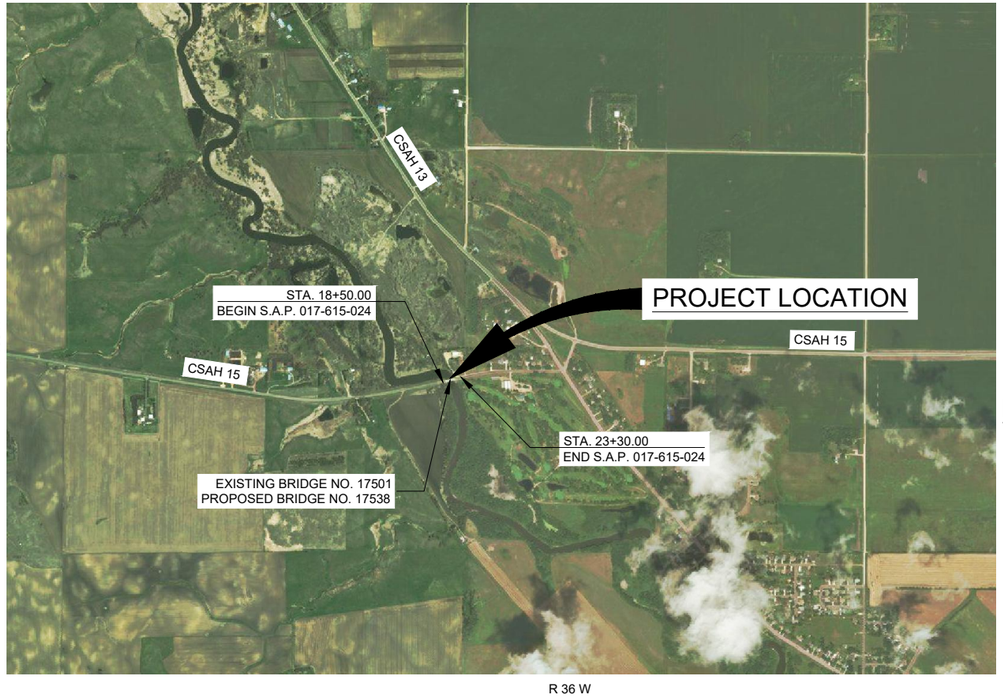
COTTONWOOD COUNTY, MINNESOTA

CONSTRUCTION PLANS FOR

GRADING, AGGREGATE BASE, BITUMINOUS, SURFACING, BRIDGE REPLACEMENT (OLD BRIDGE NO. 17501)(NEW BRIDGE NO. 17538)

CSAH 15 BRIDGE REPLACEMENT

SAP 017-615-024
LOCATED ON CSAH 15 FROM 0.3 MILES WEST OF JCT. CSAH 13
TO 0.2 MILES WEST OF JCT. CSAH 13 APPROXIMATELY
3.2 MILES NORTHWEST OF WINDOM, MN



N

N.T.S.

PROJECT LOCATION



CITY OF WINDOM, COTTONWOOD COUNTY

Know what's **below.** **Call** before you dig.

GOVERNING SPECIFICATIONS

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

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.

INDEX

SHEET NO.	DESCRIPTION
1	TITILE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	TYPICAL SECTIONS
4	PERMANENT EROSION CONTROL
5 - 7	TEMPORARY SEDIMENT CONTORL
8	TRAFFIC CONTROL PLAN
9	PLAN & PROFILE
10	EROSION CONTROL & TERF ESTABLISHMENT PLAN
X1 - X3	CROSS SECTIONS
B1 - B31	BRIDGE PLAN

THIS PLAN CONTAINS 44 SHEETS.

DESIGN DESIGNATION

STOPPING SIGHT DISTANCE BASED ON:
3.5' HEIGHT OF EYE — 2' HEIGHT OF OBJECT

C.S.A.H. 15
SAP 017-615-024

GROSS LENGTH	480 FEET 0.030 MILES
BRIDGE LENGTH	160 FEET 0.097 MILES
EXCEPTION LENGTH	0 FEET 0.000 MILES
NET LENGTH	480 FEET 0.091 MILES
DESIGN	10 TON
DESIGN SPEED	30 M.P.H.
R-VALUE	20 (ASSUMED)
ESALS	139,000
EXISTING A.D.T. (2024)	420
20 YR. PROJECTED A.D.T. (2044)	462
% HCADT (2044)	9.0 %
FUNCTIONAL CLASSIFICATION	RURAL COLLECTOR
NO. OF TRAFFIC LANES	2
NO. OF PARKING LANES	0
SHOULDER WIDTH (FEET)	8

APPROVED:
Nicholas Klisch — Digitally signed by Nicholas Klisch Date: 2024.08.27 12:03:36 -05'00'
COUNTY ENGINEER — DATE

RECOMMENDED FOR APPROVAL:
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY — DATE

RECOMMENDED FOR APPROVAL:
APPROVED FOR STATE AID FUNDING STATE AID ENGINEER — DATE

COTTONWOOD COUNTY, MINNESOTA

SEH
PHONE: 507.288.6464
717 THIRD AVENUE SE
ROCHESTER, MN 55904
www.sehinc.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.

Joshua C. Tarbell — JOSHUA C. TARBELL, PE
Signature
Date: 5/17/2024 — Lic. No. 46878

PROJECT NO. COTTO 165601

SAP 017-615-024

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STATEMENT OF ESTIMATED QUANTITIES

LINE ITEM	ITEM NOTES	ITEM NO.	ITEM DESCRIPTION		UNITS	TOTAL ESTIMATED QUANTITIES	BRIDGE NO. 17538	NON-PARTICIPATING
1		2021.501	MOBILIZATION		LUMP SUM	1	1	
2		2104.503	REMOVE PIPE CULVERTS		LIN FT	182		182
3		2104.504	REMOVE BITUMINOUS PAVEMENT		SQ YD	906		906
4		2105.609	SELECT GRANULAR BORROW		TON	10		10
5	(1)	2106.507	EXCAVATION - COMMON	(P)	CU YD	305		305
6		2106.507	COMMON EMBANKMENT (CV)	(P)	CU YD	305		305
7	(7)	2112.519	SUBGRADE PREPARATION		RDST	3		3
8	(9)	2118.509	AGGREGATE SURFACING CLASS 1		TON	29		29
9		2211.509	AGGREGATE BASE CLASS 5		TON	541		541
10		2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (2,C)		TON	250		250
11		2360.509	TYPE SP 12.5 WEARING COURSE MIX (2,C)		TON	166		166
12		2401.503	TYPE S (TL-4) 36" BARRIER CONC (3S52)	(P)	LIN FT	326	326	
13		2401.507	STRUCTURAL CONCRETE (3B52)	(P)	CU YD	263	263	
14		2401.508	REINFORCEMENT BARS (EPOXY COATED)	(P)	POUND	181,510	181,510	
15		2401.518	BRIDGE SLAB CONCRETE (3YHPC-M)	(P)	SQ FT	6,999	6,999	
16		2401.601	STRUCTURE EXCAVATION		LUMP SUM	1	1	
17	(8)	2401.601	FOUNDATION PREP PILE BENT PIERS		LUMP SUM	1	1	
18	(2)	2442.501	REMOVE EXISTING BRIDGE		LUMP SUM	1		1
19		2452.502	C-I-P CONC TEST PILE 90 FT LONG 12"		EACH	2	2	
20		2452.502	C-I-P CONC TEST PILE 90 FT LONG 16"		EACH	2	2	
21		2452.502	PILE POINTS 12"		EACH	14	14	
22		2452.502	PILE POINTS 16"		EACH	14	14	
23		2452.503	C-I-P CONCRETE PILING 12"		LIN FT	960	960	
24		2452.503	C-I-P CONCRETE PILING 16"		LIN FT	960	960	
25		2501.502	15" RC PIPE APRON		EACH	4		4
26		2501.502	36" RC PIPE APRON		EACH	2		2
27		2501.503	15" RC PIPE CULVERT CLASS III		LIN FT	132		132
28		2501.503	36" RC PIPE CULVERT CLASS III		LIN FT	80		80
29		2503.502	FLAP GATE FOR 36" RC PIPE		EACH	1		1
30		2502.501	DRAINAGE SYSTEM TYPE (B910)		LUMP SUM	1	1	
31	(6)	2511.509	RANDOM RIPRAP CLASS V		TONS	2,200	2,200	
32		2554.502	END TREATMENT-TANGENT TERMINAL		EACH	2	2	
33		2554.503	TRAFFIC BARRIER DESIGN TRANS TYPE 31		LIN FT	75	75	
34		2554.503	TRAFFIC BARRIER DESIGN TYPE 31		LIN FT	25	25	
35	(3)	2563.601	TRAFFIC CONTROL		LUMP SUM	1		1
36	(3)	2573.503	SILT FENCE TYPE MS		LIN FT	1,028		1,028
37	(3)	2573.503	FLOTATION SILT CURTAIN TYPE MOVING WATER		LIN FT	510		510
38		2574.508	FERTILIZER TYPE 2		POUND	90		90
39	(5)	2575.504	RAPID STABILIZATION METHOD 4		SQ YD	1,456		1,456
40	(4)	2575.504	ROLLED EROSION PREVENTION CATEGORY 20		SQ YD	1,456		1,456
41		2575.508	SEED MIXTURE 25-141		POUND	20		20

NOTES:

(1)	INCLUDES INPLACE AGGREGATE BASE, AND TOPSOIL.
(2)	PROVIDED FOR REMOVAL OF BRIDGE NO. 17501
(3)	INCLUDES MAINTENANCE.
(4)	PROVIDED FOR TEMPORARY EROSION CONTROL. EROSION CONTROL BLANKET SHALL HAVE NATURAL NETTING.
(5)	PROVIDED FOR TEMPORARY EROSION CONTORL.
(6)	INCLUDES GEOTEXTILE FABRIC TYPE VII (INCIDENTAL).
(7)	TO BE USED AS DIRECTED BY THE ENGINEER.
(8)	THE COST OF WORKSITE DEWATERING IS INCLUDED IN BID ITEM 2401.601 STRUCTURAL EXCAVATION.
(9)	PROVIDED FOR DRIVWAY AND ENTRACE SURFACES.

BASIS FOR ESTIMATED QUANTITIES:

AGGREGATE BASE CLASS 5:	1.4 TON/CY
SEED MIXTURE 25-141:	59 LBS/ACRE
FERTILIZER TYPE 2 (10-0-10):	300 LBS/ACRE

STANDARD PLATES

PLATE NUMBER	DESCRIPTION
3133D	RIPRAP AT RCP OUTLETS
3145G	CONCRETE PIPE TIES OR PRECAST BOX CULVERT TIES
8000K	TEMPORARY CHANNELIZERS
9000E	APPROACHES AND ENTRANCES (RECOMMENDED STANDARDS)

CONSTRUCTION NOTES

PROTECT ALL ITEMS DESIGNATED FOR REMOVAL AND/OR SALVAGE. ANY ITEMS THAT ARE NOT SPECIFIED FOR REMOVAL OR SALVAGE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

ANY USE OF TRENCH BOX, SHEETING, SHORING OR OTHER METHODS OR MEANS OF CONSTRUCTION NECESSARY TO COMPLETE CONSTRUCTION WITHIN THE CONSTRUCTION LIMITS OR SLOPE EASEMENTS SHOWN WILL BE CONSIDERED TO BE INCIDENTAL & NO DIRECT COMPENSATION WILL BE MADE THEREFORE.

COMPACTION OF GRADING ITEMS, INCLUDING AGGREGATE SURFACING, SHALL BE ACCOMPLISHED BY THE "QUALITY COMPACTION METHOD".

WATER, GAS, ELECTRIC, TELEPHONE, SEWER, TV CABLE, & FIBER OPTIC LINES SHOWN ON THE DRAWINGS AND CROSS-SECTIONS ARE PLOTTED FROM THE BEST INFORMATION AVAILABLE AT THE TIME OF PLAN PREPARATION, BUT MAY NOT REFLECT ACTUAL LOCATIONS OR ELEVATIONS. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES BEFORE BEGINNING CONSTRUCTION WHICH MAY BE AFFECTED BY A UTILITY CONFLICT. THE CONTRACTOR SHALL GIVE 48 HOURS NOTICE TO THE OWNERS OF ALL KNOWN UTILITIES BEFORE STARTING ANY OPERATIONS AFFECTING THOSE PROPERTIES, OR BEGINNING EXCAVATION IN THE VICINITY OF THOSE PROPERTIES. THE CONTRACTORS ATTENTION IS DIRECTED TO SECTION 1507 IN THE MNDOT STANDARD SPECIFICATIONS. THE CONTRACTOR IS HEREBY REMINDED OF HIS RESPONSIBILITY UNDER STATE LAW TO CONTACT ALL UTILITIES THAT MAY HAVE FACILITIES IN THE AREA. CONTACT MUST BE MADE THROUGH GOPHER STATE ONE-CALL.

ALL USES OF THE WORD "INCIDENTAL" IN THESE CONSTRUCTION DOCUMENTS SHALL BE CONSTRUED TO MEAN INCIDENTAL WORK FOR WHICH NO DIRECT COMPENSATION SHALL BE MADE.

TEMPORARY WORK BELOW THE ORDINARY HIGH WATER (OHW) ELEVATION, SUCH AS CHANNEL DIVERSIONS, PLACEMENT OF TEMPORARY FILL, STRUCTURES FOR WORK PADS/DOCK WALLS, BYPASS ROADS, COFFER DAMS, OR STAGING AREAS TO AID IN THE DEMOLITION OR CONSTRUCTION OF ANY AUTHORIZED STRUCTURE SHALL BE SUBMITTED FOR REVIEW AND APPROVAL IN WRITING BY THE DNR TRANSPORTATION HYDROLOGIST OR AREA HYDROLOGIST PRIOR TO BEGINNING WORK.

CONTRACTOR SHALL PROVIDE & MAINTAIN ALL EROSION CONTROL MEASURES AS SHOWN ON THESE PLANS & SPECIFICATION, & WILL IMPLEMENT ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY, OR AS DIRECTED BY ENGINEER, IN ORDER TO PROTECT ADJACENT PROPERTY.

ANY TRAFFIC SIGNS SHALL REMAIN IN PLACE AND BE PROTECTED BY THE CONTRACTOR FOR THE DURATION OF THE WORK, EXCEPT AS OTHERWISE AUTHORIZED BY THE ENGINEER IN ACCORDANCE WITH MN/DOT SPECIFICATION 1710.6.

ALL CLEARING AND GRUBBING REQUIRED FOR THE FINAL CONSTRUCTION, EXCLUDING TREES IDENTIFIED IN THE PLANS WILL BE CONSIDERED INCIDENTAL FOR WHICH NO DIRECT PAYMENT SHALL BE MADE.

WORKSITE DEWATERING

1. WORKSITE DEWATERING (E.G., PUMPED DISCHARGES OF COFFER DAMS AND OTHER WORK AREAS,) RELATED TO THE CONSTRUCTION ACTIVITY MUST BE DISCHARGED TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN ON THE PROJECT SITE. IF THE WATER CANNOT BE DISCHARGED TO A SEDIMENTATION BASIN PRIOR TO ENTERING THE SURFACE WATER, IT MUST BE TREATED WITH THE APPROPRIATE BEST PRACTICES, SUCH THAT THE DISCHARGE DOES NOT ADVERSELY AFFECT THE RECEIVING WATER OR DOWNSTREAM LANDOWNERS. SEDIMENT CONTROL DEVICES CAN BE BYPASSED WHEN THE DISCHARGE WATER APPEARS CLEAR.
2. STREAM DIVERSION WATER, SUCH AS A PUMPED BYPASS, SHALL BE IMMEDIATELY RETURNED TO THE ORIGINAL CHANNEL DOWNSTREAM. THIS WATER DOES NOT REQUIRE TREATMENT PRIOR TO DISCHARGE.
3. IN EITHER CASE (WORKSITE DEWATERING OR STREAM DIVERSION WATER), PRACTICES MUST BE IN PLACE TO ENSURE THAT DISCHARGE POINTS ARE ADEQUATELY PROTECTED FROM EROSION AND SCOUR.
4. ALL DRAIN PLUGS ON PUMPS SHALL BE REMOVED AND ALL DEWATERING EQUIPMENT, INCLUDING HOSES, SHALL BE DRAINED PRIOR TO TRANSPORT OFF SITE (SEE BEST PRACTICES FOR PREVENTION OF SPREAD OF AQUATIC INVASIVE SPECIES, CHAPTER 1 PAGE 8).

WORKSITE DEWATERING (CONTINUED)

5. FOR CONSTRUCTION DEWATERING AMOUNTS THAT EXCEED 10,000 GALLONS/DAY OR 1 MILLION GALLONS/YR, THE PERMITTEE OR THEIR CONTRACTORS MUST SUBMIT A GP 1997-0005 NOTIFICATION FORM TO THE DNR AT LEAST 5 DAYS PRIOR TO THE START OF PUMPING OPERATIONS. PRIOR AUTHORIZATION TO USE GENERAL PERMIT 1997-0005 MUST BE OBTAINED BY SUBMITTING AN APPLICATION USING THE MNDNR PERMITTING AND REPORTING SYSTEM.

a. NOTE: GP 1997-0005 IS NOT VALID FOR APPROPRIATIONS FROM SURFACE WATER SOURCES THAT ARE DESIGNATED AS INFESTED WATERS UNLESS ACCOMPANIED BY AN INFESTED WATERS PERMIT OR WRITTEN NOTIFICATION FROM THE DEPARTMENT THAT AN INFESTED WATERS PERMIT IS NOT REQUIRED. FOR A CURRENT LIST OF DESIGNATED INFESTED WATERS, SEE: HTTP://WWW.DNR.STATE.MN.US/INVASIVES/AIS/INFESTED.HTML
b. APPLICATION FORMS FOR AN INFESTED WATERS PERMIT APPLICATION ARE AVAILABLE AT: **HTTP://WWW.DNR.STATE.MN.US/WATERS/WATERMGMT_SECTION/APPROPRIATIONS/PERMITS.HTML**

APPROXIMATE EXCAVATION DEPTH

APPROXIMATE EXCAVATION DEPTH IS HEREBY DEFINED AS THE TOP OF THE SUB-GRADE MATERIAL OR THE BOTTOM OF THE GRANULAR MATERIAL. VERTICAL TAPERS FOR CHANGES IN "APPROXIMATE EXCAVATION DEPTHS" SHALL BE 20:1.

EMBANKMENT NOTES

PRIOR TO PLACING EMBANKMENT ON EXISTING SLOPES GREATER THAN 1:4, THE EXISTING SLOPE SHALL BE STEPPED IN ACCORDANCE WITH MN/DOT SPECIFICATION 2105.3C.

EMBANKMENT MATERIAL SHALL BE GRANULAR BORROW AND SELECT GRADING MATERIAL UNLESS SPECIFIED OTHERWISE. SELECT GRADING MATERIAL SHALL CONSIST OF ALL MATERIALS ENCOUNTERED EXCEPT TOPSOIL, ORGANIC SOIL, SILT, NON-SOIL DEBRIS, OR ANY OTHER UNSUITABLE MATERIAL. THE EMBANKMENT MUST BE CONSTRUCTED IN ACCORDANCE WITH MN/DOT SPECIFICATION 2105.

UNSUITABLE MATERIALS

PROVIDE FOR THE REMOVAL & DISPOSAL, OUTSIDE THE CONSTRUCTION ZONE, OF ANY INPLACE SURFACING OR OTHER STRUCTURES THAT WOULD INTERFERE WITH CONSTRUCTION. ALL SUCH MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR & SHALL EITHER BE RECYCLED TO THE EXTENT ALLOWED OR DISPOSED OF OUTSIDE THE RIGHT OF WAY IN ACCORDANCE WITH SPECIFICATION 2104.3C. PROVIDE FOR SAW CUTTING AS DEEMED NECESSARY BY THE ENGINEER.

ALL EXCAVATED MATERIAL SHALL BE USED ONSITE FOR BORROW ITEMS IF MEETS GRADATION REQUIREMENTS UNLESS DIRECTED OTHERWISE BY THIS PLAN OR AS DIRECTED BY THE ENGINEER.

TOPSOIL NOTES

ALL TOPSOIL STRIPPING WILL BE CONSIDERED TO BE COMMON EXCAVATION.

IN FILL SECTIONS, TOPSOIL & OTHER UNSUITABLE MATERIALS ARE NOT ALLOWED BENEATH THE ROADWAY.

PRIOR TO CONSTRUCTION, 4" OF THE NATURAL TOPSOIL SHALL BE REMOVED FROM ALL AREAS TO BE DISTURBED. THIS MATERIAL SHALL BE STOCKPILED FOR REUSE AS NEW SLOPE DRESSING. TOPSOIL REMOVAL EXCAVATION IS PAID FOR AS COMMON EXCAVATION.

PLACE A MINIMUM OF 0.33 FEET OF TOPSOIL ON ALL AREAS SCHEDULED FOR TURF RESTORATION.

SEEDING REQUIREMENTS ON THIS PROJECT ARE AS FOLLOWS:

1. SEED MIXTURE 25-141 SHALL BE USED FOR GENERAL TURF RESTORATION ON AREAS OFF-ROAD AS DIRECTED BY THE ENGINEER.
2. ALL DISTURBED AREA SHALL BE RESTORED WITH 4" OF TOPSOIL, 25-141 SEED, FERTILIZER, AND ROLLED EROSION PREVENTION CATEGORY 20 UNLESS OTHERWISE DIRECTED BY THE 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.

JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

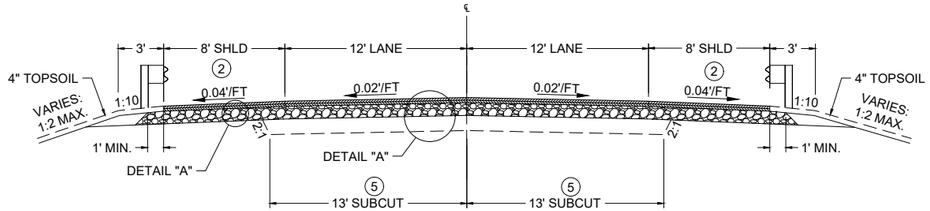
S.A.P. 017-615-024
CSAH 15 BRIDGE REPLACEMENT
COTTONWOOD COUNTY, MINNESOTA

STATEMENT OF ESTIMATED QUANTITIES

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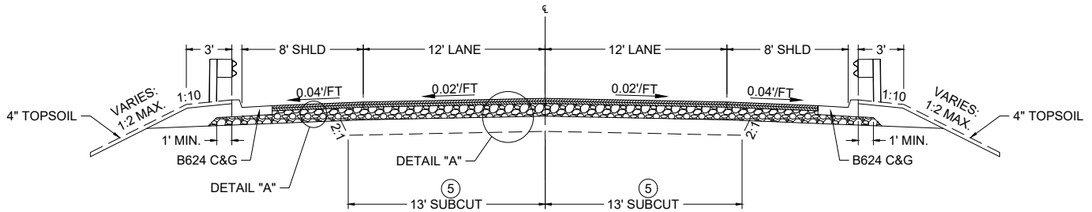
EARTHWORK TABULATIONS

LOCATION	EXCAVATION	EMBANKMENT (CV)	
	COMMON (1)(4)	COMMON (4)	AGGREGATE BASE (CV) (4) CLASS 5
CSAH 15	CU YD	CU YD	TONS
18+50.00 - 18+75.00	23	3	35
18+75.00 19+00.00	22	12	41
19+00.00 19+25.00	41	22	42
19+25.00 19+50.00	52	33	42
19+50.00 19+95.00	54	72	40
Bridge 17538			
21+36.00 21+75.00	28	6	68
21+75.00 22+00.00	7	10	55
22+00.00 22+25.00	0	31	39
22+25.00 22+50.00	12	42	39
22+50.00 22+84.00	34	35	69
22+84.00 23+00.00	14	15	32
23+00.00 23+25.00	18	24	39
TOTAL	305	305	541



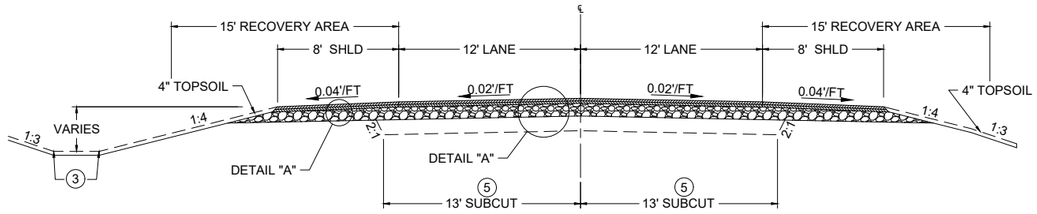
CSAH 15 TYPICAL SECTION

STA. 18+50.00 TO STA. 19+67.50



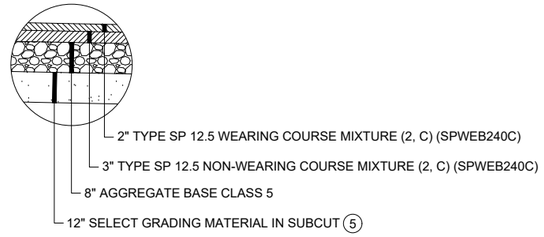
CSAH 15 TYPICAL SECTION

STA. 19+67.50 TO STA. 19+82.50



CSAH 15 TYPICAL SECTION

STA. 21+45.00 TO STA. 23+30.00



DETAIL "A"

NOTES:

1. COMMON EXCAVATION INCLUDES TOPSOIL STRIPPING.
2. TRANSITION SHOULDER TO MATCH EXISTING WEST OF STATION 18+90
3. ROUNDING THE DITCH BOTTOM IS REQUIRED DURING CONSTRUCTION.
4. PAY ITEM.
5. SUBCUT EXCAVATION SHALL BE PERFORMED ONLY WHEN DIRECTED BY THE ENGINEER IN THE FIELD. SUBCUT EXCAVATION SHALL BE PAID FOR AS COMMON EXCAVATION FOR THE QUANTITY ACTUALLY COMPLETED.

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SEH Project COTTO 165601
Drawn By JS
Designed By JT
Checked By NM

Rev.# | Revision Issue Description | Date
Rev.# | Revision Issue Description | Date

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.

JOSHUA C. TARBELL, PE

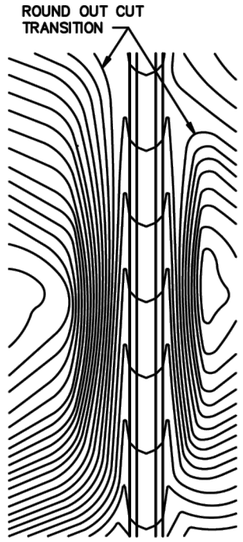
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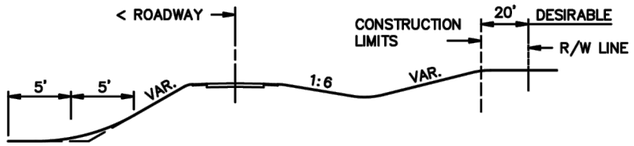
CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

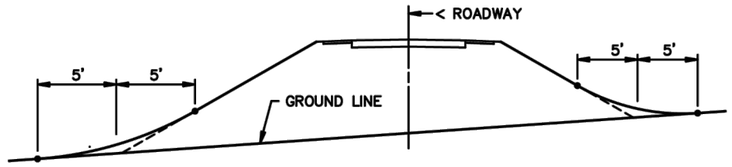
TYPICAL SECTIONS



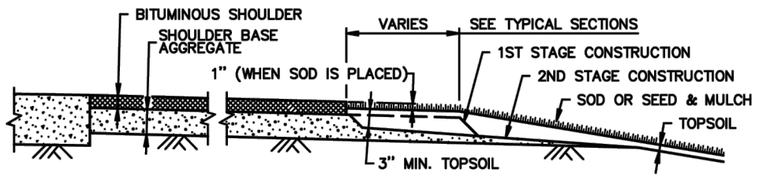
CONTOURING ROAD CUTS



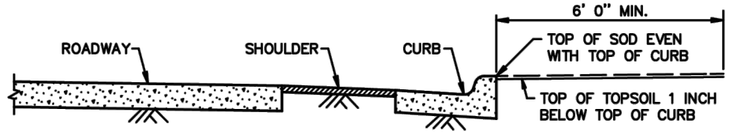
ROUNDING SHOULDERS AND BACKSLOPES



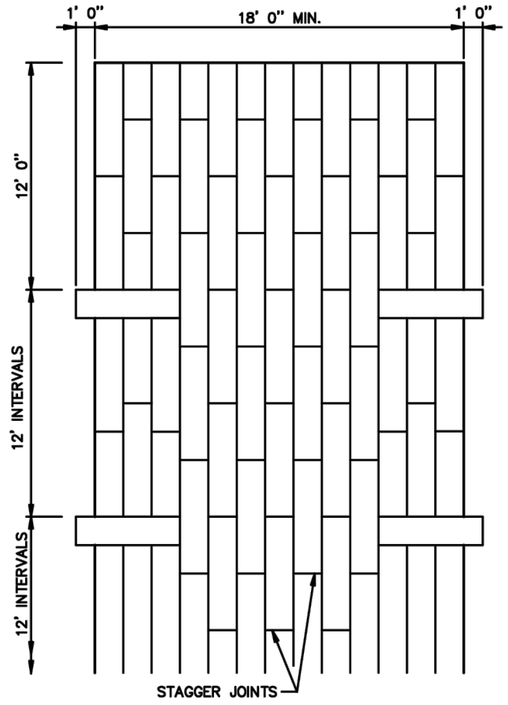
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



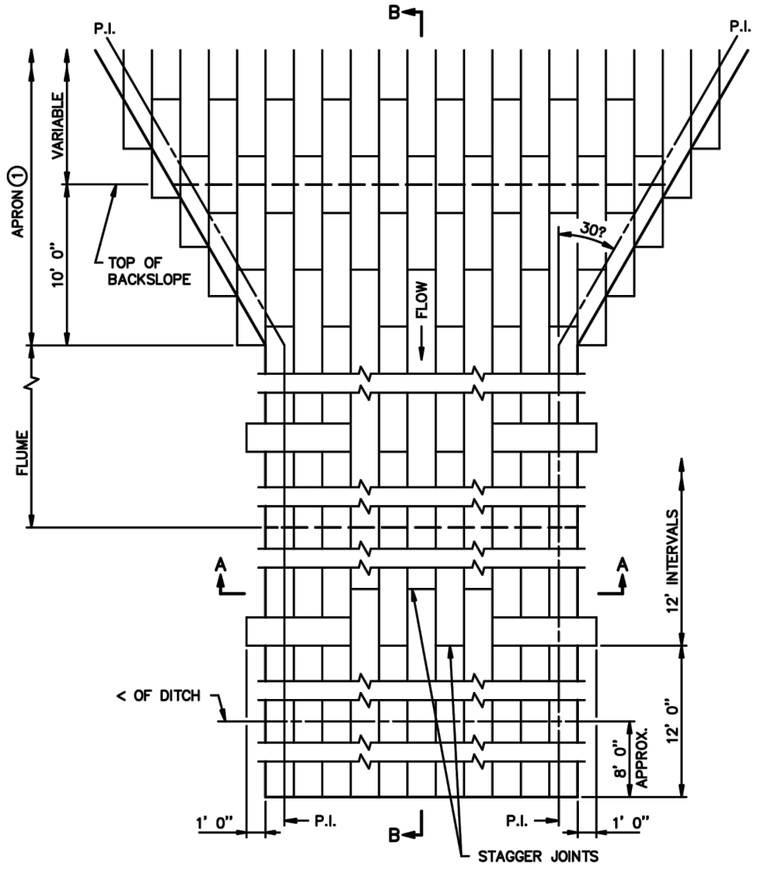
SHAPING AND TOPSOILING INSLOPES



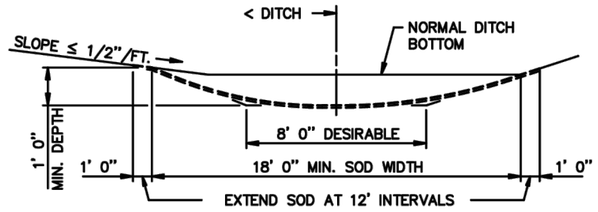
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



PLAN VIEW

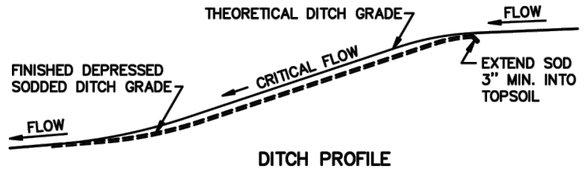


PLAN VIEW



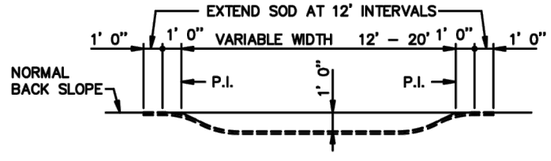
SODDED DITCH CROSS SECTION

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

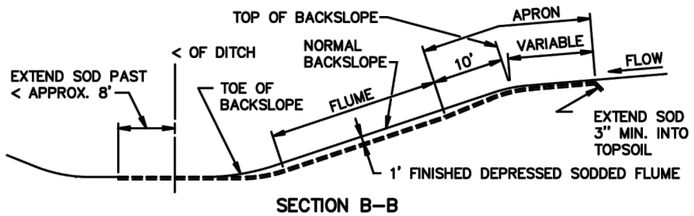


DITCH PROFILE

SODDED DITCH DETAILS



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

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

STANDARD PLAN 5-297.404 | **1 OF 3**

APPROVED 2-28-2017

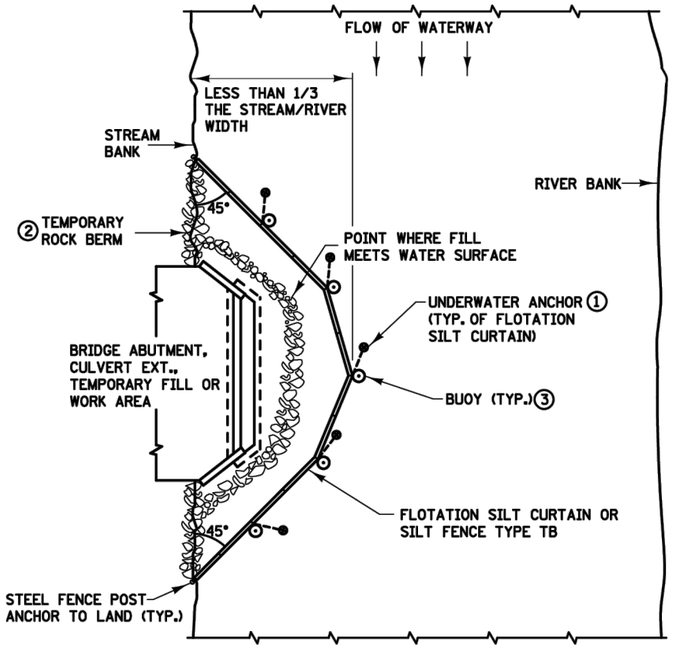
REVISED:

PERMANENT EROSION CONTROL

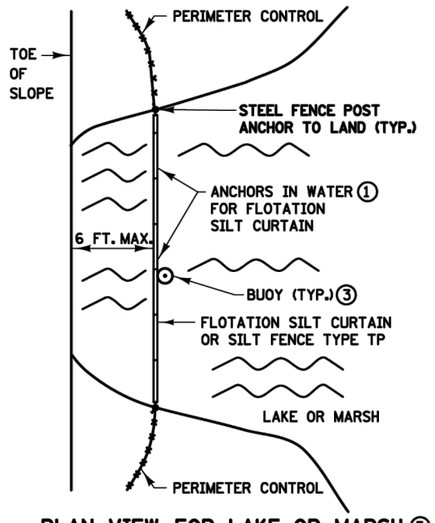
ALONG ROADWAYS, DITCHES AND FLUMES

S.A.P. 017-615-024 (CSAH 15) SHEET NO. 4 OF 10 SHEETS

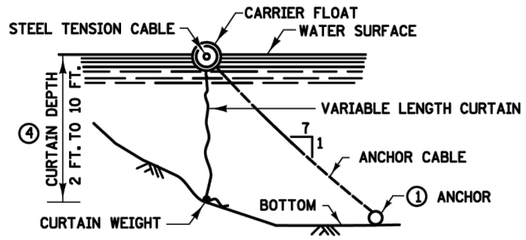
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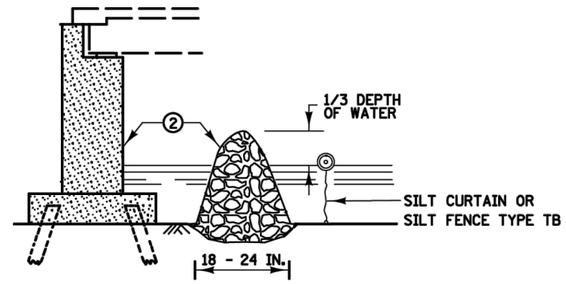
PLAN VIEW FOR STREAM ⑤



PLAN VIEW FOR LAKE OR MARSH ⑤



FLOTATION SILT CURTAIN



TEMPORARY ROCK BERM
FOR SEDIMENT CONTROL

INSTALLATION GUIDELINES
SILT FENCE TYPE TB

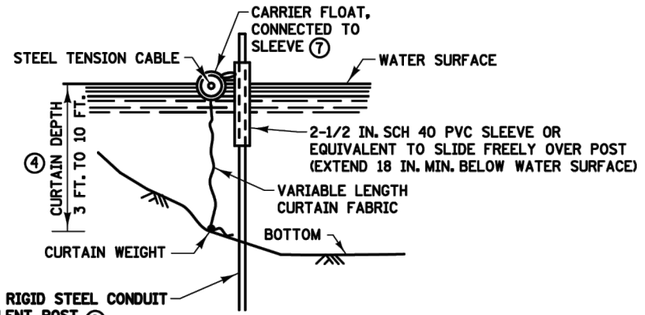
MINIMUM WATER DEPTH: 1 FT.
MAXIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.

INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: STILL WATER

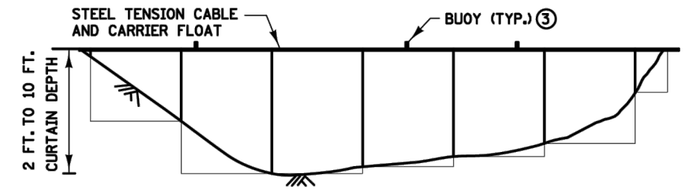
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 2 FT./SEC.
MAXIMUM WAVE HEIGHT: 1 FT

INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: MOVING WATER

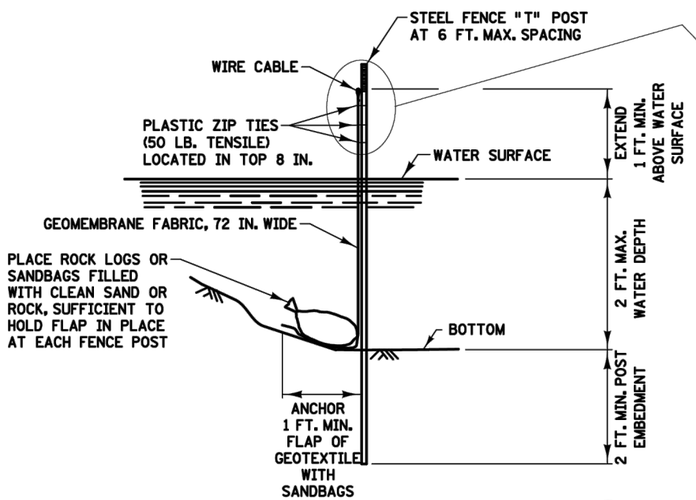
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WAVE HEIGHT: 2 FT.



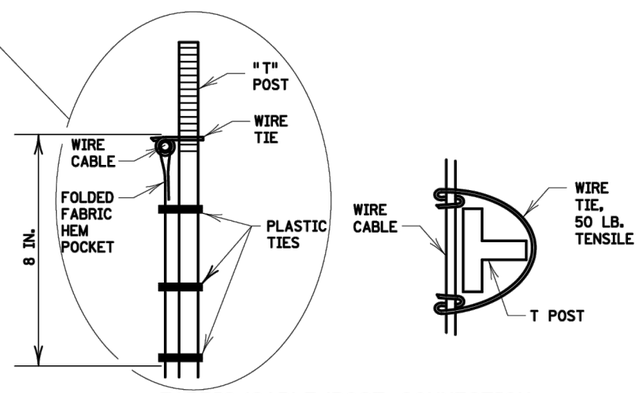
ALTERNATE FLOTATION SILT CURTAIN



FRONT VIEW FOR FLOTATION SILT CURTAIN



SILT FENCE TYPE TB ⑥



FABRIC/CABLE/POST CONNECTION

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.

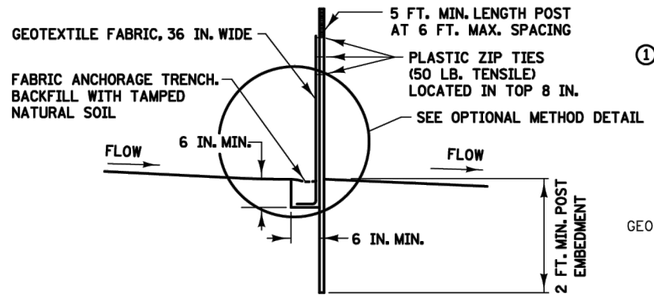
⑥ EMBED POST INTO BOTTOM A MINIMUM OF 40% OF THE WATER DEPTH (INCLUDING WAVE HEIGHT), BUT IN NO CASE SHALL EMBEDMENT BE LESS THAN 2 FEET.

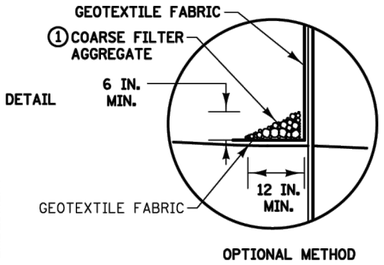
⑦ ANCHOR FLOAT MUST BE CONNECTED SECURELY TO SLEEVE WITH A MINIMUM TENSILE STRENGTH OF 100 LBS. CONNECTION METHOD MUST ALLOW FOR SLEEVE TO MOVE FREELY ON POST.

⑧ PROVIDE SUFFICIENT NUMBER OF POST ANCHORS TO MAINTAIN SILT CURTAIN POSITION.

LEAD EXPERT OFFICE: LYNN CLARKOWSKI, CHIEF ENVIRONMENTAL OFFICER, OFFICE OF ENVIRNOMENTAL STEWARDSHIP	TEMPORARY SEDIMENT CONTROL SILT CURTAIN OR SILT FENCE TYPE TB	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	1 OF 8
DEPARTMENT OF TRANSPORTATION	STANDARD PLAN	STATE PROJ. NO. 017-615-024		SHEET NO. 5	
		TRUNK HWY. CSAH 15		TOTAL SHEETS 10	

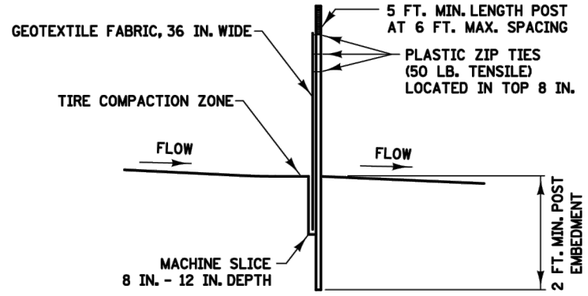
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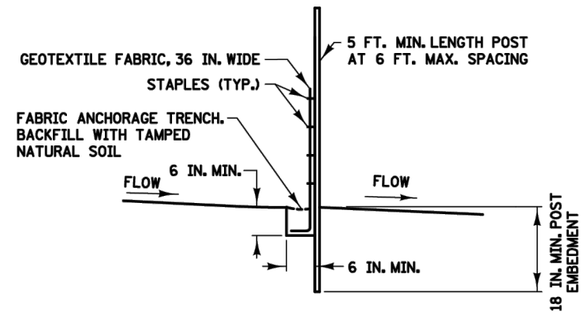


OPTIONAL METHOD

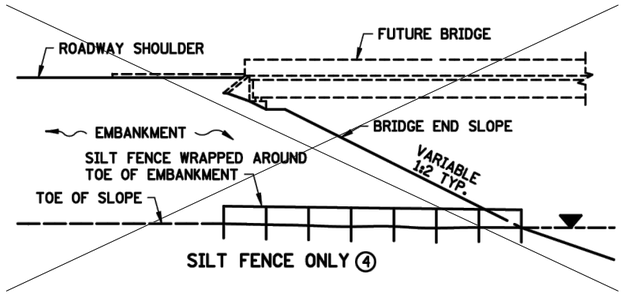
SILT FENCE TYPE HI ②
(HAND INSTALLED)



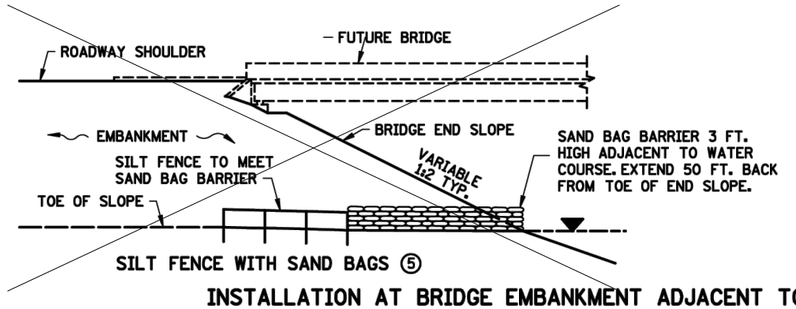
SILT FENCE TYPE MS ②
(MACHINE SLICED)



SILT FENCE TYPE PA ③
(PREASSEMBLED)

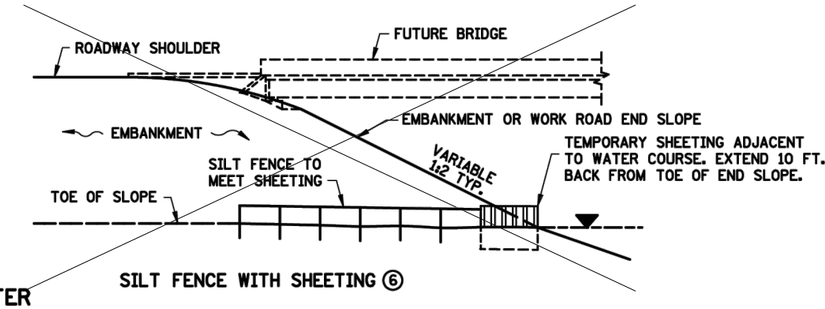


SILT FENCE ONLY ④

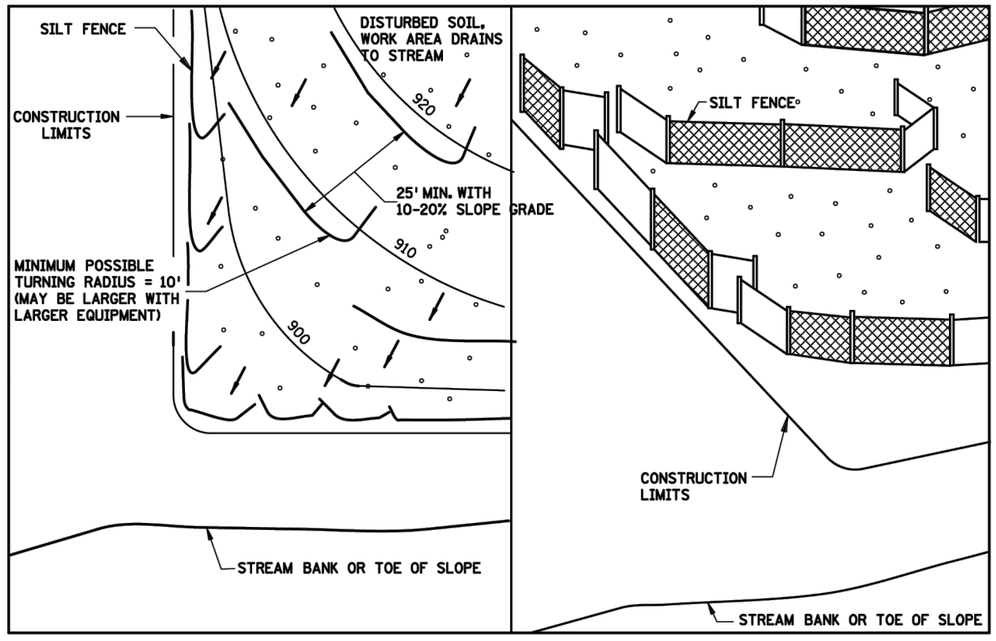


SILT FENCE WITH SAND BAGS ⑤

INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER

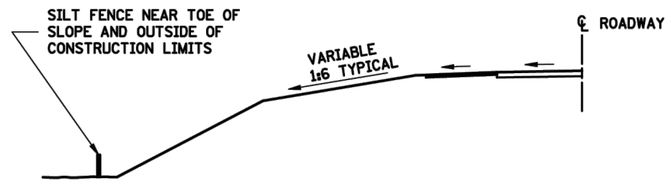


SILT FENCE WITH SHEETING ⑥



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.

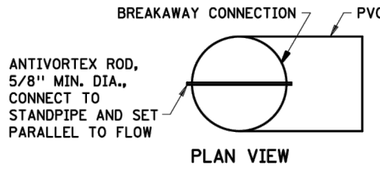
④ WATER COURSE FLOW VELOCITY: STANDING.
CONTRIBUTING SLOPE AREA: 1./2 ACRE.

⑤ WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1. ACRE.

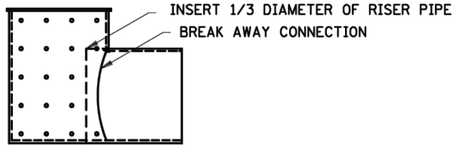
⑥ WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES.

LEAD EXPERT OFFICE: LYNN CLARKOWSKI, CHIEF ENVIRONMENTAL OFFICER, OFFICE OF ENVIRNOMENTAL STEWARDSHIP		TEMPORARY SEDIMENT CONTROL SILT FENCE	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	6 OF 8
DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	STATE PROJ. NO. 017-615-024		SHEET NO. 6	
			TRUNK HWY. CSAH 15		TOTAL SHEETS 10	

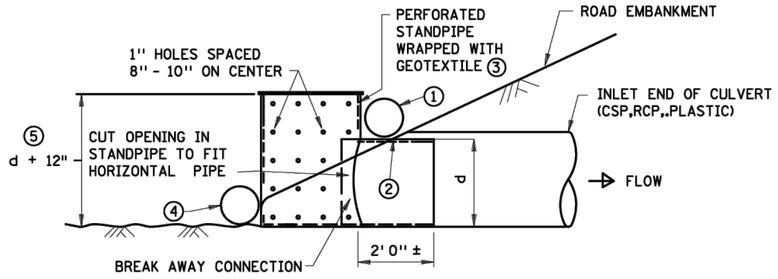
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PLAN VIEW



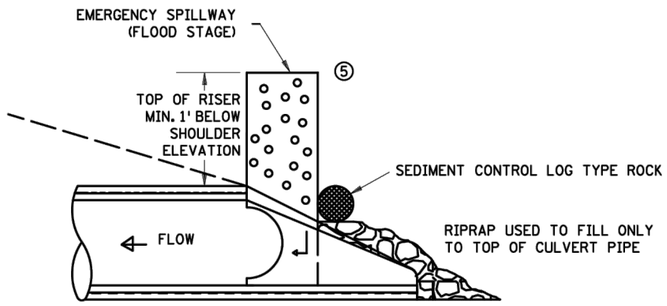
CULVERT STANDPIPE



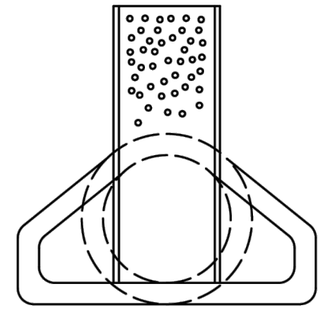
ELEVATION VIEW OF CULVERT INSTALLATION

CULVERT STANDPIPE INSERT (D-RISER)

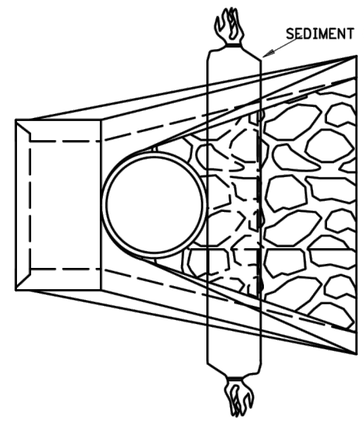
d= CULVERT SIZE: 12" - 36"



LONGITUDINAL SECTION



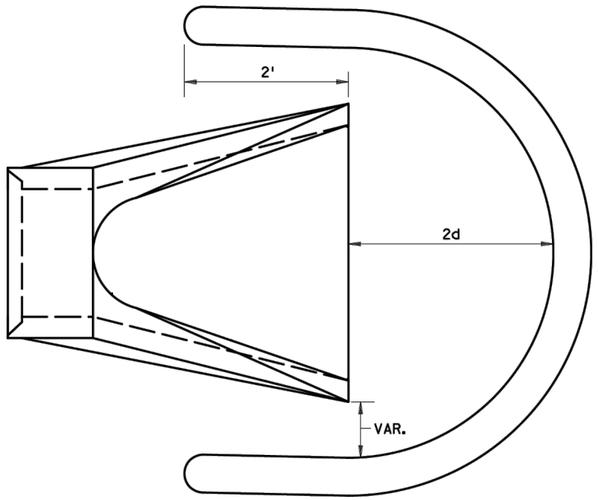
END VIEW



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

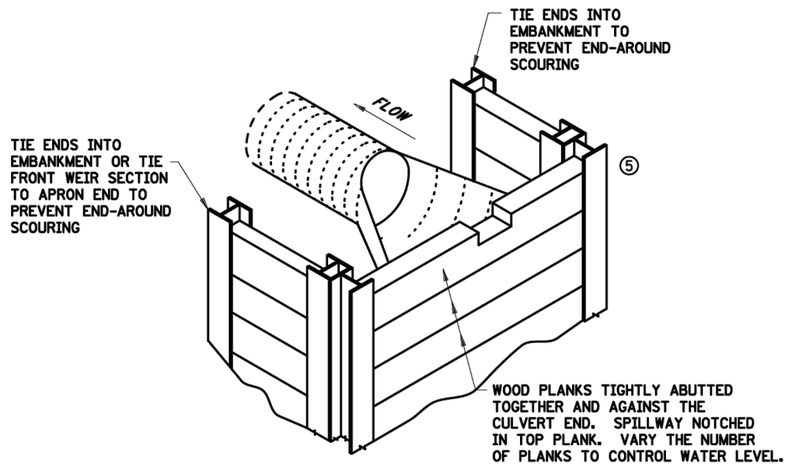
TOP VIEW

CULVERT STANDPIPE INSERT (D-RISER)



SEDIMENT CONTROL LOG WEIR (COMPOST, WOOD CHIP, OR ROCK)

d = CULVERT SIZE: 12"-36"



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.

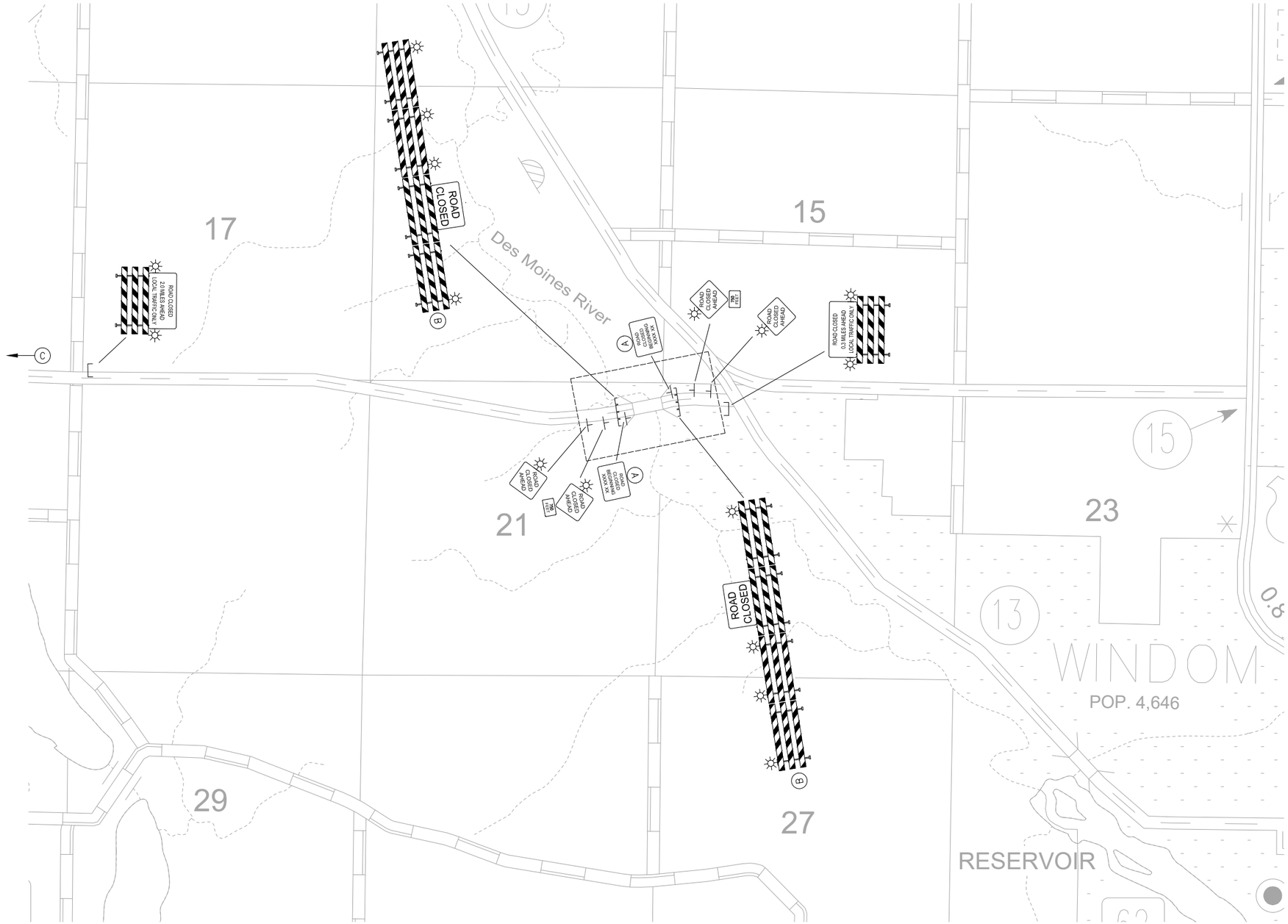
③ ALL GEOTEXTILE USED FOR CULVERT PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886 FOR MACHINE SLICED.

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.

LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP		TEMPORARY SEDIMENT CONTROL CULVERT END CONTROLS	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	8 OF 8
	DEPARTMENT OF TRANSPORTATION		STANDARD PLAN	STATE PROJ. NO. 017-615-024		SHEET NO. 7
				TRUNK HWY. CSAH 15		TOTAL SHEETS 10

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TRAFFIC CONTROL SIGN TABULATION				
SIGN	SIGN NO.	SIZE	COLOR	NO.
ROAD CLOSED XMILES AHEAD LOCAL TRAFFIC ONLY	R11-3A	60" x 30"	BL ON OR	3
ROAD CLOSED	R11-2R	48" x 30"	BL ON OR	2
ROAD CLOSED AHEAD	W20-3	48" x 48"	BL ON OR	4
750 FEET	W20-100P	24" x 18"	BL ON OR	2
	TYPE III L/R	6' MIN	OR ON WH	11
	TYPE A	FLASHER	AMBER	18
ROAD CLOSED BEGINNING XXXX XX	G20-X1	54" x 48"	BL ON OR	2

NOTES:

1. [ ] INDICATES ROAD CLOSED.
2. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM WITH THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
3. ADDITIONAL CONSTRUCTION ZONE SIGNING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL INCLUDE, BUT NOT LIMITED TO SIGNS FOR LANE CLOSURE, MACHINERY AND, BUMP, DIP, LOOSE GRAVEL, ETC. THE NUMBER AND LOCATION WILL BE DETERMINED BY THE CONTRACTOR'S OPERATIONS.
4. ALL BARRICADES ON THIS PROJECT SHALL BE RETROREFLECTORIZED ON BOTH SIDES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AT ALL TIMES.
6. GOPHER STATE ONE CALL: 1-800-252-1166
7. ALL SIGN POSTS USED FOR CONSTRUCTION SIGNS SHALL BE REMOVED AN THE SURROUNDING GROUND RETURNED TO ITS ORIGINAL CONDITION WHEN SIGNS ARE NO LONGER NEEDED.
8. THE USE OF TEMPORARY ORANGE CONSTRUCTION FENCING MAY BE REQUIRED BY THE ENGINEER TO COMPLETELY CLOSE OFF ANY SPECIFIC WORK AREA.

KEY NOTES:

- (A) INSTALL MIN. 7 DAYS BEFORE THE CLOSURE.
- (B) INSTALL AT THE LAST DRIVEWAY OR INTERSECTION BEYOND WHICH THERE IS NO PUBLIC ACCESS.
- (C) INSTALL RII-3A ON TYPE III BARRICADE AND G20-X1 AT INTERSECTION OF CSAH 5 AND CSAH 15 (8.8 MILES). INSTALL G20-X1 MIN. 14 DAYS BEFORE THE CLOSURE.

N

NOT TO SCALE

Save: 7/12/2024 10:06 AM jasamuelson Plot: 8/23/2024 11:41 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-structdwg\Sheet\8 TRAFFIC CONTROL PLAN.dwg

SEH Project	COTTO 165601	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH	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.
Drawn By	--	.			.				Joshua C. Tarbell
Designed By	--	.			.				JOSHUA C. TARBELL, PE
Checked By	--	.			.				DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

TRAFFIC CONTROL PLAN

GENERAL NOTES:

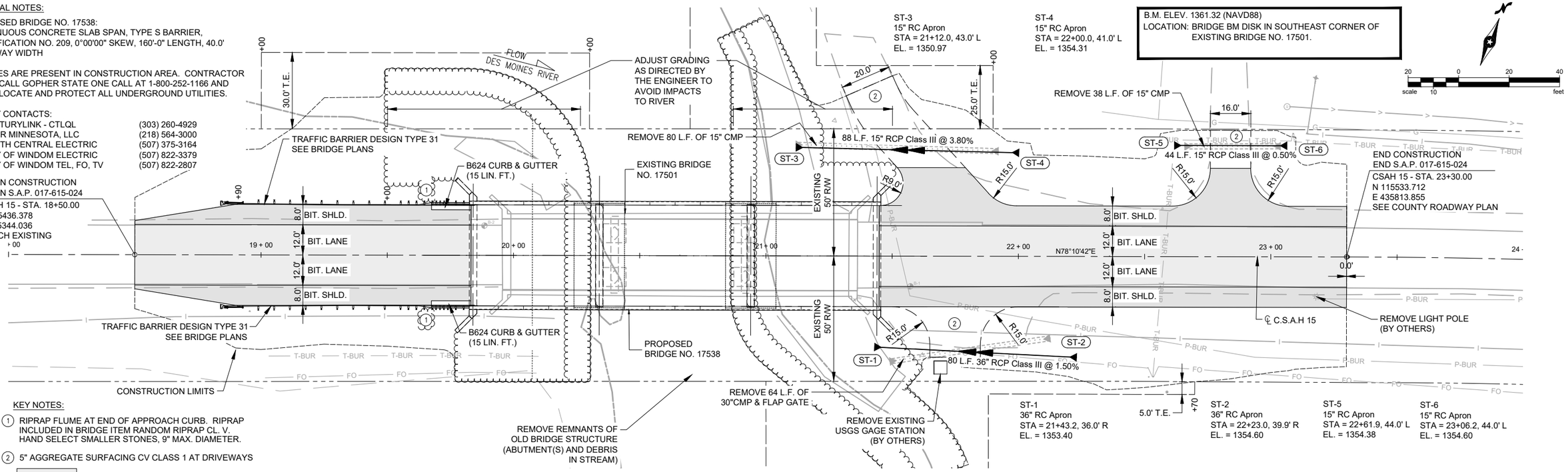
PROPOSED BRIDGE NO. 17538:
CONTINUOUS CONCRETE SLAB SPAN, TYPE S BARRIER, IDENTIFICATION NO. 209, 0°00'00" SKEW, 160'-0" LENGTH, 40.0' ROADWAY WIDTH

UTILITIES ARE PRESENT IN CONSTRUCTION AREA. CONTRACTOR SHALL CALL GOPHER STATE ONE CALL AT 1-800-252-1166 AND SHALL LOCATE AND PROTECT ALL UNDERGROUND UTILITIES.

UTILITY CONTACTS:

CENTURYLINK - CTLQL	(303) 260-4929
FIBER MINNESOTA, LLC	(218) 564-3000
SOUTH CENTRAL ELECTRIC	(507) 375-3164
CITY OF WINDOM ELECTRIC	(507) 822-3379
CITY OF WINDOM TEL, FO, TV	(507) 822-2807

B.M. ELEV. 1361.32 (NAVD88)
LOCATION: BRIDGE BM DISK IN SOUTHEAST CORNER OF EXISTING BRIDGE NO. 17501.

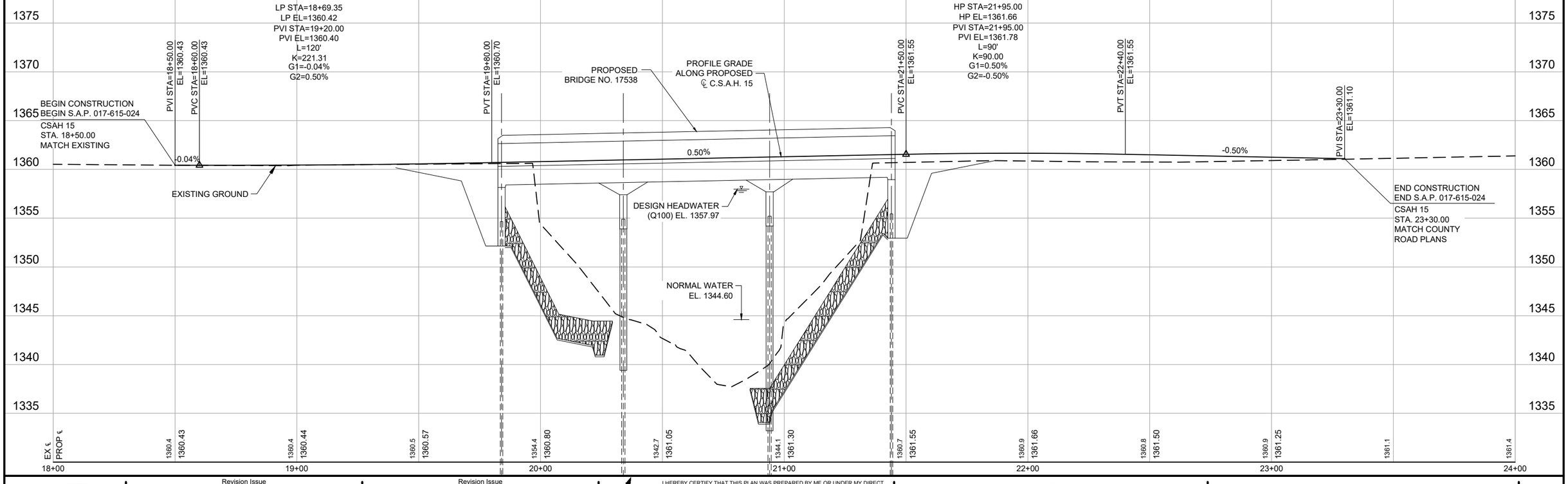


KEY NOTES:

(1) RIPRAP FLUME AT END OF APPROACH CURB. RIPRAP INCLUDED IN BRIDGE ITEM RANDOM RIPRAP CL. V. HAND SELECT SMALLER STONES, 9" MAX. DIAMETER.

(2) 5" AGGREGATE SURFACING CV CLASS 1 AT DRIVEWAYS

BITUMINOUS PAVEMENT, SEE TYPICAL SECTIONS.



SEH Project	COTTO 165601	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	JS	.			.		
Designed By	JT	.			.		
Checked By	NM	.			.		

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.
JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024
CSAH 15 BRIDGE REPLACEMENT
COTTONWOOD COUNTY, MINNESOTA

PLAN & PROFILE

9 of 10

Save: 8/21/2024 3:16 PM jasamuelson Plot: 8/23/2024 11:41 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-structdwg\Sheet\9 PLAN & PROFILE.dwg

KEY NOTES:

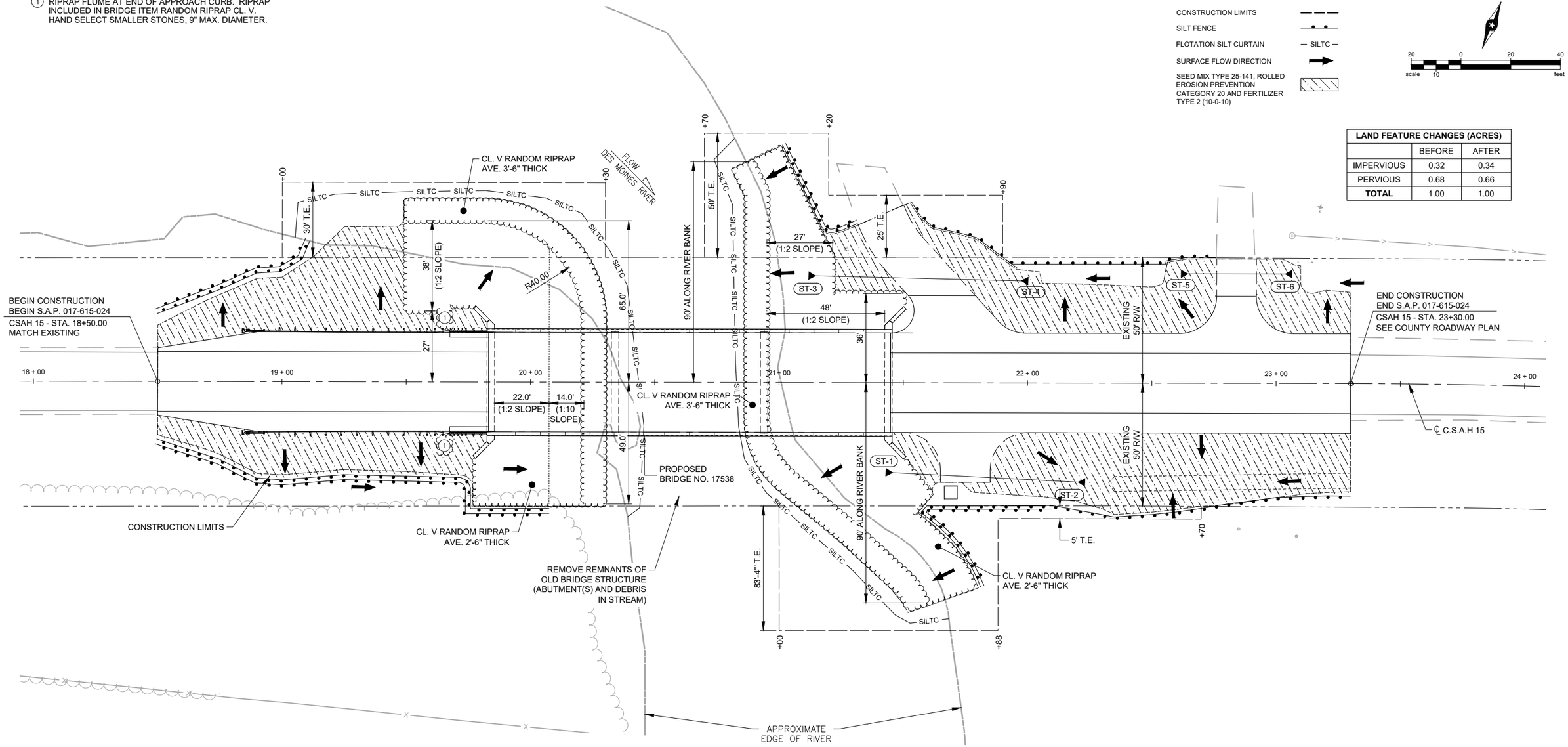
(1) RIPRAP FLUME AT END OF APPROACH CURB. RIPRAP INCLUDED IN BRIDGE ITEM RANDOM RIPRAP CL. V. HAND SELECT SMALLER STONES, 9" MAX. DIAMETER.

EROSION CONTROL LEGEND

- CONSTRUCTION LIMITS
- SILT FENCE
- FLOTATION SILT CURTAIN — SILTC —
- SURFACE FLOW DIRECTION
- SEED MIX TYPE 25-141, ROLLED EROSION PREVENTION CATEGORY 20 AND FERTILIZER TYPE 2 (10-0-10)

20 0 20 40
scale 10 feet

LAND FEATURE CHANGES (ACRES)		
	BEFORE	AFTER
IMPERVIOUS	0.32	0.34
PERVIOUS	0.68	0.66
TOTAL	1.00	1.00



EXCAVATION AND EARTHWORK NOTES:

LIMITS OF RANDOM RIPRAP AND GRANULAR FILTER OR GEOTEXTILE FABRIC AS SHOWN ARE APPROXIMATE ONLY. EXACT LIMITS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD AT THE TIME OF CONSTRUCTION.

CONTRACTOR SHALL DRESS SLOPES AND PLACE GEOTEXTILE TYPE VII AND RIPRAP IN APPROXIMATE AREAS AS DIRECTED BY THE ENGINEER.

(1) EXCAVATION AND SLOPE PREPARATION FOR PLACEMENT OF RIPRAP SHALL BE INCLUDED IN PRICE BID FOR RANDOM RIPRAP CLASS V.

Save: 7/16/2024 4:50 PM jasamuelson Plot: 8/23/2024 11:42 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-struct\dwg\Sheet\10 EROSION CONTROL & TERF ESTABLISHMENT PLAN.dwg

SEH Project	COTTO 165601	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	
Drawn By	JS	.			.			
Designed By	JT	.			.			
Checked By	NM	.			.			

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.

