

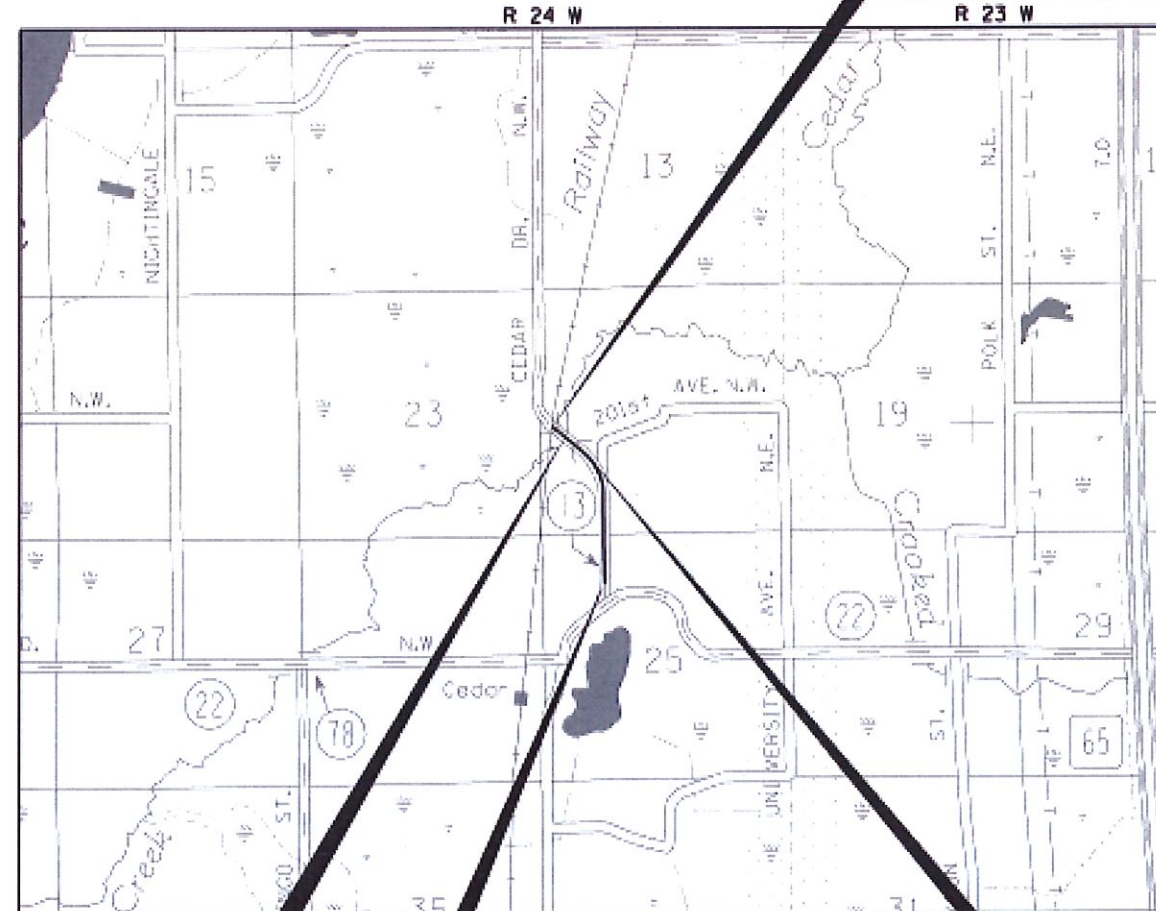
MINNESOTA DEPARTMENT OF TRANSPORTATION ANOKA COUNTY HIGHWAY DEPARTMENT

CONSTRUCTION PLAN FOR GRADING, BITUMINOUS SURFACING, FULL DEPTH RECLAMATION AND BRIDGE
NO. 02J51
LOCATED ON CSAH 13, FROM 380' NORTH OF CSAH 22 (VIKING BOULEVARD) TO EAST SIDE OF BNSF RAILROAD CROSSING SURFACE,
AND IN THE CITY OF OAK GROVE, MN (GEOGRAPHICAL DESCRIPTION)

FROM SEC. 25 TWP. 33N R24W TO SEC. 24 TWP. 33N R24W (LEGAL DESCRIPTION)

STATE AID PROJ. NO. 002-613-001 (C.S.A.H. 13)
GROSS LENGTH 3817.09 FEET 0.723 MILES
BRIDGES-LENGTH FEET MILES
EXCEPTIONS-LENGTH FEET MILES
NET LENGTH 3817.09 FEET 0.723 MILES

(END FULL-DEPTH, FULL WIDTH RECONSTRUCTION)
C.S.A.H. 13 STA. 127+68.50
END S.A.P. 002-613-001



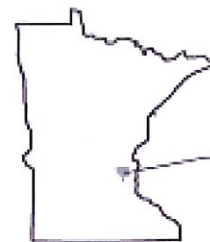
CONST. BRIDGE NO. 02J51
REMOVE BRIDGE NO. 02518

C.S.A.H. 13 STA. 117+00.00
(END FULL-DEPTH RECLAMATION)
(BEGIN FULL-DEPTH, FULL WIDTH RECONSTRUCTION)

BEGIN S.A.P. 002-613-001
C.S.A.H. 13 STA. 89+51.41
(BEGIN FULL-DEPTH RECLAMATION)

C.S.A.H. 13 DESIGN DESIGNATION
S.A.P. 002-613-001
FUNCTIONAL CLASS: MINOR ARTERIAL

ADT (Current Year) (2019)	=	1880
ADT (Future Year) (2039)	=	3070
HCAOT (Future Year) (2039)	=	184
FUNCTIONAL CLASSIFICATION	=	MINOR ARTERIAL
NO. OF TRAFFIC LANES	=	2
NO. OF PARKING LANES	=	0
SHOULDER WIDTH	=	6'
STRUCTURAL DESIGN	=	10 TON
R VALUE	=	ESAL 758,000
DESIGN SPEED	=	55 MPH
BASED ON:	STOPPING SIGHT DISTANCE	
	HEIGHT OF EYE: 3.5' HEIGHT OF OBJECT: 20'	
	STOP CONDITIONS: NONE	



PROJECT LOCATION
ANOKA COUNTY
METRO DISTRICT

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL
STATE AID PROJ. NO. CHARGE IDENTIFIER
002-613-001

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL HAS DETERMINED ACCORDING TO THE GUIDELINES OF C1/AASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

S.A.P. NO. 002-613-001

GOVERNING SPECIFICATIONS
THE 2010 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
"STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

SHEET NO.	INDEX
1	TITLE SHEET
2	GENERAL LAYOUT
3-4	STATEMENT OF ESTIMATED QUANTITIES
5	EARTHWORK TABULATIONS
6-9	QUANTITY TABULATIONS
10	CONSTRUCTION NOTES & STANDARD PLATES
11-20	STANDARD PLANS
21-23	TYPICAL SECTIONS
24-27	MISCELLANEOUS DETAILS
28-30	UTILITY TABULATIONS
31	ALIGNMENT PLAN & TABULATION
32-37	EXISTING CONDITIONS & REMOVAL PLAN
38-43	CONSTRUCTION PLAN
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48-54	DRAINAGE PLAN
55-56	DRAINAGE PROFILES
57	DRAINAGE TABULATIONS
58	DRAINAGE DETAILS
59-61	SWPPP
62-67	TURF ESTAB., ERSW. CNTL. & SUPERELEV. PLAN
68-85	SIGNING & STRIPING PLAN
86-91	STAGING & TRAFFIC CONTROL PLAN
92	DETOUR PLAN
X51-X530	CROSS SECTIONS
B1-B8	BRIDGE PLAN

THIS PLAN CONTAINS 130 SHEETS



13234 MCCOY AVENUE
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www.bolton-menk.com

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

PRINT NAME: PETER M. LEMKE LICENSE # 40110
DATE: 01-29-2019 SIGNATURE: Peter M. Lemke

RECOMMENDED FOR APPROVAL [Signature] 01/31/19
ANOKA COUNTY ENGINEER

RECOMMENDED FOR APPROVAL [Signature] 02/06/19
CITY OF OAK GROVE ENGINEER

FOR [Signature] Julie Dresel 2/11/19
DISTRICT STATE AID ENGINEER REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY
FOR [Signature] Julie Dresel 2/11/19
APPROVED FOR STATE AID FUNDING STATE AID ENGINEER

SHEET NO. 1 OF 92

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PLAN SYMBOLS		
STATE LINE	---	
COUNTY LINE	---	
TOWNSHIP OR RANGE LINE	---	
SECTION LINE	---	
QUARTER LINE	---	
RIGHT-OF-WAY LINE	---	
PRESENT RIGHT-OF-WAY LINE	---	
CONTROL OF ACCESS LINE	---	
PROPERTY LINE (Easement Line)	---	
VACATED PLATTED PROPERTY	---	
CORPORATE OR CITY LIMITS	---	
TRUCK HIGHWAY CENTER LINE	---	
RETAINING WALL	---	
RAILROAD	---	
RAILROAD RIGHT-OF-WAY LINE	---	
RIVER OR CREEK	---	
DRY RUN	---	
ORANGE DITCH	---	
GRASS DITCH	---	
CULVERT	---	
DROP INLET	---	
GUARD RAIL	---	
BARBED WIRE FENCE	---	
WOODEN WIRE FENCE	---	
CHAIN LINK FENCE	---	
RAILROAD SIGN FENCE	---	
STONE WALL OR FENCE	---	
HEDGE	---	
RAILROAD CROSSING SIGN	---	
RAILROAD CROSSING SIGNAL	---	
ELECTRIC WARNING SIGN	---	
CROSSING GATE	---	
MEANDER CORNER	---	
SPRINGS	---	
MARSH/BARN	---	
THICK ORCHARD	---	
DRYSH	---	
WATER	---	
CATTLE GUARD	---	
OVERPASS (highway over)	---	
UNDERPASS (highway under)	---	
BRIDGE	---	
BUILDING (One Story Frame)	---	
F-FRAME	---	
C-CONCRETE	---	
S-STONE	---	
T-TILE	---	
B-BRICK	---	
ST-STUCCO	---	
IRON PIPE (OR ROD)	---	
MANHOLE (STONE, CONCRETE, OR METAL)	---	
WOODEN MANHOLE	---	
BENCHMARK	---	
GRAVEL PIT	---	
SAND PIT	---	
BORDER PIT	---	
ROCK QUARRY	---	
UTILITY SYMBOLS		
POWER POLE LINE	---	
TELEPHONE OR TELEGRAPH POLE LINE	---	
JOINT TELEPHONE AND POWER ON POWER POLES	---	
ON TELEPHONE POLES	---	
ANCHOR	---	
STEEL TOWER	---	
STREET LIGHT	---	
CELESTIAL TELEPHONE CABLE TERMINAL	---	
GAS MAIN	---	
WATER MAIN	---	
CONDUIT	---	
TELEPHONE CABLE IN CONDUIT	---	
ELECTRIC CABLE IN CONDUIT	---	
TELEPHONE MANHOLE	---	
ELECTRIC MANHOLE	---	
BARBED TELEPHONE CABLE	---	
BARBED ELECTRIC CABLE	---	
NON-AR. TELEPHONE CABLE	---	
SEWER (SANITARY)	---	
SEWER (STORM)	---	
SEWER MANHOLE	---	
HANDHOLE	---	
CATCH BASIN	---	
PRE-EMERGENT	---	

INDEX MAP	SCALE
INDEX MAP	0' = 2000'
GENERAL LAYOUT	0' = 150'
PLAN	0' = 50'
PROFILE	0' HORIZ. = 25' 0' VERT. = 2.5'
CROSS-SECTION	0' HORIZ. = 10' 0' VERT. = 10'

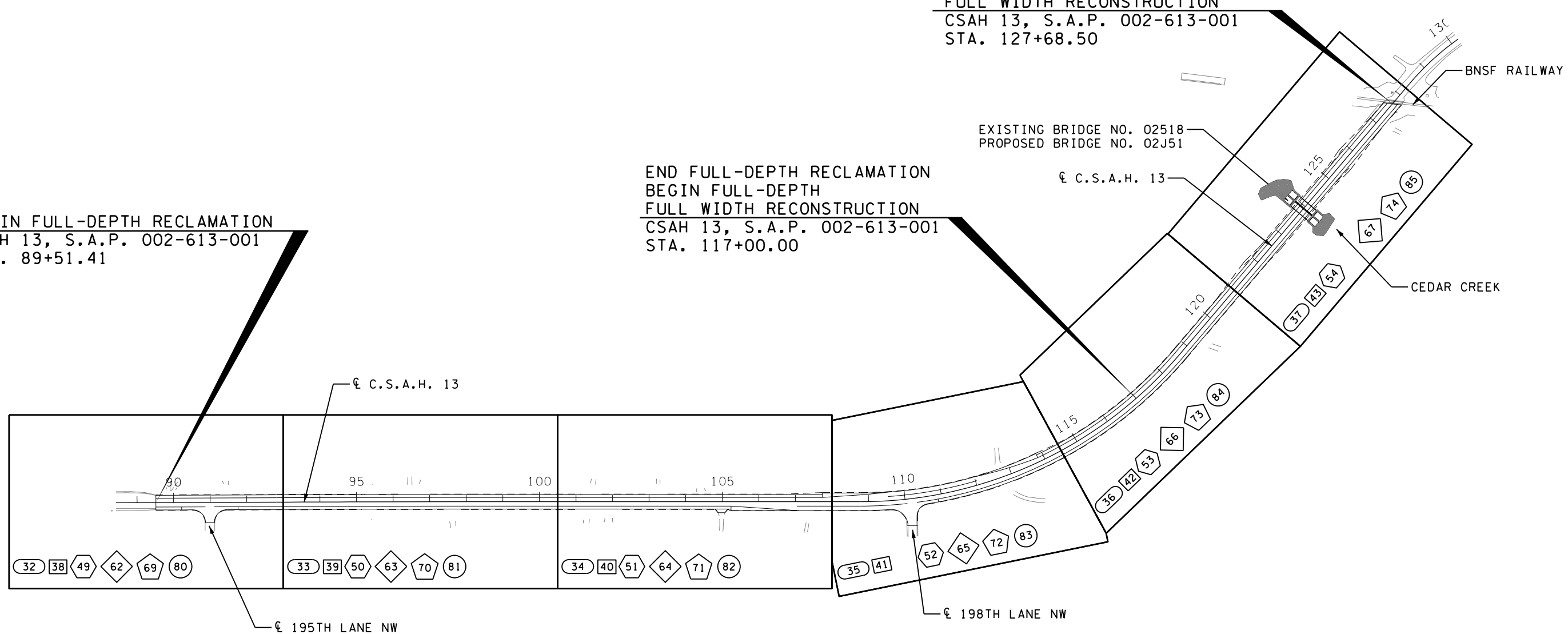
PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY



END FULL-DEPTH
FULL WIDTH RECONSTRUCTION
CSAH 13, S.A.P. 002-613-001
STA. 127+68.50

BEGIN FULL-DEPTH RECLAMATION
CSAH 13, S.A.P. 002-613-001
STA. 89+51.41

END FULL-DEPTH RECLAMATION
BEGIN FULL-DEPTH
FULL WIDTH RECONSTRUCTION
CSAH 13, S.A.P. 002-613-001
STA. 117+00.00



LEGEND

- xx EXISTING CONDITIONS & REMOVAL PLAN SHEET NUMBERS
- xx CONSTRUCTION PLAN SHEET NUMBERS
- xx DRAINAGE PLAN SHEET NUMBERS
- xx TURF ESTAB., ERSN. CNTL. & SUPERELEV. PLAN SHEET NUMBERS
- xx EXISTING SIGNING & STRIPING SHEET NUMBERS
- xx PROPOSED SIGNING & STRIPING SHEET NUMBERS



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REV.	BY	DATE

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Peter M. Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED TAL
DRAWN SJP
CHECKED PML

S.A.P. 002-613-001
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
GENERAL LAYOUT

SHEET
2
OF
92

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STATEMENT OF ESTIMATED QUANTITIES

SHEET NO.	TAB	ITEM NO.	ITEM DESCRIPTION	NOTES	UNIT	TOTAL ESTIMATED QUANTITY	S.A.P. 002-613-001	LOCAL
							C.S.A.H. 13 100% CSAH FUNDS QUANTITY	NON-PARTICIPATING 100% COUNTY FUNDS QUANTITY
		2021.501	MOBILIZATION		LUMP SUM	1	1	
		2031.502	FIELD OFFICE TYPE D		EACH	1	1	
6	B	2101.505	CLEARING		ACRE	0.05	0.05	
6	B	2101.505	GRUBBING		ACRE	0.05	0.05	
6	B	2101.524	CLEARING		TREE	253	253	
6	B	2101.524	GRUBBING		TREE	253	253	
6	C	2104.502	REMOVE PIPE APRON		EACH	5	5	
6	C	2104.502	REMOVE POST		EACH	5	5	
6	C	2104.502	REMOVE IMPACT ATTENUATOR		EACH	1	1	
6	C	2104.502	REMOVE MARKER		EACH	8	8	
6	C	2104.502	REMOVE SIGN TYPE C		EACH	16	16	
6	C	2104.502	REMOVE ECCENTRIC LOADER BCT		EACH	3	3	
6	C	2104.502	SALVAGE LIGHTING UNIT	(1)	EACH	1		1
6	C	2104.502	SALVAGE SIGN TYPE SPECIAL	(1)	EACH	3		3
6	C	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)		LIN FT	19	19	
6	C	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)		LIN FT	61	61	
6	C	2104.503	REMOVE PIPE CULVERTS		LIN FT	370	370	
6	C	2104.503	REMOVE FENCE		LIN FT	282	282	
6	C	2104.503	REMOVE GUARDRAIL-PLATE BEAM		LIN FT	512.5	512.5	
6	C	2104.504	REMOVE BITUMINOUS PAVEMENT	(2)	SQ YD	3138	3138	
6	C	2104.507	REMOVE RIPRAP		CU YD	10	10	
6	C	2104.518	REMOVE CONCRETE DRIVEWAY PAVEMENT	(3)	SQ FT	403	403	
B1		2104.601	REMOVE REGULATED WASTE MATERIAL (BRIDGE)	(6)	LUMP SUM	1	1	
B1		2104.601	REGULATED WASTE EVALUATION	(6)	LUMP SUM	1	1	
B1		2105.601	DEWATERING	(6)	LUMP SUM	1	1	
5,57	A,J	2106.507	EXCAVATION - COMMON	(P)	CU YD	8058	8058	
5	A	2106.507	EXCAVATION - MUCK		CU YD	2100	2100	
7,57	E,J	2106.507	SELECT GRANULAR EMBANKMENT MOD 10% (CV)		CU YD	3160	3160	
5	A	2106.507	COMMON EMBANKMENT (CV)	(P)	CU YD	8220	8220	
7	E	2118.507	AGGREGATE SURFACING (CV) CLASS 5		CU YD	147	147	
9	I	2118.509	AGGREGATE SURFACING CLASS 5		TON	233	233	
		2123.510	MOTOR GRADER		HOUR	15	15	
7	E	2211.507	AGGREGATE BASE (CV) CLASS 5	(P)	CU YD	1643	1643	
7	D	2215.504	FULL DEPTH RECLAMATION		SQ YD	9256	9256	
7	D	2360.509	TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)		TON	4046	4046	
B1		2411.507	GRANULAR BACKFILL (CV)		CU YD	2877	2877	
B1		2411.601	STRUCTURE EXCAVATION	(6)	LUMP SUM	1	1	
B1		2412.502	16X12 PRECAST CONCRETE BOX CULVERT END SECTION	(4)	EACH	4	4	
B1		2412.503	16X12 PRECAST CONCRETE BOX CULVERT	(4)	LIN FT	130	130	
B1		2442.501	REMOVE EXISTING BRIDGE	(5)	LUMP SUM	1	1	
57,B1		2451.507	FINE AGGREGATE BEDDING (CV)		CU YD	325	325	
57	J	2501.502	30" CS SAFETY APRON AND GRATE DESIGN 3128		EACH	2	2	
57	J	2501.502	15" CS SAFETY APRON		EACH	18	18	
57	J	2501.502	24" CS SAFETY APRON		EACH	2	2	
57	J	2501.502	36" RC SAFETY APRON		EACH	2	2	
57	J	2501.503	15" CS PIPE CULVERT		LIN FT	413	413	

NOTES:

(P) PLAN QUANTITY

- (1) SALVAGE TO PROPERTY OWNER.
- (2) AVERAGE 7" DEPTH (CONTRACTOR TO VERIFY). SEE ROAD CORE LOCATIONS AND DEPTHS ON EXISTING CONDITIONS AND REMOVAL PLAN
- (3) 6" DEPTH, NON-REINFORCED (FIELD VERIFY).
- (4) BRIDGE NO. 02J51, REPLACES BRIDGE NO. 02518.
- (5) BRIDGE NO. 02518 CONSISTS OF 78'X29' TIMBER BEAM STRUCTURE.
- (6) SEE BRIDGE PLAN SHEET NO. B1 FOR ITEM(S) AND WORK INCLUDED IN PAY ITEM.

BASIS OF QUANTITIES

SPEC NO	DESCRIPTION	RATE
2118.509	AGGREGATE SURFACING CLASS 5	1.4 TONS / CU YD
2360.509	TYPE SP 12.5 WEARING COURSE MIXTURE	115 LBS/SQ YD-IN X SQ YD X IN / 2000 = TONS
2574.508	FERTILIZER TYPE 1 (10-10-20) FOR SEED MIX 21-111	200 LBS / ACRE
2574.508	FERTILIZER TYPE 3 (22-5-10) FOR SEED MIX 25-121	350 LBS / ACRE
2574.508	FERTILIZER TYPE 3 (22-5-10) FOR SEED MIX 35-221	200 LBS / ACRE
2574.508	FERTILIZER TYPE 3 (10-10-10) FOR SEED MIX 22-111.	387.2 LBS / ACRE

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REV.	BY	DATE

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Peter M Lemke

PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED
TAL
DRAWN
SJP
CHECKED
PML

S.A.P. 002-613-001
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
STATEMENT OF ESTIMATED QUANTITIES

SHEET
3
OF
92

STATEMENT OF ESTIMATED QUANTITIES

SHEET NO.	TAB	ITEM NO.	ITEM DESCRIPTION	NOTES	UNIT	TOTAL ESTIMATED QUANTITY	S.A.P. 002-613-001	LOCAL
							C.S.A.H. 13 100% CSAH FUNDS	NON-PARTICIPATING 100% COUNTY FUNDS
							QUANTITY	QUANTITY
57	J	2501.503	24" CS PIPE CULVERT		LIN FT	49	49	
57	J	2501.503	30" CS PIPE CULVERT		LIN FT	57	57	
57	J	2501.503	36" RC PIPE CULVERT DESIGN 3006		LIN FT	118	118	
57	J	2511.504	GEOTEXTILE FILTER TYPE 3		SQ YD	151	151	
57	J	2511.507	RANDOM RIPRAP CLASS II		CU YD	28	28	
B1		2511.507	RANDOM RIPRAP CLASS IV	(6)	CU YD	892	892	
9	I	2531.504	6" CONCRETE DRIVEWAY PAVEMENT		SQ YD	29	29	
9	H	2540.602	MAIL BOX SUPPORT		EACH	8	8	
9	H	2540.602	RELOCATE MAIL BOX SUPPORT		EACH	6	6	
57	J	2554.502	GUIDE POST TYPE B		EACH	24	24	
9	G	2554.502	ANCHORAGE ASSEMBLY - PLATE BEAM		EACH	1	1	
9	G	2554.502	END TREATMENT-TANGENT TERMINAL	(7)	EACH	3	3	
9	G	2554.503	TRAFFIC BARRIER DESIGN B8307		LIN FT	25	25	
9	G	2554.503	TRAFFIC BARRIER DESIGN B8338		LIN FT	550	550	
		2563.601	TRAFFIC CONTROL		LUMP SUM	1	1	
92		2563.613	PORTABLE CHANGEABLE MESSAGE SIGN		UNIT DAY	20	20	
75	O	2564.502	DELINEATOR TYPE X4-13		EACH	2	2	
75	N	2564.502	OBJECT MARKER TYPE X4-4		EACH	4	4	
75	K	2564.518	SIGN PANELS TYPE C		SQ FT	128	128	
75	M	2564.602	INSTALL SIGN TYPE SPECIAL		EACH	2		2
8	F	2573.501	STABILIZED CONSTRUCTION EXIT		LUMP SUM	1	1	
8	F	2573.502	CULVERT END CONTROLS		EACH	8	8	
8	F	2573.503	SILT FENCE, TYPE MS		LIN FT	3457	3457	
8	F	2573.503	FLOTATION SILT CURTAIN TYPE MOVING WATER		LIN FT	328	328	
8	F	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER		LIN FT	666	666	
8	F	2574.507	SANDY CLAY LOAM TOPSOIL BORROW		CU YD	2	2	
8	F	2574.508	FERTILIZER TYPE 1	(8)	POUND	486	486	
8	F	2574.508	FERTILIZER TYPE 3	(9)	POUND	916	916	
8	F	2575.504	EROSION CONTROL BLANKETS CATEGORY 3P		SQ YD	68	68	
8	F	2575.504	EROSION CONTROL BLANKETS CATEGORY 3N		SQ YD	9699	9699	
8	F	2575.504	TURF REINFORCEMENT MAT CATEGORY 2		SQ YD	68	68	
8	F	2575.505	SEEDING		ACRE	4.5	4.5	
8	F	2575.505	DISK ANCHORING		ACRE	2	2	
8	F	2575.505	MOWING		ACRE	6	6	
8	F	2575.505	WEED SPRAYING		ACRE	1	1	
8	F	2575.506	WEED SPRAY MIXTURE		GALLON	0.3	0.3	
8	F	2575.508	SEED MIXTURE 21-111		POUND	243	243	
8	F	2575.508	SEED MIXTURE 22-111		POUND	47	47	
8	F	2575.508	SEED MIXTURE 25-121		POUND	123	123	
8	F	2575.508	SEED MIXTURE 34-171		POUND	12	12	
8	F	2575.508	SEED MIXTURE 35-221		POUND	49	49	
8	F	2575.508	HYDRAULIC REINFORCED FIBER MATRIX		POUND	387	387	
8	F	2575.508	HYDRAULIC STABILIZED FIBER MATRIX	(10)	POUND	8000	8000	
8	F	2575.509	MULCH MATERIAL TYPE 1		TON	4	4	
8	F	2575.509	MULCH MATERIAL TYPE 3		TON	1	1	
75	L	2582.503	4" SOLID LINE MULTI-COMPONENT		LIN FT	9294	9294	
75	L	2582.503	4" BROKEN LINE MULTI-COMPONENT		LIN FT	342	342	
75	L	2582.503	8" DOTTED LINE MULTI-COMPONENT		LIN FT	30	30	
75	L	2582.503	4" DOUBLE SOLID LINE MULTI-COMPONENT		LIN FT	1895	1895	
85		2582.503	24" SOLID LINE PREFORM THERMO GROUND IN		LIN FT	24	24	
75	L	2582.518	PAVEMENT MESSAGE PREFORM THERMOPLASTIC		SQ FT	62	62	

NOTES:

(P) PLAN QUANTITY

(6) SEE BRIDGE PLAN SHEET NO. B1 FOR ITEM(S) AND WORK INCLUDED IN PAY ITEM.

(7) SHALL BE ET-PLUS

(8) FERTILIZER ANALYSIS 10-10-20, APPLICATION RATE 200 LBS/ACRE FOR SEED MIX 21-111.

(9) FERTILIZER ANALYSIS 22-5-10, APPLICATION RATE 350 LBS/ACRE

FOR SEED MIX 25-121;

FERTILIZER ANALYSIS 22-5-10, APPLICATION RATE 200 LBS/ACRE

FOR SEED MIX 35-221;

FERTILIZER ANALYSIS 10-10-10, APPLICATION RATE 387.2 LBS/ACRE

FOR SEED MIX 22-111 (TEMPORARY EROSION CONTROL).

(10) SEE GENERAL NOTES ON TURF ESTABLISHMENT AND EROSION CONTROL PLANS. USED FOR TEMPORARY EROSION CONTROL ON SLOPES AND ON STOCKPILES.

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BOLTON & MENK

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REV.	BY	DATE
A	JP	3/1/19

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Peter M Lemke

PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED TAL
DRAWN SJP
CHECKED PML

S.A.P. 002-613-001
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
STATEMENT OF ESTIMATED QUANTITIES

SHEET
4
OF
92

EARTHWORK			A
STATION	2106		
	EXCAVATION - COMMON (P)(2)	EXCAVATION - MUCK	COMMON EMBANKMENT (CV)(P)(1)
	CU YD	CU YD	CU YD
C.S.A.H. 13: S.A.P. 002-613-001			
89+51.500			
90+00.000	69.8		7.6
90+50.000	76.0		12.9
91+00.000	82.8		17.1
91+43.000	76.0		7.4
91+50.000	11.2		1.5
92+00.000	93.3		23.5
92+50.000	89.3		33.4
93+00.000	71.3		38.3
93+50.000	56.9		52.5
94+00.000	48.5		74.9
94+50.000	53.0		83.6
95+00.000	65.8		60.9
95+38.000	54.8		14.7
95+50.000	15.0		1.3
96+00.000	57.5		27.5
96+50.000	63.6		44.6
97+00.000	65.7		35.5
97+50.000	66.3		20.2
97+62.000	16.4		3.0
98+00.000	48.4		16.9
98+50.000	65.0		35.1
99+00.000	81.6		35.5
99+50.000	84.2		34.4
100+00.000	75.9		36.0
100+50.000	77.0		39.6
101+00.000	77.9		34.5
101+36.000	53.4		10.0
101+50.000	18.5		0.3
101+90.000	54.7		6.9
102+00.000	14.8		3.7
102+50.000	87.2		32.6
103+00.000	94.5		56.5
103+25.000	35.6		35.3
103+50.000	28.2		38.3
104+00.000	57.5		75.0
104+50.000	57.4		47.1
105+00.000	54.6		27.1
105+50.000	56.2		40.9
106+00.000	65.9		55.4
106+50.000	80.6		66.7
107+00.000	83.1		82.5
107+36.000	48.1		63.1
107+50.000	14.7		28.9
108+00.000	52.5		140.2
108+50.000	51.1		149.9
109+00.000	47.1		137.5
SUBTOTAL	2700		1890

EARTHWORK			A
STATION	2106		
	EXCAVATION - COMMON (P)(2)	EXCAVATION - MUCK	COMMON EMBANKMENT (CV)(P)(1)
	CU YD	CU YD	CU YD
C.S.A.H. 13: S.A.P. 002-613-001			
109+50.000	48.7		105.8
109+79.000	33.8		83.2
109+88.000	21.3		33.8
110+00.000	45.3		32.1
110+10.000	40.6		19.7
110+50.000	104.4		61.4
111+00.000	61.6		49.3
111+50.000	62.9		42.4
112+00.000	65.8		46.6
112+50.000	68.8		38.8
112+75.000	49.9		8.7
112+85.000	23.4		2.7
113+00.000	24.3		7.6
113+50.000	58.3		69.4
114+00.000	67.3		153.5
114+50.000	72.6		184.7
115+00.000	77.1		155.1
115+50.000	93.6		136.4
116+00.000	84.3		121.4
116+50.000	71.9		96.7
117+00.000	97.6		92.7
117+50.000	131.5		111.3
118+00.000	148.8		127.6
118+50.000	148.0		121.8
119+00.000	140.9	319.1	104.0
119+40.000	114.1	128.9	68.0
119+50.000	28.7	733.8	15.5
120+00.000	159.2	726.7	95.6
120+50.000	200.1	191.1	116.6
121+00.000	234.5		143.0
121+50.000	223.6		187.5
122+00.000	228.1		231.3
122+50.000	368.8		226.2
123+00.000	448.1		201.6
123+50.000	239.3		202.0
124+00.000	38.9		263.7
124+50.000	50.3		495.0
125+00.000	94.2		575.2
125+25.000	52.2		267.6
125+50.000	57.4		327.1
125+75.000	70.4		355.5
126+00.000	82.9		278.9
126+50.000	145.7		237.8
127+00.000	116.2		31.1
127+50.000	107.5		3.2
127+55.000	10.2		0.3
SUBTOTAL	4910	2100	6330
TOTALS	7610	2100	8220

NOTES:

(P) PLAN QUANTITY

(1) COMMON EMBANKMENT INCLUDES 4" MIN. DEPTH OF TOPSOIL.

(2) TOPSOIL STRIP IS INCLUDED IN THE EXCAVATION-COMMON QUANTITY.

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Peter M Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
EARTHWORK TABULATIONS

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CLEARING AND GRUBBING				B			
STATION	LOCATION	2101					
		CLEARING	GRUBBING	CLEARING	GRUBBING		
		TREE	TREE	ACRE	ACRE		
C.S.A.H. 13: S.A.P. 002-613-001							
89+51.41	TO	93+00	LT	6	6		
89+51.41	TO	93+00	RT				
93+00	TO	100+50	LT	2	2		
93+00	TO	100+50	RT	1	1		
100+50	TO	108+00	LT	6	6		
100+50	TO	108+00	RT	124	124		
108+00	TO	114+50	LT	17	17	0.05	0.05
108+00	TO	114+50	RT	20	20		
114+50	TO	121+00	LT	2	2		
114+50	TO	121+00	RT	18	18		
121+00	TO	127+68.50	LT	34	34		
121+00	TO	127+68.50	RT	23	23		
SUBTOTALS				253	253	0.05	0.05
TOTALS				253	253	0.05	0.05

MISCELLANEOUS REMOVALS																	C	
STATION TO STATION	2104																	
	REMOVE PIPE APRON	REMOVE POST	REMOVE IMPACT ATTENUATOR	REMOVE MARKER	REMOVE SIGN TYPE C	REMOVE ECCENTRIC LOADER BCT	SALVAGE LIGHTING UNIT	SALVAGE SIGN TYPE SPECIAL	SAWING CONCRETE PAVEMENT (FULL DEPTH)	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	REMOVE PIPE CULVERTS	REMOVE FENCE	REMOVE GUARDRAIL -PLATE BEAM	REMOVE BITUMINOUS PAVEMENT	REMOVE RIPRAP	REMOVE CONCRETE DRIVEWAY PAVEMENT		
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	SQ YD	CU YD	SQ FT		
C.S.A.H. 13: S.A.P. 002-613-001																		
89+51.41	TO	127+68.50																
89+51.41	TO	93+00																
93+00	TO	100+50		2														
100+50	TO	108+00	2	1					19							10	403	
108+00	TO	114+50	3	1						25								
114+50	TO	121+00		1														
121+00	TO	127+68.50			1	8		4	3									
SUBTOTALS			5	5	1	8	16	3	19	61	370	282	512.5	3138	10	403		
LOCAL NON-PARTICIPATING 100% COUNTY FUNDS																		
89+51.41	TO	93+00								1								
108+00	TO	114+50								1								
114+50	TO	121+00								1								
SUBTOTALS			5	5	1	8	16	3	1	3	19	61	370	282	512.5	3138	10	403

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LIC. NO. 40118 DATE 01-29-2019

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QUANTITY TABULATIONS

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BITUMINOUS SUMMARY					D	
STATION		LOCATION		2215	2360	
				FULL DEPTH RECLAMATION	TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)	
				SQ YD	TON	
C.S.A.H. 13: S.A.P. 002-613-001						
89+51.41	TO	93+00	MAINLINE	1270	293	
89+51.41	TO	93+00	SHLDR		100	
93+00	TO	100+50	MAINLINE	2448	564	
93+00	TO	100+50	SHLDR		204	
100+50	TO	108+00	MAINLINE	2455	565	
100+50	TO	108+00	SHLDR		233	
108+00	TO	114+50	MAINLINE	2297	529	
108+00	TO	114+50	SHLDR		207	
114+50	TO	121+00	MAINLINE	786	427	
114+50	TO	121+00	SHLDR		239	
121+00	TO	127+68.50	MAINLINE		411	
121+00	TO	127+68.50	SHLDR		274	
SUBTOTALS				9256	4046	
TOTALS				9256	4046	

AGGREGATE SUMMARY						E		
STATION		DESCRIPTION		LOCATION		2106	2118	2211
						SELECT GRANULAR EMBANKMENT MOD 10% (CV)	AGGREGATE SURFACING (CV) CLASS 5	AGGREGATE BASE (CV) CLASS 5 (P)
						CU YD	CU YD	CU YD
C.S.A.H. 13: S.A.P. 002-613-001								
89+51.41	TO	93+00	PAVED SHLDR	LT		67		45
89+51.41	TO	93+00	PAVED SHLDR	RT		73		49
89+51.41	TO	93+00	GRVL SHLDR PI	LT			4	
89+51.41	TO	93+00	GRVL SHLDR PI	RT			5	
93+00	TO	100+50	PAVED SHLDR	LT		151		101
93+00	TO	100+50	PAVED SHLDR	RT		145		97
93+00	TO	100+50	GRVL SHLDR PI	LT			8	
93+00	TO	100+50	GRVL SHLDR PI	RT			9	
100+50	TO	108+00	PAVED SHLDR	LT		161		108
100+50	TO	108+00	PAVED SHLDR	RT		170		114
100+50	TO	108+00	GRVL SHLDR PI	LT			11	
100+50	TO	108+00	GRVL SHLDR PI	RT			8	
108+00	TO	114+50	PAVED SHLDR	LT		213		142
108+00	TO	114+50	PAVED SHLDR	RT		178		119
108+00	TO	114+50	GRVL SHLDR PI	LT			10	
108+00	TO	114+50	GRVL SHLDR PI	RT			9	
114+50	TO	121+00	MAINLINE	LT/RT		357		179
114+50	TO	121+00	PAVED SHLDR	LT		161		88
114+50	TO	121+00	PAVED SHLDR	RT		185		104
114+50	TO	121+00	GRVL SHLDR PI	LT			10	
114+50	TO	121+00	GRVL SHLDR PI	RT			8	
121+00	TO	127+68.50	MAINLINE	LT/RT		595		298
121+00	TO	127+68.50	PAVED SHLDR	LT		195		98
121+00	TO	127+68.50	PAVED SHLDR	RT		202		101
121+00	TO	127+68.50	GRVL SHLDR PI	LT			38	
121+00	TO	127+68.50	GRVL SHLDR PI	RT			27	
SUBTOTALS						2853	147	1643
TOTALS						2853	147	1643

NOTES:
(P) PLAN QUANTITY

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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
QUANTITY TABULATIONS

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TURF ESTABLISHMENT AND EROSION CONTROL

F

STATION TO STATION	LOCATION	2573					2574			2575										
		STABILIZED CONSTRUCTION EXIT	CULVERT END CONTROLS	SILT FENCE, TYPE MS	FLOTATION SILT CURTAIN TYPE MOVING	SEDIMENT CONTROL LOG TYPE WOOD FIBER	SANDY CLAY LOAM TOPSOIL BORROW	FERTILIZER TYPE 1	FERTILIZER TYPE 3	EROSION CONTROL BLANKETS CATEGORY 3P	EROSION CONTROL BLANKETS CATEGORY 3N	TURF REINFORCEMENT MAT CATEGORY 2	SEEDING	DISK ANCHORING	MOWING (1)	WEED SPRAYING (2)	WEED SPRAY MIXTURE (3)			
		LUMP SUM	EACH	LIN FT	LIN FT	LIN FT	CU YD	POUND	POUND	SQ YD	SQ YD	SQ YD	ACRE	ACRE	ACRE	ACRE	GALLON			
C.S.A.H. 13: S.A.P. 002-613-001																				
89+51.41	TO	93+00	LT		1	269					41		252		0.15	0.10	0.30	0.04	0.02	
89+51.41	TO	93+00	RT			88		21			27		118		0.09	0.07	0.18	0.02	0.01	
93+00	TO	100+50	LT		1	344		17			100		482		0.34	0.24	0.67	0.06	0.03	
93+00	TO	100+50	RT			256		16			165		629		0.54	0.41	1.08	0.09	0.05	
100+50	TO	108+00	LT		1	172		78			104		448		0.35	0.26	0.68	0.05	0.03	
100+50	TO	108+00	RT		1	399		6			101		508		0.34	0.24	0.68	0.07	0.04	
108+00	TO	114+50	LT			393		302			54		1028		0.36	0.15	0.33	0.02	0.01	
108+00	TO	114+50	RT		2	121		42			73		543		0.29	0.18	0.46	0.03	0.02	
114+50	TO	121+00	LT			108		47			41		2264		0.59	0.12	0.24			
114+50	TO	121+00	RT		1	167					56		1280		0.39	0.13	0.38	0.04	0.02	
121+00	TO	127+68.50	LT			698	164	7	2		71	68	1324	68	0.60	0.26	0.62	0.13	0.07	
121+00	TO	127+68.50	RT		1	442	164	130			83		823		0.45	0.24	0.65	0.10	0.05	
89+51.41	TO	127+68.50	LT/RT		1					486										
SUBTOTALS					1	8	3457	328	666	2	486	916	68	9699	68	4.5	2	6	1	0.3
TOTALS					1	8	3457	328	666	2	486	916	68	9699	68	4.5	2	6	1	0.3

TURF ESTABLISHMENT AND EROSION CONTROL

F

STATION TO STATION	LOCATION	SEED MIXTURE 21-111	SEED MIXTURE 22-111	SEED MIXTURE 25-121	SEED MIXTURE 34-171	SEED MIXTURE 35-221	HYDRAULIC REINFORCED FIBER MATRIX	HYDRAULIC STABILIZED FIBER MATRIX	MULCH MATERIAL TYPE 1	MULCH MATERIAL TYPE 3				
		POUND	POUND	POUND	POUND	POUND	POUND	POUND	TON	TON				
		C.S.A.H. 13: S.A.P. 002-613-001												
89+51.41	TO	93+00	LT			5		3		0.2	0.03			
89+51.41	TO	93+00	RT			4		1		0.1				
93+00	TO	100+50	LT			14		5		0.4	0.02			
93+00	TO	100+50	RT			23		6		0.8	0.1			
100+50	TO	108+00	LT			15	1	4		0.5	0.03			
100+50	TO	108+00	RT			14		5		0.4	0.03			
108+00	TO	114+50	LT			9	2	2		0.3	0.02			
108+00	TO	114+50	RT			11	1	2		0.4				
114+50	TO	121+00	LT			8	3			0.2				
114+50	TO	121+00	RT			8	2	3		0.2				
121+00	TO	127+68.50	LT			4	2	10	226	0.1	0.4			
121+00	TO	127+68.50	RT			8	1	8	161	0.2	0.2			
89+51.41	TO	127+68.50	LT/RT			243	47		8000					
SUBTOTALS						243	47	123	12	49	387	8000	4	1
TOTALS						243	47	123	12	49	387	8000	4	1

NOTES:

- QUANTITY BASED ON 2 ACRES OF MOWING FOR EACH ACRE SEEDED EXCLUDING AREAS WITH SEED MIX 34-171.
- WEED SPRAYING TO BE DONE, EXCLUDING AREAS WITH MIX 34-171, THROUGHOUT THE PROJECT TO CONTROL AND PREVENT THE SPREAD OF WEEDS. SUBMIT A PESTICIDE APPLICATION RECORD TO THE ENGINEER FOR EACH APPLICATION. WEED SPRAYING WILL BE MEASURED BY THE AREA COVERED OR AREA SPOT SPRAYED BY HERBICIDE AND SUCCESSFULLY APPLIED AS INDICATED BY DEAD NOXIOUS WEEDS. WEED SPRAY MIXTURE WILL BE MEASURED BY VOLUME OF HERBICIDE FURNISHED AND USED. QUANTITY BASED ON 0.5 ACRE OF SPRAYING FOR EACH ACRE SEEDED.
- 2,4-D AMINE LABELED FOR BOTH AQUATIC AND RIGHT OF WAY USE AND FORMULATED AT 3.8 LB ACID EQUIVALENT PER GALLON. QUANTITY BASED ON 0.5 GAL/ACRE.

