MINNESOTA DEPARTMENT OF TRANSPORTATION

ANOKA COUNTY

CONSTRUCTION PLAN FOR GRADING, BITUMINOUS SURFACING, ADA IMPROVEMENTS, TRAFFIC SIGNALS, AND BRIDGE NO. 02523

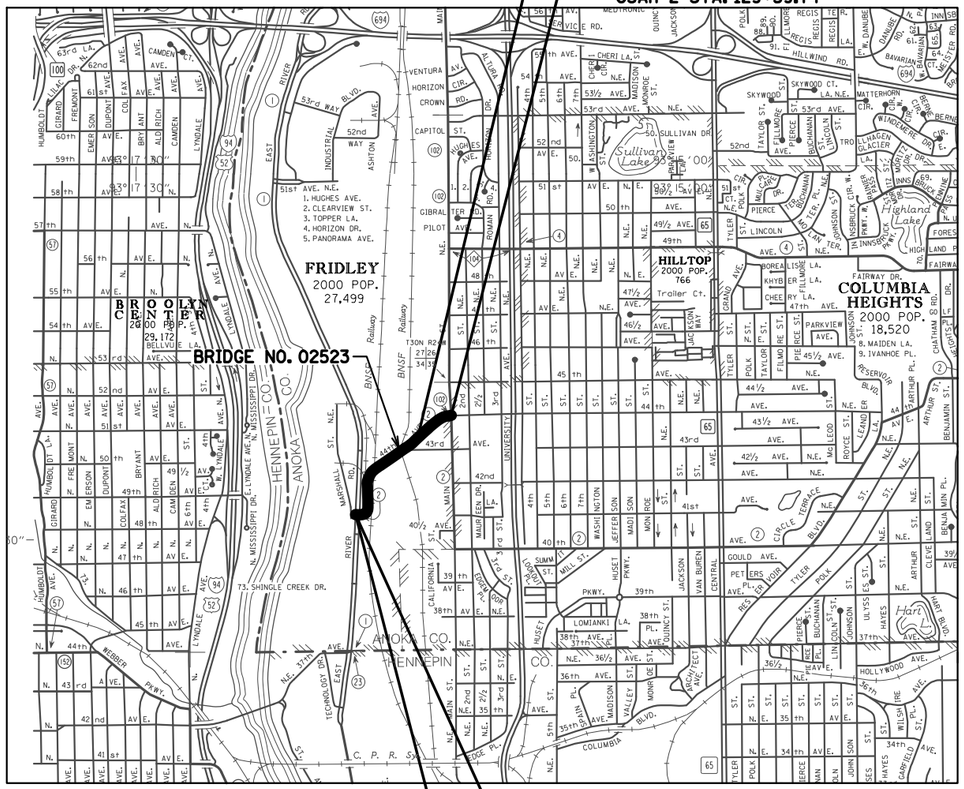
LOCATED ON CSAH 2 FROM CSAH 1 TO MAIN ST NE

S.P. 002-602-015, S.P. 127-020-037
CSAH 2

GROSS LENGTH	2875.60	FEET	0.545 MILES
BRIDGES-LENGTH	1162.25	FEET	0.220 MILES
EXCEPTIONS-LENGTH		FEET	MILES
NET LENGTH	2875.60	FEET	0.545 MILES

END S.P. 002-602-015
BEGIN S.P. 127-020-037
CSAH 2 STA. 125+00.00

END S.P. 127-020-037
END S.A.P 002-602-015
CSAH 2 STA. 129+59.74



S.A.P. 127-020-037
SIGNAL SYSTEM

BEGIN S.P. 002-602-015
BEGIN S.A.P. 002-602-015
CSAH 2 STA. 100+84.14

WARNING!
HIGH VOLTAGE
OVERHEAD ELECTRICAL
TRANSMISSION LINES

UTILITY NOTE:
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-22, ENTITLED "STANDARD GUIDELINE FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

CONTRACTOR TO CONTACT BNSF FOR UTILITIES ON BNSF RIGHT-OF-WAY (1-800-533-2891)

TRAFFIC CONTROL NOTE:
ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO AND BE PLACED IN ACCORDANCE WITH THE LATEST EDITION OF THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD), INCLUDING "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".

THIS PROJECT HAS BEEN GRANTED A VARIANCE FROM MINNESOTA RULE 8820.9936, DATED NOVEMBER 2017, SO AS TO PERMIT A HORIZONTAL ALIGNMENT WITH DESIGN SPEEDS OF 20 MPH IN LIEU OF THE REQUIRED 30 MPH 8820.9995, DATED NOVEMBER 2017, SO AS TO PERMIT A HORIZONTAL AND VERTICAL ALIGNMENT WITH DESIGN SPEEDS OF 20 MPH AND 30 MPH, RESPECTIVELY, IN LIEU OF THE REQUIRED 30 MPH. THE VARIANCE WAS SIGNED BY KRISTINE ELWOOD (ASSISTANT COMMISSIONER / STATE AID ENGINEER) ON NOVEMBER 21, 2024.

PROJECT LOCATION
COUNTY : ANOKA
DISTRICT : METRO

MINN. PROJ. NO. STBG-CRP 0224 (177)

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

SHEET INDEX

1	TITLE SHEET
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125-132	SIGNING PLANS
133-148	SIGNAL PLANS
X1-X10	CROSS SECTIONS

THIS PLAN CONTAINS 158 SHEETS

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.

TKDA

Aaron Cameron
2024.12.02
14:00:28-06'00'

SIGNATURE:
PRINTED NAME: AARON D. CAMERON
DATE: 12/2/2024 LIC. NO. 56592

APPROVED ANOKA COUNTY ENGINEER	Joseph MacPherson	Digitally signed by Joseph MacPherson Date: 2024.12.04 11:45:34 -06'00'
APPROVED CITY OF FRIDLEY ENGINEER	James Kosluchar	Digitally signed by James Kosluchar Date: 2024.12.05 12:10:38 -06'00'
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AND FEDERAL AID RULES/POLICY	Dan Erickson	Digitally signed by Dan Erickson Date: 2024.12.10 10:38:29 -06'00'
APPROVED FOR STATE AND FEDERAL AID FUNDING: for STATE AID ENGINEER	Dan Erickson	Digitally signed by Dan Erickson Date: 2024.12.10 10:38:46 -06'00'

PLAN SYMBOLS

STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT-OF-WAY LINE
TEMPORARY EASEMENT (TE)
PRESENT RIGHT-OF-WAY
CONTROL OF ACCESS LINE
PROPERTY LINES (EXCEPT LAND LINES)
VACATED PLATTED PROPERTY
CORPORATE OR CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RETAINING WALL
RAILROAD
RAILROAD RIGHT-OF-WAY
RIVER OR CREEK (NAME)
DRY RUN
DRAINAGE DITCH (SIZE)
DRAIN TILE (DRAIN TILE)
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
RAILROAD SNOW FENCE
STONE WALL OR FENCE
HEDGE
RAILROAD CROSSING SIGN
RAILROAD CROSSING BELL
ELECTRIC WARNING SIGN
CROSSING GATE
MEANDER CORNER
SPRINGS
MARSH
TIMBER
ORCHARD
BRUSH
NURSERY
(TIMBER)
CATTLE GUARD
OVERPASS (HIGHWAY OVER)
UNDERPASS (HIGHWAY UNDER)
BRIDGE
BUILDING (ONE STORY FRAME)
F - FRAME C - CONCRETE
S - STONE T - TILE
B - BRICK ST- STUCCO
1-S-F 35/75
IRON ROD OR PIPE
MONUMENT (STONE, CONCRETE, OR METAL) MONU.
WOODEN HUB
GRAVEL PIT (G)
SAND PIT (S)
BORROW PIT (B)
ROCK QUARRY (Q)

UTILITY SYMBOLS

POWER POLE LINE
TELEPHONE POLE LINE
ANCHOR
STREET LIGHT
STREET LIGHT CONDUIT
PEDESTAL (TELEPHONE CABLE TERMINAL)
GAS MAIN
WATER MAIN
HYDRANT
VALVE
CATCH BASIN (CB)
TELEPHONE CABLE IN CONDUIT (T)
ELECTRIC CABLE IN CONDUIT (P)
TELEVISION CABLE IN CONDUIT (TV)
TELEPHONE MANHOLE
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE (T-BUR)
BURIED ELECTRIC CABLE (P-BUR)
BURIED TELEVISION CABLE
TRAFFIC SIGNAL INTERCONNECT CABLE
SEWER (STORM) MANHOLE
SEWER (SANITARY) MANHOLE
SEWER (STORM)
SEWER (SANITARY)

SCALES

PLAN 25'
PROFILE 25' HORZ. 5' VERT.
INDEX MAP 1500

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

DESIGN DESIGNATION - CSAH 2

ADT (CURRENT YEAR)	2024	= 4,910
ADT (FUTURE YEAR)	2044	= 5,401
FUNCTIONAL CLASSIFICATION		= MINOR ARTERIAL
TRAFFIC LANES		= 2
PARKING LANES		= 0
SHOULDER WIDTH (FEET)		= 6
SHOULDER WIDTH - RURAL (FEET)		= 0
R-VALUE		= 40
DESIGN ESALS		= 614,000

DESIGN SPEED 30 MPH
BASED ON STOPPING SIGHT DISTANCE
HT OF EYE 3.5' HT OF OBJECT 2.0'
DESIGN SPEED NOT ACHIEVED AT: CSAH 2
STA. 100+94.725 TO STA. 103+14.103

DESIGN DESIGNATION - TRAIL A

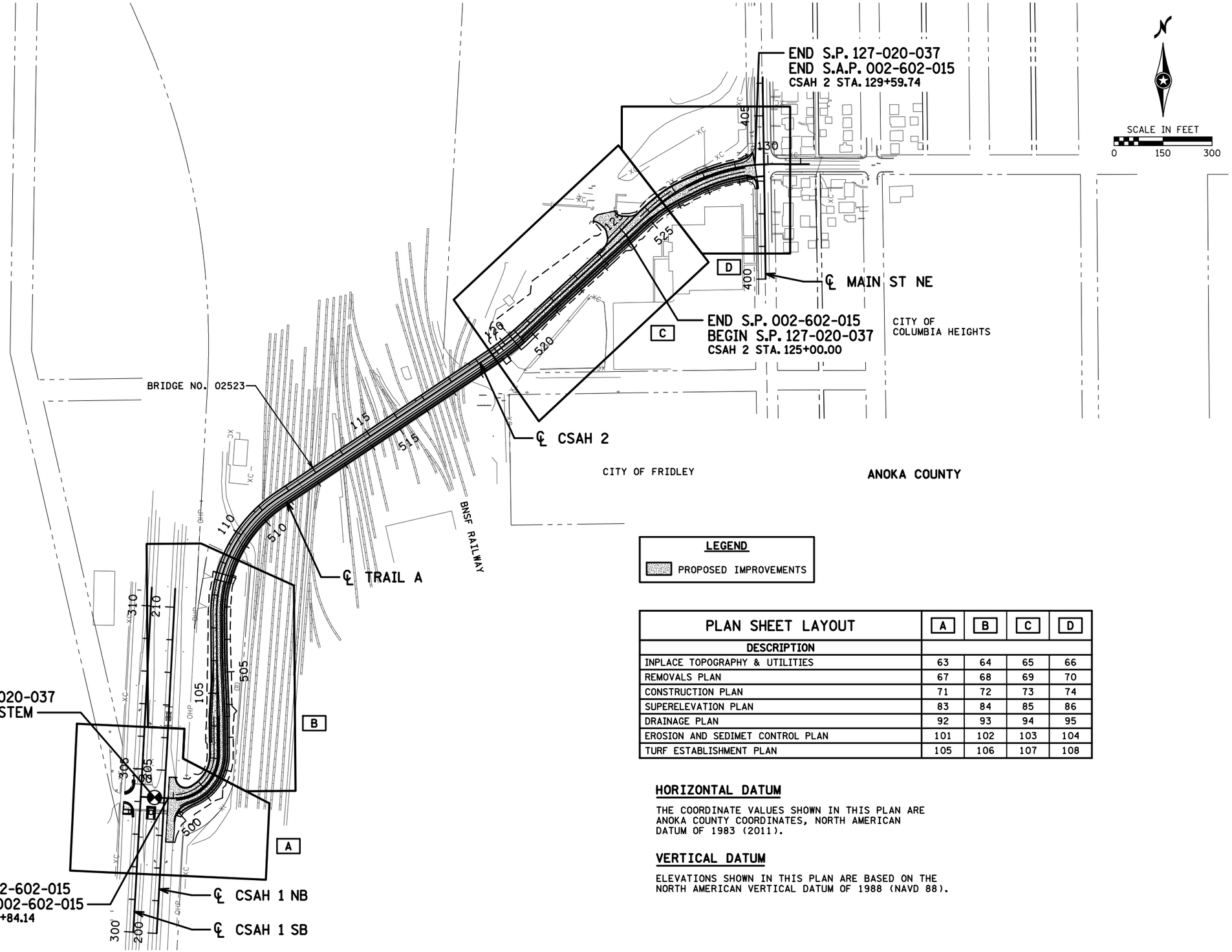
DESIGN SPEED (MPH) 30
BASED ON:
4.5 FT HEIGHT OF EYE 0.0 FT HEIGHT OF OBJECT

DESIGN SPEED NOT ACHIEVED AT: TRAIL A
STA. 500+54.61 TO STA. 502+49.23
STA. 509+05.00 TO STA. 517+95.00

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 1 OF 148 SHEETS

DATE: 12/2/2024 TIME: 1:59:15 PM
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LEGEND

PROPOSED IMPROVEMENTS

PLAN SHEET LAYOUT	A	B	C	D
DESCRIPTION				
INPLACE TOPOGRAPHY & UTILITIES	63	64	65	66
REMOVALS PLAN	67	68	69	70
CONSTRUCTION PLAN	71	72	73	74
SUPERELEVATION PLAN	83	84	85	86
DRAINAGE PLAN	92	93	94	95
EROSION AND SEDIMET CONTROL PLAN	101	102	103	104
TURF ESTABLISHMENT PLAN	105	106	107	108

HORIZONTAL DATUM

THE COORDINATE VALUES SHOWN IN THIS PLAN ARE ANOKA COUNTY COORDINATES, NORTH AMERICAN DATUM OF 1983 (2011).

VERTICAL DATUM

ELEVATIONS SHOWN IN THIS PLAN ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024

AARON D. CAMERON

TKDA

CSAH 2 STA. 100+84 TO STA. 129+59.74

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

GENERAL LAYOUT

SHEET NO. 2 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:32:08 AM
FILENAME: pw:\\tkda-pw.bentley.com:tkda-pw-01\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CADH1gtway\Sheets\cd0026020l5_gl.dgn

ESTIMATED QUANTITIES

TAB LETTER	SHEET NO.	ITEM NO.	ITEM DESCRIPTION	NOTE NO.	UNIT	TOTAL ESTIMATED QUANTITY	ROADWAY		TRAIL		STORM SEWER
							COUNTY	CITY	COUNTY PARTICIPATING	CITY PARTICIPATING	COUNTY
							S.A.P 002-602-015	S.A.P. 127-020-037	S.P. 002-602-015	S.P. 127-020-037	S.A.P. 002-602-015
		2011.601	CONSTRUCTION SURVEYING		LUMP SUM	1	0.7958	0.0088	0.1732	0.0005	0.0217
		2011.601	AS BUILT		LUMP SUM	1	0.7958	0.0088	0.1732	0.0005	0.0217
		2021.501	MOBILIZATION		LUMP SUM	1	0.7958	0.0088	0.1732	0.0005	0.0217
		2031.502	FIELD OFFICE		EACH	1	0.7958	0.0088	0.1732	0.0005	0.0217
		2041.610	TRAINEES		HOUR	1600	1600				
B	7	2101.502	CLEARING		EACH	3	3				
B	7	2101.502	GRUBBING		EACH	3	3				
B	7	2101.505	CLEARING		ACRE	0.15	0.15				
B	7	2101.505	GRUBBING		ACRE	0.15	0.15				
B	7	2104.502	REMOVE ANCHORAGE ASSEMBLY-PLATE BEAM		EACH	1	1				
H	99	2104.502	REMOVE PIPE APRON		EACH	5					5
H	99	2104.502	REMOVE MANHOLE OR CATCH BASIN		EACH	9					9
ST	125	2104.502	REMOVE DELINEATOR / MARKER		EACH	3	3				
ST	125	2104.502	REMOVE SIGN		EACH	46	46				
		2104.502	REMOVE SIGNAL SYSTEM		EACH	1	1				
B	7	2104.502	REMOVE ECCENTRIC LOADER BCT		EACH	3	3				
B	7	2104.503	SAWING BIT PAVEMENT (FULL DEPTH)		LIN FT	735	735				
H	99	2104.503	REMOVE SEWER PIPE (STORM)		LIN FT	548					548
B	7	2104.503	REMOVE CURB & GUTTER		LIN FT	3851	3851				
B	7	2104.503	REMOVE FENCE		LIN FT	64	64				
B	7	2104.503	REMOVE GUARDRAIL-PLATE BEAM		LIN FT	2294	2294				
B	7	2104.504	REMOVE CONCRETE APPROACH PANEL		SQ YD	328	328				
B	7	2104.504	REMOVE BITUMINOUS PAVEMENT		SQ YD	10749	10749				
B	7	2104.518	REMOVE BITUMINOUS WALK		SQ FT	6697	6697				
B	7	2104.518	REMOVE CONCRETE WALK		SQ FT	1136	1136				
B	7	2104.618	REMOVE BRICK PAVERS		SQ FT	1134	1134				
A	7	2106.507	EXCAVATION - COMMON	(P)	CU YD	3320	3320				
A	7	2106.507	COMMON EMBANKMENT (CV)	(P)	CU YD	1424	1424				
C	7	2211.507	AGGREGATE BASE (CV) CLASS 5		CU YD	1915	1496		319	100	
C	7	2360.509	TYPE SP 9.5 WEARING COURSE MIX (2,B)		TON	218			116	102	
C	7	2360.509	TYPE SP 12.5 WEARING COURSE MIX (3,C)		TON	1718	1718				
C	7	2360.509	TYPE SP 12.5 NON WEAR COURSE MIX (3,C)		TON	910	910				
D	7	2401.503	TYPE P-1 BARRIER CONCRETE (3S52)		LIN FT	759	759				
D	7	2401.503	TYPE S (TL-4) 42" BARRIER CONC (3S52)		LIN FT	849	849				
D	7	2406.504	BRIDGE APPROACH PANELS		SQ YD	223	223				
D	7	2411.507	STRUCTURAL CONCRETE (3B52)		CU YD	654	275		379		
D	7	2411.508	REINFORCEMENT BARS (EPOXY COATED)		POUND	87450	43320		44130		
G	98	2501.502	15" RC PIPE APRON		EACH	2					2
G	98	2501.502	18" RC PIPE APRON		EACH	2					2
G	98	2501.502	24" RC PIPE APRON		EACH	2					2

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NO.	DATE	BY	DESCRIPTION OF REVISIONS
2	1/9/2025	ADC	REVISED QUANTITIES

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET, 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: _____ LIC. NO. 56592 DATE: 1/9/2025
AARON D. CAMERON

TKDA

ESTIMATED QUANTITIES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

ESTIMATED QUANTITIES

TAB LETTER	SHEET NO.	ITEM NO.	ITEM DESCRIPTION	NOTE NO.	UNIT	TOTAL ESTIMATED QUANTITY	ROADWAY		TRAIL		STORM SEWER
							COUNTY	CITY	COUNTY PARTICIPATING	CITY PARTICIPATING	COUNTY
							S.A.P 002-602-015	S.A.P. 127-020-037	S.P. 002-602-015	S.P. 127-020-037	S.A.P. 002-602-015
G	98	2503.503	15" RC PIPE SEWER DES 3006 CL V		LIN FT	770					770
G	98	2503.503	18" RC PIPE SEWER DES 3006 CL V		LIN FT	429					429
G	98	2503.503	24" RC PIPE SEWER DES 3006 CL III		LIN FT	66					66
G	98	2503.602	CONNECT TO EXISTING STORM SEWER		EACH	2					2
G	98	2506.502	CASTING ASSEMBLY		EACH	26					26
G	98	2506.503	CONST DRAINAGE STRUCTURE DESIGN N		LIN FT	33.3					33.3
G	98	2506.503	CONST DRAINAGE STRUCTURE DESIGN SD-48		LIN FT	11.9					11.9
G	98	2506.503	CONST DRAINAGE STRUCTURE DES 48-4020		LIN FT	66.2					66.2
G	98	2511.504	GEOTEXTILE FILTER TYPE 3		SQ YD	77.4					77.4
G	98	2511.507	RANDOM RIPRAP CLASS II		CU YD	15.6					15.6
C	7	2521.518	4" CONCRETE WALK		SQ FT	1413	1413				
C	7	2521.602	DRILL & GROUT REINF BAR (EPOXY COATED)		EACH	32	32				
C	7	2521.618	CONCRETE CURB RAMP WALK		SQ FT	700	700				
C	7	2531.503	CONCRETE CURB & GUTTER DESIGN B424		LIN FT	415	208	207			
C	7	2531.503	CONCRETE CURB & GUTTER DESIGN B612		LIN FT	127	127				
C	7	2531.503	CONCRETE CURB & GUTTER DESIGN B612 (MOD)		LIN FT	1024	1024				
C	7	2531.503	CONCRETE CURB & GUTTER DESIGN B624		LIN FT	2119	1295	824			
C	7	2531.504	8" CONCRETE DRIVEWAY PAVEMENT		SQ YD	178	178				
C	7	2531.618	TRUNCATED DOMES		SQ FT	140	140				
G	98	2554.502	GUIDE POST TYPE B		EACH	7					7
C	7	2554.615	IMPACT ATTENUATOR		ASSEMBLY	1	1				
D	7	2557.503	WIRE FENCE DESIGN 60V-9322		LIN FT	277	277				
TC	109	2563.601	TRAFFIC CONTROL		LUMP SUM	1	0.7958	0.0088	0.1732	0.0005	0.0217
TC	109	2563.602	TUBULAR MARKER		EACH	6	6				
ST	125	2564.602	DELINEATOR / MARKER		EACH	4	4				
ST	125	2564.602	DELINEATOR / MARKER PANEL		EACH	9	9				
ST	125	2564.618	SIGN		SQ FT	285	285				
U	133	2565.516	TRAFFIC CONTROL SIGNAL SYSTEM		SYSTEM	1	0.75	0.25			
		2573.501	STABILIZED CONSTRUCTION EXIT		LUMP SUM	1	1				
		2573.501	EROSION CONTROL SUPERVISOR		LUMP SUM	1	1				
E	8	2573.502	STORM DRAIN INLET PROTECTION		EACH	32	32				
E	8	2573.502	CULVERT END CONTROLS		EACH	6	6				
E	8	2573.503	SILT FENCE, TYPE MS		LIN FT	601	601				
E	8	2573.503	SEDIMENT CONTROL LOG TYPE COMPOST		LIN FT	2074	2074				
F	8	2574.505	SUBSOILING		ACRE	0.8	0.8				
F	8	2574.505	SOIL BED PREPARATION		ACRE	2.2	2.2				
F	8	2574.508	FERTILIZER TYPE 1		POUND	445	445				

DATE: 1/7/2025 TIME: 2:48:02 PM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	1/7/2025	ADC	REVISED CURB DESIGN

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 1/7/2025
AARON D. CAMERON

TKDA

ESTIMATED QUANTITIES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

ESTIMATED QUANTITIES

TAB LETTER	SHEET NO.	ITEM NO.	ITEM DESCRIPTION	NOTE NO.	UNIT	TOTAL ESTIMATED QUANTITY	ROADWAY		TRAIL		STORM SEWER
							COUNTY	CITY	COUNTY PARTICIPATING	CITY PARTICIPATING	COUNTY
							S.A.P 002-602-015	S.A.P. 127-020-037	S.P. 002-602-015	S.P. 127-020-037	S.A.P. 002-602-015
F	8	2575.504	ROLLED EROSION PREVENTION CATEGORY 20		SQ YD	3636	3636				
F	8	2575.505	SEEDING		ACRE	1.4	1.4				
F	8	2575.505	MOWING		ACRE	2.8	2.8				
F	8	2575.505	WEED SPRAYING		ACRE	0.8	0.8				
F	8	2575.506	WEED SPRAY MIXTURE		GALLON	0.4	0.4				
F	8	2575.508	HYDRAULIC REINFORCED FIBER MATRIX		POUND	2001	2001				
E	8	2575.523	RAPID STABILIZATION METHOD 3		M GALLON	15.4	15.4				
F	8	2575.608	SEED SOUTHERN BOULEVARD		POUND	204	204				
TC	109	2581.503	4" REMOVABLE PREFORM PAVEMENT MARKING TAPE		LIN FT	476	476				
TC	109	2581.503	12" REMOVABLE PREFORM PAVEMENT MARKING TAPE		LIN FT	42	42				
TC	109	2581.618	REMOVABLE PREFORMED PLASTIC MASK (BLACK)		SQ FT	30	30				
		1 2582.503	MOBILE RETROREFLECTOMETER MEASUREMENTS		LIN FT	12771	12771				
PM	117	2582.503	4" SOLID LINE PREF TAPE GR IN (WR)		LIN FT	5030	5030				
PM	117	2582.503	4" DBLE SOLID LINE PREF TAPE GR IN (WR)		LIN FT	2666	2666				
PM	117	2582.503	4" SOLID LINE PREF TAPE GR IN (WR) CONT		LIN FT	2409	2409				
PM	117	2582.503	24" SOLID LINE PREF THERMO GR IN		LIN FT	124	124				
PM	117	2582.518	PAVT MSSG PREF THERMO		SQ FT	151	151				
PM	117	2582.518	CROSSWALK PREF THERMO GR IN		SQ FT	875	875				
		1 2582.602	MOBILE RETROREFLECTOMETER MEASUREMENTS		EACH	90	90				

DATE: 1/7/2025 TIME: 2:48:07 PM
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AARON D. CAMERON

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ESTIMATED QUANTITIES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SOILS AND CONSTRUCTION NOTES:

1. GRADING GRADE IS DEFINED AS THE BOTTOM OF AGGREGATE BASE (CV) CLASS 5.

2. CONSTRUCT EMBANKMENTS IN ACCORDANCE WITH MNDOT SPECIFICATION 2106 AND THE MNDOT ROAD DESIGN MANUAL. ALL EMBANKMENT CORE -WIDENING MATERIAL, INCLUDING MATERIAL USED FOR TEMPORARY WIDENING, SHALL BE SELECT GRADING MATERIAL OR COMMON EMBANKMENT (CV) IN ACCORDANCE WITH OTHER REQUIREMENTS PROVIDED IN MNDOT SPECIFICATION 2106.

3. IN ANY CASE WHERE GRANULAR EMBANKMENTS OR BACKFILL JOIN NON-GRANULAR SOIL EMBANKMENT OR BACKFILL, PROVIDE A 1:20 (V:H) TRANSITION SUCH THAT THE GRANULAR BACKFILL MATERIAL OVERLAYS THE ADJACENT NON-GRANULAR SOIL BACKFILL. PROVIDE A SIMILAR TAPER FOR CHANGING SUBCUT DEPTHS OR MATERIALS (I.E. DIFFERING IN COLOR, SOIL CLASSIFICATION, MOISTURE CONTENT, AND DENSITY).

4. BEFORE PLACING EMBANKMENT MATERIAL, CONSTRUCT STEPS AT A MINIMUM WIDTH OF 12 INCHES WHEN SIDESLOPES ARE STEEPER THAN 1:4 (V:H).

5. ANY EXTRA MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OUTSIDE OF THE RIGHT OF WAY IN ACCORDANCE WITH MNDOT SPECIFICATION 2104.3D.

6. WHEN REMOVING BITUMINOUS PAVEMENTS ADJACENT TO MATERIALS THAT WILL REMAIN IN PLACE, MAKE FULL-DEPTH SAWCUTS PERPENDICULAR TO THE ROADWAY CENTERLINE AND ALONG EXISTING LONGITUDINAL PAVEMENT JOINTS.

7. EXISTING AGGREGATE AND TOPSOIL SHALL BE REUSED IN NEW CONSTRUCTION WHERE POSSIBLE. OTHER EXCAVATED MATERIALS SHALL BE USED TO THE FULLEST EXTENT PRACTICAL SO FAR AS THEY ARE DESIGNATED SUITABLE WITH RESPECT TO THE REQUIREMENTS OF THE PROJECT.

8. ASSUMED EXISTING AVERAGE PAVEMENT THICKNESSES ARE LISTED BELOW. THE CONTRACTOR SHALL INVESTIGATE AND MAKE THEIR OWN DETERMINATION.
   CSAH 2 - 6.5 INCHES OF BITUMINOUS

9. ASIDE FROM REMOVING TOPSOIL, REMOVING UNSUITABLE SOILS ENCOUNTERED IN EXCAVATIONS AS REQUIRED BY THE ENGINEER, AND ANY WORK DESCRIBED IN THE FOUNDATION ANALYSIS DESIGN REPORT, THERE HAVE NOT BEEN ANY SUBCUTS IDENTIFIED.

10. REPLACE ALL EXCAVATED SOILS WITH SUITABLE GRADING MATERIAL MEETING THE REQUIREMENTS OF MNDOT SPECIFICATION 2106.

11. STRIP ALL EXISTING TOPSOIL IN AREAS TO BE DISTURBED BY CONSTRUCTION AND REUSE AS TOPSOIL WITHIN PROJECT LIMITS. PLACE A MINIMUM OF 6 INCHES OF TOPSOIL MATERIAL. ANY TOPSOIL NEEDED IN ADDITION TO SALVAGED TOPSOIL SHALL MEET THE REQUIREMENTS OF TOPSOIL BORROW (MNDOT SPECIFICATION 3877.2A).

12. PROVIDE TACK COAT BETWEEN ALL BITUMINOUS LAYERS IN ACCORDANCE WITH MNDOT SPECIFICATION 2357.

13. PROVIDE CONCRETE MEETING THE MOST CURRENT MNDOT SPECIFICATION 2301 CONCRETE PAVEMENT REQUIREMENTS.

14. PRODUCE CONCRETE MIX DESIGNS FOLLOWING MIX DESIGN PROCEDURES STATED IN MNDOT SPECIFICATIONS 2301.1 AND 2461.1 AS REQUIRED FOR THE TYPE OF CONCRETE USED.

15. DITCH BOTTOMS, TOE OF FILL, CUT RUNOUTS AND THE TOP EDGE OF THE BACKSLOPES SHALL BE ROUNDED REGARDLESS OF THE SECTIONS SHOWN IN THE TYPICAL SECTIONS AND CROSS SECTIONS.

16. THE CONTRACTOR IS HEREBY REMINDED OF THEIR RESPONSIBILITY UNDER STATE LAW TO CONTACT ALL UTILITIES THAT MAY HAVE FACILITIES IN THE AREA. CONTACT MUST BE MADE THROUGH GOPHER STATE ONE-CALL.

17. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE GENERAL MILLS ENTRANCE AT ALL TIMES. CONTRACTOR TO NOTIFY THE OWNER A MINIMUM 2 DAYS PRIOR TO WORK IMPEDING DRIVEWAY ACCESS OR ANY DRIVEWAY CONSTRUCTION.

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

STANDARD PLATES

PLATE NO.	DESCRIPTION
3000M	REINFORCED CONCRETE PIPE (6 SHEETS)
3006H	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3007F	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3133D	RIPRAP AT RCP OUTLETS
3145G	CONCRETE PIPE OR PRECAST BOX CULVERT TIES
4003B	30" PRECAST CATCH BASIN - DESIGN N
4010I	CONCRETE ADJUSTING RINGS
4011E	PRECAST CONCRETE BASE
4020J	MANHOLE OR CATCH BASIN (FOR USE WITH OR WITHOUT TRAFFIC LOADS) (2 SHEETS)
4024A	48" DIA. PRECAST SHALLOW DEPTH CATCH BASIN - DESIGN SD
4026B	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
4110F	COVER CASTING FOR MANHOLE (FOR USE IN ALL TRAFFIC AREAS) – CASTING NO. 715 AND 716
4125D	CATCH BASIN FRAME CASTING (FOR SQUARE GRATE) – CASTING NO. 806
4132G	CATCH BASIN FRAME CASTING (FOR SQUARE GRATE) - CASTING NO. 805
4134A	CURB BOX CASTING FOR CATCH BASIN (FOR DESIGN B CURBS)- CASTING NO. 825
4140D	SPECIAL GRATE CASTINGS FOR CATCH BASIN (CONVEX AND CONCAVE) - CASTING NO. 720 AND 721
4143E	STOOL GRATE & CONCRETE FRAME (MEDIAN DRAINS) - CASTING NO. 731
4153A	CATCH BASIN GRATE CASTING - CASTING NO. 815
4154B	CATCH BASIN GRATE CASTING - CASTING NO. 816
4180J	MANHOLE OR CATCH BASIN STEP
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100H	CONCRETE CURB AND GUTTER (DESIGN B AND DESIGN V)
7113A	CONCRETE APPROACH NOSE DETAIL
8000K	TEMPORARY CHANNELIZERS (3 SHEETS)
8129A	SHIM AND WASHER (TRAFFIC CONTROL SIGNALS AND ROADWAY LIGHTING)
8150C	INSTALLATION OF CULVERT MARKERS
9322K	CHAIN LINK FENCE (2 SHEETS)

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET, 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

SOILS & CONSTRUCTION NOTES, STANDARD PLATES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

EARTHWORK TABULATION — TAB A

STATION			EXCAVATION - COMMON	COMMON EMBANKMENT (CV)
			CU YD	CU YD
			(A)	(A)
CSAH 2				
100+84.14	TO	101+00	22	3
101+00	TO	101+50	50	57
101+50	TO	102+00	42	83
102+00	TO	102+50	33	57
102+50	TO	103+00	42	41
103+00	TO	103+50	73	30
103+50	TO	104+00	91	28
104+00	TO	104+50	100	26
104+50	TO	105+00	111	23
105+00	TO	105+50	115	21
105+50	TO	106+00	114	21
106+00	TO	106+50	112	20
106+50	TO	107+00	107	18
107+00	TO	107+50	99	18
107+50	TO	108+00	90	18
108+00	TO	108+45	62	15
120+50	TO	121+00	61	51
121+00	TO	121+50	63	61
121+50	TO	122+00	168	58
122+00	TO	122+50	275	59
122+50	TO	123+00	281	53
123+00	TO	123+50	286	50
123+50	TO	124+00	254	53
124+00	TO	124+50	142	92
124+50	TO	125+00	59	131
125+00	TO	125+50	54	93
125+50	TO	126+00	64	39
126+00	TO	126+50	72	29
126+50	TO	127+00	51	36
127+00	TO	127+50	28	38
127+50	TO	128+00	29	32
128+00	TO	128+50	43	24
128+50	TO	129+00	54	18
129+00	TO	129+50	63	24
129+50	TO	129+59.74	10	4
CSAH 2 TOTALS			**3320**	**1424**

REMOVALS — TAB B

STATION	CLEARING	GRUBBING	CLEARING	GRUBBING	REMOVE ANCHORAGE ASSMBLY - PLATE BEAM	REMOVE ECCENTRIC LOADER BCT	SAWING BIT PAVEMENT (FULL DEPTH)	REMOVE CURB & GUTTER	REMOVE FENCE	REMOVE GUARDRAIL - PLATE BEAM	REMOVE CONCRETE APPROACH PANEL	REMOVE BITUMINOUS PAVEMENT (1) (2)	REMOVE BITUMINOUS WALK (3)	REMOVE CONCRETE WALK	REMOVE BRICK PAVERS
	EACH	EACH	ACRE	ACRE	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	SQ YD	SQ YD	SQ FT	SQ FT	SQ FT
	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
CSAH 2															
100+84 TO 102+75					1	1	510	598		190		1727	1707		750
102+75 TO 109+25								1585	32	1226	163	3011	4990	229	384
119+50 TO 126+50	3	3	0.15	0.15		2	81	663	32	878	165	3949		163	
126+50 TO 129+60							144	1005				2062		744	
TOTALS	**3**	**3**	**0.15**	**0.15**	**1**	**3**	**735**	**3851**	**64**	**2294**	**328**	**10749**	**6697**	**1136**	**1134**

AGGREGATE, CONCRETE, AND BITUMINOUS — TAB C

STATION	AGGREGATE BASE (CV) CLASS 5			TYPE SP 9.5 WEARING COURSE MIXTURE (2,B) (SPWEA240B) (4) (5)		TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) (SPWEB340C) (4) (5)	TYPE SP 12.5 NON WEAR COURSE MIXTURE (3,C) (SPNWB330C) (4) (5)	4" CONCRETE WALK	DRILL & GROUT REINF BAR (EPOXY COATED) (6)			CONCRETE CURB RAMP WALK
									QUADRANT			
	ROADWAY	TRAIL							BACK OF CURB	LANDING	END OF CURB TIE-IN	
	COUNTY	COUNTY	CITY	COUNTY	CITY							
	CU YD	CU YD	CU YD	TON	TON	TON	TON	SQ FT	EACH	EACH	EACH	SQ FT
	(A)	(B)	(C)	(B)	(C)	(A)	(A)	(A)	(A)			(A)
CSAH 2												
100+84 TO 102+75	245	42		43		293	155	469	21			553
102+75 TO 109+25	442	158		48		481	255	466				
119+50 TO 126+50	521	119	36	25	37	586	310					
126+50 TO 129+60	288		64		65	358	190	478	7		4	147
TOTALS	**1496**	**319**	**100**	**116**	**102**	**1718**	**910**	**1413**	**28**		**4**	**700**

AGGREGATE, CONCRETE, AND BITUMINOUS — TAB C

STATION	CONCRETE CURB & GUTTER DESIGN B424	CONCRETE CURB & GUTTER DESIGN B612	CONCRETE CURB & GUTTER DESIGN B612 (MOD)	CONCRETE CURB & GUTTER DESIGN B624	8" CONCRETE DRIVEWAY PAVEMENT	TRUNCATED DOMES		IMPACT ATTENUATOR
	LIN FT	LIN FT	LIN FT	LIN FT	SQ YD	RADIUS	SQ FT	ASSEMBLY
	(D)	(A)	(A)	(D)	(A)	(A)		(A)
CSAH 2								
100+84 TO 102+75	237		286	288		60'	102	
102+75 TO 109+25			360	691				
119+50 TO 126+50		127		692	178			1
126+50 TO 129+60	178		378	448		30'	38	
TOTALS	**415**	**127**	**1024**	**2119**	**178**		**140**	**1**

APPROACH PANELS, MOMENT SLABS, AND FENCING — TAB D

STATION	TYPE P-1 BARRIER CONCRETE (3S52)	TYPE S (TL-4) 42" BARRIER CONC (3S52)	BRIDGE APPROACH PANELS	STRUCTURAL CONCRETE (3B52)		REINFORCEMENT BARS (EPOXY COATED)		WIRE FENCE DESIGN 60V-9322
				ROADWAY	TRAIL	ROADWAY	TRAIL	
	LIN FT	LIN FT	SQ YD	CU YD	CU YD	POUND	POUND	LIN FT
	(A)	(A)	(A)	(A)	(B)	(A)	(B)	(A)
CSAH 2								
100+84 TO 102+75								78
102+75 TO 109+25	410	501	110	162	205	25480	23600	199
119+50 TO 126+50	349	348	113	113	174	17840	20530	
126+50 TO 129+60								
TOTALS	**759**	**849**	**223**	**275**	**379**	**43320**	**44130**	**277**

NOTES:
(1) REMOVAL OF BITUMINOUS CURB IS INCIDENTAL.
(2) 6.5" AVERAGE EXISTING PAVEMENT DEPTH.
(3) 3" AVERAGE EXISTING PAVEMENT DEPTH.
(4) QUANTITY CALCULATED AT 113 LBS/SQ YD/INCH.
(5) 1/4" ADDED TO THE FIRST LIFT FOR COMPUTATIONAL PURPOSES ONLY.
(6) 12" LONG NO. 4 BARS AT 36" MAXIMUM SPACING. INCLUDES REINFORCEMENT BARS FOR CURB LINE AND SIDEWALK REINFORCEMENT PER STANDARD PLAN 5-297.250.

FUNDING NOTES:
(A) 100% ANOKA COUNTY S.A.P. 002-602-015 FUNDS.
(B) 100% ANOKA COUNTY S.P. 002-602-015 FUNDS.
(C) 100% CITY OF FRIDLEY S.P. 127-020-037 FUNDS.
(D) 50% ANOKA COUNTY S.A.P. 002-602-015 FUNDS, 50% CITY OF FRIDLEY S.A.P. 127-020-037 FUNDS.

NO.	DATE	BY	DESCRIPTION OF REVISIONS
2	1/9/2025	ADC	REVISED QUANTITIES
1	1/7/2025	ADC	REVISED CURB DESIGN

DES: RH
DRW: JDM
CHK: ADC

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AARON D. CAMERON

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TABULATIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

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EROSION & SEDIMENT CONTROL — TAB E

STATION	STORM DRAIN INLET PROTECTION	CULVERT END CONTROLS	SILT FENCE TYPE MS	SEDIMENT CONTROL LOG TYPE COMPOST	RAPID STABILIZATION METHOD 3 (1)
	EACH	EACH	LIN FT	LIN FT	M GALLON
CSAH 2					
100+84 TO 102+50	7	3	360	92	2.2
102+50 TO 109+25	6	2	241	1040	3.5
119+50 TO 126+50	15	1		797	8.7
126+50 TO 129+60	4			145	1.0
TOTALS	**32**	**6**	**601**	**2074**	**15.4**

NOTES:
(1) RAPID STABILIZATION QUANTITIES ARE BASED ON 2.0 TIMES THE AREA SHOWN ON THE EROSION CONTROL PLANS.

TURF ESTABLISHMENT — TAB F

STATION	SUBSOILING (2)	SOIL BED PREPARATION (3)	FERTILIZER TYPE 1 (4)	ROLLED EROSION PREVENTION CATEGORY 20	SEEDING	MOWING (5)	WEED SPRAYING (6)	WEED SPRAY MIXTURE (7)	HYDRAULIC REINFORCED FIBER MATRIX	SEED SOUTHERN BOULEVARD
	ACRE	ACRE	POUND	SQ YD	ACRE	ACRE	ACRE	GALLON	POUND	POUND
CSAH 2										
100+84 TO 102+50	0.1	0.3	63	859	0.2	0.4	0.1	0.1		29
102+50 TO 109+25	0.2	0.5	100	434	0.3	0.6	0.2	0.1	762	46
119+50 TO 126+50	0.4	1.2	253	1955	0.8	1.6	0.4	0.1	1239	116
126+50 TO 129+60	0.1	0.2	29	388	0.1	0.2	0.1	0.1		13
TOTALS	**0.8**	**2.2**	**445**	**3636**	**1.4**	**2.8**	**0.8**	**0.4**	**2001**	**204**

NOTES:
(2) QUANTITY BASED ON 0.5 ACRES OF SUBSOILING FOR EACH ACRE SEEDED.
(3) QUANTITY BASED ON 1.5 ACRES OF SOIL BED PREPARATION FOR EACH ACRE SEEDED.
(4) FERTILIZER TYPE 1 (COMMERCIAL), ANALYSIS 20-10-20 AT 350 LBS/ACRE.
(5) QUANTITY BASED ON 2 ACRES OF MOWING FOR EACH ACRE SEEDED.
(6) QUANTITY BASED ON 0.5 ACRES OF SPRAYING FOR EACH ACRE SEEDED.
(7) RATE OF 0.125 GAL PER ACRE SPRAYED. CLOPYRALID HERBICIDE LABELED FOR RIGHT OF WAY USE AND FORMULATED AT 3 POUNDS ACID EQUIVALENT PER GALLON.

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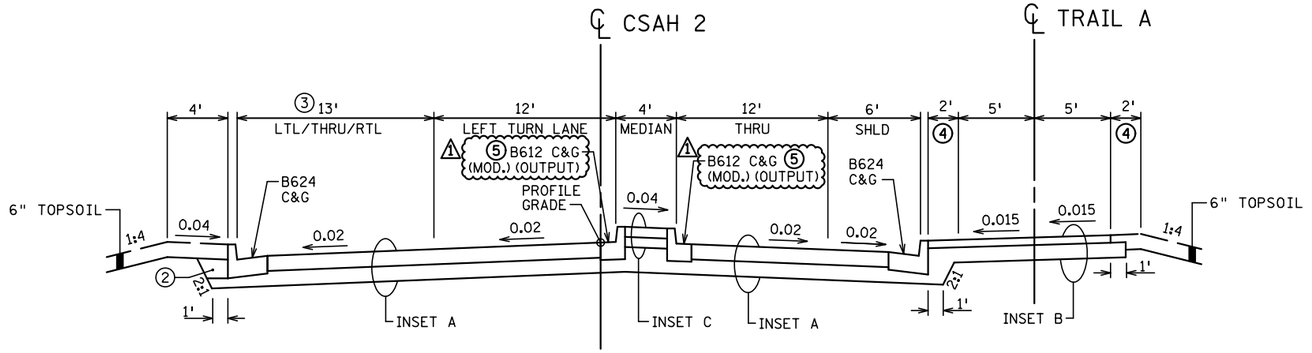
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DRW: AIM
CHK: ALP

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ADAM L. PETERSEN

TKDA

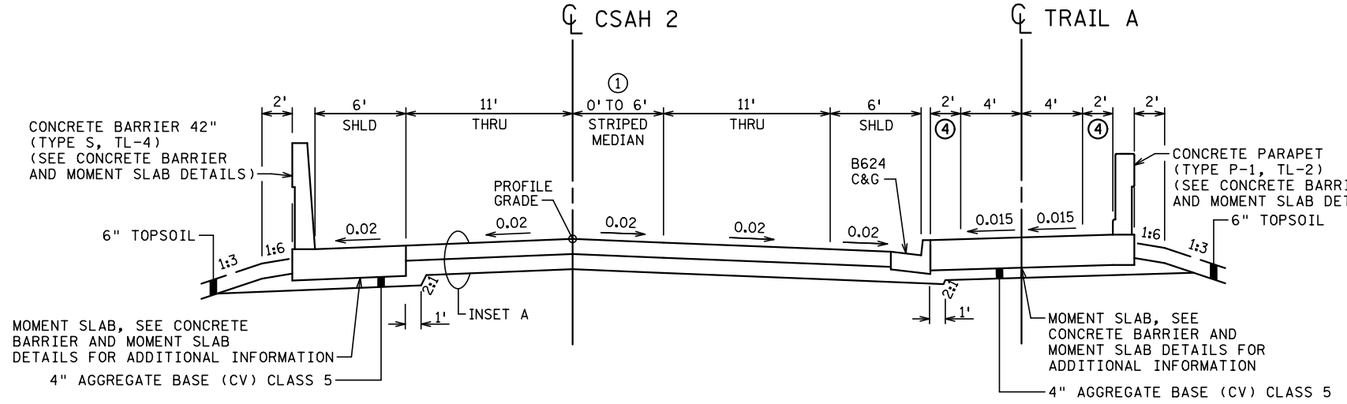
TABULATIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037



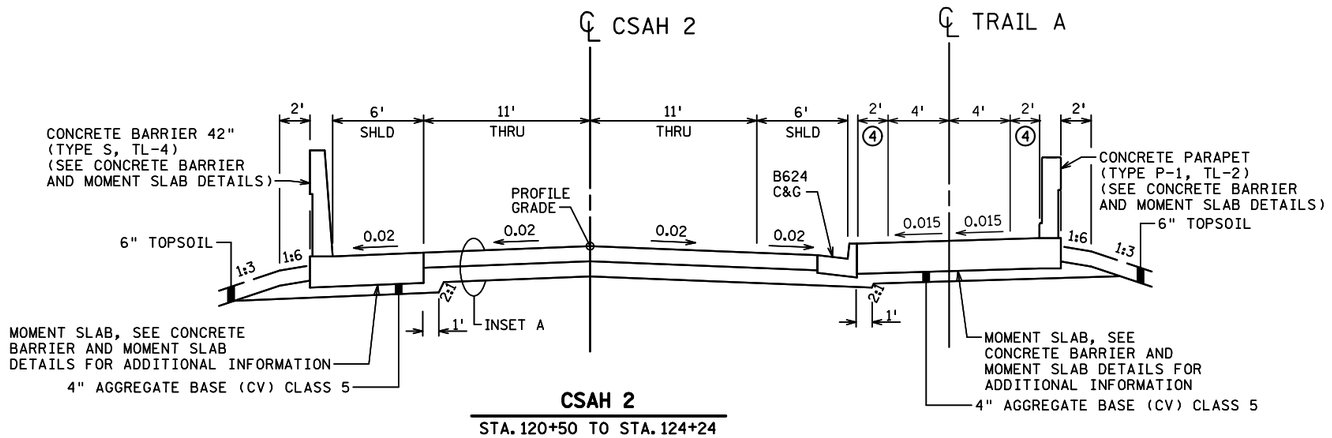
CSAH 2

STA. 100+84.14 TO STA. 104+28



CSAH 2

STA. 104+28 TO STA. 108+45

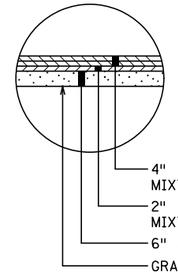


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STA. 120+50 TO STA. 124+24

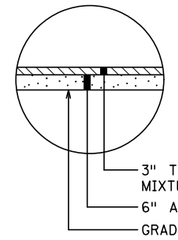
INSET A

CSAH 2



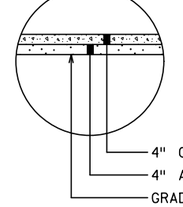
INSET B

TRAIL



INSET C

CONCRETE WALK



GENERAL NOTES:

- CROSS SLOPES ARE EXPRESSED IN FT/FT.
- TYPICAL CROSS SLOPES ARE SHOWN. SEE SUPERELEVATION PLANS FOR SUPERELEVATION SLOPES AND TRANSITIONS.
- UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE SHALL MATCH THE FINISHED PAVING SURFACE.

SPECIFIC NOTES:

(1) TAPERS FROM 6' AT STA. 104+28 TO 0' AT STA. 106+08. 0' FROM STA. 106+08 TO STA. 108+45.

(2) COMMON EMBANKMENT (CV).

(3) CONCRETE BARRIER AND MOMENT SLAB AT STA. 103+50 TO STA. 104+28. SEE CONCRETE BARRIER AND MOMENT SLAB DETAILS FOR ADDITIONAL INFORMATION.

(4) CLEAR ZONE SHALL BE 2 FT. MINIMUM, 3 FT. PREFERRED, ON EACH SIDE OF TRAIL. NO OBSTRUCTIONS SHALL BE LOCATED IN THIS ZONE. THE CLEAR ZONE CROSS SLOPE SHALL BE THE SAME AS THE FINISHED SURFCAE.

(5) SEE DETAIL ON SHEET 41R.

NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	1/7/2025	ADC	REVISED CURB DESIGN

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 1/7/2025

AARON D. CAMERON

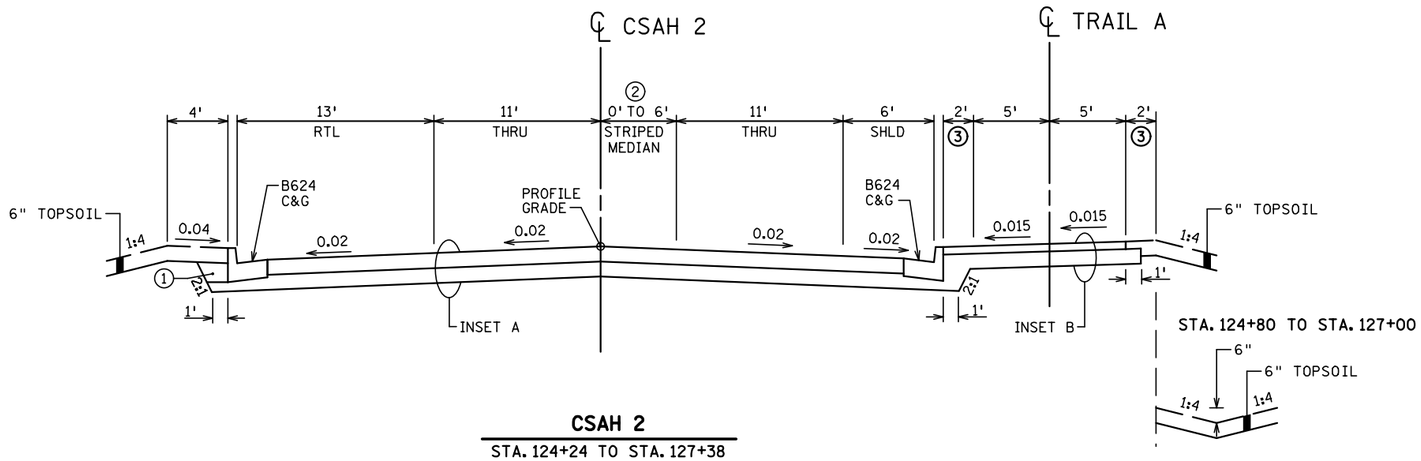
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TYPICAL SECTIONS

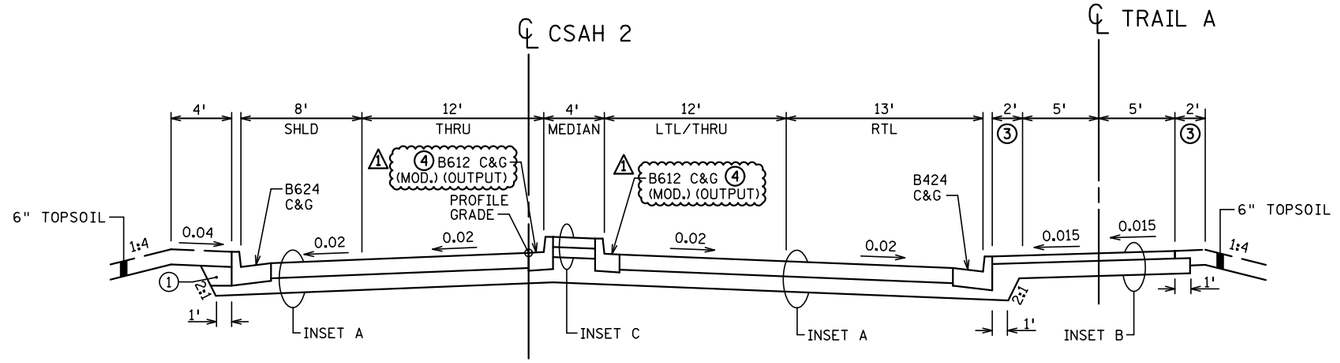
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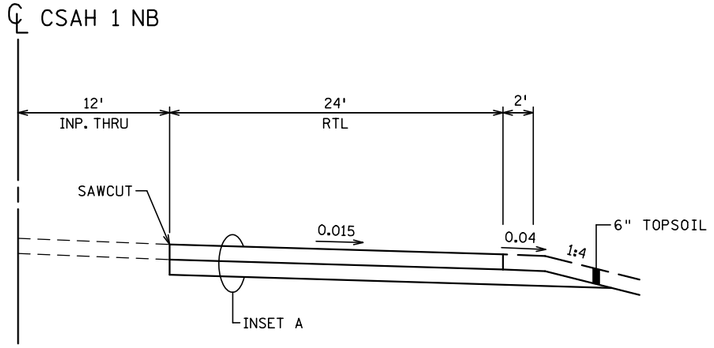
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CSAH 2
STA. 124+24 TO STA. 127+38

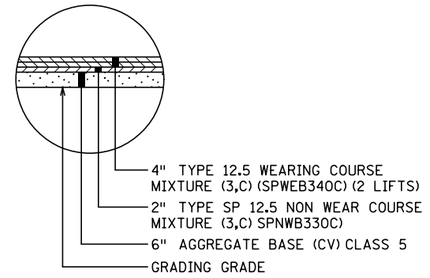


CSAH 2
STA. 127+38 TO STA. 129+59.74

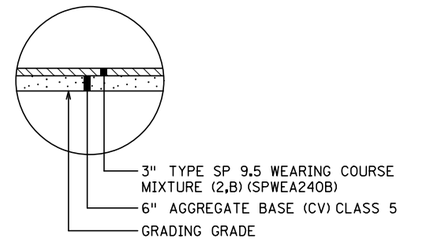


CSAH 1 NB
STA. 202+81 TO STA. 204+80

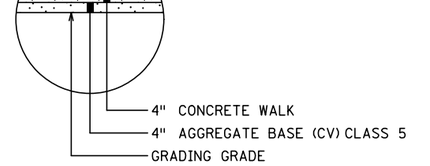
INSET A
CSAH 2



INSET B
TRAIL



INSET C
CONCRETE WALK



GENERAL NOTES:

- CROSS SLOPES ARE EXPRESSED IN FT/FT.
- TYPICAL CROSS SLOPES ARE SHOWN. SEE SUPERELEVATION PLANS FOR SUPERELEVATION SLOPES AND TRANSITIONS.
- UNLESS OTHERWISE SPECIFIED, THE GRADING GRADE SHALL MATCH THE FINISHED PAVING SURFACE.

SPECIFIC NOTES:

① COMMON EMBANKMENT (CV).

② TAPERS FROM 0' AT STA. 125+55 TO 6' AT STA. 127+38.

③ CLEAR ZONE SHALL BE 2 FT. MINIMUM, 3 FT. PREFERRED, ON EACH SIDE OF TRAIL. NO OBSTRUCTIONS SHALL BE LOCATED IN THIS ZONE. THE CLEAR ZONE CROSS SLOPE SHALL BE THE SAME AS THE FINISHED SURFCAE.

④ SEE DETAIL ON SHEET 41R.

NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	1/7/2025	ADC	REVISED CURB DESIGN

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 1/7/2025
AARON D. CAMERON

TKDA

TYPICAL SECTIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

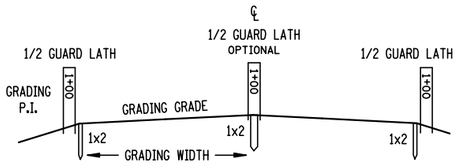
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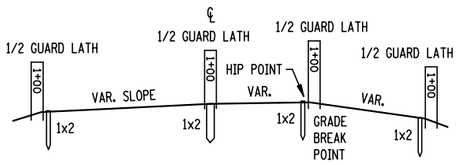
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BLUE TOPS

NORMAL SECTION

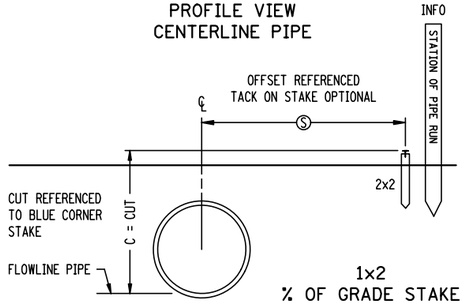


TRANSITION SECTION

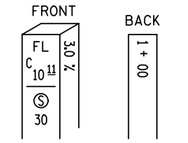


PIPE STAKING

PROFILE VIEW CENTERLINE PIPE

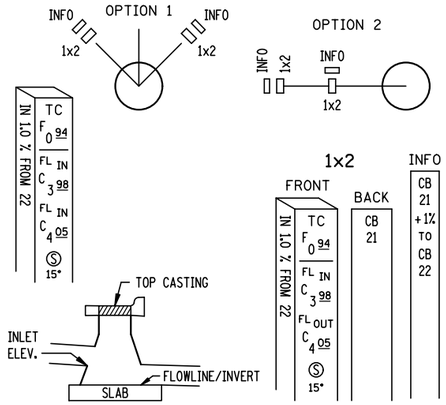


1x2 % OF GRADE STAKE



CATCH BASIN OR MANHOLE (CB/MH)

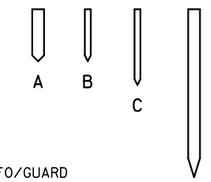
TOP VIEWS



FLOWLINE/INVERT + 0.7'

STANDARD STAKES

TYPES:
REFERENCE (REF)
INFORMATIONAL (INFO)
VISIBILITY (VIS)
GUARD (GUARD)



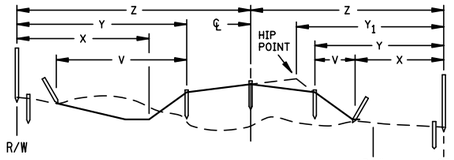
SIZES:
A = 2" X 2" X VAR. REF/INFO/GUARD
B = 1" X 2" X VAR. REF/INFO/GUARD
C = 1" X 2" X VAR. REF
D = LATH INFO/VIS/GUARD
1x2 OR LATH = INFO STAKES

ABBREVIATIONS

BBL = BARREL (PIPE)
B.C. = BACK CURB
C & G = CURB & GUTTER
C = CUT
CAP = CORR. ALUM. PIPE
CB = CATCH BASIN
℄ = CENTERLINE
CL & GR = CLEAR & GRUB
CMP = CORR. METAL PIPE
COR = CORNER
CR = CROWN
CSP = CORR. STEEL PIPE
℄ = DITCH CUT
D.E. = DRAINAGE EASEMENT
DI = DROP INLET
EB = EASTBOUND
E.M. = EDGE BITUMINOUS MAT
E.S. = EDGE CONCRETE SLAB
F = FILL
FF = FRONT FACE
FL = FLOW LINE
FL IN = FLOWLINE INLET
FL OUT = FLOWLINE OUTLET
GR = GRADE
GW = GRADING WIDTH
HH = HANDHOLE
HP = HIP POINT
LT = LEFT
MH = MANHOLE
NB = NORTHBOUND
Ⓢ = OFFSET
PAR = PARCEL
% = PERCENT GRADE
P.E. = PERM. EASEMENT
RAD = RADIUS POINT
RCP = REINF. CONC. PIPE
RP = REFERENCE POINT
RSC = REINF. SECT. CONC.
RT = RIGHT
R/W = RIGHT OF WAY
SB = SOUTHBOUND
SCP = SECT. CONC. PIPE
SH = SHOULDER
TC = TOP CASTING
OR TOP CURB
T.E. = TEMP. EASEMENT
3 :1 = SLOPE (EXAMPLE)
WB = WESTBOUND
WP = WORKING POINTS

SLOPE STAKES

SINGLE ROADWAY - EXAMPLE 'A'



STAKE 'A'

FULL LATH AND HUB-STATION
DIST. TO ℄ WITH CUT/FILL TO ℄ (Z)
DIST. TO SHLD. WITH CUT/FILL TO SHLD. (Y) (Y1)
DIST. TO TOE OF SLOPE, CUT/FILL FROM HUB (X)
OFFSET TO SAFTY SLOPE
OFFSET TO HIP POINT

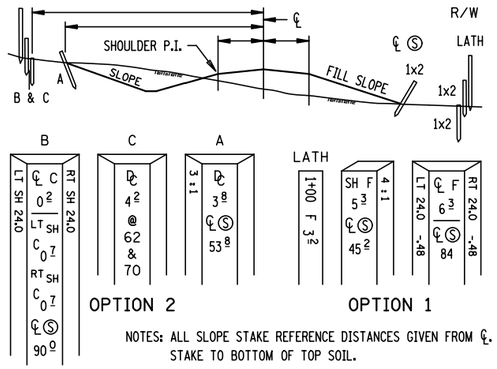
STAKE 'B'

FULL LATH
DITCH CUT/SHLD. FILL
SLOPE RATED
DISTANCE TO INSLOPE TOE (V1) OR SHOULDER (AS APPLIES) (V)

NOTE:
BLUE TOPS REQUIRED ON ℄ AND BOTH SHOULDERS AT MINIMUM
ALL CULVERTS TO BE STAKED
MINIMUM DATA TO BE PROVIDED
STAKE TO BOTTOM OF TOPSOIL

SLOPE STAKES

SINGLE ROADWAY - EXAMPLE 'B'

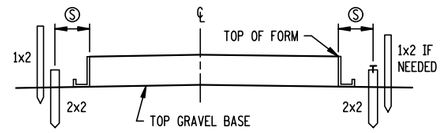


OPTION 2 OPTION 1

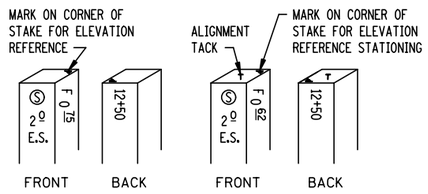
NOTES: ALL SLOPE STAKE REFERENCE DISTANCES GIVEN FROM ℄. STAKE TO BOTTOM OF TOP SOIL.

KEY STAKES: BLUE TOP SET AT R/W BOUNDARY LT. & RT. MAY BE EXCEPTIONS TO SETTING STAKE ON R/W.

CONCRETE PAVING STATIONARY FORM



OFFSET TO CONTRACTOR'S OPTION



NOTE INFORMATION ON STAKE IF NECESSARY

RECOMMENDED STAKING INTERVALS

FIGURE A

	SLOPE STAKES	SUB GRADE B.T.	CLASS MATERIAL B.T.	CONC PAVT	C & G	CL & GR LIMITS	MUCK EXC.	R/W	TEMP. EASE.
TANGENT	100	100	100	50	50	ALL CORNERS	100	ALL CORNERS	ALL CORNERS
HORIZ. CURVE									
0 - 3°	100	100	100	50	50	ALL CORNERS	100	ALL CORNERS	ALL CORNERS
OVER 3° -	100	50	50	25	25	ALL CORNERS	100	ALL CORNERS	ALL CORNERS
VERT. CURVE									
'M' 100' CHORD 0 - .25	100	100	100	50	50				
'M' OVER .25	100	50	50	25	25				
TRAN.		50	50						

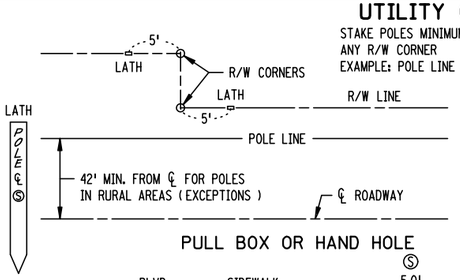
STAKING TOLERANCES (FEET)

	HORIZONTAL	VERTICAL
CONSTRUCTION LIMITS	± 1.5	
CLEARING & GRUBBING	2.0	
SLOPES STAKES	2.0	± 0.2
KEY STAKES	0.2	0.03
DRAINAGE STAKES	0.05	0.05
CURB & GUTTER	0.07	0.03
PAVING	0.05	0.03
ALIGNMENT	0.07	
UTILITY	0.10	0.05
STRUCTURAL	0.02	0.02
GUARD RAIL	0.5	
BUILDINGS	0.04	
O.H. SIGNS	0.05	0.05
MUCK EXCAVATION LIMITS	2.0	
R/W B-POINTS	0.10	
NOISE WALLS	1.0	0.5

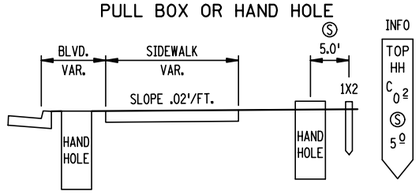
THE TOLERANCES ARE RELATIVE TO PROJECT DATUM

UTILITY (UTIL)

STAKE POLES MINIMUM OF 5 FT. FROM ANY R/W CORNER
EXAMPLE: POLE LINE = R/W LINE

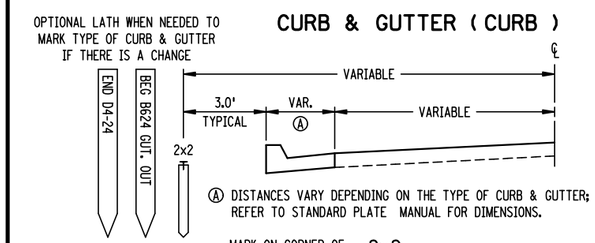


PULL BOX OR HAND HOLE

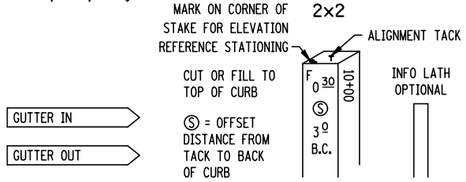


CURB & GUTTER (CURB)

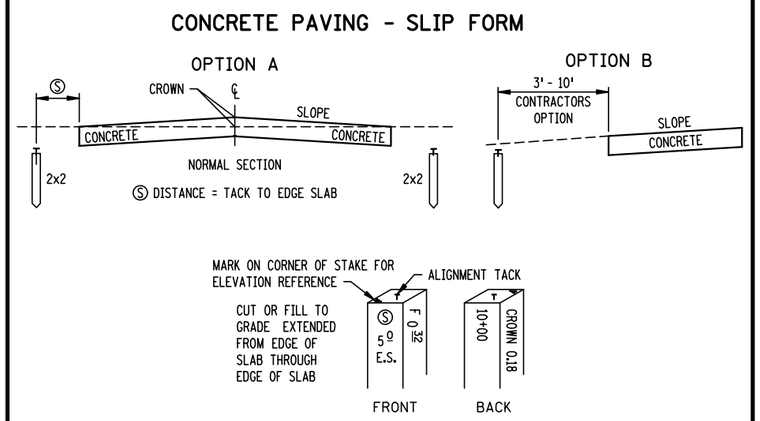
OPTIONAL LATH WHEN NEEDED TO MARK TYPE OF CURB & GUTTER IF THERE IS A CHANGE



Ⓐ DISTANCES VARY DEPENDING ON THE TYPE OF CURB & GUTTER; REFER TO STANDARD PLATE MANUAL FOR DIMENSIONS.



CONCRETE PAVING - SLIP FORM



DISCLAIMER

THESE STAKING INFORMATION SHEETS ARE FOR INFORMATION PURPOSES ONLY. STAKING PROCEDURES VARY AND MAY BE SUBJECT TO CHANGE DURING CONSTRUCTION BY CIRCUMSTANCES AND/OR AGREEMENTS BETWEEN SURVEY CREW AND CONTRACTOR.

LEAD EXPERT OFFICE	BRYAN DODDS DIRECTOR OFFICE OF LAND MANAGEMENT	STAKING INFORMATION SHEET	APPROVED: 08-06-2014 REVISED:	CHRISTOPHER ROY STATE DESIGN ENGINEER	STANDARD PLAN 5-297.115	1 OF 2

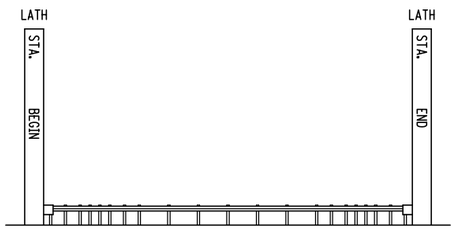
STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

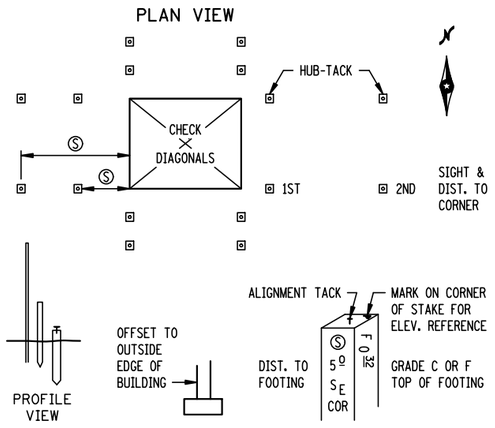
SHEET NO. 11 OF 148 SHEETS

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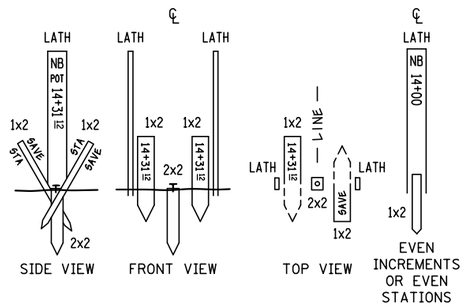
GUARDRAIL (GUARD)



BUILDING (BUILD) FOUNDATION / FOOTING



ALIGNMENT POINTS (ALIGN)



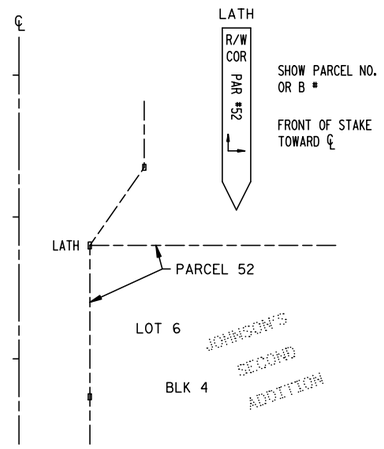
STAKE C = 2" X 2" HUB (LENGTH MAY VARY) SET AS TEMPORARY STAKE. MAY BE REPLACED BY MnDOT MARKER AFTER CONSTRUCTION IS COMPLETED.

SET AT GROUND LEVEL (TEMPORARY CONSTRUCTION STAKE).

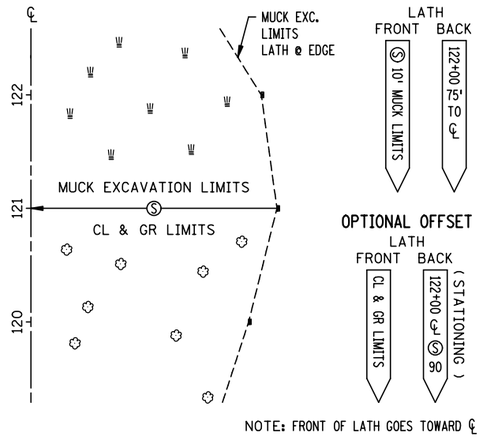
TACK SET AT ALIGNMENT POINTS.

STAKE A = GUARD STAKES SET AT ANGLE IN GROUND 6" EACH SIDE OF STAKE D, WITH STATIONING READ WHEN LOOKING UP STATION.

R/W & TEMP. EASEMENT (R/W)

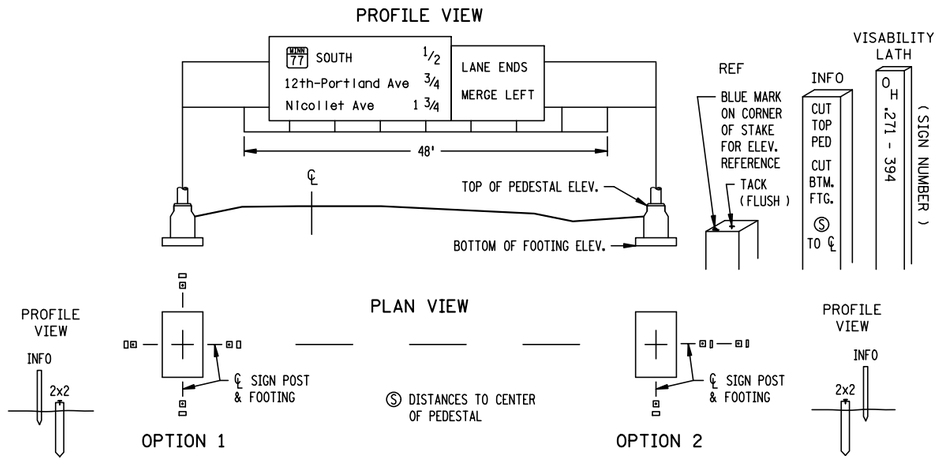


CLEAR & GRUBBING LIMITS (CLEAR) OR MUCK EXCAVATION LIMITS (MUCK)

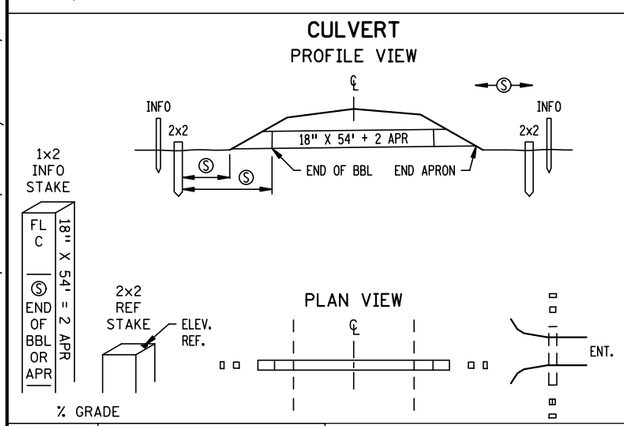


NOTE: FRONT OF LATH GOES TOWARD ℄

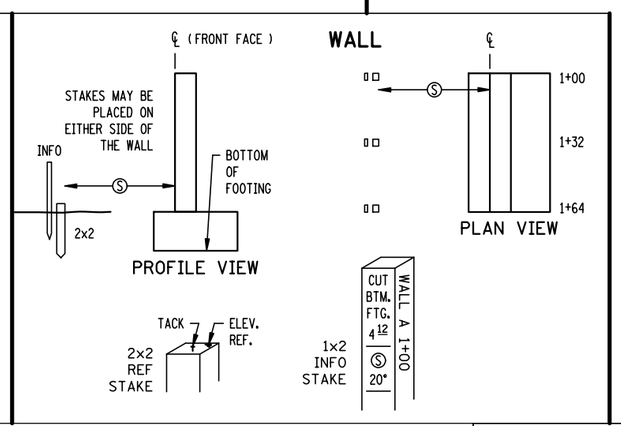
OVERHEAD SIGNS (SIGN)



CULVERT

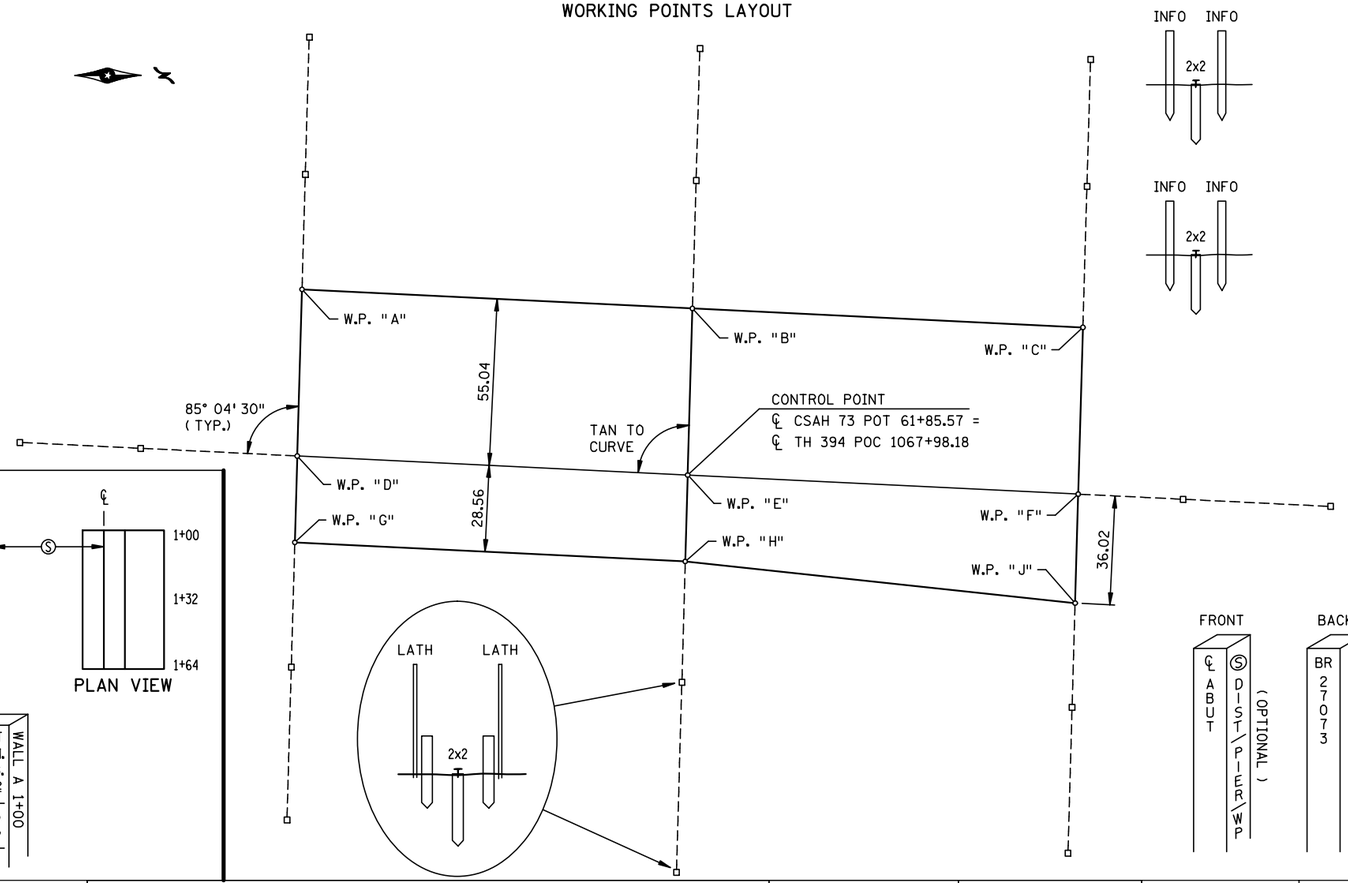


WALL



BRIDGESTAKING (BRIDGE)

WORKING POINTS LAYOUT

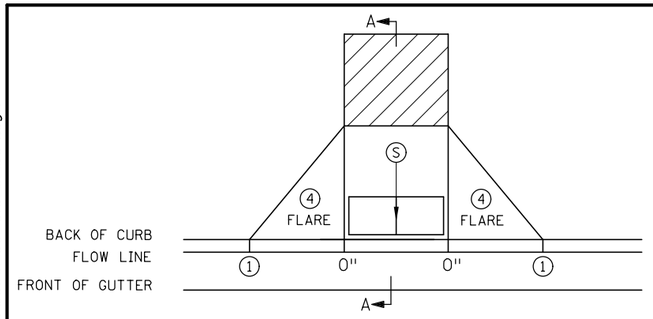


LEAD EXPERT OFFICE	BRYAN DODDS DIRECTOR OFFICE OF LAND MANAGEMENT		STAKING INFORMATION SHEET	APPROVED: 08-06-2014 REVISED:	CHRISTOPHER ROY STATE DESIGN ENGINEER	STANDARD PLAN 5-297.115	2 OF 2

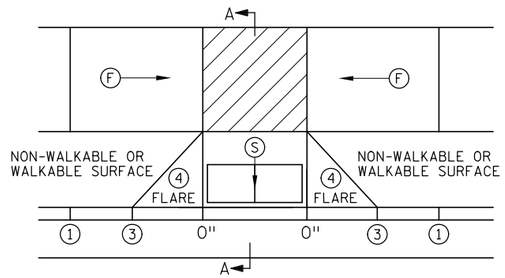
STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

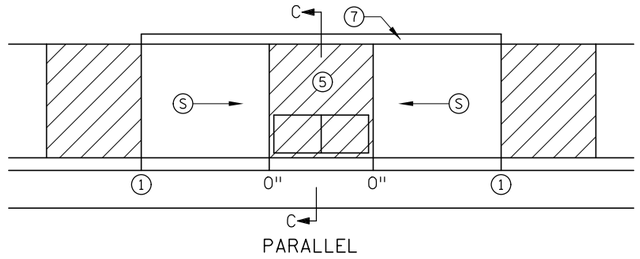
SHEET NO. 12 OF 148 SHEETS



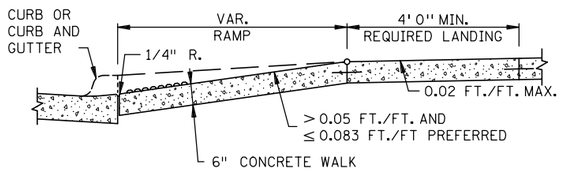
PERPENDICULAR



TIERED PERPENDICULAR

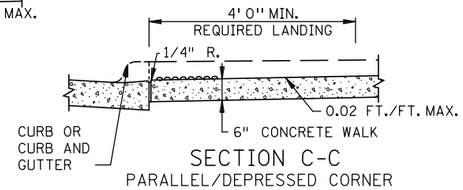


PARALLEL



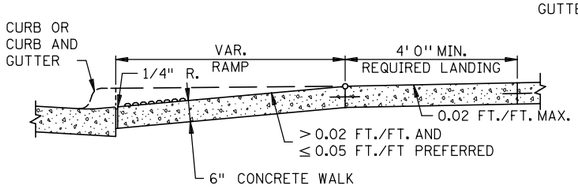
SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL



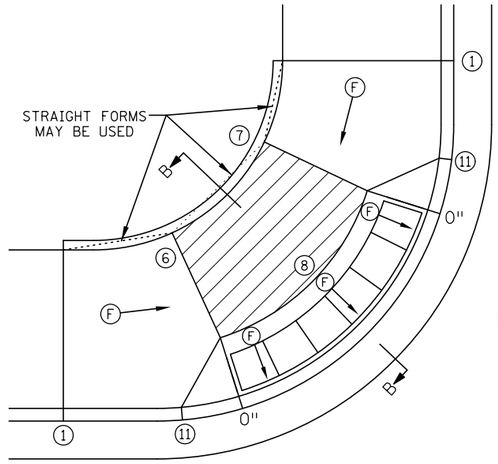
SECTION C-C

PARALLEL/DEPRESSED CORNER

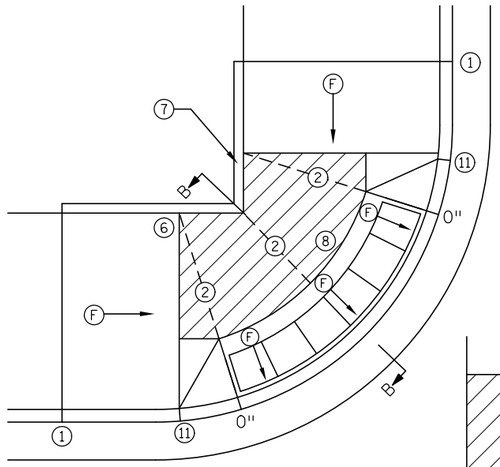


SECTION B-B

FAN

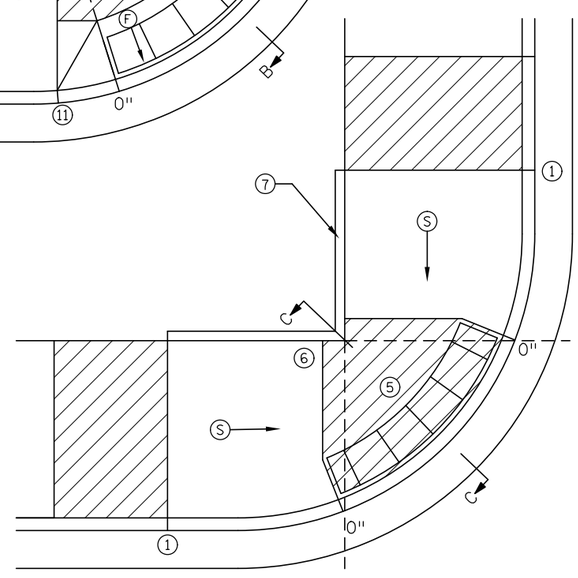


FAN (10)

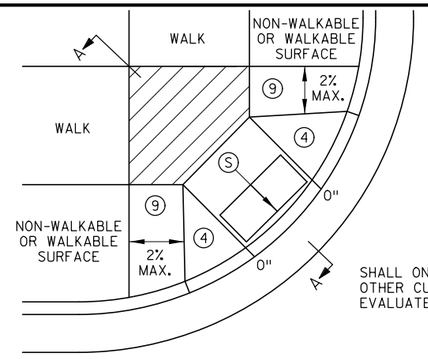


MODIFIED FAN (10)

USED WHEN RIGHT-OF-WAY IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

SHALL ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH. (EXCEPT AS STATED IN (6) BELOW.

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.

WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.

(1) MATCH FULL HEIGHT CURB.

(2) 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.

(3) 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.

(4) SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.

(5) DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.

(6) THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)

(7) WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

(8) A 7' MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.

(9) PAVE FULL WALK WIDTH.

(10) "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

(11) INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

(F) INDICATES THE PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

X" CURB HEIGHT

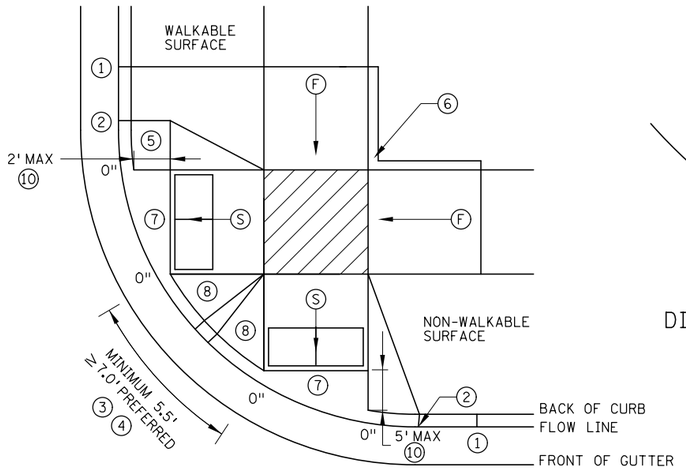
LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION		PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	1 OF 6

STANDARD PLANS

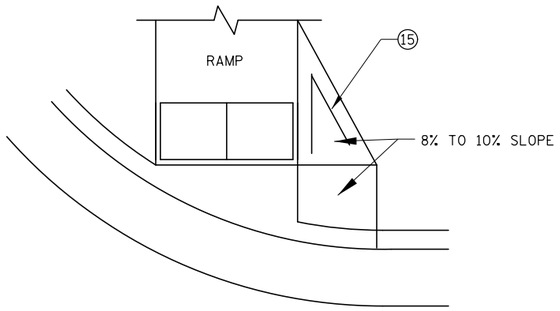
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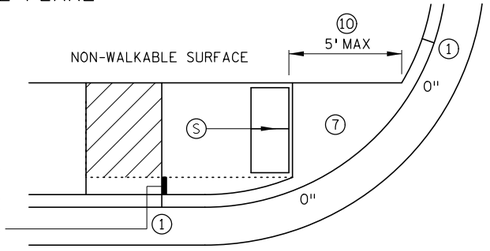


COMBINED DIRECTIONAL

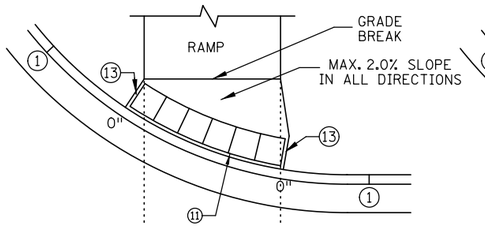


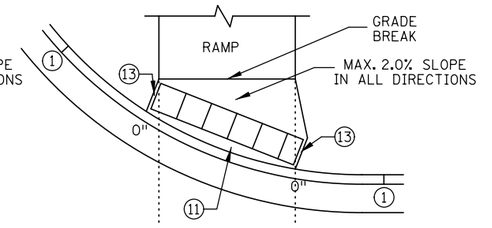
DIRECTIONAL RAMP WALKABLE FLARE

IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.



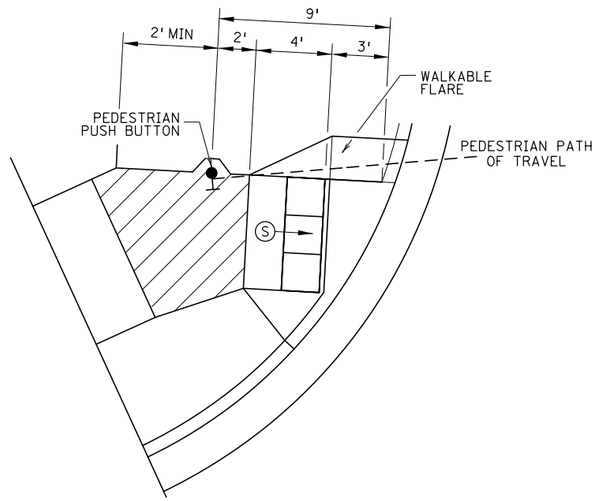
STANDARD ONE-WAY DIRECTIONAL ⑨





DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

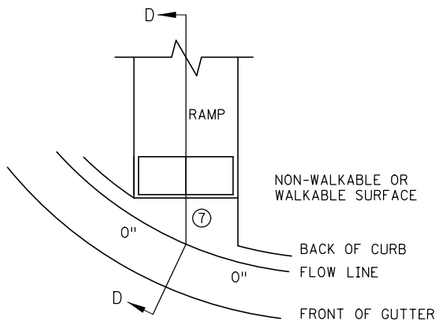
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB

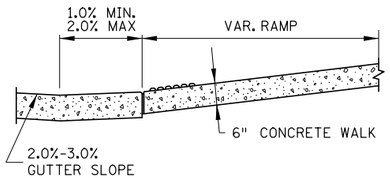


SEMI-DIRECTIONAL RAMP ③④⑨

3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB

PRIMARILY USED FOR APS APPLICATIONS WHERE THE PAR DOES NOT CONTINUE PAST THE PUSH BUTTON (DEAD-END SIDEWALK)





SECTION D-D

CURB FOR DIRECTIONAL RAMPS ⑭

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.

TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.

① MATCH FULL CURB HEIGHT.

② 3" HIGH CURB WHEN USING A 3' LONG RAMP
4" HIGH CURB WHEN USING A 4' LONG RAMP.

③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).

④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.

⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHALL BE USED. SEE THE DETAIL ON THIS SHEET.

⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.

⑧ 8% TO 10% WALKABLE FLARE.

⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.

⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.

⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.

⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

⑮ PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

Ⓢ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

Ⓕ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

X" CURB HEIGHT

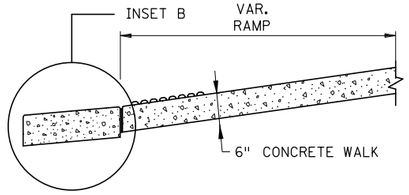
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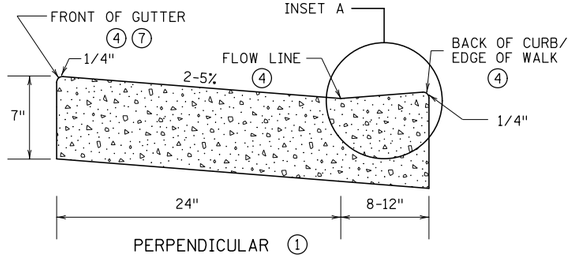
STANDARD PLANS

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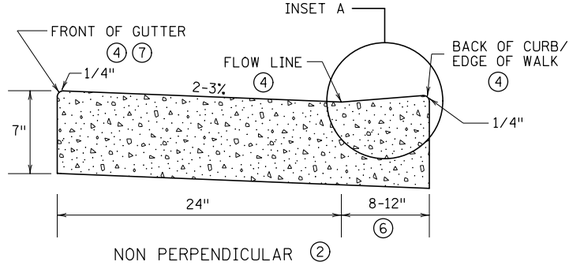
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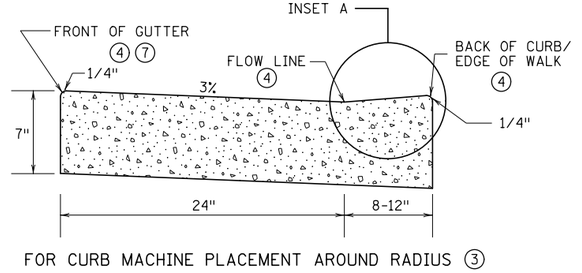




PERPENDICULAR ①

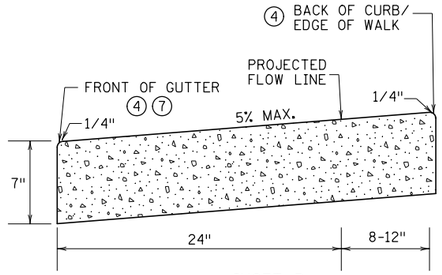


NON PERPENDICULAR ②

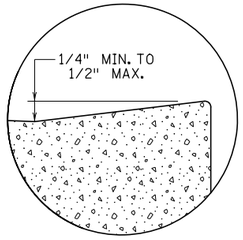


FOR CURB MACHINE PLACEMENT AROUND RADIUS ③
(REGARDLESS OF RAMP TYPE)

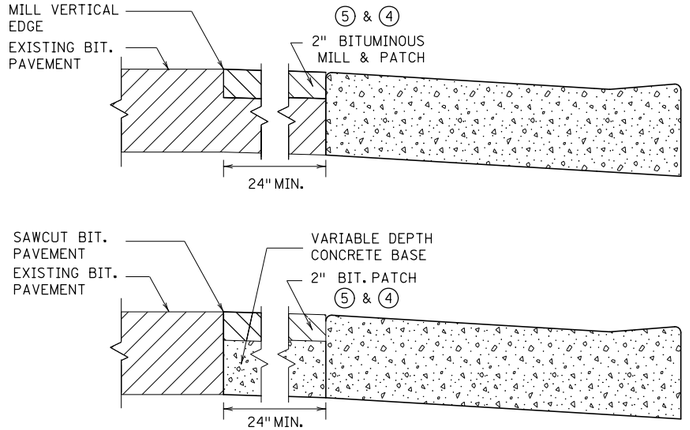
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



INSET B
OUTFLOW GUTTER ⑧



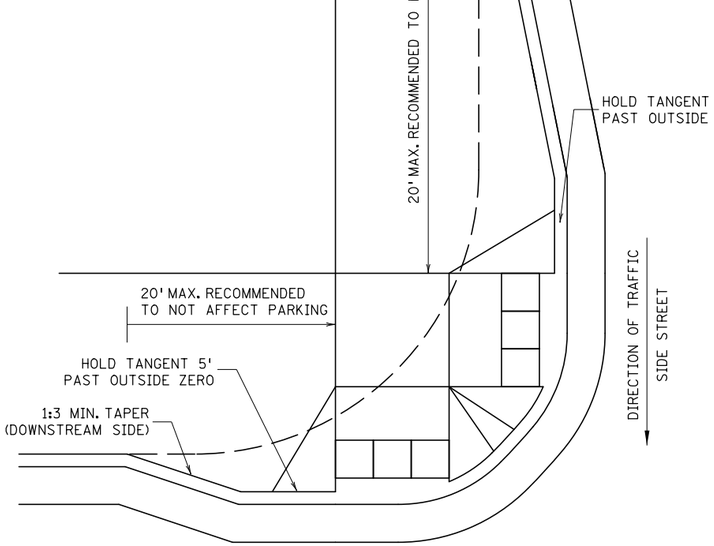
INSET A



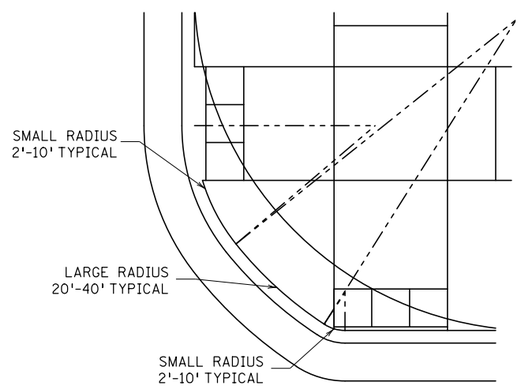
ONLY ALLOWED PER ENGINEER'S APPROVAL

PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) ⑪



COMBINED DIRECTIONAL ⑩
(COMPOUND RADIUS)

NOTES:

POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.

NO PONDING SHALL BE PRESENT IN THE PAR.

ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.

① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.

② FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.

③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.

④ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".

⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.

⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.

⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.

⑧ SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.

⑨ DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.

⑩ HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.

⑪ CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED.
PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.

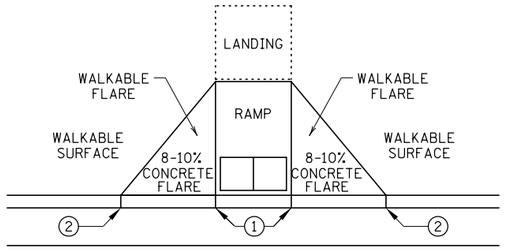
LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION		PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	3 OF 6

STANDARD PLANS

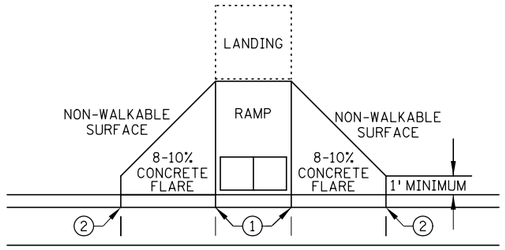
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S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 15 OF 148 SHEETS

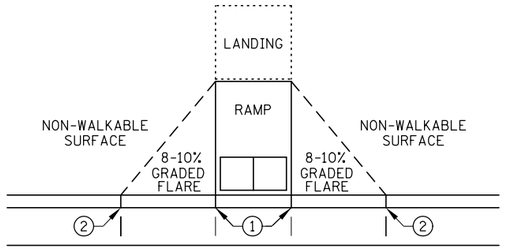
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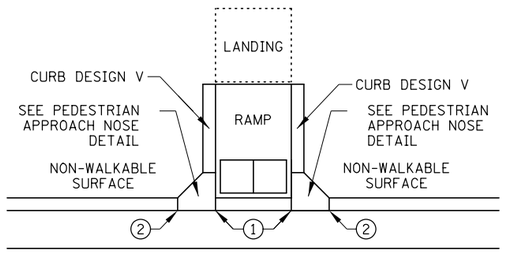
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

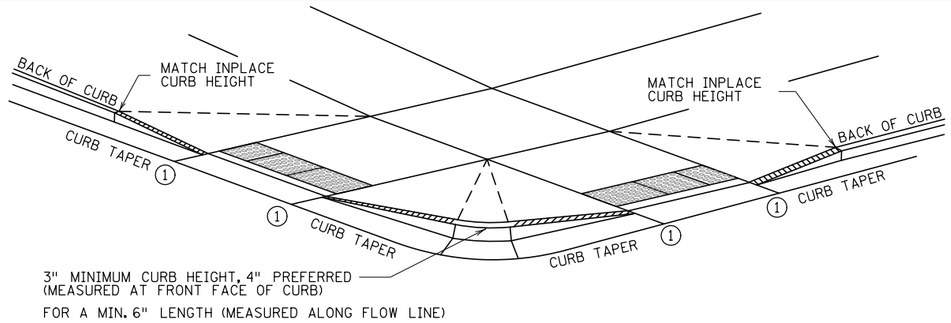


GRADED FLARES

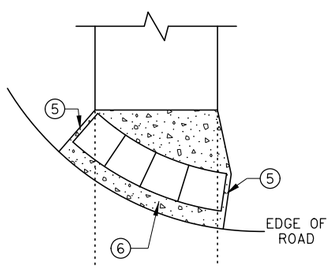


RETURNED CURB ④

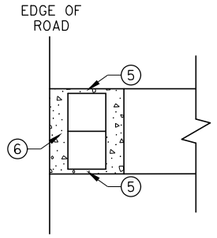
TYPICAL SIDE TREATMENT OPTIONS ③ ⑩



DETECTABLE EDGE WITH ⑦
CURB AND GUTTER

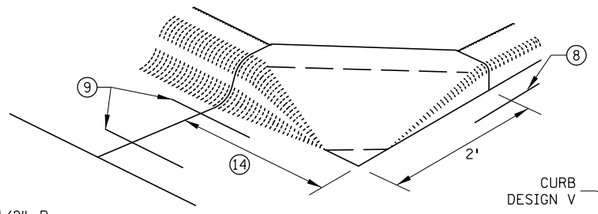


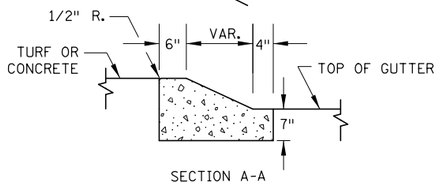
RADIAL DETECTABLE WARNING



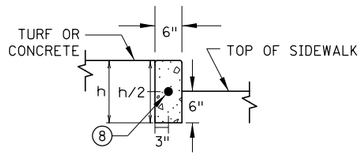
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

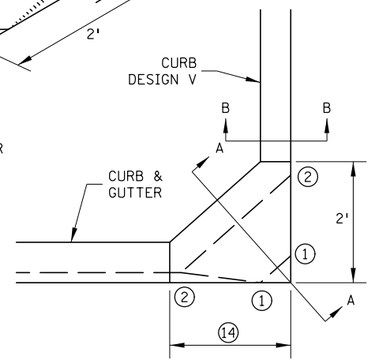




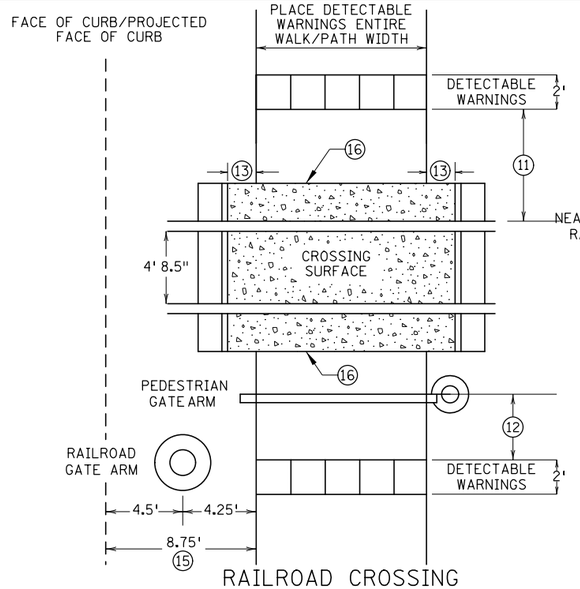
SECTION A-A



SECTION B-B



PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

① 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.

② FULL CURB HEIGHT.

③ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.

④ TYPICALLY USED FOR MEDIANS AND ISLANDS.

⑤ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑥ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.

⑦ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS. AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.

⑧ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.

⑨ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.

⑩ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.

⑪ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.

⑫ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑪.

⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.

⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.

⑮ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

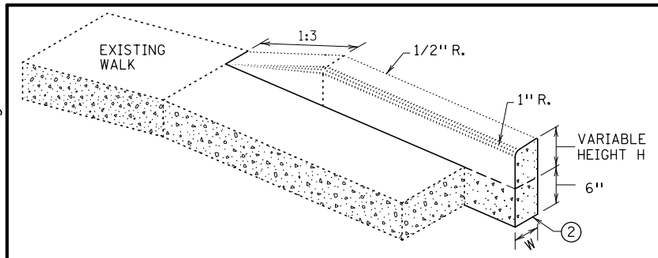
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STANDARD PLANS

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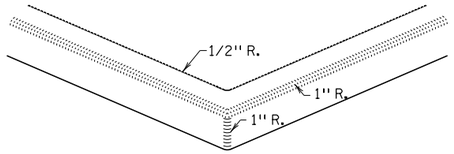
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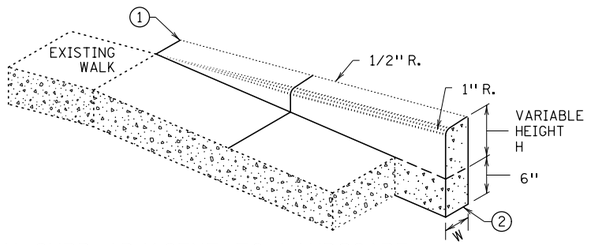
V CURB ADJACENT TO LANDSCAPE

CURB WITHIN SIDEWALK LIMITS



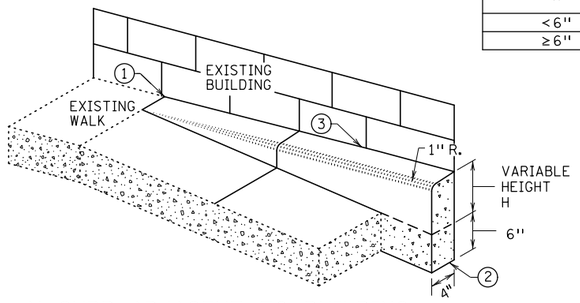
V CURB INTERSECTION

CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"

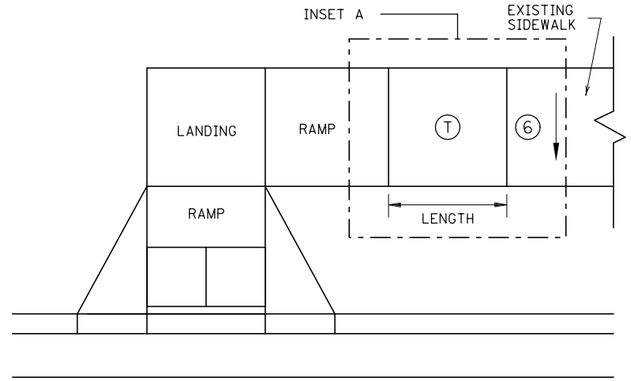


V CURB ADJACENT TO LANDSCAPE

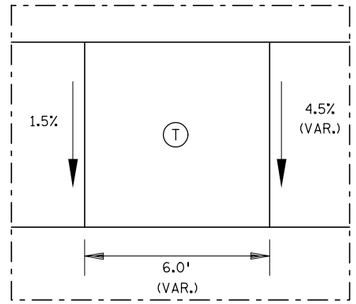
CURB OUTSIDE SIDEWALK LIMITS



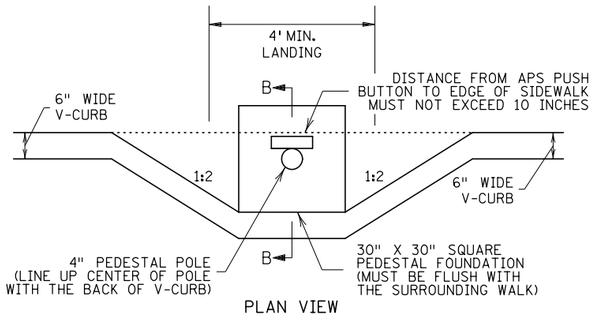
V CURB ADJACENT TO BUILDING OR BARRIER



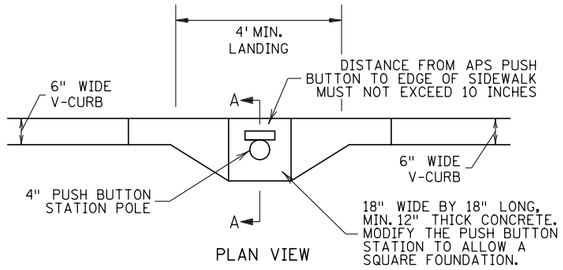
TRANSITION PANEL ④⑤



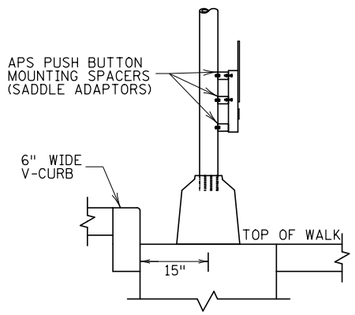
INSET A



PLAN VIEW

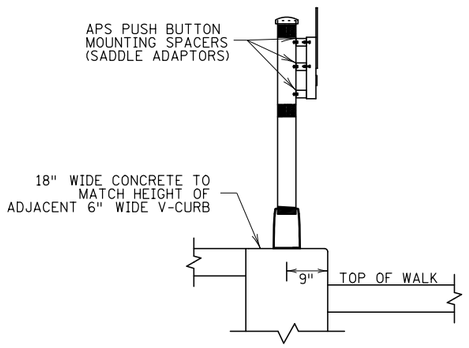


PLAN VIEW



SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION A-A

PUSH BUTTON STATION (V-CURB)

NOTES:

A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.

② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

③ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM ½" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.

④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.

⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

Ⓢ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

Ⓣ TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

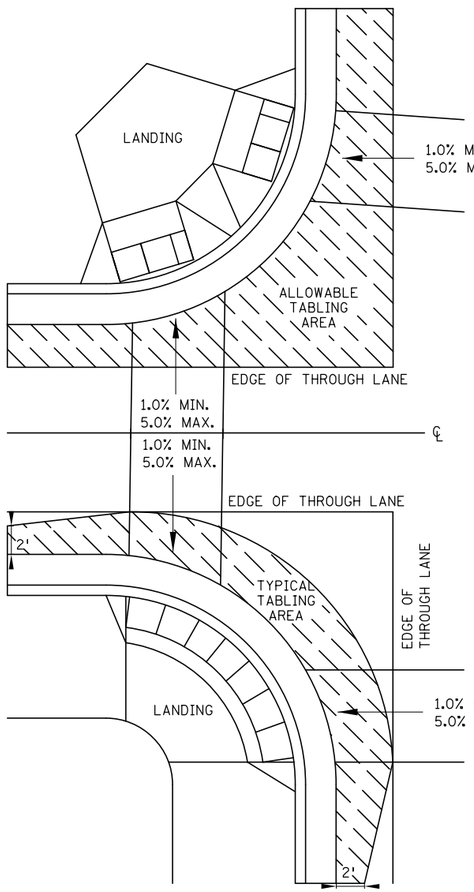
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STANDARD PLANS

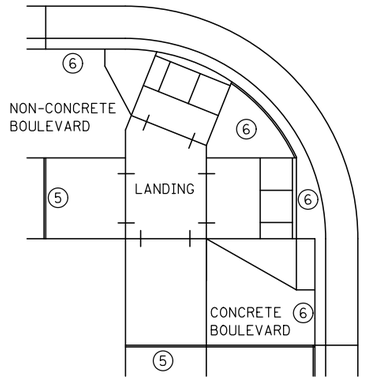
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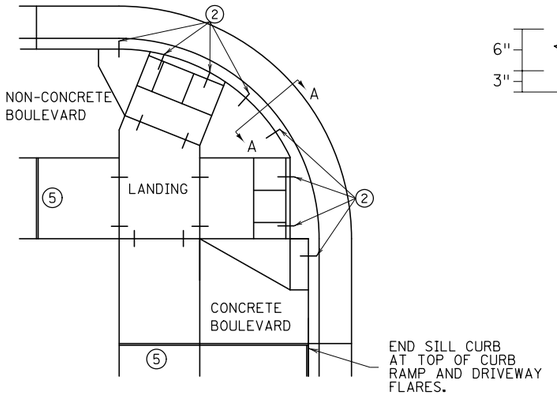
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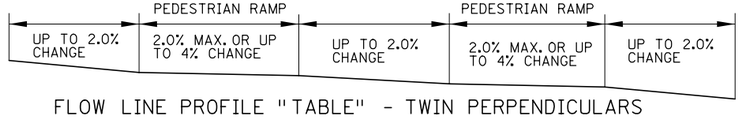
CURB LINE AND ROAD CROSSING ADJUSTMENTS



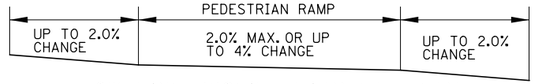
EXPANSION MATERIAL PLACEMENT
FOR CONCRETE ROADWAYS



CURB LINE REINFORCEMENT ④
PLACEMENT ON BITUMINOUS ROADWAYS



FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



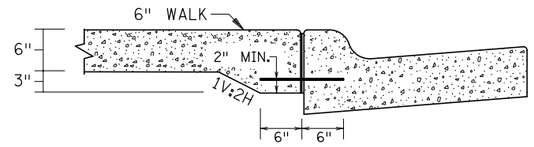
FLOW LINE PROFILE "TABLE" - FAN



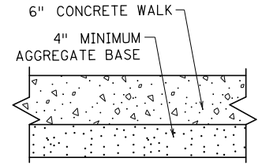
FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



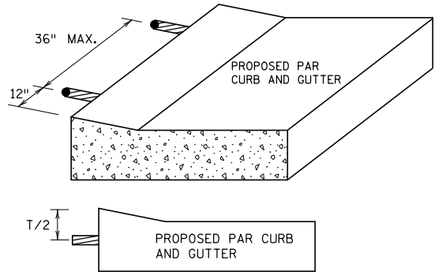
FLOW LINE PROFILE RAISE - FAN

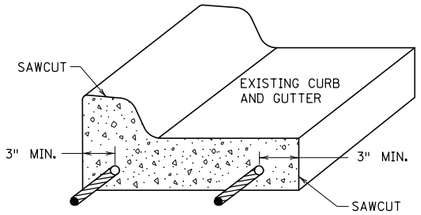


SECTION VIEW A-A
THICKENED SECTION
THROUGH CURB RAMP FLARES



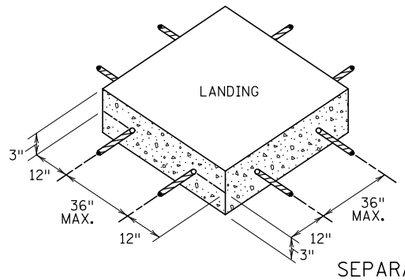
TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER

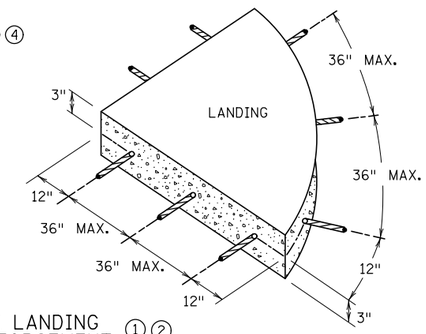




CURB AND GUTTER
REINFORCEMENT ③

CURB RAMP REINFORCEMENT DETAILS ②④





SEPARATE LANDING
POUR REINFORCEMENT ①②

GENERAL NOTES:

"TABLING" OF CROSSWALKS MEANS MAINTAINING LESS THAN 2% CROSS SLOPE WITHIN A CROSSWALK, IS REQUIRED WHEN A ROADWAY IS IN A STOP OR YIELD CONDITION AND THE PROJECT SCOPE ALLOWS.

RECONSTRUCTION PROJECTS: ON FULL PAVEMENT REPLACEMENT PROJECTS "TABLING" OF ENTIRE CROSSWALK SHALL OCCUR WHEN FEASIBLE.

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;
1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
3) "TABLE" FLOW LINE UP TO 4% CHANGE FROM EXISTING SLOPE IN FRONT OF PEDESTRIAN RAMP
4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;
1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
3) 5.0% RECOMMENDED MAX. FLOW LINE
4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

NOTES:

① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.

② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.

③ DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.

④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.

⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

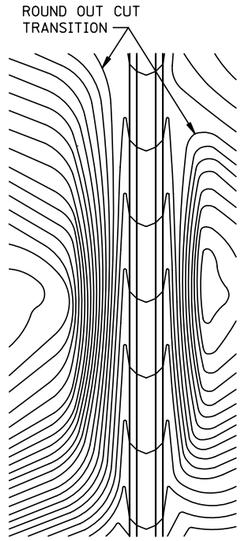
LEAD EXPERT OFFICE	JEFFREY PERKINS OPERATIONS DIVISION		PEDESTRIAN CURB RAMP DETAILS	APPROVED: 11-04-2021 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.250	6 OF 6

STANDARD PLANS

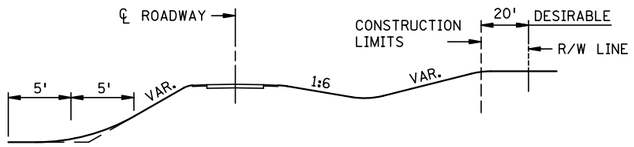
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SHEET NO. 18 OF 148 SHEETS

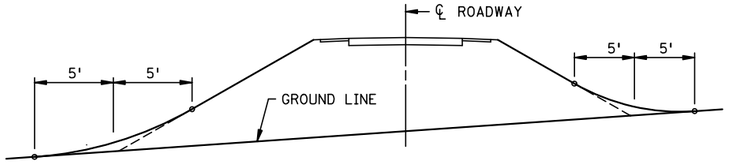
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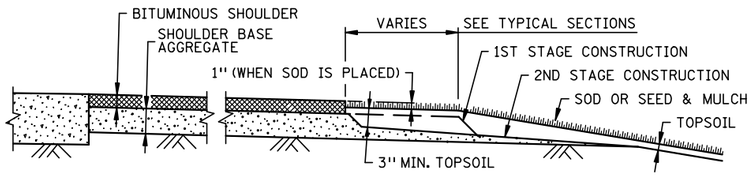
CONTOURING ROAD CUTS



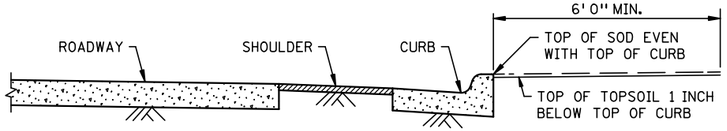
ROUNDING SHOULDERS AND BACKSLOPES



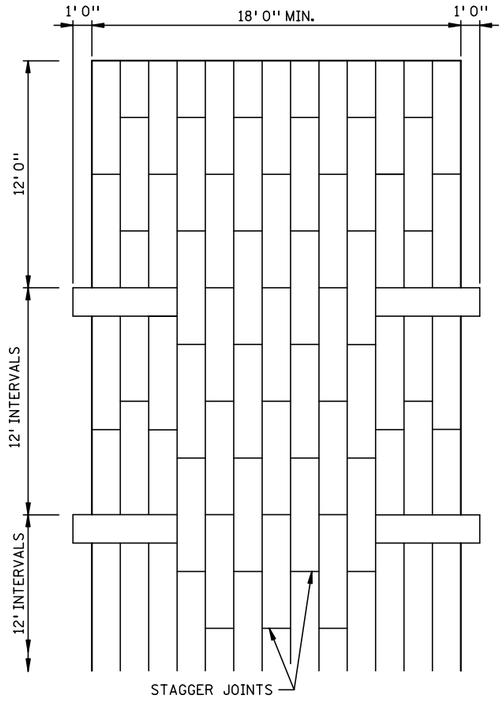
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



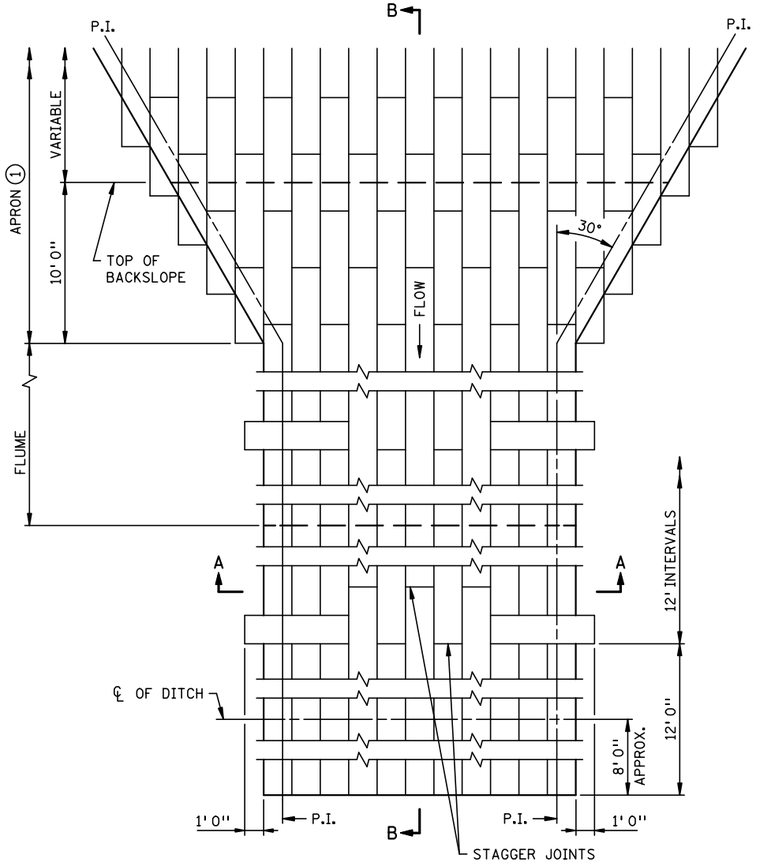
SHAPING AND TOPSOILING INSLOPES



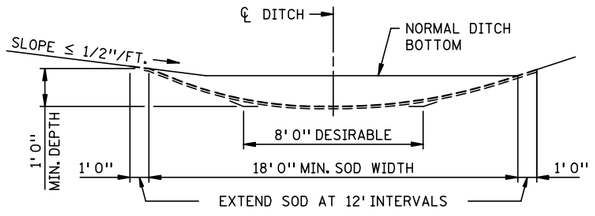
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



PLAN VIEW

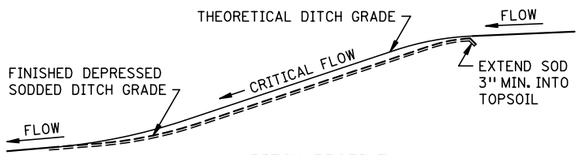


PLAN VIEW



SODDED DITCH CROSS SECTION

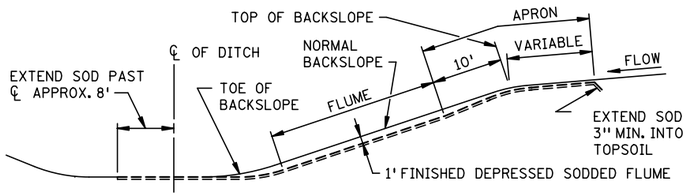
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



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.

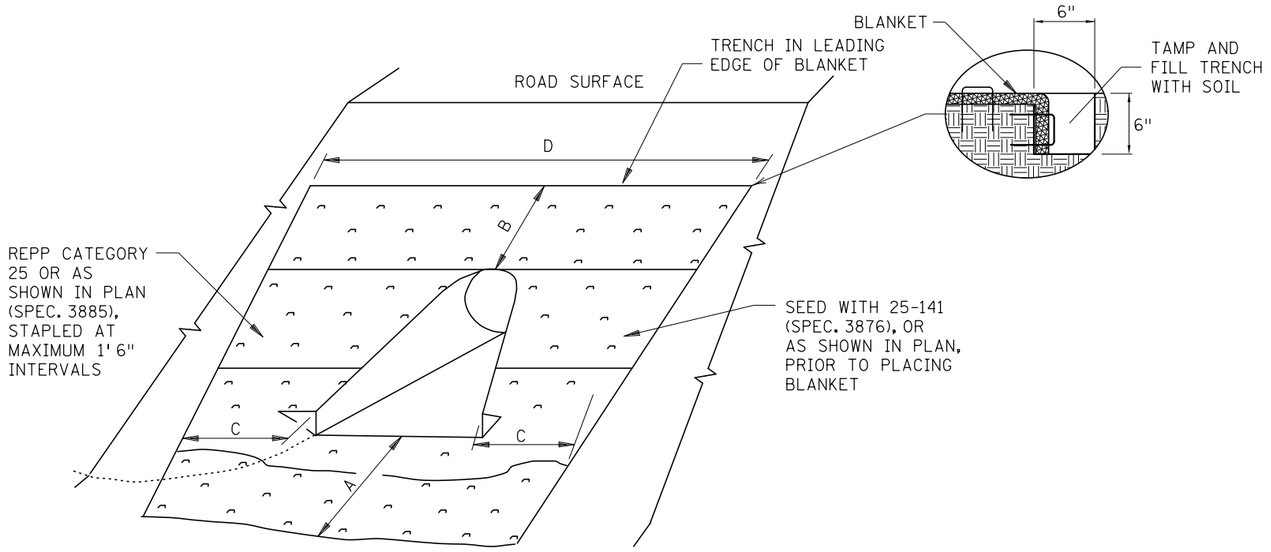
LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP		PERMANENT EROSION CONTROL ALONG ROADWAYS, DITCHES AND FLUMES	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.404	1 OF 3

STANDARD PLANS

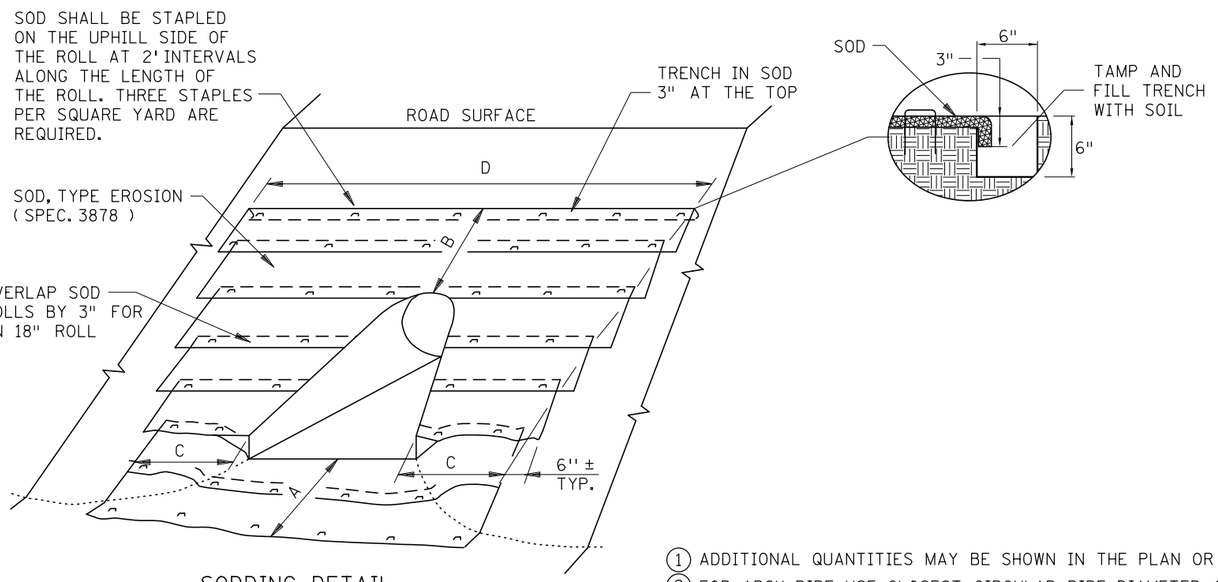
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 19 OF 148 SHEETS

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ROLLED EROSION PREVENTION PRODUCT (BLANKET) & SEED DETAIL



SODDING DETAIL

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

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

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

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

AREA SHOWN IN SQUARE YARDS IS FOR ONE CULVERT END.

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

FOR PIPE ARCHES USE EQUIVALENT PIPE DIAMETER TO APPROXIMATE AREA.

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

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

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

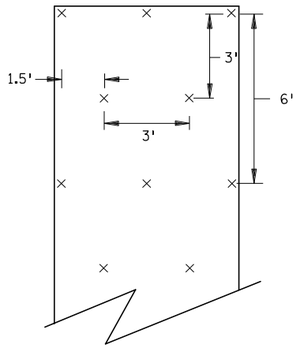
LEAD EXPERT OFFICE	MARNI KARNOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP		PERMANENT EROSION CONTROL TURF ESTABLISHMENT DETAIL AT CULVERT ENDS	APPROVED: 01-08-2020 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.404	2 OF 3

STANDARD PLANS

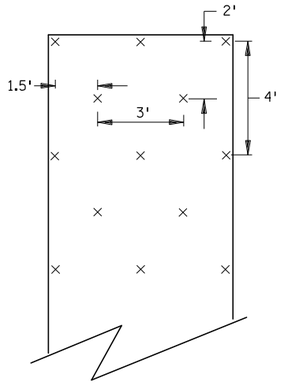
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SHEET NO. 20 OF 148 SHEETS

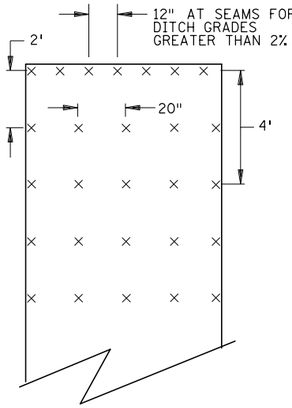
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SLOPES FLATTER THAN 1:2
120 STAPLES PER 100 SQ YD

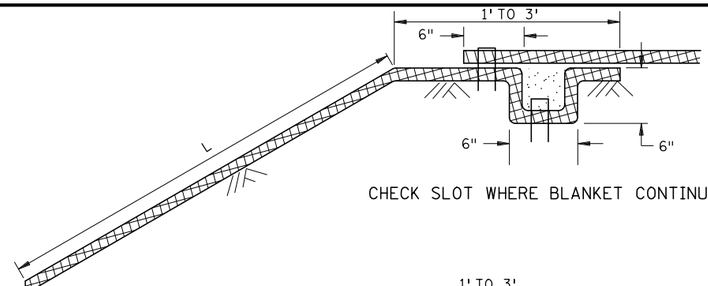


SLOPES 1:2 TO 1:1
170 STAPLES PER 100 SQ YD

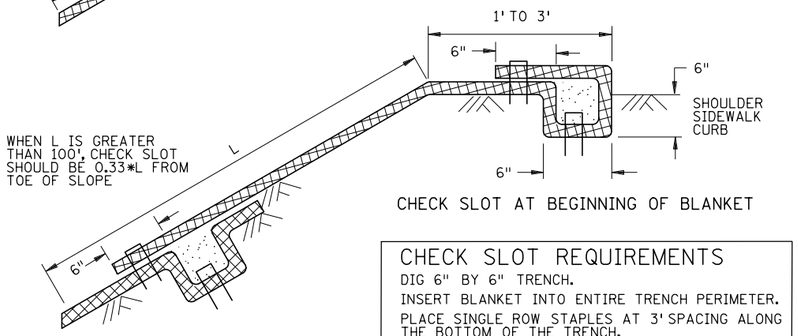


CHANNEL AND DITCH APPLICATIONS
350 STAPLES PER 100 SQ YD

BLANKET STAPLE PATTERN



CHECK SLOT WHERE BLANKET CONTINUES



CHECK SLOT AT BEGINNING OF BLANKET

CHECK SLOT REQUIREMENTS

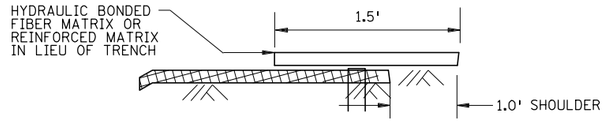
DIG 6" BY 6" TRENCH.

INSERT BLANKET INTO ENTIRE TRENCH PERIMETER.

PLACE SINGLE ROW STAPLES AT 3' SPACING ALONG THE BOTTOM OF THE TRENCH.

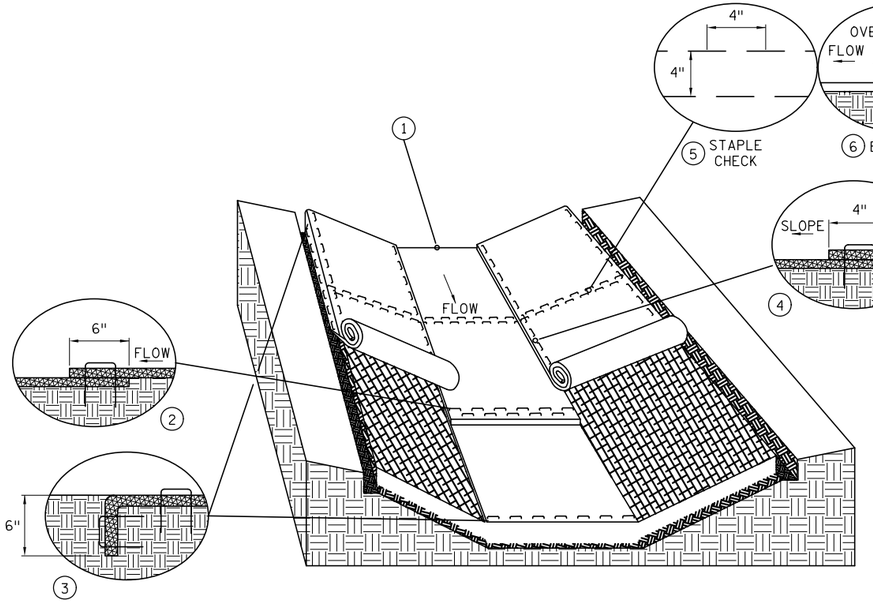
BACKFILL TRENCH WITH SOIL AND TAMP.

PLACE SINGLE ROW STAPLES AT 3' SPACING ON OVERLAP.

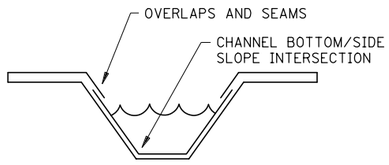


CHECK SLOT ALTERNATIVE
PLACE SINGLE ROW STAPLES AT 12" SPACING

CHECK SLOT DETAILS



DITCH BLANKET STAPLE DETAIL



DITCH BLANKET CRITICAL POINTS (7)

NOTES:

(1) USE CHECK SLOT DETAIL (NO ALTERNATES).

(2) PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER.

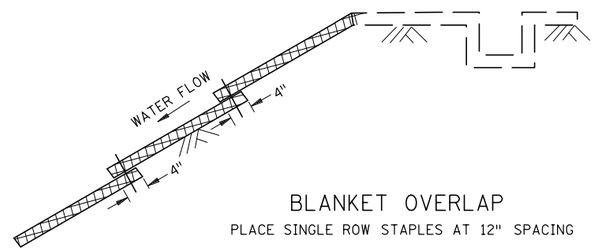
(3) USE 6" X 6" TRENCH TO PLACE BLANKET. PLACE SINGLE ROW OF STAPLES ON TOP AND TRENCH SIDES AT 12" SPACING. BACKFILL TRENCH WITH SOIL AND TAMP.

(4) PLACE SINGLE ROW OF STAPLES AT 12" SPACING.

(5) USE STAPLE CHECK FOR CHANNEL SLOPES LESS THAN 2.5% GRADE AT 100' INTERVALS. PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND AT 4" SPACING.

(6) USE BLANKET CHECKS FOR THE FOLLOWING SLOPES:
2.5%-3% 100' INTERVALS
3%-5% 50' INTERVALS
5%-7% 25' INTERVALS

(7) CRITICAL POINTS SHALL BE SECURED WITH PROPER STAPLE PATTERNS.



BLANKET OVERLAP
PLACE SINGLE ROW STAPLES AT 12" SPACING

GENERAL BLANKET INSTALLATION REQUIREMENTS

REPP = ROLLED EROSION PREVENTION PRODUCT.

PREPARE SOIL AS PER SPECIFICATION 2574.

LAY PARALLEL OR PERPENDICULAR TO THE DIRECTION OF WATER FLOW.

OVERLAP ADJACENT STRIP EDGES A MINIMUM OF 4".

OVERLAP BLANKET 6" (MINIMUM) AT EACH END. OVERLAP BOTTOM END OF UPPER BLANKET OVER TOP END OF LOWER BLANKET. STAPLE ALONG OVERLAP EVERY 1.5'.

THE UPPERMOST BLANKET OF ALL SLOPE APPLICATIONS MUST START IN A CHECK SLOT. IF SLOPE LENGTH (L) IS 100' OR GREATER, INSERT BLANKET INTO A CHECK SLOT ⅓ FROM THE BOTTOM OF THE SLOPE.

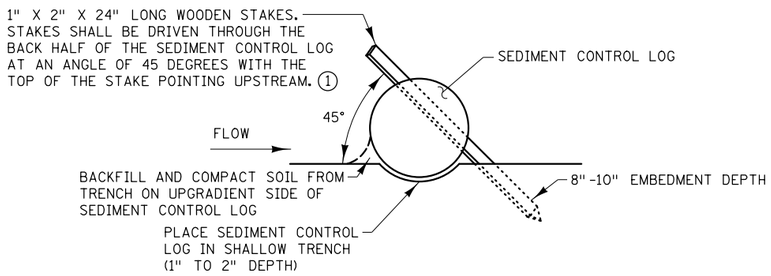
LEAD EXPERT OFFICE	MARNI KARNOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP		PERMANENT EROSION CONTROL REPP (BLANKET) STAPLE PATTERN FOR SLOPES	APPROVED: 01-08-2020 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.404	3 OF 3

STANDARD PLANS

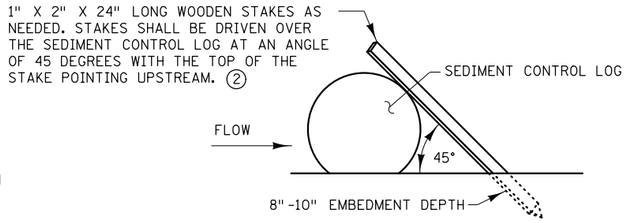
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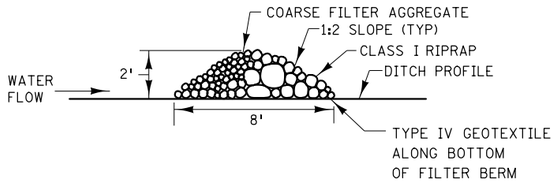


TYPES: STRAW, WOOD FIBER, OR COIR

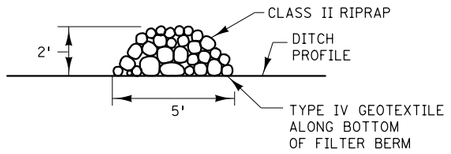


TYPES: WOOD CHIP, COMPOST, OR ROCK

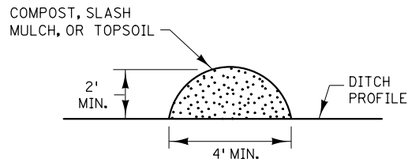
SEDIMENT CONTROL LOGS



TYPE 3 (ROCK WEEPER)

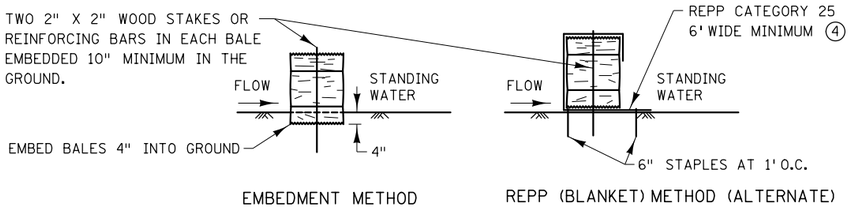


TYPE 5 (ROCK)



TYPE 1 (COMPOST), TYPE 2 (SLASH MULCH), OR TYPE 4 (TOPSOIL)

FILTER BERMS



EMBEDMENT METHOD

REPP (BLANKET) METHOD (ALTERNATE)

BALE BARRIERS③

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

SEE SPECS. 2573, 3149, 3874, 3882, 3885, 3886, AND 3897.

(1) SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1' FOR DITCH CHECKS OR 2' FOR OTHER APPLICATIONS.

(2) PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.

(3) TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS WHERE STANDING WATER OCCURS (6" MAXIMUM DEPTH). BALES SHALL CONSIST OF TYPE 1 MULCH OF APPROXIMATELY 14" X 18" X 36" LONG. BALES SHALL BE PLACED ON EDGE AND BUTTED TIGHT TO ADJACENT BALES.

(4) INSTEAD OF TRENCHING, PLACE BALE ON THE REPP (BLANKET) AND WRAP BLANKET AROUND THE BALE. PLACE STAKE THROUGH BALE AND BLANKET.

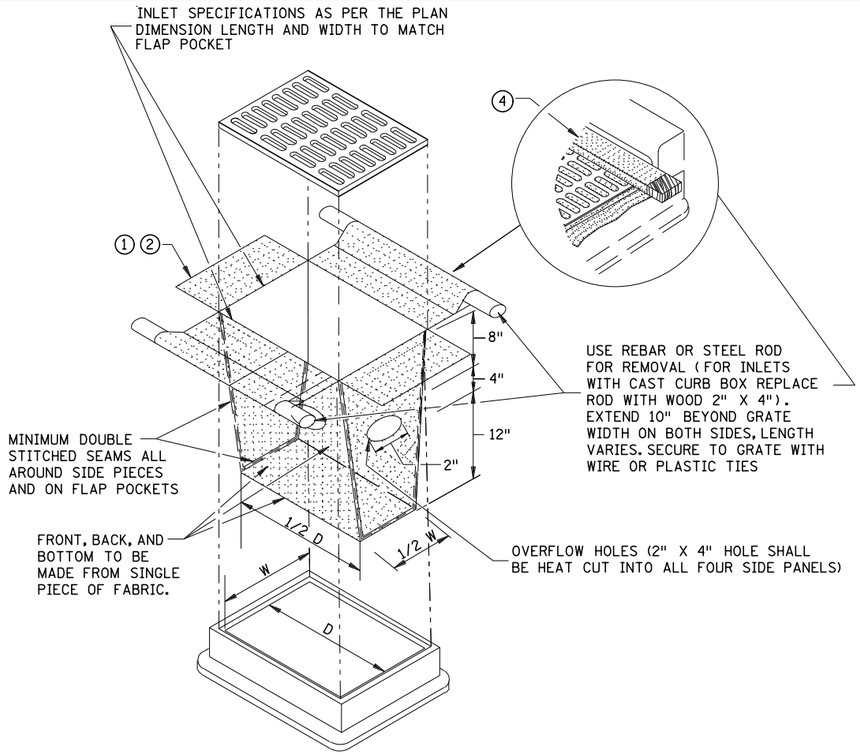
LEAD EXPERT OFFICE	MARNI KARNOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP		TEMPORARY SEDIMENT CONTROL FILTER BERMS, SEDIMENT CONTROL LOGS, AND BALE BARRIERS	APPROVED: 01-08-2020 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	2 OF 8

STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

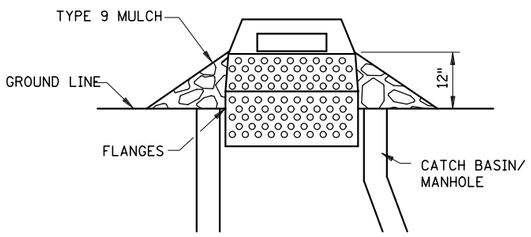
SHEET NO. 22 OF 148 SHEETS

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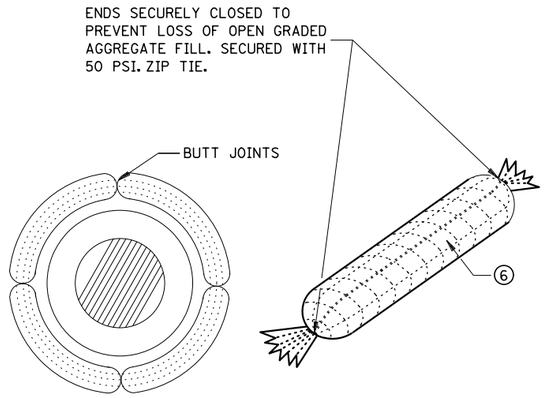
FILTER BAG INSERT ③

(CAN BE INSTALLED IN ANY INLET TYPE
WITH OR WITHOUT A CURB BOX)

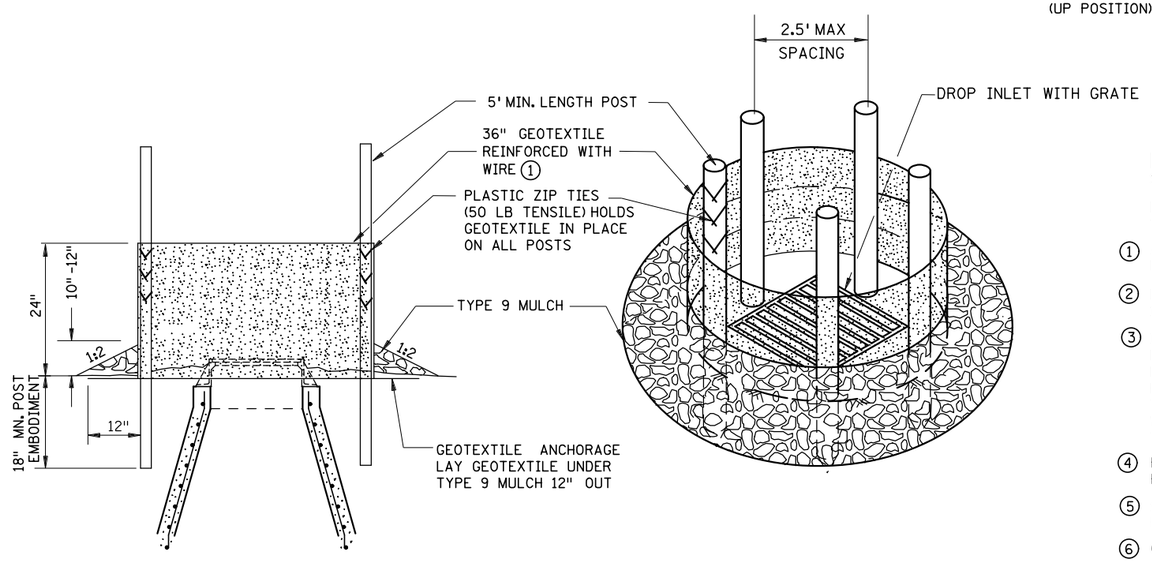


SEDIMENT CONTROL INLET HAT

NOTE:
THE SEDIMENT CONTROL BARRIER SHALL BE A METAL OR PLASTIC/POLYETHYLENE RISER SIZED TO FIT INSIDE THE CATCH BASIN/MANHOLE; HAVE PERFORATIONS TO ALLOW FOR WATER INFILTRATION; HAVE AN OVERFLOW OPENING, FLANGES AND A LID/COVER.

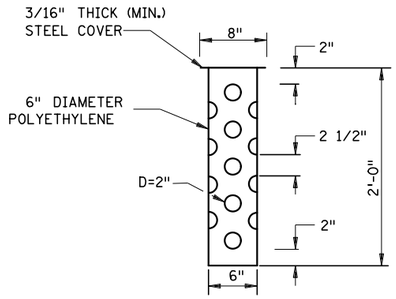


ROCK LOG/COMPOST LOG

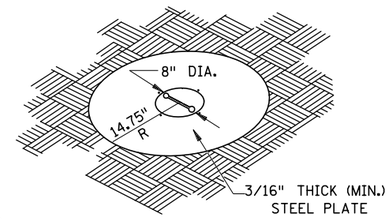


SILT FENCE RING AND ROCK FILTER BERM

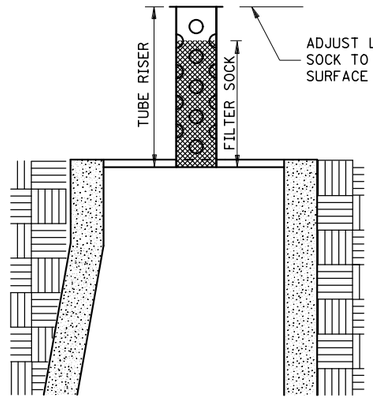
USE WHERE INLET DRAINS IN AN AREA WITH SLOPES AT 1:3 or LESS



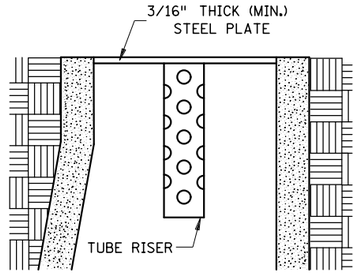
TUBE RISER



PERSPECTIVE VIEW



SECTION
(UP POSITION)



SECTION
(DOWN POSITION)

POP-UP HEAD

NOTES:

SEE SPECS. 2573, 3137, & 3886.

DEVICES MUST BE ADJUSTED ACCORDINGLY AS TO NOT CAUSE FLOODING ON ROADWAY THAT WOULD IMPEED TRAFFIC FLOW.

① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.

② FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

③ INSTALLATION NOTES:
DO NOT PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE PLACED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.

④ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.

⑤ SOCK HEIGHT MUST NOT BE SO HIGH AS TO SLOW DOWN WATER FILTRATION TO CAUSE FLOODING OF THE ROADWAY.

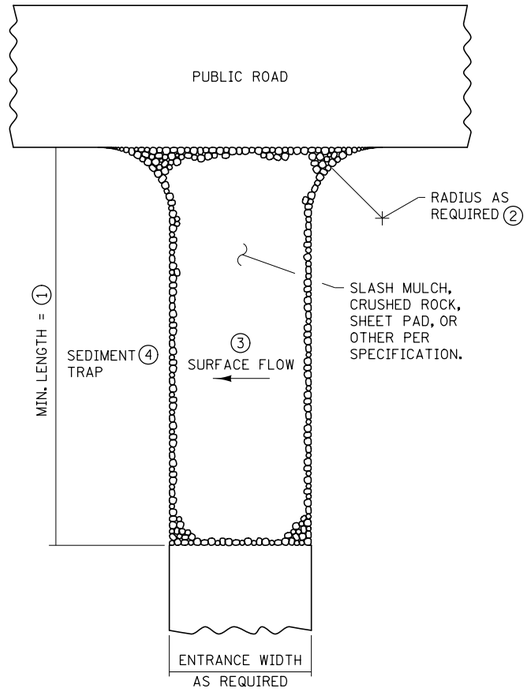
⑥ GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.

LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP	TEMPORARY SEDIMENT CONTROL STORM DRAIN INLET PROTECTION	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	4 OF 8

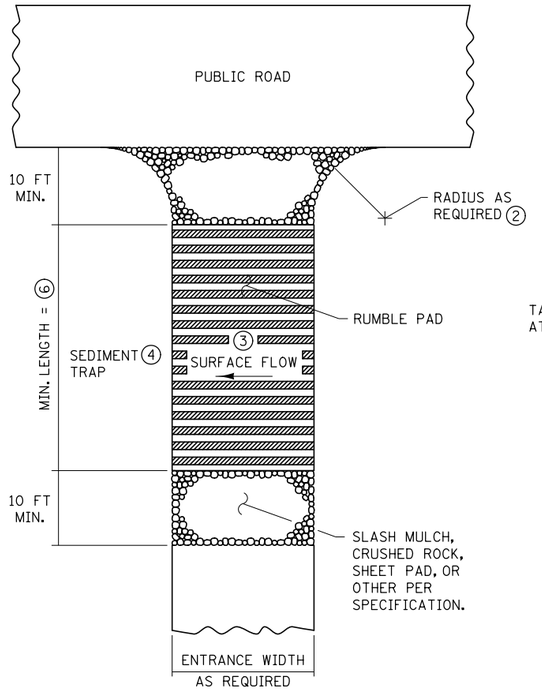
STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037 SHEET NO. 23 OF 148 SHEETS

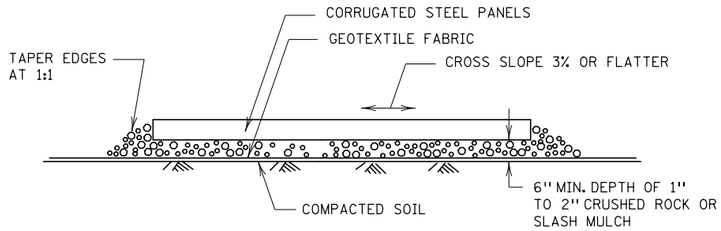
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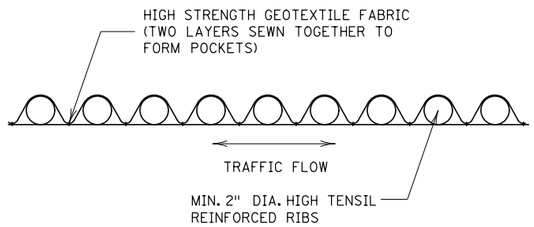
SLASH MULCH, CRUSHED ROCK, OR SHEET PAD CONSTRUCTION EXIT ⑤⑦



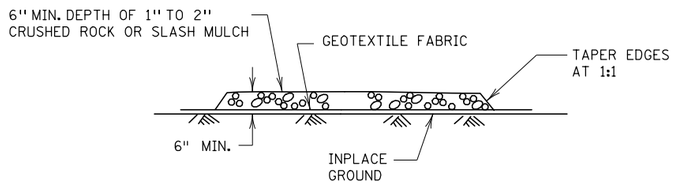
RUMBLE PAD CONSTRUCTION EXIT ⑤⑦



RUMBLE PAD



SHEET PAD



SLASH MULCH OR CRUSHED ROCK

NOTES:

SEE SPECS. 2573 & 3882.

(1) MINIMUM LENGTH SHALL BE THE GREATER OF 50 FEET OR A LENGTH SUFFICIENT TO ALLOW A MINIMUM OF 5 TIRE ROTATIONS ON THE PROVIDED PAD. MINIMUM LENGTH SHALL BE CALCULATED USING THE LARGEST TIRE WHICH WILL BE USED IN TYPICAL OPERATIONS.

(2) PROVIDE RADIUS OR WIDEN PAD SUFFICIENTLY TO PREVENT VEHICLE TIRES FROM TRACKING OFF OF PAD WHEN LEAVING SITE.

(3) IF RUNOFF FROM DISTURBED AREAS FLOWS TOWARD CONSTRUCTION EXITS, PREVENT RUNOFF FROM DRAINING DIRECTLY TO PUBLIC ROAD OVER CONSTRUCTION EXIT BY CROWNING THE EXIT OR SLOPING TO ONE SIDE. IF SURFACE GRADING IS INSUFFICIENT, PROVIDE OTHER MEANS OF INTERCEPTING RUNOFF.

(4) IF RUNOFF FROM CONSTRUCTION EXITS WILL DRAIN OFF OF PROJECT SITE, PROVIDE SEDIMENT TRAP WITH STABILIZED OVERFLOW.

(5) IF A TIRE WASH OFF IS REQUIRED THE CONSTRUCTION EXITS SHALL BE GRADED TO DRAIN THE WASH WATER TO A SEDIMENT TRAP.

(6) MINIMUM LENGTH OF RUMBLE PAD SHALL BE 20 FEET, OR AS REQUIRED TO REMOVE SEDIMENT FROM TIRES. IF SIGNIFICANT SEDIMENT IS TRACKED FROM THE SITE, THE RUMBLE PAD SHALL BE LENGTHENED OR THE DESIGN MODIFIED TO PROVIDE ADDITIONAL VIBRATION. WASH-OFF LENGTH SHALL BE AS REQUIRED TO EFFECTIVELY REMOVE CONSTRUCTION SEDIMENT FROM VEHICLE TIRES.

(7) MAINTENANCE OF CONSTRUCTION EXITS SHALL OCCUR WHEN THE EFFECTIVENESS OF SEDIMENT REMOVAL HAS BEEN REDUCED. MAINTENANCE SHALL CONSIST OF REMOVING SEDIMENT AND CLEANING THE MATERIALS OR PLACING ADDITIONAL MATERIAL (SLASH MULCH OR CRUSHED ROCK) OVER SEDIMENT FILLED MATERIAL TO RESTORE EFFECTIVENESS.

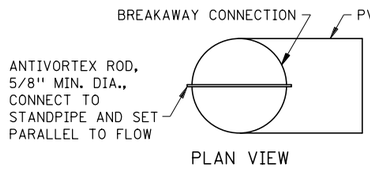
LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP		TEMPORARY SEDIMENT CONTROL STABILIZED CONSTRUCTION EXIT	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	5 OF 8

STANDARD PLANS

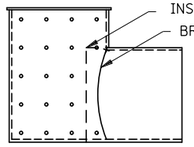
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S.A.P 002-602-015, S.A.P. 127-020-037

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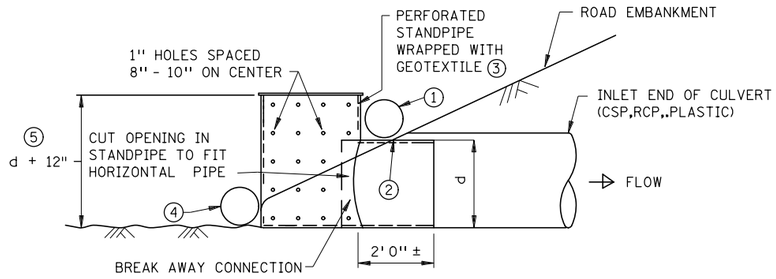
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PLAN VIEW



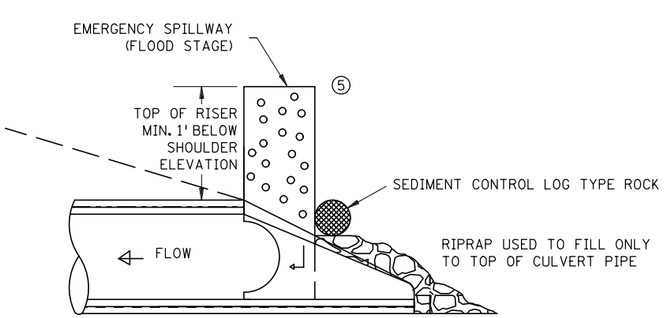
CULVERT STANDPIPE



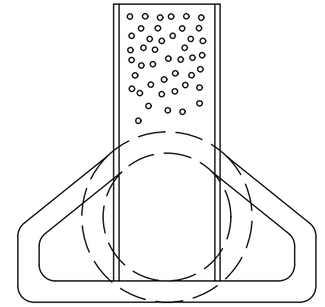
ELEVATION VIEW OF CULVERT INSTALLATION

CULVERT STANDPIPE INSERT (D-RISER)

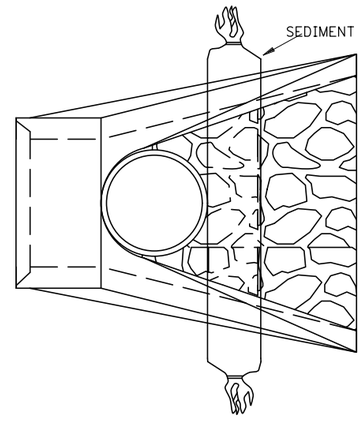
d= CULVERT SIZE: 12" - 36"



LONGITUDINAL SECTION



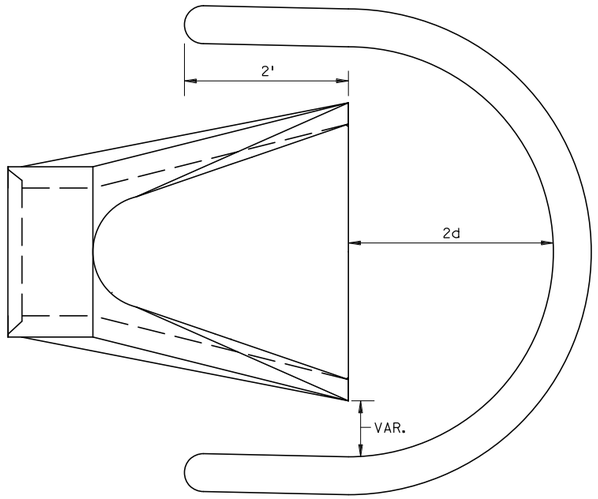
END VIEW



TOP VIEW

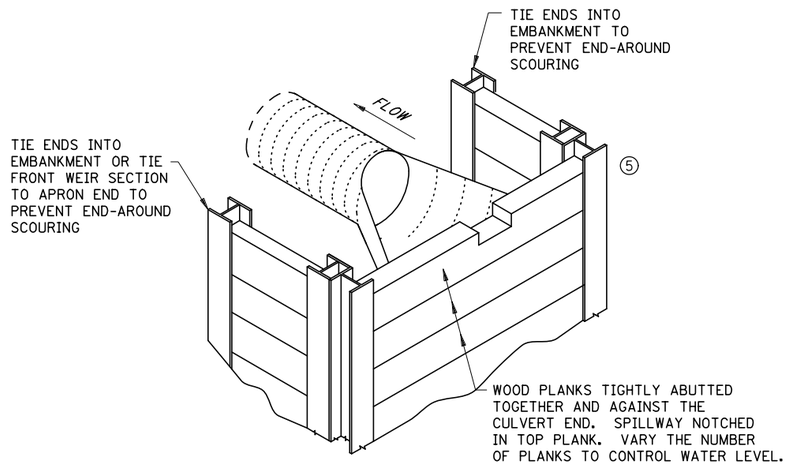
NOTE: SEDIMENT CONTROL LOG TYPE ROCK MAY BE WRAPPED AROUND RISER

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.

