MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR BITUMINOUS MILL & OVERLAY

LOCATED ON T.H. 14 FROM 1000' E. OF CSAH 27 TO 1400' E. OF CSAH 12

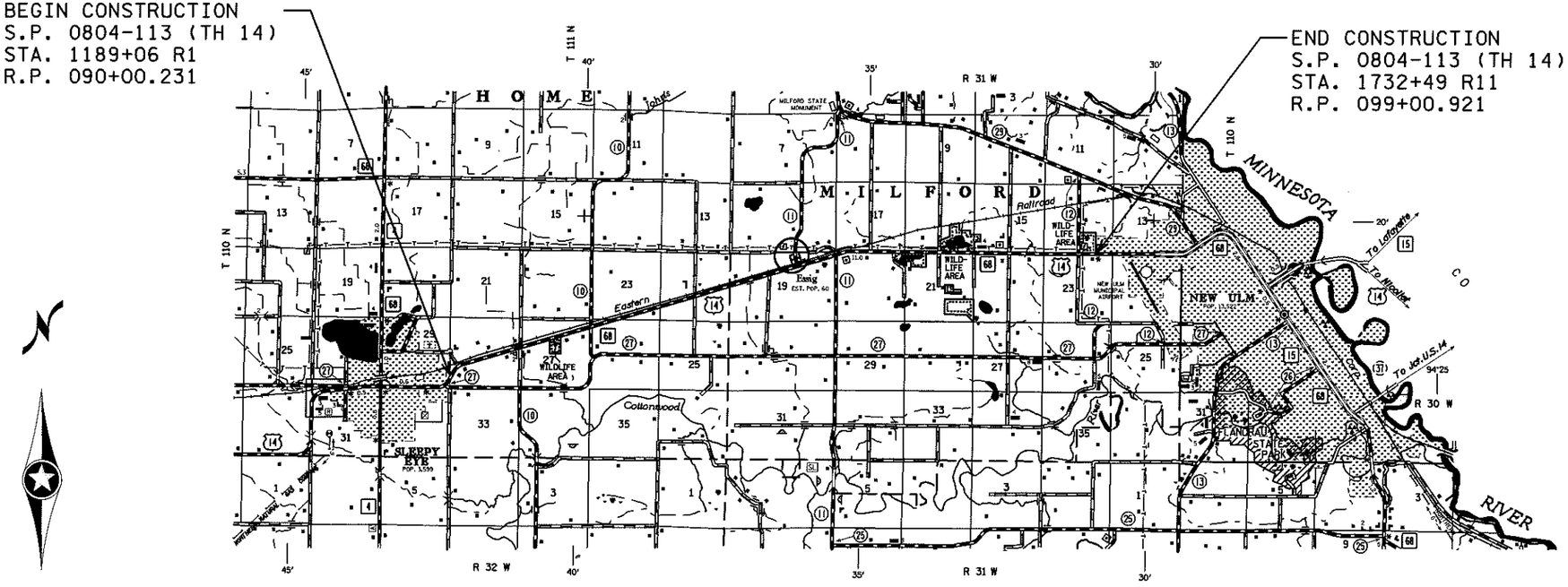
STATE PROJ. NO. 0804-113

GROSS LENGTH	50754.48	FEET	9.613 MILES
BRIDGES-LENGTH		FEET	MILES
EXCEPTIONS-LENGTH		FEET	MILES
NET LENGTH	50754.48	FEET	9.613 MILES

REF. POINT 090+00.231 TO REF. POINT 099+00.921

BEGIN CONSTRUCTION
S.P. 0804-113 (TH 14)
STA. 1189+06 R1
R.P. 090+00.231

END CONSTRUCTION
S.P. 0804-113 (TH 14)
STA. 1732+49 R11
R.P. 099+00.921



EQUATIONS:

STA 1199+54.02 BK = STA 1231+78.18 AH
STA 1401+45.23 BK = STA 1405+00.20 AH
STA 1497+86.80 BK = STA 1497+93.64 AH
STA 1531+13.01 BK = STA 1531+10.69 AH
STA 1543+10.86 BK = STA 1543+12.34 AH
STA 1558+76.20 BK = STA 1558+77.20 AH
STA 1613+98.72 BK = STA 1613+97.95 AH
STA 1637+96.00 BK = STA 1637+95.30 AH
STA 1666+49.99 BK = STA 1666+47.98 AH
STA 1692+91.24 BK = STA 1692+97.11 AH

SCALES

PLAN	NA	
PROFILE	NA HORIZ.	NA VERT.
INDEX MAP	5280'	
GENERAL LAYOUT	150'	

DESIGN DESIGNATION

Design ESALS	=	Design Speed	60 MPH
ADT (Current Year) 2017	= 3650	Based on	STOPPING Sight Distance
ADT (Future Year) 2037	= 3950	Height of eye	3.5 Height of object 2.0
DHV (Design Hr. Vol.)	=	Design Speed not achieved at:	NA
D (Directional Distr.)	= %	STA.	TO STA. MPH
T (Heavy Commercial)	= %	STA.	TO STA. MPH

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

PROJECT LOCATION
COUNTY : BROWN
DISTRICT : 7 MANKATO

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

STATE PROJ. NO.	CHARGE IDENTIFIER
0804-113	

FED. PROJ. NO. NHPP 0014(334)

GOVERNING SPECIFICATIONS

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2-7	GENERAL LAYOUT
8	STATEMENT OF ESTIMATED QUANTITIES
9	CONSTRUCTION NOTES
10-13	TABULATIONS
14	TYPICAL SECTIONS
15-20	DETAIL SHEETS
21-28	STANDARD PLANS
29-30	SWPPP
31-33	PAVEMENT MARKING

THIS PLAN CONTAINS 33 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.

PRINT NAME: BRETT BENZKOFER LICENSE # 25434

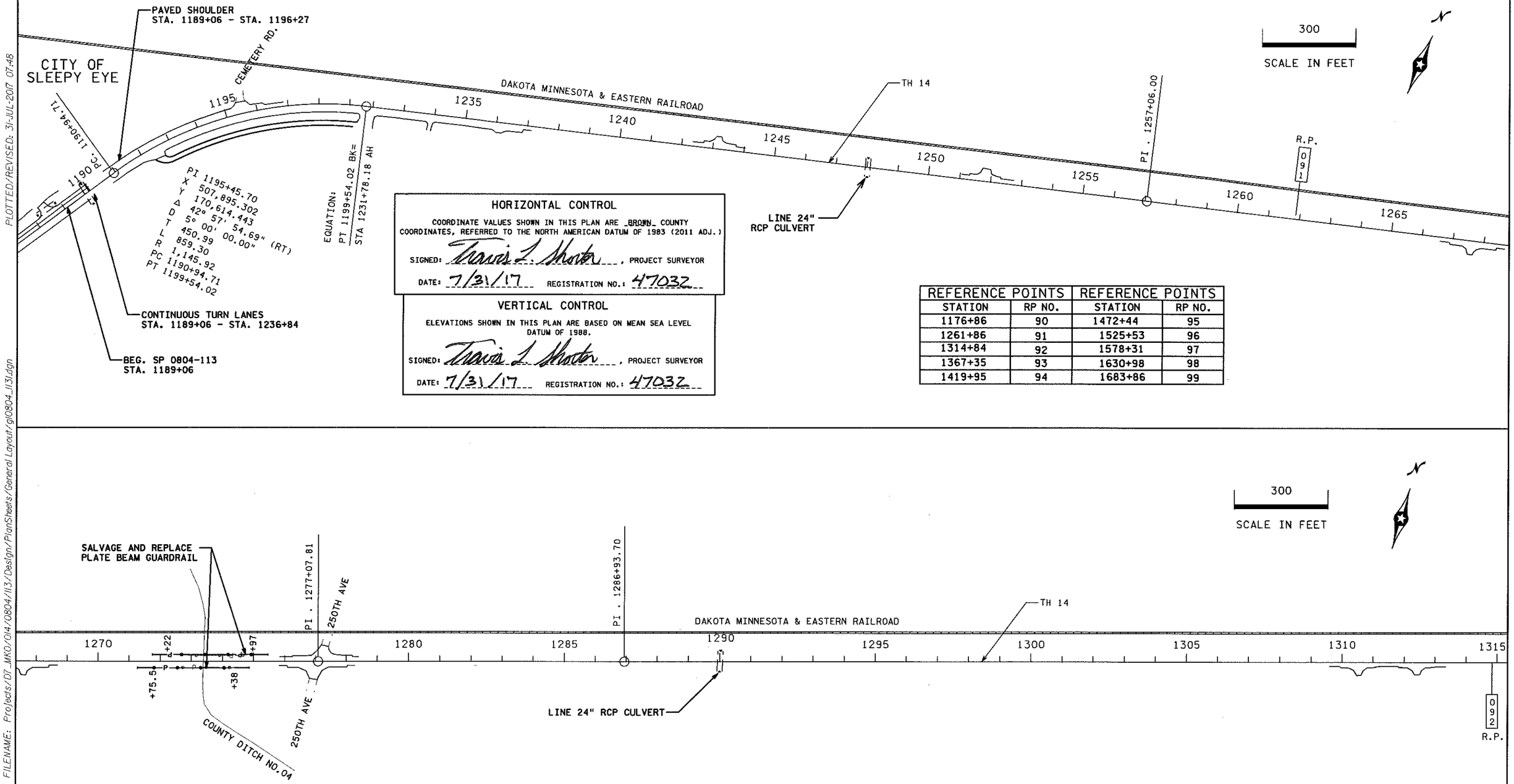
DATE: 10/26/17 SIGNATURE:

DESIGN SQUAD P.THORDSON, P.HENTGES

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: LICENSE #

DATE: SIGNATURE:



HORIZONTAL CONTROL

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

SIGNED: Travis L. Shooter, PROJECT SURVEYOR

DATE: 7/31/17 REGISTRATION NO.: 47032

VERTICAL CONTROL

ELEVATIONS SHOWN IN THIS PLAN ARE BASED ON MEAN SEA LEVEL DATUM OF 1988.

SIGNED: Travis L. Shooter, PROJECT SURVEYOR

DATE: 7/31/17 REGISTRATION NO.: 47032

REFERENCE POINTS		REFERENCE POINTS	
STATION	RP NO.	STATION	RP NO.
1176+86	90	1472+44	95
1261+86	91	1525+53	96
1314+84	92	1578+31	97
1367+35	93	1630+98	98
1419+95	94	1683+86	99

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 25434 LIC NO. 31-JUL-2017 DATE

GENERAL LAYOUT

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 2 OF 33 SHEETS

PLOTTED/REVISED: 31-JUL-2017 07:48

DISTRICT #: 7 - Mankato/Windom
USER NAME: thorlpat
PATH & FILENAME: Projects/DT_MKO/014/0804/113/Design/PlanSheets/General Layout/gl0804_113l.dgn

300

SCALE IN FEET

STA. 1323+50
REMOVE BITUMINOUS PAVEMENT
REMOVE 18" CS CULVERT AND APRONS
PLACE 18" CS CULVERT AND APRONS

TURN LANE
STA. 1322+57 - STA. 1328+36

TURN LANE
STA. 1332+06 - STA. 1337+73

CSAH 10

TH 14

DAKOTA MINNESOTA & EASTERN RAILROAD

1315 1320 1325 1330 1335 1340 1345 1350 1355 1360

R.P. 092

BY-PASS LANE
STA. 1318+23 - STA. 1326+66

CSAH 10

SPUR LINE

300

SCALE IN FEET

R.P. 093

TH 14

DAKOTA MINNESOTA & EASTERN RAILROAD

1365 1370 1375 1380 1385 1390 1395 1400 1410

EQUATION:
STA 1401+45.23 BK =
STA 1405+00.20 AH

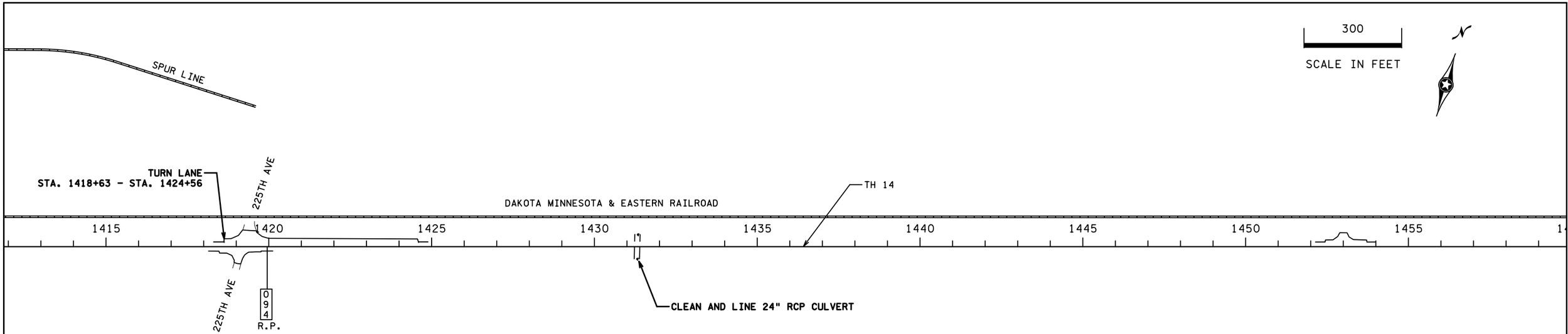
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER

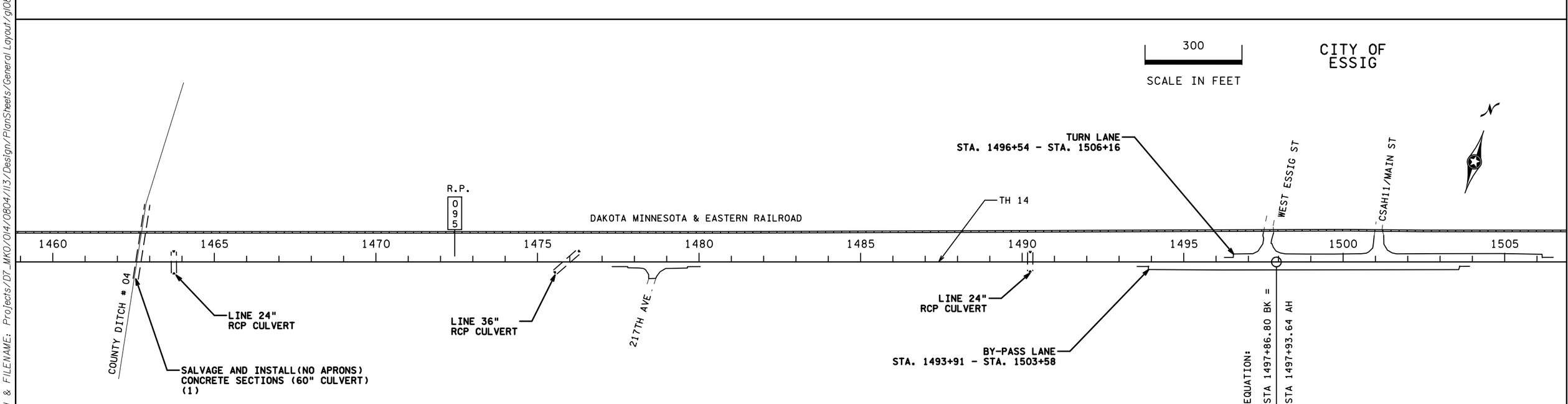
25434 LIC NO.

26-OCT-2017 DATE

GENERAL LAYOUT

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 3 OF 33 SHEETS



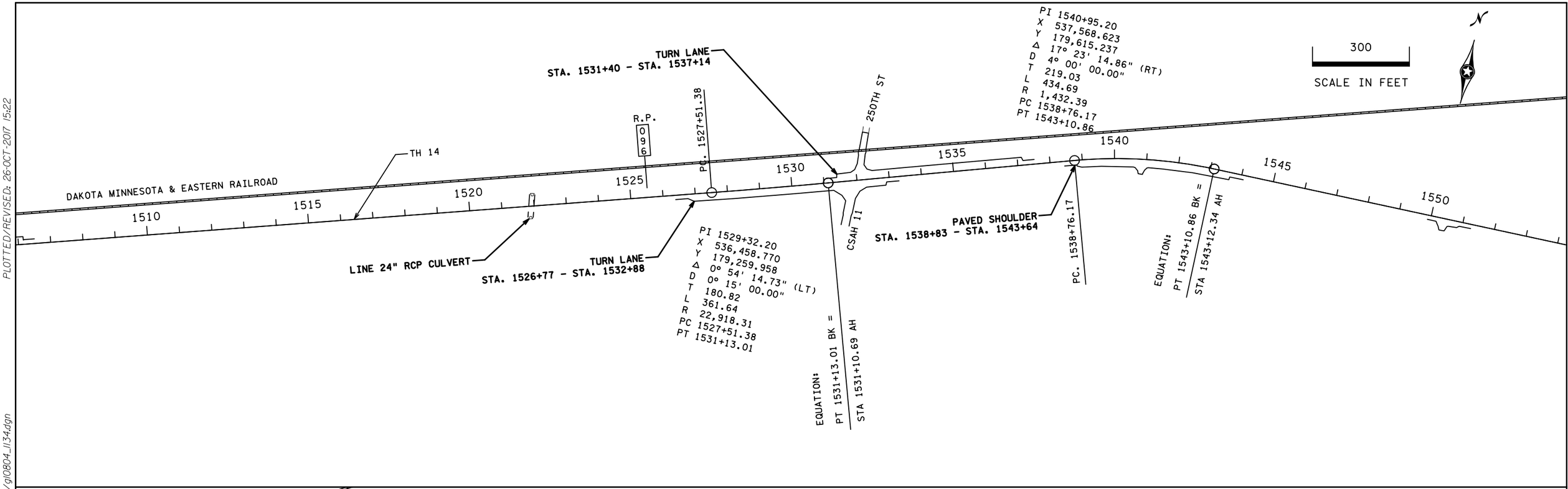


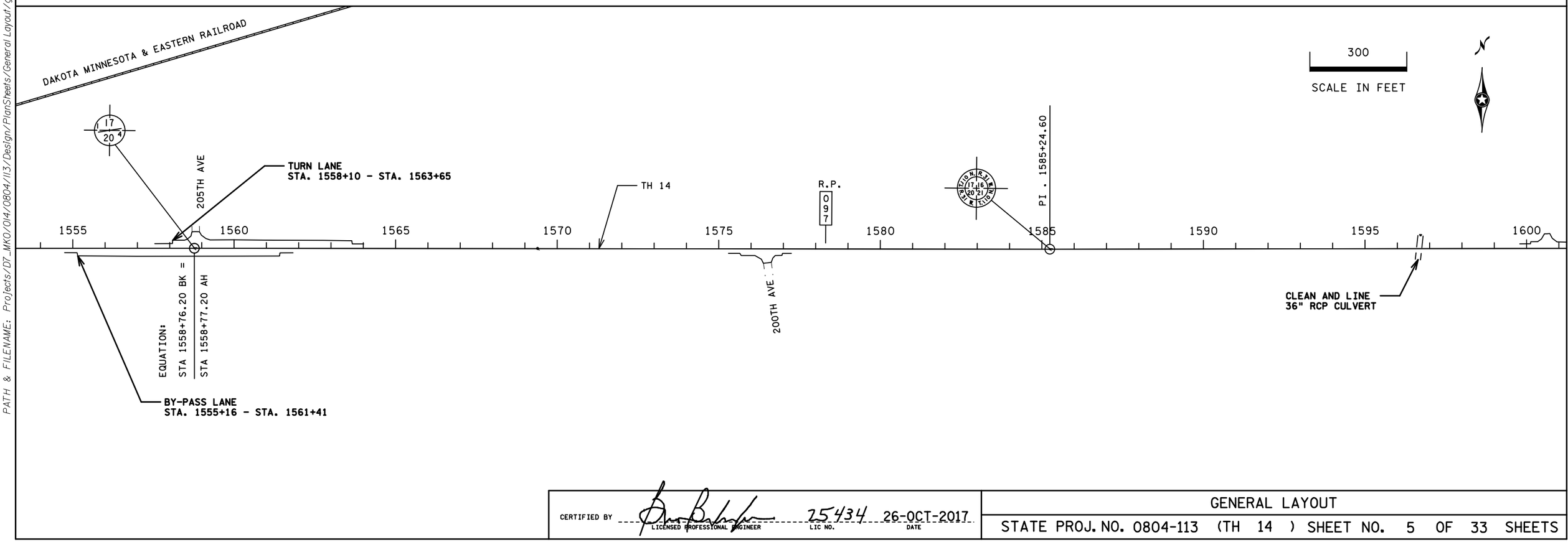
NOTE: (1) SEE TABULATION SHEET 12 FOR QUANTITIES.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 25434 LIC NO. 26-OCT-2017 DATE

GENERAL LAYOUT

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 4 OF 33 SHEETS





CERTIFIED BY _____ 25434 26-OCT-2017
LICENSED PROFESSIONAL ENGINEER LIC NO. DATE

GENERAL LAYOUT

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 5 OF 33 SHEETS

PI 1611+52.90
X 544,627.080
Y 179,657.709
Δ 1° 13' 44.86" (RT)
D 0° 15' 00.00"
T 245.84
L 491.65
R 22,918.31
PC 1609+07.06
PT 1613+98.72

EQUATION:
PT 1613+98.72 BK =
STA 1613+97.95 AH

195TH AVE

TH 14

R.P.
098

PAVED SHOULDER
STA. 1641+89 – STA. 1646+10

300
SCALE IN FEET

1605 1610 1615 1620 1625 1630 1635 1640 1645

PC. 1609+07.06

195TH AVE

EQUATION:
STA 1637+96.00 BK =
STA 1637+95.30 AH

PI 1664+42.40
X 549,917.376
Y 179,572.789
Δ 0° 41' 31.11" (LT)
D 0° 10' 00.00"
T 207.60
L 415.19
R 34,377.47
PC 1662+34.80
PT 1666+49.99

TURN LANE
STA. 1663+61 – STA. 1669+29

REMOVE
ENTRANCE

PAVED SHOULDER
STA. 1660+07 – STA. 1663+61

REMOVE AND REPLACE
3 CABLE GUARDRAIL

PC. 1662+34.80

185TH AVE

TH 14

R.P.
099

PC. 1688+63.55

300
SCALE IN FEET

1650 1655 1660 1665 1670 1675 1680 1685 1690 169

PAVED SHOULDER
STA. 1661+85 – STA. 1665+30

185TH AVE

EQUATION:
PT 1666+49.99 BK =
STA 1666+47.98 AH

LINE 30" RCP CULVERT

PI 1690+77.40
X 552,554.342
Y 179,557.418
Δ 1° 04' 09.25" (LT)
D 0° 15' 00.00"
T 213.85
L 427.69
R 22,918.31
PC 1688+63.55
PT 1692+91.24

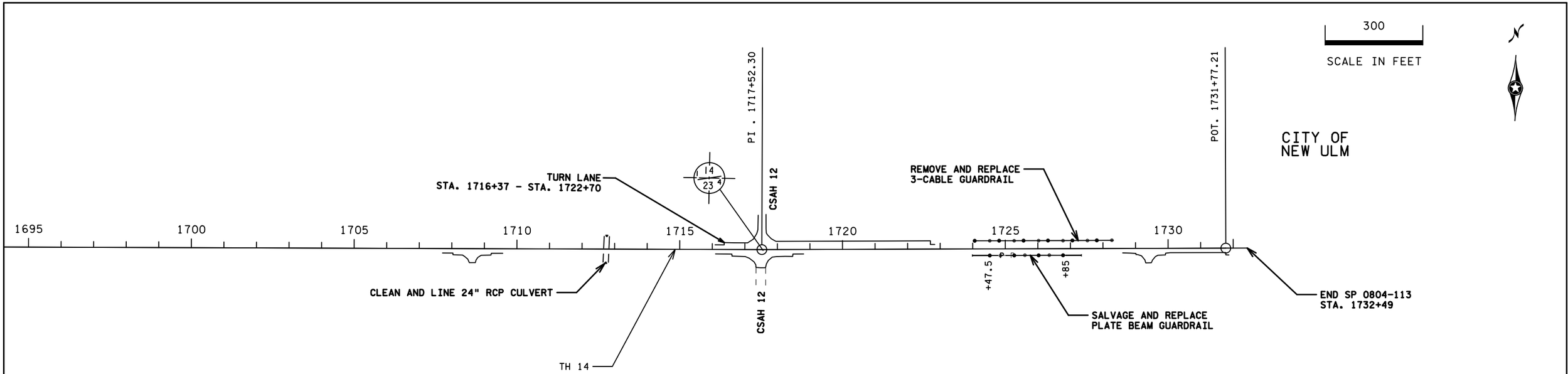
EQUATION:
PT 1692+91.24 BK =
STA 1692+97.11 AH

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER
25434 LIC NO.
26-OCT-2017 DATE

GENERAL LAYOUT

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 6 OF 33 SHEETS

PLOTTED/REVISED: 26-OCT-2017 15:22
DISTRICT #: 7 - Mankato/Windom
USER NAME: thorlpat
PATH & FILENAME: Projects/D7_MKO/014/0804/113/Design/PlanSheets/General Layout/gl0804_l135.dgn



PLOTTED/REVISED: 26-OCT-2017 15:22

PATH & FILENAME: Projects/07_MKO/014/0804/113/Design/PlanSheets/General Layout/gl0804_l136.dgn