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QUANTITY TABULATIONS

SHEET 8 OF 92

TRAFFIC BARRIERS					G	
STATION TO STATION		LOCATION		2554		
		ANCHORAGE ASSEMBLY - PLATE BEAM	END TREATMENT - TANGENT TERMINAL	TRAFFIC BARRIER DESIGN B8307	TRAFFIC BARRIER DESIGN B8338	
		EACH	EACH	LIN FT	LIN FT	
C.S.A.H. 13: S.A.P. 002-613-001						
122+55	TO	122+70	RT	1	25	
121+72.5	TO	125+85	LT		2	312.5
122+70	TO	125+57.5	RT		1	237.5
TOTALS				1	3	550

MAIL BOX SUPPORT				H	
			2540		2540
STATION	BOX LOCATED LT/RT OF CENTERLINE	ADDRESS	MAIL BOX SUPPORT	RELOCATE MAIL BOX SUPPORT	
			EACH	EACH	
C.S.A.H. 13: S.A.P. 002-613-001					
89+65	LT	#19526			1
91+23	LT	#19542	1		
95+17	LT	#19614			1
95+53	RT	#19643	1		
96+15	LT	#19656	1		
97+01	LT	#19658			1
97+87	RT	#19653	1		
101+04	RT	#19715	1		
101+93	LT	#19706	1		
102+99	LT	#19750			1
105+18	RT	#19753	1		
112+35	LT	#19900			1
119+57	RT	#19951			1
126+68	RT	#20061	1		
SUBTOTALS			8		6
TOTALS			8		6

DRIVEWAYS AND ENTRANCES SURFACING				I	
			2118		2531
STATION	LOCATION	ADDRESS (XXXXX CEDAR DRIVE)	AGGREGATE SURFACING CLASS 5	6" CONCRETE DRIVEWAY PAVEMENT	
			TON	SQ YD	
C.S.A.H. 13: S.A.P. 002-613-001					
89+90	LT	#19526	13		
91+40	LT	#19542	12		
95+35	RT	#19643	12		
95+40	LT	#19614	14		
96+45	LT	#19656	14		
96+80	LT	#19658	17		
97+60	RT	#19653	17		
101+30	RT	#19715	17		
101+45	LT	#19708	16		
101+90	RT	#19715	21		
103+25	LT	#19750	16		
105+00	RT	#19753			29
107+35	RT	#19753	9		
112+75	LT	#19900	12		
112+80	RT	-	16		
119+40	RT	#19951	14		
127+20	RT	#20061	13		
SUBTOTALS			233		29
TOTALS			233		29

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QUANTITY TABULATIONS

SHEET
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OF
92

- 1 AGGREGATE SURFACING MATERIAL FOR THIS PROJECT SHALL BE CLASS 5 GRADATION IN ACCORDANCE WITH MNDOT 2118 AND 3138
- 2 AGGREGATE BASE MATERIAL SHALL MEET THE REQUIREMENTS OF MNDOT SPEC 3138, CLASS 5
- 3 COMPACTION OF ALL AGGREGATE BASE MATERIAL SHALL BE IN ACCORDANCE WITH MNDOT "PENETRATION INDEX METHOD"
- 4 CONTRACTOR SHALL BLADE THE EXISTING RECLAIMED AGGREGATE MATERIAL ON PAVED SHOULDER AREA TO GRAVEL SHOULDER AREA PRIOR TO PLACING ANY NEW CLASS 5 AGGREGATE ON THE SHOULDER. BLADING/BLENDING AND COMPACTION OF AGGREGATE AND RECLAIM MATERIAL SHALL BE INCIDENTAL.
- 5 COMPACTION OF ALL PERMANENT BITUMINOUS MIXTURES SHALL BE THE "MAXIMUM DENSITY METHOD"
- 6 UNLESS OTHERWISE SPECIFICALLY ALLOWED OR REQUIRED BY THE CONTRACT, BITUMINOUS OR CONCRETE ITEMS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE RECYCLED TO THE EXTENT ALLOWED IN BASE AND SURFACING ITEMS OR DISPOSED OF OUTSIDE OF RIGHT OF WAY IN ACCORDANCE WITH STANDARD SPECIFICATION 2104.3C3.
- 7 USE TACK COAT BETWEEN ALL BITUMINOUS MIXTURES AND PRIOR TO PLACING ANY BITUMINOUS MIXTURES ON EXISTING PAVEMENTS. THE BITUMINOUS TACK COAT SHALL BE APPLIED AT A RATE OF 0.05 GALLONS / SQ. YD. BETWEEN BITUMINOUS LAYERS AND 0.07 - 0.10 GALLONS / SQ. YD. ON BITUMINOUS MILLED SURFACE PRIOR TO BEING OVERLAID. TACK COAT IS INCIDENTAL.
- 8 ANY DEBRIS WHICH MAY BE ENCOUNTERED OR CREATED DURING GRADING SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OF OFF THE PROJECT RIGHT OF WAY IN A SUITABLE DISPOSABLE AREA AS APPROVED BY THE ENGINEER
- 9 UNSUITABLE SOILS ON THE PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF THE PROJECT RIGHT OF WAY IN A SUITABLE DISPOSABLE AREA AS APPROVED BY THE ENGINEER
- 10 MATERIAL NOT UTILIZED ON THIS PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OF OFF THE RIGHT OF WAY IN ACCORDANCE WITH SPEC 2104
- 11 SUBGRADE EXCAVATION AND COMMON EXCAVATION WILL BE PAID FOR AS EXCAVATION-COMMON.

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

STANDARD PLATES

PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE (5 SHEETS)
3006G	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3022C	PRECAST CONCRETE SAFETY APRON (3 SHEETS)
3040F	CORRUGATED METAL PIPE CULVERT (STANDARD 2-2/3" X 1/2" CORRUGATION)
3128H	METAL SAFETY APRON & GRATE (2 SHEETS)
3134D	RIPRAP AT CSP OUTLETS
3139B	RIPRAP AT PRECAST CONCRETE END SECTIONS
3145G	CONCRETE PIPE OR PRECAST BOX CULVERT TIES
3221C	CORRUGATED STEEL PIPE COUPLING BAND (3 SHEETS)
8000J	CHANNELIZERS
8150C	INSTALLATION OF CULVERT MARKERS
8338D	W-BEAM GUARDRAIL & END ANCHORAGES (STEEL POSTS) (4 SHEETS)
9000E	APPROACHES AND ENTRANCES - RECOMMENDED STANDARDS
9350A	MAILBOX SUPPORT (SWING-AWAY TYPE)

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REV.	BY	DATE

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.

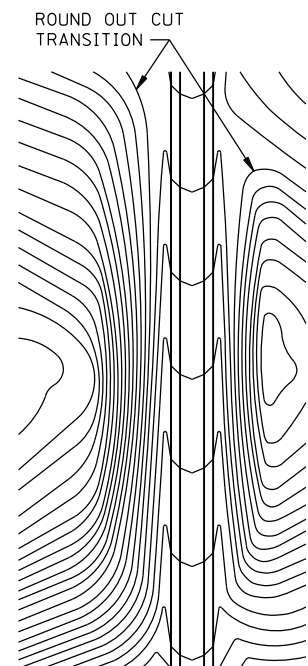
Peter M Lemke

PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

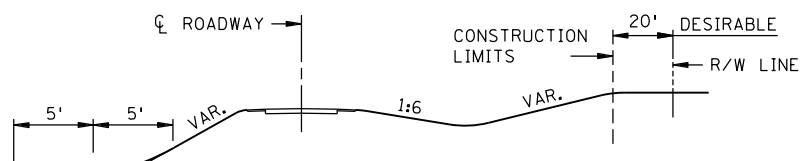
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CONSTRUCTION NOTES & STANDARD PLATES

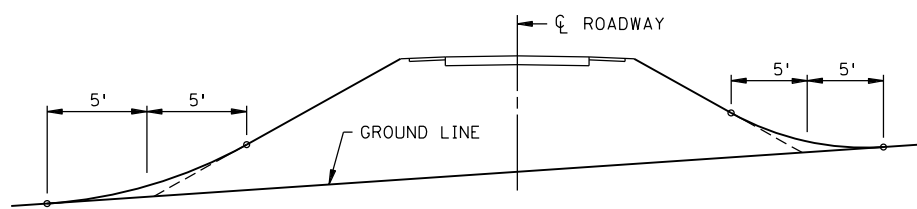
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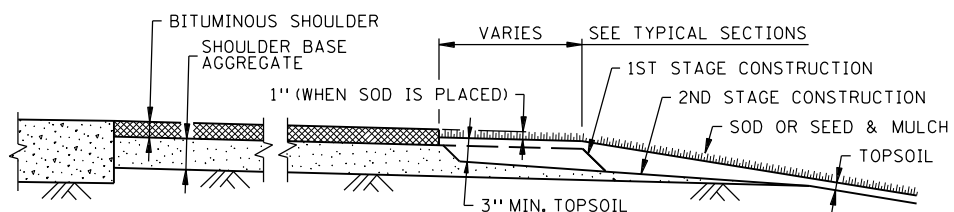
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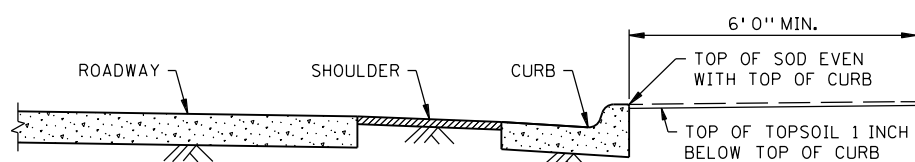
ROUNDING SHOULDERS AND BACKSLOPES



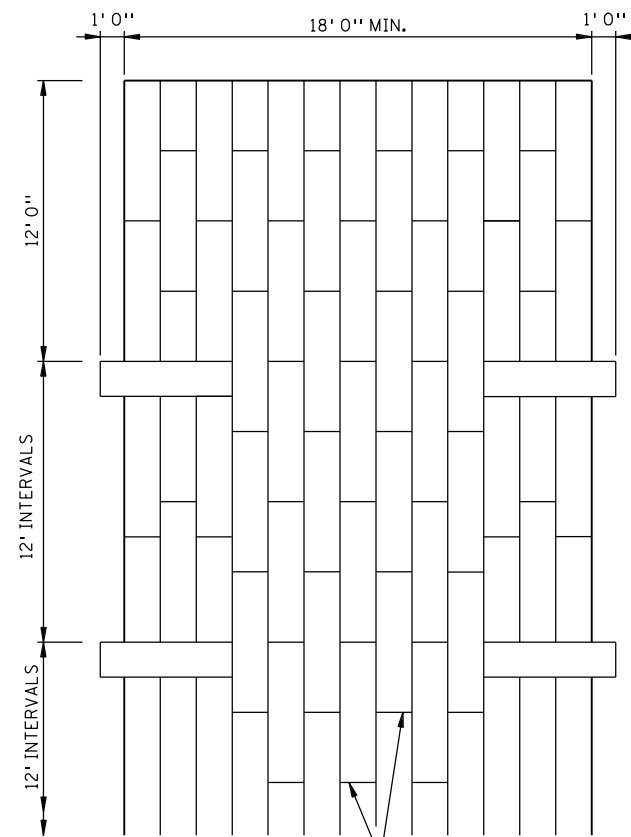
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



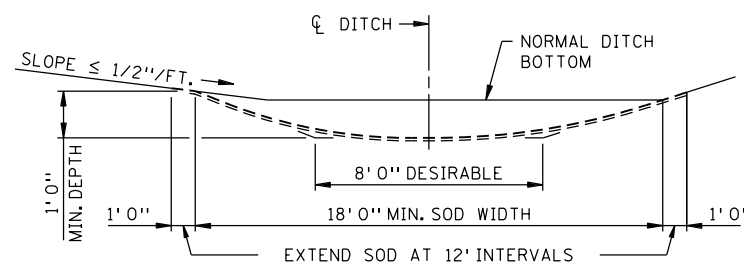
SHAPING AND TOPSOILING INSLOPES



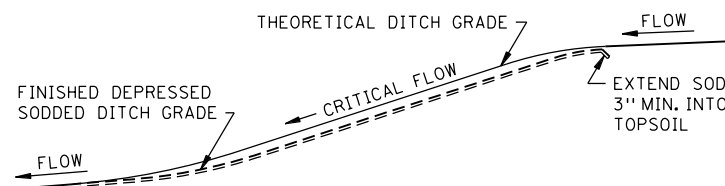
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



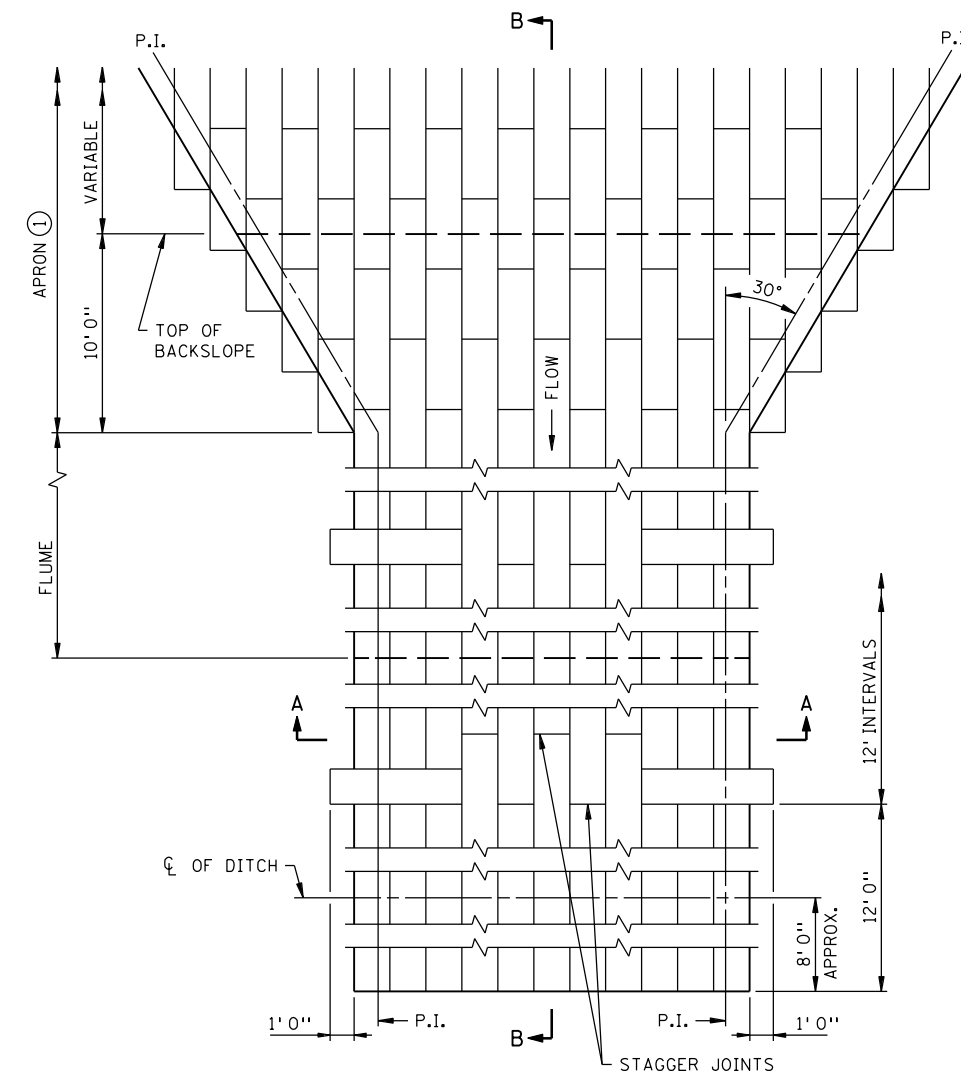
PLAN VIEW



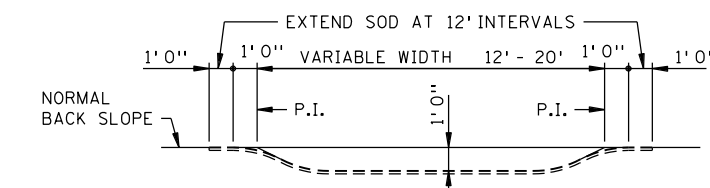
SODDED DITCH CROSS SECTION
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



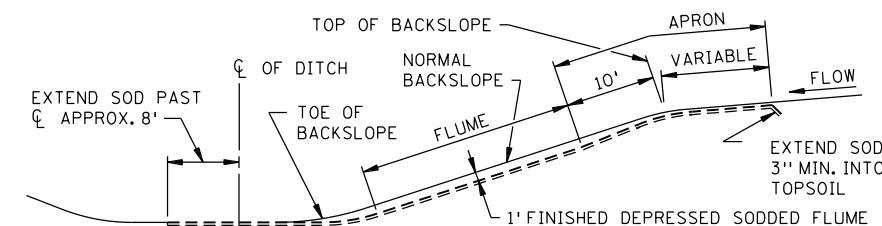
DITCH PROFILE
SODDED DITCH DETAILS



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
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CHIEF ENVIRONMENTAL OFFICER



STANDARD PLAN 5-297.404

1 OF 3

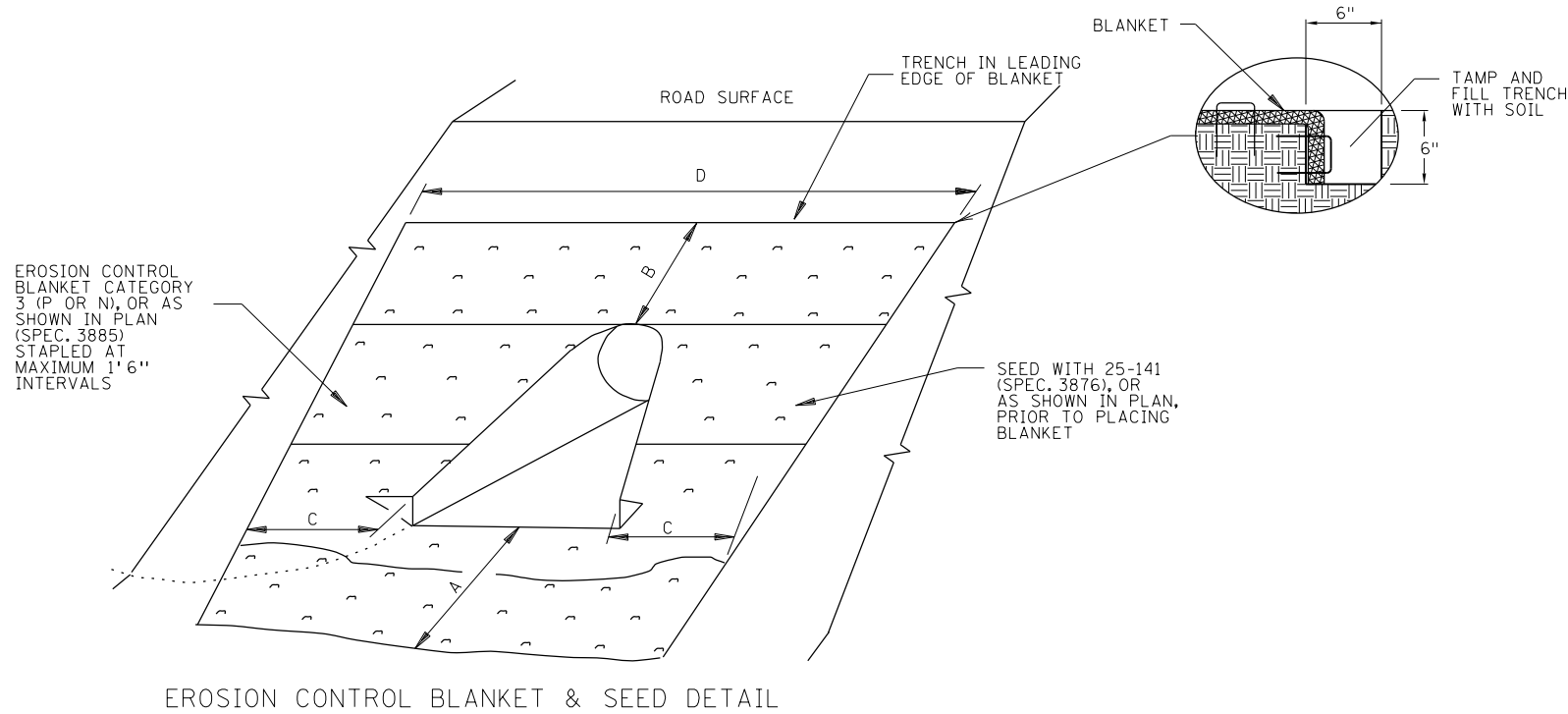
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STATE DESIGN ENGINEER

APPROVED: 2-28-2017
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PERMANENT EROSION CONTROL
ALONG ROADWAYS, DITCHES AND FLUMES

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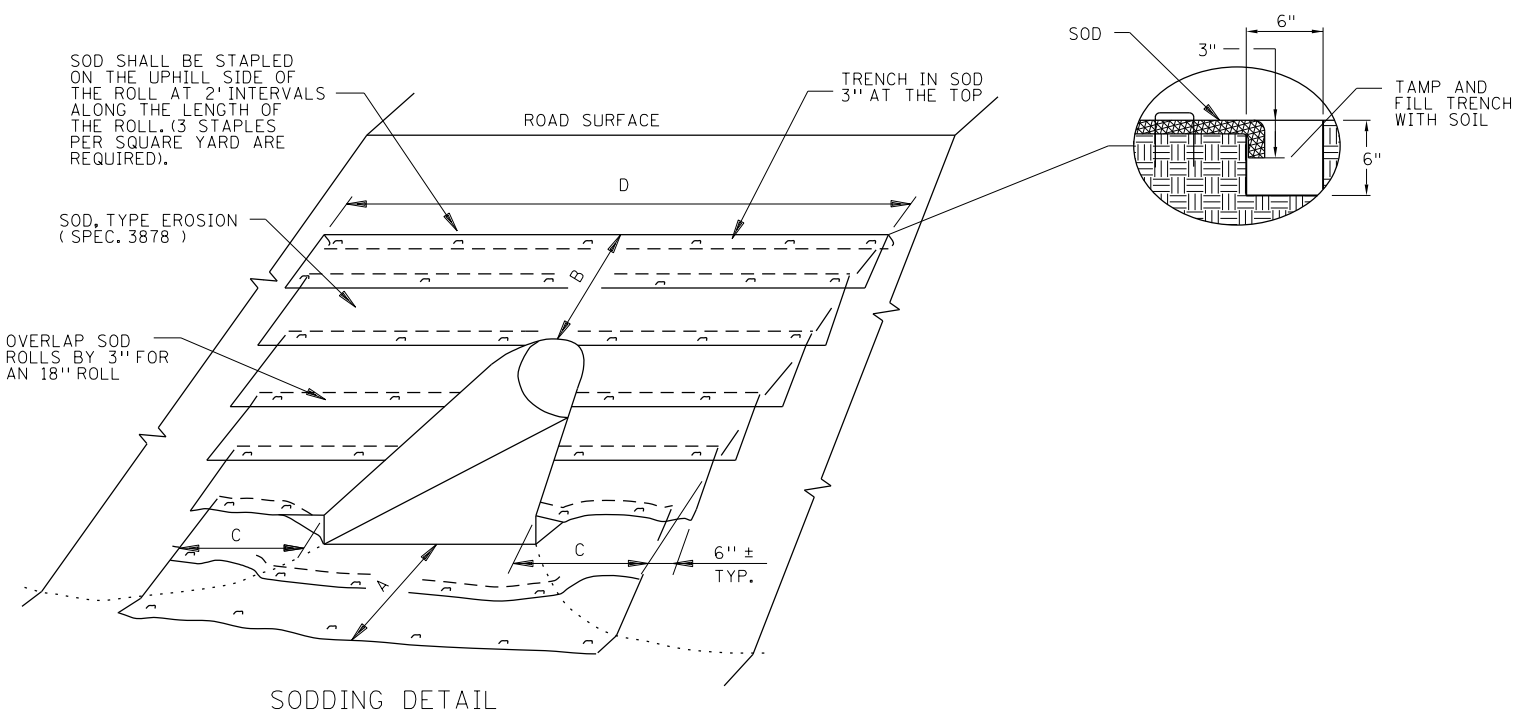
EROSION CONTROL BLANKET & SEED DETAIL

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

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

NOTES:

- AREA SHOWN IN SQUARE YARDS IS FOR ONE CULVERT END.
- QUANTITIES ARE CALCULATED TO INCLUDE SOD REQUIRED TO PROVIDE A 3" OVERLAP ON ALL 18" WIDE ROLLS. THIS ALLOWS FOR SHRINKAGE OF THE SOD.
- FOR PIPE ARCHES USE EQUIVALENT PIPE DIAMETER TO APPROXIMATE AREA.
- FOR CORRUGATED POLYETHYLENE PIPE METAL APRON (PLATE 3129), USE THE METAL APRON COLUMN (PLATE 3123).
- AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE BASED ON APRON SIDE SLOPES OF NO STEEPER THAN 1:2, UNLESS INDICATED AS FOR SAFETY APRONS.
- CARE SHOULD BE TAKEN IN SELECTING SOD TO STABILIZE THE APRON. RIP-RAP SHOULD BE USED FOR FLOW VELOCITIES GREATER THAN 6 FPS.
- ① ADDITIONAL QUANTITIES MAY BE SHOWN IN THE PLAN OR REQUIRED BY THE ENGINEER.
- ② FOR ARCH PIPE USE CLOSEST CIRCULAR PIPE DIAMETER AND APRON SLOPE. (DIAMETERS LARGER THAN 72" REQUIRE SPECIAL DESIGNS.)



SODDING DETAIL

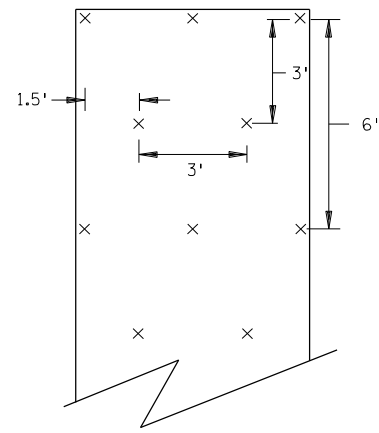
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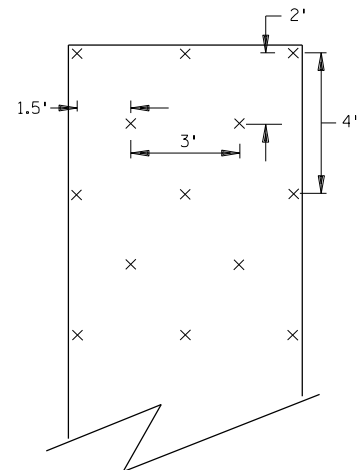
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	APPROVED: 2-28-2017 REVISED: STATE DESIGN ENGINEER	

PERMANENT EROSION CONTROL
TURF ESTABLISHMENT DETAIL AT CULVERT ENDS

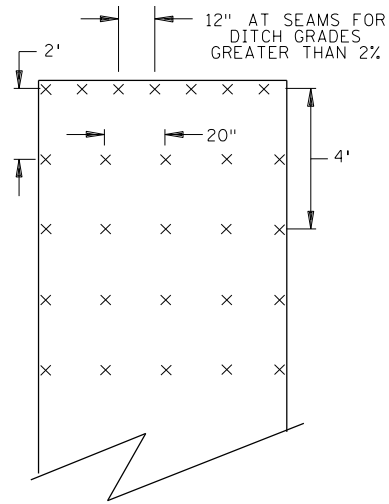
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SLOPES FLATTER THAN 1:2
(120 STAPLES PER 100 SQ YD)

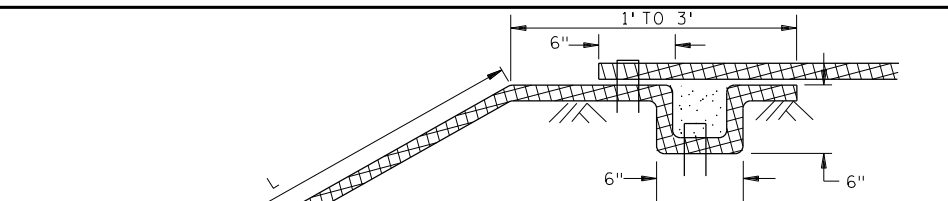


SLOPES 1:2 TO 1:1
(170 STAPLES PER 100 SQ YD)

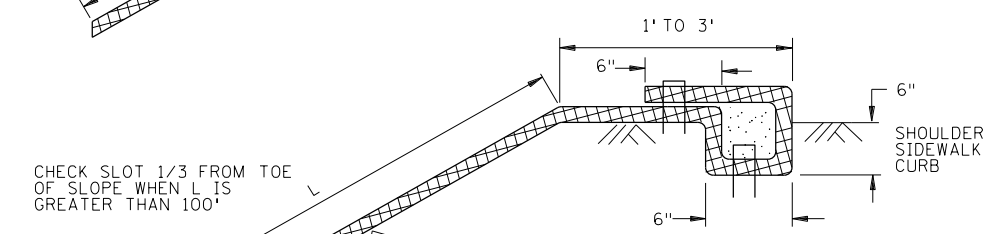


CHANNEL AND DITCH APPLICATIONS
(350 STAPLES PER 100 SQ YD)

BLANKET STAPLE PATTERN



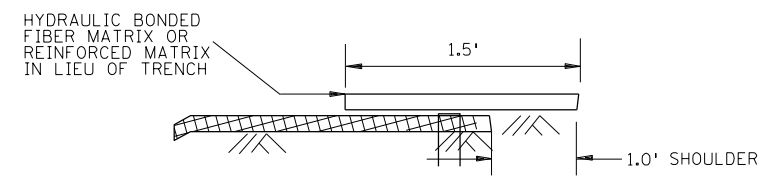
CHECK SLOT WHERE BLANKET CONTINUES



CHECK SLOT 1/3 FROM TOE OF SLOPE WHEN L IS GREATER THAN 100'

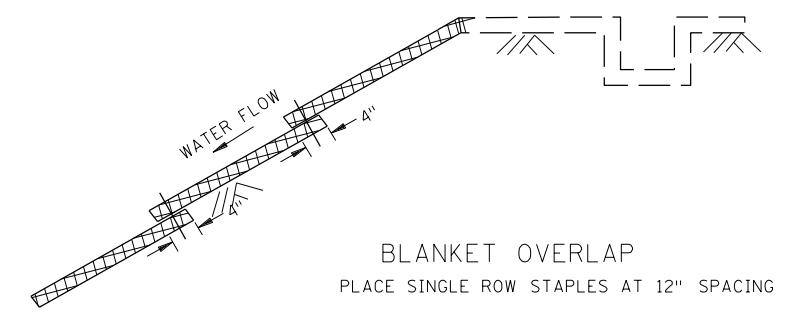
CHECK SLOT AT BEGINNING OF BLANKET

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.



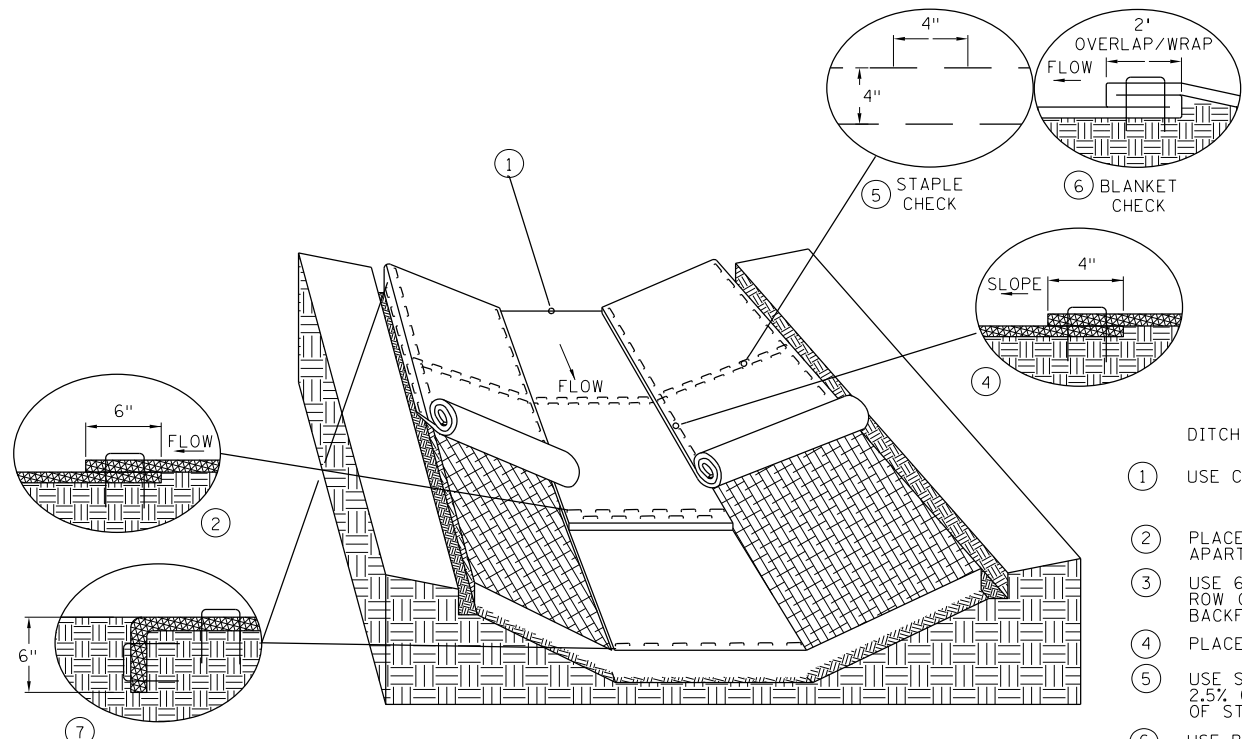
CHECK SLOT ALTERNATIVE
PLACE SINGLE ROW STAPLES AT 12" SPACING

CHECK SLOT DETAILS

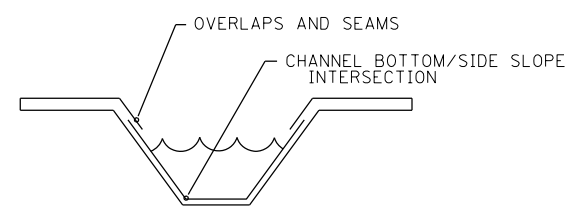


BLANKET OVERLAP
PLACE SINGLE ROW STAPLES AT 12" SPACING

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.



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.