Joshua C. Tarbell

JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

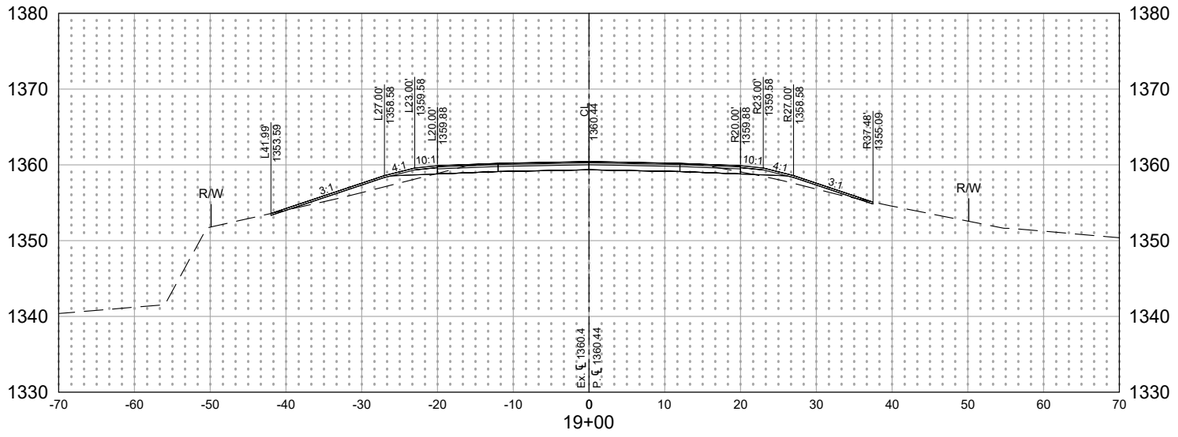
CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

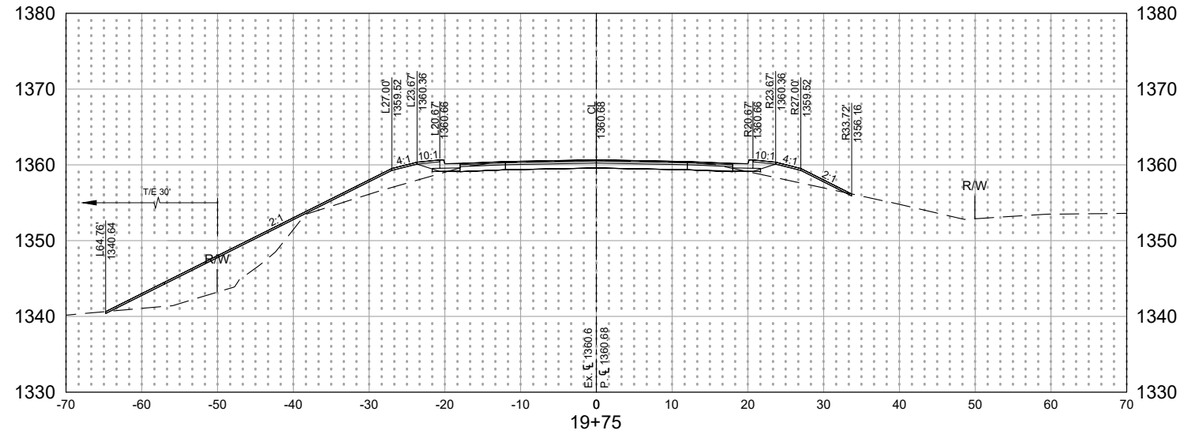
EROSION CONTROL & TERF ESTABLISHMENT PLAN

10 of 10

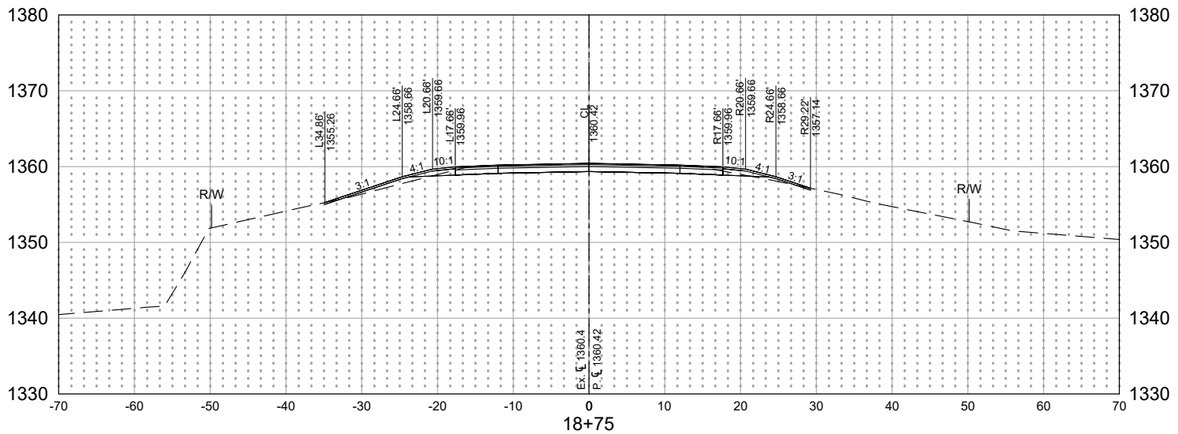
Begin Bridge No. 17538
Sta. 19+83.17



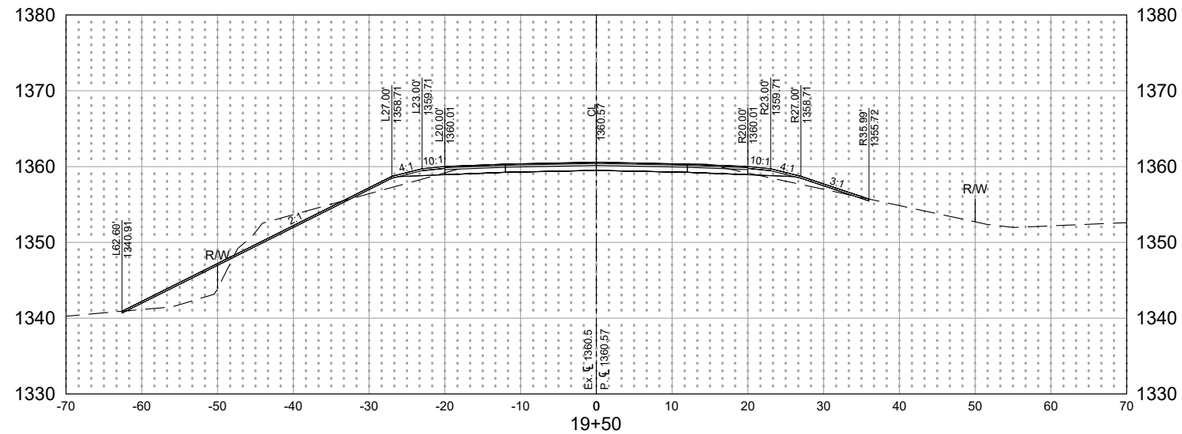
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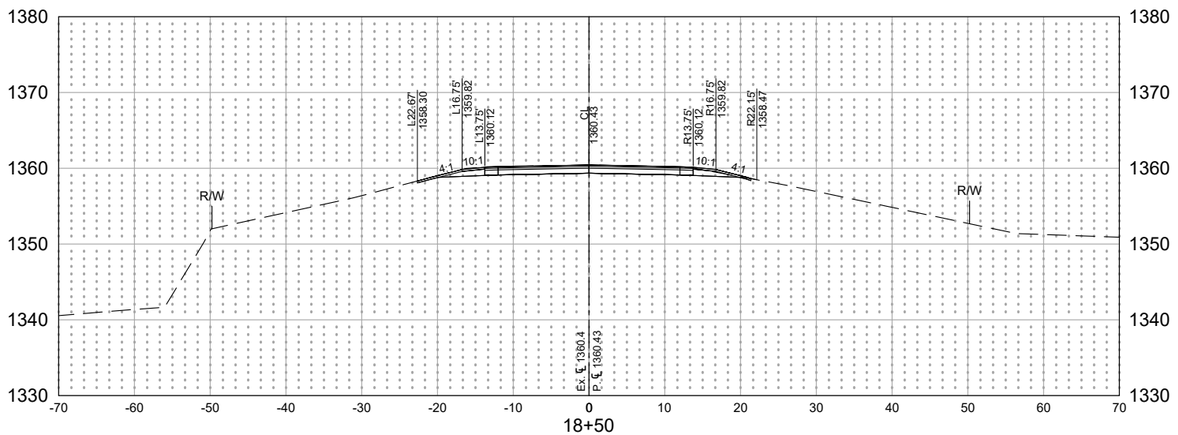
19+75



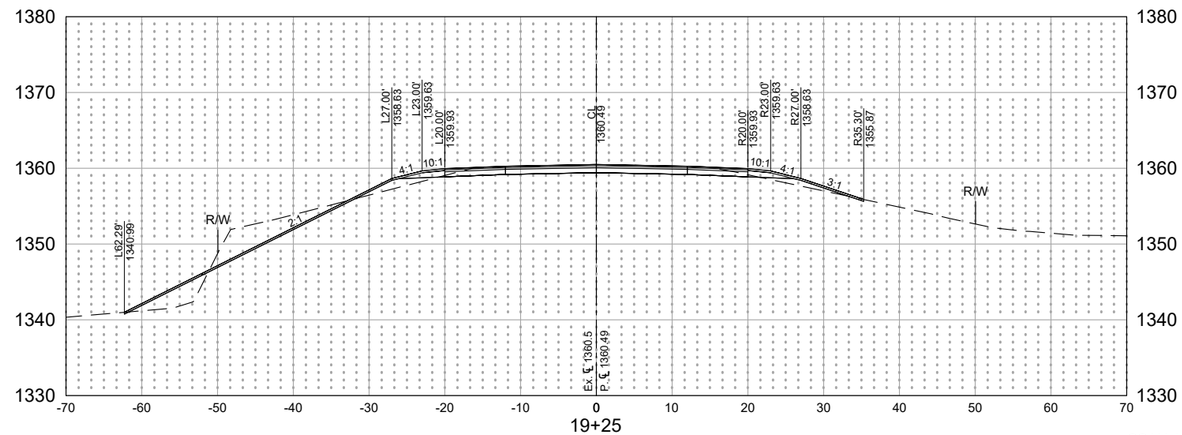
18+75



19+50



18+50

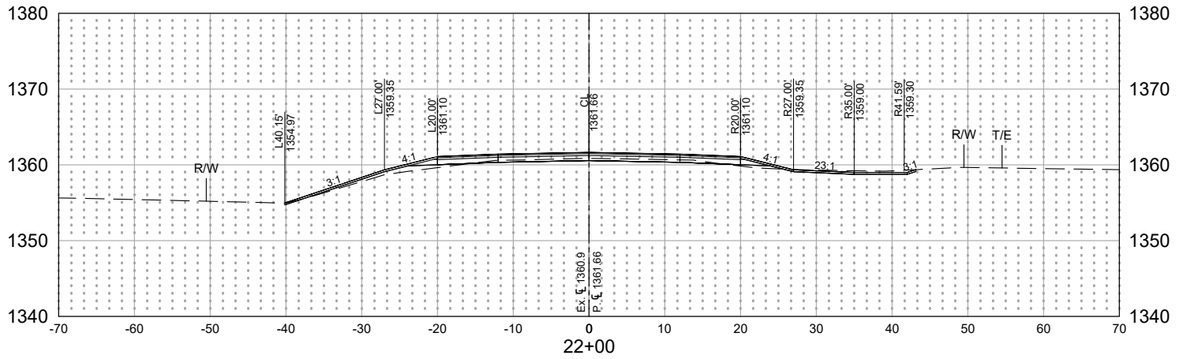


19+25

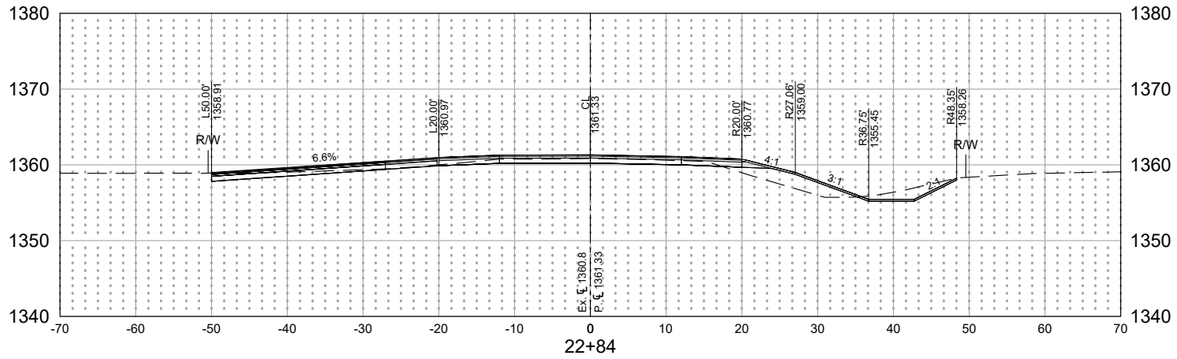
CSAH 15
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Sheet No. X1 Of X3 Sheets

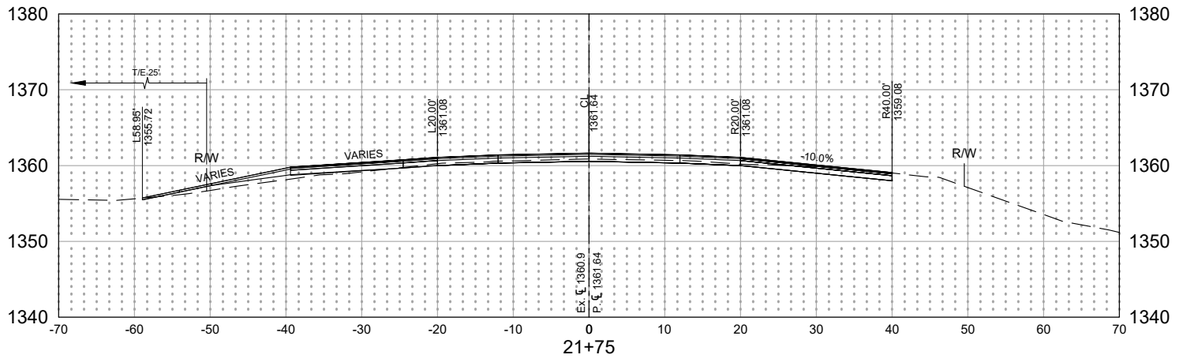
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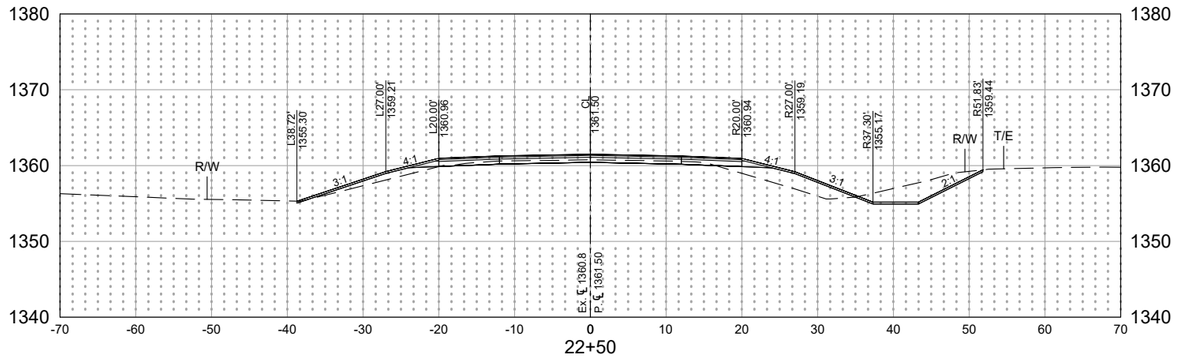
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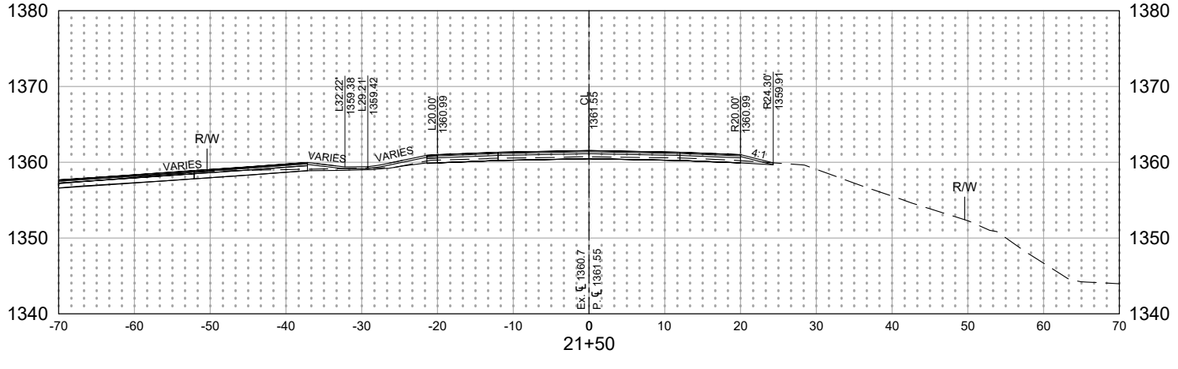
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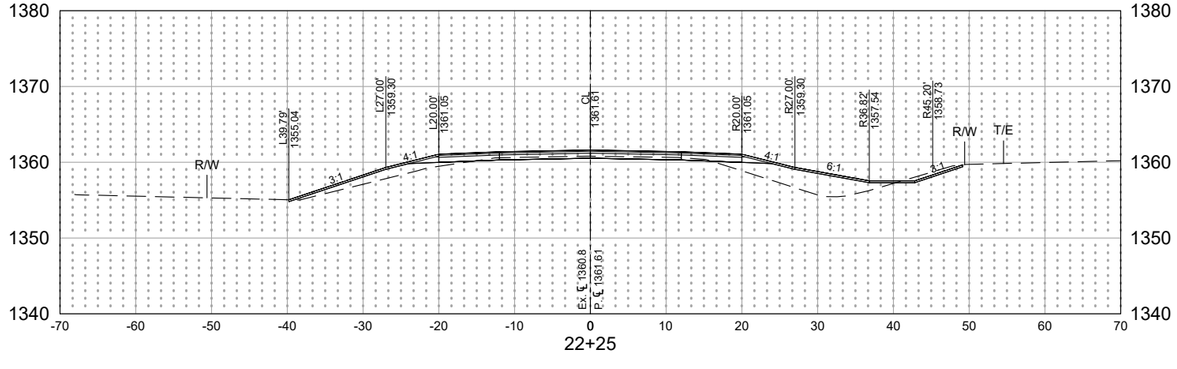
21+75



22+50



21+50



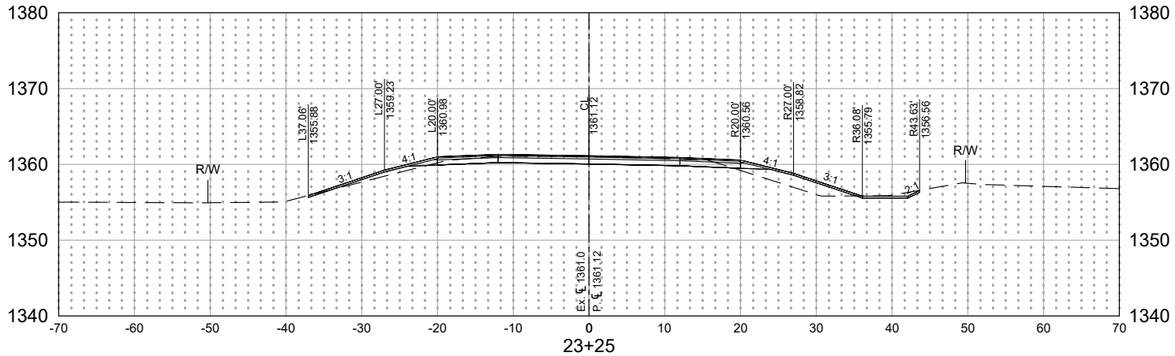
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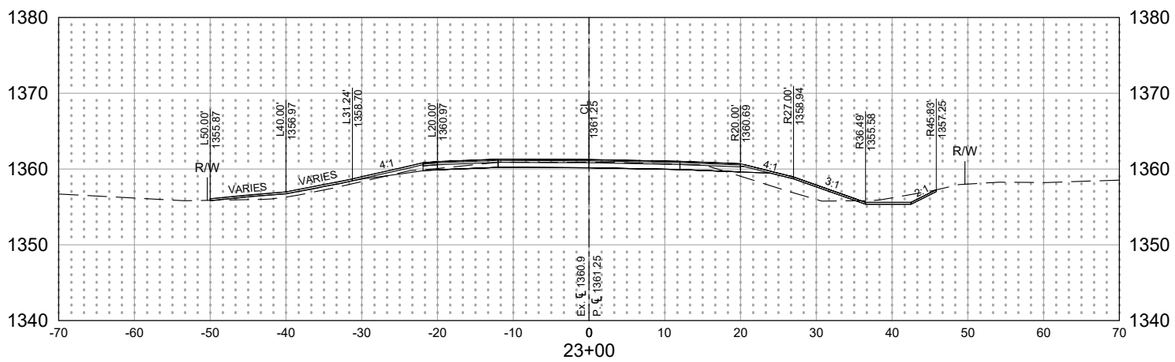
End Bridge No. 17538
Sta. 21+44.38

CSAH 15
STA: 21+50.00 - STA: 22+84.00

Sheet No. X2 Of X3 Sheets

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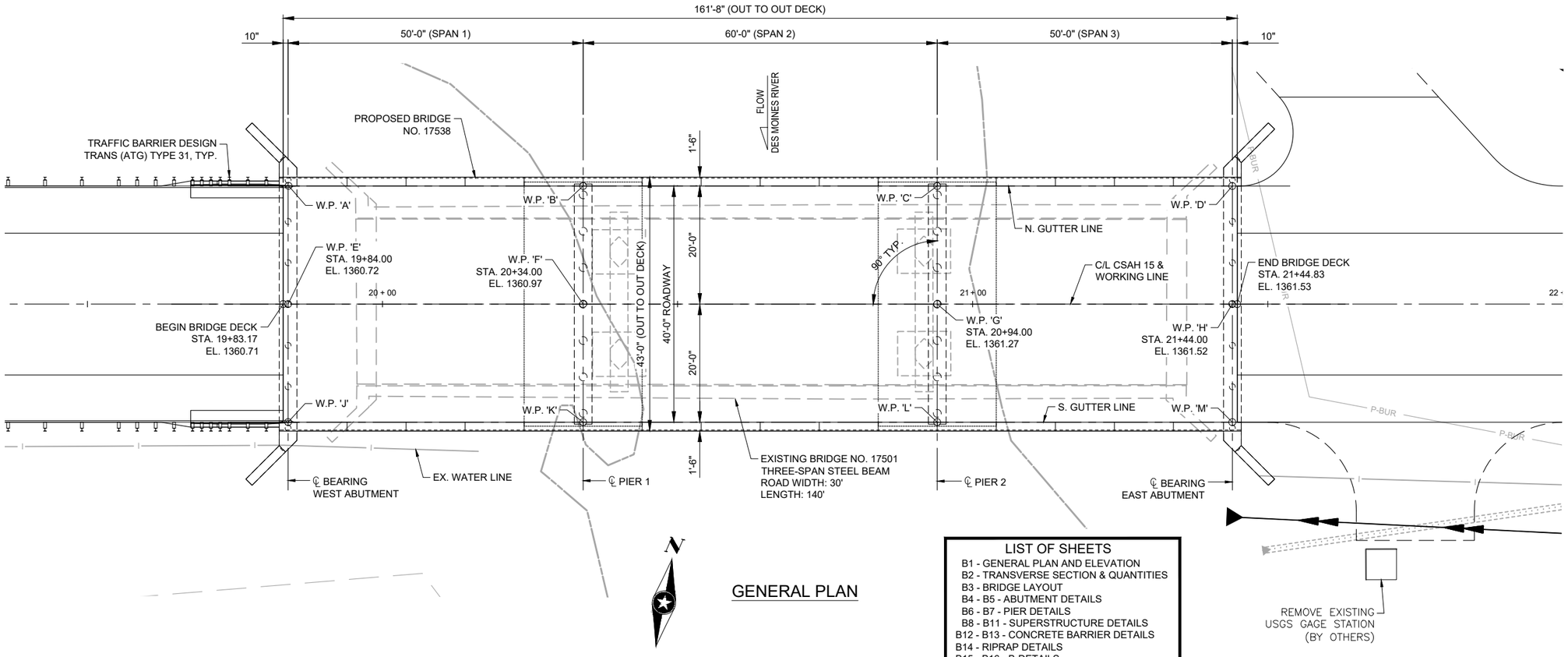




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CSAH 15
STA: 23+00.00 - STA: 23+25.00

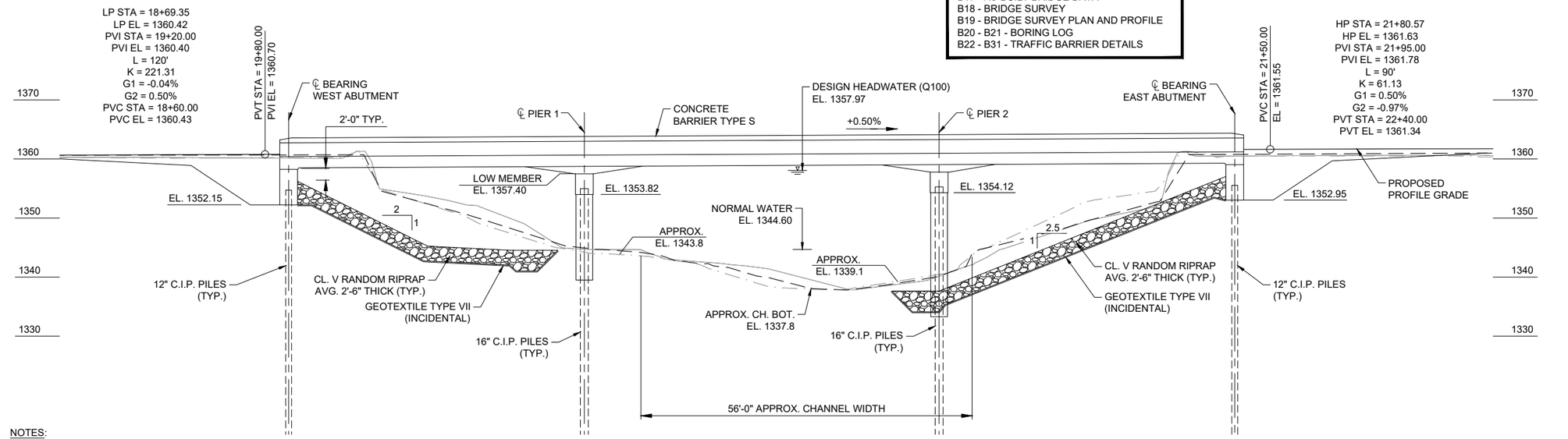
Sheet No. X3 Of X3 Sheets



GENERAL PLAN

LIST OF SHEETS

B1 - GENERAL PLAN AND ELEVATION
B2 - TRANSVERSE SECTION & QUANTITIES
B3 - BRIDGE LAYOUT
B4 - B5 - ABUTMENT DETAILS
B6 - B7 - PIER DETAILS
B8 - B11 - SUPERSTRUCTURE DETAILS
B12 - B13 - CONCRETE BARRIER DETAILS
B14 - RIPRAP DETAILS
B15 - B16 - B-DETAILS
B17 - AS-BUILT BRIDGE DATA
B18 - BRIDGE SURVEY
B19 - BRIDGE SURVEY PLAN AND PROFILE
B20 - B21 - BORING LOG
B22 - B31 - TRAFFIC BARRIER DETAILS



GENERAL ELEVATION

NOTES:
SEE BRIDGE SURVEY PLAN & PROFILE SHEET FOR APPROXIMATE LIMITS OF RANDOM RIPRAP.

SEE GUARDRAIL DETAILS IN ROADWAY PLAN FOR GUARDRAIL CONNECTION TO CONCRETE BARRIER.

CONTRACTOR MAY INSTALL UTILITIES ON THE NEW BRIDGE WITH THE APPROVAL OF THE ENGINEER.

EXISTING GROUND PROFILES:
16' DOWNSTREAM
ALONG PROPOSED ℄ CSAH 15
16' UPSTREAM

DESIGN DATA

DESIGN IN ACCORDANCE WITH 2020 AASHTO LFRD BRIDGE DESIGN SPECIFICATIONS

HL-93 LIVE LOAD
DEAD LOAD INCLUDES 20 POUNDS PER SQUARE FOOT ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'_c = 4 KSI CONCRETE
f_y = 60 KSI PLAIN AND EPOXY COATED BARS
n = 7.3 FOR REINFORCEMENT

DESIGN SPEED: 30 MPH
APPROXIMATE DECK AREA = 6,952 SQUARE FEET

TRAFFIC VOLUMES:
ADT. (CURRENT YEAR) 2024 = 421
ADT. (FUTURE YEAR) 2044 = 463

HL-93 LRFR BRIDGE OPERATING RATING: RF = 2.38

CONSTRUCTION NOTES

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

SEE SPECIAL PROVISIONS FOR ALL XXXX.6XX SERIES PAY ITEMS FOR ADDITIONAL REQUIREMENTS.

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

PROVIDE EPOXY COATED BARS MARKED WITH THE SUFFIX "E" IN ACCORDANCE WITH SPEC. 3301.

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 38-22, ENTITLED "STANDARD GUIDELINE FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

THE PILE LOADS SHOWN IN THE PLANS AND THE CORRESPONDING NOMINAL PILE BEARING RESISTANCE WERE COMPUTED USING LRFD METHODOLOGY. PILE BEARING RESISTANCE (R_n) DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

Nicholas Klisch Digitally signed by Nicholas Klisch Date: 2024.08.27 12:04:11 -05'00' DATE:
APPROVED: COTTONWOOD COUNTY ENGINEER

SEH
PHONE: 507.288.6464
717 THIRD AVENUE SE
ROCHESTER, MN 55904
www.sehinc.com

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

SIGNATURE: Joshua C. Tarbell DATE: 5/17/2024
PRINTED NAME: JOSHUA C. TARBELL, PE REG. NO. 46878

C.S.A.H. 15 COTTONWOOD COUNTY
MINNESOTA DEPARTMENT OF TRANSPORTATION

FINAL PLAN
BRIDGE NO. 17538

LOCATED ON CSAH 15 OVER DES MOINES RIVER
0.3 MILES WEST OF JCT. CSAH 13

50.0'-60.0'-50.0' CONTINUOUS CONCRETE SLAB SPAN
3 SPANS, 40'-0" ROADWAY, TYPE S BARRIER
0°00'00" SKEW, IDENTIFICATION NO. 209

GENERAL PLAN AND ELEVATION

SEC. 21 T105N R 36 W
TOWNSHIP: GREAT BEND COUNTY: COTTONWOOD

DATE:
APPROVED: STATE BRIDGE ENGINEER

DES. BY: JT
CHK. BY: NM
DRW. BY: JS
CHK. BY: NM

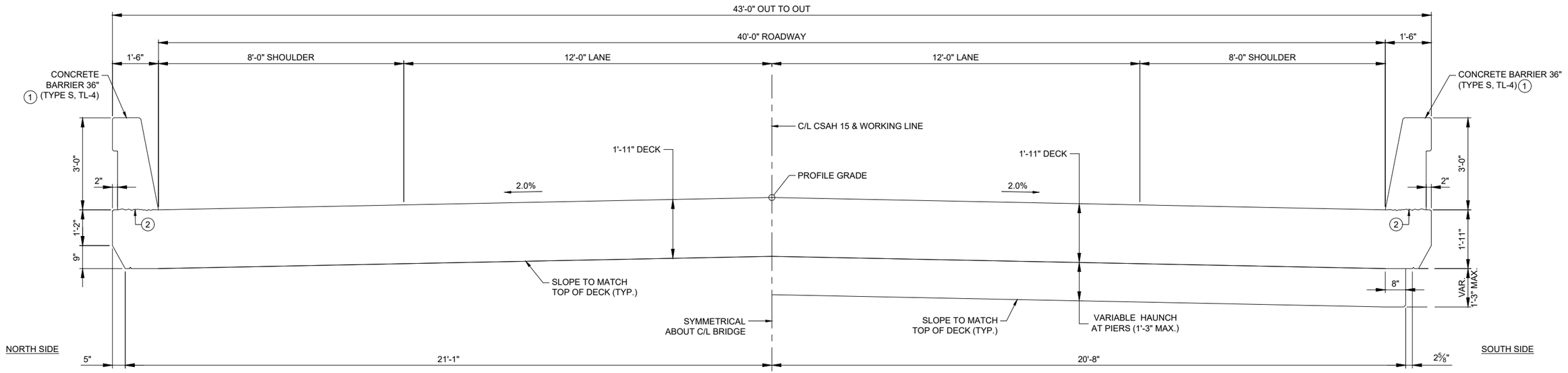
B.M. ELEV. 1361.32 (NAVD88)
LOCATION: BRIDGE BM DISK IN SOUTHEAST CORNER OF EXISTING BRIDGE NO. 17501.

BRIDGE NO. 17538

STATE AID PROJECT NO. 017-615-024

SHEET NO. B1 OF B31 SHEETS

X:\AE\C\COTTO\016560\15-final\cons\01-drawings\02-struct\dwg\Sheet\B1 GENERAL PLAN AND ELEVATION - JASAMUEL.SON, 8/21/2024



TRANSVERSE SECTION THRU DECK

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
2021.501	MOBILIZATION	LUMP SUM	1	2452.503	C-I-P CONCRETE PILING 12"	LIN FT	960
2401.503	TYPE S (TL-4) 36" BARRIER CONC (3S52)	LIN FT	326	2452.503	C-I-P CONCRETE PILING 16"	LIN FT	960
2401.507	STRUCTURAL CONCRETE (3B52)	CU YD	263	2502.501	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	1
2401.508	REINFORCEMENT BARS (EPOXY COATED)	POUND	181,510	2511.509	RANDOM RIPRAP CLASS V	TONS	2,200 (4)
2401.518	BRIDGE SLAB CONCRETE (3YHPC-M)	SQ FT	6,999	2554.502	END TREATMENT-TANGENT TERMINAL	EACH	2
2401.601	STRUCTURE EXCAVATION	LUMP SUM	1	2554.503	TRAFFIC BARRIER DESIGN TRANS TYPE 31	LIN FT	75
2401.601	FOUNDATION PREP PILE BENT PIERS	LUMP SUM	1	2554.503	TRAFFIC BARRIER DESIGN TYPE 31	LIN FT	25
(3) 2442.501	REMOVE EXISTING BRIDGE	LUMP SUM	1				
2452.502	C-I-P CONC TEST PILE 90 FT LONG 12"	EACH	2				
2452.502	C-I-P CONC TEST PILE 90 FT LONG 16"	EACH	2				
2452.502	PILE POINTS 12"	EACH	14				
2452.502	PILE POINTS 16"	EACH	14				

NOTES:

(1) SEE STANDARD FIGURE 5-397.138(A) ON SHEET B12.

(2) TOP OF DECK TO BE LEVEL WITH ROUGH FINISHED CONSTRUCTION JOINT UNDER BARRIER.

(3) NON-PARTICIPATING, BRIDGE NO. 17501.

(4) INCLUDES 150 TON TO BE PLACED AS DIRECTED BY ENGINEER.

Save: 8/15/2024 11:39 AM jasamuelson Plot: 8/23/2024 11:43 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-struct\dwg\Sheet\B2 TRANSVERSE SECTION & QUANTITIES.dwg

SEH Project	COTTO 165601	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	JS	.			.		
Designed By	JT	.			.		
Checked By	NM	.			.		

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.

JOSHUA C. TARBELL, PE

DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

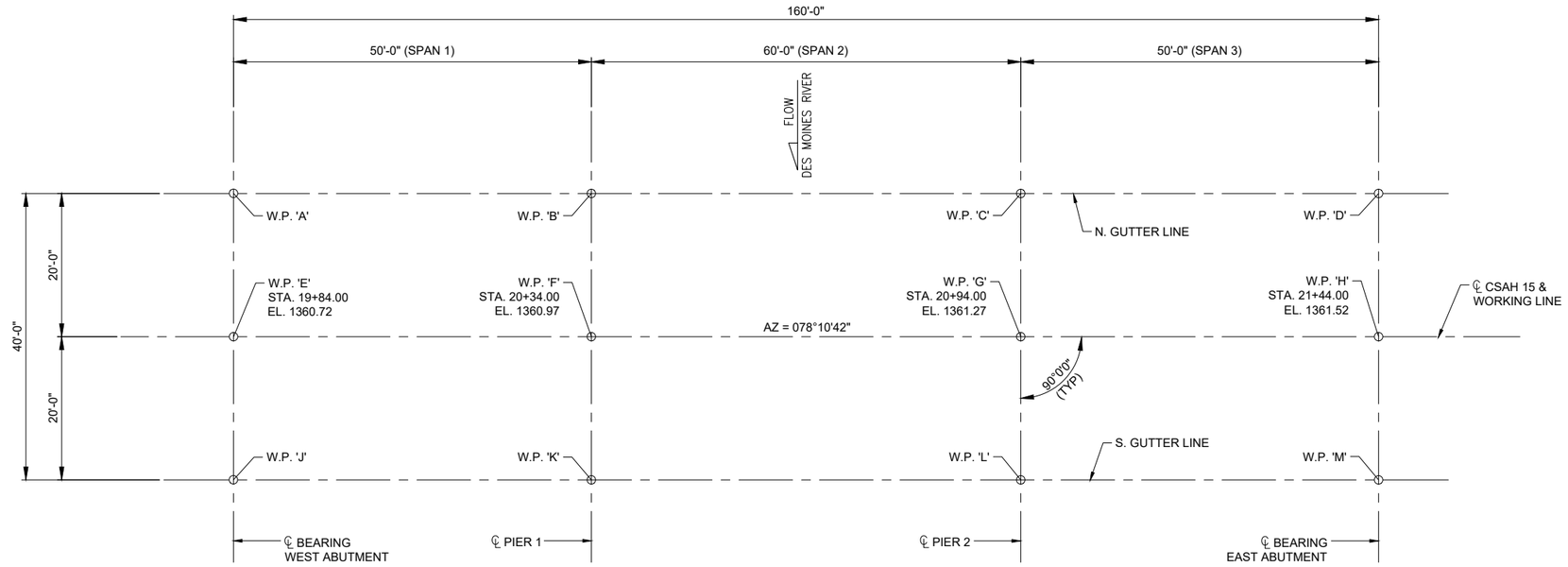
COTTONWOOD COUNTY, MINNESOTA

TRANSVERSE SECTION & QUANTITIES

BRIDGE NO. 17538

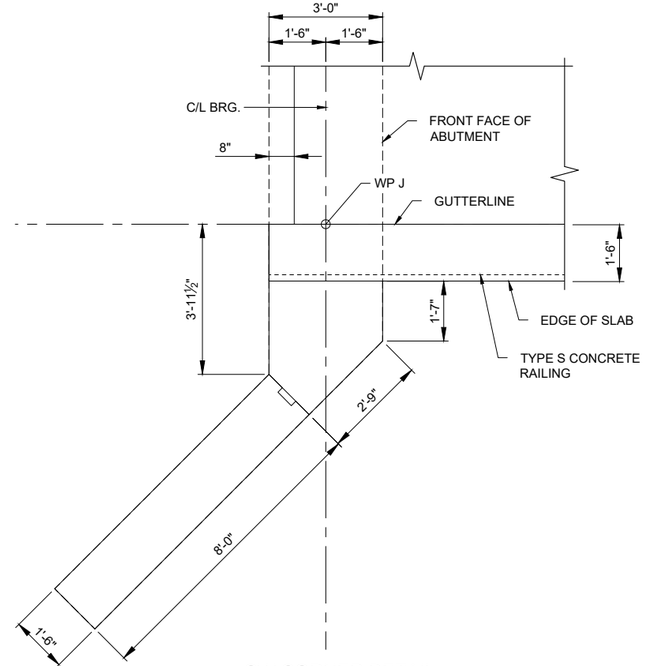
B2

of B31



WORKING POINTS LAYOUT

	DIMENSIONS BETWEEN WORKING POINTS (IN FEET)															ELEVATIONS			
POINT	X-COORDINATE	Y-COORDINATE	STATION	A	B	C	D	E	F	G	H	J	K	L	M	TOP OF SLAB	SLAB TO BRIDGE SEAT	BRIDGE SEAT	POINT
A	435,471.096	115,482.405	19+84.00		50.00			20.00	53.85				64.03	117.05		1360.32	2.17	1358.15	A
B	435,520.036	115,492.649	20+34.00			60.00			20.00	63.25				72.11	117.05	1360.57	3.25	1357.32	B
C	435,578.763	115,504.940	20+94.00				50.00			20.00	53.85				64.03	1360.87	3.25	1357.62	C
D	435,627.703	115,515.184	21+44.00								20.00	164.92				1361.12	2.17	1358.95	D
E	435,475.194	115,462.830	19+84.00						50.00			20.00	53.85			1360.72	2.17	1358.55	E
F	435,524.133	115,473.073	20+34.00							60.00			20.00	63.25		1360.97	3.25	1357.72	F
G	435,582.861	115,485.365	20+94.00								50.00			20.00	53.85	1361.27	3.25	1358.02	G
H	435,631.800	115,495.608	21+44.00												20.00	1361.52	2.17	1359.35	H
J	435,479.291	115,443.254	19+84.00										50.00			1360.32	2.17	1358.15	J
K	435,528.230	115,453.497	20+34.00											60.00		1360.57	3.25	1357.32	K
L	435,586.958	115,465.789	20+94.00												50.00	1360.87	3.25	1357.62	L
M	435,635.897	115,476.032	21+44.00													1361.12	2.17	1358.95	M



SW CORNER DETAIL
(SIMILAR AT ALL CORNERS)

Save: 7/12/2024 2:24 PM jasamuelson Plot: 8/23/2024 11:43 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-struct\dwg\Sheet\B3 BRIDGE LAYOUT.dwg

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	COTTO 165601	.			.		
Drawn By	JS	.			.		
Designed By	JT	.			.		
Checked By	NM	.			.		