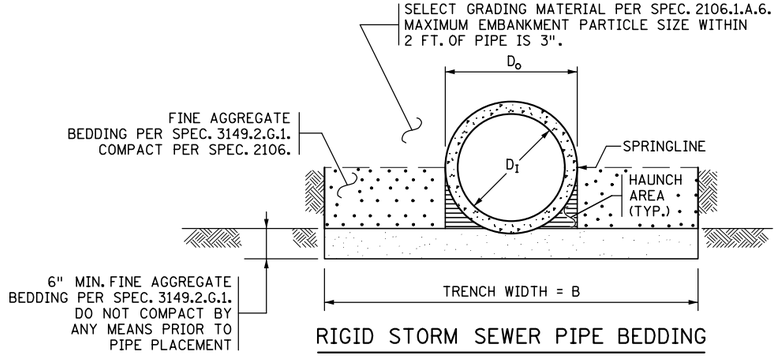
LEAD EXPERT OFFICE	LYNN CLARKOWSKI CHIEF ENVIRONMENTAL OFFICER OFFICE OF ENVIRNOMENTAL STEWARDSHIP		TEMPORARY SEDIMENT CONTROL CULVERT END CONTROLS	APPROVED: 02-28-2017 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.405	8 OF 8

STANDARD PLANS

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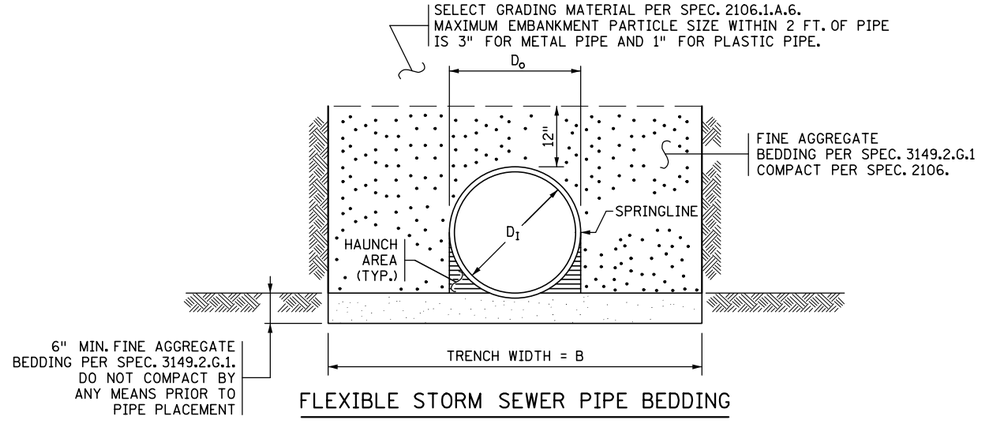


RIGID STORM SEWER PIPE BEDDING

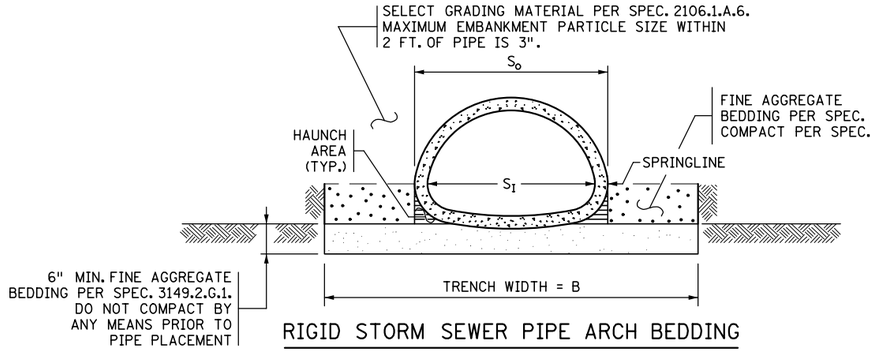
TRENCH BASE WIDTH ①②	
PIPE DIA. D_I OR S_I	TRENCH WIDTH B
< 42"	D_o + 24"
42" TO 54"	1.5 x D_o
> 54"	D_o + 36"

PLASTIC PIPE
WITH H > 10 FT.①②

PIPE DIA.	TRENCH WIDTH (FEET)
12"	5'-2"
15"	5'-6"
18"	5'-9"
24"	6'-6"
30"	8'-0"
36"	9'-6"
42"	11'-0"
48"	12'-6"



FLEXIBLE STORM SEWER PIPE BEDDING



RIGID STORM SEWER PIPE ARCH BEDDING

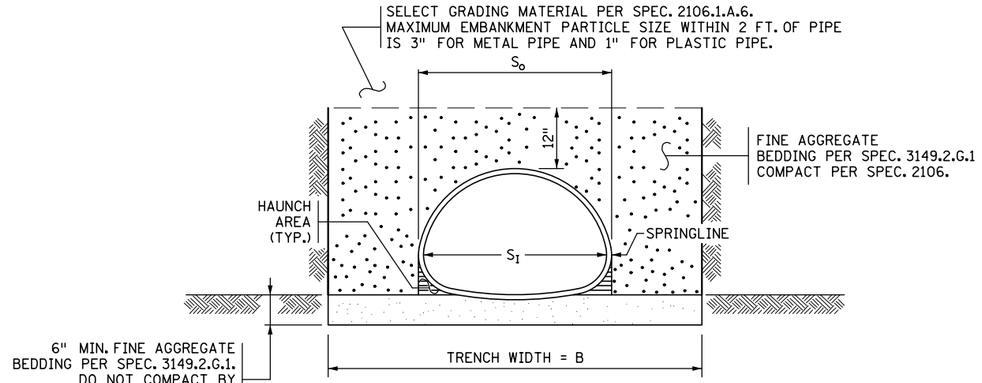
-LEGEND-

D_I = INSIDE DIAMETER OF ROUND PIPE (INCHES).
D_o = OUTSIDE DIAMETER OF ROUND PIPE (INCHES).
S_I = INSIDE SPAN OF PIPE-ARCH (INCHES).
S_o = OUTSIDE SPAN OF PIPE-ARCH (INCHES).
H = FILL COVER HEIGHT OVER PIPE (FEET).

= UNDISTURBED SOIL

= COMPACTED BEDDING

= LOOSE BEDDING, COMPACTED AFTER PIPE PLACEMENT



FLEXIBLE STORM SEWER PIPE ARCH BEDDING

CONSTRUCTION SEQUENCE

1. LOOSELY PLACE 6" OF FINE AGGREGATE BEDDING MATERIAL TO GRADE. DO NOT COMPACT PRIOR TO PIPE PLACEMENT.
2. FOR PIPES WITH BELL, REMOVE MATERIAL IN BELL AREA PRIOR TO PLACEMENT.
3. FURNISH AND INSTALL PIPE TO GRADE.
4. AFTER PLACEMENT OF THE PIPE, PLACE ADDITIONAL FINE AGGREGATE BEDDING AND COMPACT THE FULL LENGTH ON BOTH SIDES OF THE PIPE UNDERNEATH THE HAUNCH AREA BY FIRST SHOVEL SLICING (MANUALLY SHOVE THE BLADE END OF SHOVEL AT AN ANGLE DOWN THE ENTIRE LENGTH OF HAUNCH UNDER THE PIPE). THEN COMPACT THE HAUNCH AT AN ANGLE USING A POWERED MECHANICAL OR PNEUMATIC DEVICE (I.E. POLE TAMPER, JUMPING JACK, OR SIMILAR).
5. COMPACT THE REMAINING MATERIAL OUTSIDE THE HAUNCH AREA TO THE REQUIREMENTS OF SPEC. 2106 ENSURING THAT THE ENTIRE LENGTH OF PIPE IS SUPPORTED UNIFORMLY BY BEDDING.
6. PLACE AND COMPACT BACKFILL EVENLY AND SIMULTANEOUSLY IN 6" LIFTS ON EACH SIDE OF THE PIPE UP TO THE SPRINGLINE FOR RIGID PIPE AND 12" ABOVE THE TOP OF THE PIPE FOR FLEXIBLE PIPE WHEN COMPACTED.
7. COMPLETE REMAINING BACKFILL.

NOTES

EXCAVATE & CONSTRUCT ALL TRENCHES AND SLOPES PER OSHA REQUIREMENTS.

PIPE SIZE IS BASED ON THE NOMINAL INSIDE DIAMETER OR SPAN.

PROTECT ALL PIPE DURING CONSTRUCTION PER SPEC. 2503.

WHEN RIPRAP IS REQUIRED AT THE APRON END, SEE STANDARD PLATE OR PLAN FOR RIPRAP INSTALLATION AND QUANTITIES. FOR APRONS WITHOUT RIPRAP PLACE 6" MIN. FINE AGGREGATE BEDDING UNDER APRONS. USE A TRENCH WIDTH EQUAL TO THE PIPE TRENCH WIDTH.

FINE AGGREGATE BEDDING INCLUDING THE COST OF EXCAVATION, PLACEMENT AND COMPACTION IS INCLUDED IN THE CONTRACT UNIT PRICE OF THE RELEVANT STORM SEWER PAY ITEM.

EXCAVATION AND BACKFILL WITH SELECT GRADING MATERIAL ARE NOT TABULATED SEPARATELY BUT ARE INCLUDED IN THE CONTRACT UNIT PRICE OF THE RELEVANT STORM SEWER PAY ITEM.

RIGID PIPE INCLUDES CONCRETE. FLEXIBLE PIPE INCLUDES METAL, AND PLASTIC MATERIALS SUCH AS CORRUGATED POLYPROPYLENE (PP), CORRUGATED POLYETHYLENE (CP) AND POLYVINYL CHLORIDE (PVC).

① MODIFY TRENCH WIDTH & SLOPE AS NECESSARY TO COMPLY WITH OSHA REQUIREMENTS.

② USE PLASTIC PIPE TABLE FOR TRENCH WIDTHS WHEN FILL HEIGHT IS GREATER THAN 10 FT.

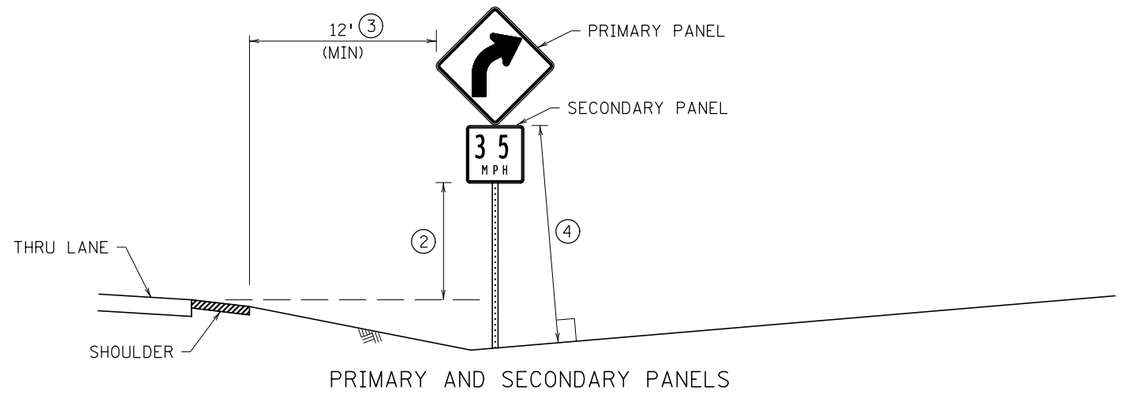
LEAD EXPERT OFFICE	KEVIN WESTERN STATE BRIDGE ENGINEER	STANDARD STORM SEWER BEDDING FOR RIGID AND FLEXIBLE PIPE	APPROVED: 01-18-2019 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.442	1 OF 1

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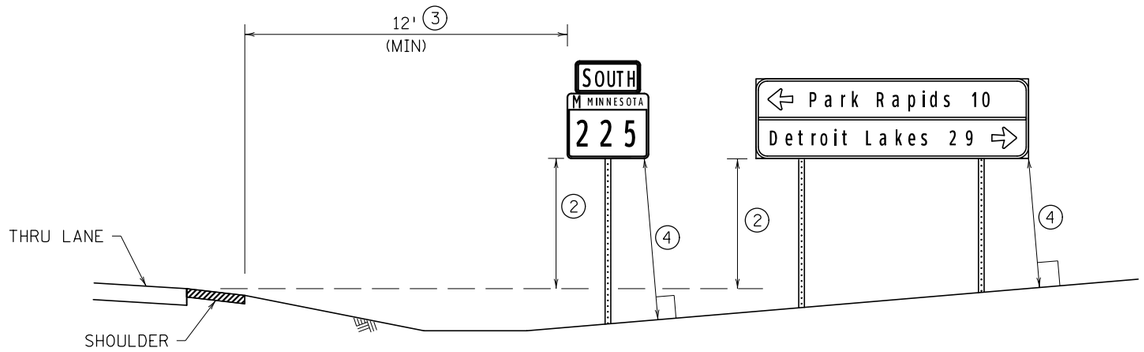
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S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 26 OF 148 SHEETS

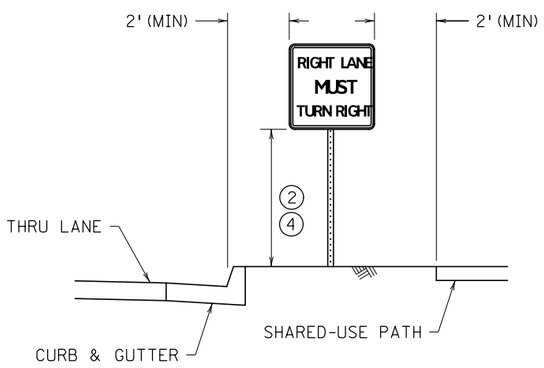
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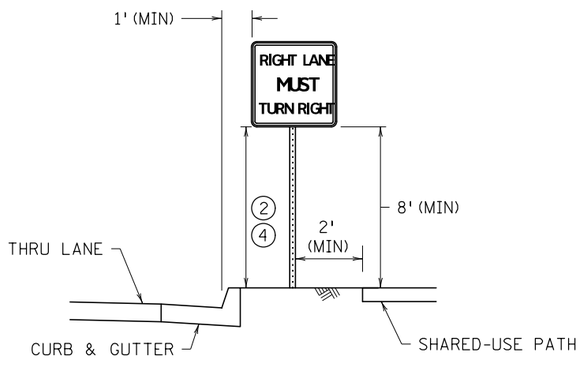
PRIMARY AND SECONDARY PANELS



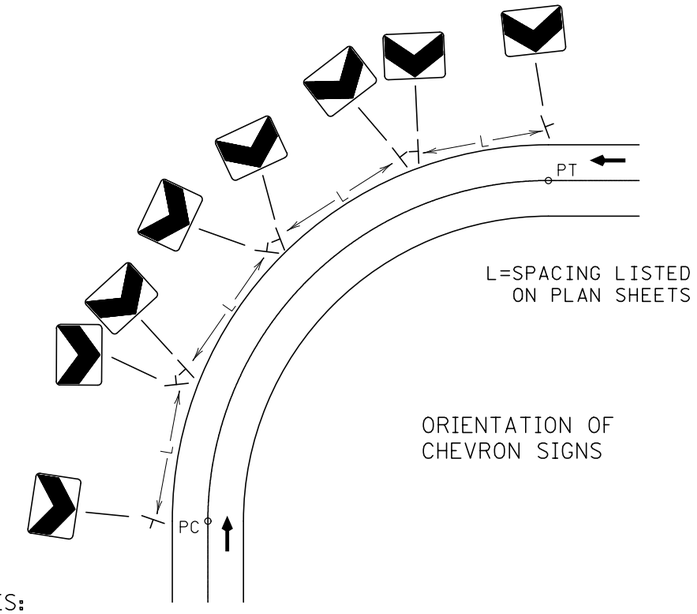
STANDARD LOCATIONS



BOULEVARD LOCATIONS
6' TO 12' WIDE



BOULEVARD LOCATIONS (1)
LESS THAN 6' WIDE



L=SPACING LISTED
ON PLAN SHEETS

ORIENTATION OF
CHEVRON SIGNS

NOTES:

PLACE SIGNS AND ORIENT THEM APPROXIMATELY AS SHOWN IN THE PLAN, AT RIGHT ANGLES TO THE DIRECTION OF, AND FACING THE TRAFFIC THEY ARE INTENDED TO SERVE, UNLESS OTHERWISE SPECIFIED. TO AVOID SPECULAR GLARE, TURN SIGNS APPROXIMATELY THREE DEGREES AWAY FROM APPROACHING TRAFFIC.

IF A SIGN NEEDS TO BE REPOSITIONED FROM THE PROPOSED PLAN LOCATION IN ORDER TO AVOID CONFLICTS WITH UTILITIES OR OBSTACLES, CONTACT THE PROJECT ENGINEER.

MOUNT SIGN FACES PLUMB.

LATERAL CLEARANCES GIVEN APPLY TO RIGHT AND/OR LEFT SIDE INSTALLATION.

ERECT OR CONSTRUCT SIGN SUPPORT SO THAT NO PORTION OF THE SIGN PANEL IS WITHIN 15' OF THE RAIL OF A RAILROAD TRACK.

PLACE SIGNS SUCH THAT OBSTACLES DO NOT BLOCK THEM FROM BEING VIEWED BY THE APPROACHING TRAFFIC.

PLACE SIGNS A MINIMUM OF 10' FROM THE NEAREST OBSTACLE. OBSTACLES MAY INCLUDE, BUT ARE NOT LIMITED TO, LIGHT POLES, TREES, SIGNS, AND BUILDINGS. SIGNS MAY BE PLACED CLOSER TO SIGNS IN TIGHT AREAS, BUT NO MORE THAN TWO POSTS IN A 7' DIAMETER CIRCLE.

AVOID PLACING SIGNS IN DITCH BOTTOMS.

(1) ONLY USE WHEN BOULEVARD IS TOO NARROW TO OBTAIN ADEQUATE CURBED LOCATION SIGN OFFSETS.

(2) ALL SIGN MOUNTING HEIGHTS ARE MEASURED VERTICALLY FROM THE BOTTOM OF THE LOWEST SIGN PANEL TO THE TOP OF THE CURB, OR IN ABSENCE OF CURB, TO THE NEAR EDGE OF THE THRU-LANE PAVEMENT. SEE SIGN TABULATIONS.

(3) MINIMUM OFFSET MAY BE REDUCED TO AT LEAST 6' FROM SHOULDER AND AT LEAST 12' FROM THRU LANE IF SITE CONDITIONS PROHIBIT A 12' OFFSET FROM SHOULDER.

(4) CRASHWORTHY HEIGHT IS AT LEAST 7' FOR BREAKAWAY STRUCTURES AND AT LEAST 4' FOR BENDABLE STRUCTURES. SEE SPECIFIC SQUARE TUBE BASE STRUCTURE PLAN FOR CRASH RESPONSE TYPE. THE CRASHWORTHY HEIGHT IS MEASURED TO THE BOTTOM OF THE PRIMARY SIGN PANEL EXCLUDING ANY SECONDARY SIGN PANELS, MARKERS, DELINEATORS, AND REFERENCE LOCATION SIGN PANELS. ANY SECONDARY SIGN PANELS MOUNTED TO MORE THAN ONE POST ARE CONSIDERED PRIMARY SIGN PANELS FOR CRASHWORTHY PURPOSES.

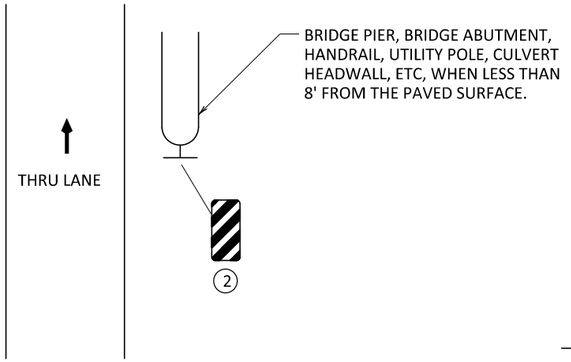
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		STANDARD SIGN PLACEMENT	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.701	1 OF 1

STANDARD PLANS

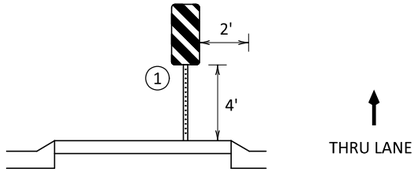
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 27 OF 148 SHEETS

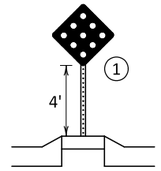
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OBSTRUCTION
TYPE 3 OBJECT MARKER

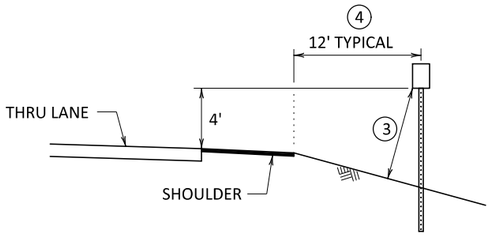


RAISED ISLAND
TYPE 3 OBJECT MARKER

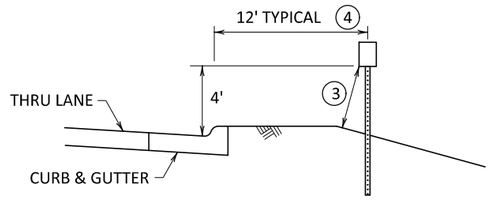


RAISED ISLAND
TYPE 1 OBJECT MARKER

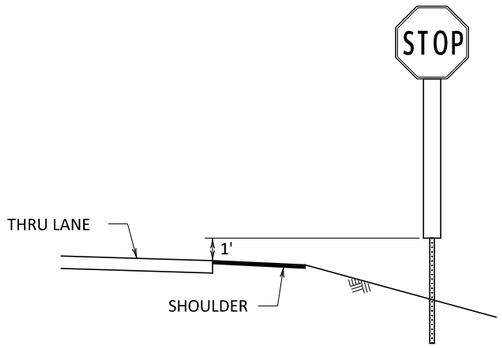
MARKER TYPICAL PLACEMENT



LOCATIONS WITHOUT CURB



LOCATIONS WITH CURB



POST STRIP

DELINEATOR TYPICAL PLACEMENT

NOTES:

FOR DELINEATOR OFFSETS AT RAMP GORES, SEE STANDARD PLAN 5-297.703.

(1) PLACE MARKER AS CLOSE TO THE BEGINNING OF MEDIAN AS POSSIBLE.

(2) PLACE THE EDGE OF THE OBJECT MARKER THAT IS CLOSEST TO THE ROAD USER IN LINE WITH THE CLOSEST EDGE OF THE OBSTRUCTION. ANGLE THE STRIPES DOWNWARD TOWARDS THE SIDE TRAFFIC IS TO PASS THE OBSTRUCTION.

(3) THE CRASHWORTHY HEIGHT FROM THE GROUND TO ANY PORTION OF THE SIGN PANEL IS AT LEAST 7' FOR BREAKAWAY STRUCTURES AND AT LEAST 4' FOR BENDABLE STRUCTURES. SEE SPECIFIC SQUARE TUBE BASE STRUCTURE PLAN FOR CRASH RESPONSE TYPE.

(4) ADJUST OFFSET TO MATCH OTHER SIGN OFFSETS ALONG ROADWAY CORRIDOR, BUT NOT MORE THAN 12' NOR LESS THAN 2'.

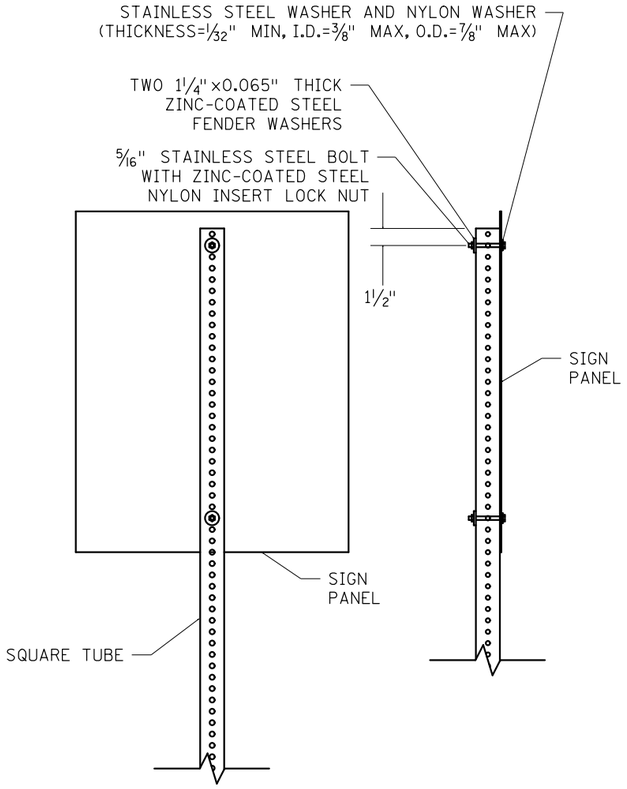
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		DELINEATOR AND MARKER PLACEMENT	APPROVED: 06-04-2024 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.702	1 OF 1

STANDARD PLANS

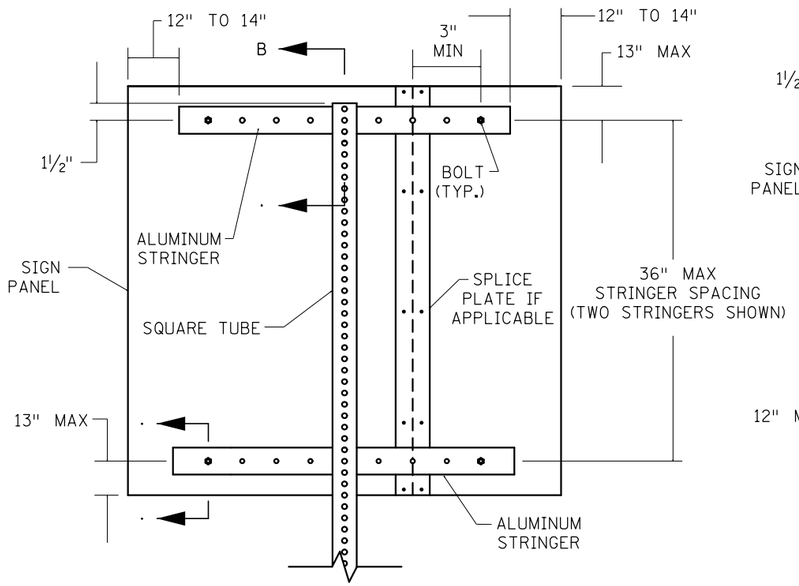
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 28 OF 148 SHEETS

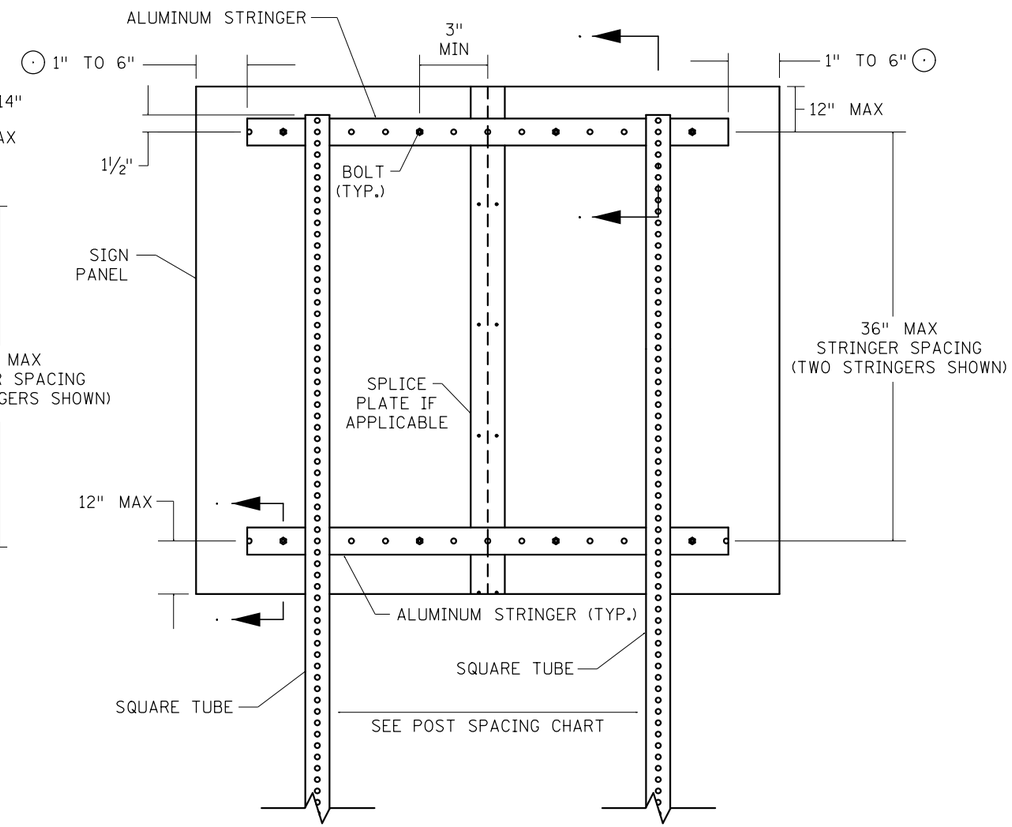
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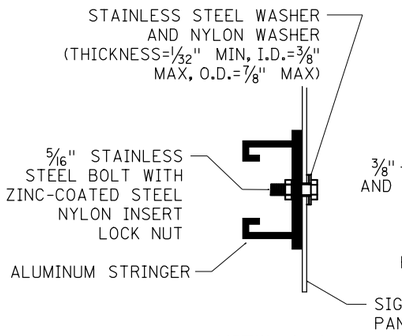
FOR SIGN PANELS UP TO 30" WIDE



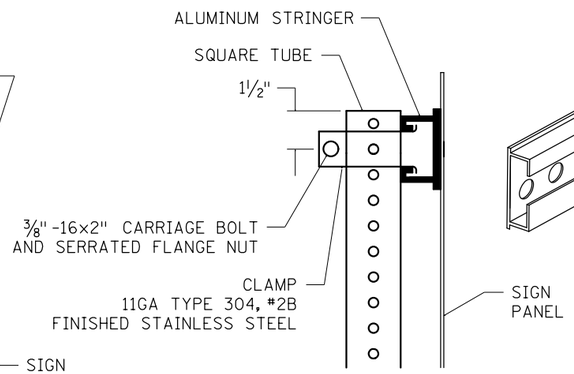
FOR SIGN PANELS 36" WIDE OR GREATER ON ONE POST



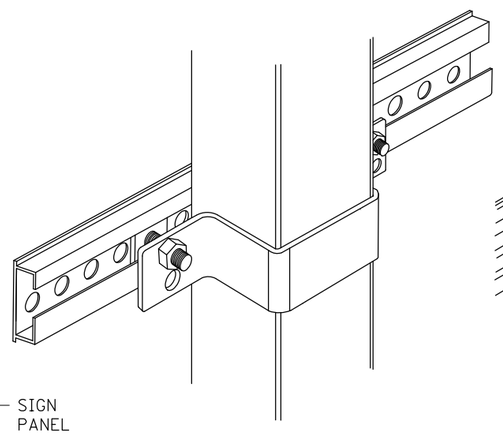
FOR SIGN PANELS ON TWO OR MORE POSTS



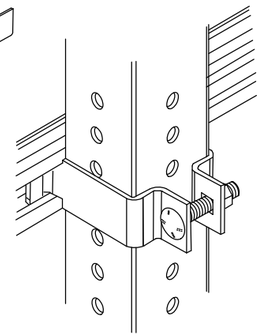
VIEW A-A



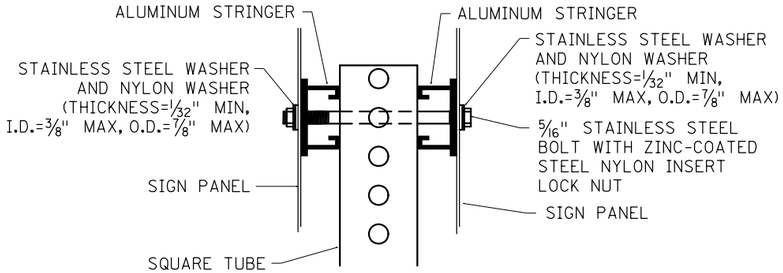
VIEW B-B



CLAMP DETAIL
4" SQUARE TUBE



CLAMP DETAIL
2" AND 2 1/2" SQUARE TUBE



BACK-TO-BACK SIGN MOUNTING WITH STRINGERS

NOTES:

BOLT SIGN PANELS TO STRINGERS OR RISER POSTS AT NO GREATER THAN 24" SPACING OR ACCORDING TO THE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR MOUNTING HOLES (PUNCH CODES) INFORMATION.

CENTER STRINGERS ON SIGN PANEL.

(·) IF POST SPACING REQUIRES PLACEMENT OF A POST WITHIN THIS AREA, EXTEND STRINGERS AS NEEDED TO ACCOMMODATE THE STRINGER TO POST CLAMP.

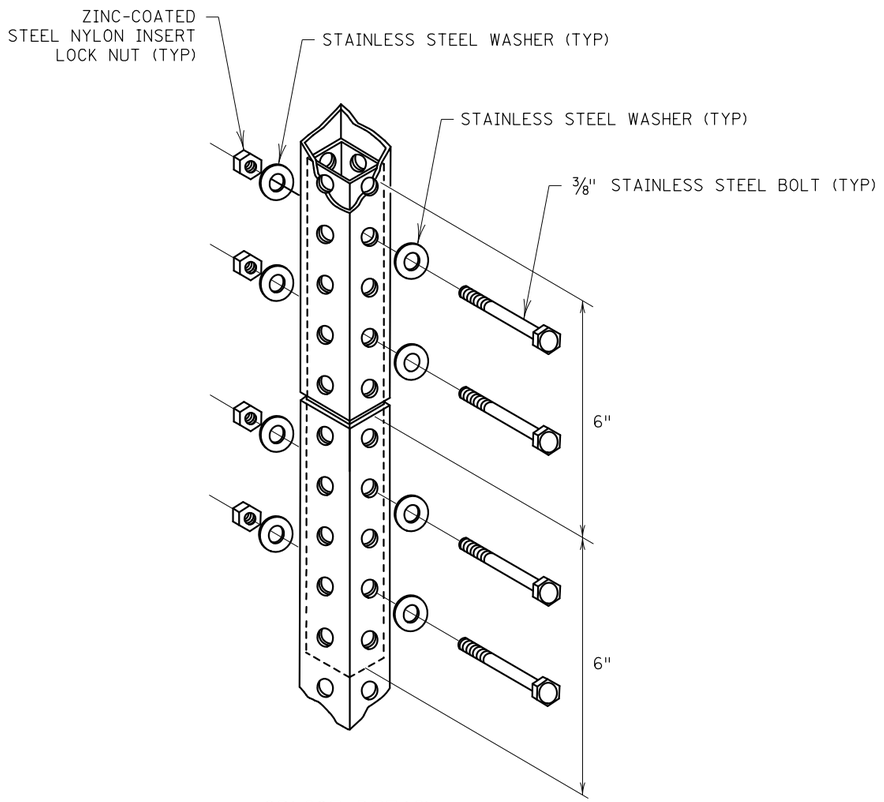
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SQUARE-TUBE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.718	1 OF 3

STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 29 OF 148 SHEETS

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SPLICE DETAIL

PANEL WIDTH	SQUARE TUBE POST SPACING						
	2 POSTS	3 POSTS	4 POSTS	5 POSTS	6 POSTS	7 POSTS	8 POSTS
(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)
42	15						
48	21						
54	30						
60	36						
66	36						
72	42						
78	42						
84	48						
90	48	42					
96	48	42					
102	54	42					
108	54	42					
114	60	42					
120	60	48					
126	66	48					
132	66	48	42				
138	72	48	42				
144	72	48	42				
150	78	54	42				
156	78	54	42				
162	84	54	42				
168	84	60	48				
174	90	60	48	42			
180	90	60	48	42			
186	96	66	48	42			
192	96	66	48	42			
198	102	66	54	42			
204	102	72	54	42			
210	108	72	54	42			
216	108	72	54	48	42		
222	114	78	60	48	42		
228	114	78	60	48	42		
234	120	78	60	48	42		
240	120	84	60	48	42		
246		84	66	54	42		
252		84	66	54	42		
258		90	66	54	42	42	
264		90	66	54	48	42	
270		90	72	54	48	42	
276		96	72	60	48	42	
282		96	72	60	48	42	
288		96	72	60	48	42	
294		102	78	60	54	42	
300		102	78	60	54	42	42
306		102	78	66	54	42	42
312		108	78	66	54	48	42
318		108	84	66	54	48	42
324		108	84	66	54	48	42
330		114	84	66	60	48	42
336		114	84	72	60	48	42

DISTANCES ARE CENTER-TO-CENTER OF POSTS

NOTES:

NO MORE THAN ONE SPLICE PER POST.

WHEN USED, THE SPLICE MUST BE PLACED AT LEAST 8' ABOVE GROUND. THE PREFERRED PLACEMENT LOCATION IS BEHIND THE SIGN PANEL.

INTERIOR POST STUD SHALL BE ONE SIZE SMALLER FOR TIGHT FIT. IF RISER POST IS 2½", INTERIOR POST IS 2 3/16". IF RISER POST IS 2", INTERIOR POST IS 1¾".

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LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SQUARE-TUBE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.718	2 OF 3

STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

NUMBER OF ALUMINUM STRINGERS FOR 2½" OR SMALLER POSTS

PANEL HEIGHT (INCHES)	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324	330	336
120	0	0	0	0	4	4	4	4	4				4																																													
114	0	0	0	0	4	4	4	4	4	4			4	4																																												
108	0	0	0	0	4	4	4	4	4	4	4			4	4	4					4	4																																				
102	0	0	0	0	4	4	4	4	4	4	4			4	4	4	4	4			4	4	4	4				4	4	4						4	4																		
96	0	0	0	0	3	3	3	3	3	3	3	3		3	3	3	3	3	3		3	3	3	3	3	3		3	3	3	3	3	3		3	3	3	3	3																
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1 POST | 2 POST | 3 POST | 4 POST | 5 POST | 6 POST

PANEL WIDTH (INCHES)

NUMBER OF STRINGERS FOR 4" POSTS

PANEL HEIGHT (INCHES)	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324	330	336
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4 POST

1 POST | 2 POST | 3 POST

PANEL WIDTH (INCHES)

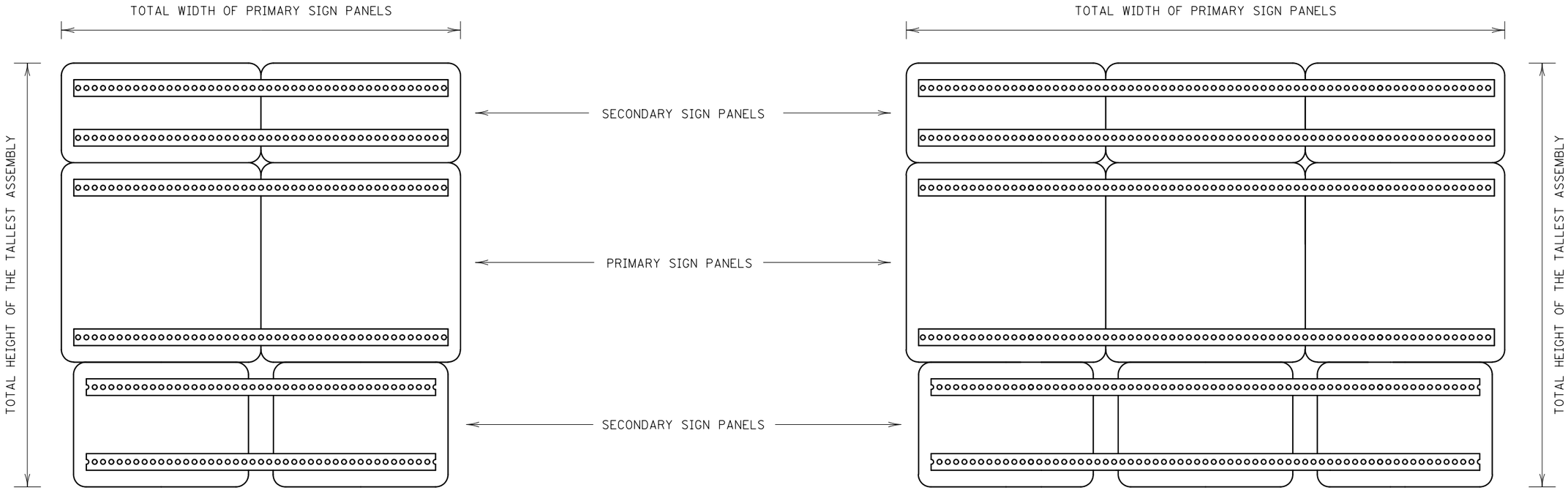
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	SQUARE-TUBE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER
STANDARD PLAN 5-297.718	3 OF 3			

STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 31 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:34:49 AM
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TWO SIDE-BY-SIDE ASSEMBLIES

THREE SIDE-BY-SIDE ASSEMBLIES

NOTES:

CENTER SECONDARY SIGN PANELS BELOW OR ABOVE PRIMARY SIGN PANELS.

STRINGER SPACING TO MATCH VERTICAL PUNCHING SPACING FOR SIGN PANELS.

FOR SINGLE-POST INSTALLATIONS, THE STRINGERS MUST EXTEND 1" BEYOND THE BOLT HOLES.

FOR MULTI-POST INSTALLATIONS, THE STRINGERS MUST EXTEND EITHER 1" BEYOND THE BOLT HOLES OR 3" BEYOND THE OUTER POST CENTERLINE, WHICHEVER IS GREATER.

DETERMINE THE NUMBER OF POSTS AND THE POST SPACING BY THE TOTAL WIDTH AND HEIGHT OF THE ASSEMBLIES.

SEE STANDARD PLAN 5-297.718 FOR ADDITIONAL MOUNTING DETAILS.

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SQUARE TUBE SIDE-BY-SIDE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.719	1 OF 1

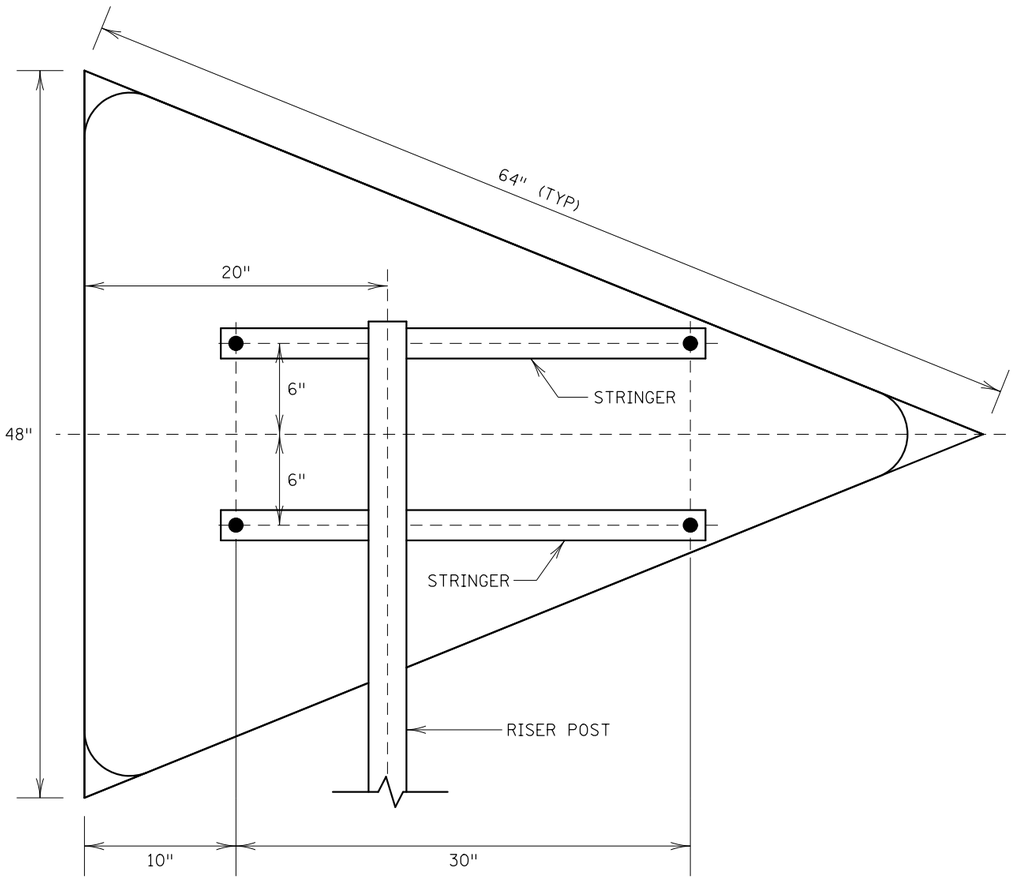
STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 32 OF 148 SHEETS

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NO PASSING ZONE MOUNTING DETAIL

NOTES:

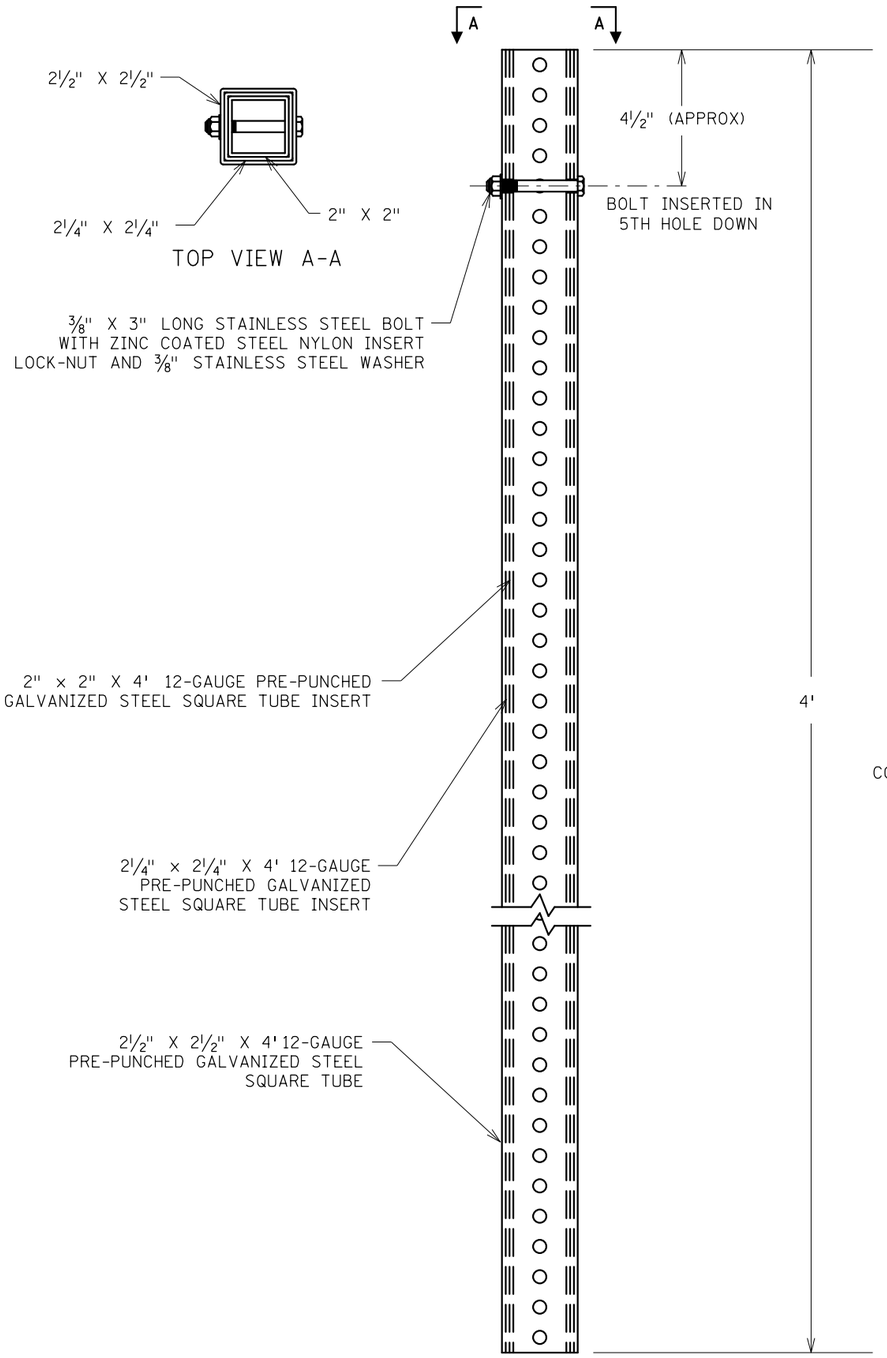
STRINGER SPACING TO MATCH VERTICAL PUNCHING SPACING FOR SIGN PANELS.

SEE STANDARD PLAN 5-297.718 FOR ADDITIONAL MOUNTING DETAILS.

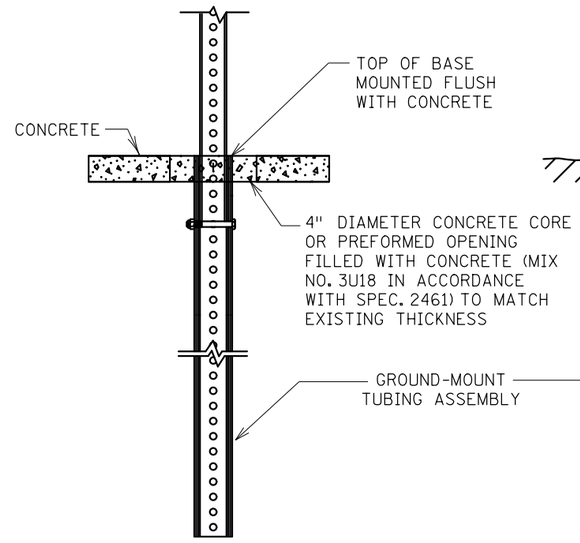
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SQUARE TUBE NO PASSING ZONE SIGN MOUNTING DETAILS	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.720	1 OF 1

STANDARD PLANS

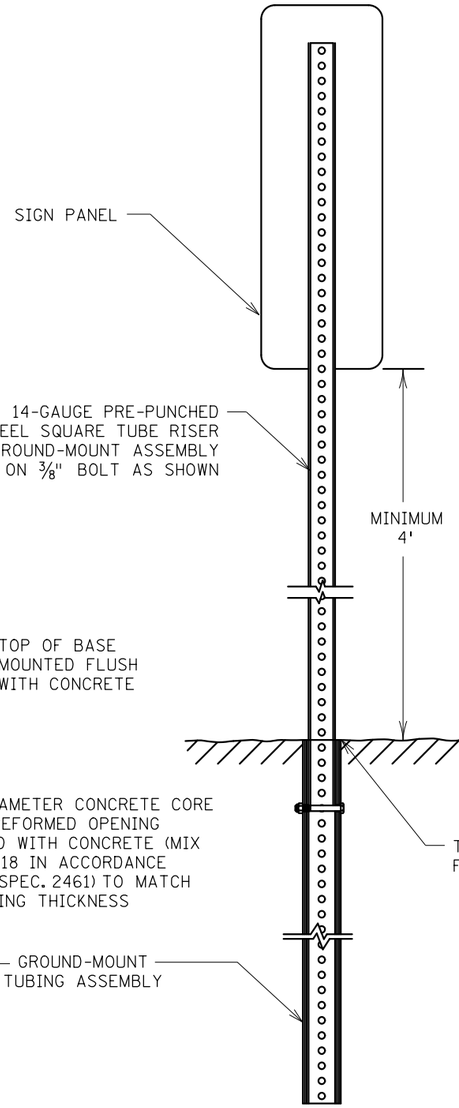
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S.A.P 002-602-015, S.A.P. 127-020-037



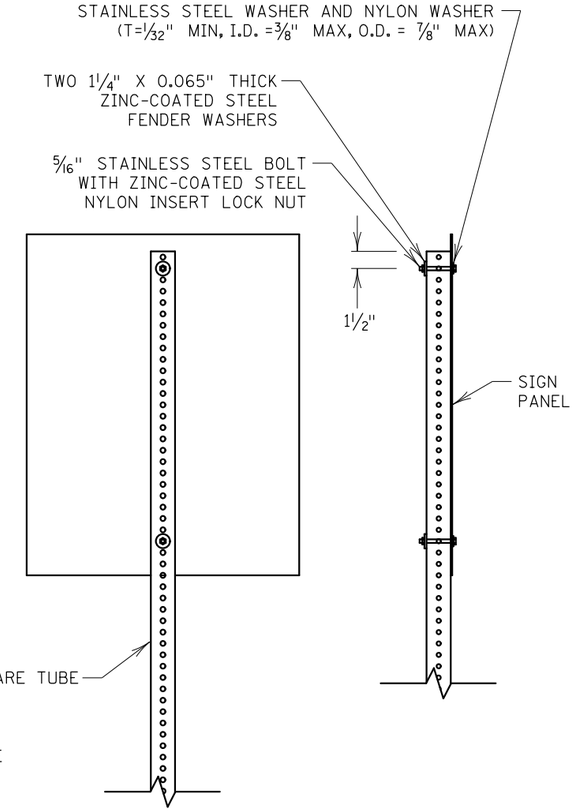
GROUND MOUNT TUBING ASSEMBLY



THREE-WALL BASE CORED
THROUGH CONCRETE



THREE-WALL BASE IN SOIL



MOUNTING DETAIL

NOTES:

THE CRASH RESPONSE FOR THIS STRUCTURE IS BENDABLE.

TO MEET CRASHWORTHY REQUIREMENTS THE DISTANCE BETWEEN THE BOTTOM OF THE SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE SIGN PANEL SHALL BE A MINIMUM OF 4'. SEE TABULATIONS FOR MOUNTING HEIGHT.

SQUARE TUBE SIGN POSTS PER MnDOT SPEC. 3402.

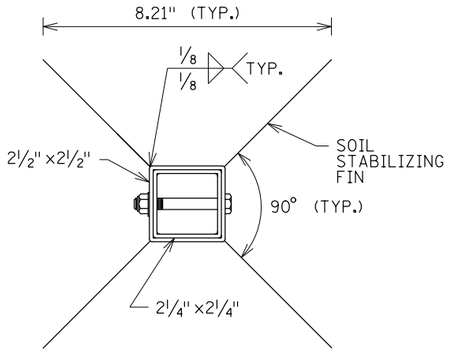
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		THREE-WALL BASE FOR 1¾" SQUARE-TUBE RISER POST	APPROVED: 11-29-2022 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.721	1 OF 1

STANDARD PLANS

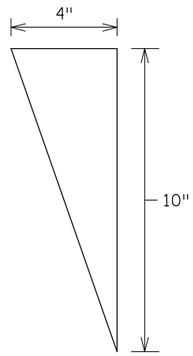
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 34 OF 148 SHEETS

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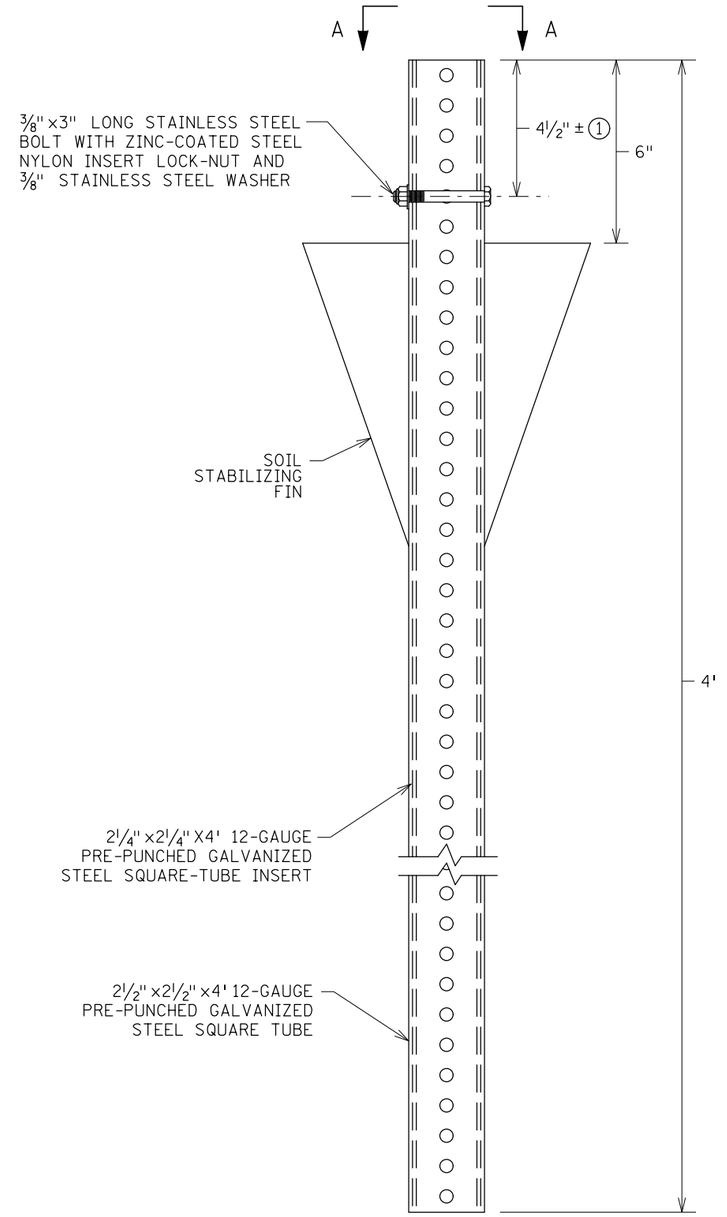


VIEW A-A

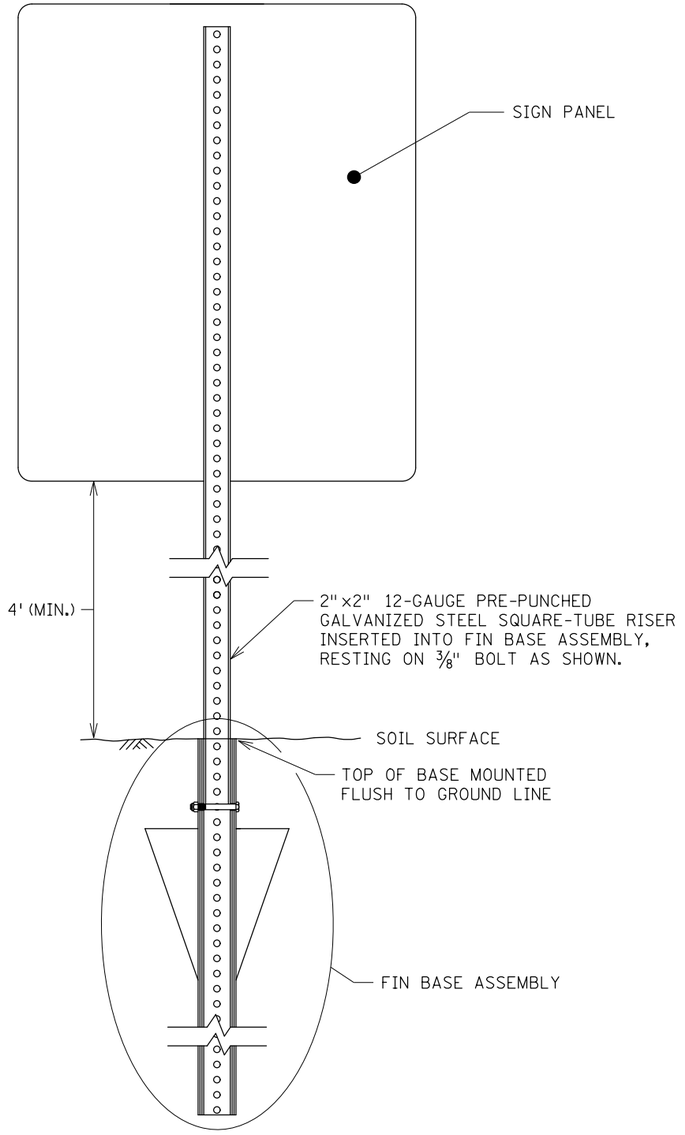


SOIL STABILIZING FIN
FOUR REQUIRED

12-GAUGE PRE-GALVANIZED ASTM A569 STEEL. WELD THE 10" EDGE OF EACH FIN TO EACH CORNER OF THE 2½" SQUARE TUBE. SEE VIEW A-A FOR WELDING DETAILS. WELDS MUST BE ZINC-COATED.



FIN BASE ASSEMBLY



FIN BASE IN SOIL

NOTES:

THE CRASH RESPONSE TYPE FOR THIS STRUCTURE IS BENDABLE.

TO MEET CRASHWORTHY REQUIREMENTS, THE DISTANCE BETWEEN THE BOTTOM OF THE SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE SIGN PANEL MUST BE A MINIMUM OF 4'. SEE TABULATIONS FOR MOUNTING HEIGHT.

SEE STANDARD PLAN 5-297.718 FOR ADDITIONAL MOUNTING DETAILS.

SQUARE-TUBE SIGN POSTS IN ACCORDANCE WITH SPEC. 3402.

① INSERT BOLT IN 5TH HOLE DOWN.

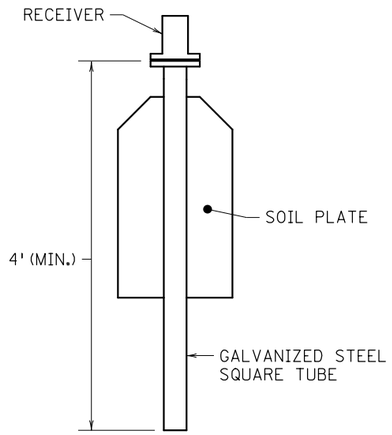
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		FIN BASE FOR 2" SQUARE-TUBE RISER POST IN SOIL	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.722	1 OF 1

STANDARD PLANS

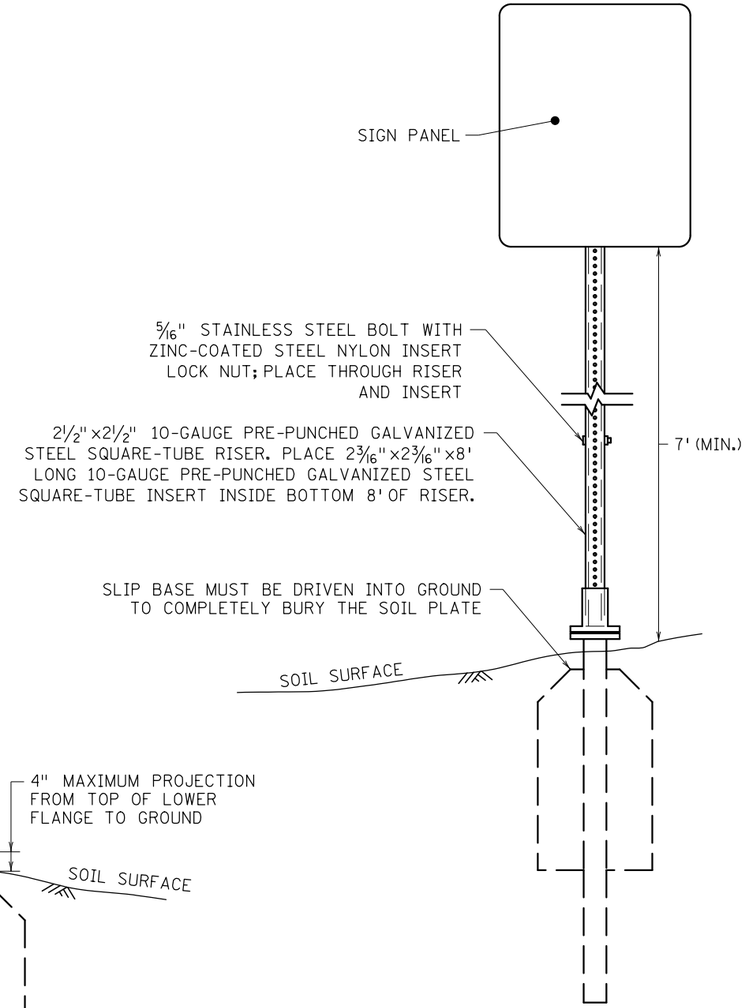
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 35 OF 148 SHEETS

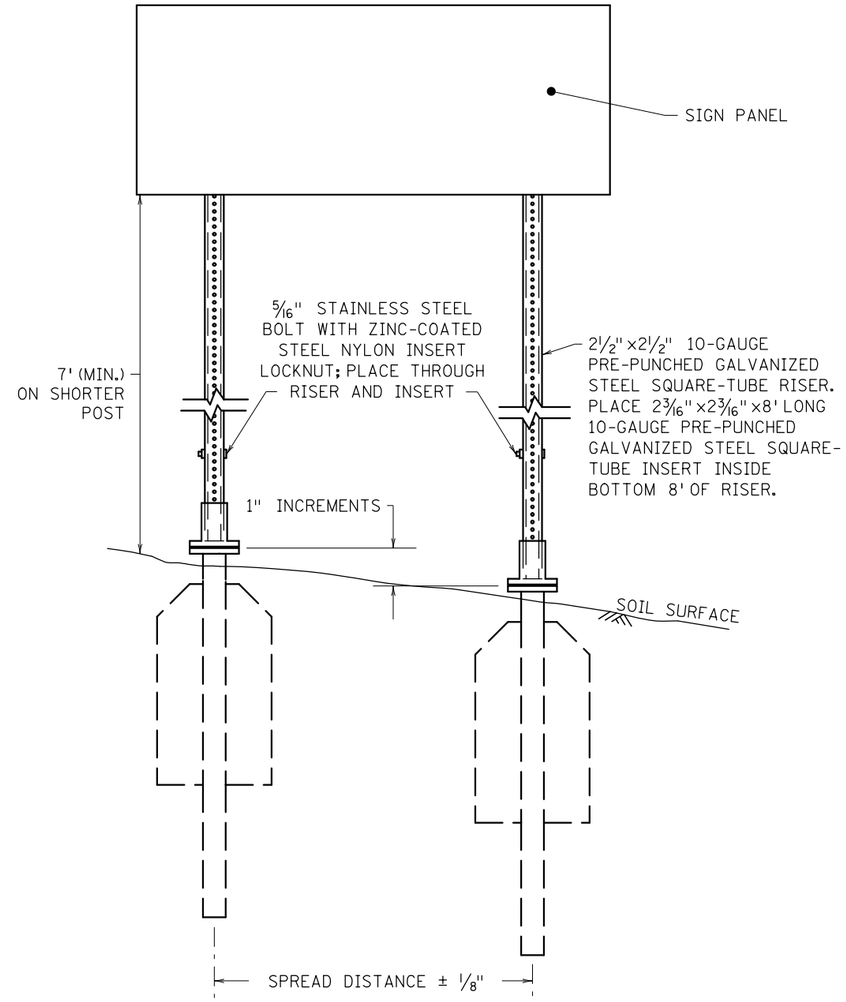
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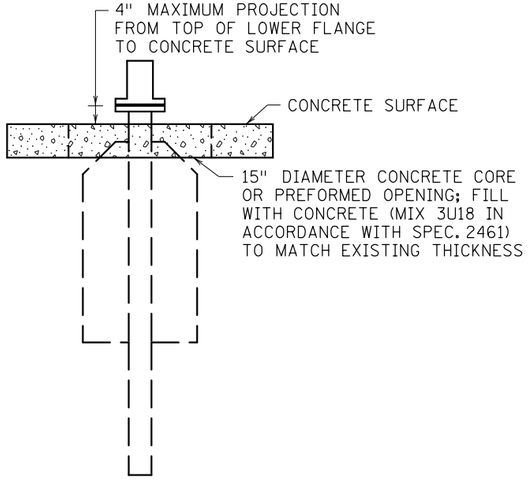
PROPRIETARY SLIP BASE ASSEMBLY ①



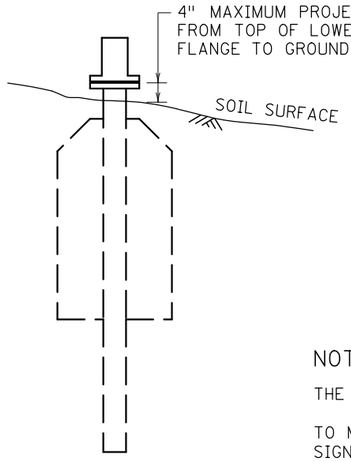
SLIP BASE ASSEMBLY WITH SINGLE-POST SIGN
TYPICAL PLACEMENT IN SOIL



SLIP BASE ASSEMBLY WITH MULTIPLE-POST SIGN ②
TYPICAL PLACEMENT IN SOIL



SLIP BASE ASSEMBLY IN CONCRETE



SLIP BASE ASSEMBLY IN SOIL

NOTES:

THE CRASH RESPONSE TYPE FOR THIS STRUCTURE IS BREAKAWAY.

TO MEET CRASHWORTHY REQUIREMENTS, THE DISTANCE BETWEEN THE BOTTOM OF THE PRIMARY SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE PRIMARY SIGN PANEL MUST BE A MINIMUM OF 7'. SEE SIGNING PLAN TABULATIONS FOR MOUNTING HEIGHT.

1/16"-THICK LEVELING SHIMS MAY BE USED TO PLUMB TOP HALF. PLACE SHIMS UNDER TEFLON-COATED SLIP WASHER. MAXIMUM OF TWO SHIMS PER NOTCH POINT.

FOR SIGN PANEL MOUNTING DETAILS, SEE STANDARD PLAN 5-297.718.

SQUARE TUBE SIGN POST IN ACCORDANCE WITH MnDOT SPEC. 3402.

① USE APPROVED PRODUCT FROM THE SIGN STRUCTURES PAGE OF THE SIGNING SECTION OF THE APPROVED PRODUCTS LIST.

② FOR MULTIPLE-POST APPLICATIONS, ENSURE SOIL PLATES ARE COMPLETELY BURIED. IF SOIL SURFACE IS NOT LEVEL, DRIVE THE BASES UNTIL THEY ARE OFFSET IN 1" INCREMENTS. THE BASES MUST BE TRUE AND SQUARE WITH ONE ANOTHER TO ENSURE PROPER UNRESTRICTED INSERTION OF STEEL TUBE RISERS. MOUNT SIGN PANELS LEVEL.

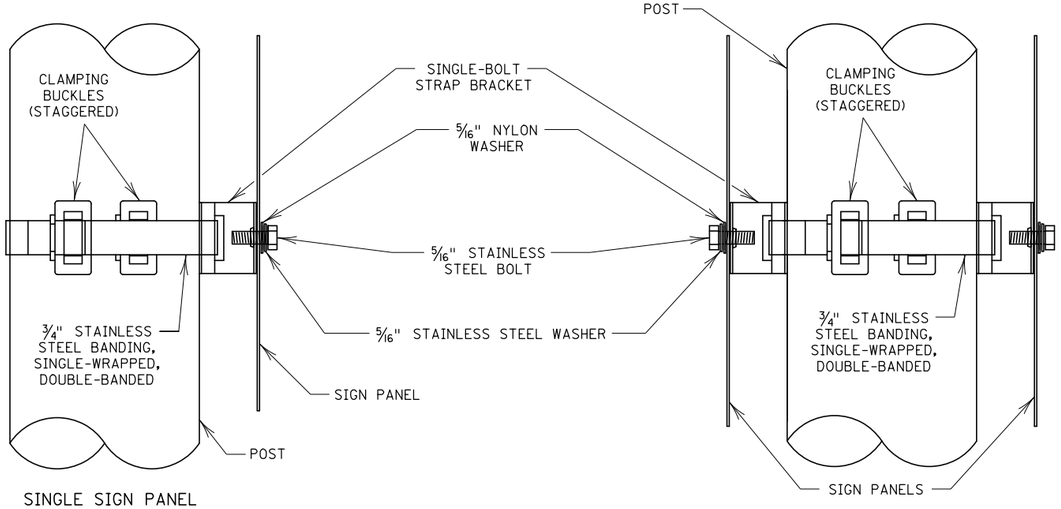
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SLIP BASE ASSEMBLY FOR 2½" SQUARE-TUBE RISER POST	APPROVED: 08-09-2023 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.724	1 OF 1

STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 36 OF 148 SHEETS

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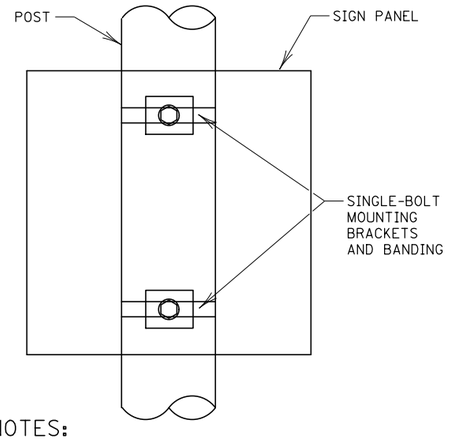


SINGLE SIGN PANEL

BACK TO BACK SIGN PANELS

NON-STIFFENER MOUNTING DETAILS

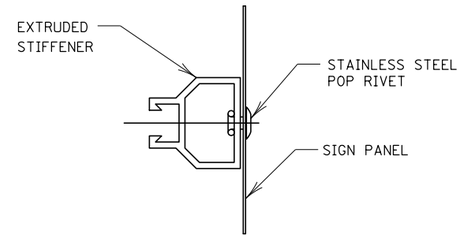
FOR SIGN PANELS UP TO 24" WIDE AND OVERHEAD SIGN IDENTIFICATION PLATES



NOTES:

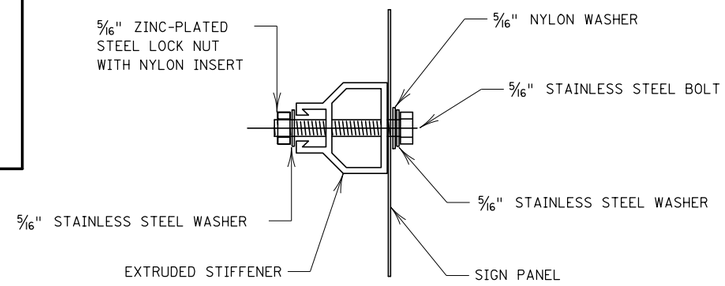
TENSION THE BANDING IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

DO NOT MOUNT SIGNS ON BREAKAWAY TRAFFIC SIGNALS AND LUMINAIRE SUPPORTS.



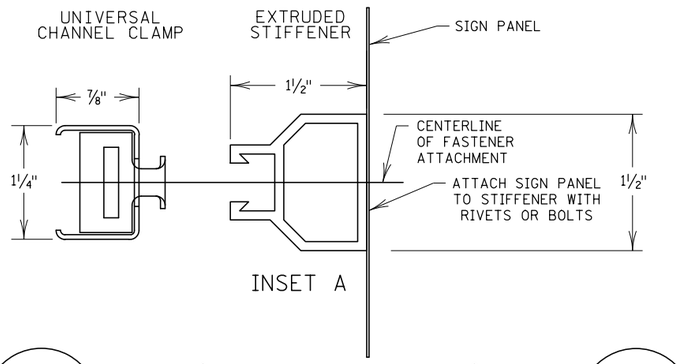
ATTACH 3/16" RIVETS AT 6" INTERVALS.
ATTACH END RIVETS 3" FROM SIGN EDGE.
USE 1/4" RIVETS FOR THE END RIVETS.

RIVET ATTACHMENT

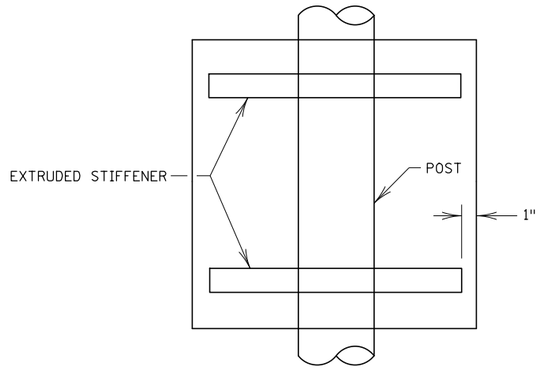


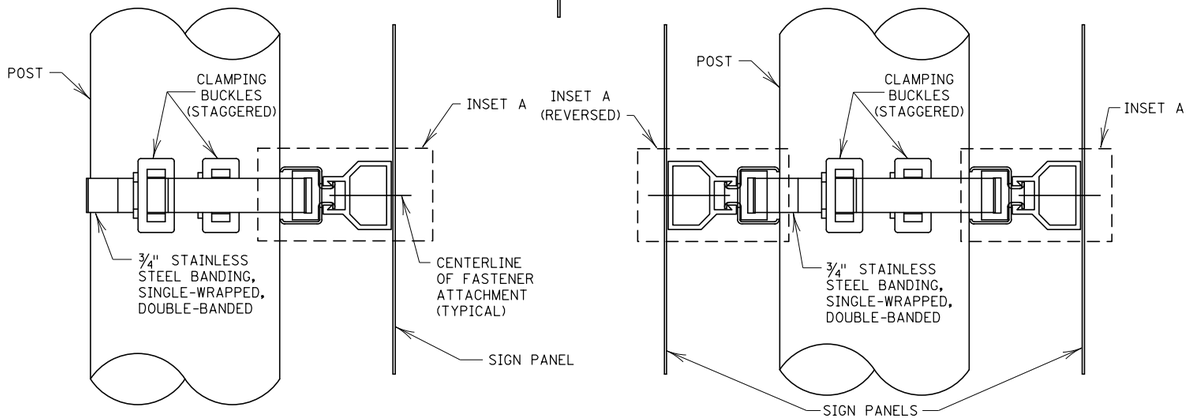
ATTACH AT STANDARD PUNCH CODE LOCATIONS

BOLT ATTACHMENT



INSET A





SINGLE SIGN PANEL

BACK-TO-BACK SIGN PANELS

STIFFENER MOUNTING DETAILS

FOR SIGN PANELS 30" WIDE AND LARGER

NUMBER OF EXTRUDED STIFFENERS REQUIRED						
		PANEL WIDTH				
		2'	3'	4'	5'	6'
PANEL HEIGHT	2'	2	2	2	2	3
	3'	2	2	2	2	3
	4'	2	2	2	2	3
	5'	3	3	3	3	3
	6'	3	3	3	4	4
	7'	3	3	3	4	4

PROVIDE VERTICAL SPACING OF NO MORE THAN 36" BETWEEN STIFFENERS.

PROVIDE A VERTICAL DISTANCE OF NO MORE THAN 12" FROM PANEL EDGE TO STIFFENER.

NOTES:

SPACE STIFFENERS IN ACCORDANCE WITH THE PUNCH CODES SHOWN IN THE MnDOT STANDARD SIGNS AND MARKINGS MANUAL.

ATTACH STIFFENERS TO SIGN PANELS USING FASTENERS. PLACE STIFFENERS AT THE VERTICAL LOCATIONS OF THE MOUNTING HOLES FOR EACH SIGN.

FURNISH AND INSTALL HARDWARE COMPATIBLE WITH STIFFENER MOUNTING SYSTEMS.

FURNISH TWO TYPE 201 STAINLESS STEEL 3/4" WIDE BY 1/32" THICK STRAPS, EACH WITH CLAMPING BUCKLES AND INSTALL SEPARATELY WITH A SINGLE WRAP AROUND THE MAST ARM CHORD. PLACE THE SECOND BANDING STRAP OVER THE FIRST STRAP AND STAGGER THE CLAMPING BUCKLES SO THE BUCKLES ARE NOT DIRECTLY OVER ONE ANOTHER.

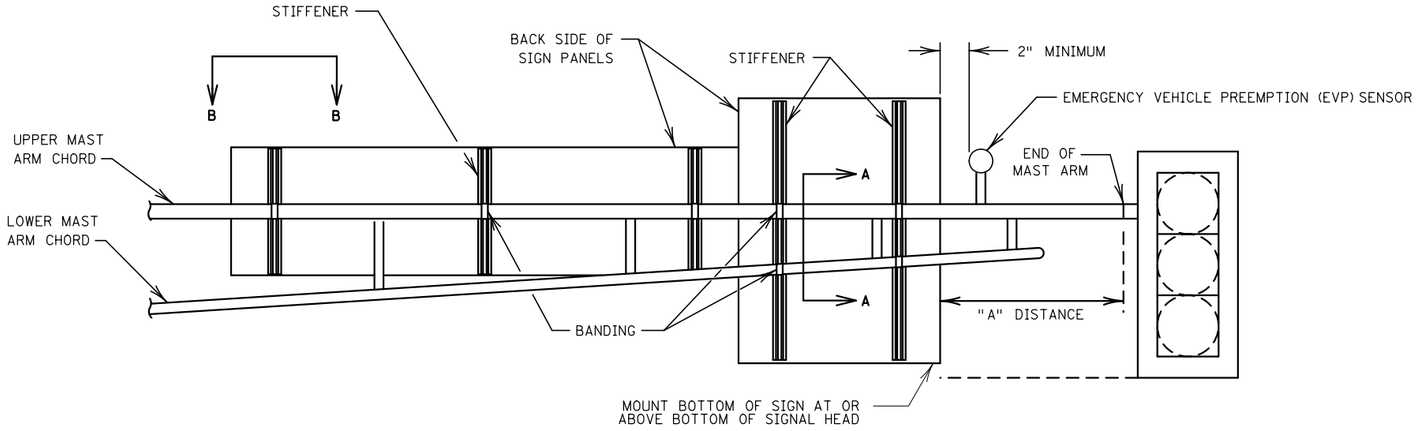
LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING		SIGN MOUNTING SYSTEMS FOR ROUND SUPPORTS	APPROVED: 10-16-2019 REVISED:	Peter A Harff PETER A. HARFF STATE DESIGN ENGINEER	STANDARD PLAN 5-297.730	1 OF 1

STANDARD PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 37 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:35:20 AM
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MAST ARM SIGN MOUNTING

NUMBER OF EXTRUDED STIFFENERS REQUIRED*														
		PANEL WIDTH												
		2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
PANEL HEIGHT	2'	2	2	2	3	3	3	4	4	4	5	5	5	5
	3'	2	2	2	3	3	3	4	4	5	5	5	5	5
	4'	2	2	2	3	3	3	4	4	5	5	5	5	6
	5'	2	2	2	3	4	4	5	5	5	5	5	5	6
	6'			2	3	4	4	5	5	5	5	5	5	6
	7'				4	4	5	5	5	5	5	5	5	6

* WHERE SIGN PANEL DIMENSIONS FALL BETWEEN 1' INCREMENTS, USE NEXT HIGHER WIDTH AND/OR HEIGHT DIMENSION.

NOTES:

FURNISH AND INSTALL AT LEAST ONE SPACER FOR EACH SIGN PANEL WHEN PANELS ARE ATTACHED TO THE LOWER MAST ARM CHORD.

AFFIX SIGNS TO UPPER AND LOWER MAST ARM CHORDS WHEN POSSIBLE.

POSITION BOTTOM OF SIGN PANEL AT LEAST 17' ABOVE ROADWAY.

MOUNT SIGN PANELS PLUMB AND SHIM WITH REQUIRED SPACERS AS SHOWN.

PROVIDE SPACING BETWEEN STIFFENERS OF NO MORE THAN 36".

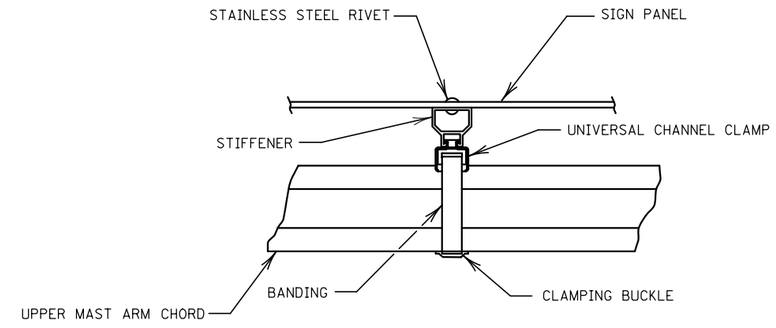
PROVIDE A HORIZONTAL DISTANCE OF NO MORE THAN 12" FROM PANEL EDGE TO STIFFENER.

PROVIDE A VERTICAL DISTANCE OF NO MORE THAN 1" FROM PANEL EDGE TO STIFFENER.

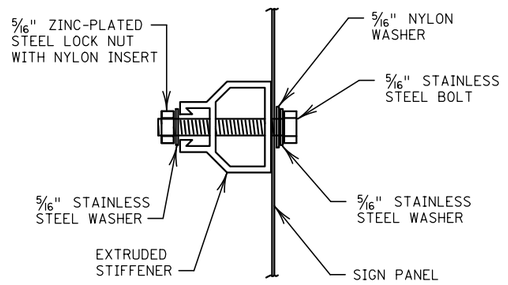
FURNISH AND INSTALL 1/4" STAINLESS STEEL RIVETS 3" FROM THE PANEL EDGE TO ATTACH THE STIFFENERS TO THE SIGN PANELS. FURNISH AND INSTALL 3/16" STAINLESS STEEL RIVETS AT 6" ON CENTER TO ATTACH THE REMAINDER OF THE STIFFENER TO THE SIGN PANEL.

FURNISH TWO TYPE 201 STAINLESS STEEL 3/4" WIDE BY 1/32" THICK STRAPS, EACH WITH CLAMPING BUCKLES AND INSTALL SEPARATELY WITH A SINGLE WRAP AROUND THE MAST ARM CHORD. PLACE THE SECOND BANDING STRAP OVER THE FIRST STRAP AND STAGGER THE CLAMPING BUCKLES SO THE BUCKLES ARE NOT DIRECTLY OVER ONE ANOTHER.

THE "A" DISTANCE IS SHOWN ON THE PLANS. IT IS THE DISTANCE FROM THE END OF THE MAST ARM TO THE EDGE OF EACH SIGN.

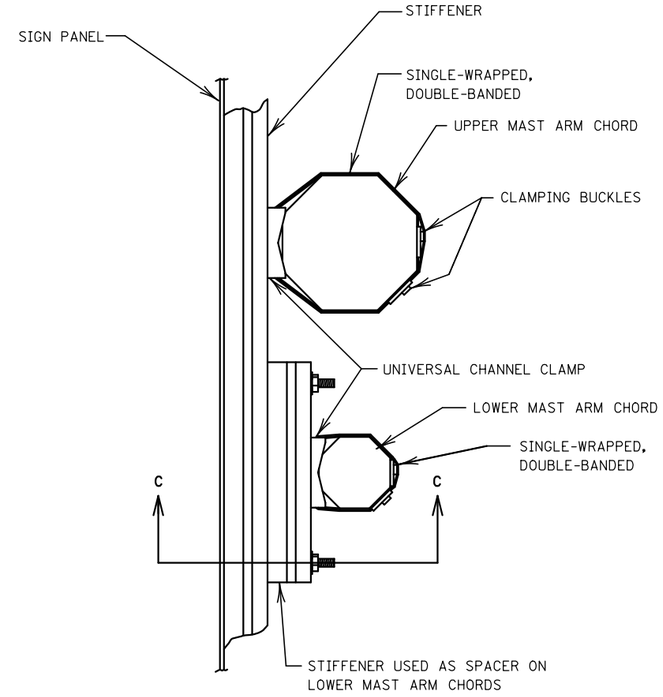


VIEW B-B



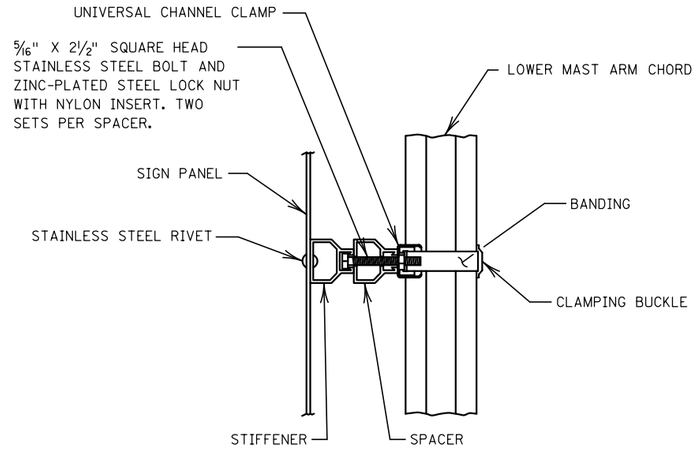
BOLT ATTACHMENT

ATTACH AT STANDARD PUNCH CODE LOCATIONS



VIEW A-A ①

① SIGN PANELS TALLER THAN 36" MUST BE BANDED TO THE LOWER MAST ARM CHORD AT A MINIMUM OF ONE LOCATION. SIGN PANEL SHALL BE BANDED TO THE LOWER MAST ARM AT A LOCATION THAT WILL PROVIDE THE CLOSEST TO PLUMB ALIGNMENT FOR THE SIGN PANEL.



VIEW C-C

LEAD EXPERT OFFICE	BRIAN SORENSON STATE TRAFFIC ENGINEER OFFICE OF TRAFFIC ENGINEERING	SIGN MOUNTING DETAILS FOR SIGNAL MAST ARMS	APPROVED: 10-16-2019 REVISED: 04-17-2020	Peter A Harff PETER A. HARFF STATE DESIGN ENGINEER	STANDARD PLAN 5-297.731	1 OF 1

STANDARD PLANS

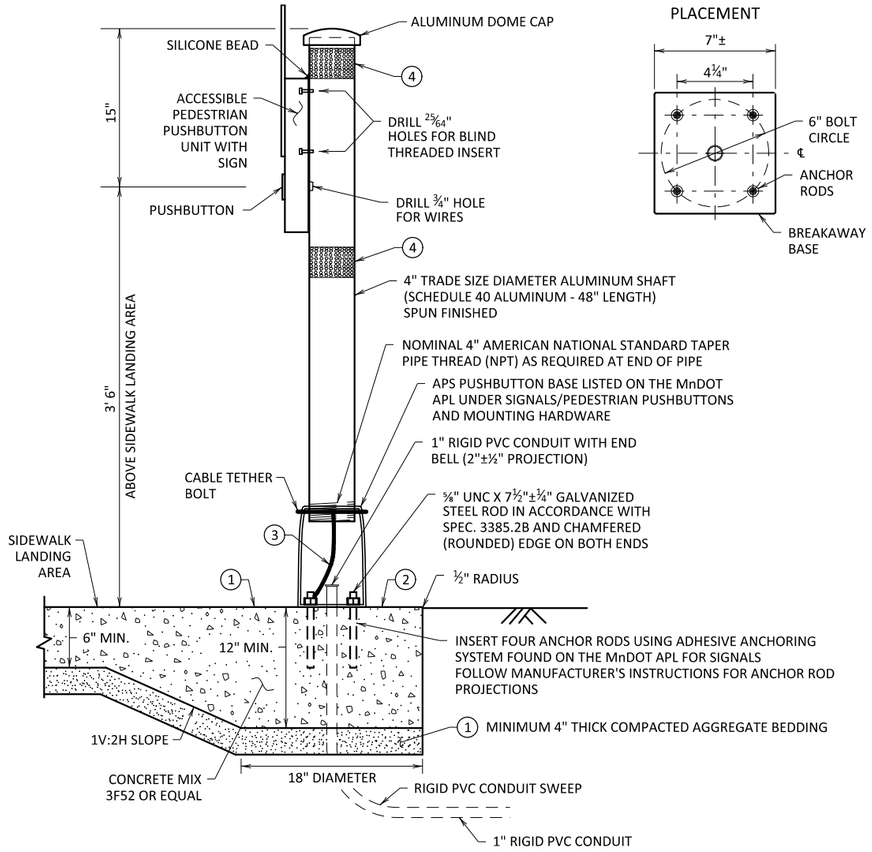
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 38 OF 148 SHEETS

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APS PUSHBUTTON STATION



ANCHOR ROD PLACEMENT

NOTES:

MOUNT THE BUTTON SO THAT THE FACE IS PARALLEL WITH THE ASSOCIATED CROSSWALK. SCREW IN SHAFT TO A TIGHTENED POSITION BEFORE MOUNTING ACCESSIBLE PEDESTRIAN PUSHBUTTON UNIT TO THE SHAFT.

ORIENT THE BASE ACCESS OPENING DIRECTLY BELOW THE APS BUTTON.

PLUMB AND LEVEL APS PUSHBUTTON STATIONS, AND TIGHTEN ANCHOR RODS IN ACCORDANCE WITH CONTRACT DOCUMENTS.

FURNISH AND INSTALL BLIND THREADED INSERTS USING MANUFACTURER'S SPECIFIC INSERTION TOOL.

USE APS ¼"-20 STAINLESS STEEL MOUNTING BOLTS. APPLY BRUSH-ON ANTI-SEIZE COMPOUND TO BOLTS BEFORE ASSEMBLY.

APPLY A BEAD OF 100% SILICONE SEALANT ALONG THE TOP OF THE PUSHBUTTON UNIT WHERE IT CONTACTS THE 4" SHAFT.

(1) THE PUSHBUTTON STATION FOUNDATION IS MONOLITHIC (POURED AT ONE TIME) WITH THE SIDEWALK. PROVIDE A 1V:2H SLOPE GRADE WHERE THE 6" MINIMUM SIDEWALK DEPTH TRANSITIONS TO THE 12" MINIMUM FOUNDATION DEPTH. MAINTAIN THE COMPACTED AGGREGATE BEDDING AND THICKNESS USED FOR THE SIDEWALK THROUGHOUT THE SLOPE AND FOUNDATION GRADING. PROVIDE 1V:2H SLOPE GRADING 360 DEGREES FOR THE TRANSITION FROM THE SIDEWALK TO THE FOUNDATION WHEN THE FOUNDATION IS NOT LOCATED NEAR EDGE OF SIDEWALK AND IS SURROUNDED BY CONCRETE WALK.

(2) ENSURE CONCRETE CONTROL JOINTS AND EDGE OF CONCRETE WALK ARE A MINIMUM OF 9" FROM THE CENTER OF THE PUSHBUTTON FOUNDATION.

(3) FURNISH AND INSTALL THE MANUFACTURER-PROVIDED CABLE TETHER ASSEMBLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

(4) FURNISH AND INSTALL 3" WIDE TUBULAR DELINEATOR/MARKER SHEETING FROM MnDOT'S APL FOR SIGNING/SHEETING MATERIALS THAT MATCHES THE COLOR OF THE NEAREST EDGE LINE.

APS PEDESTRIAN PUSHBUTTON LOCATION

NOTES:

(5) POSITION THE FACE OF THE PUSHBUTTON PARALLEL WITH THE OUTSIDE EDGE OF THE CROSSWALK.

(6) CONSTRUCT A MINIMUM 4'x4' LANDING AREA ADJACENT TO EACH PUSHBUTTON, WITH A 2% MAXIMUM SLOPE IN ALL DIRECTIONS.

(7) POSITION PUSHBUTTONS WITHIN 5' OF THE OUTSIDE EDGE OF THE CROSSWALK. DISTANCE IS MEASURED PERPENDICULARLY FROM EXTENSION OF CROSSWALK.

(8) POSITION PUSHBUTTONS BETWEEN 1.5' AND 10' FROM THE BACK OF CURB OR EDGE OF ROADWAY, MEASURED IN THE DIRECTION OF TRAVEL. STANDALONE PUSHBUTTON STATIONS SHOULD BE 4' MINIMUM FROM THE BACK OF CURB TO AVOID KNOCKDOWNS.

(9) POSITION PUSHBUTTONS AT LEAST 10' APART (PUSHBUTTON FACE TO PUSHBUTTON FACE).

(10) PROVIDE A MAINTENANCE ACCESS ROUTE (MAR) WHEREVER POSSIBLE FOR SNOW REMOVAL PURPOSES. A MAR REQUIRES A 6' MINIMUM CLEAR DISTANCE FOR SIDEWALKS (10' FOR SHARED-USE PATHS) BETWEEN A PUSHBUTTON AND ANY OBSTRUCTIONS, INCLUDING BUILDINGS, V-CURB, ELECTRICAL FOUNDATIONS, SIGNAL CABINETS, OR ANOTHER PUSHBUTTON.

(11) POSITION PUSHBUTTON 2' MINIMUM FROM CURB RAMP GRADE BREAK AND BACK OF SIDEWALK.

(12) CONSTRUCT AN 8%-10% WALKABLE CONCRETE FLARE WHEN THE PUSHBUTTON IS OFFSET FROM THE EDGE OF THE CROSSWALK SO USERS DEPARTING FROM THE PUSHBUTTON WILL TRAVERSE A CONCRETE SURFACE.

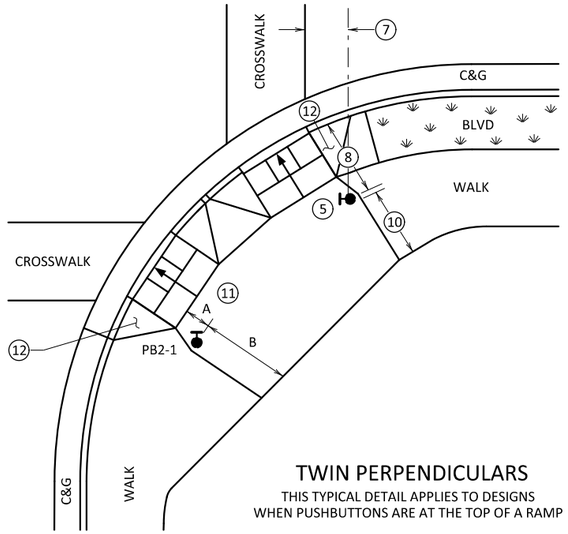
SAMPLE TABLE				
SIGNAL CONTROL POINTS			DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
SIGNAL NO.	X	Y		
PB2-1	-	-	A	B
PB4-2	-	-	C	D

A - DISTANCE MEASURED FROM THE PUSHBUTTON TO THE FRONT OF LANDING/TOP OF RAMP

B - CLEAR DISTANCE MEASURED FROM THE PUSHBUTTON TO THE BACK OF LANDING/EDGE OF WALK

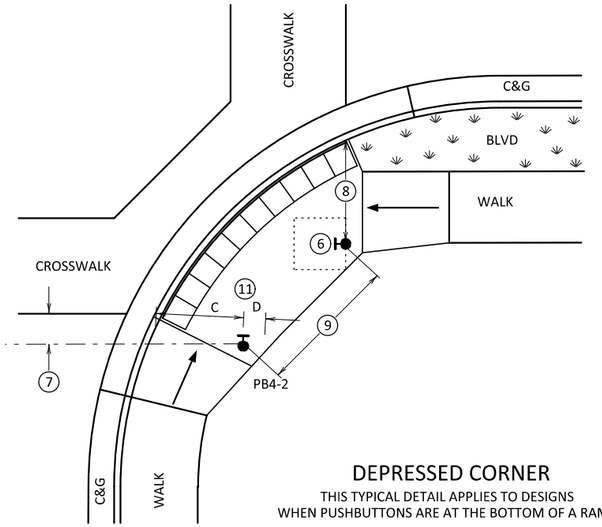
C - DISTANCE MEASURED FROM THE PUSHBUTTON TO THE OUTSIDE EDGE OF DOMES IN THE DIRECTION OF TRAVEL

D - CLEAR DISTANCE FROM THE PUSHBUTTON TO THE BACK OF LANDING MEASURED IN THE OPPOSITE DIRECTION OF TRAVEL



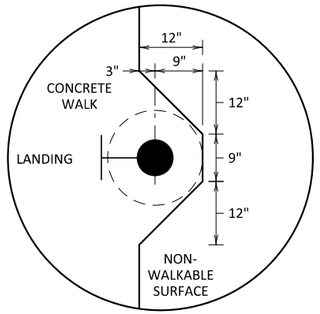
TWIN PERPENDICULARS

THIS TYPICAL DETAIL APPLIES TO DESIGNS WHEN PUSHBUTTONS ARE AT THE TOP OF A RAMP

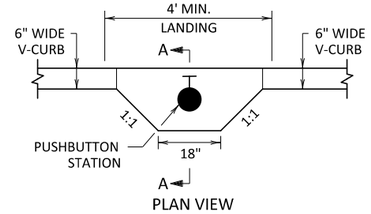


DEPRESSED CORNER

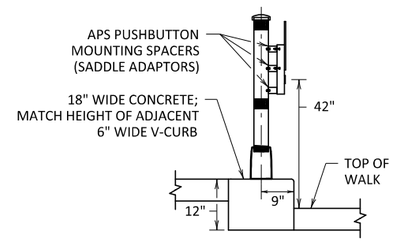
THIS TYPICAL DETAIL APPLIES TO DESIGNS WHEN PUSHBUTTONS ARE AT THE BOTTOM OF A RAMP



PUSHBUTTON STATION FOUNDATION FORMING



PLAN VIEW



SECTION A-A

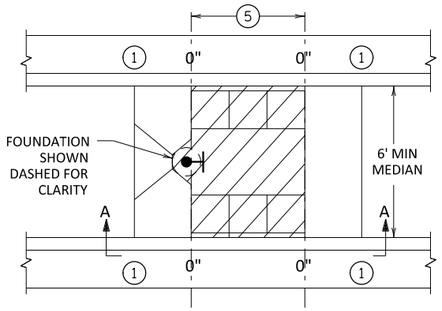
INTEGRAL PUSHBUTTON STATION WITH V-CURB

LEAD EXPERT OFFICE	JEFF PERKINS ASSISTANT DIVISION DIRECTOR OPERATIONS DIVISION		ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSHBUTTON STATION AND LOCATION	APPROVED: 02-21-2024 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.885	1 OF 2

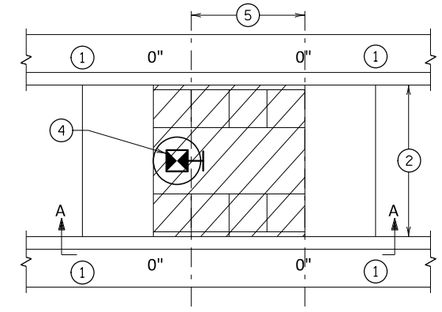
STANDARD PLANS

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S.A.P 002-602-015, S.A.P. 127-020-037

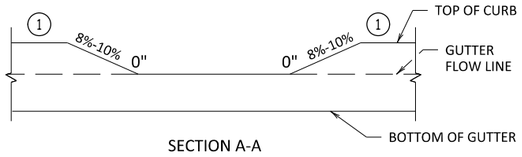
SHEET NO. 39 OF 148 SHEETS



PEDESTRIAN PUSHBUTTON STATION DETAIL



SIGNAL PEDESTAL DETAIL

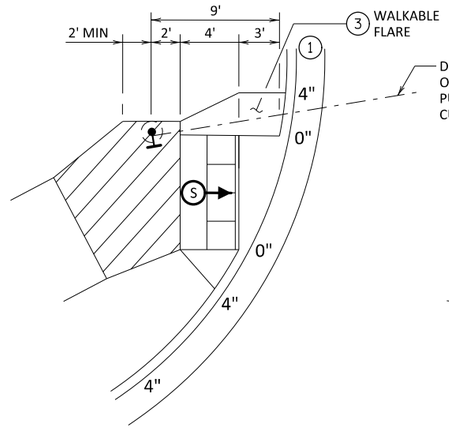


SECTION A-A

MEDIAN FLARE THROUGH

IF NEEDED DUE TO DIFFERENCE OF FLOW LINE ELEVATIONS, THE LOW SIDE OF THE REFUGE MAY BE RAMPED IF THE MEDIAN WIDTH IS SUFFICIENT TO PROVIDE BOTH A RAMP AND A LANDING ADJACENT TO THE PUSHBUTTON.

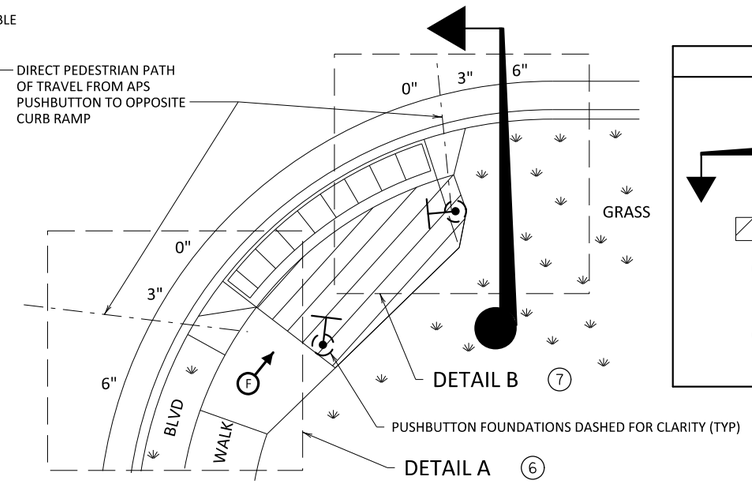
IF 6' MEDIAN IS ACHIEVED FROM FACE OF CURB TO FACE OF CURB, CONSTRUCT THE FLARE THROUGH INTEGRAL TO THE CURB. 6' MINIMUM DISTANCE IS REQUIRED TO CONSTRUCT REFUGE WITH 2' MINIMUM DETECTABLE WARNING SURFACE SEPARATION.



SEMI-DIRECTIONAL RAMP

3' DOME SETBACK, 4' LONG RAMP, AND PUSHBUTTON 9' FROM THE BACK OF CURB (SHOWN).

USED FOR APS APPLICATIONS WHERE THE PAR DOES NOT CONTINUE PAST THE PUSHBUTTON.



PUSHBUTTON LANDING AND EXTENDED WALKABLE FLARE REQUIREMENTS

FAN RAMP SHOWN IN DETAIL, APPLIES TO ALL RAMPS WITH PUSHBUTTONS

ADA LEGEND

	PEDESTRIAN PUSHBUTTON STATION WITH FOUNDATION
	SIGNAL PEDESTAL WITH FOUNDATION
	PROPOSED SIGNAL POLE
X"	CURB HEIGHT
	LANDING AREA - 4'x4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
S	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
F	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

7 DETAIL B TABLE

POINT	DESCRIPTION	PUSHBUTTON STATION	SIGNAL PEDESTAL	SIGNAL POLE
U	LANDING EXTENSION	12"	12"	18"
V	PUSHBUTTON OFFSET FROM FRONT OF LANDING (MIN)	24"	30"	30"
W	OFFSET (PARALLEL TO ROADWAY) FROM PROJECTED EDGE OF RAMP TO CENTER OF FOUNDATION	3"	6" (10)	18" (10)

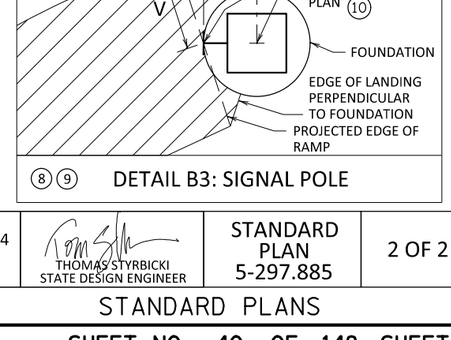
(6) USE AS THE PEDESTRIAN FACILITY APPROACHES FROM THE SAME SIDE AS THE PUSHBUTTON.

(7) USE WHEN PEDESTRIAN FACILITIES DO NOT CONTINUE PAST THE PUSHBUTTON.

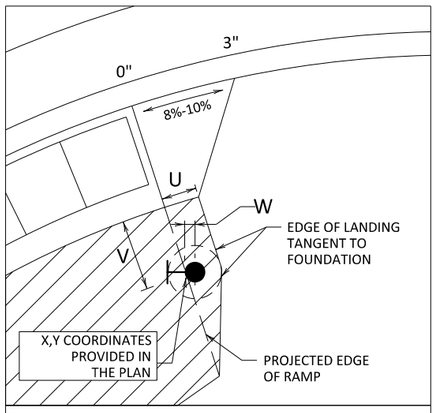
(8) WHEN SIGNAL PEDESTALS (INCLUDING RRFBS) AND SIGNAL POLES ARE USED FOR PUSHBUTTON LOCATIONS, PLACE WITHIN THE PEDESTRIAN RAMP LANDING AREA AS SHOWN.

(9) EVALUATE EXISTING SIGNAL MAST ARM POLES FOR PLACING PUSHBUTTONS. FOR NEW SIGNAL MAST ARM POLES, CONSTRUCT OUTSIDE OF PEDESTRIAN RAMP LIMITS DUE TO IMPRECISE CONSTRUCTION PRACTICES, FIELD UNCERTAINTIES, AND COMPETING REQUIREMENTS OF ADA PUSHBUTTON AND TRAFFIC SIGNAL MAST ARM POLE LOCATIONS. EXCEPTIONS ARE CONGESTED URBAN AREAS AND RURAL ROADWAY INTERSECTIONS.

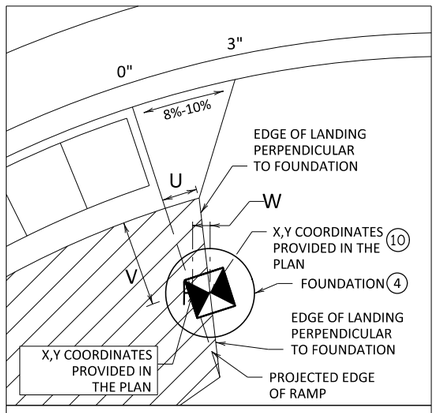
(10) X, Y COORDINATES GIVEN IN DESIGN ARE AT ALL FACE-OF-PUSHBUTTON LOCATIONS. PROVIDE ADDITIONAL X, Y COORDINATES FOR CENTER OF FOUNDATION AT NEW SIGNAL POLES AND PEDESTALS THAT CONTAIN PUSHBUTTONS. SEE OFFSET WIDTH, "W", IN THE TABLE FOR THE OFFSET OF THE PUSHBUTTON FACE TO THE CENTER OF THE SIGNAL COMPONENT.



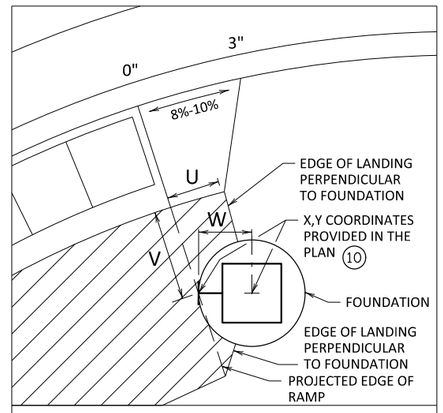
DETAIL A: EXTENDED FLARE



DETAIL B1: PUSHBUTTON STATION



(8) DETAIL B2: SIGNAL PEDESTAL



(8) (9) DETAIL B3: SIGNAL POLE

NOTES:

(1) CONSTRUCT FULL CURB HEIGHT.

(2) 7' MINIMUM DISTANCE (BACK OF CURB TO BACK OF CURB) IS REQUIRED TO ACCOMMODATE 2.5' DIAMETER PEDESTAL FOUNDATION, 2' DETECTABLE WARNING WIDTH, AND 3" DETECTABLE WARNING SETBACK.

(3) CONSTRUCT AN 8%-10% WALKABLE CONCRETE FLARE WHEN THE PUSHBUTTON IS OFFSET FROM THE EDGE OF THE CROSSWALK SO USERS DEPARTING FROM THE PUSHBUTTON WILL TRAVERSE ON A CONCRETE SURFACE.

(4) CONSTRUCT FOUNDATION FLUSH WITH ADJACENT LANDING (WITHIN ¼"). SEE STANDARD PLATE 8112.

(5) PEDESTRIAN ACCESS ROUTE/MAINTENANCE ACCESS ROUTE.

LEAD EXPERT OFFICE	JEFF PERKINS ASSISTANT DIVISION DIRECTOR OPERATIONS DIVISION	ACCESSIBLE PEDESTRIAN SIGNAL (APS) PUSHBUTTON STATION AND LOCATION	APPROVED: 02-21-2024 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.885	2 OF 2

STANDARD PLANS

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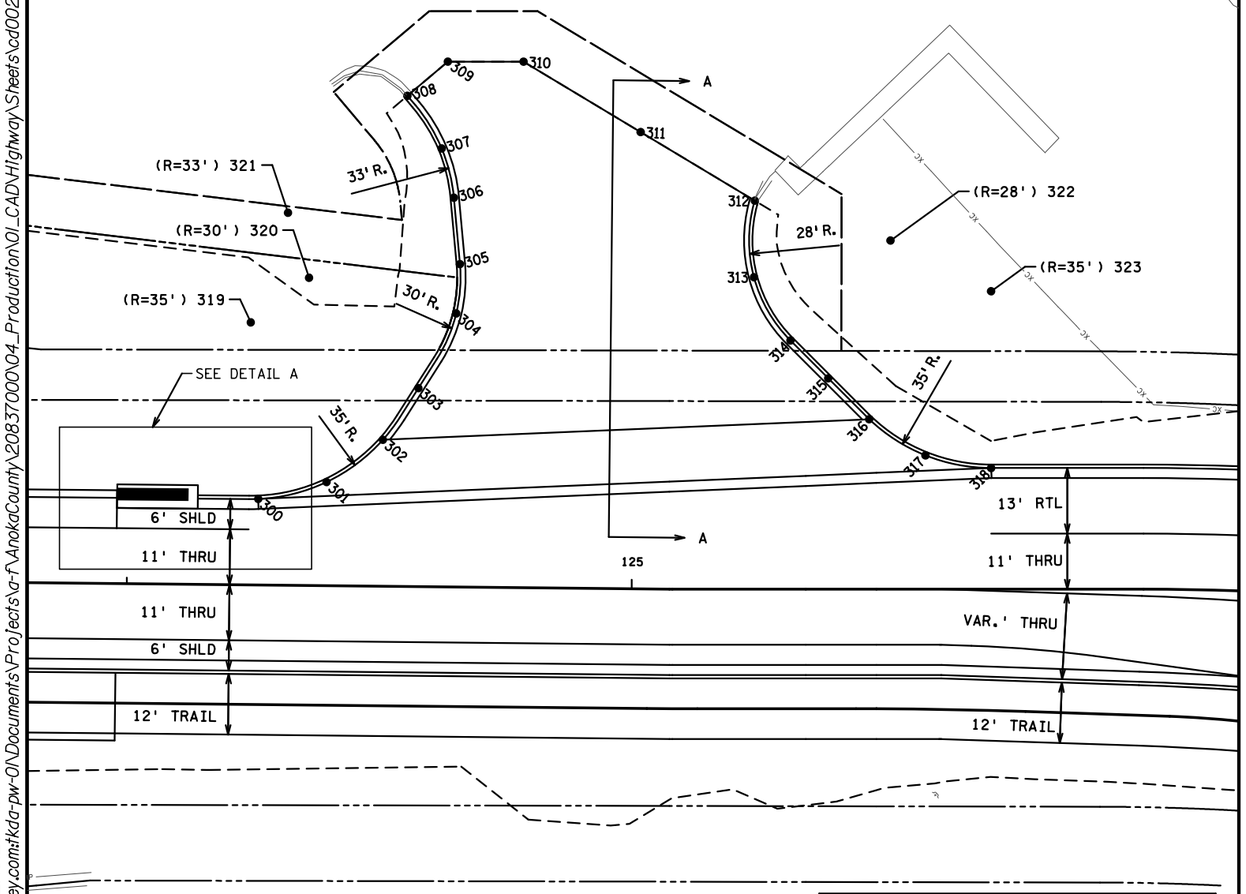
SHEET NO. 40 OF 148 SHEETS

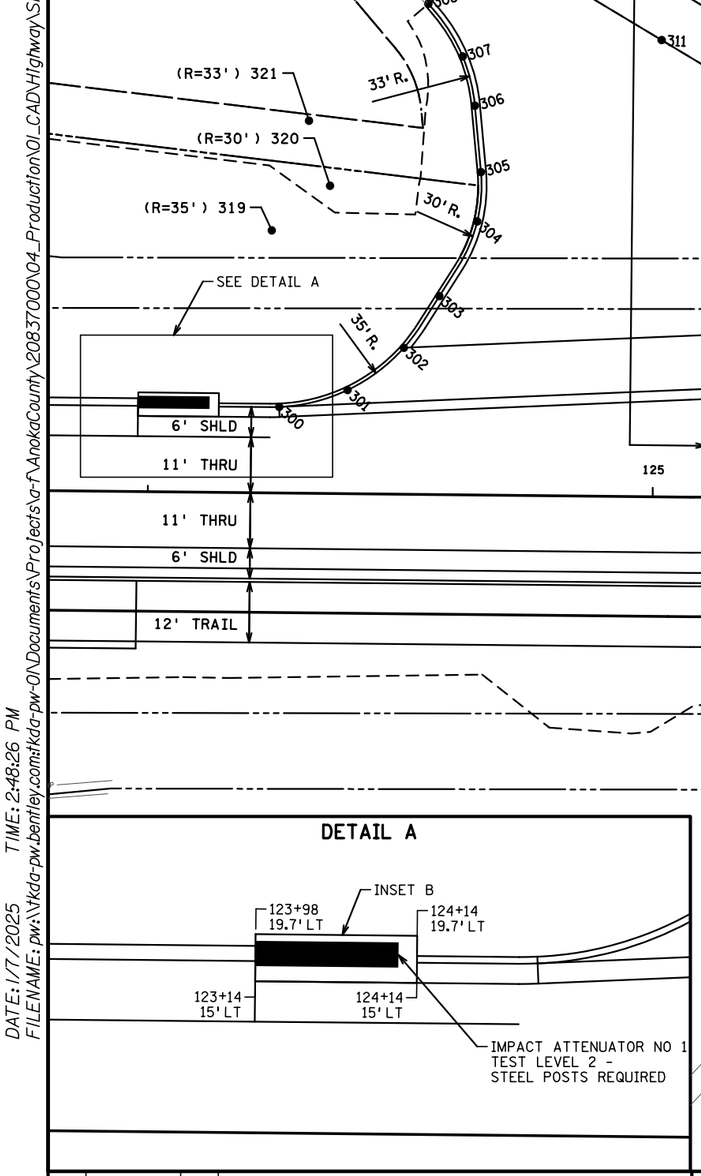
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CONTROL POINTS			
POINT NO.	X	Y	ELEV.
300	499177.03	104457.66	842.07
301	499184.61	104469.36	841.84
302	499187.03	104483.09	841.64
303	499185.17	104495.37	840.99
304	499180.53	104511.28	840.12
305	499174.38	104518.91	839.60

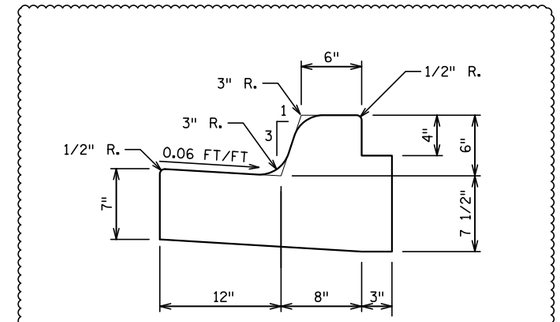
CONTROL POINTS			
POINT NO.	X	Y	ELEV.
306	499164.52	104527.69	838.93
307	499156.09	104533.16	838.40
308	499144.00	104536.11	837.74
309	499145.22	104546.52	837.53
310	499156.16	104556.78	837.29
311	499182.62	104562.46	837.69

SCALE IN FEET
0 15 30





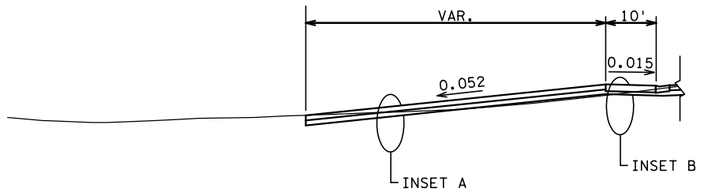
CONTROL POINTS			
POINT NO.	X	Y	ELEV.
312	499208.40	104567.99	838.28
313	499218.63	104556.83	838.93
314	499232.48	104552.63	839.56
315	499243.07	104552.28	840.00
316	499254.53	104551.92	840.48
317	499267.55	104554.31	840.37
318	499278.75	104561.37	840.26
319	499152.04	104482.17	
320	499154.42	104496.51	
321	499142.57	104503.06	
322	499233.40	104580.62	
323	499254.82	104586.91	



1

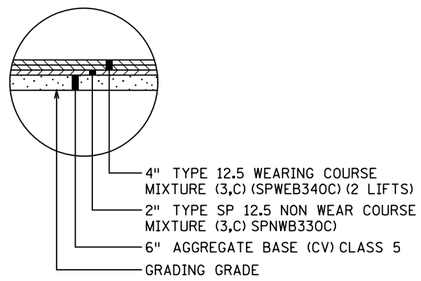
B612 C&G MODIFIED

PAID FOR AS CONCRETE CURB
AND GUTTER DESIGN B612 (MODIFIED)

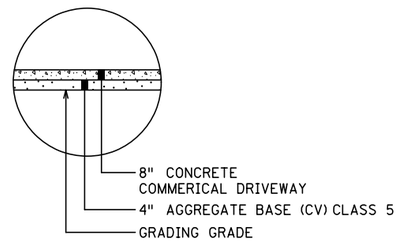


SECTION A-A

INSET A
BITUMINOUS DRIVEWAY



INSET B
CRONCRETE DRIVEWAY



GENERAL NOTES:

- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE GENERAL MILLS ENTRANCE AT ALL TIMES. COSTS ASSOCIATED WITH PROVIDING ACCESS ARE INCIDENTAL.
- CONTRACTOR TO NOTIFY THE OWNER A MINIMUM 2 DAYS PRIOR TO WORK IMPEDING DRIVEWAY ACCESS OR ANY DRIVEWAY CONSTRUCTION

NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	1/7/2025	ADC	REVISED CURB DESIGN

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 1/7/2025
AARON D. CAMERON

TKDA

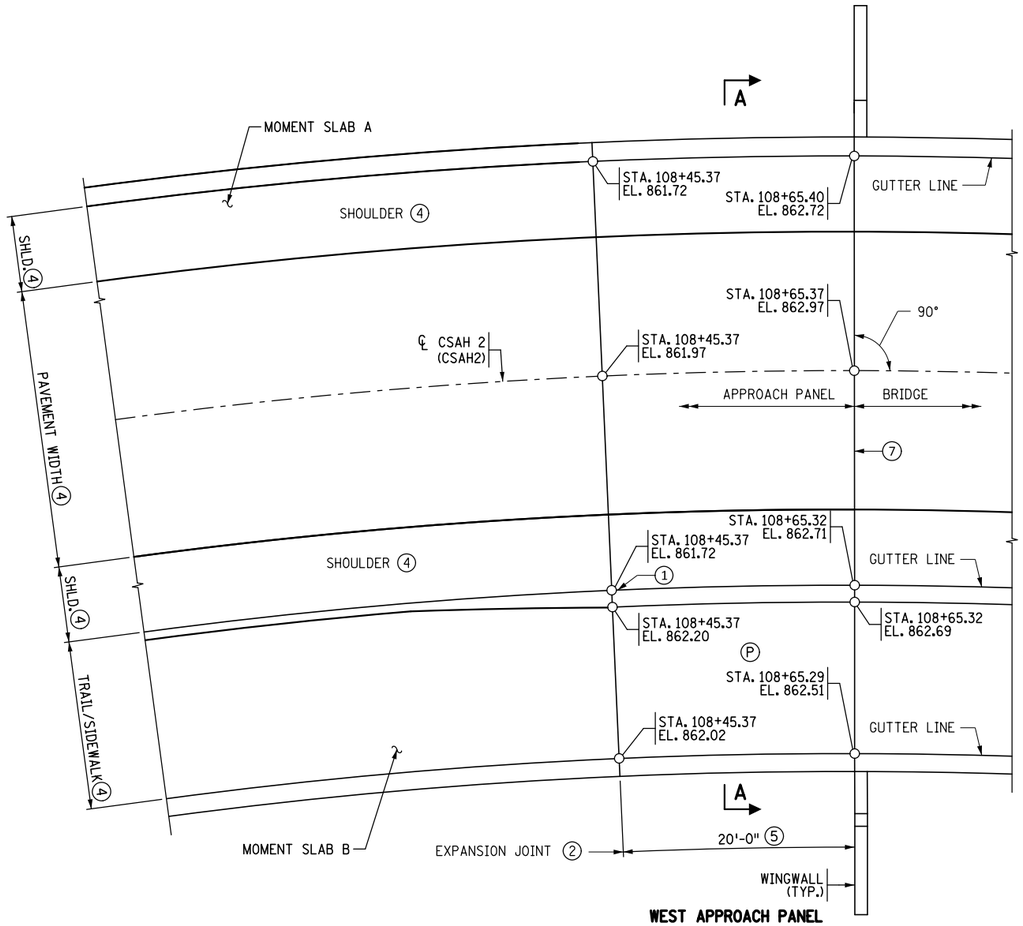
GENERAL MILLS ENTRANCE

MISCELLANEOUS DETAILS

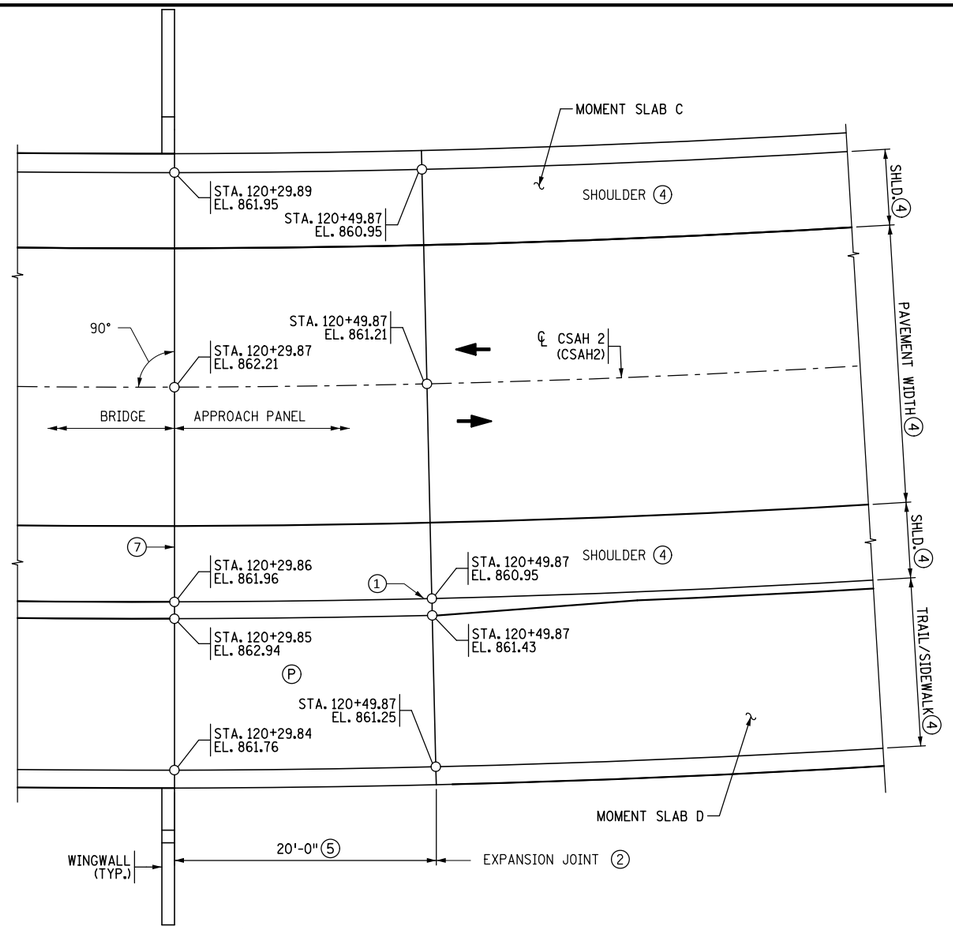
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S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 41R OF 148 SHEETS

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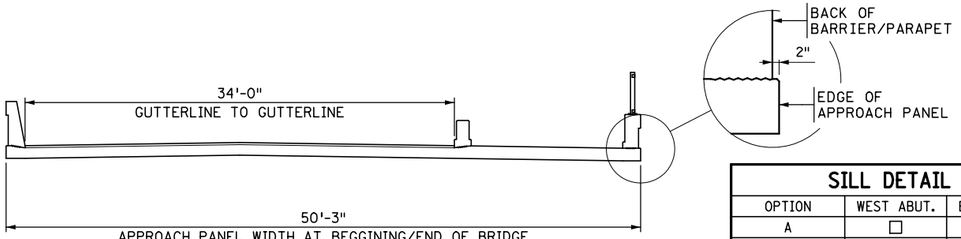
WEST APPROACH PANEL



EAST APPROACH PANEL

APPROACH PANEL PLAN

* (P) TRAILS/SIDEWALK TO TRANSITION FROM RAISED SIDEWALK TO INTEGRAL SIDEWALK. SEE TRAIL PROFILE PLANS.



SECTION A-A

SILL DETAIL		
OPTION	WEST ABUT.	EAST ABUT.
A	☐	☐
B	☐	☐
C	☒	☒
A (SHOULDER) B (MAINLINE)	☐	☐

EXPANSION JOINT TYPE			
TYPE	WIDTH	WEST ABUT.	EAST ABUT.
E8	4 INCH	☐	☐
E5	2½ INCH	☐	☐
NONE	0 INCH	☒	☒

ABUTMENT TYPE		
TYPE	WEST ABUT.	EAST ABUT.
INTEGRAL / SEMI-INTEGRAL	☐	☐
PARAPET - DAVIDSON	☐	☐
PARAPET - END BLOCK	☒	☒

GENERAL NOTES:

REFER TO THE BRIDGE PLANS FOR THE LAYOUT OF THE WINGWALLS.

IF A CONCRETE SILL IS REQUIRED BENEATH APPROACH PANEL EXPANSION JOINT EXTEND THE EXPANSION JOINT AND THE SILL ALONG THE WIDTH OF THE TRAFFIC LANES AND SHOULDERS AS SHOWN ON STANDARD PLAN 5-297.225. ENSURE THAT SILL DOES NOT INTERFERE WITH GUARDRAIL POST PLACEMENT. CONCRETE SILL AND CURBING, IF REQUIRED, ARE INCLUDED IN THE APPROACH PANEL PAY ITEM.

GENERAL DRAINAGE DETAILS ARE SHOWN ON STANDARD PLAN 5-297.226 AND 5-297.228. CATCH BASIN DETAILS ARE SHOWN ON CONSTRUCTION PLAN SHEETS.

REFER TO SPEC. 2406 FOR ADDITIONAL INFORMATION.

* MODIFIED: SHEET HAS BEEN MODIFIED TO MATCH THE PROJECT CONDITIONS.

* NOTE 1 SHEET REFERENCE UDPATED. SILL DETAIL TABLE TO REFLECT PROJECT CONDITIONS.

GENERAL NOTES (CONT.):

(1) REFER TO "TYPE IOWA BICYCLE PARAPET DETAILS" SHEET IN BRIDGE PLANS FOR ADDITIONAL CURB TRANSITION INFORMATION, EXTENDED GUTTER LINE DIMENSIONS, AND ADDITIONAL INFORMATION.

(2) REFER TO TABLE FOR EXPANSION JOINT TYPE. APPROACH PANEL EXPANSION JOINT QUANTITY IS TO BE PAID FOR SEPARATELY, MEASURED FROM BACK OF CURB, BARRIER, OR PARAPET. REFER TO STANDARD PLANS 5-297.226 AND 5-297.227 FOR EXPANSION JOINT DETAILS.

~~(3) TO ACCOMMODATE GUARDRAIL CONNECTION AND CRASH TEST REQUIREMENTS THE CONCRETE BARRIER/PARAPET MUST EXTEND 13'-4" MINIMUM ONTO THE APPROACH PANEL. FOR PARALLEL WINGWALLS THE BARRIER MUST ALSO EXTEND TO OR BEYOND THE END OF THE WINGWALL. REFER TO BRIDGE PLAN FOR BARRIER/PARAPET REINFORCEMENT, COVER PLATES, AND PAYMENT.~~

(4) REFER TO ROADWAY PLANS FOR PAVEMENT AND SHOULDER WIDTHS AND CONFIGURATION.

(5) APPROACH PANEL LENGTHS ARE MEASURED ALONG CENTERLINE OF ROADWAY. PANEL SIZE AND JOINT REQUIREMENTS FOR TRANSVERSE AND LONGITUDINAL JOINTS ARE SHOWN ON STANDARD PLANS 5-297.226 AND 5-297.227.

~~(6) STATION AND ELEVATION AT EXTENDED GUTTER LINE FROM BRIDGE. REFER TO STANDARD PLAN 5-297.223 (6 OF 6).~~

(7) REFER TO LONGITUDINAL SECTION A-A ON STANDARD PLAN 5-297.224 FOR DELINEATION OF START/END OF BRIDGE AND APPROACH PANEL.

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LEAD EXPERT OFFICE	EDWARD LUTGEN OFFICE DIRECTOR BRIDGE OFFICE

** DENOTES MODIFICATIONS TO STANDARD PLAN*

BRIDGE APPROACH PANEL LAYOUT
(0° SKEW)

APPROVED: 04-16-2024
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.223

1 OF 6

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
DRW: DRH
CHK: ADL

I HEREBY CERTIFY THAT THIS SHEET 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: Allison Lindbeck LIC. NO. 56582 DATE: 12/2/2024
ALLISON D. LINDBECK

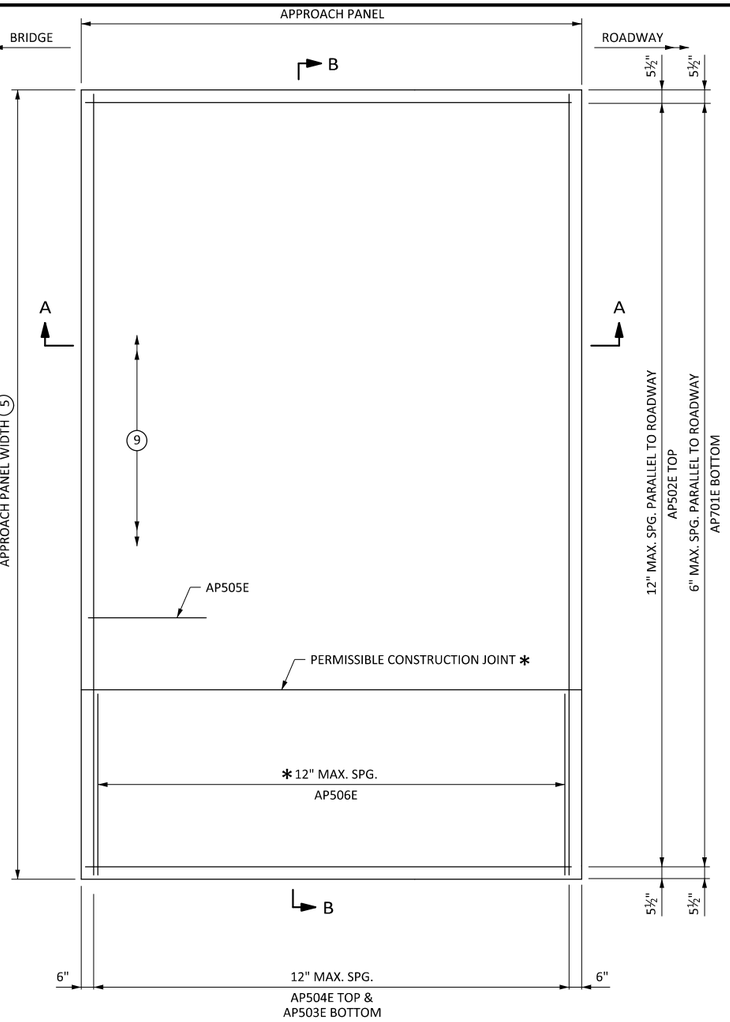
TKDA

APPROACH PANEL LAYOUT

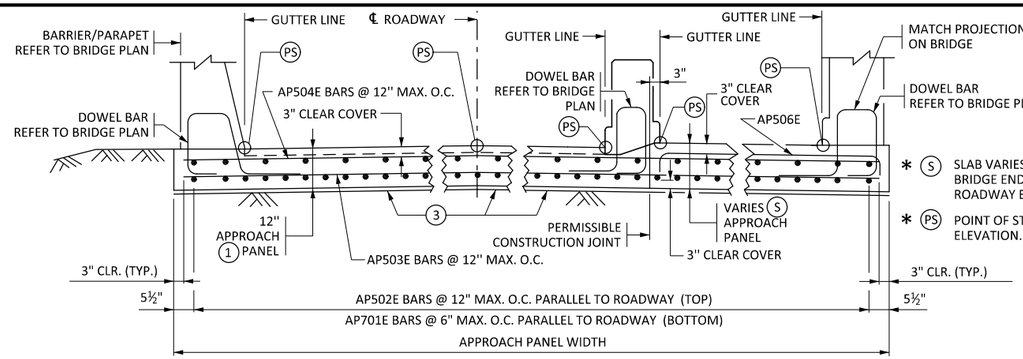
APPROACH PANEL PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

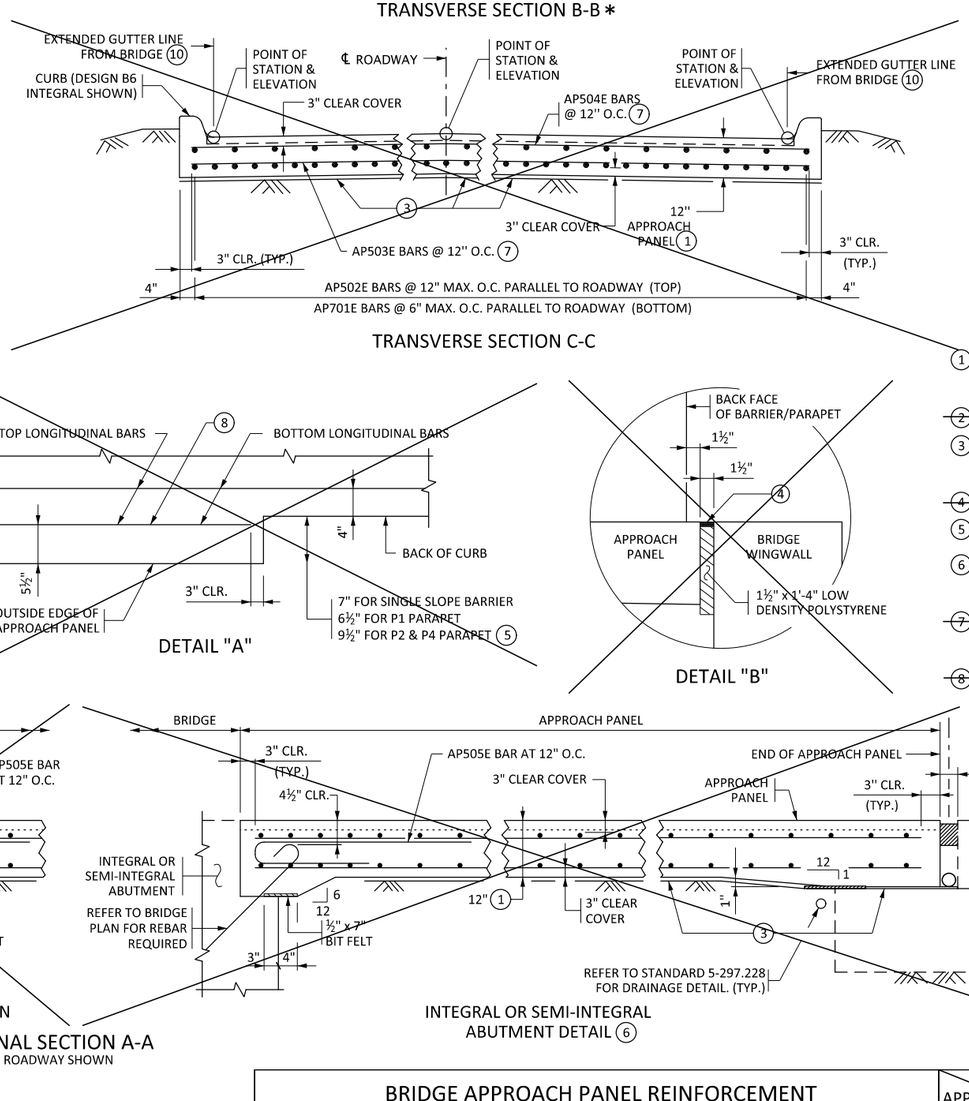
SHEET NO. 42 OF 148 SHEETS



APPROACH PANEL REINFORCEMENT *



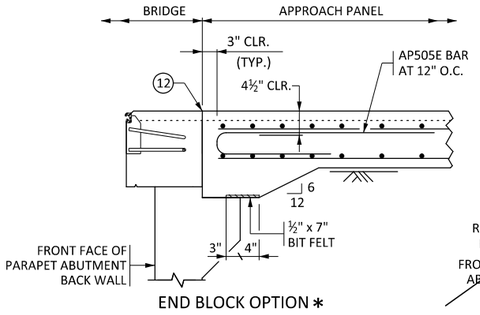
TRANSVERSE SECTION B-B *



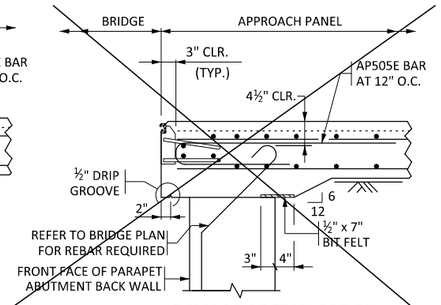
TRANSVERSE SECTION C-C

DETAIL "A"

DETAIL "B"

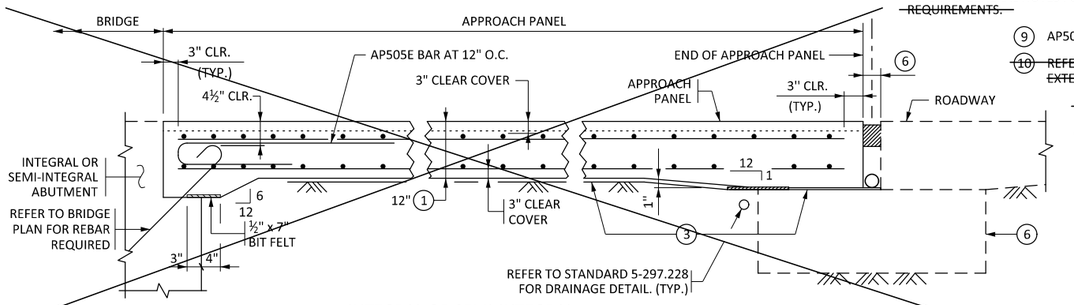


END BLOCK OPTION *



DAVIDSON DETAIL OPTION

PARAPET ABUTMENT DETAIL (6)



LONGITUDINAL SECTION A-A
CONCRETE ROADWAY SHOWN

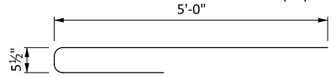
INTEGRAL OR SEMI-INTEGRAL
ABUTMENT DETAIL (6)

CONTRACTOR IS REQUIRED TO COMPLETE THE BILL OF REINFORCEMENT TABLE AND PREPARE SHOP DRAWINGS INCLUDING CURB TRANSITIONS AND ALL DETAILS NECESSARY TO CONSTRUCT THE PANEL. SUBMIT THEM TO THE PROJECT ENGINEER AT LEAST 3 WEEKS BEFORE REBAR FABRICATION.

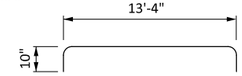
SAMPLE BILL OF REINFORCEMENT FOR BRIDGE APPROACH PANELS (PER PANEL)

	BAR	NO.	LENGTH	SHAPE	
	AP701E	*	19'-6"	———	BOTTOM LONGITUDINAL
	AP502E	**	19'-6"	———	TOP LONGITUDINAL
	AP503E	20	***	———	BOTTOM TRANSVERSE
	AP504E	20	***	———	TOP TRANSVERSE
	AP505E	**	7'-6"	———	CONFINEMENT BAR
*	AP505E	20	15'-0"	———	TRAIL TRANSVERSE

* NO. OF BARS = APPROACH PANEL WIDTH (ROUNDED UP TO NEAREST FT.) X 2
** NO. OF BARS = APPROACH PANEL WIDTH (ROUNDED UP TO NEAREST FT.)
*** LENGTH = APPROACH PANEL WIDTH (FT.) MINUS 6"



AP505E



* AP506E

GENERAL NOTES:

FOR APPROACH PANELS WITH RAISED SIDEWALK OR MEDIAN, SEE BRIDGE PLANS.

USE EPOXY COATED GRADE 60 REINFORCEMENT IN ACCORDANCE WITH SPEC. 3301 IN APPROACH PANEL, CONCRETE SILL, AND CURB TRANSITION. EPOXY COAT BARS MARKED WITH THE SUFFIX "E" IN ACCORDANCE WITH SPEC. 3301.

MINIMUM REINFORCEMENT LAP LENGTHS ARE AS FOLLOWS: NO. 4 BAR = 1'-11", NO. 5 BAR = 2'-5", NO. 6 BAR = 3'-1", NO. 7 BAR = 3'-7", NO. 8 BAR = 4'-1".

STAGGER ALL LAP SPLICES SUCH THAT NO MORE THAN 50% OF REBAR IS SPLICED AT THE SAME LOCATION.

REPAIR CUT REBAR ENDS IN ACCORDANCE WITH SPEC. 2472.3C.

TIE 100% OF TOP MAT REINFORCEMENT BAR INTERSECTIONS.

(1) APPROACH SLAB THICKNESS IS 12" (12" MONOLITHIC OR 10" SLAB + 2" WEARING COURSE). CHECK BRIDGE PLANS FOR CONCRETE WEARING COURSE, WHICH IS INCLUDED IN BRIDGE PLAN QUANTITIES.

~~(2) REFER TO STANDARD PLAN 5-297.223 FOR END OF BARRIER/PARAPET STATION.~~

(3) PLACE 8 MIL POLYETHYLENE SHEETING (OR 2 LAYERS OF 4 MIL) UNDER THE LIMITS OF THE APPROACH PANEL TO ALLOW THE PANEL TO MOVE LONGITUDINALLY ON THE GRADE. SHEETING IS INCLUDED IN THE APPROACH PANEL PAY ITEM.

~~(4) SEAL WITH ½" THICKNESS SELF-LEVELING SILICONE IN ACCORDANCE WITH SPEC. 3722.~~

(5) REFER TO STANDARD PLAN 5-297.223 FOR APPROACH PANEL WIDTH AND ADDITIONAL INFORMATION.

(6) REFER TO STANDARD PLAN 5-297.223 FOR EXPANSION JOINT TYPE AND ABUTMENT TYPE AND STANDARD PLANS 5-297.225 AND 5-297.226 FOR SILL AND EXPANSION JOINT DETAILS.

~~(7) FIELD CUT OR INCREASE LAP LENGTH ON TRANSVERSE AP503E & AP504E BARS IN NARROWED PORTION OF APPROACH PANEL. REFER TO GENERAL NOTES FOR MINIMUM LAP LENGTHS AND EPOXY REPAIR REQUIREMENTS.~~

~~(8) FIELD CUT LONGITUDINAL AP502E & AP701E BARS BENEATH BARRIER/PARAPET. REFER TO GENERAL NOTES FOR MINIMUM LAP LENGTHS AND EPOXY REPAIR REQUIREMENTS.~~

(9) AP505E BAR @ 12". REFER TO LONGITUDINAL SECTION A-A.

~~(10) REFER TO STANDARD PLAN 5-297.223 (6 OF 6) FOR EXTENDED GUTTER LINE DETAILS.~~

~~(11) REFER TO DETAIL "A"~~

(12) CONTRACTION JOINT, REFER TO STANDARD PLAN 5-297.227 FOR ADDITIONAL INFORMATION.

* MODIFIED: SHEET HAS BEEN MODIFIED TO MATCH THE PROJECT CONDITIONS.

UPDATED SECTION B-B.

UPDATED ENDBLOCK SECTION.

ADDED PERMISSIBLE CONSTRUCTION JOINT AND BAR AP506E.

ADDED NOTE S AND PS.

LEAD EXPERT OFFICE	EDWARD LUTGEN OFFICE DIRECTOR BRIDGE OFFICE

* DENOTES MODIFICATIONS TO STANDARD PLAN

BRIDGE APPROACH PANEL REINFORCEMENT
(0° SKEW)

APPROVED: 04-16-2024
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.224

1 OF 6

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
DRW: DRH
CHK: ADL

I HEREBY CERTIFY THAT THIS SHEET 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: Allison Lindbeck LIC. NO. 56582 DATE: 12/2/2024
ALLISON D. LINDBECK

TKDA

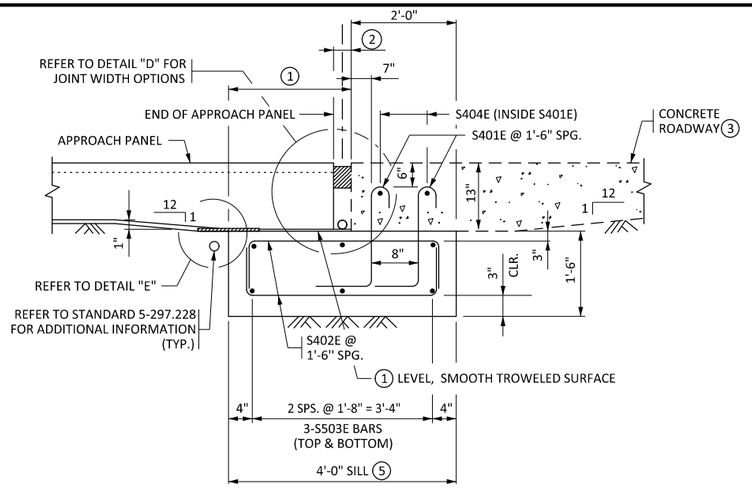
BRIDGE APPROACH PANEL REINF.

APPROACH PANEL PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 43 OF 148 SHEETS

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SILL DETAILS OPTION A

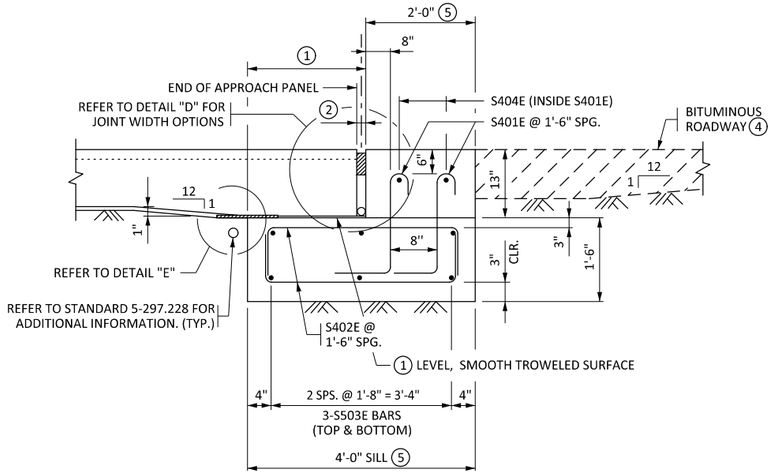
CONCRETE PAVEMENT

CONTRACTOR IS REQUIRED TO COMPLETE THE BILL OF REINFORCEMENT TABLE AND PREPARE SHOP DRAWINGS AND SUBMIT THEM TO THE PROJECT ENGINEER AT LEAST 3 WEEKS BEFORE REBAR FABRICATION.

SAMPLE BILL OF REINFORCEMENT FOR CONCRETE SILL OPTION A

	BAR	NO.	LENGTH	SHAPE	LOCATION
	S401E	**	3'-2"	⌐	SILL VERTICAL
	S402E	**	5'-6"	⊓	SILL TIE
*	S503E	6	***	———	SILL HORIZONTAL
*	S404E	2	****	———	END BLOCK HORIZONTAL

*MINIMUM REINFORCEMENT LAP LENGTHS ARE AS FOLLOWS:
NO. 4 BAR = 1'-11", NO. 5 BAR = 2'-5
**NO. OF BARS = 2 X {1 + (APPROACH PANEL WIDTH [FT] - 2.66')/1.5'} (ROUNDED UP TO A WHOLE NUMBER)}
***LENGTH = (APPROACH PANEL WIDTH [FT] - 2.5')/COS(SILL SKEW). ROUND DOWN TO NEAREST INCH.
****LENGTH = (APPROACH PANEL WIDTH [FT] -0.5')/COS(SILL SKEW). ROUND DOWN TO NEAREST INCH.



SILL DETAILS OPTION B

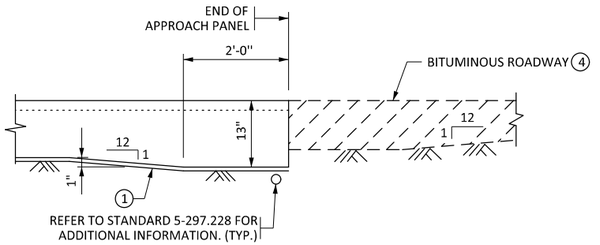
BITUMINOUS PAVEMENT OR SHOULDERS

CONTRACTOR IS REQUIRED TO COMPLETE THE BILL OF REINFORCEMENT TABLE AND PREPARE SHOP DRAWINGS AND SUBMIT THEM TO THE PROJECT ENGINEER AT LEAST 3 WEEKS BEFORE REBAR FABRICATION.

SAMPLE BILL OF REINFORCEMENT FOR CONCRETE SILL OPTION B

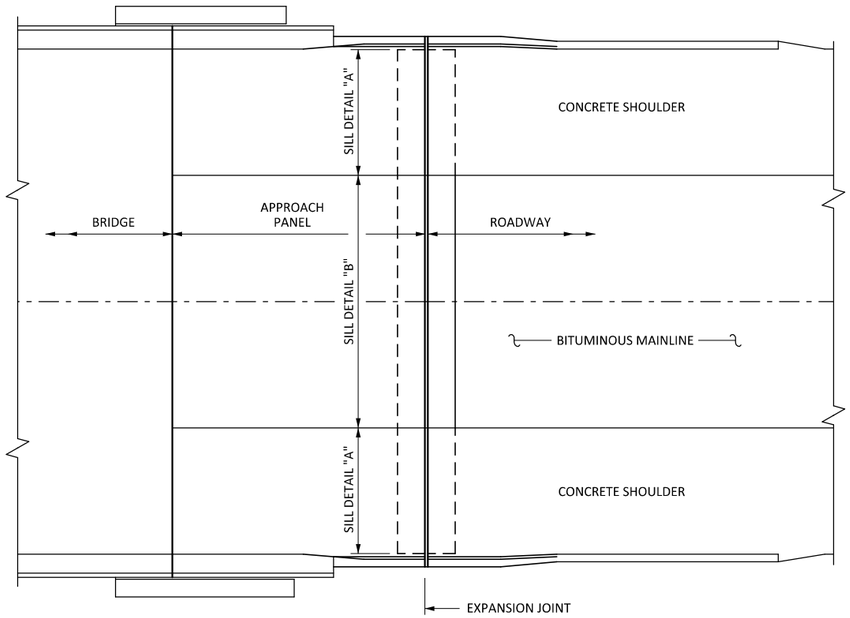
	BAR	NO.	LENGTH	SHAPE	LOCATION
	S401E	**	3'-2"	⌐	SILL VERTICAL
	S402E	**	5'-6"	⊓	SILL TIE
*	S503E	6	***	———	SILL HORIZONTAL
*	S404E	2	****	———	END BLOCK HORIZONTAL

*MINIMUM REINFORCEMENT LAP LENGTHS ARE AS FOLLOWS:
NO. 4 BAR = 1'-11", NO. 5 BAR = 2'-5
**NO. OF BARS = 2 X {1 + (APPROACH PANEL WIDTH [FT] - 2.66')/1.5'} (ROUNDED UP TO A WHOLE NUMBER)}
***LENGTH = (APPROACH PANEL WIDTH [FT] - 2.5')/COS(SILL SKEW). ROUND DOWN TO NEAREST INCH.
****LENGTH = (APPROACH PANEL WIDTH [FT] -0.5')/COS(SILL SKEW). ROUND DOWN TO NEAREST INCH.

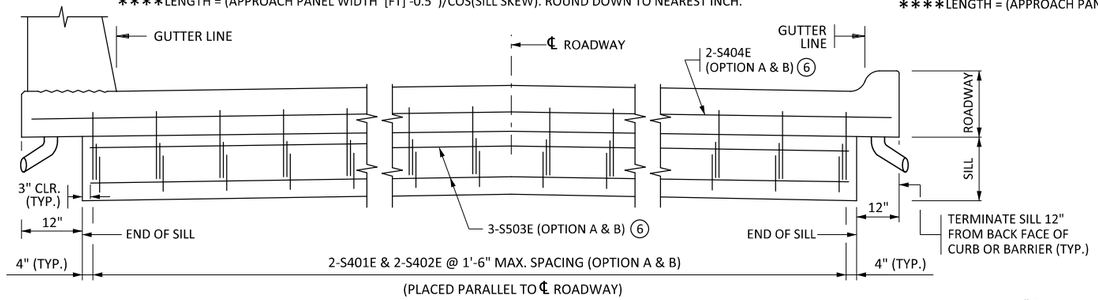


SILL DETAILS OPTION C

BITUMINOUS PAVEMENT

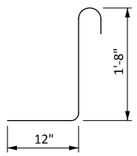


SILL DETAIL - OPTION B FOR BITUMINOUS MAINLINE, OPTION A FOR CONCRETE SHOULDERS

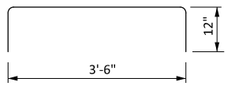


SILL ELEVATION

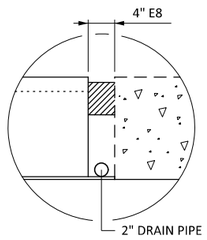
(REINFORCEMENT IN PAVEMENT NOT SHOWN)

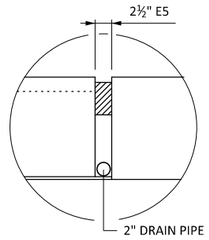


S401E

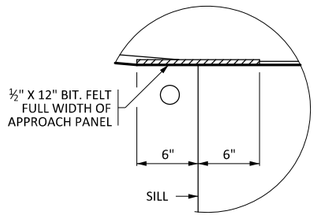


S402E





DETAIL "D"



DETAIL "E"

NOTES:

USE EPOXY COATED GRADE 60 REINFORCEMENT IN ACCORDANCE WITH SPEC 3301.

USE CONCRETE MIX 3S52.

REFER TO TABLE ON STANDARD PLAN 5-297.223 FOR SILL OPTION TYPE.

REPAIR CUT REBAR ENDS IN ACCORDANCE WITH SPEC. 2472.3C.

STAGGER ALL LAP SPLICES SUCH THAT NO MORE THAN 50% OF REBAR IS SPLICED AT THE SAME LOCATION.

1. EXTEND 8 MIL. POLYETHYLENE SHEETING (OR 2 LAYERS OF 4 MIL.) FROM UNDERSIDE OF APPROACH PANEL ONTO THE TOP OF THE SILL, IF PRESENT. COVER AREA SHOWN IN DETAIL. (SHEETING IS INCLUDED IN THE APPROACH PANEL PAY ITEM).
2. REFER TO TABLE ON STANDARD PLAN 5-297.223 FOR EXPANSION JOINT TYPE AND STANDARD PLAN 5-297.226 (3 OF 3) FOR EXPANSION JOINT DETAILS.
3. REFER TO PAVING PLANS AND STANDARD PLAN 5-297.235 FOR LUGS IN CONCRETE PAVEMENT.
4. REFER TO PAVING PLANS FOR BITUMINOUS HEADER DETAIL.
5. INCLUDED IN PAYMENT FOR APPROACH PANEL.
6. FIELD CUT OR INCREASE LAP LENGTH ON TRANSVERSE S503E AND S404E BARS IN NARROWED PORTION OF APPROACH PANEL. REFER TO GENERAL NOTES FOR MINIMUM LAP LENGTHS AND EPOXY REPAIR REQUIREMENTS.