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 APPROVED: 2-28-2017

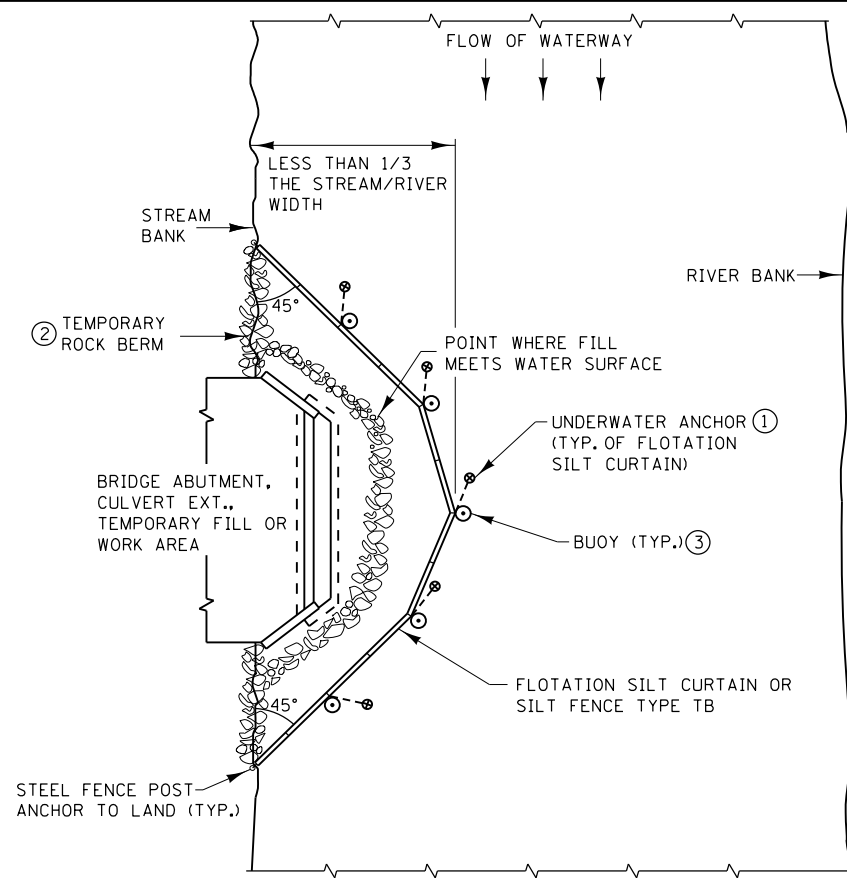
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 STANDARD PLAN 5-297.404
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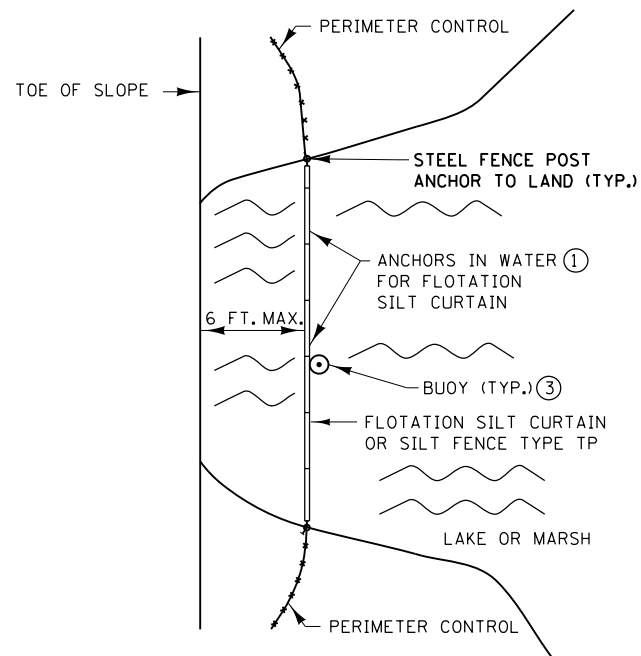
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**PERMANENT EROSION CONTROL
 BLANKET STAPLE PATTERN FOR SLOPES**

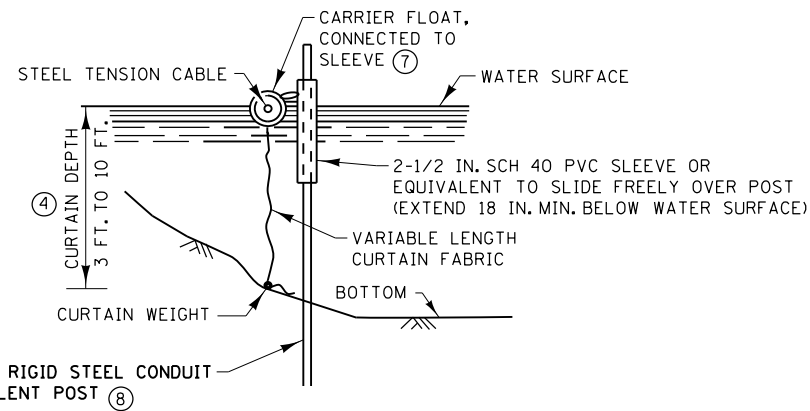
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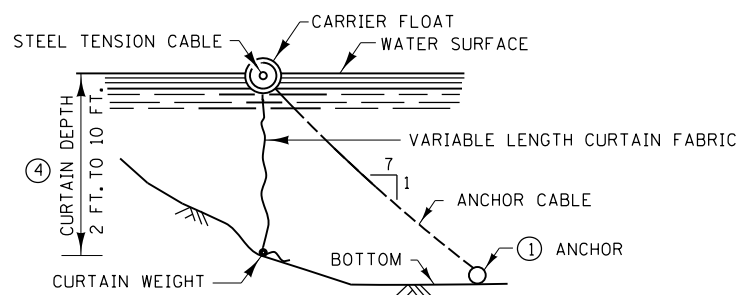
PLAN VIEW FOR STREAM ⑤



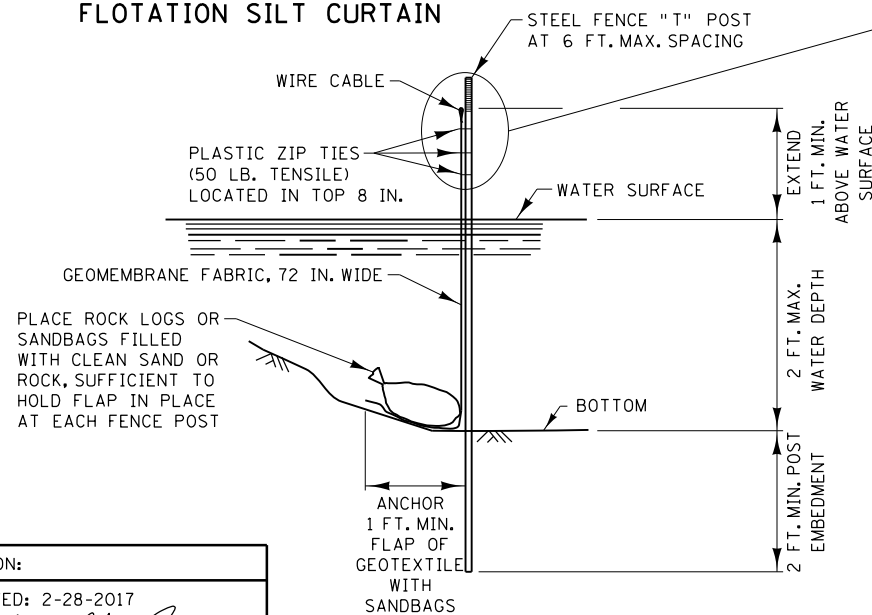
PLAN VIEW FOR LAKE OR MARSH ⑤



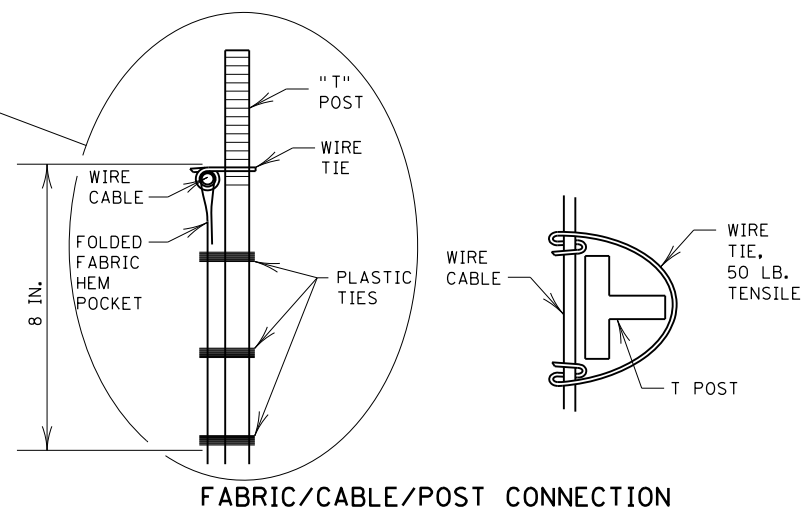
ALTERNATE FLOTATION SILT CURTAIN



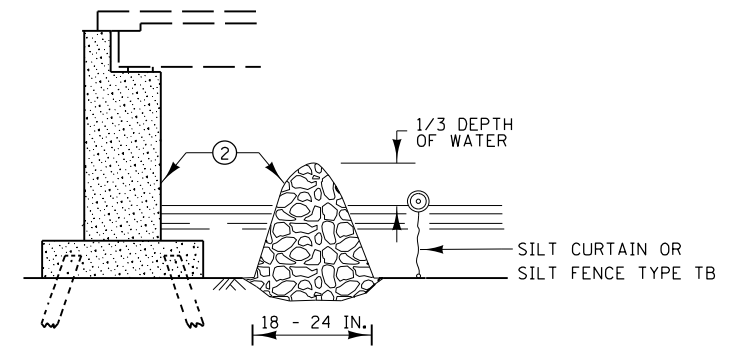
FLOTATION SILT CURTAIN



SILT FENCE TYPE TB ⑥



FABRIC/CABLE/POST CONNECTION

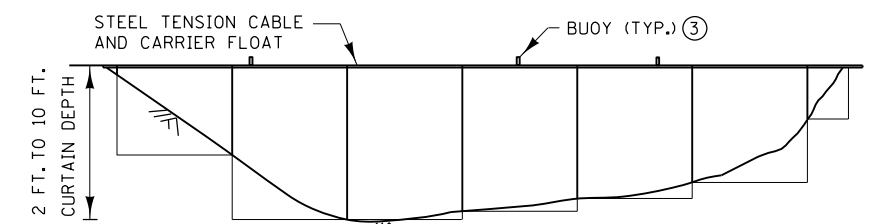


TEMPORARY ROCK BERM FOR SEDIMENT CONTROL

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

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

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



FRONT VIEW FOR FLOTATION SILT CURTAIN

NOTES:

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



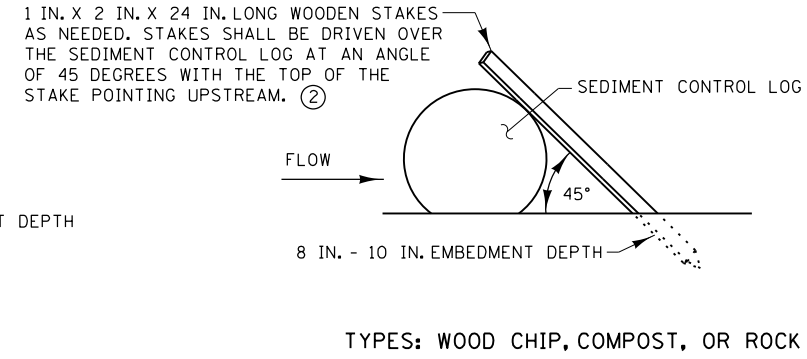
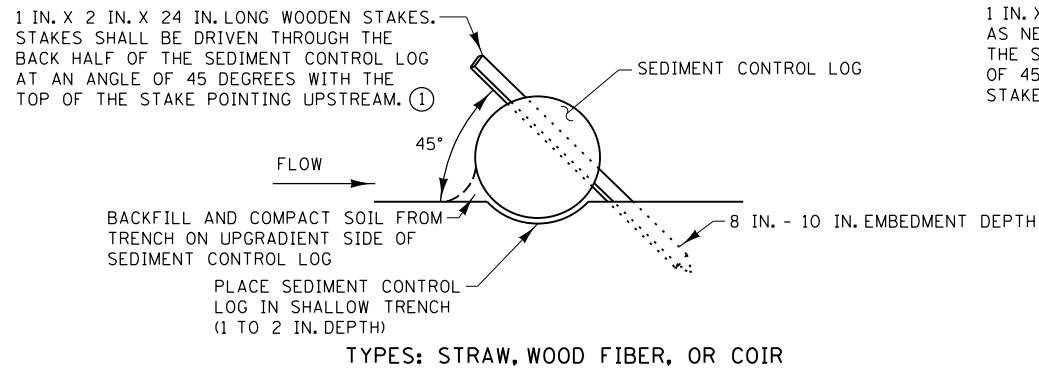
STANDARD PLAN 5-297.405

1 OF 8

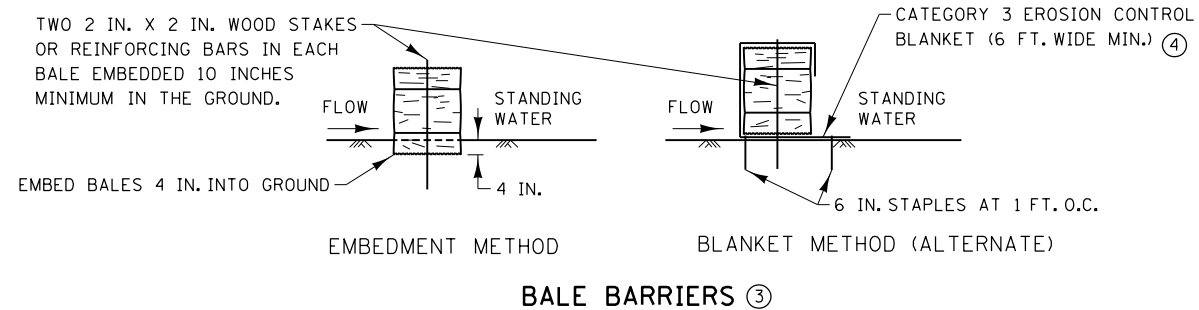
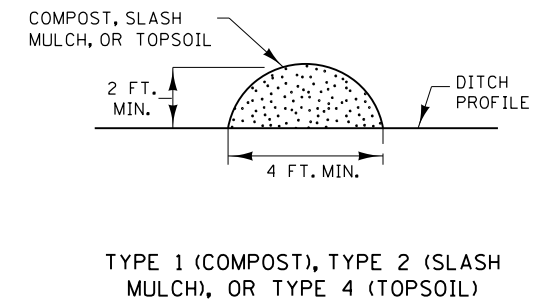
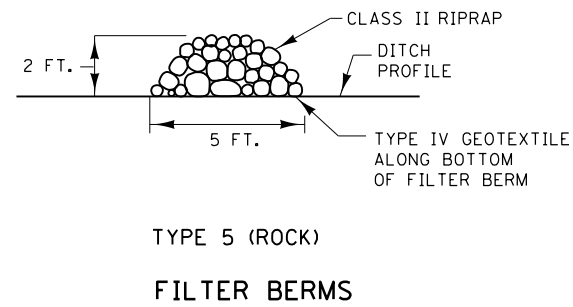
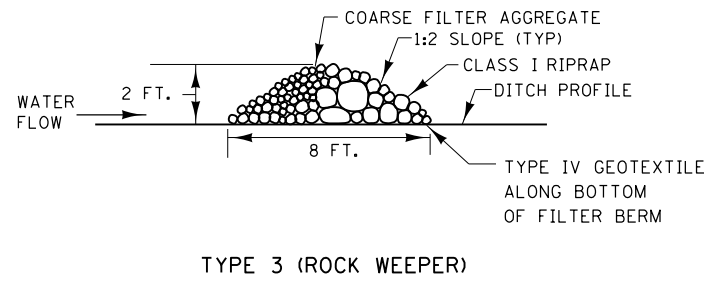
TEMPORARY SEDIMENT CONTROL
 SILT CURTAIN OR SILT FENCE TYPE TB

APPROVED: 2-28-2017
 REVISED:

Tom S...
 STATE DESIGN ENGINEER



SEDIMENT CONTROL LOGS



NOTES:

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

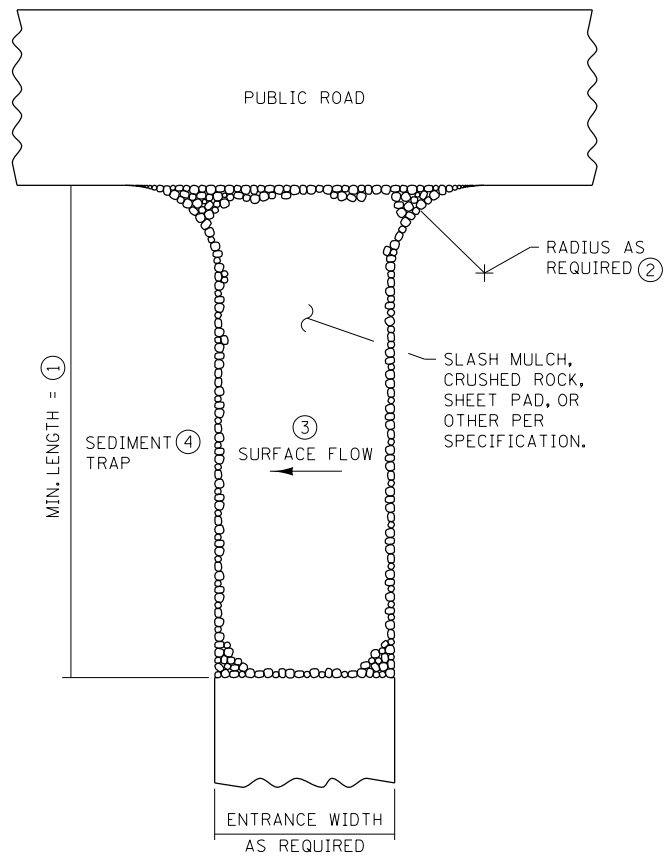
- ① SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1 FOOT FOR DITCH CHECKS OR 2 FEET FOR OTHER APPLICATIONS.
- ② PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.
- ③ TO BE USED FOR CRITICAL PERIMETER CONTROL 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.

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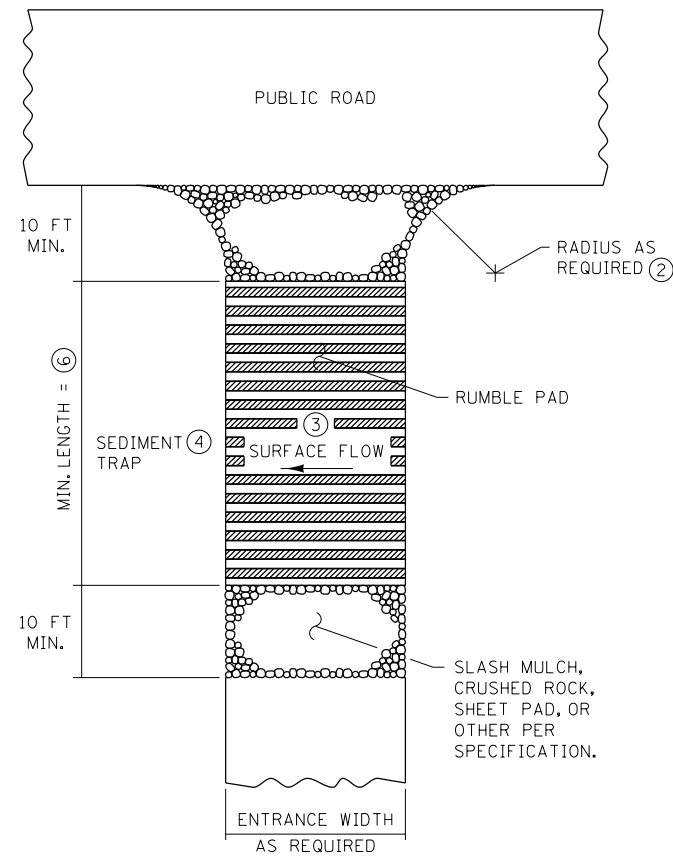


STANDARD PLAN 5-297.405	2 OF 8
<i>[Signature]</i> STATE DESIGN ENGINEER	APPROVED: 2-28-2017 REVISED:

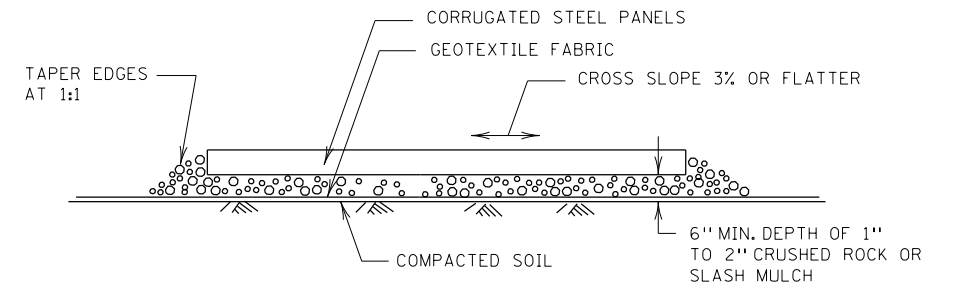
TEMPORARY SEDIMENT CONTROL	
FILTER BERMS, SEDIMENT CONTROL LOGS, AND BALE BARRIERS	



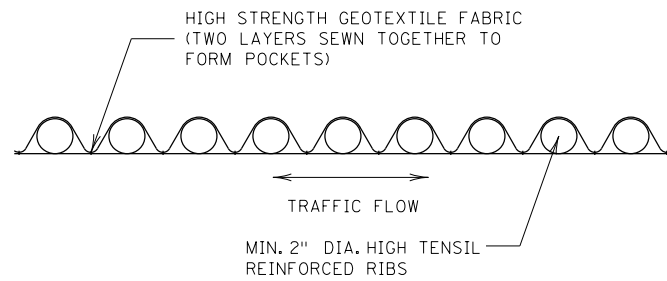
SLASH MULCH, CRUSHED ROCK, OR SHEET PAD CONSTRUCTION EXIT ⑤⑦



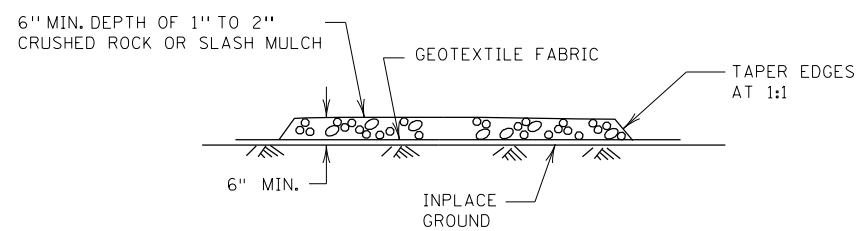
RUMBLE PAD CONSTRUCTION EXIT ⑤⑦



RUMBLE PAD



SHEET PAD



SLASH MULCH OR CRUSHED ROCK

NOTES:

SEE SPECS. 2573 & 3882.

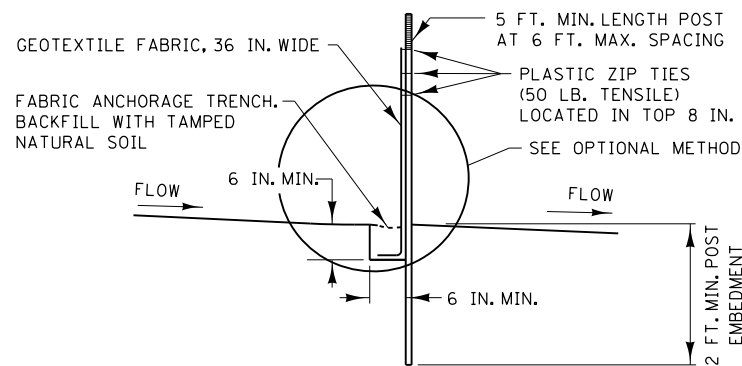
- ① MINIMUM LENGTH SHALL BE THE GREATER OF 50 FEET OR A LENGTH SUFFICIENT TO ALLOW A MINIMUM OF 5 TIRE ROTATIONS ON THE PROVIDED PAD. MINIMUM LENGTH SHALL BE CALCULATED USING THE LARGEST TIRE WHICH WILL BE USED IN TYPICAL OPERATIONS.
- ② PROVIDE RADIUS OR WIDEN PAD SUFFICIENTLY TO PREVENT VEHICLE TIRES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

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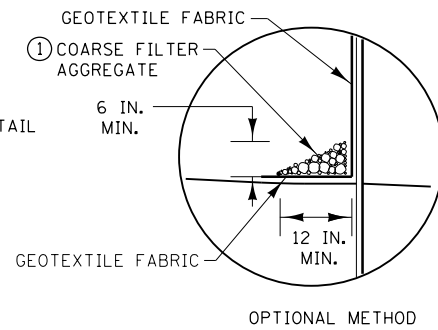
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APPROVED: 2-28-2017
<i>[Signature]</i> CHIEF ENVIRONMENTAL OFFICER

	STANDARD PLAN 5-297.405	5 OF 8
	APPROVED: 2-28-2017 REVISION: <i>[Signature]</i> STATE DESIGN ENGINEER	

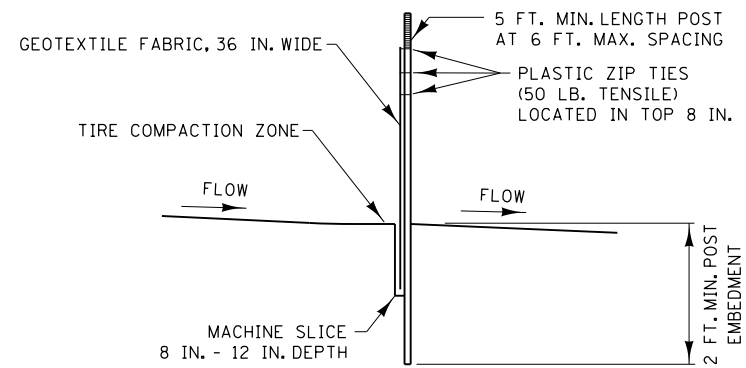
TEMPORARY SEDIMENT CONTROL STABILIZED CONSTRUCTION EXIT
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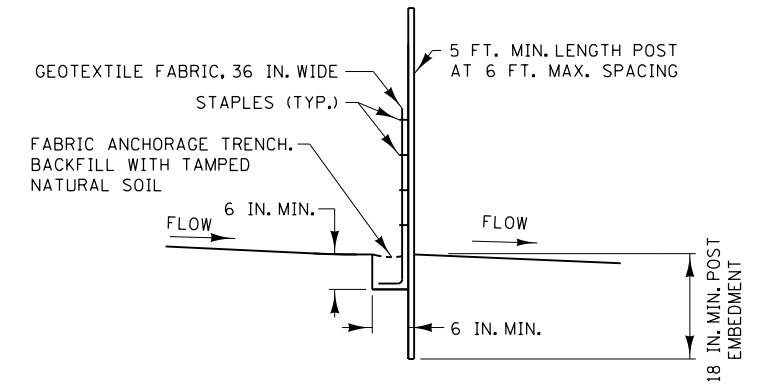
**SILT FENCE TYPE HI ②
(HAND INSTALLED)**



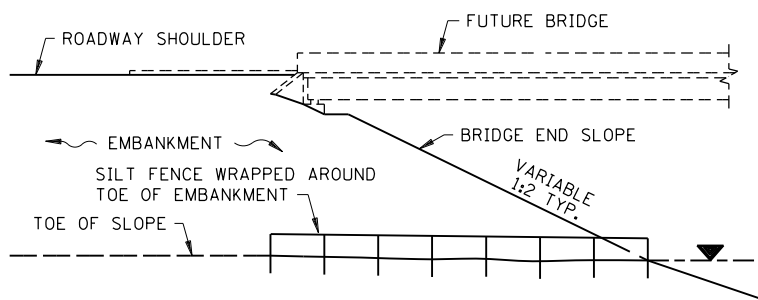
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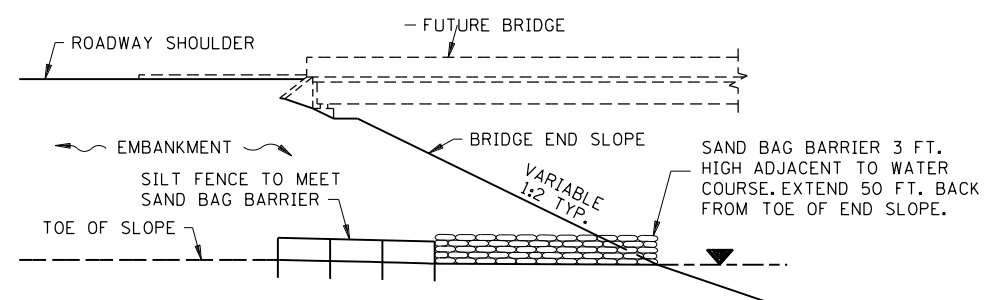
**SILT FENCE TYPE MS ②
(MACHINE SLICED)**



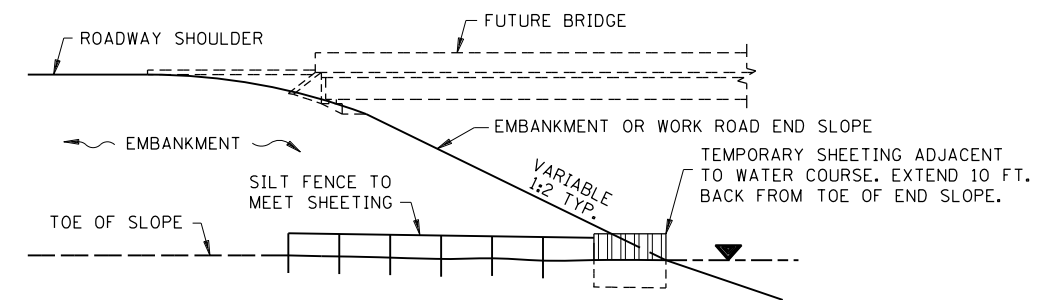
**SILT FENCE TYPE PA ③
(PREASSEMBLED)**



SILT FENCE ONLY ④

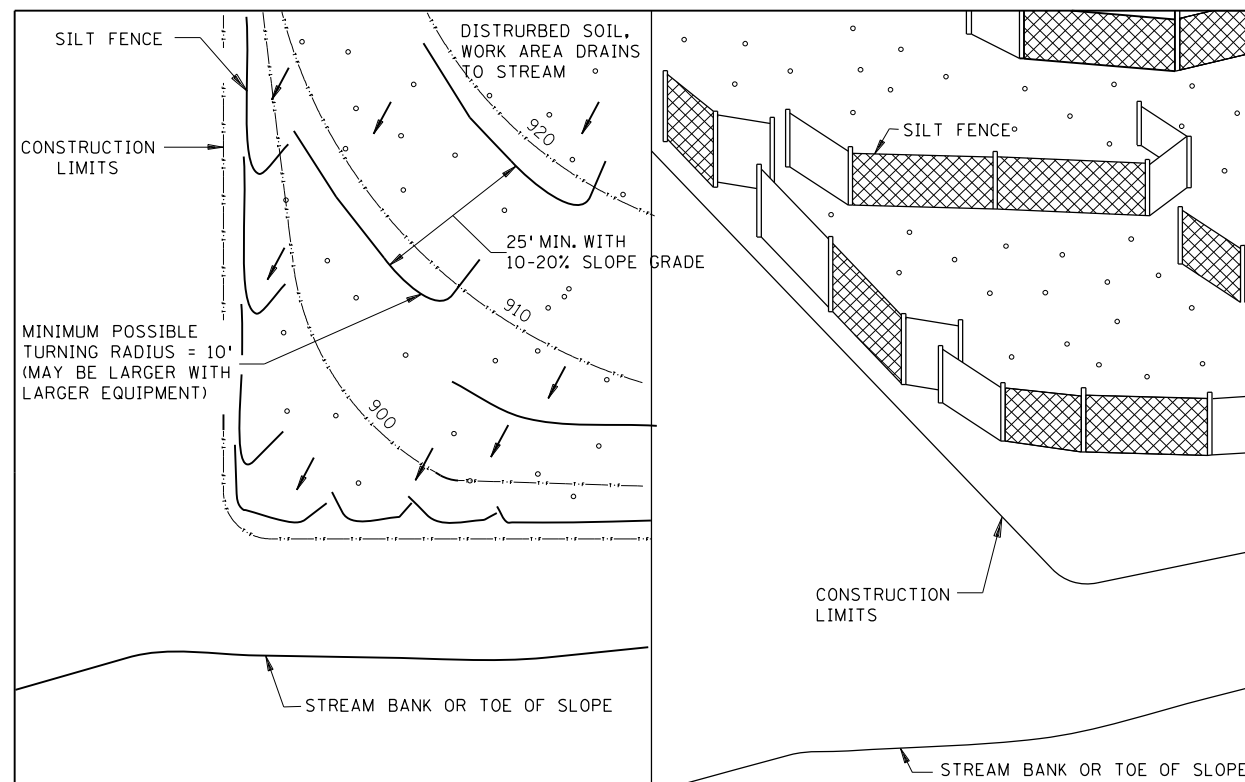


SILT FENCE WITH SAND BAGS ⑤



SILT FENCE WITH SHEETING ⑥

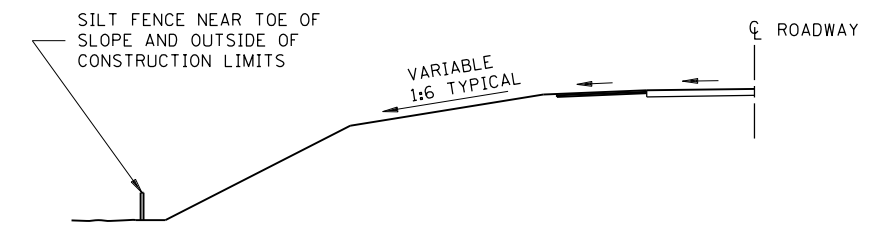
INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER



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.

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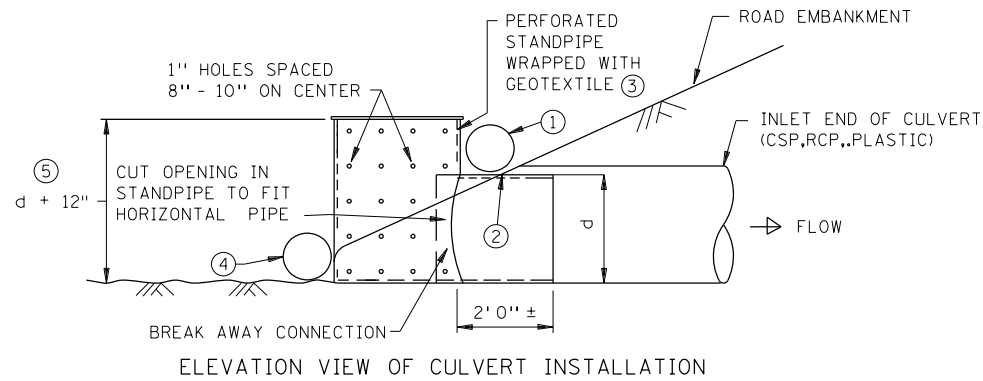
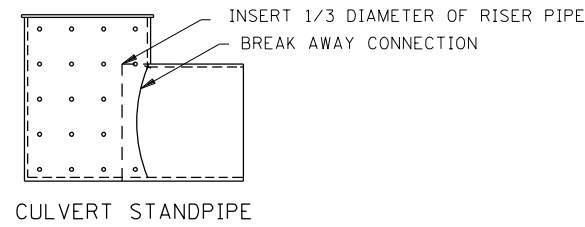
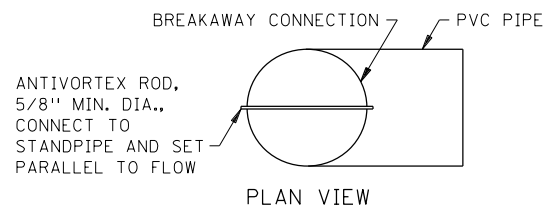
STANDARD PLAN 5-297.405

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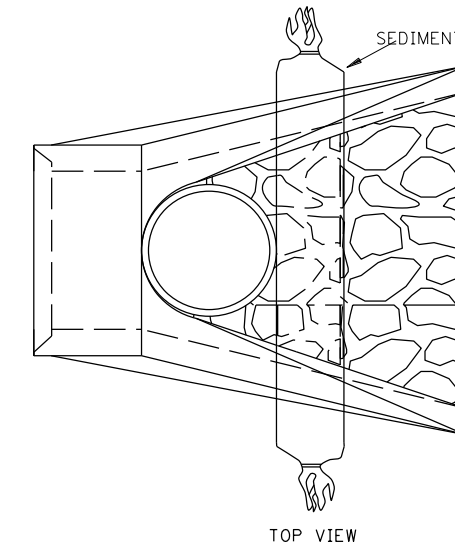
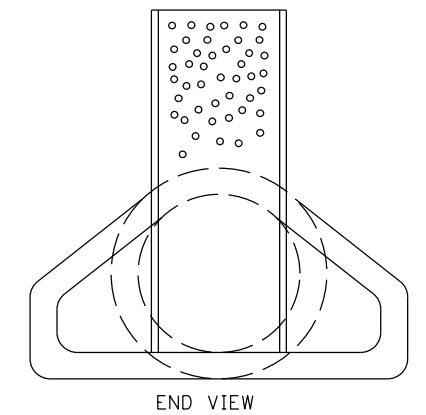
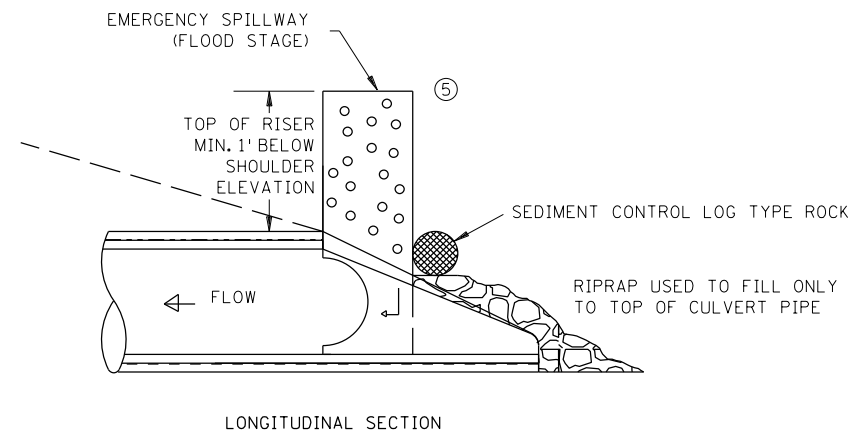
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APPROVED: 2-28-2017
REVISED:

**TEMPORARY SEDIMENT CONTROL
SILT FENCE**

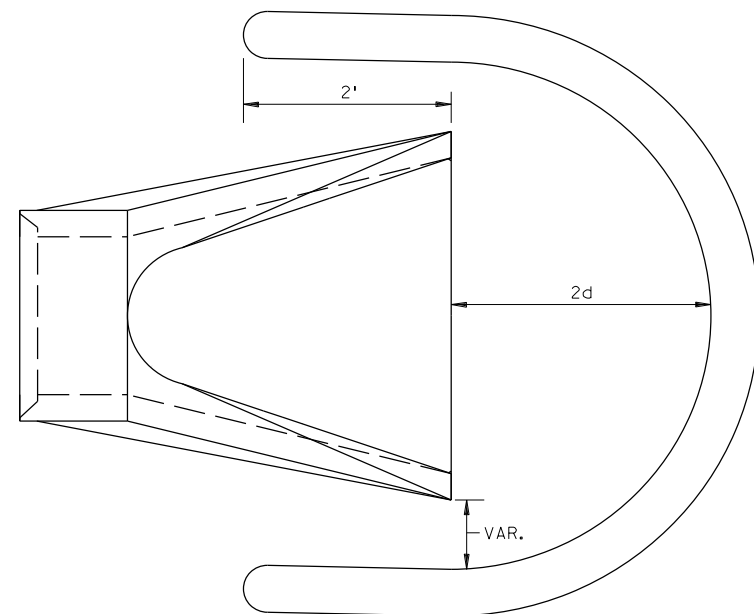


CULVERT STANDPIPE INSERT (D-RISER)
d = CULVERT SIZE: 12" - 36"

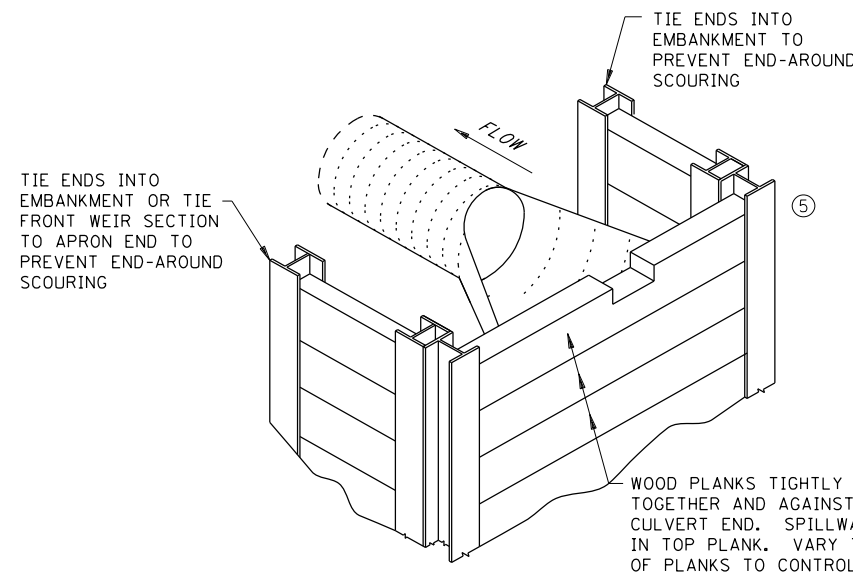


CULVERT STANDPIPE INSERT (D-RISER)

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



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.