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.

Joshua C. Tarbell

JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

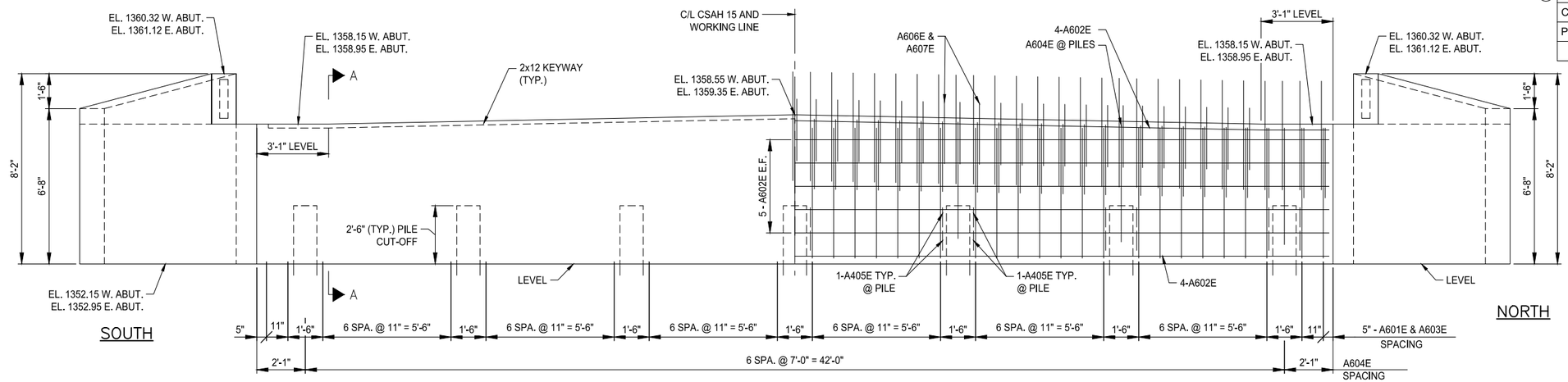
BRIDGE LAYOUT

BRIDGE NO. 17538

B3
of B31

SUMMARY OF QUANTITIES - BOTH ABUTMENTS

		QUANTITY	UNIT
	STRUCTURAL CONCRETE (3B52)	80	CU YD
	REINFORCEMENT BARS (EPOXY COATED)	10,900	POUND
(1)	STRUCTURE EXCAVATION	1	LUMP SUM
(4)	C-I-P CONCRETE PILING 12"	960	LIN FT
	C-I-P CONC TEST PILE 90 FT LONG 12"	2	EACH
	PILE POINTS 12"	14	EACH



WEST ABUTMENT ELEVATION

(1) BACKFILL BEHIND ABUTMENTS SHALL BE SELECT GRANULAR BORROW PER SPEC. 3149. SEE SURVEY SHEET FOR PLACEMENT LIMITS. APPROXIMATE QUANTITY FOR BOTH ABUTMENTS IS 940 CU. YD., INCLUDED IN PRICE BID FOR STRUCTURE EXCAVATION. BACKFILL DENSITY SHALL BE ATTAINED BY THE QUALITY COMPACTION METHOD IN ACCORDANCE WITH SPEC. 2105.3F2.

(2) OPTIONAL CONSTRUCTION JOINT LOCATIONS. CONTRACTOR SHALL PROVIDE 2x6 KEYWAY AND MEMBRANE WATERPROOFING SYSTEM PER Mn/DOT SPEC. 2481 APPLIED TO THE BACK FACE OF THE ABUTMENT. USE OF THE OPTIONAL CONSTRUCTION JOINT IS AT THE CONTRACTORS DISCRETION WITH THE APPROVAL OF THE ENGINEER IN THE FIELD. THE VERTICAL CONSTRUCTION JOINT BETWEEN END DIAPHRAGM AND WINGWALL MAY BE ELIMINATED IF THE HORIZONTAL CONSTRUCTION JOINT IS USED.

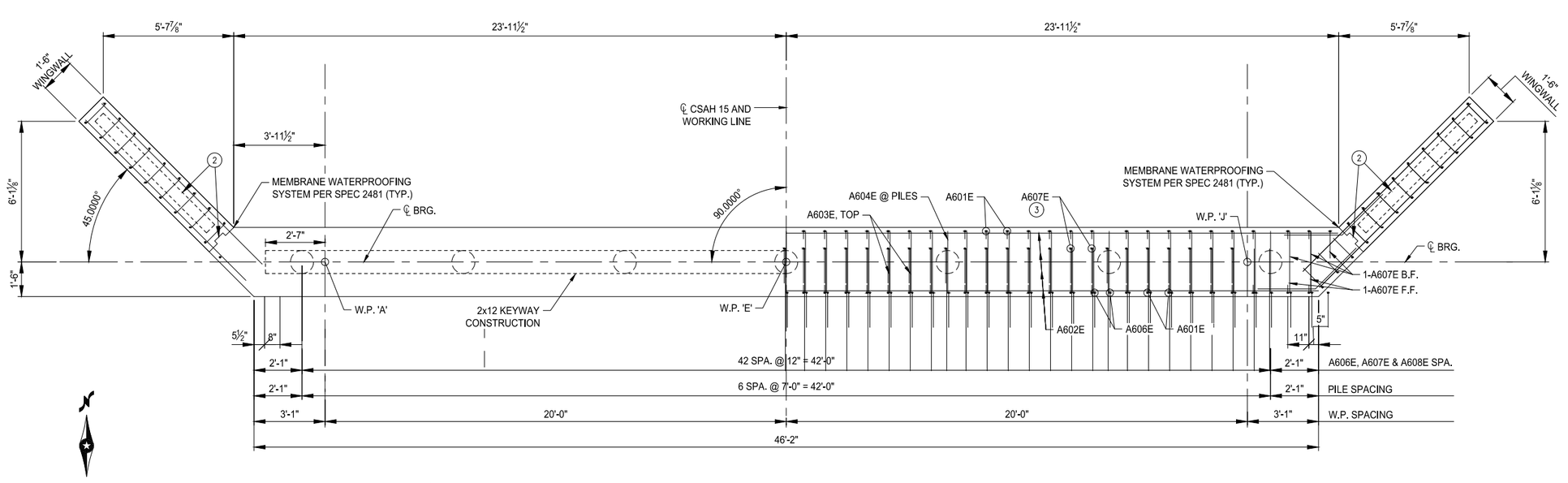
(3) PLACE A607E PARALLEL TO C/L ROADWAY AND TIE TO TOP MAT.

(4) DOES NOT INCLUDE TEST PILES.

BOTH ABUTMENTS
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD + EARTH PRESSURE	63.3
FACTORED LIVE LOAD	40.2
* FACTORED DESIGN LOAD	103.5

* BASED ON STRENGTH I LOAD COMBINATION.



SOUTH

WEST ABUTMENT PLAN

NORTH

BOTH ABUTMENTS
REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES, R_n–TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MnDOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{W_{hh}}{1000}} \times \log(\frac{10}{S})$	0.50	206.9
PDA	0.65	159.1

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

1 – CIP CONCRETE TEST PILE 90 FT. LONG 12" (1 AT EAST ABUTMENT)
1 – CIP CONCRETE TEST PILE 90 FT. LONG 12" (1 AT WEST ABUTMENT)
6 – CIP CONCRETE PILING 12" (EAST ABUTMENT) EST. LENGTH 80 FT. EA.
6 – CIP CONCRETE PILING 12" (WEST ABUTMENT) EST. LENGTH 80 FT. EA.

14 – CIP CONCRETE PILING 12" REQ'D FOR BOTH ABUTMENTS (7 EA. ABUTMENT)

GENERAL PILE NOTES:

ALL ABUTMENT PILES ARE TO HAVE A NOMINAL DIAMETER OF 12" AND NOMINAL WALL THICKNESS OF 5/16".

ALL ABUTMENT PILES SHALL HAVE PILE POINTS, SEE SPECIAL PROVISIONS.

SEE BRIDGE SURVEY PLAN & PROFILE SHEET FOR TEST PILE LOCATION.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

SEE NEXT SHEET FOR SECTION A–A.

SEH Project	COTTO 165601
Drawn By	JS
Designed By	JT
Checked By	NM

Rev.#	Revision Issue Description	Date
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Rev.#	Revision Issue Description	Date
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SEH

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Joshua C. Tarbell

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DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

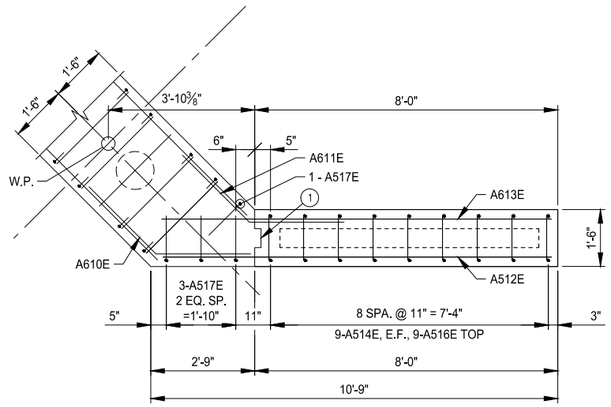
COTTONWOOD COUNTY, MINNESOTA

ABUTMENT DETAILS

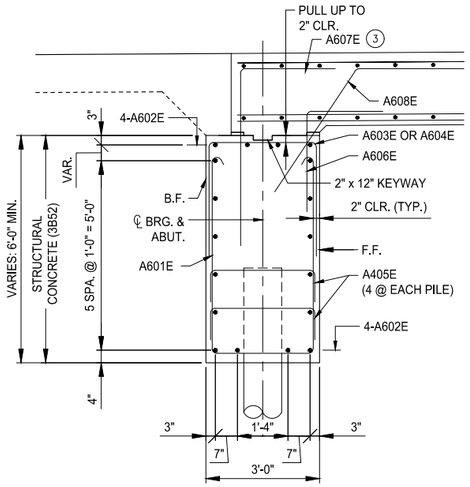
BRIDGE NO. 17538

B4 of B31

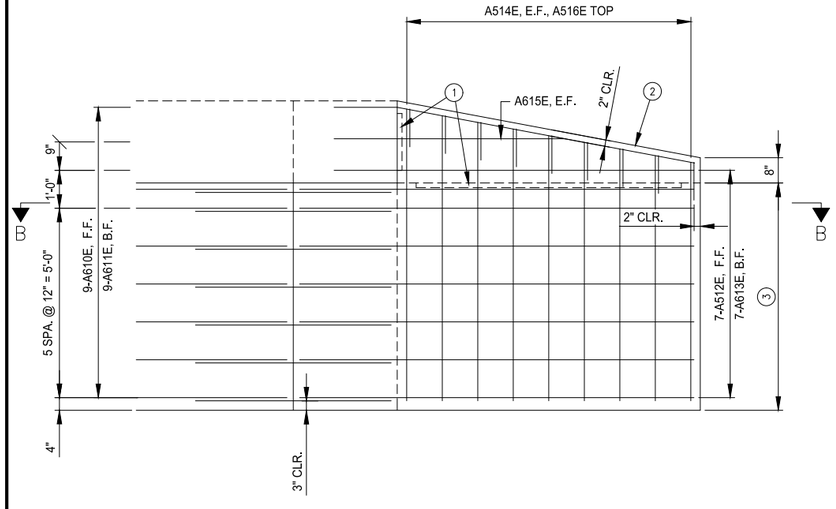
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SECTION B–B



TYPICAL SECTION A–A



TYPICAL WINGWALL ELEVATION

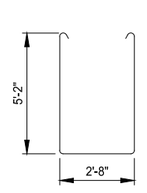
NOTES:
E.F. DENOTES EACH FACE
F.F. DENOTES FRONT FACE
B.F. DENOTES BACK FACE
E.E. DENOTES EACH END

BILL OF REINFORCEMENT - BOTH ABUTMENTS					
BAR	NO.	LENGTH	SHAPE	SIZE	UNIT
A601E	88	14' - 4"	BENT	6	STEM VERTICAL
A602E	36	46' - 2"	STRT	6	STEM HORIZONTAL
A603E	88	8' - 8"	BENT	6	STEM VERTICAL TOP
A604E	14	14' - 4"	BENT	6	STEM VERTICAL TOP @ PILES
A405E	56	4' - 4"	BENT	4	TIE @ PILES
A606E	86	4' - 8"	BENT	6	STEM DOWEL, F.F.
A607E	106	7' - 2"	BENT	6	STEM DOWEL, B.F.
A608E	86	6' - 10"	BENT	6	STEM DOWEL, F.F.
A610E	36	5' - 0"	BENT	6	STEM - CORNER, F.F.
A611E	36	7' - 8"	BENT	6	STEM - CORNER, B.F.
A512E	28	10' - 6"	STRT	5	WING - HORIZONTAL, F.F.
A613E	28	10' - 6"	STRT	6	WING - HORIZONTAL, B.F.
A514E	8 SERIES OF 9	6'-4" TO 7'-9"	STRT	5	WING - VERTICAL, E.F.
A615E	8	10' - 7"	BENT	6	WING DOWEL, HORIZONTAL TOP, E.F.
A516E	36	2' - 9"	BENT	5	WING TIE, TOP
A517E	16	8' - 10"	BENT	5	STEM - VERTICAL CORNER

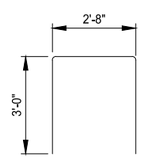
(1) OPTIONAL CONSTRUCTION JOINT LOCATIONS. CONTRACTOR SHALL PROVIDE 2x6 KEYWAY AND MEMBRANE WATERPROOFING SYSTEM PER Mn/DOT SPEC. 2481 APPLIED TO THE BACK FACE OF THE ABUTMENT. USE OF THE OPTIONAL CONSTRUCTION JOINTS IS AT THE CONTRACTORS DISCRETION WITH THE APPROVAL OF THE ENGINEER IN THE FIELD.

(2) STRUCTURAL CONCRETE (3B52) OR BRIDGE SLAB CONCRETE (3YHPC-M). VOLUME WILL BE INCLUDED IN QUANTITY PAID FOR "STRUCTURAL CONCRETE 3B52" REGARDLESS OF MIX USED.

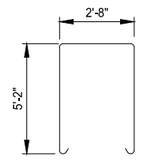
(3) STRUCTURAL CONCRETE (3B52).



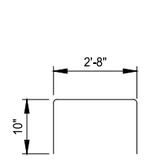
A601E



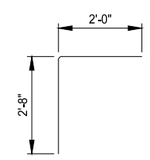
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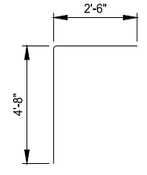
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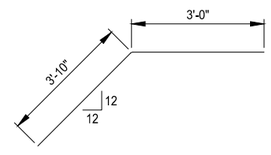
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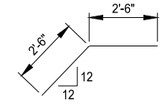
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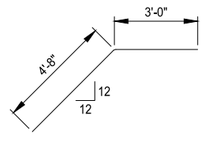
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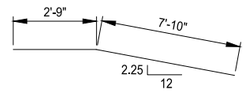
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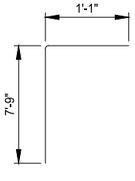
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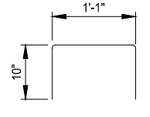
A611E



A615E



A517E



A516E

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.

JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

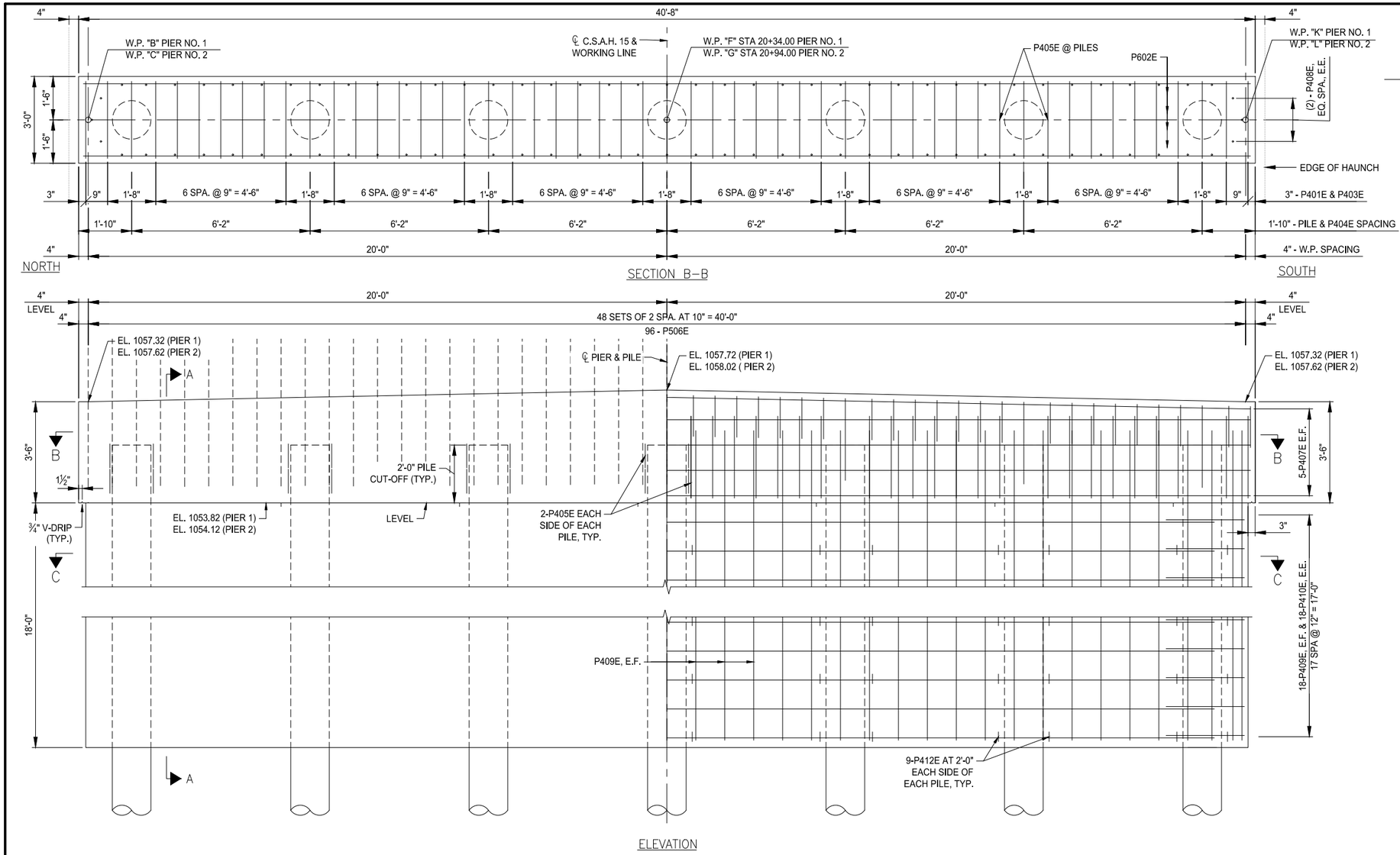
S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

ABUTMENT DETAILS

BRIDGE NO. 17538



① PLACE P506E PARALLEL TO ℄ ROADWAY & SPACE BETWEEN SLAB BARS.

E.F. DENOTES EACH FACE
F.F. DENOTES FRONT FACE
B.F. DENOTES BACK FACE
E.E. DENOTES EACH END

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SEH Project	COTTO 165601	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	
Drawn By	JS	.			.			
Designed By	JT	.			.			
Checked By	NM	.			.			

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Joshua C. Tarbell
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S.A.P. 017-615-024
CSAH 15 BRIDGE REPLACEMENT
COTTONWOOD COUNTY, MINNESOTA

PIER DETAILS

BRIDGE NO. 17538

B6 of B31

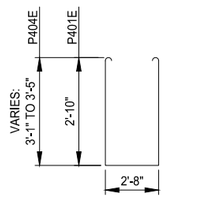
SUMMARY OF QUANTITIES - BOTH PIERS

	QUANTITY	UNIT
STRUCTURAL CONCRETE (3B52)	183	CU YD
REINFORCEMENT BARS (EPOXY COATED)	7,670	POUND
C-I-P CONCRETE PILING 16"	960	LIN FT
C-I-P CONC TEST PILE 90 FT LONG 16"	2	EACH
PILE POINTS 16"	14	EACH
FOUNDATION PREP PILE BENT PIERS	1	LUMP SUM

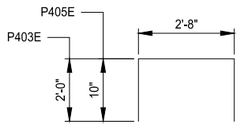
BILL OF REINFORCEMENT - BOTH PIERS

	BAR	NO.	LENGTH			SHAPE	SIZE	UNIT
	P401E	92	9'	-	1"	BENT	4	CAP VERTICAL
	P602E	28	40'	-	4"	STRT	6	CAP HORIZONTAL
	P403E	92	6'	-	8"	BENT	4	CAP VERTICAL TOP
	P404E	2 SERIES OF 7	9'-7"	TO	10'-3"	BENT	4	CAP VERTICAL TOP @ PILES
	P405E	56	4'	-	4"	BENT	4	TIE @ PILES
	P506E	192	9'	-	1"	BENT	5	CAP DOWEL
(1)	P407E	20	4'	-	7"	BENT	4	CAP ENDS, HORIZ.
	P408E	8	5'	-	0"	BENT	4	CAP ENDS, VERT.
	P409E	72	37'	-	8"	STRT	4	WALL - HORIZONTAL
	P410E	72	9'	-	2"	BENT	4	WALL ENDS - HORIZONTAL
	P411E	168	20'	-	0"	STRT	4	WALL - VERTICAL
	P412E	252	3'	-	4"	BENT	4	WALL - TIES

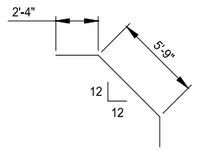
(1) PLACE P506E PARALLEL TO ℄ ROADWAY & SPACE BETWEEN SLAB BARS.



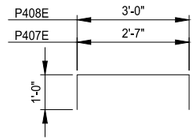
P401E & P404E



P403E & P405E



P506E



P407E & P408E

BOTH PIERS COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	115.1
FACTORED LIVE LOAD	49.3
* FACTORED DESIGN LOAD	164.4

* BASED ON STRENGTH I LOAD COMBINATION.

BOTH PIERS REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES, R_n–TONS/PILE		
FIELD CONTROL METHOD	Φ_{dyn}	* R_n
MnDOT PILE FORMULA 2012 (MPF12) $R_n = 20\sqrt{\frac{Wxh}{1000}} \times \log(\frac{10}{S})$	0.50	328.7
PDA	0.65	252.8

* R_n = (FACTORED DESIGN LOAD) / Φ_{dyn}

2 – C.I.P. CONC. TEST PILE 90 FT. LONG 16" (1 EA. PIER)
12 – C.I.P. CONC. PILING 16" (6 EA. PIER) EST. LENGTH 80 FT. EA.
14 – C.I.P. CONC. PILING 16" REQ'D FOR BOTH PIERS (7 EA. PIER)

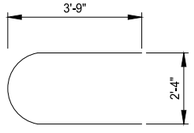
GENERAL PILE NOTES:
ALL PIER PILES ARE TO HAVE A NOMINAL DIAMETER OF 16" AND NOMINAL WALL THICKNESS OF ⅜".

ALL PIER PILES SHALL HAVE PILE POINTS, SEE SPECIAL PROVISIONS.

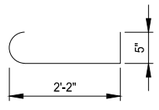
SEE SURVEY SHEET FOR TEST PILE LOCATION.

FOR PILE SPLICE DETAILS SEE DETAIL B201.

MINIMUM PILE PENETRATION ELEVATION = 1310.



P410E



P412E

Save: 8/15/2024 11:45 AM jasamuelson Plot: 8/23/2024 11:45 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-struct\dwg\Sheet\B7 PIER DETAILS.dwg

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	COTTO 165601	.			.		
Drawn By	JS	.			.		
Designed By	JT	.			.		
Checked By	NM	.			.		

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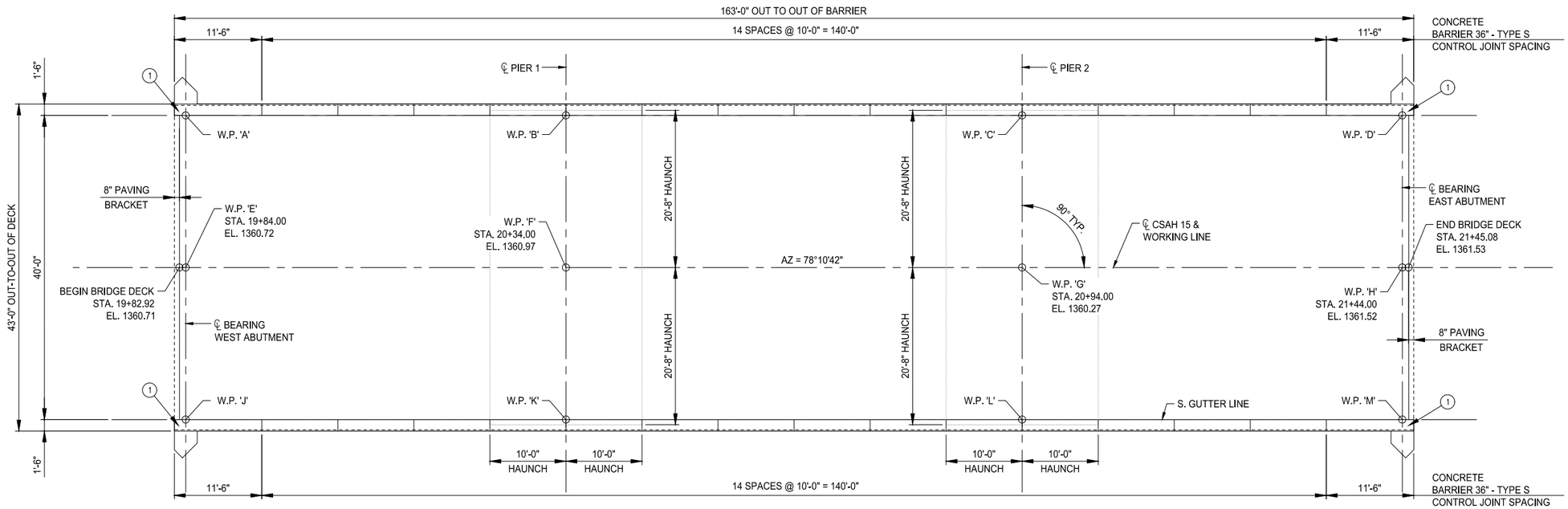
CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

PIER DETAILS

BRIDGE NO. 17538

B7
of B31



① BARRIER DOWELS AT PAVING NOTCH EXTEND INTO ABUTMENT BARREL - SEE SHEET B12.

DECK PLAN

Save: 7/12/2024 2:08 PM jasamuelson Plot: 8/23/2024 11:45 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-struct\dwg\Sheet\B8 SUPERSTRUCTURE DETAILS.dwg

SEH Project	COTTO 165601	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	
Drawn By	JS	.			.			
Designed By	JT	.			.			
Checked By	NM	.			.			

SEH

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.

JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

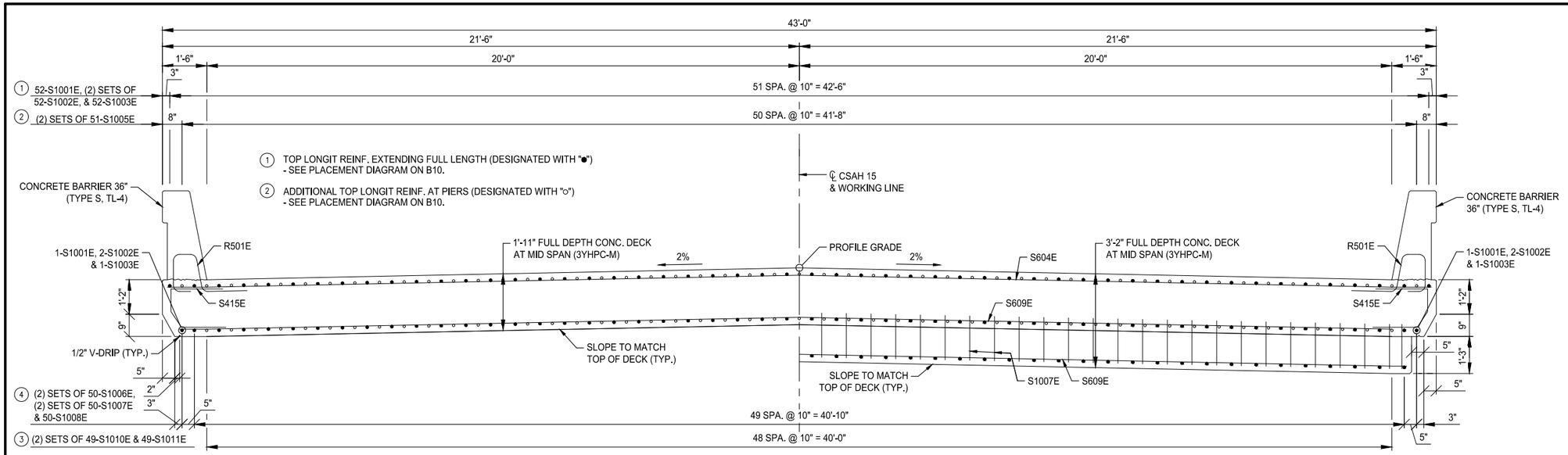
COTTONWOOD COUNTY, MINNESOTA

SUPERSTRUCTURE DETAILS

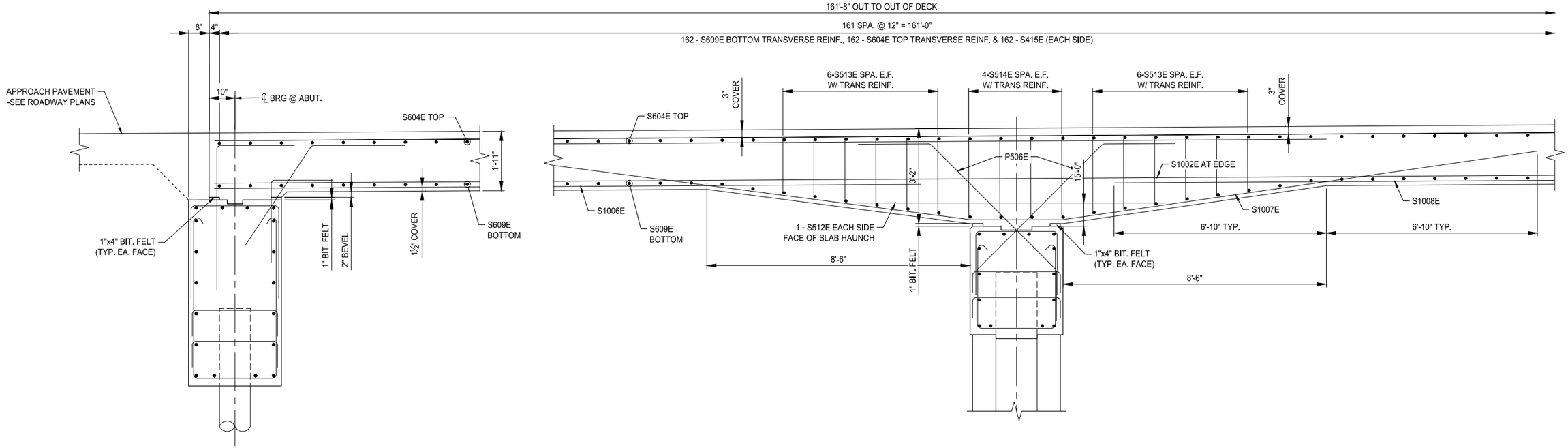
BRIDGE NO. 17538

B8

of B31



TRANSVERSE SECTION



PARTIAL LONGITUDINAL SECTION

Save: 7/18/2024 12:14 PM jasamuelson Plot: 8/23/2024 11:45 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-struct\dwg\Sheet\B9 SUPERSTRUCTURE DETAILS.dwg

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	COTTO 165601	.			.		
Drawn By	JS	.			.		
Designed By	JT	.			.		
Checked By	NM	.			.		