USER NAME: thorlpat

DISTRICT #: 7 - Mankato/Windom

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 25434 LIC NO. 26-OCT-2017 DATE

GENERAL LAYOUT

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 7 OF 33 SHEETS

STATEMENT OF ESTIMATED QUANTITIES (A)

TAB	SHEET NO.	ITEM NO.	ITEM		UNITS	TOTAL
		2011.601	CONSTRUCTION SURVEYING		LUMP SUM	1
		2016.601	QUALITY MANAGEMENT		LUMP SUM	1
		2016.601	QUALITY MANAGEMENT SPECIAL		LUMP SUM	1
		2021.501	MOBILIZATION		LUMP SUM	1
		2031.602	COMBINATION FIELD LABORATORY-OFFICE	(1)	EACH	1
		2051.501	MAINT AND RESTORATION OF HAUL ROADS		LUMP SUM	1
B	12	2104.501	REMOVE METAL CULVERT	(2)	LIN FT	106
C	12	2104.501	REMOVE CABLE GUARDRAIL	(3)	LIN FT	975
B	12	2104.503	REMOVE BITUMINOUS PAVEMENT	(4)	SQ YD	455
C	12	2104.509	REMOVE ANCHORAGE ASSEMBLY-CABLE		EACH	6
D	12	2104.509	REMOVE GUIDE POST	(5)	EACH	21
B	12	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)		LIN FT	238
D	12	2104.521	SALVAGE CONCRETE PIPE CULVERT		LIN FT	16
C	12	2104.521	SALVAGE GUARDRAIL-PLATE BEAM		LIN FT	600
C	12	2104.523	SALVAGE ENERGY ABSORBING TERMINAL	(6)	EACH	6
		2104.601	HAUL SALVAGED MATERIAL	(7) (B)	LUMP SUM	1
C	12	2105.523	COMMON BORROW (CV)	(8)	CU YD	360
C	12	2105.603	MINOR GRADING	(8)	LIN FT	1388
A	10-11	2105.603	SHOULDER TRENCHING		LIN FT	102216
		2105.607	HAUL & STOCKPILE BITUMINOUS MATERIAL	(B)	CU YD	5500
A	10-11	2118.501	AGGREGATE SURFACING CLASS 1		TON	3175
		2123.501	COMMON LABORERS	(9)	HOUR	10
		2123.510	10 CU YD TRUCK	(9)	HOUR	10
		2123.610	TRACTOR MOUNTED BACKHOE-LOADER	(9)	HOUR	10
	15	2231.501	BITUMINOUS PATCHING MIXTURE	(10)(11)	TON	113
A	10-11	2232.501	MILL BITUMINOUS SURFACE (2.0")		SQ YD	178412
E	13	2232.603	MILLED RUMBLE STRIPS-INTERMITTENT		LIN FT	80479
E	13	2232.603	MILLED SINUSOIDAL RUMBLE STRIPS-CL		LIN FT	47998
E	13	2355.502	BITUMINOUS MATERIAL FOR FOG SEAL	(12)	GALLON	717
A	10-11	2357.606	BITUMINOUS MATERIAL FOR SHOULDER TACK		GALLON	9429
A	10-11	2360.501	TYPE SP 12.5 WEARING COURSE MIXTURE (4,E)	(10)(13)	TON	20297
D	12	2501.511	18" CS PIPE CULVERT		LIN FT	50
D	12	2501.569	18" CS SAFETY APRON		EACH	2
D	12	2501.571	INSTALL CONCRETE CULVERT		LIN FT	16
D	12	2501.602	CLEAN PIPE CULVERT	(14)	EACH	3
D	12	2503.603	VIDEO TAPE PIPE SEWER		LIN FT	675
D	12	2507.501	LINING CULVERT PIPE 24"		LIN FT	210
D	12	2507.501	LINING CULVERT PIPE 30"		LIN FT	60
D	12	2507.603	LINING CULVERT PIPE (24") SPECIAL	(15)	LIN FT	255
D	12	2507.603	LINING CULVERT PIPE (36") SPECIAL	(15)	LIN FT	150
D	12	2511.501	RANDOM RIPRAP CLASS III		CU YD	20
D	12	2511.515	GEOTEXTILE FILTER TYPE IV		SQ YD	29
D	12	2519.502	CLSM HIGH DENSITY		CU YD	5.4
C	12	2554.501	TRAFFIC BARRIER DESIGN 8331		LIN FT	975
C	12	2554.501	TRAFFIC BARRIER DESIGN TYPE 31		LIN FT	775
D	12	2554.509	GUIDE POST TYPE B	(5)	EACH	24
C	12	2554.521	ANCHORAGE ASSEMBLY - CABLE		EACH	6
C	12	2554.523	END TREATMENT-TANGENT TERMINAL	(16)	EACH	6

STATEMENT OF ESTIMATED QUANTITIES (A)

TAB	SHEET NO.	ITEM NO.	ITEM		UNITS	TOTAL
		2563.601	TRAFFIC CONTROL		LUMP SUM	1
C-D	12	2575.572	RAPID STABILIZATION METHOD 4	(17)	SQ YD	1322
		2580.601	INTERIM PAVEMENT MARKING	(18)	LUMP SUM	1
F	13	2582.501	PAVEMENT MESSAGE EPOXY GROUND IN (WR)	(19)	SQ FT	75
F	13	2582.502	4" SOLID LINE EPOXY (WR)	(19)(20)	LIN FT	13277
F	13	2582.502	4" BROKEN LINE EPOXY (WR)	(19)(20)	LIN FT	8884
F	13	2582.502	4" DOUBLE SOLID LINE EPOXY (WR)	(19)(20)	LIN FT	2265
F	13	2582.502	4" SOLID LINE EPOXY GROUND IN (WR)	(19)	LIN FT	105619
F	13	2582.502	4" BROKEN LINE EPOXY GROUND IN (WR)	(19)	LIN FT	1291
F	13	2582.502	4" DOTTED LINE EPOXY GROUND IN (WR)	(19)	LIN FT	337
F	13	2582.502	8" DOTTED LINE EPOXY GROUND IN (WR)	(19)	LIN FT	286
F	13	2582.603	MOBILE RETROREFLECTOMETER MEASUREMENTS		LIN FT	203018

ESTIMATED QUANTITY NOTES:

(1) TYPE DX SERVICE.

(2) LENGTH INCLUDES APRONS.

(3) INCLUDES TREATED WOOD POSTS. SEE SPECIAL PROVISIONS FOR WOOD POST HANDLING AND DISPOSAL REQUIREMENTS.

(4) APPROXIMATE DEPTH 4".

(5) ALL CULVERT GUIDE POSTS SHALL BE REMOVED PRIOR TO ANY CULVERT OPERATION. GUIDE POSTS SHALL BE PLACED PRIOR TO MOVING TO THE NEXT LOCATION.

(6) ET-2000.

(7) HAUL SALVAGED GUARDRAIL-PLATE BEAM AND END TREATMENTS TO MNDOT MANKATO TRUCK STATION. TREATED WOOD POSTS SHALL BE DISPOSED OF PER MNDOT SPEC. 2104.

(8) FOR BUILDING GRADING PLATFORMS AND TRAVERSABLE AREAS BEHIND GUARDRAIL END TREATMENTS.

(9) FOR MINOR DITCH GRADING AND AS DIRECTED BY THE ENGINEER.

(10) MSCR GRADE BINDER.

(11) THIS ITEM SHALL MEET THE REQUIREMENT OF TYPE SP 12.5 WEARING COURSE MIXTURE(SPWEB440E). FOR REPAIRING TRANSVERSE JOINTS AND LONGITUDINAL CRACKS AFTER MILLING AND PRIOR TO PAVING AS DIRECTED BY THE ENGINEER.

(12) DILUTED QUANTITY FOR SEALING LONGITUDINAL JOINTS WHERE RUMBLE STRIPS ARE NOT PLACED. APPLICATION RATE 0.1 GALLONS PER SQUARE YARD.

(13) BITUMINOUS MATERIAL FOR TACK COAT IS INCIDENTAL.

(14) FOR ADDITIONAL CLEANING NEEDED OF CULVERTS WITH GREATER THAN 4" OF SEDIMENT OR DEBRIS. ALL OTHER CLEANING IS INCIDENTAL.

(15) SHALL BE CIPP (CURED IN PLACE PIPE)

(16) SHALL BE SOFT STOP OR MSKT.

(17) FOR CULVERT REPAIR WORK, GUARDRAIL LOCATIONS AND AS DIRECTED BY THE ENGINEER.

(18) INTERIM PAVEMENT MARKING INCLUDES MARKING THE CENTERLINE WITH A 5' LONG BY 4" WIDE BROKEN LINE YELLOW PAINT AND 4" WIDE SOLID LINE YELLOW PAINT IN NO PASSING ZONES. PAVING, RUMBLE STRIP, AND FOG SEAL CONSTRUCTION SEQUENCE:

- PAVE
- INTERIM STRIPE
- RUMBLE STRIP CONSTRUCTION
- RUMBLE STRIP DEBRIS REMOVAL
- INTERIM STRIPE
- FOG SEAL
- INTERIM MARKINGS (14 DAYS)
- GRINDING FOR FINAL MARKINGS
- FINAL MARKING INSTALLATION

ASSUME 2 INTERIM STRIPING APPLICATIONS IF RUMBLE CUTTING, DEBRIS REMOVAL, AND FOG SEALING ARE COMPLETED IN ONE DAY.

(19) FOR MARKING THE COMPLETED PROJECT.

(20) FOR CENTERLINE STRIPING IN AREAS WITH SINUSOIDAL RUMBLE STRIPS.

FUNDING NOTES:

(A) 80% FEDERAL/20% STATE FUNDS, EXCEPT AS NOTED.
(B) 100% STATE FUNDS.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC NO. 25434 DATE 27-OCT-2017

STATEMENT OF ESTIMATED QUANTITIES

CONSTRUCTION NOTES:

A. ALL RUMBLE STRIPS ARE TO HAVE A BITUMINOUS FOG SEAL APPLIED TO THEM PRIOR TO PERMANENT PAVEMENT STRIPING AT A RATE OF 0.07 TO 0.10 GAL/SQ YD. (INCIDENTAL)

B. THE MIXTURE SP 12.5 (SPWEB440E) WAS COMPUTED AT 113 LBS./SQ. YD./INCH.

C. ALL SALVAGED ROADWAY MATERIALS, SUCH AS CONCRETE, BITUMINOUS, AND AGGREGATES CAN BE UTILIZED TO THE SPECIFICATIONS AND SPECIAL PROVISIONS. MATERIALS NOT UTILIZED ON THIS PROJECT WILL BECOME THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF OFF OF THE R/W, AS AGREED UPON BY THE ENGINEER.

D. SHOULDER TACK SHALL BE APPLIED ALONG THE CENTER OF THE SHOULDER PI AT A WIDTH OF 3' TO STABILIZE THE AGGREGATE SURFACING ACCORDING TO THE SPECIAL PROVISIONS OF 2357. APPLICATION RATE IS 0.18 GAL/SQ YD. THE CONTRACTOR WILL BE REQUIRED TO PRE-WET THE SHOULDERS PRIOR TO PLACING BITUMINOUS MATERIAL FOR SHOULDER TACK FOLLOWING SPECIAL PROVISIONS OF 2357 OR AS DIRECTED BY THE ENGINEER.

E. PROVIDE FOR MATCHING THE INPLACE CROWN, BUT NO LESS THAN 1.5% IN NON-SUPERELEVATED SEGMENTS. IT IS NOT THE INTENT OF THIS PROJECT TO CORRECT THE CROWN TO A 2% STANDARD CROSS SLOPE.

F. NO TRAFFIC (CONSTRUCTION OR PUBLIC) EXCEPT FOR NECESSARY PAVING EQUIPMENT WILL BE ALLOWED ON THE MILLED SURFACE UNTIL THE BITUMINOUS IS PLACED.

G. THE SEQUENCING OF THE CENTERLINE SINUSOIDAL RUMBLE STRIP OPERATION IS AS FOLLOWS:
   1. MILLING OF CENTERLINE SINUSOIDAL RUMBLE STRIPS.
   2. APPLICATION OF BITUMINOUS MATERIAL FOR CENTERLINE JOINT FOG SEAL. (INCIDENTAL)
      FOG SEAL IS TO CURE FOR 14 DAYS PRIOR TO INSTALLATION OF FINAL PAVEMENT MARKINGS.
   3. APPLY LATEX INTERIM PAVEMENT MARKINGS THE SAME DAY THE FOG SEAL IS APPLIED.
   4. REMOVE INTERIM PAVEMENT MARKINGS.
   5. SWEEP RUMBLES TO REMOVE DEBRIS AND APPLY EPOXY CENTERLINE MARKINGS.

H. PRIOR TO PLACING THE BITUMINOUS OVERLAY, THE ENTIRE SURFACE SHALL BE AIR BLASTED AND SWEPT TO REMOVE ANY LOOSE MATERIAL INCLUDING ALL CRACK AND JOINT REPAIR LOCATIONS AND AS DIRECTED BY THE ENGINEER. THE AIR BLASTING SHOULD BE DONE WITH HIGH PRESSURE (100 PSI +/-) EQUIPMENT. SWEEPING SHALL BE DONE WITH A PICKUP STYLE SWEEPER. (INCIDENTAL).

I. ALL RAPID STABILIZATION WORK AT EACH CULVERT LOCATION SHALL BE COMPLETED WITHIN 24 HOURS OF COMPLETION OF CULVERT WORK.

J. CONSTRUCTION OF BITUMINOUS SAFETY EDGE SHALL UTILIZE A MANUFACTURED SHOE DEVICE ATTACHED TO THE PAVER SCREED TO OBTAIN COMPACTION OF EDGE DURING PAVING. CONSTRUCTION WITH A SINGLE PLATE STRIKE-OFF SHALL NOT BE ALLOWED. BITUMINOUS QUANTITY FOR CONSTRUCTION SAFETY EDGE IS INCLUDED IN MAINLINE PAVING QUANTITY TABULATION.

K. THE 4" CONCRETE OUTLETS SHALL BE MARKED BY THE FOLLOWING METHOD (INCIDENTAL):
   1. A DEPRESSION, 5" X 24" X 1/8" MINIMUM, SHOULD BE MADE AT EACH HEADWALL LOCATION AND THE DEPRESSION SHALL PROMOTE DRAINAGE OF SURFACE WATER TO THE INSLOPE.
   2. WHEN AN IRON PLATE IS USED TO CONSTRUCT THE 1/8" DEPRESSION, THE THICKNESS OF THE PLATE SHALL BE 1/4" MINIMUM.
   3. A 4" X 18" WHITE LATEX PAINT MARKING SHALL BE PLACED IN THE BITUMINOUS DEPRESSION.
   4. THE PLACEMENT AND DEPRESSION METHOD SHALL BE PRE-APPROVED BY THE ENGINEER.

L. AGGREGATE SURFACING CLASS 1 COMPACT BY QUALITY COMPACTION METHHOD.

M. THERE IS EXISTING DNR MAPPED NATIVE PRAIRIE/RAILROAD PRAIRIE ON THIS PROJECT WITHIN MN/DOT R/W ADJACENT TO THE RAILROAD R/W. EQUIPMENT USE AND ANY DISTURBANCE TO THESE AREAS SHALL BE KEPT TO A MINIMUM TO HELP MINIMIZE THE IMPACT TO THESE NATIVE SPECIES REMNANT AREAS.

N. ALL WORK BEING DONE ADJACENT TO THE RAILROAD R/W SHOULD BE COMPLETED ON MNDOT R/W. NO VEHICLES OR MATERIALS SHOULD BE STORED OFF MNDOT R/W.

O. PLACE BITUMINOUS TACK COAT, MNDOT SPEC. 2357, BETWEEN ALL BITUMINOUS LIFTS, ON EXISTING PAVEMENT AND MILLED PAVEMENT SURFACES PRIOR TO OVERLAY, AND AT THE EDGES WHERE CONCRETE OR BITUMINOUS MEET. ALL SURFACES SHALL BE CLEANED PRIOR TO THE PLACEMENT OF BITUMINOUS TACK.(INCIDENTAL)

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

STANDARD PLATES

PLATE NO.	DESCRIPTION
3040F	CORRUGATED METAL PIPE CULVERT (STANDARD 2-2/3" X 1/2" CORRUGATION)
3123J	METAL APRON FOR C.S. PIPE
3124B	METAL APRON CONNECTION
3128H	METAL SAFETY APRON & GRATE (2 SHEETS)
8000J	CHANNELIZERS (3 SHEETS)
8150C	INSTALLATION OF CULVERT MARKERS
8331B	3-CABLE GUARDRAIL (WITH STEEL POSTS) (3 SHEETS)
8333B	3-CABLE GUARDRAIL ANCHOR (4 SHEETS)
8338D	W-BEAM GUARDRAIL & END ANCHORAGES (STEEL POSTS) (4 SHEETS)
9000E	APPROACHES AND ENTRANCES - RECOMMENDED STANDARDS (1)

NOTE:

(1) THE 2' BUMPER STRIP ON FIELD ENTRANCES SHALL BE DELETED.

THE FOLLOWING UTILITY OWNERS HAVE FACILITIES INSIDE THE LIMITS OF THE PROJECT:
CENTERPOINT ENERGY MINNESOTA GAS
BROWN COUNTY RURAL ELECTRIC ASSOCIATION
NU-TELECOM

THE UTILITIES ON THIS PROJECT ARE LOCATED OUTSIDE THE LIMITS OF EXCAVATION AND WILL NOT BE AFFECTED

NOTES:
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D.
THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02,
ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

CERTIFIED BY _____ 25434 27-OCT-2017
LICENSED PROFESSIONAL ENGINEER LIC NO. DATE

CONSTRUCTION NOTES AND STANDARD PLATES

BITUMINOUS AND AGGREGATES TABULATION (2)

TAB A

TH 14		LOCATION	SHOULDER TRENCHING	MILL BITUMINOUS SURFACE (2.0")	TYPE SP 12.5 WEARING COURSE MIX (SPWEB440E)	AGGREGATE SURFACING CLASS 1 (1)	BITUMINOUS MATERIAL FOR SHOULDER TACK	COMMENTS
STATION	TO STATION		LIN FT	SQ YD	TON	TON	GALLON	
1189+06	1236+84	MAINLINE		4835	546		93	
1189+06	1196+27	PAVED SHOULDER LT	721	801	91	9	43	
1196+27	1322+57	SHOULDER LT	9406			302	564	
1189+06	1236+84	CONTINUOUS RT-TURN LANE	1554	1727	195		93	
1236+84	1337+73	MAINLINE		31387	3547		605	
1322+57	1328+36	TURN LANE LT	579	1067	121	7	35	
1328+36	1332+06	SHOULDER LT	370			12	22	
1332+06	1337+73	CSAH 10 TURN LANE LT	567	806	91		34	
1236+84	1318+23	SHOULDER RT	8139			261	488	
1318+23	1326+66	BY-PASS LANE RT	843	1002	113	10	51	
1326+66	1337+73	SHOULDER RT	1107			36	66	
1337+73	1506+16	MAINLINE		51275	5794		989	
1337+73	1418+63	SHOULDER LT	8090			260	485	
1418+63	1424+56	225TH AVE TURN LANE LT	593	881	100		36	
1424+56	1496+54	SHOULDER LT	7198			231	432	
1496+54	1506+16	ESSIG TURN LANES LT	955	1495	169		57	
1337+73	1493+91	SHOULDER RT	15618			501	937	
1493+91	1503+58	BY-PASS LANE RT	960	1133	128	12	58	
1506+16	1545+00	MAINLINE		12086	1366		233	
1506+16	1531+40	SHOULDER LT	2524			81	151	
1531+40	1537+14	250TH ST TURN LANE LT	576	793	90		35	
1537+14	1558+10	SHOULDER LT	2095			67	126	
1503+58	1526+77	SHOULDER RT	2319			74	139	
1526+77	1532+88	CSAH 11 TURN LANE RT	613	880	99		37	
1532+88	1538+83	SHOULDER RT	595			19	36	
1538+83	1543+64	PAVE SHOULDER RT	480	607	69	6	29	
1545+00	1563+65	MAINLINE		5799	655		112	
1558+10	1563+65	205TH ST TURN LANE LT	554	792	89		33	
1543+64	1555+16	SHOULDER RT	1152			37	69	
1555+16	1561+41	BY-PASS LANE RT	624	738	83	8	37	
1563+65	1669+29	MAINLINE		32877	3715		634	
1563+65	1641+89	SHOULDER LT	7824			251	469	
1641+89	1646+10	PAVED SHOULDER LT	421	54	6	5	25	
1646+10	1660+07	SHOULDER LT	1397			45	84	
1660+07	1663+61	PAVED SHOULDER LT	354	292	33	4	21	
1663+61	1669+29	185TH AVE LT	570	774	87	7	34	
1561+41	1661+85	SHOULDER RT	10044			322	603	
1661+85	1665+30	PAVED SHOULDER/185TH AVE RT	345	411	46	4	21	
1665+30	1669+29	SHOULDER RT	401			13	24	
1669+29	1732+49	MAINLINE		19644	2220	76	379	
1669+29	1716+37	SHOULDER LT	4702			151	282	
1716+37	1722+70	CSAH12 TURN LANE LT	633	865	98		38	
1722+70	1732+49	SHOULDER LT	979			31	59	
1669+29	1732+49	SHOULDER RT	6314			203	379	
SUBTOTALS			102216	173022	19551	3045	9177	

NOTES:

(1) AGGREGATE SURFACING CLASS 1 WAS COMPUTED USING A DEPTH OF 2.0" TO RAISE THE EXISTING SHOULDERS TO A SLOPE OF 0.04%.

(2) THIS PROJECT HAS EQUATIONS, SEE TITLE SHEET.

CERTIFIED BY _____ 25434 27-OCT-2017
LICENSED PROFESSIONAL ENGINEER LIC NO. DATE

TABULATIONS

BITUMINOUS AND AGGREGATES TABULATION (2)

TAB A

STATION	LOCATION	SHOULDER TRENCHING	MILL BITUMINOUS SURFACE (2.0')	TYPE SP 12.5 WEARING COURSE MIX (SPWEB440E)	AGGREGATE SURFACING CLASS 1 (1)	BITUMINOUS MATERIAL FOR SHOULDER TACK	COMMENTS
SIDE ROAD AND DRIVEWAY APPROACHES		LIN FT	SQ YD	TON	TON	GALLON	
1192+54	RT		88	10			
1196+27	LT		68	8			
1231+88	RT		646	73			
1233+95	RT		27	3			
1236+15	RT		45	5			
1243+08	LT		141	16			
1251+86	LT		148	17			
1267+66	RT		184	21			
1277+18	250TH AVE LT		267	30			
1277+18	250TH AVE RT		308	35			
1310+57	RT		128	14			
1312+45	RT		118	13			
1323+50	LT			137			(3)
1332+67	CSAH 10 RT		330	37			
1382+73	RT		141	16			
1419+22	TWP RD/225TH AVE RT		185	21			
1453+06	LT		187	21			
1478+70	217TH AVE RT		249	28			
1550+45	RT		94	11			
1576+51	RT		197	22			
1600+75	LT		170	19			
1611+58	195 TH AVE LT		230	26			
1611+58	195 TH AVE RT		154	17			
1628+25	LT		126	14			
1638+00	RT		168	19			
1645+50	LT		179	20			
1657+70	LT		124	14			
1678+47	RT		164	19			
1682+10	LT		135	15			
1687+00	LT		118	13			
1708+60	RT		164	18			
1729+46	RT		110	12			
FIELD ENTRANCES							
1242+50	RT				5	12	
1263+45	RT				5	12	
1280+25	RT				5	12	
1296+00	RT				5	12	
1360+00	RT				5	12	
1380+00	LT				5	12	
1446+79	RT				5	12	
1453+06	RT				5	12	
1468+29	RT				5	12	
1497+50	RT				5	12	
1514+00	RT				5	12	
1546+25	RT				5	12	
1562+85	RT				5		
1601+75	RT				5	12	
1617+23	RT				5	12	
1638+00	RT				5		
1650+50	LT				5	12	
1674+40	RT				5		
1683+23	LT				5		
1689+90	RT				5	12	
1698+00	LT				5	12	
1705+25	LT				5	12	
1705+25	RT				5	12	
1708+68	LT				5	12	
1720+00	LT				5	12	
1722+00	RT				5		
SUBTOTALS			5390	746	130	252	
TOTALS		102216	178412	20297	3175	9429	

NOTES:

(1) AGGREGATE SURFACING CLASS 1 WAS COMPUTED USING A DEPTH OF 2.0" TO RAISE THE EXISTING SHOULDERS TO A SLOPE OF 0.04%.

(2) THIS PROJECT HAS EQUATIONS, SEE TITLE SHEET.

(3) 6" DEPTH. PLACE IN THREE LIFTS. PLACE ON SALVAGED AGGREGATE BASE, INCIDENTAL.

CERTIFIED BY _____ 25434 27-OCT-2017
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TABULATIONS

REMOVALS TABULATION (1)(2) — TAB B

STATION	LOCATION	REMOVE METAL CULVERT	REMOVE BITUMINOUS PAVEMENT	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	REMARKS
TH 14		LIN FT	SQ YD	LIN FT	
1662+48	LT	56	51	45	
1323+50	LT	50	404	193	
TOTALS		106	455	238	

NOTES:
(1) ANY EXCAVATION TO REMOVE ENTRANCE SHALL BE INCIDENTAL.
(2) TOPSOIL SHALL BE SALVAGED AND REPLACED TO EXTENT AVAILABLE, INCIDENTAL.