LEAD EXPERT OFFICE	EDWARD LUTGEN OFFICE DIRECTOR BRIDGE OFFICE	BRIDGE APPROACH PANEL SILL DETAILS	APPROVED: 04-16-2024 REVISED:	THOMAS STYRBICKI STATE DESIGN ENGINEER	STANDARD PLAN 5-297.225	1 OF 1

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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DRW: DRH
CHK: ADL

TKDA

BRIDGE APPROACH PANEL SILL DETAILS

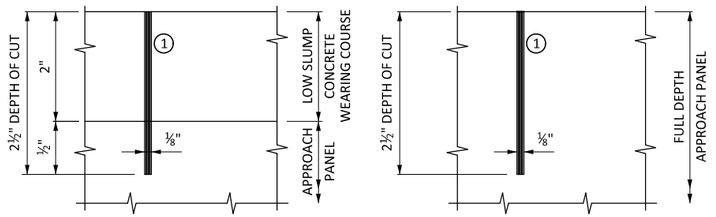
APPROACH PANEL PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 44 OF 148 SHEETS

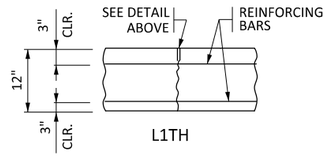
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JOINT DETAILS

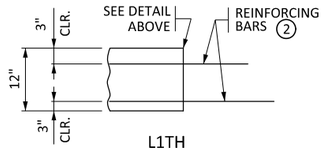


C2H & L1TH WITH
CONCRETE WEARING COURSE (1)
(SAWED & SEALED
IN ACCORDANCE WITH SPEC. 3725)

C2H & L1TH WITHOUT
CONCRETE WEARING COURSE (1)
(SAWED & SEALED
IN ACCORDANCE WITH SPEC. 3725)



L1TH



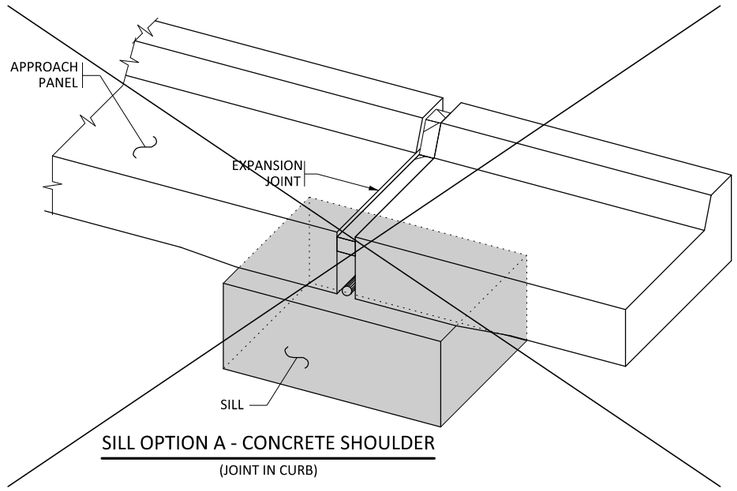
L1TH
(AT CONSTRUCTION JOINT)

(1) CLEAN AND DRY FULLY CURED JOINT FACES BY SANDBLASTING PRIOR TO SEALING THE JOINT.

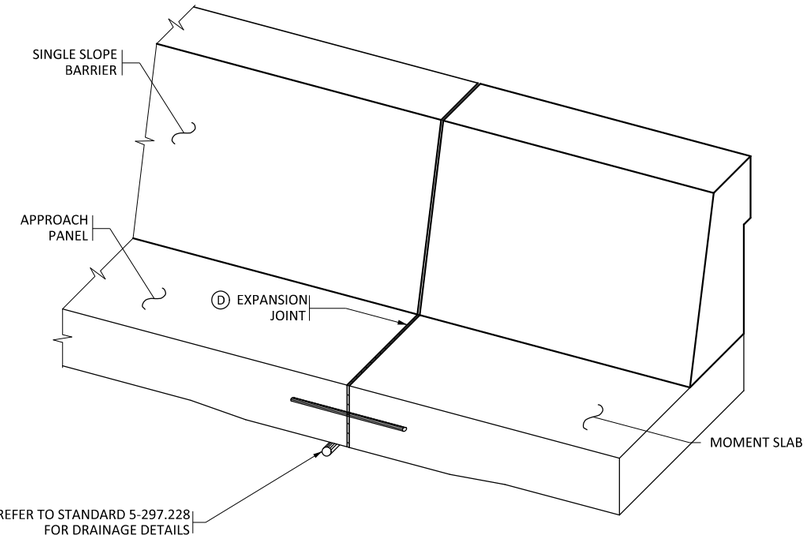
(2) WHEN CONSTRUCTING A L1TH JOINT UNDER STAGED CONSTRUCTION, EXTEND NO. 4 BARS 1'-8" AND NO. 5 BARS 2'-1" PAST THE EDGE OF THE FIRST CONCRETE POUR. CONSTRUCT L1TH JOINT ACCORDING TO DETAIL SHOWN AFTER ADJACENT POUR IS COMPLETE.

* (D) ½" EXPANSION JOINT. PLACE TYPE F PREFORMED JOINT FILLER AND MNDOT APPROVED JOINT SEALER PER SPEC 3722 AT EXPANSION JOINT. PLACE ½" DIA. STAINLESS STEEL RODS ACROSS THE JOINT EXTENDING 1'-0" INTO THE ADJACENT SLABS. INCIDENTAL TO MOMENT SLAB STRUCTURAL CONCRETE (3B52).

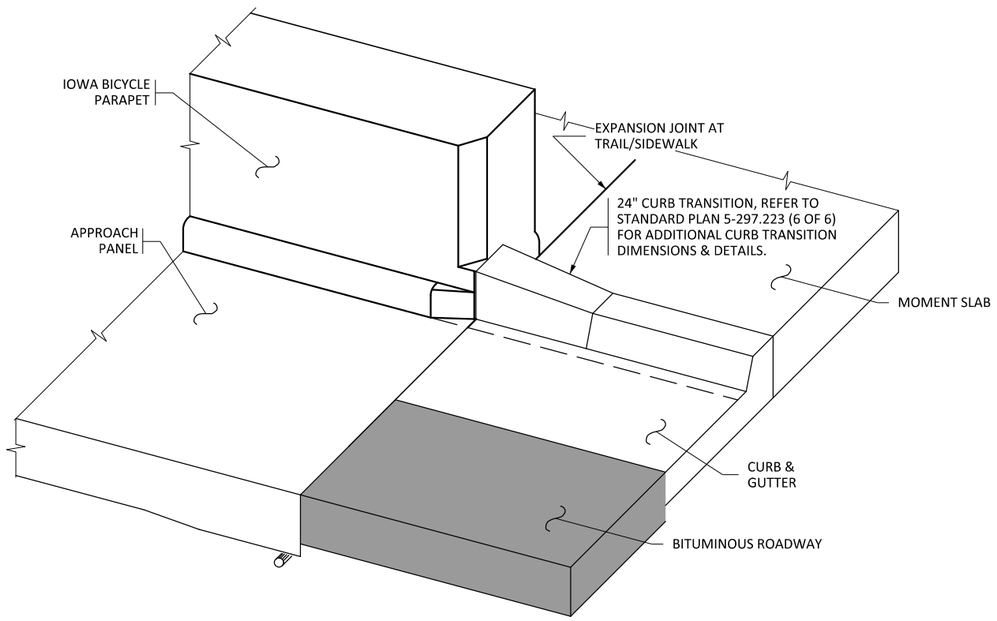
* MODIFIED: SHEET HAS BEEN MODIFIED TO MATCH THE PROJECT CONDITIONS.



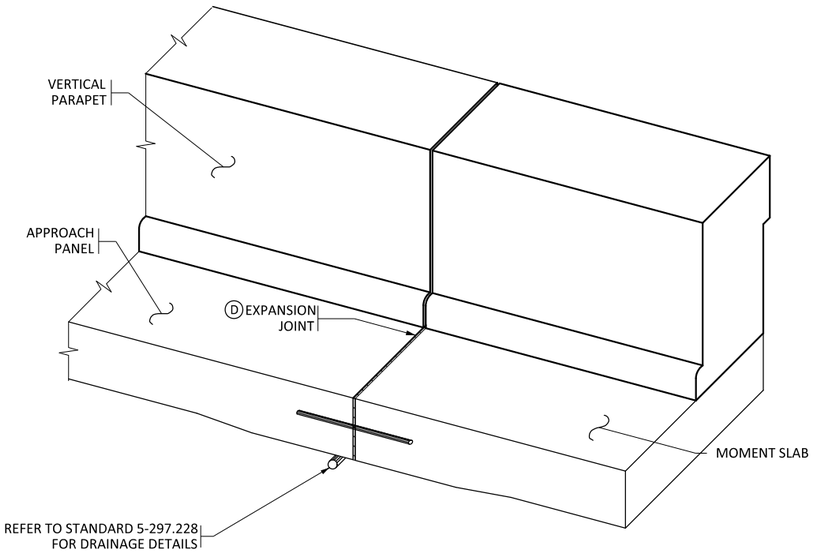
SILL OPTION A - CONCRETE SHOULDER
(JOINT IN CURB)



SILL OPTION C - EXPANSION JOINT AT TYPE S BARRIER *
REFER TO SHEET (3 OF 3) FOR DETAILS AND ADDITIONAL INFORMATION



SILL OPTION C - EXPANSION JOINT AT IOWA BICYCLE PARAPET *
REFER TO SHEET (3 OF 3) FOR DETAILS AND ADDITIONAL INFORMATION



SILL OPTION C - EXPANSION JOINT AT PARAPET *
REFER TO SHEET (3 OF 3) FOR DETAILS AND ADDITIONAL INFORMATION

NOTES:
SEE BRIDGE PLANS FOR FRONT COVER PLATE REQUIREMENTS & DETAILS.

LEAD EXPERT OFFICE	EDWARD LUTGEN OFFICE DIRECTOR BRIDGE OFFICE

* DENOTES MODIFICATIONS TO STANDARD PLAN

BRIDGE APPROACH PANEL
JOINT DETAILS

APPROVED: 04-16-2024
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.226

1 OF 3

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
DRW: DRH
CHK: ADL

I HEREBY CERTIFY THAT THIS SHEET 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: Allison Lindbeck
ALLISON D. LINDBECK
LIC. NO. 56582 DATE: 12/2/2024

TKDA

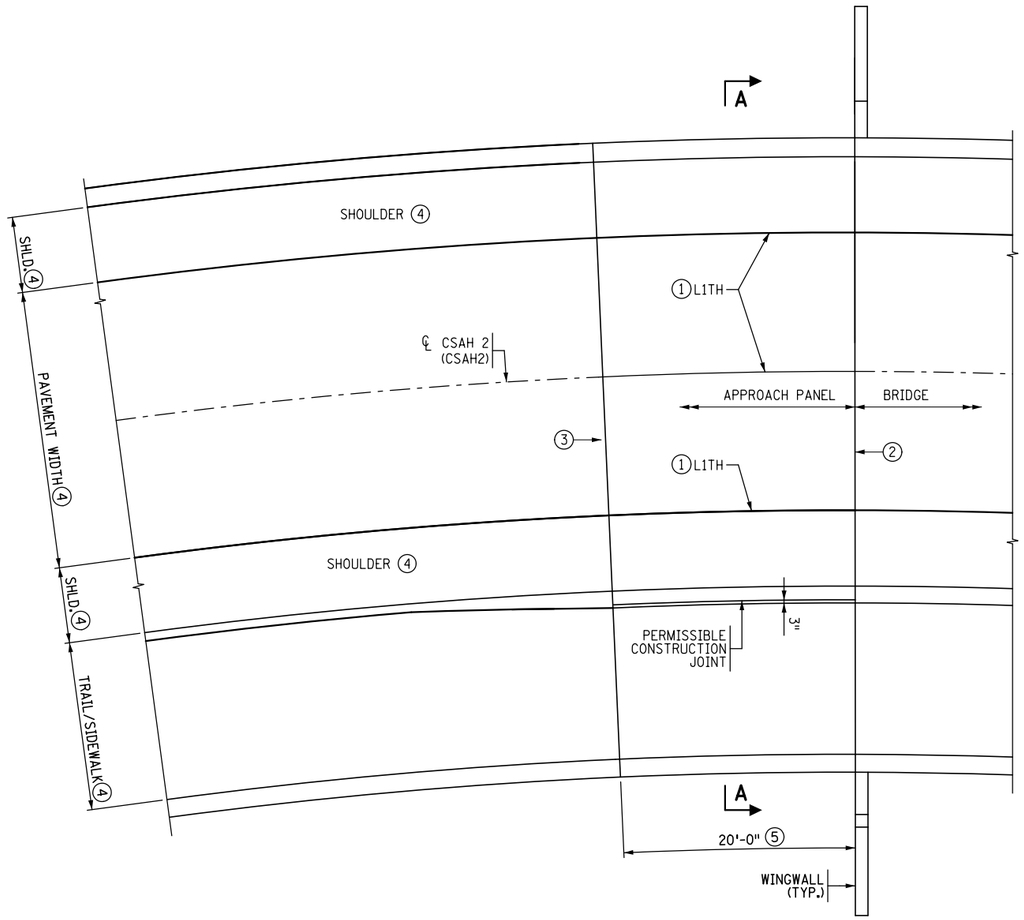
BRIDGE APPROACH PANEL JOINT DETAILS

APPROACH PANEL PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

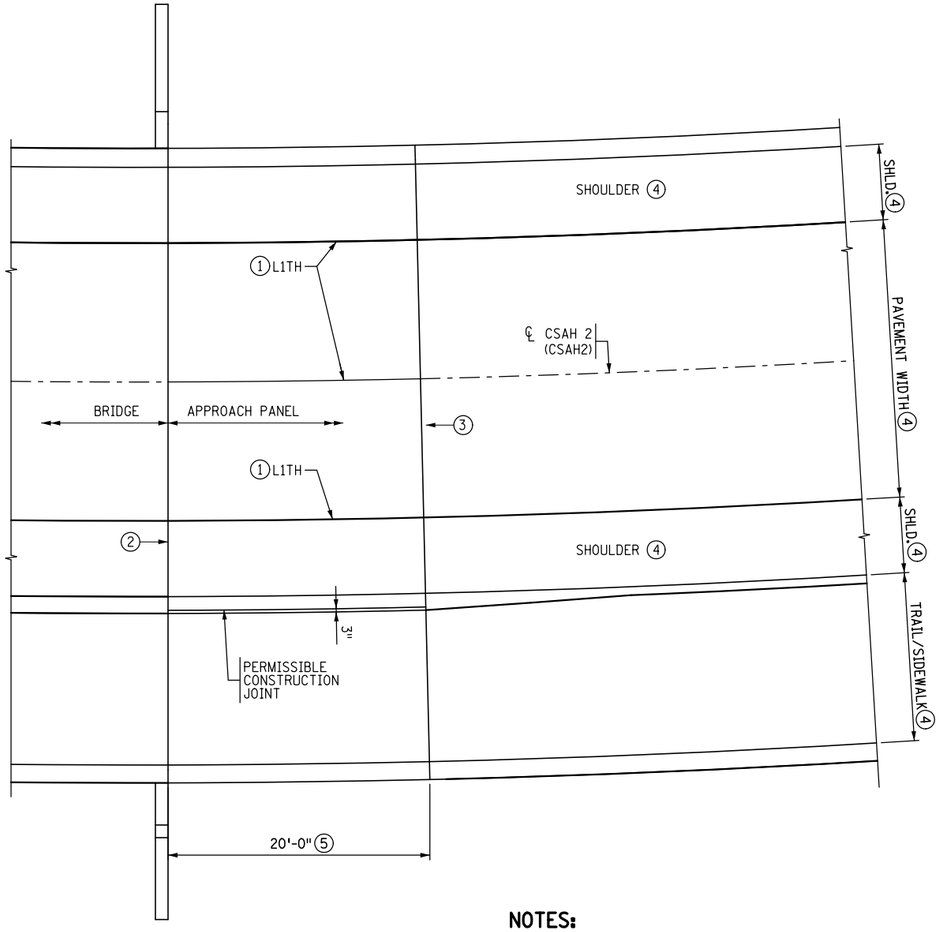
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WEST APPROACH PANEL

APPROACH PANEL PLAN



EAST APPROACH PANEL

* MODIFIED: SHEET HAS BEEN MODIFIED TO MATCH THE PROJECT CONDITIONS.

ADDED NOTE 5.

NOTES:

REFER TO STANDARD PLAN SHEET 5-297.226 FOR ADDITIONAL INFORMATION AND DETAILS FOR THE VARIOUS JOINT TYPES.

SAWCUT ALL JOINTS. SAWCUTS SHALL BE MADE WHILE THE CONCRETE IS STILL GREEN. WHEN A CONCRETE WEARING COURSE IS SPECIFIED, SAWCUT THROUGH BOTH THE WEARING COURSE AND THE UNDERLYING APPROACH SLAB IN A SINGLE OPERATION.

(1) L1TH LONGITUDINAL JOINT. SEE STANDARD PLAN 5-297.226 FOR REINFORCEMENT LAP LENGTH REQUIREMENTS FOR STAGED CONSTRUCTION.

(2) C2H CONTRACTION JOINT ON INTEGRAL ABUTMENT, SEMI-INTEGRAL ABUTMENT, AND PARAPET ABUTMENT BRIDGES WITH AN END BLOCK. WATERPROOF EXPANSION DEVICE ON PARAPET ABUTMENT BRIDGES WITH DAVIDSON DETAIL (REFER TO BRIDGE PLANS).

(3) REFER TO STANDARD PLAN 5-297.223 FOR EXPANSION JOINT TYPE. EXPANSION JOINT IS PAID FOR SEPARATELY, MEASURED FROM BACK OF CURB OR BARRIER/PARAPET TO BACK OF CURB OR BARRIER/PARAPET.

(4) REFER TO ROADWAY PLAN FOR PAVEMENT, LANE AND SHOULDER WIDTHS AND CONFIGURATION.

(5) APPROACH PANEL LENGTHS ARE MEASURED ALONG CENTERLINE OF ROADWAY. PANEL SIZE AND JOINT REQUIREMENTS FOR TRANSVERSE AND LONGITUDINAL JOINTS ARE SHOWN ON STANDARD PLANS 5-297.226 AND 5-297.227.

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LEAD EXPERT OFFICE	EDWARD LUTGEN OFFICE DIRECTOR BRIDGE OFFICE

* DENOTES MODIFICATIONS TO STANDARD PLAN

BRIDGE APPROACH PANEL JOINT LAYOUT
(0° UP TO 15° SKEWS)

APPROVED: 04-16-2024
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.227

1 OF 2

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
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CHK: ADL

I HEREBY CERTIFY THAT THIS SHEET 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: Allison Lindbeck
ALLISON D. LINDBECK
LIC. NO. 56582 DATE: 12/2/2024

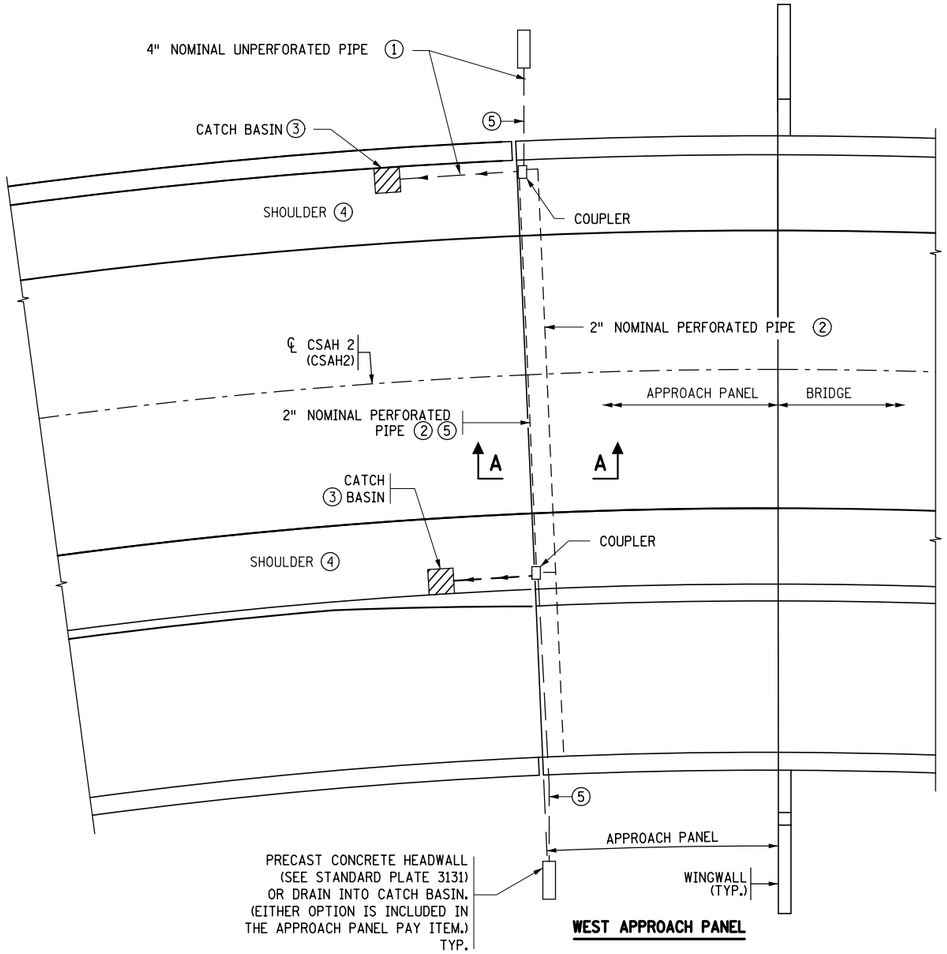
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BRIDGE APPROACH PANEL JOINT LAYOUT

APPROACH PANEL PLANS

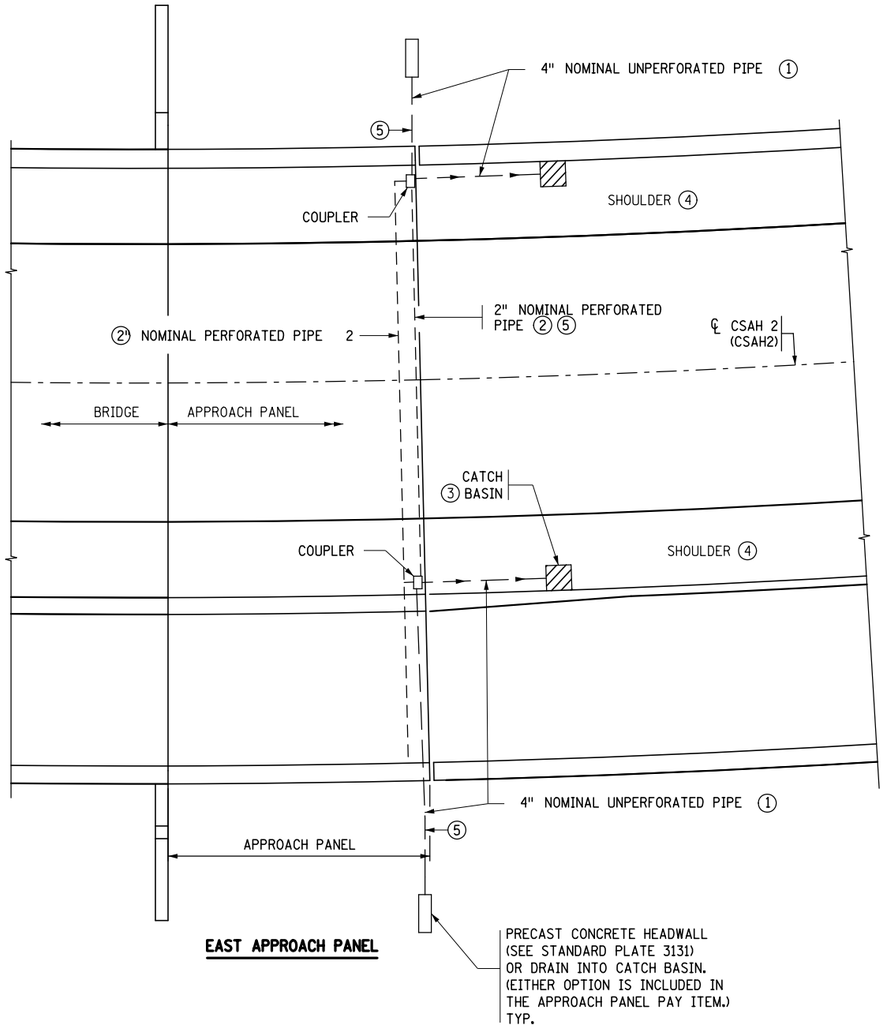
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SHEET NO. 46 OF 148 SHEETS

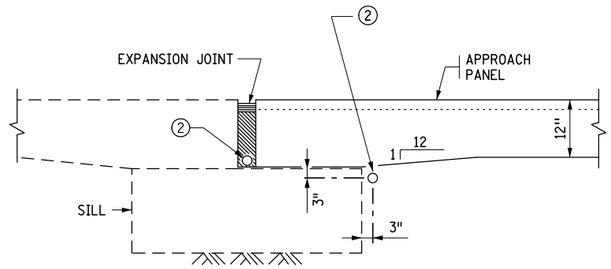


WEST APPROACH PANEL

APPROACH PANEL PLAN



EAST APPROACH PANEL



SECTION A-A

DRAINAGE AT EXPANSION JOINT DETAIL.
REFER TO STANDARD PLAN 5-297.225 FOR
ADDITIONAL SILL OPTIONS AND DETAILS

NOTES:

① UNPERFORATED PIPE IN ACCORDANCE WITH SPEC 3245.2(5). ⅛ INCH PER 12 INCH MINIMUM SLOPE. FURNISHING AND INSTALLING THE DRAIN SYSTEM IS INCLUDED IN THE APPROACH PANEL PAY ITEM.

② 2" NOMINAL PERFORATED PIPE IN ACCORDANCE WITH SPEC 3278. SLEEVE WITH GEOTEXTILE IN ACCORDANCE WITH SPEC. 3733 TYPE 1. ⅛ INCH PER 12 INCH MINIMUM SLOPE. FURNISHING AND INSTALLING DRAIN SYSTEM IS INCLUDED IN THE APPROACH PANEL PAY ITEM. REFER TO STANDARD PLAN 5-297.226 FOR ADDITIONAL INFORMATION AND DETAILS.

③ REFER TO CONSTRUCTION PLANS TO DETERMINE WHETHER A FLUME OR CATCH BASIN IS REQUIRED AND FOR ADDITIONAL DRAINAGE DETAILS.

④ SEE CONSTRUCTION PLANS FOR PAVEMENT, LANE AND SHOULDER WIDTHS AND CONFIGURATION.

⑤ CONNECT 2" PIPE BEYOND SILL INTO 4" DRAIN SYSTEM IF AVAILABLE. IF NOT AVAILABLE THEN DAYLIGHT USING A PRECAST CONCRETE HEADWALL IN ACCORDANCE WITH STANDARD PLATE 3131 OR DRAIN INTO CATCH BASIN. EITHER OPTION IS INCLUDED IN THE APPROACH PANEL PAY ITEM. REFER TO STANDARD PLAN 5-297.226 (3 OF 3) FOR PIPE DETAILS AT END OF SILL AND FOR ADDITIONAL DRAINAGE DETAILS. LOCATE GUARDRAIL POSTS PRIOR TO INSTALLING PIPE AND ROUTE PIPE TO PROVIDE 12" MINIMUM BETWEEN ℄ PIPE AND EDGE OF GUARDRAIL POST. REFER TO STANDARD PLAN 5-297.693 AND 5-297.694 FOR GUARDRAIL POST LOCATIONS.

LEAD EXPERT OFFICE	EDWARD LUTGEN OFFICE DIRECTOR BRIDGE OFFICE

BRIDGE APPROACH PANEL DRAINAGE LAYOUT

APPROVED: 04-16-2024
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.228

1 OF 1

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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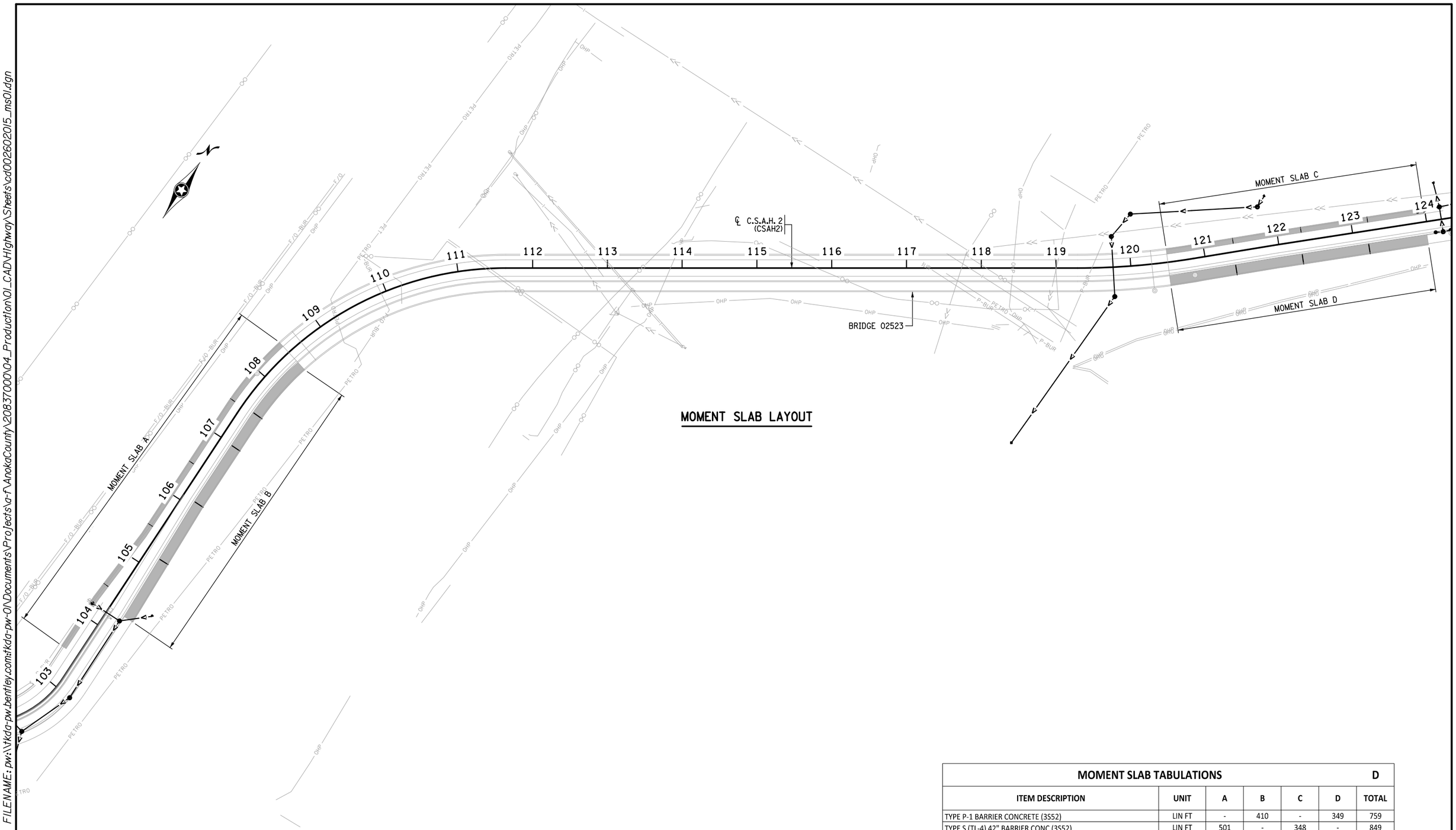
BRIDGE APPROACH PANEL DRAINAGE LAYOUT

APPROACH PANEL PLANS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

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MOMENT SLAB LAYOUT

MOMENT SLAB TABULATIONS — D

ITEM DESCRIPTION	UNIT	A	B	C	D	TOTAL
TYPE P-1 BARRIER CONCRETE (3S52)	LIN FT	-	410	-	349	759
TYPE S (TL-4) 42" BARRIER CONC (3S52)	LIN FT	501	-	348	-	849
STRUCTURAL CONCRETE (3B52)	CU YD	162	205	113	174	654
REINFORCEMENT BARS (EPOXY COATED)	POUND	25,480	23,600	17,840	20,530	87,450

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
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CHK: ADL

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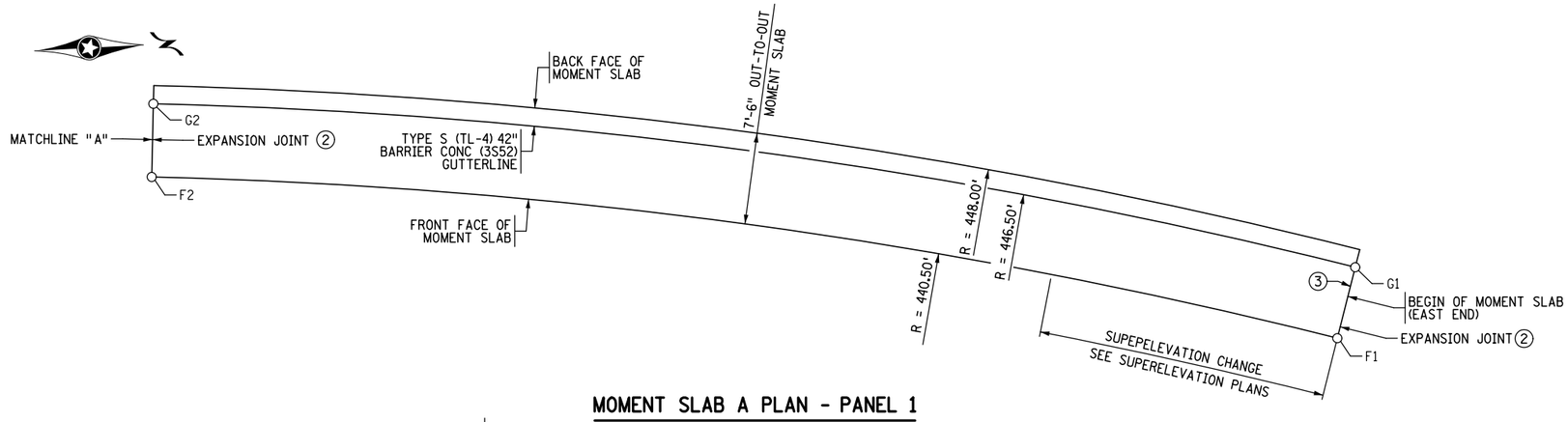
SIGNATURE: Derek R. Huston LIC. NO. 62058 DATE: 12/2/2024
DEREK R. HUSTON

TKDA

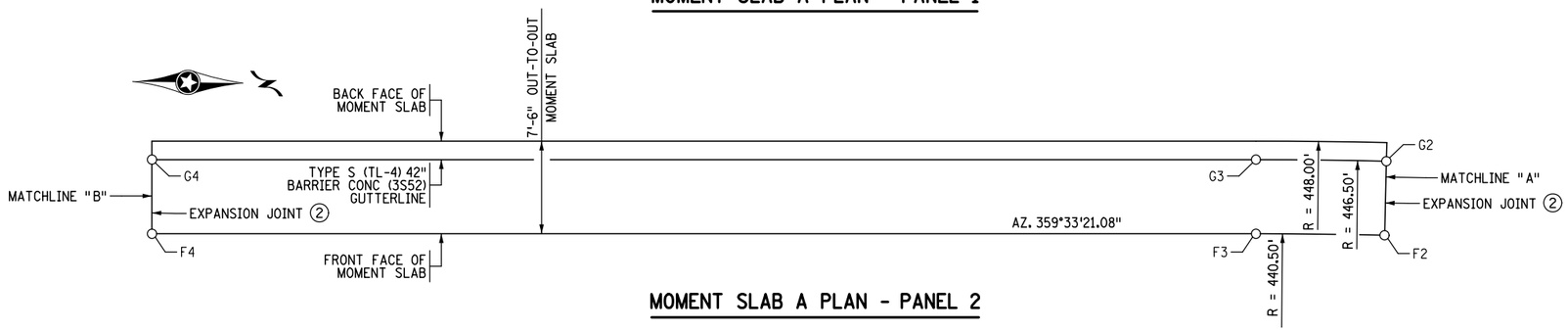
MOMENT SLAB LAYOUT

CONCRETE BARRIER AND MOMENT SLAB DETAILS

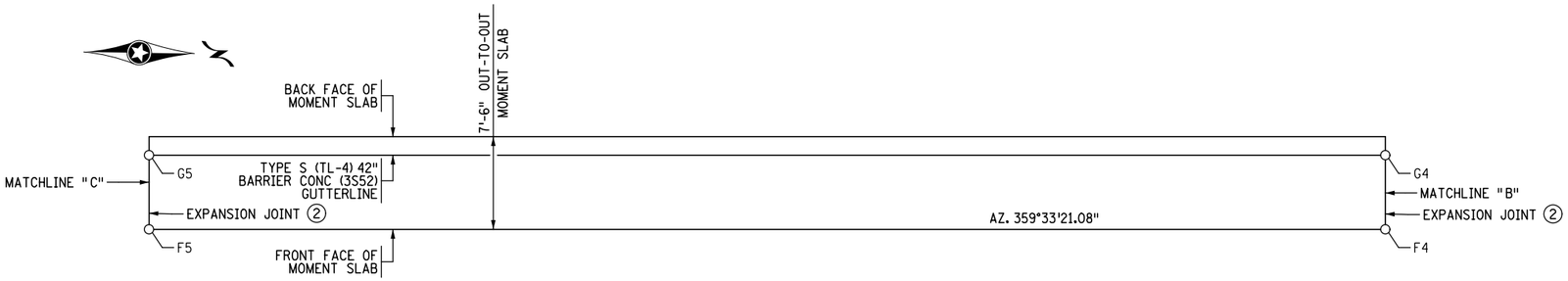
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037



MOMENT SLAB A PLAN - PANEL 1



MOMENT SLAB A PLAN - PANEL 2



MOMENT SLAB A PLAN - PANEL 3

MOMENT SLAB A (1)								
FRONT FACE OF MOMENT SLAB					GUTTER LINE			
POINT	X	Y	STA.	TOP OF MOMENT SLAB EL.	POINT	X	Y	TOP OF MOMENT SLAB EL.
F1	497,991.396	103,438.758	108+45.37	861.81	G1	497,985.567	103,440.179	861.72
F2	497,978.918	103,341.432	107+49.49	856.96	G2	497,972.919	103,341.528	856.84
F3	497,978.876	103,331.012	107+39.33	856.45	G3	497,972.876	103,330.966	856.33
F4	497,979.569	103,241.611	106+49.93	852.04	G4	497,973.569	103,241.565	851.92
F5	497,980.344	103,141.614	105+49.93	847.31	G5	497,974.344	103,141.568	847.19
LENGTH OF SLAB = 498'-3 3/4"					LENGTH OF SLAB = 500'-3 1/8"			

PANEL	LENGTH	
1	98'-3 7/8"	PANEL LENGTHS PROVIDED ARE MEASURED ALONG FRONT FACE OF MOMENT SLAB.
2	99'-9 7/8"	
3	100'-0"	

NOTES:

PLACE C2H JOINTS TO ALIGN WITH BARRIER CONTROL JOINTS.

FOR TYPICAL SECTION, C2H AND EXPANSION JOINTS DETAILS SEE MOMENT SLAB REINFORCEMENT DETAILS.

(1) STATIONING ALONG ℄ C.S.A.H. 2 (CSAH2).

(2) ½" EXPANSION JOINT. PLACE TYPE F PREFORMED JOINT FILLER AND MN/DOT APPROVED JOINT SEALER PER SPEC. 3722 AT EXPANSION JOINT. LONGITUDINAL REINFORCEMENT TO STOP AT ALL EXPANSION JOINTS. PLACE ½" DIA. STAINLESS STEEL RODS ACROSS THE JOINT EXTENDING 1'-0" INTO EACH OF THE ADJACENT SLABS. INCIDENTAL STRUCTURAL CONCRETE (3B52).

(3) SEE APPROACH PANEL PLANS FOR FURTHER DETAILS.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
DRW: DRH
CHK: ADL

I HEREBY CERTIFY THAT THIS SHEET 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: Derek R. Huston LIC. NO. 62058 DATE: 12/2/2024
DEREK R. HUSTON

TKDA

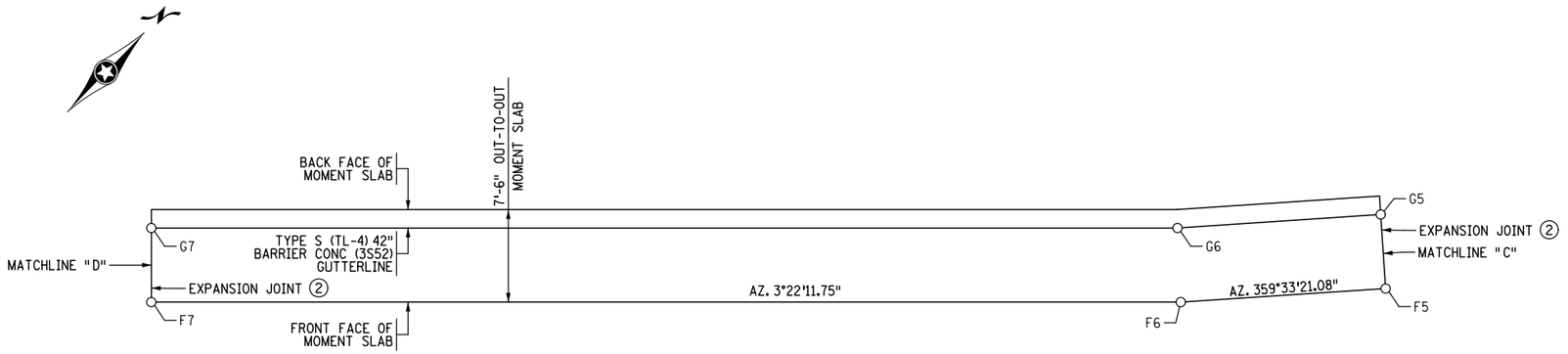
MOMENT SLAB A PLAN (1 OF 2)

CONCRETE BARRIER AND MOMENT SLAB DETAILS

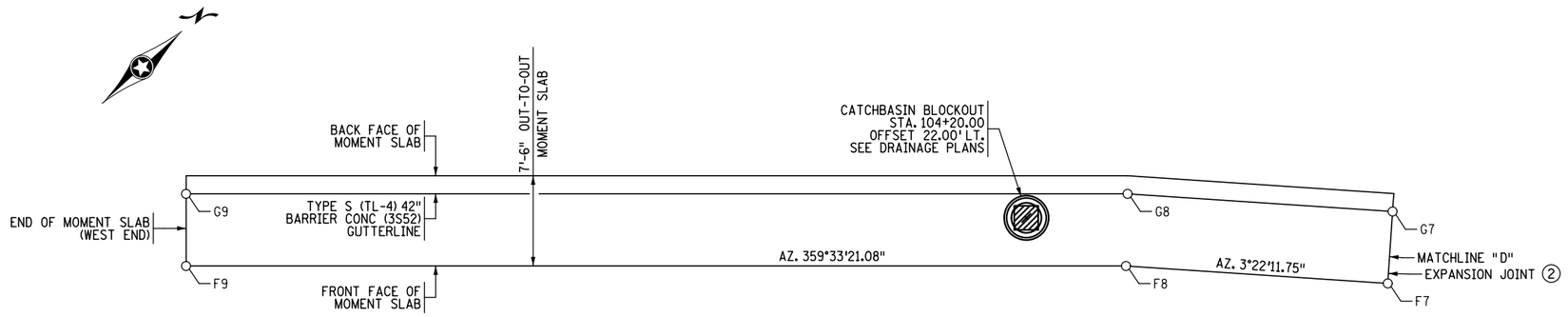
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MOMENT SLAB A PLAN - PANEL 4



MOMENT SLAB A PLAN - PANEL 5

MOMENT SLAB A (1)

FRONT FACE OF MOMENT SLAB					GUTTER LINE			
POINT	X	Y	STA.	TOP OF MOMENT SLAB EL.	POINT	X	Y	TOP OF MOMENT SLAB EL.
F5	497,980.344	103,141.614	105+49.93	847.31	G5	497,974.344	103,141.568	847.19
F6	497,980.473	103,124.982	105+33.30	846.52	G6	497,974.472	103,125.069	846.41
F7	497,975.572	103,041.758	104+50.11	842.49	G7	497,969.587	103,042.111	842.39
F8	497,974.287	103,019.931	104+28.30	841.43	G8	497,968.286	103,020.018	841.32
F9	497,974.894	102,941.635	103+50.00	837.74	G9	497,968.894	102,941.589	837.62
LENGTH OF SLAB = 498'-3 3/4"					LENGTH OF SLAB = 500'-3 1/8"			

PANEL	LENGTH	
4	100'-0"	PANEL LENGTHS PROVIDED ARE MEASURED ALONG FRONT FACE OF MOMENT SLAB.
5	100'-2"	

NOTES:

PLACE C2H JOINTS TO ALIGN WITH BARRIER CONTROL JOINTS.

FOR TYPICAL SECTION, C2H AND EXPANSION JOINTS DETAILS SEE MOMENT SLAB REINFORCEMENT DETAILS.

(1) STATIONING ALONG ℄ C.S.A.H. 2 (CSAH2).

(2) ½" EXPANSION JOINT. PLACE TYPE F PREFORMED JOINT FILLER AND MN/DOT APPROVED JOINT SEALER PER SPEC. 3722 AT EXPANSION JOINT. LONGITUDINAL REINFORCEMENT TO STOP AT ALL EXPANSION JOINTS. PLACE ½" DIA. STAINLESS STEEL RODS ACROSS THE JOINT EXTENDING 1'-0" INTO EACH OF THE ADJACENT SLABS. INCIDENTAL TO STRUCTURAL CONCRETE (3B52).

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
DRW: DRH
CHK: ADL

I HEREBY CERTIFY THAT THIS SHEET 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: Derek R. Huston LIC. NO. 62058 DATE: 12/2/2024
DEREK R. HUSTON

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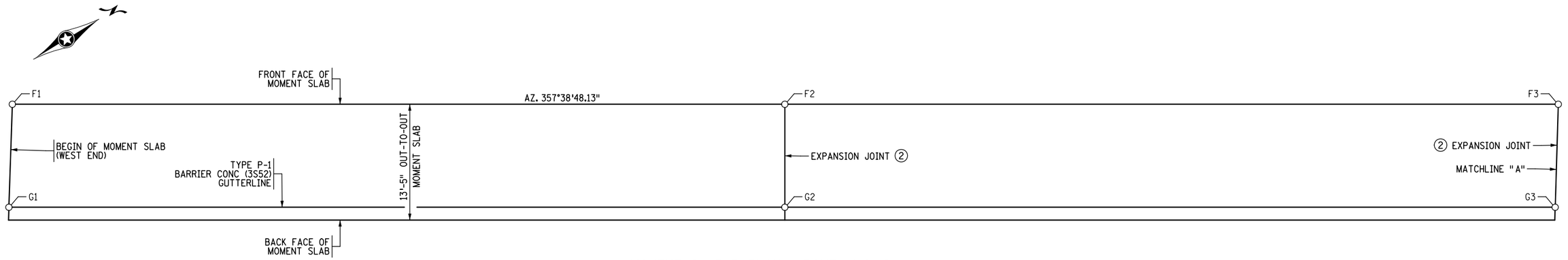
MOMENT SLAB A PLAN (2 OF 2)

CONCRETE BARRIER AND MOMENT SLAB DETAILS

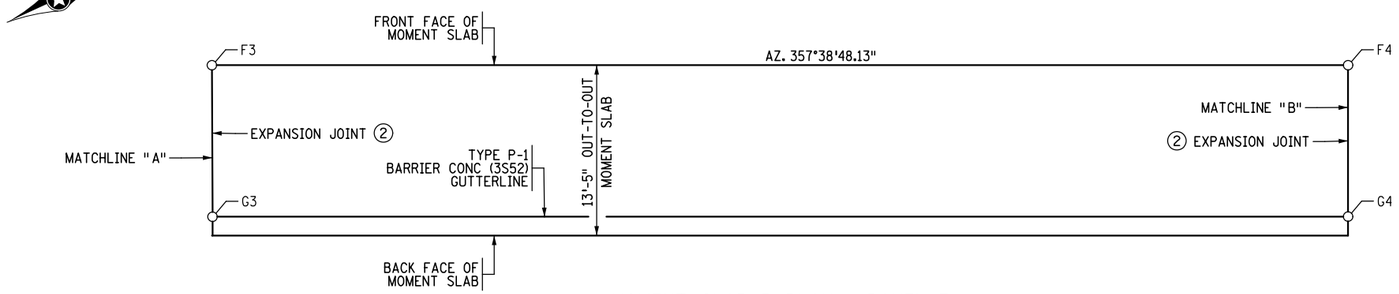
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SHEET NO. 50 OF 148 SHEETS

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MOMENT SLAB B PLAN - PANEL 1 & 2



MOMENT SLAB B PLAN - PANEL 3

MOMENT SLAB B (1)

FRONT FACE OF MOMENT SLAB					GUTTER LINE			
POINT	X	Y	STA.	TOP OF MOMENT SLAB EL.	POINT	X	Y	TOP OF MOMENT SLAB EL.
F1	498,015.951	103,020.387	104+28.43	841.76	G1	498,027.951	103,020.480	841.94
F2	498,012.256	103,110.311	105+18.38	846.06	G2	498,024.239	103,110.804	846.26
F3	498,008.556	103,200.335	106+08.43	850.37	G3	498,020.556	103,200.428	850.55
F4	498,007.859	103,290.332	106+98.43	854.71	G4	498,019.858	103,290.425	854.89
LENGTH OF SLAB = 412'-8"					LENGTH OF SLAB = 409'-9 1/4"			

PANEL	LENGTH	
1	90'-0"	PANEL LENGTHS PROVIDED ARE MEASURED ALONG FRONT FACE OF MOMENT SLAB.
2	90'-1 1/4"	
3	90'-0"	

NOTES:

PLACE C2H JOINTS TO ALIGN WITH BARRIER CONTROL JOINTS.

FOR TYPICAL SECTION, C2H AND EXPANSION JOINTS DETAILS SEE MOMENT SLAB REINFORCEMENT DETAILS.

(1) STATIONING ALONG ℄ C.S.A.H. 2 (CSAH2).

(2) ½" EXPANSION JOINT. PLACE TYPE F PREFORMED JOINT FILLER AND MN/DOT APPROVED JOINT SEALER PER SPEC. 3722 AT EXPANSION JOINT. LONGITUDINAL REINFORCEMENT TO STOP AT ALL EXPANSION JOINTS. PLACE ½" DIA. STAINLESS STEEL RODS ACROSS THE JOINT EXTENDING 1'-0" INTO EACH OF THE ADJACENT SLABS. INCIDENTAL TO STRUCTURAL CONCRETE (3B52).

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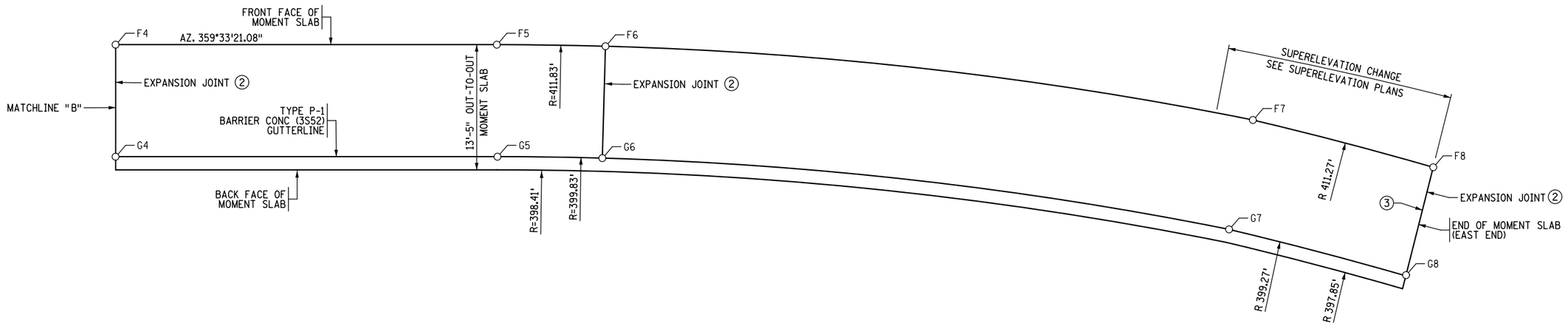
MOMENT SLAB B PLAN (1 OF 2)

CONCRETE BARRIER AND MOMENT SLAB DETAILS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 51 OF 148 SHEETS

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MOMENT SLAB B PLAN - PANEL 4 & 5

MOMENT SLAB B (1)								
FRONT FACE OF MOMENT SLAB					GUTTER LINE			
POINT	X	Y	STA.	TOP OF MOMENT SLAB EL.	POINT	X	Y	TOP OF MOMENT SLAB EL.
F4	498,007.859	103,290.332	106+98.43	854.71	G4	498,019.858	103,290.425	854.89
F5	498,007.541	103,331.235	107+39.33	856.75	G5	498,019.542	103,331.258	856.93
F6	498,007.616	103,342.896	107+51.50	857.36	G6	498,019.614	103,342.650	857.54
F7	498,014.984	103,412.430	108+24.51	861.02	G7	498,026.729	103,409.961	861.22
F8	498,019.895	103,431.810	108+45.37	862.20	G8	498,031.560	103,429.966	860.31
LENGTH OF SLAB = 412'-8"					LENGTH OF SLAB = 409'-9 1/4"			

PANEL	LENGTH	
4	52'-6 3/4"	PANEL LENGTHS PROVIDED ARE MEASURED ALONG FRONT FACE OF MOMENT SLAB.
5	90'-0"	

NOTES:

PLACE C2H JOINTS TO ALIGN WITH BARRIER CONTROL JOINTS.

FOR TYPICAL SECTION, C2H AND EXPANSION JOINTS DETAILS SEE MOMENT SLAB REINFORCEMENT DETAILS.

(1) STATIONING ALONG ℄ C.S.A.H. 2 (CSAH2).

(2) ½" EXPANSION JOINT. PLACE TYPE F PREFORMED JOINT FILLER AND MN/DOT APPROVED JOINT SEALER PER SPEC. 3722 AT EXPANSION JOINT. LONGITUDINAL REINFORCEMENT TO STOP AT ALL EXPANSION JOINTS. PLACE ½" DIA. STAINLESS STEEL RODS ACROSS THE JOINT EXTENDING 1'-0" INTO EACH OF THE ADJACENT SLABS. INCIDENTAL TO STRUCTURAL CONCRETE (3B52).

(3) SEE APPROACH PANEL PLANS FOR FURTHER DETAILS.

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CHK: ADL

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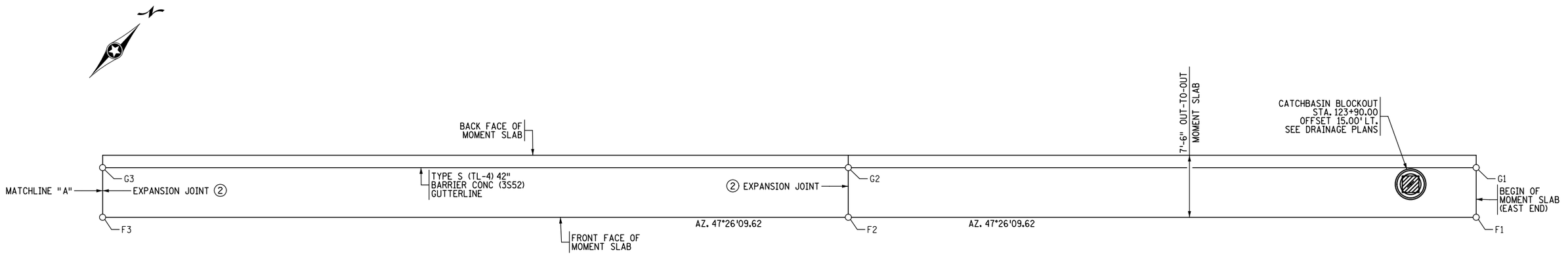
MOMENT SLAB B PLAN (2 OF 2)

CONCRETE BARRIER AND MOMENT SLAB DETAILS

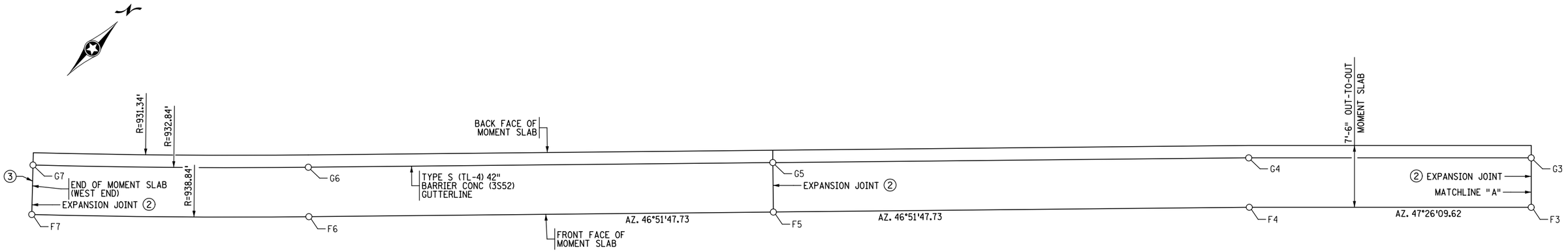
S.P. 002-602-015, S.P. 127-020-037
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SHEET NO. 52 OF 148 SHEETS

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MOMENT SLAB C PLAN - PANELS 1 & 2



MOMENT SLAB C PLAN - PANEL 3 & 4

MOMENT SLAB C (1)

FRONT FACE OF MOMENT SLAB					GUTTER LINE			
POINT	X	Y	STA.	TOP OF MOMENT SLAB EL.	POINT	X	Y	TOP OF MOMENT SLAB EL.
F1	499,160.534	104,434.303	123+97.91	843.15	G1	499,156.475	104,438.723	843.03
F2	499,104.719	104,383.044	123+22.13	846.45	G2	499,100.661	104,387.464	846.33
F3	499,038.432	104,322.167	122+32.13	851.31	G3	499,034.374	104,326.586	851.19
F4	499,013.228	104,299.020	121+98.02	853.15	G4	499,009.126	104,303.399	853.03
F5	498,971.083	104,259.531	121+40.27	856.27	G5	498,966.981	104,263.909	856.15
F6	498,929.950	104,220.989	120+83.90	859.25	G6	498,925.847	104,225.368	859.13
F7	498,905.002	104,198.439	120+49.87	861.05	G7	498,901.059	104,202.961	860.95
LENGTH OF SLAB = 347'-9 1/2"					LENGTH OF SLAB = 347'-6 3/8"			

PANEL	LENGTH
1	75'-9 3/8"
2	90'-0
3	92'-0 1/8"
4	90'-0"

PANEL LENGTHS PROVIDED ARE MEASURED ALONG FRONT FACE OF MOMENT SLAB.

NOTES:

PLACE C2H JOINTS TO ALIGN WITH BARRIER CONTROL JOINTS.

FOR TYPICAL SECTION, C2H AND EXPANSION JOINTS DETAILS SEE MOMENT SLAB REINFORCEMENT DETAILS.

(1) STATIONING ALONG ℄ C.S.A.H. 2 (CSAH2).

(2) ½" EXPANSION JOINT. PLACE TYPE F PREFORMED JOINT FILLER AND MN/DOT APPROVED JOINT SEALER PER SPEC. 3722 AT EXPANSION JOINT. LONGITUDINAL REINFORCEMENT TO STOP AT ALL EXPANSION JOINTS. PLACE ½" DIA. STAINLESS STEEL RODS ACROSS THE JOINT EXTENDING 1'-0" INTO EACH OF THE ADJACENT SLABS. INCIDENTAL TO STRUCTURAL CONCRETE (3B52).

(3) SEE APPROACH PANEL PLANS FOR FURTHER DETAILS.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNATURE: Derek R. Huston LIC. NO. 62058 DATE: 12/2/2024

DEREK R. HUSTON

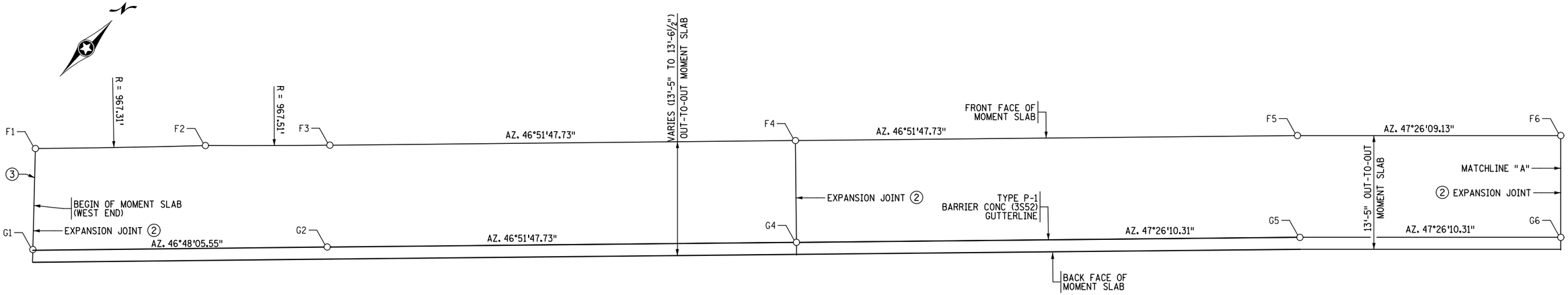
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MOMENT SLAB C PLAN

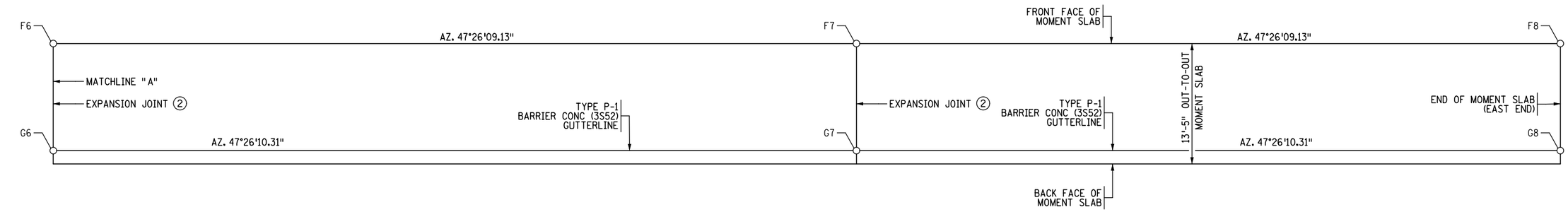
CONCRETE BARRIER AND MOMENT SLAB DETAILS

S.P. 002-602-015, S.P. 127-020-037
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MOMENT SLAB D PLAN - PANEL 1 & 2



MOMENT SLAB D PLAN - PANEL 3 & 4

MOMENT SLAB D ①

FRONT FACE OF MOMENT SLAB					GUTTER LINE				
POINT	X	Y	STA.	TOP OF MOMENT SLAB EL.	POINT	X	Y	STA.	TOP OF MOMENT SLAB EL.
F1	498,924.279	104,176.329	120+49.87	861.43	G1	498,932.165	104,167.284	120+49.87	861.25
F2	498,938.779	104,190.130	120+69.51	860.30	G2	498,957.755	104,191.314	120+83.90	859.73
F3	498,949.550	104,200.071	120+83.90	859.55	G3	NOT USED			
F4	498,989.557	104,237.559	121+38.73	856.65	G4	498,997.763	104,228.801	121+38.72	856.83
F5	499,032.700	104,277.981	121+97.85	853.46	G5	499,041.034	104,269.345	121+98.32	856.61
F6	499,055.542	104,298.960	122+29.04	851.78	G6	499,063.658	104,290.123	122+29.04	851.96
F7	499,121.830	104,359.837	123+19.04	846.92	G7	499,129.945	104,351.000	123+19.04	847.10
F8	499,179.924	104,413.190	123+97.91	843.45	G8	499,188.040	104,404.353	123+97.91	843.63
LENGTH OF SLAB = 348'-6 1/4"					LENGTH OF SLAB = 348'-9 7/8"				

PANEL	LENGTH
1	89'-5 3/8"
2	90'-1 5/8"
3	90'-0"
4	78'-10 1/2"

PANEL LENGTHS PROVIDED ARE MEASURED ALONG FRONT FACE OF MOMENT SLAB.

NOTES:

PLACE C2H JOINTS TO ALIGN WITH BARRIER CONTROL JOINTS.

FOR TYPICAL SECTION, C2H AND EXPANSION JOINTS DETAILS SEE MOMENT SLAB REINFORCEMENT DETAILS.

① STATIONING ALONG ℄ C.S.A.H. 2 (CSAH2).

② ½" EXPANSION JOINT. PLACE TYPE F PREFORMED JOINT FILLER AND MN/DOT APPROVED JOINT SEALER PER SPEC. 3722 AT EXPANSION JOINT. LONGITUDINAL REINFORCEMENT TO STOP AT ALL EXPANSION JOINTS. PLACE ½" DIA. STAINLESS STEEL RODS ACROSS THE JOINT EXTENDING 1'-0" INTO EACH OF THE ADJACENT SLABS. INCIDENTAL TO STRUCTURAL CONCRETE (3B52).

③ SEE APPROACH PANEL PLANS FOR FURTHER DETAILS.

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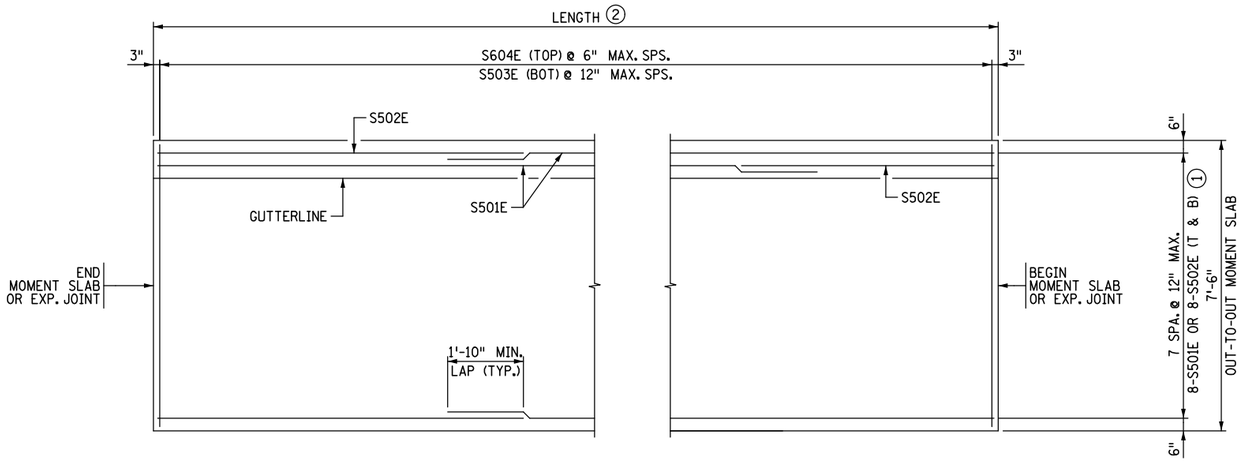
MOMENT SLAB D PLAN

CONCRETE BARRIER AND MOMENT SLAB DETAILS

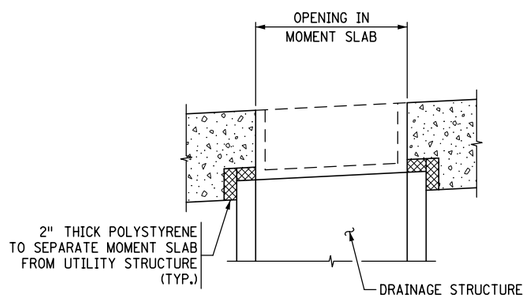
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SHEET NO. 54 OF 148 SHEETS

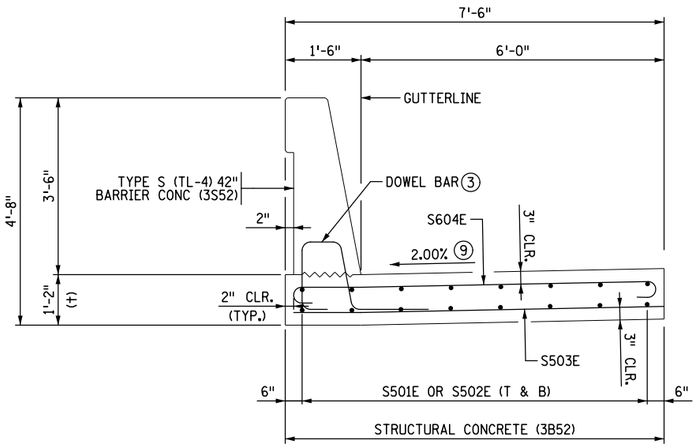
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MOMENT SLAB A & C REINFORCEMENT PLAN



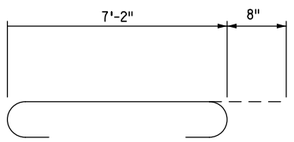
MOMENT SLAB INTERACTION DETAIL



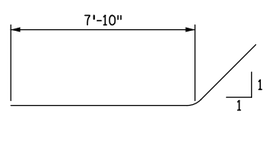
MOMENT SLAB A & C TYPICAL SECTION

BILL OF REINFORCEMENT FOR MOMENT SLAB A					
BAR	NO.	SIZE	LENGTH	SHAPE	LOCATION
S501E	80	5	60'-0"	——	LONGITUDINAL (TOP & BOTTOM)
S502E	80	5	43'-0"	——	LONGITUDINAL (TOP & BOTTOM)
S503E	504	5	7'-2"	——	TRANSVERSE - BOTTOM
S604E	999	6	8'-6"	⊂⊃	TRANSVERSE - TOP
S705E	16	7	11'-0"	⌒	BLOCKOUT

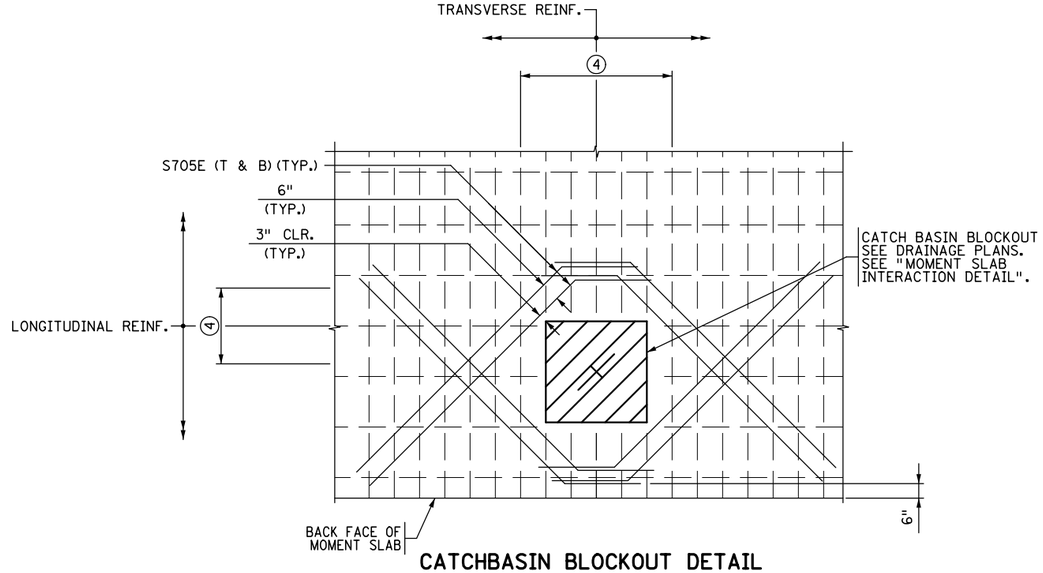
BILL OF REINFORCEMENT FOR MOMENT SLAB C					
BAR	NO.	SIZE	LENGTH	SHAPE	LOCATION
S501E	64	5	60'-0"	——	LONGITUDINAL (TOP & BOTTOM)
S502E	64	5	34'-6"	——	LONGITUDINAL (TOP & BOTTOM)
S503E	352	5	7'-2"	——	TRANSVERSE - BOTTOM
S604E	697	6	8'-6"	⊂⊃	TRANSVERSE - TOP
S705E	16	7	11'-0"	⌒	BLOCKOUT



S604E

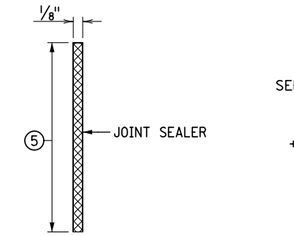


S705E



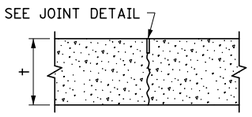
CATCHBASIN BLOCKOUT DETAIL

(MOMENT SLAB A - PANEL 1, 1 THUS)
(MOMENT SLAB C - PANEL 1, 1 THUS)

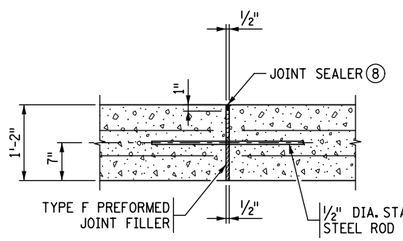


JOINT DETAIL (6)(7)

SAWED & SEALED



C2H JOINT



EXPANSION JOINT

NOTES:

PROVIDE C2H JOINTS AT 10'-0" MAXIMUM SPACING. C2H JOINTS TO ALIGN WITH BARRIER CONTROL JOINTS.

ALL SAW CUTTING OF JOINTS, SEALING OF JOINTS, MATERIAL & INSTALLATION NECESSARY AND CONTRACTION JOINTS ARE TO BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE (3B52).

THE BAR SIZES SHOWN IN THE PLAN ARE U.S. CUSTOMARY DESIGNATIONS. BARS MARKED WITH SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH PER SPEC. 3301.

(1) ALTERNATE PLACEMENT OF BARS TO STAGGER LAPS.

(2) FOR LENGTHS, SEE MOMENT SLAB TABLES ON MOMENT SLAB PLAN SHEETS.

(3) FOR SPACING OF DOWEL BARS, SEE BARRIER STANDARD SHEETS. DOWEL BARS SHALL BE PLACED WITH THE MOMENT SLAB AND IS INCLUDED IN THE BARRIER BARLIST.

(4) CUT AND REPAIR LONGITUDINAL AND TRANSVERSE BARS TO PROVIDE 2" MIN. CLEARANCE AROUND BLOCKOUTS. PROVIDE ADDITIONAL REINFORCEMENT AROUND BLOCKOUT AS SHOWN.

(5) JOINT DEPTH AND TOLERANCE: ±/3 ± 1/4".

(6) CLEAN AND DRY JOINT FACES BY SANDBLASTING AND AIR BLASTING, WHEN SEALING IS REQUIRED.

(7) JOINT WIDTH TOLERANCE IS +1/16" TO -1/32".

(8) MN/DOT APPROVED JOINT SEALER PER SPEC. 3722.

(9) VARIES. SEE SUPERELEVATION PLANS FOR INFORMATION.

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DEREK R. HUSTON
LIC. NO. 62058 DATE: 12/2/2024

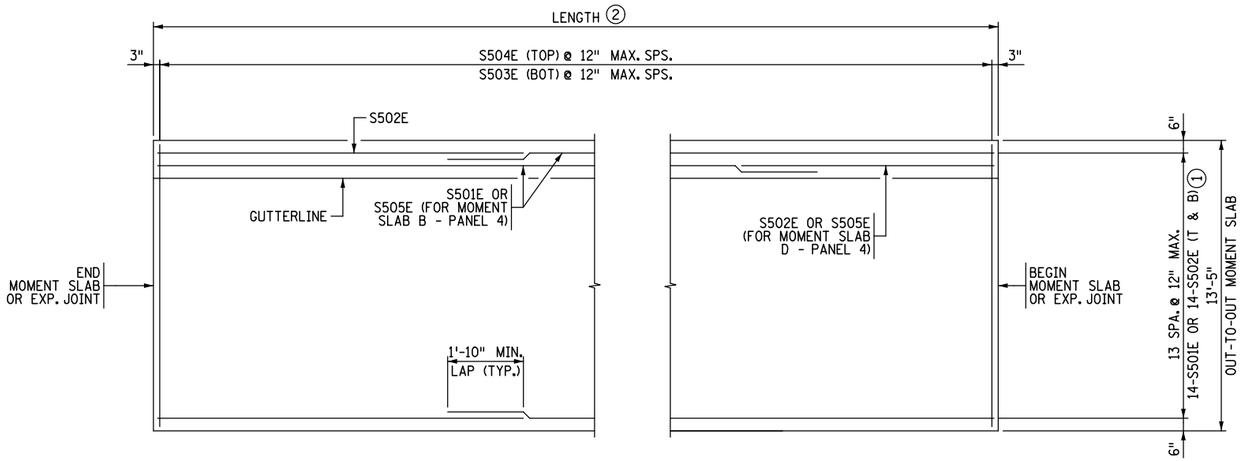
TKDA

MOMENT SLAB REINF. (1 OF 2)

CONCRETE BARRIER AND MOMENT SLAB DETAILS

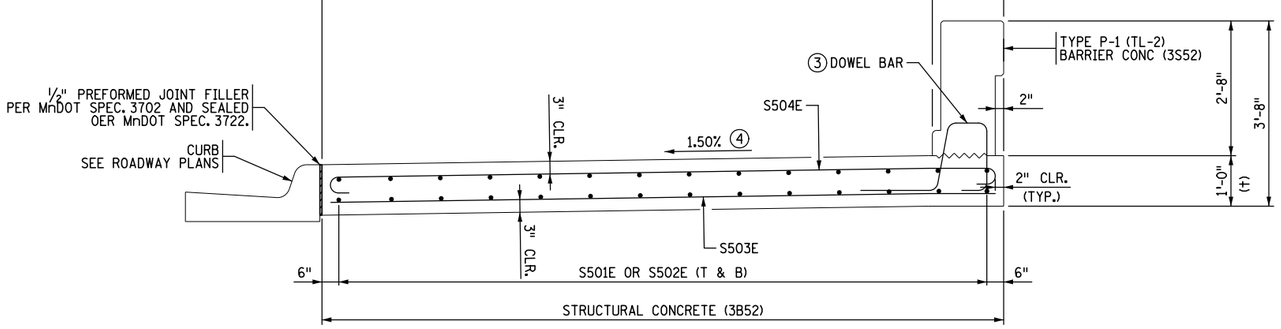
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 55 OF 148 SHEETS



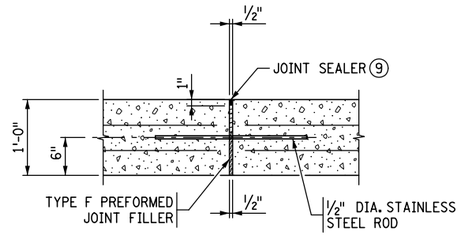
MOMENT SLAB B & D REINFORCEMENT PLAN

(TYPICAL EXCEPT MOMENT SLAB B PANEL 4 & MOMENT SLAB D PANEL 1) (8)

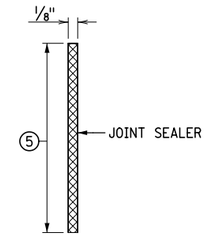


MOMENT SLAB B & D TYPICAL SECTION

(TYPICAL EXCEPT MOMENT SLAB B PANEL 4 & MOMENT SLAB D PANEL 1) (8)

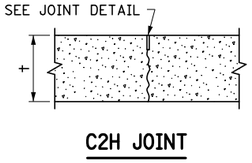


EXPANSION JOINT

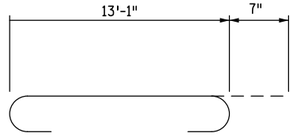


JOINT DETAIL (6)(7)

SAWED & SEALED



C2H JOINT



S504E

NOTES:

PROVIDE C2H JOINTS AT 10'-0" MAXIMUM SPACING. C2H JOINTS TO ALIGN WITH BARRIER CONTROL JOINTS.

ALL SAW CUTTING OF JOINTS, SEALING OF JOINTS, MATERIAL & INSTALLATION NECESSARY AND CONTRACTION JOINTS ARE TO BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE (3B52).

THE BAR SIZES SHOWN IN THE PLAN ARE U.S. CUSTOMARY DESIGNATIONS. BARS MARKED WITH SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH PER SPEC. 3301.

(1) ALTERNATE PLACEMENT OF BARS TO STAGGER LAPS.

(2) FOR LENGTHS, SEE MOMENT SLAB TABLES ON MOMENT SLAB PLAN SHEETS.

(3) FOR SPACING OF DOWEL BARS, SEE BARRIER STANDARD SHEETS. DOWEL BARS SHALL BE PLACED WITH THE MOMENT SLAB AND IS INCLUDED IN THE BARRIER BARLIST.

(4) VARIES. SEE SUPERELEVATION PLANS FOR INFORMATION.

(5) JOINT DEPTH AND TOLERANCE: +/3 ± 1/4".

(6) CLEAN AND DRY JOINT FACES BY SANDBLASTING AND AIR BLASTING, WHEN SEALING IS REQUIRED.

(7) JOINT WIDTH TOLERANCE IS +1/16" TO -1/32".

(8) FOR MOMENT SLAB B PANEL 4 AND MOMENT SLAB D PANEL 1 REINFORCEMENT DETAILS BARLIST, SEE "MOMENT SLAB REINFORCEMENT (3 OF 3)" SHEET.

(9) MN/DOT APPROVED JOINT SEALER PER SPEC. 3722.

BILL OF REINFORCEMENT FOR MOMENT SLAB B (8)

BAR	NO.	SIZE	LENGTH	SHAPE	LOCATION
S501E	112	5	60'-0"	——	LONGITUDINAL (TOP & BOTTOM)
S502E	140	5	32'-0"	——	LONGITUDINAL (TOP & BOTTOM)
S503E	418	5	13'-1"	——	TRANSVERSE - BOTTOM
S504E	418	5	14'-3"	⊂⊃	TRANSVERSE - TOP
S505E	28	5	23'-3"	——	LONGITUDINAL (T&B) - PANEL 4

BILL OF REINFORCEMENT FOR MOMENT SLAB D (8)

BAR	NO.	SIZE	LENGTH	SHAPE	LOCATION
S501E	112	5	60'-0"	——	LONGITUDINAL (TOP & BOTTOM)
S502E	84	5	32'-0"	——	LONGITUDINAL (TOP & BOTTOM)
S503E	352	5	13'-1"	——	TRANSVERSE - BOTTOM
S504E	352	5	14'-3"	⊂⊃	TRANSVERSE - TOP
S502E	28	5	23'-3"	——	LONGITUDINAL (T & B) - PANEL 4

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
DRW: DRH
CHK: ADL

I HEREBY CERTIFY THAT THIS SHEET 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: Derek R Huston
DEREK R. HUSTON
LIC. NO. 62058 DATE: 12/2/2024

TKDA

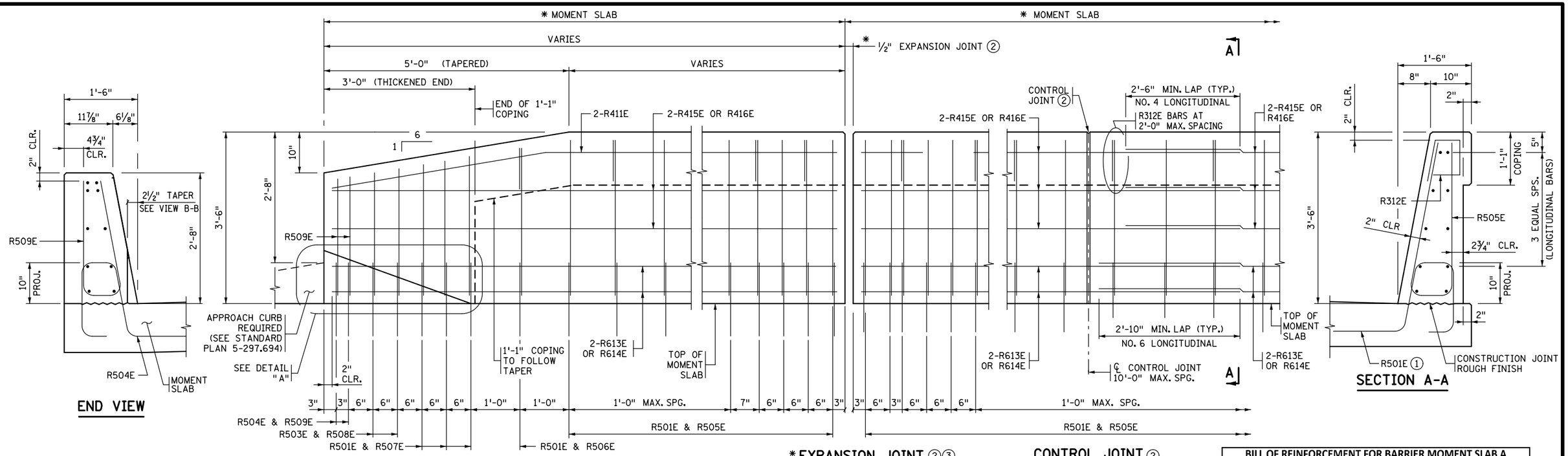
MOMENT SLAB REINF. (2 OF 2)

CONCRETE BARRIER AND MOMENT SLAB DETAILS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 56 OF 148 SHEETS

DATE: 12/2/2024 TIME: 3:15:18 PM
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END VIEW

SECTION A-A

* EXPANSION JOINT ②③

CONTROL JOINT ②

INSIDE ELEVATION OF BARRIER

BARRIER MEETS MASH TL-3 REQUIREMENTS ON MOMENT SLABS.

BILL OF REINFORCEMENT FOR BARRIER MOMENT SLAB A

BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	527	5'-9"		BARRIER DOWEL
~~R502E~~	~~0~~	~~'-"~~		~~BARRIER VERTICAL~~
R503E	2	5'-8"		BARRIER DOWEL
R504E	2	5'-7"		BARRIER DOWEL
R505E	523	7'-0"		BARRIER VERTICAL
R506E	1	6'-10"		BARRIER VERTICAL
R507E	3	SER. 1		BARRIER VERTICAL
R508E	2	5'-9"		BARRIER LONGITUDINAL
R509E	2	5'-4"		BARRIER LONGITUDINAL
~~R510E~~				~~BARRIER LONGITUDINAL~~
R411E	2	13'-0"		BARRIER LONGITUDINAL
R312E	265	2'-8"		COPING VERTICAL
R613E	40	40'-0"		BARRIER LONGITUDINAL
R614E	20	26'-0"		BARRIER LONGITUDINAL
R415E	60	40'-0"		BARRIER LONGITUDINAL
R416E	30	26'-0"		BARRIER LONGITUDINAL

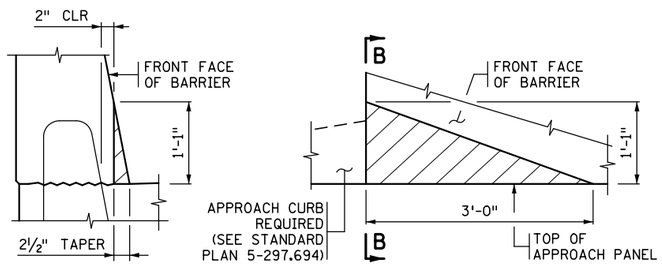
SER. 1= 1 SERIES OF 3 BARS (6'-2" TO 6'-6")

BILL OF REINFORCEMENT FOR BARRIER MOMENT SLAB C

BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	369	5'-9"		BARRIER DOWEL
~~R502E~~				~~BARRIER VERTICAL~~
R503E	2	5'-8"		BARRIER DOWEL
R504E	2	5'-7"		BARRIER DOWEL
R505E	365	7'-2"		BARRIER VERTICAL
R506E	1	6'-10"		BARRIER VERTICAL
R507E	3	SER. 1		BARRIER VERTICAL
R508E	2	5'-9"		BARRIER LONGITUDINAL
R509E	2	5'-4"		BARRIER LONGITUDINAL
~~R510E~~				~~BARRIER LONGITUDINAL~~
R411E	2	13'-0"		BARRIER LONGITUDINAL
R312E	188	2'-8"		BARRIER LONGITUDINAL
R613E	32	40'-0"		BARRIER LONGITUDINAL
R614E	16	17'-6"		BARRIER LONGITUDINAL
R415E	48	40'-0"		BARRIER LONGITUDINAL
R416E	24	17'-0"		BARRIER LONGITUDINAL

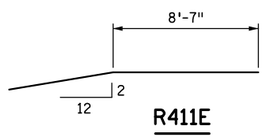
SER. 1= 1 SERIES OF 3 BARS (6'-2" TO 6'-6")

* MODIFIED
- ELEVATION TO SHOW MOMENT SLABS INSTEAD OF BRIDGE ELEMENTS.
- BAR LIST ADDED FOR MOMENT SLAB A AND C.
- ADDED NOTE 3 AND 4.

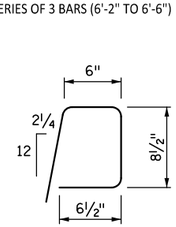


VIEW B-B
AT BARRIER END

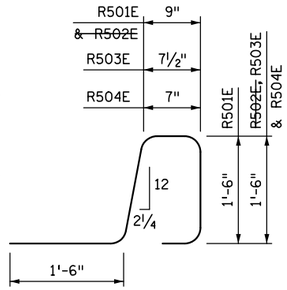
DETAIL "A"
ELEVATION VIEW



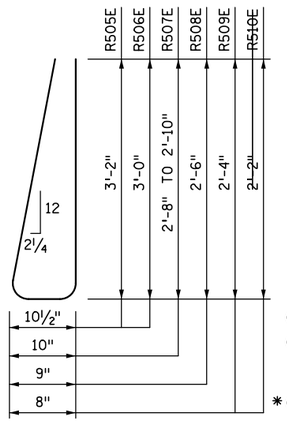
R411E



R312E



R501E, ~~R502E,~~ R503E, R504E



R505E, R506E, R507E
R508E, R509E, ~~R510E~~

GENERAL NOTES

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

CONCRETE BARRIER = 552 LBS./FT. (0.136 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 TAB__.

① PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT IN MOMENT SLAB.

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

* ③ REBAR AND CONCRETE ARE INCLUDED IN THE PAY ITEM BY LINEAR FOOT FOR THE BARRIER.

* ④ BARS R501E, R503E AND R504E (DOWELS) SPACING AND CLEARANCES ARE SHOWN ON THIS SHEET. DOWEL QUANTITIES ARE INCLUDED IN THE MOMENT SLAB REINFORCEMENT.

REVISION: DECEMBER 21, 2022

APPROVED: AUGUST 24, 2016
Kevin Western
STATE BRIDGE ENGINEER

REV. NO.	DATE	REVISION DESCRIPTION	BY
--			

TITLE: CONCRETE BARRIER 42" (TYPE S, TL-4) ~~PARAPET ABUTMENT WITH GUARDRAIL CONNECTION (WITHOUT CONCRETE WEARING COURSE)~~

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
DRW: DRH
CHK: ADL

I HEREBY CERTIFY THAT THIS SHEET 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: Derek R Huston
DEREK R. HUSTON
LIC. NO. 62058 DATE: 12/2/2024

TKDA

CONCRETE BARRIER 42" (TYPE S, TL-4)

S.P. 002-602-015, S.P. 127-020-037
S.A.P. 002-602-015, S.A.P. 127-020-037

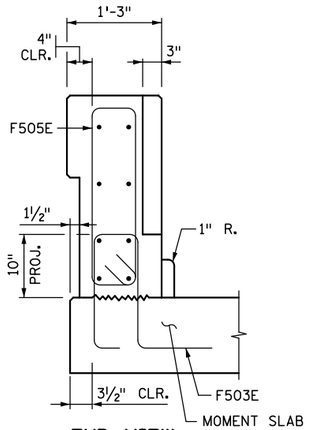
CONCRETE BARRIER AND MOMENT SLAB DETAILS

CODE 59

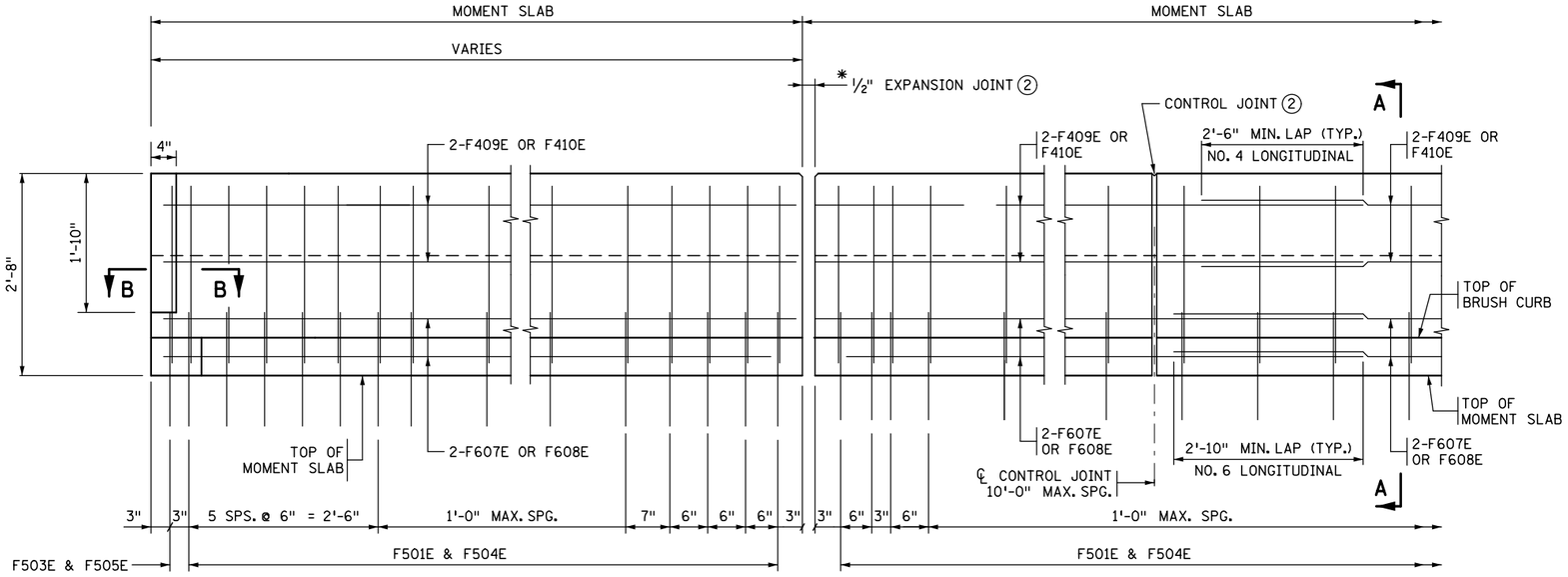
FIG. 5-397.141(A)

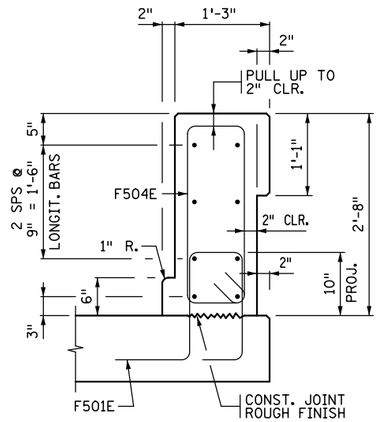
SHEET NO. 57 OF 148 SHEETS

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END VIEW





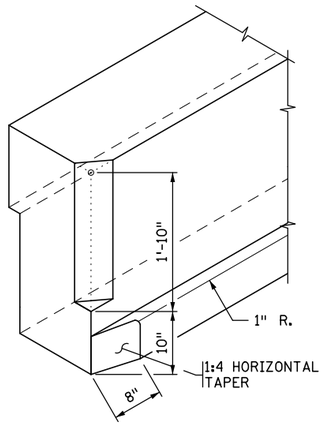
SECTION A-A

* EXPANSION JOINT ②

INSIDE ELEVATION OF PARAPET

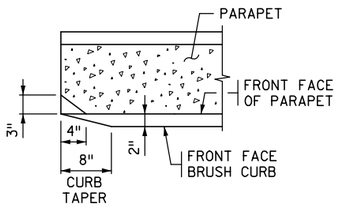
CONTROL JOINT ②

PARAPET MEETS MASH TL-2 REQUIREMENTS

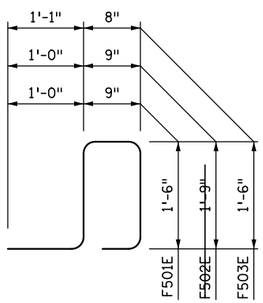


ISOMETRIC VIEW

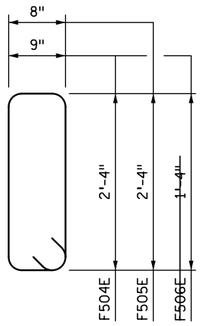
(END OF PARAPET)



SECTION B-B



F501E, ~~F502E~~, F503E



F504E, F505E, ~~F506E~~

BILL OF REINFORCEMENT FOR BARRIER MOMENT SLAB B				
BAR	NO.	LENGTH	SHAPE	LOCATION
F501E	438	5'-3"		BARRIER DOWEL
~~F502E~~				~~BARRIER VERTICAL~~
F503E	1	5'-3"		BARRIER DOWEL
F504E	438	7'-1"		BARRIER DOWEL
F505E	2	6'-11"		BARRIER VERTICAL
~~F506E~~				~~BARRIER VERTICAL~~
F607E	36	40'-0"		BARRIER LONGITUDINAL
F608E	20	16'-0"		BARRIER LONGITUDINAL
F409E	36	40'-0"		BARRIER LONGITUDINAL
F410E	20	15'-0"		BARRIER LONGITUDINAL

BILL OF REINFORCEMENT FOR BARRIER MOMENT SLAB D				
BAR	NO.	LENGTH	SHAPE	LOCATION
F501E	369	5'-3"		BARRIER DOWEL
~~F502E~~				~~BARRIER VERTICAL~~
F503E	1	5'-3"		BARRIER DOWEL
F504E	369	7'-1"		BARRIER DOWEL
F505E	2	6'-11"		BARRIER VERTICAL
~~F506E~~				~~BARRIER VERTICAL~~
F607E	32	40'-0"		BARRIER LONGITUDINAL
F608E	16	16'-0"		BARRIER LONGITUDINAL
F409E	32	40'-0"		BARRIER LONGITUDINAL
F410E	16	15'-0"		BARRIER LONGITUDINAL

GENERAL NOTES

~~CONTINUOUSLY GROUND ALL METAL RAILINGS, SEE THE SPECIAL PROVISIONS. REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING~~ BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.

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

CONCRETE PARAPET = 473 LBS./FT. (0.117 CU. YDS./FT.)

FINISH ALL EDGES OF PARAPET 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.~~

PARAPET QUANTITIES ARE LISTED IN TAB D.

① 4½" MIN. FROM FRONT FACE OF PARAPET TO VERTICAL METAL RAILING POST IF NOT PROTECTED BY A TRAFFIC BARRIER.

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

* ③ REBAR AND CONCRETE ARE INCLUDED IN THE PAY ITEM BY LINEAR FOOT FOR THE PARAPET.

* ④ F501E AND F503E (DOWELS) SPACING AND CLEARANCES ARE SHOWN ON THIS SHEET. DOWEL QUANTITIES ARE INCLUDED IN THE MOMENT SLAB REINFORCEMENT.

REVISION: DECEMBER 21, 2022

APPROVED: APRIL 09, 2020
Kevin Western
STATE BRIDGE ENGINEER

* MODIFIED
- ELEVATION TO SHOW MOMENT SLABS INSTEAD OF BRIDGE ELEMENTS.
- BAR LIST ADDED FOR MOMENT SLAB A AND C.
- ADDED NOTE 3 AND 4.

REV. NO.	DATE	REVISION DESCRIPTION	BY
--			

TITLE: CONCRETE PARAPET (TYPE P-1, TL-2)
~~PARAPET ABUTMENT~~
~~(WITHOUT CONCRETE WEARING COURSE)~~

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DRH
DRW: DRH
CHK: ADL

I HEREBY CERTIFY THAT THIS SHEET 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: Derek R Huston
DEREK R. HUSTON
LIC. NO. 62058 DATE: 12/2/2024

TKDA

CONCRETE PARAPET (TYPE P-1, TL-2)

CONCRETE BARRIER AND MOMENT SLAB DETAILS

S.P. 002-602-015, S.P. 127-020-037
S.A.P. 002-602-015, S.A.P. 127-020-037

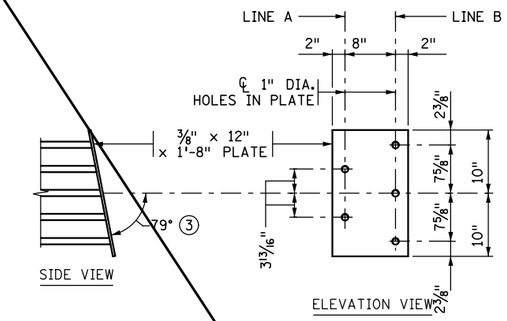
CODE 69

FIG. 5-397.166(F)

SHEET NO. 58 OF 148 SHEETS

DATE: 12/2/2024 TIME: 3:15:25 PM
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GUARDRAIL CONNECTION



NOTES

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

GUARDRAIL CONNECTION IS INCIDENTAL.

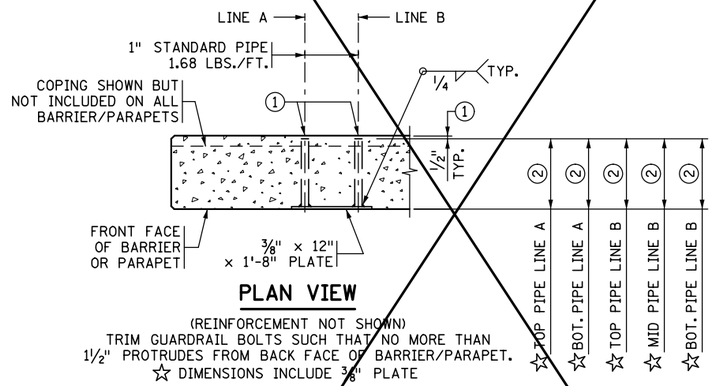
① REMOVE CONCRETE FROM PIPE ENDS AFTER SLIPFORMING OR FORM REMOVAL.

② SEE PIPE LENGTH TABLE.

③ 90° FOR VERTICAL PARAPETS.

GUARDRAIL CONNECTION DETAIL

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



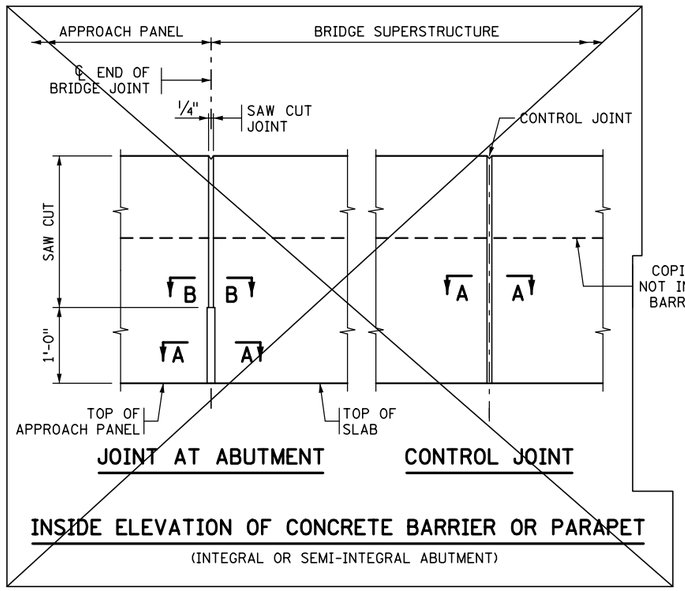
PLAN VIEW

(REINFORCEMENT NOT SHOWN)
TRIM GUARDRAIL BOLTS SUCH THAT NO MORE THAN 1½" PROTRUDES FROM BACK FACE OF BARRIER/PARAPET.
☆ DIMENSIONS INCLUDE 3/8" PLATE

PIPE LENGTH TABLE

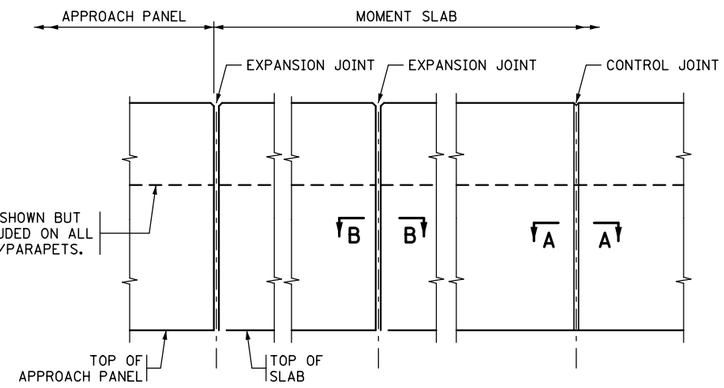
BARRIER/PARAPET TYPE STD FIGURE 5-397.	PIPE LENGTH					WEIGHT
	TOP PIPE LINE A	BOT. PIPE LINE A	TOP PIPE LINE B	MID. PIPE LINE B	BOT. PIPE LINE B	
36" SINGLE SLOPE						
138(A),(B),(E), 139(A),(B)	1'-0¾"	1'-0¼"	1'-0"	11½"	1'-1"	34 LBS.
138(C),(D), 139(C),(D)	10¾"	1'-0¼"	10"	11½"	1'-1"	34 LBS.
42" SINGLE SLOPE						
140(A),(B), 141(A),(B)	1'-0¾"	1'-2¼"	1'-0"	1'-1½"	1'-3"	36 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



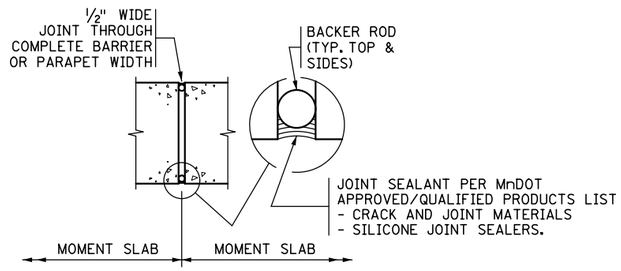
INSIDE ELEVATION OF CONCRETE BARRIER OR PARAPET

(INTEGRAL OR SEMI-INTEGRAL ABUTMENT)



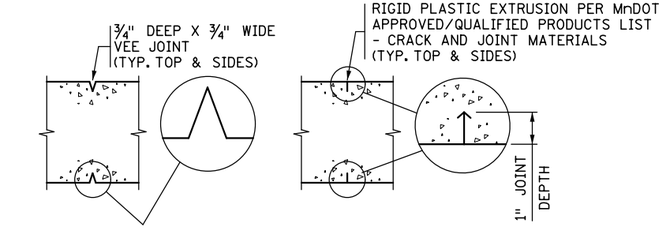
✳ INSIDE ELEVATION OF CONCRETE BARRIER OR PARAPET

(MOMENT SLAB)



SECTION B-B

✳ EXPANSION JOINT DETAILS



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 1/8" BELOW THE SURFACE; FINISH OVER GROOVE COMPLETELY HIDING THE EXTRUSION.

✳ MODIFIED: THIS IS HAS BEEN MODIFIED TO MATCH THE PROJECT CONDITIONS.

REVISION: NOVEMBER 29, 2023

APPROVED: DECEMBER 21, 2022
Edward A. Hagen
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES:
DRW:
CHK:

I HEREBY CERTIFY THAT THIS SHEET 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: Derek R. Huston
DEREK R. HUSTON
LIC. NO. 62058 DATE: 12/2/2024

TKDA

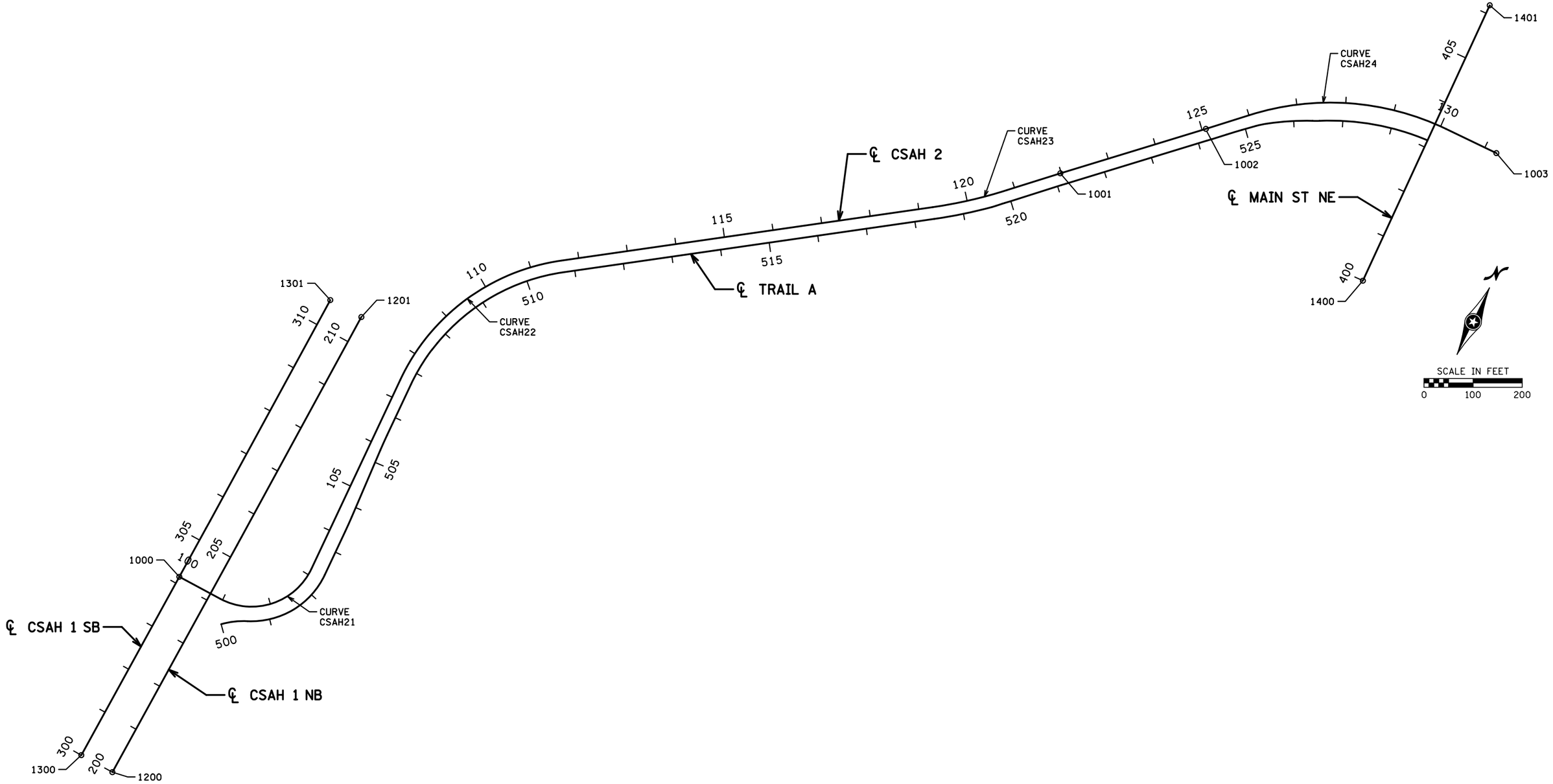
MISCELLANEOUS BARRIER AND PARAPET DETAIL

CONCRETE BARRIER AND MOMENT SLAB DETAILS

FIG. 5-397.174

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

DATE: 12/2/2024 TIME: 3:15:28 PM
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DATE: 12/2/2024 TIME: 11:37:56 AM
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HORIZONTAL CONTROL

THE HORIZONTAL DATUM OF THIS MAP IS BASED ON ANOKA COUNTY COORDINATE SYSTEM WHICH IS RELATED TO THE MINNESOTA STATE PLANE COORDINATE SYSTEM NAD 1983 (2011).

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

ALIGNMENT PLAN AND TABULATIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

DATE: 12/2/2024 TIME: 11:38:01 AM
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ALIGNMENT TABULATION

POINT NUMBER OR CUR/SPI NAME	POINT	STATION	CIRCULAR CURVE DATA / SPIRAL CURVE DATA					COORDINATES		AZIMUTH
			DELTA / ANGLE (θs)	DEGREE	RADIUS / ST	TANGENT / LT	LENGTH / LS	X	Y	
CSAH 2 <CSAH2>										
1000	POT	100+00.000						497,757.2808	102,774.3792	92° 39' 45.89"
	PC	100+94.725						497,851.9039	102,769.9785	
CSAH21	PI	102+37.252	93° 06' 24.81" LT	42° 26' 28.75"	135.000'	142.526'	219.378'	497,994.2764	102,763.3572	PI
	CC							497,858.1756	102,904.8327	
	PT	103+14.103						497,993.1716	102,905.8792	359° 33' 21.08"
	PC	107+39.335						497,989.8753	103,331.0976	
CSAH22	PI	109+70.900	56° 39' 47.51" RT	13° 20' 24.79"	429.497'	231.566'	424.755'	497,988.0803	103,562.6564	PI
	CC							498,419.3589	103,334.4270	
	PT	111+64.089						498,180.5506	103,691.4114	56° 13' 08.58"
	PC	119+28.799						498,816.1541	104,116.6048	
CSAH23	PI	120+06.522	9° 21' 20.86" LT	6° 01' 55.60"	949.846'	77.723'	155.100'	498,880.7548	104,159.8202	PI
	CC							498,288.0212	104,906.0881	
	PT	120+83.899						498,937.4710	104,212.9624	
1001	POT	121+98.022						499,020.7495	104,290.9934	46° 51' 47.73"
1002	POT	125+08.038						499,249.0835	104,500.6912	
	PC	126+01.355						499,317.1791	104,564.4959	
CSAH24	PI	128+16.916	43° 09' 36.40" RT	10° 30' 46.75"	545.000'	215.561'	410.541'	499,474.4794	104,711.8842	PI
	CC							499,689.8185	104,166.7963	
	PT	130+11.896						499,690.0407	104,711.7963	90° 01' 24.12"
1003	POT	131+25.957						499,804.1019	104,711.7498	
CSAH 1 NB <CSAH1NB>										
1200	POT	200+00.000						497,806.2915	102,356.3552	3° 10' 54.02"
	PC	205+27.912						497,835.5917	102,883.4531	
CSAH1NB1	PI	205+36.655	0° 12' 01.38" LT	1° 08' 45.30"	5,000.000'	8.743'	17.487'	497,836.0770	102,892.1830	PI
	CC							492,843.2989	103,160.9637	
	PT	205+45.398						497,836.5317	102,900.9146	2° 58' 52.64"
1201	POT	210+57.103						497,863.1454	103,411.9266	
CSAH 1 SB <CSAH1SB>										
1300	POT	300+00.000						497,734.4025	102,360.3514	3° 10' 54.02"
	PC	305+27.912						497,763.7027	102,887.4492	
CSAH1SB1	PI	305+36.529	0° 12' 01.38" LT	1° 09' 45.57"	4,928.000'	8.618'	17.235'	497,764.1810	102,896.0534	PI
	CC							492,843.2989	103,160.9637	
	PT	305+45.147						497,764.6292	102,904.6593	2° 58' 52.64"
1301	POT	310+56.851						497,791.2428	103,415.6713	
MAIN ST NE <MAINST>										
1400	POT	400+00.000						499,671.1656	104,359.8320	
1401	POT	406+17.751						499,661.7436	104,977.5111	

GENERAL NOTES:

- <XXXX> DENOTES GEOPAK ALIGNMENT NAME.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024

AARON D. CAMERON

TKDA

ALIGNMENT PLAN AND TABULATIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

DATE: 12/2/2024 TIME: 11:38:07 AM
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ALIGNMENT TABULATION

POINT NUMBER OR CUR/SPI NAME	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH			
			SPIRAL CURVE DATA					X	Y	
			ANGLE (Os)	DEGREE	ST	LT	LS			
TRAIL A <TRAILA>										
	PC	500+00.000						497,875.7595	102,724.0196	48° 25' 31.18"
TRAILA1	PI	500+27.555	18° 50' 57.88" RT	34° 30' 55.91"	166.000'	27.555'	54.611'	497,896.3729	102,742.3048	PI
	CC							497,985.9164	102,599.8364	
	PRC	500+54.611						497,921.7885	102,752.9495	67° 16' 29.06"
	PRC	500+54.611						497,921.7885	102,752.9495	
TRAILA2	PI	501+65.094	67° 43' 07.98" LT	34° 47' 42.03"	164.667'	110.482'	194.622'	498,023.6938	102,795.6302	PI
	CC							497,858.1756	102,904.8327	
	PT	502+49.234						498,022.8373	102,906.1092	359° 33' 21.08"
	PC	503+46.999						498,022.0795	103,003.8719	
TRAILA3	PI	503+63.661	1° 54' 32.95" LT	5° 43' 46.48"	1,000.000'	16.662'	33.321'	498,021.9503	103,020.5334	PI
	CC							497,022.1095	102,996.1202	
	PT	503+80.320						498,021.2662	103,037.1814	357° 38' 48.13"
	PC	505+27.096						498,015.2394	103,183.8335	
TRAILA4	PI	505+43.758	1° 54' 32.95" RT	5° 43' 46.48"	1,000.000'	16.662'	33.321'	498,014.5552	103,200.4815	PI
	CC							499,014.3960	103,224.8948	
	PT	505+60.417						498,014.4260	103,217.1431	359° 33' 21.08"
	PC	506+74.559						498,013.5413	103,331.2811	
TRAILA5	PI	507+08.395	9° 31' 55.63" RT	14° 07' 05.44"	405.830'	33.836'	67.517'	498,013.2790	103,365.1165	PI
	CC							498,419.3589	103,334.4270	
	PCC	507+42.075						498,018.6235	103,398.5282	9° 05' 16.71"
	PCC	507+42.075						498,018.6235	103,398.5282	
TRAILA6	PI	507+50.130	4° 36' 45.38" RT	28° 38' 52.87"	199.999'	8.055'	16.101'	498,019.8957	103,406.4819	PI
	CC							498,216.1120	103,366.9382	
	PT	507+58.176						498,021.8035	103,414.3075	13° 42' 02.09"
	PC	507+74.729						498,025.7239	103,430.3891	
TRAILA7	PI	509+32.364	42° 31' 06.49" RT	14° 08' 29.06"	405.163'	157.635'	300.666'	498,063.0593	103,583.5384	PI
	CC							498,419.3589	103,334.4270	
	PT	510+75.395						498,194.0804	103,671.1863	56° 13' 08.58"
	PC	518+40.105						498,829.6839	104,096.3797	
TRAILA8	PI	519+00.237	7° 03' 51.42" LT	5° 52' 53.18"	974.180'	60.132'	120.111'	498,879.6637	104,129.8143	PI
	CC							498,288.0212	104,906.0881	
	PCC	519+60.217						498,925.1523	104,169.1416	49° 09' 17.16"
	PCC	519+60.217						498,925.1523	104,169.1416	
TRAILA9	PI	519+64.382	2° 23' 09.78" LT	28° 38' 52.40"	200.000'	4.165'	8.329'	498,928.3030	104,171.8657	PI
	CC							498,794.3487	104,320.4374	
	PCC	519+68.546						498,931.3377	104,174.7185	46° 46' 07.39"
	PCC	519+68.546						498,931.3377	104,174.7185	
TRAILA10	PI	519+75.161	0° 46' 43.70" LT	5° 53' 12.08"	973.311'	6.615'	13.230'	498,936.1574	104,179.2494	PI
	CC							498,264.6734	104,883.8676	
	PRC	519+81.776						498,940.9150	104,183.8455	45° 59' 23.69"

ALIGNMENT TABULATION

POINT NUMBER OR CUR/SPI NAME	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH			
			SPIRAL CURVE DATA					X	Y	
			ANGLE (Os)	DEGREE	ST	LT	LS			
TRAIL A <TRAILA>										
	PRC	519+81.776						498,940.9150	104,183.8455	45° 59' 23.69"
TRAILA11	PI	519+84.523	1° 34' 25.79" RT	28° 38' 52.40"	200.000'	2.747'	5.494'	498,942.8907	104,185.7541	PI
	CC							499,079.8720	104,040.0020	
	PRC	519+87.269						498,944.9181	104,187.6077	47° 33' 49.49"
	PRC	519+87.269						498,944.9181	104,187.6077	
TRAILA12	PI	519+93.221	0° 42' 01.76" LT	5° 53' 07.68"	973.513'	5.951'	11.902'	498,949.3102	104,191.6233	PI
	CC							498,288.0212	104,906.0881	
	PT	519+99.171						498,953.6528	104,195.6923	46° 51' 47.73"
	PC	521+08.091						499,033.1341	104,270.1652	
TRAILA13	PI	521+13.088	0° 34' 21.40" RT	5° 43' 46.48"	1,000.000'	4.997'	9.994'	499,036.7806	104,273.5819	PI
	CC							499,716.8760	103,540.4413	
	PT	521+18.085						499,040.4610	104,276.9620	47° 26' 09.13"
	PC	524+18.283						499,261.5631	104,480.0205	
TRAILA14	PI	524+23.280	0° 34' 21.40" LT	5° 43' 46.48"	1,000.000'	4.997'	9.994'	499,265.2436	104,483.4006	PI
	CC							498,585.1481	105,216.5412	
	PT	524+28.277						499,268.8900	104,486.8172	46° 51' 47.73"
	PC	524+59.714						499,291.8299	104,508.3116	
TRAILA15	PI	524+76.482	1° 55' 16.73" RT	5° 43' 46.48"	1,000.000'	16.768'	33.533'	499,304.0660	104,519.7767	PI
	CC							499,975.5718	103,778.5876	
	PT	524+93.247						499,316.6797	104,530.8251	48° 47' 04.45"
	PC	525+21.840						499,338.1887	104,549.6650	
TRAILA16	PI	525+34.225	7° 05' 12.35" RT	28° 38' 52.40"	200.000'	12.385'	24.737'	499,347.5048	104,557.8251	PI
	CC							499,469.9671	104,399.2176	
	PCC	525+46.578						499,357.7564	104,564.7735	55° 52' 16.81"
	PCC	525+46.578						499,357.7564	104,564.7735	
TRAILA17	PI	525+92.565	10° 17' 19.59" RT	11° 13' 00.17"	510.807'	45.987'	91.727'	499,395.8237	104,590.5748	PI
	CC							499,644.3464	104,141.9376	
	PRC	526+38.305						499,437.8873	104,609.1620	66° 09' 36.40"
	PRC	526+38.305						499,437.8873	104,609.1620	
TRAILA18	PI	526+45.605	4° 10' 50.70" LT	28° 38' 52.40"	200.000'	7.300'	14.594'	499,444.5644	104,612.1126	PI
	CC							499,357.0508	104,792.0977	
	PRC	526+52.898						499,451.0088	104,615.5420	61° 58' 45.70"
	PRC	526+52.898						499,451.0088	104,615.5420	
TRAILA19	PI	527+67.345	25° 22' 34.02" RT	11° 16' 16.68"	508.333'	114.447'	225.139'	499,552.0397	104,669.3078	PI
	CC							499,689.8185	104,166.7963	
	PT	528+78.038						499,666.3644	104,674.5883	87° 21' 19.72"

GENERAL NOTES:

- <XXXX> DENOTES GEOPAK ALIGNMENT NAME.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

ALIGNMENT PLAN AND TABULATIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 62 OF 148 SHEETS

GENERAL NOTES:

- ALL UTILITY WORK SHOWN SHALL BE DONE BY OTHERS UNLESS OTHERWISE NOTED.
- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-22, ENTITLED, "STANDARD GUIDELINES FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES". THIS MUST BE INCLUDED IN THE PLAN WHETHER UTILITIES ARE AFFECTED OR NOT.
- SOME UTILITIES MAY HAVE RELOCATED THEIR UTILITIES PRIOR TO CONSTRUCTION.
- ALL POWER LINES ARE DISTRIBUTION UNLESS NOTED OTHERWISE.
- NOT ALL UTILITIES OUTSIDE OF CONSTRUCTION LIMITS ARE SHOWN.
- THIS IS A REMINDER THAT UNDER STATE LAW IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL UTILITIES THAT MAY HAVE FACILITIES IN THE AREA. CONTACT MUST BE MADE THROUGH GOPHER STATE ONE CALL.

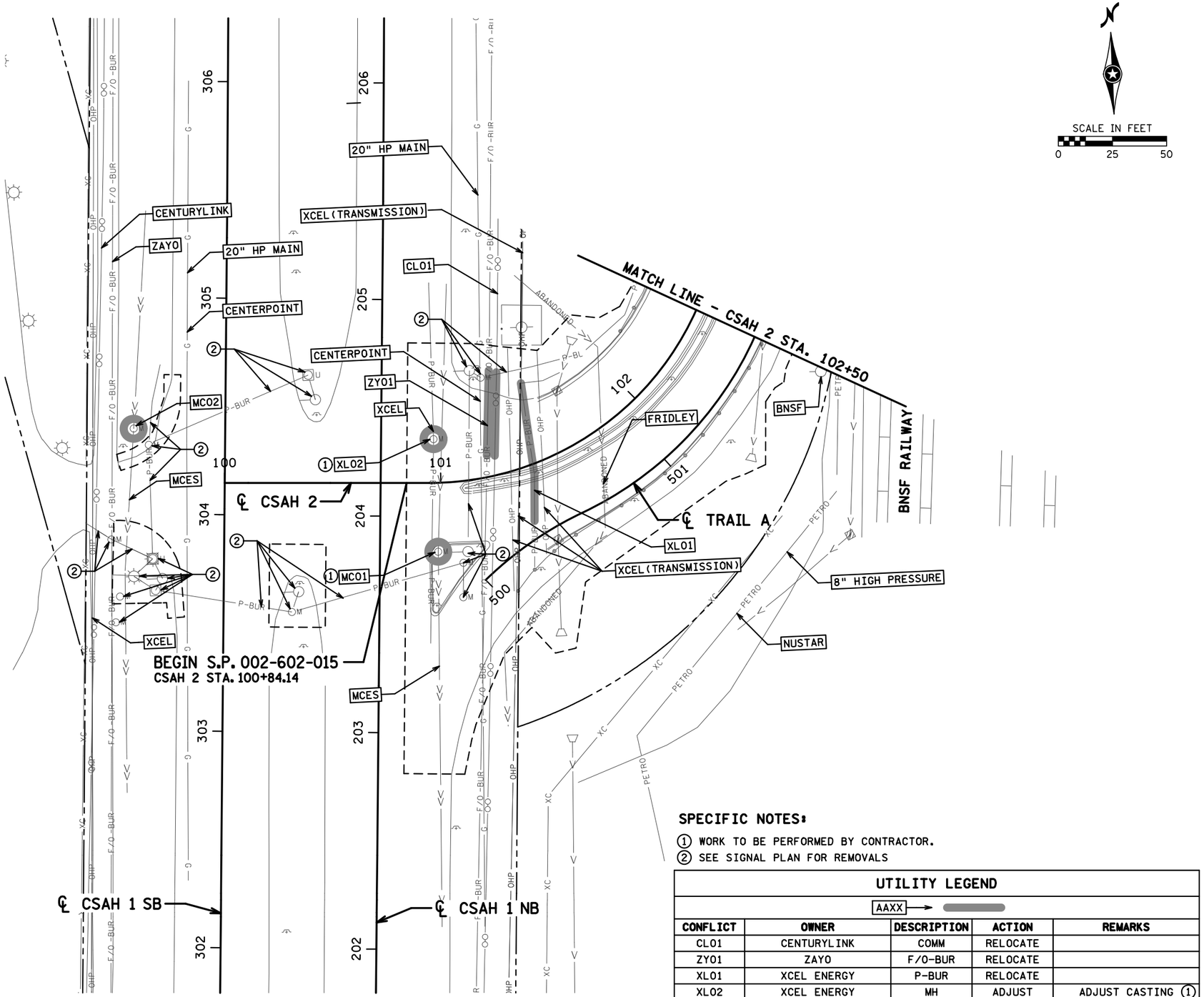
UTILITIES

THE FOLLOWING LIST SHOWS THE UTILITY COMPANIES WITHIN THE PROJECT AREA AND THEIR ABBREVIATIONS:

BNSF = BURLINGTON NORTHERN SANTA FE RAILWAY
CENTERPOINT = CENTERPOINT ENERGY MINNESOTA GAS
CENTURYLINK = CENTURYLINK
COLUMBIA HEIGHTS = CITY OF COLUMBIA HEIGHTS
FRIDLEY = CITY OF FRIDLEY
MINNEAPOLIS = CITY OF MINNEAPOLIS
MCES = METROPOLITAN COUNCIL ENVIRONMENTAL SERVICES
NUSTAR = NUSTAR ENERGY, LP
XCEL = XCEL ENERGY
ZAYO = ZAYO GROUP LLC

UTILITY ABBREVIATIONS

ANC = ANCHOR
APR = APRON
CB = CATCH BASIN
F/O-BUR = BURIED FIBER OPTIC CABLE
GAS = GAS MAIN
GV = GATE VALVE
HH = HAND HOLE
HYD = HYDRANT
LGT = BURIED LIGHTING
LP = LIGHT POLE
MH = MANHOLE
OHP = OVERHEAD POWER LINE
OHU = OVERHEAD UTILITY
P-BUR = BURIED POWER LINE
PED = PEDESTAL
POLE = UTILITY POLE
SAN = SANITARY SEWER
SIG-BUR = BURIED SIGNAL LINE
SIG-INT = BURIED SIGNAL INTERCONNECT LINE
T-BUR = BURIED TELEPHONE LINE
T-OH = TELEPHONE OVERHEAD
VAULT = VAULT
WM = WATERMAIN



SPECIFIC NOTES:

(1) WORK TO BE PERFORMED BY CONTRACTOR.
(2) SEE SIGNAL PLAN FOR REMOVALS

UTILITY LEGEND

AAXX →

CONFLICT	OWNER	DESCRIPTION	ACTION	REMARKS
CLO1	CENTURYLINK	COMM	RELOCATE	
ZYO1	ZAYO	F/O-BUR	RELOCATE	
XLO1	XCEL ENERGY	P-BUR	RELOCATE	
XLO2	XCEL ENERGY	MH	ADJUST	ADJUST CASTING (1)
MCO1	MCES	MH	ADJUST	ADJUST CASTING (1)
MCO2	MCES	MH	LEAVE AS IS	

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: RSQ

I HEREBY CERTIFY THAT THIS SHEET 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: Mark J. Daubenberger LIC. NO. 25505 DATE: 12/2/2024
MARK J. DAUBENBERGER

TKDA

CSAH 2 STA. 100+84 TO STA. 102+75

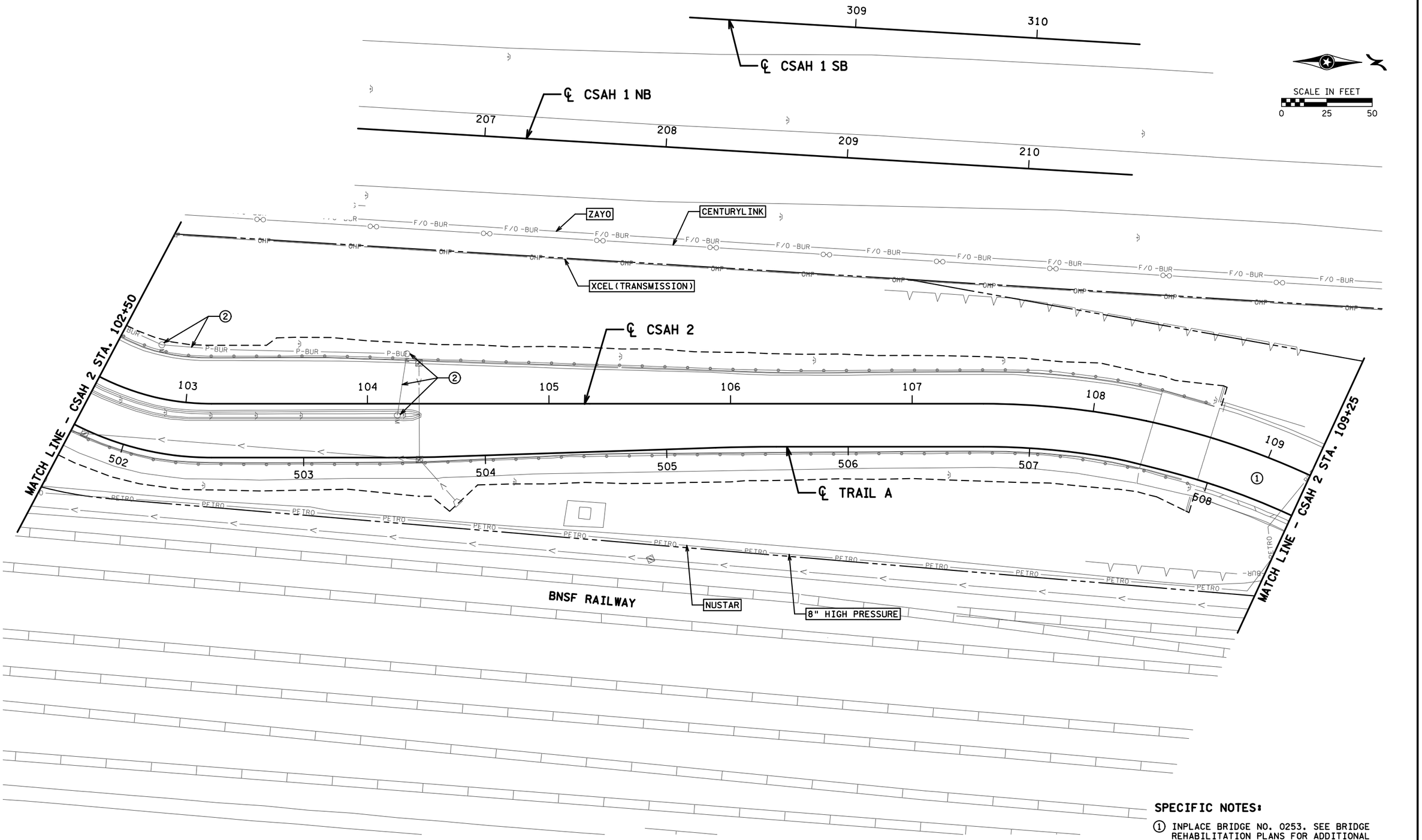
INPLACE TOPOGRAPHY & UTILITIES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 63 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:38:13 AM
FILENAME: pw:\\tkda-pw.bentley.com:tkda-pw-0\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CADHighway\Sheets\cd0026020l5_utadgn

DATE: 12/2/2024 TIME: 11:38:20 AM
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SPECIFIC NOTES:

1. INPLACE BRIDGE NO. 0253. SEE BRIDGE REHABILITATION PLANS FOR ADDITIONAL INFORMATION.
2. SEE SIGNAL PLAN FOR REMOVALS

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: RSQ

I HEREBY CERTIFY THAT THIS SHEET 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: Mark J. Daubenberger LIC. NO. 25505 DATE: 12/2/2024

MARK J. DAUBENBERGER

TKDA

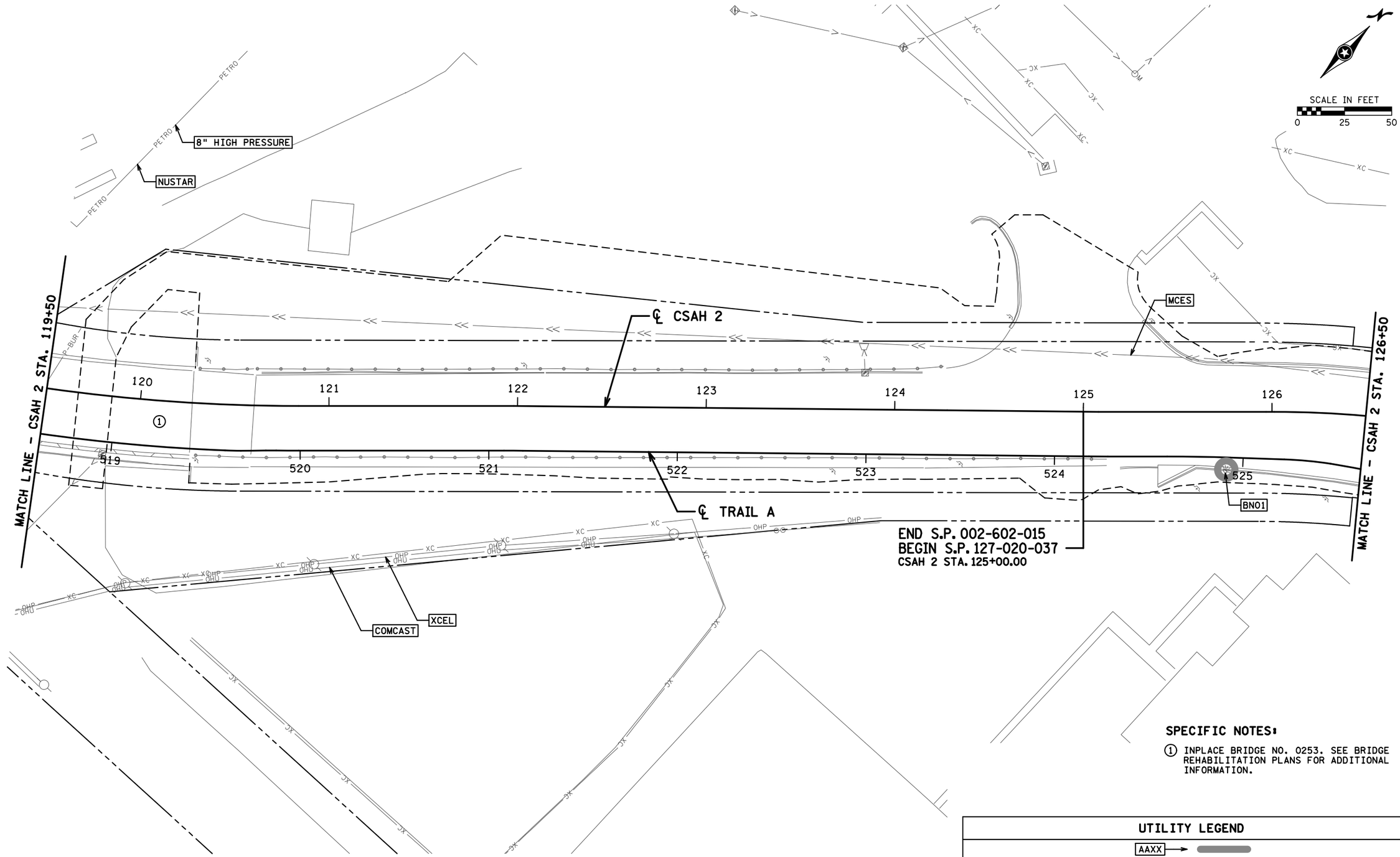
CSAH 2 STA. 102+75 TO STA. 109+25

INPLACE TOPOGRAPHY & UTILITIES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 64 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:38:27 AM
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SPECIFIC NOTES:

① INPLACE BRIDGE NO. 0253. SEE BRIDGE REHABILITATION PLANS FOR ADDITIONAL INFORMATION.

UTILITY LEGEND

AAXX →

CONFLICT	OWNER	DESCRIPTION	ACTION	REMARKS
BN01	BNSF	SPRINKLER	RELOCATE	XXXX

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: RSQ

I HEREBY CERTIFY THAT THIS SHEET 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: Mark J. Daubenberger LIC. NO. 25505 DATE: 12/2/2024
MARK J. DAUBENBERGER

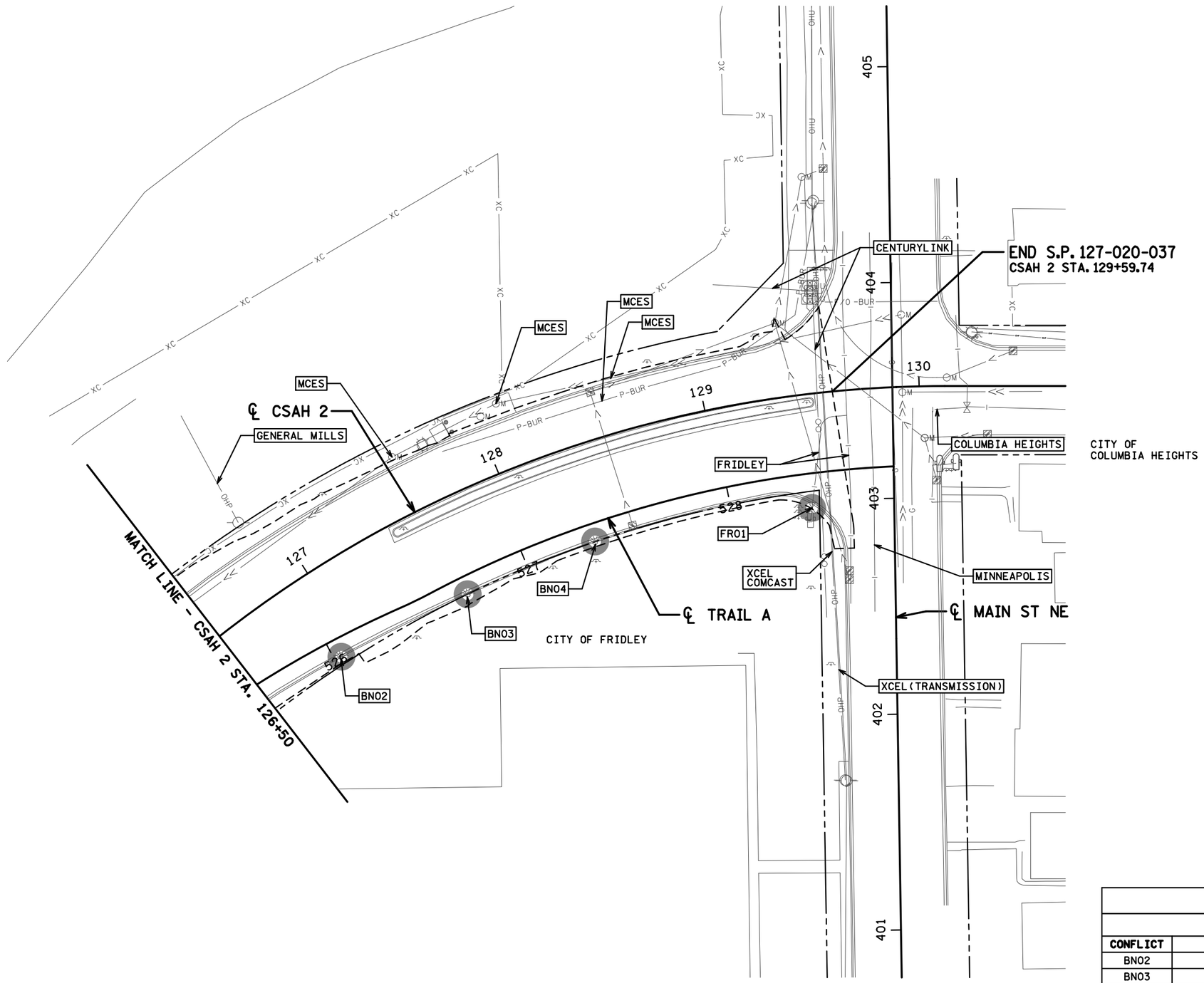
TKDA

CSAH 2 STA. 119+50 TO STA. 126+50

INPLACE TOPOGRAPHY & UTILITIES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 65 OF 148 SHEETS



UTILITY LEGEND

AAXX →

CONFLICT	OWNER	DESCRIPTION	ACTION	REMARKS
BN02	BNSF	SPRINKLER	RELOCATE	XXXX
BN03	BNSF	SPRINKLER	RELOCATE	XXXX
BN04	BNSF	SPRINKLER	RELOCATE	XXXX
FRO1	FRIDLEY	WATER VALVE	ADJUST	ADJUST VALVE BOX

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: RSQ

I HEREBY CERTIFY THAT THIS SHEET 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: Mark J. Daubenberger LIC. NO. 25505 DATE: 12/2/2024

MARK J. DAUBENBERGER

TKDA

CSAH 2 STA. 126+50 TO STA. 129+60

INPLACE TOPOGRAPHY & UTILITIES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 66 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:38:32 AM
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AREA A

LEGEND

- INPLACE RIGHT-OF-WAY
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
- REMOVE CURB & GUTTER
- REMOVE BITUMINOUS PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
- REMOVE CONCRETE PAVERS
- REMOVE CONCRETE APPROACH PANEL

SCALE IN FEET
0 25 50

REMOVE GUARDRAIL-PLATE BEAM

REMOVE ANCHORAGE ASSEMBLY-PLATE BEAM

MATCH LINE - CSAH 2 STA. 102+50

BNSF RAILWAY

℄ CSAH 2

℄ TRAIL A

REMOVE GUARDRAIL-PLATE BEAM

REMOVE ECCENTRIC LOADER BCT

BEGIN S.P. 002-602-015
CSAH 2 STA. 100+84.14

℄ CSAH 1 SB

℄ CSAH 1 NB

GENERAL NOTES:

- SEE DRAINAGE PLAN FOR DRAINAGE REMOVALS.

1 OF 4

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

CSAH 2 STA. 100+84 TO STA. 102+50

REMOVAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 67 OF 148 SHEETS

AREA B

LEGEND

- INPLACE RIGHT-OF-WAY
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
- REMOVE CURB & GUTTER
- REMOVE BITUMINOUS PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
- REMOVE CONCRETE PAVERS
- REMOVE CONCRETE APPROACH PANEL

SCALE IN FEET
0 25 50

℄ CSAH 1 NB

℄ CSAH 2

REMOVE GUARDRAIL-PLATE BEAM

℄ TRAIL A

REMOVE GUARDRAIL-PLATE BEAM

MATCH LINE - CSAH 2 STA. 102+50

MATCH LINE - CSAH 2 STA. 109+25

BNSF RAILWAY

GENERAL NOTES:

- SEE DRAINAGE PLAN FOR DRAINAGE REMOVALS.

SPECIFIC NOTES:

① INPLACE BRIDGE NO. 0253. SEE BRIDGE REHABILITATION PLANS FOR ADDITIONAL INFORMATION.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

CSAH 2 STA. 102+50 TO STA. 109+25

REMOVAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 68 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:38:43 AM
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AREA C

LEGEND

- INPLACE RIGHT-OF-WAY
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
- REMOVE CURB & GUTTER
- REMOVE BITUMINOUS PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
- REMOVE CONCRETE PAVERS
- REMOVE CONCRETE APPROACH PANEL

SCALE IN FEET
0 25 50

CLEARING AND GRUBBING (EACH)
CLEARING AND GRUBBING (ACRE)
CLEARING AND GRUBBING (EACH)
REMOVE GUARDRAIL-PLATE BEAM
REMOVE ECCENTRIC LOADER BCT
REMOVE GUARDRAIL-PLATE BEAM
REMOVE ECCENTRIC LOADER BCT
MATCH LINE - CSAH 2 STA. 119+50
MATCH LINE - CSAH 2 STA. 126+50
℄ TRAIL A
℄ CSAH 2
END S.P. 002-602-015
BEGIN S.P. 127-020-037
CSAH 2 STA. 125+00.00
120 121 122 123 124 125 126
519 520 521 522 523 524 525
P-BUR
XC
OHP
JX

GENERAL NOTES:

- SEE DRAINAGE PLANS FOR DRAINAGE REMOVALS.

SPECIFIC NOTES:

① INPLACE BRIDGE NO. 0253. SEE BRIDGE REHABILITATION PLANS FOR ADDITIONAL INFORMATION.

② REMOVAL OF BITUMINOUS CURB IS INCLUDED IN PAYMENT FOR REMOVE BITUMINOUS PAVEMENT.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

CSAH 2 STA. 119+50 TO STA. 126+50
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

REMOVAL PLAN

SHEET NO. 69 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:38:49 AM
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AREA D

LEGEND

- INPLACE RIGHT-OF-WAY
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
- REMOVE CURB & GUTTER
- REMOVE BITUMINOUS PAVEMENT
- REMOVE BITUMINOUS WALK
- REMOVE CONCRETE WALK
- REMOVE CONCRETE PAVERS
- REMOVE CONCRETE APPROACH PANEL

SCALE IN FEET
0 25 50

℄ CSAH 2

℄ TRAIL A

℄ MAIN ST NE

MATCH LINE - CSAH 2 STA. 126+50

END S.P. 127-020-037
CSAH 2 STA. 129+59.74

CITY OF FRIDLEY

CITY OF COLUMBIA HEIGHTS

405
404
403
402
401

127 128 129 130

GENERAL NOTES:

- SEE DRAINAGE PLAN FOR DRAINAGE REMOVALS.

4 OF 4

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

CSAH 2 STA. 126+50 TO STA. 129+59.74

REMOVAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 70 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:38:56 AM
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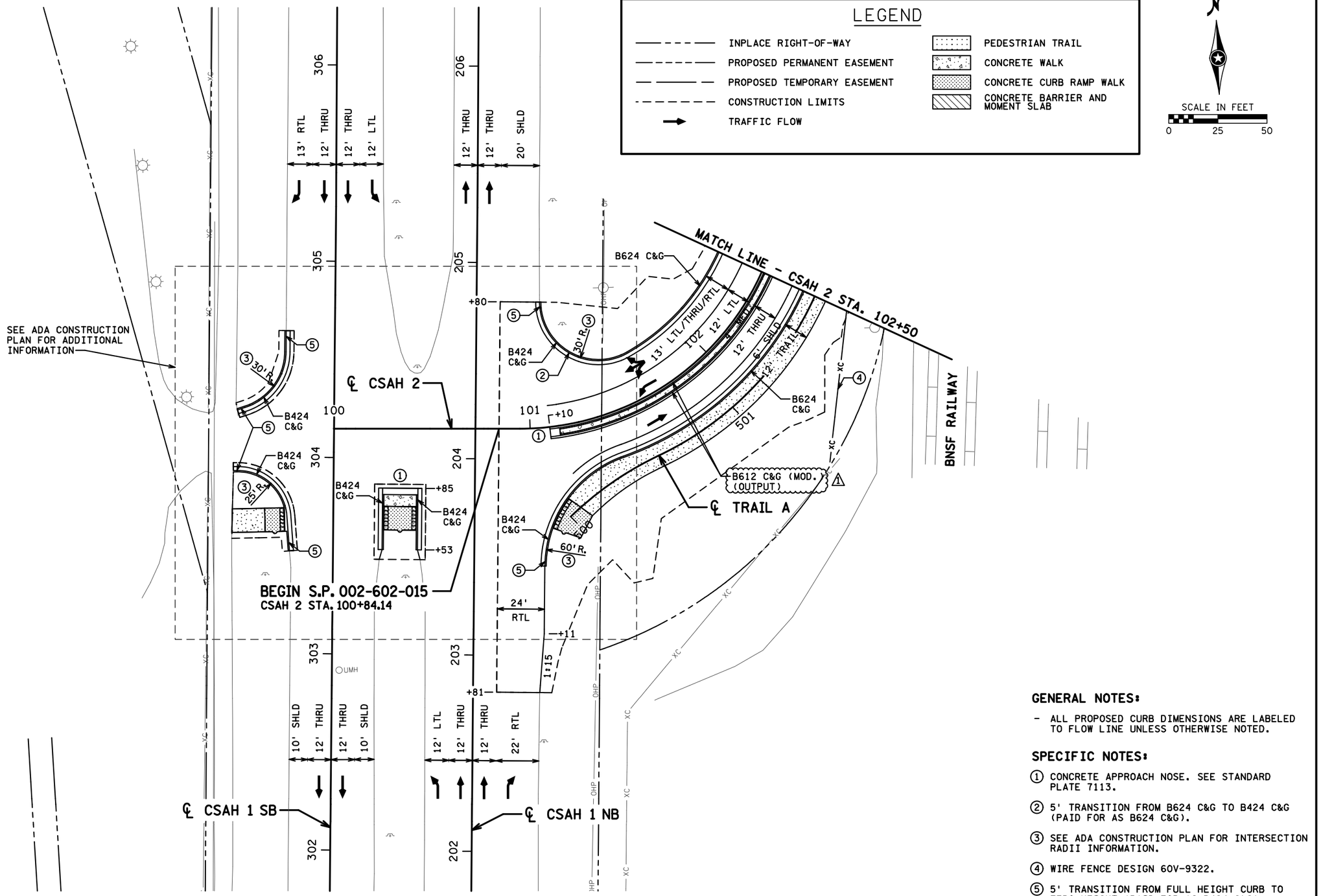
DATE: 1/7/2025 TIME: 2:48:30 PM
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AREA A

LEGEND

- INPLACE RIGHT-OF-WAY
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- TRAFFIC FLOW
- PEDESTRIAN TRAIL
- CONCRETE WALK
- CONCRETE CURB RAMP WALK
- CONCRETE BARRIER AND MOMENT SLAB

SCALE IN FEET
0 25 50



GENERAL NOTES:

- ALL PROPOSED CURB DIMENSIONS ARE LABELED TO FLOW LINE UNLESS OTHERWISE NOTED.

SPECIFIC NOTES:

1. CONCRETE APPROACH NOSE. SEE STANDARD PLATE 7113.
2. 5' TRANSITION FROM B624 C&G TO B424 C&G (PAID FOR AS B624 C&G).
3. SEE ADA CONSTRUCTION PLAN FOR INTERSECTION RADII INFORMATION.
4. WIRE FENCE DESIGN 60V-9322.
5. 5' TRANSITION FROM FULL HEIGHT CURB TO ZERO HEIGHT (PAID FOR AS B424 C&G).

NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	1/7/2025	ADC	REVISED CURB DESIGN

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 1/7/2025
AARON D. CAMERON

TKDA

CSAH 2 STA. 100+84 TO STA. 102+50

CONSTRUCTION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 71R OF 148 SHEETS

DATE: 1/7/2025 TIME: 2:48:33 PM
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AREA B

LEGEND

- INPLACE RIGHT-OF-WAY
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- TRAFFIC FLOW
- PEDESTRIAN TRAIL
- CONCRETE WALK
- CONCRETE CURB RAMP WALK
- CONCRETE BARRIER AND MOMENT SLAB

SCALE IN FEET
0 25 50

℄ CSAH 1 NB
207
208
OHP
B624 C&G
B612 C&G (MOD.) (OUTPUT) ⚠1
+50
BEGIN TAPER 104+28
℄ CSAH 2
END TAPER 105+33
1:15
6' SHLD
SEE APPROACH PANEL PLANS.
13' LTL/THRU/RTL
12' LTL
4' MEDN
12' THRU
6' SHLD
12' TRAIL
1:30
+28
11' THRU
11' THRU
6' SHLD
12' TRAIL
103
104
105
106
107
108
109
502
503
504
505
506
507
508
xc
MATCH LINE - CSAH 2 STA. 102+50
MATCH LINE - CSAH 2 STA. 109+25
① ② ③
B624 C&G
BEGIN TAPER 104+28
END TAPER 106+08
℄ TRAIL A
BNSF RAILWAY

GENERAL NOTES:

- ALL PROPOSED CURB DIMENSIONS ARE LABELED TO FLOW LINE UNLESS OTHERWISE NOTED.

SPECIFIC NOTES:

① CONCRETE APPROACH NOSE. SEE STANDARD PLATE 7113.

② INPLACE BRIDGE NO. 02523. SEE BRIDGE REHABILITATION PLANS FOR ADDITIONAL INFORMATION.

③ WIRE FENCE DESIGN 60V-9322.

NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	1/7/2025	ADC	REVISED CURB DESIGN

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: AARON D. CAMERON LIC. NO. 56592 DATE: 1/7/2025

TKDA

CSAH 2 STA. 102+50 TO STA. 109+25

CONSTRUCTION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

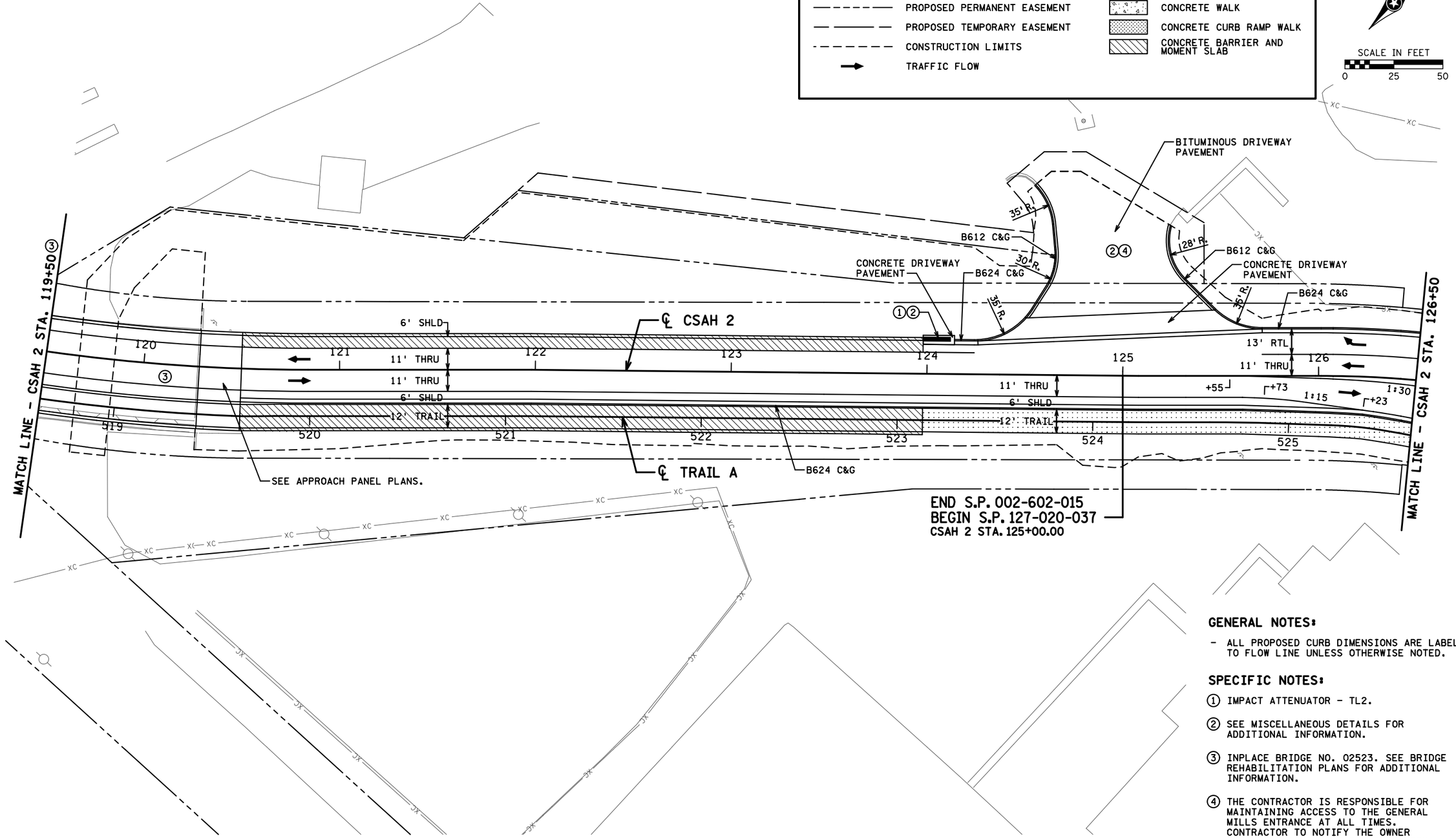
SHEET NO. 72R OF 148 SHEETS

AREA C

LEGEND

- INPLACE RIGHT-OF-WAY
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- TRAFFIC FLOW
- PEDESTRIAN TRAIL
- CONCRETE WALK
- CONCRETE CURB RAMP WALK
- CONCRETE BARRIER AND MOMENT SLAB

SCALE IN FEET
0 25 50



GENERAL NOTES:

- ALL PROPOSED CURB DIMENSIONS ARE LABELED TO FLOW LINE UNLESS OTHERWISE NOTED.