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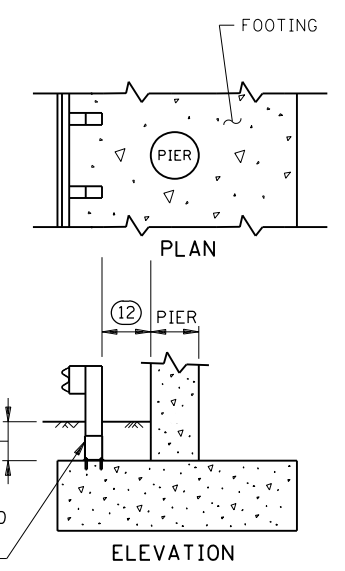
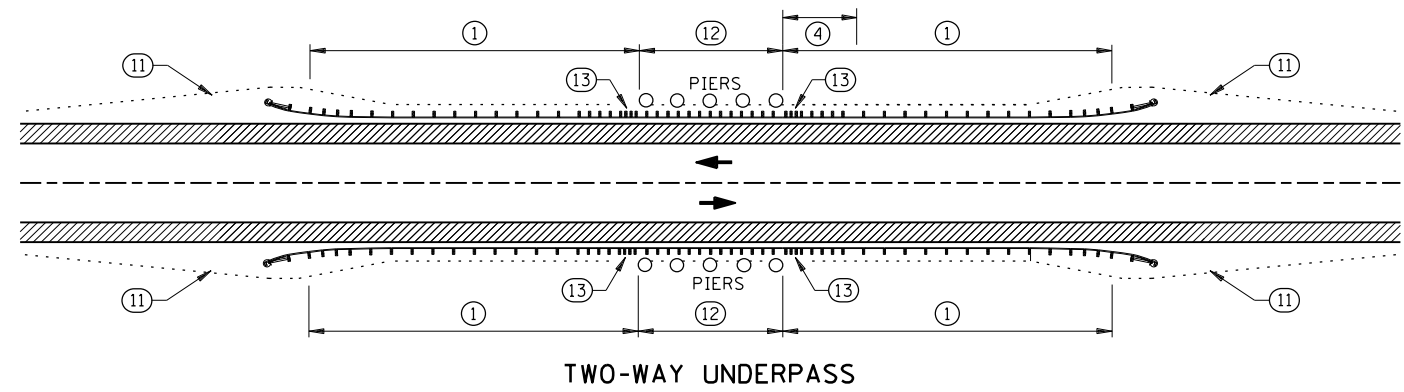
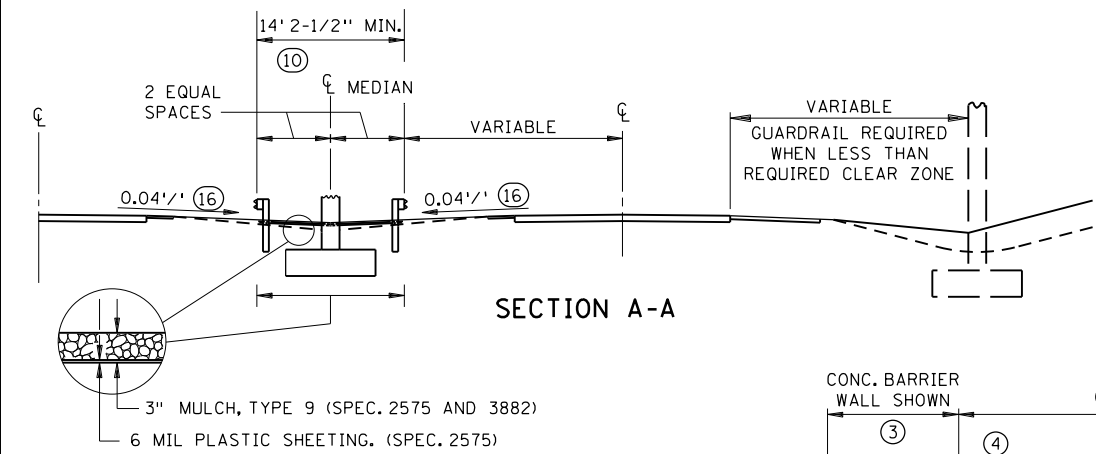
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APPROVED: 2-28-2017 <i>[Signature]</i> CHIEF ENVIRONMENTAL OFFICER



STANDARD PLAN 5-297.405	8 OF 8
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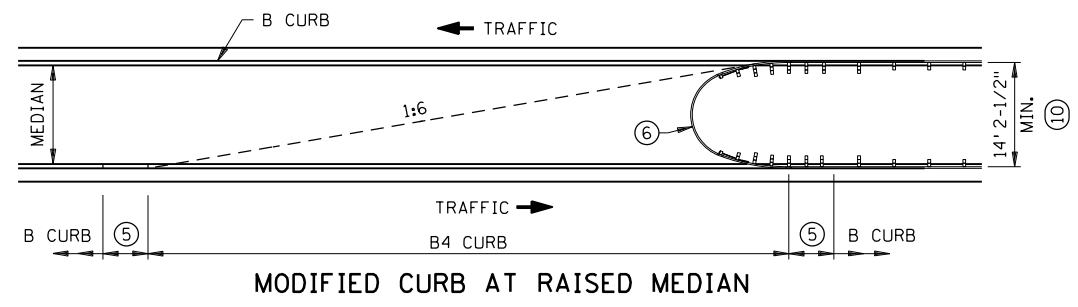
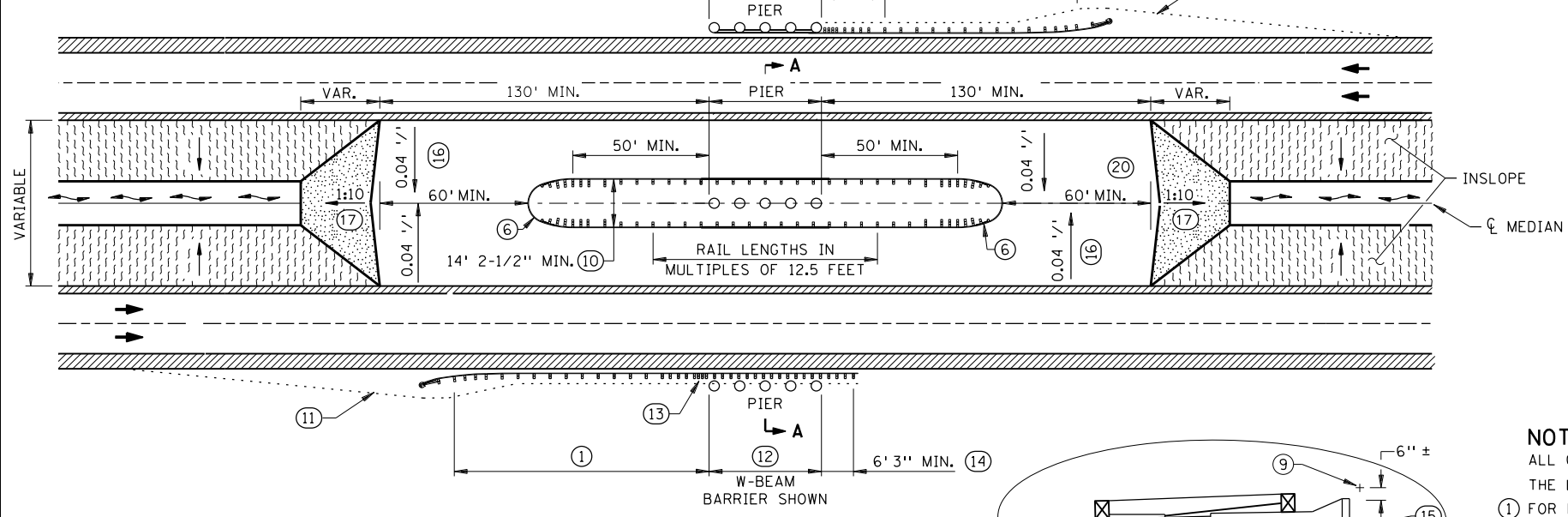
TEMPORARY SEDIMENT CONTROL
CULVERT END CONTROLS

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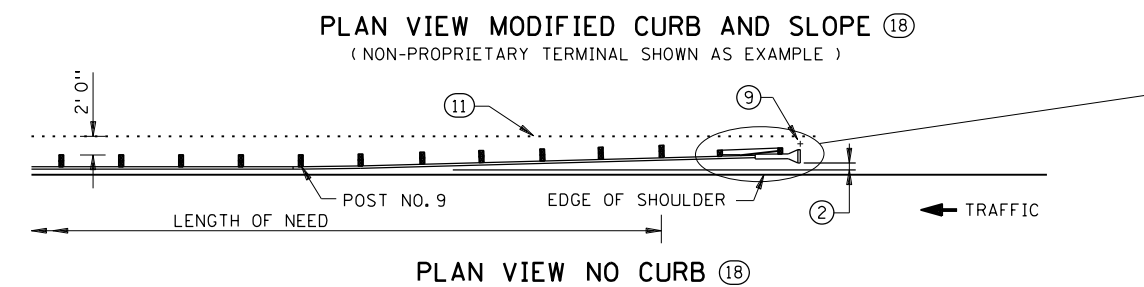
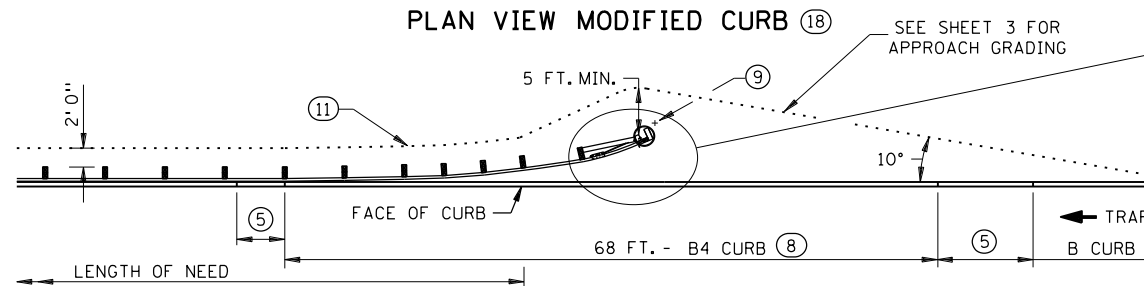
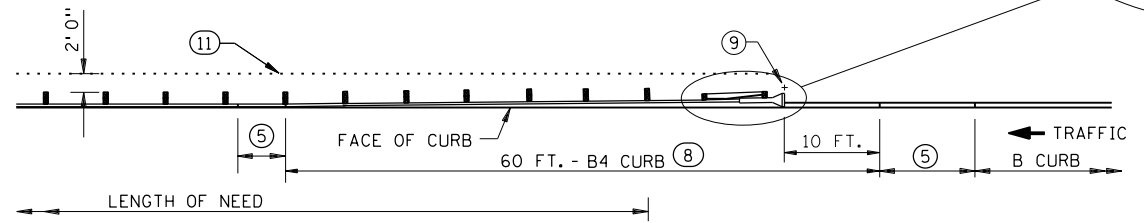
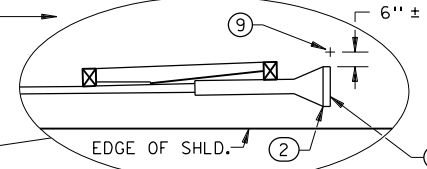
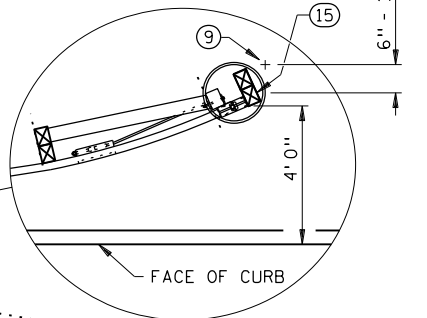
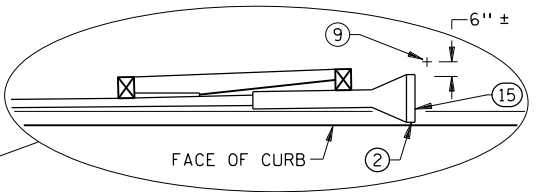



ESTIMATED DESIGN DEFLECTION TABLE FOR DESIGN B W-BEAM GUARDRAIL

6' 3" POST SPACING	3' 0"
6' 3" POST SPACING WITH DOUBLE NESTED RAIL	2' 8"
MODIFIED 3' 1-1/2" POST SPACING	2' 3"
MODIFIED POST SPACING WITH DOUBLE NESTED RAIL	2' 0"



- NOTES:**
- ALL GUARDRAIL POSTS SHALL BE 6 FT. 3 IN. CENTER TO CENTER (DESIGN B), EXCEPT WHERE NOTED. THE LATEST APPROVED VERSION OF STANDARD PLATES SHOWN OR AS INDICATED IN THE PLANS SHALL APPLY.
- ① FOR REQUIRED LENGTH OF INSTALLATION SEE ROAD DESIGN MANUAL CHAPTER 10.
 - ② THE LAST 50 FT. OF TANGENT TERMINALS MAY BE FLARED AT 1:50 TAPER.
 - ③ CONC. BARRIER WALL BETWEEN PIER COLUMNS MAY BE USED. IF USED, SEE BARRIER WALL DETAILS.
 - ④ AN APPROVED TRANSITION MUST BE USED.
 - ⑤ 10 FT. CURB TRANSITION, USE IF ADJACENT CURB IS GREATER THAN 4 INCHES.
 - ⑥ THRIE BEAM BULLNOSE. SEE STANDARD PLAN 5-297.611 FOR DETAILS.
 - ⑦ IF EMBEDMENT IS GREATER THAN 3 FT. 0 IN., OR IF EMBEDMENT IS 2 FT. 6 IN. TO 3 FT. 0 IN. AND ADJACENT POSTS ARE EMBEDDED 3 FT. 0 IN. OR MORE, POST SEAT IS NOT REQUIRED.
 - ⑧ FOR CURB 6 IN. OR HIGHER, MILL TO 3 IN. HEIGHT.
 - ⑨ SNOWPLOW MARKER (X4-5) WITH A 2 LB./FT. DELINEATOR POST 8 FT. LONG (SPEC. 3401) DRIVEN INTO THE GROUND. EXTEND 3 FT. ABOVE TERMINAL. THE MARKER IS INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE.
 - ⑩ MEASUREMENT IS FROM BACK OF RAIL TO BACK OF RAIL.
 - ⑪ 1:10 OR FLATTER SLOPE P.I.
 - ⑫ SEE ESTIMATED DESIGN DEFLECTION TABLE FOR DESIGN B W-BEAM GUARDRAIL.
 - ⑬ WHEN CLOSE POST SPACING OR DOUBLE NESTED RAIL IS USED, THIS POST SPACING SHOULD EXTEND A MINIMUM OF 12 FT. IN THE DIRECTION OF APPROACHING TRAFFIC.
 - ⑭ THE ANCHOR ASSEMBLY MUST BE LOCATED DOWNSTREAM OF THE HAZARD.
 - ⑮ MARK THE APPROACH END OF PLATE BEAM GUARDRAIL INSTALLATIONS WITH A STRIPED OBJECT MARKER SIZED TO FIT THE END TERMINAL, HAVING ALTERNATING BLACK AND REFLECTIVE YELLOW (WIDE ANGLE PRISMATIC RETROREFLECTIVE SHEETING) STRIPES SLOPED DOWNWARD AT A 45 DEGREE ANGLE TOWARD THE SIDE ON WHICH TRAFFIC PASSES. FOR FLAT END TREATMENTS THE OBJECT MARKER SHALL FIT INSIDE THE RECESSED AREA. FOR ROUNDED END TREATMENTS THE OBJECT MARKER SHALL WRAP AROUND THE CIRCULAR END AND BE MOUNTED SO THE TOP OF THE OBJECT MARKER LINES UP WITH THE TOP OF THE END TREATMENT.
 - ⑯ 0.04 FT./FT. CROSS SLOPE TYPICAL. 0.10 FT./FT. CROSS SLOPE MAXIMUM.
 - ⑰ 1:10 SLOPE OR FLATTER.
 - ⑱ USE ONLY FOR RETROFITS WITH SITE RESTRICTIONS. FOR RETROFITS WITHOUT SITE RESTRICTIONS AND NEW CONSTRUCTION, SEE SHEET 3.
 - ⑲ MEDIAN GRADING DETAIL SHOWN APPLIES TO THRIE-BEAM BULLNOSE ONLY.
 - ⑳ DRAINAGE DETAILS SHOWN ON GRADING PLAN.



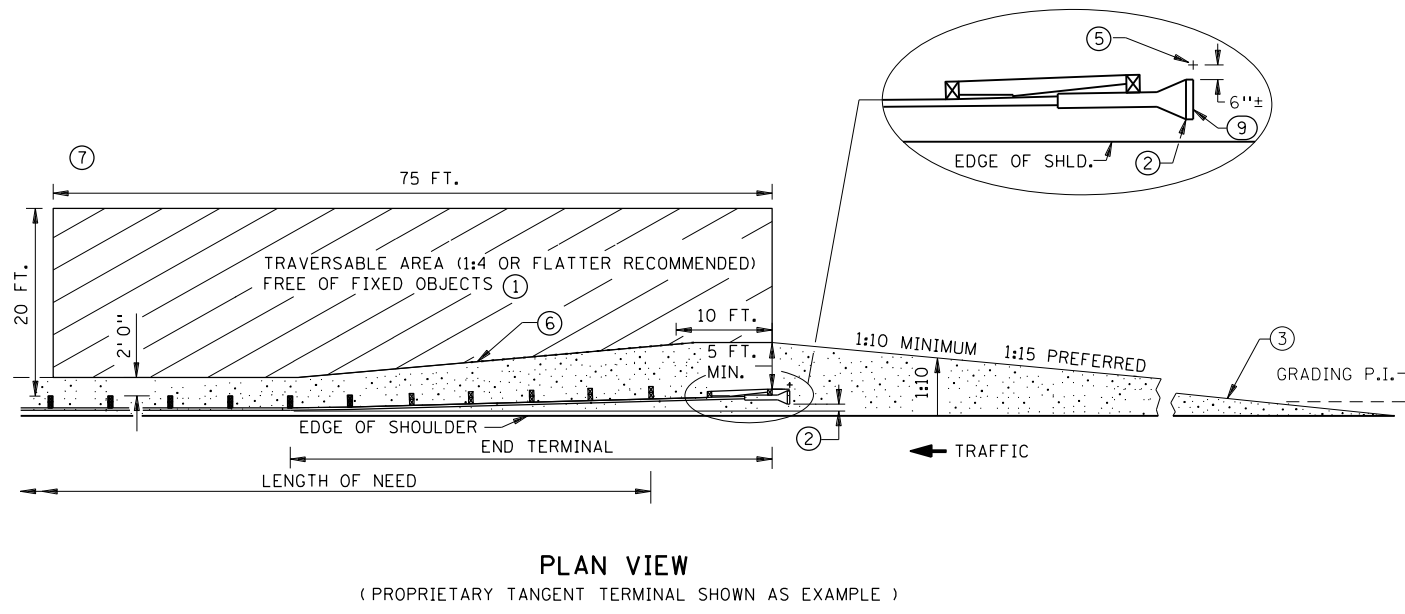

MINNESOTA
 DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.601 **1 OF 3**
 APPROVED: 5-27-2014
 REVISED:

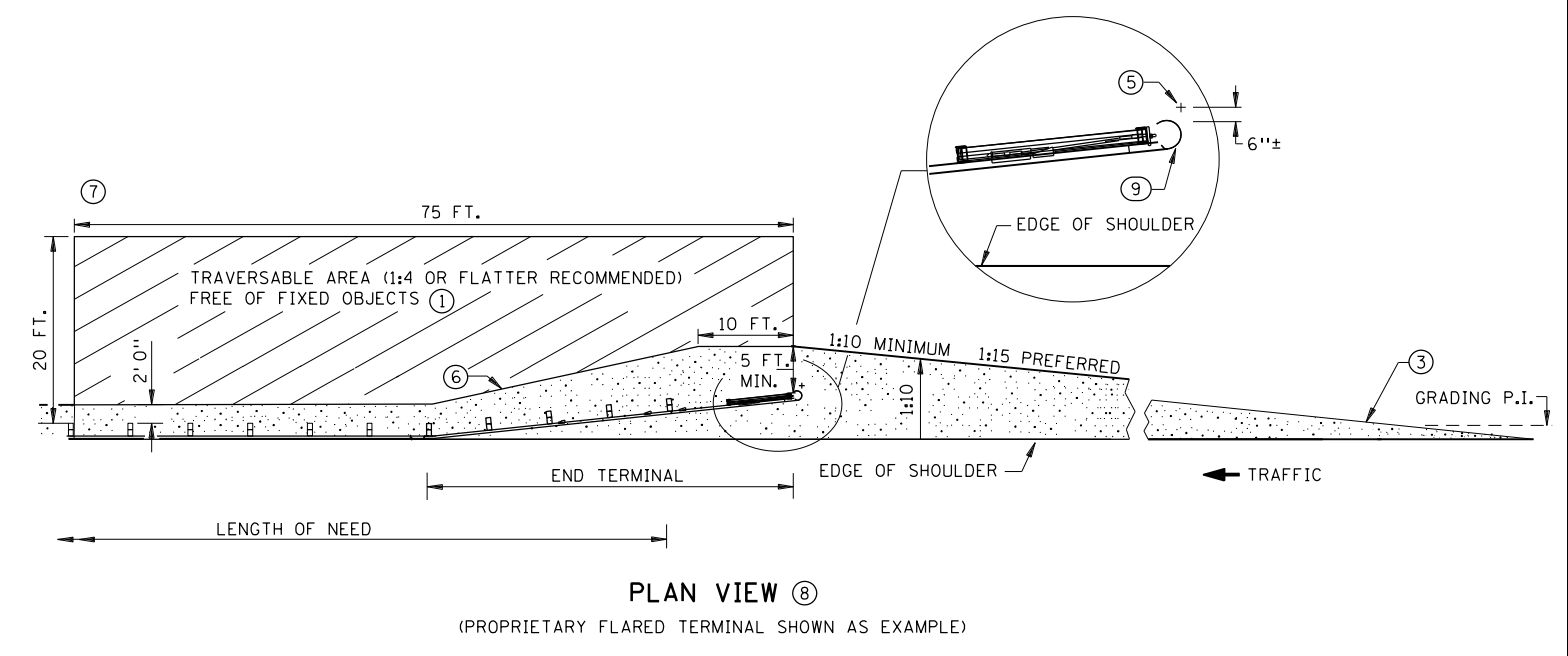
Christopher Ry
 STATE DESIGN ENGINEER

GUARDRAIL INSTALLATIONS AT MEDIANS AND END TREATMENTS

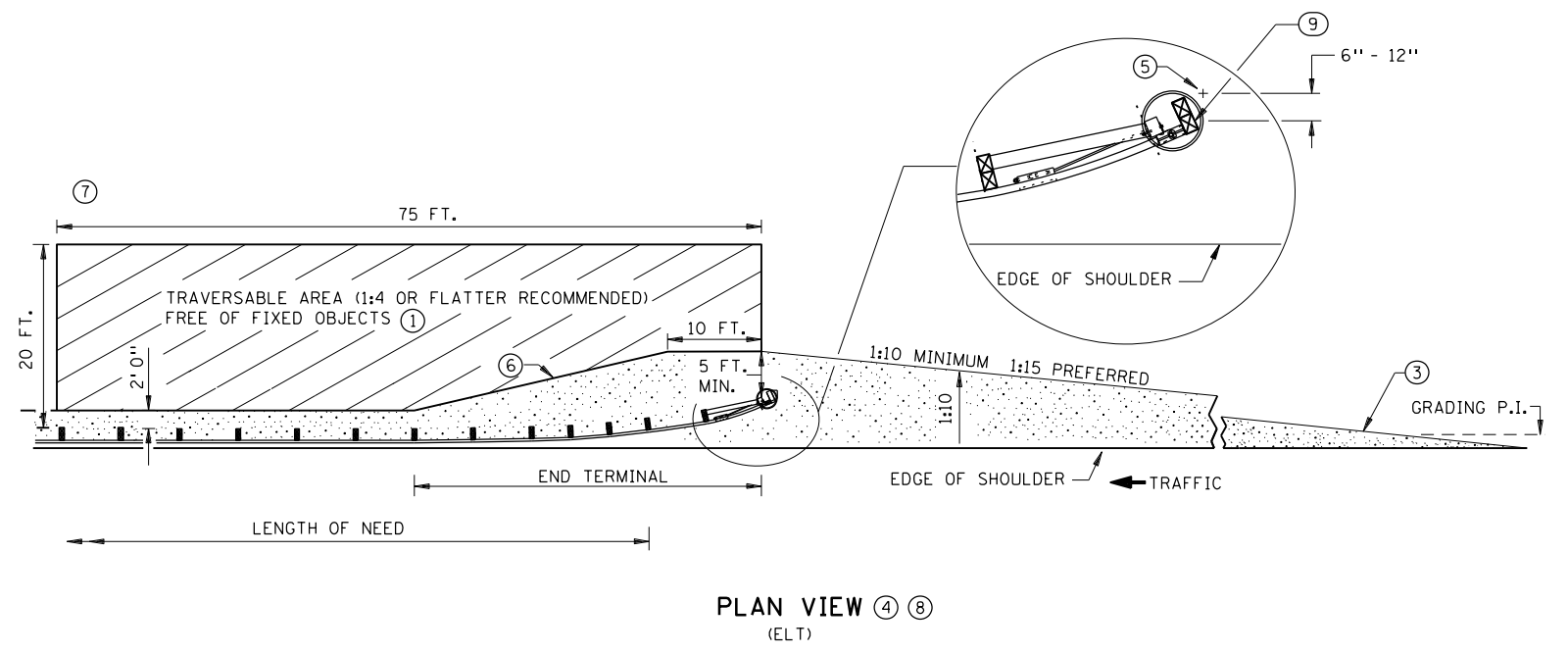
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PLAN VIEW
(PROPRIETARY TANGENT TERMINAL SHOWN AS EXAMPLE)



PLAN VIEW (8)
(PROPRIETARY FLARED TERMINAL SHOWN AS EXAMPLE)



PLAN VIEW (4) (8)
(ELT)

NOTES:

- ALL CROSS SLOPES ARE IN FOOT/FOOT UNLESS OTHERWISE NOTED.
- ALL GUARDRAIL POSTS SHALL BE 6 FT. 3 IN. CENTER TO CENTER (DESIGN B), EXCEPT WHERE NOTED.
- CHANGES (TO SUBJECTS COVERED BY THIS SHEET) INDICATED IN THE PLANS OR ON PLATES WITH MORE RECENT APPROVAL DATES SHALL APPLY.
- GRADING AND DRAINAGE HARDWARE ARE NOT INCIDENTAL TO GUARDRAIL INSTALLATION.
- ① SLOPES BETWEEN 1:3 AND 1:4 PERMITTED WHEN 1:4 OR FLATTER IS NOT POSSIBLE. FOR SLOPES STEEPER THAN 1:3 THE AREA IMMEDIATELY BEHIND AND BEYOND THE END TERMINAL SHOULD, AT LEAST, BE SIMILAR IN CROSS SECTION TO THE UNSHIELDED ROADSIDE AREA UPSTREAM OF THE END TERMINAL.
- ② THE LAST 50 FT. OF TANGENT TERMINALS CAN BE FLARED AT 1:50 TAPER.
- ③ WHEN GRADING PLATFORMS ARE BUILT, THEY MUST BE SMOOTHLY TRANSITIONED TO EXISTING SIDE SLOPE SO THE ENTIRE ROADSIDE APPROACH TO THE BARRIER REMAINS TRAVERSABLE, AS WELL AS THE AREA IMMEDIATELY BEHIND IT.

- ④ SEE STANDARD PLATE 8329.
- ⑤ SNOWPLOW MARKER (X4-5) WITH A 2 LB./FT. DELINEATOR POST 8 FT. LONG (SPEC. 3401) DRIVEN INTO THE GROUND, EXTEND 3 FT. ABOVE TERMINAL. THE MARKER IS INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE. MARK BOTH THE BEGINNING AND END OF PLATE BEAM GUARDRAIL INSTALLATION.
- ⑥ 1:10 OR FLATTER SLOPE P.I.
- ⑦ GRADUALLY BLEND SLOPE FROM TRAVERSABLE AREA TO STEEP EXISTING SLOPE (WHEN SLOPE IS STEEPER THAN 1:6).
- ⑧ IF THE TERRAIN BEYOND THE TERMINAL END AND IMMEDIATELY BEHIND THE BARRIER IS NOT SAFELY TRAVERSABLE, A TANGENT (ENERGY- ABSORBING) TERMINAL SHALL BE USED.
- ⑨ MARK THE APPROACH END OF PLATE BEAM GUARDRAIL INSTALLATIONS WITH A STRIPED OBJECT MARKER SIZED TO FIT THE END TERMINAL, HAVING ALTERNATING BLACK AND REFLECTIVE YELLOW (WIDE ANGLE PRISMATIC RETROREFLECTIVE SHEETING). STRIPES SHALL SLOPE DOWNWARD AT A 45 DEGREE ANGLE TOWARD THE SIDE ON WHICH TRAFFIC PASSES. FOR FLAT END TREATMENTS THE OBJECT MARKER SHALL FIT INSIDE THE RECESSED AREA. FOR ROUNDED END TREATMENTS THE OBJECT MARKER SHALL WRAP AROUND THE CIRCULAR END AND BE MOUNTED SO THE TOP OF THE OBJECT MARKER LINES UP WITH THE TOP OF THE END TREATMENT.

	STANDARD PLAN 5-297.601	3 OF 3	GUARDRAIL INSTALLATIONS AT MEDIANS AND END TREATMENTS (FOR NEW CONSTRUCTION AND RETROFITS WITHOUT SITE RESTRICTIONS)
		APPROVED: 5-27-2014 REVISED:	

GENERAL NOTES:

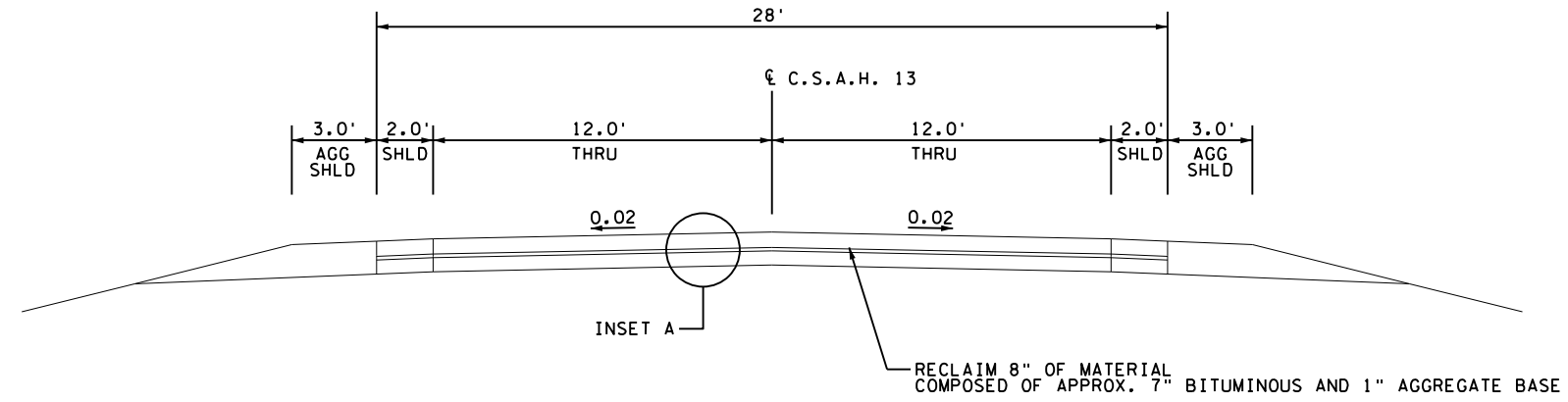
-ALL CROSS SLOPES ARE IN FT./FT. UNLESS OTHERWISE NOTED.

(*) = AGGREGATE BASE LAYER WAS INDISCERNIBLE FROM THE UNDERLYING MATERIAL IN THE FIELD.

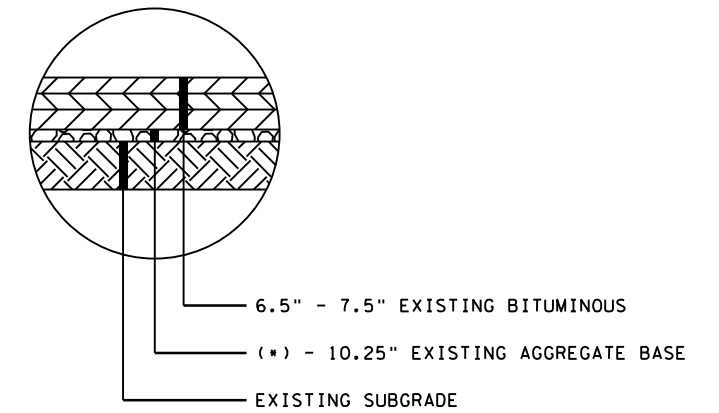
SPECIFIC NOTES:

- ① BITUMINOUS AND AGGREGATE BASE DEPTHS ARE APPROXIMATE. DEPTHS SHOWN ARE FROM CORES TAKEN BY BRAUN INTERTEC. CONTRACTOR TO VERIFY THICKNESSES. SEE LOCATIONS ON EXISTING CONDITIONS & REMOVAL PLAN.
- CORE 1: 7.5" BITUMINOUS, (*) AGG. BASE
- CORE 2: 7.25" BITUMINOUS, (*) AGG. BASE
- CORE 3: 7.5" BITUMINOUS, 1.5" AGG. BASE
- CORE 4: 7.5" BITUMINOUS, 1.5" AGG. BASE
- CORE 5: 6.75" BITUMINOUS, 10.25" AGG. BASE
- CORE 6: 6.5" BITUMINOUS, 7.5" AGG. BASE

C.S.A.H. 13 (CEDAR DRIVE NW) EXISTING TYPICAL SECTION
 STA. 89+51.41 TO STA. 127+68.50
NOT TO SCALE



INSET A ①



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12224 NICOLLET AVENUE
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REV.	BY	DATE

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Peter M Lemke
 PETER M. LEMKE
 LIC. NO. 40118 DATE 01-29-2019

DESIGNED
 TAL
 DRAWN
 SJP
 CHECKED
 PML

S.A.P. 002-613-001
 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
 TYPICAL SECTIONS

SHEET
 21
 OF
 92

GENERAL NOTES:

-ALL CROSS SLOPES ARE IN FT./FT. UNLESS OTHERWISE NOTED.

-THE GRADING GRADE AND SUBCUT CROSS SLOPES WILL BE THE SAME AS THE PROPOSED PAVEMENT SURFACE.

-MAXIMUM ROLLOVER 0.07 FT/FT.

-FOR DITCH DETAILS, ELEVATION & SIDE SLOPE VARIATIONS, SEE CROSS SECTIONS.

-SEE TURF ESTABLISHMENT, EROSION CONTROL, & SUPERELEVATION PLAN FOR CROSS SLOPE VARIATIONS.

-FILL SECTION SHOWN. FOR CUT SECTIONS PROVIDE A 2:1 SUBCUT TAPER UP FROM BOTTOM OF SUBGRADE AT SHLD PI.

-RIGHT OF WAY WIDTHS FOR C.S.A.H. 13:
 89.7' AT STA. 89+51.41
 88.5' AT STA. 90+67.65
 100' FROM STA. 91+33.64 TO 103+30.32
 125.2' AT STA. 103+30.32
 125.4' AT STA. 112+96.56
 100' FROM STA. 113+05.75 TO END

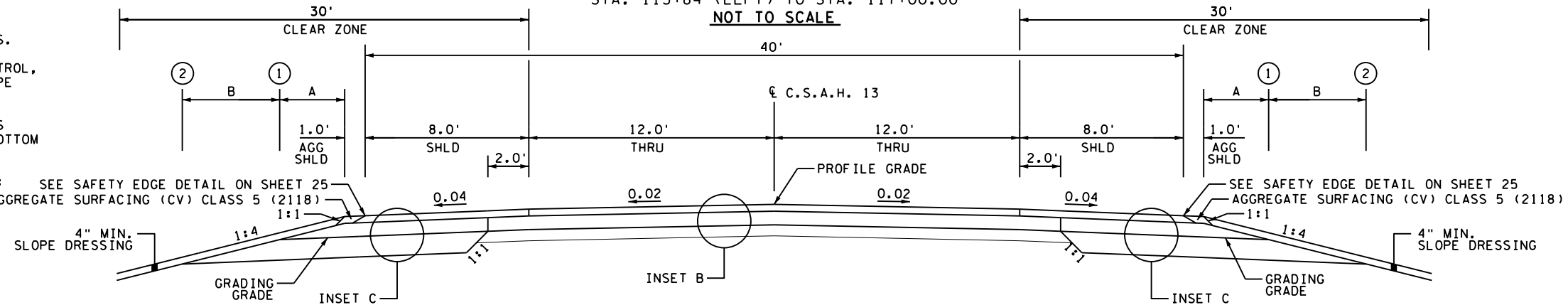
SPECIFIC NOTES:

(1) RECLAMATION TO TAKE PLACE AFTER SHOULDER, TURN LANE, AND BYPASS ARE BUILT TO GRAVEL GRADE

C.S.A.H. 13 PROPOSED TYPICAL SECTION

STA. 89+51.41 TO STA. 105+24 (RIGHT)
 STA. 89+51.41 TO STA. 107+74 (LEFT)
 STA. 110+00 (RIGHT) TO STA. 117+00.00
 STA. 113+84 (LEFT) TO STA. 117+00.00

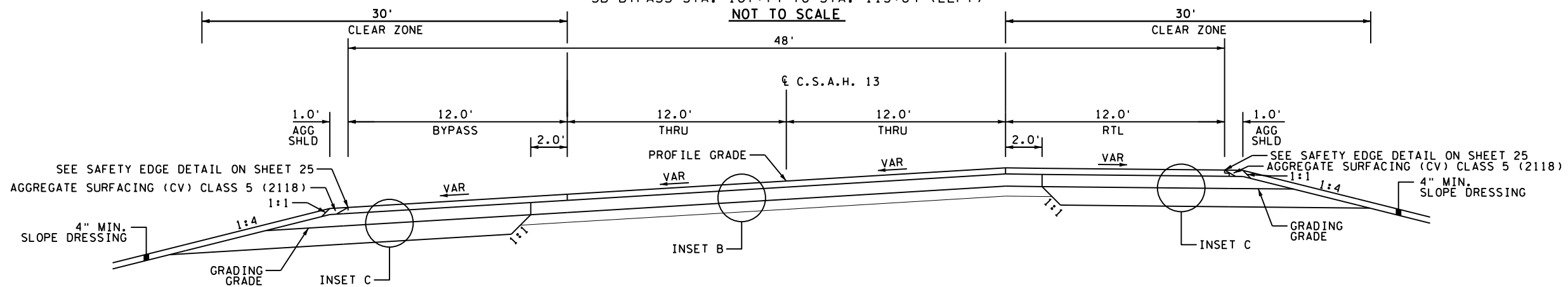
NOT TO SCALE



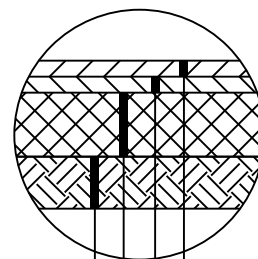
C.S.A.H. 13 PROPOSED TYPICAL RTL/BYPASS SECTION

NB RTL STA. 105+24 TO STA. 110+00 (RIGHT)
 SB BYPASS STA. 107+74 TO STA. 113+84 (LEFT)

NOT TO SCALE

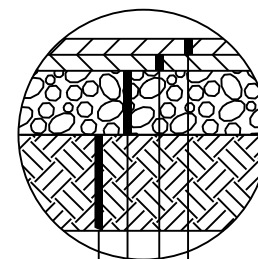


INSET B



2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) (SPWEB340C)(2360)
 2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) (SPWEB340C)(2360)
 8.0" RECLAIMED BITUMINOUS/AGGREGATE BASE (1)
 EXISTING AGGREGATE BASE/SUBGRADE

INSET C



2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) (SPWEB340C)(2360)
 2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) (SPWEB340C)(2360)
 8.0" AGGREGATE BASE (CV), CLASS 5 (2211)
 12" SELECT GRANULAR EMBANKMENT MOD 10% (CV) (2106)

ROADWAY IN	SLOPE	DISTANCE FROM SHOULDER PI TO:	
		GRADING PI (1)	SUBGRADE PI (2)
NORMAL CROWN	1:4	4.8'	9.5'
	1:2	2.2'	4.3'
FULL SUPER	HIGH SIDE	4.2'	8.3'
	LOW SIDE	5.3'	10.5'

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 PETER M. LEMKE
 LIC. NO. 40118 DATE 01-29-2019

DESIGNED TAL
 DRAWN SUP
 CHECKED PML

S.A.P. 002-613-001
 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
 TYPICAL SECTIONS

GENERAL NOTES:

-ALL CROSS SLOPES ARE IN FT./FT. UNLESS OTHERWISE NOTED.

-THE GRADING GRADE AND SUBCUT CROSS SLOPES WILL BE THE SAME AS THE PROPOSED PAVEMENT SURFACE.

-MAXIMUM ROLLOVER 0.07 FT/FT.

-FOR DITCH DETAILS, ELEVATION & SIDE SLOPE VARIATIONS, SEE CROSS SECTIONS.

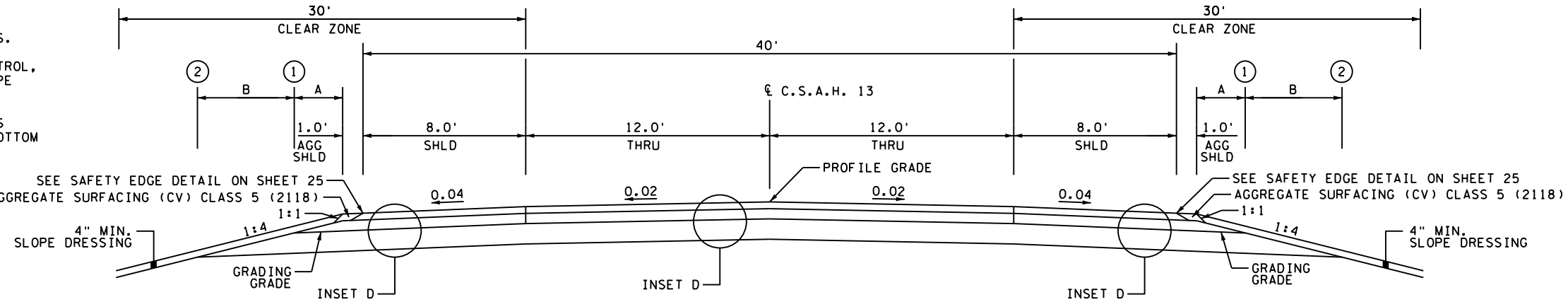
-SEE TURF ESTABLISHMENT, EROSION CONTROL, & SUPERELEVATION PLAN FOR CROSS SLOPE VARIATIONS.

-FILL SECTION SHOWN. FOR CUT SECTIONS PROVIDE A 2:1 SUBCUT TAPER UP FROM BOTTOM OF SUBGRADE AT SHLD PI.