GUARDRAIL TABULATION — TAB C

TH14		LOCATION	REMOVE CABLE GUARDRAIL	REMOVE ANCHORAGE ASSEMBLY-CABLE	SALVAGE GUARDRAIL-PLATE BEAM	SALVAGE ENERGY ABSORBING TERMINAL	TRAFFIC BARRIER DESIGN 8331	TRAFFIC BARRIER DESIGN TYPE 31	ANCHORAGE ASSEMBLY-CABLE	END TREATMENT-TANGENT TERMINAL	COMMON BORROW (CV) (3)	MINOR GRADING (3)	RAPID STABILIZATION METHOD 4	REMARKS
STATION TO STATION			LIN FT	EACH	LIN FT	EACH	LIN FT	LIN FT	EACH	EACH	CU YD	LIN FT	SQ YD	
1271+75.5	1274+38	RT			200	2		262.5		2	60	450	360	
1272+22	1274+97	LT			200	2		275		2	60	538	360	
1654+22.5	1657+35	LT	312.5	2			312.5		2					
1657+85	1660+22.5	LT	237.5	2			237.5		2					
1724+02	1728+27	LT	425	2			425		2					
1724+48	1726+85	RT			200	2		237.5		2	60	400	360	
TOTALS			975	6	600	6	975	775	6	6	360	1388	1080	

NOTE:
(3) SEE STANDARD PLANS FOR GUARDRAIL GRADING REQUIREMENTS.

DRAINAGE AND CULVERT LINING TABULATION (4) — TAB D

STATION	EXISTING RC PIPE SIZE	HDPE LINER	CIPP LINER	REMOVE GUIDE POST	SALVAGE CONCRETE PIPE CULVERT	INSTALL CONCRETE CULVERT (6)(7)	18" CS PIPE CULVERT	18" CS SAFETY APRON	CLEAN PIPE CULVERT	VIDEO TAPE PIPE SEWER	LINING CULVERT PIPE 24"	LINING CULVERT PIPE 30"	LINING CULVERT PIPE (24") SPECIAL	LINING CULVERT PIPE (36") SPECIAL	CLSM HIGH DENSITY	GUIDE POST TYPE B	RAPID STABILIZATION METHOD 4	RANDOM RIPRAP CLASS III (8)	GEOTEXTILE FILTER TYPE IV (9)	REMARKS
	INCHES			EACH	LIN FT	LIN FT	LIN FT	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	CU YD	EACH	SQ YD	CU YD	SQ YD	
TH 14																				
1248+02	24	20.5" MIN I.D.		1						75	75				1.43	2				
1290+00	24		1" THICK MAX.	2						60			60			2				
1323+50	18"						50	2								2	67			(5)
1431+40	24	20.5" MIN I.D.		2					1	60	60				1.14	2	75			(5)
1462+65	60			2	16	16										2	50	20	29	
1463+85	24		1" THICK MAX.	2						60			60			2				
1476+04	36		1" THICK MAX.	2						80				80		2				
1490+36	24	20.5" MIN I.D.		2						75	75				1.43	2				
1522+00	24		1" THICK MAX.	2						60			60			2				
1596+48	36		1" THICK MAX.	2					1	70				70		2	25			
1692+09	30	26.1" MIN I.D.		2						60		60			1.38	2				
1712+75	24		1" THICK MAX.	2					1	75			75			2	25			
TOTALS				21	16	16	50	2	3	675	210	60	255	150	5.37	24	242	20	29	

NOTES:
(4) CONTRACTOR WILL BE REQUIRED TO VERIFY EXACT CULVERT SIZES, LENGTHS AND INPLACE INTERIOR DIMENSIONS TO DETERMINE SIZE OF LINING TO FIT CULVERT PRIOR TO ORDERING MATERIALS. CONTRACTOR IS RESPONSIBLE TO ACCOUNT FOR ANY DEFLECTIONS, DISTORTIONS OR MISALIGNMENTS TO ENSURE PROPER FIT OF LINER, INCIDENTAL.
(5) GRADE NORTH DITCH TO INLET, INCIDENTAL.
(6) ANY GRADING/AGGREGATE BEDDING NEEDED TO INSTALL CONCRETE CULVERT SECTIONS SHALL BE INCIDENTAL.
(7) PROVIDE FULL CIRCUMFERENTIAL GEOTEXTILE WRAP OF JOINTS PER MNDOT 2501.3.C3.
(8) PLACE RIPRAP AS DIRECTED BY THE ENGINEER.
(9) QUANTITY FOR UNDER RIPRAP ONLY.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER — 25434 LIC NO. — 27-OCT-2017 DATE

TABULATIONS

RUMBLE STRIP TABULATION — TAB E

TH 14		LOCATION	MILLED RUMBLE STRIPS-INTERMITTENT	MILLED SINUSOIDAL RUMBLE STRIPS-CL	BITUMINOUS MATERIAL FOR FOG SEAL (1)	COMMENTS
STATION TO STATION			LIN FT	LIN FT	GALLON	
1189+06	1732+49	CENTERLINE		47998	274	
1196+27	1732+49	SHOULDER LT	41788		241	
1236+39	1732+49	SHOULDER RT	38691		202	
TOTAL			80479	47998	717	

NOTE:
(1) PLACE AT JOINT BETWEEN TRAVEL LANE AND TURN LANE, AND TH 14 CENTERLINE JOINT AT INTERSECTIONS WHERE NO RUMBLE STRIPS ARE PLACED.

PAVEMENT MARKINGS TABULATION — TAB F

ITEM	UNIT	YELLOW	WHITE	TOTAL QTY
PAVEMENT MESSAGE EPOXY GROUND IN (2)	SQ FT		75	75
4" SOLID LINE EPOXY (WR)	LIN FT	13277		13277
4" BROKEN LINE EPOXY (WR)	LIN FT	8884		8884
4" DOUBLE SOLID LINE EPOXY (WR)	LIN FT	2265		2265
4" SOLID LINE EPOXY GROUND IN (WR)	LIN FT	1032	104587	105619
4" BROKEN LINE EPOXY GROUND IN (WR)	LIN FT	1291		1291
4" DOTTED LINE EPOXY GROUND IN (WR)	LIN FT		337	337
8" DOTTED LINE EPOXY GROUND IN (WR)	LIN FT		286	286
MOBILE RETROREFLECTOMETER MEASUREMENTS	LIN FT			203018

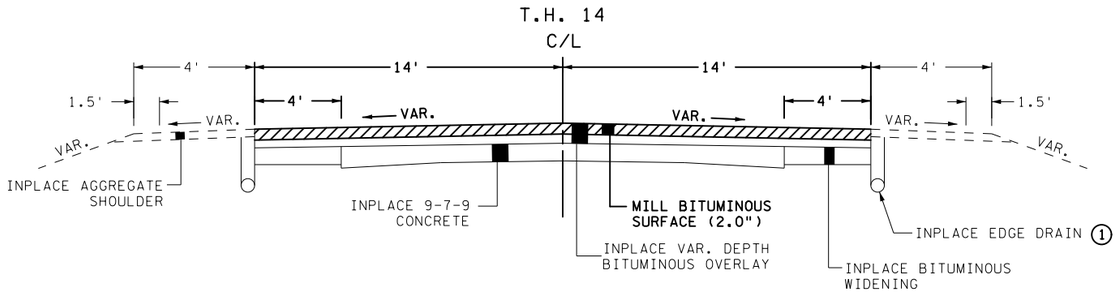
NOTE:
(2) RIGHT TURN ARROWS.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER — LIC NO. 25434 — DATE 27-OCT-2017

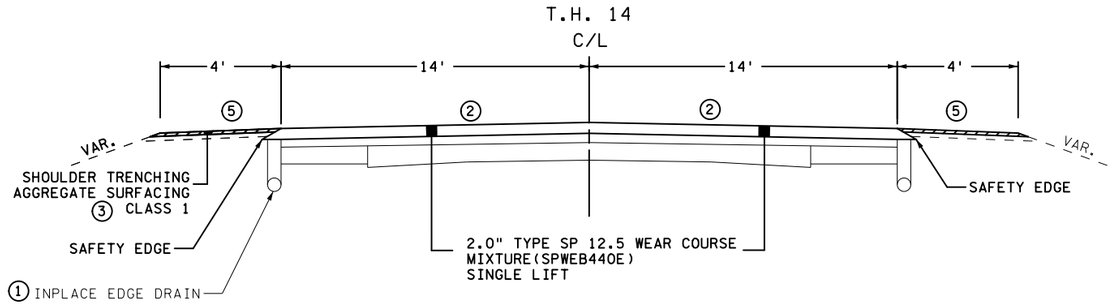
TABULATIONS

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 13 OF 33 SHEETS

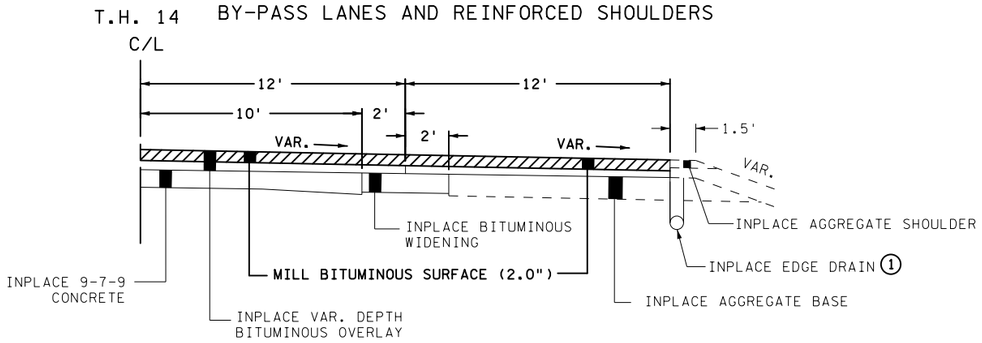
INPLACE TYPICAL SECTION
AGGREGATE SHOULDER
STA. 1189+06 - STA. 1732+49



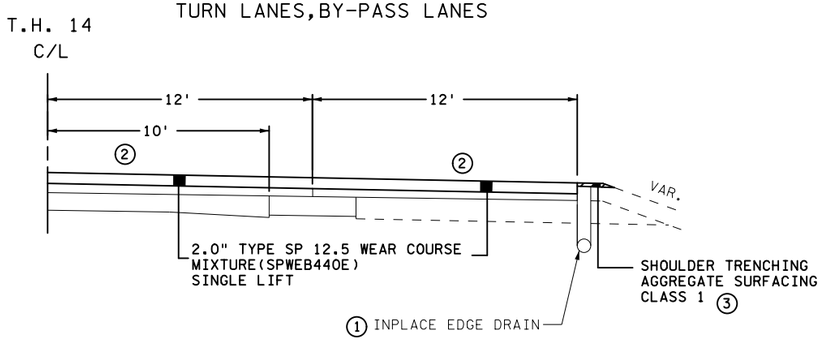
PROPOSED TYPICAL SECTION
AGGREGATE SHOULDER
STA. 1189+06 - STA. 1732+49



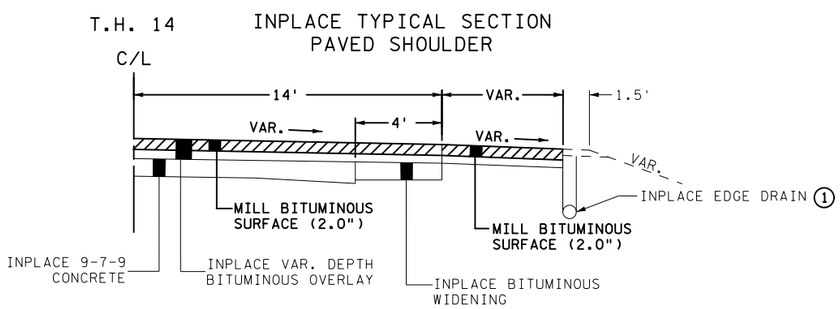
INPLACE TYPICAL SECTION
APPLIES: EXISTING RT. TURN LANES, BY-PASS LANES AND REINFORCED SHOULDERS



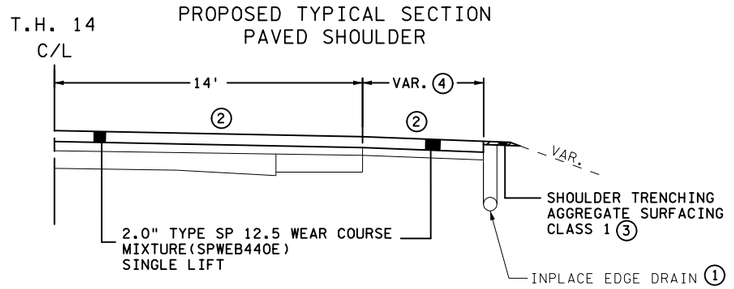
PROPOSED TYPICAL SECTION
APPLIES: EXISTING RT. TURN LANES, BY-PASS LANES



INPLACE TYPICAL SECTION
PAVED SHOULDER



PROPOSED TYPICAL SECTION
PAVED SHOULDER



NOTE:

(1) PROTECT INPLACE EDGE DRAINS (INCIDENTAL).

(2) MATCH EXISTING CROSS SLOPE, 1.5% MIN.

(3) CONTRACTOR SHALL GRADE SHOULDER AS NECESSARY TO ALLOW FOR PAVING OPERATIONS INCLUDING THE SAFETY EDGE. THIS WORK SHALL BE PAID FOR AS SHOULDER TRENCHING AND SHALL INCLUDE GRADING THE AGGREGATE BACK AGAINST THE FINISHED PAVING.

(4) SHOULDER WIDTH VARIES. PAVE TO THE EXTENT AVAILABLE.

(5) PLACE VAR. DEPTH AGGREGATE SURFACING AT 4% SLOPE.

ALL CROSS SLOPES ARE EXPRESSED IN FT/FT.

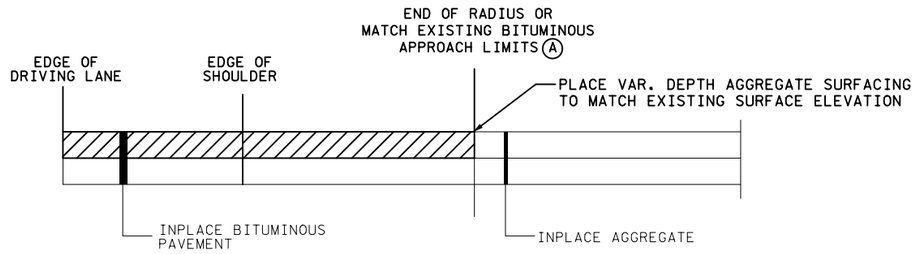
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 25434 LIC NO. 26-OCT-2017 DATE

TYPICAL SECTIONS

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 14 OF 33 SHEETS

PLOTTED/REVISED: 26-OCT-2017 15:23
DISTRICT #: 7 - Mankato/Windom
USER NAME: thorlpat
PATH & FILENAME: Projects/D7_MKO/014/0804/113/Design/PlanSheets/d0804i13_ts.dgn

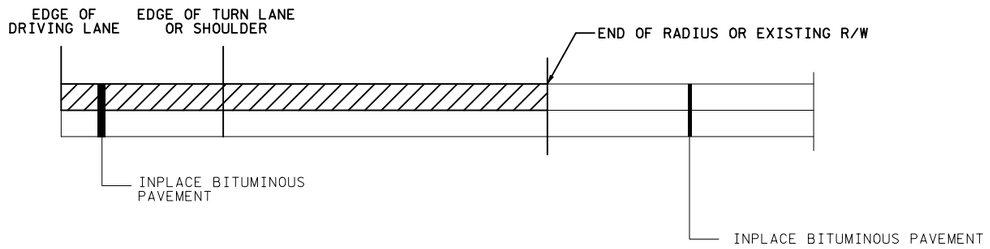
AGGREGATE DRIVEWAYS AND ROADS DETAIL



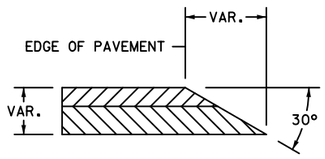
MILL BITUMINOUS 2.0" &
PLACE 2" SP 12.5 WEARING
COURSE MIXTURE (SPWEB440E)
SINGLE LIFT

NOTE: (A) NO CONSTRUCTION SHALL EXTEND BEYOND EXISTING R/W.

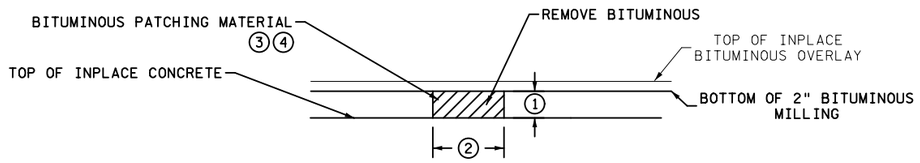
PAVED ROADS AND DRIVEWAYS DETAIL



SAFETY EDGE DETAIL



LONGITUDINAL AND TRANSVERSE CRACK REPAIR DETAIL



GENERAL NOTES:

PROVIDE A TACK COAT TO SIDES, BOTTOM OF REPAIR AREAS, AND BETWEEN LIFTS ACCORDING TO MnDOT SPEC. 2357. (INCIDENTAL)

BITUMINOUS PATCHING MATERIAL SHALL BE COMPACTED BY ORDINARY COMPACTION TO THE SATISFACTION OF THE ENGINEER. THE USE OF A STEEL DRUM ROLLER AND/OR PNEUMATIC TIRE ROLLER IS REQUIRED. THE USE OF A PLATE COMPACTOR IS PROHIBITED UNLESS ALLOWED BY THE ENGINEER IN THE FIELD.

NOTES:

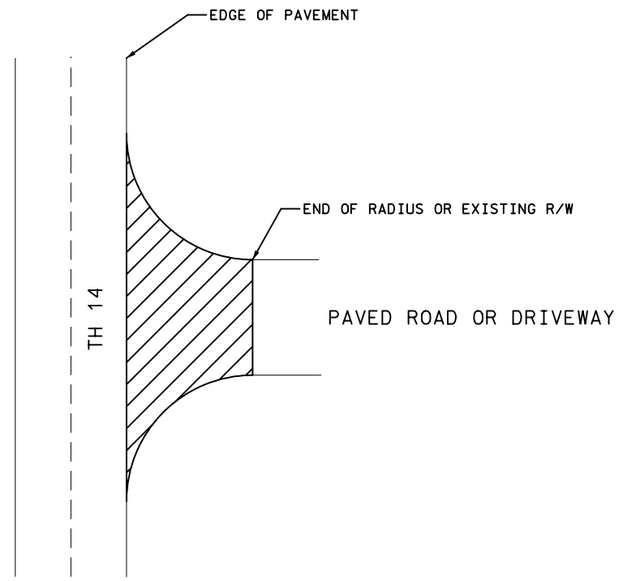
① MILL 5" OR TO TOP OF CONCRETE, WHICHEVER IS SHALLOWER.

② NOT LESS THAN 4.5' WIDE BY 14' LONG FOR TRANSVERSE JOINTS OR 4.5' WIDE BY 5' LONG FOR LONGITUDINAL CRACKS.

③ 3" MAXIMUM SINGLE LIFT.

④ INCLUDES SAWING AND REMOVING BITUMINOUS PAVEMENT.

PLAN VIEW



MILL BITUMINOUS 2.0" &
PLACE 2" SP 12.5 WEARING
COURSE MIXTURE (SPWEB440E)
SINGLE LIFT

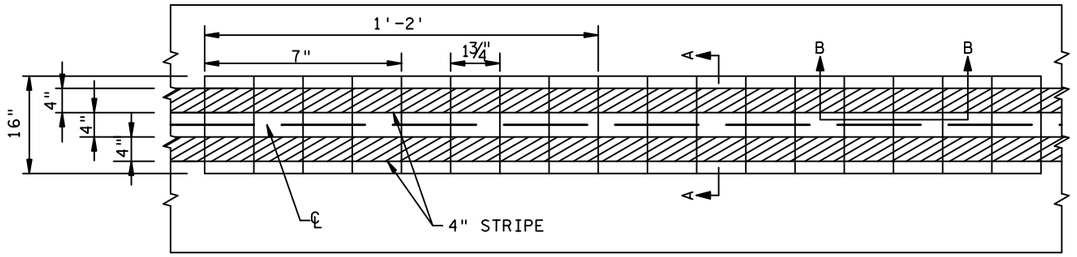
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 25434 LIC NO. 26-OCT-2017 DATE

ROAD SURFACING DETAIL

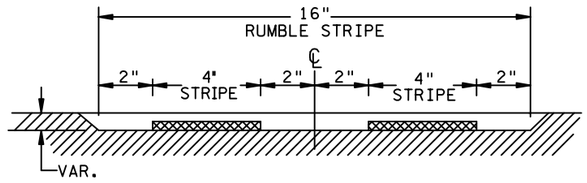
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 15 OF 33 SHEETS

PLAN VIEW

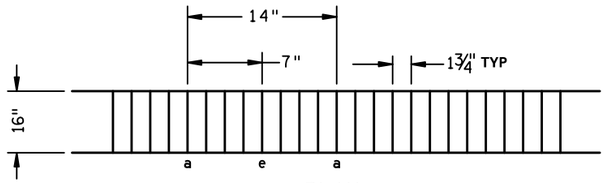
BITUMINOUS CENTERLINE RUMBLE STRIPE



SECTION A-A

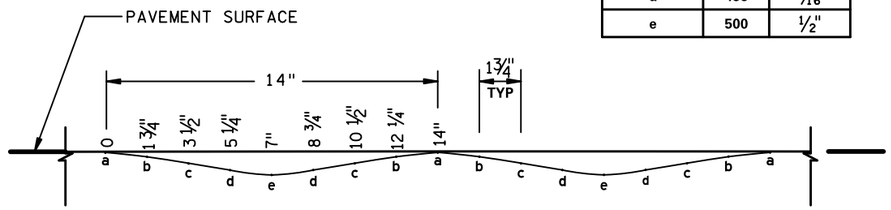


GROUND-IN SINUSOIDAL RUMBLE STRIPE



PLAN

	DEPTH	
LOCATION	MIL	INCHES
a	62.5	1/16"
b	156	5/32"
c	281	9/32"
d	438	7/16"
e	500	1/2"

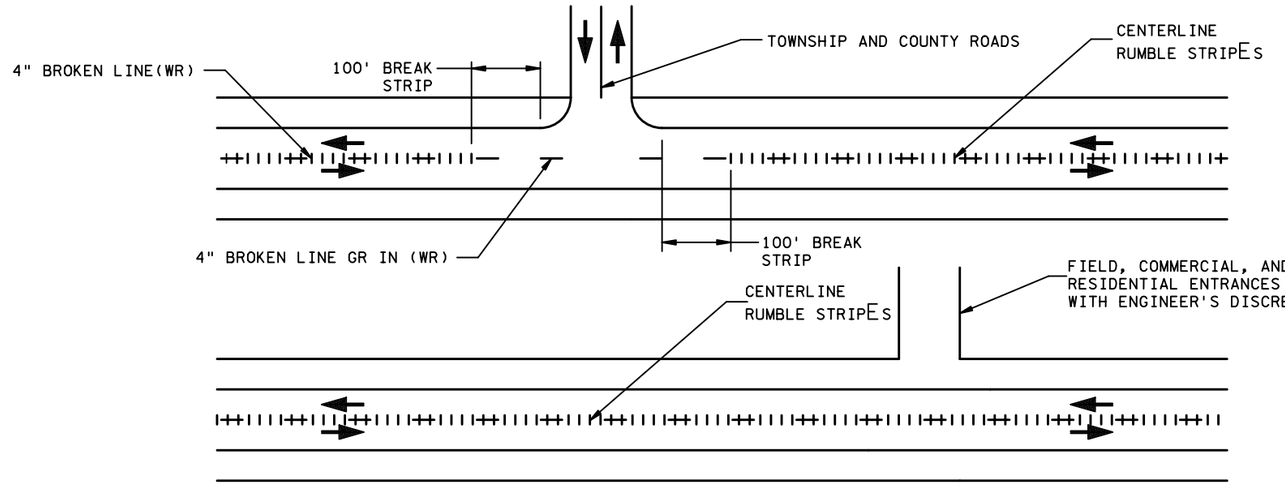


PROFILE

GROUND-IN SINUSOIDAL RUMBLE STRIPE

SECTION B-B

CENTERLINE SINUSOIDAL RUMBLE STRIPE - APPROPRIATE BREAKS ①



NOTE:

① PAVEMENT MARKINGS AND STRIPING SHALL BE COMPLIANT WITH THE CURRENT TRAFFIC ENGINEERING MANUAL (TEM) AND THE CURRENT MINNESOTA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MN/MUTCD)

