MINNESOTA DEPARTMENT OF TRANSPORTATION
BLUE EARTH COUNTY, MINNESOTA
TH 22 & CSAH 90

CONSTRUCTION PLAN FOR GRADING, BITUMINOUS & CONCRETE PAVEMENT, BITUMINOUS MILL & OVERLAY, ADA IMPROVEMENTS, LIGHTING

LOCATED ON TH 22 FROM 1225' NORTH OF CSAH 15 TO 2200' NORTH OF CSAH 90

LOCATED ON CSAH 90 FROM 612' WEST OF TH 22 TO 522' EAST OF TH 22

FED. PROJ. NO.

GOVERNING SPECIFICATIONS

THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM AND BE INSTALLED IN ACCORDANCE TO THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD) AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".

STATE PROJ. NO. 0704-108 (TH 22)

GROSS LENGTH	12845.39	FEET	2.433	MILES
BRIDGES-LENGTH	174.67	FEET	0.033	MILES
EXCEPTIONS-LENGTH	174.67	FEET	0.033	MILES
NET LENGTH	12670.72	FEET	2.400	MILES

REF. POINT 46+00.100 TO REF. POINT 48+00.339

LENGTH AND DESCRIPTION BASED UPON NB TH 22

STATE PROJ. NO. 007-070-005 (CSAH 90)

GROSS LENGTH	1160.00	FEET	0.220	MILES
BRIDGES-LENGTH		FEET		MILES
EXCEPTIONS-LENGTH		FEET		MILES
NET LENGTH	1160.00	FEET	0.220	MILES

LENGTH AND DESCRIPTION BASED UPON EB CSAH 90

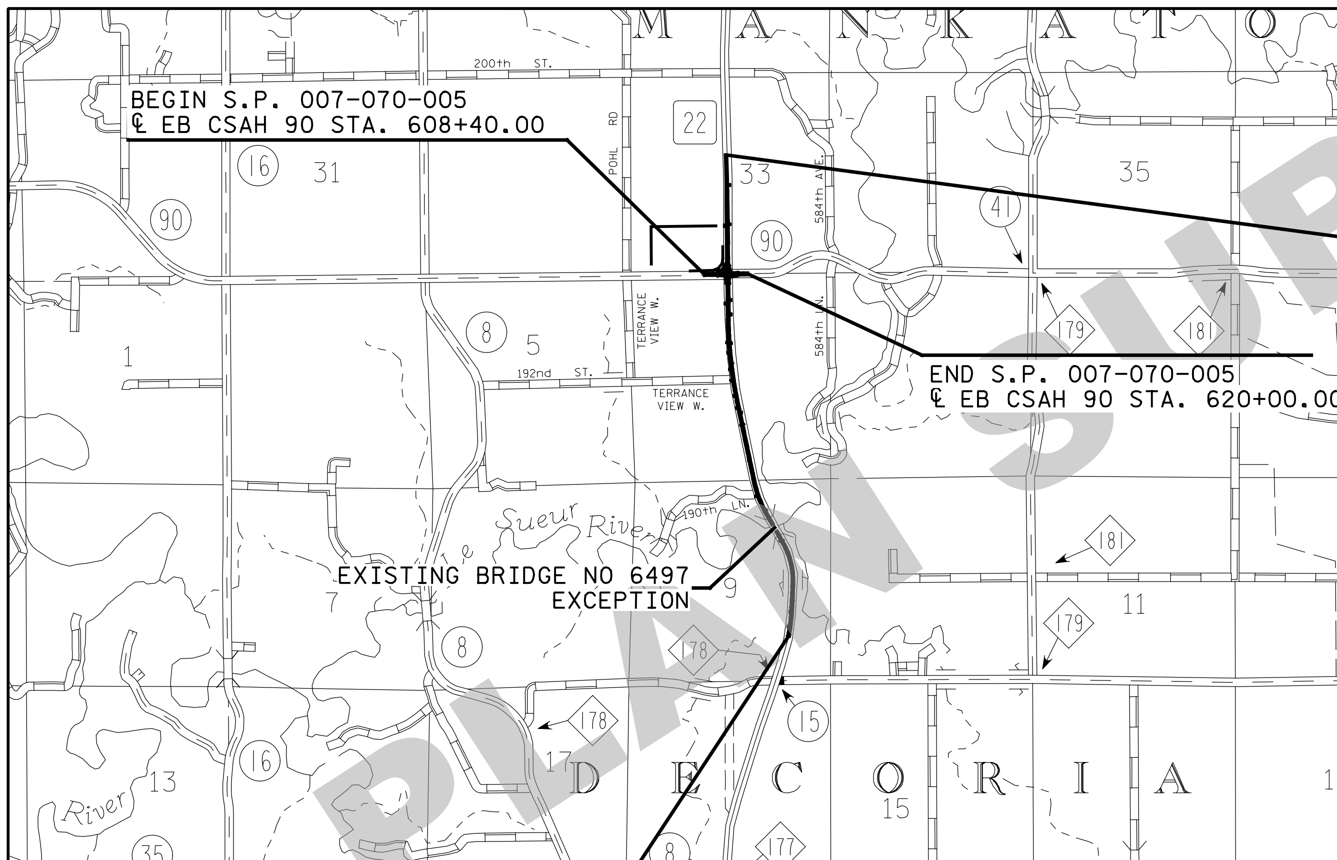
SCALE

INDEX MAP	5000'
GENERAL LAYOUT	400'
PLAN	100'
PROFILE	100' HORIZ. 10' VERT.

BEGIN S.P. 007-070-005
℄ EB CSAH 90 STA. 608+40.00

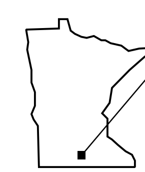
END S.P. 0704-108
℄ NB TH 22 STA. 760+14.39

END S.P. 007-070-005
℄ EB CSAH 90 STA. 620+00.00



BEGIN S.P. 0704-108
℄ NB TH 22 STA. 631+69.00

R 26 W



PROJECT LOCATION
COUNTY : BLUE EARTH
DISTRICT : 7

PLAN REVISIONS

DATE	SHEET NO.	APPROVED BY

INDEX

THIS PLAN CONTAINS 255 SHEETS

SRF Consulting Group, Inc.

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.

SIGNATURE

DATE XX/XX/XX LIC. NO. 50890 PRINT NAME AMBER E. TRACY

RECOMMENDED FOR APPROVAL .... 20....
BLUE EARTH COUNTY ENGINEER

RECOMMENDED FOR APPROVAL .... 20....
DISTRICT TRANSPORTATION ENGINEER

RECOMMENDED FOR APPROVAL .... 20....
DISTRICT MATERIALS ENGINEER

RECOMMENDED FOR APPROVAL .... 20....
DISTRICT WATER RESOURCES/HYDRAULICS ENGINEER

RECOMMENDED FOR APPROVAL .... 20....
DISTRICT TRAFFIC ENGINEER

RECOMMENDED FOR APPROVAL .... 20....
STATE PRE-LETTING ENGINEER

RECOMMENDED FOR APPROVAL .... 20....
DIRECTOR, OFFICE OF LAND MANAGEMENT

APPROVED .... 20....
STATE DESIGN ENGINEER

.... 20....
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AND/OR FEDERAL AID RULES/POLICY

.... 20....
APPROVED FOR STATE AND/OR FEDERAL AID FUNDING: STATE AID ENGINEER

DESIGN DESIGNATION FOR:

	TH 22	CSAH 90
R-VALUE	12	12
ADT (Current Year) =	7,800 (2011)	3,200 (2009)
ADT (Future Year) 2025 =	13,500 (2025)	9,000 (2025)
PAVEMENT DESIGN	10 TON	10 TON
FUNCTIONAL CLASSIFICATION	MINOR ARTERIAL	MINOR ARTERIAL
NO. OF TRAFFIC LANES	2	2
NO. OF PARKING LANES	0	0
ESALS (20)	1,954,000 (20 YRS.)	1,954,000 (20 YRS.)
Design Speed	60 MPH	60 MPH
Based on Sight Distance	STOPPING	STOPPING
Height of eye / Height of Object	3.5' / 2.0'	3.5' / 2.0'
Design Speed not achieved at:	ROUNDABOUT APPROACHES	ROUNDABOUT APPROACHES

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

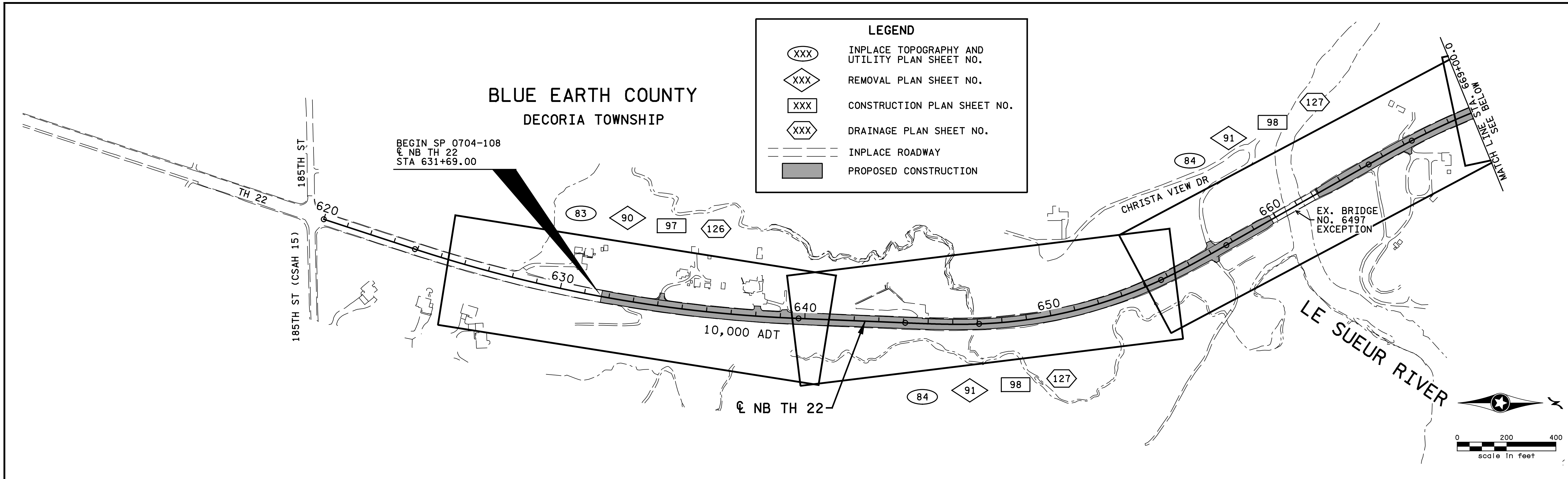
STATE PROJ. NO.	CHARGE IDENTIFIER

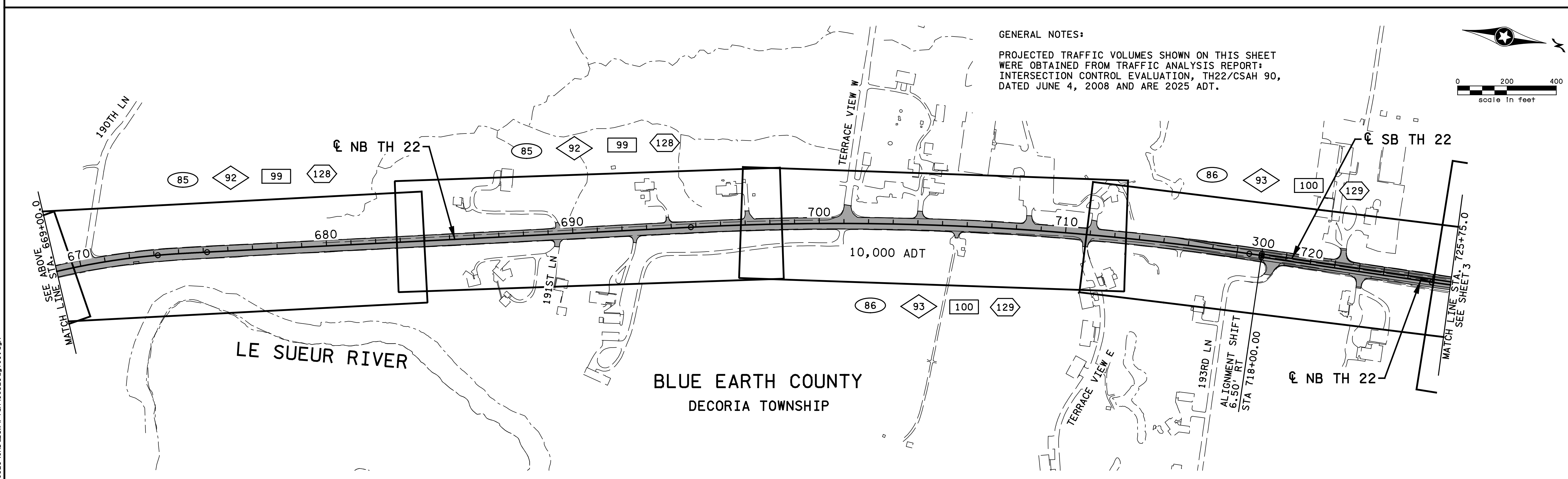
I HEREBY CERTIFY THAT THE FINAL FIELD CHANGES, IF ANY, OF THIS PLAN WERE MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

DATE LIC. NO. PRINT NAME

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





NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc. — ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

GENERAL LAYOUT
TH 22 & CSAH 90

SHEET 2 OF 255

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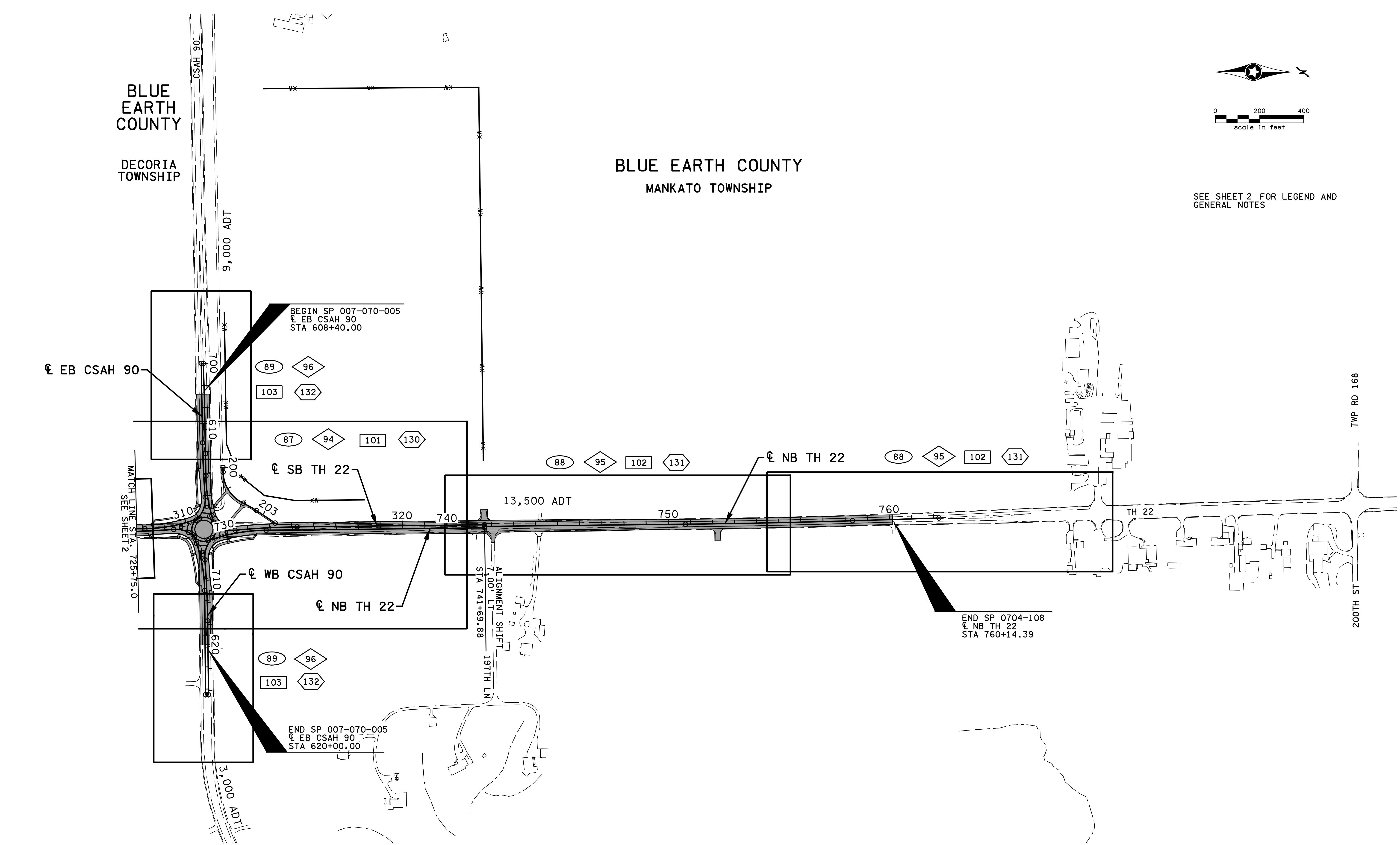

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

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DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

GENERAL LAYOUT
TH 22 & CSAH 90

STATEMENT OF ESTIMATED QUANTITIES

NOTES	TAB	SHEET NO.	ITEM NO.	DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITIES	SP 0704-108 NHPP FUNDS 80% FED 20% STATE	SP 0704-108 HSIP FUNDS 90% FED 10% STATE	SP 007-070-005 HSIP FUNDS 90% FED 10% LOCAL
			2021.501	MOBILIZATION	LUMP SUM				
			2031.501	FIELD OFFICE TYPE D	EACH				
	G	13	2101.501	CLEARING	ACRE				
	G	13	2101.506	GRUBBING	ACRE				
	F	18-20	2104.501	REMOVE PIPE CULVERTS	LIN FT				
	F	18-20	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT				
	H	13	2104.501	REMOVE CABLE GUARDRAIL	LIN FT				
	H	13	2104.501	REMOVE GUARDRAIL-PLATE BEAM	LIN FT				
	H	13	2104.501	REMOVE UNDERGROUND WIRE	LIN FT				
	H	13	2104.501	REMOVE RIGID STEEL CONDUIT	LIN FT				
	H	13	2104.501	REMOVE BARBED WIRE FENCE	LIN FT				
	H	13	2104.501	REMOVE DIRECT BURIED LIGHTING CABLE	LIN FT				
	H	13	2104.503	REMOVE BITUMINOUS WALK	SQ FT				
	H	13	2104.505	REMOVE PAVEMENT	SQ YD				
	H	13	2104.505	REMOVE BITUMINOUS PAVEMENT	SQ YD				
	F	18-20	2104.509	REMOVE PIPE APRON	EACH				
	H	13	2104.509	REMOVE ANCHORAGE ASSEMBLY-CABLE	EACH				
	F	18-20	2104.509	REMOVE DRAINAGE STRUCTURE	EACH				
	Y	166	2104.509	REMOVE MARKER	EACH				
	U	165	2104.509	REMOVE SIGN TYPE C	EACH				
	V	165	2104.509	REMOVE SIGN TYPE D	EACH				
	H	13	2104.509	REMOVE EQUIPMENT PAD	EACH				
	H	13	2104.509	REMOVE LIGHT FOUNDATION	EACH				
	H	13	2104.509	REMOVE SERVICE CABINET	EACH				
	H	13	2104.509	REMOVE ENERGY ABSORBING TERMINAL	EACH				
	H	13	2104.510	REMOVE FLASHER SYSTEM	LUMP SUM				
	H	13	2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT				
	H	13	2104.513	SAWING BIT PAVEMENT (FULL DEPTH)	LIN FT				
	H	13	2104.523	SALVAGE LIGHTING UNIT	EACH				
	Z	165	2104.523	SALVAGE SIGN TYPE SPECIAL	EACH				
	A	9	2106.501	EXCAVATION - COMMON	CU YD				
	A	9	2106.507	EXCAVATION - SUBGRADE	CU YD				
	A	9	2106.522	SELECT GRANULAR EMBANKMENT (CV)	CU YD				
	A	9	2106.523	COMMON EMBANKMENT (CV)	CU YD				
			2112.501	SUBGRADE PREPARATION	ROAD STA				
	J	14	2118.607	AGGREGATE SURFACING (CV) CLASS 1	CU YD				
	J	14	2211.503	AGGREGATE BASE (CV) CLASS 5Q	CU YD				
	H	13	2232.501	MILL BITUMINOUS SURFACE (2.0")	SQ YD				
	BB	15	2232.603	MILLED SINUSOIDAL RUMBLE STRIPS-INTERM	LIN FT				
	BB	15	2232.603	MILLED SINUSOIDAL RUMBLE STRIPS-CENTER	LIN FT				
	BB	15	2232.603	MILLED SINUSOIDAL RUMBLE STR CONC-CENT	LIN FT				
	L	14	2301.504	CONCRETE PAVEMENT 8.0"	SQ YD				
	L	14	2301.508	SUPPLEMENTAL PAVEMENT REINFORCEMENT	POUND				
	L	14	2301.538	DOWEL BAR	EACH				
(1)	J	14	2360.501	TYPE SP 9.5 WEARING COURSE MIX (3,E)	TON				
(1)	J	14	2360.501	TYPE SP 12.5 WEARING COURSE MIX (3,B)	TON				
(1)	J	14	2360.501	TYPE SP 12.5 WEARING COURSE MIX (4,C)	TON				
(1)	J	14	2360.501	TYPE SP 12.5 WEARING COURSE MIX (4,E)	TON				
(1)	J	14	2360.502	TYPE SP 12.5 NON WEAR COURSE MIX (4,B)	TON				
	A	9	2451.503	GRANULAR BACKFILL (MOD) CV	CU YD				
	EE	140	2451.514	FINE AGGREGATE BEDDING (CV)	CU YD				
	EE	140	2452.618	STEEL SHEET PILING (PERMANENT)	SQ FT				
	EE	140	2501.515	30" GS PIPE APRON	EACH				
	EE	140	2501.515	15" RC PIPE APRON	EACH				

NOTES:
(P) DENOTES PLAN QUANTITY
(1) BITUMINOUS QUANTITIES BASED ON UNIT WEIGHT OF 113 POUNDS PER SQUARE YARD PER INCH. TACK COAT SHALL BE INCIDENTAL.
(2) SEE CONSTRUCTION AND SOILS NOTES FOR DESCRIPTION.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: AMBER E. TRACY
Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION
STATEMENT OF ESTIMATED QUANTITIES
TH 22 & CSAH 90

STATEMENT OF ESTIMATED QUANTITIES

NOTES	TAB	SHEET NO.	ITEM NO.	DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITIES	SP 0704-108 NHPP FUNDS 80% FED 20% STATE	SP 0704-108 HSIP FUNDS 90% FED 10% STATE	SP 007-070-005 HSIP FUNDS 90% FED 10% LOCAL
	EE	140	2501.515	24" RC PIPE APRON	EACH				
	EE	140	2501.569	18" GS SAFETY APRON	EACH				
	EE	140	2501.569	24" GS SAFETY APRON	EACH				
	EE	140	2501.569	24" RC SAFETY APRON	EACH				
	Q	14	2502.501	4" PRECAST CONCRETE HEADWALL	EACH				
	Q	14	2502.541	4" PERF TP PIPE DRAIN	LIN FT				
	Q	14	2502.541	4" PERF PE PIPE DRAIN	LIN FT				
	EE	140	2503.511	18" CS PIPE SEWER	LIN FT				
	EE	140	2503.511	24" CS PIPE SEWER	LIN FT				
	EE	140	2503.541	12" RC PIPE SEWER DES 3006 CL V	LIN FT				
	EE	140	2503.541	15" RC PIPE SEWER DES 3006 CL V	LIN FT				
	EE	140	2503.541	24" RC PIPE SEWER DES 3006	LIN FT				
	EE	140	2503.602	CONNECT TO EXISTING STORM SEWER	EACH				
	EE	140	2506.501	CONST DRAINAGE STRUCTURE DESIGN F	LIN FT				
	EE	140	2506.501	CONST DRAINAGE STRUCTURE DESIGN G	LIN FT				
	EE	140	2506.501	CONST DRAINAGE STRUCTURE DES 60-4020	LIN FT				
	R	140	2506.516	CASTING ASSEMBLY	EACH				
	EE	140	2507.501	LINING CULVERT PIPE 30"	LIN FT				
	EE	140	2507.501	LINING CULVERT PIPE 36"	LIN FT				
	EE	140	2511.501	RANDOM RIPRAP CLASS II	CU YD				
	EE	140	2511.501	RANDOM RIPRAP CLASS III	CU YD				
	EE	140	2511.515	GEOTEXTILE FILTER TYPE IV	SQ YD				
	K	14	2521.501	6" CONCRETE WALK	SQ FT				
	K	14	2531.501	CONCRETE CURB & GUTTER DESIGN SPECIAL	LIN FT				
	K	14	2531.501	CONCRETE CURB & GUTTER DESIGN B424	LIN FT				
	K	14	2531.501	CONCRETE CURB & GUTTER DESIGN B624	LIN FT				
	K	14	2531.501	CONCRETE CURB & GUTTER DESIGN S524	LIN FT				
	K	14	2531.618	TRUNCATED DOMES	SQ FT				
	DD	60	2533.507	PORTABLE PRECAST CONC BARRIER DES 8337	LIN FT				
	DD	60	2533.508	RELOCATE PORT PRECAST CONC BAR DES 8337	LIN FT				
	H	13	2540.602	RELOCATE MAIL BOX SUPPORT	EACH				
	AA	186	2545.511	LIGHTING UNIT TYPE 9-40	EACH				
	AA	186	2545.515	LIGHT FOUNDATION DESIGN STEEL E	EACH				
	AA	186	2545.523	2" NON-METALLIC CONDUIT	LIN FT				
	AA	186	2545.523	3" NON-METALLIC CONDUIT	LIN FT				
	AA	186	2545.531	UNDERGROUND WIRE 1 COND NO 2	LIN FT				
	AA	186	2545.533	DIRECT BURIED LIGHTING CABLE 4 COND NO 4	LIN FT				
	AA	186	2545.541	SERVICE CABINET -TYPE L1	EACH				
	N	13	2554.501	TRAFFIC BARRIER DESIGN 8331	LIN FT				
	N	13	2554.501	TRAFFIC BARRIER DESIGN TYPE 31	LIN FT				
	EE	140	2554.509	GUIDE POST TYPE B	EACH				
	N	13	2554.521	ANCHORAGE ASSEMBLY - CABLE	EACH				
	N	13	2554.521	ANCHORAGE ASSEMBLY - TYPE 31	EACH				
	P	14	2557.604	FENCING SPECIAL	SQ YD				
	DD	60	2563.601	TRAFFIC CONTROL	LUMP SUM				
	W	166	2564.531	SIGN PANELS TYPE C	SQ FT				
	X	166	2564.531	SIGN PANELS TYPE D	SQ FT				
	Z	165	2564.537	INSTALL SIGN TYPE SPECIAL	EACH				
	CC	165	2564.551	REFERENCE LOCATION SIGN	EACH				
	Y	166	2564.552	OBJECT MARKER TYPE X4-2	EACH				
	M	15	2573.502	SILT FENCE, TYPE MS	LIN FT				
	M	15	2573.530	STORM DRAIN INLET PROTECTION	EACH				
	M	15	2573.533	SEDIMENT CONTROL LOG TYPE STRAW	LIN FT				
			2573.535	STABILIZED CONSTRUCTION EXIT	LUMP SUM				

NOTES:
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(2) SEE CONSTRUCTION AND SOILS NOTES FOR DESCRIPTION.

NO	DATE	BY	CKD	APPR	REVISION

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Date ________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION
STATEMENT OF ESTIMATED QUANTITIES
TH 22 & CSAH 90

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STATEMENT OF ESTIMATED QUANTITIES

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			2573.550	EROSION CONTROL SUPERVISOR	LUMP SUM				
	M	15	2573.560	CULVERT END CONTROLS	EACH				
(2)	M	15	2574.508	FERTILIZER TYPE 3	POUND				
	M	15	2574.578	SOIL BED PREPARATION	ACRE				
	M	15	2575.501	SEEDING	ACRE				
(2)	M	15	2575.502	SEED MIXTURE 35-241	POUND				
(2)	M	15	2575.511	MULCH MATERIAL TYPE 3	TON				
(2)	M	15	2575.519	DISK ANCHORING	ACRE				
(2)	M	15	2575.523	EROSION CONTROL BLANKETS CATEGORY 3N	SQ YD				
(2)	M	15	2575.571	RAPID STABILIZATION METHOD 3	M GALLON				
	T	154	2582.501	PAVT MSSG PREF TAPE GR IN CONT	SQ FT				
	T	154	2582.502	4" SOLID LINE EPOXY GR IN (WR)	LIN FT				
	T	154	2582.502	24" SOLID LINE EPOXY GR IN (WR)	LIN FT				
	T	154	2582.502	4" BROKEN LINE EPOXY GR IN (WR)	LIN FT				
	T	154	2582.502	4" DOTTED LINE EPOXY GR IN (WR)	LIN FT				
	T	154	2582.502	8" DOTTED LINE EPOXY GR IN (WR)	LIN FT				
	T	154	2582.502	4" DBLE SOLID LINE EPOXY GR IN (WR)	LIN FT				

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INDEX OF TABULATIONS

TAB	TABULATION	SHEET NO
A	EARTHWORK SUMMARY	9
B	EARTHWORK TABULATION	10 - 12
C	EXISTING UTILITIES	16 - 17
D	EXISTING SANITARY SEWER	17
E	EXISTING WATERMAIN	17
F	EXISTING DRAINAGE	18 - 20
G	CLEARING & GRUBBING	13
H	REMOVALS, SAWING, AND MILLING	13
J	AGGREGATE AND BITUMINOUS SUMMARY	14
K	CURB & GUTTER AND WALKS	14
L	CONCRETE PAVEMENT, REINFORCEMENT, AND JOINT SUMMARY	14
M	TURF ESTABLISHMENT / EROSION CONTROL	15
N	TRAFFIC BARRIER	13
P	FENCING	14
Q	SUBDRAIN TABULATION	14
R	CASTING ASSEMBLIES SUMMARY	140
S	DRAINAGE TABULATION	138 - 139
T	PERMANENT PAVEMENT MARKINGS	153
U	REMOVE SIGN TYPE C	165
V	REMOVE SIGN TYPE D	165
W	SIGN PANELS TYPE C	166
X	SIGN PANELS TYPE D	166
Y	MARKERS	166
Z	SALVAGE & INSTALL SIGN TYPE SPECIAL	165
AA	LIGHTING TABULATION	186
BB	RUMBLE STRIP	15
CC	REFERENCE LOCATION SIGN	165
DD	TRAFFIC CONTROL	60
EE	DRAINAGE SUMMARY TABULATION	140

TABULATIONS "I" AND "O" NOT USED

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

STANDARD PLATES

PLATE NO.	DESCRIPTION
1070 M	SUPPLEMENTAL PAVEMENT REINFORCEMENT
1103 K	TYPICAL DOWEL BAR ASSEMBLY (2 SHEETS)
1150 R	CONCRETE HEADER JOINTS (2 SHEETS)
3000 L	REINFORCED CONCRETE PIPE (5 SHEETS)
3006 G	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3022 C	PRECAST CONCRETE SAFETY APRON (3 SHEETS)
3040 F	CORRUGATED METAL PIPE CULVERT (STANDARD 2-2/3" X 1/2" CORRUGATION)
3100 G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3123 J	METAL APRON FOR C.S. PIPE
3124 B	METAL APRON CONNECTION
3128 H	METAL SAFETY APRON & GRATE (2 SHEETS)
3133 D	RIPRAP AT RCP OUTLETS
3134 D	RIPRAP AT CSP OUTLETS
3145 G	CONCRETE PIPE OR PRECAST BOX CULVERT TIES
3221 C	CORRUGATED STEEL PIPE COUPLING BAND (3 SHEETS)
4005 M	MANHOLE OR CATCH BASIN TYPE A & B CONE SECTIONS PRECAST - DESIGN F
4006 L	MANHOLE OR CATCH BASIN PRECAST - DESIGNS G AND H
4010 H	CONCRETE SHORT CONE & ADJUSTING RING (SECTIONAL CONCRETE)
4011 E	PRECAST CONCRETE BASE
4020 J	MANHOLE OR CATCH BASIN FOR USE WITH OR WITHOUT TRAFFIC LOADS (2 SHEETS)
4026 A	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4101 D	RING CASTING FOR MANHOLE OR CATCH BASIN
4110 F	COVER CASTING FOR MANHOLE (FOR USE IN ALL TRAFFIC AREAS) - CASTING NO. 715 AND 716
4132 F	CATCH BASIN FRAME CASTING (FOR SQUARE GRATE) - CASTING NO. 805
4143 E	STOOL GRATE & CONCRETE FRAME (MEDIAN DRAINS) - CASTING NO. 731
4154 B	CATCH BASIN GRATE CASTING - CASTING NO. 816
4180 J	MANHOLE OR CATCH BASIN STEP
7038 A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100 H	CONCRETE CURB AND GUTTER (DESIGN B AND DESIGN V)
7102 J	CONCRETE CURB AND GUTTER (DESIGN BR, D, S, B4, B5 AND D3) (2 SHEETS)
7109 C	MEDIAN NOSE AND ISLAND (UNDIVIDED TO DIVIDED ROADWAY)
7111 J	INSTALLATION OF CATCH BASIN CASTINGS (CONCRETE CURB & GUTTER)
7113 A	CONCRETE APPROACH NOSE DETAIL
8000 J	CHANNELIZERS (3 SHEETS)
8129 A	SHIM AND WASHER (TRAFFIC CONTROL SIGNALS AND ROADWAY LIGHTING)
8331 B	3-CABLE GUARDRAIL (WITH STEEL POSTS) (3 SHEETS)
8337 C	TEMPORARY PORTABLE PRECAST CONCRETE BARRIER (TYPE F) (3 SHEETS)
9000 E	APPROACHES AND ENTRANCES - RECOMMENDED STANDARDS

CONSTRUCTION AND SOILS NOTES

GRADING, BASE AND SURFACE

1. STRIP SOD AND TOPSOIL FROM AREAS TO BE DISTURBED BY CONSTRUCTION AND REUSE TOPSOIL. FOR ESTIMATING PURPOSES, THE DEPTH OF TOPSOIL AVAILABLE IS CONSIDERED TO BE 6".

2. ALL TOPSOIL STRIPPING WILL BE CONSIDERED EXCAVATION - COMMOM.

3. TEST ROLLING USING TEST ROLLER TR10, SHALL BE PERFORMED ON THE TOP OF THE AGGREGATE BASE FOR NB AND SB TH 22 (INCIDENTAL).

4. 6 INCHES OF SUBGRADE PREPARATION IS REQUIRED ON PROPOSED TH 22 CONSTRUCTION AND TRAIL SECTION.

5. WHERE CONNECTING TO THE INPLACE ROADWAYS AT THE TERMINI OF PROPOSED CONSTRUCTION, CUT VERTICALLY TO THE BOTTOM OF THE INPLACE SURFACING OR TO THE BOTTOM OF THE NEW SURFACING, WHICHEVER IS DEEPER, THEN 1V:20H TO THE BOTTOM OF THE RECOMMENDED SUBGRADE EXCAVATION, UNLESS OTHERWISE NOTED.

6. PROVIDE 1V:20H LONGITUDINAL TAPERS BETWEEN CHANGES IN SUBGRADE AND SUBCUT DEPTHS.

7. DITCH BOTTOMS, TOE OF FILL, CUT RUNOUTS AND THE TOP EDGE OF THE BACKSLOPES SHALL BE ROUNDED REGARDLESS OF THE SECTION USED ON THE CROSS SECTION SHEETS.

8. PROVIDE A FULL DEPTH SAW CUT WHERE PLACING NEW PAVEMENT NEXT TO INPLACE PAVEMENT TO ENSURE A UNIFORM JOINT.

9. NO TRAFFIC, EXCEPT THAT WHICH IS NECESSARY FOR CONSTRUCTION, WILL BE ALLOWED ON THE MILLED SURFACE.

10. PROVIDE BITUMINOUS TACK COATS BETWEEN ALL BITUMINOUS LIFTS AND PRIOR TO PLACING ANY BITUMINOUS MIXTURES ON EXISTING PAVEMENT OR MILLED SURFACES (INCIDENTAL).

11. THE GRADING SHALL BE SHAPED AND COMPACTED TO SEAL THE SURFACE AND PROVIDE DRAINAGE AT THE END OF EACH WORKING DAY. ALL EROSION AND SEDIMENT CONTROL BMP'S ARE TO BE IN GOOD CONDITION AT THE END OF EACH WORKING DAY.

12. THE NEW ROAD SURFACE OR ROADBED SHALL NOT BE USED TO STOCKPILE ANY MATERIAL UNLESS AUTHORIZED BY THE ENGINEER.

13. DITCHES MUST BE EXCAVATED AND STABILIZED BEFORE ANY SUBCUTS ARE EXCAVATED AND KEPT DEEPER THAN THE BOTTOM OF THE SUBCUT. PROVIDE POSITIVE DRAINAGE FOR SUBCUTS AT ALL TIMES.

REMOVALS

14. THE EXISTING PAVEMENT THICKNESSES ARE ASSUMED TO BE AS FOLLOWS:

    TH 22 - 7.5" BITUMINOUS PAVEMENT OVER 9-7-9 CONCRETE PAVEMENT
    CSAH 90 WEST OF TH 22 - 8.0" BITUMINOUS PAVEMENT
    CSAH 90 EAST OF TH 22 - 7.5" BITUMINOUS PAVEMENT

    THE CONTRACTOR SHALL INVESTIGATE AND MAKE THEIR OWN DETERMINATION.
    (INFORMATION TAKEN FROM RECORD DRAWINGS).

TURF ESTABLISHMENT

15. PLACE A MINIMUM OF 6 INCHES OF TOPSOIL ON ALL AREAS SCHEDULED FOR PERMANENT TURF ESTABLISHMENT.

16. SEE EROSION CONTROL AND TURF ESTABLISHMENT PLANS FOR PERMANENT TURF ESTABLISHMENT TYPES AND LOCATIONS. THE FOLLOWING MATERIALS AND RATES SHALL APPLY TO MNDOT SPEC. 2575:

    ON PERMANENT CONSTRUCTION, SEED MIXTURE 35-241 @ 36.5 POUNDS PER ACRE, FERTILIZER TYPE 3, ANALYSIS 22-5-10, @ 200 POUNDS PER ACRE AND MULCH MATERIAL TYPE 3 @ 2 TONS PER ACRE, WITH DISK ANCHOR ON SLOPES 1:3 AND FLATTER. ON SLOPES STEEPER THAN 1:3, AND DITCH BOTTOMS, USE EROSION CONTROL BLANKET CATEGORY 3N (WOOD FIBER WITH NATURAL NETTING).

TEMPORARY EROSION CONTROL

17. USE RAPID STABILIZATION METHOD 3 TO TEMPORARILY STABILIZE DISTURBED AREAS BEFORE PERMANMENT TURF ESTABLISHEMENT IS APPLIED.

EARTHWORK SUMMARY A

ALIGNMENT	EXCAVATION TOTALS (EV) COMMON	EXCAVATION TOTALS (EV) SUBGRADE	EMBANKMENT TOTALS (CV) COMMON SELECT GRADING	EMBANKMENT TOTALS (CV) COMMON SLOPE DRESSING	SELECT GRANULAR	GRANULAR BACKFILL MOD (CV)
	CU YD	CU YD	CU YD	CU YD	CU YD	CU YD
S.P. 0704-108 (TH 22) NHPP FUNDS						
NB TH 22 (SB TH 22) - GUARDRAIL	1253		2635	1266		
NB TH 22 (SB TH 22)	4370	6041	1297	2079	6781	
SNOW BASIN GRADING	135		4			
CULVERT BACKFILL (A-1)	786		211			575
S.P. 0704-108 (TH 22) NHPP FUNDS TOTAL	**6544**	**6041**	**4147**	**3345**	**6781**	**575**
S.P. 0704-108 (TH22) HSIP FUNDS						
NB TH 22 (SB TH 22)	2940	1998	3458	1196	2512	
SNOW BASIN GRADING	1100		1072			
S.P. 0704-108 (TH22) HSIP FUNDS TOTAL	**4040**	**1998**	**4530**	**1196**	**2512**	
S.P. 007-070-005 (CSAH 90) FUNDS						
EB CSAH 90 (WB CSAH 90)	3428	1461	3599	1194	2346	
SNOW BASIN GRADING	491		816			
S.P. 007-070-005 (CSAH 90) FUNDS TOTAL	**3919**	**1461**	**4415**	**1194**	**2346**	
PROJECT TOTALS	**14503**	**9500**	**13092**	**5735**	**11639**	**575**

NOTES:
(A-1) SEE DRAINAGE TABULATIONS AND STORM SEWER DETAILS

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: AMBER E. TRACY
Date ________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION
EARTHWORK SUMMARY AND TABULATIONS
TH 22 & CSAH 90

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TH 22 GUARDRAIL - EARTHWORK TABULATION B

STATION	EXCAVATION TOTALS (EV)		EMBANKMENT TOTALS (CV)		
	COMMON	SUBGRADE	COMMON		SELECT GRANULAR
			SELECT GRADING	SLOPE DRESSING	
NB TH 22 (SB TH 22)	CU YD	CU YD	CU YD	CU YD	CU YD
633+00.00					
633+50.00	15		9	15	
634+00.00	21		29	21	
634+50.00	15		22	15	
635+00.00	7		3	7	
635+50.00	5		1	5	
636+00.00	8		1	8	
636+50.00	10		4	10	
637+00.00	8		5	8	
637+50.00	8		4	8	
638+00.00	8		3	8	
638+50.00	47		147	47	
639+00.00	65		179	65	
639+50.00	56		142	56	
640+50.00	77		356	77	
641+00.00	35		173	35	
641+50.00	23		55	23	
642+00.00	44		110	44	
642+50.00	41		89	41	
643+00.00	36		57	36	
643+50.00	21		24	21	
644+00.00	19		8	19	
644+50.00	28		14	28	
645+00.00	15		11	15	
645+50.00	3		6	5	
646+00.00	15		20	17	
646+50.00	28		46	29	
646+79.00	14		23	15	
647+00.00	11		19	11	
647+50.00	20		37	21	
648+00.00	6		6	8	
648+50.00	3		6	5	
649+00.00	3		6	5	
649+50.00	3		3	4	
650+00.00	3			3	
650+50.00	8		1	8	
651+00.00	12		3	12	
651+50.00	13		8	12	
652+00.00	14		11	14	
652+50.00	19		14	19	
653+00.00	21		26	21	
653+50.00	10		17	10	
654+00.00	2			2	
654+50.00	4		1	4	
655+00.00	16		24	16	
655+50.00	26		44	26	
656+00.00	23		42	23	
656+50.00	20		38	20	
664+00.00					
664+50.00	31		107	31	
665+00.00	22		72	22	
674+00.00					
674+50.00	2			2	
675+00.00	3			3	
675+50.00	3			3	
676+00.00	22		41	22	
676+50.00	41		117	41	
677+00.00	26		79	26	
677+50.00	12		9	12	
678+00.00	12		9	12	
678+50.00	11		7	11	
679+00.00	11		7	11	
679+50.00	11		6	11	

TH 22 GUARDRAIL - EARTHWORK TABULATION B

STATION	EXCAVATION TOTALS (EV)		EMBANKMENT TOTALS (CV)		
	COMMON	SUBGRADE	COMMON		SELECT GRANULAR
			SELECT GRADING	SLOPE DRESSING	
NB TH 22 (SB TH 22)	CU YD	CU YD	CU YD	CU YD	CU YD
680+00.00	10		6	10	
680+50.00	13		10	13	
681+00.00	17		15	17	
681+50.00	13		9	13	
682+00.00	5		1	5	
682+50.00	2			2	
TOTAL	**1253**		**2635**	**1266**	

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

EARTHWORK SUMMARY AND TABULATIONS
TH 22 & CSAH 90

TH 22 - EARTHWORK TABULATION B

STATION	EXCAVATION TOTALS (EV)		EMBANKMENT TOTALS (CV)		
			COMMON		
NB TH 22 (SB TH 22)	COMMON	SUBGRADE	SELECT GRADING	SLOPE DRESSING	SELECT GRANULAR
	CU YD	CU YD	CU YD	CU YD	CU YD
717+00.00					
717+50.00	43	50	5	25	51
717+99.00	49	98	10	34	101
718+01.00	2	4	1	1	4
718+50.00	86	128	18	30	139
719+00.00	88	119	14	34	142
719+50.00	50	78	13	43	105
720+00.00	46	80	10	39	105
720+50.00	39	75	7	32	105
721+00.00	29	77	4	18	107
721+24.00	27	60		4	73
721+50.00	32	67		5	81
722+00.00	63	122	2	15	153
722+50.00	59	112	4	20	145
723+00.00	30	70	4	24	103
723+50.00	33	70	3	25	105
724+00.00	28	64	2	21	105
724+50.00	41	60	3	32	105
725+00.00	56	67	7	43	105
725+50.00	70	80	9	46	104
726+00.00	111	85	7	52	103
726+50.00	164	84	140	72	100
727+00.00	204	84	329	95	99
727+50.00	217	85	392	99	105
728+00.00	235	94	454	94	133
729+71.16	716	389	1399	243	537
730+00.00	90	66	166	26	83
730+50.00	145	98	256	47	115
731+50.00	227	187	259	83	196
732+00.00	59	96	12	25	98
732+50.00	29	100	9	16	102
733+00.00	25	101	6	13	105
733+50.00	166	95	4	59	106
734+00.00	324	93	1	105	106
734+50.00	346	93	6	104	106
735+00.00	357	90	15	104	106
735+50.00	359	86	21	103	106
736+00.00	359	82	25	102	106
736+50.00	213	83	25	74	106
737+00.00	51	82	26	38	106
737+50.00	43	82	34	35	110
738+00.00	48	82	42	40	114
738+50.00	48	79	43	40	114
739+00.00	47	78	46	39	114
739+50.00	48	81	45	38	114
740+00.00	50	87	49	38	114
740+50.00	51	90	58	39	114
741+00.00	48	94	45	34	114
742+00.00	147	286	29	43	304
742+50.00	80	145	27	22	152
743+00.00	60	103	44	32	110
743+50.00	59	105	36	32	106
744+00.00	53	106	19	25	106
744+50.00	56	106	9	23	106
745+00.00	61	105	35	31	106
745+50.00	60	105	56	34	106
746+00.00	60	105	56	34	106
746+50.00	61	104	65	36	106
747+00.00	59	102	72	36	106
747+50.00	56	101	63	35	105
748+00.00	53	100	49	34	101
748+50.00	49	97	36	33	98
749+00.00	44	93	28	32	95
749+50.00	41	87	20	33	92
750+00.00	34	85	11	27	89

TH 22 - EARTHWORK TABULATION B

STATION	EXCAVATION TOTALS (EV)		EMBANKMENT TOTALS (CV)		
			COMMON		
NB TH 22 (SB TH 22)	COMMON	SUBGRADE	SELECT GRADING	SLOPE DRESSING	SELECT GRANULAR
	CU YD	CU YD	CU YD	CU YD	CU YD
750+50.00	29	83	7	23	88
751+00.00	31	80	7	25	88
751+13.00	8	20	2	6	23
751+50.00	22	59	5	17	65
753+00.00	78	252	10	49	264
753+50.00	23	87		11	88
754+00.00	25	87		14	88
754+50.00	25	86		15	88
755+00.00	25	86		15	88
755+50.00	27	87		17	88
756+00.00	27	87		16	88
756+50.00	33	88	5	20	88
757+00.00	43	87	10	31	88
757+50.00	43	87	13	32	88
758+00.00	42	88	9	25	88
758+50.00	40	88	1	20	88
759+00.00	36	88		15	88
759+50.00	35	88		13	88
760+00.00	23	84	1	12	88
760+14.30	4	23		3	25
760+64.30	7	42		6	44
TOTAL	**7310**	**8039**	**4755**	**3275**	**9293**

CSAH 90 - EARTHWORK TABULATION B					
STATION	EXCAVATION TOTALS (EV)		EMBANKMENT TOTALS (CV)		
			COMMON		
	COMMON	SUBGRADE	SELECT GRADING	SLOPE DRESSING	SELECT GRANULAR
EB CSAH 90 (WB CSAH 90)	CU YD	CU YD	CU YD	CU YD	CU YD
608+40.00					
608+50.00	56			6	
609+00.00	279			34	
609+50.00	280			37	
610+00.00	175	56	2	30	56
610+50.00	61	112	6	19	112
611+00.00	49	111	7	19	112
611+50.00	74	107	7	29	111
612+00.00	118	97	86	45	108
612+50.00	122	81	167	54	99
613+00.00	101	70	162	54	94
613+50.00	97	75	153	47	108
613+75.25	61	49	86	22	68
615+49.74	671	202	1289	243	536
616+00.00	242	5	511	94	135
616+50.00	229	8	449	98	105
617+00.00	224	21	410	100	99
617+50.00	157	43	217	78	103
618+00.00	87	67	26	46	109
618+50.00	59	88	7	30	111
619+00.00	42	103	7	26	112
619+50.00	60	110	5	34	112
620+00.00	109	56	2	34	56
620+50.00	75			15	
TOTAL	**3428**	**1461**	**3599**	**1194**	**2346**

CLEARING & GRUBBING G

ALIGNMENT	STATION TO STATION	CLEARING ACRE	GRUBBING ACRE
SP 0704-108 (TH 22) NHPP FUNDS			
FENCE 2	100+00 TO 126+62		
SP 0704-108 (TH 22) NHPP FUNDS TOTAL			
PROJECT TOTALS			

TRAFFIC BARRIER N

ALIGNMENT	STATION TO STATION	TRAFFIC BARRIER DESIGN 8331 LIN FT	TRAFFIC BARRIER DESIGN TYPE 31 LIN FT	ANCHORAGE ASSEMBLY - CABLE EACH	ANCHORAGE ASSEMBLY - TYPE 31 EACH
SP 0704-108 (TH 22) NHPP FUNDS					
NB TH 22	631+69 TO 717+00				
SP 0704-108 (TH 22) NHPP FUNDS TOTAL					
PROJECT TOTALS					

REMOVALS, SAWING, AND MILLING H

ALIGNMENT	STATION TO STATION	REMOVE CABLE GUARDRAIL LIN FT	REMOVE GUARDRAIL-PLATE BEAM LIN FT	REMOVE UNDERGROUND WIRE LIN FT	REMOVE RIGID STEEL CONDUIT LIN FT	REMOVE BARBED WIRE FENCE LIN FT	REMOVE DIRECT BURIED LIGHTING CABLE LIN FT	REMOVE BITUMINOUS WALK SQ FT	REMOVE PAVEMENT SQ YD	REMOVE BITUMINOUS PAVEMENT SQ YD	REMOVE ANCHORAGE ASSEMBLY-CABLE EACH	REMOVE EQUIPMENT PAD EACH	REMOVE LIGHT FOUNDATION EACH
SP 0704-108 (TH 22) NHPP FUNDS													
FENCE 1	60+00 TO 73+46												
FENCE 2	100+00 TO 126+62												
NB TH 22	631+69 TO 717+00												
NB TH 22	717+00 TO 723+50												
NB TH 22	734+00 TO 760+14												
SP 0704-108 (TH 22) NHPP FUNDS TOTAL													
SP 0704-108 (TH 22) HSIP FUNDS													
NB TH 22	723+50 TO 734+00												
SP 0704-108 (TH 22) HSIP FUNDS TOTAL													
SP 007-070-005 (CSAH 90) HSIP FUNDS													
EB CSAH 90	608+40 TO 613+76												
EB CSAH 90	615+09 TO 620+00												
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL													
PROJECT TOTALS													

REMOVALS, SAWING, AND MILLING H

ALIGNMENT	STATION TO STATION	REMOVE SERVICE CABINET EACH	REMOVE ENERGY ABSORBING TERMINAL EACH	REMOVE FLASHER SYSTEM LUMP SUM	SAWING CONCRETE PAVEMENT (FULL DEPTH) LIN FT	SAWING BIT PAVEMENT (FULL DEPTH) LIN FT	SALVAGE LIGHTING UNIT EACH	MILL BITUMINOUS SURFACE (2.0") SQ YD	RELOCATE MAIL BOX SUPPORT EACH
SP 0704-108 (TH 22) NHPP FUNDS									
FENCE 1	60+00 TO 73+46								
FENCE 2	100+00 TO 126+62								
NB TH 22	631+69 TO 717+00								
NB TH 22	717+00 TO 723+50								
NB TH 22	734+00 TO 760+14								
SP 0704-108 (TH 22) NHPP FUNDS TOTAL									
SP 0704-108 (TH 22) HSIP FUNDS									
NB TH 22	723+50 TO 734+00								
SP 0704-108 (TH 22) HSIP FUNDS TOTAL									
SP 007-070-005 (CSAH 90) HSIP FUNDS									
EB CSAH 90	608+40 TO 613+76								
EB CSAH 90	615+09 TO 620+00								
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL									
PROJECT TOTALS									

AGGREGATE AND BITUMINOUS SUMMARY — J

ALIGNMENT	STATION TO STATION	(J-1) AGGREGATE SURFACING (CV) CLASS 1 CU YD	AGGREGATE BASE (CV) CLASS 5Q CU YD	TYPE SP 9.5 WEARING COURSE MIX (3,E) TON	TYPE SP 12.5 WEARING COURSE MIX (3,B) TON	TYPE SP 12.5 WEARING COURSE MIX (4,C) TON	TYPE SP 12.5 WEARING COURSE MIX (4,E) TON	TYPE SP 12.5 NON WEAR COURSE MIX (4,B) TON
SP 0704-108 (TH 22) NHPP FUNDS								
FENCE 1	60+00 TO 73+46							
FENCE 2	100+00 TO 126+62							
NB TH 22	631+69 TO 717+00							
NB TH 22	717+00 TO 723+50							
NB TH 22	734+00 TO 760+14							
SP 0704-108 (TH 22) NHPP FUNDS TOTAL								
SP 0704-108 (TH 22) HSIP FUNDS								
NB TH 22	723+50 TO 734+00							
SP 0704-108 (TH 22) HSIP FUNDS TOTAL								
SP 007-070-005 (CSAH 90) HSIP FUNDS								
EB CSAH 90	608+40 TO 613+76							
EB CSAH 90	615+09 TO 620+00							
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL								
PROJECT TOTALS								

NOTES:
(J-1) INCLUDES AGGREGATE DRIVEWAYS AND SHOULDER RESTORATION

CURB & GUTTER AND WALKS — K

ALIGNMENT	STATION TO STATION	(K-1) 6" CONCRETE WALK SQ FT	(K-2) CONCRETE CURB & GUTTER DESIGN SPECIAL LIN FT	CONCRETE CURB & GUTTER DESIGN B424 LIN FT	CONCRETE CURB & GUTTER DESIGN B624 LIN FT	CONCRETE CURB & GUTTER DESIGN S524 LIN FT	TRUNCATED DOMES SQ FT
SP 0704-108 (TH 22) HSIP FUNDS							
NB TH 22	723+50 TO 734+00						
SP 0704-108 (TH 22) HSIP FUNDS TOTAL							
SP 007-070-005 (CSAH 90) HSIP FUNDS							
EB CSAH 90	608+40 TO 613+76						
EB CSAH 90	615+09 TO 620+00						
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL							
PROJECT TOTALS							

NOTES:
(K-1) INCLUDES MEDIAN NOSES AND PEDESTRIAN RAMPS
(K-2) SEE MISCELLANEOUS DETAILS

FENCING — P

ALIGNMENT	STATION TO STATION	FENCING SPECIAL SQ YD
SP 0704-108 (TH 22) NHPP FUNDS		
FENCE 1	60+00 TO 73+46	
FENCE 2	100+00 TO 126+62	
SP 0704-108 (TH 22) NHPP FUNDS TOTAL		
PROJECT TOTALS		

SUBDRAIN TABULATION — Q

ALIGNMENT	STATION TO STATION	4" PRECAST CONCRETE HEADWALL EACH	4" PERF TP PIPE DRAIN LIN FT	4" PERF PE PIPE DRAIN LIN FT
SP 0704-108 (TH 22) NHPP FUNDS				
NB TH 22	717+00 TO 723+50			
NB TH 22	734+00 TO 760+14			
SP 0704-108 (TH 22) NHPP FUNDS TOTAL				
SP 0704-108 (TH 22) HSIP FUNDS				
NB TH 22	723+50 TO 734+00			
SP 0704-108 (TH 22) HSIP FUNDS TOTAL				
SP 007-070-005 (CSAH 90) HSIP FUNDS				
EB CSAH 90	608+40 TO 613+76			
EB CSAH 90	615+09 TO 620+00			
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL				
PROJECT TOTALS				

CONCRETE PAVEMENT, REINFORCEMENT, AND JOINT SUMMARY — L

ALIGNMENT	STATION TO STATION	CONCRETE PAVEMENT 8.0" SQ YD	SUPPLEMENTAL PAVEMENT REINFORCEMENT POUND	DOWEL BAR EACH
SP 0704-108 (TH 22) NHPP FUNDS				
NB TH 22	717+00 TO 723+50			
NB TH 22	734+00 TO 760+14			
SP 0704-108 (TH 22) NHPP FUNDS TOTAL				
SP 0704-108 (TH 22) HSIP FUNDS				
NB TH 22	723+50 TO 734+00			
SP 0704-108 (TH 22) HSIP FUNDS TOTAL				
SP 007-070-005 (CSAH 90) HSIP FUNDS				
EB CSAH 90	608+40 TO 613+76			
EB CSAH 90	615+09 TO 620+00			
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL				
PROJECT TOTALS				

TURF ESTABLISHMENT/EROSION CONTROL

M

ALIGNMENT	STATION TO STATION	SILT FENCE, TYPE MS	STORM DRAIN INLET PROTECTION	SEDIMENT CONTROL LOG TYPE STRAW	CULVERT END CONTROLS	FERTILIZER TYPE 3	SOIL BED PREPARATION	SEEDING	SEED MIXTURE 35-241	MULCH MATERIAL TYPE 3	DISK ANCHORING	EROSION CONTROL BLANKETS CATEGORY 3N	RAPID STABILIZATION METHOD 3
		LIN FT	EACH	LIN FT	EACH	POUND	ACRE	ACRE	POUND	TON	ACRE	SQ YD	M GALLON
SP 0704-108 (TH 22) NHPP FUNDS													
FENCE 1	60+00 TO 73+46												
FENCE 2	100+00 TO 126+62												
NB TH 22	631+69 TO 717+00												
NB TH 22	717+00 TO 723+50												
NB TH 22	734+00 TO 760+14												
SP 0704-108 (TH 22) NHPP FUNDS TOTAL													
SP 0704-108 (TH 22) HSIP FUNDS													
NB TH 22	723+50 TO 734+00												
SP 0704-108 (TH 22) HSIP FUNDS TOTAL													
SP 007-070-005 (CSAH 90) HSIP FUNDS													
EB CSAH 90	608+40 TO 613+76												
EB CSAH 90	615+09 TO 620+00												
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL													
PROJECT TOTALS													

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

TABULATIONS
TH 22 & CSAH 90

EXISTING UTILITIES (BENCO ELECTRIC) C

ALIGNMENT	LOCATION		INPLACE ITEM	REMARKS			NOTES
	STATION	OFFSET		LEAVE AS IS	ADJUST	RELOCATE	
NB TH 22	625+22 TO 638+17	63' LT TO 108' LT	OH POWER	X			
NB TH 22	626+01	61' LT	POWER POLE	X			
NB TH 22	629+10	66' LT	POWER POLE	X			
NB TH 22	635+09	109' LT	POWER POLE	X			
NB TH 22	638+17	108' LT	POWER POLE	X			
NB TH 22	668+56 TO 668+72	192' LT TO 231' LT	BURIED POWER	X			
NB TH 22	668+77 TO 668+80	244' LT TO 254' LT	BURIED POWER	X			
NB TH 22	671+96 TO 672+75	243' RT TO 203' LT	BURIED POWER	X			
NB TH 22	686+12 TO 693+51	155' LT TO 116' LT	BURIED POWER	X			
NB TH 22	688+56 TO 708+95	182' RT TO 175' RT	BURIED POWER	X			
NB TH 22	690+42 TO 690+56	136' RT TO 74' RT	BURIED POWER	X			
NB TH 22	690+51 TO 690+56	77' LT TO 73' RT	BURIED POWER	X			
NB TH 22	690+51	77' LT	ELEC PED	X			
NB TH 22	690+56	74' RT	ELEC PED	X			
NB TH 22	692+44 TO 692+70	163' RT TO 66' RT	BURIED POWER	X			
NB TH 22	692+70	66' RT	TRANSFORMER	X			
NB TH 22	697+31 TO 726+15	132' LT TO 88' LT	BURIED POWER	X			
NB TH 22	701+42	94' LT	ELEC PED	X			
NB TH 22	703+88	77' LT	ELEC PED	X			
NB TH 22	703+88 TO 704+03	77' LT TO 140' LT	BURIED POWER	X			
NB TH 22	705+11 TO 705+41	74' RT TO 130' LT	BURIED POWER	X			
NB TH 22	705+13	75' RT	ELEC PED	X			
NB TH 22	705+23	75' RT	TRANSFORMER	X			
NB TH 22	705+26 TO 705+30	76' LT TO 132' LT	BURIED POWER	X			
NB TH 22	705+26	76' LT	TRANSFORMER	X			
NB TH 22	705+40 TO 705+81	228' RT TO 88' RT	BURIED POWER	X			
NB TH 22	709+58 TO 709+62	81' LT TO 128' LT	BURIED POWER	X			
NB TH 22	709+58	81' LT	TRANSFORMER	X			
NB TH 22	709+62	128' LT	TRANSFORMER	X			
NB TH 22	709+62	126' LT	ELEC PED	X			
NB TH 22	709+62	132' LT	ELEC METER	X			
NB TH 22	712+23 TO 716+39	123' RT TO 241' RT	BURIED POWER	X			
NB TH 22	714+38 TO 714+76	70' RT TO 76' LT	BURIED POWER	X			
NB TH 22	714+38	70' RT	ELEC PED	X			
NB TH 22	714+50 TO 714+55	156' RT TO 72' RT	BURIED POWER	X			
NB TH 22	714+55 TO 720+35	72' RT TO 66' RT	OH POWER	X			
NB TH 22	714+55	72' RT	POWER POLE	X			
NB TH 22	714+76	76' LT	TRANSFORMER	X			
NB TH 22	717+42	76' RT	POWER POLE	X			
NB TH 22	718+63	70' RT	POWER POLE	X			
NB TH 22	720+03 TO 720+35	165' RT TO 66' RT	BURIED POWER	X			
NB TH 22	720+35	66' RT	POWER POLE	X			
NB TH 22	720+78 TO 722+67	150' LT TO 83' LT	BURIED POWER	X			
NB TH 22	722+67 TO 727+59	83' LT TO 140' LT	BURIED POWER	X			
NB TH 22	722+67	83' LT	ELEC PED	X			
NB TH 22	726+15 TO 728+73	88' LT TO 178' RT	BURIED POWER			X	
NB TH 22	727+82 TO 730+32	89' LT TO 108' LT	BURIED POWER			X	
NB TH 22	727+82	89' LT	ELEC PED			X	
NB TH 22	727+89	91' LT	TRANSFORMER			X	
NB TH 22	728+73 TO 728+83	178' RT TO 397' RT	BURIED POWER	X			
NB TH 22	728+83 TO 728+90	397' RT TO 1002' RT	BURIED POWER	X			
NB TH 22	730+32 TO 736+35	108' LT TO 91' LT	BURIED POWER			X	
NB TH 22	736+35 TO 751+94	91' LT TO 88' LT	BURIED POWER	X			
NB TH 22	742+38 TO 742+39	85' RT TO 87' LT	BURIED POWER	X			
NB TH 22	742+38 TO 742+39	85' RT TO 220' RT	OH POWER	X			
NB TH 22	742+38 TO 751+49	85' RT TO 76' RT	OH POWER	X			
NB TH 22	744+45	77' RT	POWER POLE	X			
NB TH 22	747+98	76' RT	POWER POLE	X			
NB TH 22	751+49	76' RT	POWER POLE	X			
NB TH 22	751+49 TO 754+45	76' RT TO 77' RT	OH POWER	X			
NB TH 22	751+94 TO 761+72	88' LT TO 66' LT	BURIED POWER	X			
NB TH 22	754+45	77' RT	POWER POLE	X			
NB TH 22	754+45 TO 757+45	77' RT TO 77' RT	OH POWER	X			
NB TH 22	757+45	77' RT	POWER POLE	X			
NB TH 22	757+45 TO 760+47	77' RT TO 77' RT	OH POWER	X			
NB TH 22	760+47	77' RT	POWER POLE	X			

EXISTING UTILITIES (MnDOT) C

ALIGNMENT	LOCATION		INPLACE ITEM	REMARKS			NOTES
	STATION	OFFSET		LEAVE AS IS	ADJUST	RELOCATE	
NB TH 22	727+89 TO 727+91	91' LT TO 89' LT	BURIED POWER			X	(C-1)
NB TH 22	727+91	89' LT	ELEC METER			X	(C-1)
NB TH 22	727+91 TO 727+92	89' LT TO 44' LT	BURIED POWER			X	(C-1)
NB TH 22	727+91 TO 728+09	89' LT TO 81' LT	BURIED POWER			X	(C-1)
NB TH 22	727+92	44' LT	LIGHT POLE			X	(C-1)
NB TH 22	727+92 TO 728+09	44' LT TO 81' LT	BURIED POWER			X	(C-1)
NB TH 22	727+92 TO 728+29	44' LT TO 22' RT	BURIED POWER			X	(C-1)
NB TH 22	728+09	81' LT	POWER POLE			X	(C-1)
NB TH 22	728+29 TO 728+82	22' RT TO 48' RT	BURIED POWER			X	(C-1)
NB TH 22	728+82 TO 729+22	48' RT TO 57' RT	BURIED POWER			X	(C-1)
NB TH 22	729+22 TO 729+39	57' RT TO 25' RT	BURIED POWER			X	(C-1)
NB TH 22	729+39	25' RT	POWER POLE			X	(C-1)
NB TH 22	729+39 TO 729+75	25' RT TO 13' RT	BURIED POWER			X	(C-1)
NB TH 22	729+75	13' RT	LIGHT POLE			X	(C-1)

NOTES:

(C-1) WORK TO BE DONE BY CONTRACTOR

EXISTING UTILITIES (GREATER MINNESOTA GAS) C

ALIGNMENT	LOCATION		INPLACE ITEM	REMARKS			NOTES
	STATION	OFFSET		LEAVE AS IS	ADJUST	RELOCATE	
NB TH 22	688+64 TO 689+01	90' LT TO 64' RT	2" GAS	X			
NB TH 22	688+91 TO 726+47	64' RT TO 69' RT	2" GAS	X			
NB TH 22	690+24 TO 690+27	66' RT TO 93' RT	2" GAS	X			
NB TH 22	692+37 TO 692+59	126' RT TO 55' RT	2" GAS	X			
NB TH 22	692+55 TO 692+79	170' RT TO 56' RT	2" GAS	X			
NB TH 22	692+95 TO 693+03	57' RT TO 24' LT	2" GAS	X			
NB TH 22	695+86 TO 696+17	120' LT TO 66' RT	2" GAS	X			
NB TH 22	701+19 TO 701+52	61' RT TO 213' LT	2" GAS	X			
NB TH 22	704+99 TO 705+01	56' RT TO 104' LT	2" GAS	X			
NB TH 22	705+28 TO 705+45	57' RT TO 130' LT	2" GAS	X			
NB TH 22	710+62 TO 711+30	59' RT TO 237' RT	2" GAS	X			
NB TH 22	712+20	134' RT	GAS MH	X			
NB TH 22	712+22	141' RT	GAS MH	X			
NB TH 22	717+03 TO 717+04	240' RT TO 67' RT	2" GAS	X			
NB TH 22	719+64 TO 719+70	56' RT TO 127' LT	2" GAS	X			
NB TH 22	721+84 TO 721+89	60' RT TO 105' RT	2" GAS	X			
NB TH 22	722+52 TO 723+24	61' RT TO 106' RT	2" GAS	X			
NB TH 22	726+47 TO 728+65	69' RT TO 26' RT	2" GAS			X	
NB TH 22	727+59 TO 727+84	1080' LT TO 202' LT	2" GAS	X			
NB TH 22	727+84 TO 728+72	202' LT TO 49' RT	2" GAS			X	
NB TH 22	728+65 TO 731+22	26' RT TO 63' RT	2" GAS			X	
NB TH 22	731+22 TO 741+61	63' RT TO 76' RT	2" GAS	X			
NB TH 22	741+61 TO 741+60	76' RT TO 212' RT	2" GAS	X			

UTILITY OWNERS

THE FOLLOWING LIST SHOWS THE UTILITY COMPANIES INVOLVED WITH THIS PROJECT

BENCO ELECTRIC COOPERATIVE
CHARTER COMMUNICATIONS
CONSOLIDATED COMMUNICATIONS
GREATER MINNESOTA GAS, INC.
MINNESOTA DEPARTMENT OF TRANSPORTATION

GENERAL NOTES:

THE "REMARKS" NOTES ARE BASED UPON THE BEST INFORMATION AVAILABLE AND MAY NOT REFLECT THE ACTUAL EFFECTS ON THE UTILITIES BY CONSTRUCTION. ACTUAL DETERMINATION WILL BE MADE IN THE FIELD DURING CONSTRUCTION.

ALL UTILITY WORK SHOWN ON THESE SHEETS SHALL BE PERFORMED BY OTHERS UNLESS NOTED.

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

THE CONTRACTOR IS HEREBY REMINDED OF HIS RESPONSIBILITY TO CONTACT ALL UTILITIES THAT MAY HAVE FACILITIES IN THE PROJECT AREA.

EXISTING UTILITIES (CONSOLIDATED COMMUNICATIONS) — C

ALIGNMENT	LOCATION: STATION	LOCATION: OFFSET	INPLACE ITEM	REMARKS: LEAVE AS IS	REMARKS: ADJUST	REMARKS: RELOCATE	NOTES
NB TH 22	626+95 TO 647+41	40' LT TO 156' LT	BURIED TEL	X			
NB TH 22	647+26 TO 647+46	88' LT TO 108' RT	BURIED TEL	X			
NB TH 22	647+41 TO 657+45	156' LT TO 241' LT	BURIED TEL	X			
NB TH 22	647+46 TO 671+08	108' RT TO 52' LT	BURIED TEL	X			
NB TH 22	671+08 TO 689+61	52' LT TO 67' LT	BURIED TEL	X			
NB TH 22	671+08 TO 671+57	51' LT TO 212' LT	BURIED TEL	X			
NB TH 22	685+84 TO 689+61	153' LT TO 67' LT	BURIED TEL	X			
NB TH 22	686+29 TO 689+57	116' RT TO 72' RT	BURIED TEL	X			
NB TH 22	686+49	79' RT	TEL PED	X			
NB TH 22	686+65 TO 690+46	96' RT TO 139' RT	BURIED TEL	X			
NB TH 22	689+38 TO 689+57	133' RT TO 72' RT	BURIED TEL	X			
NB TH 22	689+57	72' RT	TEL PED	X			
NB TH 22	689+57 TO 689+61	71' RT TO 61' LT	BURIED TEL	X			
NB TH 22	689+61	67' LT	TEL PED	X			
NB TH 22	689+61 TO 701+07	67' LT TO 214' LT	BURIED TEL	X			
NB TH 22	689+61 TO 692+28	67' LT TO 137' LT	BURIED TEL	X			
NB TH 22	692+32	51' LT	TEL PED	X			
NB TH 22	697+28 TO 714+69	133' LT TO 76' LT	BURIED TEL	X			
NB TH 22	700+70	65' LT	TEL PED	X			
NB TH 22	705+22 TO 705+28	94' LT TO 74' RT	BURIED TEL	X			
NB TH 22	705+22 TO 705+35	94' LT TO 128' LT	BURIED TEL	X			
NB TH 22	705+22 TO 705+36	94' LT TO 128' LT	BURIED TEL	X			
NB TH 22	705+22 TO 705+36	94' LT TO 128' LT	BURIED TEL	X			
NB TH 22	705+22	94' LT	TEL PED	X			
NB TH 22	705+22 TO 705+29	94' LT TO 74' RT	BURIED TEL	X			
NB TH 22	705+22 TO 705+37	94' LT TO 128' LT	BURIED TEL	X			
NB TH 22	705+22 TO 705+38	94' LT TO 127' LT	BURIED TEL	X			
NB TH 22	705+29	74' RT	TEL PED	X			
NB TH 22	705+29 TO 723+39	74' RT TO 121' RT	BURIED TEL	X			
NB TH 22	705+29 TO 705+46	74' RT TO 230' RT	BURIED TEL	X			
NB TH 22	711+66	73' RT	TEL PED	X			
NB TH 22	714+48	70' RT	TEL PED	X			
NB TH 22	714+48 TO 716+41	70' RT TO 163' RT	BURIED TEL	X			
NB TH 23	714+48 TO 714+69	70' RT TO 76' LT	BURIED TEL	X			
NB TH 22	714+64 TO 714+69	114' LT TO 76' LT	BURIED TEL	X			
NB TH 22	714+69	76' LT	TEL PED	X			
NB TH 22	719+74 TO 727+74	223' LT TO 205' LT	BURIED FIBER	X			
NB TH 22	719+79	77' LT	TEL MH	X			
NB TH 22	719+79	80' LT	TEL PED	X			
NB TH 22	720+73 TO 727+76	64' RT TO 186' LT	BURIED TEL	X			
NB TH 22	720+74	64' RT	TEL PED	X			
NB TH 22	720+80	82' LT	TEL PED	X			
NB TH 22	720+80 TO 720+97	82' LT TO 128' LT	BURIED TEL	X			
NB TH 22	721+05	82' LT	TEL PED	X			
NB TH 22	722+72	81' LT	TEL PED	X			
NB TH 22	727+71 TO 730+25	1092' LT TO 244' LT	BURIED FIBER	X			
NB TH 22	727+74 TO 729+68	205' LT TO 45' RT	BURIED FIBER			X	
NB TH 22	727+76 TO 730+91	186' LT TO 66' RT	BURIED TEL			X	
NB TH 22	727+84 TO 730+25	209' LT TO 244' LT	BURIED FIBER			X	
NB TH 22	728+99 TO 729+13	977' RT TO 174' RT	BURIED FIBER	X			
NB TH 22	729+13 TO 729+68	174' RT TO 45' RT	BURIED FIBER			X	
NB TH 22	730+22 TO 730+69	220' LT TO 698' LT	BURIED FIBER	X			
NB TH 22	730+22 TO 730+41	220' LT TO 220' LT	BURIED FIBER			X	
NB TH 22	730+41	220' LT	TEL MH			X	
NB TH 22	730+44	220' LT	TEL PED			X	
NB TH 22	730+84	67' RT	TEL PED			X	
NB TH 22	730+97 TO 751+75	68' RT TO 52' RT	BURIED FIBER	X			
NB TH 22	742+37 TO 742+37	71' RT TO 220' RT	BURIED FIBER	X			
NB TH 22	743+28	73' RT	TEL PED	X			
NB TH 22	743+52	74' RT	TEL PED	X			
NB TH 22	749+63	67' RT	TEL PED	X			
NB TH 22	751+75 TO 761+25	52' RT TO 53' RT	BURIED FIBER	X			

EXISTING UTILITIES (CHARTER COMMUNICATIONS) — C

ALIGNMENT	LOCATION: STATION	LOCATION: OFFSET	INPLACE ITEM	REMARKS: LEAVE AS IS	REMARKS: ADJUST	REMARKS: RELOCATE	NOTES
NB TH 22	686+09 TO 692+65	144' LT TO 66' RT	BURIED TV	X			
NB TH 22	686+38 TO 686+66	122' RT TO 110' RT	BURIED TV	X			
NB TH 22	686+63 TO 725+89	102' RT TO 76' RT	BURIED TV	X			
NB TH 22	686+63	102' RT	TV PED	X			
NB TH 22	690+41 TO 690+50	132' RT TO 73' RT	BURIED TV	X			
NB TH 22	690+50	73' RT	TV PED	X			
NB TH 22	692+32 TO 692+56	51' LT TO 106' LT	BURIED TV	X			
NB TH 22	692+41 TO 692+65	159' RT TO 66' RT	BURIED TV	X			
NB TH 22	692+65	66' RT	TV PED	X			
NB TH 22	697+22 TO 701+42	132' LT TO 104' LT	BURIED TV	X			
NB TH 22	697+31	54' LT	TV PED	X			
NB TH 22	698+52	55' LT	TV PED	X			
NB TH 22	701+27 TO 701+42	70' RT TO 104' LT	BURIED TV	X			
NB TH 22	701+27	70' RT	TV PED	X			
NB TH 22	701+42 TO 701+60	104' LT TO 213' LT	BURIED TV	X			
NB TH 22	705+17 TO 705+29	73' RT TO 132' LT	BURIED TV	X			
NB TH 22	705+18	73' RT	TV PED	X			
NB TH 22	710+63 TO 710+64	54' RT TO 116' RT	BURIED TV	X			
NB TH 22	710+63 TO 711+64	54' RT TO 73' RT	BURIED TV	X			
NB TH 22	711+64	73' RT	TV PED	X			
NB TH 22	711+71 TO 711+98	53' RT TO 140' LT	BURIED TV	X			
NB TH 22	712+22 TO 720+74	123' RT TO 64' RT	BURIED TV	X			
NB TH 22	714+53	71' RT	TV PED	X			
NB TH 22	714+53 TO 716+40	71' RT TO 164' RT	BURIED TV	X			
NB TH 22	720+25 TO 720+30	169' RT TO 65' RT	BURIED TV	X			
NB TH 22	720+30	65' RT	TV PED	X			
NB TH 22	720+30 TO 720+63	65' RT TO 84' RT	BURIED TV	X			
NB TH 22	725+89 TO 726+07	76' RT TO 81' LT	BURIED TV	X			
NB TH 22	725+89 TO 730+97	76' RT TO 67' RT	TV FIBER			X	
NB TH 22	725+89	76' RT	TV PED	X			
NB TH 22	726+07 TO 730+32	81' LT TO 109' LT	BURIED TV			X	
NB TH 22	729+28 TO 730+55	38' RT TO 62' RT	TV FIBER			X	
NB TH 22	730+32 TO 736+91	109' LT TO 93' LT	TV FIBER			X	
NB TH 22	730+97 TO 751+75	67' RT TO 51' RT	TV FIBER	X			
NB TH 22	736+91 TO 751+94	93' LT TO 80' LT	TV FIBER	X			
NB TH 22	742+13 TO 742+15	88' RT TO 83' LT	TV FIBER	X			
NB TH 22	743+59	75' LT	TV PED	X			
NB TH 22	751+75 TO 761+26	51' RT TO 47' RT	TV FIBER	X			
NB TH 22	751+94 TO 761+73	80' LT TO 78' LT	TV FIBER	X			

EXISTING SANITARY SEWER — D

ALIGNMENT	LOCATION: STATION	LOCATION: OFFSET	EXISTING ITEM	LEAVE AS IS	NOTES
NB TH 22	684+31	146' RT	SAN MH	X	
NB TH 22	687+74	207' RT	SAN MH	X	
NB TH 22	691+42	102' RT	SAN MH	X	
NB TH 22	719+26	218' LT	SAN MH	X	

EXISTING WATERMAIN — E

ALIGNMENT	LOCATION: STATION	LOCATION: OFFSET	EXISTING ITEM	LEAVE AS IS	NOTES
NB TH 22	643+30	156' LT	WELL	X	

SEE SHEET 16 FOR GENERAL NOTES

EXISTING DRAINAGE ITEMS

F

ALIGNMENT	LOCATION		EXISTING ITEM	LEAVE AS IS	REMOVE				NOTES
	STATION	OFFSET			PIPE CULVERTS	SEWER PIPE (STORM)	PIPE APRON	DRAINAGE STRUCTURE	
					LIN FT	LIN FT	EACH	EACH	
NB TH 22	633+83 TO 634+61	35' LT TO 36' LT	24" CSP		77				
NB TH 22	633+83	36' LT	24" CSP APRON				1		
NB TH 22	634+61	36' LT	24" CSP APRON				1		
NB TH 22	637+80 TO 638+40	37' LT TO 36' LT	24" CSP	X					
NB TH 22	637+80	37' LT	24" CSP APRON	X					
NB TH 22	638+40	36' LT	24" CSP APRON	X					
NB TH 22	638+87 TO 640+25	35' LT TO 94' LT	24" CSP	X					
NB TH 22	638+87	35' LT	24" CSP APRON	X					
NB TH 22	643+35 TO 643+68	135' LT TO 167' LT	15" CSP	X					
NB TH 22	643+35	135' LT	DROP INLET	X					
NB TH 22	644+89 TO 645+43	75' LT TO 105' LT	12" RCP	X					
NB TH 22	646+76 TO 646+76	50' RT TO 43' LT	BOX CULVERT	X					
NB TH 22	646+79	50' RT	72" RCP APRON	X					
NB TH 22	646+79	44' LT	72" RCP APRON	X					
NB TH 22	654+10 TO 654+11	35' LT TO 72' RT	36" CSP	X					
NB TH 22	654+10	35' LT	36" CSP APRON	X					
NB TH 22	656+73 TO 657+42	46' RT TO 45' RT	15" CSP	X					
NB TH 22	656+86 TO 657+40	42' LT TO 41' LT	18" CSP	X					
NB TH 22	662+16	53' LT	STORM MANHOLE	X					
NB TH 22	662+17	55' RT	STORM MANHOLE	X					
NB TH 22	665+84 TO 666+35	46' RT TO 50' RT	18" CSP	X					
NB TH 22	665+84	46' RT	18" CSP APRON	X					
NB TH 22	666+35	50' RT	18" CSP APRON	X					
NB TH 22	667+57 TO 667+62	52' RT TO 54' LT	24" CSP	X					
NB TH 22	667+62	54' LT	24" CSP APRON	X					
NB TH 22	670+05 TO 671+36	72' LT TO 38' LT	15" CSP	X					
NB TH 22	670+05	72' LT	15" CSP APRON	X					
NB TH 22	672+17 TO 672+17	36' RT TO 24' RT	12" PVC		12				
NB TH 22	672+17	36' RT	12" CSP APRON				1		
NB TH 22	672+17	24' RT	DROP INLET					1	
NB TH 22	676+06	61' LT	42" RCP APRON	X					
NB TH 22	676+06 TO 676+07	61' LT TO 61' RT	42" CSP	X					
NB TH 22	676+07	60' RT	DROP INLET	X					
NB TH 22	676+07 TO 676+07	81' RT TO 61' RT	42" CSP	X					
NB TH 22	676+08 TO 676+54	60' RT TO 36' RT	24" CSP	X					
NB TH 22	676+54	36' RT	24" CSP APRON	X					
NB TH 22	681+13 TO 681+79	33' RT TO 35' LT	24" CSP	X					
NB TH 22	689+00 TO 689+69	38' RT TO 38' RT	18" CSP	X					
NB TH 22	689+00	38' RT	18" CSP APRON	X					
NB TH 22	689+06 TO 689+64	39' LT TO 40' LT	18" CSP	X					
NB TH 22	689+06	39' LT	18" CSP APRON	X					
NB TH 22	689+64	40' LT	18" CSP APRON	X					
NB TH 22	689+69	38' RT	18" CSP APRON	X					
NB TH 22	695+27	77' LT	30" CSP APRON				1		
NB TH 22	695+27 TO 695+61	77' LT TO 62' RT	30" CSP	X					
NB TH 22	695+51 TO 695+52	123' RT TO 93' RT	15" CSP	X					
NB TH 22	695+51	123' RT	15" CSP APRON	X					
NB TH 22	695+52	93' RT	15" CSP APRON	X					
NB TH 22	695+62	62' RT	DROP INLET					1	
NB TH 22	696+91 TO 697+32	44' LT TO 43' LT	15" CSP	X					
NB TH 22	700+64 TO 701+18	38' RT TO 38' RT	18" CSP	X					
NB TH 22	700+64	38' RT	18" CSP APRON	X					
NB TH 22	701+18	38' RT	18" CSP APRON	X					
NB TH 22	703+91 TO 704+29	50' LT TO 49' LT	18" CSP	X					
NB TH 22	704+29	49' LT	18" CSP APRON	X					
NB TH 22	705+31 TO 705+87	39' RT TO 38' RT	18" CSP	X					
NB TH 22	705+32	39' RT	18" CSP APRON	X					
NB TH 22	705+87	39' RT	18" CSP APRON	X					
NB TH 22	708+29 TO 708+70	44' LT to 44' LT	18" CSP	X					
NB TH 22	710+55 TO 711+16	40' RT TO 39' RT	18" CSP	X					
NB TH 22	710+55	40' RT	18" CSP APRON	X					
NB TH 22	710+80 TO 711+42	39' LT TO 41' LT	18" CSP	X					
NB TH 22	710+80	39' LT	18" CSP APRON	X					
NB TH 22	711+16	39' RT	18" CSP APRON	X					
NB TH 22	711+42	41' LT	18" CSP APRON	X					
NB TH 22	712+59	55' RT	DROP INLET	X					
NB TH 22	712+64 TO 712+73	55' RT TO 52' LT	84" RCP	X					

SEE SHEET 16 FOR GENERAL NOTES

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

INPLACE UTILITY TABULATIONS

TH 22 & CSAH 90

EXISTING DRAINAGE ITEMS

F

ALIGNMENT	LOCATION		EXISTING ITEM	LEAVE AS IS	REMOVE				NOTES
	STATION	OFFSET			PIPE CULVERTS	SEWER PIPE (STORM)	PIPE APRON	DRAINAGE STRUCTURE	
					LIN FT	LIN FT	EACH	EACH	
NB TH 22	714+90 TO 714+91	38' LT TO 60' LT	12" SCP	X					
NB TH 22	714+91	60' LT	DROP INLET	X					
NB TH 22	714+91 TO 714+93	60' LT TO 120' LT	12" SCP	X					
NB TH 22	717+20 TO 717+21	80' RT TO 120' RT	15" CSP	X					
NB TH 22	717+30 TO 717+96	64' LT TO 64' LT	12" SCP	X					
NB TH 22	717+96	64' LT	DROP INLET	X					
NB TH 22	717+96 TO 718+52	64' LT TO 70' LT	12" SCP	X					
NB TH 22	718+00 TO 718+02	45' RT TO 58' LT	24" RCP		103				
NB TH 22	718+00	45' RT	24" RCP APRON				1		
NB TH 22	718+02	58' LT	24" RCP APRON				1		
NB TH 22	718+06 TO 718+83	52' RT TO 51' RT	18" CSP		77				
NB TH 22	718+06	52' RT	18" CSP APRON				1		
NB TH 22	718+83	51' RT	18" CSP APRON				1		
NB TH 22	718+96 TO 718+96	134' LT TO 83' LT	DRAIN TILE	X					
NB TH 22	718+96 TO 718+97	83' LT TO 67' RT	DRAIN TILE			150			
NB TH 22	718+97 TO 718+97	67' RT TO 116' RT	DRAIN TILE	X					
NB TH 22	720+96 TO 721+63	59' LT TO 59' LT	18" CSP		68				
NB TH 22	720+96	59' LT	18" CSP APRON				1		
NB TH 22	721+63	59' LT	18" CSP APRON				1		
NB TH 22	721+75 TO 722+37	47' RT TO 47' RT	18" CSP		62				
NB TH 22	721+75	47' RT	18" CSP APRON				1		
NB TH 22	722+37	47' RT	18" CSP APRON				1		
NB TH 22	728+01 TO 729+82	80' LT TO 101' LT	24" RCP		107				
NB TH 22	728+01	80' LT	24" RCP APRON				1		
NB TH 22	728+91 TO 728+91	619' RT TO 675' RT	18" CSP	X					
NB TH 22	728+91	619' RT	18" CSP APRON	X					
NB TH 22	728+91	675' RT	18" CSP APRON	X					
NB TH 22	729+01 TO 729+02	525' RT TO 470' RT	18" CSP	X					
NB TH 22	729+01	525' RT	18" CSP APRON	X					
NB TH 22	729+02	470' RT	18" CSP APRON	X					
NB TH 22	729+82	101' LT	24" RCP APRON				1		
NB TH 22	730+90 TO 737+27	371' LT TO 363' LT	DRAIN TILE	X					(F-1)
NB TH 22	730+90 TO 730+91	371' LT TO 396' LT	DRAIN TILE	X					(F-1)
NB TH 22	730+91 TO 731+10	396' LT TO 720' LT	DRAIN TILE	X					(F-1)
NB TH 22	730+93 TO 737+44	421' LT TO 413' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+04 TO 731+10	278' LT TO 368' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+04 TO 733+01	278' LT TO 163' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+07 TO 739+72	318' LT TO 313' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+10 TO 731+49	720' LT TO 715' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+11 TO 731+23	743' LT TO 1089' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+13 TO 731+25	418' LT TO 692' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+13 TO 739+72	267' LT TO 263' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+15 TO 737+27	468' LT TO 463' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+18 TO 731+43	518' LT TO 515' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+20 TO 731+45	567' LT TO 565' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+22 TO 731+46	617' LT TO 615' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+22 TO 731+57	1068' LT TO 1064' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+24 TO 731+48	667' LT TO 665' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+27 TO 731+51	767' LT TO 764' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+27 TO 731+35	767' LT TO 1066' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+29 TO 731+52	817' LT TO 814' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+30 TO 731+53	867' LT TO 864' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+32 TO 731+54	917' LT TO 914' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+33 TO 731+55	967' LT TO 964' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+34 TO 731+56	1017' LT TO 1014' LT	DRAIN TILE	X					(F-1)
NB TH 22	731+57 TO 739+72	214' LT TO 213' LT	DRAIN TILE	X					(F-1)
NB TH 22	733+01 TO 739+72	163' LT TO 163' LT	DRAIN TILE	X					(F-1)
NB TH 22	736+92 TO 741+47	113' LT TO 113' LT	DRAIN TILE	X					(F-1)
NB TH 22	736+92 TO 736+92	113' LT TO 163' LT	DRAIN TILE	X					(F-1)
NB TH 22	737+44 TO 738+20	413' LT TO 486' LT	DRAIN TILE	X					(F-1)
NB TH 22	737+44 TO 737+63	468' LT TO 486' LT	DRAIN TILE	X					(F-1)
NB TH 22	737+52 TO 737+52	336' LT TO 421' LT	DRAIN TILE	X					(F-1)
NB TH 22	738+02 TO 738+02	333' LT TO 468' LT	DRAIN TILE	X					(F-1)
NB TH 22	738+52 TO 738+52	341' LT TO 485' LT	DRAIN TILE	X					(F-1)

SEE SHEET 16 FOR GENERAL NOTES

NOTES:

(F-1) OWNED BY PIONEER SEED

EXISTING DRAINAGE ITEMS — F

ALIGNMENT	LOCATION		EXISTING ITEM	LEAVE AS IS	REMOVE				NOTES
	STATION	OFFSET			PIPE CULVERTS	SEWER PIPE (STORM)	PIPE APRON	DRAINAGE STRUCTURE	
					LIN FT	LIN FT	EACH	EACH	
NB TH 22	739+02 TO 739+02	333' LT TO 485' LT	DRAIN TILE	X					(F-1)
NB TH 22	739+52 TO 739+52	335' LT TO 484' LT	DRAIN TILE	X					(F-1)
NB TH 22	740+02 TO 740+02	138' LT TO 484' LT	DRAIN TILE	X					(F-1)
NB TH 22	740+52 TO 740+52	138' LT TO 483' LT	DRAIN TILE	X					(F-1)
NB TH 22	741+02 TO 741+02	138' LT TO 239' LT	DRAIN TILE	X					(F-1)
NB TH 22	741+52 TO 741+52	138' LT TO 238' LT	DRAIN TILE	X					(F-1)
NB TH 22	741+83 TO 742+30	51' RT TO 51' RT	15" CSP		47				
NB TH 22	741+83	51' RT	15" CSP APRON				1		
NB TH 22	742+30	51' RT	15" CSP APRON				1		
NB TH 22	743+96 TO 744+37	51' RT TO 51' RT	18" CSP		41				
NB TH 22	746+38 TO 746+39	34' RT TO 34' LT	24" RCP		68				
NB TH 22	746+38	34' RT	24" RCP APRON				1		
NB TH 22	746+39	34' LT	24" RCP APRON				1		
NB TH 22	751+91 TO 752+59	48' RT TO 48' RT	18" CSP	X					

SEE SHEET 16 FOR GENERAL NOTES

NOTES:

(F-1) OWNED BY PIONEER SEED

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

INPLACE UTILITY TABULATIONS

TH 22 & CSAH 90

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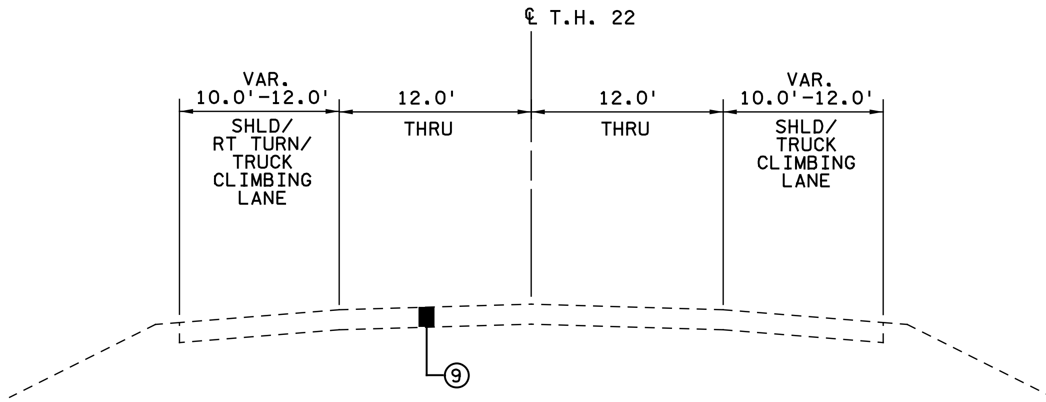
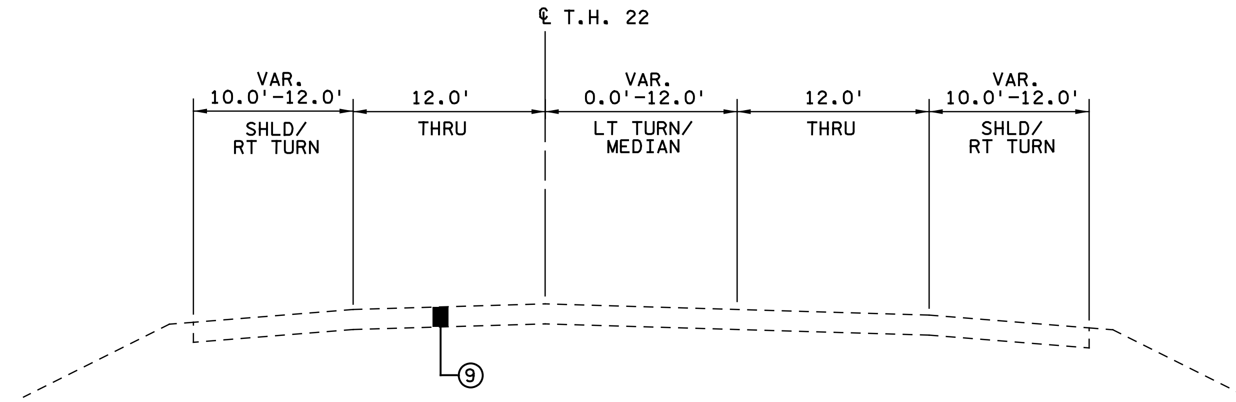


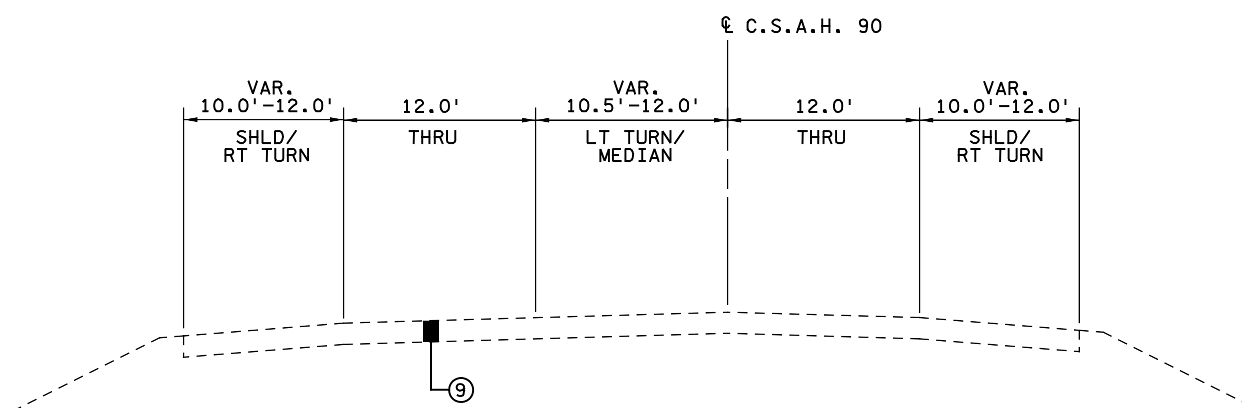
EXISTING T.H. 22

N.B. T.H. 22 STA. 631+69.00 TO STA. 716+41.55
N.B. T.H. 22 STA. 741+40.16 TO STA. 760+14.39



EXISTING T.H. 22

N.B. T.H. 22 STA. 716+41.55 TO STA. 741+40.16



EXISTING C.S.A.H. 90

E.B. C.S.A.H. 90 STA. 608+40.00 TO STA. 620+00.00

NOTES:

9 SEE CONSTRUCTION PLANS AND SOILS NOTES FOR EXISTING PAVEMENT DEPTHS

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Print Name: AMBER E. TRACY

Date ____________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

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MINNESOTA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
TH 22 & CSAH 90

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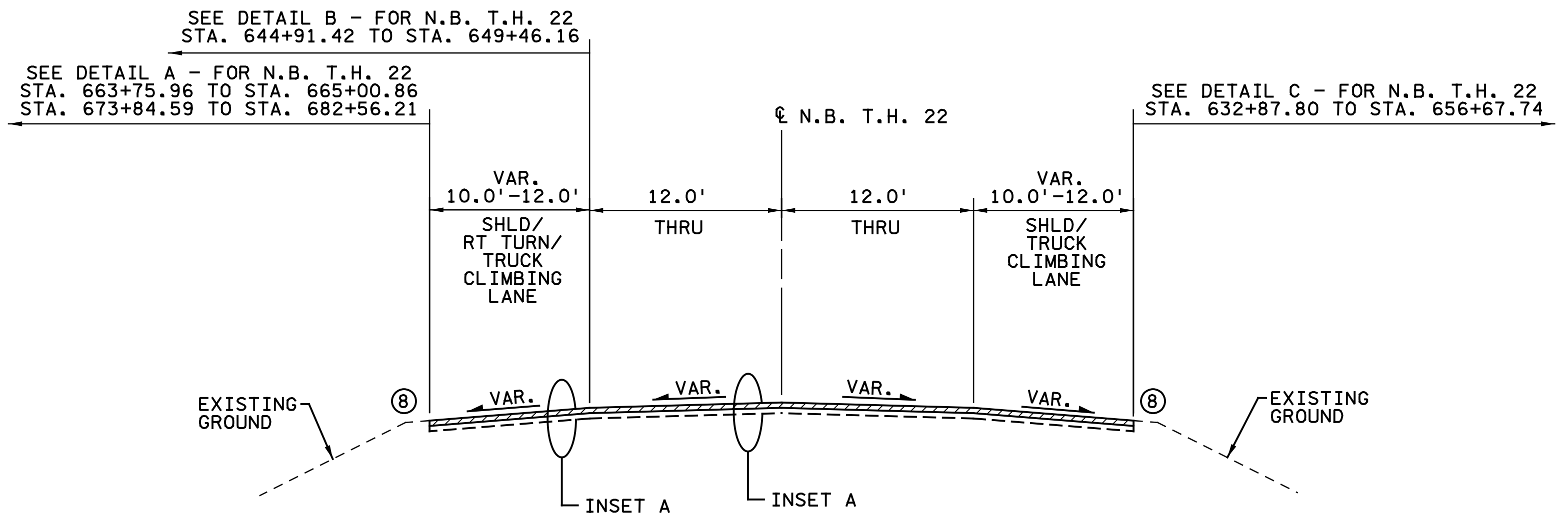
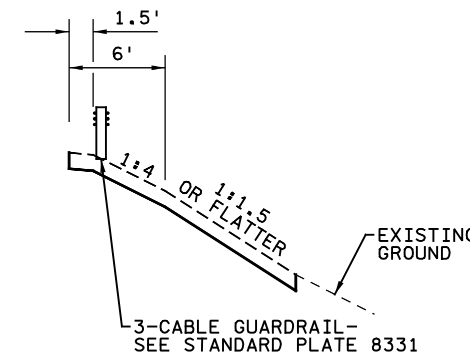


T.H. 22

N.B. T.H. 22 STA. 631+69.00 TO STA. 714+10.00



DETAIL C

N.B. T.H. 22 STA. 632+87.80 TO STA. 656+67.74

GENERAL NOTES:

ALL SLOPES ARE IN FT PER FT

SEE DRAINAGE AND SUPERELEVATION PLANS FOR SUPERELEVATION LOCATIONS

MAXIMUM SHOULDER SUPERELEVATION ROLLOVER SHALL BE 7%

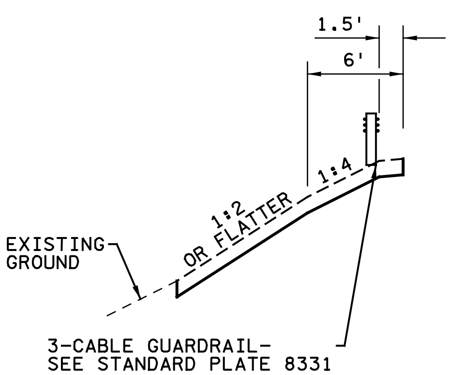
SEE SHEET 27 FOR PAVEMENT INSETS

NOTES:

1 EXCAVATION - SUBGRADE (CUT SECTION ONLY)

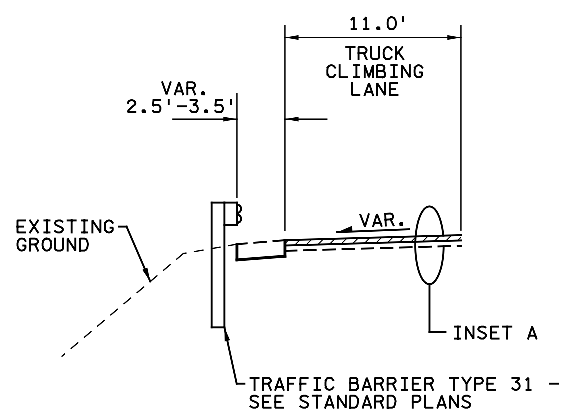
6 4" PERF TP PIPE DRAIN MNDOT SPEC. 2502. USE ON TH 22. SEE DRAINAGE AND SUPERELEVATION PLANS FOR LOCATIONS. SEE MNDOT STD. PLAN 5-297.430 & 5-297.433.

8 CLASS 1 AGGREGATE SURFACING TO RESTORE SHOULDER. 1.0 INCH DEPTH (MINIMUM).



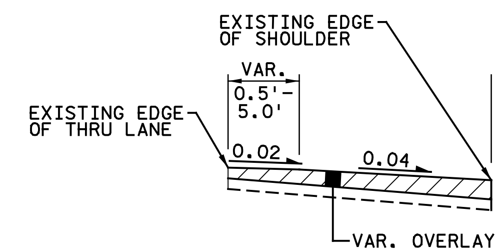
DETAIL A

N.B. T.H. 22 STA. 663+75.96 TO STA. 665+00.86
N.B. T.H. 22 STA. 673+84.59 TO STA. 682+56.21

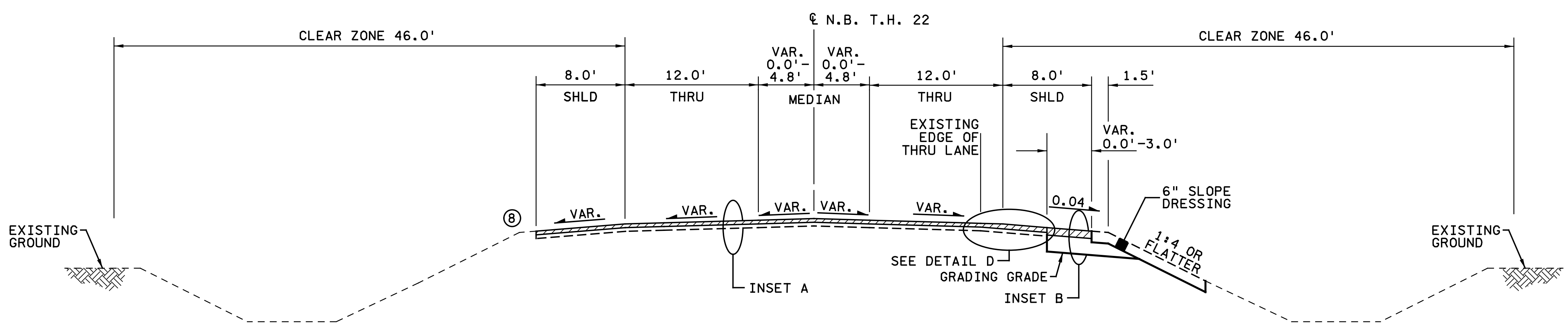


DETAIL B

N.B. T.H. 22 STA. 644+91.42 TO STA. 649+46.16



DETAIL D



T.H. 22

N.B. T.H. 22 STA. 714+10.00 TO STA. 717+00.00

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Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

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MINNESOTA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
TH 22 & CSAH 90

SHEET 22 OF 255

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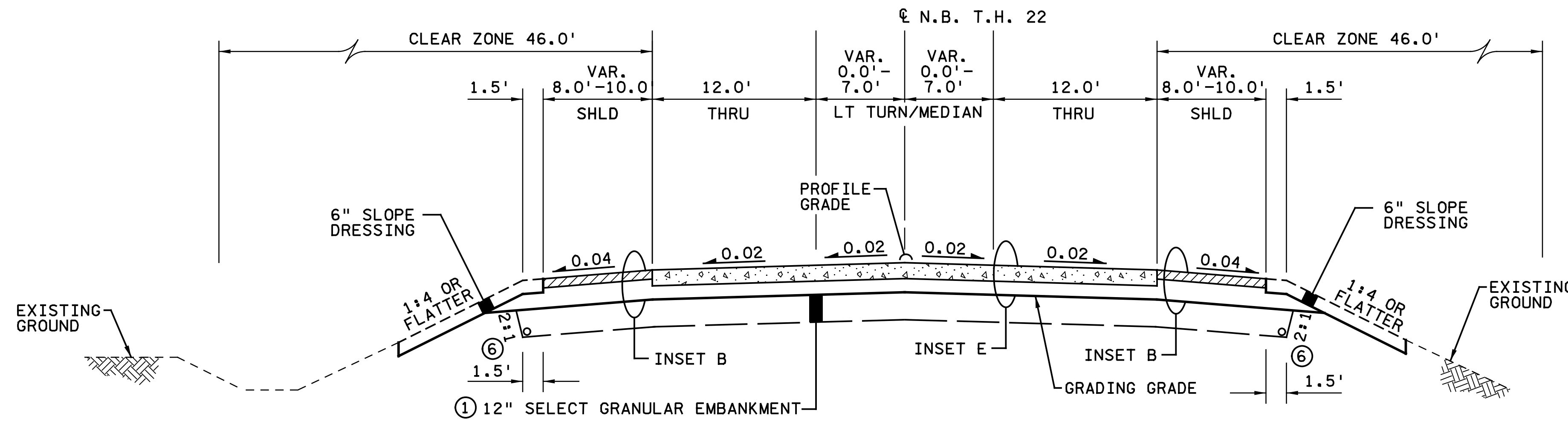
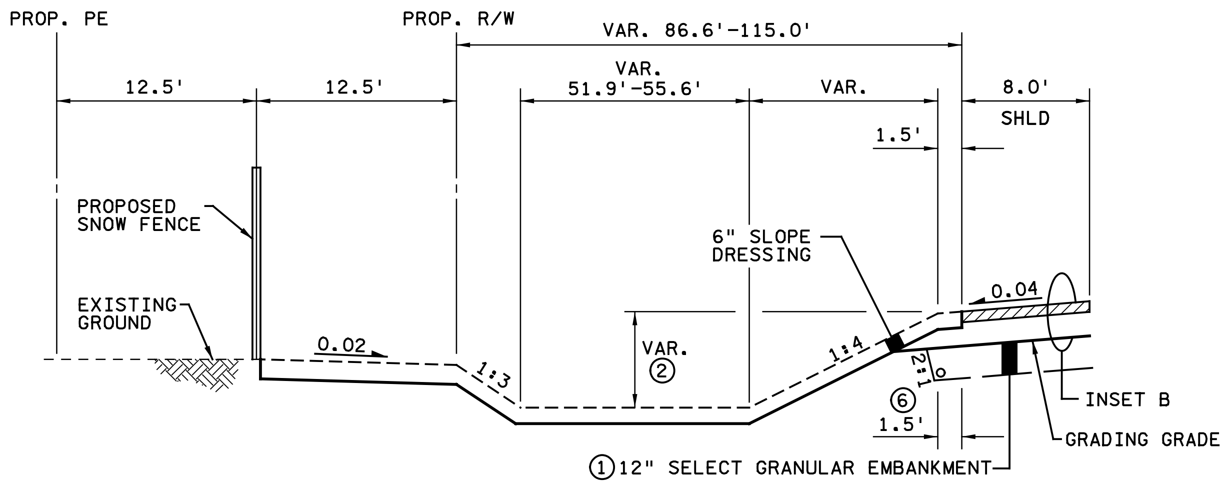


T.H. 22

N.B. T.H. 22 STA. 717+00.00 TO STA. 718+00.00
N.B. T.H. 22 STA. 741+69.88 TO STA. 760+14.39

SEE SHEET 27 FOR PAVEMENT INSETS

SEE SHEET 22 FOR GENERAL NOTES

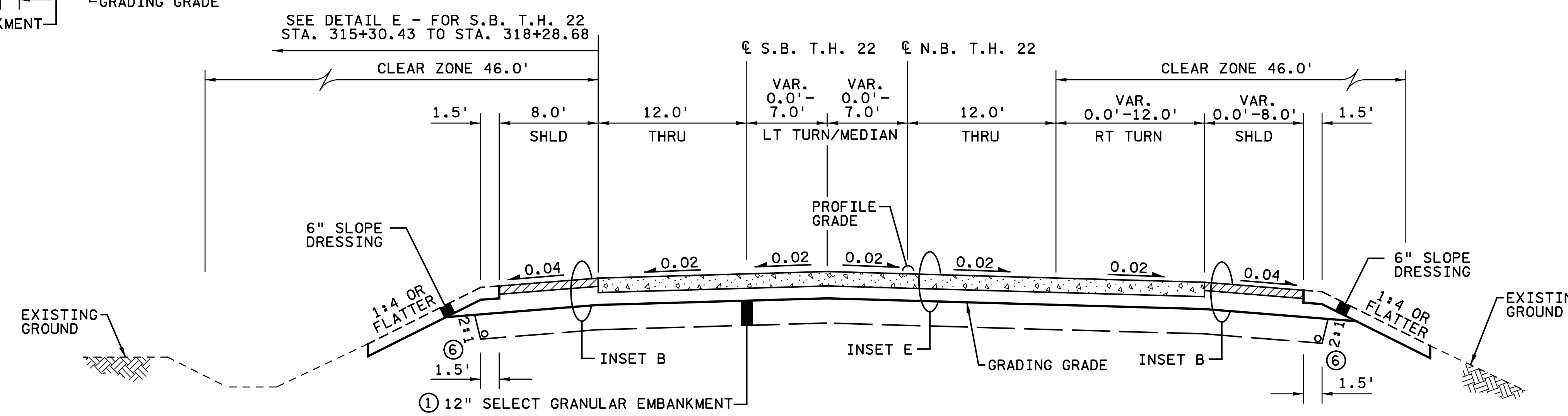


DETAIL E

S.B. T.H. 22 STA. 314+32.00 TO STA. 318+28.68

NOTES:

1. EXCAVATION - SUBGRADE (CUT SECTION ONLY)
2. SEE PROFILES AND CROSS SECTIONS FOR SPECIAL DITCH GRADES AND ELEVATIONS
6. 4" PERF TP PIPE DRAIN MNDOT SPEC. 2502. USE ON TH 22. SEE DRAINAGE AND SUPERELEVATION PLANS FOR LOCATIONS. SEE MNDOT STD. PLAN 5-297.430 & 5-297.433.



T.H. 22

N.B. T.H. 22 STA. 718+00.00 TO STA. 724+51.57
S.B. T.H. 22 STA. 300+00.00 TO STA. 306+51.57
N.B. T.H. 22 STA. 733+27.47 TO STA. 741+69.88
S.B. T.H. 22 STA. 315+30.43 TO STA. 323+72.84

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

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TH 22 & CSAH 90

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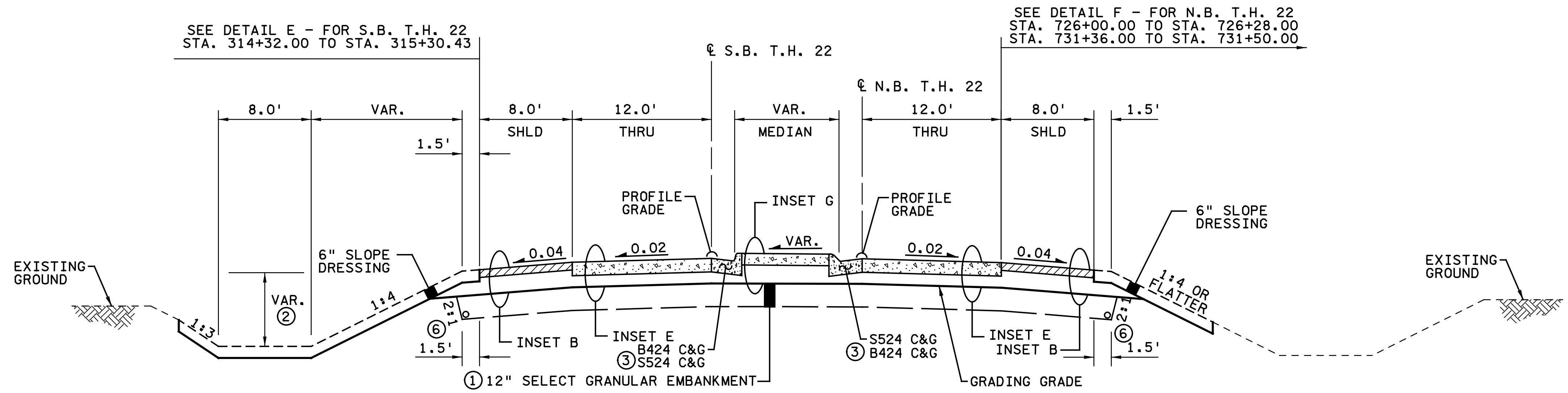


T.H. 22

N.B. T.H. 22 STA. 724+51.57 TO STA. 726+28.00
S.B. T.H. 22 STA. 306+51.57 TO STA. 308+42.00
N.B. T.H. 22 STA. 731+36.00 TO STA. 733+27.47
S.B. T.H. 22 STA. 314+32.00 TO STA. 315+30.43

SEE SHEET 27 FOR PAVEMENT INSETS

SEE SHEET 22 FOR GENERAL NOTES

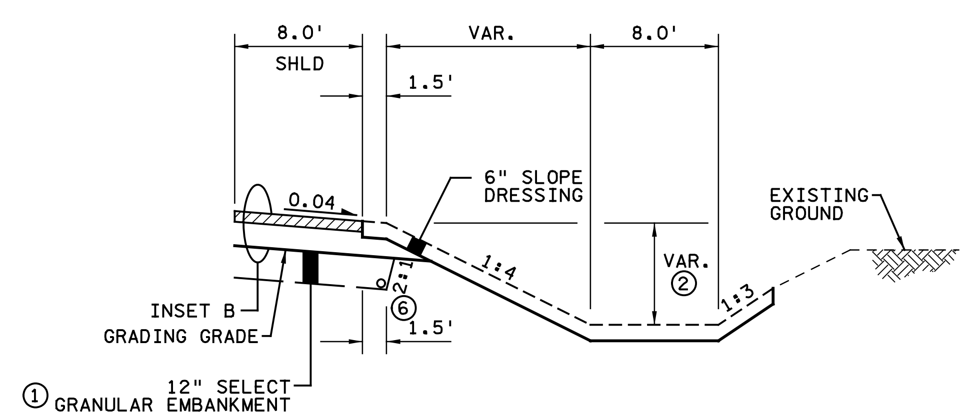
NOTES:

① EXCAVATION - SUBGRADE (CUT SECTION ONLY)

② SEE PROFILES AND CROSS SECTIONS FOR SPECIAL DITCH GRADES AND ELEVATIONS

③ SEE CONSTRUCTION PLAN FOR LOCATIONS

⑥ 4" PERF TP PIPE DRAIN MNDOT SPEC. 2502. USE ON TH 22. SEE DRAINAGE AND SUPERELEVATION PLANS FOR LOCATIONS. SEE MNDOT STD. PLAN 5-297.430 & 5-297.433.



DETAIL F

N.B. T.H. 22 STA. 726+00.00 TO STA. 726+28.00
N.B. T.H. 22 STA. 731+36.00 TO STA. 731+50.00

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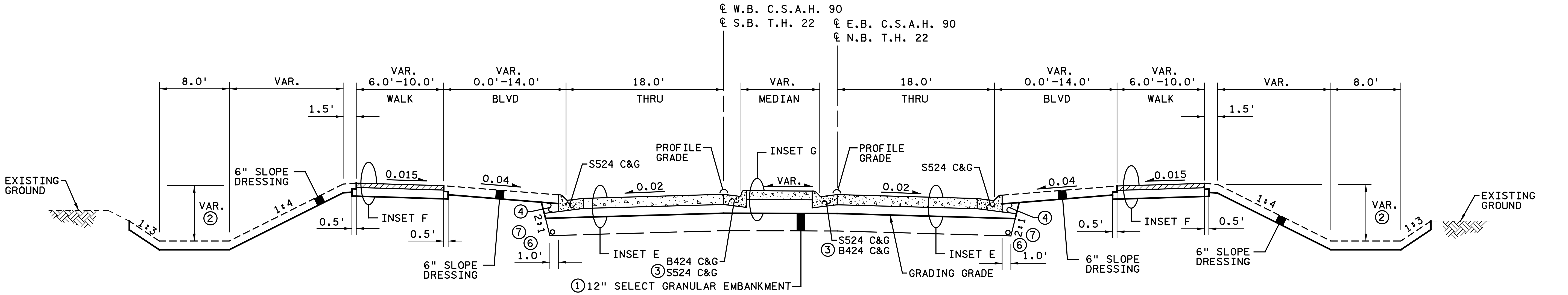
MINNESOTA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
TH 22 & CSAH 90



T.H. 22 & C.S.A.H. 90

N.B. T.H. 22 STA. 726+28.00 TO STA. 728+01.56   E.B. C.S.A.H. 90 STA. 611+75.00 TO STA. 613+75.25
S.B. T.H. 22 STA. 308+42.00 TO STA. 310+08.12   W.B. C.S.A.H. 90 STA. 704+95.00 TO STA. 706+79.51
N.B. T.H. 22 STA. 729+70.21 TO STA. 731+36.00   E.B. C.S.A.H. 90 STA. 615+48.74 TO STA. 617+31.50
S.B. T.H. 22 STA. 311+80.10 TO STA. 314+32.00   W.B. C.S.A.H. 90 STA. 708+46.38 TO STA. 710+48.00

SEE SHEET 27 FOR PAVEMENT INSETS

SEE SHEET 22 FOR GENERAL NOTES

NOTES:

① EXCAVATION - SUBGRADE (CUT SECTION ONLY)

② SEE PROFILES AND CROSS SECTIONS FOR SPECIAL DITCH GRADES AND ELEVATIONS

③ SEE CONSTRUCTION PLAN FOR LOCATIONS

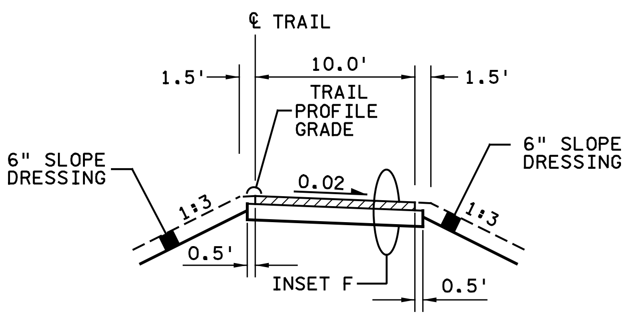
④ BACKFILL WITH SELECT GRADING MATERIAL

⑤ SEE SHEET 28 FOR DETAILS

⑥ 4" PERF TP PIPE DRAIN MNDOT SPEC. 2502. USE ON TH 22. SEE DRAINAGE AND SUPERELEVATION PLANS FOR LOCATIONS. SEE MNDOT STD. PLAN 5-297.430 & 5-297.433.

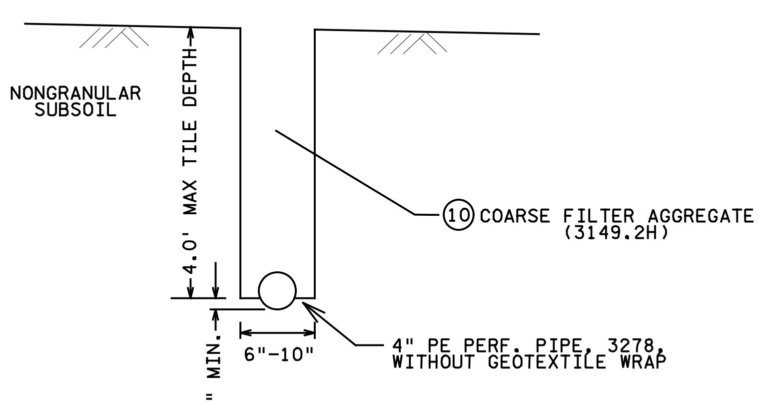
⑦ 4" PERF PE PIPE DRAIN. USE ON CSAH 90. SEE DRAINAGE AND SUPERELEVATION PLANS FOR LOCATIONS. SEE SUBSURFACE DRAIN SYSTEM DETAIL ON SHEET 25 .

⑩ PAYMENT FOR COARSE FILTER AGG. (3149.2H) SHALL BE INCIDENTAL.



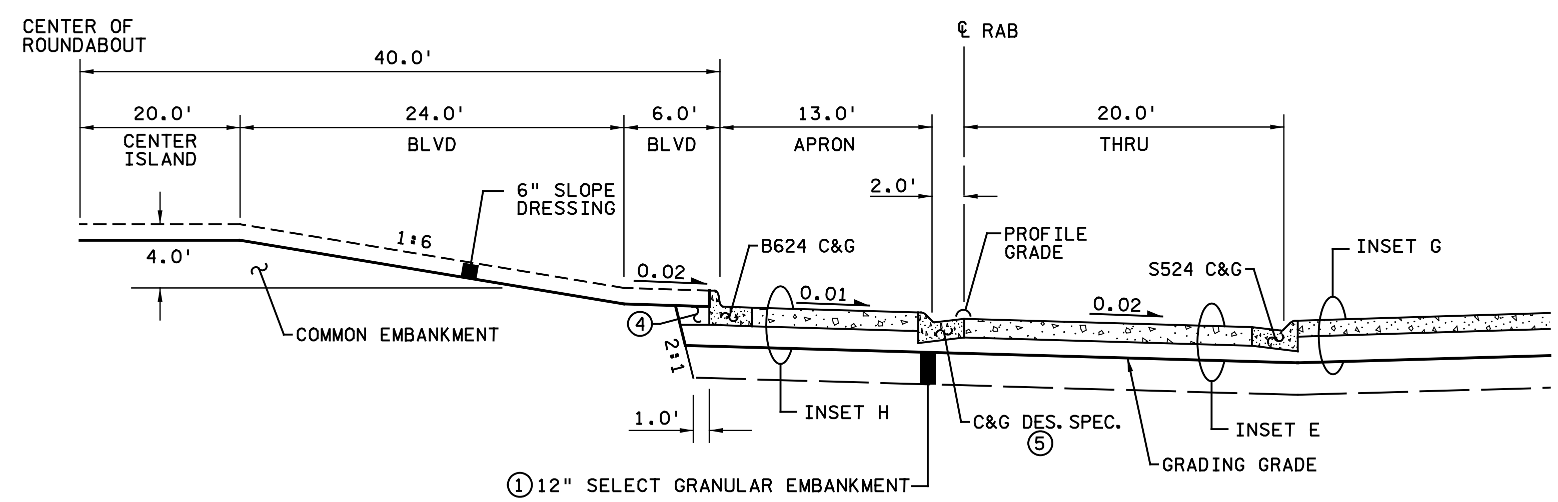
TRAIL

TRAIL STA. 200+00.00 TO STA. 203+68.30



SUBSURFACE DRAIN SYSTEM DETAIL

NOT TO SCALE



ROUNDABOUT

RAB STA. 100+00.00 TO STA. 103+45.58

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

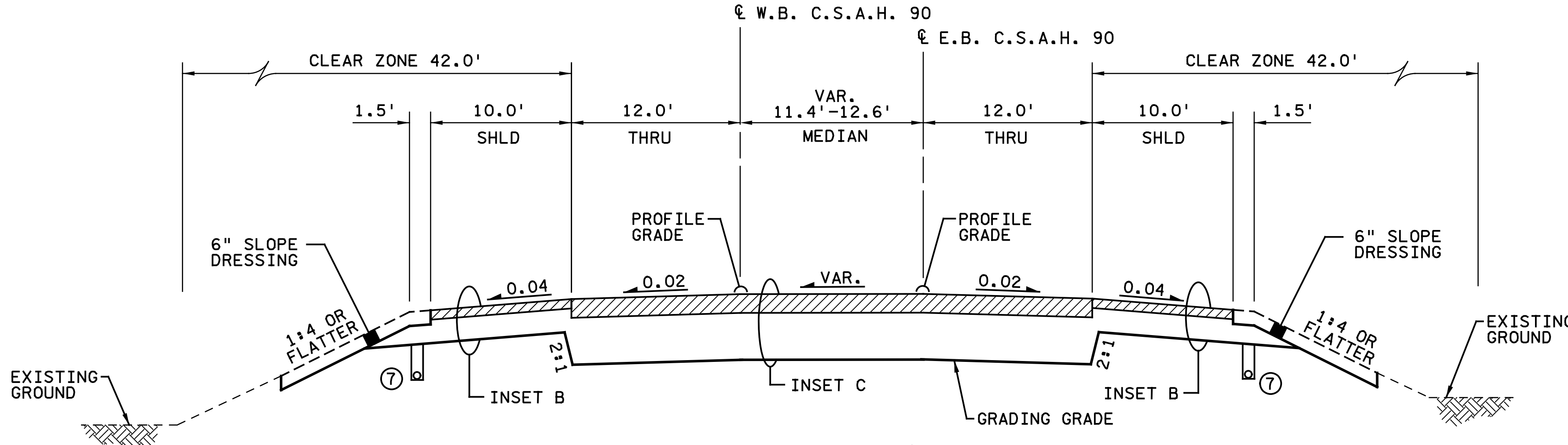
CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

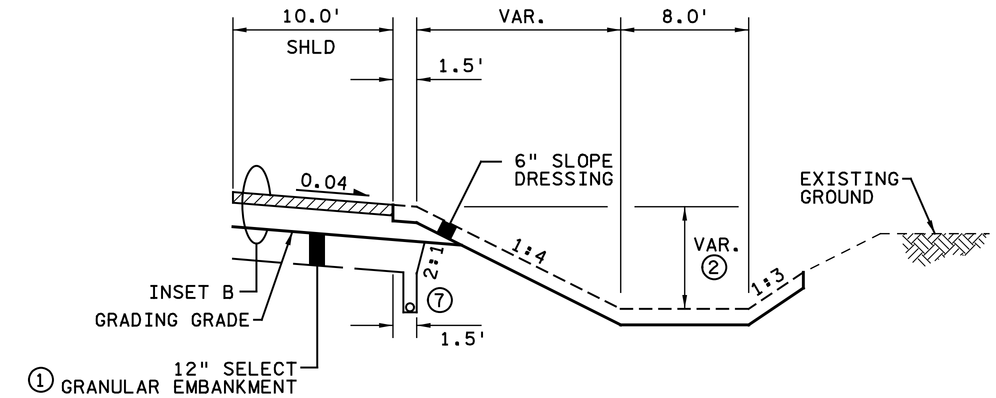
MINNESOTA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
TH 22 & CSAH 90



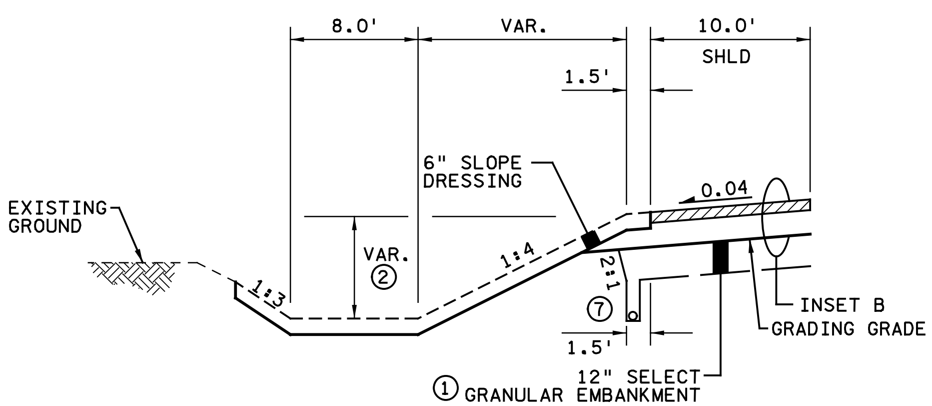
C.S.A.H. 90

E.B. C.S.A.H. 90 STA. 608+40.00 TO STA. 609+73.14
W.B. C.S.A.H. 90 STA. 701+39.08 TO STA. 702+72.23



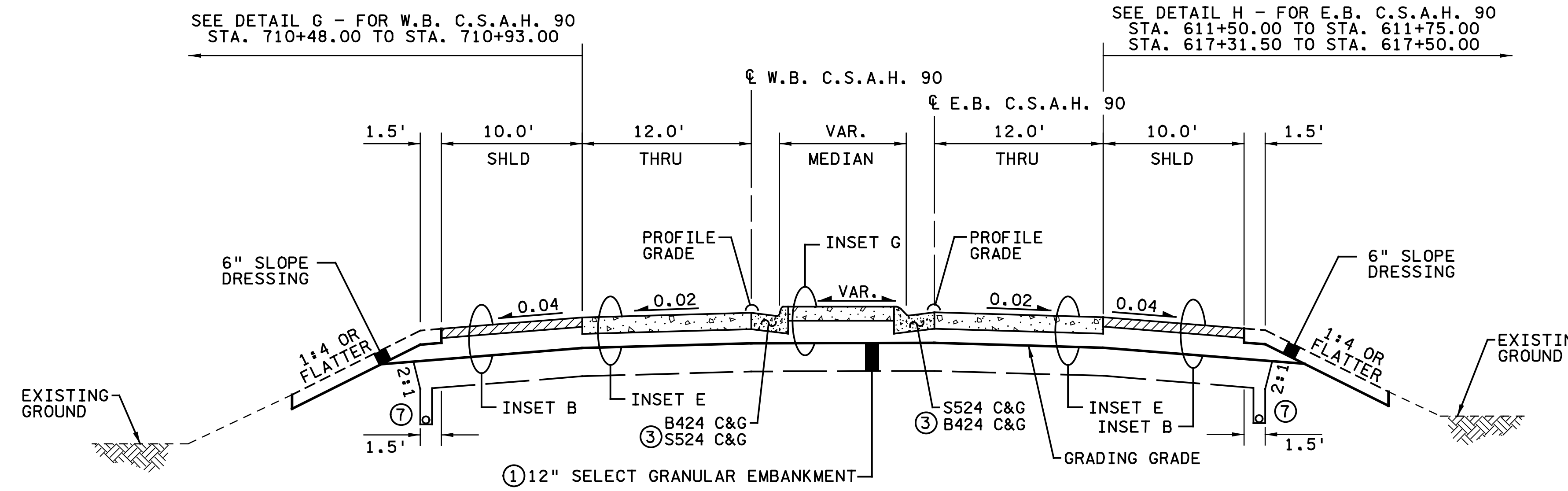
DETAIL H

E.B. C.S.A.H. 90 STA. 611+50.00 TO STA. 611+75.00
E.B. C.S.A.H. 90 STA. 617+31.50 TO STA. 617+50.00



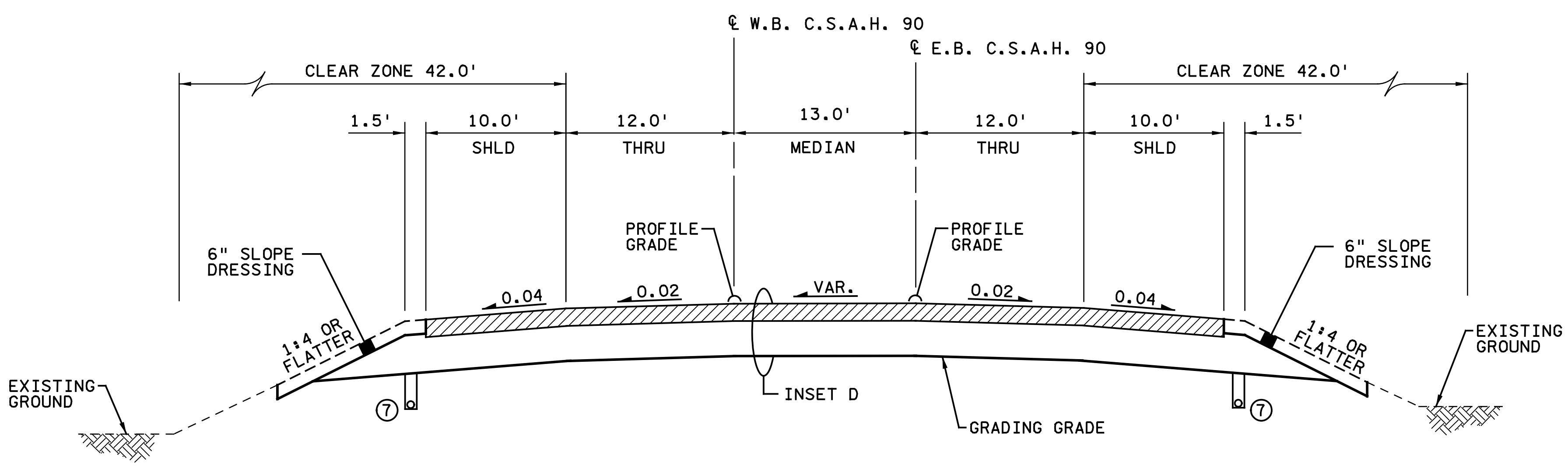
DETAIL G

W.B. C.S.A.H. 90 STA. 710+48.00 TO STA. 710+93.00



C.S.A.H. 90

E.B. C.S.A.H. 90 STA. 609+73.14 TO STA. 611+75.00
W.B. C.S.A.H. 90 STA. 702+72.23 TO STA. 704+95.00
E.B. C.S.A.H. 90 STA. 617+31.50 TO STA. 619+56.51
W.B. C.S.A.H. 90 STA. 710+48.00 TO STA. 712+49.18



C.S.A.H. 90

E.B. C.S.A.H. 90 STA. 619+56.51 TO STA. 620+00.00
W.B. C.S.A.H. 90 STA. 712+49.18 TO STA. 712+92.67

SEE SHEET 27 FOR PAVEMENT INSETS

SEE SHEET 22 FOR GENERAL NOTES

NOTES:

1. EXCAVATION - SUBGRADE (CUT SECTION ONLY)
2. SEE PROFILES AND CROSS SECTIONS FOR SPECIAL DITCH GRADES AND ELEVATIONS
3. SEE CONSTRUCTION PLAN FOR LOCATIONS
7. 4" PERF PE PIPE DRAIN. USE ON CSAH 90. SEE DRAINAGE AND SUPERELEVATION PLANS FOR LOCATIONS. SEE SUBSURFACE DRAIN SYSTEM DETAIL ON SHEET 25.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: AMBER E. TRACY
Date ____ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
TH 22 & CSAH 90

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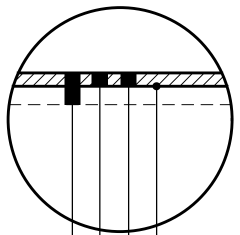


TACK COAT (INCIDENTAL)
MNDOT SPEC. 2357

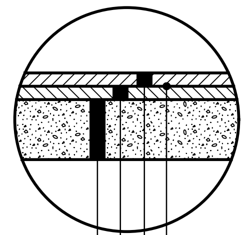
2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4,E) MNDOT SPEC. 2360, (SPWEB440E)

MILL 2.0" BIT PAVEMENT

EXISTING PAVEMENT

INSET A

TH 22 MILL AND OVERLAY



TACK COAT (INCIDENTAL)
MNDOT SPEC. 2357

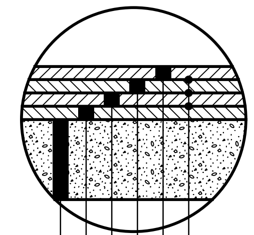
2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (3,B) MNDOT SPEC. 2360, (SPWEB330B)

2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (3,B) MNDOT SPEC. 2360, (SPWEB330B)

10" AGGREGATE BASE, CLASS 5Q
MNDOT SPEC. 2211

INSET B

BITUMINOUS SHOULDER / BITUMINOUS DRIVEWAY



TACK COAT (INCIDENTAL)
MNDOT SPEC. 2357

2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4,C) MNDOT SPEC. 2360, (SPWEB440C)

2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4,C) MNDOT SPEC. 2360, (SPWEB440C)

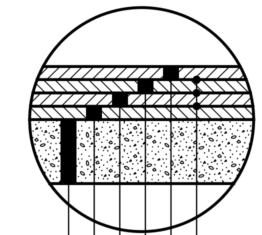
2.0" TYPE SP 12.5 NON WEARING COURSE MIXTURE (4,B) MNDOT SPEC. 2360, (SPNWB430B)

2.0" TYPE SP 12.5 NON WEARING COURSE MIXTURE (4,B) MNDOT SPEC. 2360, (SPNWB430B)

20" AGGREGATE BASE, CLASS 5Q
MNDOT SPEC. 2211

INSET C

BITUMINOUS PAVEMENT
CSAH 90 (WEST OF TH 22)



TACK COAT (INCIDENTAL)
MNDOT SPEC. 2357

2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4,C) MNDOT SPEC. 2360, (SPWEB440C)

2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (4,C) MNDOT SPEC. 2360, (SPWEB440C)

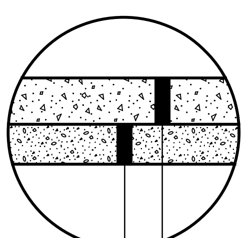
2.0" TYPE SP 12.5 NON WEARING COURSE MIXTURE (4,B) MNDOT SPEC. 2360, (SPNWB430B)

1.5" TYPE SP 12.5 NON WEARING COURSE MIXTURE (4,B) MNDOT SPEC. 2360, (SPNWB430B)

15" AGGREGATE BASE, CLASS 5Q
MNDOT SPEC. 2211

INSET D

BITUMINOUS PAVEMENT
CSAH 90 (EAST OF TH 22)

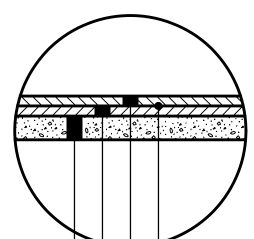


8.0" CONCRETE PAVEMENT
MNDOT SPEC. 2301

6" AGGREGATE BASE, CLASS 5Q
MNDOT SPEC. 2211

INSET E

TH 22/CSAH 90 CONCRETE PAVEMENT



TACK COAT (INCIDENTAL)
MNDOT SPEC. 2357

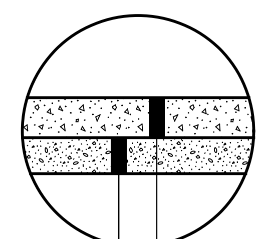
1.5" TYPE SP 9.5 WEARING COURSE MIXTURE (3,E) MNDOT SPEC. 2360 (SPWEA330E) (PG 58H-34)

1.5" TYPE SP 9.5 WEARING COURSE MIXTURE (3,E) MNDOT SPEC. 2360 (SPWEA330E) (PG 58H-34)

6" AGGREGATE BASE, CLASS 5Q
MNDOT SPEC. 2211

INSET F

BITUMINOUS TRAIL

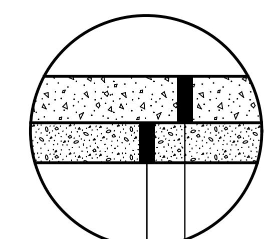


6" CONCRETE WALK
MNDOT SPEC. 2521

VAR. AGGREGATE BASE, CLASS 5Q
MNDOT SPEC. 2211

INSET G

CONCRETE MEDIAN



7.0" CONCRETE PAVEMENT
MNDOT SPEC. 2301

VAR. AGGREGATE BASE, CLASS 5Q
MNDOT SPEC. 2211

INSET H

TRUCK APRON

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

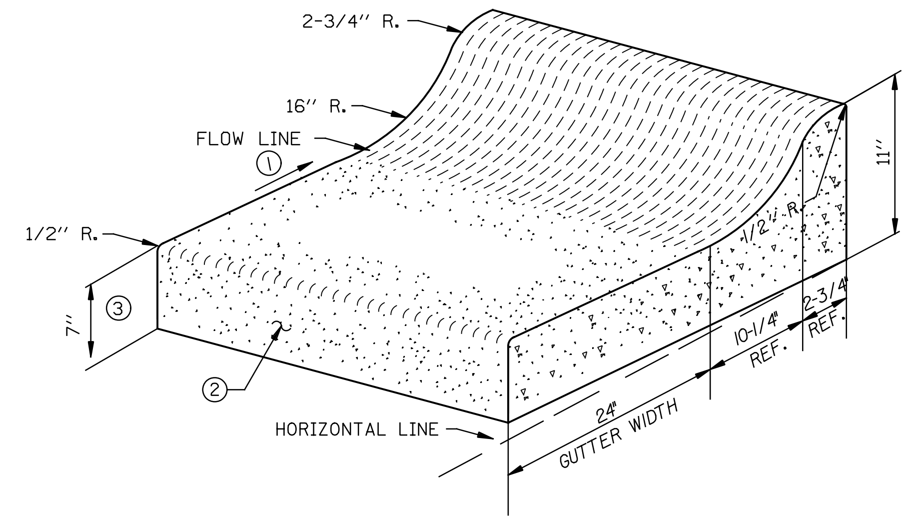
DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
TH 22 & CSAH 90

SHEET 27 OF 255

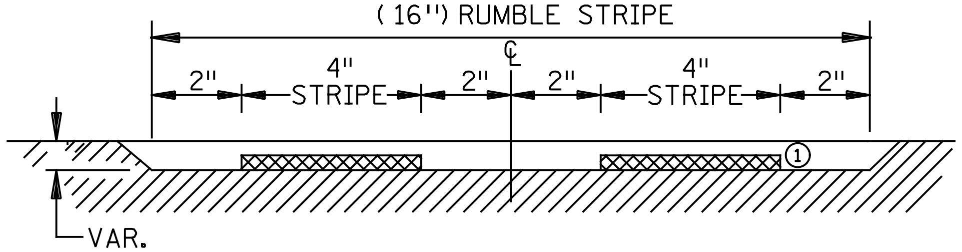


DESIGN NO.	CONCRETE	
	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.
R424	0.0522	19.16

CONCRETE CURB & GUTTER DESIGN SPECIAL - DESIGN R424

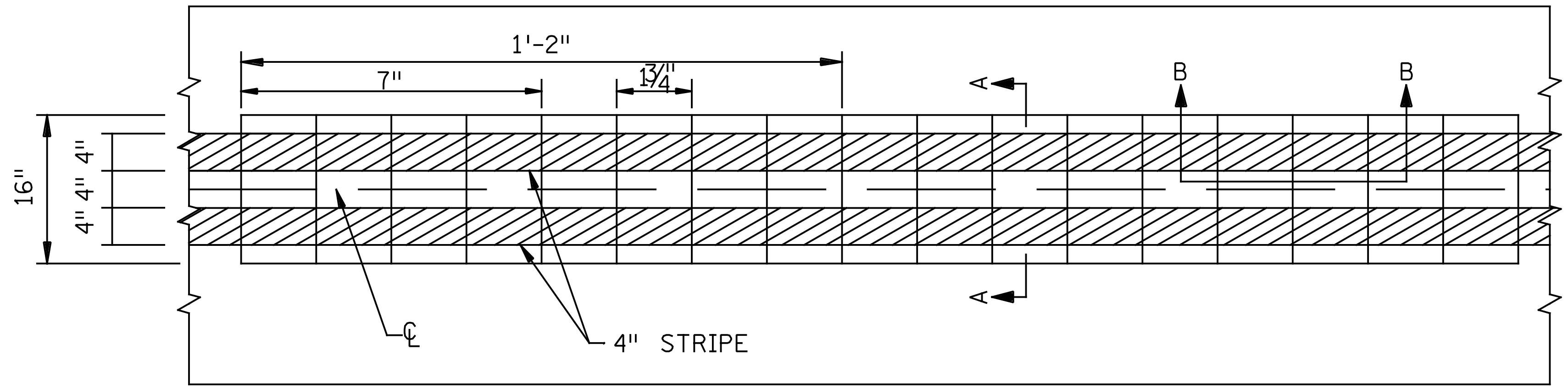
NOTES:

1. SLOPE 3/4" PER FT. NORMAL, UNLESS OTHERWISE SPECIFIED. IF A DIFFERENT GUTTER SLOPE IS PERMITTED, THE GUTTER FORM MAY BE TILTED.
2. LONGITUDINAL JOINT WHEN ADJACENT TO RIGID PAVEMENT OR BASE. SEE STANDARD PLANS MANUAL FOR JOINT INFORMATION.
3. ANY ADDITIONAL BASE MATERIAL REQUIRED IS INCIDENTAL WITH THESE OPTIONAL DESIGNS.



SECTION A-A

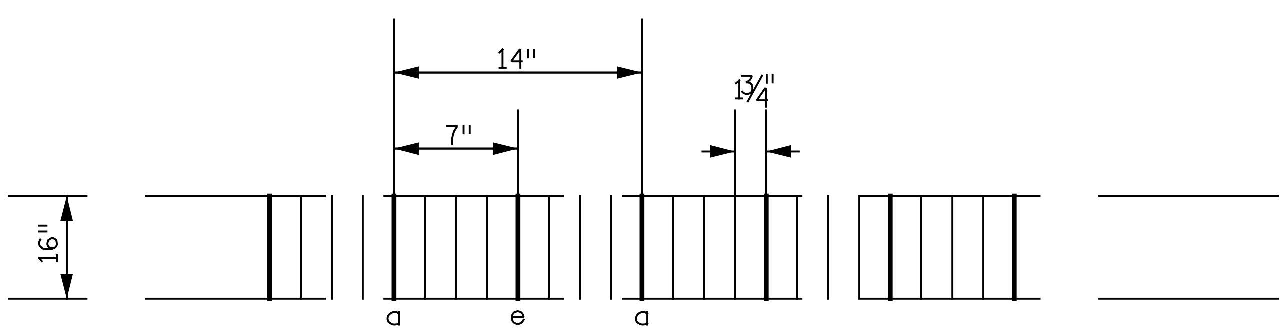
BITUMINOUS AND CONCRETE
CENTERLINE RUMBLE STRIPE



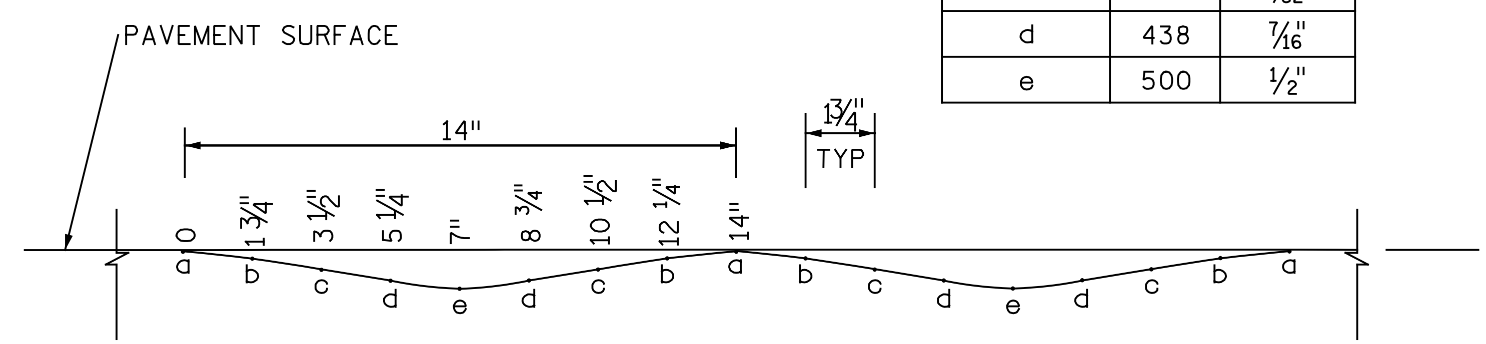
NOTE:

1 DEPTH OF RUMBLE SHALL BE UNIFORM.

	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"



PLAN



PROFILE

MILLED SINUSOIDAL RUMBLE STRIP

SECTION B-B

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS

TH 22 & CSAH 90

RUMBLE STRIP

SHEET 29 OF 255

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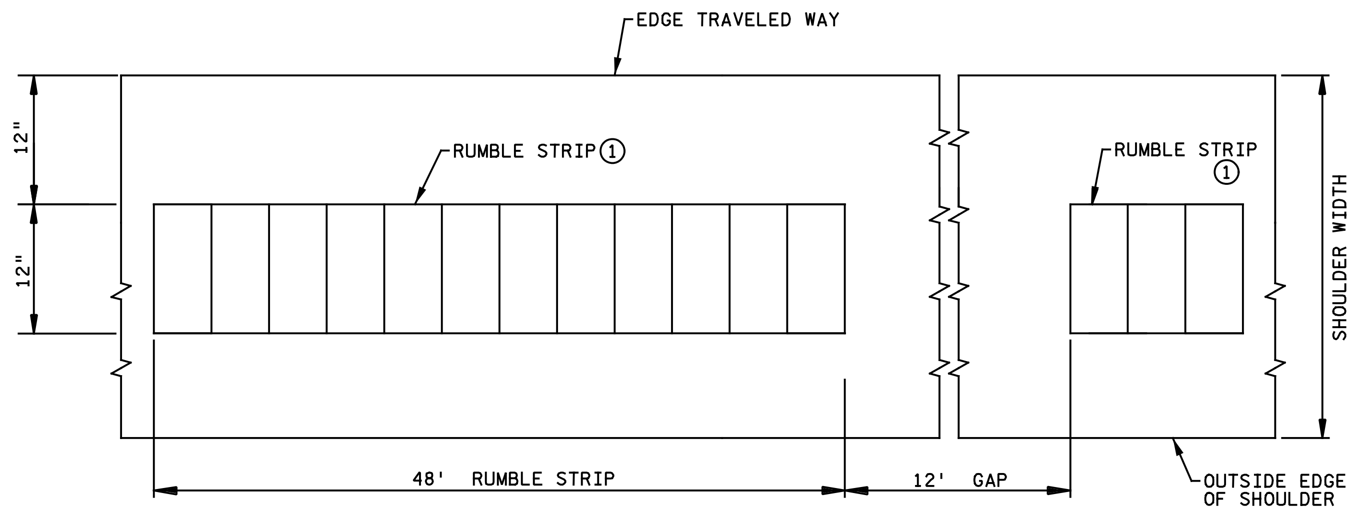
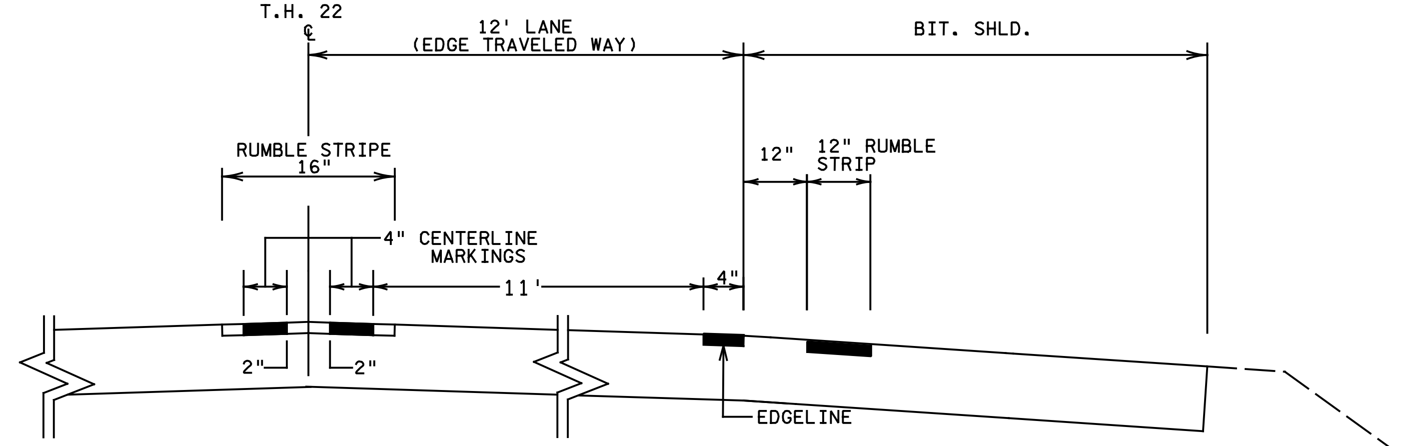
BITUMINOUS SHOULDER RUMBLE STRIP

INTERMITTENT PATTERN



NOTE:

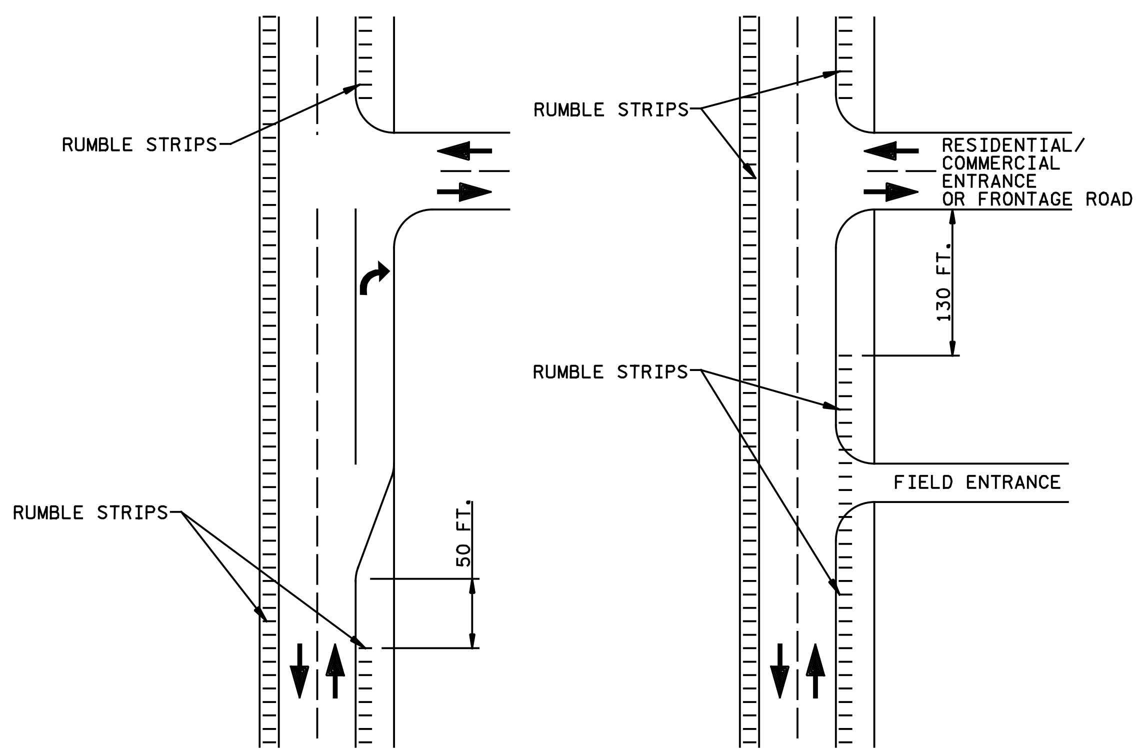
(1) SEE SHEET 29 FOR MILLED SINUSOIDAL RUMBLE STRIP DETAILS.



RUMBLE STRIP PLACEMENT DETAIL
(BITUMINOUS SHOULDER AREAS)

NOTE: SEE CONSTRUCTION PLAN AND TYPICAL SECTIONS FOR LOCATION OF BITUMINOUS SHOULDERS.

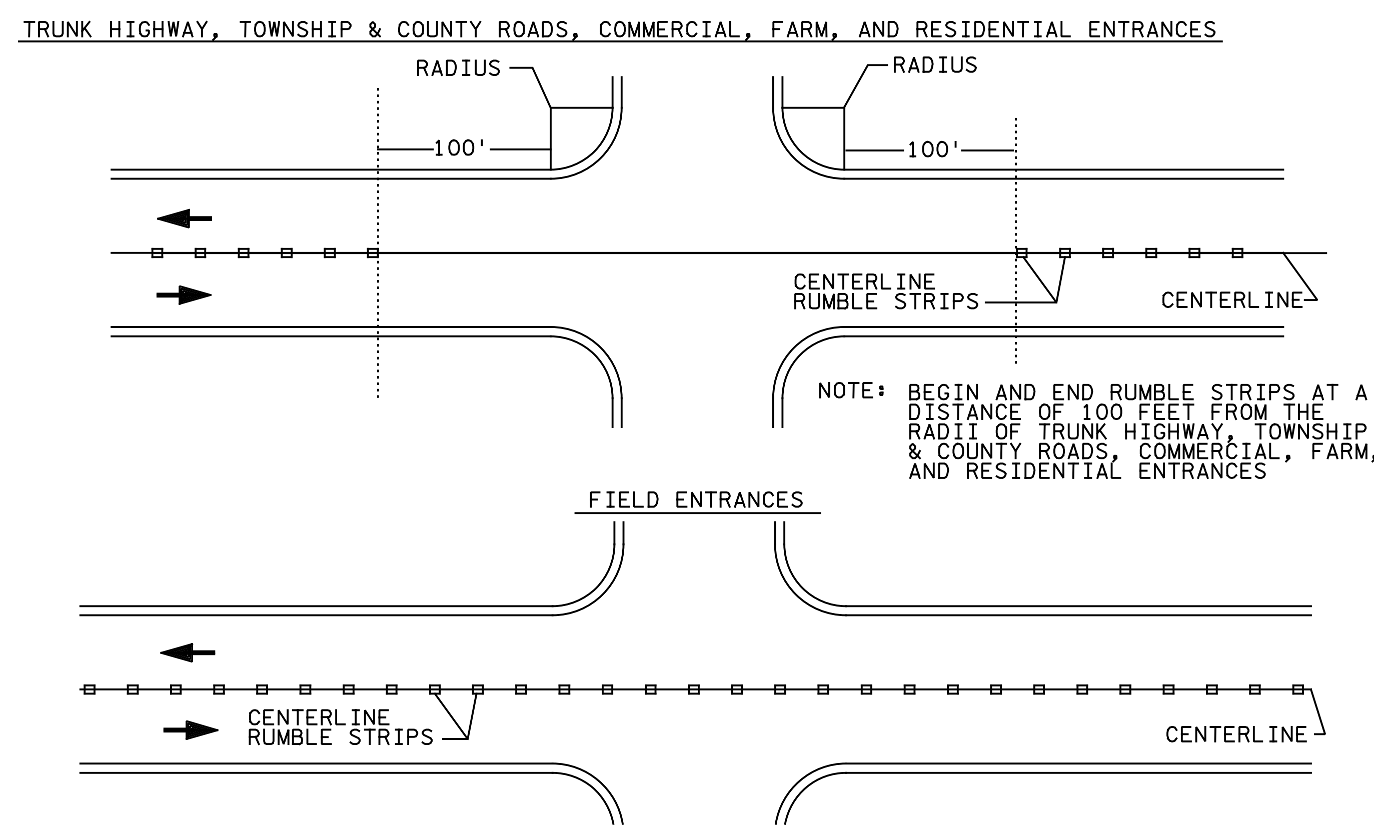
SHOULDER RUMBLE STRIP - APPROPRIATE BREAKS



RIGHT TURN LANE

ENTRANCE ROADS

CENTERLINE RUMBLE STRIP DETAILS



NO	DATE	BY	CKD	APPR	REVISION

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Date ____ License # 50890

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STATE PROJECT NO. 007-070-005

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CHECKED BY A. TRACY

COMM. NO. 01710321

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ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS

TH 22 & CSAH 90

RUMBLE STRIP

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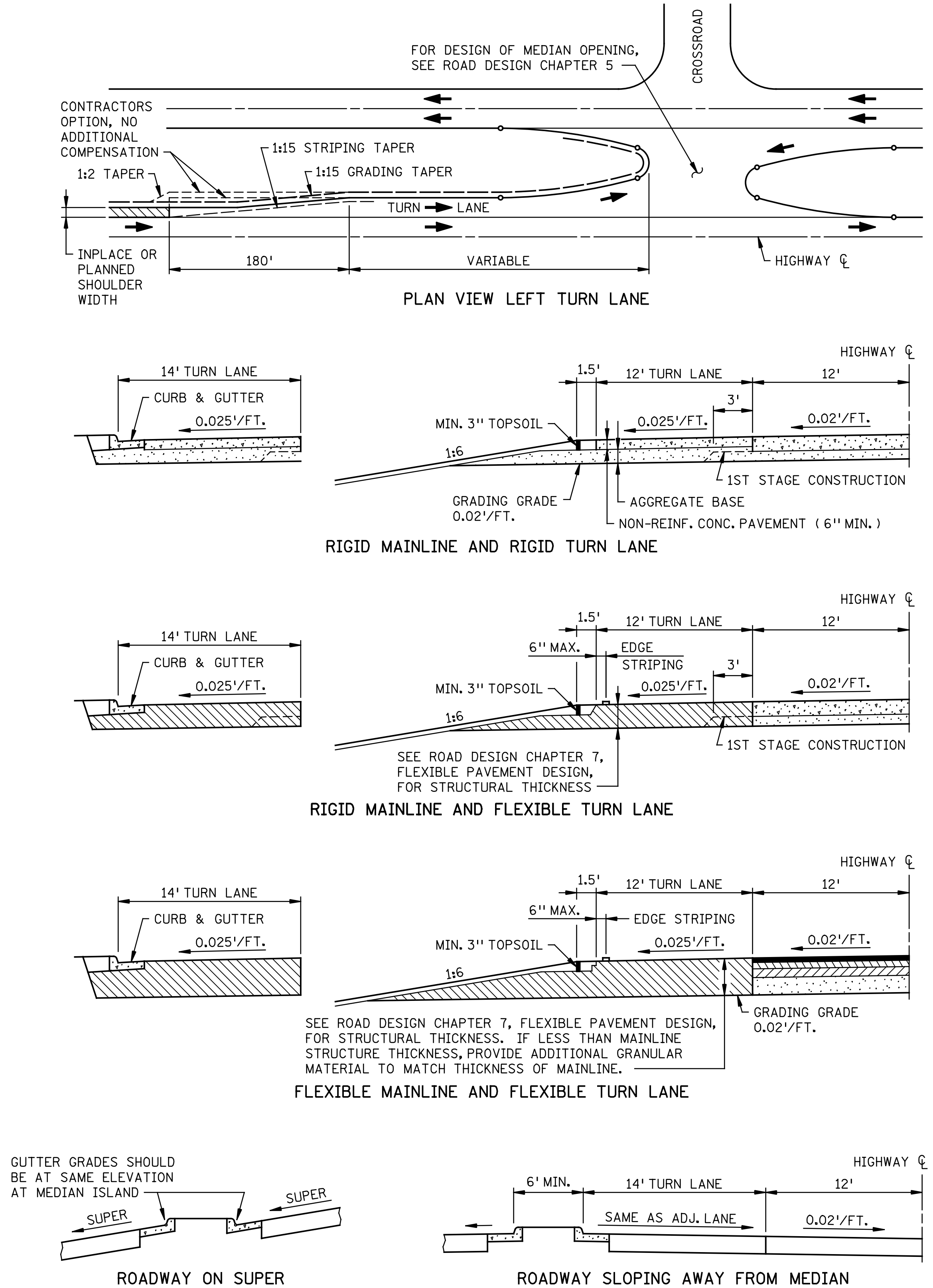
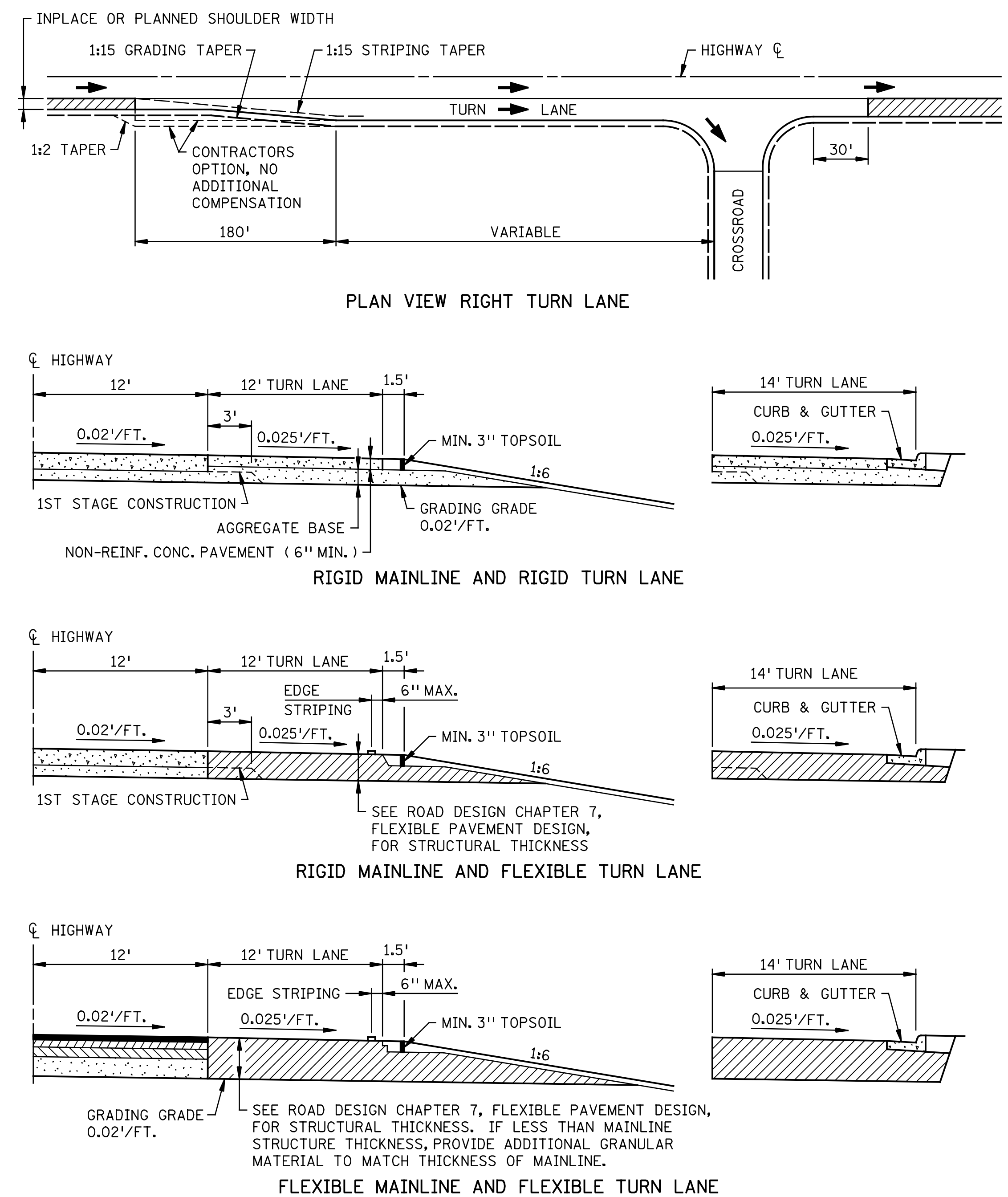


LEFT TURN LANES



RIGHT TURN LANES

MINNESOTA DEPARTMENT OF TRANSPORTATION

REVISED:

APPROVED: 5-27-2014

STATE DESIGN ENGINEER

RIGHT AND LEFT TURN LANES

STANDARD PLAN 5-297.111 | 1 OF 1

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90
	CHECKED BY	
	COMM. NO. 01710321	

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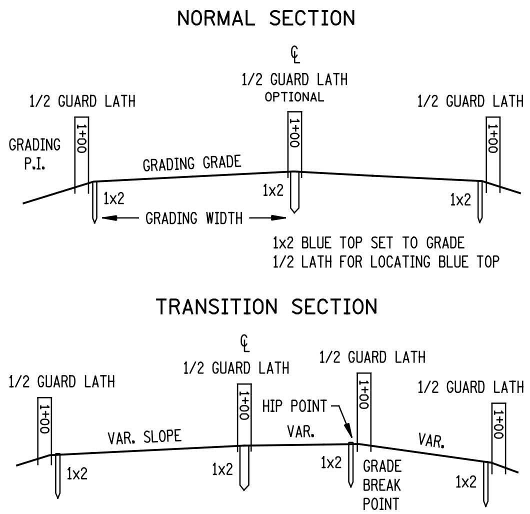
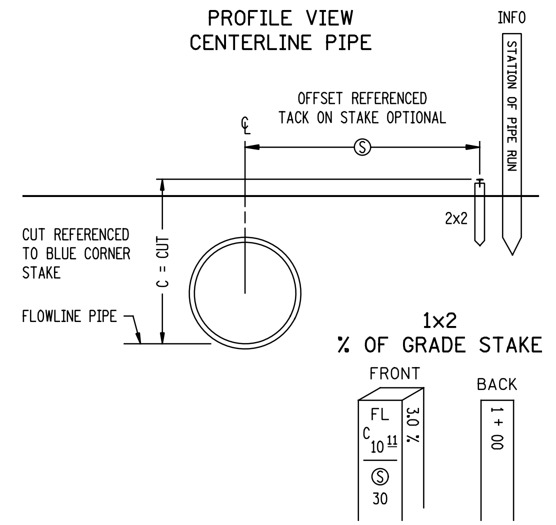
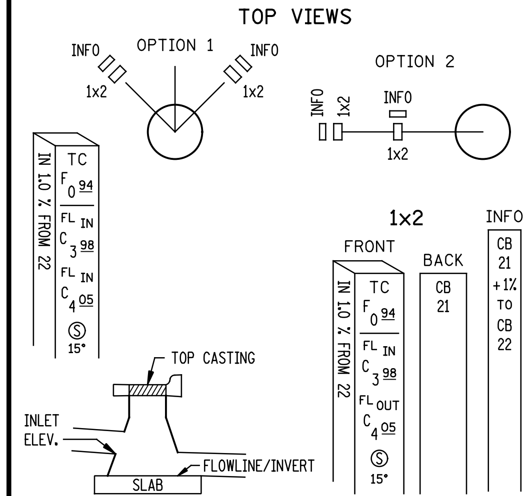
BLUE TOPS



PIPE STAKING



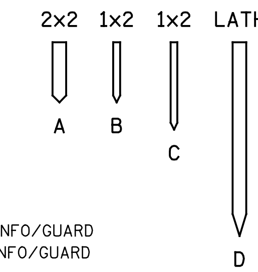
CATCH BASIN OR MANHOLE (CB/MH)



FLOWLINE/INVERT + 0.7'

STANDARD STAKES

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



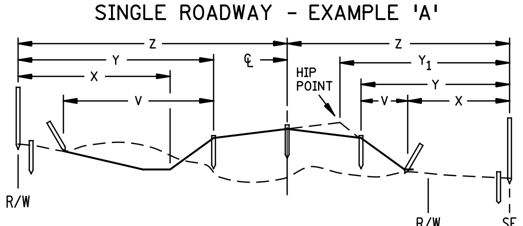
SIZES:
A = 2" X 2" X VAR. REF/INFO/GUARD
B = 1" X 2" X VAR. REF/INFO/GUARD
C = 1" X 2" X VAR. REF
D = LATH INFO/VIS/GUARD
1x2 OR LATH = INFO STAKES

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
DC = 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'



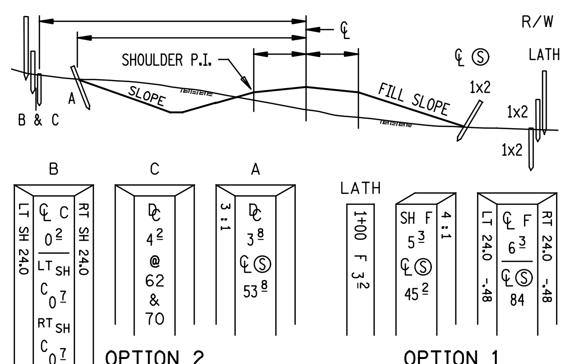
STAKE 'A'
FULL LATH AND HUB-STATION
DIST. TO ℄ WITH CUT/FILL TO ℄ (Z)
DIST. TO SHLD. WITH CUT/FILL TO SHLD. (Y)(Y1)
DIST. TO TOE OF SLOPE, CUT/FILL FROM HUB (X)
OFFSET TO SAFTY SLOPE
OFFSET TO HIP POINT

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

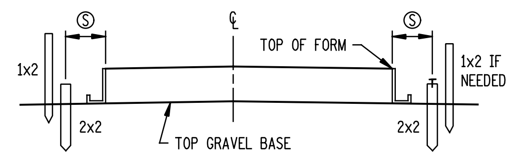
SLOPE STAKES

SINGLE ROADWAY - EXAMPLE 'B'

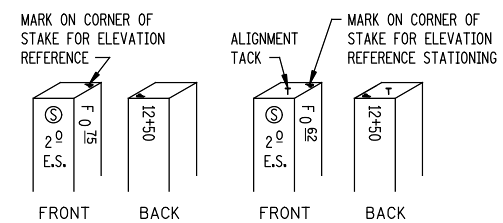


NOTES: ALL SLOPE STAKE REFERENCE DISTANCES GIVEN FROM ℄. STAKE TO BOTTOM OF TOP SOIL.
KEY STAKES: BLUE TOP SET AT R/W BOUNDARY LT. & RT. MAY BE EXCEPTIONS TO SETTING STAKE ON R/W.