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JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

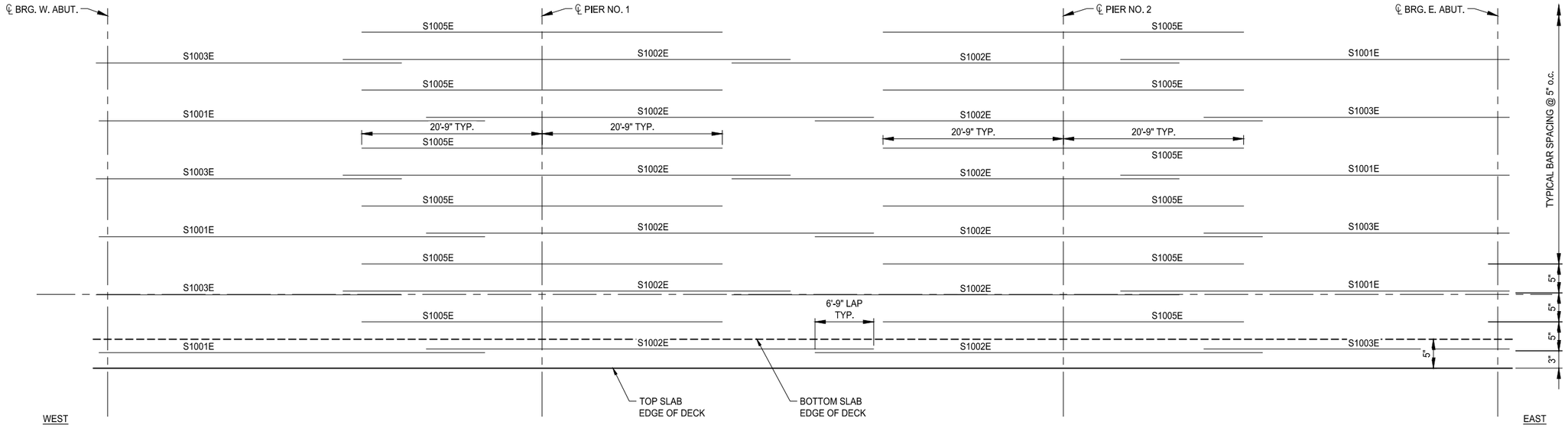
COTTONWOOD COUNTY, MINNESOTA

SUPERSTRUCTURE DETAILS

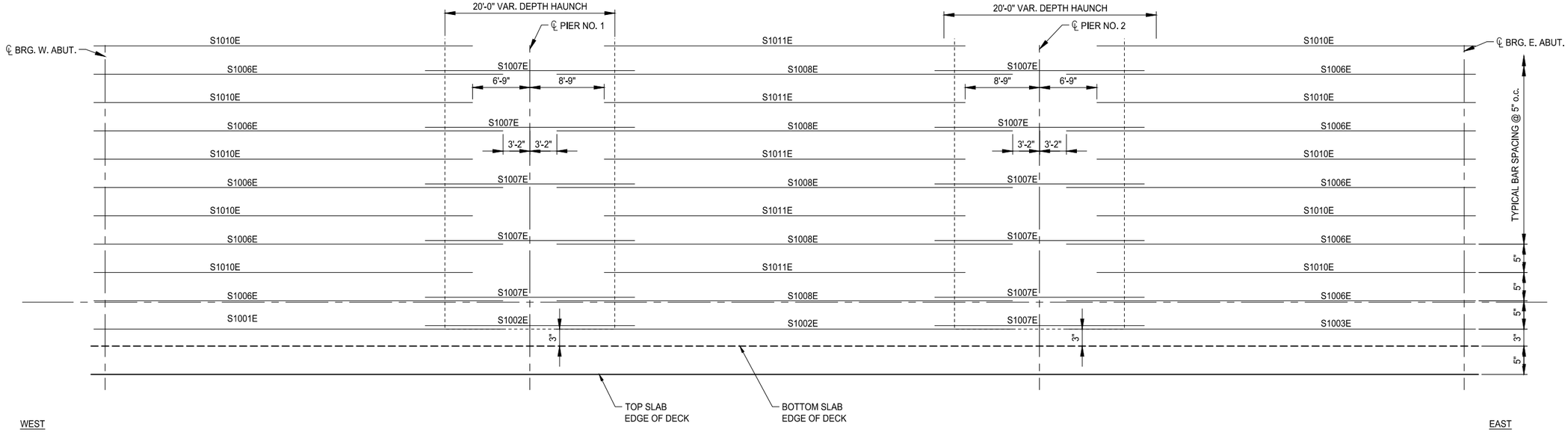
BRIDGE NO. 17538

B9

of B31



TOP LONGITUDINAL REINFORCEMENT



BOTTOM LONGITUDINAL REINFORCEMENT

SEH Project	COTTO 165601	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH	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.
Drawn By	JS	.			.				Joshua C. Tarbell
Designed By	JT	.			.				JOSHUA C. TARBELL, PE
Checked By	NM	.			.				DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

SUPERSTRUCTURE DETAILS

BRIDGE NO. 17538

B10 of B31

Save: 7/12/2024 2:21 PM jasamuelson Plot: 8/23/2024 11:45 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-struct\dwg\Sheet\B10 SUPERSTRUCTURE DETAILS.dwg

LIST OF PREFORMED JOINT FILLERS

	UNIT	QUANTITY	LOCATION
BIT. FELT 1"x4"	LIN FT	225	ABUTMENTS
BIT. FELT 1"x4"	LIN FT	219	PIERS

SUMMARY OF QUANTITIES - SUPERSTRUCTURE

		QUANTITY	UNIT
(1)	BRIDGE SLAB CONCRETE (3YHPC-M)	6,999	SQ FT
(2)	TYPE S (TL-4) 36" BARRIER CONCRETE (3S52)	326	LIN FT
(3)	REINFORCEMENT BARS (EPOXY COATED)	162,940	POUND
(4)	BRIDGE NAMEPLATE (BRIDGE DETAIL B101)	1	EACH
(4)	MEMBRANE WATERPROOFING SYSTEM	120	LIN FT
	PREFORMED JOINT FILLER (SEE LIST)		

(1) BRIDGE SLAB CONCRETE (3YHPC-M) VOLUME IS APPROXIMATELY 550 CU. YDS. INCLUDES END BLOCK.

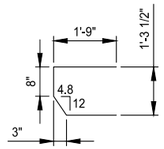
(2) TYPE "S" BARRIER CONCRETE (3S52) VOLUME IS APPROXIMATELY 41 CU. YDS.

(3) INCLUDES SLAB, SIDEWALK AND RAILING REINFORCEMENT.
SLAB REINFORCEMENT BARS: 154,950 LBS
RAILING REINFORCEMENT BARS: 7,990 LBS

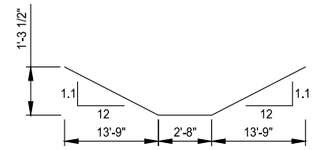
(4) PAYMENT SHALL BE CONSIDERED INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE.

BILL OF REINFORCEMENT - SUPERSTRUCTURE

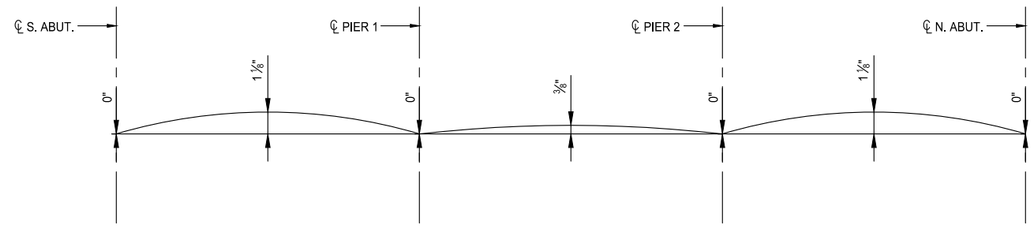
BAR	NO.	LENGTH	SHAPE	SIZE	UNIT
S1001E	54	46' - 7"	STRT	10	TOP LONGITUDINAL
S1002E	108	49' - 6"	STRT	10	TOP LONGITUDINAL
S1003E	54	36' - 0"	STRT	10	TOP LONGITUDINAL
S604E	162	42' - 8"	STRT	6	TOP TRANSVERSE
S1005E	104	41' - 6"	STRT	10	TOP LONGITUDINAL SUPPLEMENTAL
S1006E	100	47' - 6"	STRT	10	BOT. LONGITUDINAL
S1007E	100	30' - 4"	BENT	10	BOT. LONGITUDINAL
S1008E	50	53' - 8"	STRT	10	BOT. LONGITUDINAL
S609E	162	41' - 0"	STRT	6	BOT. TRANSVERSE
S1010E	98	43' - 11"	STRT	10	BOT. LONGITUDINAL SUPPLEMENTAL
S1011E	49	42' - 6"	STRT	10	BOT. LONGITUDINAL SUPPLEMENTAL
S512E	4	13' - 0"	STRT	5	SLAB HAUNCH LONGITUDINAL
S513E	8 SERIES OF 5	2'-4" TO 3'-2"	BENT	5	SLAB HAUNCH VERTICAL
S514E	16	3' - 4"	BENT	5	SLAB HAUNCH VERTICAL
S415E	324	5' - 0"	BENT	4	TRANSVERSE AT EDGES



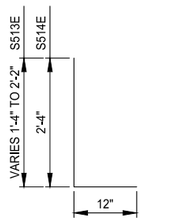
S415E



S1007E



CAMBER DIAGRAM



S513E & S514E

CAMBER DIAGRAM NOTES:

BASE LINE IN CAMBER DIAGRAM IS THE PROFILE GRADE LINE FROM ℄ ABUTMENT TO ℄ ABUTMENT AT BOTTOM OF SLAB.

CAMBER DIAGRAM SHOWS THE CAMBER REQUIRED FOR THE ANTICIPATED DEAD LOAD DEFLECTION.

THE CAMBER SHOWN DOES NOT INCLUDE ANY ALLOWANCE FOR DEFLECTION OF FORMS.

Save: 7/12/2024 2:29 PM jasamuelson Plot: 8/23/2024 11:46 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-struct\dwg\Sheet\B11 SUPERSTRUCTURE DETAILS.dwg

SEH Project	COTTO 165601	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	
Drawn By	JS	.			.			
Designed By	JT	.			.			
Checked By	NM	.			.			

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JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

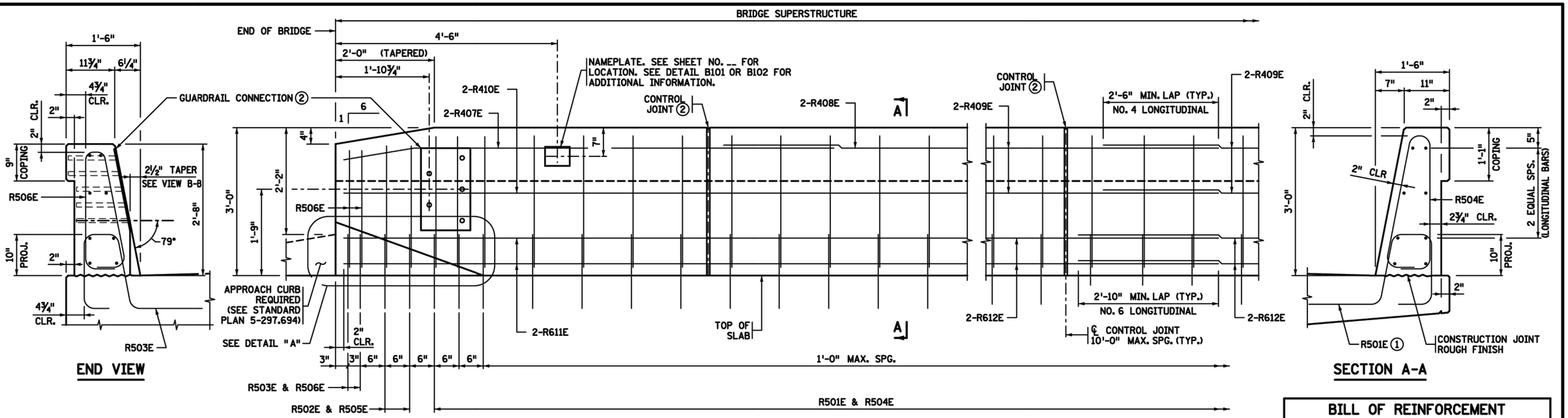
CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

SUPERSTRUCTURE DETAILS

BRIDGE NO. 17538

B11 of B31



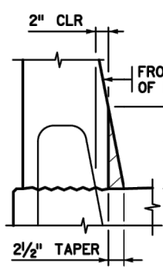
INSIDE ELEVATION OF BARRIER

CONTROL JOINT ②

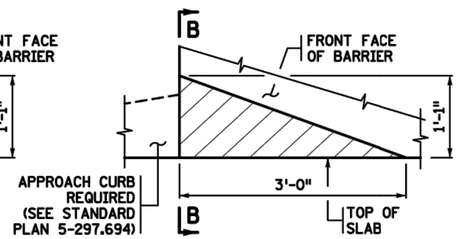
BARRIER MEETS MASH TL-4 REQUIREMENTS ON BRIDGE DECK

BILL OF REINFORCEMENT FOR BARRIER

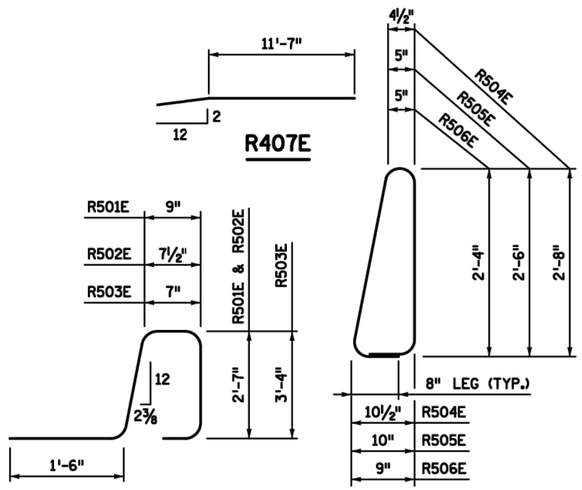
BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	324	7'-11"		BARRIER DOWEL
R502E	8	7'-10"		BARRIER DOWEL
R503E	8	9'-3"		BARRIER DOWEL
R504E	324	7'-1"		BARRIER VERTICAL
R505E	8	6'-9"		BARRIER VERTICAL
R506E	8	6'-5"		BARRIER VERTICAL
R407E	8	13'-0"	——	BARRIER LONGIT.
R408E	8	34'-8"	——	BARRIER LONGIT.
R409E	20	40'-0"	——	BARRIER LONGIT.
R410E	8	26'-4"	——	BARRIER LONGIT.
R611E	16	27'-0"	——	BARRIER LONGIT.
R612E	24	40'-0"	——	BARRIER LONGIT.



VIEW B-B
AT BARRIER END



DETAIL "A"
ELEVATION VIEW



GENERAL NOTES

FOR SLIPFORM CONSTRUCTION, TIE 100% OF THE REINFORCEMENT BAR INTERSECTIONS IN THE BARRIER.

CONCRETE BARRIER = 496 LBS./FT. (0.123 CU. YDS./FT.)

FINISH ALL EDGES OF BARRIER WITH ½" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

SPACE CONTROL JOINTS AT 10 FT. MAXIMUM. REFER TO SUPERSTRUCTURE SHEET FOR SPECIFIC SPACING INFORMATION.

NAMEPLATE IS INCIDENTAL.

BARRIER QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

① PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT IN DECK.

② REFER TO "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET INCLUDED IN THIS PLAN SET FOR GUARDRAIL CONNECTION DETAILS AND CONTROL JOINT DETAILS.

REVISION: DECEMBER 21, 2022

APPROVED: MAY 10, 2017

STATE BRIDGE ENGINEER

REV. NO.	DATE	REVISION DESCRIPTION	BY
1			

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CERTIFIED BY Joshua C. Tarbell 5/17/2024
LICENSED PROFESSIONAL ENGINEER — DATE

NAME: JOSHUA C. TARBELL LIC. NO. 17538

TITLE: CONCRETE BARRIER 36" (TYPE S, TL-4)
INTEGRAL OR SEMI-INTEGRAL ABUTMENT, (WITHOUT CONCRETE WEARING COURSE) NO APPROACH PANEL

DES: JCT DR: NCM
CHK: NCK CHK: JCT

APPROVED:

SHEET NO. B12 OF B31 SHEETS

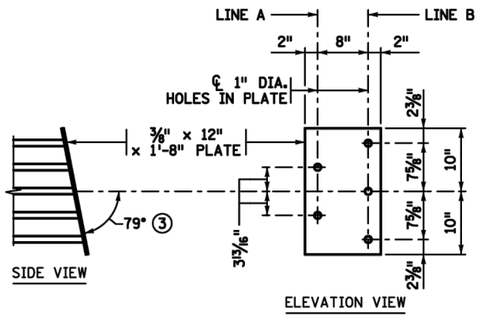
CODE 58

FIG. 5-397.138(E)

BRIDGE NO. 17538

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GUARDRAIL CONNECTION



NOTES

GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL IN ACCORDANCE WITH SPEC. 3306.

GUARDRAIL CONNECTION IS INCIDENTAL.

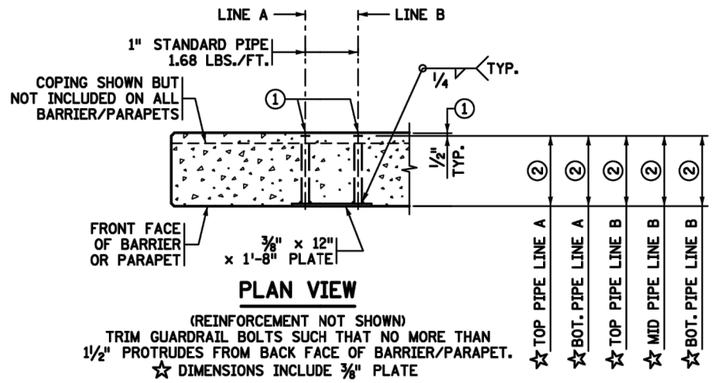
① REMOVE CONCRETE FROM PIPE ENDS AFTER SLIPFORMING OR FORM REMOVAL.

② SEE PIPE LENGTH TABLE.

③ 90° FOR VERTICAL PARAPETS.

GUARDRAIL CONNECTION DETAIL

GALVANIZE PLATE AND PIPES AFTER FABRICATION IN ACCORDANCE WITH SPEC. 3394

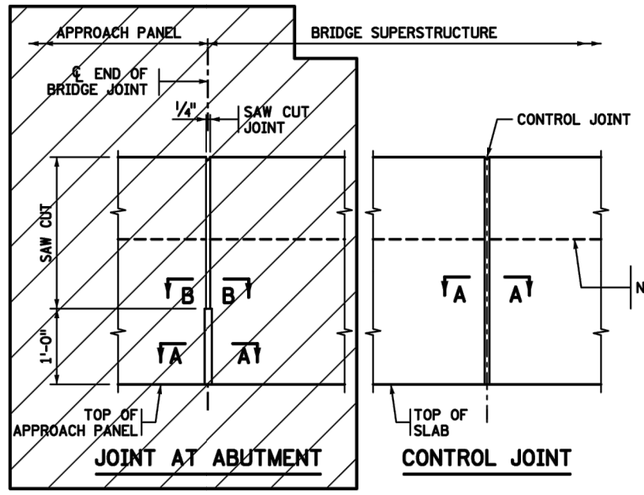


(REINFORCEMENT NOT SHOWN)
TRIM GUARDRAIL BOLTS SUCH THAT NO MORE THAN 1½" PROTRUDES FROM BACK FACE OF BARRIER/PARAPET.
☆ DIMENSIONS INCLUDE ⅜" PLATE

PIPE LENGTH TABLE

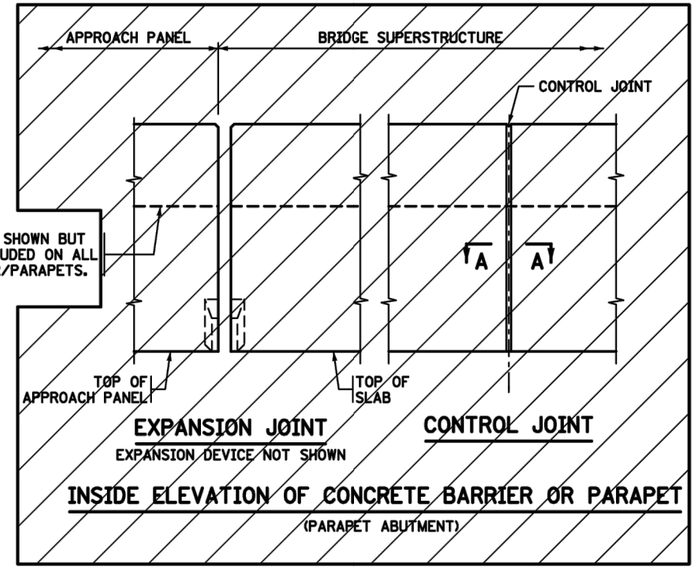
BARRIER/PARAPET TYPE STD FIGURE 5-397.	PIPE LENGTH					WEIGHT
	TOP PIPE LINE A	BOT. PIPE LINE A	TOP PIPE LINE B	MID. PIPE LINE B	BOT. PIPE LINE B	
36" SINGLE SLOPE						
138(A),(B),(E), 139(A),(B)	1'-0¾"	1'-0¼"	1'-0"	11½"	1'-1"	34 LBS.
~~138(C),(D), 139(C),(D)~~	~~10¾"~~	~~1'-0¼"~~	~~10"~~	~~11½"~~	~~1'-1"~~	~~34 LBS.~~
42" SINGLE SLOPE						
~~140(A),(B), 141(A),(B)~~	~~1'-0¾"~~	~~1'-2¼"~~	~~1'-0"~~	~~1'-1½"~~	~~1'-3"~~	~~35 LBS.~~
~~140(C),(D), 141(C),(D)~~	~~10¾"~~	~~1'-0¼"~~	~~10"~~	~~11½"~~	~~1'-1"~~	~~34 LBS.~~
54" SINGLE SLOPE						
~~142(A),(B), 143(A),(B)~~	~~1'-0¾"~~	~~1'-2¼"~~	~~1'-0"~~	~~1'-1½"~~	~~1'-3"~~	~~35 LBS.~~
~~142(C),(D), 143(C),(D)~~	~~10¾"~~	~~1'-0¼"~~	~~10"~~	~~11½"~~	~~1'-1"~~	~~34 LBS.~~
TYPE P-1 PARAPET						
~~166(B),(D),(F),(H)~~	~~1'-2½"~~	~~1'-0½"~~	~~1'-2½"~~	~~1'-2½"~~	~~1'-0½"~~	~~34 LBS.~~
TYPE P-2 PARAPET						
~~157(A)-(H)~~	~~1'-3½"~~	~~1'-3½"~~	~~1'-3½"~~	~~1'-3½"~~	~~1'-3½"~~	~~37 LBS.~~
TYPE P-4 PARAPET						
~~173(A),(B),(C),(D)~~	~~1'-5½"~~	~~1'-3½"~~	~~1'-5½"~~	~~1'-3½"~~	~~1'-3½"~~	~~37 LBS.~~

CONTROL JOINT AND ABUTMENT JOINT



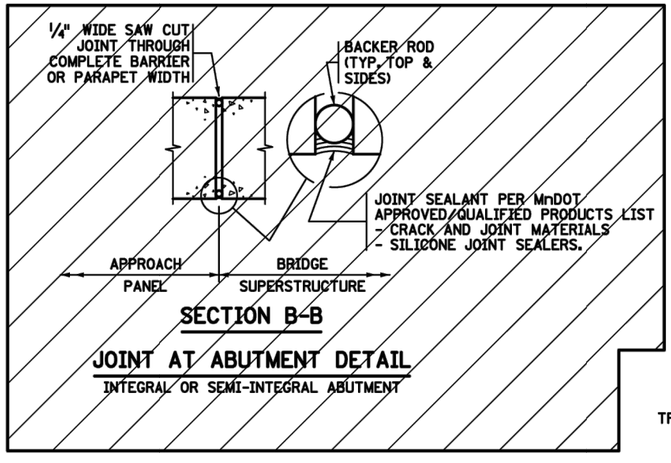
INSIDE ELEVATION OF CONCRETE BARRIER OR PARAPET

(INTEGRAL OR SEMI-INTEGRAL ABUTMENT)



INSIDE ELEVATION OF CONCRETE BARRIER OR PARAPET

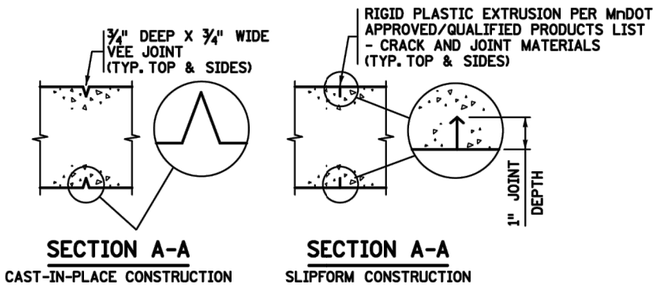
(PARAPET ABUTMENT)



SECTION B-B

JOINT AT ABUTMENT DETAIL

INTEGRAL OR SEMI-INTEGRAL ABUTMENT



SECTION A-A

CAST-IN-PLACE CONSTRUCTION

SECTION A-A

SLIPFORM CONSTRUCTION

CONTROL JOINT DETAILS

FOR SLIPFORM CONSTRUCTION: IMMEDIATELY AFTER CONCRETE IS PLACED AND WHILE IT IS STILL WET, CREATE A ONE INCH STRAIGHT GROOVE USING A TROWEL. INSERT RIGID PLASTIC EXTRUSION INTO GROOVE TO A DEPTH ⅛" BELOW THE SURFACE; FINISH OVER GROOVE COMPLETELY HIDING THE EXTRUSION.

REVISION: NOVEMBER 29, 2023

APPROVED: DECEMBER 21, 2022
STATE BRIDGE ENGINEER

REV. NO.	DATE	REVISION DESCRIPTION	BY
1			

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CERTIFIED BY Joshua C. Tarbell 5/17/2024
LICENSED PROFESSIONAL ENGINEER DATE

NAME: JOSHUA C. TARBELL LIC. NO. 46878

TITLE: MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS

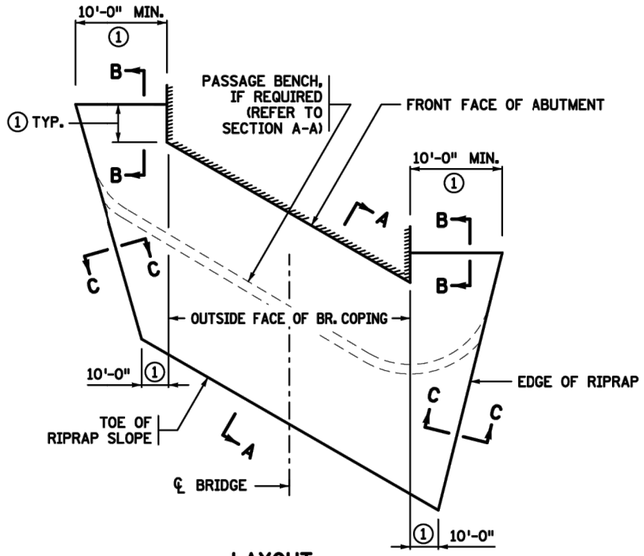
DES:	JCT	DR:	NCM	APPROVED:
CHK:	NCK	CHK:	JCT	

SHEET NO. B13 OF B31 SHEETS

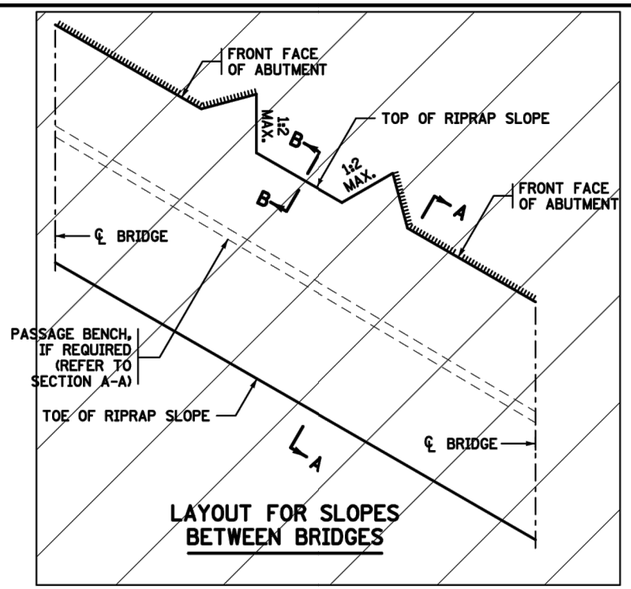
FIG. 5-397.174

BRIDGE NO. 17538

Save: 7/12/2024 2:31 PM jasamuelson Plot: 8/23/2024 11:46 AM x:\AE\C\COTTO\16560115-final-dsgn\51-drawings\20-structdwg\Sheet\B13 CONCRETE BARRIER DETAILS.dwg



LAYOUT



LAYOUT FOR SLOPES BETWEEN BRIDGES

GENERAL NOTES

GEOTEXTILE TYPE 7 IN ACCORDANCE WITH SPEC. 3733, BY THE SQ. YD.

RIPRAP IN ACCORDANCE WITH SPEC. 2511, RANDOM RIPRAP CLASS V BY THE CU. YD.

SLOPES ARE EXPRESSED AS A RATIO OF VERTICAL DISTANCE : HORIZONTAL DISTANCE.

SLOPE BOTTOM OF TRENCHES 1:20 PARALLEL TO ABUTMENT FACE TO PROVIDE POSITIVE DRAINAGE.

(1) SEE PLAN SHEET NO. B19 FOR DIMENSIONS, AND FOR ELEVATIONS OF RIPRAP TOE AND PASSAGE BENCHES.

(2) PLACE RIPRAP STARTING FROM THE BOTTOM OF THE SLOPE. DO NOT PLACE RIPRAP IN TRENCH UNTIL RIPRAP HAS BEEN PLACED ON ENTIRE SLOPE BENEATH THE TRENCH.

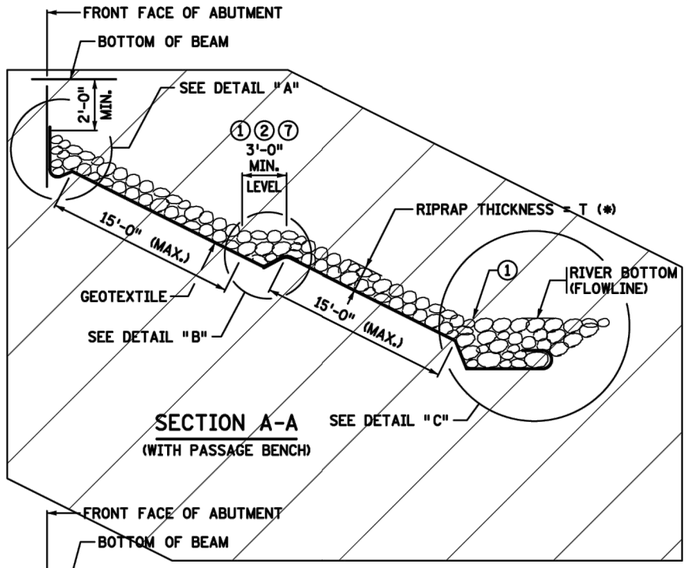
(3) OVERLAP GEOTEXTILE 2'-0" MINIMUM.

(4) WRAP GEOTEXTILE AROUND TOE, OVERHANG BETWEEN 1ST AND 2ND LAYER OF RIPRAP. USE HAND PLACEMENT OR SIMILAR METHODS TO ESTABLISH PROFILE AND PLACE FABRIC IF UNDER WATER.

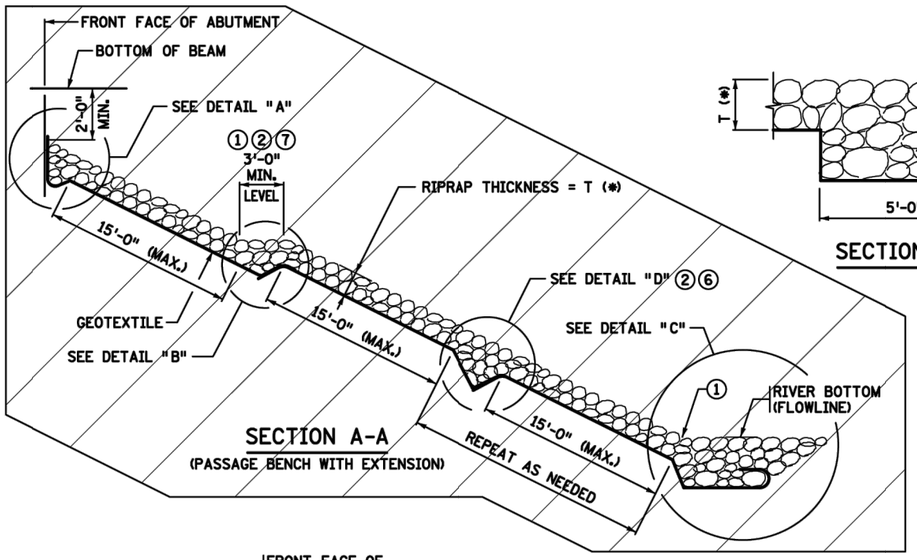
(5) BURY EDGES OF GEOTEXTILE TO DIRECT WATER FLOW OVER THE FABRIC WITHOUT UNDERMINING.

(6) OMIT THE TRENCH SHOWN IN DETAIL "D" AND THE 15'-0" MAXIMUM SPACING BETWEEN TRENCHES FOR SLOPES 1:3 OR FLATTER.

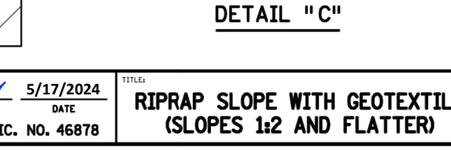
(7) SURFACE BENCHES WITH COARSE FILTER AGGREGATE IN ACCORDANCE WITH SPEC. 3149.2H (INCLUDED IN PRICE BID FOR RANDOM RIPRAP). TIE BENCHES TO NATURAL GROUNDLINES OUTSIDE OF BRIDGE.



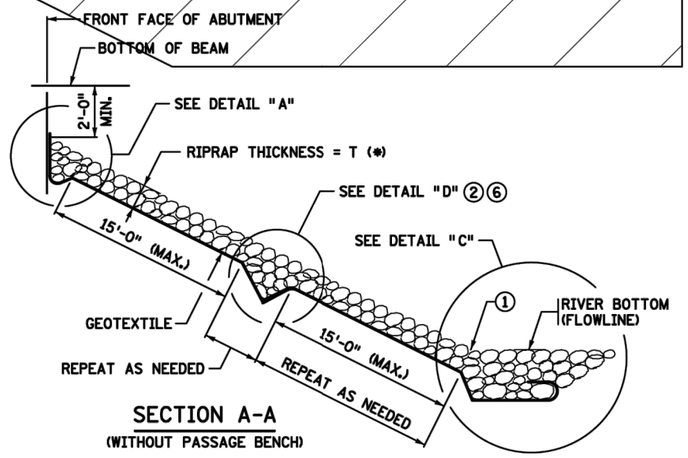
SECTION A-A
(WITH PASSAGE BENCH)



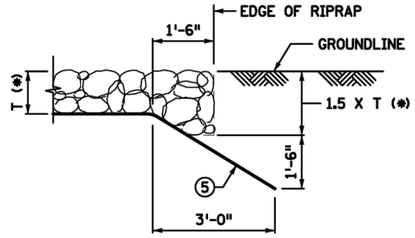
SECTION A-A
(PASSAGE BENCH WITH EXTENSION)



SECTION C-C

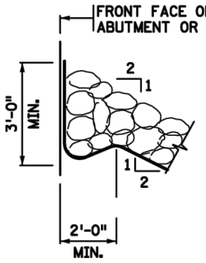


SECTION A-A
(WITHOUT PASSAGE BENCH)

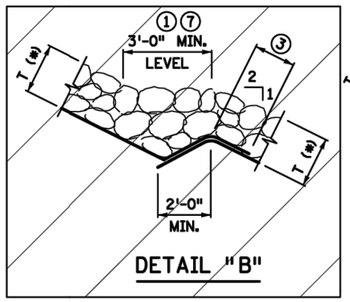


SECTION B-B

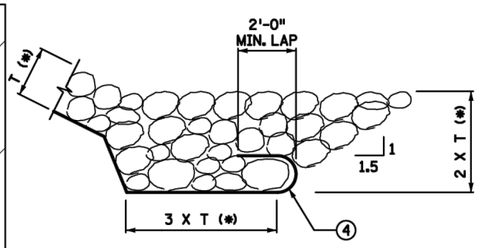
* DIMENSION T
~~CLASS III = 1'-6"~~
~~CLASS IV = 2'-0"~~
CLASS V = 2'-6"



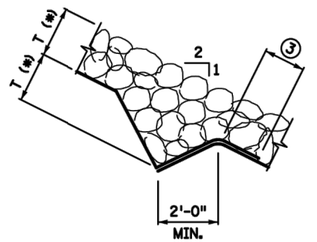
DETAIL "A"



DETAIL "B"



DETAIL "C"



DETAIL "D"

REVISED: DECEMBER 21, 2022
APPROVED: MAY 24, 2011 — NANCY DAUBENBERGER, 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: Joshua C. Tarbell — LICENSED PROFESSIONAL ENGINEER — 5/17/2024 DATE

NAME: JOSHUA C. TARBELL LIC. NO. 46878

TITLE: RIPRAP SLOPE WITH GEOTEXTILE (SLOPES 1:2 AND FLATTER)

DES: JCT	DR: NCM
CHK: BAW	CHK: JCT

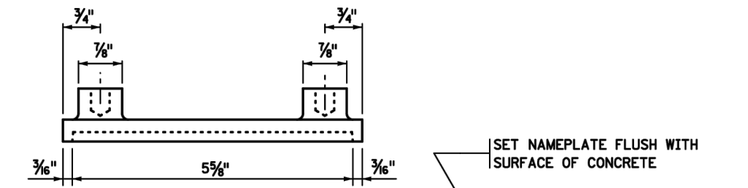
APPROVED:

FIG. 5-397.309

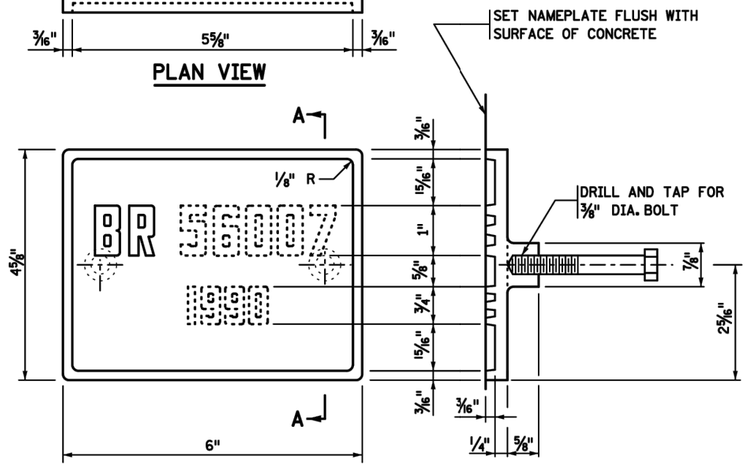
SHEET NO. B14 OF B31 SHEETS

BRIDGE NO. 17538

Save: 7/19/2024 9:13 AM nmclaughlin Plot: 8/23/2024 11:46 AM x:\AE\c\OTTO\116560115-final-dsgn\51-drawings\20-structure\dwg\Sheet\B14 RIPRAP DETAILS.dwg



PLAN VIEW



ELEVATION

SECTION A-A

THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

BRIDGE 17538

YEAR 2025



NUMBERS FOR NAMEPLATE

NOTES:

MATERIAL SHALL COMPLY WITH SPEC. 3327.

LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.

DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".

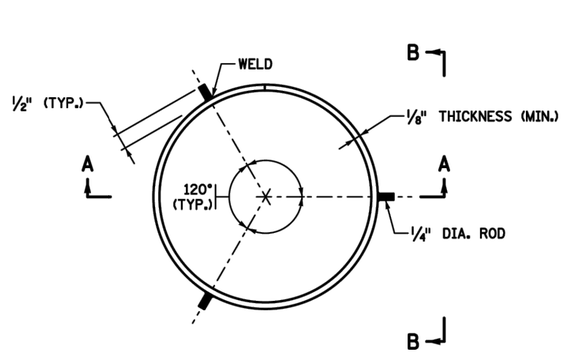
HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS ⅜" DIA. x 3" LONG WITH EACH PLATE.