SPECIFIC NOTES:

1. IMPACT ATTENUATOR - TL2.
2. SEE MISCELLANEOUS DETAILS FOR ADDITIONAL INFORMATION.
3. INPLACE BRIDGE NO. 02523. SEE BRIDGE REHABILITATION PLANS FOR ADDITIONAL INFORMATION.
4. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE GENERAL MILLS ENTRANCE AT ALL TIMES. CONTRACTOR TO NOTIFY THE OWNER A MINIMUM OF 2 DAYS PRIOR TO WORK IMPEDING DRIVEWAY ACCESS OR ANY DRIVEWAY CONSTRUCTION.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024

AARON D. CAMERON

TKDA

CSAH 2 STA. 119+50 TO STA. 126+50

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

CONSTRUCTION PLAN

SHEET NO. 73 OF 148 SHEETS

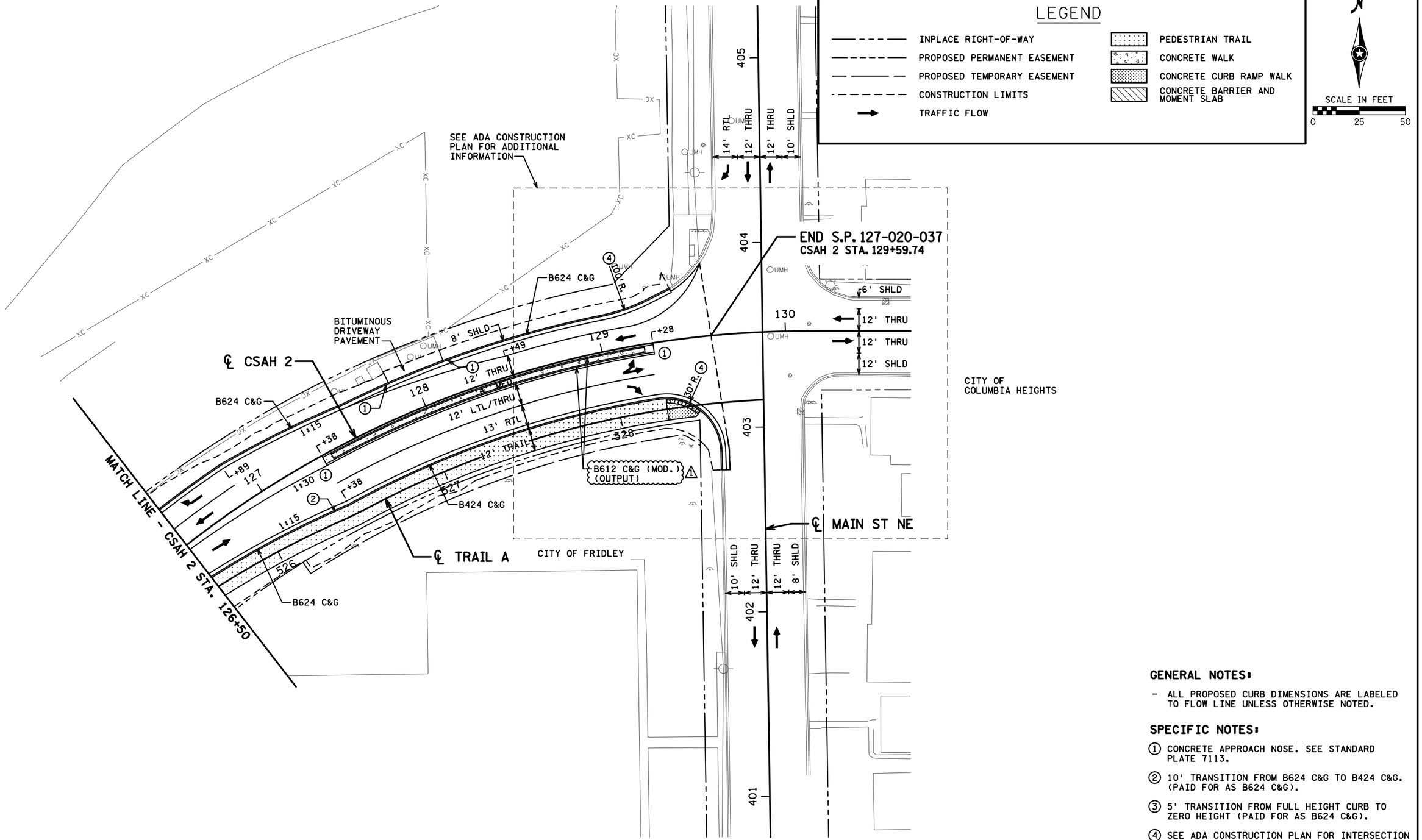
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AREA D

LEGEND

- INPLACE RIGHT-OF-WAY
- PROPOSED PERMANENT EASEMENT
- PROPOSED TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- TRAFFIC FLOW
- PEDESTRIAN TRAIL
- CONCRETE WALK
- CONCRETE CURB RAMP WALK
- CONCRETE BARRIER AND MOMENT SLAB

SCALE IN FEET
0 25 50



GENERAL NOTES:

- ALL PROPOSED CURB DIMENSIONS ARE LABELED TO FLOW LINE UNLESS OTHERWISE NOTED.

SPECIFIC NOTES:

1. CONCRETE APPROACH NOSE. SEE STANDARD PLATE 7113.
2. 10' TRANSITION FROM B624 C&G TO B424 C&G. (PAID FOR AS B624 C&G).
3. 5' TRANSITION FROM FULL HEIGHT CURB TO ZERO HEIGHT (PAID FOR AS B624 C&G).
4. SEE ADA CONSTRUCTION PLAN FOR INTERSECTION RADII INFORMATION.

NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	1/7/2025	ADC	REVISED CURB DESIGN

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 1/7/2025
AARON D. CAMERON

TKDA

CSAH 2 STA. 126+50 TO STA. 129+59.74

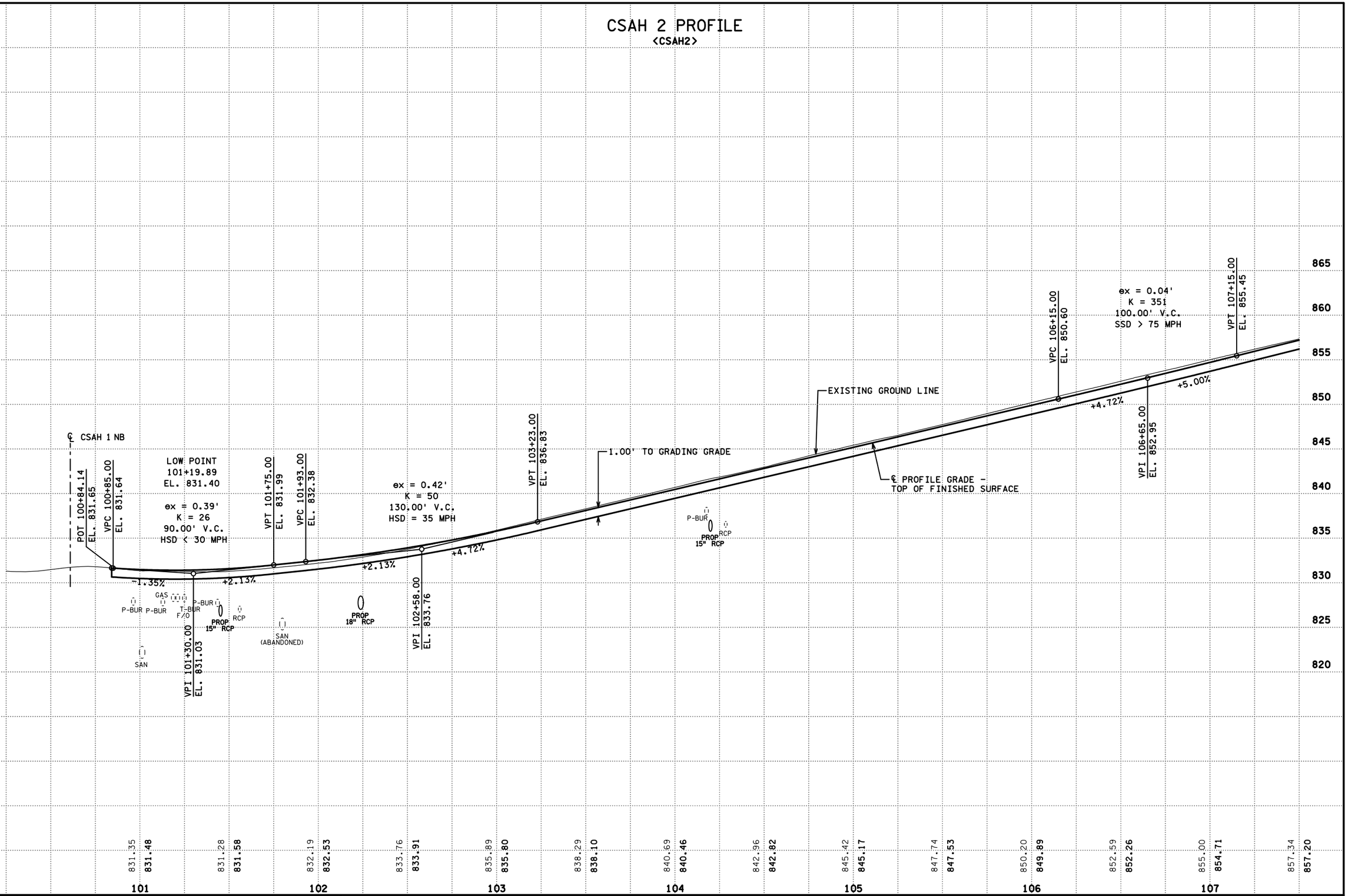
CONSTRUCTION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 74R OF 148 SHEETS

DATE: 1/7/2025 TIME: 2:48:37 PM
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CSAH 2 PROFILE
<CSAH2>



DATE: 12/2/2024 TIME: 11:39:24 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

CSAH 2 STA. 100+84 TO STA. 107+50

PROFILES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 75 OF 148 SHEETS

CSAH 2 PROFILE
<CSAH2>

VPI 114+40.00
EL. 891.70
+5.00%
-5.00%

1.00' TO GRADING GRADE
℄ PROFILE GRADE - TOP OF FINISHED SURFACE
+5.00%
EXISTING GROUND LINE
VPC 109+90.00
EL. 869.20

ex = -11.25'
K = 90
900.00' V.C.
SSD = 50 MPH

① INPLACE BRIDGE NO. 0253. SEE BRIDGE REHABILITATION PLANS FOR ADDITIONAL INFORMATION.

PETRO
F/O
T-BUR
STM
T-BUR
T-BUR
SAN
WTR
WTR
SAN
T-BUR

890	885	880	875	870	865	860	855	850	845

857.34	**857.20**	859.77	**859.70**	862.13	**862.20**	842.57	**864.70**	835.64	**867.20**	834.98	**869.70**	835.89	**872.00**	837.53	**874.03**	837.84	**875.78**	837.96	**877.25**	838.05	**878.45**	838.32	**879.36**	839.09	**880.00**	840.73	**880.36**	837.83	**880.45**	836.47	**880.25**
	108						**109**				**110**				**111**				**112**				**113**				**114**				**115**

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

CSAH 2 STA. 107+50 TO STA. 115+00

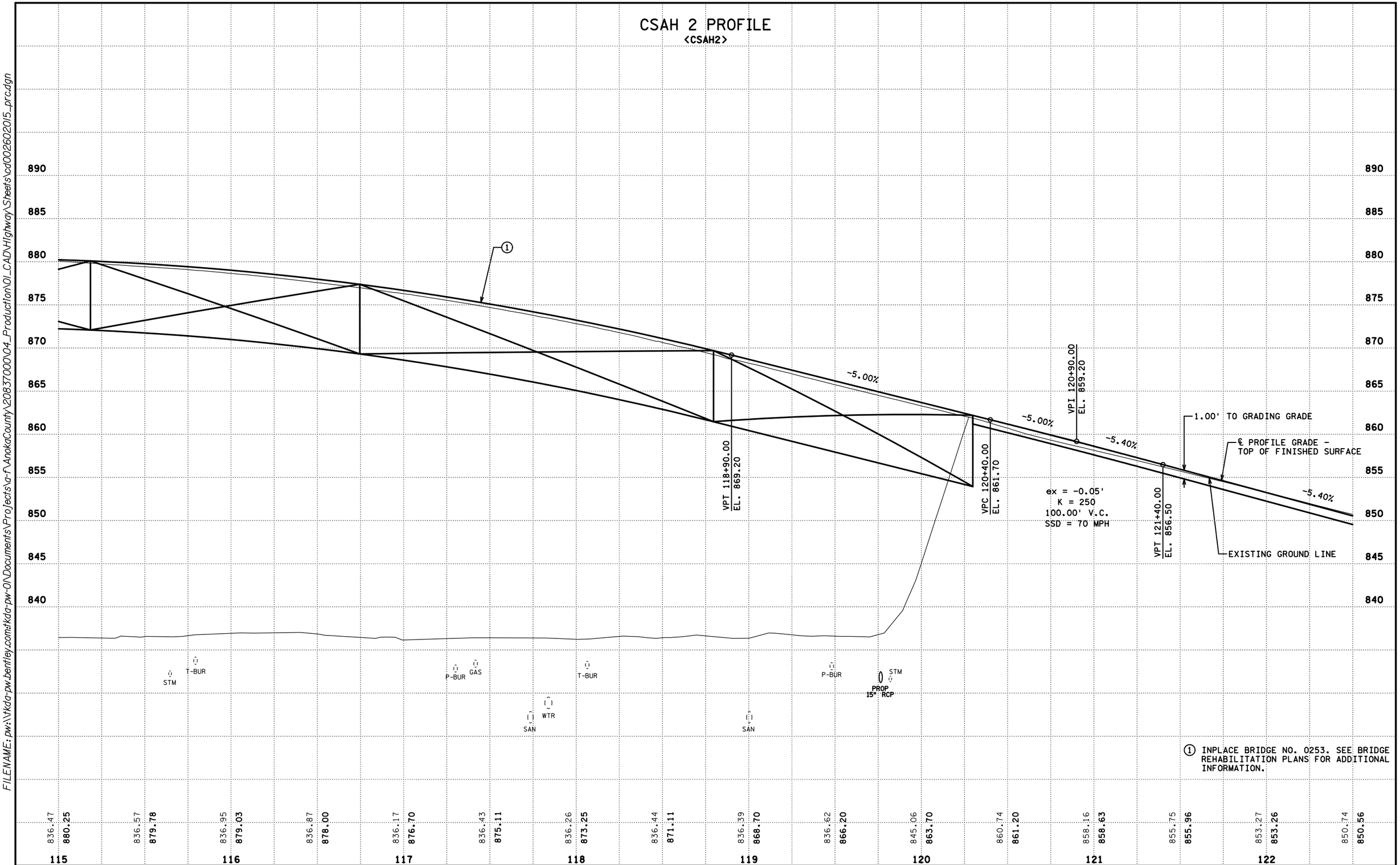
PROFILES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 76 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:39:30 AM
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CSAH 2 PROFILE
<CSAH2>



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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

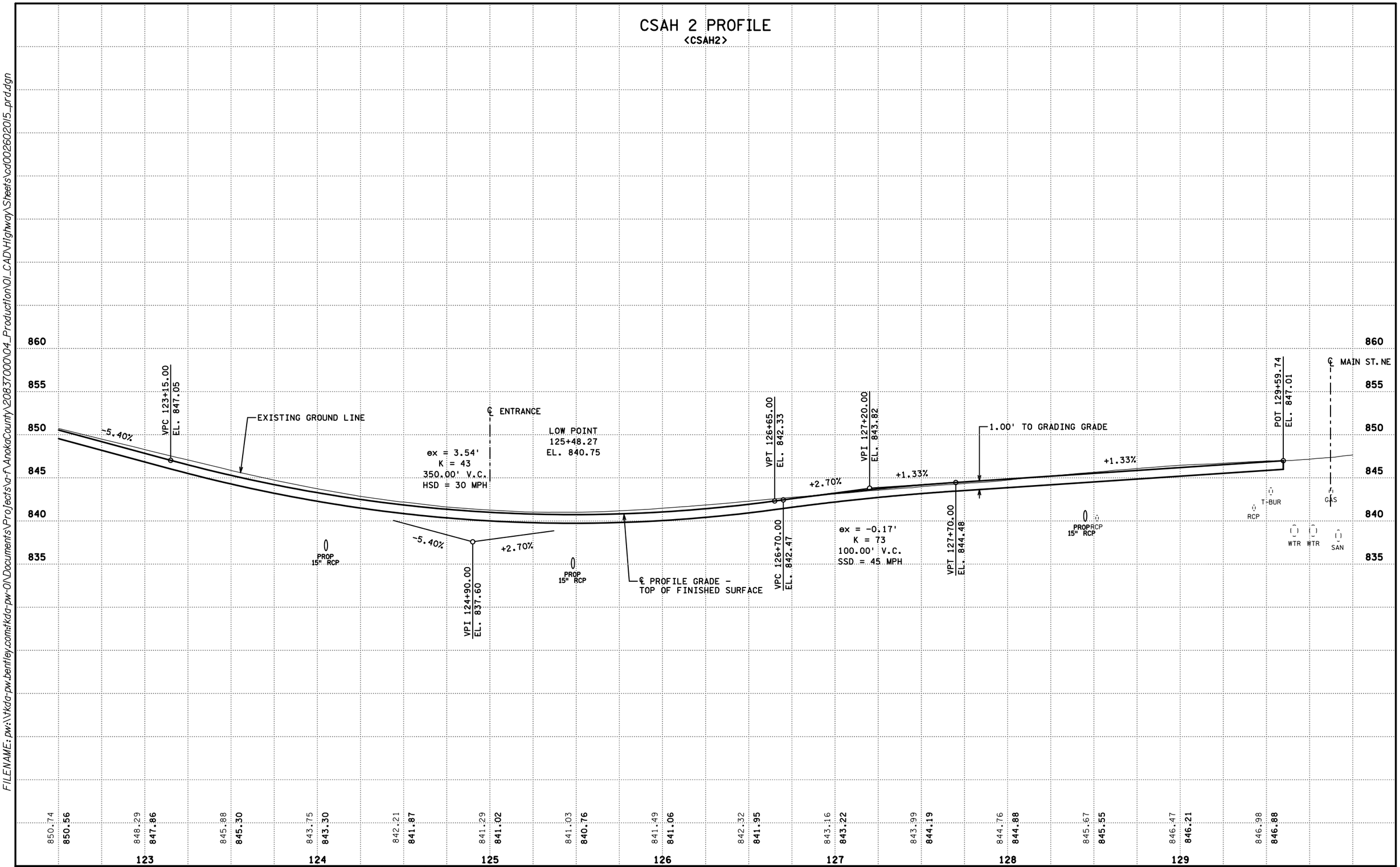
CSAH 2 STA. 115+00 TO STA. 122+50

PROFILES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 77 OF 148 SHEETS

CSAH 2 PROFILE
<CSAH2>



DATE: 12/2/2024 TIME: 11:39:41 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

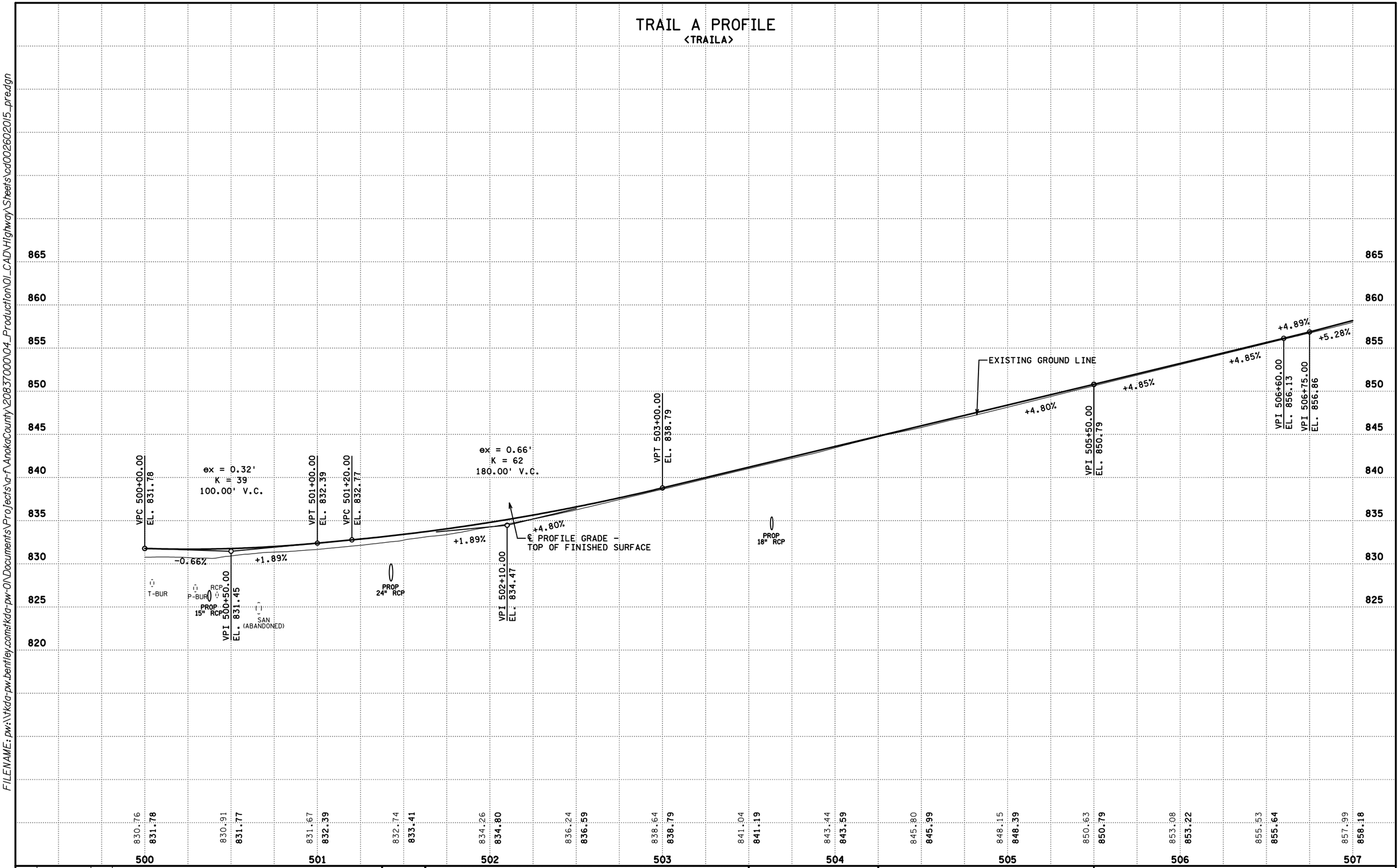
CSAH 2 STA. 126+50 TO STA. 129+59.74

PROFILES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 78 OF 148 SHEETS

TRAIL A PROFILE
<TRAILA>



DATE: 12/2/2024 TIME: 11:39:47 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

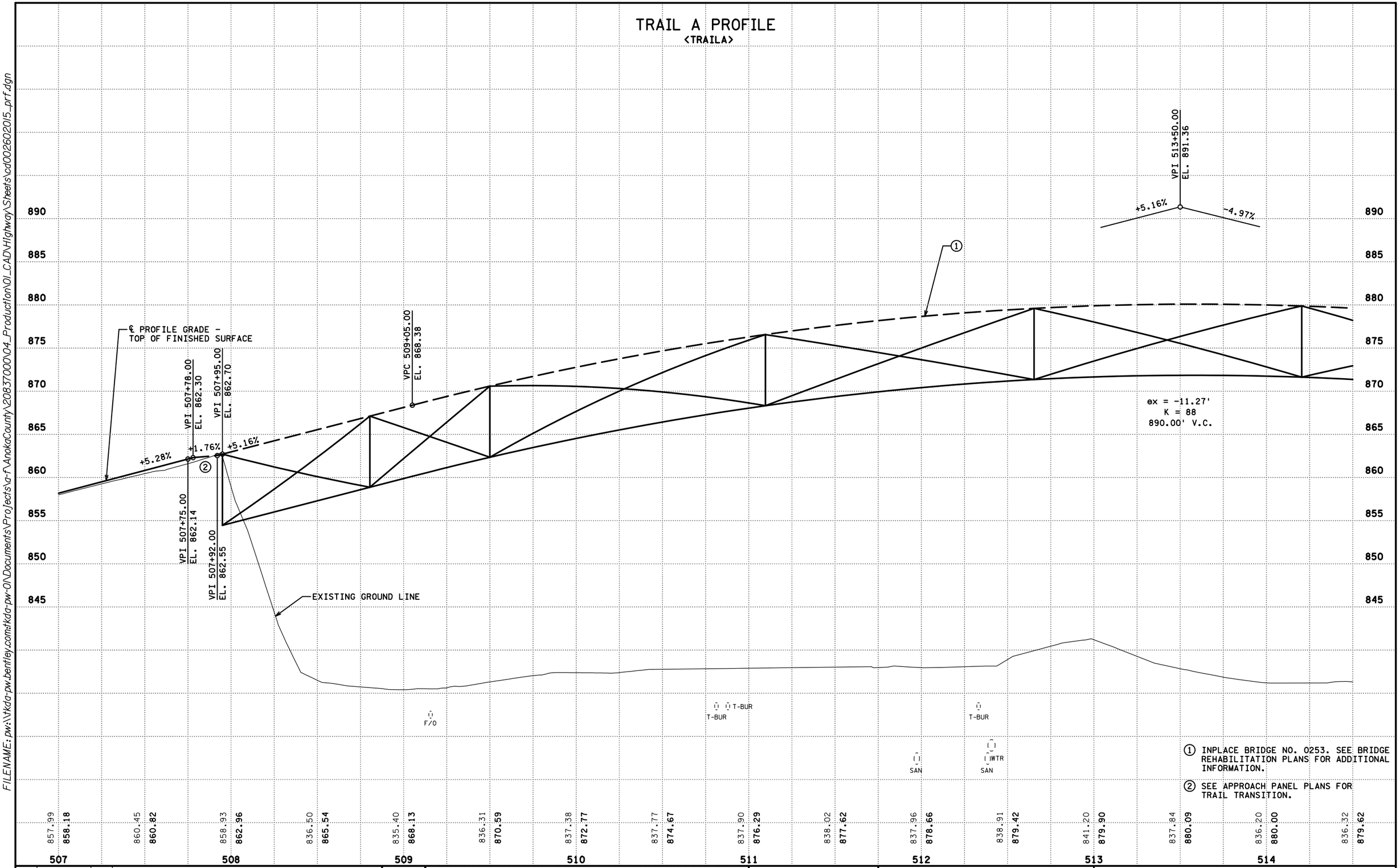
TRAIL A STA. 500+00 TO STA. 507+50

PROFILES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 79 OF 148 SHEETS

TRAIL A PROFILE
<TRAILA>



① INPLACE BRIDGE NO. 0253. SEE BRIDGE REHABILITATION PLANS FOR ADDITIONAL INFORMATION.

② SEE APPROACH PANEL PLANS FOR TRAIL TRANSITION.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

TRAIL A STA. 507+50 TO STA. 515+00

PROFILES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 80 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:39:53 AM
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TRAIL A PROFILE
<TRAILA>

VPT 517+95.00
EL. 869.25

VPI 519+42.00
EL. 861.95

VPI 519+61.00
EL. 861.53

VPI 519+64.00
EL. 861.38

VPI 519+45.00
EL. 861.80

VPI 520+00.00
EL. 859.64

VPI 520+55.00
EL. 856.69

-4.97%
-1.72%
-4.84%
-5.36%
-5.41%

℄ PROFILE GRADE -
TOP OF FINISHED SURFACE

EXISTING GROUND LINE

T-BUR
P-BUR
T-BUR
T-BUR
P-BUR
PROP
15" RCP
SAN
WTR
SAN

① INPLACE BRIDGE NO. 0253. SEE BRIDGE REHABILITATION PLANS FOR ADDITIONAL INFORMATION.

② SEE APPROACH PANEL PLANS FOR TRAIL TRANSITION.

515		516		517		518		519		520		521		522
836.32	879.62	836.98	878.96	836.90	878.01	836.21	876.78	836.25	875.26	836.21	873.46	836.35	871.37	836.46	869.01	836.38	866.52	837.95	864.04	861.14	861.72	858.72	859.64	856.25	856.96	853.71	854.25	851.16	851.55	848.57	848.84

890 885 880 875 870 865 860 855 850 845

DATE: 12/2/2024 TIME: 11:40:00 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

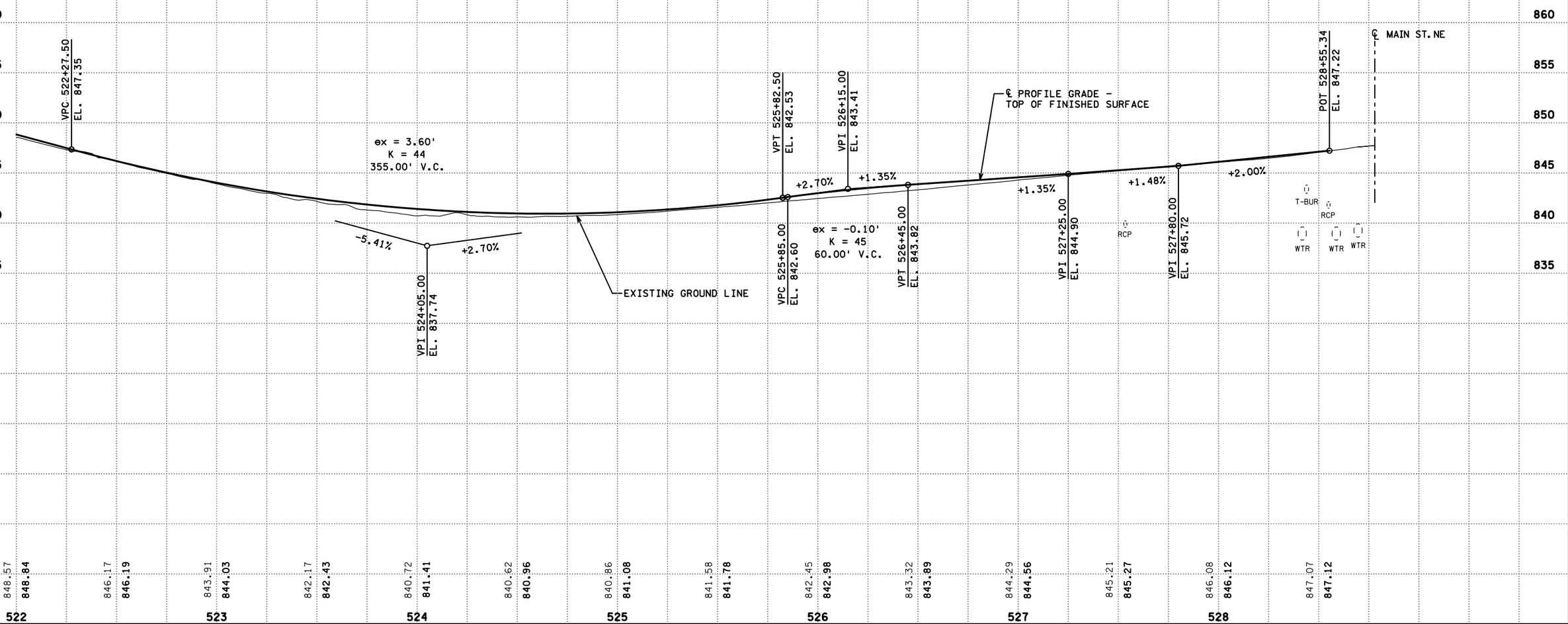
TRAIL A STA. 515+00 TO STA. 522+50

PROFILES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 81 OF 148 SHEETS

TRAIL A PROFILE
<TRAILA>



NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

TRAIL A STA. 522+50 TO STA. 528+55

PROFILES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 82 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:40:06 AM
FILENAME: pw:\\tkda-pw.bentley.com:tkda-pw-01\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CADHighway\Sheets\cd0026020l5_prh.dgn

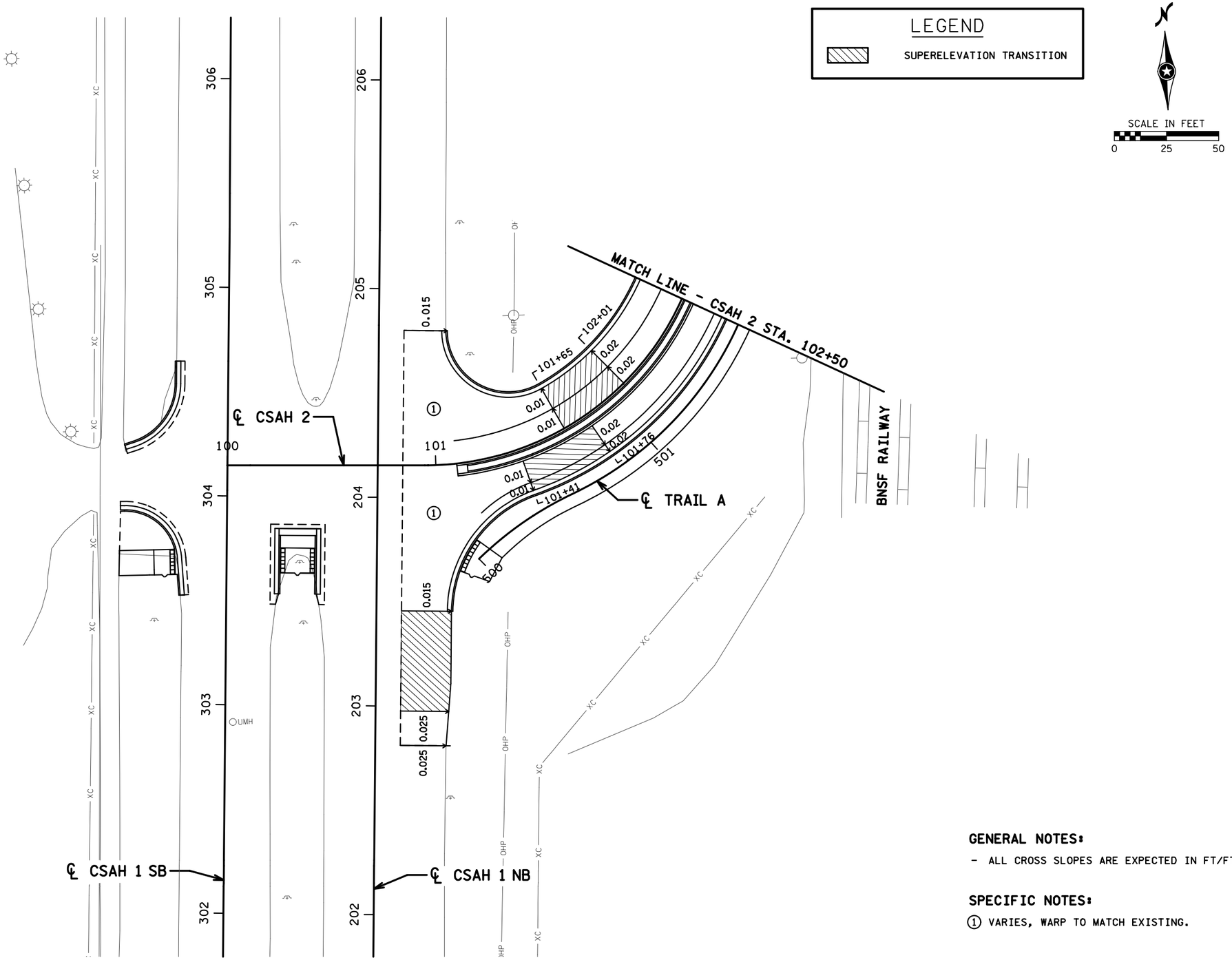
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AREA A

LEGEND

SUPERELEVATION TRANSITION

SCALE IN FEET
0 25 50



GENERAL NOTES:

- ALL CROSS SLOPES ARE EXPECTED IN FT/FT.

SPECIFIC NOTES:

(1) VARIES, WARP TO MATCH EXISTING.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024
AARON D. CAMERON

TKDA

CSAH 2 STA. 100+84 TO STA. 102+50

SUPERELEVATION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 83 OF 148 SHEETS

AREA B

LEGEND

SUPERELEVATION TRANSITION

SCALE IN FEET

0 25 50

℄ CSAH 1 NB

207 208 209 210

OHP

℄ CSAH 2

MATCH LINE - CSAH 2 STA. 102+50

103 104 105 106 107 108 109

108+21 108+45

0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.015 0.015 0.015 0.015 0.015 0.015

502 503 504 505 506 507 508

℄ TRAIL A

BNSF RAILWAY

MATCH LINE - CSAH 2 STA. 109+25

GENERAL NOTES:

- ALL CROSS SECTIONS ARE EXPRESSED IN FT/FT.

DATE: 12/2/2024 TIME: 11:40:17 AM
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2 OF 4

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: AARON D. CAMERON LIC. NO. 56592 DATE: 12/2/2024

TKDA

CSAH 2 STA. 102+50 TO STA. 109+25

SUPERELEVATION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 84 OF 148 SHEETS

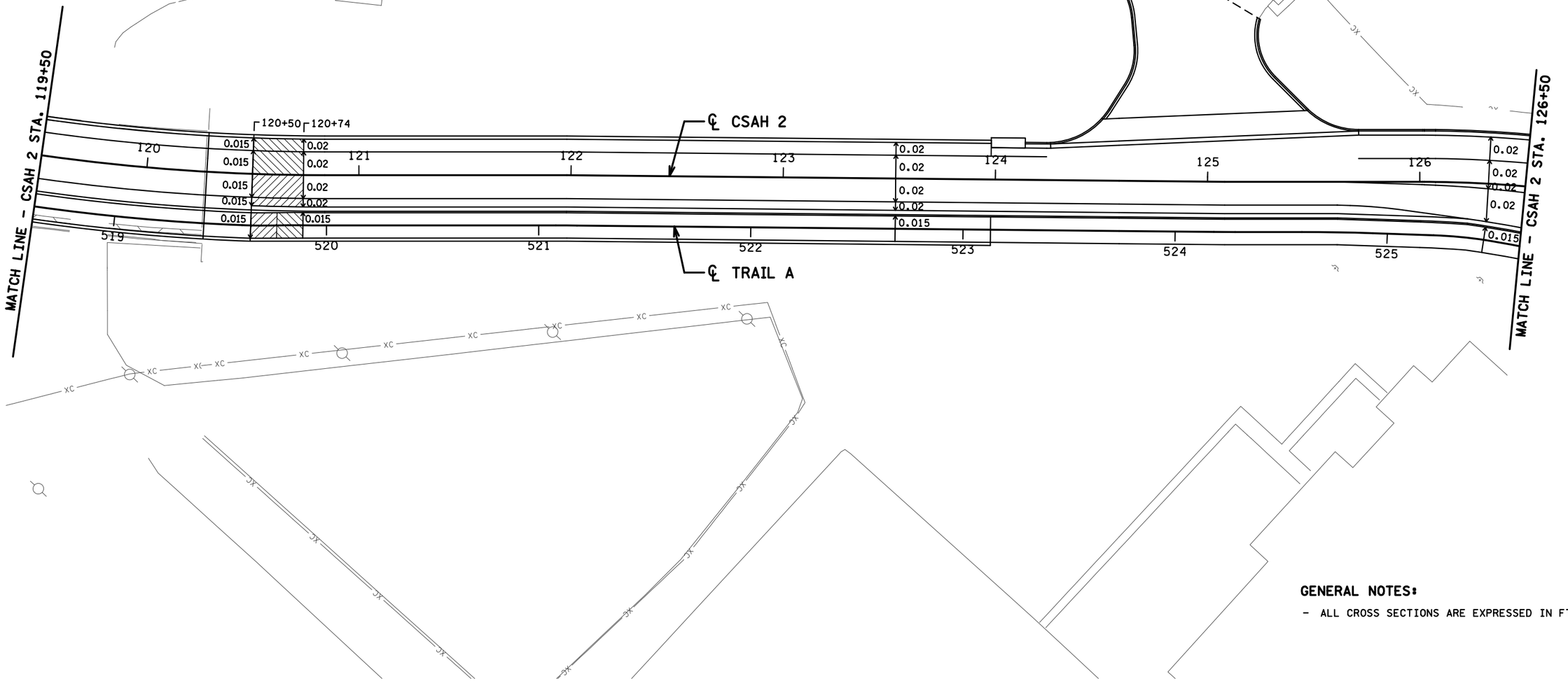
AREA C

LEGEND

SUPERELEVATION TRANSITION

SCALE IN FEET

0 25 50



GENERAL NOTES:

- ALL CROSS SECTIONS ARE EXPRESSED IN FT/FT.

3 OF 4

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

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SIGNATURE: _____ LIC. NO. 56592 DATE: 12/2/2024

AARON D. CAMERON

TKDA

CSAH 2 STA. 119+50 TO STA. 126+50

SUPERELEVATION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 85 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:40:23 AM
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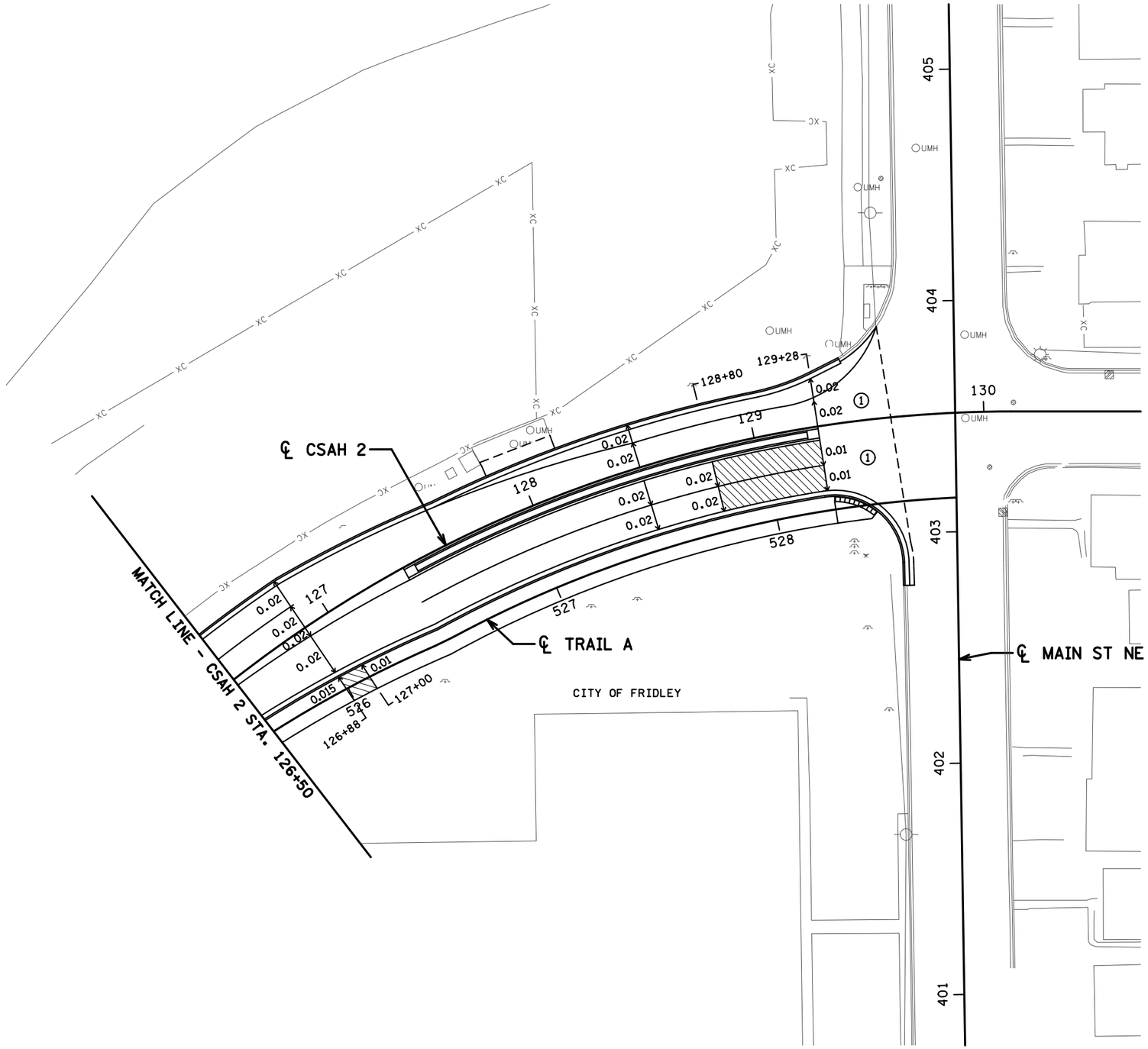
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AREA D

LEGEND

SUPERELEVATION TRANSITION

SCALE IN FEET
0 25 50



GENERAL NOTES:

- ALL CROSS SECTIONS ARE EXPRESSED IN FT/FT.

SPECIFIC NOTES:

(1) VARIES, WARP TO MATCH EXISTING.

4 OF 4

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

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SIGNATURE: AARON D. CAMERON LIC. NO. 56592 DATE: 12/2/2024

TKDA

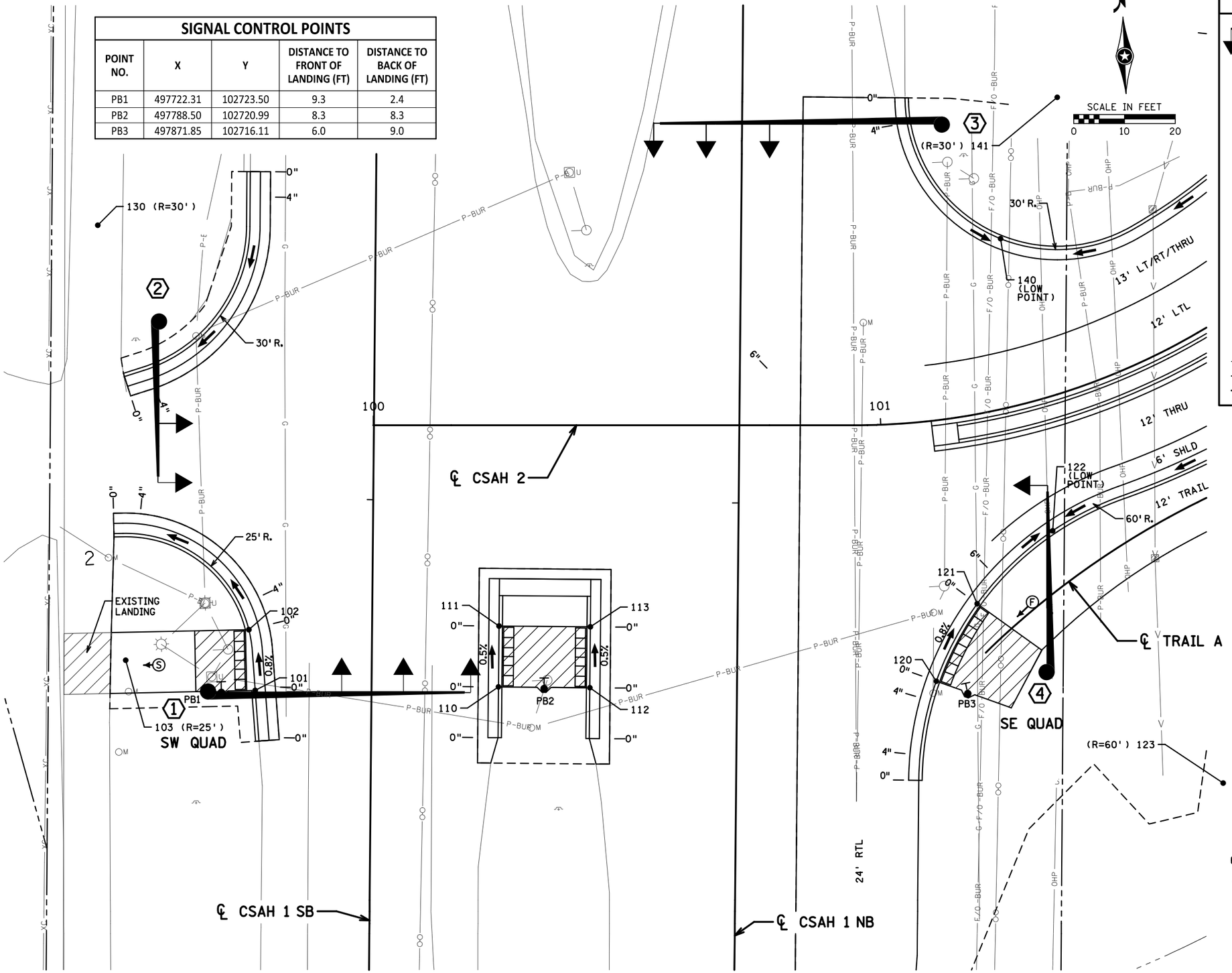
CSAH 2 STA. 126+50 TO STA. 129+59.74

SUPERELEVATION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 86 OF 148 SHEETS

SIGNAL CONTROL POINTS				
POINT NO.	X	Y	DISTANCE TO FRONT OF LANDING (FT)	DISTANCE TO BACK OF LANDING (FT)
PB1	497722.31	102723.50	9.3	2.4
PB2	497788.50	102720.99	8.3	8.3
PB3	497871.85	102716.11	6.0	9.0



LEGEND

- PROPOSED SIGNAL POLE
- PEDESTRIAN PUSH BUTTON STATION
- PEDESTRIAN PUSH BUTTON
- XXX — CONTROL POINTS AT GUTTER FLOW LINE
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" — CURB HEIGHT
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- (S) — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- (F) — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- DRAINAGE FLOW ARROW
- (T) — TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK.
- INPLACE RIGHT-OF-WAY
- CONSTRUCTION LIMITS
- TEMPORARY EASEMENT OR TEMPORARY ORDERS

CONTROL POINTS			
POINT NO.	X	Y	ELEV.
101	497731.61	102723.27	831.16
102	497730.92	102735.29	831.06
103	497706.40	102730.41	
110	497779.53	102721.74	831.48
111	497780.20	102733.72	831.42
112	497797.50	102720.74	831.60
113	497798.17	102732.72	831.54
120	497865.78	102718.86	831.23
121	497874.53	102733.73	831.14
122	497890.06	102747.39	831.00
123	497921.33	102696.18	
130	497704.87	102816.26	
140	497882.47	102805.36	830.98
141	497894.93	102832.65	

GENERAL NOTES:

- ALL INITIAL LANDINGS ARE TO BE POURED SEPARATELY.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

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SIGNATURE: _____ AARON D. CAMERON LIC. NO. 56592 DATE: 12/2/2024

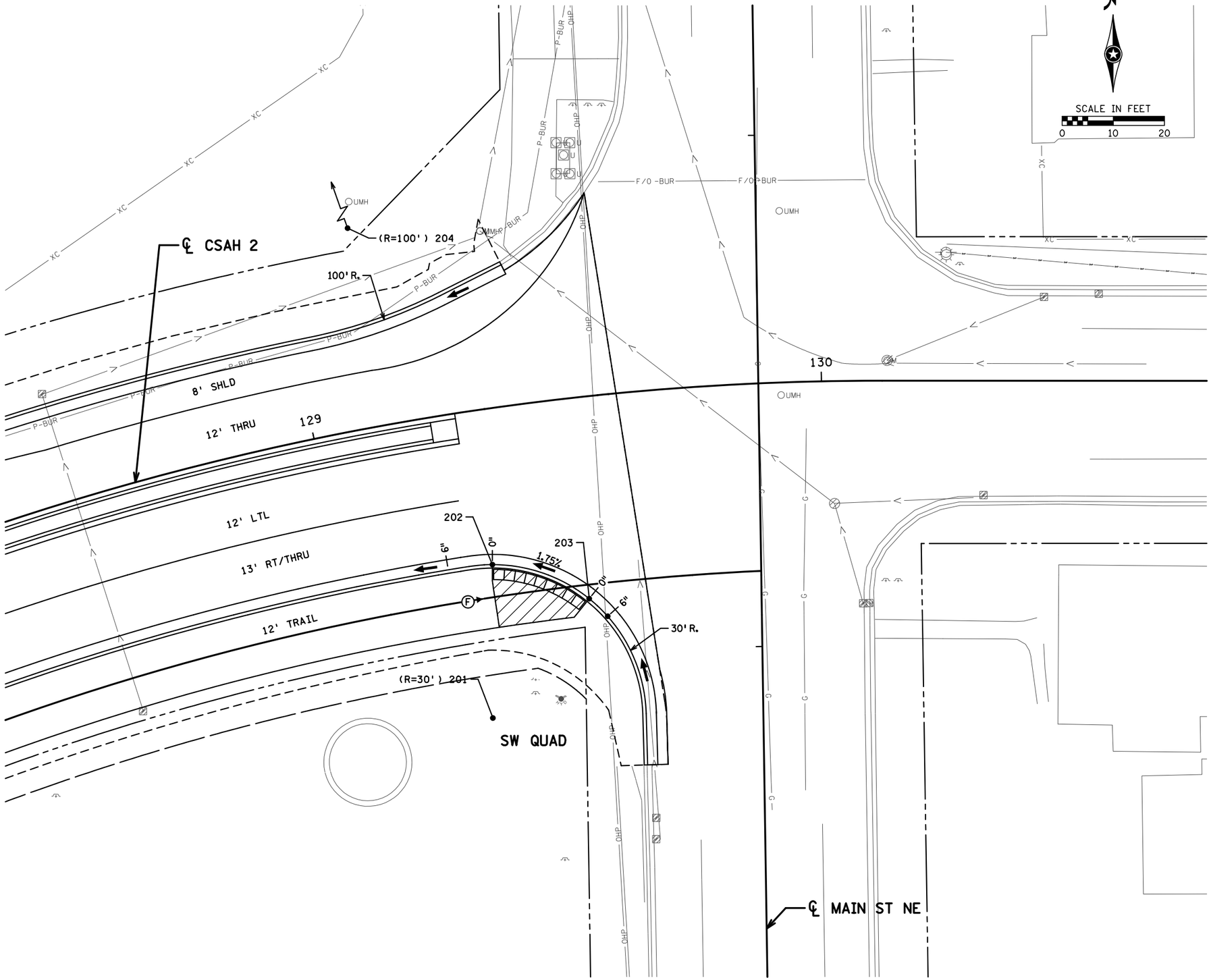
TKDA

ADA CONSTRUCTION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 87 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:40:34 AM
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LEGEND

- PROPOSED SIGNAL POLE
- PEDESTRIAN PUSH BUTTON STATION
- PEDESTRIAN PUSH BUTTON
- XXX — CONTROL POINTS AT GUTTER FLOW LINE
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" — CURB HEIGHT
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- (S) — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- (F) — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- DRAINAGE FLOW ARROW
- (T) — TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK.
- INPLACE RIGHT-OF-WAY
- CONSTRUCTION LIMITS
- TEMPORARY EASEMENT OR TEMPORARY ORDERS

CONTROL POINTS

POINT NO.	X	Y	ELEV.
201	499613.89	104645.82	
202	499613.79	104675.82	846.36
203	499632.73	104669.16	846.72
204	499558.45	104817.67	

GENERAL NOTES:

- ALL INITIAL LANDINGS ARE TO BE POURED SEPARATELY.

DATE: 12/2/2024 TIME: 11:40:40 AM
FILENAME: pw:\\tkda-pw.bentley.com:tkda-pw-01\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CADH1gtway\Sheets\cd0026020l5_acb.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: RH
DRW: JDM
CHK: ADC

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 56592 DATE: 12/2/2024

AARON D. CAMERON

TKDA

ADA CONSTRUCTION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 88 OF 148 SHEETS

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE

PROJECT DESCRIPTION/LOCATION

SP 002-602-015 IS LOCATED ON CSAH 2 FROM EAST RIVER RD TO MAIN ST NE IN THE CITY OF FRIDLEY IN ANOKA COUNTY. THE PLANNED SCOPE OF THE PROJECT INCLUDES: GRADING, BITUMINOUS SURFACING, ADA IMPROVEMENTS, TRAFFIC SIGNALS LIGHTING, DRAINAGE IMPROVEMENTS, AND BRIDGE NO. 02523 CONSTRUCTION.

THE SWPPP MUST BE AMENDED TO DOCUMENT ANY CHANGES TO EROSION AND SEDIMENT CONTROLS, METHODS OR PRACTICES. THESE AMENDMENTS MUST BE TIMELY TO KEEP THE SWPPP UPDATED AND NEED TO BE KEPT ON SITE.

RESPONSIBILITIES

PROVIDE A CERTIFIED EROSION CONTROL SUPERVISOR PER MNDOT SPECIFICATION 2573.3.A.1. EROSION CONTROL SUPERVISOR WILL WORK WITH PROJECT ENGINEER TO OVERSEE IMPLEMENTATION OF SWPPP AND INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS BEFORE, DURING AND AFTER CONSTRUCTION UNTIL PERMIT TERMINATION CONDITIONS HAVE BEEN MET.

PROVIDE AT LEAST ONE CERTIFIED INSTALLER PER MNDOT SPECIFICATION 2573.3.A.2. FOR EACH CONTRACTOR OR SUBCONTRACTOR THAT PLACES THE PRODUCTS LISTED IN MNDOT SPECIFICATION SECTION 2573.3.A.2. THE CONTRACTOR MUST PROVIDE PROOF OF TRAINING CERTIFICATION FOR EROSION CONTROL SUPERVISOR AND EROSION CONTROL INSTALLERS PRIOR TO BEGINNING WORK.

CHAIN OF RESPONSIBILITY

ANOKA COUNTY AND THE CONTRACTOR ARE CO-PERMITEES FOR THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CONSTRUCTION PERMIT. THE CONTRACTOR IS RESPONSIBLE TO COMPLY WITH ALL ASPECTS OF THE NPDES CONSTRUCTION PERMIT AT ALL TIMES UNTIL THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA. ANOKA COUNTY WILL APPLY AND PAY FOR THE NPDES CONSTRUCTION PERMIT AND WILL TRANSFER THE PERMIT TO THE CONTRACTOR BEFORE CONSTRUCTION.

LAND FEATURE AREAS AND LANDUSE CHANGES

EXISTING IMPERVIOUS AREA =	2.66 ACRES	*PAVEMENT REPLACEMENT= AREAS WHERE CONSTRUCTION ACTIVITIES DO NOT EXPOSE THE UNDERLYING NATIVE SOILS BENEATH THE EXISTING PAVEMENT & SUBGRADE SECTION.
EXISTING PERVIOUS AREA =	1.04 ACRES	
EXISTING BRIDGE DECK =	1.40 ACRES	
PROPOSED IMPERVIOUS AREA =	2.43 ACRES	
PROPOSED PERVIOUS AREA =	1.27 ACRES	**FULLY RECONSTRUCTED= AREAS WHERE IMPERVIOUS SURFACES HAVE BEEN REMOVED DOWN INTO THE UNDERLYING NATIVE SOILS.
PROPOSED BRIDGE DECK =	1.34 ACRES	
NEW IMPERVIOUS SURFACE AREA =	0.00 ACRES	
PAVEMENT REPLACEMENT AREA* =	2.43 ACRES	***DISTURBED AREA= ONLY THE AREAS WHERE EXCAVATION EXTENDS INTO THE UNDERLYING SOILS. INPLACE AGGREGATE BASE LAYER AND SELECT GRANULAR LAYER IS NOT CONSIDERED THE UNDERLYING SOIL.
FULLY RECONSTRUCTED AREA** =	0.00 ACRES	
NET INCREASE IN IMPERVIOUS AREA =	-0.23 ACRES	
NEW + FULL RECONSTRUCTED IMPERVIOUS SURFACE AREA =	0.00 ACRES	
***TOTAL DISTURBED AREA =	1.27 ACRES	

SWPPP SHEET DESCRIPTIONS	LOCATION
TEMPORARY EROSION CONTROL MEASURES	SHEETS NO. 101-104
PERMANENT EROSION CONTROL MEASURES	SHEETS NO. 105-108
DIRECTION OF FLOW	SHEETS NO. 92-95
FINAL STABILIZATION	SHEETS NO. 105-108
SOILS AND CONSTRUCTION NOTES	SHEETS NO. 6
DRAINAGE STRUCTURES	SHEETS NO. 92-95
DRAINAGE TABULATION	SHEETS NO. 98
STORM SEWER PROFILE SHEETS	SHEETS NO. 96-97
STORM SEWER TABULATION	SHEETS NO. 98
EROSION AND SEDIMENT CONTROL DETAILS	SHEETS NO. 19-25
EROSION CONTROL TABULATION	SHEETS NO. 8
TURF ESTABLISHMENT TABULATION	SHEETS NO. 8
SITE MAP	SHEETS NO. 1, 91
STORMWATER TREATMENT CONSTRUCTION STAGING	NA - NO PERMANENT STORMWATER TREATMENT REQUIRED
STORMWATER CALCULATIONS	AVAILABLE UPON REQUEST

SOIL TYPES

SOIL TYPES TYPICALLY FOUND ON THIS PROJECT ARE PREDOMINANTLY SILTY SAND, LOAMY SAND, AND LOAMY FINE SAND PER THE NRCS SOIL SURVEY FOR ANOKA COUNTY. THESE SOILS HAVE HYDROLOGIC SOIL GROUP CLASSIFICATION OF A AND B.

ENVIRONMENTAL REVIEW

THERE ARE NO STORMWATER MITIGATION MEASURES REQUIRED AS A RESULT OF AN ENVIRONMENTAL, ARCHEOLOGICAL OR AGENCY REVIEW. ALL MITIGATION MEASURES HAVE BEEN ADDRESSED IN THIS PLAN SET OR THE SPECIAL PROVISIONS.

THIS PROJECT IS NOT LOCATED IN A WELL HEAD PROTECTION AREA.

THIS PROJECT IS LOCATED IN THE MINNEAPOLIS, ST. PAUL, AND ST. CLOUD "PRIORITY A" DRINKING WATER SUPPLY MANAGEMENT AREA (DWSMA).

THIS PROJECT IS NOT LOCATED IN A KARST AREA.

THIS PROJECT IS NOT LOCATED IN AN EMERGENCY RESPONSE AREA (ERA) PER DEPARTMENT OF HEALTH.

THIS PROJECT IS NOT LOCATED WITHIN AREAS OF KNOWN SOIL AND GROUNDWATER CONTAMINATION.

WATER RELATED PERMITS AND REQUIREMENTS

AGENCY	TYPE OF PERMIT
MINNESOTA POLLUTION CONTROL AGENCY (MPCA)	NPDES CONSTRUCTION PERMIT
MISSISSIPPI WATERSHED MANAGEMENT ORGANIZATION (MWMO)	MWMO STORMWATER STANDARDS (ADMINISTERED BY THE CITY OF FRIDLEY)

1. READ AND REVIEW ALL PERMITS FOR SPECIAL CONDITIONS THAT WILL AFFECT CONSTRUCTION OF THE PROJECT.
2. IF IT BECOMES NECESSARY TO DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMITS, OPERATIONS SHOULD CEASE AND A DETERMINATION SHOULD BE MADE IF ADDITIONAL PERMITS ARE NEEDED OR EXISTING PERMITS NEED TO BE MODIFIED.
3. TEMPORARY DEWATERING ACTIVITIES ARE UNLIKELY FOR ROADWAY CONSTRUCTION AND UTILITY WORK. HOWEVER, IT IS POSSIBLE THAT A PERMIT FOR THE TEMPORARY APPROPRIATION OF WATERS OF THE STATE, NON-IRRIGATION FROM MNDNR WILL BE REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THIS PERMIT PRIOR TO COMMENCING DEWATERING ACTIVITIES. ALL TEMPORARY DEWATERING SHALL BE DISCHARGED TO AN APPROVED LOCATION FOR TREATMENT PRIOR TO DISCHARGE TO THE RECEIVING WATER. SUBMIT A SITE MANAGEMENT PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK.

SPECIAL AND IMPAIRED WATERS THAT ARE LOCATED WITHIN ONE MILE (AERIAL RADIUS) OF THE PROJECT LIMITS AND RECEIVE RUNOFF FROM THE PROJECT SITE.

WATERBODY NAME	IMPAIRMENT(S) OR SPECIAL STATUS
MISSISSIPPI RIVER	FECAL COLIFORM, NUTRIENTS, MERCURY IN FISH TISSUE, PCBs IN FISH TISSUE*

* THESE IMPAIRMENT(S) ARE CONSIDERED TO BE CONSTRUCTION RELATED PARAMETERS AND REQUIRE THE ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) FOUND IN ITEMS 23.9 AND 23.10 OF THE PERMIT.

AREAS OF ENVIRONMENTAL SENSITIVITY (AES)

NO KNOWN WETLANDS OR EXISTING STORMWATER FACILITIES ARE WITHIN OR NEAR THE PROJECT BOUNDARY.

THERE ARE NO KNOWN AREAS OF SOIL OR GROUNDWATER CONTAMINATION WITHIN THE PROJECT LIMITS.

PROJECT ORGANIZATION CONTACTS		PHONE
CONTRACTOR'S EROSION AND SEDIMENT CONTROL SUPERVISOR		
CONTRACTOR'S EROSION AND SEDIMENT CONTROL INSTALLER		
ANOKA COUNTY PROJECT ENGINEER	JERRY AUGE, ASSISTANT COUNTY ENGINEER	763-324-3103
CITY OF FRIDLEY (MWMO LOCAL GOVERNMENT UNIT)	BRANDON BRODHAG, ASSISTANT CITY ENGINEER	763-238-8086
DESIGN PROJECT ENGINEER	MARK DAUBENBERGER, TKDA	651-292-4611
CONSTRUCTION PROJECT ENGINEER	CHRIS OSTERHUS, CONSTRUCTION ENG. MANAGER	763-324-3189
SWPPP DESIGNER	ADAM PETERSEN, TKDA	651-373-6534
MPCA DUTY OFFICER 24 HR EMERGENCY NOTIFICATION	651-649-5451 OR	1(800)-422-0798

SITE INSPECTION AND MAINTENANCE

THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING THE EROSION CONTROL PLAN AND MUST ROUTINELY INSPECT THE ENTIRE CONSTRUCTION SITE A MINIMUM OF ONCE EVERY SEVEN DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. A TRAINED PERSON, AS IDENTIFIED IN 21.2.B OF THE NPDES PERMIT SHALL PERFORM INSPECTIONS.

INSPECT ALL TEMPORARY AND PERMANENT WATER QUALITY MANAGEMENT, EROSION PREVENTION AND SEDIMENT CONTROL BMPS TO ENSURE INTEGRITY AND EFFECTIVENESS UNTIL THE SITE HAS UNDERGONE FINAL STABILIZATION AND THE NOT HAS BEEN SUBMITTED.

INSPECT SURFACE WATER INCLUDING DRAINAGE DITCHES FOR SIGNS OF EROSION AND SEDIMENT DEPOSITION.

INSPECT CONSTRUCTION SITE VEHICLE EXIT LOCATIONS FOR EVIDENCE OF TRACKING ONTO PAVED SURFACES.

INSPECT SURROUNDING PROPERTIES FOR EVIDENCE OF OFF SITE SEDIMENT ACCUMULATION.

INSPECT DAILY THE FOLLOWING: CONSTRUCTION EXITS FOR SIGNS OF TRACKOUT, DEWATERING AREAS, FLOOD PRONE INLETS, SURROUNDING PROPERTIES (STAY WITHIN PROJECT LIMITS), AND ALL SITE MANAGEMENT PLAN LOCATIONS IN ACTIVE CONSTRUCTION.

RECORD ALL INSPECTIONS AND MAINTENANCE ACTIVITES IN WRITING WITHIN 24 HOURS. SUBMIT INSPECTION REPORTS IN A FORMAT THAT IS ACCEPTABLE TO THE PROJECT ENGINEER. INCLUDE THE FOLLOWING IN THE RECORDS OF EACH INSPECTION AND MAINTENANCE ACTIVITY:
A. DATE AND TIME OF INSPECTIONS
B. NAME OF PERSONS CONDUCTING INSPECTIONS
C. FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS
D. CORRECTIVE ACTIONS TAKEN, INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES
E. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 0.5 INCHES IN 24 HOURS
F. ANY DISCHARGES DURING INSPECTIONS MUST BE PHOTOGRAPHED AND DESCRIBED
G. ANY AMENDMENTS TO THE SWPPP AS A RESULT OF INSPECTIONS MUST BE DOCUMENTED WITHIN 7 DAYS
H. ALL PHOTOGRAPHS OF DEWATERING ACTIVITIES AND DOCUMENTATION OF ANY RESULTING NUISANCE CONDITIONS.

MAINTAIN ALL STORMWATER BMPS IN THE TIMEFRAMES DESCRIBED IN THE EROSION AND SEDIMENT CONTROL MEASURES SECTION.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
DRW: AIM
CHK: ALP

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 49785 DATE: 12/2/2024
ADAM L. PETERSEN

TKDA

STORM WATER POLLUTION PREVENTION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 89 OF 148 SHEETS

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STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE (CONTINUED)

EROSION AND SEDIMENT CONTROL MEASURES

AREA	TIME FRAME
ESTABLISH SEDIMENT CONTROL DEVICES ON ALL DOWN GRADIENT PERIMETERS AND UPGRADIENT OF ANY BUFFER ZONES	BEFORE ANY UP GRADIENT LAND DISTURBING ACTIVITIES BEGIN
REPAIR, REPLACE OR SUPPLEMENT PERIMETER CONTROL BMPS	WHEN BMP BECOMES NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT OF THE BMP BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY.
REPLACE, REPAIR OR SUPPLEMENT ALL NONFUNCTIONAL BMPS	BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY.
REPAIR, REPLACE, OR SUPPLEMENT INLET PROTECTION BMPS	WHEN BMP BECOMES NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT OF THE BMP BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY.
REMOVE TRACKED SEDIMENT FROM PAVED SURFACES BOTH ON AND OFF SITE (LIGHTLY WET PRIOR TO SWEEPING)	WITHIN 24 HOURS OF DISCOVERY
REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN AREAS ADJACENT TO PROJECT, SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS AND RESTABILIZE	WITHIN 7 DAYS OF DISCOVERY

1. PROVIDE PERIMETER CONTROL AROUND ALL STOCKPILES AND DO NOT PLACE THEM IN NATURAL BUFFER AREAS, SURFACE WATERS OR STORMWATER CONVEYANCES. TOPSOIL BERMS MUST BE STABILIZED IN ORDER TO BE CONSIDERED PERIMETER CONTROL BMPS.
2. PROTECT STORM SEWER INLETS AT ALL TIMES WITH THE APPROPRIATE INLET PROTECTION BMP AND PROVIDE EMERGENCY OVERFLOW CAPABILITIES. SILT FENCE PLACED IN THE INLET GRATE IS NOT AN ACCEPTABLE INLET PROTECTION BMP FOR GRADING OPERATIONS.
3. PLACE AND MAINTAIN CONSTRUCTION EXITS OF SUFFICIENT SIZE TO PREVENT TRACKING OF SEDIMENT ONTO PAVED SURFACES BOTH ON AND OFF THE PROJECT SITE. REGULAR STREET SWEEPING IS NOT AN ACCEPTABLE ALTERNATIVE TO PROPER CONSTRUCTION EXIT INSTALLATION AND MAINTENANCE.
4. PROVIDE SCOUR PROTECTION AT OUTFALL OF DEWATERING ACTIVITIES. PROVIDE STABILIZATION IN TRENCHES CUT FOR DEWATERING OR SITE DRAINING PURPOSES. DEWATERING THAT MAY HAVE TURBID OR SEDIMENT LADEN DISCHARGE WATER MUST BE DISCHARGED TO A TEMPORARY SEDIMENTATION BASIN, IF POSSIBLE, OR TREATED WITH AN APPROPRIATE BMP SUCH THAT THE DISCHARGE DOES NOT ADVERSLY AFFECT RECEIVING WATERS.
5. PREPARE AND SUBMIT A SITE MANAGEMENT PLAN AND CONTACT ALL APPROPRIATE AUTHORITIES PRIOR TO WORKING IN SURFACE WATERS.
6. MAINTAIN ALL BMPS UNTIL WORK HAS BEEN COMPLETED, SITE HAS UNDERGONE FINAL STABILIZATION FOR PERMIT TERMINATION, AND THE NOTICE OF TERMINATION (NOT) HAS BEEN SUBMITTED TO THE MPCA.

STABILIZATION

AREA	TIME FRAME	NOTES
LAST 200 LINEAL FEET OF DRAINAGE DITCH OR SWALE	WITHIN 24 HOURS OF CONNECTION TO SURFACE WATER OR PROPERTY EDGE	2A, 3A
REMAINING PORTIONS OF DRAINAGE DITCH OR SWALE	7 DAYS	3A
PIPE AND CULVERT OUTLETS	24 HOURS	
EXPOSED SOILS AND STOCKPILES	7 DAYS	1A
WHEN CONSTRUCTION HAS TEMP. OR PERM. CEASED	IMMEDIATELY	4A

1A. TEMPORARY SOIL STOCKPILES WITHOUT SIGNIFICANT CLAY OR SILT AND STOCKPILED AND CONSTRUCTED ROAD BASE ARE EXEMPT.

2A. STABILIZE WETTED PERIMETER OF DITCH (I.E. WHERE THE DITCH GETS WET).

3A. APPLICATION OF MULCH, HYDROMULCH (SLOPE>2%), DISC ANCHORED MULCH (SLOPE>2%),TACKIFIER AND POLYACRYLAMIDE ARE NOT ACCEPTABLE STABILIZATION METHODS IN DITCHES AND SWALES.

4A. STABILIZATION MUST BE INITIATED IMMEDIATELY TO LIMIT SOIL EROSION WHEN CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 7 DAYS AFTER THE CONSTRUCTION ACTIVITY HAS CEASED. TEMPORARY STABILIZATION NOT REQUIRED FOR AREAS WHERE PERMANENT COVER CAN BE PLACED WITHIN 7 DAYS.

MATERIAL STORAGE, WASTE MANAGEMENT, FUELING AND DUST CONTROL

1. PROVIDE A SPILL KIT AT EACH WORK LOCATION ON THE SITE. ENSURE ALL SPILLS ARE CLEANED UP IMMEDIATELY.
2. STORE ALL LIQUID CHEMICALS UNDER COVER WITH SECONDARY CONTAINMENT. CREATE AND FOLLOW A WRITTEN DISPOSAL PLAN FOR ALL WASTE MATERIALS. STORE, COLLECT AND DISPOSE OF ALL SOLID WASTE.
3. FUEL AND MAINTAIN VEHICLES IN A DESIGNATED CONTAINED AREA WHENEVER FEASIBLE. USE DRIP PANS OR ABSORBENT MATERIALS TO PREVENT SPILLS OR LEAKED CHEMICALS FROM DISCHARGING TO SURFACE WATER OR STORMWATER CONVEYANCES.
4. PROVIDE EFFECTIVE CONTAINMENT FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS. LIQUID AND SOLID WASHOUT WASTES MUST NOT CONTACT THE GROUND. DESIGN THE CONTAINMENT SO THAT IT DOES NOT RESULT IN RUNOFF FROM THE WASHOUT OPERATIONS OR CONTAINMENT AREA.
5. USE METHODS AND OPERATIONAL PROCEDURES THAT PREVENT DISCHARGE OR PLACEMENT OF BITUMINOUS GRINDINGS, CUTTINGS, MILLINGS, AND OTHER BITUMINOUS WASTES FROM AREAS OF EXISTING OR FUTURE VEGETATED SOILS AND FROM ALL WATER CONVEYANCE SYSTEMS, INCLUDING INLETS, DITCHES AND CURB FLOW LINES.
6. USE METHODS AND OPERATIONAL PROCEDURES THAT PREVENT CONCRETE DUST, STREET SWEEPING DUST, SAWCUT SLURRY, PLANING WASTE, CONCRETE WASH OUT, AND OTHER CONCRETE WASTES FROM LEAVING MNDOT RIGHT OF WAY, DEPOSITING IN EXISTING OR FUTURE VEGETATED SOILS AND FROM ALL WATER CONVEYANCE SYSTEMS INCLUDING INLETS, DITCHES AND CURB FLOW LINES.
7. PORTABLE TOILETS MUST BE POSITIONED SO THAT THEY ARE SECURE AND WILL NOT BE TIPPED OR KNOCKED OVER. SANITARY WASTE MUST BE DISPOSED OF PROPERLY IN ACCORDANCE WITH MINN. R. CHAPTER 7041.

IMPORTANT SWPPP NOTES FOR CONSTRUCTION ACTIVITY

1. PREPARE AND SUBMIT A SITE MANAGEMENT PLAN FOR THE ENGINEER'S ACCEPTANCE FOR CONCRETE MANAGEMENT, CONCRETE SLURRY APPLICATION AREAS, WORK IN AND NEAR AREAS OF ENVIRONMENTAL SENSITIVITY, AREAS IDENTIFIED IN THE PLANS AS "SITE MANAGEMENT PLAN AREA", ANY WORK THAT WILL REQUIRE DEWATERING, AND AS REQUESTED BY THE ENGINEER. SUBMIT ALL SITE MANAGEMENT PLANS TO THE ENGINEER IN WRITING. ALLOW A MINIMUM OF 7 DAYS FOR MNDOT TO REVIEW AND ACCEPT SITE MANAGEMENT PLAN SUBMITTALS. WORK WILL NOT BE ALLOWED TO COMMENCE IF A SITE MANAGEMENT PLAN IS REQUIRED UNTIL ACCEPTANCE HAS BEEN GRANTED BY THE ENGINEER. THERE WILL BE NO EXTRA TIME ADDED TO THE CONTRACT DUE TO THE UNTIMELY SUBMITTAL.
2. PROTECT ALL STORM DRAIN INLETS USING APPROPRIATE BMPS DURING CONSTRUCTION UNTIL PERMANENT COVER IS ESTABLISHED.
3. ROUTE STORMWATER AROUND UNSTABILIZED AREAS OF THE SITE WHENEVER FEASIBLE.
4. CONSTRUCTION PROJECT SHOULD BE PHASED TO MINIMIZE THE DURATION OF EXPOSED SOILS.
5. MINIMIZE COMPACTION OF SOILS AND PRESERVE TOPSOIL IN AREAS WHERE VEGETATION WILL BE ESTABLISHED.
6. DIRECT DISCHARGES FROM BMPS TO VEGETATED AREAS WHENEVER FEASIBLE. PROVIDE VELOCITY DISSIPATION DEVICES AS NEEDED TO PREVENT EROSION.
7. LOCATE STOCKPILES OUTSIDE OF STORMWATER CONVEYANCES AND PROVIDE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROL AT THE BASE OF STOCKPILES ON THE DOWNGRADIENT SIDE.
8. DISCHARGE TURBID OR SEDIMENT LADEN WATER TO TEMPORARY SEDIMENT BASINS WHENEVER FEASIBLE (REQUIRED IF DRAINAGE AREA IS 5 ACRES OR LARGER AND WITHIN 1 MILE OF IMPAIRED WATER). IN THE EVENT THAT IT IS NOT FEASIBLE TO DISCHARGE THE SEDIMENT LADEN WATER TO A TEMPORARY SEDIMENT BASIN, THE WATER MUST BE TREATED SO THAT IT DOES NOT CAUSE A NUISANCE CONDITION IN THE RECEIVING WATERS OR TO DOWNSTREAM LANDOWNERS. MUST DOCUMENT WHY SEDIMENT BASIN IS NOT FEASIBLE.
9. PROVIDE STABILIZATION IN ANY TRENCHES CUT FOR DEWATERING OR SITE DRAINING PURPOSES.
10. PROVIDE A 50 FOOT NATURAL BUFFER OR, IF BUFFER IS INFEASIBLE, PROVIDE A DOUBLE ROW OF SEDIMENT CONTROLS SPACED AT LEAST 5' APART WHEN A SURFACE WATER IS LOCATED WITHIN 50 FEET OF LAND DISTURBANCE AND STORMWATER FLOWS TO THE SURFACE WATER.
11. SUBSOIL ALL DISTURBED GREEN SPACES EXCEPT AS LISTED IN 2574.3A.5.

PIPE AND STRUCTURE NOTES

1. SIZE AND ELEVATION OF CULVERTS, STORM SEWER PIPES, CATCH BASINS, PONDS, INFILTRATION/FILTRATION BASINS, PERMEABLE DITCH BLOCKS AND OVERFLOW DEVICES HAVE BEEN SPECIFICALLY DESIGNED TO CONFORM TO DESIGN STANDARDS AND PERMIT REQUIREMENTS. THE DESIGN COMPUTATIONS ARE ON FILE WITH THE OWNER. CHANGING THESE ITEMS OR THE DIRECTION OF FLOW FROM WHAT IS SHOWN ON THE PLANS MAY CAUSE PROBLEMS OFF THE PROJECT AND COULD MEAN THE PROJECT IS OUT OF COMPLIANCE WITH APPROVED DRAINAGE PERMITS. ANY CHANGES OF THE DRAINAGE SYSTEM MUST BE APPROVED BY THE WATER RESOURCES DESIGNER.
2. SUBSURFACE DRAINAGE TILES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED, REPLACED OR REROUTED, AND CONNECTED TO THE EXISTING TILE OR DRAINAGE SYSTEM TO ENSURE THAT EXISTING UPLAND DRAINAGE IS PERPETUATED. THIS SHALL BE DONE TO THE APPROVAL AND SATISFACTION OF THE ENGINEER.

NPDES PERMIT TERMINATION CONDITIONS

1. PERMITTEES MUST COMPLETE ALL CONSTRUCTION ACTIVITY AND MUST INSTALL PERMANENT COVER OVER ALL AREAS PRIOR TO SUBMITTING NOT. VEGETATIVE COVER MUST CONSIST OF A UNIFORM PERENNIAL VEGETATION WITH A DENSITY OF 70% OF ITS EXPECTED FINAL GROWTH.
2. PERMITTEES MUST REMOVE ANY ACCUMULATED SEDIMENT AND STABILIZE THE PERMANENT STORMWATER TREATMENT SYSTEM(S) AND MUST ENSURE THE SYSTEM(S) ARE OPERATING AS DESIGNED.
3. PERMITTEES MUST REMOVE ALL SEDIMENT FROM CONVEYANCE SYSTEMS PRIOR TO SUBMITTING THE NOT.
4. PERMITTEES MUST REMOVE ALL TEMPORARY SYNTHETIC EROSION PREVENTION AND SEDIMENT CONTROL BMPS PRIOR TO SUBMITTING THE NOT. PERMITTEES MAY LEAVE BMPS DESIGNED TO DECOMPOSE ON-SITE IN PLACE.
5. PERMITTEES MUST INCLUDE PHOTOGRAPHS SHOWING THE 70% VEGETATIVE COVER REQUIREMENT HAS BEEN MET.

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
DRW: AIM
CHK: ALP

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 49785 DATE: 12/2/2024
ADAM L. PETERSEN

TKDA

STORM WATER POLLUTION PREVENTION PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE (CONTINUED)

TREATMENT BMPS INCLUDED WITH THIS PROJECT ARE:

STORM DRAIN INLET PROTECTION, SILT FENCE, SEDIMENT CONTROL LOGS. NO PERMANENT STORMWATER TREATMENT REQUIRED.

BASIN CONSTRUCTION NOTES

1. ATTENUATION BASIN AND DITCHES MAY BE USED AS TEMPORARY SEDIMENT TRAPS OR TEMPORARY SEDIMENT BASINS AS LONG AS SEDIMENT IS REMOVED AT THE END OF CONSTRUCTION.

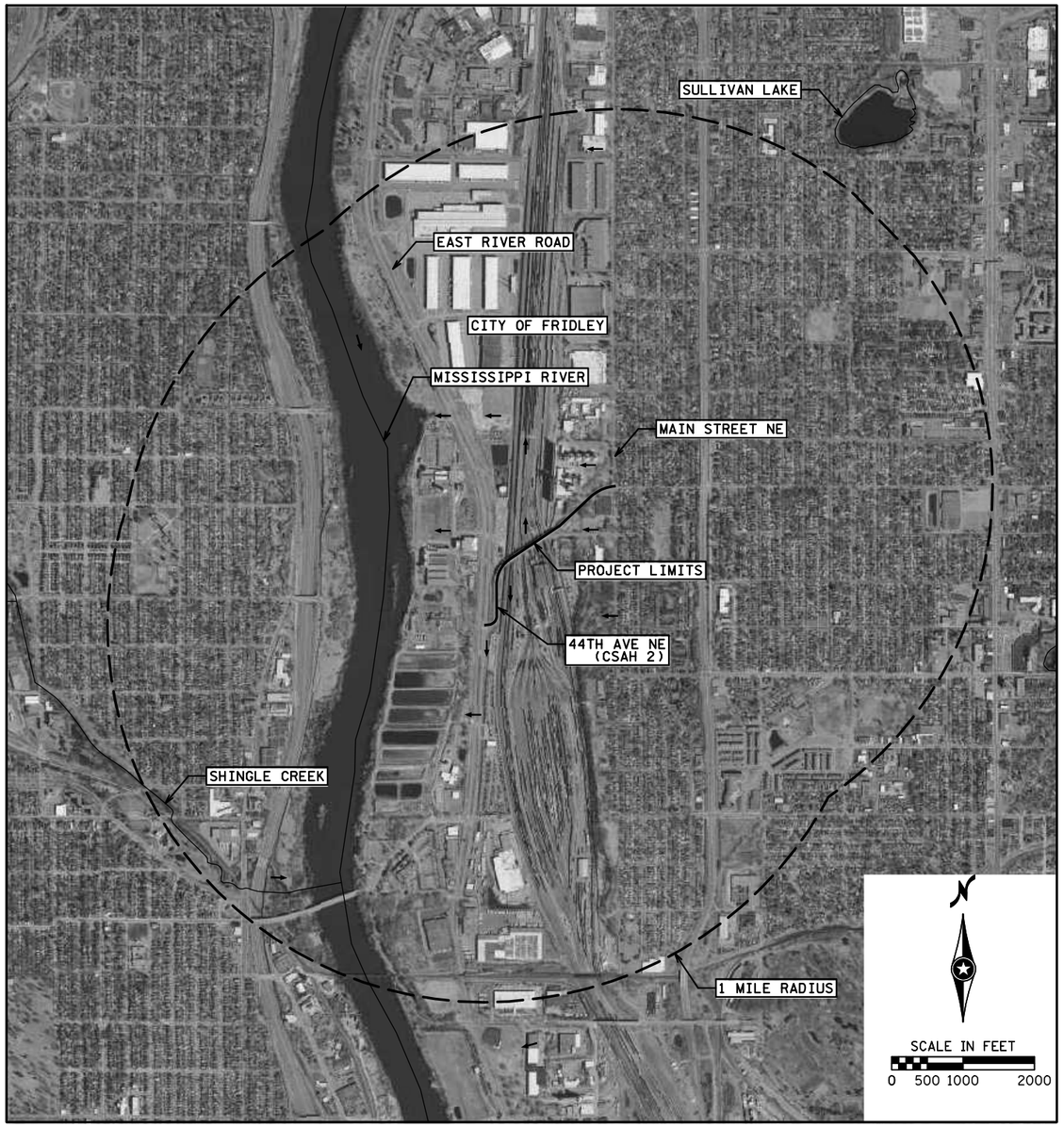
TEMPORARY SEDIMENT BASINS

1. PROVIDE TEMPORARY SEDIMENT BASIN FOR COMMON DRAINAGE LOCATIONS THAT SERVE AN AREA WITH 5 OR MORE ACRES DISTURBED AT ONE TIME.
2. THE TEMPORARY BASIN MUST PROVIDE LIVE STORAGE FOR A CALCULATED VOLUME OF RUNOFF FROM A 2-YEAR, 24-HOUR STORM FROM EACH ACRE DRAINED TO THE BASIN OR 1,800 CUBIC FEET OF LIVE STORAGE PER ACRE DRAINED, WHICHEVER IS GREATER.
3. WHERE CONTRACTOR HAS NOT CALCULATED THE 2-YEAR, 24-HOUR STORM RUNOFF AMOUNT, THE TEMPORARY BASIN MUST PROVIDE 3,600 CUBIC FEET OF LIVE STORAGE PER ACRE OF THE BASIN'S DRAINAGE AREA.
4. DESIGN BASIN OUTLETS TO PREVENT SHORT-CIRCUITING AND THE DISCHARGE OF FLOATING DEBRIS.
5. DESIGN THE OUTLET STRUCTURE TO WITHDRAW WATER FROM THE SURFACE TO MINIMIZE THE DISCHARGE OF POLLUTANTS. THE BASIN MUST INCLUDE A STABILIZED EMERGENCY OVERFLOW TO PREVENT FAILURE OF POND INTEGRITY.
6. PROVIDE ENERGY DISSIPATION FOR THE BASIN OUTLET WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER.
7. LOCATE TEMPORARY BASINS OUTSIDE OF SURFACE WATERS AND ANY BUFFER ZONE REQUIRED UNLESS OTHERWISE SHOWN IN THE PLANS.

LONG TERM MAINTENANCE AND OPERATION

NO PERMANENT STORMWATER TREATMENT IS REQUIRED FOR THE PROJECT. AN ATTENUATION BASIN PROVIDES RATE CONTROL. INSPECTION AND MAINTENANCE OF THE ATTENUATION BASIN SHALL BE PERFORMED BY THE CITY OF FRIDLEY.

OFFSITE FLOW INFORMATION DRAWING



SEE DRAINAGE PLANS FOR SURFACE FLOW DIRECTION

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
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I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 49785 DATE: 12/2/2024
ADAM L. PETERSEN

TKDA

STORM WATER POLLUTION PREVENTION PLAN

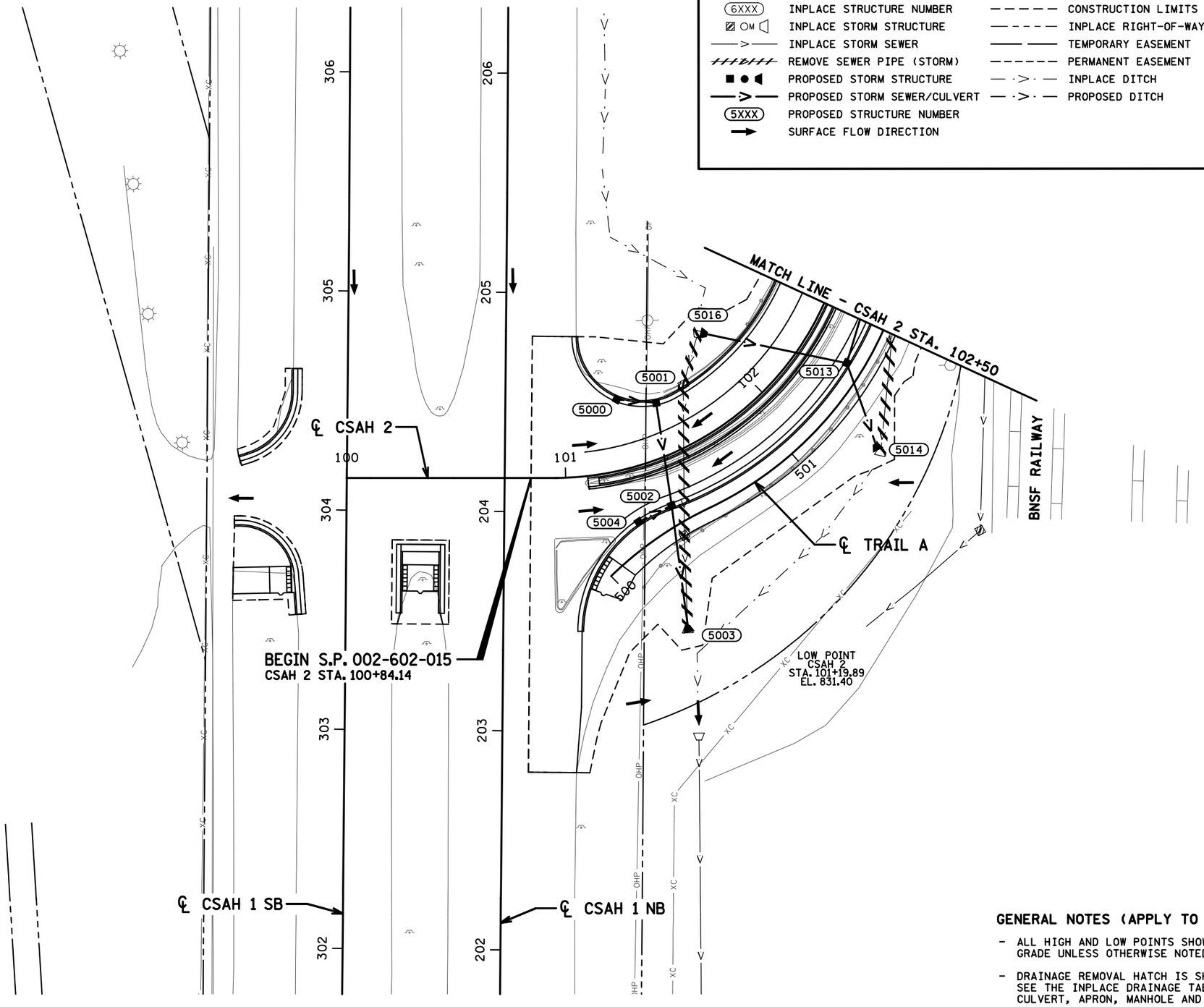
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S.A.P 002-602-015, S.A.P. 127-020-037

DATE: 12/2/2024 TIME: 11:41:07 AM
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LEGEND

6XXX — INPLACE STRUCTURE NUMBER	CONSTRUCTION LIMITS
OM — INPLACE STORM STRUCTURE	INPLACE RIGHT-OF-WAY
INPLACE STORM SEWER	TEMPORARY EASEMENT
REMOVE SEWER PIPE (STORM)	PERMANENT EASEMENT
PROPOSED STORM STRUCTURE	INPLACE DITCH
PROPOSED STORM SEWER/CULVERT	PROPOSED DITCH
5XXX — PROPOSED STRUCTURE NUMBER	
SURFACE FLOW DIRECTION	

SCALE IN FEET
0 25 50



GENERAL NOTES (APPLY TO ALL DRAINAGE SHEETS):

- ALL HIGH AND LOW POINTS SHOWN ARE ON THE ROADWAY PROFILE GRADE UNLESS OTHERWISE NOTED FOR GUTTER LOW POINTS.
- DRAINAGE REMOVAL HATCH IS SHOWN ON THE DRAINAGE PLAN. SEE THE INPLACE DRAINAGE TABULATION FOR STORM SEWER PIPE, CULVERT, APRON, MANHOLE AND CATCH BASINS TO BE REMOVED.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
DRW: AIM
CHK: ALP

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 49785 DATE: 12/2/2024
ADAM L. PETERSEN

TKDA

CSAH 2 STA. 100+84 TO STA. 102+50

DRAINAGE PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 92 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:41:12 AM
FILENAME: pw:\\tkda-pw.bentley.com:tkda-pw-ON\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CADHIghway\Sheets\cd0026020l5_drb.dgn

LEGEND

6XXX	INPLACE STRUCTURE NUMBER		CONSTRUCTION LIMITS
OM	INPLACE STORM STRUCTURE		INPLACE RIGHT-OF-WAY
	INPLACE STORM SEWER		TEMPORARY EASEMENT
	REMOVE SEWER PIPE (STORM)		PERMANENT EASEMENT
	PROPOSED STORM STRUCTURE		INPLACE DITCH
	PROPOSED STORM SEWER/CULVERT		PROPOSED DITCH
5XXX	PROPOSED STRUCTURE NUMBER		
	SURFACE FLOW DIRECTION		

SCALE IN FEET
0 25 50

℄ CSAH 1 SB
℄ CSAH 1 NB
207
208
℄ CSAH 2
5010
5011
5012
5015
102
103
104
105
106
107
108
109
502
503
504
505
506
507
508
MATCH LINE - CSAH 2 STA. 102+50
MATCH LINE - CSAH 2 STA. 109+25
℄ TRAIL A
BNSF RAILWAY

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
DRW: AIM
CHK: ALP

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 49785 DATE: 12/2/2024
ADAM L. PETERSEN

TKDA

CSAH 2 STA. 102+50 TO STA. 109+25

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

DRAINAGE PLAN

SHEET NO. 93 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:41:17 AM
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LEGEND

6XXX — INPLACE STRUCTURE NUMBER	— — — — CONSTRUCTION LIMITS
OM — INPLACE STORM STRUCTURE	— — — — INPLACE RIGHT-OF-WAY
INPLACE STORM SEWER	TEMPORARY EASEMENT
REMOVE SEWER PIPE (STORM)	PERMANENT EASEMENT
PROPOSED STORM STRUCTURE	INPLACE DITCH
PROPOSED STORM SEWER/CULVERT	PROPOSED DITCH
5XXX — PROPOSED STRUCTURE NUMBER	
SURFACE FLOW DIRECTION	

SCALE IN FEET
0 25 50

ATTENUATION BASIN (2)
BTM = 833.0
DESIGN HWL (10-YR) = 836.9
HWL (100-YR) = 837.3

MATCH LINE - CSAH 2 STA. 119+50

MATCH LINE - CSAH 2 STA. 126+50

℄ CSAH 2

℄ TRAIL A

5032 5034 5035 5033 5025 5023 5022 5021 5020 5024 5031 5030 5029 5028 5027 5026 5036 (1)

120 121 122 123 124 125 126 520 521 522 523 524 525

LOW POINT
CSAH 2
STA. 125+48.27
EL. 840.75

END S.P. 002-602-015
BEGIN S.P. 127-020-037
CSAH 2 STA. 125+00.00

SPECIFIC NOTES:

(1) CONNECT TO EXISTING STORM SEWER

(2) SEE CONTOUR PLAN

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
DRW: AIM
CHK: ALP

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 49785 DATE: 12/2/2024
ADAM L. PETERSEN

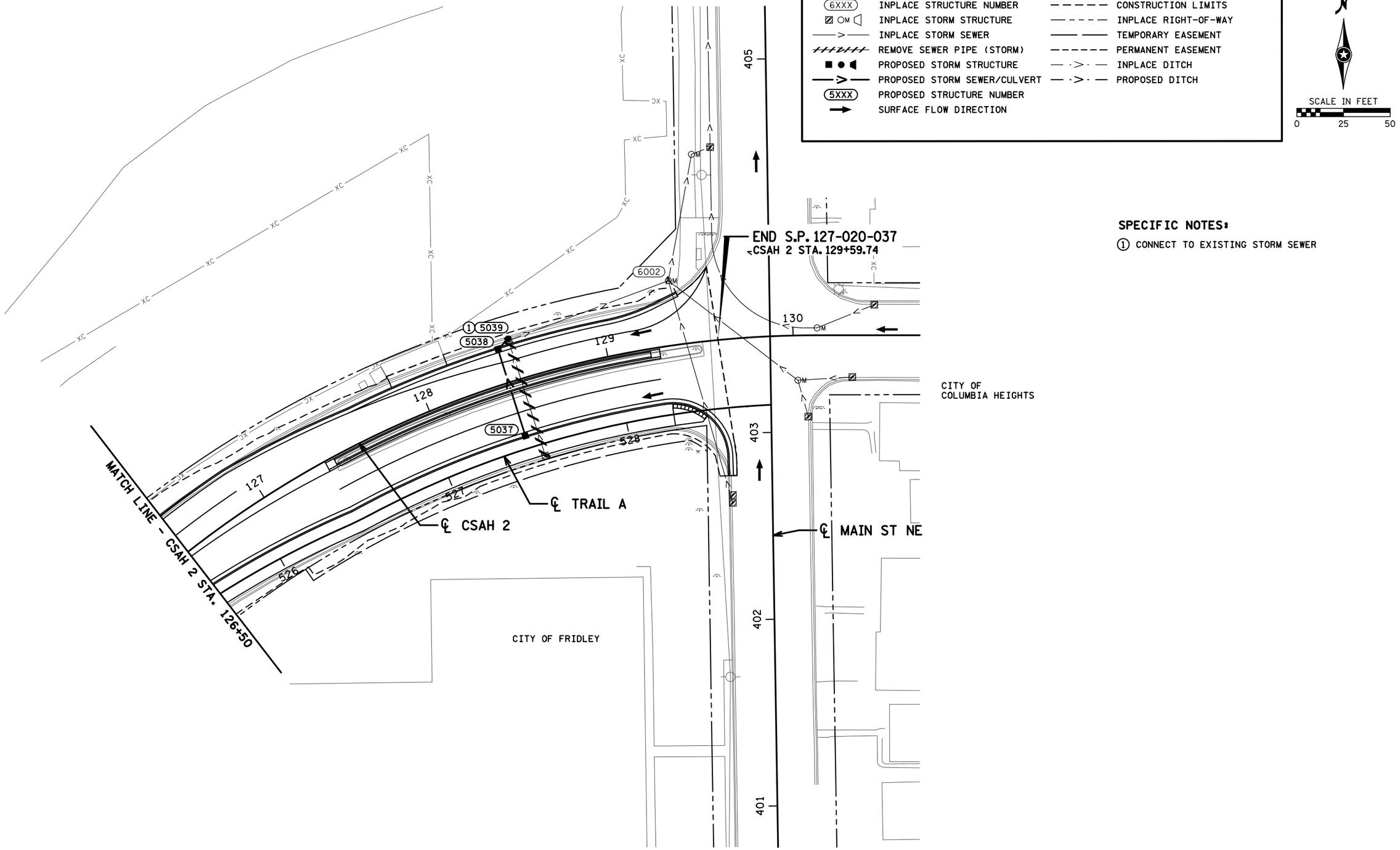
TKDA

CSAH 2 STA. 119+50 TO STA. 126+50

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

DRAINAGE PLAN

SHEET NO. 94 OF 148 SHEETS



NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
DRW: AIM
CHK: ALP

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 49785 DATE: 12/2/2024

ADAM L. PETERSEN

TKDA

CSAH 2 STA. 126+50 TO STA. 129+60

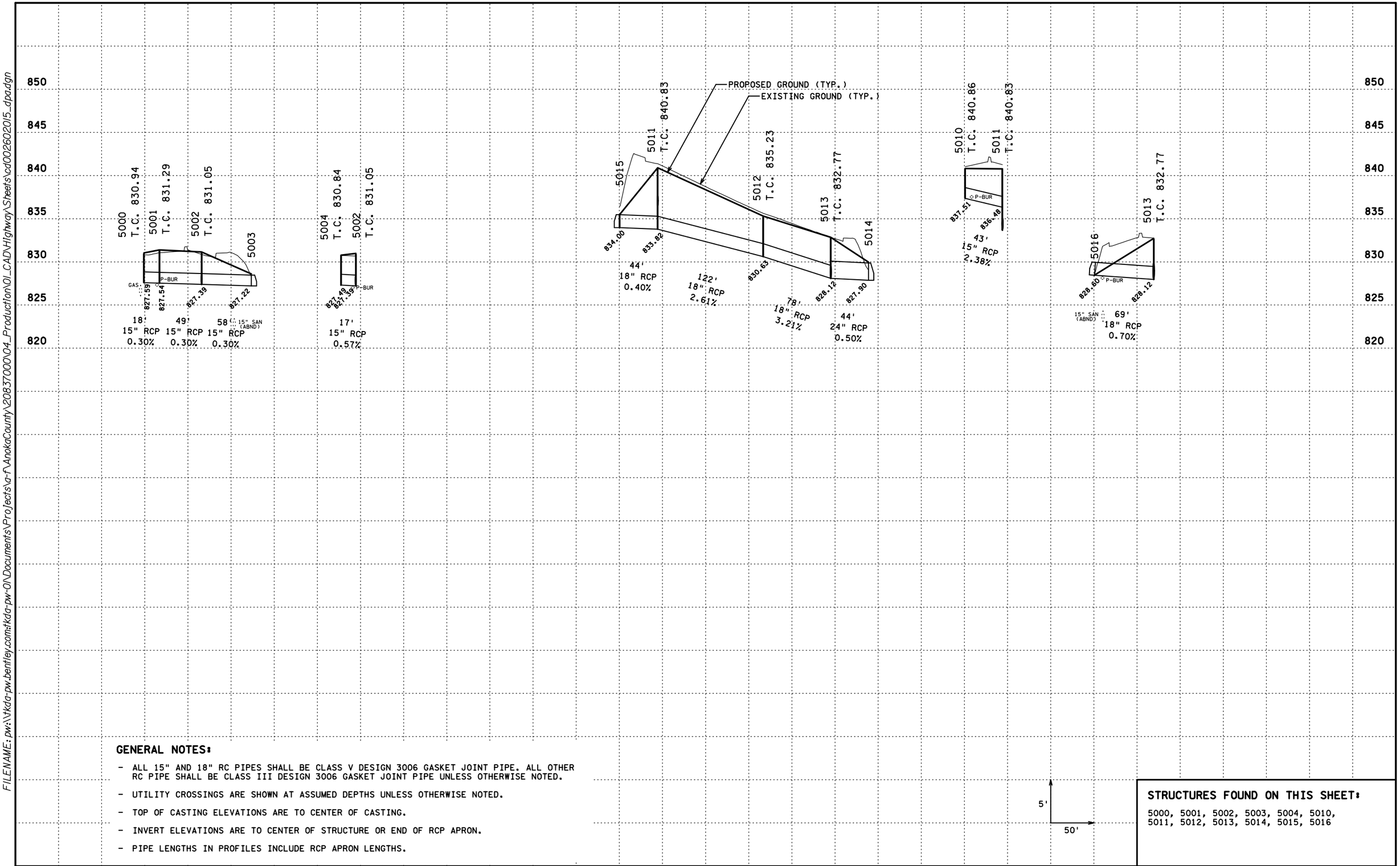
DRAINAGE PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 95 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:41:22 AM
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DATE: 12/2/2024 TIME: 11:41:28 AM
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GENERAL NOTES:

- ALL 15" AND 18" RC PIPES SHALL BE CLASS V DESIGN 3006 GASKET JOINT PIPE. ALL OTHER RC PIPE SHALL BE CLASS III DESIGN 3006 GASKET JOINT PIPE UNLESS OTHERWISE NOTED.
- UTILITY CROSSINGS ARE SHOWN AT ASSUMED DEPTHS UNLESS OTHERWISE NOTED.
- TOP OF CASTING ELEVATIONS ARE TO CENTER OF CASTING.
- INVERT ELEVATIONS ARE TO CENTER OF STRUCTURE OR END OF RCP APRON.
- PIPE LENGTHS IN PROFILES INCLUDE RCP APRON LENGTHS.

5'
50'

STRUCTURES FOUND ON THIS SHEET:

5000, 5001, 5002, 5003, 5004, 5010, 5011, 5012, 5013, 5014, 5015, 5016

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
DRW: AIM
CHK: ALP

I HEREBY CERTIFY THAT THIS SHEET 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

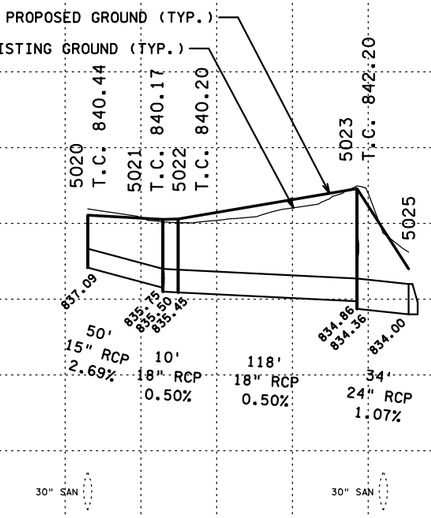
SIGNATURE: _____ ADAM L. PETERSEN LIC. NO. 49785 DATE: 12/2/2024

TKDA

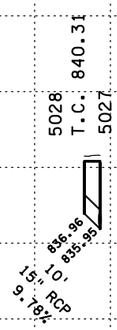
DRAINAGE PROFILES

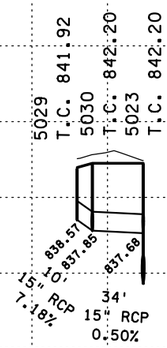
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

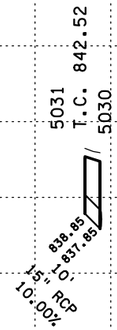
SHEET NO. 96 OF 148 SHEETS

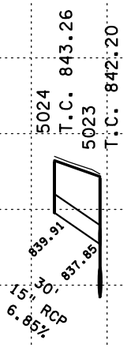


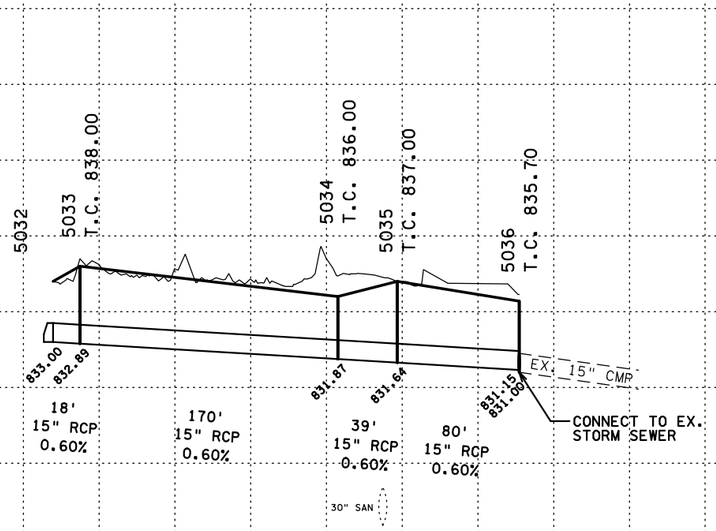


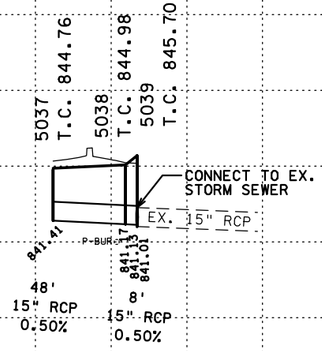






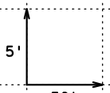






GENERAL NOTES:

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- UTILITY CROSSINGS ARE SHOWN AT ASSUMED DEPTHS UNLESS OTHERWISE NOTED.
- TOP OF CASTING ELEVATIONS ARE TO CENTER OF CASTING.
- INVERT ELEVATIONS ARE TO CENTER OF STRUCTURE OR END OF RCP APRON.
- PIPE LENGTHS IN PROFILES INCLUDE RCP APRON LENGTHS.



STRUCTURES FOUND ON THIS SHEET:

5020, 5021, 5022, 5023, 5024, 5025, 5026, 5027, 5028, 5029, 5030, 5031, 5032, 5033, 5034, 5035, 5036, 5037, 5038, 5039

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
DRW: AIM
CHK: ALP

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SIGNATURE: _____ LIC. NO. 49785 DATE: 12/2/2024
ADAM L. PETERSEN

TKDA

DRAINAGE PROFILES

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 97 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:41:34 AM
FILENAME: pw:\\tkda-pw.bentley.com:tkda-pw-0\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CAD\Hgtway\Sheets\cd0026020l5_dpb.dgn

DRAINAGE

TAB G

UPSTREAM STRUCTURE LOCATION (1)								NEW STRUCTURE CONSTRUCTION						PIPE SEWER			DRAINS TO			APRON			GUIDE POST TYPE B	GEOTEXTILE FILTER TYPE 3	RANDOM RIPRAP CLASS II	CONNECT TO EXISTING STORM SEWER	NOTES
STRUCTURE OR APRON INLET POINT NO.	ALIGNMENT	STATION	OFFSET	COORDINATES		TOP OF CASTING ELEV.	OUTLET ELEV. (2)	CASTING ASSEMBLY (3)		PAY HEIGHT DESIGN			STEPS REQ'D (4)	15" RC DES 3006 CL V	18" RC DES 3006 CL V	24" RC DES 3006 CL III	STRUCT OR APRON OUTLET POINT NO.	SLOPE OF PIPE %	INLET ELEV. (2)	15" RC	18" RC	24" RC					
				X	Y			TYPE	EACH	N	SD-48	48-4020		LIN FT	LIN FT	LIN FT				EACH	EACH	EACH	EACH	SQ YD	CU YD	EACH	
5000	CSAH2	101+32.53	31.83 LT	497882.06	102804.47	830.94	827.59	B - 16	1	3.3				18			5001	0.30	827.54								
5001	CSAH2	101+53.13	24.07 LT	497899.95	102802.07	831.29	827.54	B - 17	1		3.7			49			5002	0.30	827.39								(7)
	CSAH2	101+53.35	24.84 LT	497899.83	102802.85																						
5002	CSAH2	101+41.73	22.00 RT	497904.83	102754.92	831.05	827.39	B - 17	1		3.6			52			5003	0.30	827.22								(5)(6)(7)
	CSAH2	101+41.74	22.79 RT	497905.08	102754.17																						
5003	CSAH2	101+34.00	79.50 RT	497910.09	102696.71		827.22													1			1	18.0	3.2		(8)
5004	CSAH2	101+27.27	24.89 RT	497889.10	102747.96	830.84	827.49	B - 16	1	3.3				17			5002	0.57	827.39								
5010	CSAH2	104+20.00	22.00 LT	497970.35	103011.60	840.86	837.51	B - 17	1	3.3				43			5011	2.38	836.48								
5011	CSAH2	104+20.00	22.00 RT	498014.35	103011.94	840.83	833.82	B - 17	1			6.9	YES		122		5012	2.61	830.63								(7)
	CSAH2	104+20.00	21.21 RT	498013.56	103011.94																						
5012	CSAH2	103+00.00	22.00 RT	498014.44	102889.67	835.23	830.63	B - 17	1			4.5	YES		78		5013	3.21	828.12								(7)
	CSAH2	103+00.00	22.79 RT	498015.23	102889.60																						
5013	CSAH2	102+31.98	22.00 RT	497987.71	102816.11	832.77	828.12	B - 17	1		4.6		YES			38	5014	0.50	827.90								(5)(6)(7)
	CSAH2	102+31.98	21.21 RT	497987.05	102816.56																						
5014	CSAH2	102+13.50	57.90 RT	498000.96	102775.13		827.90															1	1	29.7	6.2		(8)
5015	CSAH2	104+49.29	54.37 RT	498046.49	103041.48		834.00								38		5011	0.40	833.82		1		1				(5)(6)
5016	CSAH2	101+97.00	39.70 LT	497920.38	102832.63		828.60								63		5013	0.70	828.12		1		1				(5)(6)
5020	CSAH2	125+98.00	23.00 LT	499299.01	104578.99	840.44	837.09	B - 17	1	3.3				50			5021	2.69	835.75								
5021	CSAH2	125+48.30	22.00 LT	499263.42	104544.27	840.17	835.50	B - 8	1			4.6	YES		10		5022	0.50	835.45								
	CSAH2	125+48.30	22.79 LT	499262.88	104544.85																						
5022	CSAH2	125+38.21	21.61 LT	499256.33	104537.09	840.20	835.45	B - 8	1			4.7	YES		118		5023	0.50	834.86								
	CSAH2	125+38.18	22.40 LT	499255.76	104537.64																						
5023	CSAH2	124+20.00	16.00 LT	499173.42	104452.93	842.20	834.36	B - 17	1			7.8	YES			28	5025	1.07	834.00								(5)(6)(7)
	CSAH2	124+20.00	16.79 LT	499172.89	104453.51																						
5024	CSAH2	123+90.00	15.00 LT	499152.00	104431.90	843.26	839.91	B - 17	1	3.3				30			5023	6.85	837.85								
5025	CSAH2	124+16.78	50.54 LT	499147.68	104476.18		834.00															1	1	29.7	6.2		(9)
5026	CSAH2	125+98.00	17.20 RT	499326.49	104549.65	840.56	837.21	B - 17	1	3.3				50			5027	2.54	835.95								
5027	CSAH2	125+48.30	16.00 RT	499289.40	104516.55	840.30	835.95	B - 16	1			4.3	YES	40			5021	0.50	835.75								(7)
	CSAH2	125+48.30	16.79 RT	499289.94	104515.97																						
5028	CSAH2	125+38.00	16.00 RT	499281.89	104509.50	840.31	836.96	B - 17	1	3.3				10			5027	9.78	835.95								
5029	CSAH2	124+30.00	16.00 RT	499202.43	104436.12	841.92	838.57	B - 17	1	3.3				10			5030	7.18	837.85								
5030	CSAH2	124+20.00	16.00 RT	499195.06	104429.36	842.20	837.85	B - 17	1			4.3	YES	34			5023	0.50	837.68								(7)
	CSAH2	124+20.00	16.79 RT	499195.60	104428.78																						
5031	CSAH2	124+10.00	16.00 RT	499187.70	104422.59	842.52	838.85	B - 17	1	3.6				10			5030	10.00	837.85								
5032	CSAH2	121+91.86	67.47 LT	498970.12	104336.02		833.00							12			5033	0.60	832.89	1			1				(5)(6)
5033	CSAH2	121+80.00	55.00 LT	498969.99	104318.81	838.00	832.89	A - 4D	1			5.5	YES	170			5034	0.60	831.87								
	CSAH2	121+80.00	54.21 LT	498970.53	104318.23																						
5034	CSAH2	120+05.00	70.00 LT	498834.27	104216.34	836.00	831.87	M - 11	1			4.2	YES	39			5035	0.60	831.64				1				
	CSAH2	120+05.00	69.21 LT	498834.76	104215.72																						
5035	CSAH2	119+75.14	41.00 LT	498829.59	104176.22	837.00	831.64	A - 4D	1			5.7	YES	80			5036	0.60	831.15								
	CSAH2	119+75.96	41.00 LT	498830.23	104176.70																						
5036	CSAH2	119+77.34	39.45 RT	498879.37	104112.99	835.70	831.00	M - 7	1			4.8	YES				6001	1.41	827.62							1	
	CSAH2	119+76.58	39.45 RT	498878.74	104112.52																						
5037	CSAH2	128+45.00	29.00 RT	499534.46	104658.85	844.76	841.41	B - 17	1	3.3				48			5038	0.50	841.17								
5038	CSAH2	128+45.00	18.00 LT	499520.31	104703.67	844.98	841.17	B - 17	1			3.8		8			5039	0.50	841.13								(7)
	CSAH2	128+45.00	18.79 LT	499520.07	104704.43																						
5039	CSAH2	128+51.50	21.70 LT	499525.66	104709.20	845.70	841.01	A - 4D	1			5.1	YES				6002	0.47	840.58							1	
	CSAH2	128+51.50	22.49 LT	499525.43	104709.95																						
TOTALS									26	33.3	11.9	66.2		770	429	66				2	2	2	7	77.4	15.6	2	

NOTES:

(1) STATION, OFFSET, COORDINATES AND TOP OF CASTING ELEVATIONS FOR EACH STRUCTURE NUMBER ARE GIVEN AT:
- CENTER OF GRATE OR COVER CASTING UNLESS NOTED OTHERWISE
- END OF RC APRON
- ADDITIONAL STATION, OFFSET AND COORDINATES GIVEN AT CENTER OF BASE FOR DESIGN 4020 AND SD STRUCTURES.

(2) OUTLET AND INLET ELEVATIONS ARE GIVEN AT:
- CENTER OF STRUCTURE
- END OF RC APRON

(3) SEE SHEET 99 FOR CASTING ASSEMBLY KEY AND SUMMARY.

(4) STRUCTURES WITH PAY HEIGHT 4.0' AND GREATER SHALL INCLUDE MANHOLE STEPS 16" ON CENTER UNLESS OTHERWISE NOTED (INCIDENTAL). SEE STANDARD PLATE 4180.

(5) LENGTH GIVEN TO END OF BARREL (DOES NOT INCLUDE APRON LENGTH).

(6) FOR CONCRETE SEWERS, TIE THE THREE END SECTIONS (INCLUDING APRON) OF A FREE END (NO MANHOLE). TIE PER STANDARD PLATE 3145 (INCIDENTAL).

(7) CASTING ASSEMBLY REQUIRES MINIMUM 30" HOLE IN TOP SLAB AND 30" ADJUSTING RINGS.

(8) PLACE RIPRAP AT RCP OUTLET PER STANDARD PLATE 3133.

(9) PLACE RIPRAP AT RCP OUTLET PER STANDARD PLATE 3133. MODIFY LENGTH DIMENSION TO FIT WITHIN BASIN GRADING. EXTEND RIPRAP UP THE BASIN SIDE SLOPES 1 FOOT TO PROTECT SLOPES. SEE CONTOUR PLAN ON SHEET 100 FOR RIPRAP EXTENT.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: AMB
DRW: AIM
CHK: ALP

I HEREBY CERTIFY THAT THIS SHEET 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: _____ LIC. NO. 49785 DATE: 12/2/2024

ADAM L. PETERSEN

TKDA

DRAINAGE TABULATIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 98 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:41:37 AM
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CASTING ASSEMBLY SUMMARY

ASSEMBLY	RING OR FRAME CASTING	COVER OR GRATE CASTING	CURB BOX	STANDARD PLATE NO.	TOTAL
MANHOLES					
A - 4D	700-4			4101	3
		715		4110	
AREA DRAINS					
M - 7	700-7			4101	1
		721		4140	
M - 11	ROUND CONC.			4143	1
		731		4143	
CATCH BASINS					
B - 8	805			4132	2
		815		4153	
			N/A	N/A	
B - 16	806			4125	3
		815		4153	
			825	4134	
B - 17	806			4125	16
		816		4154	
			825	4134	

INPLACE DRAINAGE — TAB H

ALIGNMENT	STATION TO STATION	LOCATION	INPLACE ITEM	REMOVE PIPE APRON	REMOVE MANHOLE OR CATCH BASIN	REMOVE SEWER PIPE (STORM)
				EACH	EACH	LIN FT
CSAH 2	101+34	76' RT	APRON	1		
CSAH 2	101+34 - 101+42	76' RT - 37' RT	18" RCP			41
CSAH 2	101+42	37' RT	CB		1	
CSAH 2	101+42 - 101+71	37' RT - 25' LT	18" RCP			69
CSAH 2	101+71	25' LT	CB		1	
CSAH 2	101+71 - 101+95	25' LT - 39' LT	15" RCP			22
CSAH 2	101+95	39' LT	APRON	1		
CSAH 2	102+14	57' RT	APRON	1		
CSAH 2	102+14 - 102+56	57' RT - 32' RT	18" RCP			60
CSAH 2	102+56	32' RT	CB		1	
CSAH 2	102+56 - 104+29	32' RT - 31' RT	15" RCP			185
CSAH 2	104+28	23' LT	CB		1	
CSAH 2	104+28 - 104+29	23' LT - 31' RT	15" RCP			53
CSAH 2	104+29	31' RT	CB		1	
CSAH 2	104+29 - 104+48	31' RT - 53' RT	15" RCP			30
CSAH 2	104+48	53' RT	APRON	1		
CSAH 2	119+77 - 119+83	39' RT - 31' RT	15" CMP			11
CSAH 2	119+83	31' RT	CB		1	
CSAH 2	123+83	32' LT	APRON	1		
CSAH 2	123+83 - 123+84	32' LT - 20' LT	15" RCP			12
CSAH 2	123+84	20' LT	CB		1	
CSAH 2	128+52	22' LT	CB		1	
CSAH 2	128+52 - 128+53	22' LT - 43' RT	12" RCP			65
CSAH 2	128+53	43' RT	CB		1	
TOTALS				**5**	**9**	**548**

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ADAM L. PETERSEN

TKDA

DRAINAGE TABULATIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

STAKING POINTS			
POINT #	X	Y	ELEV. (1)
G100	499161.4715	104490.9580	838.0
G101	499139.1483	104487.3877	837.0
G102	499154.5346	104486.0127	837.0
G103	499155.2811	104471.3295	837.0
G104	499085.9084	104406.4538	837.0
G105	498985.5748	104331.3988	837.0
G106	498957.5314	104309.9091	837.0
G107	498952.6759	104315.6117	837.0
G108	498956.5924	104348.0761	837.0
G109	498963.8746	104359.5413	837.0
G110	499139.3994	104476.2991	834.0
G111	499143.2836	104472.1672	834.0
G112	499080.0518	104413.4412	834.0
G113	498977.6351	104341.0080	833.0
G114	498969.2697	104336.1381	833.0
G115	498971.3007	104349.0709	833.0
G116	498955.3301	104312.6082	836.5
G117	498837.3214	104221.5201	836.0
G118	498832.1420	104218.6901	836.0
G119	498829.5343	104203.4189	836.0
G120	498838.8527	104217.3859	837.0
G121	498830.3761	104222.2608	837.0
G122	498823.8347	104185.0472	837.0
G123	498833.1597	104184.4778	837.0

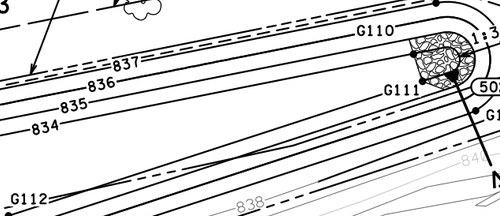
STAKING POINTS			
POINT #	X	Y	ELEV. (1)
G124	498823.8216	104169.4651	836.8
G125	498838.7079	104149.8673	836.6
G126	498855.3725	104127.7665	836.5
G127	498877.1555	104099.0207	836.4
G128	498891.5064	104109.8858	836.3
G129	498828.6848	104185.0425	836.9
G130	498867.4824	104130.9305	836.0

NOTES:

(1) FOR G124-G128 MATCH EXISTING GROUND ELEVATION. MODIFY PROPOSED ELEVATION AS NECESSARY AND GRADE TOWARD DRAINAGE SWALE AND STRUCTURE 5036. SEE CROSS SECTION A-A.

ATTENUATION BASIN
BTM = 833.0
DESIGN HWL (10-YR) = 836.9
HWL (100-YR) = 837.3

PERMANENT EASEMENT
TEMPORARY EASEMENT
INPLACE R/W
CONSTRUCTION LIMITS
℄ CSAH 2
℄ TRAIL A



CROSS SECTION A-A

SCALE IN FEET
0 15 30

LEGEND

- INPLACE STORM STRUCTURE
- INPLACE STORM SEWER
- PROPOSED STORM STRUCTURE
- PROPOSED STORM SEWER/CULVERT
- 5XXX PROPOSED STRUCTURE NUMBER
- CONSTRUCTION LIMITS
- RANDOM RIPRAP
- INPLACE RIGHT-OF-WAY
- TEMPORARY EASEMENT
- PERMANENT EASEMENT
- INPLACE DITCH
- PROPOSED DITCH

GENERAL NOTES:

- CONTOUR INTERVAL = 1.0'.
- CONTOURS SHOWN ARE TO FINISHED GROUND.
- SEDIMENT ACCUMULATED IN BASIN DURING CONSTRUCTION MUST BE REMOVED TO RESTORE PLAN BOTTOM ELEVATION.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNATURE: _____ LIC. NO. 49785 DATE: 12/2/2024

ADAM L. PETERSEN

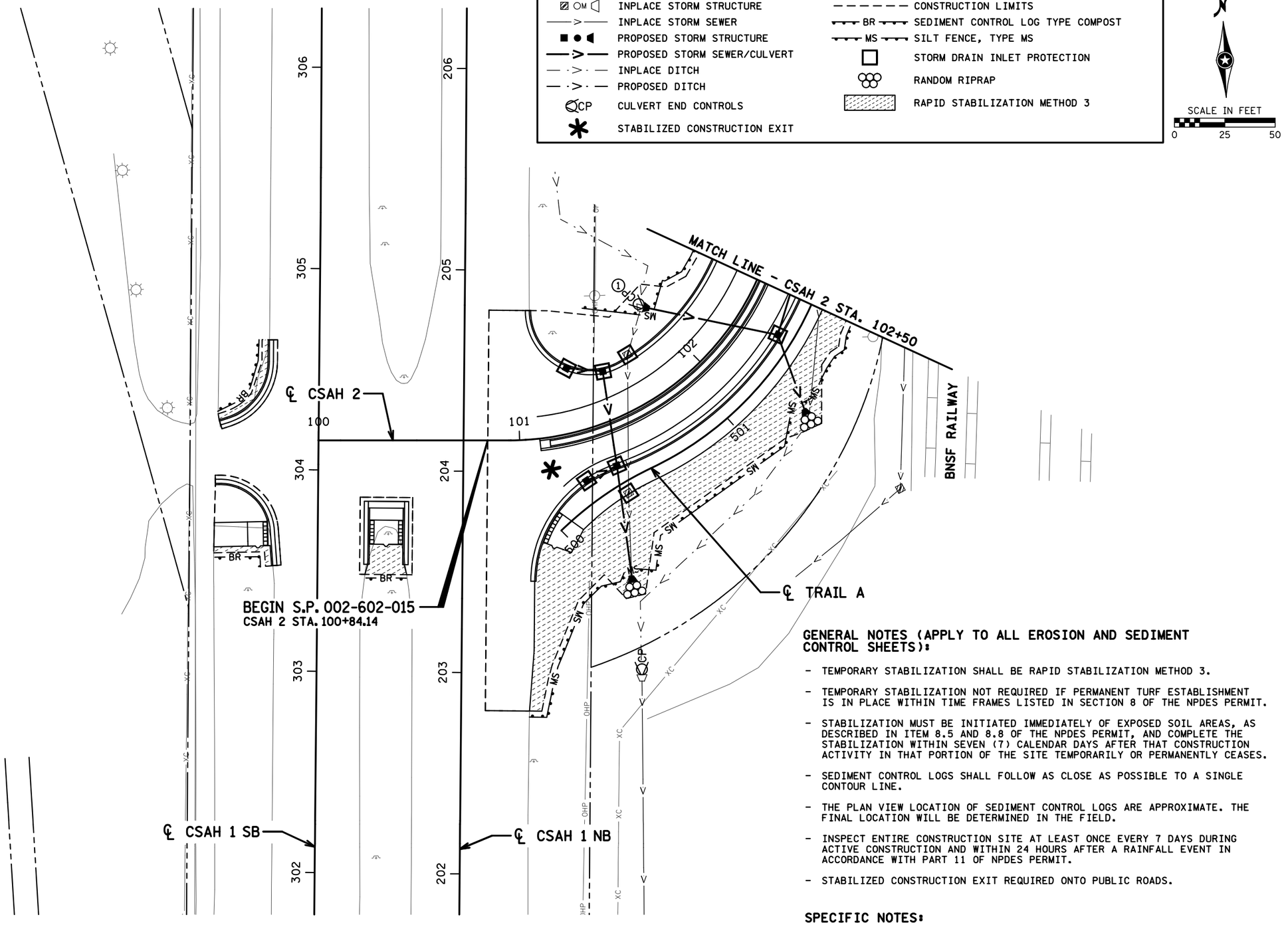
TKDA

CONTOUR PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 100 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:41:45 AM
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GENERAL NOTES (APPLY TO ALL EROSION AND SEDIMENT CONTROL SHEETS):

- TEMPORARY STABILIZATION SHALL BE RAPID STABILIZATION METHOD 3.
- TEMPORARY STABILIZATION NOT REQUIRED IF PERMANENT TURF ESTABLISHMENT IS IN PLACE WITHIN TIME FRAMES LISTED IN SECTION 8 OF THE NPDES PERMIT.
- STABILIZATION MUST BE INITIATED IMMEDIATELY OF EXPOSED SOIL AREAS, AS DESCRIBED IN ITEM 8.5 AND 8.8 OF THE NPDES PERMIT, AND COMPLETE THE STABILIZATION WITHIN SEVEN (7) CALENDAR DAYS AFTER THAT CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE TEMPORARILY OR PERMANENTLY CEASES.
- SEDIMENT CONTROL LOGS SHALL FOLLOW AS CLOSE AS POSSIBLE TO A SINGLE CONTOUR LINE.
- THE PLAN VIEW LOCATION OF SEDIMENT CONTROL LOGS ARE APPROXIMATE. THE FINAL LOCATION WILL BE DETERMINED IN THE FIELD.
- INSPECT ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY 7 DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT IN ACCORDANCE WITH PART 11 OF NPDES PERMIT.
- STABILIZED CONSTRUCTION EXIT REQUIRED ONTO PUBLIC ROADS.

SPECIFIC NOTES:

① PROVIDE CULVERT PROTECTION AT EXISTING AND PROPOSED CULVERT INLET.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNATURE: _____ ADAM L. PETERSEN LIC. NO. 49785 DATE: 12/2/2024

TKDA

CSAH 2 STA. 100+84 TO STA. 102+50

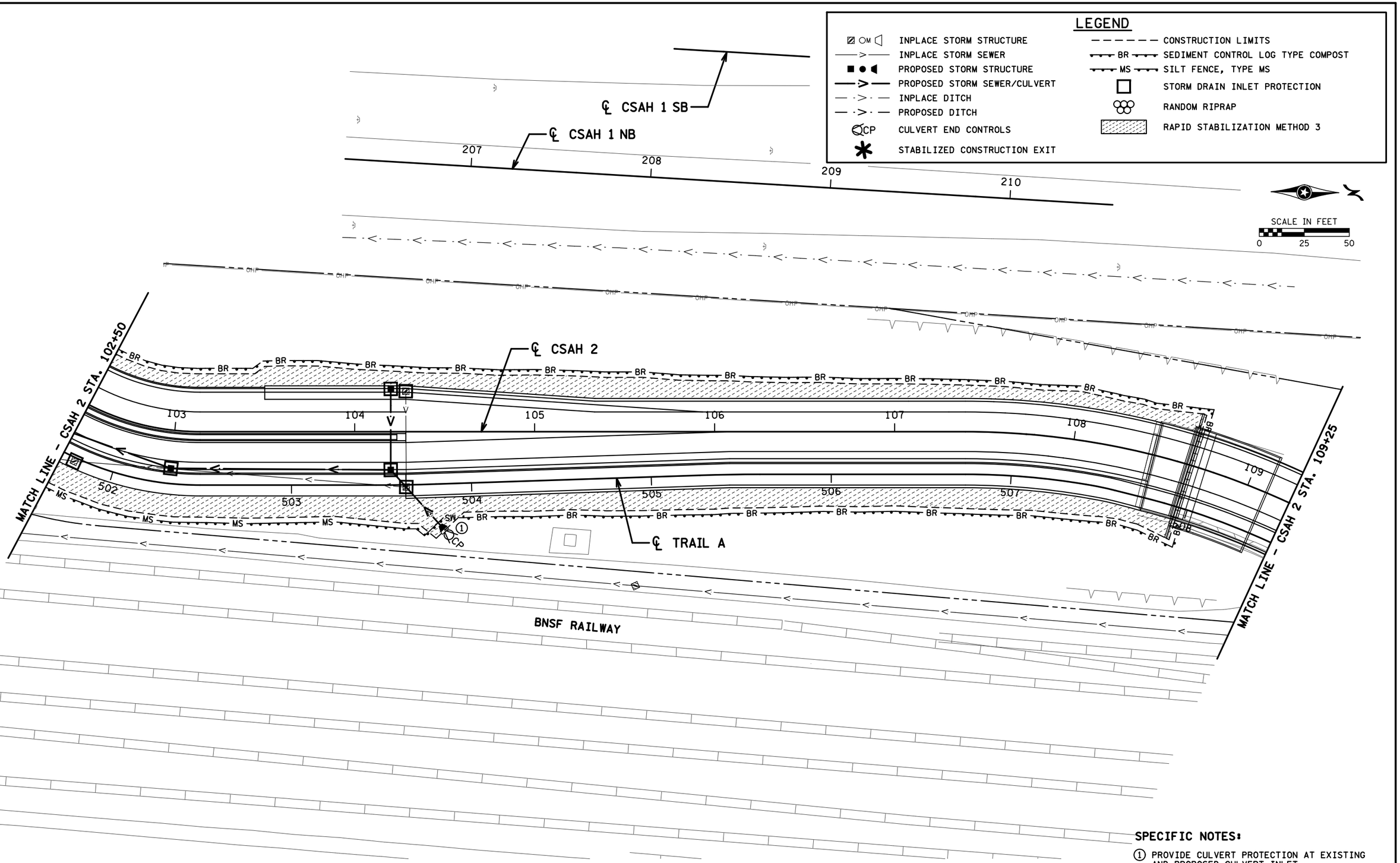
EROSION AND SEDIMENT CONTROL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 101 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:41:54 AM
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SPECIFIC NOTES:

① PROVIDE CULVERT PROTECTION AT EXISTING AND PROPOSED CULVERT INLET.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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CHK: ALP

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ADAM L. PETERSEN

TKDA

CSAH 2 STA. 102+50 TO STA. 109+25

EROSION AND SEDIMENT CONTROL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 102 OF 148 SHEETS

LEGEND

- INPLACE STORM STRUCTURE
- INPLACE STORM SEWER
- PROPOSED STORM STRUCTURE
- PROPOSED STORM SEWER/CULVERT
- INPLACE DITCH
- PROPOSED DITCH
- CULVERT END CONTROLS
- STABILIZED CONSTRUCTION EXIT
- CONSTRUCTION LIMITS
- SEDIMENT CONTROL LOG TYPE COMPOST
- SILT FENCE, TYPE MS
- STORM DRAIN INLET PROTECTION
- RANDOM RIPRAP
- RAPID STABILIZATION METHOD 3

SCALE IN FEET
0 25 50

ATTENUATION BASIN

℄ CSAH 2

℄ TRAIL A

MATCH LINE - CSAH 2 STA. 119+50

MATCH LINE - CSAH 2 STA. 126+50

END S.P. 002-602-015
BEGIN S.P. 127-020-037
CSAH 2 STA. 125+00.00

DATE: 12/2/2024 TIME: 11:42:02 AM
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CSAH 2 STA. 119+50 TO STA. 126+50

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

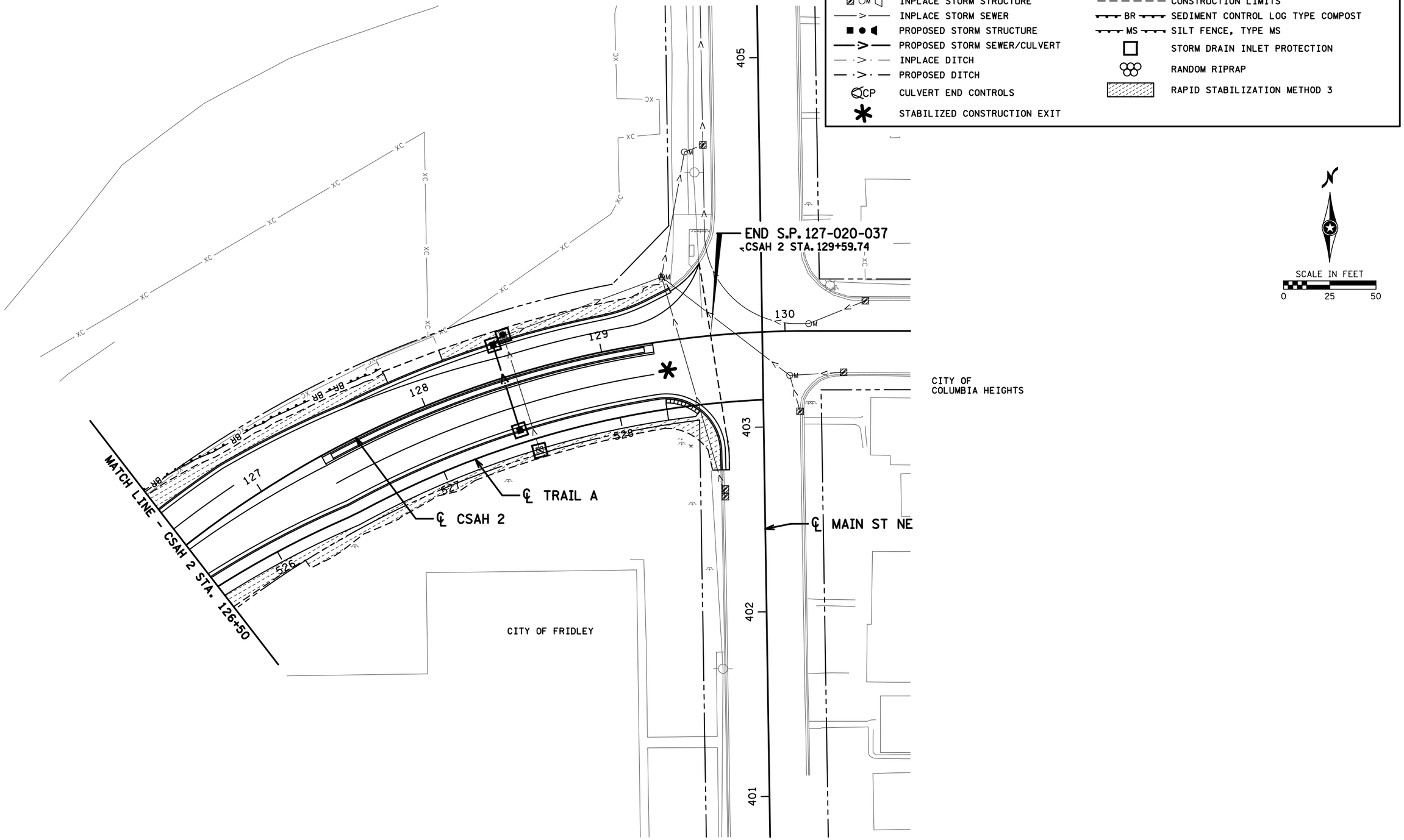
EROSION AND SEDIMENT CONTROL PLAN

SHEET NO. 103 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:42:05 AM
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LEGEND

- INPLACE STORM STRUCTURE
- INPLACE STORM SEWER
- PROPOSED STORM STRUCTURE
- PROPOSED STORM SEWER/CULVERT
- INPLACE DITCH
- PROPOSED DITCH
- CP — CULVERT END CONTROLS
- STABILIZED CONSTRUCTION EXIT
- CONSTRUCTION LIMITS
- BR — SEDIMENT CONTROL LOG TYPE COMPOST
- MS — SILT FENCE, TYPE MS
- STORM DRAIN INLET PROTECTION
- RANDOM RIPRAP
- RAPID STABILIZATION METHOD 3



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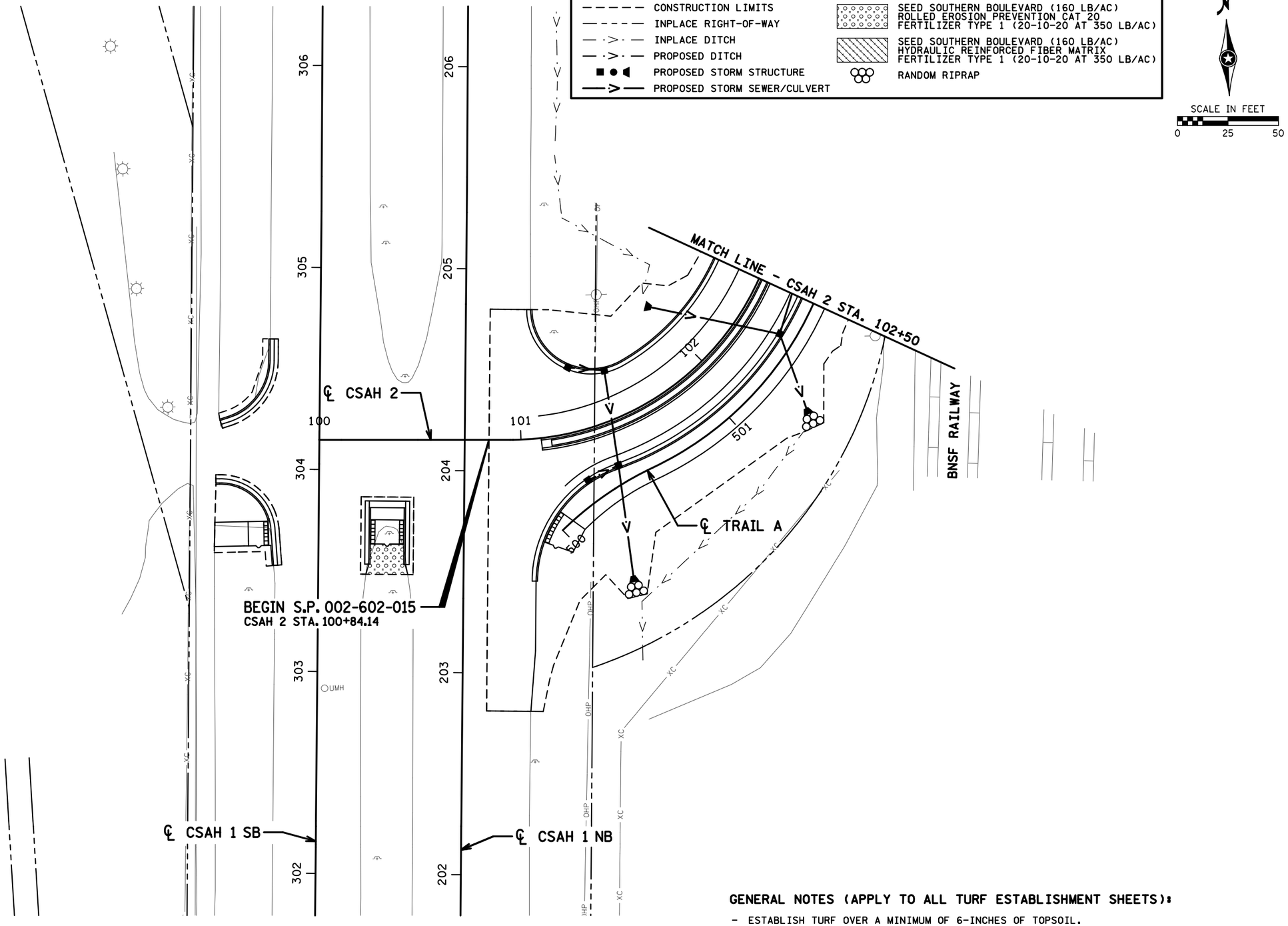
TKDA

CSAH 2 STA. 126+50 TO STA. 129+60

EROSION AND SEDIMENT CONTROL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 104 OF 148 SHEETS



GENERAL NOTES (APPLY TO ALL TURF ESTABLISHMENT SHEETS):

- ESTABLISH TURF OVER A MINIMUM OF 6-INCHES OF TOPSOIL.
- PERFORM SOIL BED PREPARATION PER SPEC. 2574 IN ALL AREAS THAT REQUIRE TURF ESTABLISHMENT.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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ADAM L. PETERSEN

TKDA

CSAH 2 STA. 100+84 TO STA. 102+50

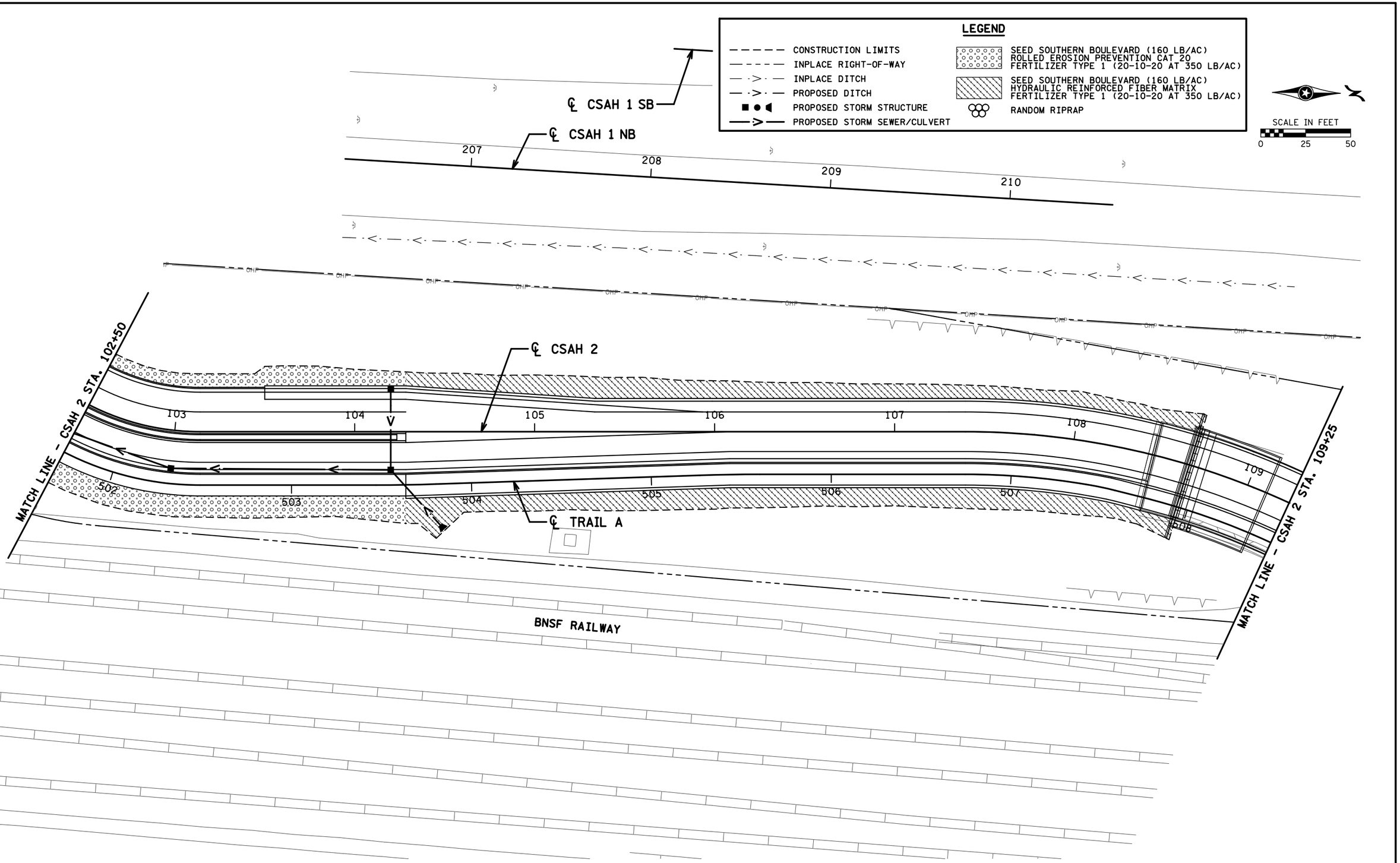
TURF ESTABLISHMENT PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 105 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:42:09 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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TKDA

CSAH 2 STA. 102+50 TO STA. 109+25

TURF ESTABLISHMENT PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 106 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:42:17 AM
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LEGEND

- CONSTRUCTION LIMITS
- INPLACE RIGHT-OF-WAY
- INPLACE DITCH
- PROPOSED DITCH
- PROPOSED STORM STRUCTURE
- PROPOSED STORM SEWER/CULVERT
- SEED SOUTHERN BOULEVARD (160 LB/AC) ROLLED EROSION PREVENTION CAT 20 FERTILIZER TYPE 1 (20-10-20 AT 350 LB/AC)
- SEED SOUTHERN BOULEVARD (160 LB/AC) HYDRAULIC REINFORCED FIBER MATRIX FERTILIZER TYPE 1 (20-10-20 AT 350 LB/AC)
- RANDOM RIPRAP

SCALE IN FEET
0 25 50

ATTENUATION BASIN

℄ CSAH 2

℄ TRAIL A

MATCH LINE - CSAH 2 STA. 119+50

MATCH LINE - CSAH 2 STA. 126+50

END S.P. 002-602-015
BEGIN S.P. 127-020-037
CSAH 2 STA. 125+00.00

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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CSAH 2 STA. 119+50 TO STA. 126+50

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

TURF ESTABLISHMENT PLAN

SHEET NO. 107 OF 148 SHEETS

LEGEND

- CONSTRUCTION LIMITS
- INPLACE RIGHT-OF-WAY
- INPLACE DITCH
- PROPOSED DITCH
- PROPOSED STORM STRUCTURE
- PROPOSED STORM SEWER/CULVERT
- SEED SOUTHERN BOULEVARD (160 LB/AC) ROLLED EROSION PREVENTION CAT 2O FERTILIZER TYPE 1 (20-10-20 AT 350 LB/AC)
- SEED SOUTHERN BOULEVARD (160 LB/AC) HYDRAULIC REINFORCED FIBER MATRIX FERTILIZER TYPE 1 (20-10-20 AT 350 LB/AC)
- RANDOM RIPRAP

N

SCALE IN FEET
0 25 50

END S.P. 127-020-037
CSAH 2 STA. 129+59.74

MATCH LINE - CSAH 2 STA. 126+50

℄ TRAIL A

℄ CSAH 2

℄ MAIN ST NE

CITY OF FRIDLEY

CITY OF COLUMBIA HEIGHTS

UMH

XC

126 127 128 129 130

526 527 528

401 402 403

DATE: 12/2/2024 TIME: 11:42:20 AM
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ADAM L. PETERSEN

TKDA

CSAH 2 STA. 126+50 TO STA. 129+60

TURF ESTABLISHMENT PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 108 OF 148 SHEETS

NOTES & GUIDELINES

GENERAL INFORMATION:

1. ALL DISTANCES ARE APPROXIMATE.

SIGNING:

1. ALL TEMPORARY SIGNS ARE REQUIRED TO BE CRASHWORTHY PER THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE 2016 (MASH-2016). TEMPORARY SIGN STRUCTURES THAT ARE CRASHWORTHY UNDER THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 (NCHRP-350) MAY BE USED PROVIDED THE DEVICES WERE ACQUIRED BY THE CONTRACTOR PRIOR TO DECEMBER 31ST, 2019. THE MINNESOTA TYPE "C" AND "D" BRACED LEG U-CHANNEL (KNEE BRACE) SIGN SUPPORT IS NOT ALLOWED.
2. **THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE FINAL SIGNS TO ASSURE THAT THE FINAL SIGNS ARE PLACED AS NEEDED, OR PROVIDE TEMPORARY SIGNING UNTIL THE FINAL SIGNING IS PLACED.**
3. WHEN MULTIPLE GROUND MOUNTED SIGN STRUCTURES ARE PLACED ADJACENT TO EACH OTHER THERE SHOULD BE NO MORE THAN 2 POSTS WITHIN 84" OF EACH OTHER. WHEN THIS SPACING CAN NOT BE MAINTAINED, THEN SIGN STRUCTURES SHALL BE OFFSET, AND STAGGERED WITH A MINIMUM OF 4' BETWEEN SIGN STRUCTURES BOTH LATERALLY AND LONGITUDINALLY.
4. **WHEN A SIGN OR BARRICADE IS ORIENTED SUCH THAT VISIBILITY TO ROAD USERS INCLUDING BIKES AND PEDESTRIANS IS REDUCED ENOUGH TO CAUSE A HAZARD, DELINEATE THE SIGN/BARRICADE WITH APPROPRIATE DEVICES.**
5. TEMPORARY SIGNS SHALL BE PLACED SUCH THAT OBSTACLES DO NOT BLOCK THEM FROM BEING VIEWED BY APPROACHING ROAD USERS. OBSTACLES MAY INCLUDE, BUT ARE NOT LIMITED TO, LIGHT POLES, TREES, SIGNS, AND BUILDINGS.
6. TEMPORARY SIGNS SHALL BE PLACED AND ORIENTED APPROXIMATELY AS SHOWN IN THE PLAN, AT RIGHT ANGLES TO DIRECTION OF AND FACING THE TRAFFIC THEY ARE INTENDED TO SERVE, UNLESS OTHERWISE SPECIFIED.
7. LONGITUDINAL DROPOFFS SHALL BE SIGNED AS SHOWN IN THE "MINNESOTA TEMPORARY TRAFFIC CONTROL FIELD MANUAL" PAGES (6K-aj) THRU (6K-al) UNLESS OTHERWISE SPECIFIED IN THESE PLANS.
8. AFTER REMOVAL OF SIGN AND/OR SIGN BASE, BACK FILL, COMPACT, AND LEVEL SOIL TO MATCH SURROUNDING SOIL.

CONSTRUCTION INFORMATION SIGNING:

1. THE CONTRACTOR SHALL USE CONSTRUCTION INFORMATION SIGNING AS SHOWN IN THE PLAN WHICH ARE TO BE USED AS FOLLOWS:

   PLACE THE G20-X1 ADVANCE CLOSURE NOTICE SIGN(S) 7 DAYS PRIOR TO THE PLANNED CLOSURE DATE.

   IF CONSTRUCTION INFORMATION SIGNING IS NO LONGER VISIBLE TO THE MOTORING PUBLIC ONCE WORK BEGINS, MOVE SAID SIGNING TO A SITE IN ADVANCE OF THE WORK ZONE OR CLOSURE AS SHOWN IN THE PLAN OR APPROVED BY THE ENGINEER.

PAVEMENT MARKING SYMBOLS AND MATERIALS LEGEND

DOUBLE SOLID LINE

STRIPING KEY

[___]* SQUARE-REMOVABLE PREF TAPE

1ST DIGIT WIDTH	2ND DIGIT PATTERN	3RD DIGIT COLOR
4", 8", ETC.	S - SOLID	W - WHITE
	B - BROKEN	Y - YELLOW
	T - DOTTED	B - BLACK
	D - DOUBLE SOLID	
	K - DOUBLE BROKEN	
	H - DOUBLE DOTTED	

G=GROUND IN W=WET REFLECTIVE
C=CONTRAST E=ENHANCED SKID RESISTANCE

EXAMPLE: [4SW] = 4" SOLID LINE WHITE REMOVABLE PREF TAPE

INDEX

TRAFFIC CONTROL SHEET NO.	DESCRIPTIONS
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113	TEMPORARY SIGN WIND LOADING CHART FOR SQUARE TUBES
114-115	DETOURS
116	UNIVERSITY AVE LAYOUT

TRAFFIC CONTROL TABULATION		TC
ITEM DESCRIPTION	UNIT	QUANTITY
TRAFFIC CONTROL	LUMP SUM	1
TUBULAR MARKER	EACH	6
4" REMOVABLE PREFORMED PAVEMENT MARKING TAPE	LIN FT	476
12" REMOVABLE PREFORMED PAVEMENT MARKING TAPE	LIN FT	42
REMOVABLE PREFORMED PLASTIC MASK (BLACK)	SQ FT	30

UPDATED 11/02/2023

TRAFFIC CONTROL DEVICES & SYMBOLS LEGEND

SYMBOL	DESCRIPTION
⊢	TRAFFIC CONTROL SIGN
⌊⌋	TYPE III BARRICADE =
▭	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
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CHK: JAH

I HEREBY CERTIFY THAT THIS SHEET 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: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024
JEFFREY A. HILDEN

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TITLE SHEET | TRAFFIC CONTROL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 109 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:42:24 AM
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"M" SERIES

SIGN	SIGN NO.	COLOR	SIZE (IN. X IN.) (W×H)	ASSEMBLY (IN. X IN.) (W×H)	NUMBER OF POST	POST SPACING INCHES
END DETOUR	M4-8a	BLACK ON ORANGE	24 x 18	24 x 18	1	
DETOUR	M4-8	BLACK ON ORANGE	24 x 12	24 x 63	1	
EAST WEST	M3-2 M3-4	BLACK ON WHITE	24 x 12			
ANOKA 2 COUNTY	M1-6M	WHITE AND YELLOW ON BLUE	24 x 24			
	M5-1L M5-1R	BLACK ON ORANGE	21 x 15			
	M5-2R M6-2R					
	M6-1L M6-1R					
	M6-3					
EAST WEST	M3-2 M3-4	BLACK ON WHITE	24 x 12	36 x 72	1	
ANOKA 2 COUNTY	M1-6M	WHITE AND YELLOW ON BLUE	24 x 24			
DETOUR AHEAD	W20-2	BLACK ON ORANGE	36 x 36			
EAST WEST	M3-2 M3-4	BLACK ON WHITE	24 x 12	36 x 72	1	
ANOKA 2 COUNTY	M1-6M	WHITE AND YELLOW ON BLUE	24 x 24			
ROAD CLOSED AHEAD	W20-3	BLACK ON ORANGE	36 x 36			
DETOUR	M4-9cML	BLACK ON ORANGE	18 x 12			
DETOUR	M4-9cMT	BLACK ON ORANGE	18 x 12			

BARRICADE MOUNTED SIGNS

SIGN	SIGN NO.	COLOR	SIZE (IN. X IN.) (W×H)
DETOUR	M4-10L	BLACK ON ORANGE	48 x 18
DETOUR	M4-10R	BLACK ON ORANGE	48 x 18
ROAD CLOSED	R11-2M	BLACK ON WHITE	48 x 30
ROAD CLOSED TO THRU TRAFFIC	R11-4	BLACK ON WHITE	60 x 30

DEVICES

SIGN	SIGN NO.	COLOR	SIZE (IN. X IN.) (W×H)
	TYPE III BARRICADE (L AND R)		

GENERAL NOTES:

1. SIGN STRUCTURE TABULATIONS INDICATE SQUARE TUBE GROUND MOUNTED SIGN STRUCTURES THAT ARE MASH-16 COMPLIANT.
2. USE PRODUCTS FROM THE BASES FOR SQUARE TUBE SIGN STRUCTURES APPROVED/QUALIFIED PRODUCTS LIST FOR THE INDICATED SQUARE TUBE RISER POST SIZE. PLACE PER THE MANUFACTURER'S SPECIFICATIONS.
3. ALUMINUM STRINGERS SHALL BE USED FOR SIGNS 36 INCHES AND WIDER. SEE MANUFACTURER'S SPECIFICATIONS FOR SQUARE TUBE MOUNTING DETAILS. STRINGERS ON SINGLE POST ASSEMBLIES ARE REQUIRED TO BE AT LEAST 9 INCHES IN FROM THE EDGE OF THE SIGN.
4. UNLESS OTHERWISE INDICATED, USE 2-1/2 INCH RISER POSTS FOR GROUND MOUNTED SIGN STRUCTURES.

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TEMPORARY SIGNS AND DEVICES TABULATION

TRAFFIC CONTROL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

GENERAL NOTES;

1. GROUND MOUNTED SQUARE TUBE SIGN STRUCTURES PLACED WITHIN 50' OF THE RADIUS END OF AN INTERSECTION SHALL BE PLACED ON ONE 2" OR 2-1/2" POST.
2. FOR 2" SQUARE TUBE RISER POST IN SOIL, USE FIN BASE PLACED PER MANUFACTURER'S SPECIFICATIONS. USE A 2" X 2" PRE-PUNCHED, GALVANIZED STEEL, SQUARE TUBE RISER POST. PLACE 3/8" STAINLESS STEEL BOLT THROUGH THE 5TH HOLE DOWN FROM THE TOP OF THE BASE. RISER POST SHALL REST ON THE BOLT.
3. FOR 2-1/2" SQUARE TUBE RISER POST IN SOIL, USE SLIP BASE PLACED PER MANUFACTURER'S SPECIFICATIONS USING A 10 GAUGE , 2-1/2" X 2-1/2" PRE-PUNCHED, GALVANIZED STEEL, SQUARE TUBE RISER POST WITH A 10 GAUGE 2-3/16" X 2-3/16" PRE-PUNCHED, GALVANIZED STEEL, SQUARE TUBE INTERNAL INSERT.

SPECIFIC NOTES;

① IF ANY PART OF A SIGN OR SIGN ASSEMBLY EXTENDS MORE THAN 4" INTO THE PEDESTRIAN FACILITY, THE MINIMUM HEIGHT TO BOTTOM OF THE SIGN OR SIGN ASSEMBLY SHALL BE 7'.

② 6' - 12' FROM EDGE OF ROADWAY, MUST BE A MINIMUM OF 6' FROM EDGE OF PAVED SHOULDER (WHEN PRESENT).

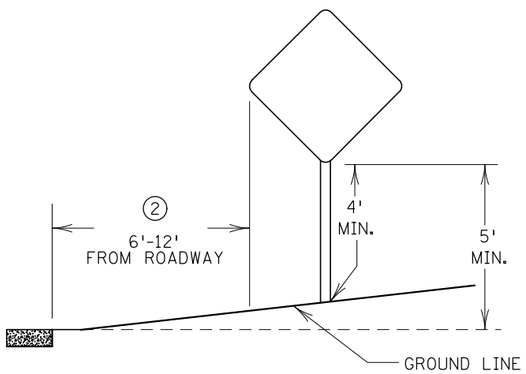
③ IF GROUND MOUNTED TEMPORARY SIGN OR SIGN ASSEMBLY IS PLACED ON 2-1/2" SQUARE TUBE RISER POST(S), THE MINIMUM CLEARANCE FROM THE GROUND LINE TO THE BOTTOM OF THE LOWEST SIGN ON THE ASSEMBLY SHALL BE 7', OR AS SHOWN IN DETAIL, WHICHEVER IS GREATER.