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						

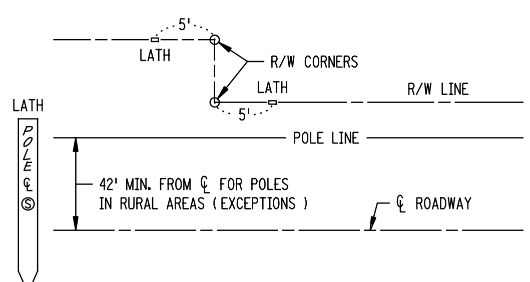
STAKING TOLERANCES (FEET)

	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

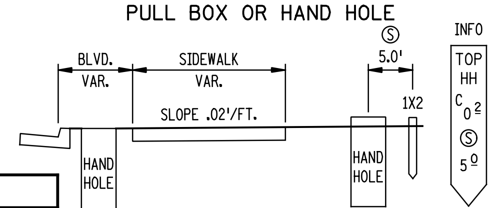
THE TOLERANCES ARE RELATIVE TO PROJECT DATUM

UTILITY (UTIL)

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



PULL BOX OR HAND HOLE



REVISION:
APPROVED: 8-6-2014
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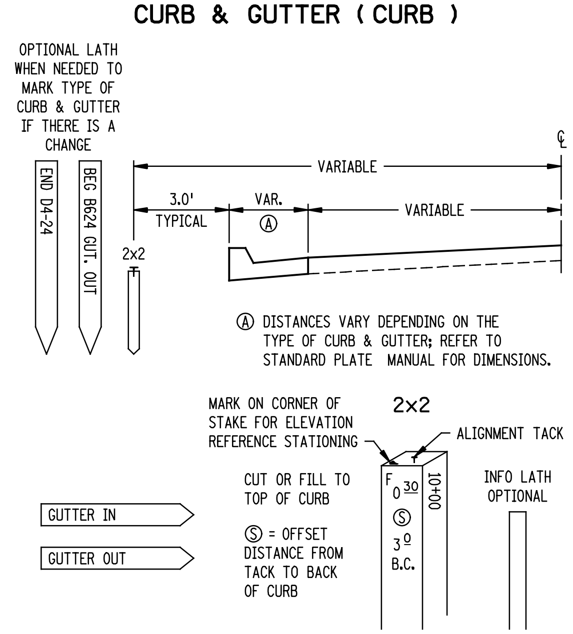
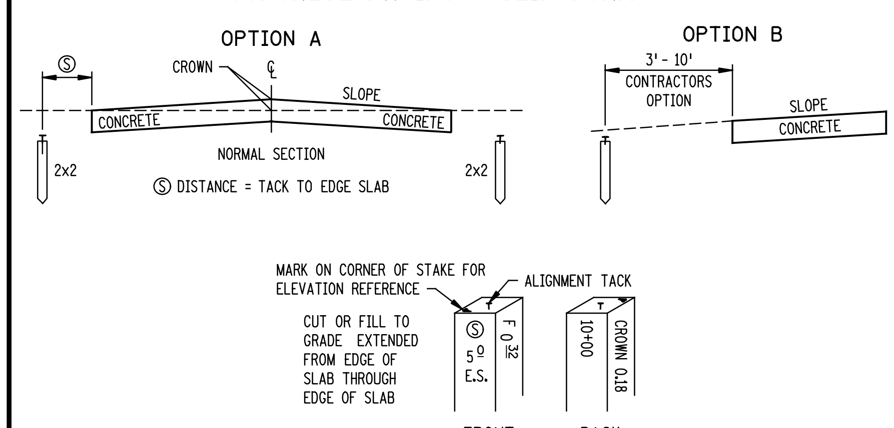
CURB & GUTTER (CURB)



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.

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

STAKING INFORMATION SHEET

STANDARD PLAN 5-297.115 | 1 OF 2

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS	32
	CHECKED BY	TH 22 & CSAH 90	OF
	COMM. NO. 01710321		255

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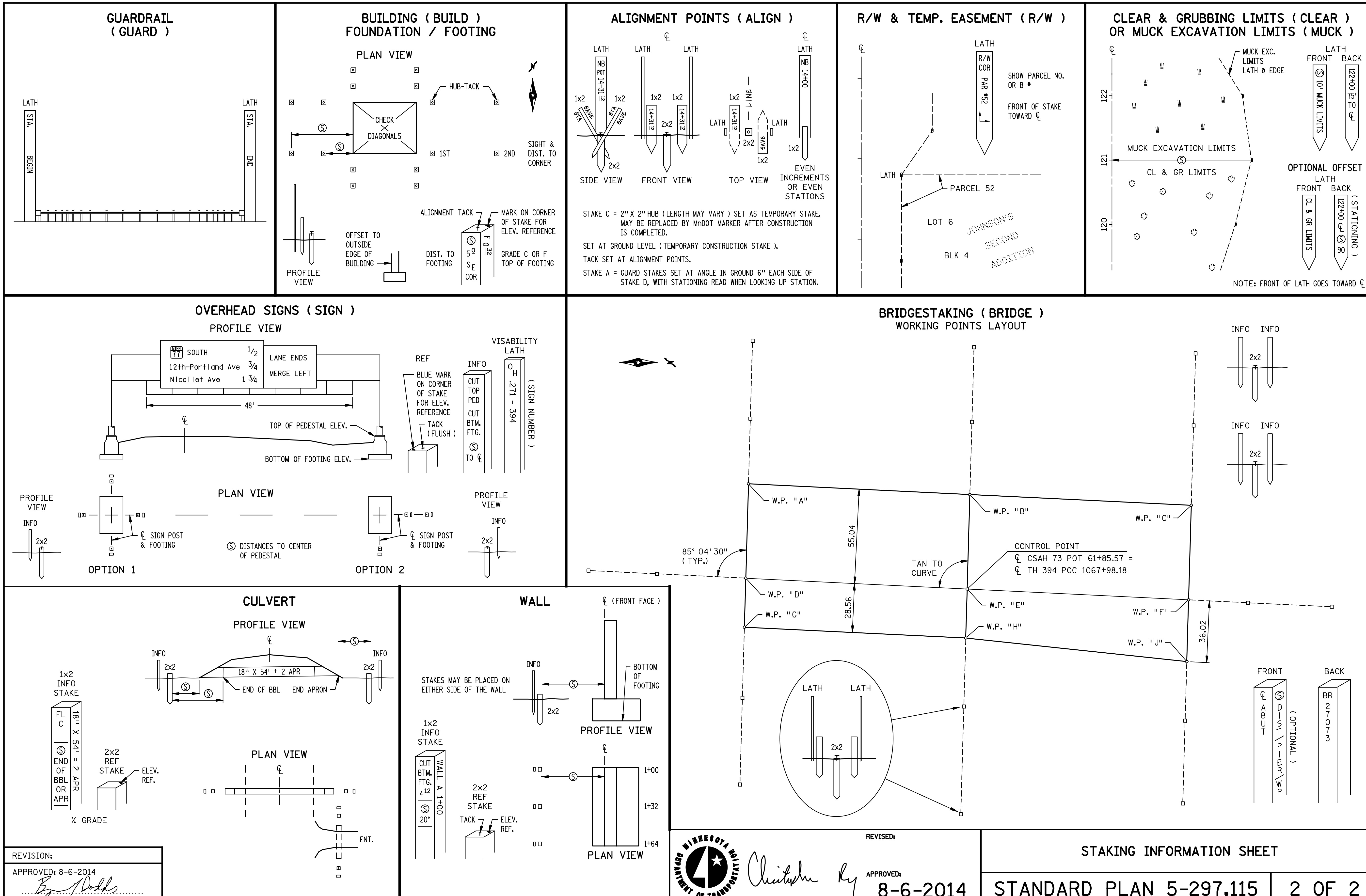

REVISION:

APPROVED: 8-6-2014

DIRECTOR, OFFICE OF LAND MANAGEMENT

MINNESOTA DEPARTMENT OF TRANSPORTATION

REVISED:

APPROVED: 8-6-2014

STATE DESIGN ENGINEER

STAKING INFORMATION SHEET

STANDARD PLAN 5-297.115 | 2 OF 2

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90
	CHECKED BY	
	COMM. NO. 01710321	

SHEET 33 OF 255

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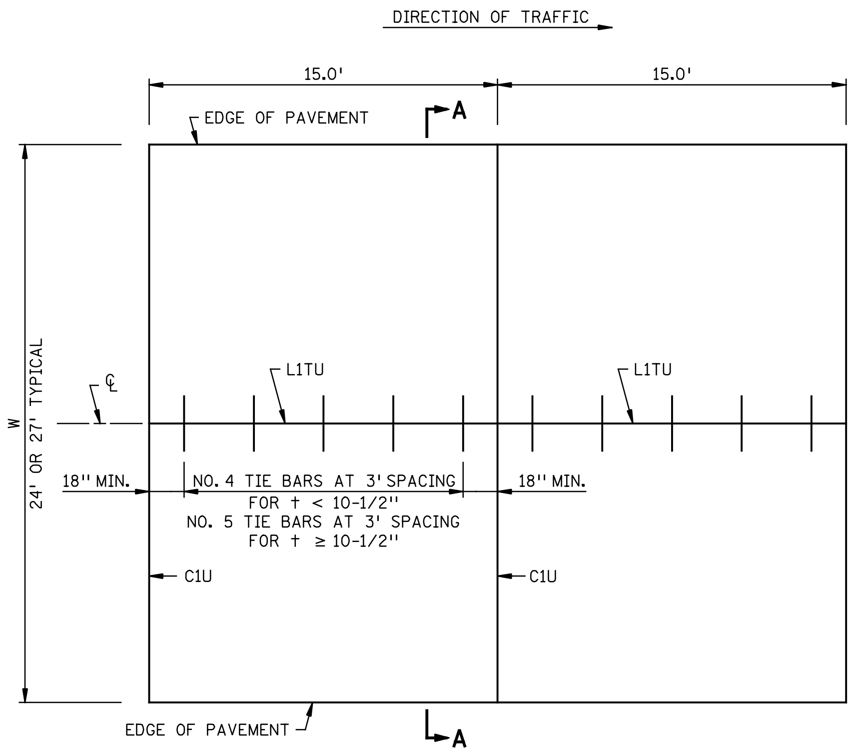
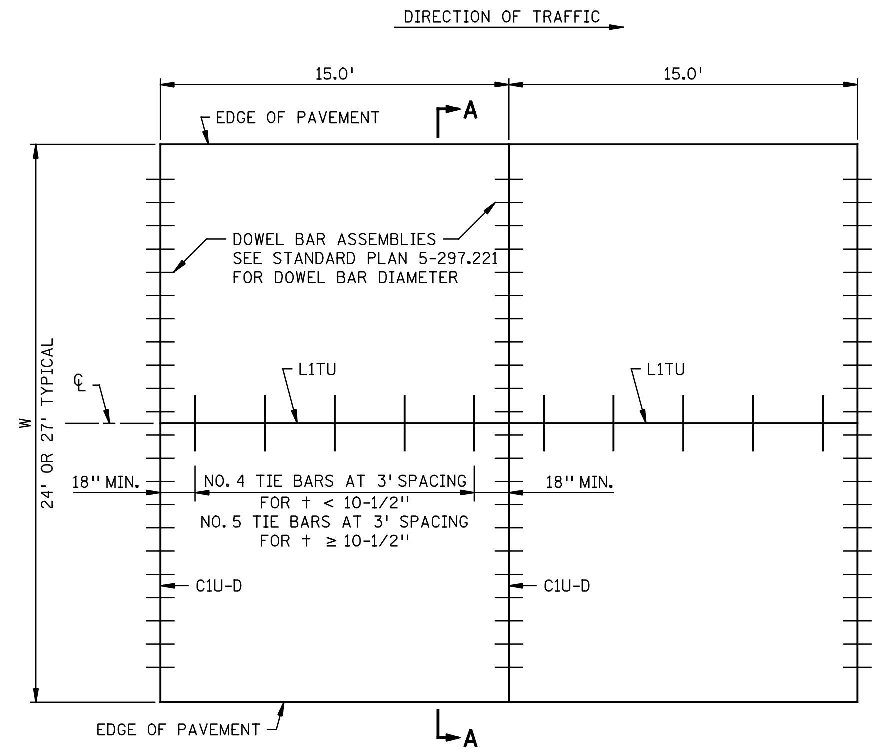
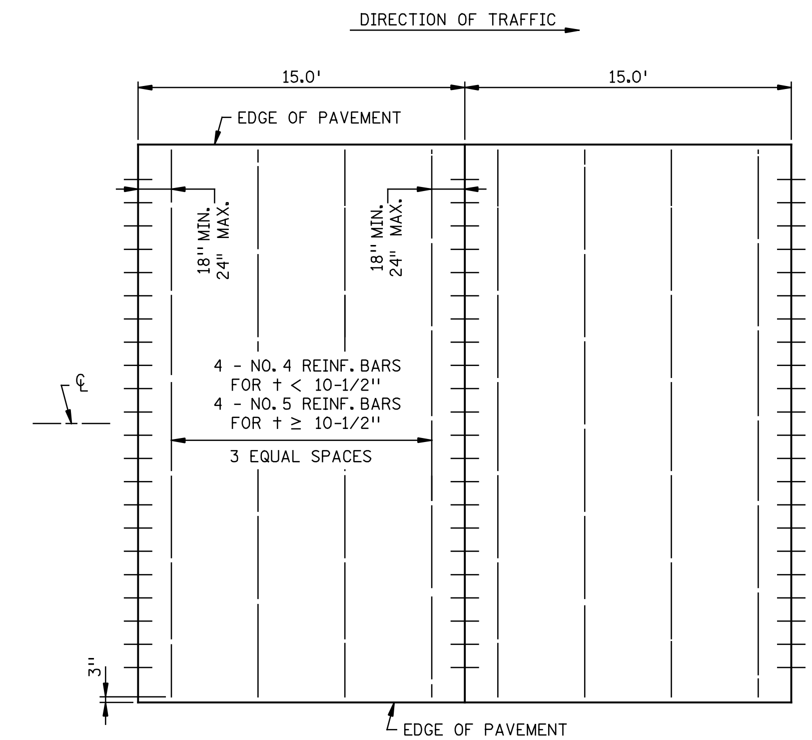


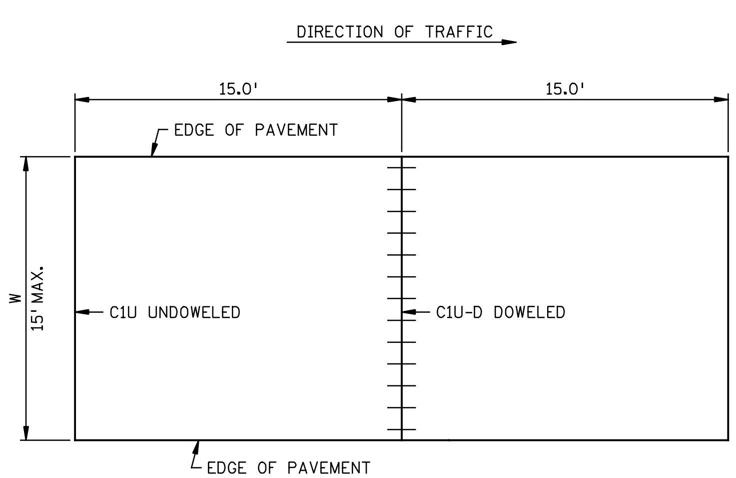
MAINLINE PAVEMENT
UNDOWELED



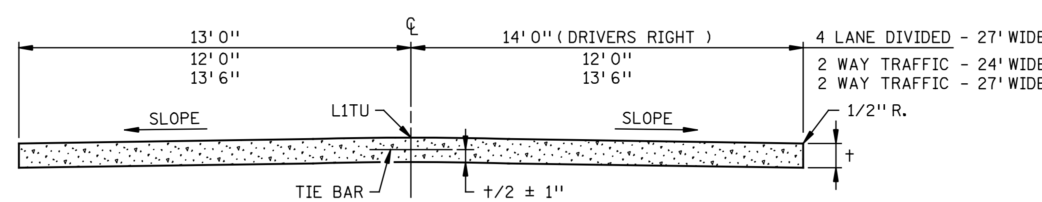
MAINLINE PAVEMENT
DOWELED



PANEL REINFORCEMENT



PAVEMENT 2 FT. THRU 15 FT. WIDTH
UNDOWELED OR DOWELED



SECTION A-A

GENERAL NOTES:

SEE TYPICAL SECTIONS AND PLAN SHEETS FOR CROSS SLOPES AND PAVEMENT THICKNESS, t.

DOWEL BAR ASSEMBLIES, WHEN REQUIRED, SHALL BE SIMILAR TO THOSE SHOWN ON STANDARD PLATE 1103.

ALL REINFORCING BARS SHALL BE EPOXY COATED AND COMPLY WITH SPEC 3301.

FOR SUPPLEMENTAL PAVEMENT REINFORCEMENT, SEE STANDARD PLATE 1070.

PANEL REINFORCEMENT:
PLACE IN PANELS WHERE PAVEMENT WIDTH EXCEEDS 15.0' WITHOUT A LONGITUDINAL JOINT, PLACEMENT DEPTH SHALL BE PLANNED t/2 ± 1". IT IS PREFERRED TO ADD A LONGITUDIDNAL JOINT RATHER THAN PAVE GREATER THAN 15' IN WIDTH.

REVISION:
APPROVED: FEBRUARY 16, 2016
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

STATE DESIGN ENGINEER
REVISED:
APPROVED:
2-16-2016

CONCRETE MAINLINE PAVEMENT
15.0 FT. PANEL LENGTH
RURAL

STANDARD PLAN 5-297.217 | 1 OF 2

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY
DESIGNED BY
CHECKED BY
COMM. NO. 01710321

MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLANS
TH 22 & CSAH 90

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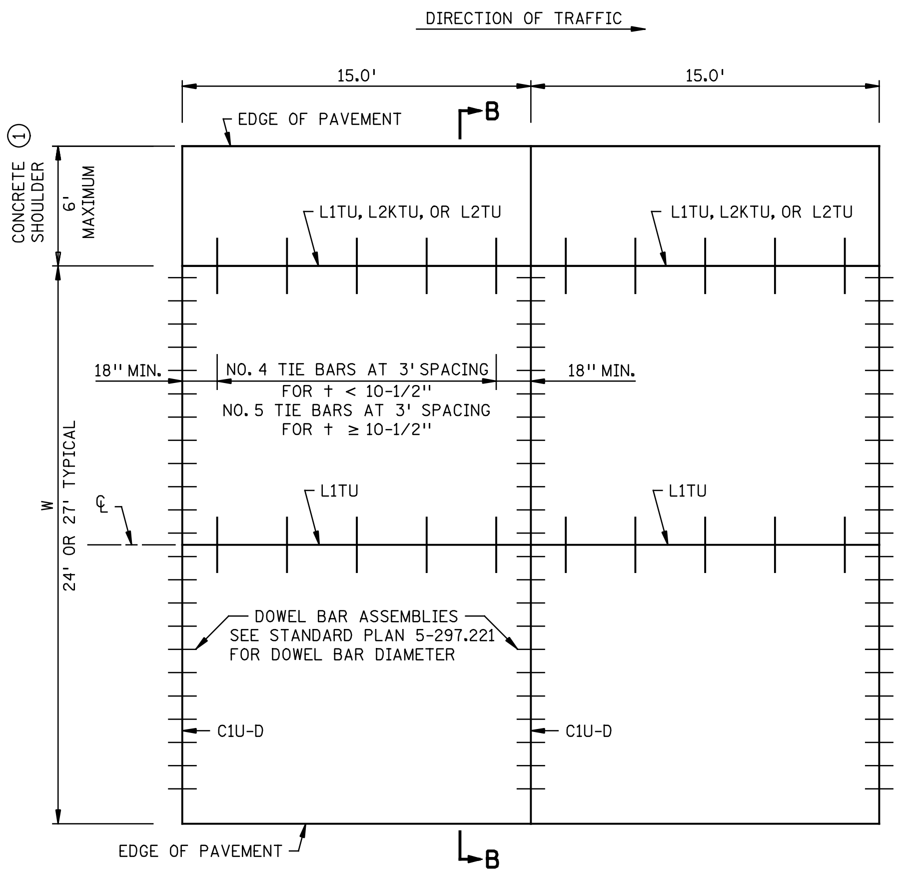
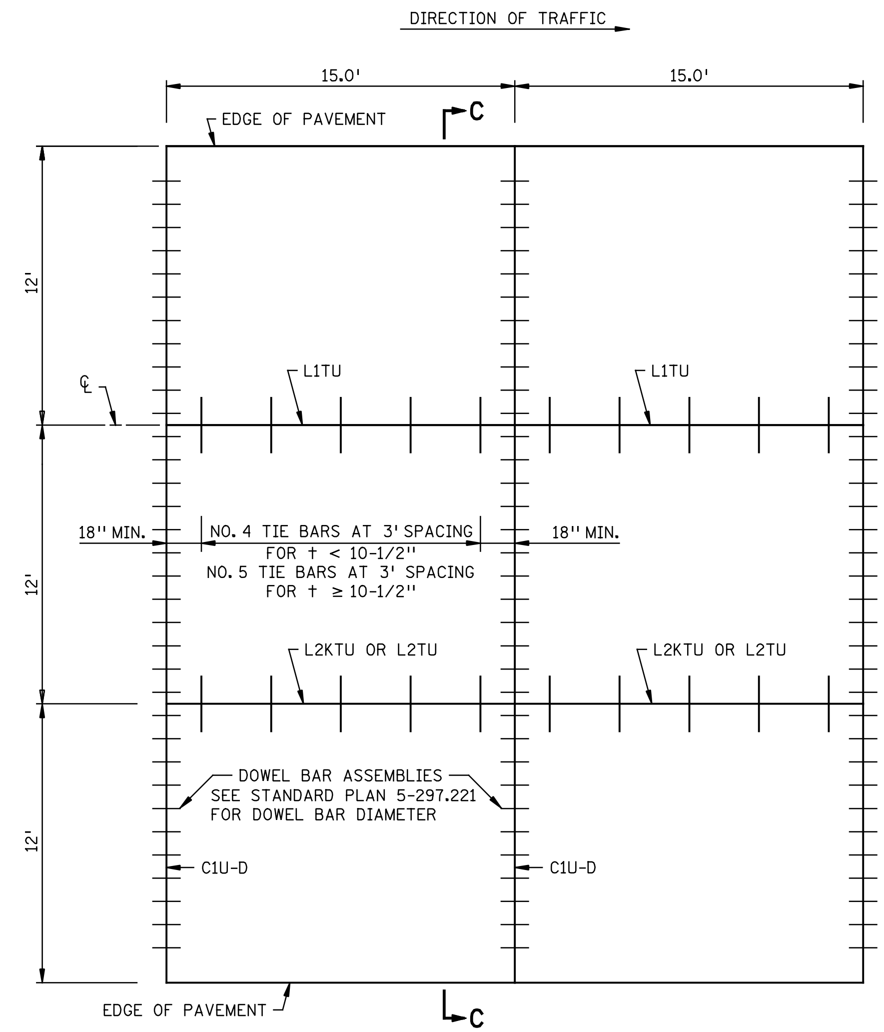


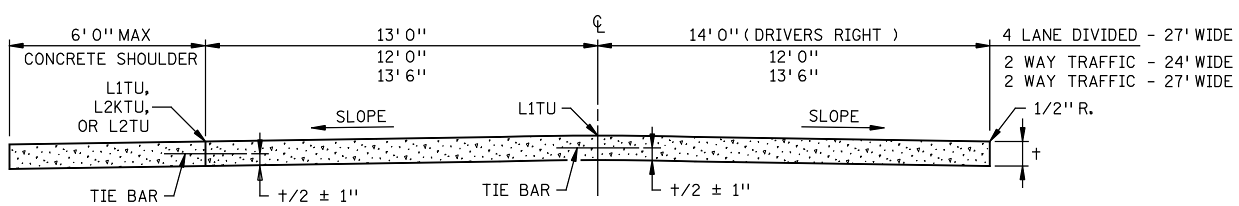
MAINLINE PAVEMENT WITH INSIDE CONCRETE SHOULDER

DOWELED

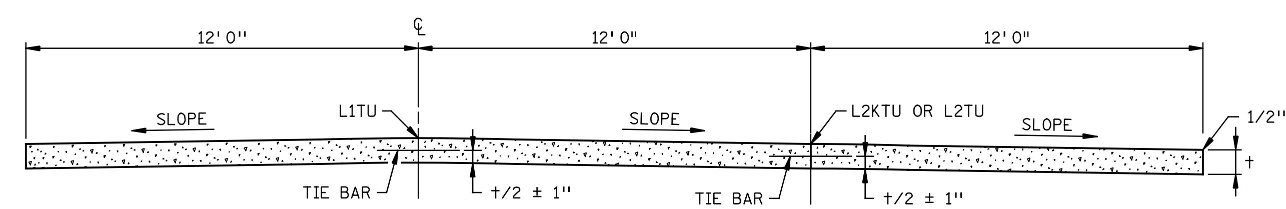


MAINLINE PAVEMENT URBAN

DOWELED



SECTION B-B



SECTION C-C

GENERAL NOTES:

SEE TYPICAL SECTIONS AND PLAN SHEETS FOR CROSS SLOPES AND PAVEMENT THICKNESS, t.

DOWEL BAR ASSEMBLIES, WHEN REQUIRED, SHALL BE SIMILAR TO THOSE SHOWN ON STANDARD PLATE 1103.

ALL REINFORCING BARS SHALL BE EPOXY COATED AND COMPLY WITH SPEC. 3301.

FOR SUPPLEMENTAL PAVEMENT REINFORCEMENT, SEE STANDARD PLATE 1070.

① CONTACT THE CONCRETE ENGINEER TO DISCUSS WHETHER TIE BARS AND SAWED JOINTS ARE NEEDED BASED ON CONCRETE SHOULDER WIDTH AND DEPTH.

REVISION:

APPROVED: FEBRUARY 16, 2016

DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED: 2-16-2016

CONCRETE MAINLINE PAVEMENT
15.0 FT. PANEL LENGTH
URBAN OR CONCRETE SHOULDERS

STANDARD PLAN 5-297.217 | 2 OF 2

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90	35 OF 255
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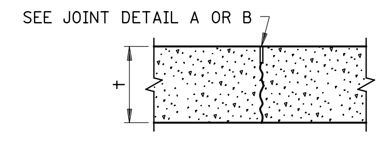
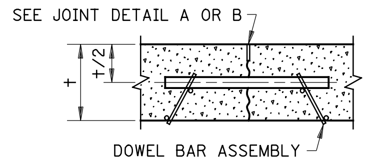
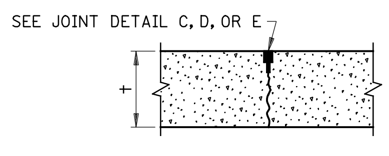


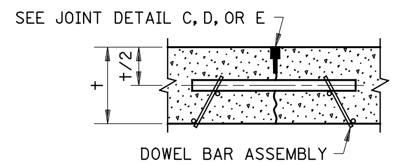
C1U & C2H



C1U-D & C2H-D



C3P, C4S, C5H



C3P-D, C4S-D, C5H-D

CONTRACTION JOINT REFERENCE, DETAIL & SEALER SPEC. TABLE

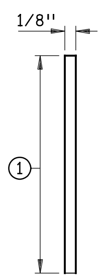
JOINT REFERENCE		JOINT DETAIL	JOINT SEALER SPEC.	JOINT WIDTH
WITHOUT DOWELS	WITH DOWELS			
C1U	C1U-D	A	UNSEALED	1/8"
C2H	C2H-D	B	3725	1/8"
C3P	C3P-D	C	3721	3/8"
C4S	C4S-D	D	3722	3/8"
C5H	C5H-D	E	3725	3/8"

LEGEND — EXAMPLE C2H-D

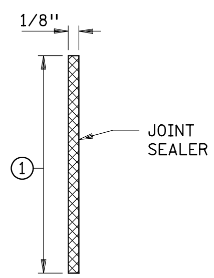
C = CONTRACTION JOINT
NO. = JOINT REFERENCE
U = UNSEALED
H = HOT POURED
P = PREFORMED
S = SILICONE
-D = DOWEL BARS

DOWEL BAR DIAMETER TABLE

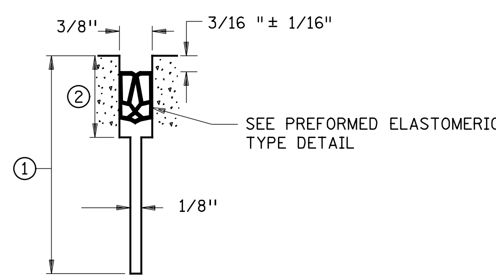
PAVEMENT THICKNESS t	DOWEL BAR DIAMETER
LESS THAN 6"	NONE
6" - 6 1/2"	1" OR NONE
7" - 7 1/2"	1"
8" - 10"	1 1/4"
10 1/2" AND GREATER	1 1/2"



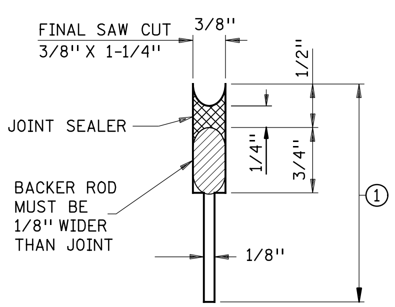
JOINT DETAIL A
SAWED & UNSEALED



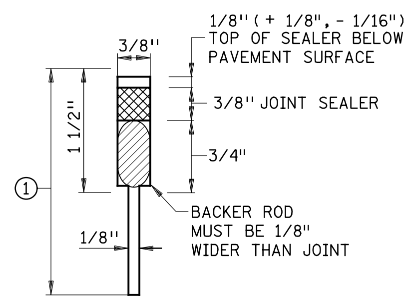
JOINT DETAIL B (3)
SAWED & SEALED



JOINT DETAIL C (3)
SAWED AND SEALED



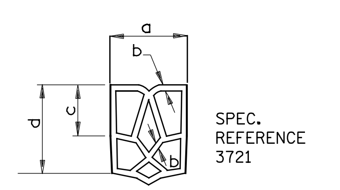
JOINT DETAIL D (3)(4)
SAWED AND SEALED



JOINT DETAIL E (3)(5)
SAWED AND SEALED

REQUIRED DIMENSIONS

JOINT TYPE	TRANSVERSE
NOMINAL SEALER SIZE	11/16" USE IN ALL 3/8" JOINTS
a	0.69" + 0.13" - 0.05"
b	0.08" ± 0.02"
c	0.25" MIN.
d	0.63" MIN.



TYPICAL SHAPE FOR SATISFACTORY INSTALLATION IN JOINT (5 CELL MIN.)

PREFORMED ELASTOMERIC TYPE DETAIL

NOTES:

SEE STANDARD PLATE 1103 FOR DOWEL BAR ASSEMBLY.

SEE STANDARD PLATE 1150 FOR CONSTRUCTION OF HEADER JOINTS.

JOINT WIDTH TOLERANCE IS + 1/16" TO - 1/32"

FURNISH AND INSTALL ALL JOINT SEALER IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

SEE STANDARD PLANS 5-297.217 AND 5-297.219, FOR CONCRETE MAINLINE/RAMP PAVEMENT.

SEE PAVING LAYOUTS IN THE PLANS FOR JOINT CLASS DESIGNATION TO BE USED AND SPECIAL REINFORCEMENT REQUIRED.

(1) JOINT DEPTH SHALL BE:
FOR CONCRETE OVERLAYS - 1/3 THE PAVEMENT THICKNESS
FOR CONCRETE PAVEMENT - 1/4 THE PAVEMENT THICKNESS

(2) SEE CONTRACTION JOINT SEALER DETAIL. WHEN USING PREFORMED JOINT SEALER, THE DEPTH SHALL BE 1/4" MORE THAN THE PREFORMED SEALER, WHEN COMPRESSED, TO FIT THE JOINT DESIGN WIDTH. "a" DIMENSION SHALL APPLY AT ANY POINT THROUGHOUT "c" DEPTH. SHARP INTERNAL CORNERS WILL NOT BE PERMITTED. ALL CORNERS SHALL BE PROVIDED WITH SUITABLE FILLET.

(3) WHEN SEALING, THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING.

(4) PRIOR TO SEALING THE JOINT, A 1/2" DIA. CLOSED CELL BACKER ROD SHALL BE PLACED SUCH THAT THE TOP OF THE BACKER ROD IS 1/2" BELOW THE SURFACE OF THE PAVEMENT. NON SELF-LEVELING SILICONE SHALL BE TOOLED INTO THE JOINT MAINTAINING A SEAL AND BEAD THICKNESS OF 1/4".

(5) PRIOR TO SEALING THE JOINT, A 1/2" DIA. CLOSED CELL BACKER ROD CAPABLE OF WITHSTANDING SEALANT TEMPERATURES OF 400 DEGREES F. SHALL BE PLACED 1/2" BELOW THE TOP OF PAVEMENT.

REVISION:
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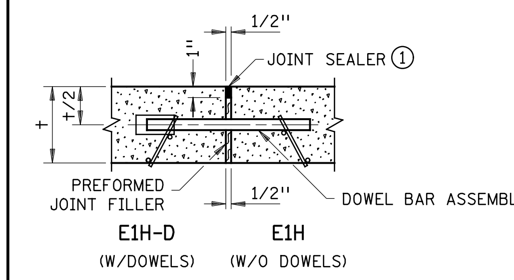
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

CONTRACTION JOINTS
DESIGN C



E1H-D (W/DOWELS) — E1H (W/O DOWELS)

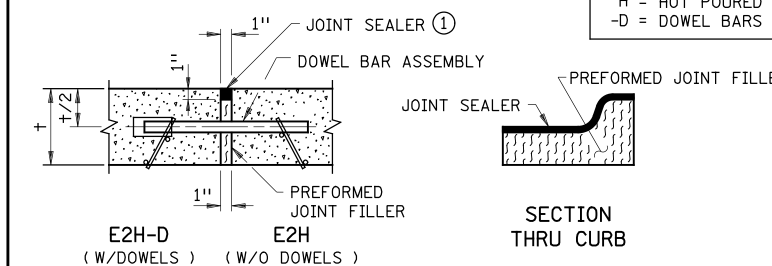
JOINT DETAIL A

EXPANSION JOINT REFERENCE, DETAIL & SEALER SPEC. TABLE

JOINT REFERENCE		JOINT DETAIL	JOINT SEALER SPEC.	JOINT WIDTH
WITHOUT DOWELS	WITH DOWELS			
E1H	E1H-D	A	3725	1/2"
E2H	E2H-D	B	3725	1"
E4H		C	3725	2"
	E4H-D	D	3725	2"
E8H		STANDARD PLAN 5-297.229	3725	4"

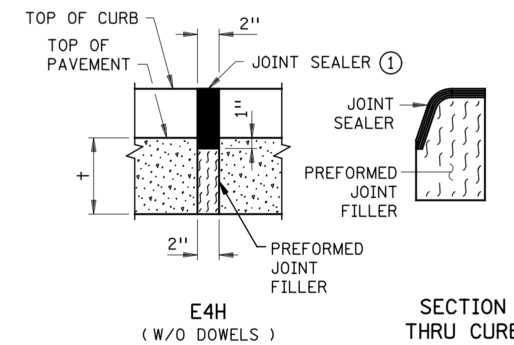
LEGEND — EXAMPLE E4H-D

E = EXPANSION JOINT
NO. = JOINT REFERENCE
H = HOT POURED
-D = DOWEL BARS



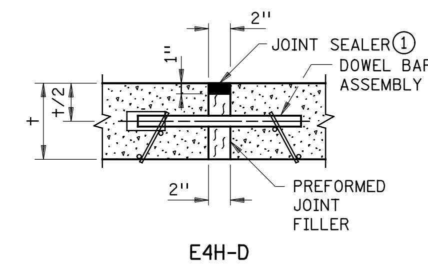
E2H-D (W/DOWELS) — E2H (W/O DOWELS) — SECTION THRU CURB

JOINT DETAIL B



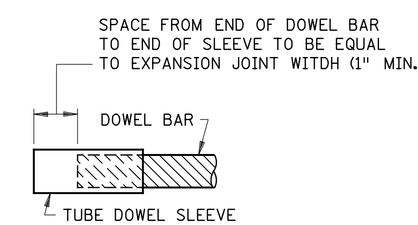
E4H (W/O DOWELS) — SECTION THRU CURB

JOINT DETAIL C



E4H-D (W/DOWELS)

JOINT DETAIL D



DOWEL BAR SLEEVE DETAIL

NOTES:

PREFORMED JOINT FILLER MATERIAL, SPEC. 3702.

FOR DOWEL BAR ASSEMBLY, SEE STANDARD PLATE 1103.

(1) JOINT SEALER SPEC. 3725. THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING. TOP OF SEALER, FLUSH TO 1/8" BELOW TOP OF PAVEMENT SURFACE. MAKE TOP OF SEALER FOR CURB SECTION D JOINTS FLUSH WITH SURFACE ±1/8".

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

PAVEMENT JOINTS
CONTRACTION (DESIGN C) AND EXPANSION (DESIGN E)

STANDARD PLAN 5-297.221 — 1 OF 2

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005
DRAWN BY
DESIGNED BY
CHECKED BY
COMM. NO. 01710321

MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLANS
TH 22 & CSAH 90

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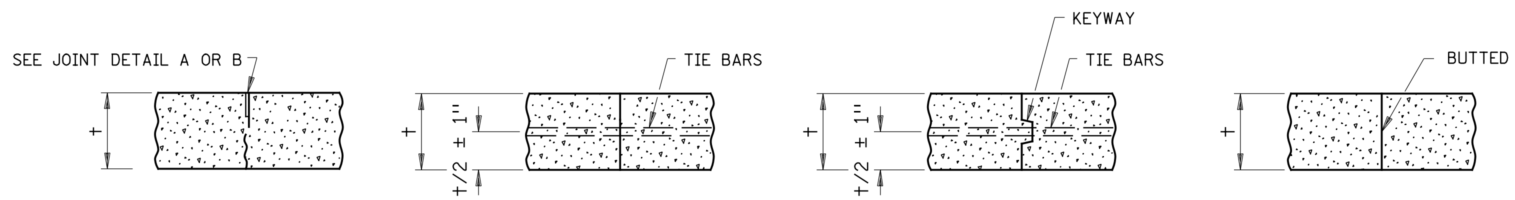
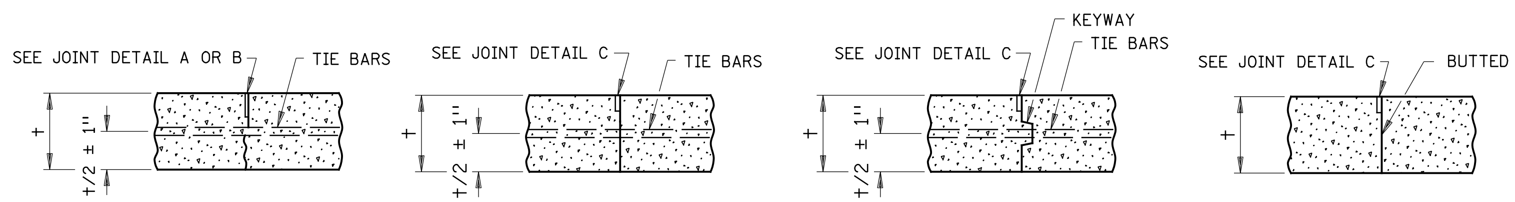
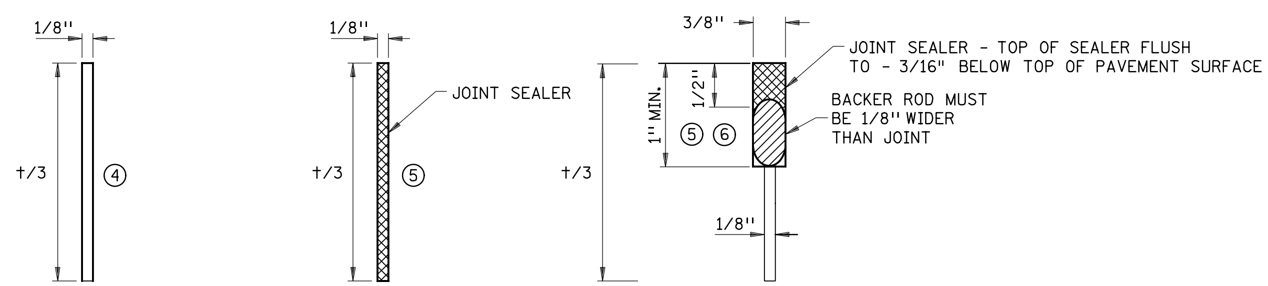


L1U & L1H ①　　L2TU ②　　L2KTU ③　　L3U



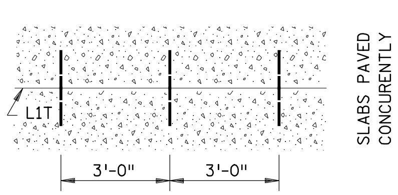
L1TU & L1TH ①　　L2TH ②　　L2KTH ③　　L3H



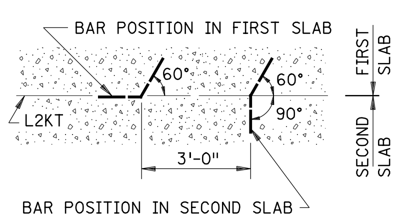
JOINT DETAIL A
SAWED & UNSEALED

JOINT DETAIL B
SAWED & SEALED

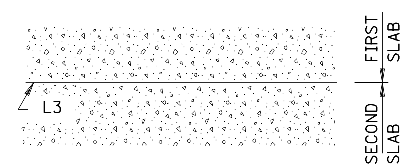
JOINT DETAIL C
SAWED & SEALED



L1T PAVING DETAIL



L2T & L2KT TIE BAR BENDING AND PAVING DETAIL



L3 PAVING DETAIL

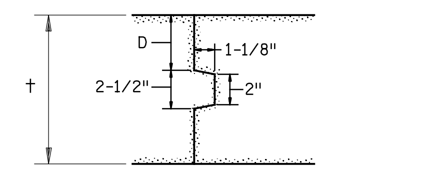
TIEBAR TABLE

PAVEMENT THICKNESS	TIEBAR SIZE	LENGTH
< 10-1/2"	NO. 4	30"
≥ 10-1/2"	NO. 5	36"
ALL THICKNESS WHEN TYING TO CURB AND GUTTER	NO. 4	30"

THE TIE BAR SPACING FOR ALL L2T AND L2KT JOINTS SHALL BE 3'-0" CENTER TO CENTER AND BENT 60° AS SHOWN, EXCEPT WHEN NOTED OTHERWISE IN THE PLANS.

TIE BARS IN THE L2T AND L2KT JOINTS SHALL BE THE SAME SIZE AND LENGTH AS USED FOR THE L1T JOINTS, WHEN TYING PAVEMENT TO PAVEMENT. TIE BARS IN THE L2KT JOINTS SHALL BE NO. 4 X 2' - 6", WHEN TYING CURB & GUTTER TO PAVEMENT.

ALL TIE BARS SHALL BE EPOXY COATED AND COMPLY WITH SPEC. 3301.



PAVEMENT KEYWAY DETAIL

KEYWAY DIMENSION TABLE

t PAVEMENT THICKNESS	D (TOLERANCE ± 1/4")
< 7"	NO KEYWAY
7" TO 7-1/2"	3"
8" TO 10"	4"
≥ 10-1/2"	5"

KEYWAY (1-1/8" x 2" x 2-1/2") MAY BE FORMED WITH MOLD OR METAL FORM. OTHER APPROVED KEYWAY SHAPES GIVING EQUIVALENT CONSTRUCTION FEATURES MAY BE USED WITH APPROVAL OF THE ENGINEER.

LONGITUDINAL JOINT REFERENCE, DETAIL & SEALER SPECIFICATION TABLE

JOINT REFERENCE			JOINT DETAIL	JOINT SEALER SPEC	JOINT WIDTH
WITHOUT TIE BARS	WITH TIE BARS	WITH KEYWAY & TIE BARS			
L1U	L1TU		A	UNSEALED	1/8"
L1H	L1TH		B	3725	1/8"
	L2TU	L2KTU	NONE	UNSEALED	
	L2TH	L2KTH	C	3725	3/8"
L3U			NONE	UNSEALED	
L3H			C	3725	3/8"

LEGEND — **EXAMPLE**: L2KTH

- L = LONGITUDINAL JOINT
- NO. = JOINT REFERENCE
- 1 = PAVED CONSTRUCTION JOINT
- 2 = TIED/KEYED CONSTRUCTION JOINT
- 3 = BUTTED CONSTRUCTION JOINT
- K = KEYWAY
- T = TIE BARS
- U = UNSEALED
- H = HOT POURED

NOTES:

NORMALLY, TIED PAVEMENT WIDTHS SHALL NOT EXCEED FOUR LANES, EXCEPT BRIDGE APPROACH PANELS AND PAVEMENT TAPERS.

JOINT WIDTH TOLERANCE IS + 1/16 IN. TO - 1/32 IN.

FURNISH AND INSTALL ALL JOINT SEALER IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

TIED/KEYED AND BUTTED CONSTRUCTION JOINTS SHALL BE UNSEALED EXCEPT AS OTHERWISE NOTED IN THE PLAN OR REQUIRED BY THE ENGINEER.

SEE STANDARD PLANS 5-297.217 AND 5-297.219 FOR CONCRETE MAINLINE AND RAMP PAVEMENT.

SEE PAVING LAYOUTS IN THE PLANS FOR JOINT CLASS DESIGNATIONS TO BE USED AND SPECIAL REINFORCEMENT REQUIRED.

WHEN CURB AND GUTTER IS PLACED ADJACENT TO CONCRETE MAINLINE, THE TIEBARS SHALL BE PLACED A MINIMUM OF 2" ABOVE THE CURB AND GUTTER GRADE.

① SEE THE LONGITUDINAL JOINT REFERENCE, DETAIL & SEALER SPECIFICATION TABLE TO DETERMINE JOINT DETAIL.

② CONCRETE PAVEMENTS LESS THAN 7" SHALL USE L2TU AND L2TH JOINTS UNLESS OTHERWISE ALLOWED BY THE ENGINEER.

③ CONCRETE PAVEMENTS GREATER THAN OR EQUAL TO 7" SHALL USE L2KTU AND L2KTH JOINTS UNLESS OTHERWISE ALLOWED BY THE ENGINEER.

④ THE JOINT FACES SHALL BE CLEANED WITH WATER DURING THE SAW CUTTING OPERATION OR BY WATER BLASTING AFTER SAWING.

⑤ THE JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING.

⑥ PRIOR TO SEALING THE JOINT, A 1/2" DIAMETER CLOSED CELL BACKER ROD CAPABLE OF WITHSTANDING SEALANT TEMPERATURES OF 400 DEGREES F. SHALL BE PLACED 1/2" BELOW THE TOP OF THE PAVEMENT.

REVISION:

APPROVED: 8-6-2014

DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

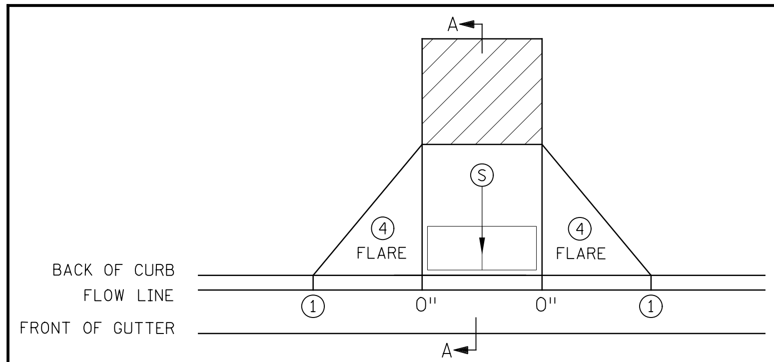
APPROVED: 8-6-2014

PAVEMENT JOINTS
LONGITUDINAL (DESIGN L)

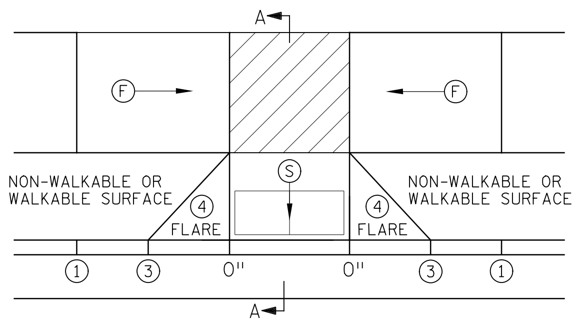
STANDARD PLAN 5-297.221 | 2 OF 2

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	
STATE PROJECT NO. 007-070-005	DESIGNED BY	
	CHECKED BY	
	COMM. NO. 01710321	

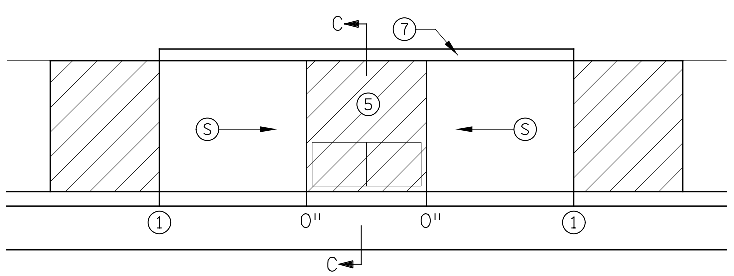
MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLANS
TH 22 & CSAH 90



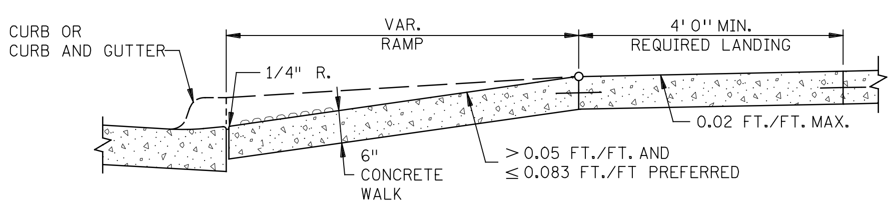
PERPENDICULAR



TIERED PERPENDICULAR

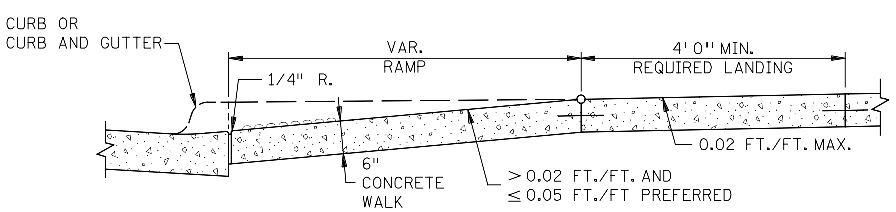


PARALLEL



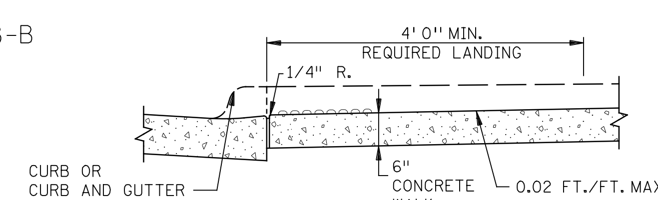
SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL



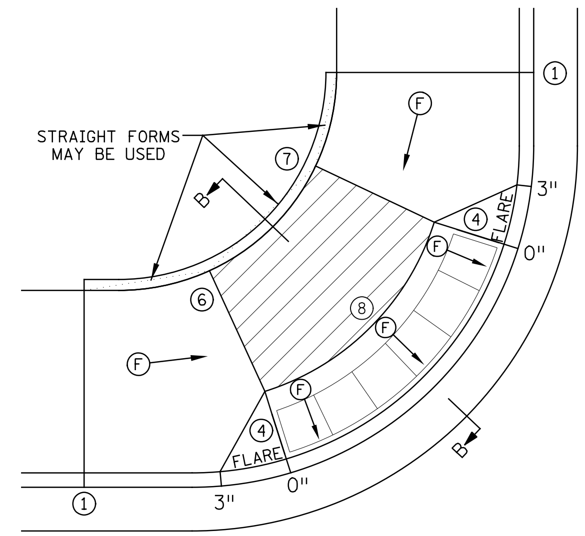
SECTION B-B

FAN

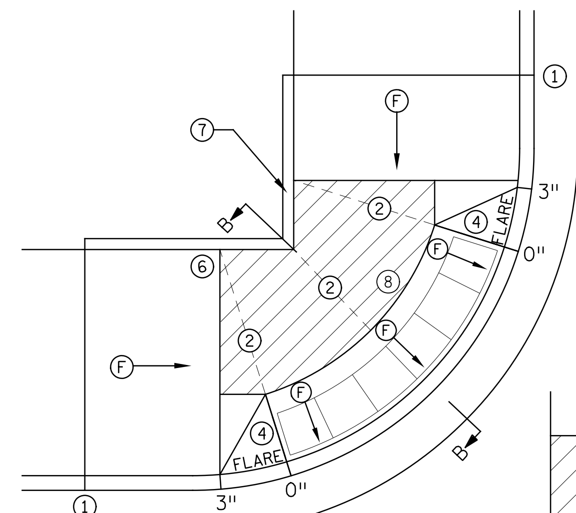


SECTION C-C

PARALLEL/DEPRESSED CORNER

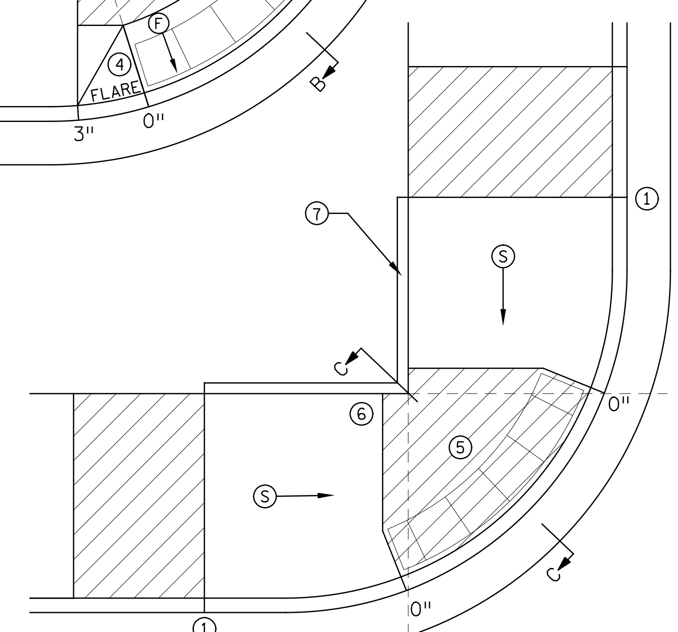


FAN 10

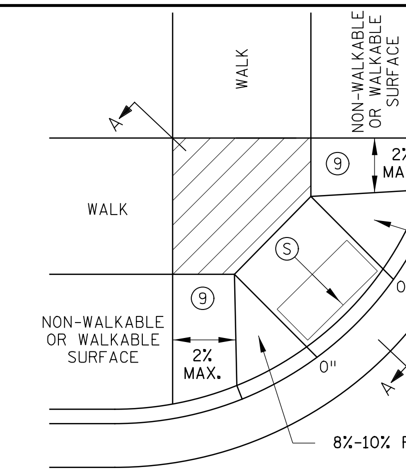


MODIFIED FAN 10

USED WHEN RIGHT-OF-WAY IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

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

NOTES:

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

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

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

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

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

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

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

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

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

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/TRAIL WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

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

1. MATCH FULL HEIGHT CURB.
2. 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
3. 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
4. SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS, WHEN INITIAL LANDING IS AT FULL CURB HEIGHT.
5. DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
6. THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)
7. WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
8. A 7' MIN TOP RADIUS GRADE BREAK REQUIRED TO BE CONSTRUCTIBLE.
9. PAVE FULL WALK WIDTH.
10. "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

LEGEND

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

S	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
F	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
(hatched box)	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
X"	CURB HEIGHT

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED:

1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 | 1 OF 6

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY

DESIGNED BY

CHECKED BY

COMM. NO. 01710321

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLANS

TH 22 & CSAH 90

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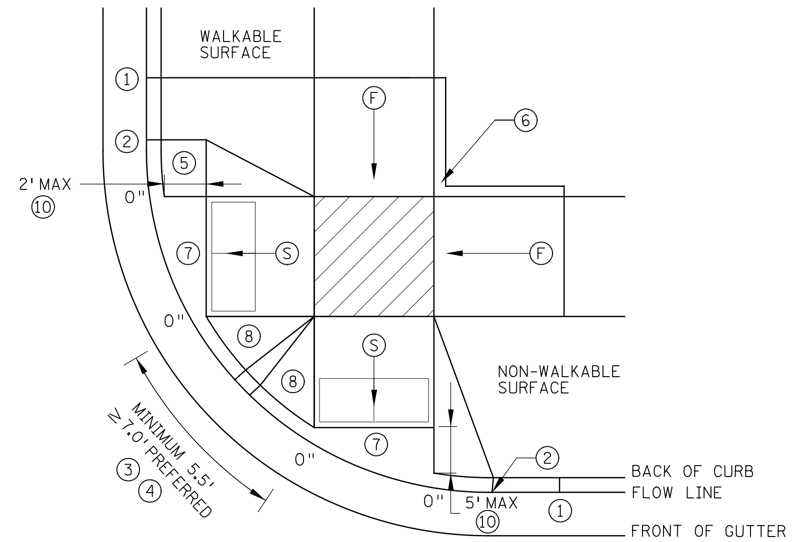
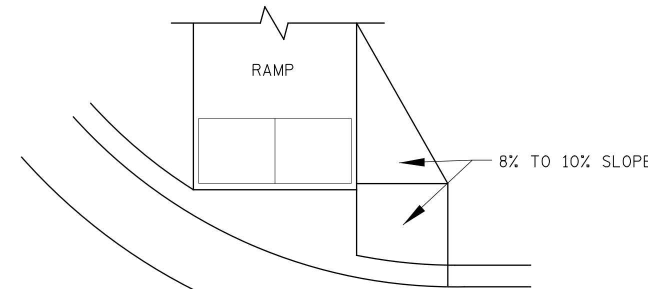


COMBINED DIRECTIONAL ⑨



DIRECTIONAL RAMP WALKABLE FLARE

NOTES:

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

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

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

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

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

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

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

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

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

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATH AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/PATH WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

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

① MATCH FULL CURB HEIGHT.

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

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

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

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

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

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

⑧ 8% TO 10% WALKABLE FLARE.

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

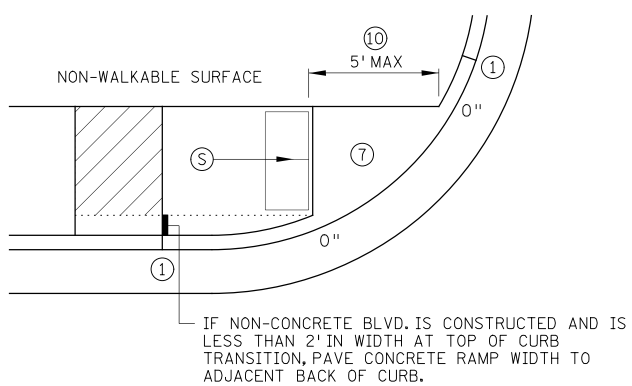
⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD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

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

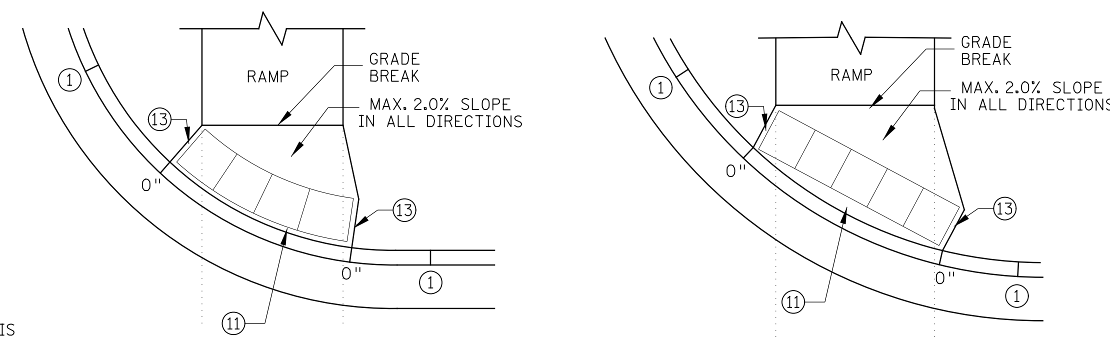
⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.

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

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

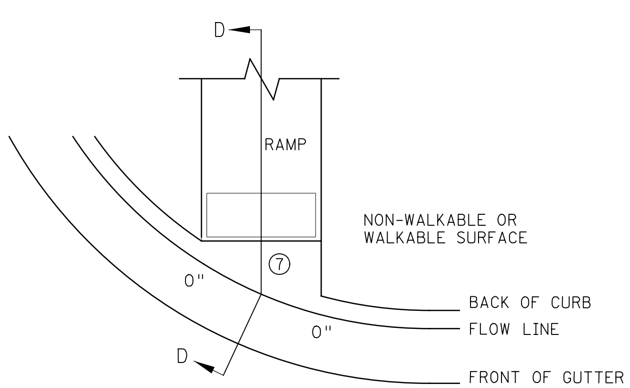


STANDARD ONE-WAY DIRECTIONAL ⑨

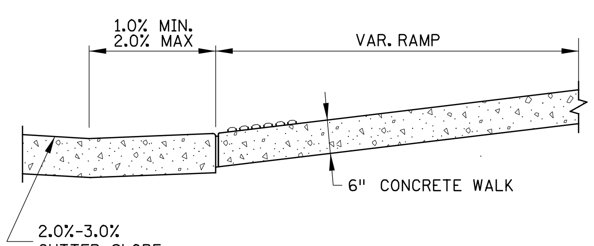


DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

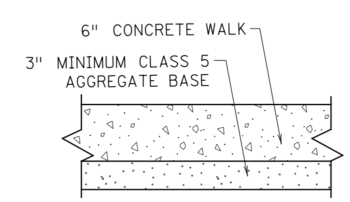
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



CURB FOR DIRECTIONAL RAMPS ⑭



SECTION D-D



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

LEGEND

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

- Ⓢ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
- Ⓕ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
- LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
- X" CURB HEIGHT

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED:
1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 | 2 OF 6

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	
STATE PROJECT NO. 007-070-005	DESIGNED BY	
	CHECKED BY	
	COMM. NO. 01710321	

MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLANS
TH 22 & CSAH 90

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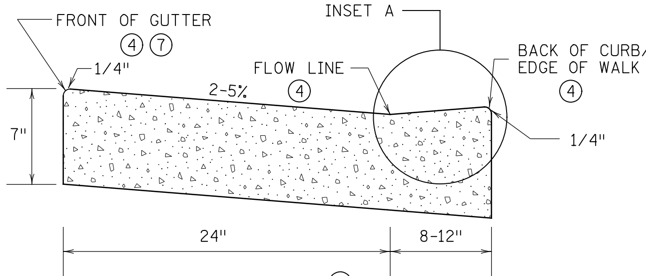
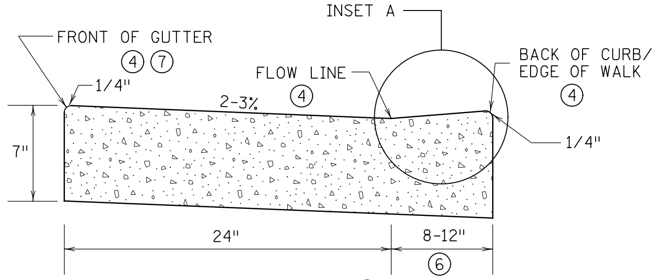
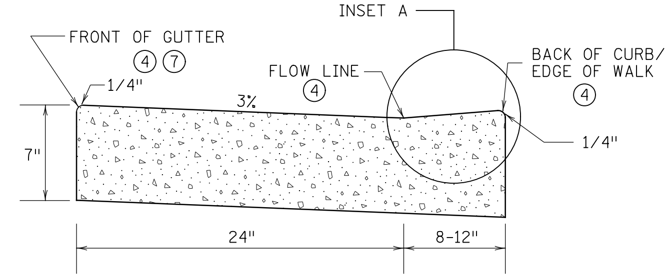


PERPENDICULAR ①



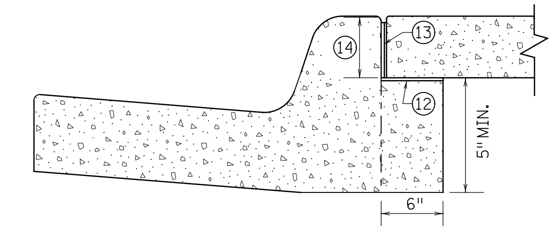
NON PERPENDICULAR ②

PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



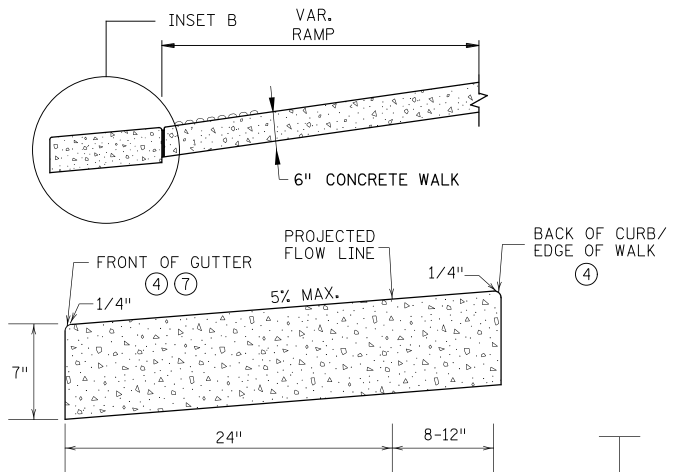
FOR CURB MACHINE PLACEMENT AROUND RADIUS ③

(REGARDLESS OF RAMP TYPE)



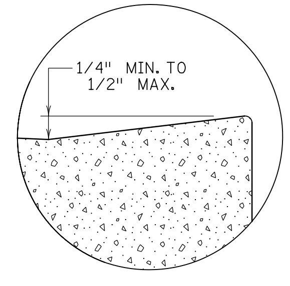
OPTIONAL SILL CURB WHEN SIDEWALK IS AT BACK OF CURB

CONCRETE SILL TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.

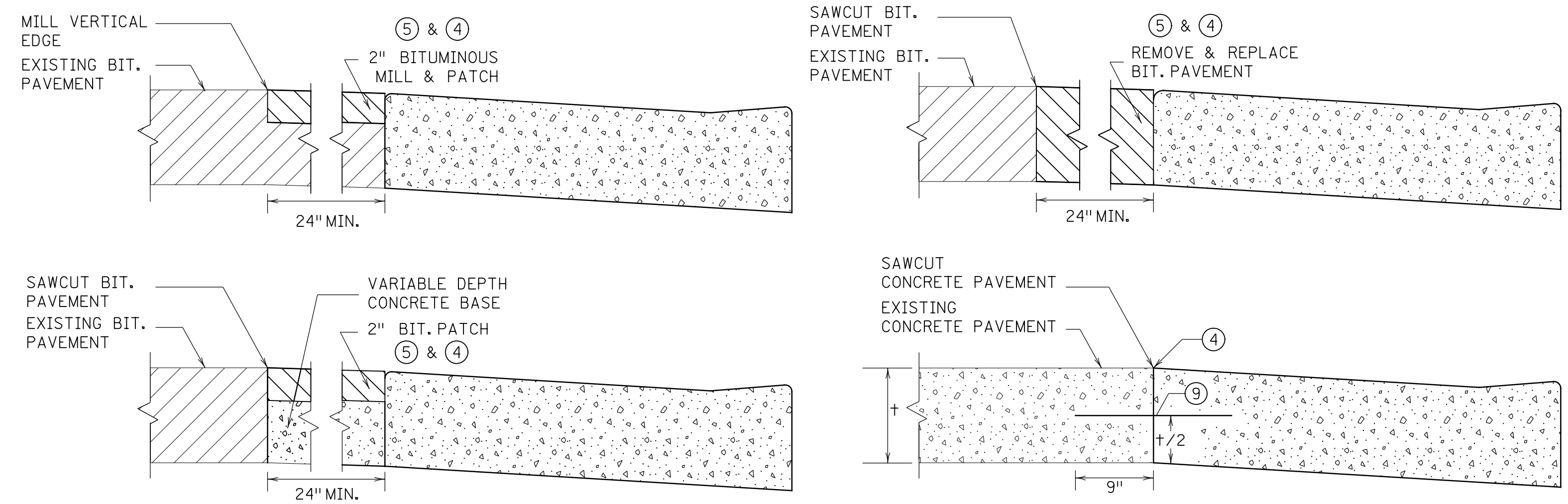


INSET B

OUTFLOW GUTTER ⑧



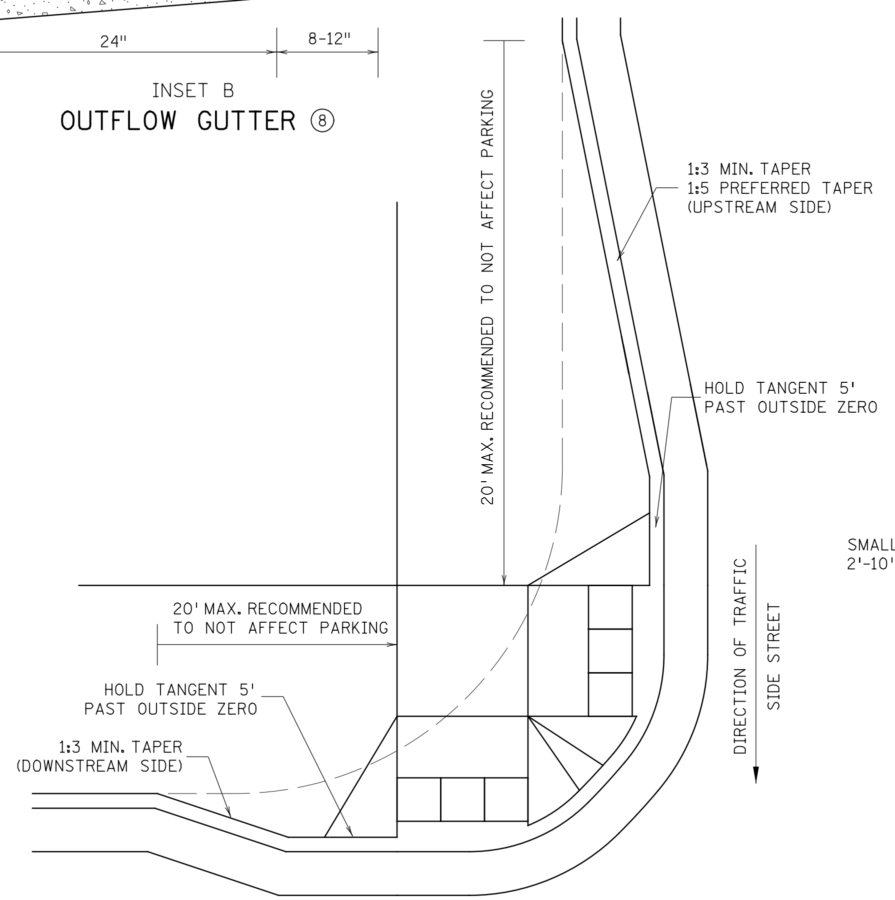
INSET A



ONLY ALLOWED PER ENGINEER'S APPROVAL

PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

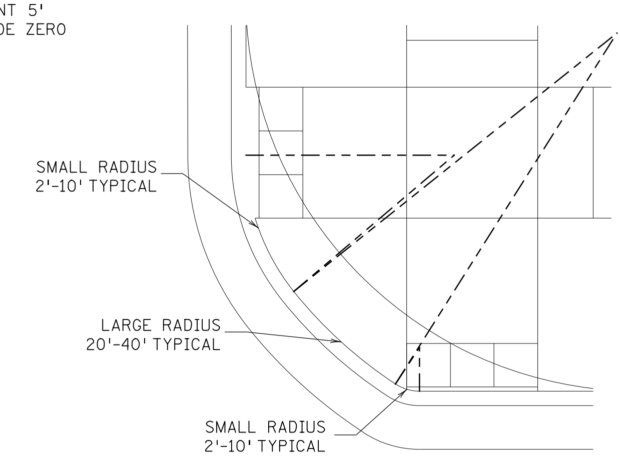
FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) ⑪

DIRECTION OF TRAFFIC

MAIN STREET



COMBINED DIRECTIONAL ⑩
(COMPOUND RADIUS)

NOTES:

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

NO PONDING SHALL BE PRESENT IN THE PAR.

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

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

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

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

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

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

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

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

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

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

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

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

⑫ PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.

⑬ 1/2" PREFORMED JOINT FILLER PER MNDOT SPEC. 3702.

⑭ DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

REVISED:

APPROVED:

STATE DESIGN ENGINEER

1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 | 3 OF 6

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS	40
	CHECKED BY	TH 22 & CSAH 90	OF
	COMM. NO. 01710321		255

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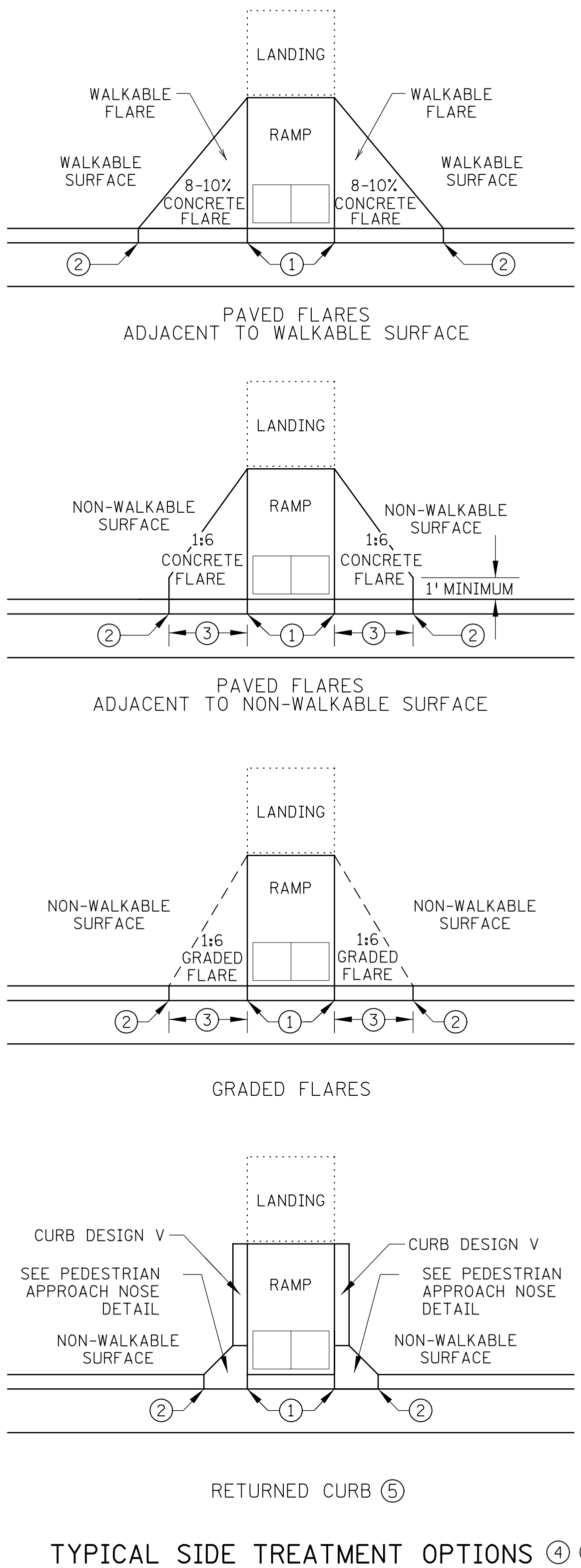


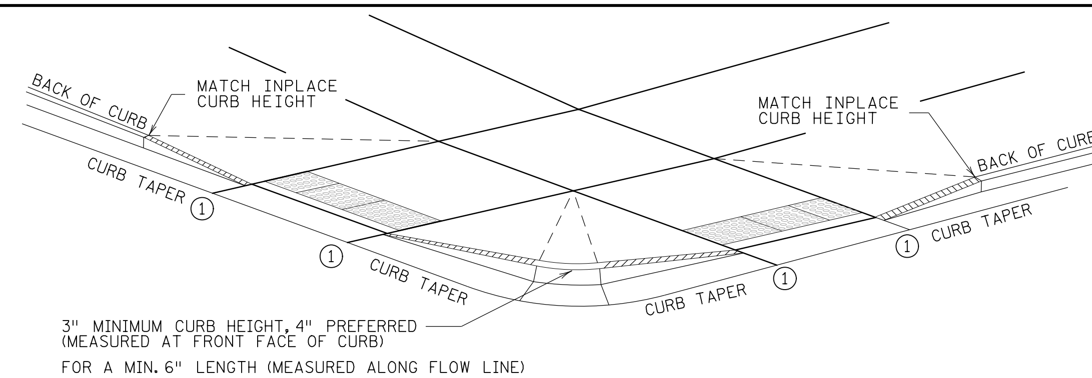
PAVED FLARES
ADJACENT TO WALKABLE SURFACE

PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

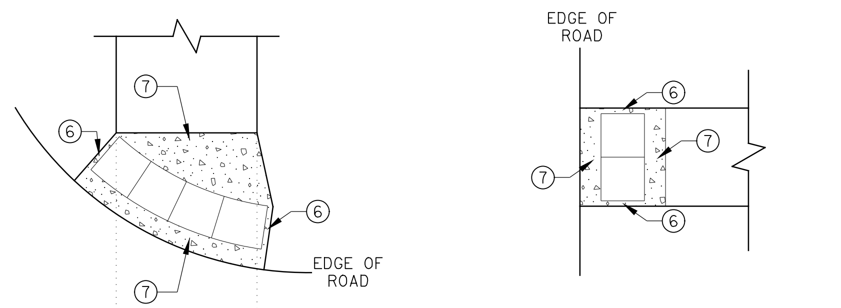
GRADED FLARES

RETURNED CURB (5)

TYPICAL SIDE TREATMENT OPTIONS (4) (11)



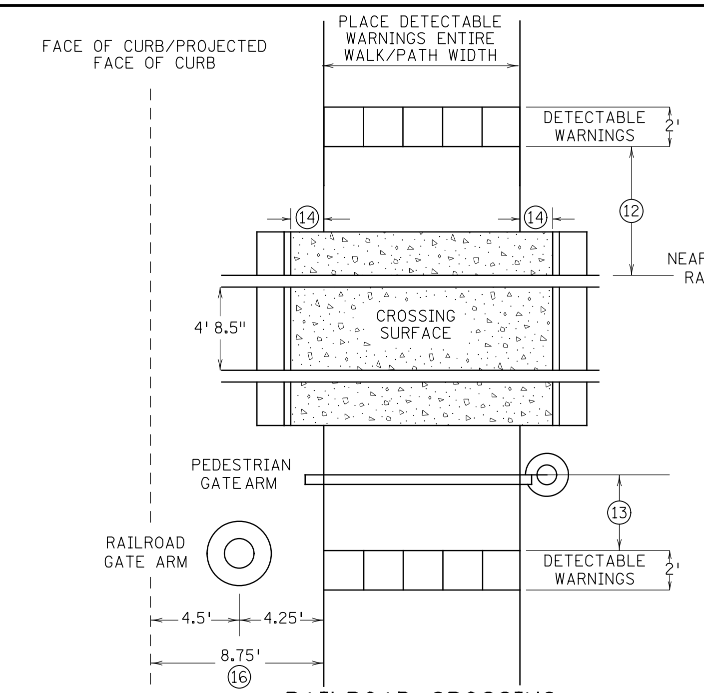
DETECTABLE EDGE WITH (8)
CURB AND GUTTER



RADIAL DETECTABLE WARNING

RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER



RAILROAD CROSSING
PLAN VIEW

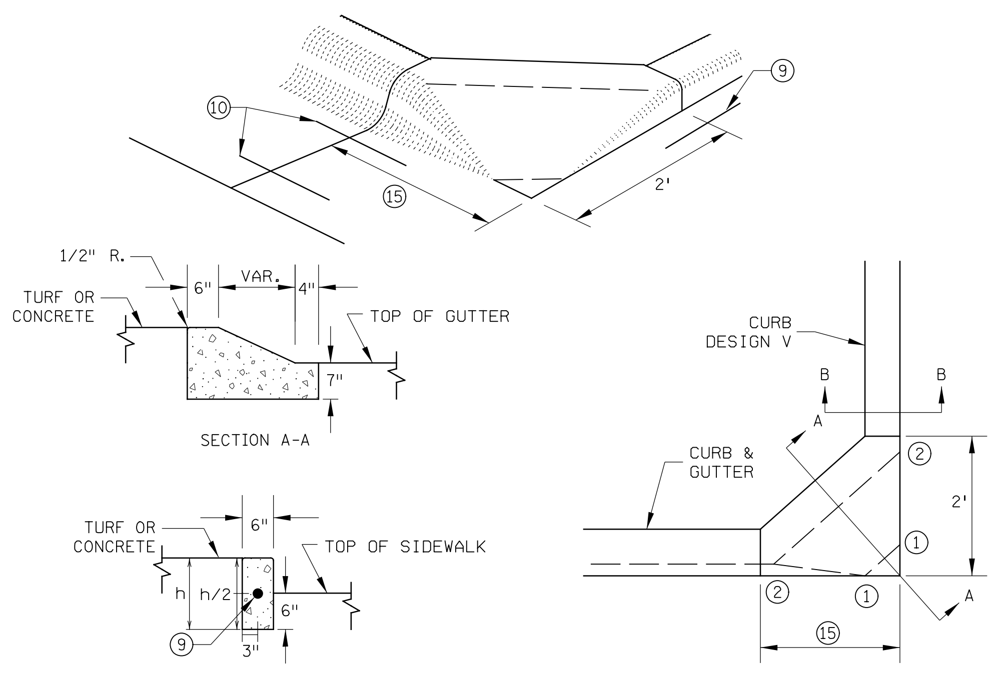
NOTES:

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

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

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

(1) 0" CURB HEIGHT.
(2) FULL CURB HEIGHT.
(3) 2' FOR 4" HIGH CURB AND 3' FOR 6" HIGH CURB.
(4) SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
(5) TYPICALLY USED FOR MEDIANS AND ISLANDS.
(6) WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
(7) IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
(8) ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.
(9) DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.
(10) DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.
(11) SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE.
(12) NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.
(13) WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE (12).
(14) CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
(15) 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
(16) SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.



PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED:
1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 | 4 OF 6

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY
DESIGNED BY
CHECKED BY
COMM. NO. 01710321

MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLANS
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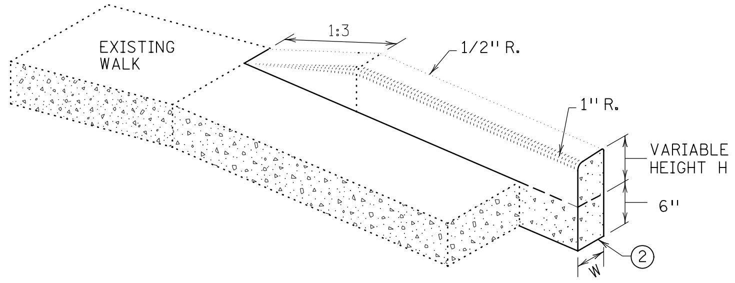
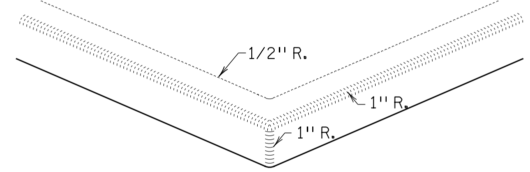
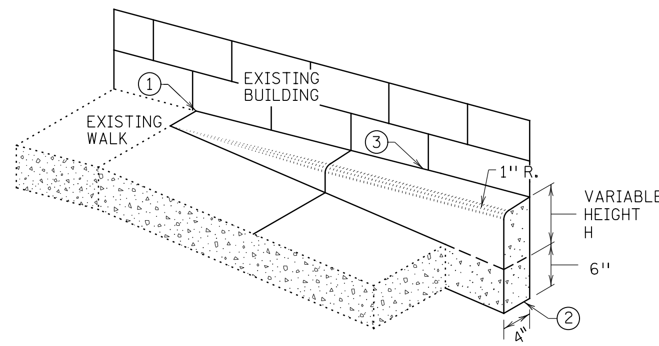


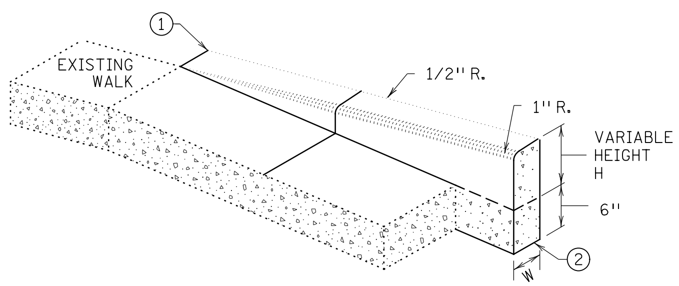
V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS



V CURB INTERSECTION

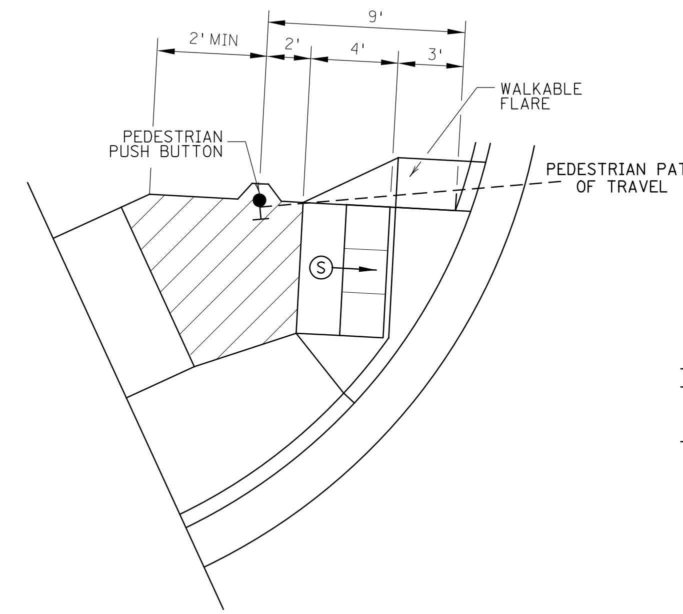


V CURB ADJACENT TO BUILDING OR BARRIER



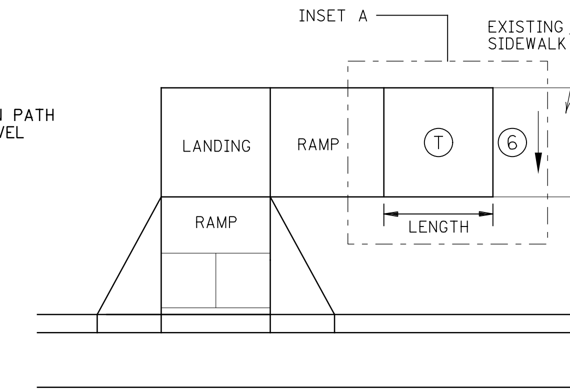
V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

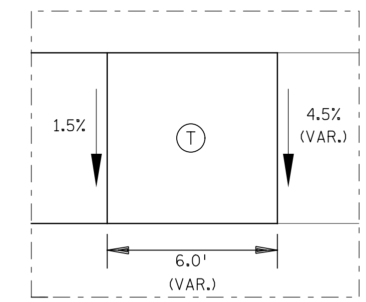
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
<6"	4"
≥6"	6"



SEMI-DIRECTIONAL RAMP (3,4,9)
3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB

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





INSET A

TRANSITION PANEL ④⑤

NOTES:

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

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

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

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

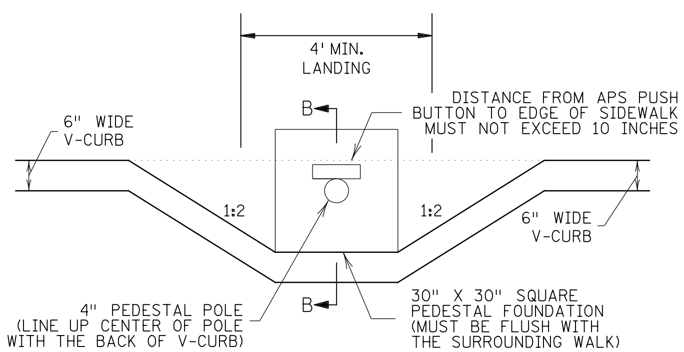
V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

1. END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
2. ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
3. EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.
4. THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.
5. TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).
6. EXISTING CROSS SLOPE GREATER THAN 2.0%.

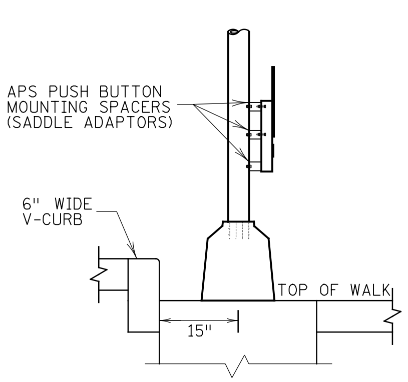
LEGEND

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

- (S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
- LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
- (T) TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

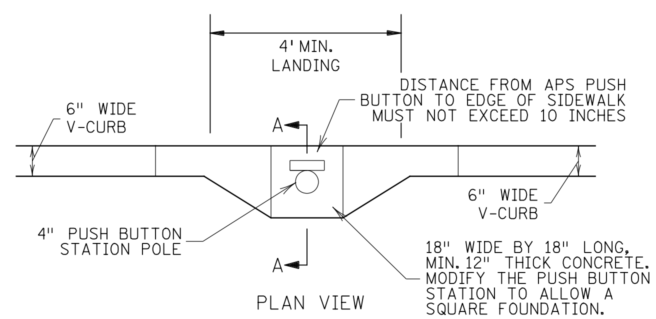


PLAN VIEW

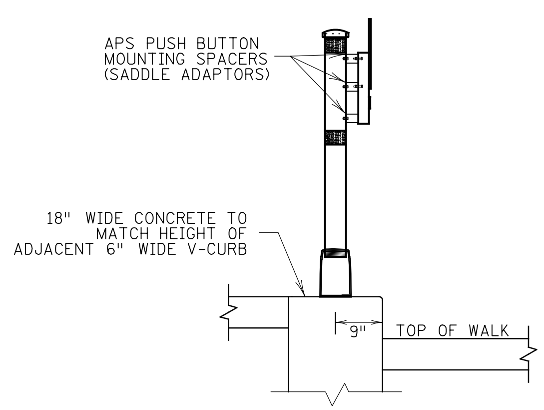


SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



PLAN VIEW



SECTION A-A

PUSH BUTTON STATION (V-CURB)

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED: 1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 | 5 OF 6

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY
STATE PROJECT NO. 007-070-005	DESIGNED BY
	CHECKED BY
	COMM. NO. 01710321

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLANS

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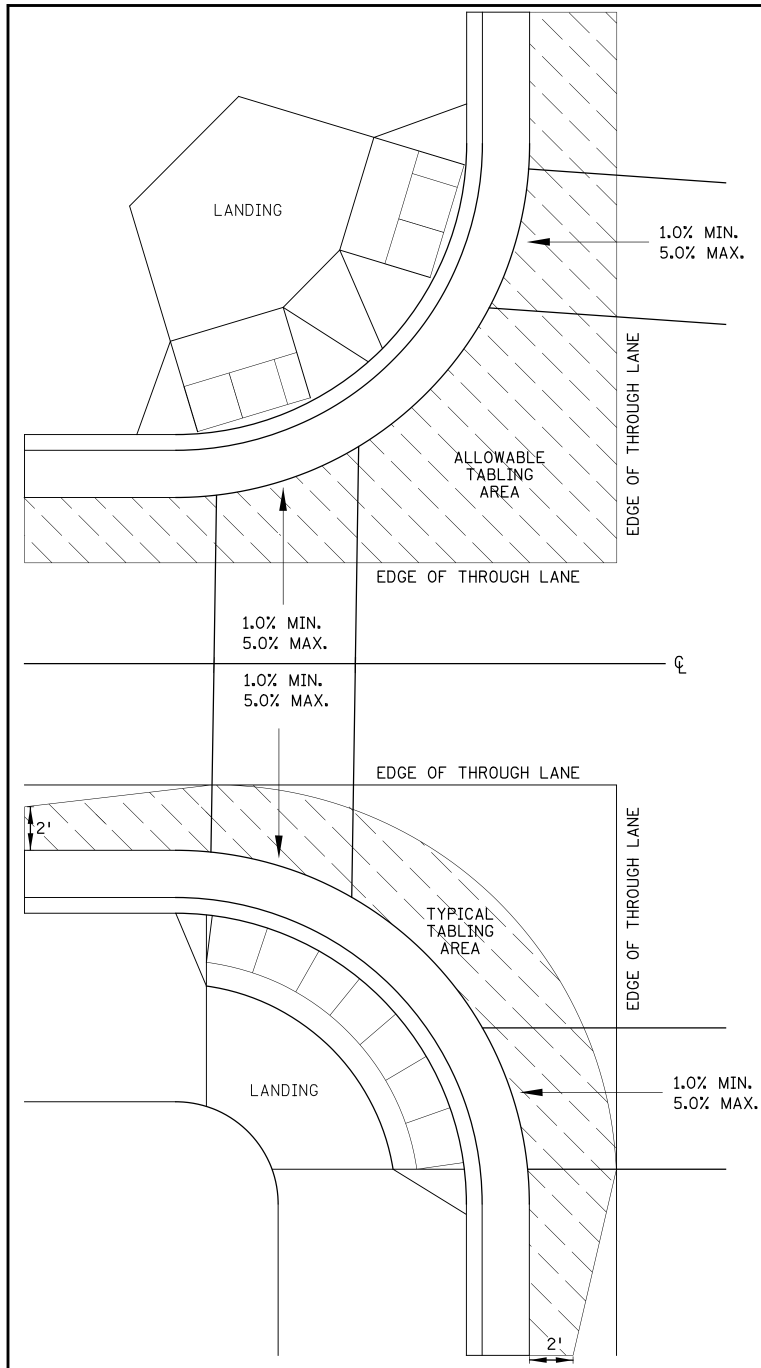
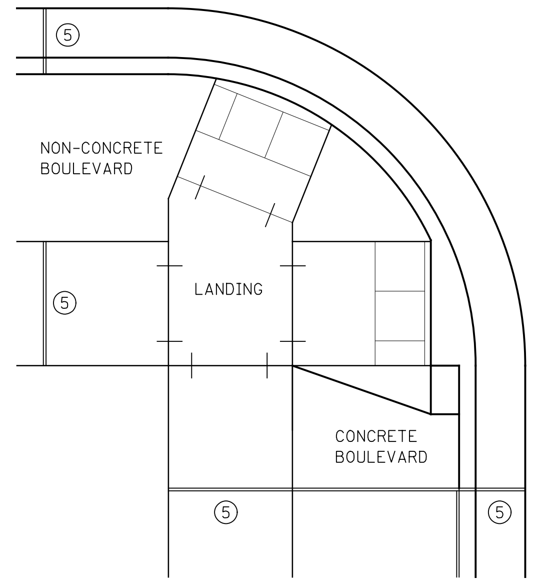
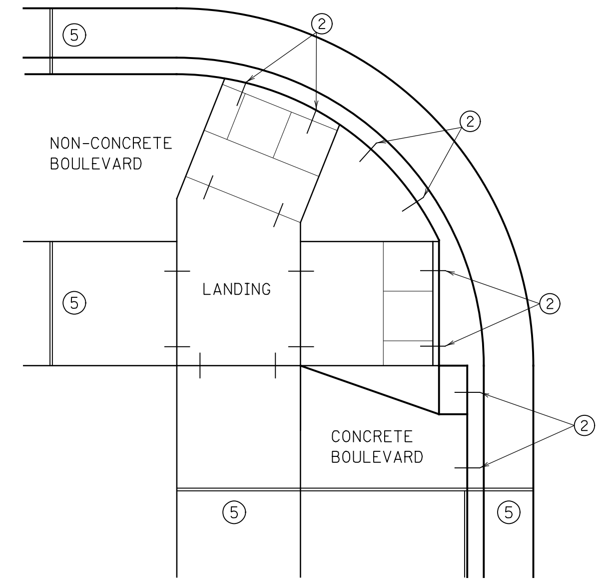


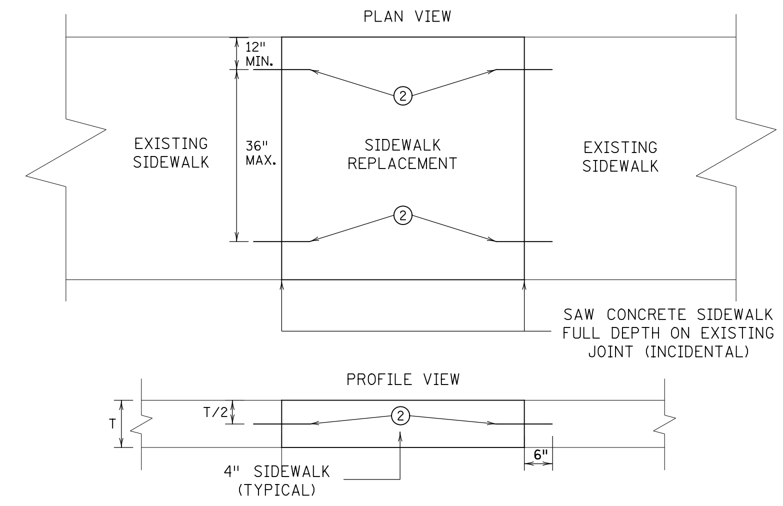
CURB LINE AND ROAD CROSSING ADJUSTMENTS



EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS

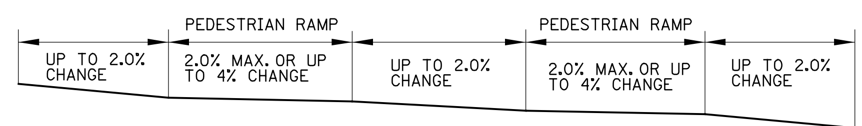


OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS ④

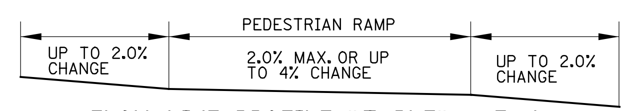


OPTIONAL SIDEWALK REINFORCEMENT

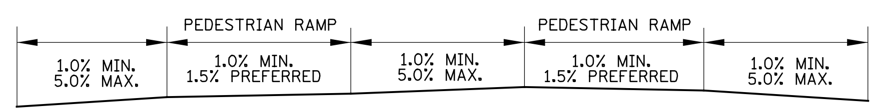
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



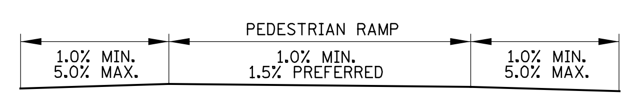
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



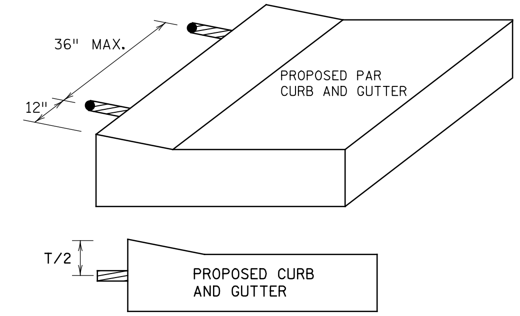
FLOW LINE PROFILE "TABLE" - FAN



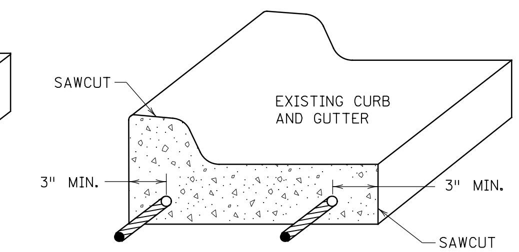
FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



FLOW LINE PROFILE RAISE - FAN

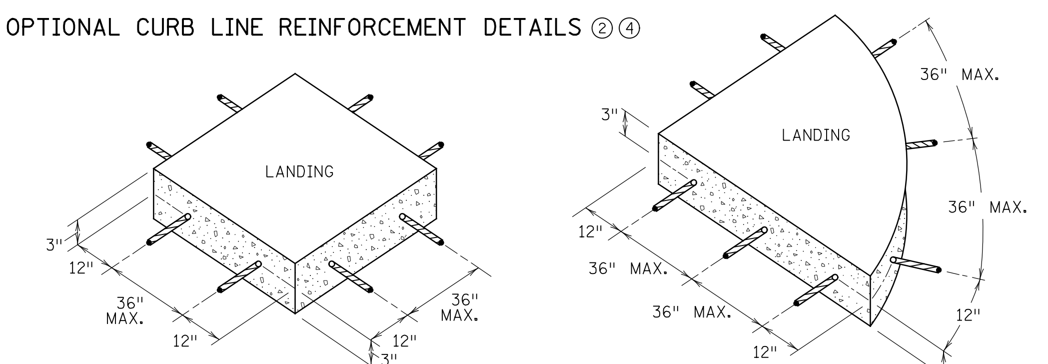


OPTIONAL CURB LINE REINFORCEMENT DETAILS ②④



FOR USE ON CURB RAMP RETROFITS

CURB AND GUTTER REINFORCEMENT ③



SEPARATE LANDING POUR REINFORCEMENT ①

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

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

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;

1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
3) "TABLE" FLOW LINE UP TO 4% CHANGE FROM EXISTING SLOPE IN FRONT OF PEDESTRIAN RAMP
4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

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

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;

1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
3) 5.0% RECOMMENDED MAX. FLOW LINE
4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

NOTES:

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

② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS AT 36" MAXIMUM CENTER TO CENTER (EPOXY COATED). BARS TO BE ADJUSTED TO MATCH RAMP GRADE.

③ DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS WITHIN RADIUS.

④ THIS OPTIONAL CURB LINE REINFORCEMENT DETAIL SHOULD ONLY BE USED ON BITUMINOUS ROADWAYS WHEN SPECIFIED IN THE PLAN.

⑤ 1/2 IN. PREFORMED JOINT FILLER MATERIAL PER MNDOT SPEC. 3702.

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED:

1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 | 6 OF 6

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS	43
	CHECKED BY	TH 22 & CSAH 90	OF
	COMM. NO. 01710321		255

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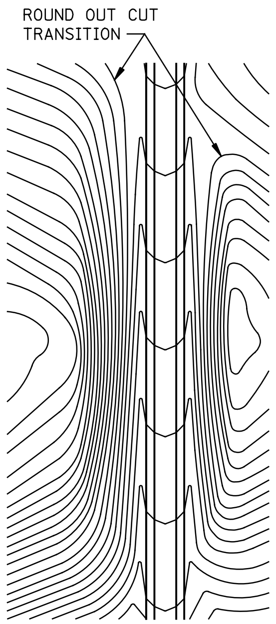
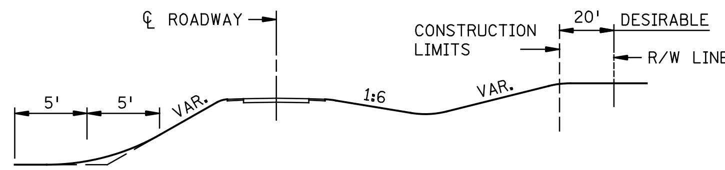
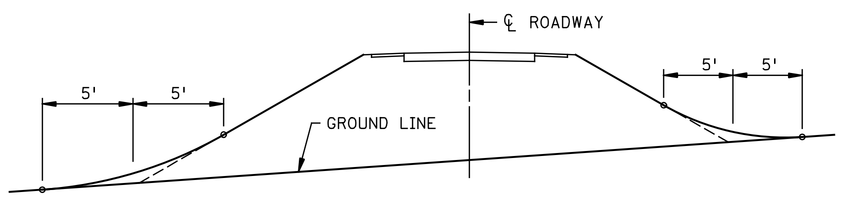


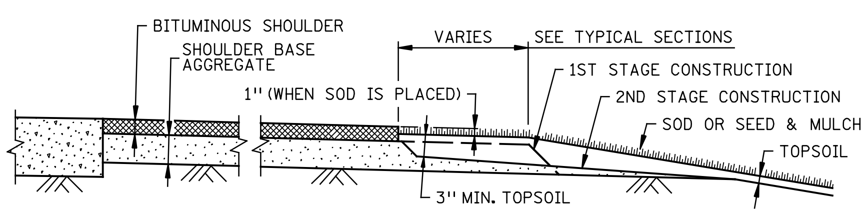
CONTOURING ROAD CUTS



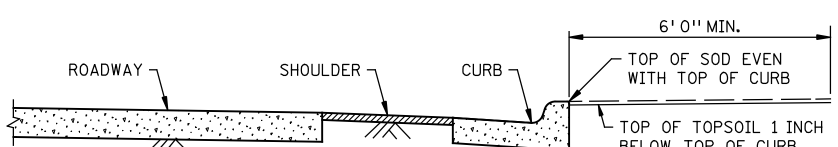
ROUNDING SHOULDERS AND BACKSLOPES



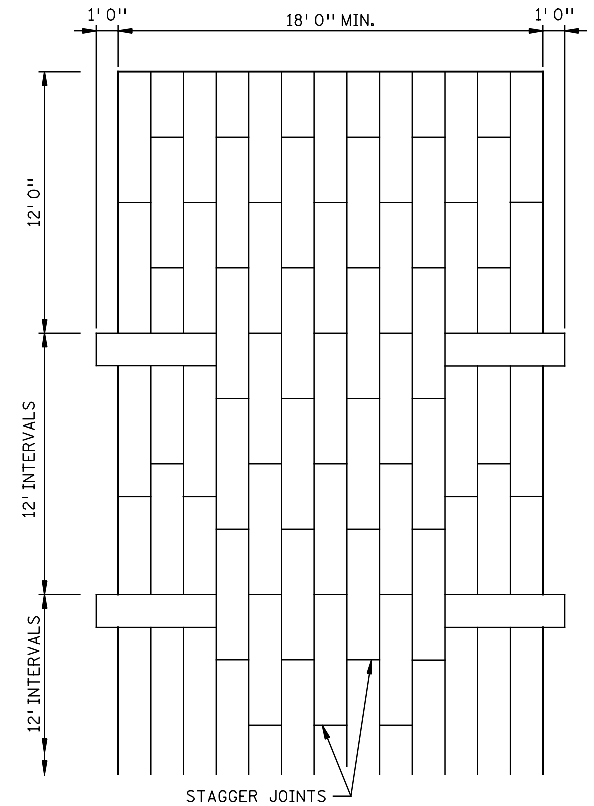
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



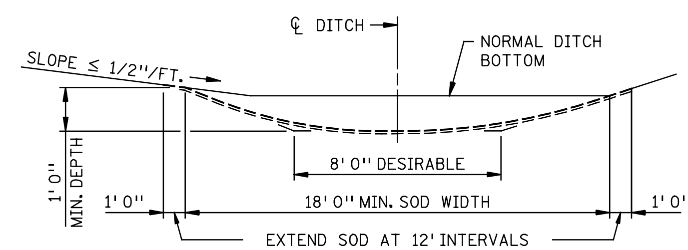
SHAPING AND TOPSOILING INSLOPES



SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED

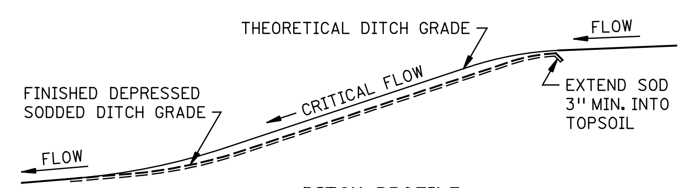


PLAN VIEW



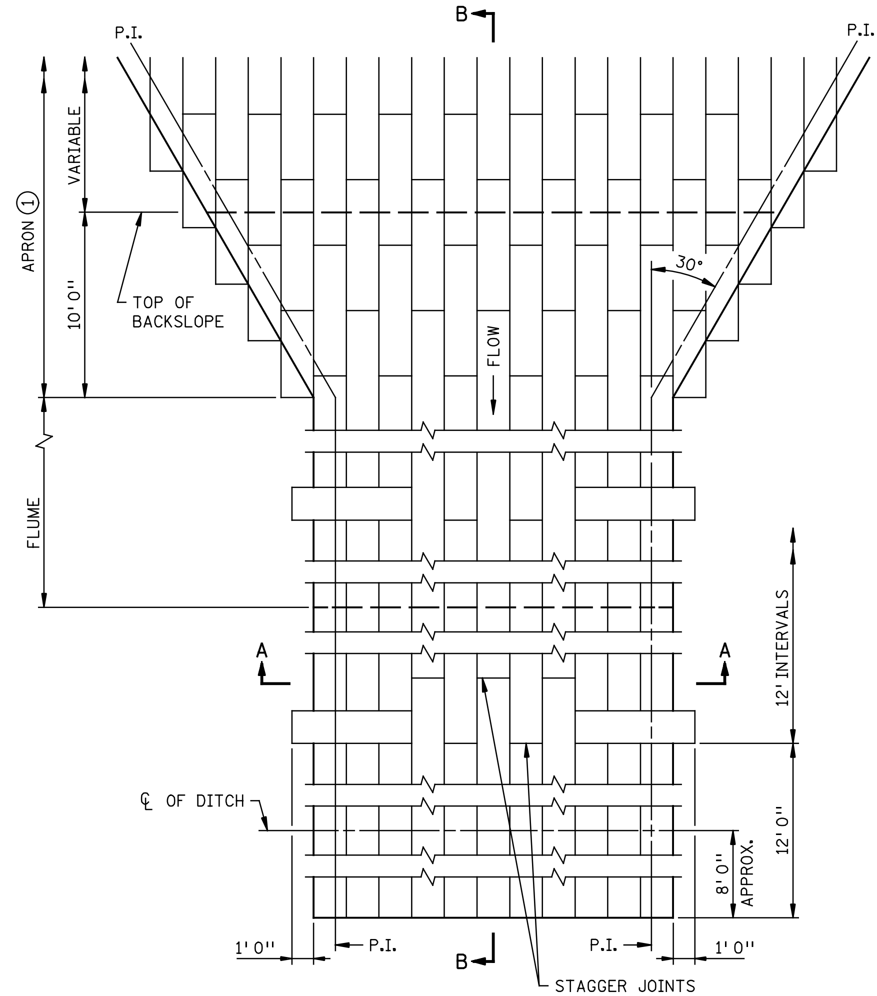
SODDED DITCH CROSS SECTION

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

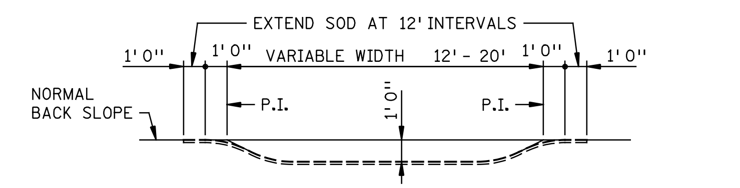


DITCH PROFILE

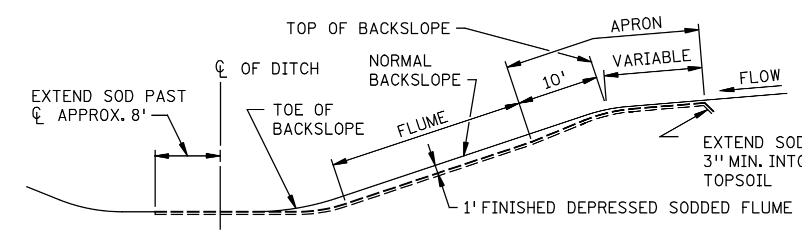
SODDED DITCH DETAILS



PLAN VIEW



SECTION A-A



SECTION B-B

SODDED FLUME DETAILS

NOTES:

SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

(1) CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

REVISION:

APPROVED: 2-28-2017

CHIEF ENVIRONMENTAL OFFICER

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 PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY

DESIGNED BY

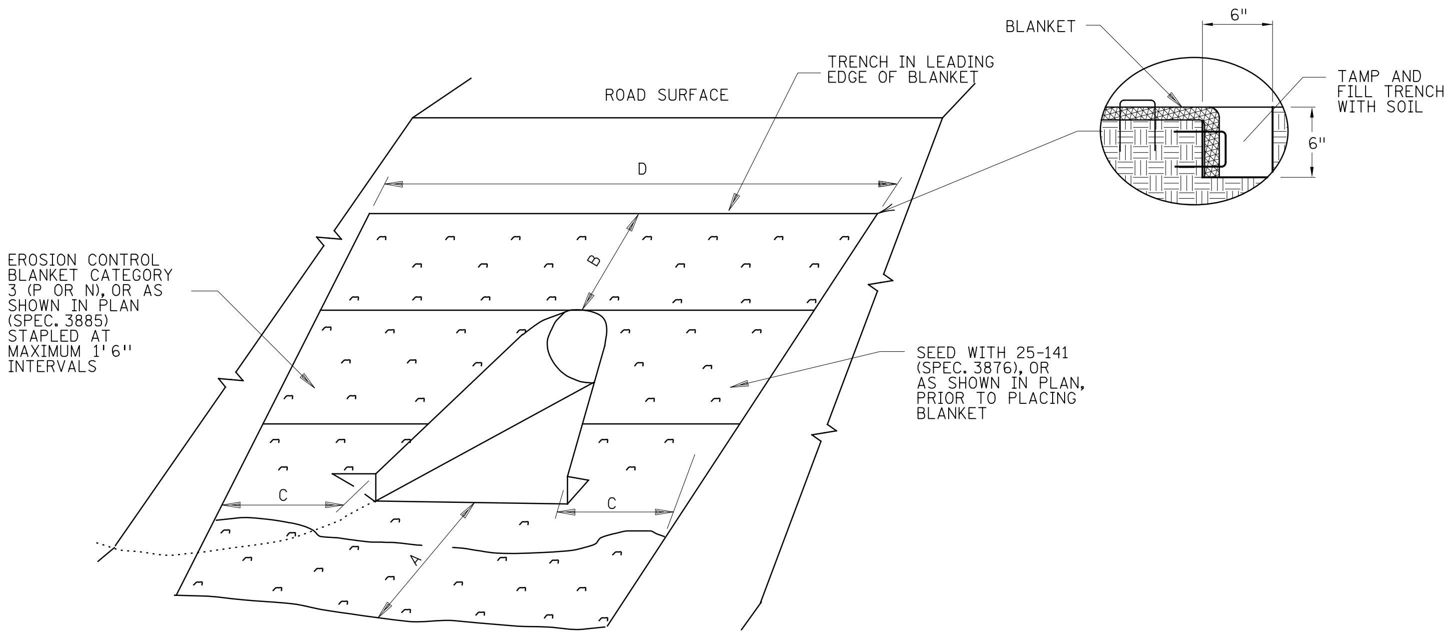
CHECKED BY

COMM. NO. 01710321

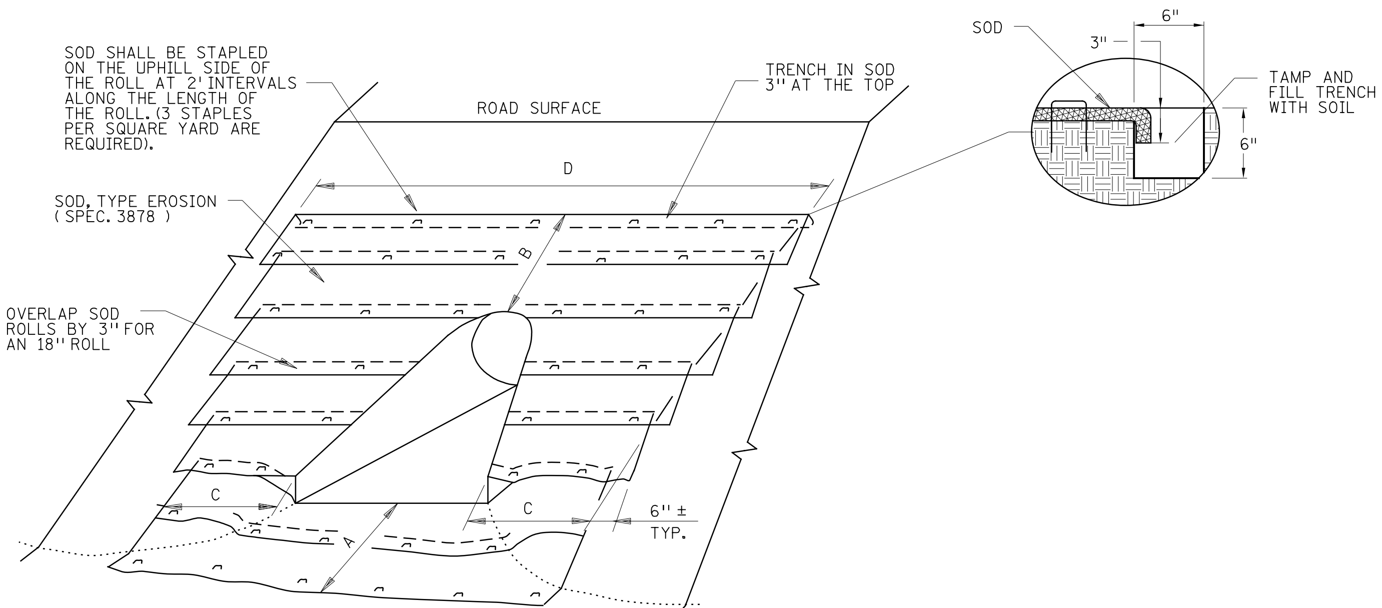
MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLANS

TH 22 & CSAH 90



EROSION CONTROL BLANKET & SEED DETAIL



SODDING DETAIL

CULVERT INLET APRON (1)

CULVERT DIAMETER (2)	SOD OR EROSION CONTROL BLANKET (SQ. YDS.) CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)	"A"	"B"	"C"	"D"
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.) 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)	"A"	"B"	"C"	"D"
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:

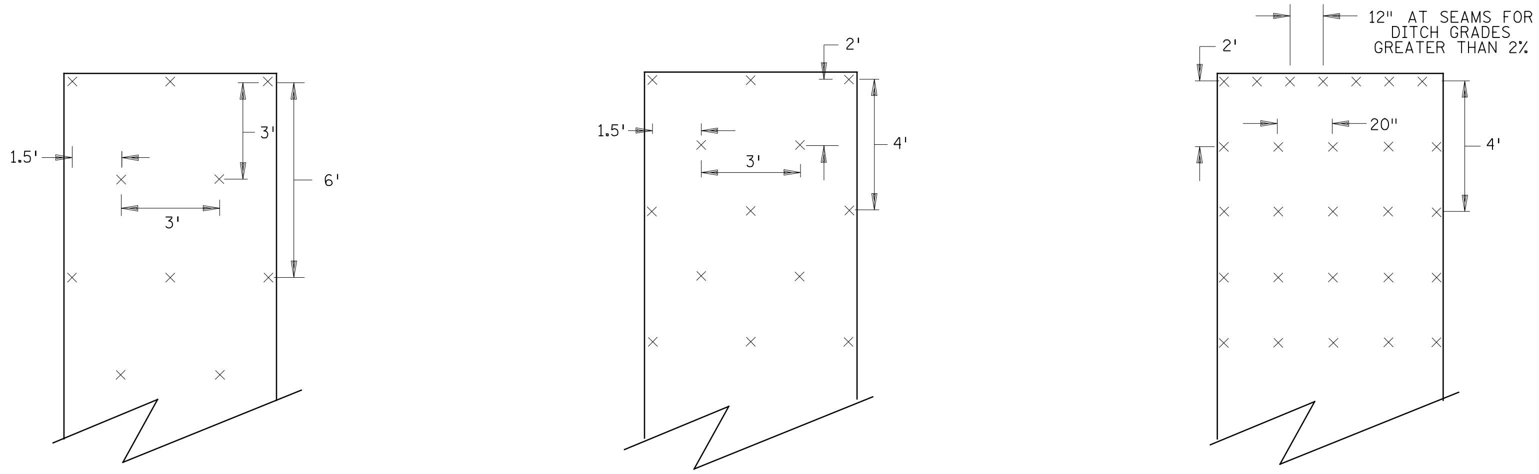
APPROVED:

2-28-2017

PERMANENT EROSION CONTROL

TURF ESTABLISHMENT DETAIL AT CULVERT ENDS

STANDARD PLAN 5-297.404 | 2 OF 3

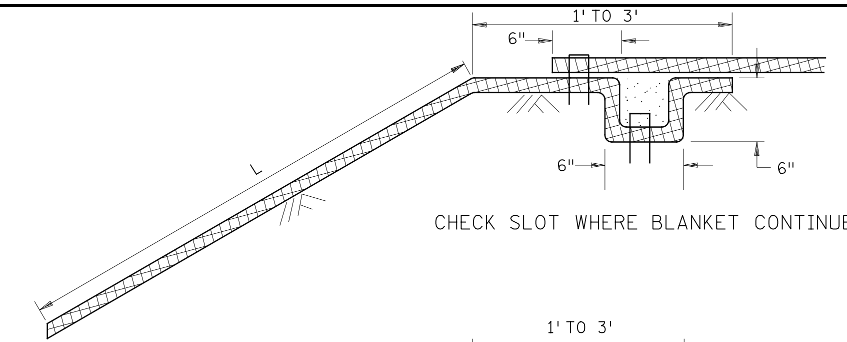


SLOPES FLATTER THAN 1:2
(120 STAPLES PER 100 SQ YD)

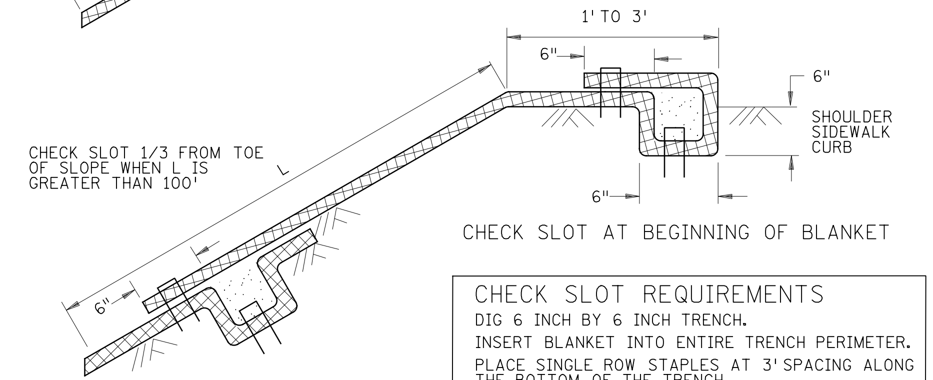
SLOPES 1:2 TO 1:1
(170 STAPLES PER 100 SQ YD)

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

BLANKET STAPLE PATTERN

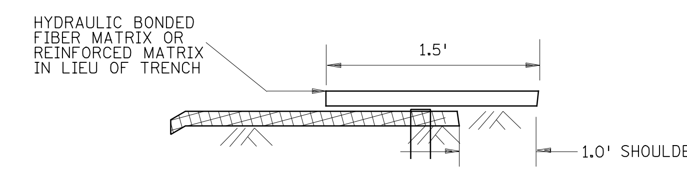


CHECK SLOT WHERE BLANKET CONTINUES



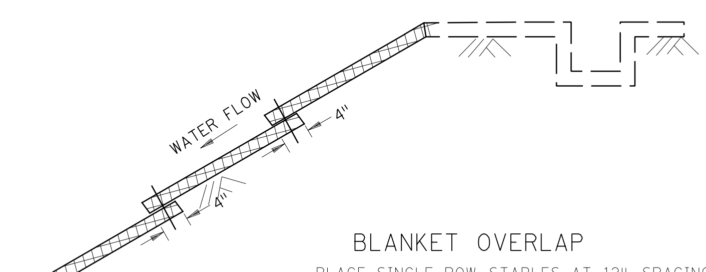
CHECK SLOT AT BEGINNING OF BLANKET

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.

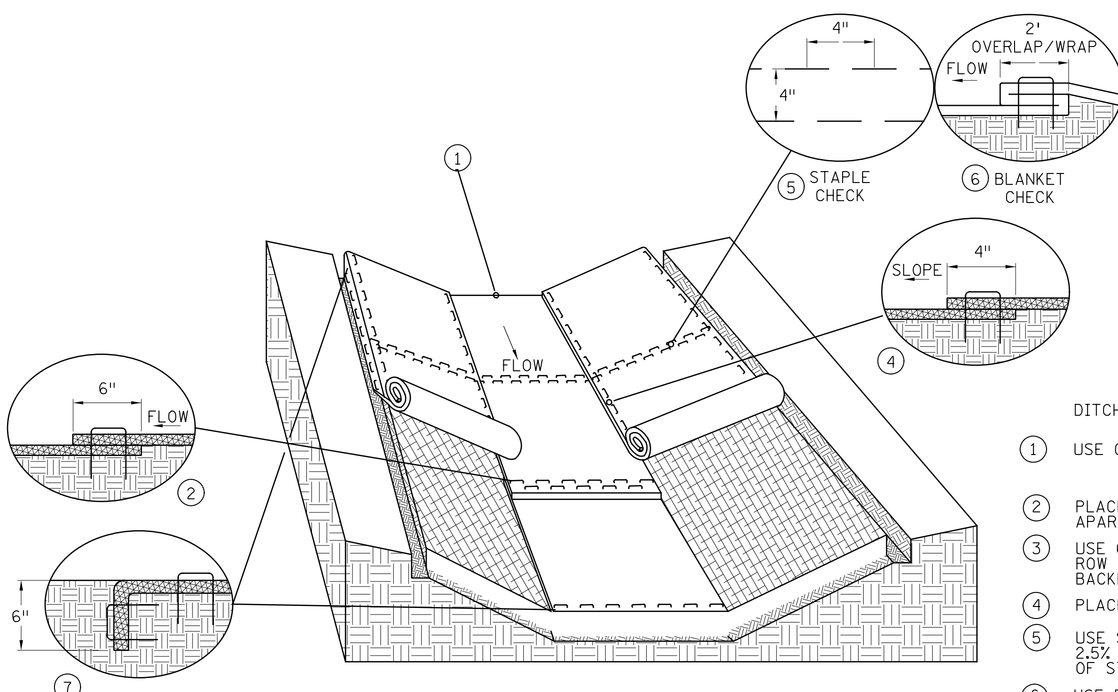


CHECK SLOT ALTERNATIVE
PLACE SINGLE ROW STAPLES AT 12" SPACING

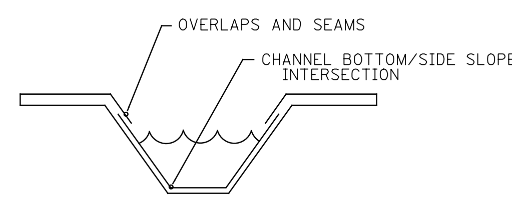
CHECK SLOT DETAILS



BLANKET OVERLAP
PLACE SINGLE ROW STAPLES AT 12" SPACING



DITCH BLANKET STAPLE DETAIL



DITCH BLANKET CRITICAL POINTS (7)

DITCH BLANKET STAPLE DETAIL NOTES

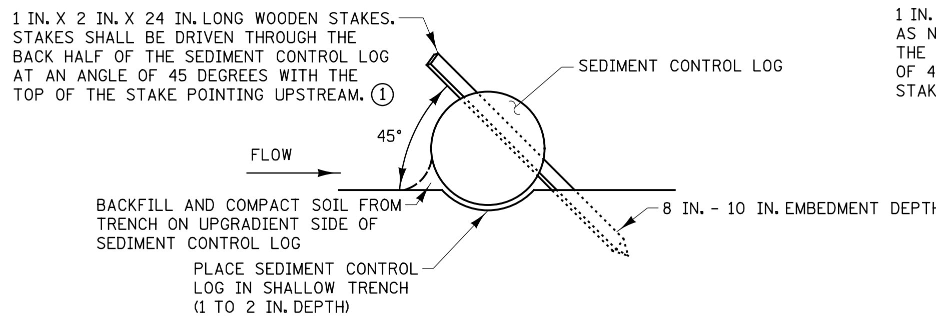
1. USE CHECK SLOT DETAIL (NO ALTERNATES).
2. PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER.
3. USE 6" X 6" TRENCH TO PLACE BLANKET. PLACE SINGLE ROW OF STAPLES ON TOP AND TRENCH SIDES AT 12" SPACING. BACKFILL TRENCH WITH SOIL AND TAMP.
4. PLACE SINGLE ROW OF STAPLES AT 12" SPACING.
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.

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.

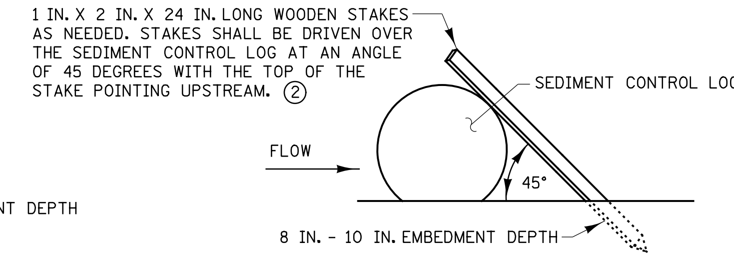
REVISION:
APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

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

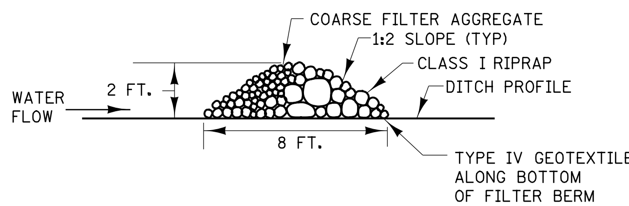


TYPES: STRAW, WOOD FIBER, OR COIR

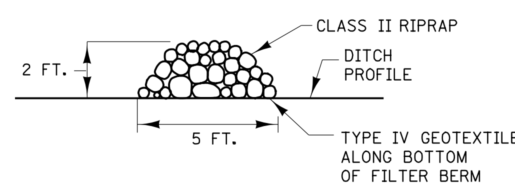


TYPES: WOOD CHIP, COMPOST, OR ROCK

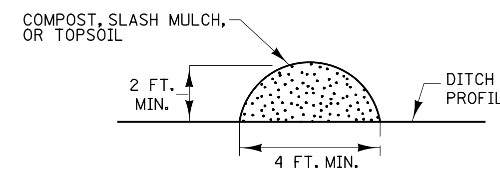
SEDIMENT CONTROL LOGS



TYPE 3 (ROCK WEEPER)

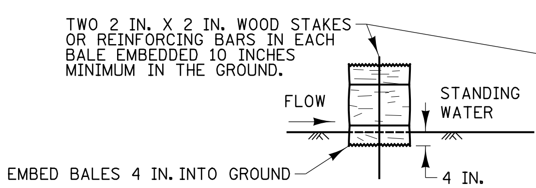


TYPE 5 (ROCK)

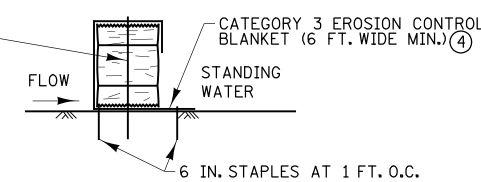


TYPE 1 (COMPOST), TYPE 2 (SLASH MULCH), OR TYPE 4 (TOPSOIL)

FILTER BERMS



EMBEDMENT METHOD



BLANKET METHOD (ALTERNATE)

BALE BARRIERS (3)

NOTES:

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

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

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

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

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

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

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED: 2-28-2017

TEMPORARY SEDIMENT CONTROL
FILTER BERMS, SEDIMENT CONTROL LOGS, AND BALE BARRIERS

STANDARD PLAN 5-297.405 | 2 OF 8

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET 47 OF 255
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90	
	CHECKED BY		
	COMM. NO. 01710321		

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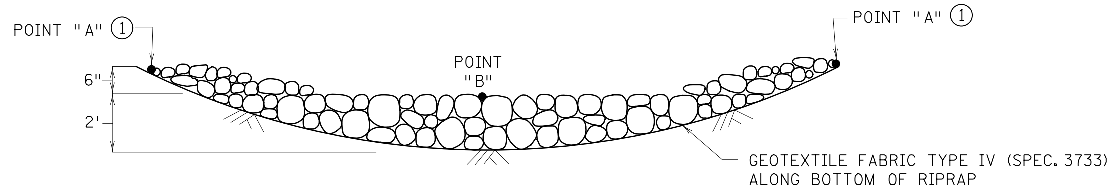
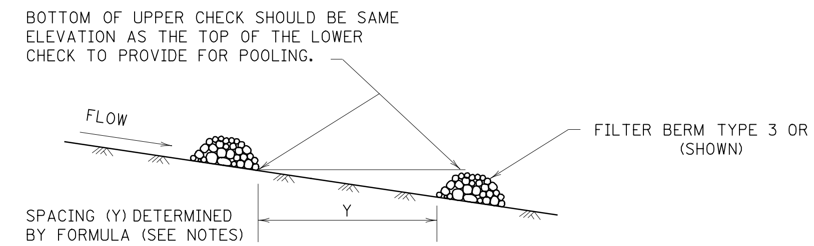
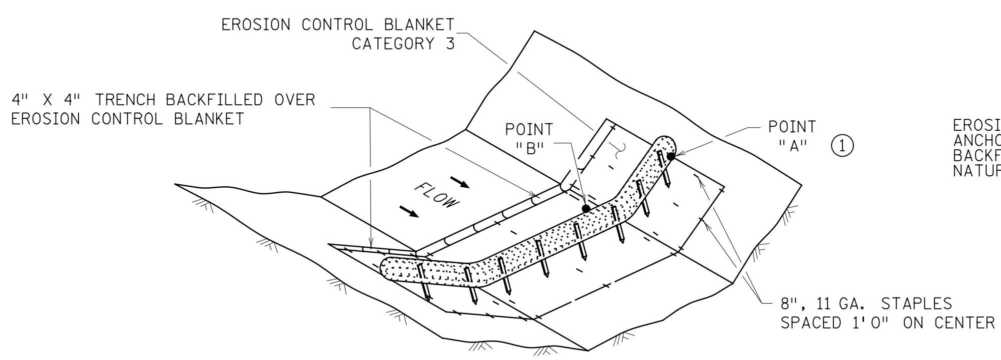
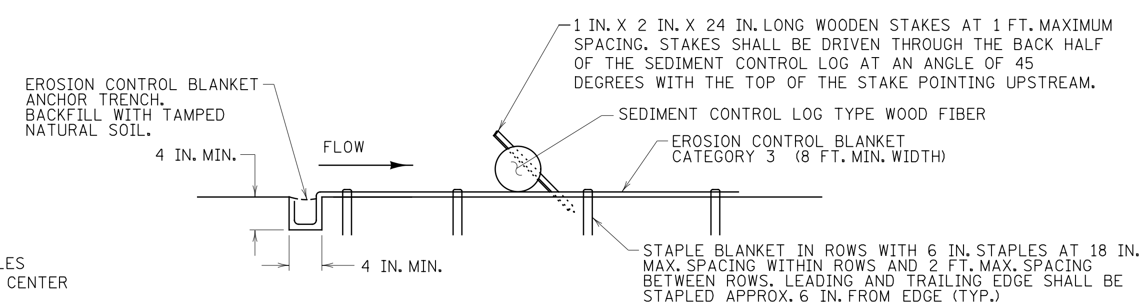


ROCK DITCH CHECKS
FILTER BERMS TYPE 3 (ROCK WEEPER) OR FILTER TYPE 5 (ROCK) ② ③
(FOR USE ON ROUGH GRADED AREAS)

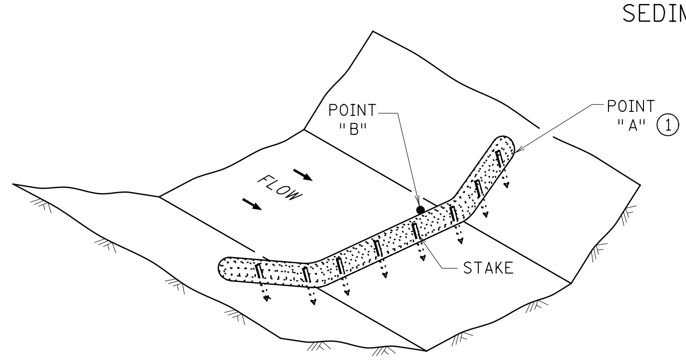


DITCH CHECK SPACING
(FOR ALL FILTER BERM TYPES)





SEDIMENT CONTROL LOG TYPE BLANKET SYSTEM ④



SEDIMENT CONTROL LOG TYPE WOOD FIBER, OR TYPE COMPOST ⑤
(FOR USE ON ROUGH GRADED AREAS)

NOTES:

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

FOR DITCH CHECKS, PLACE SEDIMENT CONTROL LOG PERPENDICULAR TO FLOW AND IN A CRESCENT SHAPE WITH THE ENDS FACING UPSTREAM.

APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{APPROXIMATE SPACING OF DITCH CHECKS (FT.)} = Y = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\text{\% CHANNEL SLOPE}} \times 100$$

① POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

② PERMANENT ROCK DITCH CHECKS PLACED WITHIN THE CLEAR ZONE ARE TO BE 18" OR LESS IN HEIGHT. A 1:6 APPROACH AND DEPARTURE SLOPE SHALL BE PROVIDED.

③ DITCH GRADE 3% - 5%, MAX. FLOW VELOCITY 12 FT./SEC..

④ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 4.5 FT./SEC..

⑤ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 1.5 FT./SEC..

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

MINNESOTA DEPARTMENT OF TRANSPORTATION
STATE DESIGN ENGINEER
REVISED:
APPROVED:
2-28-2017

TEMPORARY SEDIMENT CONTROL
DITCH CHECK

STANDARD PLAN 5-297.405 | 3 OF 8

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY
DESIGNED BY
CHECKED BY
COMM. NO. 01710321

MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLANS
TH 22 & CSAH 90

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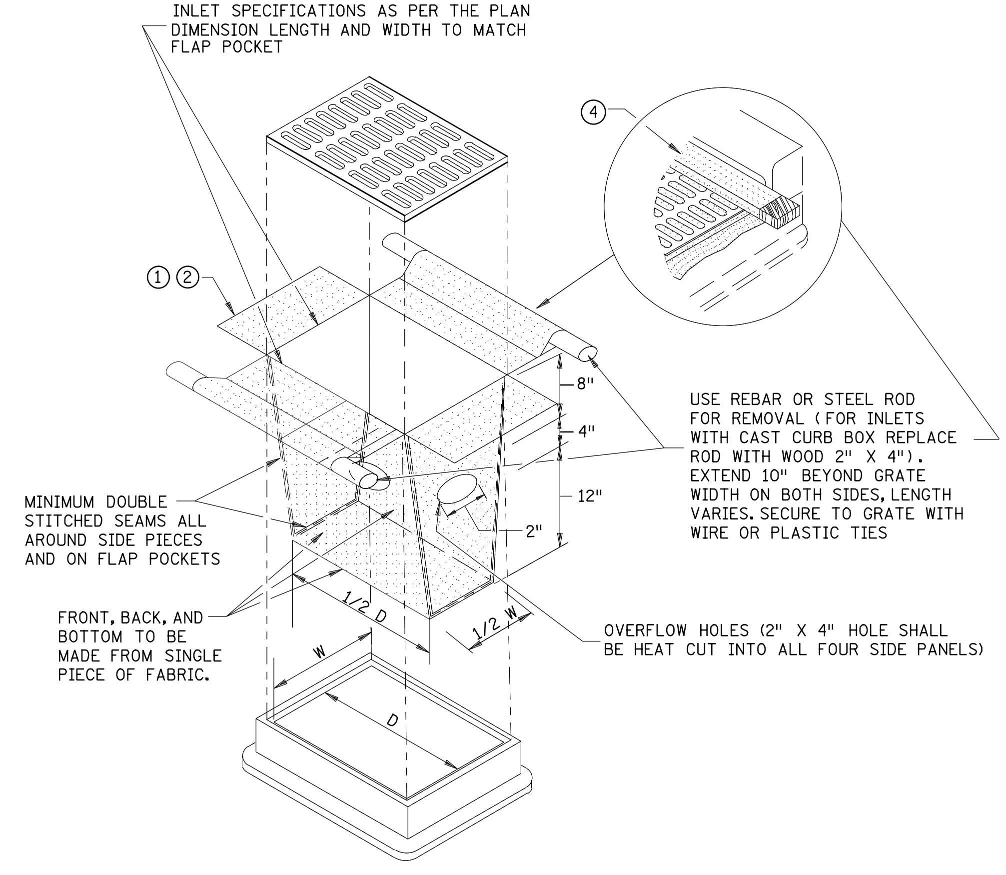
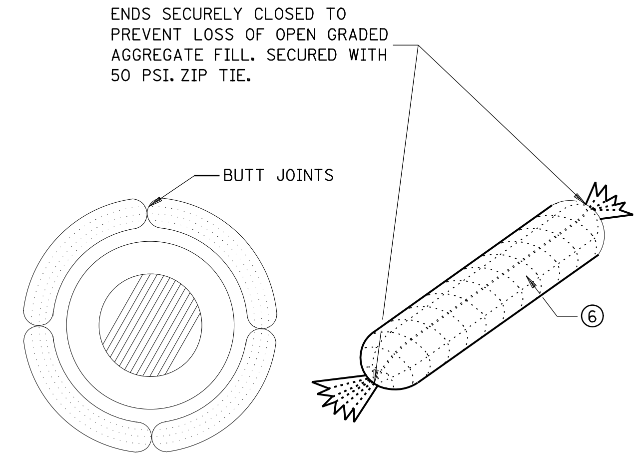
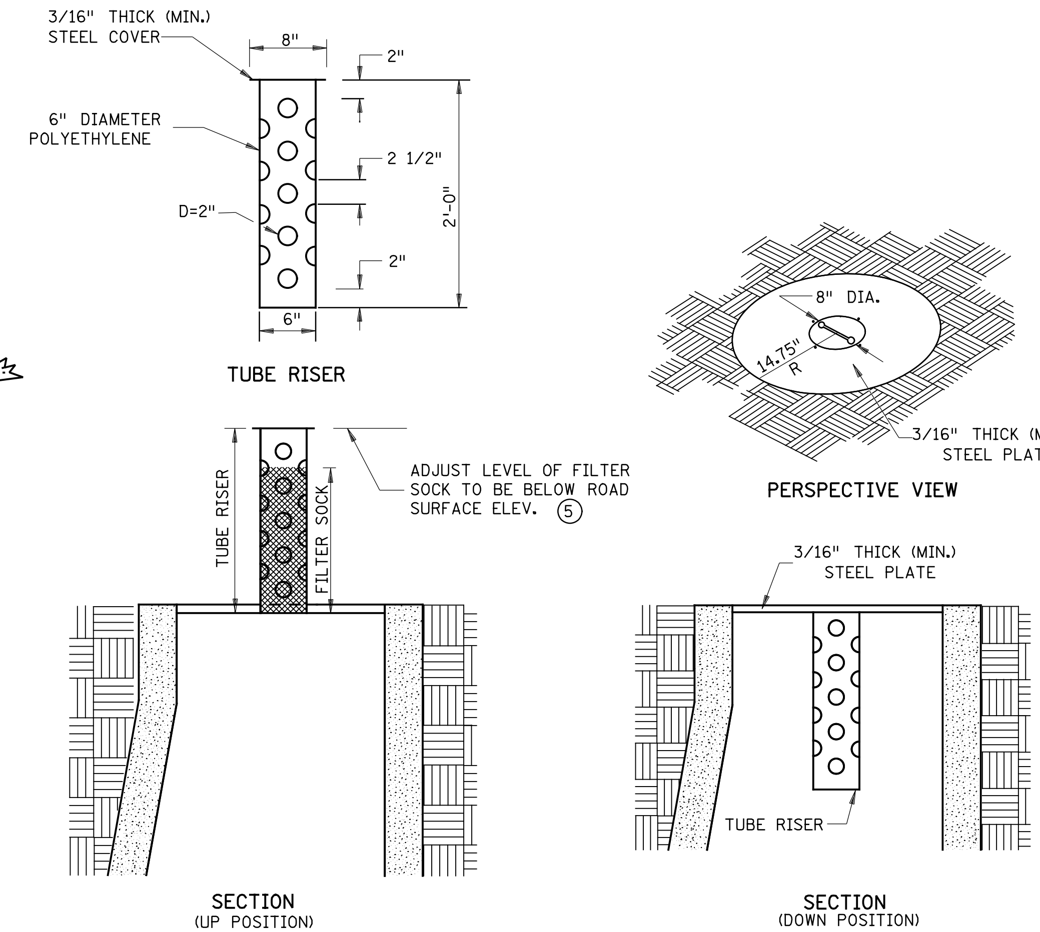


FILTER BAG INSERT ③

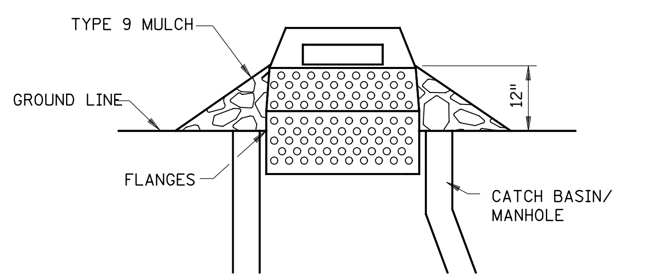
(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX)



ROCK LOG/COMPOST LOG

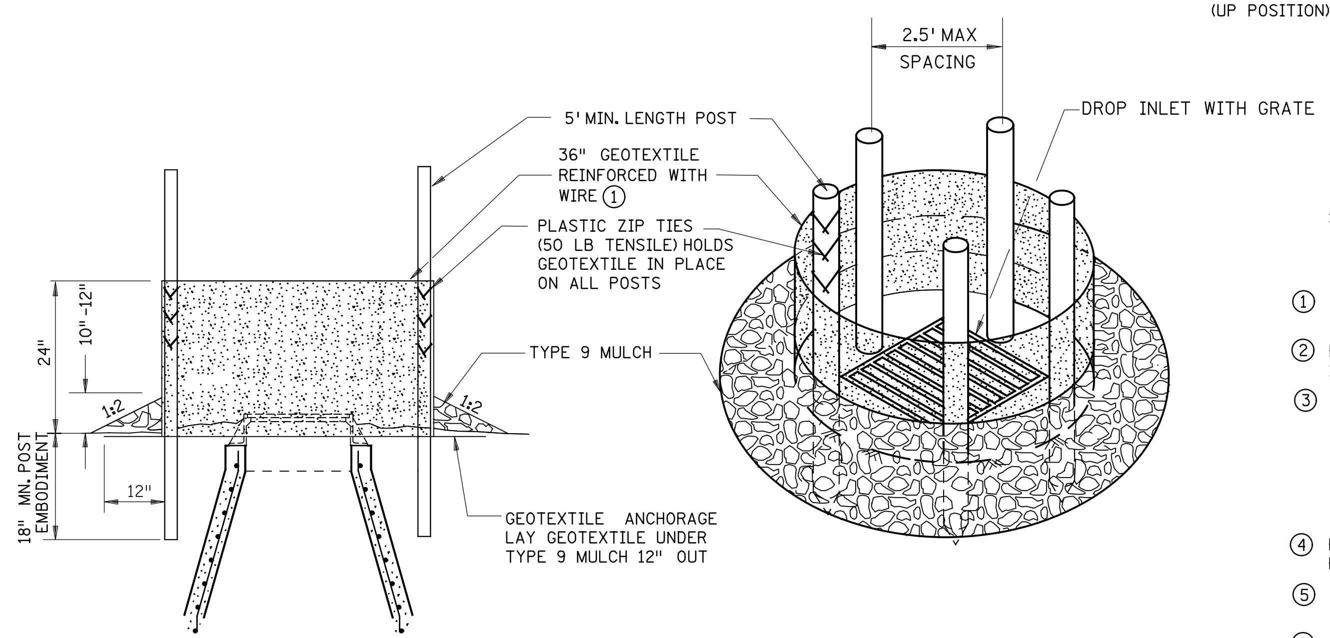


POP-UP HEAD



SEDIMENT CONTROL INLET HAT

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



SILT FENCE RING AND ROCK FILTER BERM

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

NOTES:

SEE SPECS. 2573, 3137, & 3886.

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

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

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

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

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

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

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

REVISION:
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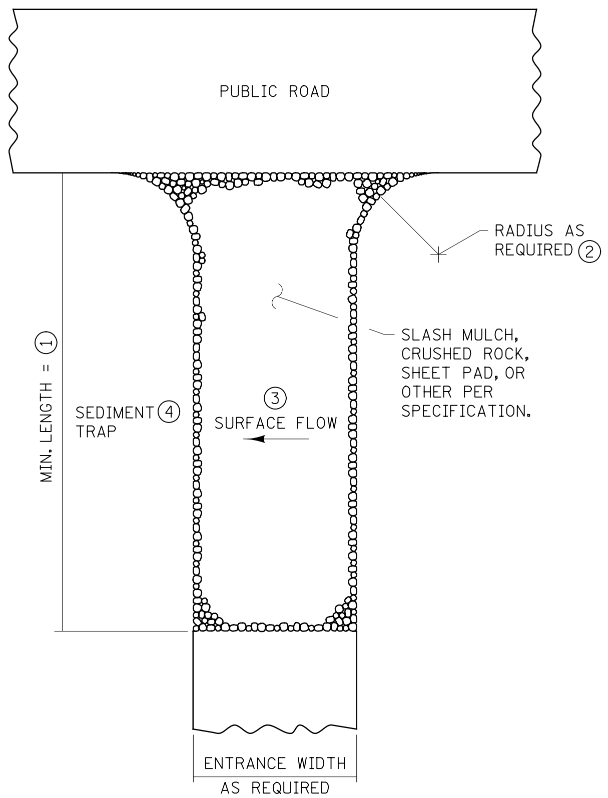
CHIEF ENVIRONMENTAL OFFICER

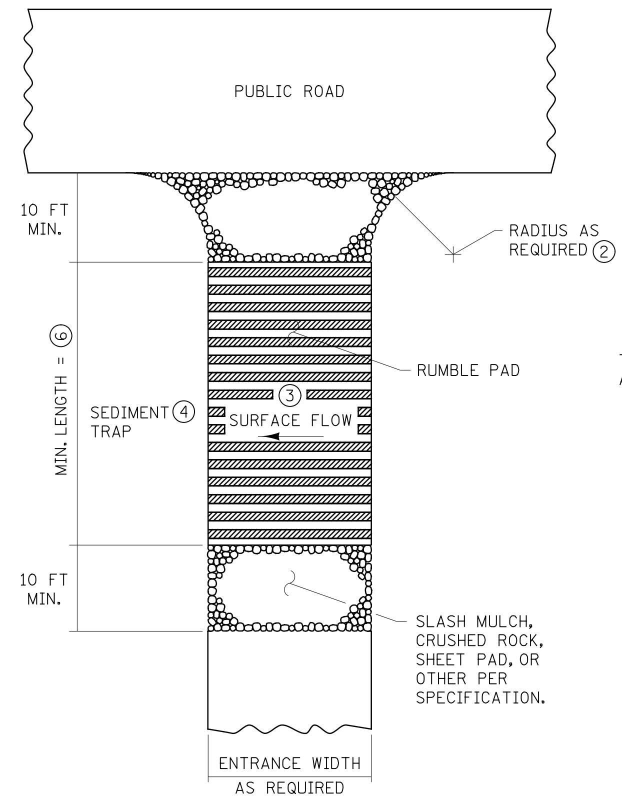
MINNESOTA DEPARTMENT OF TRANSPORTATION
STATE DESIGN ENGINEER
REVISED:
APPROVED: 2-28-2017

TEMPORARY SEDIMENT CONTROL
STORM DRAIN INLET PROTECTION

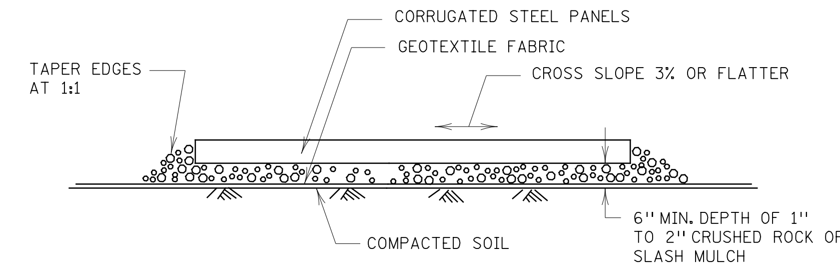
STANDARD PLAN 5-297.405 | 4 OF 8



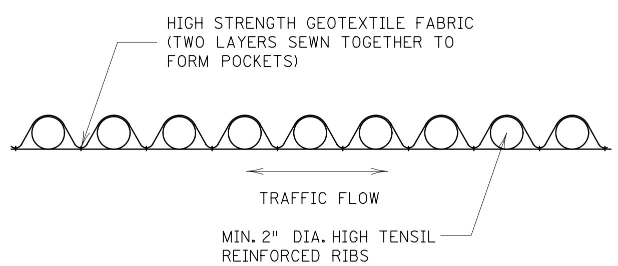
SLASH MULCH, CRUSHED ROCK, OR SHEET PAD CONSTRUCTION EXIT 5 7



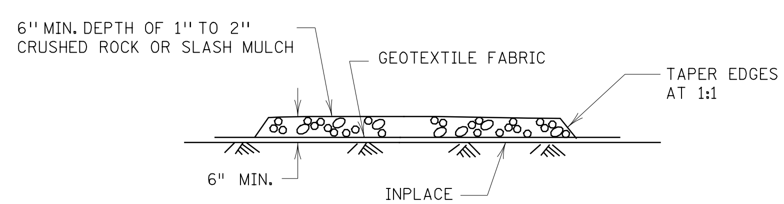
RUMBLE PAD CONSTRUCTION EXIT 5 7



RUMBLE PAD



SHEET PAD



SLASH MULCH OR CRUSHED ROCK

NOTES:

SEE SPECS. 2573 & 3882.

1. MINIMUM LENGTH SHALL BE THE GREATER OF 50 FEET OR A LENGTH SUFFICIENT TO ALLOW A MINIMUM OF 5 TIRE ROTATIONS ON THE PROVIDED PAD. MINIMUM LENGTH SHALL BE CALCULATED USING THE LARGEST TIRE WHICH WILL BE USED IN TYPICAL OPERATIONS.
2. PROVIDE RADIUS OR WIDEN PAD SUFFICIENTLY TO PREVENT VEHICLE TIRES FROM TRACKING OFF OF PAD WHEN LEAVING SITE.
3. IF RUNOFF FROM DISTURBED AREAS FLOWS TOWARD CONSTRUCTION EXITS, PREVENT RUNOFF FROM DRAINING DIRECTLY TO PUBLIC ROAD OVER CONSTRUCTION EXIT BY CROWNING THE EXIT OR SLOPING TO ONE SIDE. IF SURFACE GRADING IS INSUFFICIENT, PROVIDE OTHER MEANS OF INTERCEPTING RUNOFF.
4. IF RUNOFF FROM CONSTRUCTION EXITS WILL DRAIN OFF OF PROJECT SITE, PROVIDE SEDIMENT TRAP WITH STABILIZED OVERFLOW.
5. IF A TIRE WASH OFF IS REQUIRED THE CONSTRUCTION EXITS SHALL BE GRADED TO DRAIN THE WASH WATER TO A SEDIMENT TRAP.
6. MINIMUM LENGTH OF RUMBLE PAD SHALL BE 20 FEET, OR AS REQUIRED TO REMOVE SEDIMENT FROM TIRES. IF SIGNIFICANT SEDIMENT IS TRACKED FROM THE SITE, THE RUMBLE PAD SHALL BE LENGTHENED OR THE DESIGN MODIFIED TO PROVIDE ADDITIONAL VIBRATION. WASH-OFF LENGTH SHALL BE AS REQUIRED TO EFFECTIVELY REMOVE CONSTRUCTION SEDIMENT FROM VEHICLE TIRES.
7. MAINTENANCE OF CONSTRUCTION EXITS SHALL OCCUR WHEN THE EFFECTIVENESS OF SEDIMENT REMOVAL HAS BEEN REDUCED. MAINTENANCE SHALL CONSIST OF REMOVING SEDIMENT AND CLEANING THE MATERIALS OR PLACING ADDITIONAL MATERIAL (SLASH MULCH OR CRUSHED ROCK) OVER SEDIMENT FILLED MATERIAL TO RESTORE EFFECTIVENESS.

REVISION:

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CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED: 2-28-2017

TEMPORARY SEDIMENT CONTROL

STABILIZED CONSTRUCTION EXIT

STANDARD PLAN 5-297.405 | 5 OF 8

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90	50 OF 255
	CHECKED BY		
	COMM. NO. 01710321		

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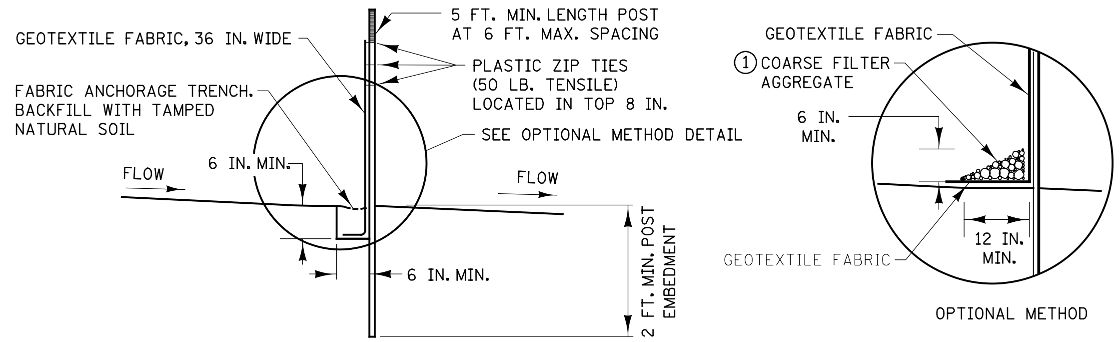
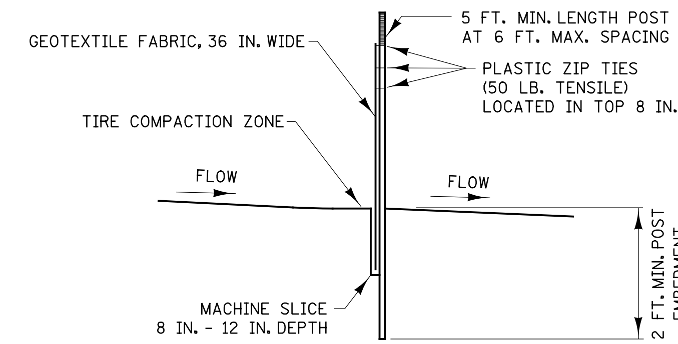
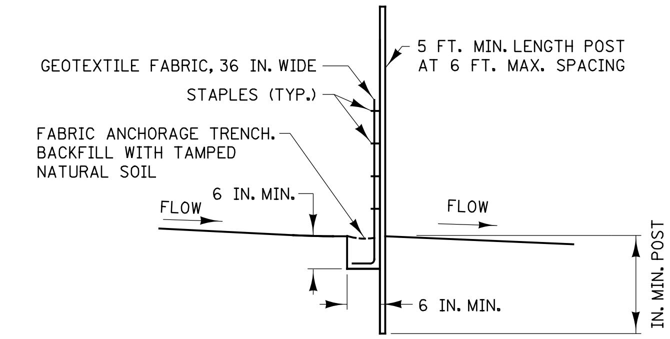


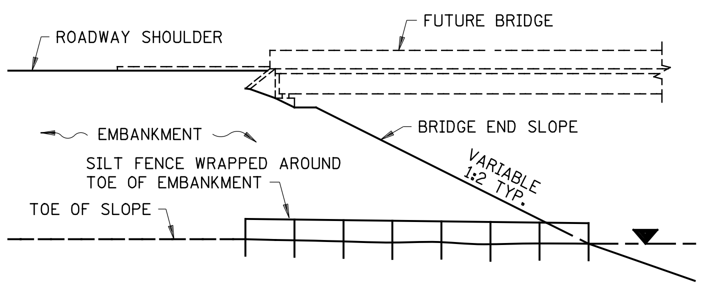
SILT FENCE TYPE HI ②
(HAND INSTALLED)



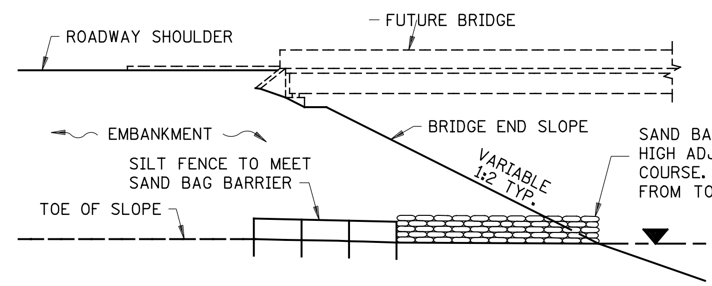
SILT FENCE TYPE MS ②
(MACHINE SLICED)



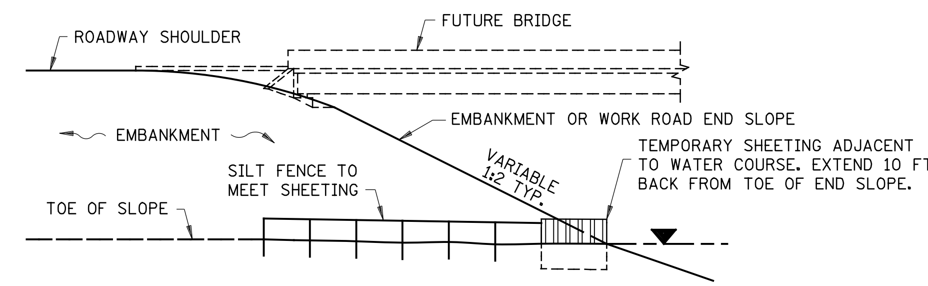
SILT FENCE TYPE PA ③
(PREASSEMBLED)



SILT FENCE ONLY ④

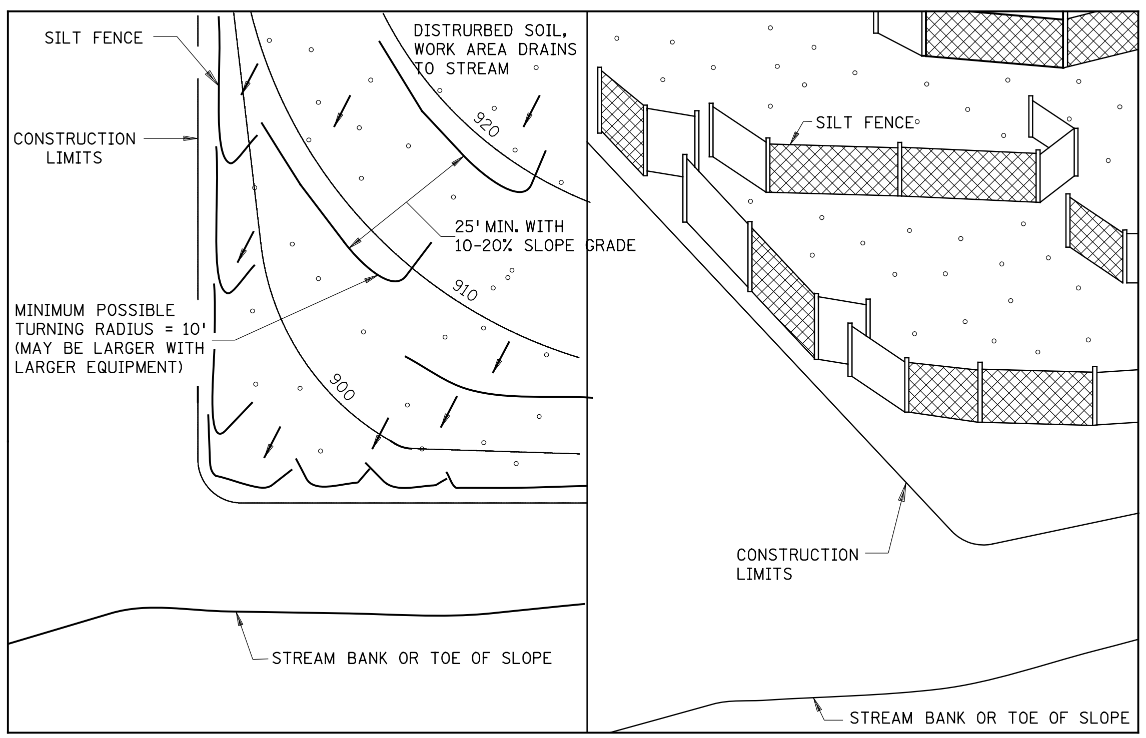


SILT FENCE WITH SAND BAGS ⑤



SILT FENCE WITH SHEETING ⑥

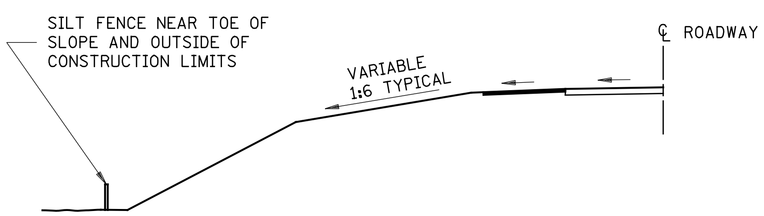
INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER



PLAN VIEW

PERSPECTIVE VIEW

J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

SEE SPECS. 2573, 3149 & 3886.