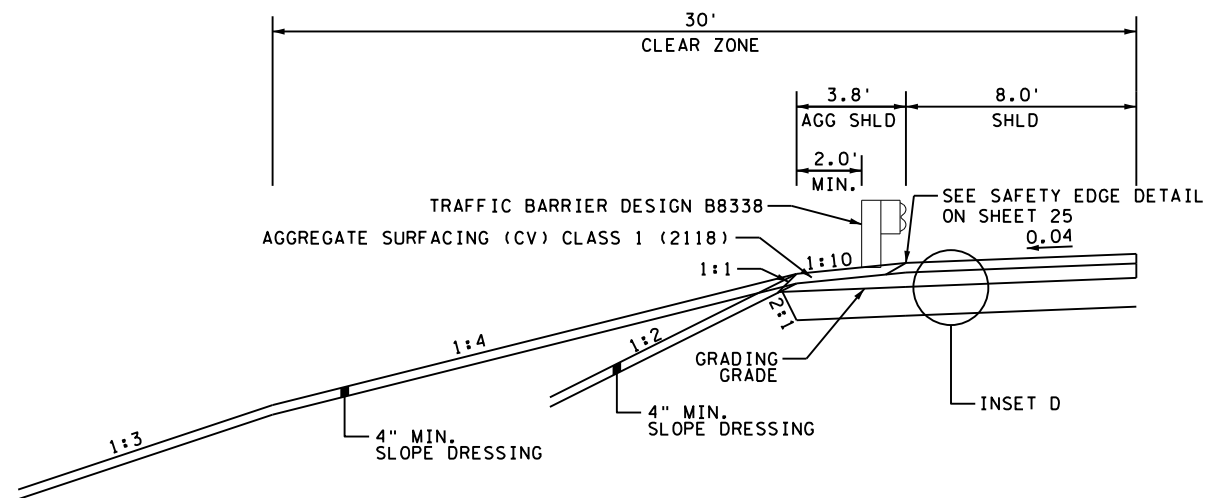
-RIGHT OF WAY WIDTH FOR C.S.A.H. 13: 100' FROM STA. 113+05.75 TO END

SEE SAFETY EDGE DETAIL ON SHEET 25
AGGREGATE SURFACING (CV) CLASS 5 (2118)

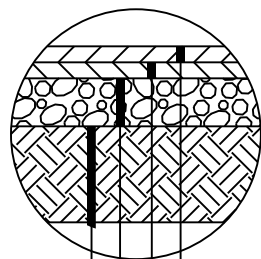
C.S.A.H. 13 PROPOSED TYPICAL SECTION
STA. 117+00.00 TO STA. 127+68.50
NOT TO SCALE



ROADWAY IN		DISTANCE FROM SHOULDER PI TO:	
		GRADING PI (1)	SUBGRADE PI (2)
NORMAL CROWN	1:4	4.8'	9.5'
	1:2	2.2'	4.3'
FULL SUPER	HIGH SIDE	4.2'	8.3'
	LOW SIDE	5.3'	10.5'



INSET D



- 2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) (SPWEB340C)(2360)
- 2.0" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) (SPWEB340C)(2360)
- 6.0" AGGREGATE BASE (CV), CLASS 5 (2211)
- 12" SELECT GRANULAR EMBANKMENT MOD 10% (CV) (2106)

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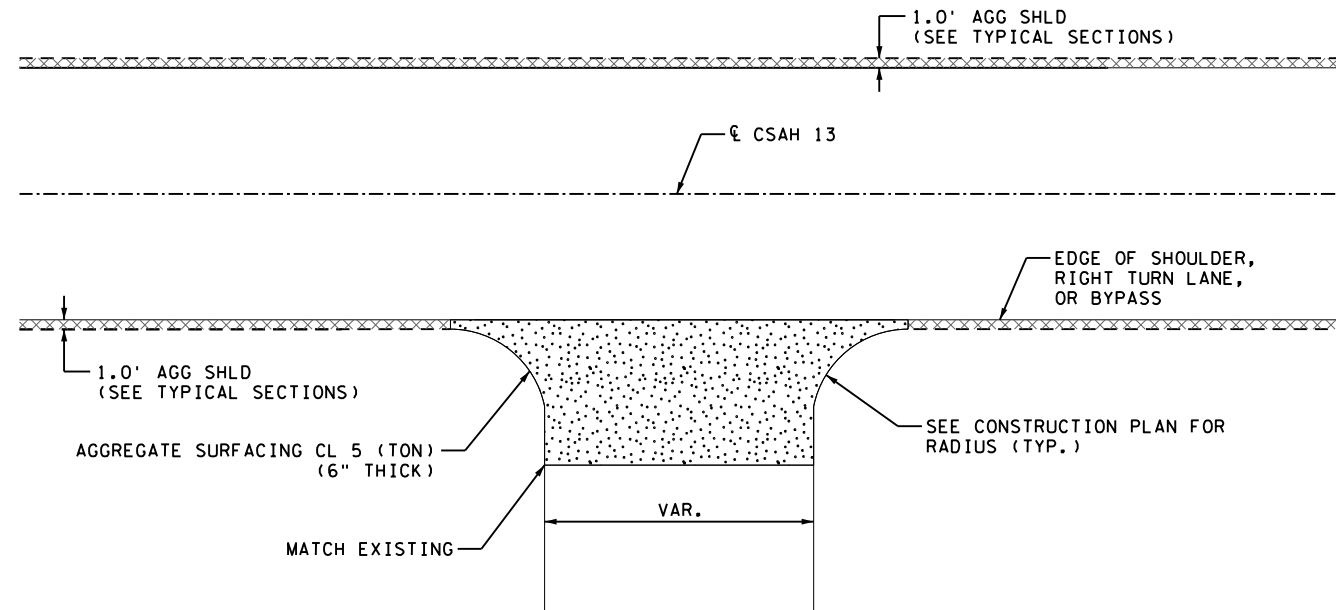
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Peter M Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

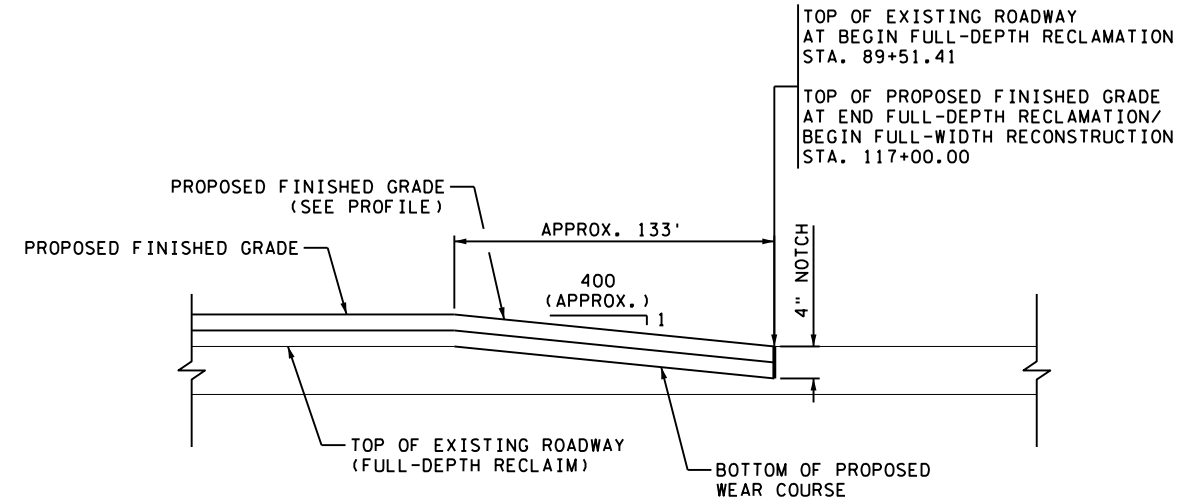
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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
TYPICAL SECTIONS

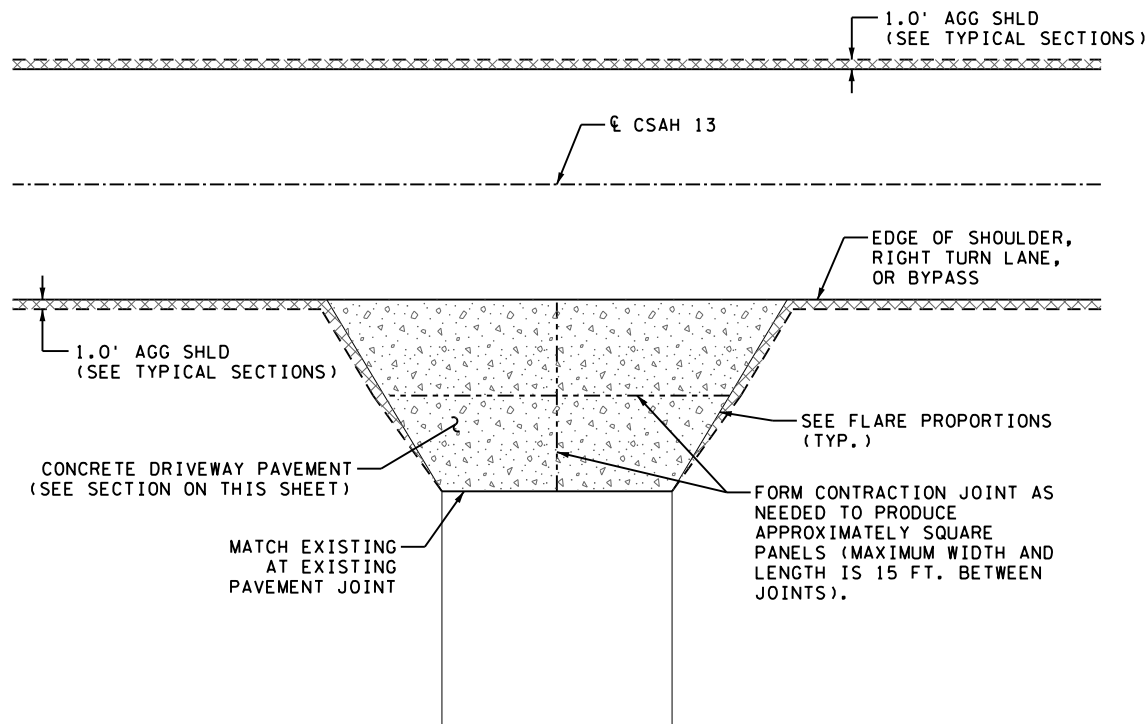
GRAVEL/FIELD ENTRANCE ①
NOT TO SCALE



(BETWEEN PAVEMENT TREATMENT TYPES)
NOT TO SCALE



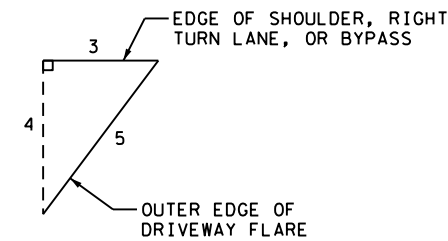
CONCRETE DRIVEWAYS ②
NOT TO SCALE



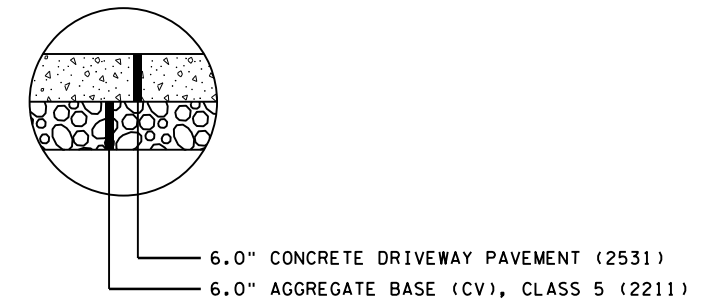
SPECIFIC NOTES:

- ① SEE MNDOT STANDARD PLATE 9000 FOR ADDITIONAL INFORMATION.
- ② SEE ROAD DESIGN MANUAL, CHAPTER 5, FOR GEOMETRIC DESIGN OF DRIVEWAYS.

FLARE PROPORTIONS DETAIL



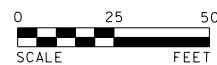
CONCRETE DRIVEWAY PAVEMENT



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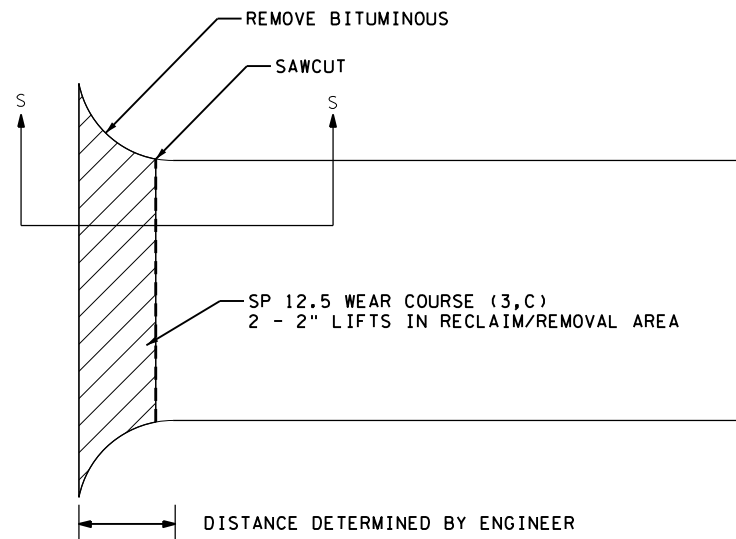
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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
MISCELLANEOUS DETAILS

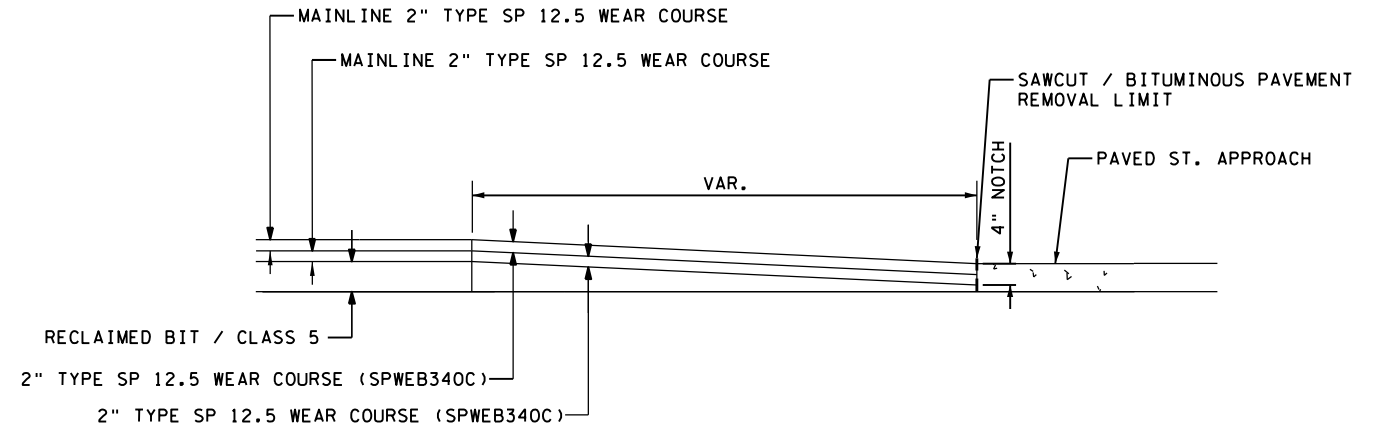
SHEET
24
OF
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STREET APPROACH DETAIL (RECLAIM)
(BITUMINOUS STREET)
NOT TO SCALE

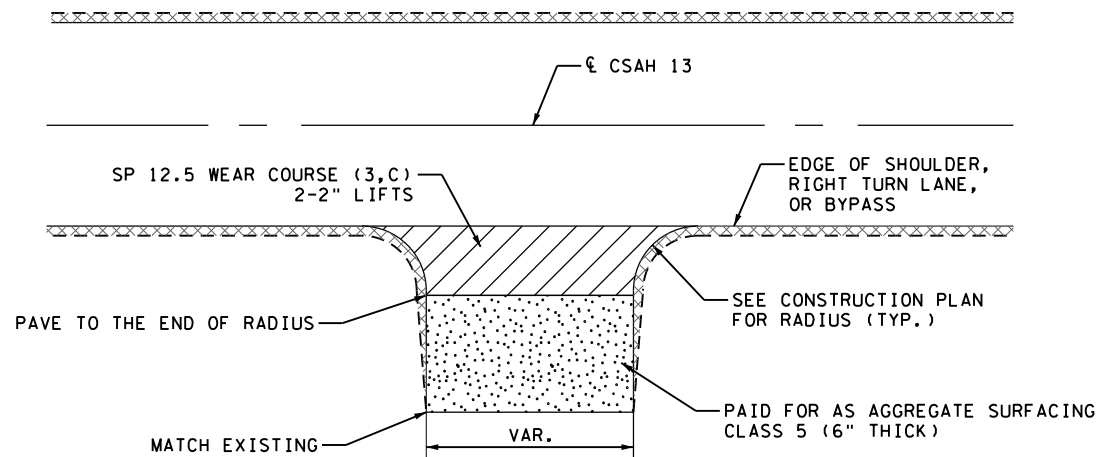
PLAN VIEW



SECTION S - S

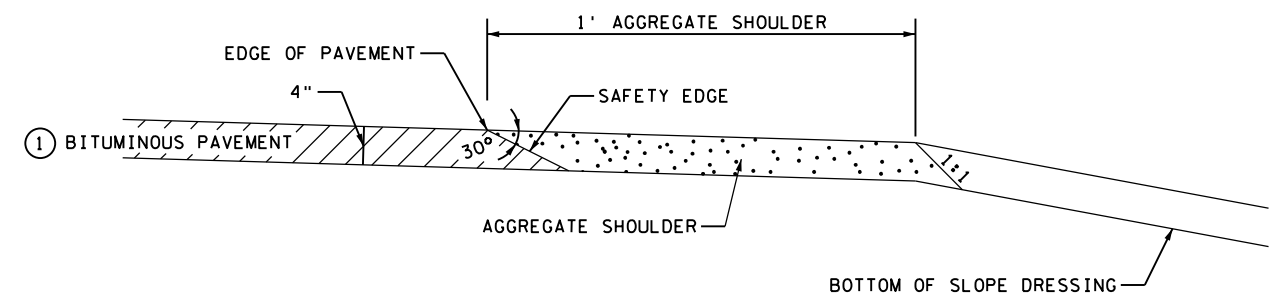


STREET APPROACH DETAIL
(UNPAVED STREET)
NOT TO SCALE



UNPAVED STREET APPROCHES, PAVED SEPARATE FROM MAINLINE

SAFETY EDGE DETAIL
BITUMINOUS SAFETY EDGE
GRAVEL SHOULDER
NOT TO SCALE



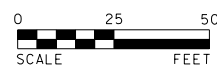
SAFETY EDGE TO BE USED IN ALL NON-CURB AREAS ON SHOULDER, RIGHT TURN LANE, OR BYPASS.

① INDIVIDUAL LIFTS ARE NOT SHOWN.

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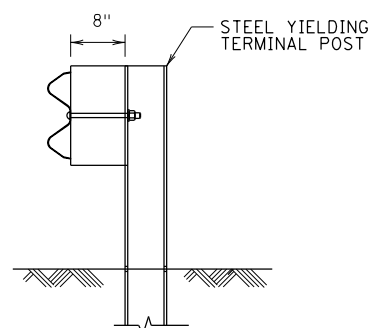
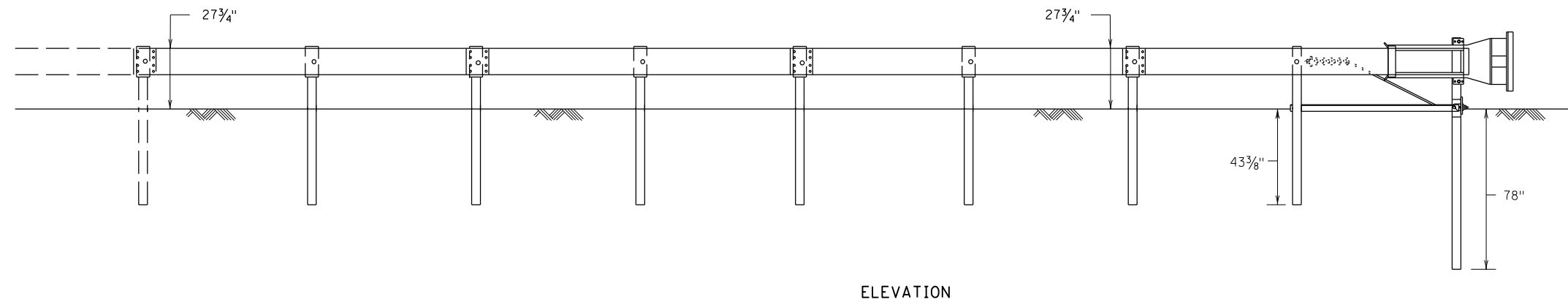
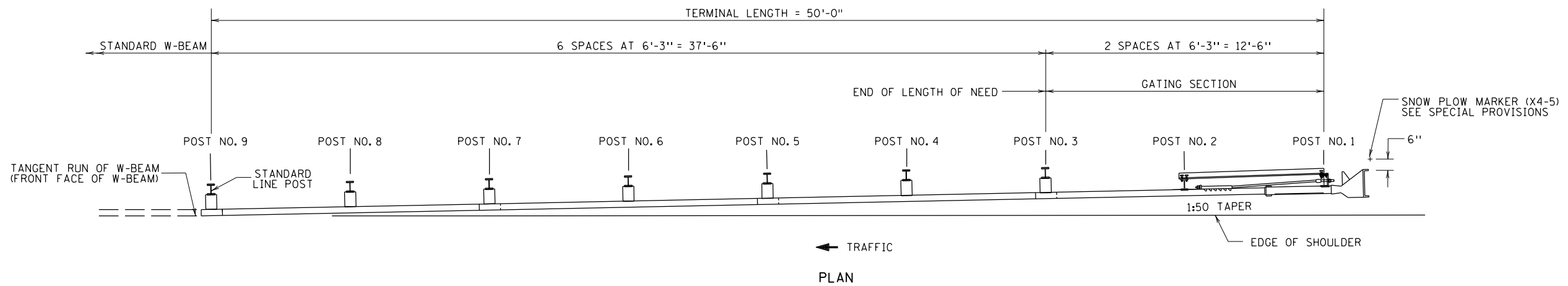
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LIC. NO. 40118 DATE 01-29-2019

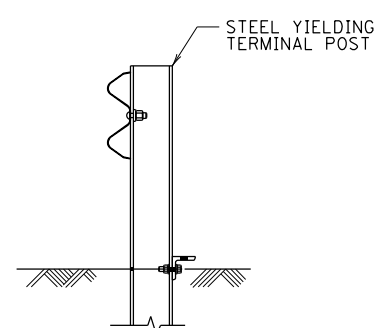
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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
MISCELLANEOUS DETAILS

SHEET
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OF
92



POSTS 3-8



POST 2

NOTES:

THIS IS A PROPRIETARY ITEM AS PER SPEC. 1703.

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

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

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

SEE SPECIAL PROVISIONS FOR POST DELINEATORS AND OBJECT MARKERS.

POST 1 IS A PROPRIETARY STEEL HINGED BREAKAWAY POST.

POSTS 2 THRU 8 ARE PROPRIETARY STEEL YIELDING TERMINAL POSTS.

USE OF MANUFACTURER'S ALTERNATIVE POST DESIGNS MUST BE APPROVED BY THE ENGINEER.

SYSTEM SHALL BE FLARED AT 1:50 MINIMUM. CHECK WITH MANUFACTURER FOR MAXIMUM ALLOWABLE FLARE RATE.

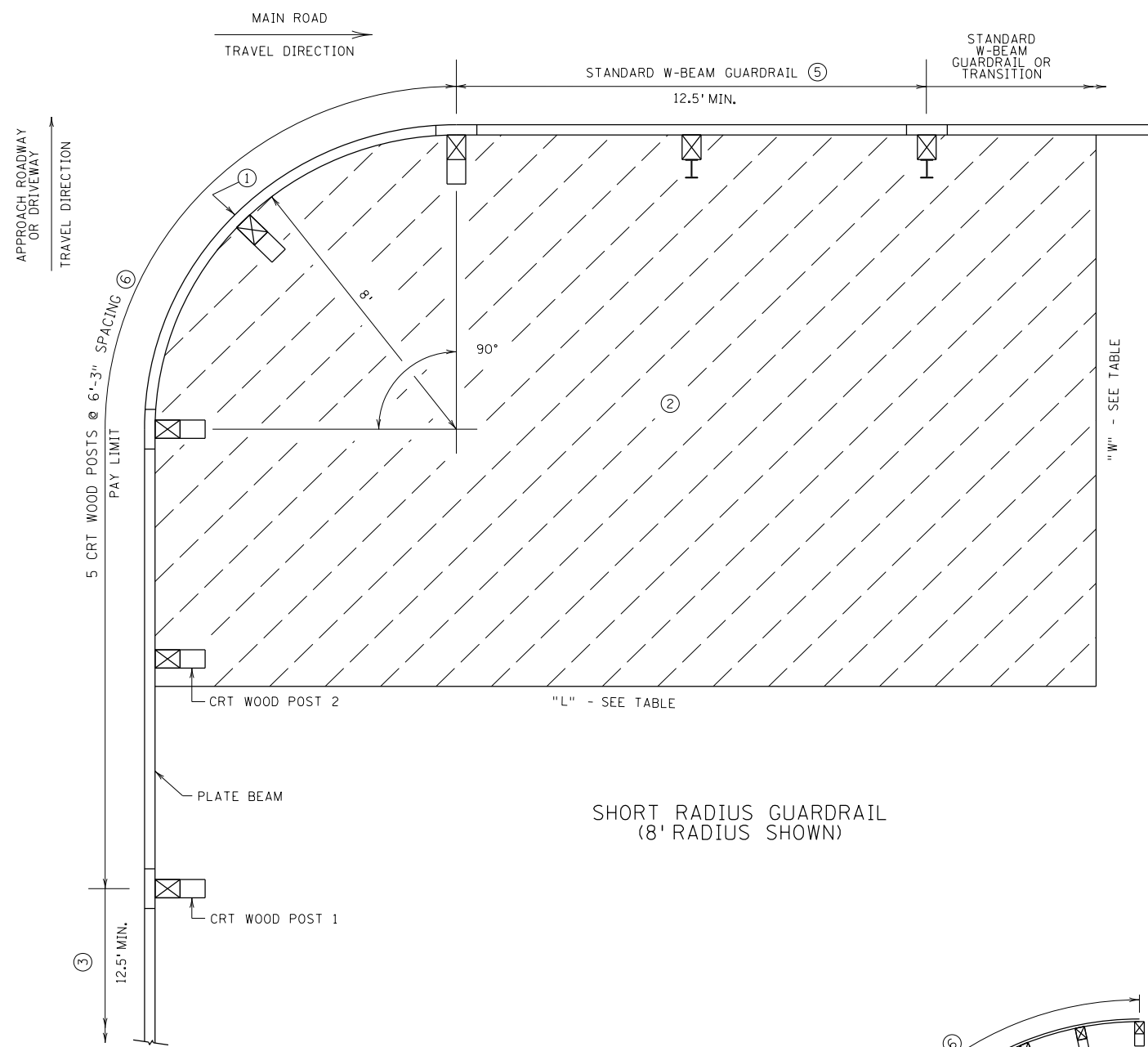
THE RAIL IS DESIGNED TO EXIT THE TERMINAL HEAD ON THE BACK SIDE OF THE GUARDRAIL.

W-BEAM GUARDRAIL END TERMINAL
ET-PLUS (TANGENT - ENERGY ABSORBING)
7 SYT & 1 HBA POST

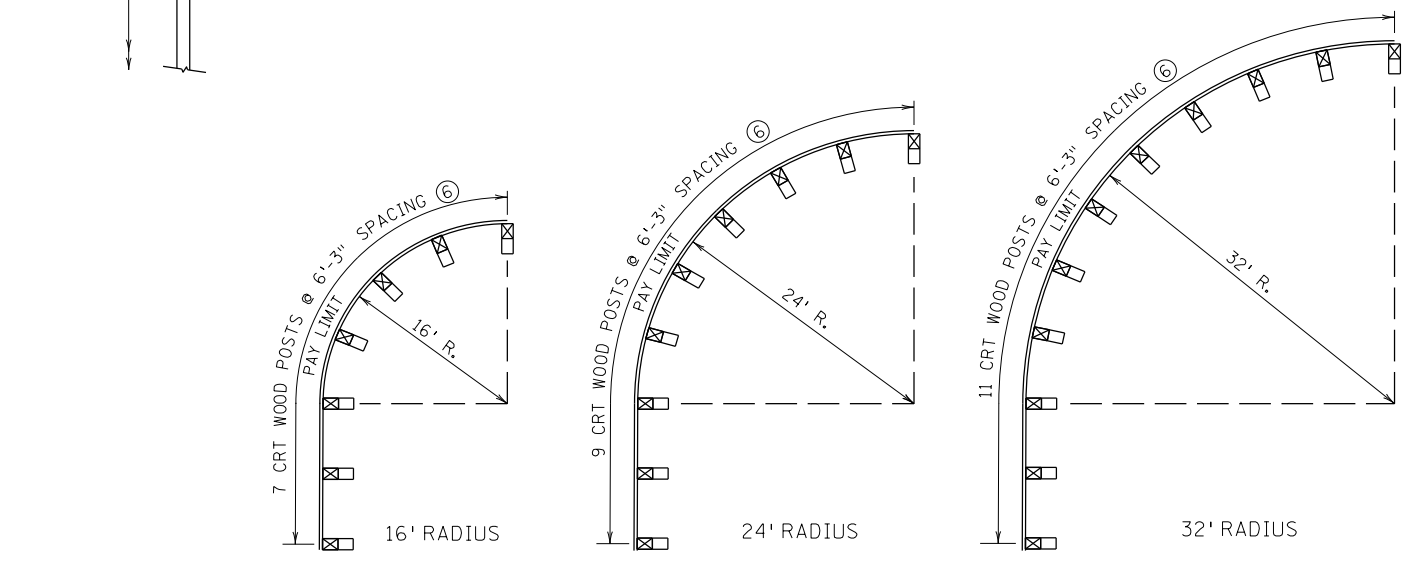
REFERENCE DATE
11-2-16

STATE AID PROJ. NO. 002-613-001

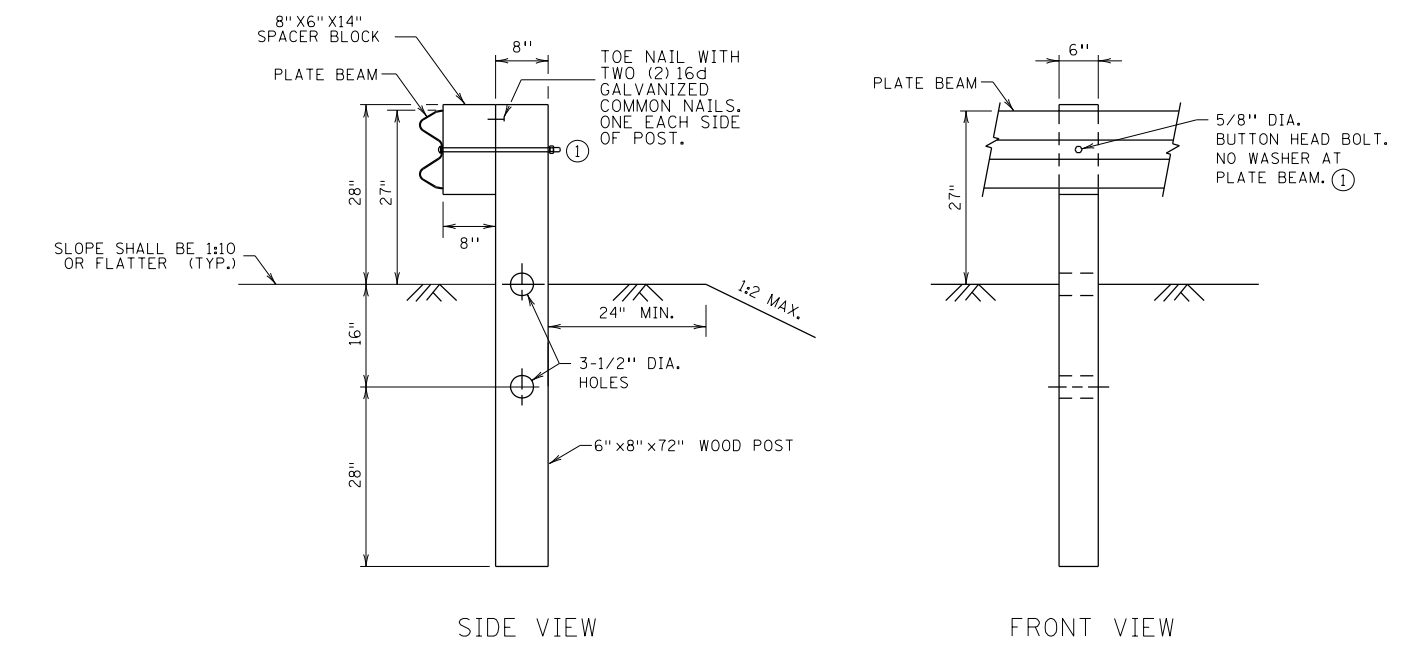
SHEET NO. 26 OF 92



SHORT RADIUS GUARDRAIL
(8' RADIUS SHOWN)



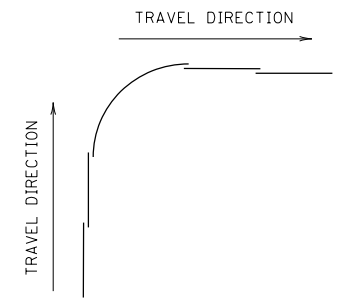
RADIUS OPTIONS



SIDE VIEW

FRONT VIEW

CRT WOOD POST



TYPICAL LAP SPLICE

SHORT RADIUS GUARDRAIL					
RADIUS	TOTAL NUMBER OF CRT POSTS (4)	NUMBER AND LENGTH OF CURVED RAILS	REQUIRED AREA FREE OF FIXED OBJECTS		PAY LIMIT LENGTH
			L	W	
8'	5	1 AT 12.5'	25'	15'	25'
16'	7	1 AT 25'	30'	15'	37.5'
24'	9	1 AT 25' AND 1 AT 12.5'	40'	20'	50'
32'	11	2 AT 25'	50'	20'	62.5'

NOTES:

- SEE MnDOT SPEC. 2554.
- ALL RAIL AND RAIL HARDWARE PER AASHTO SPEC. M 180.
- SHOP BEND CURVED RAIL SECTIONS.
- POST SPACING EQUALS 6' 3".
- GENERIC SPACER BLOCK SHOWN. SPACER BLOCKS OF COMPOSITE OR RECYCLED MATERIAL THAT MEET THE REQUIREMENTS OF NCHRP 350 OR MASH MAY BE SUBSTITUTED. BLOCKS SHALL NOT ROTATE AFTER INSTALLATION.
- (1) PLATE BEAM NOT BOLTED TO THE CENTER CRT POST ON 8' RADIUS.
- (2) AREA BEHIND GUARDRAIL (SHOWN BY HATCH) TO BE FREE OF FIXED OBJECT HAZARDS AND HAVE SLOPES NOT STEEPER THAN 1:2. SEE TABLE FOR DIMENSIONS.
- (3) THE APPROPRIATE LENGTH OF NEED MUST BE DETERMINED FOR EACH INSTALLATION. USE AN APPROVED W-BEAM END TERMINAL TREATMENT, OR ON PRIVATE ROADS USE A W-BEAM FLARED END SECTION WITH A STRUT ANCHORAGE ASSEMBLY (ANCHORAGE ASSEMBLY). SEE STD. PLATE 8338.
- (4) INCLUDES CRT WOOD POST 1 AND CRT WOOD POST 2 LOCATED ON THE TANGENT SECTION OF RAIL ON APPROACH ROADWAY OR DRIVEWAY.
- (5) A MINIMUM 12.5' OF STANDARD GUARDRAIL DESIGN 8307 OR 8338 BEYOND RADIUS REQUIRED.
- (6) DESIGN 8307

SHORT RADIUS GUARDRAIL
FOR INTERSECTION ROADWAYS

CERTIFIED BY **PETER M. LEMKE** LICENSE NO. **40118** DATE **01/29/2019** REFERENCE DATE **2-4-2016**
LICENSED PROFESSIONAL ENGINEER

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LEGEND	
	UTILITY POLE
	LIGHT POLE
	UTILITY PEDESTAL
	UTILITY VALVE
	OVERHEAD UTILITIES
	GAS
	ELECTRIC UNDERGROUND
	TV UNDERGROUND
	TELEPHONE UNDERGROUND
	CULVERT
	CONSTRUCTION LIMITS
	EXISTING RIGHT-OF-WAY
	PROPOSED RIGHT-OF-WAY
	TEMPORARY EASEMENT
	PERMANENT EASEMENT
	PARCEL LINE
	TREES
	FENCE
	DRAINAGE APRON
	WETLAND EDGE

THE FOLLOWING UTILITY COMPANIES ARE IMPACTED WITH THIS PROJECT:

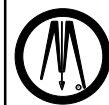
UTILITY	COMPANY/OWNERS
COMMUNICATIONS (TELEPHONE)	CENTURYLINK
COMMUNICATIONS (TV)	COMCAST
COMMUNICATIONS (NOT IMPACTED)	MIDCONTINENT COMMUNICATIONS
ELECTRIC	CONNEXUS ENERGY
GAS	CENTERPOINT ENERGY MINNESOTA GAS

GENERAL NOTES:

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

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

ALL POWER LINES ARE DISTRIBUTION UNLESS NOTED OTHERWISE.



BOLTON & MENK

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 LIC. NO. 40118 DATE 01-29-2019

DESIGNED JTP
DRAWN SJP
CHECKED PML

S.A.P. 002-613-001
 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
 UTILITY TABULATIONS

SHEET
 28
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 92

ELECTRICAL TABULATION

STATION TO STATION	OFFSET (FT)	DESCRIPTION	OWNER	ACTION			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
88+19 R 1 - 88+80 R 1	26R - 33R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY			X	
88+78 R 1	43R	ANC	CONNEXUS ENERGY			X	
88+80 R 1	33R	P POLE	CONNEXUS ENERGY			X	
88+80 R 1 - 91+27 R 1	33R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
91+23 R 1 - 91+27 R 1	25L - 33R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
91+26 R 1 - 91+27 R 1	60R - 33R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
91+27 R 1	33R	P POLE	CONNEXUS ENERGY		X		
91+27 R 1 - 94+29 R 1	33R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
94+23 R 1 - 94+29 R 1	40L - 33R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
94+28 R 1 - 94+29 R 1	53R - 33R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
94+29 R 1	33R	P POLE	CONNEXUS ENERGY		X		
94+29 R 1 - 96+97 R 1	33R - 35R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
96+75 R 1 - 96+97 R 1	40L - 35R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
96+97 R 1	35R	P POLE	CONNEXUS ENERGY		X		
96+97 R 1 - 96+98 R 1	35R - 24R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
96+97 R 1 - 99+84 R 1	35R - 36R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
96+98 R 1	24R	ANC	CONNEXUS ENERGY		X		
99+74 R 1 - 99+84 R 1	39L - 36R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
99+84 R 1	36R	P POLE	CONNEXUS ENERGY		X		
99+84 R 1 - 102+30 R 1	36R - 36L	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
99+90 R 1	68R	ANC	CONNEXUS ENERGY			X	
102+25 R 1	50L	ANC	CONNEXUS ENERGY			X	
102+30 R 1	36L	P POLE	CONNEXUS ENERGY		X		
102+30 R 1 - 102+89 R 1	36L - 39L	P-BUR	CONNEXUS ENERGY		X		
102+30 R 1 - 102+53 R 1	36L - 37R	P-BUR	CONNEXUS ENERGY		X		
102+30 R 1 - 105+24 R 1	36L	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
105+21 R 1 - 105+24 R 1	33R - 36L	P-BUR	CONNEXUS ENERGY		X		
105+24 R 1	36L	P POLE	CONNEXUS ENERGY		X		
105+24 R 1 - 107+91 R 1	36L - 37L	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
107+91 R 1	37L	P POLE	CONNEXUS ENERGY		X		
107+91 R 1 - 110+19 R 1	37L - 28L	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
110+19 R 1	28L	P POLE	CONNEXUS ENERGY		X		
110+19 R 1 - 113+27 R 1	28L - 54R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
110+21 R 1 - 110+30 R 1	28L - 27L	P-BUR	CONNEXUS ENERGY		X		
110+21 R 1 - 111+16 R 1	28L - 25L	P-BUR	CONNEXUS ENERGY		X		
110+30 R 1 - 110+43 R 1	27L - 20L	P-BUR	CONNEXUS ENERGY		X		
110+41 R 1 - 110+57 R 1	6R - 37R	P-BUR	CONNEXUS ENERGY		X		
110+43 R 1 - 110+41 R 1	20L - 6R	P-BUR	CONNEXUS ENERGY		X		
111+16 R 1 - 112+54 R 1	25L - 26L	P-BUR	CONNEXUS ENERGY		X		
112+54 R 1 - 112+68 R 1	26L - 53L	P-BUR	CONNEXUS ENERGY		X		
123+55 R 1 - 126+22 R 1	141R - 36R	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		
126+11 R 1	40R	ANC	CONNEXUS ENERGY		X		
126+19 R 1	27R	ANC	CONNEXUS ENERGY		X		
126+22 R 1	36R	P POLE	CONNEXUS ENERGY		X		
126+22 R 1 - 126+50 R 1	36R - 74R	P-BUR	CONNEXUS ENERGY		X		
126+22 R 1 - 128+17 R 1	36R - 40L	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY		X		

ELECTRICAL TABULATION

STATION TO STATION	OFFSET (FT)	DESCRIPTION	OWNER	ACTION			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
126+26 R 1	44R	ANC	CONNEXUS ENERGY		X		
127+81 R 1	61L	P POLE	CONNEXUS ENERGY			X	
128+05 R 1	49L	P POLE	CONNEXUS ENERGY			X	
128+05 R 1 - 128+16 R 1	49L - 40L	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY			X	
128+15 R 1	49L	ANC	CONNEXUS ENERGY			X	
128+17 R 1	40L	P POLE	CONNEXUS ENERGY			X	
128+17 R 1 - 129+58 R 1	40L - 73L	OVERHEAD ELECTRIC LINE	CONNEXUS ENERGY			X	
128+23 R 1	32L	ANC	CONNEXUS ENERGY			X	
128+33 R 1	47L	ANC	CONNEXUS ENERGY			X	
119+57 R 1	31R	L POLE			X		(1)

NOTE:
(1) SALVAGE TO PROPERTY OWNER.