④ 5' MINIMUM IN RURAL. 7' MINIMUM IN BUSINESS, COMMERCIAL, OR RESIDENTIAL AREAS.

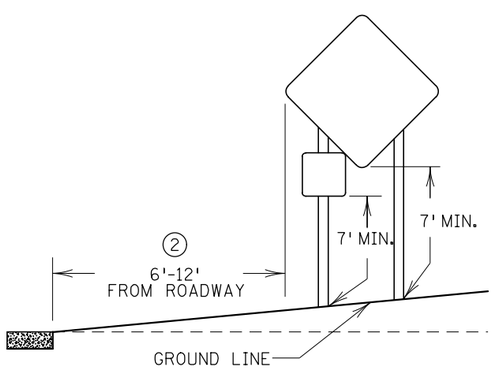
⑤ WHEN MULTIPLE GROUND MOUNTED SIGN STRUCTURES ARE PLACED ADJACENT TO EACH OTHER THERE SHOULD BE NO MORE THAN 2 POSTS WITHIN 84" OF EACH OTHER. WHEN THIS SPACING CAN NOT BE MAINTAINED, THEN SIGN STRUCTURES SHALL BE OFFSET, AND STAGGERED WITH A MINIMUM OF 4' BETWEEN SIGN STRUCTURES BOTH LATERALLY AND LONGITUDINALLY. EXAMPLE SHOWS DETOUR SIGNAGE, BUT THIS REQUIREMENT APPLIES TO ALL SIGNAGE.

⑥ INPLACE AND/OR OTHER CONSTRUCTION SIGNING.

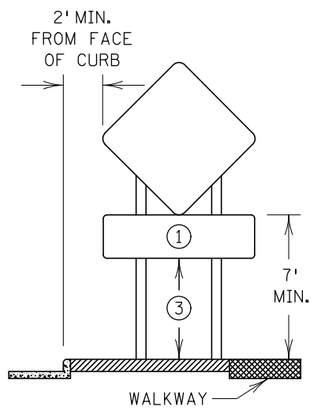
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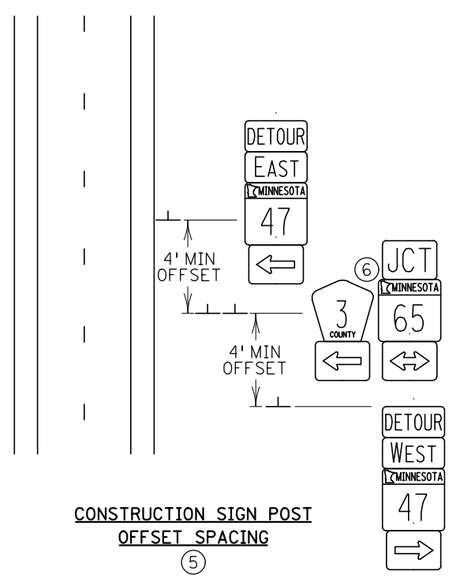
TYPICAL RURAL DESIGN
AND 2" RISER POST



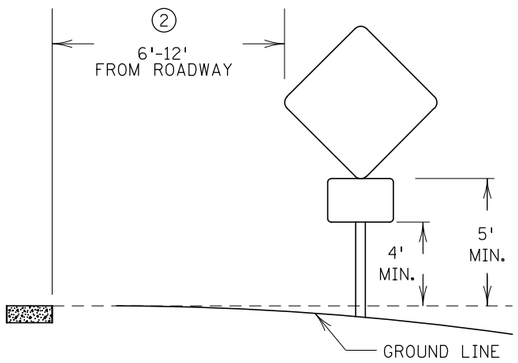
TYPICAL RURAL DESIGN WITH SUPPLEMENTAL
PLAQUE AND 2-1/2" RISER POST



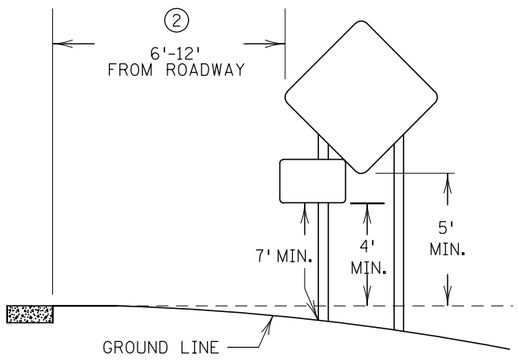
BUSINESS,COMMERCIAL,
OR RESIDENTIAL AREA



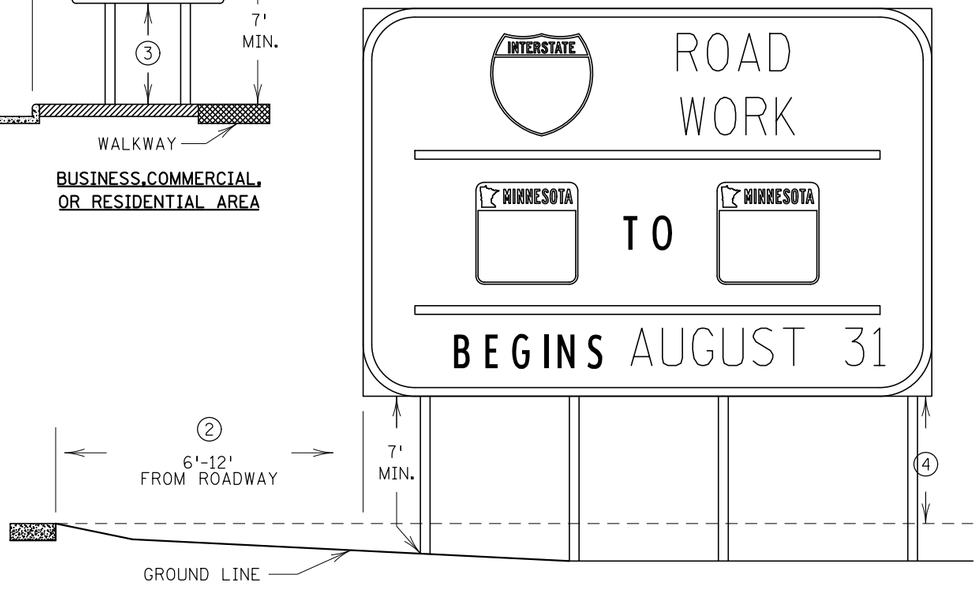
CONSTRUCTION SIGN POST
OFFSET SPACING
⑤



TYPICAL RURAL DESIGN WITH SUPPLEMENTAL
PLAQUE AND 2" RISER POST



TYPICAL RURAL DESIGN
2-1/2" RISER POST



TYPICAL G20-X2 DESIGN

PUBLISHED BY OTE 03/15/2021

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JEFFREY A. HILDEN

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TEMPORARY SQUARE TUBE
GROUND MOUNTED INSTALLATION

TRAFFIC CONTROL PLAN

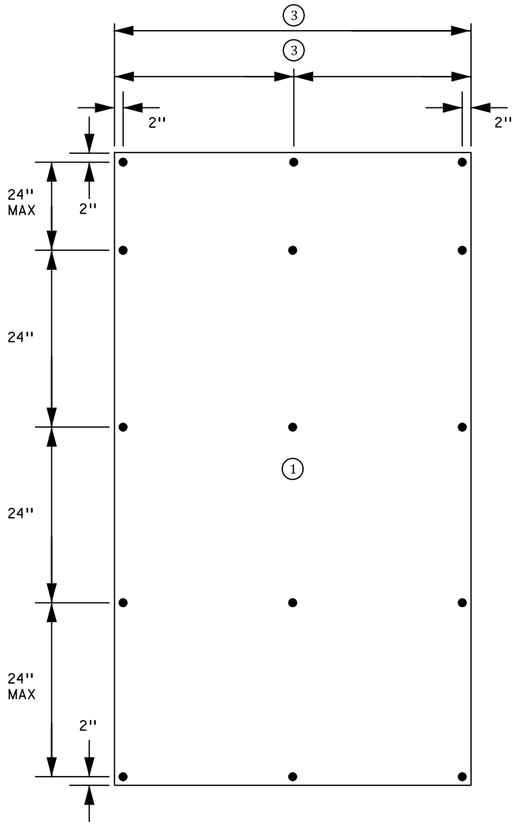
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S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 111 OF 148 SHEETS

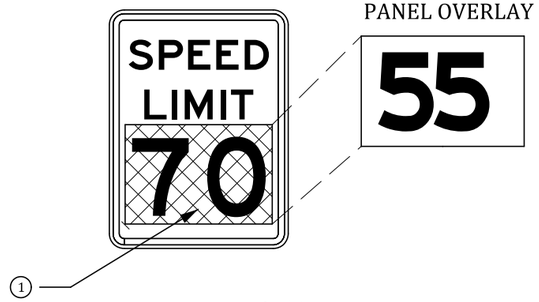
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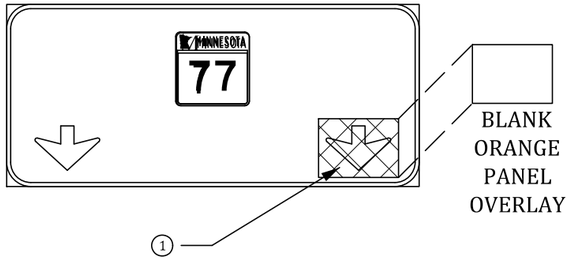
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FASTENER SPACING DETAIL
HORIZONTAL PLACEMENT

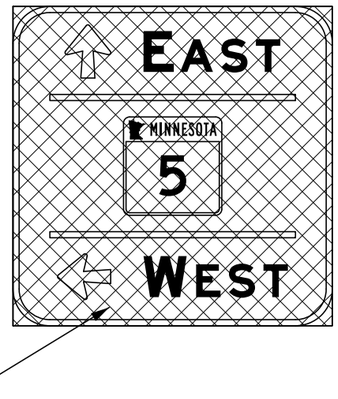


R2-1

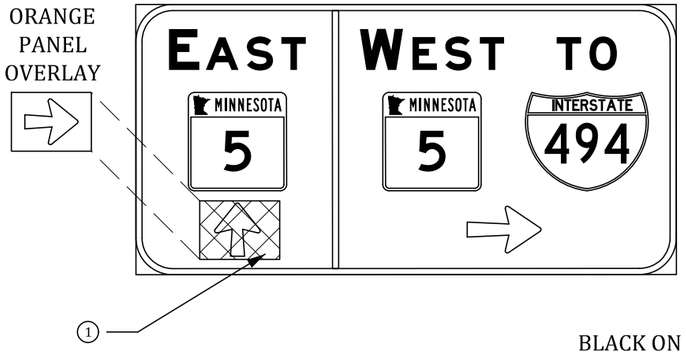




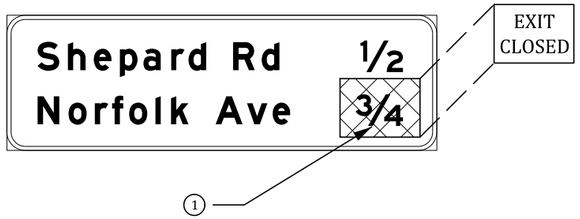
BLANK NON-REFLECTIVE GREEN COVER

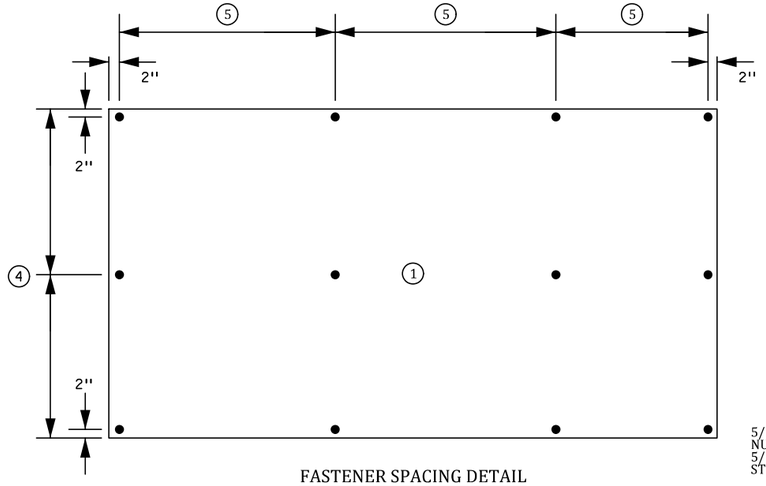


BLACK ON ORANGE PANEL OVERLAY



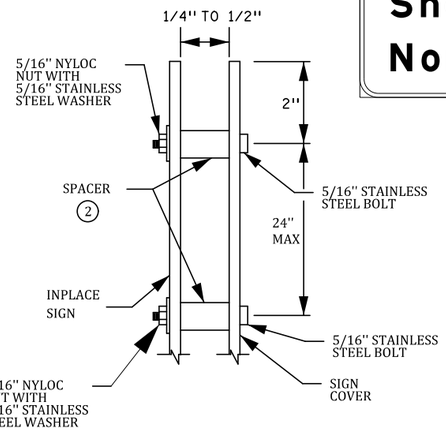
BLACK ON ORANGE PANEL OVERLAY





FASTENER SPACING DETAIL
VERTICAL PLACEMENT

SPACER DETAIL



GENERAL NOTES:

1. SIGN COVERS ARE USED TO COVER THE ENTIRE PANEL OF A INPLACE SIGN. THE COVER SHALL BE BLANK, GREEN IN COLOR, AND MADE OF A RIGID NON-REFLECTIVE MATERIAL (SHEET ALUMINUM, PLYWOOD, CORRUGATED PLASTIC). OTHER MATERIALS MAY BE USED AS APPROVED BY THE ENGINEER.
2. SIGN PANEL OVERLAYS ARE USED TO MODIFY THE MESSAGE OF AN INPLACE SIGN PANEL. THE PANEL OVERLAY SHALL BE MADE OF SHEET ALUMINUM WITH THE APPROPRIATE SHEETING MATERIAL AS SPECIFIED ON THE MNDOT SHEETING FOR RIGID TEMPORARY WORK ZONE SIGNS APL. THE MESSAGE SHALL FOLLOW THE REQUIREMENTS OF THE "MNDOT STANDARD SIGNS AND MARKINGS MANUAL" OR THE "FHWA STANDARD HIGHWAY SIGNS MANUAL" (AND SUPPLEMENTS). THE SIGN PANEL OVERLAY SHALL BE RECTANGULAR IN SHAPE AND FULLY COVER THE MESSAGE ELEMENT(S) BEING MODIFIED.

   SIGN PANEL OVERLAY WITH A MESSAGE SHALL BE BLACK ON FLUORESCENT ORANGE ON ALL SIGNS EXCEPT FOR REGULATORY SIGNS WHICH SHALL BE THE PROPER COLOR ON A WHITE BACKGROUND.

   BLANK SIGN PANEL OVERLAYS SHALL BE FLUORESCENT ORANGE ON ALL SIGNS.

   DO NOT COVER OR MODIFY THE "STOP" (R1-1), "YIELD" (R1-2), OR THE (W14-3) NO PASSING ZONE SIGNS, THESE SIGNS SHALL BE REMOVED IF THEY NO LONGER APPLY OR CONFLICT WITH WORK ZONE SIGNING.
3. MINIMIZE DAMAGE TO THE INPLACE SIGN PANEL. DO NOT APPLY TAPE TO THE INPLACE SIGN SHEETING.
4. SPACERS (SUCH AS PLASTIC OR RUBBER) SHALL BE A MATERIAL THAT WILL NOT HARM THE INPLACE SIGN SHEETING FACE.
5. ATTACH SIGN COVER PANEL OR PANEL OVERLAY USING HARDWARE SHOWN IN THE SPACER DETAIL.
6. IF SHEET METAL SCREWS ARE USED TO PLACE CORRUGATED PLASTIC AS A SIGN COVER PANEL, PLACE FENDER WASHERS BETWEEN THE SCREW HEADS AND THE CORRUGATED PLASTIC.
7. REMOVE ALL COVERING MATERIAL, MOUNTING HARDWARE, AND FASTENERS WHEN SIGN COVER PANEL OR PANEL OVERLAY IS REMOVED.
8. NO HANDLE OR OTHER LIFTING DEVICE SHALL BE LEFT ATTACHED TO ANY SIGN COVER PANEL AFTER PLACEMENT.

SPECIFIC NOTES:

① THE SIGN COVER OR PANEL OVERLY SHALL FULLY COVER THE MESSAGE BEING COVERED OR MODIFIED.

② PLACE SIGN COVER AND PANEL OVERLAYS WITH SPACERS THAT PROVIDE A SPACING OF 1/4 IN TO 1/2 IN BETWEEN THE COVER MATERIAL AND THE INPLACE SIGN. THE SPACERS SHALL HAVE AN OUTSIDE DIAMETER BETWEEN 3/8 IN TO 7/8 IN. EACH FASTENER REQUIRES A SPACER.

③ IF THE SIGN COVER OR PANEL OVERLAY IS GREATER THAN 48 IN WIDE, THE FASTENER SPACING SHALL BE NO GREATER THAN 24 IN. IF THE SIGN COVER OR PANEL OVERLAY IS LESS THAN 24 IN WIDE, DO NOT PLACE A CENTER FASTENER (UNLESS REQUIRED BY SPECIFIC NOTE ④).

④ VERTICAL SPACING FOR FASTENERS IS 50% OF THE SIGN COVER OR PANEL OVERLAY. IF THE SIGN COVER OR PANEL OVERLAY IS LESS THAN 24 IN HIGH, DO NOT PLACE A CENTER FASTENER (UNLESS REQUIRED PER SPECIFIC NOTE ⑤).

⑤ HORIZONTAL SPACING FOR FASTENERS SHALL NOT BE LESS THAN 15 IN OR MORE THAN 24 IN.

ASSEMBLY NOTES:

1. DRILL 11/32 IN HOLES ON THE SIGN COVER OR PANEL OVERLAY IN ACCORDANCE WITHHELD FASTENER SPACING DETAILS.
2. ATTACH PLASTIC SPACERS TO SIGN COVER OR PANEL OVERLAY WITH DOUBLE FACED TAPE. CENTERED BEHIND EACH DRILLED HOLE.
3. POSITION THE COVER OR OVERLAY MATERIAL OVER THE SIGN OR MESSAGE TO BE MODIFIED.
4. DRILL ALL THE OUTSIDE HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH THE COVER OR OVERLAY MATERIAL WITH APPROPRIATE FASTENERS.
5. DRILL ALL THE INNER HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH WITH APPROPRIATE FASTENERS.

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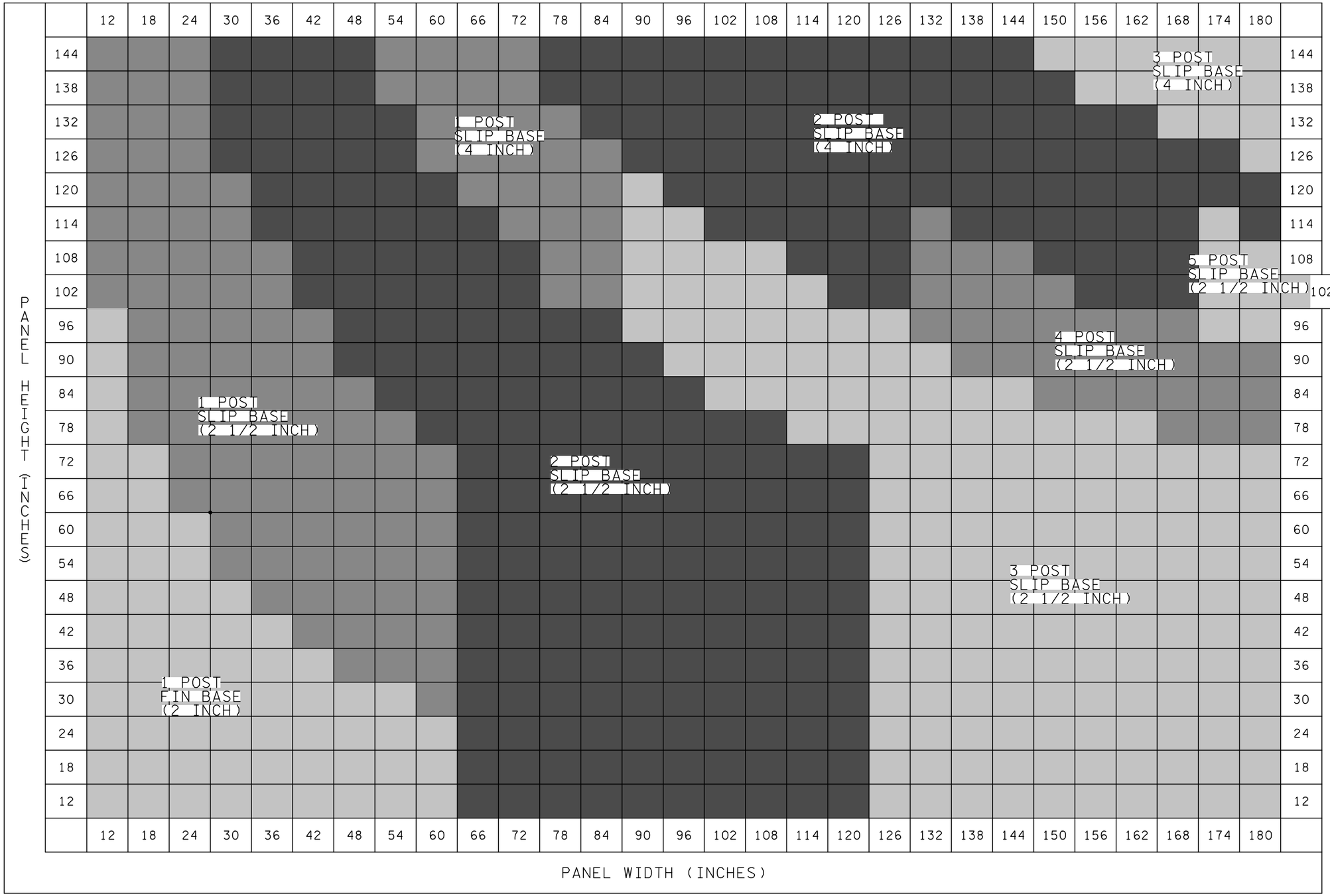
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TEMPORARY SIGN COVERING AND MODIFICATION

TRAFFIC CONTROL PLAN

S.P. 002-602-015, S.P. 127-020-037
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SLIP BASE RISER POST 4 INCH, 8 GAUGE
SLIP BASE RISER POST 2-1/2 INCH, 10 GAUGE WITH 2-3/16 INCH INSERT
FIN BASE RISER POST 2 IN, 12 GAUGE

BASED ON 90 MPH WIND LOAD

UPDATED 09/17/2021

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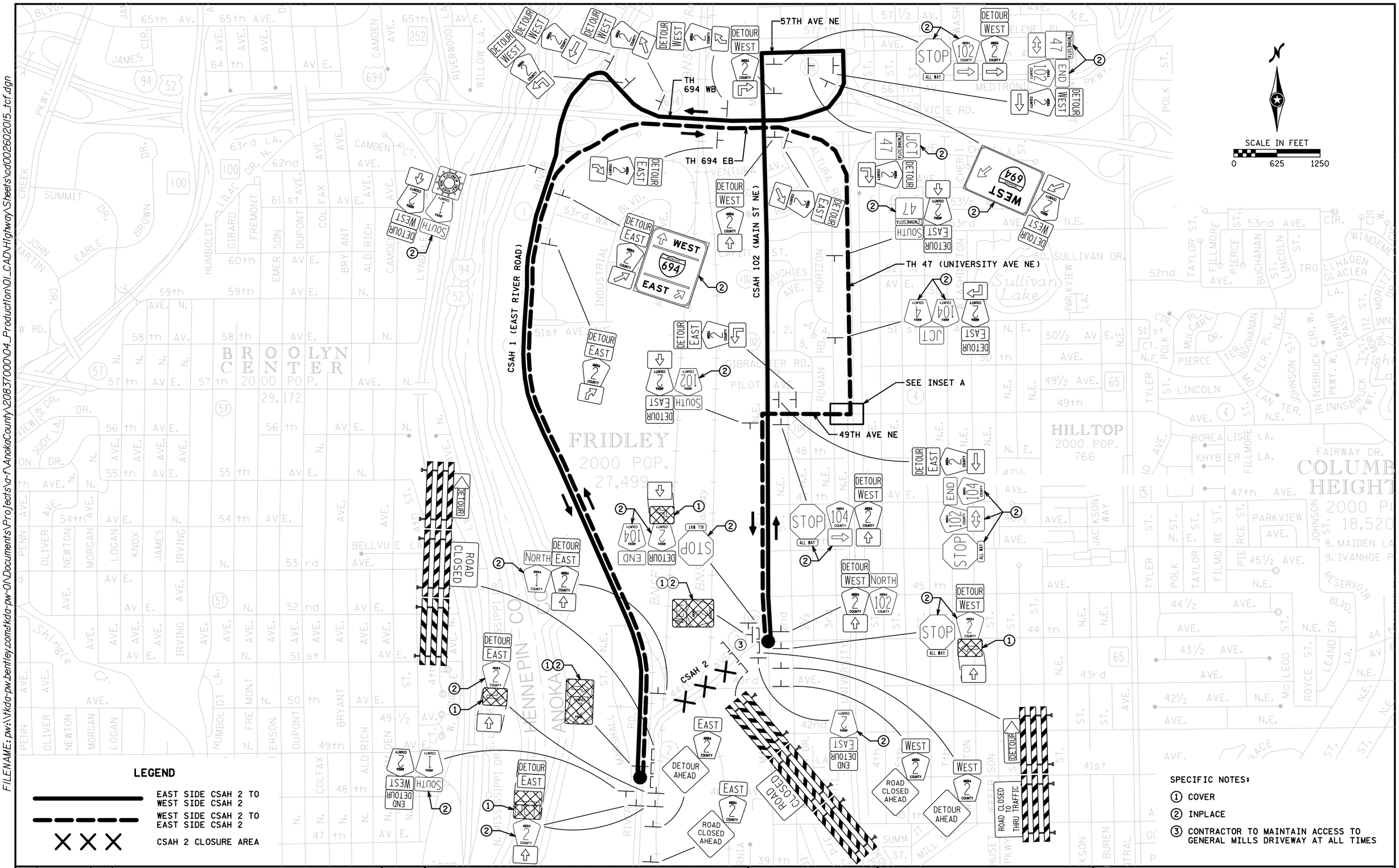
SIGNATURE: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

TKDA

TEMPORARY SIGN WIND LOADING CHART
FOR GROUND MOUNTED SQUARE TUBE SIGNS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037



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JEFFREY A. HILDEN
LIC. NO. 20781 DATE: 12/2/2024

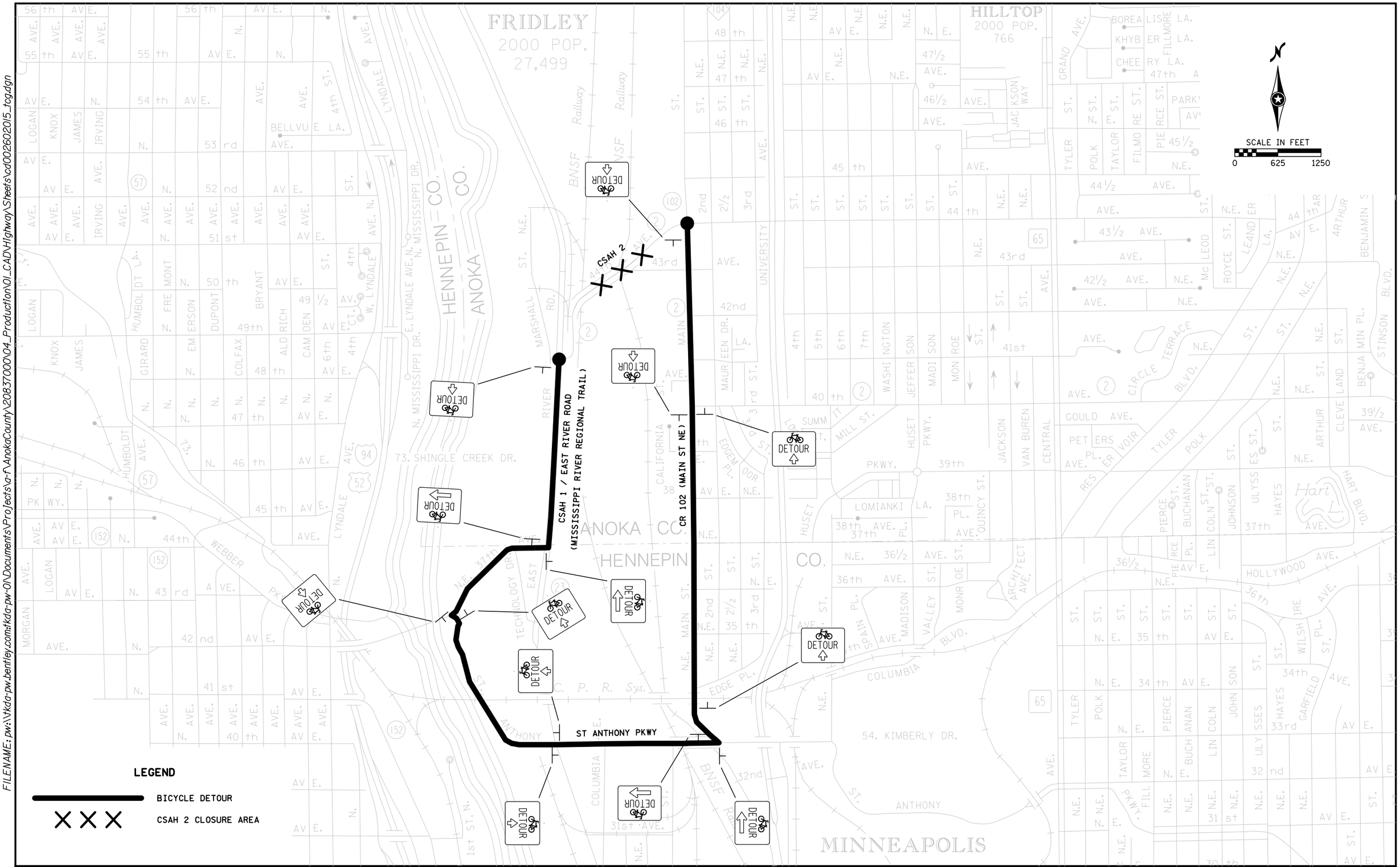
TKDA

VEHICLE & TRUCK DETOUR

TRAFFIC CONTROL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 114 OF 148 SHEETS



DATE: 12/2/2024 TIME: 11:42:47 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
DRW: NDR
CHK: JAH

I HEREBY CERTIFY THAT THIS SHEET 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: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

TKDA

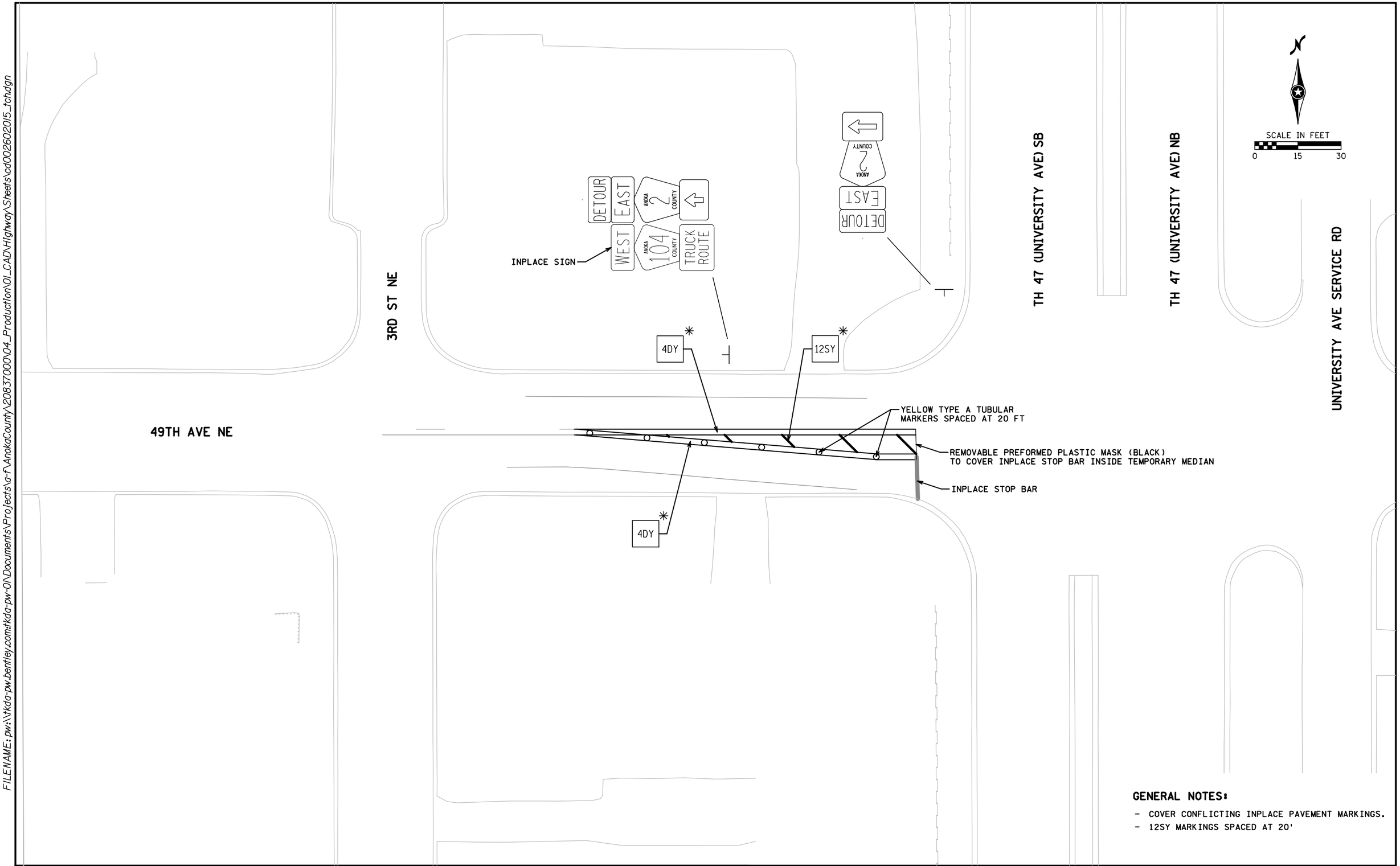
BICYCLE DETOUR

TRAFFIC CONTROL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 115 OF 148 SHEETS

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GENERAL NOTES:

- COVER CONFLICTING INPLACE PAVEMENT MARKINGS.
- 12SY MARKINGS SPACED AT 20'

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
DRW: DAF
CHK: JAH

I HEREBY CERTIFY THAT THIS SHEET 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: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

TKDA

49TH AVE NE AND TH 47 LAYOUT
(INSET A)

TRAFFIC CONTROL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 116 OF 148 SHEETS

PERMANENT PAVEMENT MARKING PLAN

NOTES & GUIDELINES

GENERAL INFORMATION:

1. SEE 2582 IN THE SPECIAL PROVISIONS FOR PAVEMENT MARKING SPOTTING RESPONSIBILITIES.
2. EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS, AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY AN AGENCY PLACED YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE MAINLINE RADIUS.
3. DO NOT APPLY THE PAVEMENT MARKINGS WHEN WEATHER AND OTHER CONDITIONS CAUSE A FILM OF DUST OR DEBRIS TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL IS APPLIED.
4. THE FILLING OF TANKS, POURING OF MATERIALS OR CLEANING OF EQUIPMENT SHALL NOT BE PERFORMED ON UNPROTECTED PAVEMENT SURFACES UNLESS ADEQUATE PROVISIONS ARE MADE TO PREVENT SPILLAGE OF MATERIAL.

PAVEMENT MARKING TABULATIONS

PERMANENT PAVEMENT MARKING SUMMARY			PM
TAB	ITEM	UNIT	TOTAL
PM-A	4" SOLID LINE PREFORM TAPE GR IN (WR)	LIN FT	5030
PM-A	4" DBLE SOLID LINE PREFORM TAPE GR IN (WR)	LIN FT	2666
PM-A	4" SOLID LINE PREFORM TAPE GR IN (WR) CONT.	LIN FT	2409
PM-A	24" SOLID LINE PREFORM THERMO GR IN	LIN FT	124
PM-B	PAVEMENT MESSAGE PREFORM THERMO	SQ FT	151
PM-B	CROSSWALK PREFORM THERMO GR IN	SQ FT	875

LINEAR PAVEMENT MARKINGS				PM-A
ITEM	UNIT	WHITE	YELLOW	TOTAL
4" SOLID LINE PREFORM TAPE GR IN (WR)	LIN FT	4005	1025	5030
4" DBLE SOLID LINE PREFORM TAPE GR IN (WR)	LIN FT		2666	2666
4" SOLID LINE PREFORM TAPE GR IN (WR) CONT.	LIN FT	2409		2409
24" SOLID LINE PREFORM THERMO GR IN	LIN FT	124		124

PAVEMENT MESSAGES		PM-B
ITEM	UNIT	TOTAL
PAVEMENT MESSAGE PREFORM THERMO	SQ FT	151
CROSSWALK PREFORM THERMO GR IN	SQ FT	875

PERMANENT PAVEMENT MARKING PLAN INDEX

SHEET NO.	DESCRIPTION
117	PERMANENT PAVEMENT MARKING TITLE SHEET
118	PERMANENT PAVEMENT DETAILS
119-124	PERMANENT PAVEMENT MARKING PLANS

SYMBOLS & MATERIALS LEGEND

DOUBLE SOLID LINE

CROSSWALK BLOCK
PREFORM THERMO GR IN

PAVEMENT MESSAGE (LEFT THRU RIGHT ARROW)
PREFORM THERMO

PAVEMENT MESSAGE (LEFT ARROW)
PREFORM THERMO

STRIPING KEY

CIRCLE-MULTI COMP

OCTAGON-PREF THERMO

SQUARE-REMOVABLE PREF TAPE *

SQUARE-PREF TAPE

1ST DIGIT WIDTH	2ND DIGIT PATTERN	3RD DIGIT COLOR
4", 8", ETC.	S - SOLID B - BROKEN T - DOTTED D - DOUBLE SOLID K - DOUBLE BROKEN H - DOUBLE DOTTED	W - WHITE Y - YELLOW B - BLACK

G=GROUND IN	W=WET REFLECTIVE
C=CONTRAST	E=ENHANCED SKID RESISTANCE

EXAMPLE: 6SW / GW = 6" SOLID LINE WHITE MULTI-COMP GROUND IN, WET REFLECTIVE

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
DRW: DAF
CHK: JAH

I HEREBY CERTIFY THAT THIS SHEET 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: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024
JEFFREY A. HILDEN

TKDA

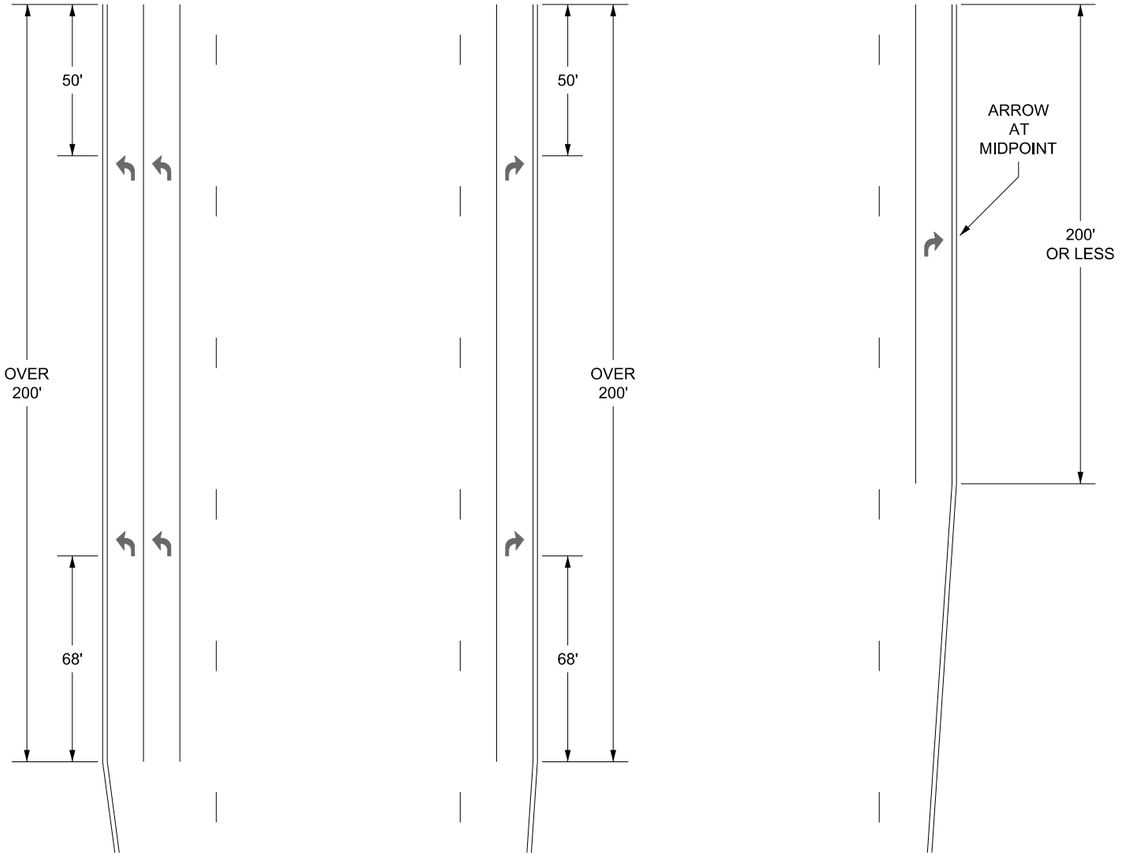
TITLE SHEET | PAVEMENT MARKING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

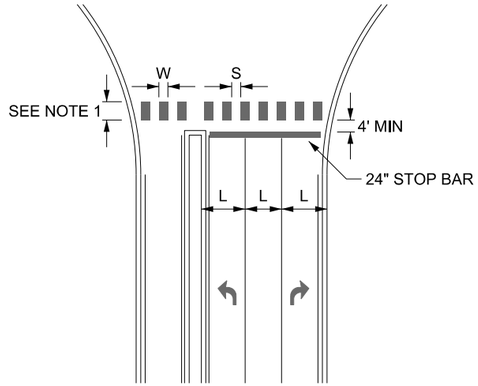
SHEET NO. 117 OF 148 SHEETS

PAVEMENT MARKING TYPICALS

TURN LANE ARROW PLACEMENT

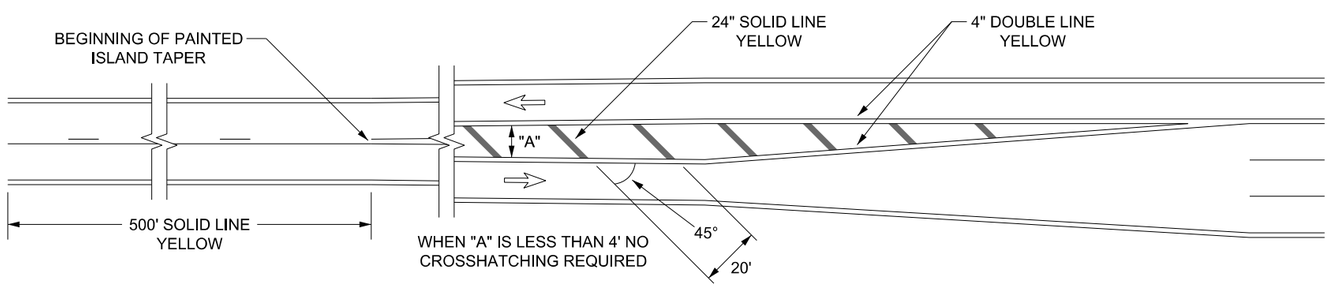


PEDESTRIAN CROSSWALK



(L) WIDTH OF INSIDE LANE	(W) WIDTH OF PAINTED AREAS	(S) WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'

LEFT TURN ISLAND MARKINGS



CROSSWALK NOTES:

1. THE BLOCKS SHALL BE A MINIMUM OF 6' AND AT LEAST AS LONG AS THE TRUNCATED DOMES. FOR FANNED TRUNCATED DOMES THE BLOCKS SHALL BE AT LEAST AS LONG AS THE APPROACHING SIDEWALK OR SHARED-USE PATH.
2. BLOCKS TO BE CENTERED ON CENTERLINE AND LANE LINES.
3. A MINIMUM OF 1.5' CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB FACE. IF BLOCK FALLS INTO THIS DISTANCE IT MUST BE OMITTED.
4. ON TWO LANE TWO WAY STREETS, USE SPACING SHOWN FOR AN 11' INSIDE LANE.
5. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE BLOCKS SHOULD BE MADE IN THE MEDIAN SO THAT THE BLOCKS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
6. AT SKEWED CROSSWALKS, THE BLOCKS ARE TO REMAIN PARALLEL TO THE LANE LINES.
7. THE BLOCKS SHALL BE PLACED SO THAT THEY ARE NOT LOCATED IN THE WHEEL PATH OF THE VEHICLES.
8. LOCATION OF CROSSWALK BLOCKS, STOP BARS, SIGNAL LOOPS AND PEDESTRIAN RAMPS ARE APPROXIMATE. FINAL LOCATIONS TO BE DETERMINED AND FIELD VERIFIED DURING CONSTRUCTION BY THE FIELD ENGINEER.

DATE: 12/2/2024 TIME: 11:42:59 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
DRW: DAF
CHK: JAH

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JEFFREY A. HILDEN

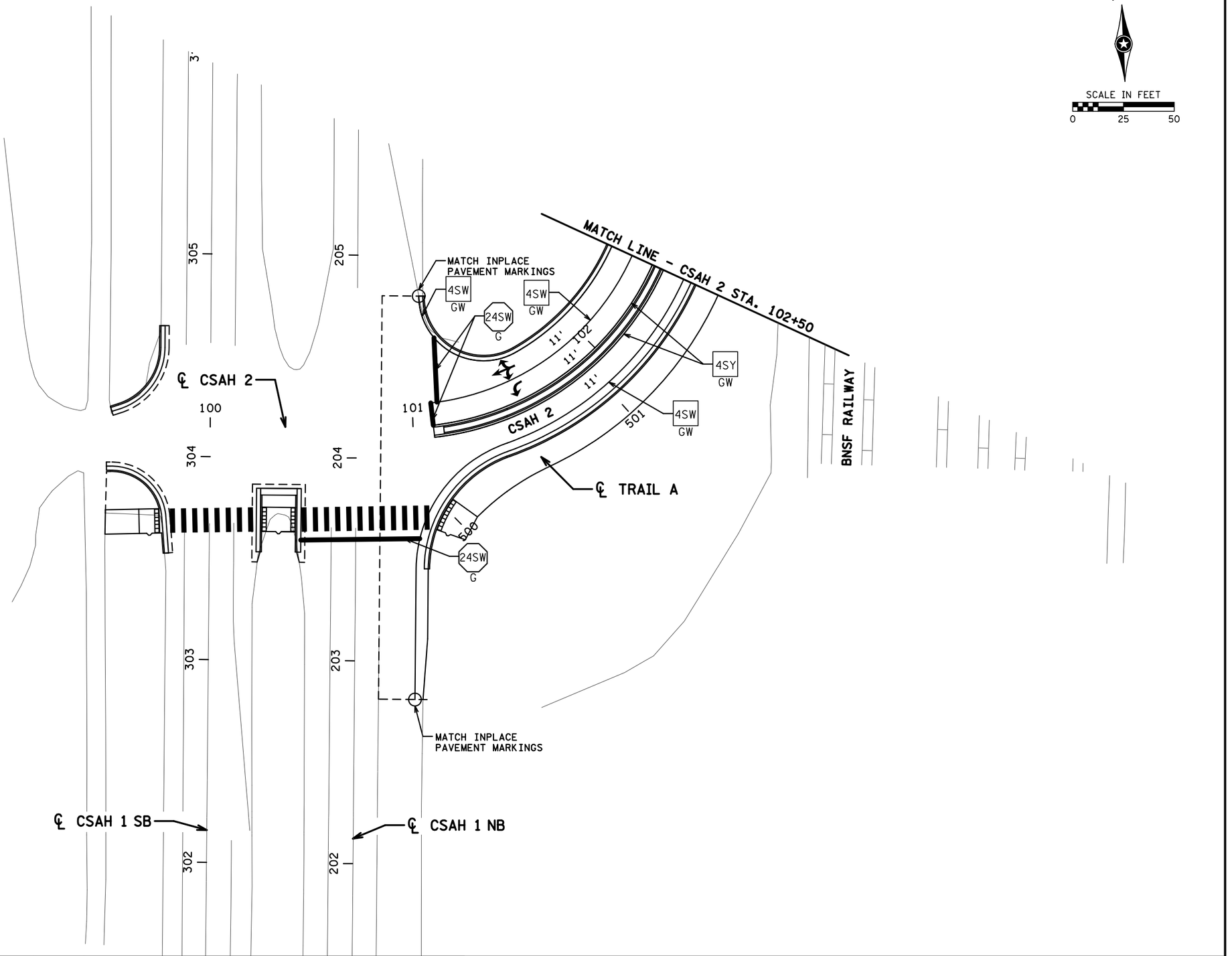
TKDA

DETAILS

PAVEMENT MARKING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 118 OF 148 SHEETS



DATE: 12/2/2024 TIME: 11:43:02 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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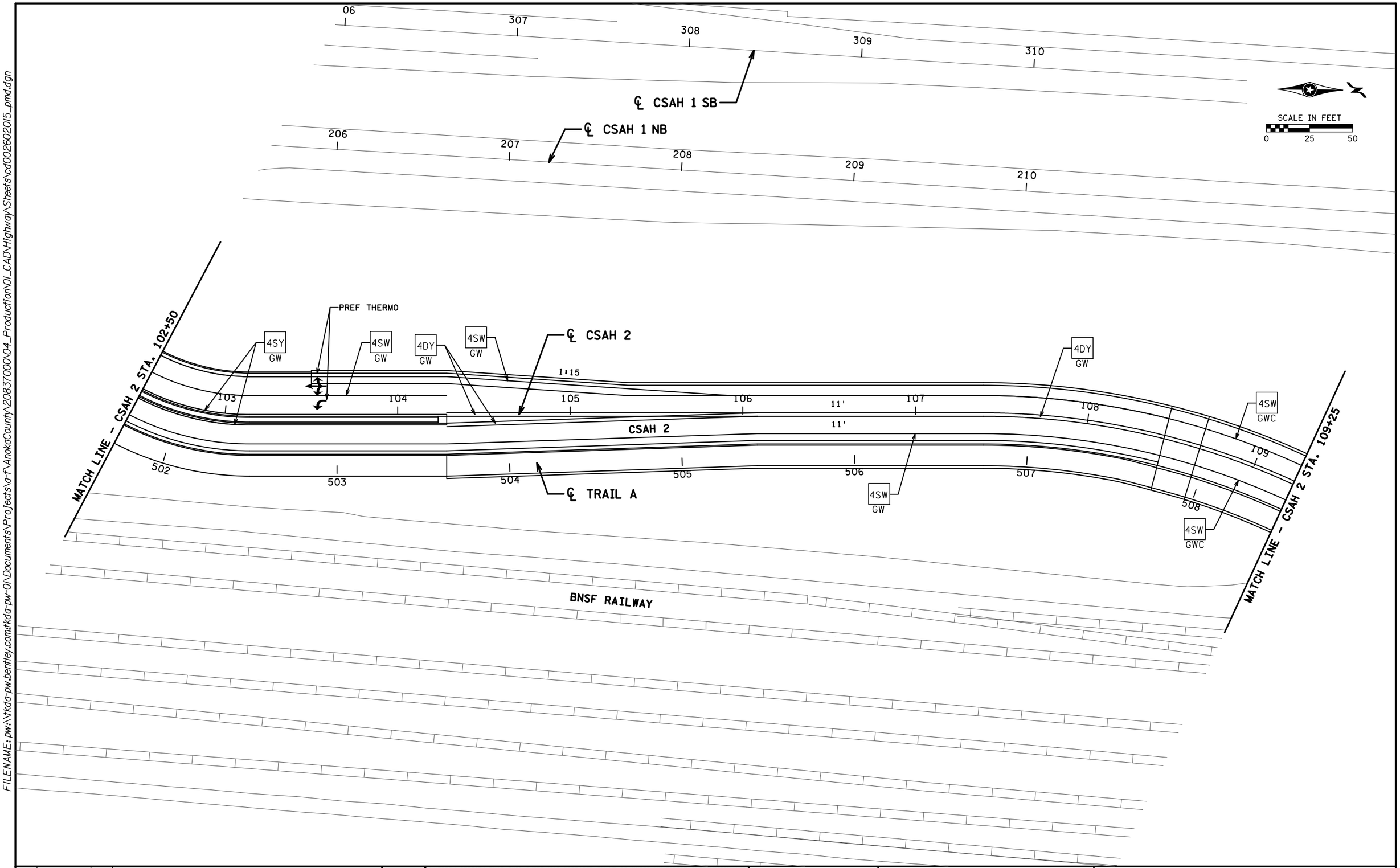
TKDA

CSAH 2 STA. 100+84 TO STA. 102+75

PAVEMENT MARKING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 119 OF 148 SHEETS



DATE: 12/2/2024 TIME: 11:43:06 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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DRW: DAF
CHK: JAH

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SIGNATURE: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

TKDA

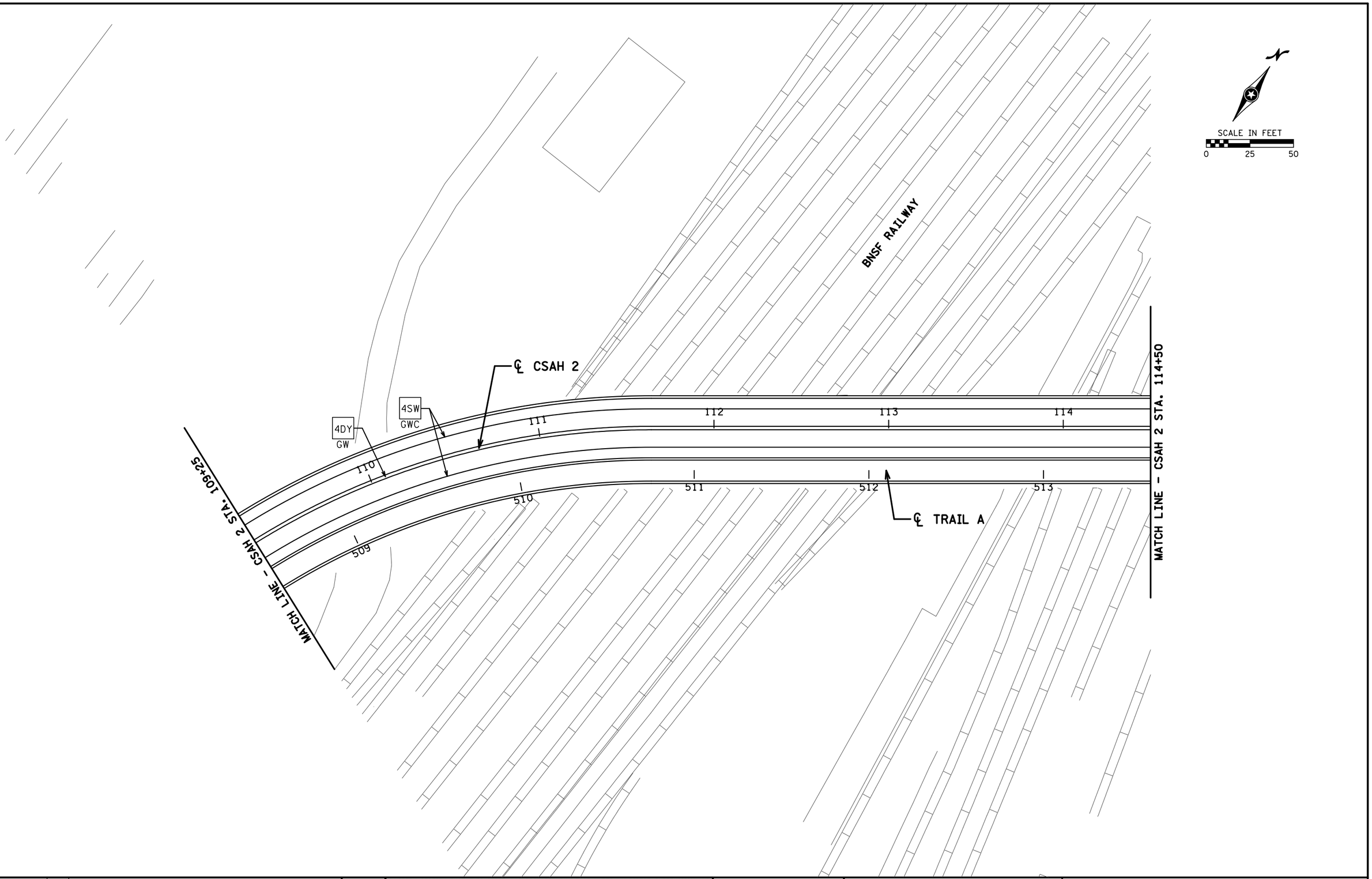
CSAH 2 STA. 102+75 TO STA. 109+25

PAVEMENT MARKING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 120 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:43:10 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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DRW: DAF
CHK: JAH

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SIGNATURE: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

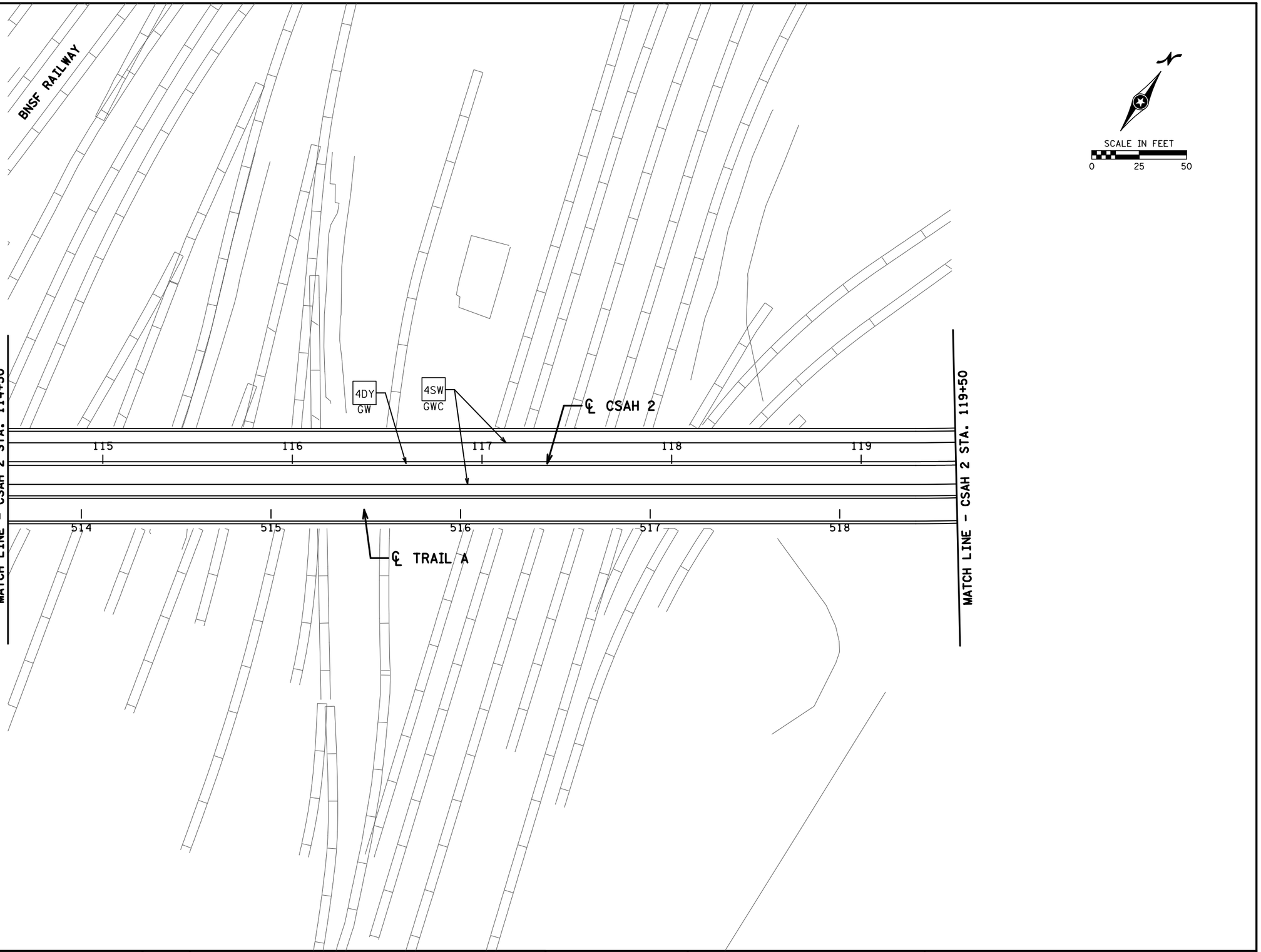
TKDA

CSAH 2 STA. 109+25 TO STA. 114+50

PAVEMENT MARKING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 121 OF 148 SHEETS



SCALE IN FEET
0 25 50

DATE: 12/2/2024 TIME: 11:43:13 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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JEFFREY A. HILDEN

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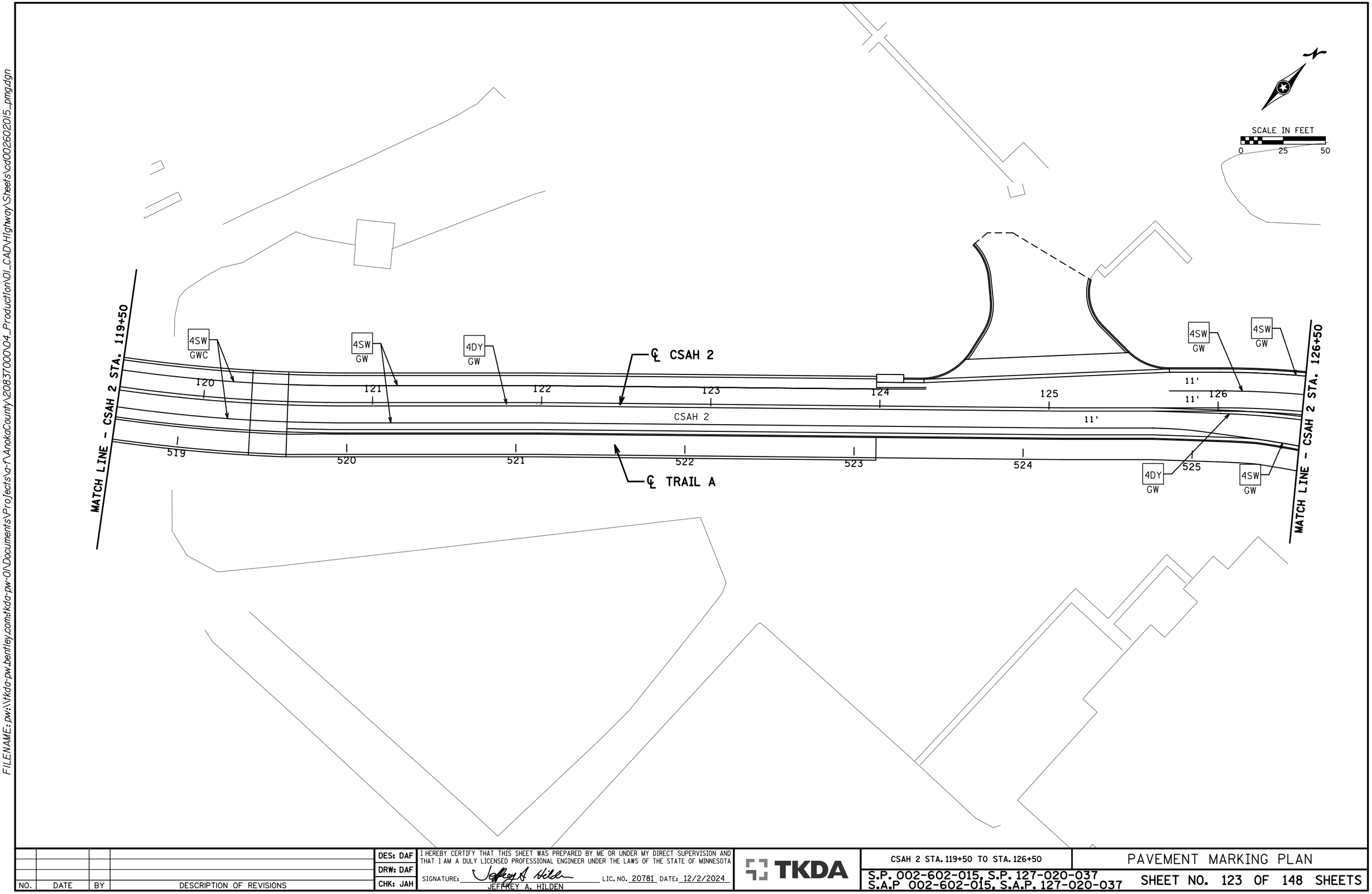
CSAH 2 STA. 114+50 TO STA. 119+50

PAVEMENT MARKING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 122 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:43:17 AM
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DRW: DAF
CHK: JAH

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JEFFREY A. HILDEN

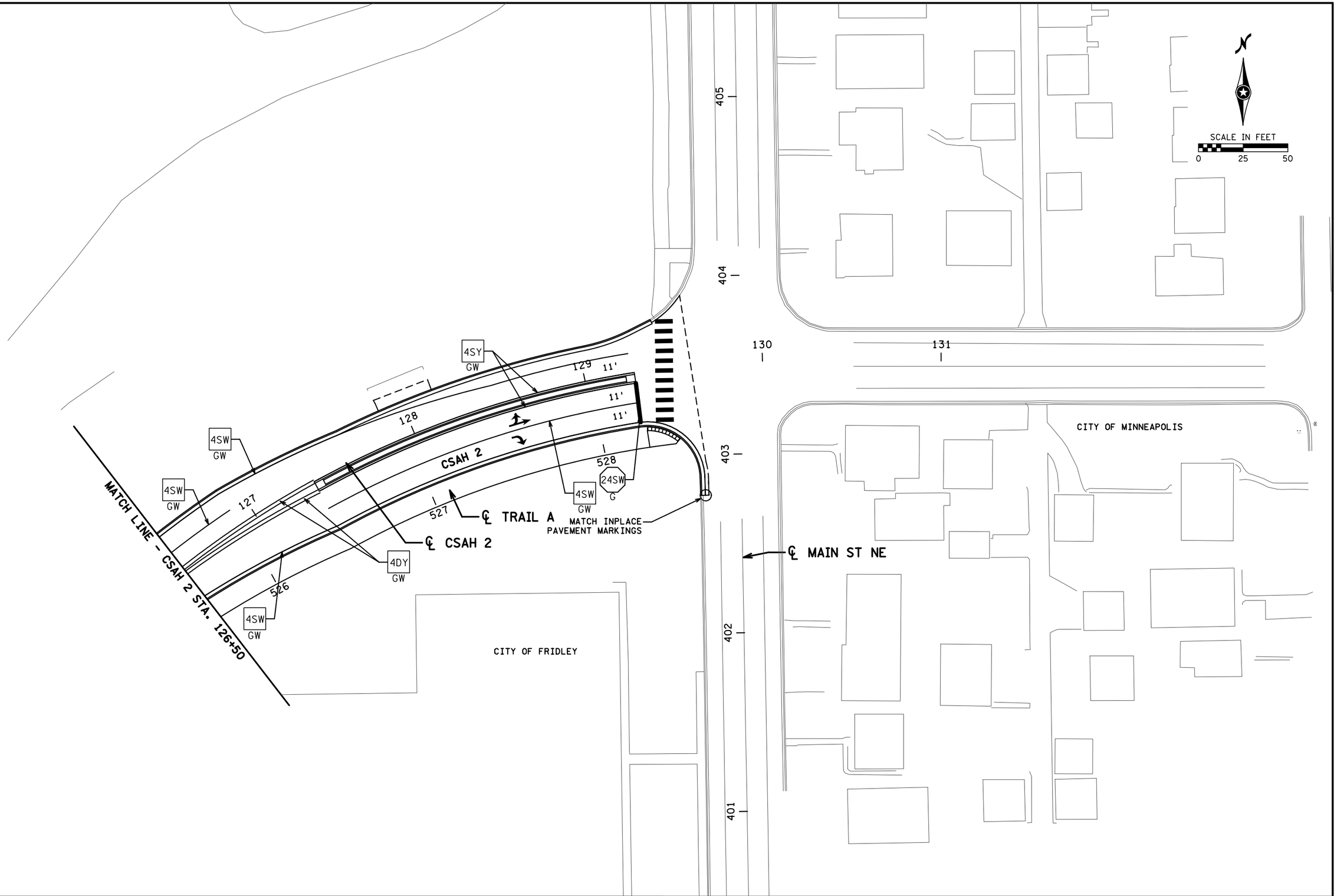
TKDA

CSAH 2 STA. 119+50 TO STA. 126+50

PAVEMENT MARKING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 123 OF 148 SHEETS



DATE: 12/2/2024 TIME: 11:43:21 AM
FILENAME: pw:\\tkda-pw.bentley.com:tkda-pw-01\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CADH1gtway\Sheets\cd00260201 5_pmh.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNATURE: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

TKDA

CSAH 2 STA. 126+50 TO STA. 129+65

PAVEMENT MARKING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 124 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:43:25 AM
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PERMANENT SIGNING SUMMARY				ST
TAB	ITEM NO	ITEM	UNIT	TOTAL QUANTITIES
ST-A	2104	REMOVE SIGN	EACH	46
ST-A	2104	REMOVE DELINEATOR/MARKER	EACH	3
ST-A	2564	DELINEATOR/MARKER	EACH	4
ST-A	2564	DELINEATOR/MARKER PANEL	EACH	9
ST-A	2564	SIGN	SQ FT	285

STANDARD PLANS	
NUMBER	DESCRIPTION
5-297.701	STANDARD SIGN PLACEMENT
5-297.702	DELINEATOR AND MARKER PLACEMENT
5-297.718	SQUARE TUBE SIGN MOUNTING DETAILS (3 SHEETS)
5-297.719	SQUARE TUBE SIDE-BY-SIDE SIGN MOUNTING DETAILS
5-297.720	SQUARE TUBE NO PASSING ZONE SIGN MOUNTING DETAILS
5-297.721	THREE-WALL BASE - FOR 1-3/4" SQUARE-TUBE RISER POST
5-297.722	FIN BASE - FOR 2" SQUARE-TUBE RISER POST IN SOIL
5-297.724	SLIP BASE FOR 2-1/2" SQUARE-TUBE RISER POST

GENERAL INFORMATION:

1. MOUNTING HEIGHT IS MINIMUM (WITH A + 6 INCH TOLERANCE)
2. SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR STANDARD SIGN DESIGNS, SPLICE PLATES, STRINGERS AND PUNCHING CODES.
3. SEE PANEL LAYOUTS FOR SIGNS WITH THE CODE "DESIGN".
4. SEE STANDARD PLANS AND DETAILS FOR SIGN STRUCTURE INSTALLATION AND PLACEMENT.
5. STANDARD SIGN PANELS ARE LISTED IN THE TABULATIONS WITH TWO DIMENSTION THAT MAY NOT BE THEIR ACTUAL WIDTH OR HEIGHT, BUT INSTEAD ARE LENGTHS OF THEIR SIDES OR DIAMETER. SEE THE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR ACTUAL DIMENSIONS OF THESE PANELS BASED UPON THE CORRESPONDING DIMENSIONS FROM THE TABULATIONS.
6. SIGNS AND DELINEATOR/MARKER TABULATIONS DISPLAY SIGN PANEL AND SUPPORT INFORMATION FOR NEW SIGNS. SIGNS BEING REMOVED OR SALVAGED MAY NOT INCLUDE PANEL OR SUPPORT INFORMATION IN THE TABULATION.
7. PLACE SIGNS AFTER FINAL GRADING IS COMPLETE.

SIGNING PLAN INDEX

SHEET NO.	DESCRIPTION
125	TITLE SHEET
126-127	SIGNING TABULATION
128	SIGNING DETAILS
129-132	PROPOSED SIGNING PLAN

ABBREVIATIONS

SQ-SOIL SQUARE TUBE IN SOIL
SQ-CONC SQUARE TUBE IN CONCRETE

SIGNING LEGEND

⊥ SIGN

⊥⊥ BACK TO BACK MOUNTED SIGNS

LAST REVISED
OCT/24/2022

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
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CHK: JAH

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JEFFREY A. HILDEN

TKDA

TITLE SHEET | SIGNING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 125 OF 148 SHEETS

SIGN AND DELINEATOR / MARKER

ST-A

SIGN NUMBER	PANEL				SUPPORT			REMOVE SIGN	SIGN	REMOVE DELINEATOR /MARKER	DELINEATOR /MARKER	DELINEATOR /MARKER PANEL
	PANEL CODE	LEGEND	SIZE (W x H)	MOUNTING HEIGHT	TYPE	RISER POST SIZE	NUMBER OF POSTS					
			INCH	FEET		INCHES		EACH	SQ FT	EACH	EACH	EACH
S-1	W11-2	PEDESTRIAN CROSSING	36 x 36					1				
	W16-7PL	DOWN ARROW LEFT PLAQUE (YELLOW)	30 x 18									
S-2	R6-1L	ONE WAY LEFT	36 x 12					1				
S-3	R5-1	DO NOT ENTER	36 x 36	7	SQ-SOIL	2	1	1	9.00			
S-4	R4-7	KEEP RIGHT	24 x 30	7	SQ-SOIL	2	1	1	5.00			
	OM1-2	TYPE 1 OBJECT MARKER	18 x 18									1
S-5	R4-7	KEEP RIGHT	24 x 30	7	SQ-SOIL	2	1	1	5.00			
	OM1-2	TYPE 1 OBJECT MARKER	18 x 18									1
S-6	R5-1	DO NOT ENTER	36 x 36	7	SQ-SOIL	2	1	1	9.00			
S-7	W12-1	DOUBLE ARROW	36 x 36					1				
S-8	R1-2	YIELD	48 x 48 x 48					1				
S-9	R1-2	YIELD	48 x 48 x 48					1				
S-10	R4-7	KEEP RIGHT	24 x 30	7	SQ-CONC	2	1	1	5.00			
	OM1-2	TYPE 1 OBJECT MARKER	18 x 18									1
S-11	R5-1	DO NOT ENTER	36 x 36	7	SQ-CONC	2	1	1	9.00			
S-12	M4-6	END (BLUE)	24 x 12	7	SQ-SOIL	2	1	1	2.00			
	M1-6M	ANOKA COUNTY 2	24 x 24						4.00			
S-13	M1-6M	ANOKA COUNTY 1	24 x 24	7	SQ-SOIL	2	1	1	4.00			
	M6-4	DOUBLE ARROW (BLUE)	21 x 15						2.19			
S-14	R6-1L	ONE WAY LEFT	36 x 12					1				
	R6-1L	ONE WAY LEFT	36 x 12									
	R9-3	NO PEDESTRIANS	18 x 18									
S-15	M3-2	EAST (BLUE)	24 x 12	7	SQ-SOIL	2	1	1	2.00			
	M1-6M	ANOKA COUNTY 2	24 x 24						4.00			
S-16	W1-6	ONE DIRECTION ARROW	48 x 24	7	SQ-SOIL	2 1/2	1	1	8.00			
	OM1-2	TYPE 1 OBJECT MARKER	18 x 18									1
S-17		LEFT TURN LANE	30 x 30	7	SQ-SOIL	2	1	1				
	R3-7L	LEFT LANE MUST TURN LEFT	30 x 30						6.25			
S-18	R2-1	SPEED LIMIT 30	24 x 30	7	SQ-SOIL	2	1	1	5.00			
S-19	R3-8AG	L-LTR	36 x 30	7	SQ-SOIL	2	1	1	7.50			
S-20	OM3-L	TYPE 3 OBJECT MARKER LEFT	12 x 36	4	SQ SOIL	1 3/4	1			1	1	
S-21	OM3-R	TYPE 3 OBJECT MARKER RIGHT	12 x 36	4	SQ SOIL	1 3/4	1				1	
(1) S-22	R3-4	NO U-TURN	24 x 24	7	SQ-CONC	2	1	1	4.00			
	R4-7	KEEP RIGHT	24 x 30						5.00			
	OM1-2	TYPE 1 OBJECT MARKER	18 x 18									1
S-23	W1-1R	SHARP CURVE RIGHT	30 x 30	7	SQ-SOIL	2	1	1	6.25			
S-24	M2-1	JCT (BLUE)	21 x 15	7	SQ-SOIL	2	1	1	2.19			
	M1-6M	ANOKA COUNTY 1	24 x 24						4.00			
S-25	W14-3	NO PASSING ZONE	48 x 48 x 36	7	SQ-SOIL	2	1		6.00			
S-26	W3-3	SIGNAL AHEAD	30 x 30	7	SQ-SOIL	2	1	1	6.25			
S-27	W8-5	SLIPPERY WHEN WET	30 x 30	7	SQ-SOIL	2	1	1	6.25			
S-28	W1-1R	SHARP CURVE RIGHT	30 x 30	7	SQ-SOIL	2 1/2	1	1	6.25			
	W13-1P	20 MPH PLAQUE	18 x 18						2.25			
S-29	OM3-R	TYPE 3 OBJECT MARKER RIGHT	12 x 36	4	SQ-CONC	1 3/4	1			1	1	
S-30	OM3-L	TYPE 3 OBJECT MARKER LEFT	12 x 36	4	SQ-CONC	1 3/4	1			1	1	
S-31	W1-1L	SHARP CURVE LEFT	30 x 30	7	SQ-SOIL	2 1/2	1	1	6.25			
	OM3-R	TYPE 3 OBJECT MARKER RIGHT	12 x 36									

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CHK: JAH

I HEREBY CERTIFY THAT THIS SHEET 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: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024
JEFFREY A. HILDEN

TKDA

SIGNING TABULATIONS

SIGNING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 126 OF 148 SHEETS

SIGN AND DELINEATOR / MARKER

ST-A

	SIGN NUMBER	PANEL				SUPPORT			REMOVE SIGN	SIGN	REMOVE DELINEATOR /MARKER	DELINEATOR /MARKER	DELINEATOR /MARKER PANEL
		PANEL CODE	LEGEND	SIZE (W x H)	MOUNTING HEIGHT	TYPE	RISER POST SIZE	NUMBER OF POSTS					
				INCH	FEET		INCHES		EACH	SQ FT	EACH	EACH	EACH
	S-32	W8-5	SLIPPERY WHEN WET	30 x 30	7	SQ SOIL	2	1	1	6.25			
(1)	S-33	W3-1	STOP AHEAD	30 x 30	7	SQ-SOIL	2	1	1	6.25			
		OM3-R	TYPE 3 OBJECT MARKER RIGHT	12 x 36									1
(1)	S-34	OM3-L	TYPE 3 OBJECT MARKER LEFT	12 x 36	7	SQ SOIL	2 1/2	1					1
		W3-1	STOP AHEAD	30 x 30					1	6.25			
	S-35	M2-1	JCT (BLUE)	21 x 15	7	SQ-SOIL	2	1	1	2.19			
		M1-6M	ANOKA COUNTY 102	24 x 24						4.00			
	S-36	R1-1	STOP	30 x 30	7	SQ SOIL	2	1	1	6.25			
	S-37	R1-1	STOP	30 x 30	7	SQ SOIL	2	1	1	6.25			
	S-38		RIGHT TURN LANE	30 x 30	7	SQ-SOIL	2 1/2	1	1				
		R8-3	NO PARKING	24 x 24						4.00			
			HERE TO CORNER	24 x 12						2.00			
		R3-7R	RIGHT LANE MUST TURN RIGHT	30 x 30						6.25			
	S-39	R3-8DA	LT-R	36 x 30	7	SQ SOIL	2	1		7.50			
(1)	S-40	R4-7	KEEP RIGHT	24 x 30	7	SQ-CONC	2	1	1	5.00			
		OM1-2	TYPE 1 OBJECT MARKER	18 x 18									1
		R3-4	NO U-TURN	24 x 24						4.00			
	S-41		LEFT TURN LANE	30 x 30	7	SQ-CONC	2	1	1				
		R3-7L	LEFT LANE MUST TURN LEFT	30 x 30						6.25			
	S-42		RIGHT TURN LANE	30 x 30					1				
	S-43	R2-1	SPEED LIMIT 30	24 x 30	7	SQ-SOIL	2	1	1	5.00			
	S-44	R5-1	DO NOT ENTER	36 x 36	7	SQ-CONC	2	1	1	9.00			
	S-45	M3-4	WEST (BLUE)	24 x 12	7	SQ-SOIL	2	1	1	2.00			
		M1-6M	ANOKA COUNTY 2	24 x 24						4.00			
	S-46	R1-1	STOP	30 x 30	7	SQ-SOIL	2	1	1	6.25			
		R1-3P	ALL WAY PLAQUE	18 x 6						0.75			
	S-47	M1-6M	ANOKA COUNTY 102	24 x 24	7	SQ-SOIL	2	1	1	4.00			
		M6-1L	ARROW LEFT (BLUE)	21 x 15						2.19			
	S-48	M1-6M	ANOKA COUNTY 2	24 x 24	7	SQ-SOIL	2	1	1	4.00			
		M6-1R	ARROW RIGHT (BLUE)	21 x 15						2.19			
(1)	S-49	R1-1	STOP	30 x 30	7	SQ-CONC	2 1/2	1	1	6.25			
		R1-3P	ALL WAY PLAQUE	18 x 6						0.75			
		R4-7	KEEP RIGHT	24 x 30						5.00			
		OM1-2	TYPE 1 OBJECT MARKER	18 x 18									1
	S-50	R1-1	STOP	30 x 30	7	SQ-SOIL	2	1	1	6.25			
		R1-3P	ALL WAY PLAQUE	18 x 6						0.75			
	S-51	M1-6M	ANOKA COUNTY 2	24 x 24	7	SQ-SOIL	2 1/2	1	1	4.00			
		M6-6R	ARROW UP RIGHT (BLUE)	21 x 15						2.19			
	S-52	M4-6	END (BLUE)	24 x 12	7	SQ-SOIL	2 1/2	1	1	2.00			
		M1-6M	ANOKA COUNTY 102	24 x 24						4.00			
	TOTALS								**46**	**285**	**3**	**4**	**9**

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SIGNATURE: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

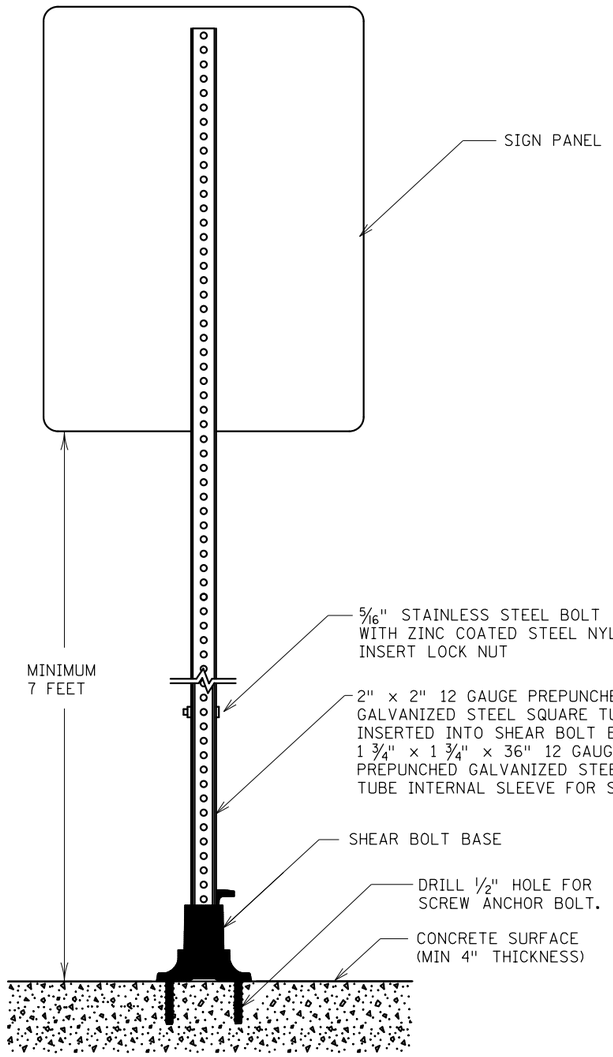
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SIGNING TABULATIONS

SIGNING PLAN

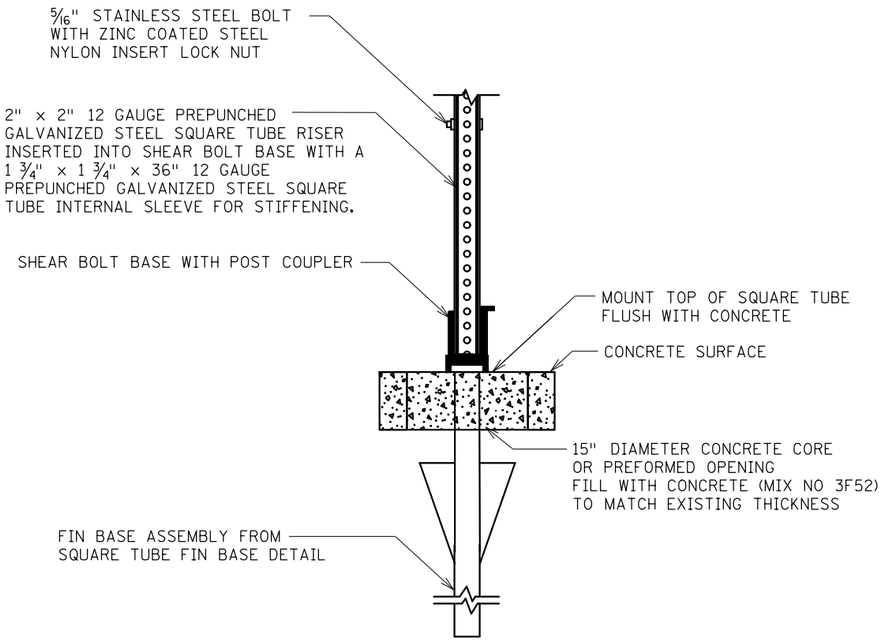
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S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 127 OF 148 SHEETS

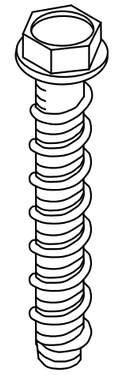


SHEAR BOLT BASE MOUNTED
TO CONCRETE SURFACE

RISER POSTS TO BE MOUNTED CLOSE TO PLUMB. UP TO A MAXIMUM OF 1/2" OF SHIM WASHERS MAY BE USED BETWEEN SHEAR BOLT BASE AND CONCRETE FOR LEVELING. IF MORE THAN 1/2" OF SHIMS ARE REQUIRED, THEN CORE THROUGH THE CONCRETE.



SHEAR BOLT BASE CORED THROUGH CONCRETE



SCREW ANCHOR BOLT

5" LONG CARBON STEEL
THAT MUST MEET A MINIMUM
ALLOWABLE TENSION LOAD
OF 2270 PSI.

NOTES:

1. THE CRASH RESPONSE TYPE FOR THIS STRUCTURE IS BREAKAWAY.
2. TO MEET CRASHWORTHY REQUIREMENTS THE DISTANCE BETWEEN THE BOTTOM OF THE SIGN PANEL AND THE GROUND SURFACE BELOW ANY PORTION OF THE PRIMARY SIGN PANEL MUST BE A MINIMUM OF 7 FEET. SEE TABULATIONS FOR MOUNTING HEIGHT.
3. INSTALLATION OF SHEAR BOLT BASE MUST BE NO EARLIER THAN 3 DAYS AFTER CONCRETE IS PLACED.
4. FOR SHEAR BOLT BASE USE APPROVED PRODUCT FROM MnDOT APPROVED PRODUCTS LIST, PRODUCT MUST BE MODIFIED AS SHOWN.
5. USE ANTI SEIZE ON THE SHEAR BOLT CONNECTIONS.
6. FOR SIGN PANEL MOUNTING DETAILS SEE SQUARE TUBE SIGN MOUNTING DETAILS.
7. SQUARE TUBE SIGN POSTS PER MnDOT SPEC. 3402.

REV 4/20/21

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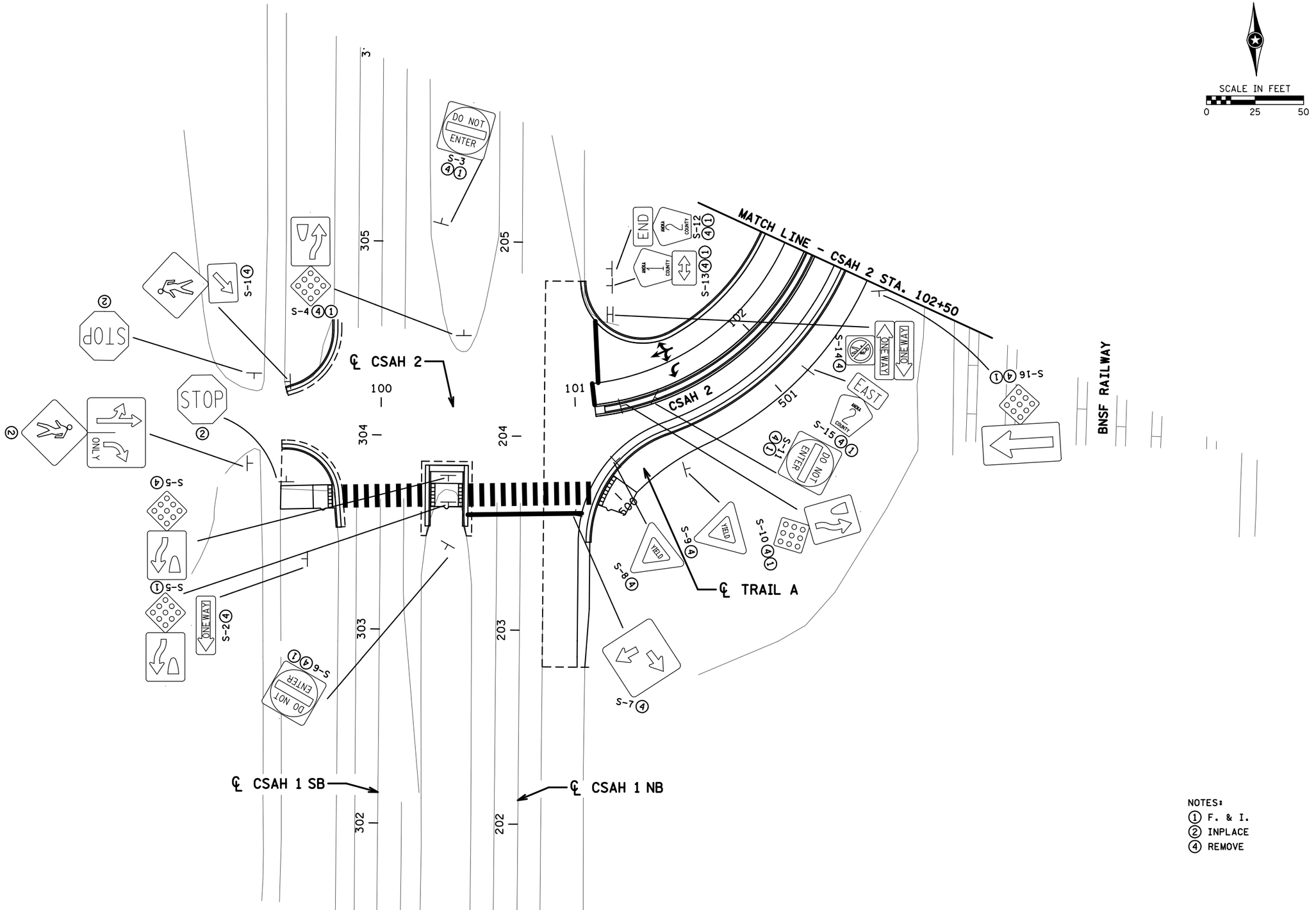
SIGNING DETAILS

SIGNING PLAN

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SHEET NO. 128 OF 148 SHEETS

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NOTES:
1. F. & I.
2. INPLACE
4. REMOVE

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JEFFREY A. HILDEN
LIC. NO. 20781 DATE: 12/2/2024

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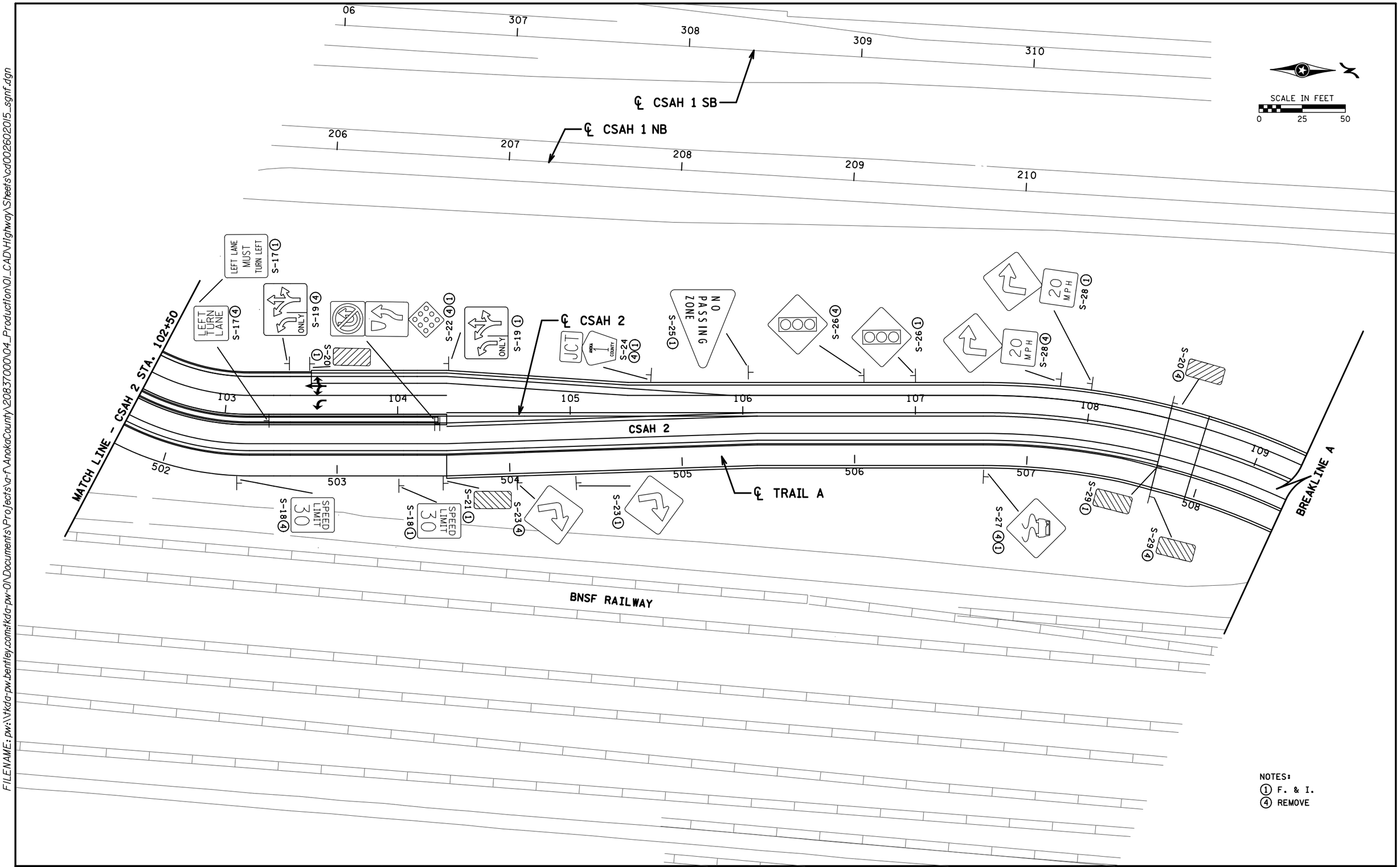
CSAH 2 STA. 100+84 TO STA. 102+75

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

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NOTES:
① F. & I.
④ REMOVE

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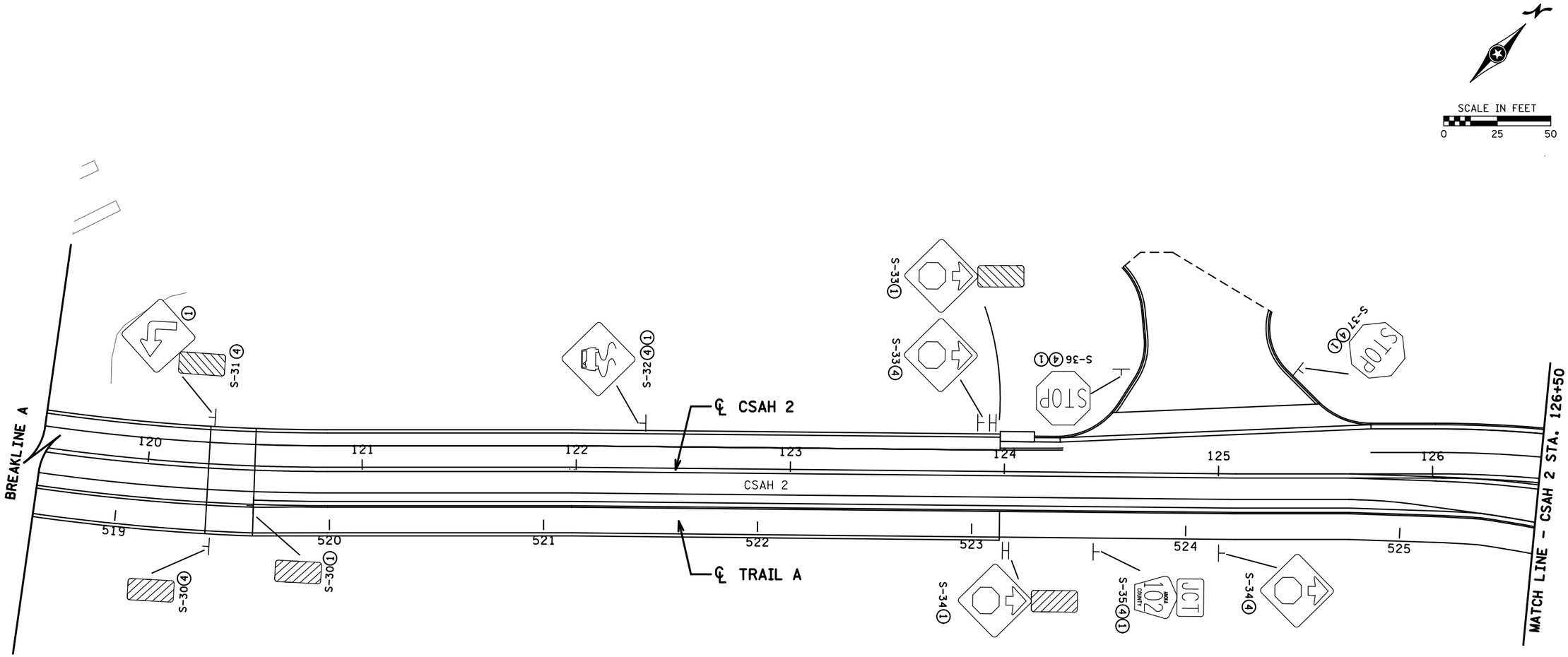
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JEFFREY A. HILDEN

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CSAH 2 STA. 102+75 TO STA. 109+25
S.P. 002-602-015, S.P. 127-020-037
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SIGNING PLAN
SHEET NO. 130 OF 148 SHEETS



NOTES:
① F. & I.
④ REMOVE

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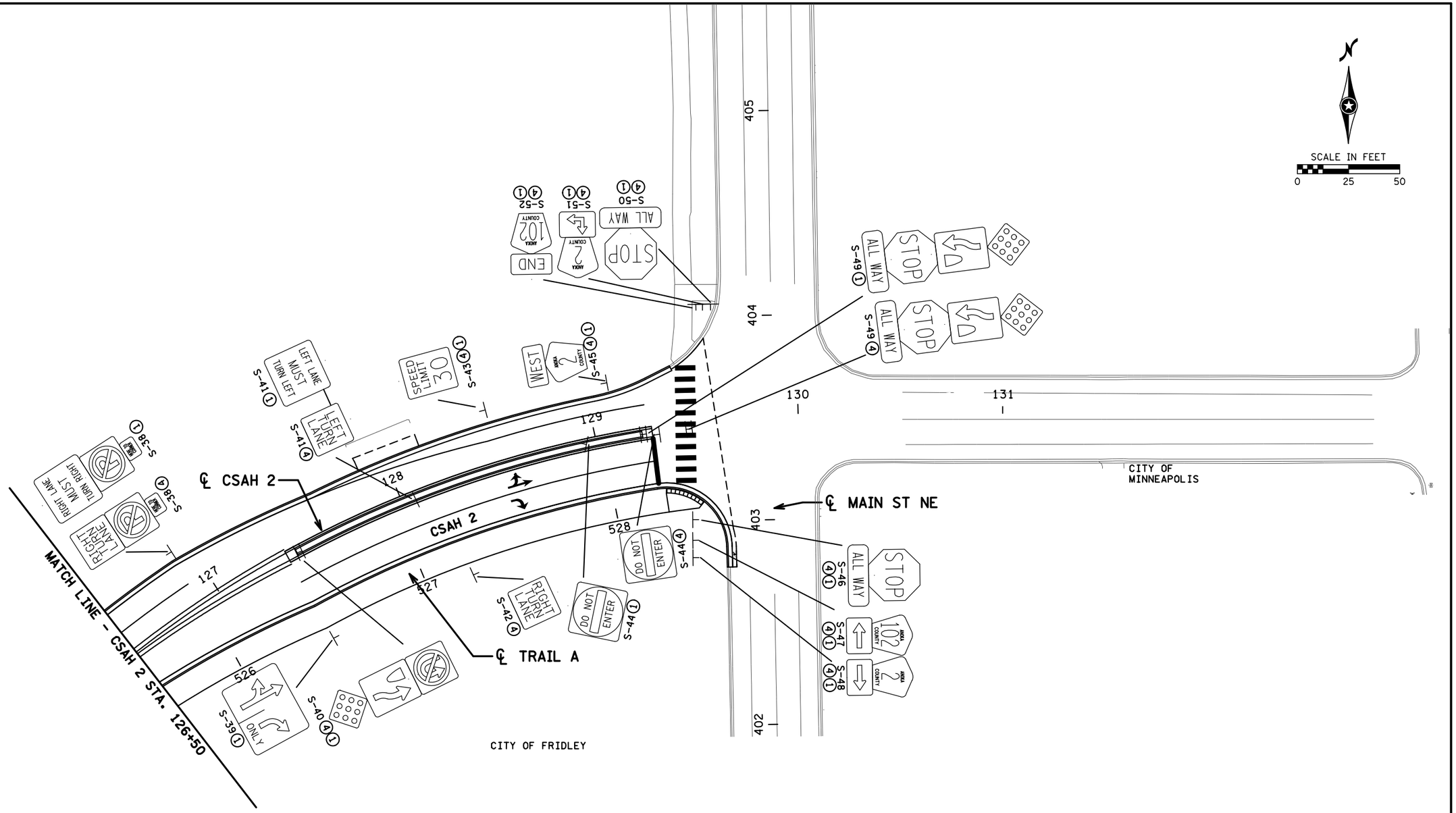
CSAH 2 STA. 119+50 TO STA. 126+50

SIGNING PLAN

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SHEET NO. 131 OF 148 SHEETS

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NOTES:
1. F. & I.
4. REMOVE

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CSAH 2 STA. 126+50 TO STA. 129+65

SIGNING PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 132 OF 148 SHEETS

ABBREVIATIONS

AWF	ADVANCE WARNING FLASHER
C.D.	COUNT DOWN
D2-1 (e.g.)	DETECTOR (PHASE 2, NO. 1)
DEG	DEGREES
DWK	DON'T WALK
F&I	FURNISH AND INSTALL
FL	FLASH/FLASHING
FYA	FLASHING YELLOW ARROW
FYLA	FLASHING YELLOW LEFT ARROW
G	GREEN
GLA	GREEN LEFT ARROW
GRN	GREEN
GR. RD.	GROUND ROD
GRA	GREEN RIGHT ARROW
GTA	GREEN THRU ARROW
HH	HANDHOLE
IND	INDICATION
INP	INPLACE
INS. GR.	INSULATED GROUND
JB	JUNCTION BOX
LED	LIGHT EMITTING DIODE
LUM	LUMINAIRE
NEU	NEUTRAL
P1-1 (e.g.)	PEDESTRIAN HEAD (PHASE 1, NO. 1)
PB	PUSH BUTTON
PB2-1 (e.g.)	PUSH BUTTON (PHASE 2, NO. 1)
PED	PEDESTRIAN
R	RED
R&S	REMOVE AND SALVAGE
RLA	RED LEFT ARROW
S&I	SALVAGE AND INSTALL
SPR	SPARE
STA	STATION
TRA MGMT CAM	TRAFFIC MANAGEMENT CAMERA
V-1 (e.g.)	VIDEO DETECTION CAMERA (NO. 1)
WLK	WALK
Y	YELLOW
YEL	YELLOW
YLA	YELLOW LEFT ARROW
YRA	YELLOW RIGHT ARROW

SYMBOLS

- HANDHOLE
- EQ.G CONNECTION
- EVP CONFIRMATORY LIGHT
- EVP DETECTOR
- EVP DETECTOR AND CONFIRMATORY LIGHT
- SPLICE
- FO — FIBER OPTIC SPLICE VAULT
- PV — PULL VAULT
- 2 — LUMINAIRE NO.
- 3 — SIGNAL BASE NO.
- 3-2 — SIGNAL HEAD NO./FLASHER HEAD NO.
- BM 4 — BARREL MOUNT BASE NO.
- WP 1 — WOOD POLE NO.
- PTZ — PAN TILT ZOOM CAMERA (PTZ)
- V — VIDEO DETECTION

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

INDEX

133	TITLE SHEET
134-142	DETAIL SHEETS
143-144	INTERSECTION LAYOUT
145	INTERSECTION NOTES
146-147	FIELD WIRING DIAGRAMS
148	MAST ARM AND SIGNING DETAILS

SIGNALS SUMMARY		U
ITEM	UNIT	TOTAL QUANTITIES
REMOVE SIGNAL SYSTEM	SYSTEM	1
TRAFFIC CONTROL SIGNAL SYSTEM	SYSTEM	1

STANDARD PLANS	
NUMBER	DESCRIPTION
5-297.250	PEDESTRIAN CURB RAMP DETAILS
5-297.730	SIGN MOUNTING SYSTEMS FOR ROUND SUPPORTS
5-297.731	SIGN MOUNTING DETAILS FOR SIGNAL MAST ARMS
5-297.885	ACCESIBLE PEDESTRIAN SIGNAL (APS) PUSHBUTTON STATION AND LOCATION

STANDARD PLATES	
NUMBER	DESCRIPTION
8129A	SHIM AND WASHER

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TKDA

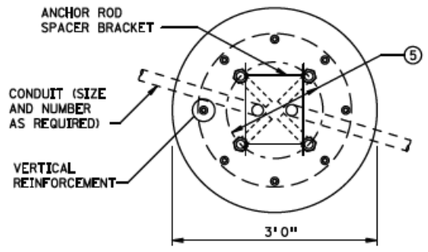
TITLE SHEET

SIGNAL PLAN

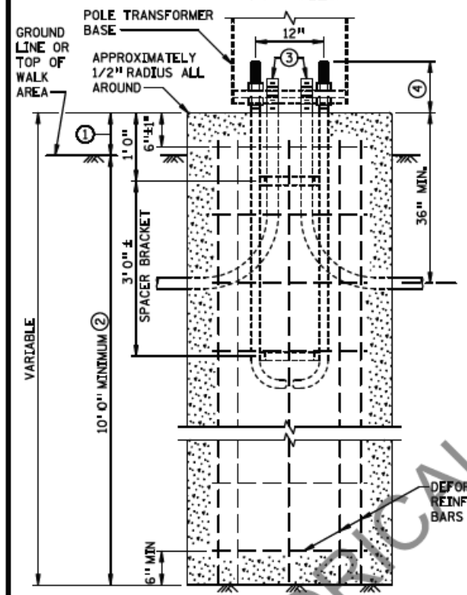
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SHEET NO. 133 OF 148 SHEETS

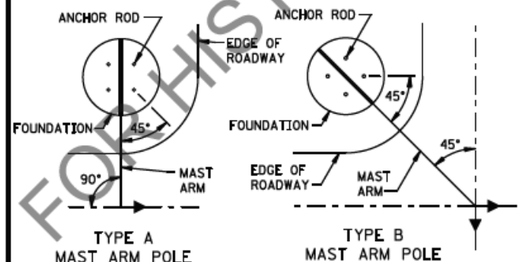
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TOP VIEW



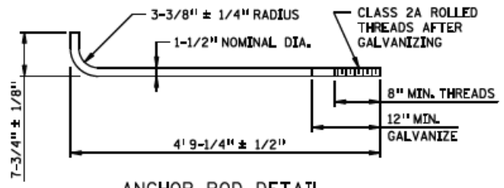
VERTICAL SECTION



TYPE A MAST ARM POLE

TYPE B MAST ARM POLE

ANCHOR ROD PLACEMENT
(WHEN USED WITH MAST ARM POLE)



ANCHOR ROD DETAIL
(SPEC. 3385 TYPE C)

NOTES:

REINFORCING BARS SHALL BE GRADE 60 AND MEET THE REQUIREMENTS OF ASTM A 706 (WELDABLE REBARS) AND ARE IDENTIFIED BY A DISTINGUISHING MARK OF "W" ROLLED ONTO THE SURFACE OF ONE SIDE OF THE BAR. WELDING SHALL BE PER ANSI/AWS D1.4. USE 8-NO. 7 BARS FOR VERTICAL REINFORCEMENT, SPACED ON A 27" DIA. CIRCLE. HORZONTAL (CIRCULAR) BARS TO BE NO. 4 SPACED AT 1'0" MAXIMUM VERTICAL SPACING. SECURELY TIE OR WELD (OR COMBINATION) ALL REINFORCEMENT TOGETHER.

ANCHOR RODS SHALL BE GALVANIZED IN ACCORDANCE WITH SPEC. 3392 AND SHALL BE 1-1/2" NOMINAL DIA. AND CUT LENGTH OF 60" BEFORE BENDING. (SEE ANCHOR ROD DETAIL). ANCHOR ROD CAGES SHALL BE DESIGNED WITHOUT WELDING ONTO THE ANCHOR RODS.

ALL BACKFILLING AROUND THE FOUNDATION MUST BE IN ACCORDANCE WITH 2451.

ALL EXCAVATIONS MUST BE PROPERLY COMPACTED IN ACCORDANCE WITH 2451.

CONCRETE MIX 3G52.

PREFORMED JOINT FILLER SHALL BE USED BETWEEN FOUNDATION AND SIDEWALK OR CONCRETE AREAS.

A FIBER FORMING TUBE SHALL BE USED IN FORMING THE FOUNDATION, OR AS APPROVED BY THE ENGINEER.

OPEN ENDS OF ALL CONDUIT INTO FOUNDATION SHALL BE POSITIONED INSIDE THE ANCHOR ROD BOLT CIRCLE, AND CAPPED UNTIL CABLES ARE INSTALLED.

MAST ARM POLE STANDARDS SHALL NOT BE INSTALLED ON FOUNDATIONS UNTIL AT LEAST SEVEN DAYS OF CURING PERIOD HAVE ELAPSED.

ANTI-SEIZE COMPOUND THAT MEETS MIL-PRF-907E SPEC. SHALL BE APPLIED WITH A BRUSH TO ALL THREADS.

① THE ELEVATION OF THE TOP OF THE FOUNDATION SHALL ASSURE THAT THE VERTICAL CLEARANCE FROM THE BOTTOM OF ALL SIGNAL HEADS (INCLUDING BACKGROUND SHIELDS) TO THE PAVEMENT IS NOT LESS THAN 17 FT. NOR GREATER THAN 19 FT. THE TOP OF THE FOUNDATION MUST BE A MINIMUM OF 6" ABOVE THE GROUND LINE OR TOP OF SIDEWALK.

② DEPTH OF FOUNDATION MAY VARY IN PLANS OR SPECIAL PROVISIONS. DEPTH OF FOUNDATION MAY BE REDUCED 2 FEET WHEN PLACED IN SIDEWALK OR CONCRETE RAISED MEDIAN. FOUNDATION DEPTHS ARE BASED ON A SOIL FRICTION OF 30° AND A SOIL WEIGHT OF 120 LB/CF AND NO GROUNDWATER WITHIN THE GROUND SURFACE TO A DEPTH OF TWO TIMES THE WIDTH OR DIAMETER OF BOTTOM OF POLE FOUNDATION. A SOIL BORING OR CONE PENETRATION TEST (CPT) SOUNDING IS RECOMMENDED WHERE IN-SITU STRATIGRAPHY IS UNKNOWN OR QUESTIONABLE. ANY VARIATION IN THE DEPTH OF THE FOUNDATION REQUIRES AN APPROVAL BY THE DISTRICT SOILS ENGINEER.

③ CONDUIT PER SPEC. 3801 OR 3803, SIZE AND NUMBER AS REQUIRED IN PLANS OR SPECIAL PROVISIONS, 4" MINIMUM AND 6" MAXIMUM PROJECTION ABOVE FOUNDATION, AND CAPPED UNTIL WIRING IS PLACED.

④ 6" ANCHOR ROD PROJECTION (THREADED). SOME POLES (SUCH AS ROTATABLE T-BASE) MAY REQUIRE GREATER PROJECTION.

⑤ FOUR ANCHOR RODS EQUALLY SPACED ON 16.97" DIA. BOLT CIRCLE (12" C. TO C.). EACH ANCHORAGE ROD SHALL HAVE TWO (2) HEAVY HEX LEVELING NUTS, AS PER ASTM A563 GRADE DH.

FOR HISTORICAL REFERENCE ONLY

APPROVED JULY 15, 2015 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION POLE FOUNDATION (PA85)	SPECIFICATION REFERENCE 2565	STANDARD PLATE NO. 8120Q

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
DRW: DAF
CHK: JAH

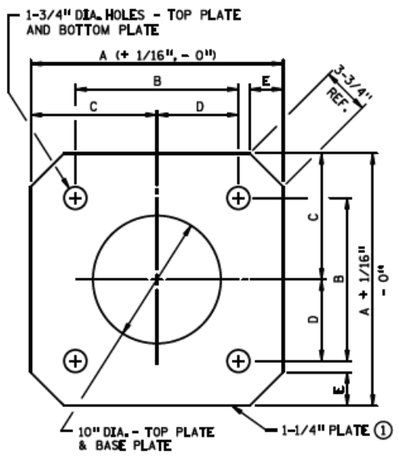
I HEREBY CERTIFY THAT THIS SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNATURE: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024
JEFFREY A. HILDEN

TKDA

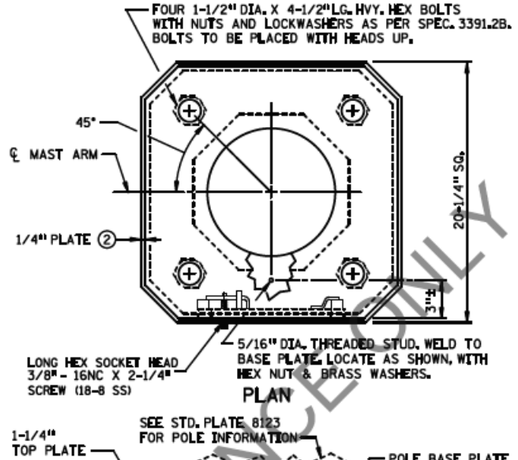
PA85 POLE FOUNDATION DETAIL

SIGNAL PLAN

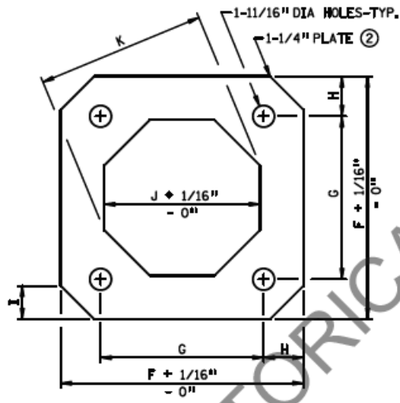
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037



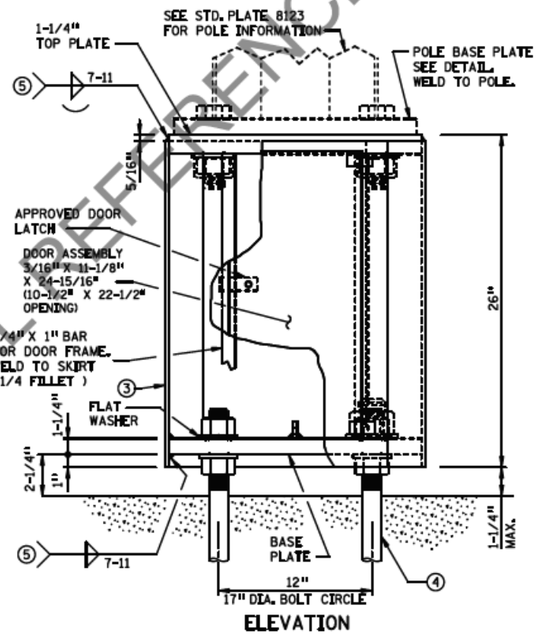
TOP & BASE PLATE DETAIL



PLAN



POLE BASE PLATE DETAIL



ELEVATION

DIMENSION	TOP ① PLATE	BASE ① PLATE	POLE ② BASE PLATE
A	19-3/4"	19-3/4"	
B	12-3/4"	12"	
C	9-7/8"	9-7/8"	
D	6-3/8"	6"	
E	2-5/8"	2-5/8"	
F			19"
G			12-3/4"
H			3-1/8"
I			2-5/8"
J			12-3/16"
K			13-3/16"

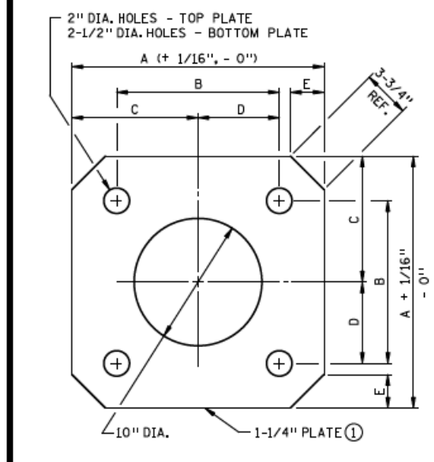
NOTES:

ANTI-SEIZE COMPOUND THAT MEETS MIL-PRF-907E SPEC. SHALL BE APPLIED WITH A BRUSH TO ALL THREADS.

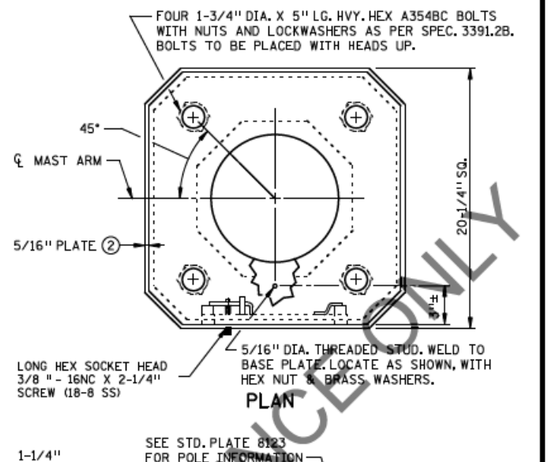
FOR SUBSTITUTION OF MATERIALS, SEE SPEC. 1605.

① STRUCTURAL STEEL AS PER SPEC. 3306.
② STRUCTURAL STEEL AS PER SPEC. 3309.
③ GALVANIZE TRANSFORMER BASE AS PER SPEC. 3394 AFTER FABRICATION. GALVANIZE ALL HARDWARE AS PER SPEC. 3392, EXCEPT STAINLESS STEEL AND BRASS.
④ SEE STANDARD PLATE 8120 FOR POLE FOUNDATION DETAILS.
⑤ FABRICATE STRUCTURAL METALS PER SPEC. 2471.

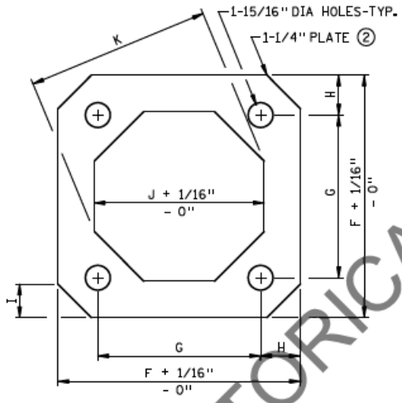
APPROVED APRIL 5, 2013 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION TRANSFORMER BASE AND POLE BASE PLATE (PA85)	SPECIFICATION REFERENCE 2565	STANDARD PLATE NO. 8121H 1 OF 2



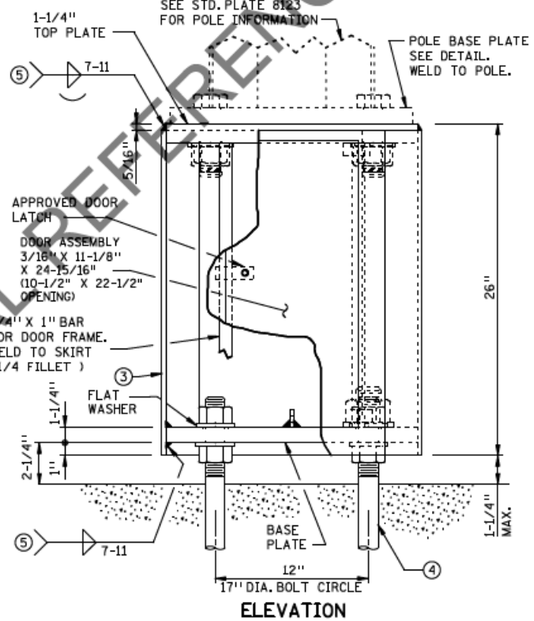
TOP & BASE PLATE DETAIL



PLAN



POLE BASE PLATE DETAIL



ELEVATION

DIMENSION	TOP ① PLATE	BASE ① PLATE	POLE ② BASE PLATE
A	19-3/4"	19-3/4"	
B	12-3/4"	12"	
C	9-7/8"	9-7/8"	
D	6-3/8"	6"	
E	2-5/8"	2-5/8"	
F			19"
G			12-3/4"
H			3-1/8"
I			2-5/8"
J			13-3/16"
K			14-5/16"

NOTES:

ANTI-SEIZE COMPOUND THAT MEETS MIL-PRF-907E SPEC. SHALL BE APPLIED WITH A BRUSH TO ALL THREADS.

FOR SUBSTITUTION OF MATERIALS, SEE SPEC. 1605.

① STRUCTURAL STEEL AS PER SPEC. 3306.
② STRUCTURAL STEEL AS PER SPEC. 3309.
③ GALVANIZE TRANSFORMER BASE AS PER SPEC. 3394 AFTER FABRICATION. GALVANIZE ALL HARDWARE AS PER SPEC. 3392, EXCEPT STAINLESS STEEL AND BRASS.
④ SEE STANDARD PLATE 8126 FOR POLE FOUNDATION DETAILS.
⑤ FABRICATE STRUCTURAL METALS PER SPEC. 2471.

APPROVED APRIL 5, 2013 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION TRANSFORMER BASE AND POLE BASE PLATE (PA90 AND PA100)	SPECIFICATION REFERENCE 2565	STANDARD PLATE NO. 8121H 2 OF 2

FOR HISTORICAL REFERENCE ONLY

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
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CHK: JAH

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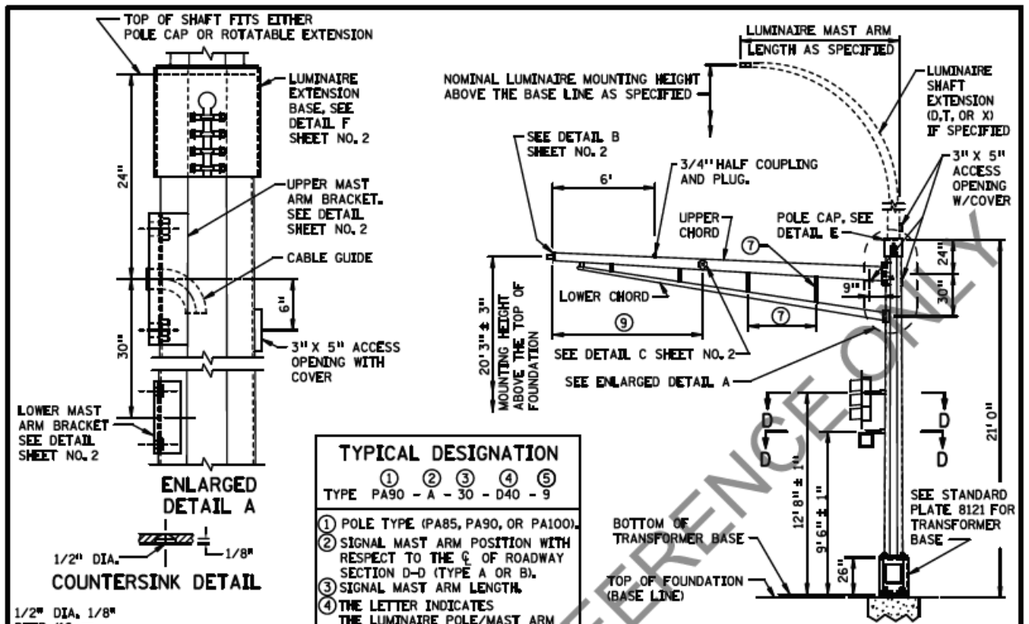
TKDA

TRANSFORMER BASE & POLE BASE PLATE DETAIL

SIGNAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

DATE: 12/2/2024 TIME: 11:44:08 AM
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TYPICAL DESIGNATION

① ② ③ ④ ⑤
TYPE PA90 - A - 30 - D40 - 9

① POLE TYPE (PA85, PA90, OR PA100).
② SIGNAL MAST ARM POSITION WITH RESPECT TO THE ℄ OF ROADWAY SECTION D-D (TYPE A OR B).
③ SIGNAL MAST ARM LENGTH.
④ THE LETTER INDICATES THE LUMINAIRE POLE/MAST ARM TYPE (D=DAVIT, T=TRUSS, X=STRAIGHT). THE NUMBER INDICATES THE NOMINAL LUMINAIRE MOUNTING HEIGHT FROM THE BASELINE.
⑤ LUMINAIRE MAST ARM LENGTH.

⑥ SEE TABLE OUTSIDE DIMENSION

POLE-UPPER & LOWER CHORD SECTION

TAPERED OCTAGONAL MAST ARM TRUSS AND POLE DIMENSIONS

POLE TYPE	MAST ARM LENGTH ⑧	VERTICAL POLE ⑥			UPPER CHORD ⑥			LOWER CHORD ⑥		
		LARGE END	SMALL END	WALL THICK	LARGE END	SMALL END	WALL THICK	LARGE END	SMALL END	WALL THICK
PA85	15'-30'	13.0"	11.8"	0.179"	9.6"	4.0"	0.120"	5.6"	2.8"	0.120"
PA90	30'-40'	14.0"	11.8"	0.250"	10.9"	5.0"	0.179"	5.6"	2.8"	0.120"
PA100	40'-55'	14.0"	11.8"	0.312"	11.6"	5.0"	0.250"	5.6"	2.8"	0.120"

NOTES:

MATERIAL: HIGH STRENGTH LOW ALLOY STEEL SPEC. 3310 50,000 PSI MINIMUM YIELD.

GALVANIZED STRUCTURAL STEEL AS PER SPEC. 3394 AFTER FABRICATION. GALVANIZE ALL HARDWARE AS PER SPEC. 3392. PROVIDE VENT HOLES FOR GALVANIZING.

VERTICAL POST AND MAST ARM ELEMENTS SHALL BE OCTAGONAL TUBE, FABRICATED BY LONGITUDINAL SEAM WELDING WITH 60% PENETRATION.

EACH MAST ARM POLE STANDARD CONSTRUCTED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE IDENTIFIED BY THE MARKING "PA85, PA90 OR PA100" IMPRINTED INTO THE VERTICAL POST SHAFT APPROXIMATELY 6 FEET ABOVE THE BOTTOM OF THE TRANSFORMER BASE ON THE ZERO-DEGREE FACE WITH RESPECT TO THE TRAFFIC SIGNAL TRUSS-TYPE MAST ARM. THE IMPRINTED "PA85, PA90 OR PA100" SHALL BE CLEARLY LEGIBLE AFTER GALVANIZATION.

THE BASE LINE OR TOP OF FOUNDATION IS ESTABLISHED AT TOP OF THE FINISHED PAVEMENT BENEATH THE OUTER END OF THE MAST ARM.

SEE SPEC. 1605 FOR SUBSTITUTION OF MATERIALS.

SEE SPEC. 2471 FOR FABRICATION REQUIREMENTS.

THE MOUNTING HEIGHTS OF LUMINAIRES ARE MEASURED FROM THE BASELINE, WHICH PROVIDE MOUNTING HEIGHTS OF 30' TO 50'.

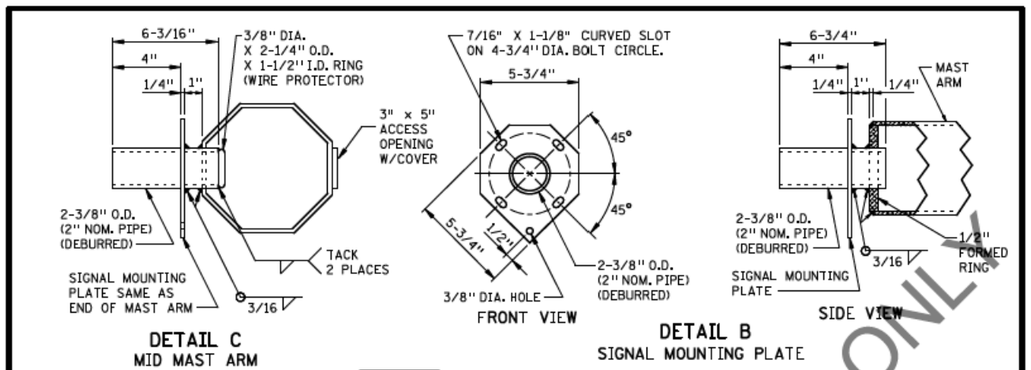
⑥ DIMENSION MEASURED OUTSIDE POINT TO OUTSIDE POINT THROUGH OCTAGON CENTER. ADJUST POLE WITH LEVELING NUTS SO THAT THE POLE IS VERTICAL.

⑦ VERTICAL BRACES SHALL BE SPACED AT 5' INTERVALS. MINIMUM SECTION FOR VERTICAL BRACE SHALL BE 1" SCHEDULE 40 PIPE WITH ALLOWABLE STRESS OF 42000 PSI. PIPE ENDS SHALL BE FLATTENED TO A MAXIMUM THICKNESS OF 1" PERPENDICULAR TO THE MAST ARM AXIS.

⑧ ALL ARMS SHALL BE SUPPLIED IN FIVE-FOOT INCREMENTS OF LENGTH.

⑨ ONE MID-MAST ARM MOUNT SHALL BE PLACED AT 11' FROM THE END FOR 30', 35' AND 40' LENGTH MAST ARMS. TWO MID MAST ARM MOUNTS SHALL BE PLACED AT 11' AND 23' FROM THE END FOR 45', 50' AND 55' LENGTH MAST ARMS. ALL MID-MAST ARMS SHALL BE CAPPED AND GALVANIZED. KEEP UNUSED MID-MAST ARM MOUNTS CAPPED AND GALVANIZED.

APPROVED DECEMBER 20, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
STATE DESIGN ENGINEER	POLE AND MAST ARM LUMINAIRES AND TRAFFIC LIGHTS ASSEMBLY (FOR ALL POLE TYPES)	2565	8123G 1 OF 2



ARM AND POLE MOUNTING BRACKETS

ARM MEMBER	FOUR HEX HEAD BOLTS & NUTS EACH BRACKET	TABULATED BRACKET DIMENSIONS						
		'A'	'B'	'C'	'D'	'E'	'F'	'G'
UPPER	1-1/2"-6UNC X 4-1/2" LG.	15.50"	12.00"	7.75"	1.75"	1.688"	1.25"	1.25"
LOWER	3/4"-10UNC X 2-1/4" LG. ①	(V) 8.50" (H) 7.75"	6.25"	4.25"	1.25"	0.875"	3/4"	1/2"

NOTES:

① THE (V) DIMENSIONS ARE MEASURED VERTICALLY AND THE (H) DIMENSIONS ARE MEASURED HORIZONTALLY, WHILE UNSPECIFIED ARE MEASURED BOTH VERTICALLY AND HORIZONTALLY.

APPROVED DECEMBER 20, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STANDARD PLATE NO.
STATE DESIGN ENGINEER	POLE AND MAST ARM (DETAILS)	2565	8123G 2 OF 2

FOR HISTORICAL REFERENCE ONLY

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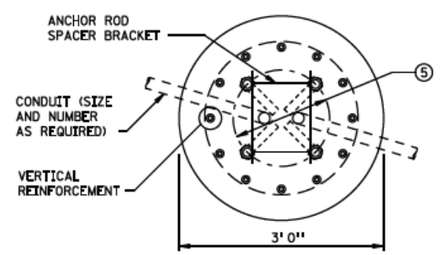
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POLE & MAST ARM
LUMINAIRES & TRAFFIC LIGHTS ASSEMBLY

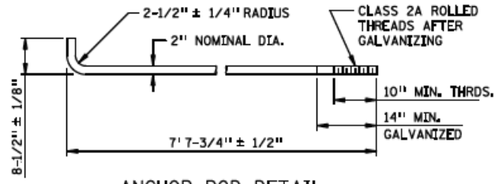
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S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

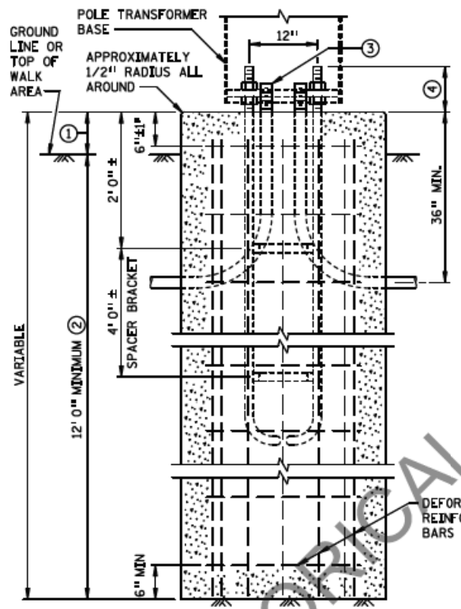
SHEET NO. 136 OF 148 SHEETS



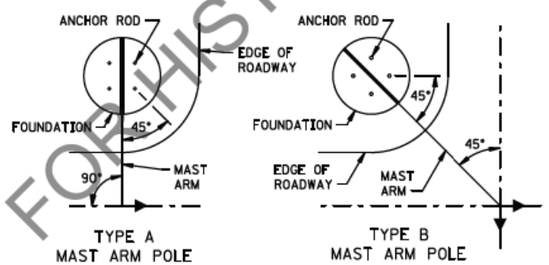
TOP VIEW



ANCHOR ROD DETAIL
(SPEC. 3385 TYPE C)



VERTICAL SECTION



TYPE A
MAST ARM POLE

TYPE B
MAST ARM POLE

ANCHOR ROD PLACEMENT
(WHEN USED WITH MAST ARM POLE)

NOTES:

REINFORCING BARS SHALL BE GRADE 60 AND MEET THE REQUIREMENTS OF ASTM A 706 (WELDABLE REBARS) AND ARE IDENTIFIED BY A DISTINGUISHING MARK OF "W" ROLLED ONTO THE SURFACE OF ONE SIDE OF THE BAR. WELDING SHALL BE PER ANSI/AWS D1.4. USE 12-NO. 7 BARS FOR VERTICAL REINFORCEMENT, SPACED ON A 28" DIA. CIRCLE. HORIZONTAL (CIRCULAR) BARS TO BE NO. 4 SPACED AT 1'-0" MAXIMUM VERTICAL SPACING. SECURELY TIE OR WELD (OR COMBINATION) ALL REINFORCEMENT TOGETHER.

ANCHOR RODS SHALL BE GALVANIZED IN ACCORDANCE WITH SPEC. 3392 AND SHALL BE 2" NOM. DIA. AND CUT LENGTH OF 96" BEFORE BENDING. (SEE ANCHOR ROD DETAIL). ANCHOR ROD CAGES SHALL BE DESIGNED WITHOUT WELDING.

ANTI-SIEZE COMPOUND THAT MEETS MIL-PRF-907E SPEC. SHALL BE APPLIED WITH A BRUSH TO ALL THREADS.

ALL BACKFILLING AROUND THE FOUNDATION MUST BE IN ACCORDANCE WITH 2451.

ALL EXCAVATION MUST BE PROPERLY COMPACTED IN ACCORDANCE WITH 2451.

CONCRETE MIX SHALL BE 3G52.

PREFORMED JOINT FILLER SHALL BE USED BETWEEN FOUNDATION AND SIDEWALK OR CONCRETE AREAS.

FIBER FORMING TUBE SHALL BE USED IN FORMING THE FOUNDATION, OR AS APPROVED BY THE ENGINEER.

OPEN ENDS OF ALL CONDUIT INTO FOUNDATION SHALL BE THREADED, POSITIONED INSIDE THE ANCHOR ROD BOLT CIRCLE, AND CAPPED UNTIL CABLES ARE PLACED.

MAST ARM POLE STANDARDS SHALL NOT BE PLACED ON FOUNDATIONS UNTIL AT LEAST SEVEN DAYS OF CURING PERIOD HAVE ELAPSED.

(1) THE ELEVATION OF THE TOP OF THE FOUNDATION SHALL ASSURE THAT THE VERTICAL CLEARANCE FROM THE BOTTOM OF ALL SIGNAL HEADS (INCLUDING BACKGROUND SHIELDS) TO THE PAVEMENT IS NOT LESS THAN 17 FEET NOR GREATER THAN 19 FEET. THE TOP OF THE FOUNDATION MUST BE A MINIMUM OF 6" ABOVE THE GROUND LINE OR TOP OF SIDEWALK.

(2) DEPTH OF FOUNDATION MAY VARY IN PLANS OR SPECIAL PROVISIONS. DEPTH OF FOUNDATION MAY BE REDUCED 2 FEET WHEN PLACED IN SIDEWALK OR CONCRETE RAISED MEDIAN. FOUNDATION DEPTHS ARE BASED ON A SOIL FRICTION ANGLE OF 30° AND A SOIL WEIGHT OF 120 LB/CF AND NO GROUNDWATER WITHIN THE GROUND SURFACE TO A DEPTH OF TWO TIMES THE WIDTH OR DIAMETER OF BOTTOM OF POLE FOUNDATION. A SOIL BORING OR CONE PENETRATION TEST (CPT) SOUNDING IS RECOMMENDED WHERE IN-SITU STRATIGRAPHY IS UNKNOWN OR QUESTIONABLE. ANY VARIATION IN THE DEPTH OF THE FOUNDATION REQUIRES AN APPROVAL BY THE SOILS ENGINEER.

(3) CONDUIT PER SPEC. 3801 OR 3803. SIZE AND NUMBER AS REQUIRED IN PLANS OR SPECIAL PROVISIONS. 4" MINIMUM AND 6" MAXIMUM PROJECTION ABOVE FOUNDATION, AND CAPPED UNTIL WIRING IS PLACED.

(4) 8" ANCHOR ROD PROJECTION (THREADED). SOME POLES (SUCH AS ROTATABLE T-BASE) REQUIRE GREATER PROJECTION.

(5) FOUR ANCHOR RODS EQUALLY SPACED ON 16.97" DIA. BOLT CIRCLE (12" C. TO C.). EACH ANCHORAGE ROD SHALL HAVE TWO (2) HEAVY HEX LEVELING NUTS, PER ASTM A563 GRADE DH.

FOR HISTORICAL REFERENCE ONLY

APPROVED JULY 15, 2015 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION POLE FOUNDATION (PA90 AND PA100)	SPECIFICATION REFERENCE 2565	STANDARD PLATE NO. 8126L

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
DRW: DAF
CHK: JAH

I HEREBY CERTIFY THAT THIS SHEET 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
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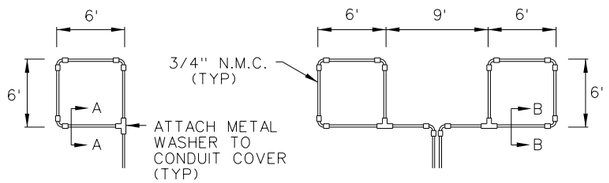
POLE FOUNDATION - PA90 & PA100

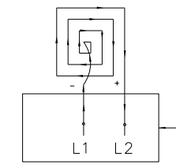
SIGNAL PLAN

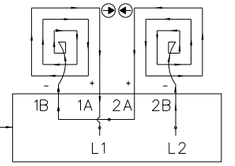
S.P. 002-602-015, S.P. 127-020-037
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SHEET NO. 137 OF 148 SHEETS

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LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

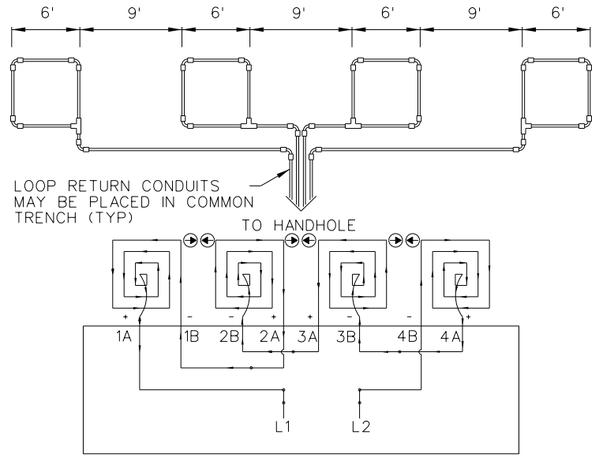
L1 TO 1A
1B TO 2A
2B TO L2

LOOP DETECTOR DETAIL 'A'

(LOOP PHASING FOR SINGLE CONNECTION)

LOOP DETECTOR DETAIL 'B'

(LOOP PHASING FOR SERIES CONNECTION)



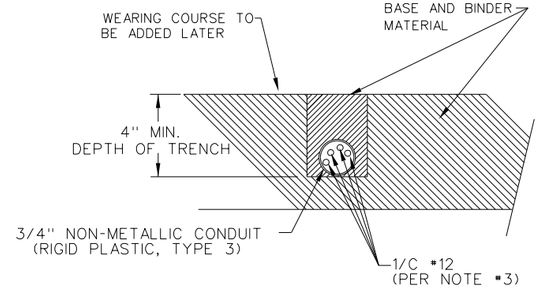
LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A	3B TO 4A
1B TO 2A	4B TO L2
2B TO 3A	

SPLICE CONTROL CABLE TO L1 & L2 IN HANDHOLE. ALL CONDUCTORS SHALL BE TAGGED IN HANDHOLE (1A, 1B, ECT)

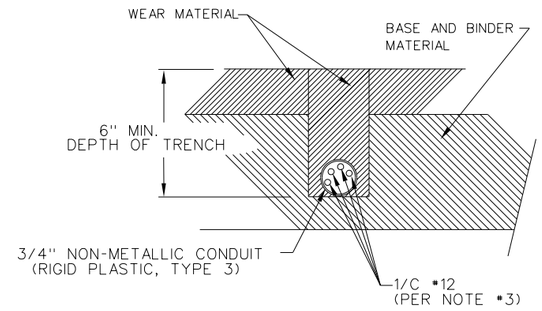
LOOP DETECTOR DETAIL 'C'

(LOOP PHASING FOR SERIES CONNECTION)



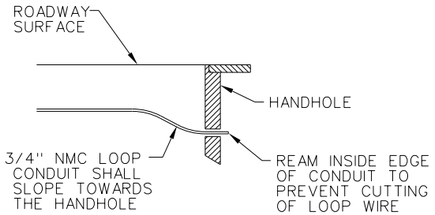
SECTION A-A

DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY



SECTION B-B

DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY



DRAINAGE DETAIL

LOOP DETECTOR WIRING

1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
5) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
6) LOOPS 6' x 6' THRU 6' x 14' SHALL HAVE (4) TURNS.
7) LOOPS 6' x 15' AND LARGER SHALL HAVE (2) TURNS.

LEGEND OF SYMBOLS

CONTROLLER AND SERVICE EQUIP. NO's
SIGNAL BASE NO.
SIGNAL FACE NO.
LUMINAIRE NO.
CONTROLLER AND CABINET
CONTROLLER AND CABINET - IN PLACE
HANDHOLE
HANDHOLE - IN PLACE
RIGID STEEL CONDUIT (RSC)
RIGID STEEL CONDUIT (RSC) - IN PLACE
SIGNAL FACE WITH BACKGROUND SHIELD
SIGNAL FACE W/O BACKGROUND SHIELD
SIGNAL FACE - IN PLACE
PEDESTRIAN INDICATORS
PEDESTRIAN INDICATORS - IN PLACE
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE
PEDESTRIAN PUSH BUTTON STATION
TRAFFIC SIGNAL PEDESTAL
TRAFFIC SIGNAL PEDESTAL - INPLACE
TRAFFIC SIGNAL POLE AND MAST ARM
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE
STREET LIGHT POLE AND LUMINAIRE
STREET LIGHT POLE AND LUMINAIRE - IN PLACE
MAST ARM AND LUMINAIRE
MAST ARM AND LUMINAIRE - INPLACE
WOOD POLE
WOOD POLE - IN PLACE
SOURCE OF POWER
RAILROAD SIGNAL - IN PLACE
RIGHT OF WAY LINE
CENTERLINE
EDGE OF ROADWAY
SHOULDERLINE
CURB LINE
STOP BAR
EMERGENCY VEHICLE PREEMPTION DETECTOR

ABBREVIATIONS

3-1(EG)	SIGNAL HEAD PHASE "3" - NO "1"
BR. GR.	BARE GROUND
CH. SW.	CHECK SWITCH
CLR	CLEAR
D2-1(EG)	DETECTOR PHASE "2" - NO. "1"
DWK	DON'T WALK
EQG	EQUIPMENT GROUND
EVP	EMERGENCY VEHICLE PRE-EMPTION
F&I	FURNISH AND INSTALL
FL	FLASH/FLASHING
G	GREEN
GLTA	GREEN LEFT TURN ARROW
GRN	GREEN
GR. R	GROUND ROD
GRTA	GREEN RIGHT TURN ARROW
GTHA	GREEN THRU ARROW
HH	HANDHOLE
HPS	HIGH PRESSURE SODIUM
JB	JUNCTION BOX
LUM	LUMINAIRE
NEU	NEUTRAL
NMC	NONMETALLIC CONDUIT
P2-1(EG)	PED INDICATION PHASE "2" - NO. "1"
PB	PUSH BUTTON
PB2-1(EG)	PUSH BUTTON PHASE "2" - NO. "1"
PEC	PHOTOELECTRIC CELL
PED	PEDESTRIAN
R	RED
R&S	REMOVE AND SALVAGE
RLTA	RED LEFT TURN ARROW
RRTA	RED RIGHT TURN ARROW
RSC	RIGID STEEL CONDUIT
SOP	SOURCE OF POWER
SPR	SPARE
ST. LHT	STREET LIGHT
STA	STATION
SW	SWITCH
SWD	SWITCHED
S&R	SALVAGE AND REINSTALL
TDW	TELEPHONE DROP WIRE
WLK	WALK
YEL	YELLOW
YLTA	YELLOW LEFT TURN ARROW
YRTA	YELLOW RIGHT TURN ARROW
YTHA	YELLOW THRU ARROW

CONDUCTOR COLOR CODE

R	RED
O	ORANGE
BL	BLUE
WH	WHITE
R/BLK	RED WITH BLACK TRACER
O/BLK	ORANGE WITH BLACK TRACER
BL/BLK	BLUE WITH BLACK TRACER
WH/BLK	WHITE WITH BLACK TRACER
BLK	BLACK
BLK/WH	BLACK WITH WHITE TRACER
G/BLK	GREEN WITH BLACK TRACER
G	GREEN

S.P. 002-602-015

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
DRW: DAF
CHK: JAH

I HEREBY CERTIFY THAT THIS SHEET 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: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

TKDA

TRAFFIC SIGNAL SYSTEM DETAIL

SIGNAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 138 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:44:16 AM
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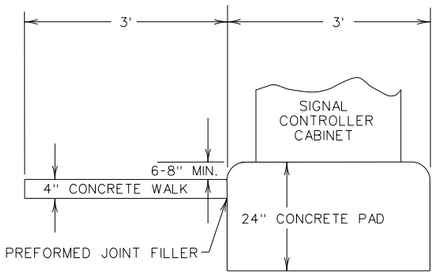
TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

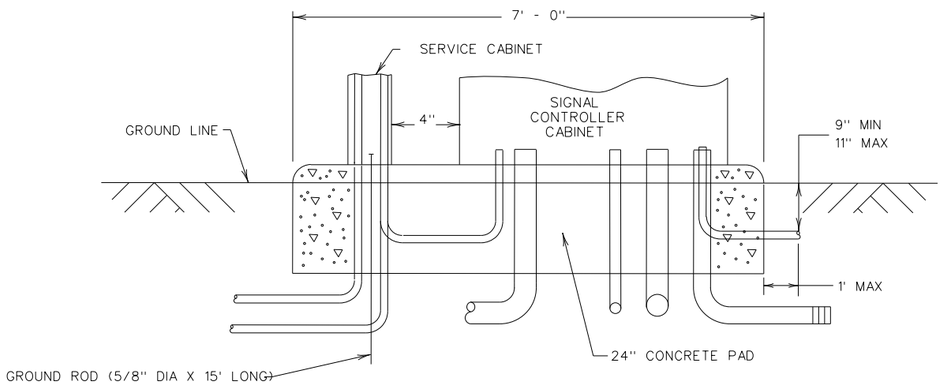
NOTES:

1. THE ANCHOR RODS, NUTS AND WASHERS FOR THE COUNTY FURNISHED CONTROLLER AND CABINET SHALL BE FURNISHED BY THE COUNTY AND INSTALLED BY THE CONTRACTOR.
2. THE UPPER PART OF THE NEW EQUIPMENT PAD SHALL BE BEVELLED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE CONCRETE AND SHALL BE LOCATED INSIDE OF THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
5. CONCRETE MIX 3F52 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PAD AND SIDEWALK.
6. CONDUITS WITH BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT BE INSTALLED BELOW THE CONCRETE.
7. THE EXACT LOCATION OF CONDUITS WITHIN THE PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
8. ANCHOR RODS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
9. CONTRACTOR SHALL PROVIDE MINIMUM 4-INCH CLEARANCE BETWEEN CONTROLLER AND SERVICE CABINETS ON THE EQUIPMENT PAD FOUNDATION AS SHOWN.

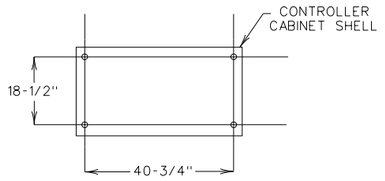
SIDE VIEW



FRONT VIEW

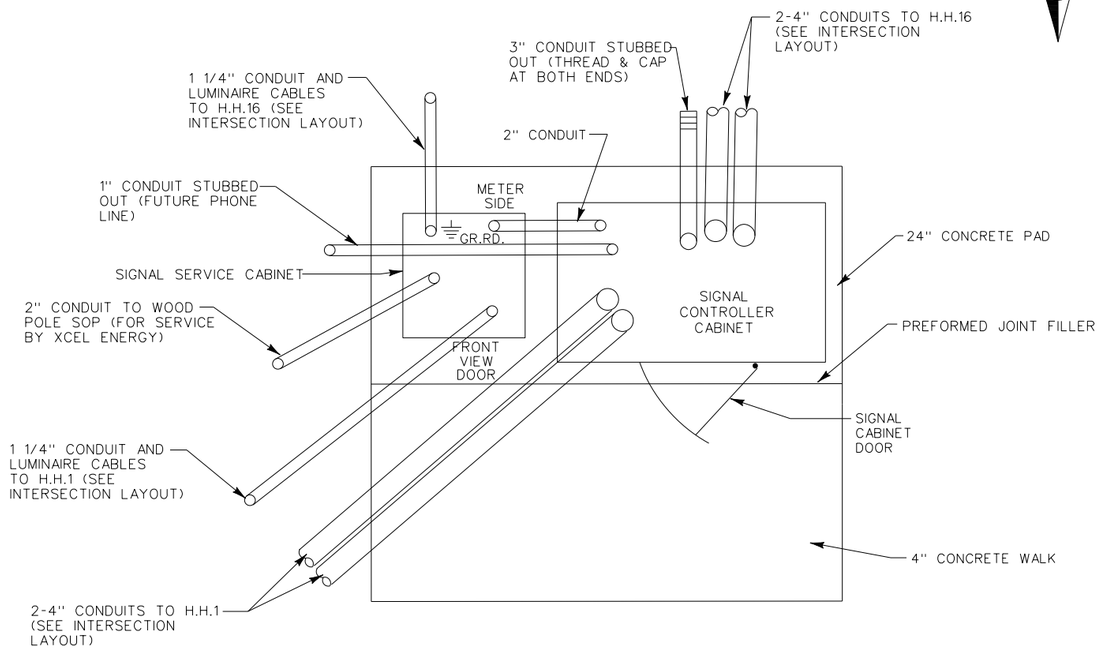


CONTROLLER CABINET TYPE "P" & "R" BOLT PATTERN



PLAN VIEW

LOCATION



NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
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SIGNATURE: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

TKDA

EQUIPMENT PAD DETAIL

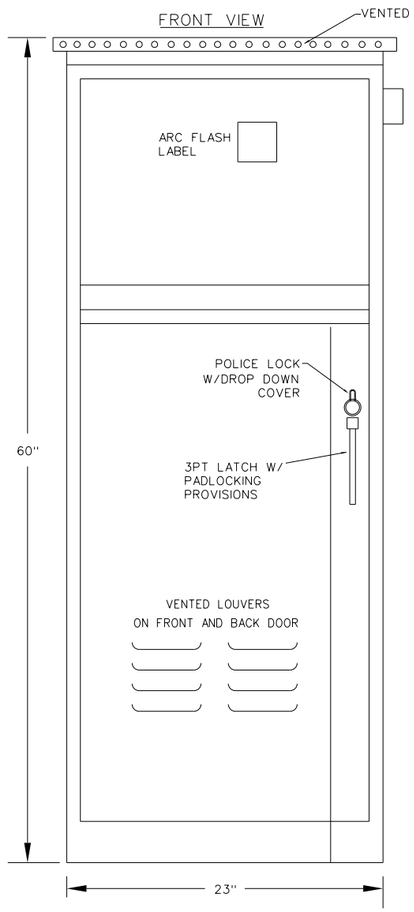
SIGNAL PLAN

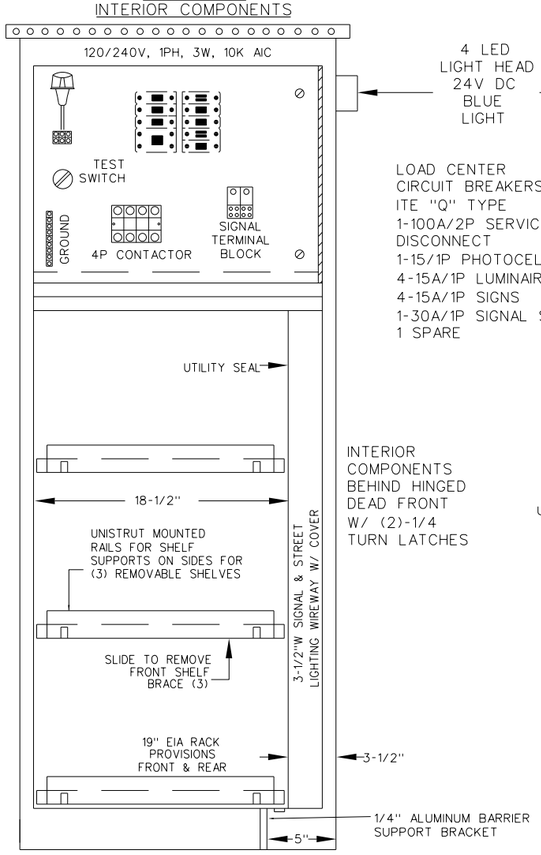
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

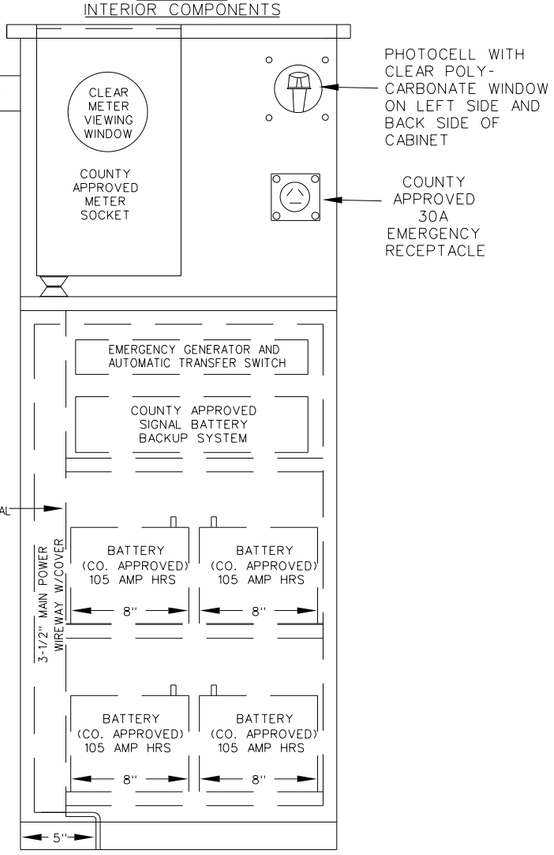
SHEET NO. 139 OF 148 SHEETS

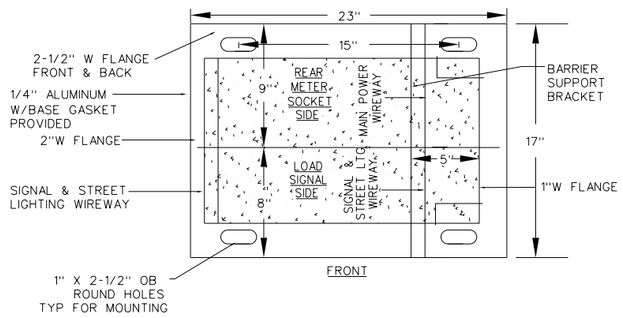
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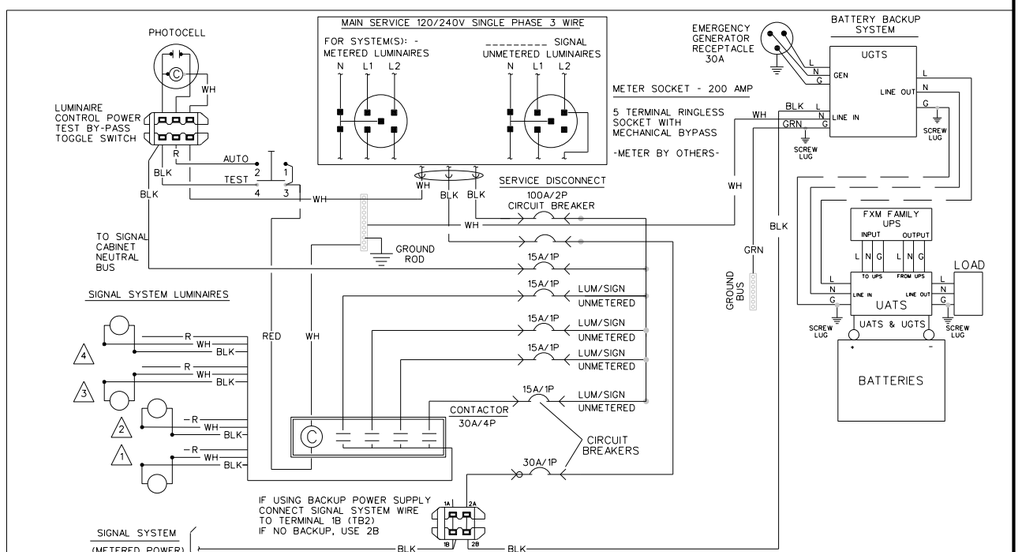




CABINET CONSTRUCTION

-NEMA 3R
-1/8" ALUMINUM 5052-H32
-ANODIZED 30 MINUTE CLEAR
-NEOPRENE GASKETED DOORS
-NON-CORRODING HARDWARE
-ETL LISTED IN ACCORDANCE W/UL508A

SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING SEPARATE PAY ITEM FOR FURNISHING & INSTALLING NEW BATTERY BACK-UP SIGNAL SERVICE CABINET.