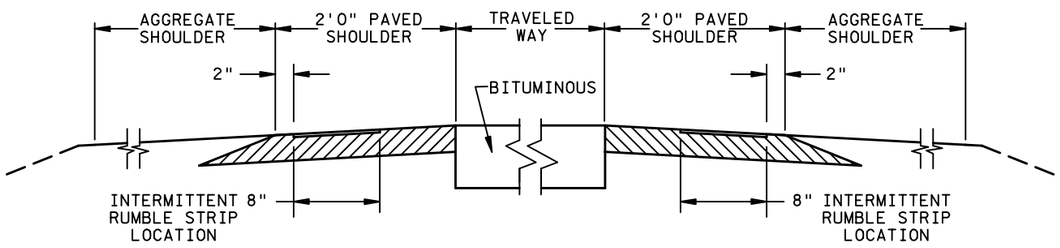
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 25434 LIC NO. 26-OCT-2017 DATE

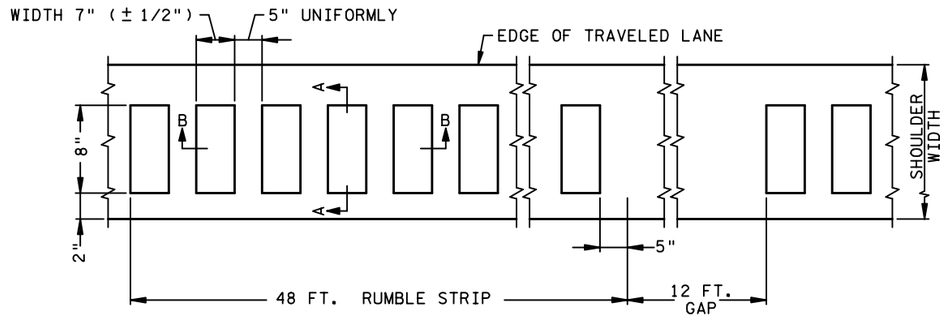
CENTERLINE SINUSOIDAL RUMBLE STRIPE DETAIL

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 16 OF 33 SHEETS

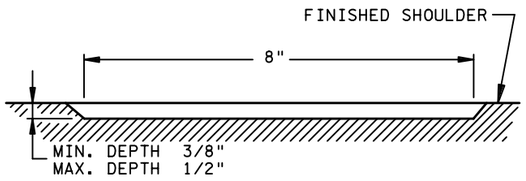
SECTION VIEW OF TWO-LANE ROADWAY

(WITH 2' 0" PAVED SHOULDERS PLUS 4' AGGREGATE SHOULDERS)

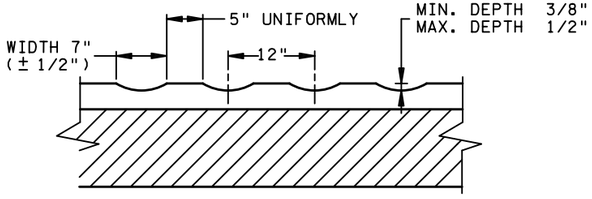




PLAN VIEW - INTERMITTENT

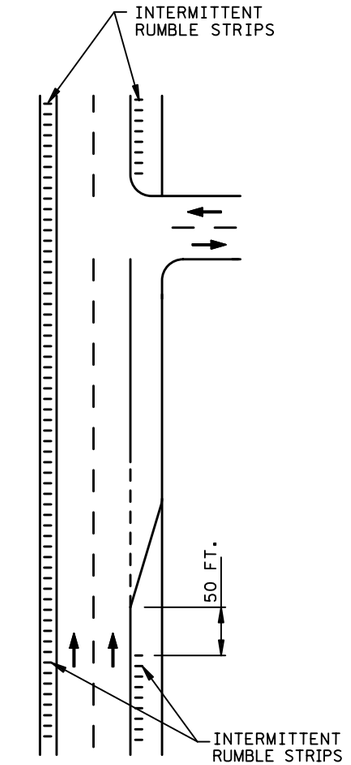


SECTION A-A

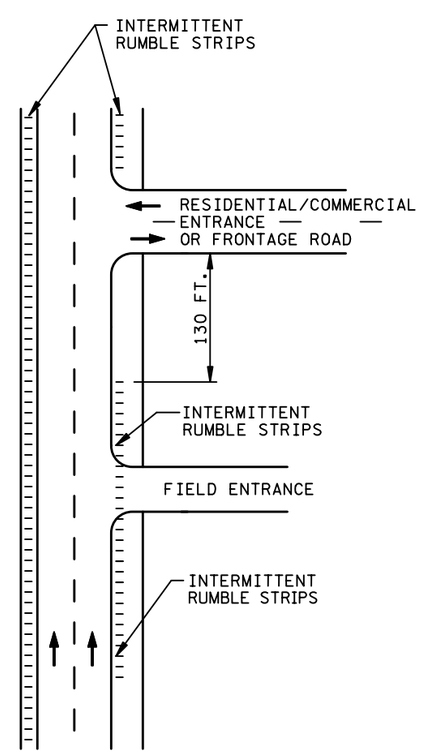


SECTION B-B

SHOULDER RUMBLE STRIP - APPROPRIATE BREAKS ①



RIGHT TURN LANE



ENTRANCE ROADS

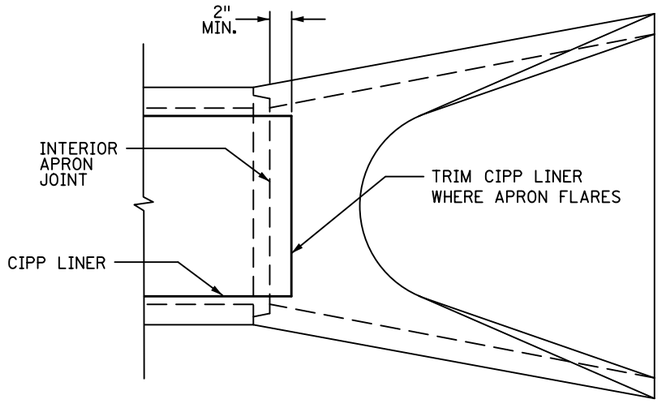
NOTE:

① PAVEMENT MARKINGS AND STRIPING SHALL BE COMPLIANT WITH THE CURRENT TRAFFIC ENGINEERING MANUAL (TEM) AND THE CURRENT MINNESOTA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MN/MUTCD)

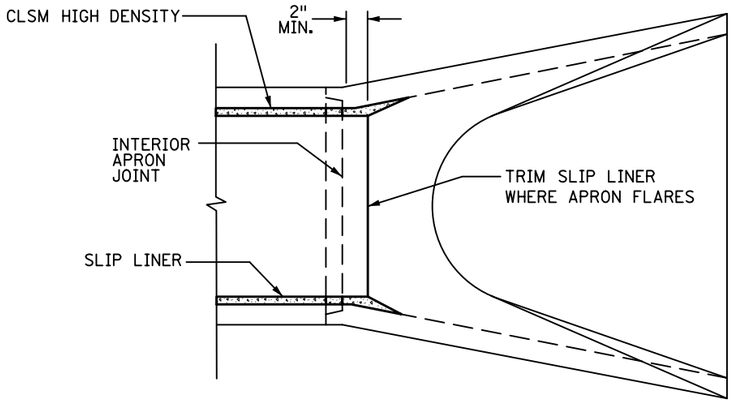
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER — LIC NO. 25434 — DATE 26-OCT-2017

RUMBLE STRIP DETAIL

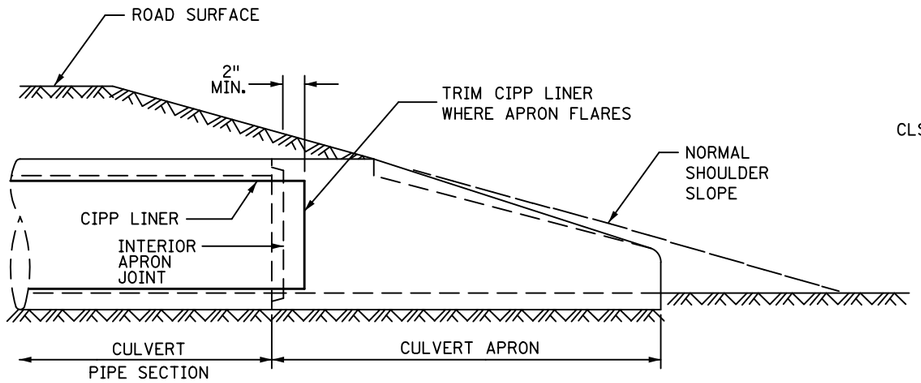
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 17 OF 33 SHEETS



TOP VIEW

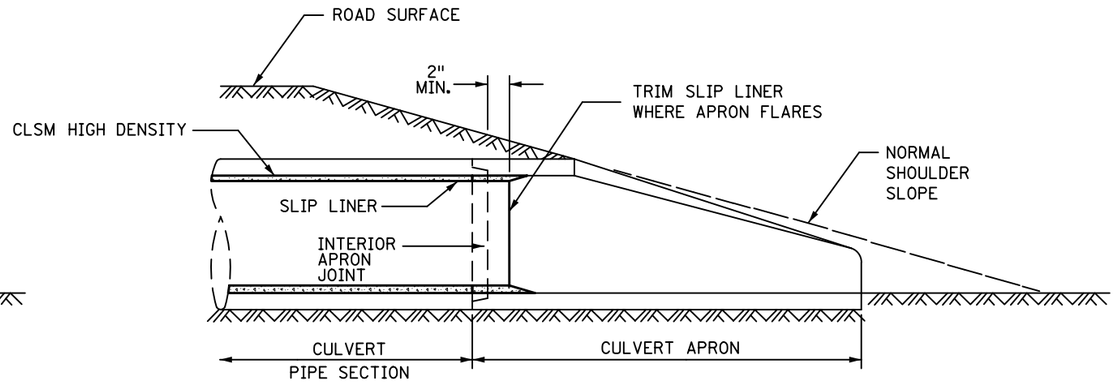


TOP VIEW



ELEVATION VIEW

CIPP AT RCP APRON DETAIL



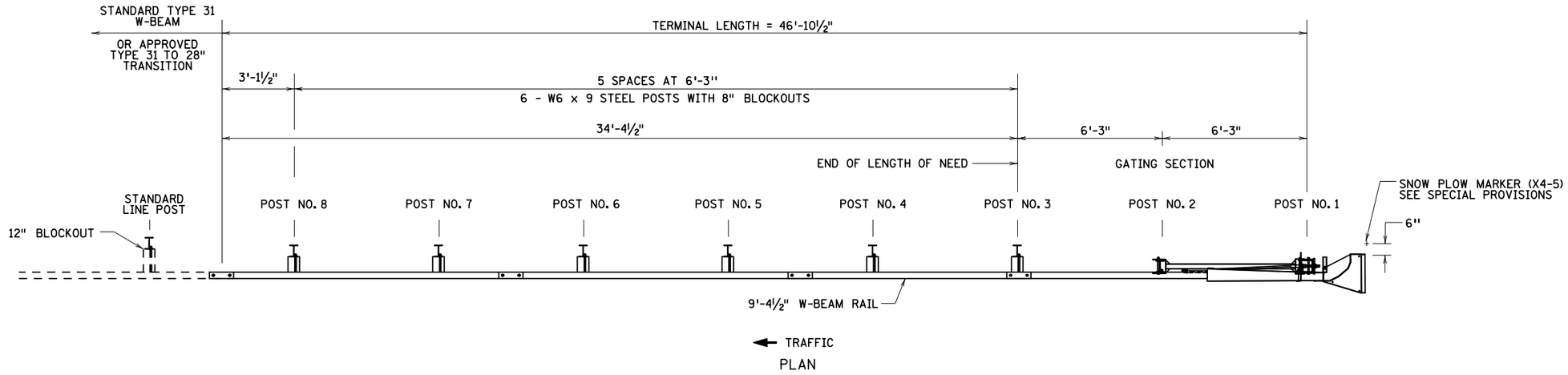
ELEVATION VIEW

SLIP LINER AT RCP APRON DETAIL

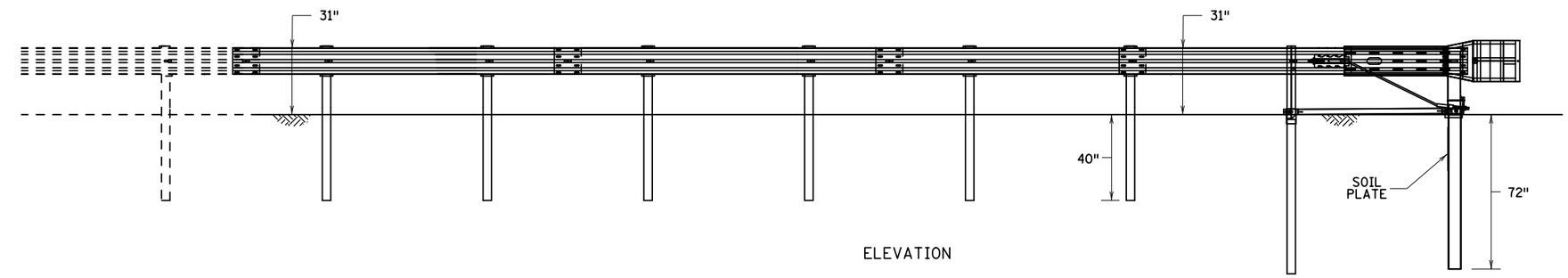
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 25434 LIC NO. 26-OCT-2017 DATE

CULVERT LINING DETAILS

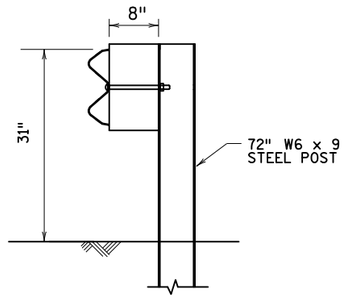
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 18 OF 33 SHEETS



PLAN



ELEVATION



STANDARD POST
(POSTS 3 THRU 8)

NOTES:

THIS IS A PROPRIETARY ITEM AS PER SPEC. 1703.

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

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

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

SEE SPECIAL PROVISIONS FOR POST DELINEATORS AND OBJECT MARKERS.

CHECK WITH MANUFACTURER FOR SPECIFIC OFFSET REQUIREMENTS.

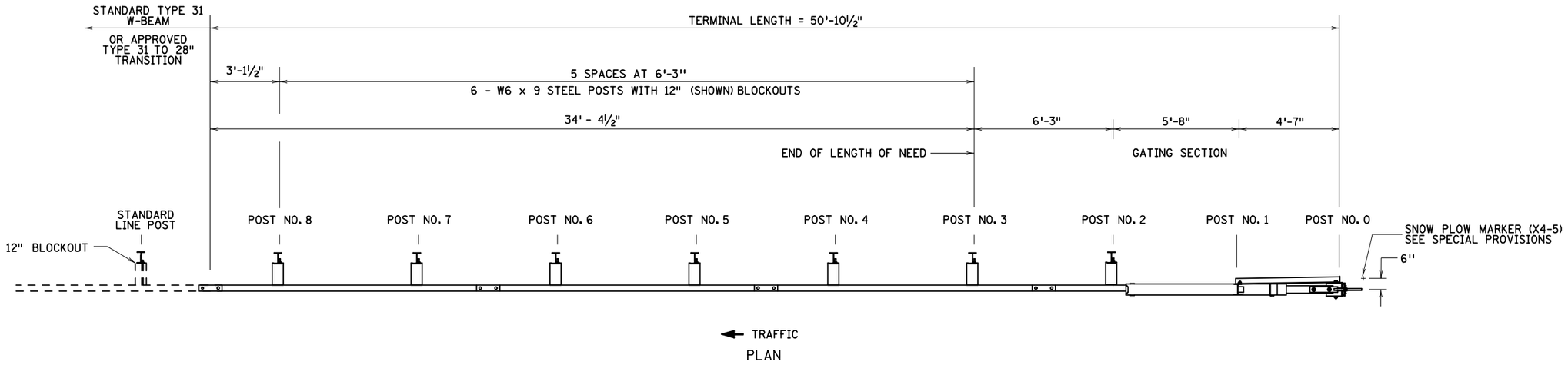
POSTS 1 AND 2 ARE PROPRIETARY HINGED POSTS.

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

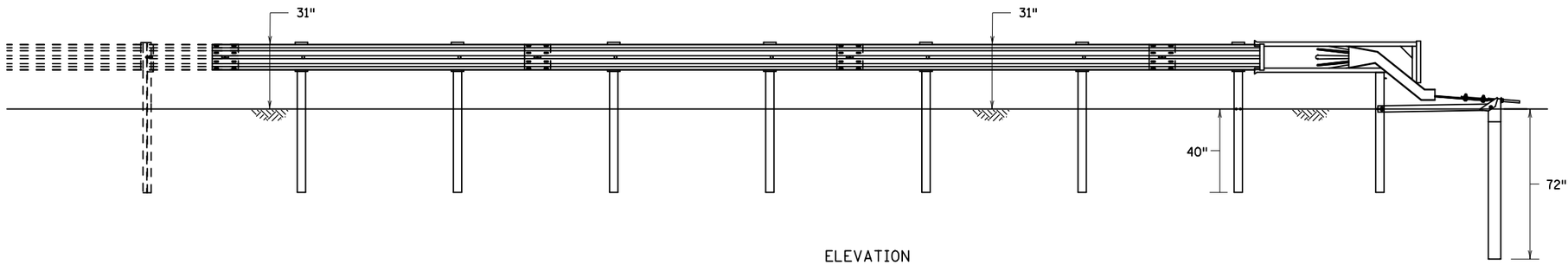
REFERENCE DATE
9-28-2016

W-BEAM GUARDRAIL END TERMINAL
MSKT - STANDARD POST MGS
(ROAD SYSTEMS INC.)

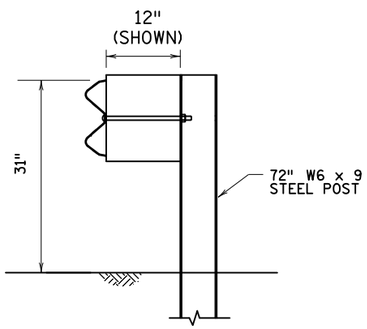
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 19 OF 33 SHEETS



PLAN



ELEVATION



STANDARD POST
(POSTS 3 THRU 8)

NOTES:

THIS IS A PROPRIETARY ITEM AS PER SPEC. 1703.

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

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

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SEE SPECIAL PROVISIONS FOR POST DELINEATORS AND OBJECT MARKERS.

CHECK WITH MANUFACTURER FOR SPECIFIC OFFSET REQUIREMENTS.

POSTS 1 AND 2 ARE PROPRIETARY STEEL YIELDING TERMINAL POSTS.

POST 0 IS A PROPRIETARY ANCHOR POST.

POSTS 2 - 8, 8" BLOCKOUTS ACCEPTABLE.

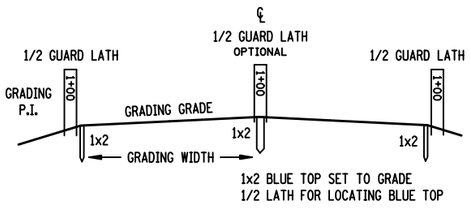
REFERENCE DATE
9-28-2016

SOFTSTOP END TERMINAL
(TRINITY HIGHWAY PRODUCTS)

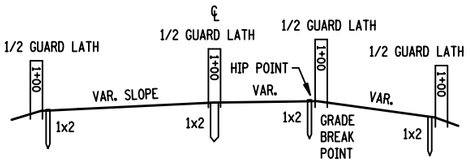
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 20 OF 33 SHEETS

BLUE TOPS

NORMAL SECTION

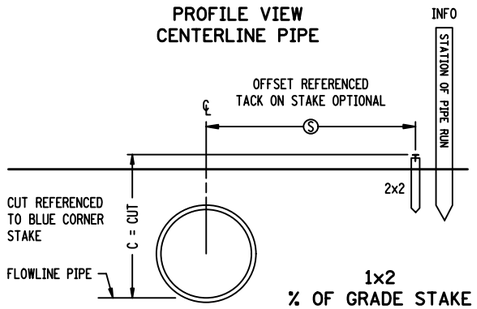


TRANSITION SECTION

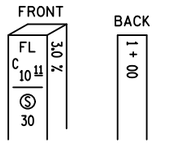


PIPE STAKING

PROFILE VIEW CENTERLINE PIPE

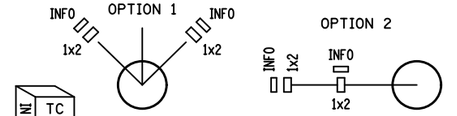


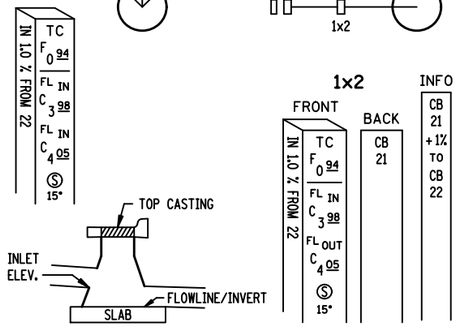
1x2 % OF GRADE STAKE



CATCH BASIN OR MANHOLE (CB/MH)

TOP VIEWS

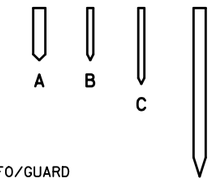




FLOWLINE/INVERT + 0.7'

STANDARD STAKES

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



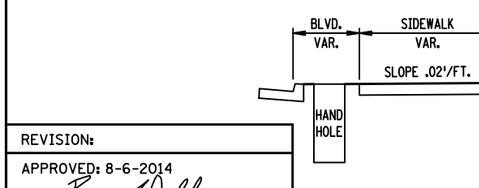
SIZES:
A = 2" X 2" X VAR. REF/INFO/GUARD
B = 1" X 2" X VAR. REF/INFO/GUARD
C = 1" X 2" X VAR. REF
D = LATH INFO/VIS/GUARD
1x2 OR LATH = INFO STAKES

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'



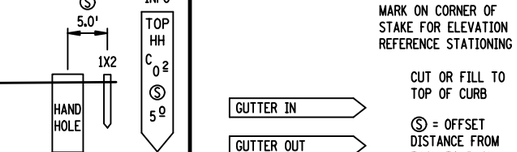
STAKE 'A'
FULL LATH AND HUB-STATION
DIST. TO ℄ WITH CUT/FILL TO ℄ (Z)
DIST. TO SHLD. WITH CUT/FILL TO SHLD. (Y) (Y1)
DIST. TO TOE OF SLOPE, CUT/FILL FROM HUB (X)
OFFSET TO SAFTY SLOPE
OFFSET TO HIP POINT

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

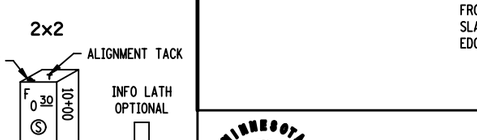
SINGLE ROADWAY - EXAMPLE 'B'



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						

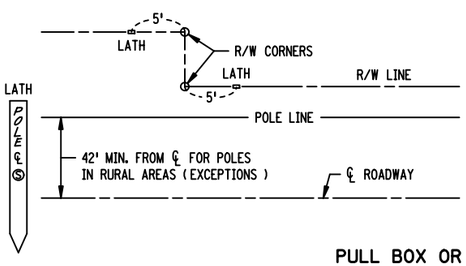
STAKING TOLERANCES (FEET)

	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

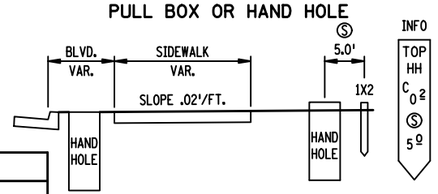
THE TOLERANCES ARE RELATIVE TO PROJECT DATUM

UTILITY (UTIL)

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

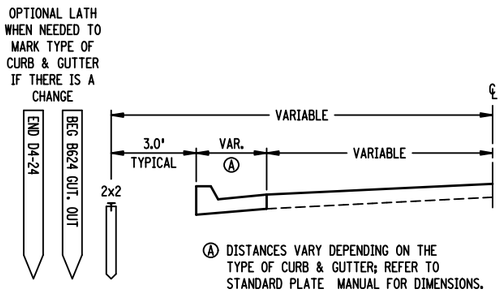


PULL BOX OR HAND HOLE

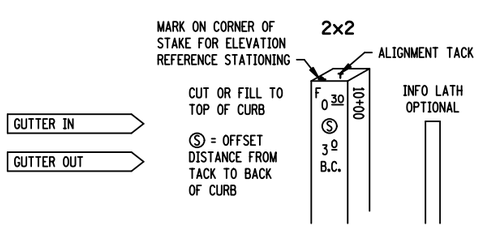


CURB & GUTTER (CURB)

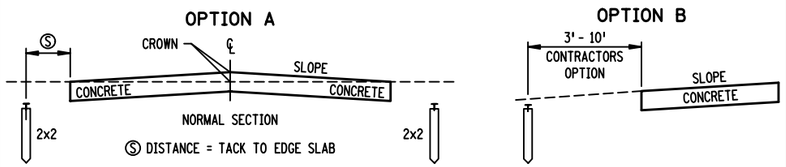
OPTIONAL LATH WHEN NEEDED TO MARK TYPE OF CURB & GUTTER IF THERE IS A CHANGE

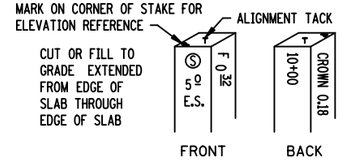


Ⓐ DISTANCES VARY DEPENDING ON THE TYPE OF CURB & GUTTER; REFER TO STANDARD PLATE MANUAL FOR DIMENSIONS.