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

REVISION:

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CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

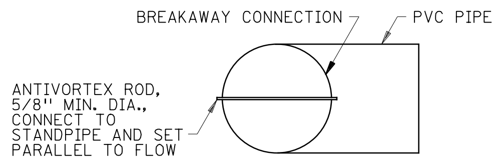
APPROVED:

2-28-2017

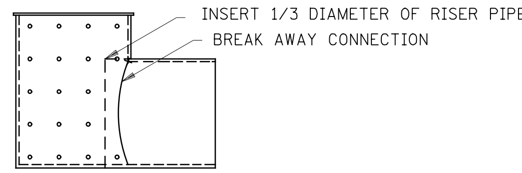
TEMPORARY SEDIMENT CONTROL

SILT FENCE

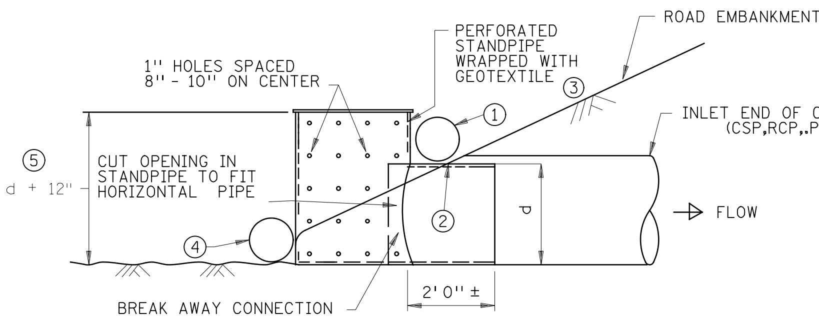
STANDARD PLAN 5-297.405 | 6 OF 8



PLAN VIEW



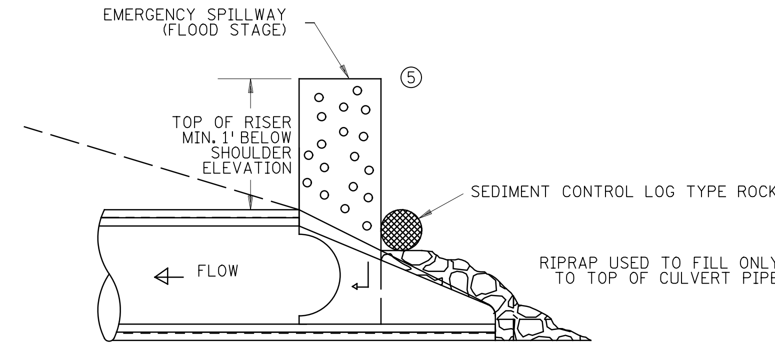
CULVERT STANDPIPE



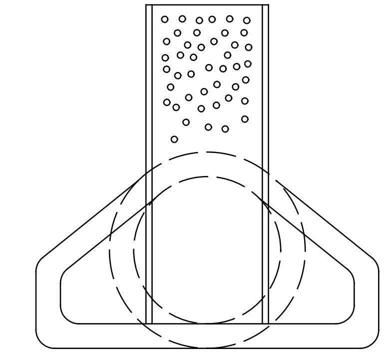
ELEVATION VIEW OF CULVERT INSTALLATION

CULVERT STANDPIPE INSERT (D-RISER)

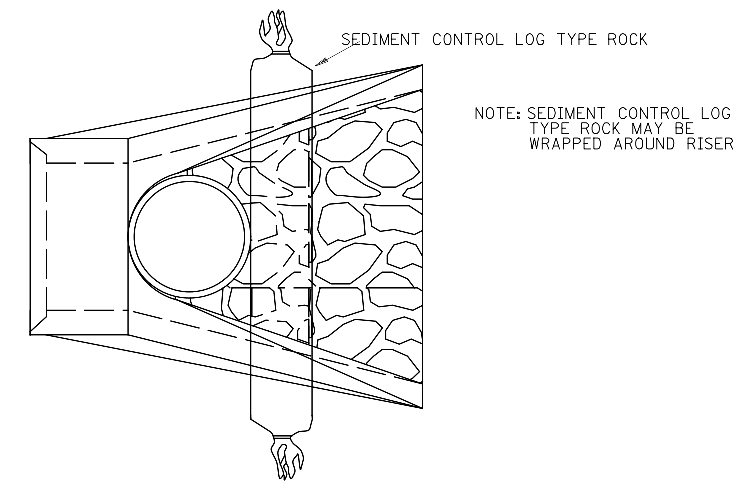
d= CULVERT SIZE: 12" - 36"



LONGITUDINAL SECTION



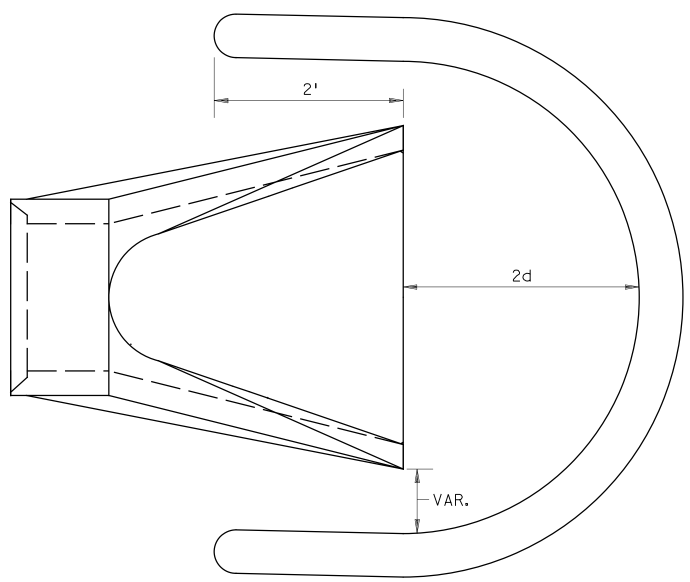
END VIEW



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

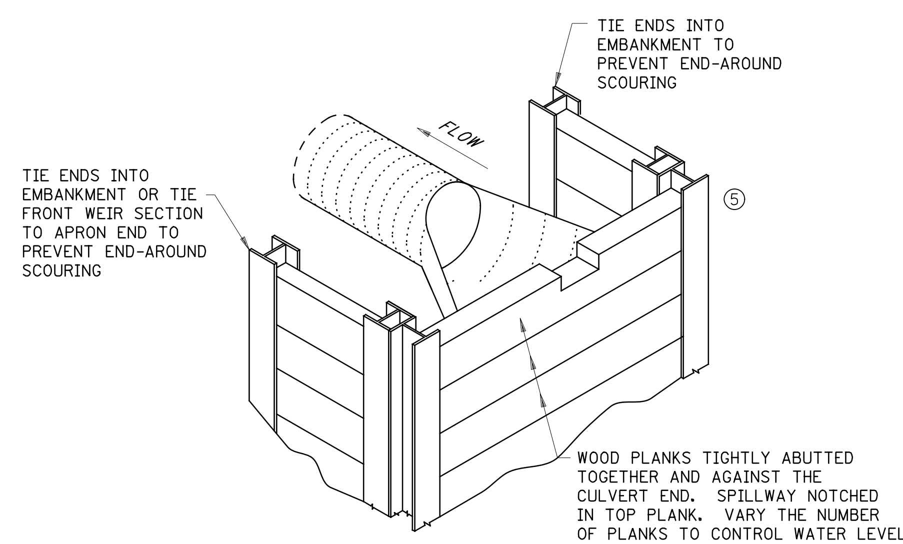
TOP VIEW

CULVERT STANDPIPE INSERT (D-RISER)



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

d = CULVERT SIZE: 12"-36"



WOOD PLANK WEIR

NOTES:

SEE SPECS. 2573, 3891 & 3893.

FOR USE WHEN TEMPORARY PONDING IS NEEDED IN DITCH SECTIONS FOR SEDIMENT CONTROL.

MANUFACTURED ALTERNATIVES LISTED ON MnDOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED AT NO ADDITIONAL COST.

1. ROCK LOG OR SANDBAG TO HOLD STANDPIPE AND ACT AS A SEAL BETWEEN RISER PIPE AND CULVERT.
2. PLACE CULVERT APRON AND SLIDE TEMPORARY STANDPIPE INTO CSP OR RCP CULVERT.
3. ALL GEOTEXTILE USED FOR CULVERT PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886 FOR MACHINE SLICED.
4. ROCK LOG OR RIP RAP TO HOLD STANDPIPE AND ACT AS A FILTER BETWEEN RISER PIPE AND CULVERT.
5. HEIGHT OVERFLOW NOT TO CAUSE FLOODING OF ROAD OR ADJACENT PROPERTIES.

REVISION:

APPROVED: 2-28-2017

CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED: 2-28-2017

TEMPORARY SEDIMENT CONTROL

CULVERT END CONTROLS

STANDARD PLAN 5-297.405 | 8 OF 8

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90	52 OF 255
	CHECKED BY		
	COMM. NO. 01710321		

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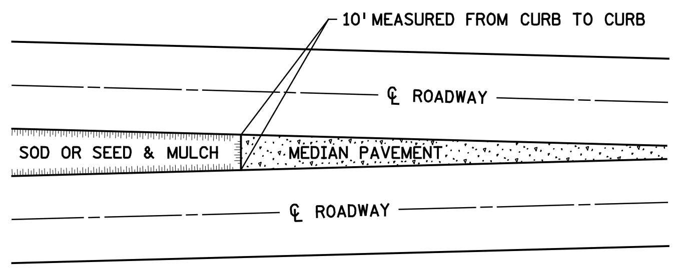
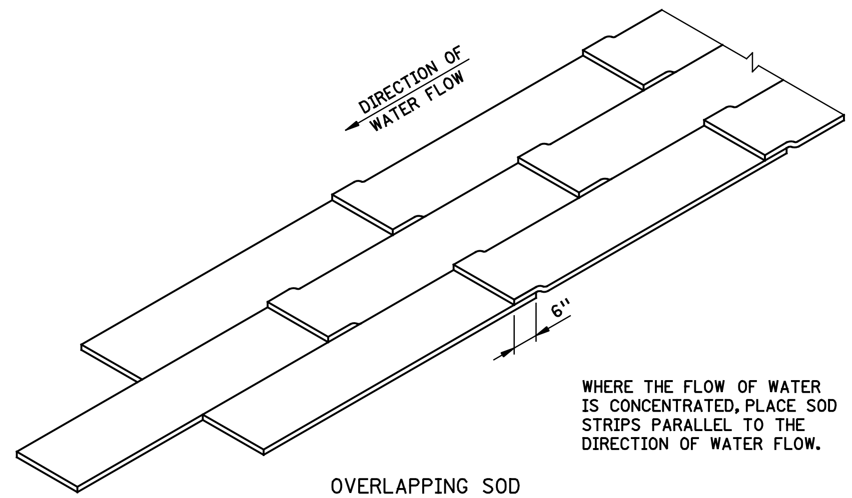
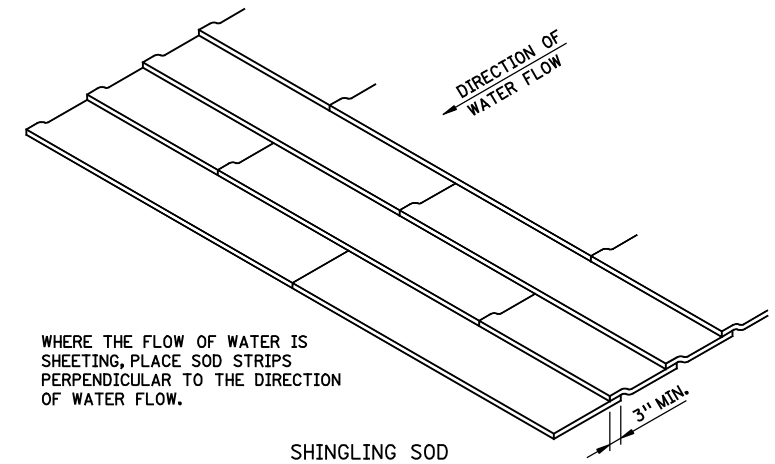


SODDING LIMITS AT GORE AREA

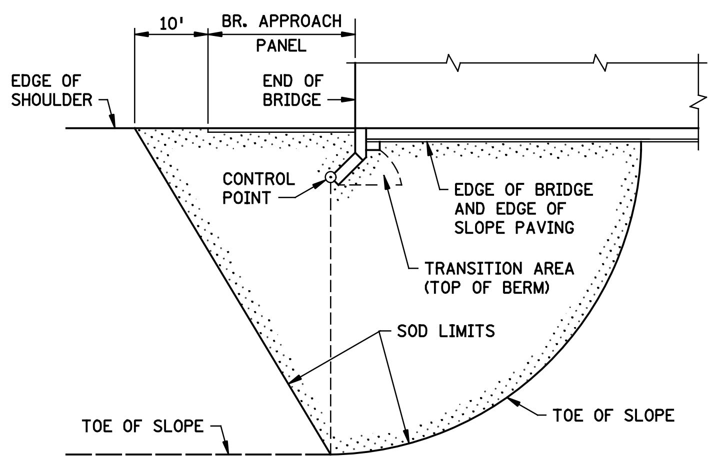


OVERLAPPING SOD

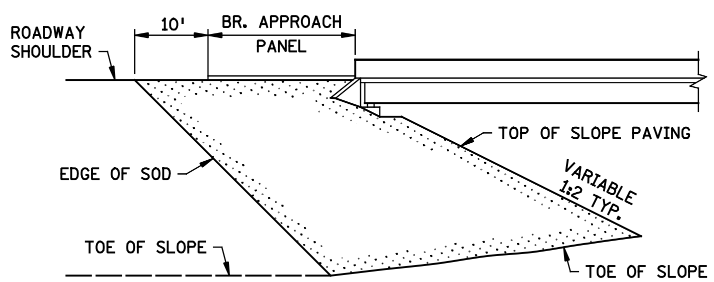


SHINGLING SOD

SPECIAL SOD PLACEMENT TECHNIQUES

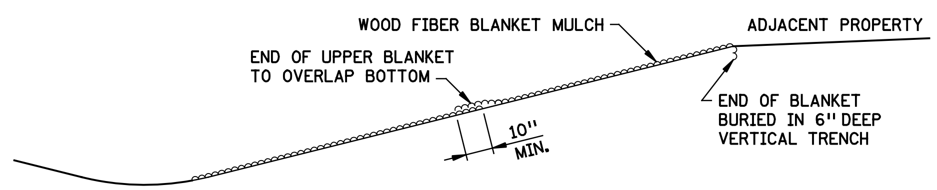


PLAN

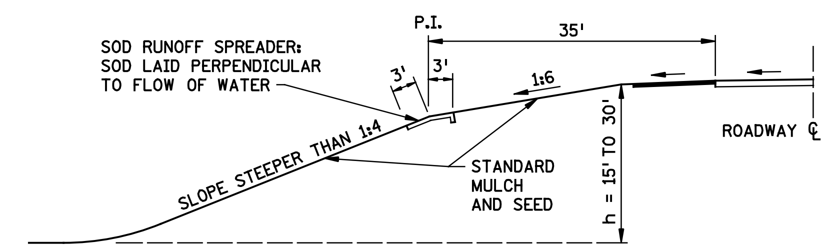


ELEVATION

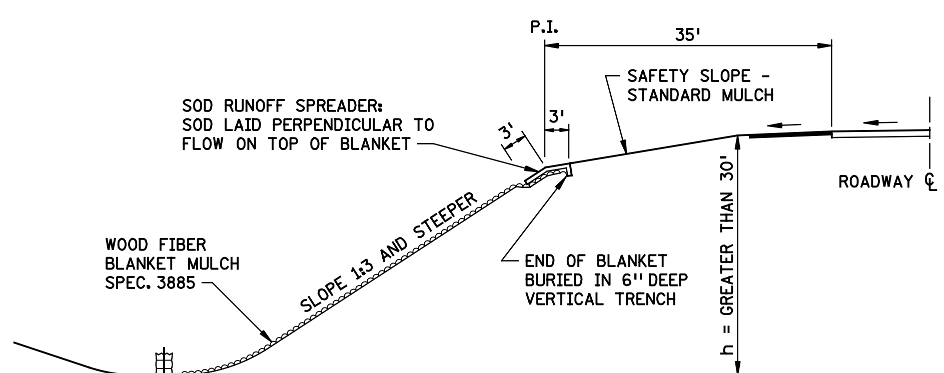
SODDING LIMITS AT BRIDGE APPROACH FILLS



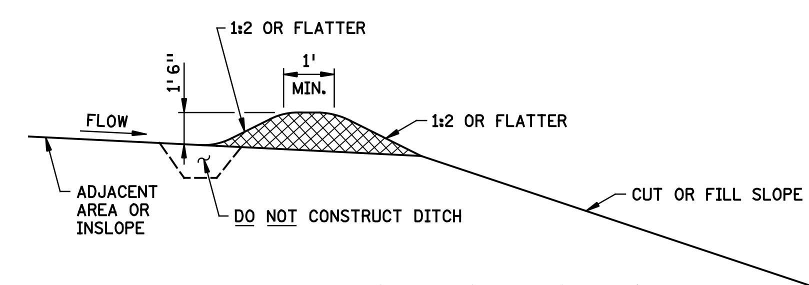
WOOD FIBER BLANKET INSTALLATION ON A CUT SLOPE



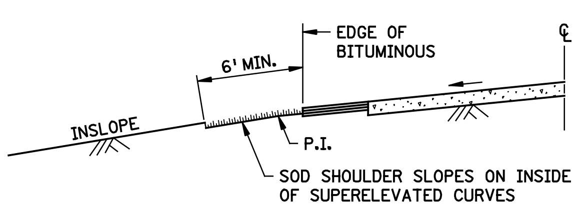
BROKEN-BACK SAFETY FILL SLOPE



WOOD FIBER BLANKET INSTALLATION ON AN INSLOPE
(WHEN REQUIRED)



PERMANENT SLOPE PROTECTION DIKE



SODDING INSLOPES OF SUPERELEVATED CURVES

REVISION:
APPROVED: 8-6-2014
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

REVISED:
APPROVED: 8-6-2014
STATE DESIGN ENGINEER

PERMANENT SEDIMENT CONTROL
ALONG ROADWAYS AND AT GORE AREAS & BRIDGE APPROACH FILLS

STANDARD PLAN 5-297.406 | 1 OF 1

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005
DRAWN BY
DESIGNED BY
CHECKED BY
COMM. NO. 01710321

MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLANS
TH 22 & CSAH 90

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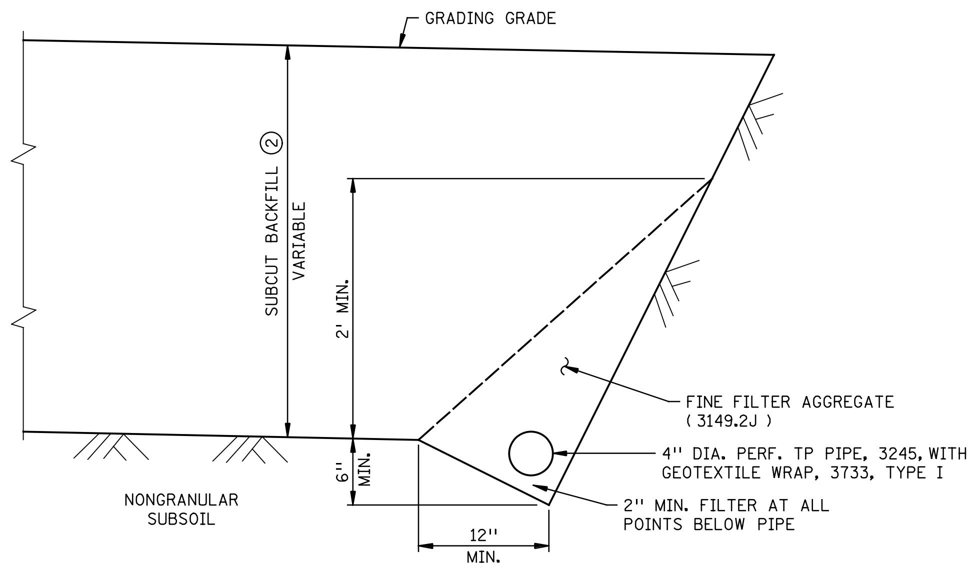
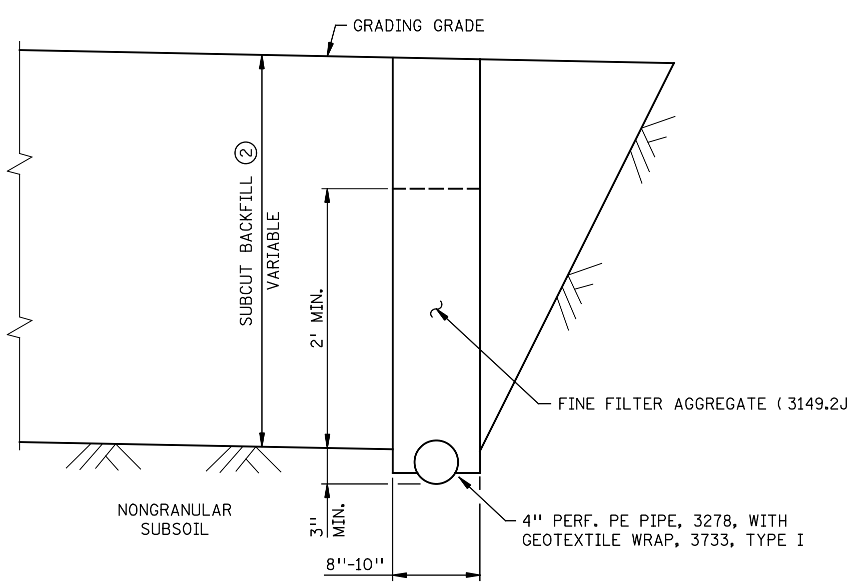


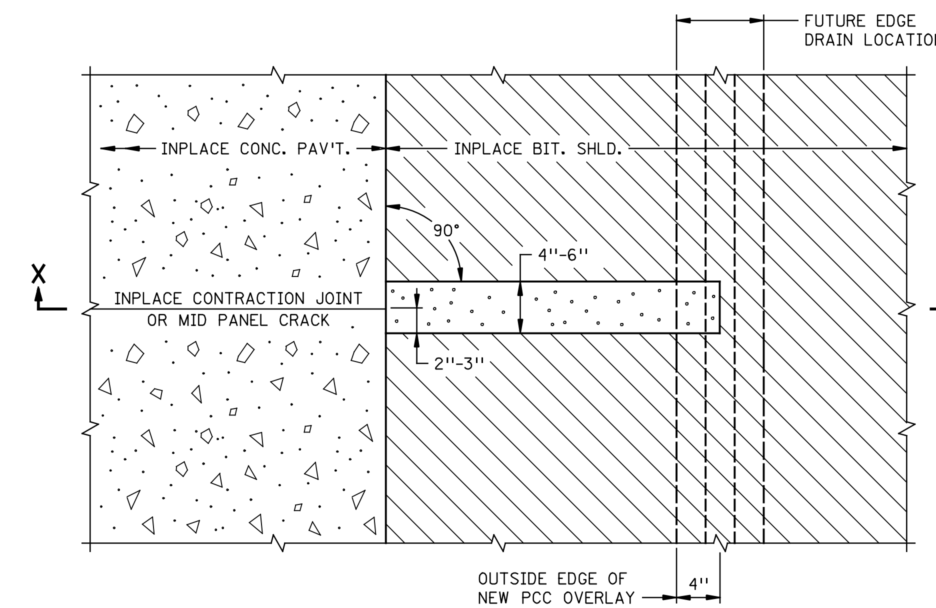
TYPICAL SECTION (OPTION NO. 1) ①



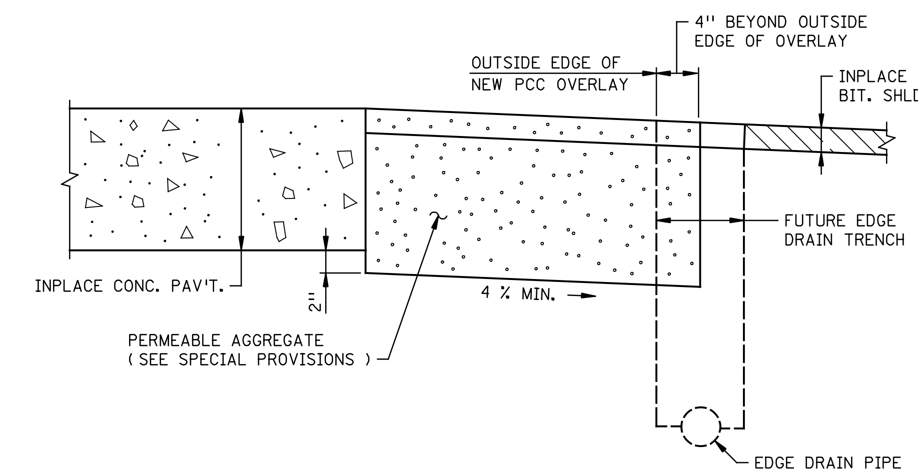
TYPICAL SECTION (OPTION NO. 2) ①

SUBSURFACE DRAIN, SUBCUT DRAIN TYPE

NOTES:
① MAY NEED TO BE MODIFIED FOR SPECIFIC PROJECTS. SEE SPECIAL PROVISIONS FOR MATERIAL AND CONSTRUCTION DETAILS. OPTION NO. 2 MAY ONLY BE USED WHEN PIPE IS TO BE PLACED BY MACHINE TRENCHER.
② GRANULAR, SELECT GRANULAR OR SELECT GRANULAR MODIFIED. (AS SHOWN IN DESIGN RECOMMENDATION LETTER).



PLAN VIEW



SECTION X-X

INTERCEPTOR DRAIN DETAIL ①

NOTE:
① SEE SPECIAL PROVISIONS FOR MATERIAL AND CONSTRUCTION DETAILS.

REVISION:
APPROVED: 8-6-2014
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

REVISED:
APPROVED: 8-6-2014
STATE DESIGN ENGINEER

SUBSURFACE DRAINS
STANDARD PLAN 5-297.430 | 1 OF 1

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90
	CHECKED BY	
	COMM. NO. 01710321	

SHEET 54 OF 255

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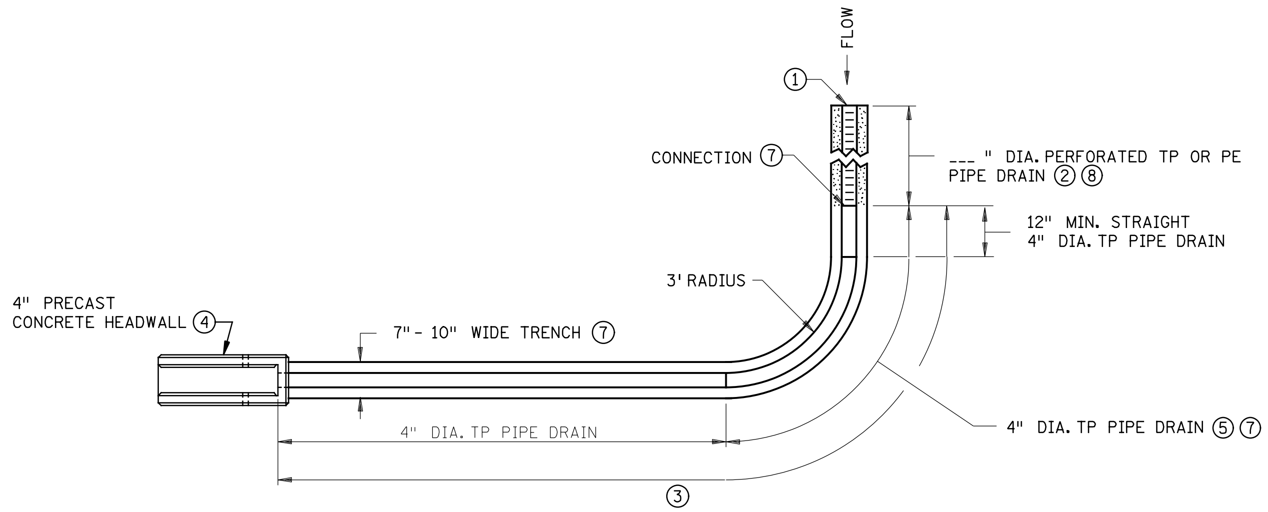
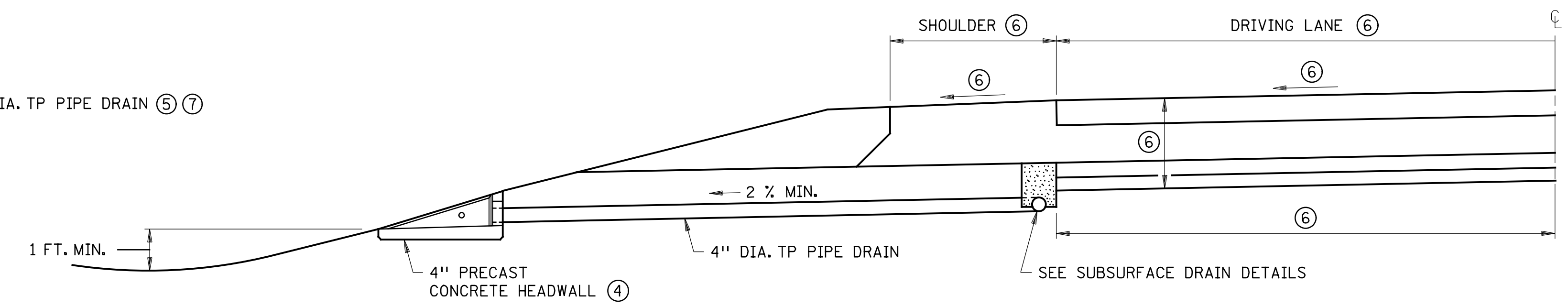
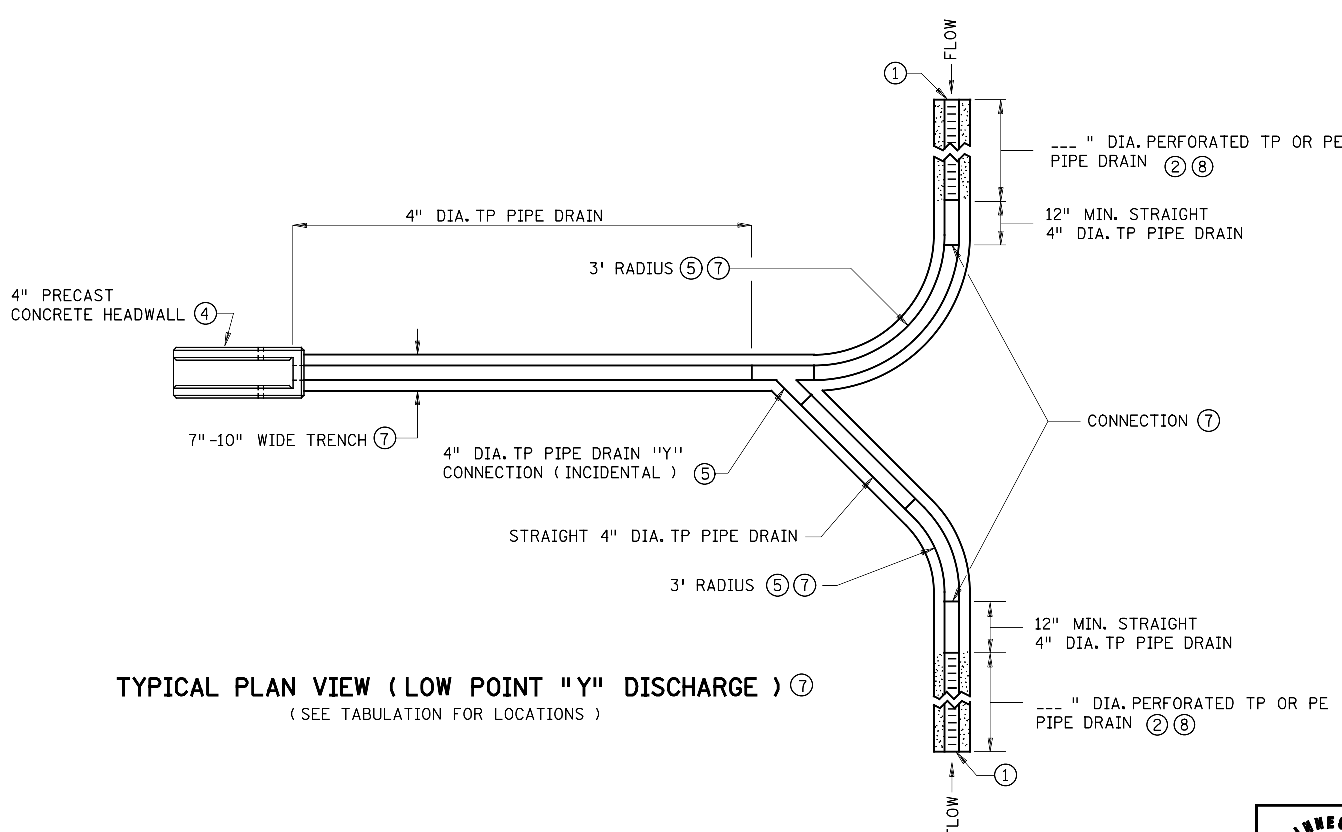


TYPICAL PLAN VIEW (SINGLE DISCHARGE) 7
(SEE TABULATION FOR LOCATIONS)



SECTION VIEW

TYPICAL EDGE DRAIN AND DISCHARGE CROSS SECTION 7
(SEE TABULATION FOR LOCATIONS)



TYPICAL PLAN VIEW (LOW POINT "Y" DISCHARGE) 7
(SEE TABULATION FOR LOCATIONS)

NOTES:

1. THE UPSTREAM ENDS OF THE PERFORATED PIPE SHALL BE CAPPED AS APPROVED BY THE PROJECT ENGINEER, THE CAPS ARE INCIDENTAL. PLACE PERFORATED PIPE WITH THE PERFORATIONS DOWN.
2. MAXIMUM LENGTH 500 FT., EXCEPT 300 FT. MAXIMUM FOR GRADES LESS THAN 0.2% . LENGTH INCLUDED AND PAID FOR AS SPEC. 2502, __ INCH PERFORATED TP OR PE PIPE DRAIN.
3. LENGTH INCLUDED AND PAID FOR AS SPEC. 2502, 4 INCH DIA. TP PIPE DRAIN.
4. PRECAST CONCRETE HEADWALL STANDARD PLATE 3131 PAID FOR AS SPEC. 2502, 4 INCH PRECAST CONCRETE HEADWALL.
5. DETAILS OF CONNECTION AND COUPLING TO PIPE SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR "Y" AND EXTRA CONNECTION, 11 INCH TP PIPE AND COUPLING TO BE INCIDENTAL.
6. SEE ROADWAY TYPICAL SECTIONS FOR ADDITIONAL INFORMATION.
7. SEE SPECIAL PROVISIONS FOR MATERIAL AND CONSTRUCTION DETAILS.
8. 3 INCH OR 4 INCH DIAMETER.

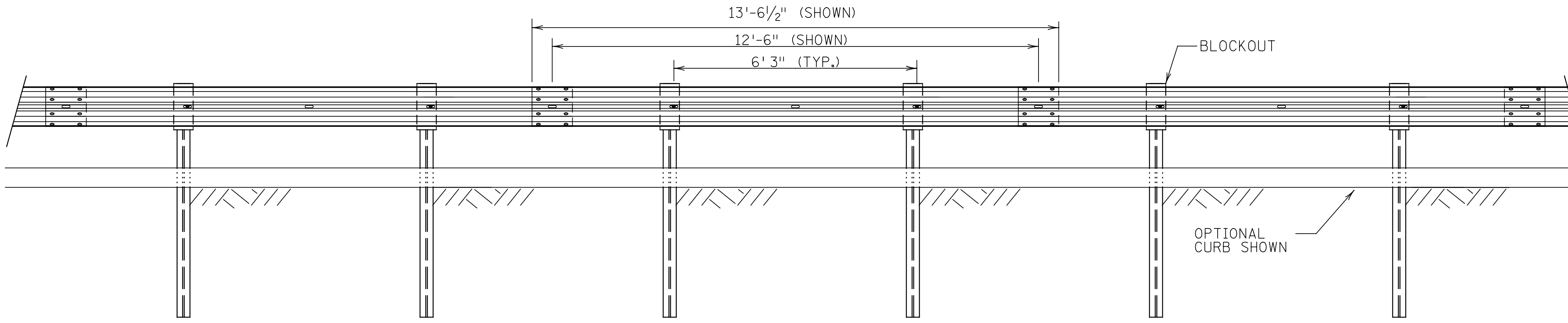
REVISION:
APPROVED: 8-6-2014
DIRECTOR, OFFICE OF MATERIALS AND ROAD RESEARCH

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

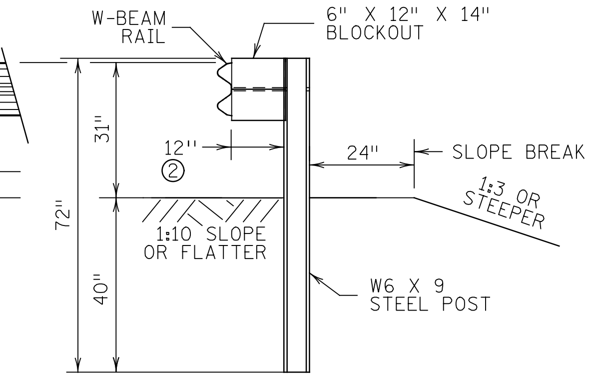
SUBSURFACE DRAINS
OUTLET PIPES FOR EDGE AND SUBCUT DRAINS

STANDARD PLAN 5-297.433 | 1 OF 1

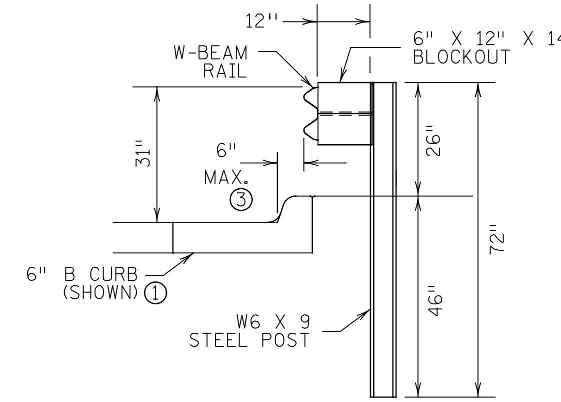
STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90	55 OF 255
	CHECKED BY		
	COMM. NO. 01710321		



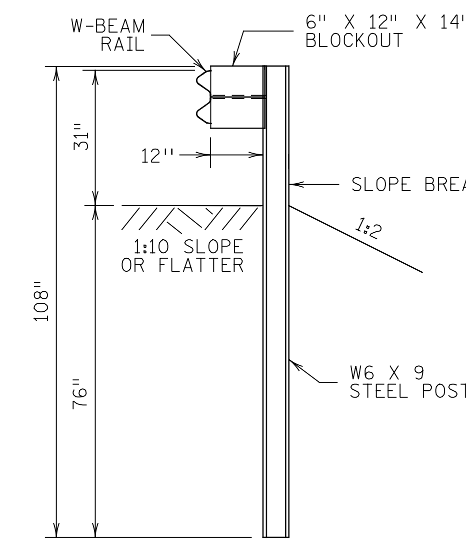
FRONT VIEW



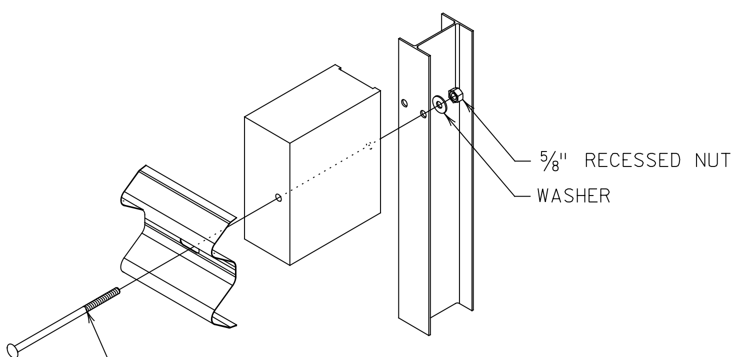
SIDE VIEW



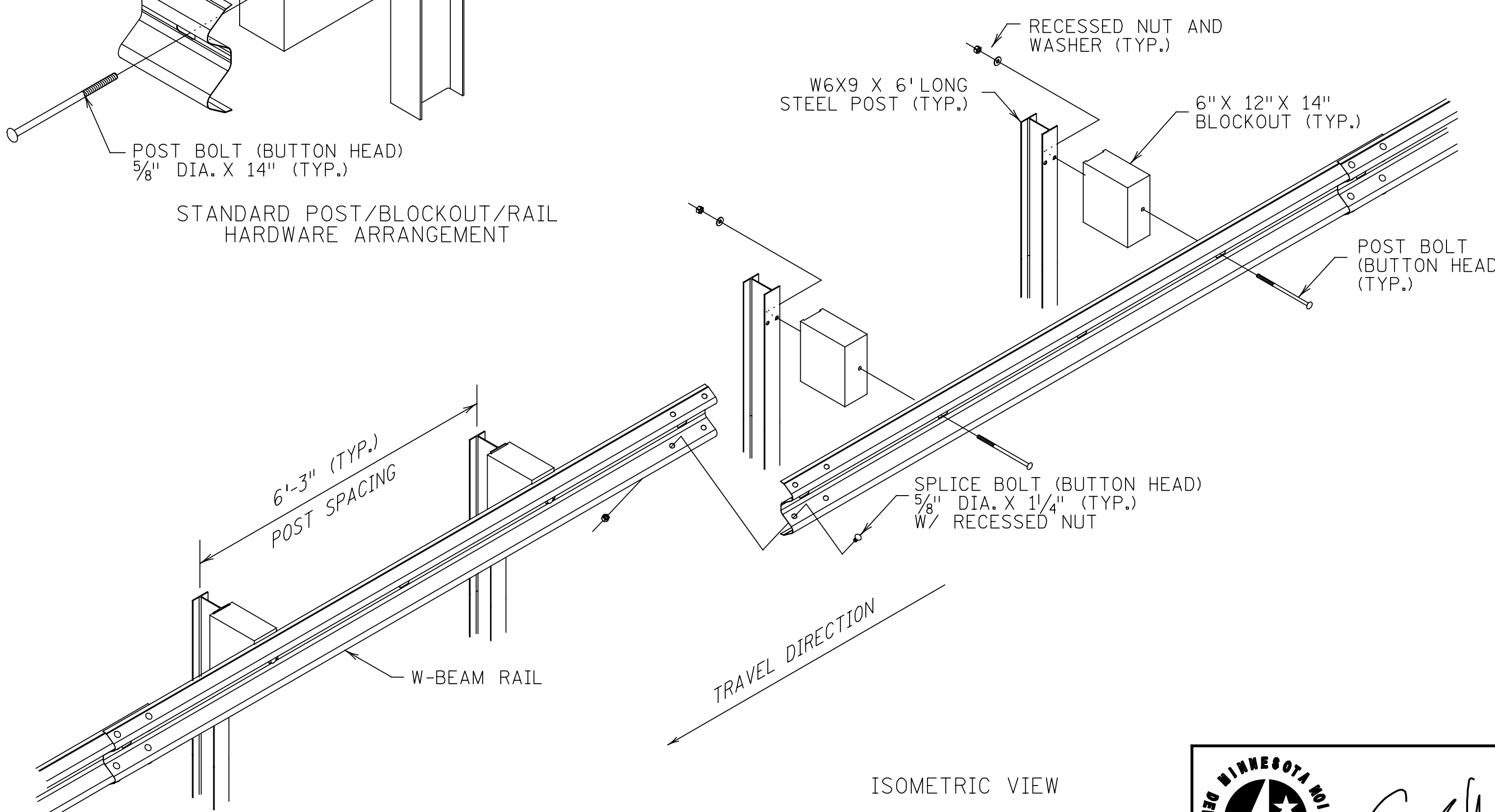
TYPE 31 GUARDRAIL WITH CURB



TYPE 31 GUARDRAIL WITH 1:2 BACK SLOPE AT POST



STANDARD POST/BLOCKOUT/RAIL HARDWARE ARRANGEMENT



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.

MINNESOTA DEPARTMENT OF TRANSPORTATION · STATE DESIGN ENGINEER	REVISED: APPROVED: 7-19-2016	TRAFFIC BARRIER TYPE 31 ASSEMBLY DETAILS
		STANDARD PLAN 5-297.690 · 1 OF 2

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET 56 OF 255
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90	
	CHECKED BY		
	COMM. NO. 01710321		

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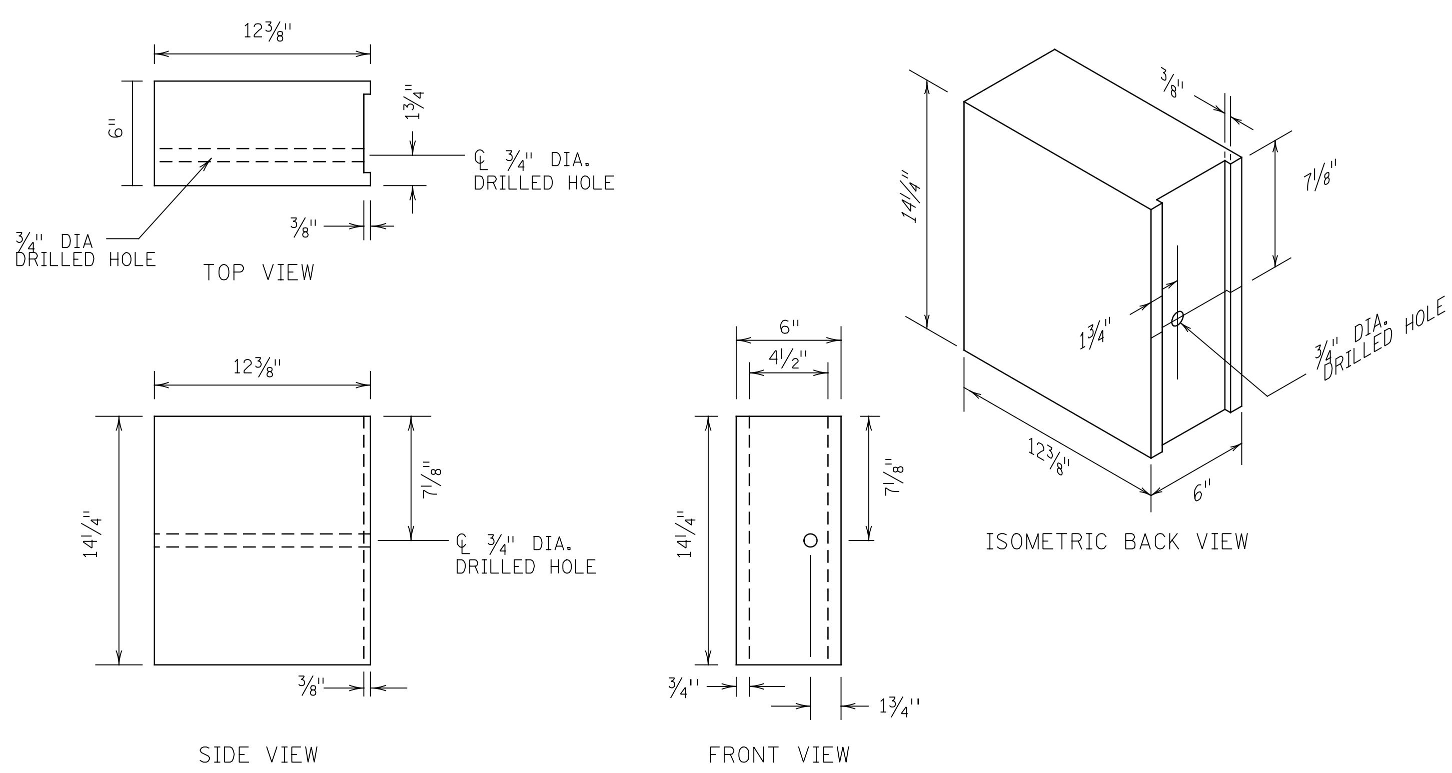
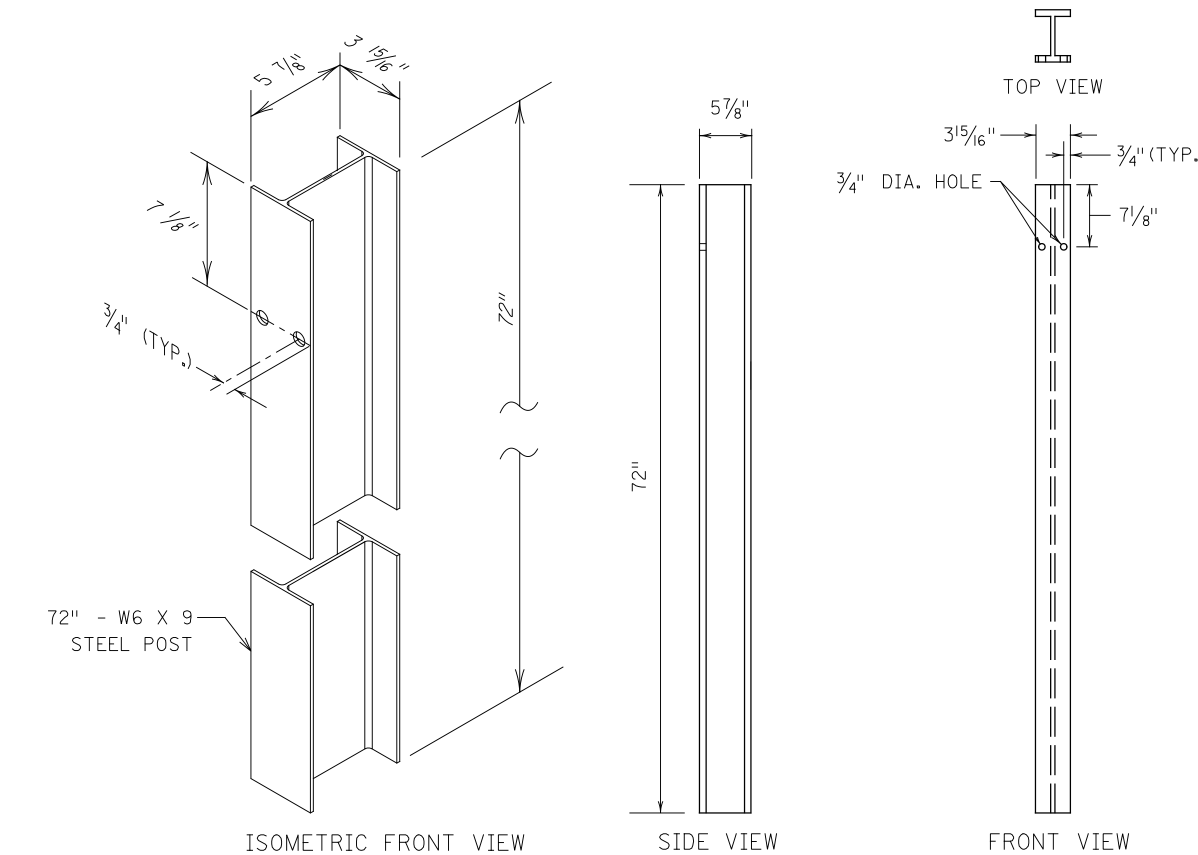
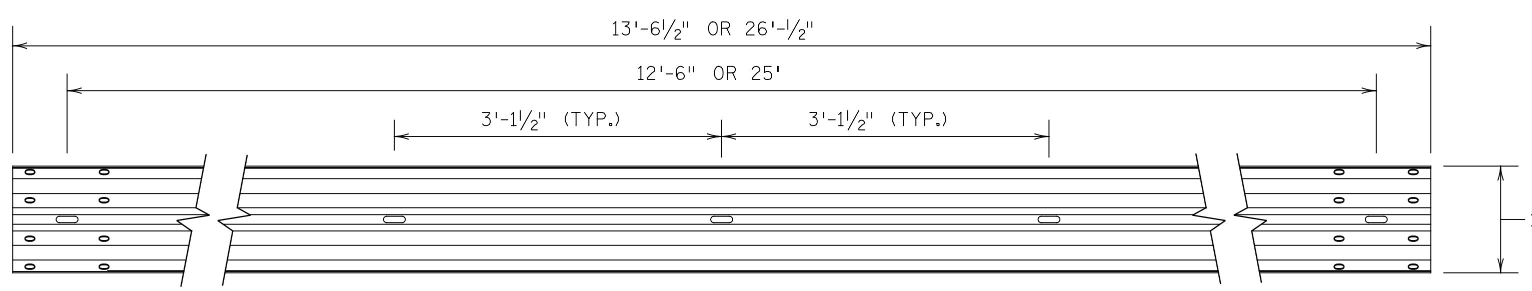


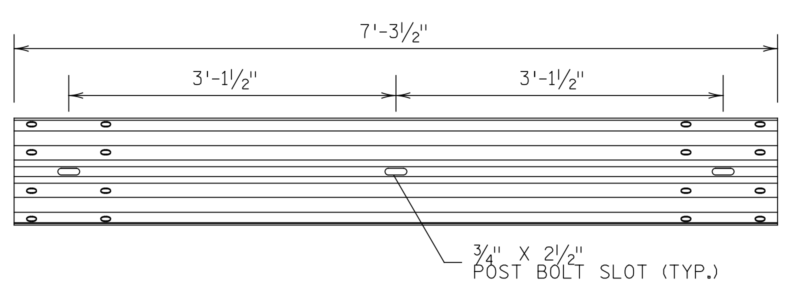
BLOCKOUT
WITH ROUTED GROOVE



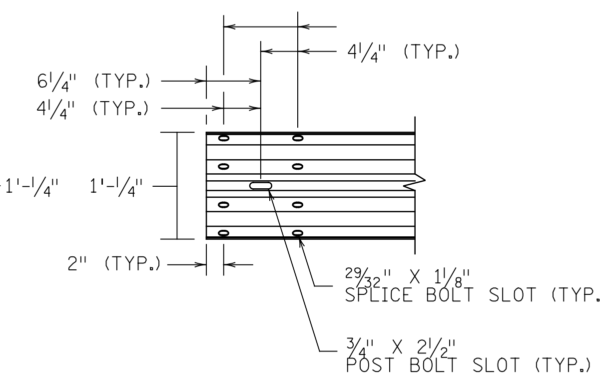
LINE POST①



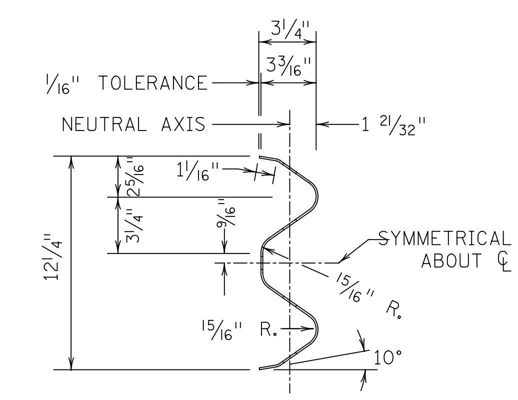
12'-6" OR 25' W-BEAM RAIL



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 PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY
DESIGNED BY
CHECKED BY
COMM. NO. 01710321

MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLANS
TH 22 & CSAH 90

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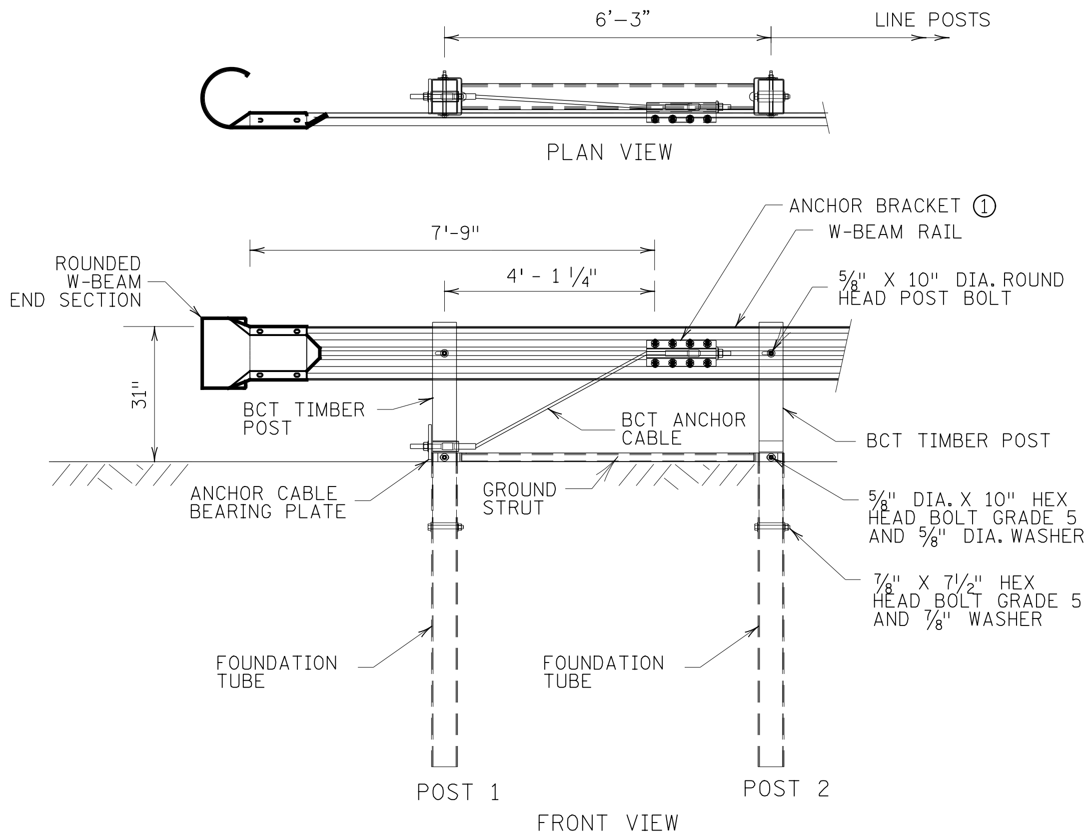
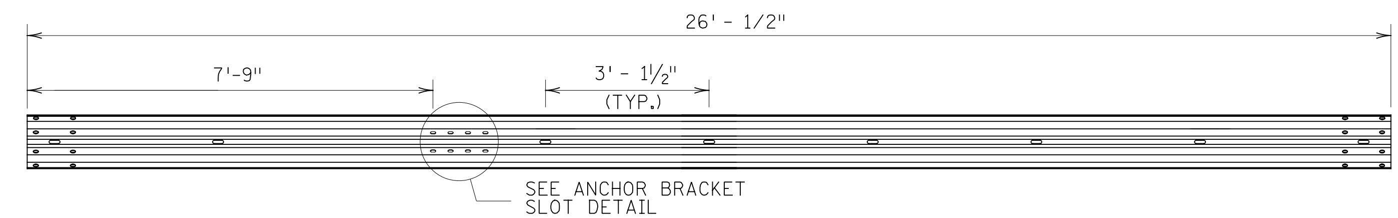
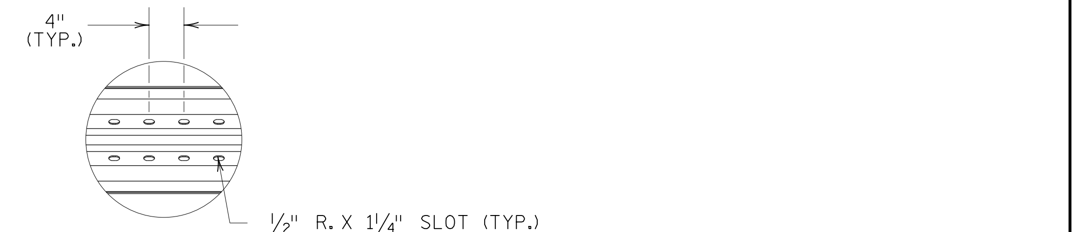


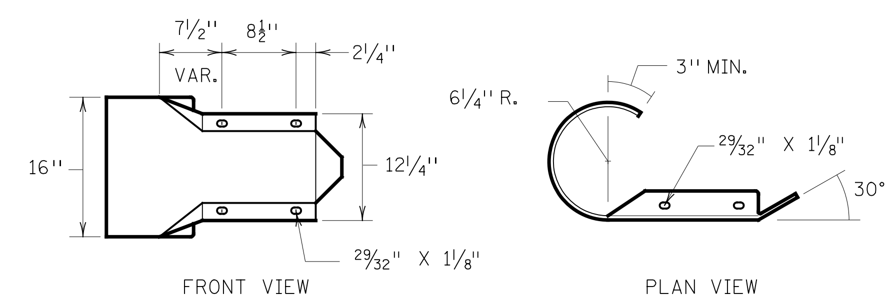
END RAIL DETAIL



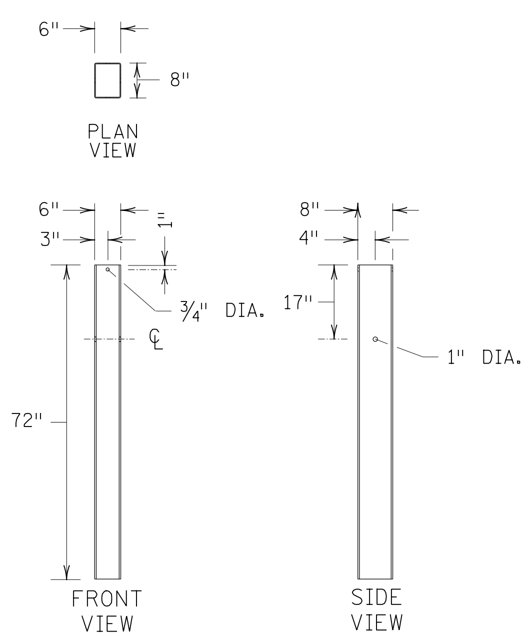
END RAIL BEAM



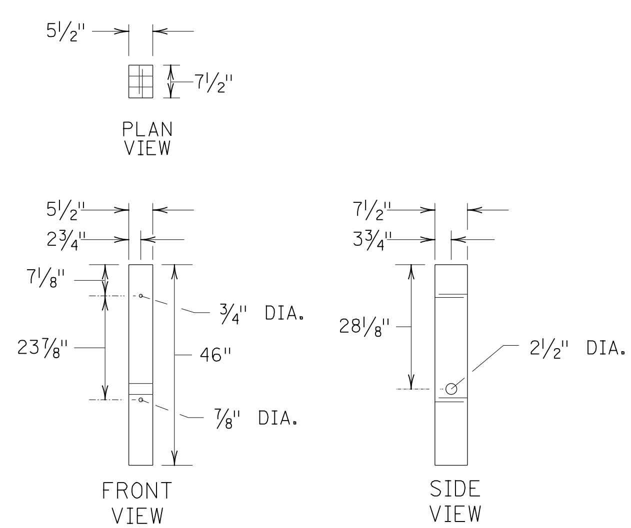
ANCHOR BRACKET SLOT DETAIL



ROUNDED W-BEAM END SECTION



FOUNDATION TUBE ②



BCT TIMBER POST
(MGS LENGTH)

NOTES:

ALL RAIL AND HARDWARE COMPONENTS PER AASHTO SPEC. M 180.

① BRACKET BOLTED TO BEAM WITH (8) 5/8" DIA. X 1 1/2" HEX HEAD BOLT GRADE 5 AND 5/8" DIA. WASHER.

② FOUNDATION TUBE SHALL BE MANUFACTURED USING ASTM A500B STEEL AND SHALL CONFORM TO ASTM A500 GRADE B MATERIAL.

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED: 7-19-2016

TRAFFIC BARRIER TYPE 31 END ANCHORAGE ASSEMBLY DETAILS

STANDARD PLAN 5-297.692 | 1 OF 2

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90	58 OF 255
	CHECKED BY		
	COMM. NO. 01710321		

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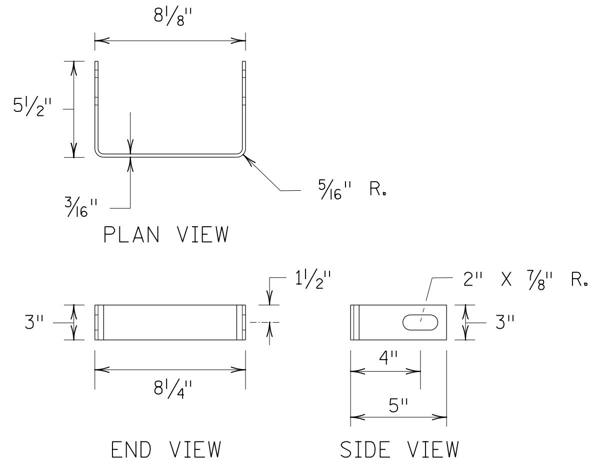
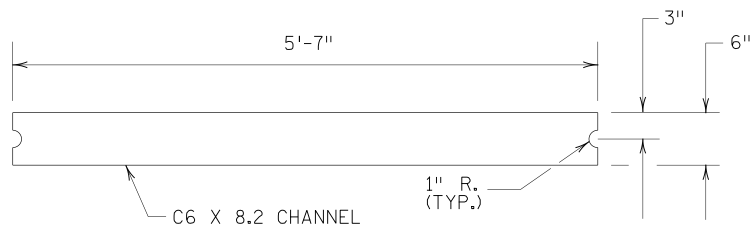
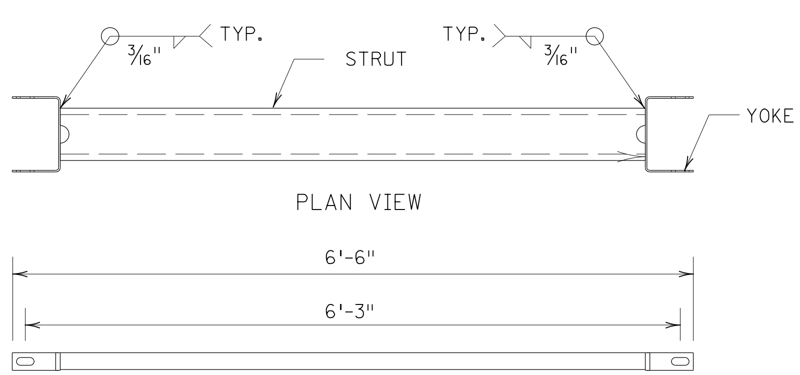


YOKE DETAILS

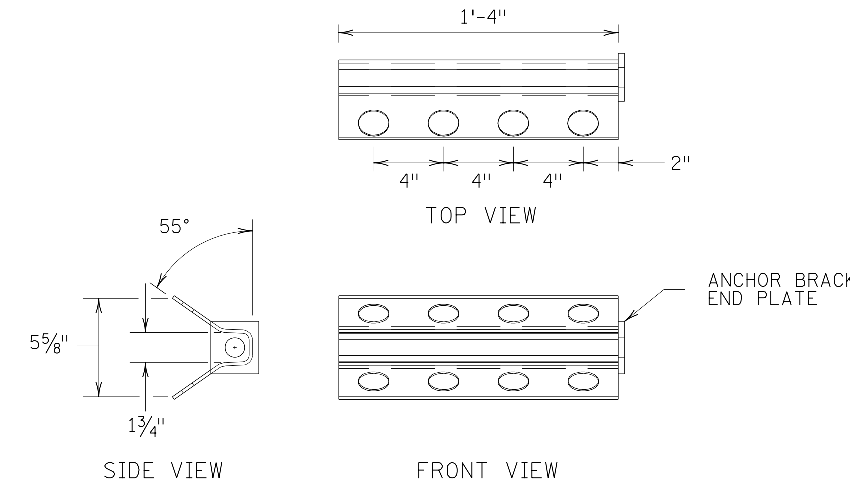


PLAN VIEW
STRUT DETAIL

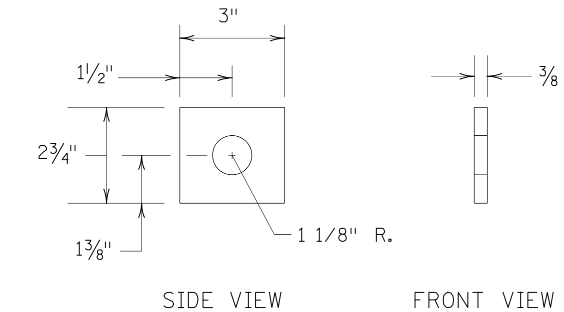


FRONT VIEW

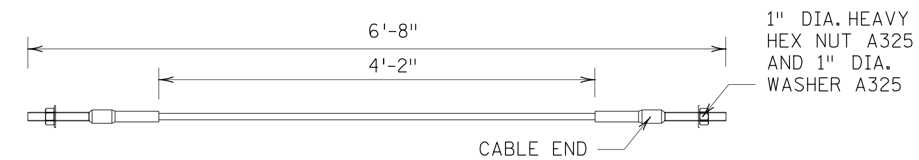
STRUT AND YOKE ASSEMBLY



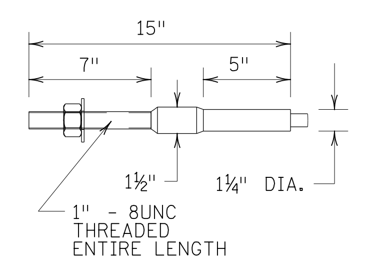
ANCHOR BRACKET



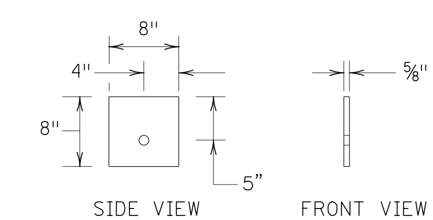
ANCHOR BRACKET END PLATE



BCT ANCHOR CABLE



BCT ANCHOR CABLE END DETAIL



BCT ANCHOR CABLE BEARING PLATE

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

APPROVED:
7-19-2016

TRAFFIC BARRIER TYPE 31 END ANCHORAGE COMPONENT DETAILS

STANDARD PLAN 5-297.692 | 2 OF 2

STATE PROJECT NO. 0704-108 (TH 22)	DRAWN BY	MINNESOTA DEPARTMENT OF TRANSPORTATION	SHEET
STATE PROJECT NO. 007-070-005	DESIGNED BY	STANDARD PLANS TH 22 & CSAH 90	59 OF 255
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	COMM. NO. 01710321		

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NOTES & GUIDELINES

GENERAL INFORMATION:

1. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN THE DEVICES IN THIS TRAFFIC CONTROL PLAN UNLESS OTHERWISE NOTED.
2. FIELD CONDITIONS MAY REQUIRE MODIFICATIONS OF THIS LAYOUT AS DEEMED NECESSARY BY THE ENGINEER.
3. ALL DISTANCES ARE APPROXIMATE.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ANY WORK AREAS NEAR TRAFFIC IN ACCORDANCE WITH THE MN MUTCD.
5. AN ANNUAL FALL REVIEW OF ALL TRAFFIC CONTROLS WILL BE MADE TO PREPARE FOR WINTER MAINTENANCE OF THE PROJECT. THIS MAY INCLUDE ADJUSTMENTS OR EXCHANGE OF ONE TRAFFIC CONTROL DEVICE FOR ANOTHER. READJUSTMENTS MAY AGAIN BE REQUIRED IN THE SPRING.
6. IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THAN SHOWN IN THIS TRAFFIC CONTROL PLAN THE CONTRACTOR SHALL PROVIDE COMPLETE REVISED TRAFFIC CONTROL PLANS TO BE APPROVED BY THE ENGINEER.

SIGNING:

1. ALL TRAFFIC CONTROL DEVICES, INCLUDING OVERHEAD SIGNS ON ROADS OPEN TO TRAFFIC THAT ARE NOT CONSISTENT WITH TRAFFIC OPERATION SHALL BE COVERED, REMOVED OR REVISED AS DIRECTED BY THE ENGINEER.
2. WHEN SIGNS ARE PLACED, THEY SHALL BE MOUNTED ON POSTS DRIVEN INTO THE GROUND AT THE PROPER HEIGHT AND LATERAL OFFSET AS SHOWN IN THE TYPICAL TEMP SIGN FRAMING & INSTALLATION DETAILS IN THE PLAN. IF THIS IS NOT POSSIBLE THEY WILL BE MOUNTED ON PORTABLE SUPPORTS AS APPROVED BY THE ENGINEER. WHEN THE SIGNS ARE REMOVED THE SIGN POSTS SHALL ALSO BE REMOVED AS SOON AS POSSIBLE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EXTRA SIGNING NEEDED TO FACILITATE TRAFFIC SWITCHES OR FOR TRANSITIONING TRAFFIC FROM ONE STAGE TO ANOTHER.
4. ALL ORANGE WARNING AND ORANGE GUIDE SIGNS SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MnDOT APPROVED PRODUCT LIST FOR "SHEETING FOR RIGID TEMPORARY WORK ZONE SIGNS".
5. BARRICADES SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MnDOT APPROVED PRODUCT LIST FOR BARRICADE SHEETING. NOTE THAT ASTM TYPE VII SHEETING IS NOT ALLOWED ON BARRICADES AFTER JANUARY 1, 2010.
6. LONGITUDINAL DROPOFFS SHALL BE SIGNED AS SHOWN IN THE "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS" FIELD MANUAL UNLESS OTHERWISE SPECIFIED IN THESE PLANS.
7. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE FINAL SIGNS TO ASSURE THAT THE FINAL SIGNS ARE PLACED AS NEEDED, OR PROVIDE TEMPORARY SIGNING AT THEIR EXPENSE UNTIL THE FINAL SIGNING IS PLACED.

PAVEMENT MARKING:

1. OBLITERATE ANY CONFLICTING PAVEMENT MARKINGS AS DIRECTED BY THE ENGINEER.
2. PAINT, POLYMER LANE TAPE AND/OR TRPM'S ARE ACCEPTABLE TEMPORARY STRIPING ALTERNATIVES ACCORDING TO ACTUAL CONDITIONS ENCOUNTERED AS DIRECTED BY THE ENGINEER. GENERALLY, ONLY PAINT WILL BE USED BEFORE MAY 1ST OR WHEN THE OTHER MANUFACTURERS' SPECIFICATIONS CAN NOT BE MET.
3. TRPM'S (TEMPORARY RAISED PAVEMENT MARKERS) SHOULD BE USED TO SUPPLEMENT THE LONG TERM (MORE THAN 3 DAYS) EDGELINES ON ALL TRANSITION AREAS WHEN THE CONDITIONS ARE WITHIN THE MANUFACTURERS' SPECIFICATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PLACEMENT OF TEMPORARY AND FINAL STRIPING MnDOT TRAFFIC PERSONNEL WILL ASSIST IN THE SPOTTING OF TRANSITION AREAS, GORES AND TAPERS.

BARRIER & DELINEATION:

1. TOP MOUNTED BARRIER DELINEATORS WILL HAVE A MINIMUM OF 24 SQ. IN. OF REFLECTIVE SURFACE AREA AND BE PLACED AT 25' SPACES ON TOP OF THE BARRIER WHEN THE BARRIER IS WITHIN 10' OF TRAFFIC UNLESS OTHERWISE NOTED OR AS DIRECTED BY THE ENGINEER. IF THE TRAFFIC ENGINEER REQUIRES SIDE MOUNTED BARRIER DELINEATORS, THEY WILL HAVE A MINIMUM OF 12 SQ. IN. OF REFLECTIVE SURFACE AREA AND BE PLACED AT 25' SPACES. IF A SMALLER APPROVED BARRIER DELINEATOR IS USED IT SHALL BE AT ONE HALF THE SPACING AND ONE HALF THE BID PRICE.

CONSTRUCTION INFORMATION SIGNING:

1. THE CONTRACTOR SHALL USE CONSTRUCTION INFORMATION SIGNING AS SHOWN IN THE PLAN AND WHICH ARE TO BE USED AS FOLLOWS:

   G20-X1 CLOSURE NOTICE SIGNS PAIRED WITH G20-X3 WORK ENDS SIGNS TO DISPLAY THE CORRECT START DATE AND AN ESTIMATED FINISH DATE AS APPROVED BY THE PROJECT ENGINEER.

   G20-X2 WORK ZONE ADVANCE NOTICE SIGNS WITH THE CORRECT STARTING DATE DISPLAYED BEFORE WORK BEGINS. ONCE WORK BEGINS, THE START DATE LEGEND SHALL BE COVERED BY THE SUGGESTED PLAQUE CONTAINED IN THIS PLAN. IF NO ALTERNATE MESSAGE IS SUGGESTED OR IF DIRECTED BY THE PROJECT ENGINEER, THE CORRECT ESTIMATED FINISH DATE, MONTH, OR SEASON SHALL BE DISPLAYED.

   CONSTRUCTION INFORMATION SIGNING NOT VISIBLE TO THE MOTORING PUBLIC ONCE WORK BEGINS WILL BE MOVED BY THE CONTRACTOR TO A SITE IN ADVANCE OF THE WORK ZONE OR CLOSURE AS DIRECTED BY THE PLAN OR PROJECT ENGINEER.

TRAFFIC CONTROL DEVICES & SYMBOLS LEGEND

SYMBOL	DESCRIPTION
	AREA CLOSED TO TRAFFIC / WORK AREA
	TRAFFIC CONTROL SIGN
	TYPE III BARRICADE =
	DRUM-LIKE CHANNELIZER (TYPE B) =
F	TYPE A FLASHING WARNING LIGHT
	FLASHING ARROW BOARD TYPE C = (4' X 8' UNLESS OTHERWISE NOTED).
	PORTABLE PRECAST CONC BARRIER DES 8337 WITH DELINEATORS AT 25' SPACING

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ADRIAN S. POTTER

Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS

DESIGNED BY B. BETTS

CHECKED BY A. POTTER

COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

TRAFIC CONTROL AND DETOUR PLANS

TH 22 & CSAH 90

NOTES AND LEGEND

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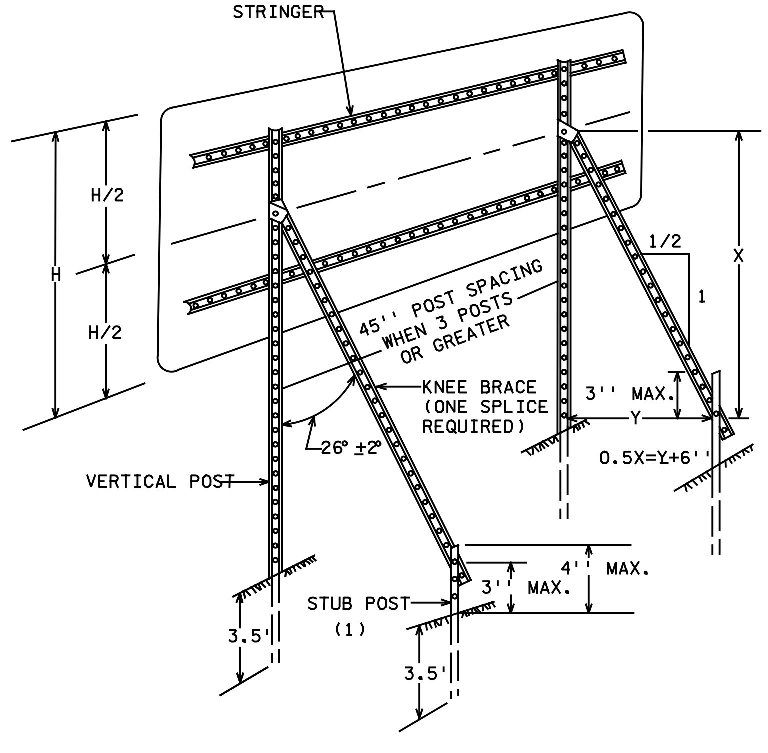
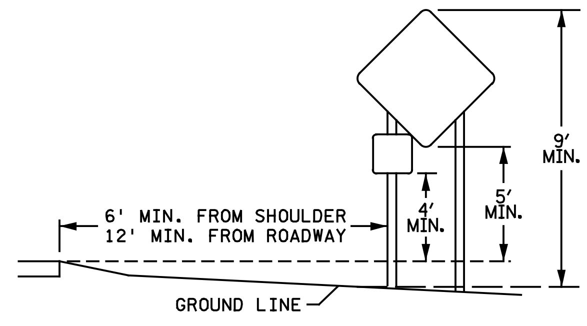
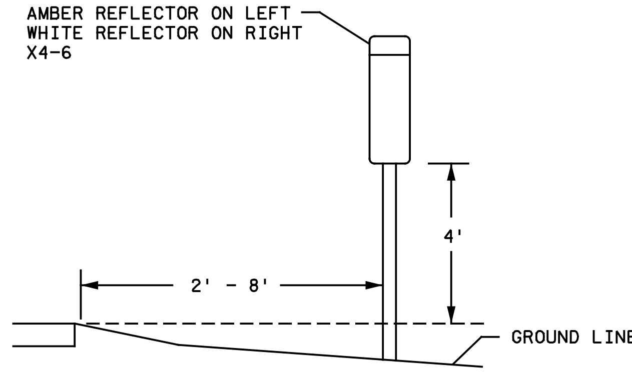


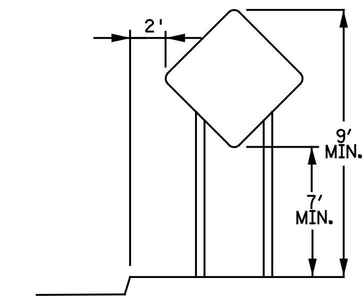
TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS



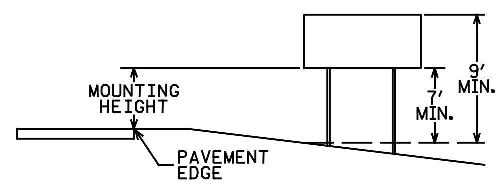
TYPICAL RURAL DESIGN



DELINEATION MOUNTING

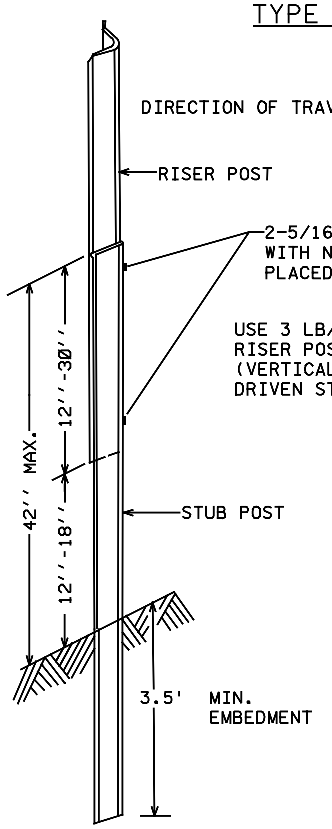


TYPICAL URBAN DESIGN



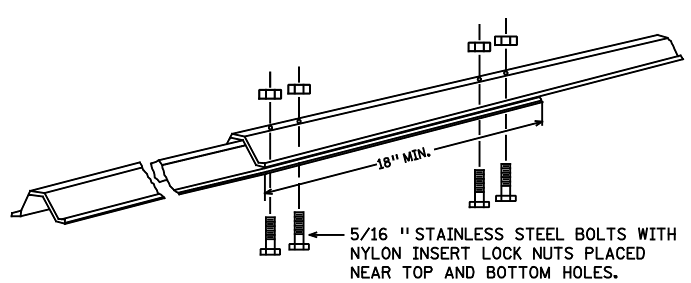
TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY RELATIVE TO VERTICAL POST.



USE 3 LB/FT STUB POSTS, USE 2.5 LB/FT RISER POSTS AND STRINGERS. ALL RISER (VERTICAL) "U" POSTS SHALL BE SPLICED. DRIVEN STUB POSTS SHALL BE 7 FEET LONG.

"U" POST BREAKAWAY SPLICE



KNEE BRACE STRUCTURAL SPLICE

SIGN DATA

SIGNS TO BE PLACED ON DRIVEN U-POSTS SHALL BE PLACED IN ACCORDANCE WITH TABLE 1 OR 2 BELOW. IF THE TTC PLAN PLACES POST MOUNTED TEMPORARY SIGNS ADJACENT TO EXISTING STRUCTURES THERE SHALL BE NO MORE THAN TWO U-POST WITHIN 84 INCHES OF EACH OTHER ALIGNED IN THE SAME PLANE SO AS NOT TO COMPROMISE THAT STRUCTURE'S AND THE NEW DEVICE'S CRASHWORTHINESS. IF IT IS NOT POSSIBLE TO MAINTAIN THIS SPACING THEN THE POST MOUNTED TEMPORARY SIGNS SHALL BE PLACED A MIN OF 4' BEYOND THE IN PLACE STRUCTURES. SIGN PANELS SHALL BE PLACED ON SIGN STRUCTURES TO MEET THE 5' MIN DEPICTED ON THE TYPICAL RURAL DESIGN DETAIL, THE 7' MIN DEPICTED ON THE TYPICAL URBAN DESIGN DETAIL, AND THE 9' MIN DEPICTED ON THE TYPICAL MOUNTING DETAIL ON THIS SHEET.

STANDARD CONSTRUCTION SIGNS IN MnDOT STANDARD SIGNS AND MARKINGS MANUAL

TABLE 1

PANEL SIZE (IN.)	POSTS			
	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
24 x 24	2-U	18		13
30 x 24	2-U	18		13
36 x 30	2-U	24		13
36 x 36	2-U	18		14
42 x 36	2-U	30		14
48 x 48	2-U	30		15
60 x 60	2-U	42	1	16
66 X 60	2-U	42	2	16
72 x 72	2-U	42	2	17
96 x 54	2-U	54	2	19
96 X 84	2-U	54	2	19
132 X 108	3-U	45	3	22
168 x 132	4-U	48	4	25

GENERAL NOTES:
1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING HOLES.
3. MINIMUM OF 45" SPACING BETWEEN POSTS MUST BE MAINTAINED WHEN USING MORE THAN TWO POSTS.

TABLE 2
SPECIAL DESIGN CONSTRUCTION SIGNS

PANEL SIZE		POSTS			
LENGTH (IN.)	HEIGHT (IN.)	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
54 - 96	78	2-U	42	2	20
102 - 138	78	3-U	45	3	20
144 - 180	78	4-U	45	4	20

DESIGNER NOTE: INCLUDE SPECIAL SIGN DETAILS IN THE TRAFFIC CONTROL PLAN IN TABLE TWO.

NOTES: FOR TEMPORARY CONSTRUCTION SIGN FRAMING, THE CONTRACTOR MAY USE GRADE 5 ZINC PLATED BOLTS FOR ALL BOLTED CONNECTIONS, EXCEPT FOR THE KNEE BRACE CONNECTION TO THE REAR STUB POST, WHICH SHALL UTILIZE A 5/16 INCH STAINLESS STEEL BOLT AND NYLON INSERT LOCK NUT. ADDITIONAL SIGN FRAMING DETAILS CAN BE FOUND IN THE TRAFFIC ENGINEERING MANUAL PART 6.

IF THE CONTRACTOR ELECTS TO USE SOME OTHER TYPE OF SIGN SUPPORT (OTHER THAN U-CHANNEL SIGN POSTS) FOR MOUNTING CONSTRUCTION SIGNS, DETAILS OF THE PROPOSED SIGN STRUCTURE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING THE SIGN STRUCTURE COMPONENTS. ANY SIGN STRUCTURE TO BE SUBMITTED TO THE ENGINEER SHALL BE AN FHWA ACCEPTED BREAKAWAY SIGN SUPPORT. SIGN STRUCTURE SHALL ALSO BE APPROVED FOR 90 MPH WIND LOAD.

TYPICAL TEMPORARY SIGN FRAMING AND INSTALLATION DETAILS

PUBLISHED BY OTST: 10 OCT 2016

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STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS
DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

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TRAFIC CONTROL AND DETOUR PLANS
TH 22 & CSAH 90
DETAILS

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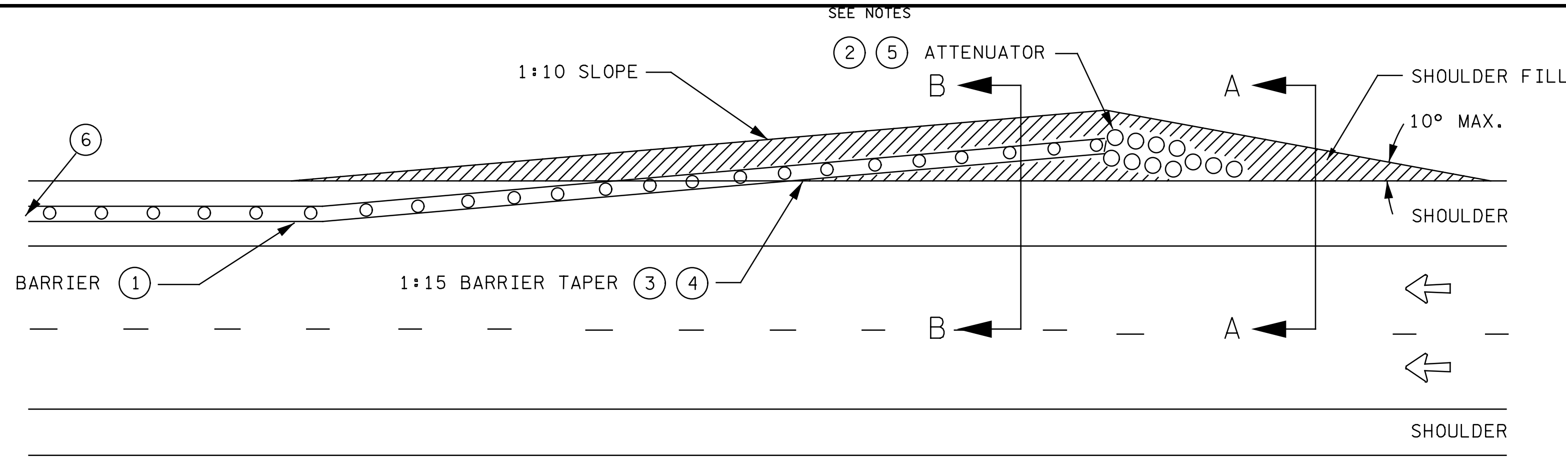
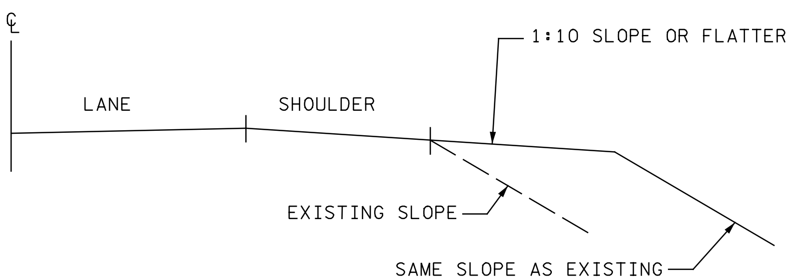
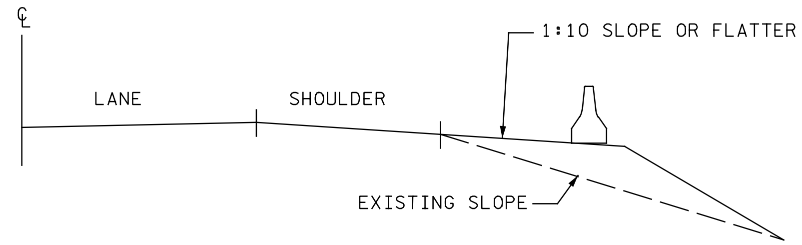




SECTION A-A



SECTION B-B

DESIGNER NOTES (REMOVE FROM LAYOUT BEFORE INSERTING IN PLAN):

(1) IT IS DESIRABLE TO MAINTAIN FULL SHOULDER WIDTH WHENEVER POSSIBLE. IF THAT IS NOT POSSIBLE, THE MINIMUM DESIRABLE LATERAL OFFSETS ARE BASED ON THE FOLLOWING POSTED SPEED LIMITS:

70 MPH - 12.0 FEET
60 MPH - 8.0 FEET
50 MPH - 6.5 FEET
40 MPH - 5.0 FEET

FOR RESTRICTED CONDITIONS, LESSER OFFSETS MAY BE USED. THE OFFSETS SHOULD BE A MINIMUM OF 2 FEET UNLESS THE CONDITIONS ARE EXTREME. LATERAL OFFSETS ARE MEASURED TO THE BOTTOM OF THE BARRIER. BARRIER OFFSET FROM THE EDGE OF THE THRU LANE SHOULD NOT EXCEED 15 FEET.

(2) DESIRABLE TREATMENTS FOR EXPOSED BARRIER ENDS ARE; A CONNECTION TO EXISTING BARRIER; IMPACT ATTENUATOR; TAPER AWAY TO THE EDGE OF THE CLEAR ZONE; AND EXTENDING THROUGH A PLATE BEAM GUARDRAIL BY REMOVING A PANEL.

FOR POSTED SPEED LIMITS OF 30 MPH OR LESS, THE TAPERING AWAY FROM THE TRAFFIC IS DESIRABLE AND THE USE OF AN IMPACT ATTENUATOR IS OPTIONAL.

(3) A 1:8 TAPER MAY BE USED WHEN THE POSTED SPEED LIMIT IS 35 MPH OR LESS.

A 1:12 TAPER MAY BE USED WHEN THE POSTED SPEED LIMIT IS 45 MPH OR LESS.

(4) IF THE BARRIER IS TO BE EXTENDED BEYOND THE SHOULDER, ADDITIONAL FILL WILL BE NEEDED IN ORDER TO PROVIDE A FLAT (1:10) APPROACH AREA TO THE BARRIER. (SEE SHOULDER FILL DETAIL).

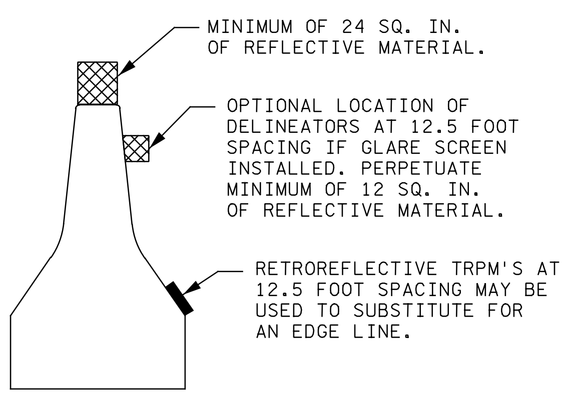
(5) THE IMPACT ATTENUATOR SHOULD BE OFFSET A MINIMUM OF 2 FEET FROM THE EDGE OF THE THRU LANE (SEE SAND BARREL OFFSET DETAIL). THE IMPACT ATTENUATOR SHOULD BE ORIENTED TO ACCOMMODATE THE PROBABLE IMPACT ANGLE OF AN ENCROACHING VEHICLE. FOR MOST ROADSIDE CONDITIONS, AN ANGLE OF APPROXIMATELY 10 DEGREES, AS MEASURED BETWEEN THE HIGHWAY AND THE IMPACT ATTENUATOR LONGITUDINAL CENTERLINE, IS CONSIDERED APPROPRIATE. (SEE SHOULDER FILL DETAIL). FOR SAND BARREL ARRANGEMENT, SEE SAND FILLED BARREL OFFSET DETAIL.

(6) FOR TWO-LANE, TWO-WAY TRAFFIC, BOTH ENDS OF THE BARRIER SHOULD BE TREATED IN THE SAME MANNER AS DESCRIBED IN (2) .

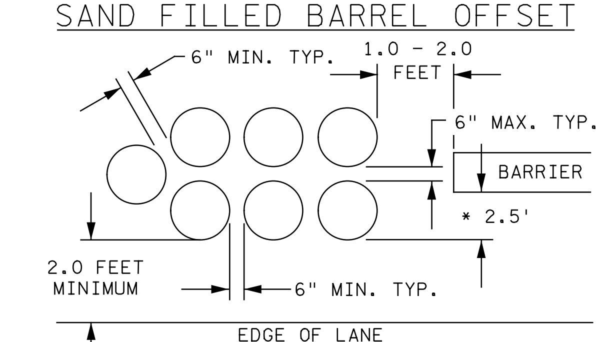
SEE MANUFACTURERS SPECIFICATIONS FOR BARREL ARRAY SET UP.

DELINEATION OPTIONS FOR BARRIER

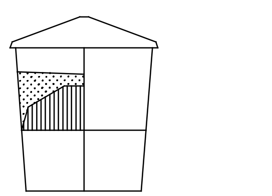
(7) DELINEATOR @ 25' SPACING



SAND FILLED BARREL OFFSET



NOTE:
* DISTANCE MAY BE REDUCED TO MINIMUM OF 1.25 FEET THIS IS ACCEPTABLE ONLY WHERE A GREATER OFFSET WOULD CAUSE UNACCEPTABLE INTERFERENCE WITH TRAFFIC.



SEE MANUFACTURER INFORMATION FOR PROPER PROCEDURE TO FILL BARRELS WITH SAND.

NOTE:
AT THE DIRECTION OF THE ENGINEER, OTHER APPROVED IMPACT ATTENUATORS CAN BE SUBSTITUTED IN LIEU OF THE SAND BARRELS ESPECIALLY WHERE REDIRECTION IS DESIRED OR AT WIDTH RESTRICTED AREAS.

PORTABLE CONCRETE BARRIER PLACEMENT AND END TREATMENT

10/22/14 LAYOUT 19

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Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS
DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

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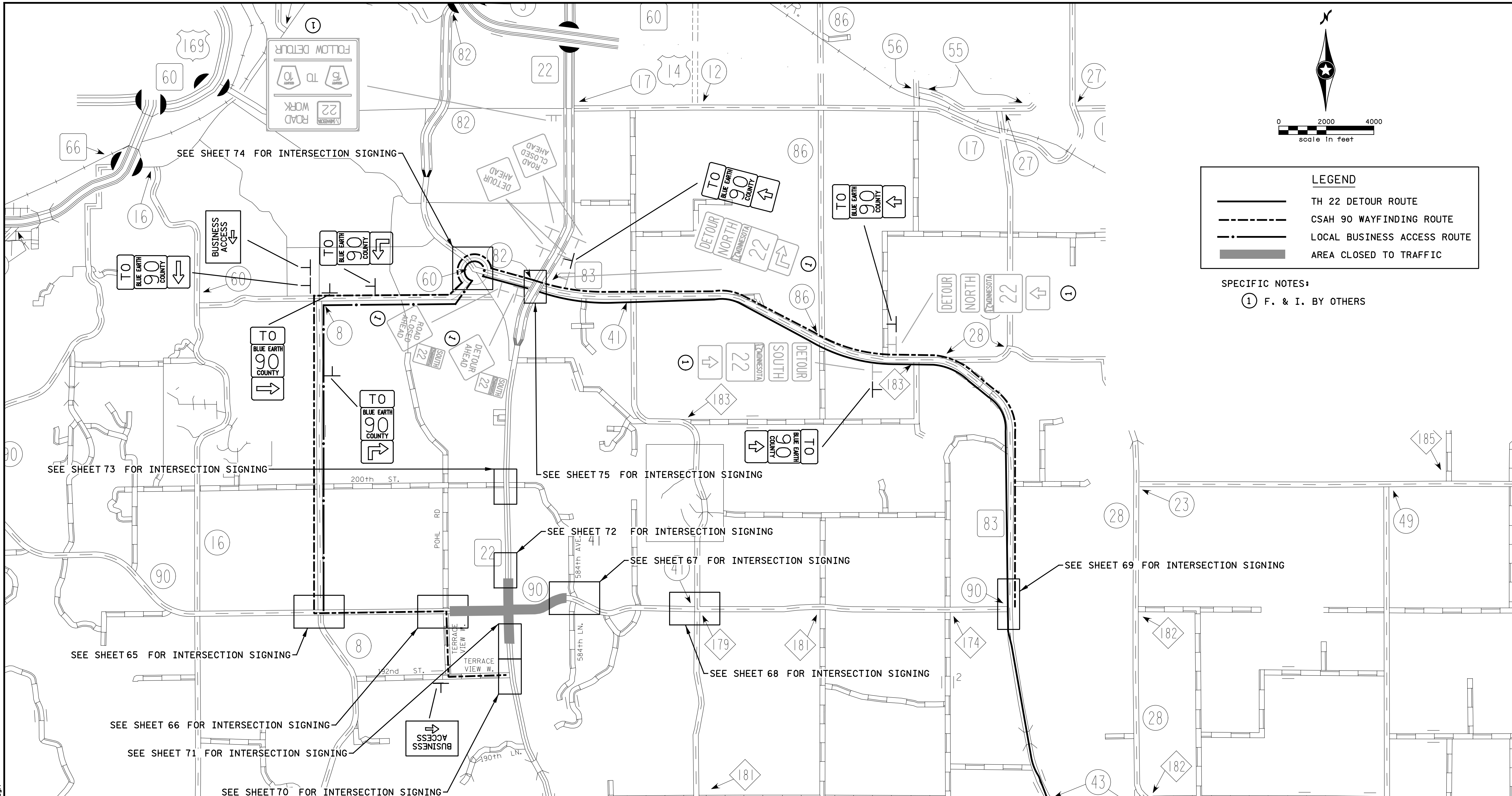
TRAFIC CONTROL AND DETOUR PLANS
TH 22 & CSAH 90
DETAILS



MATCHLINE "A"
(SEE SHEET 64)

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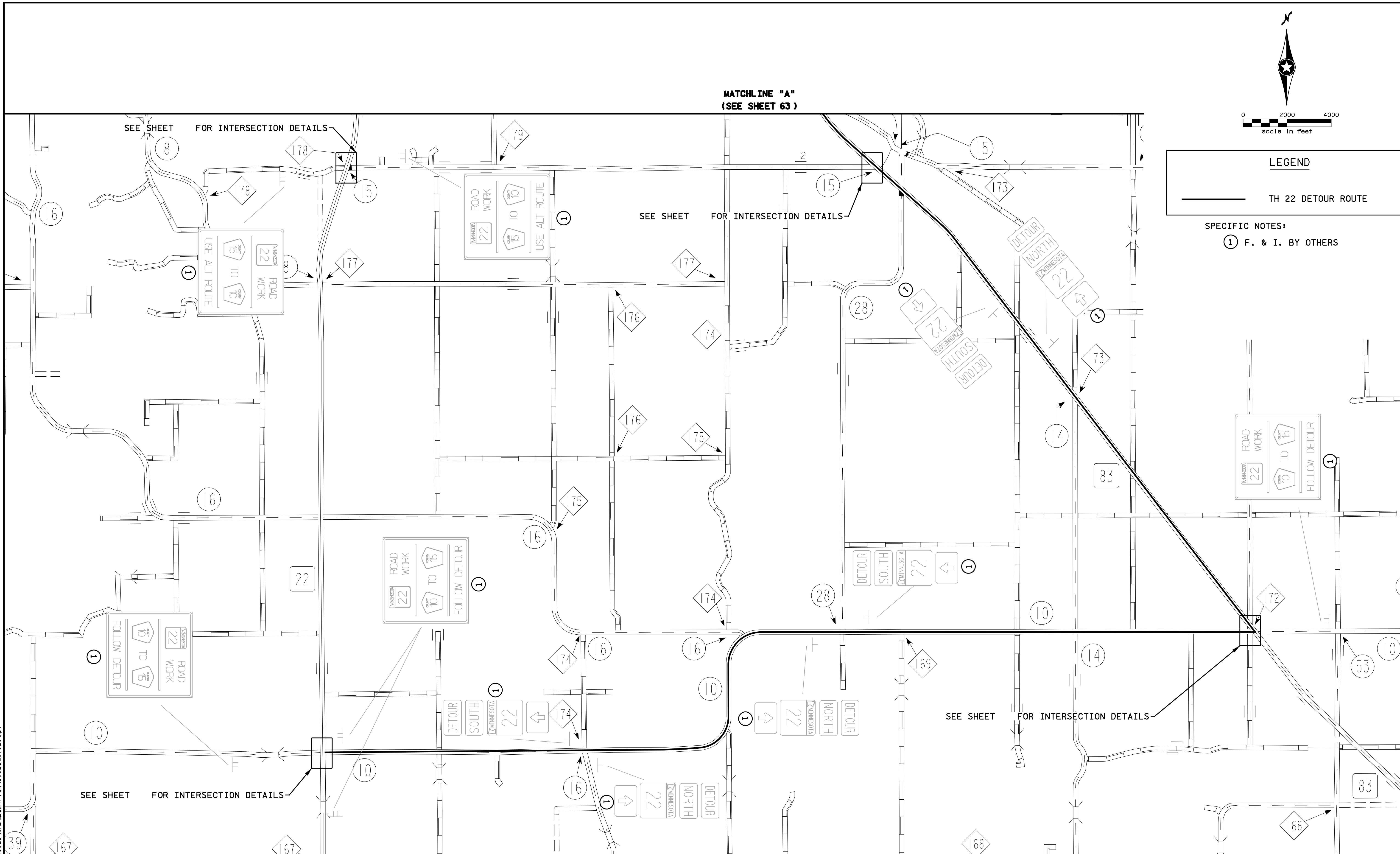
TRAFFIC CONTROL AND DETOUR PLANS

TH 22 & CSAH 90

TH 22 DETOUR/CSAH 90 WAYFINDING/ LOCAL BUSINESS ACCESS ROUTES



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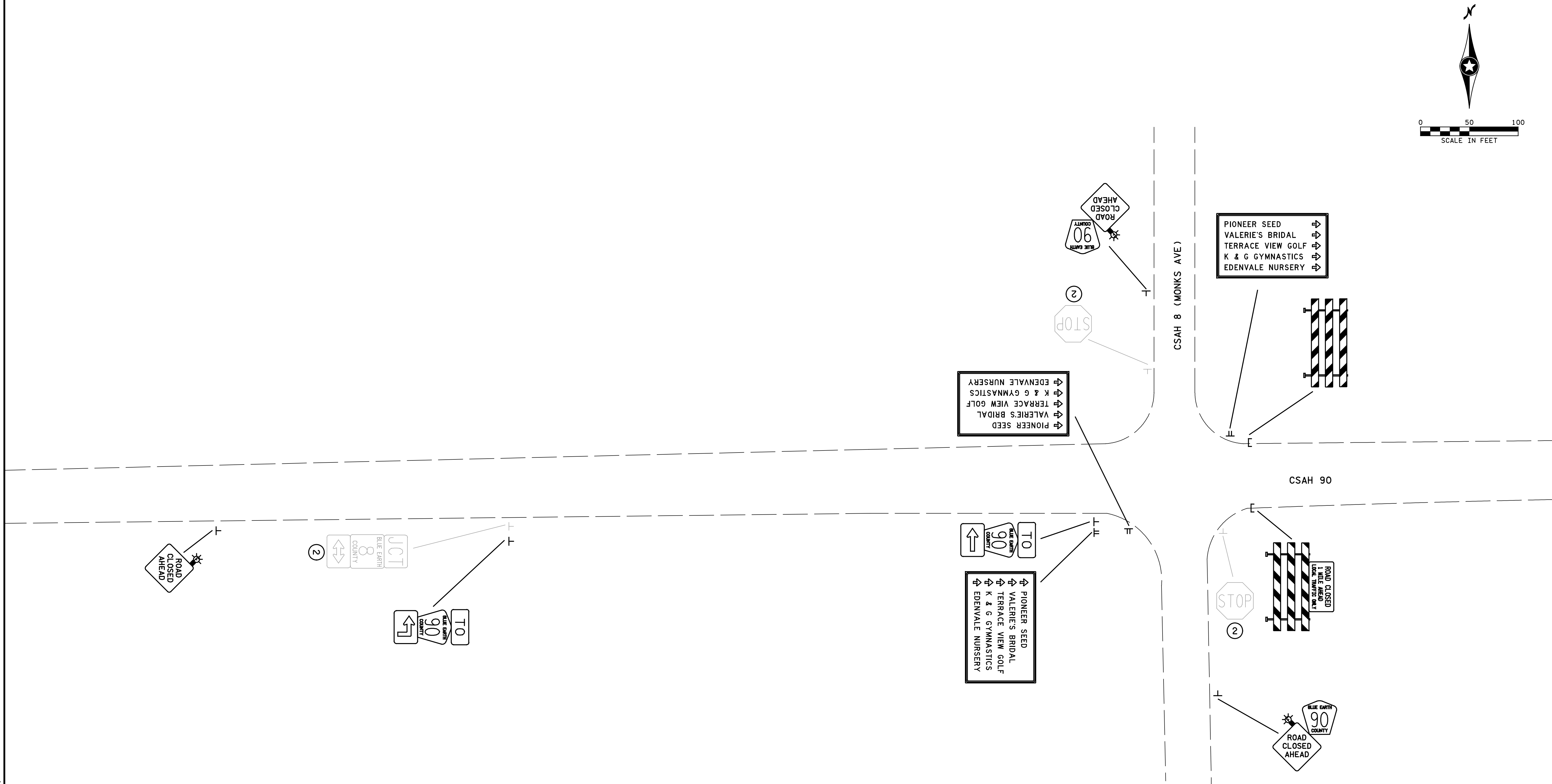
TH 22 & CSAH 90

TH 22 DETOUR/CSAH 90 WAYFINDING/ LOCAL BUSINESS ACCESS ROUTES

SHEET 64 OF 255



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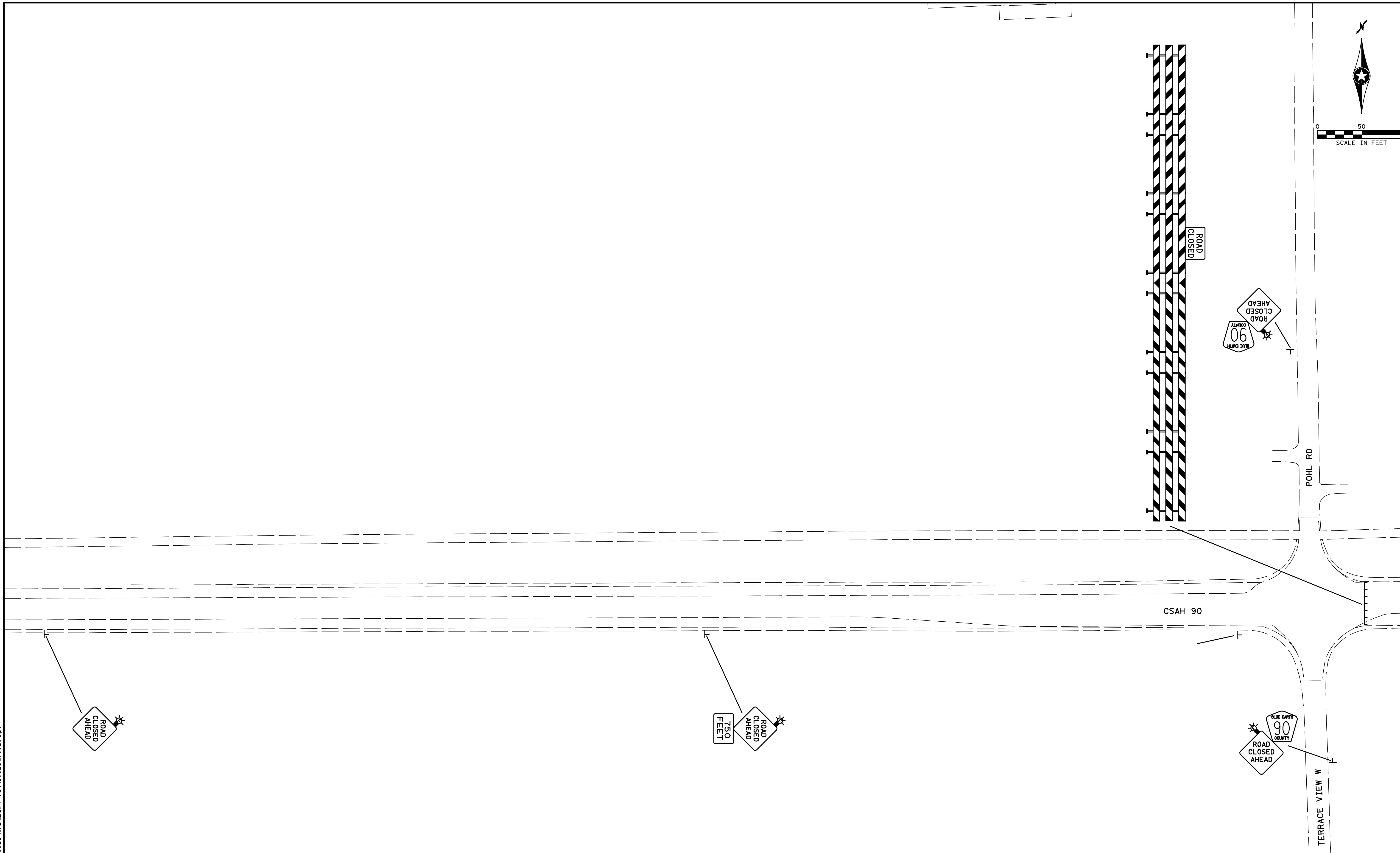

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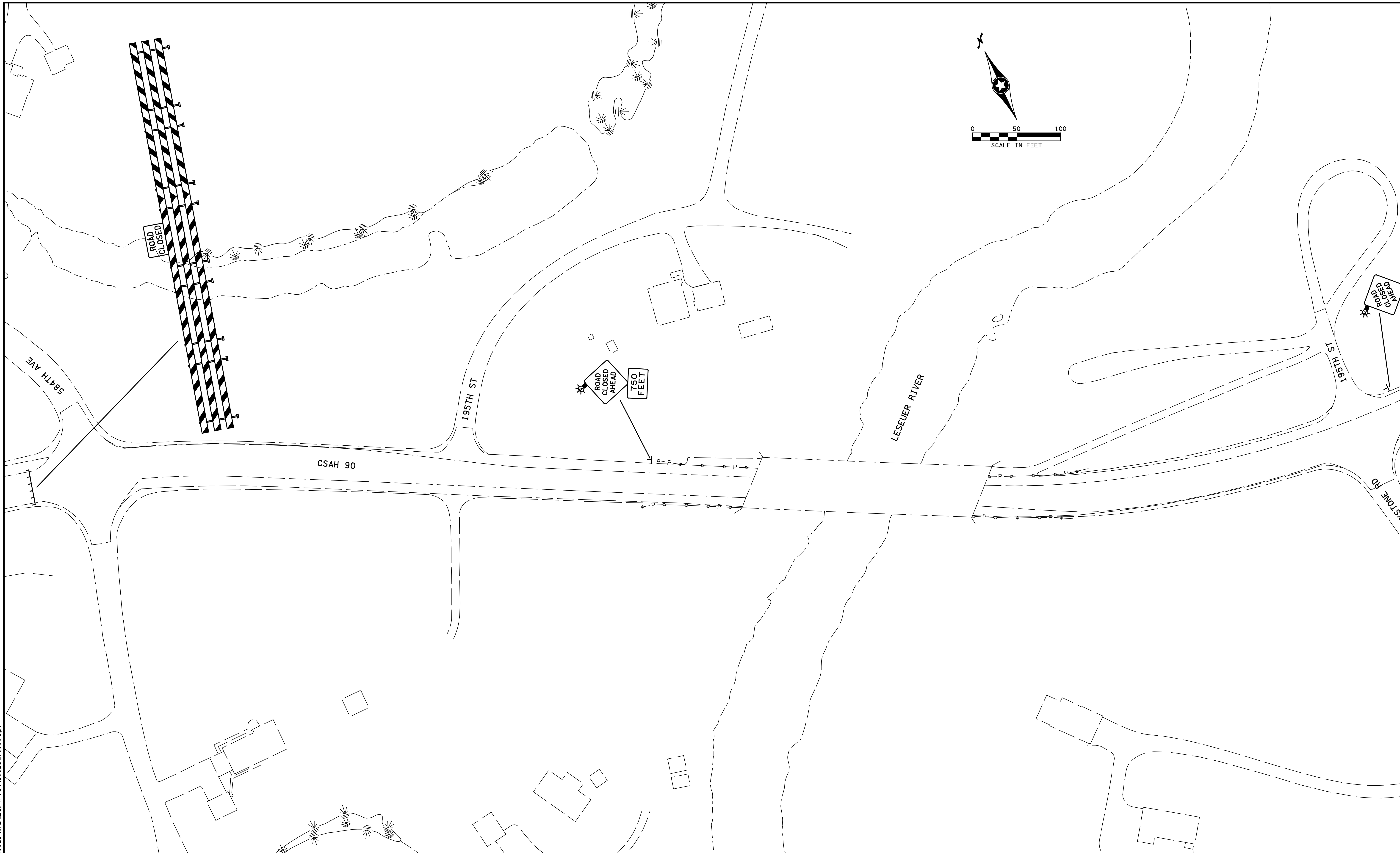
CSAH 90



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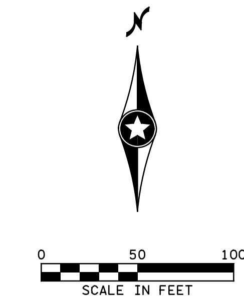

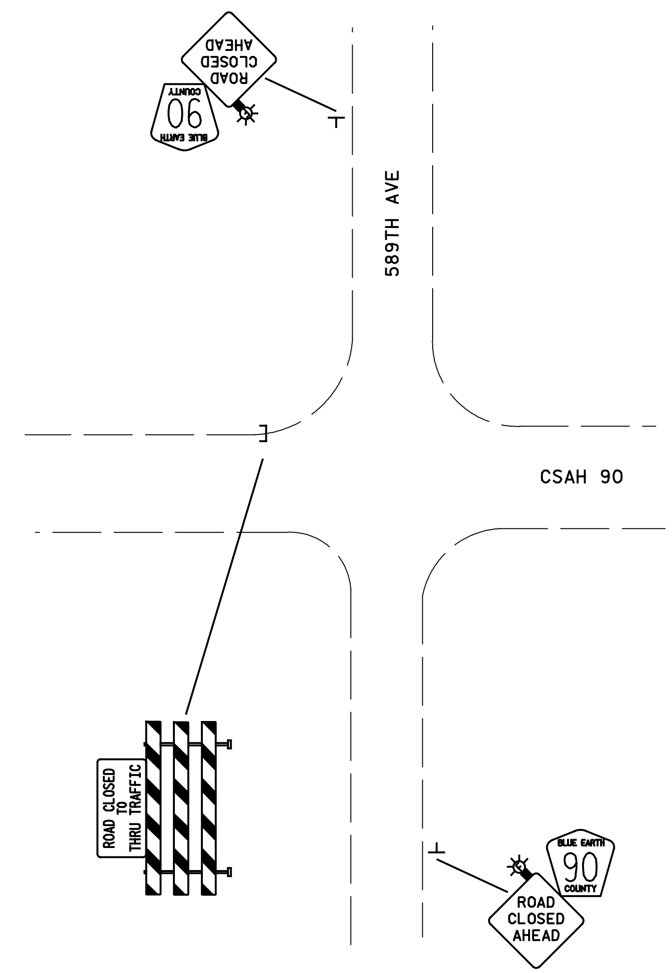

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CSAH 90

SHEET 68 OF 255

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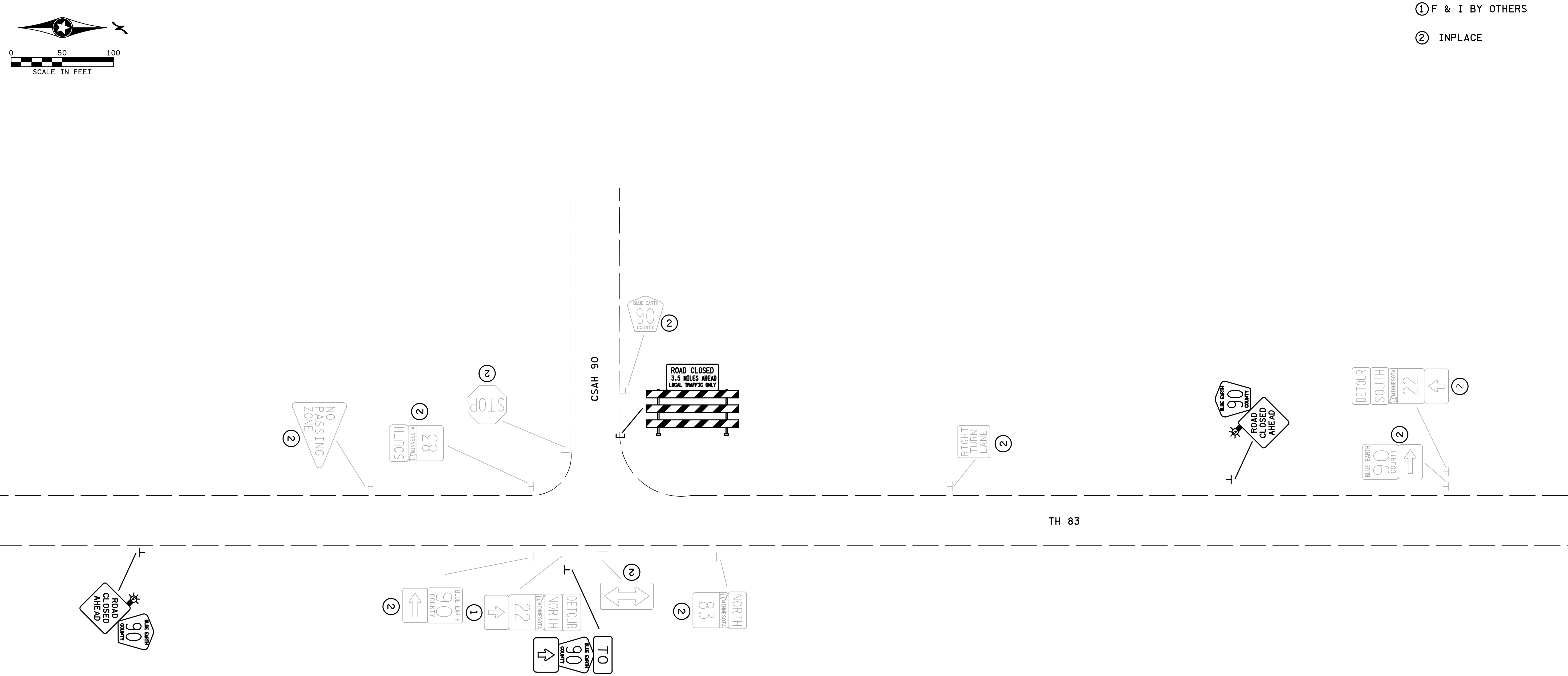
SPECIFIC NOTES:

1. F & I BY OTHERS
2. INPLACE



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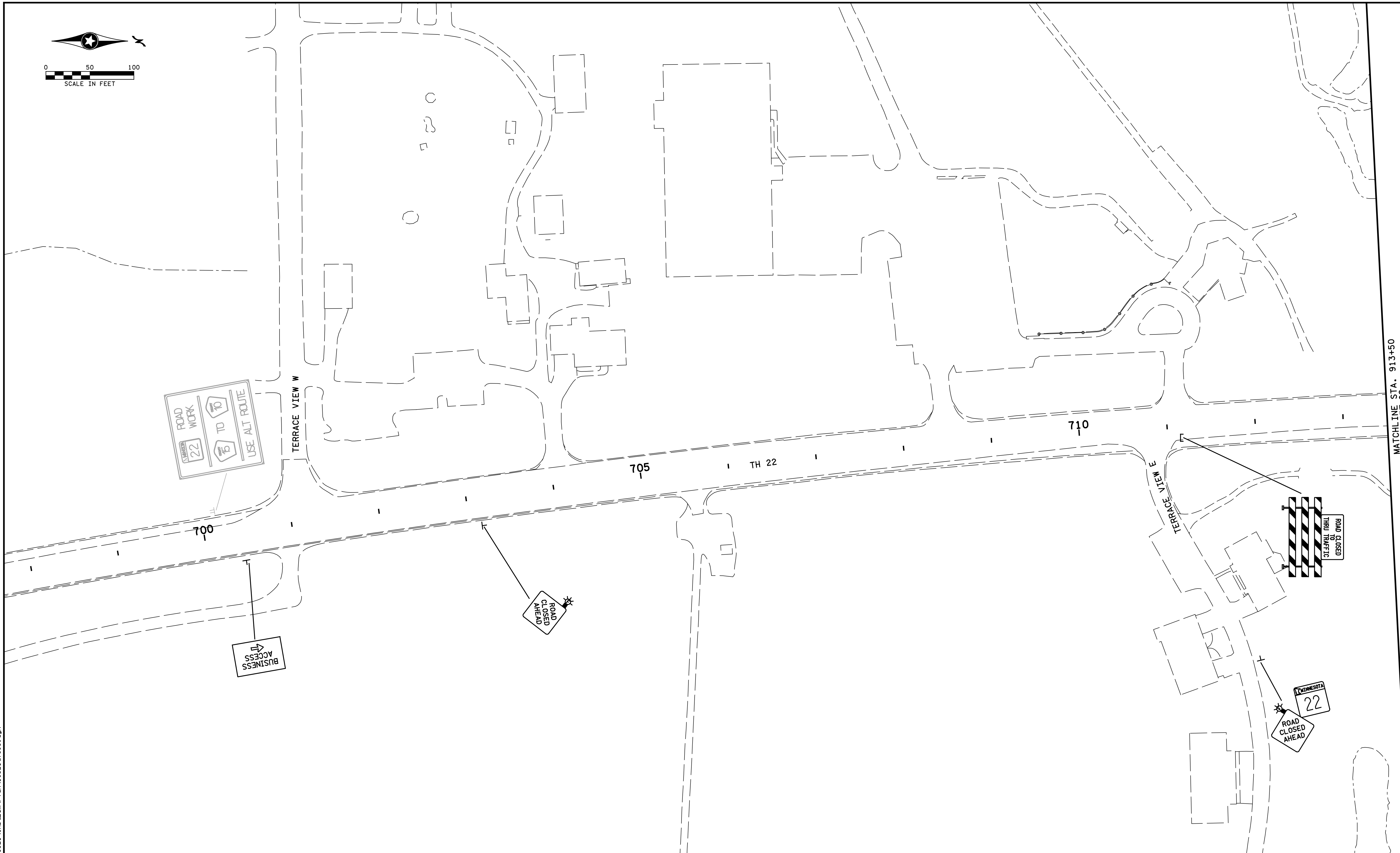

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TH 22 & CSAH 90

TH 22

SHEET 70 OF 255

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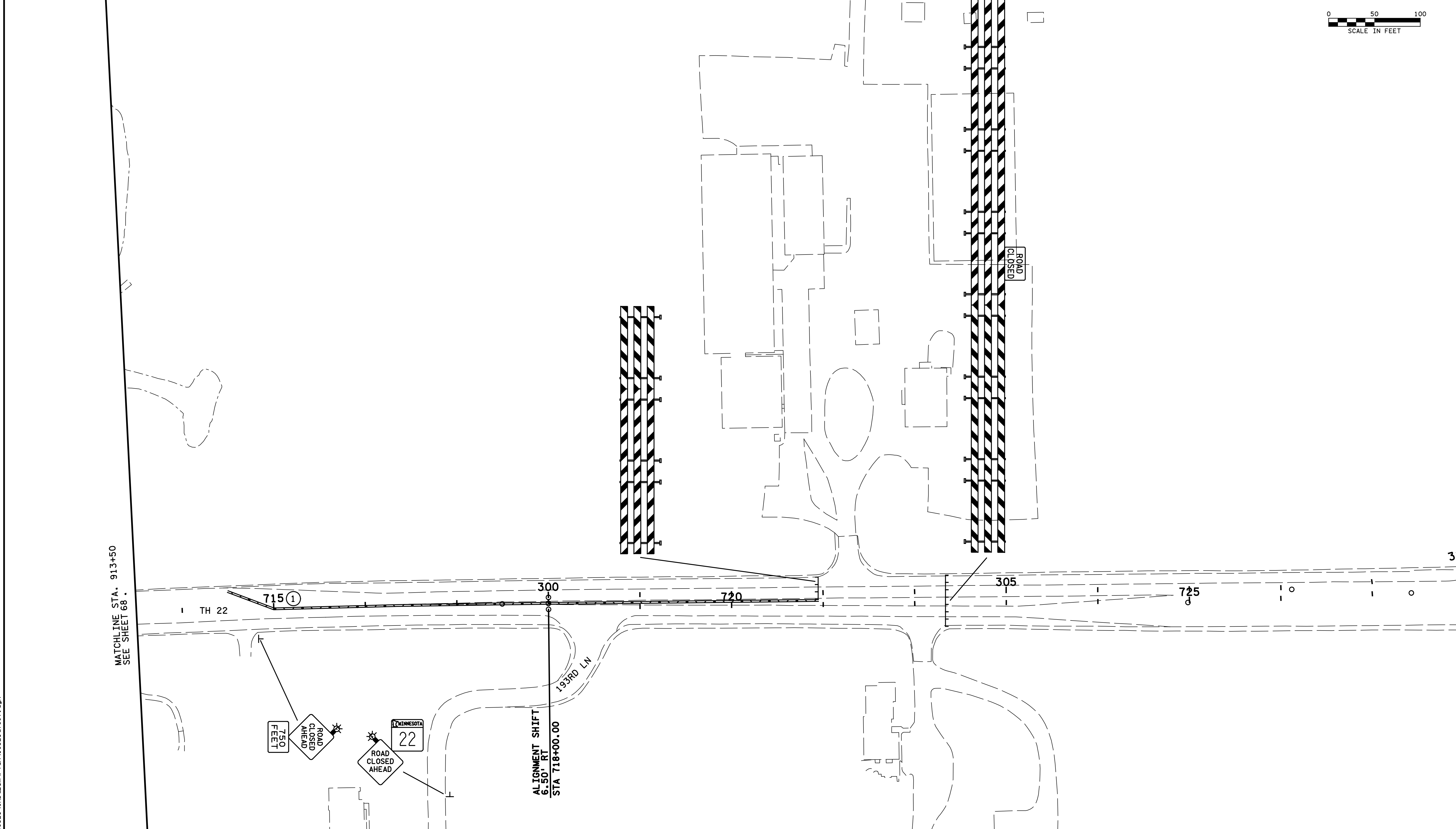
SPECIFIC NOTE:

1 CONTRACTOR SHALL RELOCATE PORTABLE PRECAST CONCRETE BARRIER AS NEEDED TO COMPLETE CONSTRUCTION OF TH 22 TO THE SATISFACTION OF THE ENGINEER.



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TH 22

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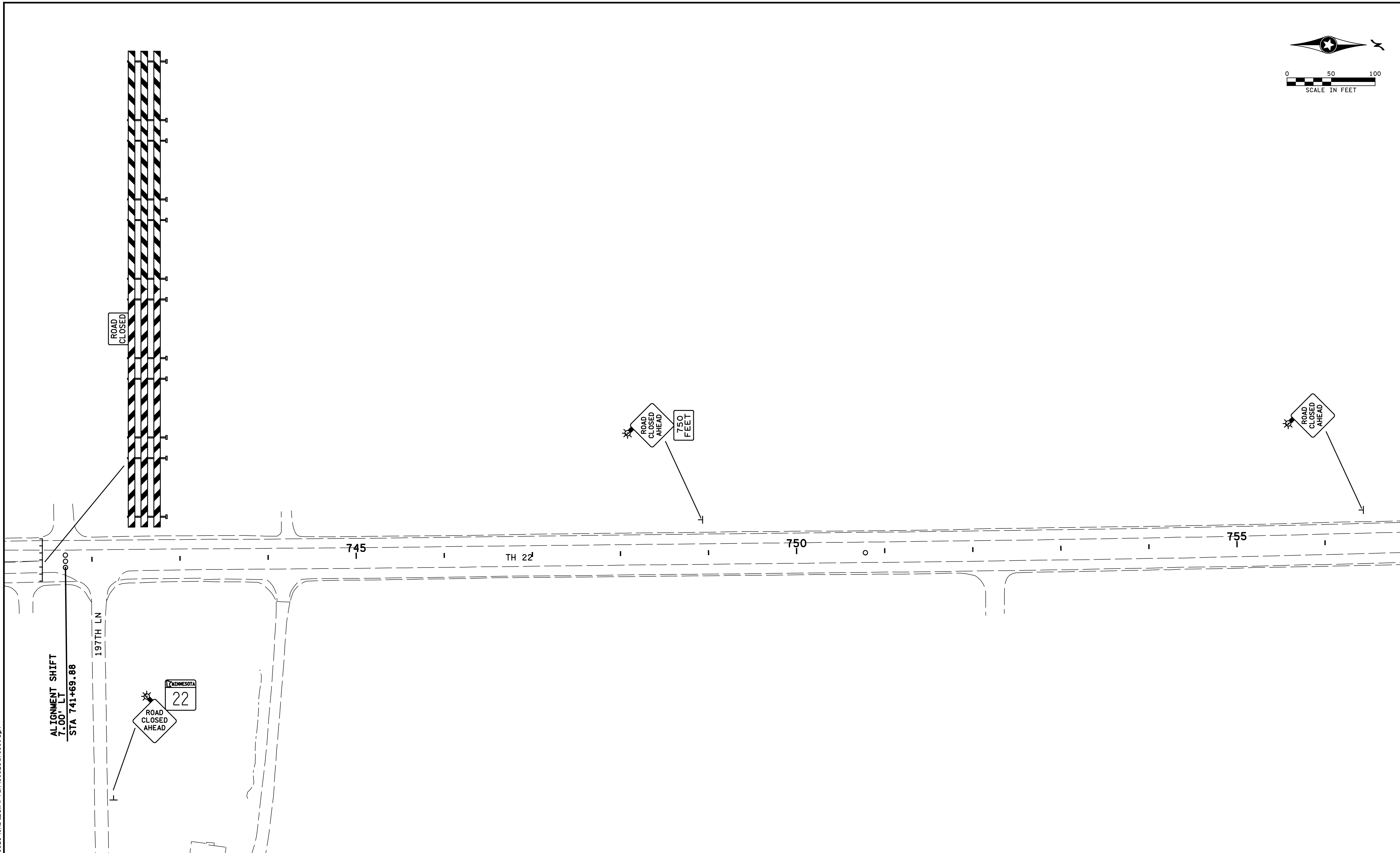

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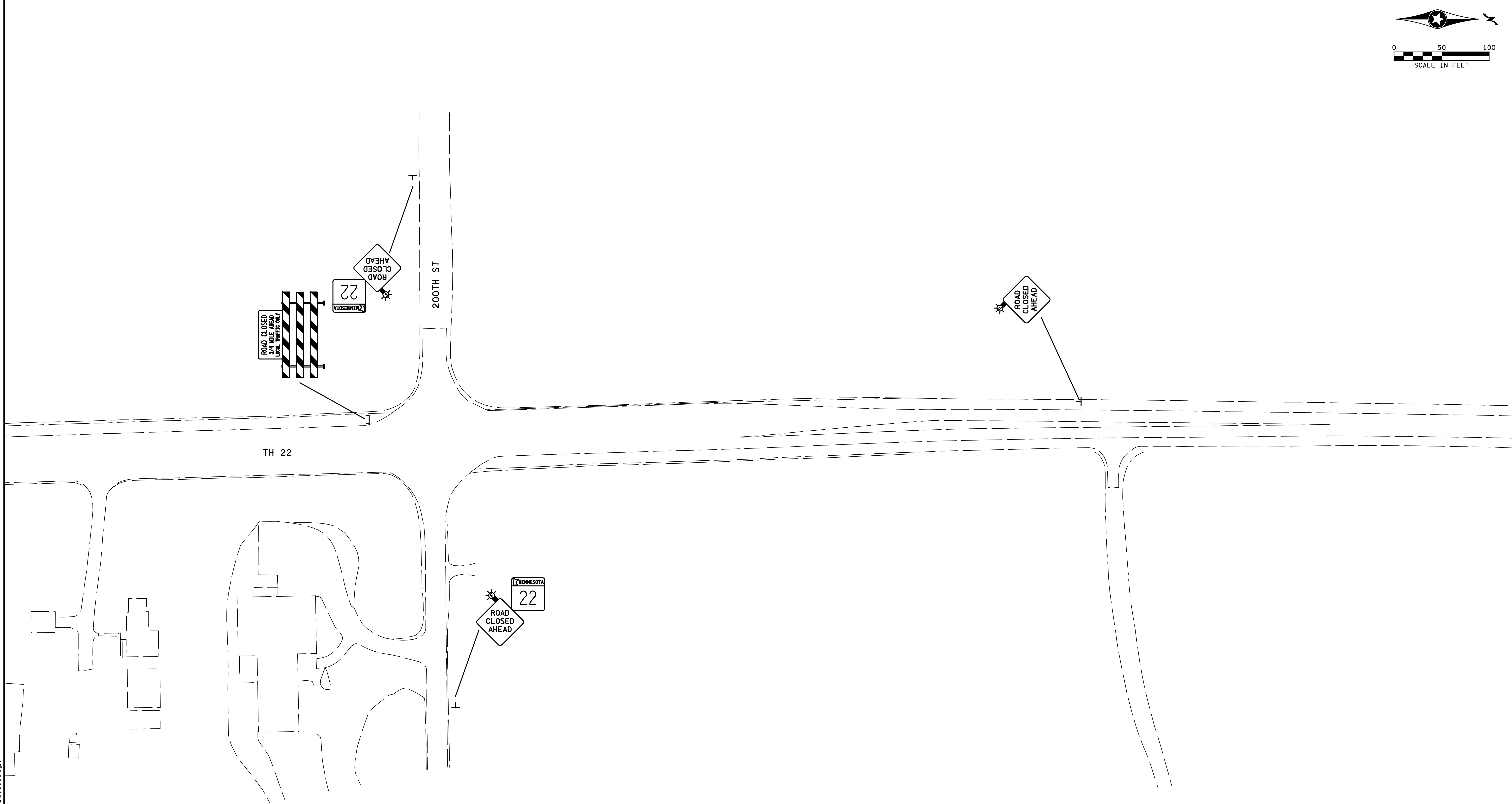

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Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS

DESIGNED BY B. BETTS

CHECKED BY A. POTTER

COMM. NO. 01710321

SRF Consulting Group, Inc. Engineers Planners Designers

MINNESOTA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL AND DETOUR PLANS

TH 22 & CSAH 90

TH 22

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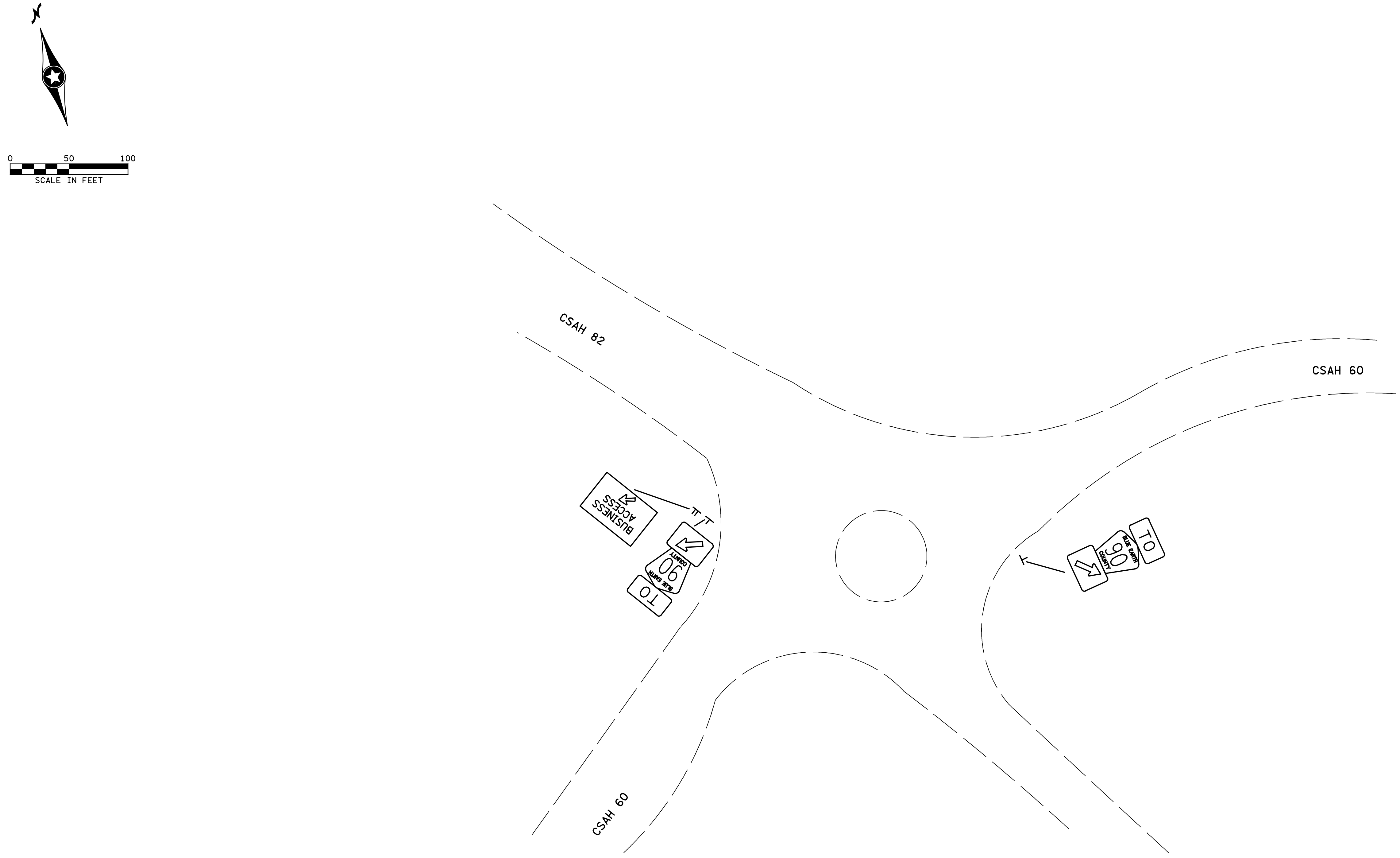

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ADRIAN S. POTTER

Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

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ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL AND DETOUR PLANS

TH 22 & CSAH 90

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SPECIFIC NOTES:

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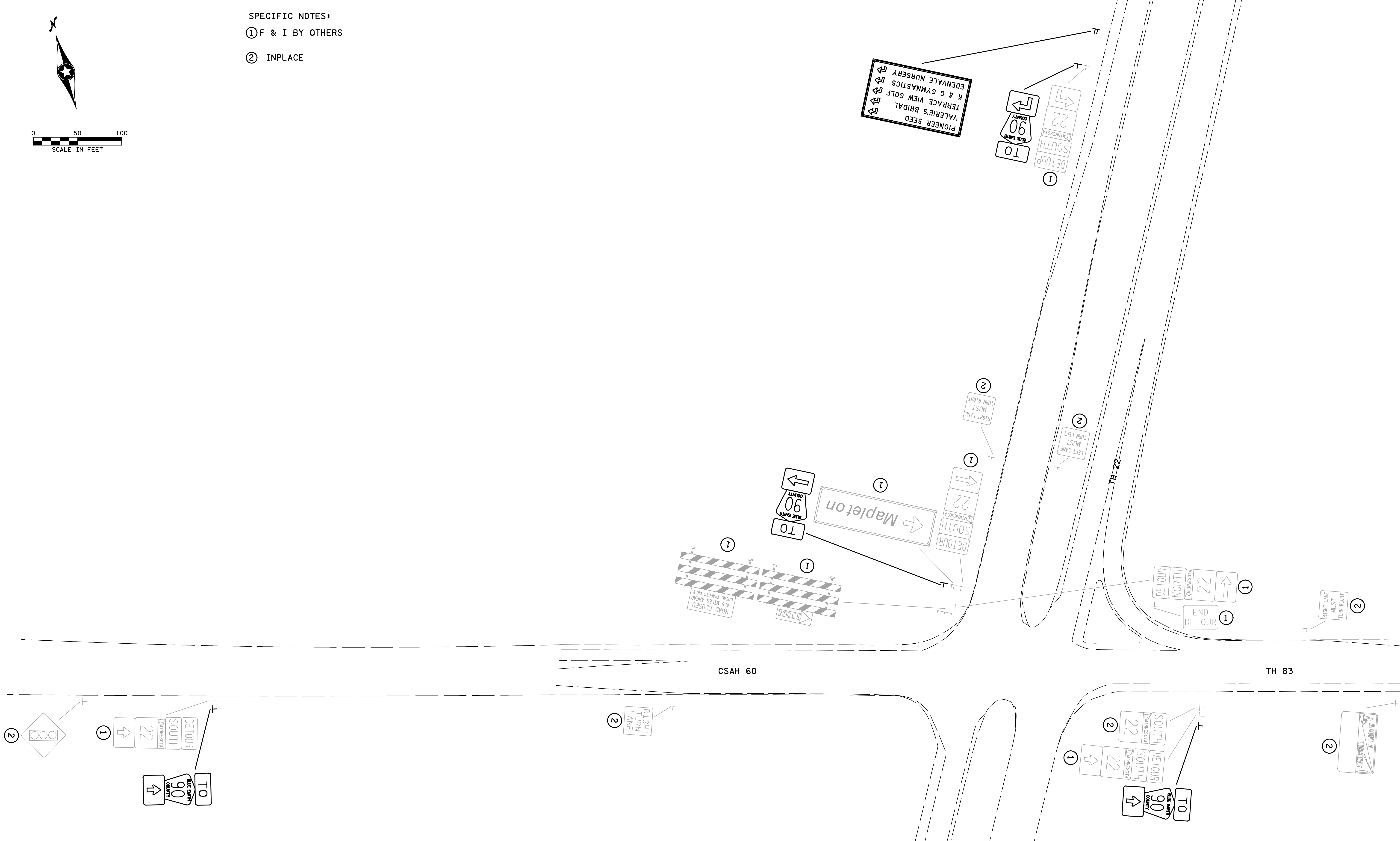

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MINNESOTA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL AND DETOUR PLANS

TH 22 & CSAH 90

TH 22

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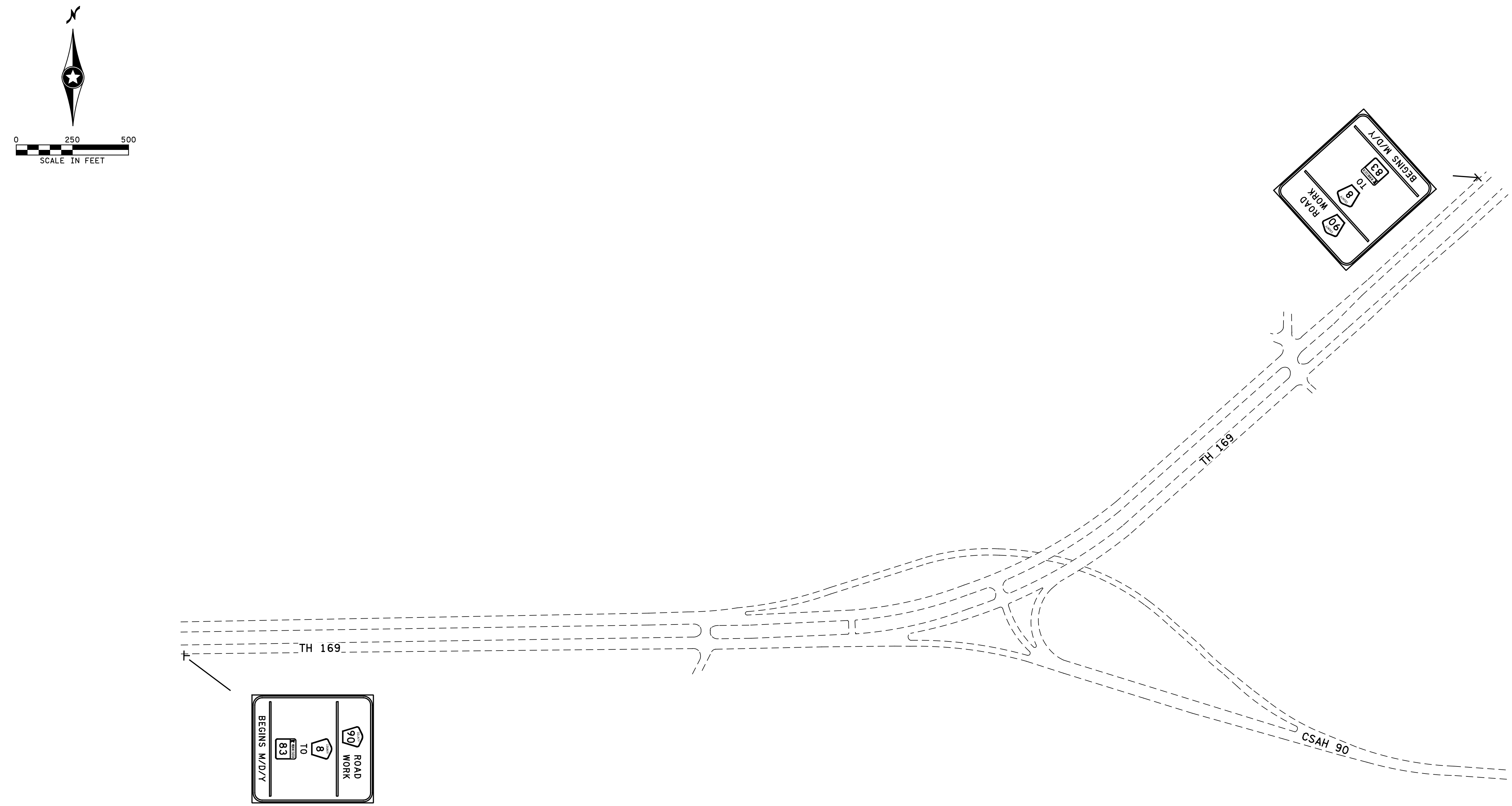

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Date ______ License # 42785

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SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL AND DETOUR PLANS
TH 22 & CSAH 90

HORIZONTAL CONTROL

THE HORIZONTAL CONTROL SHOWN ON THIS PLAN IS ENGLISH IN NAD 83 DATUM (2011 HARN ADJUSTMENT), STATE PLANE MINNESOTA SOUTH ZONE, BLUE EARTH COUNTY COORDINATES. FOR A REPORT DETAILING THIS CONTROL CONTACT MNDOT DISTRICT 7 SURVEYS.

VERTICAL CONTROL

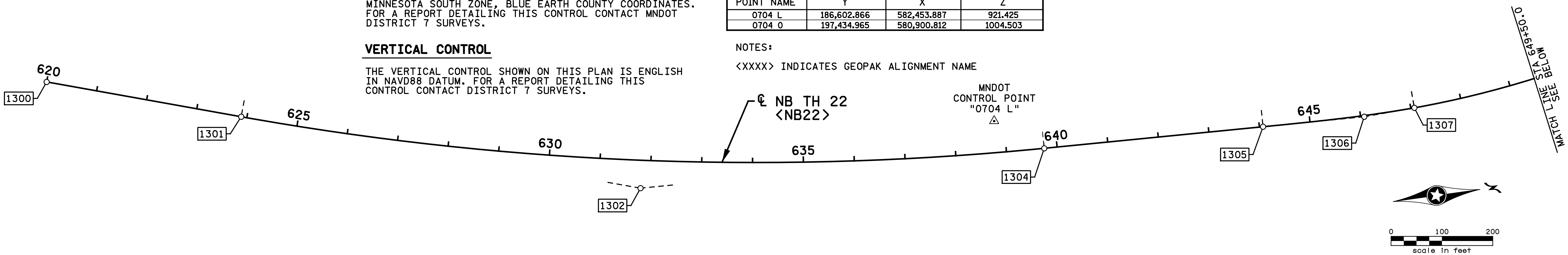
THE VERTICAL CONTROL SHOWN ON THIS PLAN IS ENGLISH IN NAVD88 DATUM. FOR A REPORT DETAILING THIS CONTROL CONTACT DISTRICT 7 SURVEYS.

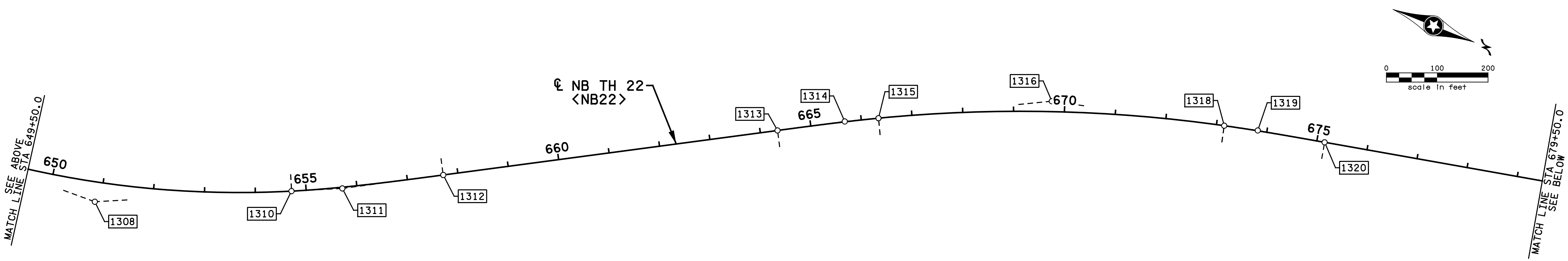
HORIZONTAL & VERTICAL CONTROL

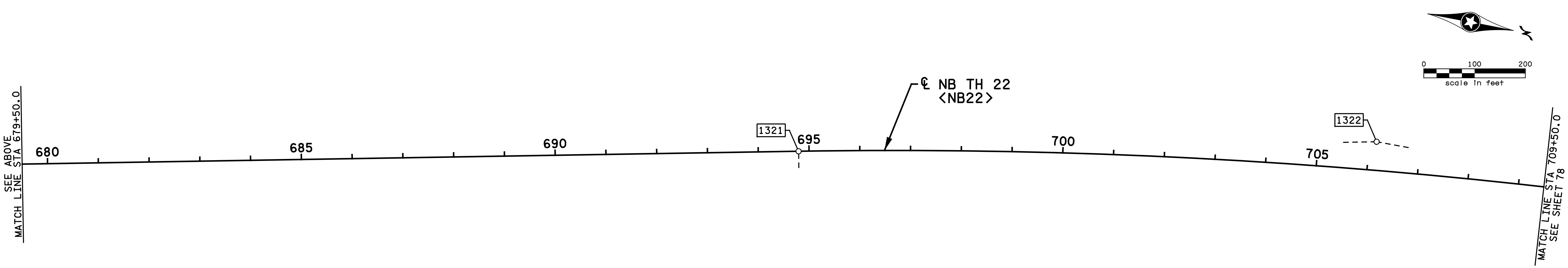
POINT NAME	Y	X	Z
0704 L	186,602.866	582,453.887	921.425
0704 O	197,434.965	580,900.812	1004.503

NOTES:

<XXXX> INDICATES GEOPAK ALIGNMENT NAME







NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

ALIGNMENT PLANS

TH 22 & CSAH 90

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HORIZONTAL CONTROL

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VERTICAL CONTROL

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HORIZONTAL & VERTICAL CONTROL

POINT NAME	Y	X	Z
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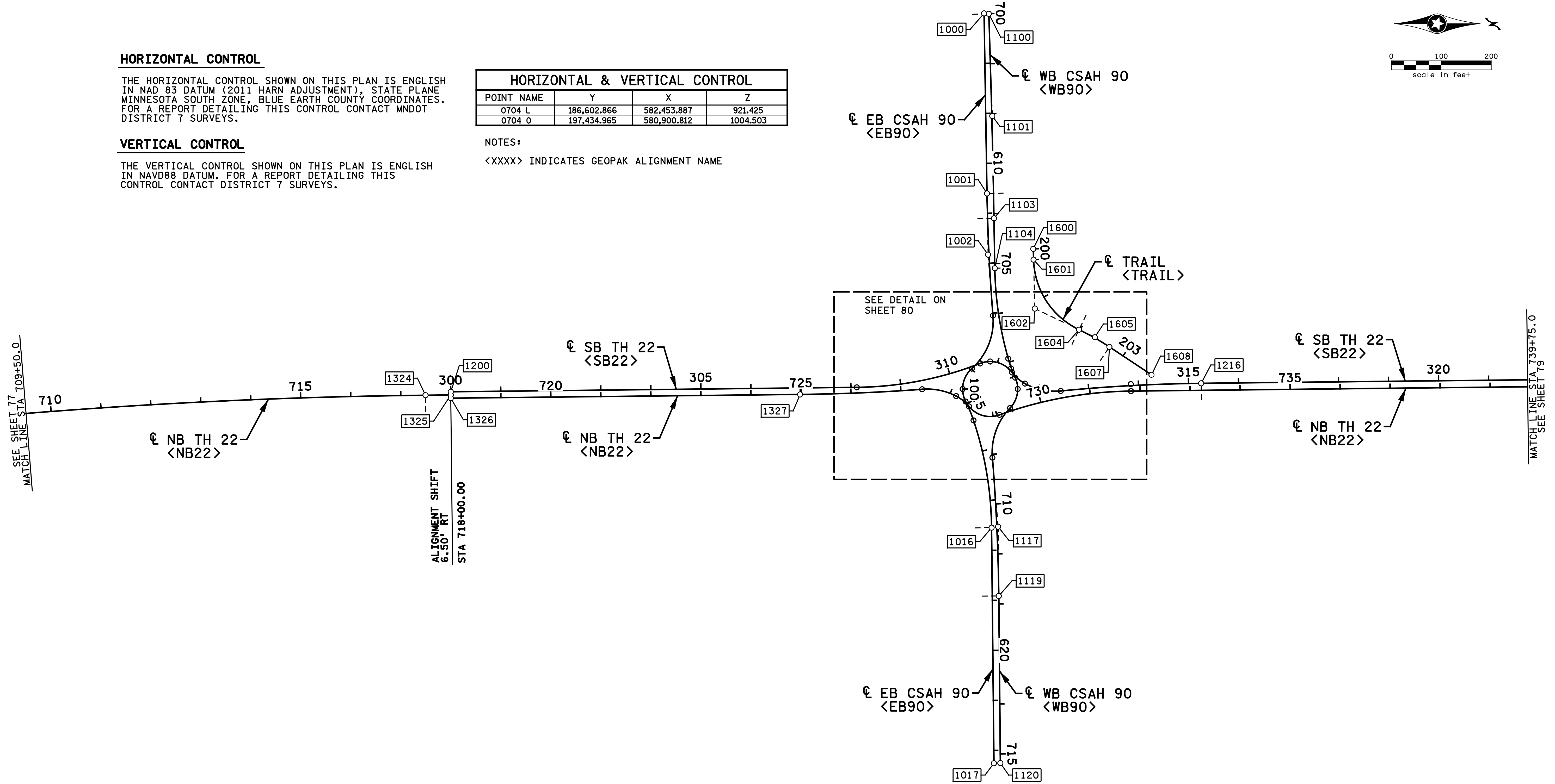

NO	DATE	BY	CKD	APPR	REVISION

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Date ____ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

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MINNESOTA DEPARTMENT OF TRANSPORTATION

ALIGNMENT PLANS

TH 22 & CSAH 90

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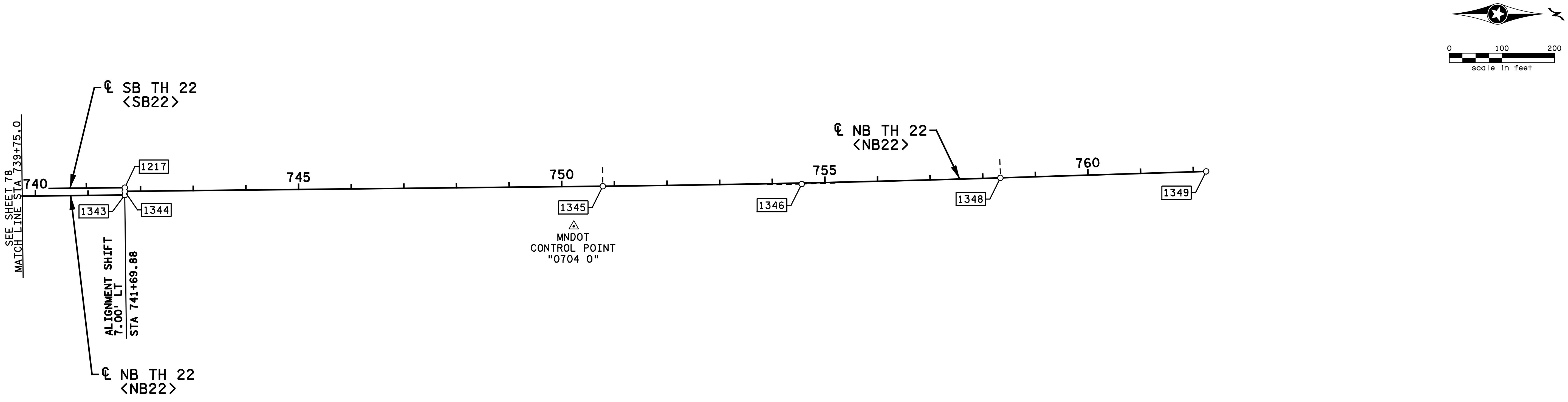

HORIZONTAL CONTROL

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VERTICAL CONTROL

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HORIZONTAL & VERTICAL CONTROL

POINT NAME	Y	X	Z
0704 L	186,602.866	582,453.887	921.425
0704 O	197,434.965	580,900.812	1004.503

NOTES:

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NO	DATE	BY	CKD	APPR	REVISION

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Date ______ License # 50890

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STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

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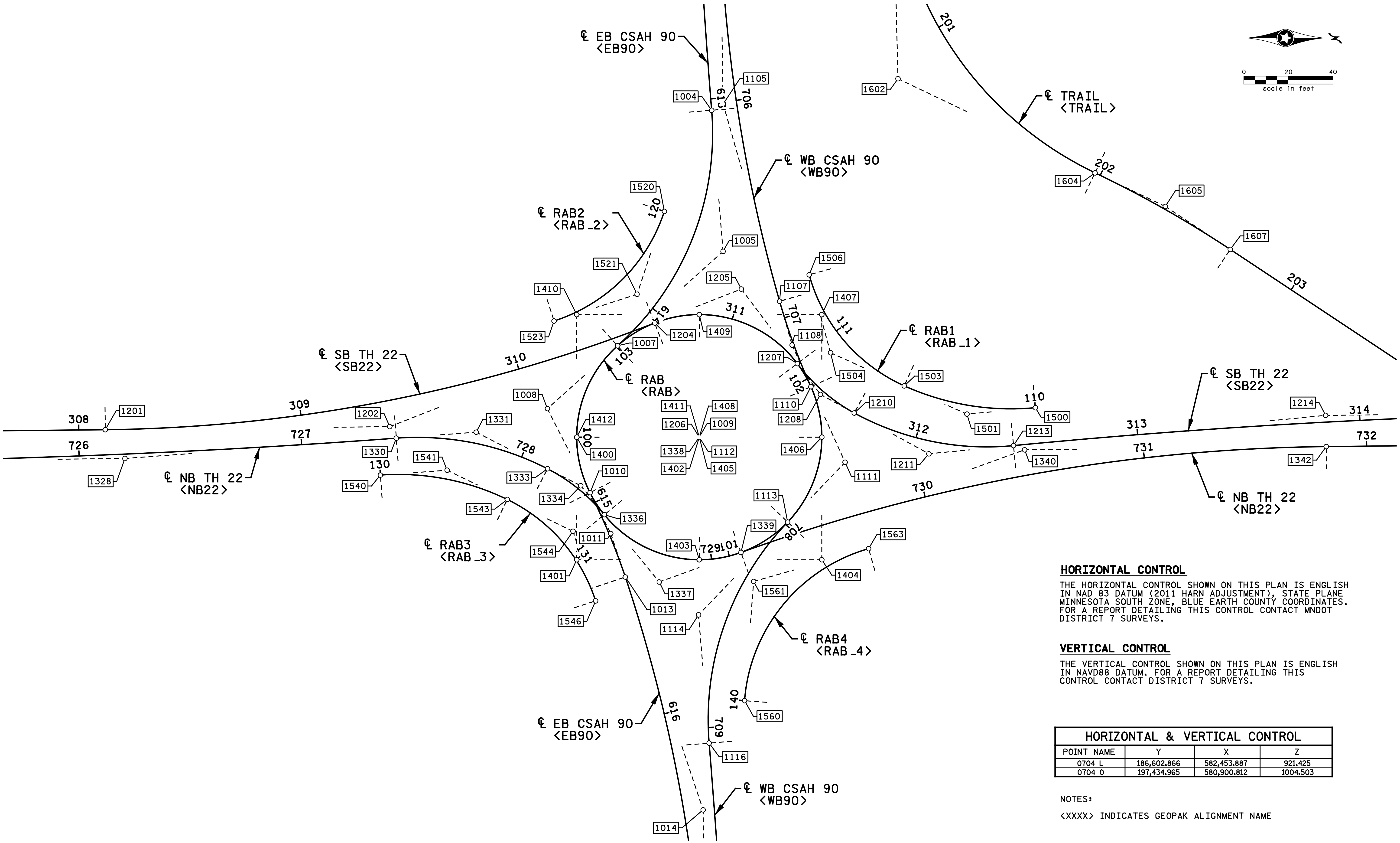
COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

ALIGNMENT PLANS
TH 22 & CSAH 90



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HORIZONTAL & VERTICAL CONTROL

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0704 O	197,434.965	580,900.812	1004.503

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NO	DATE	BY	CKD	APPR	REVISION

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Date ______ License # 50890

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STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

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ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

ALIGNMENT PLANS

TH 22 & CSAH 90

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ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA: DELTA / SPIRAL CURVE DATA: ANGLE (θs)	DEGREE / DEGREE	RADIUS / ST	TANGENT / LT	LENGTH / LS	COORDINATES X	COORDINATES Y	AZIMUTH
℄ NB TH 22 <NB22>										
1300	POT	℄ NB TH 22 620+00.000						582,118.0989	184,767.9981	
1301	PC	623+88.848						582,239.3193	185,137.4682	18° 09' 51.40"
1302	PI	631+86.820	15° 48' 50.37" LT	0° 59' 50.01"	5,745.523'	797.972'	1,585.800'	582,488.0812	185,895.6747	PI
1303	CC	(1)						576,780.1156	186,928.5922	
1304	PT	639+74.648						582,520.8050	186,692.9756	2° 21' 01.03"
1305	TS	644+07.114						582,538.5399	187,125.0780	
1306	PI	646+07.178	4° 30' 00.00"	3° 00' 00.00"	100.059'	200.065'	300.000'	582,546.7443	187,324.9744	PI
1307	SC	647+07.114						582,542.9910	187,424.9627	357° 51' 01.03"
1308	PI									PI
1309	CC	(1)								
1310	CS	654+71.216						582,364.3693	188,162.6623	334° 55' 37.94"
1311	PI	655+71.269	4° 29' 58.92"	3° 00' 00.00"	100.052'	200.051'	299.980'	582,321.9703	188,253.2865	PI
1312	ST	657+71.196						582,223.2401	188,427.2776	330° 25' 39.02"
1313	TS	664+34.074						581,896.0938	189,003.8034	
1314	PI	665+67.416	2° 00' 00.00"	2° 00' 00.00"	66.674'	133.342'	200.000'	581,830.2864	189,119.7750	PI
1315	SC	666+34.074						581,799.4247	189,178.8769	332° 25' 39.02"
1316	PI									PI
1317	CC	(1)								
1318	CS	673+15.382						581,558.5075	189,814.4517	346° 03' 13.17"
1319	PI	673+82.053	1° 59' 59.64"	2° 00' 00.00"	66.671'	133.335'	199.990'	581,542.4389	189,879.1575	PI
1320	ST	675+15.372						581,514.8389	190,009.6048	348° 03' 12.81"
1321	PC	694+79.497						581,108.2704	191,931.1897	
1322	PI	706+18.208	11° 19' 39.99" RT	0° 29' 56.48"	11,481.638'	1,138.712'	2,270.000'	580,872.5602	193,045.2386	PI
1323	CC	(1)						592,341.2335	194,307.8574	
1324	PT	717+49.497						580,860.2649	194,183.8839	359° 22' 52.80"
1325	POT	↓ALIGNMENT SHIFT 718+00.000						580,859.7196	194,234.3843	
1326	POT	↑6.50' RT 718+00.000						580,866.2192	194,234.4545	
1327	PC	724+98.411						580,858.6781	194,932.8252	359° 22' 52.80"
1328	PI	726+20.560	3° 39' 15.61" LT	1° 29' 46.91"	3,829.000'	122.149'	244.214'	580,857.3592	195,054.9666	PI
1329	CC	(1)						577,029.9013	194,891.4813	
1330	PRC	727+42.626						580,848.2580	195,176.7757	355° 43' 37.20"
1331	PI	727+78.596	31° 23' 33.96" RT	44° 45' 44.38"	128.000'	35.970'	70.132'	580,845.5779	195,212.6461	PI
1332	CC	(1)						580,975.9022	195,186.3128	
1333	PCC	728+12.758						580,861.9751	195,244.6618	27° 07' 11.16"
1334	PI	728+29.511	23° 39' 20.97" RT	71° 37' 11.01"	80.000'	16.754'	33.030'	580,869.6123	195,259.5734	PI
1335	CC	(1)						580,933.1796	195,208.1937	
1336	PRC	728+45.788						580,882.5908	195,270.1677	50° 46' 32.13"
1337	PI	728+84.768	70° 39' 11.63" LT	104° 10' 26.92"	55.000'	38.981'	67.822'	580,912.7881	195,294.8174	PI
1338	CC							580,847.8110	195,312.7748	
1339	PRC	729+13.610						580,899.5342	195,331.4755	340° 07' 20.49"
1340	PI	730+49.004	19° 15' 32.31" RT	7° 10' 47.72"	798.000'	135.394'	268.234'	580,853.4985	195,458.8029	PI
1341	CC	(1)						581,649.9901	195,602.8056	
1342	PT	731+81.844						580,852.0366	195,594.1891	359° 22' 52.80"
1343	POT	↓ALIGNMENT SHIFT 741+69.881						580,841.3682	196,582.1687	
1344	POT	↑7.00' LT 741+69.881						580,834.3686	196,582.0931	
1345	PC	750+78.027						580,824.5628	197,490.1864	359° 22' 52.80"

ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA: DELTA / SPIRAL CURVE DATA: ANGLE (θs)	DEGREE / DEGREE	RADIUS / ST	TANGENT / LT	LENGTH / LS	COORDINATES X	COORDINATES Y	AZIMUTH
℄ NB TH 22 <NB22> (CONT)										
1346	PI	754+55.767	1° 10' 30.54" LT	0° 09' 20.00"	36,833.001'	377.740'	755.454'	580,820.4842	197,867.9044	PI
1347	CC	(1)						543,993.7086	197,092.4801	
1348	PT	758+33.481						580,808.6598	198,245.4593	358° 12' 22.26"
1349	POT	℄ NB TH 22 762+24.393						580,796.4231	198,636.1801	
℄ SB TH 22 <SB22>										
A PT 6.50' LT OF ℄ NB TH 22 518+00.00=										
1200	POT	℄ SB TH 22 300+00.000						580,853.2200	194,234.3141	
1201	PC	308+11.885						580,844.4536	195,046.1513	359° 22' 52.80"
1202	PI	309+39.569	20° 43' 58.65" LT	8° 12' 30.83"	698.000'	127.685'	252.577'	580,843.0749	195,173.8288	PI
1203	CC	(1)						580,146.4943	195,038.6146	
1204	PRC	310+64.462						580,796.5860	195,292.7498	338° 38' 54.15"
1205	PI	311+06.256	74° 27' 44.32" RT	104° 10' 26.92"	55.000'	41.794'	71.479'	580,781.3691	195,331.6757	PI
1206	CC							580,847.8110	195,312.7748	
1207	PRC	311+35.940						580,814.7961	195,356.7636	53° 06' 38.47"
1208	PI	311+53.247	24° 24' 48.90" LT	71° 37' 11.01"	80.000'	17.307'	34.088'	580,828.6378	195,367.1523	PI
1209	CC	(1)						580,766.7745	195,420.7474	
1210	PCC	311+70.028						580,836.9481	195,382.3330	28° 41' 49.57"
1211	PI	312+08.208	34° 13' 37.17" LT	46° 12' 22.59"	124.000'	38.179'	74.074'	580,855.2810	195,415.8228	PI
1212	CC	(1)						580,728.1790	195,441.8753	
1213	PRC	312+44.103						580,851.6019	195,453.8245	354° 28' 12.40"
1214	PI	313+84.850	4° 54' 40.40" RT	1° 44' 44.73"	3,282.000'	140.748'	281.323'	580,838.0387	195,593.9173	PI
1215	CC	(1)						584,118.3276	195,770.0945	
1216	PT	315+25.426						580,836.5190	195,734.6569	359° 22' 52.80"
1217	POT	323+72.836=						580,827.3690	196,582.0176	
A PT 7.00' LT OF ℄ NB TH 22 541+69.881										
℄ EB CSAH 90 <EB90>										
1000	POT	℄ EB CSAH 90 607+00.000						580,096.4218	195,300.5308	
1001	PC	610+60.228						580,456.6003	195,306.4786	89° 03' 14.17"
1002	PI	611+82.702	3° 39' 50.73" LT	1° 29' 46.91"	3,829.000'	122.475'	244.866'	580,579.0585	195,308.5008	PI
1003	CC	(1)						580,393.3790	199,134.9566	
1004	PRC	613+05.094						580,701.1371	195,318.3448	85° 23' 23.44"
1005	PI	613+68.624	52° 47' 35.30" RT	44° 45' 44.38"	128.000'	63.530'	117.941'	580,764.4617	195,323.4510	PI
1006	CC	(1)						580,711.4252	195,190.7589	
1007	PRC	614+23.035						580,806.8208	195,276.1034	138° 10' 58.75"
1008	PI	614+65.302	75° 05' 02.35" LT	104° 10' 26.92"	55.000'	42.267'	72.075'	580,835.0025	195,244.6027	PI
1009	CC							580,847.8110	195,312.7748	
1010	PRC	614+95.110						580,872.6958	195,263.7264	63° 05' 56.40"
1011	PI	615+15.691	8° 24' 27.88" RT	20° 27' 46.00"	280.000'	20.581'	41.088'	580,891.0497	195,273.0382	PI
1012	CC	(1)						580,999.3819	195,014.0253	
1013	PCC	615+36.198						580,910.5678	195,279.5664	71° 30' 24.28"
1014	PI	616+46.348	17° 56' 07.68" RT	8° 12' 30.83"	698.000'	110.149'	218.497'	581,015.0293	195,314.5050	PI
1015	CC	(1)						581,131.9686	194,617.6104	
1016	PT	617+54.695						581,125.1735	195,315.5773	89° 26' 31.96"
1017	POT	℄ EB CSAH 90 622+25.819						581,596.2748	195,320.1638	

NOTES: (1) ALIGNMENT POINT IS NOT SHOWN ON ALIGNMENT PLAN VIEW.