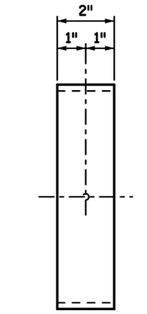
ALL DIMENSIONS FOR ¾" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002 Daniel D Thorson STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **BRIDGE NAMEPLATE** (FOR NEW BRIDGES)	REVISION 09-11-2014	DETAIL NO. **B101**



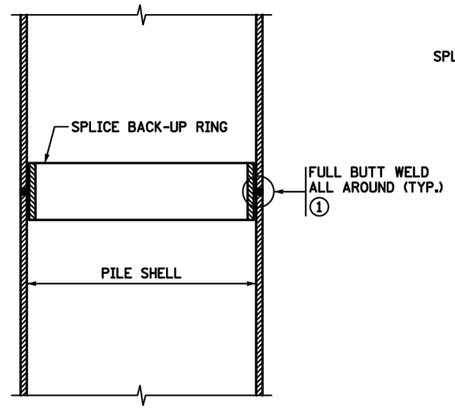
PLAN VIEW - SPLICE BACK-UP RING

PILE NOT SHOWN

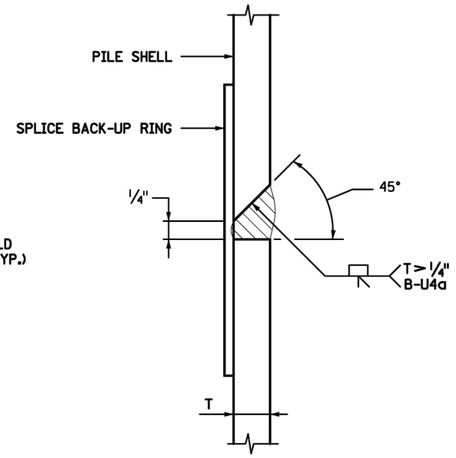


SECTION B-B

PILE NOT SHOWN



SECTION A-A



DETAIL "A" ①

NOTES:

APPROVED COMMERCIAL PILE SPLICE BACK-UP RING MAY BE USED IN LIEU OF THE TYPE DETAILED, PROVIDED THAT ¼" ROOT IS MAINTAINED. BACK-UP RING SHALL HAVE A TIGHT FIT.

WELDING ELECTRODES SHALL BE CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011.

ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.

WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN 0° F. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 32° F., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 70° F. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.

① FOR PILE SHELL THICKNESSES GREATER THAN ¼", USE A B-U4a WELD CONFIGURATION. SEE DETAIL "A".

APPROVED: NOVEMBER 22, 2002 Daniel D Thorson STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **PILE SPLICE** (CAST-IN-PLACE CONCRETE PILES)	REVISION: 11-06-2013	DETAIL NO. **B201**

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.

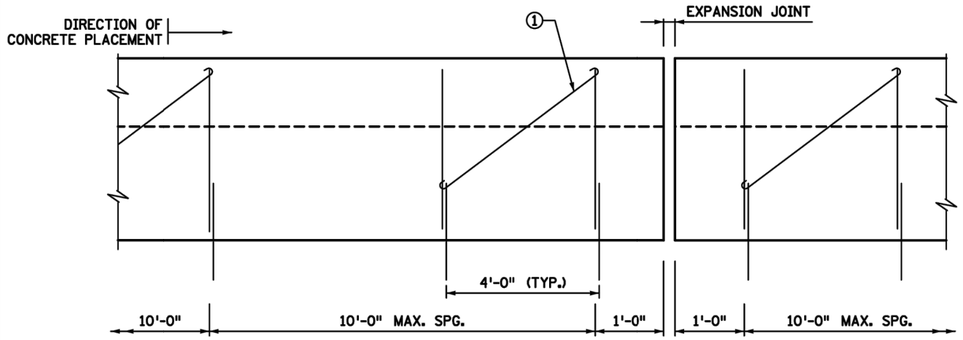
JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

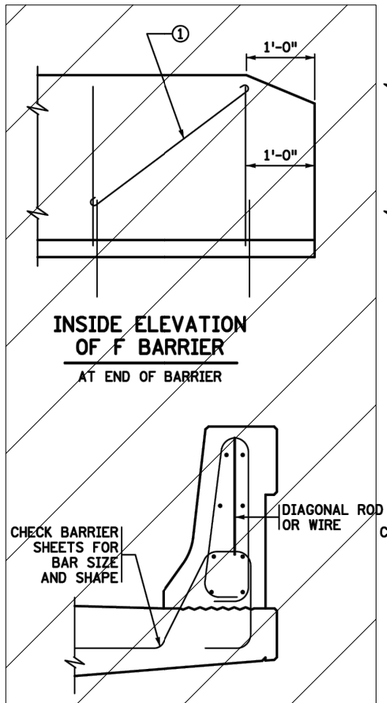
CSAH 15 BRIDGE REPLACEMENT
COTTONWOOD COUNTY, MINNESOTA

B-DETAILS

BRIDGE NO. 17538



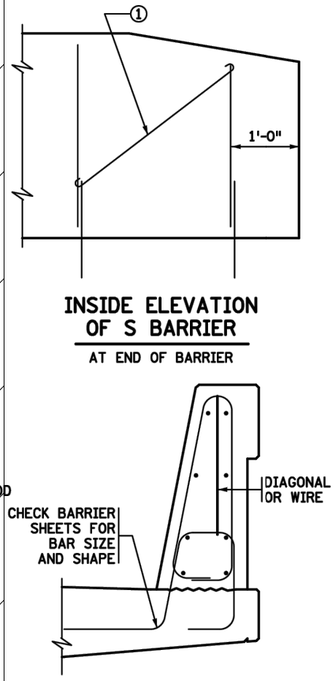
INSIDE ELEVATION OF BARRIER OR PARAPET



INSIDE ELEVATION OF F BARRIER

AT END OF BARRIER

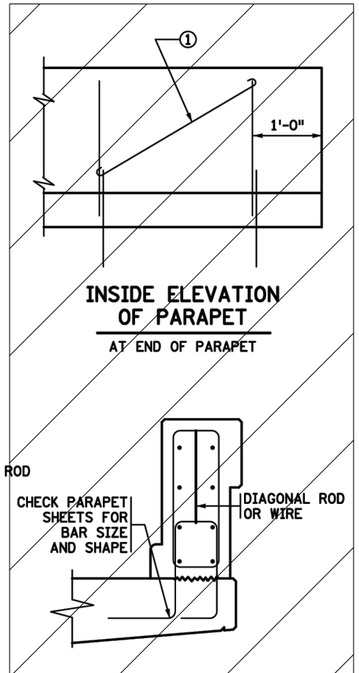
F BARRIER SECTION



INSIDE ELEVATION OF S BARRIER

AT END OF BARRIER

S BARRIER SECTION



INSIDE ELEVATION OF PARAPET

AT END OF PARAPET

PARAPET SECTION

NOTES:

FOR ADDITIONAL DIMENSIONS, DETAILS, REINFORCEMENT, NOTES, AND CONTROL JOINT SPACING SEE BARRIER OR PARAPET SHEET.

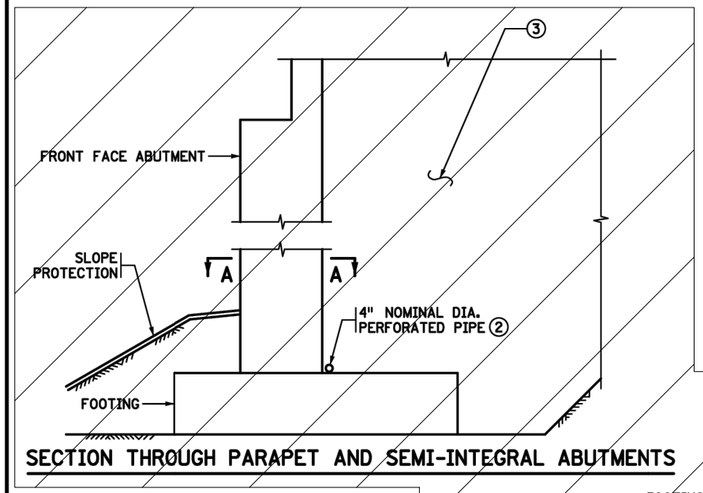
PAY QUANTITIES WILL NOT BE ADJUSTED AS A RESULT OF SELECTING SLIPFORM ALTERNATE.

USE A SIMILAR METHOD FOR TALLER BARRIERS OR MODIFIED VERSIONS OF THIS BARRIER.

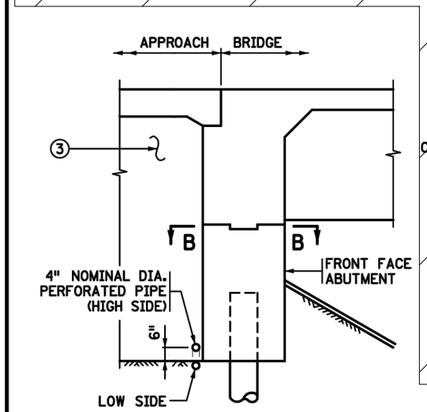
TIE 100% OF THE REINFORCEMENT BAR INTERSECTIONS IN THE BARRIER OR PARAPET.

① 3/16" TO 1/4" SOFT STEEL ROD, 10 GAGE WIRE OR APPROVED EQUAL. GALVANIZE IN ACCORDANCE WITH SPEC. 3392 OR ASTM A641 REGULAR COATING.

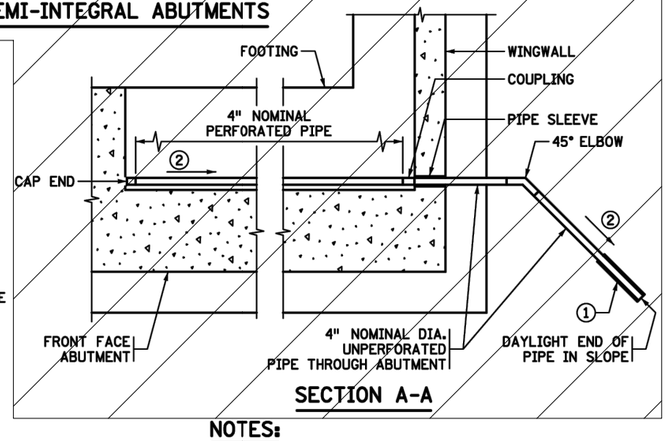
APPROVED: AUGUST 24, 2016 Kevin Western STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **CONCRETE BARRIER OR PARAPET** (SLIPFORM ALTERNATE)	REVISION 04-09-2020 04-21-2021 02-08-2022	DETAIL NO. **B830**



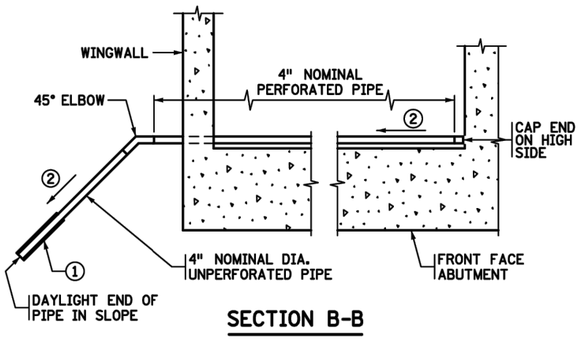
SECTION THROUGH PARAPET AND SEMI-INTEGRAL ABUTMENTS



SECTION THROUGH INTEGRAL ABUTMENT



SECTION A-A



SECTION B-B

NOTES:

PAYMENT WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR "DRAINAGE SYSTEM TYPE (B910)". INCLUDES BUT IS NOT LIMITED TO 4" DIAMETER PERFORATED AND UNPERFORATED PIPE, ELBOWS, END CAPS, COUPLINGS, SLEEVES AND PRECAST CONCRETE HEADWALLS.

ALL PIPE TO COMPLY WITH SPEC. 3245.2(5).

SLEEVE PERFORATED PIPE WITH GEOTEXTILE KNIT SOCK IN ACCORDANCE WITH SPEC. 3733, TYPE 1. ATTACH TO PIPE IN ACCORDANCE WITH SPEC. 2502.3B.

① USE PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS. AT CONTRACTOR'S OPTION, TIE APPROACH PANEL DRAINAGE SYSTEM AND ABUTMENT DRAINAGE SYSTEM INTO A SINGLE PRECAST CONCRETE HEADWALL OR INTO A CATCH BASIN AS LONG AS A MINIMUM OF 2% POSITIVE SLOPE CAN BE MAINTAINED.

② 1/8" PER FT. MINIMUM SLOPE.

③ REFER TO GRADING PLANS FOR ABUTMENT BACKFILL REQUIREMENTS.

APPROVED: JANUARY 13, 2015 Nancy Daubenberger STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **DRAINAGE SYSTEM**	REVISION 12-02-2015 02-22-2018 11-08-2018 12-21-2022	DETAIL NO. **B910**

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.

JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

B-DETAILS

BRIDGE NO. 17538

WEARING COURSE

☐ LOW SLUMP

☐ OTHER _____
TYPE OR MANUFACTURER

EXPANSION JOINTS

JOINT MANUFACTURER

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR JOINT USED

GLAND MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SIZE OF GLAND _____

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR GLAND USED

ELASTOMERIC BEARING PADS

PAD MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SPECIAL SURFACE FINISH

PRODUCT NAME: _____ COLOR & TEXTURE: _____

FINISHING ROADWAY FACES OF BARRIER OR PARAPET

PRODUCT NAME: _____ COLOR & TEXTURE: _____

ANTI-GRAFFITI COATING

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRODUCT NAME: _____ LOCATION: _____

PAINT SYSTEM

MnDOT SPECIFICATION NUMBER _____
2478 OR 2479 OR OTHER

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRIME COAT _____
MnDOT MATERIAL SPECIFICATION NUMBER

INTERMEDIATE COAT _____
MnDOT MATERIAL SPECIFICATION NUMBER

FINISH COAT _____ _____
MnDOT MATERIAL SPECIFICATION NUMBER COLOR

PLAN QUALITY

RATE 1 (AGREE), 2 (NEUTRAL), OR 3 (DISAGREE, PLEASE COMMENT BELOW)

DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION. _____

BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS. _____

SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD. _____

(SB) SPECIAL PROVISIONS ADEQUATELY DESCRIBED SPECIAL WORK AND PAYMENT. _____

COMMENTS: _____

NUMBER OF BRIDGE SUPPLEMENTAL AGREEMENTS: _____ COST: $ _____

LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.

NOTIFICATION TO ADD, REMOVE, OR REHAB A STRUCTURE

PLEASE GO TO THE FOLLOWING WEBSITE AND COMPLETE THE FORM WHEN ADDING, REMOVING OR REHABILITATING A STRUCTURE:
(CONTACT THE BRIDGE INVENTORY MANAGEMENT UNIT AT 651-366-4557 IF YOU HAVE QUESTIONS)
- WHEN ADDING A NEW STRUCTURE - (SEND WHEN THE BRIDGE IS OPEN TO TRAFFIC)
http://www.dot.state.mn.us/bridge/new-structure.html
- WHEN REMOVING A STRUCTURE - (SEND WHEN THE BRIDGE IS NO LONGER IN SERVICE)
http://www.dot.state.mn.us/bridge/remove-structure.html
- WHEN REHABILITATING A STRUCTURE - (SEND WHEN THE REHABILITATION IS COMPLETE)
http://www.dot.state.mn.us/bridge/rehab-structure.html

CHANGE OF VERTICAL CLEARANCE

PLEASE GO TO THE FOLLOWING WEBSITE WHEN CHANGING THE VERTICAL CLEARANCE OF EXISTING BRIDGE STRUCTURE:
(CONTACT THE BRIDGE INVENTORY MANAGEMENT UNIT AT 651-366-4557 IF YOU HAVE QUESTIONS)
http://www.dot.state.mn.us/bridge/pdf/clearanceform.pdf

OTHER ITEMS ①

① UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES: YES ☐ NO ☐

REMOVE & PATCH QUANTITIES (SF)						CONCRETE SURFACE REPAIR (SF)	CLEAN & PAINT REINF. (SF)
TYPE A:	TYPE B:	TYPE C:	TYPE D:	TYPE E:	TYPE F:		

SUMMARY OF SIGNIFICANT AS-BUILT CHANGES

THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY:

_____ _____
INSPECTOR(S) SIGNATURE DATE

CHECKED BY: _____ _____
PROJECT ENGINEER/SUPERVISOR SIGNATURE DATE

WHEN BRIDGE IS OPEN TO TRAFFIC, COMPLETE THIS AS-BUILT BRIDGE DATA SHEET AND SUBMIT TO THE BRIDGE OFFICE VIA EMAIL AT: BridgeForms.dot@state.mn.us.

REVISION:

APPROVED: MAY 10, 2017
Kevin Western
STATE BRIDGE ENGINEER

AS-BUILT DETAILS
(AS NEEDED)

THIS FORM IS AVAILABLE IN AN ELECTRONIC FORMAT AT:
http://www.dot.state.mn.us/bridge/pdf/as-built-bridge-data-r0.xlsx

TITLE: AS-BUILT BRIDGE DATA

FIG. 5-397.900

APPROVED:

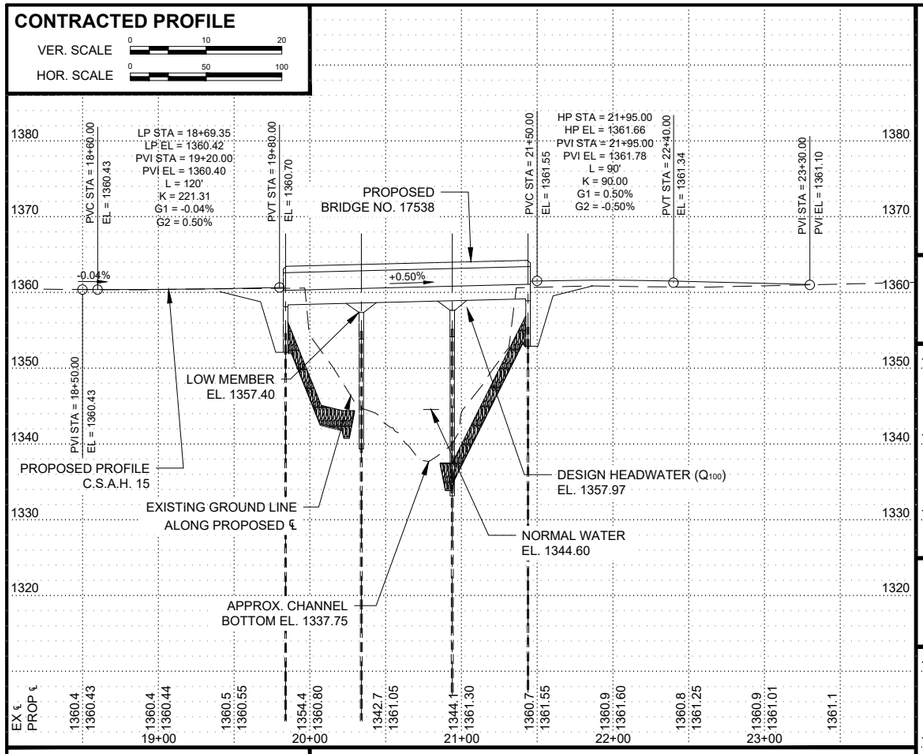
SHEET NO. B17 OF 10 SHEETS

BRIDGE NO. 17538

Save: 7/12/2024 2:41 PM jasamuelson Plot: 8/23/2024 11:47 AM x:\AE\C\COTTO\166601\5-final-dsgn\51-drawings\20-struct\dwg\Sheet\B17 AS-BUILT BRIDGE DATA.dwg

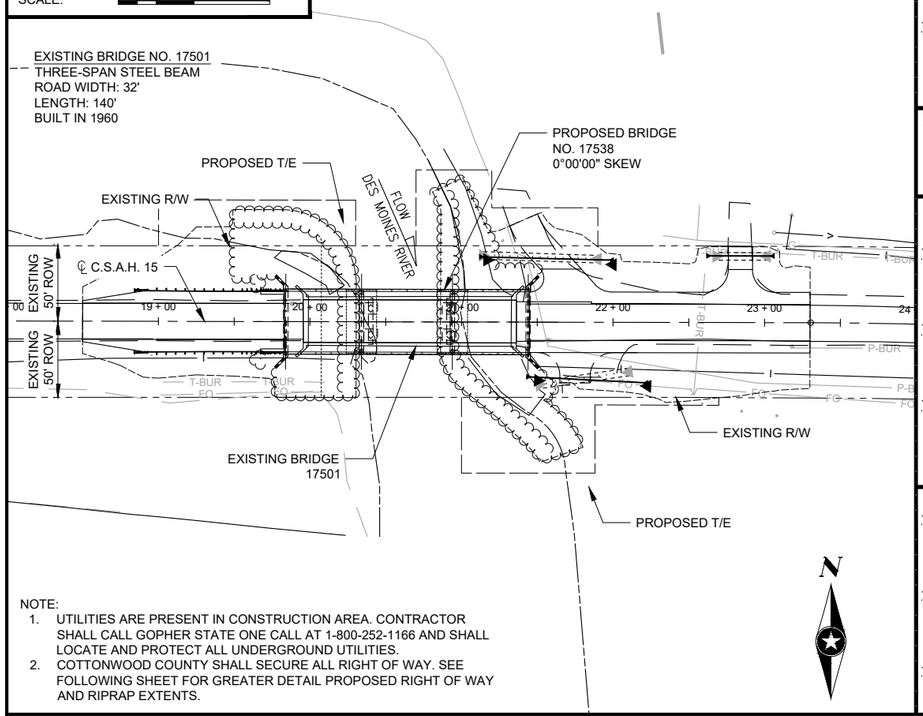
CONTRACTED PROFILE

VER. SCALE 0 10 20
HOR. SCALE 0 50 100



PLAT

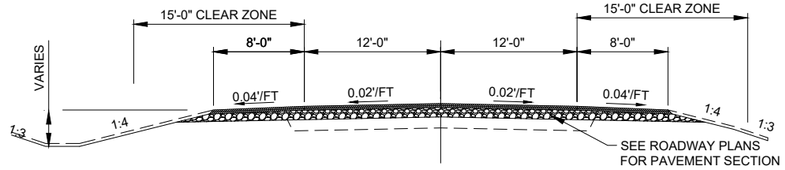
SCALE: 0 50 100



NOTE:
1. UTILITIES ARE PRESENT IN CONSTRUCTION AREA. CONTRACTOR SHALL CALL GOPHER STATE ONE CALL AT 1-800-252-1166 AND SHALL LOCATE AND PROTECT ALL UNDERGROUND UTILITIES.
2. COTTONWOOD COUNTY SHALL SECURE ALL RIGHT OF WAY. SEE FOLLOWING SHEET FOR GREATER DETAIL PROPOSED RIGHT OF WAY AND RIPRAP EXTENTS.

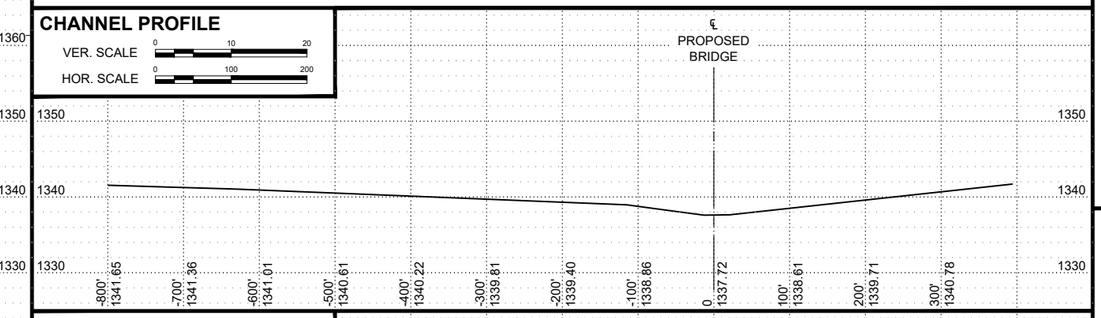
TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



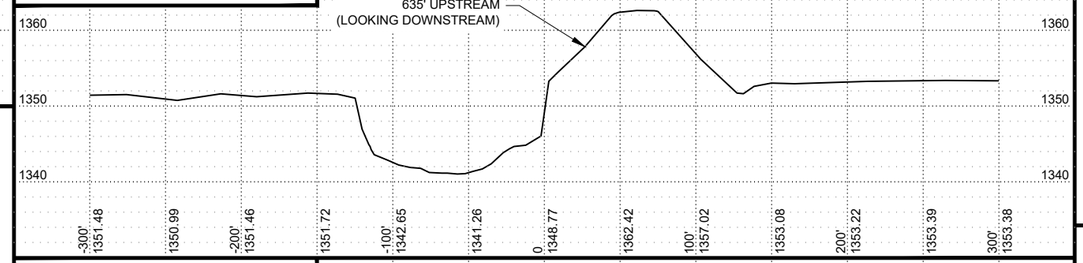
CHANNEL PROFILE

VER. SCALE 0 10 20
HOR. SCALE 0 100 200



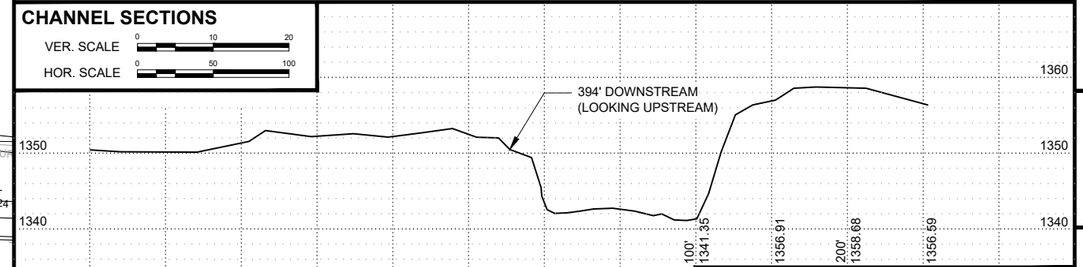
CHANNEL SECTIONS

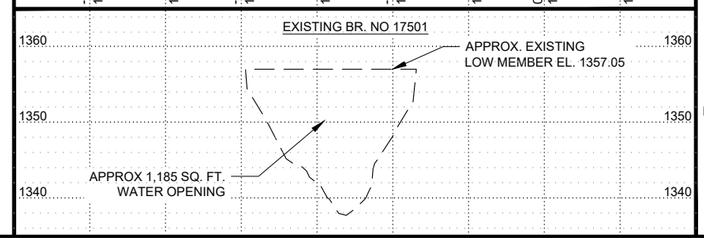
VER. SCALE 0 10 20
HOR. SCALE 0 50 100



CHANNEL SECTIONS

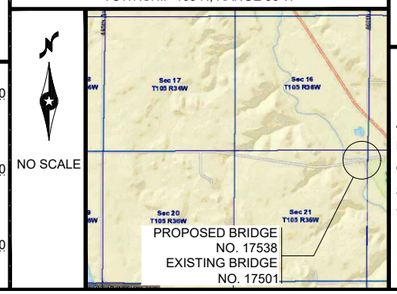
VER. SCALE 0 10 20
HOR. SCALE 0 50 100





INDEX MAP

(FOUR SECTIONS)
TOWNSHIP 105 N, RANGE 36 W



FEDERAL PROJECT NO. _____

LOCATION ENGINEER'S OBSERVATION AT BRIDGE SITE

SPECIAL FEATURES: _____

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: _____

HYDRAULIC ENGINEER'S RECOMMENDATION

DATE: 11-10-2023

STREAM OR DITCH DESIGNATION: DES MOINES RIVER
DRAINAGE AREA: 1104.5 SQ. MI.
MAX. FLOOD ON RECORD: UNKNOWN
MAXIMUM OBSERVED HIGHWATER ELEVATION: UNKNOWN
DESIGN FLOOD (100 YR. FREQ.): 12,600 C.F.S.
- HEADWATER ELEVATION: 1357.97
- DESIGN MEAN VELOCITY THROUGH STRUCTURE: 7.2 FT/S
- TOTAL STAGE INCREASE: (0.42 FT.)
- LOW MEMBER AT OR ABOVE ELEVATION: 1358.57
- TAILWATER ELEVATION: 1358.39

GREATEST FLOOD (500 YR. FREQ.): 19,200 C.F.S.
- HEADWATER ELEVATION: 1361.06
- TOTAL STAGE INCREASE (DECREASE): (1.00 FT)
- MEAN VELOCITY THROUGH STRUCTURE: 9.5 FT/S

FLOWLINE ELEVATION: 1337.75
ESTIMATED PRELIMINARY TOTAL SCOUR AT PIER EL. 1330.34

SCOUR CONFIRMATION RECOMMENDATION

TOTAL SCOUR AT PIER 7.4 ft (500 OR OT YR. FREQ.)
SCOUR CODE: L

ENGINEER'S RECOMMENDATION

DATE: 11-10-2023

3-SPAN (50'-0", 60'-0", 50'-0") SLAB SPAN BRIDGE, WITH INTEGRAL ABUTMENTS

BRIDGE SURVEY SHEETS MADE FROM: COTTONWOOD COUNTY FIELD SURVEY, DONE IN APRIL 2022.

BENCH MARK ELEVATION 1361.32 (NAVD88)
LOCATION: BRIDGE BM DISK IN SOUTHEAST CORNER OF EXISTING BRIDGE NO. 17501.

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT _____ ON C.S.A.H. 15
PROPOSED BRIDGE LOCATED 0.3 MILES WEST
OF THE JCT. CSAH 13
SEC. 21 TWP. 105 N R 36 W
TOWNSHIP: GREAT BEND COUNTY: COTTONWOOD

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	COTTO 165601	.			.		
Drawn By	JS	.			.		
Designed By	JT	.			.		
Checked By	NM	.			.		

SEH

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.
JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

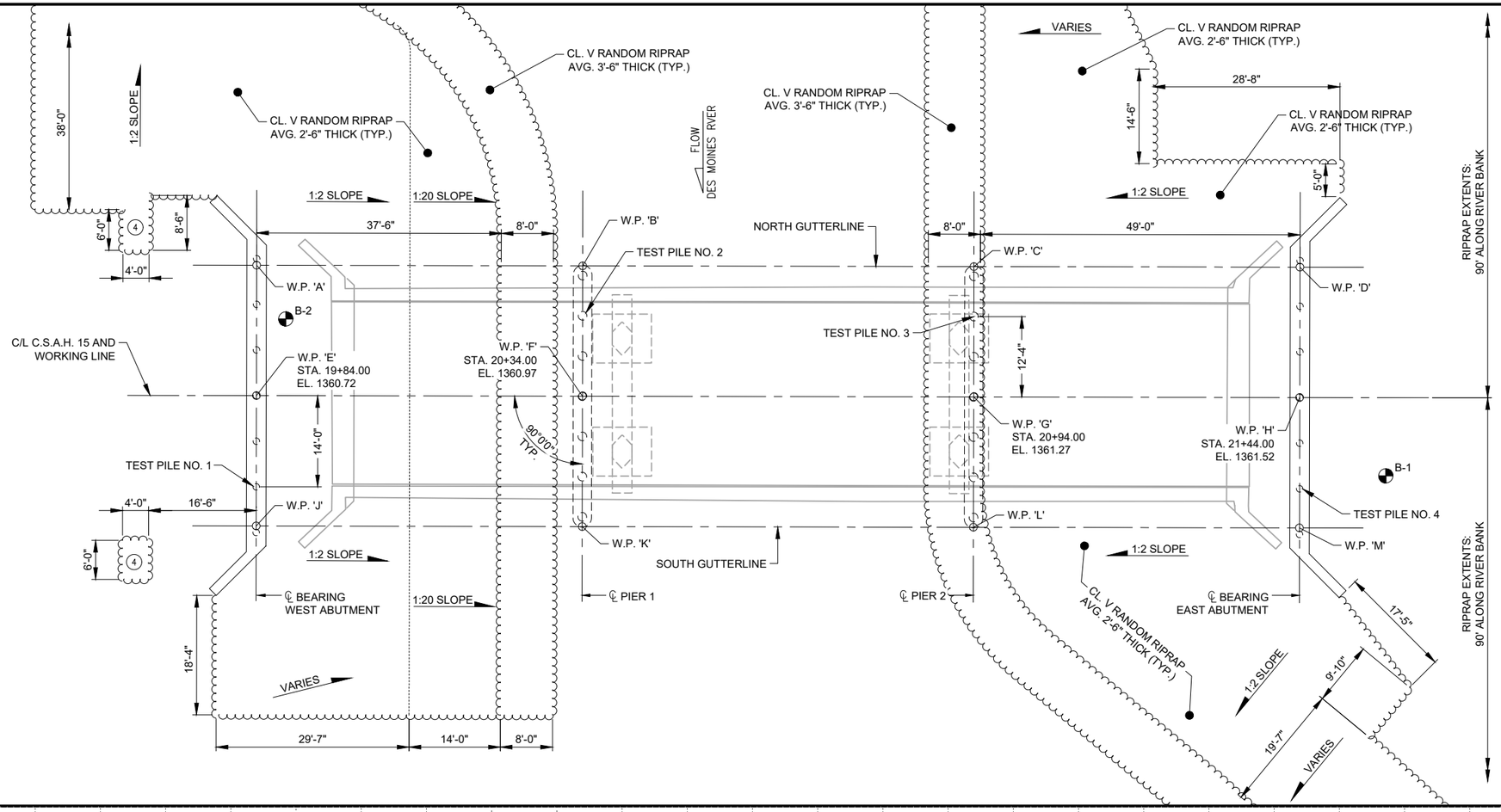
S.A.P. 017-615-024
CSAH 15 BRIDGE REPLACEMENT
COTTONWOOD COUNTY, MINNESOTA

BRIDGE SURVEY

BRIDGE NO. 17538

B18 of B31

Save: 7/12/2024 2:42 PM jasamuelson Plot: 8/23/2024 11:48 AM x:\AE\C\COTTO\165601\5-final-dsgn\51-drawings\20-structdwg\Sheet\B18 BRIDGE SURVEY.dwg



B.M. ELEV. 1361.32 (NAVD88)
LOCATION: BRIDGE BM DISK IN SOUTHEAST CORNER OF EXISTING BRIDGE NO. 17501.

NOTE:
SEE BORING LOG FOR DESCRIPTION OF MATERIALS AND BLOWS PER FOOT FOR EACH BORING.

EXCAVATION AND EARTHWORK NOTES:

LIMITS OF RANDOM RIPRAP AND GEOTEXTILE TYPE VII AS SHOWN ARE APPROXIMATE ONLY. EXACT LIMITS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD AT THE TIME OF CONSTRUCTION.

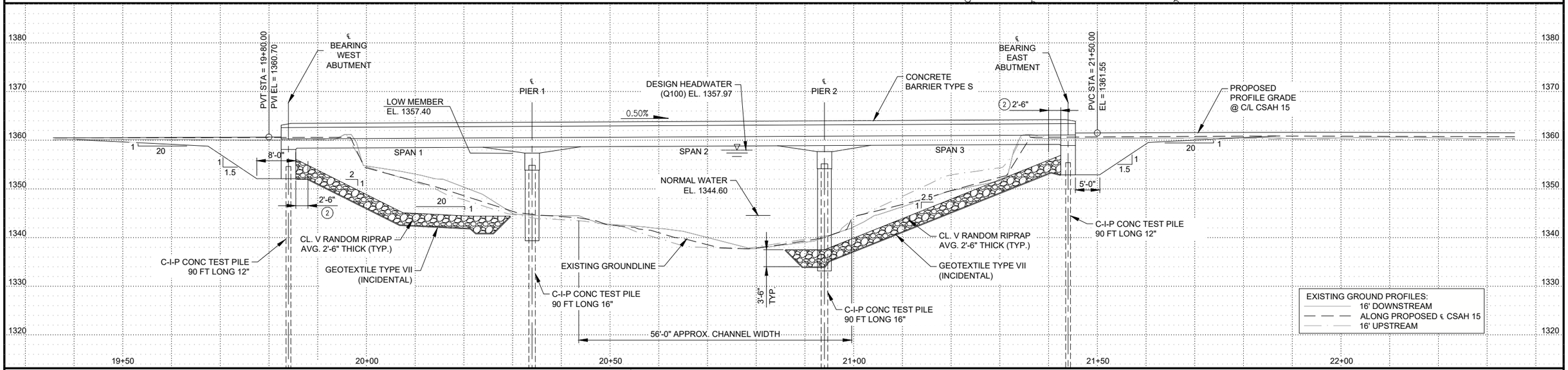
CONTRACTOR SHALL DRESS SLOPES AND PLACE GEOTEXTILE TYPE VII AND RIPRAP IN APPROXIMATE AREAS AS DIRECTED BY THE ENGINEER.

(1) EXCAVATION AND SLOPE PREPARATION FOR PLACEMENT OF RIPRAP SHALL BE INCLUDED IN PRICE BID FOR RANDOM RIPRAP CLASS V.

(2) LIMITS OF STRUCTURE EXCAVATION AND SELECT GRANULAR BORROW MODIFIED TO 10% OR LESS PASSING NO. 200 SIEVE. INCLUDED IN LUMP SUM PRICE BID FOR STRUCTURE EXCAVATION. REFER TO ABUTMENT LAYOUT SHEET.

(3) PAYMENT FOR GEOTEXTILE TYPE VII SHALL BE INCIDENTAL TO RANDOM RIPRAP CLASS V.

(4) RIPRAP FLUME AT END OF APPROACH CURB. RIPRAP INCLUDED IN BRIDGE ITEM RANDOM RIPRAP CL. V. HAND SELECT SMALLER STONES, 9" MAX. DIAMETER.



		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	COTTO 165601	.			.		
Drawn By	JS	.			.		
Designed By	JT	.			.		
Checked By	NM	.			.		

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.

JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

COTTONWOOD COUNTY, MINNESOTA

BRIDGE SURVEY PLAN AND PROFILE

BRIDGE NO. 17538

B19 of B31

Save: 8/16/2024 8:26 AM jtarbell Plot: 8/23/2024 11:48 AM x:\AE\C\COTTO\116560\115-final-dsgn\51-drawings\20-structwg\Sheet\B19 BRIDGE SURVEY PLAN AND PROFILE.dwg

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 19587.22.MNR
Design Phase Geotechnical Evaluation
Proposed Bridge 17501 Replacement
CSAH 15 over Des Moines River
Cottonwood County, Minnesota
TOP BORING = EL 1360.6

BORING: **B-1**
LOCATION: See attached sketch
DATE: 2/28/2022 SCALE: 1" = 6'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
99.6	0.0					
98.9	0.7		**8" ASPHALT**.			
		SP GP	**FILL**, Sand and Gravel, fine to medium grained, trace clay inclusions, brown, moist, very dense to medium dense.	69		Benchmark: Survey disc on southeast wing wall, assigned elevation = 100 feet.
				16		
			Rusting and silt inclusions below 7 feet.	28		MC = 5.5%
				28		
88.1	11.5					
		SC	**CLAYEY SAND**, very fine to fine grained, light brown, moist, medium dense. (Alluvium)	16		
			Brown with redish brown seams below 14 feet.	16		
			Trace gravel, brown below 18 feet.	16	▽	
				21		MC = 27.3%
				15		
67.6	32.0					
		SC	**CLAYEY SAND**, fine grained, gray, water bearing, medium dense to very dense. (Glacial Till)	24		
			Very fine to fine grained below 43 feet.	40		
				58		MC = 22.9%

(continued)

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 19587.22.MNR
Design Phase Geotechnical Evaluation
Proposed Bridge 17501 Replacement
CSAH 15 over Des Moines River
Cottonwood County, Minnesota

BORING: **B-1 (cont.)**
LOCATION: See attached sketch
DATE: 2/28/2022 SCALE: 1" = 6'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
		SC	*(continued)*			
				25		
				26		
				76		
37.1	62.5					
		SP SM	**POORLY GRADED SAND with SILT**, fine to medium grained, trace gravel and seams of clay, gray, water bearing, medium dense. (Glacial Outwash)	12		
			Medium to coarse grained below 68 feet.	16		MC = 11.9%
				23		
22.1	77.5					
		SP	**POORLY GRADED SAND with GRAVEL**, medium to coarse grained, gray, water bearing, very dense. (Glacial Outwash)	62		
17.1	82.5					
		SC	**CLAYEY SAND**, fine grained, trace gravel, brown with light gray mottiling, wet, dense to very dense. (Glacial Till)	41		PP = 1.75 tsf, MC = 15.6%.
				62		PP = >4.5 tsf, MC = 12.5%
10.1	89.5					
			End of boring. Boring terminated due to auger refusal around 88 feet, presumably on cobbles or boulder. Water observed around 20 feet during drilling. Boring sealed upon completion.			

CVT STANDARD 19587.22.MNR (COTTONWOOD CO. BRIDGE 17501 REPLACEMENT).GPJ LOG A GNNN06.GDT 5/10/22

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SEH Project	COTTO 165601	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH	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. Joshua C. Tarbell JOSHUA C. TARBELL, PE DATE 5/17/2024 LICENSE NO. 46878
Drawn By	JS								
Designed By	JT								
Checked By	NM								

S.A.P. 017-615-024
CSAH 15 BRIDGE REPLACEMENT
COTTONWOOD COUNTY, MINNESOTA

BORING LOG

BRIDGE NO. 17538

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 19587.22.MNR
Design Phase Geotechnical Evaluation
Proposed Bridge 17501 Replacement
CSAH 15 over Des Moines River
Cottonwood County, Minnesota

TOP BORING = EL 1360.4

BORING: **B-2**

LOCATION:
See attached sketch

DATE: 2/28/2022 SCALE: 1" = 6'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
99.5	0.0					
98.8	0.7		**7.5" ASPHALT**.			Benchmark: Survey disc on southeast wing wall, assigned elevation = 100 feet.
			10" AGGREGATE BASE.			
98.0	1.5	CL	**FILL**, Sandy Lean Clay, trace gravel, brown, orangish brown and dark brown mix, wet.	37		PP = 0.25 tsf.
				17		PP = 2.0 tsf, MC = 15.3%.
				7		PP = 0.5 tsf.
90.5	9.0	CL	**LEAN CLAY with SAND**, trace gravel, brown with slight iron staining, wet, very stiff to medium. (Alluvium)	18		PP = 0.75 tsf, MC = 13.2%.
				10		PP = 0.75 tsf.
				8		
82.5	17.0	SC	**CLAYEY SAND**, fine to medium grained, trace clay seams, dark gray to gray, water bearing, loose to medium dense. (Glacial Till)	7	▽	MC = 17.4%.
				11		MC = 19.8%.
				7		
				6		
				11		MC = 29.5%.
				15		

(continued)

LOG OF BORING

CHOSEN VALLEY TESTING **CVT**

PROJECT: 19587.22.MNR
Design Phase Geotechnical Evaluation
Proposed Bridge 17501 Replacement
CSAH 15 over Des Moines River
Cottonwood County, Minnesota

BORING: **B-2 (cont.)**

LOCATION:
See attached sketch

DATE: 2/28/2022 SCALE: 1" = 6'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
		SC	*(continued)*			
				16		
47.0	52.5	SP SM	**POORLY GRADED SAND with SILT**, fine to medium grained, trace gravel and clay seams, gray, water bearing, medium dense to very dense. (Glacial Outwash)	35		
			Fine grained below 58 feet.	53		MC = 23.4%.
				15		
27.0	72.5	SP	**POORLY GRADED SAND with GRAVEL**, fine to medium grained, gray, water bearing, medium dense to very dense. (Glacial Outwash)	17		MC = 17.4%.
				65		
18.0	81.5		End of boring. Boring terminated due to auger refusal around 81.5 feet, presumably on cobbles or boulder. Water observed around 20.5 feet during drilling. Boring sealed upon completion.			

CVT STANDARD 19587.22.MNR (COTTONWOOD CO. BRIDGE 17501 REPLACEMENT).GPJ LOG A GNNN06.GDT 5/10/22

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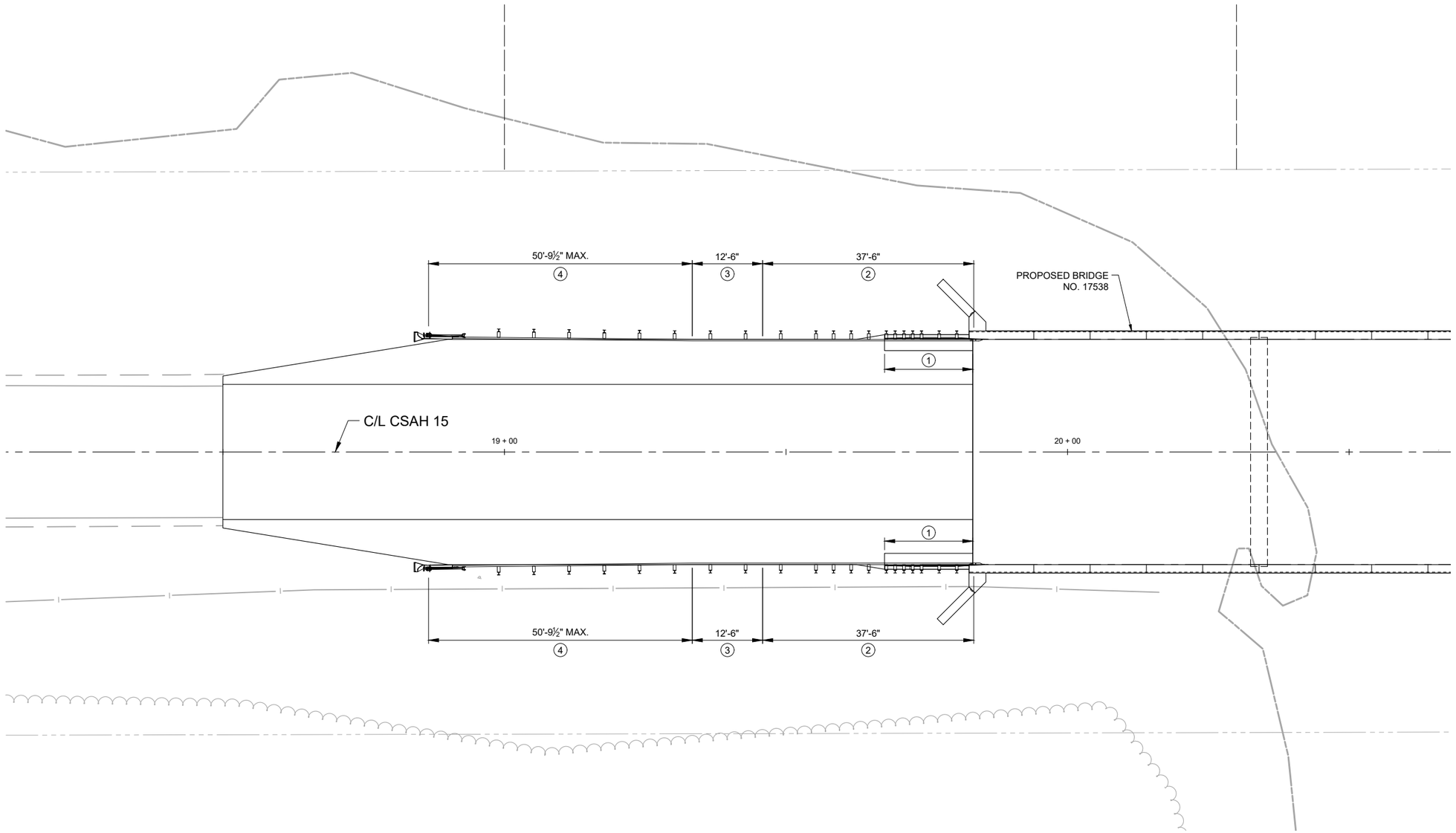
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Drawn By	JS								
Designed By	JT								
Checked By	NM								

S.A.P. 017-615-024
CSAH 15 BRIDGE REPLACEMENT
COTTONWOOD COUNTY, MINNESOTA

BORING LOG

BRIDGE NO. 17538

B21 of B31



KEY NOTES:

1. B6 CURB AND GUTTER.
2. TRAFFIC BARRIER DESIGN TRANS (ATG) TYPE 31.
3. TRAFFIC BARRIER DESIGN TYPE 31.
4. END TERMINAL - TANGENT. SEE STANDARD PLAN 5-297.612.

N

TRAFFIC BARRIER LAYOUT

10 0 10 20
scale 5 feet

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		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	COTTO 165601	.			.		
Drawn By	JS	.			.		
Designed By	JT	.			.		
Checked By	NM	.			.		

SEH

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Joshua C. Tarbell

JOSHUA C. TARBELL, PE
DATE 5/17/2024 LICENSE NO. 46878

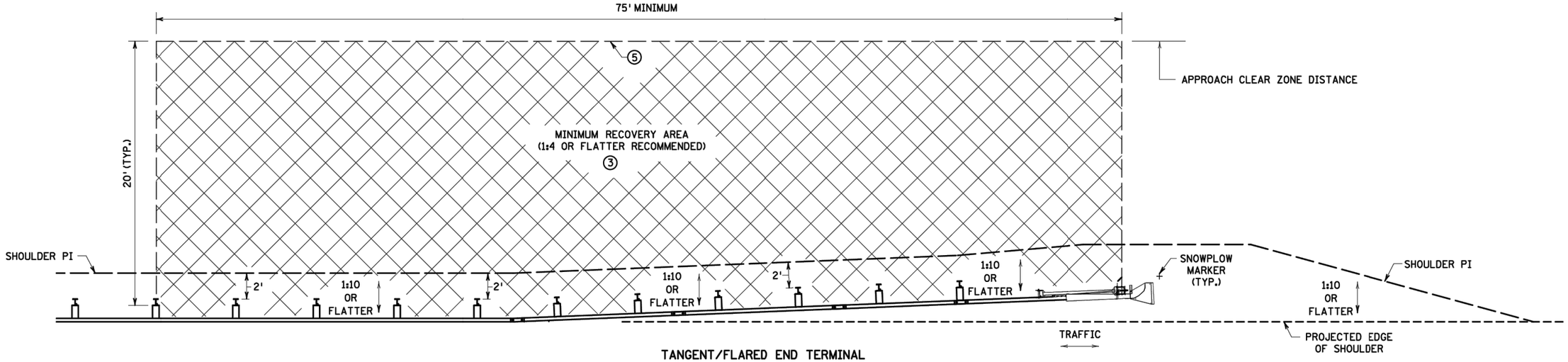
S.A.P. 017-615-024

CSAH 15 BRIDGE REPLACEMENT

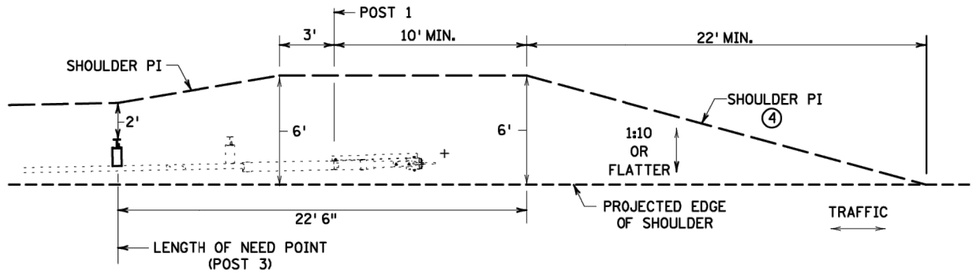
COTTONWOOD COUNTY, MINNESOTA

TRAFFIC BARRIER LAYOUT

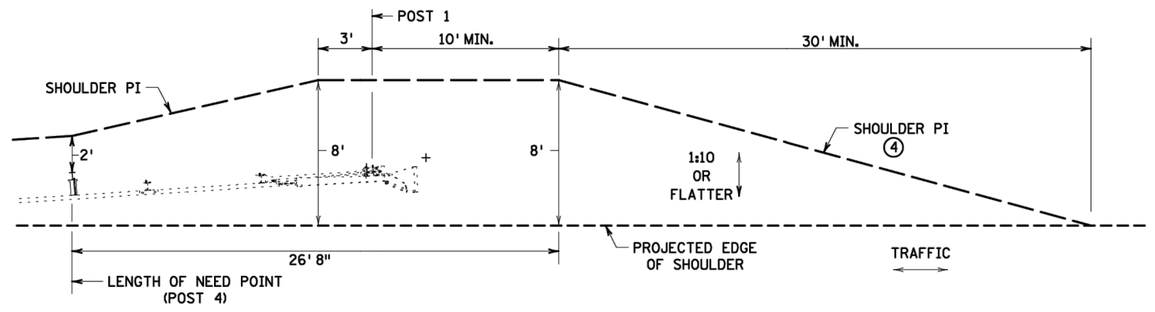
BRIDGE NO. 17538



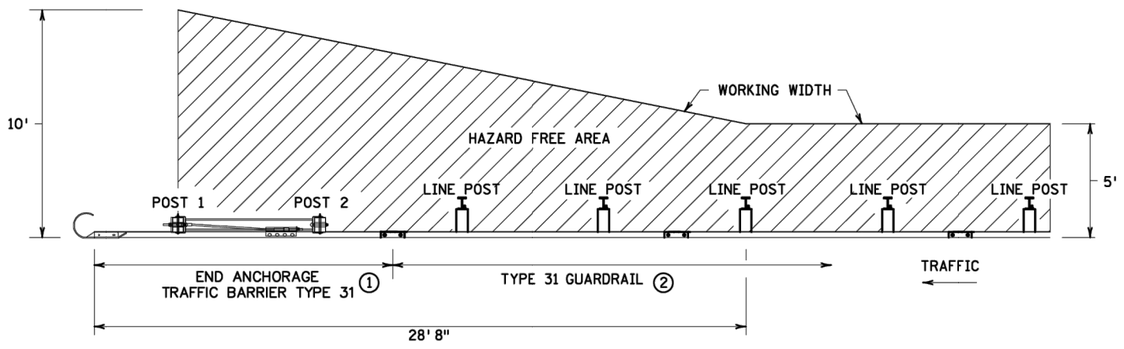
TANGENT/FLARED END TERMINAL
MINIMUM RECOVERY AREA



TANGENT END TERMINAL GRADING
(SOFTSTOP SHOWN)



FLARED END TERMINAL GRADING
(MFLEAT SHOWN)



TYPE 31 END ANCHORAGE
STANDARD POST SPACING
TRAILING END HAZARD FREE AREA

NOTES:

① SEE STANDARD PLAN 5-297.692.

② SEE STANDARD PLAN 5-297.690.

③ THIS AREA FREE OF FIXED OBJECTS. SLOPES BETWEEN 1:3 AND 1:4 PERMITTED WHEN 1:4 OR FLATTER IS NOT POSSIBLE. FOR SLOPES STEEPER THAN 1:3, THIS AREA SHOULD BE SIMILAR IN CROSS SECTION TO THE UNSHIELDED ROADSIDE AREA UPSTREAM OF THE END TERMINAL.

④ SMOOTHLY TRANSITION THE GRADING PLATFORM TO EXISTING SIDE SLOPE SO THE ENTIRE ROADSIDE APPROACH TO THE BARRIER REMAINS TRAVERSABLE.

⑤ GRADUALLY BLEND SLOPE FROM TRAVERSABLE AREA TO STEEP EXISTING SLOPE (WHEN SLOPE IS STEEPER THAN 1:6).

REVISION:

APPROVED: 05-14-2021

NANCY YOO
DESIGN SUPPORT DIRECTOR
OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

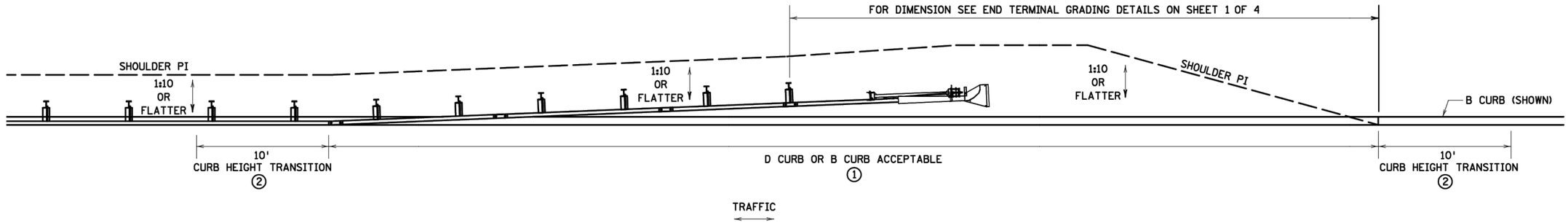
STANDARD PLAN 5-297.601 | 1 OF 4

APPROVED: 05-14-2021
REVISED:

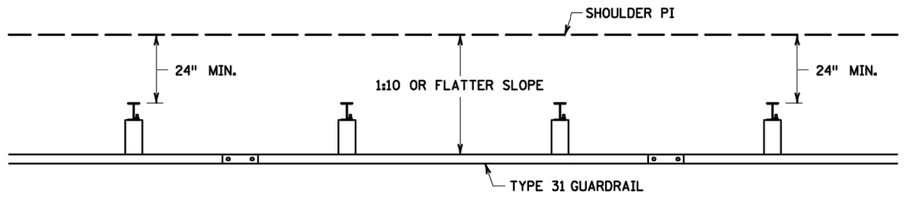
GUARDRAIL / END TREATMENTS MISCELLANEOUS DETAILS

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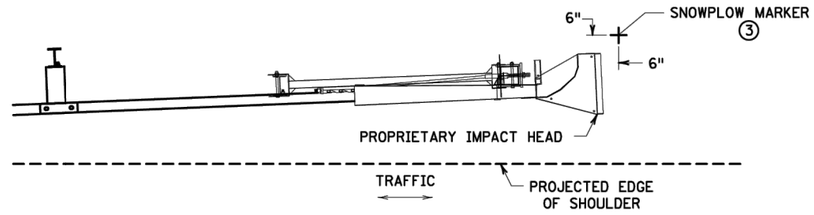
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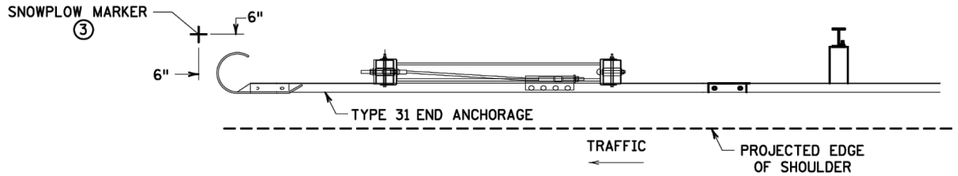


INPLACE CURB AT END TERMINAL

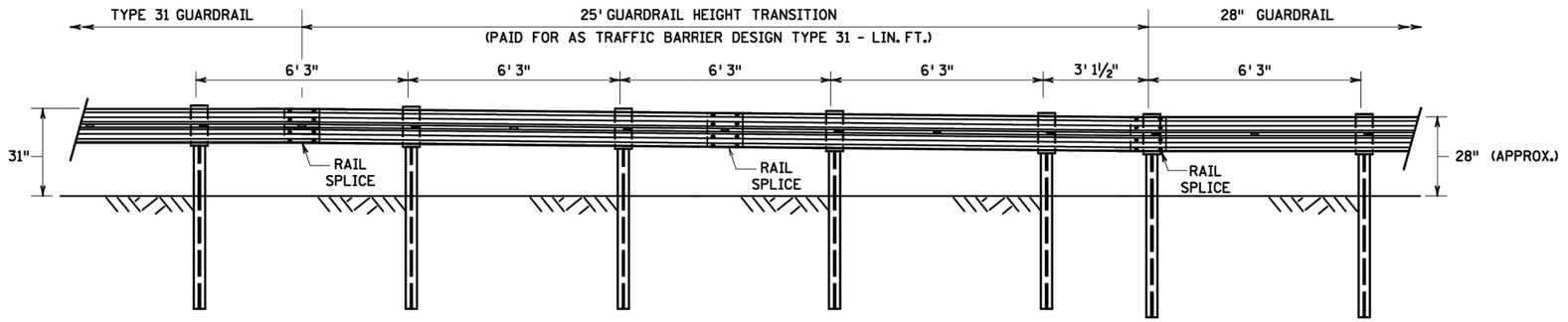


GRADING REQUIREMENTS AT TYPE 31 GUARDRAIL





SNOWPLOW MARKER LOCATION AT END TERMINAL/END ANCHORAGE



TYPE 31 W-BEAM GUARDRAIL HEIGHT TRANSITION TO 28" ④

NOTES:

① IF INPLACE CURB IS OVER 4" HEIGHT, MILL TO 3" HEIGHT.
② CONTINUE MILLING FROM 3" MILLED HEIGHT TO MATCH INPLACE CURB HEIGHT.
③ SNOWPLOW MARKER (X3-5) WITH A SQUARE-TUBE THREE-WALL SIGN BASE PER STANDARD PLAN 5-297.721. TOP OF POST SHALL BE 3' ABOVE THE HEIGHT OF THE END TERMINAL/END ANCHORAGE. PLACE MARKER AT BOTH ENDS OF GUARDRAIL RUN.
④ USE ONLY WHEN CONNECTING TO GUARDRAIL TYPES 8338 AND 8307.

REVISION:

APPROVED: 05-14-2021

NANCY YOO
DESIGN SUPPORT DIRECTOR
OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.601 | 2 OF 4

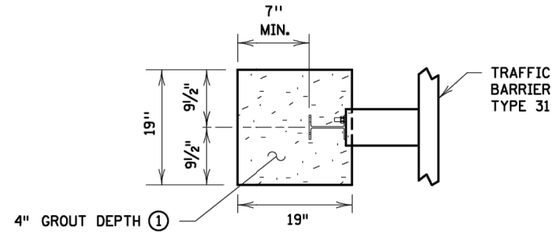
APPROVED: 05-14-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

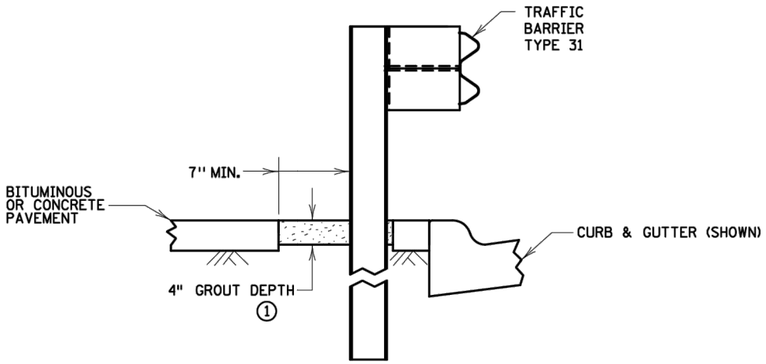
GUARDRAIL / END TREATMENTS MISCELLANEOUS DETAILS

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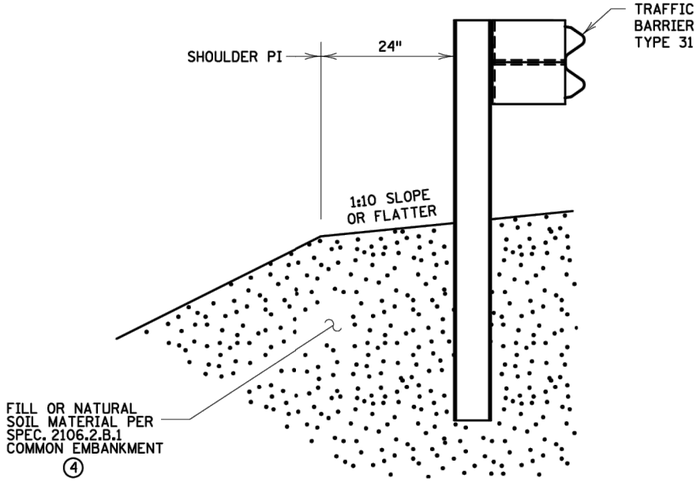


PLAN VIEW

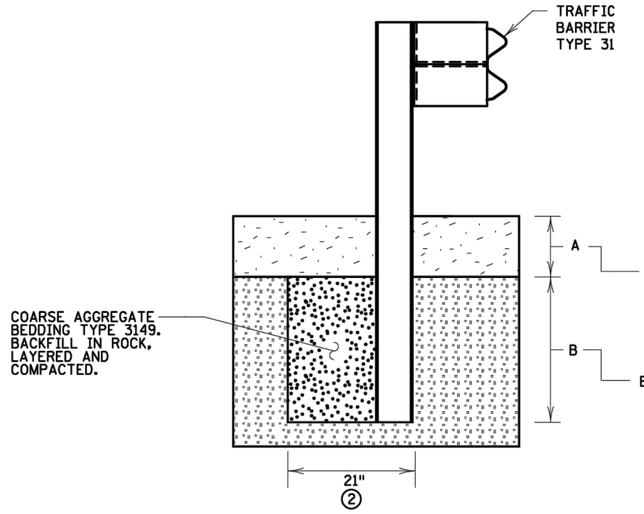


ELEVATION

POST LEAVE-OUT FOR
TRAFFIC BARRIER TYPE 31

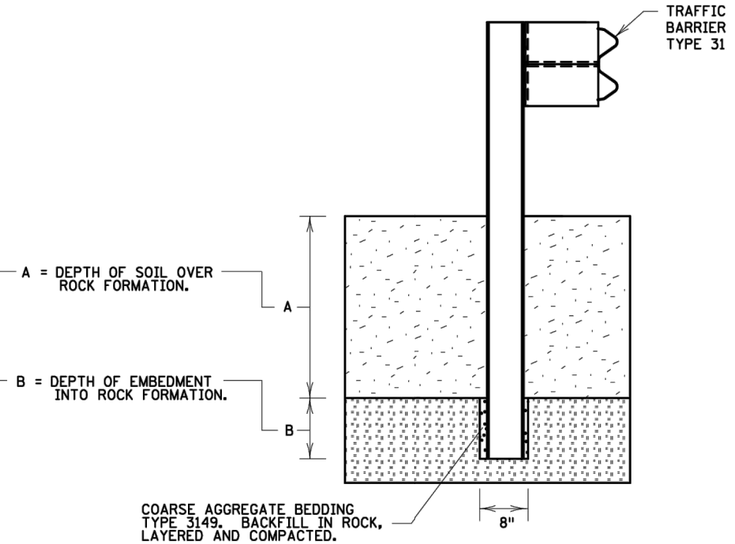


GUARDRAIL POST IN SOIL



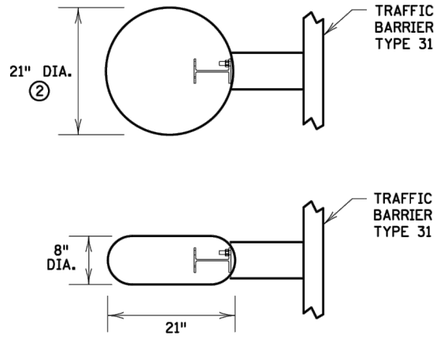
- FOR OVERLYING SOIL DEPTHS (A) RANGING FROM 0" TO 18", THE DEPTH INTO ROCK (B) IS 24".

ELEVATION



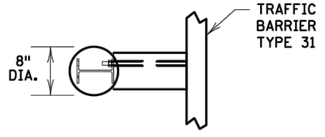
- FOR OVERLYING SOIL DEPTHS (A) RANGING FROM 18" TO FULL POST EMBEDMENT DEPTH. THE REQUIRED DEPTH INTO ROCK (B) IS EQUAL TO FULL POST EMBEDMENT DEPTH MINUS (A). FULL POST EMBEDMENT DEPTH FOR BLOCKED OUT W-BEAM IS APPROXIMATELY 42".

ELEVATION



PLAN VIEWS (3)

GUARDRAIL POST IN ROCK
0" TO 18" OVERLYING SOIL DEPTH
(POST HOLE IN ROCK SPECIAL)



PLAN VIEW

GUARDRAIL POST IN ROCK
18" OR GREATER OVERLYING SOIL DEPTH
(POST HOLE IN ROCK)

NOTES:

1. GROUT IS ONE PART TYPE 1A CEMENT, 14 PARTS SAND, AND 5 PARTS WATER, BY VOLUME.
2. 24" DIAMETER ACCEPTABLE.
3. EITHER HOLE CONFIGURATION (CIRCULAR OR ELONGATED) ACCEPTABLE.
4. MATERIAL SHALL NOT CONTAIN GEOFOAM, TIRE SHREDS, OR OTHER LIGHTWEIGHT FILL MATERIALS. POST SHALL NOT BE DRIVEN THROUGH PAVEMENT OR GEOCELL SLOPE REINFORCEMENT.

REVISION:

APPROVED: 05-14-2021

NANCY YOO
DESIGN SUPPORT DIRECTOR
OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.601 | 4 OF 4

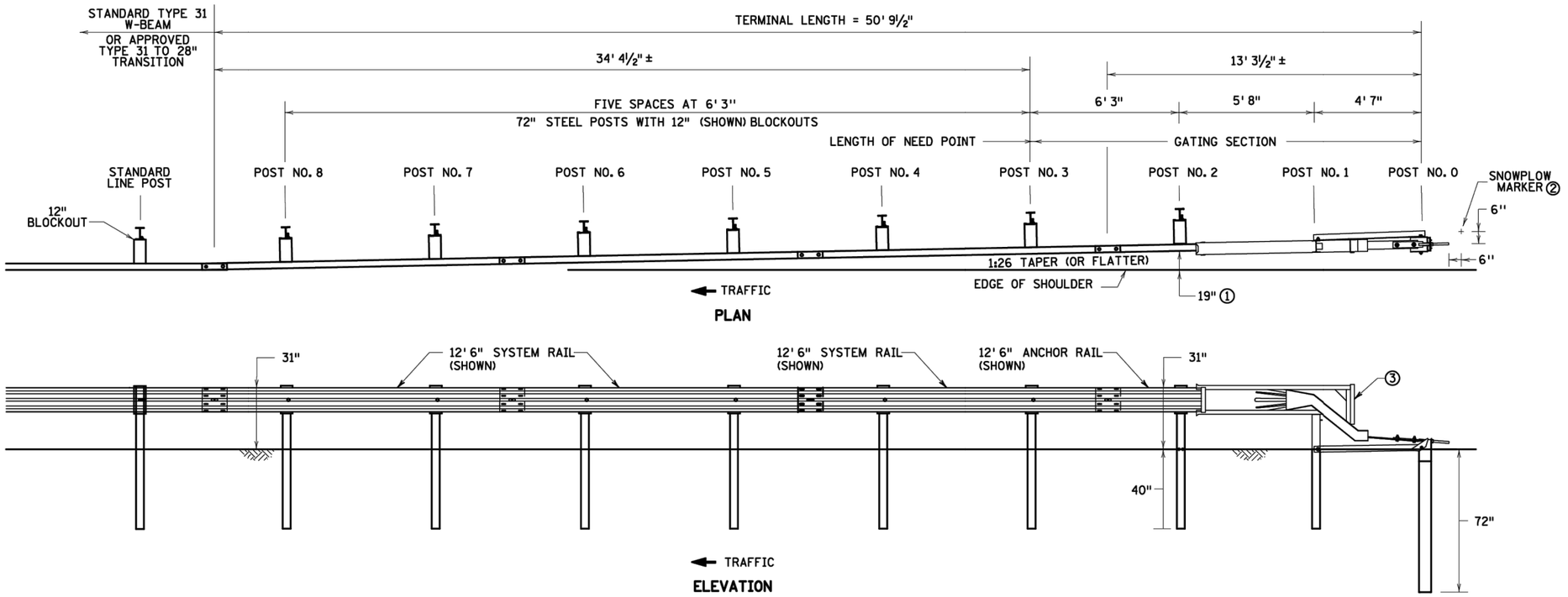
APPROVED: 05-14-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

GUARDRAIL / END TREATMENTS MISCELLANEOUS DETAILS

STATE AID PROJ. NO. 017-615-024 (CSAH 15) SHEET NO. B25 OF B31 SHEETS

Save: 2/6/2024 9:34 AM nmclaughlin Plot: 8/23/2024 11:49 AM x:\AE\C\COTTO\166801\5-final-dsgn\51-drawings\20-structdwg\Sheet\B23-B27 TRAFFIC BARRIER DETAILS.dwg



SOFTSTOP
(TRINITY HIGHWAY PRODUCTS)

NOTES:

THIS IS A PROPRIETARY ITEM AS PER SPEC. 1703.

THESE DETAILS ARE FOR DESIGN GUIDANCE INFORMATION ONLY. CHECK WITH MANUFACTURER FOR CURRENT DETAILS AND INSTALLATION INSTRUCTIONS.

ALL TERMINAL RAIL MUST BE STRAIGHT. CURVED TERMINAL RAIL IS NOT ALLOWED.

ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS, AND BEARING PLATES SHALL BE GALVANIZED PER MnDOT SPEC. 3392.

POSTS 1 AND 2 ARE PROPRIETARY STEEL YIELDING TERMINAL POSTS.

POST 0 IS A PROPRIETARY ANCHOR POST.

POSTS 2 - 8, 8" BLOCKOUTS ACCEPTABLE.

OPTIONAL 25' ANCHOR RAIL AND 25' SYSTEM RAIL ACCEPTABLE.

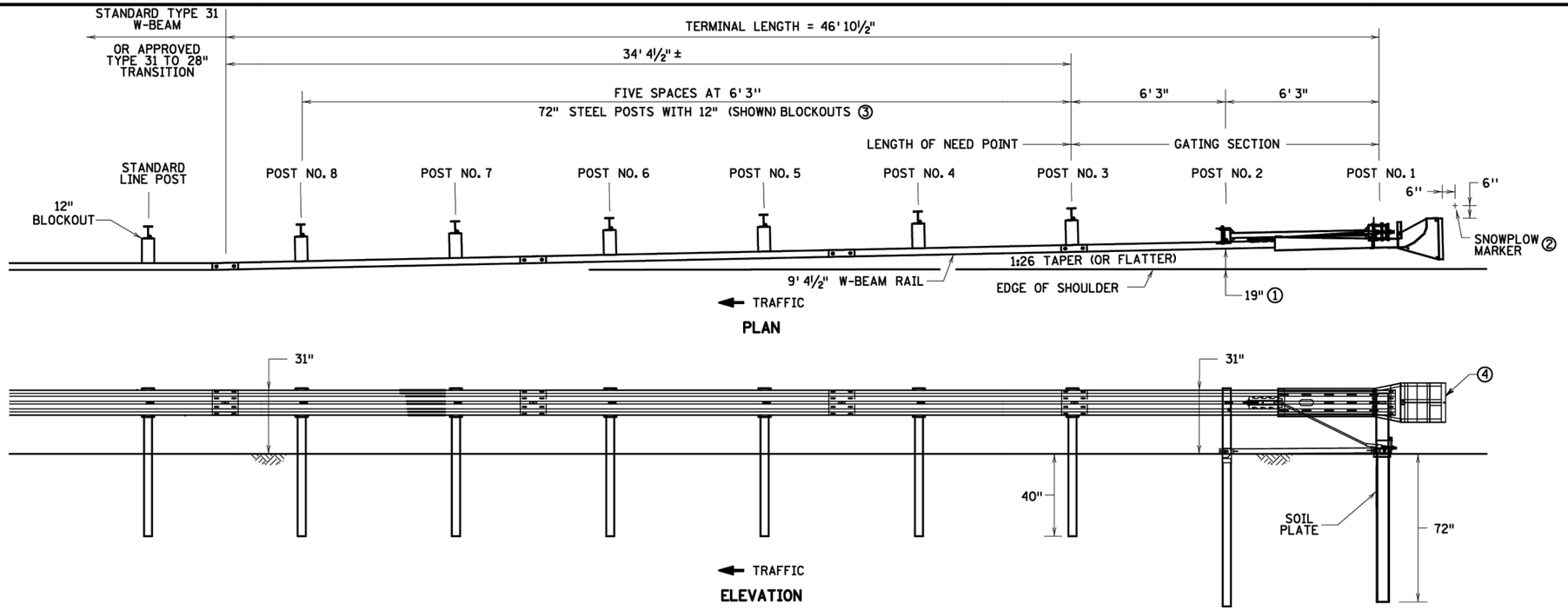
END TERMINAL TO FOLLOW A STRAIGHT TAPER.