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.

REVISION:

APPROVED: 8-6-2014
DIRECTOR, OFFICE OF LAND MANAGEMENT

REVISED:

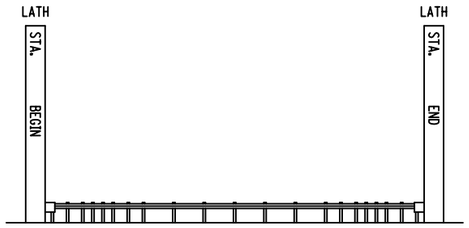
MINNESOTA DEPARTMENT OF TRANSPORTATION
STATE DESIGN ENGINEER
APPROVED: 8-6-2014

STAKING INFORMATION SHEET

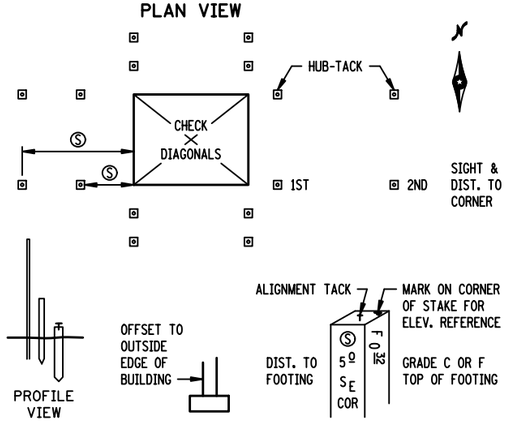
STANDARD PLAN 5-297.115 | 1 OF 2

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 21 OF 33 SHEETS

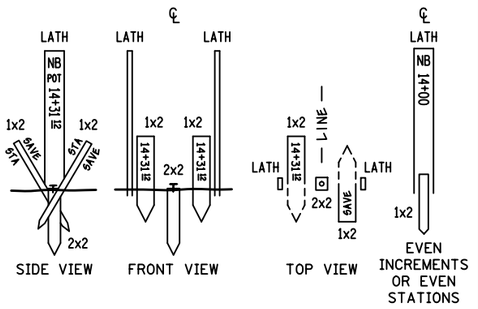
GUARDRAIL (GUARD)



BUILDING (BUILD) FOUNDATION / FOOTING



ALIGNMENT POINTS (ALIGN)



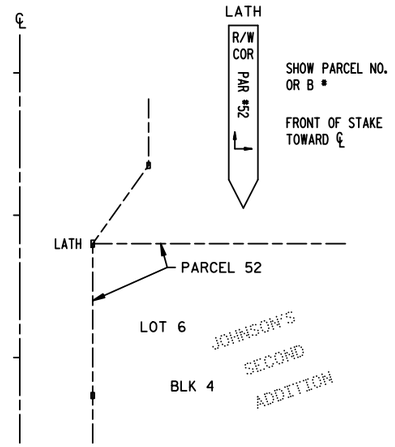
STAKE C = 2" X 2" HUB (LENGTH MAY VARY) SET AS TEMPORARY STAKE. MAY BE REPLACED BY MnDOT MARKER AFTER CONSTRUCTION IS COMPLETED.

SET AT GROUND LEVEL (TEMPORARY CONSTRUCTION STAKE).

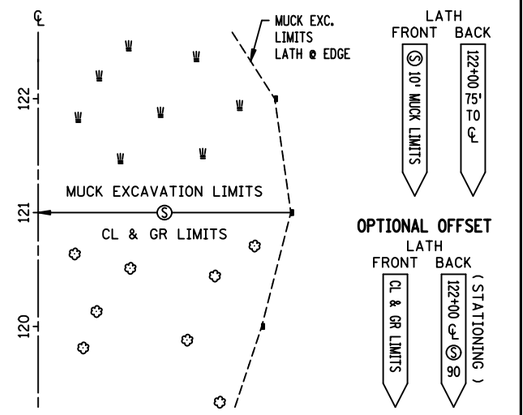
TACK SET AT ALIGNMENT POINTS.

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)



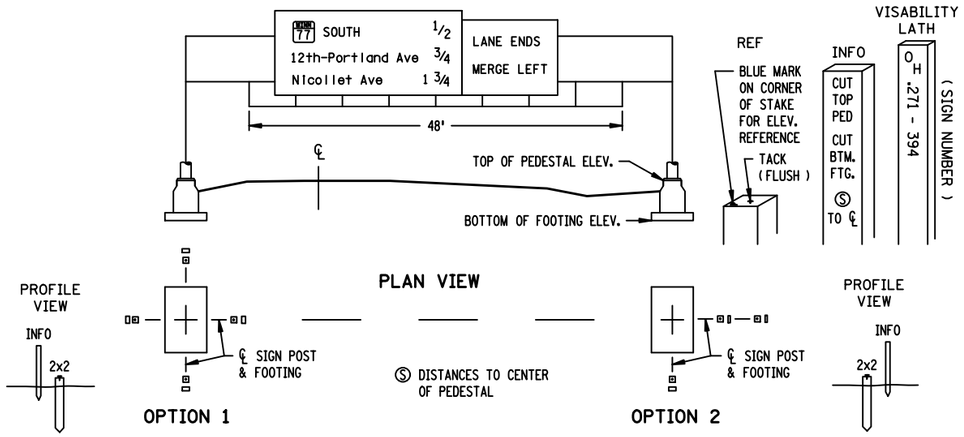
CLEAR & GRUBBING LIMITS (CLEAR) OR MUCK EXCAVATION LIMITS (MUCK)



NOTE: FRONT OF LATH GOES TOWARD ℄

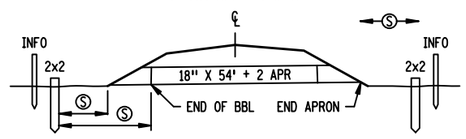
OVERHEAD SIGNS (SIGN)

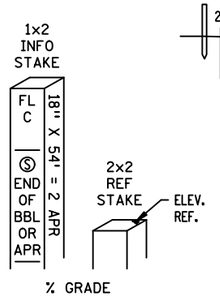
PROFILE VIEW



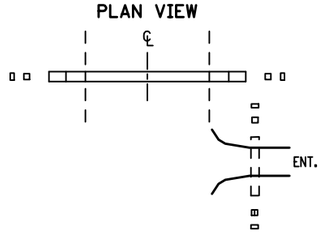
CULVERT

PROFILE VIEW

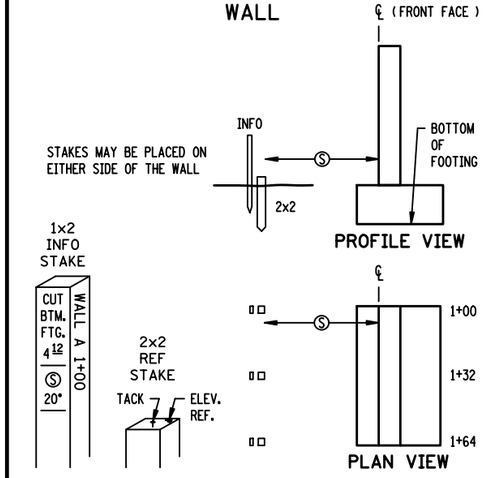




PLAN VIEW

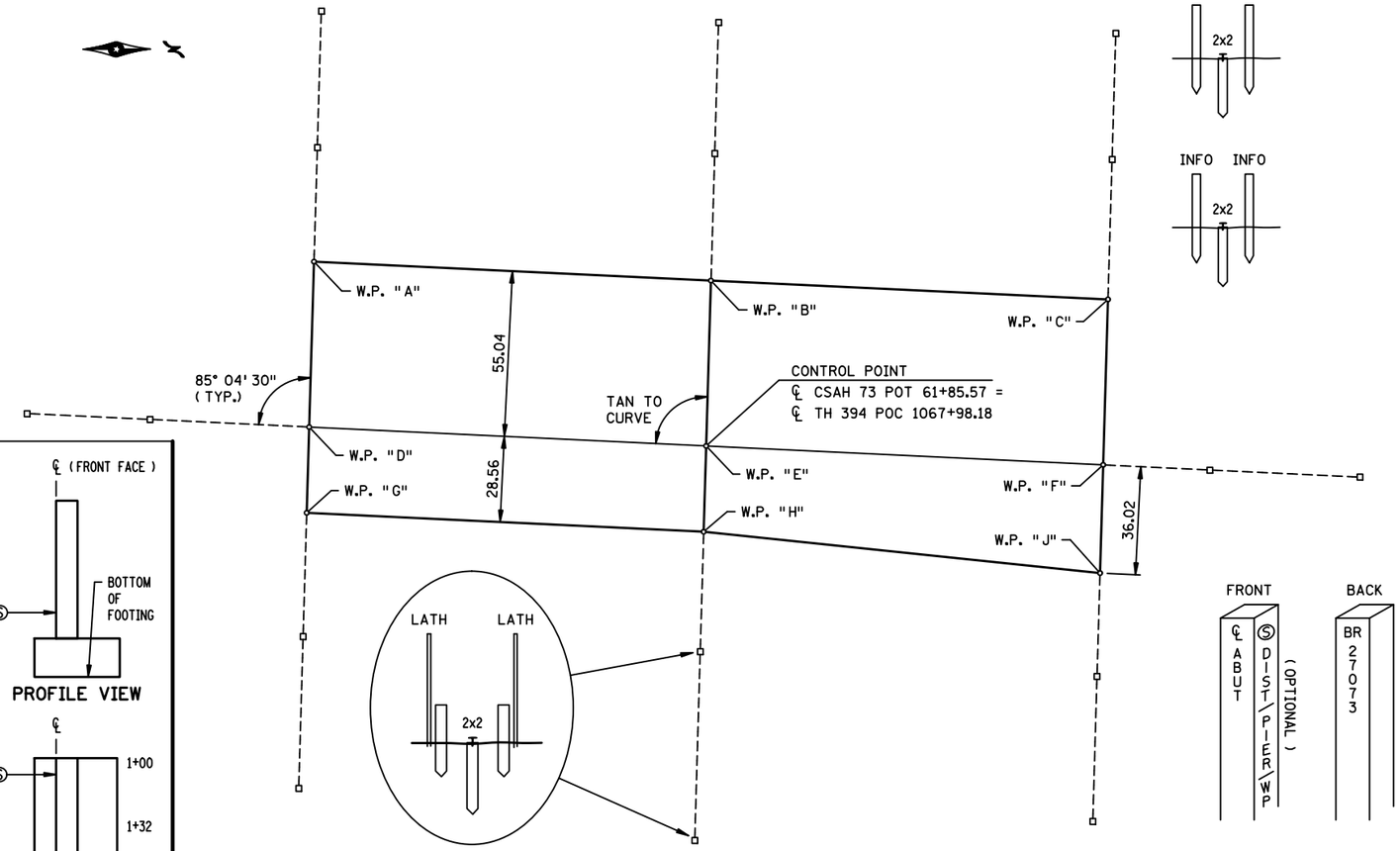


WALL



BRIDGESTAKING (BRIDGE)

WORKING POINTS LAYOUT



REVISION:

APPROVED: 8-6-2014

DIRECTOR, OFFICE OF LAND MANAGEMENT

REVISED:

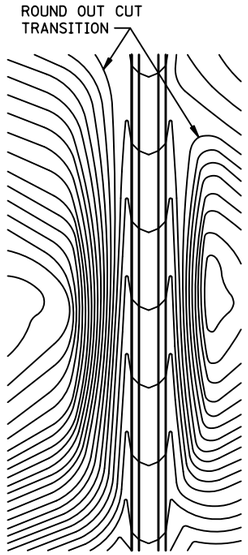
APPROVED: 8-6-2014

STATE DESIGN ENGINEER

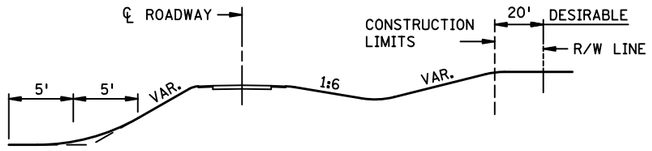
STAKING INFORMATION SHEET

STANDARD PLAN 5-297.115 | 2 OF 2

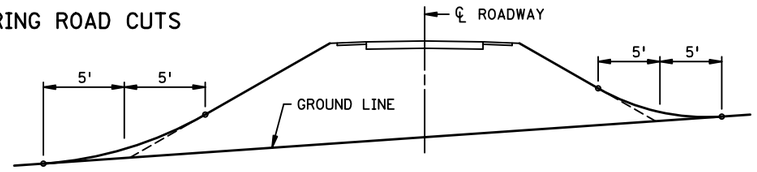
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 22 OF 33 SHEETS



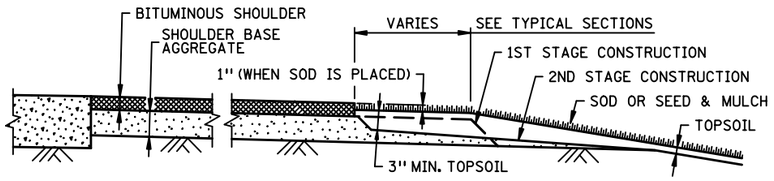
CONTOURING ROAD CUTS



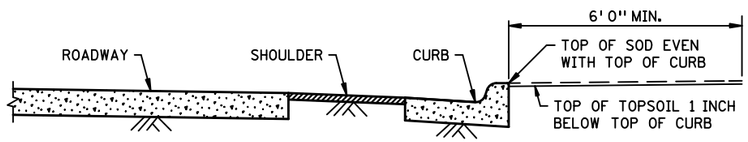
ROUNDING SHOULDERS AND BACKSLOPES



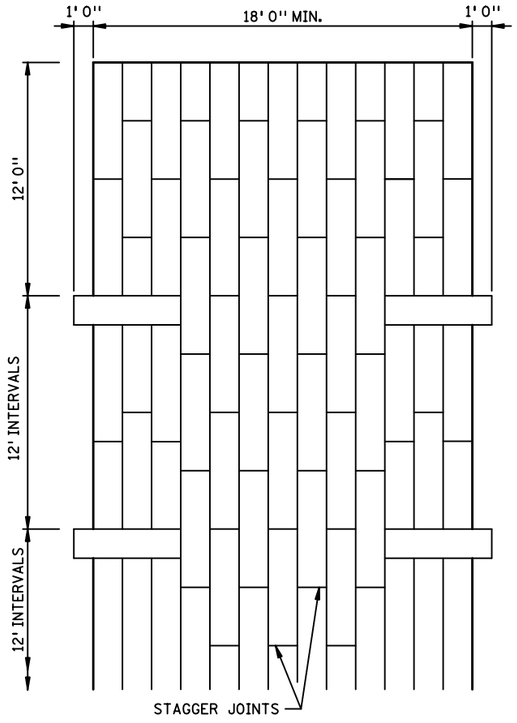
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



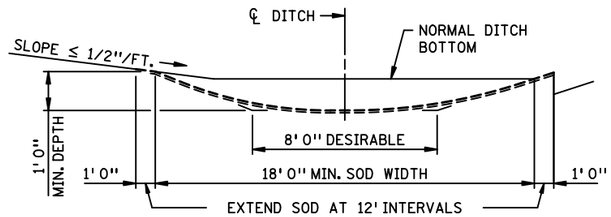
SHAPING AND TOPSOILING INSLOPES



SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED

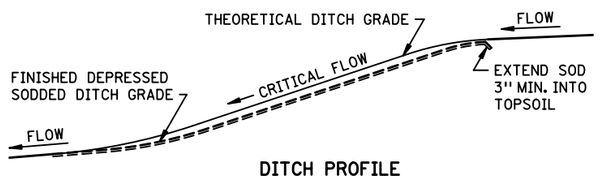


PLAN VIEW



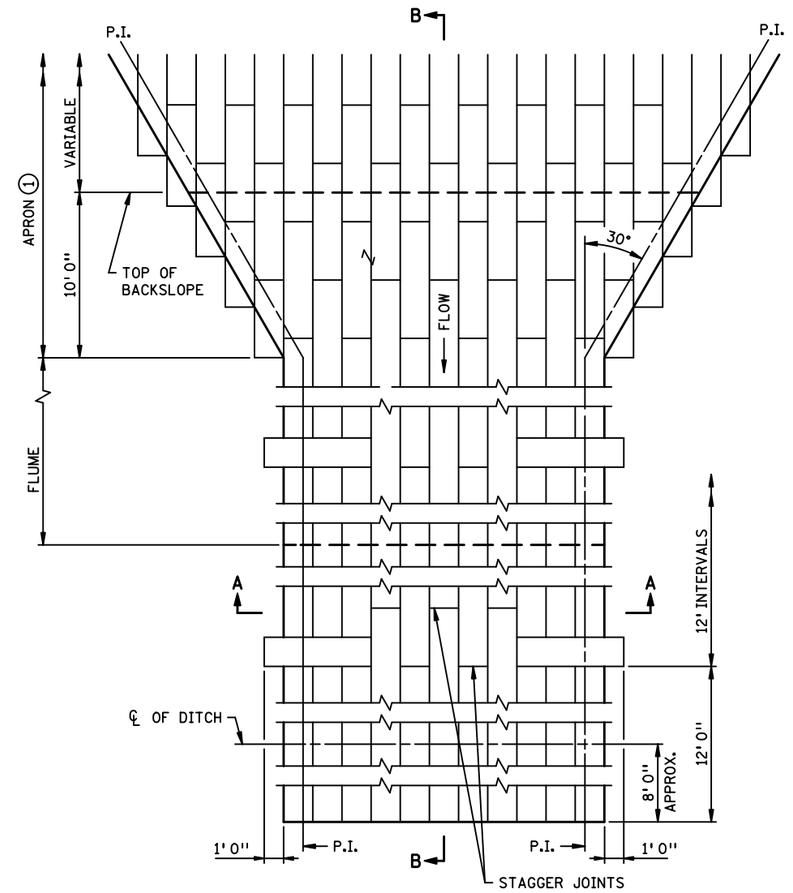
SODDED DITCH CROSS SECTION

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

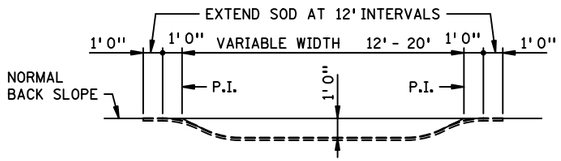


DITCH PROFILE

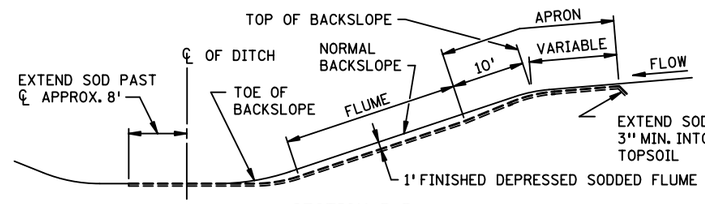
SODDED DITCH DETAILS



PLAN VIEW



SECTION A-A



SECTION B-B

SODDED FLUME DETAILS

NOTES:

SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

(1) CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

REVISION:

APPROVED: 2-28-2017

CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED: 2-28-2017

PERMANENT EROSION CONTROL

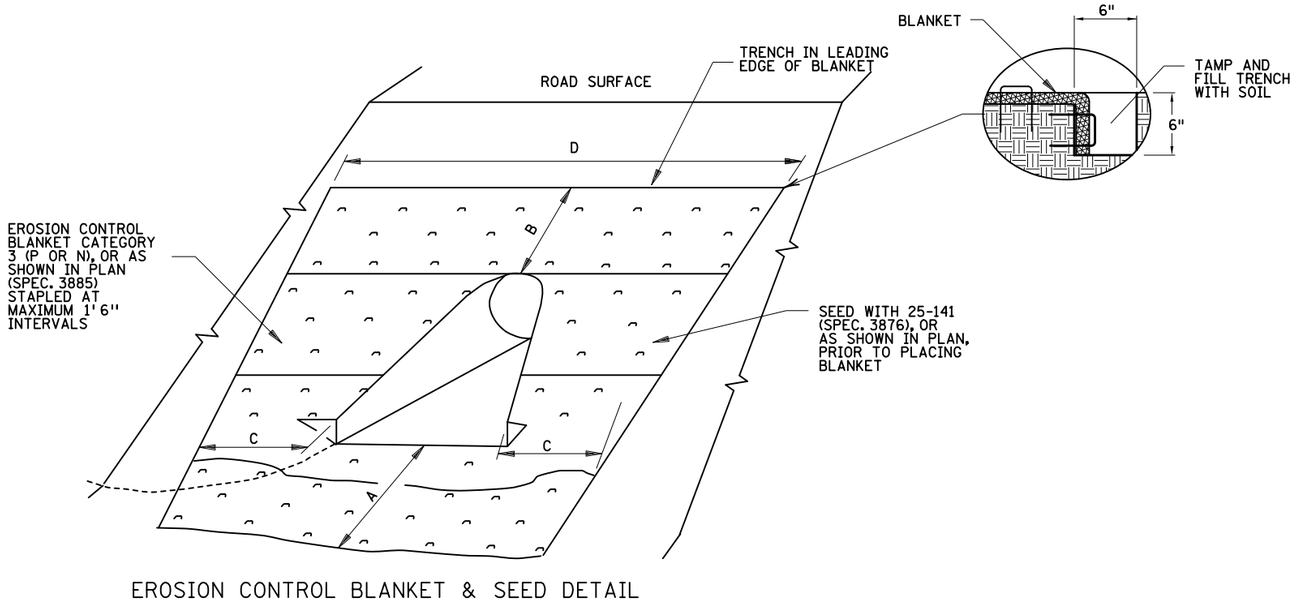
ALONG ROADWAYS, DITCHES AND FLUMES

STANDARD PLAN 5-297.404 | 1 OF 3

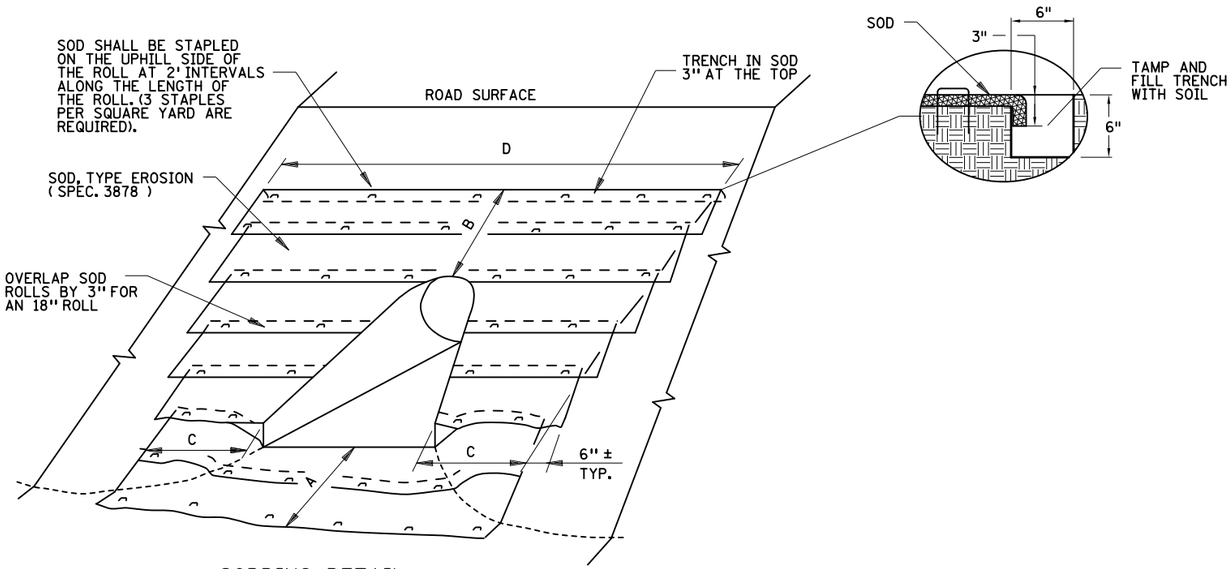
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 23 OF 33 SHEETS

PLOTTED/REVISED: 26-OCT-2017 15:27

DISTRICT #: 7 - Mankato/Windom
USER NAME: thorlpat
PATH & FILENAME: Projects/D7_MK0/0l4/0804/113/Design/PlanSheets/Standard Plans/s404_1_spndgn



EROSION CONTROL BLANKET & SEED DETAIL



SODDING DETAIL

CULVERT INLET APRON ①

CULVERT DIAMETER ②	SOD OR EROSION CONTROL BLANKET (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 EROSION CONTROL BLANKET (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'

NOTES:

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.

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.)