GAS TABULATION

STATION TO STATION	OFFSET (FT)	DESCRIPTION	OWNER	ACTION			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
88+43 R 1 - 88+75 R 1	28R - 33R	GAS	CENTERPOINT			X	
88+75 R 1 - 90+81 R 1	33R	GAS	CENTERPOINT			X	
90+81 R 1	33R - 76R	GAS	CENTERPOINT			X	
90+81 R 1 - 95+22 R 1	33R - 34R	GAS	CENTERPOINT			X	
95+22 R 1 - 99+84 R 1	34R - 38R	GAS	CENTERPOINT			X	
99+84 R 1 - 100+21 R 1	38R - 28R	GAS	CENTERPOINT			X	
100+21 R 1 - 105+50 R 1	28R - 28R	GAS	CENTERPOINT			X	
105+50 R 1 - 108+83 R 1	28R - 27R	GAS	CENTERPOINT		X		
108+83 R 1 - 109+81 R 1	27R - 22R	GAS	CENTERPOINT		X		
109+81 R 1 - 109+94 R 1	22R	GAS	CENTERPOINT		X		
109+94 R 1 - 109+95 R 1	22R - 75R	GAS	CENTERPOINT		X		
109+94 R 1 - 112+51 R 1	22R - 19R	GAS	CENTERPOINT		X		
112+51 R 1 - 112+71 R 1	19R - 48L	GAS	CENTERPOINT		X		
112+51 R 1 - 119+48 R 1	19R - 21R	GAS	CENTERPOINT		X		
119+48 R 1 - 119+53 R 1	21R - 51R	GAS	CENTERPOINT		X		
119+48 R 1 - 122+74 R 1	21R - 20R	GAS	CENTERPOINT		X		
122+74 R 1 - 123+65 R 1	20R - 21R	GAS	CENTERPOINT		X		
123+65 R 1 - 124+23 R 1	21R	GAS	CENTERPOINT		X		ENCASED
124+23 R 1 - 126+23 R 1	21R - 22R	GAS	CENTERPOINT		X		
126+23 R 1 - 127+25 R 1	22R - 24R	GAS	CENTERPOINT		X		
127+25 R 1 - 127+29 R 1	24R - 56R	GAS	CENTERPOINT		X		
127+25 R 1 - 127+50 R 1	24R - 26R	GAS	CENTERPOINT		X		
127+50 R 1 - 127+64 R 1	26R - 27R	GAS	CENTERPOINT			X	
127+57 R 1	53R	GAS VLV	CENTERPOINT			X	
127+64 R 1 - 128+22 R 1	27R - 29R	GAS	CENTERPOINT			X	ENCASED
128+22 R 1 - 128+46 R 1	29R	GAS	CENTERPOINT			X	

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REV.	BY	DATE

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Peter M Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED JTP
DRAWN SJP
CHECKED PML

S.A.P. 002-613-001
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
UTILITY TABULATIONS

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OF
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COMMUNICATIONS TABULATION

STATION TO STATION	OFFSET (FT)	DESCRIPTION	OWNER	ACTION			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
88+38 R 1 - 90+59 R 1	25R - 26R	T-BUR	CENTURYLINK			X	200 PAIR
88+38 R 1 - 91+31 R 1	27R - 28R	T-BUR	CENTURYLINK			X	50 PAIR
90+59 R 1	37L	TEL PED	CENTURYLINK			X	
90+59 R 1	37L - 26R	T-BUR	CENTURYLINK			X	25 PAIR
90+59 R 1 - 91+31 R 1	26R	T-BUR	CENTURYLINK			X	200 PAIR
91+29 R 1	42R	TEL PED	CENTURYLINK			X	
91+29 R 1 - 91+31 R 1	42R - 26R	T-BUR	CENTURYLINK			X	50 PAIR
91+31 R 1 - 96+21 R 1	26R	T-BUR	CENTURYLINK			X	200 PAIR
96+21 R 1 - 96+98 R 1	26R - 27R	T-BUR	CENTURYLINK			X	200 PAIR
96+21 R 1 - 96+22 R 1	26R - 39L	T-BUR	CENTURYLINK			X	25 PAIR
96+22 R 1	39L	TEL PED	CENTURYLINK			X	
96+98 R 1	42R	TEL PED	CENTURYLINK	X			
96+98 R 1	42R - 27R	T-BUR	CENTURYLINK			X	200 PAIR
96+98 R 1 - 99+92 R 1	27R - 26R	T-BUR	CENTURYLINK			X	200 PAIR
99+92 R 1	43L	TEL PED	CENTURYLINK			X	
99+92 R 1	43L - 26R	T-BUR	CENTURYLINK			X	25 PAIR
99+92 R 1 - 99+93 R 1	26R - 37R	T-BUR	CENTURYLINK			X	200 PAIR
99+92 R 1 - 102+65 R 1	26R - 30R	T-BUR	CENTURYLINK			X	200 PAIR
99+93 R 1	37R	TEL PED	CENTURYLINK	X			
102+65 R 1 - 104+06 R 1	30R - 28R	T-BUR	CENTURYLINK			X	200 PAIR
104+06 R 1	37R	TEL PED	CENTURYLINK	X			
104+06 R 1	37R - 28R	T-BUR	CENTURYLINK			X	200 PAIR
104+06 R 1 - 104+82 R 1	28R - 27R	T-BUR	CENTURYLINK			X	200 PAIR
104+82 R 1	36R	TEL PED	CENTURYLINK			X	
104+82 R 1	36R - 27R	T-BUR	CENTURYLINK			X	200 PAIR
104+82 R 1 - 105+00 R 1	27R	T-BUR	CENTURYLINK			X	200 PAIR
105+00 R 1 - 106+10 R 1	27R - 25R	T-BUR	CENTURYLINK		X		200 PAIR
106+10 R 1 - 110+00 R 1	25R - 26R	T-BUR	CENTURYLINK		X		200 PAIR
110+00 R 1 - 110+33 R 1	26R - 29R	T-BUR	CENTURYLINK			X	200 PAIR
110+32 R 1 - 110+28 R 1	73R - 106R	T-BUR	CENTURYLINK			X	
110+32 R 1 - 110+41 R 1	73R - 74R	T-BUR	CENTURYLINK			X	200 PAIR
110+33 R 1 - 110+35 R 1	29R - 38R	T-BUR	CENTURYLINK			X	200 PAIR
110+35 R 1 - 110+32 R 1	38R - 73R	T-BUR	CENTURYLINK			X	20 PAIR
110+41 R 1	74R - 38R	T-BUR	CENTURYLINK			X	
110+41 R 1	74R	TEL PED	CENTURYLINK			X	
110+41 R 1 - 110+53 R 1	38R - 27R	T-BUR	CENTURYLINK			X	20 PAIR
110+53 R 1 - 113+65 R 1	27R - 25R	T-BUR	CENTURYLINK			X	20 PAIR
113+65 R 1	46R	TEL PED	CENTURYLINK			X	
113+65 R 1	46R - 25R	T-BUR	CENTURYLINK			X	25 PAIR
113+65 R 1 - 117+50 R 1	25R - 22R	T-BUR	CENTURYLINK			X	25 PAIR
117+50 R 1 - 119+10 R 1	22R - 24R	T-BUR	CENTURYLINK	X			25 PAIR
119+10 R 1 - 119+24 R 1	24R - 33R	T-BUR	CENTURYLINK	X			25 PAIR
119+24 R 1	33R	TEL PED	CENTURYLINK	X			
119+24 R 1 - 119+36 R 1	33R - 56R	T-BUR	CENTURYLINK	X			25 PAIR
119+36 R 1 - 119+56 R 1	56R - 39R	T-BUR	CENTURYLINK	X			25 PAIR
119+56 R 1 - 122+63 R 1	39R - 43R	T-BUR	CENTURYLINK	X			25 PAIR
122+63 R 1	43R	TEL PED	CENTURYLINK	X			
122+63 R 1 - 122+79 R 1	43R - 37R	T-BUR	CENTURYLINK	X			25 PAIR
122+79 R 1 - 123+68 R 1	37R - 62R	T-BUR	CENTURYLINK	X			25 PAIR
123+68 R 1 - 124+49 R 1	62R	T-BUR	CENTURYLINK	X			25 PAIR
124+49 R 1 - 126+18 R 1	62R - 53R	T-BUR	CENTURYLINK	X			25 PAIR

COMMUNICATIONS TABULATION

STATION TO STATION	OFFSET (FT)	DESCRIPTION	OWNER	ACTION			REMARKS
				ADJUST	RELOCATE	LEAVE AS IS	
126+18 R 1 - 126+50 R 1	53R - 46R	T-BUR	CENTURYLINK	X			25 PAIR
126+50 R 1 - 126+89 R 1	46R	T-BUR	CENTURYLINK	X			25 PAIR
126+89 R 1 - 127+45 R 1	46R	T-BUR	CENTURYLINK			X	25 PAIR
127+45 R 1 - 127+57 R 1	46R - 59R	T-BUR	CENTURYLINK			X	25 PAIR
127+57 R 1	59R	TEL PED	CENTURYLINK			X	
88+43 R 1 - 90+62 R 1	31R - 29R	TV CABLE	COMCAST			X	
90+55 R 1 - 90+62 R 1	51L - 37L	TV CABLE	COMCAST			X	
90+62 R 1	37L	TV PED	COMCAST			X	
90+62 R 1	37L - 29R	TV CABLE	COMCAST			X	
90+62 R 1 - 90+65 R 1	37L - 51L	TV CABLE	COMCAST			X	
90+62 R 1 - 92+81 R 1	37L - 36L	TV CABLE	COMCAST		X		
90+62 R 1 - 90+71 R 1	29R - 39R	TV CABLE	COMCAST			X	
90+62 R 1 - 91+29 R 1	29R - 38R	TV CABLE	COMCAST			X	
90+71 R 1	39R - 55R	TV CABLE	COMCAST			X	
91+29 R 1 - 91+80 R 1	38R - 28R	TV CABLE	COMCAST			X	
91+80 R 1 - 95+11 R 1	28R	TV CABLE	COMCAST			X	
92+81 R 1 - 96+27 R 1	36L - 42L	TV CABLE	COMCAST		X		
95+11 R 1 - 95+23 R 1	28R - 42R	TV CABLE	COMCAST			X	
95+23 R 1 - 96+96 R 1	42R - 41R	TV CABLE	COMCAST			X	
95+23 R 1 - 96+97 R 1	42R - 54L	TV CABLE	COMCAST			X	
95+23 R 1	42R - 50R	TV CABLE	COMCAST			X	
96+27 R 1	42L	TV PED	COMCAST			X	
96+27 R 1 - 96+97 R 1	42L - 54L	TV CABLE	COMCAST			X	
96+96 R 1	41R	TV PED	COMCAST	X			
96+96 R 1 - 99+85 R 1	41R - 42R	TV CABLE	COMCAST			X	
96+97 R 1	54L	TV PED	COMCAST			X	
99+85 R 1	42R	TV PED	COMCAST			X	
99+85 R 1 - 99+94 R 1	42R - 45L	TV CABLE	COMCAST	X			
99+85 R 1 - 99+87 R 1	42R - 50R	TV CABLE	COMCAST			X	
99+85 R 1 - 103+00 R 1	42R - 40R	TV CABLE	COMCAST		X		
99+94 R 1	45L	TV PED	COMCAST			X	
99+94 R 1 - 99+95 R 1	45L - 50L	TV CABLE	COMCAST			X	
103+00 R 1	49L	TV PED	COMCAST	X			
103+00 R 1	49L - 40R	TV CABLE	COMCAST			X	
103+00 R 1 - 103+79 R 1	40R	TV CABLE	COMCAST	X			
103+79 R 1	40R	TV PED	COMCAST	X			
103+79 R 1 - 103+84 R 1	40R - 75R	TV CABLE	COMCAST			X	
103+79 R 1 - 103+84 R 1	40R - 45R	TV CABLE	COMCAST			X	
103+79 R 1 - 109+93 R 1	40R - 46R	TV CABLE	COMCAST	X			
103+84 R 1 - 109+88 R 1	45R - 51R	TV CABLE	COMCAST		X		
109+88 R 1 - 109+84 R 1	51R - 101R	TV CABLE	COMCAST			X	
109+93 R 1 - 109+88 R 1	46R - 101R	TV CABLE	COMCAST			X	
110+45 R 1 - 110+50 R 1	108R - 72R	TV CABLE	COMCAST			X	
110+50 R 1 - 112+67 R 1	72R - 94R	TV CABLE	COMCAST			X	
112+67 R 1 - 116+17 R 1	94R - 47R	TV CABLE	COMCAST			X	
116+17 R 1 - 116+26 R 1	47R - 198R	TV CABLE	COMCAST			X	
103+10 R 1	44L	COM PED			X		OWNERSHIP UNKNOWN

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Peter M Lemke

PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED JTP
DRAWN SJP
CHECKED PML

S.A.P. 002-613-001
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
UTILITY TABULATIONS

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ALIGNMENT TABULATION

POINT NUMBER	POINT	STATION	CIRCULAR CURVE DATA					COORDINATES		AZIMUTH
			DELTA	DEGREE	RADIUS	TANGENT	LENGTH	X	Y	
C.S.A.H. 13 (CSAH13)										
1000	POT	88+42.630						496,313.8779	205,243.4008	
	PC	92+81.192						496,310.5079	205,681.9503	359° 33' 35.00"
CSAH131	PI	95+46.986	0° 14' 03.44" RT	0° 02' 38.67"	130,000.000'	265.793'	531.585'	496,308.4655	205,947.7356	PI
	CC							626,306.6699	206,680.9017	
	PT	98+12.778						496,307.5099	206,213.5270	359° 47' 38.44"
	PC	108+78.066						496,303.6800	207,278.8085	359° 47' 38.44"
CSAH132	PI	114+08.222	49° 39' 18.31" LT	5° 00' 00.00"	1,145.916'	530.156'	993.102'	496,301.7740	207,808.9610	PI
	CC							495,157.7718	207,274.6887	
	PT	118+71.168						495,896.4785	208,150.7224	310° 08' 20.13"
	PC	128+40.951						495,155.0952	208,775.8864	310° 08' 20.13"
CSAH133	PI	132+09.137	53° 50' 48.56" RT	7° 54' 10.32"	725.000'	368.186'	681.358'	494,873.6230	209,013.2350	PI
	CC							495,622.4615	209,330.1370	
	PT	135+22.309						494,899.2150	209,380.5306	3° 59' 08.69"

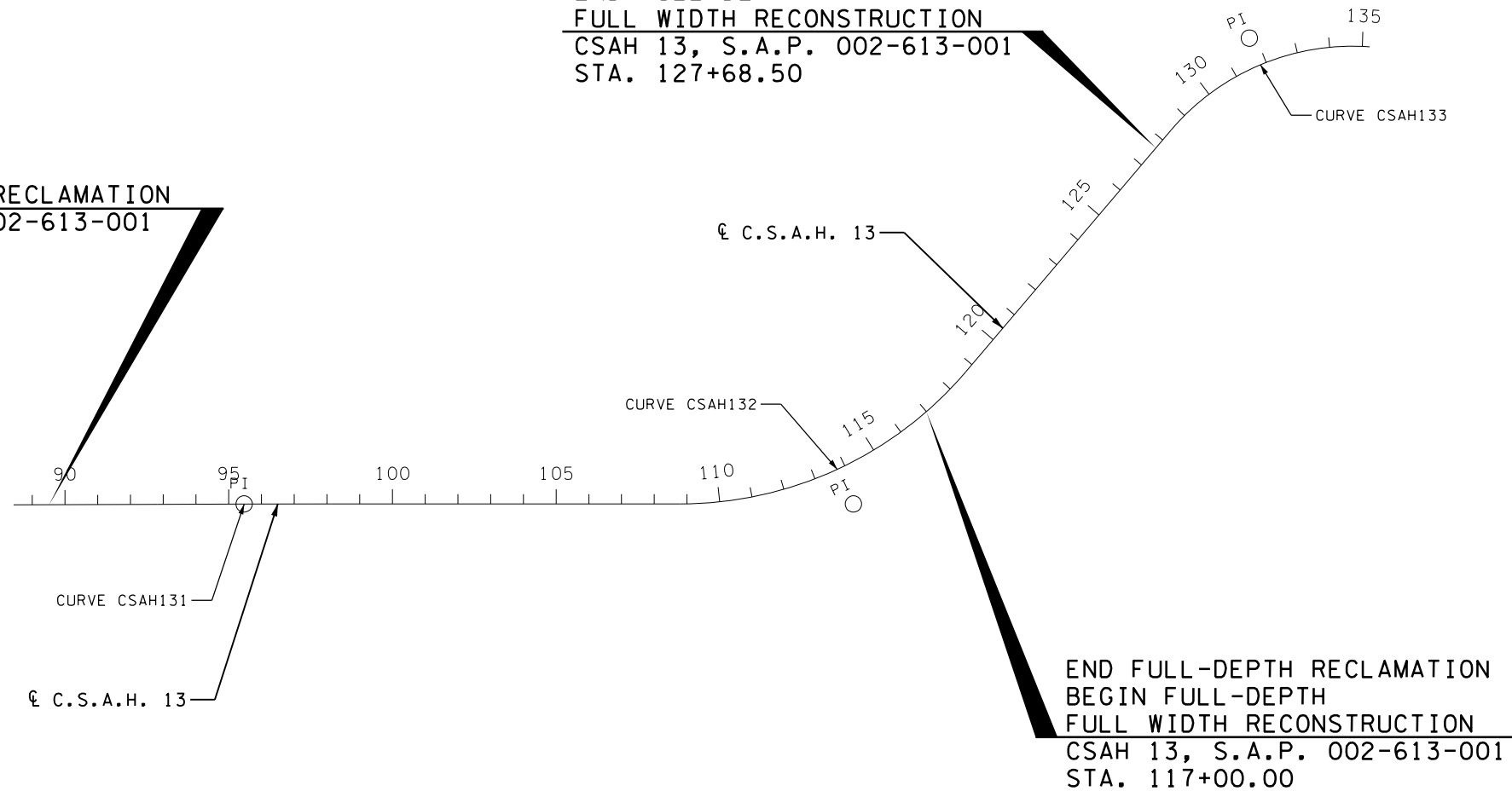
HORIZONTAL CONTROL

THE HORIZONTAL CONTROL FOR THIS PLAN IS NAD83 (1996 ADJUSTMENT) ANOKA COUNTY COORDINATES. FOR INFORMATION ON HORIZONTAL CONTROL POINTS CONTACT MNDOT'S OFFICE OF LAND MANAGEMENT OR THE METRO DISTRICT SURVEYS OFFICE.



BEGIN FULL-DEPTH RECLAMATION
CSAH 13, S.A.P. 002-613-001
STA. 89+51.41

END FULL-DEPTH
FULL WIDTH RECONSTRUCTION
CSAH 13, S.A.P. 002-613-001
STA. 127+68.50

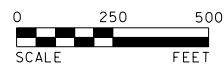


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S.A.P. 002-613-001
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
ALIGNMENT PLAN & TABULATION

SHEET
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OF
92

GENERAL NOTES:

SEE SIGNING & STRIPING PLAN FOR SIGN, DELINEATOR AND MARKER REMOVALS.



BEGIN FULL-DEPTH RECLAMATION
CSAH 13, S.A.P. 002-613-001
STA. 89+51.41

C.S.A.H. 13

MATCHLINE 93+00

RT TURN LANE (INP)
THRU LANE (INP)
THRU LANE (INP)

THRU LANE (INP)
THRU LANE (INP)

195TH LANE NW

#19526

#19542

#560

#565

CORE 1

15" CMP

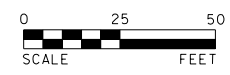
LEGEND			
	FULL DEPTH RECLAMATION		REMOVE FENCE
	MAIL BOX SUPPORT		REMOVE PIPE CULVERTS
	RELOCATE MAIL BOX SUPPORT		SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
	CLEARING AND GRUBBING (BY THE TREE)		CONSTRUCTION LIMITS
	EXISTING ROAD CORE		EXISTING RIGHT-OF-WAY
			PROPOSED RIGHT-OF-WAY

NOTE: FOR LEGEND OF EXISTING UTILITIES REFER TO UTILITY TABULATIONS SHEET

CONTRACTOR TO VERIFY PRIOR TO PLACING BID.
NO WARRANTY PROVIDED. FOR INFORMATION ONLY.

ROAD CORES	
BITUMINOUS AND AGGREGATE BASE DEPTHS ARE APPROXIMATE	
CORE 1:	7.5" BITUMINOUS, (*) AGG. BASE
CORE 2:	7.25" BITUMINOUS, (*) AGG. BASE
CORE 3:	7.5" BITUMINOUS, 1.5" AGG. BASE
CORE 4:	7.5" BITUMINOUS, 1.5" AGG. BASE
CORE 5:	6.75" BITUMINOUS, 10.25" AGG. BASE
CORE 6:	6.5" BITUMINOUS, 7.5" AGG. BASE

(*) = AGGREGATE BASE LAYER WAS INDISCERNIBLE FROM THE UNDERLYING MATERIAL IN THE FIELD.



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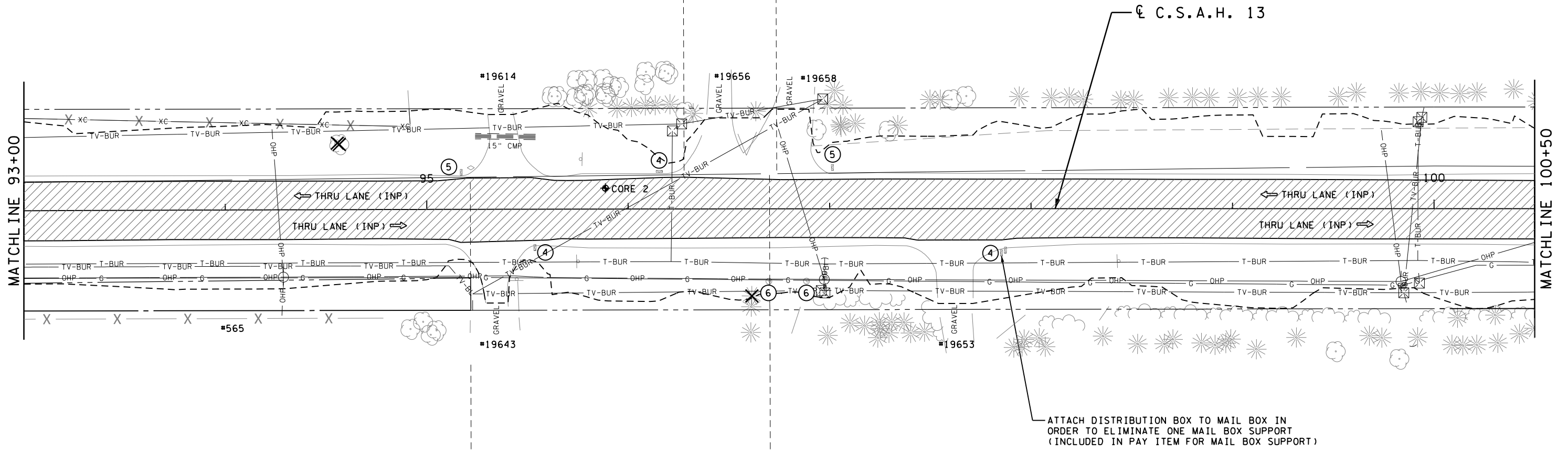
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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
EXISTING CONDITIONS & REMOVAL PLAN

SHEET 32 OF 92

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GENERAL NOTES:

SEE SIGNING & STRIPING PLAN FOR SIGN, DELINEATOR AND MARKER REMOVALS.



LEGEND

- | | | | |
|--|-------------------------------------|--|-----------------------|
| | FULL DEPTH RECLAMATION | | REMOVE FENCE |
| | MAIL BOX SUPPORT | | REMOVE PIPE CULVERTS |
| | RELOCATE MAIL BOX SUPPORT | | CONSTRUCTION LIMITS |
| | REMOVE POST | | EXISTING RIGHT-OF-WAY |
| | CLEARING AND GRUBBING (BY THE TREE) | | PROPOSED RIGHT-OF-WAY |
| | EXISTING ROAD CORE | | |

NOTE: FOR LEGEND OF EXISTING UTILITIES REFER TO UTILITY TABULATIONS SHEET

CONTRACTOR TO VERIFY PRIOR TO PLACING BID. NO WARRANTY PROVIDED. FOR INFORMATION ONLY.

ROAD CORES

BITUMINOUS AND AGGREGATE BASE DEPTHS ARE APPROXIMATE

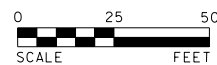
- CORE 1: 7.5" BITUMINOUS, (*) AGG. BASE
- CORE 2: 7.25" BITUMINOUS, (*) AGG. BASE
- CORE 3: 7.5" BITUMINOUS, 1.5" AGG. BASE
- CORE 4: 7.5" BITUMINOUS, 1.5" AGG. BASE
- CORE 5: 6.75" BITUMINOUS, 10.25" AGG. BASE
- CORE 6: 6.5" BITUMINOUS, 7.5" AGG. BASE

(*) = AGGREGATE BASE LAYER WAS INDISCERNIBLE FROM THE UNDERLYING MATERIAL IN THE FIELD.

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Peter M. Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

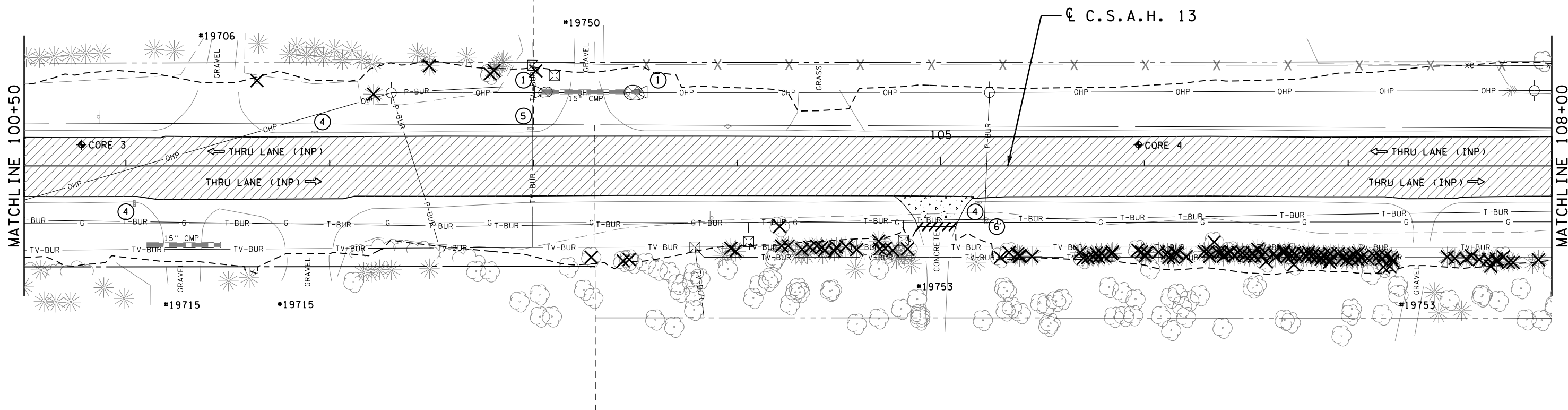
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CHECKED PML

S.A.P. 002-613-001
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
EXISTING CONDITIONS & REMOVAL PLAN

SHEET
33
OF
92

GENERAL NOTES:

SEE SIGNING & STRIPING PLAN FOR SIGN, DELINEATOR AND MARKER REMOVALS.



LEGEND

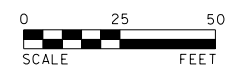
	FULL DEPTH RECLAMATION		CLEARING AND GRUBBING (BY THE TREE)
	REMOVE CONCRETE DRIVEWAY PAVEMENT		EXISTING ROAD CORE
	REMOVE RIPRAP		REMOVE PIPE CULVERTS
	REMOVE PIPE APRON		SAWING CONCRETE PAVEMENT (FULL DEPTH)
	MAIL BOX SUPPORT		CONSTRUCTION LIMITS
	RELOCATE MAIL BOX SUPPORT		EXISTING RIGHT-OF-WAY
	REMOVE POST		PROPOSED RIGHT-OF-WAY
NOTE: FOR LEGEND OF EXISTING UTILITIES REFER TO UTILITY TABULATIONS SHEET			

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ROAD CORES	
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CORE 2:	7.25" BITUMINOUS, (*) AGG. BASE
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(*) = AGGREGATE BASE LAYER WAS INDISCERNIBLE FROM THE UNDERLYING MATERIAL IN THE FIELD.

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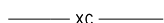


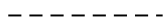
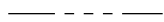
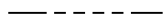
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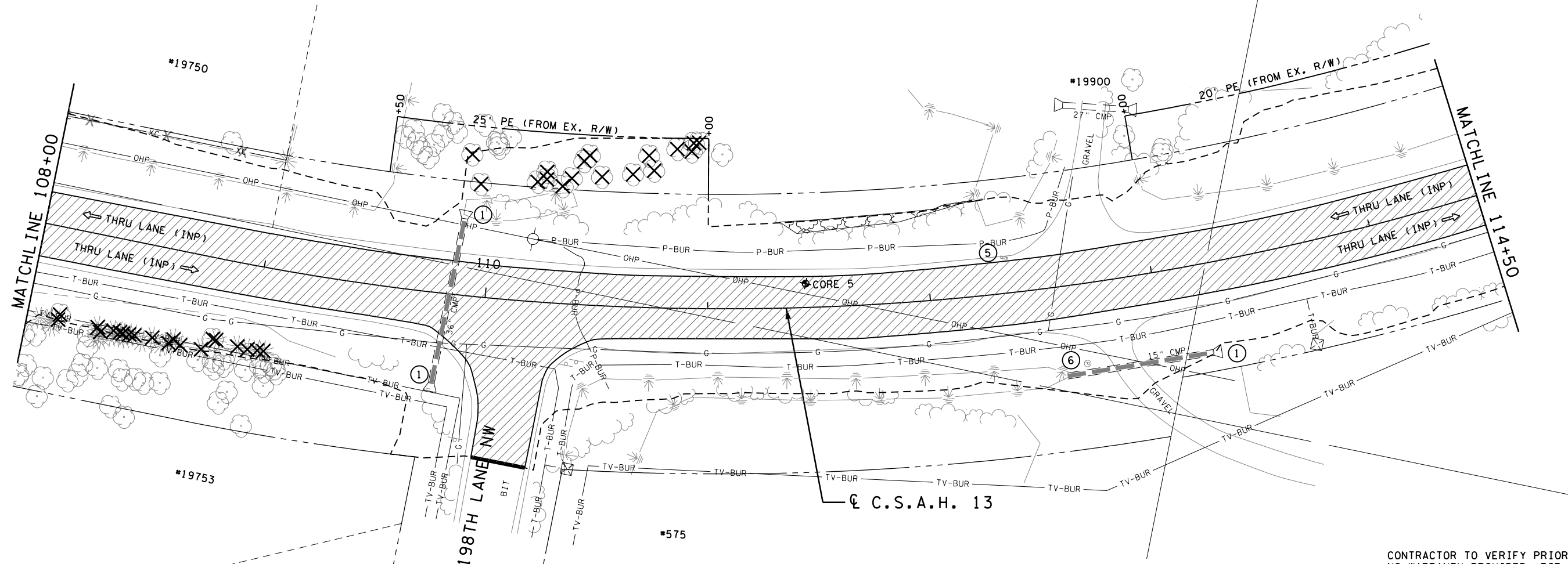
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PETER M. LEMKE
LIC. NO. 40118
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DESIGNED TAL	S.A.P. 002-613-001 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION EXISTING CONDITIONS & REMOVAL PLAN	SHEET 34 OF 92
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CHECKED PML		

LEGEND

-  FULL DEPTH RECLAMATION
 -  CLEARING AND GRUBBING (BY THE ACRE)
 -  REMOVE PIPE APRON
 -  RELOCATE MAIL BOX SUPPORT
 -  REMOVE POST
 -  CLEARING AND GRUBBING (BY THE TREE)
 -  EXISTING ROAD CORE
 -  REMOVE FENCE
 -  REMOVE PIPE CULVERTS
 -  SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
 -  CONSTRUCTION LIMITS
 -  EXISTING RIGHT-OF-WAY
 -  PERMANENT EASEMENT
- NOTE: FOR LEGEND OF EXISTING UTILITIES REFER TO UTILITY TABULATIONS SHEET

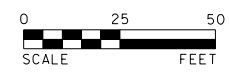


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(*) = AGGREGATE BASE LAYER WAS INDISCERNIBLE FROM THE UNDERLYING MATERIAL IN THE FIELD.

GENERAL NOTES:
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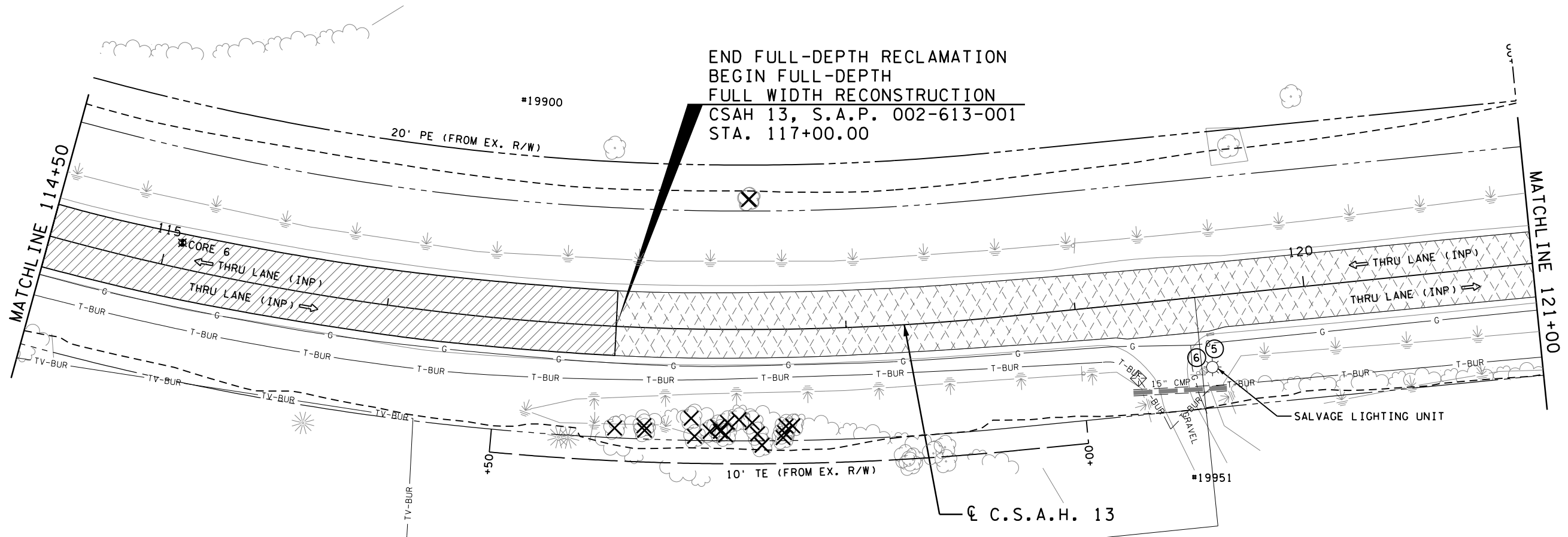
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EXISTING CONDITIONS & REMOVAL PLAN

SHEET 35 OF 92

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GENERAL NOTES:
 SEE SIGNING & STRIPING PLAN
 FOR SIGN, DELINEATOR AND
 MARKER REMOVALS.



LEGEND

- | | | | |
|--|----------------------------|--|-------------------------------------|
| | FULL DEPTH RECLAMATION | | CLEARING AND GRUBBING (BY THE TREE) |
| | REMOVE BITUMINOUS PAVEMENT | | EXISTING ROAD CORE |
| | RELOCATE MAIL BOX SUPPORT | | REMOVE PIPE CULVERTS |
| | REMOVE POST | | CONSTRUCTION LIMITS |
| | | | EXISTING RIGHT-OF-WAY |
| | | | TEMPORARY EASEMENT |
| | | | PERMANENT EASEMENT |

NOTE: FOR LEGEND OF EXISTING UTILITIES REFER TO UTILITY TABULATIONS SHEET

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ROAD CORES

BITUMINOUS AND AGGREGATE BASE
 DEPTHS ARE APPROXIMATE

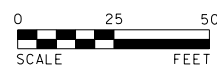
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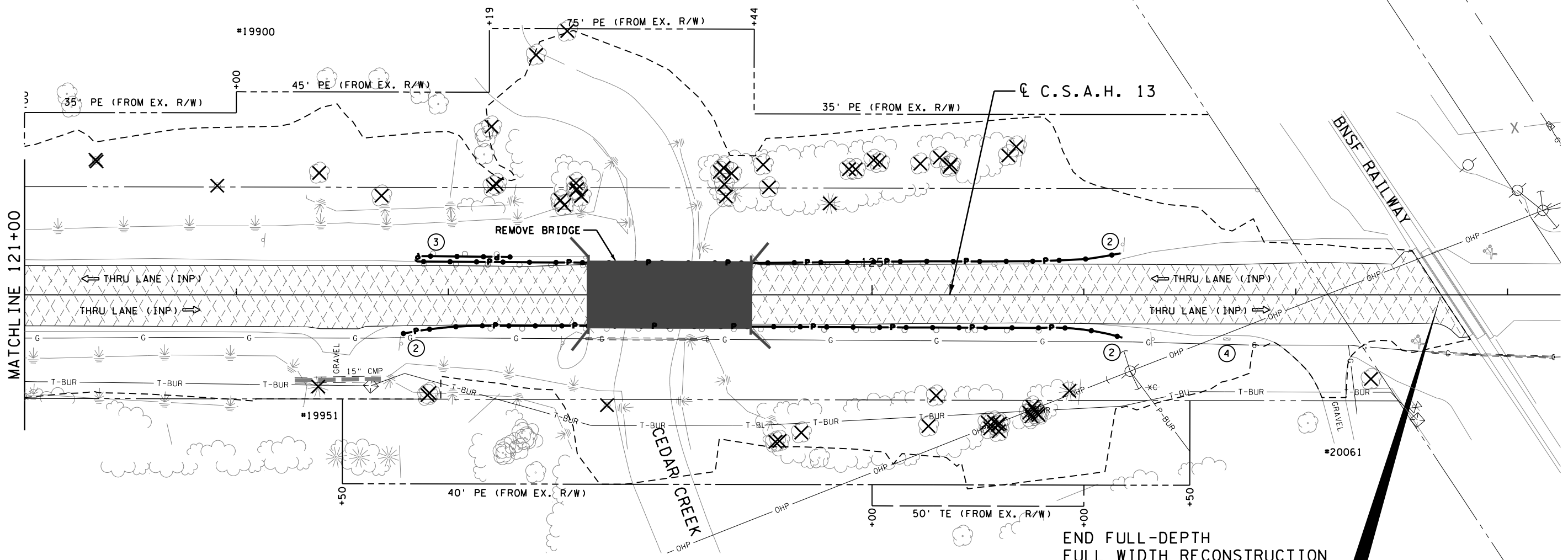
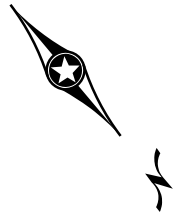
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DESIGNED TAL
 DRAWN SJP
 CHECKED PML

S.A.P. 002-613-001
 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
 EXISTING CONDITIONS & REMOVAL PLAN

SHEET
 36
 OF
 92

GENERAL NOTES:
 SEE SIGNING & STRIPING PLAN
 FOR SIGN, DELINEATOR AND
 MARKER REMOVALS.

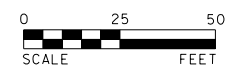


END FULL-DEPTH
 FULL WIDTH RECONSTRUCTION
 CSAH 13, S.A.P. 002-613-001
 STA. 127+68.50

LEGEND

	REMOVE BITUMINOUS PAVEMENT		REMOVE PIPE CULVERTS
	REMOVE ECCENTRIC LOADER BCT		REMOVE GUARDRAIL - PLATE BEAM
	REMOVE IMPACT ATTENUATOR		CONSTRUCTION LIMITS
	MAIL BOX SUPPORT		EXISTING RAILROAD RIGHT-OF-WAY
	CLEARING AND GRUBBING (BY THE TREE)		EXISTING RIGHT-OF-WAY
			TEMPORARY EASEMENT
			PERMANENT EASEMENT

NOTE: FOR LEGEND OF EXISTING UTILITIES REFER TO UTILITY TABULATIONS SHEET



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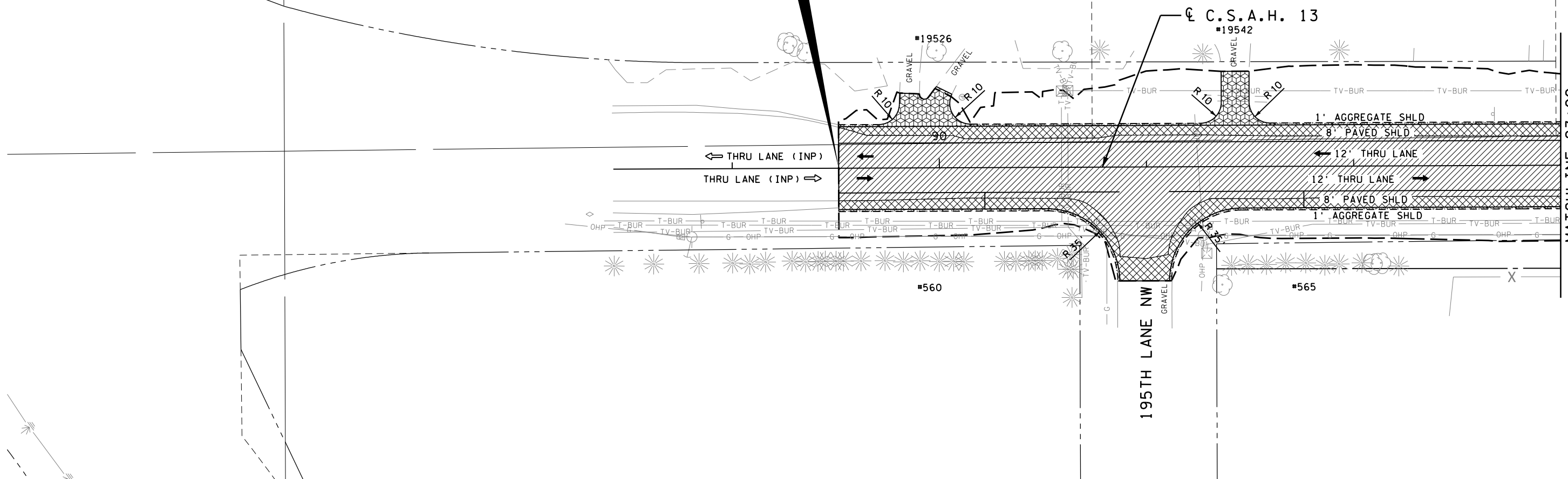
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 EXISTING CONDITIONS & REMOVAL PLAN

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BEGIN FULL-DEPTH RECLAMATION
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STA. 89+51.41



LEGEND	
	4" BITUMINOUS PAVEMENT (FULL DEPTH RECLAIM SECTION)
	4" BITUMINOUS PAVEMENT (SHOULDER WIDENING/TURN LANE/BYPASS/STREET CONSTRUCTION)
	4" AGGREGATE SURFACING (CV) CLASS 5
	6" AGGREGATE SURFACING CLASS 5
	CONSTRUCTION LIMITS
	EXISTING RIGHT-OF-WAY
	TRAFFIC FLOW

GENERAL NOTES:
1. SEE TURF ESTAB., ERSN. CNTL. & SUPERLEV. PLAN FOR SUPERELEVATION DESIGN.