FEED POINT WIRING DIAGRAM

S.A.P. 002-XXX-XXX

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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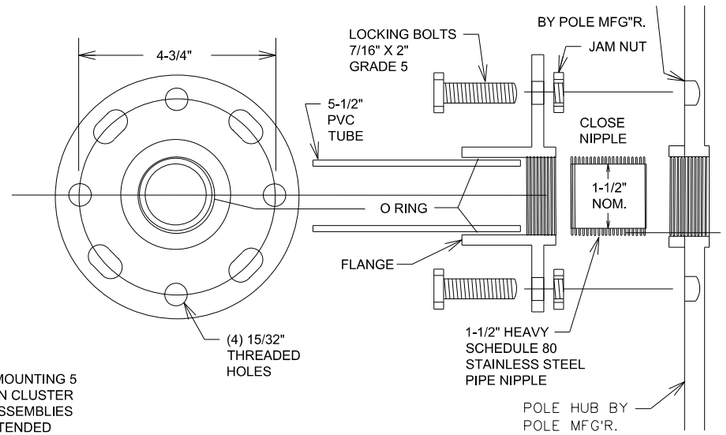
SIGNAL SERVICE CABINET DETAIL

SIGNAL PLAN

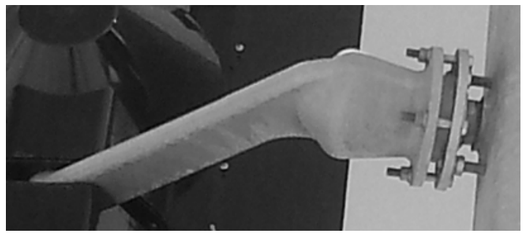
S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

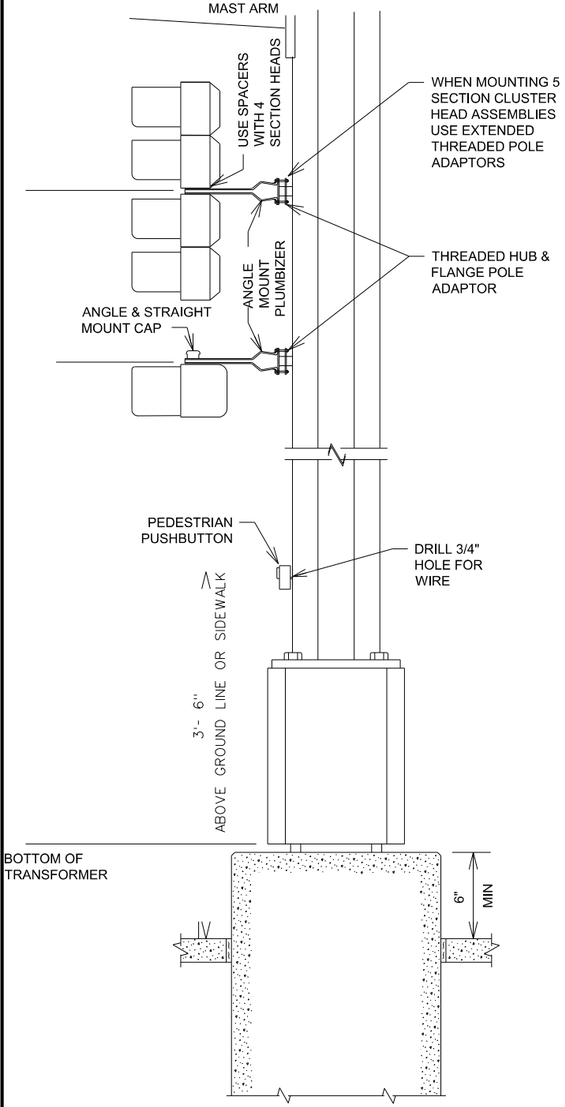
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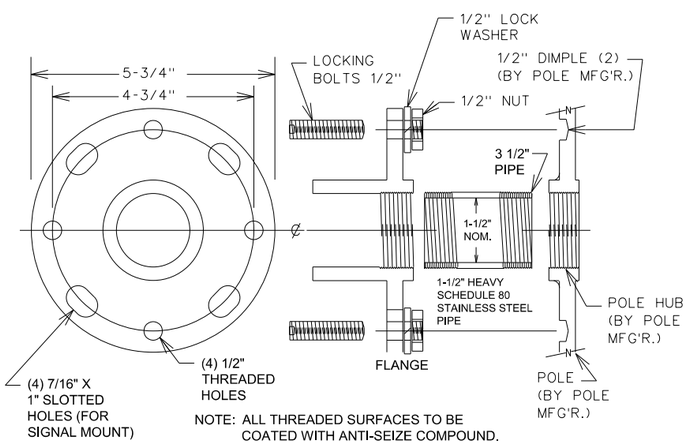
THREADED HUB AND FLANGE POLE ADAPTOR





TYPICAL SIGNAL POLE MOUNTING

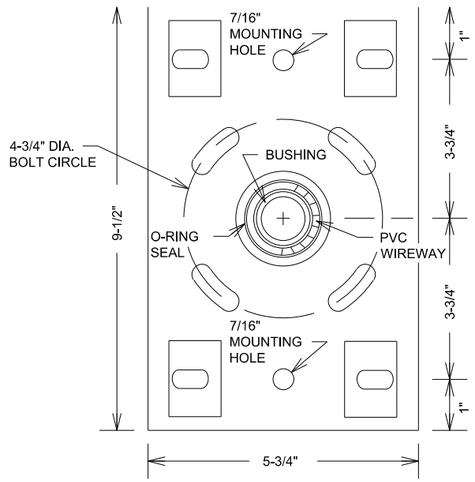
NOT TO SCALE



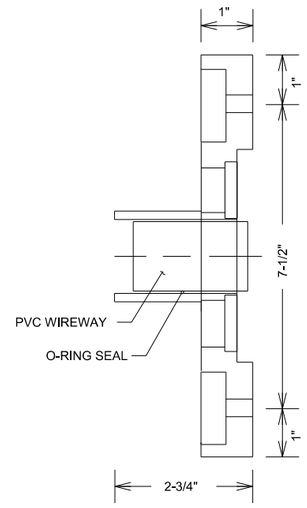
NOTE: ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.

EXTENDED THREADED POLE ADAPTER

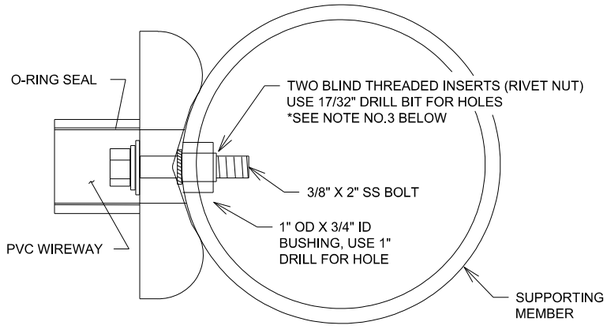
NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
3. SEE STANDARD PLATE NUMBER 8123 FOR ADDITIONAL SIGNAL POLE DETAILS.
4. EXTENDED THREADED POLE ADAPTOR ONLY USED WITH 5 SECTION CLUSTER HEADS.



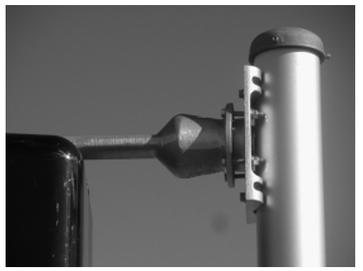
BOLT ON HUB & FLANGE



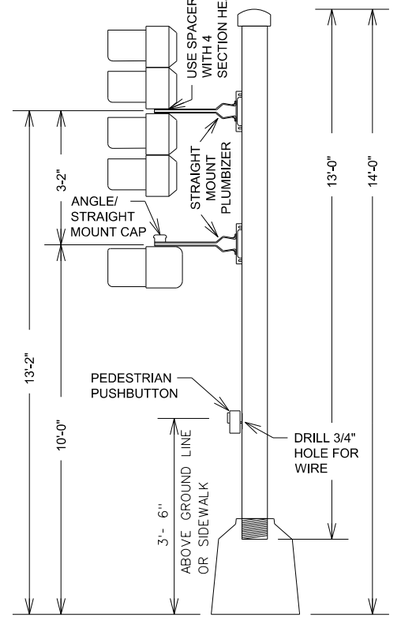
SIDE VIEW



TOP VIEW



NOTES:
1. ALL THREADED SURFACES TO BE COATED WITH ANTI-SEIZE COMPOUND.
2. USE SIGNAL HEAD MOUNTED SPACERS FOR 4 SECTION POLY HEADS.
3. BLIND THREADED INSERTS (RIVET NUT) MUST BE INSERTED USING MANUFACTURERS SPECIFIC INSERTION TOOL. NO OTHER METHOD IS ACCEPTABLE.
4. SEE STANDARD PLATE NUMBER 8122 FOR ADDITIONAL PEDESTAL POLE DETAILS.



TYPICAL PEDESTAL MOUNTING

NOT TO SCALE

S.A.P. 002-XXX-XXX

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
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SIGNATURE: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024
JEFFREY A. HILDEN

TKDA

ONE WAY POLE MOUNT DETAIL

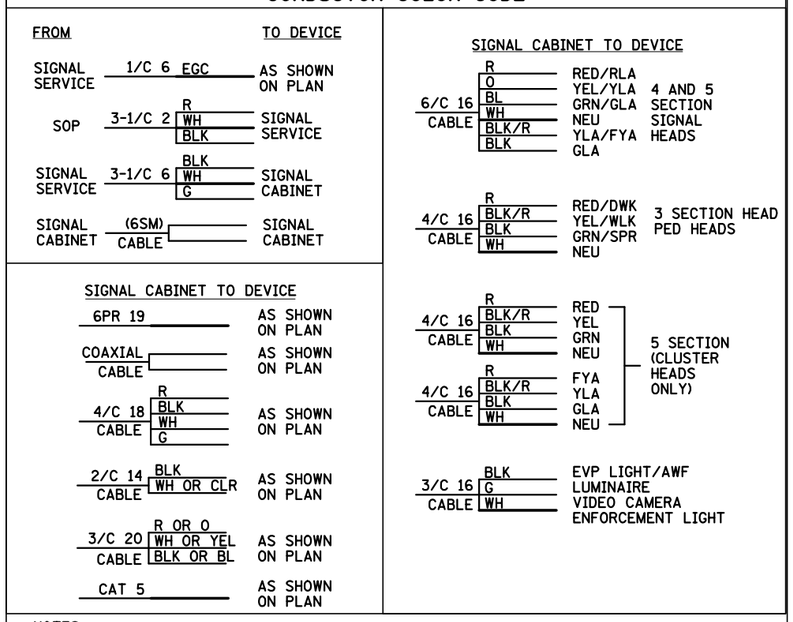
SIGNAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 141 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:44:31 AM
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CONDUCTOR COLOR CODE



NOTES:
ARRANGE AND TERMINATE CONDUCTORS AND CABLES AS SHOWN WITHOUT SPLICE.
NUMBER ONLY MEANS AWG CONDUCTOR SIZE (e.g. 14=14AWG)
1/C MEANS AN INDIVIDUAL CONDUCTOR NOT PART OF A CABLE ASSEMBLY

CABLE LABELING ABBREVIATIONS

ABBREVIATION	LABEL REFERENCE DSISCRIPTION & EXAMPLE	COMPONENT
X-Y	INDICATION NUMBER 2-1	SIGNAL HEAD
X-Y	LOOP NUMBER D2-1	DETECTOR
X-Y	PUSH BUTTON NUMBER PB2-1	PUSH BUTTON
X-Y	PED INDICATION NUMBER P2-1	PED INDICATION
X-Y	LUMINAIRE NUMBER L1	LUMINAIRE
X-Y	EVP PHASE NUMBER EVP 2+5	EVP DETECTOR
X-Y	EVP LIGHT PHASE NUMBER EVPL 2+5	EVP CON. LIGHT
X-Y	VIDEO DETECTION PHASE V2-1	VIDEO DETECTION
X-Y	RADAR DETECTION PHASE RD2-1	RADAR DETECTION
SS	SIGNAL SERVICE	SERVICE WIRE
CC	CABINET COMMS	COMMS CABLE
FO	FIBER OPTIC	FIBER CABLE
SPARE Y	SPARE WIRE TO POLE NUMB. SPARE1	SPARE WIRE
ELYZ *	ENFORC. LIGHT POLE & DIRECTION	ENFORCEMENT LIGHT
PTZ1	PTZ CAMERA POLE NUMBER PTZ1	PTZ CAMERA
IC	INTERCONNECT CABLE	INTERCONNECT
EGC	EQUIPMENT GROUNDING CONDUCTOR	GROUND

X = SIGNAL SYSTEM PHASE NUMBER; REFER TO THE PLAN
Y = SIGNAL SYSTEM ASSIGNED COMPONENT NUMBER; REFER TO THE PLAN
Z * = DIRECTION
FURNISH AND INSTALL LABELS ON CABLES WITH ABBREVIATIONS SHOWN ON THIS TABLE AND IN ACCORDANCE WITH THE WIRING DIAGRAM.

WIRE COLOR CODE KEY

R	Red
O	Orange
BL	Blue
WH	White
BLK	Black
BRN	Brown
CL	Clear
G	Green
R/BLK	Red with Black Stripe
O/BLK	Orange with Black Stripe
BL/BLK	Blue with Black Stripe
WH/BLK	White with Black Stripe
WH/R	White with Red Stripe
BLK/WH	Black with White Stripe
BLK/R	Black with Red Stripe

CONDUCTOR AND CABLE SPECIFICATION CHART

NUMBER OF CONDUCTORS & AWG SIZE	TYPE	Specification Number
1/C 2	INDIVIDUAL SERVICE CONDUCTORS	3815.2B.1
1/C 6	FEEDER AND BRANCH CONDUCTORS	3815.2B.1
1/C 6 INS.GR.	Grounding Conductors	3815.2B.5
2/C 14	Loop Detector Lead-In Cable	3815.2C.4
3/C 16	Signal Control Cable	SPEC. PROV.
4/C 16	Signal Control Cable	SPEC. PROV.
6/C 16	Signal Control Cable	SPEC. PROV.
4PR 24	ETHERNET CABLE	3815.2C.6.d
6PR 19	Telephone Cables Outdoor	3815.2C.6.b
3/C 20	EVP Detector Cable	3815.2C.5

FOUNDATION DESIGNATION

① ② ③
POLE FOUNDATION TYPE PA45-55 - DS - S

(SEE STANDARD PLAN 5-297.861)
① FOUNDATION TYPE PA
② DS=DRILLED SHAFT, SF=SPREAD FOOTING
③ BLANK=DOES NOT APPLY TO POLE TYPE, S=STANDARD, H=HEAVY

POLE DESIGNATION

① ② ③ ④ ⑤
TYPE PA-A-45-D30-9

(SEE STANDARD PLATE 8124 15' TO 55' MAST ARMS)
(SEE STANDARD PLATE 8125 60' TO 80' MAST ARMS)
①POLE TYPE PA
②MAST ARM ORIENTATION WITH RESPECT TO ℄ OF ROADWAY (TYPE A=90° B=45°)
③SIGNAL MAST ARM LENGTH
④D=DAVIT, NUMBER REPRESENTS MOUNTING HEIGHT
⑤LUMINAIRE MAST ARM LENGTH

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TKDA

COLOR CODE DETAIL

SIGNAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SIGNAL HEAD CHART

FACE	R	Y	FYA	G	Y	G
1-1, 1-2	←	←	←	←		
2-1, 2-2, 2-3	●	●		●		
5-1, 5-2	←	←	←	←		
6-1, 6-2, 6-3	●	●		●		
7-1	●	●		●		
7-2	●	●		●	←	←
7-3	←	←		←		
8-1	●	●		●		
8-2, 8-5	●	●		●	←	←
8-3, 8-4	←	←		←		

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
-ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
-FYA DENOTES FLASHING YELLOW ARROW

LOOP DETECTOR CHART

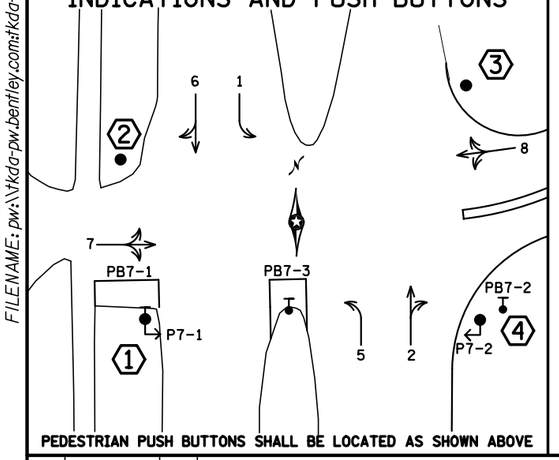
NUMBER	SIZE (FT)	LOCATION
D1-1, D5-1	3-6X6	20, 35, 50
D1-2, D5-2	6X6	5
D2-1, D2-2	6X6	625
D2-3, D2-4	6X6	20
D2-5	6X12	5
D2-6, D2-7	6X6	5
D6-1, D6-2	6X6	625
D6-3, D6-4	6X6	20
D6-5, D6-6, D6-7	6X6	5
D7-1	2-6X6	20, 35
D7-2	6X6	5
D8-1, D8-2	6X6	200
D8-3	2-6X6	5
D8-3	6X6	20
D8-4	6X6	20, 35, 50
D8-5	6X6	5

-ALL LOOP DETECTORS SHALL BE NMC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM CROSSWALK/STOP BAR IN FEET

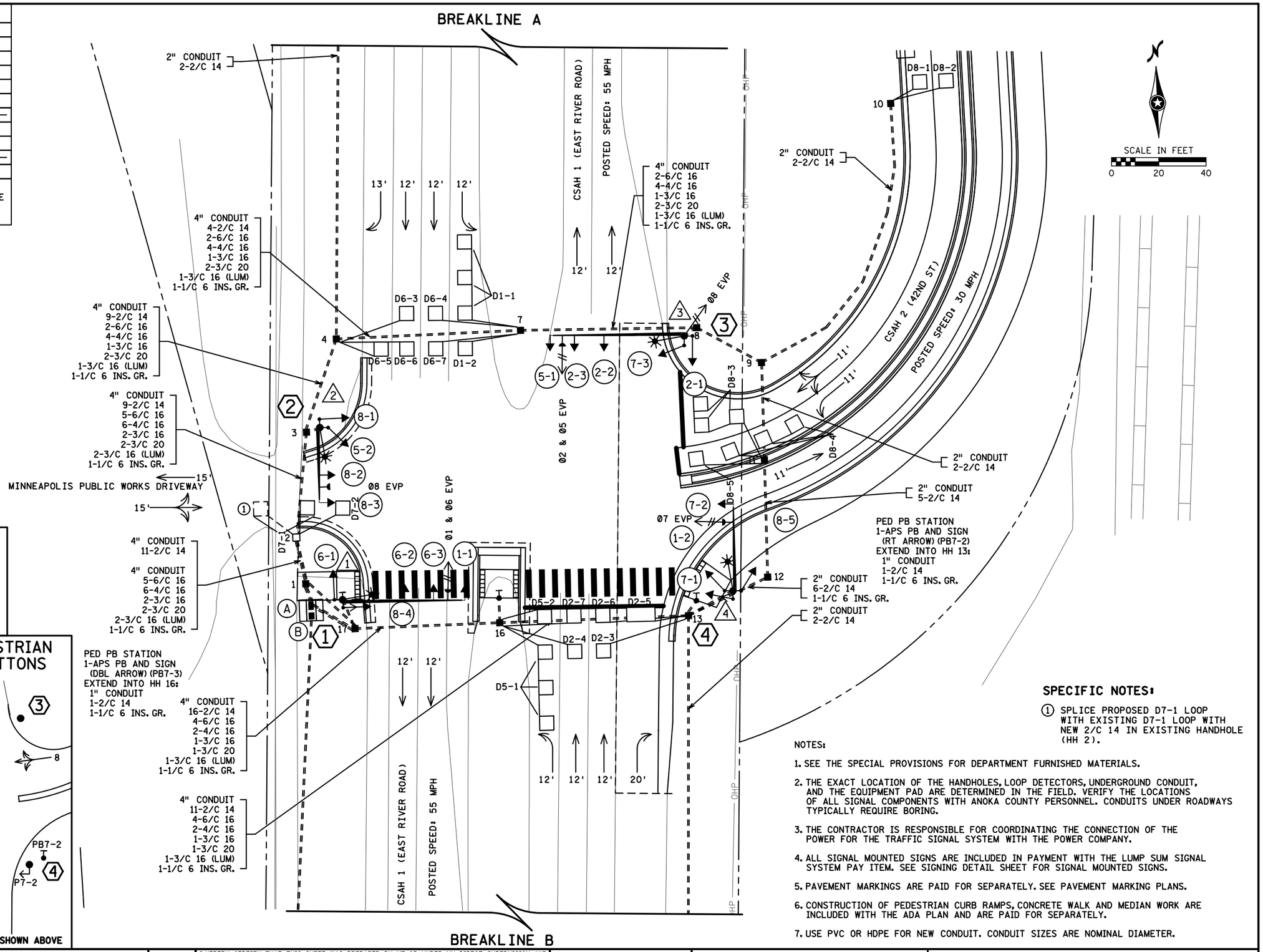
SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 6 PHASE, WITH PHASE(S) 1 AND 5 BEING FLASHING YELLOW ARROWS BY TIME OF DAY AND PHASES 7 AND 8 BEING SPLIT PHASE.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE



SPECIFIC NOTES:

① SPLICE PROPOSED D7-1 LOOP WITH EXISTING D7-1 LOOP WITH NEW 2/C 14 IN EXISTING HANDHOLE (HH 2).

NOTES:

1. SEE THE SPECIAL PROVISIONS FOR DEPARTMENT FURNISHED MATERIALS.
2. THE EXACT LOCATION OF THE HANDHOLES, LOOP DETECTORS, UNDERGROUND CONDUIT, AND THE EQUIPMENT PAD ARE DETERMINED IN THE FIELD. VERIFY THE LOCATIONS OF ALL SIGNAL COMPONENTS WITH ANOKA COUNTY PERSONNEL. CONDUITS UNDER ROADWAYS TYPICALLY REQUIRE BORING.
3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TRAFFIC SIGNAL SYSTEM WITH THE POWER COMPANY.
4. ALL SIGNAL MOUNTED SIGNS ARE INCLUDED IN PAYMENT WITH THE LUMP SUM SIGNAL SYSTEM PAY ITEM. SEE SIGNING DETAIL SHEET FOR SIGNAL MOUNTED SIGNS.
5. PAVEMENT MARKINGS ARE PAID FOR SEPARATELY. SEE PAVEMENT MARKING PLANS.
6. CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK ARE INCLUDED WITH THE ADA PLAN AND ARE PAID FOR SEPARATELY.
7. USE PVC OR HDPE FOR NEW CONDUIT. CONDUIT SIZES ARE NOMINAL DIAMETER.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DES: DAF
DRW: DAF
CHK: JAH

I HEREBY CERTIFY THAT THIS SHEET 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: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024

JEFFREY A. HILDEN

TKDA

SIGNAL LAYOUT | SIGNAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 143 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:44:35 AM
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BREAKLINE B

D6-1 D6-2

6

12' 12'

CSAH 1 (EAST RIVER ROAD)

POSTED SPEED: 55 MPH

OHP

14

2" CONDUIT
2-2/C 14

SCALE IN FEET
0 10 20 40

5

BREAKLINE A

15

D2-2 D2-1

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SIGNAL LAYOUT

SIGNAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 144 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:44:42 AM
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(2) X= 497716.0823
Y= 102796.7821
PA85 POLE FOUNDATION
TYPE PA85-A-30-D30-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'(8-3)
1-STRAIGHT MOUNT SIGNAL OVERHEAD AT 12'(8-2)
2-ANGLE MOUNT SIGNALS AT 180 AND 270 DEG (8-1, 5-2)
1-ONE WAY CONFIRMATORY LIGHT (PHASE 8)
1-LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-R6-1(L) "ONE WAY" MOUNTED ON POLE FACING POLE 3
1-R9-3 SIGN MOUNTED ON POLE FACING POLE 3
1-SIGN (EAST RIVER RD) (SEE SIGN DETAILS)
3" CONDUIT INTO HH 3:
3-6/C 16
2-4/C 16
1-3/C 16
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(3) X= 497871.9533
Y= 102828.3416
PA100 POLE FOUNDATION
TYPE PA100-A-55-D30-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'(5-1)
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' AND 24'(2-3, 2-2)
1-ANGLE MOUNT SIGNAL AT 180 DEG (2-1)
1-ANGLE MOUNT SIGNAL AT 270 DEG (7-3)
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 2+5)
1-ONE WAY EVP DETECTOR (PHASE 8)
1-LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-R6-1(L) "ONE WAY" MOUNTED ON POLE FACING POLE 2
1-R6-1(R) "ONE WAY" MOUNTED ON POLE FACING EAST
2-R9-3 SIGNS MOUNTED ON POLE FACING POLE 2 AND POLE 4
1-R10-X12 SIGN ADJACENT TO HEAD (5-1)
1-SIGN (42ND ST) (SEE SIGN DETAILS)
3" CONDUIT INTO HH 8:
2-6/C 16
4-4/C 16
1-3/C 16
2-3/C 20
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(A) EQUIPMENT PAD (SEE DETAIL SHEET)
SERVICE CABINET (SSB) WITH BATTERY BACKUP SYSTEM AND BATTERIES
CONTROLLER AND CABINET (ANOKA COUNTY FURNISHED)

4" CONDUIT TO HH 17:	4" CONDUIT TO HH 1:
17-2/C 14	11-2/C 14
4" CONDUIT TO HH 17:	4" CONDUIT TO HH 1:
6-6/C 16	5-6/C 16
7-4/C 16	6-4/C 16
2-3/C 16	2-3/C 16
2-3/C 20	2-3/C 20
1-1/C 6 INS GR	1-1/C 6 INS. GR.

GROUND WIRE AND GROUND ROD - MIN 8' OUT FROM PAD
2-2" AND 1-3" CONDUIT STUBBED OUT (CAPPED BOTH ENDS)
CONTROLLER CABINET TO SERVICE CABINET:
2" CONDUIT
3-1/C 6
CONTROLLER CABINET TO SERVICE CABINET (COMMS):
2" CONDUIT
1-6PR 19
SERVICE CABINET TO POLE MOUNTED SOP:
2" CONDUIT
3-1/C 2

SERVICE CABINET TO HH 17:
2" CONDUIT
4-3/C 16 (LUM)
SERVICE CABINET TO EXTERNAL GR. RD.:
1" CONDUIT
1-1/C 6 INS. GR.
(SEE EQUIPMENT PAD LAYOUT)
HH 17 TO HH 1:
2" CONDUIT
2-3/C 16 (LUM)

(1) X= 497722.3149
Y= 102723.5032
PA100 POLE FOUNDATION
TYPE PA100-A-50-D30-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL OVERHEAD AT 0'(1-1)
2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12' AND 24'(6-3, 6-2)
2-ANGLE MOUNT SIGNALS AT 90 AND 180 DEG (8-4, 6-1)
1-ANGLE MOUNT C.D. PED HEAD AT 90 DEG (P7-1)
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 1+6)
1-LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-APS PB AND SIGN (LT ARROW) (PB7-1)
1-R6-1(R) "ONE WAY" MOUNTED ON POLE FACING WEST
1-R6-1(L) "ONE WAY" MOUNTED ON POLE FACING POLE 4
1-R10-X12 SIGN ADJACENT TO HEAD (1-1)
1-SIGN (42ND ST) (SEE SIGN DETAILS)
3" CONDUIT INTO HH 17:
2-6/C 16
5-4/C 16
1-2/C 14
1-3/C 16
1-3/C 20
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(4) X= 497887.5655
Y= 102719.6357
PA90 POLE FOUNDATION
TYPE PA90-A-35-D30-9 (DAVIT AT 350 DEG)
1-ANGLE MOUNT SIGNAL APAPTOR OVERHEAD AT 0'(7-2)
1-ANGLE MOUNT SIGNAL AT 90 DEG (8-5)
1-ANGLE MOUNT SIGNAL AT 180 DEG (7-1)
1-ANGLE MOUNT SIGNAL AT 270 DEG (1-2)
1-ANGLE MOUNT C.D. PED HEAD AT 180 (P7-2)
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASE 7)
1-LUMINAIRE-LED (FOR 30' MOUNTING HEIGHT)
1-R6-1(L) "ONE WAY" MOUNTED ON POLE FACING POLE 1
1-SIGN (EAST RIVER RD) (SEE SIGN DETAILS)
3" CONDUIT INTO HH 13:
4-6/C 16
2-4/C 16
1-3/C 16
1-3/C 20
1-3/C 16 (LUM)
1-1/C 6 INS. GR.

(B) SOP-POLE MOUNTED (XCEL ENERGY)
2" CONDUIT INTO SERVICE CABINET:
3-1/C 2

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNATURE: Jeffrey A. Hilden LIC. NO. 20781 DATE: 12/2/2024
JEFFREY A. HILDEN

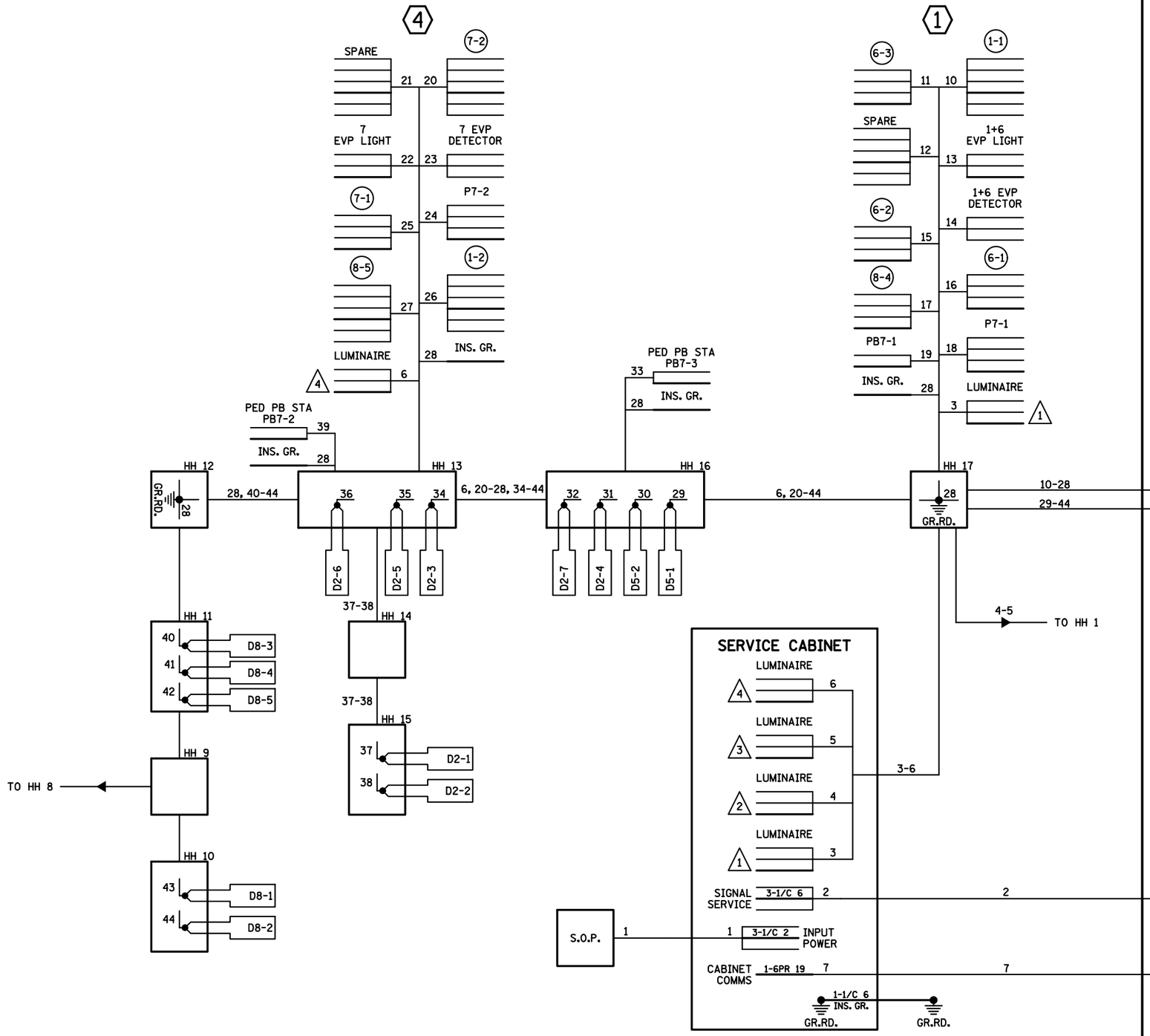
TKDA

INTERSECTION NOTES

SIGNAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

DATE: 12/2/2024 TIME: 11:44:46 AM
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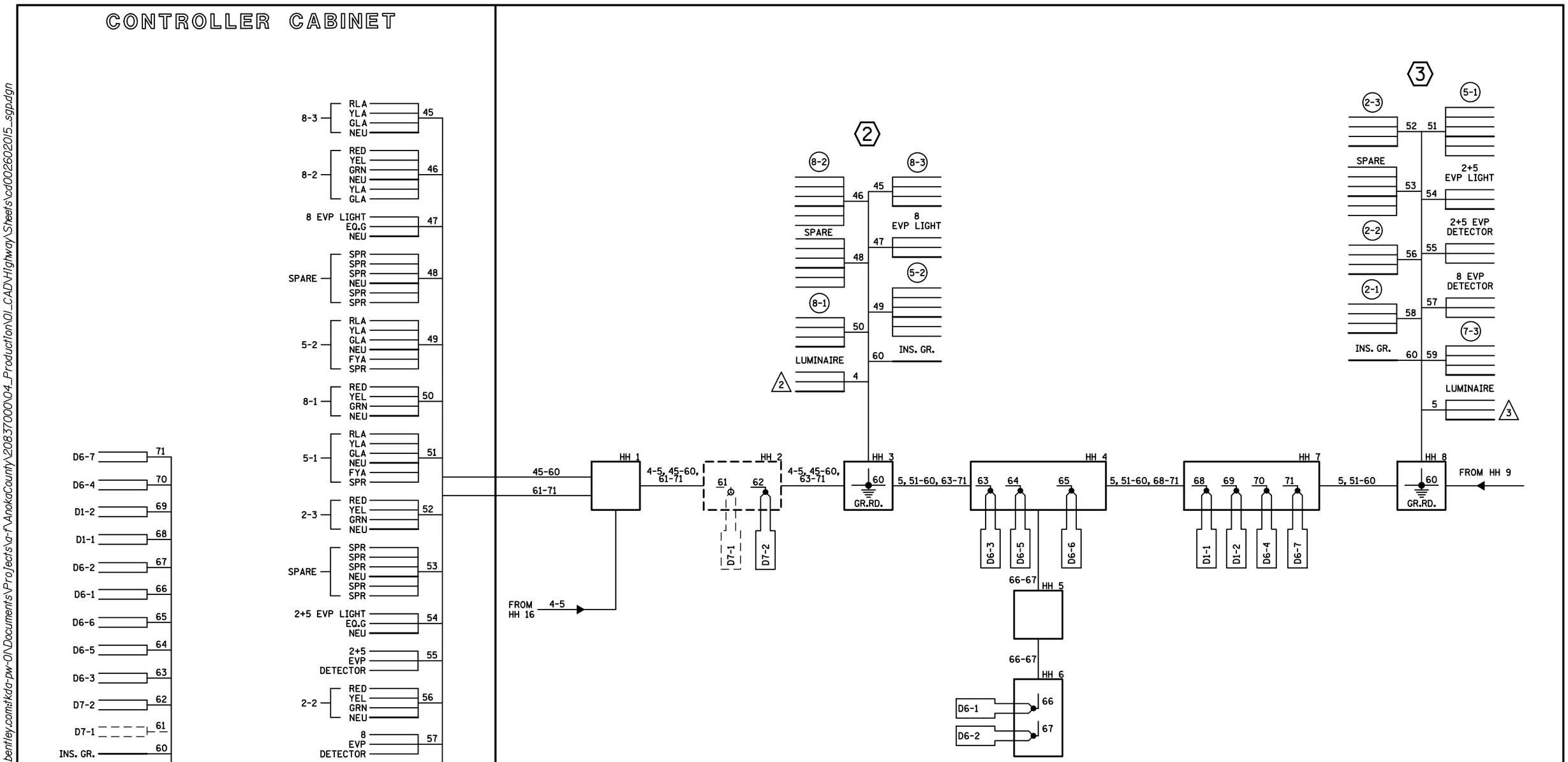
WIRING DIAGRAM

SIGNAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 146 OF 148 SHEETS

DATE: 12/2/2024 TIME: 11:44:50 AM
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JEFFREY A. HILDEN

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WIRING DIAGRAM

SIGNAL PLAN

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 147 OF 148 SHEETS

TYPE C SIGN PANELS ON SIGNAL

	SIGN PANEL	POLE NO.	a (FT)	b (FT)	SIZE (IN)	MOUNTING BRACKET QUANTITY	MOUNTING BRACKET SPACING (1)	UNIT AREA (SQ FT)	NO. REQ	PANEL LEGEND
(3)	R6-1R	1	POLE	-	36 X 12	1	-	3.00	1	ONE WAY RIGHT
(2)	R6-1L	1,2	POLE	-	36 X 12	2	-	6.00	2	ONE WAY LEFT
(2)	R6-1R	3	POLE	-	36 X 12	1	-	3.00	1	ONE WAY RIGHT
(3)	R6-1L	3,4	POLE	-	36 X 12	2	-	6.00	2	ONE WAY LEFT
(2)	R9-3	2	POLE		18 X 18	1		2.25	1	NO PEDESTRIANS
(3)	R9-3	3	POLE		18 X 18	1		2.25	1	NO PEDESTRIANS
(4)	R9-3	3	POLE		18 X 18	1		2.25	1	NO PEDESTRIANS
	R10-X12	1,3	2	-	36 X 42	2	-	21.00	2	LEFT TURN YIELD ON FLASHING YELLOW ARROW
	TOTAL QUANTITIES							45.75	15	

TYPE D SIGN PANELS ON SIGNAL

SIGN PANEL	POLE NO.	a (FT)	b (FT)	SIZE (IN)	MOUNTING BRACKET QUANTITY	MOUNTING BRACKET SPACING (1)	UNIT AREA (SQ FT)	NO. REQ	PANEL LEGEND
S-1	1,3	-	30	60 X 18	5	-	15.00	2	42ND AVE
S-2	2	-	20	78 X 18	5	-	9.75	1	EAST RIVER ROAD
S-2	4	-	10	78 X 18	5	-	9.75	1	EAST RIVER ROAD
TOTAL QUANTITIES							34.50	4	

NOTES

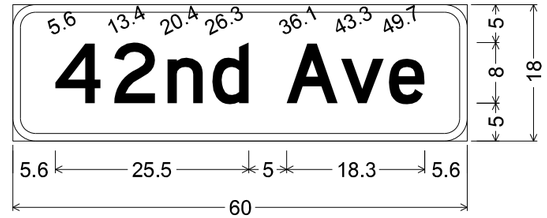
(1) SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED. SEE STANDARD SIGNS MANUAL, CURRENT EDITION, PAGE 105A FOR BRACKET SPACING REQUIRMENTS.

(2) PLACE SIGN FACING EAST

(3) PLACE SIGN FACING WEST

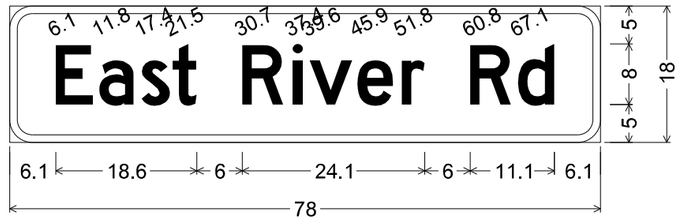
(4) PLACE SIGN FACING SOUTH

S-1



42nd Ave;
3.0" Radius, 1.0" Border, White on Green;
"42nd Ave", D 2K;

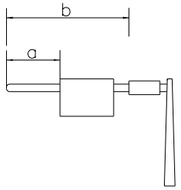
S-2



East River Rd;
3.0" Radius, 1.0" Border, White on Green;
"East River Rd", D 2K;

GENERAL SIGNING NOTES:

1) COLOR FOR ALL TYPE D SIGNS SHALL BE WHITE LEGEND AND BORDER ON GREEN BACKGROUND, FULLY REFLECTORIZED.
2) CORNERS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED. CORNERS OF STANDARD SIGN PANELS WITH MARGINS SHALL BE TRIMMED.
3) FOR STRUCTURAL DETAILS OF MAST ARM MOUNTED SIGNS, SEE STANDARD SIGNS MANUAL, CURRENT EDITION, PAGE 105A, AND SPECIAL PROVISIONS.
4) SEE STANDARD SIGNS MANUAL FOR DETAILED DRAWINGS OF TYPE C SIGN PANELS.
5) FURNISHING AND INSTALLING NEW SIGNS SHALL BE INCLUDED AS PART OF BID ITEM FOR "TRAFFIC CONTROL SIGNAL SYSTEM" SEE SPECIAL PROVISIONS.
6) MAST ARM POLE MOUNTED AND PEDESTAL POLE MOUNTED SIGN PANELS SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR USING CONTRACTOR FURNISHED AND INSTALLED MOUNTING HARDWARE.
7) (1) = INSTALL SIGN PANEL ON TRAFFIC SIGNAL PEDESTAL POLE.
8) SEE STANDARD SIGNS MANUAL FOR ARROW DETAILS.
9) ALL NEW SIGN PANELS SHALL BE FABRICATED USING HP SHEETING. SEE SPECIAL PROVISIONS.



DATE: 12/2/2024 TIME: 11:44:53 AM
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MAST ARM SIGNING DETAILS

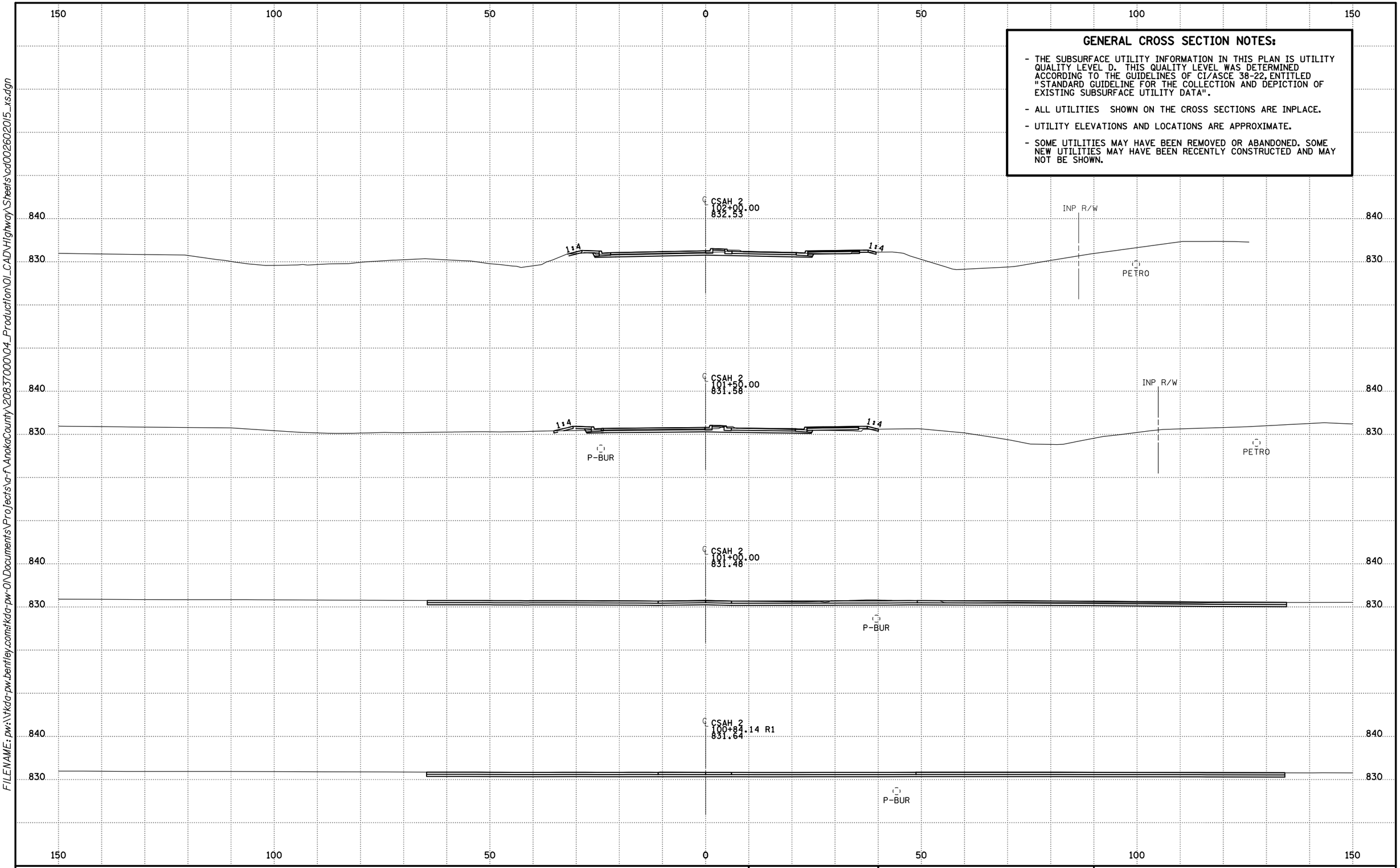
SIGNAL PLAN

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S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. 148 OF 148 SHEETS

GENERAL CROSS SECTION NOTES:

- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-22, ENTITLED "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
- ALL UTILITIES SHOWN ON THE CROSS SECTIONS ARE INPLACE.
- UTILITY ELEVATIONS AND LOCATIONS ARE APPROXIMATE.
- SOME UTILITIES MAY HAVE BEEN REMOVED OR ABANDONED. SOME NEW UTILITIES MAY HAVE BEEN RECENTLY CONSTRUCTED AND MAY NOT BE SHOWN.



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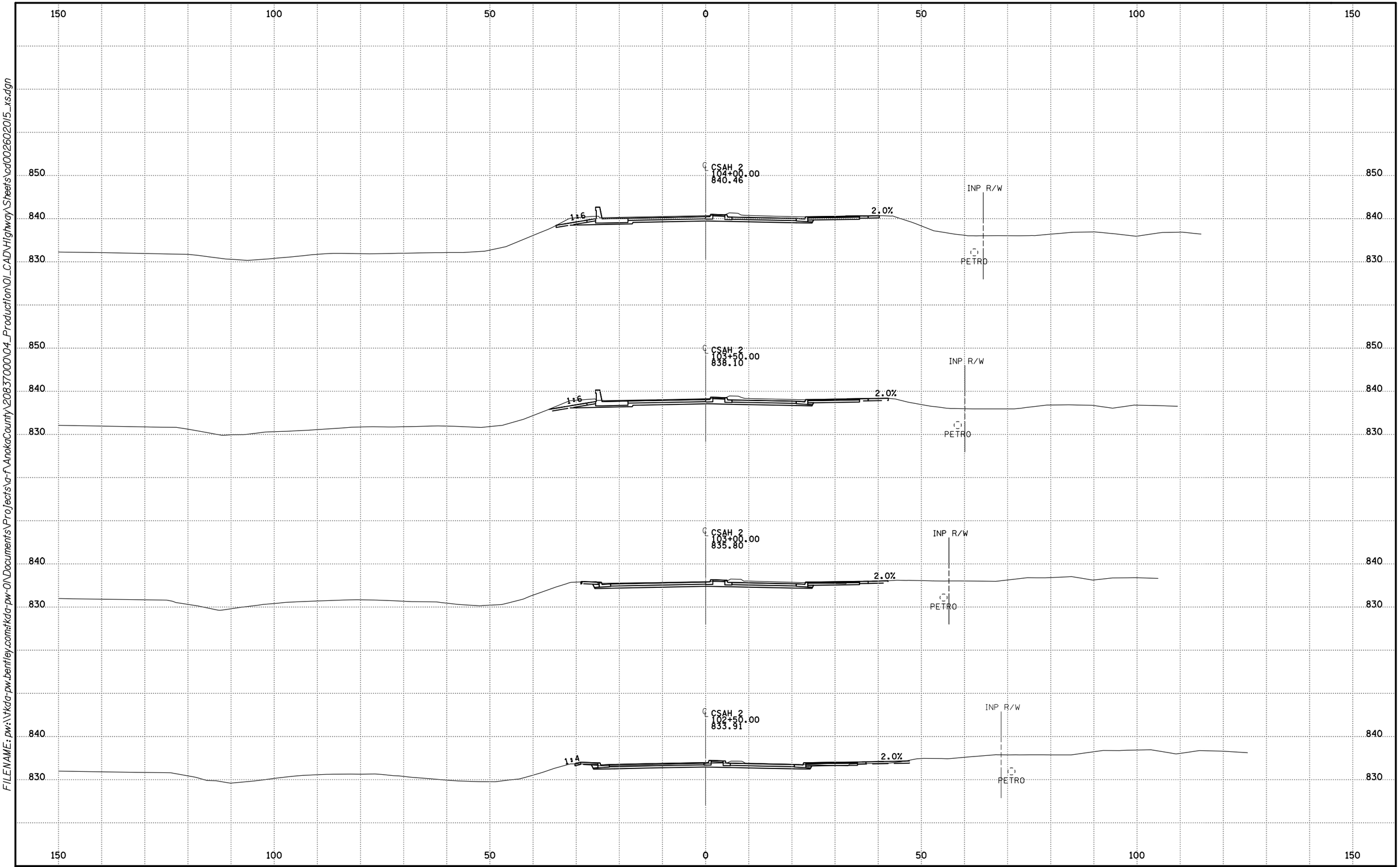
CSAH 2 STA. 100+84.14 TO STA. 102+00

CROSS SECTIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. X1 OF X10 SHEETS

DATE: 12/2/2024 TIME: 11:44:58 AM
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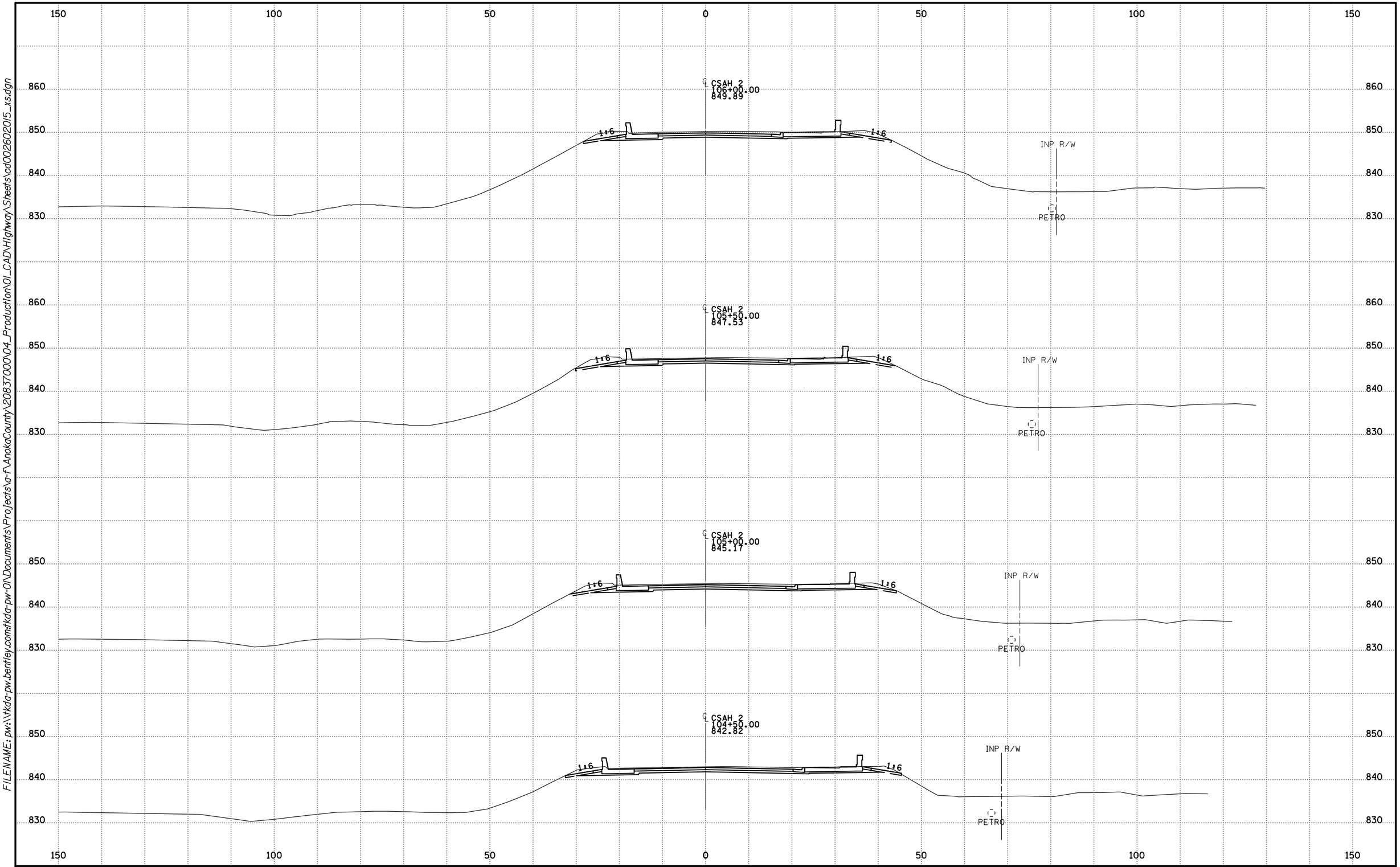
TKDA

CSAH 2 STA. 102+50 TO STA. 104+00

CROSS SECTIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. X2 OF X10 SHEETS



DATE: 12/2/2024 TIME: 11:44:58 AM
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TKDA

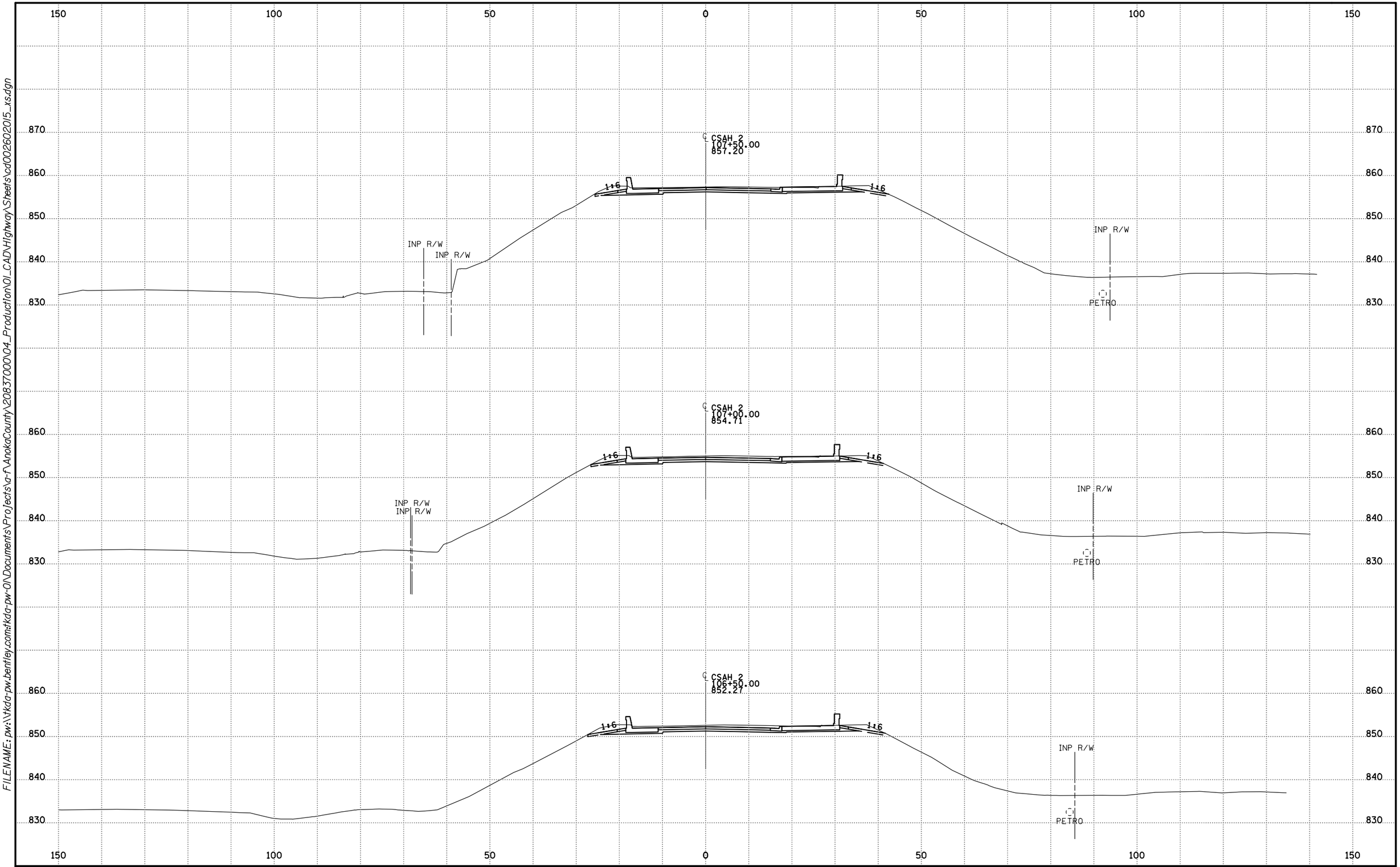
CSAH 2 STA. 104+50 TO STA. 106+00

CROSS SECTIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

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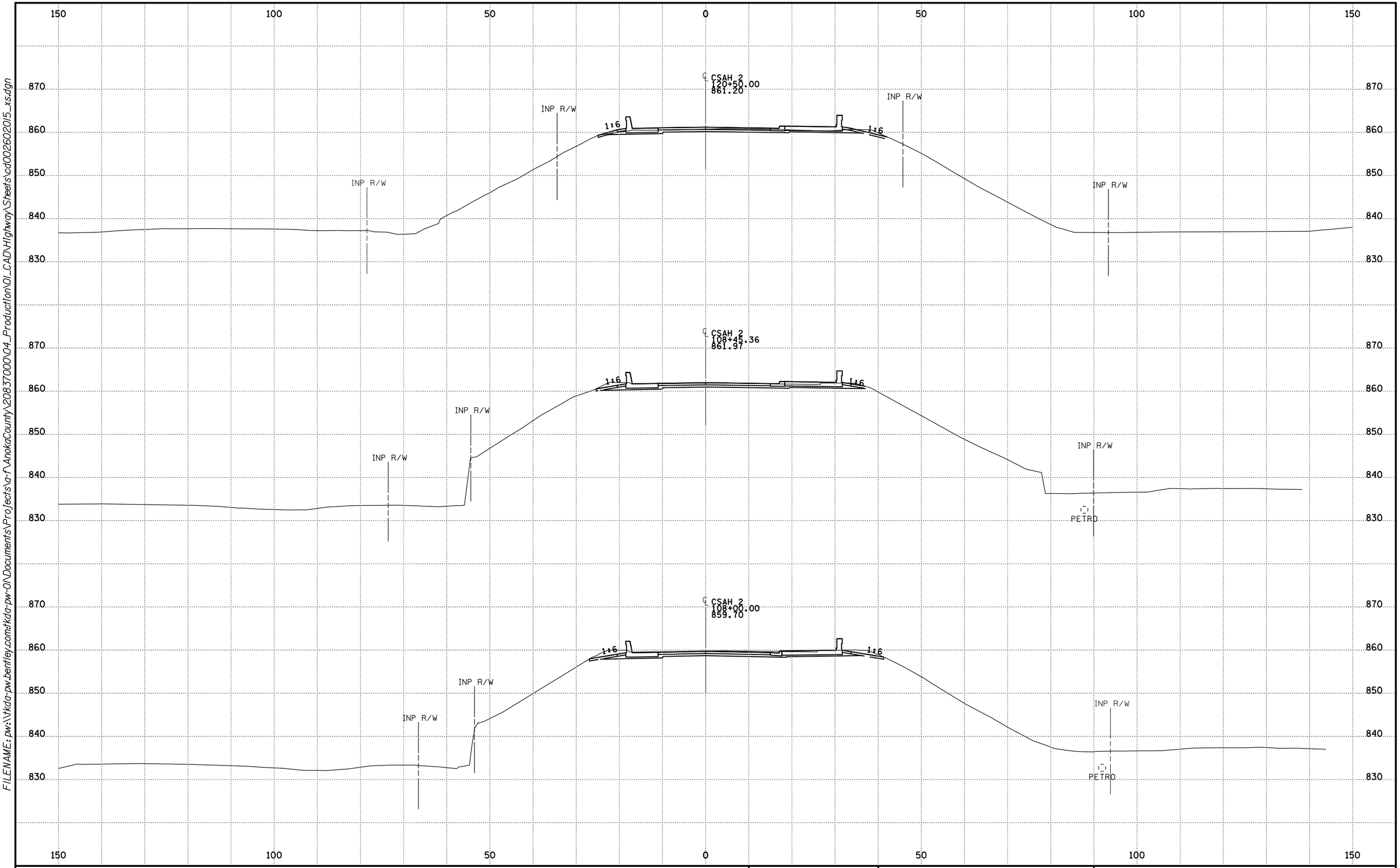
CSAH 2 STA. 106+50 TO STA. 107+50

CROSS SECTIONS

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S.A.P 002-602-015, S.A.P. 127-020-037

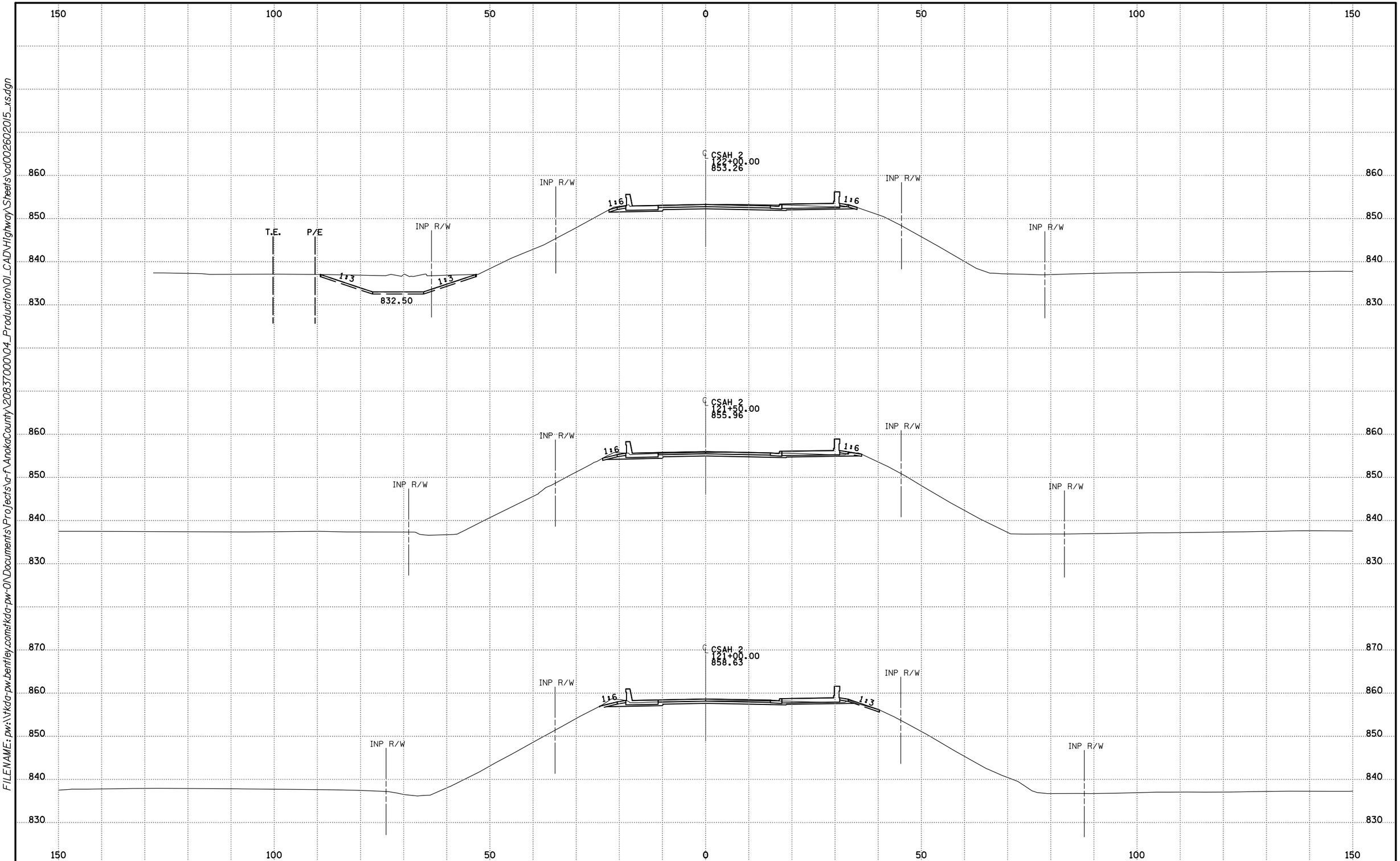
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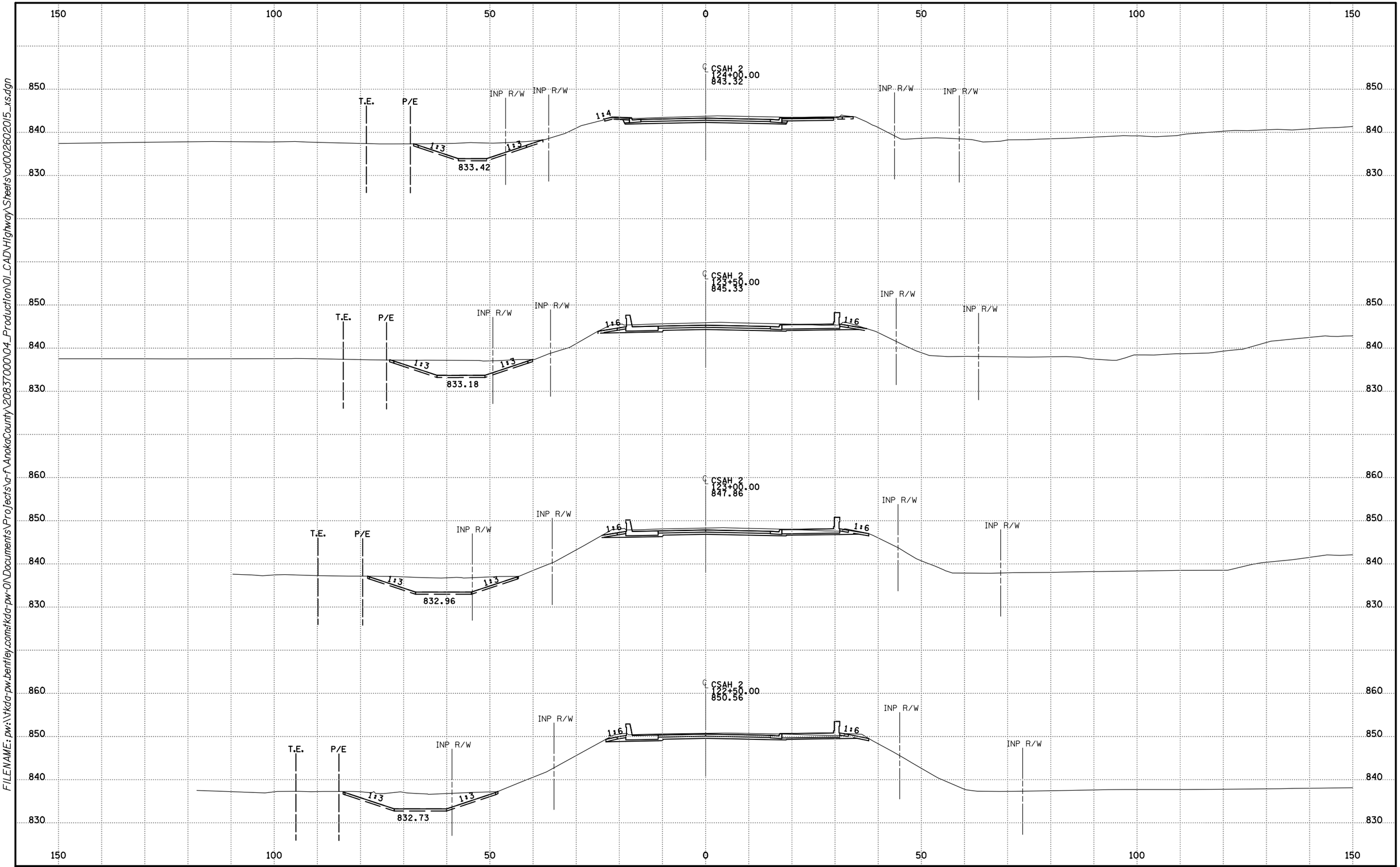
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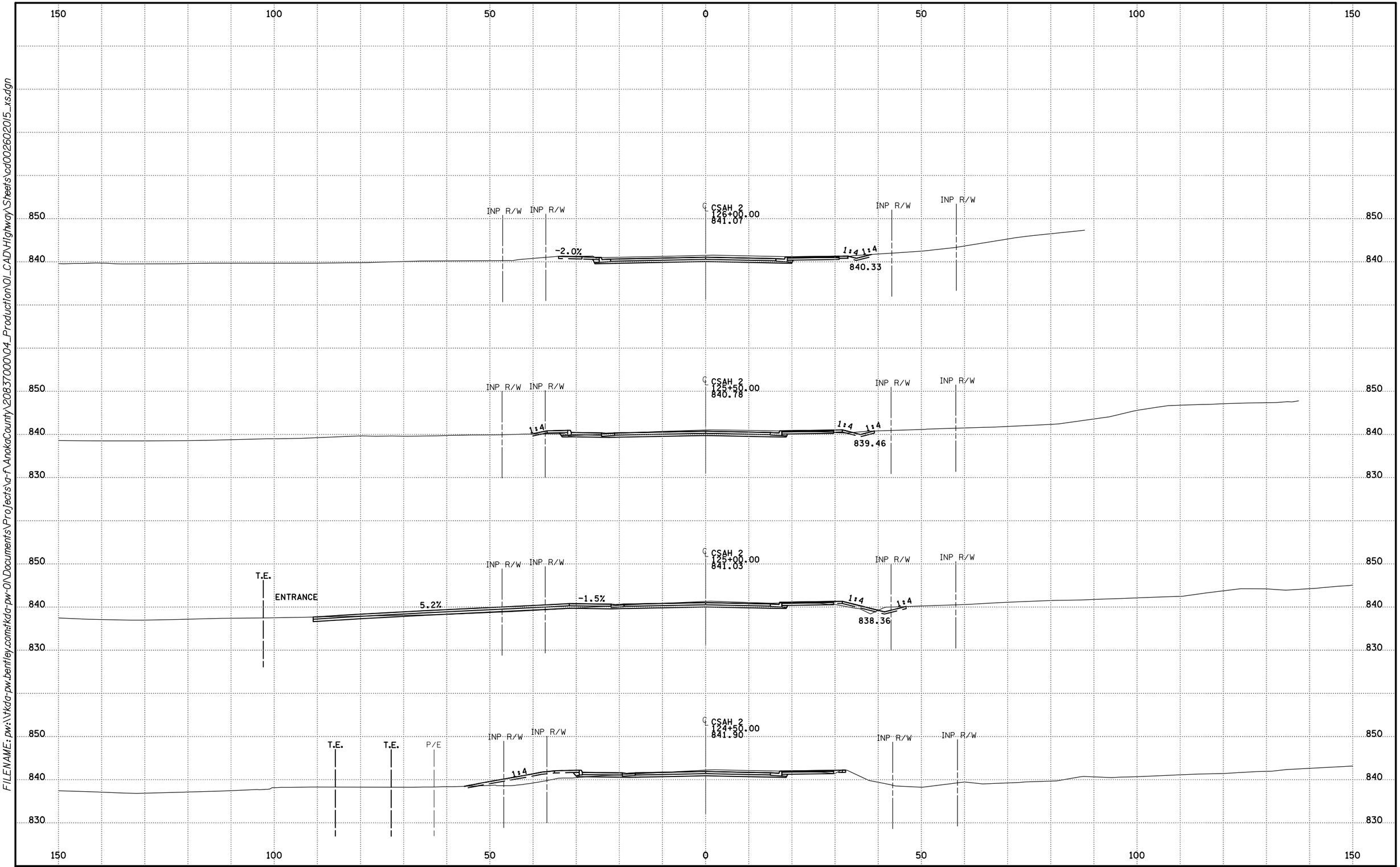
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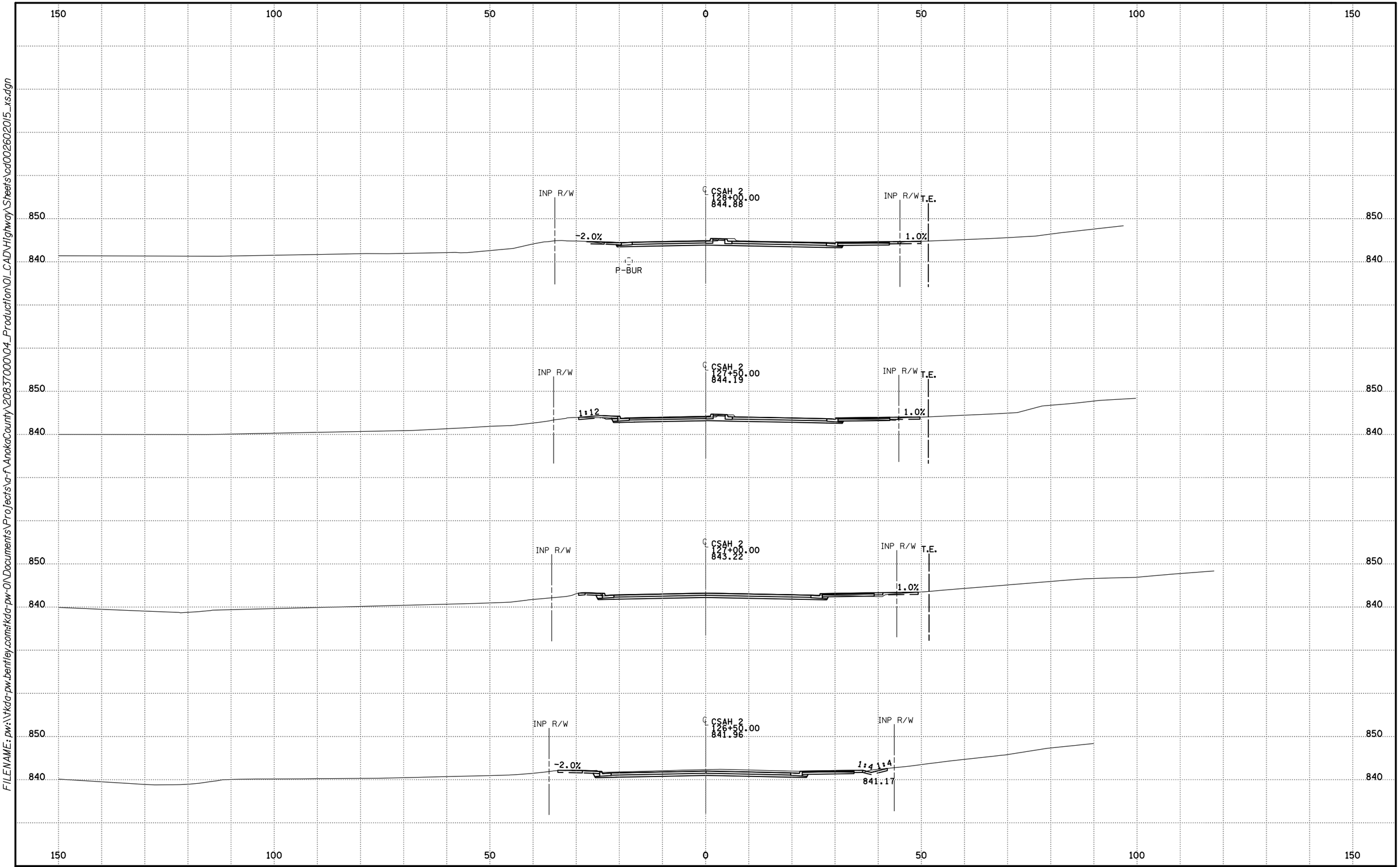


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TKDA	CSAH 2 STA. 124+50 TO STA. 126+00	CROSS SECTIONS
	S.P. 002-602-015, S.P. 127-020-037 S.A.P 002-602-015, S.A.P. 127-020-037	SHEET NO. X8 OF X10 SHEETS



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TKDA

CSAH 2 STA. 126+50 TO STA. 128+00

CROSS SECTIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. X9 OF X10 SHEETS

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150 100 50 0 50 100 150

860
850
840

C CSAH 2
129+59.74
847.00

P-BUR

860
850
840

C CSAH 2
129+50.00
846.88

1.0%

P-BUR

860
850
840

INP R/W
C CSAH 2
129+00.00
846.21
INP R/W
T.E.

P-BUR

850
840

INP R/W
C CSAH 2
128+50.00
845.55
INP R/W
T.E.

1.0%

P-BUR

150 100 50 0 50 100 150

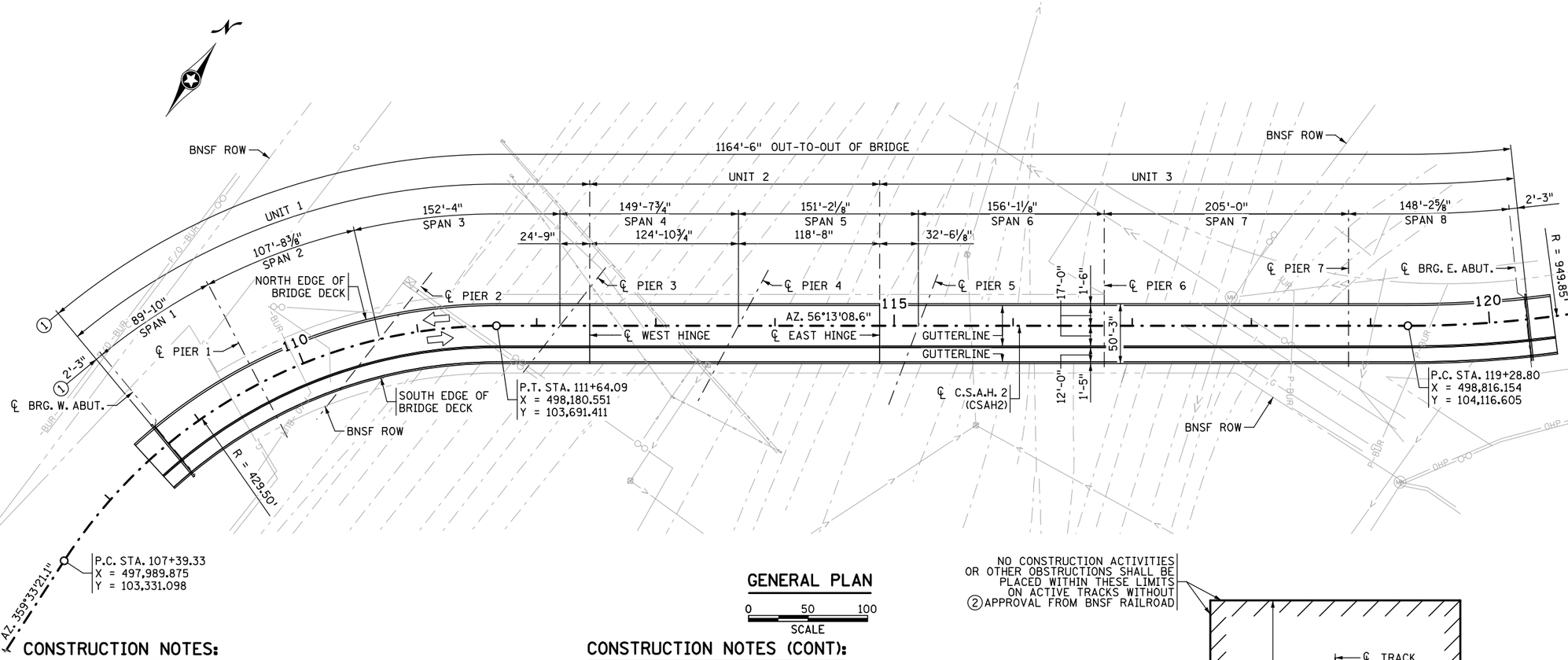
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CSAH 2 STA. 128+50 TO STA. 129+59.74

CROSS SECTIONS

S.P. 002-602-015, S.P. 127-020-037
S.A.P 002-602-015, S.A.P. 127-020-037

SHEET NO. X10 OF X10 SHEETS



GENERAL PLAN

0 50 100
SCALE

DESIGN DATA

DESIGNED IN ACCORDANCE WITH 2020 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

LOAD AND RESISTANCE FACTOR DESIGN METHOD
HL 93 LIVE LOAD

DEAD LOAD INCLUDES 20PSF ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS.

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4 ksi n = 7.3
Fy = 60 ksi FOR REINFORCEMENT

STRUCTURAL STEEL:
Fy = 36 ksi (PAINTED)
(CHANNELS, ANGLES, BEARING PLATES, STIFFENERS)

DESIGN SPEED:
OVER = 30MPH
UNDER = N/A

DECK AREA = 58,168 SQ FT

HL-93 LRFR BRIDGE OPERATING RATING FACTOR RF = 1.51

LIST OF SHEETS

NO.	DESCRIPTION
1	GENERAL PLAN
2-4	GENERAL PLAN AND ELEVATION
5	TRANSVERSE SECTIONS & QUANTITIES
6	RAILROAD CLEARANCE DATA
7	PAVING BRACKET AND ANODE DETAILS
8-14	PIER IN-FILL COLUMN DETAILS
15-17	FRAMING PLAN
18-20	BEAM ELEVATIONS
21-29	DECK REINFORCEMENT
30	CORNER DETAILS
31	DECK POUR SEQUENCE
32-54	BARRIERS
55-61	EXPANSION JOINT DETAILS
62-63	STANDARD DETAILS
64	AS-BUILT BRIDGE DATA

MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02523
GENERAL PLAN

C.S.A.H. 2 (44TH AVE NE) OVER BNSF RAILROAD AT NORTHTOWN YARD
0.2 MI NE OF JCT C.S.A.H. 1
1166'-11¾" CONTINUOUS STEEL BEAM SPAN
BRIDGE I.D. NO. 401

SEC 34 T 30 R 24 W

CITY OF FRIDLEY ANOKA COUNTY

APPROVED Joseph MacPherson — Digitally signed by Joseph MacPherson Date: 2024.11.18 14:53:29 -06'00'
COUNTY ENGINEER
DATE 11/18/2024

APPROVED Digitally signed by Edward Lutgen Date: 2024.11.26 10:54:53 -06'00'
STATE BRIDGE ENGINEER
DATE

CONSTRUCTION NOTES:

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

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

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

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

PROVIDE STAINLESS STEEL BARS MARKED WITH SUFFIX "S" IN ACCORDANCE WITH SPECIAL PROVISIONS.

IN PLACE DIMENSIONS SHOWN ARE TAKEN FROM THE 1972 AND 1990 PLANS AND FIELD MEASUREMENTS. THE DIMENSIONS, STATIONING, AND ELEVATIONS WERE RECREATED FROM THE ORIGINAL DRAWINGS AND SHOULD BE CONSIDERED APPROXIMATE. CONTRACTOR SHALL TAKE SUFFICIENT MEASUREMENTS TO FIELD VERIFY COMPATIBILITY BETWEEN THE INPLACE STRUCTURE AND THE PROPOSED WORK.

PREFORMED JOINT FILLER MATIERALS ARE INCIDENTAL. PAYMENT IS TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS FOR WHICH NO ADDITIONAL PAYMENT WILL BE MADE.

APPROVED BONDING GROUT TO BE APPLIED TO ALL CONTACT SURFACES BETWEEN NEW AND INPLACE CONCRETE.

INPLACE CONDUIT AND UTILITIES ARE PRESENT WITHIN THE CONCRETE BARRIERS. PRIOR TO REMOVAL OPERATIONS, THE CONTRACTOR SHALL CALL FOR UTILITIES TO BE LOCATED. BRIDGE SHALL BE CAREFULLY EXAMINED FOR PRESENCE OF UTLIITIES. UTILITIES SHALL BE CLEARLY MARKED PRIOR TO ANY REMOVALS.

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 GUIDELINES FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

CONSTRUCTION NOTES (CONT):

USE OF TRACK-MOUNTED CRANES OR CONCRETE BOOM TRUCKS WILL NOT BE ALLOWED WITHIN THE RAILROAD RIGHT-OF-WAY OR BNSF NORTHTOWN YARD.

THE CONTRACTOR SHOULD PLAN TO COMPLETE ALL WORK FROM THE EXISTING BRIDGE SUPERSTRUCTURE, AS EQUIPMENT ACCESS ON THE GROUND WITHIN THE BNSF RAILWAY RIGHT-OF-WAY WILL NOT BE PROVIDED.

TEMPORARY CROSSINGS TO CROSS THE BNSF RAILWAY TRACKS WILL NOT BE ALLOWED.

THE CONTRACTOR SHALL SAW CUT AND REMOVE THE CONCRETE BARRIERS AND BRIDGE DECK, FOR THE ENTIRE LENGTH OF THE BRIDGE.

NOTES:

TRACK DESIGNATIONS ARE SHOWN ON GENERAL PLAN AND ELEVATION SHEETS.

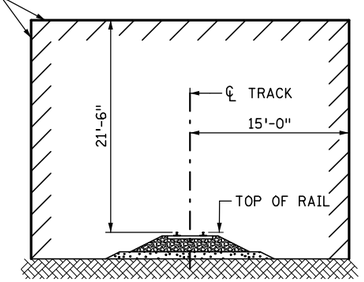
SEE GENERAL PLAN AND ELEVATION SHEETS FOR SUBSTRUCTURE AZIMUTHS AND ANGLES TO ℄ C.S.A.H. 2 (CSAH2).

PLAN DIMENSIONS ARE ON A LEVEL PLANE, UNLESS NOTED OTHERWISE.

① MEASURED ALONG ℄ C.S.A.H. 2 (CSAH2).

② CONTRACTOR TO COORDINATE WITH BNSF RAILROAD FOR TRACK PROTECTION WHEN WORKING OVER ACTIVE TRACKS.

NO CONSTRUCTION ACTIVITIES OR OTHER OBSTRUCTIONS SHALL BE PLACED WITHIN THESE LIMITS ON ACTIVE TRACKS WITHOUT ②APPROVAL FROM BNSF RAILROAD



MINIMUM CONSTRUCTION CLEARANCE ENVELOPE

(NORMAL TO RAILROAD)

TKDA

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

SIGNED Matthew J. Christensen DATE 11/6/2024
NAME MATTHEW J. CHRISTENSEN LICENSE 43076

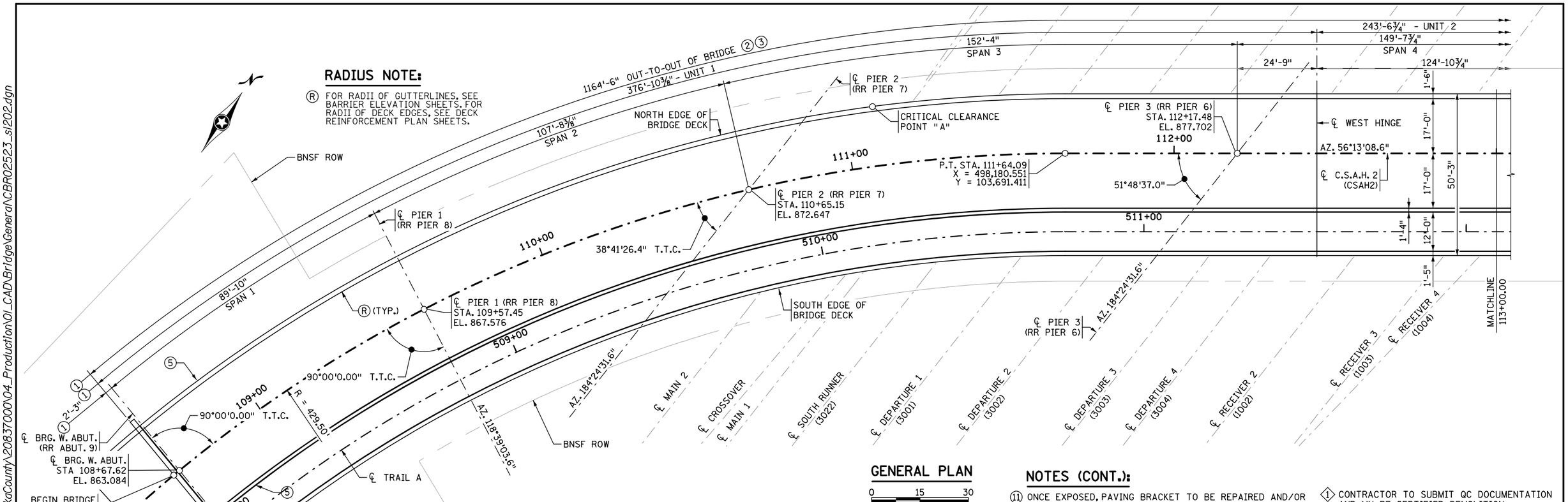
S.P. 002-602-015	DES: DRH	DR: DRH	SHEET NO. 1 OF 64 SHEETS	02523
	CHK: JRM	CHK: MJC		

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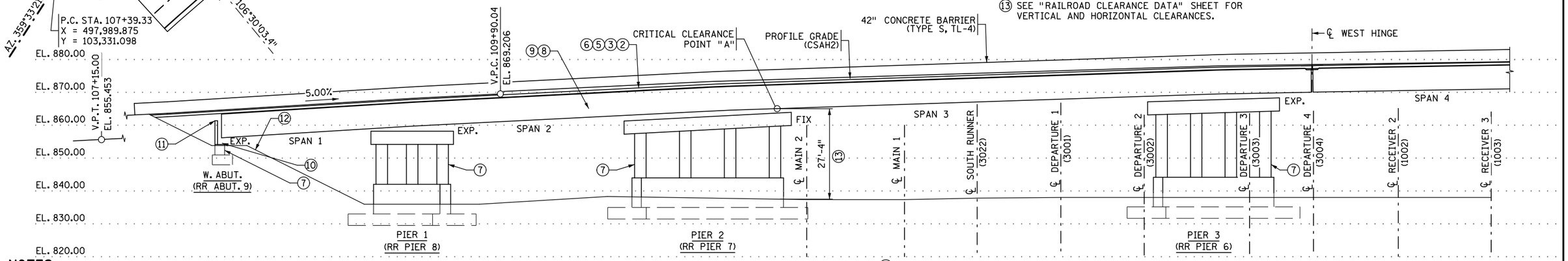
RADIUS NOTE:

Ⓡ FOR RADII OF GUTTERLINES, SEE BARRIER ELEVATION SHEETS. FOR RADII OF DECK EDGES, SEE DECK REINFORCEMENT PLAN SHEETS.



GENERAL PLAN

0 15 30
SCALE



GENERAL ELEVATION

0 15 30
SCALE

NOTES (CONT.):

⑪ ONCE EXPOSED, PAVING BRACKET TO BE REPAIRED AND/OR RECONSTRUCTED AS DIRECTED BY THE ENGINEER.

⑫ REMOVE AND REPLACE CONCRETE SLOPE PAVING. INCLUDED IN ITEMS "REMOVE CONCRETE SLOPE PAVING" AND "CONCRETE SLOPE PAVING".

⑬ SEE "RAILROAD CLEARANCE DATA" SHEET FOR VERTICAL AND HORIZONTAL CLEARANCES.

① CONTRACTOR TO SUBMIT QC DOCUMENTATION AND MN PE CERTIFIED DEMOLITION PLAN AND CALCULATIONS TO ENGINEER AND BNSF RR FOR APPROVAL PRIOR TO BEGINNING REMOVAL OPERATIONS. SEE SPECIAL PROVISIONS.

NOTES:

T.T.C. DENOTES TANGENT TO CURVE.

FOR EXISTING UTILITIES, SEE "GENERAL PLAN" SHEET.

① MEASURED ALONG ℄ C.S.A.H. 2 (CSAH2).

② REMOVE INPLACE BARRIERS, WEARING COURSE, EXPANSION JOINTS, CONCRETE DECK, DECK DRAINS AND CONDUIT. INCLUDED IN ITEM "REMOVE CONC SLAB; OVERLAY; & BARRIER". REMOVE LEAD SHEETS UNDER NORTH BARRIER RAIL, INCLUDED IN ITEM "LEAD SUNSTANCES COLLECTION AND DISPOSAL". ①

③ CONSTRUCT NEW 7¼" CONCRETE DECK, INCLUDED IN ITEM "BRIDGE SLAB CONCRETE (3YHPC-S)". PLACE 2" CONCRETE WEARING COURSE ON NEW DECK, INCLUDED IN ITEM "CONCRETE WEARING COURSE (3U17A)". APPLY 100% SILANE SEALER TO ROADWAY AND TRAIL/SIDEALK SURFACE, INCLUDED IN ITEM "SILANE 100 PERCENT".

④ NEW APPROACH PANELS TO BE CONSTRUCTED, SEE GRADING PLANS.

⑤ NEW 42" CONCRETE BARRIER (TYPE S), CONCRETE BARRIER (TYPE P-1) ON APPROACH PANELS AND BRIDGE DECK AND 24" CONCRETE BARRIER (TYPE IOWA BICYCLE PARAPET). INCLUDED IN ITEMS "TYPE S (TL-4) 42" BARRIER CONCRETE (3S52)", "TYPE P-1 (TL-2) BARRIER CONCRETE (3S52)" AND "TYPE IOWA BICYCLE PARAPET CONC (3S52)".

⑥ REMOVE CHAIN LINK FENCE AT SOUTH EDGE OF BRIDGE DECK AND AT TOP OF SOUTH BARRIER. INCLUDED IN ITEM "REMOVE CHAIN LINK FENCE".

⑦ UNSOUND CONCRETE ON ABUTMENTS AND PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 SQUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".

⑧ CLEAN, PRIME, AND PAINT TOP FLANGES OF STEEL GIRDERS AS DIRECTED BY THE ENGINEER. PRIOR TO REDECKING. INCLUDED IN ITEM "CLEAN AND PAINT STEEL".

⑨ PAINT ALL STEEL WITHIN 7 FEET OF ALL DECK JOINT AND HINGE JOINT LOCATIONS. PAINT BOTTOM FLANGES OF FASCIA GIRDERS AND UP 6 INCHES ON FASCIA WEBS FROM TOP OF BOTTOM FLANGE. PAINT ALL STEEL COMPONENTS OF BEARING ASSEMBLIES AT ALL FASCIA BEAMS. INCLUDED IN ITEM "ORGANIC ZINC-RICH PAINT SYSTEM (OLD)", "TCLP TEST", AND "WASTE COLLECTION AND DISPOSAL". MITIGATION OF PACK RUST IS INCIDENTAL.

⑩ CLEAN AND GREASE ALL EXPANSION BEARINGS AT WEST ABUTMENT. INCLUDED IN PRICE BID FOR "CLEAN AND GREASE EXP BEARING ASSEMBLIES" AND "TEMPORARY STRUCTURAL SUPPORT." PAINT STEEL COMPONENTS OF ALL BEARINGS AT WEST ABUTMENT. AFTER PREPPING FOR PAINT ALLOW ENGINEER TO INSPECT BEARINGS FOR ADEQUACY. INCLUDED IN PRICE BID FOR "ORGANIC ZINC-RICH PAINT SYSTEM (OLD)".

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

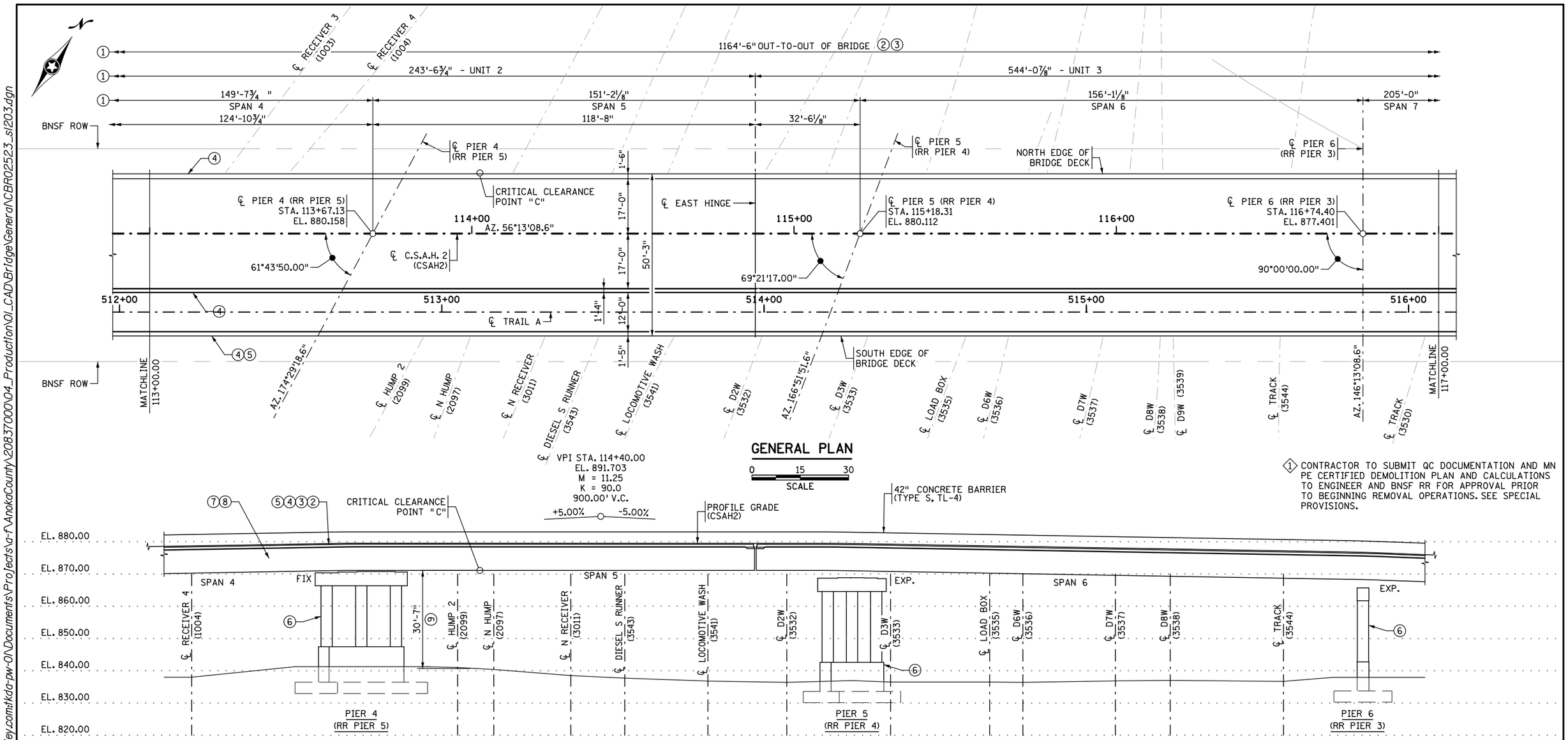
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: GENERAL PLAN AND ELEVATION (1 OF 3)

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 2 OF 64 SHEETS

BRIDGE NO. 02523



GENERAL PLAN

0 15 30
SCALE

GENERAL ELEVATION

0 15 30
SCALE

① CONTRACTOR TO SUBMIT QC DOCUMENTATION AND MN PE CERTIFIED DEMOLITION PLAN AND CALCULATIONS TO ENGINEER AND BNSF RR FOR APPROVAL PRIOR TO BEGINNING REMOVAL OPERATIONS. SEE SPECIAL PROVISIONS.

NOTES:

T.T.C. DENOTES TANGENT TO CURVE.

FOR EXISTING UTILITIES, SEE "GENERAL PLAN" SHEET.

① MEASURED ALONG ℄ C.S.A.H. 2 (CSAH2).

② REMOVE INPLACE BARRIERS, WEARING COURSE, EXPANSION JOINTS, CONCRETE DECK, DECK DRAINS, AND CONDUIT. INCLUDED IN ITEM "REMOVE CONC SLAB; OVERLAY; & BARRIER". REMOVE LEAD SHEETS UNDER NORTH BARRIER RAIL, INCLUDED IN ITEM "LEAD SUBSTANCES COLLECTION AND DISPOSAL". ①

③ CONSTRUCT NEW 7¼" CONCRETE DECK, INCLUDED IN ITEM "BRIDGE SLAB CONCRETE (3YHPC-S)". PLACE 2" CONCRETE WEARING COURSE ON NEW DECK, INCLUDED IN ITEM "CONCRETE WEARING COURSE (3U17A)". APPLY 100% SILANE SEALER TO ROADWAY AND TRAIL/SIDEWALK SURFACE, INCLUDED IN ITEM "SILANE 100 PERCENT".

④ NEW 42" CONCRETE BARRIER (TYPE S), CONCRETE BARRIER (TYPE P-1) ON APPROACH PANELS AND BRIDGE DECK AND 24" CONCRETE BARRIER (TYPE IOWA BICYCLE PARAPET) INCLUDED IN ITEMS "TYPE S (TL-4) 42" BARRIER CONCRETE (3S52)" AND "TYPE P-1 (TL-2) BARRIER CONCRETE (3S52)" AND "TYPE IOWA BICYCLE PARAPET CONC (3S52)".

⑤ REMOVE CHAIN LINK FENCE AT EDGE OF BRIDGE DECK AND AT TOP OF SOUTH BARRIER. INCLUDED IN ITEM "REMOVE CHAIN LINK FENCE".

⑥ UNSOUND CONCRETE ON ABUTMENTS AND PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 SQUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".

⑦ CLEAN, PRIME, AND PAINT TOP FLANGES OF STEEL GIRDERS PRIOR TO REDECKING AS DIRECTED BY THE ENGINEER. INCLUDED IN ITEM "CLEAN AND PAINT STEEL".

⑧ PAINT ALL STEEL WITHIN 7 FEET OF ALL DECK JOINT AND HINGE JOINT LOCATIONS. PAINT BOTTOM FLANGES OF FASCIA GIRDERS AND UP 6 INCHES ON FASCIA WEBS FROM TOP OF BOTTOM FLANGE. PAINT STEEL COMPONENTS OF ALL BEARING ASSEMBLIES AT FASCIA BEAMS. INCLUDED IN ITEM "ORGANIC ZINC-RICH PAINT SYSTEM (OLD)", "TCLP TEST", AND WASTE COLLECTION AND DISPOSAL". MITIGATION OF PACK RUST IS INCIDENTAL.

⑨ SEE "RAILROAD CLEARANCE DATA" SHEET FOR VERTICAL AND HORIZONTAL CLEARANCES.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

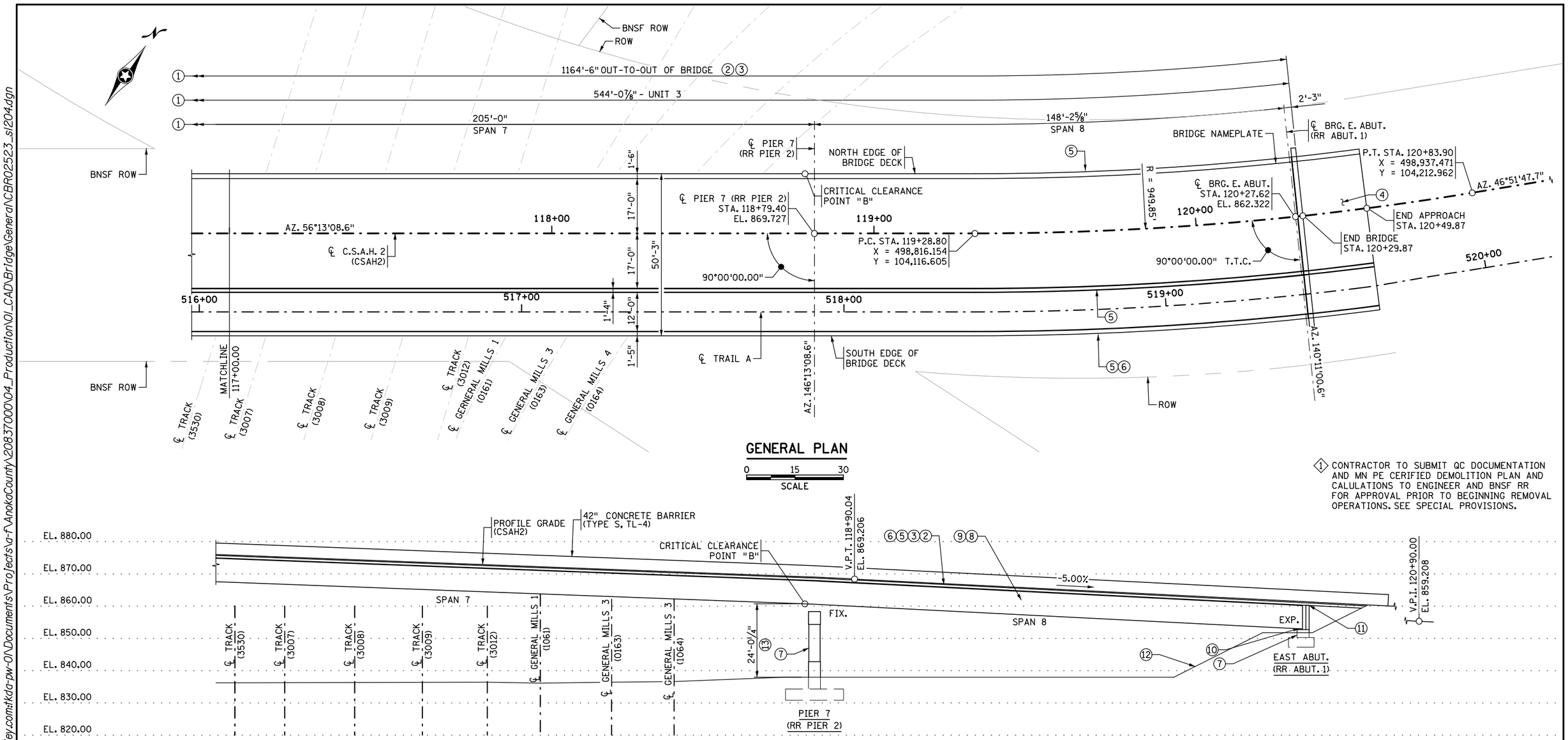
TITLE: GENERAL PLAN AND ELEVATION (2 OF 3)

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 3 OF 64 SHEETS

BRIDGE NO. 02523

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GENERAL PLAN

0 15 30
SCALE

GENERAL ELEVATION

0 15 30
SCALE

NOTES:

T.T.C. DENOTES TANGENT TO CURVE.

FOR EXISTING UTILITIES, SEE "GENERAL PLAN" SHEET.

FOR RADII OF GUTTERLINES, SEE BARRIER ELEVATION SHEETS. FOR RADII OF DECK EDGES, SEE DECK REINFORCEMENT PLAN SHEETS.

(1) MEASURED ALONG ℄ C.S.A.H. 2 (CSAH2).

(2) REMOVE INPLACE BARRIERS, WEARING COURSE, EXPANSION JOINTS, CONCRETE DECK, DECK DRAINS, AND CONDUIT. INCLUDED IN ITEM "REMOVE CONC SLAB; OVERLAY; & BARRIER". REMOVE LEAD SHEEETS UNDER NORTH BARRIER RAIL, INCLUDED IN ITEM "LEAD SUBSTANCES COLLECTION AND DISPOSAL". ⟨1⟩

(3) CONSTRUCT NEW 7 1/4" CONCRETE DECK, INCLUDED IN ITEM "BRIDGE SLAB CONCRETE (3YHPC-S)". PLACE 2" CONCRETE WEARING COURSE ON NEW DECK, INCLUDED IN ITEM "CONCRETE WEARING COURSE (3U17A)". APPLY 100% SILANE SEALER TO ROADWAY AND TRAIL/SIDEWALK SURFACE, INCLUDED IN ITEM "SILANE 100 PERCENT".

(4) NEW APPROACH PANELS TO BE CONSTRUCTED, SEE GRADING PLANS.

(5) NEW 42" CONCRETE BARRIER (TYPE S), CONCRETE BARRIER (TYPE P-1) ON APPROACH PANELS AND BRIDGE DECK AND 24" CONCRETE BARRIER (TYPE IOWA BICYCLE PARAPET). INCLUDED IN ITEMS "TYPE S (TL-4) 42" BARRIER CONCRETE (3S52)", "TYPE P-1 (TL-2) BARRIER CONCRETE (3S52)" AND 24" CONCRETE BARRIER (TYPE IOWA BICYCLE PARAPET).

(6) REMOVE CHAIN LINK FENCE AT SOUTH EDGE OF BRIDGE DECK AND AT TOP OF SOUTH BARRIER. INCLUDED IN ITEM "REMOVE CHAIN LINK FENCE".

(7) UNSOUND CONCRETE ON ABUTMENTS AND PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 SQUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".

(8) CLEAN, PRIME, AND PAINT TOP FLANGES OF STEEL GIRDERS PRIOR TO REDECKING, AS DIRECTED BY THE ENGINEER. INCLUDED IN ITEM "CLEAN AND PAINT STEEL".

(9) PAINT ALL STEEL WITHIN 7 FEET OF ALL DECK JOINT AND HINGE JOINT LOCATIONS. PAINT BOTTOM FLANGES OF FASCIA GIRDERS AND UP 6 INCHES ON FASCIA WEBS FROM TOP OF BOTTOM FLANGE. PAINT STEEL COMPONENTS OF ALL BEARING ASSEMBLIES AT FASCIA BEAMS. INCLUDED IN ITEM "ORGANIC ZINC-RICH PAINT SYSTEM (OLD)", "TCLP TEST", AND "WASTE COLLECTION AND DISPOSAL". MITIGATION OF PACK RUST IS INCIDENTAL.

(10) CLEAN AND GREASE ALL EXPANSION BEARINGS AT EAST ABUTMENT. INCLUDED IN PRICE BID FOR "CLEAN AND GREASE EXP BEARING ASSEMBLIES" AND TEMPORARY STRUCTURAL SUPPORT". PAINT STEEL COMPONENTS OF ALL BEARINGS AT EAST ABUTMENT. AFTER PREPPING FOR PAINT ALLOW ENGINEER TO INSPECT BEARINGS FOR ADEQUACY. INCLUDED IN PRICE BID FOR "ORGANIC ZINC-RICH PAINT SYSTEM (OLD)".

(11) ONCE EXPOSED, PAVING BRACKET TO BE REPAIRED AND/OR RECONSTRUCTED AS DIRECTED BY THE ENGINEER. SEE ABUTMENT DETAILS.

(12) REMOVE AND REPLACE CONCRETE SLOPE PAVING. INCLUDED IN ITEMS "REMOVE CONCRETE SLOPE PAVING" AND "CONCRETE SLOPE PAVING".

(13) SEE "RAILROAD CLEARANCE DATA" SHEET FOR VERTICAL AND HORIZONTAL CLEARANCE.

⟨1⟩ CONTRACTOR TO SUBMIT QC DOCUMENTATION AND MN PE CERIFIED DEMOLITION PLAN AND CALULATIONS TO ENGINEER AND BNSF RR FOR APPROVAL PRIOR TO BEGINNING REMOVAL OPERATIONS. SEE SPECIAL PROVISIONS.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

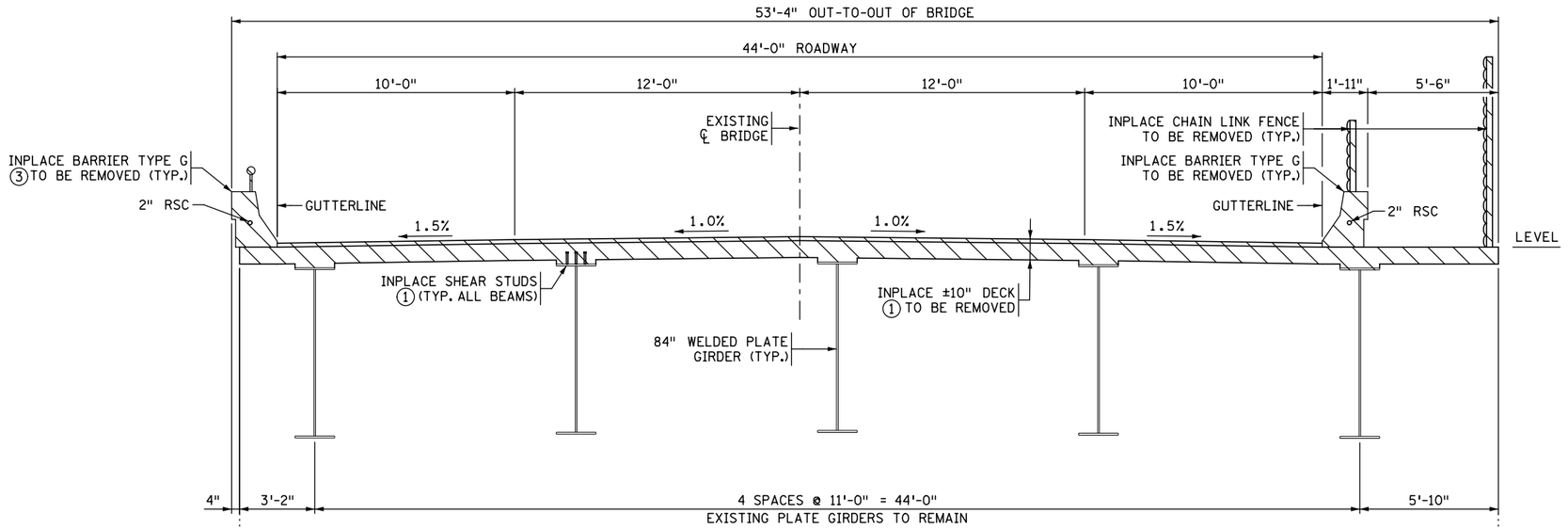
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CHK: JRM	CHK: MJC	

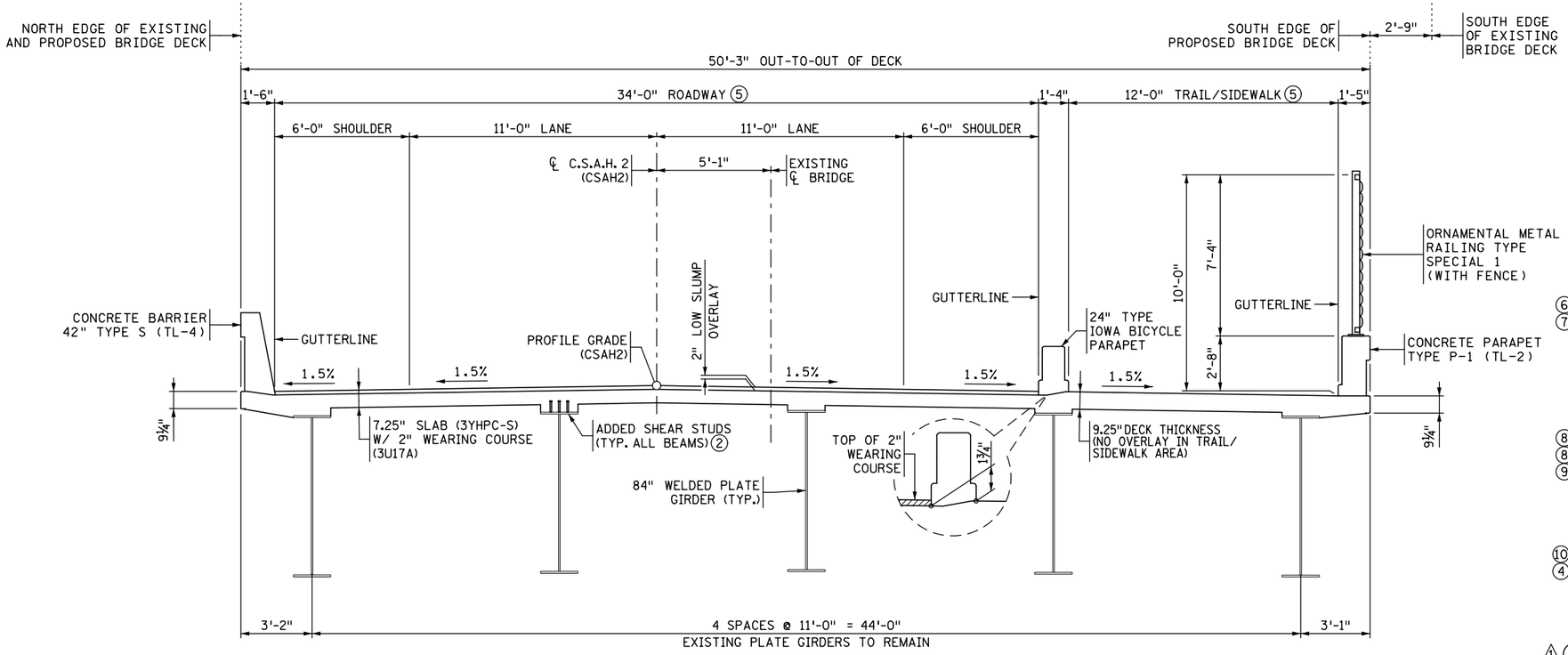
SHEET NO. 4 OF 64 SHEETS

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INPLACE TYPICAL SECTION



PROPOSED TYPICAL SECTION

NOTES:

DENOTES REMOVAL ①

THE INPLACE DIMENSIONS SHOWN ARE TAKEN FROM THE 1990 PLAN SET AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION BEGINS.

① THE DECK SHALL BE CAREFULLY REMOVED TO AVOID DAMAGE TO INPLACE TOP FLANGE AND SHEAR STUDS. REPLACE IN KIND FOR ANY DAMAGE DURING DECK REMOVAL. INCLUDED IN ITEM "REMOVE CONC. SLAB, OVERLAY & BARRIER".

② SEE FRAMING PLAN FOR LOCATION OF ADDITIONAL SHEAR STUDS.

③ REMOVAL OF STEEL PIPE, BASE PLATES, AND MISC. HARDWARE INCLUDED IN PRICE BID FOR "REMOVE CONC. SLAB, OVERLAY, AND BARRIER". REMOVAL OF LEAD SHEETS INCLUDED IN PRICE BID FOR "LEAD SUBSTANCES COLLECTION AND DISPOSAL".

④ INCLUDES REMOVAL OF LEAD SHEETS AT RAIL POSTS OF NORTH BARRIER AND BEARING ASSEMBLIES AT EAST AND WEST ABUTMENTS.

⑤ SILANE 100 PERCENT.

⑥ INCLUDES 1451 SQ FT ON APPROACH PANELS.

⑦ INCLUDES SAWCUTTING 2' X 2', AND CONCRETE REMOVAL TO TOP LAYER OF REINFORCING BARS IN CRASH STRUT AT EACH INFILL COLUMN.

⑧ INCLUDES SAWCUTTING, CONCRETE REMOVAL, REINFORCING BARS, ANCH TYPE REINFORCING BARS (TYPE NT), AND CONCRETE (3B52).

⑨ INCLUDES 1955 SQ FT ON ROAD AND TRAIL/SIDEWALK SURFACES ON APPROACH PANELS.

⑩ ON APPROACH PANELS.

① CONTRACTOR TO SUBMIT DEMOLITION PLAN TO ENGINEER AND BNSF RR FOR APPROVAL PRIOR TO BEGINNING REMOVAL OPERATIONS. SEE SPECIAL PROVISIONS.

SUMMARY OF ESTIMATED QUANTITIES

	MnDOT ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	
	2013.602	TCLP TEST	EACH	1	
	2104.503	REMOVE CHAIN LINK FENCE	LIN FT	2335	(P)
	2104.518	REMOVE CONCRETE SLOPE PAVING	SQ FT	5040	
	2401.503	TYPE P-1 BARRIER CONCRETE (3S52)	LIN FT	1185	(P)
	2401.503	TYPE S (TL-4) 42" BARRIER CONC (3S52)	LIN FT	1216	(P)
	2401.503	TYPE IOWA BICYCLE PARAPET CONC (3S52)	LIN FT	1193	(P)
	2401.508	REINFORCEMENT BARS (EPOXY COATED)	POUND	592690	(P)
	2401.518	BRIDGE SLAB CONCRETE (3YHPC-S)	SQ FT	58168	(P)
	2401.607	STRUCTURAL CONCRETE (SCC)	CU YD	40	
	2402.508	STRUCTURAL STEEL (3309)	POUND	6100	
	2402.602	SHEAR STUDS	EACH	15018	
⑥	2404.518	CONCRETE WEARING COURSE (3U17A)	SQ FT	40941	(P)
⑦	2433.502	ANCH TYPE REINF BARS (TYPE L)	EACH	64	
	2433.518	REMOVE CONC SLAB; OVERLAY; & BARRIER	SQ FT	61693	(P)
	2433.601	TEMPORARY STRUCTURAL SUPPORT	LUMP SUM	1	
	2433.602	REMOVE DRAINAGE SYSTEM	EACH	9	
	2433.602	CLEAN AND GREASE EXP BEARING ASSEMBLIES	EACH	10	
	2433.602	EMBEDDED GALVANIC ANODE	EACH	340	
	2433.603	REPAIR STRUCTURAL CRACKS	LIN FT	750	
⑧	2433.603	REPAIR PAVING BRACKET	LIN FT	50	
⑧	2433.603	RECONSTRUCT PAVING BRACKET	LIN FT	50	
⑨	2433.618	SILANE 100 PERCENT	SQ FT	55212	(P)
	2433.618	CONCRETE SURFACE REPAIR	SQ FT	500	
	2473.503	EXPANSION JOINT DEVICES TYPE 5	LIN FT	151	(P)
	2473.503	MODULAR BRIDGE JOINT SYSTEM TYPE 9	LIN FT	51	(P)
	2475.503	ORNAMENTAL METAL RAILING TYPE SPECIAL 1	LIN FT	1145	(P)
⑩	2475.503	ORNAMENTAL METAL RAILING DESIGN T-4	LIN FT	42	(P)
④	2476.601	LEAD SUBSTANCES COLLECTION & DISPOSAL	LUMP SUM	1	
	2476.601	WASTE COLLECTION AND DISPOSAL	LUMP SUM	1	
	2478.518	ORGANIC ZINC-RICH PAINT SYSTEM (OLD)	SQ FT	13830	(P)
	2478.618	CLEAN AND PAINT STEEL	SQ FT	8275	
①	~~2514.504~~	~~CONCRETE SLOPE PAVING~~	~~SQ YD~~	~~560~~	
	2563.613	RAILROAD FLAGGING AND PROTECTIVE SERVICES	UNIT DAY	216	

NO.	DATE	BY	DESCRIPTION OF REVISIONS
1	1/7/25	MJC	PAY ITEM REVISION

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SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 1/7/2025 LIC. NO.: 43076

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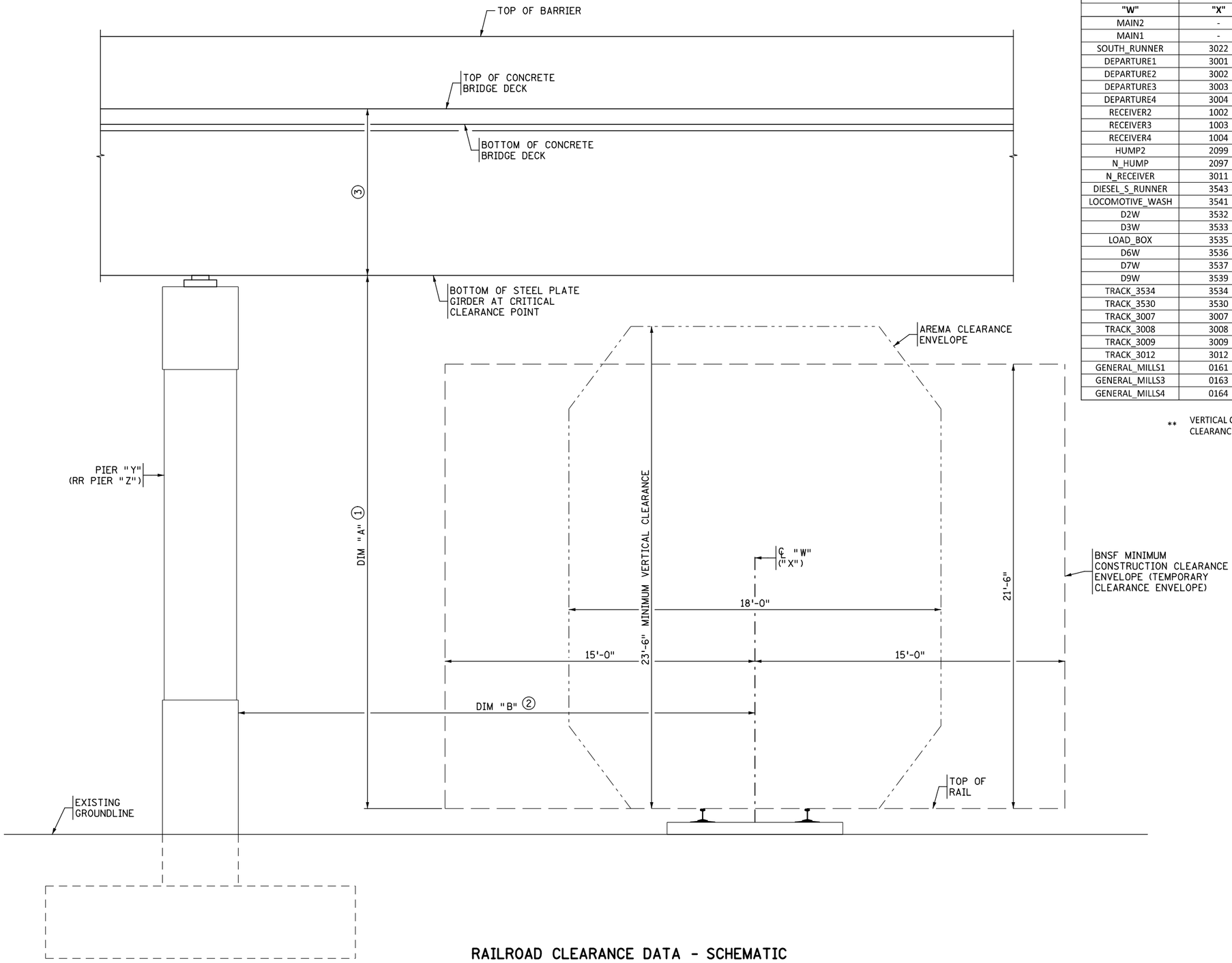
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: TYPICAL SECTIONS

DES: DRH | DR: DRH | APPROVED
CHK: JRM | CHK: MJC
SHEET NO. 5R OF 64 SHEETS

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RAILROAD CLEARANCE DATA - SCHEMATIC

TRACK LABEL	TRACK NO.	VERTICAL CLEARANCE (FT)	PIER LOCATION		HORIZONTAL CLEARANCE (FT)
			COUNTY NO.	RR NO.	
"W"	"X"	DIM "A"	"Y"	"Z"	DIM "B"
MAIN2	-	27.6070	2	7	20.8793
MAIN1	-	28.7197	-	-	-
SOUTH_RUNNER	3022	28.9854	-	-	-
DEPARTURE1	3001	**	-	-	-
DEPARTURE2	3002	**	3	6	10.9156 (4)
DEPARTURE3	3003	**	3	6	10.0096 (4)
DEPARTURE4	3004	**	-	-	-
RECEIVER2	1002	31.9132	-	-	-
RECEIVER3	1003	32.4836	-	-	-
RECEIVER4	1004	32.7587	4	5	26.361
HUMP2	2099	30.8519	4	5	27.3485
N_HUMP	2097	31.0220	-	-	-
N_RECEIVER	3011	33.0669	-	-	-
DIESEL_S_RUNNER	3543	33.5890	-	-	-
LOCOMOTIVE_WASH	3541	34.4784	-	-	-
D2W	3532	34.4419	5	4	14.3686 (4)
D3W	3533	34.2746	5	4	11.0776 (4)
LOAD_BOX	3535	33.7229	-	-	-
D6W	3536	33.7353	-	-	-
D7W	3537	33.1114	-	-	-
D9W	3539	32.8389	-	-	-
TRACK_3534	3534	31.8858	6	3	20.5397
TRACK_3530	3530	**	6	3	17.4395
TRACK_3007	3007	**	-	-	-
TRACK_3008	3008	30.1836	-	-	-
TRACK_3009	3009	**	-	-	-
TRACK_3012	3012	27.9455	-	-	-
GENERAL_MILLS1	0161	27.1149	-	-	-
GENERAL_MILLS3	0163	25.2032	-	-	-
GENERAL_MILLS4	0164	24.1665	7	2	11.5206 (4)

** VERTICAL CLEARANCE DATA NOT AVAILABLE. VERTICAL CLEARANCE ABOVE MINIMUM 23'-4" CLEARANCE BY INSPECTION.

NOTES:

① VERTICAL CLEARANCE GIVEN AT CONTROLLING EDGE OF AREMA CLEARANCE ENVELOPE. DISTANCE IS FROM TOP OF RAIL TO BOTTOM OF STEEL PLATE GIRDER BASED ON LIDAR SURVEY.

② MINIMUM DIMENSION FROM CENTERLINE OF TRACK TO CLOSEST EDGE OF ADJACENT PIER. DISTANCE FROM ℄ OF TRACK BASED ON LIDAR SURVEY.

③ ESTIMATED STRUCTURE DEPTH:
DECK THICKNESS = 9¼"
STOOL HEIGHT = 3¾"
BEAM HEIGHT = 84"+1"+1" (BEAM+FLANGES)
TOTAL HEIGHT = 97" = 8'-3"

④ HORIZONTAL CLEARANCE IS LESS THAN THE MINIMUM CLEARANCE IN THE CONSTRUCTION CLEARANCE ENVELOPE. CONTRACTOR TO COORDINATE WITH BNSF FLAGGER TO OBTAIN ADDITIONAL TRACK PROTECTION AS NECESSARY.

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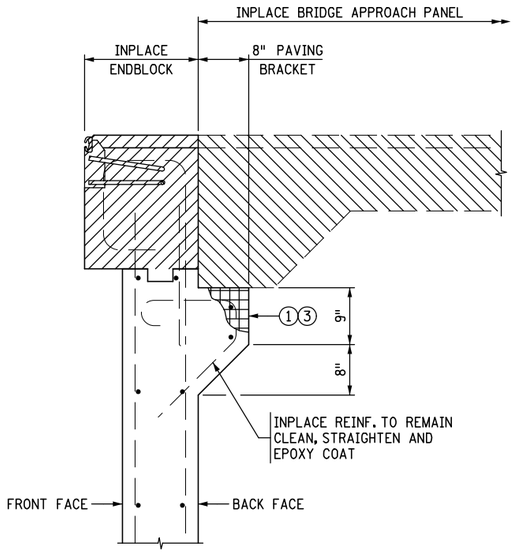
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

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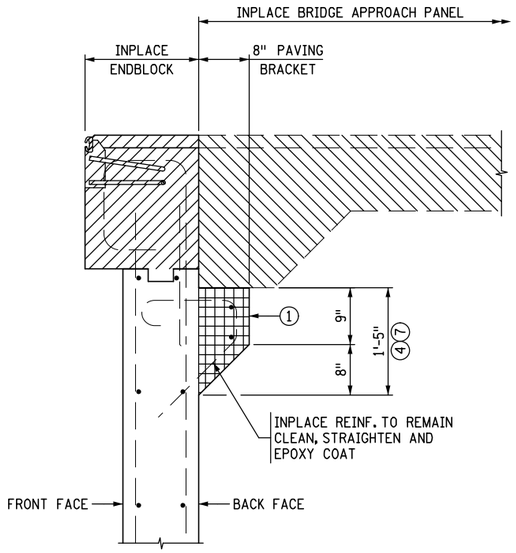
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CHK: JRM	CHK: MJC	

SHEET NO. 6 OF 64 SHEETS

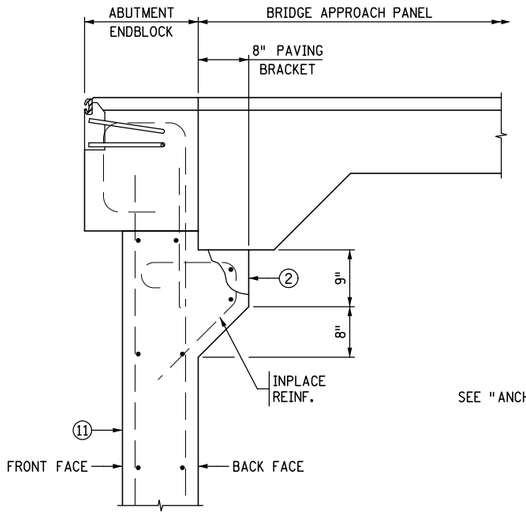
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INPLACE SECTION - REMOVALS



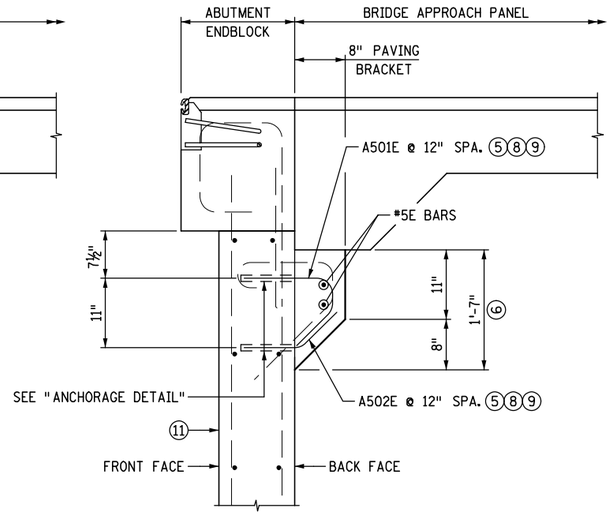
INPLACE SECTION - REMOVALS



PROPOSED SECTION - REPAIR

REPAIR PAVING BRACKET ③

EAST ABUTMENT SHOWN, WEST ABUTMENT SIMILAR



PROPOSED SECTION - RECONSTRUCT

RECONSTRUCT PAVING BRACKET ⑦⑩

EAST ABUTMENT SHOWN, WEST ABUTMENT SIMILAR

REPAIR/RECONSTRUCT PAVING BRACKET NOTES:

DENOTES REMOVE CONCRETE BRIDGE DECK. INCLUDED IN PRICE BID FOR "REMOVE CONC SLAB; OVERLAY; AND BARRIER".

DENOTES REMOVE CONCRETE APPROACH PANEL. INCLUDED IN PRICE BID FOR "REMOVE CONCRETE APPROACH PANEL".

DENOTES REMOVAL OF CONCRETE PAVING BRACKET. INCLUDED IN PRICE BID FOR "REPAIR PAVING BRACKET" OR "RECONSTRUCT PAVING BRACKET".

① REMOVE ANY DETERIORATED AREAS OF PAVING BRACKET TO SOUND CONCRETE IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

② REPLACE REMOVED CONCRETE WITH CONCRETE MIX 3B52. COAT SURFACE OF EXISTING CONCRETE WITH BONDING GROUT PER THE SPECIAL PROVISIONS.

③ INCLUDED IN PRICE BID FOR "REPAIR PAVING BRACKET".

④ REMOVE PAVING BRACKET IN ITS ENTIRETY TO SOUND CONCRETE IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

⑤ SUPPLEMENT INPLACE REINFORCEMENT AS NEEDED WITH NEW BARS AND ADHESIVE ANCHORS. PROVIDE 2" CLEAR (TYPICAL).

⑥ REPLACE REMOVED CONCRETE WITH CONCRETE MIX 3B52. COAT SURFACE OF EXISTING CONCRETE WITH BONDING GROUT PER THE SPECIAL PROVISIONS PRIOR TO CASTING.

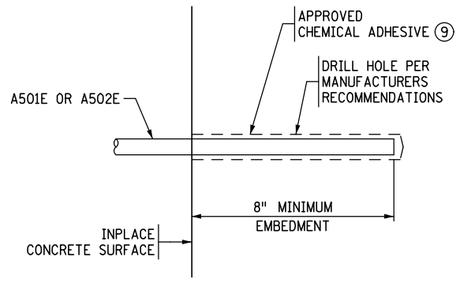
⑦ INCLUDED IN PRICE BID FOR "RECONSTRUCT PAVING BRACKET" EXCEPT AS NOTED.

⑧ A501E AND A502E ANCHORAGE BARS, DRILLING, ADHESIVE, AND INSTALLATION INCLUDED IN PRICE BID FOR "REPAIR PAVING BRACKET" OR "RECONSTRUCT PAVING BRACKET".

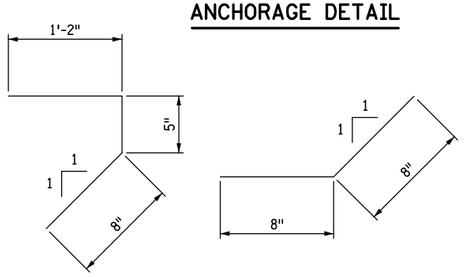
⑨ PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.0 KSI. EMBED THE ANCHOR NO LESS THAN 8". PROOF LOAD TO 2.2 KIPS REGARDLESS OF CHARACTERISTIC BOND STRENGTH. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS. PRIOR TO DRILLING HOLES FOR ANCHORAGE'S, LOCATE THE INPLACE REINFORCEMENT USING NON -DESTRUCTIVE METHODS. ADJUST ANCHOR LOCATION IF THERE IS A CONFLICT WITH THE INPLACE REINFORCEMENT. INCLUDED IN PRICE BID FOR "REPAIR PAVING BRACKET" OR "RECONSTRUCT PAVING BRACKET".

⑩ PROVIDE SUPPLEMENTAL #5 EPOXY COATED BARS WHEN THE LENGTH OF AN AREA EXCEEDS 18" ALONG THE LENGTH OF THE ABUTMENT. SUPPLEMENTAL REINF. INCLUDED IN PRICE BID FOR "RECONSTRUCT PAVING BRACKET."

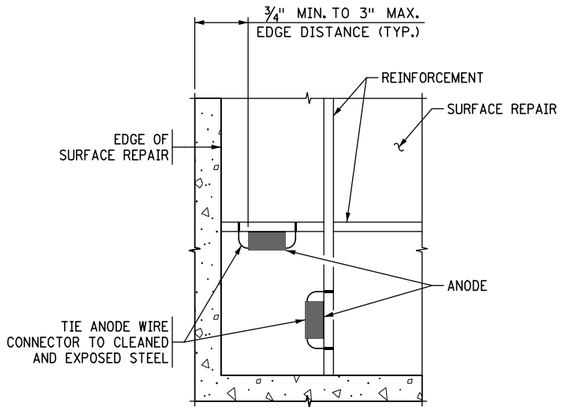
⑪ UNSOUND CONCRETE ON ABUTMENTS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 QUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".



ANCHORAGE DETAIL



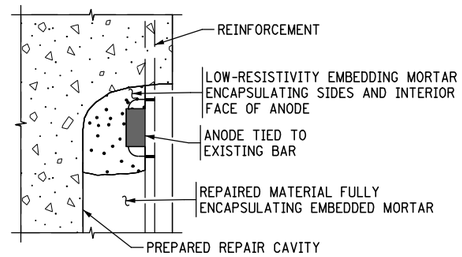
A501E **A502E**



ANODE DETAIL

NOTES:

1. MAINTAIN MINIMUM ¾" COVER OVER ANODE, AND EMBEDDING MORTAR (IF REQUIRED).
2. MINIMUM OF TWO ELECTRICAL CONNECTIONS PER ANODE.
3. WHERE REINFORCEMENT IS CORRODED AND SUPPLEMENTED WITH NEW EPOXY COATED REINFORCEMENT, ELECTRICAL CONNECTION SHALL BE MADE TO ADJACENT REINFORCEMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR SUPPLEMENTAL CONNECTIONS. COST INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".
4. DISCRETE ANODES CAN BE PLACED ON TOP OR ON SIDES OF REINFORCEMENT, AS NECESSARY FOR INSTALLATION PER SPECIAL PROVISIONS AND MANUFACTURER'S RECOMMENDATIONS.
5. IF REQUIRED BASED ON REPAIR MATERIAL PROPERTIES (SEE SPECIAL PROVISIONS), LOW-RESISTIVITY EMBEDDING MORTAR BETWEEN ANODE AND ORIGINAL CONCRETE SHALL BE USED. SEE ANODE ENCASEMENT DETAIL.
6. NEW EPOXY COATED REBAR TO REMAIN ELECTRICALLY DISCONTINUOUS FROM EXISTING, UNCOATED REINFORCEMENT.



ANODE ENCASEMENT DETAIL

NOTES:

1. IF REQUIRED BASED ON REPAIR MATERIAL PROPERTIES, LOW-RESISTIVITY EMBEDDING MORTAR SHALL BE USED. REFER TO SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
2. EMBEDDING MORTAR SHALL BE PLACED ON PREPARED CONCRETE SUBSTRATE AND ANODES SHALL BE PLACED IN EMBEDDING MORTAR SUCH THAT CONTACT BETWEEN NEW ANODE AND EXISTING CONCRETE SUBSTRATE IS ACHIEVED. EMBEDDING MORTAR SHALL ENCAPSULATE SIDES AND INTERIOR FACE OF ANODE, EXTENDING MIN. 2" AROUND ANODE AND TO SURFACE OF PREPARED CONCRETE SUBSTRATE IF WITHIN 3" OF ANODE. EMBEDDING MORTAR AND ANODES SHALL BE FULL ENCAPSULATED BY REPAIR MATERIAL.

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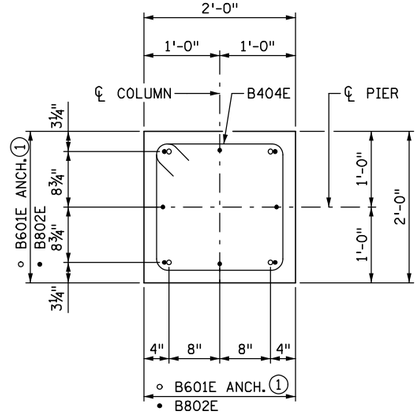
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DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

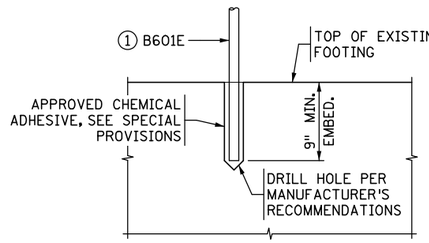
SHEET NO. 7 OF 64 SHEETS

BRIDGE NO. 02523

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SECTION A-A



ANCHORAGE DETAIL

INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)"

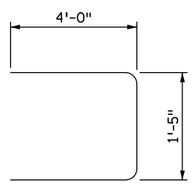
BILL OF REINFORCEMENT - PIER 1

	PIER 1				
	BAR	NO.	LENGTH	SHAPE	LOCATION
①	B601E	8	4'-4"	——	CRASH STRUT ANCHORAGE
	B802E	16	11'-10"	——	COLUMN - VERTICAL
	B803E	4	9'-5"	⊏	COLUMN - TOP TIE
	B404E	26	7'-5"	▭	COLUMN - TIE

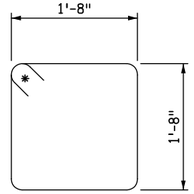
BAR BENDING NOTES:

BENT BAR DIMENSIONS ARE GIVEN OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAM.

✱ DENOTES STANDARD STIRRUP HOOK



B803E



B404E

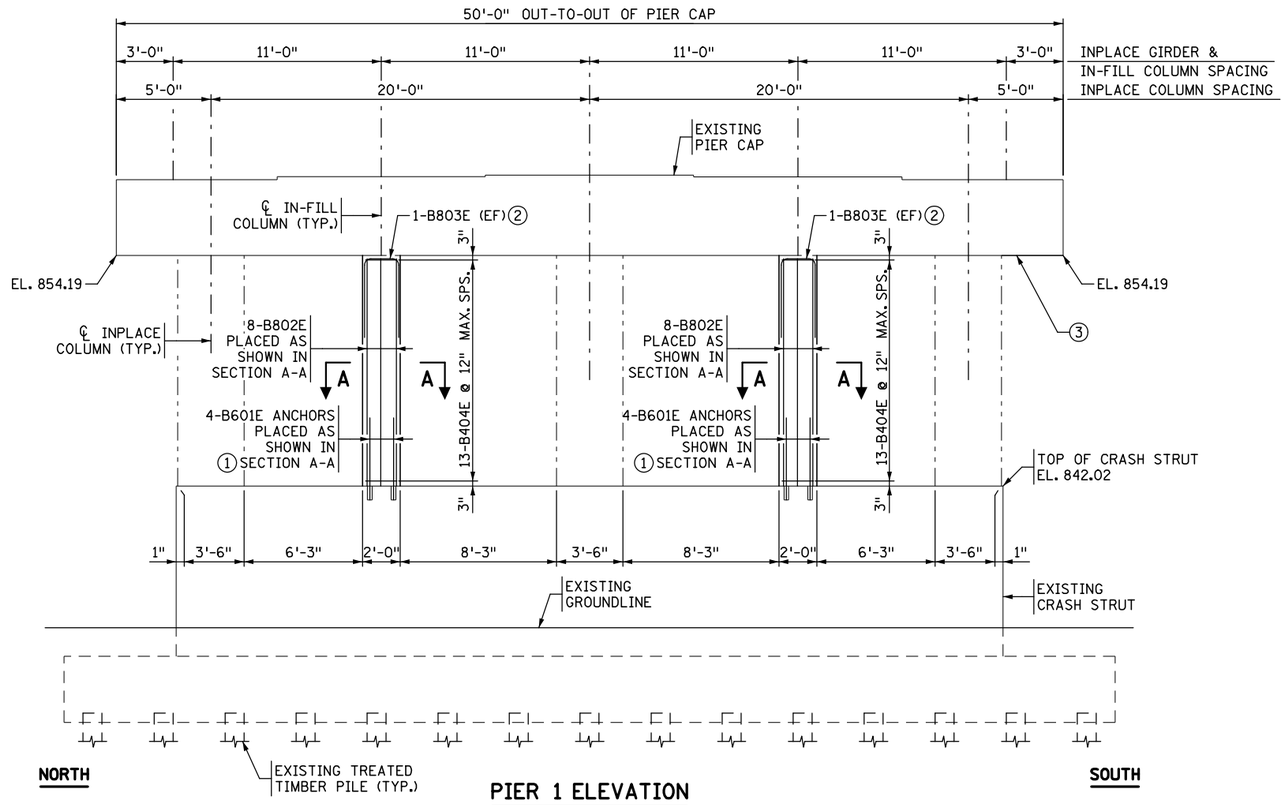
NOTES:

ELEVATIONS PROVIDED ARE TAKEN FROM THE ORIGINAL BRIDGE PLANS AND SHOULD BE USED AS A REFERENCE TO CONSTRUCT THE IN-FILL COLUMNS AND NOT TO ESTABLISH THE PROPOSED PROFILE GRADE. THE FINAL PROFILE GRADE IS DEPENDENT ON FINAL BEAM CAMBER AND SURVEY DATA AFTER THE EXISTING BRIDGE DECK IS REMOVED.

① PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.0 KSI. EMBED THE ANCHORAGE NO LESS THAN DESCRIBED IN THE ANCHORAGE DETAIL REGARDLESS OF THE CHARACTERISTIC BOND STRENGTH. STOP DRILLING AND CONTACT ENGINEER IF REINFORCEMENT IN ENCOUNTERED DURING DRILLING. INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)".

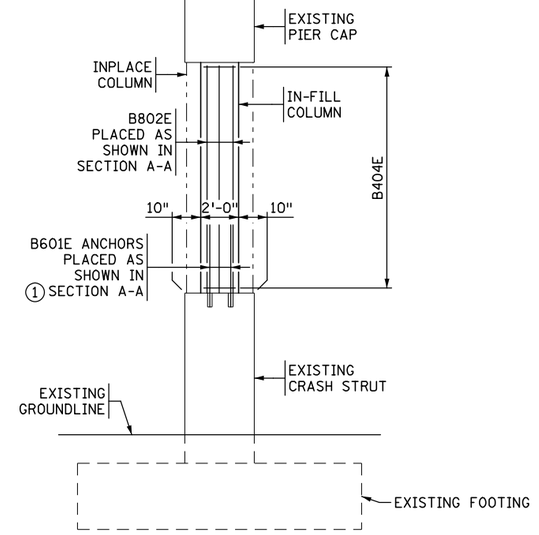
② PULL UP TO 2" CLEAR FROM INPLACE PIER CAP.

③ UNSOUND CONCRETE ON PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 QUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".



PIER 1 ELEVATION

(RR PIER 8)



IN-FILL COLUMN TYPICAL SECTION

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

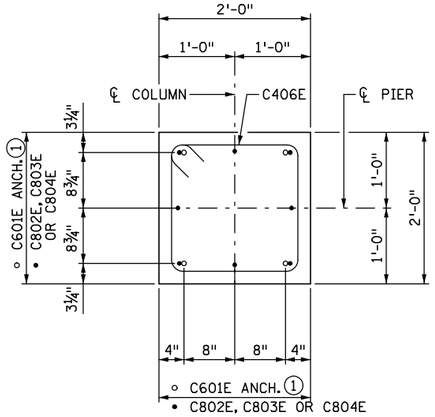
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: PIER 1 IN-FILL COLUMNS

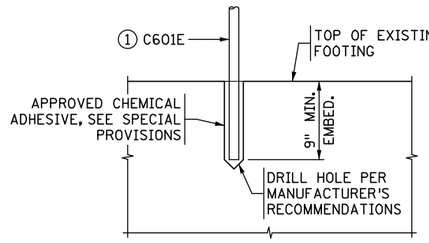
DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 8 OF 64 SHEETS

BRIDGE NO. 02523



SECTION A-A



ANCHORAGE DETAIL

INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)"

BILL OF REINFORCEMENT - PIER 2

	PIER 2				
	BAR	NO.	LENGTH	SHAPE	LOCATION
①	C601E	12	4'-4"	———	CRASH STRUT ANCHORAGE
	C802E	8	13'-8"	———	COLUMN - VERTICAL
	C803E	8	14'-3"	———	COLUMN - VERTICAL
	C804E	8	14'-11"	———	COLUMN - VERTICAL
	C805E	6	9'-5"	⊏	COLUMN - TOP TIE
	C406E	47	7'-5"	▭	COLUMN - TIE

BAR BENDING NOTES:

BENT BAR DIMENSIONS ARE GIVEN OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAM.

✱ DENOTES STANDARD STIRRUP HOOK

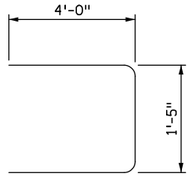
NOTES:

ELEVATIONS PROVIDED ARE TAKEN FROM THE ORIGINAL BRIDGE PLANS AND SHOULD BE USED AS A REFERENCE TO CONSTRUCT THE IN-FILL COLUMNS AND NOT TO ESTABLISH THE PROPOSED PROFILE GRADE. THE FINAL PROFILE GRADE IS DEPENDENT ON FINAL BEAM CAMBER AND SURVEY DATA AFTER THE EXISTING BRIDGE DECK IS REMOVED.

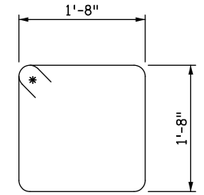
① PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.0 KSI. EMBED THE ANCHORAGE NO LESS THAN DESCRIBED IN THE ANCHORAGE DETAIL REGARDLESS OF THE CHARACTERISTIC BOND STRENGTH. STOP DRILLING AND CONTACT ENGINEER IF REINFORCEMENT IN ENCOUNTERED DURING DRILLING. INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)".

② PULL UP TO 2" CLEAR FROM INPLACE PIER CAP.

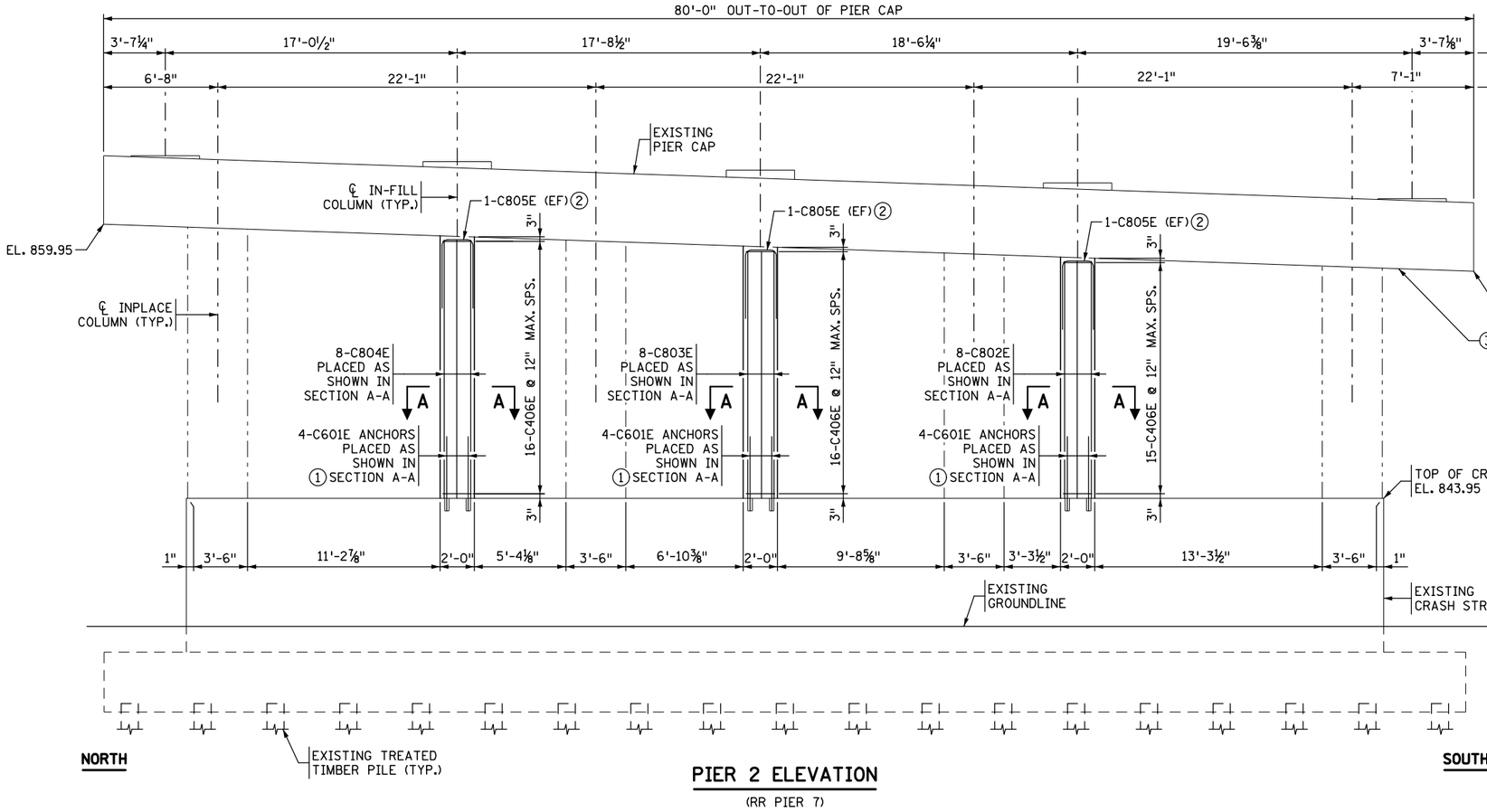
③ UNSOUND CONCRETE ON PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 QUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".



C805E

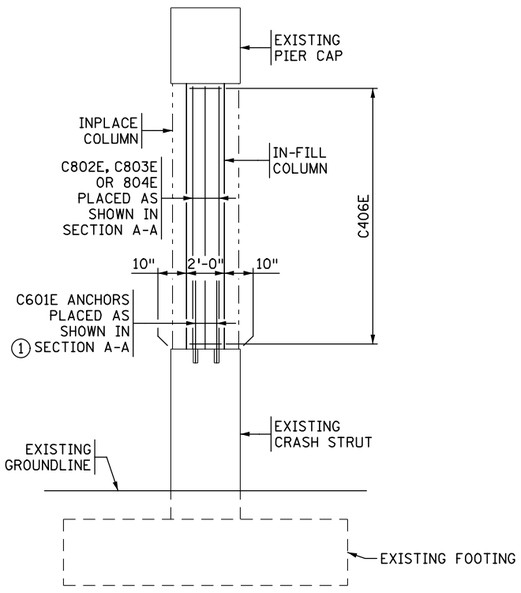


C406E



PIER 2 ELEVATION

(RR PIER 7)



IN-FILL COLUMN TYPICAL SECTION

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

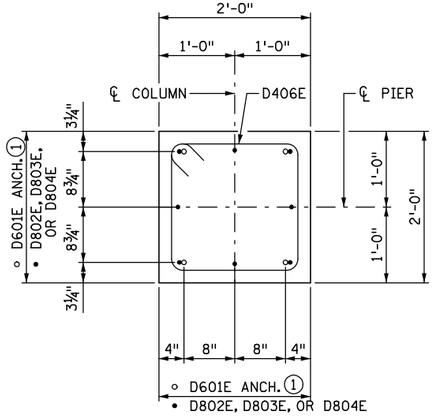
TITLE: PIER 2 IN-FILL COLUMNS

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

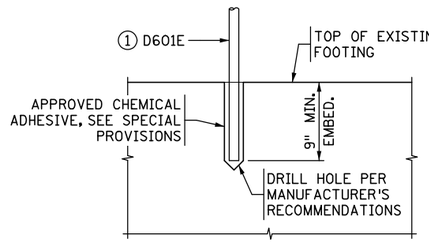
SHEET NO. 9 OF 64 SHEETS

BRIDGE NO. 02523

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SECTION A-A



ANCHORAGE DETAIL

INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)"

BILL OF REINFORCEMENT - PIER 3

	PIER 3				
	BAR	NO.	LENGTH	SHAPE	LOCATION
①	D601E	12	4'-4"	——	CRASH STRUT ANCHORAGE
	D802E	8	18'-11"	——	COLUMN - VERTICAL
	D803E	8	19'-2"	——	COLUMN - VERTICAL
	D804E	8	19'-5"	——	COLUMN - VERTICAL
	D805E	6	9'-5"	⊏	COLUMN - TOP TIE
	D406E	62	7'-5"	▭	COLUMN - TIE

BAR BENDING NOTES:

BENT BAR DIMENSIONS ARE GIVEN OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAM.

✱ DENOTES STANDARD STIRRUP HOOK

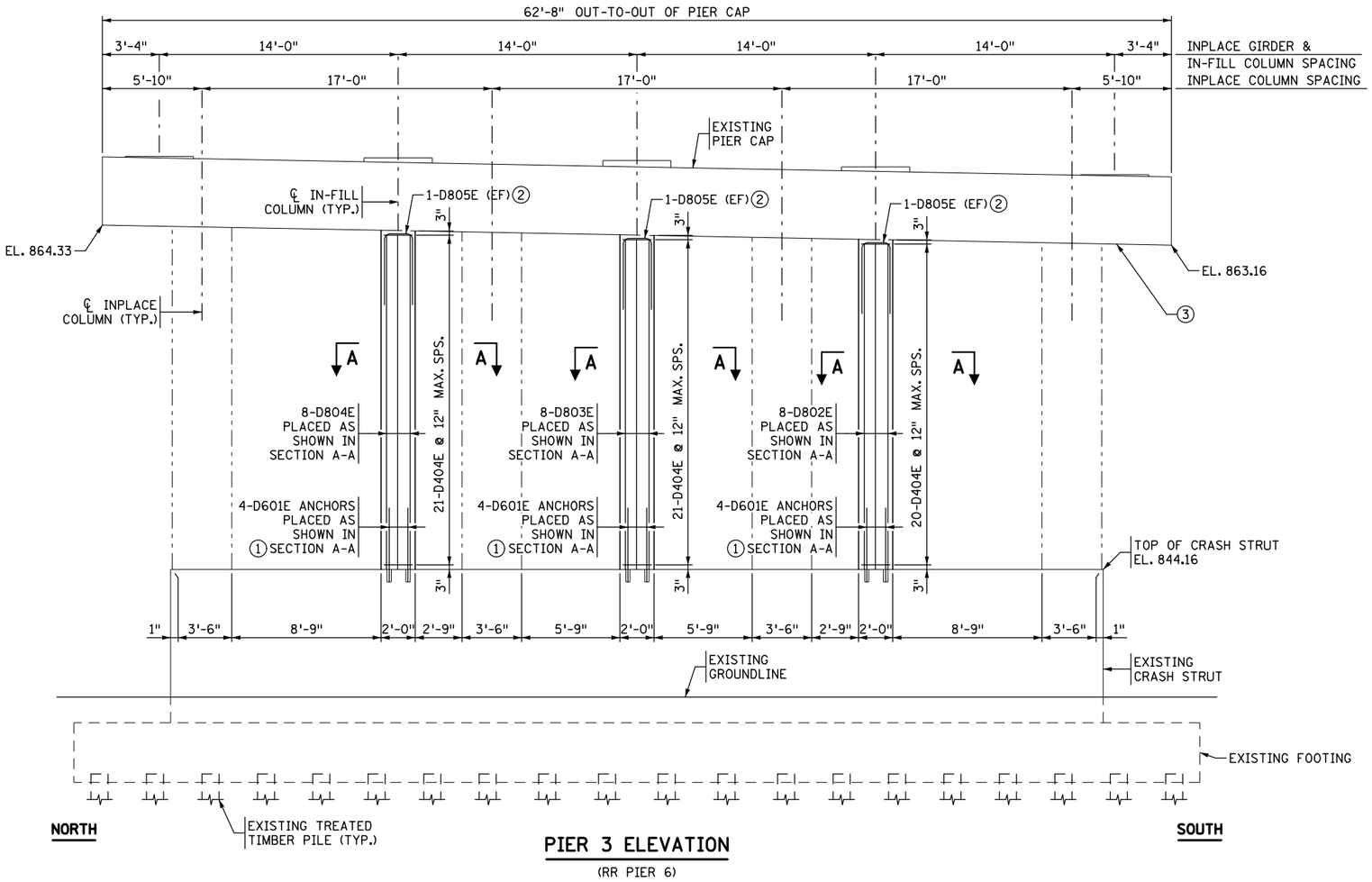
NOTES:

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① PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.0 KSI. EMBED THE ANCHORAGE NO LESS THAN DESCRIBED IN THE ANCHORAGE DETAIL REGARDLESS OF THE CHARACTERISTIC BOND STRENGTH. STOP DRILLING AND CONTACT ENGINEER IF REINFORCEMENT IN ENCOUNTERED DURING DRILLING. INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)".