<XXXX> INDICATES GEOPAK ALIGNMENT NAME.

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc. — ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

ALIGNMENT TABULATIONS
TH 22 & CSAH 90

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ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA: DELTA / SPIRAL CURVE DATA: ANGLE (θs)	DEGREE / DEGREE	RADIUS / ST	TANGENT / LT	LENGTH / LS	COORDINATES X	COORDINATES Y	AZIMUTH
℄ WB CSAH 90 <WB90>										
1100	PC	℄ WB CSAH 90 700+00.000						580,097.2040	195,309.8927	88° 01' 51.72"
1101	PI	702+04.586	1° 01' 22.46" RT	0° 15' 00.00"	22,918.312'	204.586'	409.162'	580,301.6696	195,316.9219	PI
1102	CC	1						580,884.6362	172,405.1121	
1103	PT	704+09.162						580,506.2280	195,320.2999	
1104	PC	705+09.162						580,606.2144	195,321.9510	89° 03' 14.17"
1105	PI	706+01.256	15° 01' 56.80" LT	8° 12' 30.83"	698.000'	92.095'	183.131'	580,698.2963	195,323.4716	PI
1106	CC	1						580,594.6896	196,019.8558	
1107	PCC	706+92.293						580,786.8328	195,348.8230	74° 01' 17.37"
1108	PI	707+12.754	8° 21' 31.45" LT	20° 27' 46.00"	280.000'	20.461'	40.848'	580,806.5028	195,354.4554	PI
1109	CC	1						580,709.7553	195,618.0052	
1110	PRC	707+33.142						580,825.1452	195,362.8873	65° 39' 45.92"
1111	PI	707+70.367	68° 10' 55.30" RT	104° 10' 26.92"	55.000'	37.225'	65.450'	580,859.0624	195,378.2280	PI
1112	CC							580,847.8110	195,312.7748	
1113	PRC	707+98.592						580,885.9099	195,352.4419	133° 50' 41.22"
1114	PI	708+56.318	48° 32' 57.90" LT	44° 45' 44.38"	128.000'	57.726'	108.460'	580,927.5432	195,312.4545	PI
1115	CC	1						580,974.5764	195,444.7579	
1116	PRC	709+07.052						580,985.0749	195,317.1892	85° 17' 43.31"
1117	PI	710+45.677	4° 08' 48.65" RT	1° 29' 46.91"	3,829.000'	138.625'	277.128'	581,123.2325	195,328.5590	PI
1118	CC	1						581,299.1262	191,501.0900	
1119	PT	711+84.180						581,261.8505	195,329.9086	89° 26' 31.96"
1120	POT	℄ WB CSAH 90 715+18.494						581,596.1482	195,333.1631	
℄ RAB <RAB>										
1400	PC	℄ RAB 100+00.000						580,847.8110	195,257.7748	90° 00' 00.00"
1401	PI	100+55.000	90° 00' 00.00" LT	104° 10' 26.92"	55.000'	55.000'	86.394'	580,902.8110	195,257.7748	PI
1402	CC							580,847.8110	195,312.7748	
1403	PCC	100+86.394						580,902.8110	195,312.7748	360° 00' 00.00"
1404	PI	101+41.394	90° 00' 00.00" LT	104° 10' 26.92"	55.000'	55.000'	86.394'	580,902.8110	195,367.7748	PI
1405	CC							580,847.8110	195,312.7748	
1406	PCC	101+72.788						580,847.8110	195,367.7748	270° 00' 00.00"
1407	PI	102+27.788	90° 00' 00.00" LT	104° 10' 26.92"	55.000'	55.000'	86.394'	580,792.8110	195,367.7748	PI
1408	CC							580,847.8110	195,312.7748	
1409	PCC	102+59.181						580,792.8110	195,312.7748	180° 00' 00.00"
1410	PI	103+14.181	90° 00' 00.00" LT	104° 10' 26.92"	55.000'	55.000'	86.394'	580,792.8110	195,257.7748	PI
1411	CC							580,847.8110	195,312.7748	
1412	PT	℄ RAB 103+45.575						580,847.8110	195,257.7748	90° 00' 00.00"
℄ RAB1 <RAB_1>										
1500	PC	℄ RAB1 110+00.000						580,834.5961	195,463.6447	174° 40' 06.21"
1501	PI	110+30.854	29° 32' 45.19" RT	48° 58' 14.71"	117.000'	30.854'	60.334'	580,837.4631	195,432.9246	PI
1502	CC	1						580,718.1023	195,452.7731	
1503	PCC	110+60.334						580,824.8084	195,404.7855	204° 12' 51.40"
1504	PI	110+96.617	50° 27' 40.14" RT	74° 24' 36.37"	77.000'	36.284'	67.815'	580,809.9267	195,371.6942	PI
1505	CC	1						580,754.5830	195,436.3671	
1506	PT	℄ RAB1 111+28.149						580,774.9331	195,362.1049	254° 40' 31.54"

ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA: DELTA / SPIRAL CURVE DATA: ANGLE (θs)	DEGREE / DEGREE	RADIUS / ST	TANGENT / LT	LENGTH / LS	COORDINATES X	COORDINATES Y	AZIMUTH
℄ RAB2 <RAB_2>										
1520	PC	℄ RAB2 120+00.000						580,746.5205	195,297.1183	108° 15' 40.61"
1521	PI	120+39.145	53° 53' 43.28" RT	74° 24' 36.37"	77.000'	39.145'	72.430'	580,783.6939	195,284.8522	PI
1522	CC	1						580,722.3924	195,223.9962	
1523	PT	℄ RAB2 120+72.430						580,795.6886	195,247.5902	162° 09' 23.90"
℄ RAB3 <RAB_3>										
1540	PC	℄ RAB3 130+00.000						580,864.8269	195,169.6366	355° 51' 05.33"
1541	PI	130+30.025	30° 00' 51.98" RT	51° 09' 25.01"	112.000'	30.025'	58.671'	580,862.6548	195,199.5834	PI
1542	CC	1						580,976.5335	195,177.7389	
1543	PCC	130+58.671						580,875.7539	195,226.6008	25° 51' 57.32"
1544	PI	130+91.464	46° 08' 12.21" RT	74° 24' 36.37"	77.000'	32.793'	62.003'	580,890.0604	195,256.1085	PI
1545	CC	1						580,945.0399	195,193.0082	
1546	PT	℄ RAB3 131+20.675						580,921.2489	195,266.2407	72° 00' 09.53"
℄ RAB4 <RAB_4>										
1560	PC	℄ RAB4 140+00.000						580,966.0335	195,333.0842	274° 22' 28.48"
1561	PI	140+53.658	69° 44' 31.01" RT	74° 24' 36.37"	77.000'	53.658'	93.726'	580,912.5318	195,337.1770	PI
1562	CC	1						580,971.9068	195,409.8599	
1563	PT	℄ RAB4 140+93.726						580,897.8466	195,388.7864	344° 06' 59.49"
℄ TRAIL <TRAIL>										
1600	POT	℄ TRAIL 200+00.000						580,567.4769	195,398.8596	
1601	PC	200+21.510						580,588.9794	195,399.4186	88° 30' 39.17"
1602	PI	201+19.528	62° 59' 04.00" LT	35° 48' 35.50"	160.000'	98.018'	175.886'	580,686.9645	195,401.9658	PI
1603	CC							580,584.8214	195,559.3645	
1604	PRC	201+97.395						580,729.2033	195,490.4161	25° 31' 35.17"
1605	PI	202+32.355	7° 59' 57.20" RT	11° 27' 32.96"	500.000'	34.960'	69.806'	580,744.2685	195,521.9636	PI
1606	CC							581,180.3966	195,274.9524	
1607	PT	202+67.202						580,763.5773	195,551.1076	33° 31' 32.37"
1608	POT	℄ TRAIL 203+68.301						580,819.4153	195,635.3876	

NOTES:

1 ALIGNMENT POINT IS NOT SHOWN ON ALIGNMENT PLAN VIEW.

<XXXX> INDICATES GEOPAK ALIGNMENT NAME.

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc. — ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

ALIGNMENT TABULATIONS
TH 22 & CSAH 90

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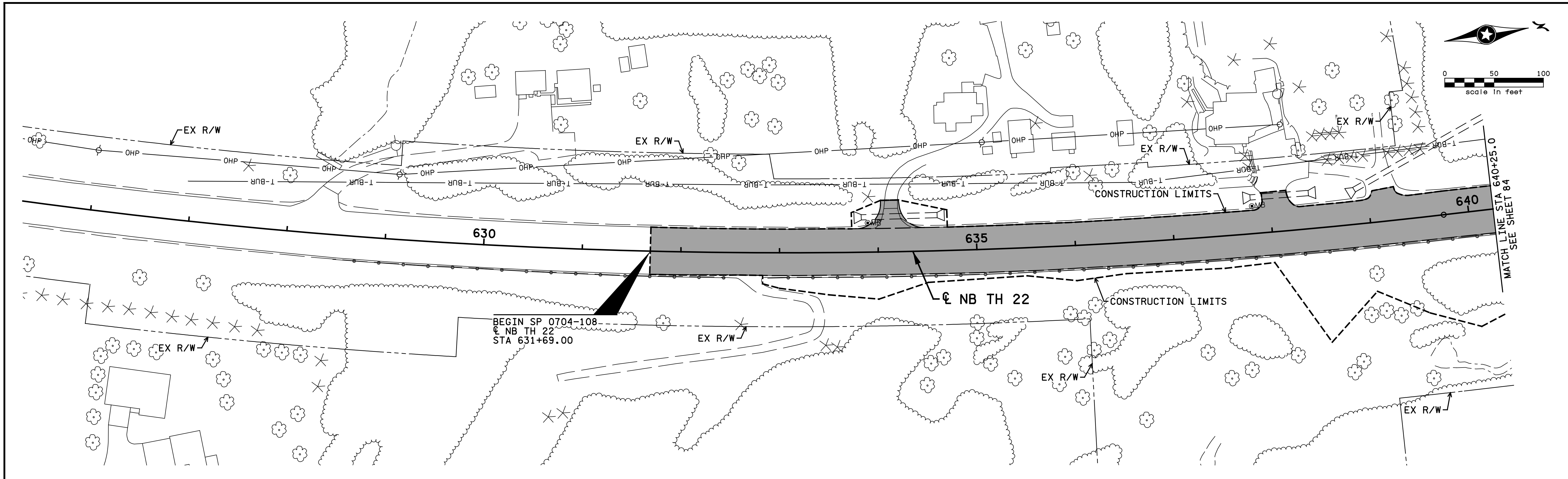

LEGEND

(shaded box)	PROPOSED PERMANENT CONSTRUCTION		UTILITY POLE
G	GAS		LIGHT POLE
P-BUR	BURIED ELECTRIC WIRE	E	ELECTRIC MANHOLE
TV-BUR	BURIED TV WIRE	T	TELEPHONE MANHOLE
T-BUR	BURIED TELEPHONE WIRE		GAS VALVE
F/O-BUR	BURIED FIBER OPTIC CABLE		CATCH BASIN
I	WATER MAIN		UTILITY VALVE
>>	SANITARY SEWER		HYDRANT
>	STORM SEWER		SIGNAL CONTROL CABINET
>	SUBSURFACE DRAIN		MANHOLE
	CULVERT		SIGNAL POST NO MAST ARM
OHP	OVERHEAD POWER LINE		SIGNAL POLE WITH MAST ARM
OH-TV	OVERHEAD TV LINE	HH	HANDHOLE
		GP	GUY POLE

GENERAL NOTES:

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

SOME UTILITIES MAY BE RELOCATED PRIOR TO CONSTRUCTION.

THE RIGHT-OF-WAY SHOWN IN THIS PLAN GIVES A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA. THE EXACT RIGHT OF WAY AND BOUNDARY CORNERS ARE LOCATED BY REFERENCE TO THE RIGHT OF WAY PLATS AND ARE IDENTIFIED ON THE RIGHT OF WAY MAP.

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STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

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DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

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INPLACE TOPOGRAPHY AND UTILITY PLANS
TH 22 & CSAH 90

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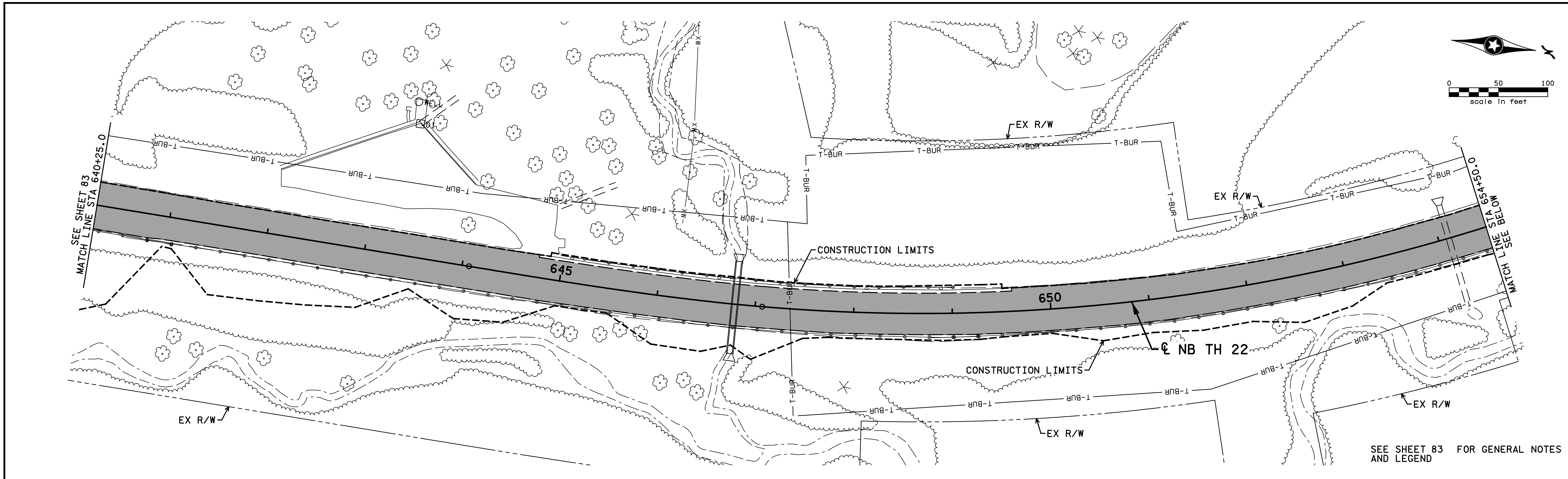

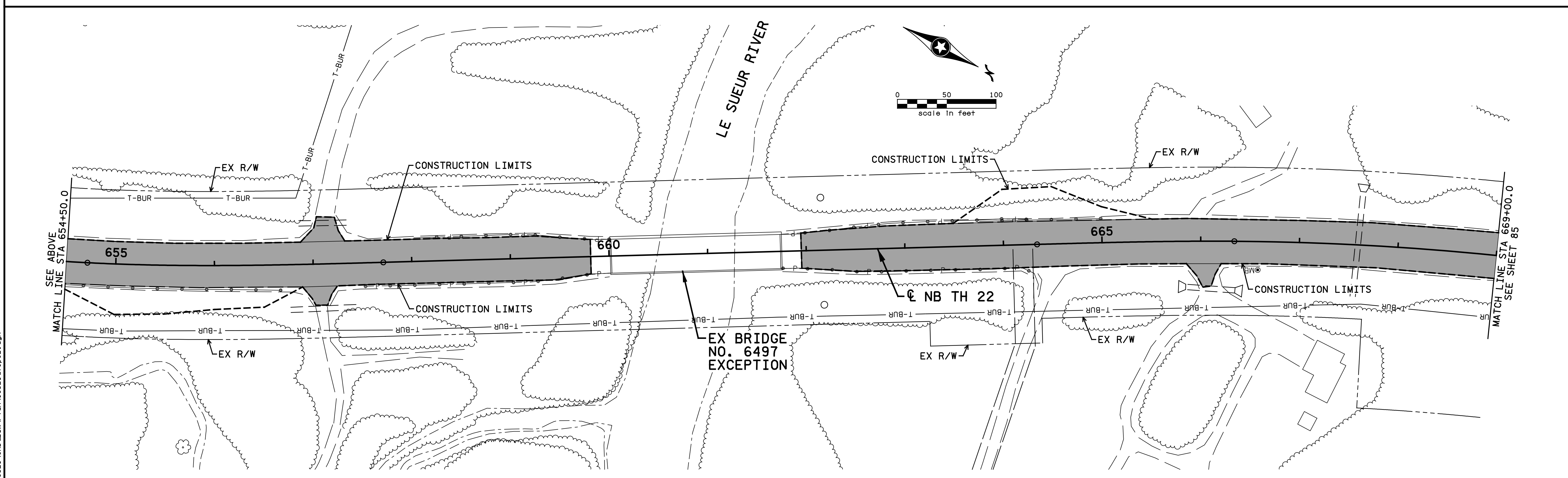

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STATE PROJECT NO. 007-070-005

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DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

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INPLACE TOPOGRAPHY AND UTILITY PLANS

TH 22 & CSAH 90

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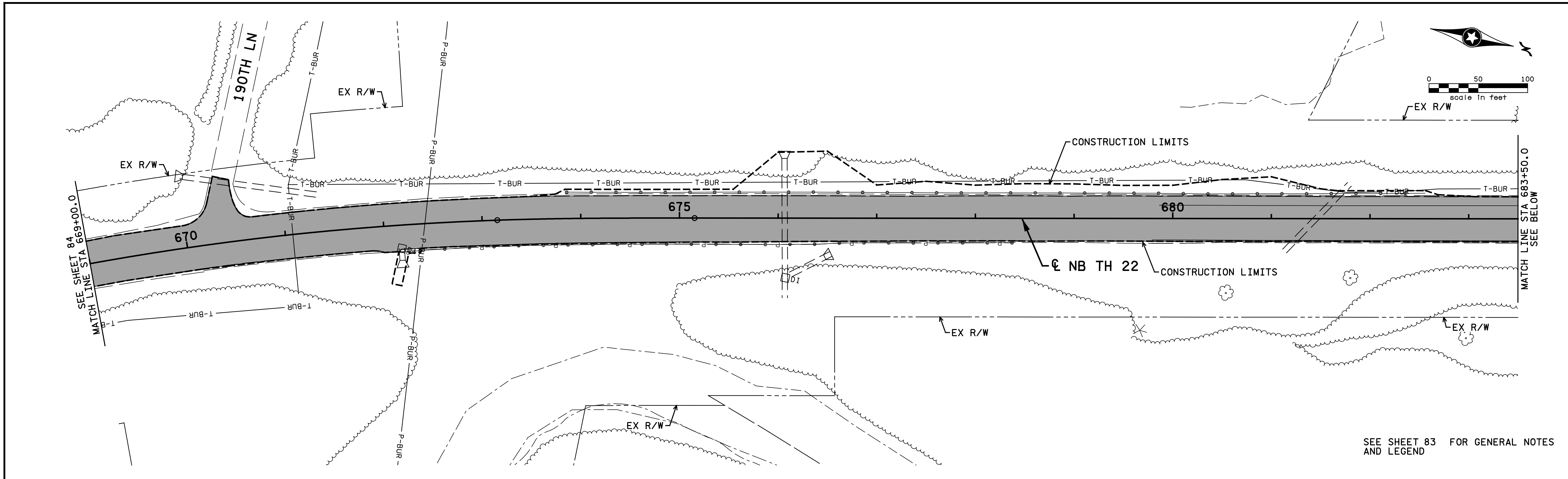

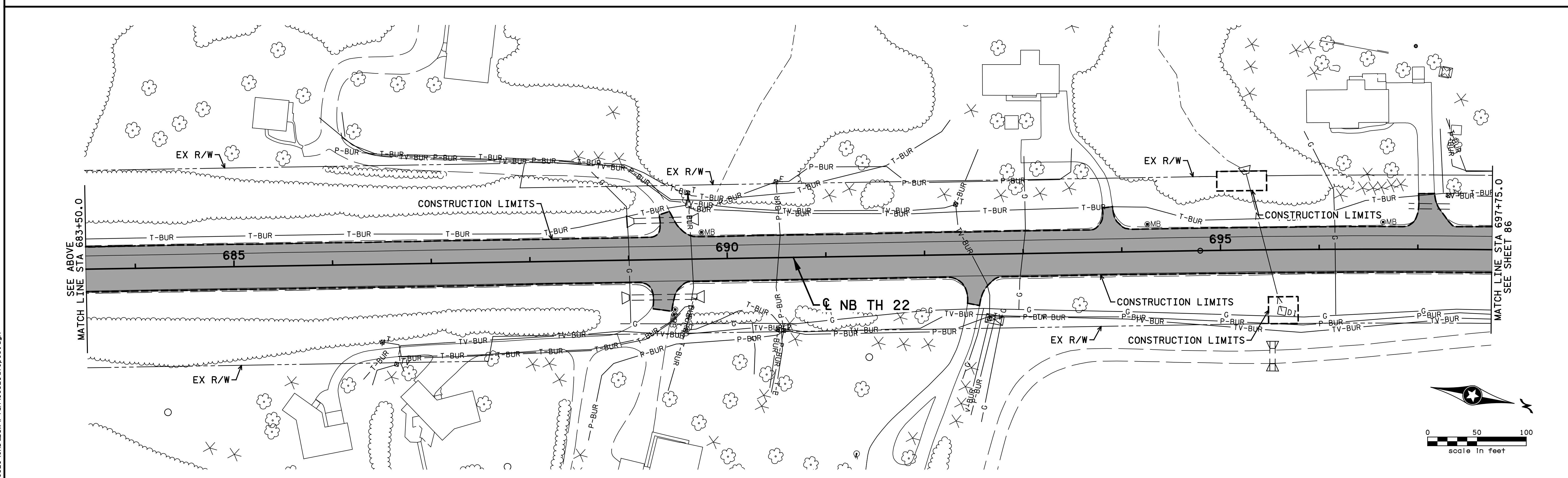

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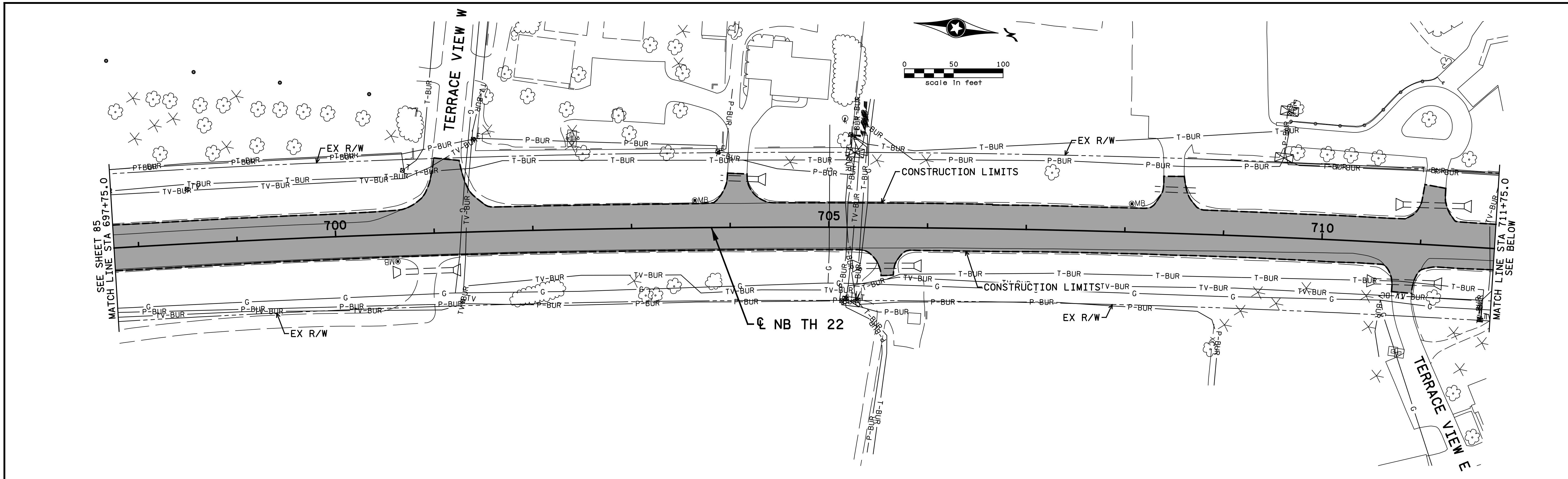
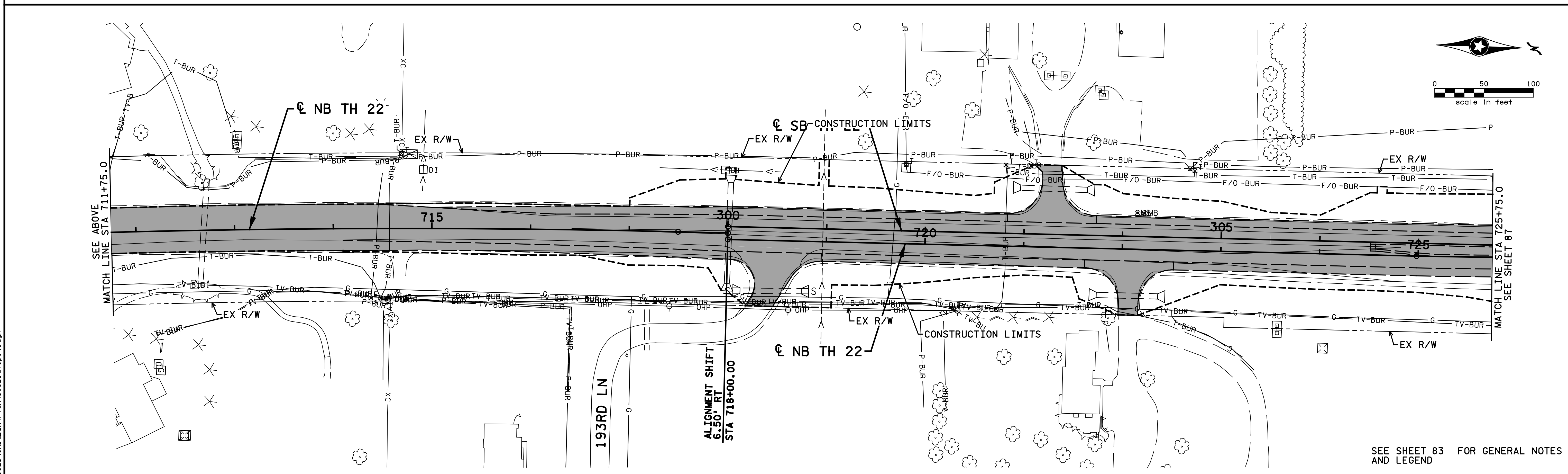
TH 22 & CSAH 90





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INPLACE TOPOGRAPHY AND UTILITY PLANS

TH 22 & CSAH 90

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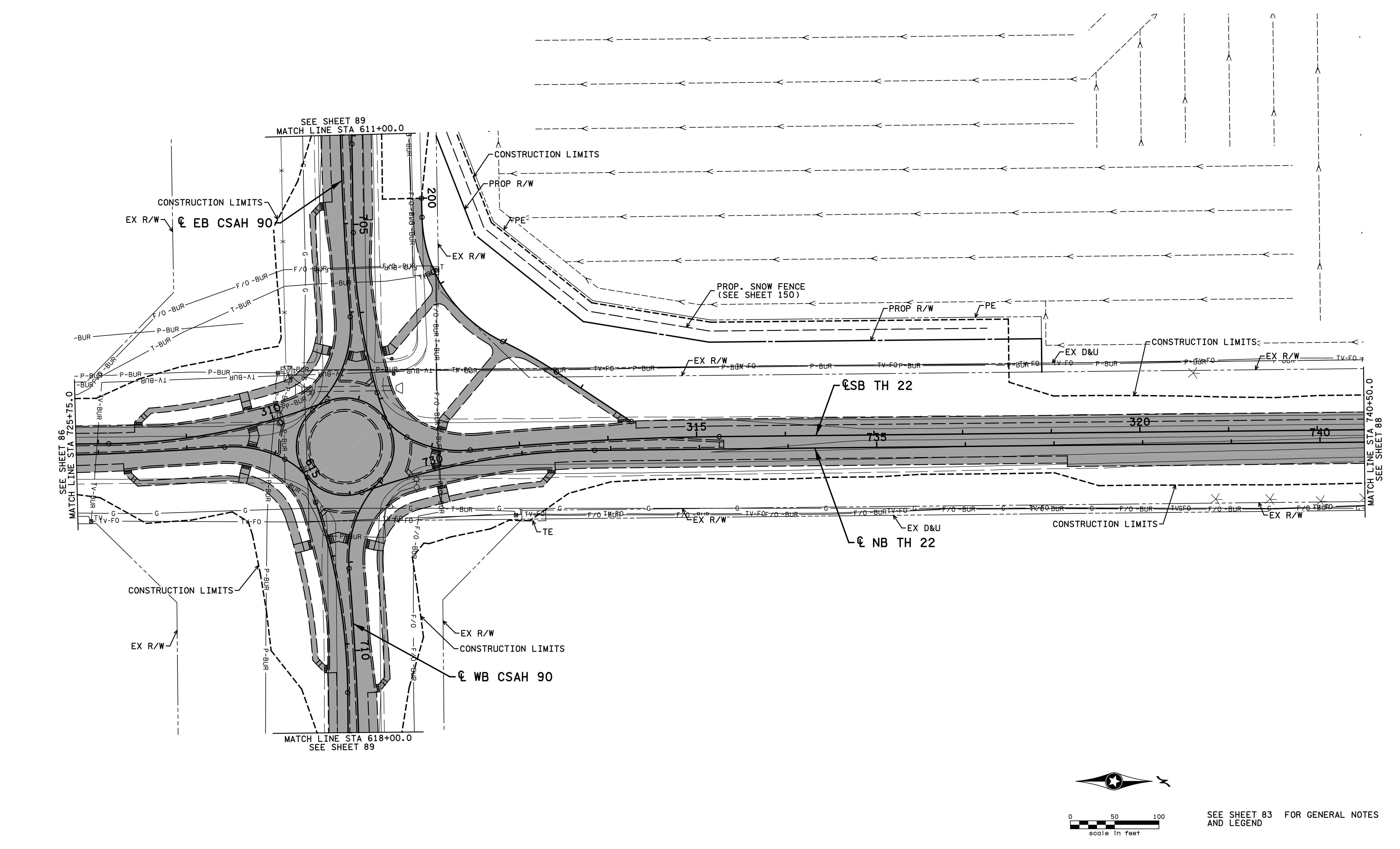

SEE SHEET 83 FOR GENERAL NOTES AND LEGEND

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TH 22 & CSAH 90

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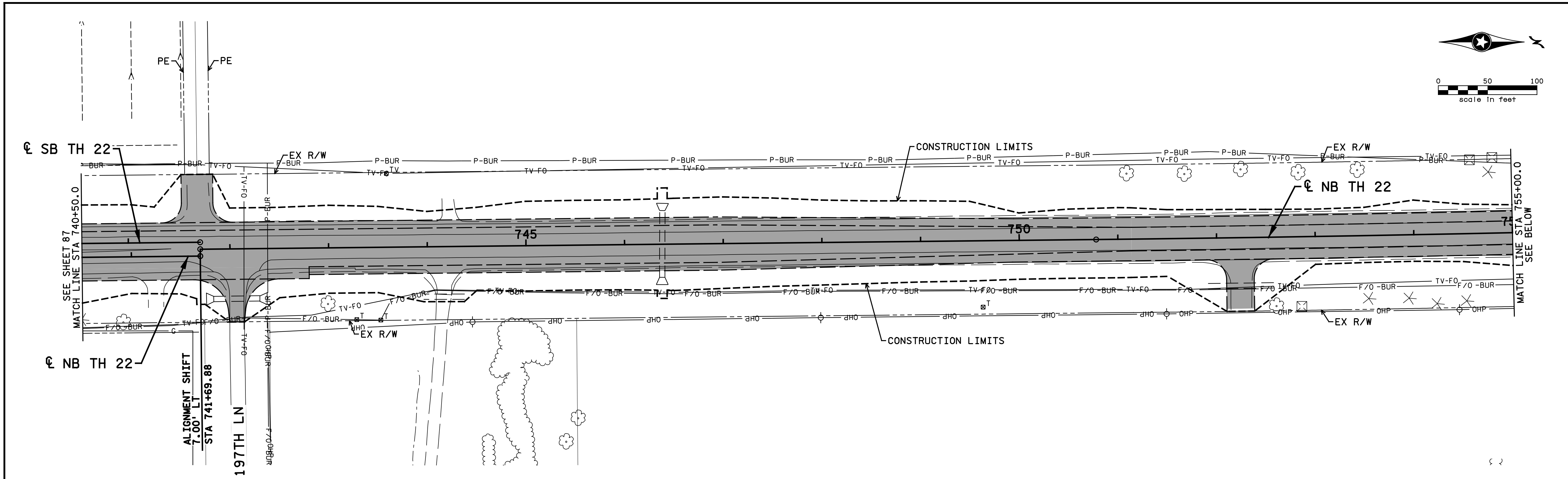

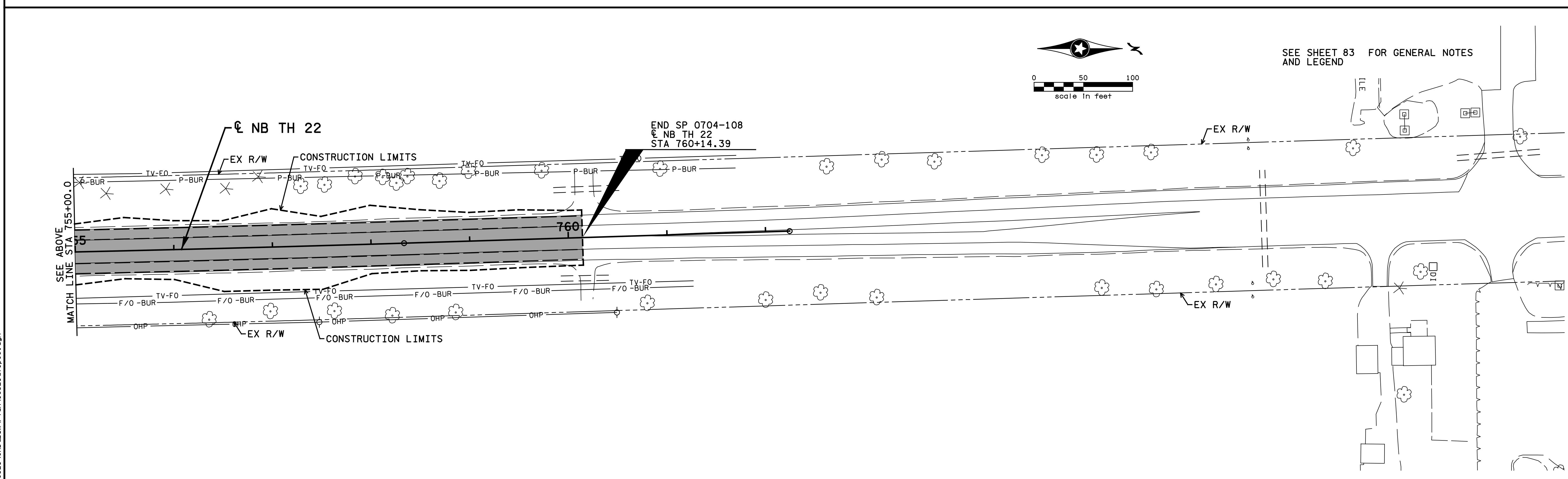

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TOPOGRAPHY AND UTILITY PLANS

TH 22 & CSAH 90

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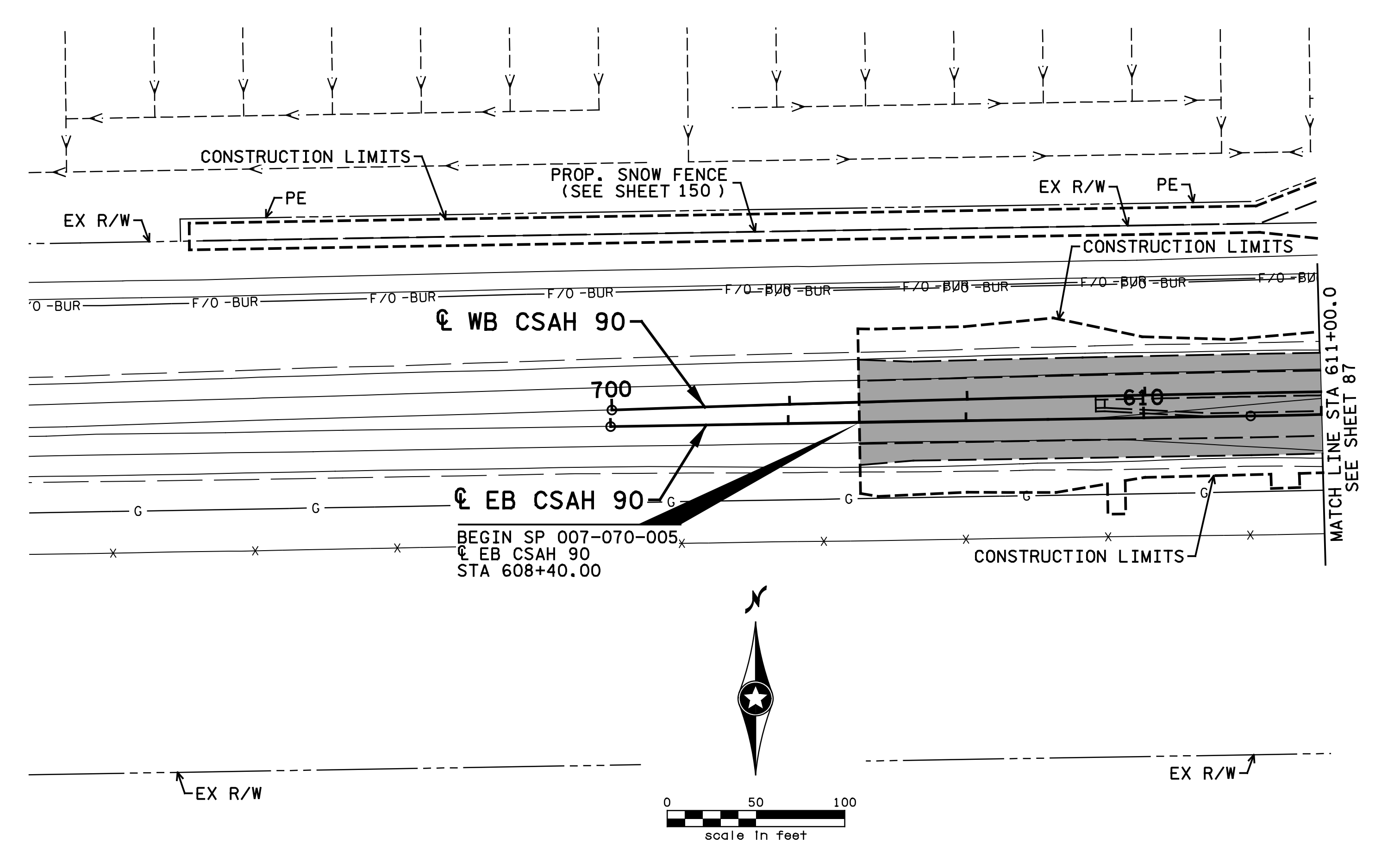

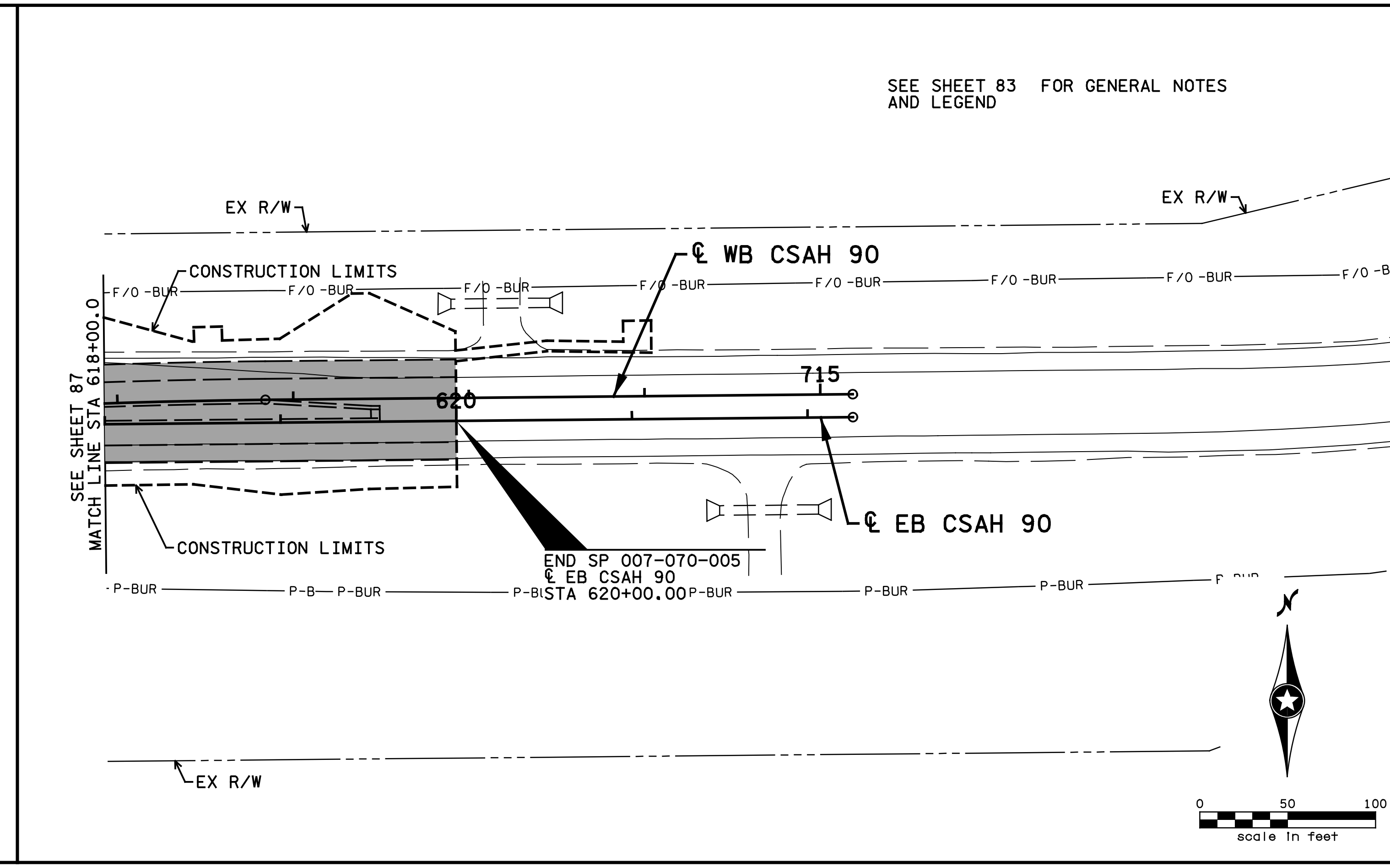

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DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

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TOPOGRAPHY AND UTILITY PLANS

TH 22 & CSAH 90

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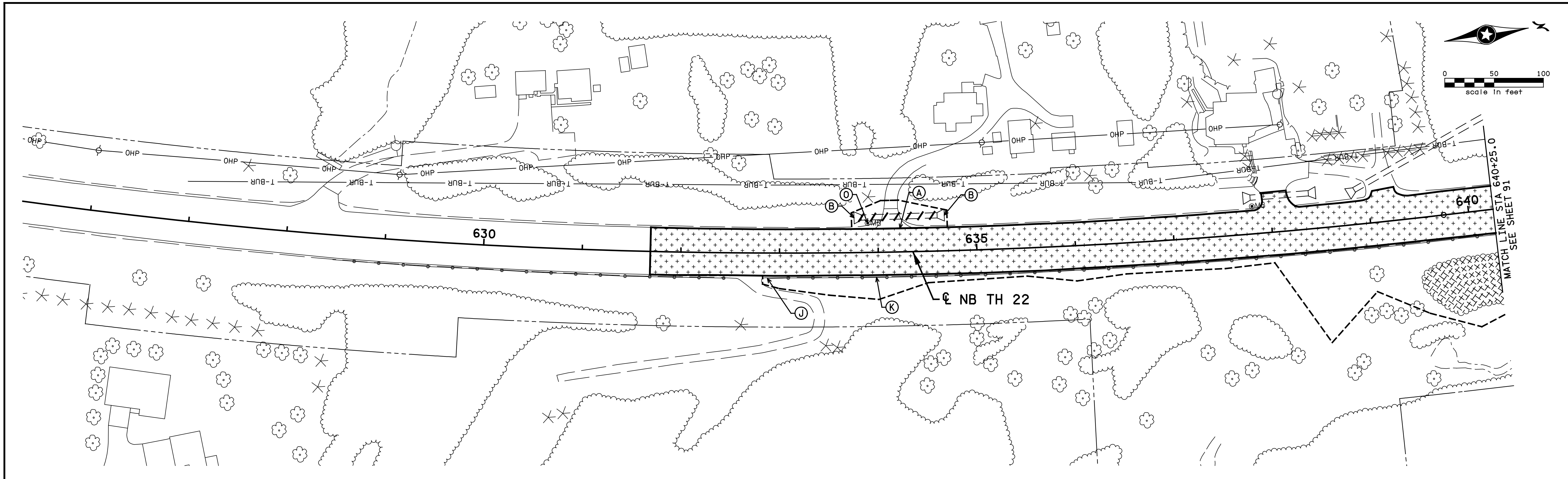

LEGEND

- CLEAR AND GRUB (ACRE)
- CLEAR AND GRUB TREE (ACRE)
- REMOVE PAVEMENT
- REMOVE BITUMINOUS PAVEMENT
- REMOVE BITUMINOUS WALK
- MILL BITUMINOUS SURFACE (2.0")
- REMOVE SEWER PIPE (STORM)/ REMOVE PIPE CULVERTS

GENERAL NOTES:

PROTECT ALL TREES THAT ARE NOT MARKED FOR REMOVAL (INCIDENTAL).

ALL TREES TO BE CLEARED AND GRUBBED WILL BE MARKED BY THE FIELD ENGINEER.

SEE EXISTING SIGNING PLANS FOR SIGN REMOVALS.

NOTES:

- (A) SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
- (B) REMOVE PIPE APRON
- (J) REMOVE ANCHORAGE ASSEMBLY - CABLE
- (K) REMOVE CABLE GUARDRAIL
- (O) RELOCATE MAIL BOX SUPPORT

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ____________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

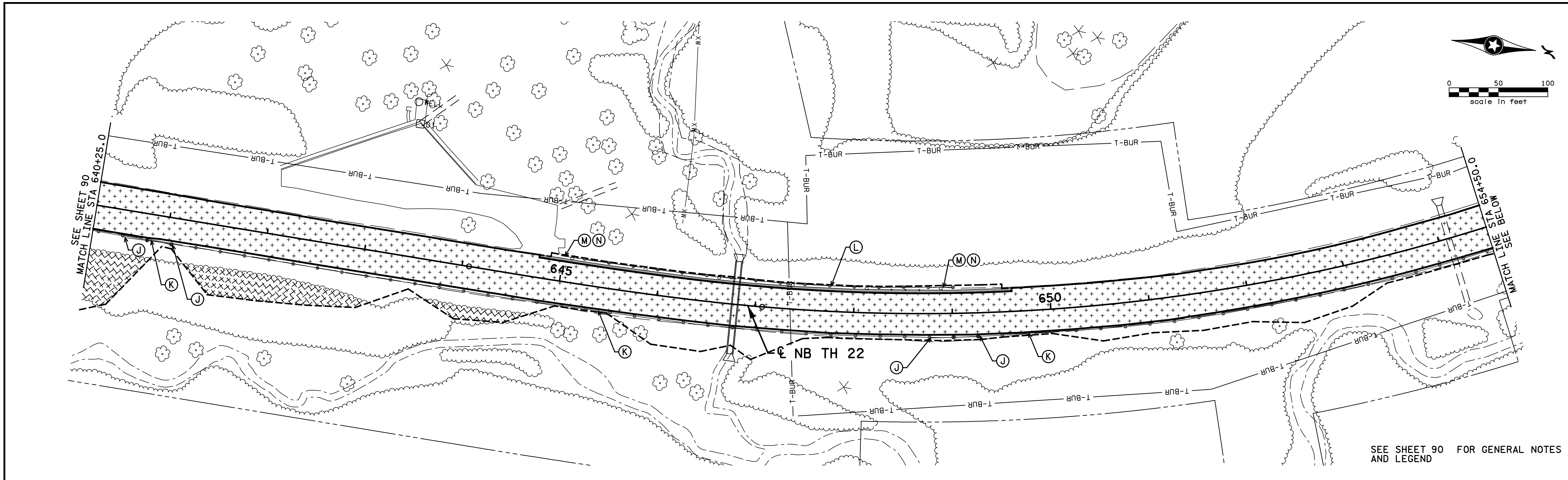
SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

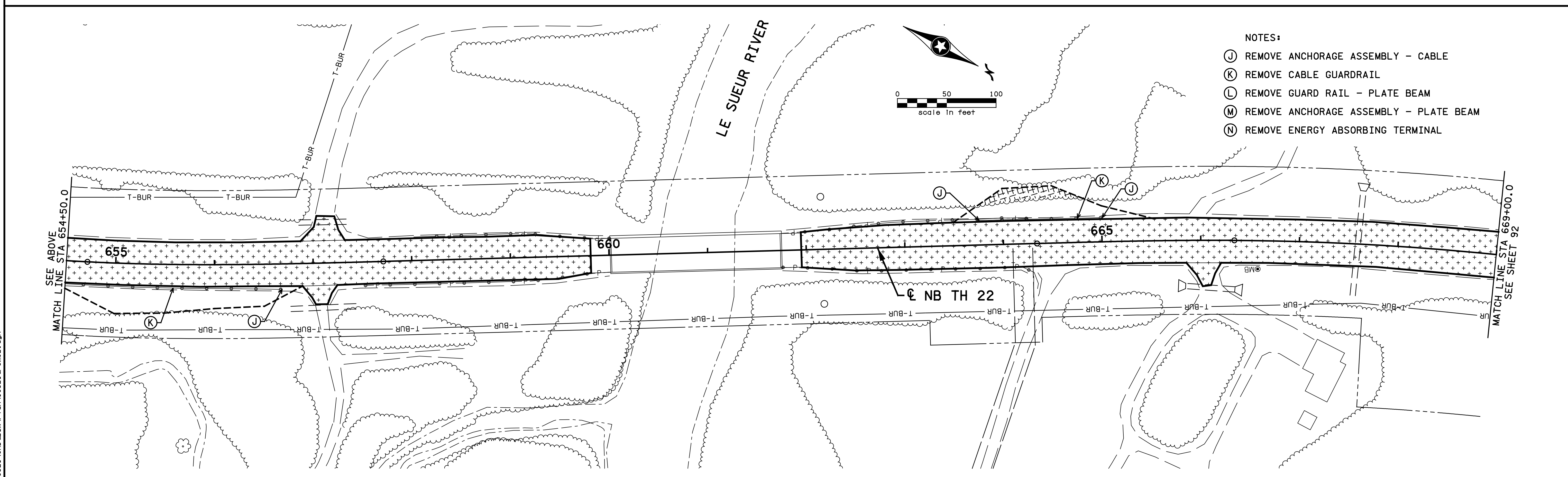
MINNESOTA DEPARTMENT OF TRANSPORTATION

REMOVAL PLANS

TH 22 & CSAH 90



SEE SHEET 90 FOR GENERAL NOTES AND LEGEND



NOTES:

- (J) REMOVE ANCHORAGE ASSEMBLY - CABLE
- (K) REMOVE CABLE GUARDRAIL
- (L) REMOVE GUARD RAIL - PLATE BEAM
- (M) REMOVE ANCHORAGE ASSEMBLY - PLATE BEAM
- (N) REMOVE ENERGY ABSORBING TERMINAL

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

REMOVAL PLANS

TH 22 & CSAH 90

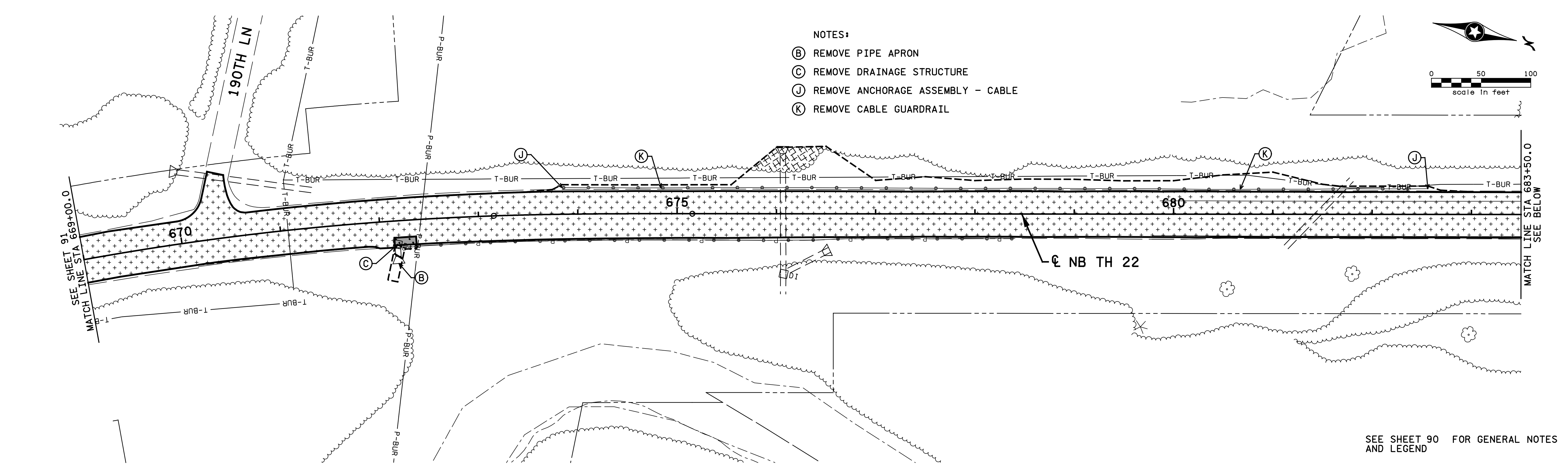
NOTES:

(B) REMOVE PIPE APRON

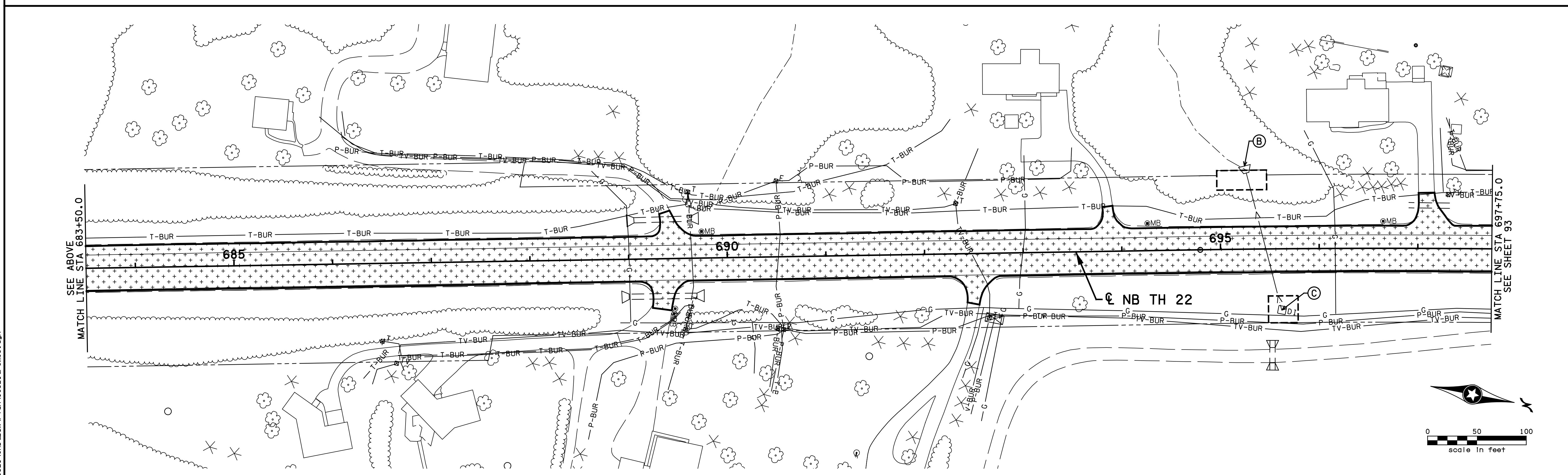
(C) REMOVE DRAINAGE STRUCTURE

(J) REMOVE ANCHORAGE ASSEMBLY - CABLE

(K) REMOVE CABLE GUARDRAIL



SEE SHEET 90 FOR GENERAL NOTES AND LEGEND



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Date ________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

REMOVAL PLANS

TH 22 & CSAH 90

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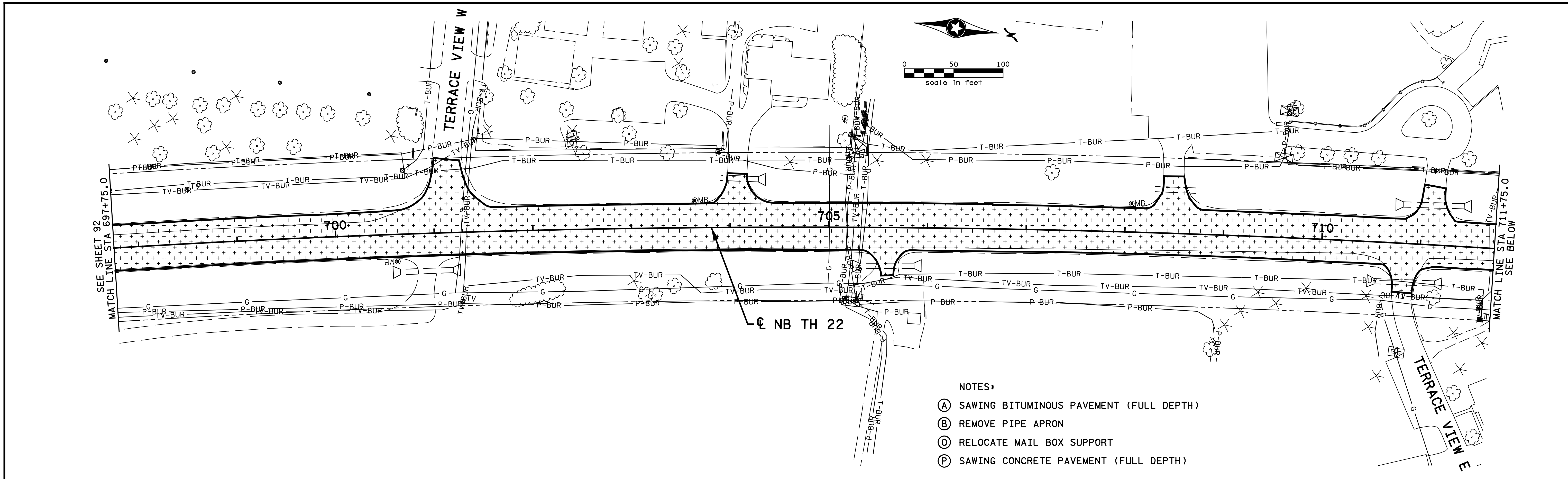


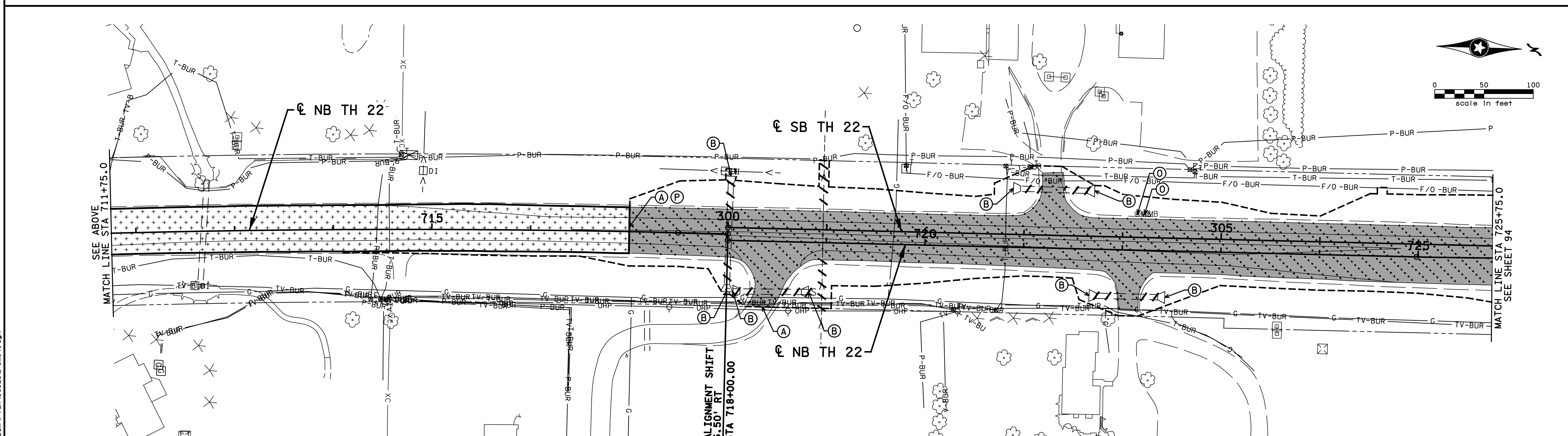
NOTES:

Ⓐ SAWING BITUMINOUS PAVEMENT (FULL DEPTH)

Ⓑ REMOVE PIPE APRON

Ⓞ RELOCATE MAIL BOX SUPPORT

Ⓟ SAWING CONCRETE PAVEMENT (FULL DEPTH)



SEE SHEET 90 FOR GENERAL NOTES AND LEGEND

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

REMOVAL PLANS

TH 22 & CSAH 90

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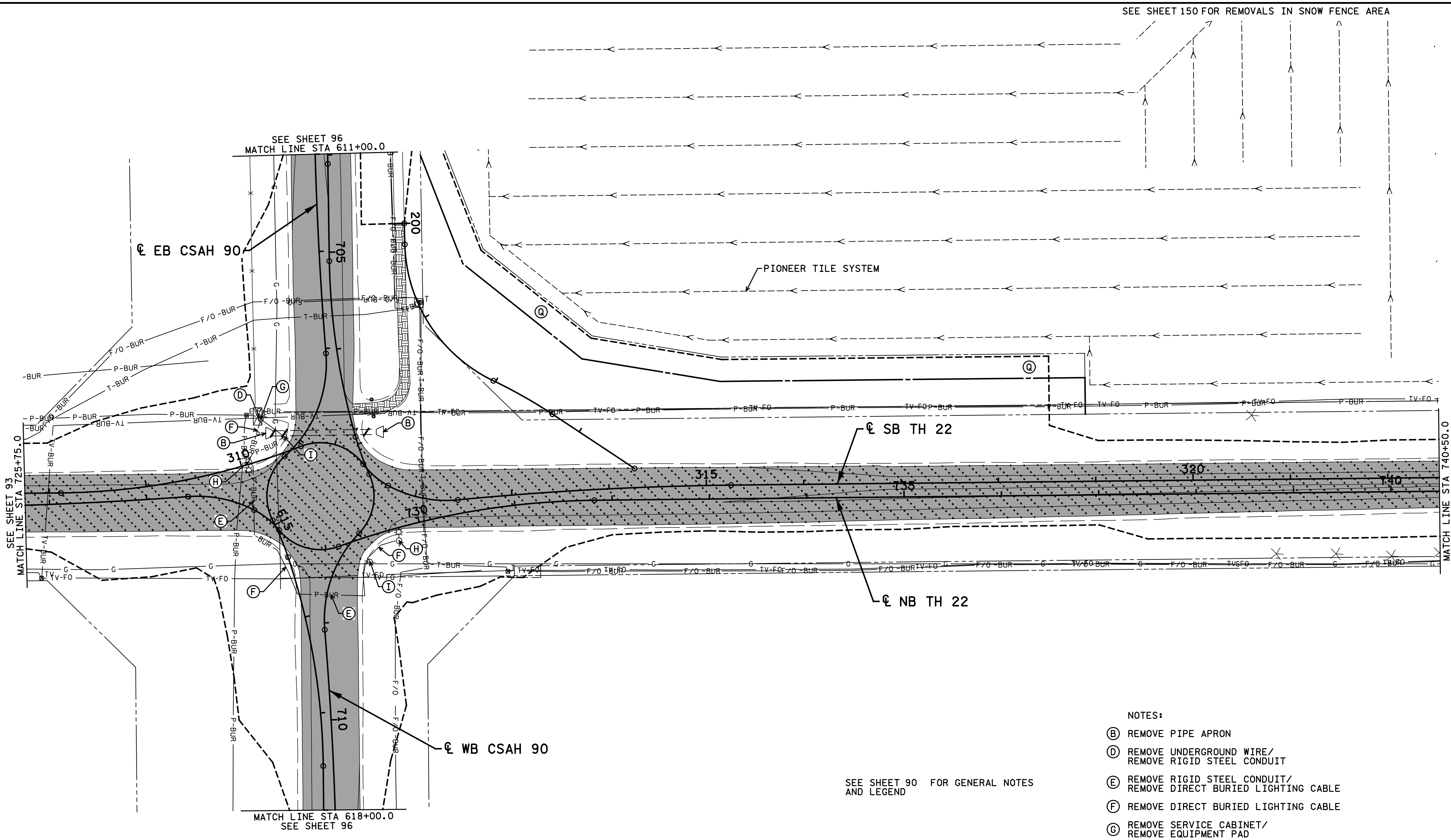

SEE SHEET 90 FOR GENERAL NOTES AND LEGEND

NOTES:

- (B) REMOVE PIPE APRON
- (D) REMOVE UNDERGROUND WIRE/ REMOVE RIGID STEEL CONDUIT
- (E) REMOVE RIGID STEEL CONDUIT/ REMOVE DIRECT BURIED LIGHTING CABLE
- (F) REMOVE DIRECT BURIED LIGHTING CABLE
- (G) REMOVE SERVICE CABINET/ REMOVE EQUIPMENT PAD
- (H) SALVAGE LIGHTING UNIT/ REMOVE LIGHTING FOUNDATION
- (I) REMOVE FLASHER SYSTEM
- (Q) IF PIONEER TILE IS STILL INPLACE WITHIN PROPOSED MNDOT R/W AT TIME OF CONSTRUCTION, CONTRACTOR TO CUT AND CAP EXISTING TILE.

0 50 100
scale in feet

NO	DATE	BY	CKD	APPR	REVISION

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Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

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REMOVAL PLANS

TH 22 & CSAH 90

SHEET 94 OF 255

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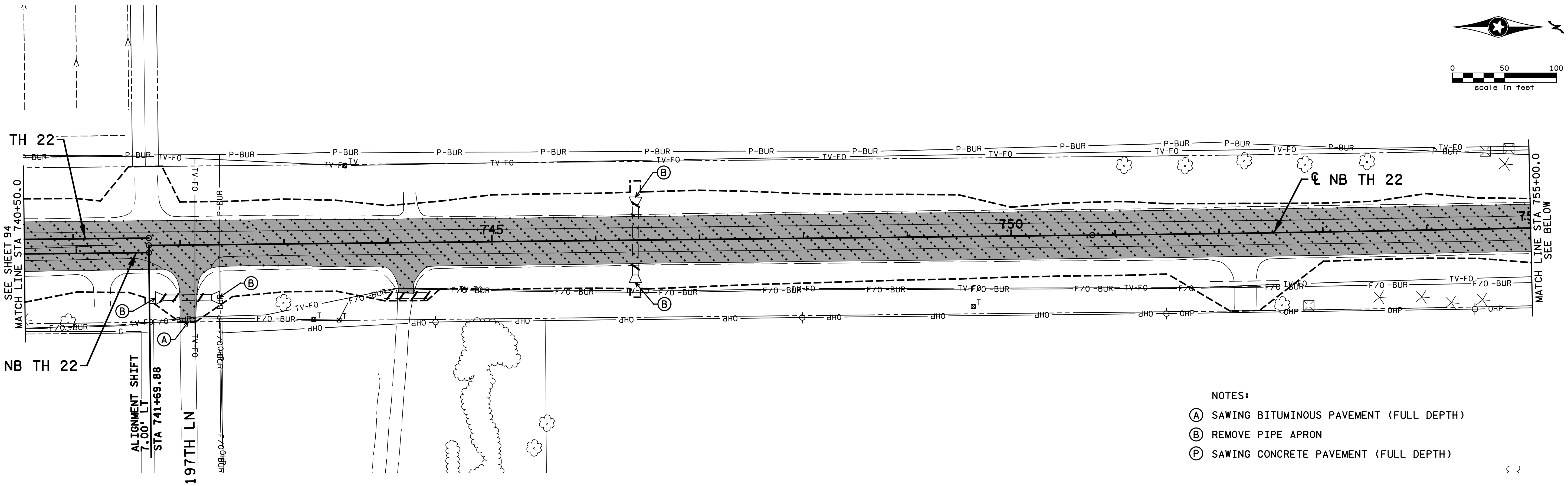
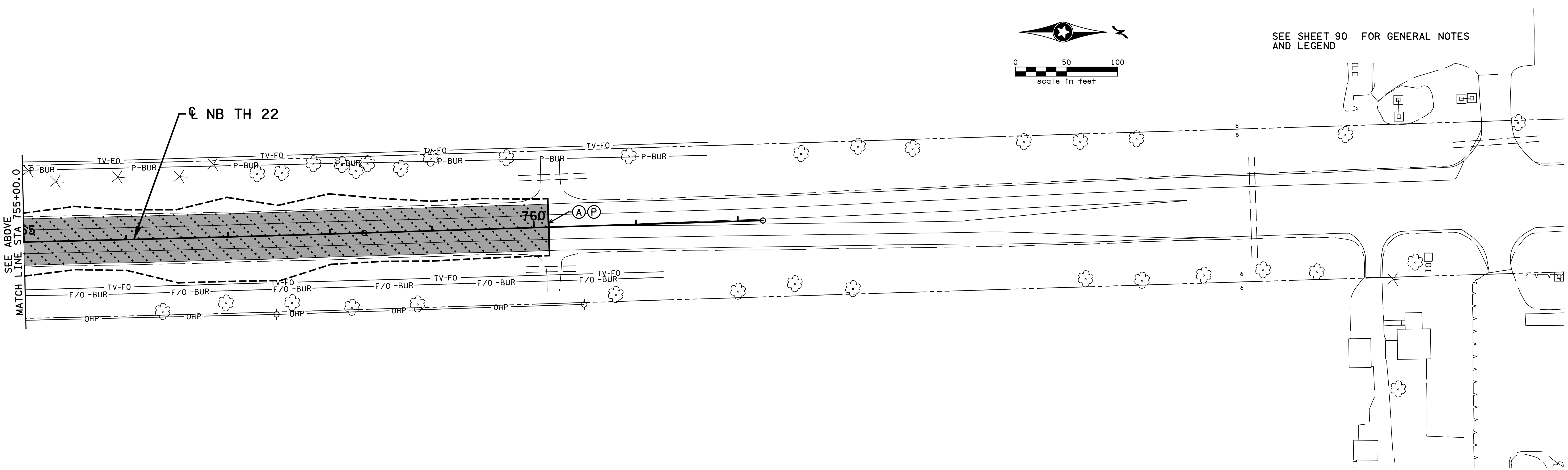


NOTES:

Ⓐ SAWING BITUMINOUS PAVEMENT (FULL DEPTH)

Ⓑ REMOVE PIPE APRON

Ⓟ SAWING CONCRETE PAVEMENT (FULL DEPTH)



SEE SHEET 90 FOR GENERAL NOTES AND LEGEND

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

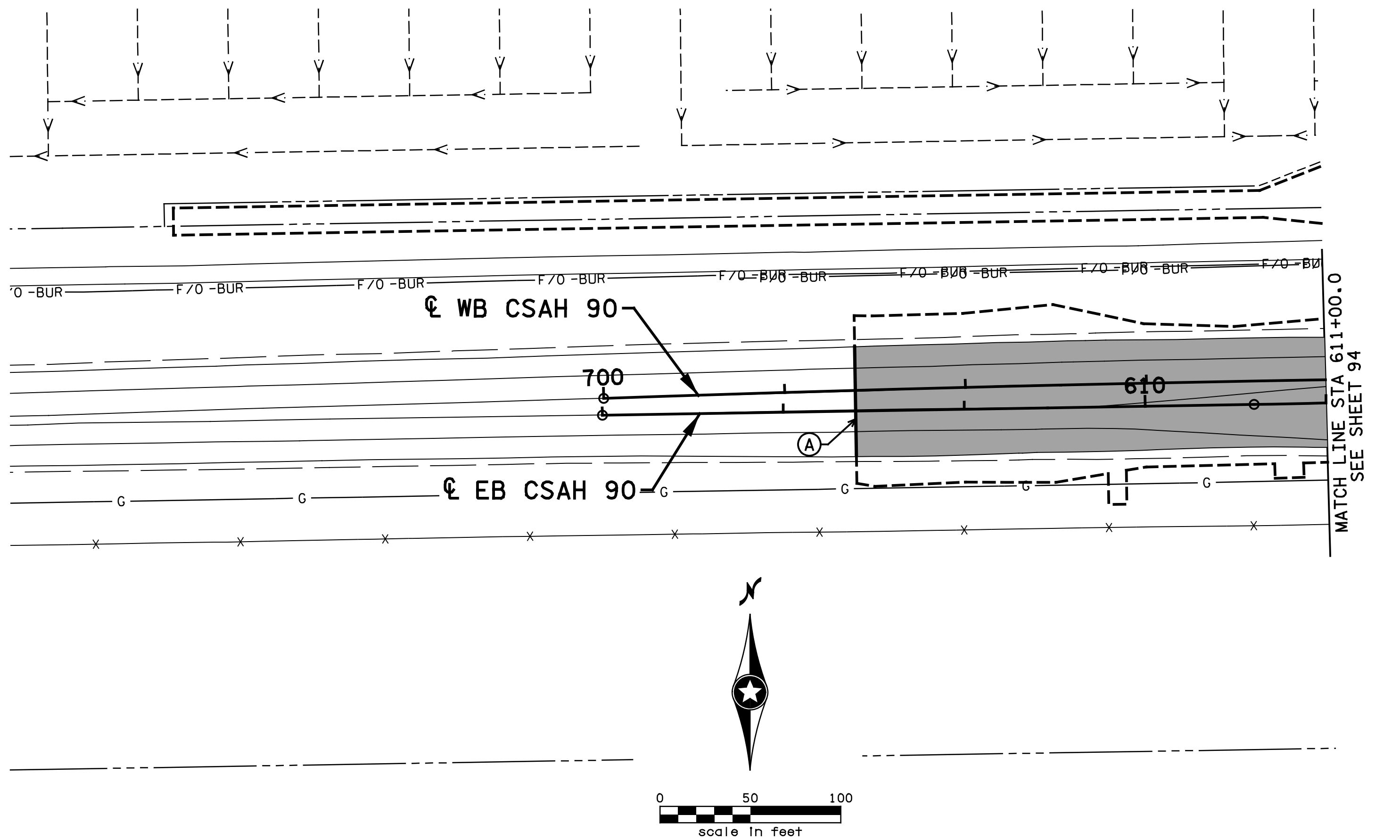
SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

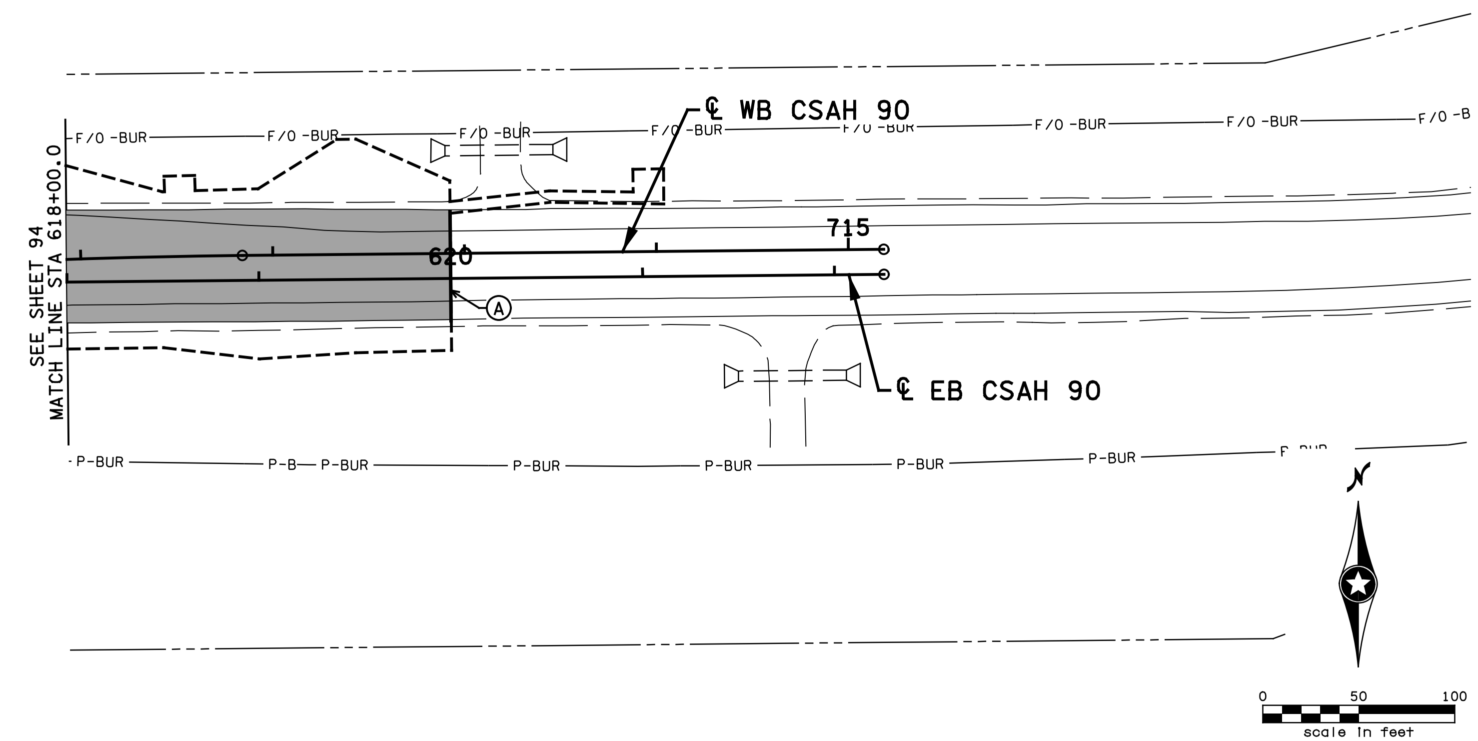
REMOVAL PLANS

TH 22 & CSAH 90

SHEET 95 OF 255



SEE SHEET 90 FOR GENERAL NOTES AND LEGEND



NOTES:

(A) SAWING BITUMINOUS PAVEMENT (FULL DEPTH)

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

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ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

REMOVAL PLANS

TH 22 & CSAH 90

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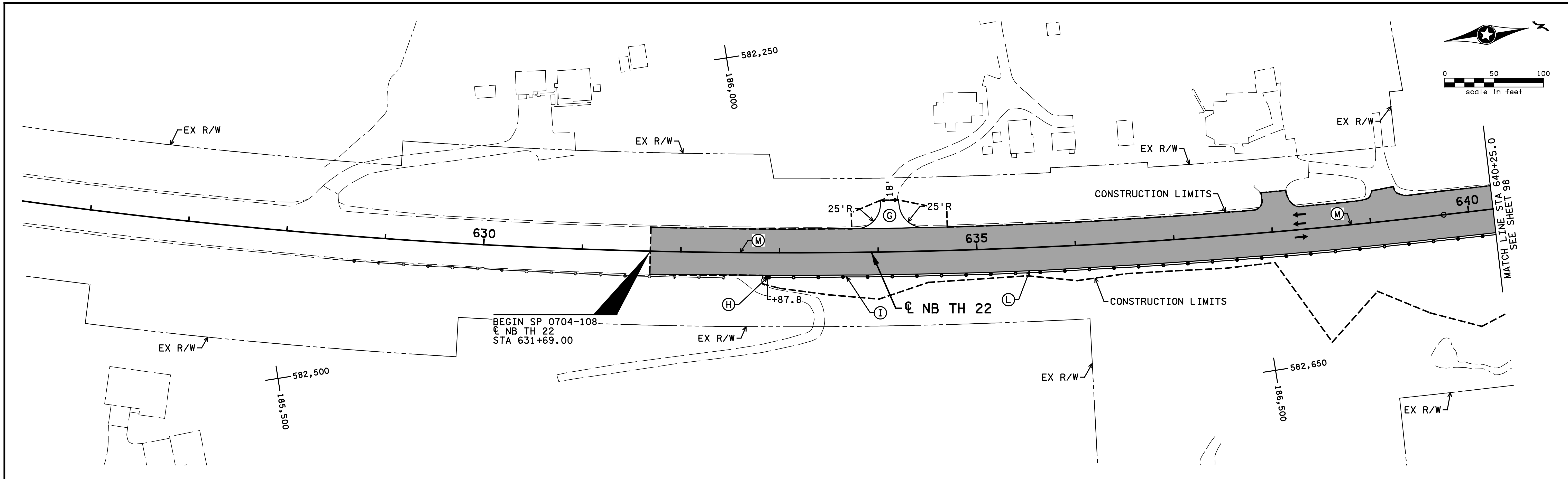

LEGEND

- EXISTING ROADWAYS
- EXISTING GUARDRAIL
- PROPOSED CONSTRUCTION
- DIRECTION OF TRAFFIC
- 2.0" BITUMINOUS OVERLAY

GENERAL NOTES:

THE RIGHT-OF-WAY SHOWN IN THIS PLAN GIVES A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA. THE EXACT RIGHTOF WAY AND BOUNDARY CORNERS ARE LOCATED BY REFERENCE TO THE RIGHT OF WAY PLATS AND ARE IDENTIFIED ON THE RIGHT OF WAY MAP.

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.

SEE INTERSECTION DETAILS, AND PEDESTRIAN RAMP DETAILS FOR INFORMATION NOT SHOWN ON THE CONSTRUCTION PLANS.

SEE DRAINAGE AND SUPERELEVATION PLANS FOR SUPERELEVATION TRANSITIONS.

ALL DIMENSIONS TO CURB & GUTTER ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.

NOTES:

G CONSTRUCT DRIVEWAY (MNDOT STD PLATE 9000) SEE INSET B ON SHEET 27

H ANCHORAGE ASSEMBLY - CABLE

I TRAFFIC BARRIER DESIGN B8331

L MILLED SINUSOIDAL RUMBLE STRIP - INTERMITTENT SEE MISCELLANEOUS DETAILS.

M MILLED SINUSOIDAL RUMBLE STRIP - CENTERLINE SEE MISCELLANEOUS DETAILS.

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Date ________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

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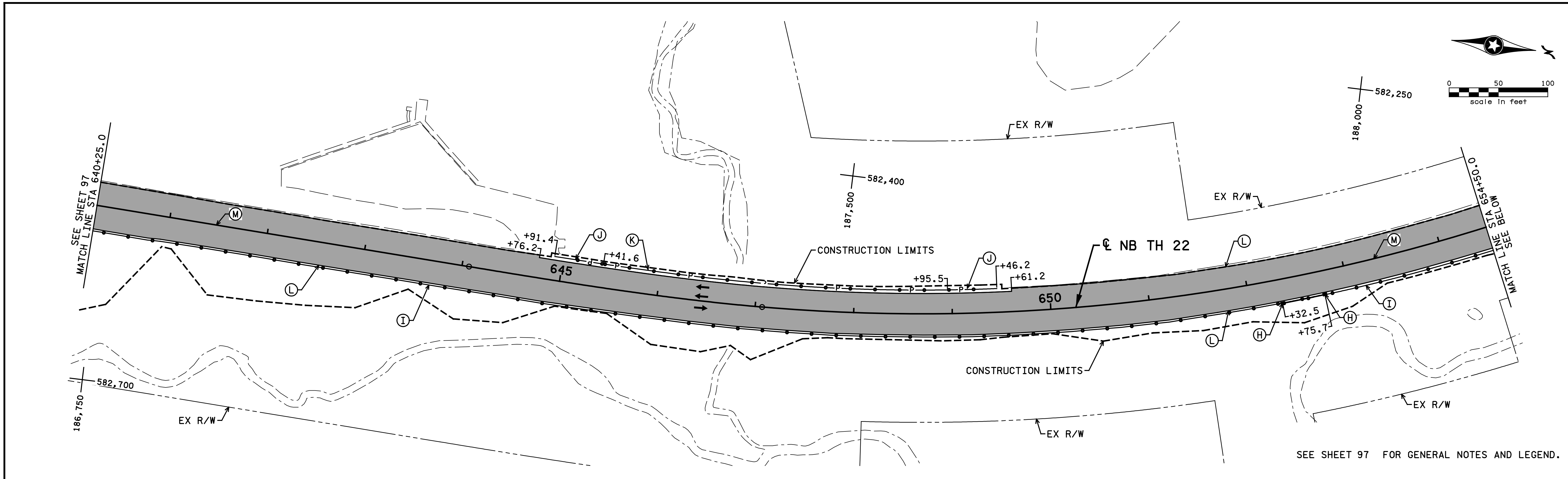
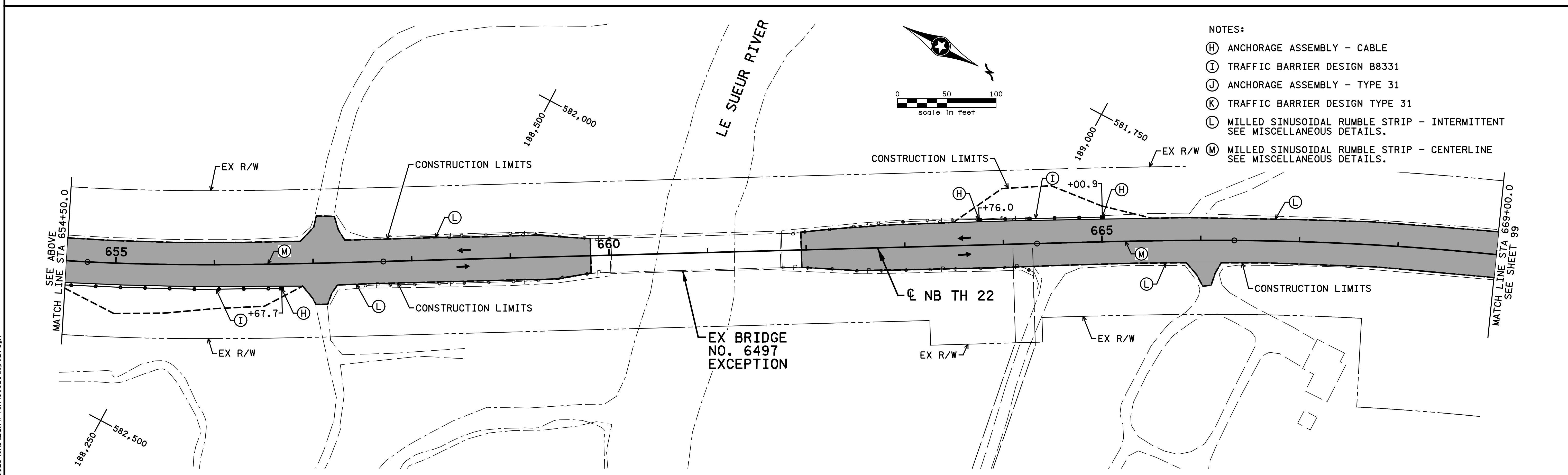
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS
TH 22 & CSAH 90





NOTES:

- (H) ANCHORAGE ASSEMBLY - CABLE
- (I) TRAFFIC BARRIER DESIGN B8331
- (J) ANCHORAGE ASSEMBLY - TYPE 31
- (K) TRAFFIC BARRIER DESIGN TYPE 31
- (L) MILLED SINUSOIDAL RUMBLE STRIP - INTERMITTENT SEE MISCELLANEOUS DETAILS.
- (M) MILLED SINUSOIDAL RUMBLE STRIP - CENTERLINE SEE MISCELLANEOUS DETAILS.

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

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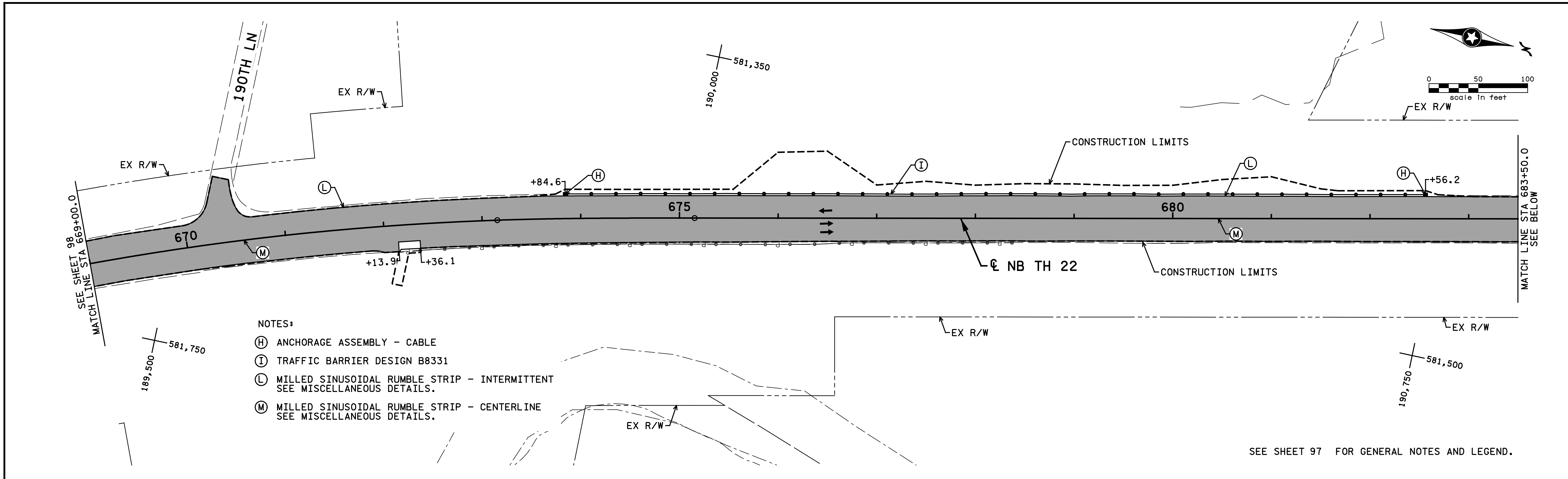
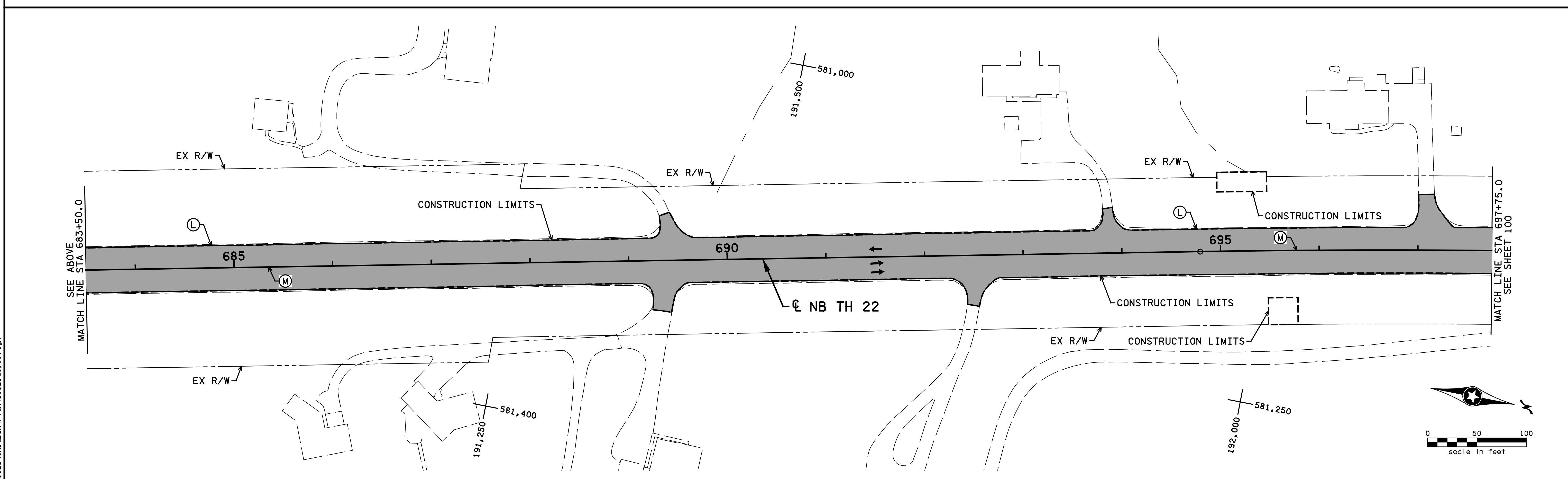
MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

TH 22 & CSAH 90





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Print Name: AMBER E. TRACY

Date ____ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

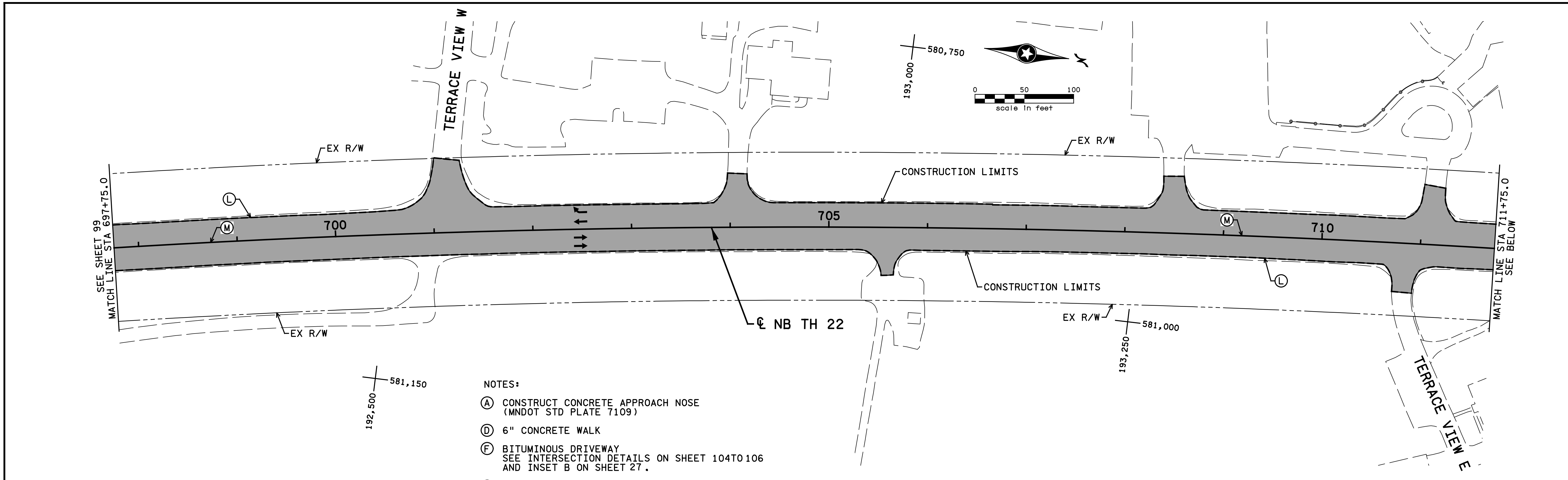
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

TH 22 & CSAH 90

SHEET 99 OF 255



NOTES:

Ⓐ CONSTRUCT CONCRETE APPROACH NOSE (MNDOT STD PLATE 7109)

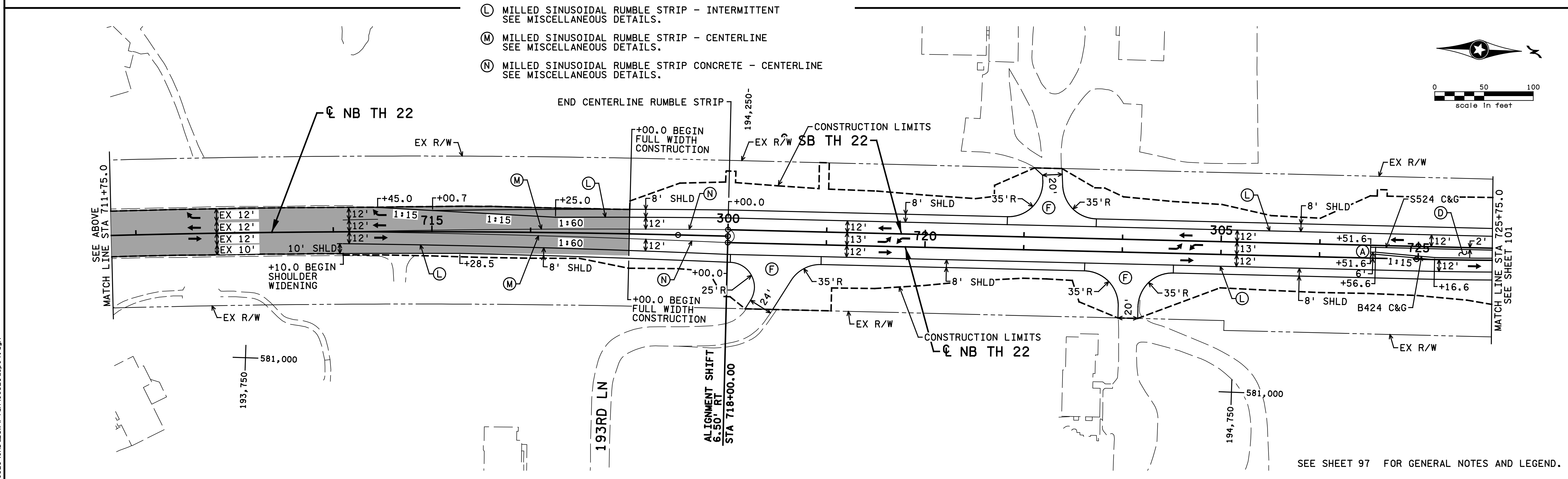
Ⓓ 6" CONCRETE WALK

Ⓕ BITUMINOUS DRIVEWAY
SEE INTERSECTION DETAILS ON SHEET 104TO106
AND INSET B ON SHEET 27.

Ⓛ MILLED SINUSOIDAL RUMBLE STRIP - INTERMITTENT
SEE MISCELLANEOUS DETAILS.

Ⓜ MILLED SINUSOIDAL RUMBLE STRIP - CENTERLINE
SEE MISCELLANEOUS DETAILS.

Ⓝ MILLED SINUSOIDAL RUMBLE STRIP CONCRETE - CENTERLINE
SEE MISCELLANEOUS DETAILS.



SEE SHEET 97 FOR GENERAL NOTES AND LEGEND.

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

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ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS
TH 22 & CSAH 90

SHEET 100 OF 255

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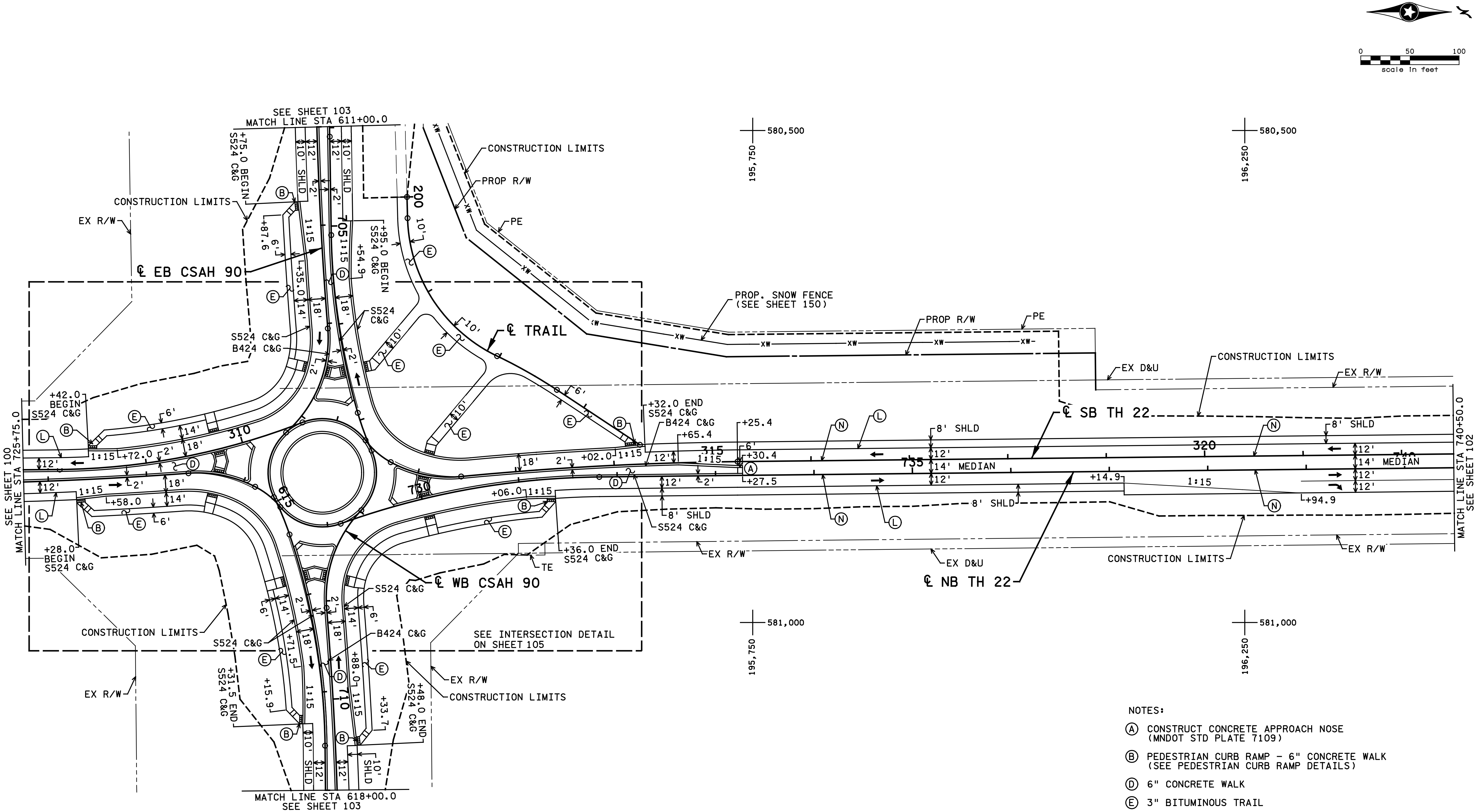

NOTES:

(A) CONSTRUCT CONCRETE APPROACH NOSE (MNDOT STD PLATE 7109)

(B) PEDESTRIAN CURB RAMP - 6" CONCRETE WALK (SEE PEDESTRIAN CURB RAMP DETAILS)

(D) 6" CONCRETE WALK

(E) 3" BITUMINOUS TRAIL

(L) MILLED SINUSOIDAL RUMBLE STRIP - INTERMITTENT SEE MISCELLANEOUS DETAILS.

(N) MILLED SINUSOIDAL RUMBLE STRIP CONCRETE - CENTERLINE SEE MISCELLANEOUS DETAILS.

SEE SHEET 97 FOR GENERAL NOTES AND LEGEND.

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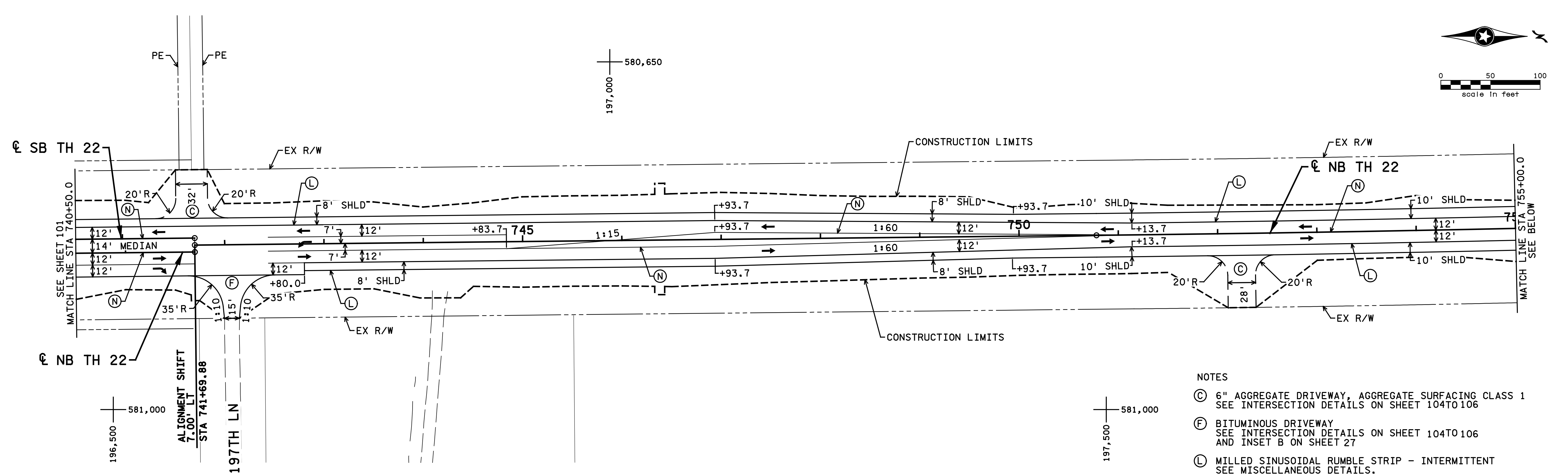
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS

TH 22 & CSAH 90

SHEET 101 OF 255



NOTES

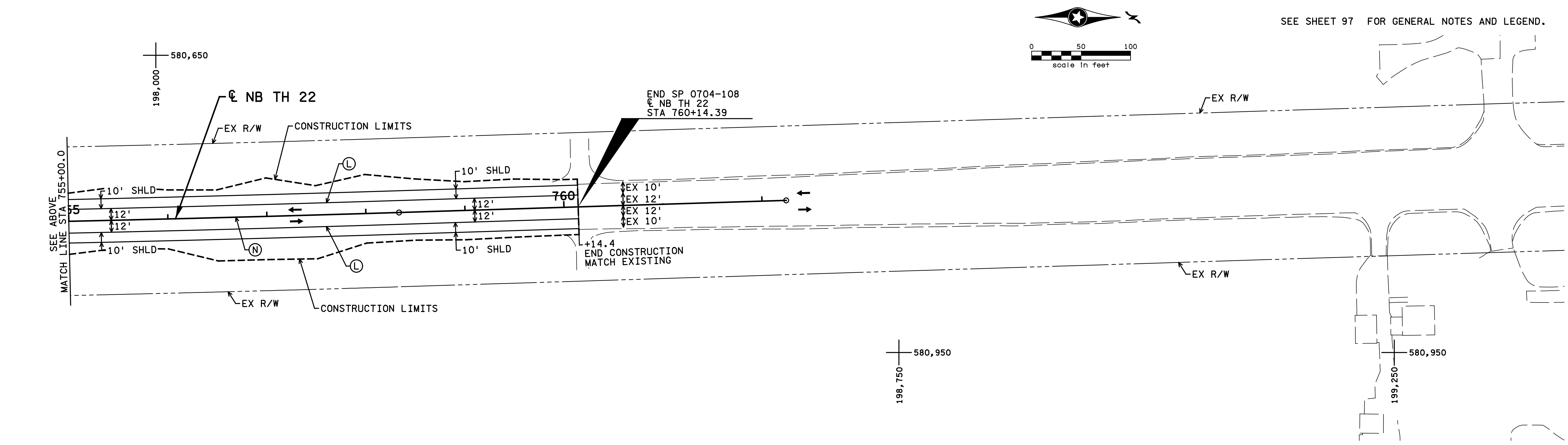
Ⓒ 6" AGGREGATE DRIVEWAY, AGGREGATE SURFACING CLASS 1
SEE INTERSECTION DETAILS ON SHEET 104TO 106

Ⓕ BITUMINOUS DRIVEWAY
SEE INTERSECTION DETAILS ON SHEET 104TO 106
AND INSET B ON SHEET 27

Ⓛ MILLED SINUSOIDAL RUMBLE STRIP - INTERMITTENT
SEE MISCELLANEOUS DETAILS.

Ⓝ MILLED SINUSOIDAL RUMBLE STRIP CONCRETE - CENTERLINE
SEE MISCELLANEOUS DETAILS.

SEE SHEET 97 FOR GENERAL NOTES AND LEGEND.



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DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLANS
TH 22 & CSAH 90

SHEET 102 OF 255

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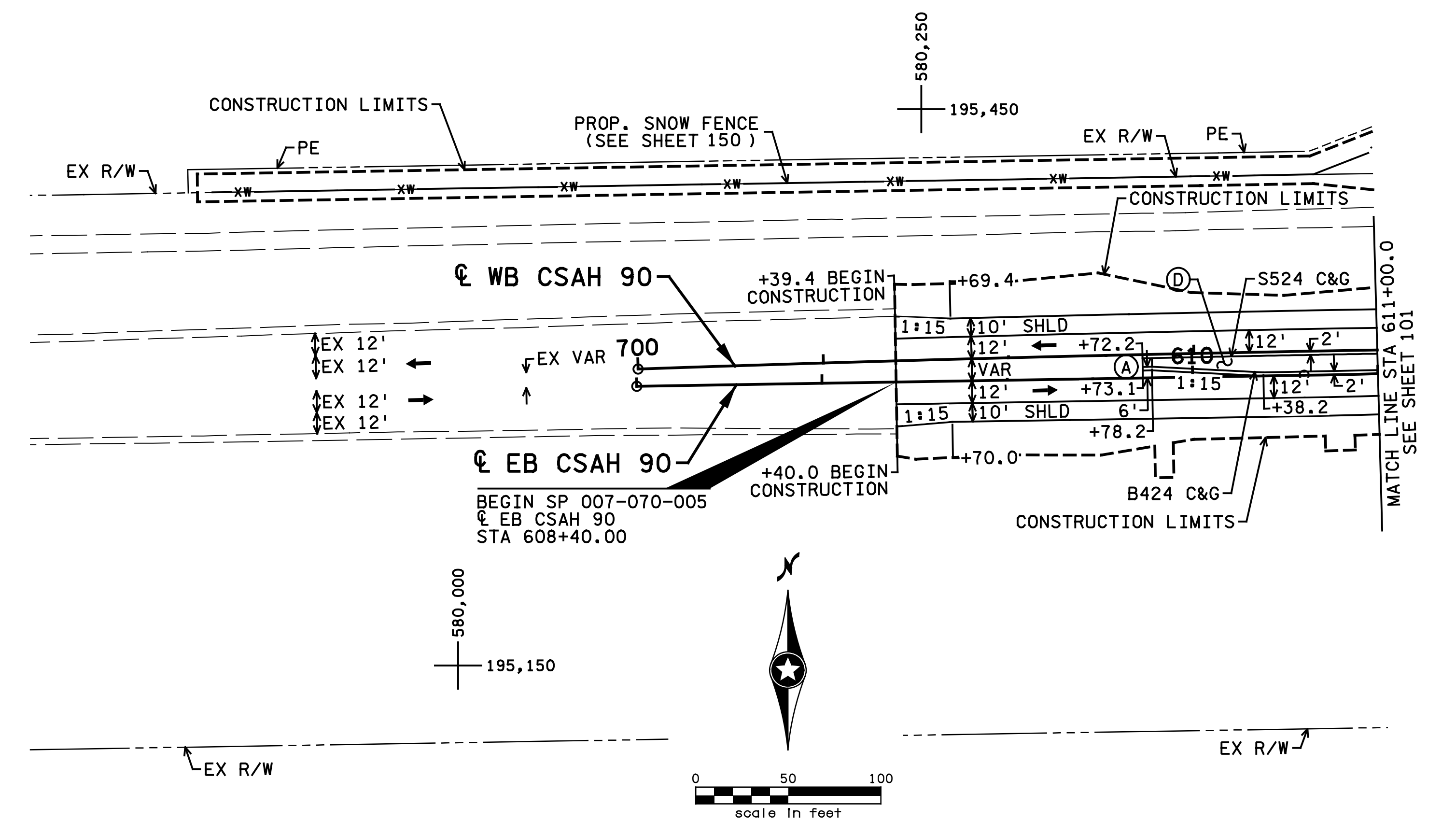

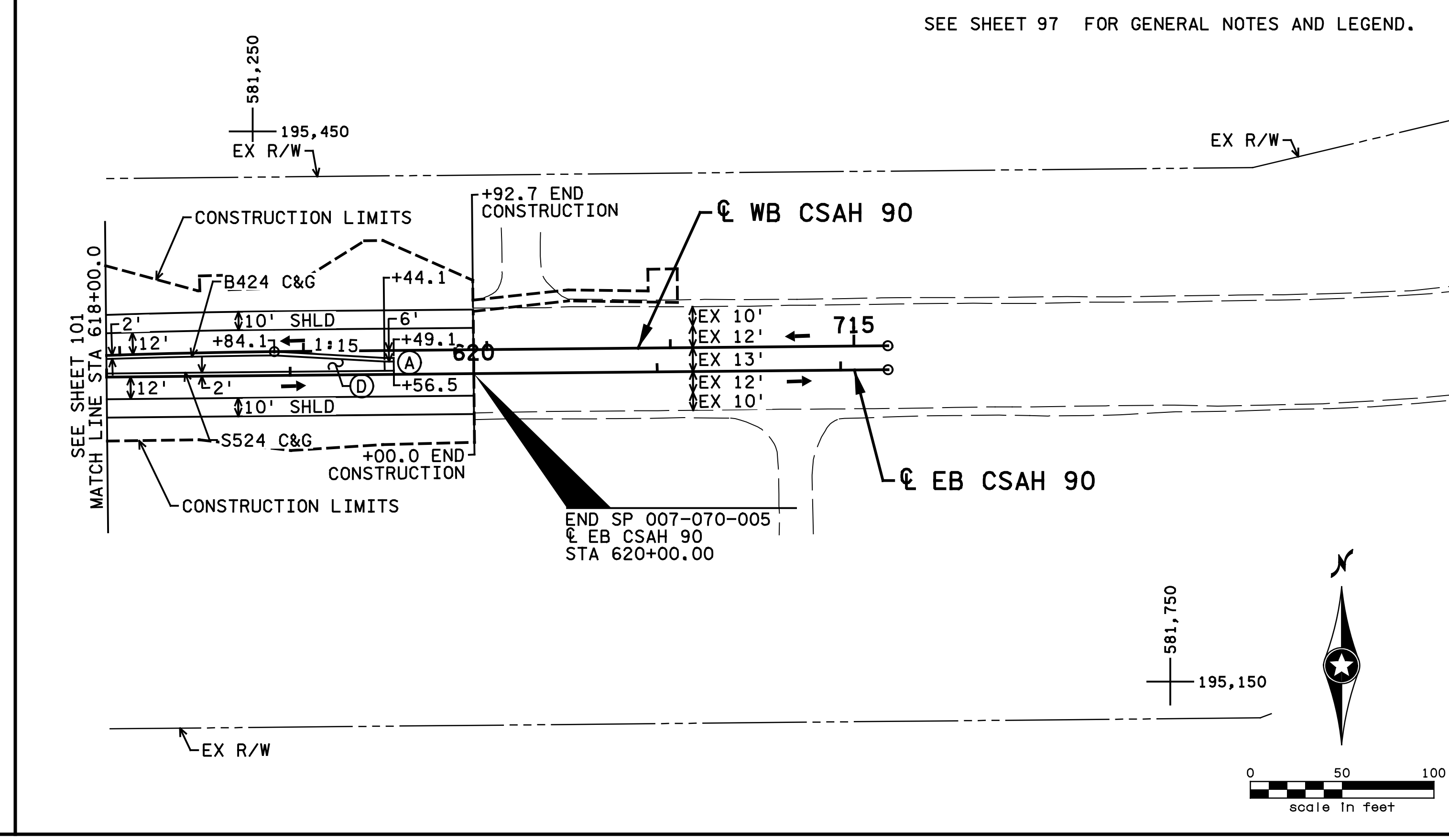

NOTES:

(A) CONSTRUCT CONCRETE APPROACH NOSE (MNDOT STD PLATE 7109)

(D) 6" CONCRETE WALK

NO	DATE	BY	CKD	APPR	REVISION

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CONSTRUCTION PLANS

TH 22 & CSAH 90

SHEET 103 OF 255

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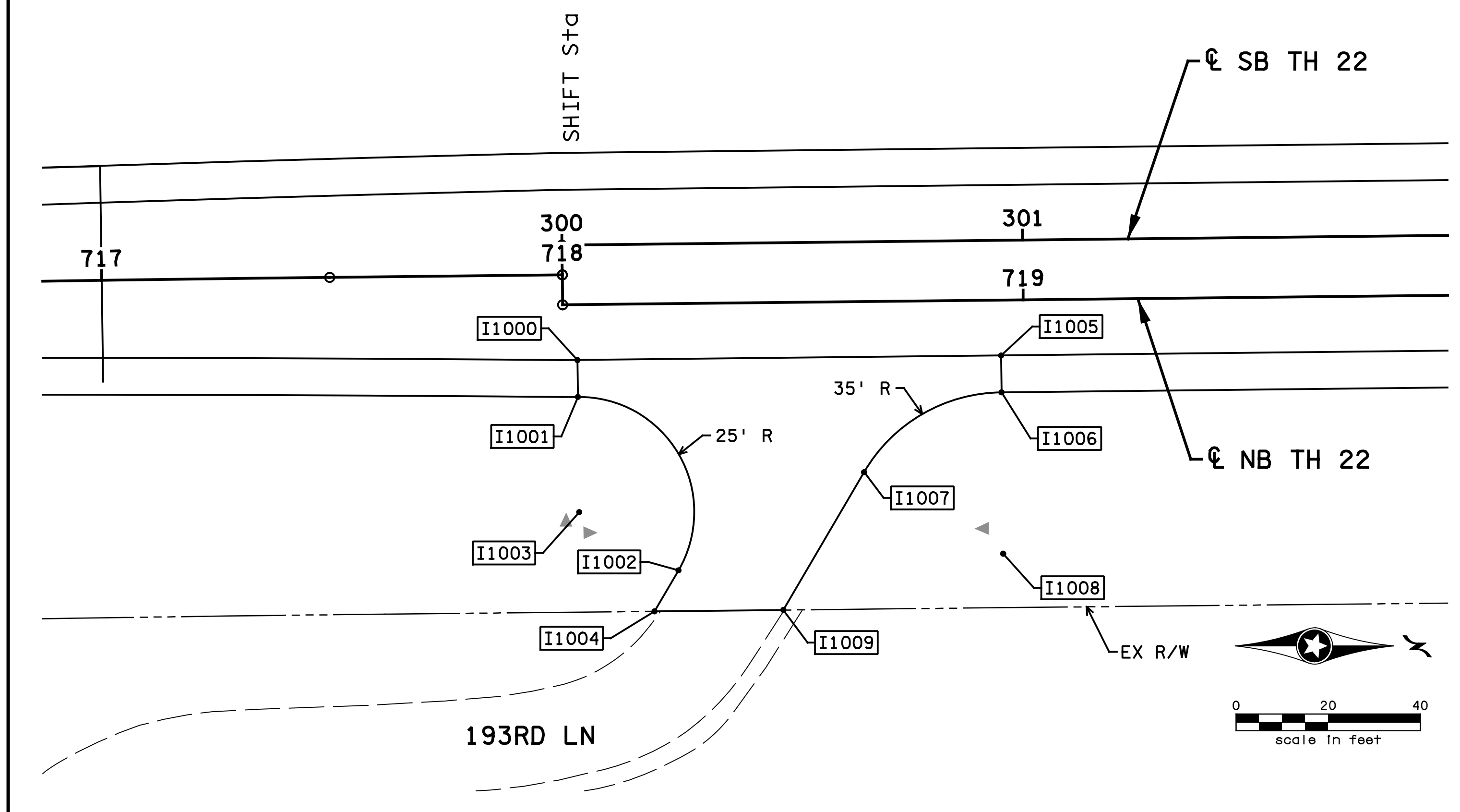

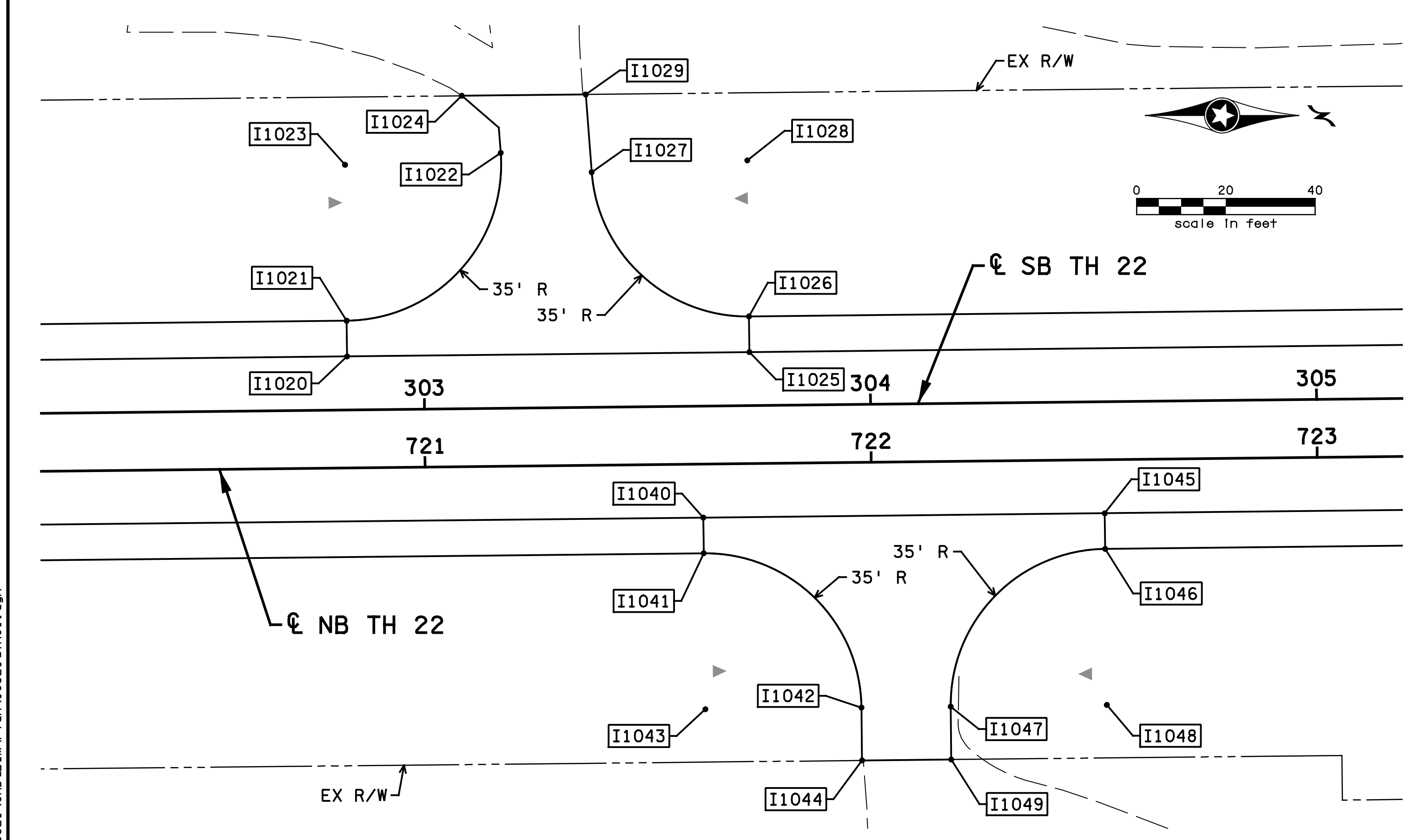

LEGEND

- PROPOSED CATCH BASIN
- DI PROPOSED DROP INLET
- PROPOSED MANHOLE
- PROPOSED APRON

GENERAL NOTES:

DIMENSIONS ARE TO FLOWLINE OF GUTTER, UNLESS NOTED OTHERWISE.

SEE CONSTRUCTION PLANS, DRAINAGE AND SUPERELEVATION PLANS, AND PROFILES FOR INFORMATION NOT SHOWN ON THESE SHEETS.

POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
I1000	580878.185	194237.687	EL. 1001.63	NB TH 22	718+03.10	12.00' RT.
I1001	580886.185	194237.773	EL. 1001.31	NB TH 22	718+03.10	20.00' RT.
I1002	580923.817	194259.616	EL. 998.95	NB TH 22	718+24.54	57.87' RT.
I1003	580911.183	194238.043	25.0' R.	NB TH 22	718+03.10	45.00' RT.
I1004	580932.719	194254.403	EL. 998.49	NB TH 22	718+19.23	66.71' RT.
I1005	580877.192	194329.650	EL. 1001.93	NB TH 22	718+95.07	12.00' RT.
I1006	580885.192	194329.736	EL. 1001.61	NB TH 22	718+95.07	20.00' RT.
I1007	580902.502	194299.912	EL. 1000.33	NB TH 22	718+65.06	36.99' RT.
I1008	580920.189	194330.114	35.0' R.	NB TH 22	718+95.07	55.00' RT.
I1009	580932.427	194282.386	EL. 999.10	NB TH 22	718+47.21	66.72' RT.
I1020	580838.167	194516.949	EL. 1002.55	SB TH 22	302+82.78	12.00' LT.
I1021	580830.168	194516.862	EL. 1002.23	SB TH 22	302+82.78	20.00' LT.
I1022	580792.517	194551.384	EL. 1000.94	SB TH 22	303+17.71	57.28' LT.
I1023	580795.170	194516.484	35.0' R.	SB TH 22	302+82.78	55.00' LT.
I1024	580779.710	194542.664	EL. 1000.34	SB TH 22	303+09.13	70.18' LT.
I1025	580837.193	194607.134	EL. 1002.85	SB TH 22	303+72.97	12.00' LT.
I1026	580829.194	194607.048	EL. 1002.53	SB TH 22	303+72.97	20.00' LT.
I1027	580796.849	194571.771	EL. 1001.61	SB TH 22	303+38.05	52.72' LT.
I1028	580794.196	194606.670	35.0' R.	SB TH 22	303+72.97	55.00' LT.
I1029	580779.420	194570.446	EL. 1001.31	SB TH 22	303+36.91	70.17' LT.
I1040	580874.307	194596.804	EL. 1002.82	NB TH 22	721+62.24	12.00' RT.
I1041	580882.307	194596.890	EL. 1002.50	NB TH 22	721+62.24	20.00' RT.
I1042	580916.927	194632.266	EL. 1001.87	NB TH 22	721+97.24	55.00' RT.
I1043	580917.305	194597.268	35.0' R.	NB TH 22	721+62.24	55.00' RT.
I1044	580928.782	194632.394	EL. 1001.74	NB TH 22	721+97.24	66.86' RT.
I1045	580873.335	194686.798	EL. 1003.11	NB TH 22	722+52.24	12.00' RT.
I1046	580881.335	194686.885	EL. 1002.79	NB TH 22	722+52.24	20.00' RT.
I1047	580916.711	194652.265	EL. 1001.98	NB TH 22	722+17.24	55.00' RT.
I1048	580916.333	194687.263	35.0' R.	NB TH 22	722+52.24	55.00' RT.
I1049	580928.574	194652.393	EL. 1001.80	NB TH 22	722+17.24	66.86' RT.

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAILS
TH 22 & CSAH 90

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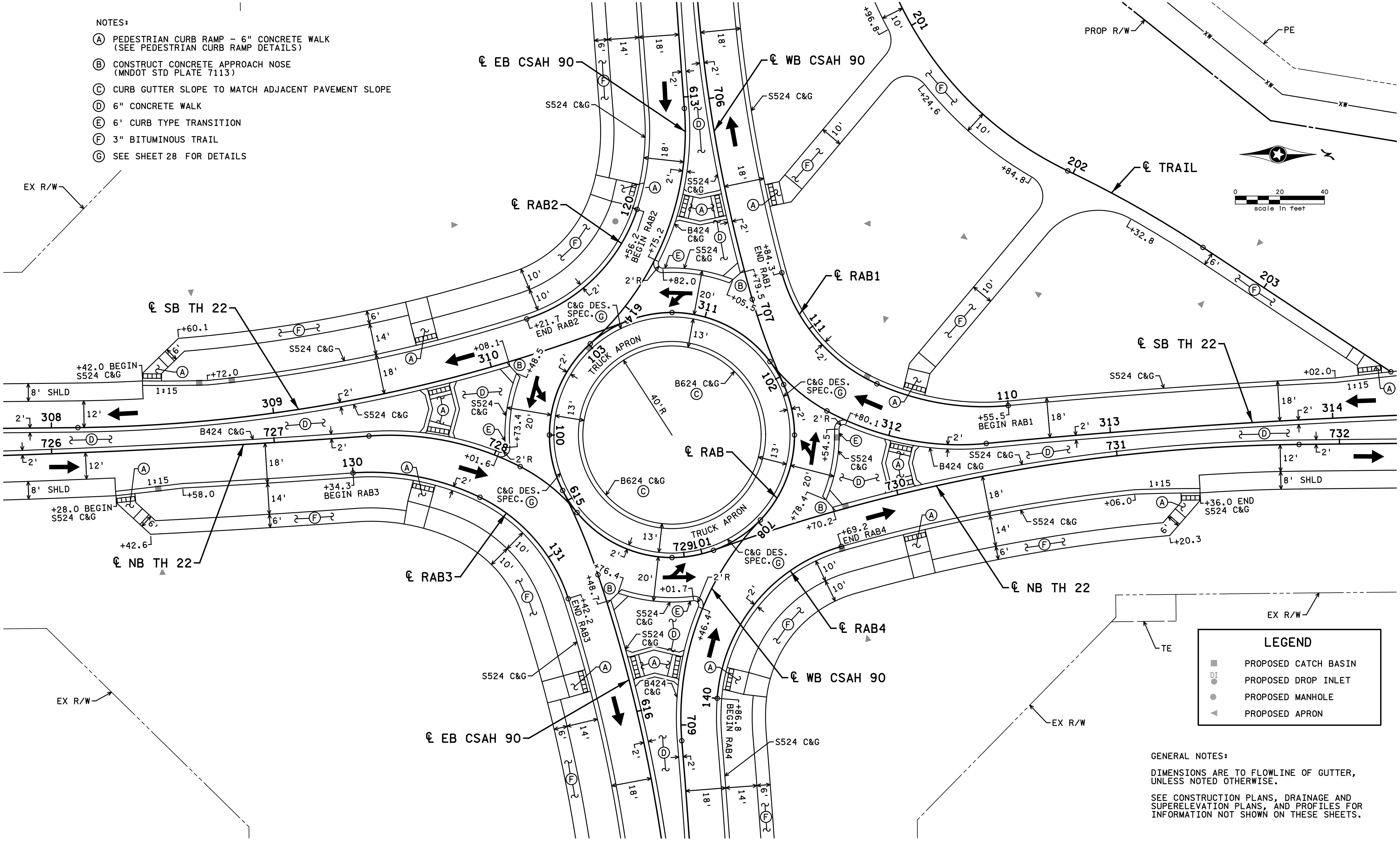
NOTES:

- (A) PEDESTRIAN CURB RAMP - 6" CONCRETE WALK (SEE PEDESTRIAN CURB RAMP DETAILS)
- (B) CONSTRUCT CONCRETE APPROACH NOSE (MNDOT STD PLATE 7113)
- (C) CURB GUTTER SLOPE TO MATCH ADJACENT PAVEMENT SLOPE
- (D) 6" CONCRETE WALK
- (E) 6' CURB TYPE TRANSITION
- (F) 3" BITUMINOUS TRAIL
- (G) SEE SHEET 28 FOR DETAILS



LEGEND

- PROPOSED CATCH BASIN
- DI PROPOSED DROP INLET
- PROPOSED MANHOLE
- PROPOSED APRON

GENERAL NOTES:

DIMENSIONS ARE TO FLOWLINE OF GUTTER, UNLESS NOTED OTHERWISE.

SEE CONSTRUCTION PLANS, DRAINAGE AND SUPERELEVATION PLANS, AND PROFILES FOR INFORMATION NOT SHOWN ON THESE SHEETS.

NO	DATE	BY	CKD	APPR	REVISION

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MINNESOTA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAILS

TH 22 & CSAH 90

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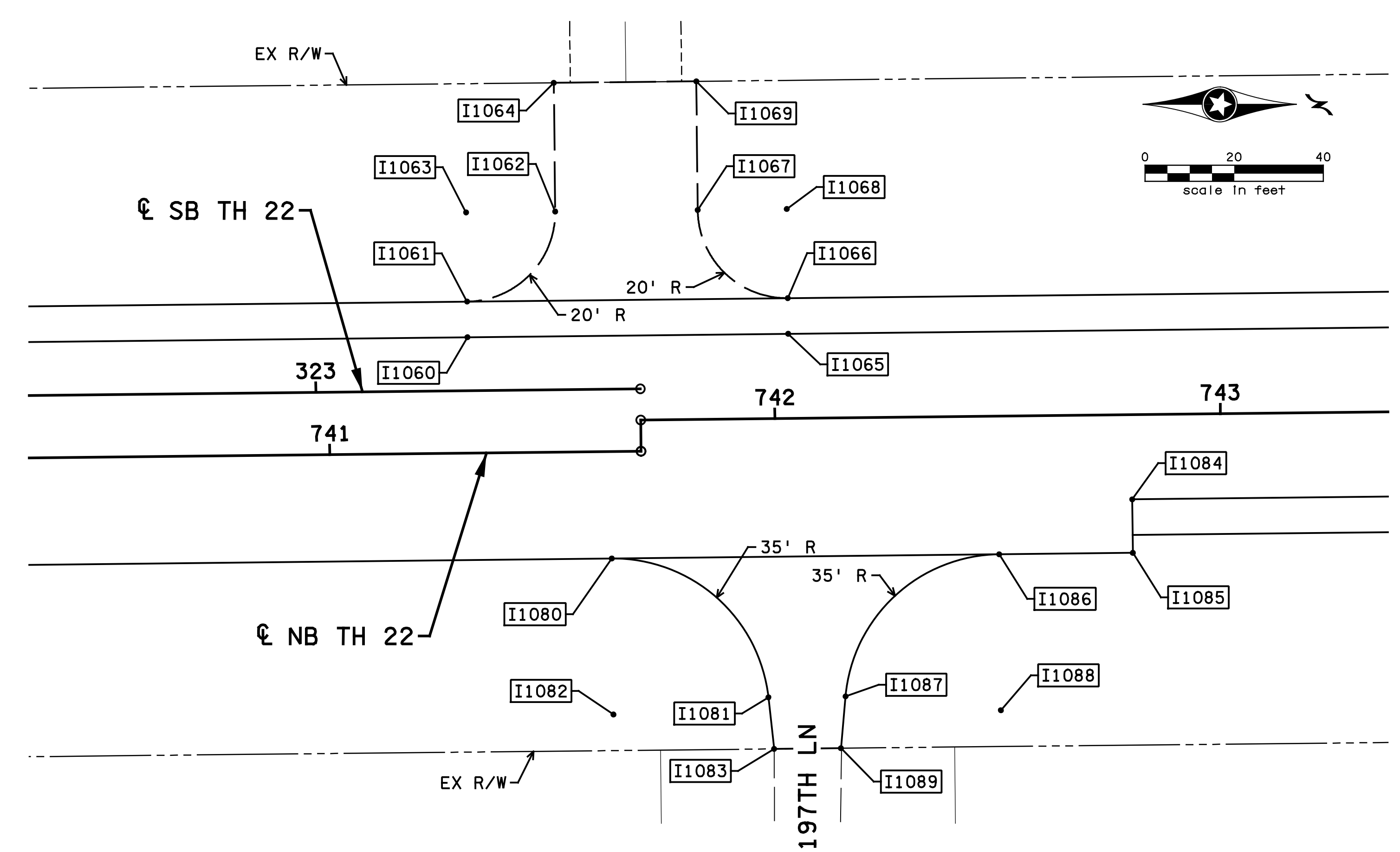

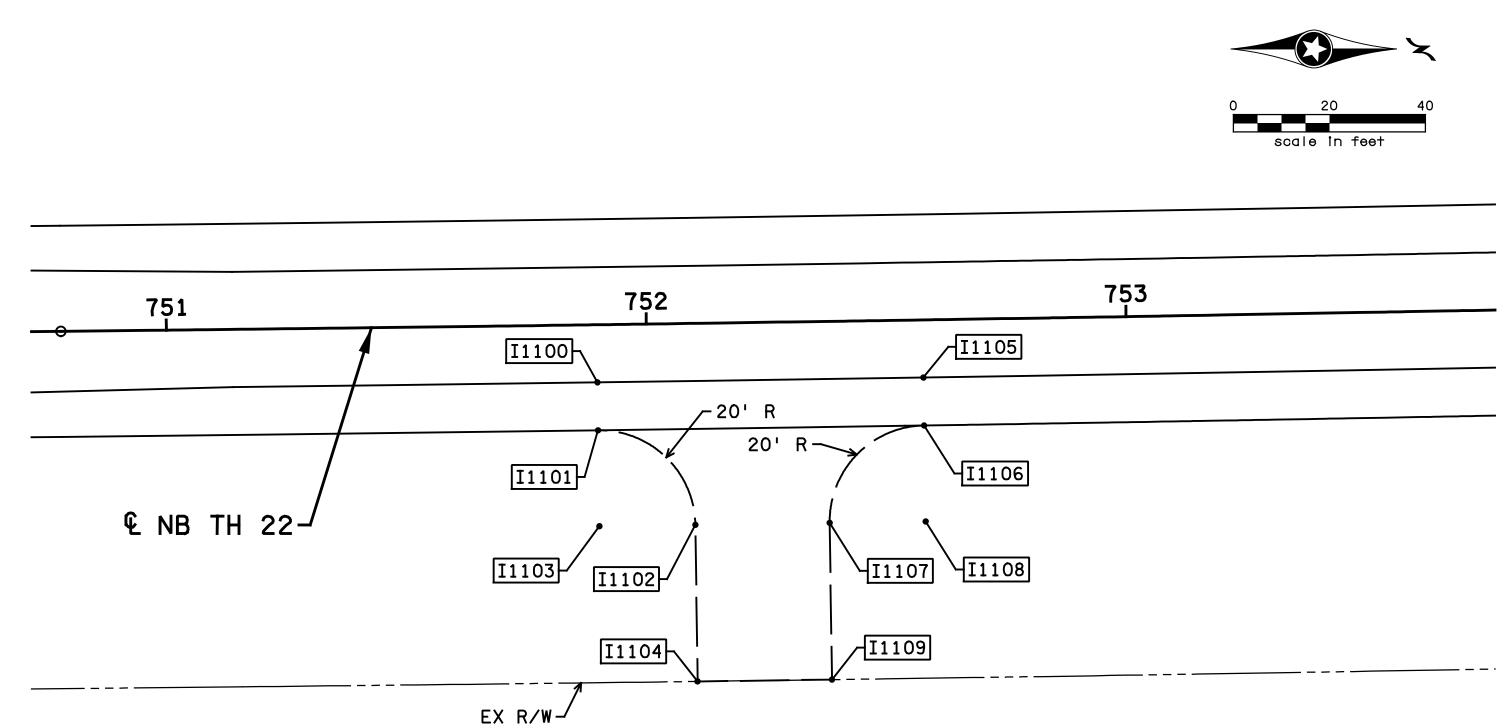

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POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
I1060	580815.788	196543.189	EL. 1008.52	NB TH 22	741+31.18	26.00' LT.
I1061	580807.788	196543.102	EL. 1008.20	NB TH 22	741+31.18	34.00' LT.
I1062	580787.573	196562.885	EL. 1007.09	NB TH 22	741+51.18	54.00' LT.
I1063	580787.789	196542.886	20.0' R.	NB TH 22	741+31.18	54.00' LT.
I1064	580758.682	196562.573	EL. 1006.07	NB TH 22	741+51.18	82.89' LT.
I1065	580815.010	196615.184	EL. 1008.45	NB TH 22	742+03.18	19.00' LT.
I1066	580807.011	196615.098	EL. 1008.13	NB TH 22	742+03.18	27.00' LT.
I1067	580787.228	196594.883	EL. 1006.67	NB TH 22	741+83.18	47.00' LT.
I1068	580787.012	196614.882	20.0' R.	NB TH 22	742+03.18	47.00' LT.
I1069	580758.349	196594.571	EL. 1005.33	NB TH 22	741+83.18	75.88' LT.
I1080	580865.441	196575.586	EL. 1008.24	NB TH 22	741+63.04	24.00' RT.
I1081	580896.594	196610.752	EL. 1006.71	NB TH 22	741+97.87	62.53' RT.
I1082	580900.439	196575.964	35.0' R.	NB TH 22	741+63.04	59.00' RT.
I1083	580908.175	196612.032	EL. 1006.36	NB TH 22	741+99.02	74.13' RT.
I1084	580852.178	196692.425	EL. 1008.37	NB TH 22	742+80.01	19.00' RT.
I1085	580864.178	196692.554	EL. 1008.13	NB TH 22	742+80.01	31.00' RT.
I1086	580864.502	196662.556	EL. 1008.16	NB TH 22	742+50.01	31.00' RT.
I1087	580896.380	196628.073	EL. 1006.87	NB TH 22	742+15.19	62.50' RT.
I1088	580899.500	196662.934	35.0' R.	NB TH 22	742+50.01	66.00' RT.
I1089	580908.019	196627.032	EL. 1006.58	NB TH 22	742+14.02	74.13' RT.
I1100	580835.187	197601.972	EL. 1007.60	NB TH 22	751+89.66	12.00' RT.
I1101	580845.186	197602.110	EL. 1007.20	NB TH 22	751+89.66	22.00' RT.
I1102	580864.895	197622.385	EL. 1006.14	NB TH 22	752+09.63	41.99' RT.
I1103	580865.184	197602.387	20.0' R.	NB TH 22	751+89.66	42.00' RT.
I1104	580897.521	197622.857	EL. 1005.05	NB TH 22	752+09.64	74.62' RT.
I1105	580834.185	197669.909	EL. 1007.53	NB TH 22	752+57.58	12.00' RT.
I1106	580844.184	197670.066	EL. 1007.13	NB TH 22	752+57.58	22.00' RT.
I1107	580864.471	197650.382	EL. 1006.12	NB TH 22	752+37.60	41.98' RT.
I1108	580864.181	197670.380	20.0' R.	NB TH 22	752+57.58	42.00' RT.
I1109	580897.142	197650.855	EL. 1005.07	NB TH 22	752+37.58	74.66' RT.

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NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

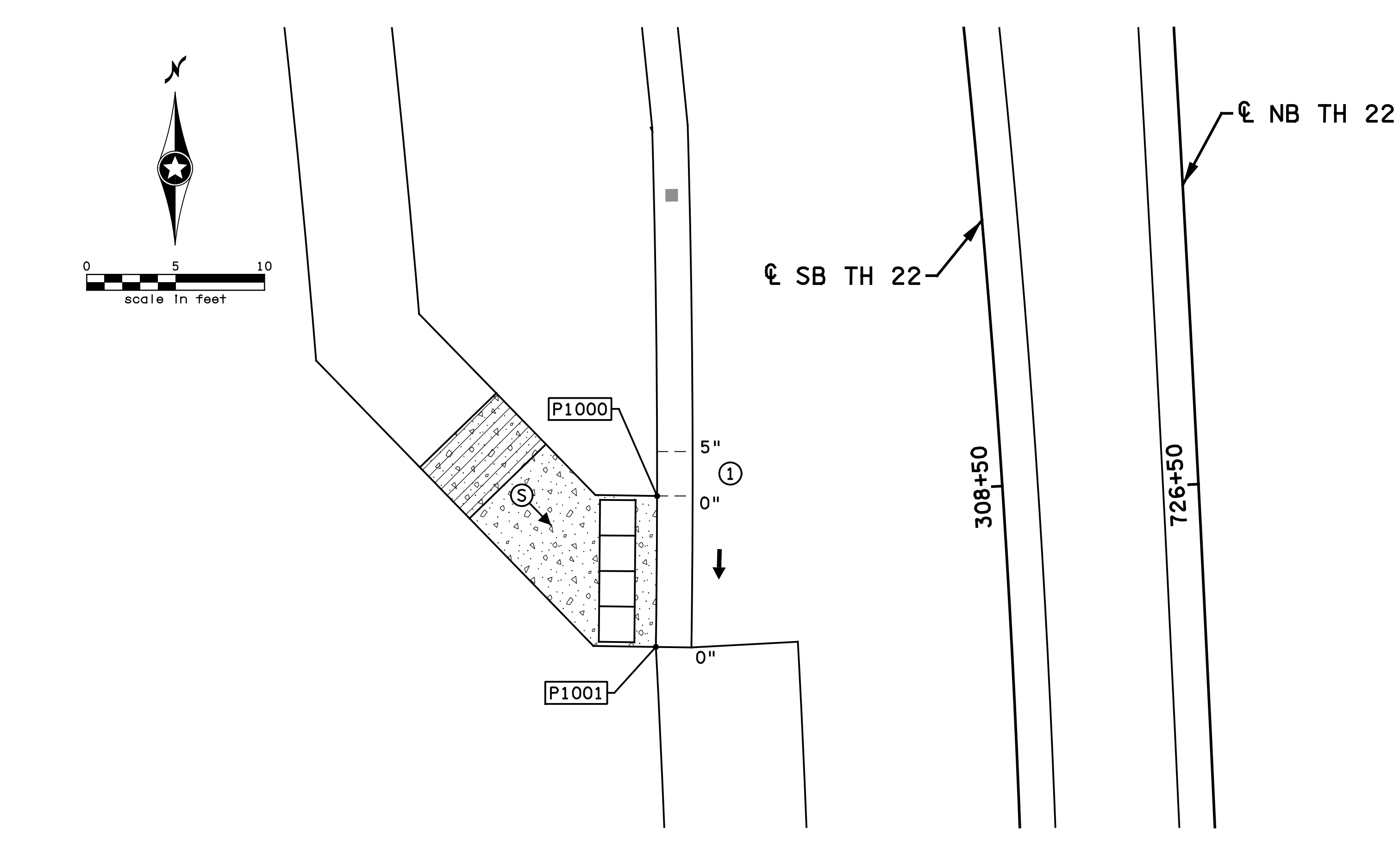
STATE PROJECT NO. 007-070-005

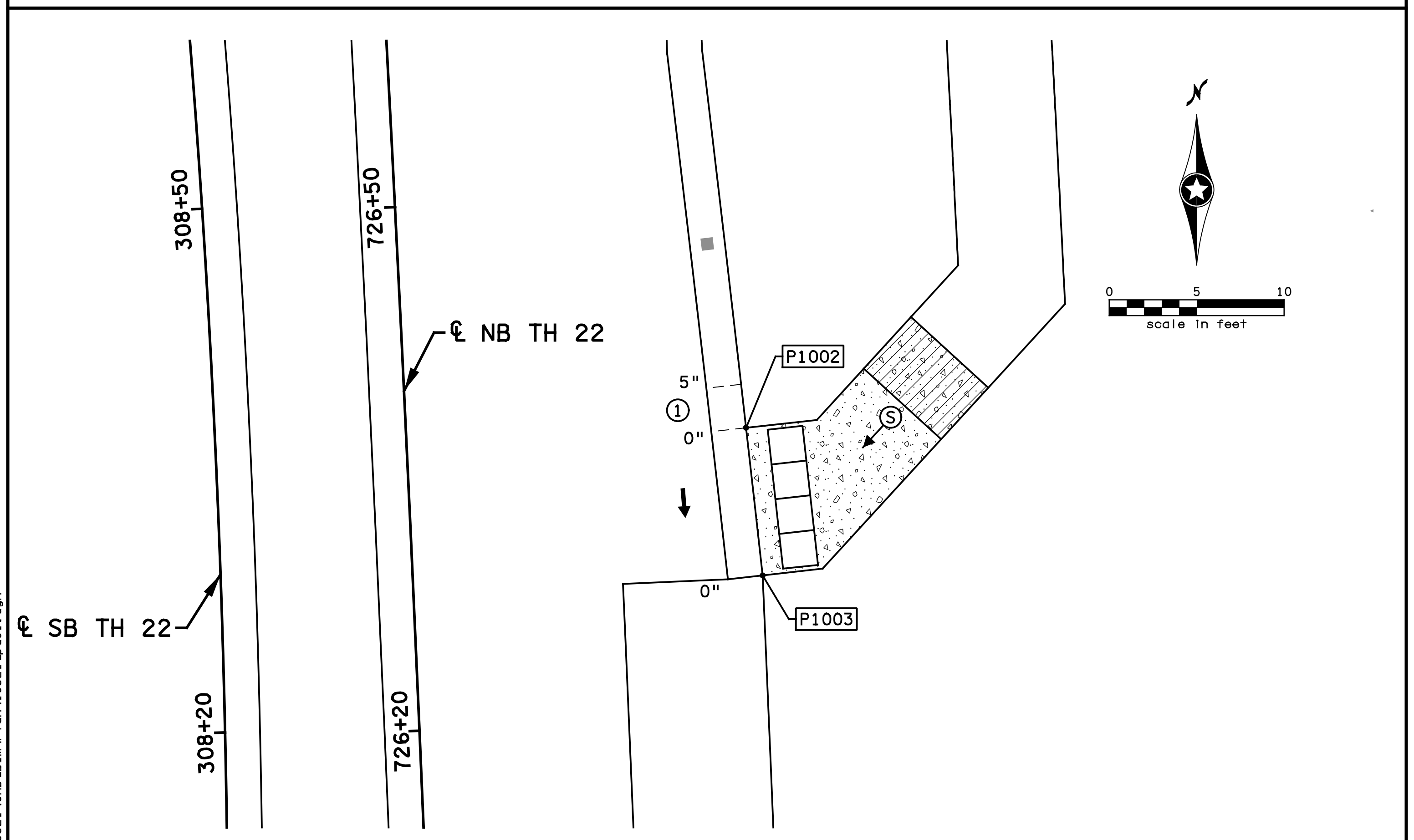
DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAILS
TH 22 & CSAH 90





LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PXXXX — CONTROL POINTS AT GUTTER FLOW LINE UNLESS NOTED OTHERWISE - SEE TABULATION LOCATED ON EACH SHEET
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- X" — CURB HEIGHT
- CONSTRUCT CONCRETE CURB & GUTTER
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- S — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- F — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- DRAINAGE FLOW ARROW
- 6" CONCRETE WALK

GENERAL NOTES:
OFFSETS, ELEVATIONS, AND RADIUS LENGTHS ARE TO FLOWLINE OF GUTTER, UNLESS NOTED OTHERWISE AND DO NOT INCLUDE DRAINAGE STRUCTURE SUMPS.

SEE CONSTRUCTION PLANS, DRAINAGE & SUPERELEVATION PLANS, AND INTERSECTION DETAILS FOR INFORMATION NOT SHOWN ON THIS SHEET.

NOTES:
1 CURB HEIGHT TAPER SECTION, ADJUST GUTTER SLOPE TO 2% SLOPING INWARD TOWARDS FACE OF CURB

POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
P1000	580823.579	195083.670	EL. 1004.29	SB TH 22	308+50.73	19.42' LT.
P1001	580823.508	195075.170	EL. 1004.24	SB TH 22	308+42.00	20.00' LT.
P1002	580874.117	195071.697	EL. 1004.31	NB TH 22	726+36.44	19.44' RT.
P1003	580875.067	195063.250	EL. 1004.27	NB TH 22	726+28.00	20.00' RT.

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY
Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION
PEDESTRIAN CURB RAMP DETAILS
TH 22 & CSAH 90

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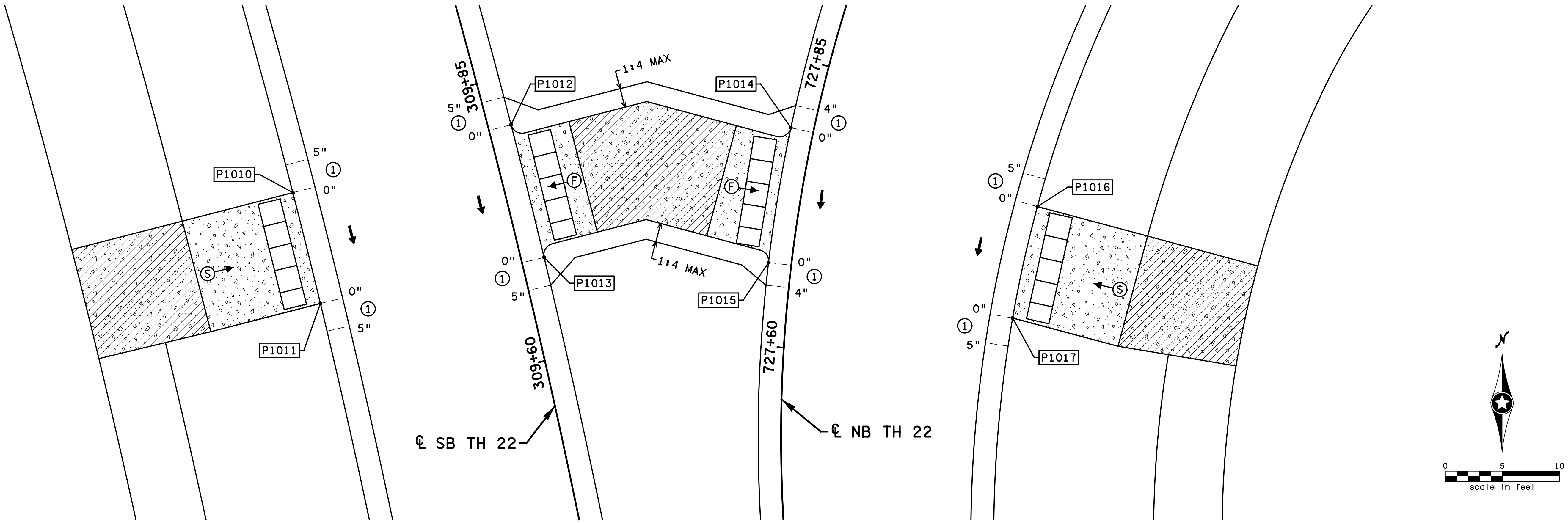

POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
P1010	580805.133	195207.716	EL. 1004.80	SB TH 22	309+79.77	18.00' LT.
P1011	580807.548	195198.012	EL. 1004.76	SB TH 22	309+69.50	18.00' LT.
P1012	580824.251	195213.673	EL. 1005.13	SB TH 22	309+80.78	2.00' RT.
P1013	580827.149	195202.045	EL. 1005.08	SB TH 22	309+68.83	2.00' RT.
P1014	580848.756	195213.403	EL. 1005.26	NB TH 22	727+79.04	2.00' LT.
P1015	580846.804	195201.597	EL. 1005.21	NB TH 22	727+67.26	2.00' LT.
P1016	580870.362	195206.506	EL. 1004.88	NB TH 22	727+76.37	20.55' RT.
P1017	580868.186	195196.736	EL. 1004.84	NB TH 22	727+64.52	19.78' RT.

LEGEND

PROPOSED CATCH BASIN

PROPOSED MANHOLE

PXXXX — CONTROL POINTS AT GUTTER FLOW LINE UNLESS NOTED OTHERWISE - SEE TABULATION LOCATED ON EACH SHEET

TRUNCATED DOMES (SEE STANDARD PLATE 7038)

X" — CURB HEIGHT

CONSTRUCT CONCRETE CURB & GUTTER

LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS

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

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

DRAINAGE FLOW ARROW

6" CONCRETE WALK

GENERAL NOTES:
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SEE CONSTRUCTION PLANS, DRAINAGE & SUPERELEVATION PLANS, AND INTERSECTION DETAILS FOR INFORMATION NOT SHOWN ON THIS SHEET.

NOTES:
1 CURB HEIGHT TAPER SECTION, ADJUST GUTTER SLOPE TO 2% SLOPING INWARD TOWARDS FACE OF CURB

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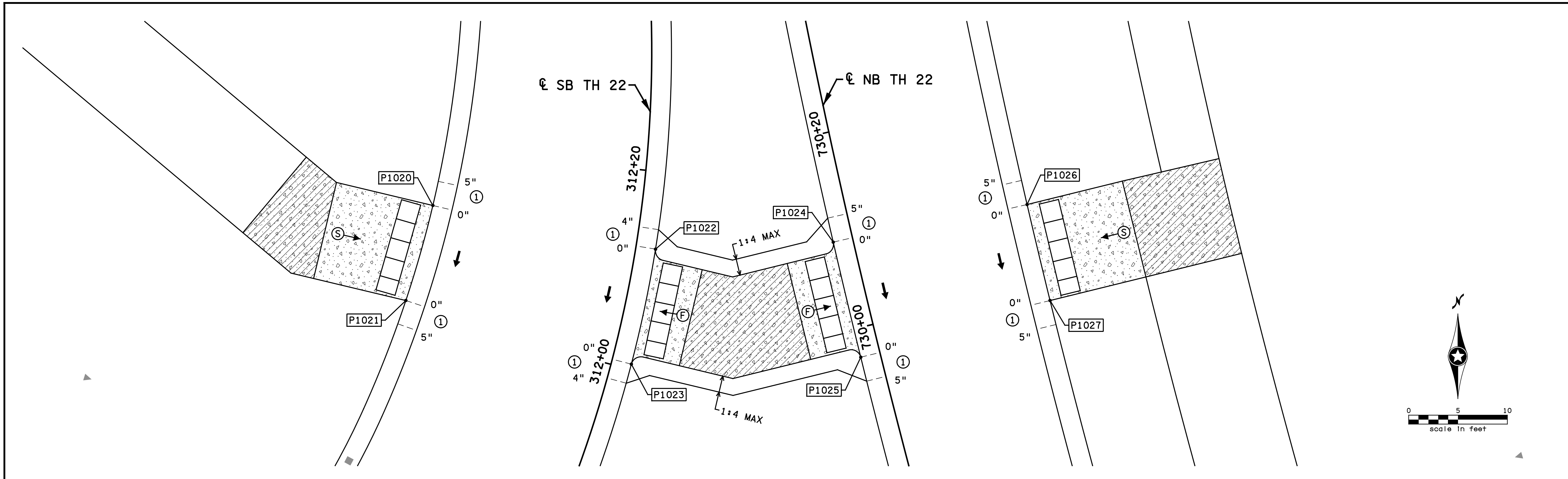
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN CURB RAMP DETAILS
TH 22 & CSAH 90



POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
P1020	580829.990	195426.201	EL. 1005.46	SB TH 22	312+13.19	20.99' LT.
P1021	580827.256	195416.572	EL. 1005.41	SB TH 22	312+01.13	21.74' LT.
P1022	580852.565	195421.770	EL. 1005.84	SB TH 22	312+12.26	2.00' RT.
P1023	580850.111	195410.116	EL. 1005.80	SB TH 22	312+00.54	2.00' RT.
P1024	580870.578	195422.480	EL. 1005.94	NB TH 22	730+09.03	2.00' LT.
P1025	580873.367	195410.824	EL. 1005.90	NB TH 22	729+97.07	2.00' LT.
P1026	580890.224	195426.295	EL. 1005.62	NB TH 22	730+08.30	18.00' RT.
P1027	580892.550	195416.569	EL. 1005.56	NB TH 22	729+98.07	18.00' RT.

LEGEND

■	PROPOSED CATCH BASIN
●	PROPOSED MANHOLE
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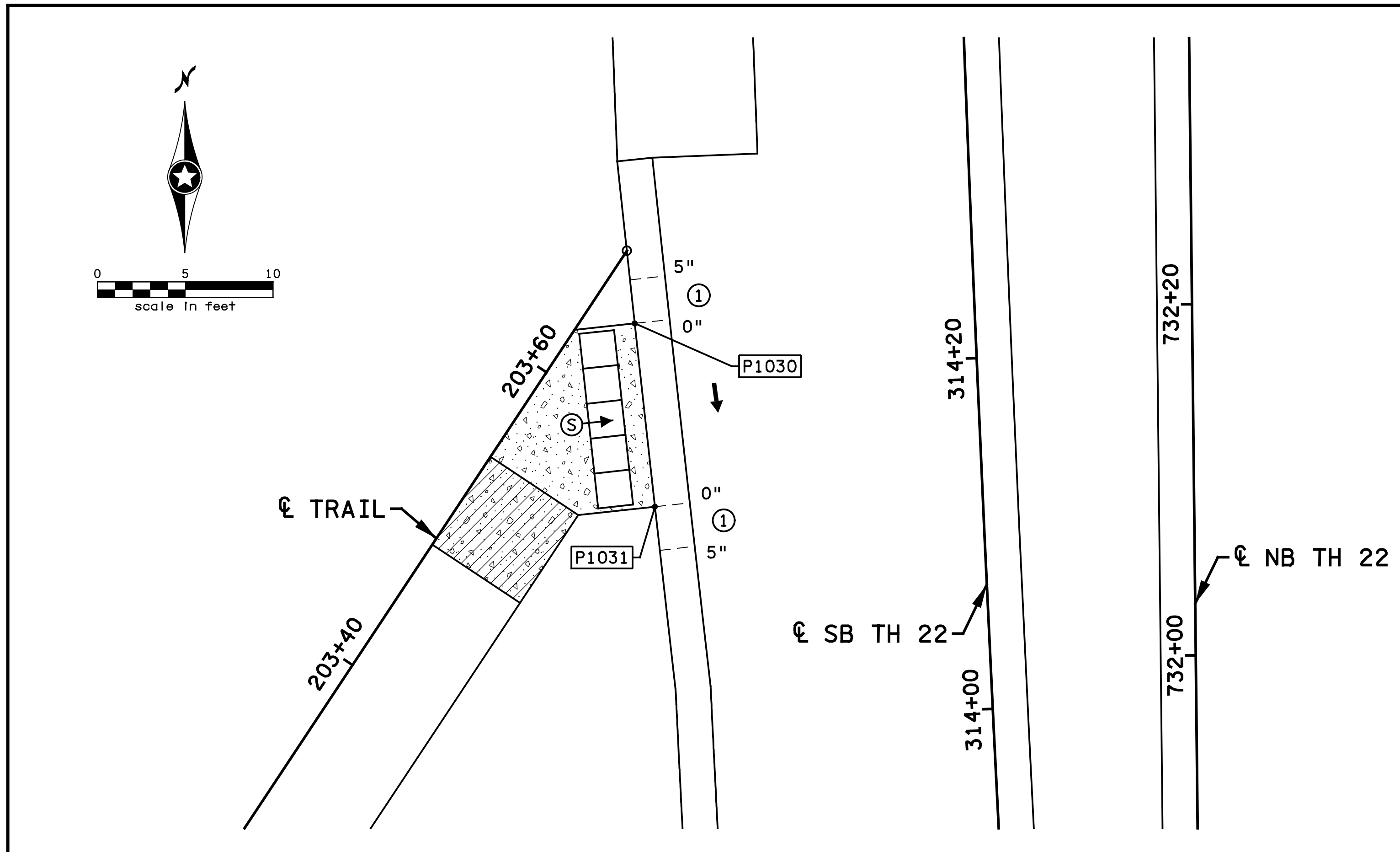
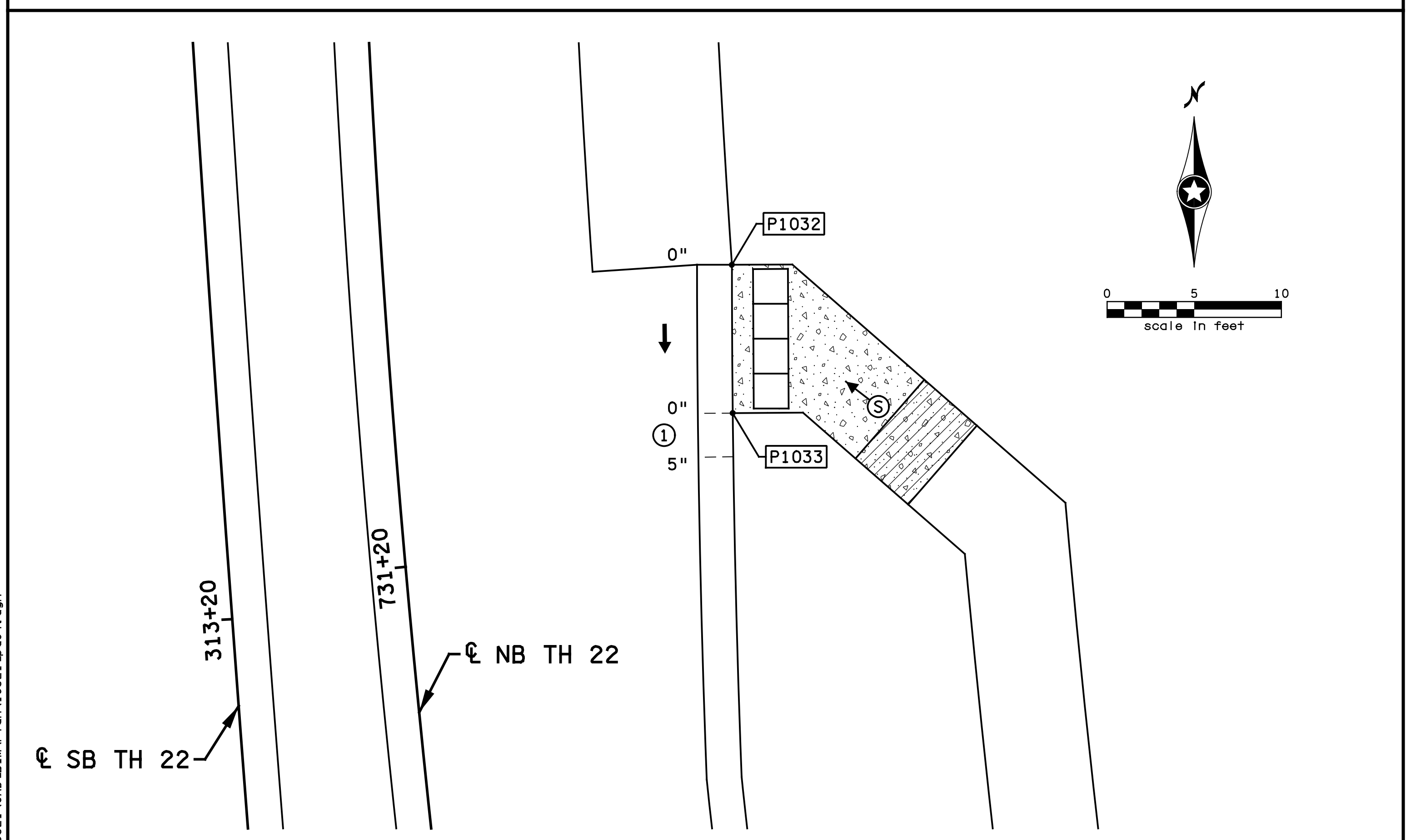
PEDESTRIAN CURB RAMP DETAILS
TH 22 & CSAH 90





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POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
P1030	580819.863	195631.247	EL. 1006.25	SB TH 22	314+22.79	19.39' LT.
P1031	580821.014	195620.810	EL. 1006.23	SB TH 22	314+12.37	18.69' LT.
P1032	580873.801	195549.751	EL. 1006.03	NB TH 22	731+36.00	20.00' RT.
P1033	580873.847	195541.252	EL. 1006.01	NB TH 22	731+27.30	19.42' RT.

NO	DATE	BY	CKD	APPR	REVISION

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STATE PROJECT NO. 007-070-005

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COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION
PEDESTRIAN CURB RAMP DETAILS
TH 22 & CSAH 90

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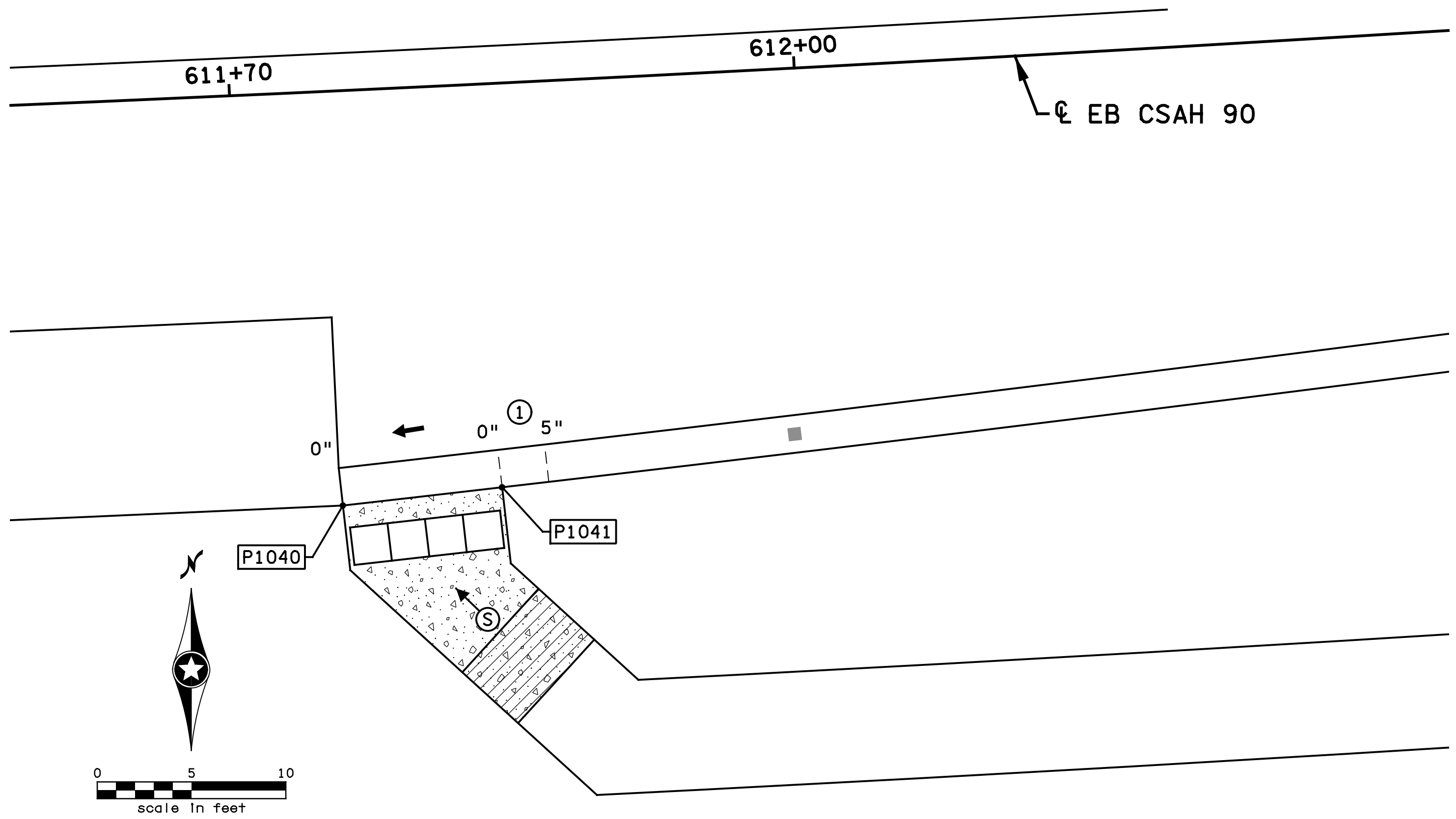

LEGEND

- ■ PROPOSED CATCH BASIN
- ● PROPOSED MANHOLE
- PXXXX — CONTROL POINTS AT GUTTER FLOW LINE UNLESS NOTED OTHERWISE - SEE TABULATION LOCATED ON EACH SHEET
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- → DRAINAGE FLOW ARROW
- 6" CONCRETE WALK

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POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
P1040	580572.334	195288.117	EL. 1004.13	EB CSAH 90	611+75.00	22.00' RT.
P1041	580580.779	195289.082	EL. 1004.17	EB CSAH 90	611+83.43	21.44' RT.