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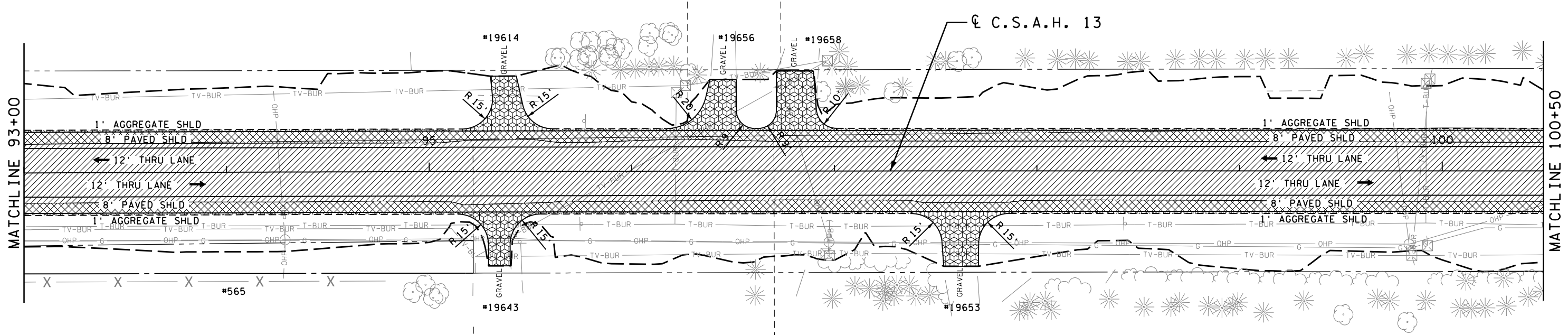
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CONSTRUCTION PLAN

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LEGEND	
	4" BITUMINOUS PAVEMENT (FULL DEPTH RECLAIM SECTION)
	4" BITUMINOUS PAVEMENT (SHOULDER WIDENING/TURN LANE/BYPASS/STREET CONSTRUCTION)
	4" AGGREGATE SURFACING (CV) CLASS 5
	6" AGGREGATE SURFACING CLASS 5
	CONSTRUCTION LIMITS
	EXISTING RIGHT-OF-WAY
	PROPOSED RIGHT-OF-WAY
	TRAFFIC FLOW

GENERAL NOTES:
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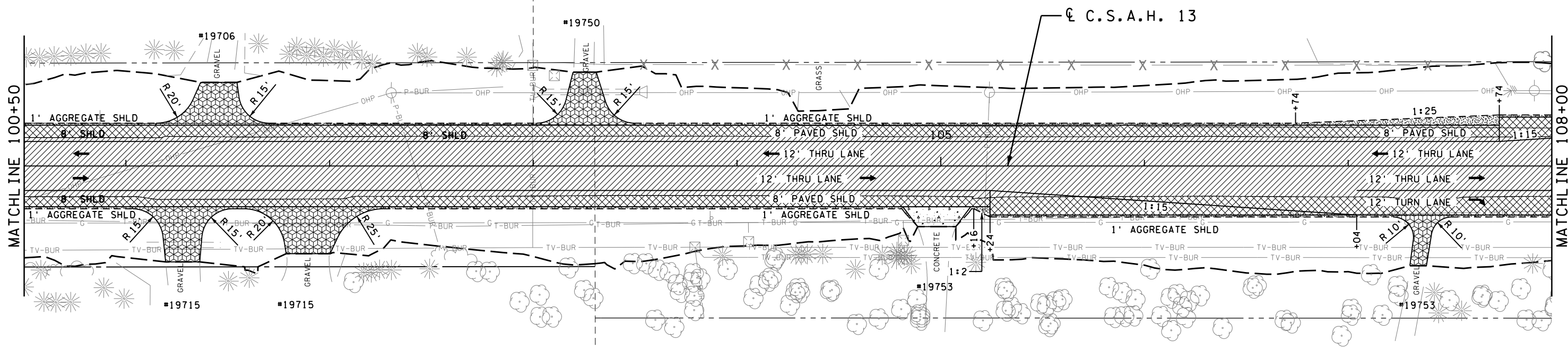
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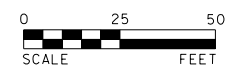
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LEGEND	
	4" BITUMINOUS PAVEMENT (FULL DEPTH RECLAIM SECTION)
	4" BITUMINOUS PAVEMENT (SHOULDER WIDENING/TURN LANE/BYPASS/STREET CONSTRUCTION)
	4" AGGREGATE SURFACING (CV) CLASS 5
	6" AGGREGATE SURFACING CLASS 5
	CONSTRUCTION LIMITS
	EXISTING RIGHT-OF-WAY
	PROPOSED RIGHT-OF-WAY
	TRAFFIC FLOW

GENERAL NOTES:
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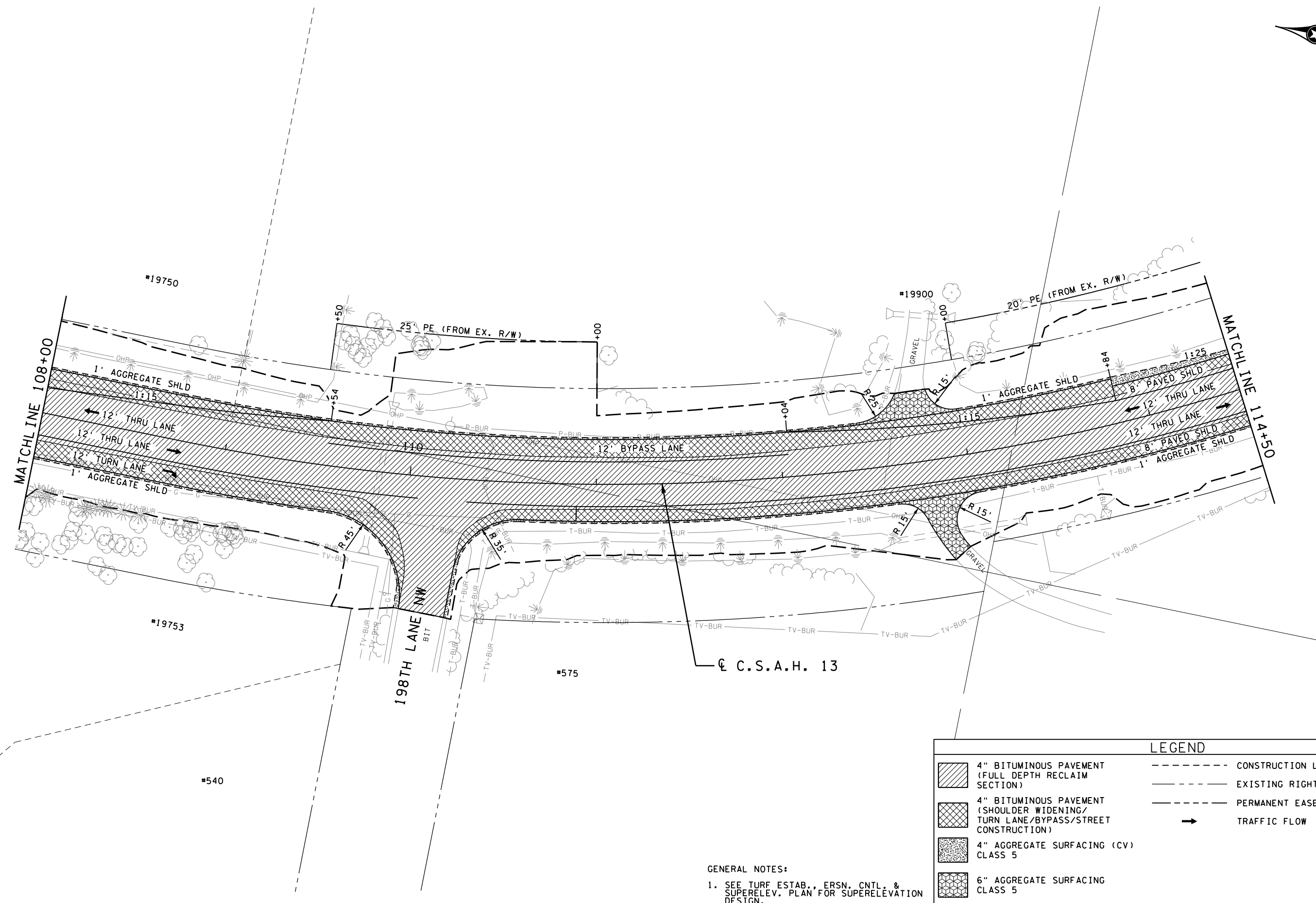
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CHECKED PML	CONSTRUCTION PLAN

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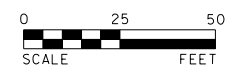


LEGEND

	4" BITUMINOUS PAVEMENT (FULL DEPTH RECLAIM SECTION)		CONSTRUCTION LIMITS
	4" BITUMINOUS PAVEMENT (SHOULDER WIDENING/TURN LANE/BYPASS/STREET CONSTRUCTION)		EXISTING RIGHT-OF-WAY
	4" AGGREGATE SURFACING (CV) CLASS 5		PERMANENT EASEMENT
	6" AGGREGATE SURFACING CLASS 5		TRAFFIC FLOW

GENERAL NOTES:
 1. SEE TURF ESTAB., ERSN, CNTL. & SUPERELEV. PLAN FOR SUPERELEVATION DESIGN.

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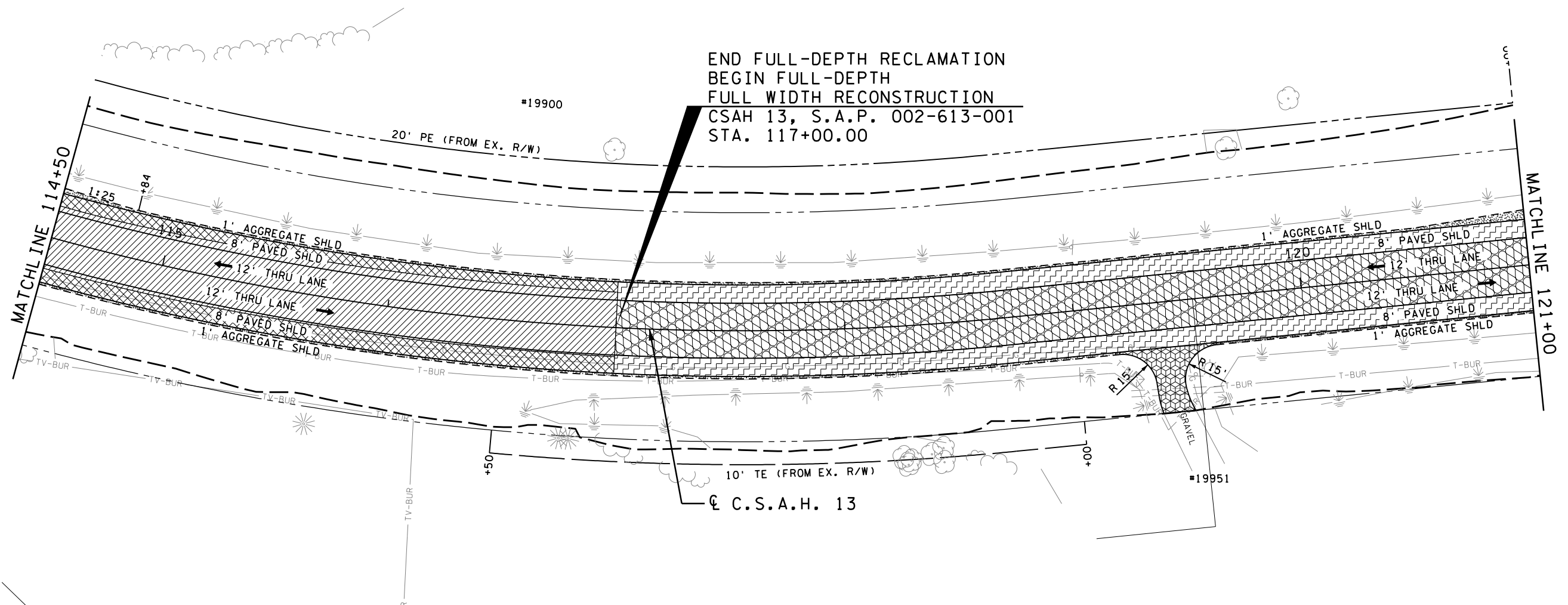
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 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
 CONSTRUCTION PLAN

SHEET
 41
 OF
 92



END FULL-DEPTH RECLAMATION
 BEGIN FULL-DEPTH
 FULL WIDTH RECONSTRUCTION
 CSAH 13, S.A.P. 002-613-001
 STA. 117+00.00

☉ C.S.A.H. 13

LEGEND

	4" BITUMINOUS PAVEMENT (FULL DEPTH RECLAIM SECTION)		4" AGGREGATE SURFACING (CV) CLASS 5
	4" BITUMINOUS PAVEMENT (SHOULDER WIDENING/TURN LANE/BYPASS/STREET CONSTRUCTION)		6" AGGREGATE SURFACING CLASS 5
	4" BITUMINOUS PAVEMENT (MAINLINE WEAR - FULL RECONSTRUCTION)	- - - - -	CONSTRUCTION LIMITS
	4" BITUMINOUS PAVEMENT (SHOULDER WEAR - FULL RECONSTRUCTION)	- - - - -	EXISTING RIGHT-OF-WAY
	TRAFFIC FLOW	- - - - -	TEMPORARY EASEMENT
		- - - - -	PERMANENT EASEMENT

GENERAL NOTES:
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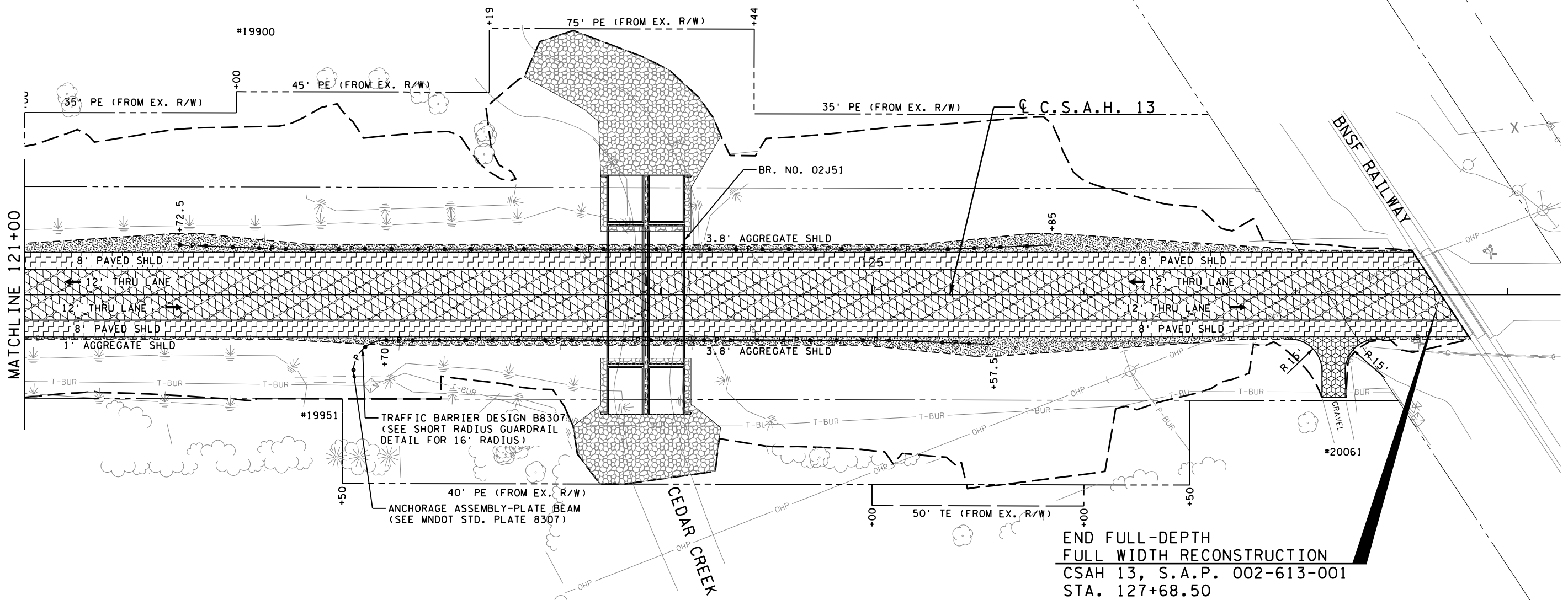
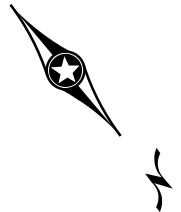
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 CONSTRUCTION PLAN

SHEET 42 OF 92

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LEGEND

	4" BITUMINOUS PAVEMENT (MAINLINE WEAR - FULL RECONSTRUCTION)		CONSTRUCTION LIMITS
	4" BITUMINOUS PAVEMENT (SHOULDER WEAR - FULL RECONSTRUCTION)		EXISTING RIGHT-OF-WAY
	4" AGGREGATE SURFACING (CV) CLASS 5		TEMPORARY EASEMENT
	6" AGGREGATE SURFACING CLASS 5		PERMANENT EASEMENT
			TRAFFIC BARRIER DESIGN B8338
			TRAFFIC FLOW

GENERAL NOTES:
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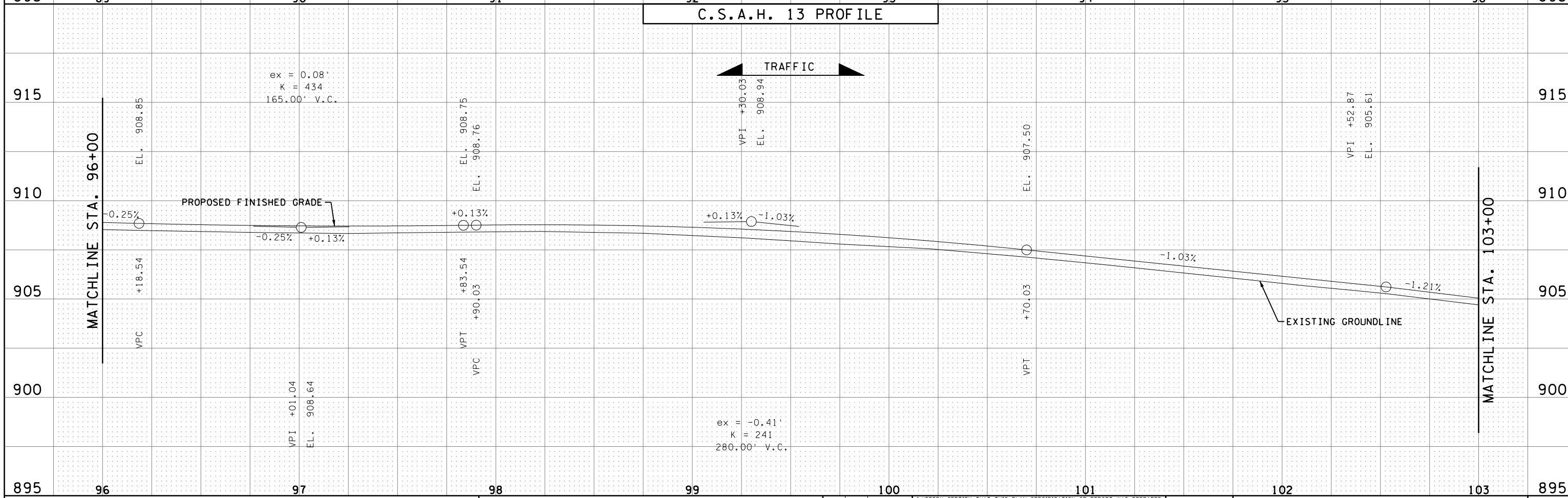
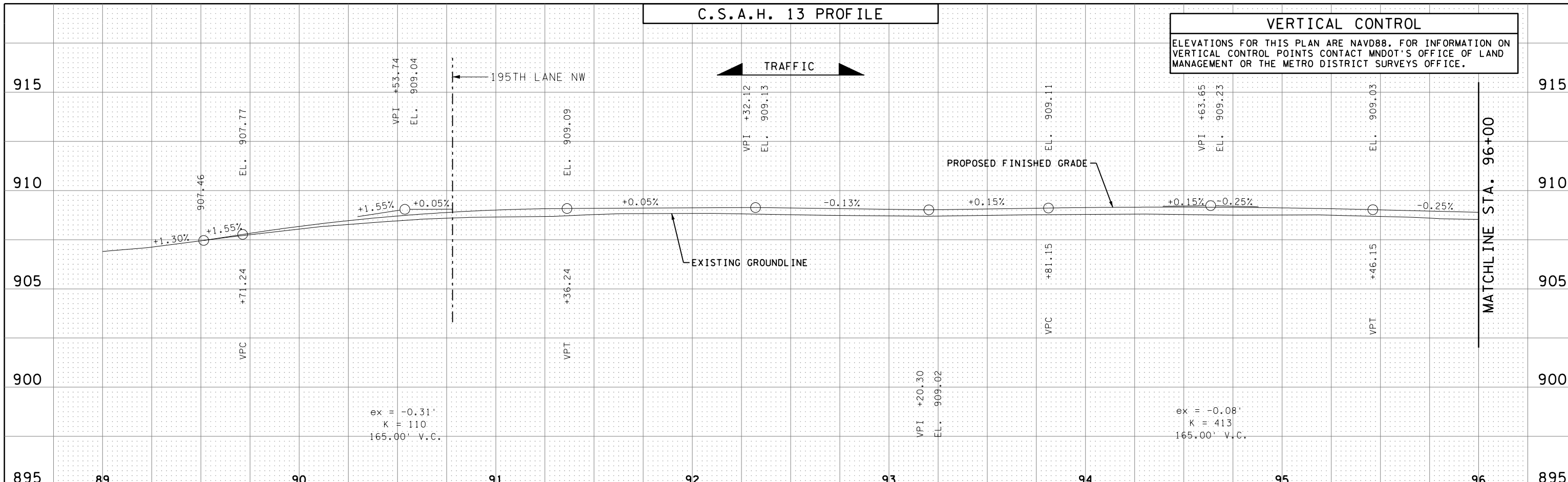
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Peter M. Lemke
 PETER M. LEMKE
 LIC. NO. 40118 DATE 01-29-2019

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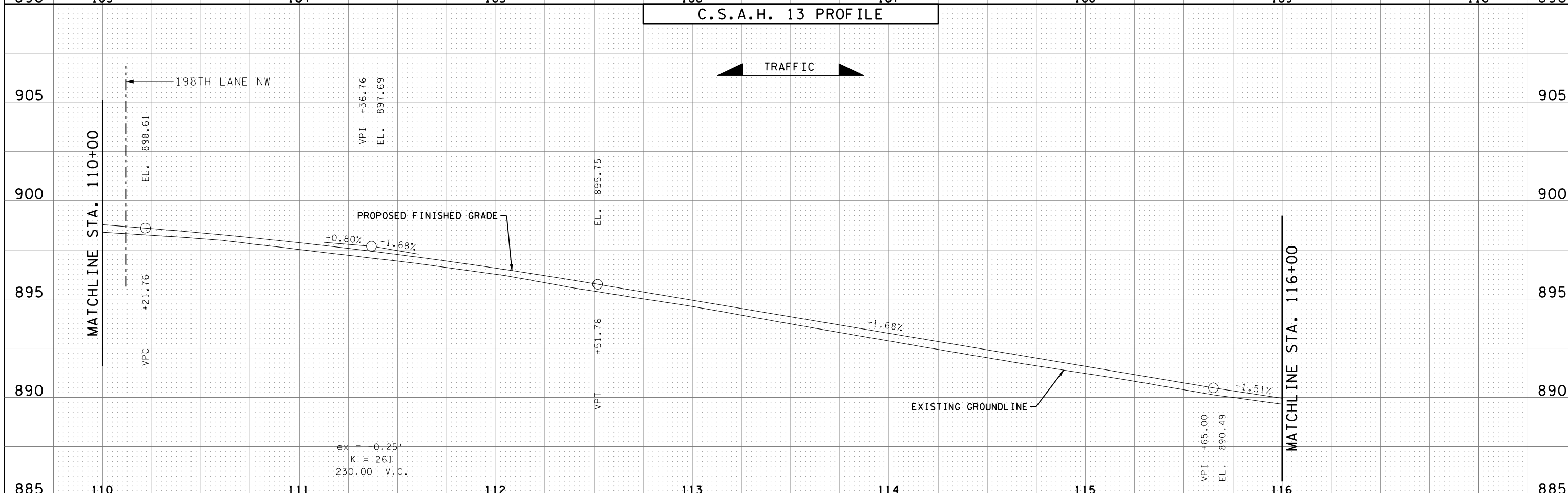
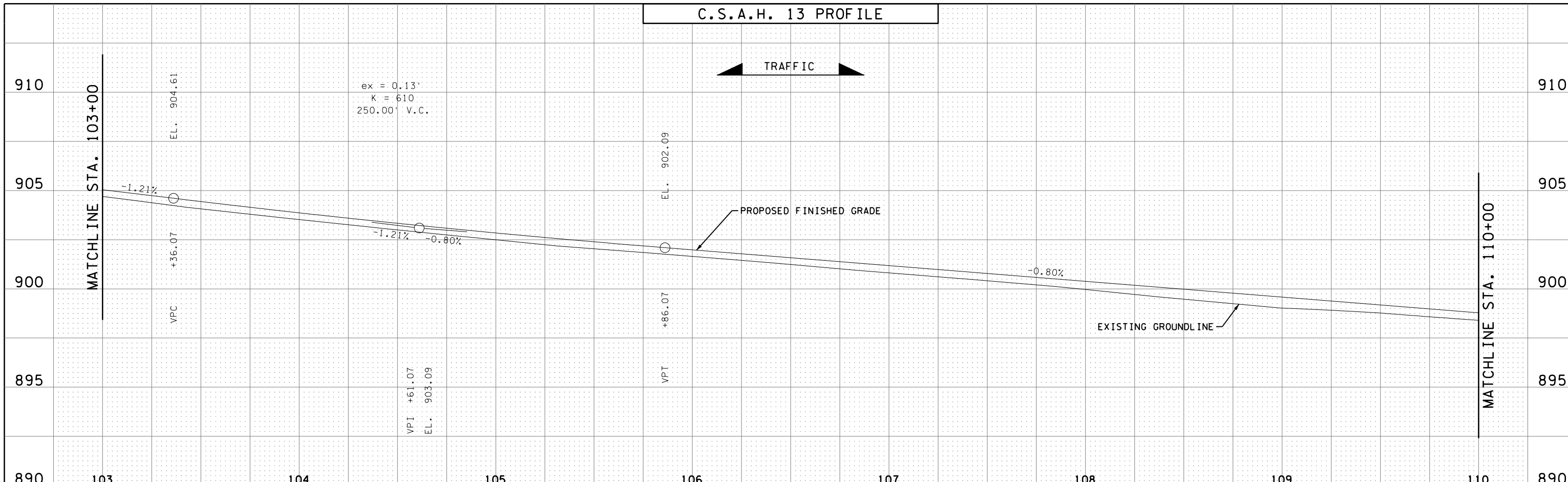
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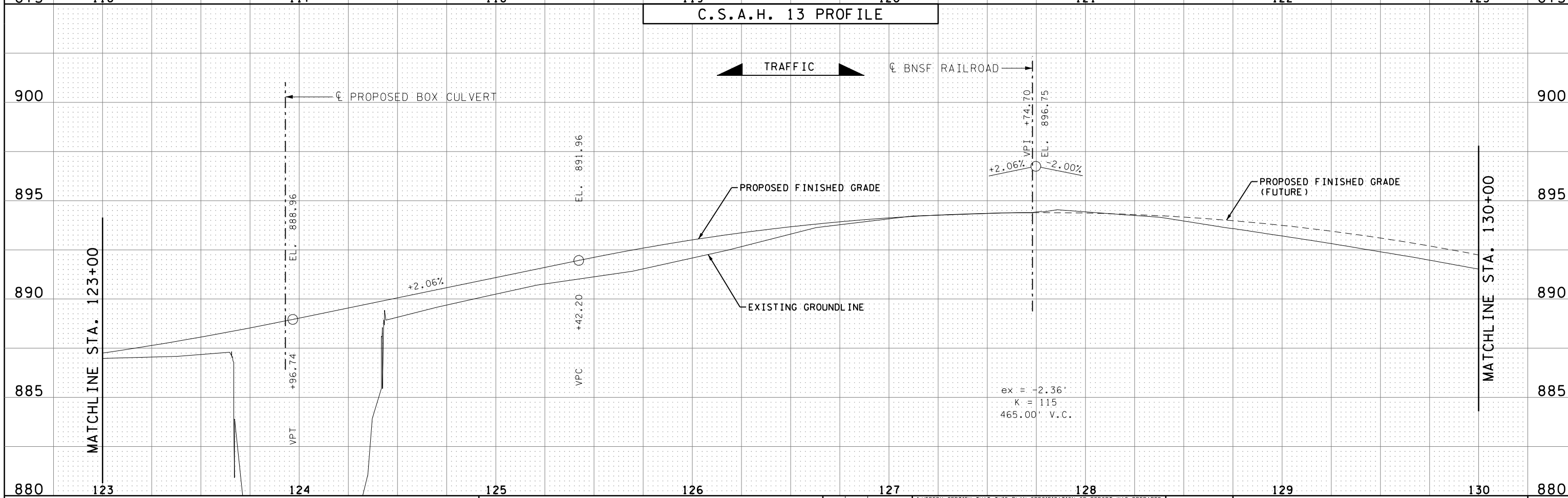
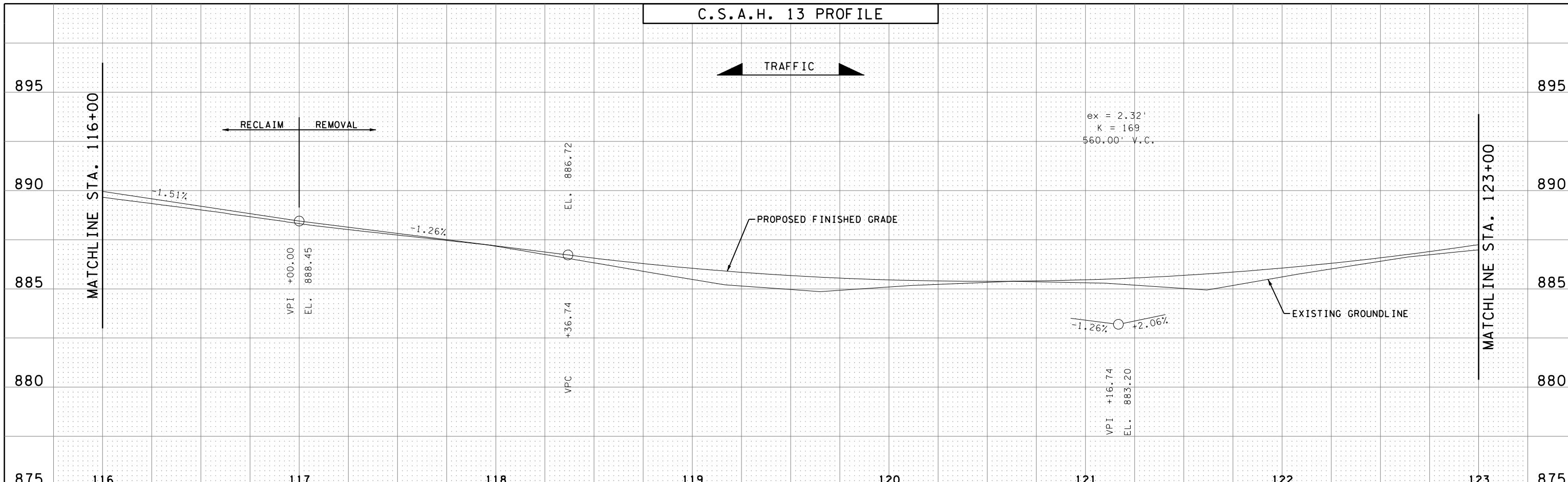
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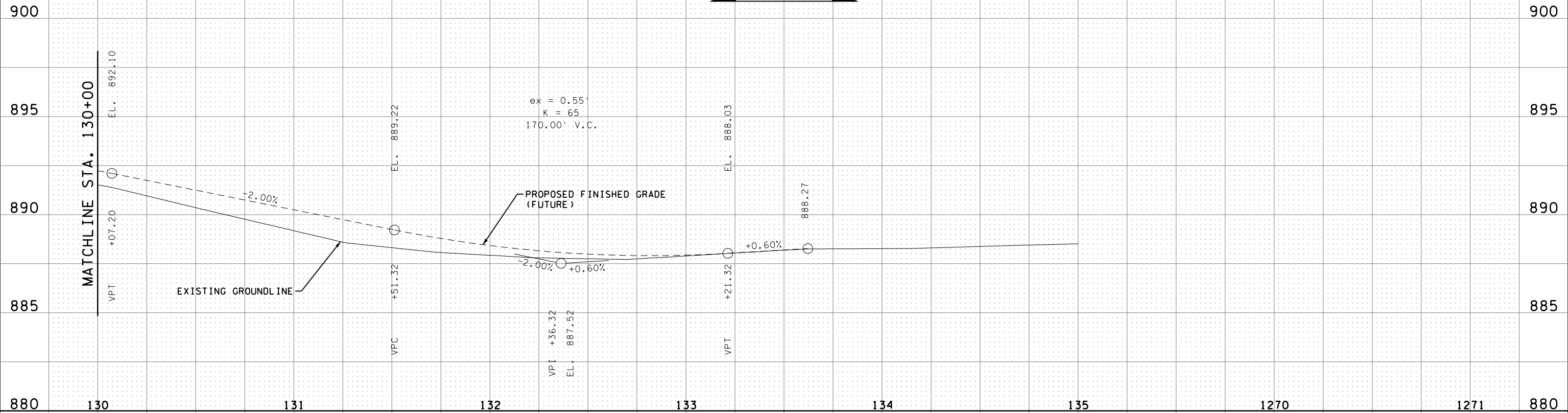
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 CONSTRUCTION PROFILES

SHEET 47 OF 92

NOTES AND GUIDELINES

GENERAL CULVERT CONSTRUCTION NOTES:

1. ALL EXISTING SUBSURFACE UTILITIES SHOWN ON THE PLANS ARE DONE SO IN AN APPROXIMATE MANNER BASED UPON AVAILABLE RECORDS AND SURVEYED INFORMATION. THE CONTRACTOR SHALL TAKE NECESSARY ACTIONS TO BECOME ACQUAINTED WITH ALL BURIED UTILITIES BY MARKING AND LOCATING THEM PRIOR TO COMMENCING WITH CONSTRUCTION. IN THE EVENT THAT A UTILITY IS DAMAGED BY THE CONTRACTOR DUE TO THE CONTRACTOR'S DISREGARD FOR LOCATING AND MARKING UTILITIES, THE CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH REPAIRING THE DAMAGED UTILITY TO THE UTILITY OWNERS REQUIREMENTS.
2. ALL CULVERT CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATIONS OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2018 EDITION AND SPECIAL PROVISIONS CONTAINED IN THE PROPOSAL.
3. UNLESS OTHERWISE INDICATED ON THE PLANS OR IN THE PROPOSAL, ALL MATERIALS FOR CULVERT CONSTRUCTION SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:
 PIPE: REINFORCED CONCRETE PIPE, CLASS II (Mn/DOT SPEC. 3236)
 CORRUGATED STEEL PIPE (Mn/DOT SPEC. 3226)

 PIPE JOINT GASKETS: PREFORMED RUBBER, TYPE A (Mn/DOT SPEC. 3726)
4. SEE DETAILS FOR ALL TRENCHING, EXCAVATING, BACKFILLING, AND COMPACTING FOR CONSTRUCTING CULVERTS, AND DRAINAGE STRUCTURES.
5. SEE TABULATIONS AND DETAILS FOR PIPE BEDDING.
6. PROVIDE TEMPORARY EROSION CONTROL MEASURES DURING AND AFTER CULVERT CONSTRUCTION TO PREVENT SEDIMENT AND CONTAMINANTS FROM ENTERING THE CULVERTS.
7. ELEVATIONS FOR RC PIPE CULVERTS ARE TO THE END OF THE APRON. ELEVATIONS FOR CS SAFETY APRONS ARE TO THE END OF THE APRON. SEE TABULATIONS FOR APRON TYPES.
8. ALL PIPE LENGTHS SHOWN IN TABULATIONS DO NOT INCLUDE APRONS.
9. ALL PIPE LENGTHS SHOWN IN PROFILES DO NOT INCLUDE APRONS.
10. ALL PIPE SPECIFIED AS "PIPE CULVERT" SHALL BE TIED FROM UPSTREAM STRUCTURE TO OUTLET APRON (INCIDENTAL).
11. ALL FLAGGING OPERATIONS REQUIRED FOR DRAINAGE RELATED WORK IS INCIDENTAL.
12. PRIOR TO CONSTRUCTING DRAINAGE IMPROVEMENTS, THE CONTRACTOR SHALL POTHOLE AND VERIFY PRIVATE UTILITY CROSSING ELEVATIONS TO ENSURE THAT NO CONFLICTS EXIST (INCIDENTAL). REPORT ANY CONFLICTS TO THE ENGINEER FOR FURTHER INVESTIGATION.
13. ALL TEMPORARY CONNECTIONS, PIPING, PUMPING STRUCTURES, ETC. DUE TO CONTRACTOR STAGING OPERATIONS FOR THE PROJECT ARE INCIDENTAL.
14. ALL CULVERTS SHALL BE BACKFILLED WITH THE SAME OR SIMILAR MATERIAL FOUND IN THE EXCAVATION THAT MEETS "SELECTED GRADING MATERIAL" AS DEFINED UNDER MNDOT STANDARD SPECIFICATION 2106.1.A.6 UNLESS OTHERWISE RECOMMENDED BY THE DISTRICT MATERIALS AND/OR SOILS ENGINEER. THE SELECT GRADING MATERIAL MAY BE EITHER PLASTIC OR GRANULAR SOIL AS LONG AS IT MEETS 2106.1.A.6 AND IS FREE OF CLODS, STONES OVER 3 INCHES, SOD, AND ROOTS.
15. 5000 SERIES LABELS DENOTE PROPOSED DRAINAGE STRUCTURES.