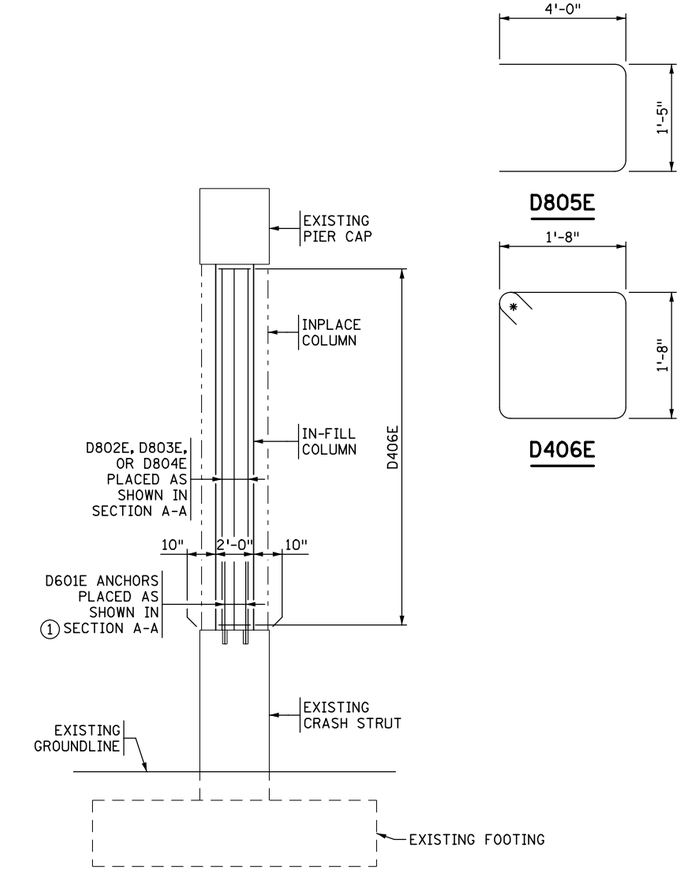
② PULL UP TO 2" CLEAR FROM INPLACE PIER CAP.

③ UNSOUND CONCRETE ON PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 QUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".



PIER 3 ELEVATION

(RR PIER 6)



IN-FILL COLUMN TYPICAL SECTION

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

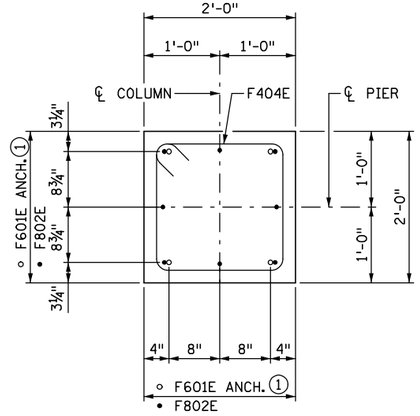
TITLE: PIER 3 IN-FILL COLUMNS

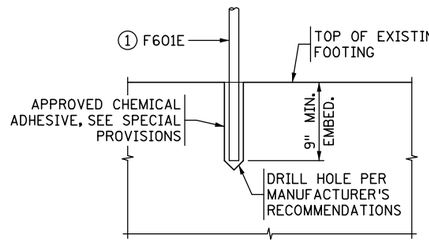
DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 10 OF 64 SHEETS

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:16:56 AM
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ANCHORAGE DETAIL

INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)"

BILL OF REINFORCEMENT - PIER 4

	PIER 4				
	BAR	NO.	LENGTH	SHAPE	LOCATION
(1)	F601E	8	4'-4"	——	CRASH STRUT ANCHORAGE
	F802E	16	18'-7"	——	COLUMN - VERTICAL
	F803E	4	9'-5"	⊏	COLUMN - TOP TIE
	F404E	40	7'-5"	▭	COLUMN - TIE

BAR BENDING NOTES:

BENT BAR DIMENSIONS ARE GIVEN OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAM.

* DENOTES STANDARD STIRRUP HOOK

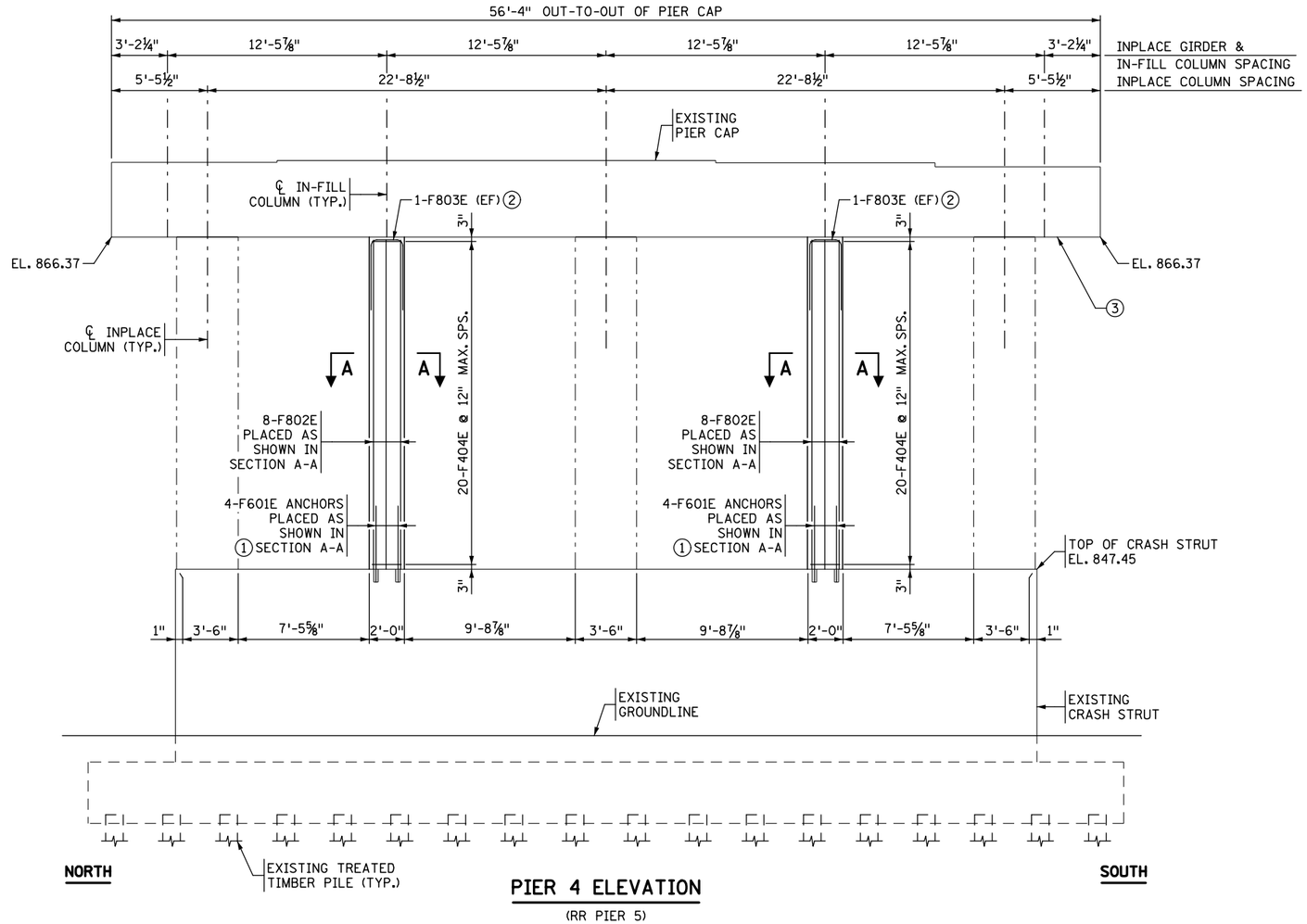
NOTES:

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(1) PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.0 KSI. EMBED THE ANCHORAGE NO LESS THAN DESCRIBED IN THE ANCHORAGE DETAIL REGARDLESS OF THE CHARACTERISTIC BOND STRENGTH. STOP DRILLING AND CONTACT ENGINEER IF REINFORCEMENT IN ENCOUNTERED DURING DRILLING. INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)".

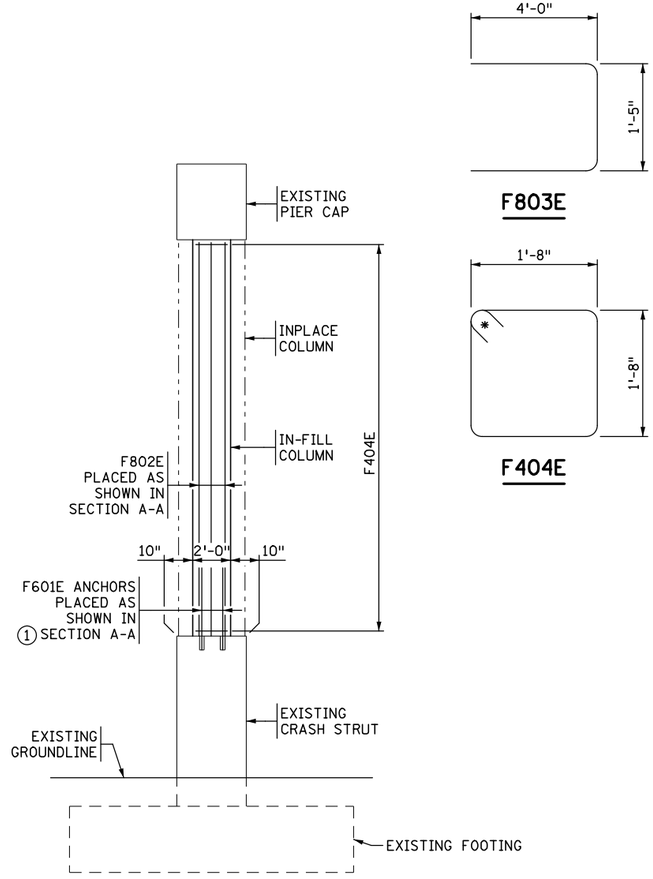
(2) PULL UP TO 2" CLEAR FROM INPLACE PIER CAP.

(3) UNSOUND CONCRETE ON PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 QUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".



PIER 4 ELEVATION

(RR PIER 5)



IN-FILL COLUMN TYPICAL SECTION

F803E

F404E

DATE: 11/6/2024 TIME: 9:17:00 AM
FILENAME: pw:\\tkda-pw.bentley.com\tkda-pw-01\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CAD\Bridge\Pier\CBR02523_pir04.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

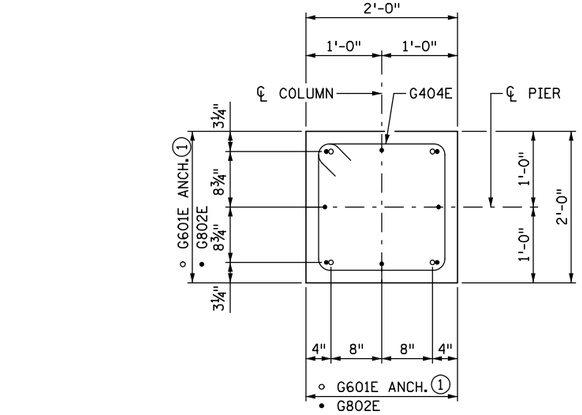
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

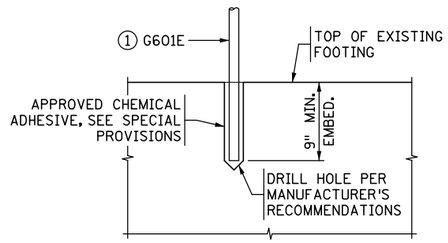
TITLE:
PIER 4 IN-FILL COLUMNS

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 11 OF 64 SHEETS

BRIDGE NO. 02523





ANCHORAGE DETAIL

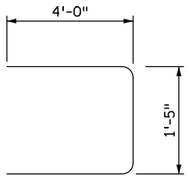
INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)"

BILL OF REINFORCEMENT - PIER 5				
PIER 5				
BAR	NO.	LENGTH	SHAPE	LOCATION
① G601E	8	4'-4"	——	CRASH STRUT ANCHORAGE
G802E	16	21'-8"	——	COLUMN - VERTICAL
G803E	4	9'-5"	⊏	COLUMN - TOP TIE
G404E	46	7'-5"	▭	COLUMN - TIE

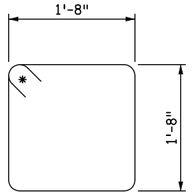
BAR BENDING NOTES:

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✱ DENOTES STANDARD STIRRUP HOOK



G803E



G404E

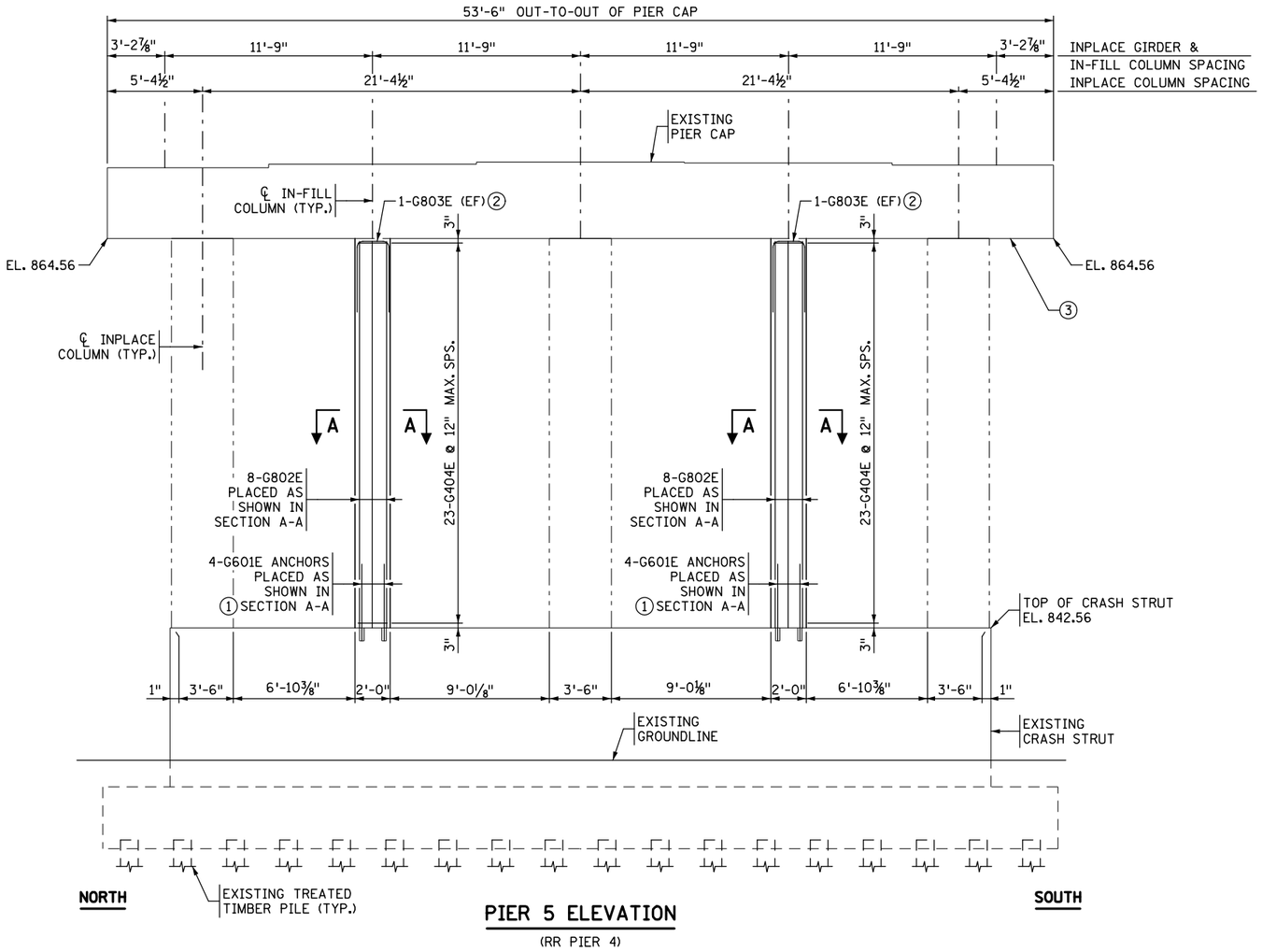
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② PULL UP TO 2" CLEAR FROM INPLACE PIER CAP.

③ UNSOUND CONCRETE ON PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 QUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".



PIER 5 ELEVATION

(RR PIER 4)

IN-FILL COLUMN TYPICAL SECTION

DATE: 11/6/2024 TIME: 9:17:04 AM
FILENAME: pw:\\tkda-pw.bentley.com:tkda-pw-01\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CAD\Bridge\Pier\CBR02523_pir05.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

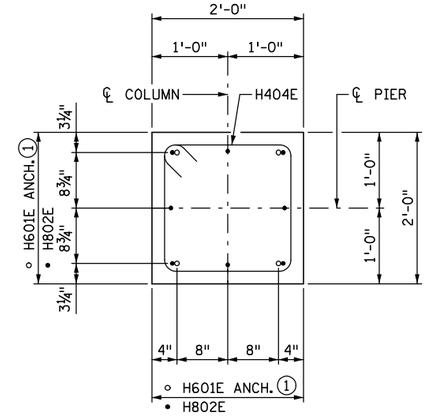
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

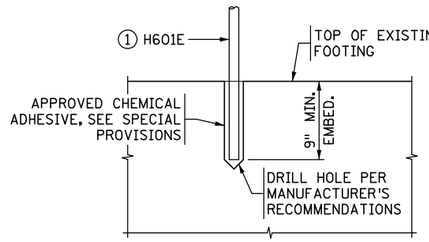
TITLE: PIER 5 IN-FILL COLUMNS

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 12 OF 64 SHEETS

BRIDGE NO. 02523





ANCHORAGE DETAIL

INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)"

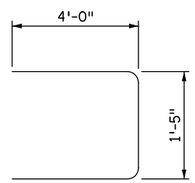
BILL OF REINFORCEMENT - PIER 6

	PIER 6				
	BAR	NO.	LENGTH	SHAPE	LOCATION
①	H601E	8	4'-4"	——	CRASH STRUT ANCHORAGE
	H802E	16	18'-8"	——	COLUMN - VERTICAL
	H803E	4	9'-5"	⊏	COLUMN - TOP TIE
	H404E	40	7'-5"	▭	COLUMN - TIE

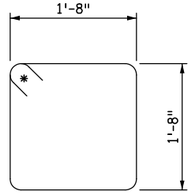
BAR BENDING NOTES:

BENT BAR DIMENSIONS ARE GIVEN OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAM.

* DENOTES STANDARD STIRRUP HOOK



H803E



H404E

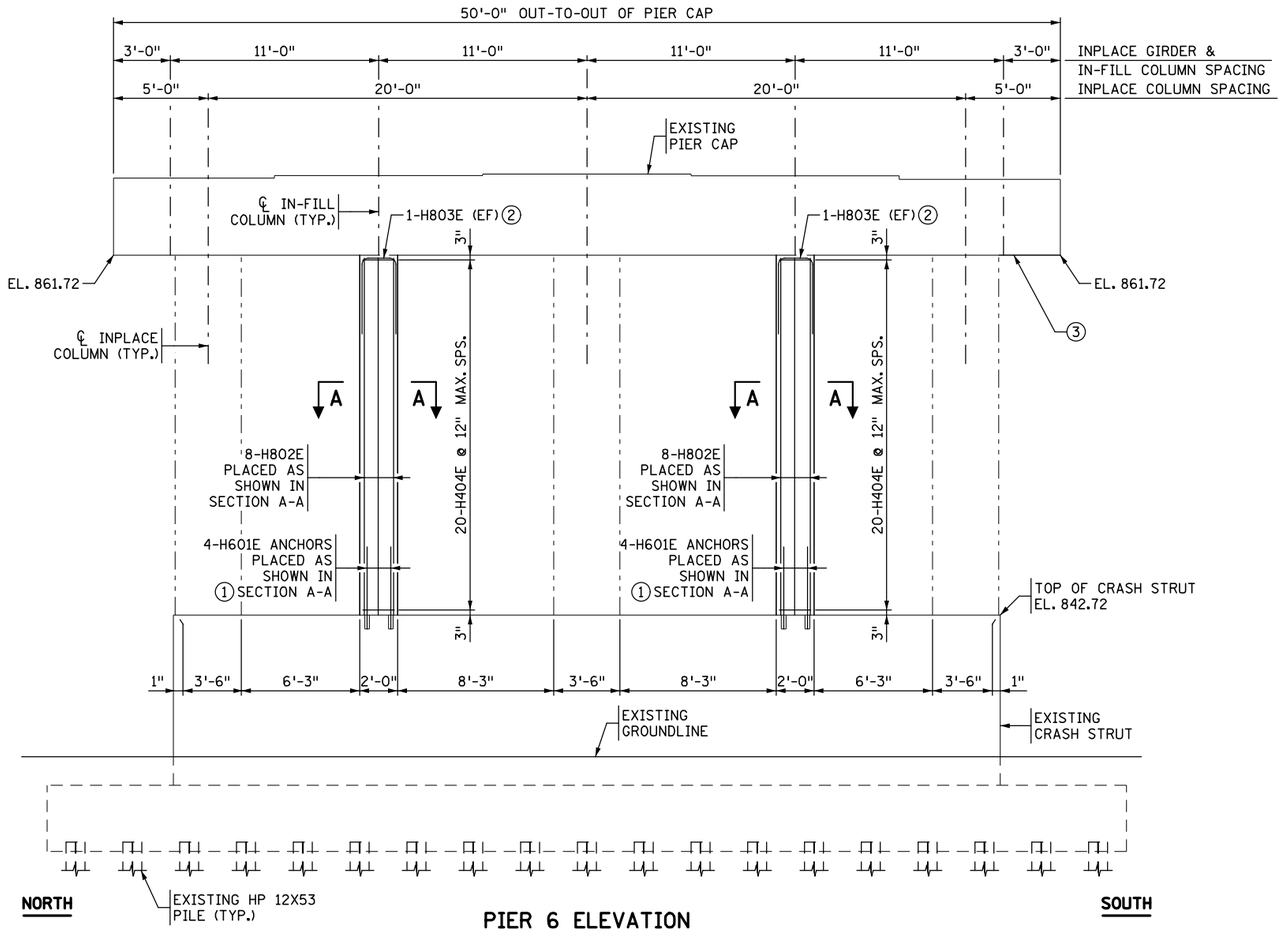
NOTES:

ELEVATIONS PROVIDED ARE TAKEN FROM THE ORIGINAL BRIDGE PLANS AND SHOULD BE USED AS A REFERENCE TO CONSTRUCT THE IN-FILL COLUMNS AND NOT TO ESTABLISH THE PROPOSED PROFILE GRADE. THE FINAL PROFILE GRADE IS DEPENDENT ON FINAL BEAM CAMBER AND SURVEY DATA AFTER THE EXISTING BRIDGE DECK IS REMOVED.

① PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.0 KSI. EMBED THE ANCHORAGE NO LESS THAN DESCRIBED IN THE ANCHORAGE DETAIL REGARDLESS OF THE CHARACTERISTIC BOND STRENGTH. STOP DRILLING AND CONTACT ENGINEER IF REINFORCEMENT IN ENCOUNTERED DURING DRILLING. INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)".

② PULL UP TO 2" CLEAR FROM INPLACE PIER CAP.

③ UNSOUND CONCRETE ON PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 QUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".



PIER 6 ELEVATION

(RR PIER 3)

IN-FILL COLUMN TYPICAL SECTION

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

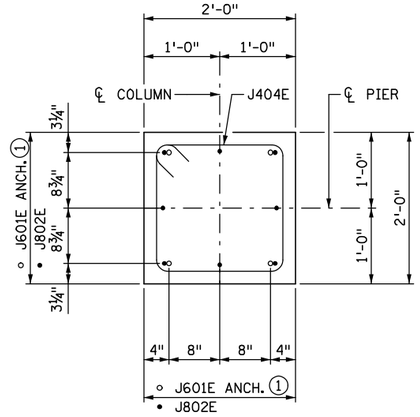
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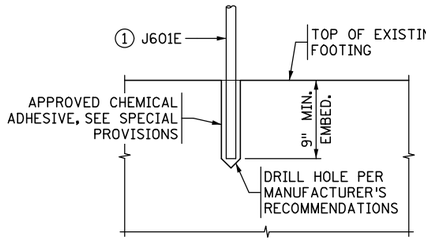
DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 13 OF 64 SHEETS

BRIDGE NO. 02523

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ANCHORAGE DETAIL

INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)"

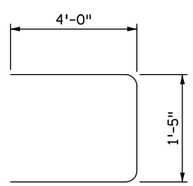
BILL OF REINFORCEMENT - PIER 7

	PIER 7				
	BAR	NO.	LENGTH	SHAPE	LOCATION
①	J601E	8	4'-4"	——	CRASH STRUT ANCHORAGE
	J802E	16	10'-8"	——	COLUMN - VERTICAL
	J803E	4	9'-5"	⊏	COLUMN - TOP TIE
	J404E	24	7'-5"	▭	COLUMN - TIE

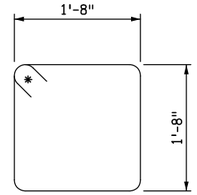
BAR BENDING NOTES:

BENT BAR DIMENSIONS ARE GIVEN OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAM.

✱ DENOTES STANDARD STIRRUP HOOK



J803E



J404E

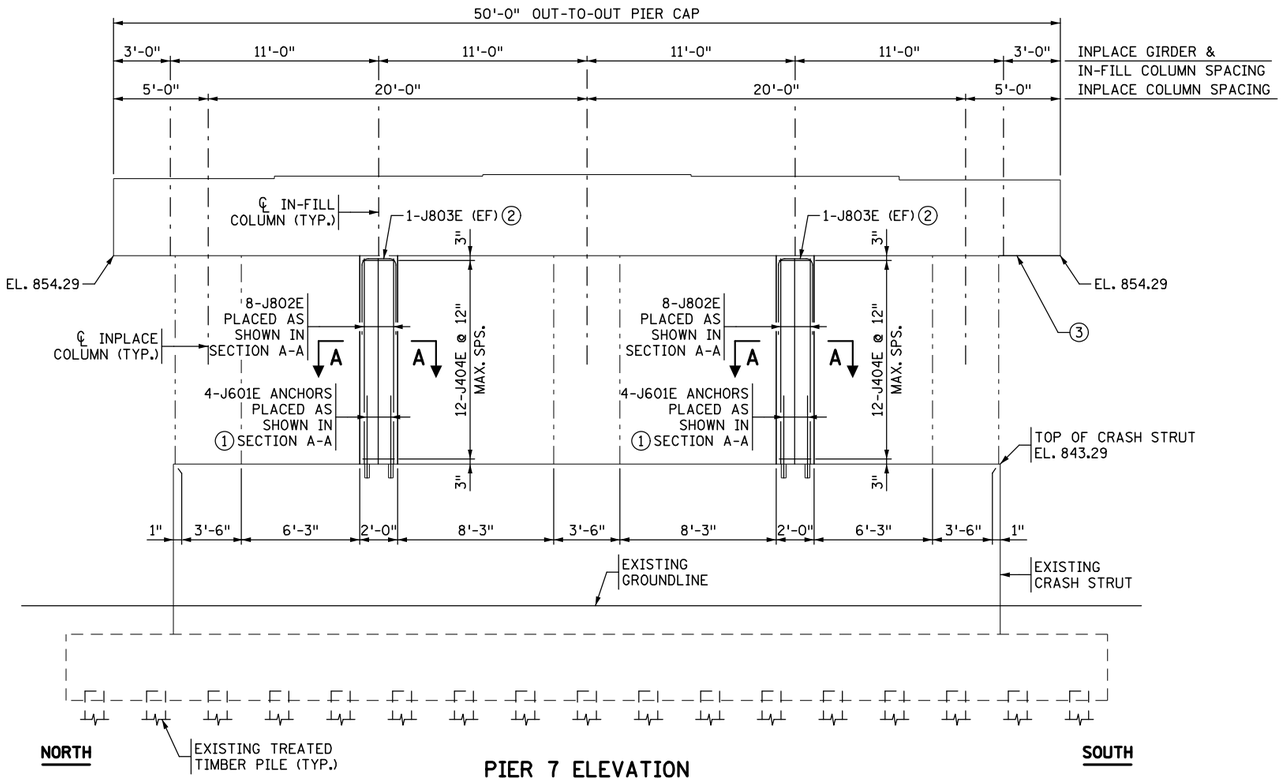
NOTES:

ELEVATIONS PROVIDED ARE TAKEN FROM THE ORIGINAL BRIDGE PLANS AND SHOULD BE USED AS A REFERENCE TO CONSTRUCT THE IN-FILL COLUMNS AND NOT TO ESTABLISH THE PROPOSED PROFILE GRADE. THE FINAL PROFILE GRADE IS DEPENDENT ON FINAL BEAM CAMBER AND SURVEY DATA AFTER THE EXISTING BRIDGE DECK IS REMOVED.

① PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.0 KSI. EMBED THE ANCHORAGE NO LESS THAN DESCRIBED IN THE ANCHORAGE DETAIL REGARDLESS OF THE CHARACTERISTIC BOND STRENGTH. STOP DRILLING AND CONTACT ENGINEER IF REINFORCEMENT IN ENCOUNTERED DURING DRILLING. INCLUDED IN ITEM "ANCH TYPE REINF BARS (TYPE L)".

② PULL UP TO 2" CLEAR FROM INPLACE PIER CAP.

③ UNSOUND CONCRETE ON PIERS SHALL BE REMOVED AND REPAIRED. COORDINATE REMOVAL AREAS WITH ENGINEER. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". PROVIDE GALVANIC ANODES IN CONCRETE SURFACE REPAIR AREAS AT A RATE OF 1 ANODE PER 1.5 QUARE FEET OF CONCRETE SURFACE REPAIR. INCLUDED IN ITEM "EMBEDDED GALVANIC ANODE".



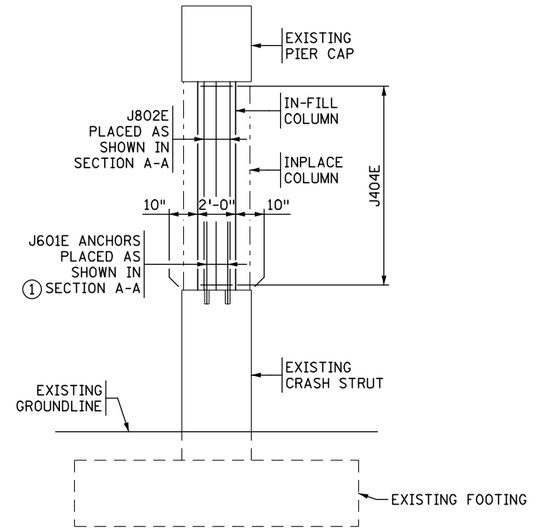
PIER 7 ELEVATION

(RR PIER 2)

ESTIMATED QUANTITIES FOR SUBSTRUCTURES

	ITEM DESCRIPTION	UNIT	PIER 1	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	PIER 7	TOTAL
	REINFORCEMENT BARS (EPOXY COATED)	POUND	740	1300	1690	1100	1260	1100	680	7870
	STRUCTURAL CONCRETE (SCC)	CU YD	3.6	6.5	8.7	5.6	6.5	5.6	3.3	40
	ANCH TYPE REINF BARS (TYPE L)	EACH	8	12	12	8	8	8	8	64
①	REMOVE DRAINAGE SYSTEM	EACH	1	2		2		2	2	9

① SEE FRAMING PLAN SHEETS AND SPECIAL PROVISIONS



IN-FILL COLUMN SECTION

DATE: 11/6/2024 TIME: 9:17:11 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

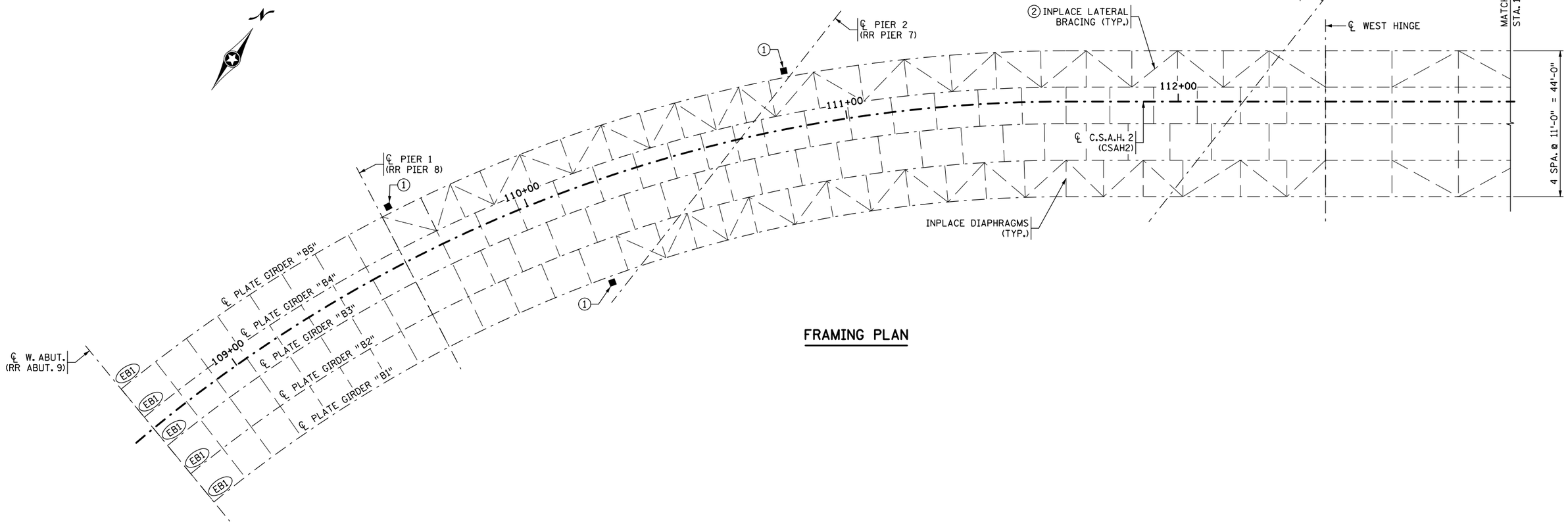
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE:
PIER 7 IN-FILL COLUMNS

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 14 OF 64 SHEETS

BRIDGE NO. 02523



FRAMING PLAN

NOTES:

IN PLACE DIMENSIONS ARE TAKEN FROM 1972 AND 1990 PLAN SETS FOR BRIDGE 02523 AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION BEGINS.

PROVIDE TEMPORARY STRUCTURAL SUPPORT TO SUPERSTRUCTURE (AFTER DECK REMOVALS) FOR CLEAN AND GREASE EXPANSION BEARINGS AND REMOVE SHEET LEAD. SUBMIT PLAN TO ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK. INCLUDED IN PRICE BID FOR "TEMPORARY STRUCTURAL SUPPORT".

(1) REMOVE DOWNSPOUT, PIPING, FITTINGS, AND CONCRETE SPLASH BLOCK ATTACHED TO PIER. INCLUDED IN PRICE BID FOR "REMOVE DRAINAGE SYSTEM".

(2) CONTRACTOR TO COORDINATE WITH ENGINEER TO LOCATE AREAS OF DAMAGED LATERAL BRACING PRIOR TO REMOVAL OPERATIONS. IF DAMAGED LATERAL BRACING IS IDENTIFIED THE CONTRACTOR SHALL REPLACE THE DAMAGED LATERAL BRACING. LATERAL BRACING REPLACEMENTS WILL BE PAID AT THE PRICE BID FOR "STRUCTURAL STEEL (3309)". SEE NOTE 5 ON "FRAMING PLAN (2 OF 3)" SHEET FOR ADDITIONAL DETAILS.

(EB1) CLEAN AND GREASE EXPANSION BEARINGS AND REMOVE SHEET LEAD. (3) INCLUDED IN PRICE BID FOR "CLEAN AND GREASE EXP BEARING ASSEMBLIES", "TEMPORARY STRUCTURAL SUPPORT" AND "LEAD SUBSTANCES COLLECTION & DISPOSAL".

(3) PROVIDE 1/8 INCH 60 DUROMETER PLAIN ELASTOMERIC PAD OR PREFORMED FABRIC PAD MEETING AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATION SECTION 18.10. WAIVE THE SAMPLING AND TESTING REQUIREMENTS UNDER 3741, "ELASTOMERIC BEARING PADS," WAND AASHTO M 251.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

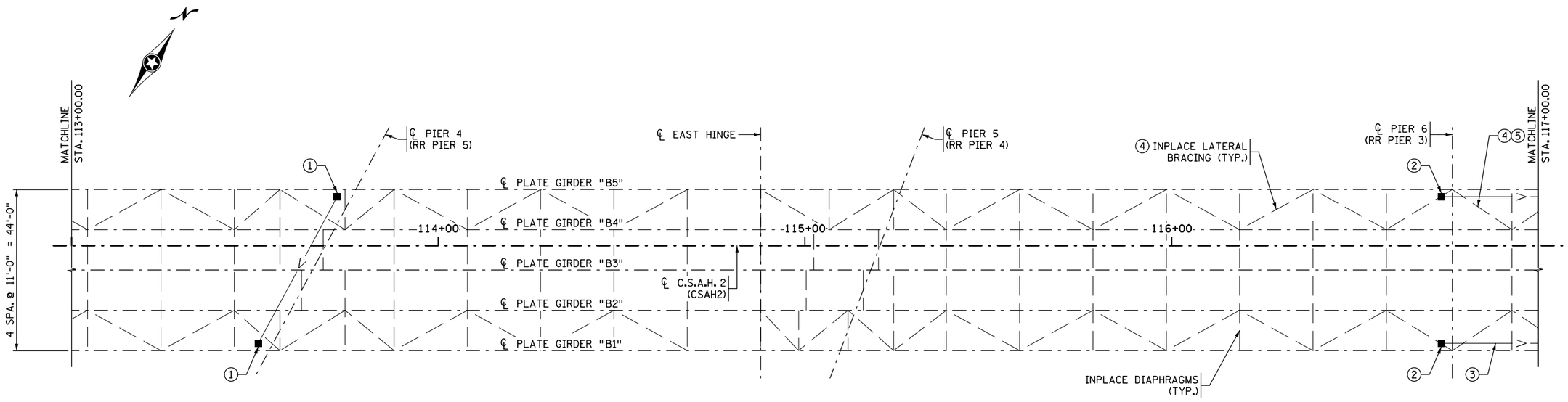
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DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 15 OF 64 SHEETS

BRIDGE NO. 02523

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FRAMING PLAN

NOTES:

IN PLACE DIMENSIONS ARE TAKEN FROM 1972 AND 1990 PLAN SETS FOR BRIDGE 02523 AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION BEGINS.

PROVIDE TEMPORARY STRUCTURAL SUPPORT TO SUPERSTRUCTURE (AFTER DECK REMOVALS) TO RECONSTRUCT BEARING ASSEMBLIES. SUBMIT PLAN TO ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK. INCLUDED IN PRICE BID FOR "TEMPORARY STRUCTURAL SUPPORT".

① REMOVE DECK DRAIN, DOWNSPOUT, PIPING, AND FITTINGS TO DRAINAGE STRUCTURE. INCLUDED IN PRICE BID FOR "REMOVE DRAINAGE SYSTEM". CONSTRUCT BULKHEAD AT DRAINAGE STRUCTURE, INCIDENTAL TO ITEM "REMOVE DRAINAGE SYSTEM". SEE SPECIAL PROVISIONS.

② REMOVE DOWNSPOUT, PIPING, AND FITTINGS TO THE EXTENT POSSIBLE TO NOT IMPACT THE TRACK SUPPORT BELOW EXISTING GROUND LINE. CAP PIPE BELOW GROUND LINE. INCLUDED IN PRICE BID FOR "REMOVE DRAINAGE SYSTEM".

③ REMOVE DOWNSPOUT, PIPING, FITTINGS, AND HANGER RODS ATTACHED TO BOTTOM OF INPLACE BRIDGE DECK (TYP.). INCLUDED IN PRICE BID FOR "REMOVE DRAINAGE SYSTEM".

④ CONTRACTOR TO COORDINATE WITH ENGINEER TO LOCATE AREAS OF DAMAGED LATERAL BRACING PRIOR TO REMOVAL OPERATIONS. IF DAMAGED LATERAL BRACING IS IDENTIFIED THE CONTRACTOR SHALL REPLACE THE DAMAGED LATERAL BRACING. LATERAL BRACING REPLACEMENTS WILL BE PAID AT THE PRICE BID FOR "STRUCTURAL STEEL (3309)". SEE NOTE 5 FOR ADDITIONAL DETAILS.

⑤ REPLACE L8x8x1/2 DAMAGED LATERAL BRACING. CONTRACTOR TO FIELD MEASURE FOR LENGTH AND BOLT HOLE LOCATIONS. GALVANIZE STRUCTURAL STEEL PER MNDOT SPEC 3394. PAINT TO MATCH OTHER STEEL ELEMENTS ON BRIDGE AFTER INSTALLATION. GALVANIZING AND HARDWARE INCIDENTAL TO PRICE BID FOR "STRUCTURAL STEEL (3309)". PAINT INCLUDED IN PRICE BID FOR "ORGANIC ZINC-RICH PAINT SYSTEM (OLD)".

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

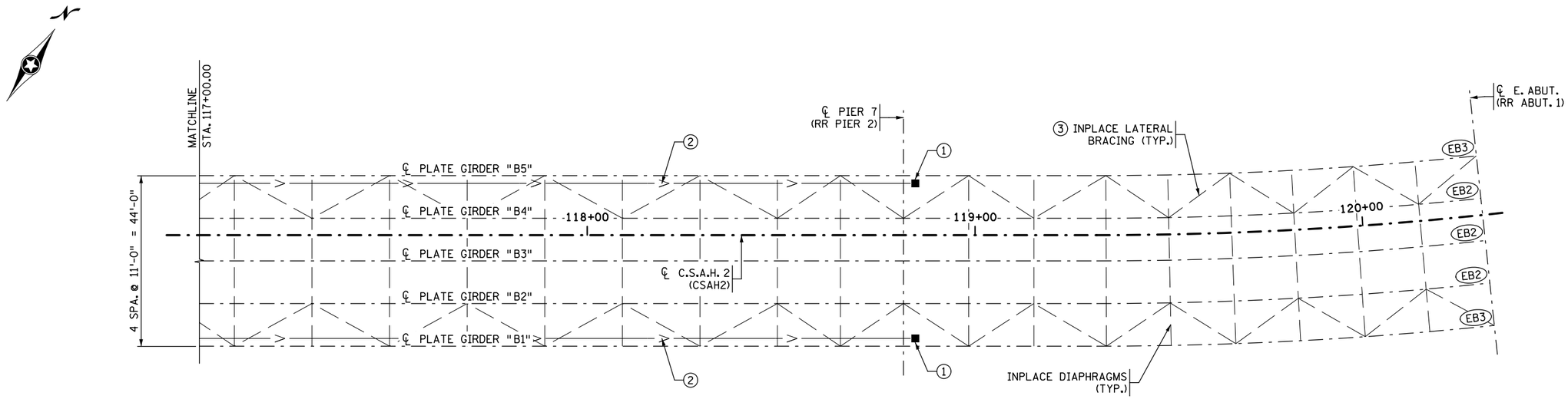
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DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

SHEET NO. 16 OF 64 SHEETS

BRIDGE NO. 02523

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FRAMING PLAN

NOTES:

IN PLACE DIMENSIONS ARE TAKEN FROM 1972 AND 1990 PLAN SETS FOR BRIDGE 02523 AND SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION BEGINS.

PROVIDE TEMPORARY STRUCTURAL SUPPORT TO SUPERSTRUCTURE (AFTER DECK REMOVALS) FOR CLEAN AND GREASE EXPANSION BEARINGS AND REMOVE SHEET LEAD. SUBMIT PLAN TO ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK. INCLUDED IN PRICE BID FOR "TEMPORARY STRUCTURAL SUPPORT".

① REMOVE DOWNSPOUT, PIPING, FITTINGS, AND CONCRETE SPLASH BLOCK ATTACHED TO PIER. INCLUDED IN PRICE BID FOR "REMOVE DRAINAGE SYSTEM".

② REMOVE DOWNSPOUT, PIPING, FITTINGS, AND HANGER RODS ATTACHED TO BOTTOM OF INPLACE BRIDGE DECK (TYP.). INCLUDED IN PRICE BID FOR "REMOVE DRAINAGE SYSTEM".

③ CONTRACTOR TO COORDINATE WITH ENGINEER TO LOCATE AREAS OF DAMAGED LATERAL BRACING PRIOR TO REMOVAL OPERATIONS. IF DAMAGED LATERAL BRACING IS IDENTIFIED THE CONTRACTOR SHALL REPLACE THE DAMAGED LATERAL BRACING. LATERAL BRACING REPLACEMENTS WILL BE PAID AT THE PRICE BID FOR "STRUCTURAL STEEL (3309)". SEE NOTE 5 ON "FRAMING PLAN (2 OF 3)" SHEET FOR ADDITIONAL DETAILS.

(EB2) CLEAN AND GREASE EXPANSION BEARINGS AND REMOVE SHEET LEAD. ④ INCLUDED IN PRICE BID FOR "CLEAN AND GREASE EXP BEARING ASSEMBLIES","TEMPORARY STRUCTURAL SUPPORT" AND LEAD SUBSTANCES COLLECTION & DISPOSAL".

(EB3) CLEAN AND GREASE EXPANSION BEARINGS AND REMOVE SHEET LEAD. ④ INCLUDED IN PRICE BID FOR "CLEAN AND GREASE EXP BEARING ASSEMBLIES","TEMPORARY STRUCTURAL SUPPORT" AND LEAD SUBSTANCES COLLECTION & DISPOSAL".

④ PROVIDE 1/8 INCH 60 DUROMETER PLAIN ELASTOMERIC PAD OR PREFORMED FABRIC PAD MEETING AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATION SECTION 18.10. WAIVE THE SAMPLING AND TESTING REQUIREMENTS UNDER 3741, "ELASTOMERIC BEARING PADS WAND AASHTO M 251.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

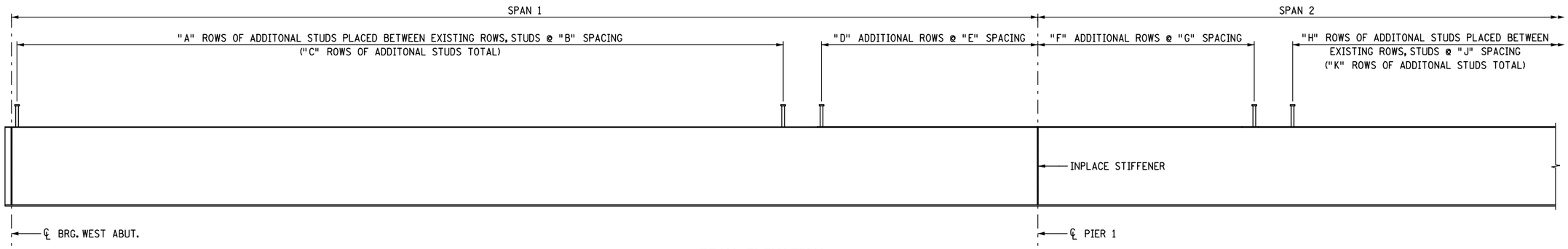
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DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: MJC	

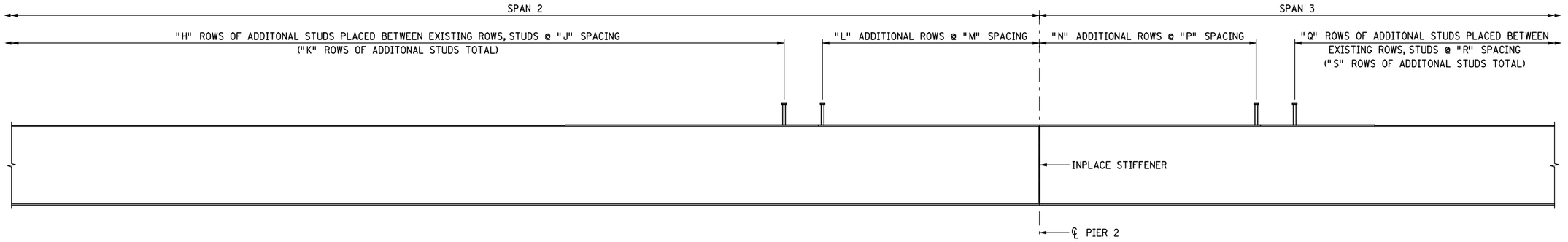
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BRIDGE NO. 02523

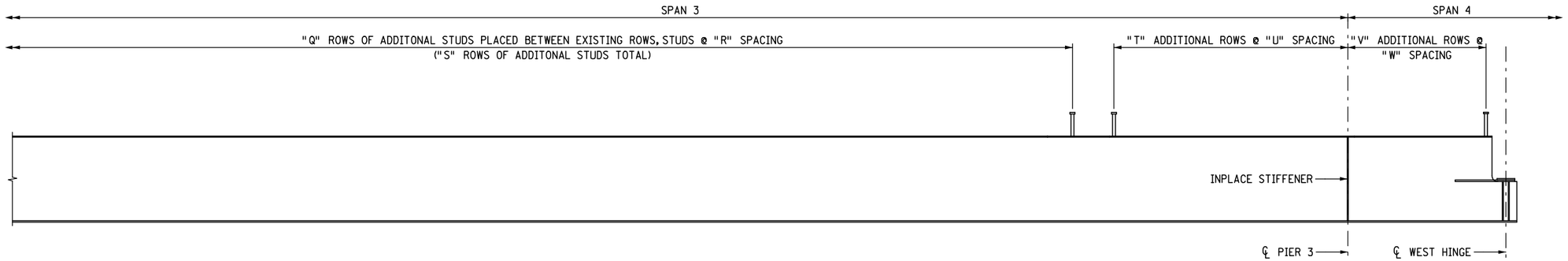
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BEAM ELEVATION



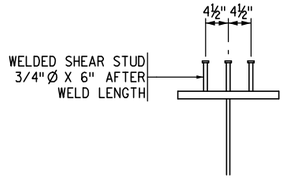
BEAM ELEVATION



BEAM ELEVATION

ADDITIONAL SHEAR STUDS

BEAM	SPAN 1					SPAN 2							SPAN 3							SPAN 4	
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
1	2	7"	78	34	4"	192	4"	N/A					24	13"	1	9"	60	36	13"	40	14"
2	2	6"	94	10	14"	192	5"	N/A					26	12"	1	9"	61	32	12"	43	10"
3	2	6"	92	12	15"	192	6"	N/A					27	12"	1	9"	63	27	11"	34	10"
4	2	6"	90	15	15"	35	8"	2	6"	50	62	8"	42	8"	1	10 1/2"	55	28	8"	25	10"
5	2	8"	66	51	5"	32	8"	2	8"	60	56	8"	20	18"	2	8"	100	8	17"	11	13"



SHEAR STUD DETAIL

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

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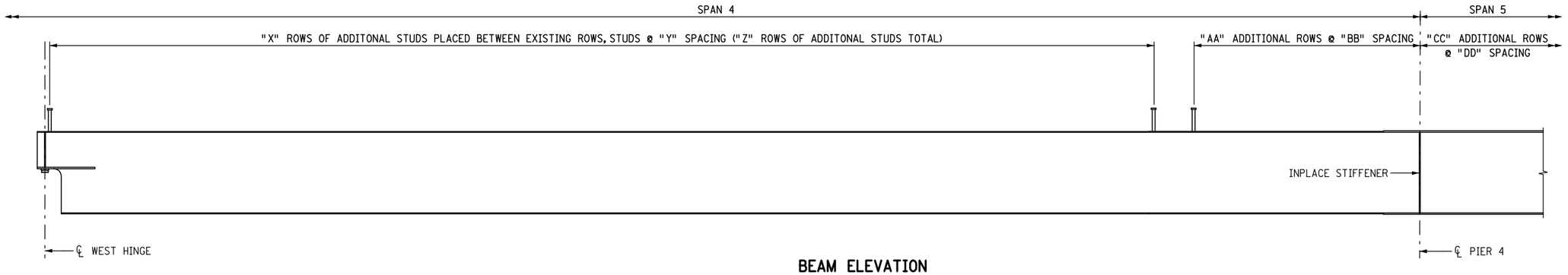
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DES: HAP	DR: DRH	APPROVED
CHK: MJC	CHK: MJC	

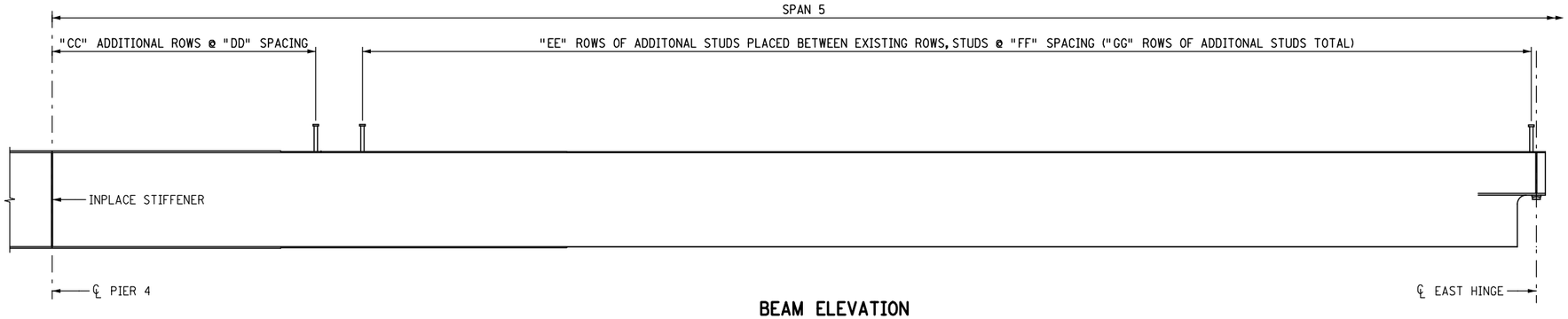
SHEET NO. 18 OF 64 SHEETS

BRIDGE NO. 02523

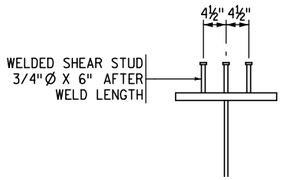
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BEAM ELEVATION



BEAM ELEVATION



SHEAR STUD DETAIL

ADDITIONAL SHEAR STUDS										
BEAM	SPAN 4					SPAN 5				
	X	Y	Z	AA	BB	CC	DD	EE	FF	GG
1	2	7"	68	37	14"	44	9"	1	10 1/2"	53
2	1	9"	47	44	10"	35	11"	1	9"	58
3	1	9"	52	42	10"	39	10"	1	9"	54
4	1	9"	56	41	10"	30	15"	2	7"	82
5	2	8"	92	31	13"	45	11"	2	8"	62

DATE: 11/6/2024 TIME: 9:17:33 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

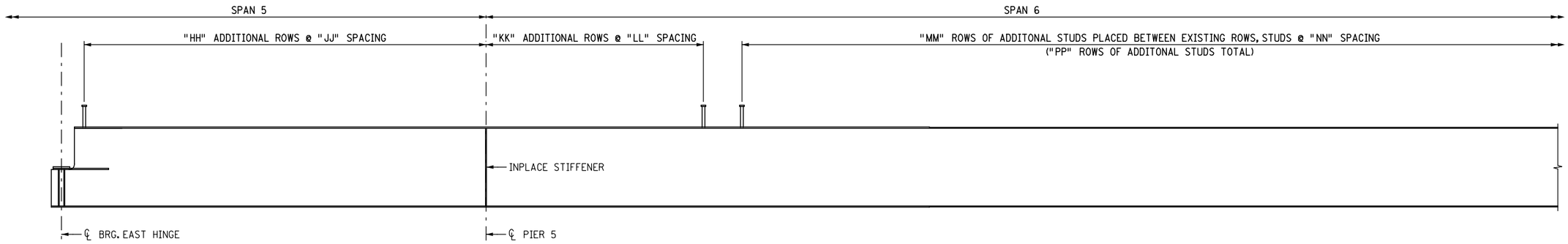
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: BEAM ELEVATION (2 OF 3)

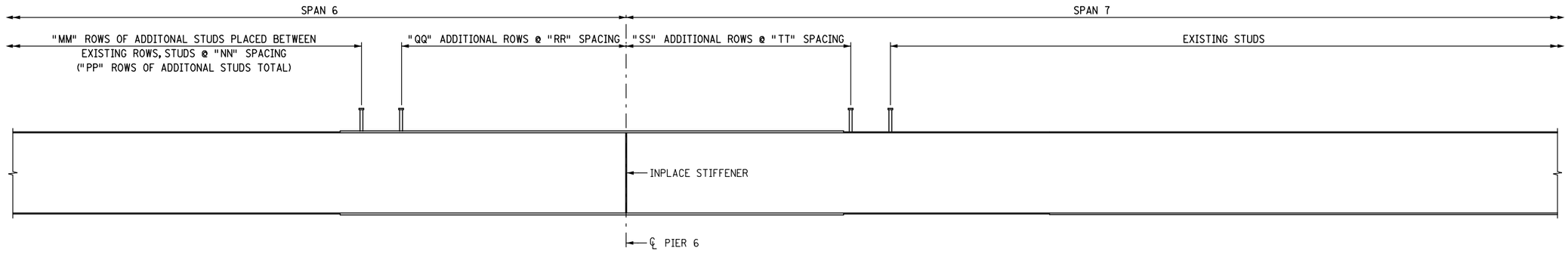
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CHK: MJC	CHK: MJC	

SHEET NO. 19 OF 64 SHEETS

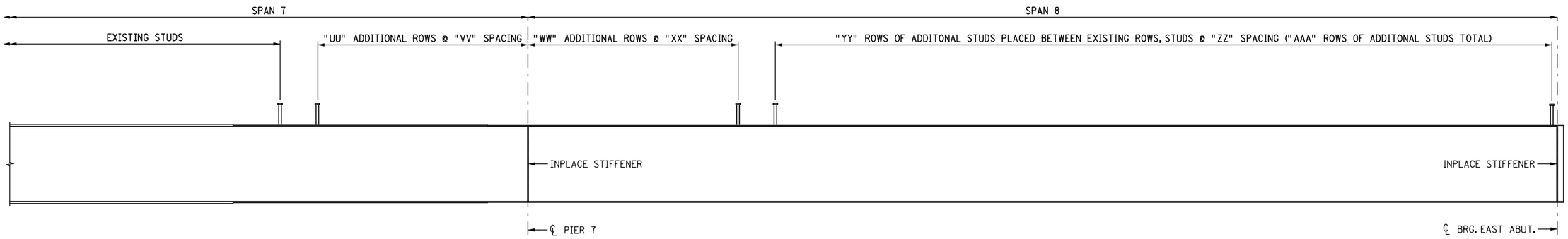
BRIDGE NO. 02523



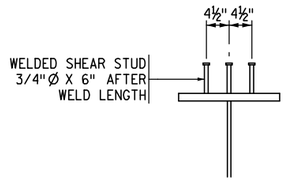
BEAM ELEVATION



BEAM ELEVATION



BEAM ELEVATION



SHEAR STUD DETAIL

ADDITIONAL SHEAR STUDS

BEAM	SPAN 5		SPAN 6							SPAN 7				SPAN 8				
	HH	JJ	KK	LL	MM	NN	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	AAA
1	28	9"	25	11"	1	10 1/2"	49	56	11"	54	10"	56	10"	85	7"	N/A		
2	27	11"	27	12"	1	9"	52	49	12"	45	11"	47	11"	55	10"	1	9"	65
3	35	10"	34	11"	1	9"	45	56	11"	43	11"	49	11"	88	7"	N/A		
4	27	15"	42	10"	1	9"	40	62	10"	40	11"	48	11"	89	7"	N/A		
5	41	11"	37	13"	2	6"	64	47	13"	50	8"	64	8"	45	13"	1	10 1/2"	53

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

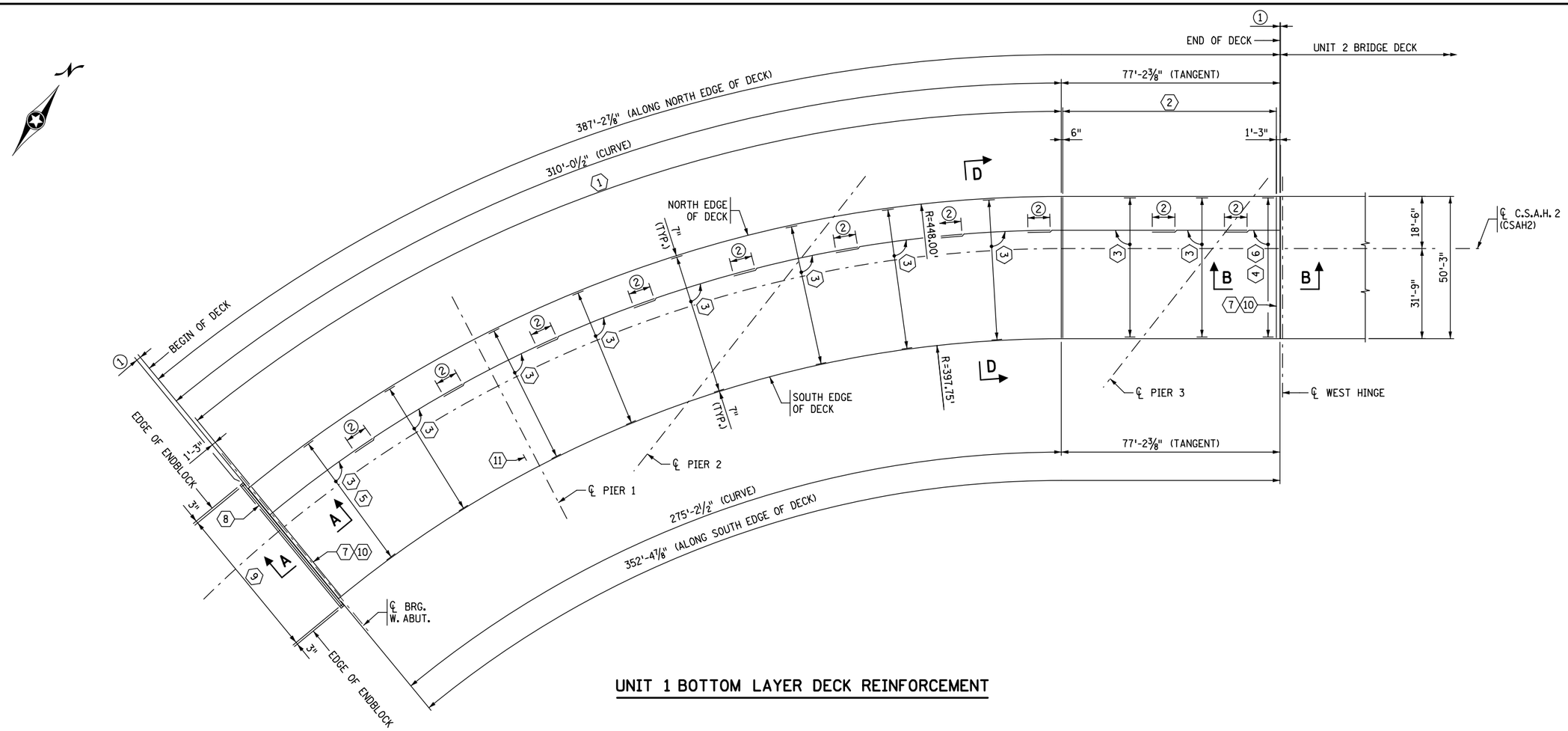
TITLE: BEAM ELEVATION (3 OF 3)

DES: HAP	DR: DRH	APPROVED
CHK: MJC	CHK: MJC	

SHEET NO. 20 OF 64 SHEETS

BRIDGE NO. 02523

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UNIT 1 BOTTOM LAYER DECK REINFORCEMENT

NOTES:

FOR ℄ BRG. ABUT. AND ℄ PIER AZIMUTHS REFER TO GENERAL PLAN AND ELEVATION SHEETS.

FOR SECTIONS A-A, B-B AND D-D SEE DECK REINFORCEMENT DETAILS SHEETS.

(1) FOR EXPANSION JOINT OPENINGS SEE LONGITUDINAL SECTION ON "DECK REINFORCEMENT DETAILS (1 OF 2)" SHEET.

(2) REINFORCEMENT BAR LAP LENGTHS AS FOLLOWS:
- NO. 4 BARS = 1'-11" MINIMUM
- NO. 5 BARS = 2'-5" MINIMUM

USE LONGEST LAP LENGTH WHEN SPLICING DIFFERENT SIZE BARS.

(3) TRANSVERSE BARS TO BE PLACED RADIALLY AT THE MAXIMUM SPACING SHOWN.

(4) ALL LONGITUDINAL BARS TO BE PLACED CONCENTRICALLY TO ℄ C.S.A.H. 2 AT THE MAXIMUM SPACING SHOWN.

(5) PLACE PARALLEL TO BEGIN/END EDGE OF DECK.

BAR CALL-OUTS:

⟨1⟩ 619-S501E SPACED AT 6" MAX. SPS. ALONG NORTH EDGE OF DECK AND ±5⅜" SPS. ALONG THE SOUTH EDGE OF DECK. (3)

⟨2⟩ 152-S501E SPACED AT 6" MAXIMUM.

⟨3⟩ 119-S405E SPACED AT 5" MAXIMUM. (4)

⟨4⟩ 119-S406E SPACED TO MATCH S405E BARS. ALTERNATE PLACEMENT OF BAR AT END OF BRIDGE DECK UNIT TO STAGGER SPLICES. (4)

⟨5⟩ 119-S541E SPACED TO MATCH S405E BARS. PLACED AS SHOWN IN SECTION A-A.

⟨6⟩ 119-S542E SPACED TO MATCH S405E OR S406E BARS. PLACED AS SHOWN IN SECTION B-B.

⟨7⟩ 2-S540E PLACED AS SHOWN IN SECTION A-A AND SECTION B-B. (5)

⟨8⟩ 8-S555E (ENDBLOCK REINF.) PLACED AS SHOWN IN SECTION A-A.

⟨9⟩ 57-S556E (ENDBLOCK REINF.) SPACED AT 12" MAXIMUM.

BAR CALL-OUTS (CONT.):

⟨10⟩ 12-S509E PLACED IN THE END DIAPHRAGM BETWEEN BEAMS (4 THUS), FOR SPACING AND FURTHER DETAILS SEE SECTION A-A. (5)

⟨11⟩ PROVIDE S550E BARS ALONG BEAM WHERE INPLACE SHEAR STUDS PROJECT LESS THAN 2" INTO DECK. MATCH S501E BARS. LOCATIONS TO BE COORDINATED WITH THE ENGINEER AFTER FIELD SURVEY HAS BEEN RECEIVED. FOR DETAILS, SEE "HAT BAR FOR BEAMS WITH LARGE STOOL HEIGHTS" ON "DECK REINFORCEMENT DETAILS (2 OF 2)" SHEET.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

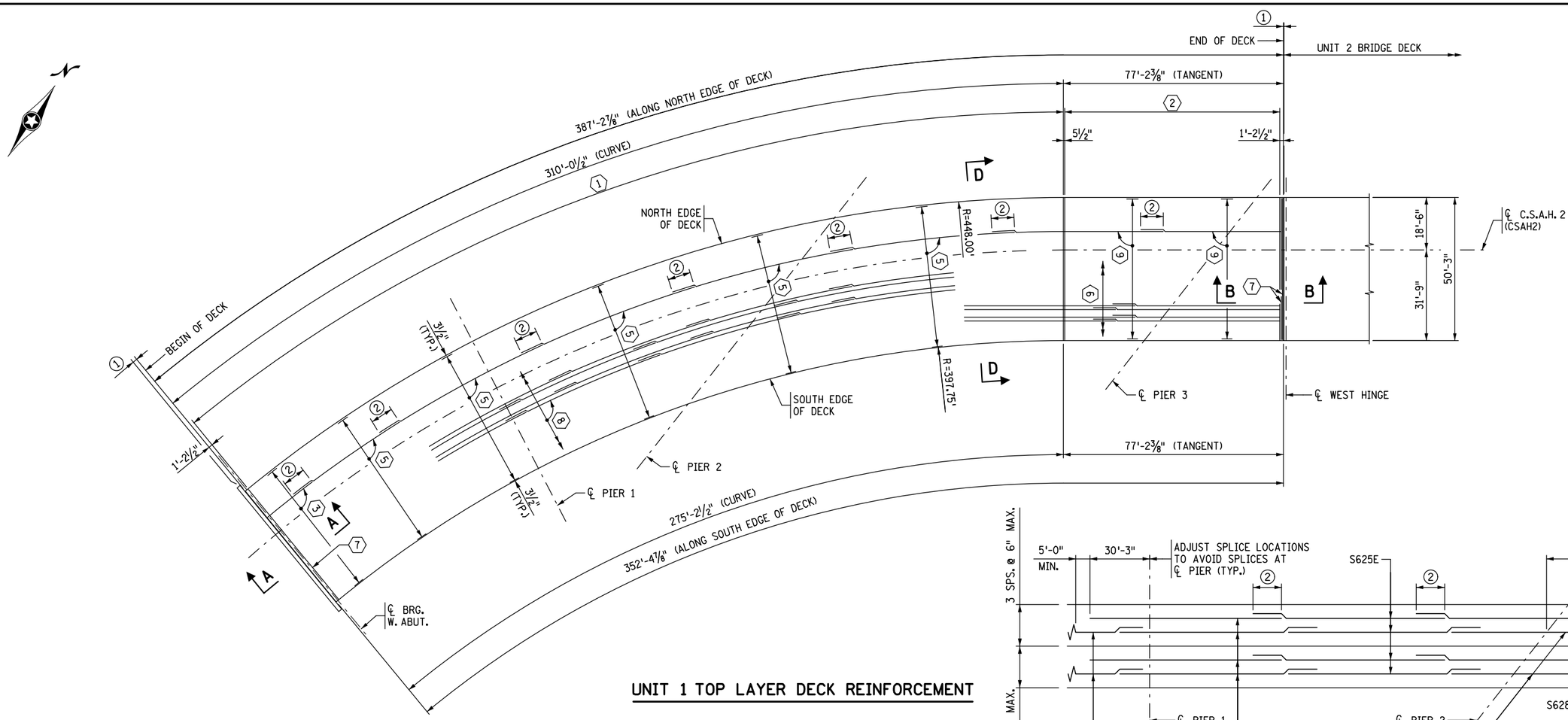
TITLE: UNIT 1 BOTTOM LAYER DECK REINFORCEMENT

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: ADL	

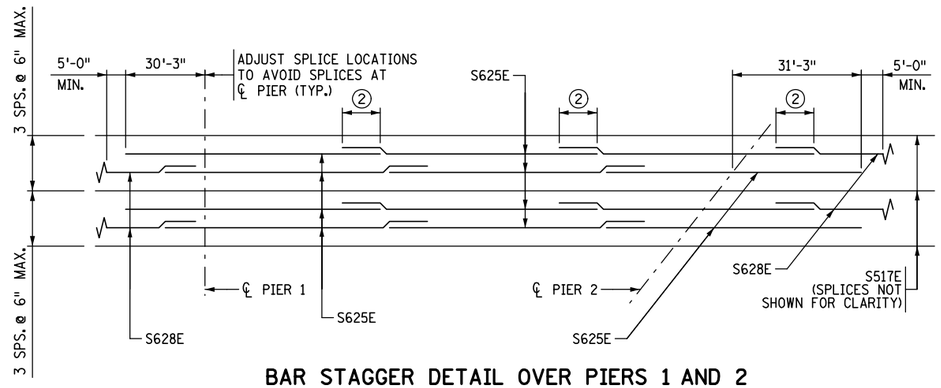
SHEET NO. 21 OF 64 SHEETS

BRIDGE NO. 02523

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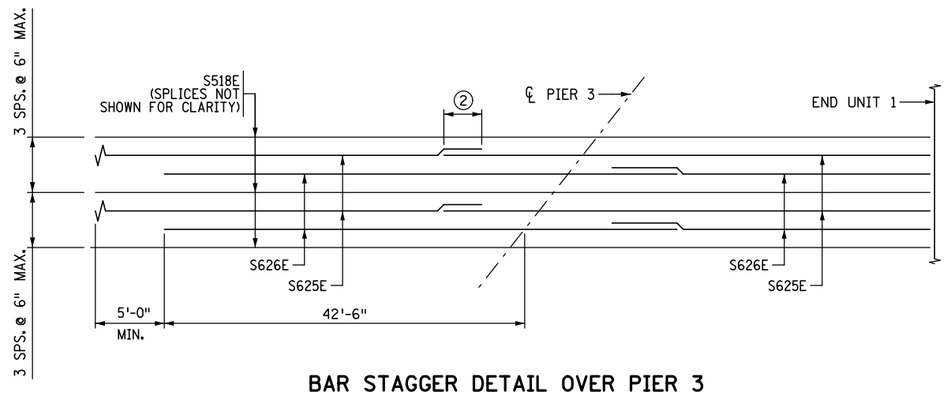


UNIT 1 TOP LAYER DECK REINFORCEMENT



BAR STAGGER DETAIL OVER PIERS 1 AND 2

(SCHEMATIC DETAIL)



BAR STAGGER DETAIL OVER PIER 3

(SCHEMATIC DETAIL)

NOTES:

FOR ℄ BRG. ABUT. AND ℄ PIER AZIMUTHS REFER TO GENERAL PLAN AND ELEVATION SHEETS.

FOR SECTIONS A-A, B-B AND D-D SEE "DECK REINFORCEMENT DETAILS (1 OF 2)" SHEET.

(1) FOR EXPANSION JOINT OPENINGS SEE LONGITUDINAL SECTION ON DECK REINFORCEMENT DETAILS (1 OF 2)" SHEET.

(2) REINFORCEMENT BAR LAP LENGTHS AS FOLLOWS:
- NO. 5 BARS = 2'-5" MINIMUM
- NO. 6 BARS = 2'-10" MINIMUM

USE LONGEST LAP LENGTH WHEN SPLICING DIFFERENT SIZE BARS.

(3) TRANSVERSE BARS TO BE PLACED RADIALLY AT THE MAXIMUM SPACING SHOWN.

(4) ALL LONGITUDINAL BARS TO BE PLACED CONCENTRICALLY TO ℄ C.S.A.H. 2 AT THE MAXIMUM SPACING SHOWN.

(5) PLACE PARALLEL TO BEGIN/END EDGE OF DECK.

BAR CALL-OUTS:

(1) 675-S502E SPACED AT 5½" MAX. SPS. ALONG NORTH EDGE OF DECK AND ±4⅞" SPS. ALONG SOUTH EDGE OF DECK. (3)

(2) 166-S502E SPACED AT 5½" MAXIMUM.

(3) 35-S515E SPACED AT 1'-6" MAXIMUM. ALTERNATE PLACEMENT OF BAR WITH S517E AT BEGIN OF DECK EDGE TO STAGGER SPLICES. (4)

(4) NOTE NOT USED.

(5) 35-S517E SPACED TO MATCH S515E BARS.

(6) 35-S518E SPACED TO MATCH S515E BARS.

(7) 2-S540E PLACED AS SHOWN IN SECTION A-A AND SECTION B-B. (5)

(8) 204-S625E W/ 68-S628E, LAPPED AT 3 LOCATIONS. PLACED AS SHOWN IN "BAR STAGGER DETAIL OVER PIERS 1 & 2". ALTERNATE PLACEMENT OF BAR TO STAGGER SPLICES.

(9) 68-S625E W/ 68-S626E PLACED AS SHOWN IN "BAR DETAIL OVER PIER 3".

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

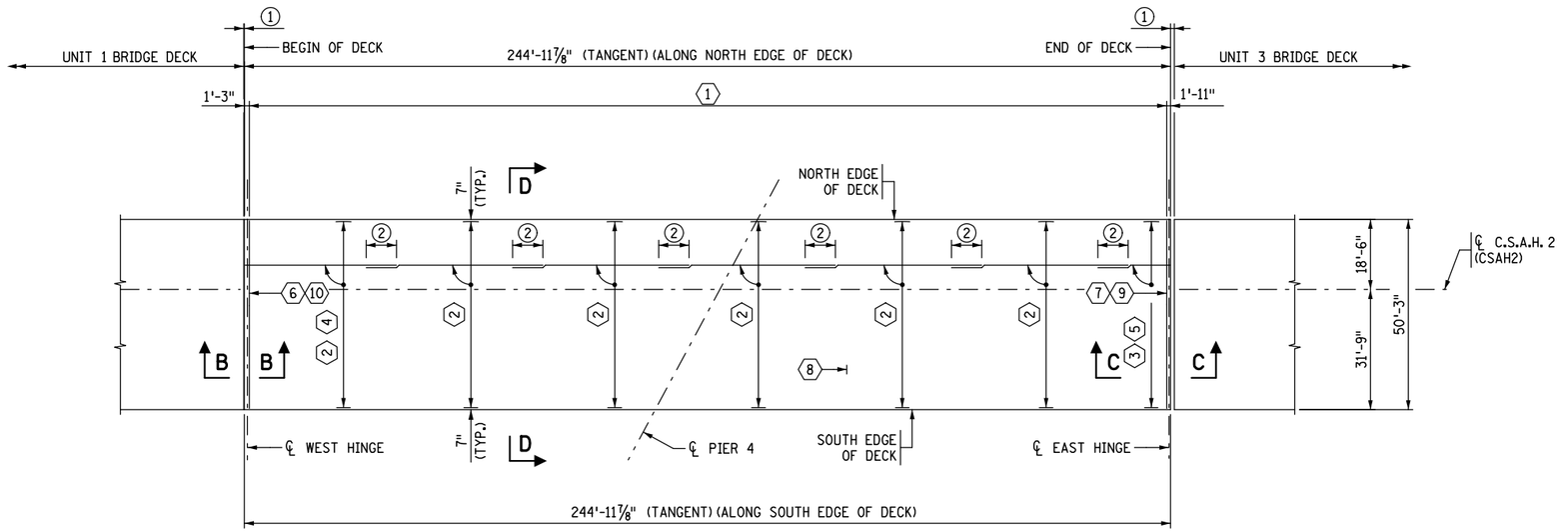
TITLE: UNIT 1 TOP LAYER DECK REINFORCEMENT

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: ADL	

SHEET NO. 22 OF 64 SHEETS

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:17:45 AM
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UNIT 2 BOTTOM LAYER DECK REINFORCEMENT

NOTES:

FOR ℄ BRG. ABUT. AND ℄ PIER AZIMUTHS REFER TO GENERAL PLAN AND ELEVATION SHEETS.

FOR SECTIONS B-B, C-C, AND D-D SEE DECK REINFORCEMENT DETAILS SHEETS.

(1) FOR EXPANSION JOINT OPENINGS SEE LONGITUDINAL SECTION ON "DECK REINFORCEMENT DETAILS (1 OF 2)" SHEET.

(2) REINFORCEMENT BAR LAP LENGTHS AS FOLLOWS:
- NO. 4 BARS = 1'-11" MINIMUM
- NO. 5 BARS = 2'-5" MINIMUM

USE LONGEST LAP LENGTH WHEN SPLICING DIFFERENT SIZE BARS.

BAR CALL-OUTS:

⟨1⟩ 486-S501E SPACED AT 6" MAXIMUM.

⟨2⟩ 119-S405E SPACED AT 5" MAXIMUM.

⟨3⟩ 119-S407E SPACED TO MATCH S405E BARS. ALTERNATE PLACEMENT OF S405E AND S407E AT BEGIN/END OF BRIDGE DECK UNIT TO STAGGER SPLICES.

⟨4⟩ 119-S542E SPACED TO MATCH S405E BARS. PLACED AS SHOWN IN SECTION B-B.

⟨5⟩ 119-S543E, 119-S544E, & 119-S545E SPACED TO MATCH S405E BARS. PLACED AS SHOWN IN SECTION C-C.

⟨6⟩ 2-S540E PLACED AS SHOWN IN SECTION B-B.

⟨7⟩ 20-S509E AND 20-S510E PLACED IN MODULAR JOINT SEAT BETWEEN BEAMS (4 THUS). FOR FURTHER DETAILS, SEE SECTION C-C.

⟨8⟩ PROVIDE S550E BARS ALONG BEAM WHERE INPLACE SHEAR STUDS PROJECT LESS THAN 2" INTO DECK. MATCH S501E BARS. LOCATIONS TO BE COORDINATED WITH THE ENGINEER AFTER FIELD SURVEY HAS BEEN RECEIVED. FOR DETAILS, SEE "HAT BAR FOR BEAMS WITH LARGE STOOL HEIGHTS" ON "DECK REINFORCEMENT DETAILS (2 OF 2)" SHEET.

⟨9⟩ 6-S540E (BLOCKOUT AREA) PLACED AS SHOWN IN SECTION C-C.

⟨10⟩ 12-S509E PLACED IN THE END DIAPHRAGM BETWEEN BEAMS (4 THUS), FOR SPACING AND FURTHER DETAILS, SEE SECTION A-A.

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

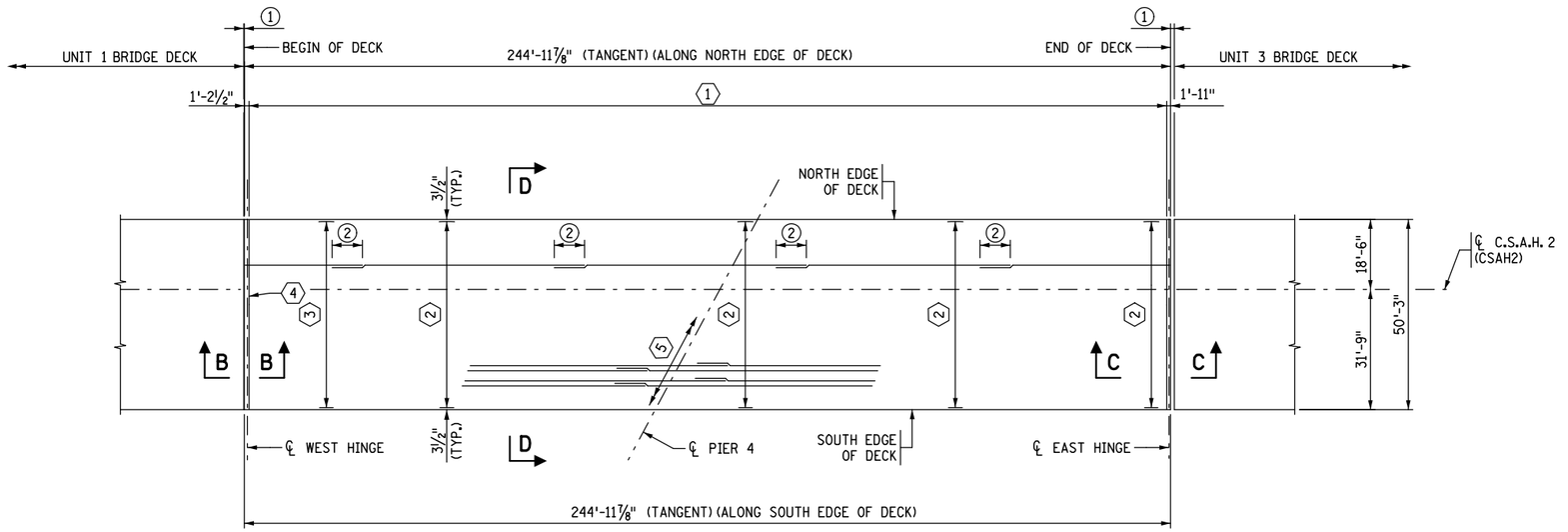
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: UNIT 2 BOTTOM LAYER DECK REINFORCEMENT

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: ADL	

SHEET NO. 23 OF 64 SHEETS

BRIDGE NO. 02523



UNIT 2 TOP LAYER DECK REINFORCEMENT

NOTES:

FOR ℄ BRG. ABUT. AND ℄ PIER AZIMUTHS REFER TO GENERAL PLAN AND ELEVATION SHEETS.

FOR SECTIONS A-A, B-B AND D-D SEE DECK REINFORCEMENT DETAILS SHEETS.

(1) FOR EXPANSION JOINT OPENINGS SEE LONGITUDINAL SECTION ON "DECK REINFORCEMENT DETAILS (1 OF 2)" SHEET.

(2) REINFORCEMENT BAR LAP LENGTHS AS FOLLOWS:
- NO. 5 BARS = 2'-5" MINIMUM
- NO. 6 BARS = 2'-10" MINIMUM

USE LONGEST LAP LENGTH WHEN SPLICING DIFFERENT SIZE BARS.

BAR CALL-OUTS:

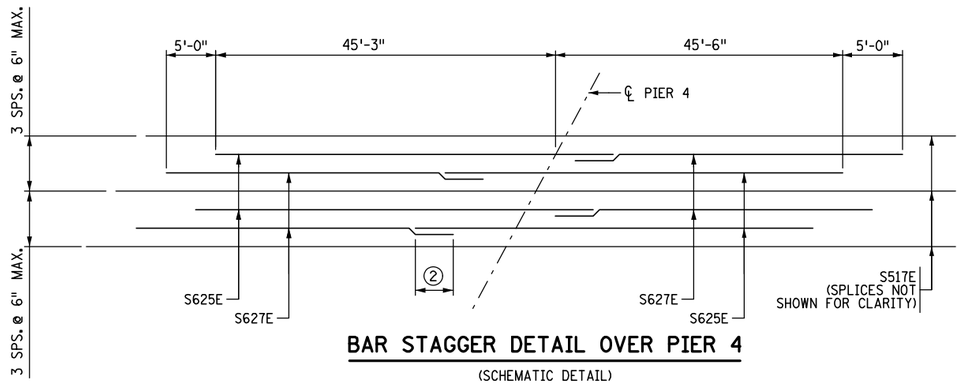
(1) 531-S502E SPACED AT 5½" MAXIMUM.

(2) 35-S517E SPACED TO MATCH S516E BARS.

(3) 35-S516E SPACED AT 1'-6" MAXIMUM. ALTERNATE PLACEMENT OF S516E AND S517E BARS AT BEGIN/END OF BRIDGE DECK UNIT TO STAGGER SPLICES

(4) 2-S540E PLACED AS SHOWN IN SECTION B-B.

(5) 68-S625E W/ 68-S627E PLACED AS SHOWN IN "BAR STAGGER DETAIL OVER PIER 4".



BAR STAGGER DETAIL OVER PIER 4

(SCHEMATIC DETAIL)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

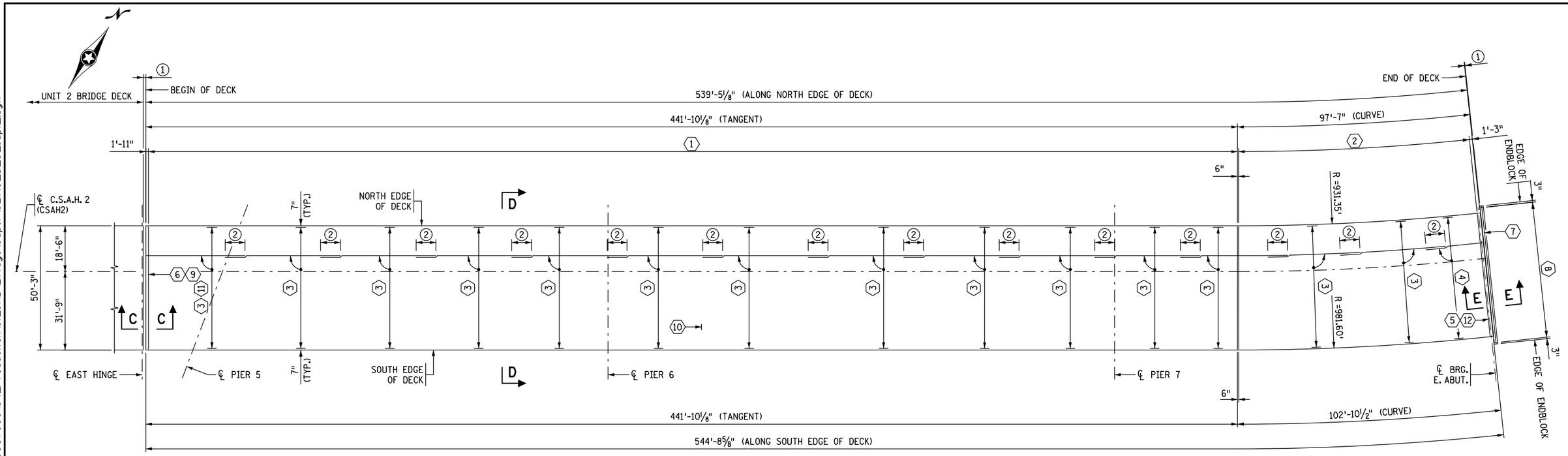
TITLE: UNIT 2 TOP LAYER DECK REINFORCEMENT

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: ADL	

SHEET NO. 24 OF 64 SHEETS

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:17:53 AM
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UNIT 3 BOTTOM LAYER DECK REINFORCEMENT

NOTES:

FOR ℄ BRG. ABUT. AND ℄ PIER AZIMUTHS REFER TO GENERAL PLAN AND ELEVATION SHEETS.

FOR SECTIONS A-A AND C-C SEE DECK REINFORCEMENT DETAILS SHEETS.

1. FOR EXPANSION JOINT OPENINGS SEE LONGITUDINAL SECTION ON "DECK REINFORCEMENT DETAILS (1 OF 2)" SHEET.
2. REINFORCEMENT BAR LAP LENGTHS AS FOLLOWS:
   - NO. 4 BARS = 1'-11" MINIMUM
   - NO. 5 BARS = 2'-5" MINIMUM

   USE LONGEST LAP LENGTH WHEN SPLICING DIFFERENT SIZE BARS.
3. TRANSVERSE BARS TO BE PLACED RADIALLY AT THE MAXIMUM SPACING SHOWN.
4. ALL LONGITUDINAL BARS TO BE PLACED CONCENTRICALLY TO ℄ C.S.A.H. 2 AT THE MAXIMUM SPACING SHOWN.
5. PLACE PARALLEL TO END OF DECK EDGE.

BAR CALL-OUTS:

1. 880-S501E SPACED AT 6" MAXIMUM.
2. 205-S501E SPACED AT 6" MAX. SPS. ALONG SOUTH EDGE OF DECK AND ±5⅝" SPS. ALONG THE NORTH EDGE OF DECK. (3)
3. 119-S405E SPACED AT 5" MAXIMUM. (4)
4. 119-S408E SPACED TO MATCH S405E BARS. ALTERNATE PLACEMENT S405E AND S408E BARS AT BEGIN/END OF BRIDGE DECK UNIT TO (4) STAGGER SPLICES.
5. 2-S540E PLACED AS SHOWN IN SECTION E-E. (5)
6. 20-S509E AND 20-S510E PLACED IN MODULAR JOINT SEAT BETWEEN BEAMS (4 THUS). FOR FURTHER DETAILS SEE SECTION C-C.
7. 8-S555E (ENDBLOCK REINF.) PLACED AS SHOWN IN SECTION E-E.
8. 57-S557E (ENDBLOCK REINF.) SPACED AT 12" MAXIMUM.
9. 6-S540E (BLOCKOUT AREA) PLACED AS SHOWN IN SECTION C-C.
10. PROVIDE S550E BARS ALONG BEAM WHERE INPLACE SHEAR STUDS PROJECT LESS THAN 2" INTO DECK. MATCH S501E BARS. LOCATIONS TO BE COORDINATED WITH THE ENGINEER AFTER FIELD SURVEY HAS BEEN RECEIVED. FOR DETAIL SEE "HAT BAR FOR BEAMS WITH LARGE STOOL HEIGHTS" ON "DECK REINFORCEMENT DETAILS (2 OF 2)" SHEET.

BAR CALL-OUTS (CONT.):

11. 119-S543E, 119-S444E, & 119-S545E SPACED TO MATCH S405E BARS. PLACED AS SHOWN IN SECTION C-C.
12. 12-S509E PLACED IN THE END DIAPHRAGM BETWEEN BEAMS (4 THUS), FOR SPACING AND FURTHER DETAILS, SEE SECTION A-A.

DATE: 11/6/2024 TIME: 9:17:58 AM
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

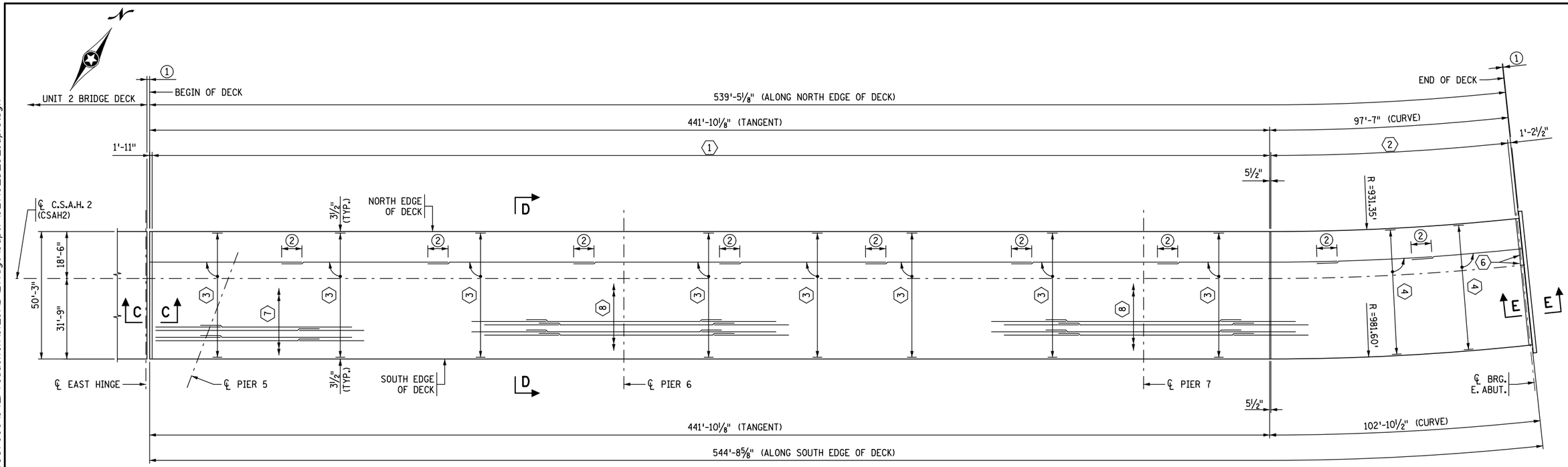
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: UNIT 3 BOTTOM LAYER DECK REINFORCEMENT

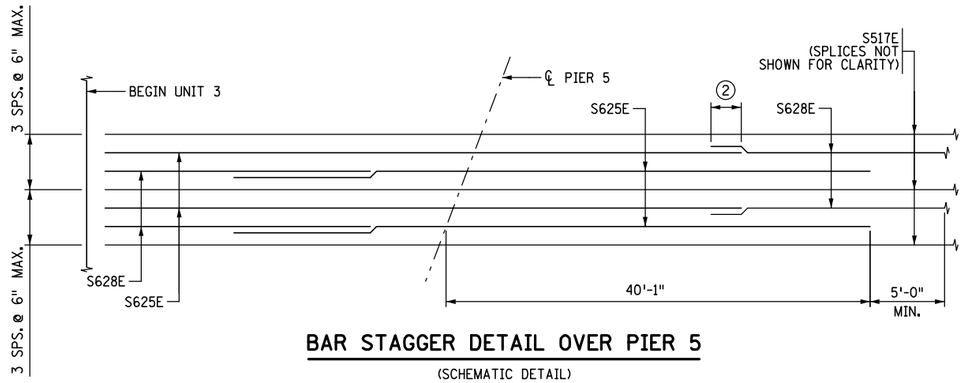
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CHK: JRM	CHK: ADL	

SHEET NO. 25 OF 64 SHEETS

BRIDGE NO. 02523

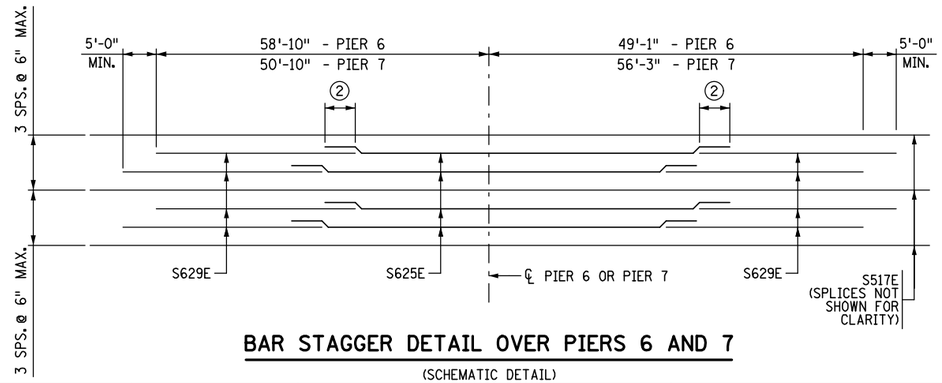


UNIT 3 TOP LAYER DECK REINFORCEMENT



BAR STAGGER DETAIL OVER PIER 5

(SCHEMATIC DETAIL)



BAR STAGGER DETAIL OVER PIERS 6 AND 7

(SCHEMATIC DETAIL)

NOTES:

FOR ℄ BRG. ABUT. AND ℄ PIER AZIMUTHS REFER TO GENERAL PLAN AND ELEVATION SHEETS.

FOR SECTIONS C-C AND E-E SEE DECK REINFORCEMENT DETAILS SHEETS.

1. FOR EXPANSION JOINT OPENINGS SEE LONGITUDINAL SECTION ON "DECK REINFORCEMENT DETAILS (1 OF 2)" SHEET.
2. REINFORCEMENT BAR LAP LENGTHS AS FOLLOWS:
   - NO. 5 BARS = 2'-5" MINIMUM
   - NO. 6 BARS = 2'-10" MINIMUM

   USE LONGEST LAP LENGTH WHEN SPLICING DIFFERENT SIZE BARS.
3. TRANSVERSE BARS TO BE PLACED RADIALLY AT THE MAXIMUM SPACING SHOWN.
4. ALL LONGITUDINAL BARS TO BE PLACED CONCENTRICALLY TO ℄ C.S.A.H. 2 AT THE MAXIMUM SPACING SHOWN.
5. PLACE PARALLEL TO END OF DECK EDGE.

BAR CALL-OUTS:

1. 960-S502E SPACED AT 5½" MAXIMUM.
2. 223-S502E SPACED AT 5½" MAX. SPS. ALONG SOUTH EDGE OF DECK AND ±5¼" SPS. ALONG NORTH EDGE OF DECK. (3)
3. 35-S517E SPACED AT 1'-6" MAXIMUM. ALTERNATE PLACEMENT OF S517E AND S518E BARS AT BEGIN/END OF DECK EDGE TO STAGGER SPLICES. (4)
4. 35-S518E SPACED TO MATCH S517E BARS. (4)
5. NOTE NOT USED
6. 2-S540E PLACED AS SHOWN IN SECTION E-E. (5)
7. 68-S625E W/ 68-S628E PLACED AS SHOWN IN "BAR STAGGER DETAIL OVER PIERS 5" ALTERNATE PLACEMENT OF BAR TO STAGGER SPLICES.
8. 68-S625E W/ 136-S629E LAPPED AT 2 LOCATIONS. PLACE BARS AS SHOWN IN "BAR STAGGER DETAIL OVER PIERS 6 AND 7" ALTERNATE PLACEMENT OF BAR S629E ON EACH SIDE OF PIER.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

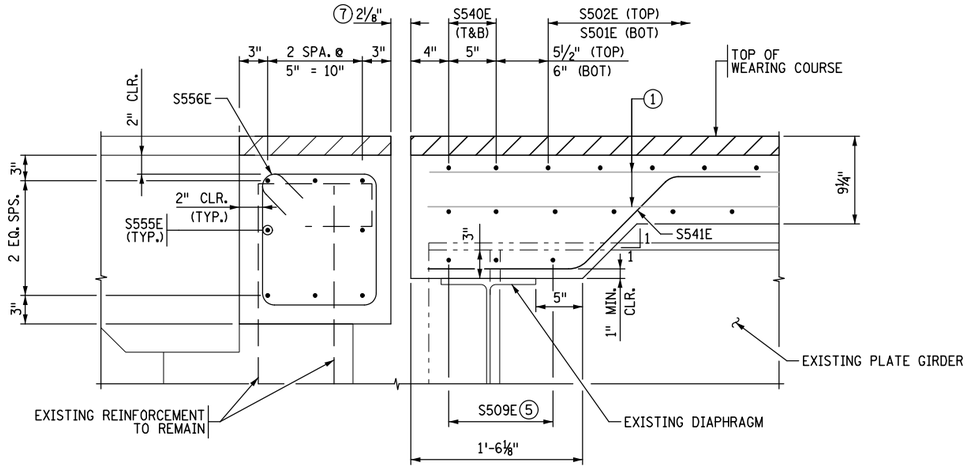
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DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: ADL	

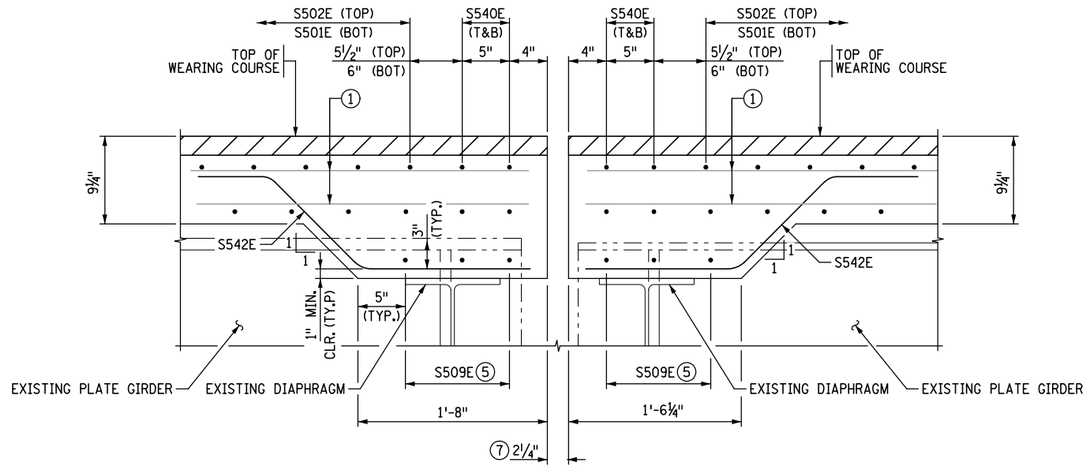
SHEET NO. 26 OF 64 SHEETS

BRIDGE NO. 02523

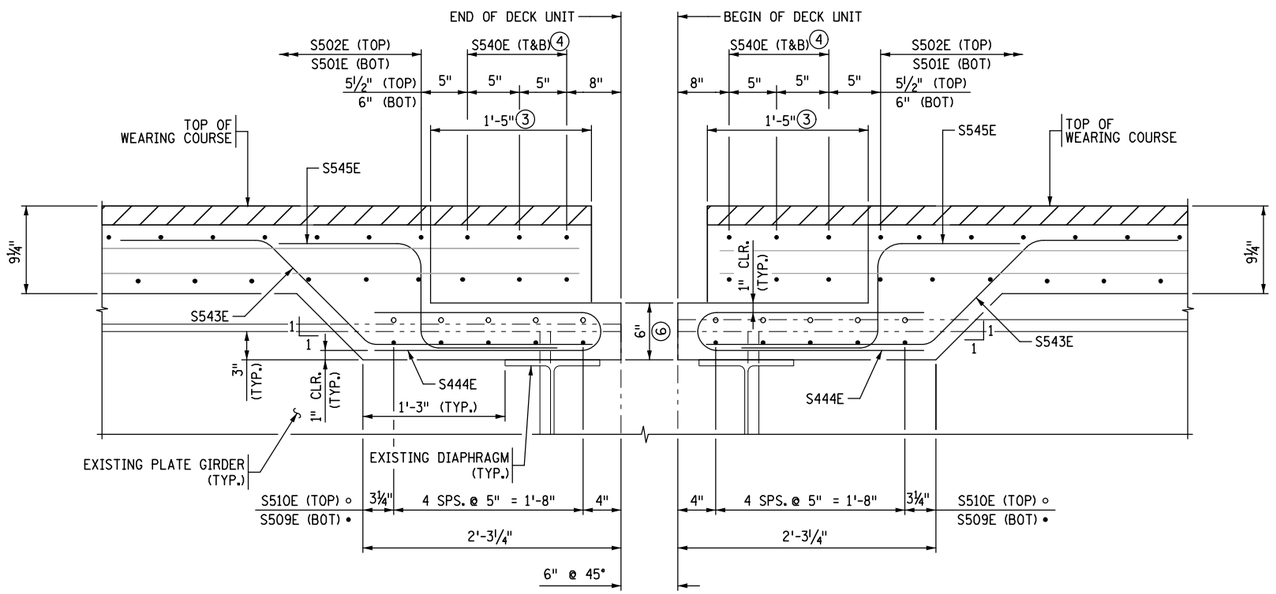
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SECTION A-A

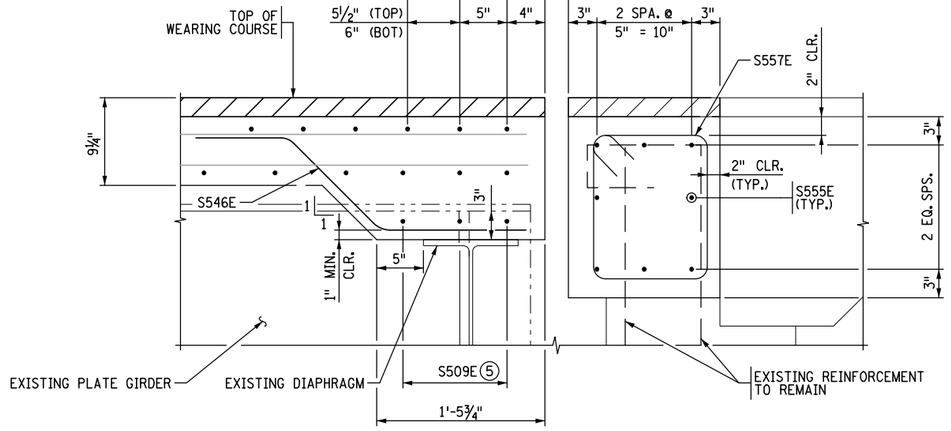


SECTION B-B



SECTION C-C

(MODULAR JOINT NOT SHOWN FOR CLARITY) ②



SECTION E-E

NOTES:

1. LONGITUDINAL REINFORCEMENT PLACED AS SHOWN IN SECTION D-D ON "DECK DETAILS (2 OF 2) SHEET.
2. FOR MODULAR JOINT DETAILS, SEE "MODULAR JOINT DETAILS - EAST HINGE" SHEET.
3. BLOCKOUT AREA. LEAVE OPEN FOR MODULAR JOINT INSTALLATION.
4. TRANSVERSE DECK REINFORCEMENT TO BE CUT AT EXPANSION JOINT DEVICE SUPPORT BOXES AS REQUIRED TO PROVED 2" MIN. CLEAR (TYP.).

NOTES (CONT.):

5. MATCH DECK TRANSVERSE BAR SPACING.
6. MODULAR JOINT SEAT.
7. DIMENSION IN THE PLANS ARE BASED ON THE DIMENSION SHOWN FOR THE EXPANSION JOINT OPENING. THE CONTRACTOR IS TO ADJUST THE OPENING AND PLAN DIMENSIONS BASED ON THE EXPANSION JOINT TEMPERATURE OPENINGS THAT ARE DETAILED IN THE EXPANSION JOINT SHEETS, WHICH IS DETERMINED BY THE AMBIENT TEMPERATURE AT THE TIME OF CONCRETE DECK PLACEMENT.

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

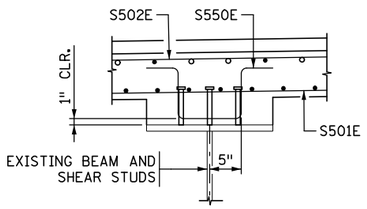
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: DECK REINFORCEMENT DETAILS (1 OF 2)

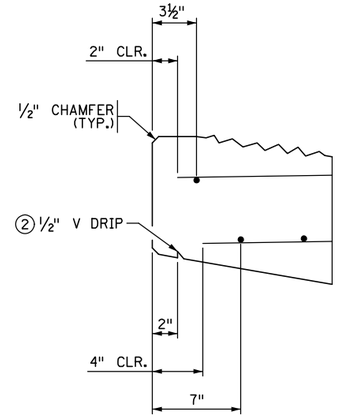
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CHK: JRM	CHK: ADL	

SHEET NO. 27 OF 64 SHEETS

BRIDGE NO. 02523

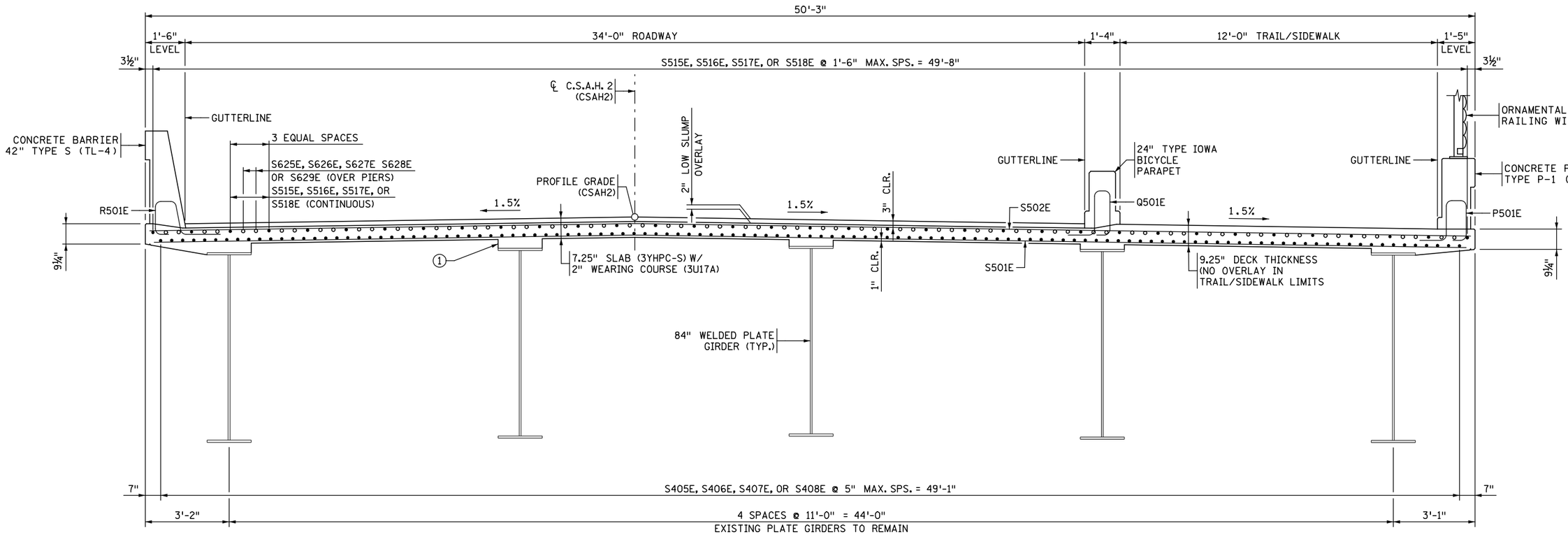


HAT BAR FOR BEAMS WITH LARGE STOOL HEIGHTS



EDGE OF DECK DETAIL

(NORTH EDGE SHOWN, SOUTH EDGE SIMILAR)



NORTH END **SOUTH END**

SECTION D-D

NOTES:

① THE CONTRACTOR IS TO SURVEY THE TOP OF THE BEAMS AT 5 FOOT INTERVALS, ALL AT BEARING LOCATIONS, AND AT GIRDER SPLICE LOCATIONS. THE CONTRACTOR IS TO PROVIDE X, Y, AND Z COORDINATES FOR ALL SURVEYED LOCATIONS. THE CONTRACTOR WILL PROVIDE THE SURVEY INFORMATION TO THE ENGINEER. THE ENGINEER WILL PROVIDE THE CONCRETE STOOL HEIGHTS.

② END V DRIP 5 FEET FROM FRONT FACE OF ABUTMENTS

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: DECK REINFORCEMENT DETAILS (2 OF 2)

DES: DRH	DR: DRH	APPROVED
CHK: JRM	CHK: ADL	

SHEET NO. 28 OF 64 SHEETS

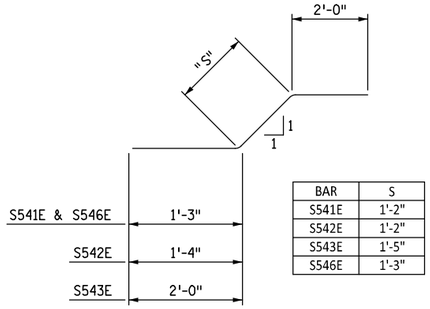
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BILL OF REINFORCEMENT - SUPERSTRUCTURE

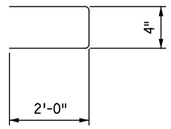
BAR	NO.	LENGTH	SHAPE	LOCATION
S501E	2342	49'-7"	———	BOTTOM TRANSVERSE - ALL UNITS
S502E	2555	49'-11"	———	TOP TRANSVERSE - ALL UNITS
S405E	3570	40'-0"	———	BOTTOM LONGITUDINAL - ALL UNITS
S406E	119	11'-3"	———	BOTTOM LONGITUDINAL - UNIT 1
S407E	119	17'-6"	———	BOTTOM LONGITUDINAL - UNIT 2
S408E	119	14'-9"	———	BOTTOM LONGITUDINAL - UNIT 3
S509E	136	10'-7"	———	TRANSVERSE BETWEEN WEBS
S510E	40	9'-0"	———	TRANSVERSE BETWEEN TOP FLANGES
S515E	35	20'-0"	———	TOP LONGITUDINAL - UNIT 1
S516E	35	40'-0"	———	TOP LONGITUDINAL - UNIT 2
S517E	595	60'-0"	———	TOP LONGITUDINAL - ALL SPANS
S518E	140	45'-0"	———	TOP LONGITUDINAL - UNIT 1 & 3
S625E	544	60'-0"	———	TOP LONG OVER PIERS - ALL PIERS
S626E	68	37'-0"	———	TOP LONG OVER PIERS - PIER 3
S627E	68	41'-0"	———	TOP LONG OVER PIERS - PIER 4
S628E	168	25'-6"	———	TOP LONG OVER PIERS - PIERS 1,2 & 5
S629E	272	30'-0"	———	TOP LONG OVER PIERS - PIERS 6 & 7
S540E	28	49'-7"	———	TOP & BOT TRANSVERSE - EXP JOINT
S541E	357	4'-5"	⌒	TIE EXP JOINT - WEST ABUT
S542E	119	4'-6"	⌒	TIE EXP JOINT - WEST HINGE
S543E	238	5'-5"	⌒	TIE EXP JOINT - EAST HINGE
S444E	238	4'-4"	⊓	TIE EXP JOINT - EAST HINGE
S545E	238	4'-1"	⊓	TIE EXP JOINT - EAST HINGE
S546E	119	4'-6"	⌒	TIE EXP JOINT - EAST ABUT
S550E	4500	3'-10"	⊔	ADDITIONAL STOOL HEIGHT
S555E	16	56'-2"	———	ABUTMENT ENDBLOCK - HORIZONTAL
S556E	57	4'-8"	▭	WEST ABUTMENT ENDBLOCK - TIE
S557E	57	5'-4"	▭	EAST ABUTMENT ENDBLOCK - TIE

BAR BENDING DIAGRAMS:

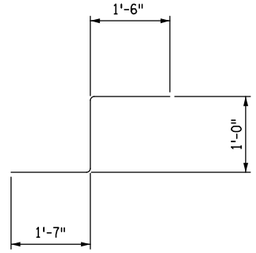


BAR	S
S541E	1'-2"
S542E	1'-2"
S543E	1'-5"
S546E	1'-3"

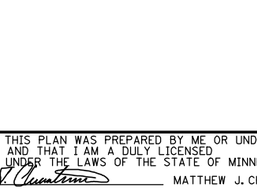
S541E, S542E, S543E, & S546E



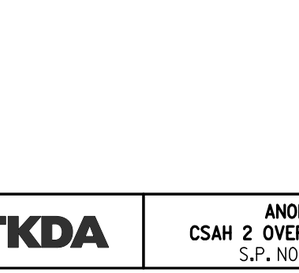
S444E



S545E



S556E & S557E



S550E

NOTE:

BENT BAR DIMENSIONS GIVEN ARE OUT-TO-OUT. ACTUAL BAR LENGTHS SHALL BE DETERMINED BASED ON THE DETAIL DIMENSIONS SHOWN IN THE BAR BENDING DIAGRAMS.

* DENOTES STANDARD STIRRUP HOOK.

ESTIMATED QUANTITIES FOR SUPERSTRUCTURE

ITEM DESCRIPTION	UNIT	QUANTITY
TCLP TEST	EACH	1
REMOVE CHAIN LINK FENCE	LIN FT	2335
TYPE P-1 BARRIER CONCRETE (3S52)	LIN FT	1185
TYPE S (TL-4) 42" BARRIER CONC (3S52)	LIN FT	1216
TYPE IOWA BICYCLE PARAPET CONC (3S52)	LIN FT	1193
REINFORCEMENT BARS (EPOXY COATED)	POUND	584820
BRIDGE SLAB CONCRETE (3YHPC-S)	SQ FT	58168
STRUCTURAL STEEL (3309)	POUND	6100
SHEAR STUDS	EACH	15018
CONCRETE WEARING COURSE (3U17A)	SQ FT	40941
REMOVE CONC SLAB; OVERLAY; & BARRIER	SQ FT	61693
TEMPORARY STRUCTURAL SUPPORT	LUMP SUM	1
CLEAN AND GREASE EXP BEARING ASSEMBLIES	EACH	10
SILANE 100 PERCENT	SQ FT	55212
EXPANSION JOINT DEVICES TYPE 5	LIN FT	151
MODULAR BRIDGE JOINT SYSTEM TYPE 9	LIN FT	51
ORNAMENTAL METAL RAILING TYPE SPECIAL 1	LIN FT	1145
ORNAMENTAL METAL RAILING DESIGN T-4	LIN FT	42
LEAD SUBSTANCES COLLECTION & DISPOSAL	LUMP SUM	1
WASTE COLLECTION AND DISPOSAL	LUMP SUM	1
ORGANIC ZINC-RICH PAINT SYSTEM (OLD)	SQ FT	13830
CLEAN AND PAINT STEEL	SQ FT	8275

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

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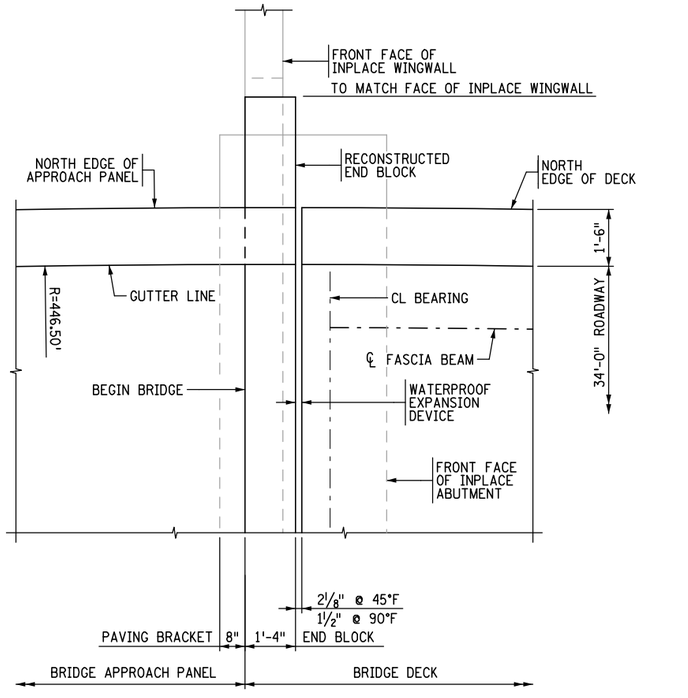
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE:
DECK REINFORCEMENT
BARLIST AND QUANTITIES

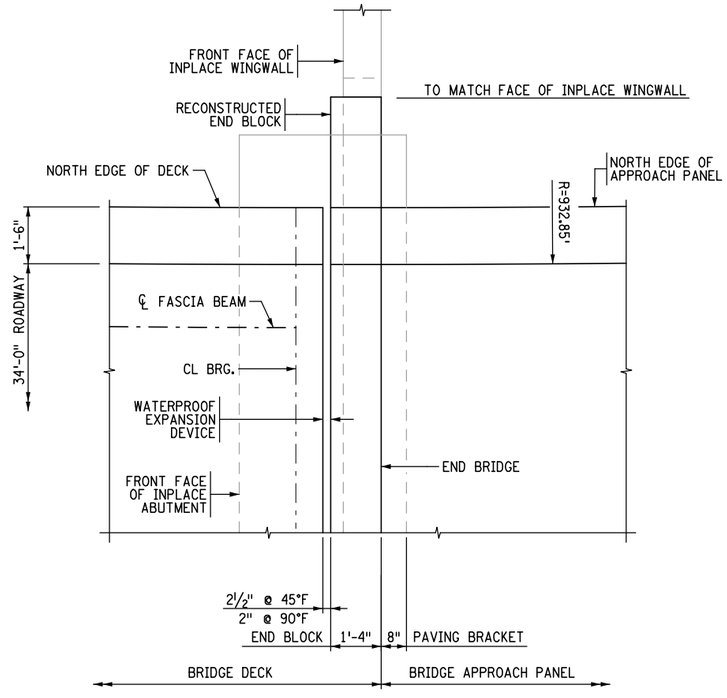
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CHK: JRM	CHK: ADL	

SHEET NO. 29 OF 64 SHEETS

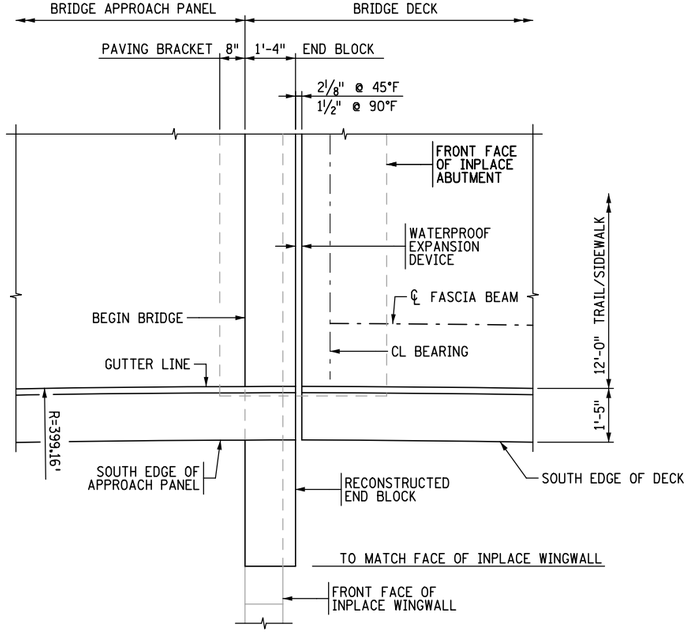
BRIDGE NO. 02523



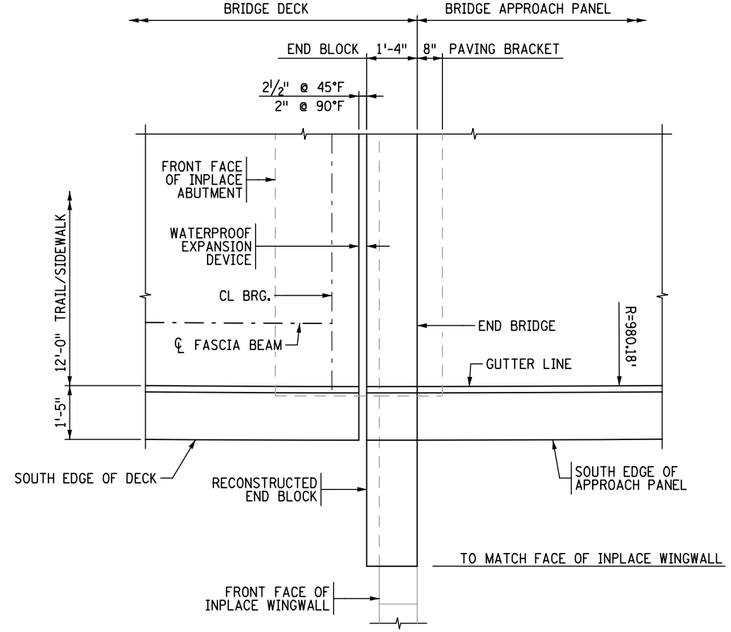
NW CORNER



NE CORNER



SW CORNER



SE CORNER

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

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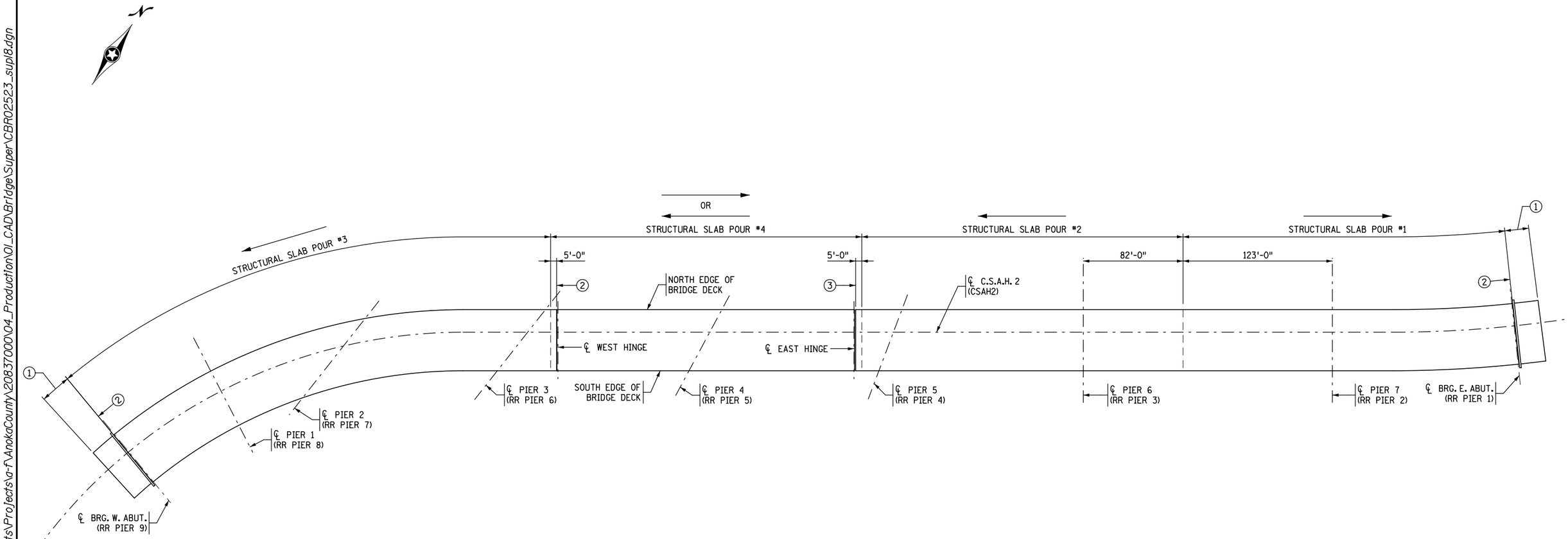
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE:
CORNER DETAILS

DES: DRH	DR: DRH	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 30 OF 64 SHEETS

BRIDGE NO. 02523



STRUCTURAL SLAB POUR SEQUENCE PLAN

NOTES:

- – – – DENOTES TRANSVERSE CONSTRUCTION JOINT BETWEEN ADJACENT DECK POURS.
- ← INDICATES DIRECTION OF DECK POUR.
- (1) BRIDGE APPROACH PANEL (CONC. MIX 3S52) AND ABUTMENT ENDBLOCK (CONC. MIX 3YHPC-S). POUR ABUTMENT ENDBLOCK CONCRETE WITH APPLICABLE BRIDGE DECK POUR.
- (2) WATERPROOF EXPANSION JOINT. SEE WATERPROOF EXPANSION JOINT DETAIL SHEETS.
- (3) MODULAR EXPANSION JOINT. SEE "MODULAR JOINT DETAILS - EAST HINGE" SHEET.

A MINIMUM OF 72 HOURS IS REQUIRED BETWEEN ADJACENT DECK POURS.

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SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

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S.P. NO. 002-602-015

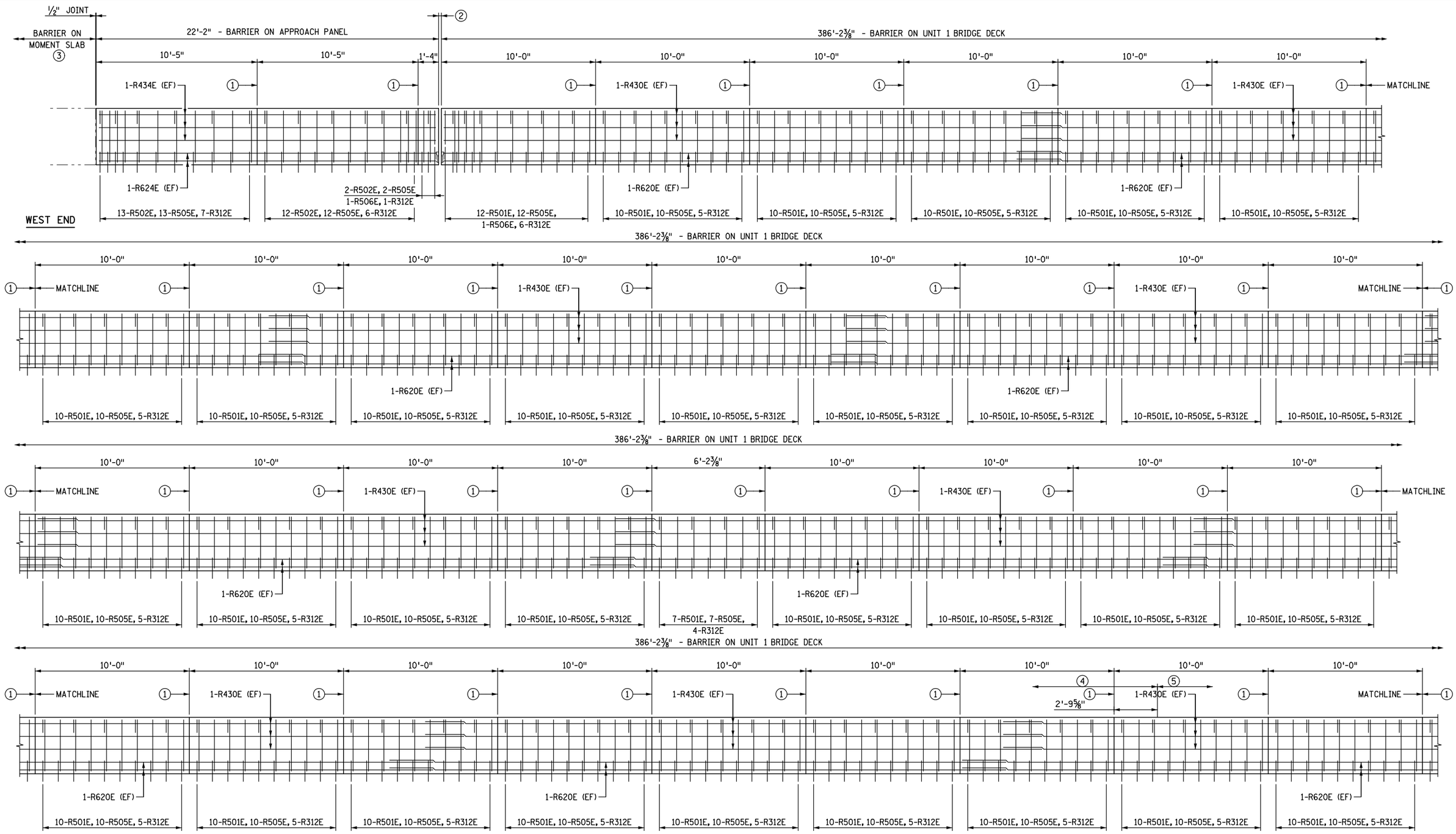
TITLE: DECK POUR SEQUENCE

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

SHEET NO. 31 OF 64 SHEETS

BRIDGE NO. 02523

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NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE BARRIER 42" (TYPE S, TL-4)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE BARRIER 42" (TYPE S, TL-4)" SHEET.

① ℄ CONTROL JOINT. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

NORTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NOTES (CONT.):

② EXPANSION JOINT. SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" FOR COVER PLATE DETAILS AND EXPANSION JOINT OPENINGS AND 45 DEG AND 90 DEG.

③ SEE ROADWAYS PLANS.

④ BARRIER ON CURVE, RADIUS AT GUTTERLINE IS 446.50'.

⑤ BARRIER ON TANGENT.

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DATE: 11/6/2024 LIC. NO.: 43076

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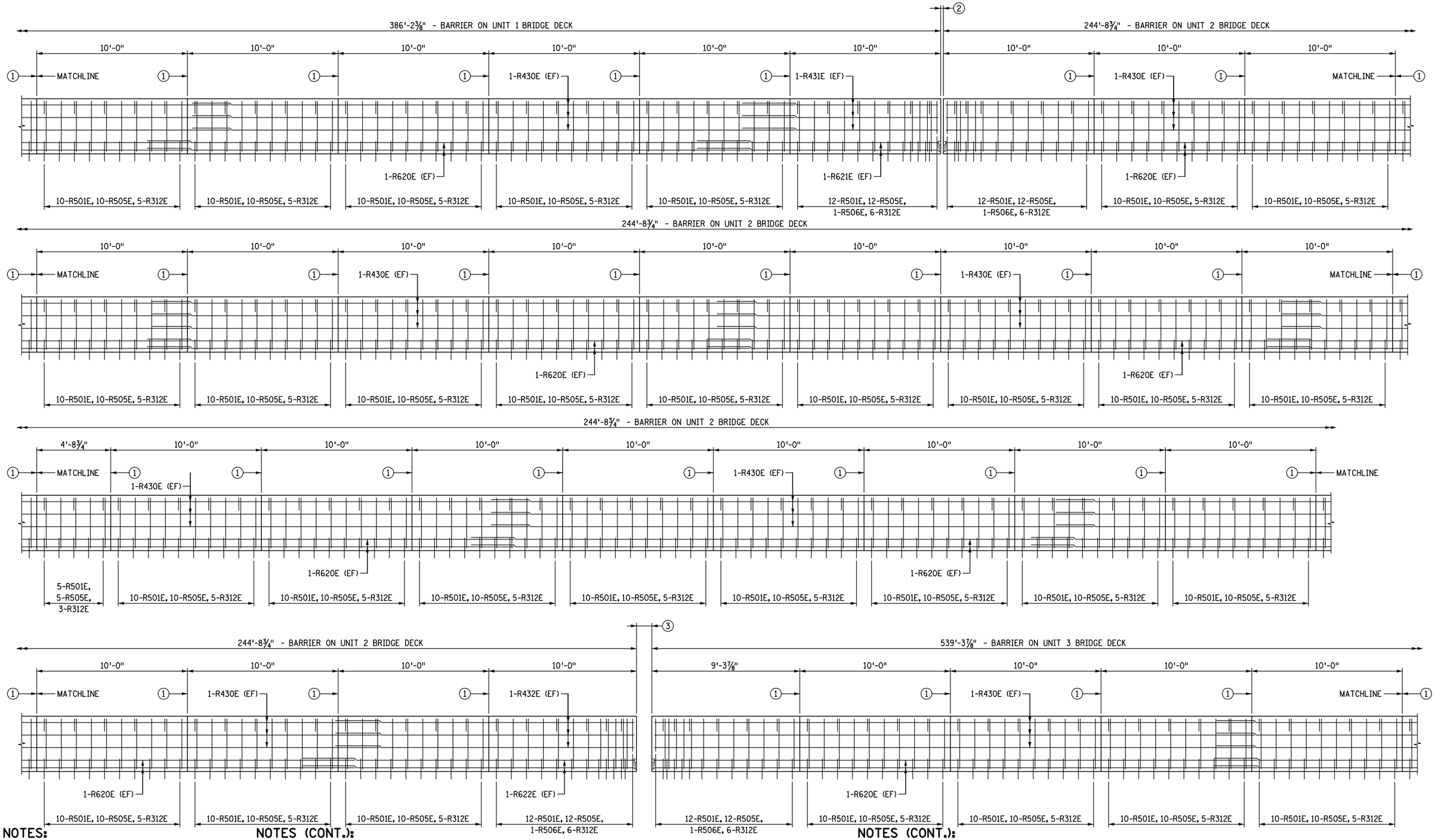
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE:
NORTH CONCRETE BARRIER ELEVATION (1 OF 4)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 32 OF 64 SHEETS

BRIDGE NO. 02523



NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE BARRIER 42" (TYPE S, TL-4)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE BARRIER 42" (TYPE S, TL-4)" SHEET.

(1) ℄ CONTROL JOINT. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

NORTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NOTES (CONT.):

(2) EXPANSION JOINT. SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" FOR COVER PLATE DETAILS AND FOR EXPANSION JOINT OPENINGS AT 45 DEG AND 90 DEG.

(3) EXPANSION JOINT. SEE SHEET "MODULAR JOINT COVER PLATES - TYPE S BARRIER" FOR COVER PLATE DETAILS.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: NORTH CONCRETE BARRIER ELEVATION (2 OF 4)

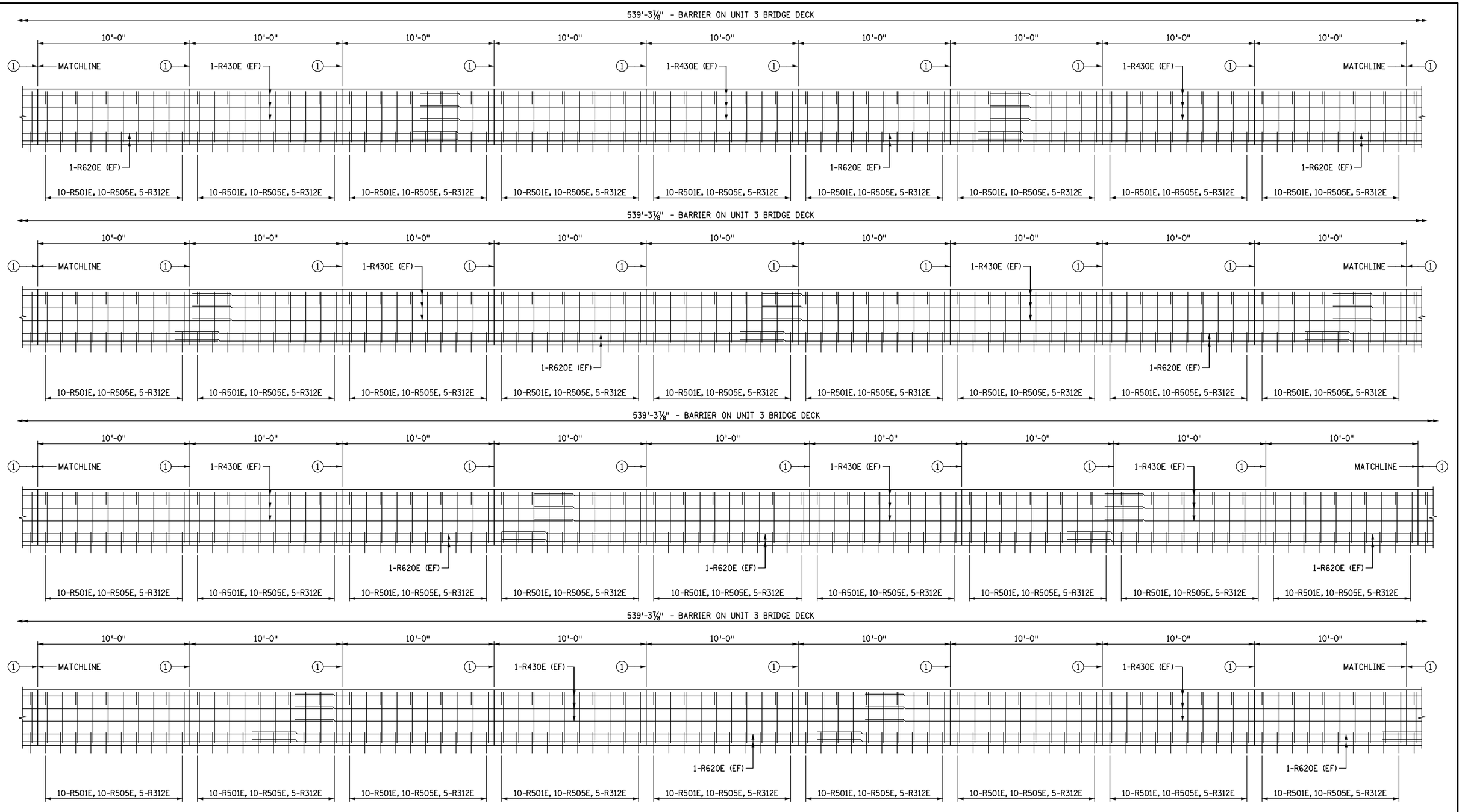
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CHK: ADL	CHK: ADL	

SHEET NO. 33 OF 64 SHEETS

BRIDGE NO. 02523

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NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE BARRIER 42" (TYPE S, TL-4)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE BARRIER 42" (TYPE S, TL-4)" SHEET.

(1) ℄ CONTROL JOINT. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

NORTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

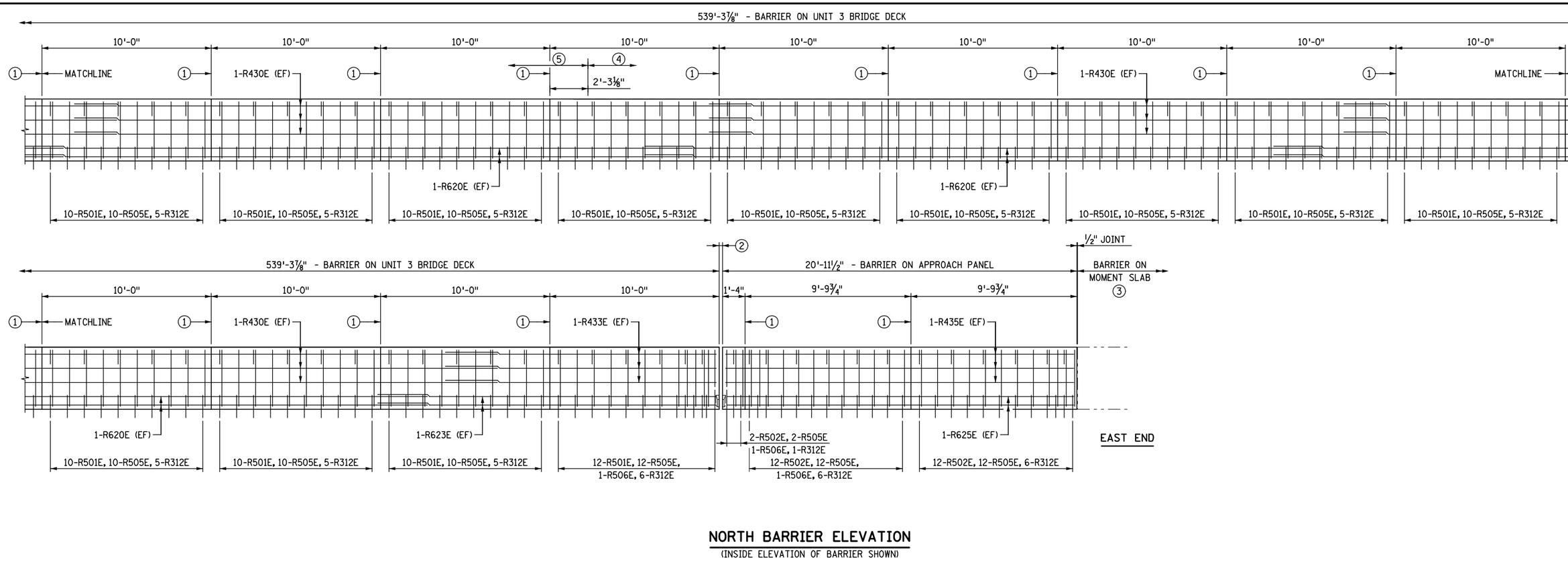
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE:
NORTH CONCRETE BARRIER ELEVATION (3 OF 4)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 34 OF 64 SHEETS

BRIDGE NO. 02523



NORTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

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NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE BARRIER 42" (TYPE S, TL-4)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE BARRIER 42" (TYPE S, TL-4)" SHEET.

(1) ℄ CONTROL JOINT. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

(2) EXPANSION JOINT. SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" FOR COVER PLATE DETAILS AND EXPANSION JOINT OPENINGS AND 45 DEG AND 90 DEG.

(3) SEE ROADWAY PLANS.

(4) BARRIER ON CURVE, RADIUS AT GUTTERLINE IS 932.85'.

(5) BARRIER ON TANGENT.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

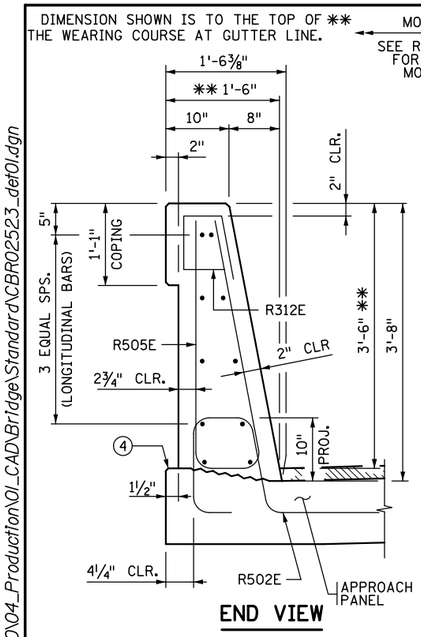
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE:
NORTH CONCRETE BARRIER ELEVATION (4 OF 4)

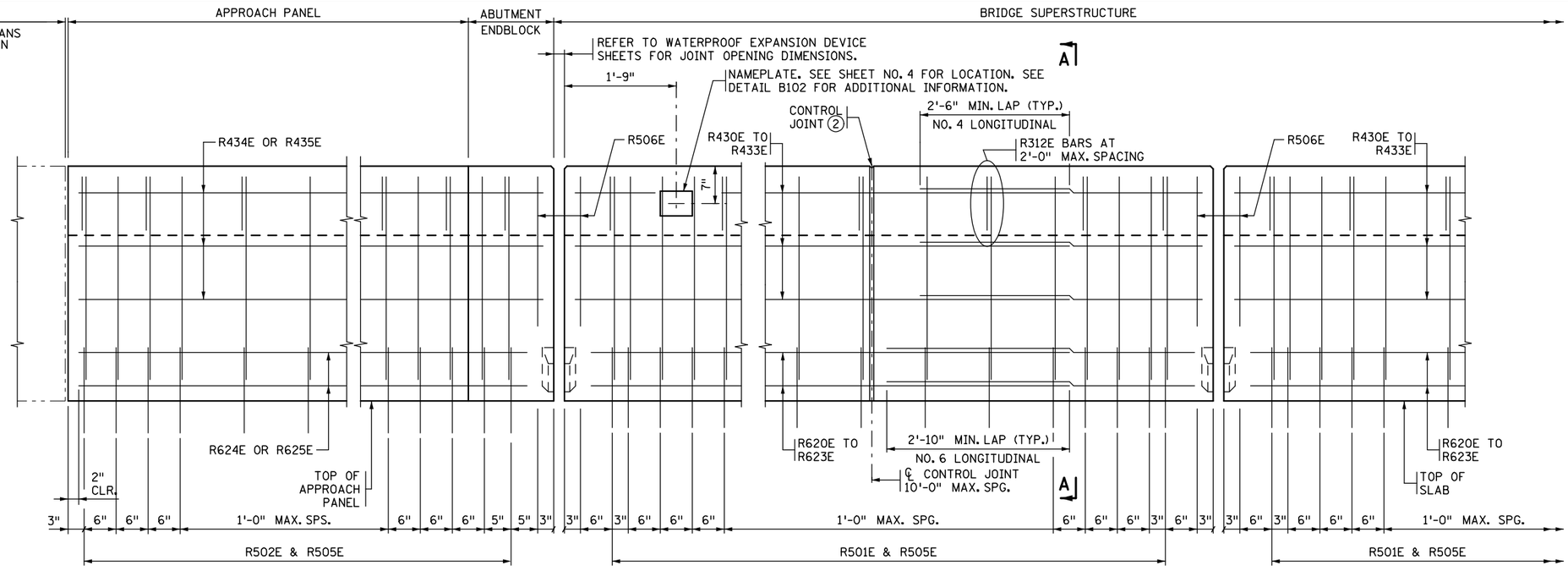
DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 35 OF 64 SHEETS

BRIDGE NO. 02523



END VIEW



ABUTMENT EXPANSION JOINT (2)(3)

EXPANSION DEVICE NOT SHOWN

CONTROL JOINT (2)

HINGE EXPANSION JOINT (2)(3)(5)

EXPANSION DEVICE NOT SHOWN

INSIDE ELEVATION OF BARRIER

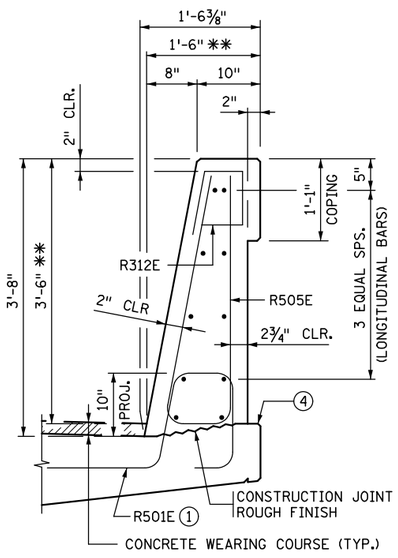
CONCRETE WEARING COURSE NOT SHOWN

BARRIER MEETS MASH TL-4 REQUIREMENTS ON BRIDGE DECK AND TL-3 ON APPROACH PANEL.

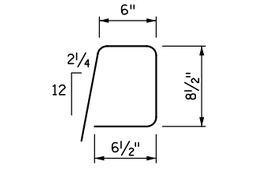
BILL OF REINFORCEMENT - TYPE S BARRIER

BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	1184	5'-5"		BARRIER DOWEL - BRIDGE DECK
R502E	53	5'-7"		BARRIER DOWEL - APPROACH PANEL
R505E	1237	7'-6"		BARRIER VERTICAL
R506E	8	5'-4"		BARRIER VERTICAL @ EXP JOINTS
R312E	620	2'-8"		BARRIER VERTICAL TOP TIE
R620E	120	40'-0"		BARRIER LONGITUDINAL - ALL UNITS
R621E	4	16'-0"		BARRIER LONGITUDINAL - UNIT 1
R622E	4	22'-0"		BARRIER LONGITUDINAL - UNIT 2
R623E	4	20'-0"		BARRIER LONGITUDINAL - UNIT 3
R624E	4	21'-10"		BARRIER LONGITUDINAL - APPROACH PANEL
R625E	4	20'-7"		BARRIER LONGITUDINAL - APPROACH PANEL
R430E	180	40'-0"		BARRIER LONGITUDINAL - ALL UNITS
R431E	6	13'-0"		BARRIER LONGITUDINAL - UNIT 1
R432E	6	20'-0"		BARRIER LONGITUDINAL - UNIT 2
R433E	6	16'-0"		BARRIER LONGITUDINAL - UNIT 3
R434E	6	21'-10"		BARRIER LONGITUDINAL - APPROACH PANEL
R435E	6	20'-7"		BARRIER LONGITUDINAL - APPROACH PANEL

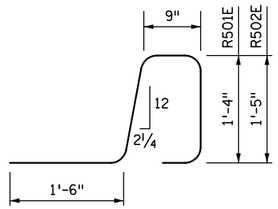
** DIMENSION SHOWN IS TO THE TOP OF THE WEARING COURSE AT GUTTER LINE.



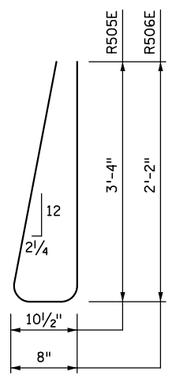
SECTION A-A



R312E



R501E, R502E



R505E, R506E

GENERAL NOTES

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

CONCRETE BARRIER = 569 LBS./FT. (0.140 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 AND ABUTMENT JOINT DETAILS.

(3) REFER TO "WATERPROOF EXPANSION DEVICE" STANDARD PLANS FOR COVER PLATE DETAILS.

(4) MATCH GUTTER LINE ELEVATION.

(5) REFER TO "MODULAR JOINT COVER PLATES-TYPE S BARRIER" FOR COVER PLATE DETAILS.

REVISION: DECEMBER 21, 2022

APPROVED: AUGUST 24, 2016
Kevin Western
STATE BRIDGE ENGINEER

MODIFIED: REMOVED DETAILS RELATING TO GUARDRAIL CONNECTION. ADDED REFERENCES TO BARRIER ON MOMENT SLAB AFTER APPROACH PANEL. ADJUSTED REBAR TO ACCOMMODATE ABUTMENT ENDBLOCK. ADDED NOTE 5.

CODE 59

FIG. 5-397.141(B) MOD.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

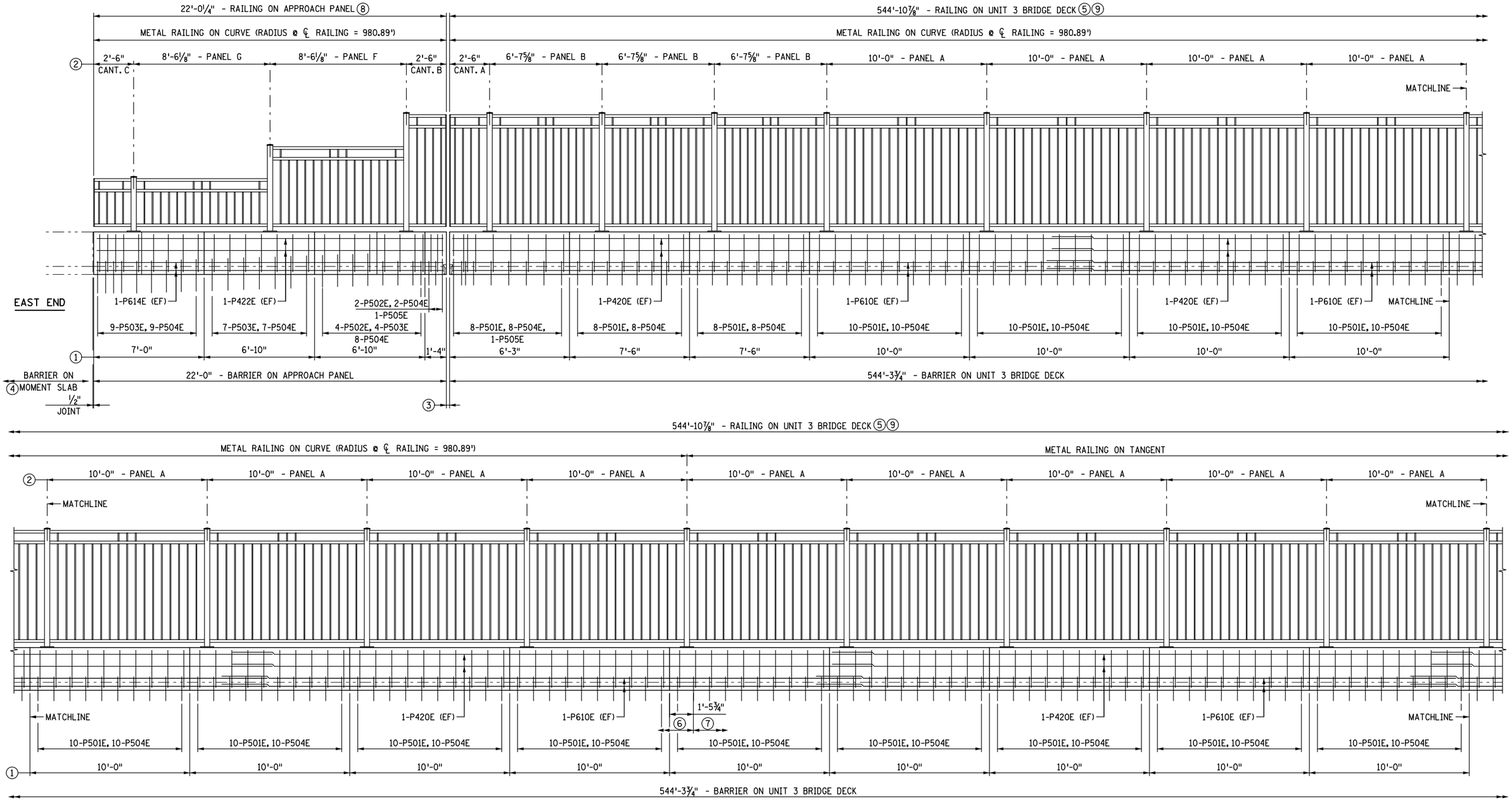
TITLE: CONCRETE BARRIER 42" (TYPE S, TL-4)

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

SHEET NO. 36 OF 64 SHEETS

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:18:33 AM
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NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE UNLESS NOTED OTHERWISE.

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

NOTES (CONT.):

① ℄ CONTROL JOINT SPACING. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

② ℄ RAILPOST SPACING. SPACING MEASURED ALONG ℄ RAILING.

③ EXPANSION JOINT. SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)" FOR COVER PLATE DETAILS. FOR EXPANSION JOINT OPENING AT 45°F AND 90°F, SEE "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)".

SOUTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NOTES (CONT.):

④ SEE ROADWAY PLANS.

⑤ CURVE LENGTH ALONG ℄ RAILING IS 102'-9⅝". TANGENT LENGTH ALONG ℄ RAILING IS 442'-1¼".

⑥ BARRIER ON CURVE, RADIUS AT GUTTERLINE IS 980.18'

⑦ BARRIER ON TANGENT.

⑧ ORNAMNENTAL METAL RAILING DESIGN T-4

⑨ ORNAMENTAL METAL RAILING TYPE SPECIAL 1

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

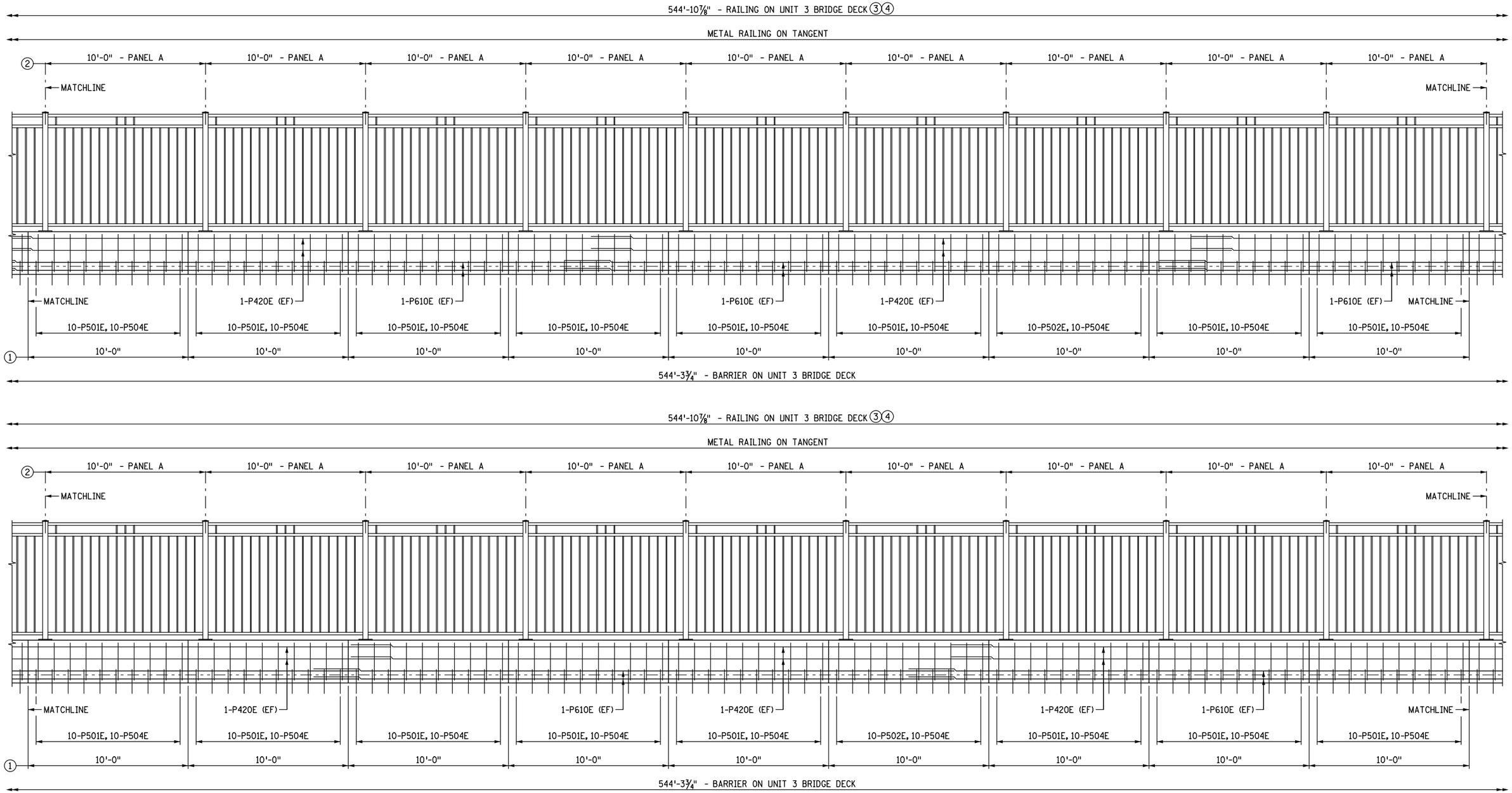
TITLE: SOUTH CONCRETE BARRIER ELEVATION (1 OF 8)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 37 OF 64 SHEETS

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:18:36 AM
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544'-10⅞" - RAILING ON UNIT 3 BRIDGE DECK ③④
METAL RAILING ON TANGENT
544'-3¾" - BARRIER ON UNIT 3 BRIDGE DECK

SOUTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE UNLESS NOTED OTHERWISE.