NO	DATE	BY	CKD	APPR	REVISION

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PEDESTRIAN CURB RAMP DETAILS

TH 22 & CSAH 90

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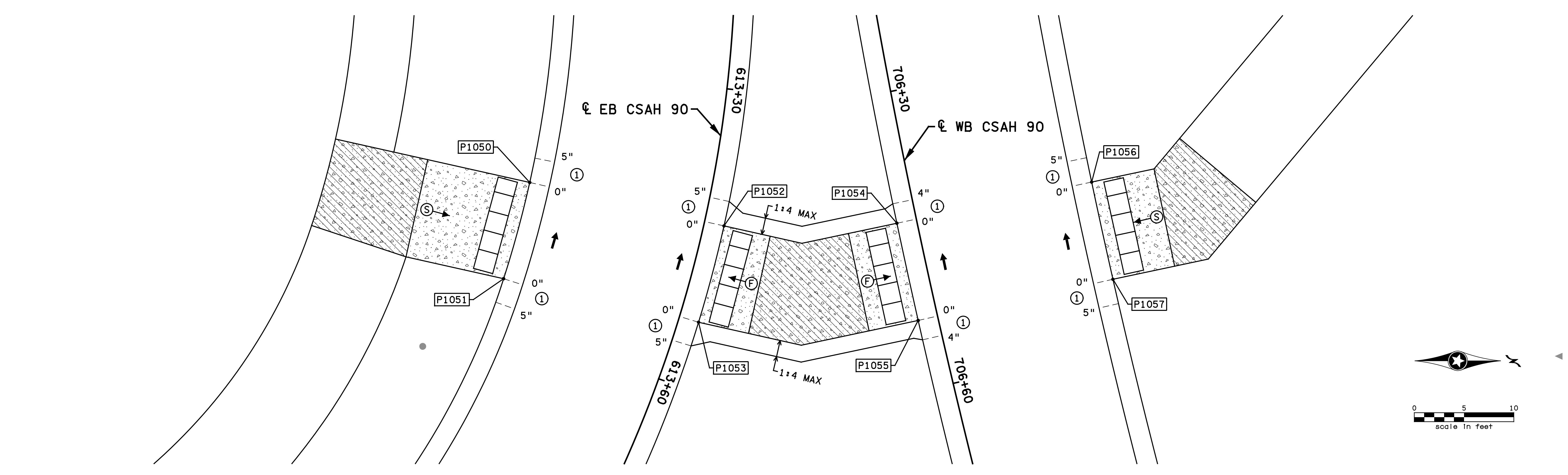

POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
P1050	580735.413	195298.112	EL. 1004.85	EB CSAH 90	613+43.53	18.00' RT.
P1051	580745.073	195295.486	EL. 1004.90	EB CSAH 90	613+55.18	18.00' RT.
P1052	580739.774	195317.630	EL. 1005.17	EB CSAH 90	613+43.53	2.00' LT.
P1053	580749.449	195315.074	EL. 1005.21	EB CSAH 90	613+53.39	2.00' LT.
P1054	580739.504	195334.999	EL. 1005.28	WB CSAH 90	706+43.09	2.00' RT.
P1055	580749.273	195337.138	EL. 1005.32	WB CSAH 90	706+53.06	2.00' RT.
P1056	580735.367	195354.566	EL. 1004.96	WB CSAH 90	706+43.09	18.00' LT.
P1057	580745.135	195356.707	EL. 1005.00	WB CSAH 90	706+53.35	18.00' LT.

LEGEND

- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- PXXXX — CONTROL POINTS AT GUTTER FLOW LINE UNLESS NOTED OTHERWISE - SEE TABULATION LOCATED ON EACH SHEET
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- X" — CURB HEIGHT
- CONSTRUCT CONCRETE CURB & GUTTER
- LANDING AREA - 4' X 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- S — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- F — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- DRAINAGE FLOW ARROW
- 6" CONCRETE WALK

GENERAL NOTES:
OFFSETS, ELEVATIONS, AND RADIUS LENGTHS ARE TO FLOWLINE OF GUTTER, UNLESS NOTED OTHERWISE AND DO NOT INCLUDE DRAINAGE STRUCTURE SUMPS.

SEE CONSTRUCTION PLANS, DRAINAGE & SUPERELEVATION PLANS, AND INTERSECTION DETAILS FOR INFORMATION NOT SHOWN ON THIS SHEET.

NOTES:
1 CURB HEIGHT TAPER SECTION, ADJUST GUTTER SLOPE TO 2% SLOPING INWARD TOWARDS FACE OF CURB

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: AMBER E. TRACY
Date ____ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION
PEDESTRIAN CURB RAMP DETAILS
TH 22 & CSAH 90

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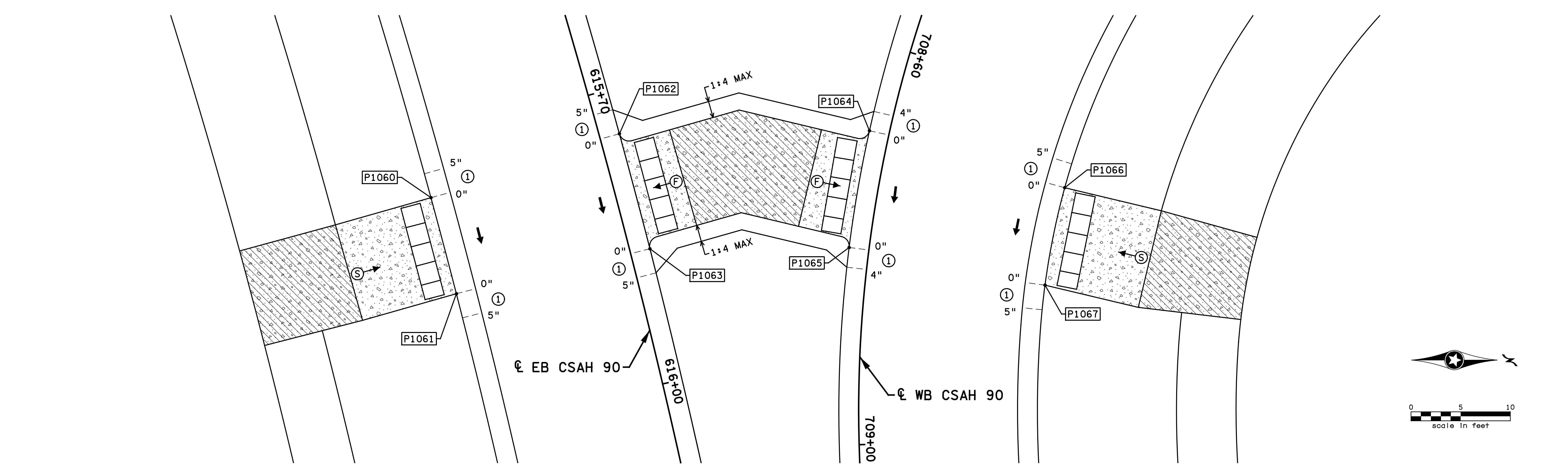

POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
P1060	580953.166	195273.684	EL. 1005.03	EB CSAH 90	615+75.77	18.00' RT.
P1061	580962.834	195276.244	EL. 1004.97	EB CSAH 90	615+86.04	18.00' RT.
P1062	580946.725	195292.655	EL. 1005.36	EB CSAH 90	615+74.55	2.00' LT.
P1063	580958.309	195295.727	EL. 1005.29	EB CSAH 90	615+86.50	2.00' LT.
P1064	580946.426	195317.842	EL. 1005.50	WB CSAH 90	708+68.60	2.00' RT.
P1065	580958.180	195315.796	EL. 1005.43	WB CSAH 90	708+80.35	2.00' RT.
P1066	580952.159	195337.506	EL. 1005.17	WB CSAH 90	708+70.17	18.43' LT.
P1067	580961.966	195335.522	EL. 1005.10	WB CSAH 90	708+81.83	18.04' LT.

LEGEND

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- 6" CONCRETE WALK

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NOTES:

1. CURB HEIGHT TAPER SECTION, ADJUST GUTTER SLOPE TO 2% SLOPING INWARD TOWARDS FACE OF CURB

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STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

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DESIGNED BY P. ENGELMEYER
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COMM. NO. 01710321

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PEDESTRIAN CURB RAMP DETAILS
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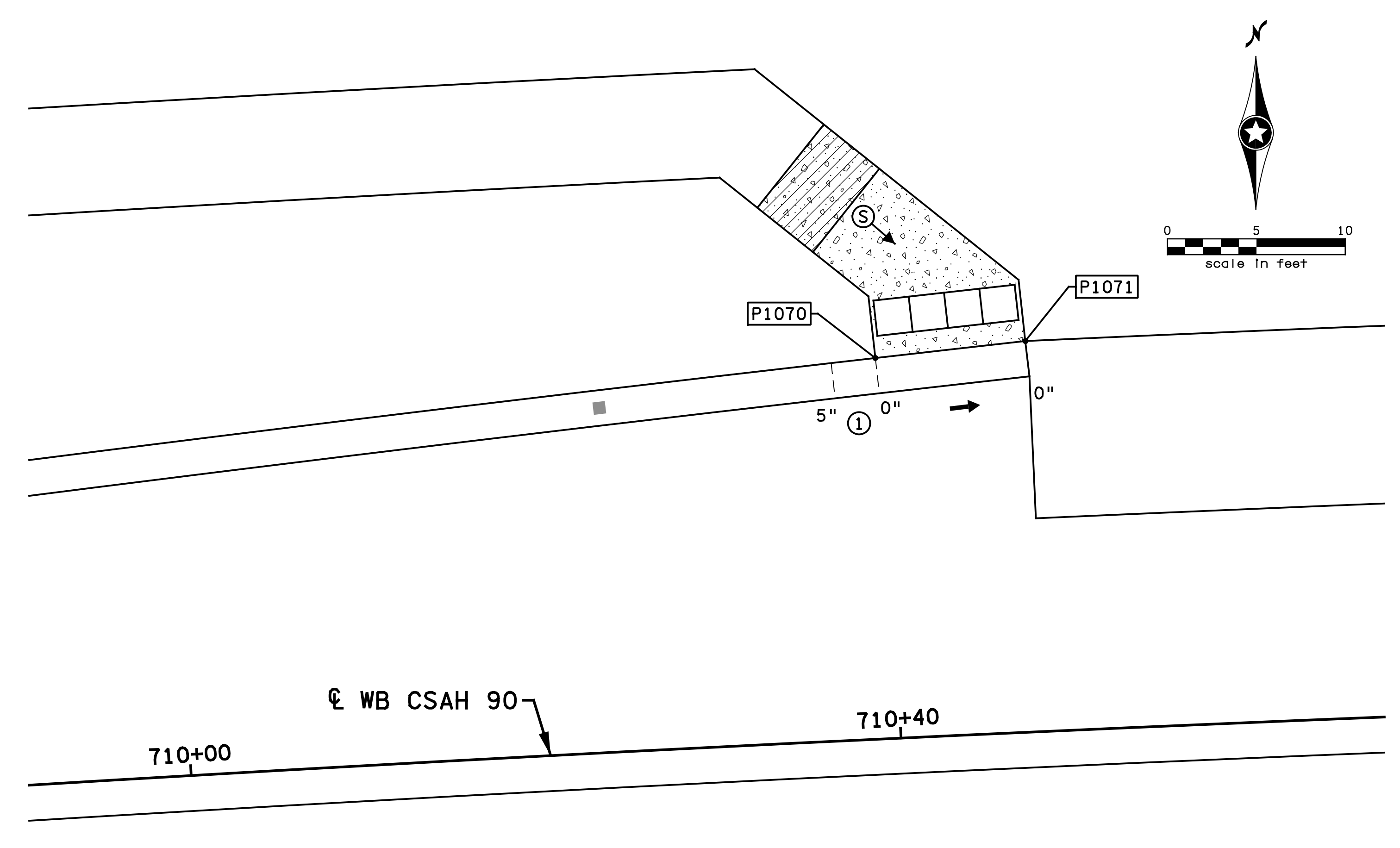

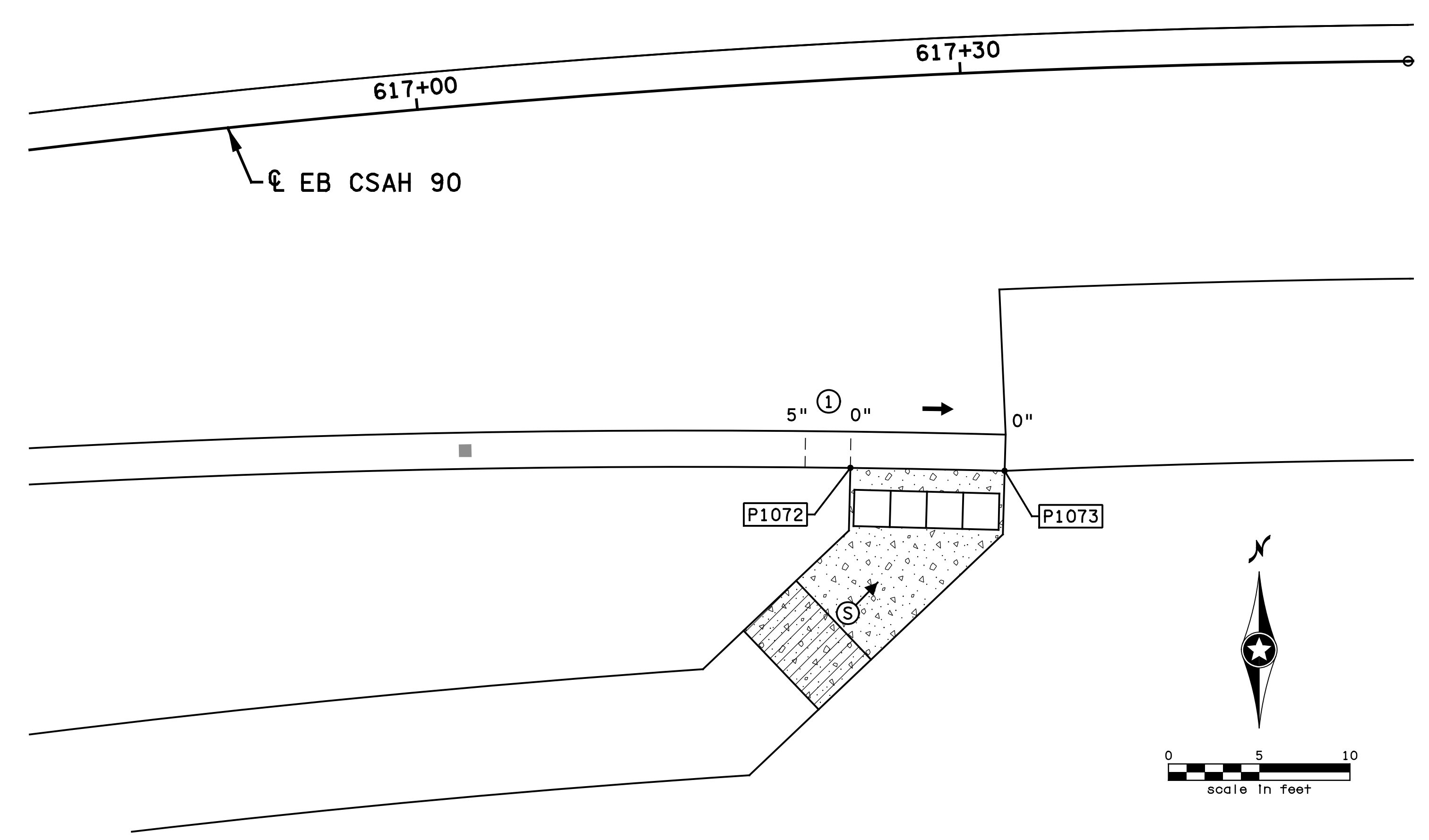

LEGEND

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- PROPOSED MANHOLE
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SEE CONSTRUCTION PLANS, DRAINAGE & SUPERELEVATION PLANS, AND INTERSECTION DETAILS FOR INFORMATION NOT SHOWN ON THIS SHEET.

NOTES:

1. CURB HEIGHT TAPER SECTION, ADJUST GUTTER SLOPE TO 2% SLOPING INWARD TOWARDS FACE OF CURB

POINT NO.	X COORD.	Y COORD.	ELEV. OR RADIUS	ALIGNMENT	STATION	OFFSET
P1070	581116.287	195347.184	EL. 1003.99	WB CSAH 90	710+39.57	21.44' LT.
P1071	581124.733	195348.139	EL. 1003.92	WB CSAH 90	710+48.00	22.00' LT.
P1072	581094.434	195293.152	EL. 1004.12	EB CSAH 90	617+22.75	21.42' RT.
P1073	581102.932	195292.987	EL. 1004.06	EB CSAH 90	617+31.50	22.00' RT.

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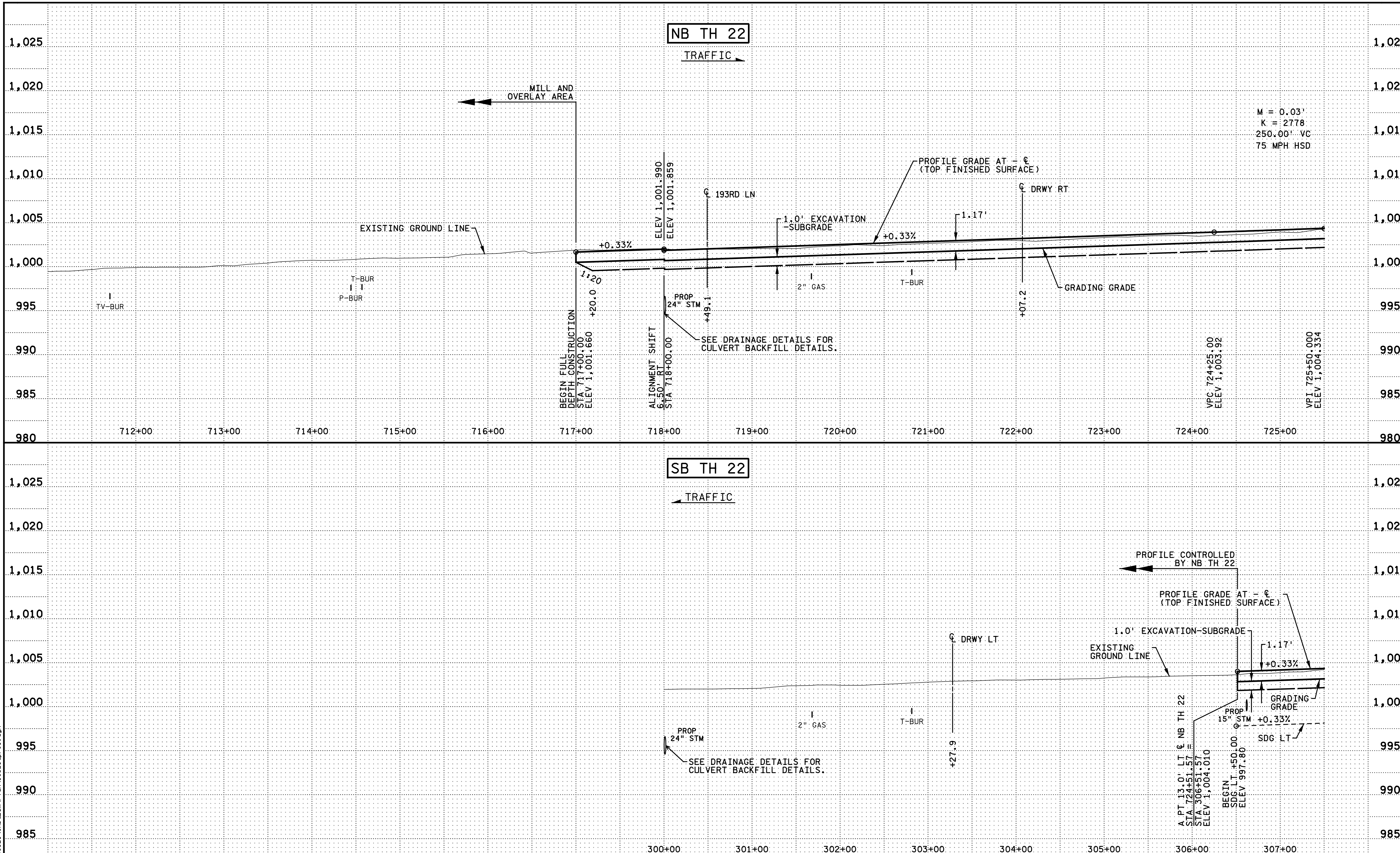
MINNESOTA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN CURB RAMP DETAILS

TH 22 & CSAH 90



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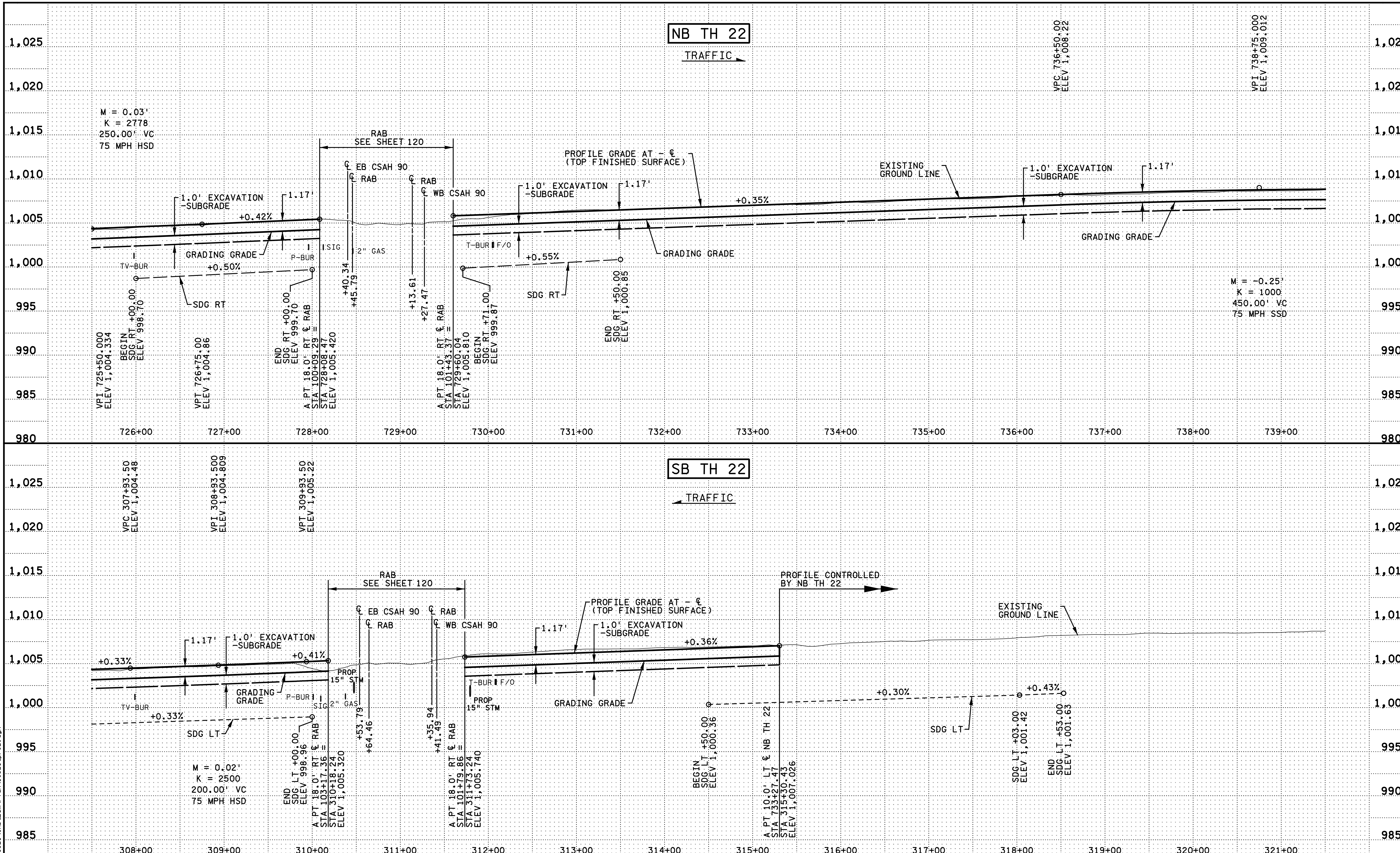

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STATE PROJECT NO. 007-070-005

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PROFILES
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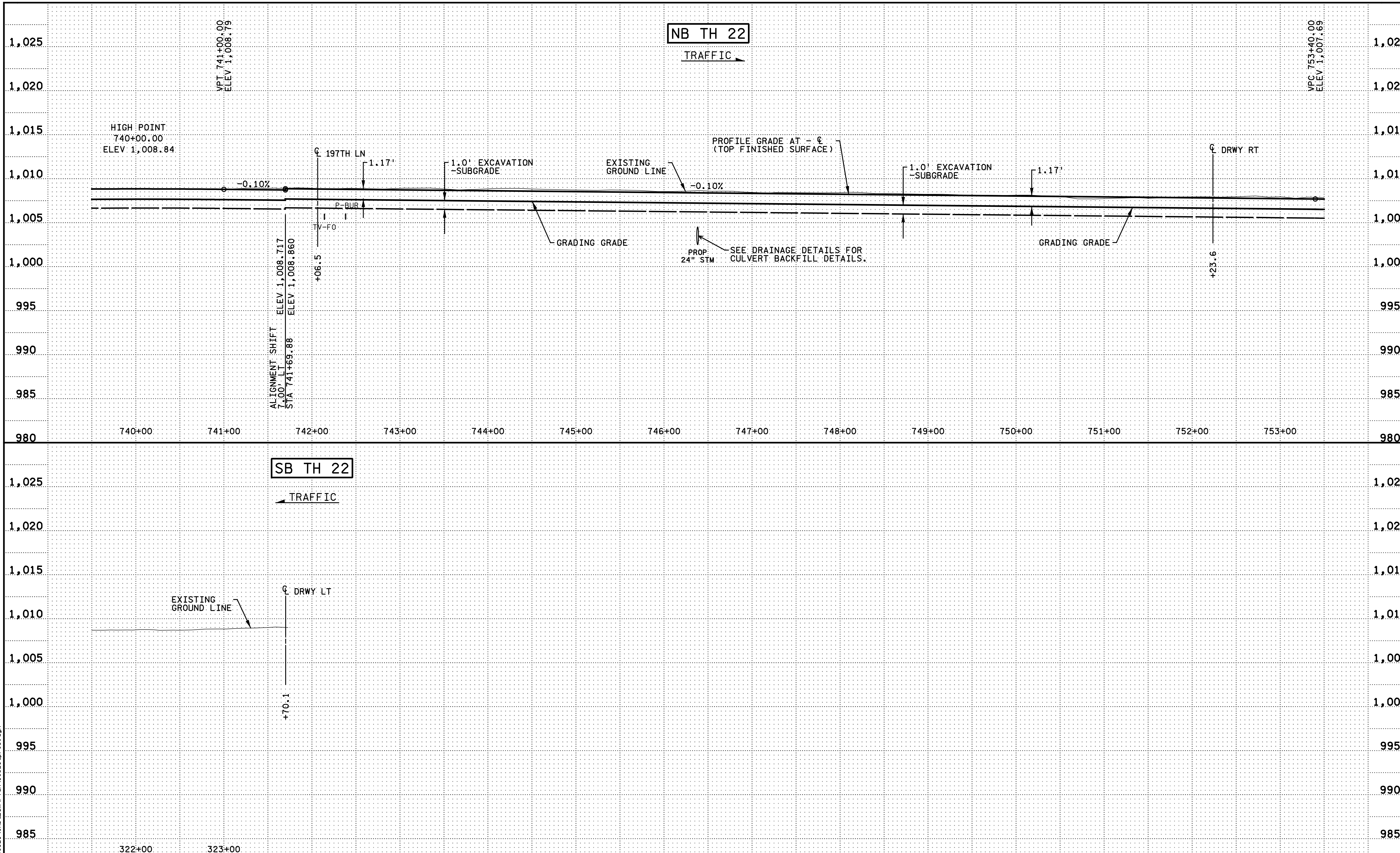
SHEET 116 OF 255



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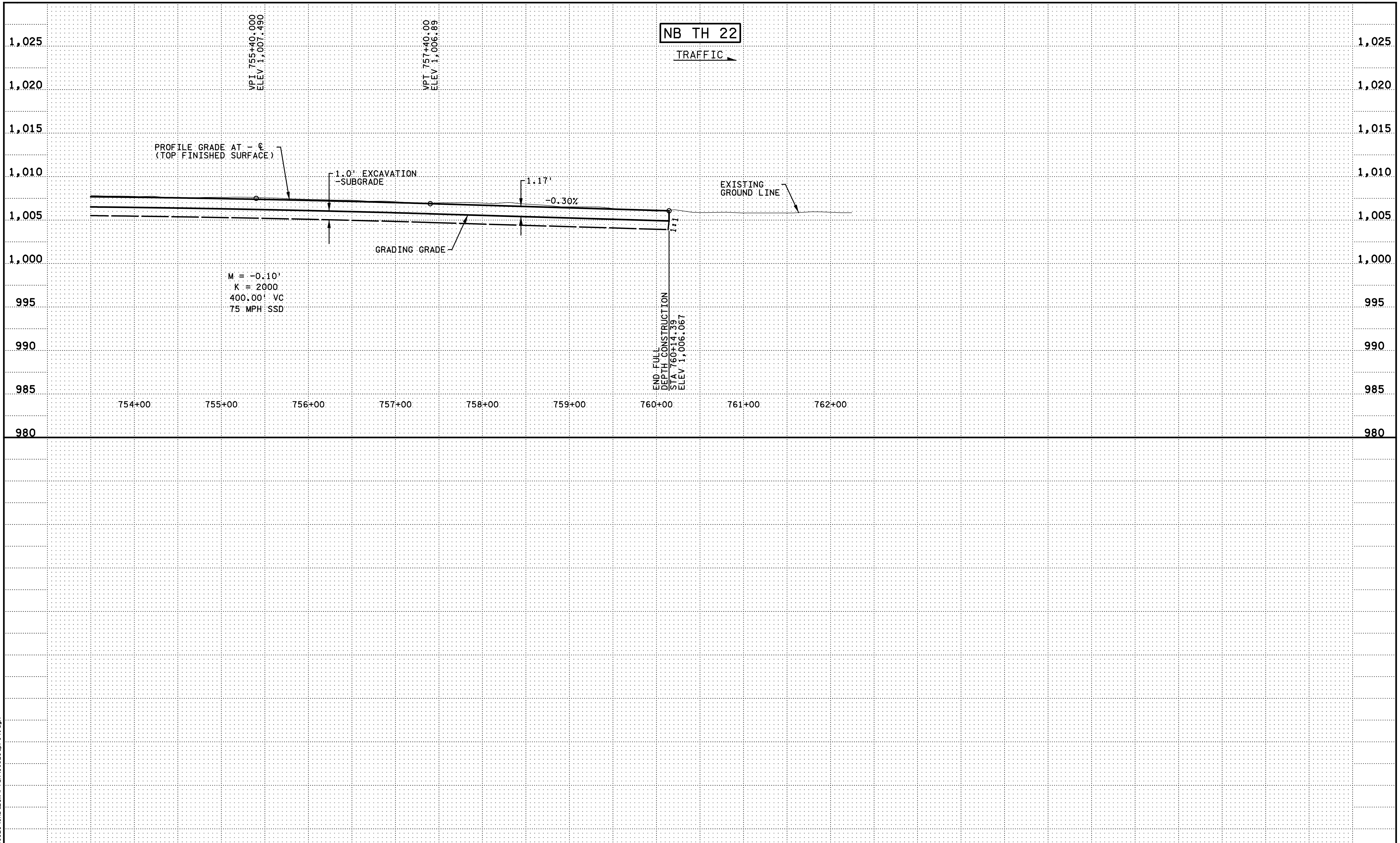

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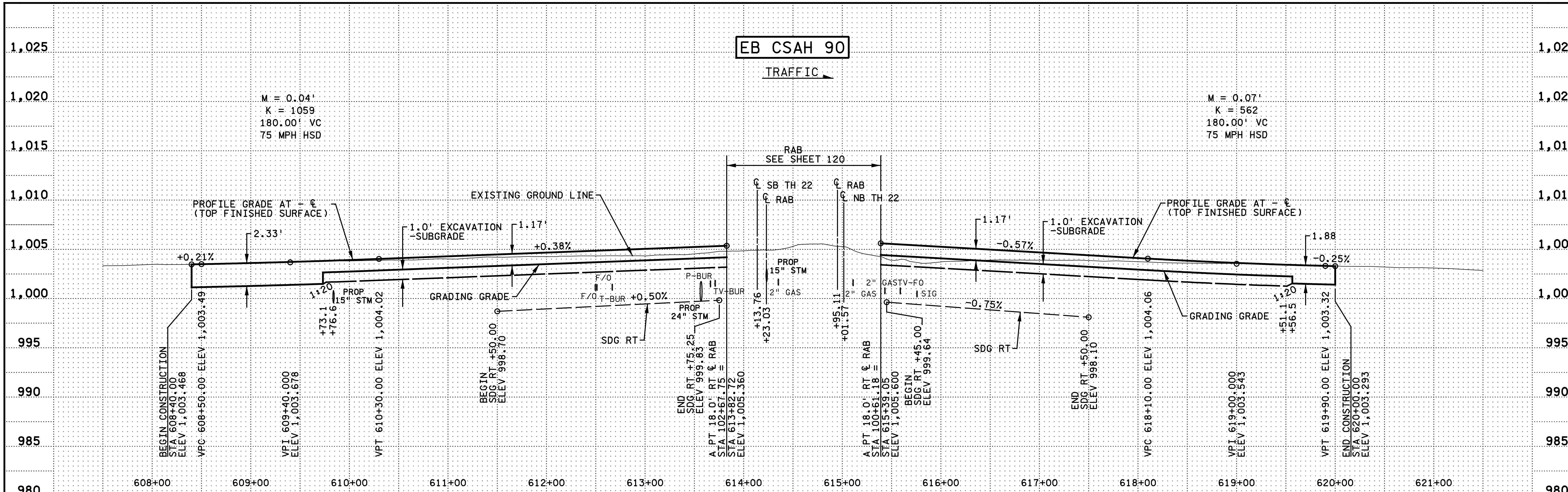

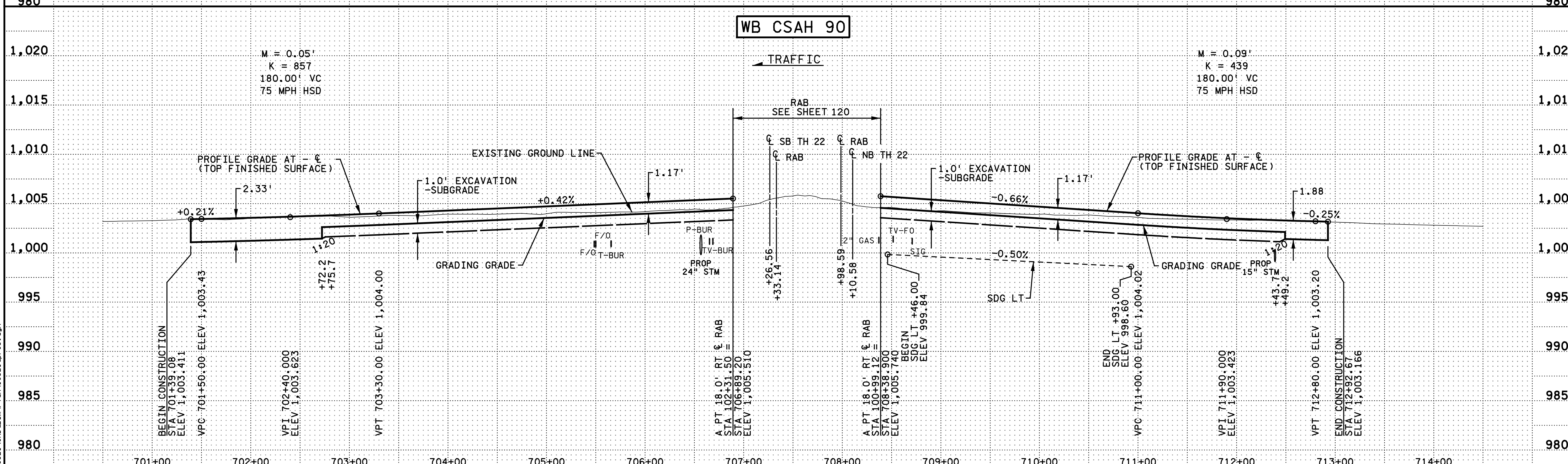

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STATE PROJECT NO. 007-070-005

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MINNESOTA DEPARTMENT OF TRANSPORTATION

PROFILES

TH 22 & CSAH 90

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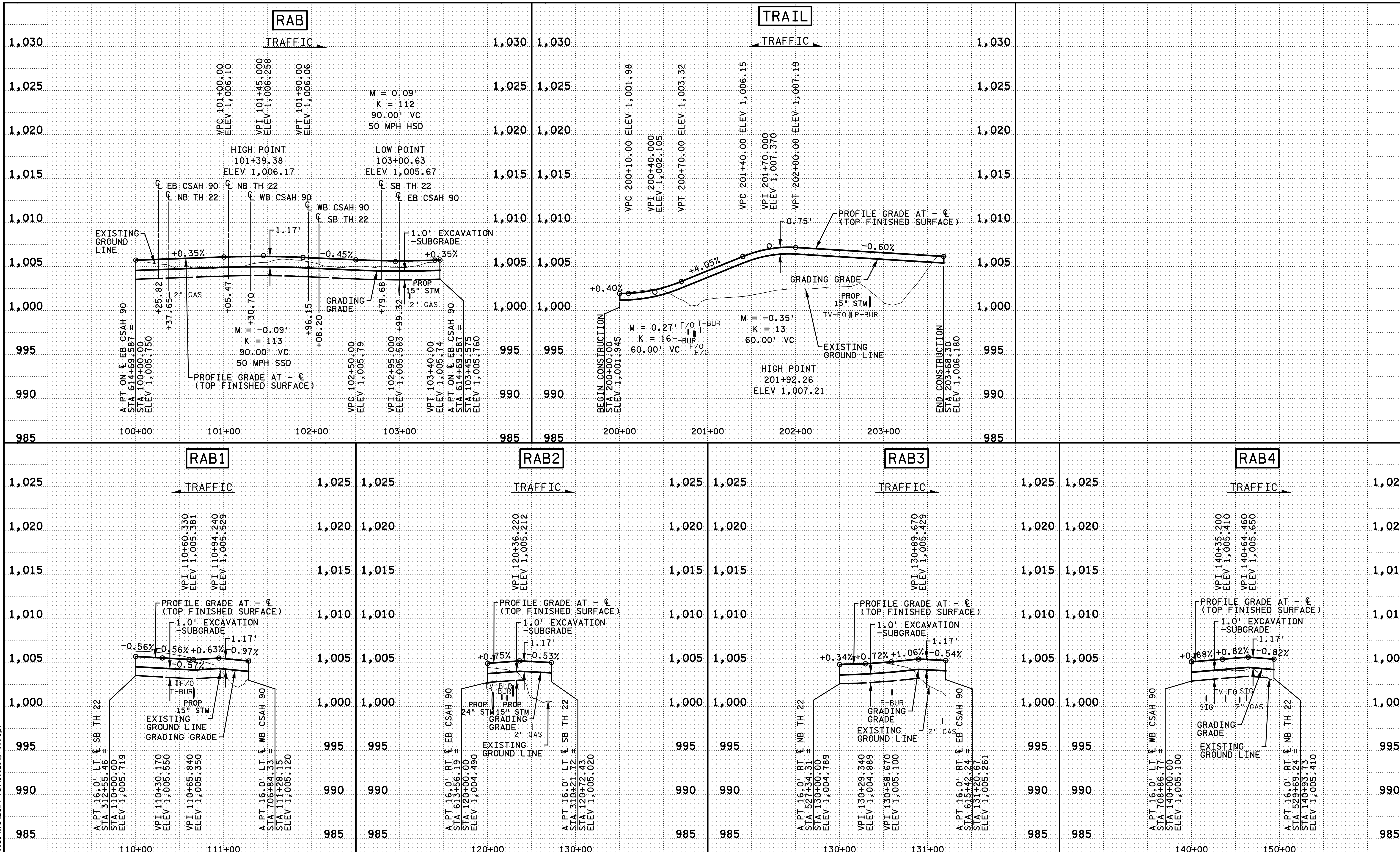

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ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

PROFILES

TH 22 & CSAH 90

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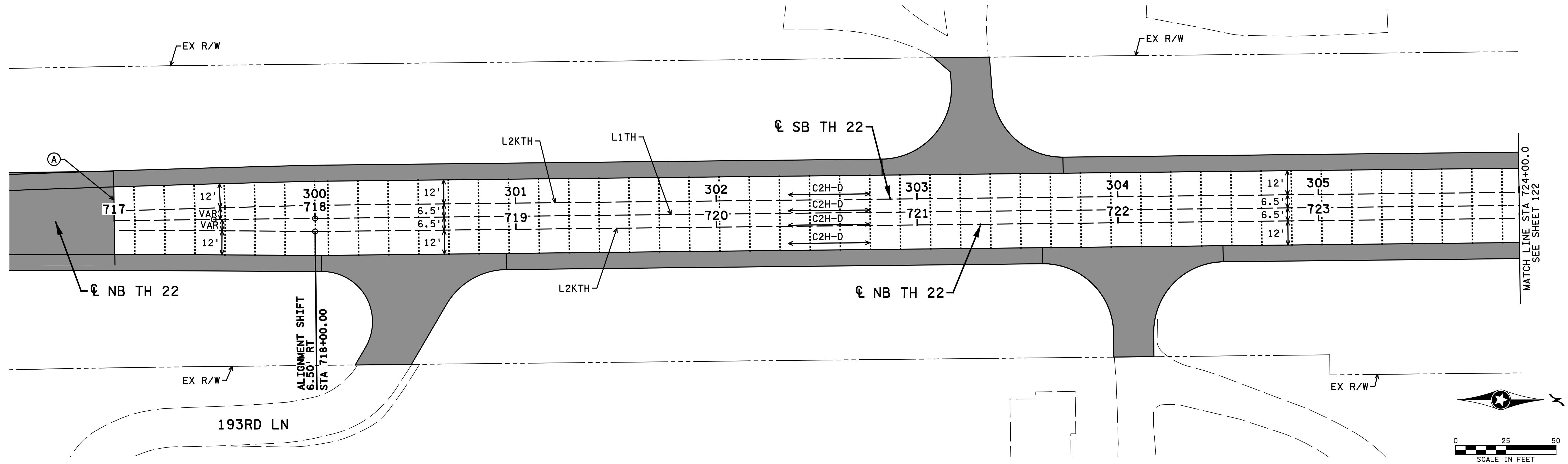

GENERAL NOTES:

ALL DIMENSIONS SHOW FOR ROADWAYS ON THE CONCRETE PAVING PLAN ARE ACTUAL ROADWAY WIDTHS.

REINFORCEMENT BARS FOR ALL LONGITUDINAL JOINTS ARE CONSIDERED INCIDENTAL.

PROPOSED JOINTS MAY BE CHANGED AS DIRECTED BY THE ENGINEER.

TIE ALL CONCRETE CURB & GUTTER TO CONCRETE SHOULDERS WITH A L2KTU JOINT.

CONSTRUCTION HEADER JOINTS SHALL BE CONSIDERED INCIDENTAL.

FOR SUPPLEMENTAL PAVEMENT REINFORCEMENT OVER PIPE SEWERS, SEE TABULATION SHEET.

LEGEND

SUPPLEMENTAL STEEL REQUIRED SEE STANDARD PLATE 1070

BITUMINOUS PAVEMENT

PAVEMENT JOINTS

NOTES:

Ⓐ CONSTRUCT TERMINAL HEADER JOINT

NO	DATE	BY	CKD	APPR	REVISION

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MINNESOTA DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT PLANS
TH 22 & CSAH 90

SHEET 121 OF 255

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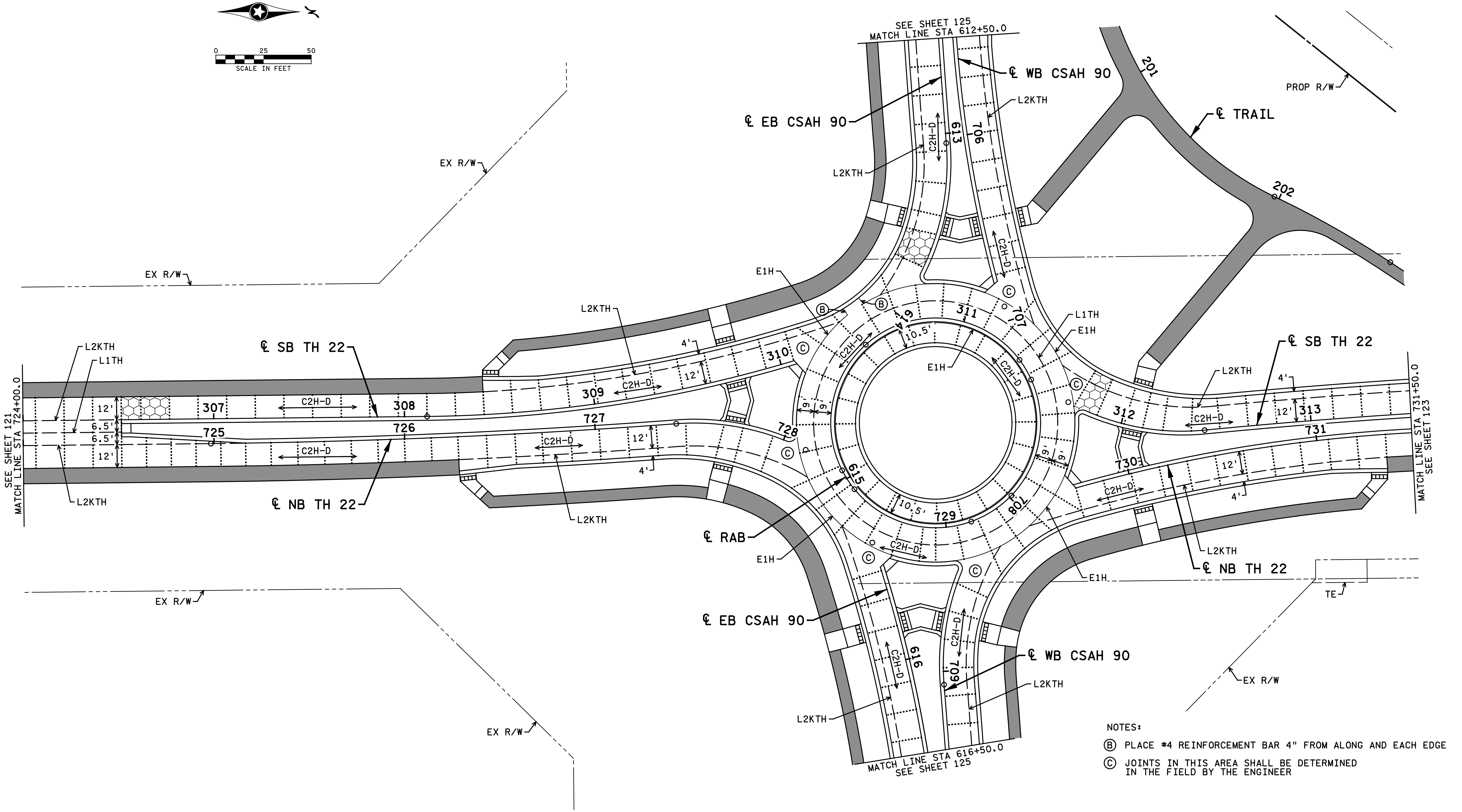

NOTES:

(B) PLACE #4 REINFORCEMENT BAR 4" FROM ALONG AND EACH EDGE

(C) JOINTS IN THIS AREA SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER

SEE SHEET 121 FOR GENERAL NOTES AND LEGEND.

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MINNESOTA DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT PLANS

TH 22 & CSAH 90

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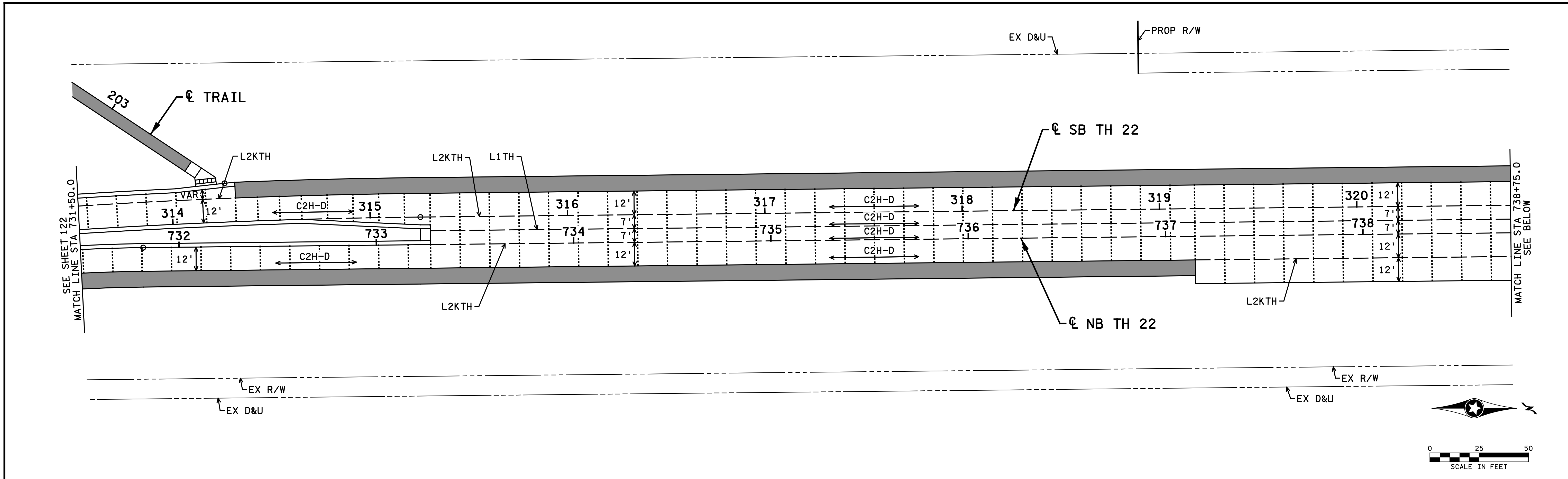
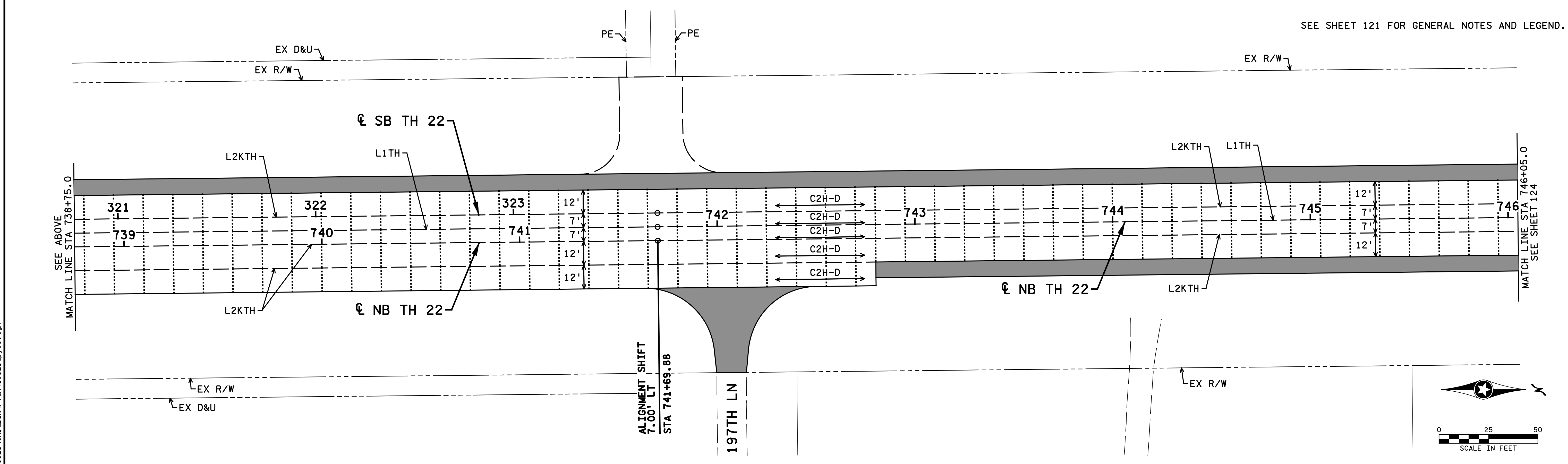


SEE SHEET 121 FOR GENERAL NOTES AND LEGEND.



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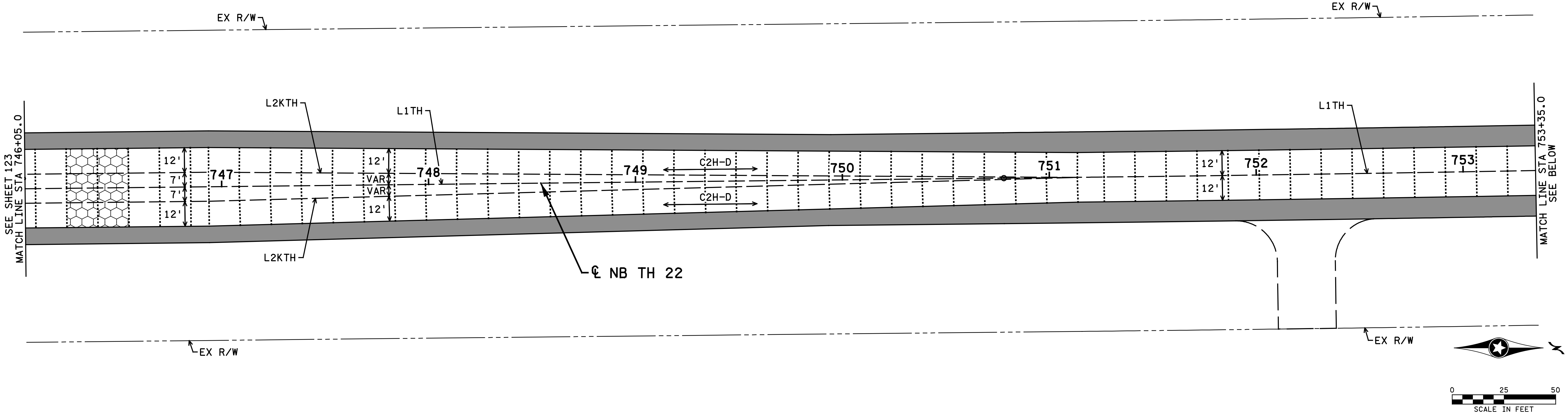
MINNESOTA DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT PLANS

TH 22 & CSAH 90

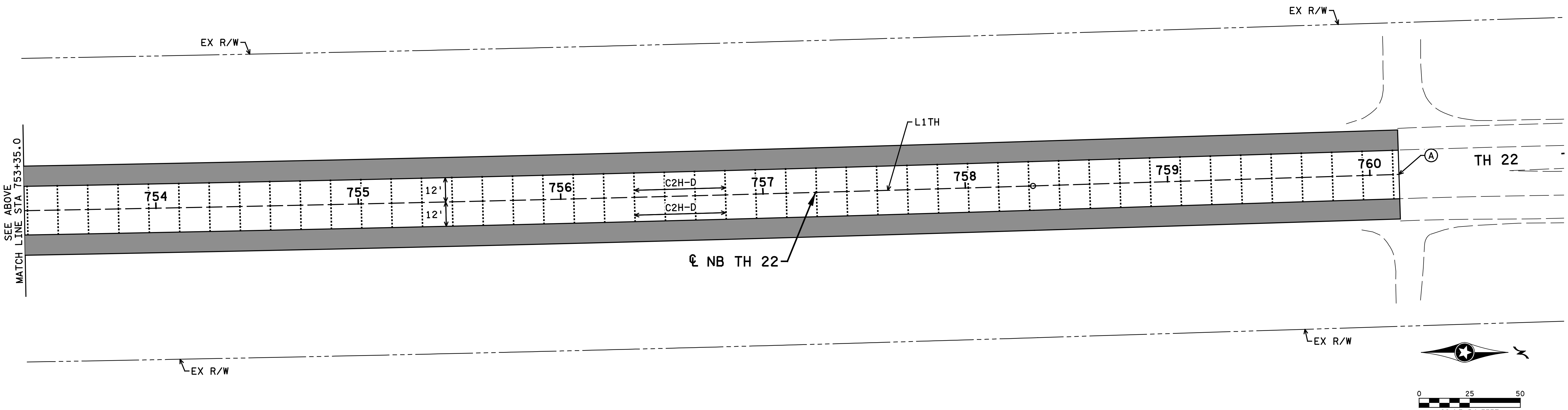
SHEET 123 OF 255



NOTES:

(A) CONSTRUCT TERMINAL HEADER JOINT

SEE SHEET 121 FOR GENERAL NOTES AND LEGEND.



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CONCRETE PAVEMENT PLANS

TH 22 & CSAH 90

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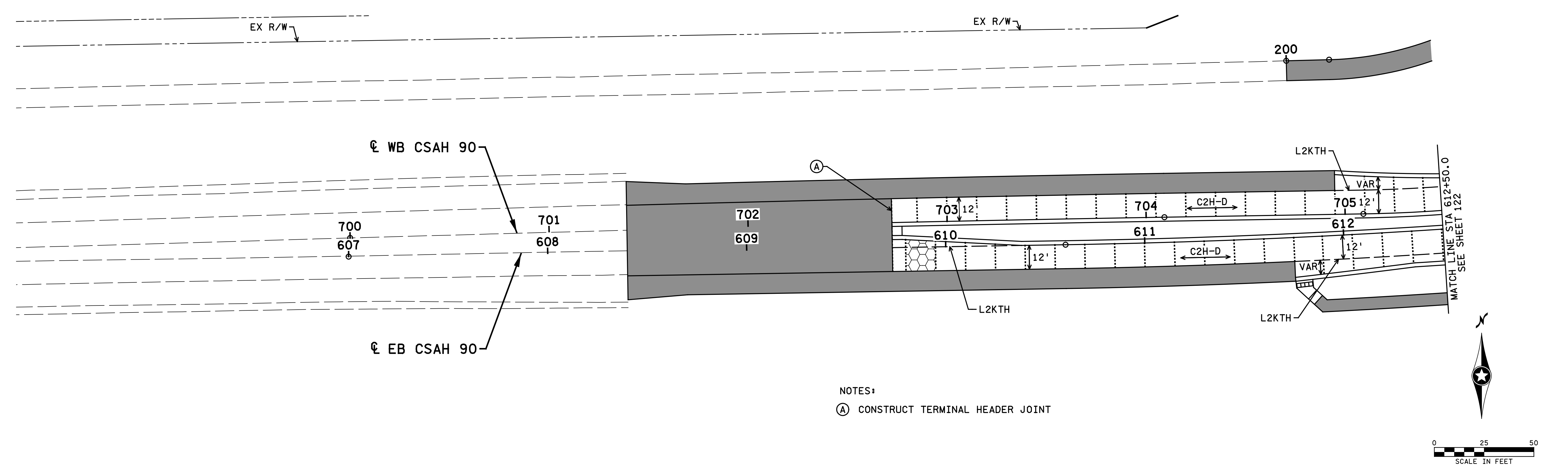
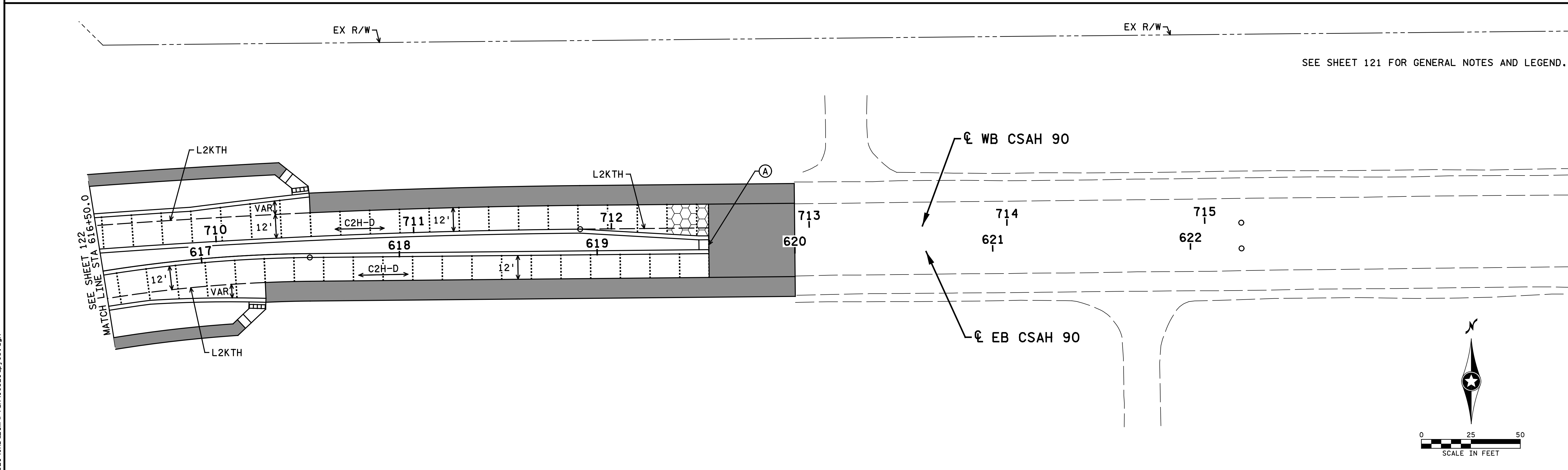


NOTES:

(A) CONSTRUCT TERMINAL HEADER JOINT



SEE SHEET 121 FOR GENERAL NOTES AND LEGEND.

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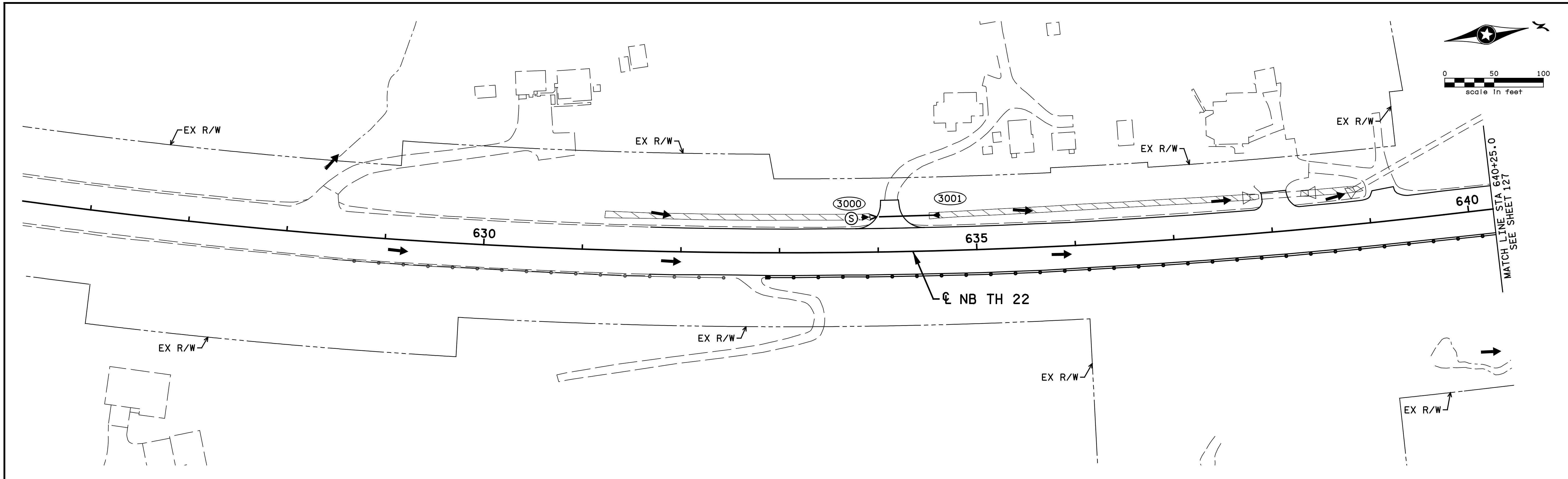
CONCRETE PAVEMENT PLANS

TH 22 & CSAH 90



LEGEND

—>—	PROPOSED STORM SEWER/PIPE CULVERT	➡	SURFACE FLOW
—>—	EXISTING STORM SEWER	(XXXX)	STORM SEWER STRUCTURE NO.
= =	EXISTING PIPE CULVERT	Ⓢ	BLANKET & SEED PER MNDOT STD. PLAN 5-297.404
═══	EXISTING BOX CULVERT	Ⓡ	RIPRAP PER MNDOT STD. PLATE 3133D/3134D
■	PROPOSED CATCH BASIN	—·>·—	PROPOSED DITCH FLOW LINE
DI ●	PROPOSED DROP INLET	-->--	PROPOSED SUBSURFACE DRAIN
□DI	EXISTING DROP INLET	-->--	EXISTING SUBSURFACE DRAIN
►	PROPOSED APRON	CO ●	PROPOSED CLEAN OUT
▷	EXISTING APRON	▨	EXISTING CONCRETE FLUME
●	PROPOSED MANHOLE	▬	PROPOSED DRAIN HEADWALL

GENERAL NOTES:

CROSS SLOPES ARE FT./FT.

SEE CONTOUR PLANS FOR PROPOSED AND EXISTING CONTOURS.

FOR SPECIAL DITCH GRADES, SEE PROFILE SHEETS, AND CROSS SECTIONS.

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: ROBERT J. LEBA

Date ____ License # 41951

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY D. ANDERSON

CHECKED BY B. LEBA

COMM. NO. 01710321

SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

DRAINAGE AND SUPERELEVATION PLANS

TH 22 & CSAH 90

SHEET 126 OF 255

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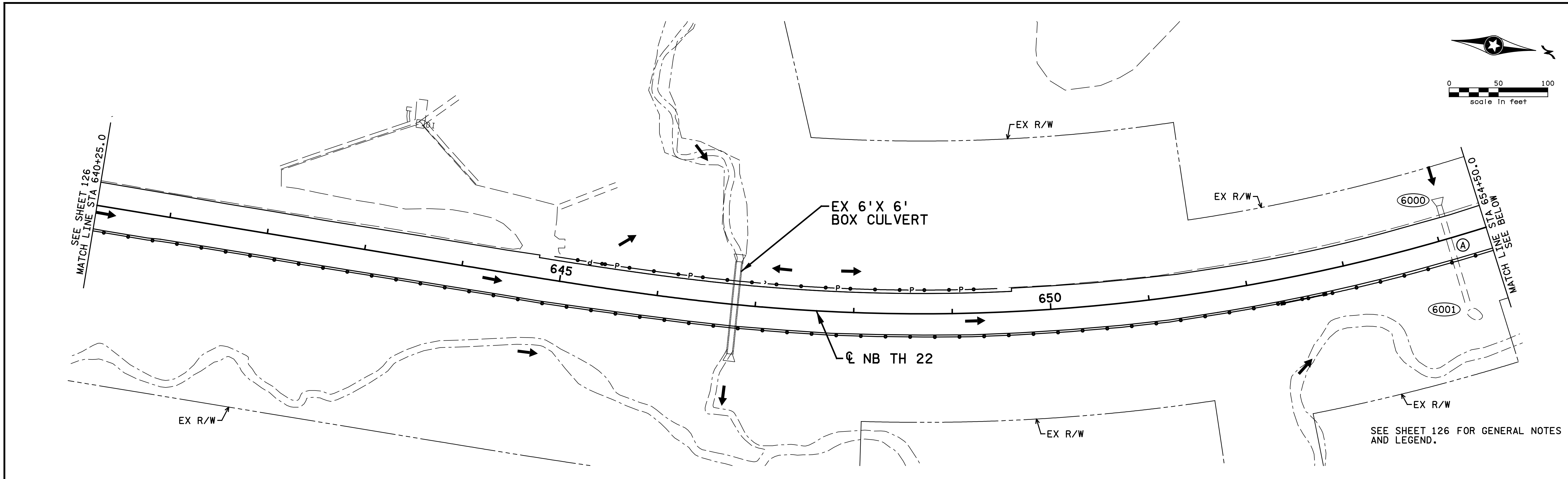

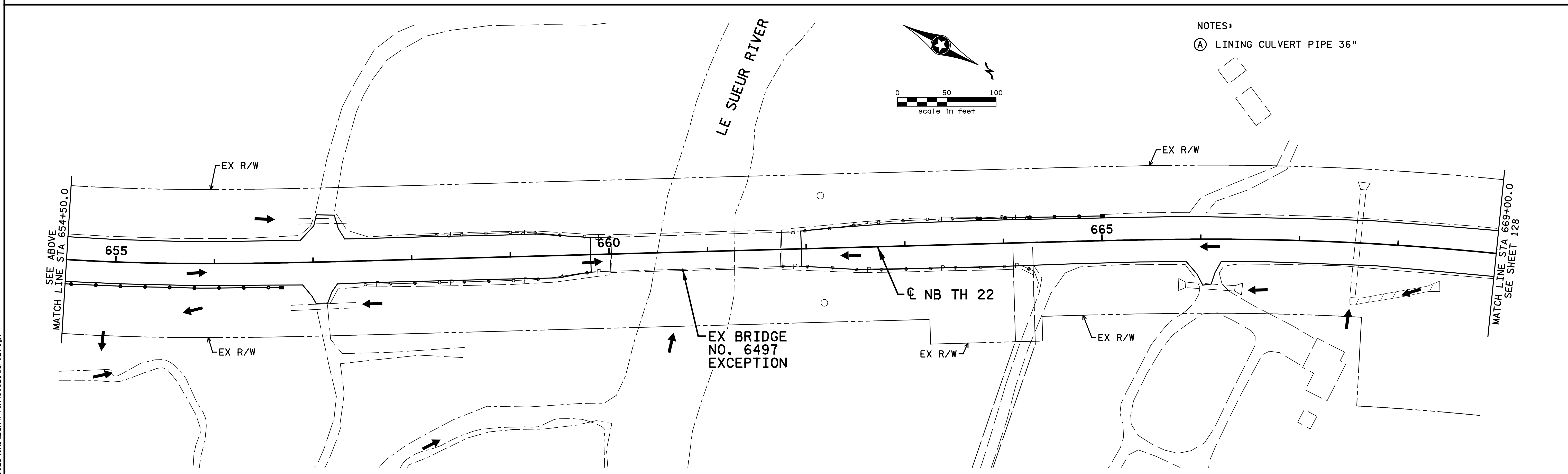

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DRAINAGE AND SUPERELEVATION PLANS

TH 22 & CSAH 90

SHEET 127 OF 255

NOTES:

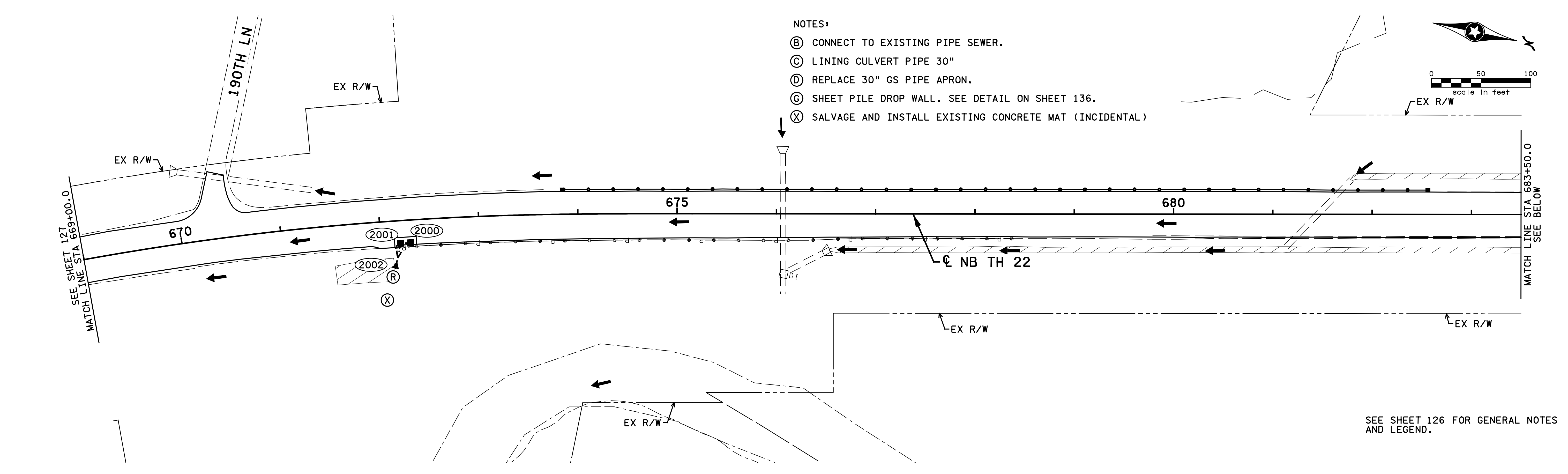
(B) CONNECT TO EXISTING PIPE SEWER.

(C) LINING CULVERT PIPE 30"

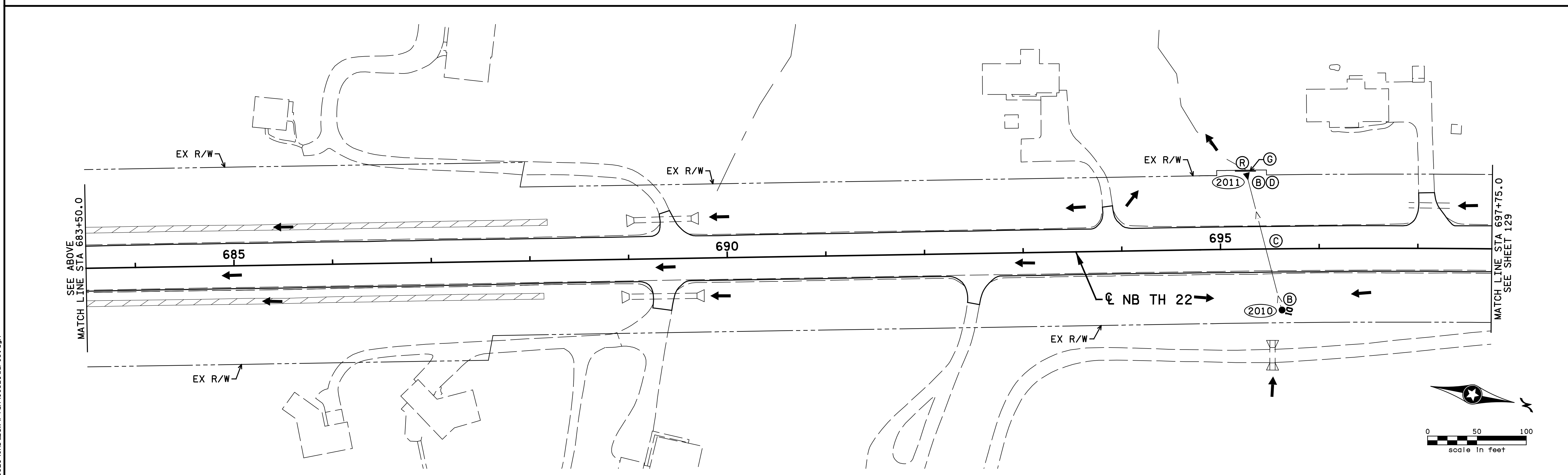
(D) REPLACE 30" GS PIPE APRON.

(G) SHEET PILE DROP WALL. SEE DETAIL ON SHEET 136.

(X) SALVAGE AND INSTALL EXISTING CONCRETE MAT (INCIDENTAL)



SEE SHEET 126 FOR GENERAL NOTES AND LEGEND.



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STATE PROJECT NO. 007-070-005

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DESIGNED BY D. ANDERSON

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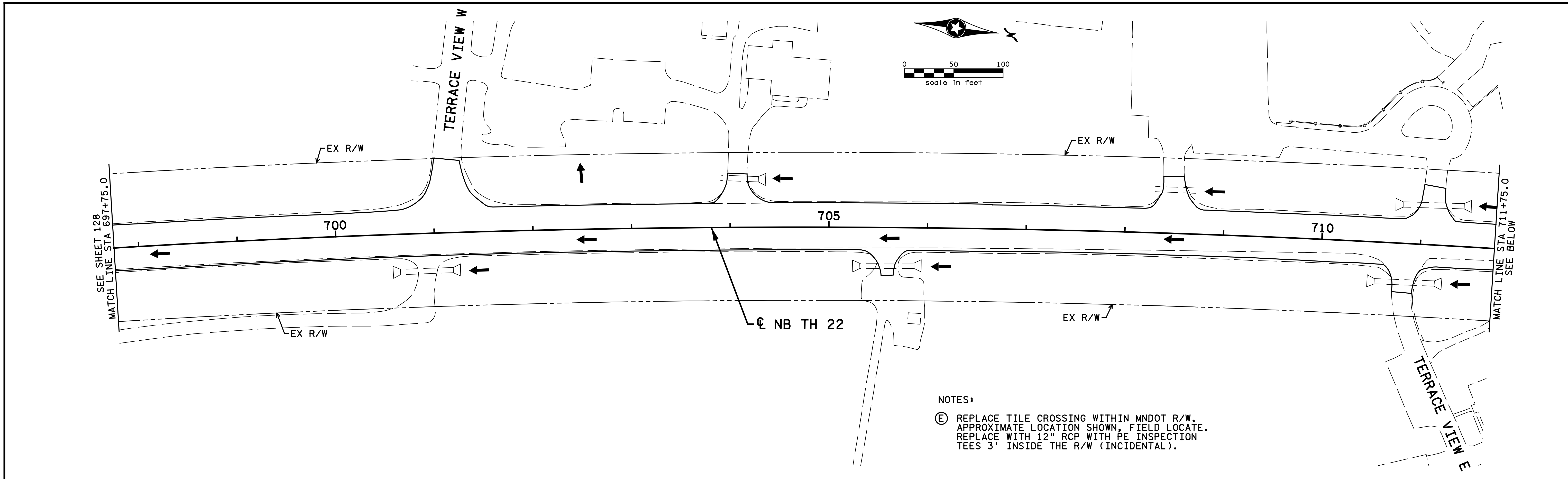
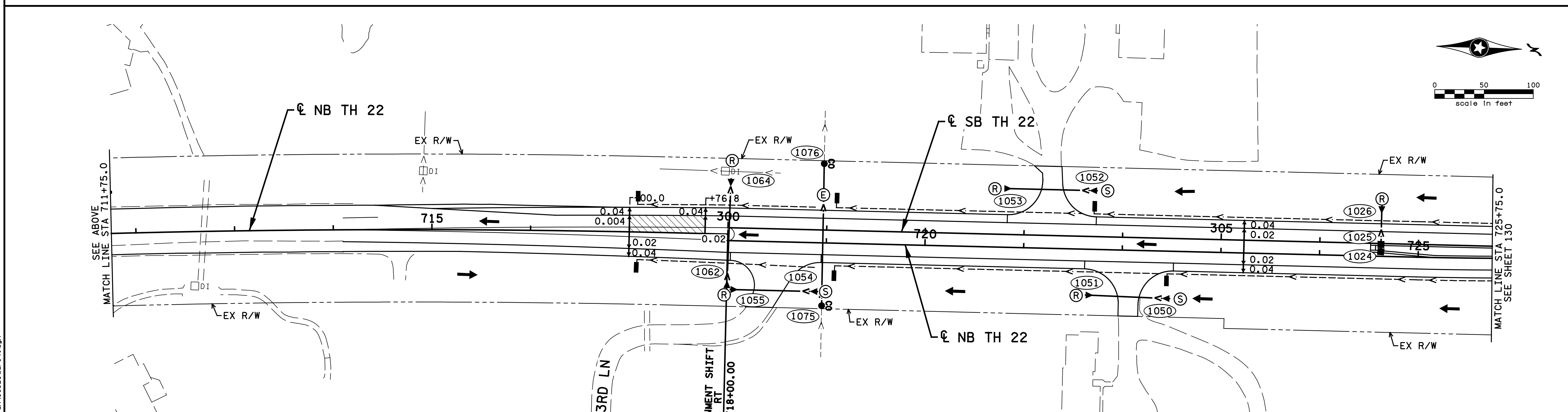
DRAINAGE AND SUPERELEVATION PLANS

TH 22 & CSAH 90



NOTES:

Ⓔ REPLACE TILE CROSSING WITHIN MNDOT R/W. APPROXIMATE LOCATION SHOWN, FIELD LOCATE. REPLACE WITH 12" RCP WITH PE INSPECTION TEES 3' INSIDE THE R/W (INCIDENTAL).



SEE SHEET 126 FOR GENERAL NOTES AND LEGEND.

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STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY D. ANDERSON

CHECKED BY B. LEBA

COMM. NO. 01710321

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DRAINAGE AND SUPERELEVATION PLANS

TH 22 & CSAH 90

SHEET 129 OF 255

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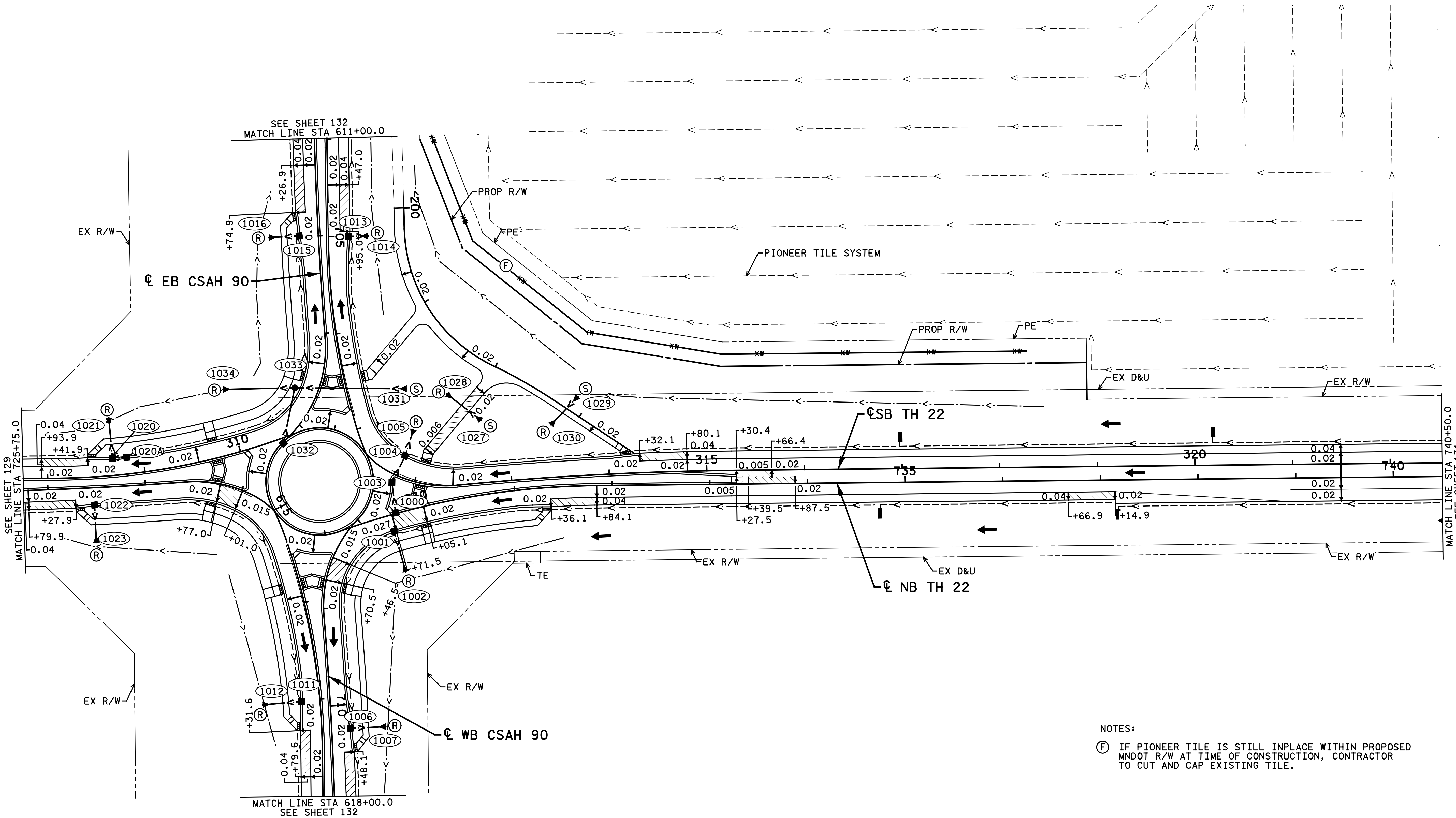

NOTES:

(F) IF PIONEER TILE IS STILL INPLACE WITHIN PROPOSED MNDOT R/W AT TIME OF CONSTRUCTION, CONTRACTOR TO CUT AND CAP EXISTING TILE.

SEE SHEET 126 FOR GENERAL NOTES AND LEGEND.

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DRAINAGE AND SUPERELEVATION PLANS

TH 22 & CSAH 90

SHEET 130 OF 255

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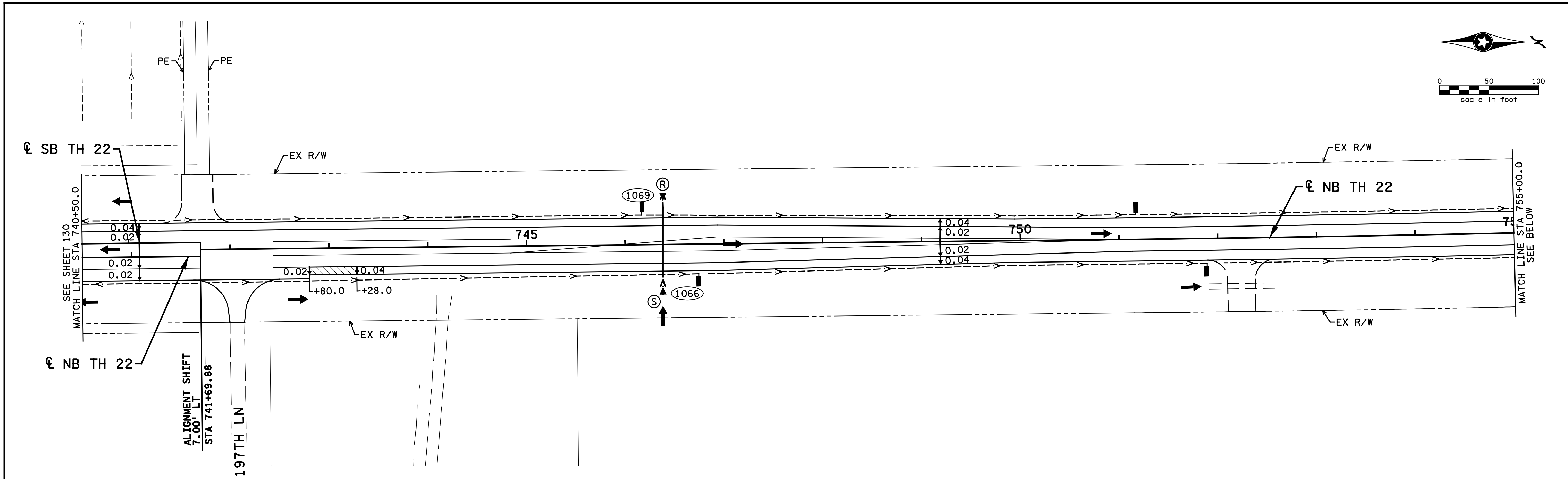

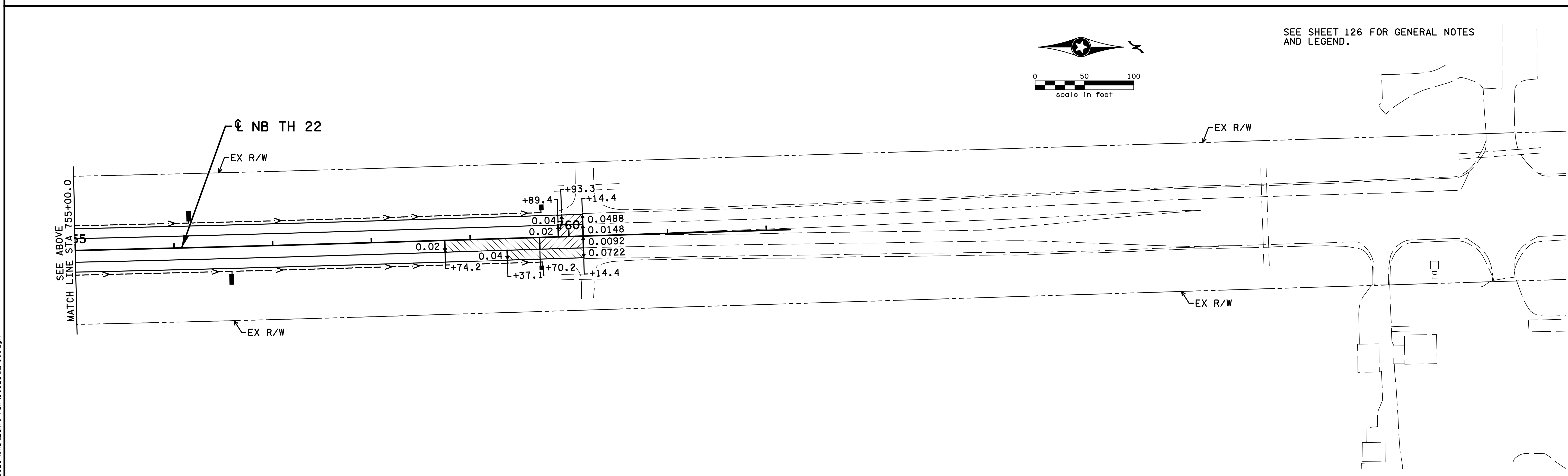

SEE SHEET 126 FOR GENERAL NOTES AND LEGEND.

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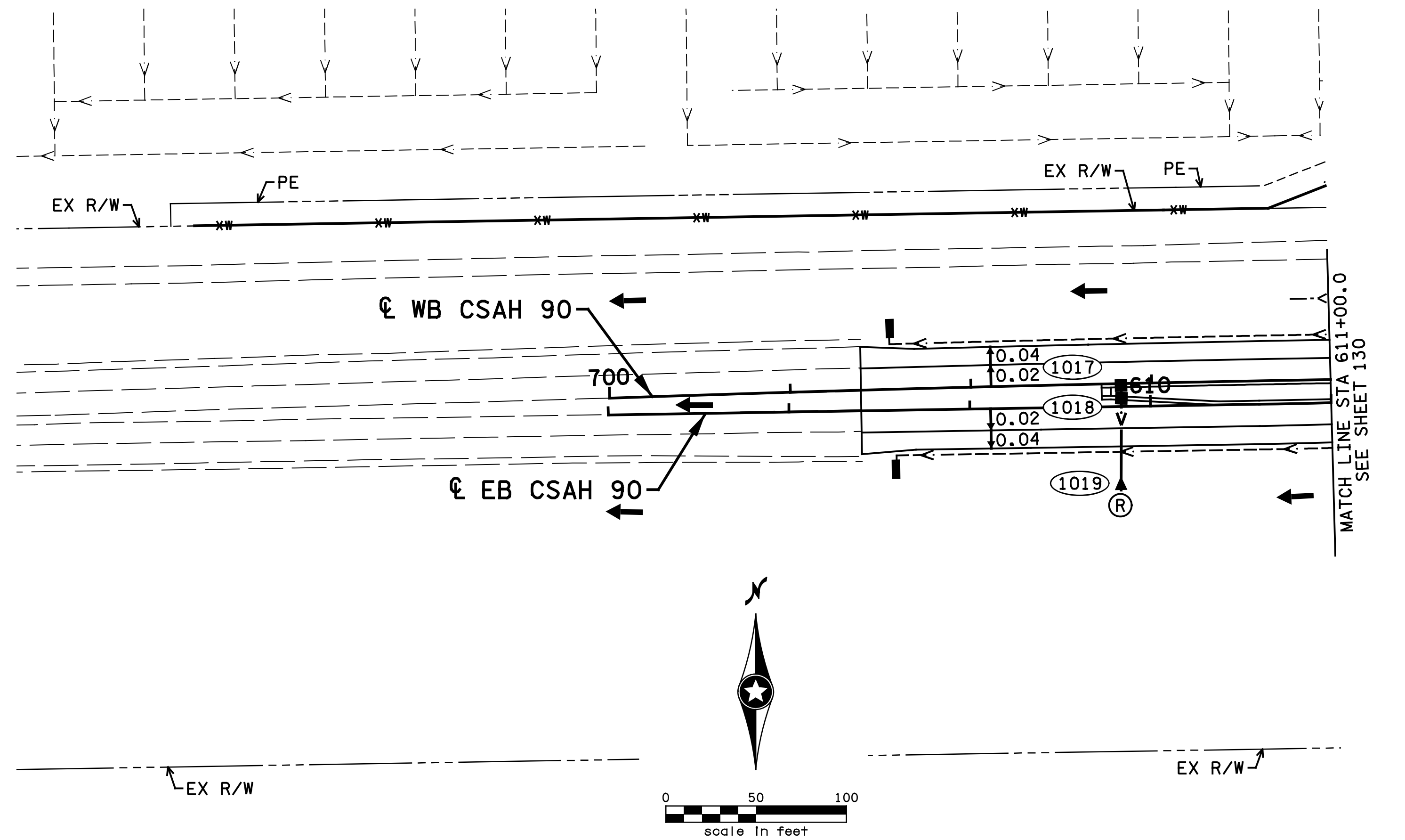
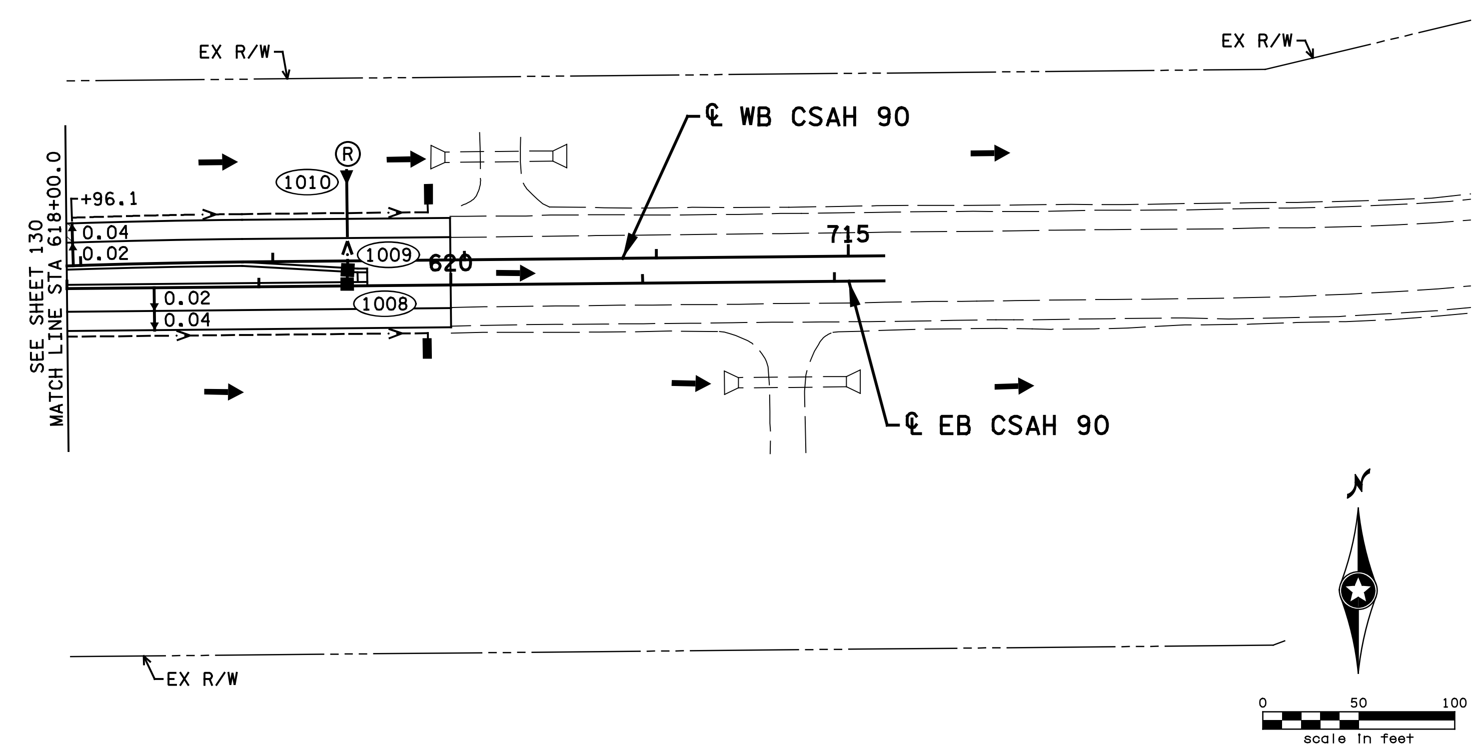


SEE SHEET 126 FOR GENERAL NOTES AND LEGEND.



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STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

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DESIGNED BY D. ANDERSON

CHECKED BY B. LEBA

COMM. NO. 01710321

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DRAINAGE AND SUPERELEVATION PLANS

TH 22 & CSAH 90

SHEET 132 OF 255

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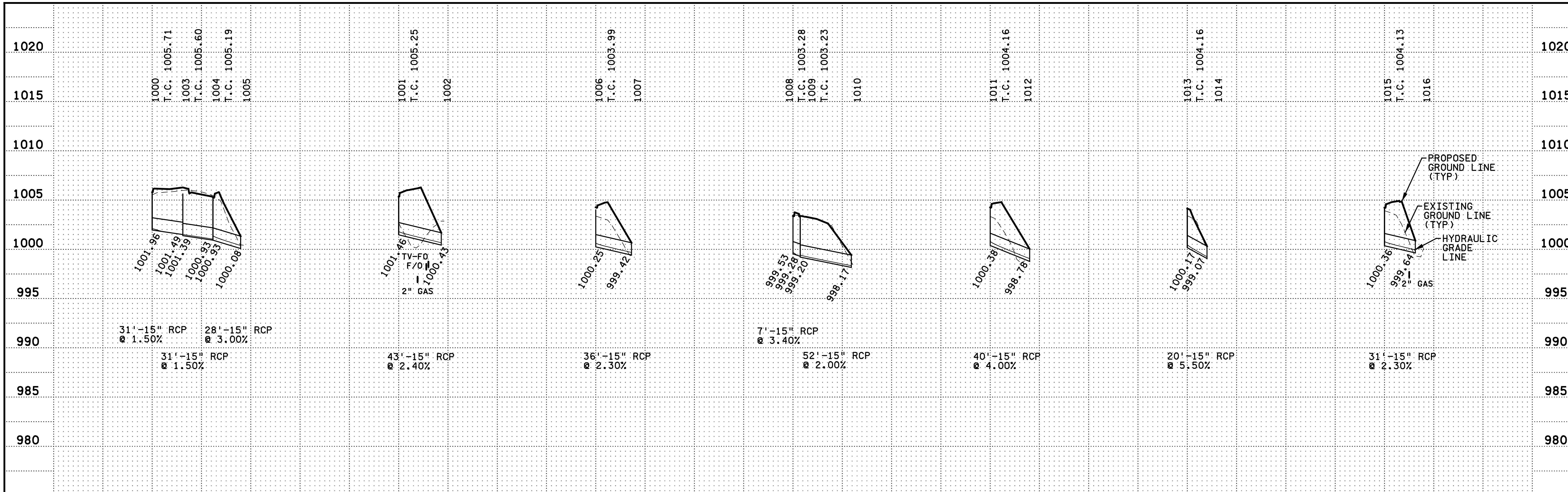

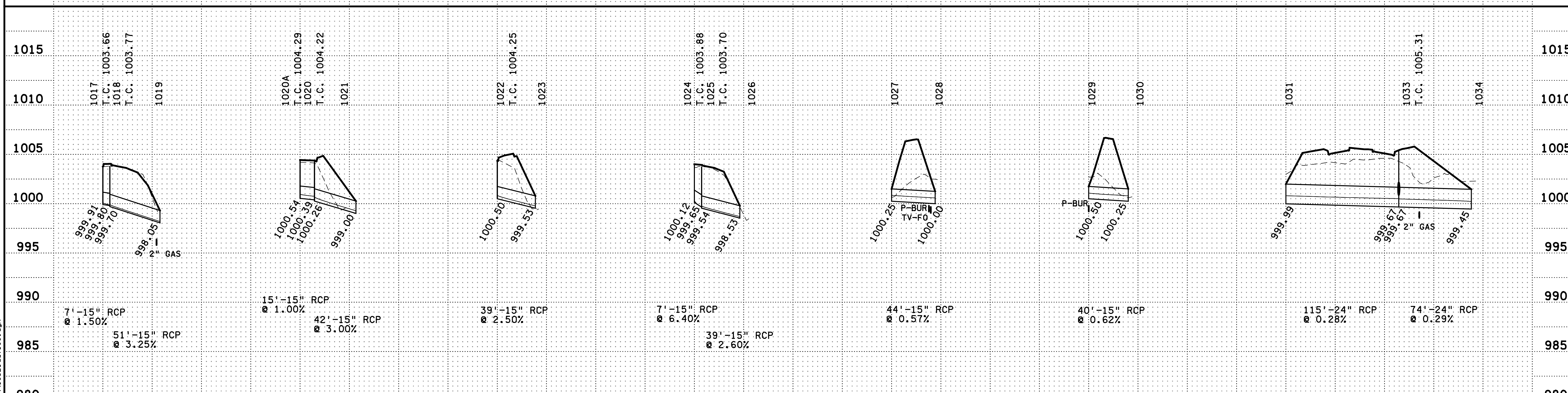

GENERAL NOTES:

ALL RC PIPES 12" - 15" ARE CL V.
ALL RC PIPES 18" - 54" ARE CL II UNLESS NOTED OTHERWISE.

- INVERT ELEVATIONS ARE GIVEN TO CENTER OF STRUCTURE OR END OF APRON (END OF PIPE IF NO APRON).
- TOP OF CASTING ELEVATIONS ARE TO CENTER OF CASTING ASSEMBLY.
- APRON LENGTH INCLUDED IN LENGTH OF PIPE IN PROFILES (SEE DRAINAGE TABULATION FOR PAY LENGTH OF PIPE).
- SEE WATERMAIN AND SANITARY SEWER PLAN AND PROFILE FOR ADDITIONAL INFORMATION

STRUCTURES ON THIS SHEET				
1000	1007	1014	1020	1027
1001	1008	1015	1021	1028
1002	1009	1016	1022	1029
1003	1010	1017	1023	1030
1004	1011	1018	1024	1031
1005	1012	1019	1025	1033
1006	1013	1020A	1026	1034

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MINNESOTA DEPARTMENT OF TRANSPORTATION

DRAINAGE PROFILES

TH 22 & CSAH 90

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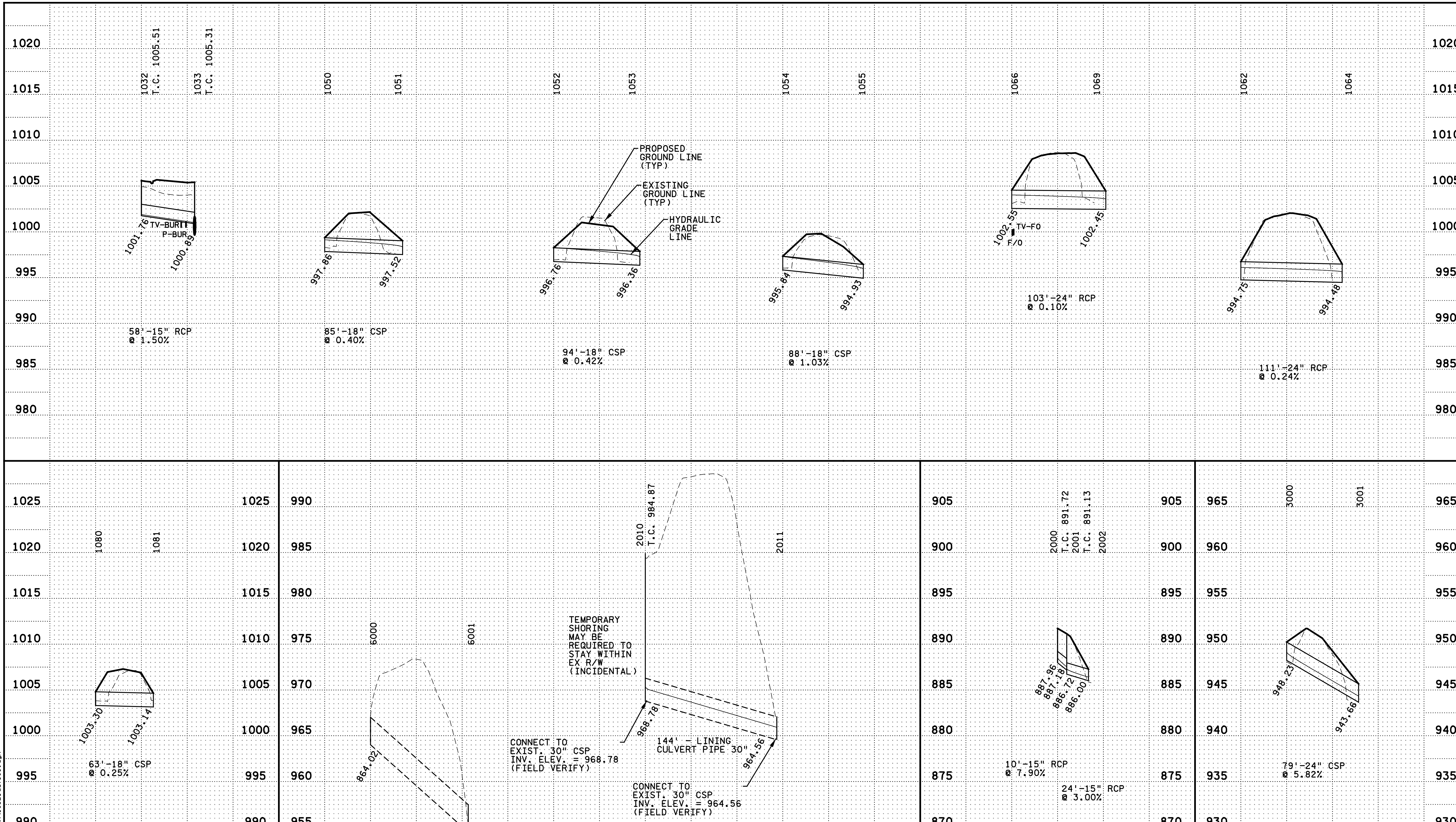

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- APRON LENGTH INCLUDED IN LENGTH OF PIPE IN PROFILES (SEE DRAINAGE TABULATION FOR PAY LENGTH OF PIPE).
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STRUCTURES ON THIS SHEET			
1032	1055	2000	6000
1033	1062	2001	6001
1050	1064	2002	
1051	1066	2010	
1052	1069	2011	
1053	1080	3000	
1054	1081	3001	

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STATE PROJECT NO. 007-070-005

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DRAINAGE PROFILES
TH 22 & CSAH 90

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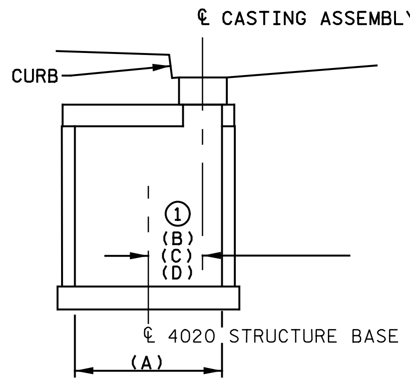
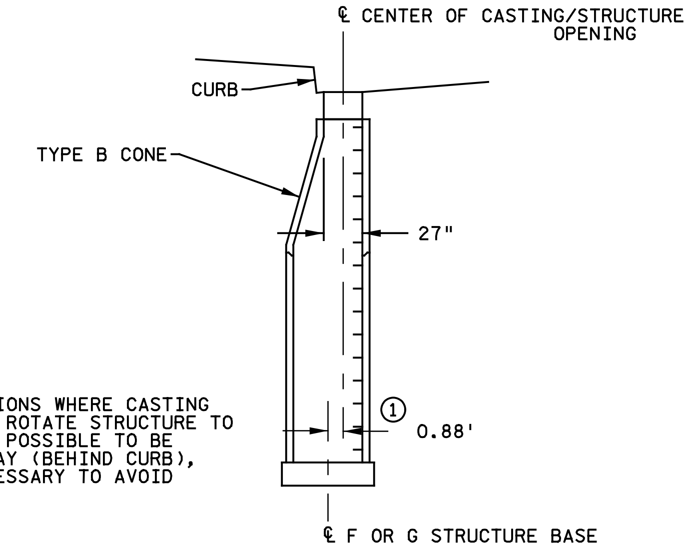


(A)	(B)
4020 DIAMETER (IN.)	OFFSET FOR 27-IN. OPENING (FT.)
48	0.79
54	1.08
60	1.29
66	1.58
72	1.79
78	2.08
84	2.29
90	2.58
96	2.87
102	3.16
108	3.29
120	3.79

STAKING DETAIL: DESIGN XX-4020 OR SD-XX STRUCTURE

NOT TO SCALE



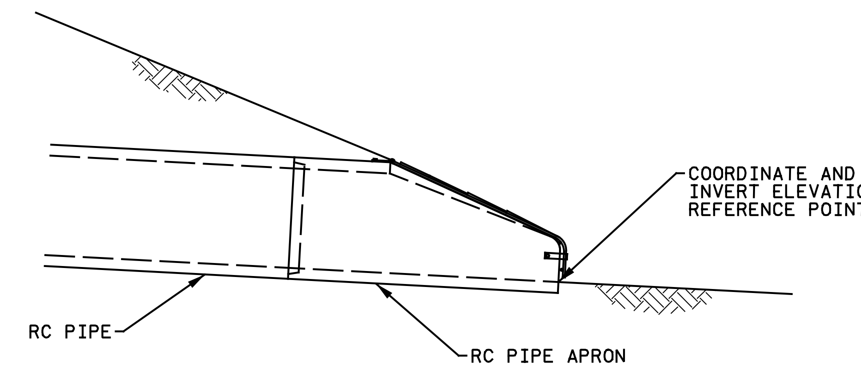
1 NOTES:

IN TYPICAL LOCATIONS WHERE CASTING IS IN CURB LINE, ROTATE STRUCTURE TO ALLOW AS MUCH AS POSSIBLE TO BE OUTSIDE OF ROADWAY (BEHIND CURB), OR ROTATE AS NECESSARY TO AVOID CONFLICTS.

LOCATE CENTER OF STRUCTURE 0.88' FROM CENTER OF STRUCTURE OPENING.

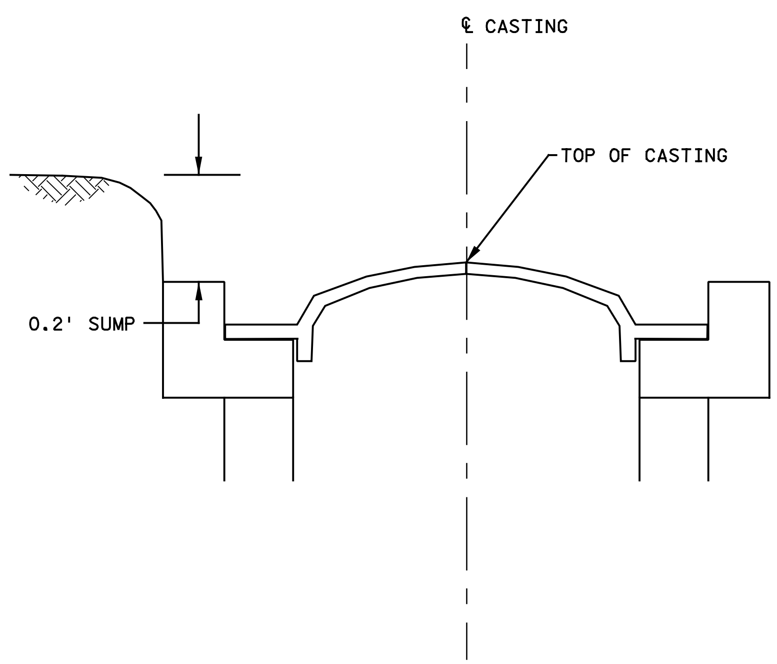
STAKING DETAIL: F OR G STRUCTURE AT CURB AND GUTTER

NOT TO SCALE



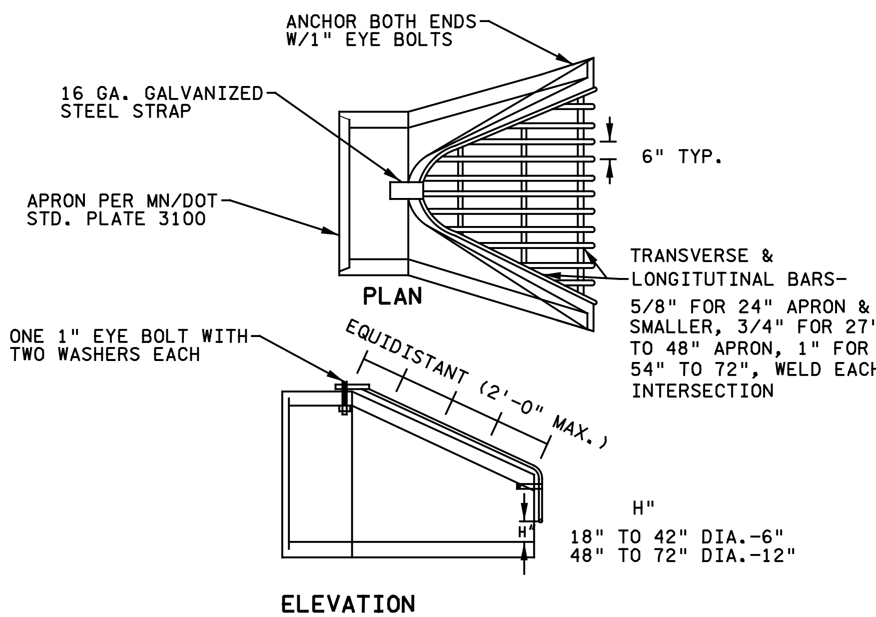
STAKING DETAIL: PIPE APRONS

NOT TO SCALE



STAKING DETAIL: CASTING ASSEMBLY M-11

NOT TO SCALE



NOTES:

1. ENTIRE HEAVY DUTY TRASH GUARD ASSEMBLY TO BE HOT-DIP GALVANIZED AFTER FABRICATION.
2. SIZE OF TRASH GUARD VARIABLE DEPENDENT ON SIZE OF FLARED END SECTION.

TRASH GUARD FOR CONCRETE APRON

NOT TO SCALE

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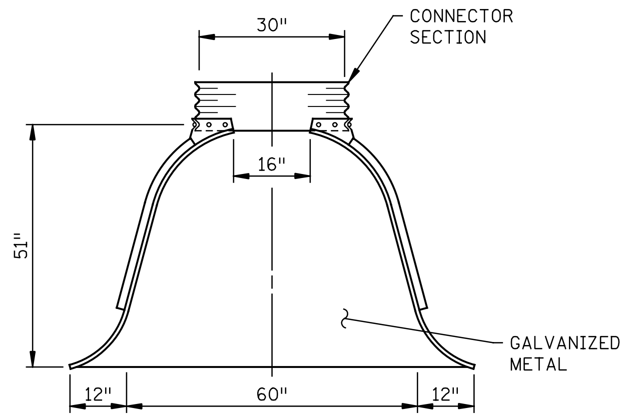
MINNESOTA DEPARTMENT OF TRANSPORTATION

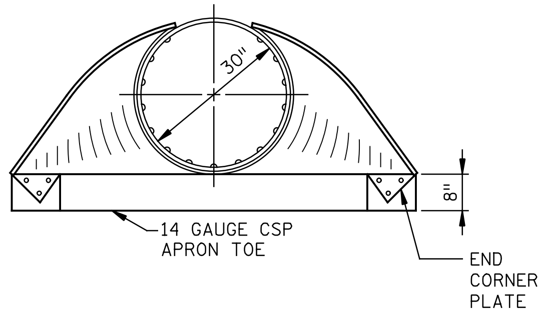
DRAINAGE DETAILS

TH 22 & CSAH 90

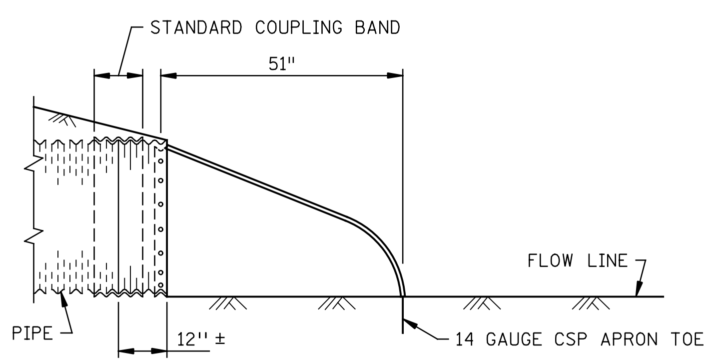
STAKING DETAILS / TRASH GUARD



TOP VIEW

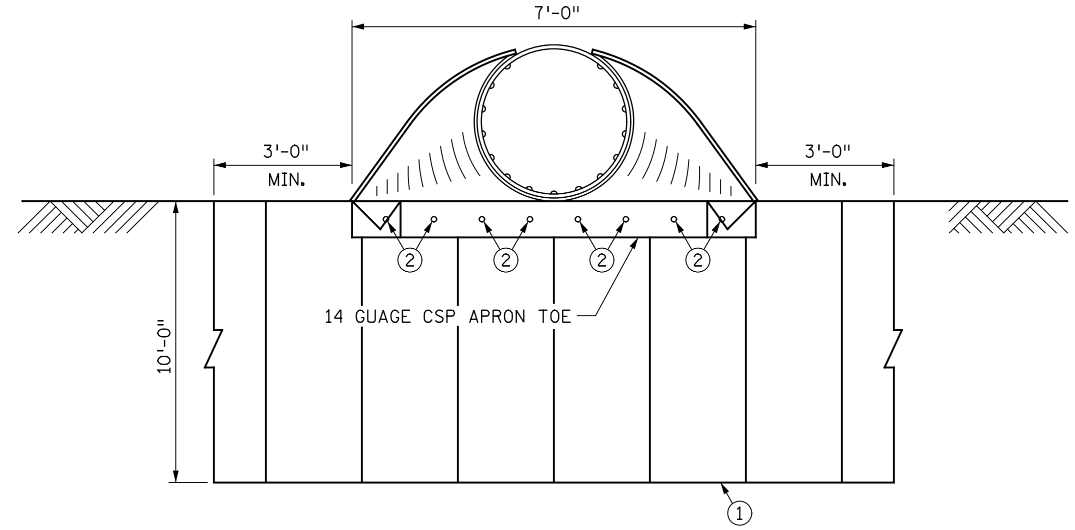


ELEVATION

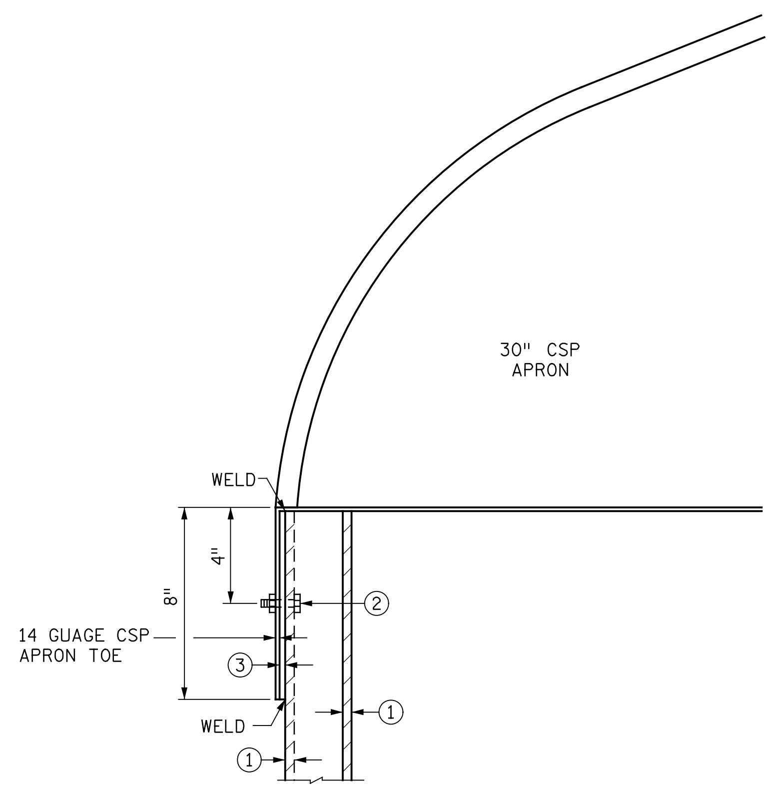


CROSS SECTION

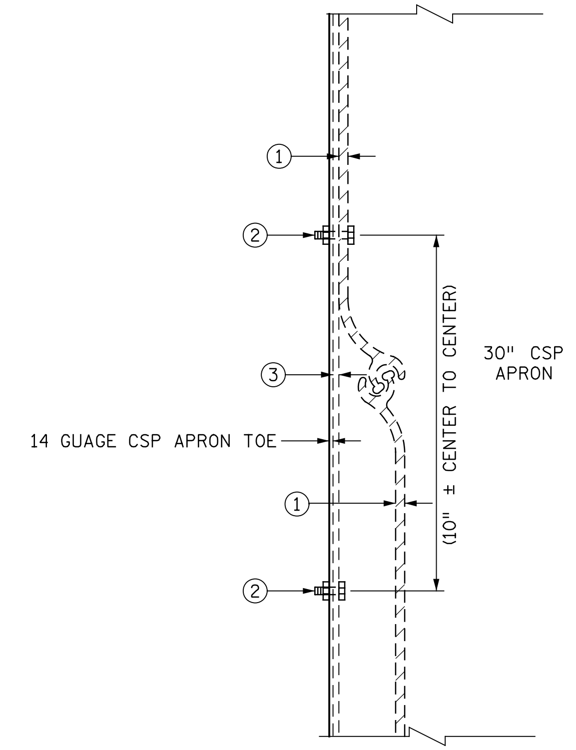
30" CSP APRON



END VIEW



ELEVATION



PLAN

(5) SHEET PILE SHALL BE PAID FOR AS STEEL SHEET PILING (PERMANENT)

CONSTRUCTION NOTES

GALVANIZE ALL FASTENERS AND ANCHORS PER SPEC. 3392.

(1) SHEET PILING, SECTION NO. PS-27.5 OR EQUAL.

(2) FASTEN THE SHEET PILE TO THE APRON TOE WITH 3/8" DIAMETER BY 1-1/2" LONG BOLTS (10" ± CENTER TO CENTER).

(3) 7'-0" X 8" X 1/4" STEEL MOUNTING PLATE WELDED TO SHEET PILE (GALVANIZED).

(4) ALL HARDWARE AND CONNECTIONS SHALL BE INCIDENTAL.

30" CSP APRON CONNECTION TO SHEET PILE

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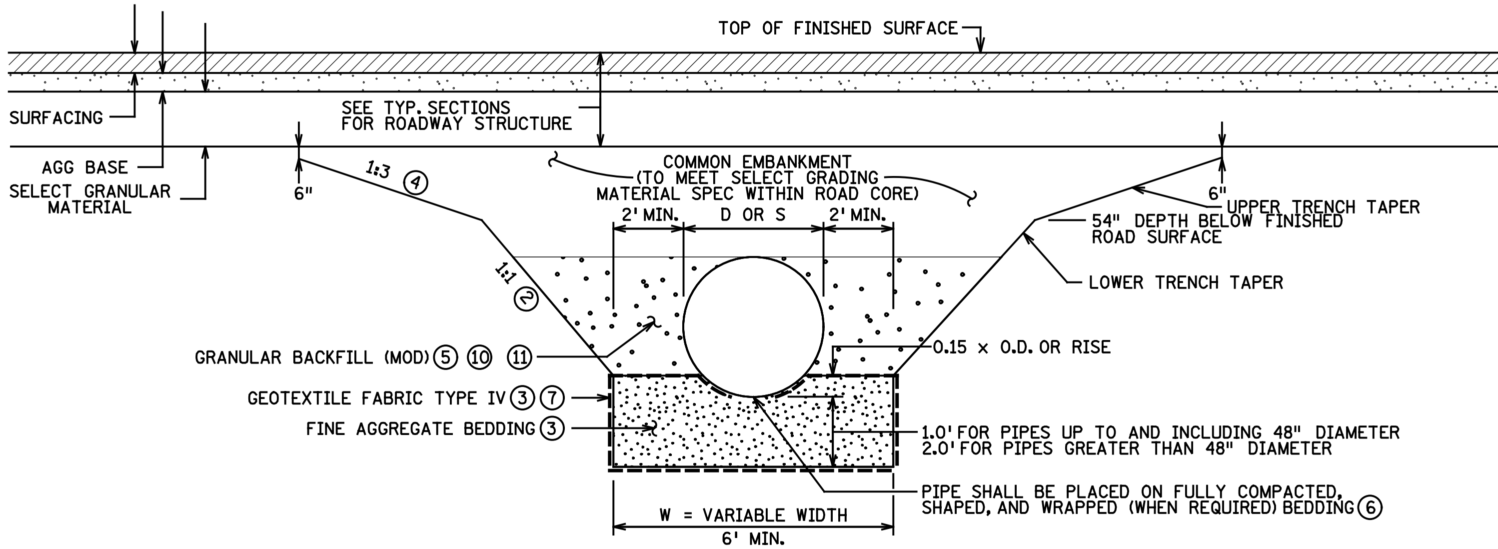
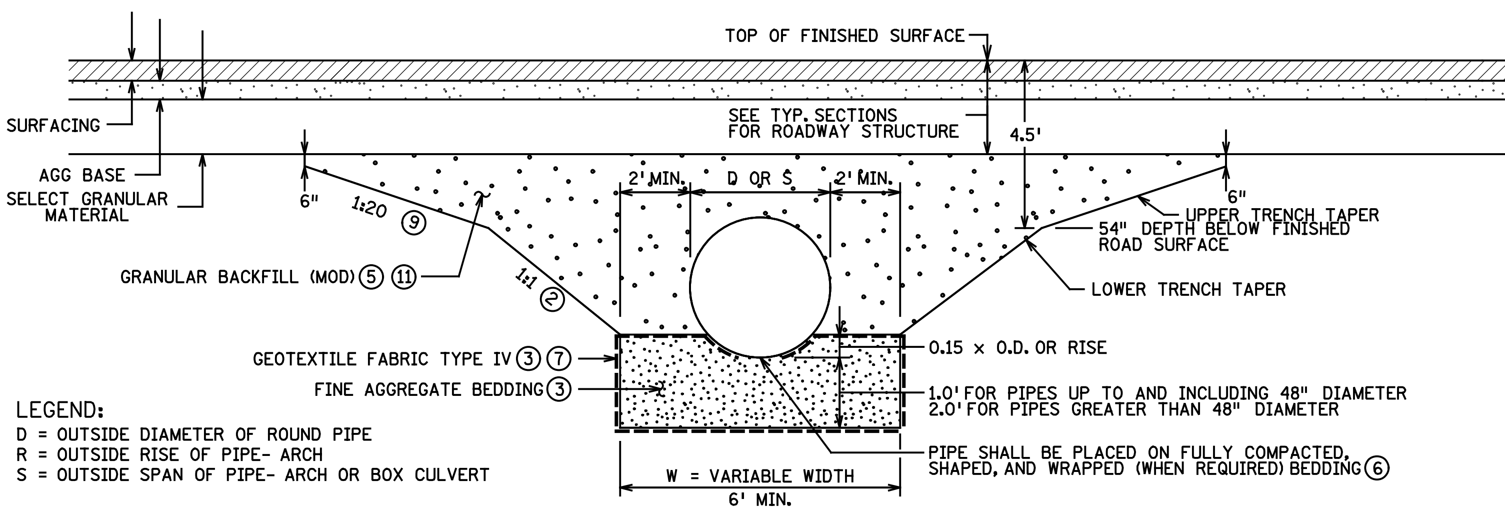
DRAINAGE DETAILS
TH 22 & CSAH 90
SHEET PILE DROP WALL



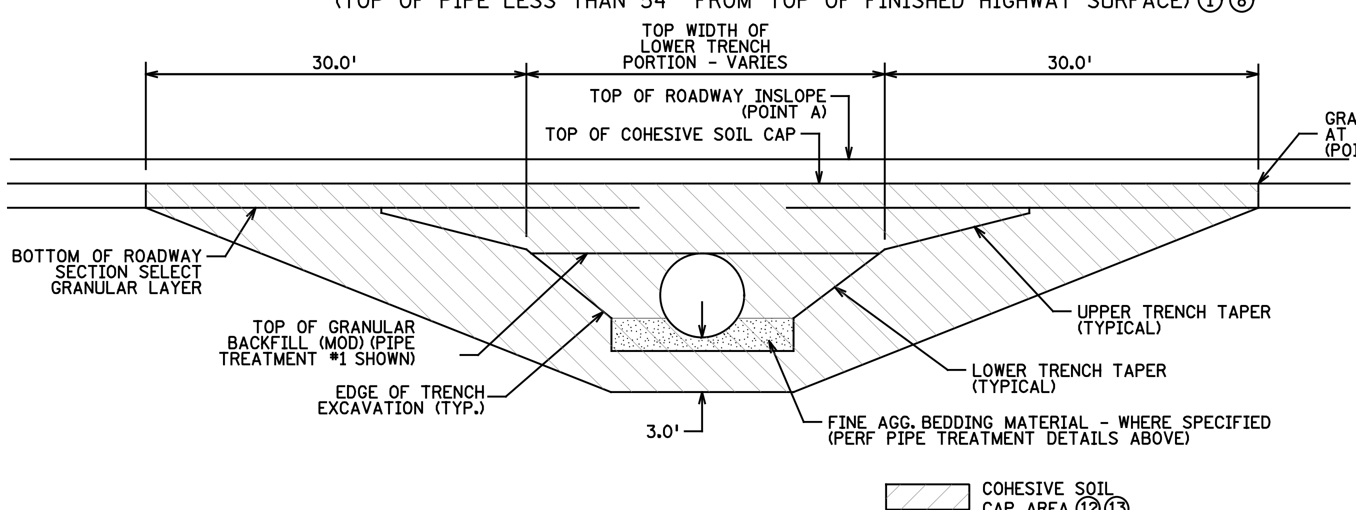
CULVERT PIPE TREATMENT #1 - FOR PIPE AND TILE UNDER PAVED ROADWAYS ① ⑧
(TOP OF PIPE 54" OR MORE FROM TOP OF FINISHED HIGHWAY SURFACE)



LEGEND:

D = OUTSIDE DIAMETER OF ROUND PIPE
R = OUTSIDE RISE OF PIPE- ARCH
S = OUTSIDE SPAN OF PIPE- ARCH OR BOX CULVERT

CULVERT PIPE TREATMENT #2 - FOR PIPE AND TILE UNDER PAVED ROADWAYS
(TOP OF PIPE LESS THAN 54" FROM TOP OF FINISHED HIGHWAY SURFACE) ① ⑧



COHESIVE SOIL CAP -- END VIEW

GENERAL NOTES:

A. SPECIFICATION 2451 SHALL APPLY TO ALL PIPE TRENCHING, BEDDING AND BACKFILL CONSTRUCTION.

B. AGGREGATE BEDDING PLACED BENEATH THE PIPE OR PIPE CULVERT SHALL EXTEND THROUGH THE DOWNSTREAM (OUTLET) COHESIVE SOIL CAP, BUT SHALL NOT EXTEND THROUGH THE UPSTREAM (INLET) COHESIVE SOIL CAP.

C. PUMPING MAY BE REQUIRED IN SOME LOCATIONS TO FACILITATE PROPER FLOOD COMPACTION (INCIDENTAL).

D. TRENCH BACKFILL COMPACTION REQUIREMENTS SHALL BE AS FOLLOWS:
- FINE AGGREGATE BEDDING: PENETRATION INDEX METHOD (DCP)
- COARSE AGGREGATE BEDDING (FOR WET CONDITIONS ONLY, WHERE APPROVED): COMPACT TO THE SATISFACTION OF THE ENGINEER. SEE NOTE 3.
- GRANULAR BACKFILL (MOD): PER THE FLOOD COMPACTION SPEC. PROV.
- COMMON EMBANKMENT WITHIN ROAD CORE SHALL MEET SELECT GRADING MATERIAL SPEC. SPECIFIED DENSITY (100% COMPACTION).
- NON-STRUCTURAL GRADING MATERIAL (OUTSIDE ROAD CORE): SPECIFIED DENSITY (100% COMPACTION)

SPECIFIC NOTES:

① AS MEASURED AT THE MINIMUM ELEVATION DIFFERENCE LOCATION UNDER DRIVING SURFACE PAVEMENT.

② THE LOWER TRENCH TAPER RATE SHALL BE ADJUSTED (FLATTENED) AS NEEDED TO COMPLY WITH OSHA TRENCH STANDARDS FOR THE SOILS TYPES ENCOUNTERED.

③ IN LOCATIONS ABOVE THE WATER TABLE, THE PIPE BEDDING MATERIAL SHALL BE FINE AGGREGATE BEDDING (SPEC. 3149.2G.1) AND GEOTEXTILE WRAPPING WILL NOT BE REQUIRED. IN LOCATIONS AT OR BELOW THE WATER TABLE, THE CONTRACTOR MAY CHOOSE TO SUBSTITUTE COARSE AGGREGATE BEDDING (SPEC. 3149.2G.2) FOR THE FINE AGGREGATE BEDDING AT NO ADDITIONAL COST TO THE STATE. COARSE AGGREGATE BEDDING, IF UTILIZED, SHALL BE FULLY WRAPPED (INCLUDING ON THE ENDS) WITH GEOTEXTILE FABRIC TYPE IV (SPEC 3733) AS SHOWN AND THE FABRIC SHALL BE INCIDENTAL.

④ THE UPPER TRENCH TAPER RATE SHALL BE 1:3 FOR ALL TREATMENT #1 PIPE PLACEMENTS SINCE INPLACE MATERIAL MATCHES THE MATERIAL IN THE UPPER PORTION OF THE TRENCH BACKFILL. THE UPPER TRENCH TAPER SHALL END 6 INCHES BELOW THE BOTTOM OF THE ROADWAY SECTION SELECT GRANULAR MATERIAL AS SHOWN.

⑤ THE GRANULAR BACKFILL (MOD.) MATERIAL SHALL BE PLACED AND THEN COMPACTED USING THE FLOOD COMPACTION PROCEDURE SPECIFIED IN THE SPECIAL PROVISIONS. SATURATION AND COMPACTION IS REQUIRED FOR EACH LIFT (2.0' MAXIMUM LIFT THICKNESS). MECHANICAL COMPACTION PRIOR TO FLOOD COMPACTION WILL NOT BE ALLOWED.

⑥ THE ENTIRE PIPE TRENCH SHALL BE PREPARED (INCLUDING PLACEMENT, COMPACTION AND SHAPING OF BEDDING WITH A TEMPLATE OR OTHER METHOD ACCEPTABLE TO THE ENGINEER) PRIOR TO THE PLACEMENT OF ANY PORTION OF THE PIPE. THE PIPE SHALL THEN BE PLACED FROM END TO END IN A SINGLE OPERATION. PLACEMENT AND COMPACTION OF BEDDING JUST AHEAD OF THE PIPE, ONE SECTION AT A TIME, WILL NOT BE ALLOWED. EXCAVATION AND SHAPING OF THE BEDDING TO FIT THE BELL OF THE PIPE, JUST AHEAD OF PIPE PLACEMENT, WILL BE ALLOWED.

⑦ THE CONTRACTOR SHALL PROVIDE A MINIMUM GEOTEXTILE FABRIC TYPE IV OVERLAP OF 24 INCHES ON ANY ALLOWED UNSEAMED FABRIC JOINTS, INCLUDING BENEATH THE PIPE (IF UTILIZED).

⑧ ALL EXCAVATION REQUIRED TO PLACE THE PIPE, PIPE CULVERT, AGGREGATE BEDDING, AND COHESIVE SOIL CAPS, IS INCIDENTAL. ALL TRENCH BACKFILL MATERIALS OTHER THAN AGGREGATE BEDDING AND GRANULAR BACKFILL (MOD.) ARE INCIDENTAL.

⑨ THE UPPER TRENCH TAPER RATE SHALL BE 1:20 FOR ALL TREATMENT #2 PIPE PLACEMENTS SINCE GRANULAR BACKFILL (MOD) MATERIAL WILL OVERLAY INPLACE MATERIAL. THE UPPER TRENCH TAPER SHALL END 6 INCHES BELOW THE BOTTOM OF THE ROADWAY SECTION SELECT GRANULAR MATERIAL AS SHOWN.

⑩ FLOOD COMPACTED GRANULAR BACKFILL (MOD.) MATERIAL SHALL BE PLACED AS TRENCH BACKFILL FROM THE TOP OF THE PIPE BEDDING MATERIAL THE CONTROLLING (HIGH) TOP OF PIPE ELEVATION AT THE ROAD CORE LINE FOR ALL TREATMENT #1 PIPES; AND TO THE BOTTOM OF THE ROADWAY SECTION SELECT GRANULAR MATERIAL LAYER FOR ALL TREATMENT #2 PIPES. NO COMPENSATION WILL BE PAID FOR FLOOD COMPACTED GRANULAR BACKFILL (MOD.) MATERIAL PLACED OUTSIDE OF THE ROAD CORE.

⑪ GRANULAR BACKFILL (MOD) SHALL MEET THE MATERIAL SPECIFICATIONS OF "SELECT GRANULAR BACKFILL" (STD. SPEC. 3149.2D.3).

⑫ A COHESIVE SOIL CAP SHALL BE CONSTRUCTED ON BOTH THE INLET AND OUTLET ENDS OF ALL PIPE INSTALLATIONS UNDER THE HIGHWAY OR PAVED ROADWAY WHERE ANY GRANULAR OR OTHER HIGHLY PERMEABLE MATERIALS HAVE BEEN UTILIZED IN THE TRENCH BACKFILL, OR IN CONSTRUCTED SOIL EMBANKMENT, ABOVE OR AROUND THE PIPE. THE COHESIVE SOIL CAP SHALL NOT BE LESS THAN 3' THICK IN ANY LOCATION, MEASURED PERPENDICULARLY IN FROM THE SLOPE (AND NOT INCLUDE RIPRAP OR SLOPE DRESSING), AND SHALL BE CONSTRUCTED TO FULLY OVERLAP ALL GRANULAR BACKFILL MATERIALS, WITH DIMENSIONS BEING AS SHOWN BELOW. VERTICALLY, THE COHESIVE SOIL CAP SHALL EXTEND FROM 3' BENEATH THE PIPE INVERT ELEVATION UP TO A MINIMUM HEIGHT OF THE GRADING GRADE AT THE SHOULDER P.I. (TOP OF THE ROADWAY INSLOPE), OR TO 5' ABOVE THE TOP OF THE FLOOD COMPACTED GRANULAR TRENCH BACKFILL MATERIALS, WHICHEVER IS LOWER.

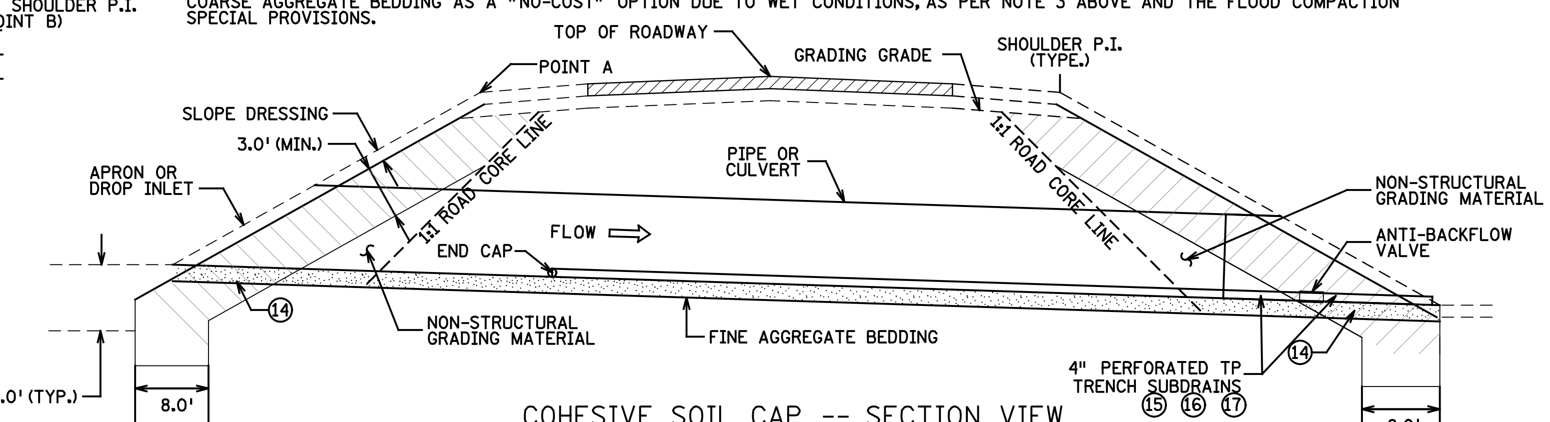
⑬ MATERIAL USED IN COHESIVE SOIL CAPS SHALL BE ANY SUITABLE GRADING MATERIAL THAT HAS A MINIMUM OF 50% PASSING THE #200 SIEVE AND CONTAINS NOT LESS THAN 20% CLAY-SIZED PARTICLES (0.002 MILLIMETERS OR LESS). COHESIVE SOIL CAPS ARE CONSIDERED COMMON EMBANKMENT.

⑭ THE PIPE OR PIPE CULVERT AGGREGATE BEDDING MATERIAL SHALL EXTEND THROUGH THE COHESIVE SOIL CAP ON THE DOWNSTREAM (OUTLET) END, BUT SHALL NOT EXTEND THROUGH THE COHESIVE SOIL CAP ON THE UPSTREAM (INLET) END. ANY PERMEABLE PIPE BEDDING MATERIALS, SUCH AS COARSE AGGREGATE BEDDING (IF UTILIZED), MUST BE FULLY WRAPPED ON ALL SIDES, INCLUDING ON THE ENDS, WITH TYPE IV GEOTEXTILE FABRIC (INCIDENTAL).

⑮ THE 4" PERFORATED TP TRENCH SUBDRAINS SHALL EXTEND TO WITHIN 10 FT OF THE UPSTREAM ROAD CORE LINE.

⑯ PROVIDE A MANUFACTURERS END CAP ON THE UPSTREAM END OF THE 4" PERFORATED TP TRENCH SUBDRAINS, AND A COMMERICAL ANTI- BACKFLOW VALVE APPROXIMATELY 6' FROM THE DOWNSTREAM (OUTLET) END. ANTI-BACKFLOW VALVES TO BE PLACED SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. THE 4" PERFORATED TP TRENCH SUBDRAINS, END CAPS, ANTI-BACKFLOW VALVES, AND TYPE I GEOTEXTILE FABRIC WRAP ARE INCIDENTAL.

⑰ THE 4" PERFORATED TP TRENCH SUBDRAINS CAN BE OMITTED IN LOCATIONS WHERE THE CONTRACTOR ELECTS TO FURNISH GEOTEXTILE WRAPPED COARSE AGGREGATE BEDDING AS A "NO-COST" OPTION DUE TO WET CONDITIONS, AS PER NOTE 3 ABOVE AND THE FLOOD COMPACTION SPECIAL PROVISIONS.



COHESIVE SOIL CAP -- SECTION VIEW

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ROBERT J. LEBA

Date ______ License # 41951

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY D. ANDERSON
CHECKED BY B. LEBA
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

DRAINAGE DETAILS
TH 22 & CSAH 90

1:33:30 PM
7/28/2017
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DRAINAGE TABULATION — S

FLOWS FROM STR. OR APRON INLET POINT NO.	STRUCTURE LOCATION ALIGNMENT NAME	STATION	OFFSET FT	FLOWS TO STR. OR APRON OUTLET POINT NO.	NEW STRUCTURE CONSTRUCTION DESIGN	PAY HEIGHT LIN FT	CASTING ASSEMBLY TYPE (B)	STEPS REQ'D (A)	RC PIPE (DESIGN 3006) 12" CLV L.F.	APR	15" CLV L.F.	APR	24" CLII L.F.	APR	RC PIPE CULVERT (DESIGN 3006) 15" CLV L.F.	APR	24" CLII L.F.	APR	CS PIPE CULVERT 18" L.F.	APR	24" L.F.	APR	30" L.F.	APR	LINING CULVERT PIPE 30" L.F.	36" L.F.	EROSION CONTROL BLANKET AND SEED (C) SQ YD	RIPRAP (B) CLASS II CU YD	CLASS III CU YD	GEOTEXTILE FILTER TYPE IV SQ YD	GUIDE POST TYPE B EACH	NOTES
1000	NB TH 22	729+76.00	1.00 L	1003	G	3.7	S - 5	Y			31																					(2)
1001	NB TH 22	729+69.24	17.00 R	1002	G	3.7	S - 5	Y			37																					(D) (2)
1002	NB TH 22	729+69.24	60.25 R		APRON							1																3.4		18.0	1	(2)
1003	ROUNDABOUT	101+72.00	19.00 R	1004	G	4.1	S - 5	Y			31																					(2)
1004	SB TH 22	311+80.19	21.86 L	1005	G	4.2	S - 5	Y			22																					(D) (2)
1005	SB TH 22	311+74.91	49.75 L		APRON							1																3.4		18.0	1	(2)
1006	WB CSAH 90	710+24.00	19.40 L	1007	G	3.7	S - 5	Y			30																					(D) (3)
1007	WB CSAH 90	710+24.00	55.57 L		APRON							1																3.4		18.0	1	(3)
1008	EB CSAH 90	619+46.00	1.00 L	1009	G	3.7	S - 5	Y			7																					(3)
1009	WB CSAH 90	712+39.00	4.66 R	1010	G	4.0	B - 9	Y			46																					(D) (3)
1010	WB CSAH 90	712+39.00	47.25 L		APRON							1																3.4		18.0	1	(3)
1011	EB CSAH 90	617+01.00	18.97 R	1012	G	3.7	S - 5	Y			34																					(D) (3)
1012	EB CSAH 90	617+01.00	59.04 R		APRON							1																3.4		18.0	1	(3)
1013	WB CSAH 90	705+00.00	20.61 L	1014	G	3.9	S - 5	Y			14																					(D) (3)
1014	WB CSAH 90	705+00.00	40.64 L		APRON							1																3.4		18.0	1	(3)
1015	EB CSAH 90	611+99.00	19.40 R	1016	G	3.7	S - 5	Y			25																					(D) (3)
1016	EB CSAH 90	611+99.00	50.73 R		APRON							1																3.4		18.0	1	(3)
1017	WB CSAH 90	702+83.00	1.00 R	1018	G	3.7	S - 5	Y			7																					(3)
1018	EB CSAH 90	609+84.00	4.61 L	1019	G	4.0	B - 9	Y			45																					(D) (3)
1019	EB CSAH 90	609+83.00	46.14 R		APRON							1																3.4		18.0	1	(3)
1020A	SB TH 22	308+83.00	17.00 L	1020	G	3.7	S - 5	Y			15																					(2)
1020	SB TH 22	308+68.00	17.27 L	1021	G	3.9	S - 5	Y			36																					(D) (2)
1021	SB TH 22	308+68.00	59.31 L		APRON							1																3.4		18.0	1	(2)
1022	NB TH 22	726+47.00	17.73 R	1023	G	3.7	S - 5	Y			33																					(D) (2)
1023	NB TH 22	726+47.00	56.45 R		APRON							1																3.4		18.0	1	(2)
1024	NB TH 22	724+62.00	4.64 L	1025	G	3.7	B - 9	Y			7																					(2)
1025	SB TH 22	306+62.00	1.00 R	1026	G	4.1	S - 5	Y			33																					(D) (2)
1026	SB TH 22	306+62.00	37.71 L		APRON							1																3.4		18.0	1	(2)
1027	SB TH 22	312+73.98	63.87 L	1028	APRON										32	1											9				1	(D) (2)
1028	SB TH 22	312+36.89	93.89 L		APRON											1												3.4		18.0	1	(2)
1029	SB TH 22	313+72.53	81.19 L	1030	APRON										28	1											9				1	(D) (2)
1030	SB TH 22	313+43.74	53.80 L		APRON											1												3.4		18.0	1	(2)
1031	SB TH 22	311+26.41	75.21 L	1033	APRON								108	1													15				1	(D) (I) (3)
SP 0704-108 (NHPP (OTHER)) DRAINAGE SUBTOTAL THIS SHEET																																
SP 0704-108 (HSIP (RAB)) DRAINAGE SUBTOTAL THIS SHEET											245	5			60	4											18	23.8		126.0	9	
SP 007-070-005 (HSIP (RAB)) DRAINAGE SUBTOTAL THIS SHEET											208	6	108	1													15	20.4		108.0	7	

GENERAL NOTES:
STA., OFFSETS, AND COORDINATES ARE GIVEN TO THE END OF APRON OR CENTER OF CASTING ASSEMBLY
CASTING SUMP = 0.10 FT FOR CATCH BASIN CASTINGS, AND 0.20 FT FOR DROP INLET CASTINGS. SUMP HAS BEEN INCLUDED IN TOP OF CASTING ELEVATIONS.
ROTATE STRUCTURES SUCH THAT MAJORITY OF STRUCTURE IS BEHIND CURB LINE UNLESS DIRECTED BY THE ENGINEER OR ALTERNATE ROTATION IS REQUIRED TO AVOID CONFLICTS (SEE DRAINAGE DETAILS).

SEE 140 FOR CASTING KEY AND SUMMARY TABULATION.
PAYMENT FOR CULVERT PIPES MADE UNDER ITEM 2501.

ITEMS IN EACH ROW ARE PAID UNDER THE SP OR SAP AS INDCATED BY THE NOTES BELOW:
(1) PAID FOR UNDER SP 0704-108 (NHPP (OTHER)) - 80% FEDERAL, 20% STATE
(2) PAID FOR UNDER SP 0704-108 (HSIP (RAB)) - 90% FEDERAL, 10% STATE
(3) PAID FOR UNDER SP 007-070-005 (HSIP (RAB)) - 90% FEDERAL, 10% LOCAL

(A) STEPS REQUIRED WHEN DEPTH FROM TOP OF CASTING TO STRUCTURE INVERT IS GREATER THAN 3.5 FT.
(B) RIPRAP QUANTITY ASSUMES RIPRAP UTILIZED UNDER APRONS (INSTEAD OF GRANULAR FILTER) UNLESS NOTED OTHERWISE. GRANULAR FILTER MAY BE SUBSTITUTED FOR THE RIPRAP UNDER THE APRON PER MNDOT STANDARD PLATE 3133. IF GRANULAR FILTER IS SUBSTITUTED IT SHALLBE PAID FOR AS RIPRAP OF THE CLASS INDICATED AT THAT LOCATION. GEOTEXTILE FILTER SHALL BE TYPE IV AT ALL RIPRAP LOCATIONS.
(C) PLACE BLANKET AND SEED PER STANDARD PLAN 5-297.404.
(D) TIE ALL JOINTS FOR CULVERTS AND LAST 3 JOINTS FOR STORM SEWER RUNS CONTAINING APRONS. TIED JOINTS SHALL BE INCIDENTAL.
(E) BUILD OVER EXISTING PIPE OR CONNECT TO EXISTING PIPE. PIPE TO PIPE CONNECTIONS SHALL BE MADE AT AN EXISTING PIPE JOINT. FIELD VERIFY LOCATION AND ELEVATION.
(F) FURNISH AND INSTALL PILING AND CORRUGATED METAL END SECTION WITH APRON. SEE DRAINAGE DETAILS.
(G) USE POSITIVE JOINTS ON ALL CORRUGATED STEEL PIPE.
(H) FURNISH AND INSTALL ANTI-SEEPAGE DIAPHRAGM PER MNDOT STD. PLATE 3146 (INCIDENTAL).
(I) FURNISH AND INSTALL TRASH GUARD WITH APRON. SEE DRAINAGE DETAILS.
(J) FURNISH AND INSTALL 1:4 SAFETY APRON PER MNDOT STANDARD PLATE 3022 (OPTION 1 ASSUMED FOR LENGTH).
(K) FURNISH AND INSTALL 1:6 SAFETY APRON PER MNDOT STANDARD PLATE 3128.
(L) SEE DRAINAGE DETAILS FOR CULVERT BEDDING AND BACKFILL.
(M) CONNECT TO EXISTING DRAINTILE WITH A 24" PE CLEANOUT STRUCTURE. CLEANOUT STRUCTURE AND CONNECTION SHALL BE INCIDENTAL.
(N) LINE CULVERT PIPE WITH A CIPP LINER. SEE SPECIAL PROVISIONS.

DRAINAGE TABULATION — S

FLOWS FROM STR. OR APRON INLET POINT NO.	ALIGNMENT NAME	STATION	OFFSET FT	FLOWS TO STR. OR APRON OUTLET POINT NO.	NEW STRUCTURE CONSTRUCTION: DESIGN	PAY HEIGHT LIN FT	CASTING ASSEMBLY TYPE (B)	STEPS REQ'D (A)	RC PIPE (DESIGN 3006) 12" CLV L.F.	APR	15" CLV L.F.	APR	24" CLII L.F.	APR	RC PIPE CULVERT (DESIGN 3006) 15" CLV L.F.	APR	24" CLII L.F.	APR	CS PIPE CULVERT 18" L.F.	APR	24" L.F.	APR	30" L.F.	APR	LINING CULVERT PIPE 30" L.F.	36" L.F.	EROSION CONTROL BLANKET AND SEED (C) SQ YD	RIPRAP (B) CLASS II CU YD	CLASS III CU YD	GEOTEXTILE FILTER TYPE IV SQ YD	GUIDE POST TYPE B EACH	NOTES
1032	ROUNDABOUT	103+01.00	1.00 L	1033	G	3.7	S - 5	Y			58																					(2)
1033	SB TH 22	310+70.71	44.25 L	1034	60-4020	5.8	A - 7D	Y					67																			(D) (3)
1034	SB TH 22	310+00.46	66.22 L		APRON									1														6.7		29.7	1	(3)
1050	NB TH 22	722+49.00	48.00 R	1051	APRON														85	1							16				1	(G)(H)(K) (1)
1051	NB TH 22	721+64.00	46.50 R		APRON															1								4.6		22.4	1	(K) (1)
1052	SB TH 22	303+73.00	46.50 L	1053	APRON														94	1							16				1	(G)(H)(K) (1)
1053	SB TH 22	302+79.00	46.50 L		APRON															1								4.6		22.4	1	(K) (1)
1054	NB TH 22	718+92.00	49.50 R	1055	APRON														88	1							16				1	(G)(H)(K) (1)
1055	NB TH 22	718+04.00	49.50 R		APRON															1								4.6		22.4	1	(K) (1)
1062	NB TH 22	718+00.22	48.12 R	1064	APRON												98	1													1	(D)(J)(L) (1)
1064	SB TH 22	300+01.88	49.54 L		APRON													1										6.7		29.7	1	(J) (1)
1066	NB TH 22	746+37.76	50.75 R	1069	APRON												90	1									17				1	(D)(J)(L) (1)
1069	NB TH 22	746+38.73	51.91 L		APRON													1											10.0	33.4	1	(J) (1)
1075	NB TH 22	718+97.00	66.74 R	1076	CO				150																							(M) (1)
1076	SB TH 22	300+96.00	70.26 L		CO																											(M) (1)
1080	NB TH 22	741+70.00	51.25 R	1081															63	1							16				1	(G)(H)(K) (1)
1081	NB TH 22	742+33.00	51.25 R																	1								4.6		22.4	1	(K) (1)
2000	NB TH 22	672+30.00	25.00 R	2001	G	3.7	D - 4	Y			10																					(1)
2001	NB TH 22	672+20.00	25.00 R	2002	G	4.3	D - 4	Y			18																					(D) (1)
2002	NB TH 22	672+13.00	47.81 R		APRON							1																3.4		18.0	1	(1)
2010	NB TH 22	695+61.85	62.04 R	2011	F	16.1	M - 11	Y																	144						1	(D)(E)(N) (1)
2011	NB TH 22	695+27.11	77.22 L		APRON																			1					13.4	41.6	1	(E) (F) (1)
3000	NB TH 22	633+84.00	35.50 L	3001	APRON																79	1					21				1	(G)(H)(K) (1)
3001	NB TH 22	634+63.00	36.27 L		APRON																	1									1	(K) (1)
6000	NB TH 22	654+10.36	34.83 L	6001	EX APRON																					104						(N) (1)
6001	NB TH 22	654+10.70	71.87 R		EX PIPE																											(1)
SP 0704-108 (NHPP (OTHER)) DRAINAGE SUBTOTAL THIS SHEET									150		28	1					188	4	330	8	79	2		1	144	104	102	28.5	23.4	212.3	17	
SP 0704-108 (HSIP (RAB)) DRAINAGE SUBTOTAL THIS SHEET											58																					
SP 007-070-005 (HSIP (RAB)) DRAINAGE SUBTOTAL THIS SHEET													67	1														6.7		29.7	1	

GENERAL NOTES:
STA., OFFSETS, AND COORDINATES ARE GIVEN TO THE END OF APRON OR CENTER OF CASTING ASSEMBLY
CASTING SUMP = 0.10 FT FOR CATCH BASIN CASTINGS, AND 0.20 FT FOR DROP INLET CASTINGS. SUMP HAS BEEN INCLUDED IN TOP OF CASTING ELEVATIONS.
ROTATE STRUCTURES SUCH THAT MAJORITY OF STRUCTURE IS BEHIND CURB LINE UNLESS DIRECTED BY THE ENGINEER OR ALTERNATE ROTATION IS REQUIRED TO AVOID CONFLICTS (SEE DRAINAGE DETAILS).

SEE 140 FOR CASTING KEY AND SUMMARY TABULATION.
PAYMENT FOR CULVERT PIPES MADE UNDER ITEM 2501.

ITEMS IN EACH ROW ARE PAID UNDER THE SP OR SAP AS INDCATED BY THE NOTES BELOW:
(1) PAID FOR UNDER SP 0704-108 (NHPP (OTHER)) - 80% FEDERAL, 20% STATE
(2) PAID FOR UNDER SP 0704-108 (HSIP (RAB)) - 90% FEDERAL, 10% STATE
(3) PAID FOR UNDER SP 007-070-005 (HSIP (RAB)) - 90% FEDERAL, 10% LOCAL

(A) STEPS REQUIRED WHEN DEPTH FROM TOP OF CASTING TO STRUCTURE INVERT IS GREATER THAN 3.5 FT.
(B) RIPRAP QUANTITY ASSUMES RIPRAP UTILIZED UNDER APRONS (INSTEAD OF GRANULAR FILTER) UNLESS NOTED OTHERWISE. GRANULAR FILTER MAY BE SUBSTITUTED FOR THE RIPRAP UNDER THE APRON PER MNDOT STANDARD PLATE 3133. IF GRANULAR FILTER IS SUBSTITUTED IT SHALLBE PAID FOR AS RIPRAP OF THE CLASS INDICATED AT THAT LOCATION. GEOTEXTILE FILTER SHALL BE TYPE IV AT ALL RIPRAP LOCATIONS.
(C) PLACE BLANKET AND SEED PER STANDARD PLAN 5-297.404.
(D) TIE ALL JOINTS FOR CULVERTS AND LAST 3 JOINTS FOR STORM SEWER RUNS CONTAINING APRONS. TIED JOINTS SHALL BE INCIDENTAL.
(E) BUILD OVER EXISTING PIPE OR CONNECT TO EXISTING PIPE. PIPE TO PIPE CONNECTIONS SHALL BE MADE AT AN EXISTING PIPE JOINT. FIELD VERIFY LOCATION AND ELEVATION.
(F) FURNISH AND INSTALL PILING AND CORRUGATED METAL END SECTION WITH APRON. SEE DRAINAGE DETAILS.
(G) USE POSITIVE JOINTS ON ALL CORRUGATED STEEL PIPE.
(H) FURNISH AND INSTALL ANTI-SEEPAGE DIAPHRAGM PER MNDOT STD. PLATE 3146 (INCIDENTAL).
(I) FURNISH AND INSTALL TRASH GUARD WITH APRON. SEE DRAINAGE DETAILS.
(J) FURNISH AND INSTALL 1:4 SAFETY APRON PER MNDOT STANDARD PLATE 3022 (OPTION 1 ASSUMED FOR LENGTH).
(K) FURNISH AND INSTALL 1:6 SAFETY APRON PER MNDOT STANDARD PLATE 3128.
(L) SEE DRAINAGE DETAILS FOR CULVERT BEDDING AND BACKFILL.
(M) CONNECT TO EXISTING DRAINTILE WITH A 24" PE CLEANOUT STRUCTURE. CLEANOUT STRUCTURE AND CONNECTION SHALL BE INCIDENTAL.
(N) LINE CULVERT PIPE WITH A CIPP LINER. SEE SPECIAL PROVISIONS.

CASTING ASSEMBLIES SUMMARY — R

ASSEMBLY	RING OR FRAME CASTING	COVER OR GRATE CASTING (A)	CURB BOX	STANDARD PLATE NO.	QUANTITY (EACH)	REMARKS
A - 7D	700-7			4101	1	MANHOLE
		715		4110		
			N/A			
B - 9	805			4132	3	CATCH BASIN
		816		4154		
			N/A			
D - 4	805			4132	2	CATCH BASIN
		816		4154		
			N/A			
M - 11	ROUND CONC			4143	1	DROP INLET
		731		4143		
			N/A			
S - 5	805			4132	15	CATCH BASIN
		816		4154		
			N/A			
PROJECT TOTALS:					22	

NOTES:
(A) USE BENT BOLT WITH 816 GRATE.

DRAINAGE SUMMARY TABULATION — EE

SHEET	DRAINAGE STRUCTURE DESIGN				TRASH GUARD		CASTING	CONN. TO EX. STORM SEWER	NOTES
	G	F	60-4020		24"				
	L.F.	L.F.	L.F.		EACH		EACH	EACH	
SP 0704-108 (NHPP (OTHER)) - 80% FEDERAL, 20% STATE									
138									
139	8.0	16.1					3	2	
SP 0704-108 (NHPP (OTHER)) DRAINAGE TOTAL	8.0	16.1					3	2	
PAID FOR UNDER SP 0704-108 (HSIP (RAB)) - 90% FEDERAL, 10% STATE									
138	34.8						9		
139	3.7						1		
SP 0704-108 (HSIP (RAB)) DRAINAGE TOTAL	38.5						10		
PAID FOR UNDER SP 007-070-005 (HSIP (RAB)) - 90% FEDERAL, 10% LOCAL									
138	30.4				1		8		
139			5.8				1		
SP 007-070-005 (HSIP (RAB)) DRAINAGE TOTAL	30.4		5.8		1		9		

DRAINAGE SUMMARY TABULATION — EE

SHEET	RC PIPE (DESIGN 3006)						RC PIPE CULVERT (DESIGN 3006)				CS PIPE						LINING CULVERT PIPE		EROSION CONTROL	RIPRAP				NOTES
	12" CLV		15" CLV		24" CLII		15" CLV		24" CLII		18"		24"		30"		30"	36"	BLANKET AND SEED	CLASS II	CLASS III	GEOTEXTILE FILTER TYPE IV	GUIDE POST TYPE B	
	L.F.	APR	L.F.	APR	L.F.	APR	L.F.	APR	L.F.	APR	L.F.	APR	L.F.	APR	L.F.	APR	L.F.	L.F.	SQ YD	CU YD	CU YD	SQ YD	EACH	
SP 0704-108 (NHPP (OTHER)) - 80% FEDERAL, 20% STATE																								
138																								
139	150		28	1					188	4	330	8	79	2		1	144	104	102	28.5	23.4	212.3	17	(1) (2) (3)
SP 0704-108 (NHPP (OTHER)) DRAINAGE TOTAL	150		28	1					188	4	330	8	79	2		1	144	104	102	28.5	23.4	212.3	17	
PAID FOR UNDER SP 0704-108 (HSIP (RAB)) - 90% FEDERAL, 10% STATE																								
138			245	5			60	4											18	23.8		126	9	
139			58																					
SP 0704-108 (HSIP (RAB)) DRAINAGE TOTAL			303	5			60	4											18	23.8		126.0	9	
PAID FOR UNDER SP 007-070-005 (HSIP (RAB)) - 90% FEDERAL, 10% LOCAL																								
138			208	6	108	1													15	20.4		108	7	
139					67	1														6.7		29.7	1	
SP 007-070-005 (HSIP (RAB)) DRAINAGE TOTAL			208	6	175	2													15	27.1		137.7	8	

NOTES:
(1) 24" CS PIPE APRON COLUMN INCLUDES 2-24"CS SAFETY APRONS
(2) 18" CS PIPE APRON COLUMN INCLUDES 6-18"CS SAFETY APRONS
(3) 24" RC PIPE CL II APRON COLUMN INCLUDES 4-24" RC SAFETY APRONS

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

(NPDES PERMIT IS REQUIRED ON THIS PROJECT)

PROJECT NAME/LOCATION

S.P. 0704-108 is located on T.H. 22 from RP 46+00.100 to RP 48+00.339 in the county of Blue Earth, Mankato, 56001.
Latitude: 44.1153 (north limit), 44.0831 (south limit) Longitude: -93.9589 (north limit), -93.9530 (south limit)

ENVIRONMENTAL REVIEW

The environmental review that was completed on XX/XX/XXXX was a categorical exclusion. 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 or Drinking Water Supply Management Area (DWSMA).

PROJECT DESCRIPTION/NARRATIVE

Grading, bituminous & concrete pavement, concrete curb & gutter, drainage, and lighting.

LONG TERM MAINTENANCE AND OPERATION

~~MnDOT District 7 maintenance staff are responsible for the long term maintenance and operation of the permanent stormwater system.~~
or
~~MnDOT has entered into a cooperative agreement with (city/county) that identifies the agency that is responsible for ongoing maintenance. See agreement number ###, on file with MnDOT, for more information.~~
No permanant stormwwater treatment systems are required for this project.

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 the Notice of Termination (NOT) has been submitted with the Minnesota Pollution Control Agency (MPCA). MnDOT District 7 staff and members of MnDOT's Office of Environmental Stewardship are also available for technical assistance.

MnDOT District 7	MnDOT District 7	Contractor is:
Construction Engineer	Maintenance Supervisor (owner)	
Name	Name	Co-Permitee
Phone	Phone	
Address	Address	
email	email	

ORGANIZATION	CONTACT NAME	PHONE	PERMIT NO.
MnDOT District 7 Design	Andrew Lawver	507-304-6216	N/A
MnDOT District 7 Hydraulics	Jared DeMaster	507-304-6237	N/A
Construction Site Manager	Adam Schendel	507-304-6201	N/A
MnDOT Office of Environmental Sterwardship	Kenneth Graeve	651-366-3613	N/A
MN Department of Natural Resources	Peter Leete	651-366-3634	XXXX
Minnesota Pollution Control Agency	Brian Green	507-206-2610	XXXX
Army Corp of Engineers	Ben Orne	651-290-5358	XXXX
County Ag Inspector	Mike Samuelson	507-304-4025	N/A
SWPPP Designer	Robert Leba	763-475-0010	N/A

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 the NOT has been filed with the MPCA.

The Erosion Control Supervisor is responsible for complying with all the inspection and maintenance requirements stated in the NPDES permit. 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

The required SWPPP elements are located in several places within the plan set as well as in the special provisions and MnDOT spec book (2016 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
EROSION CONTROL SHEETS	SHEETS NO. 143 - 149
POND CONTOUR SHEETS	SHEETS NO. 191
DIRECTION OF FLOW	SHEETS NO. 126 - 131
FINAL STABILIZATION	SHEETS NO. 143 - 149
SOILS AND CONSTRUCTION NOTES	SHEETS NO. 97 - 102
DRAINAGE STRUCTURES	SHEETS NO. 126 - 131
DRAINAGE TABULATION	SHEETS NO. 138 - 140
DRAINAGE PLAN/PROFILE SHEETS	SHEETS NO. 126 - 134
DRAINAGE TABULATION	SHEETS NO. -
EROSION AND SEDIMENT CONTROL DETAILS	SHEETS NO. -
EROSION CONTROL TABULATION	SHEETS NO. 15
TURF ESTABLISHMENT TABULATION	SHEETS NO. 15

PROJECT WATERBODIES

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

NAME	TYPE	SPECIAL?	IMPAIRED?	APPROVED TMDL?
Le Sueur River	River	No	Yes	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 30.7 inches. Average 2-year and 10-year rainfall intensities are 0.121 in/hr and 0.181 in/hr respectively.
Type of stormwater management: None required

LAND FEATURE CHANGES

Total disturbed area: 23.1 acres (Includes 10.5 acres of mill and overlay)
Total existing impervious surface area: 15.7 acres
Total post construction surface area: 15.1 acres
Total proposed net change in impervious surface area: -0.6 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 silty clay loam.
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.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (CONTINUED)

GENERAL SWPPP NOTES FOR CONSTRUCTION ACTIVITY

1. Construction shall be governed by the 2013 NPDES Construction Stormwater Permit, MnDOT Spec Book (2016 Edition), project plans, and special provisions. Reference special provision 1717 for additional MPCA NPDES requirements. The contractor will develop a chain of command with all operators on the site to ensure that the SWPPP will be implemented and stay in effect until the construction project is complete, the entire site has undergone final stabilization, and the NOT has been submitted.

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 and in compliance with part IV of the NPDES permit. 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 within the time frames indicated in the NPDES permit.