PLACE STEEL I-BEAM POST DELINEATORS PER THE APPROVED PRODUCTS LIST ON THE TOP OF THE FIRST FIVE I-BEAM POSTS OF UPSTREAM TERMINAL AND THE LAST FIVE I-BEAM POSTS OF DOWNSTREAM TERMINAL. ATTACH USING ADHESIVE (PER MANUFACTURER RECOMMENDATION). THE RETROREFLECTIVE SHEETING SHALL FACE TRAFFIC AND MATCH THE COLOR OF THE ADJACENT EDGE LINE.

① LESSER OFFSET ALLOWED WITH APPROVAL OF THE ENGINEER.

② SEE STANDARD PLAN 5-297.601.

③ 6" X 18" OBJECT MARKER (OM3-R OR OM3-L) PER MNDOT STANDARD SIGNS AND MARKINGS MANUAL. ALTERNATING STRIPES SHALL BE SLOPED DOWN TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS THE OBSTRUCTION.



MSKT
(ROAD SYSTEMS INC.)

NOTES:

THIS IS A PROPRIETARY ITEM AS PER SPEC. 1703.

THESE DETAILS ARE FOR DESIGN GUIDANCE INFORMATION ONLY. CHECK WITH MANUFACTURER FOR CURRENT DETAILS AND INSTALLATION INSTRUCTIONS.

ALL TERMINAL RAIL MUST BE STRAIGHT. CURVED TERMINAL RAIL IS NOT ALLOWED.

ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS, AND BEARING PLATES SHALL BE GALVANIZED PER MnDOT SPEC. 3392.

POSTS 1 AND 2 ARE PROPRIETARY HINGED POSTS.

THE RAIL IS DESIGNED TO EXIT THE IMPACT HEAD ON THE BACK SIDE OF THE TERMINAL.

END TERMINAL TO FOLLOW A STRAIGHT TAPER.

PLACE STEEL I-BEAM POST DELINEATORS PER THE APPROVED PRODUCTS LIST ON THE TOP OF THE FIRST FIVE I-BEAM POSTS OF UPSTREAM TERMINAL AND THE LAST FIVE I-BEAM POSTS OF DOWNSTREAM TERMINAL. ATTACH USING ADHESIVE (PER MANUFACTURER RECOMMENDATION). THE RETROREFLECTIVE SHEETING SHALL FACE TRAFFIC AND MATCH THE COLOR OF THE ADJACENT EDGE LINE.

① LESSER OFFSET ALLOWED WITH APPROVAL OF THE ENGINEER.

② SEE STANDARD PLAN 5-297.601.

③ 8" BLOCKOUTS ARE ACCEPTABLE.

④ 18" X 18" OBJECT MARKER (OM3-R OR OM3-L) PER MNDOT STANDARD SIGNS AND MARKINGS MANUAL. ALTERNATING STRIPES SHALL BE SLOPED DOWN TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS THE OBSTRUCTION.

REVISION:

APPROVED: 11-02-2021

NANCY YOO
DESIGN SUPPORT DIRECTOR
OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.612 | 1 OF 1

APPROVED: 11-02-2021
REVISED:

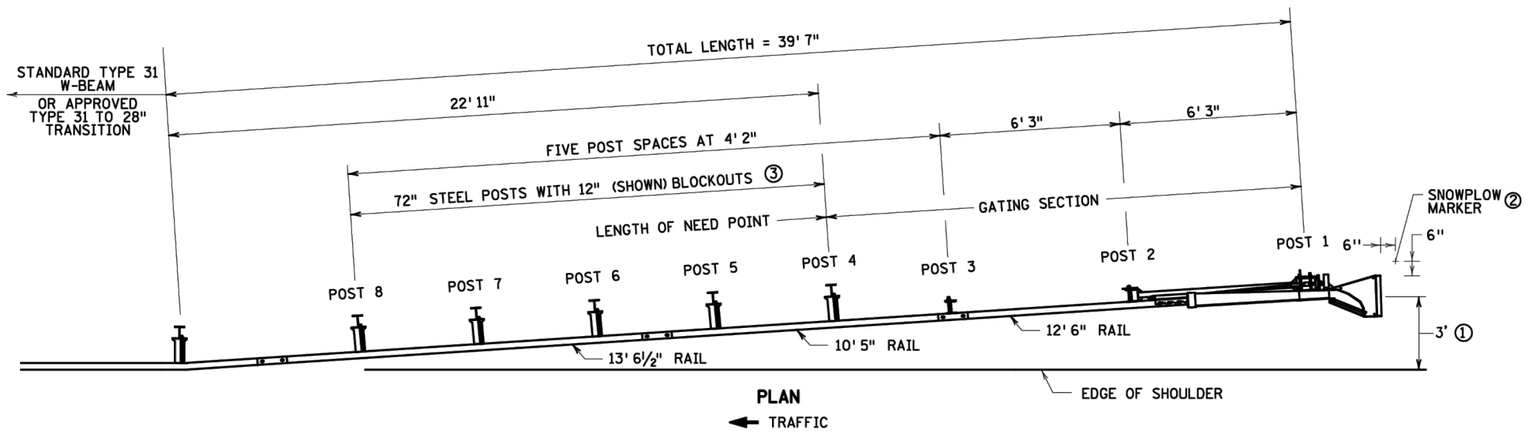
THOMAS STYRBICKI
STATE DESIGN ENGINEER

PROPRIETARY END TERMINAL - TANGENT FOR TYPE 31 GUARDRAIL

STATE AID PROJ. NO. 017-615-024 (CSAH 15)

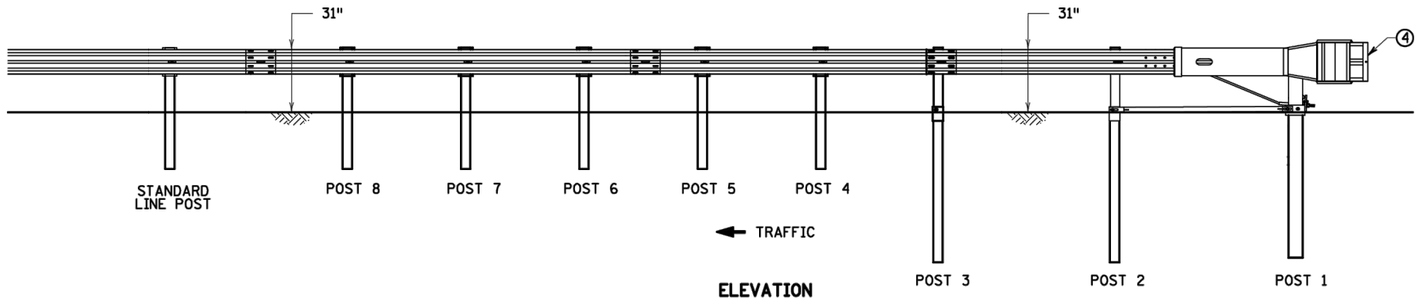
SHEET NO. B26 OF B31 SHEETS

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PLAN

← TRAFFIC



ELEVATION

MFLEAT
(ROAD SYSTEMS INC.)

NOTES:

THIS IS A PROPRIETARY ITEM AS PER SPEC. 1703.

THESE DETAILS ARE FOR DESIGN GUIDANCE INFORMATION ONLY. CHECK WITH MANUFACTURER FOR CURRENT DETAILS AND INSTALLATION INSTRUCTIONS.

ALL TERMINAL RAIL MUST BE STRAIGHT. CURVED TERMINAL RAIL IS NOT ALLOWED.

ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS, AND BEARING PLATES SHALL BE GALVANIZED PER MnDOT SPEC. 3392.

POSTS 1 - 3 ARE PROPRIETARY HINGED POSTS.

THE RAIL IS DESIGNED TO EXIT THE IMPACT HEAD ON THE TRAFFIC SIDE OF THE TERMINAL.

PLACE STEEL I-BEAM POST DELINEATORS PER THE APPROVED PRODUCTS LIST ON THE TOP OF THE FIRST FIVE I-BEAM POSTS OF UPSTREAM TERMINAL AND THE LAST FIVE I-BEAM POSTS OF DOWNSTREAM TERMINAL. ATTACH USING ADHESIVE (PER MANUFACTURER RECOMMENDATION). THE RETROREFLECTIVE SHEETING SHALL FACE TRAFFIC AND MATCH THE COLOR OF THE ADJACENT EDGE LINE.

① MEASURED TO THE FACE OF RAIL AT POST 1.
② SEE STANDARD PLAN 5-297.601.
③ 8" BLOCKOUTS ARE ACCEPTABLE.
④ 18" X 18" OBJECT MARKER (OM3-R OR OM3-L) PER MNDOT STANDARD SIGNS AND MARKINGS MANUAL. ALTERNATING STRIPES SHALL BE SLOPED DOWN TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS THE OBSTRUCTION.

REVISION:

APPROVED: 11-02-2021

NANCY YOO
DESIGN SUPPORT DIRECTOR
OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

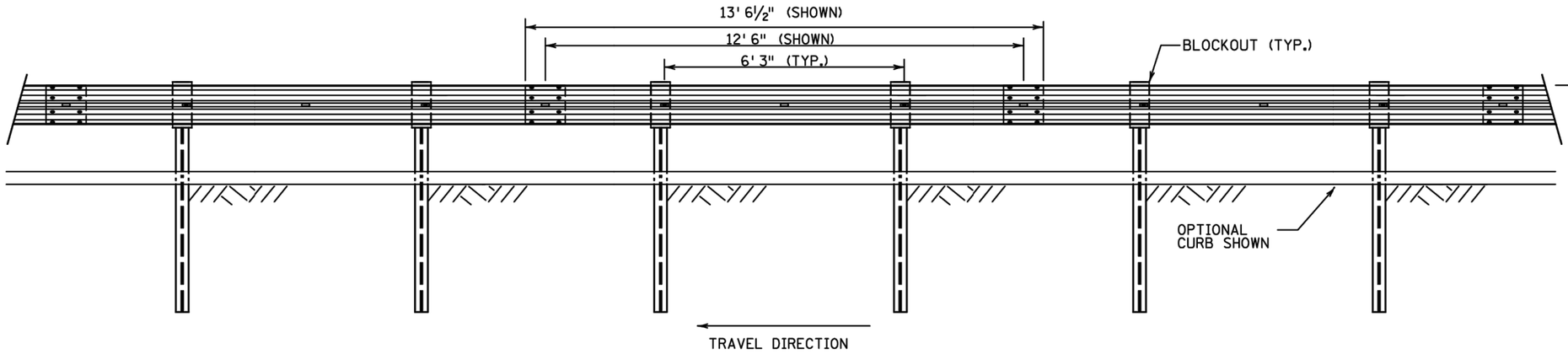
STANDARD PLAN 5-297.613 | 1 OF 1

APPROVED: 11-02-2021
REVISED:

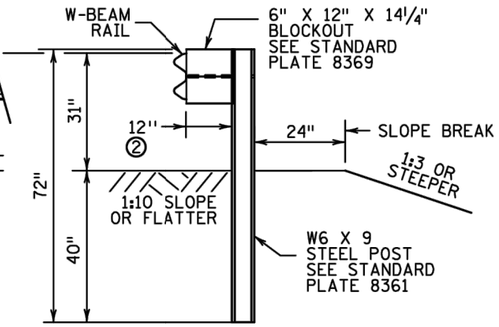
PROPRIETARY END TERMINAL - FLARED FOR TYPE 31 GUARDRAIL

STATE AID PROJ. NO. 017-615-024 (CSAH 15) SHEET NO. B27 OF B31 SHEETS

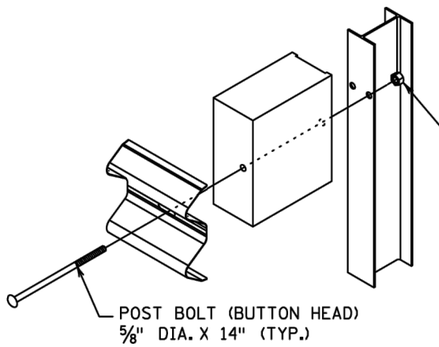
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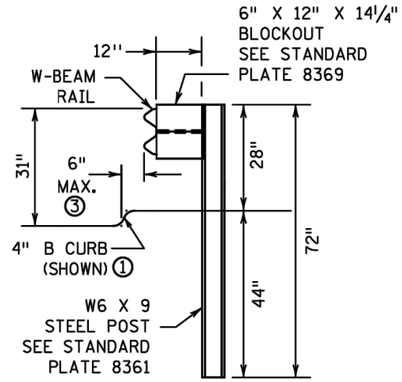
FRONT VIEW



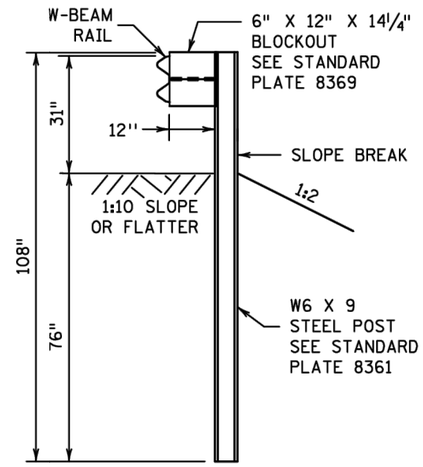
SIDE VIEW



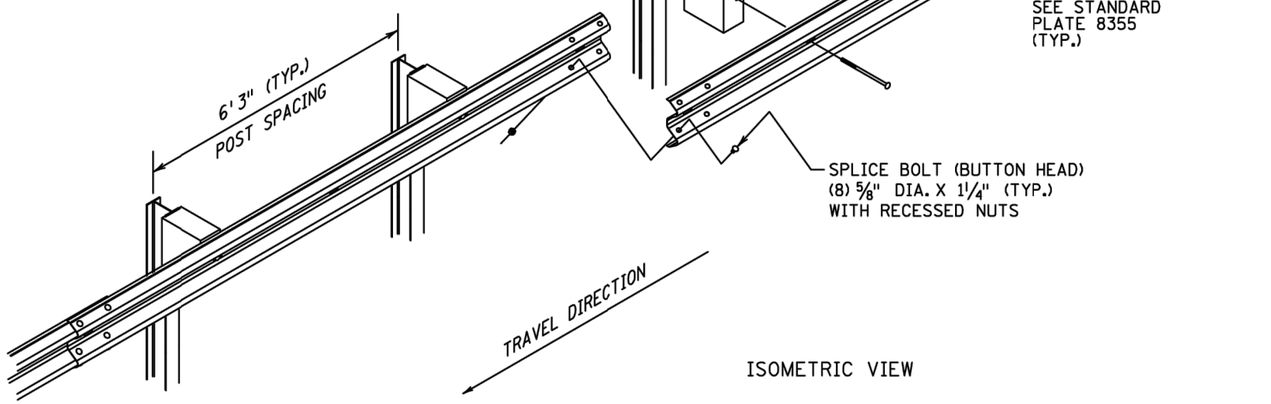
POST BOLT HARDWARE



TYPE 31 GUARDRAIL
WITH CURB



TYPE 31 GUARDRAIL WITH
1:2 INSLOPE AT
BACK OF POST



ISOMETRIC VIEW

NOTES:

GUARDRAIL IS PLACED ON SLOPES 1:10 OR FLATTER WITH SLOPE EXTENDING A MINIMUM 24" BEHIND POST TO SLOPE BREAK POINT.

ALL RAIL AND HARDWARE COMPONENTS IN ACCORDANCE WITH AASHTO SPEC. M 180

① 4" B CURB OR D CURB ACCEPTABLE.

② MAXIMUM OF 24" MAY BE USED WHERE UNDERGROUND POST OBSTRUCTIONS ARE ENCOUNTERED.

③ 0" TO 6" MAXIMUM.

LEAD EXPERT OFFICE

NANCY YOO
DESIGN SUPPORT DIRECTOR
OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.690	1 OF 1

APPROVED: 07-05-2022
REVISED:

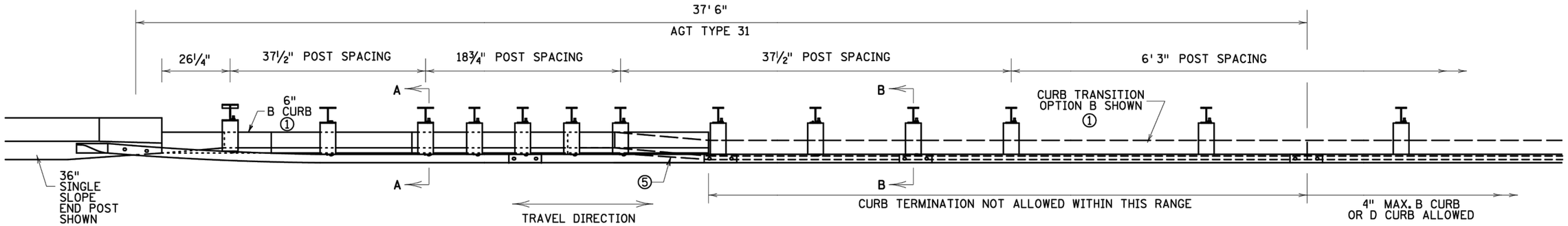
THOMAS STYRBICKI
STATE DESIGN ENGINEER

TRAFFIC BARRIER TYPE 31 ASSEMBLY DETAILS

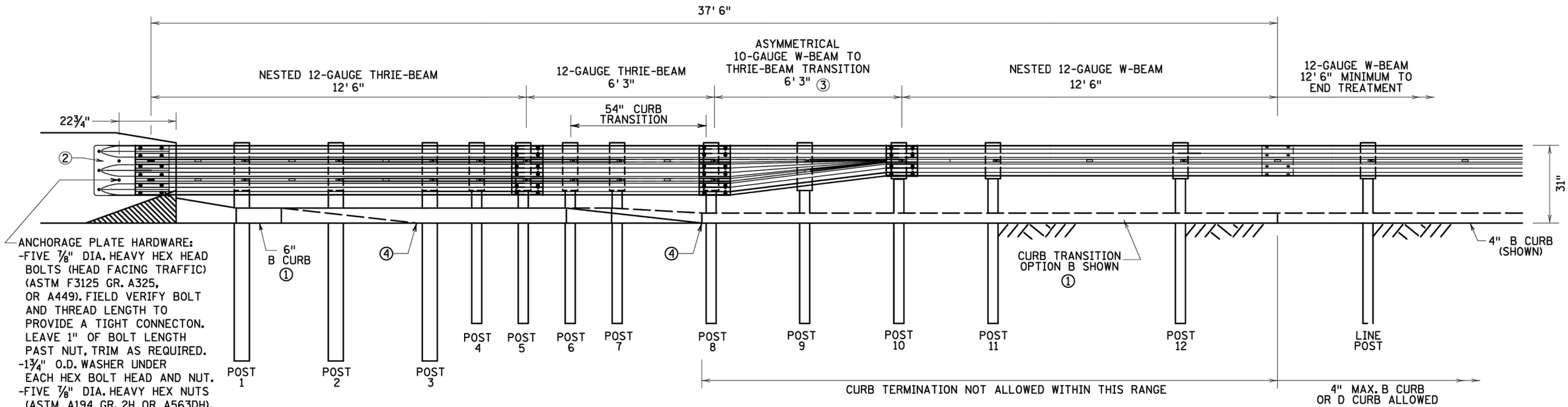
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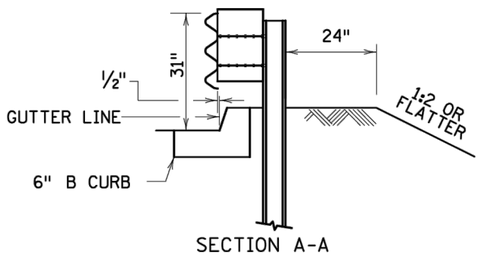
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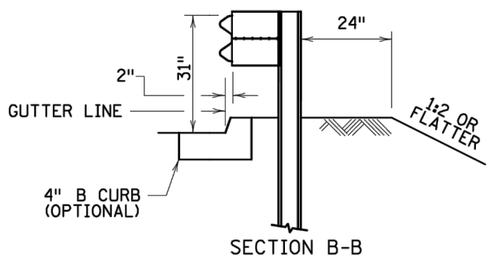
PLAN VIEW



FRONT VIEW



SECTION A-A



SECTION B-B

TRANSITION POST AND BLOCKOUT SIZING		
POST #	STEEL POST SIZE	BLOCKOUT SIZE
1-3	84" - W6 x 15	6 x 12 x 19"
4-9	72" - W6 x 9	6 x 12 x 19"
10-12	72" - W6 x 9	6 x 12 x 14¼"

NOTES:

APPROACH GUARDRAIL TRANSITION SHALL BE USED ON THE APPROACH SIDE, AND SHALL BE USED ON THE DEPARTING/TRAILING END IF GUARDRAIL IS NEEDED.

GUARDRAIL BEAM AND HARDWARE IN ACCORDANCE WITH AASHTO SPEC. M 180.

REFER TO APPROACH PANEL PLANS FOR LOCATION OF E8 JOINT.

① SEE CURB DETAILS ON SHEET 2 OF 3.

② THRIE-BEAM ANCHORAGE PLATE (STANDARD PLATE 8350) IS INCIDENTAL.

③ SEE STANDARD PLATE 8356.

④ CURB MAY BE TERMINATED AT THIS LOCATION, SEE CONSTRUCTION PLAN SHEETS FOR LOCATION. SEE CURB DETAILS ON SHEET 2 OF 3.

⑤ GUTTER LINE TAPERS 2½" TO MATCH EXTENDED GUTTER LINE FROM BRIDGE.

LEAD EXPERT OFFICE

NANCY YOO
DESIGN SUPPORT DIRECTOR
OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

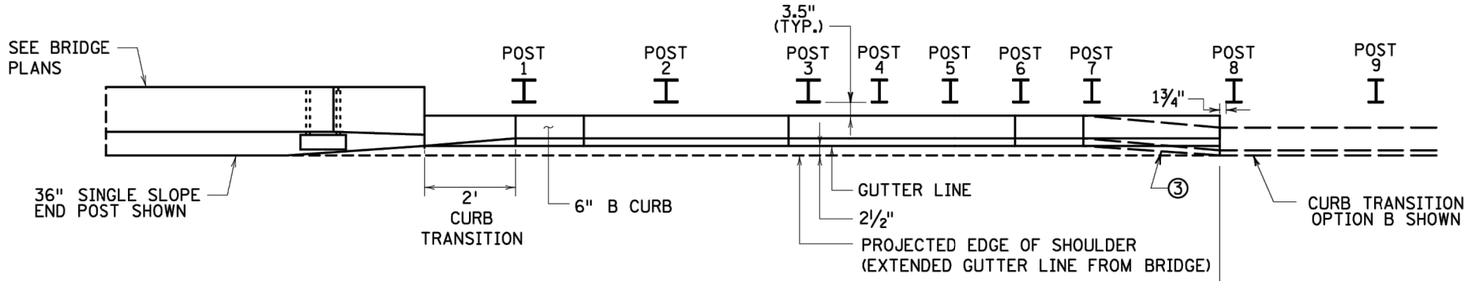
STANDARD PLAN 5-297.694 | 1 OF 3

APPROVED: 07-05-2022
REVISED:

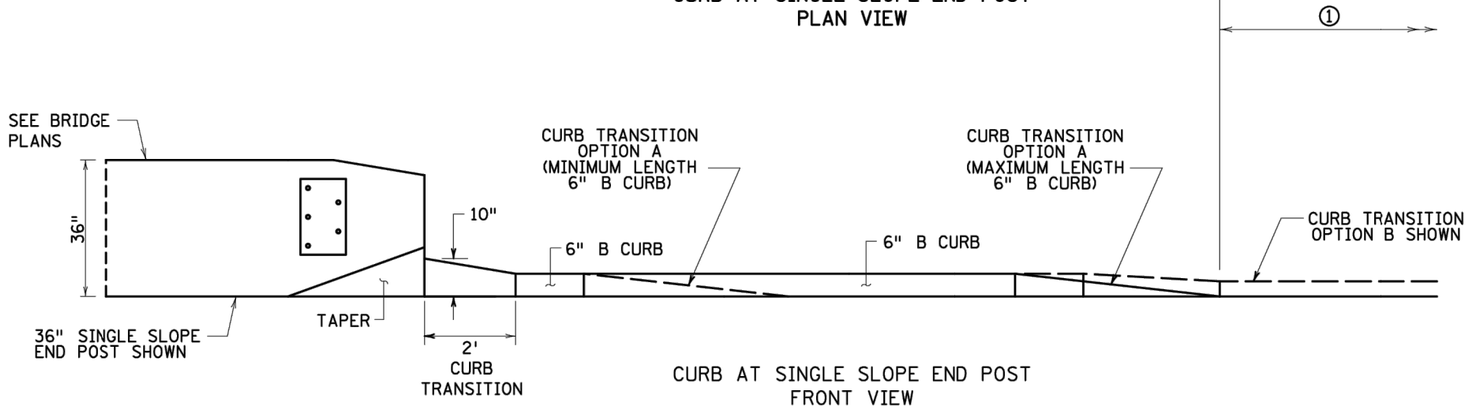
APPROACH GUARDRAIL TRANSITION (AGT) TYPE 31 AT SINGLE SLOPE END POST

ASSEMBLY DETAILS

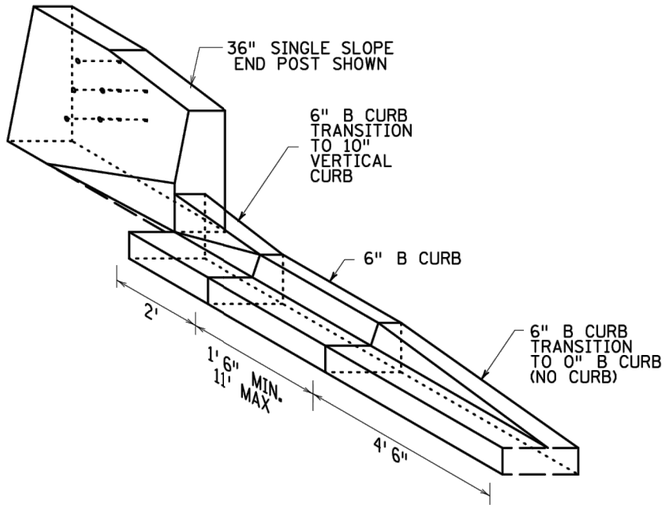
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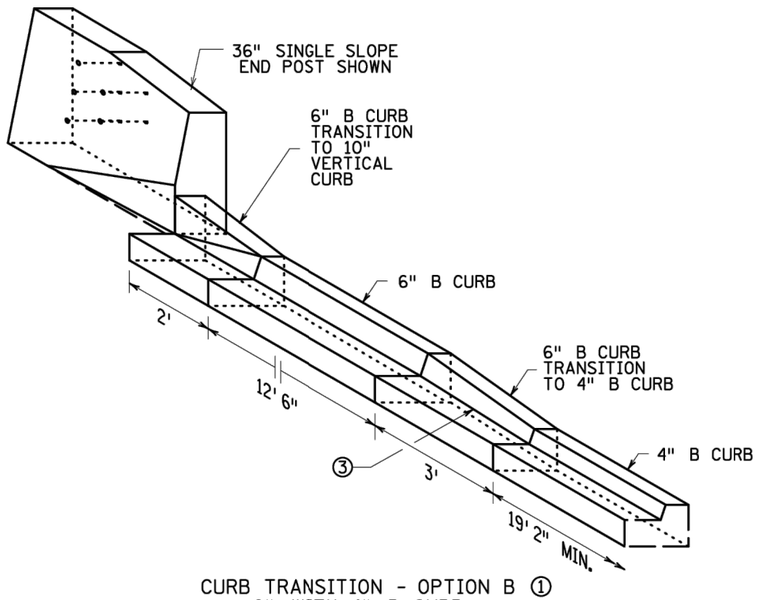
CURB AT SINGLE SLOPE END POST
PLAN VIEW



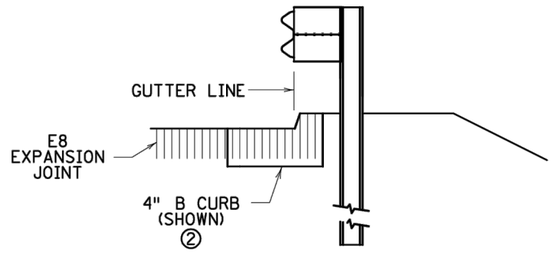
CURB AT SINGLE SLOPE END POST
FRONT VIEW



CURB TRANSITION - OPTION A
6" B CURB ONLY



CURB TRANSITION - OPTION B ①
6" WITH 4" B CURB



EXPANSION JOINT AT CURB

NOTES:

DESIGN B CURB REQUIRED WITH THIS SYSTEM.

DESIGN D CURB ALLOWED BEYOND THE 37' 6" DISTANCE FROM THE RAIL CONNECTION AT THE THRIE-BEAM ANCHORAGE PLATE.

REFER TO APPROACH PANEL PLANS FOR LOCATION OF E8 JOINT.

① CURB TERMINATION NOT ALLOWED BETWEEN POST 8 AND THE 37' 6" DISTANCE FROM THE RAIL CONNECTION AT THE THRIE-BEAM ANCHORAGE PLATE. SEE SHEET 1 OF 3.

② AT CURB CONTAINING E8 EXPANSION JOINT, PLACE BACK FACE OF GUARDRAIL AT THE GUTTER LINE.

③ GUTTER LINE TAPERS 2½" TO MATCH EXTENDED GUTTER LINE FROM BRIDGE.

LEAD EXPERT OFFICE

NANCY YOO
DESIGN SUPPORT DIRECTOR
OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

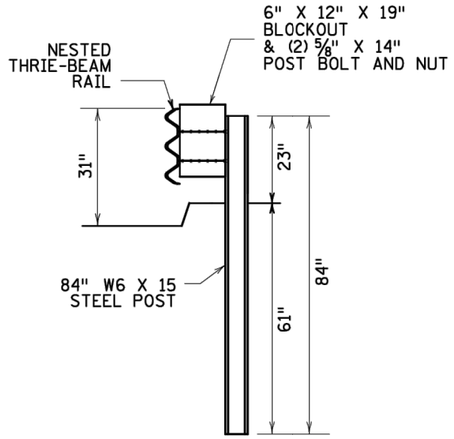
STANDARD PLAN 5-297.694 | 2 OF 3

APPROVED: 07-05-2022
REVISED:

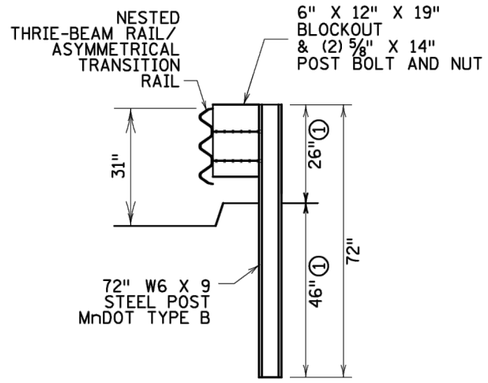
APPROACH GUARDRAIL TRANSITION (AGT) TYPE 31 AT SINGLE SLOPE END POST

CURB DETAILS

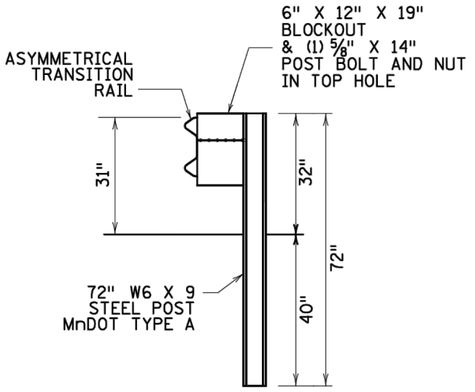
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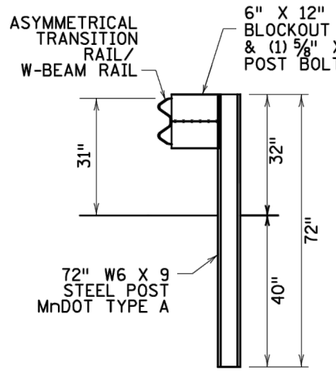
POSTS 1-3



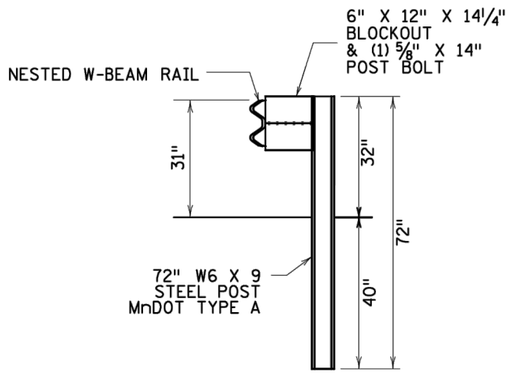
POSTS 4-8



POST 9

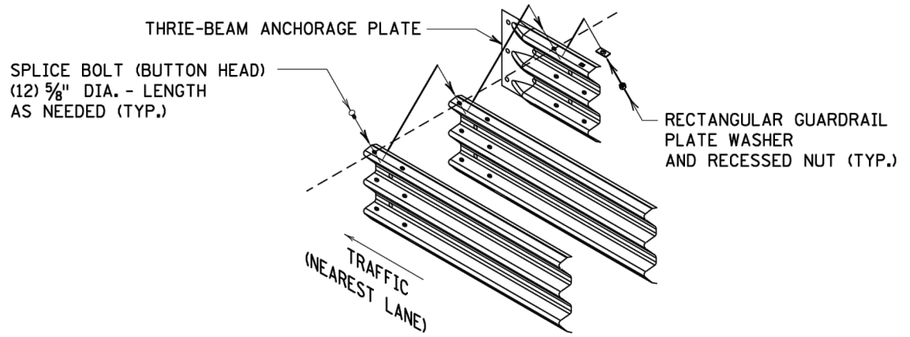


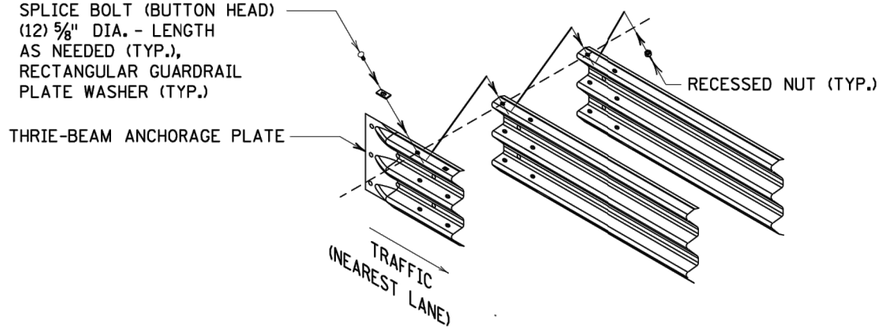
POST 10



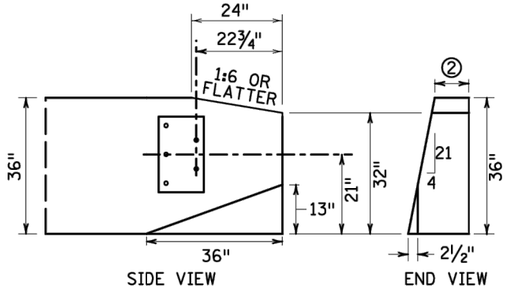
POSTS 11-12

AGT POST COMPONENTS

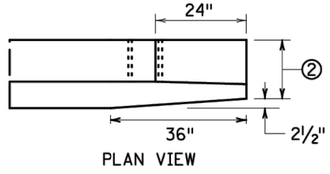




THRIE BEAM RAIL/ANCHORAGE PLATE SPLICE CONNECTION DETAIL ④

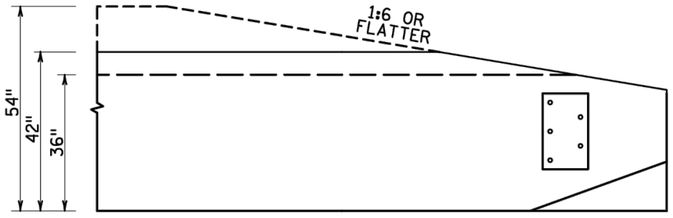


SIDE VIEW END VIEW



PLAN VIEW

SINGLE SLOPE BARRIER ③ (36" HEIGHT SHOWN)



SINGLE SLOPE BARRIER HEIGHT OPTIONS

NOTES:

FOR GUARDRAIL STEEL POSTS, SEE STANDARD PLATE 8361.

FOR GUARDRAIL BLOCKOUTS, SEE STANDARD PLATE 8369.

GUARDRAIL BEAM AND HARDWARE IN ACCORDANCE WITH AASHTO SPEC. M 180.

① DIMENSIONS APPLICABLE FOR POSTS 4-5. DIMENSIONS VARY AT POSTS 4-6 WHERE CURB HEIGHT TRANSITIONS TO NO HEIGHT.

② SEE BRIDGE PLAN.

③ 36" HEIGHT SHOWN.

④ DRILL THRIE-BEAM ANCHORAGE PLATE AS NEEDED FOR FIT, REPAIR GALVANIZED COATINGS IN ACCORDANCE WITH ASTM SPEC. A780.

LEAD EXPERT OFFICE

NANCY YOO
DESIGN SUPPORT DIRECTOR
OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.694	3 OF 3
APPROVED: 07-05-2022	
REVISED:	

APPROACH GUARDRAIL TRANSITION (AGT) TYPE 31 AT SINGLE SLOPE END POST

MISCELLANEOUS AND COMPONENT DETAILS

STATE AID PROJ. NO. 017-615-024 (CSAH 15) SHEET NO. B31 OF B31 SHEETS

Save: 2/6/2024 9:34 AM nmclaughlin Plot: 8/23/2024 11:50 AM x:\AE\C\COTTO\165800115-final-dsgn\51-drawings\20-struct\dwg\Sheet\B28-B31 TRAFFIC BARRIER STD DETAILS.dwg