REVISION:

APPROVED: 2-28-2017

CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED: 2-28-2017

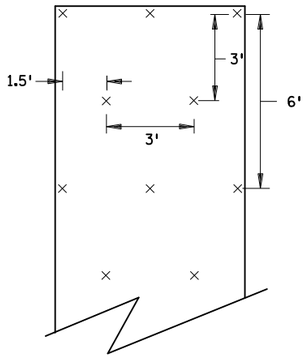
PERMANENT EROSION CONTROL

TURF ESTABLISHMENT DETAIL AT CULVERT ENDS

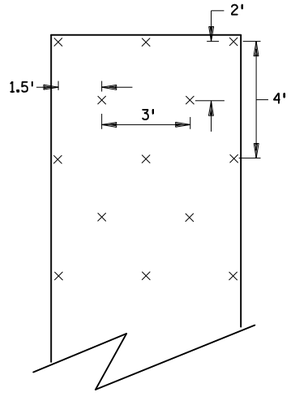
STANDARD PLAN 5-297.404 | 2 OF 3

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 24 OF 33 SHEETS

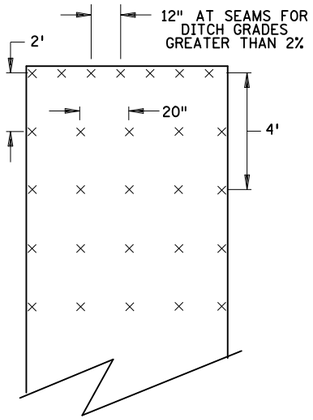
PLOTTED/REVISED: 26-OCT-2017 15:27
DISTRICT #: 7 - Mankato/Windom
USER NAME: thorlpat
PATH & FILENAME: Projects/07_MKO/014/0804/113/Design/PlanSheets/Standard Plans/s404_2.spndgn



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

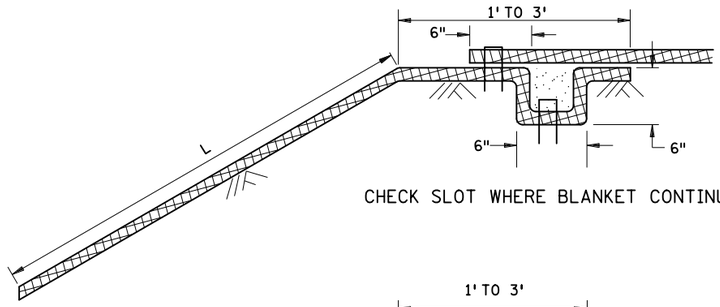


SLOPES 1:2 TO 1:1
(170 STAPLES PER 100 SQ YD)

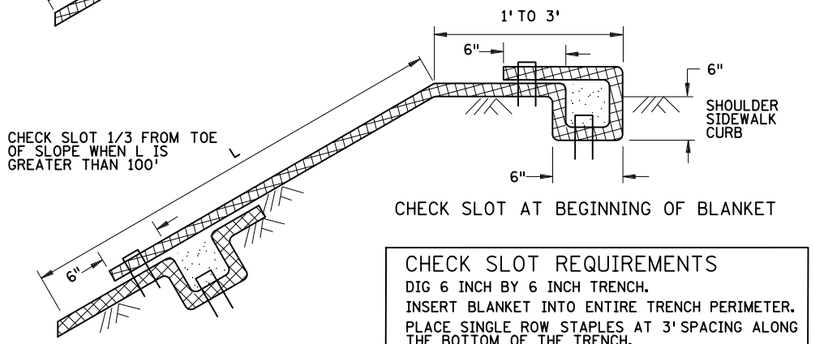


CHANNEL AND DITCH APPLICATIONS
(350 STAPLES PER 100 SQ YD)

BLANKET STAPLE PATTERN



CHECK SLOT WHERE BLANKET CONTINUES



CHECK SLOT AT BEGINNING OF BLANKET

CHECK SLOT REQUIREMENTS

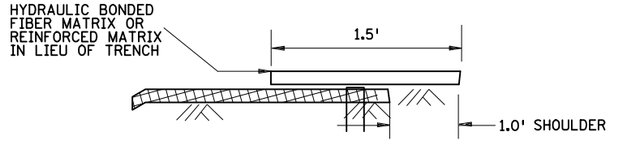
DIG 6 INCH BY 6 INCH TRENCH.

INSERT BLANKET INTO ENTIRE TRENCH PERIMETER.

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

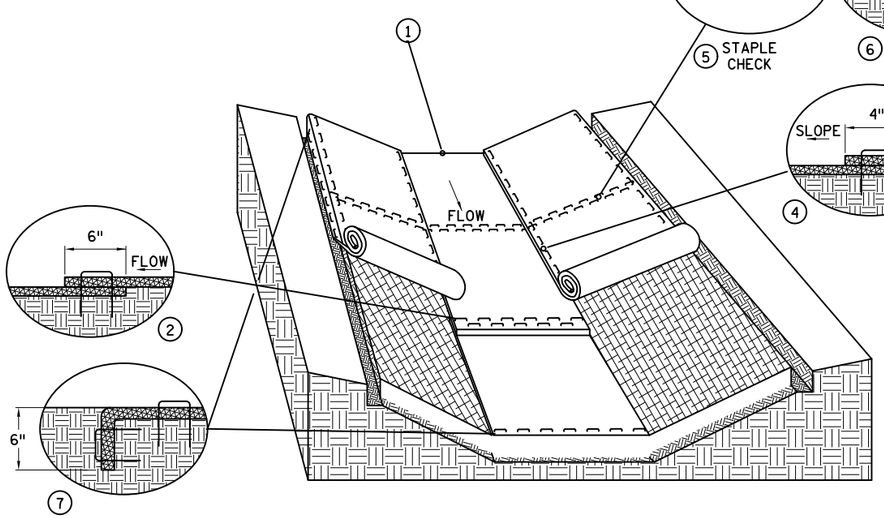
BACKFILL TRENCH WITH SOIL AND TAMP.

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)

DITCH BLANKET STAPLE DETAIL NOTES

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

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

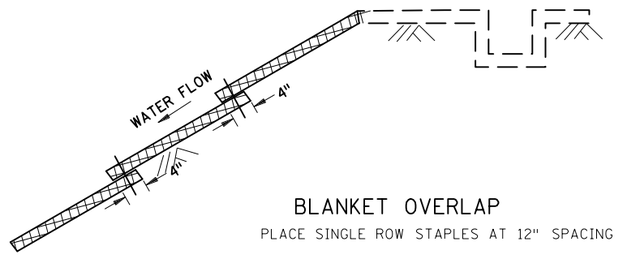
(3) USE 6" X 6" TRENCH TO PLACE BLANKET. PLACE SINGLE ROW OF STAPLES ON TOP AND TRENCH SIDES AT 12" SPACING. BACKFILL TRENCH WITH SOIL AND TAMP.

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

(5) USE STAPLE CHECK FOR CHANNEL SLOPES LESS THAN 2.5% GRADE AT 100 FOOT 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 FT INTERVALS
3%-5% 50 FT INTERVALS
5%-7% 25 FT INTERVALS

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



BLANKET OVERLAP
PLACE SINGLE ROW STAPLES AT 12" SPACING

GENERAL BLANKET INSTALLATION REQUIREMENTS

PREPARE SOIL AS PER SPECIFICATION 2574.

LAY PARALLEL OR PERPENDICULAR TO THE DIRECTION OF WATER FLOW.

OVERLAP ADJACENT STRIP EDGES A MINIMUM OF 4 INCHES.

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

THE UPPERMOST BLANKET OF ALL SLOPE APPLICATIONS MUST START IN A CHECK SLOT. IF SLOPE LENGTH (L) IS 100' OR GREATER, INSERT BLANKET INTO A CHECK SLOT 1/3 FROM THE BOTTOM OF THE SLOPE.

REVISION:

APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

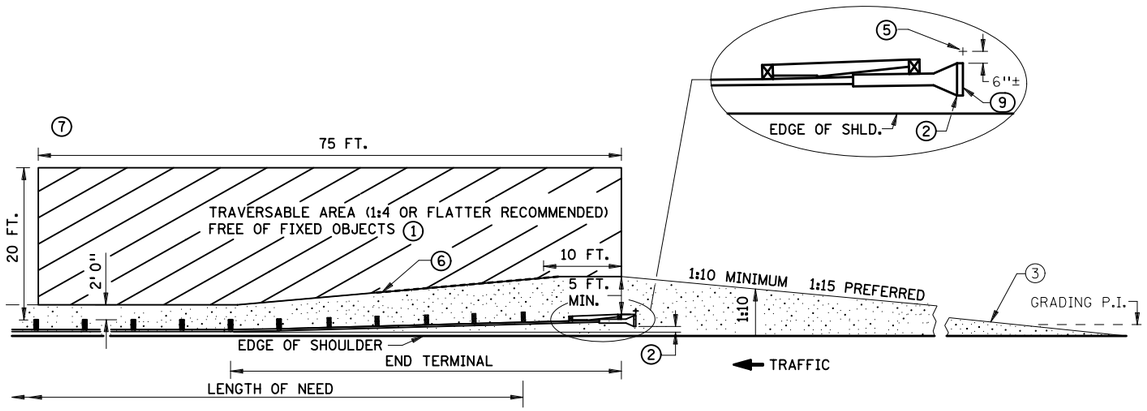
APPROVED: 2-28-2017

PERMANENT EROSION CONTROL
BLANKET STAPLE PATTERN FOR SLOPES

STANDARD PLAN 5-297.404 | 3 OF 3

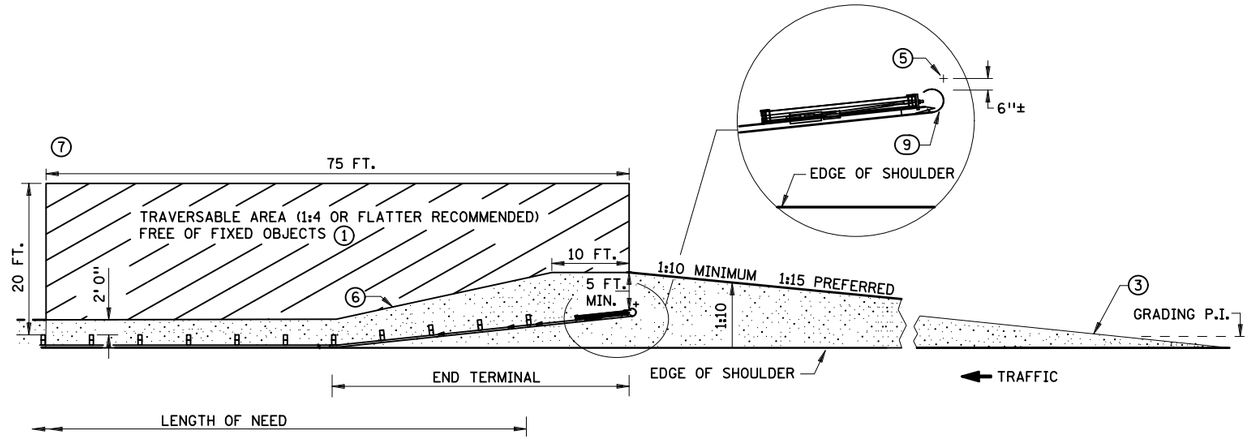
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 25 OF 33 SHEETS

PLOTTED/REVISED: 26-OCT-2017 15:28
DISTRICT #: 7 - Mankato/Windom
USER NAME: thorlpat
PATH & FILENAME: Projects/D7_MKO/014/0804/113/Design/PlanSheets/Standard Plans/s404_3_spn.dgn



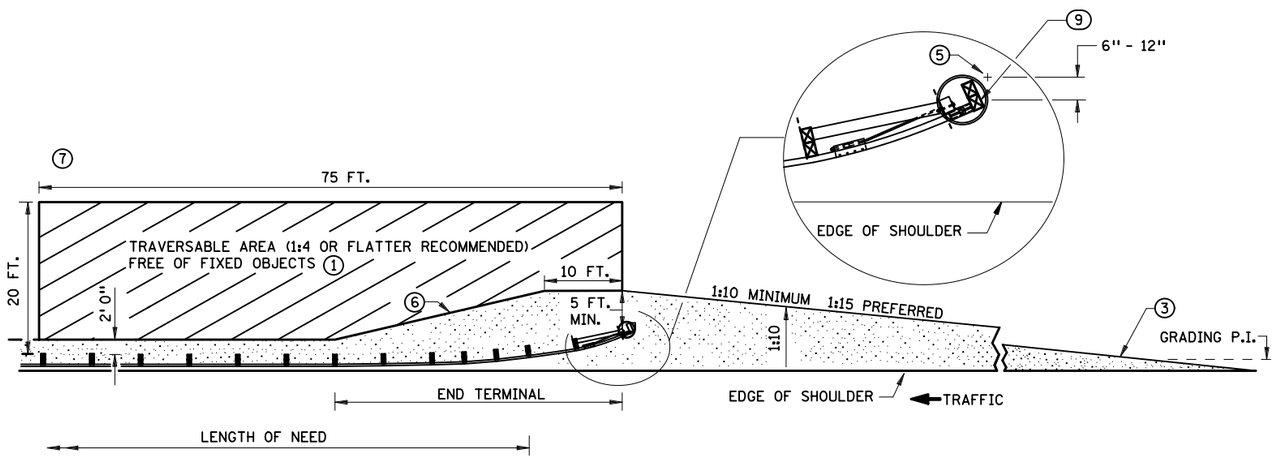
PLAN VIEW

(PROPRIETARY TANGENT TERMINAL SHOWN AS EXAMPLE)



PLAN VIEW ⑧

(PROPRIETARY FLARED TERMINAL SHOWN AS EXAMPLE)



PLAN VIEW ④ ⑧

(ELT)

NOTES:

ALL CROSS SLOPES ARE IN FOOT/FOOT UNLESS OTHERWISE NOTED.

ALL GUARDRAIL POSTS SHALL BE 6 FT. 3 IN. CENTER TO CENTER (DESIGN B), EXCEPT WHERE NOTED.

CHANGES (TO SUBJECTS COVERED BY THIS SHEET) INDICATED IN THE PLANS OR ON PLATES WITH MORE RECENT APPROVAL DATES SHALL APPLY.

GRADING AND DRAINAGE HARDWARE ARE NOT INCIDENTAL TO GUARDRAIL INSTALLATION.

① SLOPES BETWEEN 1:3 AND 1:4 PERMITTED WHEN 1:4 OR FLATTER IS NOT POSSIBLE. FOR SLOPES STEEPER THAN 1:3 THE AREA IMMEDIATELY BEHIND AND BEYOND THE END TERMINAL SHOULD, AT LEAST, BE SIMILAR IN CROSS SECTION TO THE UNSHIELDED ROADSIDE AREA UPSTREAM OF THE END TERMINAL.

② THE LAST 50 FT. OF TANGENT TERMINALS CAN BE FLARED AT 1:50 TAPER.

③ WHEN GRADING PLATFORMS ARE BUILT, THEY MUST BE SMOOTHLY TRANSITIONED TO EXISTING SIDE SLOPE SO THE ENTIRE ROADSIDE APPROACH TO THE BARRIER REMAINS TRAVERSABLE, AS WELL AS THE AREA IMMEDIATELY BEHIND IT.

④ SEE STANDARD PLATE 8329.

⑤ SNOWPLOW MARKER (X4-5) WITH A 2 LB./FT. DELINEATOR POST 8 FT. LONG (SPEC. 3401) DRIVEN INTO THE GROUND. EXTEND 3 FT. ABOVE TERMINAL. THE MARKER IS INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE. MARK BOTH THE BEGINNING AND END OF PLATE BEAM GUARDRAIL INSTALLATION.

⑥ 1:10 OR FLATTER SLOPE P.I.

⑦ GRADUALLY BLEND SLOPE FROM TRAVERSABLE AREA TO STEEP EXISTING SLOPE (WHEN SLOPE IS STEEPER THAN 1:6).

⑧ IF THE TERRAIN BEYOND THE TERMINAL END AND IMMEDIATELY BEHIND THE BARRIER IS NOT SAFELY TRAVERSABLE, A TANGENT (ENERGY- ABSORBING) TERMINAL SHALL BE USED.

⑨ MARK THE APPROACH END OF PLATE BEAM GUARDRAIL INSTALLATIONS WITH A STRIPED OBJECT MARKER SIZED TO FIT THE END TERMINAL, HAVING ALTERNATING BLACK AND REFLECTIVE YELLOW (WIDE ANGLE PRISMATIC RETROREFLECTIVE SHEETING). STRIPES SHALL SLOPE DOWNWARD AT A 45 DEGREE ANGLE TOWARD THE SIDE ON WHICH TRAFFIC PASSES. FOR FLAT END TREATMENTS THE OBJECT MARKER SHALL FIT INSIDE THE RECESSED AREA. FOR ROUNDED END TREATMENTS THE OBJECT MARKER SHALL WRAP AROUND THE CIRCULAR END AND BE MOUNTED SO THE TOP OF THE OBJECT MARKER LINES UP WITH THE TOP OF THE END TREATMENT.

REVISED:

APPROVED:

STATE DESIGN ENGINEER

5-27-2014

GUARDRAIL INSTALLATIONS AT MEDIANS AND END TREATMENTS

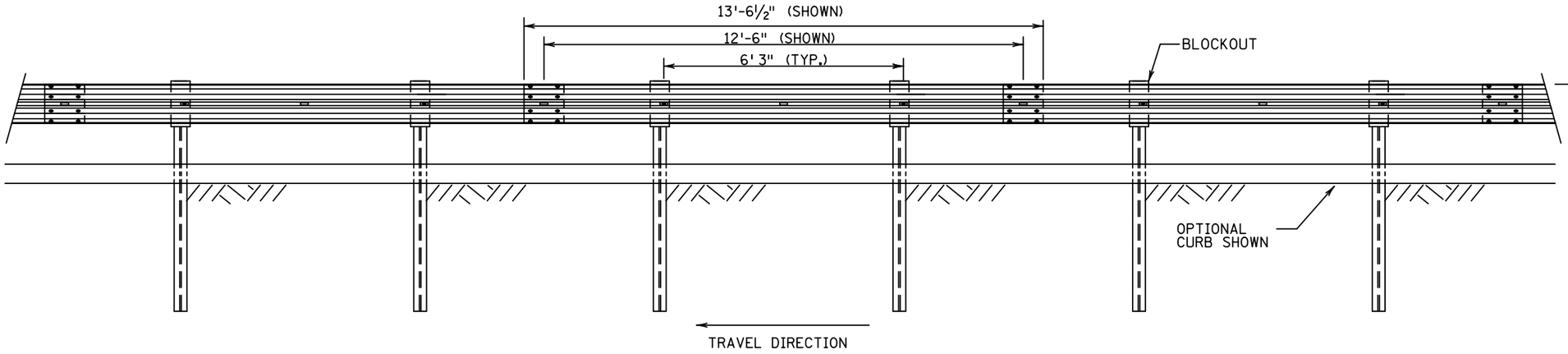
(FOR NEW CONSTRUCTION AND RETROFITS WITHOUT SITE RESTRICTIONS)

STANDARD PLAN 5-297.601 | 3 OF 3

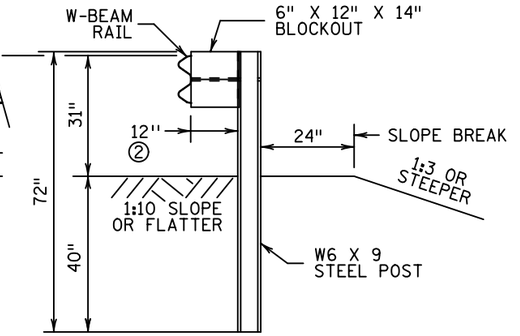
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 26 OF 33 SHEETS

PLOTTED/REVISED: 26-OCT-2017 15:28
DISTRICT #: 7 - Mankato/Windom
USER NAME: thorlpat
PATH & FILENAME: Projects/07_MKO/014/0804/113/Design/PlanSheets/Standard Plans/s601_3_spndgn

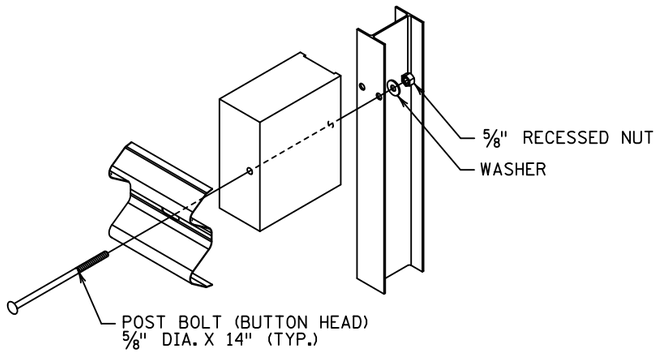
PLOTTED/REVISED: 26-OCT-2017 15:28
DISTRICT #: 7 - Mankato/Windom
USER NAME: thorlpat
PATH & FILENAME: Projects/D7_MKO/014/0804/113/Design/PlanSheets/Standard Plans/s690_1_spn.dgn



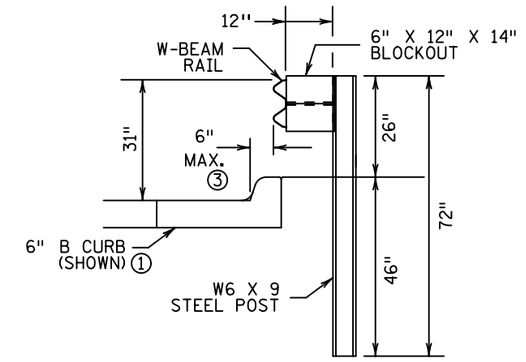
FRONT VIEW



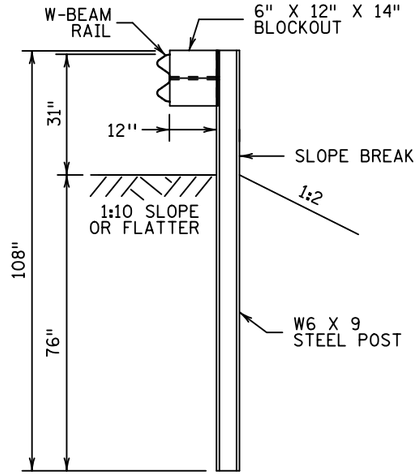
SIDE VIEW



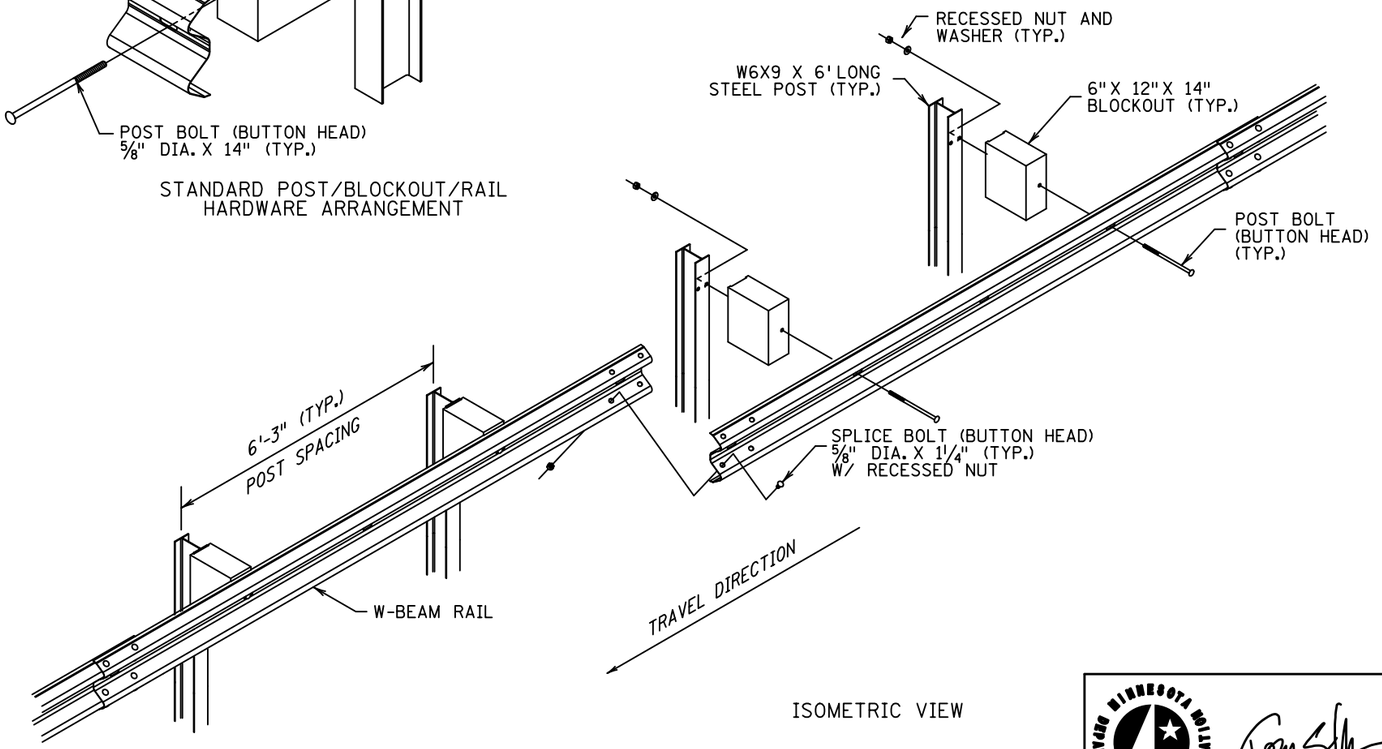
STANDARD POST/BLOCKOUT/RAIL
HARDWARE ARRANGEMENT



TYPE 31 GUARDRAIL
WITH CURB



TYPE 31 GUARDRAIL WITH
1:2 BACK SLOPE AT POST



ISOMETRIC VIEW

NOTES:

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

WOOD BLOCKOUT SHOWN. PROPRIETARY BLOCKOUTS THAT MEET THE REQUIREMENTS OF MASH MAY BE SUBSTITUTED AT NO ADDITIONAL COST. BLOCKOUTS SHALL NOT ROTATE AFTER INSTALLATION.