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 non-functional 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 non-functional 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 non-functional 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, site has gone under final stabilization, and the NOT has been submitted.

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.

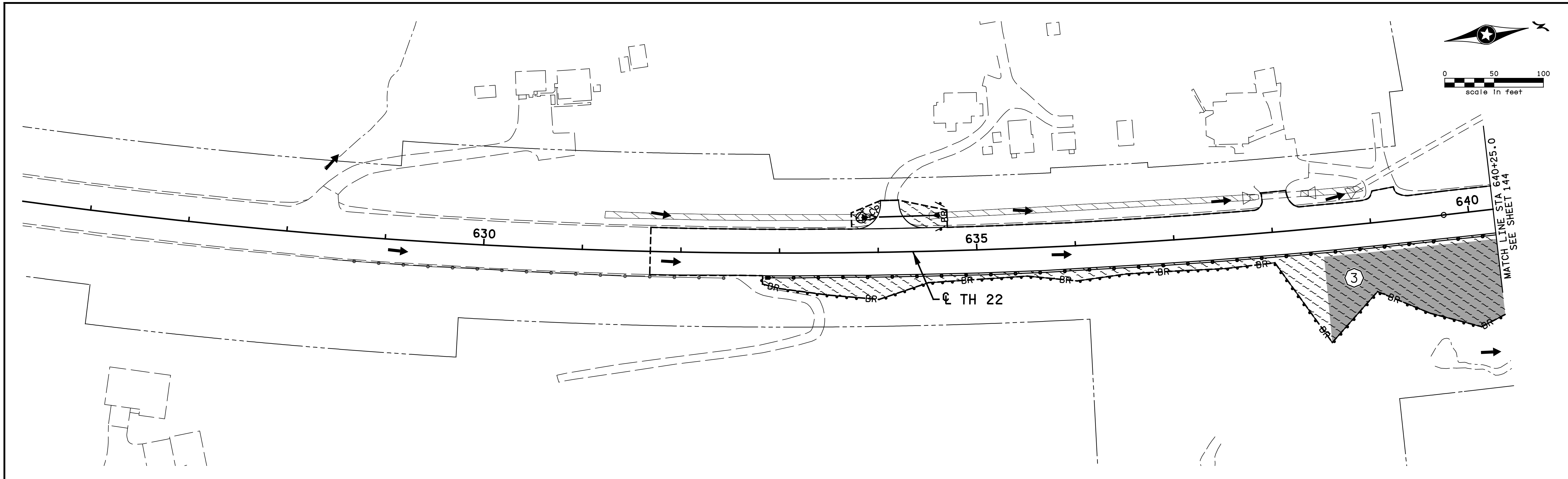
24. Final stabilization requires that:
   - A. All soil disturbing activities at the site have been completed.
   - B. All soils have been stabilized by a uniform perennial cover with a density of 70% or other equivalent means to prevent soil failure under erosive conditions.
   - C. All accumulated 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. The NOT form can be found on the MPCA Stormwater Program for Construction Activity webpage. Submit the completed NOT form to the MnDOT District 7 Construction Office for final submittal to MPCA.

27. 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 permit and is not intended to be all inclusive. Modifications from the permit will be underlined for quick identification.



LEGEND

- SEED MIXTURE 35-241
- ③ EROSION CONTROL BLANKET (CATEGORY 3N)
- BR — SEDIMENT CONTROL LOG TYPE STRAW
- MS — SILT FENCE, TYPE MS
- ← DIRECTION OF FLOW
- STORM DRAIN INLET PROTECTION
- CP CULVERT END CONTROLS

GENERAL NOTES:

SEE CONSTRUCTION AND SOILS NOTES FOR TYPES OF SEEDING, MULCH AND FERTILIZER.

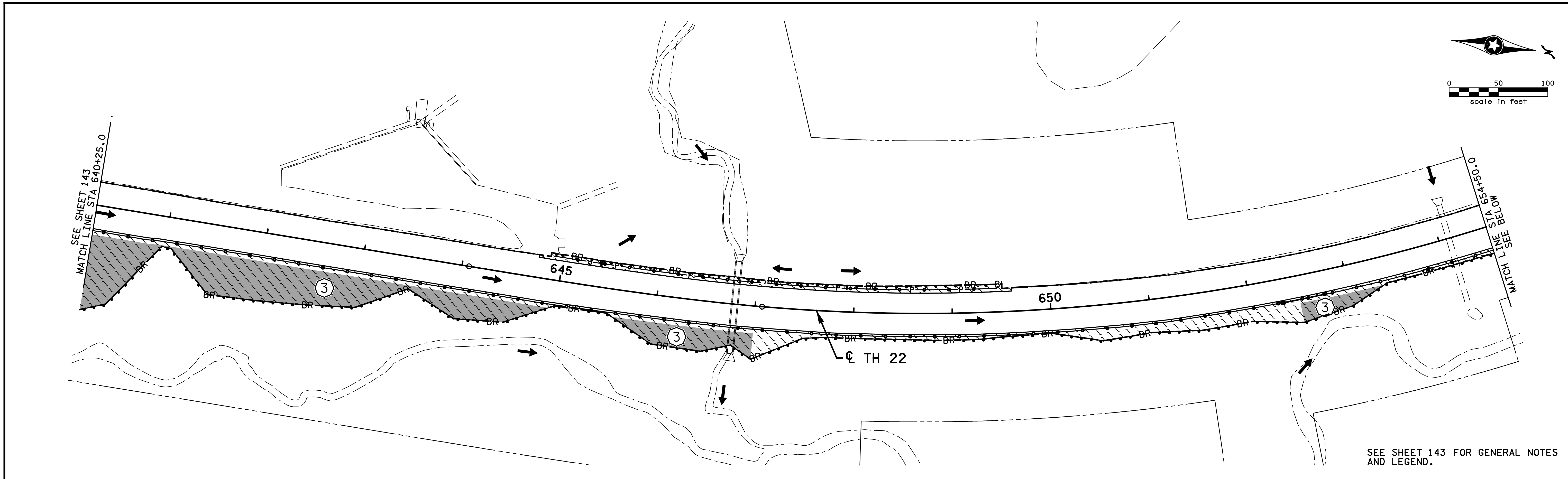
RAPID STABILIZATION METHOD 3 SHALL BE APPLIED TO TEMPORARILY STABILIZE DISTURBED AREAS PER MNDOT SPED. 2575.

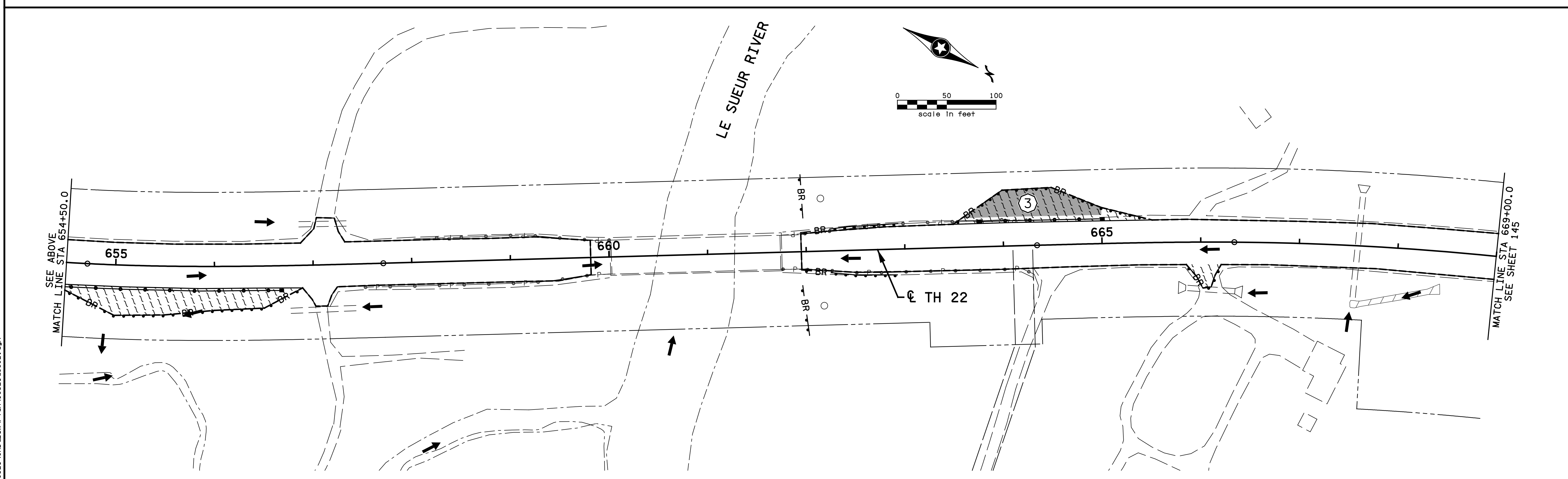
PLACE PERMANENT TURF ESTABLISHMENT AND EROSION CONTROL MEASURES ALONG THE PERMANENT CONSTRUCTION.

MULCH ALL AREAS NOT COVERED BY BLANKET.

SILT FENCE SHALL FOLLOW A SINGLE CONTOUR LINE AS CLOSE AS POSSIBLE WHEN PLACED.

ADDITIONAL EROSION CONTROL MEASURES MAY BE NEEDED AS CONDITIONS WARRANT. PLACE ADDITIONAL MEASURES AT THE DIRECTION OF THE ENGINEER.





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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

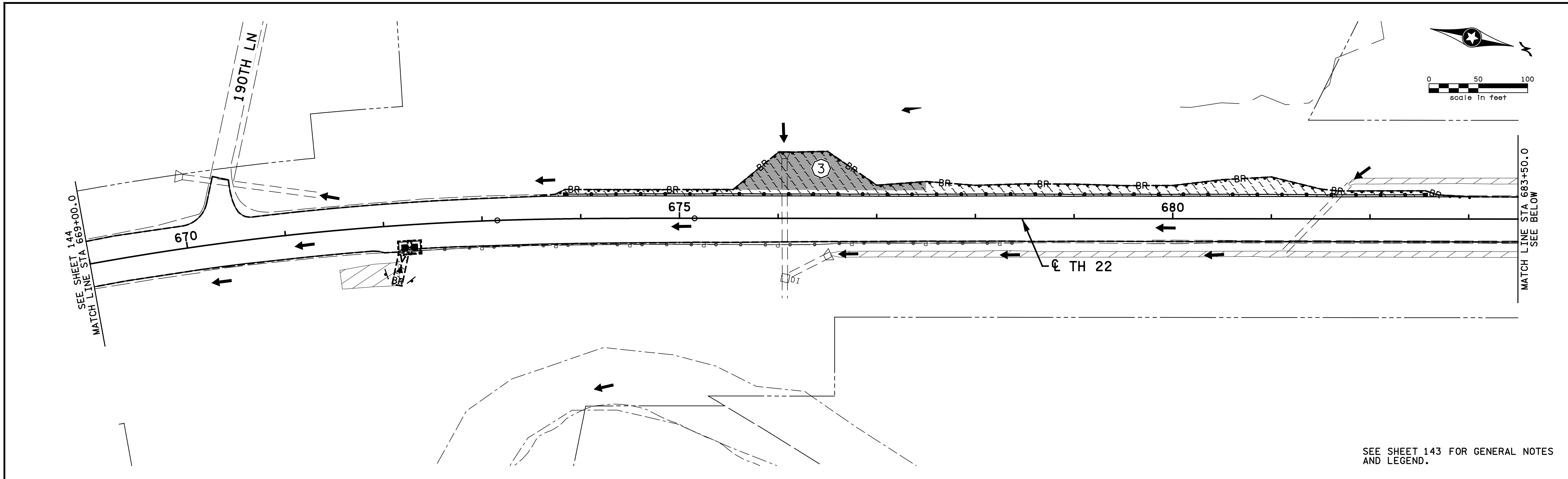
STATE PROJECT NO. 007-070-005

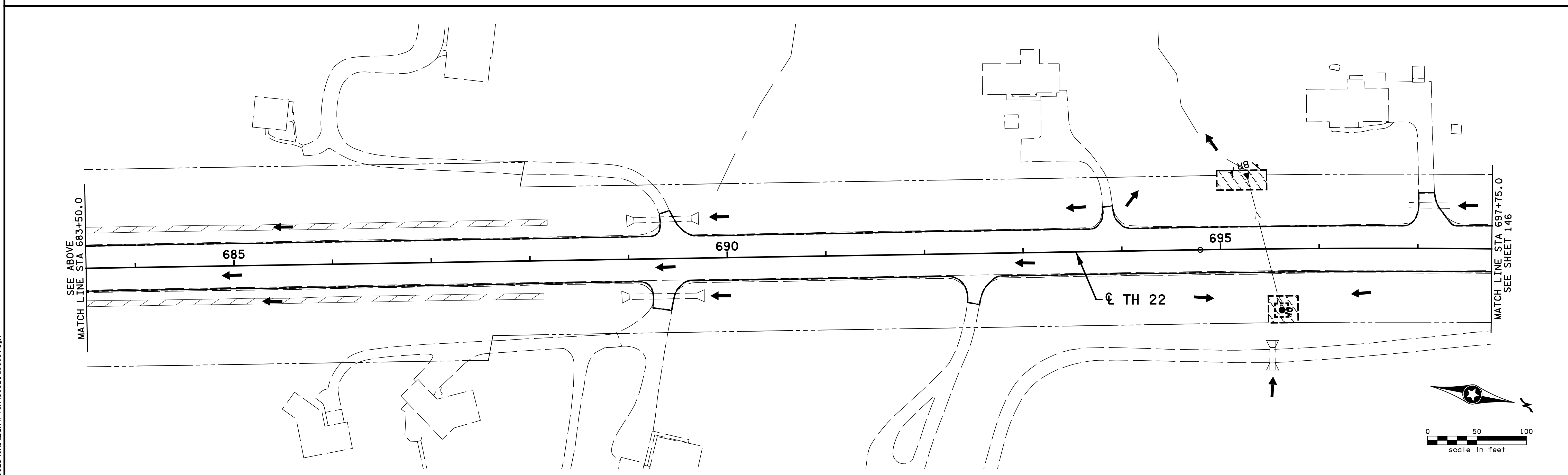
DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

EROSION CONTROL AND TURF ESTABLISHMENT PLANS
TH 22 & CSAH 90





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NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

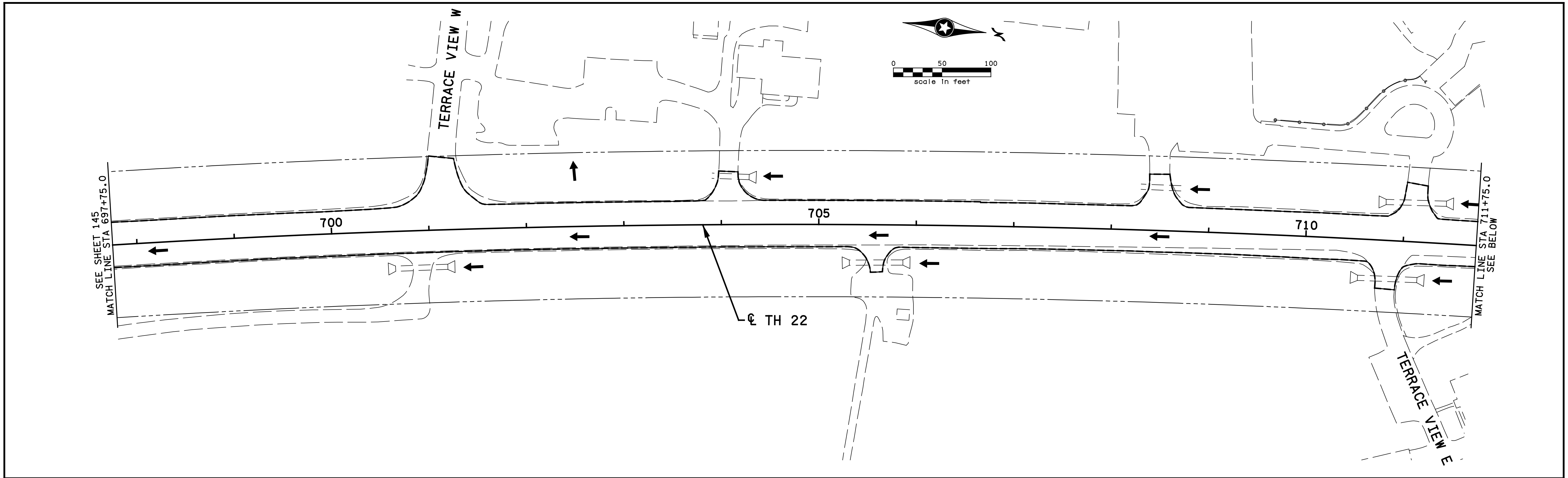
ENGINEERS PLANNERS DESIGNERS

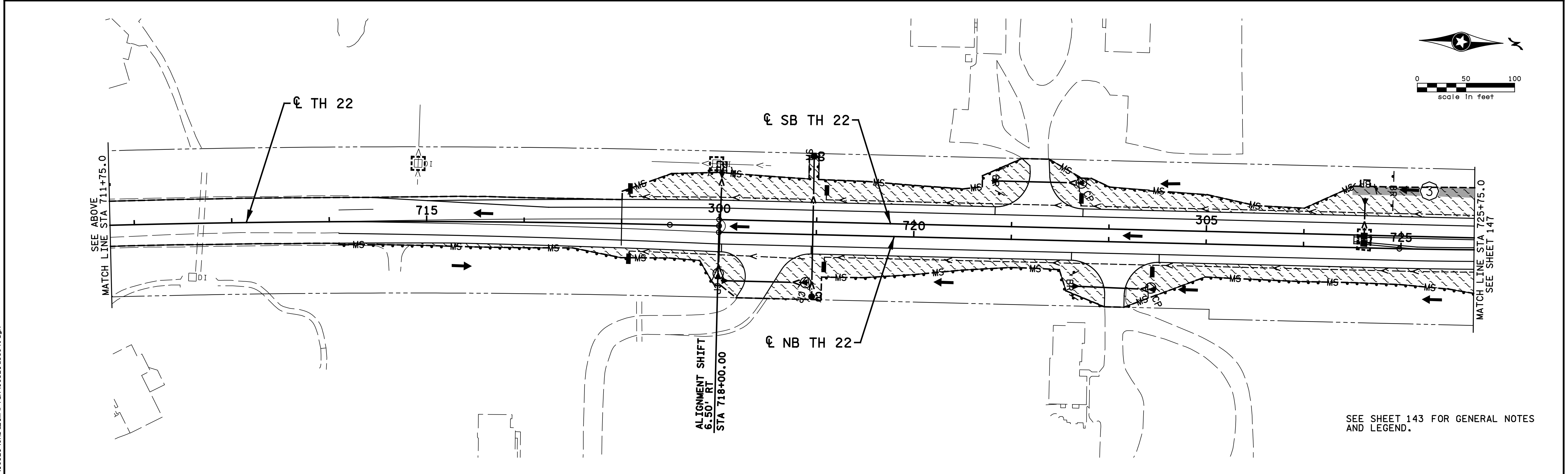
MINNESOTA DEPARTMENT OF TRANSPORTATION

EROSION CONTROL AND TURF ESTABLISHMENT PLANS

TH 22 & CSAH 90

SHEET 145 OF 255





SEE SHEET 143 FOR GENERAL NOTES AND LEGEND.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS
DESIGNED BY P. ENGELMEYER
CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

EROSION CONTROL AND TURF ESTABLISHMENT PLANS
TH 22 & CSAH 90

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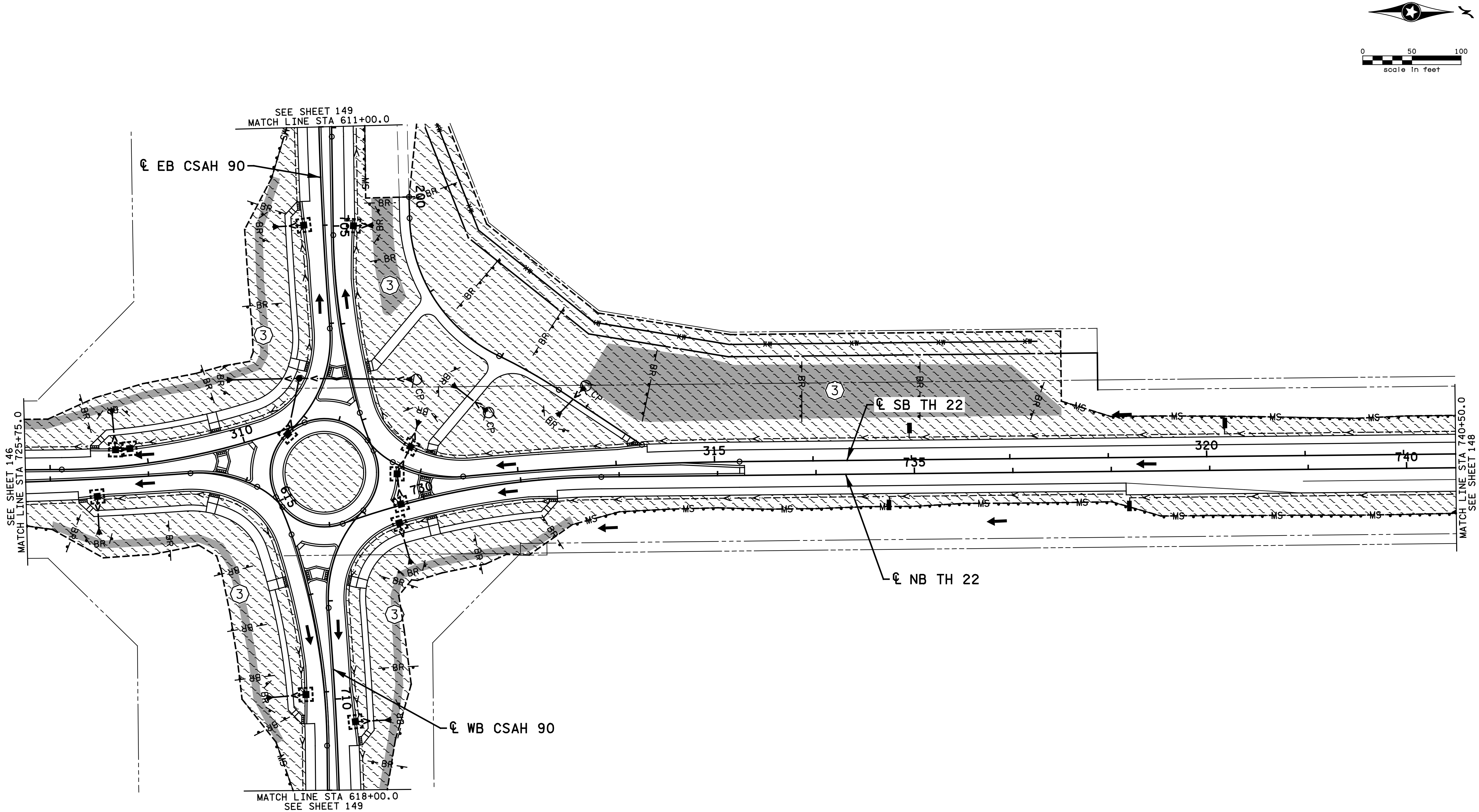

SEE SHEET 143 FOR GENERAL NOTES AND LEGEND.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

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MINNESOTA DEPARTMENT OF TRANSPORTATION

EROSION CONTROL AND TURF ESTABLISHMENT PLANS

TH 22 & CSAH 90

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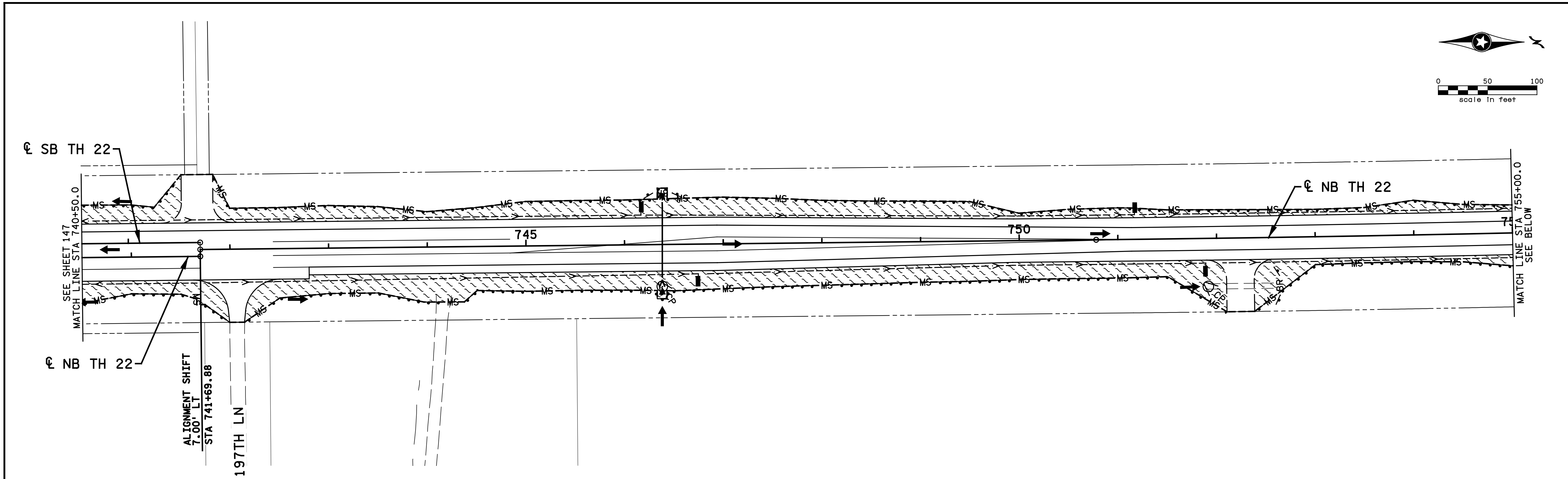

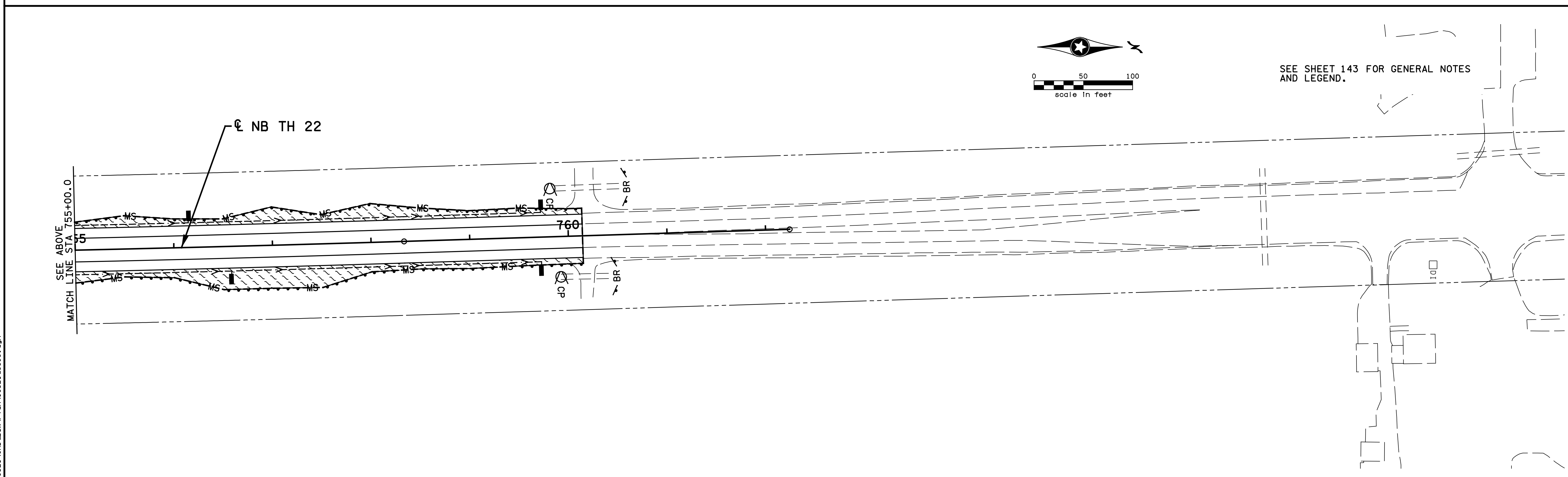

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

EROSION CONTROL AND TURF ESTABLISHMENT PLANS

TH 22 & CSAH 90

SHEET 148 OF 255

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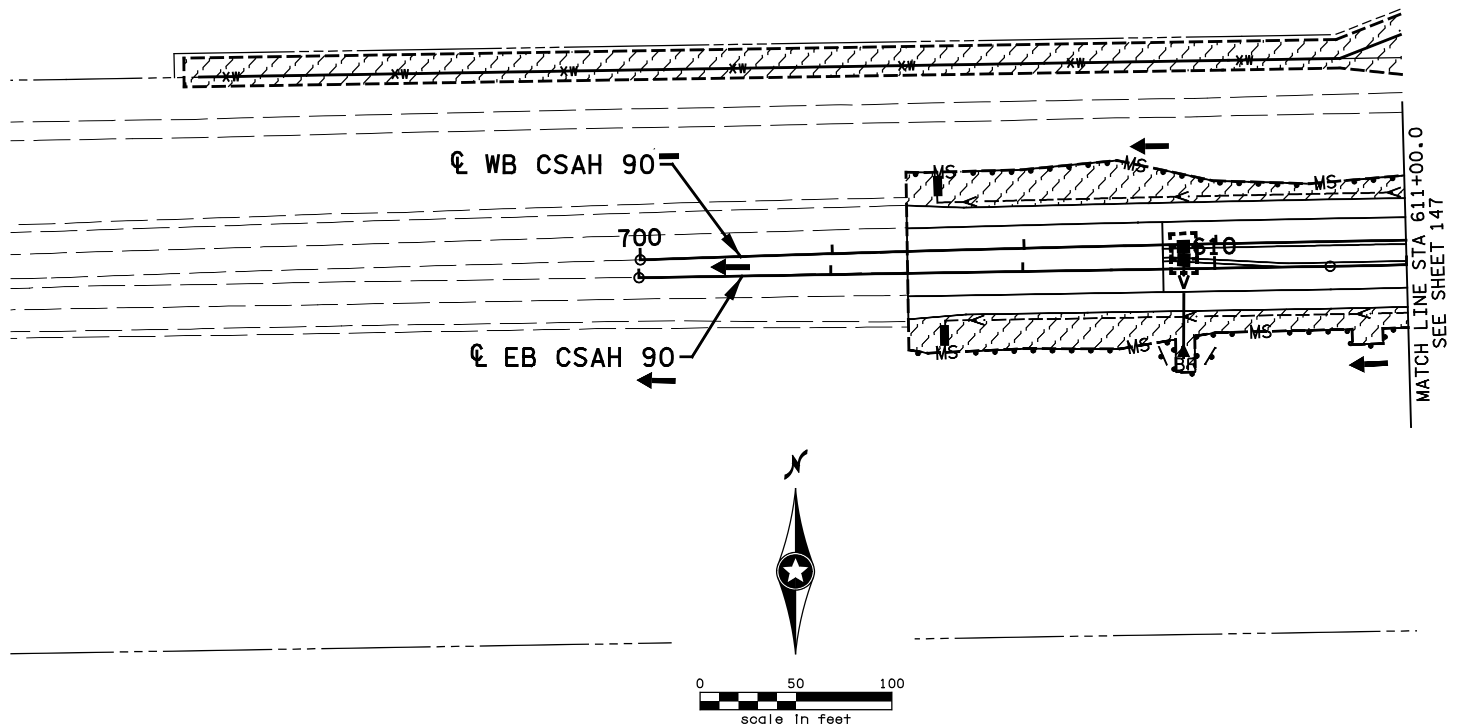
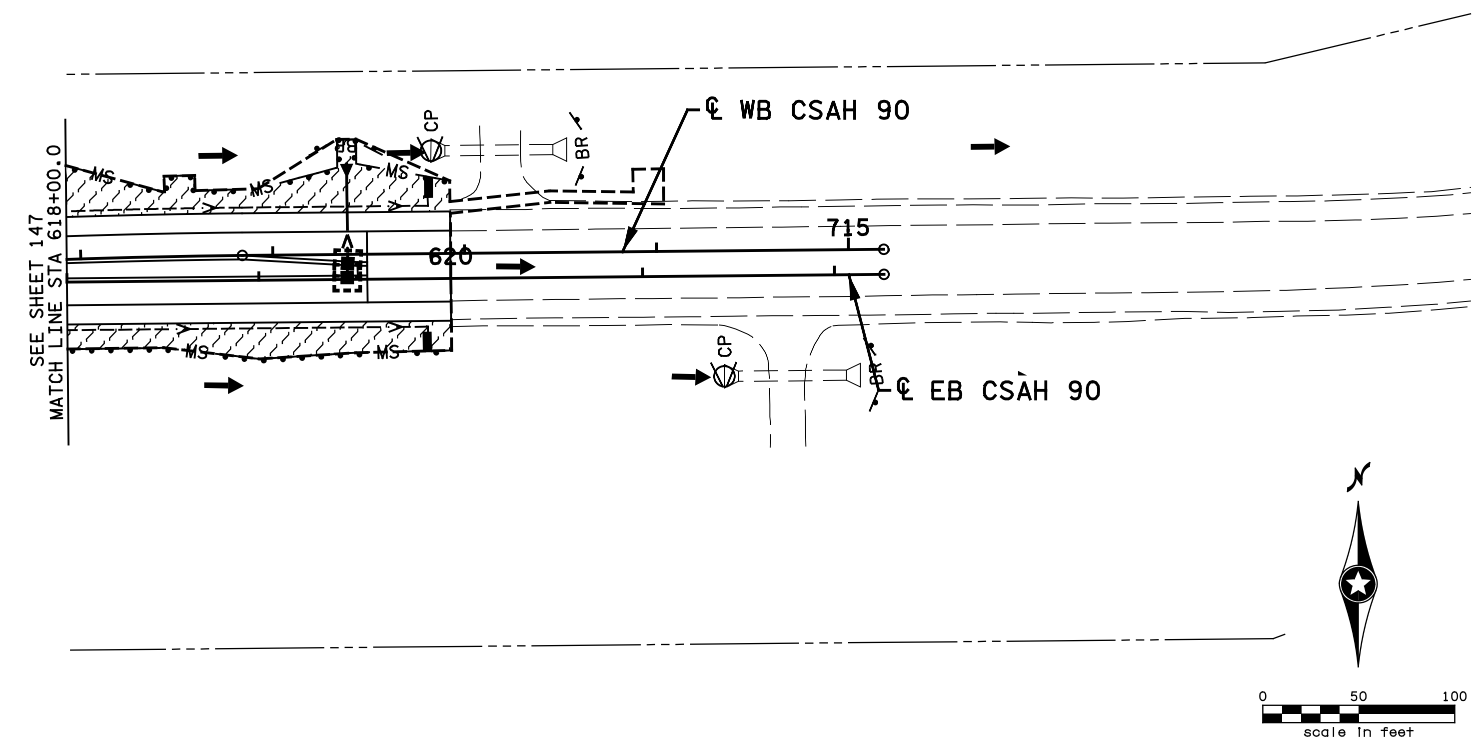
SEE SHEET 143 FOR GENERAL NOTES AND LEGEND.





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CHECKED BY A. TRACY
COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

EROSION CONTROL AND TURF ESTABLISHMENT PLANS
TH 22 & CSAH 90

SHEET 149 OF 255

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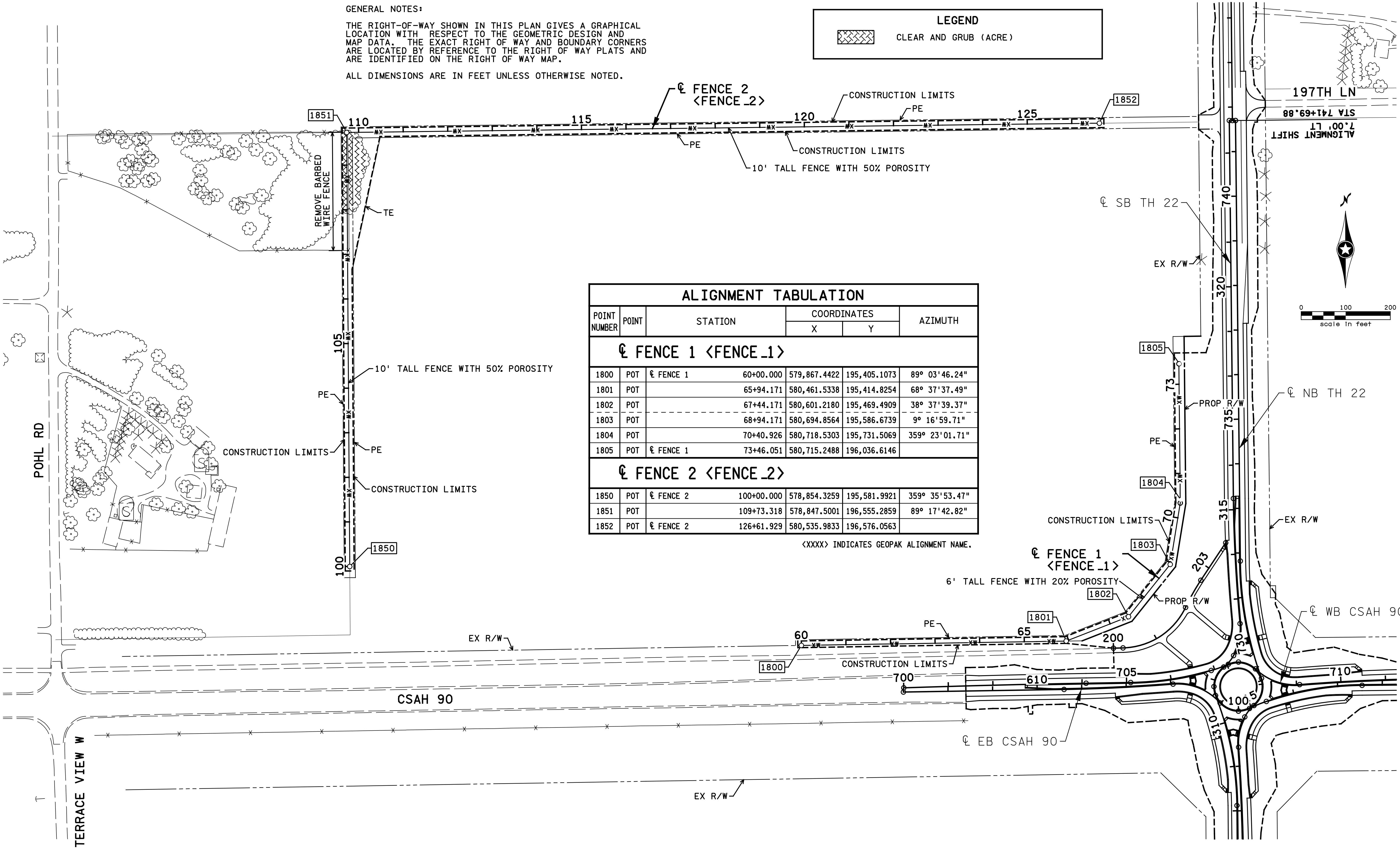
GENERAL NOTES:

THE RIGHT-OF-WAY SHOWN IN THIS PLAN GIVES A GRAPHICAL LOCATION WITH RESPECT TO THE GEOMETRIC DESIGN AND MAP DATA. THE EXACT RIGHT OF WAY AND BOUNDARY CORNERS ARE LOCATED BY REFERENCE TO THE RIGHT OF WAY PLATS AND ARE IDENTIFIED ON THE RIGHT OF WAY MAP.

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.

LEGEND

CLEAR AND GRUB (ACRE)



ALIGNMENT TABULATION					
POINT NUMBER	POINT	STATION	COORDINATES X	COORDINATES Y	AZIMUTH
℄ FENCE 1 <FENCE_1>					
1800	POT	℄ FENCE 1 60+00.000	579,867.4422	195,405.1073	89° 03'46.24"
1801	POT	65+94.171	580,461.5338	195,414.8254	68° 37'37.49"
1802	POT	67+44.171	580,601.2180	195,469.4909	38° 37'39.37"
1803	POT	68+94.171	580,694.8564	195,586.6739	9° 16'59.71"
1804	POT	70+40.926	580,718.5303	195,731.5069	359° 23'01.71"
1805	POT	℄ FENCE 1 73+46.051	580,715.2488	196,036.6146	
℄ FENCE 2 <FENCE_2>					
1850	POT	℄ FENCE 2 100+00.000	578,854.3259	195,581.9921	359° 35'53.47"
1851	POT	109+73.318	578,847.5001	196,555.2859	89° 17'42.82"
1852	POT	℄ FENCE 2 126+61.929	580,535.9833	196,576.0563	

<XXXX> INDICATES GEOPAK ALIGNMENT NAME.

0 100 200
scale in feet

NO	DATE	BY	CKD	APPR	REVISION

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Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

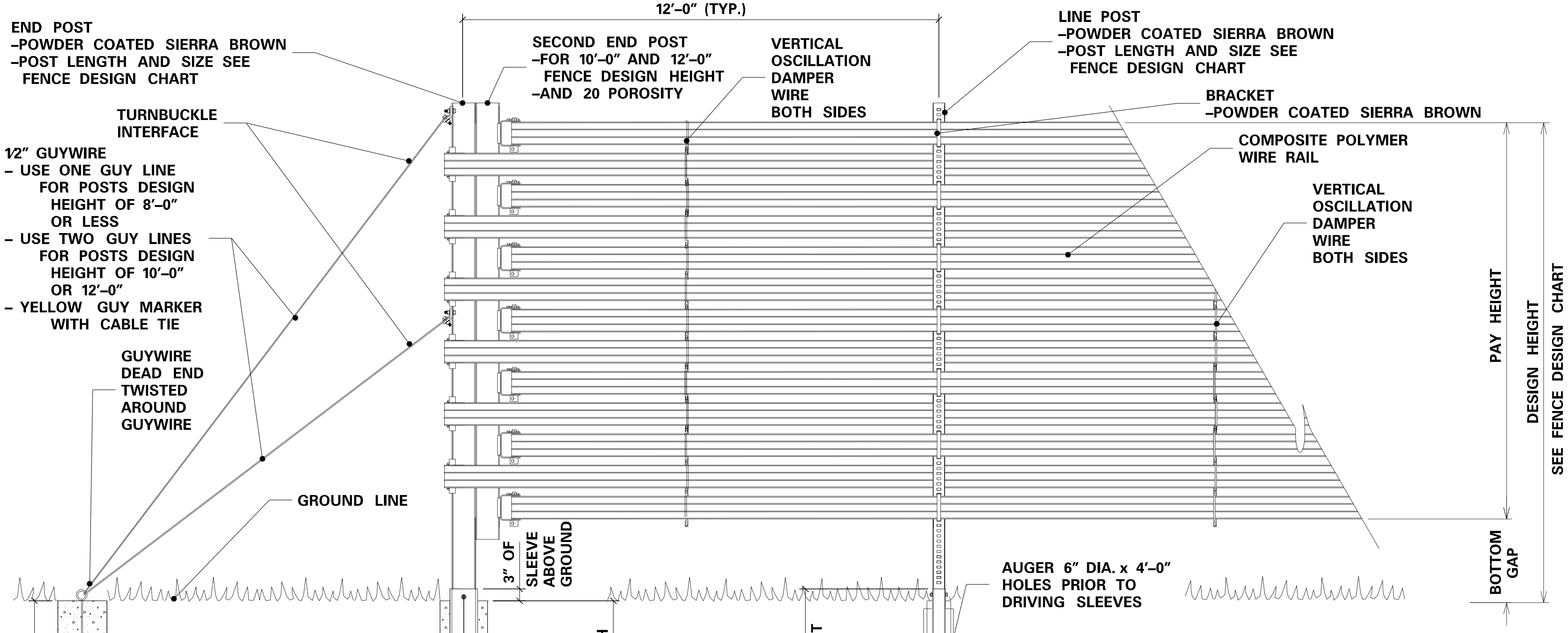
ENGINEERS PLANNERS DESIGNERS

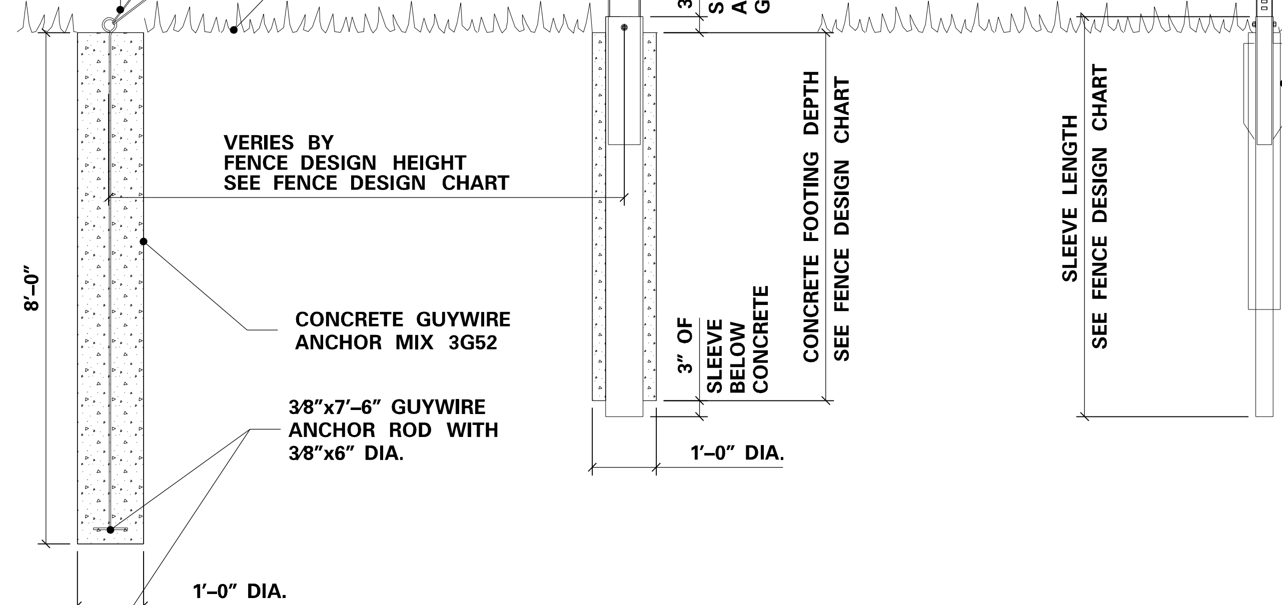
MINNESOTA DEPARTMENT OF TRANSPORTATION

SNOW FENCE PLANS

TH 22 & CSAH 90

SHEET 150 OF 255



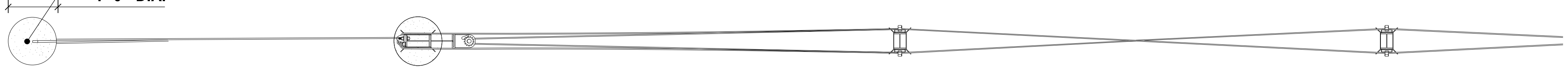


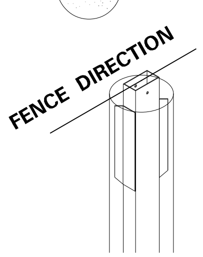
NOTE:
1.) REFER TO THE STRUCTUAL SNOW FENCE LAYOUT SHEETS FOR POROSITY, FENCE DESIGN HEIGHT AND INTERIOR OR EXTERIOR SUPPORT STRUCTURE TYPE.

2.) FOR SIZE AND LENGTH OF SLEEVE, CONCRETE FOOTING DEPTH, POST LENGTH AND SIZE, BOTTOM GAP – ARE DETERMINED BY FENCE DESIGN HEIGHT REFER TO THE FENCE DESIGN CHART.

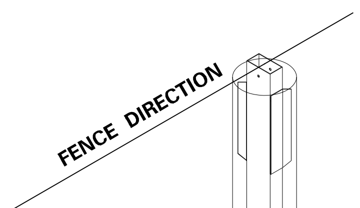
FENCE DESIGN CHART

FENCE DESIGN HEIGHT			8'-0"	10'-0"	12'-0"	BOTTOM GAP - IS DETERMAIN FROM GOUND TO BOTTOM RAIL
CONCRETE FOOTING DEPTH	GOOD SOILS		6'-6"	7'-3"	7'-6"	
	POOR SOILS		9'-6"	11'-6"	13'-6"	
LENGTH OF SLEEVE	GOOD SOILS		7'-0"	7'-6"	8'-0"	
	POOR SOILS		10'-0"	12'0"	14'-0"	
SIZE OF SLEEVE	END POST		3"x 5"			
	LINE POST		3" x 4"			
POST LENGTH			S4x7.7 13'-4"			
SECOND END POST LENGTH			S3x5.5 or S4x7.7 12'-0"			
POST SIZE	END POST		S4x7.7			
	LINE POST		S3x5.5			
NUMBER OF RAILS	POROSITY	20	11	14	18	6"
		50	8	10	13	12"



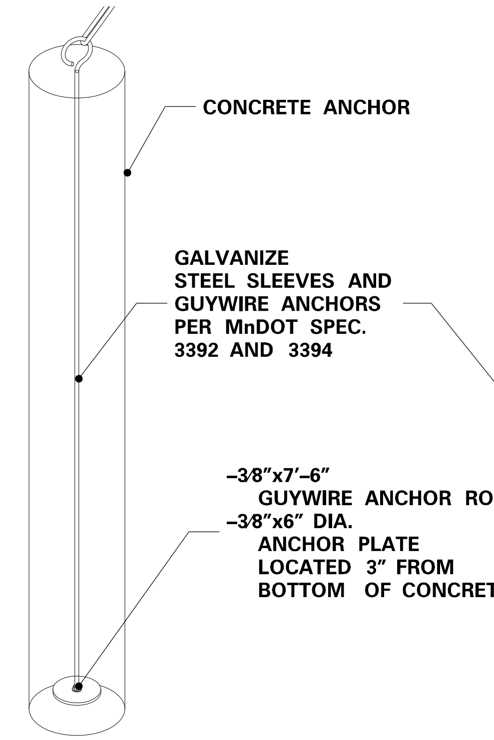


END POST ISOMETRIC VIEW

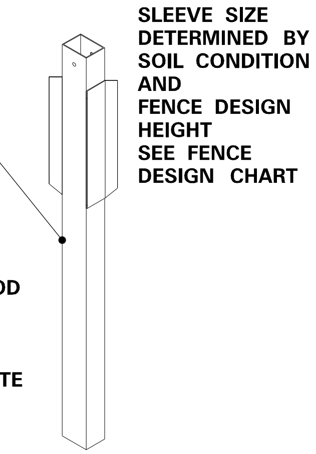


LINE POSTS ISOMETRIC VIEW

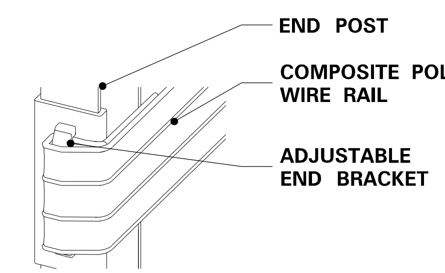
END TREATMENT EXTERIOR SUPPORT



GUYWIRE ANCHOR



SLEEVE



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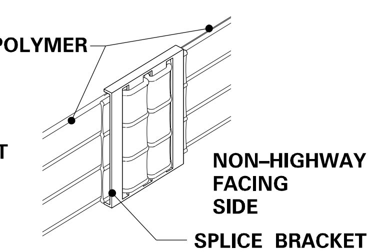
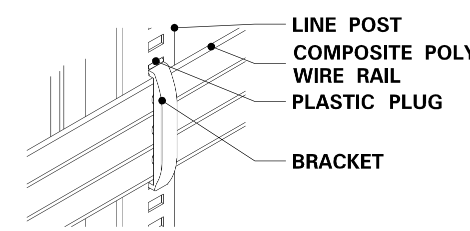
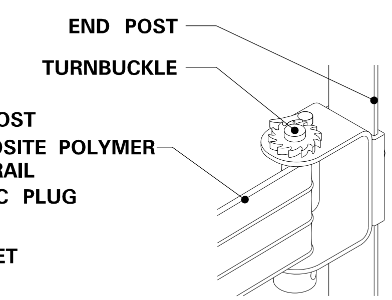


SPLICE BRACKET



LINE POSTS BRACKET



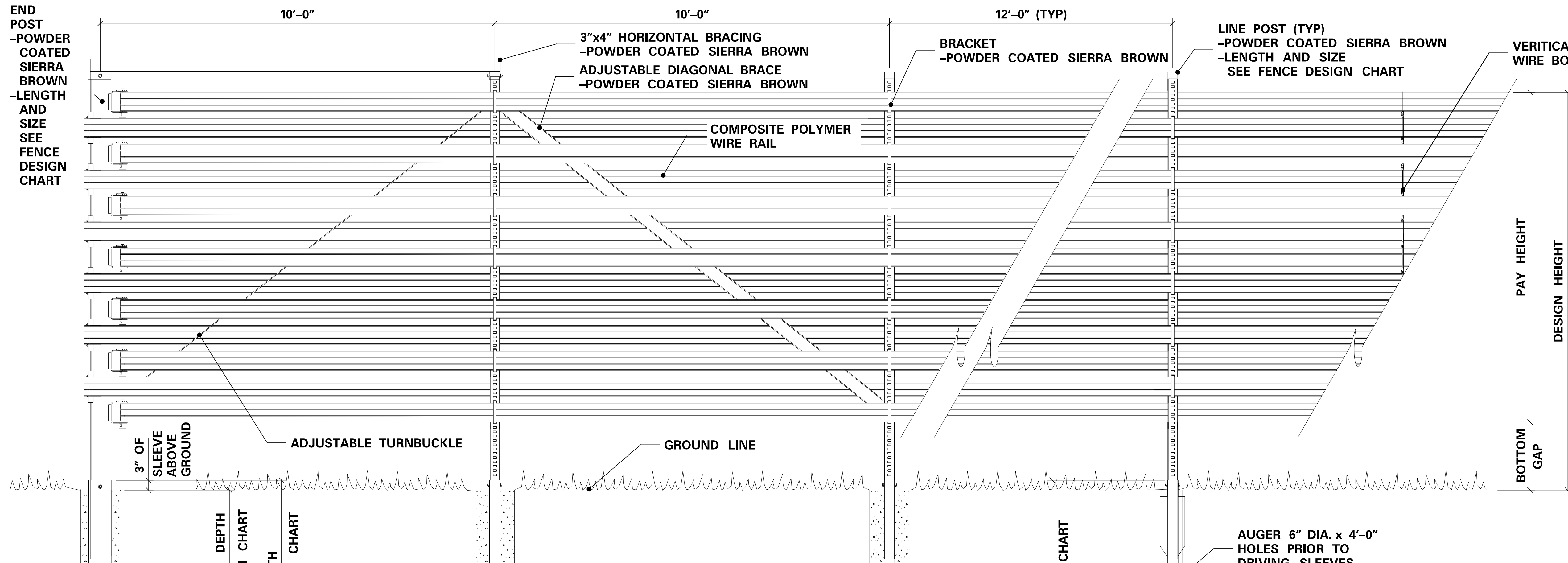
TENSIONING WINCH

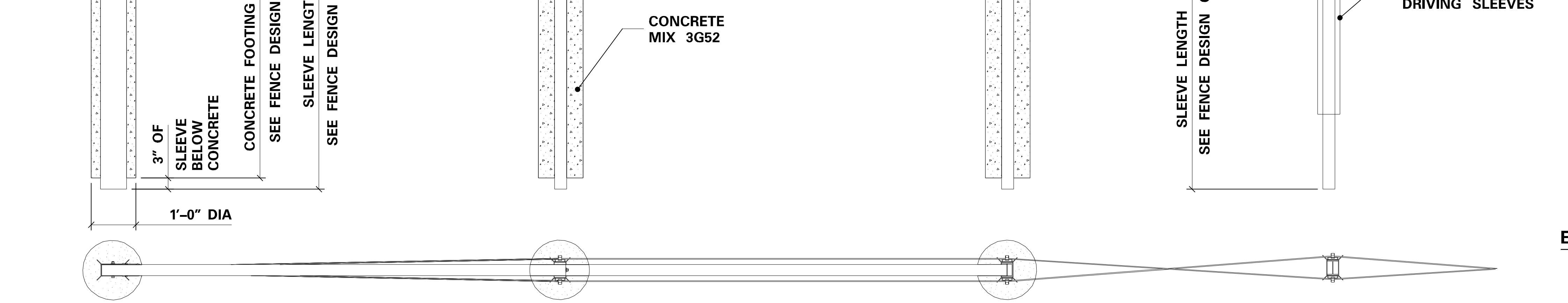
RAIL CONNECTIONS ISOMETERIC VIEWS

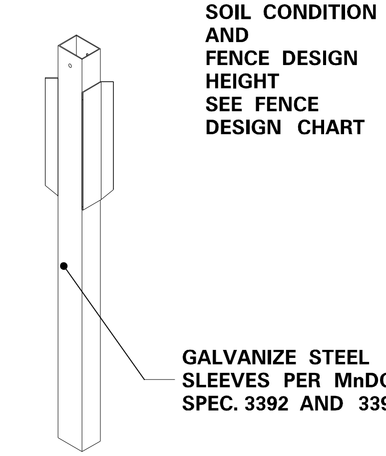
This is a proprietary item as per spec. 1703.
This drawing is to be used only for pictorial representation.
Design changes are not always shown.
This drawing is for information only.
Contact the Manufacturer Perma–Rail International Inc. for installation instructions.

STRUCTURAL SNOW FENCE – EXTERIOR SUPPORT STRUCTURE

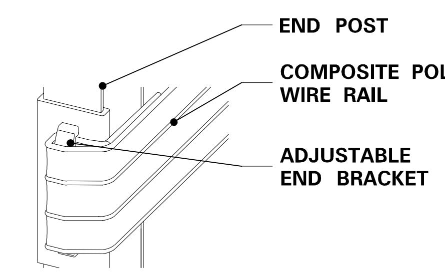
S.P. 0704-108 (T.H. 22) SHEET 151 OF 255 SHEETS







SLEEVE



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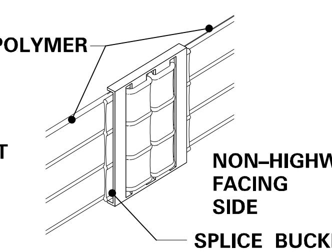
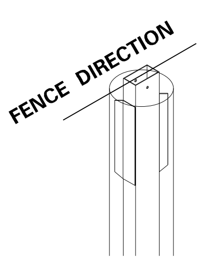
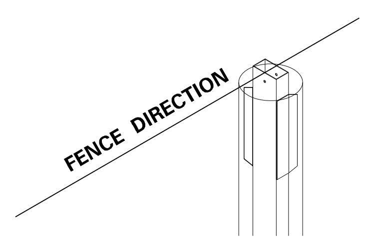


SPLICE BUCKLE



END POST ISOMETRIC VIEW



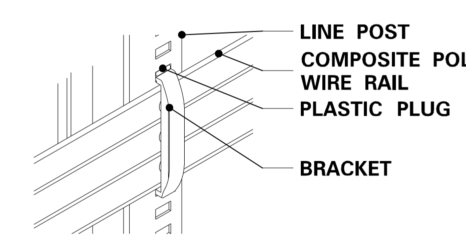
LINE POSTS ISOMETRIC VIEW

NOTE:
1.) REFER TO THE STRUCTUAL SNOW FENCE LAYOUT SHEETS FOR POROSITY, FENCE DESIGN HEIGHT AND INTERIOR OR EXTERIOR SUPPORT STRUCTURE TYPE.

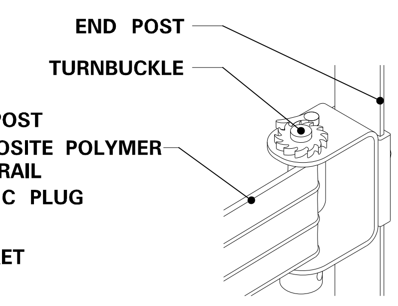
2.) FOR SIZE AND LENGTH OF SLEEVE, CONCRETE FOOTING DEPTH, POST LENGTH AND SIZE, BOTTOM GAP – ARE DETERMINED BY FENCE DESIGN HEIGHT REFER TO THE FENCE DESIGN CHART.

FENCE DESIGN CHART

FENCE DESIGN HEIGHT			4'-0"	6'-0"	8'-0"	BOTTOM GAP
CONCRETE FOOTING DEPTH	GOOD SOILS		5'-6"	6'-0"	6'-6"	
	POOR SOILS		5'-6"	7'-6"	9'-6"	
LENGTH OF SLEEVE	GOOD SOILS		6'-0"	6'-6"	7'-0"	
	POOR SOILS		6'-0"	8'-0"	10'-0"	
SIZE OF SLEEVE	END POST		3"x 5"			
	LINE POST		3" x 4"			
POST SIZE	END POST		S4x7.7			
	LINE POST		S3x5.5			
NUMBER OF RAILS	POROSITY	20	5	8	11	6"
		50	4	6	8	12"



LINE POSTS BRACKET



TENSIONING WINCH

RAIL CONNECTIONS ISOMETRIC VIEWS

END TREATMENT INTERIOR SUPPORT

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Design changes are not always shown.
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Contact the Manufacturer Perma–Rail International Inc. for installation instructions.

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STRUCTUAL SNOW FENCE – INTERIOR SUPPORT STRUCTURE

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.

REFER TO SPECIAL PROVISIONS OR SPEC BOOK FOR GROUND IN/RECESSED PAVEMENT MARKING APPLICATION REQUIREMENTS.

CONTRAST MARKINGS:

STANDARD LINEAR PAVEMENT MARKINGS, CROSSWALK MARKINGS AND PAVEMENT MESSAGES WITH 1.5 INCH NON REFLECTIVE BLACK BORDERS.

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.

PREFORMED MARKINGS:

MANUFACTURER CERTIFICATIONS ARE REQUIRED FOR INSTALLERS, AND WRITTEN CERTIFICATION SHALL BE PRESENTED AT ANYTIME UPON REQUEST OF ENGINEER OR OTHER STATE PERSONAL.

DO NOT USE LINE MATERIAL TO PIECE TOGETHER INDIVIDUAL LETTERS, SYMBOLS, OR CROSSWALKS BLOCKS. UTILIZE PRECUT KITS PROVIDED BY THE MANUFACTURER. TWO STRIPS OF 18" LINE MATERIAL MAY BE USED TO FORM CROSSWALK BLOCKS OF 36" WIDTH.

DO NOT USE NARROWER LINE MATERIAL TO PIECE TOGETHER WIDER LINES.

IF THERE IS A CRACK OR JOINT IN ROAD SURFACE. (FOR TAPE LAY OVER CRACK OR JOINT THEN CUT TAPE 1" ON EACH SIDE OF CRACK OR JOINT). (FOR THERMO MAKE A DEEP SCORE IN THE MATERIAL ONCE IT HAS SET UP BUT NOT ENTIRELY COOLED DOWN).

PREFORM TAPE INLAY APPLICATION:

MAT TEMPERATURE SHALL BE CHECKED USING A THERMOMETER TO MAKE SURE THE INLAY IS BEING DONE IN THE PROPER TEMPERATURE RANGE. THE TEMPERATURE SHOULD MEASURE BETWEEN 150° F (ASPHALT FIRM ENOUGH TO WALK ON) AND 120° F. APPLICATION BELOW 120° F MAY NOT GET A PROPER INLAY. INLAYS ARE NOT RECOMMENDED AFTER SEPTEMBER 15th AS THE ASPHALT COOLS TOO FAST AT THIS TIME OF THE YEAR.

NO PRIMERS ARE USED FOR INLAY APPLICATION. DO NOT PLACE LANE LINES ON AN ASPHALT SEAM. ROLLING OF ALL THE MARKINGS SHOULD BE LENGTHWISE IN THE DIRECTION THEY WERE LAID. FOR CROSSWALKS AND STOP BARS, INITIAL TAMPING WITH THE TAMPING CART IS RECOMMENDED USING ONLY 100 LBS. OF WEIGHT.

USE COMPACTION ROLLER TO EMBED (INLAY) MARKINGS INTO PAVEMENT SURFACE. USE MINIMUM SPEED AND WATER ON ROLLER. DO NOT USE VIBRATOR. IF MARKING BUCKLES OR DISTORTS SEVERELY IN FRONT OF ROLLER, MAT TEMPERATURE OR ROLLER SPEED MAY BE TOO HIGH.

BITUMINOUS PAVEMENT SURFACES WHERE PAVEMENT MARKINGS CANNOT BE INLAID IN THE HOT MAT SHALL HAVE A RECESS GROUND IN FOR THE PLACEMENT OF DURABLE REFLECTORIZED PAVEMENT MARKINGS. SEE CONTRUCTION SPECIFICATIONS.

SYMBOLS & MATERIALS LEGEND

— — — BROKEN LINE-50' CYCLE (10' LINE, 40' GAP)

- - - - - - - - DOTTED LINE-15' CYCLE (3' LINE, 12' GAP), UNLESS SHOWN OTHERWISE IN THE PLAN

CROSSWALK BLOCK

PAVEMENT MESSAGE (LEFT ARROW)

STRIPING KEY

CIRCLE-EPOXY

SQUARE-PREF TAPE

OCTAGON-PREF THERMO

1ST DIGIT WIDTH	2ND DIGIT PATTERN	3RD DIGIT COLOR
4", 8", ETC.	S - SOLID	W - WHITE
	B - BROKEN	Y - YELLOW
	T - DOTTED	B - BLACK
	D - DOUBLE	
	K - DOUBLE BROKEN	
	H - DOUBLE DOTTED	

G=GROUND IN	W=WET REFLECTIVE
C=CONTRAST	E=ENHANCED SKID RESISTANCE

EXAMPLE: 4SW GCW = 4" SOLID LINE WHITE PREF THERMO GROUND IN, CONTRAST, WET REFLECTIVE

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: ADRIAN S. POTTER

Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS

DESIGNED BY B. BETTS

CHECKED BY A. POTTER

COMM. NO. 01710321

SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN

TH 22 & CSAH 90

PAVEMENT MARKING NOTES AND LEGEND

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PERMANENT PAVEMENT MARKINGS

T

ALIGNMENT	STATION TO STATION	4" SOLID LINE EPOXY GR IN (WR) LIN FT	24" SOLID LINE EPOXY GR IN (WR) LIN FT	4" BROKEN LINE EPOXY GR IN (WR) LIN FT	4" DOTTED LINE EPOXY GR IN (WR) LIN FT	8" DOTTED LINE EPOXY GR IN (WR) LIN FT	4" DOUBLE SOLID LINE EPOXY GROUND IN (WR) LIN FT	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN SQ FT	PAVEMENT MESSAGE PREFORM THERMOPLASTIC GROUND IN CONTRAST SQ FT	
SP 0704-108 (TH 22) NHPP FUNDS										
FENCE 1	60+00 TO 73+46									
FENCE 2	100+00 TO 126+62									
NB TH 22	631+69 TO 717+00									
NB TH 22	717+00 TO 723+50									
NB TH 22	734+00 TO 760+14									
SP 0704-108 (TH 22) NHPP FUNDS TOTAL		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
SP 0704-108 (TH 22) HSIP FUNDS										
NB TH 22	723+50 TO 734+00									
SP 0704-108 (TH 22) HSIP FUNDS TOTAL		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
SP 007-070-005 (CSAH 90) HSIP FUNDS										
EB CSAH 90	608+40 TO 613+76									
EB CSAH 90	615+09 TO 620+00									
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PROJECT TOTALS		0	0	0	0	0	0	0	0	0

NO	DATE	BY	CKD	APPR	REVISION

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Date ________ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS

DESIGNED BY B. BETTS

CHECKED BY A. POTTER

COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

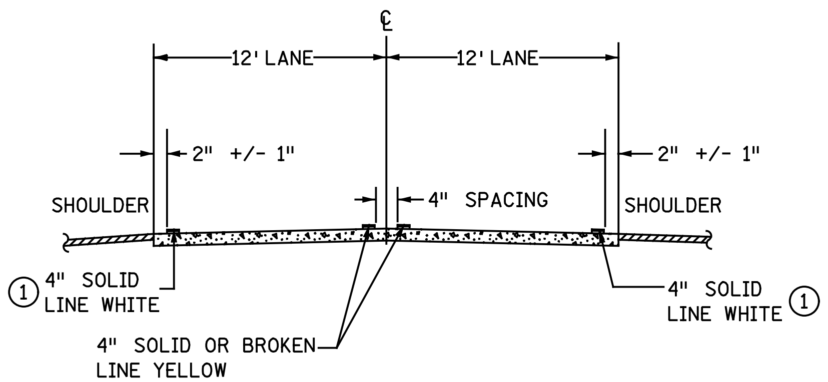
MINNESOTA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLANS

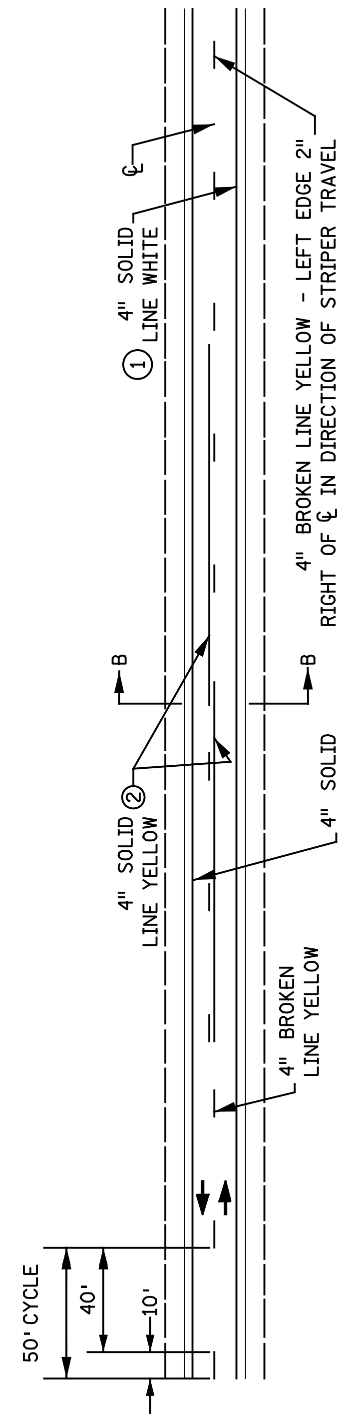
TH 22 & CSAH 90

TABULATIONS

TWO-LANE, TWO-WAY



SECTION B-B



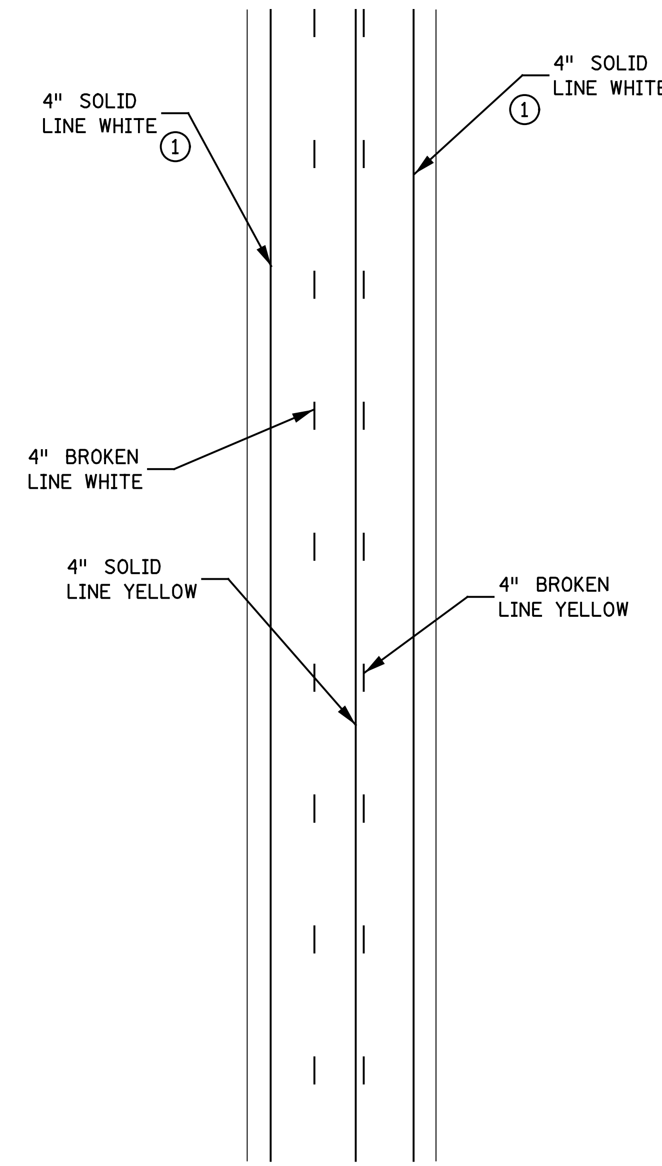
DESIGNER'S NOTES:

1. USE 6" EDGE LINES ON 2-LANE 2-WAY RURAL TYPE ROADWAYS WITH OUT SHOULDER RUMBLES.
2. CONTACT TRAFFIC ENGINEER FOR NO PASSING ZONE SURVEY.

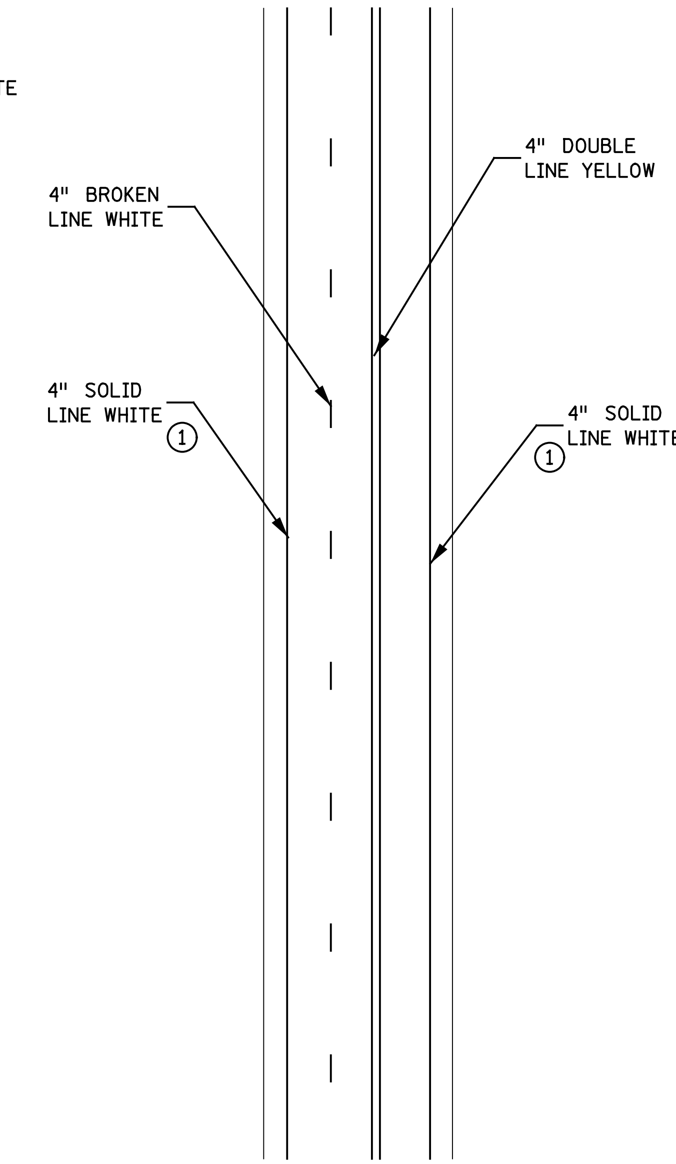
PUBLISHED BY OTST: 20 NOV 2015	MODIFIED:

THREE-LANE, TWO-WAY

PASSING PERMITTED IN SINGLE-LANE DIRECTION



PASSING PROHIBITED IN SINGLE-LANE DIRECTION



DESIGNER'S NOTE:

1. USE 6" EDGE LINES ON 2-LANE 2-WAY RURAL TYPE ROADWAYS WITH OUT SHOULDER RUMBLES.

PUBLISHED BY OTST: 20 NOV 2015	MODIFIED:

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NO	DATE	BY	CKD	APPR	REVISION

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Print Name: ADRIAN S. POTTER

Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS
DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

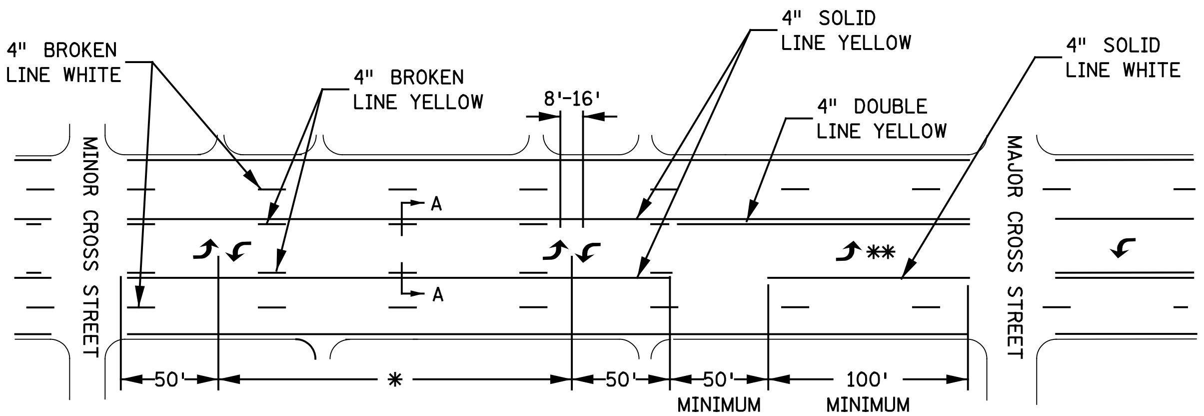
SRF Consulting Group, Inc. — ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
TH 22 & CSAH 90

SHEET 155 OF 255

TWO-WAY LEFT-TURN LANE

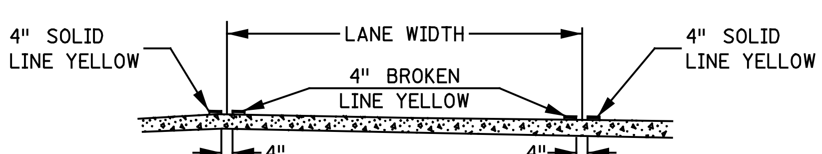


DESIGNER'S NOTES:

SINGLE-DIRECTION LEFT-TURN ARROWS SHALL NOT BE USED IN LANES BORDERED ON BOTH SIDES BY TWO-WAY LEFT TURN LANE MARKINGS.

* INSERT SPACING, BASED ON FIELD CONDITIONS.

** SEE "TURN LANE WITH ARROW MESSAGE, OR WITH DOTTED LINE EXTENSION" TYPICALS FOR PLACEMENT AND NUMBER OF ARROWS OR OPTIONAL LANE LINE EXTENSIONS. (MNMUTCD SECTION 3B.20)



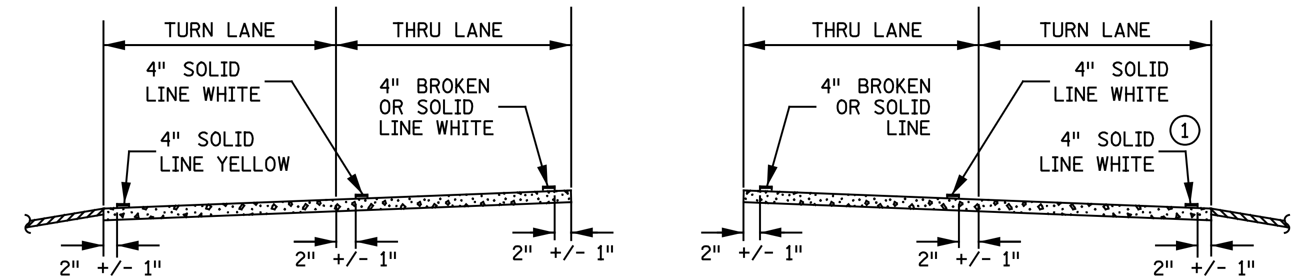
SECTION A-A
TWO WAY LEFT TURN LANE

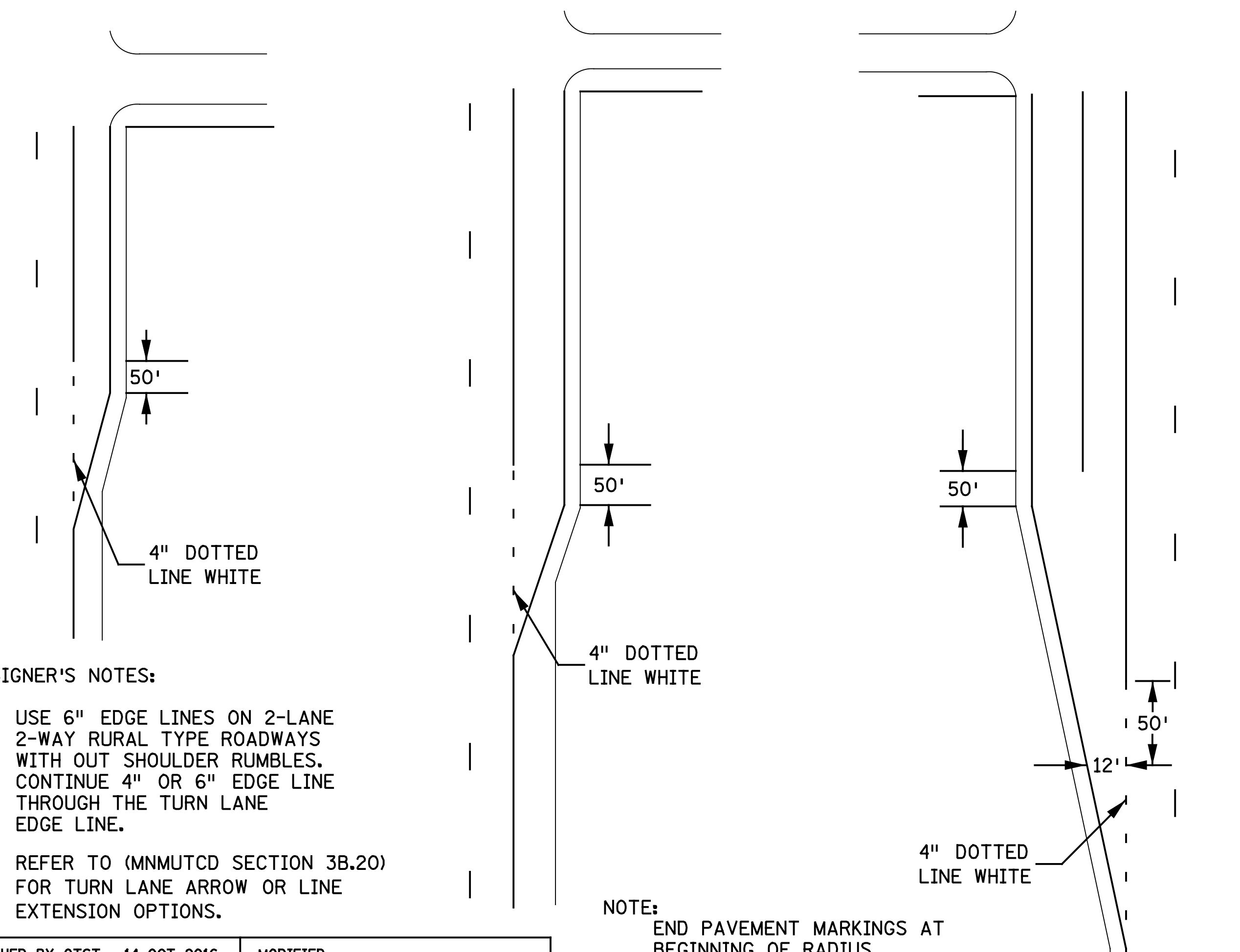
PUBLISHED BY OTST: 14 OCT 2016 | MODIFIED:

TURN LANE WITH DOTTED LINE EXTENSION

LEFT TURN LANE

RIGHT TURN LANE





DESIGNER'S NOTES:

(1) USE 6" EDGE LINES ON 2-LANE 2-WAY RURAL TYPE ROADWAYS WITH OUT SHOULDER RUMBLES. CONTINUE 4" OR 6" EDGE LINE THROUGH THE TURN LANE EDGE LINE.

REFER TO (MNMUTCD SECTION 3B.20) FOR TURN LANE ARROW OR LINE EXTENSION OPTIONS.

NOTE:
END PAVEMENT MARKINGS AT BEGINNING OF RADIUS

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Print Name: ADRIAN S. POTTER

Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS
DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION
PAVEMENT MARKING PLAN
TH 22 & CSAH 90

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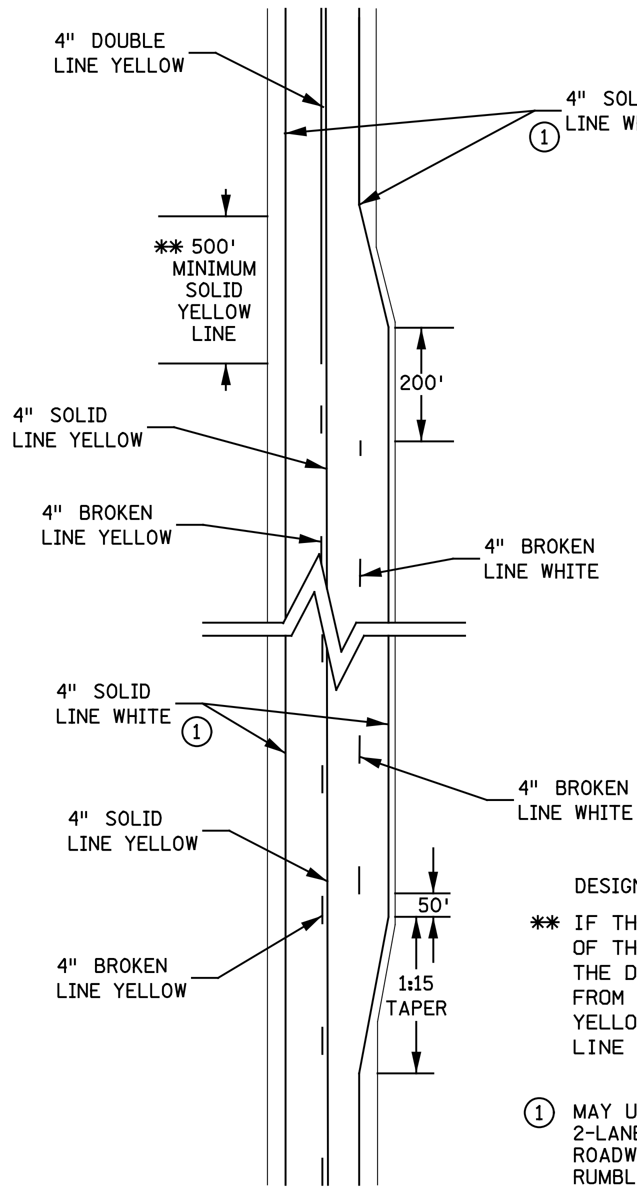
TRUCK CLIMBING LANE



DESIGNER'S NOTE:

** IF THE DISTANCE BETWEEN THE BEGINNING OF THE SOLID LINE YELLOW IS LESS THAN THE DISTANCES IN TABLE 7.5 IN THE (TEM) FROM THE END OF A PRECEDING SOLID LINE YELLOW IN THE SAME LANE, THE SOLID LINE SHALL BE EXTENDED BETWEEN THEM.

1 MAY USE 6" EDGE LINES ON 2-LANE 2-WAY RURAL TYPE ROADWAYS WITH OUT SHOULDER RUMBLES.

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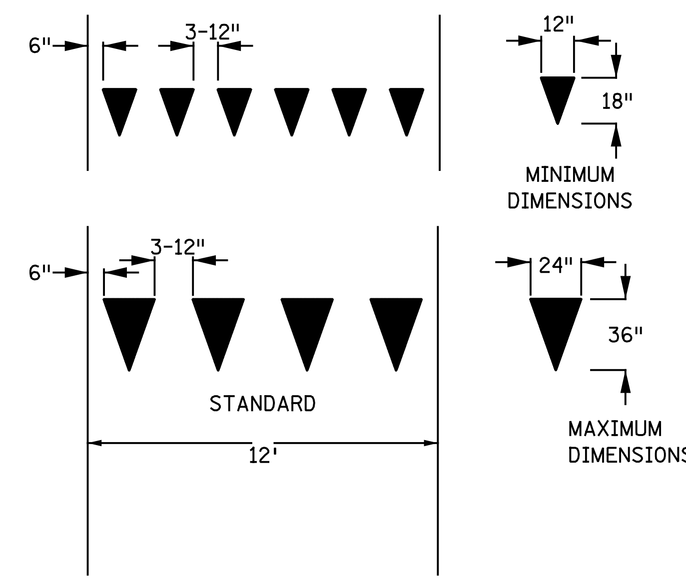
RECOMMENDED YIELD LINE LAYOUT

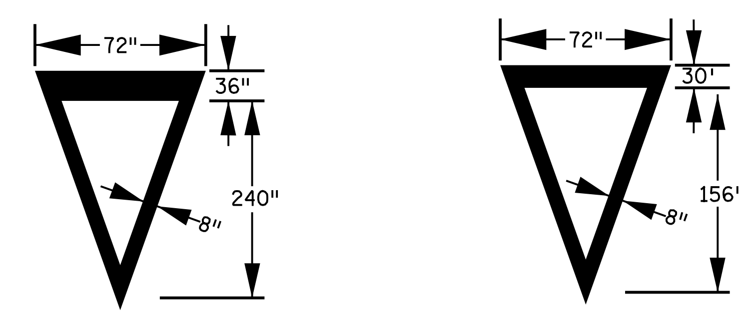


DESIGNER'S NOTES:

TRIANGLE HEIGHT IS EQUAL TO 1.5 TIMES THE BASE DIMENSION

12" X 18" YIELD LINES MAY BE PLACED ON NARROWER OR SLOW-SPEED FACILITIES SUCH AS SHARED-USE PATHS

YIELD AHEAD PAVEMENT MARKING



20' TALL

15.5 TALL

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STATE PROJECT NO. 0704-108 (TH 22)

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PAVEMENT MARKING PLAN

TH 22 & CSAH 90

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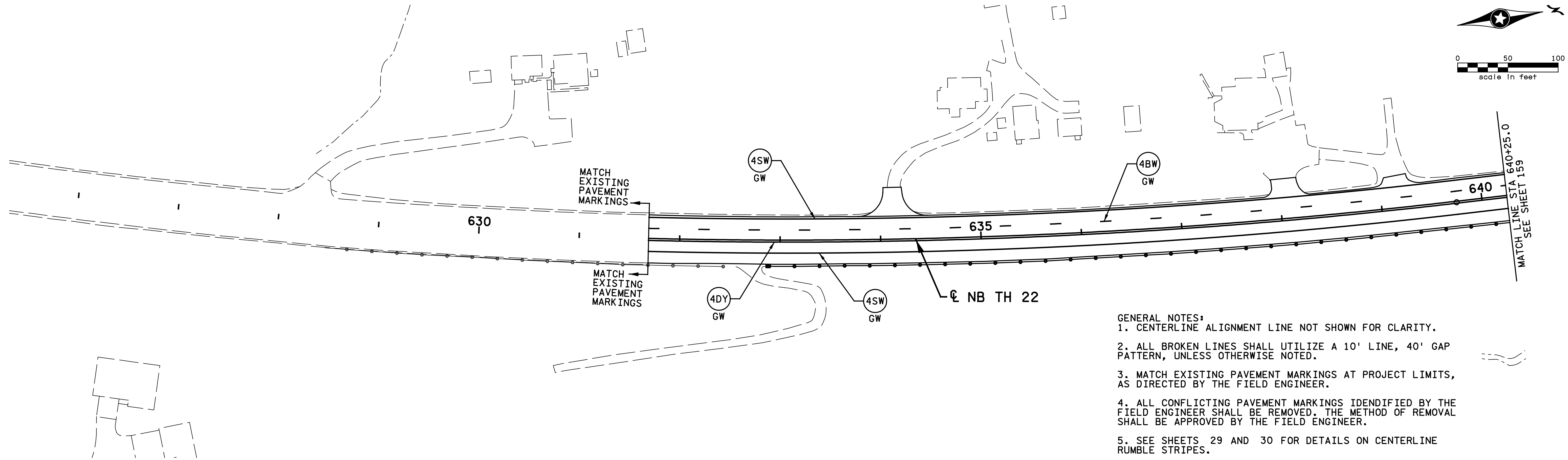

GENERAL NOTES:

1. CENTERLINE ALIGNMENT LINE NOT SHOWN FOR CLARITY.
2. ALL BROKEN LINES SHALL UTILIZE A 10' LINE, 40' GAP PATTERN, UNLESS OTHERWISE NOTED.
3. MATCH EXISTING PAVEMENT MARKINGS AT PROJECT LIMITS, AS DIRECTED BY THE FIELD ENGINEER.
4. ALL CONFLICTING PAVEMENT MARKINGS IDENDIFIED BY THE FIELD ENGINEER SHALL BE REMOVED. THE METHOD OF REMOVAL SHALL BE APPROVED BY THE FIELD ENGINEER.
5. SEE SHEETS 29 AND 30 FOR DETAILS ON CENTERLINE RUMBLE STRIPES.

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STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

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MINNESOTA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLANS

TH 22 & CSAH 90

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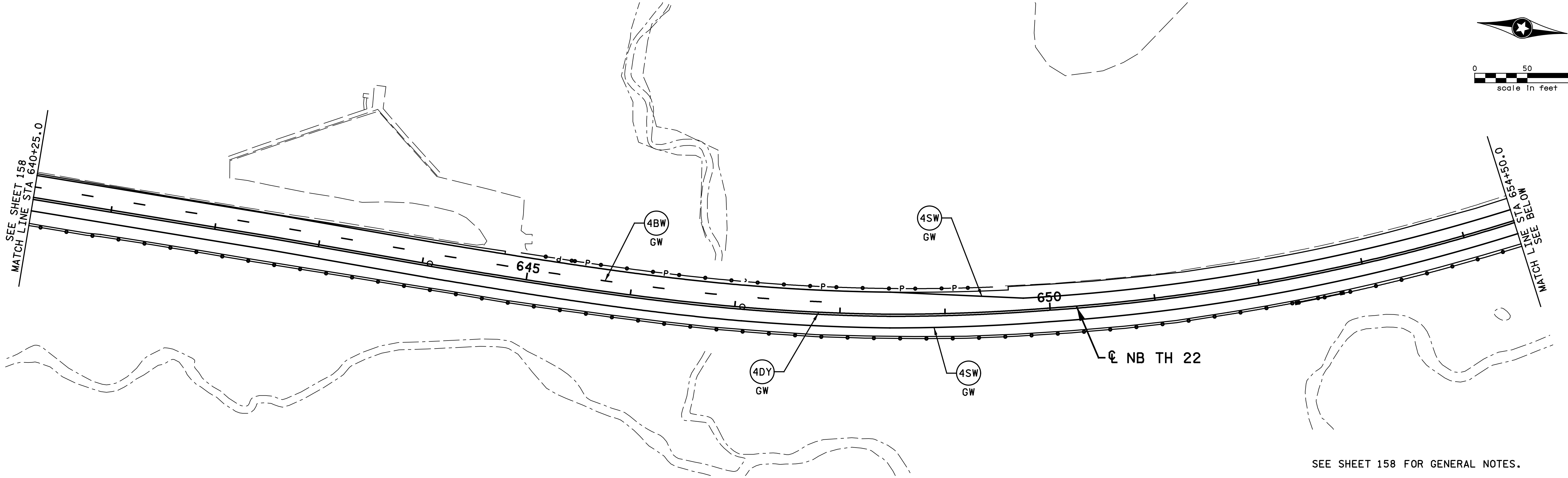
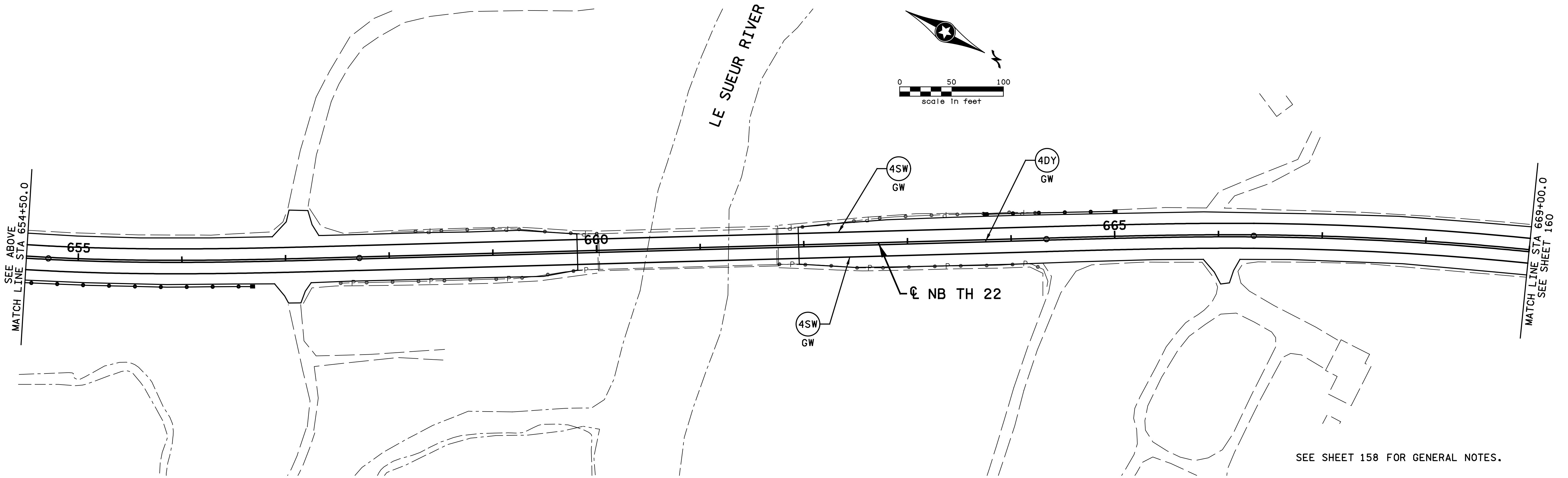


SEE SHEET 158 FOR GENERAL NOTES.



SEE SHEET 158 FOR GENERAL NOTES.

NO	DATE	BY	CKD	APPR	REVISION

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Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

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DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

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PAVEMENT MARKING PLANS
TH 22 & CSAH 90

SHEET 159 OF 255

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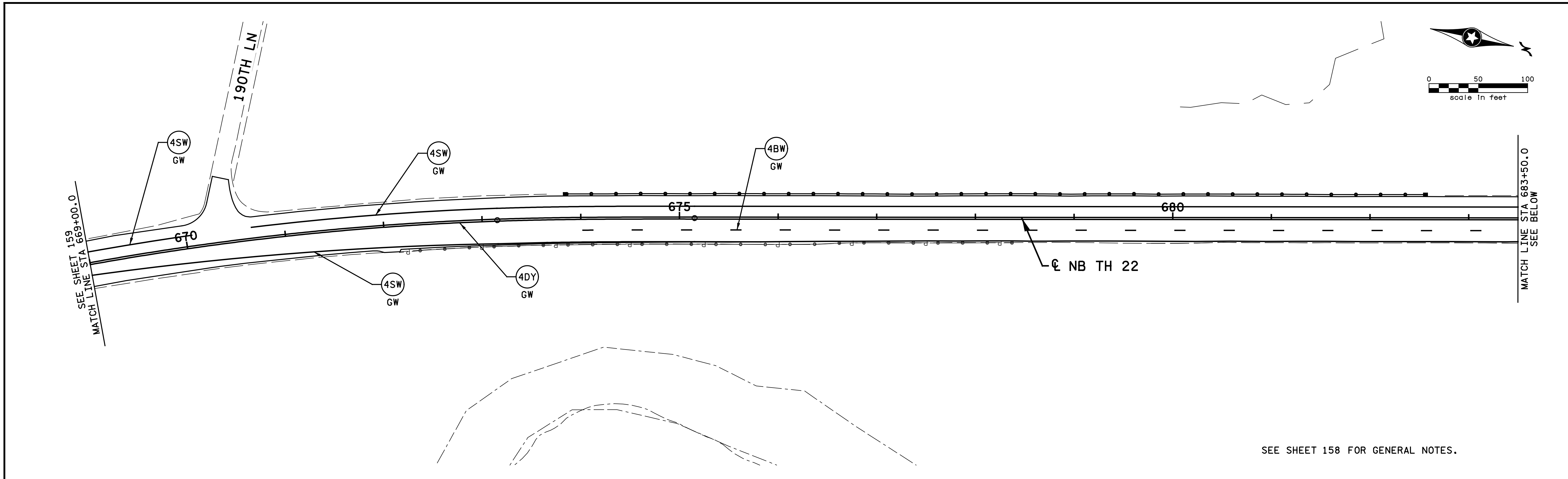

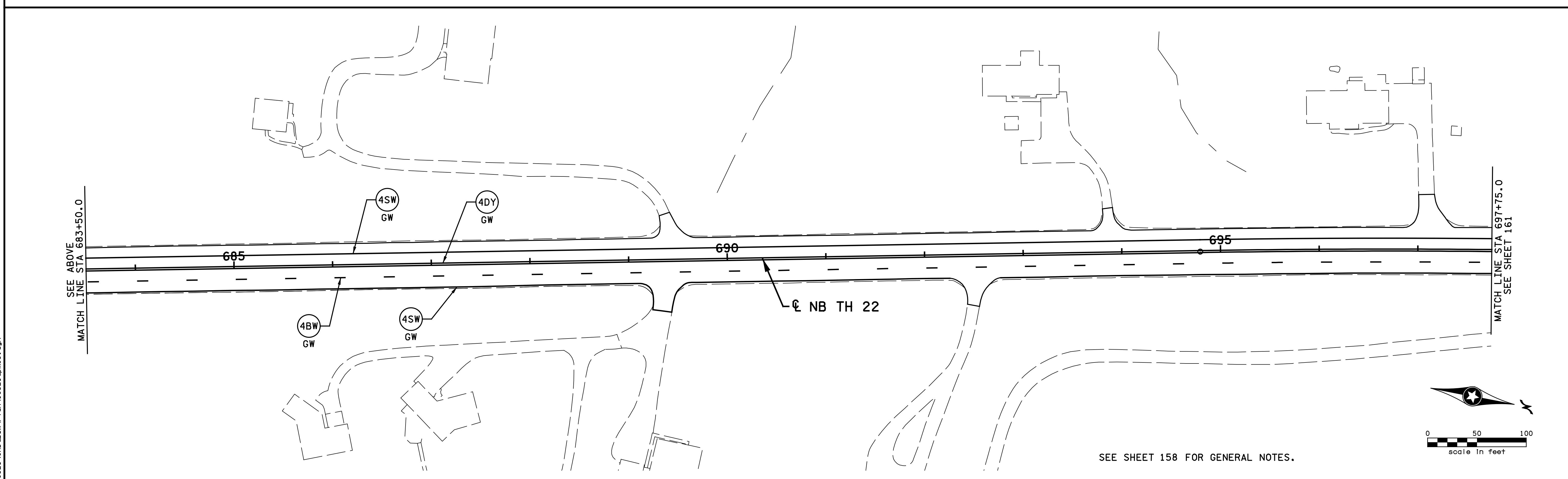

NO	DATE	BY	CKD	APPR	REVISION

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STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

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DESIGNED BY B. BETTS

CHECKED BY A. POTTER

COMM. NO. 01710321

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PAVEMENT MARKING PLANS

TH 22 & CSAH 90

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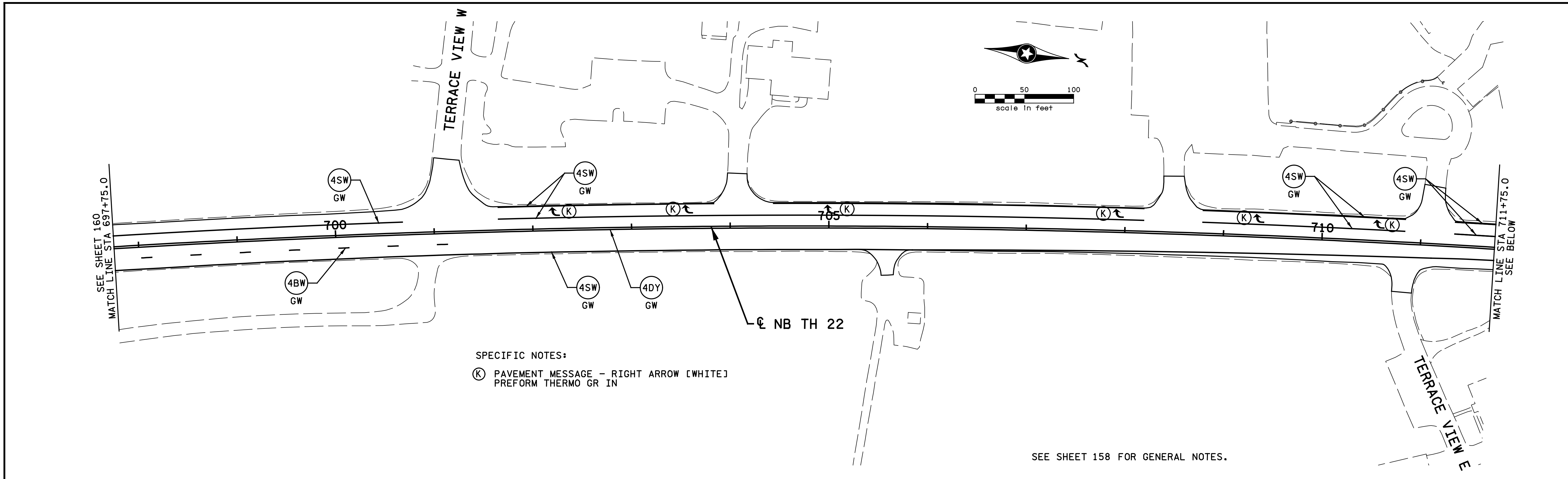
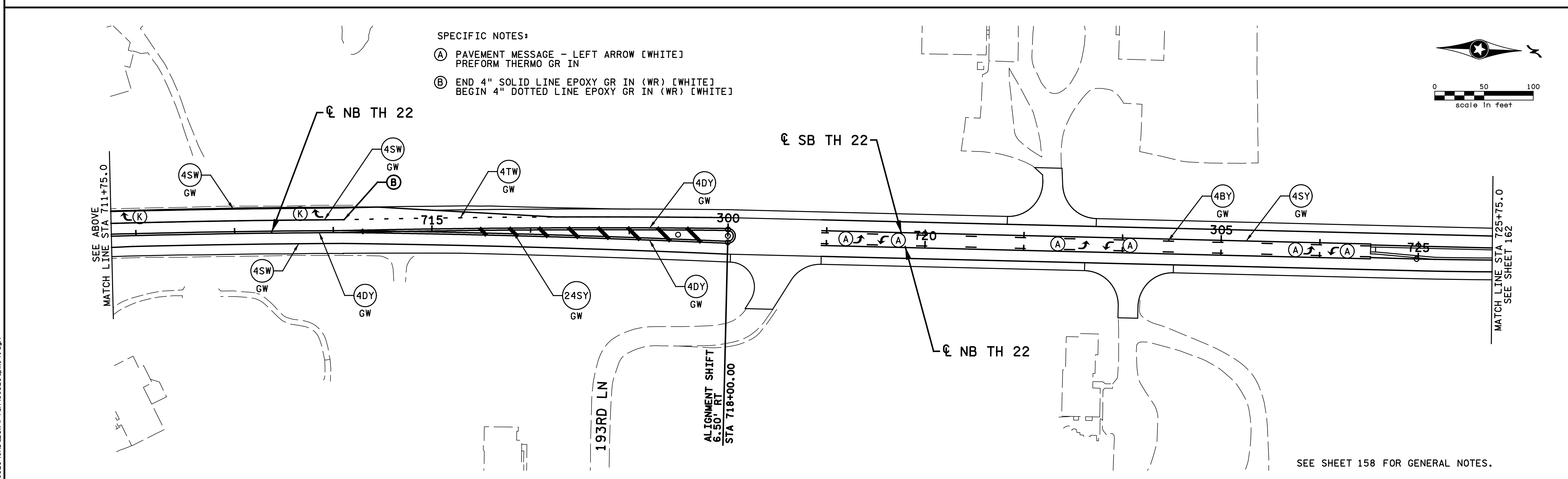


SPECIFIC NOTES:

(K) PAVEMENT MESSAGE - RIGHT ARROW [WHITE]
PREFORM THERMO GR IN

SEE SHEET 158 FOR GENERAL NOTES.



SPECIFIC NOTES:

(A) PAVEMENT MESSAGE - LEFT ARROW [WHITE]
PREFORM THERMO GR IN

(B) END 4" SOLID LINE EPOXY GR IN (WR) [WHITE]
BEGIN 4" DOTTED LINE EPOXY GR IN (WR) [WHITE]

SEE SHEET 158 FOR GENERAL NOTES.

NO	DATE	BY	CKD	APPR	REVISION

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Date ______ License # 42785

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STATE PROJECT NO. 007-070-005

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CHECKED BY A. POTTER
COMM. NO. 01710321

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PAVEMENT MARKING PLANS
TH 22 & CSAH 90

SHEET 161 OF 255

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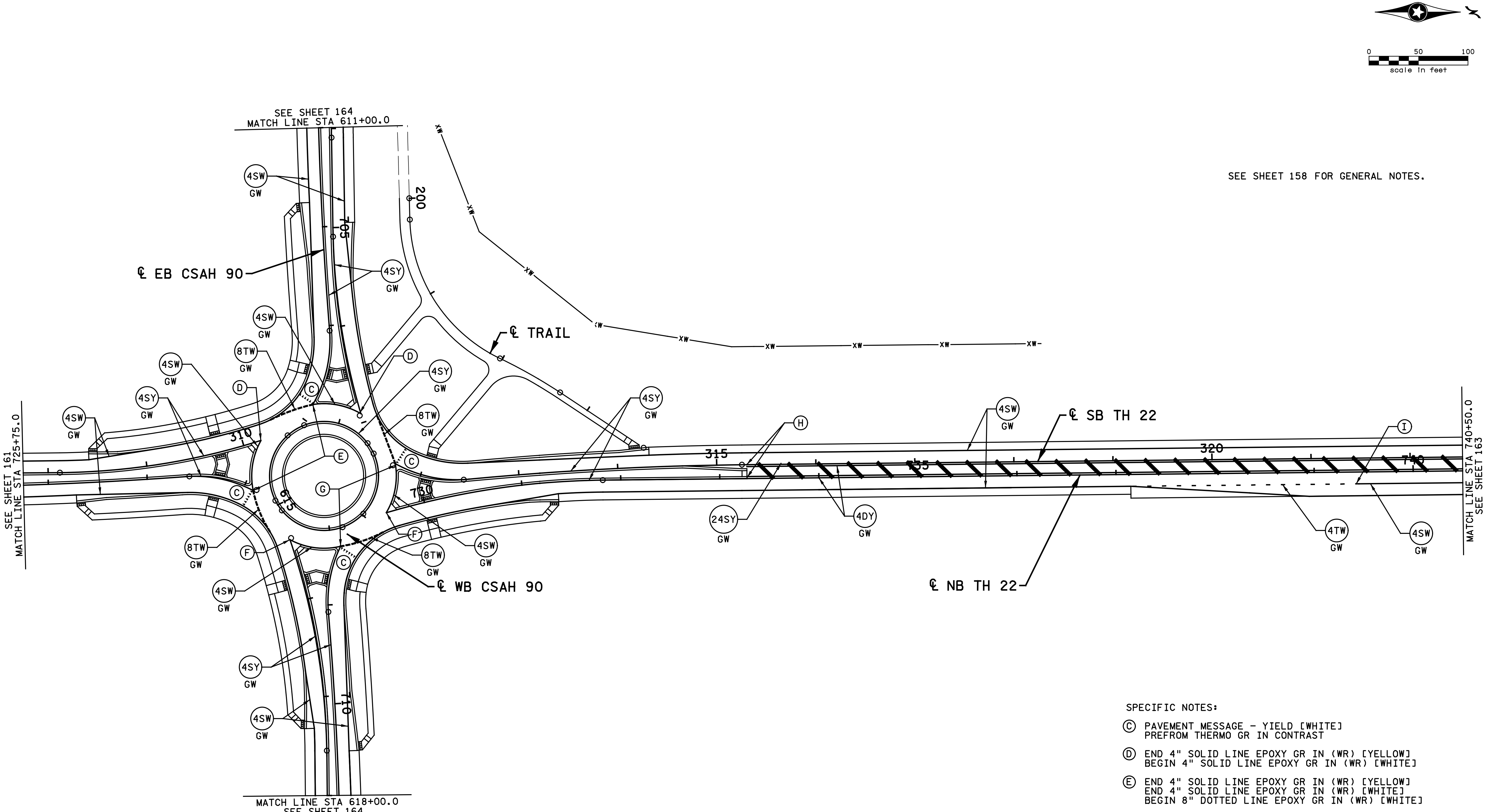
SEE SHEET 158 FOR GENERAL NOTES.



SPECIFIC NOTES:

Ⓒ PAVEMENT MESSAGE - YIELD [WHITE]
PREFROM THERMO GR IN CONTRAST

Ⓓ END 4" SOLID LINE EPOXY GR IN (WR) [YELLOW]
BEGIN 4" SOLID LINE EPOXY GR IN (WR) [WHITE]

Ⓔ END 4" SOLID LINE EPOXY GR IN (WR) [YELLOW]
END 4" SOLID LINE EPOXY GR IN (WR) [WHITE]
BEGIN 8" DOTTED LINE EPOXY GR IN (WR) [WHITE]

Ⓕ END 4" SOLID LINE EPOXY GR IN (WR) [WHITE]
BEGIN 4" SOLID LINE EPOXY GR IN (WR) [YELLOW]

Ⓖ END 8" DOTTED LINE EPOXY GR IN (WR) [WHITE]
BEGIN 4" SOLID LINE EPOXY GR IN (WR) [WHITE]
BEGIN 4" SOLID LINE EPOXY GR IN (WR) [YELLOW]

Ⓗ END 4" SOLID LINE EPOXY GR IN (WR) [YELLOW]
BEGIN 4" DOUBLE SOLID LINE EPOXY GR IN (WR) [YELLOW]

Ⓘ END 4" DOTTED LINE EPOXY GR IN (WR) [WHITE]
BEGIN 4" SOLID LINE EPOXY GR IN (WR) [WHITE]

NO	DATE	BY	CKD	APPR	REVISION

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Date ______ License # 42785

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STATE PROJECT NO. 007-070-005

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DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

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MINNESOTA DEPARTMENT OF TRANSPORTATION
PAVEMENT MARKING PLANS
TH 22 & CSAH 90

SHEET 162 OF 255

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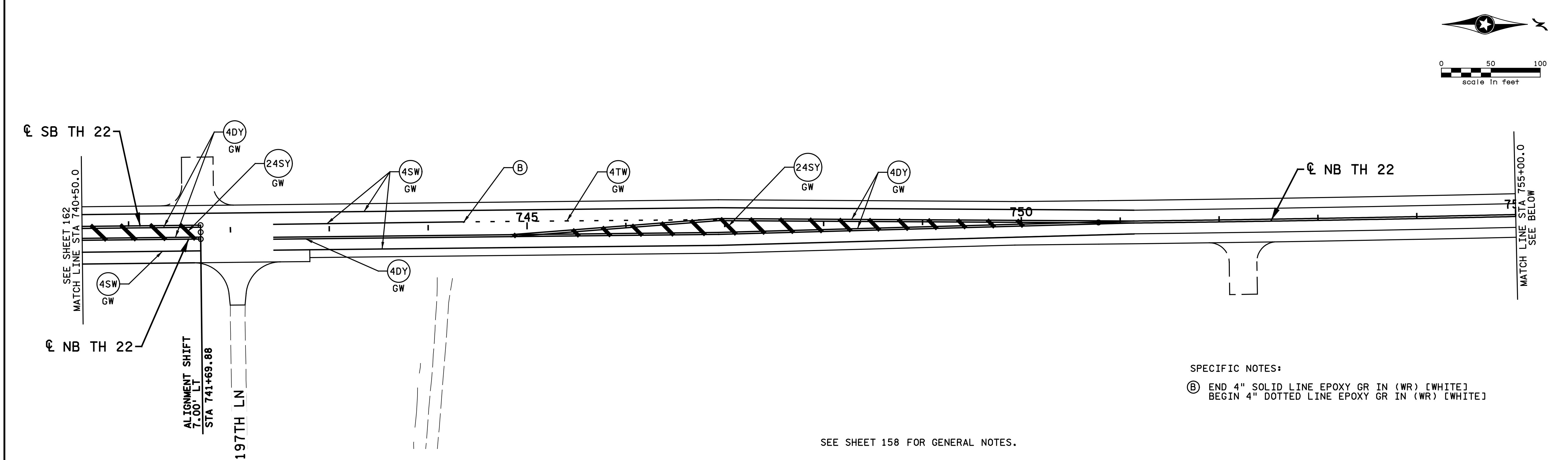
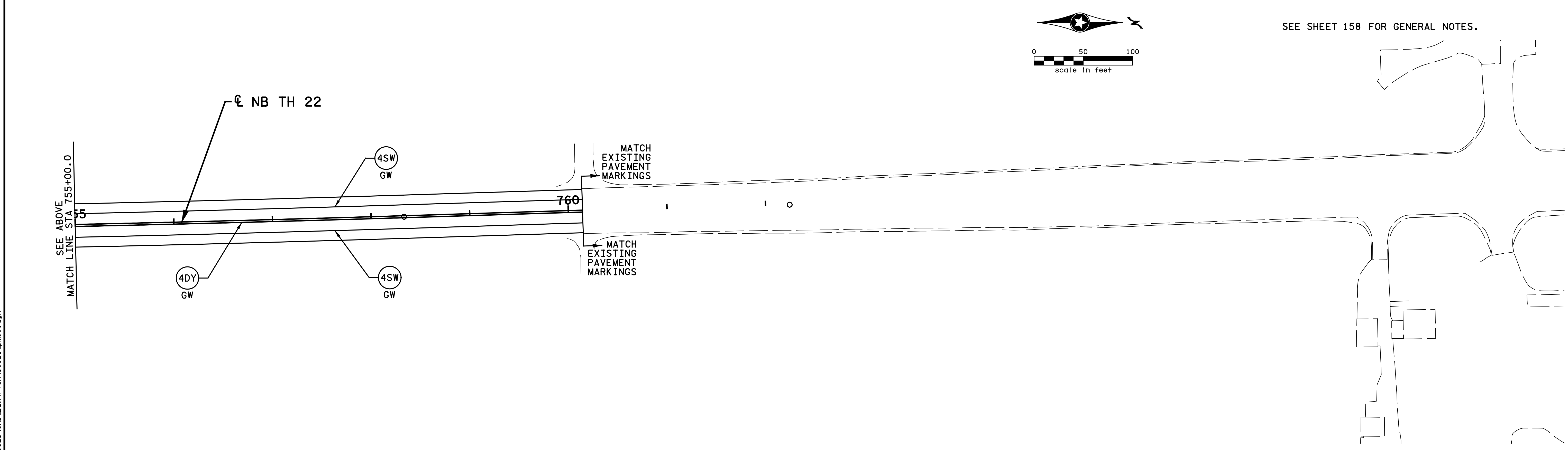


SPECIFIC NOTES:

(B) END 4" SOLID LINE EPOXY GR IN (WR) [WHITE]
BEGIN 4" DOTTED LINE EPOXY GR IN (WR) [WHITE]

SEE SHEET 158 FOR GENERAL NOTES.



SEE SHEET 158 FOR GENERAL NOTES.

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STATE PROJECT NO. 007-070-005

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DESIGNED BY B. BETTS

CHECKED BY A. POTTER

COMM. NO. 01710321

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MINNESOTA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLANS

TH 22 & CSAH 90

SHEET 163 OF 255

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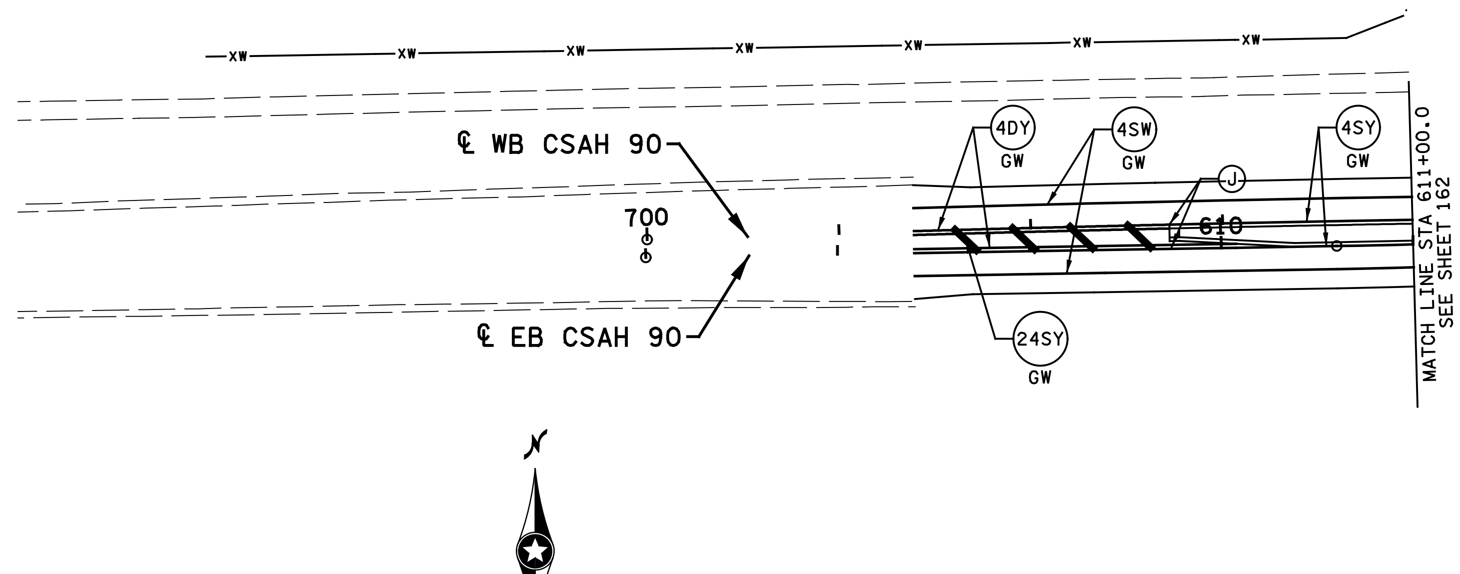
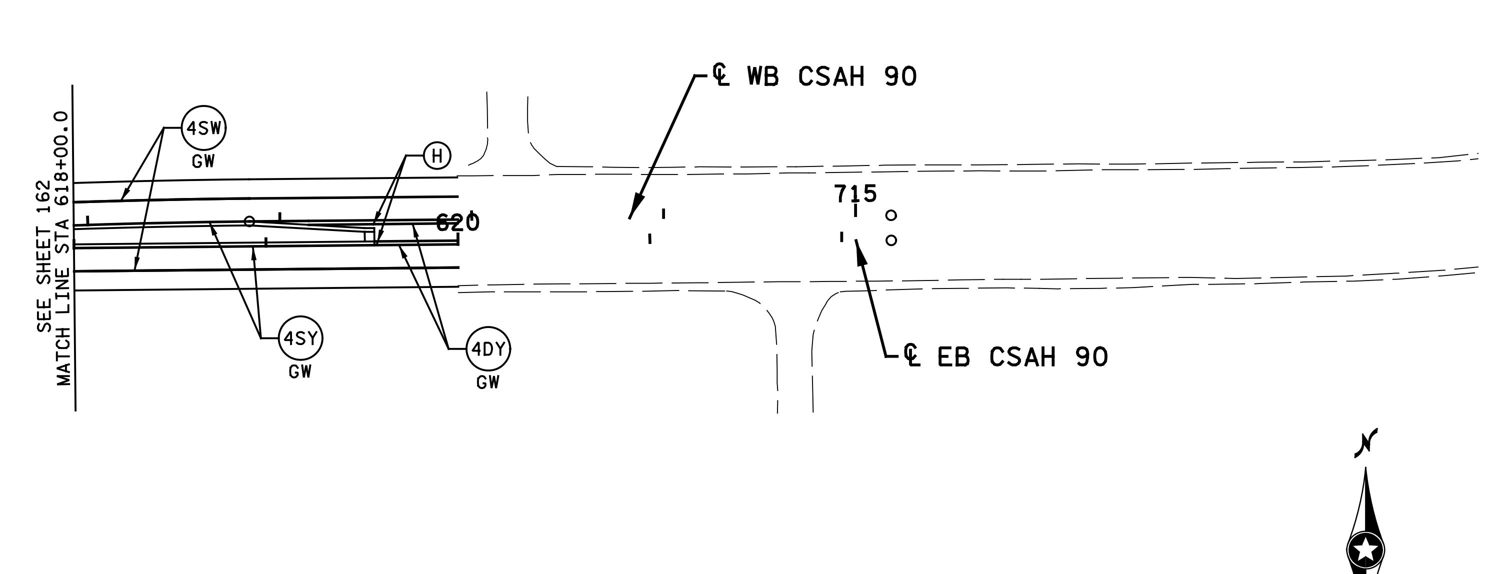
SEE SHEET 158 FOR GENERAL NOTES.



SPECIFIC NOTES:

(J) END 4" DOUBLE SOLID LINE EPOXY GR IN (WR) [YELLOW]
BEGIN 4" SOLID LINE EPOXY GR IN (WR) [YELLOW]



SPECIFIC NOTES:

(H) END 4" SOLID LINE EPOXY GR IN (WR) [YELLOW]
BEGIN 4" DOUBLE SOLID LINE EPOXY GR IN (WR) [YELLOW]

NO	DATE	BY	CKD	APPR	REVISION

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Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

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DRAWN BY B. BETTS
DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLANS
TH 22 & CSAH 90

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REMOVE SIGN TYPE C — U

ALIGNMENT	STATION TO STATION	REMOVE SIGN TYPE C (EACH)
SP 0704-108 (TH 52) NHPP FUNDS		
FENCE 1	60+00 TO 73+46	
FENCE 2	100+00 TO 126+62	
NB TH 22	631+69 TO 717+00	
NB TH 22	717+00 TO 723+50	
NB TH 22	734+00 TO 760+14	
SP 0704-108 (TH 52) NHPP FUNDS TOTAL		
SP 0704-108 (TH 52) HSIP FUNDS		
NB TH 22	723+50 TO 734+00	
SP 0704-108 (TH 52) HSIP FUNDS TOTAL		
SP 007-070-005 (CSAH 90) HSIP FUNDS		
EB CSAH 90	608+40 TO 613+76	
EB CSAH 90	615+09 TO 620+00	
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL		
PROJECT TOTALS		0

REMOVE SIGN TYPE D — V

SIGN NO.	QUANTITY (EACH)				POSTS		PANEL			PANEL LEGEND
	SP 0704-108 (TH 22) NHPP FUNDS	SP 0704-108 (TH 22) HSIP FUNDS	SP 007-070-005 (CSAH 90) HSIP FUNDS	TOTAL QTY (EACH)	NO. & TYPE	KNEE BRACE QUANT.	SIZE (IN)	AREA (SQ FT)	TOTAL AREA (SQ FT)	
D-101					#N/A	#N/A	0 X 0	0.0	0.0	
D-102					#N/A	#N/A	0 X 0	0.0	0.0	
D-103					#N/A	#N/A	0 X 0	0.0	0.0	
D-104					#N/A	#N/A	0 X 0	0.0	0.0	
PROJECT TOTAL				0						

SALVAGE & INSTALL SIGN TYPE SPECIAL — Z

SIGN NO.	QUANTITY (EACH)				POSTS		MTG. HEIGHT (MIN.) (FT)	PANEL LEGEND
	SP 0704-108 (TH 22) NHPP FUNDS	SP 0704-108 (TH 22) HSIP FUNDS	SP 007-070-005 (CSAH 90) HSIP FUNDS	TOTAL QTY (EACH)	NO. & TYPE	LENGTH (FT)		
S-201				0	1-0	11.0	7	
S-202				0	1-0	11.0	7	
PROJECT TOTAL				0				

GENERAL NOTES:

1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
3. SEE STANDARD SIGNS MANUAL FOR PUNCHING CODE AND DETAIL DRAWINGS OF TYPE C SIGN PANELS.

SPECIFIC NOTES:

(Z-1) MOUNTING HEIGHT IS MINIMUM, SEE SHEET FOR TYPICAL MOUNTING.
(Z-2) SEE SHEETS FOR STRUCTURAL DETAILS.
(Z-3) MOUNTING HEIGHT IS MINIMUM, SEE SHEET FOR TYPICAL MOUNTING.
(Z-4) SEE SHEETS - FOR STRUCTURAL DETAILS.

REFERENCE LOCATION SIGN — CC

ALIGNMENT	STATION TO STATION	REFERENCE LOCATION SIGN (EACH)
SP 0704-108 (TH 52) NHPP FUNDS		
FENCE 1	60+00 TO 73+46	
FENCE 2	100+00 TO 126+62	
NB TH 22	631+69 TO 717+00	
NB TH 22	717+00 TO 723+50	
NB TH 22	734+00 TO 760+14	
SP 0704-108 (TH 52) NHPP FUNDS TOTAL		
SP 0704-108 (TH 52) HSIP FUNDS		
NB TH 22	723+50 TO 734+00	
SP 0704-108 (TH 52) HSIP FUNDS TOTAL		
SP 007-070-005 (CSAH 90) HSIP FUNDS		
EB CSAH 90	608+40 TO 613+76	
EB CSAH 90	615+09 TO 620+00	
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL		
PROJECT TOTALS		

SIGN PANELS TYPE C — W

SIGN NO.	QUANTITY (EACH) SP 0704-108 (TH 22) NHPP FUNDS	SP 0704-108 (TH 22) HSIP FUNDS	SP 007-070-005 (CSAH 90) HSIP FUNDS	TOTAL QTY	POSTS NO. & TYPE	KNEE BRACE QUANT.	LENGTH (FT)	MTG. HEIGHT (MIN.) (FT)	PANEL SIZE (IN)	AREA (SQ FT)	TOTAL AREA (SQ FT) SP 0704-108 (TH 22) NHPP FUNDS	SP 0704-108 (TH 22) HSIP FUNDS	SP 007-070-005 (CSAH 90) HSIP FUNDS	TOTAL	CODE NO.	PANEL LEGEND
PROJECT TOTAL														0.0		

GENERAL NOTES:
1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE STANDARD SIGNS MANUAL FOR PUNCHING CODE AND DETAIL DRAWINGS OF TYPE C SIGN PANELS.

SPECIFIC NOTES:
(W-1) MOUNTING HEIGHT IS MINIMUM, SEE SHEET FOR TYPICAL MOUNTING.
(W-2) SEE SHEETS FOR STRUCTURAL DETAILS.
(W-3) MOUNTING HEIGHT IS MINIMUM, SEE SHEET FOR TYPICAL MOUNTING.
(W-4) SEE SHEETS - FOR STRUCTURAL DETAILS.
(W-5) MOUNT IN CONCRETE. SEE SHEET .
(W-6) MOUNT BACK TO BACK

SIGN PANELS TYPE D — X

SIGN NO.	QUANTITY (EACH) SP 0704-108 (TH 22) NHPP FUNDS	SP 0704-108 (TH 22) HSIP FUNDS	SP 007-070-005 (CSAH 90) HSIP FUNDS	TOTAL QTY (EACH)	POSTS NO. & TYPE	KNEE BRACE QUANT.	LENGTH (FT)	SPACING (IN)	(FF-1) MTG. HEIGHT (MIN.) (FT)	PANEL SIZE (IN)	AREA (SQ FT)	TOTAL AREA (SQ FT) SP 0704-108 (TH 22) NHPP FUNDS	SP 0704-108 (TH 22) HSIP FUNDS	SP 007-070-005 (CSAH 90) HSIP FUNDS	TOTAL	PANEL LEGEND	
				0	#N/A	#N/A	3.5	#N/A		X	0.0				0.0		#N/A
PROJECT TOTAL															0.0		

GENERAL NOTES:
1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE SHEETS - FOR STRUCTURAL DETAILS.
3. SEE STANDARD SIGNS MANUAL FOR PUNCHING CODES.
4. SEE SHEETS - FOR DETAILED DRAWINGS OF TYPE D SIGN PANELS.

SPECIFIC NOTES:
(X-1) MOUNTING HEIGHT IS MINIMUM, SEE SHEET FOR TYPICAL MOUNTING.

MARKERS — Y

ALIGNMENT	STATION TO STATION	OBJECT MARKER TYPE X4-2 (EACH)	(EACH)	(EACH)
SP 0704-108 (TH 52) NHPP FUNDS				
FENCE 1	60+00 TO 73+46			
FENCE 2	100+00 TO 126+62			
NB TH 22	631+69 TO 717+00			
NB TH 22	717+00 TO 723+50			
NB TH 22	734+00 TO 760+14			
SP 0704-108 (TH 52) NHPP FUNDS TOTAL				
SP 0704-108 (TH 52) HSIP FUNDS				
NB TH 22	723+50 TO 734+00			
SP 0704-108 (TH 52) HSIP FUNDS TOTAL				
SP 007-070-005 (CSAH 90) HSIP FUNDS				
EB CSAH 90	608+40 TO 613+76			
EB CSAH 90	615+09 TO 620+00			
SP 007-070-005 (CSAH 90) HSIP FUNDS TOTAL				
PROJECT TOTALS				

NO	DATE	BY	CKD	APPR	REVISION

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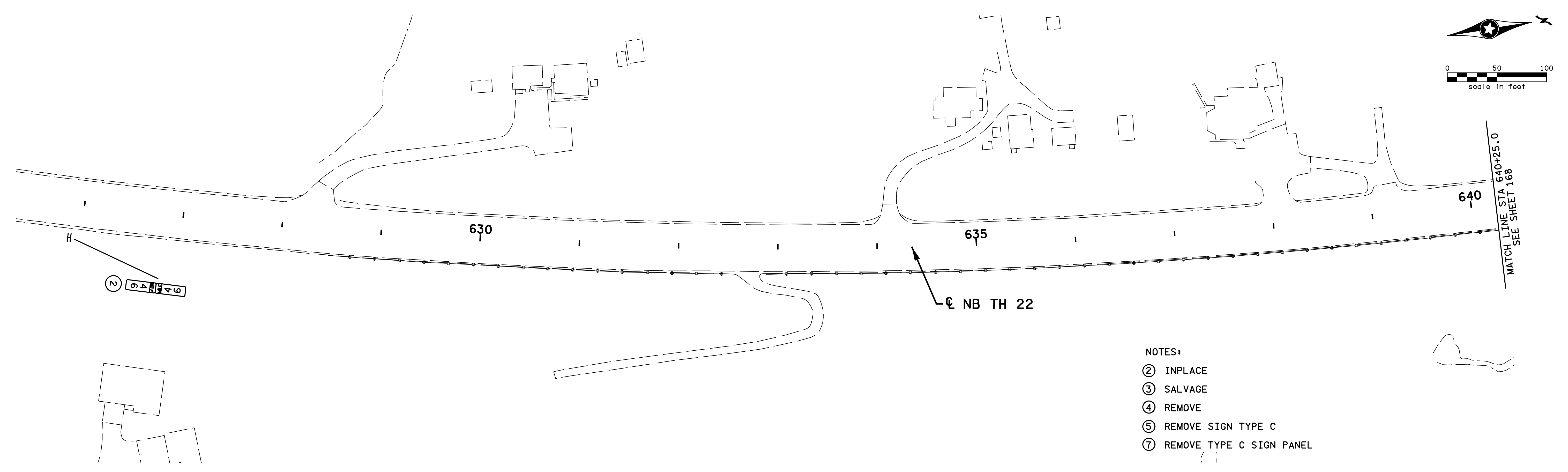
Print Name: ADRIAN S. POTTER
Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS
DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

SRF Consulting Group, Inc.
ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION
SIGNING PLANS
TH 22 & CSAH 90
TABULATIONS



NOTES:

2 INPLACE

3 SALVAGE

4 REMOVE

5 REMOVE SIGN TYPE C

7 REMOVE TYPE C SIGN PANEL

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TH 22 & CSAH 90

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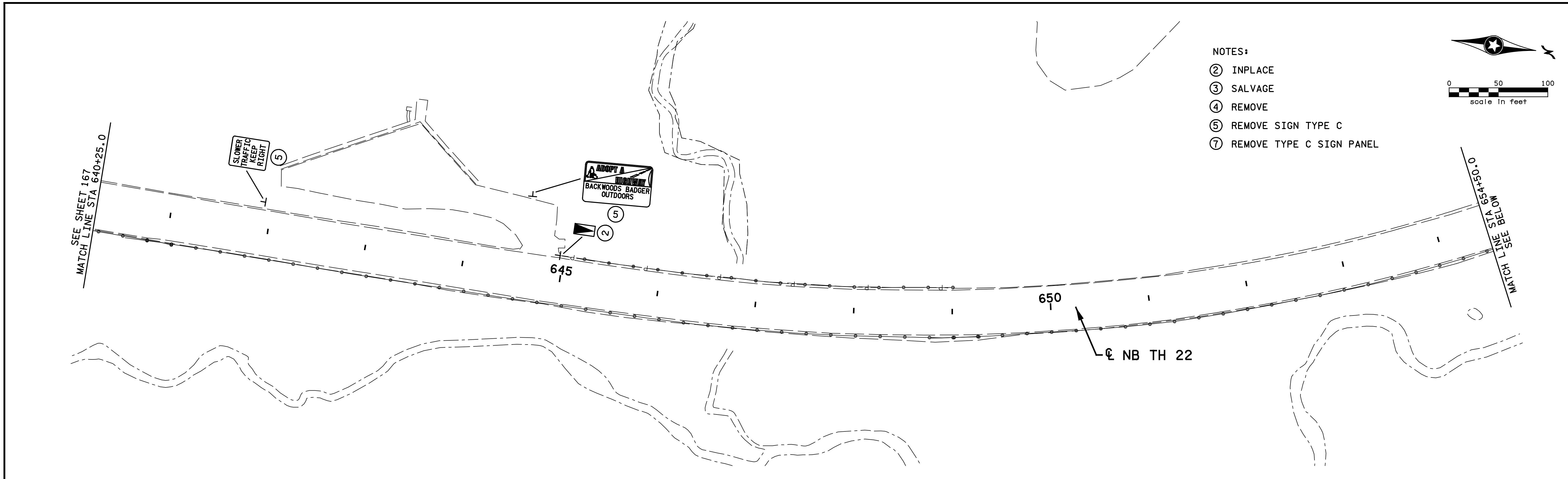

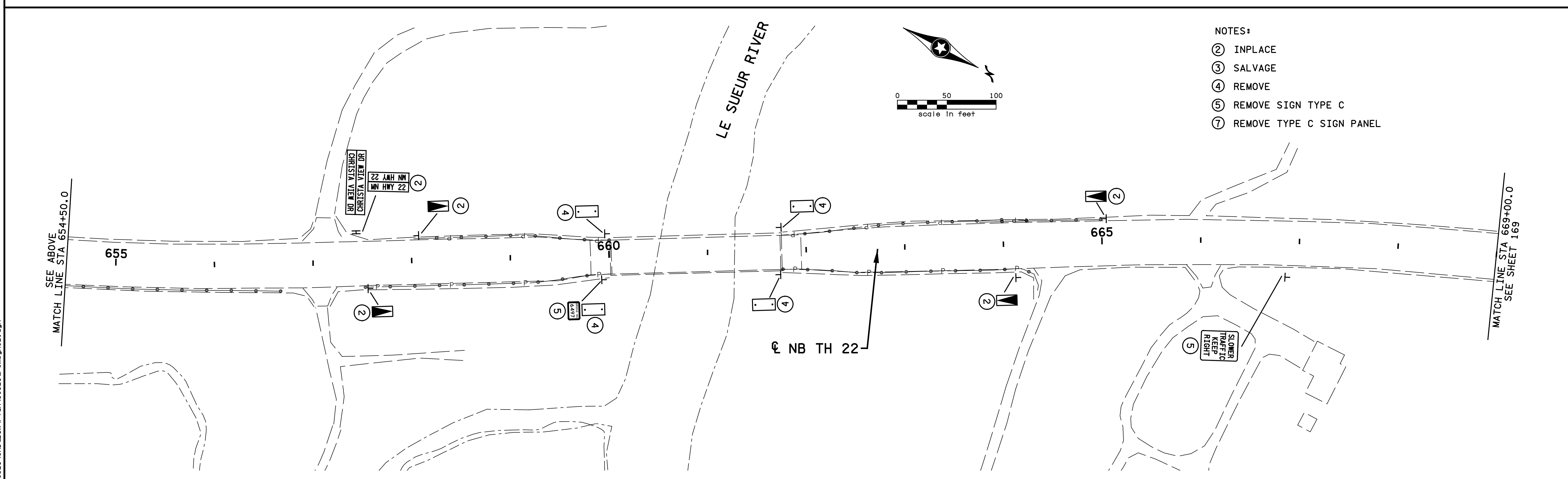

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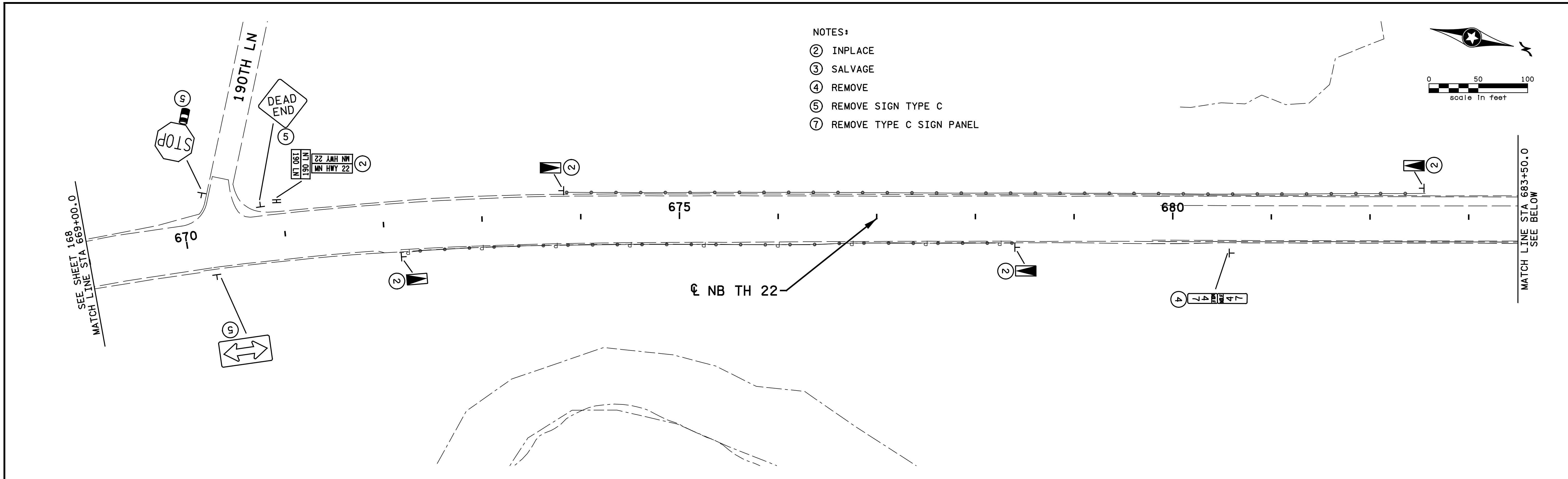

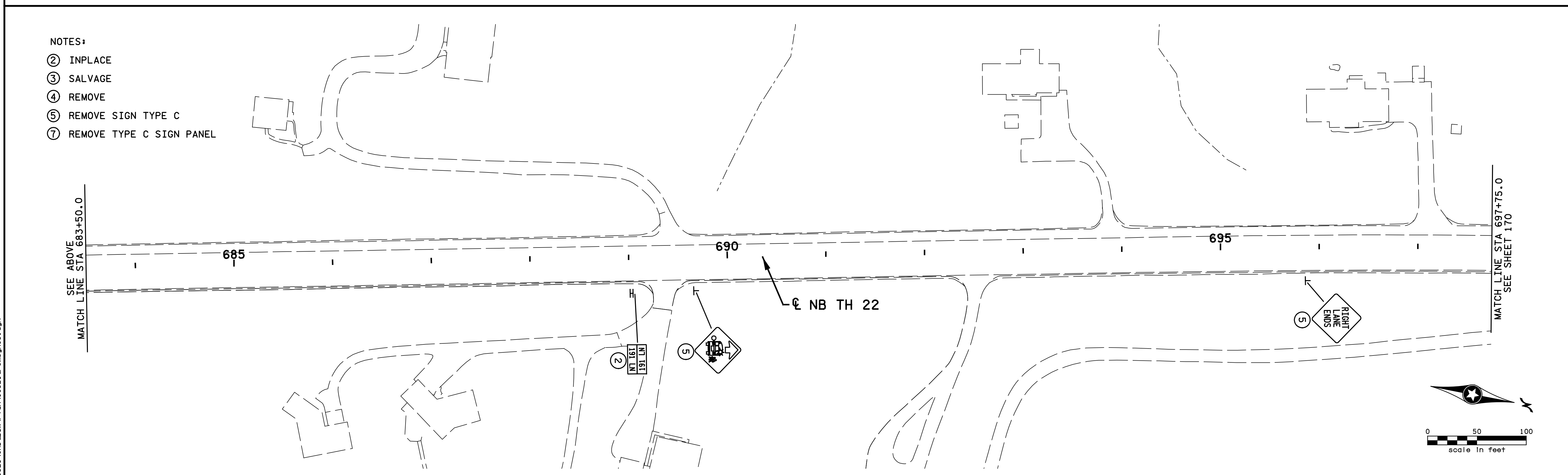

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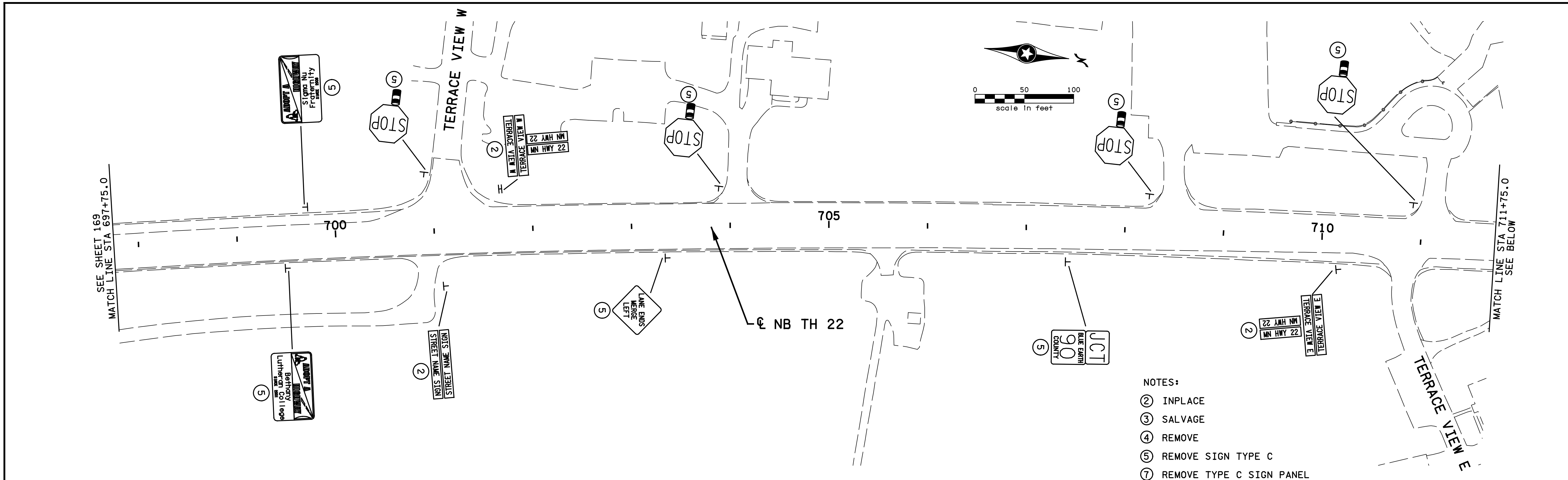

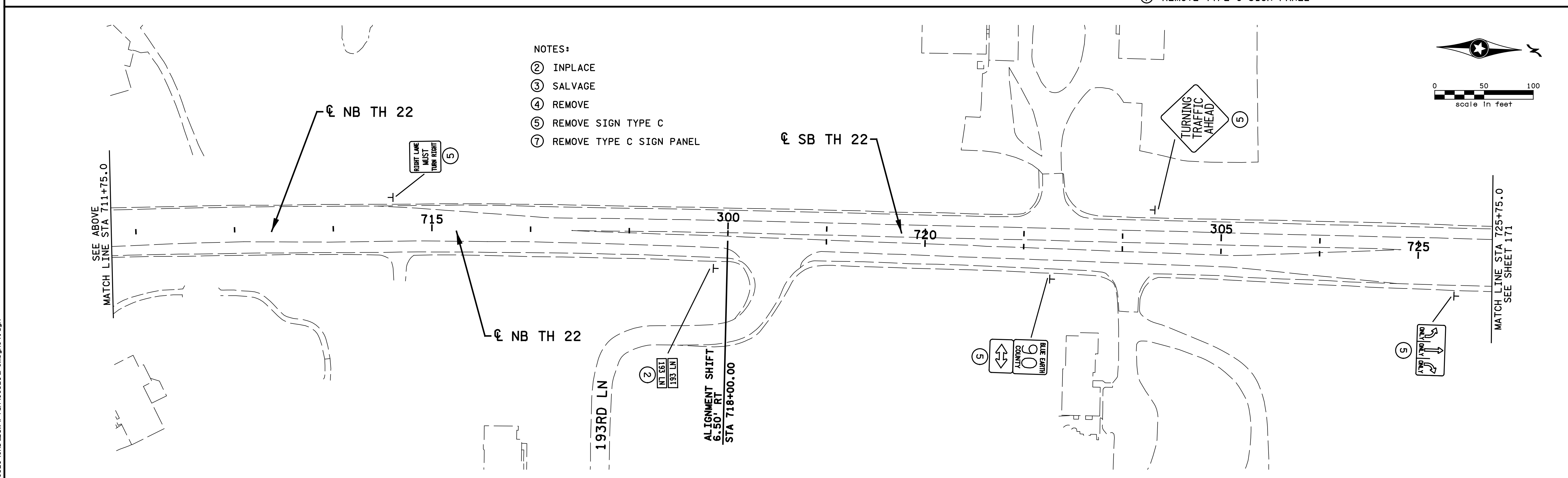

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TH 22 & CSAH 90

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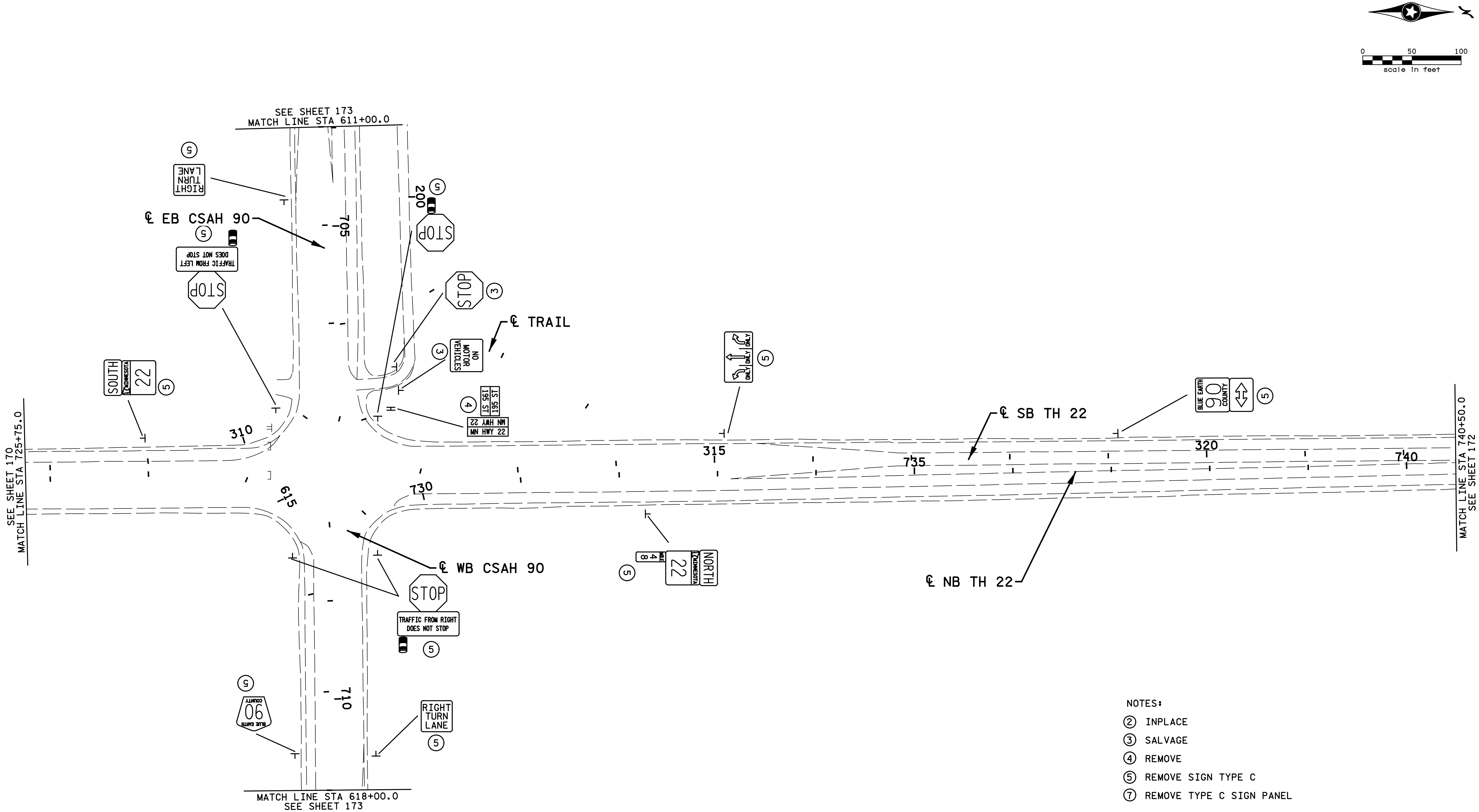

NOTES:

2. INPLACE
3. SALVAGE
4. REMOVE
5. REMOVE SIGN TYPE C
7. REMOVE TYPE C SIGN PANEL

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STATE PROJECT NO. 007-070-005

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CHECKED BY A. POTTER
COMM. NO. 01710321

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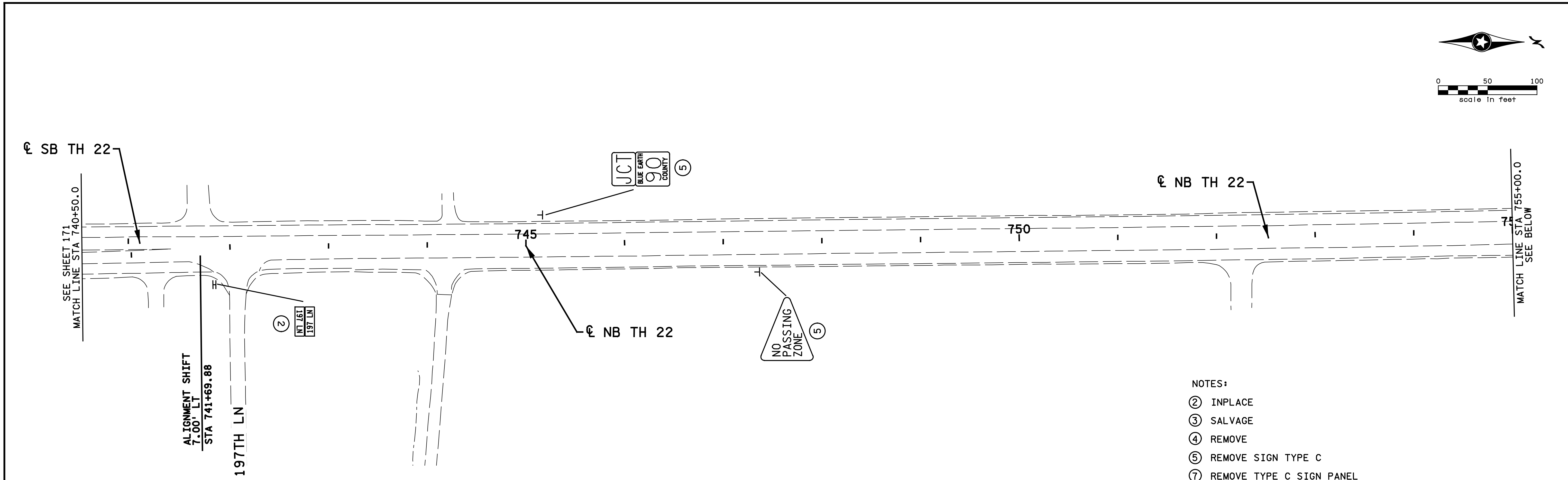

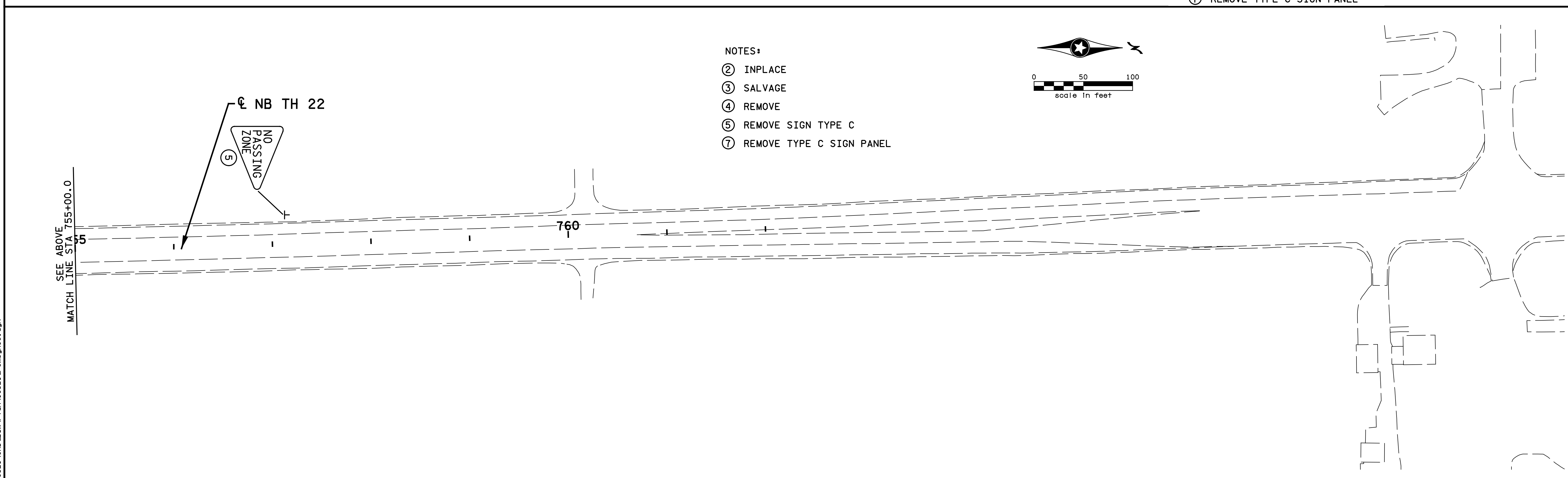

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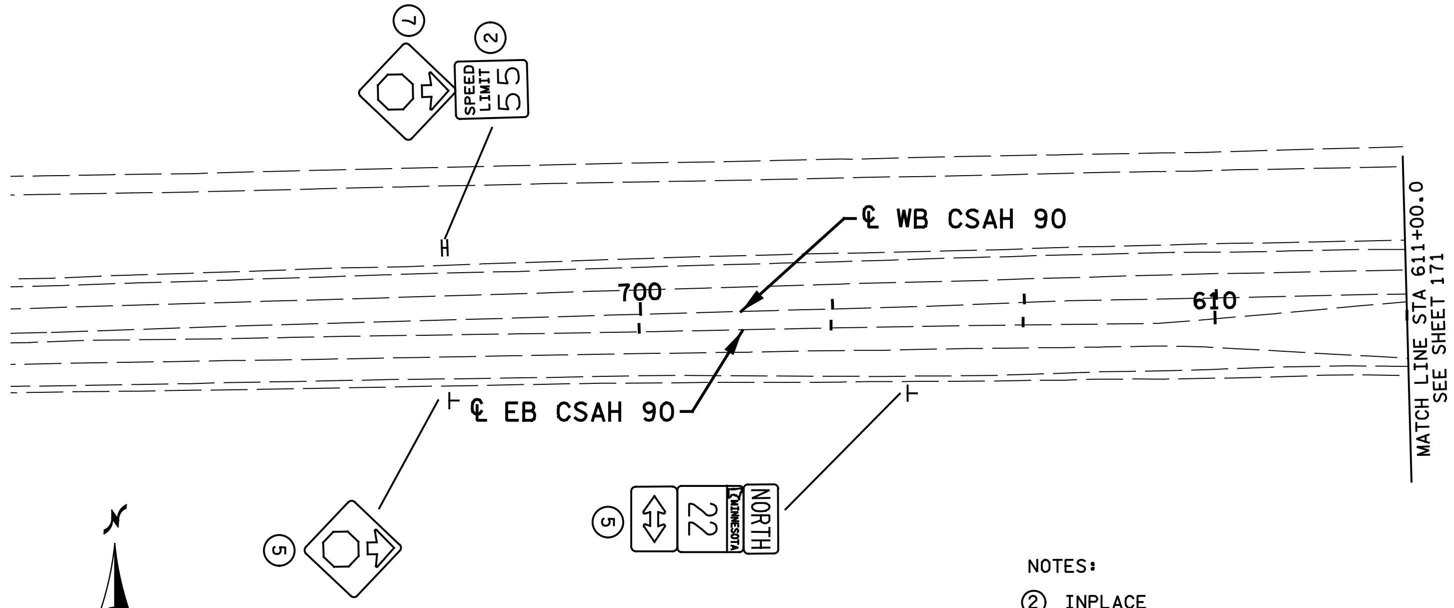
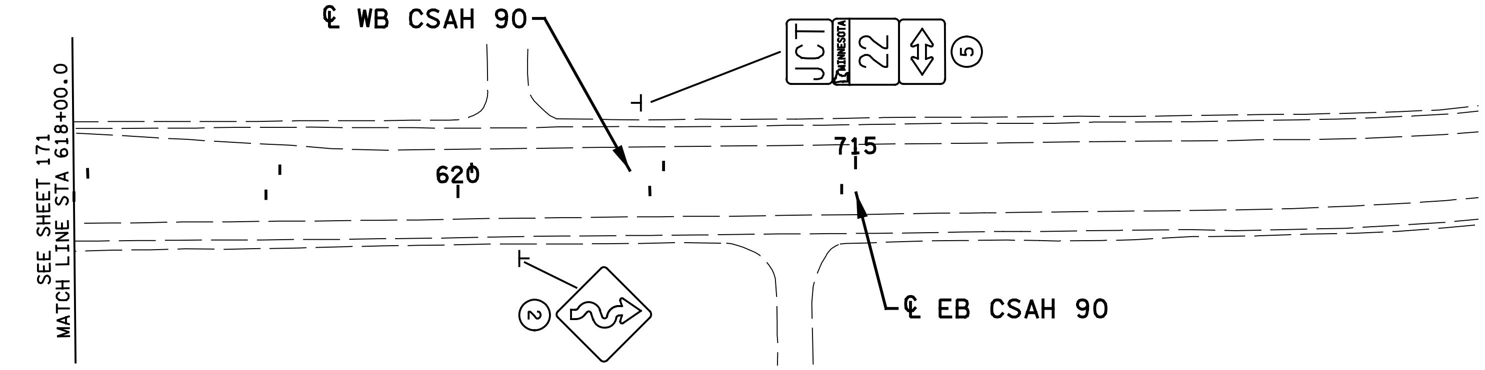


NOTES:

2 INPLACE
3 SALVAGE
4 REMOVE
5 REMOVE SIGN TYPE C
7 REMOVE TYPE C SIGN PANEL

0 50 100
scale in feet



NOTES:

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3 SALVAGE
4 REMOVE
5 REMOVE SIGN TYPE C
7 REMOVE TYPE C SIGN PANEL

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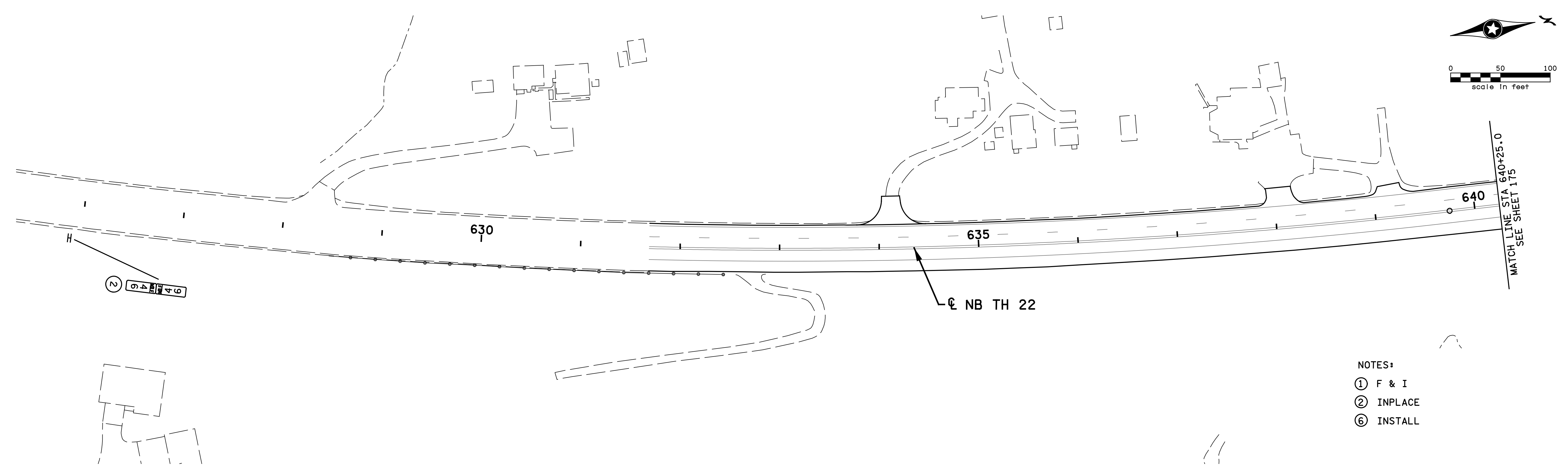
TH 22 & CSAH 90

SHEET 173 OF 255



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TH 22 & CSAH 90

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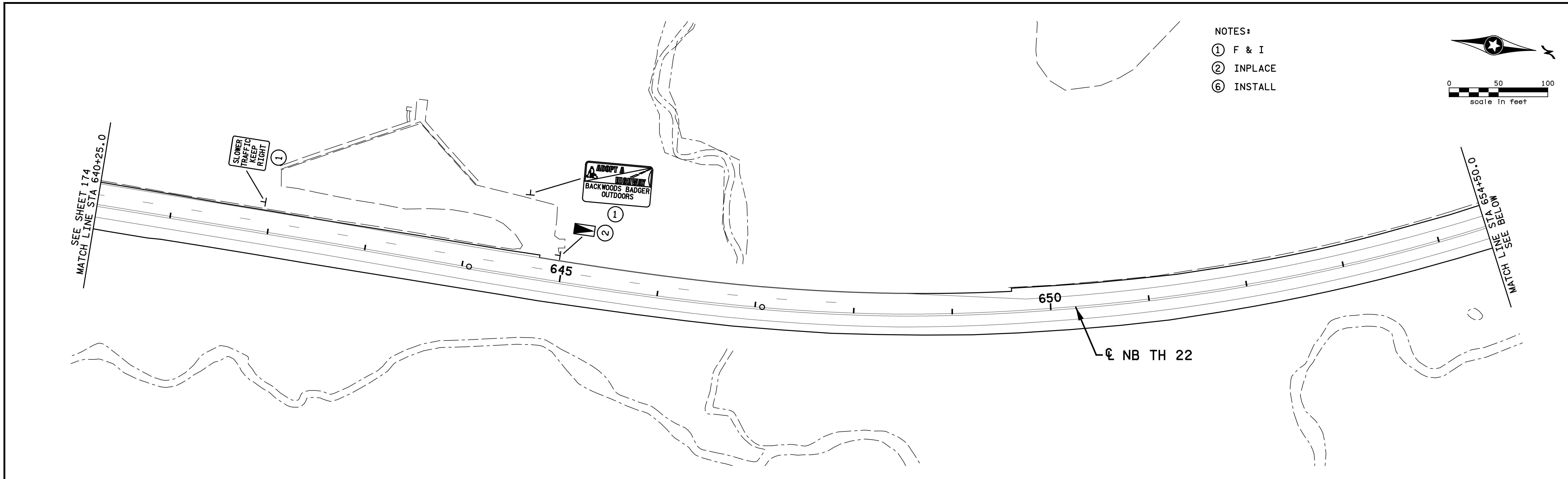