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

NOTES (CONT.):

① ℄ CONTROL JOINT SPACING. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

② ℄ RAILPOST SPACING. SPACING MEASURED ALONG ℄ RAILING.

③ CURVE LENGTH ALONG ℄ RAILING CURVE IS 102'-9⅝". TANGENT LENGTH ALONG ℄ RAILING IS 442'-1¼"

④ ORNAMENTAL METAL RAILING TYPE SPECIAL 1

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: SOUTH CONCRETE BARRIER ELEVATION (2 OF 8)

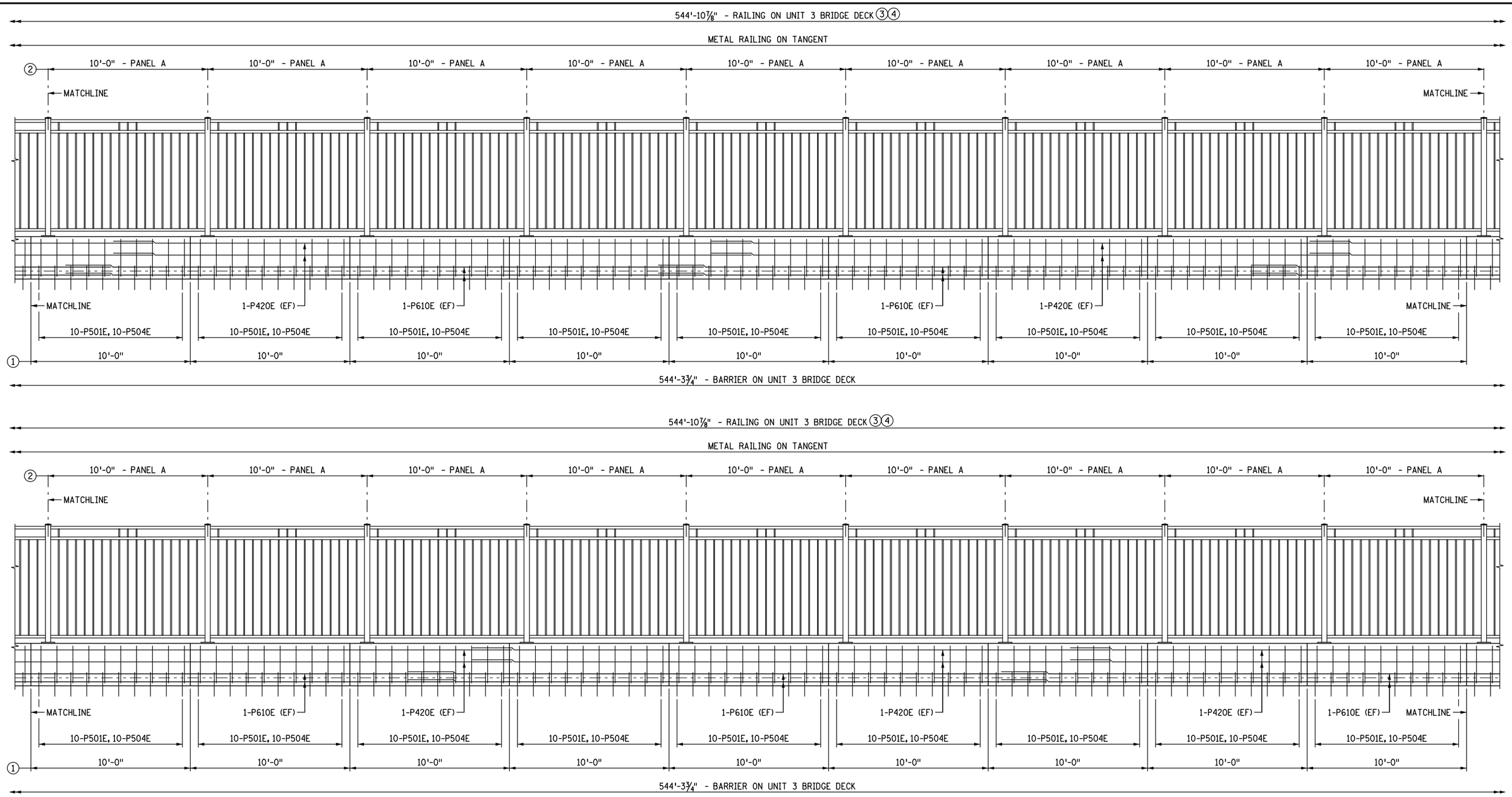
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CHK: ADL	CHK: ADL	

SHEET NO. 38 OF 64 SHEETS

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SOUTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE UNLESS NOTED OTHERWISE.

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

NOTES (CONT.):

① ℄ CONTROL JOINT SPACING. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

② ℄ RAILPOST SPACING. SPACING MEASURED ALONG ℄ RAILING.

③ CURVE LENGTH ALONG ℄ RAILING CURVE IS 102'-9⅝". TANGENT LENGTH ALONG ℄ RAILING IS 442'-1¼"

④ ORNAMENTAL METAL RAILING TYPE SPECIAL 1

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

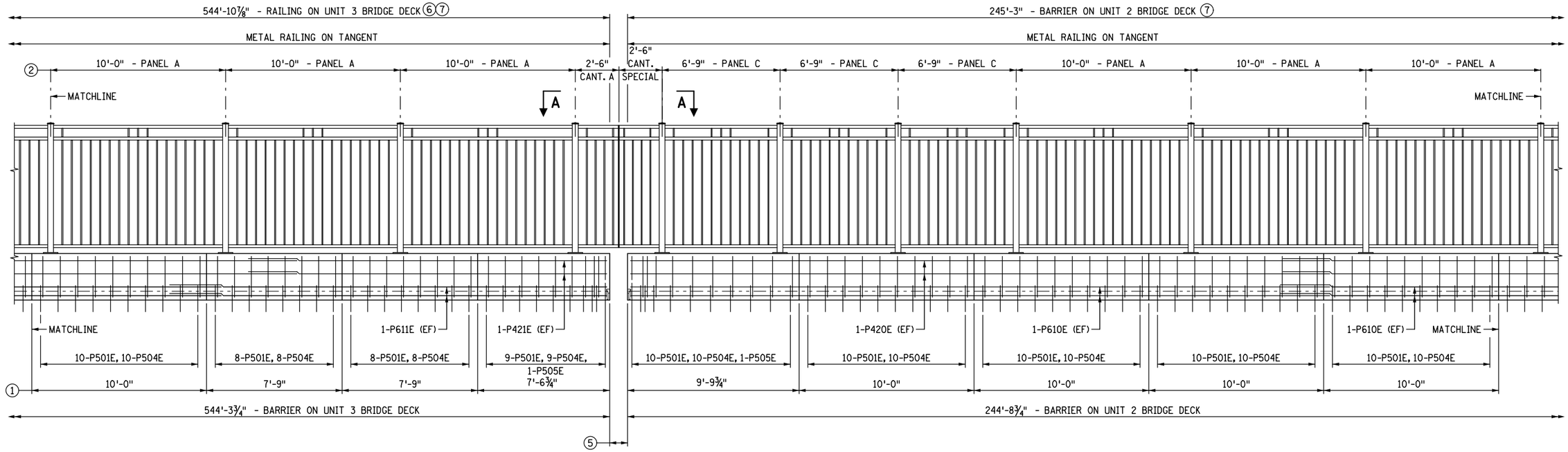
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE:
SOUTH CONCRETE BARRIER ELEVATION (3 OF 8)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 39 OF 64 SHEETS

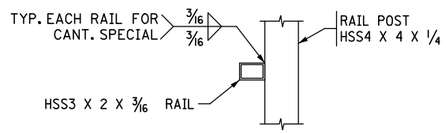
BRIDGE NO. 02523



SOUTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

VIEW A-A



SECTION B-B - WELD DETAIL

FOR ADDITIONAL CANTILEVER CONSTRUCTION DETAILS SEE "ORNAMENTAL METAL RAILING WITH FENCE (DESIGN T-4 PARAPET MOUNT)" SHEET FOR DETAILS.

BASE PLATE (SPECIAL)

1 REQUIRED WITH CANT. SPECIAL

NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE UNLESS NOTED OTHERWISE.

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

NOTES (CONT.):

① ℄ CONTROL JOINT SPACING. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

② ℄ RAILPOST SPACING. SPACING MEASURED ALONG ℄ RAILING.

③ BASE PLATE (TYPICAL). SEE "ORNAMENTAL METAL RAILING WITH FENCE (DESIGN T-4 PARAPET MOUNT)" SHEET FOR DETAILS.

④ BASE PLATE (SPECIAL). SEE DETAIL ON THIS SHEET.

⑤ EXPANSION JOINT. SEE SHEET "MODULAR JOINT COVER PLATES - TYPE P-1 BARRIER" FOR COVER PLATE DETAILS. FOR EXPANSION JOINT OPENINGS AT 45°F AND 90°F, SEE "MODULAR JOINT DETAILS - EAST HINGE" SHEET.

⑥ CURVE LENGTH ALONG ℄ RAILING IS 102'-9⅝". TANGENT LENGTH ALONG ℄ RAILING IS 442'-1¼".

⑦ ORNAMENTAL METAL RAILING TYPE SPECIAL 1

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

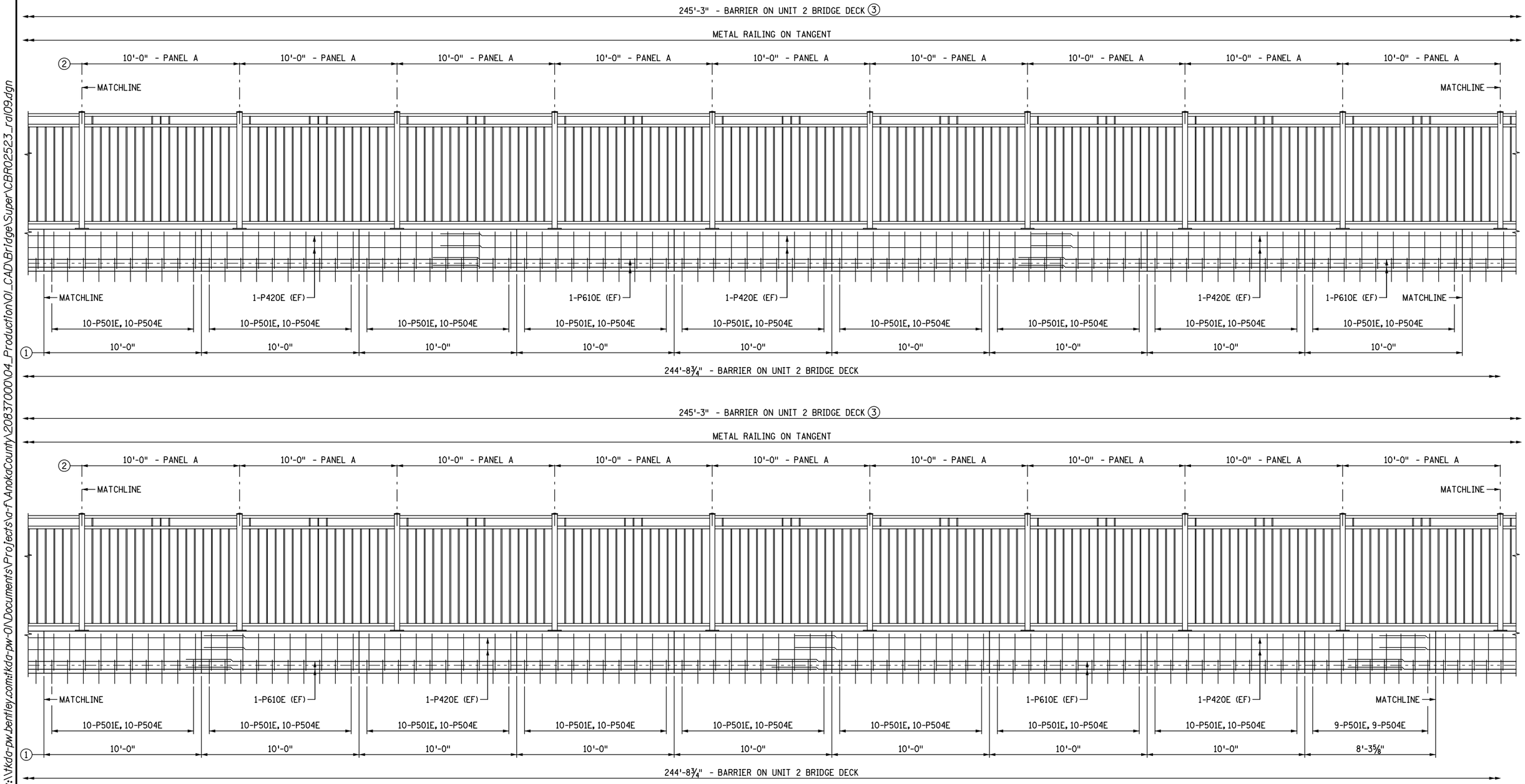
TITLE:
SOUTH CONCRETE BARRIER ELEVATION (4 OF 8)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 40 OF 64 SHEETS

BRIDGE NO. 02523

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SOUTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE UNLESS NOTED OTHERWISE.

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

NOTES (CONT.):

① ℄ CONTROL JOINT SPACING. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

② ℄ RAILPOST SPACING. SPACING MEASURED ALONG ℄ RAILING.

③ ORNAMENTAL METAL RAILING TYPE SPECIAL 1

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: SOUTH CONCRETE BARRIER ELEVATION (5 OF 8)

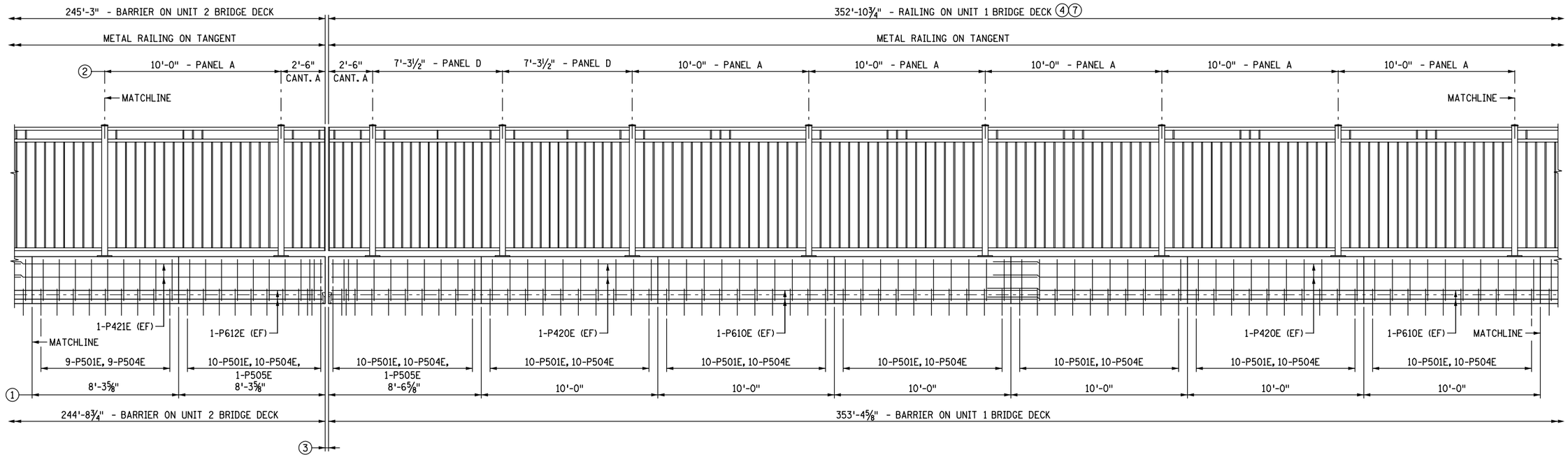
DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

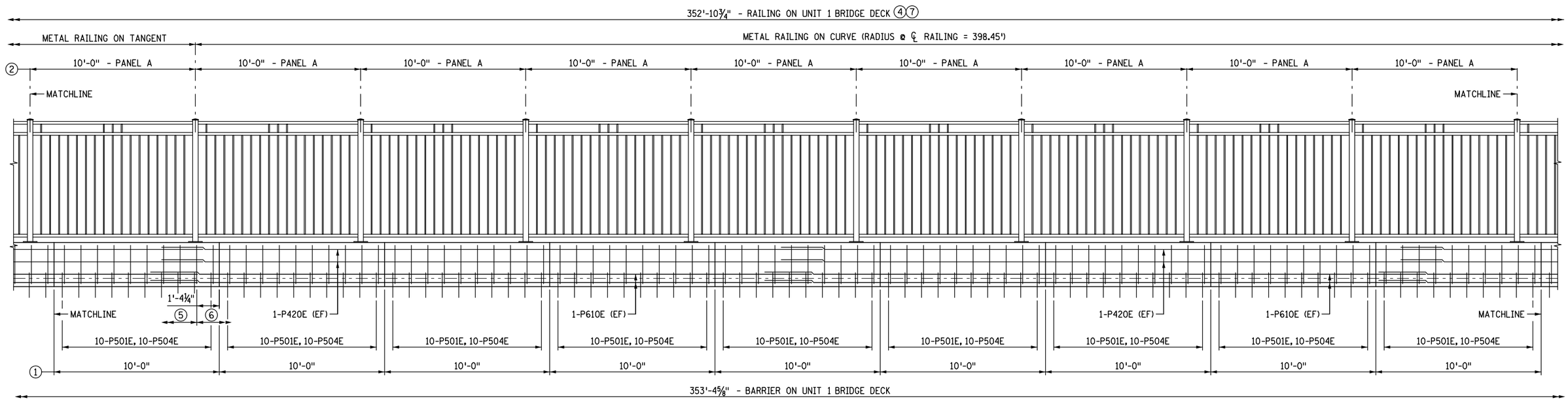
SHEET NO. 41 OF 64 SHEETS

BRIDGE NO. 02523

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NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE UNLESS NOTED OTHERWISE.

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

NOTES (CONT.):

1. ℄ CONTROL JOINT SPACING. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.
2. ℄ RAILPOST SPACING. SPACING MEASURED ALONG ℄ RAILING.
3. EXPANSION JOINT. SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)" FOR COVER PLATE DETAILS. FOR EXPANSION JOINT OPENING AT 45°F AND 90°F, SEE "WATERPROOF EXPANION JOINT DETAILS (2 OF 3)" SHEET.

SOUTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NOTES (CONT.):

4. CURVE LENGTH ALONG ℄ RAILING IS 275'-8⅜". TANGENT LENGTH ALONG ℄ RAILING IS 77'-2⅜".
5. BARRIER ON TANGENT.
6. BARIER ON CURVE, RAIDUS AT GUTTERLINE IS 399.16'
7. ORNAMENTAL METAL RAILING TYPE SPECIAL 1

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

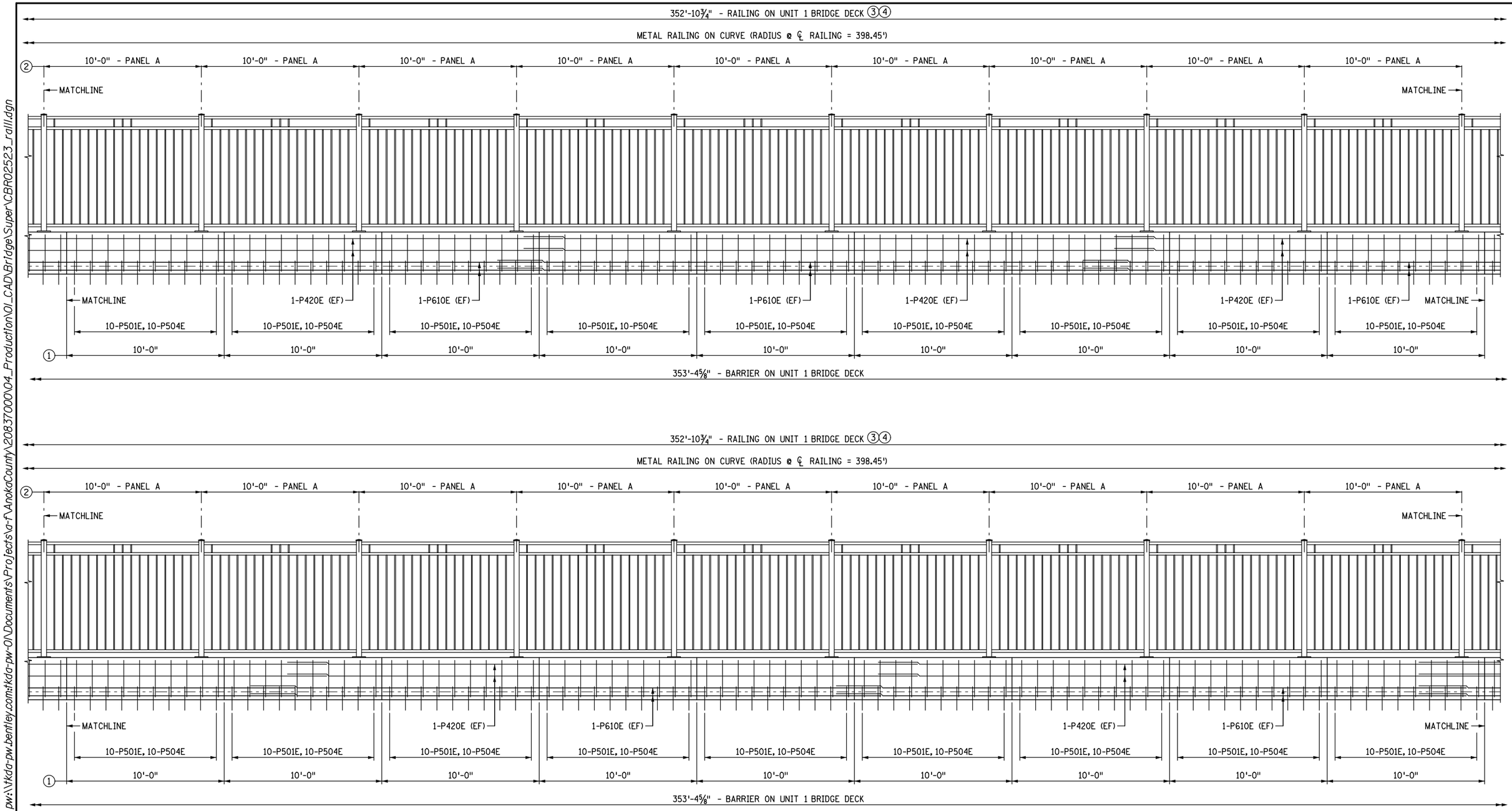
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: SOUTH CONCRETE BARRIER ELEVATION (6 OF 8)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 42 OF 64 SHEETS

BRIDGE NO. 02523



NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE UNLESS NOTED OTHERWISE.

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

NOTES (CONT.):

① ℄ CONTROL JOINT SPACING. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

② ℄ RAILPOST SPACING. SPACING MEASURED ALONG ℄ RAILING.

③ CURVE LENGTH ALONG ℄ RAILING IS 275'-8⅜". TANGENT LENGTH ALONG ℄ RAILING IS 77'-2⅜".

④ ORNAMENTAL METAL RAILING TYPE SPECIAL 1

SOUTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

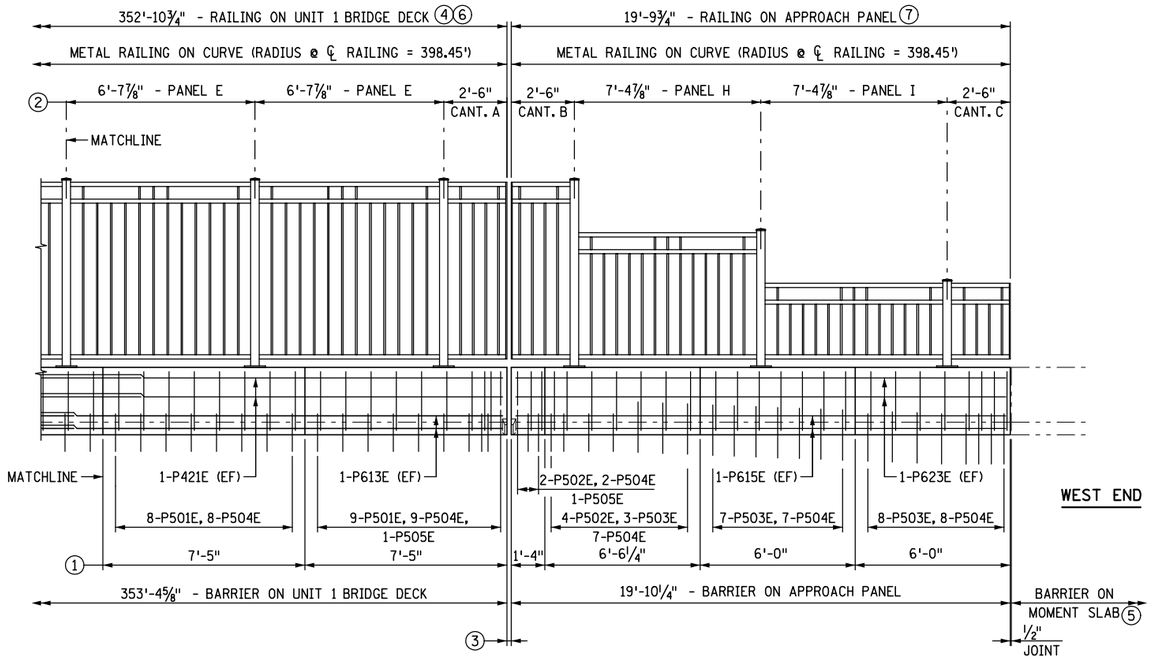
TITLE: SOUTH CONCRETE BARRIER ELEVATION (7 OF 8)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 43 OF 64 SHEETS

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:18:52 AM
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SOUTH BARRIER ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

PANEL ID	PANEL QUANTITY	CHAIN LINK FENCE FABRIC	LOCATION
PANEL A	106	YES	UNITS 1, 2 AND 3 BRIDGE DECK
PANEL B	3	YES	UNIT 3 BRIDGE DECK
PANEL C	3	YES	UNIT 2 BRIDGE DECK
PANEL D	2	YES	UNIT 1 BRIDGE DECK
PANEL E	2	YES	UNIT 1 BRIDGE DECK
PANEL F	1	NO	EAST APPROACH PANEL
PANEL G	1	NO	EAST APPROACH PANEL
PANEL H	1	NO	WEST APPROACH PANEL
PANEL I	1	NO	WEST APPROACH PANEL
CANT A	5	YES	UNIT 1, 2 AND 3 BRIDGE DECKS
CANT B	2	NO	EAST AND WEST APPROACH PANELS
CANT C	2	NO	EAST AND WEST APPROACH PANELS
CANT SPECIAL	1	YES	UNIT 2 BRIDGE DECK

NOTES:

FOR SPACING OF VERTICAL REINFORCEMENT SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE UNLESS NOTED OTHERWISE.

FOR REINFORCEMENT LAP LENGTHS SEE "CONCRETE PARAPET (TYPE P-1, TL-2)" SHEET.

NOTES (CONT.):

① ℄ CONTROL JOINT SPACING. SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

② ℄ RAILPOST SPACING. SPACING MEASURED ALONG ℄ RAILING.

③ EXPANSION JOINT. SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)" FOR COVER PLATE DETAILS. FOR EXPANSION JOINT OPENINGS AT 45°F AND 90°F, SEE "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" SHEET.

④ CURVE LENGTH ALONG ℄ RAILING IS 275'-8⅜". TANGENT LENGTH ALONG ℄ RAILING IS 77'-2⅜".

⑤ SEE ROADWAY PLANS.

⑥ ORNAMENTAL METAL RAILING TYPE SPECIAL 1.

⑦ ORNAMENTAL METAL RAILING DESIGN T-4.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

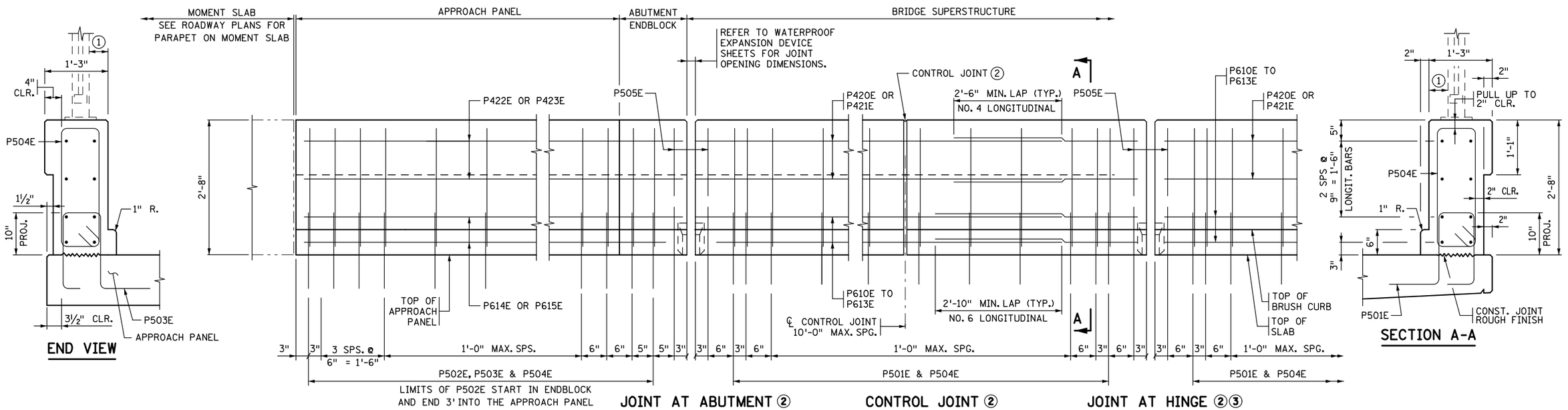
TITLE:
SOUTH CONCRETE BARRIER ELEVATION (8 OF 8)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 44 OF 64 SHEETS

BRIDGE NO. 02523

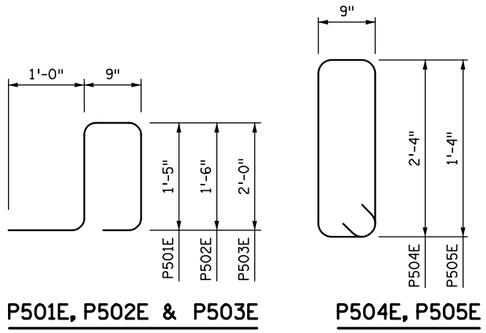
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INSIDE ELEVATION OF PARAPET

PARAPET MEETS MASH TL-2 REQUIREMENTS

BILL OF REINFORCEMENT - TYPE P-1 BARRIER				
BAR	NO.	LENGTH	SHAPE	LOCATION
P501E	1154	5'-1"	⌐¬	PARAPET DOWEL - BRIDGE DECK
P502E	12	5'-3"	⌐¬	PARAPET DOWEL - APPROACH PANEL
P503E	38	6'-3"	⌐¬	PARAPET DOWEL - APPROACH PANEL
P504E	1204	7'-1"	▭	PARAPET VERTICAL
P505E	8	5'-1"	▭	PARAPET VERTICAL @ EXP JOINTS
P610E	116	40'-0"	———	PARAPET LONGITUDINAL
P611E	4	25'-0"	———	PARAPET LONGITUDINAL - UNIT 3
P612E	4	22'-0"	———	PARAPET LONGITUDINAL - UNIT 2
P613E	4	20'-0"	———	PARAPET LONGITUDINAL - UNIT 1
P614E	4	21'-8"	———	PARAPET LONGITUDINAL - APPROACH PANEL
P615E	4	19'-6"	———	PARAPET LONGITUDINAL - APPROACH PANEL
P420E	116	40'-0"	———	PARAPET LONGITUDINAL
P421E	12	21'-0"	———	PARAPET LONGITUDINAL
P422E	4	21'-8"	———	PARAPET LONGITUDINAL - APPROACH PANEL
P423E	4	19'-6"	———	PARAPET LONGITUDINAL - APPROACH PANEL



P501E, P502E & P503E **P504E, P505E**

GENERAL NOTES

CONTINUOUSLY GROUND ALL METAL RAILINGS; SEE THE SPECIAL PROVISIONS. REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.

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

CONCRETE PARAPET = 473 LBS./FT. (0.117 CU. YDS./FT.)

FINISH ALL EDGES OF PARAPET 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.

PARAPET QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

① 4½" MIN. FROM FRONT FACE OF PARAPET TO VERTICAL METAL RAILING POST IF NOT PROTECTED BY A TRAFFIC BARRIER.

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

③ REFER TO "MODULAR JOINT COVER PLATES - TYPE P-1 BARRIER" FOR COVER PLATE DETAILS.

MODIFIED: REMOVED DETAILS RELATING TO GUARDRAIL CONNECTION. ADDED REFERENCES TO BARRIER ON MOMENT SLAB AFTER APPROACH PANEL. ADJUSTED REBAR TO ACCOMMODATE ABUTMENT ENDBLOCK. ADDED NOTE 3.

CODE 69

FIG. 5-397.166(F) MOD.

REVISION: DECEMBER 21, 2022

APPROVED: APRIL 09, 2020
Kim Western
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: CONCRETE PARAPET (TYPE P-1, TL-2)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

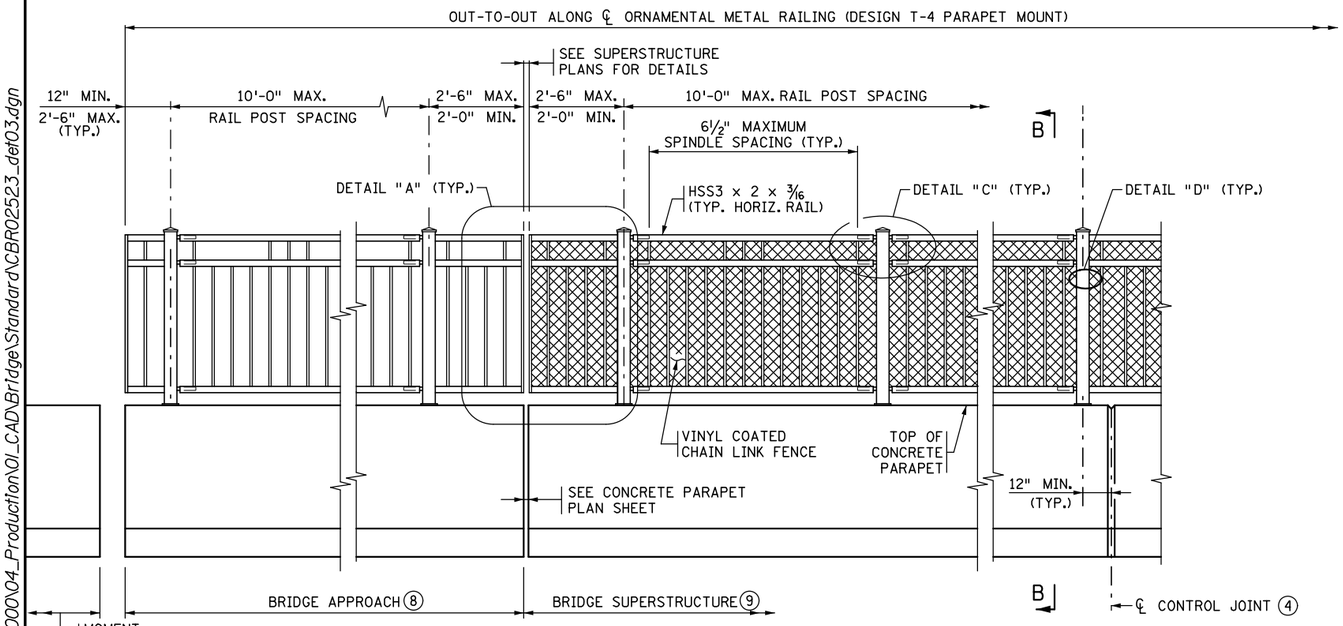
SHEET NO. 45 OF 64 SHEETS

BRIDGE NO. 02523

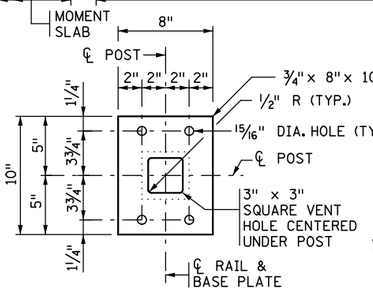
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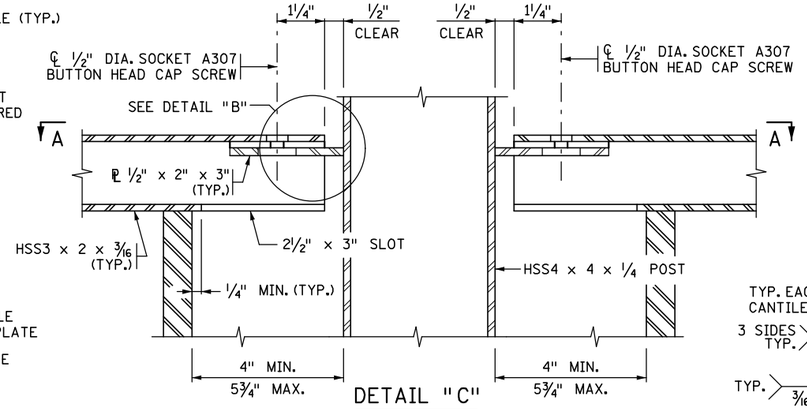
RAILING HEIGHT TABLE				
NOMINAL HEIGHT	Ⓐ	Ⓑ	Ⓒ	TYPE
6'-0"	3'-4"	2'-0"	N/A	III
8'-0"	5'-4"	4'-0"	N/A	II
10'-0"	7'-4"	6'-0"	7'-0"	I



INSIDE ELEVATION OF RAILING

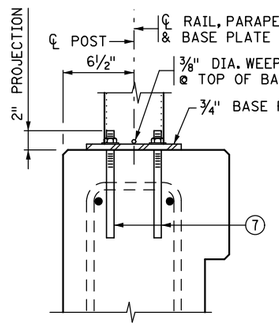


BASE PLATE

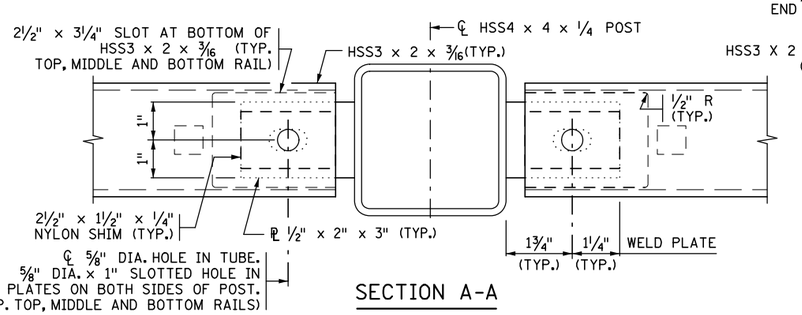


DETAIL "C"

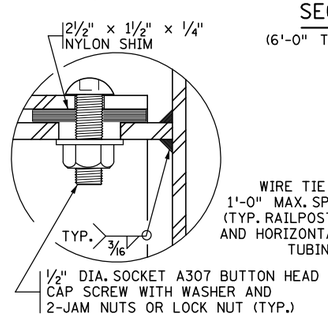
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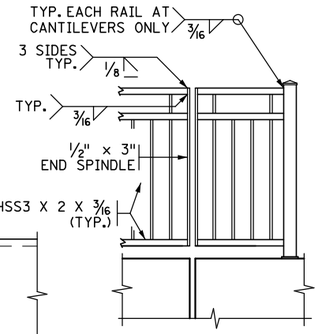
ANCHOR DETAIL



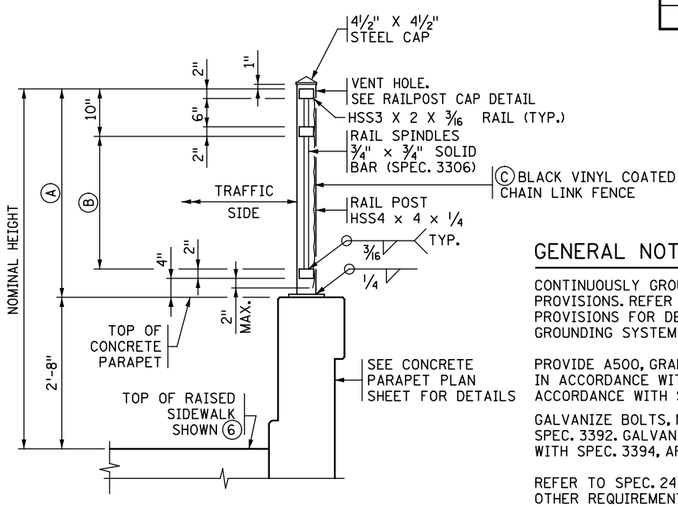
SECTION A-A



DETAIL "B"

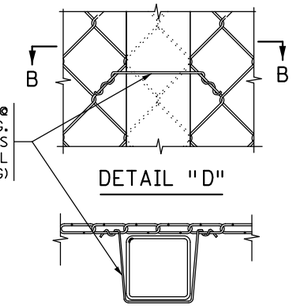


DETAIL "A"



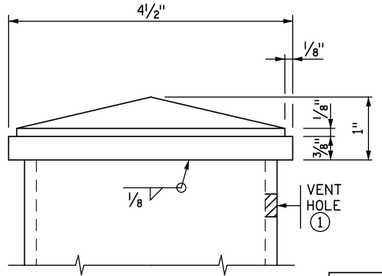
SECTION B-B

(6'-0" TALL OPTION SHOWN)



DETAIL "D"

SECTION B-B



RAILPOST CAP DETAIL (5)

GENERAL NOTES

CONTINUOUSLY GROUND ALL METAL RAILINGS; SEE THE SPECIAL PROVISIONS. REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.

PROVIDE A500, GRADE B STRUCTURAL STEEL TUBING (HSS) IN THE RAIL IN ACCORDANCE WITH SPEC. 3361. PROVIDE ALL OTHER STEEL IN ACCORDANCE WITH SPEC. 3306.

GALVANIZE BOLTS, NUTS, WASHERS AND ANCHORS IN ACCORDANCE WITH SPEC. 3392. GALVANIZE ALL OTHER STRUCTURAL STEEL IN ACCORDANCE WITH SPEC. 3394, AFTER FABRICATION.

REFER TO SPEC. 2475 AND THE SPECIAL PROVISIONS FOR COATING AND OTHER REQUIREMENTS NOT INCLUDED ON THIS SHEET.

INSTALL RAIL POSTS AND SPINDLES PLUMB.

CURVE HORIZONTAL RAILS WHERE APPLICABLE AND PLACE RAILS PARALLEL TO THE EDGE OF SIDEWALK PROFILE.

DRILL ½" DIA. MAX. VENT HOLES ON THE UNDERSIDE OF RAIL TUBES AS NECESSARY TO FACILITATE GALVANIZING.

REFER TO SPEC. 2557 FOR CHAIN LINK FABRIC AND TIE REQUIREMENTS. CHAIN LINK FENCE FABRIC AT PANEL ENDS TO BE TENSIONED WITH A STRETCHER BAR. PROVIDE MOUNTING TABS ON FABRICATED PANEL AT PANEL ENDS FOR TENSIONING OR OTHER MEANS AS APPROVED BY THE ENGINEER. STRETCHER BAR COLOR TO MATCH CHAIN LINK FENCE FABRIC.

(1) DRILL VENT HOLE IN THE RAIL POST WITHIN 2" OF THE UNDERSIDE OF THE CAP, ON THE NON-TRAFFIC SIDE OF THE POST AS NECESSARY TO FACILITATE GALVANIZING. MAXIMUM HOLE SIZE IS ½" DIA.

(2) NOT USED

(3) NOT USED

(4) SEE SUPERSTRUCTURE AND CONCRETE PARAPET PLAN SHEETS FOR CONTROL JOINT SPACING.

(5) PROVIDE A PYRAMID TOP STYLE STEEL CAP WELDED TO TOP OF POST WITH A SURFACE FINISH OF 1000 MICRO-INCH, OR SMOOTHER, PRIOR TO GALVANIZING.

(6) FOR NON-RAISED SIDEWALK, SEE CONCRETE PARAPET PLAN SHEET.

(7) ADHESIVE ANCHORAGE WITH ⅝" DIA. ANCHOR ROD IN ACCORDANCE WITH SPEC. 3385, TYPE A OR B WITH HEX NUT AND WASHER. PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.5 KSI. EMBED THE ANCHORAGE NO LESS THAN 5" REGARDLESS OF CHARACTERISTIC BOND STRENGTH. DRILL THROUGH REINFORCEMENT (IF ENCOUNTERED) TO ACHIEVE MINIMUM EMBEDMENT. ENSURE HEX NUT IS IN CONTACT WITH THE ADJACENT SURFACE AND TORQUE TO 60 FT-LBS UNLESS A HIGHER TORQUE IS RECOMMENDED BY THE MANUFACTURER. PROOF LOAD TO 6.9 KIPS. REFER TO THE APPROVED/QUALIFIED PRODUCTS LIST AND THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

(8) "ORNAMENTAL METAL RAILING DESIGN T-4" RAILING ON APPROACH PANEL PARAPETS.

(9) "ORNAMENTAL METAL RAILING TYPE SPECIAL 1" RAILING ON BRIDGE SUPERSTRUCTURE PARAPETS.

REVISION: DECEMBER 21, 2022

APPROVED: FEBRUARY 08, 2022
Kevin Western
STATE BRIDGE ENGINEER

MODIFIED: ADDED CHAIN LINK FENCE DETAILS TO METAL RAILING ON BRIDGE SUPERSTRUCTURE. UPDATED ELEVATION FOR PROJECT GEOMETRY.

FIG. 5-397.162(C) MOD.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

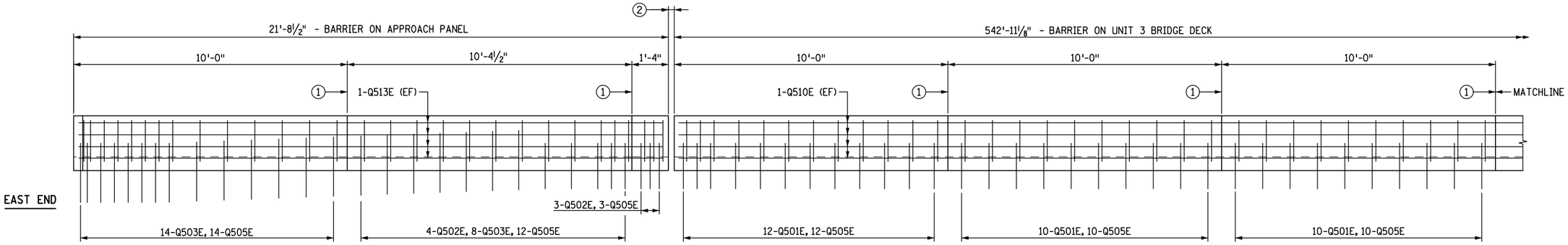
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

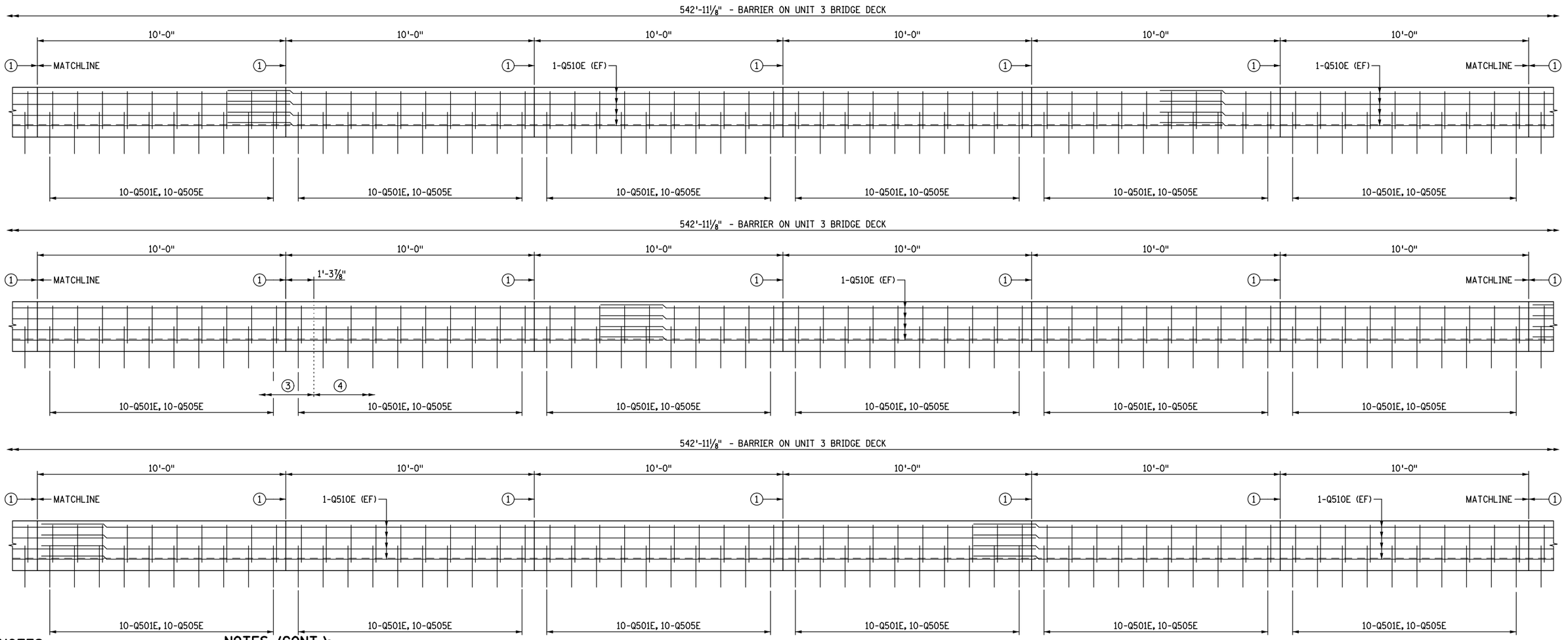
TITLE: ORNAMENTAL METAL RAILING WITH FENCE (DESIGN T-4 MOD. PARAPET MOUNT)

DES: JRM	DR: JRM	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 46 OF 64 SHEETS

BRIDGE NO. 02523





NOTES:

FOR SPACING OF VERTICAL REINF, SEE "TYPE IOWA BICYCLE PARAPET DETAILS" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

(1) ℄ CONTROL JOINT, SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

(2) EXPANSION JOINT. SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)" FOR COVER PLATE DETAILS. FOR EXPANSION JOINT OPENING AT 45 DEG AND 90 DEG SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)".

(3) BARRIER ON CURVE RADIUS AT GUTTERLINE IS 966.85'

(4) BARRIER ON TANGENT.

TYPE IOWA BICYCLE PARAPET ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

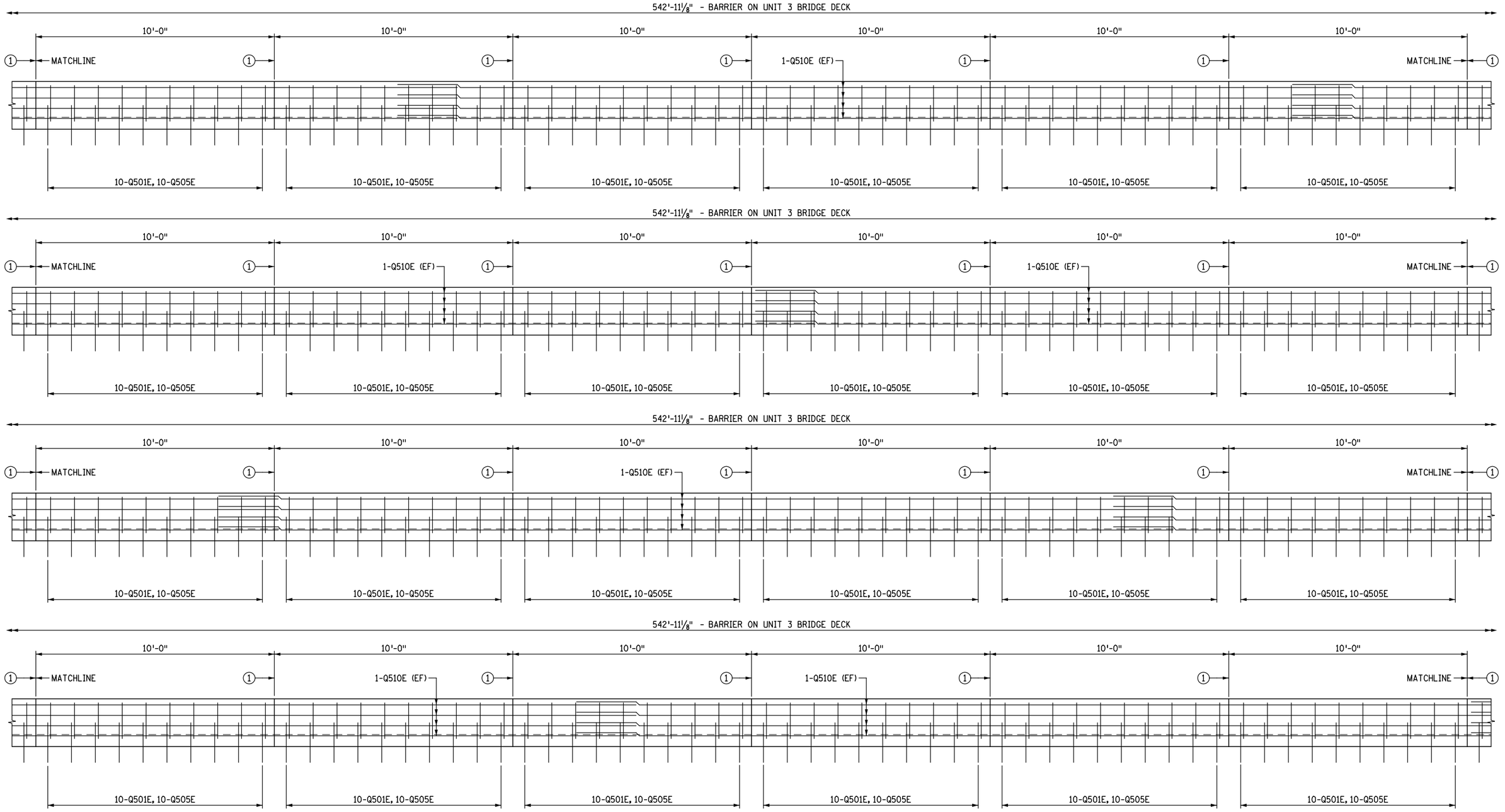
TITLE: TYPE IOWA BICYCLE PARAPET ELEVATION (1 OF 6)

DES: EGM	DR: EGM	APPROVED
CHK: SEM	CHK: SEM	

SHEET NO. 47 OF 64 SHEETS

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:19:02 AM
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NOTES:

FOR SPACING OF VERTICAL REINF, SEE "TYPE IOWA BICYCLE PARAPET DETAILS" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

(1) ℄ CONTROL JOINT, SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

TYPE IOWA BICYCLE PARAPET ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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

SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

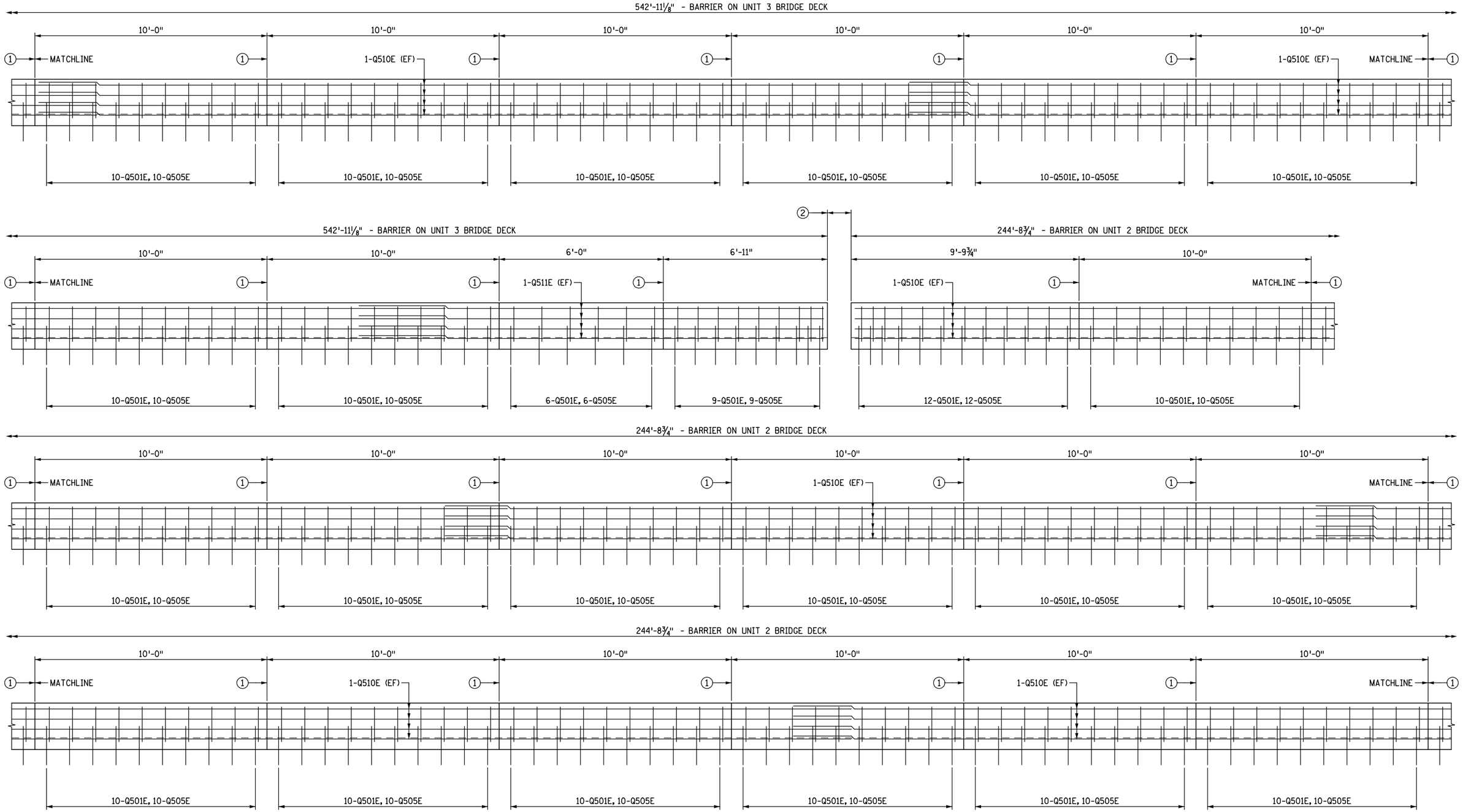
TITLE: TYPE IOWA BICYCLE PARAPET ELEVATION (2 OF 6)

DES: EGM	DR: EGM	APPROVED
CHK: SEM	CHK: SEM	

SHEET NO. 48 OF 64 SHEETS

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:19:05 AM
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NOTES:

FOR SPACING OF VERTICAL REINF, SEE "TYPE IOWA BICYCLE PARAPET DETAILS" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

(1) ℄ CONTROL JOINT, SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

(2) EXPANSION JOINT. SEE SHEET "MODULAR JOINT COVER PLATES - TYPE IOWA BICYLCE PARAPET" FOR COVER PLATE DETAILS. SEE SHEET "MODULAR JOINT DETAILS EAST HINGE" FOR JOINT OPENINGS.

TYPE IOWA BICYCLE PARAPET ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

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NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

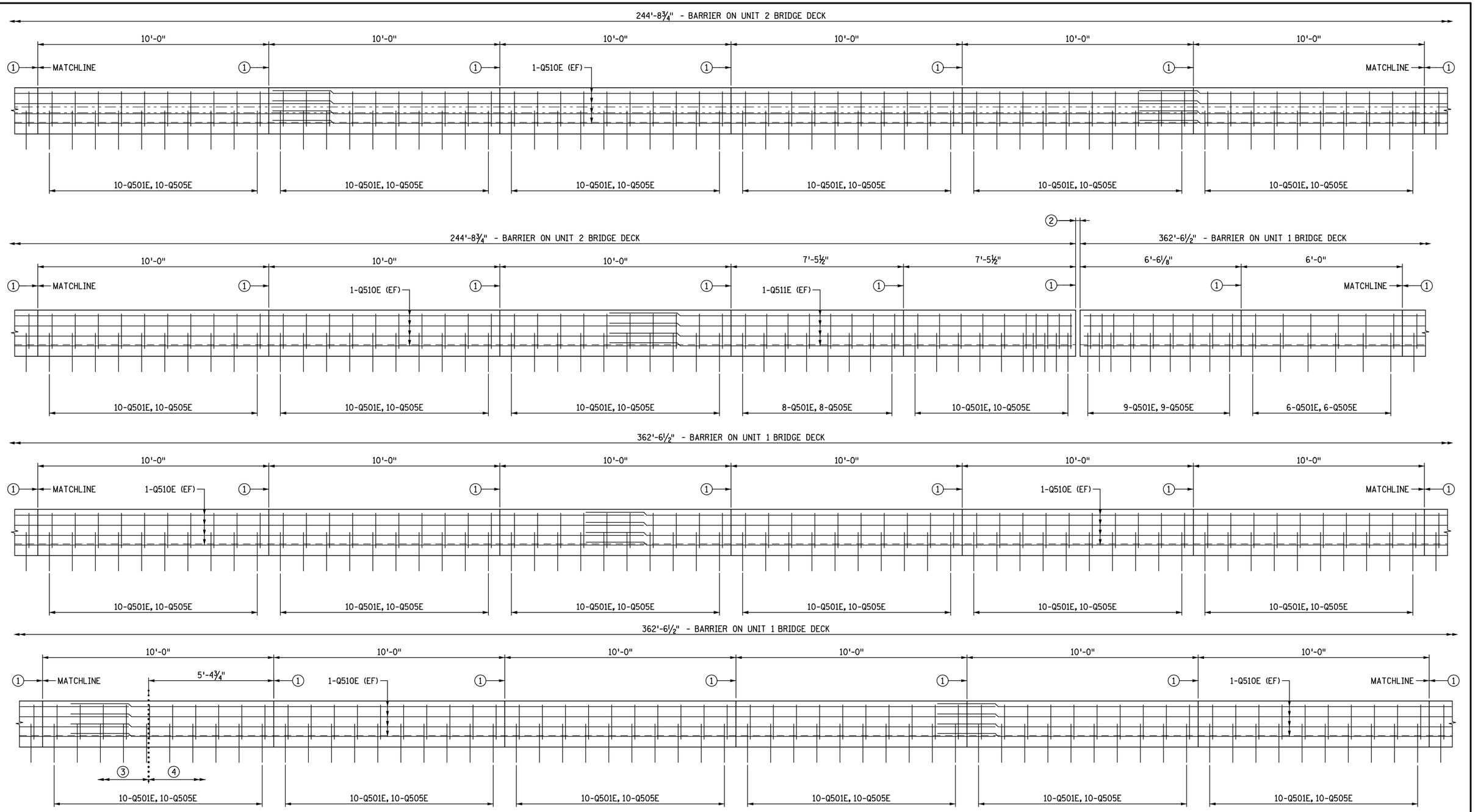
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: TYPE IOWA BICYCLE PARAPET ELEVATION (3 OF 6)

DES: EGM	DR: EGM	APPROVED
CHK: SEM	CHK: SEM	

SHEET NO. 49 OF 64 SHEETS

BRIDGE NO. 02523



NOTES:

FOR SPACING OF VERTICAL REINF, SEE "TYPE IOWA BICYCLE PARAPET DETAILS" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

1. ℄ CONTROL JOINT, SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.
2. EXPANSION JOINT. SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)" FOR COVER PLATE DETAILS. FOR EXPANSION JOINT OPENING AT 45 DEG AND 90 DEG SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)".
3. BARRIER ON TANGENT.
4. BARRIER ON CURVE, RADIUS AT GUTTERLINE IS 412.50'.

TYPE IOWA BICYCLE PARAPET ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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SIGNED _____ MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

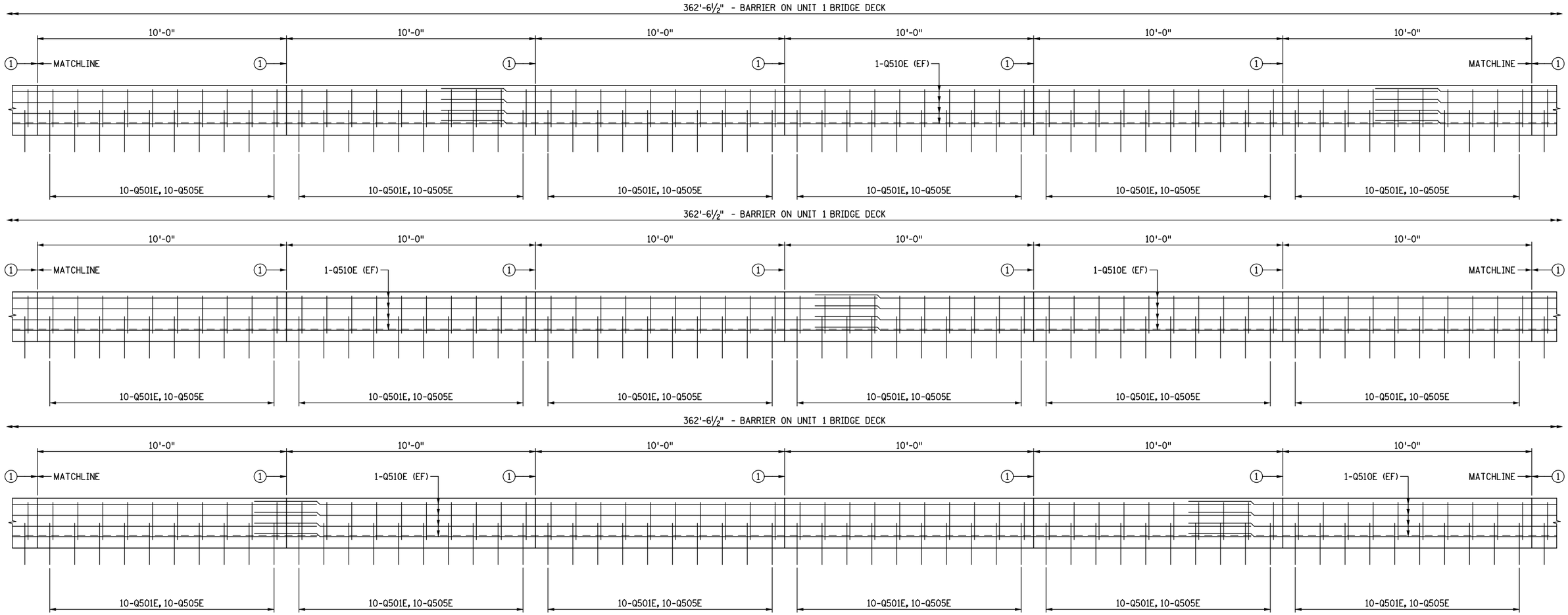
TITLE: TYPE IOWA BICYCLE PARAPET ELEVATION (4 OF 6)

DES: EGM	DR: EGM	APPROVED
CHK: SEM	CHK: SEM	

SHEET NO. 50 OF 64 SHEETS

BRIDGE NO. 02523

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NOTES:

FOR SPACING OF VERTICAL REINF, SEE "TYPE IOWA BICYCLE PARAPET DETAILS" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

(1) ℄ CONTROL JOINT, SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

TYPE IOWA BICYCLE PARAPET ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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DATE: 11/6/2024 LIC. NO.: 43076

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ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

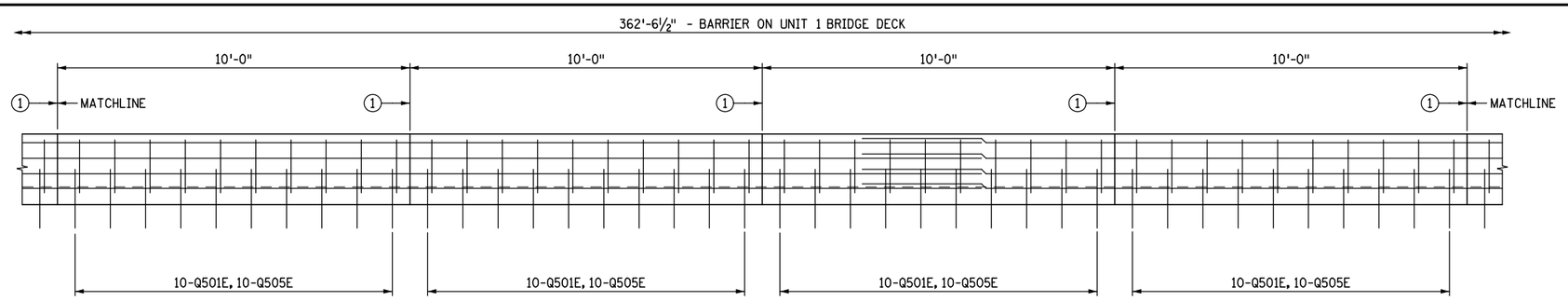
TITLE: TYPE IOWA BICYCLE PARAPET ELEVATION (5 OF 6)

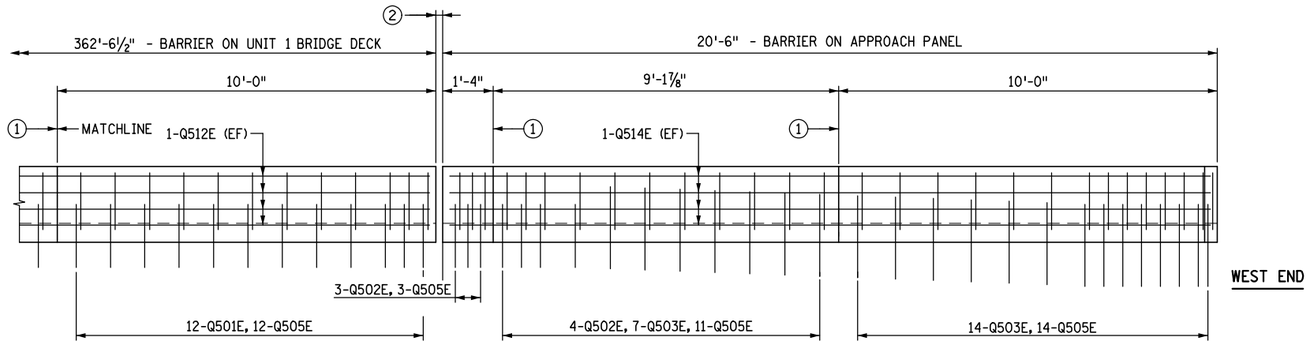
DES: EGM	DR: EGM	APPROVED
CHK: SEM	CHK: SEM	

SHEET NO. 51 OF 64 SHEETS

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NOTES:

FOR SPACING OF VERTICAL REINF, SEE "TYPE IOWA BICYCLE PARAPET DETAILS" SHEET.

BARRIER MEASUREMENTS ARE ALONG GUTTERLINE AND ON A LEVEL PLANE.

NOTES (CONT.):

(1) ℄ CONTROL JOINT, SEE "MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS" SHEET.

(2) EXPANSION JOINT. SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)" FOR COVER PLATE DETAILS. FOR EXPANSION JOINT OPENING AT 45 DEG AND 90 DEG SEE SHEET "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)".

TYPE IOWA BICYCLE PARPAET ELEVATION

(INSIDE ELEVATION OF BARRIER SHOWN)

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

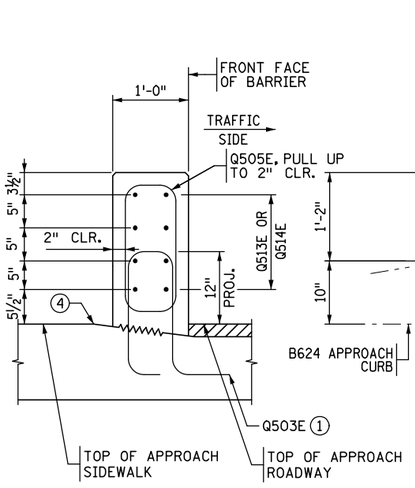
TITLE: TYPE IOWA BICYCLE PARAPET ELEVATION (6 OF 6)

DES: EGM	DR: EGM	APPROVED
CHK: SEM	CHK: SEM	

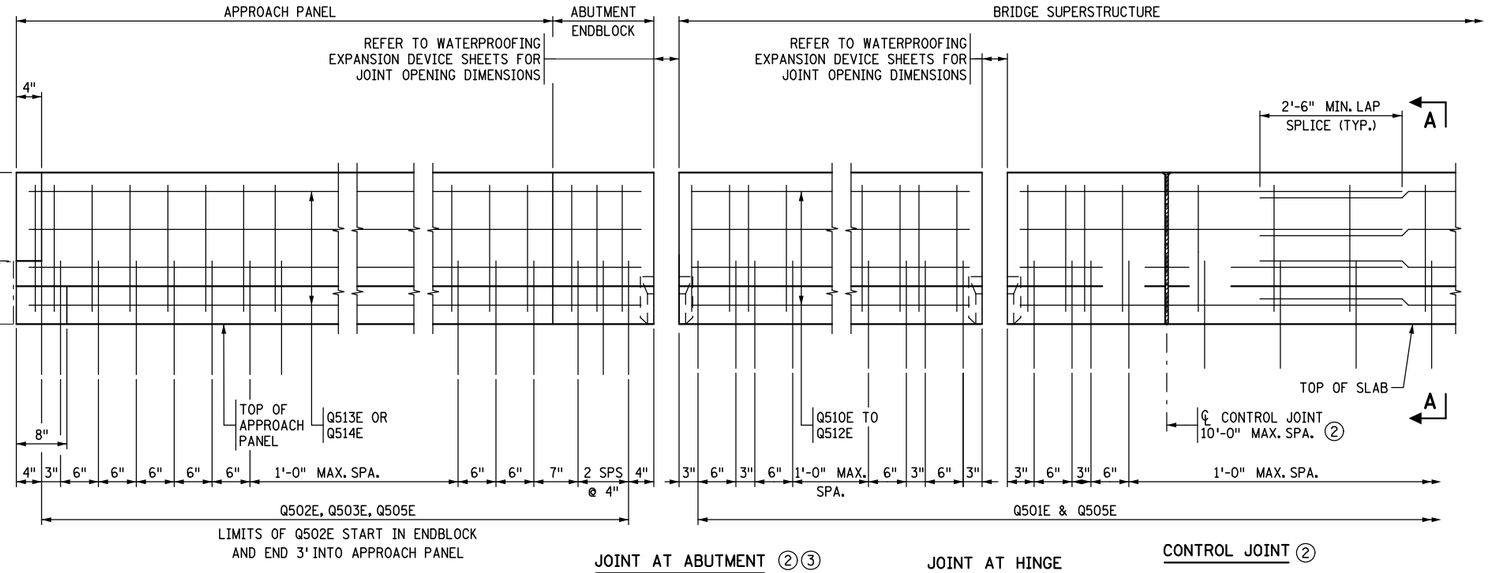
SHEET NO. 52 OF 64 SHEETS

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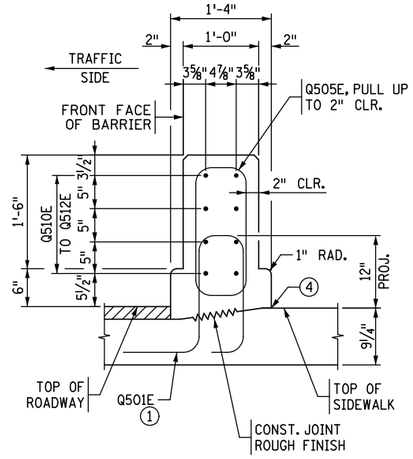
END VIEW



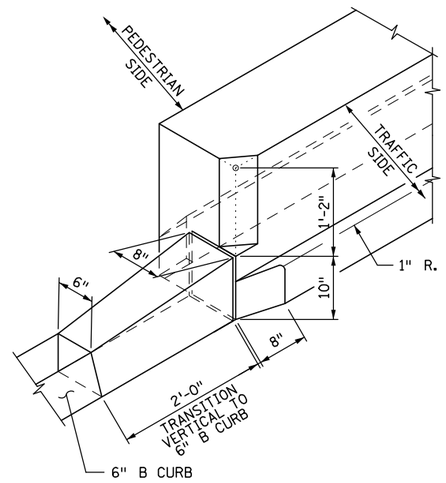
JOINT AT ABUTMENT (2)(3)
EXPANSION DEVICE NOT SHOWN

JOINT AT HINGE
EXPANSION DEVICE NOT SHOWN
(2)(3)(5)

CONTROL JOINT (2)



SECTION A-A



ISOMETRIC VIEW - FF & BF TRANSITION

END OF IOWA BICYCLE PARAPET
BACK FACE BRUSH CURB TRANSITION MATCHES FRONT FACE
FF=FRONT FACE
BF=BACK FACE

INSIDE ELEVATION OF BARRIER

CONCRETE WEARTING COURSE NOT SHOWN

BARRIER MEETS TL-2 REQUIREMENTS OF NCHRP REPORT 350

BILL OF REINFORCEMENT - IOWA BICYCLE PARAPET				
BAR	NO.	LENGTH	SHAPE	LOCATION
Q501E	1164	5'-6"	⌐	PARAPET DOWEL - BRIDGE DECK
Q502E	14	5'-8"	⌐	PARAPET DOWEL - APPROACH PANEL
Q503E	43	6'-8"	⌐	PARAPET DOWEL - APPROACH PANEL
Q505E	1221	5'-8"	▭	PARAPET VERTICAL
Q510E	232	40'-0"	———	PARAPET LONGITUDINAL
Q511E	16	20'-0"	———	PARAPET LONGITUDINAL
Q512E	8	26'-0"	———	PARAPET LONGITUDINAL
Q513E	8	21'-4"	———	PARAPET LONGITUDINAL
Q514E	8	20'-1"	———	PARAPET LONGITUDINAL

GENERAL NOTES:

MEASURE PAYMENT LENGTH BETWEEN THE OUTSIDE ENDS OF THE BARRIER.

INCLUDED IN PAY ITEM "TYPE IOWA BICYCLE PARAPET CONC (3S52)"

CONCRETE BARRIER = 265 LBS./FT. (0.196 CU. YDS./FT.)

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

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

BARRIER QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

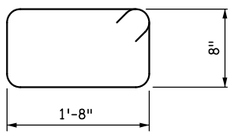
(1) PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT IN DECK OR APPROACH PANEL.

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

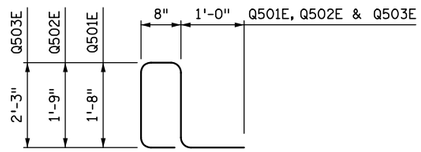
(3) REFER TO "WATERPROOFING EXPANSION DEVICE" STANDARD PLANS FOR COVER PLATE DETAILS.

(4) SEE "TYPICAL SECTIONS" FOR DELTA OF BARRIER GUTTERLINES

(5) REFER TO "MODULAR JOINT COVER PLATES -TYPE IOWA BICYCLE PARAPET" FOR COVER PLATE DETAILS



Q505E



Q501E, Q502E & Q503E

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SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: TYPE IOWA BICYCLE PARAPET DETAILS

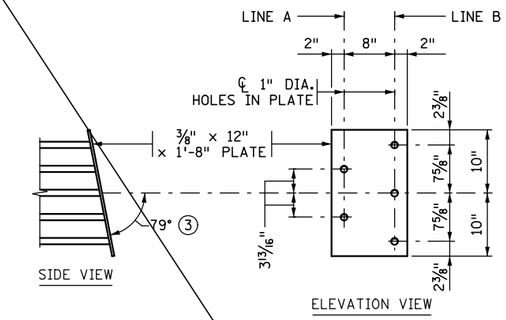
DES: EGM	DR: EGM	APPROVED
CHK: SEM	CHK: SEM	

SHEET NO. 53 OF 64 SHEETS

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GUARDRAIL CONNECTION



NOTES

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

GUARDRAIL CONNECTION IS INCIDENTAL.

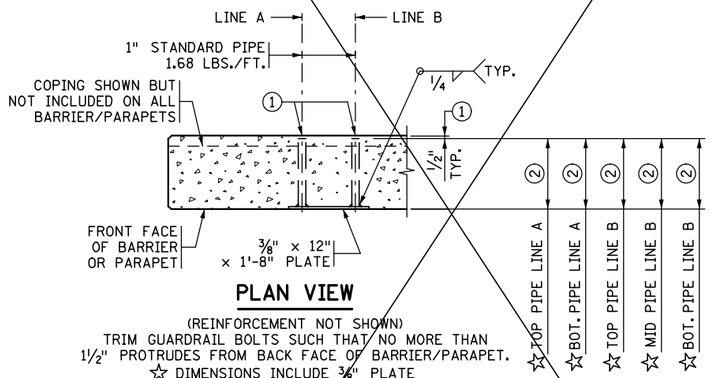
① REMOVE CONCRETE FROM PIPE ENDS AFTER SLIPFORMING OR FORM REMOVAL.

② SEE PIPE LENGTH TABLE.

③ 90° FOR VERTICAL PARAPETS.

GUARDRAIL CONNECTION DETAIL

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



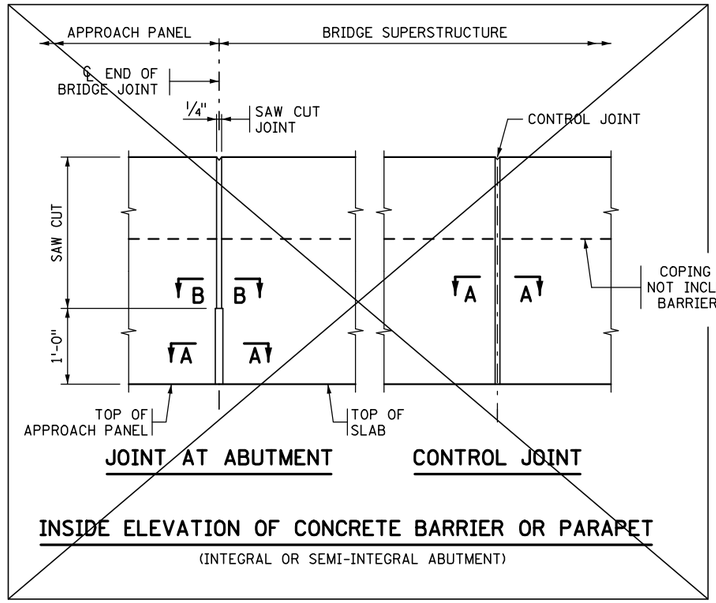
PLAN VIEW

(REINFORCEMENT NOT SHOWN)
TRIM GUARDRAIL BOLTS SUCH THAT NO MORE THAN 1½" PROTRUDES FROM BACK FACE OF BARRIER/PARAPET.
☆ DIMENSIONS INCLUDE 3/8" PLATE

PIPE LENGTH TABLE

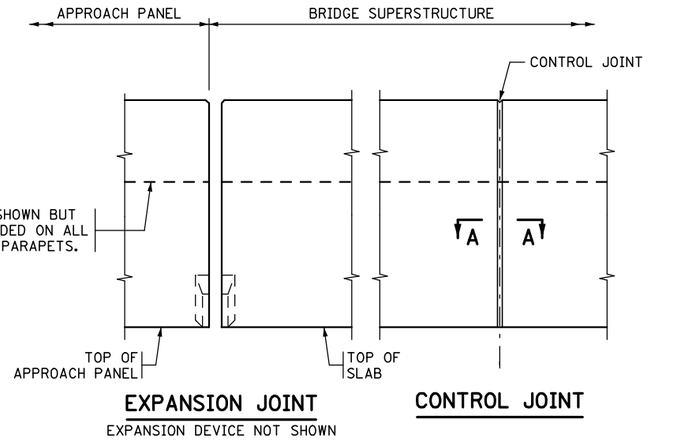
BARRIER/PARAPET TYPE STD FIGURE 5-397.	PIPE LENGTH					WEIGHT
	TOP PIPE LINE A	BOT. PIPE LINE A	TOP PIPE LINE B	MID. PIPE LINE B	BOT. PIPE LINE B	
36" SINGLE SLOPE						
138(A),(B),(E), 139(A),(B)	1'-0 3/4"	1'-0 1/4"	1'-0"	11 1/2"	1'-1"	34 LBS.
138(C),(D), 139(C),(D)	10 3/4"	1'-0 1/4"	10"	11 1/2"	1'-1"	34 LBS.
42" SINGLE SLOPE						
140(A),(B), 141(A),(B)	1'-0 3/4"	1'-2 1/4"	1'-0"	1'-1 1/2"	1'-3"	36 LBS.
140(C),(D), 141(C),(D)	10 3/4"	1'-0 1/4"	10"	11 1/2"	1'-1"	34 LBS.
54" SINGLE SLOPE						
142(A),(B), 143(A),(B)	1'-0 3/4"	1'-2 1/4"	1'-0"	1'-1 1/2"	1'-3"	35 LBS.
142(C),(D), 143(C),(D)	10 3/4"	1'-0 1/4"	10"	11 1/2"	1'-1"	34 LBS.
TYPE P-1 PARAPET						
166(B),(D),(F),(H)	1'-2 1/2"	1'-0 1/2"	1'-2 1/2"	1'-2 1/2"	1'-0 1/2"	34 LBS.
TYPE P-2 PARAPET						
157(A)-(H)	1'-3 1/2"	1'-3 1/2"	1'-3 1/2"	1'-3 1/2"	1'-3 1/2"	37 LBS.
TYPE P-4 PARAPET						
173(A),(B),(C),(D)	1'-5 1/2"	1'-3 1/2"	1'-5 1/2"	1'-3 1/2"	1'-3 1/2"	37 LBS.

CONTROL JOINT AND ABUTMENT JOINT



INSIDE ELEVATION OF CONCRETE BARRIER OR PARAPET

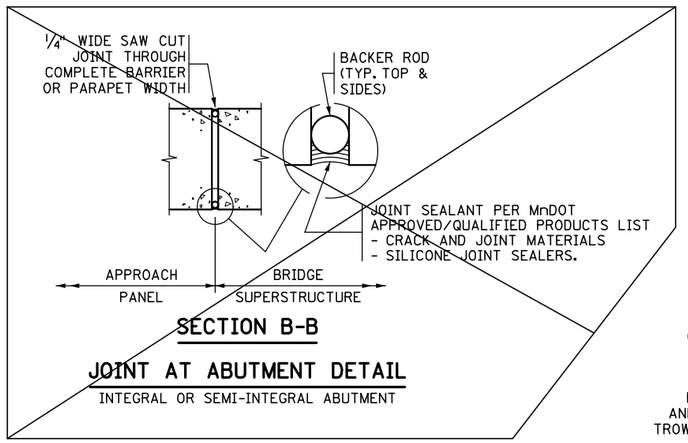
(INTEGRAL OR SEMI-INTEGRAL ABUTMENT)



EXPANSION DEVICE NOT SHOWN

INSIDE ELEVATION OF CONCRETE BARRIER OR PARAPET

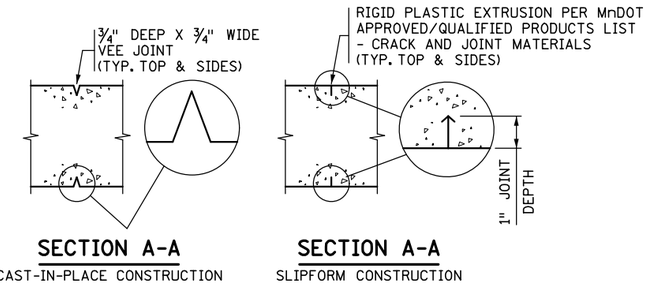
(PARAPET ABUTMENT)



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 1/8" BELOW THE SURFACE; FINISH OVER GROOVE COMPLETELY HIDING THE EXTRUSION.

REVISION: NOVEMBER 29, 2023

APPROVED: DECEMBER 21, 2022
Edward A. Satgen
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: MISCELLANEOUS CONCRETE BARRIER AND PARAPET DETAILS

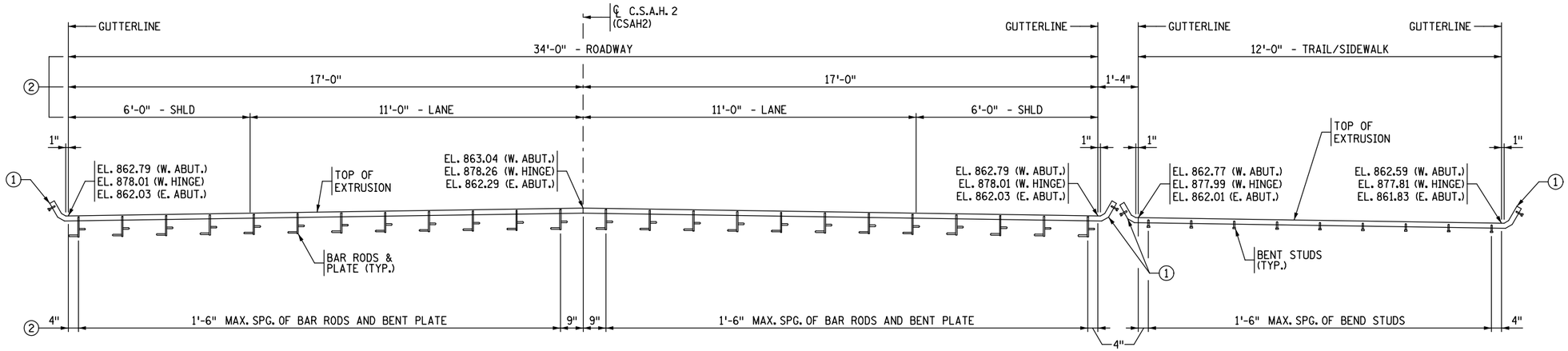
DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

SHEET NO. 54 OF 64 SHEETS

FIG. 5-397.174

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:19:23 AM
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SECTION B-B - WATERPROOF EXPANSION JOINT ELEVATION Ⓐ

WEST ABUTMENT SHOWN, WEST HINGE AND EAST ABUTMENT SIMILAR

NOTES:

FOR ADDITIONAL JOINT DETAILS REFER TO "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" AND "WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)" SHEETS.

Ⓐ THEORETICAL ELEVATIONS PROVIDED SHOULD BE USED AS A REFERENCE TO FABRICATE THE EXTRUSION AND NOT TO ESTABLISH THE PROPOSED PROFILE GRADE. THE FINAL PROFILE GRADE IS DEPENDENT ON FINAL BEAM CAMBER AND SURVEY DATA AFTER THE EXISTING BRIDGE DECK IS REMOVED.

① EXTEND GLAND 1" MIN. BEYOND THE END OF THE EXTRUSION. SEE DETAIL "C" ON WATERPROOF EXPANSION JOINT DETAILS (2 OF 3) SHEET.

② DIMENSIONS ARE ALONG ℄ JOINT.

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CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

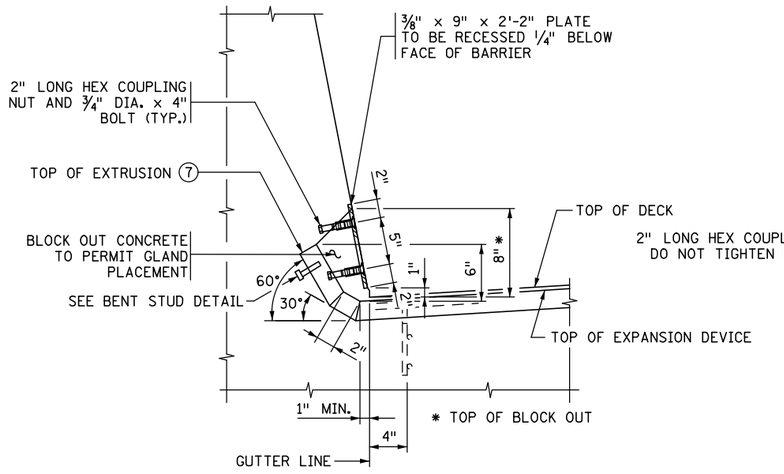
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WATERPROOF EXPANSION JOINT DETAILS (1 OF 3)

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

SHEET NO. 55 OF 64 SHEETS

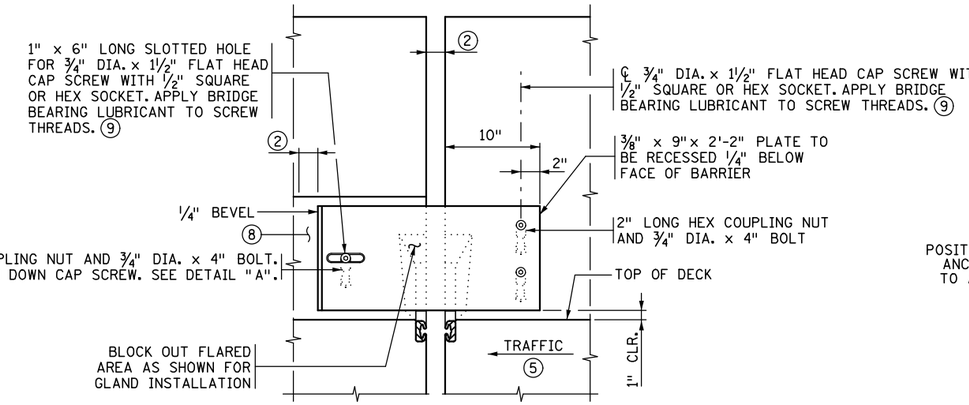
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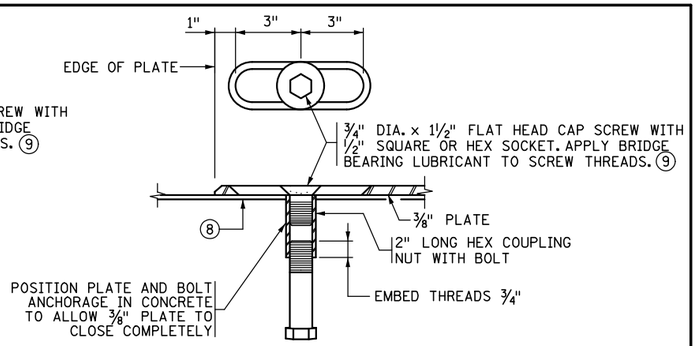


SECTION THROUGH BARRIER

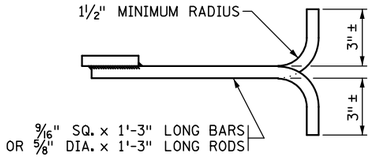
TYPE S BARRIER



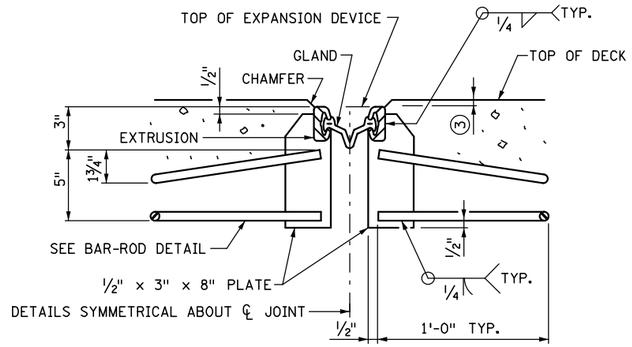
BARRIER ELEVATION



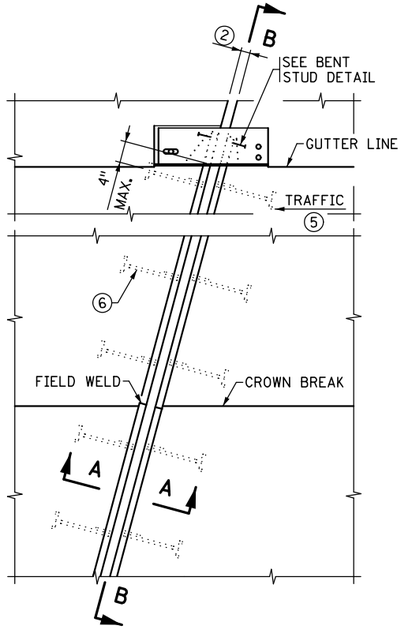
DETAIL "A"



BAR-ROD DETAIL

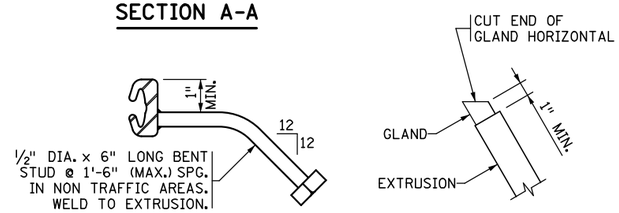


SECTION A-A

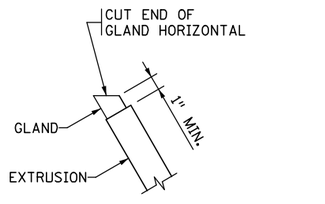


PLAN VIEW ℄ EXPANSION DEVICE

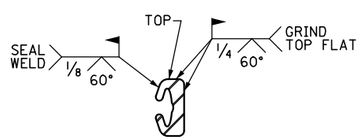
WITH STRAIGHT DEVICE



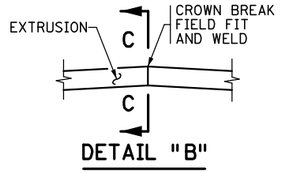
BENT STUD DETAIL



DETAIL "C"



SECTION C-C



DETAIL "B"

GENERAL NOTES

FURNISH AND INSTALL WATERPROOF EXPANSION JOINT DEVICES IN ACCORDANCE WITH SPEC. 2473.

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION IN ACCORANCE WITH SPEC. 3394. GALVANIZE FASTENERS IN ACCORDANCE WITH SPEC. 3392.

LOCATE JOINTS IN EXTRUSION AT BREAKS IN TRANSVERSE PROFILE AND AS OTHERWISE REQUIRED, WITH CLOSE FIT, WELDED JOINTS. REPAIR AFTER WELDING IN ACCORDANCE WITH SPEC. 2471.3L.

PROVIDE STRUCTURAL STEEL IN ACCORDANCE WITH SPEC. 3306 OR SPEC. 3310.

STRAIGHTEN EXPANSION DEVICE TO A TOLERANCE OF 1/8" IN 10 FT.

3/4" DIA. X 1 1/2" FLAT HEAD CAP SCREW WITH 1/2" SQUARE OR HEX SOCKET IN ACCORDANCE WITH SPEC 3391. COUNTERSINK CAP SCREWS 1/16" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT TO SCREW THREADS. (9)

(1) ~~DIMENSIONS ARE ALONG CENTERLINE OF JOINT.~~

(2) 2 1/8" @ 45°F, 1 3/8" @ 90°F (WEST ABUT.)
2 1/2" @ 45°F, 1 3/8" @ 90°F (WEST HINGE)
2 1/2" @ 45°F, 2" @ 90°F (EAST ABUT.)

(3) SET THE TOP OF THE EXTRUSION 1/4" BELOW TOP OF DRIVING SURFACE AND 3/4" BELOW TOP OF SIDEWALK.

(4) ~~SEE SUPERSTRUCTURE DETAILS FOR RADIUS.~~

(5) SEE SHEET GENERAL PLAN FOR DIRECTION OF TRAFFIC.

(6) PLACE BAR-ROD NORMAL TO JOINT ON NEW BRIDGES AND JOINT REPLACEMENTS. ON JOINT REPLACEMENTS WHEN SKEW IS OVER 15° AND LESS THAN 50° BEND RODS PARALLEL TO ℄ ROADWAY.

(7) EXTEND GLAND 1" MIN. BEYOND THE END OF THE EXTRUSION. SEE DETAIL "C".

(8) PROVIDE SMOOTH CONCRETE FINISH BENEATH PLATE WITH 0" MIN. TO 1/8" MAX. GAP BETWEEN CONCRETE AND UNDERSIDE OF PLATE. PROVIDE BOND BREAKER (DUCT TAPE, ETC.) TO UNDERSIDE OF COVER PLATE.

(9) LUBRICANT PER MNDOT APPROVED/QUALIFIED PRODUCTS LIST: BRIDGE GREASE.

MODIFIED: REMOVED DETAILS RELATED TO CURVED DEVICE AND MEDIAN/RAISED SIDEWALK. MOVED SECTION B-B TO A NEW SHEET. ADDED SECTION THRU PARAPET BARRIER DETAILS.

REVISION: DECEMBER 21, 2022

APPROVED: AUGUST 24, 2016
Kevin Western
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)

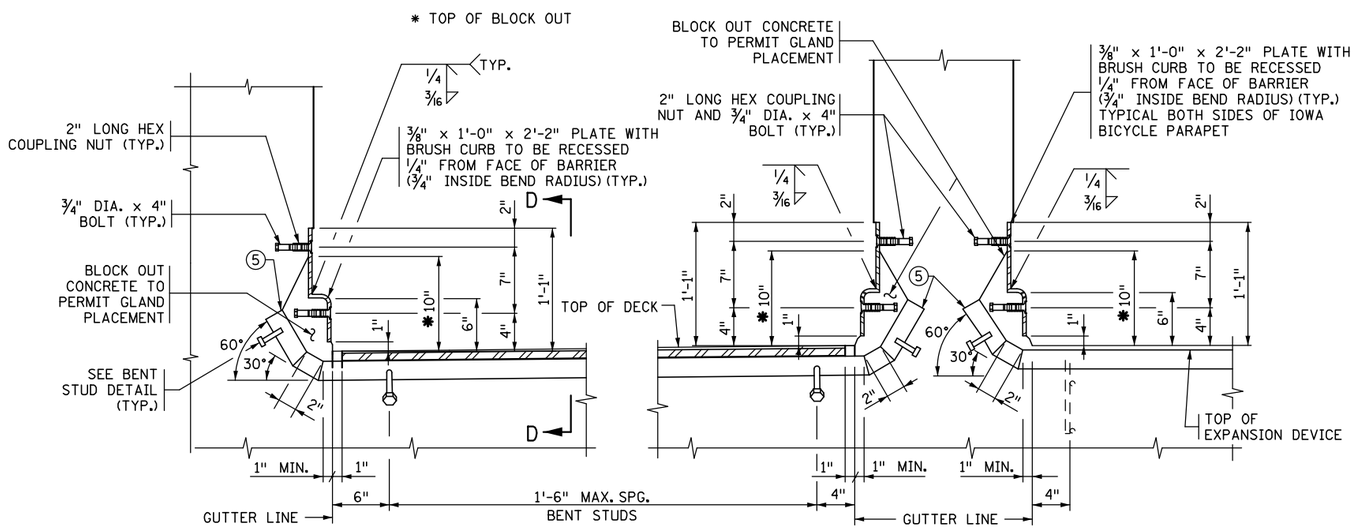
FIG. 5-397.627(B) MOD.

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

SHEET NO. 56 OF 64 SHEETS

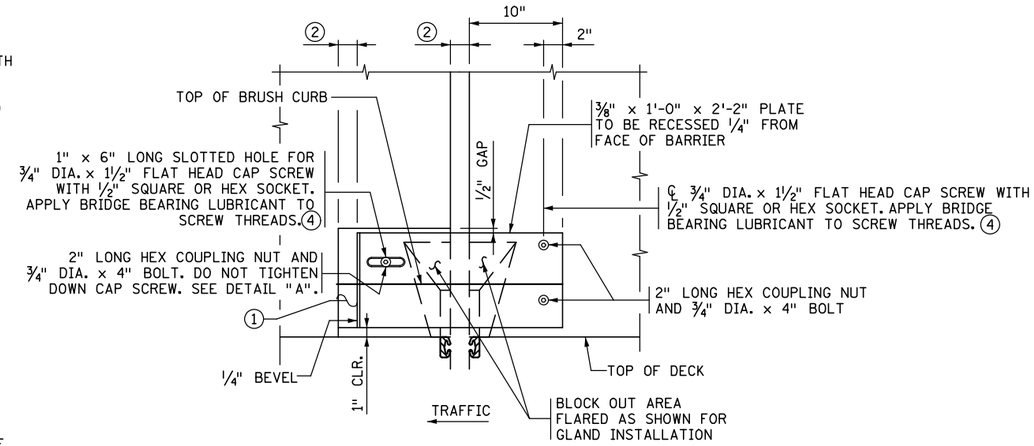
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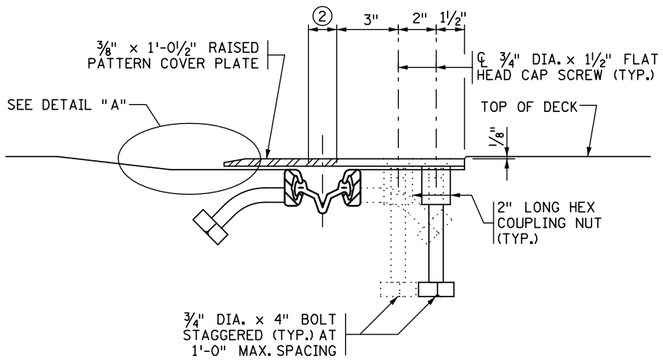
TYPE P-1 PARAPET | **TYPE IOWA BICYCLE PARAPET**

SECTION THROUGH SIDEWALK - INTEGRAL SIDEWALK



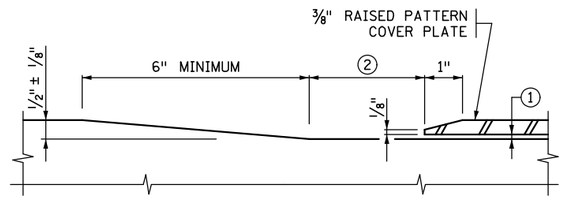
TYPE P-1 PARAPET ELEVATION

TYPE IOWA BICYLCLE PARAPET SIMILAR



SECTION D-D (3)

(INTEGRAL SIDEWALK)



DETAIL "A" (3)

GENERAL NOTES

SEE "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" SHEET FOR ADDITIONAL DETAILS AND NOTES.

PROVIDE RAISED PATTERN PLATE IN ACCORDANCE WITH SPEC. 3310, ASTM A709, GRADE 50, GALVANIZED IN ACCORDANCE WITH SPEC. 3394.

TRANSVERSE DECK REINFORCEMENT MAY BE SHIFTED THE MINIMUM DISTANCE REQUIRED FOR EXPANSION DEVICE PLACEMENT.

3/4" DIA. X 1 1/2" FLAT HEAD CAP SCREW WITH 1/2" SQUARE OR HEX SOCKET IN ACCORDANCE WITH SPEC 3391. COUNTERSINK CAP SCREWS 1/16" FROM TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT TO SCREW THREADS. (4)

(1) PROVIDE SMOOTH CONCRETE FINISH BENEATH PLATE WITH 0" MIN. TO 1/8" MAX. GAP BETWEEN CONCRETE AND UNDERSIDE OF PLATE. PROVIDE BOND BREAKER (DUCT TAPE, ETC.) TO UNDERSIDE OF COVER PLATE.

(2) SEE NOTE (2) ON "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" SHEET FOR JOINTS AT EAST ABUTMENT, WEST HINGE AND EAST ABUTMENT. SEE NOTE (6) ON MODULAR JOINT DETAILS - EAST HINGE FOR JOINT AT THE EAST HINGE.

(3) DIMENSIONS SHOWN ARE REQUIRED TO COMPLY WITH A.D.A. STANDARDS.

(4) LUBRICANT PER MNDOT APPROVED/QUALIFIED PRODUCTS LIST: BRIDGE GREASE.

(5) SEE NOTE (7) ON "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" SHEET.

MODIFIED: REMOVED DETAILS RELATED TO CURB AND MEDIANS. UPDATED SECTION THRU SIDEWALK TO REFLECT A TYPE P-1 BARRER AT EDGE OF BRIDGE DECK AND IOWA BICYLCE PARAPET.

REVISION: DECEMBER 21, 2022

APPROVED: AUGUST 24, 2016
Kevin Western
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)

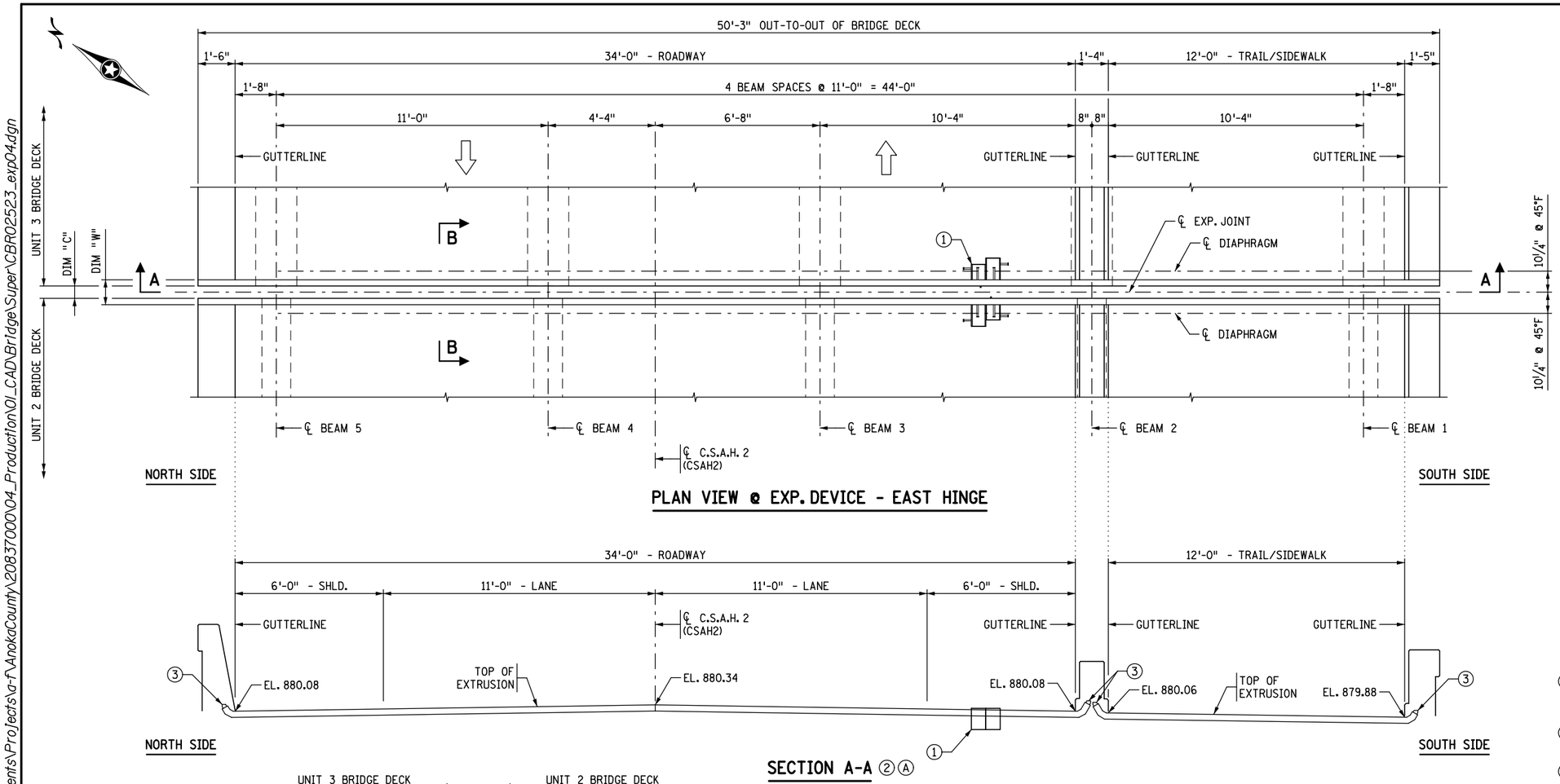
DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

SHEET NO. 57 OF 64 SHEETS

FIG. 5-397.632(B)

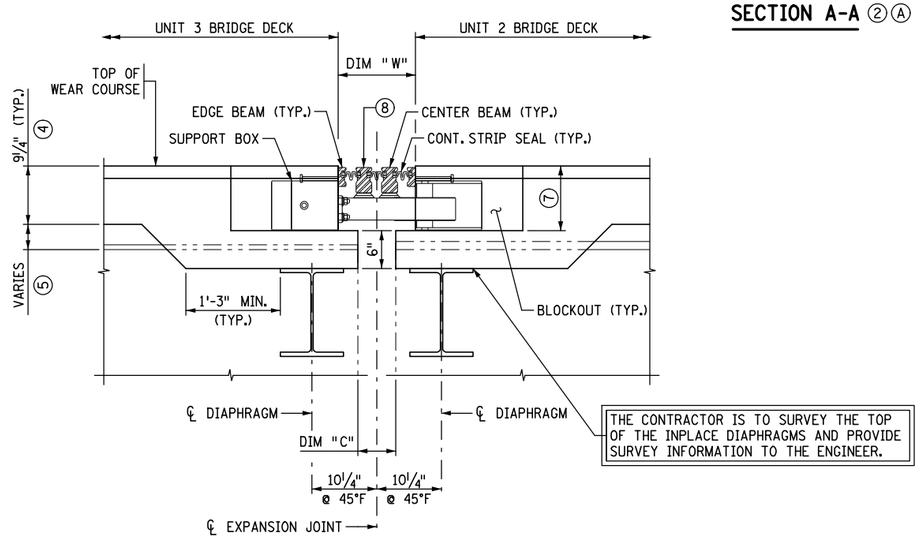
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PLAN VIEW @ EXP. DEVICE - EAST HINGE

SECTION A-A ②Ⓐ



SECTION B-B

TABLE B - MODULAR EXPANSION JOINT DATA			
LOCATION	"C" @ 45°F (IN.)	"W"	TOTAL DESIGN MOVEMENT CAPACITY (IN.)
EAST HINGE	6"	SEE TABLE A	7¼"

TABLE A ⑥	
TEMPERATURE (°F)	JOINT OPENING "W"
90°F	10"
75°F	10¾"
60°F	11½"
45°F	12¼"

GENERAL NOTES:

THIS DRAWING IS A SCHEMATIC OF THE REQUIRED JOINT DEVICE THE EAST HINGE. MANUFACTURER IS RESPONSIBLE FOR THE DESIGN OF THE JOINT DEVICES. REFER TO SPECIAL PROVISIONS FOR ADDITIONAL DESIGN AND SHOP DRAWING SUBMITTAL REQUIRMENTS. SHOP DRAWINGS SHALL INCLUDE EXPANSION DEVICES, BARRIER RAIL & SIDEWALK COVER PLATES, METHOD OF SUPPORT DURING INSTALLATION AND INSTALLATION PROCEDURE.

THE INSTALLED EXPANSION JOINT DEVICE SHALL CONFORM TO THE GRADES AT THE JOINT LOCATIONS AND PROVIDE A SMOOTH RIDING SURFACE. RAILS SHALL BE INSTALLED ¼" BELOW FINAL ROADWAY GRADE BETWEEN TRAFFIC BARRIERS. EDGE BEAMS OF EXPANSION DEVICE AND THE TOPS OF THE FORMS THAT ESTABLISH THE GRADES FOR THE POURBACKS OF THE BLOCKOUTS SHALL BE SURVEYED TO VERIFY THAT THE FINAL INSTALLED JOINTS WILL CONFORM TO THE FINAL ELEVATIONS AND PROVIDE A SMOOTH RIDING SURFACE. SURVEY ELEVATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. BLOCKOUT CONCRETE SHALL NOT BE PLACED UNTIL THE ELEVATIONS ARE ACCEPTED BY THE ENGINEER.

ALL STRUCTURAL STEEL FOR EDGE BEAMS, CENTER BEAMS AND SUPPORT BARS SHALL MEET MnDOT SPEC. 3309. SUPPORT BOXES AND ANCHORAGES SHALL MEET EITHER MnDOT SPEC. 3306 OR 3309. ALL BARRIER & SIDEWALK COVER PLATES SHALL MEET MnDOT SPEC. 3306. SEE SPECIAL PROVISIONS.

GALVANIZE ALL STRUCTURAL STEEL SURFACES AND FASTENERS, EXCEPT THOSE MADE OF STAINLESS STEEL, AFTER FABRICATION PER MnDOT SPEC. 3394. SEE SPECIAL PROVISIONS.

EXP. DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF ⅛" IN 10 FT.

THE EXPANSION JOINTS SHOWN ON THIS SHEET AND SHEETS "MODULAR JOINT COVER PLATES" INCLUDING BARRIER & SIDEWALK COVER PLATES SHALL BE PAID FOR UNDER "MODULAR BRIDGE JOINT SYSTEM TYPE 9". COST SHALL INCLUDE ALL MATERIALS AND LABOR FOR THE JOINT INSTALLATION. LENGTH OF PAYMENT IS BASED ON THE HORIZONTAL OUT-TO-OUT DISTANCE MEASURED ALONG ℄ JOINT. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL SPECIFIC PAYMENT INFORMATION.

NOTES:

THE INPLACE DIMENSIONS ARE TAKEN FROM THE 1972 PLAN SET AND 1990 REHABILITATION PLAN SETFOR BR. 02523 AND SHALL BE FIELD VERIFIED PRIOR TO THE START OF CONSTRUCTION.

SEE SHEETS "MODULAR JOINT COVER PLATES" FOR ADDITIONAL JOINT INFORMATION.

(1) SUPPORT BOX SPACING AND LOCATIONS SHALL BE DETERMINED IN ACCORDANCE WITH SPECIAL PROVISIONS AND MANUFACTURER'S RECOMMENDATIONS.

(2) DECK ELEVATIONS AND DIMENSIONS ARE AT ℄ JOINT MEASURED FROM GUTTER LINE TO GUTTER LINE.

(3) EXTEND GLAND 1" MIN. BEYOND THE END OF THE EXTRUSION. SEE DETAIL "C" ON "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" SHEET.

(4) DECK THICKNESS INCLUDING 2" WEARING COURSE.

(5) STOOL THICKNESS INCLUDING TOP FLANGE.

(6) JOINT OPENINGS ARE DEPENDANT ON TEMPERATURE AS DETAILED IN TABLE A AND THE EXPANSION JOINT FURNISHED AND INSTALLED.

(7) 10¼" MAXIMUM BLOCKOUT BASED ON 1990 REHABILITATION PLANS. THE EXISTING GEOMETRY OF THE GIRDERS AND DIAPHRAGMS WILL NOT BE MODIFIED. MODIFICATIONS MAY BE REQUIRED TO THE MANUFACTURER'S STANDARD DETAILS. COORDINATE AND VERIFY THE MODULAR JOINT HEIGHT TO ENSURE THAT FIT AND CLEARANCE REQUIREMENTS ARE MET.

(8) SET THE TOP OF THE EXTRUSION ¼" BELOW THE TOP OF THE DRIVING SURFACE AND ¾" BELOW THE TOP OF THE SIDEWALK.

(Ⓐ) THEORETICAL ELEVATIONS PROVIDED SHOULD BE USED AS A REFERENCE TO FABRICATE THE EXTRUSION AND NOT TO ESTABLISH THE PROPOSED PROFILE GRADE. THE FINAL PROFILE GRADE IS DEPENDENT ON FINAL BEAM CAMBER AND SURVEY DATA AFTER THE EXISTING BRIDGE DECK IS REMOVED.

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

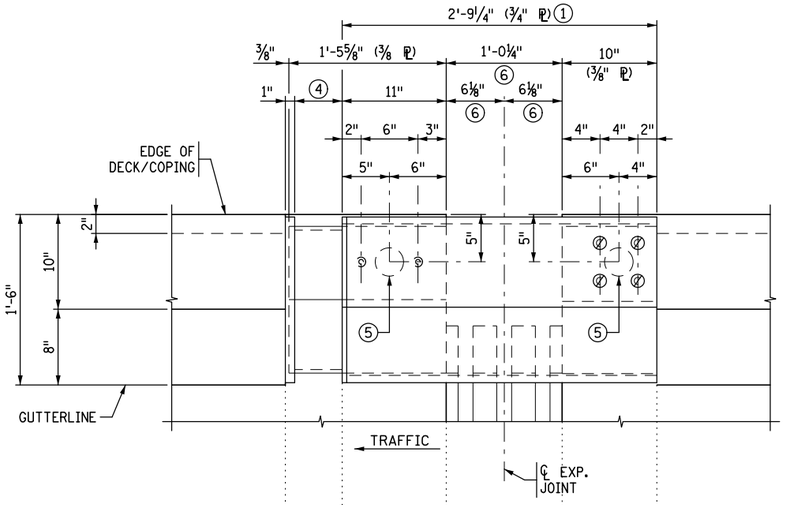
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DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

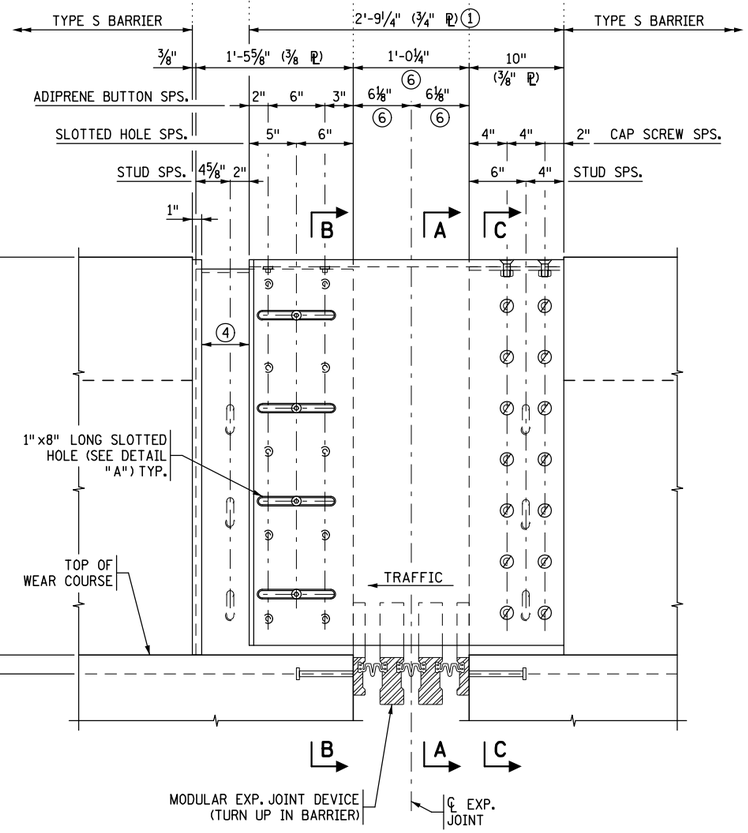
SHEET NO. 58 OF 64 SHEETS

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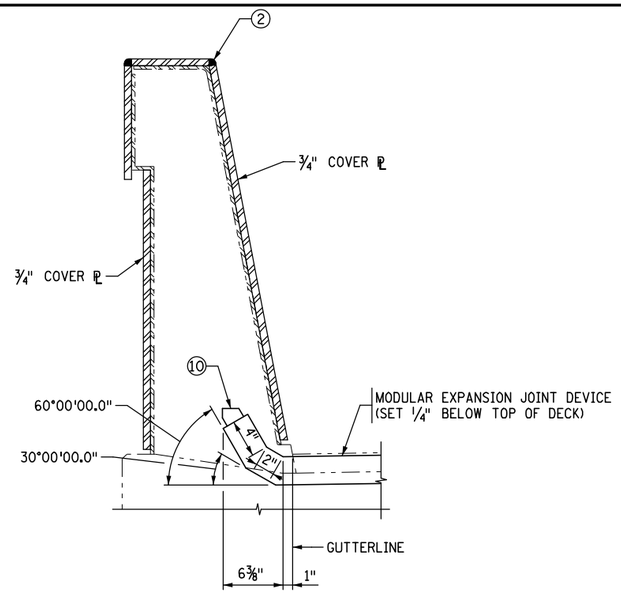
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TYPE S BARRIER COVER PLATE - PLAN



TYPE S BARRIER COVER PLATE - ELEVATION



SECTION A-A

SECTION B-B

SECTION C-C

NOTES:

SEE "MODULAR JOINT DETAILS - EAST HINGE" SHEET FOR JOINT DETAILS.

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION AS PER SPEC. 3394. GALVANIZE FASTENERS AS PER SPEC. 3392.

STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306 OR 3309.

FOR ADIPRENE BUTTON AND DETAIL "A" SEE "MODULAR JOINT COVER PLATES - TYPE P-1 PARAPET" SHEET.

① RECESS ¾" SLIDING PLATE ¼" FROM FACE OF BARRIER.

② CUT, WELD AND GRIND SMOOTH (TYP. AT TOP OF BARRIER COVER PLATES.

③ ¾" DIA. x 1¾" FLATHEAD CAP SCREW WITH ½" SQUARE OR HEX SOCKET PER SPEC. 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW FACE OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS.

④ 6" @ 45°F. DIMENSIONS ALONG GUTTERLINE.

⑤ 3" DIA. HOLE IN INNER ⅜" PLATES.

⑥ DIMENSIONS SHOWN AT 45°F. SEE TABLE A ON SHEET "MODULAR JOINT DETAILS - EAST HINGE" FOR JOINT OPENINGS AT OTHER TEMPERATURES.

⑦ TACK WELD NUT TO ⅜" INNER PLATE (TYP.)

⑧ ¾" DIA. X 4" WELDED HEADED STUD (TYP.)

⑨ EXTEND ¾" COVER PLATE 1" BELOW ⅜" INNER PLATE.

⑩ EXTEND GLAND 1" MIN. BEYOND THE END OF THE EXTRUSION. SEE DETAIL "C" ON "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" SHEET.

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
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TKDA

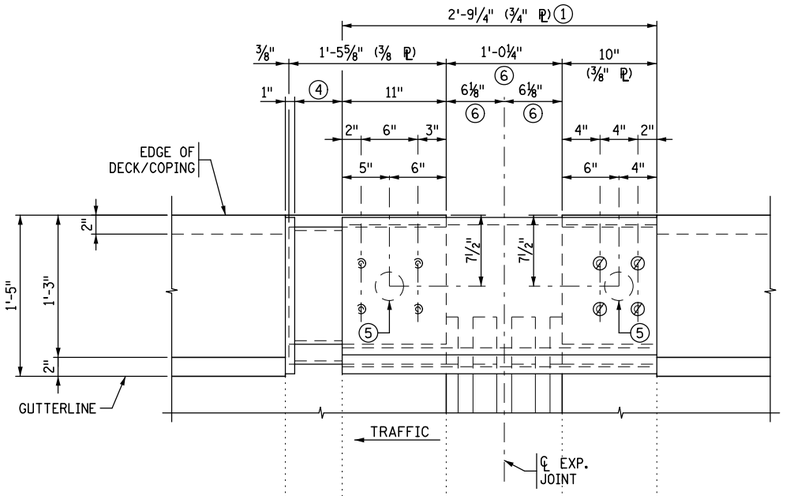
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

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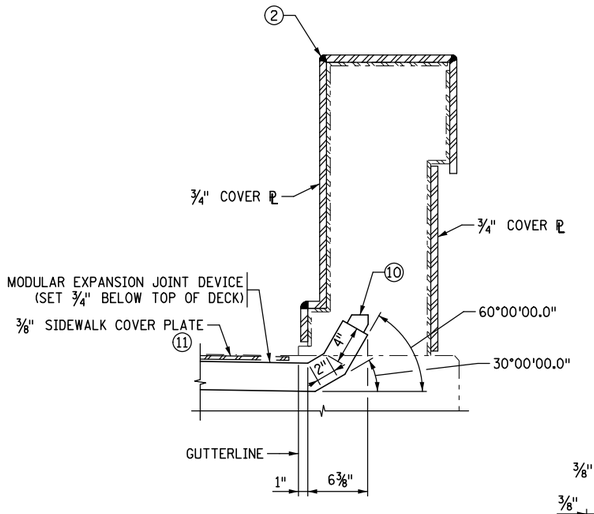
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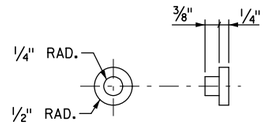
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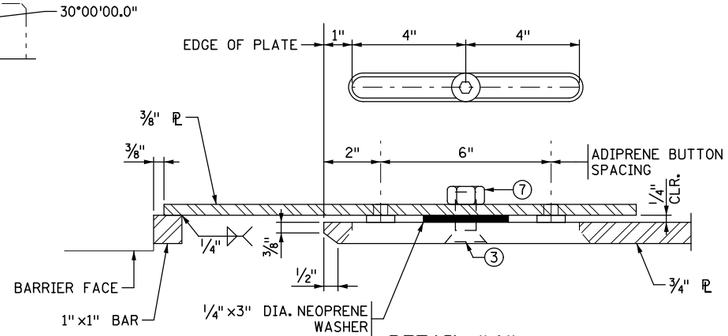
TYPE P-1 PARAPET COVER PLATE - PLAN



SECTION A-A



ADIPRENE BUTTON DETAIL



DETAIL "A"

NOTES:

SEE "MODULAR JOINT DETAILS - EAST HINGE" SHEET FOR JOINT DETAILS.

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION AS PER SPEC. 3394. GALVANIZE FASTENERS AS PER SPEC. 3392.

STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306 OR 3309.

① RECESS ¾" SLIDING PLATE ¼" FROM FACE OF BARRIER.

② CUT, WELD AND GRIND SMOOTH (TYP. AT TOP OF BARRIER COVER PLATES.

③ ¾" DIA. x 1¾" FLATHEAD CAP SCREW WITH ½" SQUARE OR HEX SOCKET PER SPEC. 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW FACE OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS.

④ 6" @ 45°F. DIMENSIONS ALONG GUTTERLINE.

⑤ 3" DIA. HOLE IN INNER ⅜" PLATES.

⑥ DIMENSIONS SHOWN AT 45°F. SEE TABLE A ON SHEET "MODULAR JOINT DETAILS - EAST HINGE" FOR JOINT OPENINGS AT OTHER TEMPERATURES.

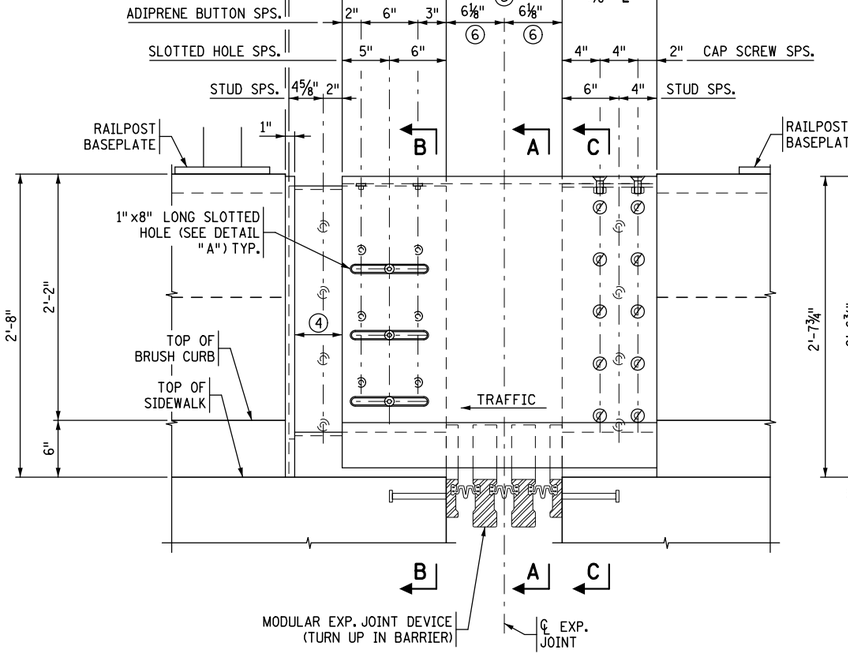
⑦ TACK WELD NUT TO ⅜" INNER PLATE (TYP.)

⑧ ¾" DIA. X 4" WELDED HEADED STUD (TYP.)

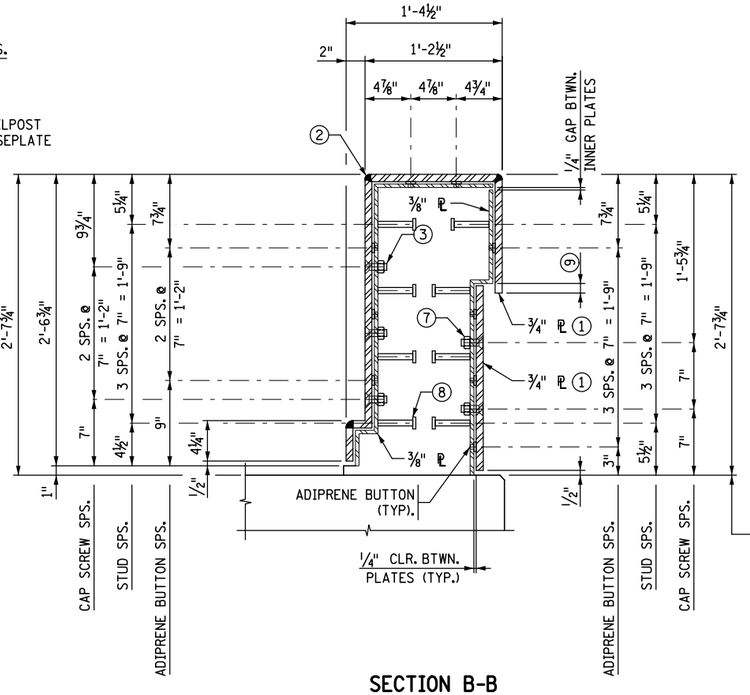
⑨ EXTEND ¾" COVER PLATE 1" BELOW ⅜" INNER PLATE.

⑩ EXTEND GLAND 1" MIN. BEYOND THE END OF THE EXTRUSION. SEE DETAIL "C" ON "WATERPROOF EXPANSION JOINT DETAILS (2 OF 3)" SHEET.

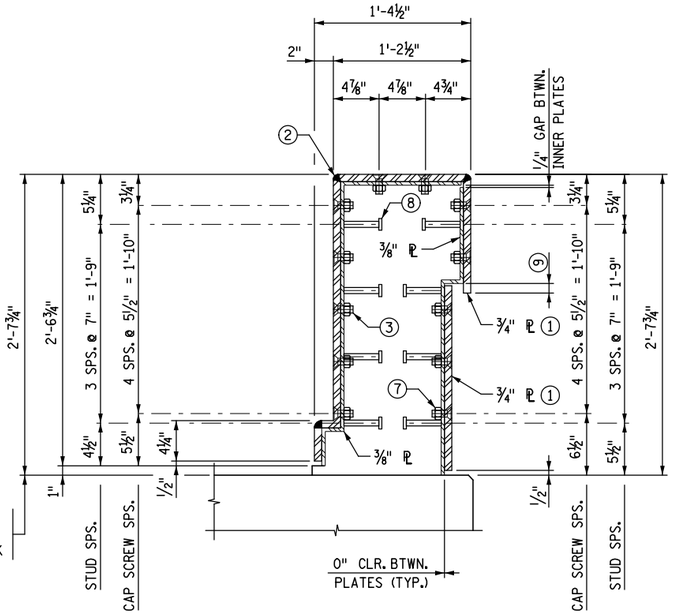
⑪ FOR SIDEWALK COVER PLATE DETAILS SEE SECTION THRU SIDEWALK ON "WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)" SHEET.



TYPE P-1 PARAPET COVER PLATE - ELEVATION



SECTION B-B



SECTION C-C

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED _____ MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

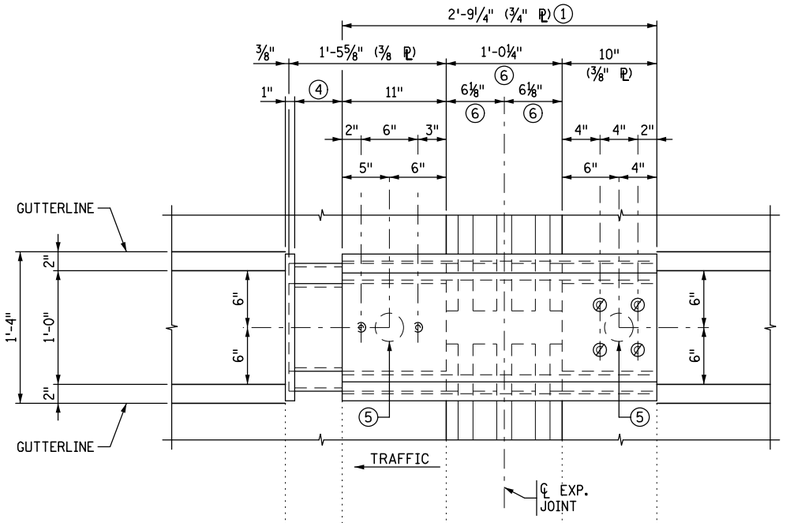
TITLE:
MODULAR JOINT COVER PLATES - TYPE P-1 BARRIER

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

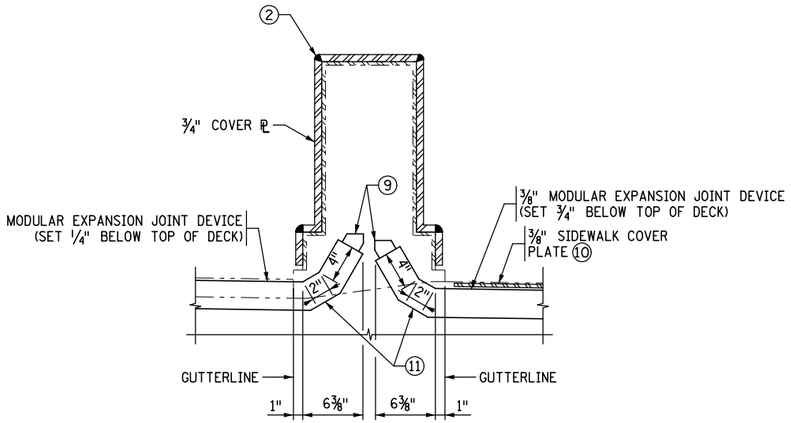
SHEET NO. 60 OF 64 SHEETS

BRIDGE NO. 02523

DATE: 11/6/2024 TIME: 9:19:41 AM
FILENAME: pw:\\tkda-pw.benfley.com:tkda-pw-01\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CAD\Bridge\Super\CBR02523_exp06.dgn



TYPE IOWA BICYCLE PARAPET COVER PLATE - PLAN



SECTION A-A

NOTES:

SEE "MODULAR JOINT DETAILS - EAST HINGE" SHEET FOR JOINT DETAILS.

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION AS PER SPEC. 3394. GALVANIZE FASTENERS AS PER SPEC. 3392.

STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306 OR 3309.

FOR ADIPRENE BUTTON AND DETAIL "A" SEE "MODULAR JOINT COVER PLATES - TYPE P-1 PARAPET" SHEET.

① RECESS ¾" SLIDING PLATE ¼" FROM FACE OF BARRIER.

② CUT, WELD AND GRIND SMOOTH (TYP. AT TOP OF BARRIER COVER PLATES.

③ ¾" DIA. x 1¾" FLATHEAD CAP SCREW WITH ½" SQUARE OR HEX SOCKET PER SPEC. 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW FACE OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS.

④ 6" @ 45°F. DIMENSIONS ALONG GUTTERLINE.

⑤ 3" DIA. HOLE IN INNER ⅜" PLATES.

⑥ DIMENSIONS SHOWN AT 45°F. SEE TABLE A ON SHEET "MODULAR JOINT DETAILS - EAST HINGE" FOR JOINT OPENINGS AT OTHER TEMPERATURES.

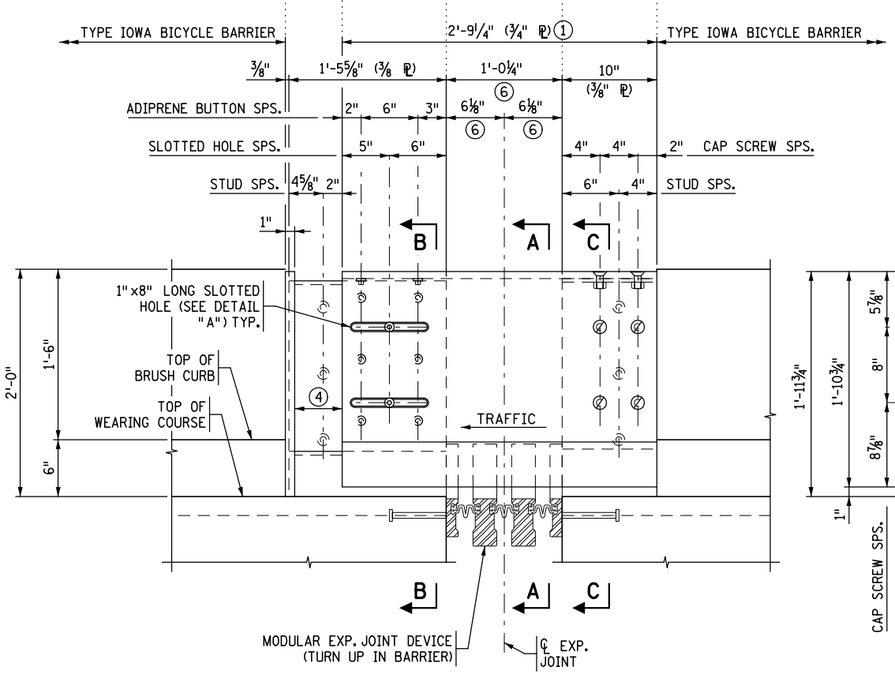
⑦ TACK WELD NUT TO ⅜" INNER PLATE (TYP.)

⑧ ¾" DIA. X 4" WELDED HEADED STUD (TYP.)

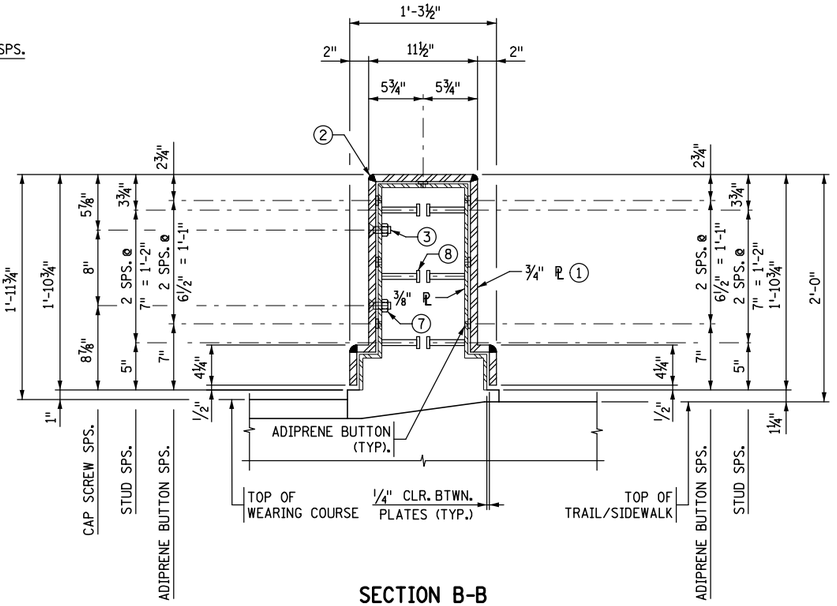
⑨ EXTEND GLAND 1" MIN. BEYOND THE END OF THE EXTRUSION. SEE DETAIL "C" ON WATERPROOF EXPANSION JOINT DETAILS (2 OF 3).

⑩ FOR SIDEWALK COVER PLATE DETAILS SEE SECTION THRU SIDEWALK ON "WATERPROOF EXPANSION JOINT DETAILS (3 OF 3)" SHEET.

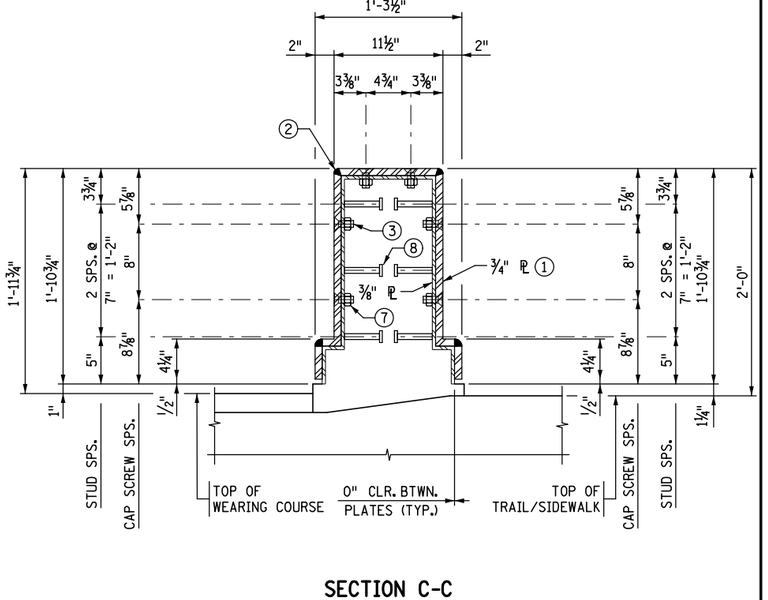
⑪ SEE SECTION C-C ON "MODULAR JOINT COVER PLATES - TYPE P-1 PARAPET" SHEET FOR TURN UP ANGLES.



TYPE IOWA BICYCLE PARAPET COVER PLATE - ELEVATION



SECTION B-B



SECTION C-C

DATE: 11/6/2024 TIME: 9:19:44 AM
FILENAME: pw:\\tkda-pw.bentley.com:tkda-pw-01\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CAD\Bridge\Super\CBR02523_exp07.dgn

NO.	DATE	BY	DESCRIPTION OF REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN
DATE: 11/6/2024 LIC. NO.: 43076

TKDA

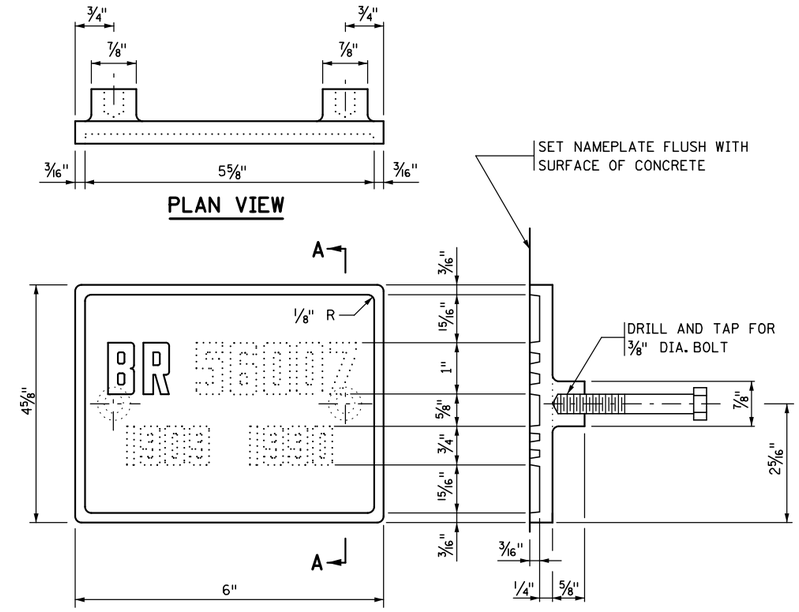
ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: MODULAR JOINT COVER PLATES - TYPE IOWA BICYCLE PARAPET

DES: JRM	DR: JRM	APPROVED
CHK: MJC	CHK: MJC	

SHEET NO. 61 OF 64 SHEETS

BRIDGE NO. 02523



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

BRIDGE: 02523

YEAR: 1973 YEAR: 2025



NUMBERS FOR NAMEPLATE

NOTES:

NO SHOP DRAWING REQUIRED.

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.

BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

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

FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.

ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NAMEPLATE
(FOR BRIDGE RECONSTRUCTION)

REVISION
09-11-2014
11-08-2018

DETAIL NO.
B102

NO.	DATE	BY	DESCRIPTION OF REVISIONS

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

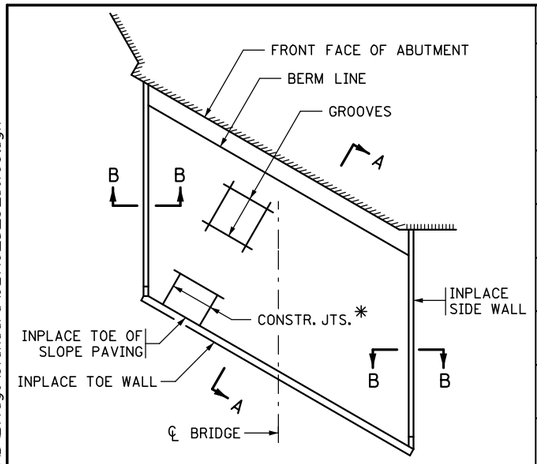
TITLE:
STANDARD DETAIL B102

DES: DRH	DR: DRH	APPROVED
CHK: ADL	CHK: ADL	

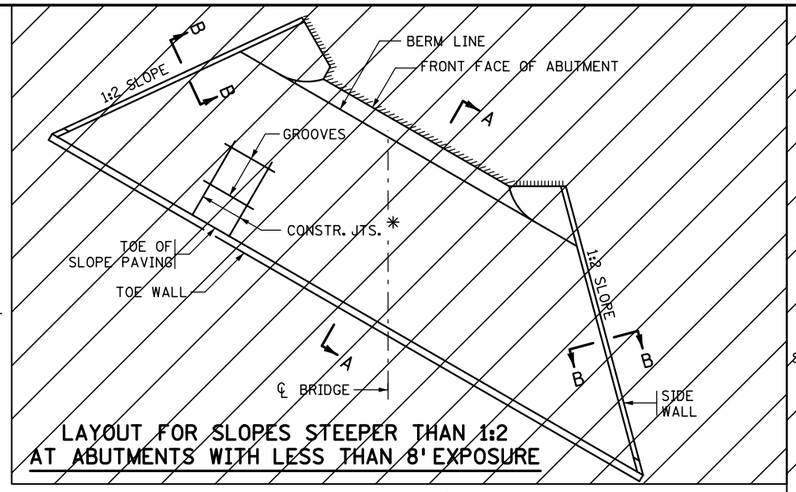
SHEET NO. 62 OF 64 SHEETS

BRIDGE NO.
02523

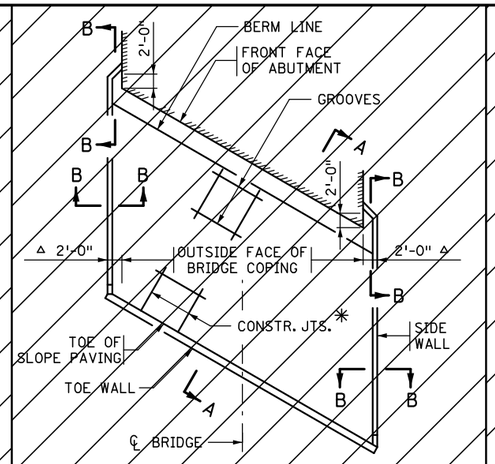
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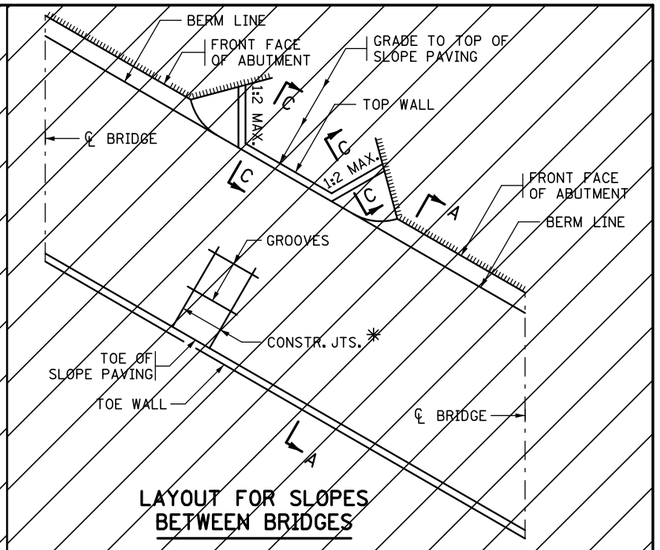
LAYOUT FOR SLOPES 1:2 OR FLATTER AT ABUTMENTS WITH LESS THAN 8' EXPOSURE



LAYOUT FOR SLOPES STEEPER THAN 1:2 AT ABUTMENTS WITH LESS THAN 8' EXPOSURE



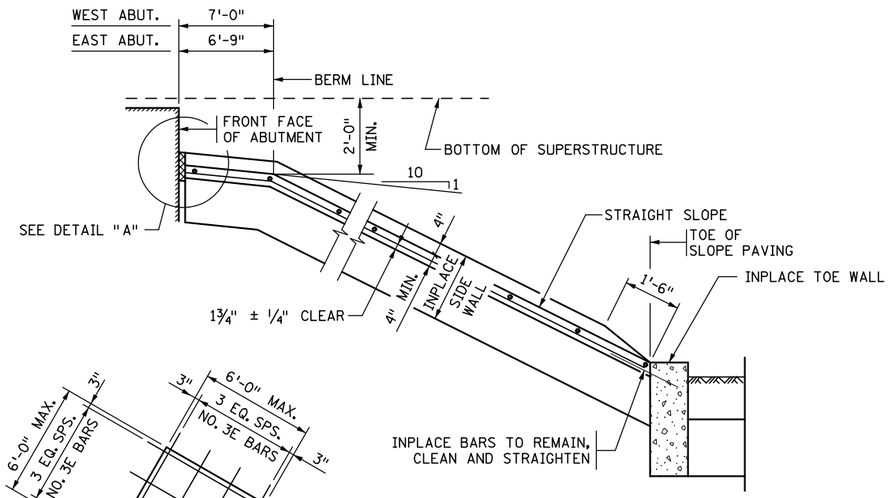
LAYOUT FOR SLOPES AT ABUTMENTS WITH 8' OR GREATER EXPOSURE



LAYOUT FOR SLOPES BETWEEN BRIDGES

△ 2'-0" FOR TANGENT BRIDGE SUPERSTRUCTURES. VARIES 2'-0" MINIMUM FOR CURVED BRIDGE SUPERSTRUCTURE.

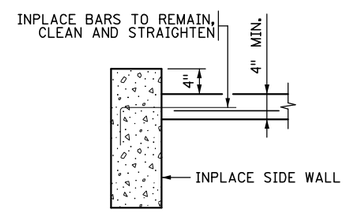
✳ VERTICAL CONSTRUCTION JOINTS MAY BE CONSTRUCTED PARALLEL TO ℄ OF BRIDGE FOR SKEWS TO 10° ONLY.



PAVING DETAIL

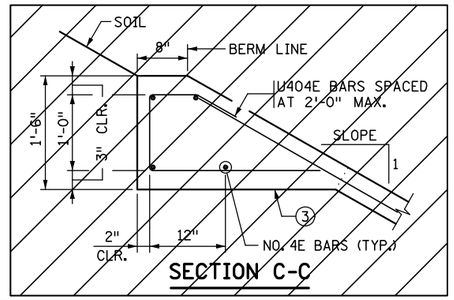
SECTION A-A

1:2 SLOPE SHOWN

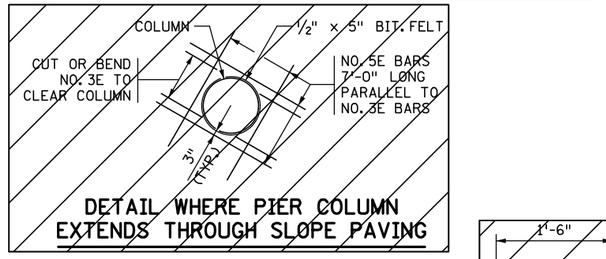


SECTION B-B

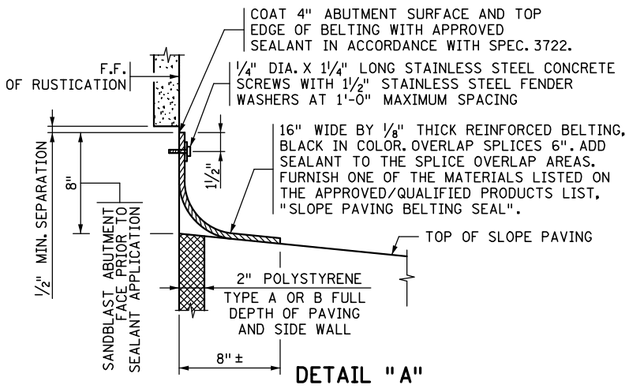
NORMAL TO SLOPE



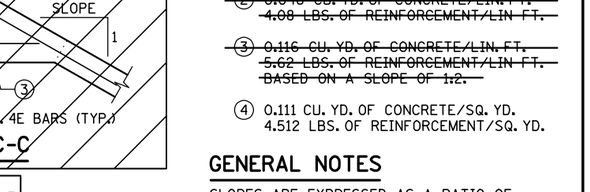
SECTION C-C

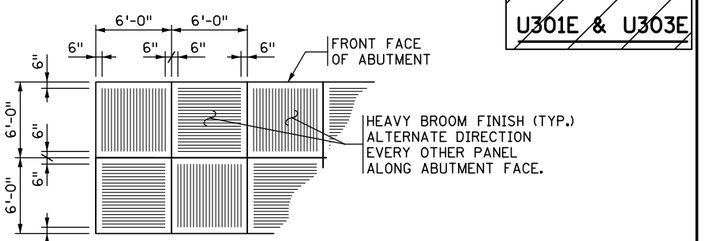


DETAIL WHERE PIER COLUMN EXTENDS THROUGH SLOPE PAVING



DETAIL "A"





BROOMED SURFACE TREATMENT

CONCRETE & REINFORCEMENT UNIT QUANTITIES

1. ~~0.111 CU. YD. OF CONCRETE/LIN. FT. 8.55 LBS. OF REINFORCEMENT/LIN FT.~~
2. ~~0.046 CU. YD. OF CONCRETE/LIN. FT. 4.08 LBS. OF REINFORCEMENT/LIN FT.~~
3. ~~0.116 CU. YD. OF CONCRETE/LIN. FT. 5.62 LBS. OF REINFORCEMENT/LIN FT. BASED ON A SLOPE OF 1:2.~~
4. 0.111 CU. YD. OF CONCRETE/SQ. YD. 4.512 LBS. OF REINFORCEMENT/SQ. YD.

GENERAL NOTES

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

SLOPE PAVING IN ACCORDANCE WITH SPEC. 2514.

REVISION: NOVEMBER 29, 2023

APPROVED: SEPTEMBER 26, 2003

STATE BRIDGE ENGINEER

MODIFIED:
- LAYOUT PLAN AND SECTION A-A TO INPLACE TOE WALL AND SIDE WALL
- SECTION A-A TO SHOW INPLACE SIDE WALL
- SECTION B-B TO SHOW INPLACE TOE WALL

NO.	DATE	BY	DESCRIPTION OF REVISIONS

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

SIGNED Matthew J. Christensen MATTHEW J. CHRISTENSEN

DATE: 11/6/2024 LIC. NO.: 43076

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: CONCRETE SLOPE PAVING UNDER BRIDGES

DES: DRH	DR: DRH	APPROVED
CHK: ADL	CHK: ADL	

SHEET NO. 63 OF 64 SHEETS

BRIDGE NO. 02523

FIG. 5-397.301 MOD.

DATE: 11/6/2024 TIME: 9:19:51 AM
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DATE: 11/6/2024 TIME: 9:19:53 AM
FILENAME: pw:\tkda-pw.bentley.com:tkda-pw-01\Documents\Projects\a-f\AnokaCounty\20837000\04_Production\01_CAD\Bridge\Standard\CBR02523_det09.dgn

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
STATE BRIDGE ENGINEER

NO.	DATE	BY	DESCRIPTION OF REVISIONS

AS-BUILT DETAILS (AS NEEDED)

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

FIG. 5-397.900

TKDA

ANOKA COUNTY
CSAH 2 OVER NORTHTOWN YARD
S.P. NO. 002-602-015

TITLE: AS-BUILT BRIDGE DATA

DES:	DR:	APPROVED
CHK:	CHK:	

SHEET NO. 64 OF 64 SHEETS

BRIDGE NO. 02523