ALL RAIL AND HARDWARE COMPONENTS PER AASHTO SPEC. M 180

① B CURB OR D CURB ACCEPTABLE.

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

③ 0" TO 6" MAXIMUM.

REVISED:

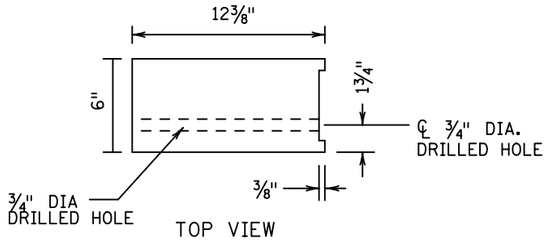
APPROVED:
7-19-2016

STATE DESIGN ENGINEER

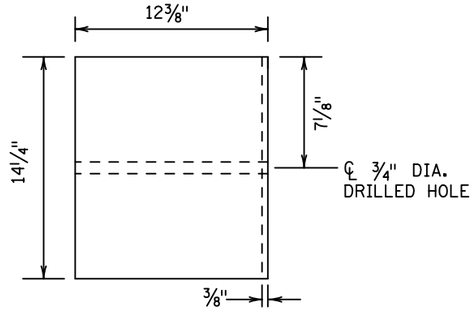
TRAFFIC BARRIER TYPE 31 ASSEMBLY DETAILS

STANDARD PLAN 5-297.690 | 1 OF 2

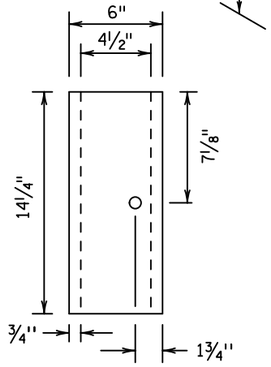
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 27 OF 33 SHEETS



TOP VIEW

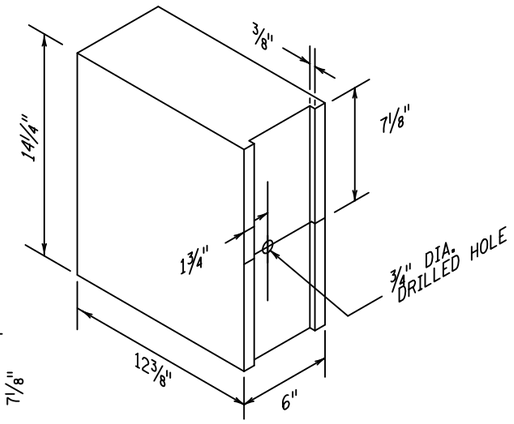


SIDE VIEW

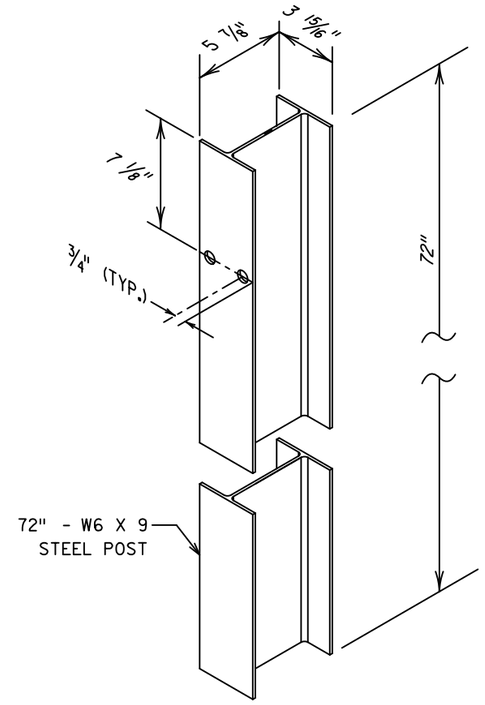


FRONT VIEW

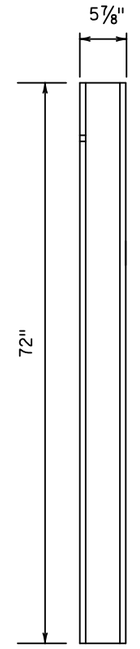
BLOCKOUT
WITH ROUTED GROOVE



ISOMETRIC BACK VIEW

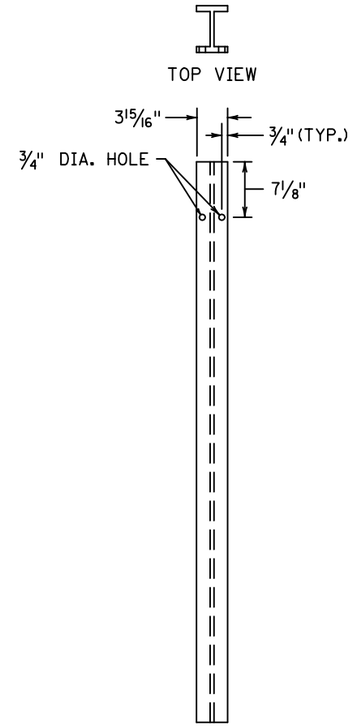


ISOMETRIC FRONT VIEW

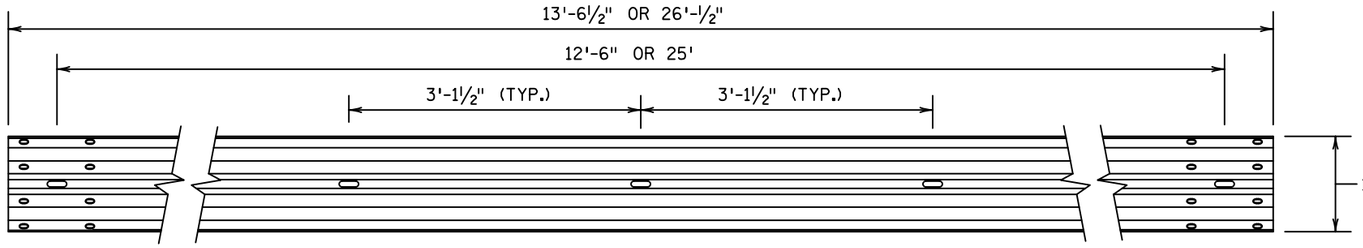


SIDE VIEW

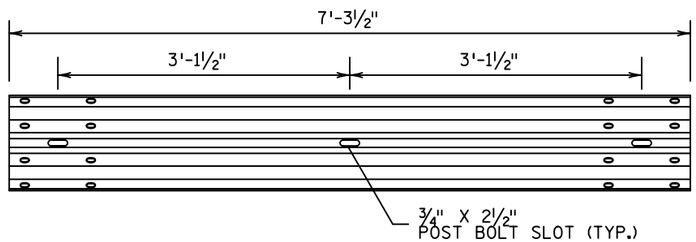
LINE POST①



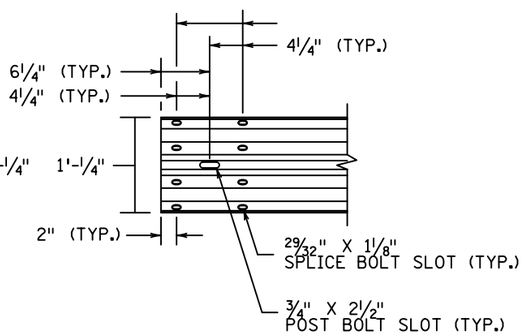
FRONT VIEW



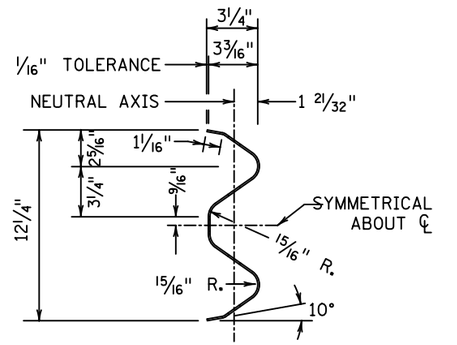
12'-6" OR 25' W-BEAM RAIL



6'-3" W-BEAM RAIL



W-BEAM RAIL
SPLICE BOLT/POST BOLT DETAIL



W-BEAM CROSS SECTION
AASHTO DESIGNATION M 180-11

NOTES:

ALL POSTS SHALL BE STAMPED INDICATING THE POST SIZE AND LENGTH. STAMP SHALL BE VISIBLE AFTER BEING PLACED.

① 72" - W6 X 9 STEEL POST SHOWN.

STATE DESIGN ENGINEER

REVISED:

APPROVED: 7-19-2016

TRAFFIC BARRIER TYPE 31
LINE POST, SPACER BLOCK, AND W-BEAM RAIL DETAILS

STANDARD PLAN 5-297.690 | 2 OF 2

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 28 OF 33 SHEETS

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

(NO NPDES PERMIT IS REQUIRED ON THIS PROJECT)

PROJECT NAME/LOCATION

S.P. 0804-113 is located on T.H. 14 from RP 90.231 to RP 99.921 in the county of Brown, cities of Sleepy Eye, Essig and New Ulm, Home and Milford Townships, zip codes: 56073, 56085.

ENVIRONMENTAL REVIEW

The environmental review that was done was a Categorical Exclusion Determination, completed on 05/24/2016. 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.

PROJECT DESCRIPTION/NARRATIVE

This SWPPP has been prepared in regard of the NPDES General Stormwater Permit in general and Part 111. Bituminous Mill and Overlay, Guardrail and Drainage. Lat: 44.3232 Lon: 94.6042

LONG TERM MAINTENANCE AND OPERATION

MnDOT District 7 maintenance staff are responsible for the long term maintenance and operation of the permanent stormwater system.

PROJECT CONTACTS

The project engineer and contractor are responsible for implementation of the SWPPP and installation, inspection, and maintenance of the erosion prevention and sediment control BMPs before, during and after construction until Final Stabilization has been completed to the satisfaction of the Engineer. MnDOT District 7 staff and members of MnDOT's Office of Environmental Stewardship are also available for technical assistance.

MnDOT District 7
Construction Engineer
Dan Pirkl
507-304-6200
Mankato District Office
daniel.pirkl@state.mn.us

MnDOT District 7
Maintenance Supervisor (owner)
Tony DeSantiago
507-304-6233
Mankato District Office
anthony.desantiago@state.mn.us

Contractor is:

Co-Permitee

ORGANIZATION	CONTACT NAME	PHONE	PERMIT NO.
MnDOT District 7 Design	Peg Hentges	507-304-6148	N/A
MnDOT District 7 Hydraulics (SWPPP Designer)	Scott Morgan	507-304-6154	N/A
Construction Site Manager	NAME	507-304-XXXX	N/A
MnDOT Office of Environmental Sterwardship	Brett Troyer	651-366-3629	N/A
Minnesota Pollution Control Agency	Dave Bodovinitz	507-206-2654	MN R100001
County Ag Inspector	Wayne Stevens	507-233-5700	

MPCA 24 HOUR EMERGENCY NOTIFICATION: 651-649-5451 TOLL FREE: 800-422-0798

EROSION CONTROL SUPERVISOR

In accordance with spec. 2573.3 A1 the contractor shall provide an Erosion Control Supervisor with a valid certification to direct the contractor and subcontractors operations and insure compliance with federal, state and local ordinances and regulations. The Erosion Control Supervisor will work with the project engineer to oversee the implementation of the SWPPP and the installation, inspection, and maintenance and repair of the erosion prevention and sediment control BMPs before, during and after construction until Final Stabilization is complete.

The Erosion Control Supervisor is responsible for complying with all the inspection and maintenance requirements. Inspections of the entire construction site will occur 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. The Erosion Control Supervisor will oversee inspection of all erosion prevention and sediment control BMPs to ensure integrity and effectiveness of each BMP. All inspections and maintenance conducted during construction must be recorded in writing (within 24 hrs.) and these records must become part of the SWPPP. Inspection reports must be submitted to the project engineer in a format that meets or exceeds the project engineer's expectations. Records of each inspection and maintenance activity shall include:

A. Date and time of inspections;
B. Name of persons conducting inspections;
C. Findings of inspections, including specific locations where corrective actions are needed;
D. Corrective actions taken, including dates, times, and party completing maintenance activities;
E. Date and amount of all rainfall events greater than 0.5 inch in 24 hours;
F. Photograph and description of discharge (i.e. color, odor, floating, settled or suspended solids, foam, oil sheen,etc.); and
G. Documents and changes made to the SWPPP.

Rainfall amounts must be obtained by a properly maintained rain gage on site, a weather station within 1 mile of site, or a weather reporting system that provides site specific rainfall data from radar summaries.

LOCATION OF SWPPP REQUIREMENTS

SWPPP elements are located in several places within the plan set as well as in the special provisions and MnDOT spec book (2014 edition). Soils maps are on file at the MnDOT Mankato office. The notes and table below are a quick reference for the contractor and project engineer to use in the field. There may be additional required SWPPP elements included on the project that are not listed on this sheet.

SWPPP TRAINING

This SWPPP was prepared by MnDOT personnel certified, or under the supervision of someone certified, in the design of construction SWPPPs. Copies of the certifications are on file with MnDOT and are available upon request. The contractor is responsible for providing an erosion control supervisor with valid certification that is responsible for overseeing the implementation of the SWPPP. The contractor must provide proof of certification at the preconstruction meeting and will not be allowed to commence work until proof of certification has been provided to the project engineer.

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN

DESCRIPTION	LOCATION
SITE MAP SHEET	SHEETS NO. 1
POND CONTOUR SHEETS	SHEETS NO. N/A
DIRECTION OF FLOW	SHEETS NO. N/A
FINAL STABILIZATION	SHEETS NO. N/A
SOILS AND CONSTRUCTION NOTES	SHEETS NO. 9
DRAINAGE STRUCTURES	SHEETS NO. N/A
DRAINAGE TABULATION	SHEETS NO. 12
STORM SEWER PLAN/PROFILE SHEETS	SHEETS NO. N/A
STORM SEWER TABULATION	SHEETS NO. N/A
EROSION AND SEDIMENT CONTROL DETAILS	SHEETS NO. N/A
EROSION CONTROL TABULATION	SHEETS NO. 12
TURF ESTABLISHMENT TABULATION	SHEETS NO. 12

PROJECT WATERBODIES

The following water bodies are located within one mile of the project limits and receive runoff from the project site. If any of the water bodies are special or impaired waters, the BMPs described in Appendix A of the 2013 NPDES Construction Stormwater permit will apply to all areas of the site. Approved TMDL implementation plans are also listed.

	TYPE	SPECIAL?	IMPAIRED?	APPROVED TMDL?
CD4	Ditch	No	No	No
CD1	Ditch	No	No	No
Unnamed Wetlands		No	No	No

No work shall occur within the banks of DNR designated Public Waters between March 1 and June 15. Stabilization of soils within 200 feet of the waters edge must be completed within 24 hours during this period.

STORMWATER CONTROLS AND PRECIPITATION

The contractor must plan and implement BMPs to protect receiving waters. The average annual rainfall amount for the project area is 30.3 inches. Average 2-year and 10-year 24-hour rainfall intensities are 0.115 in/hr and 0.168 in/hr respectively.
Type of permanent storm water management: N/A

LAND FEATURE CHANGES

Total disturbed area: 0.04 acres
Total existing impervious surface area: 44.3 acres
Total post construction surface area: 44.29 acres
Total proposed net change in impervious surface area: 0.01 acres

ADDITIONAL SWPPP REQUIREMENTS

-Timing for Installation is described in General SWPPP notes and are specified relative to contractor schedule.
-BMP Design Factors are incorporated in the design of BMP Standard Detail Sheets.
-Soil Management:
Soil types typically found on this project are Hydrologic Soil Groups C/D, C, B.
Preservation Projects: all work is done within road core so there will be no disturbance or compaction outside of road core.
Grading Projects: subsoiling and seeding practices will be done to mitigate for compatction and disturbance beyond road core.
-All MPCA Construction Activity Requirements are incorporated into this SWPPP and associated plan documents.

I HEREBY CERTIFY THAT SHEETS 29 THROUGH 30 WERE PREPARED BY MY OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

CERTIFIED BY Scott Morgan — LICENSED PROFESSIONAL ENGINEER — SCOTT MORGAN — 25130 LIC NO. — 26-OCT-2017 DATE

SWPPP

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 29 OF 33 SHEETS

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (CONTINUED)

(NO NPDES PERMIT IS REQUIRED ON THIS PROJECT)

GENERAL SWPPP NOTES FOR CONSTRUCTION ACTIVITY

1. Construction shall be governed by the Erosion and Sediment control guidelines included in the 2013 NPDES Construction Stormwater Permit, MnDOT Spec Book (2016 Edition), project plans, and special provisions. Reference special provision 1717 for additional SWPPP requirements. The contractor will develop a chain of command with all operators on the site to ensure the SWPPP will be implemented and stay in effect until the construction project is complete and the entire site has undergone final stabilization.

2. The contractor will prepare a written, weekly schedule of proposed erosion control activities for the Project Engineer's approval as per MnDOT Spec 1717.2C.

3. The contractor will prepare and submit a site plan for the Engineer's approval as per MnDOT Spec 1717.2D for concrete management, work in environmentally sensitive areas, areas identified in the plans as "site plan requirement area", any work that will require dewatering, the staging of inlet protection devices over the life of the contract, and as requested by the engineer. All site plans must be submitted to the engineer in writing. The contractor shall allow a minimum of 7 days for MnDOT to review and approve site plan submittals. The contractor will not be allowed to commence work for which a site plan is required until approval has been granted by the engineer. The contractor will not be given any extra time in the contract due to the untimely submittal of a site plan.

4. The contractor will comply with the requirements regarding pollution prevention management during construction, which will include, but not be limited to:
   - A. Concrete (including stucco, paint, form release oils, curing compounds, and other construction materials) washout areas for use by all subcontractors and MnDOT personnel must be identified by signage. These areas must be at least 200' from site plan requirement areas or environmentally sensitive areas, and utilize a leak-proof containment facility or impermeable liner that prevents runoff onto adjacent soils. An engineered collection system can also be used if it is approved by the project engineer. Liquid and solid waste must be disposed of properly and in compliance with all MPCA regulations.
   - B. Solid waste including, but not limited to, collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris, and other wastes, must be disposed of properly and in compliance with MPCA disposal requirements.
   - C. Hazardous waste, such as, oil, gasoline, paint, and other hazardous substances, must be properly stored, including secondary containment, to prevent spills, leaks, or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations.
   - D. External washing of trucks and other construction vehicles must be limited to a defined area of the site and runoff must be contained and properly disposed of. Engine degreasing is not allowed on site.
   - E. Chemical spill kits must be available on site at all times.
   - F. Portable restroom facilities must be anchored to prevent tipping.

5. Chemicals must be kept in a secure storage area when not in use. Chemical storage containers must have secondary containment when being used or stored on the project site. Chemical spills of any kind (oil, fuel, fertilizer, etc.) must be cleaned up and removed from the site immediately.

6. The contractor is responsible for creating and following a written disposal plan for all waste materials, and submitting the plan to the engineer. The plan will include how the material will be disposed of and the location of the disposal site.

7. Burning of any material is not allowed within project boundary.

8. The erosion prevention and sediment control BMPs shall be placed as necessary to minimize erosion from disturbed surfaces and to capture sediment onsite. All erosion control measures shall be in place prior to starting any removal work and/or ground disturbing activities and shall be maintained until temporarily or permanently stabilized.

9. Sediment control devices must be established on all down gradient perimeters before any up gradient land disturbing activities begin.

10. Storm sewer inlets will be protected at all times with the appropriate inlet protection for each specific phase of construction. Inlet protection devices may need to be placed multiple times in the same location over the life of the contract. Inlet protection devices will be paid for once per inlet regardless of the number of times the BMP is placed. All storm sewer inlet protection devices will be kept in good functional condition at all times. If the project engineer deems an inlet protection device to be nonfunctional, in poor condition, ineffective, or not appropriate for the current construction activities it will be replaced with a suitable alternative at no cost to MnDOT.

11. The contractor will place construction exits, as necessary, to prevent tracking of sediment onto paved surfaces. Construction exits will be sufficiently sized and maintained to prevent track out. Type 5 mulch (slash mulch) or an approved engineered product will be allowed for construction exits in lieu of crushed rock.

12. All stormwater, including dewatering, must be discharged in a manner that does not cause nuisance conditions or erosion in receiving channels, downslope properties or inundation in wetlands causing an adverse impact to the wetland as determined by the engineer.

13. Backfill placed in streams shall consist of rock or granular material free of fines, silts, and mud. Machinery shall be cleaned of all such material and free of grease, oil, etc. before entering the stream.

14. Slopes steeper than 1:3 (V:H) and greater than 75' in length shall be temporarily or permanently stabilized in increments not to exceed 75' in length prior to constructing or disturbing a new increment. If temporary or permanent stabilization is not feasible at a particular site, a sediment basin or other approved sediment control measure will be allowed as approved by the engineer.

15. Land disturbance and removal of riparian (streamside) vegetation shall be minimized.

16. All exposed soil areas must be temporarily or permanently stabilized no more than 14 days (7 days if within 1 mile of and draining to a special or impaired water) after construction activity on that portion of the site has temporarily or permanently ceased. Stabilization must be initiated immediately. In many instances, this will require stabilization to occur more than once during rough grading. Rapid stabilization methods 1, 2, 3 or 4 will be used to provide temporary cover, as appropriate, in these areas.

17. All temporary or permanent drainage ditches or swales that drain water from the construction site or divert water around the construction site must be stabilized to top of bank within 200 lineal feet from the property edge or point of discharge to any surface water. Stabilization must occur within 24 hours of connection to surface water, existing gutter, storm sewer inlet, drainage ditch, or other stormwater conveyance system according to MnDOT Spec 1717.2A. Rapid stabilization Method 4 will be used to stabilize these areas. The remainder of the ditch must be stabilized within 14 days (7 days if within 1 mile of and draining to a special or impaired water) of connecting to the surface water. Permanent erosion control blanket or rapid stabilization Method 4 will be used to stabilize these areas. Disc anchored mulch and hydraulic soil stabilizers are not allowed to be used for permanent ditch stabilization.

18. Outlets shall be permanently or temporarily stabilized with energy dissipation within 24 hours of being constructed.

19. All exposed soil areas will be stabilized prior to the onset of winter. Any work still being performed will be snow mulched, seeded, or blanketed according to timelines outlines in 16, 17 and 18 above.

20. The contractor shall comply with the following inspection and maintenance requirements:
   - A. Perimeter control devices must be repaired, replaced, or supplemented when it becomes nonfunctional or sediment reaches 1/2 the height of the device. Repairs must be made within 24 hours of discovery.
   - B. Inlet protection devices should be repaired when they become nonfunctional or sediment reaches 1/3 the height and/or depth of the device.
   - C. Temporary and permanent sediment basins must be drained and have the sediment removed once the sediment has reached 1/2 the storage volume within 72 hours of discovery.
   - D. Tracked sediment must be removed within 24 hours of discovery of tracking onto paved surfaces.
   - E. All other nonfunctional BMPs must be repaired, replaced, or supplemented within 24 hours of discovery.
   - F. Contractor is responsible for maintaining all BMPs until all soil disturbing work has been completed and the entire site has undergone final stabilization.

21. If sediment deposits in a surface water (including drainage ditches and conveyance systems), the material must be removed within 7 days.

22. Pavement surfaces shall be swept within 24 hours of discovery of sediment or tracking onto pavement that drains to curbs, inlets, ditches, or ponds. Pavement shall be lightly wetted prior to sweeping.

23. Temporary dewatering activities may be required for roadway construction and utility work. Therefore 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 will be responsible for obtaining this permit. All temporary dewatering shall be discharged to an approved location for treatment prior to discharge to the receiving water. The contractor is required to submit site plans to MnDOT engineer for approval prior to commencing work according to MnDOT Spec 1717.2D.

24. Final stabilization requires that:
   - A. All soil disturbing activities at the site have been completed.
   - B. All soils have been stabilized by a uniform perennial cover with a density of 70% or other equivalent means to prevent soil failure under erosive conditions.
   - C. All accumulated sediment has been removed from permanent water quality basins.
   - D. The permanent stormwater management system has been constructed and is operating as designed.
   - E. All temporary synthetic and structural erosion prevention and sediment control BMPs have been removed.

25. The size and elevation of storm sewer pipes, inlets and overflow devices have been specifically designed to conform to MnDOT design standards, MPCA and watershed district permit requirements. The design computations are on file with MnDOT District 7 Hydraulics. Changing flow directions, quantities, or patterns is not permitted. Any changes to the size, elevation or direction of flow of the drainage system must be approved by the hydraulics engineer.

26. Temporary soil stockpiles must have silt fence or other effective perimeter control. Soil stock piles must be convered with mulch, plastic or other BMP if left in place for more than 7 days (incidental).

Note: information on this sheet is available in the 2013 NPDES Construction Stormwater Permit and is not intended to be all inclusive. Modifications from the permit will be underlined for quick identification.