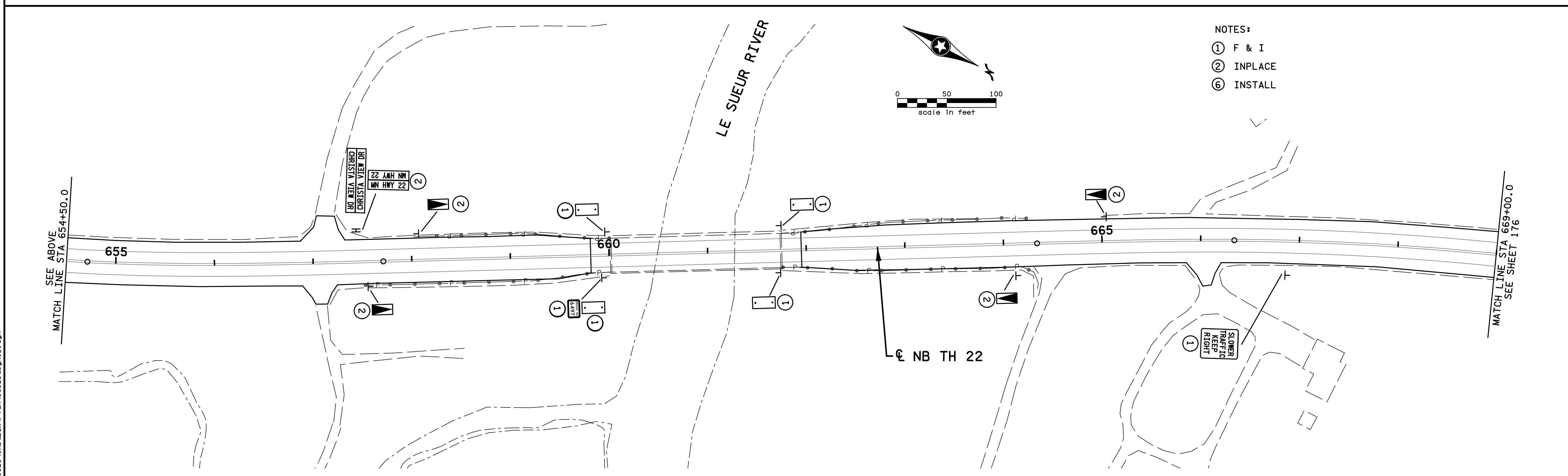

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TH 22 & CSAH 90

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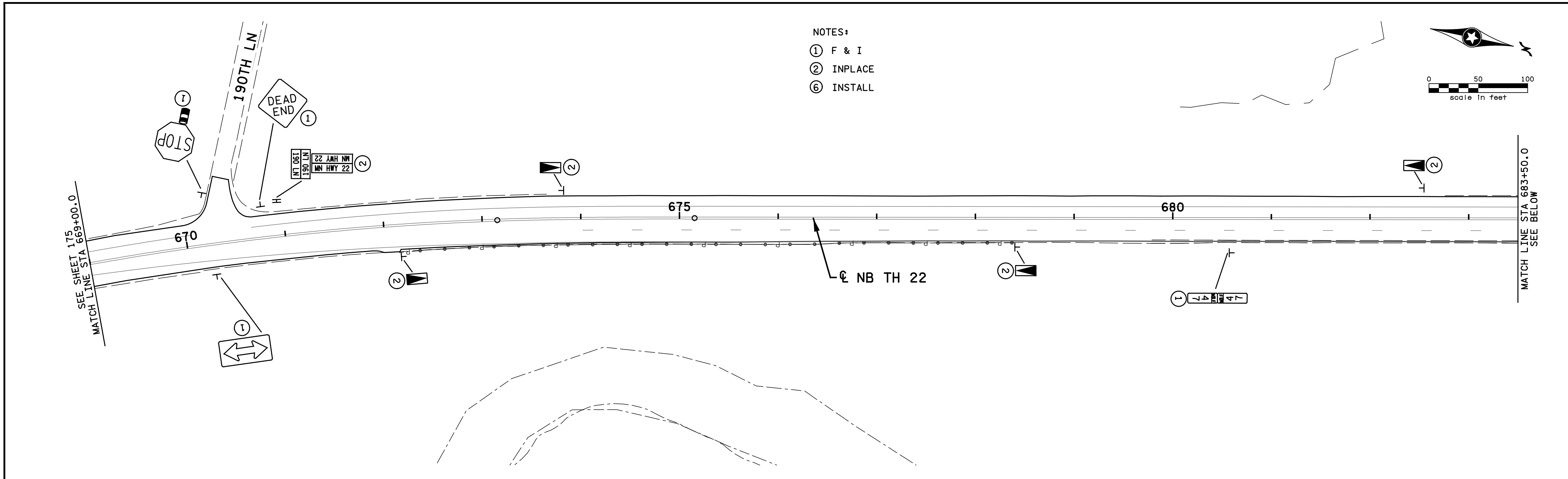

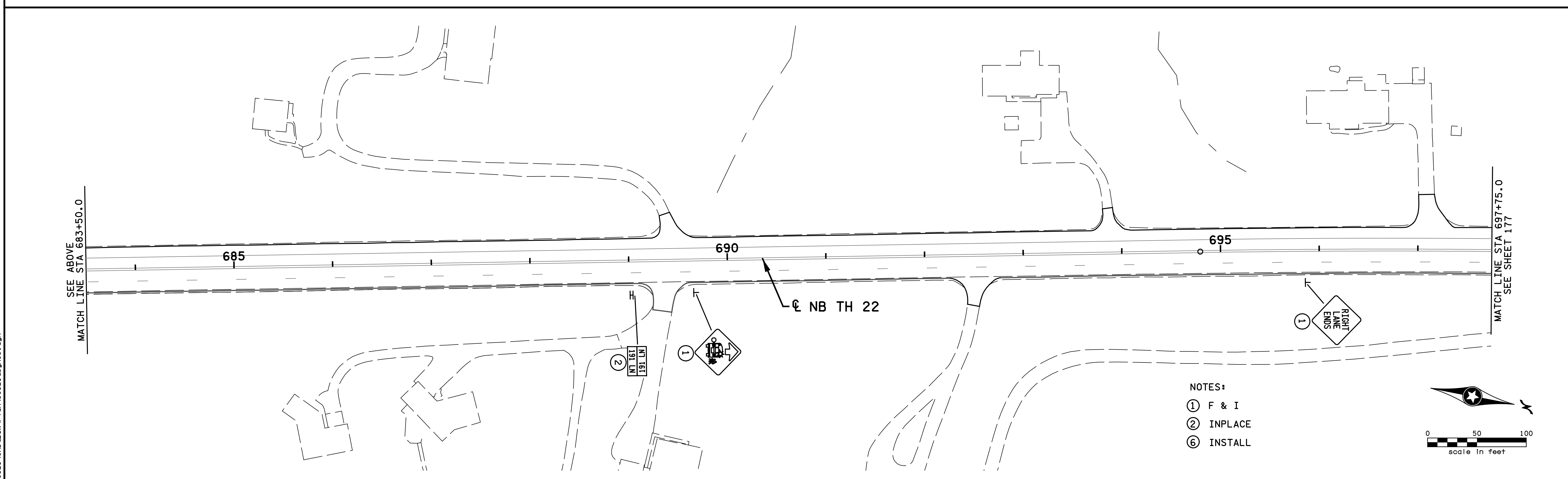

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STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS

DESIGNED BY B. BETTS

CHECKED BY A. POTTER

COMM. NO. 01710321

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TH 22 & CSAH 90

SHEET 176 OF 255

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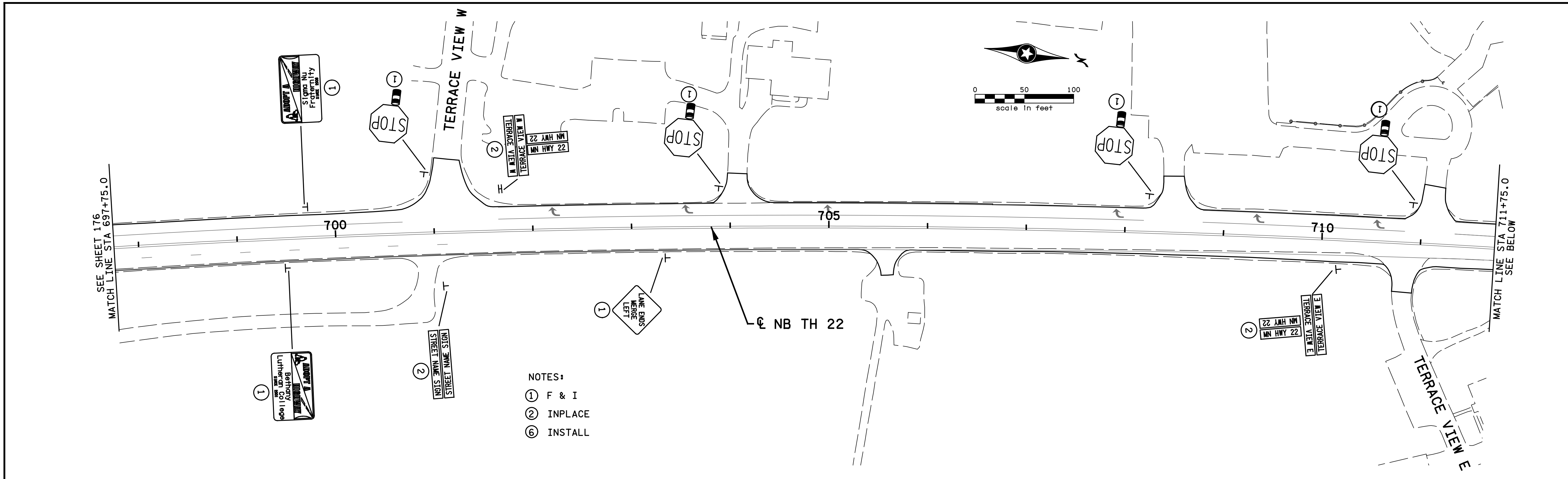

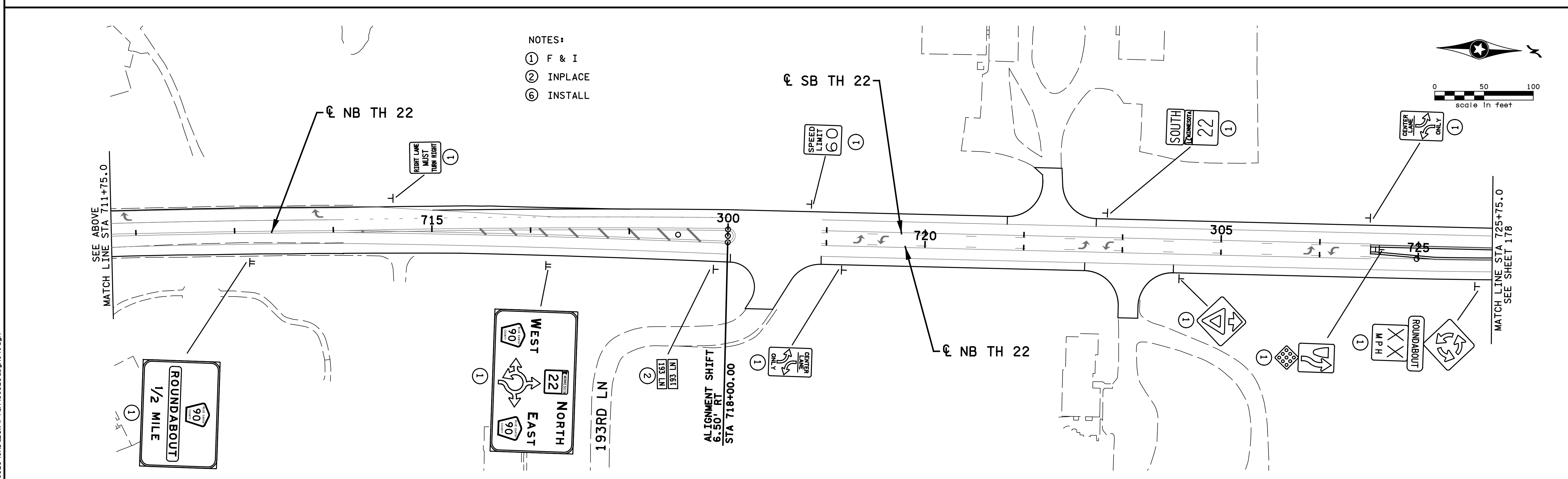

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SHEET 177 OF 255

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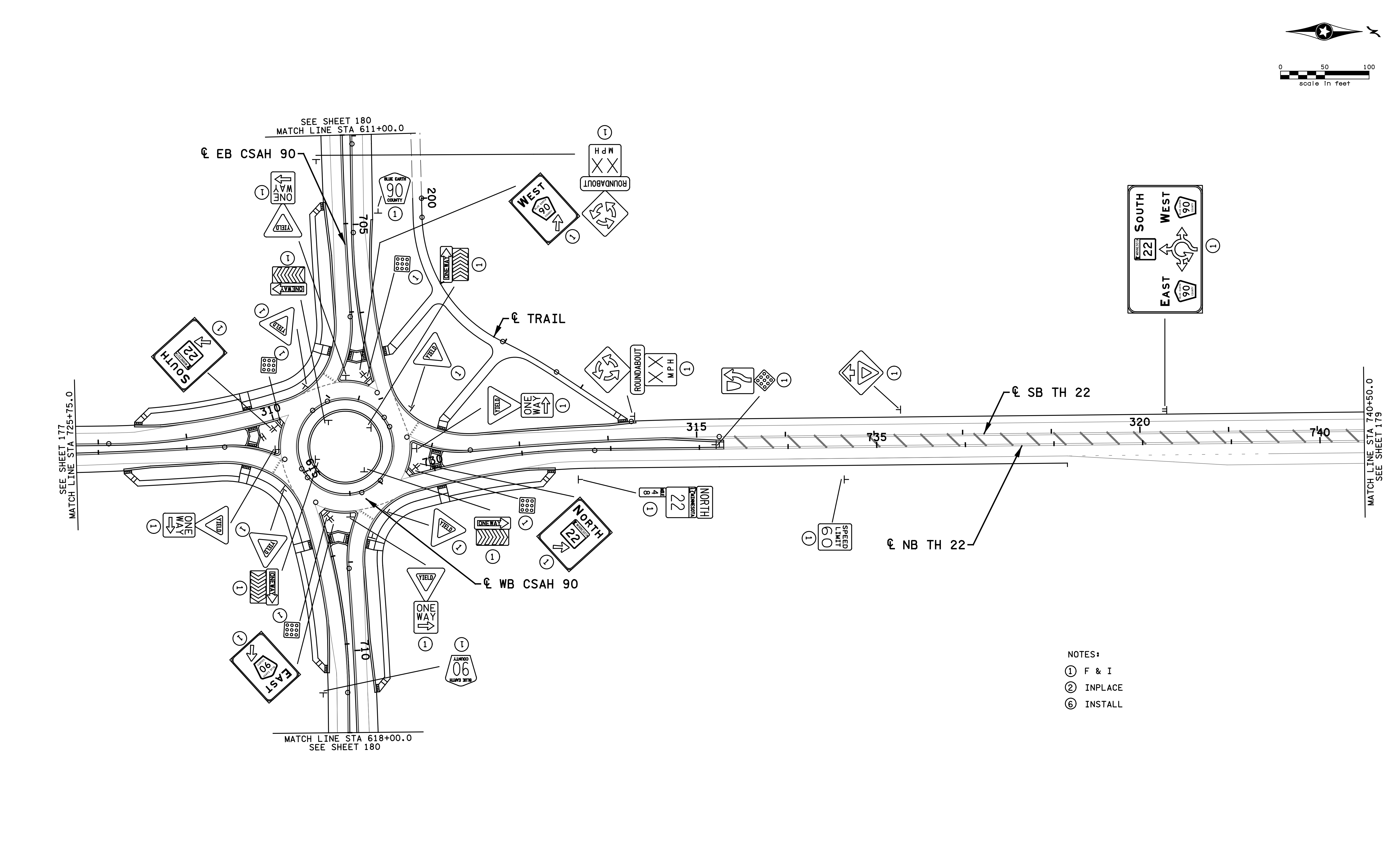

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TH 22 & CSAH 90

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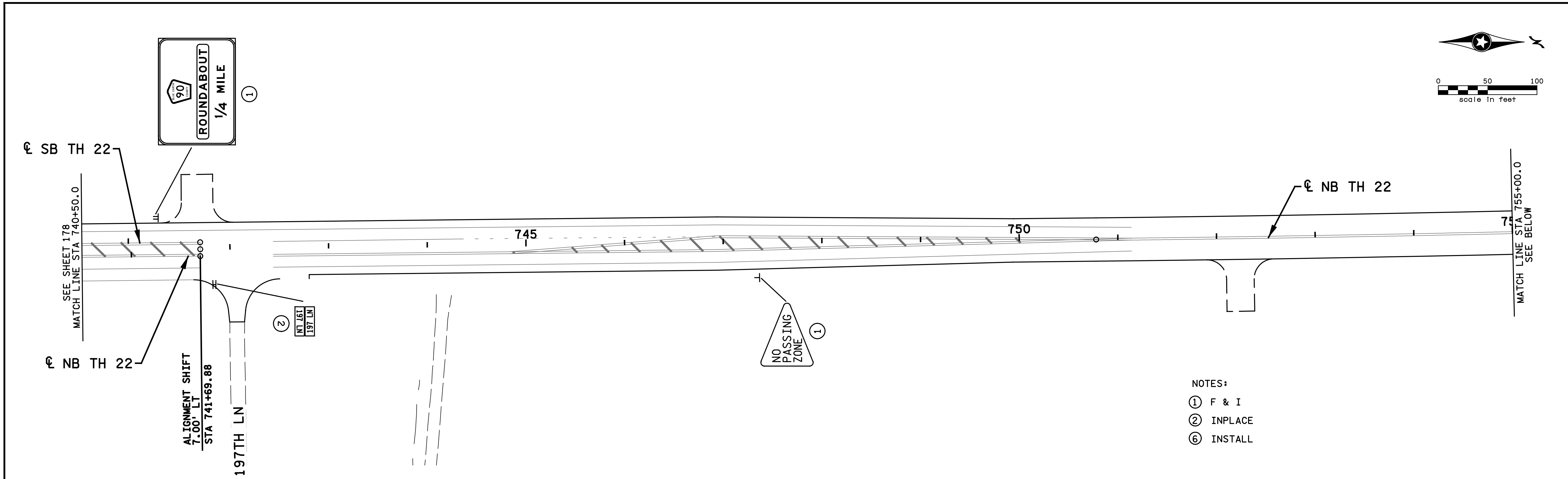

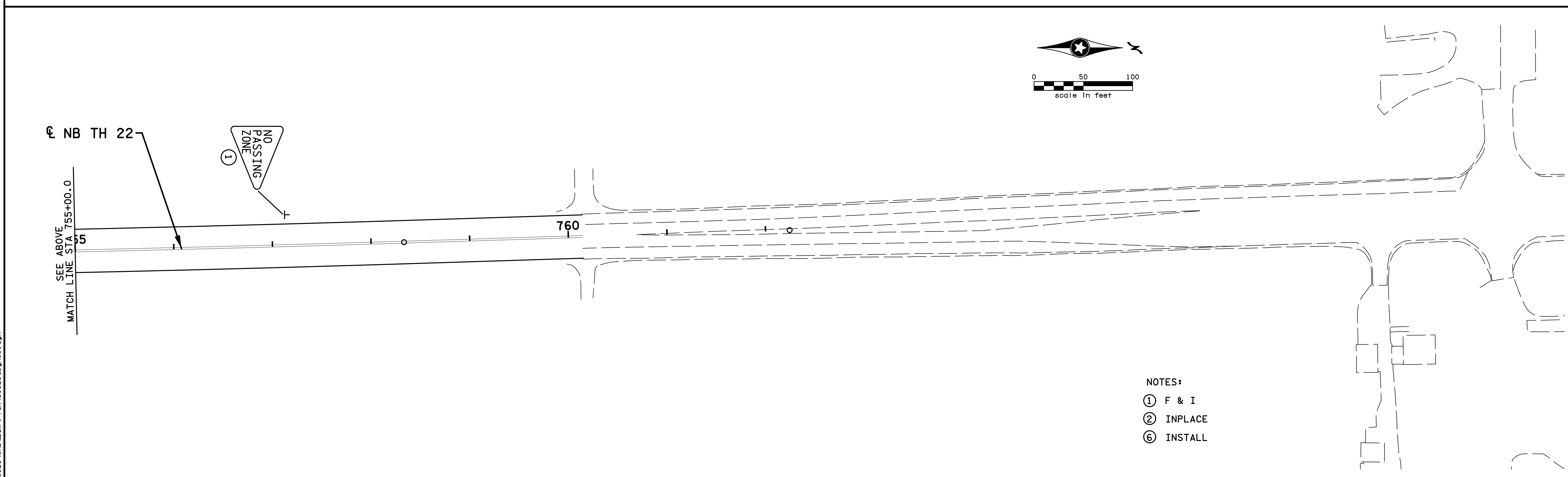

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Engineers Planners Designers

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TH 22 & CSAH 90

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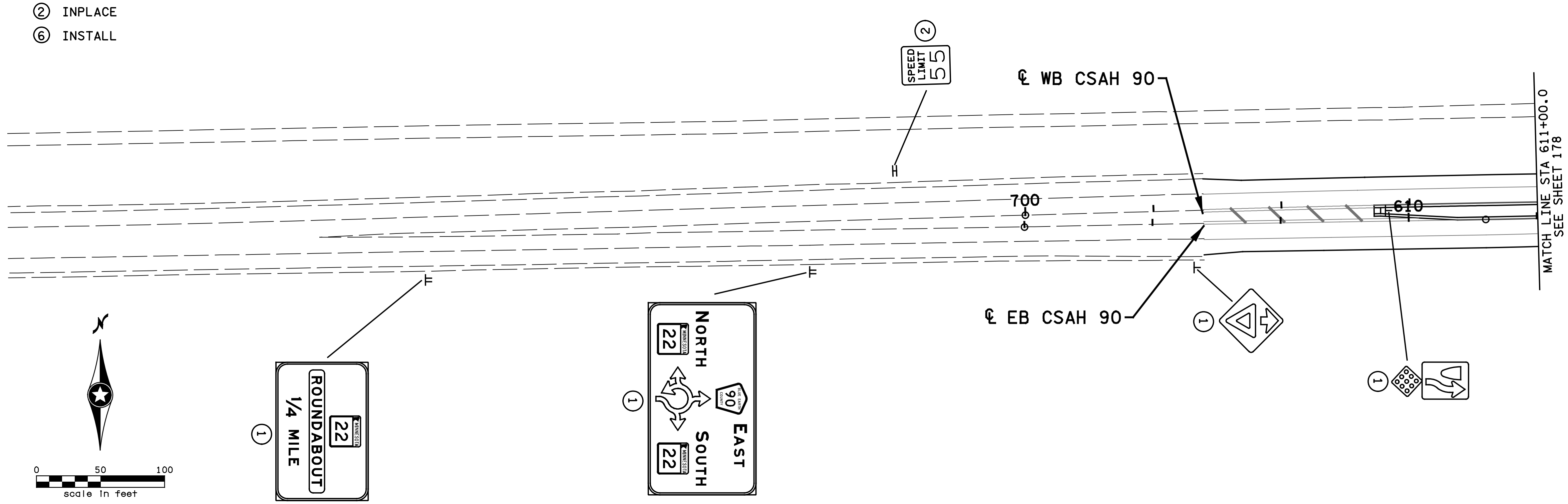
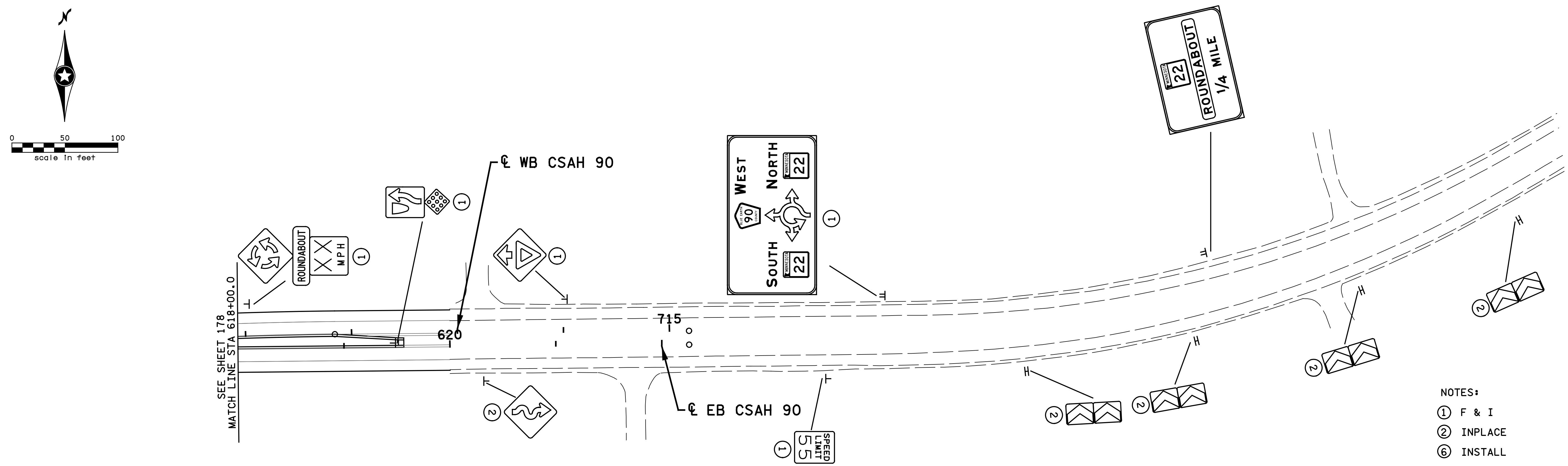
NOTES:
1 F & I
2 INPLACE
6 INSTALL





NOTES:
1 F & I
2 INPLACE
6 INSTALL

NO	DATE	BY	CKD	APPR	REVISION

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Date ____________ License # 42785

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STATE PROJECT NO. 007-070-005

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DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

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SHEET 180 OF 255

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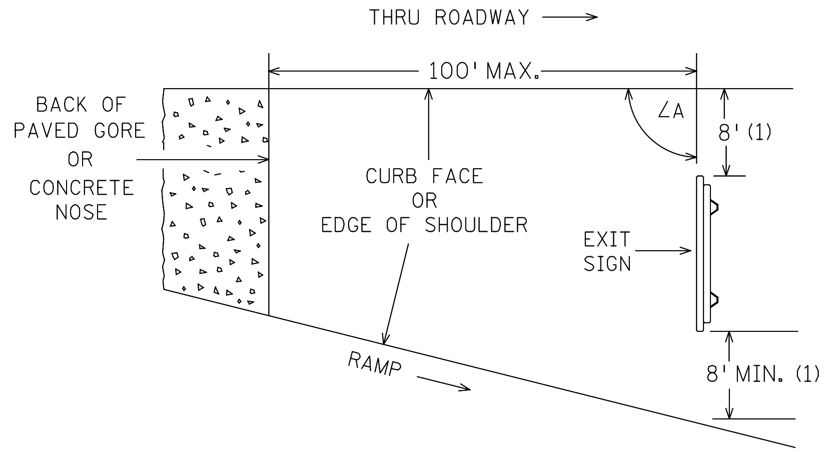
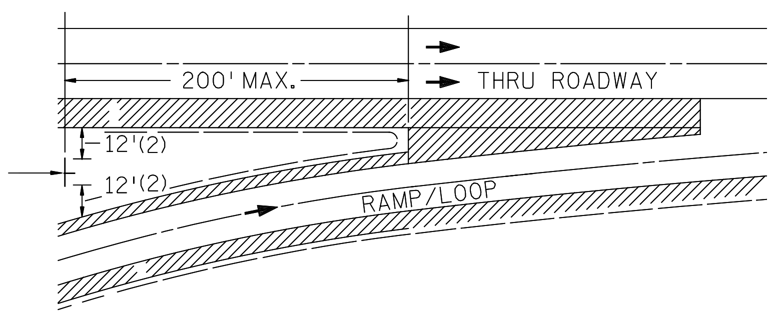
GORE PLACEMENT





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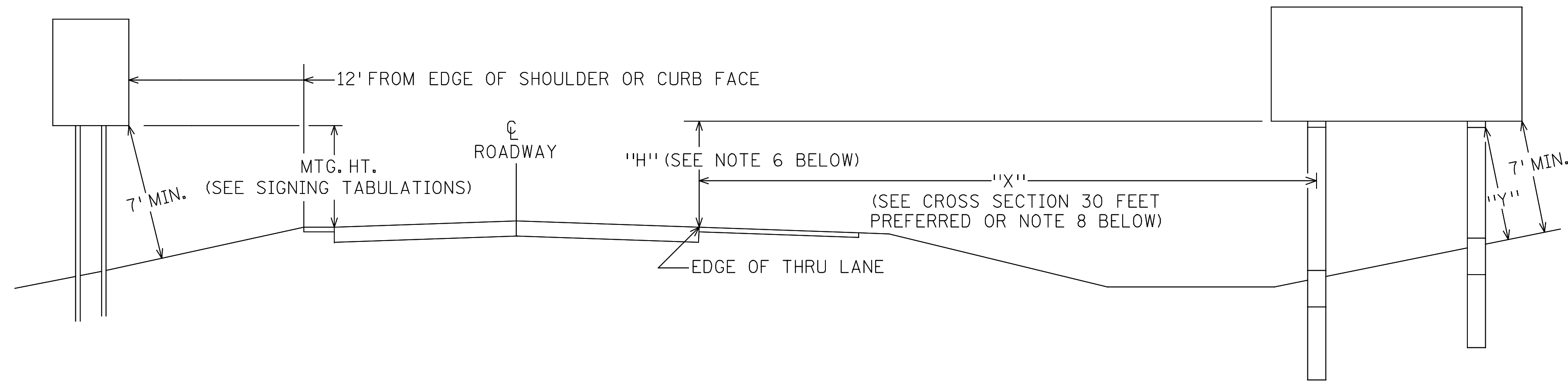

ROUTE MARKER, REGULATORY & WARNING SIGNS - TYPE C
GUIDE SIGNS - TYPE D

GUIDE SIGN - TYPE A

NOTES:

1. ALL TYPE C AND D MOUNTING HEIGHTS ARE MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE ELEVATION OF THE NEAR EDGE OF PAVEMENT IN RURAL AREAS OR TO THE TOP OF THE CURB OR IN THE ABSCENCE OF CURB, TO THE NEAR EDGE OF THE TRAVELED WAY.
2. SIGN FACES SHALL BE VERTICAL.
3. OVERHEAD SIGNS SHALL BE POSITIONED AT RIGHT ANGLES TO THE THRU ROADWAY UNLESS OTHERWISE NOTED.
4. TO AVOID SPECULAR GLARE, ∠A SHALL BE APPROXIMATELY 93° FOR SIGNS LOCATED LESS THAN 30' FROM THE EDGE OF THRU LANE AND APPROXIMATELY 92° FOR SIGNS LOCATED 30' OR MORE FROM EDGE OF THRU LANE. THIS APPLIES TO SIGNS TYPE A, C, & D AND INCLUDES SIGNS IN THE GORE.
5. "Y" IS THE PERPENDICULAR DISTANCE FROM THE GROUND LINE TO THE FRICTION FUSE ON THE POST. THIS DISTANCE SHALL BE AT LEAST 7'.
6. WHERE "X" IS LESS THAN 30', "H" SHALL BE 7'. WHERE "X" IS 30' OR GREATER, MINIMUM AND PREFERRED "H" IS 5'.
7. LATERAL CLEARANCES GIVEN APPLY TO RIGHT AND OR LEFT SIDE INSTALLATION.
8. WHEN A TYPE A SIGN IS INSTALLED DIRECTLY BEHIND TRAFFIC BARRIER, THE LEFT EDGE OF THE SIGN PANEL SHALL BE LOCATED A MINIMUM OF 8 FEET BEHIND THE FACE OF THE TRAFFIC BARRIER.

SPECIFIC NOTES:

(1) EXIT SIGN
IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 100 FEET OF THE PAVED GORE, CONTACT THE PROJECT ENGINEER.

(2) MERGE OR ADDED LANE SIGN
IF THESE OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, A 4 FOOT OFFSET IS ACCEPTABLE. IF THE 4 FOOT OFFSETS CANNOT BE ATTAINED WITHIN 200 FEET OF THE PAVED GORE, CONTACT THE PROJECT ENGINEER.

SIGN PLACEMENT

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Print Name: ADRIAN S. POTTER
Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)
STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS
DESIGNED BY B. BETTS
CHECKED BY A. POTTER
COMM. NO. 01710321

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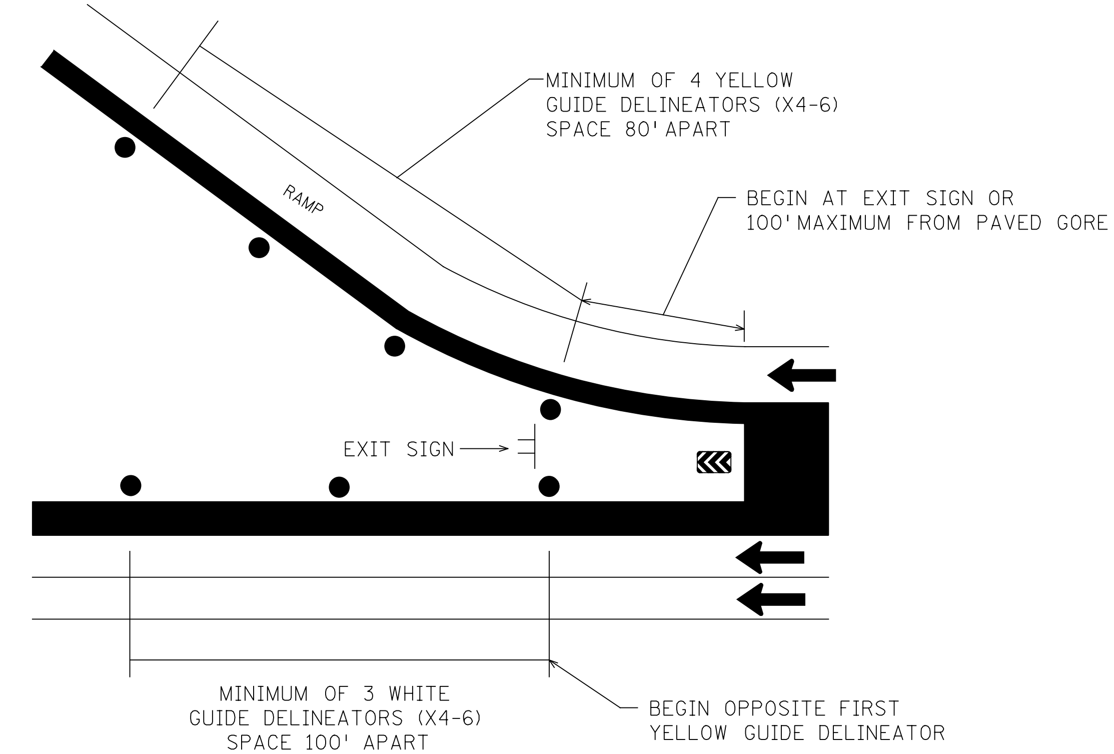
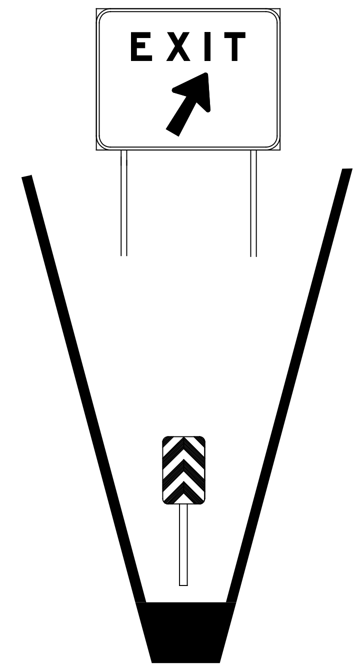
ENGINEERS PLANNERS DESIGNERS

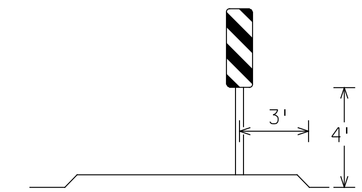
MINNESOTA DEPARTMENT OF TRANSPORTATION
SIGNING PLAN
TH 22 & CSAH 90



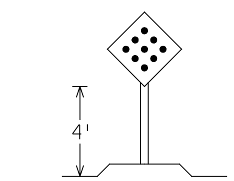
PLAN A
RAMP DELINEATION



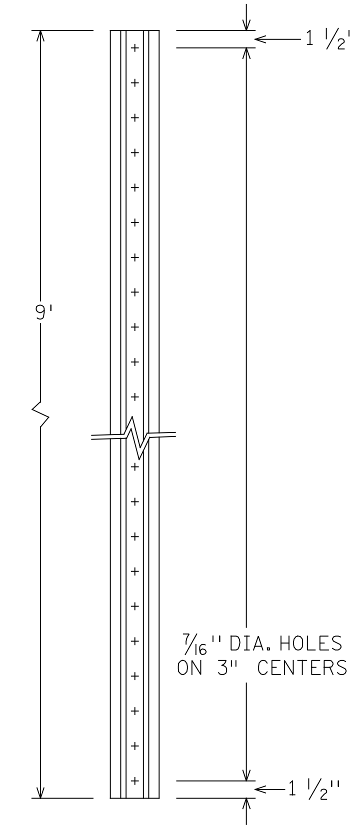
TYPE 3 OBJECT MARKER
12" X 24" (X4-4C)



RAISED ISLAND
TYPE 3 OBJECT MARKER
(X4-4)

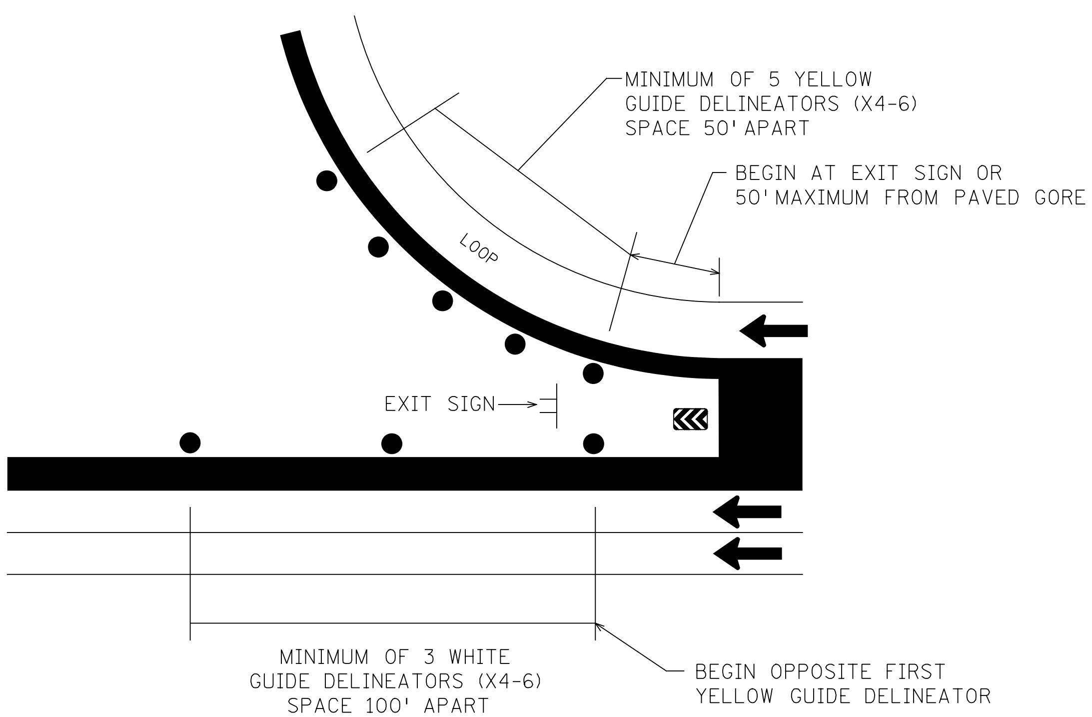


RAISED ISLAND
TYPE 2 OBJECT MARKER
(X4-2)

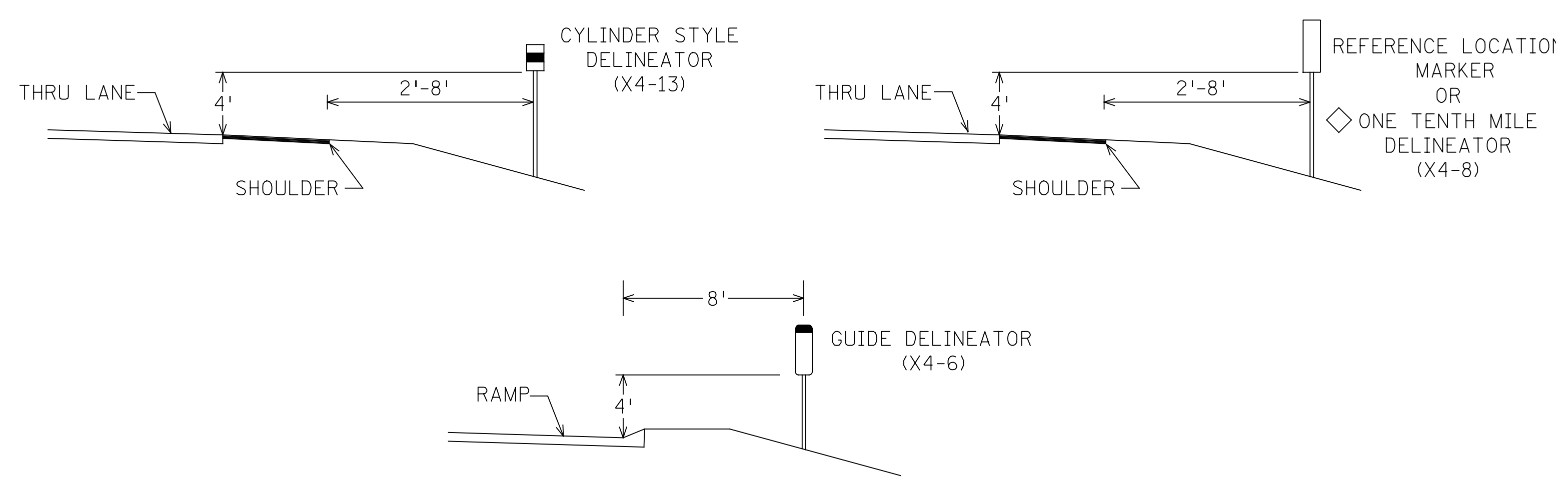


MNDOT 3401
NORMAL WEIGHT= 3 LB./FT.

DELINEATOR POST



PLAN B
LOOP DELINEATION



TYPICAL PLACEMENT

DELINEATORS AND MARKERS

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Date ____________ License # 42785

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STATE PROJECT NO. 007-070-005

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DESIGNED BY B. BETTS

CHECKED BY A. POTTER

COMM. NO. 01710321

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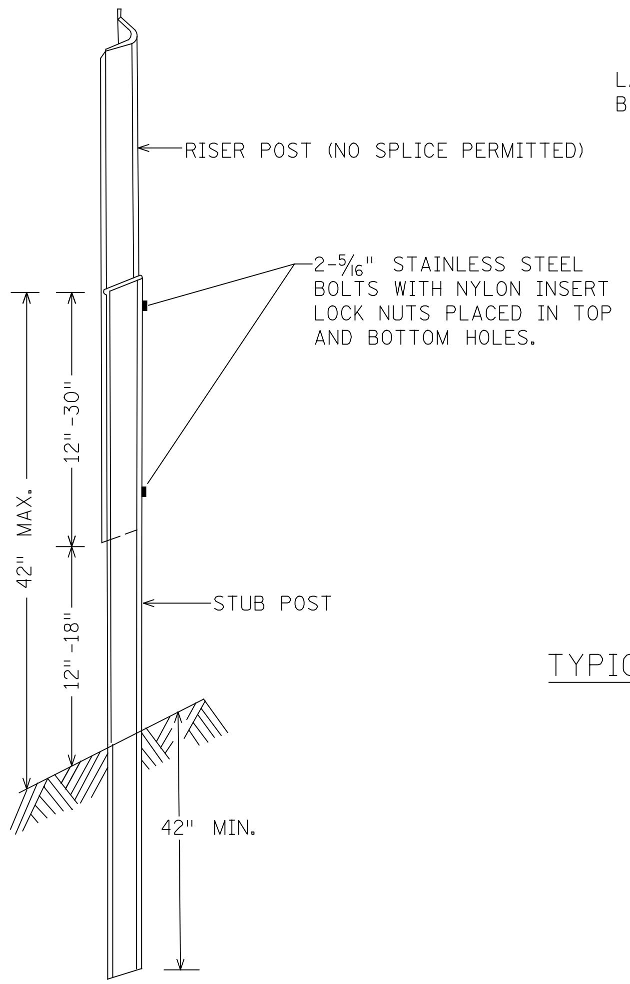
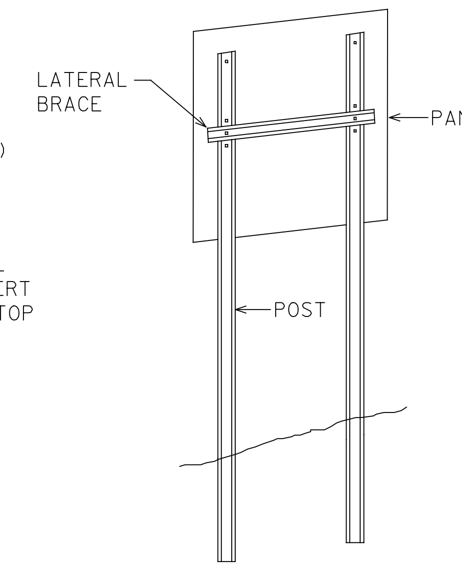
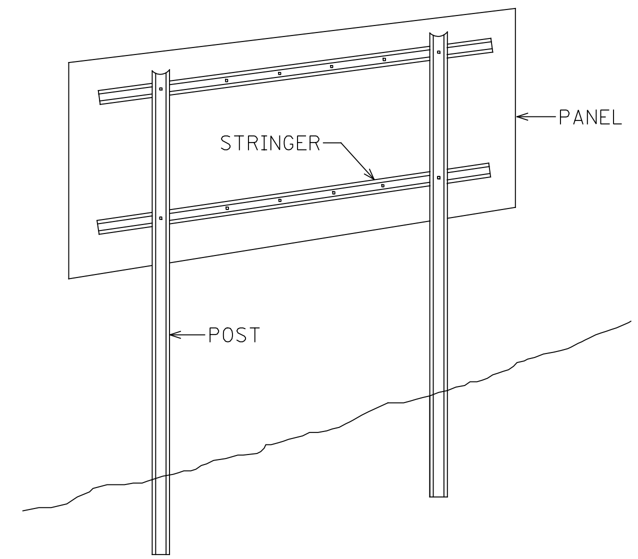
TYPE C & D POST



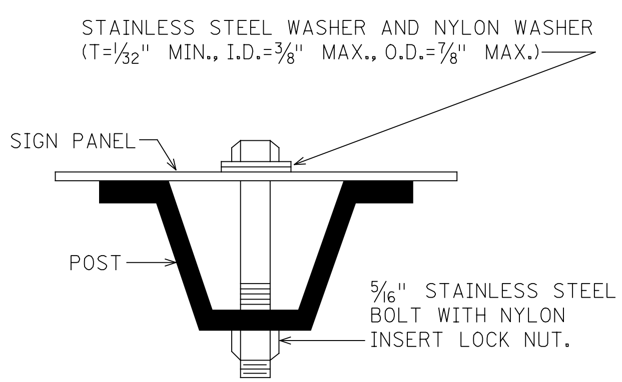
U POST BREAKAWAY SPLICE



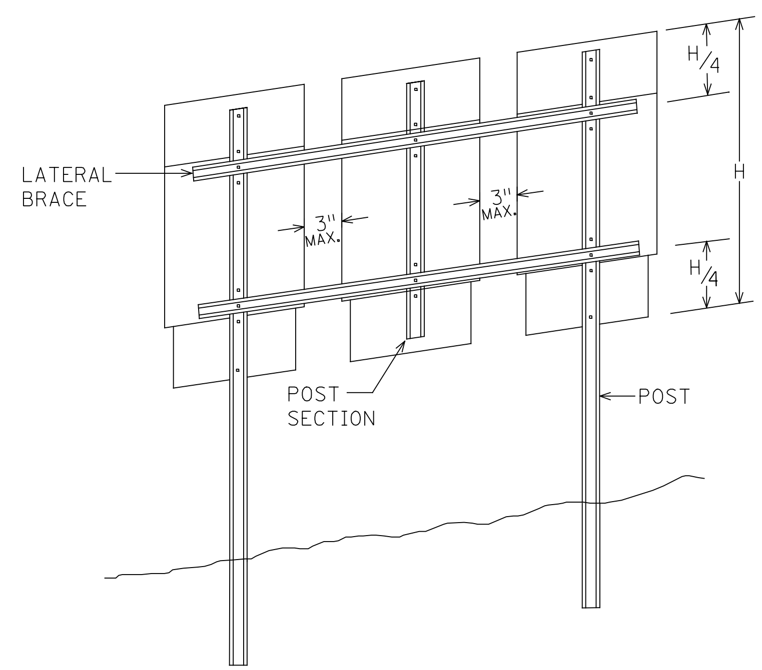
TYPICAL TYPE C INSTALLATION



TYPICAL TYPE D INSTALLATION



U POST MOUNTING
TYPE C SIGNS



MODIFIED TYPE C INSTALLATION

NOTES:

1. USE 3 LB/FT STUB POSTS. SHALL CONFORM TO MNDOT 3401.
2. USE 2.5 LB/FT RISER POSTS, STRINGERS, KNEE BRACES AND LATERAL BRACES. ALL SHALL CONFORM TO MNDOT 3401.
3. SEE SIGN DATA SHEETS FOR NUMBER OF POSTS, KNEE BRACES, POST LENGTHS AND SPACINGS, AS DETERMINED FROM TEM CHARTS 6.3 AND 6.4.
4. IF MORE THAN TWO POSTS ARE NEEDED, THE MINIMUM SPACING SHALL BE 45" BETWEEN POSTS.
5. TYPE D SIGN PANELS SHALL BE BOLTED TO STRINGERS AT 24" MAXIMUM INTERVALS IN ACCORDANCE WITH THE TYPE D STRINGER AND PANEL-JOINT DETAIL (SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL).
6. MOUNTING (PUNCH CODE) FOR TYPE C SIGN PANELS SHALL BE AS INDICATED IN THE MNDOT STANDARD SIGNS AND MARKINGS MANUAL UNLESS OTHERWISE SPECIFIED.
7. ALL RISER (VERTICAL) U POSTS SHALL BE SPLICED. DRIVEN STUB POSTS SHALL BE AT LEAST 7' LONG.
8. USE STAINLESS STEEL 5/16" BOLTS, WASHERS AND NYLON INSERT LOCK NUTS AS SHOWN FOR ALL GROUND MOUNTED AND OVERHEAD MOUNTED SIGNS.
9. STAINLESS STEEL WASHER WITH SAME DIMENSIONS SHALL BE PROVIDED BETWEEN ALL NYLON WASHERS AND BOLT HEADS.
10. BRACING STUBS SHALL BE NO MORE THAN 4" ABOVE GROUND AND EMBEDDED AT LEAST 42".
11. A-FRAME BRACKET SHALL BE STEEL CONFORMING TO MNDOT 3306 AND GALVANIZED IN ACCORDANCE WITH MNDOT 3394.
12. COLLARS SHALL BE USED TO SHIM OVERLAYS AND LEGEND COMPONENTS AWAY FROM PANEL WHERE INTERFERENCE WITH BOLT HEADS IS ENCOUNTERED. MNDOT 3352.2A6.
13. 2 POST TYPE C SIGNS SHALL BE REINFORCED WITH AT LEAST ONE LATERAL BRACE. INSTALLATIONS WHERE THE TOTAL PANEL HEIGHT IS 60" OR MORE SHALL HAVE TWO LATERAL BRACES LOCATED APPROXIMATELY AT THE QUARTER POINTS.
14. WHERE 2 SINGLE POST TYPE C SIGNS ARE INSTALLED SIDE BY SIDE, THEY SHALL BE REINFORCED LATERALLY BY AT LEAST 2 BRACES, BOLTED AT EACH POST AND LOCATED APPROXIMATELY AT THE QUARTER POINTS.
15. WHERE 3 OR MORE TYPE C SIGNS ARE INSTALLED SIDE BY SIDE, THEY SHALL BE REINFORCED LATERALLY BY AT LEAST 2 BRACES, BOLTED AT EACH POST AND POST SECTION AND LOCATED APPROXIMATELY AT THE QUARTER POINTS AS SHOWN IN MODIFIED TYPE C INSTALLATION.

TYPE C & D SIGN STRUCTURAL DETAILS

Sheet 1 of 2

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Print Name: ADRIAN S. POTTER

Date ______ License # 42785

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY B. BETTS

DESIGNED BY B. BETTS

CHECKED BY A. POTTER

COMM. NO. 01710321

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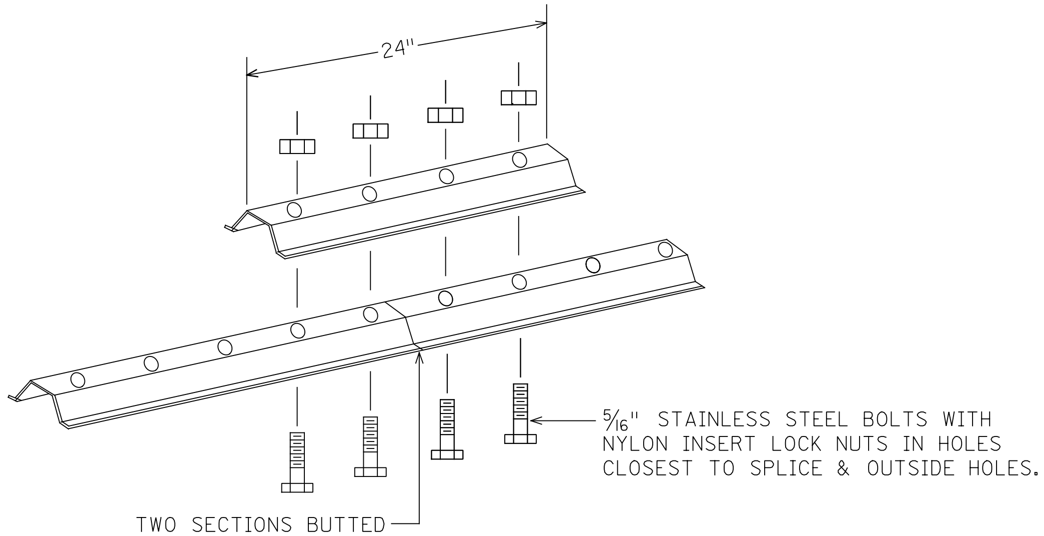
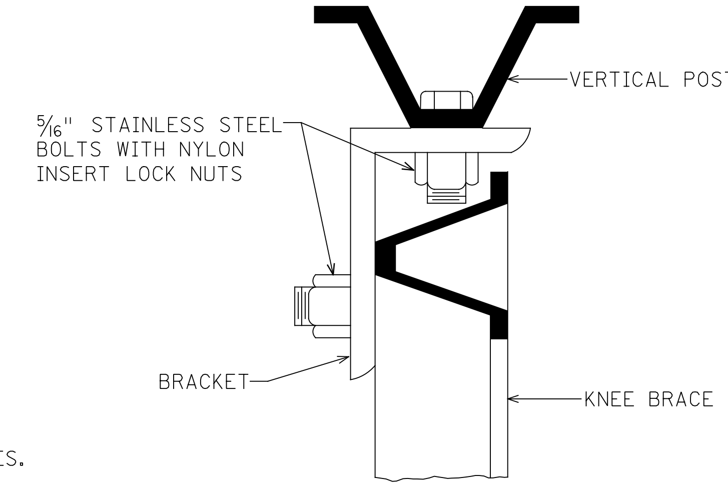
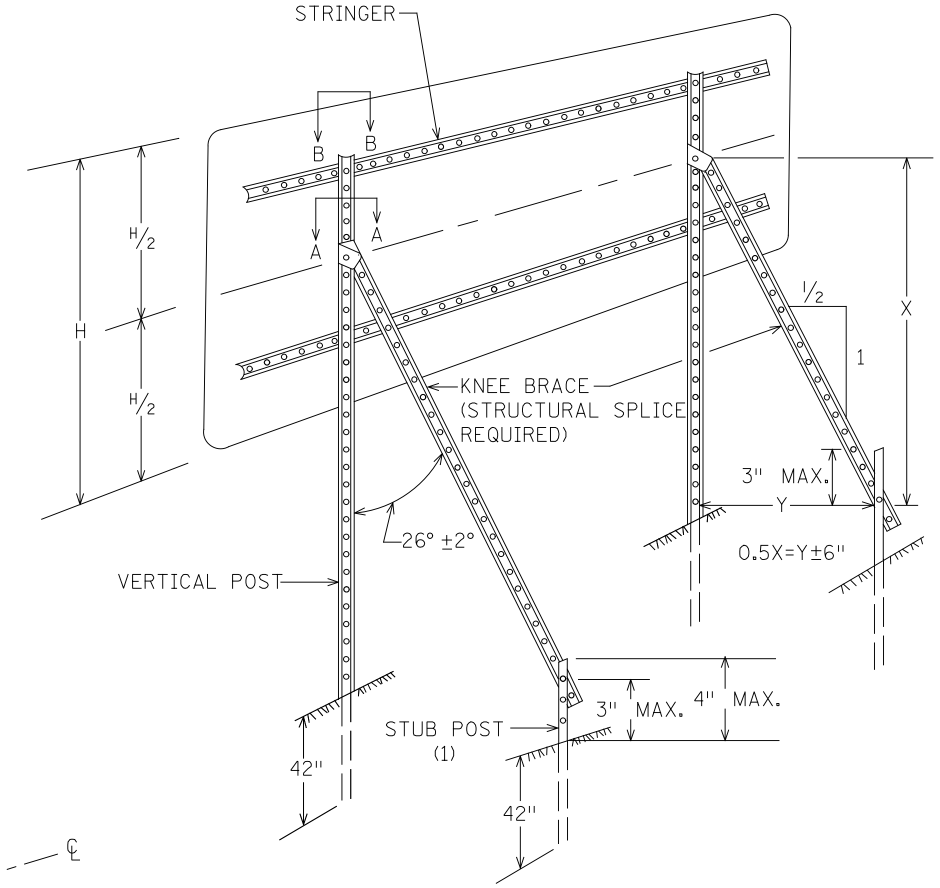
SIGNING PLAN
TH 22 & CSAH 90



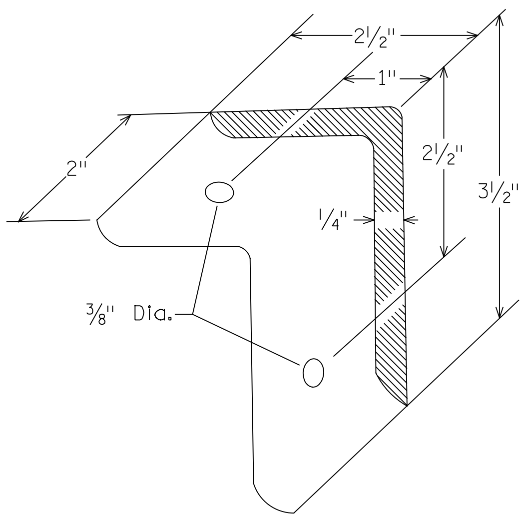
LATERAL BRACE OR STRINGER SPLICE DETAIL (EXPLODED VIEW)



SECTION A-A

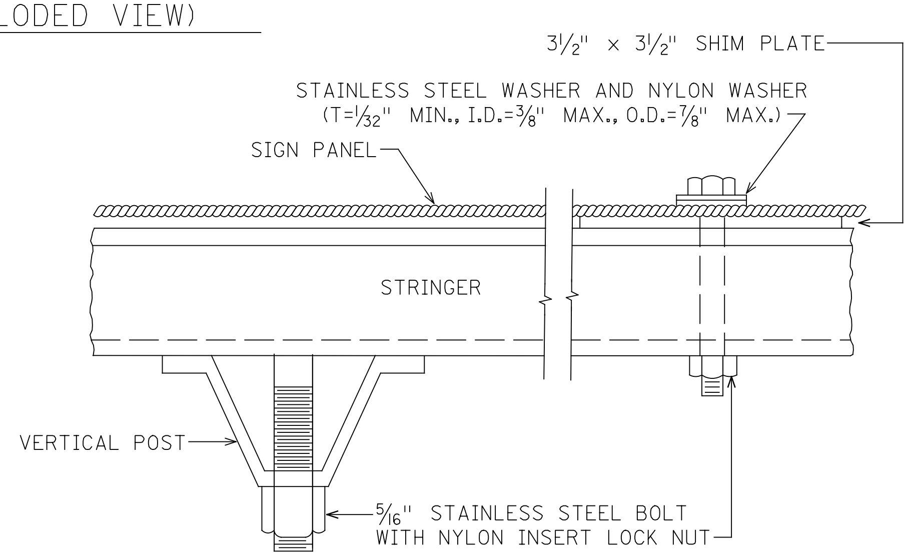


TYPICAL "A-FRAME" INSTALLATION TYPE "D" SIGNS

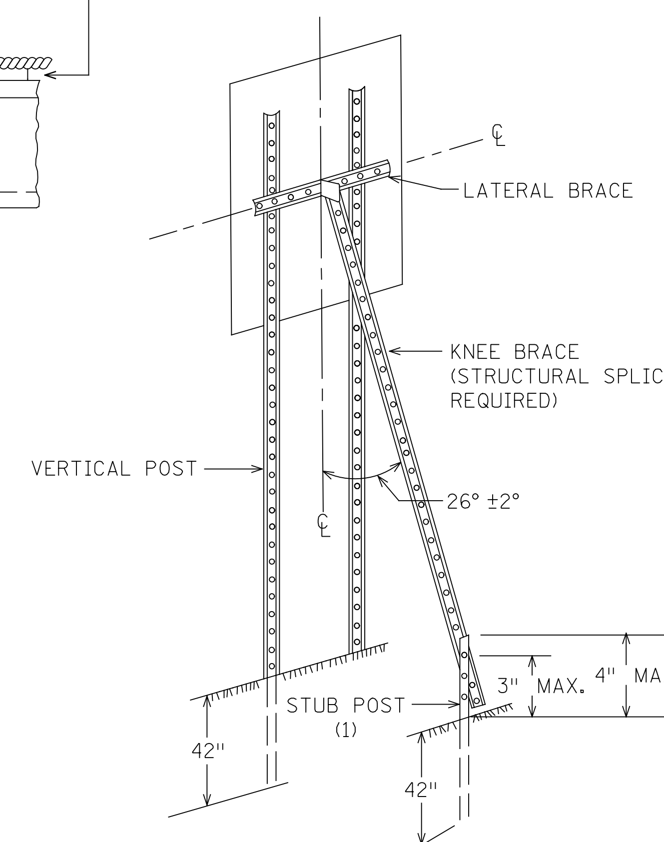


A-FRAME BRACKET

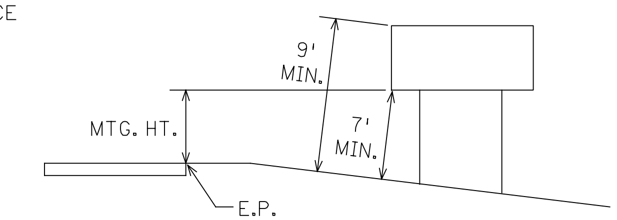
(STEEL MNDOT 3306 GALVANIZED PER MNDOT 3394)



SECTION B-B

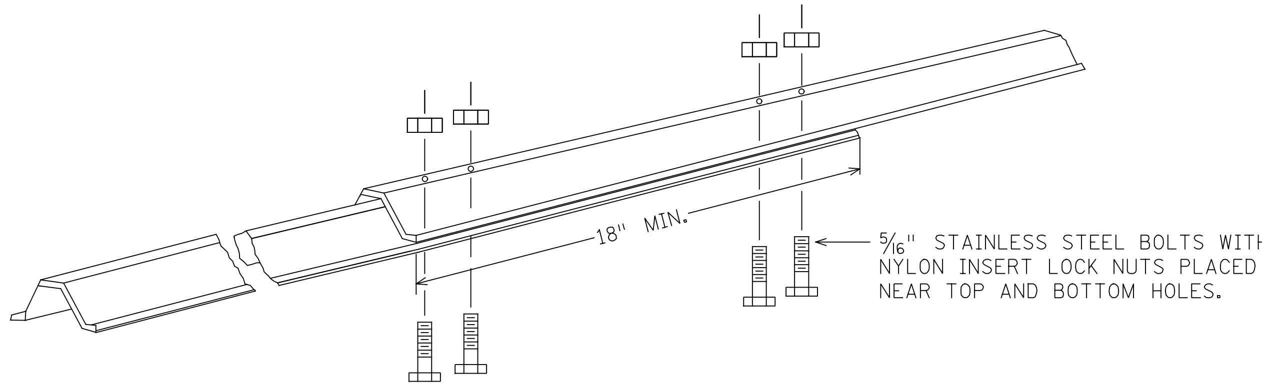


TYPICAL "A-FRAME" INSTALLATION TYPE "C" SIGNS



TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY RELATIVE TO VERTICAL POST. ATTACH STUB POST AND KNEE BRACE BACK TO BACK.



STRUCTURAL SPLICE

(USE WHEN IT IS NECESSARY TO FABRICATE THE CORRECT LENGTH OF POST FROM TWO PIECES)

TYPE C & D SIGN STRUCTURAL DETAILS

Sheet 2 of 2

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STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

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DESIGNED BY B. BETTS

CHECKED BY A. POTTER

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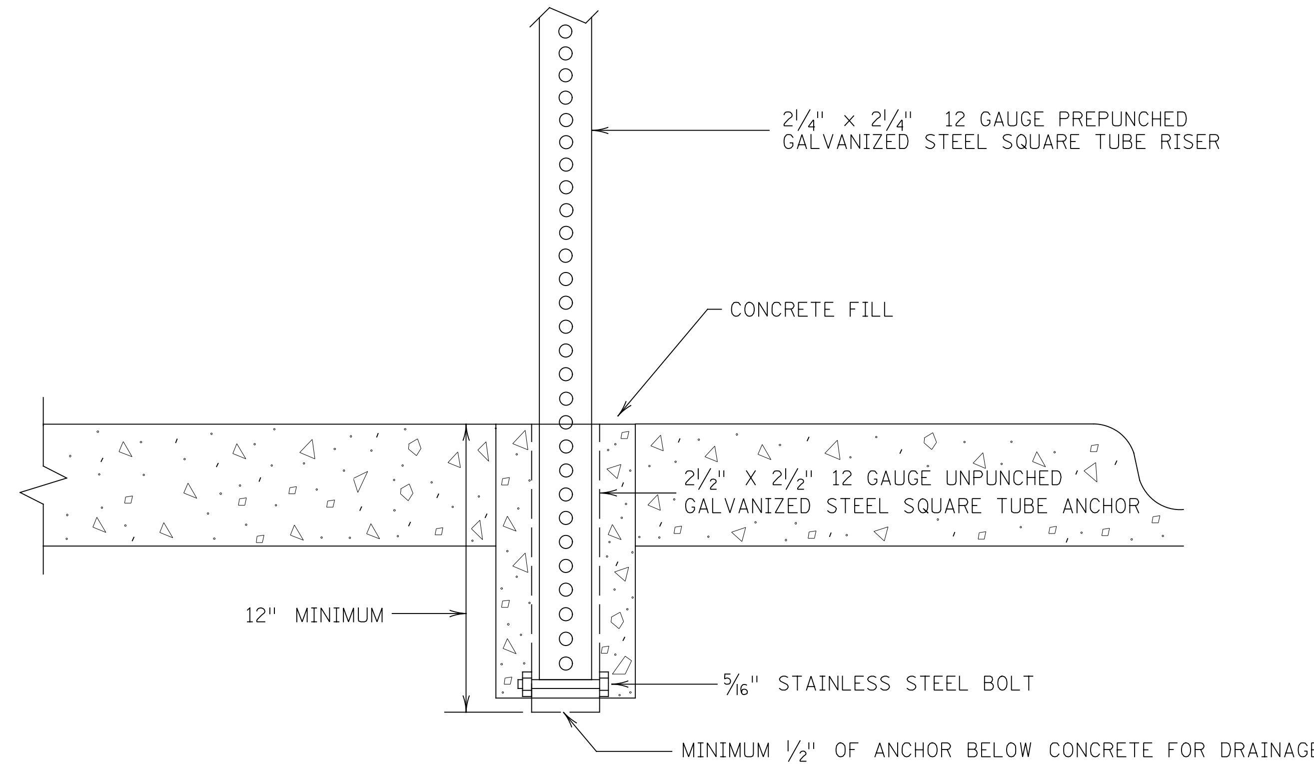

NOTES;

1. DRILL AN 8" DIAMETER HOLE THE FULL DEPTH OF THE ANCHOR.
2. DRILL 3/8" HOLES ON OPPOSITE SIDES OF THE UNPUNCHED GALVANIZED STEEL SQUARE TUBE ANCHOR APPROX. 1" FROM THE BOTTOM OF THE ANCHOR. INSERT A 5/16" STAINLESS STEEL BOLT THROUGH THE HOLES AND SECURE WITH A STAINLESS STEEL LOCK NUT WITH NYLON INSERT. THE PREPUNCHED GALVANIZED STEEL SQUARE TUBE RISER (TO BE INSERTED INSIDE THE UNPUNCHED GALVANIZED SQUARE TUBE ANCHOR) WILL REST ON BOLT.
3. INSERT THE ANCHOR IN THE HOLE.
4. AFTER INSTALLATION OF THE UNPUNCHED GALVANIZED STEEL SQUARE TUBE ANCHOR, FILL THE HOLE WITH A CONCRETE MIX APPROVED BY THE ENGINEER AND LEVEL OFF THE TOP OF CONCRETE.
5. MAXIMUM SIGN PANEL SIZE IS 42" WIDE X 48" HIGH.
6. SIGN PANEL TO BE MOUNTED 7 FT ABOVE THE GROUND.

TYPE C SIGNS, DELINEATORS & MARKERS IN CONCRETE

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SIGNING PLAN
TH 22 & CSAH 90

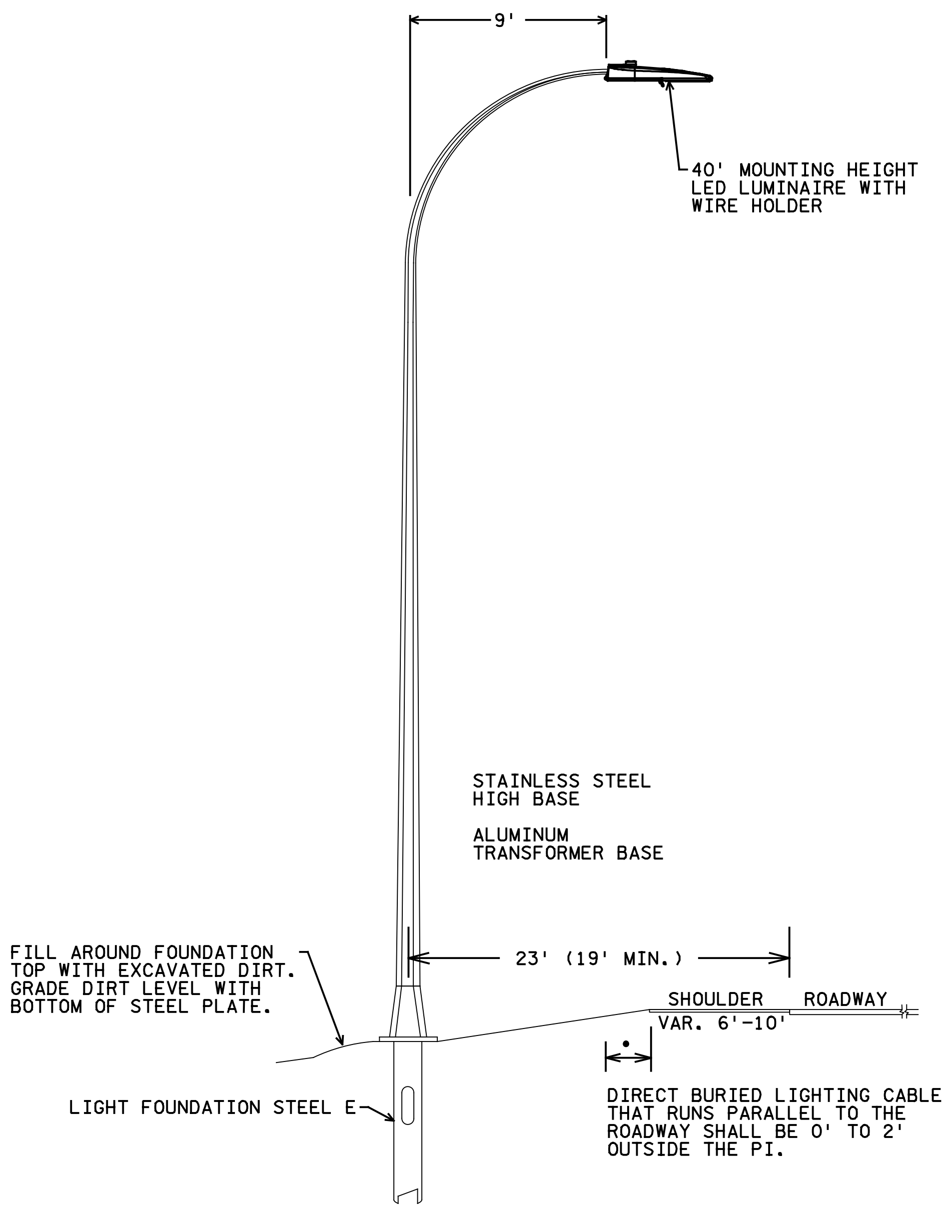
LEGEND

	LIGHTING UNIT TYPE 9-40
	PAD MOUNTED SOURCE OF POWER (BY OTHERS)
	PAD MOUNTED SERVICE CABINET
	PERMANENT GROUND ROD (25 OHMS OR LESS)
========	3" NON-METALLIC CONDUIT (UNLESS OTHERWISE NOTED)
	DIRECT BURIED LIGHTING CABLE 4 COND NO 4

LIGHTING TABULATION AA

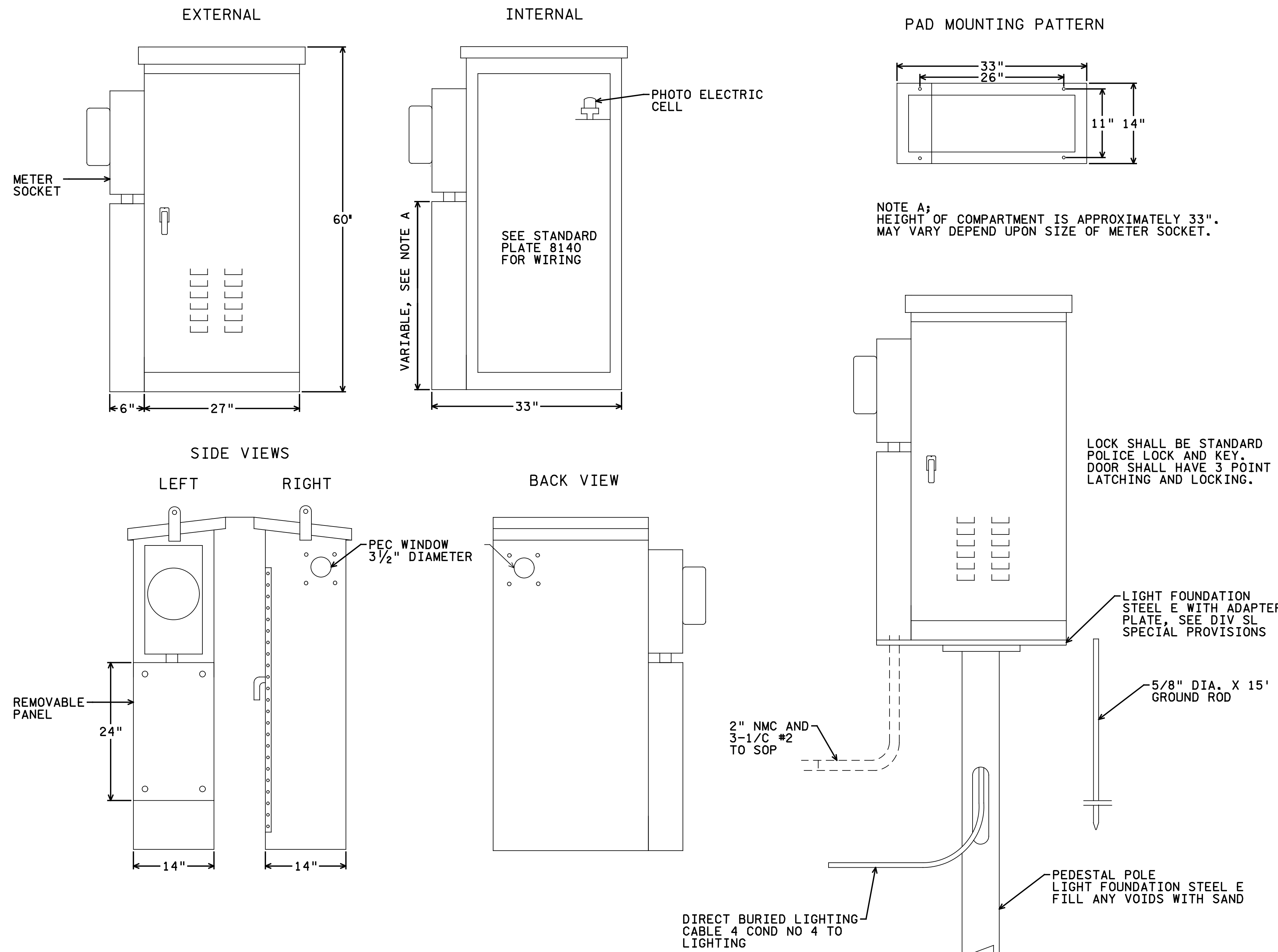
NOTES	ITEM DESCRIPTION	UNIT	PROJECT TOTAL	SP 0704-108 (TH 22) HSIP FUNDS	SP 007-070-005 (CSAH 90) HSIP FUNDS
	LIGHTING UNIT TYPE 9-40	EACH			
	LIGHT FOUNDATION DESIGN STEEL E	EACH			
	2" NON-METALLIC CONDUIT	LIN FT			
	3" NON-METALLIC CONDUIT	LIN FT			
	UNDERGROUND WIRE 1 COND NO 2	LIN FT			
	DIRECT BURIED LIGHTING CABLE 4 COND NO 4	LIN FT			
	SERVICE CABINET - TYPE L1	EACH			

USE THE MAXIMUM DISTANCE WHENEVER POSSIBLE,
IF THE MINIMUM DISTANCE CANNOT BE OBTAINED
CONTACT THE DISTRICT/DIVISION TRAFFIC ENGINEER.
LIGHT FOUNDATIONS SHALL BE PLACED IN ACCORDANCE
WITH 2545.3F2.
DISTANCES SHALL BE MEASURED FROM THE
EDGE OF DRIVING LANE OR TURN LANE.



TYPICAL PLACEMENT OF LIGHTING UNIT TYPE 9-40

(NOT TO SCALE)



LIGHTING SERVICE PANEL

SERVICE CABINET TYPE L1

(NOT TO SCALE)

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Print Name: STEVE MCHENRY

Date ______ License # 46710

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STATE PROJECT NO. 007-070-005

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DESIGNED BY T. RICHARDSON
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LIGHTING DETAILS
TH 22 & CSAH 90

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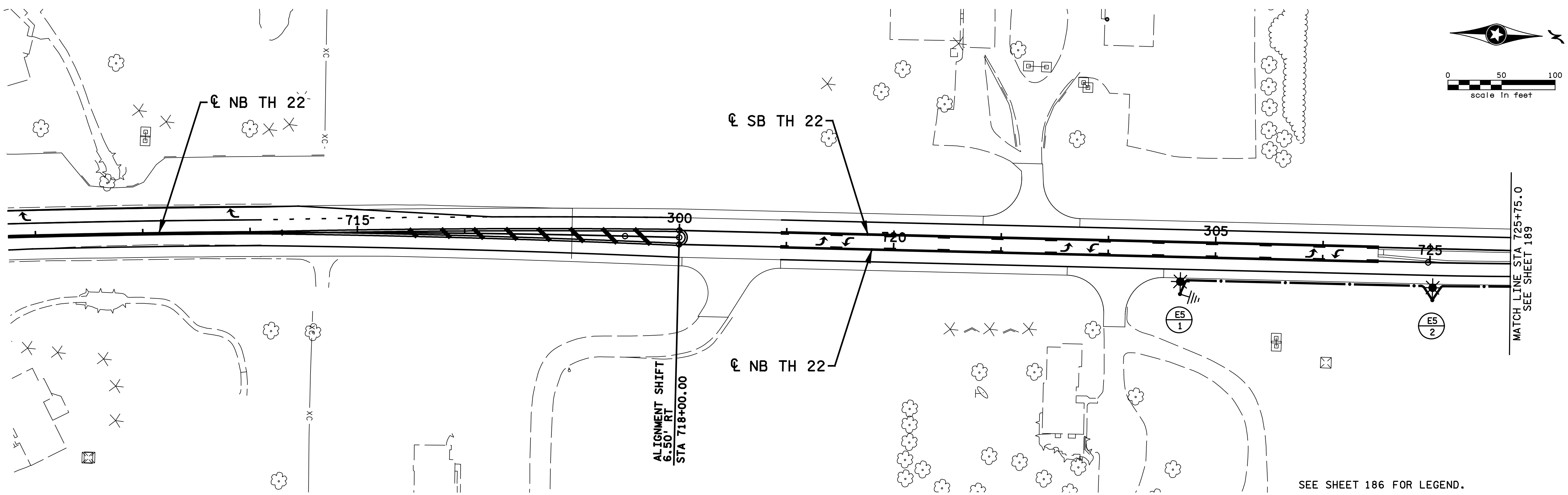
FEED POINT 07E5						
NO.	STATION	L	R	LOCATION	TYPE	FOUNDATION
1	722+68		X	NB TH 22	9-40	STEEL E
2	725+03		X	NB TH 22	9-40	STEEL E



SEE SHEET 186 FOR LEGEND.

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Date ______ License # 46710

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CHECKED BY S. MCHENRY

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LIGHTING PLANS
TH 22 & CSAH 90

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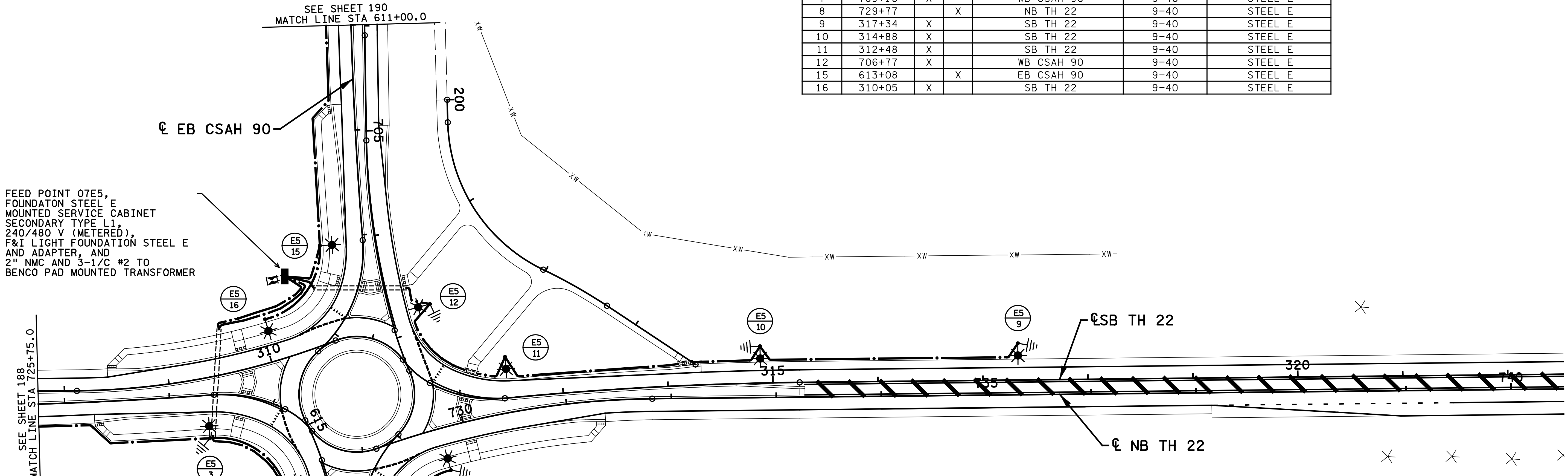
FEED POINT 07E5						
NO.	STATION	L	R	LOCATION	TYPE	FOUNDATION
3	727+36		X	NB TH 22	9-40	STEEL E
4	615+50		X	EB CSAH 90	9-40	STEEL E
7	709+10	X		WB CSAH 90	9-40	STEEL E
8	729+77		X	NB TH 22	9-40	STEEL E
9	317+34	X		SB TH 22	9-40	STEEL E
10	314+88	X		SB TH 22	9-40	STEEL E
11	312+48	X		SB TH 22	9-40	STEEL E
12	706+77	X		WB CSAH 90	9-40	STEEL E
15	613+08		X	EB CSAH 90	9-40	STEEL E
16	310+05	X		SB TH 22	9-40	STEEL E



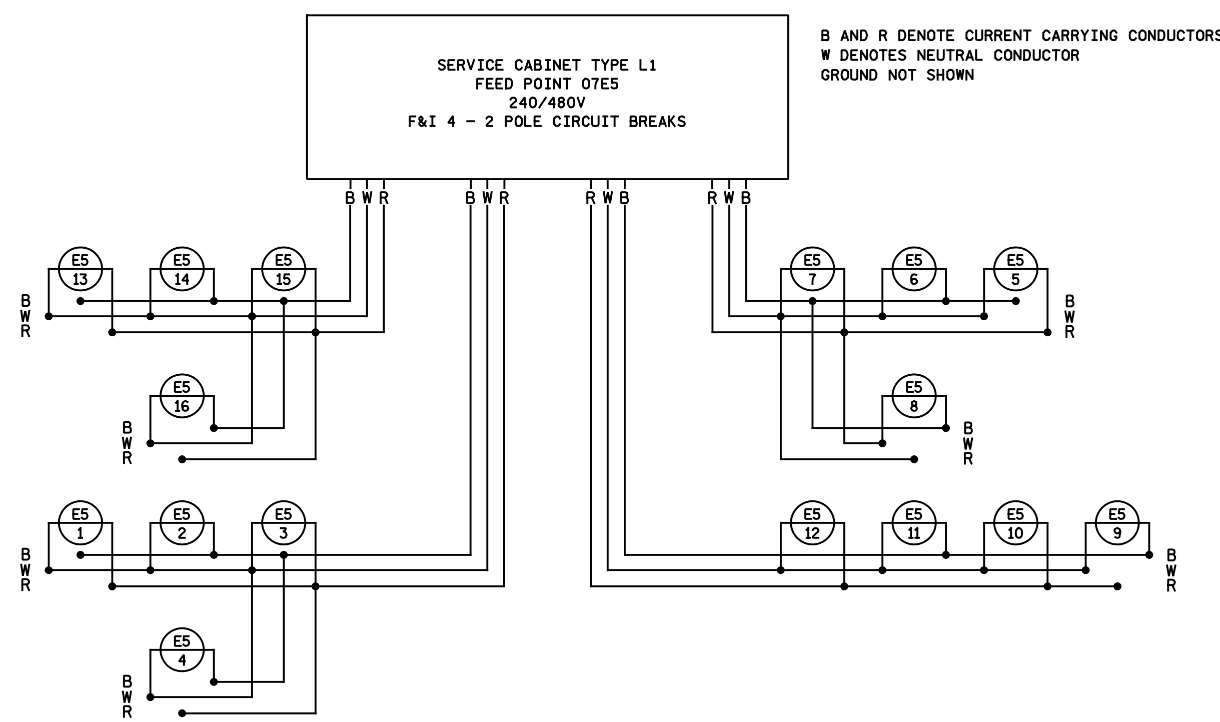


DIAGRAM LEGEND

PROPOSED LIGHTING UNIT

PROPOSED CIRCUITRY

PROPOSED SPLICE

SEE SHEET 186 FOR LEGEND.

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LIGHTING PLANS

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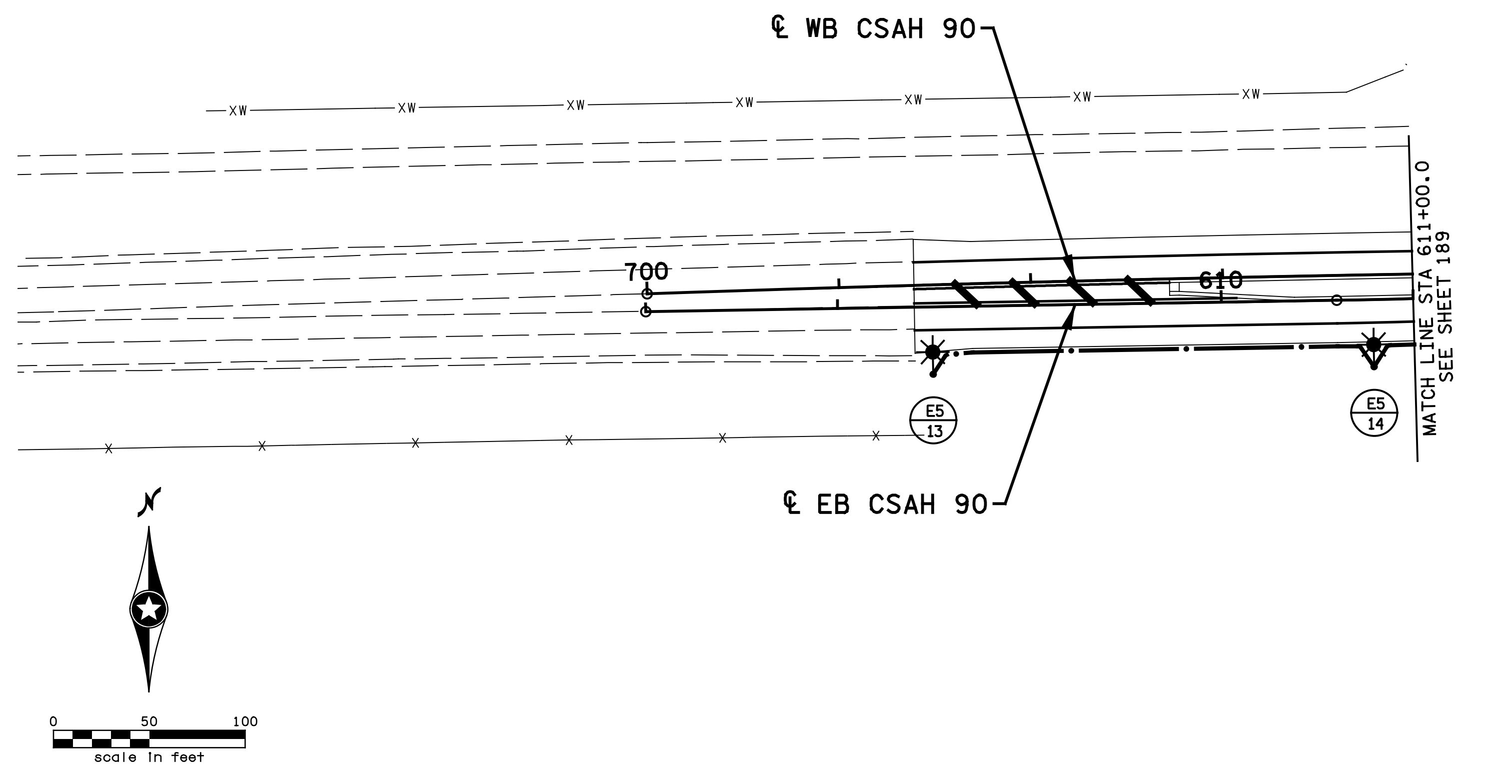
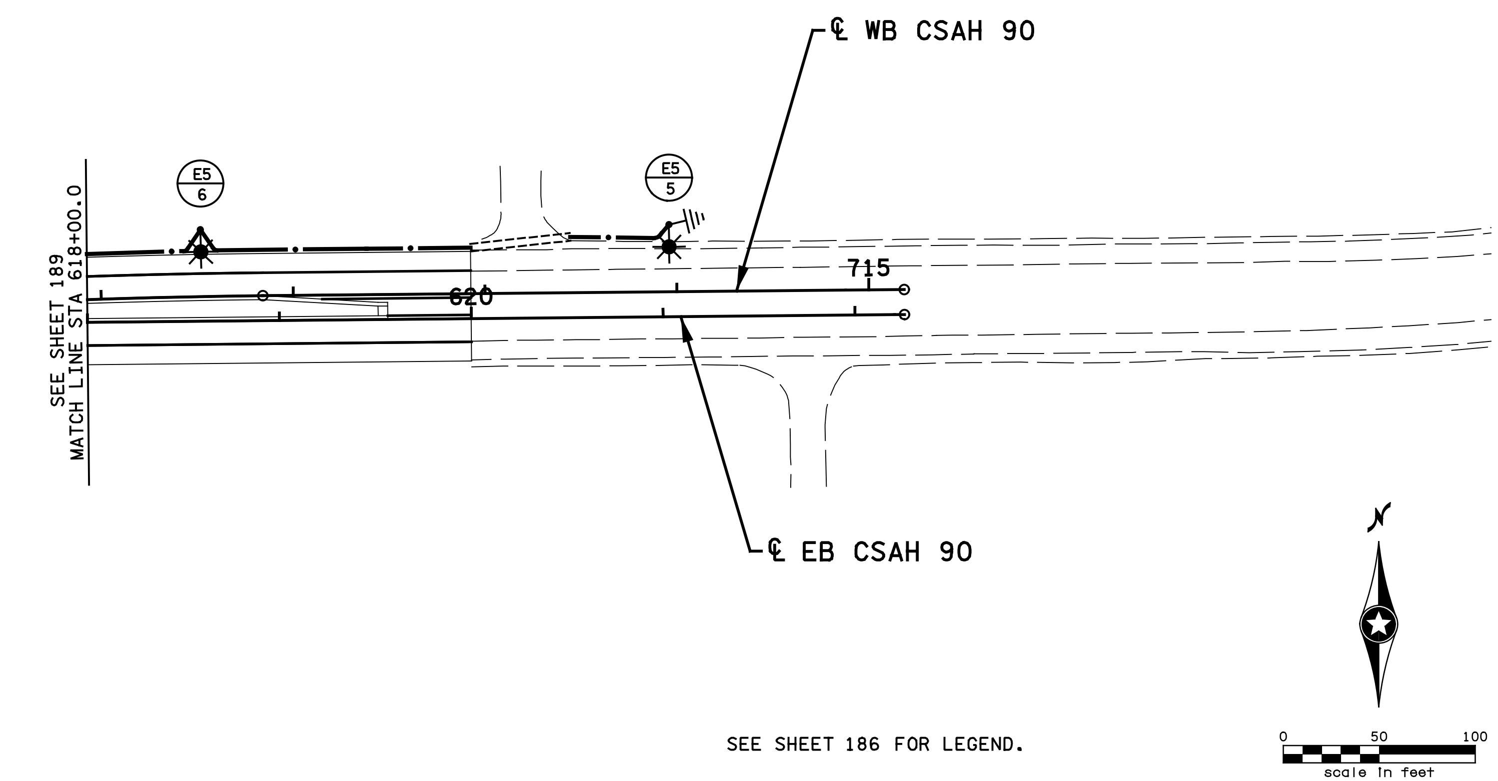
FEED POINT 07E5						
NO.	STATION	L	R	LOCATION	TYPE	FOUNDATION
5	713+96	X		WB CSAH 90	9-40	STEEL E
6	711+52	X		WB CSAH 90	9-40	STEEL E
13	608+49		X	EB CSAH 90	9-40	STEEL E
14	610+79		X	EB CSAH 90	9-40	STEEL E





SEE SHEET 186 FOR LEGEND.

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: STEVE MCHENRY

Date ______ License # 46710

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY T. RICHARDSON

DESIGNED BY T. RICHARDSON

CHECKED BY S. MCHENRY

COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

LIGHTING PLANS
TH 22 & CSAH 90

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7/28/2017
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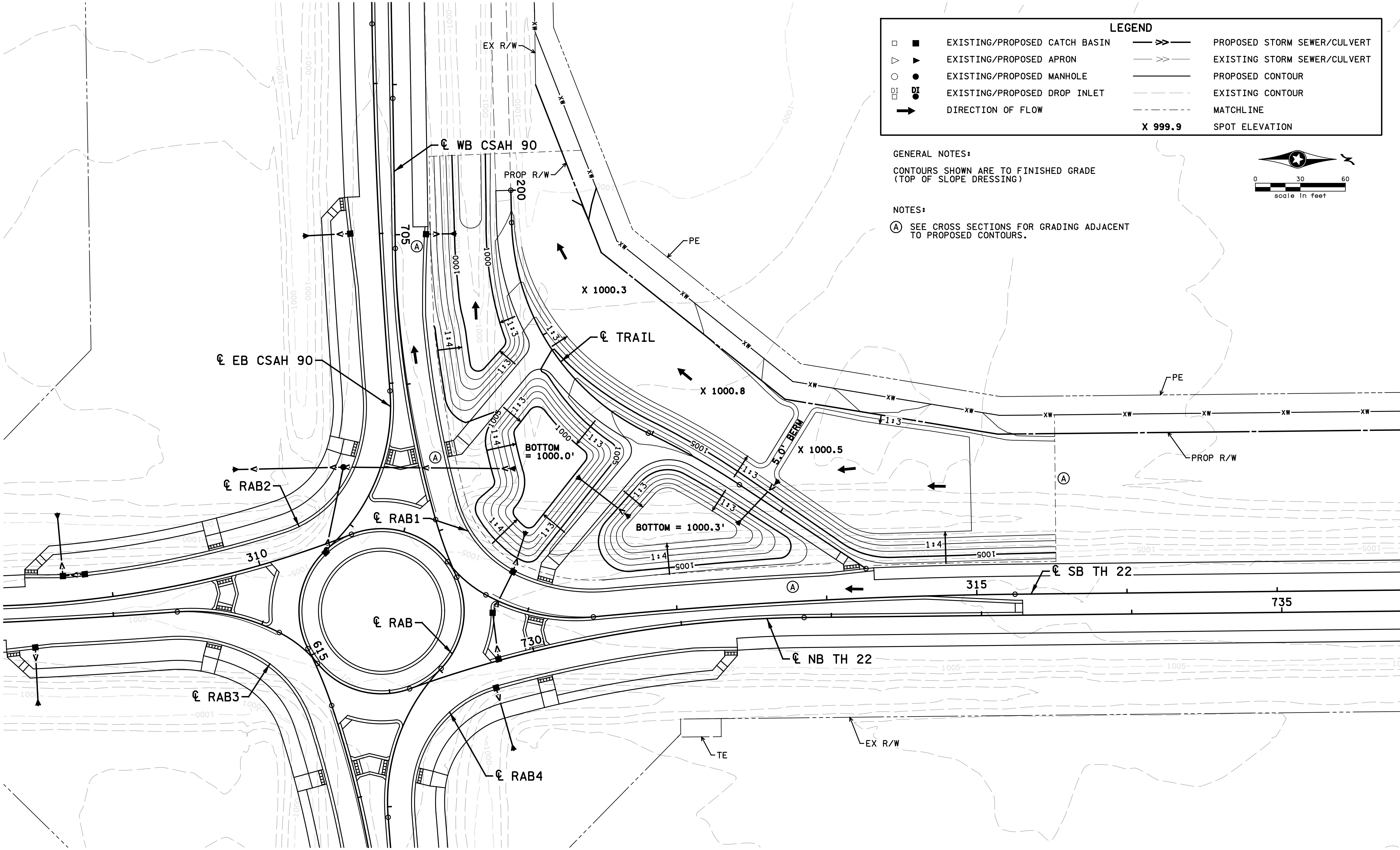

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ______ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc. ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

CONTOUR PLANS

TH 22 & CSAH 90

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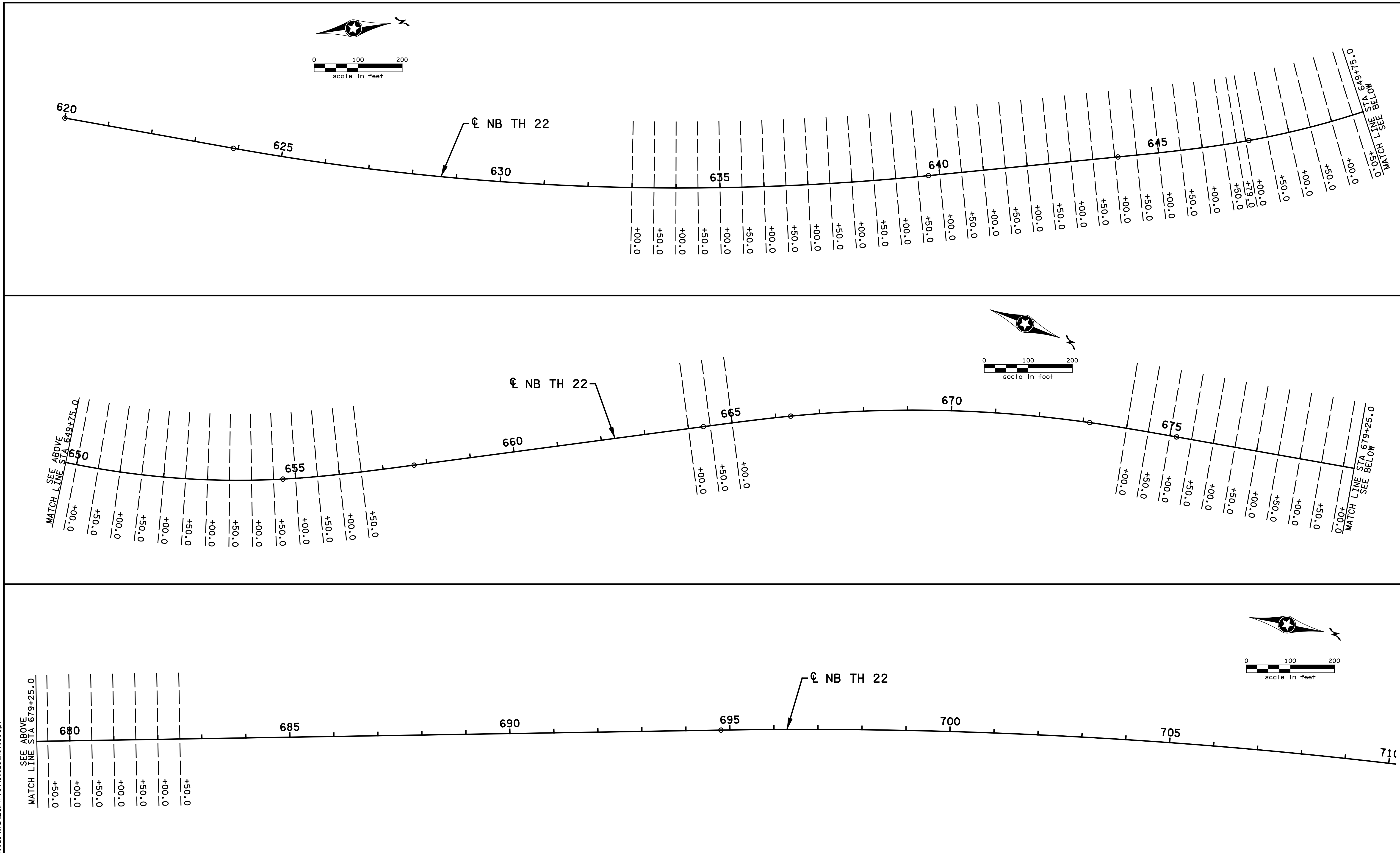

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ____________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

CROSS SECTION MATCHLINE LAYOUT PLAN

TH 22 & CSAH 90

SHEET 192 OF 255

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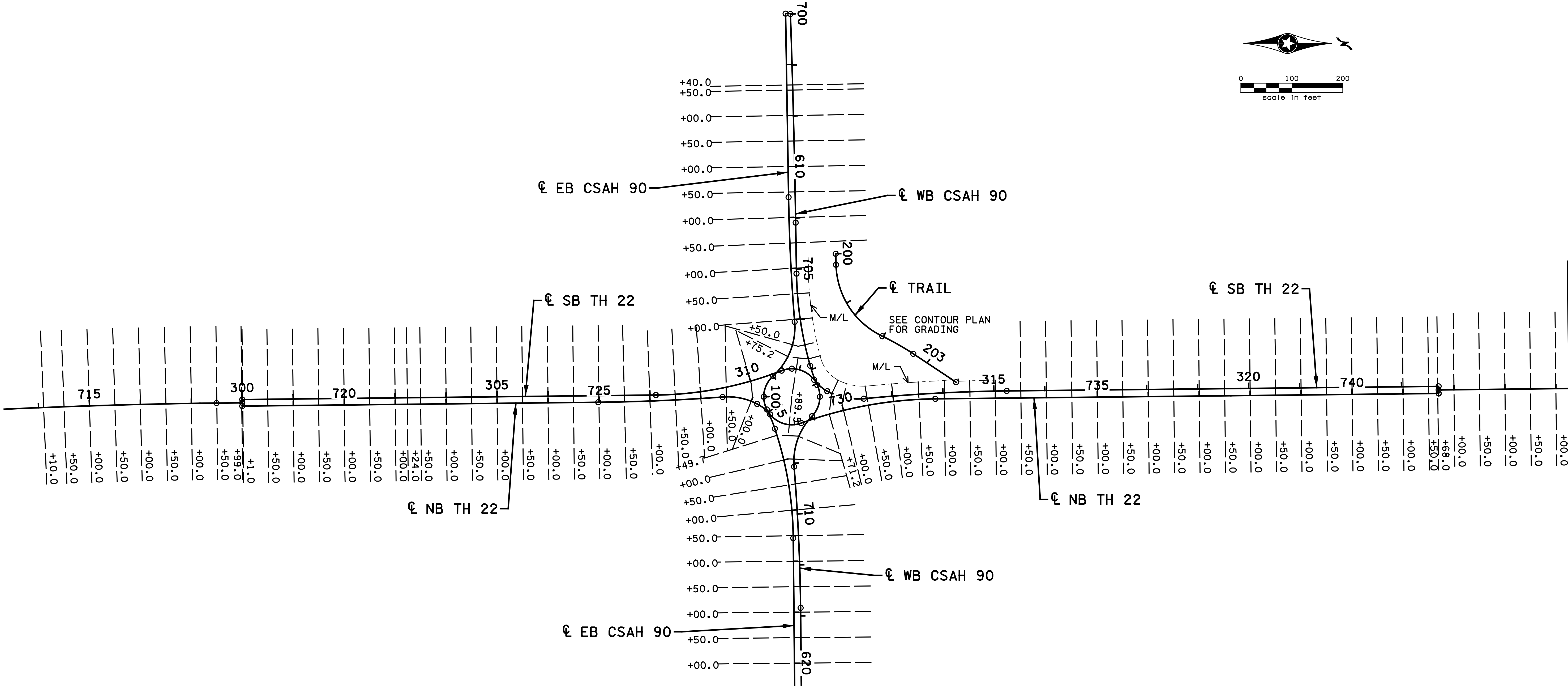

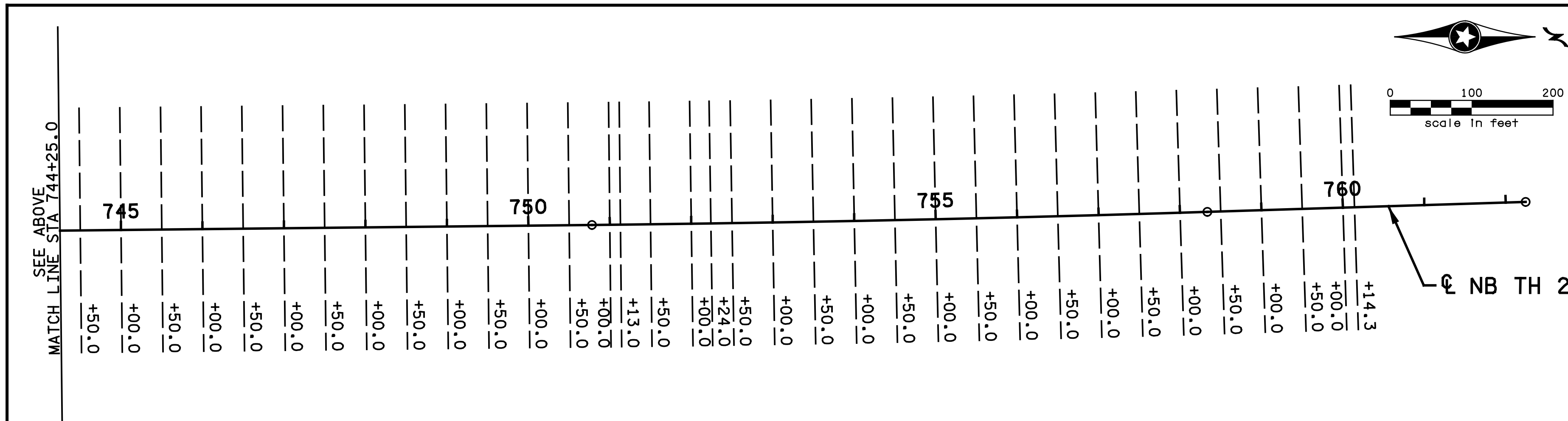

NO	DATE	BY	CKD	APPR	REVISION

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: AMBER E. TRACY

Date ____________ License # 50890

STATE PROJECT NO. 0704-108 (TH 22)

STATE PROJECT NO. 007-070-005

DRAWN BY S. MARTINS

DESIGNED BY P. ENGELMEYER

CHECKED BY A. TRACY

COMM. NO. 01710321

SRF Consulting Group, Inc.

ENGINEERS PLANNERS DESIGNERS

MINNESOTA DEPARTMENT OF TRANSPORTATION

CROSS SECTION MATCHLINE LAYOUT PLAN

TH 22 & CSAH 90

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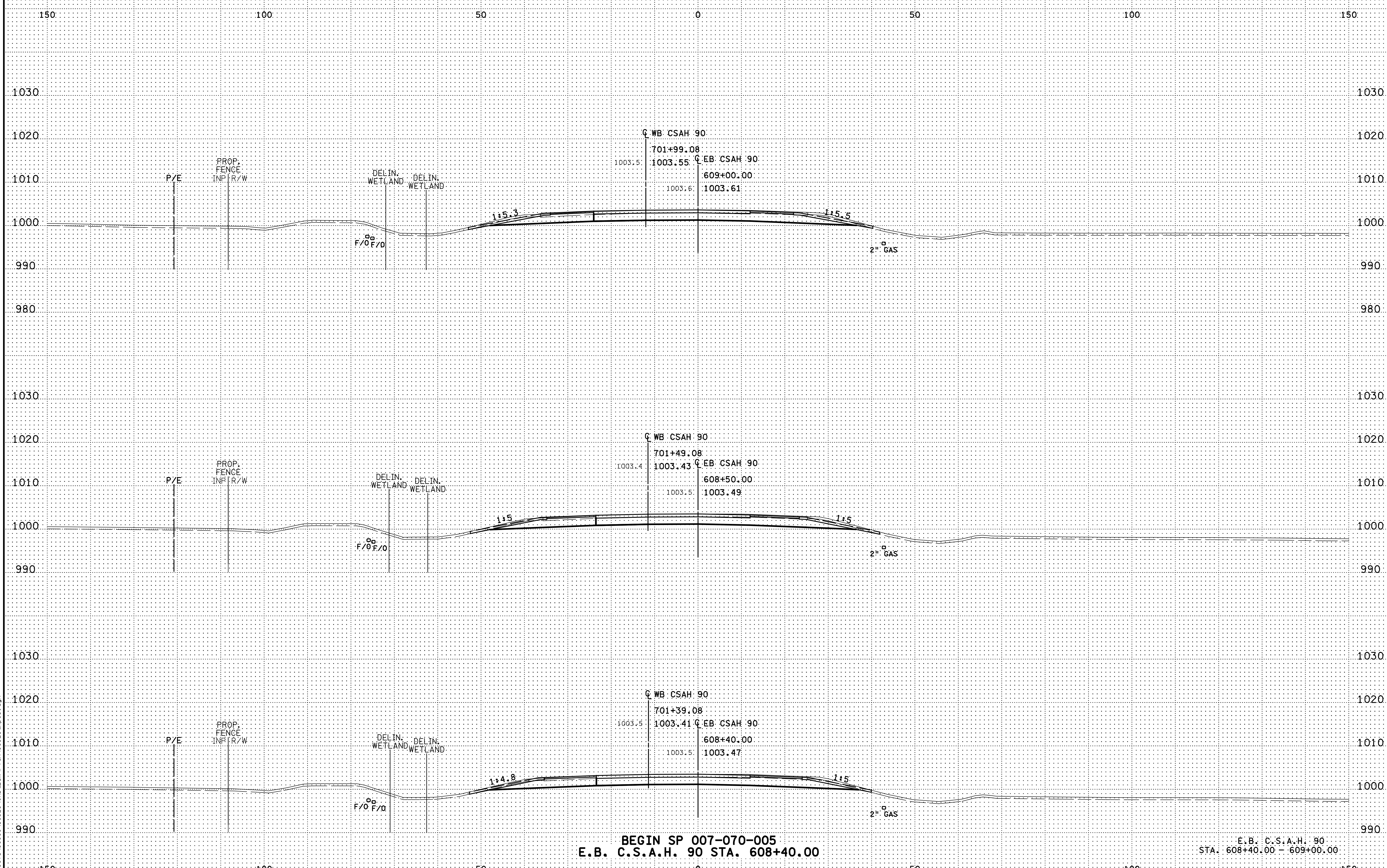

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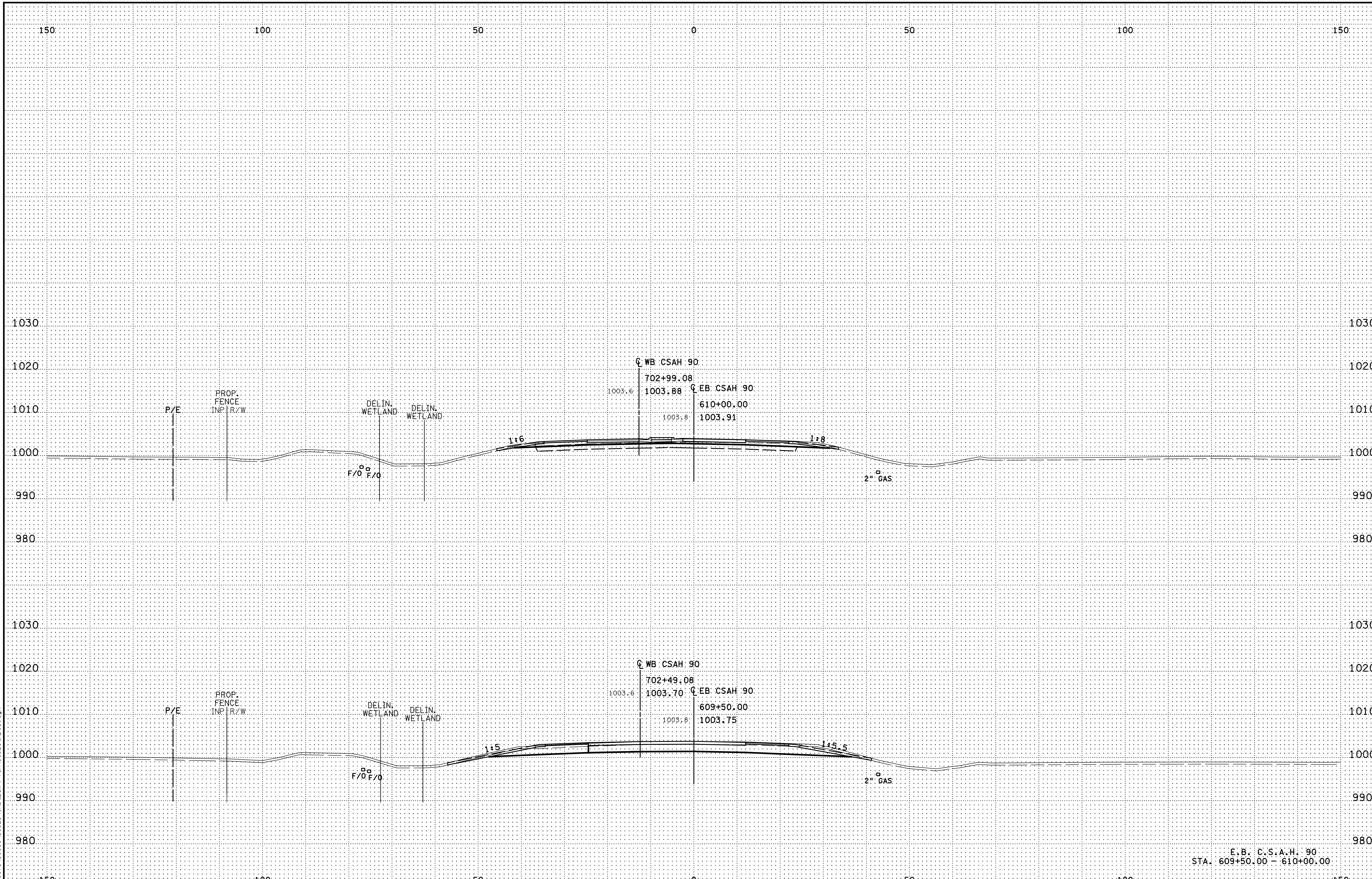

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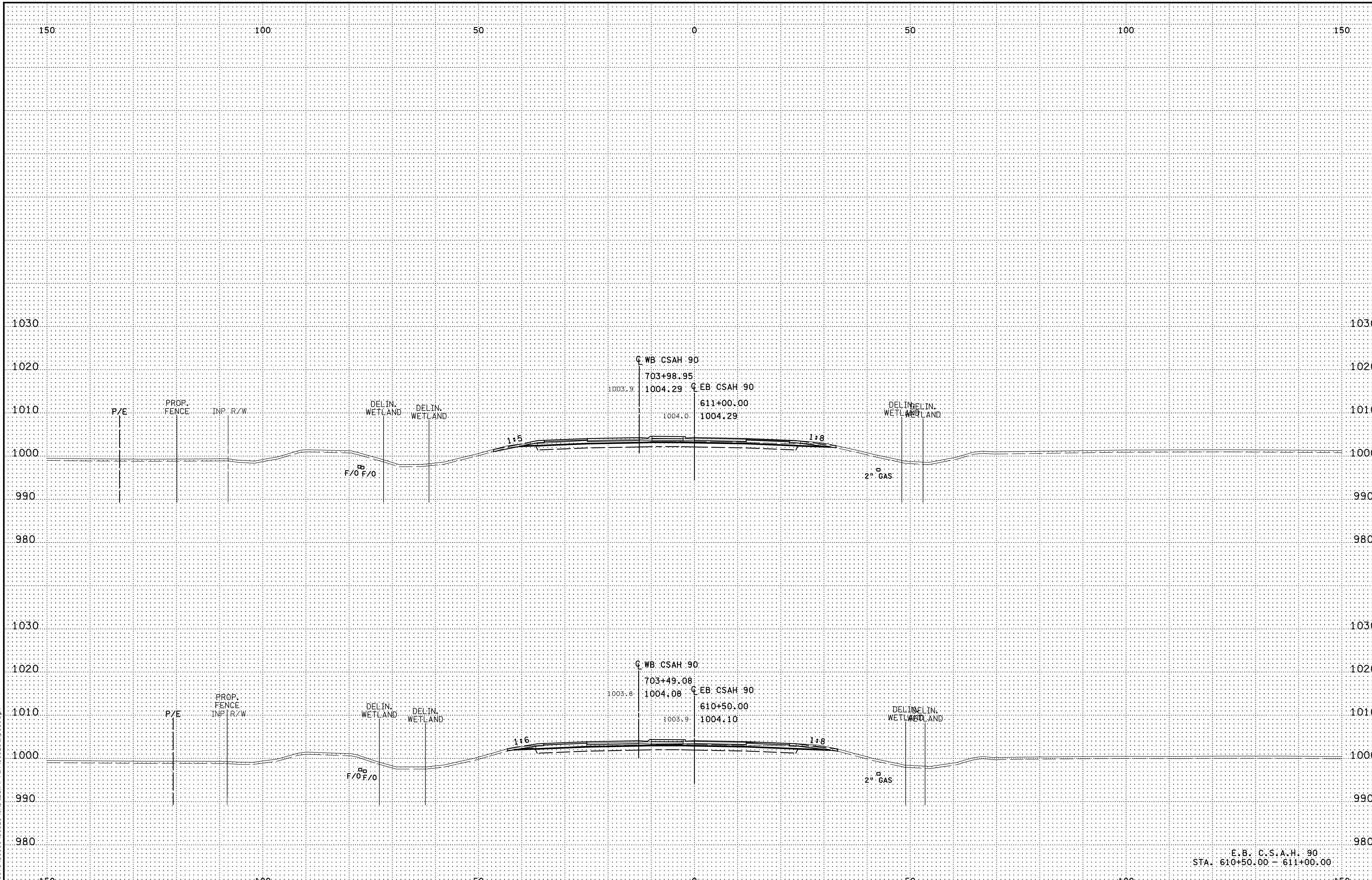

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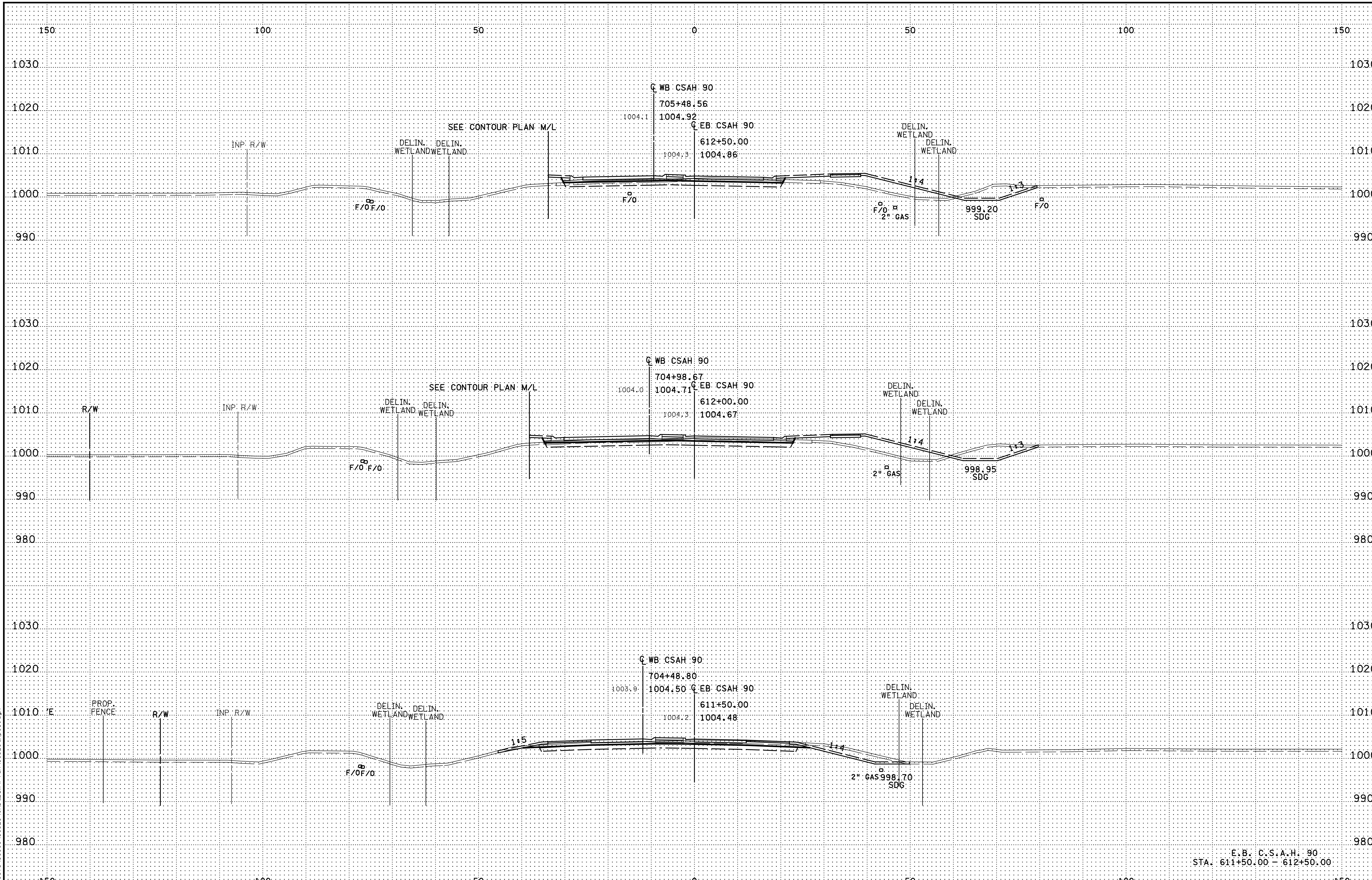

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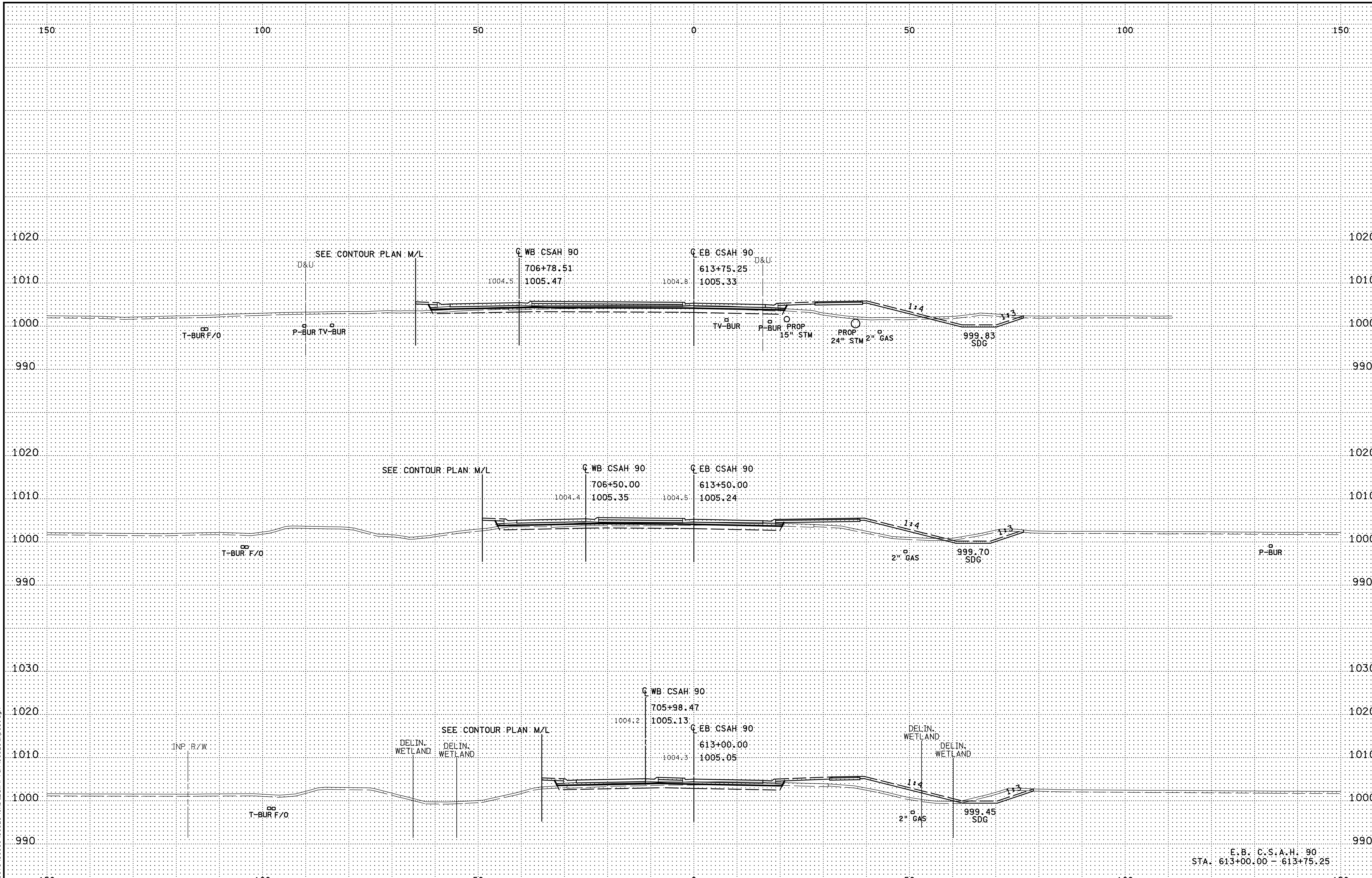

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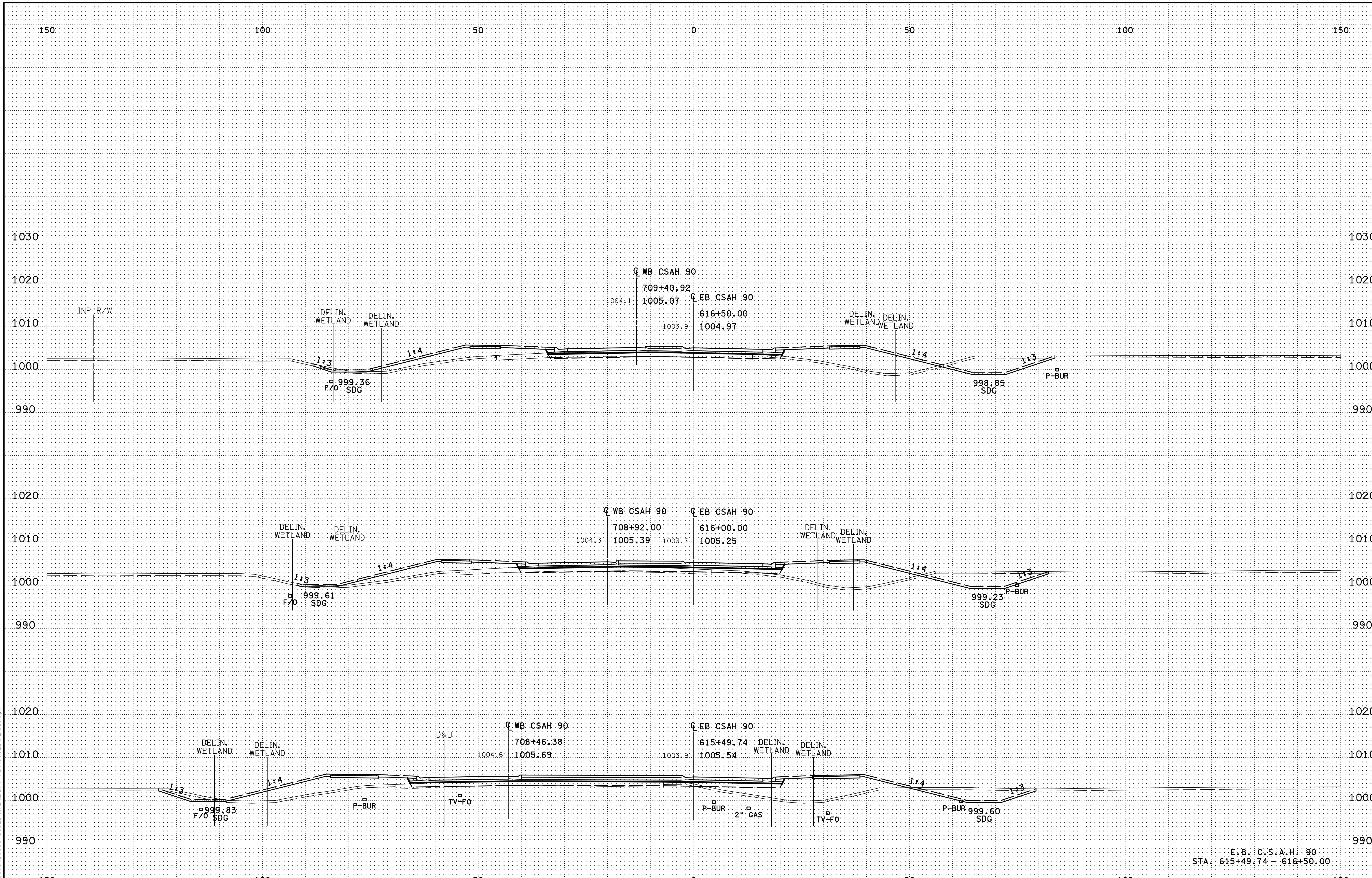

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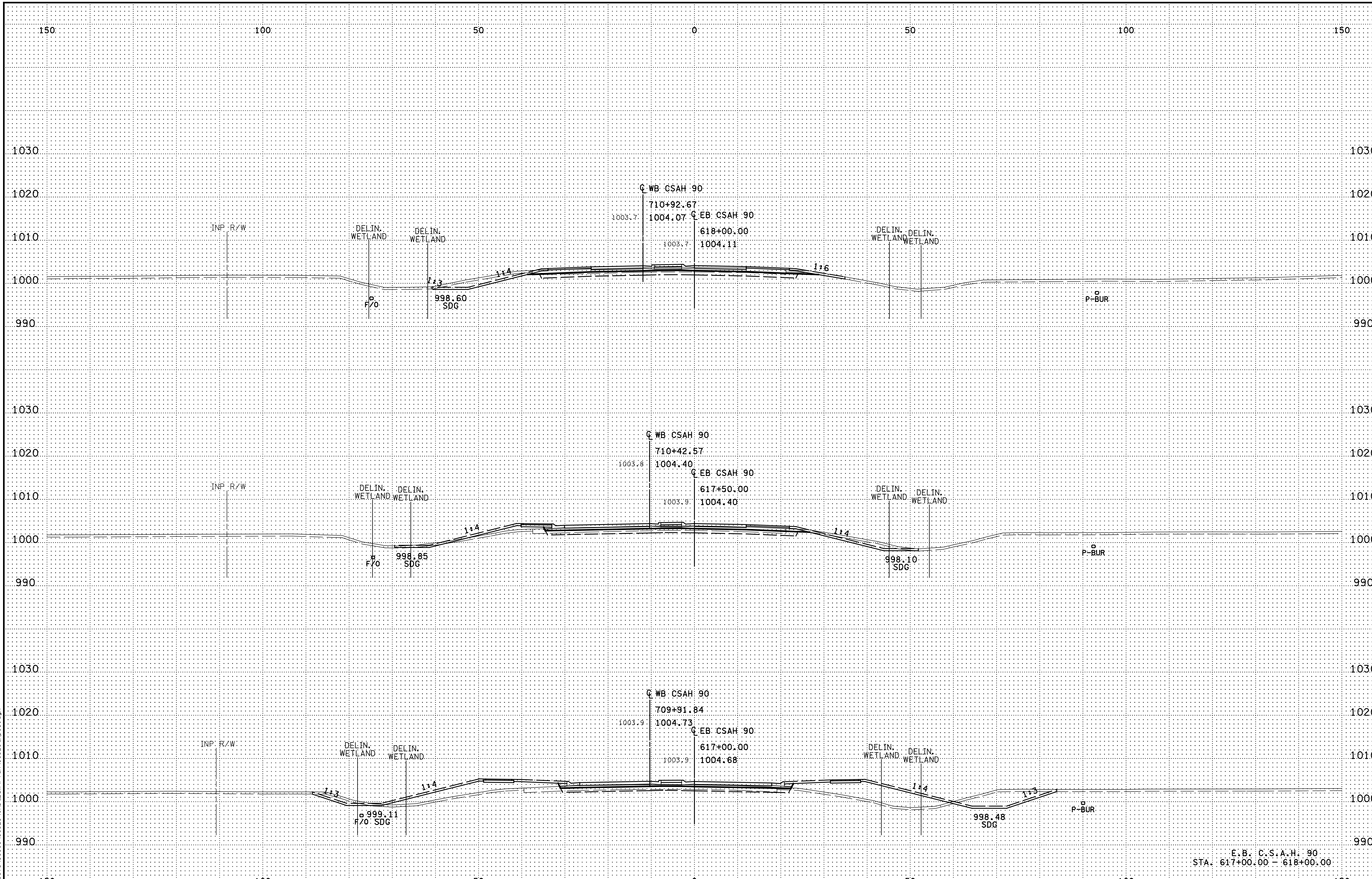

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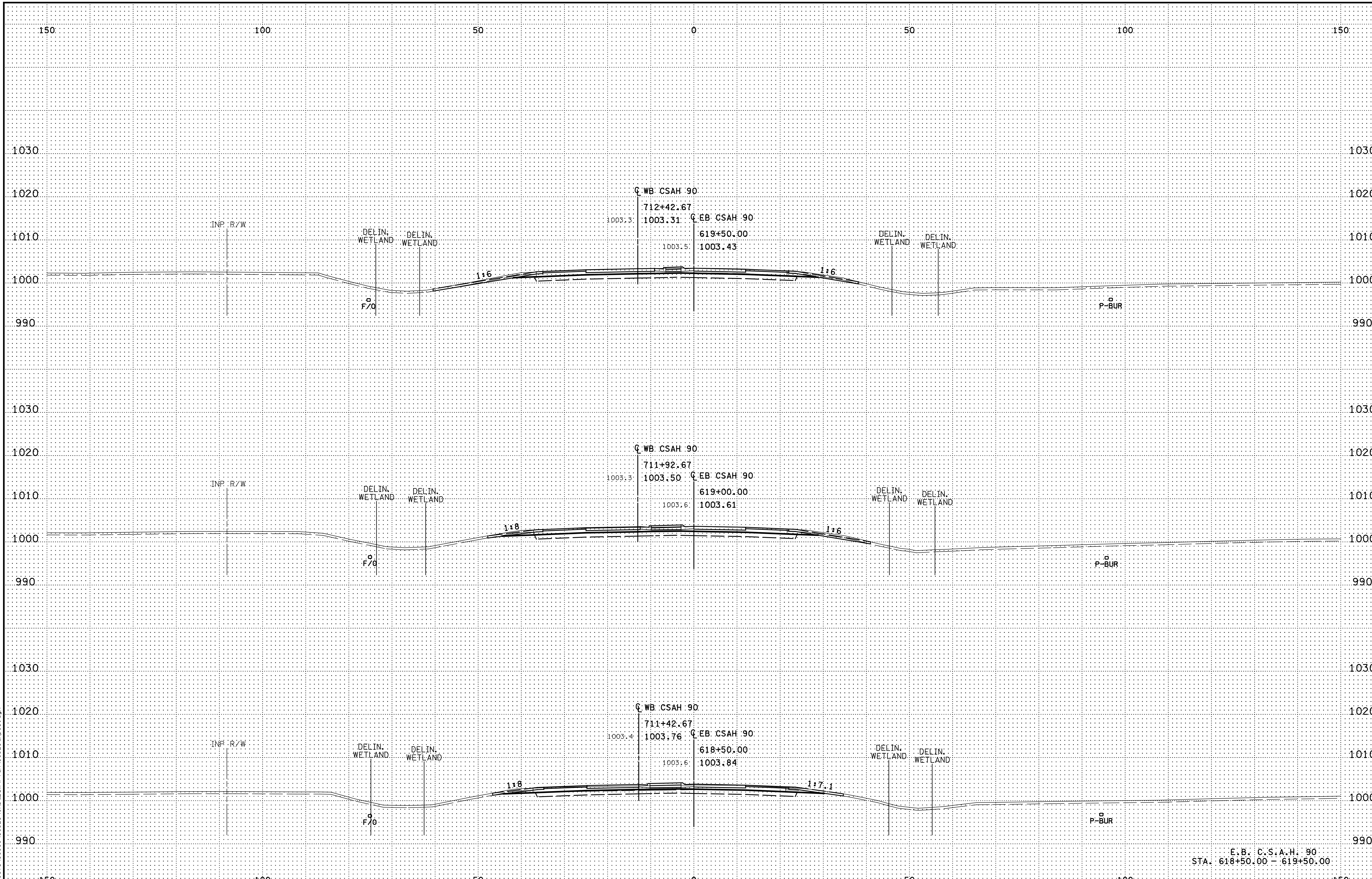

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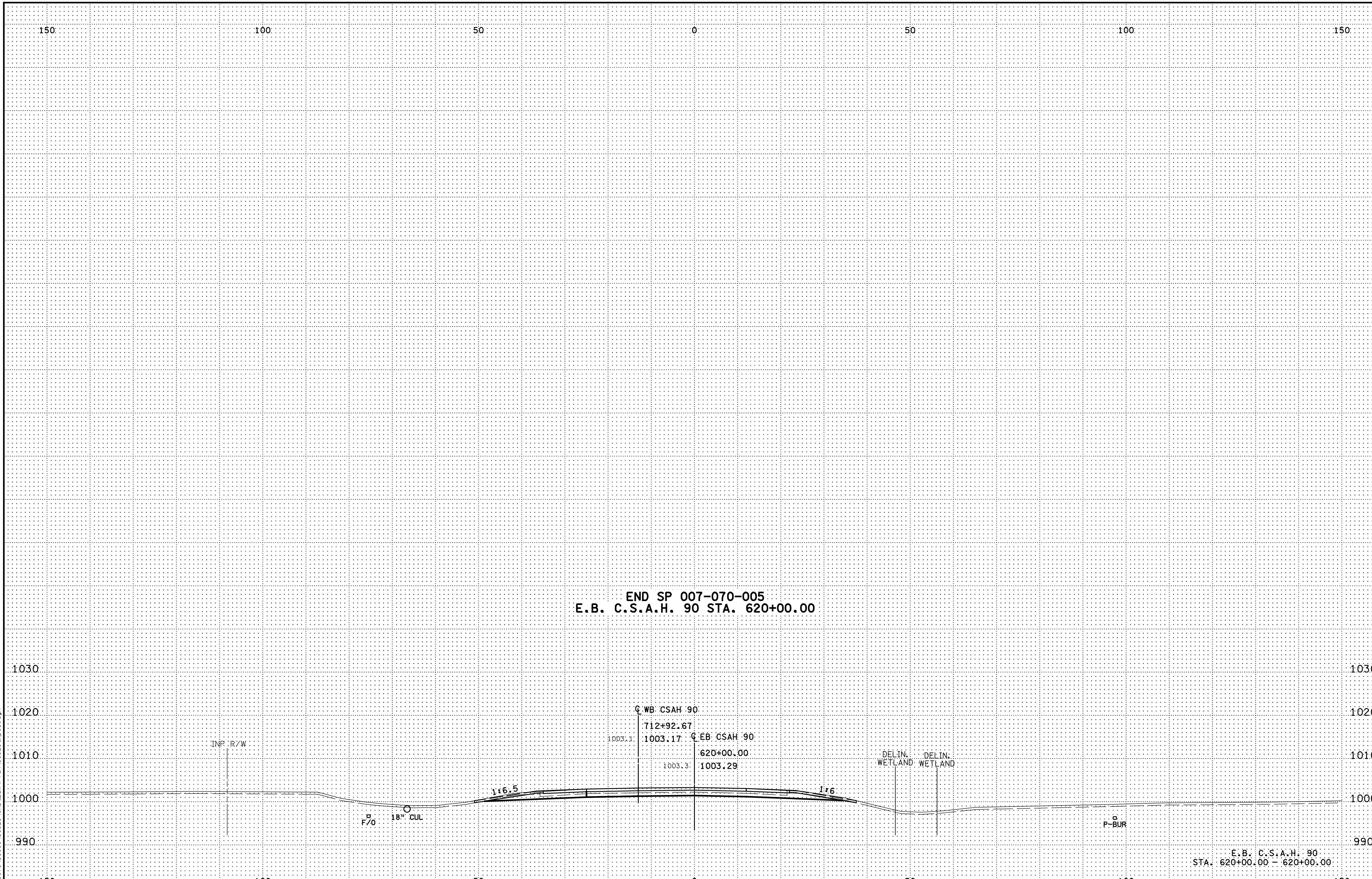

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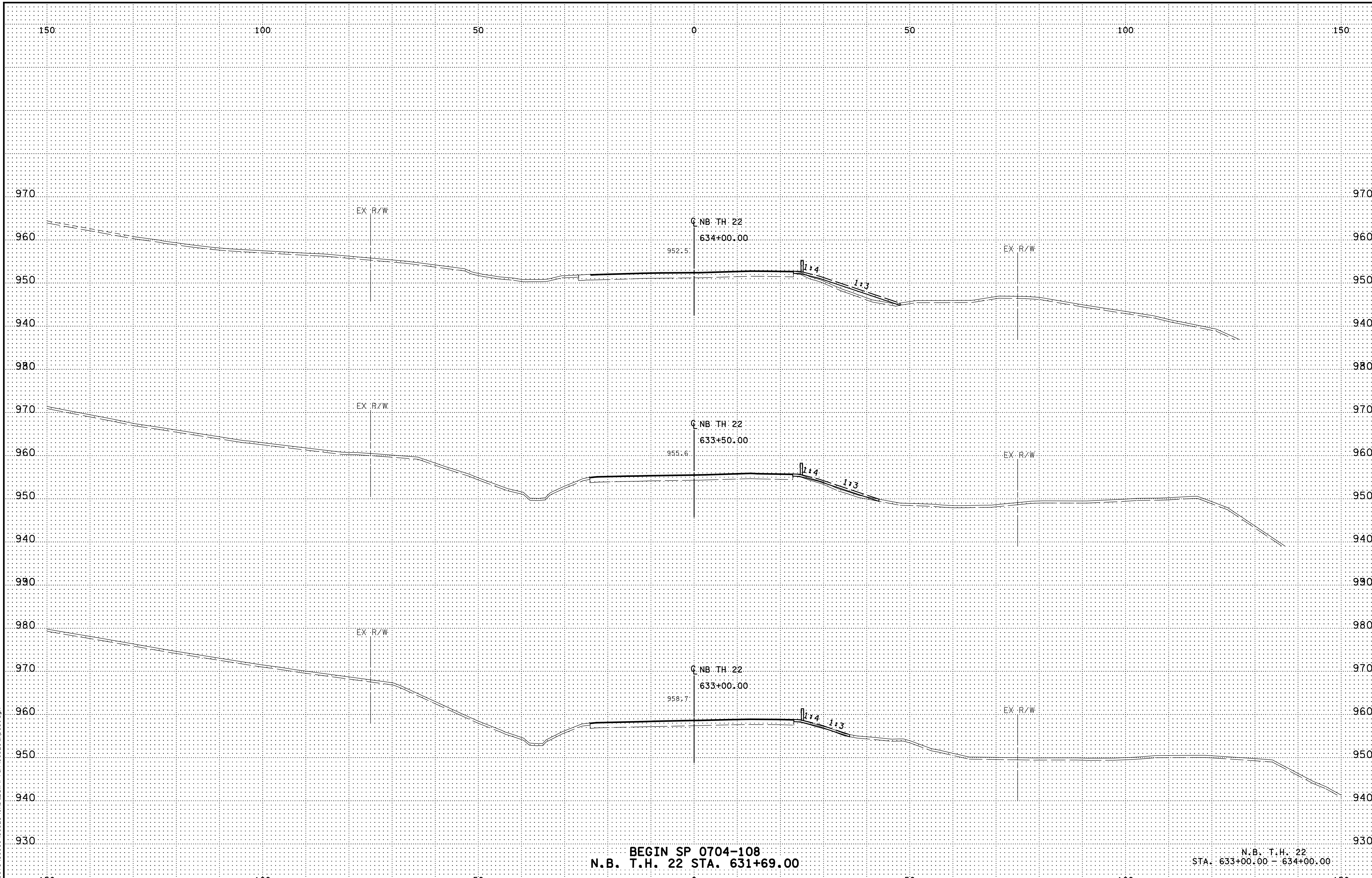

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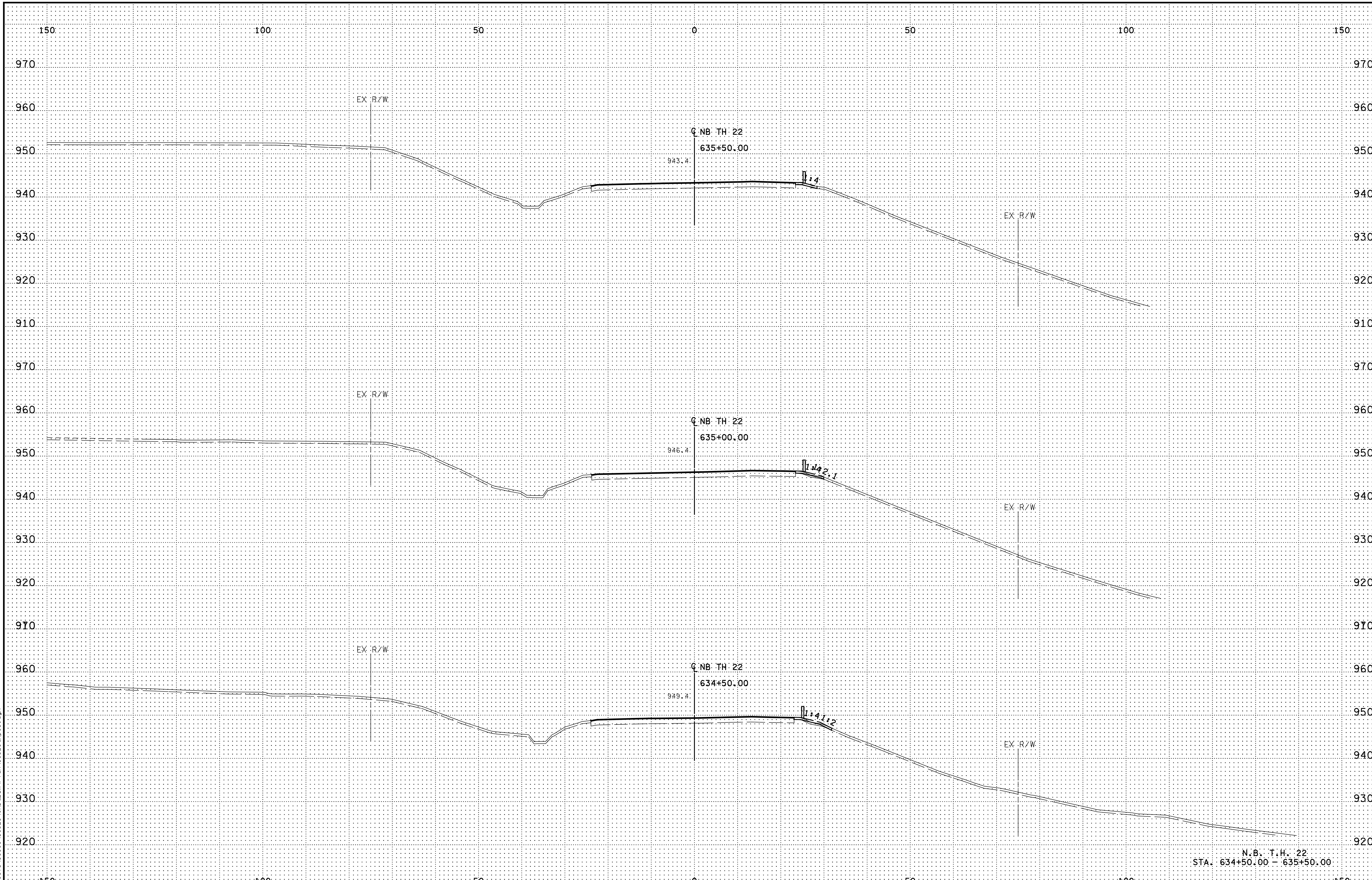

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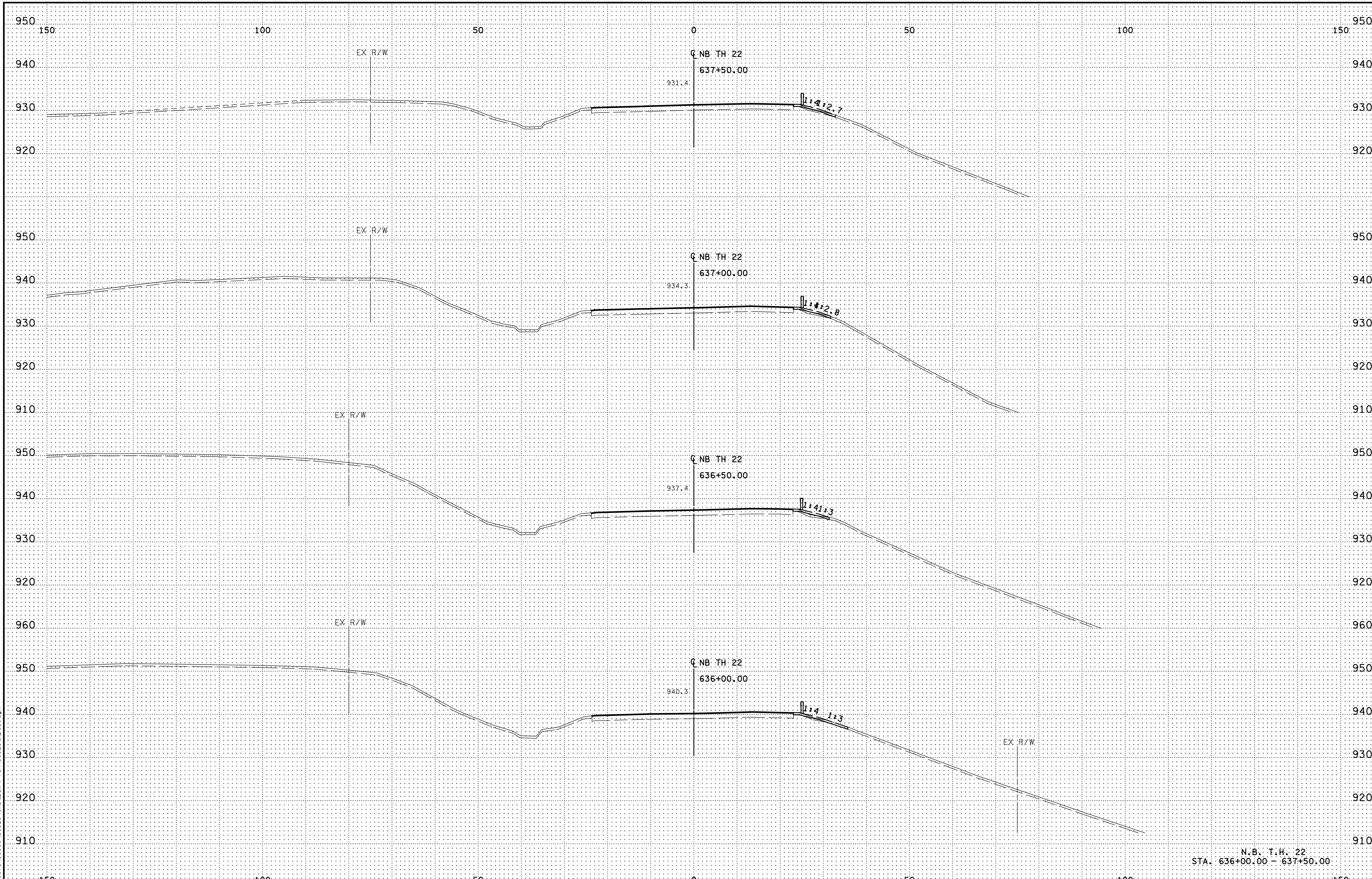

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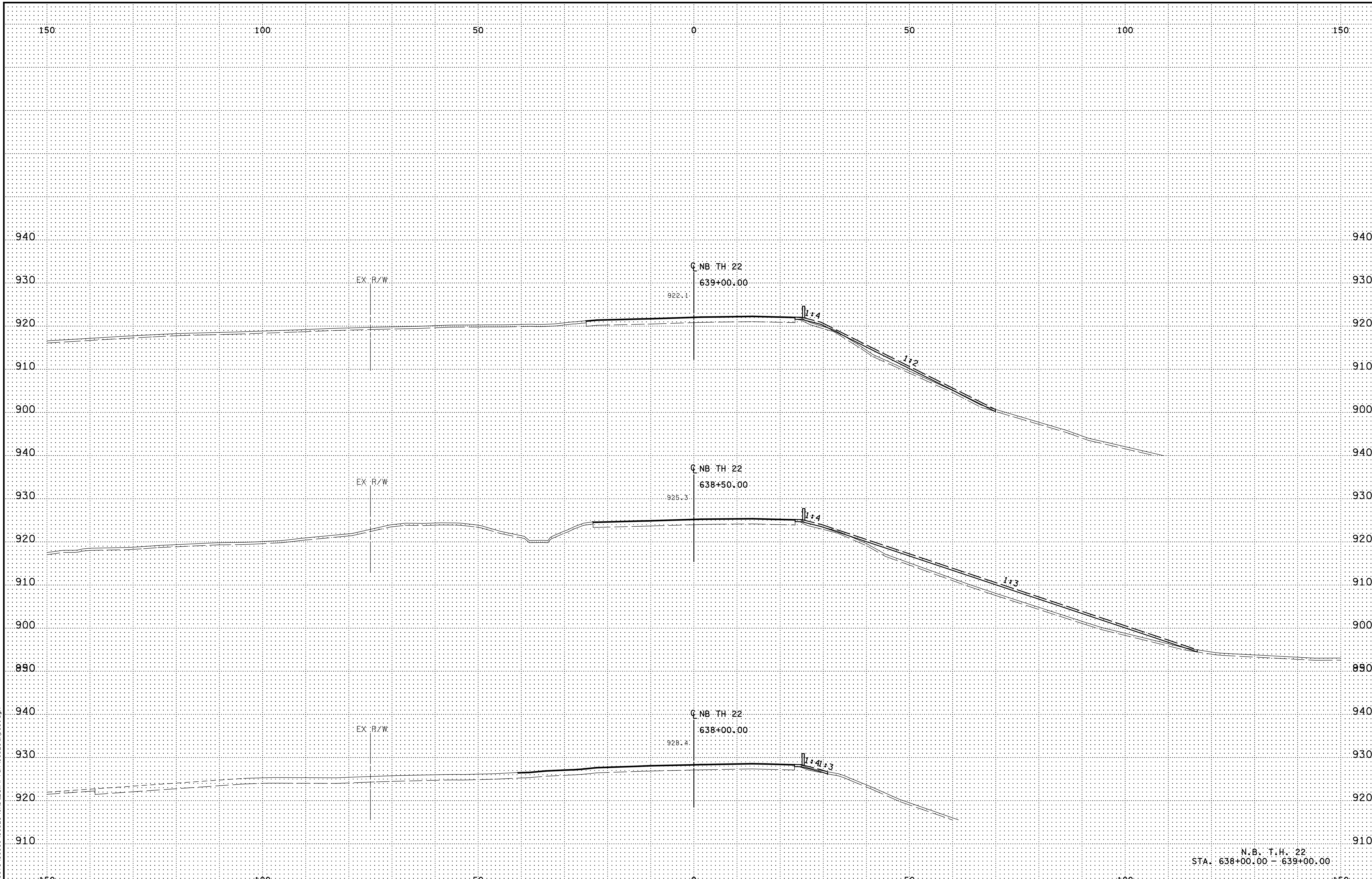

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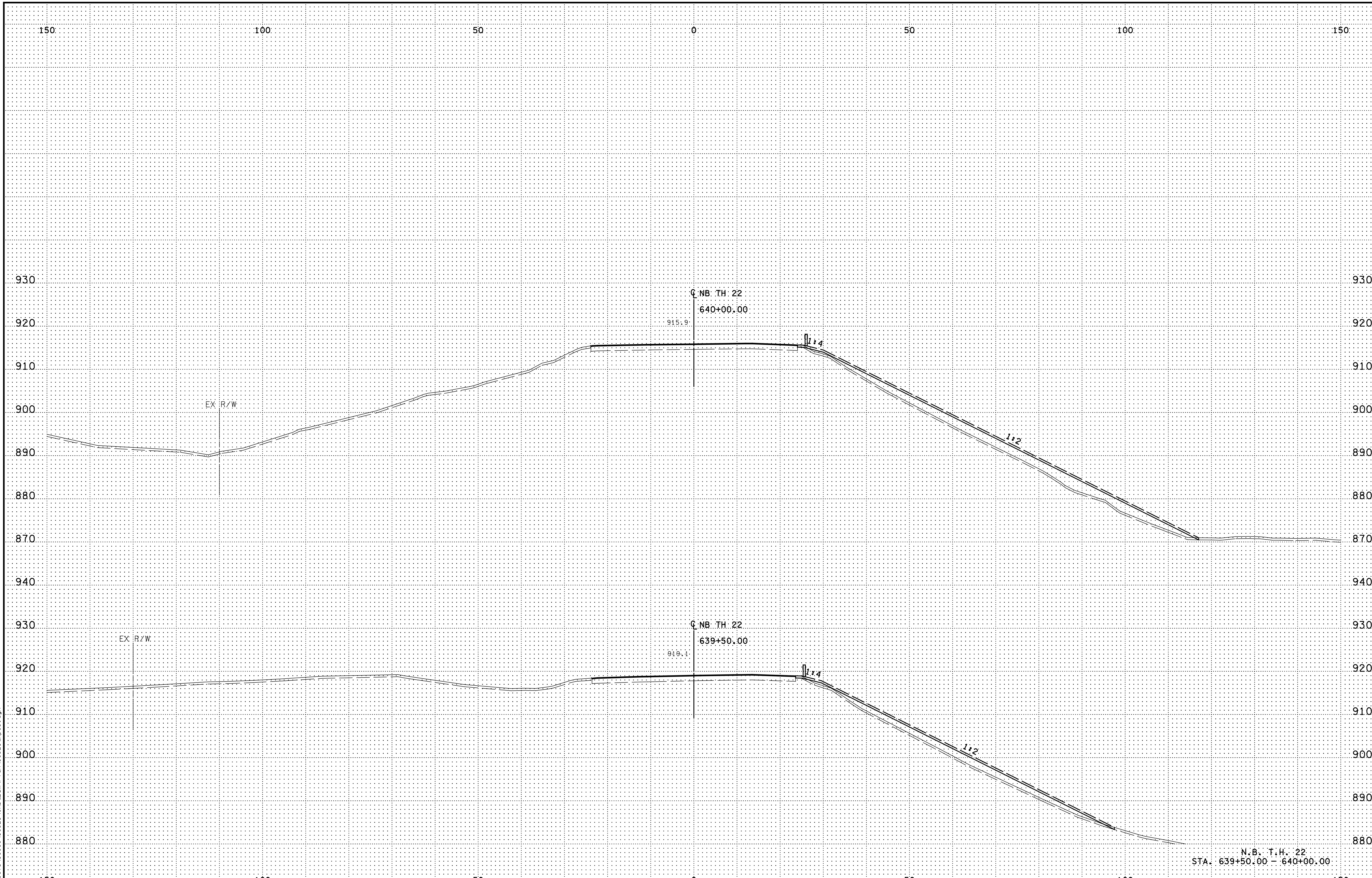

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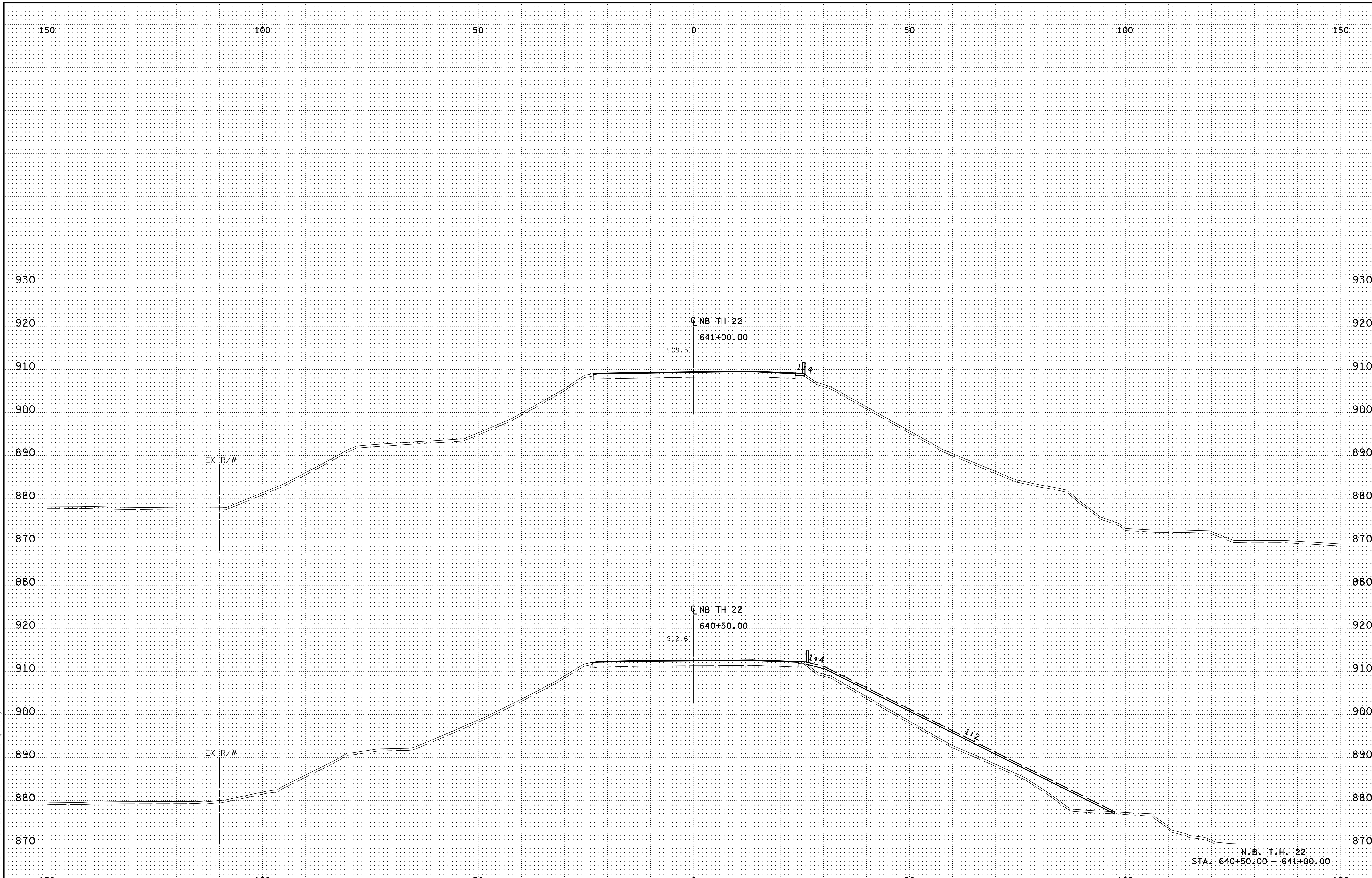

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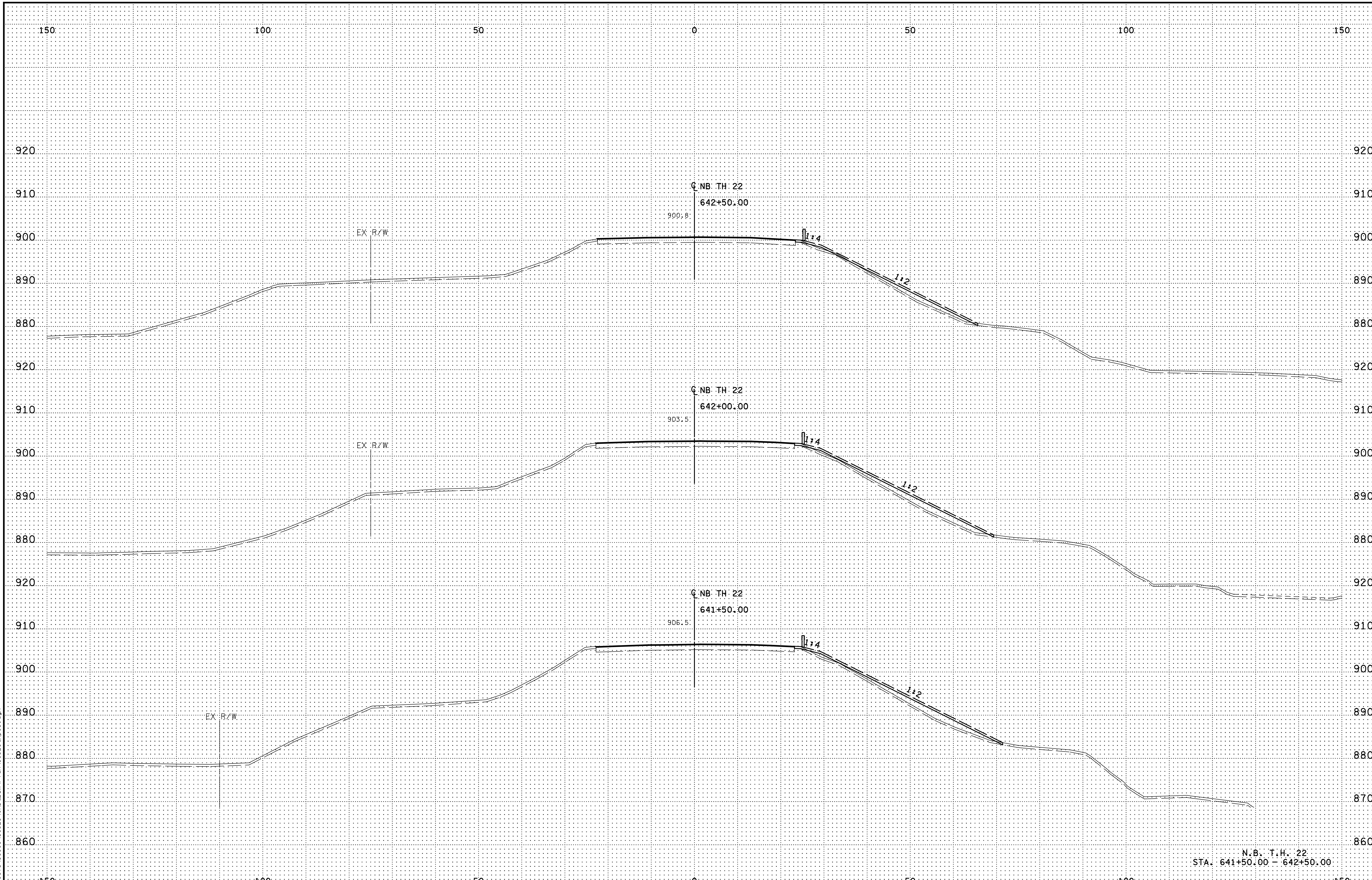

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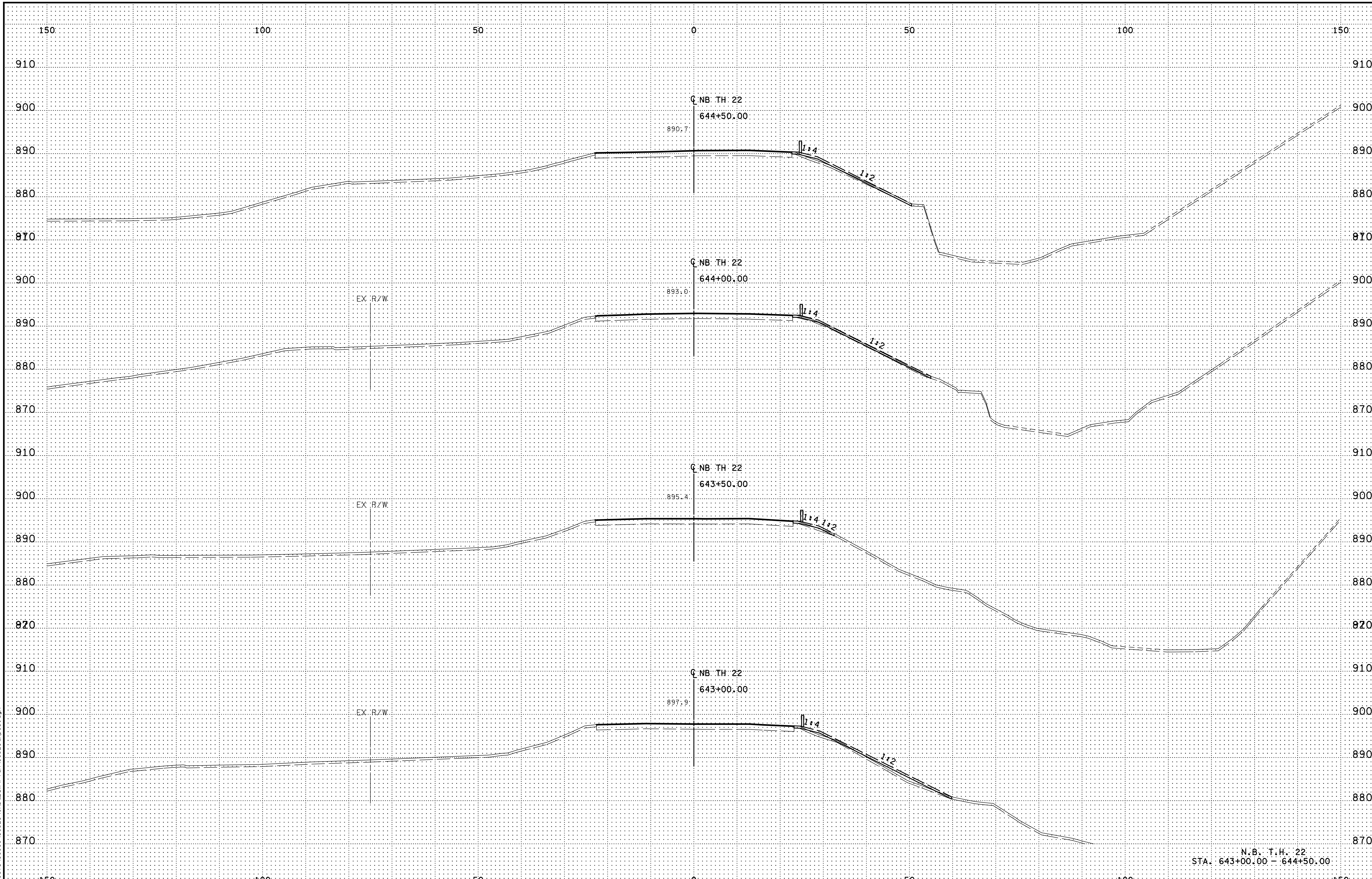