CERTIFIED BY _____ (LICENSED PROFESSIONAL ENGINEER) 25130 (LIC NO.) 26-OCT-2017 (DATE)

SWPPP

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 30 OF 33 SHEETS

PERMANENT PAVEMENT MARKING PLAN

NOTES & GUIDELINES

GENERAL INFORMATION:

THE ENGINEER'S INVOLVEMENT IN THE APPLICATION OF THE MATERIAL SHALL BE LIMITED TO FIELD CONSULTATION AND INSPECTION. THE CONTRACTOR WILL PLACE NECESSARY 'SPOTTING' AT APPROPRIATE POINTS TO PROVIDE HORIZONTAL CONTROL FOR STRIPING AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS. LONGITUDINAL JOINTS, PAVEMENT EDGES AND EXISTING MARKINGS MAY SERVE AS HORIZONTAL CONTROL WHEN SO DIRECTED.

EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A AGENCY PLACED YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL. THE BREAK POINT IS TO BE AT THE START OF THE RADIUS FOR THE INTERSECTION OR AT MARKED STOP LINES OR CROSSWALKS.

A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE VARIATION IS GRADUAL AND DOES NOT DETRACT FROM THE GENERAL APPEARANCE. BROKEN LINE SEGMENTS MAY VARY UP TO 3 INCHES FROM THE SPECIFIED LENGTHS PROVIDED THE OVER AND UNDER VARIATIONS ARE REASONABLY COMPENSATORY. ALIGNMENT DEVIATIONS FROM THE CONTROL GUIDE SHALL NOT EXCEED 1 INCH. MATERIAL SHALL NOT BE APPLIED OVER LONGITUDINAL JOINTS. ESTABLISHMENT OF APPLICATION TOLERANCES SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLY AS CLOSELY AS PRACTICABLE WITH THE PLANNED DIMENSIONS.

JUST PRIOR TO THE PLACEMENT OF PAVEMENT MARKINGS THE ROAD SURFACE SHALL BE CLEANED AND FREE OF CONTAMINATION AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE.

APPLY ALL PAVEMENT MARKINGS AS RECOMMENDED BY THE MATERIAL MANUFACTURER.

PERMANENT PAVEMENT MARKINGS SHALL NOT BE PLACED OVER TEMPORARY TAPE MARKINGS.

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.

EPOXY:

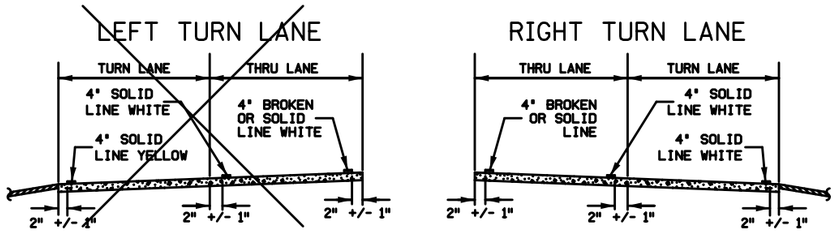
THE ROAD SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE ENGINEER JUST PRIOR TO APPLICATION. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NON-METALLIC) OR AS RECOMMENDED BY THE MATERIAL MANUFACTURER AND ACCEPTABLE TO THE ENGINEER. NEW PORTLAND CEMENT CONCRETE SURFACES SHALL BE SANDBLAST CLEANED TO REMOVE ANY SURFACE TREATMENTS AND/OR LAITANCE.

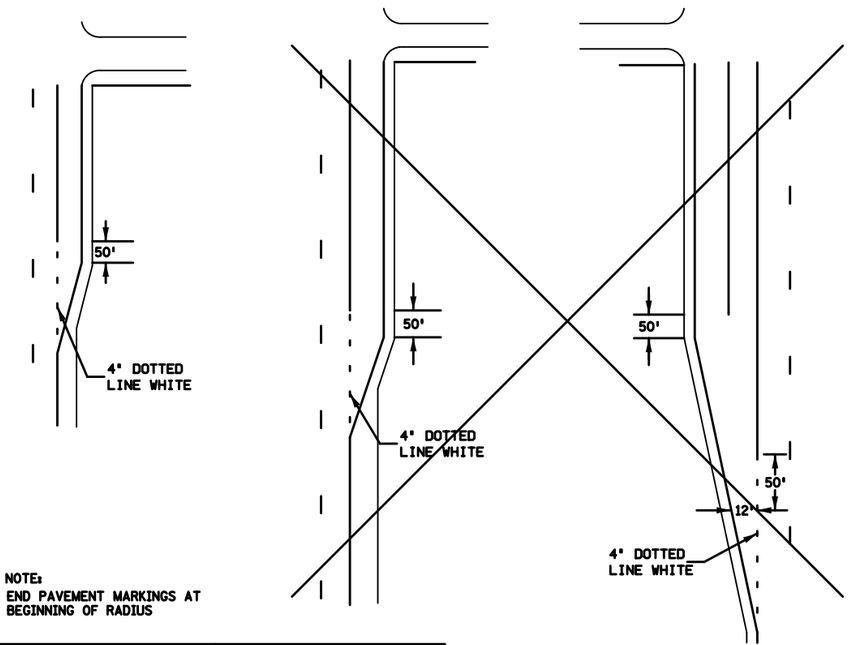
THE EPOXY MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE.

APPLY EPOXY MARKINGS WITH A MINIMUM THICKNESS OF 20 MILS, GLASS BEADS SHALL BE APPLIED AT A RATE OF AT LEAST 25 LB/GAL. THE 'NO-TRACKING' CONDITION SHALL BE DETERMINED ON AN APPLICATION OF SPECIFIED THICKNESS TO THE PAVEMENT AND COVERED WITH GLASS BEADS AT THE RATE OF AT LEAST 25 LB/GAL.

PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR AND PAVEMENT SURFACE TEMPERATURES ARE 40°F OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILM OF DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

TURN LANE WITH DOTTED LINE EXTENSION





NOTE:
END PAVEMENT MARKINGS AT BEGINNING OF RADIUS

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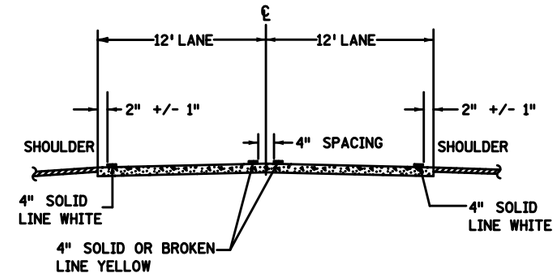
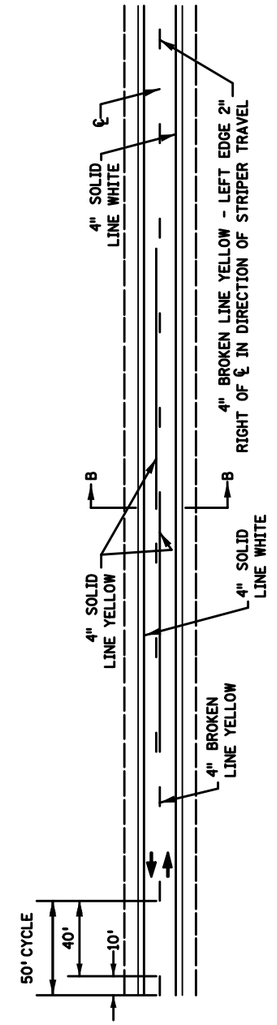
TWO-LANE, TWO-WAY



SECTION B-B



NOTES:

1 CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PERPETUATING EXISTING NO PASSING ZONES.

PUBLISHED BY OTST: 20 NOV 2015 | MODIFIED: 26-OCT-2017

I HEREBY CERTIFY THAT SHEETS 31 THROUGH 33 OF THIS PLAN WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINT NAME: SCOTT THOMPSON LICENSE # 46137

DATE: 26-OCT-2017 SIGNATURE: Scott Thompson

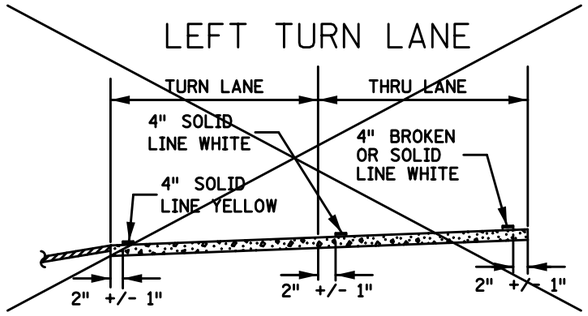
DESIGNER PATTY THORDSON

PAVEMENT MARKING

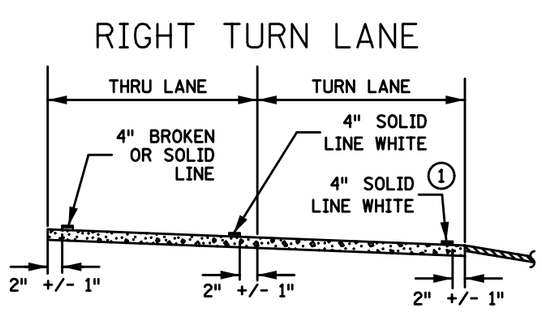
STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 31 OF 33 SHEETS

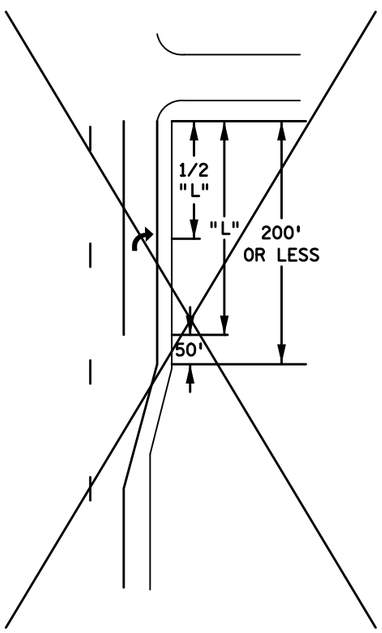
TURN LANE WITH ARROW MESSAGE

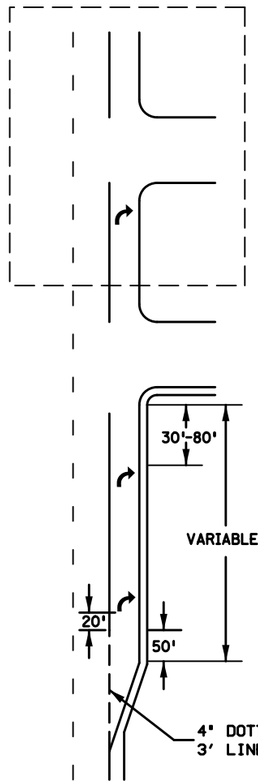
LEFT TURN LANE

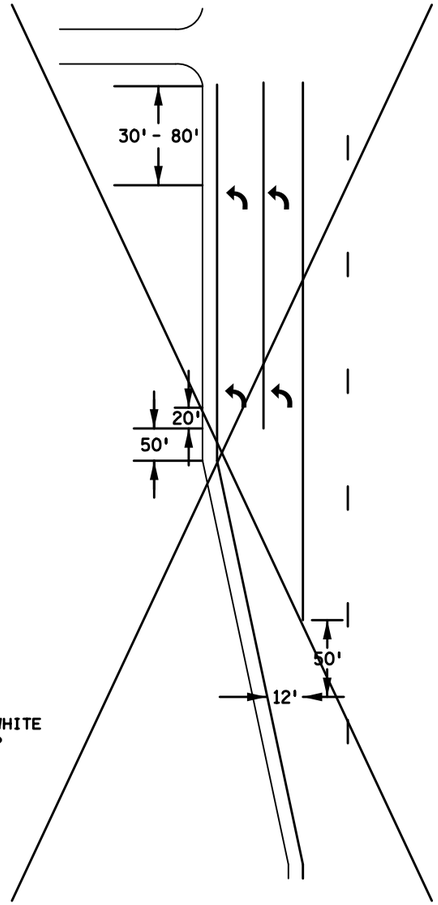


RIGHT TURN LANE









NOTES:

1. RIGHT TURN ARROWS SHALL ONLY BE PLACED FOR THE CONTINUOUS RIGHT TURN LANE FROM STA. 1189+06 TO STA. 1233+81 ONLY.
2. END PAVEMENT MARKINGS AT BEGINNING OF RADIUS

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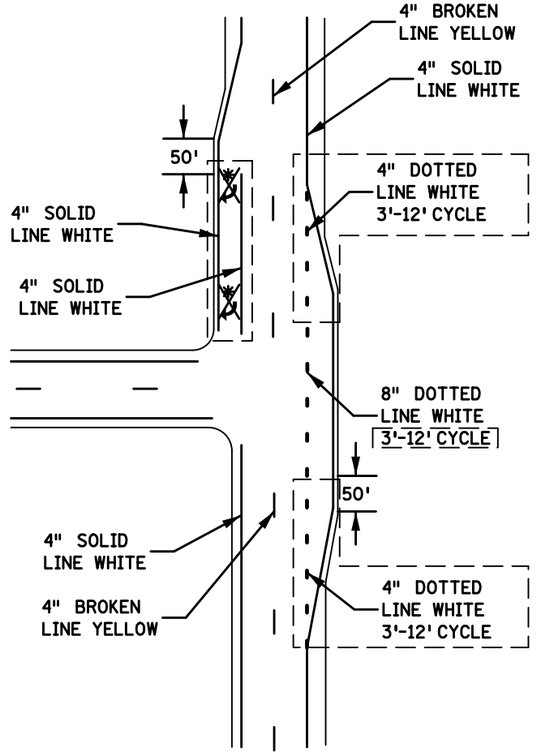
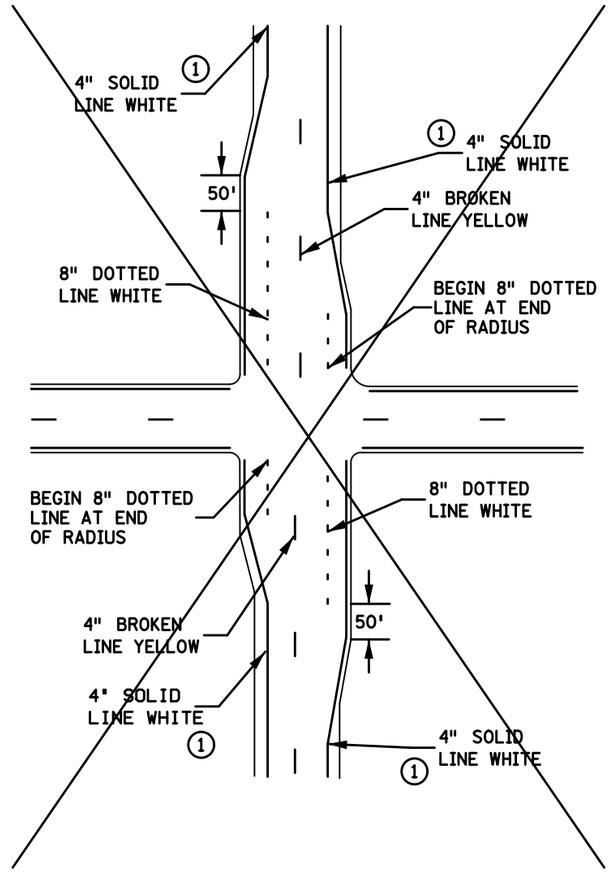
BYPASS LANE





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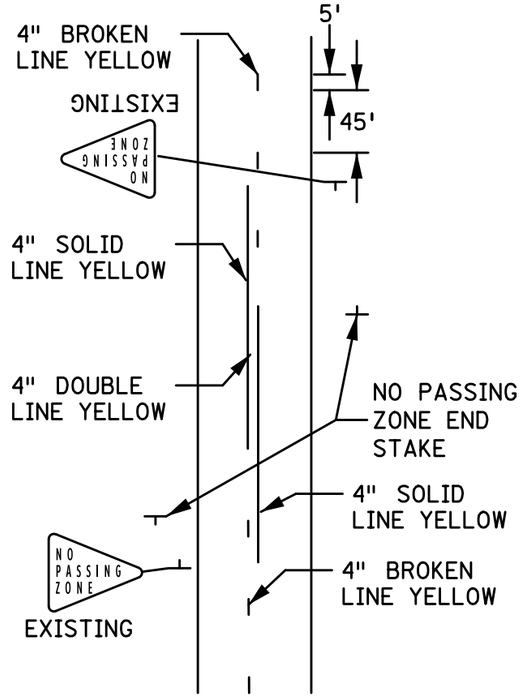
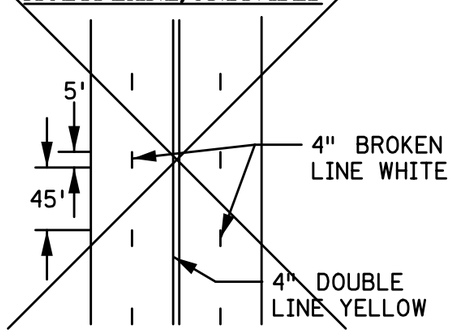
INTERIM PAVEMENT MARKINGS

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 32 OF 33 SHEETS

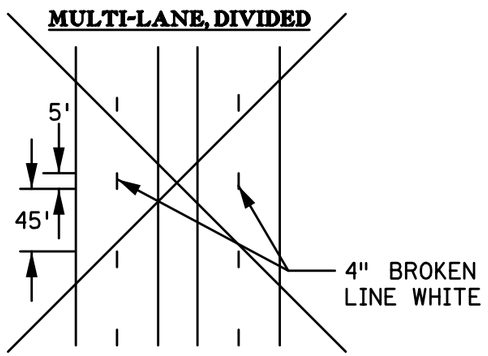
TWO LANE, TWO WAY



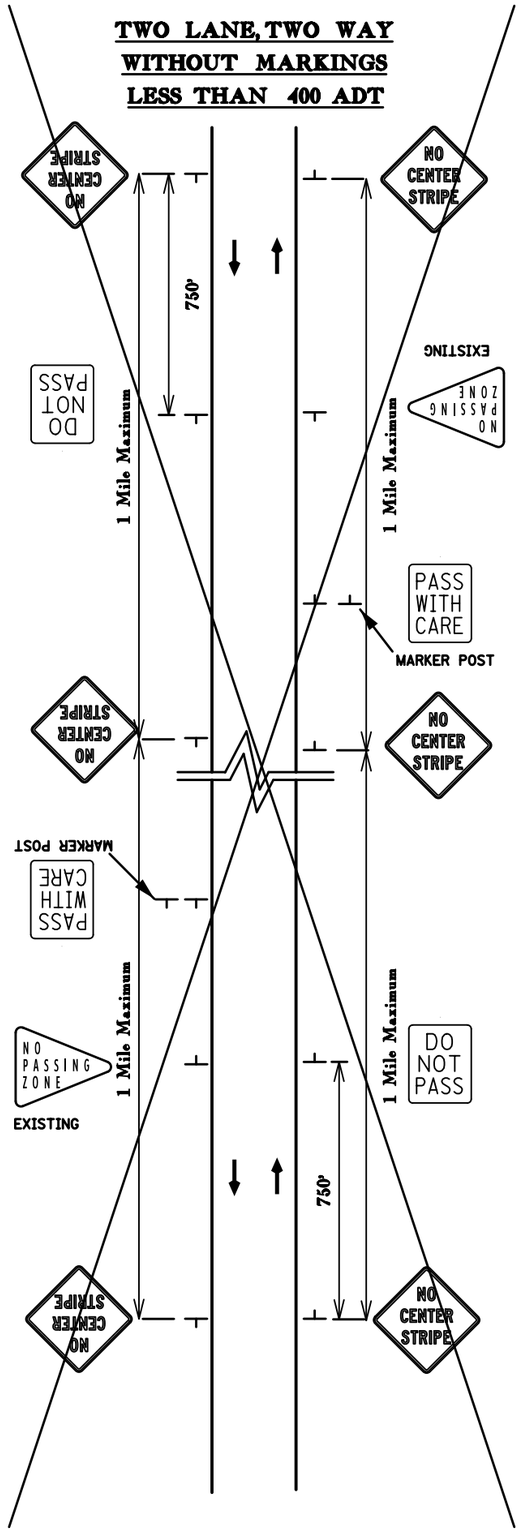
MULTI-LANE, UNDIVIDED



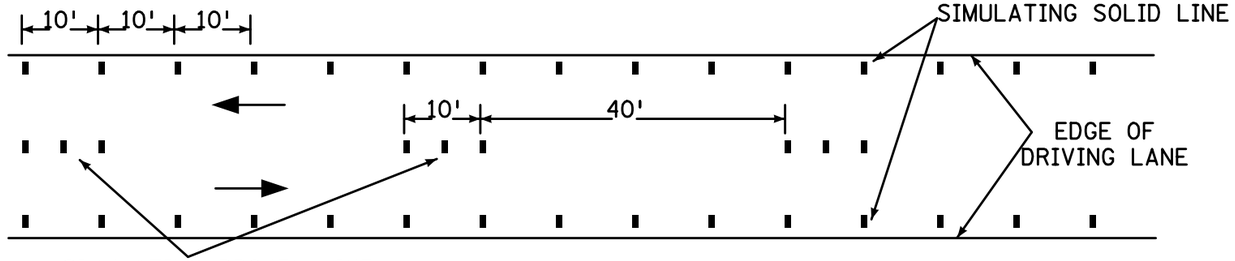
MULTI-LANE, DIVIDED



TWO LANE, TWO WAY WITHOUT MARKINGS LESS THAN 400 ADT



SIMULATING A SOLID LINE AND A BROKEN LINE (50 FOOT CYCLE) WITH TRPM'S



USING TRPM'S AS INTERIM PAVEMENT MARKING

WHEN TRPM'S ARE USED TO SIMULATE A LINE THE FOLLOWING GUIDELINE APPLIES:

SKIP STRIPE - USES 3 TRPM's PER 10' SKIP STRIPE ON 5' CENTERS WITH A 40' GAP

SOLID LINE - USES TRPM'S ON 10' CENTERS ON TANGENTS, FLATTER GRADES AND CURVES UNDER 6 DEGREES. FOR CURVES OVER 6 DEGREES AND STEEP GRADES, THIS SPACING SHALL BE REDUCED TO 5' CENTERS.

GENERAL NOTES:

SEE SPECIAL PROVISIONS FOR INTERIM PAVEMENT MARKING GUIDELINES

THESE INTERIM PAVEMENT MARKING GUIDELINES APPLY TO ALL TEMPORARY TRAFFIC CONTROL ZONES OF AT LEAST 300' IN LENGTH ON TANGENT AND 50' ON CURVES OF 6 DEGREES OR GREATER.

1. FOR ALL PROJECTS GREATER THAN 1.25 MILES IN LENGTH, INTERIM SKIP STRIPE PAVEMENT MARKINGS SHALL USE THE SAME CYCLE LENGTH AS FINAL PAVEMENT MARKINGS (50') AND SHALL BE A MINIMUM OF 5' LENGTH. DOTTED LINE CYCLE SHALL BE 3' LINE 12' GAP UNLESS STATED OTHERWISE IN THE PLAN.

2. ON PROJECTS GREATER THAN 300' IN LENGTH, BUT LESS THAN 1.25 MILES IN LENGTH, THE INTERIM MARKING SHALL MATCH THE CYCLE LENGTH AT EITHER END OF THE PROJECT. THE INTERIM STRIPE SHALL BE 5' IN LENGTH. DOTTED LINE CYCLE SHALL BE 3' LINE 12' GAP UNLESS STATED OTHERWISE IN THE PLAN.

ALL INTERIM MARKINGS SHALL BE PLACED PRIOR TO REMOVING LANE CLOSURE OR OPENING THE ROADWAY TO TRAFFIC . INTERIM PAVEMENT MARKINGS SHALL CONSIST OF CENTER LINE (INCLUDING NO-PASSING ZONES), PAINTED ISLAND (MINUS CROSSHATCHING), AND ALL LANE LINES (INCLUDING TURN LANE LINES). AND SHALL BE THE SAME WIDTH AS THE CORRESPONDING PERMANENT PAVEMENT MARKINGS.

FINAL MARKINGS AND ALL OTHER PAVEMENT MARKINGS INCLUDING EDGELINES, CHANNELIZING LINES LANE, LANE REDUCTION TRANSITIONS, GORE MARKINGS AND OTHER LONGITUDIUAL MARKINGS AND THE VARIOUS NON-LONGITUDINAL MARKINGS (STOP LINES, RAIL ROAD CROSSING, CROSSWALKS, WORDS, SYMBOLS. ETC) SHOULD BE PLACED WITHIN 14 CALENDAR DAYS.

WHEN FINAL MARKINGS ARE TO BE EPOXY AND PAINT IS USED FOR INTERIM SOLID LINES, A 10 MIL THICK LAYER APPLICATION OF A WATER-BASED TRAFFIC MARKING PAINT SHALL BE USED. WITH A 10 MIL LAYER OF PAINT APPLIED, BEADS SHOULD BE APPLIED AT A RATE OF 6 LBS/GAL. REMOVAL OF THE 10 MIL LAYER OF PAINT IS NOT REQUIRED PRIOR TO PLACING THE EPOXY.

PUBLISHED BY OTST: 14 OCT 2016 | MODIFIED: 26-OCT-2017

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INTERIM PAVEMENT MARKINGS

STATE PROJ. NO. 0804-113 (TH 14) SHEET NO. 33 OF 33 SHEETS

DISTRICT #: 7 - Mankato/Windom
USER NAME: thorlpat
PATH & FILENAME: Projects/D7_MKO/014/0804/113/Design/PlanSheets/Pavement Marking/d0804113_pm01.dgn
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