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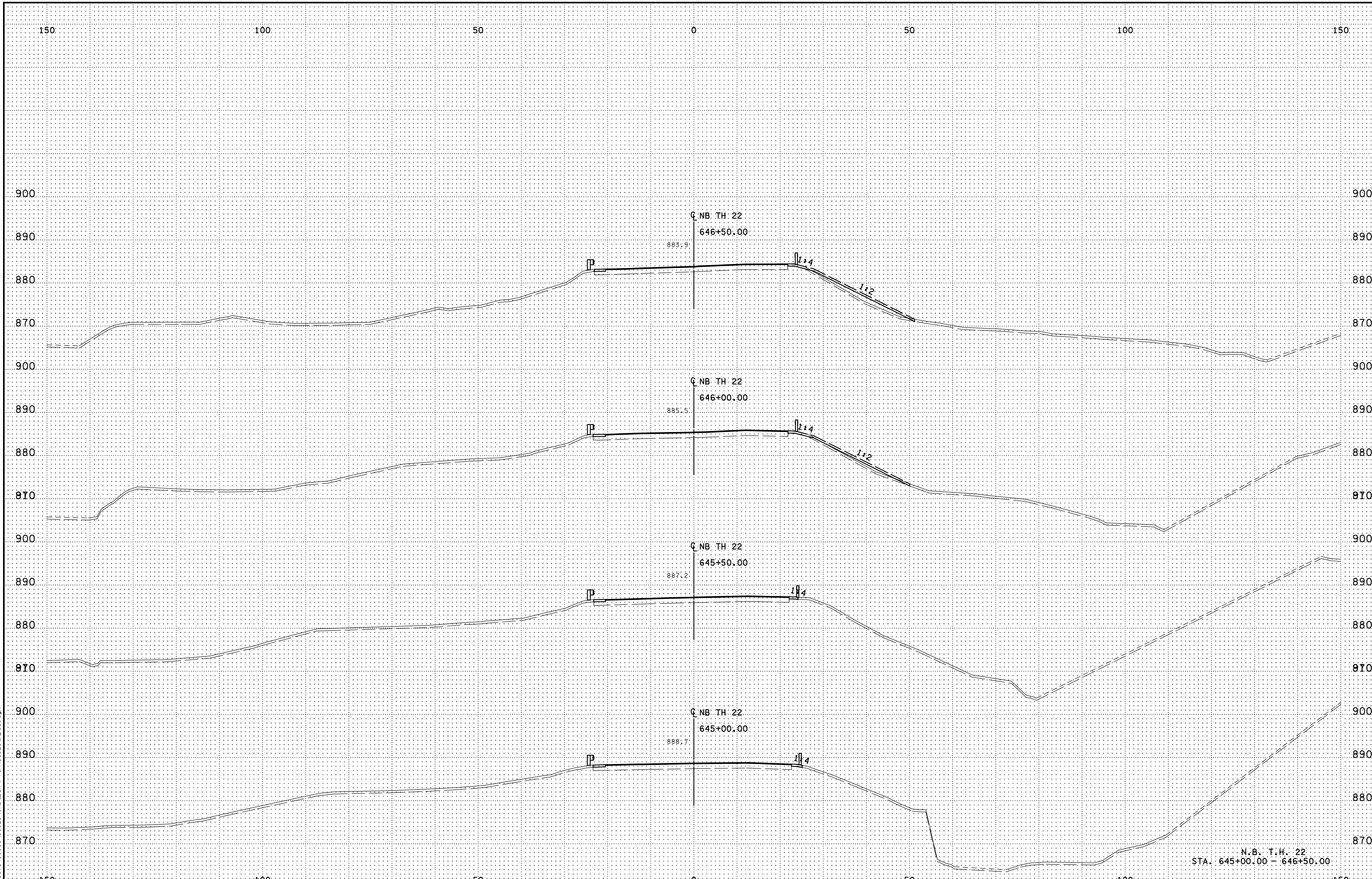

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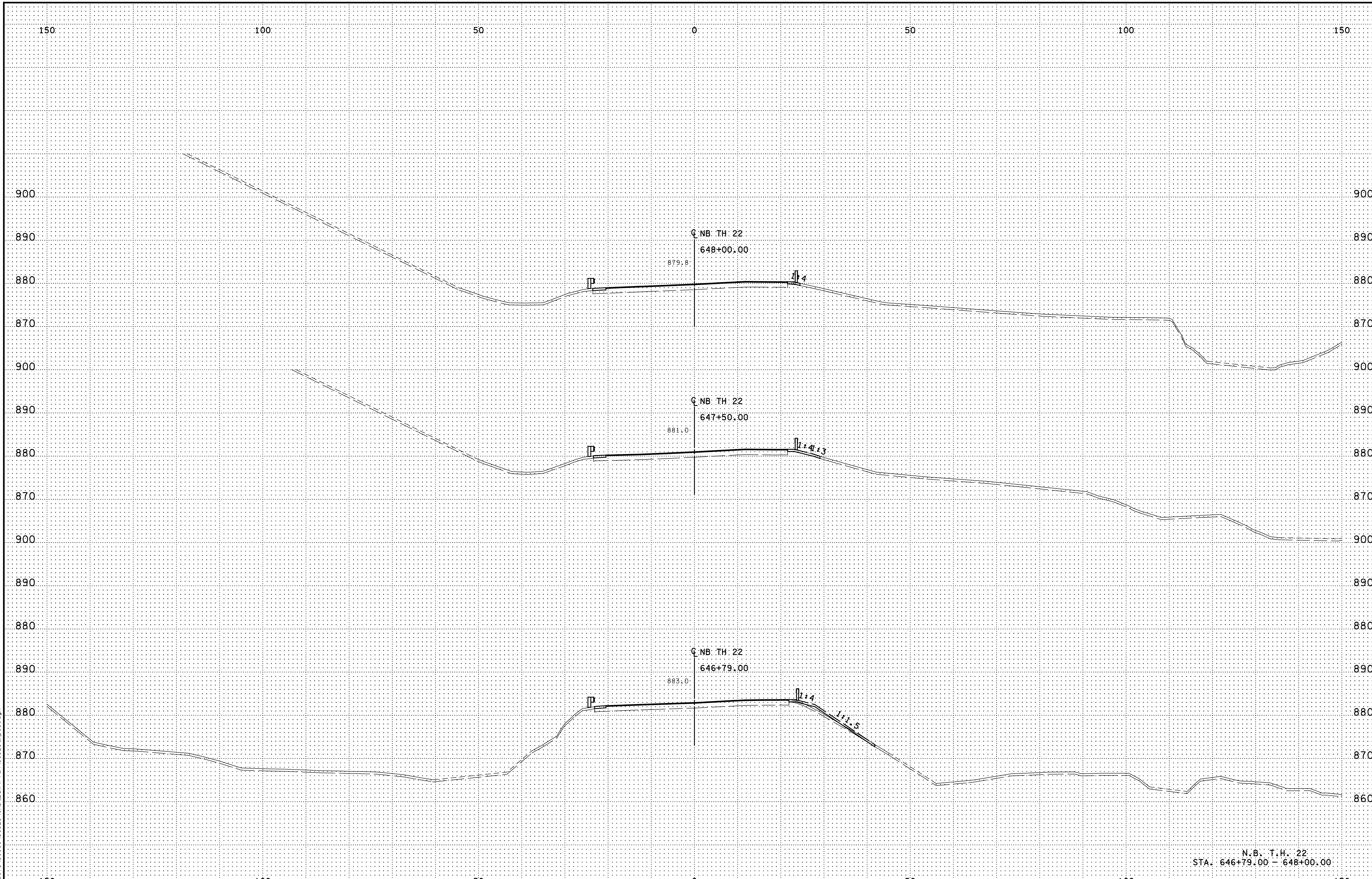

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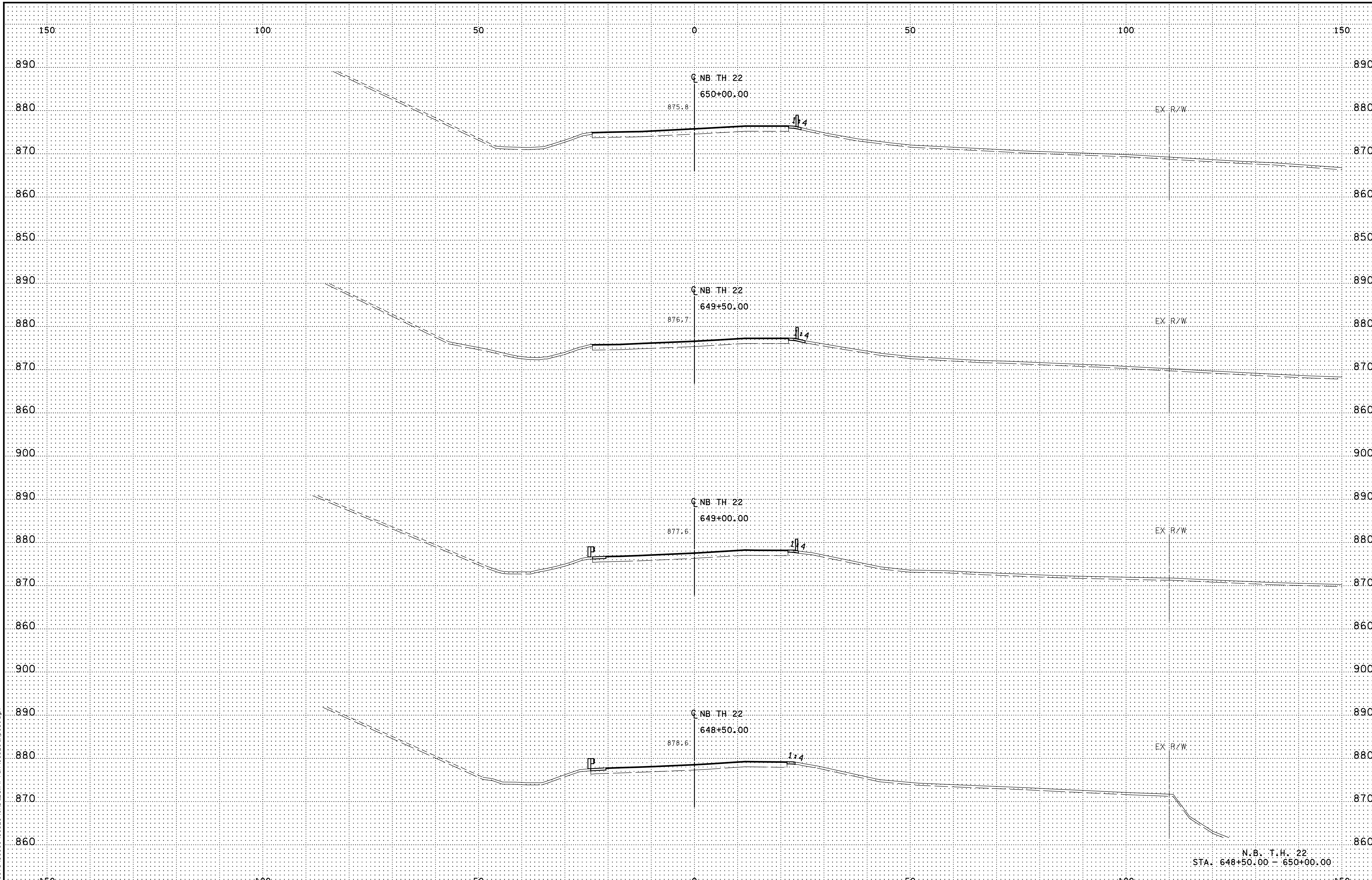

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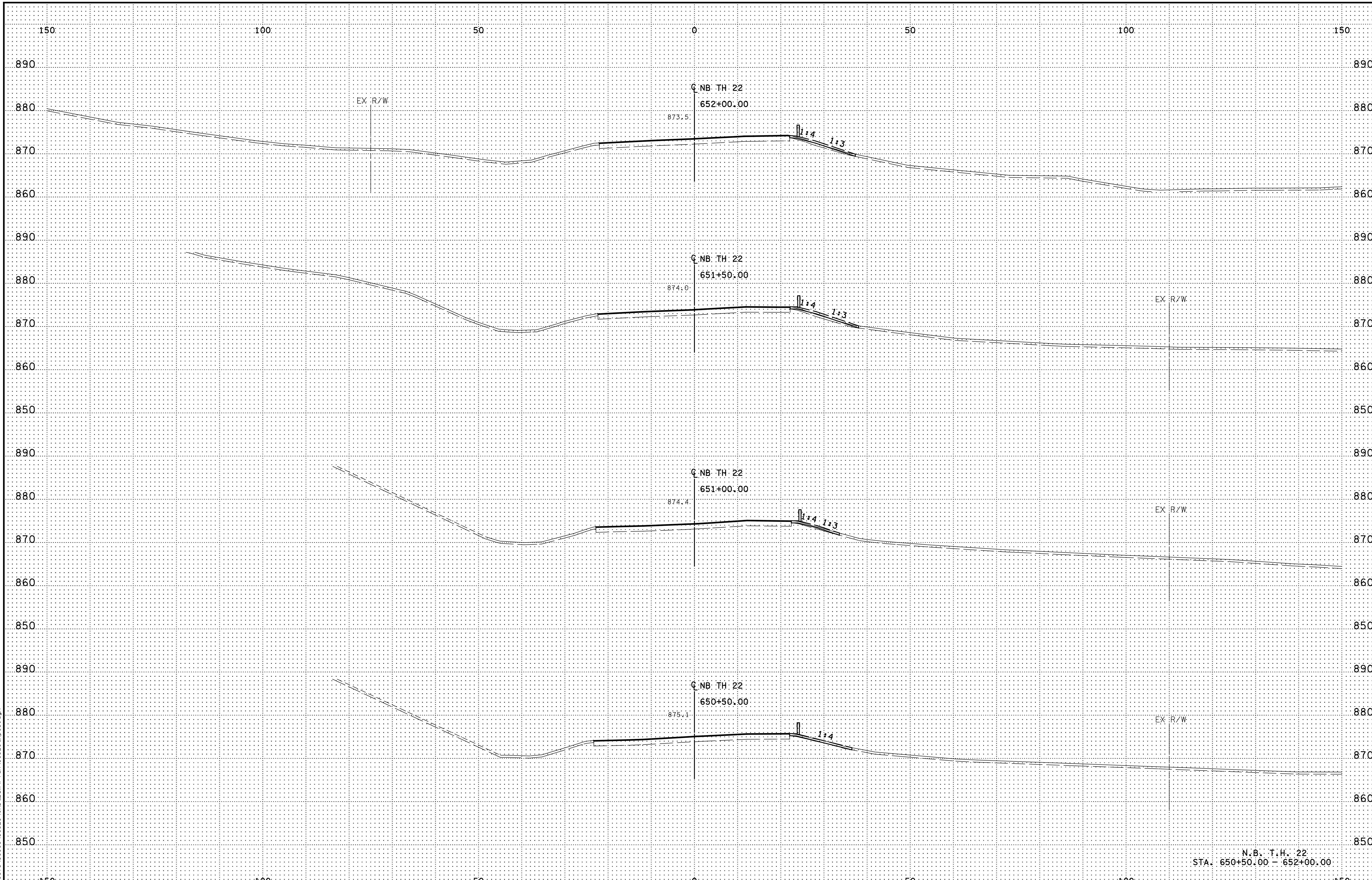

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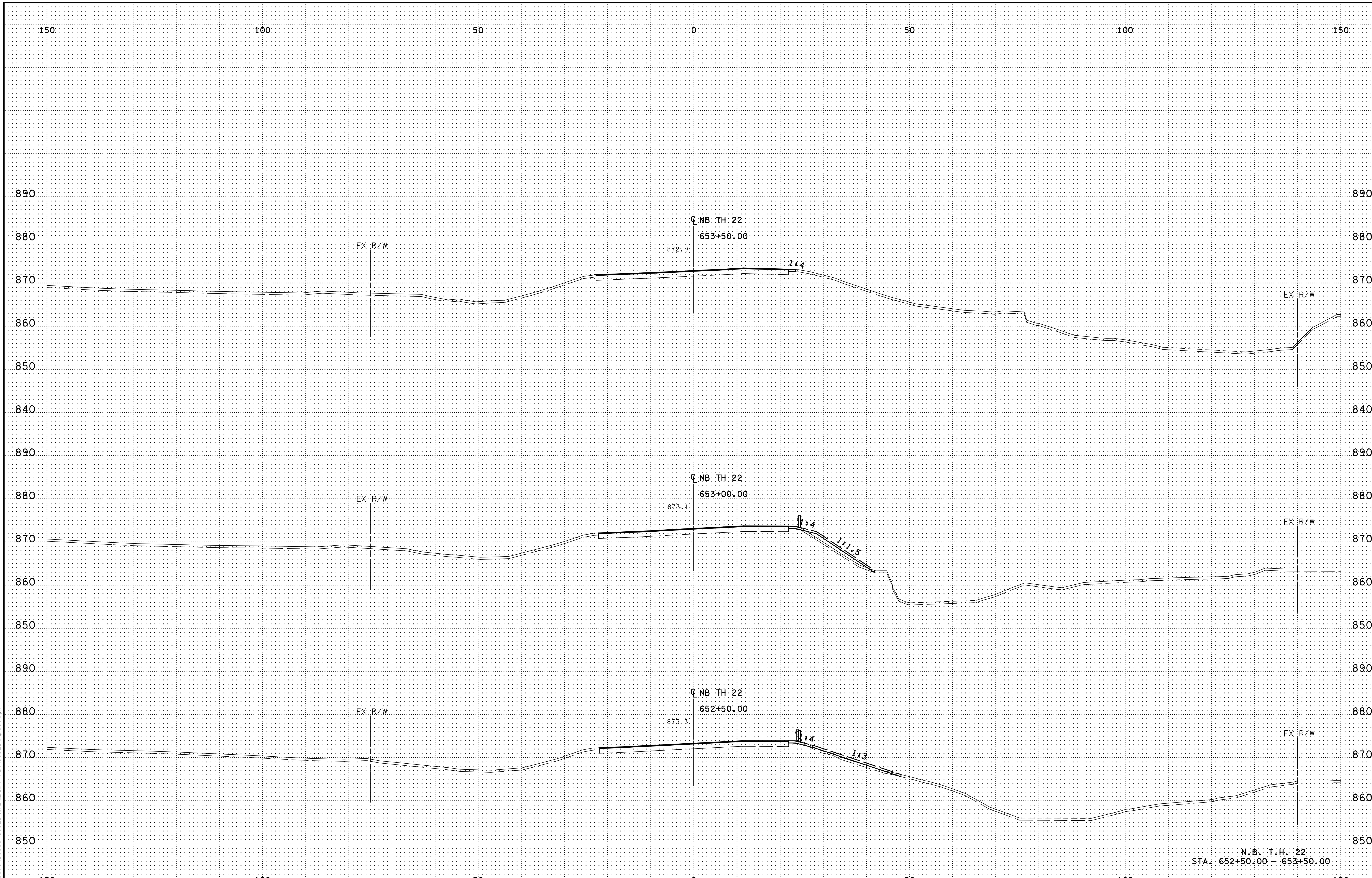

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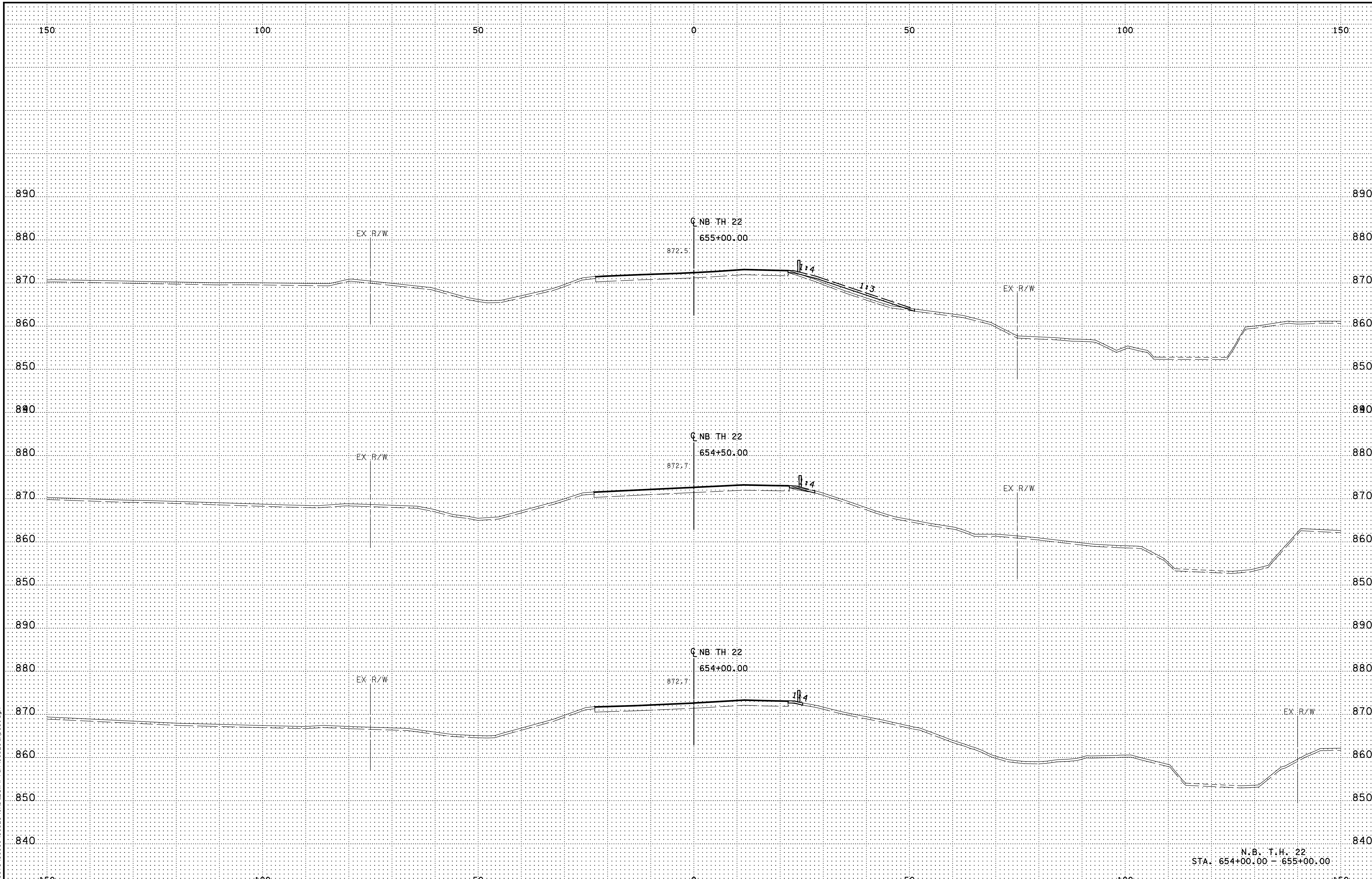

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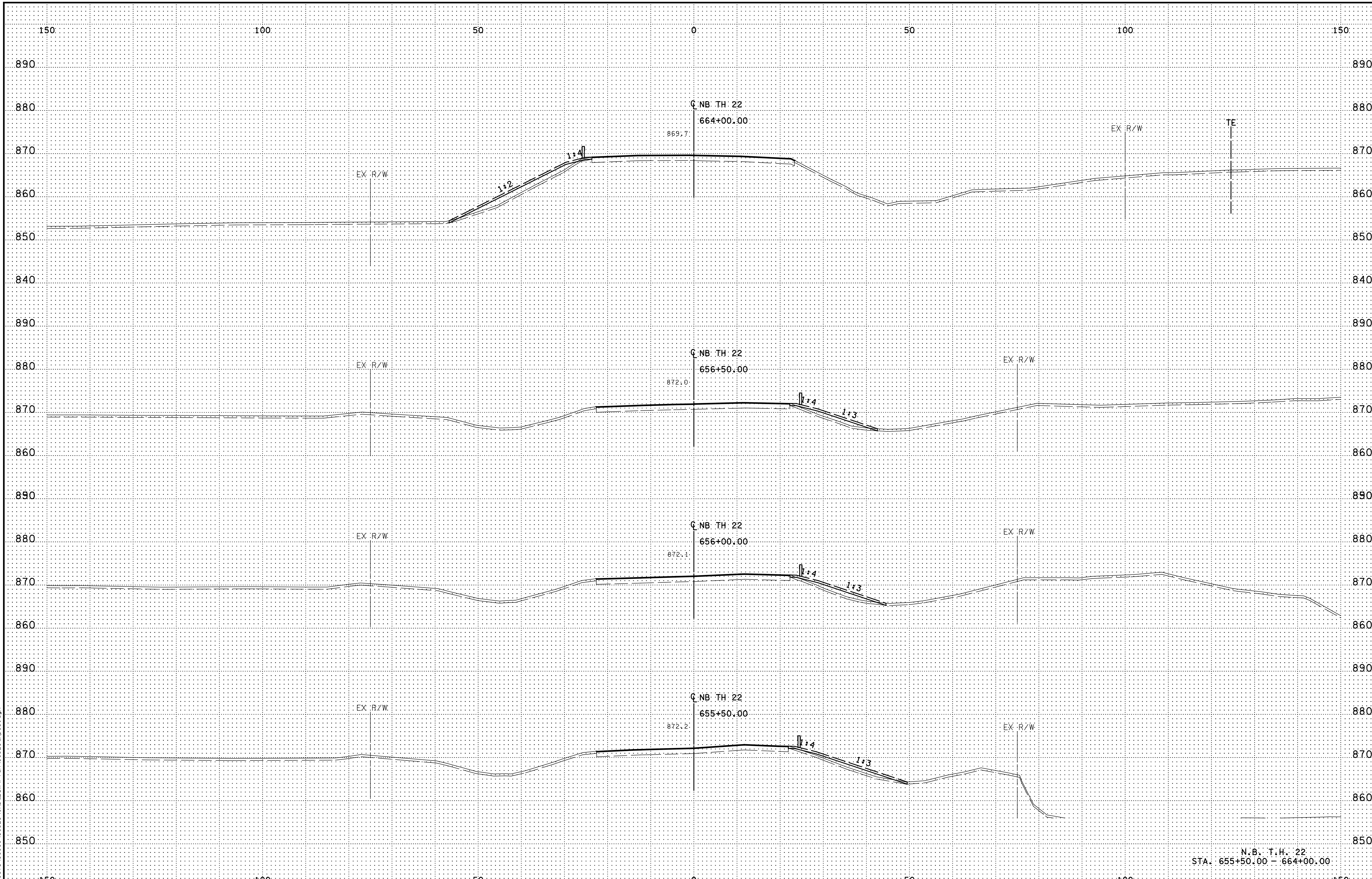

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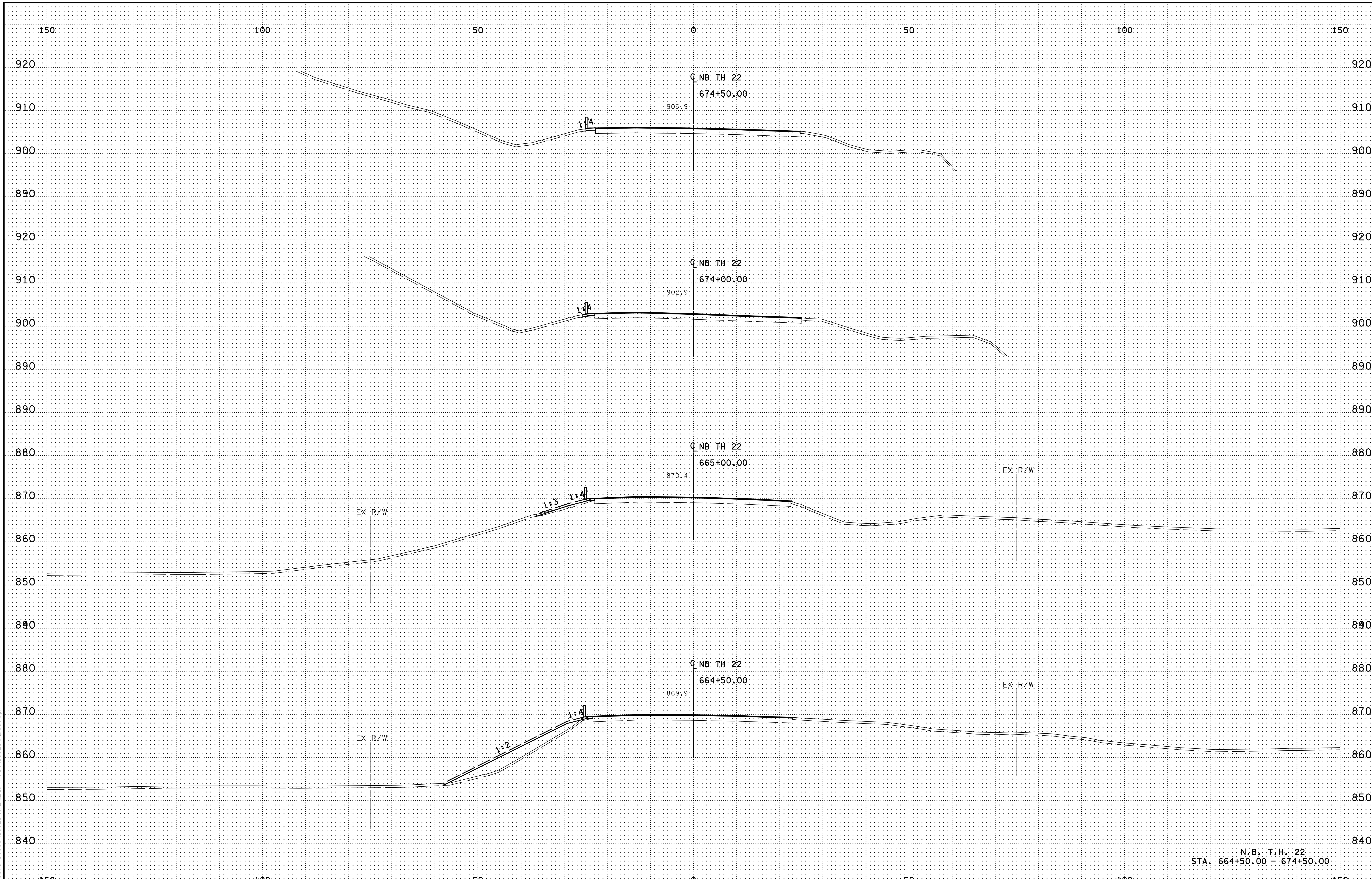

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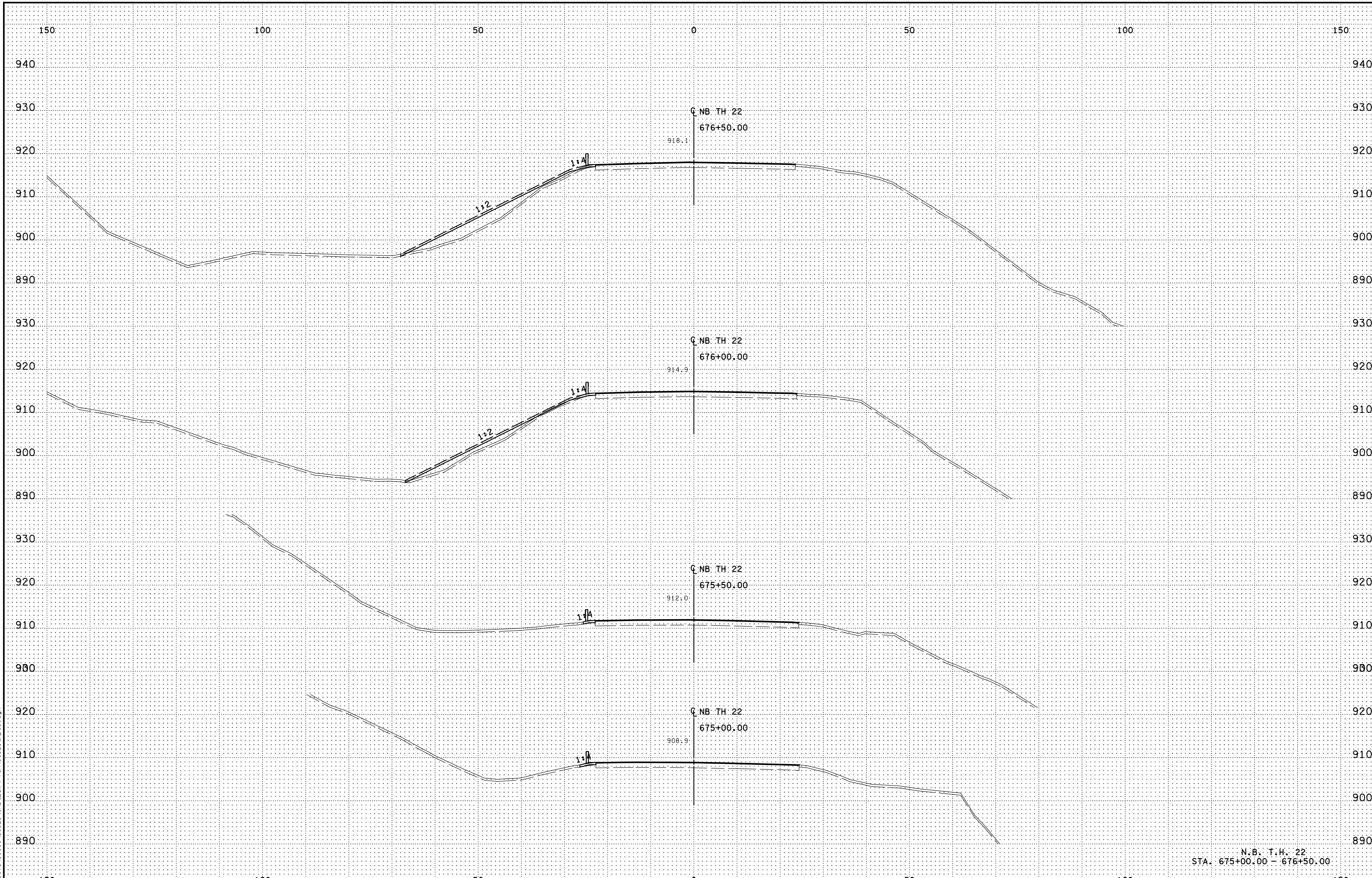

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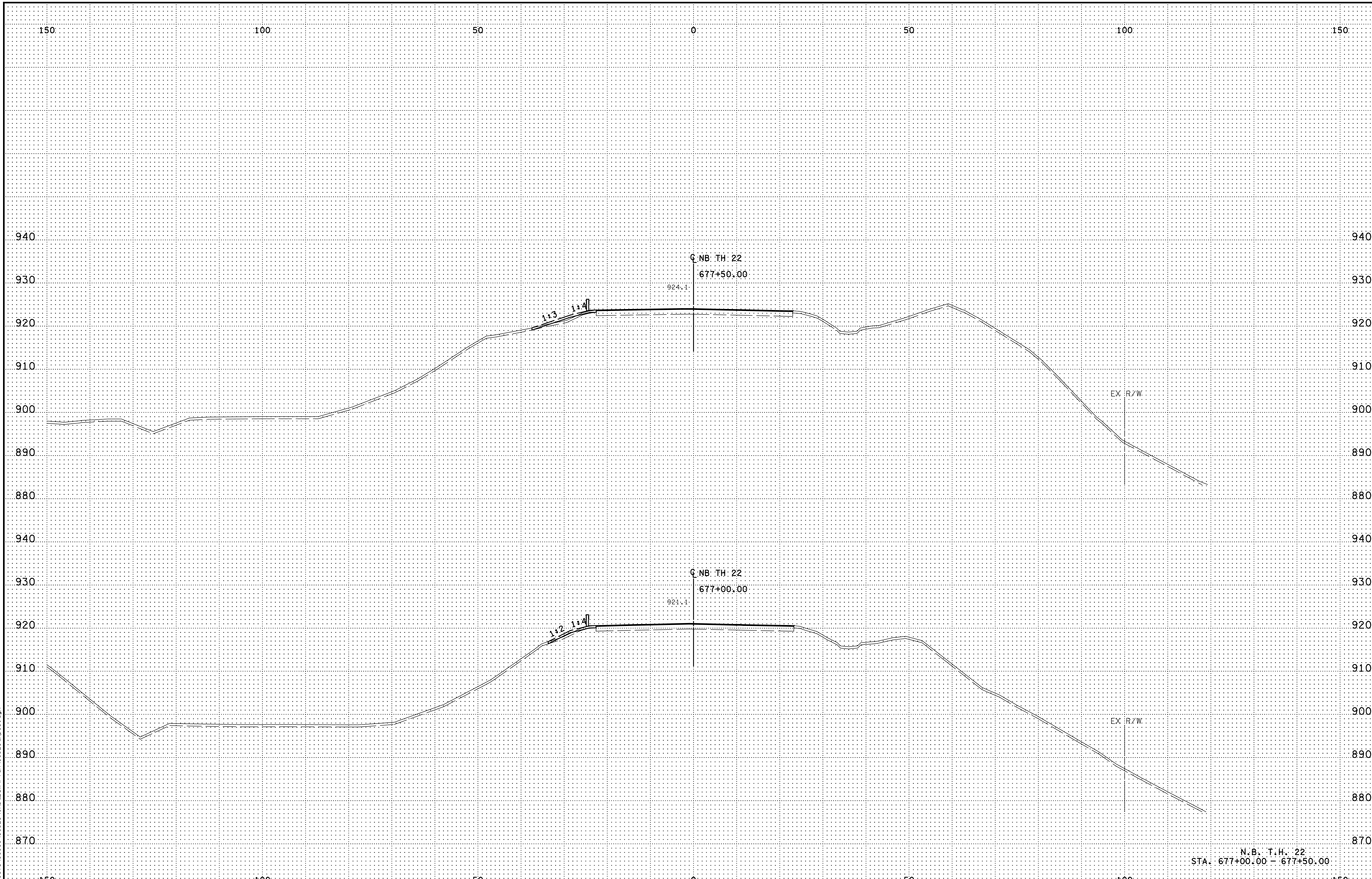

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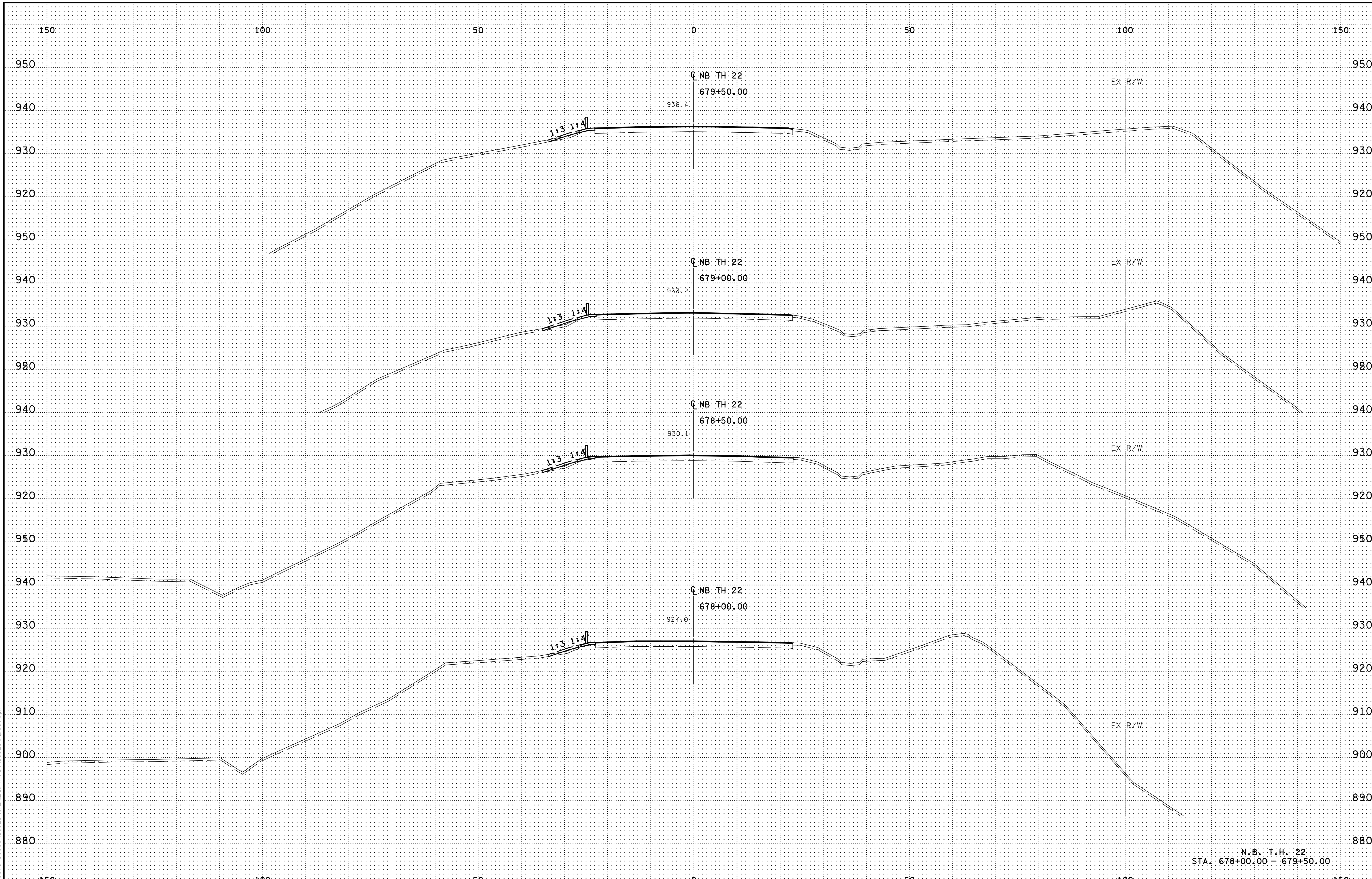

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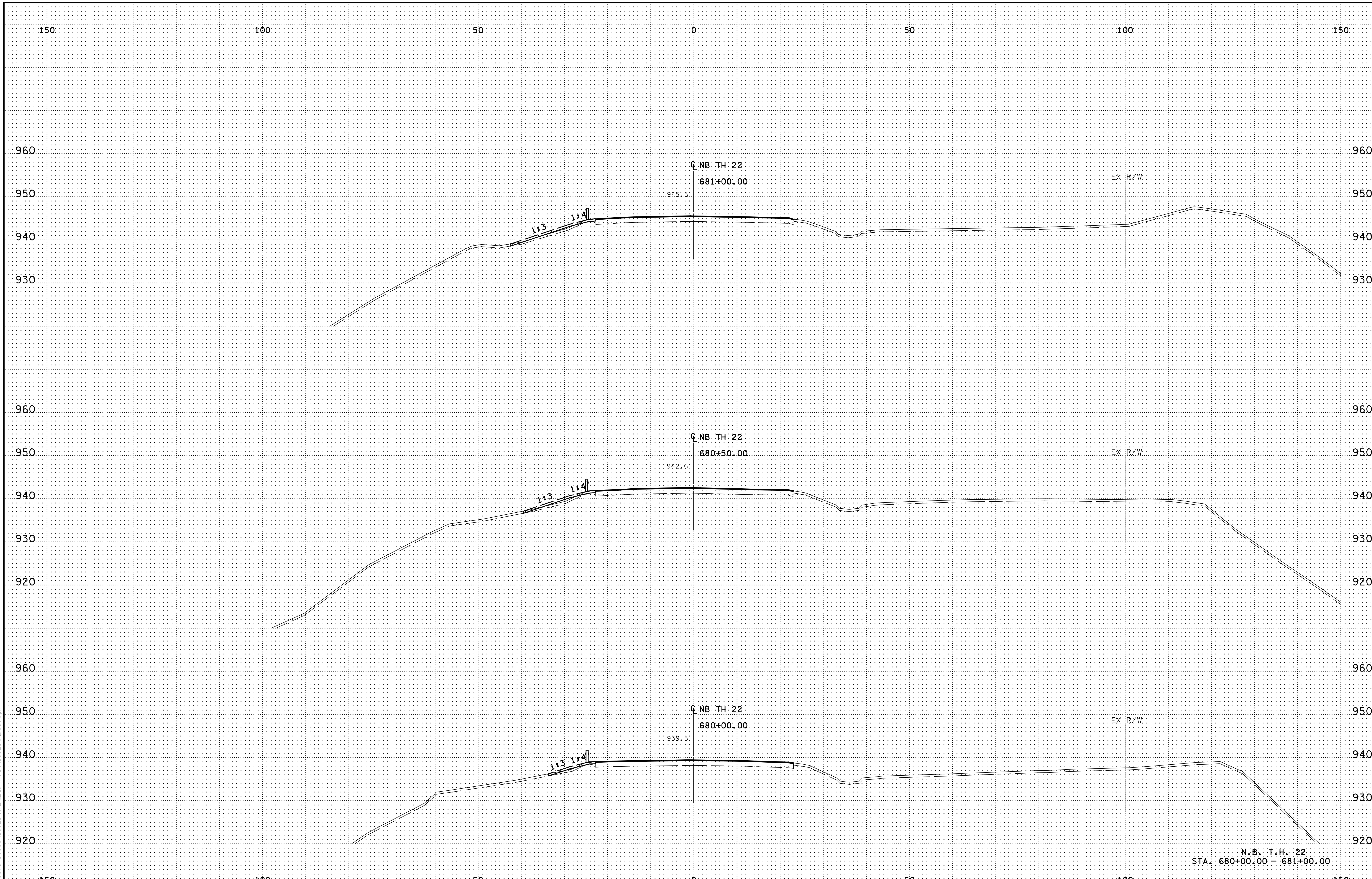

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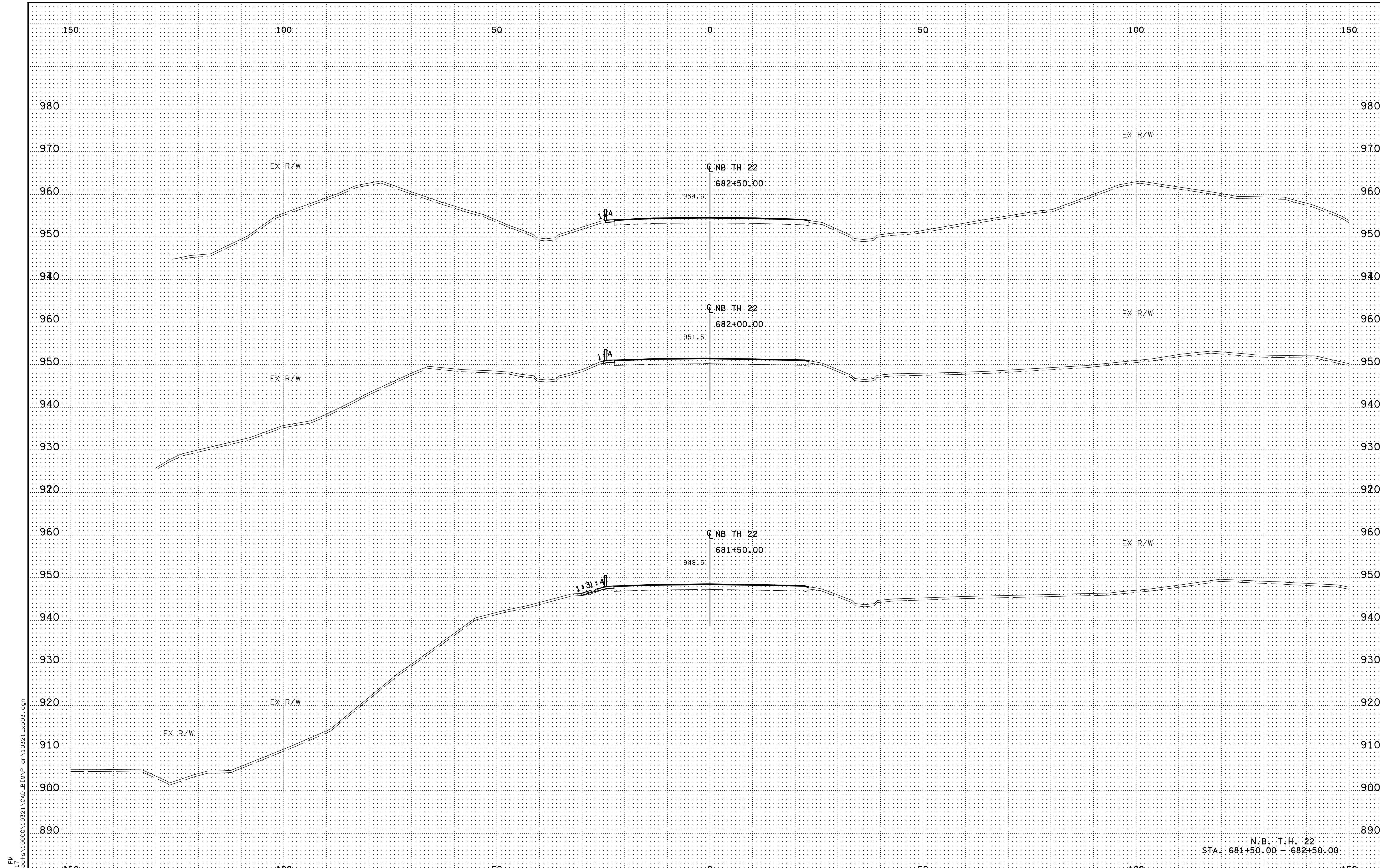

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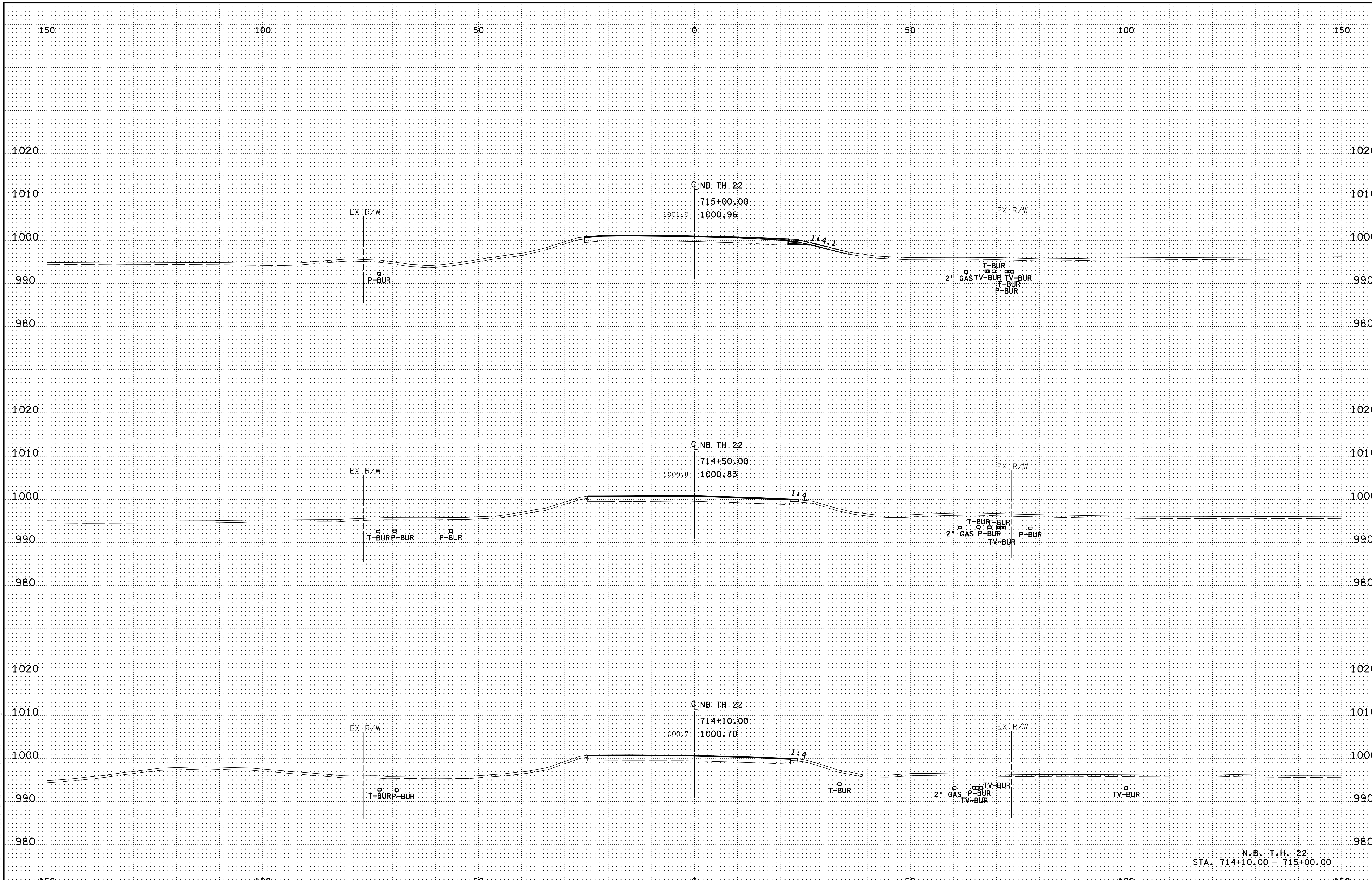

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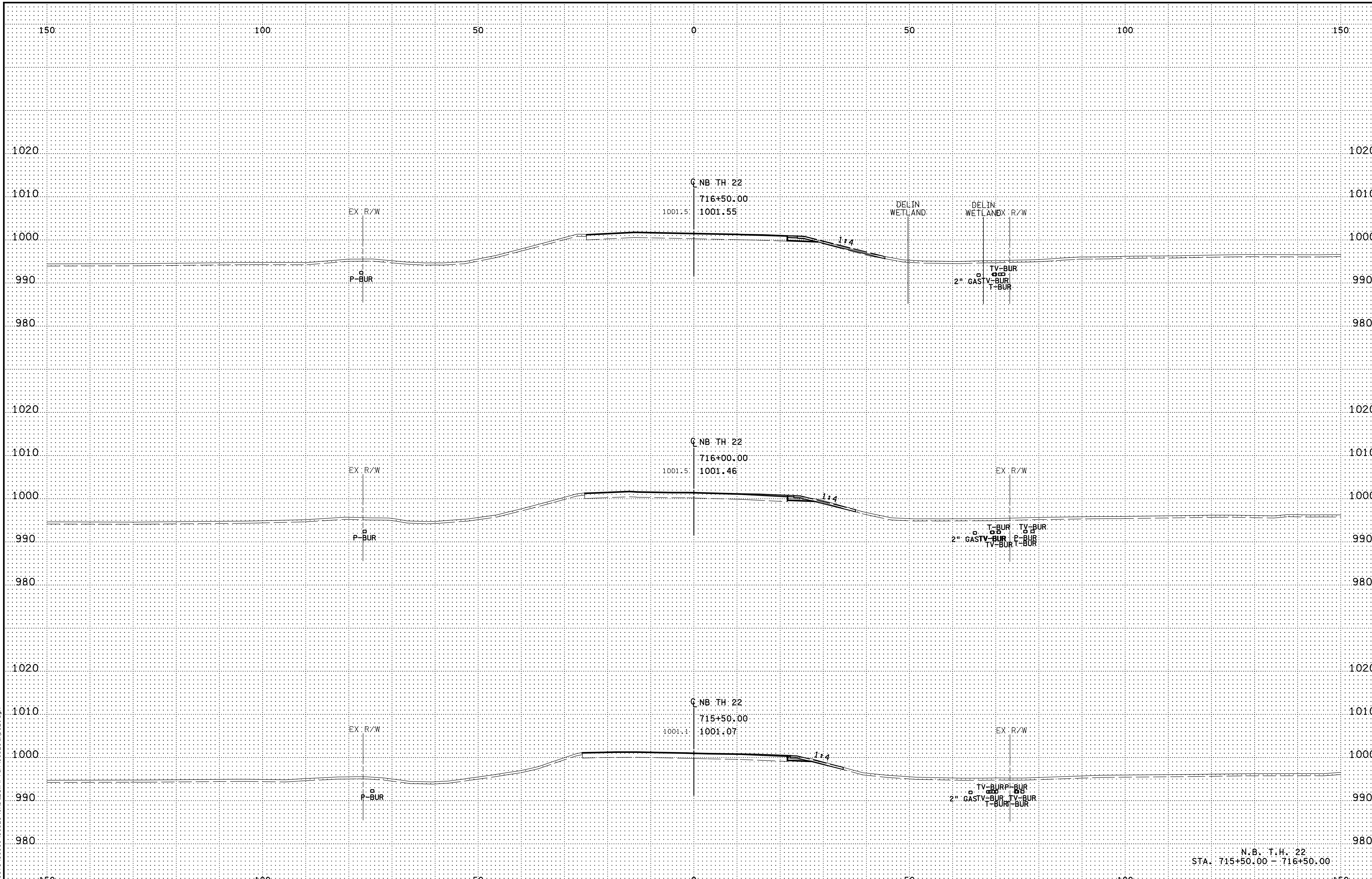

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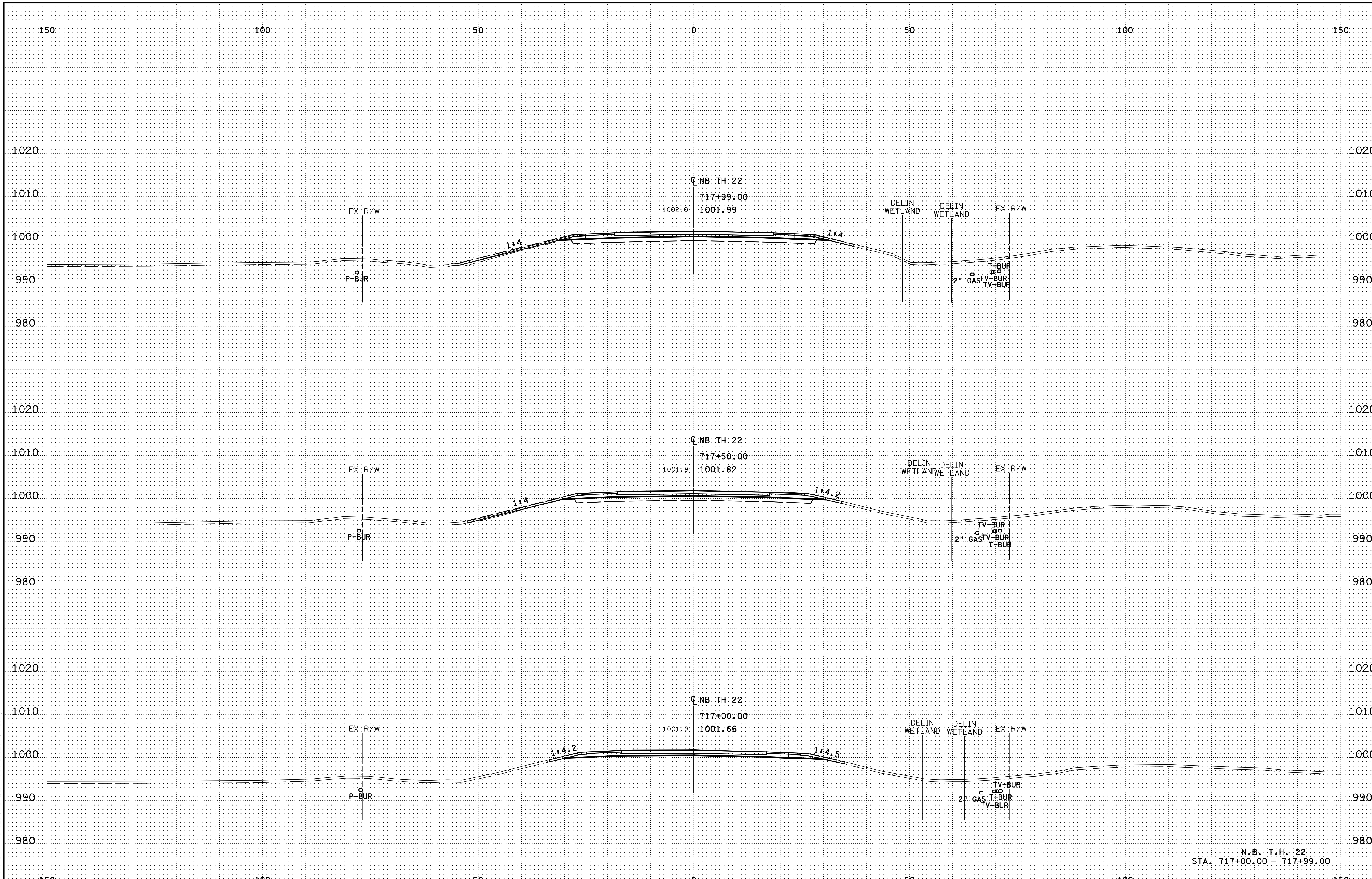

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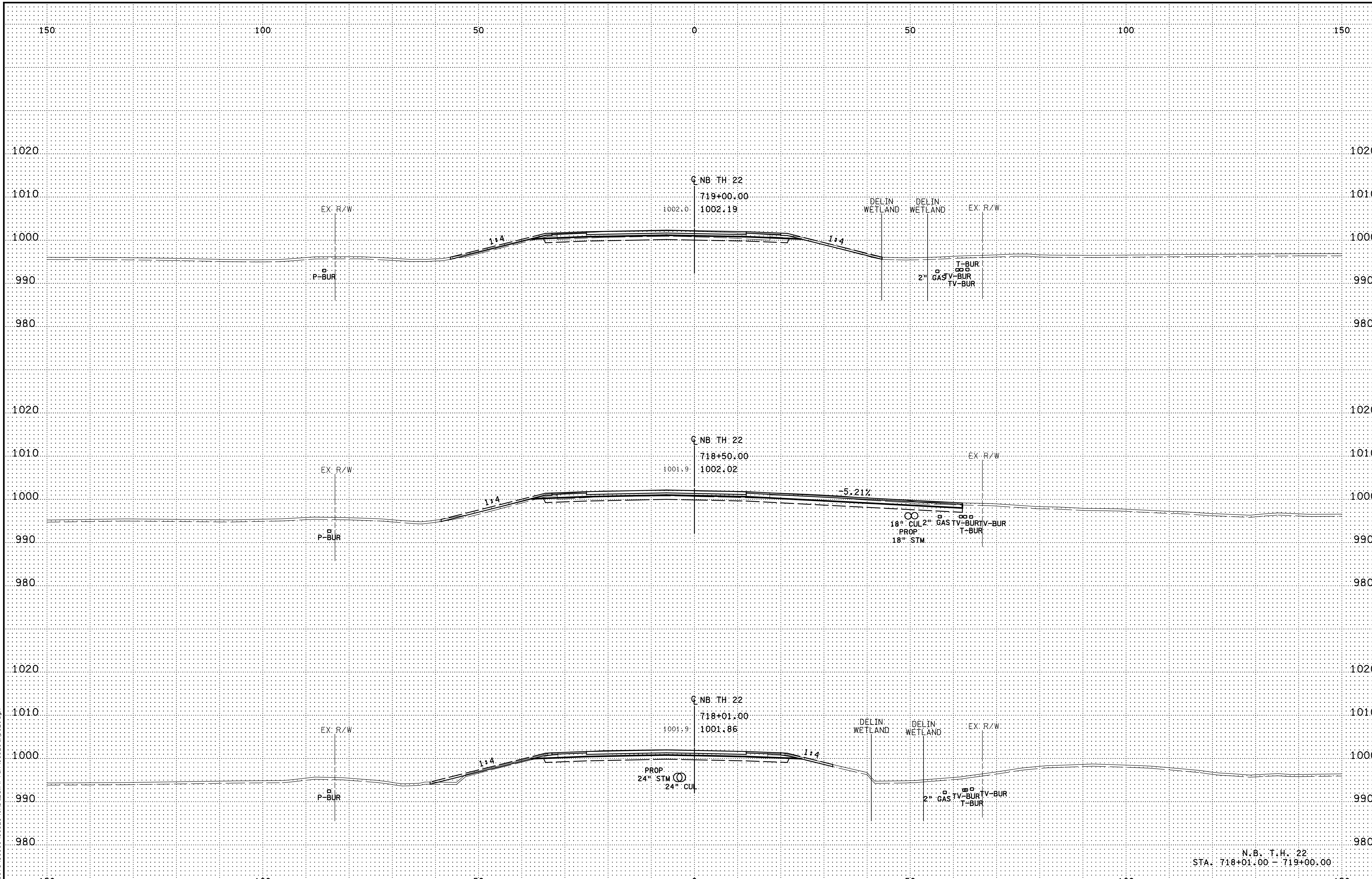

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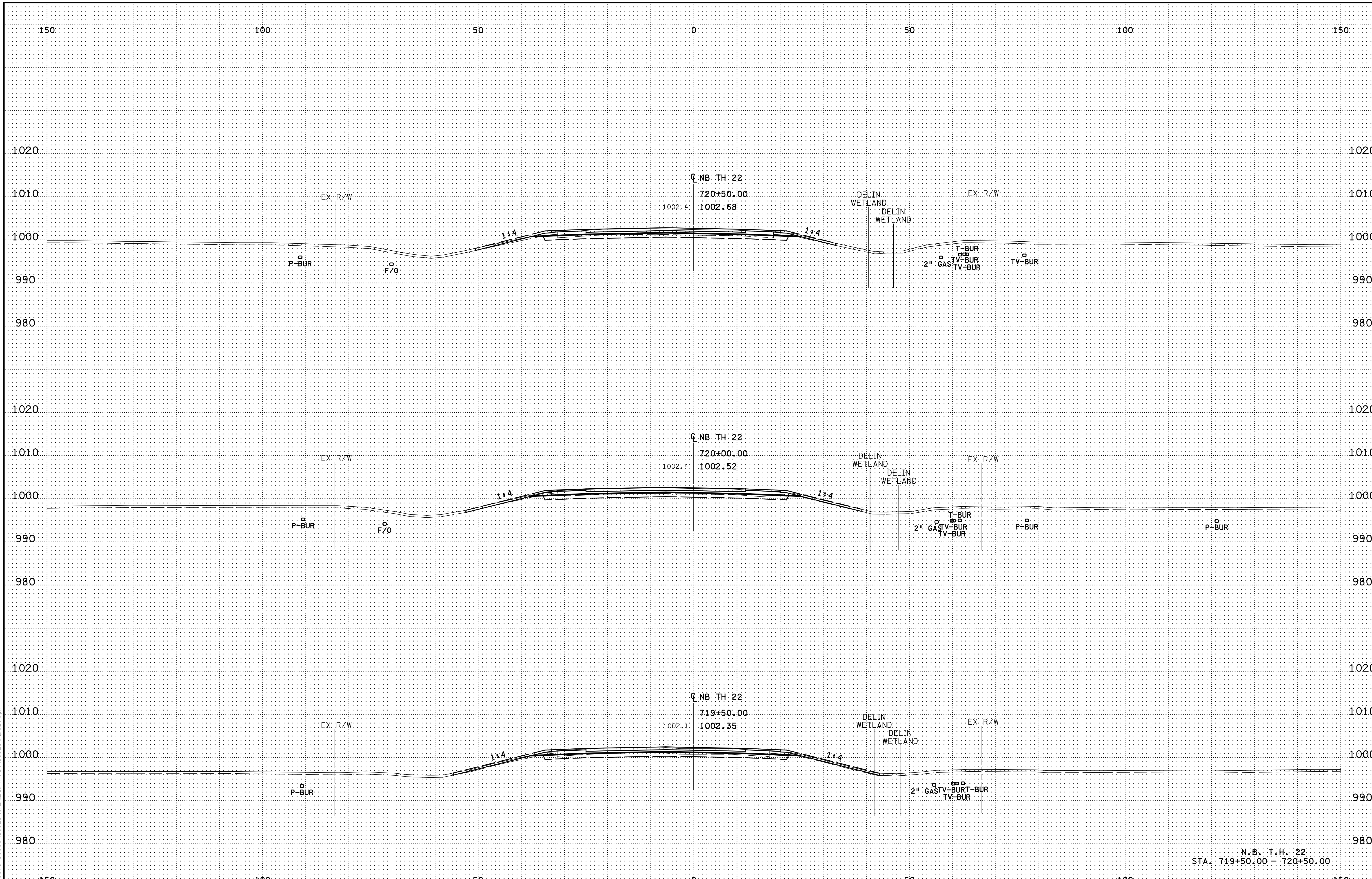

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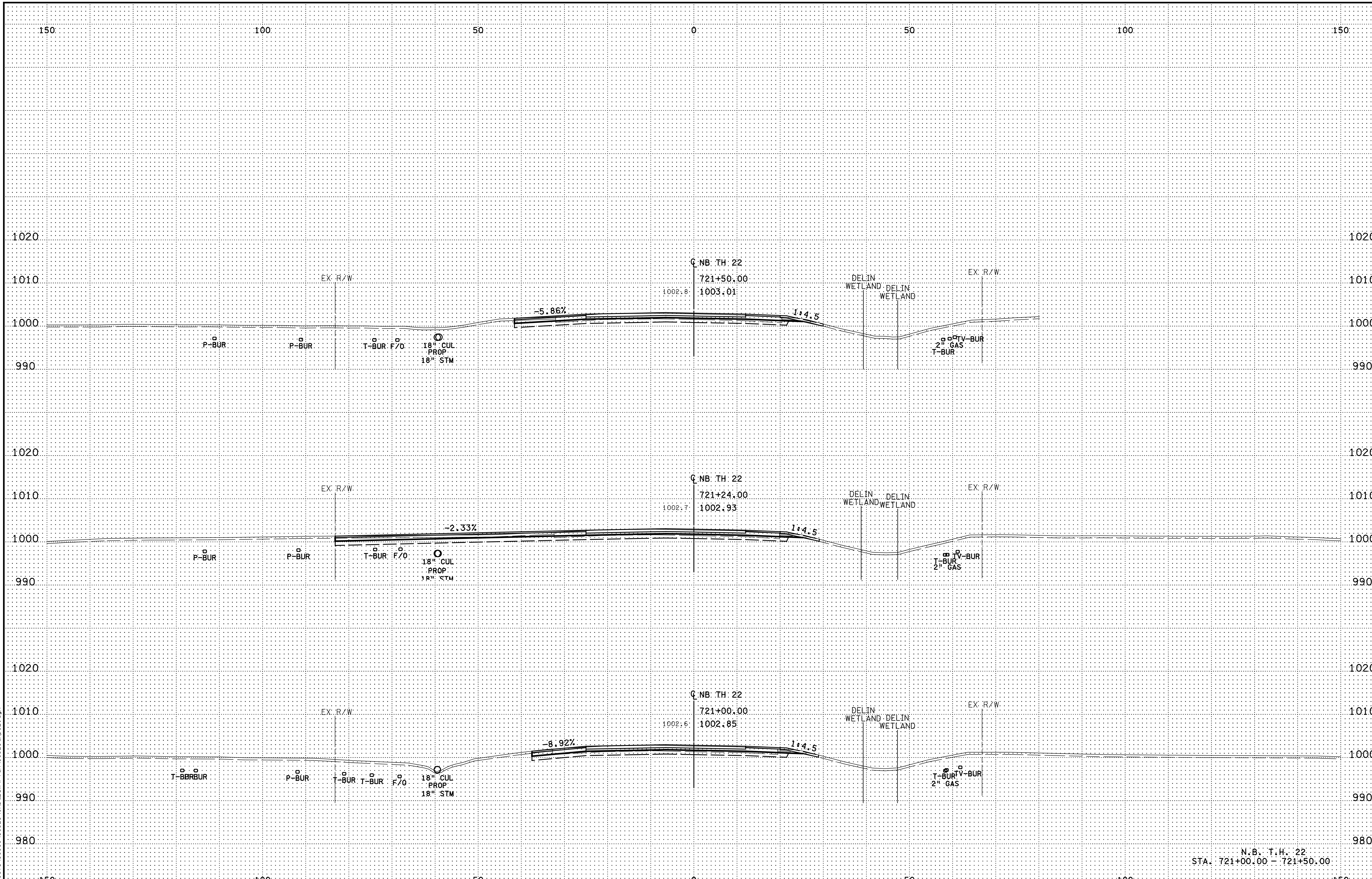

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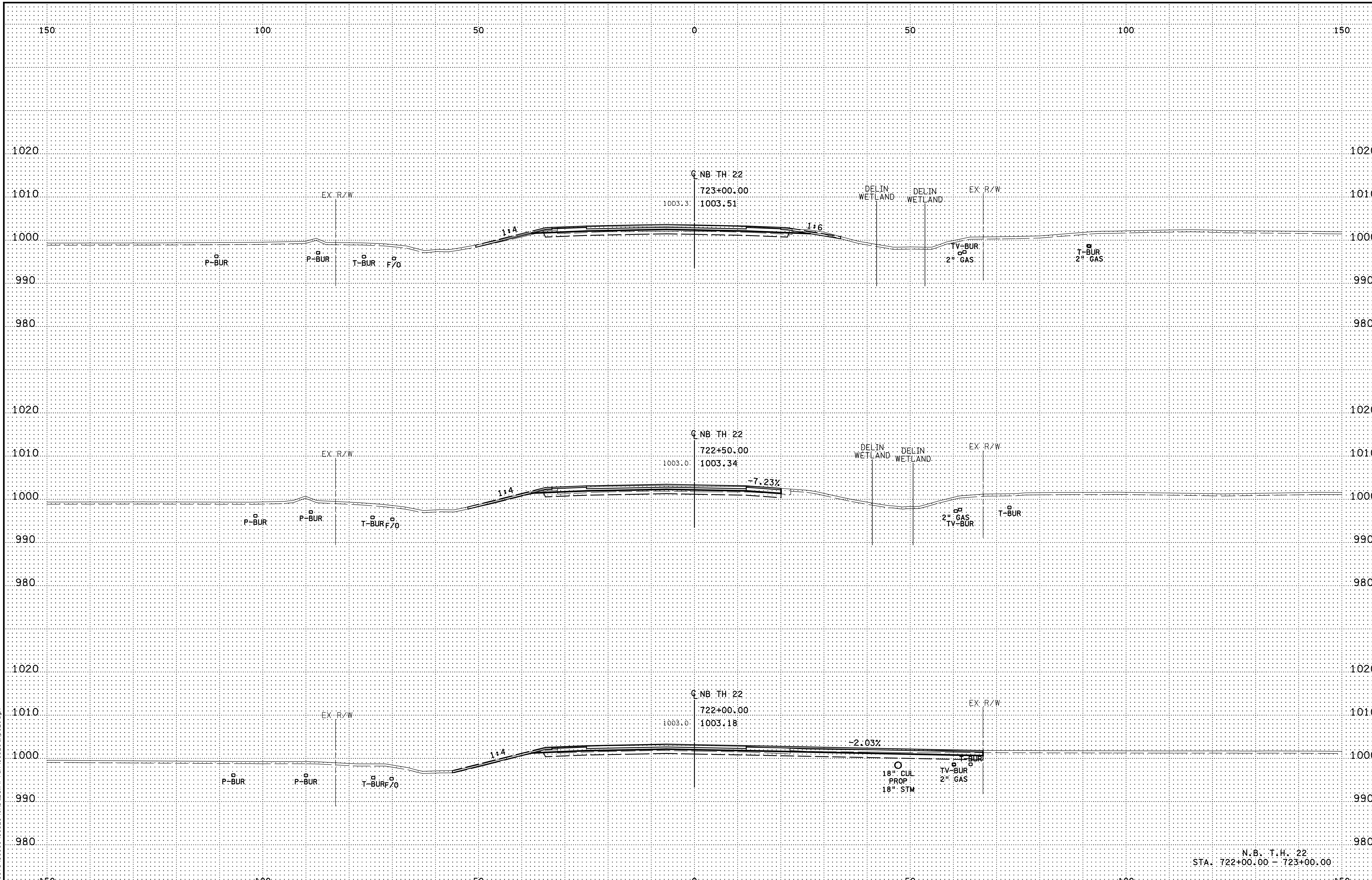

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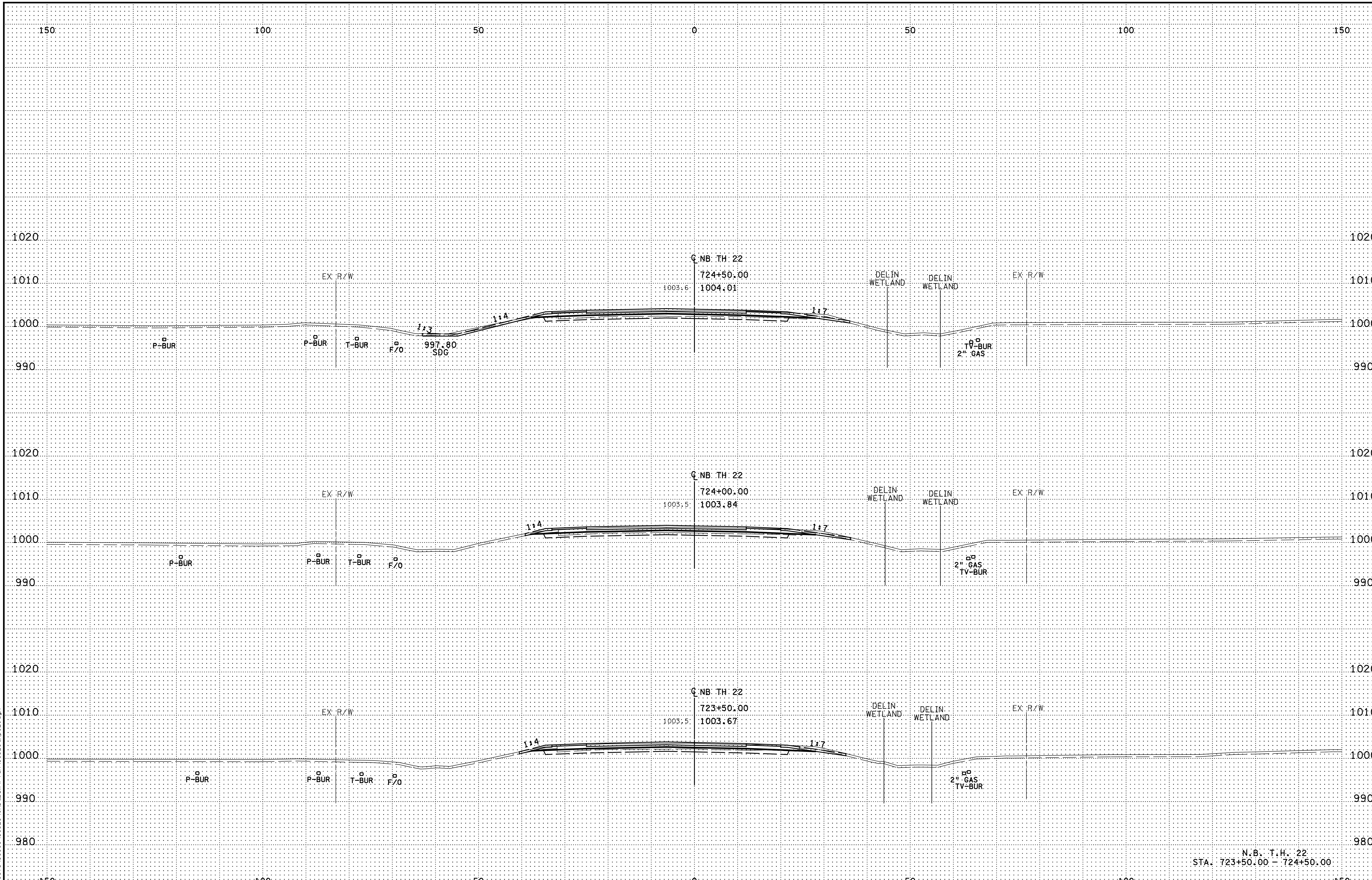

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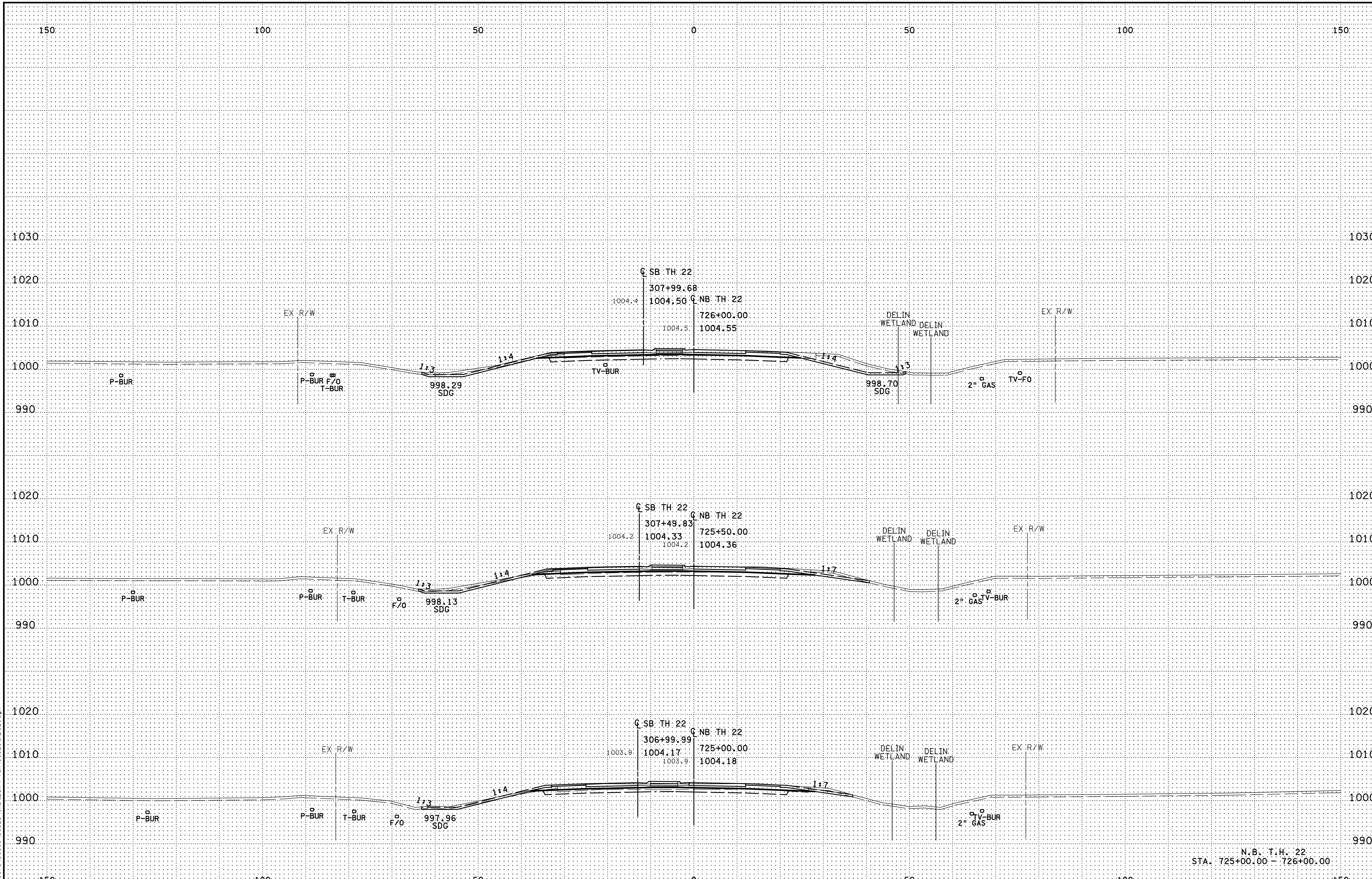

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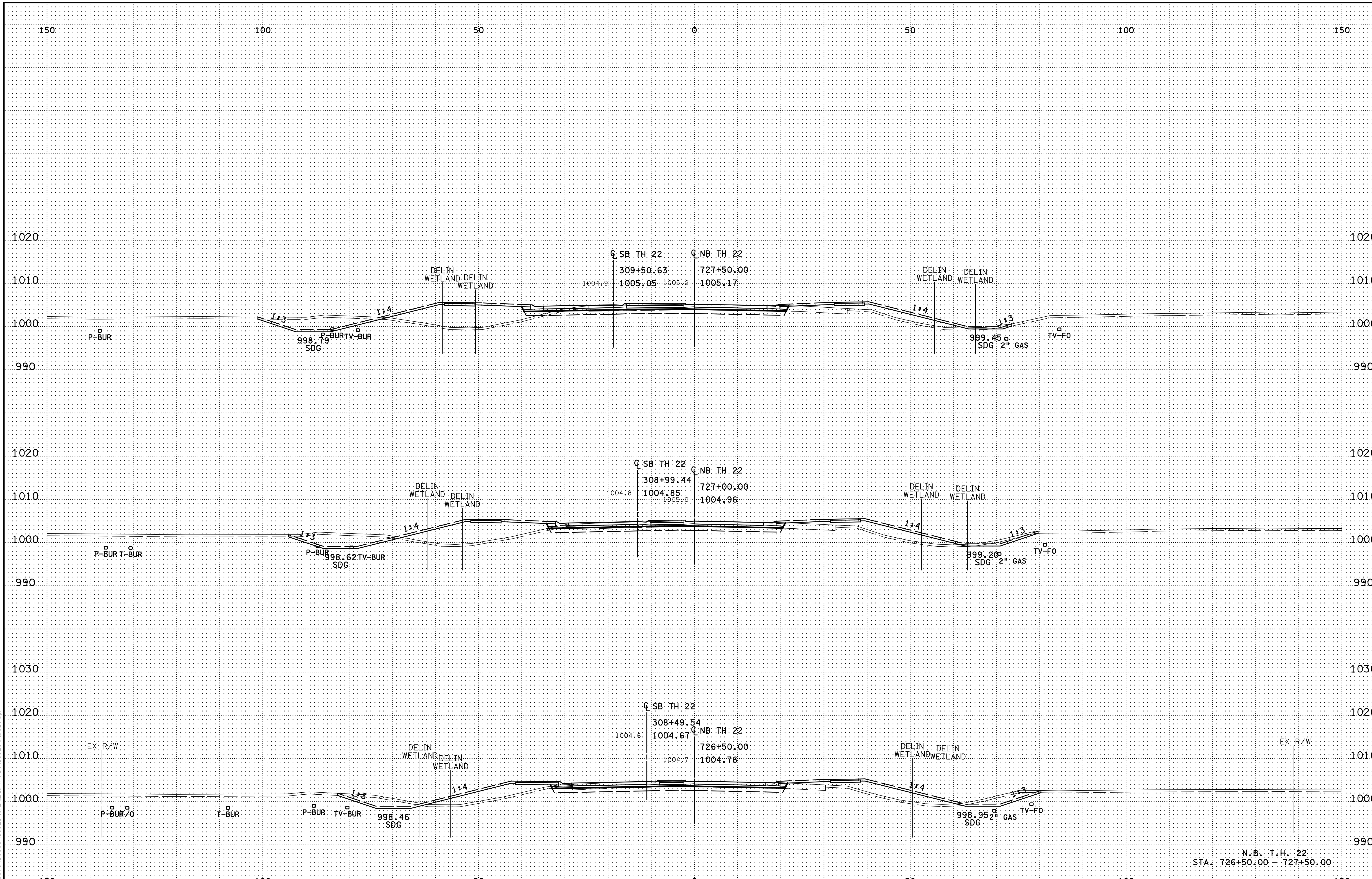

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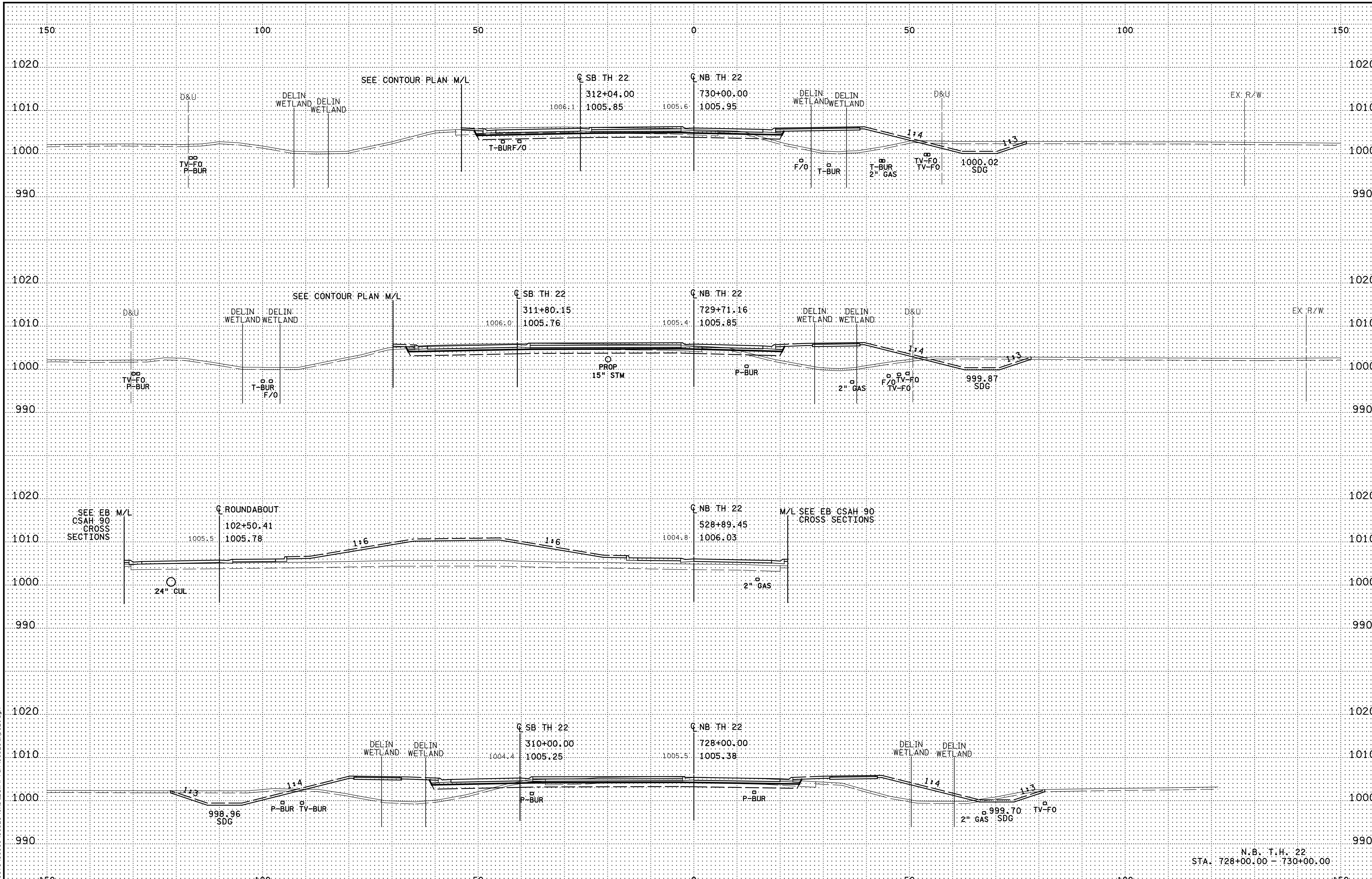

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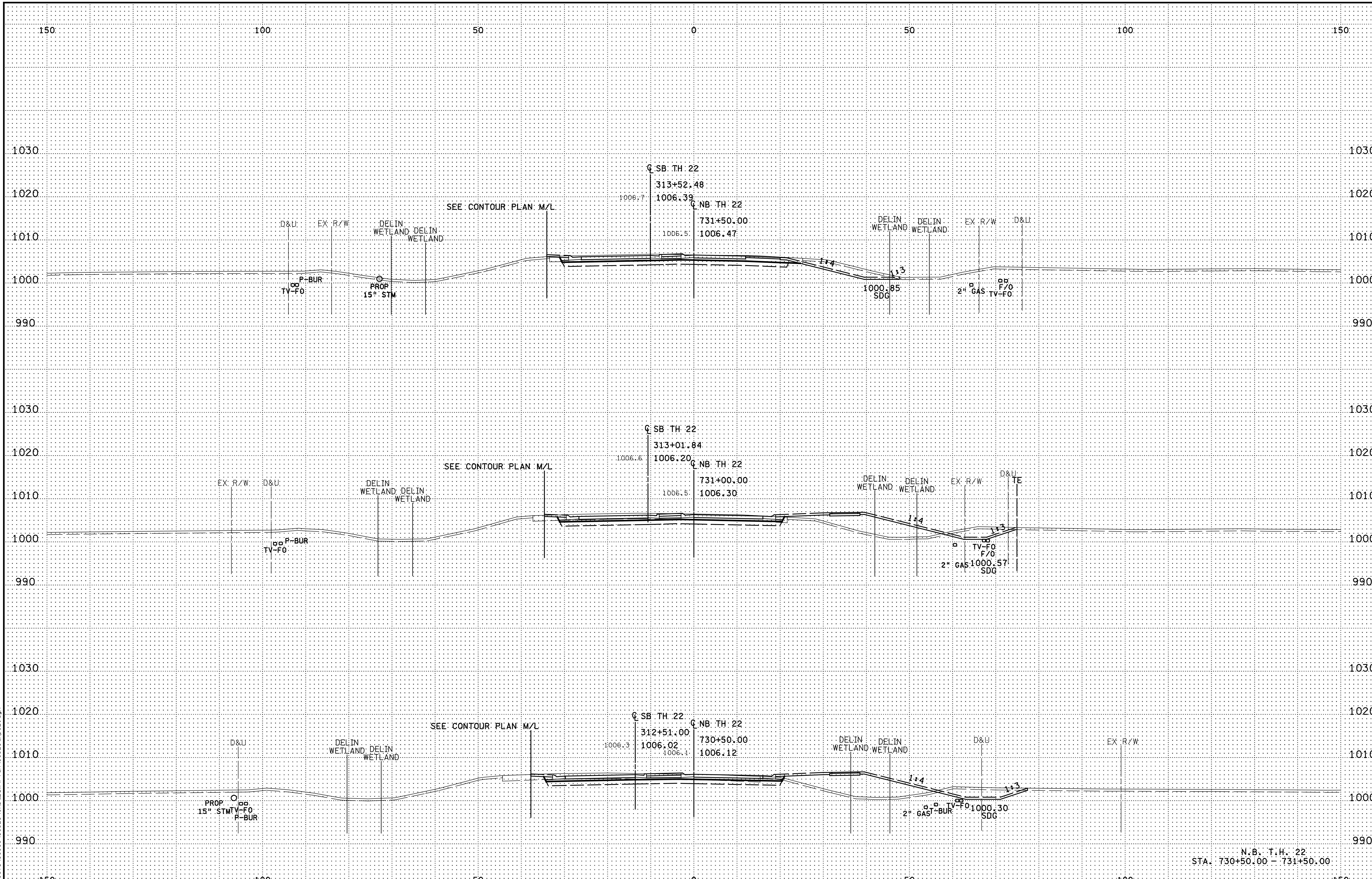

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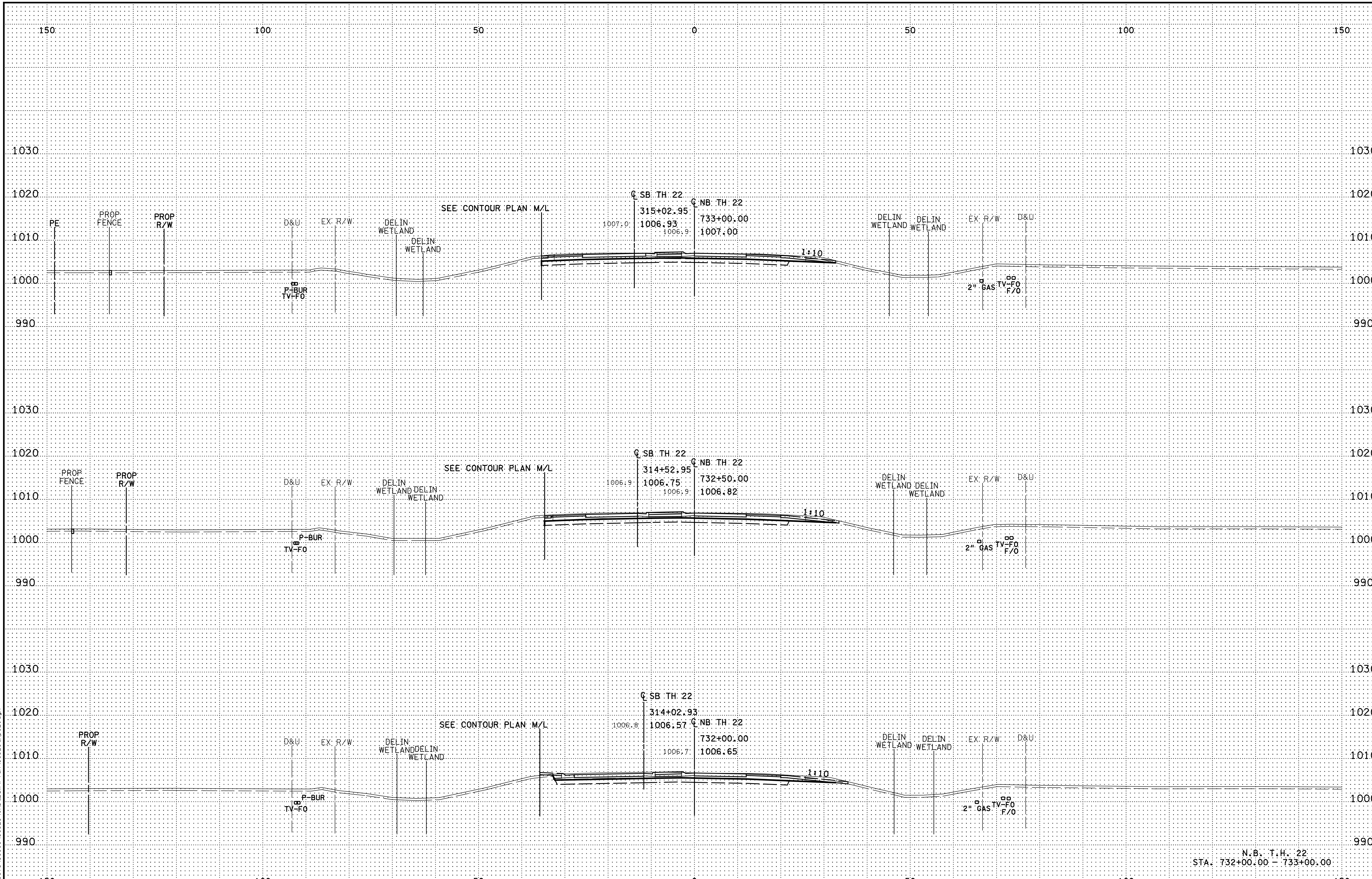

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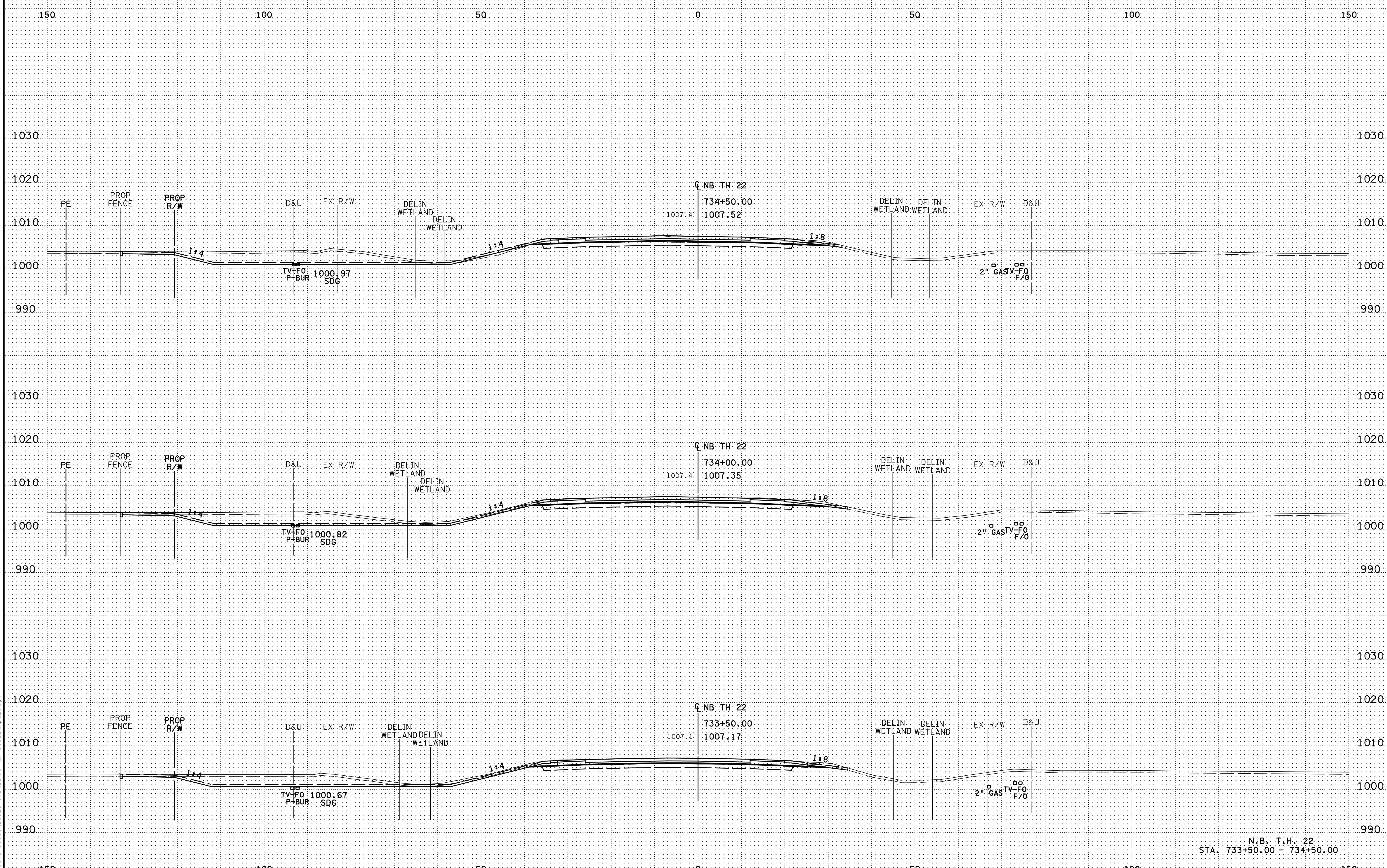

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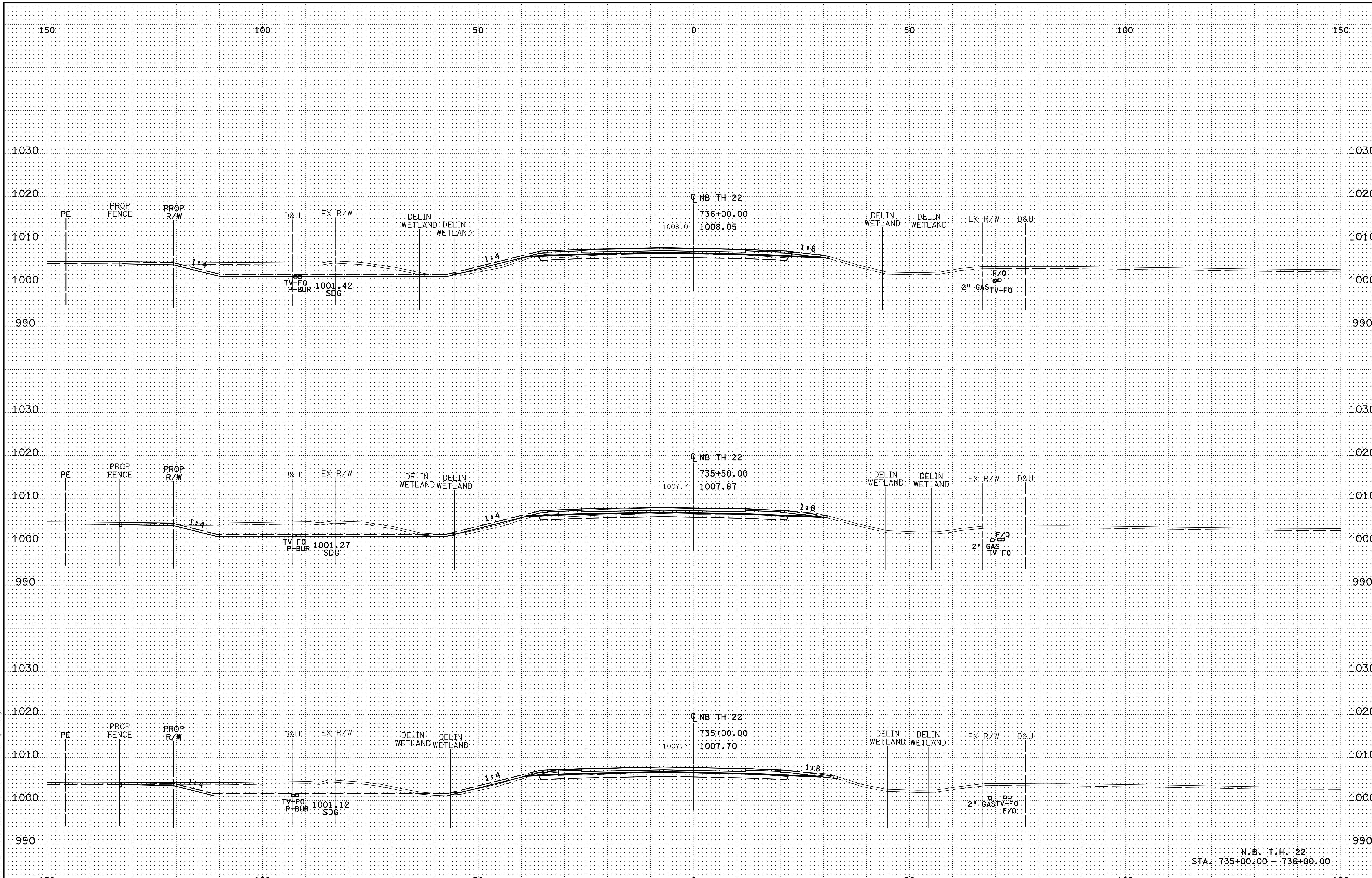
State Proj. No. 0704-108, 007-070-005 | Sheet No. 237 of 255 Sheets



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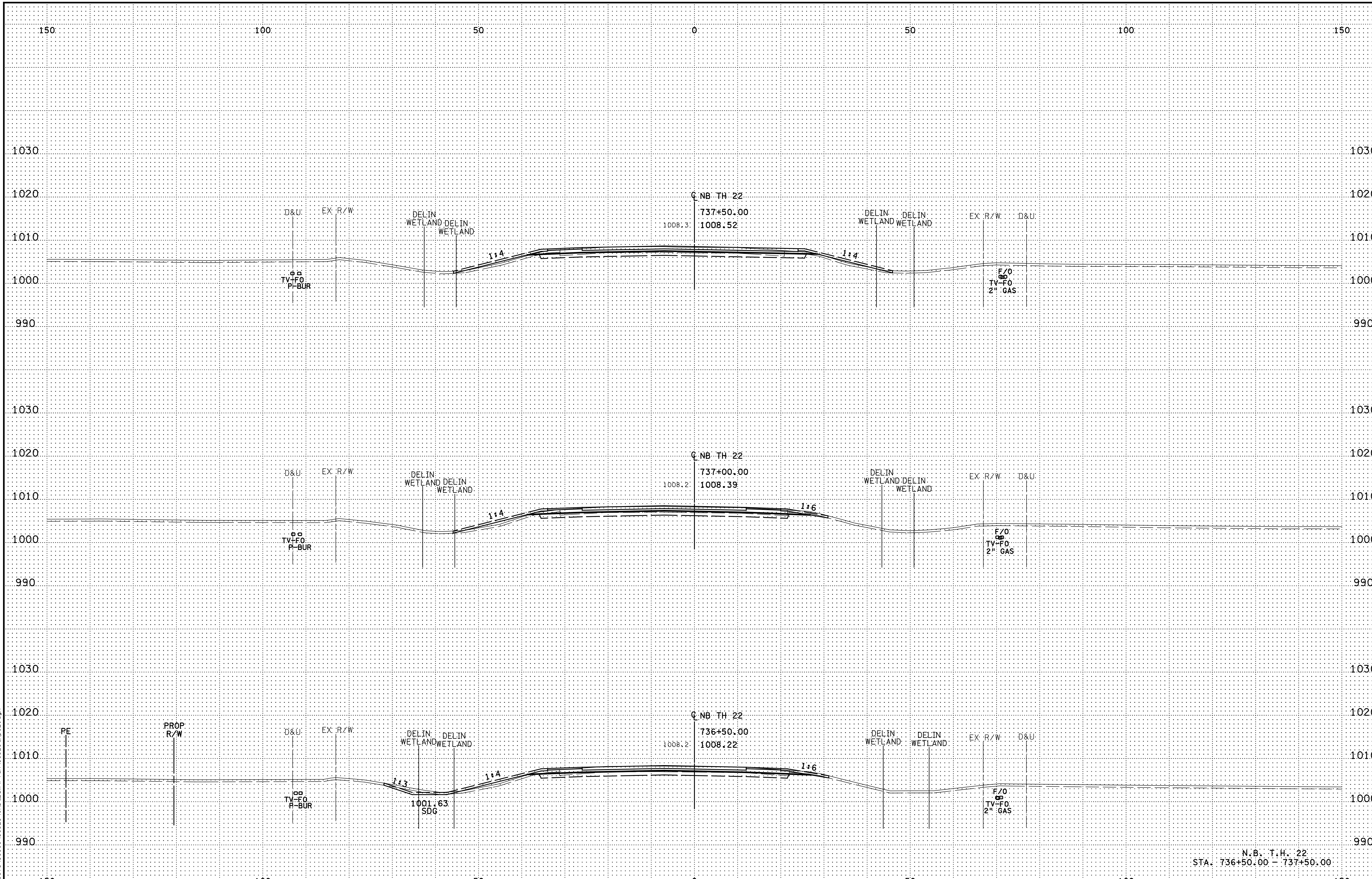

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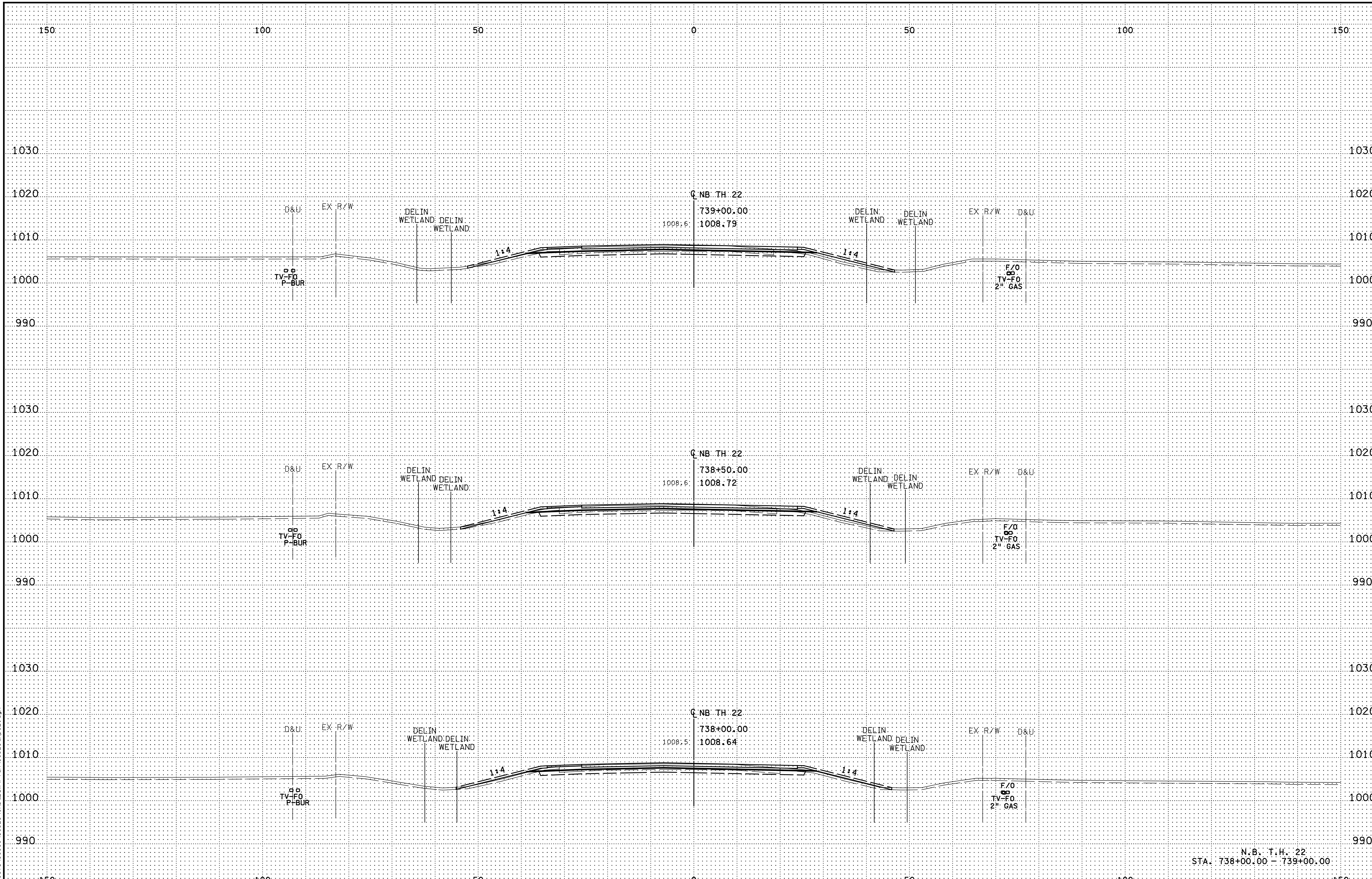

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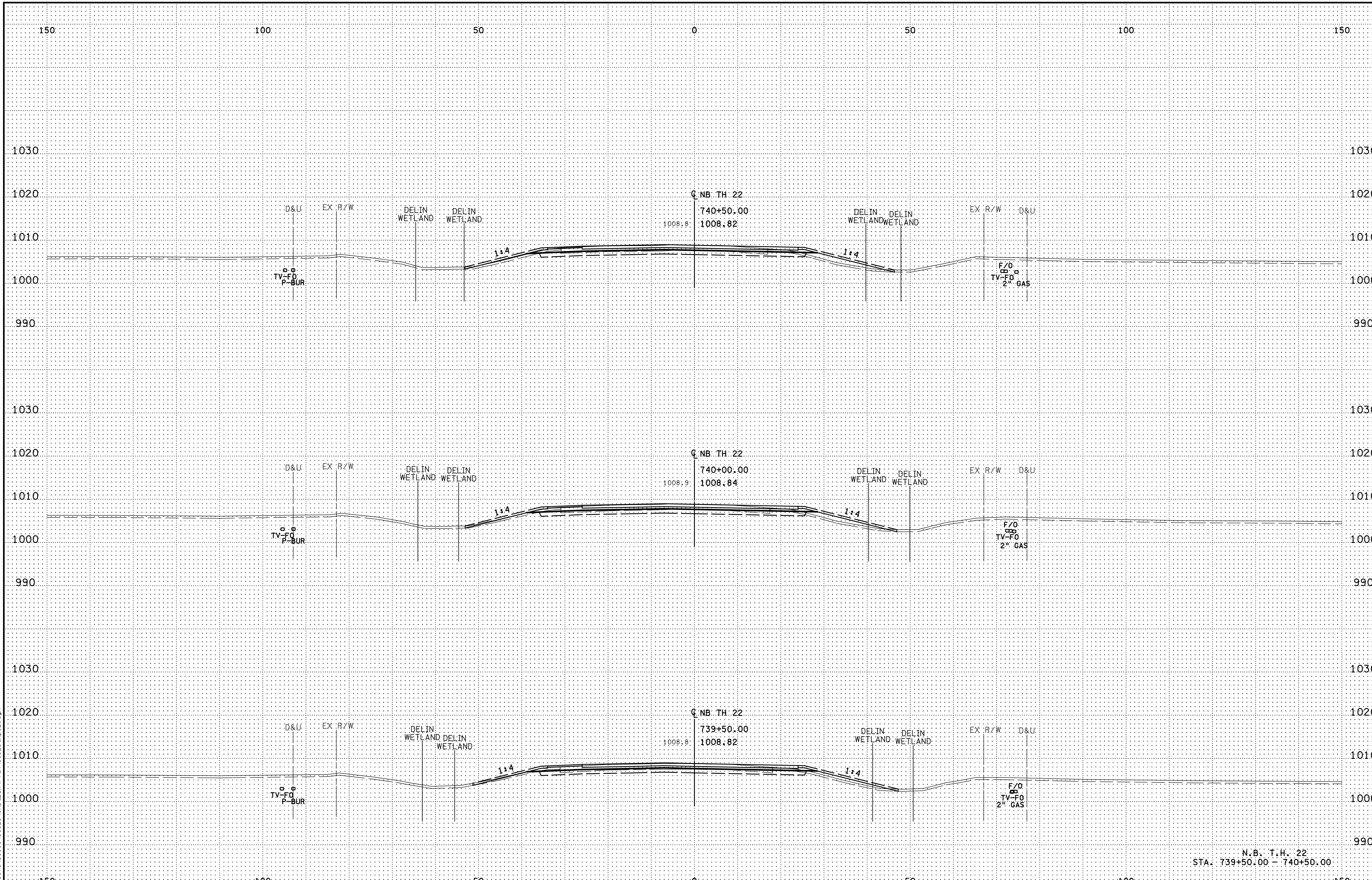

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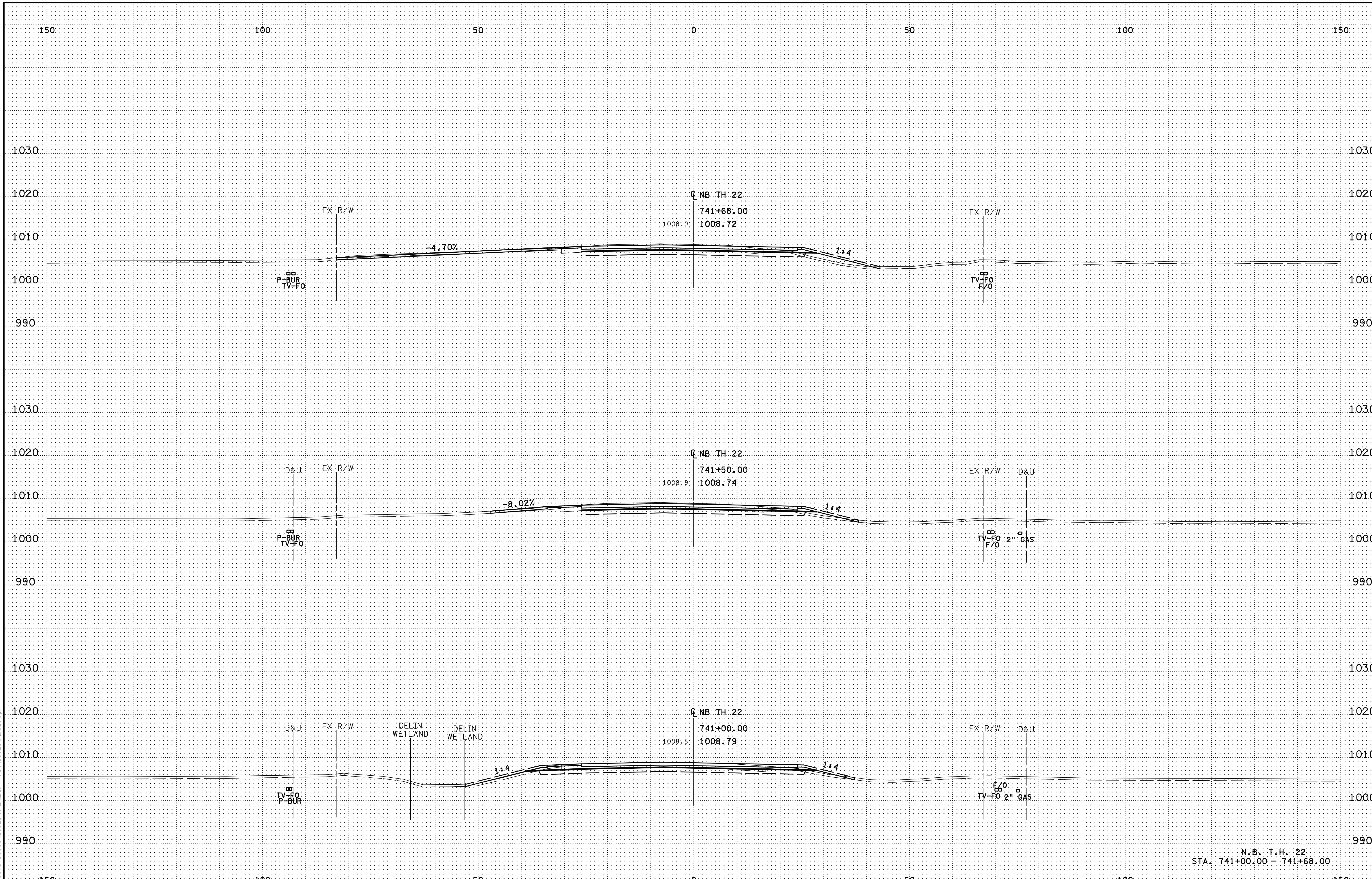

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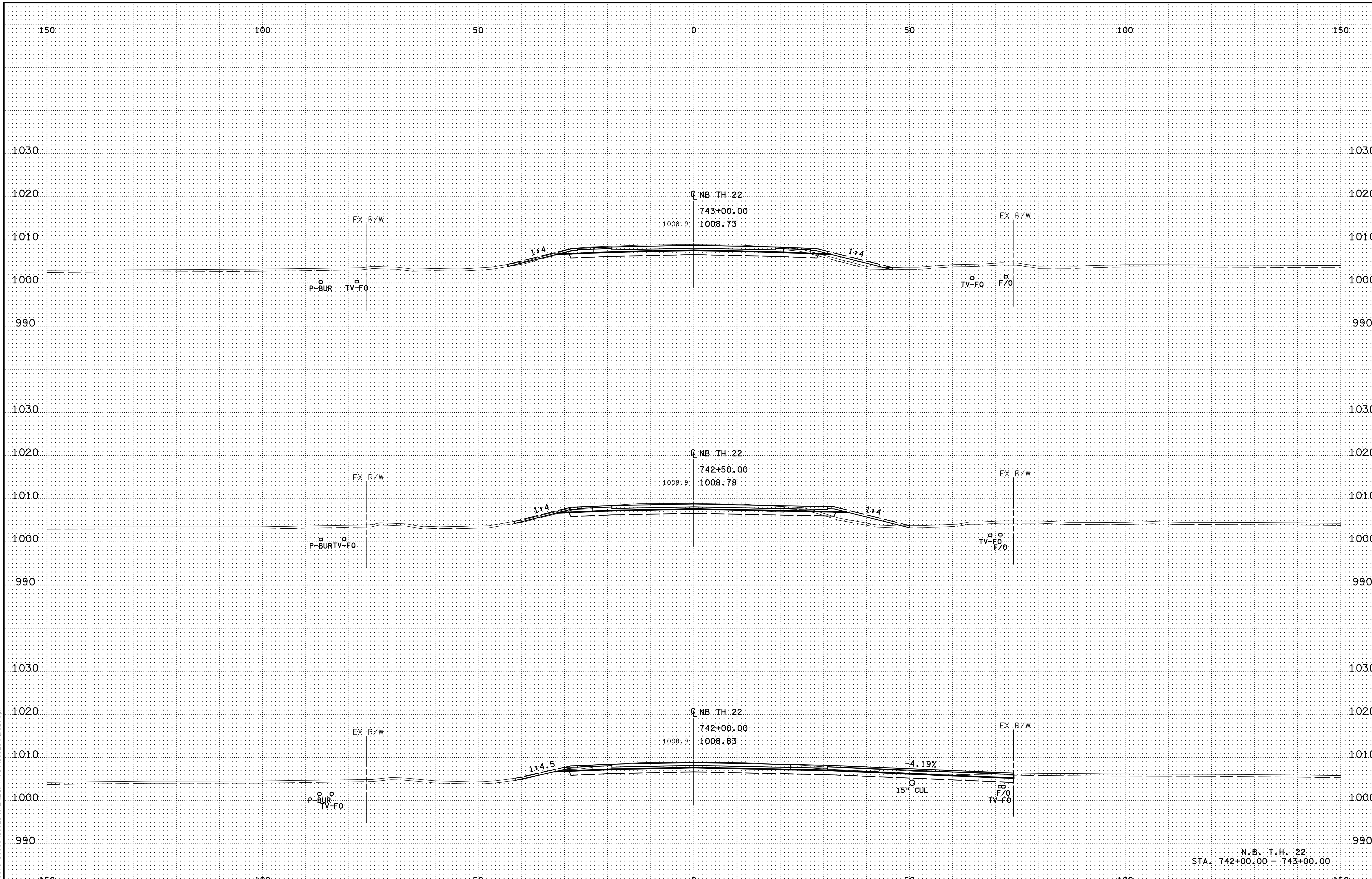

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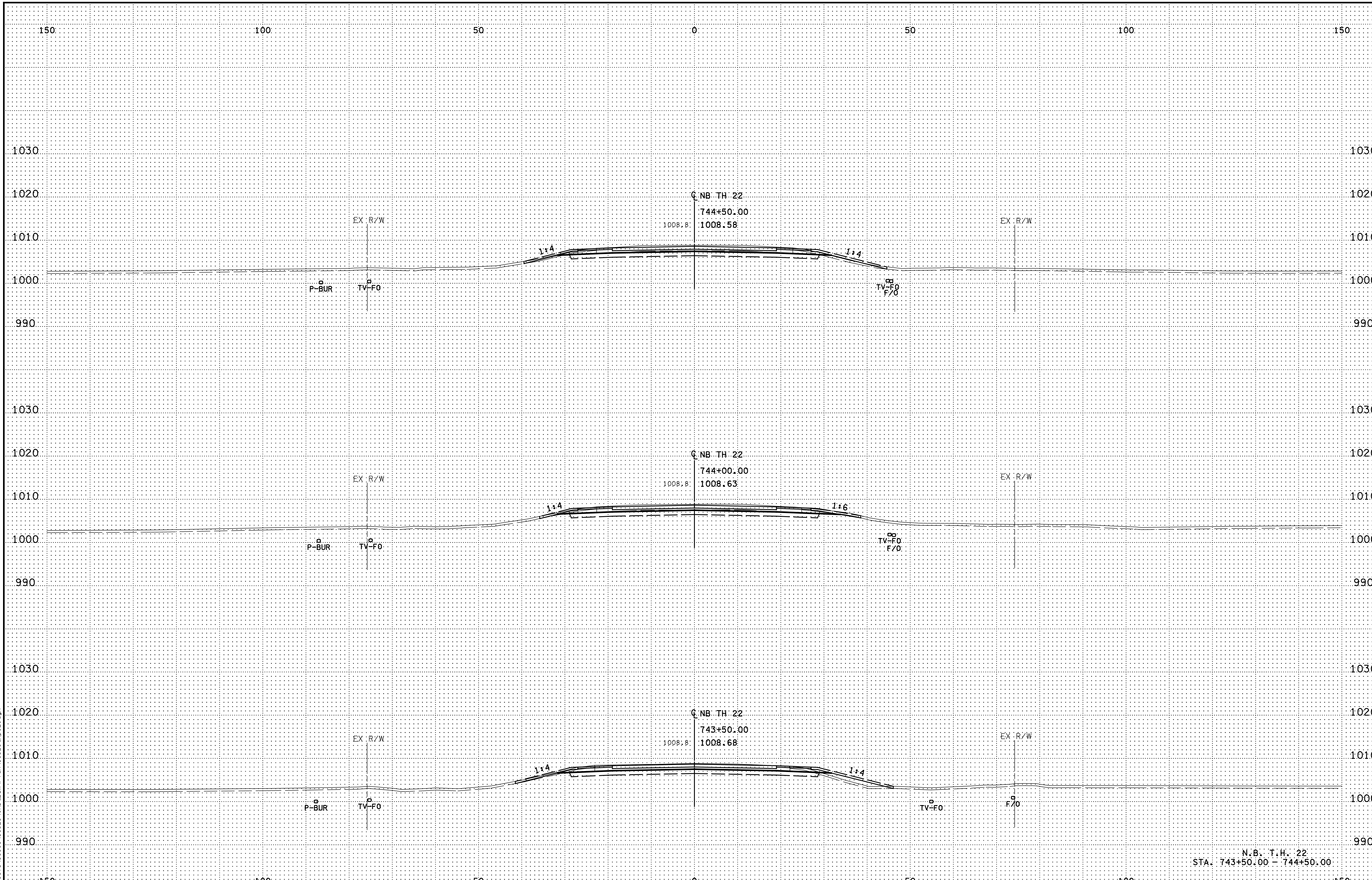

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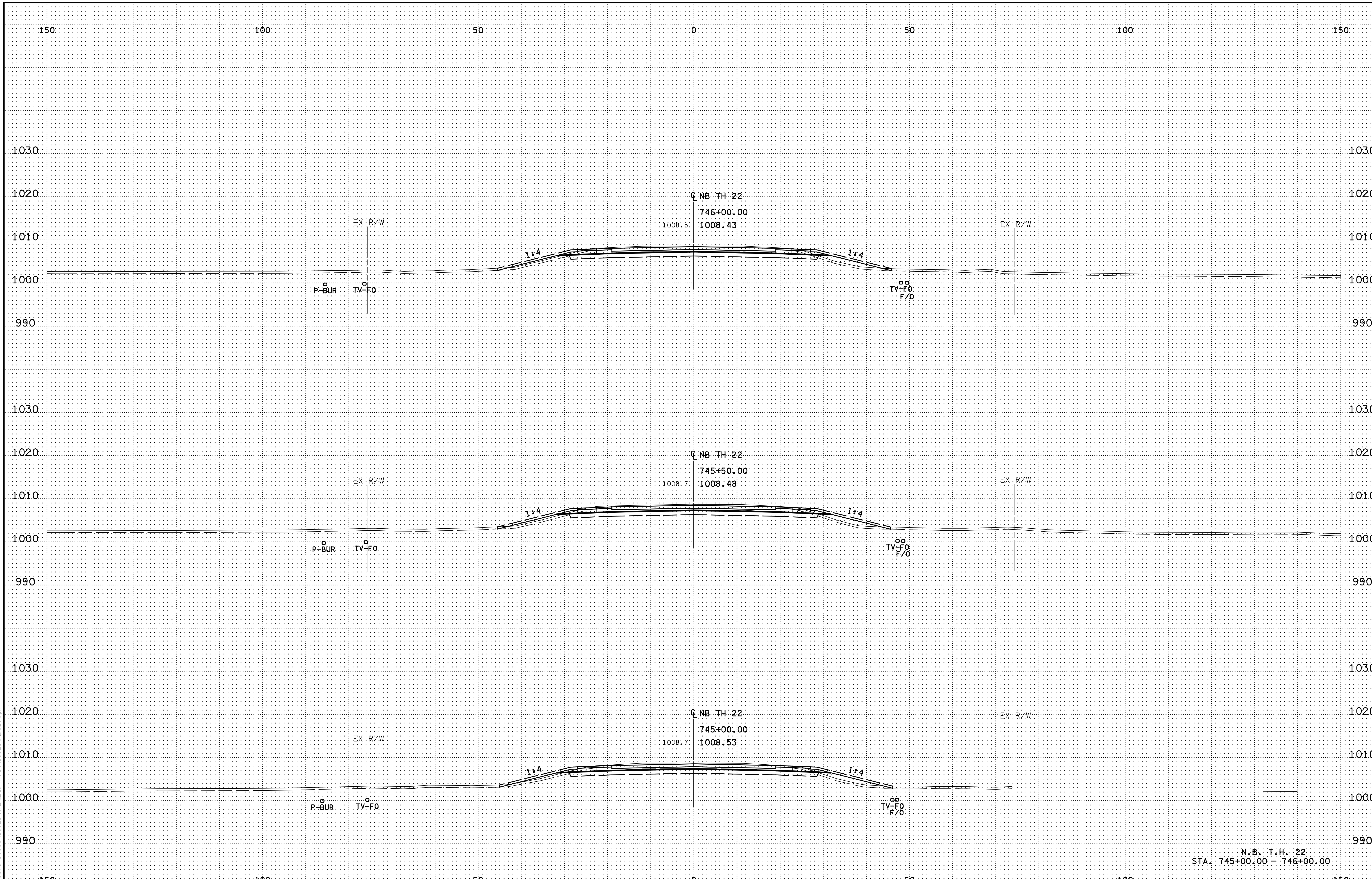

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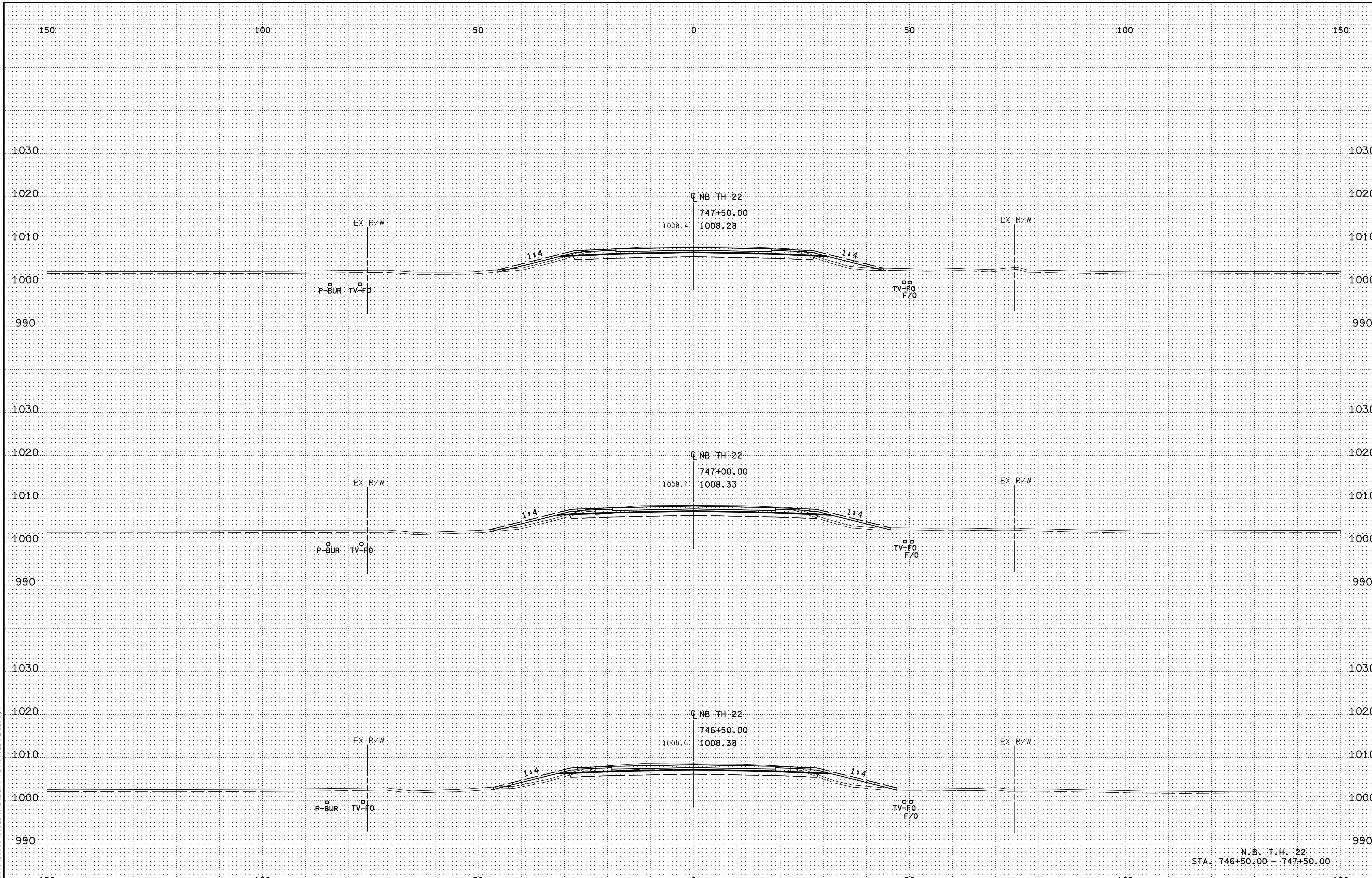

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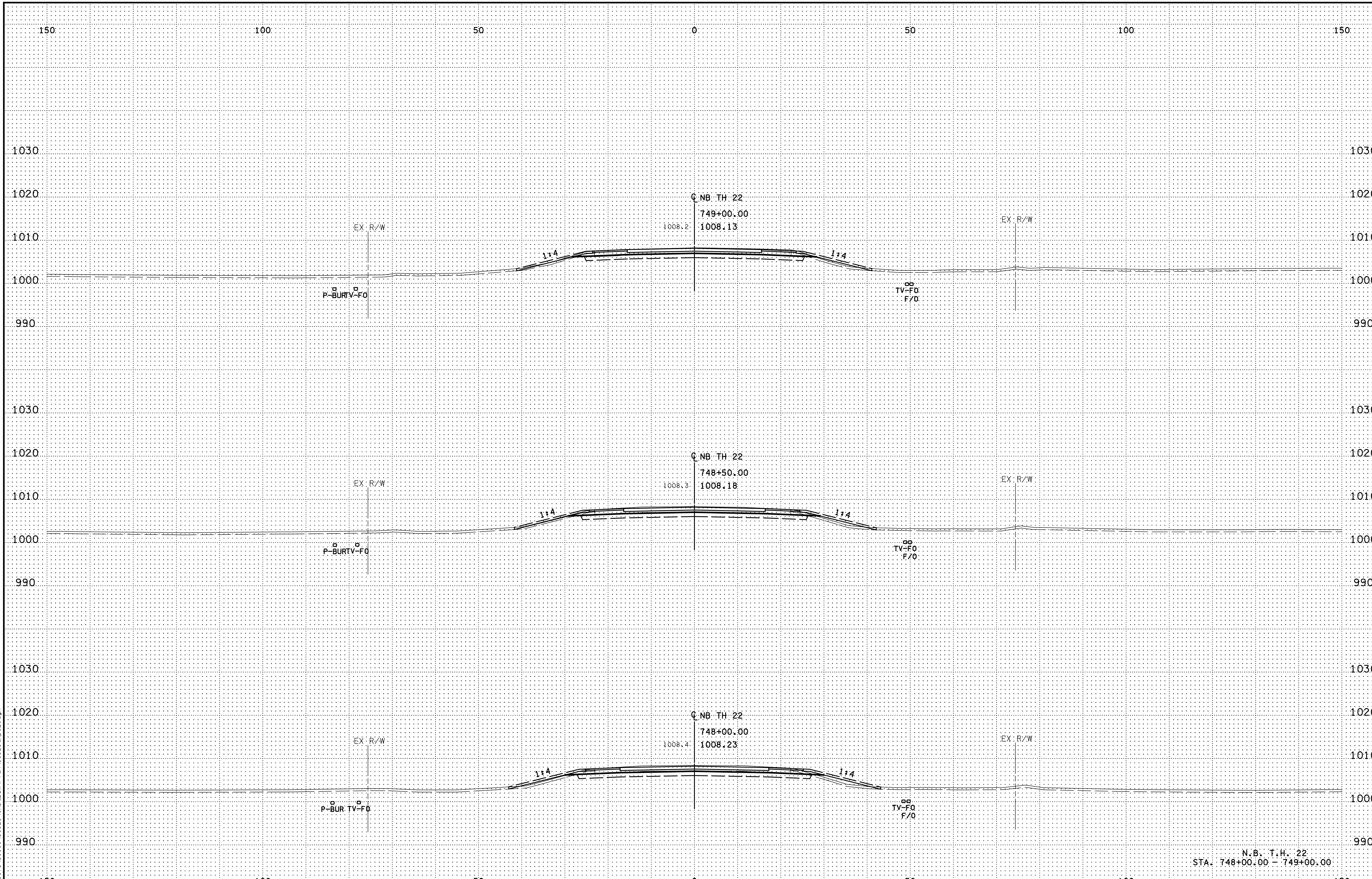

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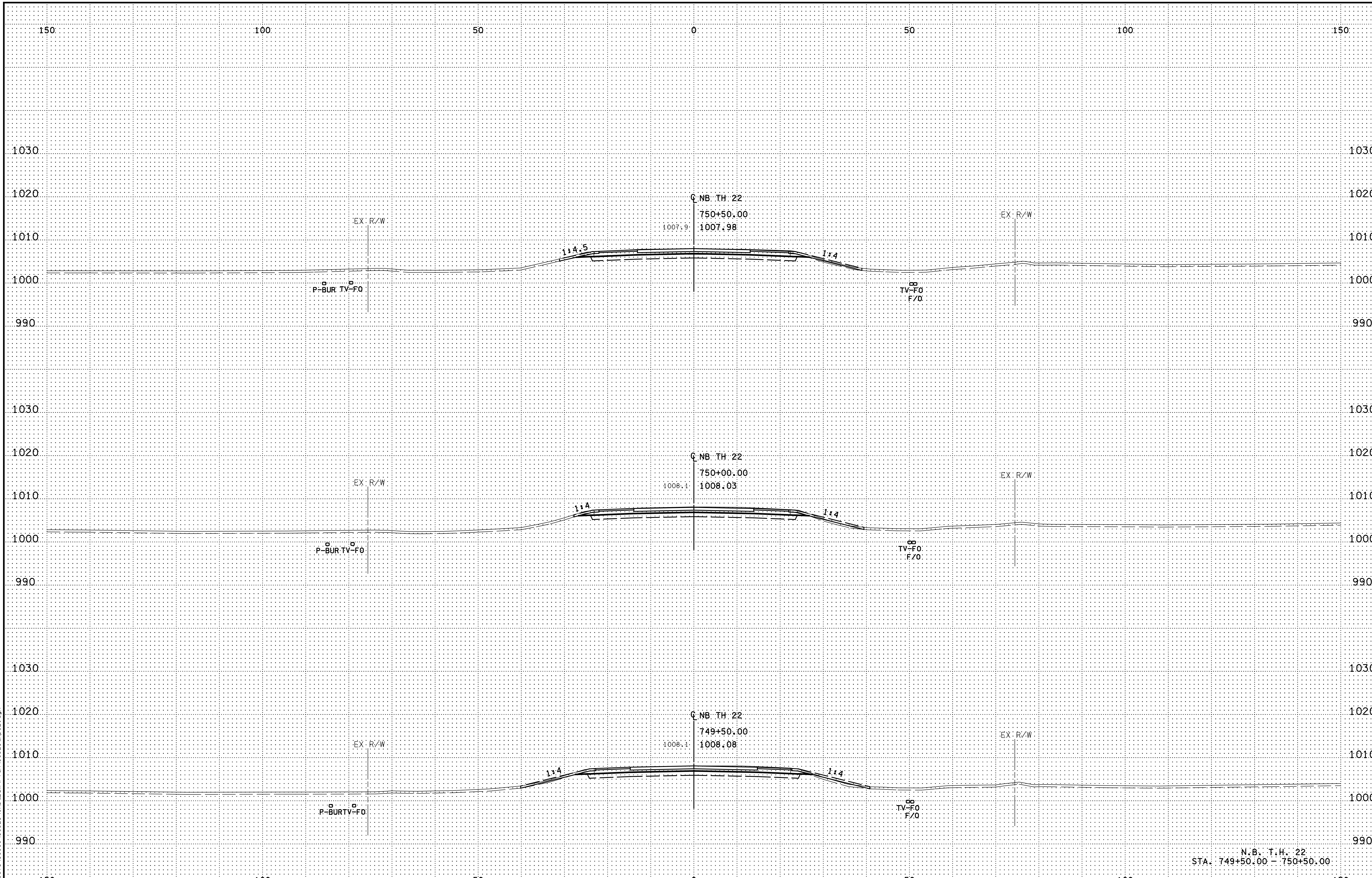

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F/O
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1:4
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F/O
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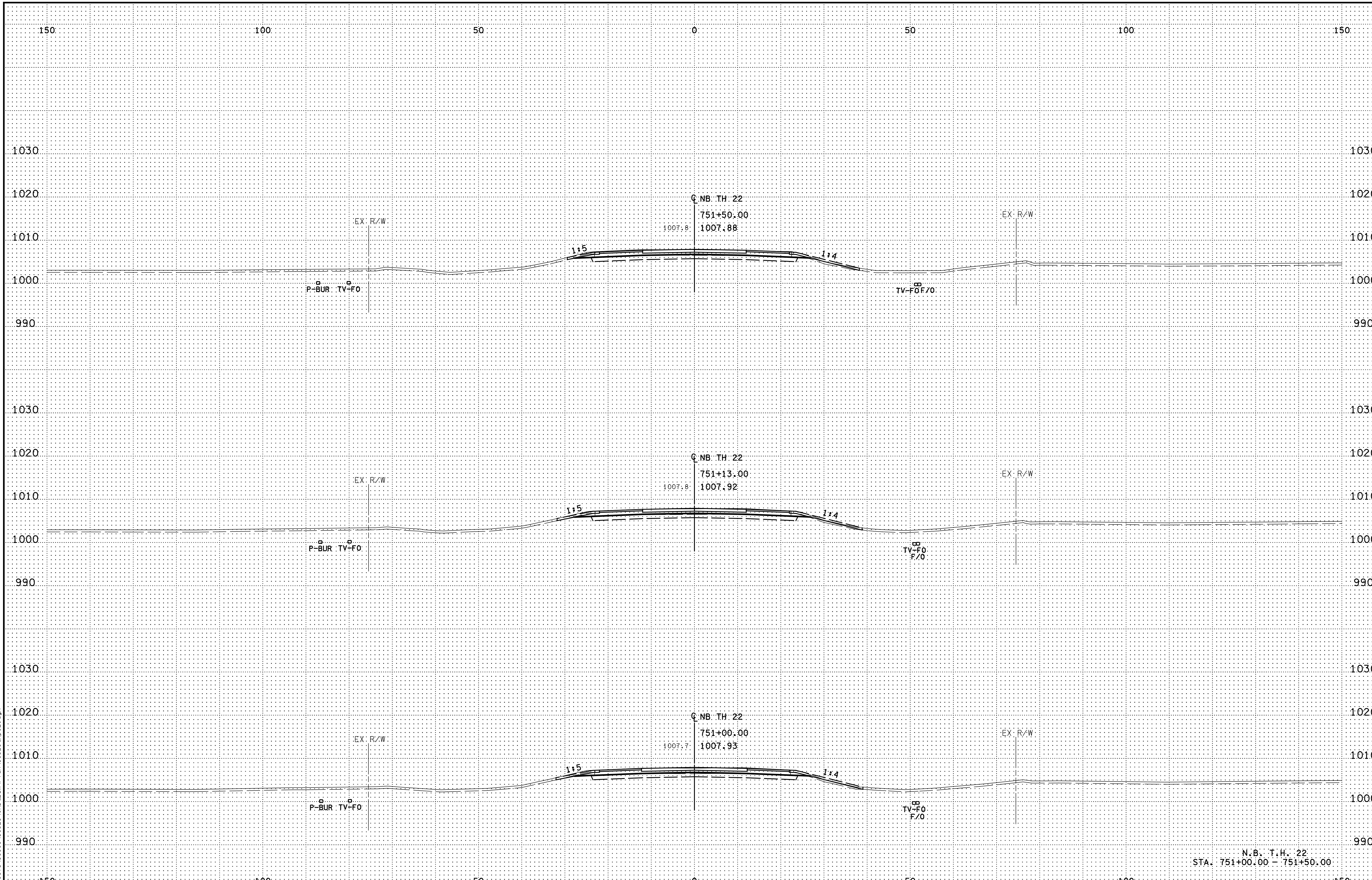

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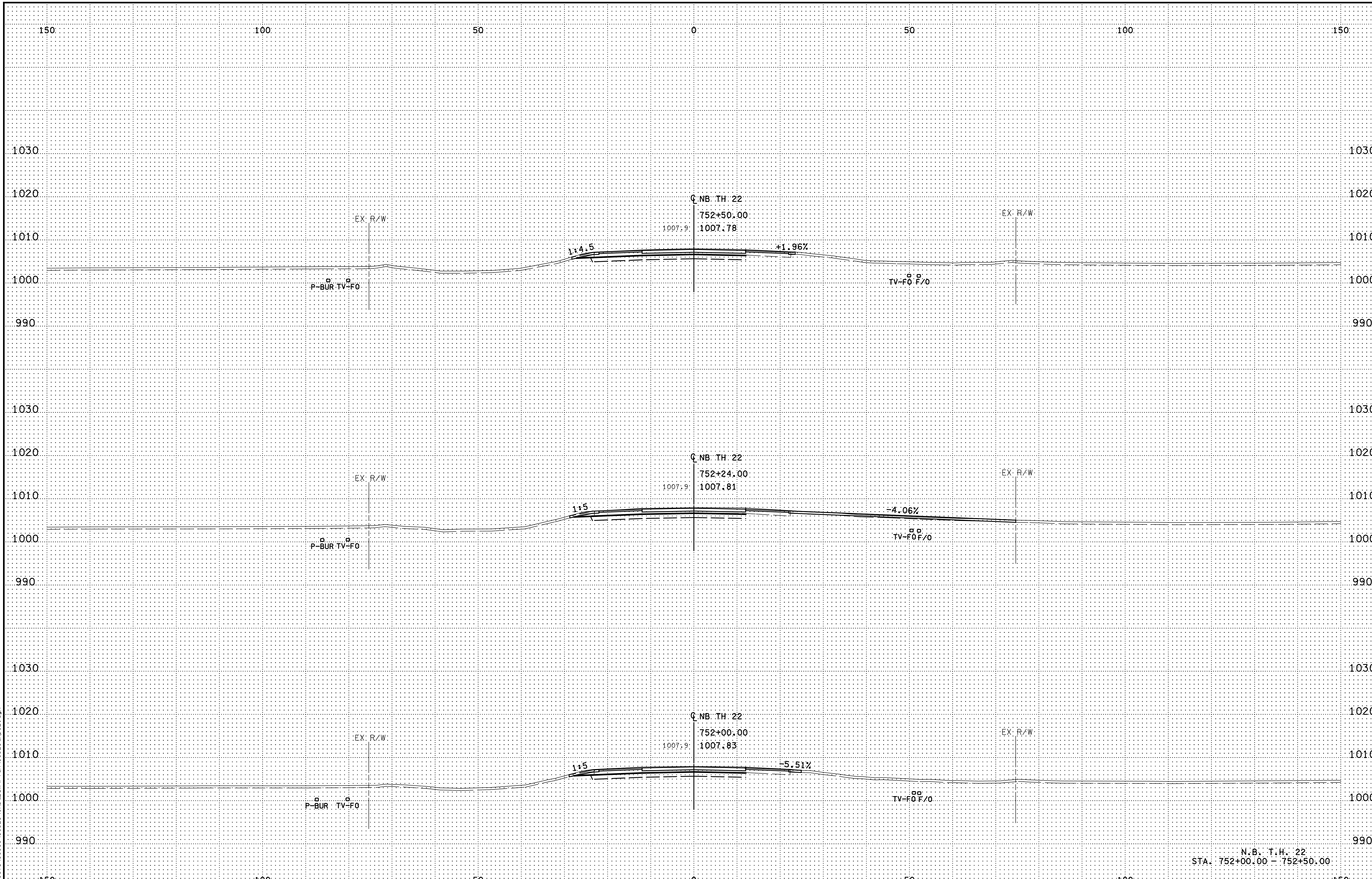

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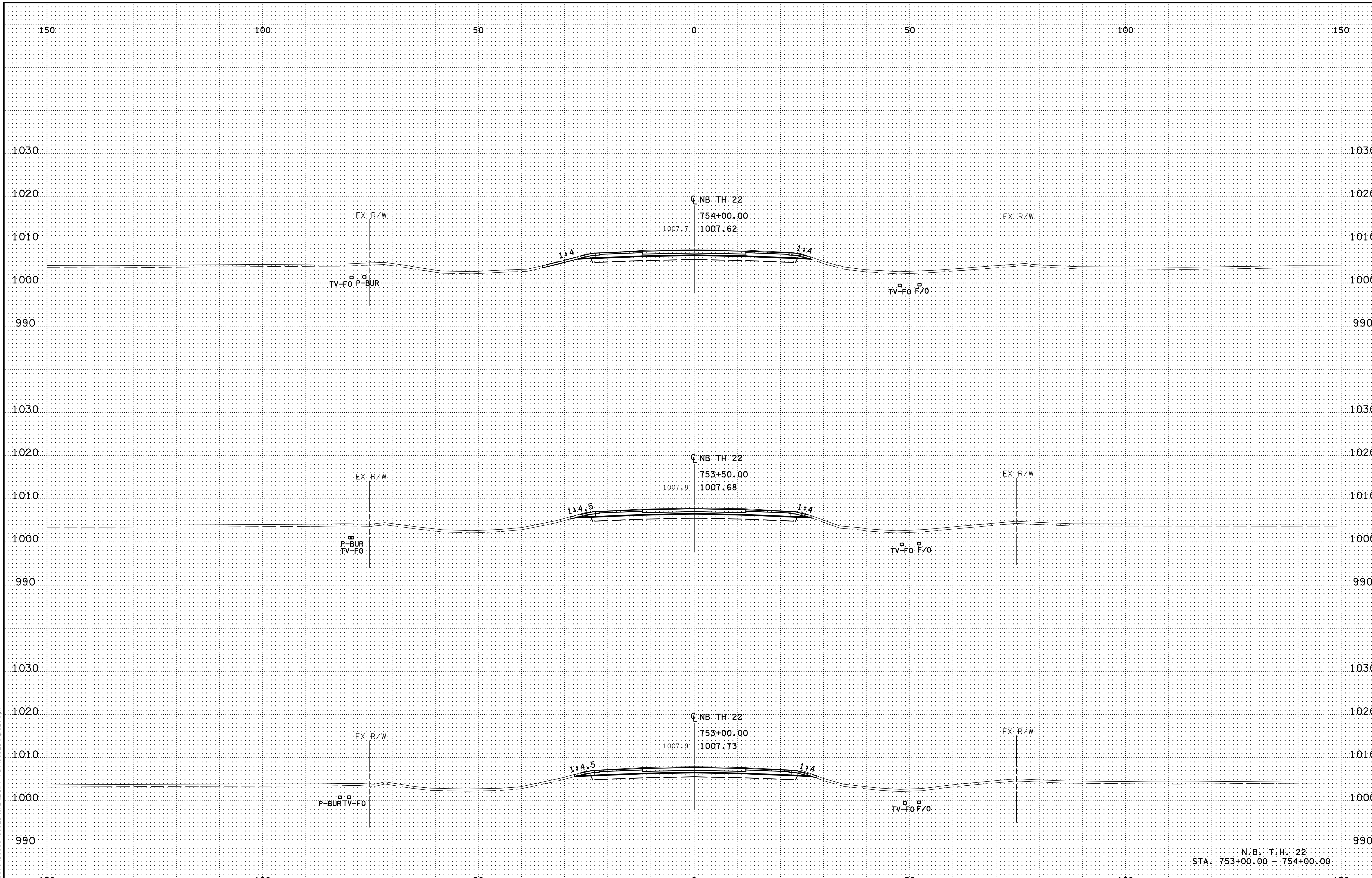

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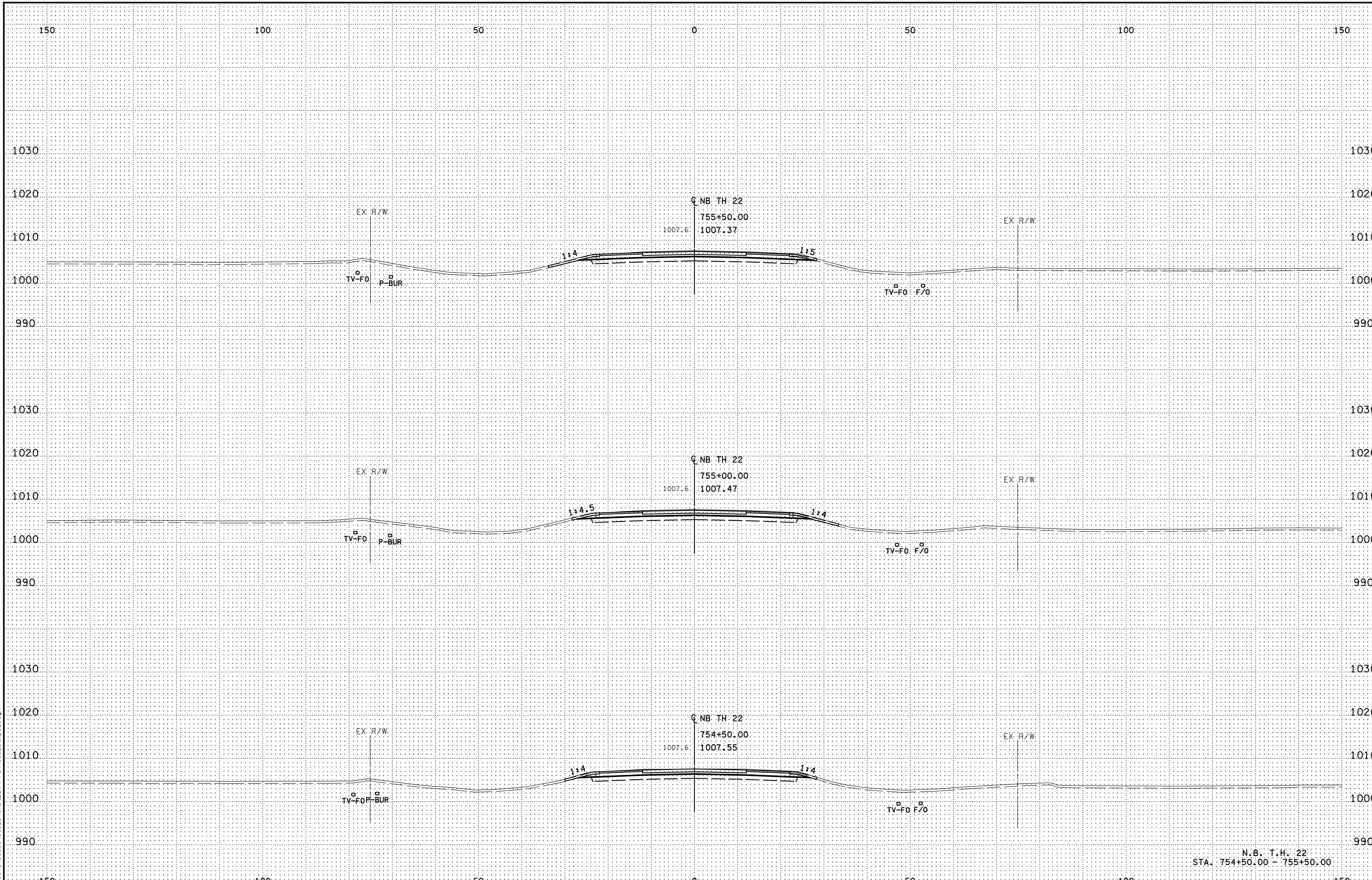

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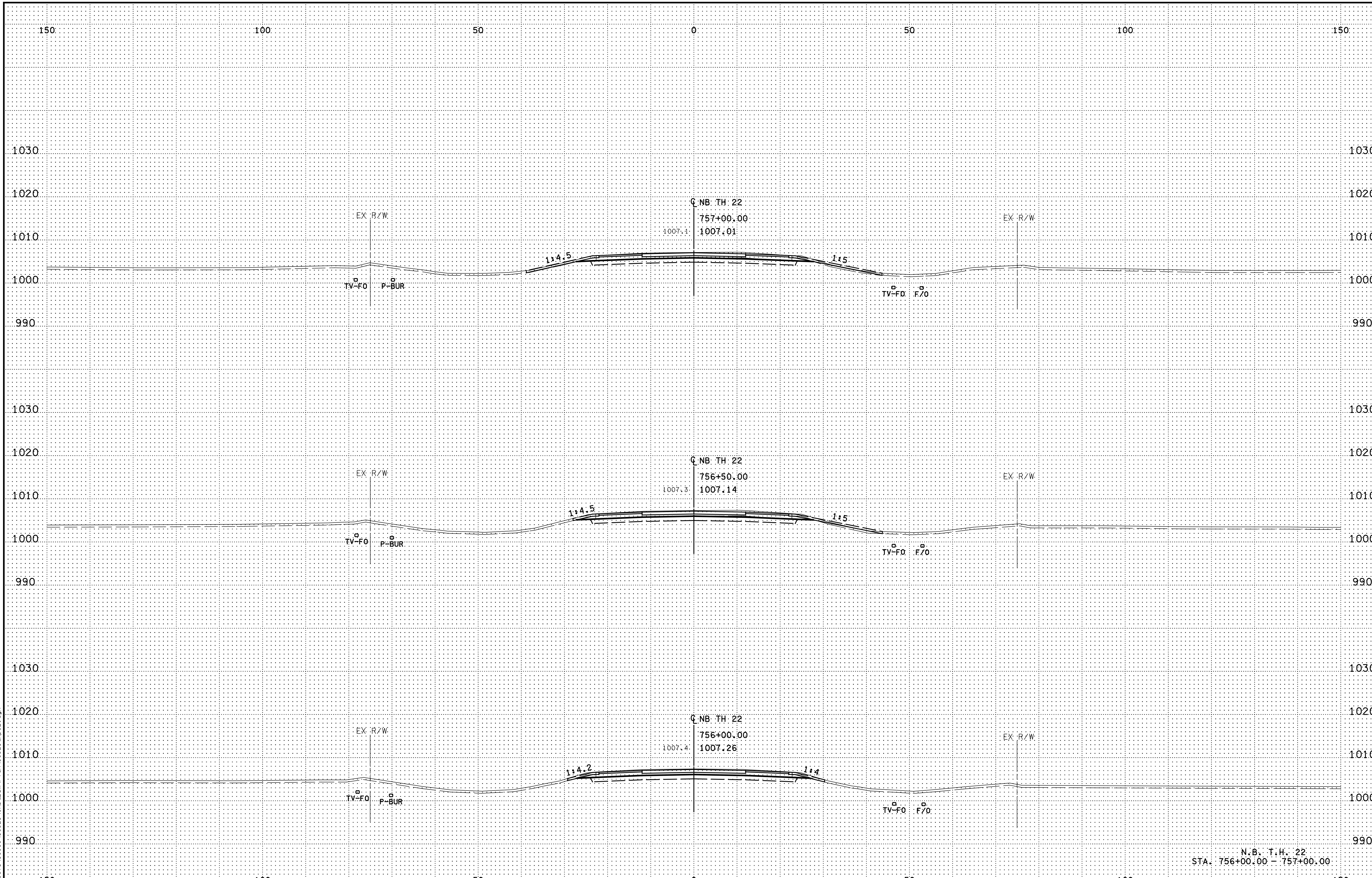

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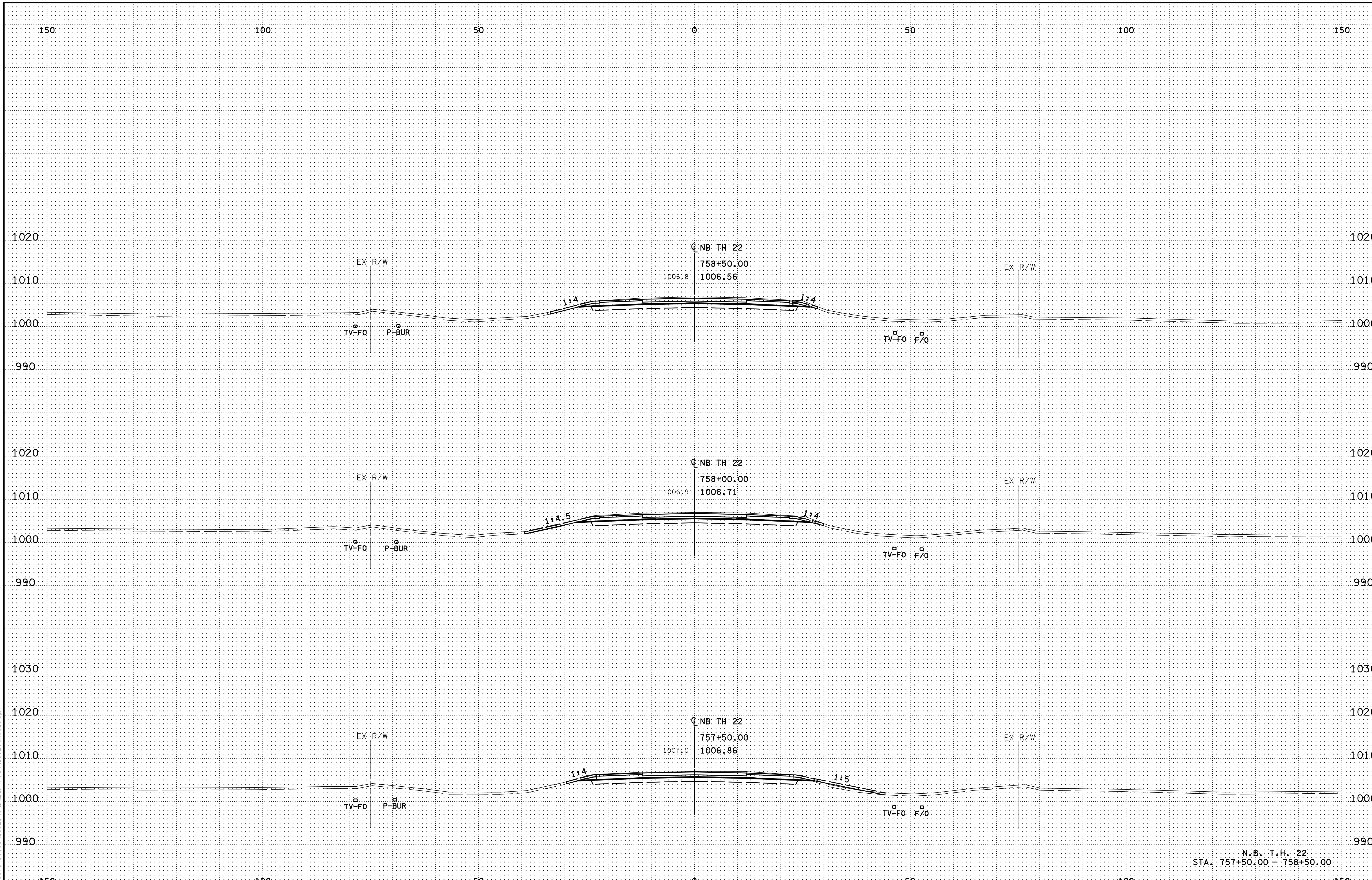

State Proj. No. **0704-108, 007-070-005** Sheet No. **254** of **255** Sheets

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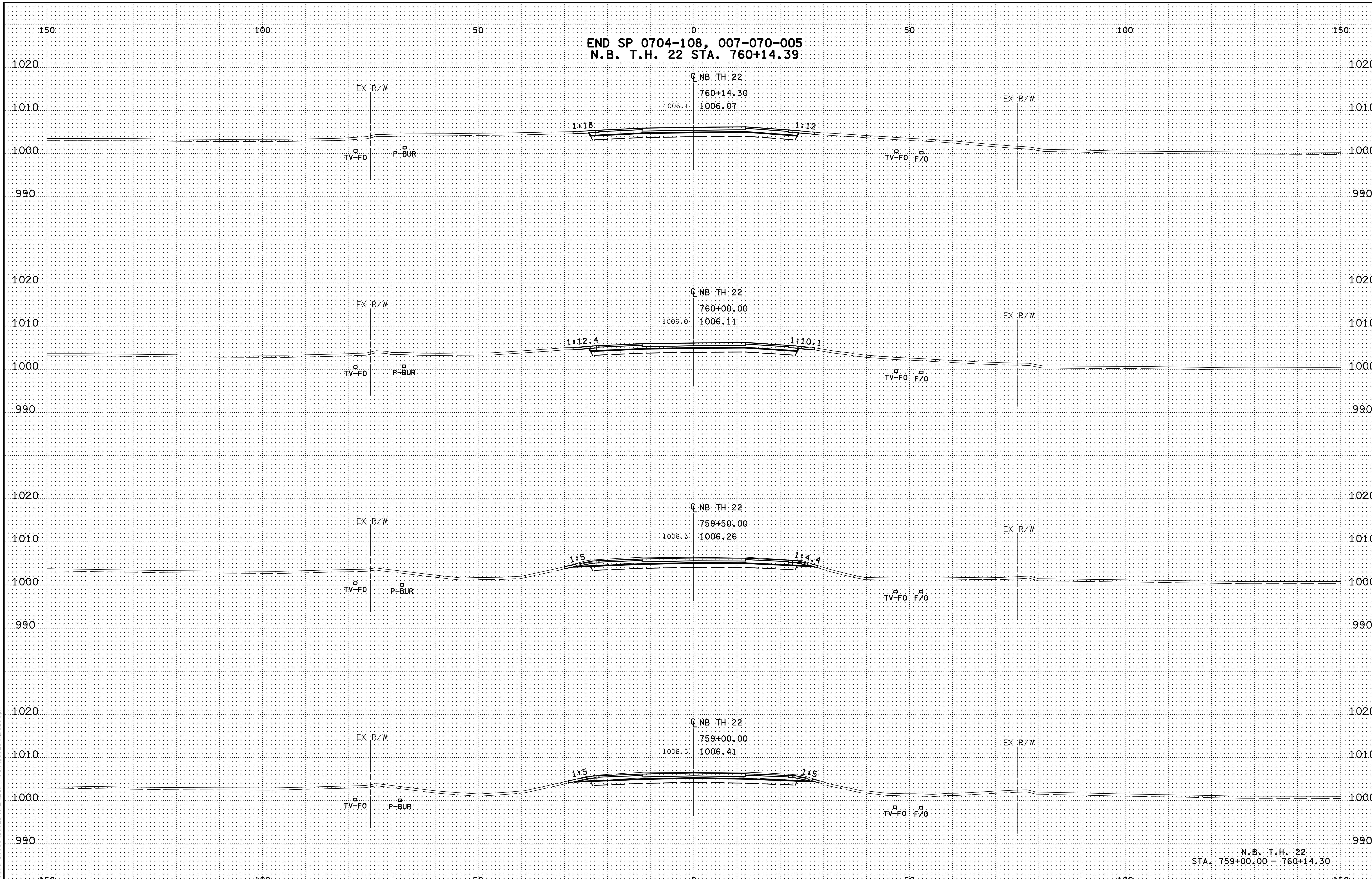

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