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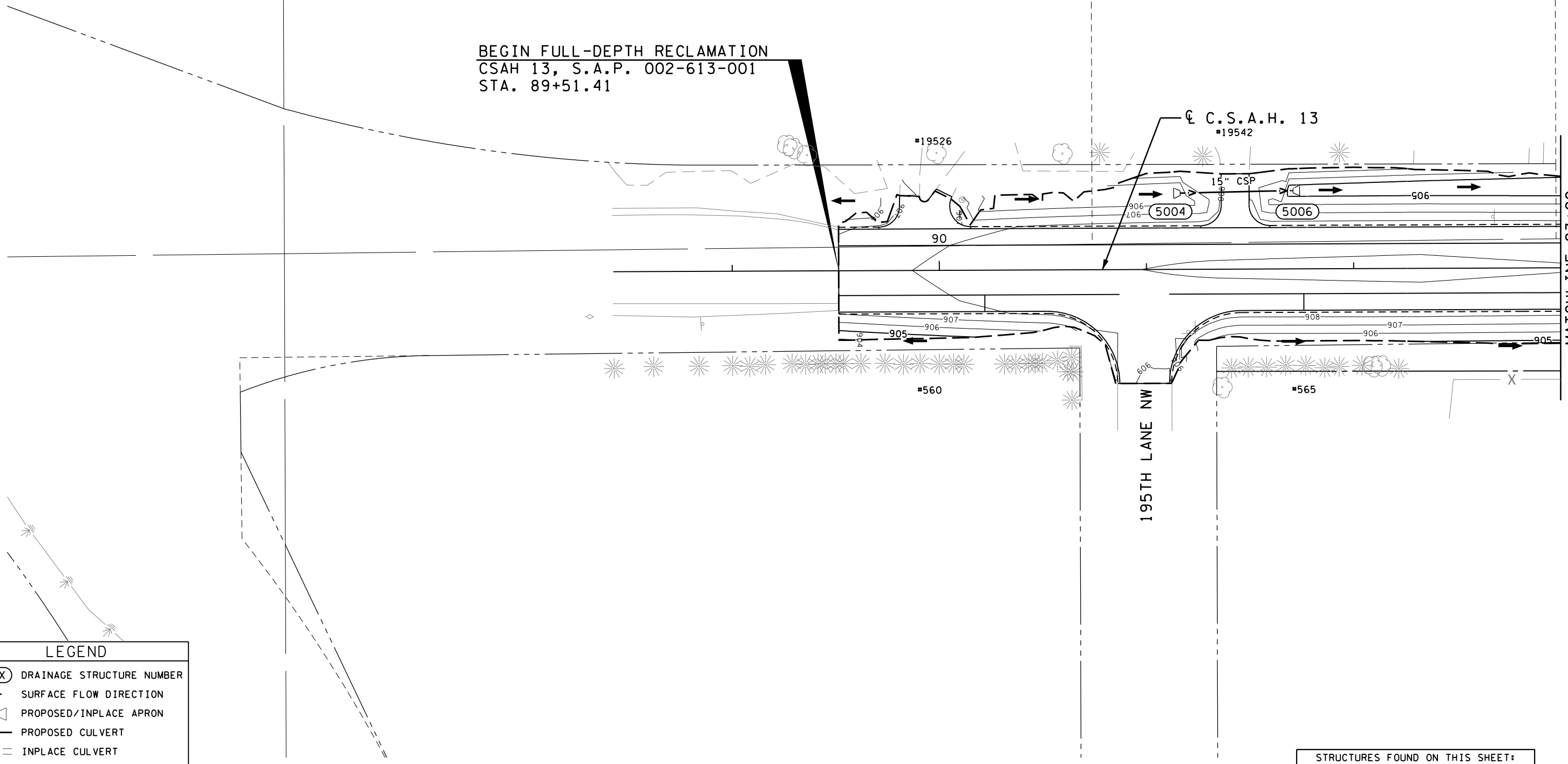
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DRAINAGE PLAN

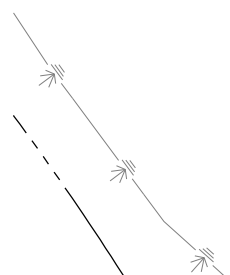
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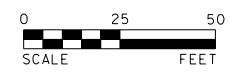
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LEGEND	
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→	SURFACE FLOW DIRECTION
▧/▧	PROPOSED/INPLACE APRON
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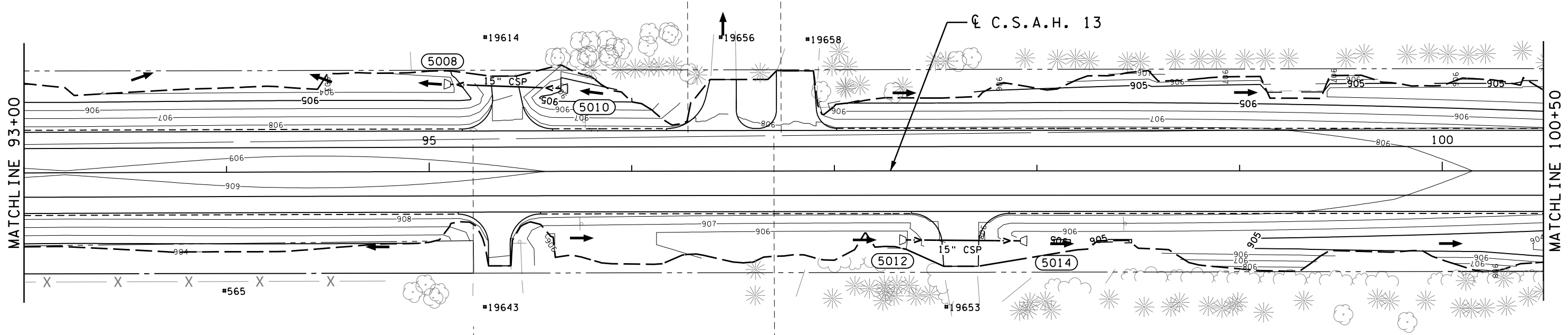
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 DRAINAGE PLAN

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LEGEND	
(XXXX)	DRAINAGE STRUCTURE NUMBER
→	SURFACE FLOW DIRECTION
▢/▢	PROPOSED/INPLACE APRON
—>	PROPOSED CULVERT
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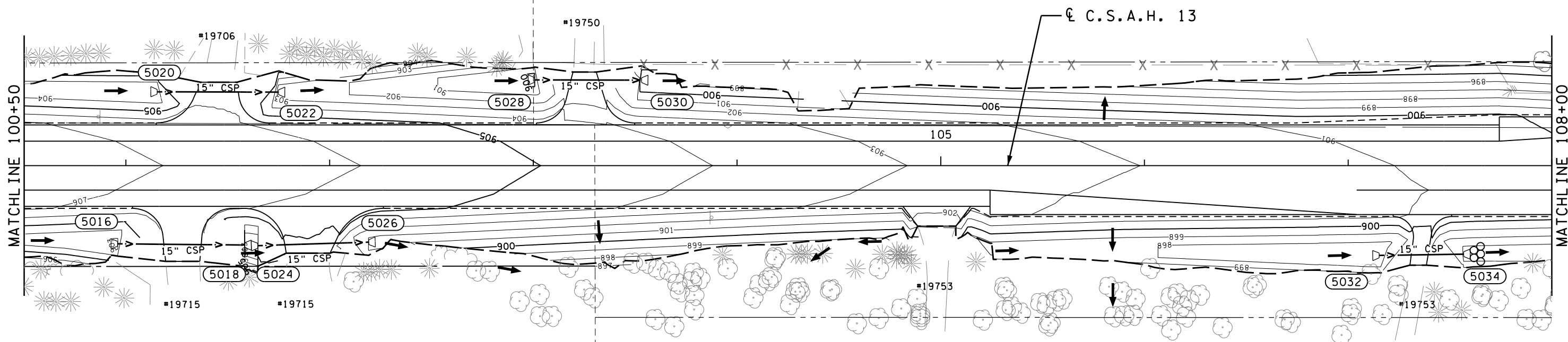
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DRAINAGE PLAN

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→	SURFACE FLOW DIRECTION
▱/▱	PROPOSED/INPLACE APRON
—v—	PROPOSED CULVERT
==	INPLACE CULVERT
⊗	RANDOM RIPRAP CL II

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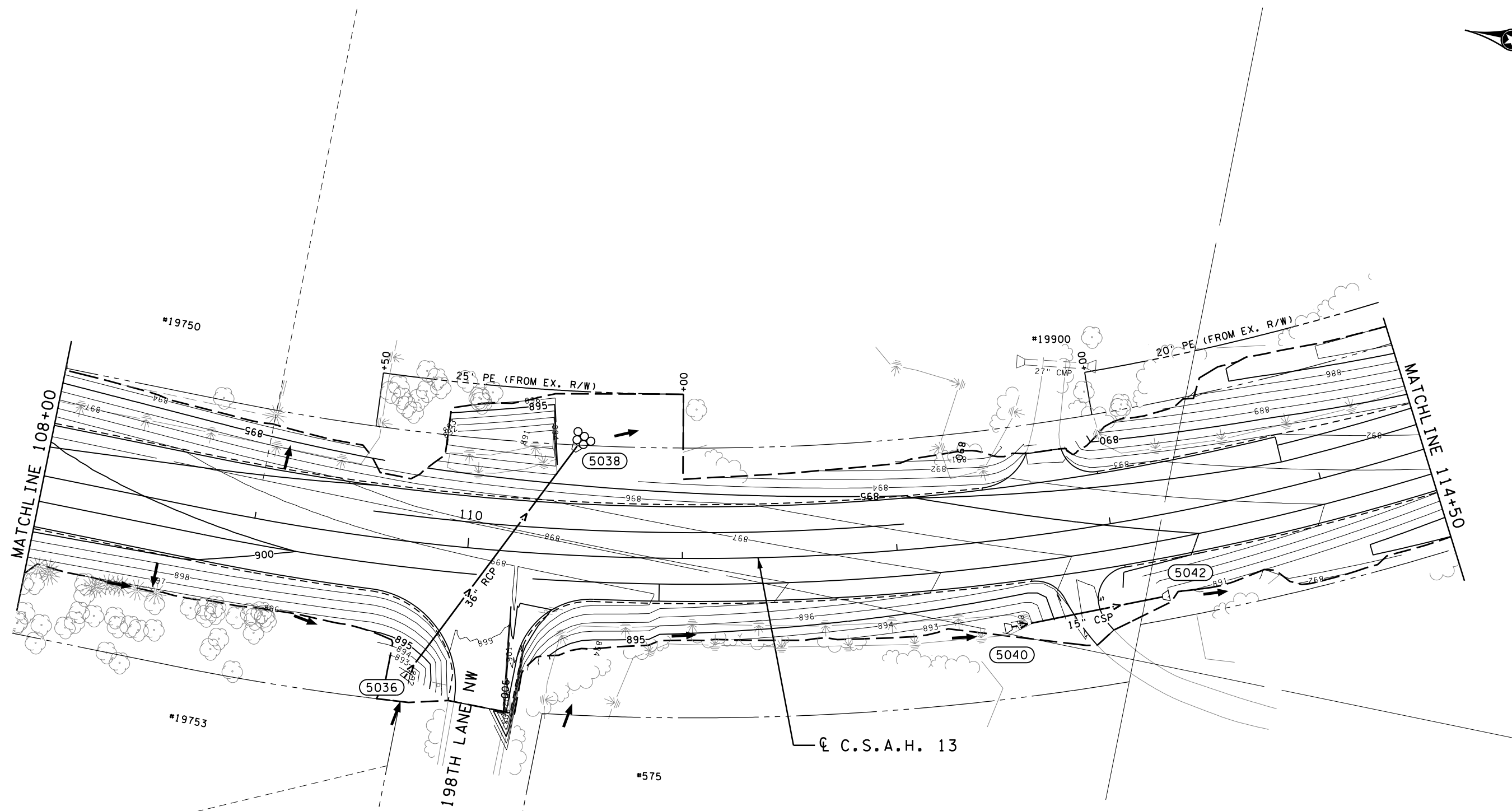
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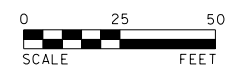
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 DRAINAGE PLAN

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→	SURFACE FLOW DIRECTION
▽/▽	PROPOSED/INPLACE APRON
— ▽ —	PROPOSED CULVERT
— ▽ —	INPLACE CULVERT
⊗	RANDOM RIPRAP CL II

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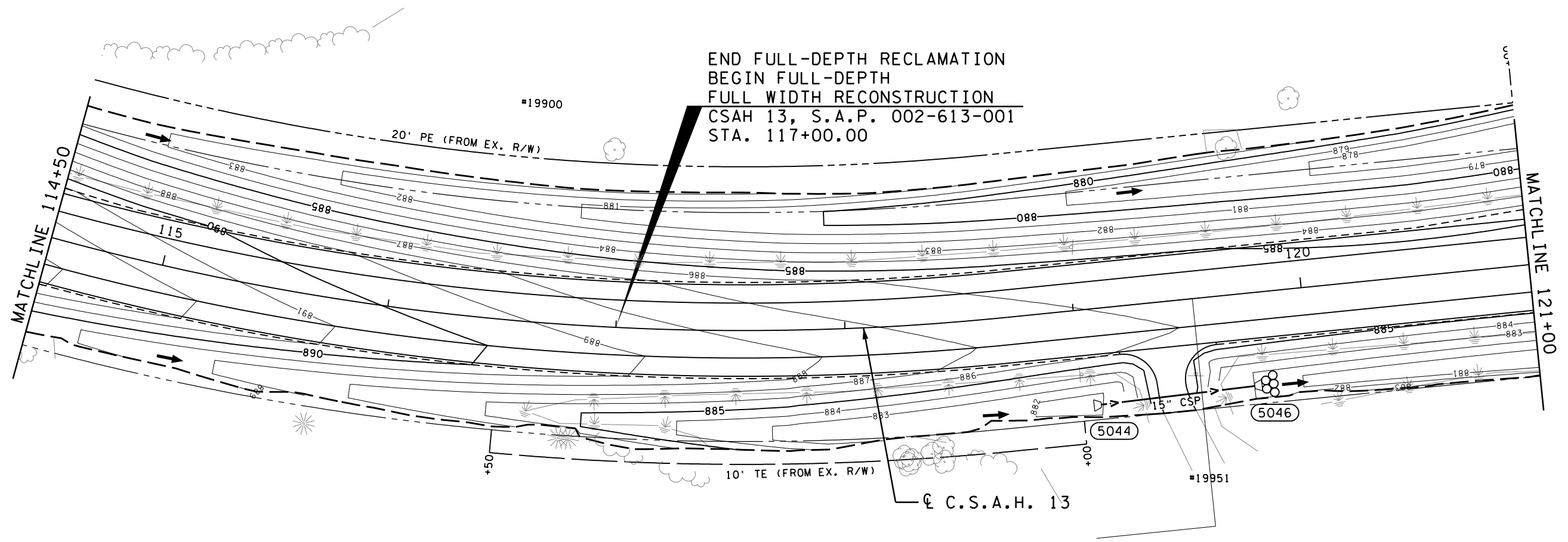
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DRAINAGE PLAN

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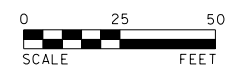
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⊗	RANDOM RIPRAP CL II

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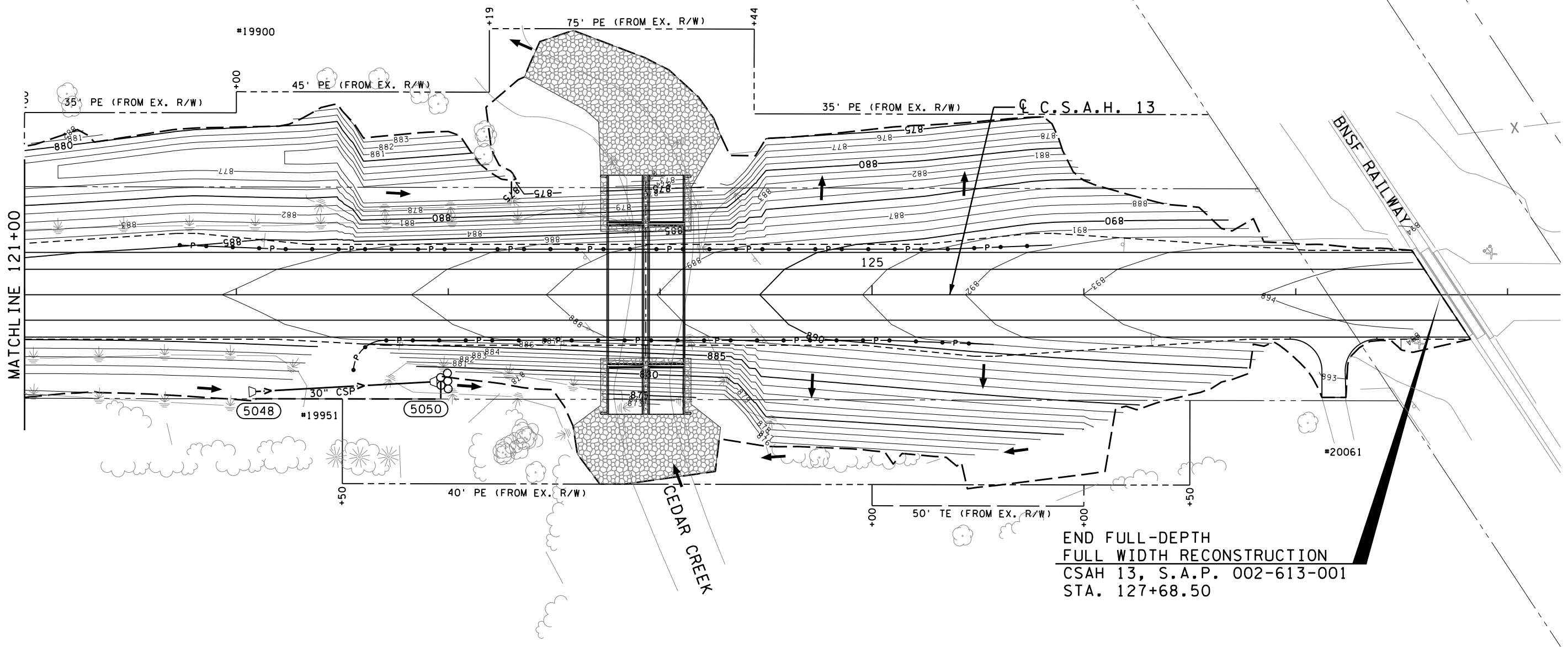
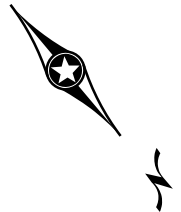
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LEGEND	
XXXX	DRAINAGE STRUCTURE NUMBER
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—▽—	PROPOSED CULVERT
---▽---	INPLACE CULVERT
⊗	RANDOM RIPRAP CL II



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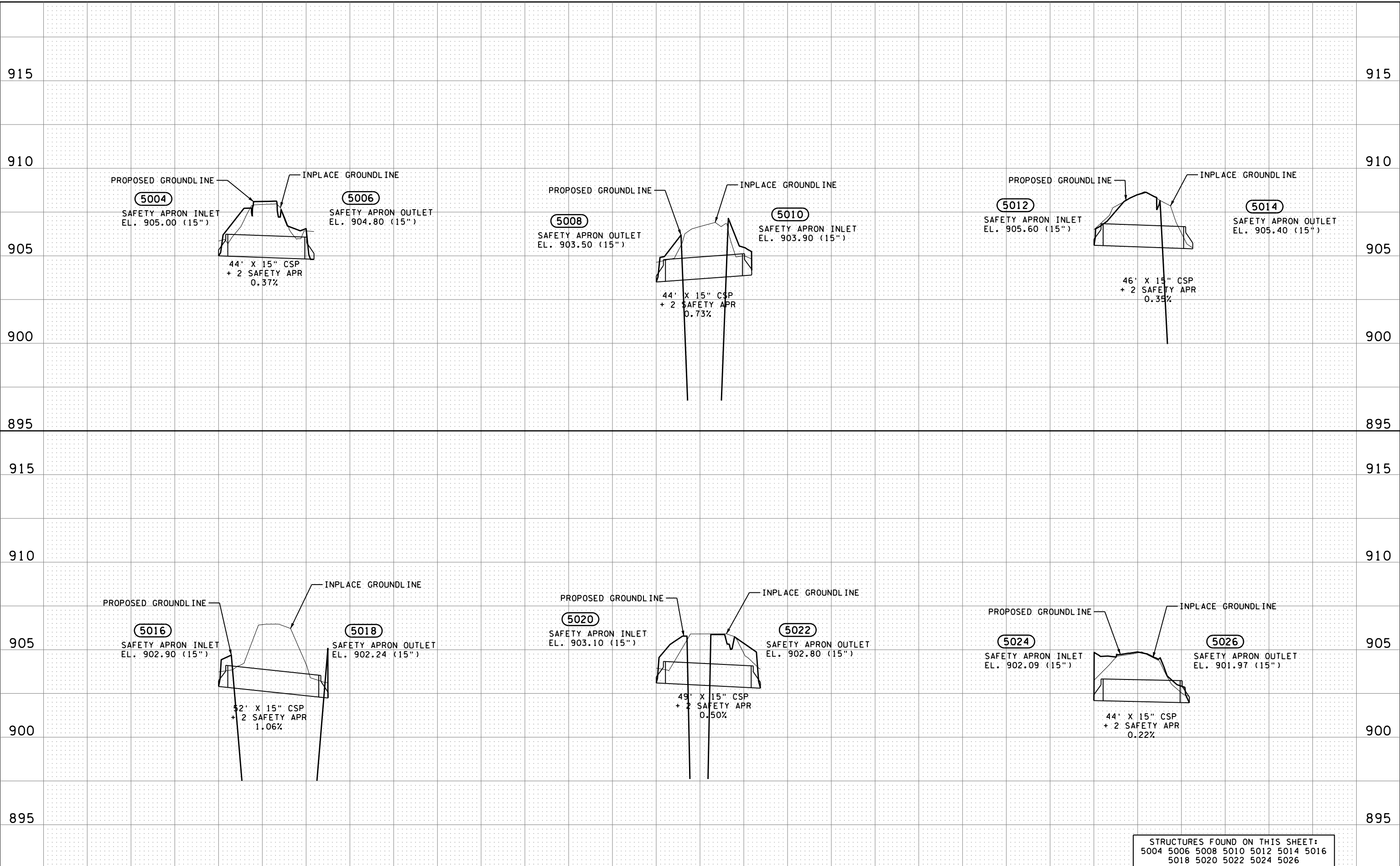
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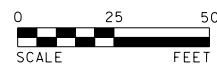
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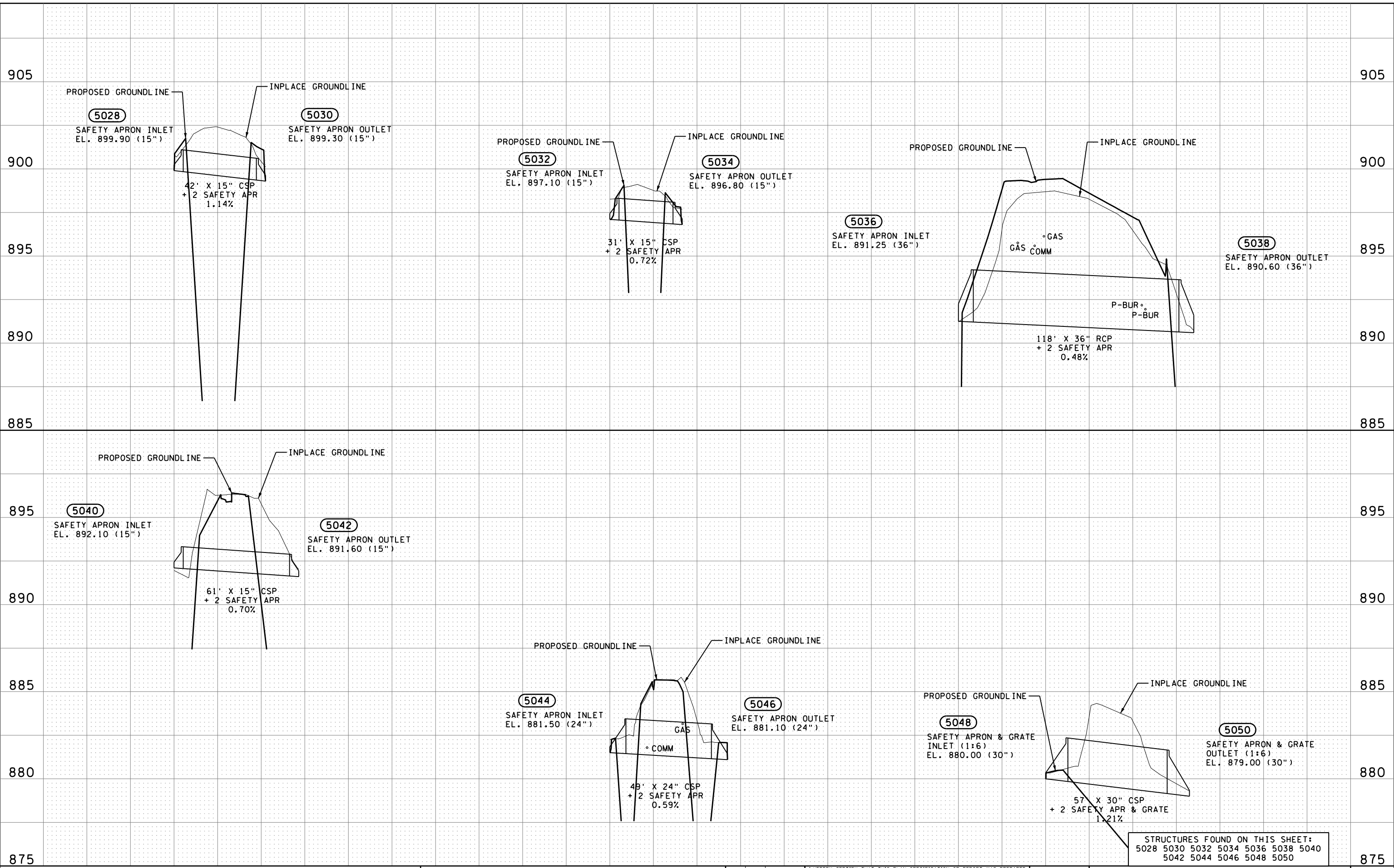
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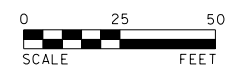
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 DRAINAGE PROFILES

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 DRAINAGE PROFILES

SHEET 56 OF 92

CULVERT TABULATION

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STRUCTURE NO.		STRUCTURE LOCATION				ELEV.	CS PIPE CULVERT			RC PIPE CULVERT DES 3006	SAFETY APRON			30" CS SAFETY APRON & GRATE DES 3128	RIPRAP CLASS II	GEOTEXTILE FILTER TYPE 3	GUIDE POSTS TYPE B	PIPE TREATMENT NO.	EXCAVATION - COMMON (P)	SELECT GRANULAR EMBANKMENT 10% MOD (CV)	FINE AGGREGATE BEDDING (CV)	REMARKS
		ALIGN.	STATION	OFFSET			15"	24"	30"	36"	15"	24"	36"									
FLows FROM	FLows TO					LIN FT	LIN FT	LIN FT	CL II LIN FT	EACH	EACH	EACH	EACH	CU YD	SQ YD	EACH	(1)	CU YD	CU YD	CU YD		
5004	5006	CSAH13	91+16.44	36.8'	LT	905.00	44			1						1						
5006		CSAH13	91+70.93	37.8'	LT	904.80				1						1						
5008		CSAH13	95+10.67	43.0'	LT	903.50				1						1						
5010	5008	CSAH13	95+65.11	40.9'	LT	903.90	44			1						1						
5012	5014	CSAH13	97+35.34	34.0'	RT	905.60	46			1						1						
5014		CSAH13	97+91.85	34.5'	RT	905.40				1						1						
5016	5018	CSAH13	100+95.87	38.4'	RT	902.90	52			1						1						
5018		CSAH13	101+58.36	39.0'	RT	902.24				1						1						
5020	5022	CSAH13	101+15.35	36.3'	LT	903.10	49			1						1						
5022		CSAH13	101+74.85	36.1'	LT	902.80				1						1						
5024	5026	CSAH13	101+64.72	39.3'	RT	902.09	44			1						1						
5026		CSAH13	102+19.20	37.6'	RT	901.97				1						1						
5028	5030	CSAH13	103+00.60	42.1'	LT	899.90	42			1						1						
5030		CSAH13	103+53.10	42.0'	LT	899.30				1						1						
5032	5034	CSAH13	107+15.24	44.1'	RT	897.10	31			1				4	18	1						
5034		CSAH13	107+56.73	43.5'	RT	896.80				1						1						
5036	5038	CSAH13	109+77.45	63.3'	RT	891.25			118			1				1		448	307	143	(2)	
5038		CSAH13	110+48.69	51.2'	LT	890.60						1		8	63	1	1				(2)	
5040	5042	CSAH13	112+48.61	40.9'	RT	892.10	61			1						1						
5042		CSAH13	113+17.68	37.7'	RT	891.60				1						1						
5044	5046	CSAH13	119+08.12	42.1'	RT	881.50		49				1		7	31	1						
5046		CSAH13	119+75.60	40.7'	RT	881.10						1				1						
5048	5050	CSAH13	122+09.10	45.7'	RT	880.00			57				1	9	39	1						
5050		CSAH13	122+91.48	41.2'	RT	879.00							1			1						
TOTALS							413	49	57	118	18	2	2	2	28	151	24	448	307	143		

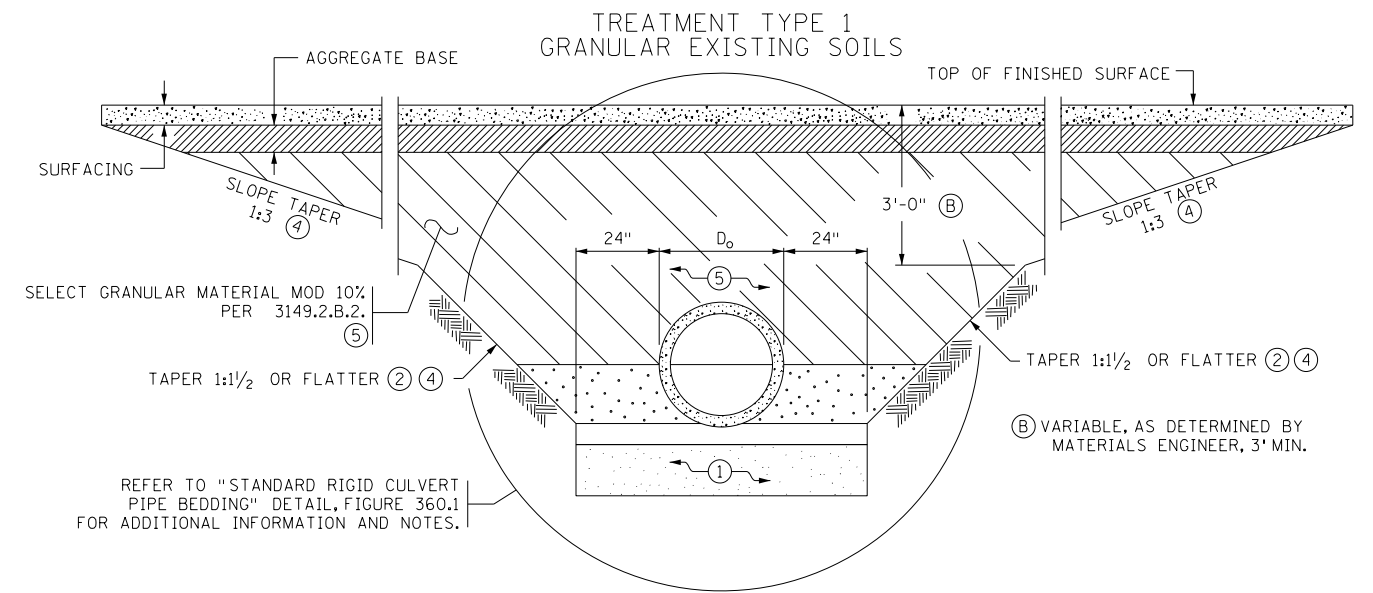
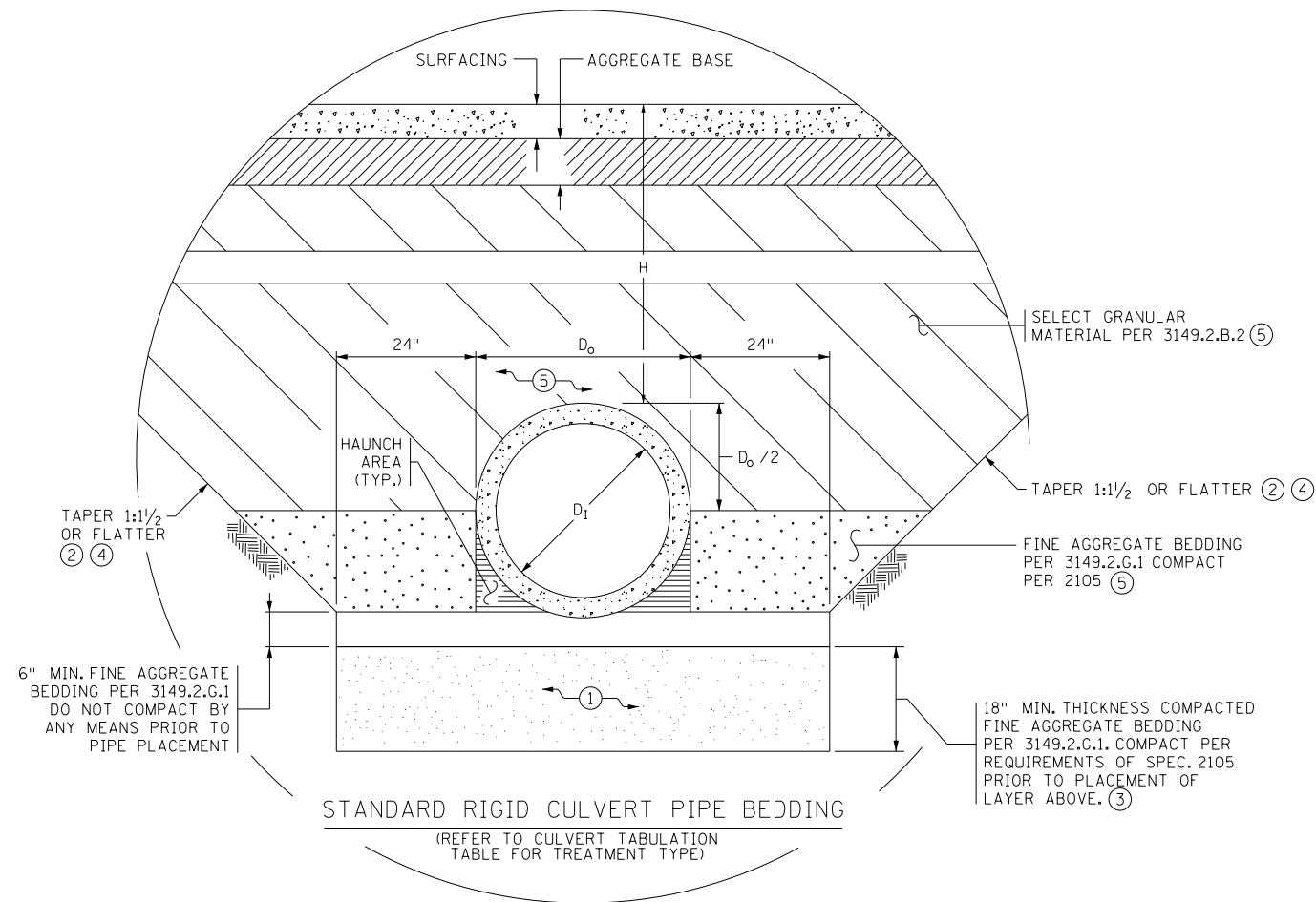
NOTES:
(P) PLAN QUANTITY
 - STA. AND OFFSET IS AT:
 - END OF RC PIPE APRON, CS SAFETY APRON

(1) SEE DRAINAGE DETAILS FOR PIPE TREATMENT INFORMATION.
 (2) TIE ALL JOINTS (INCIDENTAL).

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DRAINAGE TABULATIONS

 <p>BOLTON & MENK 12224 NICOLLET AVENUE BURNSVILLE, MINNESOTA 55337 Phone: (952) 890-0509 Email: Burnsville@bolton-menk.com www.bolton-menk.com</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>REV.</th><th>BY</th><th>DATE</th></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>	REV.	BY	DATE										<p>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.</p> <p style="text-align: center;"><i>Peter M. Lemke</i> PETER M. LEMKE LIC. NO. 40118 DATE 01-29-2019</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>DESIGNED TAL</td></tr> <tr><td>DRAWN TAL</td></tr> <tr><td>CHECKED PML</td></tr> </table>	DESIGNED TAL	DRAWN TAL	CHECKED PML	<p>S.A.P. 002-613-001 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION DRAINAGE TABULATIONS</p>	<p>SHEET 57 OF 92</p>
REV.	BY	DATE																		
DESIGNED TAL																				
DRAWN TAL																				
CHECKED PML																				



CONSTRUCTION SEQUENCE

1. PLACE AND COMPACT 18" OF FINE AGGREGATE BEDDING TO THE REQUIREMENTS OF SPEC. 2105.
2. LOOSELY PLACE 6" OF FINE AGGREGATE BEDDING MATERIAL TO GRADE. DO NOT COMPACT PRIOR TO PIPE PLACEMENT.
3. FOR PIPES WITH BELL, REMOVE MATERIAL IN BELL AREA PRIOR TO PLACEMENT.
4. FURNISH AND INSTALL PIPE TO GRADE.
5. AFTER PLACEMENT OF THE PIPE, PLACE ADDITIONAL BEDDING AND COMPACT THE FULL LENGTH ON BOTH SIDES OF THE PIPE UNDERNEATH THE HAUNCH AREA BY FIRST SHOVEL SLICING (MANUALLY SHOVEL THE BLADE END OF A SHOVEL AT AN ANGLE DOWN THE ENTIRE LENGTH OF THE HAUNCH UNDER THE PIPE) THEN COMPACT THE HAUNCH AT AN ANGLE USING A POWERED MECHANICAL OR PNEUMATIC DEVICE (I.E. POLE TAMPER, JUMPING JACK, OR SIMILAR). COMPACT THE REMAINING MATERIAL OUTSIDE THE HAUNCH AREA TO THE REQUIREMENTS OF THE APPLICABLE MATERIAL TYPE ENSURING THAT THE ENTIRE LENGTH OF PIPE IS SUPPORTED UNIFORMLY BY BEDDING.
6. PLACE AND COMPACT BACKFILL EVENLY AND SIMULTANEOUSLY IN 6" LIFTS ON EACH SIDE OF THE PIPE UP TO THE MID-HEIGHT WHEN COMPACTED.
7. COMPLETE REMAINING BACKFILL PER THE APPROPRIATE TREATMENT REQUIREMENTS.

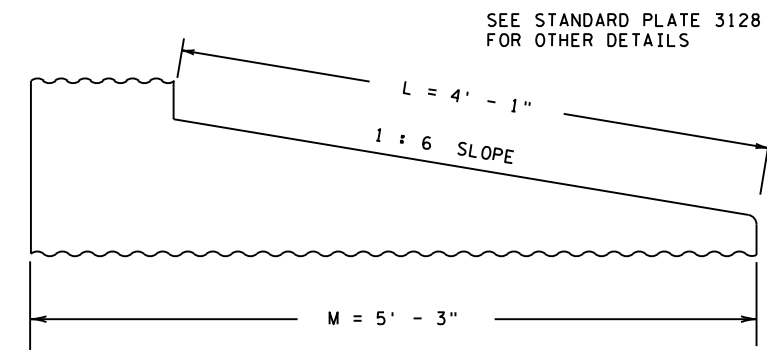
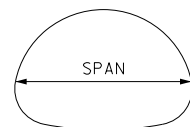
NOTES

EXCAVATE & CONSTRUCT ALL TRENCHES AND SLOPES PER OSHA REQUIREMENTS.
 ALL SLOPES SHOWN AS (V):(H)
 PIPE SIZE IS BASED ON THE NOMINAL INSIDE DIAMETER.

- ① IF APPROVED BY THE ENGINEER IN WET CONDITIONS THE CONTRACTOR MAY SUBSTITUTE 18" OF COARSE FILTER AGGREGATE PER 3149.2.H COMPACTED TO THE QUALITY COMPACTION REQUIREMENTS OF SPEC. 2105. WRAP WITH GEOTEXTILE FABRIC TYPE IV PER SPEC 3733. SEAM ALL FABRIC SIDES AND ENDS PER SPEC TABLE 3733-1 INCLUDING FOOTNOTE (e) OR OVERLAP A MINIMUM OF 3 FT. ALL AT NO ADDITIONAL COST.
- ② FOR FILL HEIGHTS (H) LESS THAN 3 FT., OMIT 1:1 1/2 TAPER
- ③ FOR INSTALLATIONS ON INTACT BEDROCK, OMIT THIS LAYER.
- ④ OVER EXCAVATION BENEATH TAPERS IS NOT PERMITTED UNLESS REQUIRED BY OSHA. (TYP.)
- ⑤ MAXIMUM EMBANKMENT PARTICLE SIZE WITHIN 2 FT. OF PIPE IS 3" PER SPEC. TABLE 2105-4.
 PROTECT ALL PIPE DURING CONSTRUCTION PER SPEC. 2501 OR 2503.
 PLACE MULTIPLE PIPE CULVERTS WITH A MIN. CLEARANCE OF 24 INCHES OR GREATER BETWEEN STRINGS OF PIPE.

-LEGEND-

D₁ = NOMINAL INSIDE DIAMETER OR SPAN OF PIPE
 D₀ = OUTSIDE DIAMETER OF ROUND PIPE, OR OUTSIDE SPAN OF PIPE-ARCH.
 H = FILL COVER HEIGHT OVER PIPE (FEET)
 = UNDISTURBED SOIL



15" CS SAFETY APRON
 (MODIFIED TO 1 : 6 SLOPE)

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 1/31/2019



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 www.bolton-menk.com

REV.	BY	DATE

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Peter M. Lemke
 PETER M. LEMKE
 LIC. NO. 40118 DATE 01-29-2019

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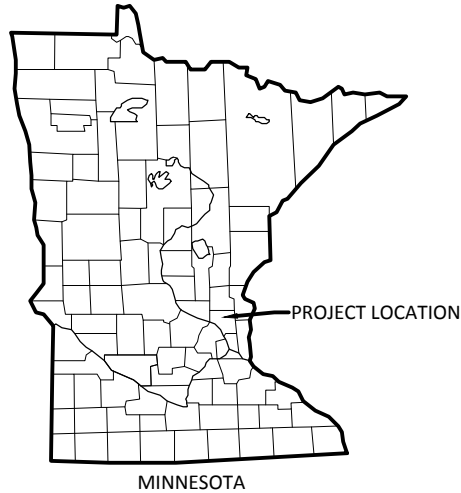
DRAINAGE DETAILS	
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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION	
DRAINAGE DETAILS	

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STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

C.S.A.H. 13 BRIDGE REPLACEMENT & ROAD CONSTRUCTION

CITY OF OAK GROVE
ANOKA COUNTY, MINNESOTA



UNIVERSITY OF MINNESOTA

Lanol Leichthy

Design of Construction SWPPP (May 31 2020)

LEGEND

PROJECT BOUNDARY

PROJECT AREAS:

Total Project Size (disturbed area) =	8.6	ACRES
Existing area of impervious surface =	3.4	ACRES
Post construction area of impervious surface =	4.1	ACRES
Total new impervious surface area created =	0.7	ACRES

Planned Construction Start Date: 05/01/2019
Estimated Construction Completion Date: 08/30/2019

PERMANENT STORMWATER MANAGEMENT SYSTEM:

Type of storm water management used if more than 1 acre of new impervious surface is created:

NA	Wet Sedimentation Basin
NA	Infiltration/Filtration
NA	Regional Pond
X	Permanent Storm Water Management Not Required

PROJECT LOCATION:

COUNTY	TOWNSHIP	RANGE	SECTION	LATITUDE	LONGITUDE
ANOKA	33N	24W	24	45.329329	-93.281249

BMP SUMMARY	QUANTITY	UNIT
STABILIZED CONSTRUCTION EXIT	1	LS
SILT FENCE, MS	3457	LF
SEDIMENT CONTROL LOG, TYPE WOOD FIBER	666	LF
EROSION CONTROL BLANKETS CATEGORY 3P	68	SY
EROSION CONTROL BLANKETS, CATEGORY 3N	9699	SY
SEEDING	4.5	ACRE
HYDRAULIC REINFORCED FIBER MATRIX	387	LB
HYDRAULIC STABILIZED FIBER MATRIX	8000	LB
MULCH MATERIAL, TYPE 1	4	TON
MULCH MATERIAL, TYPE 3	1	TON
FLOTATION SILT CURTAIN TYPE MOVING WATER	328	LF
TURF REINFORCEMENT MAT CATEGORY 2	68	SY

DESCRIPTION OF CONSTRUCTION ACTIVITIES AND STORMWATER MANAGEMENT:

Construction activities include: Bituminous milling, bituminous reclamation and grading, culvert replacements, temporary erosion and sediment control, and permanent stabilization.

All modifications to the SWPPP shall be approved by the engineer and remain on site at all times during construction.

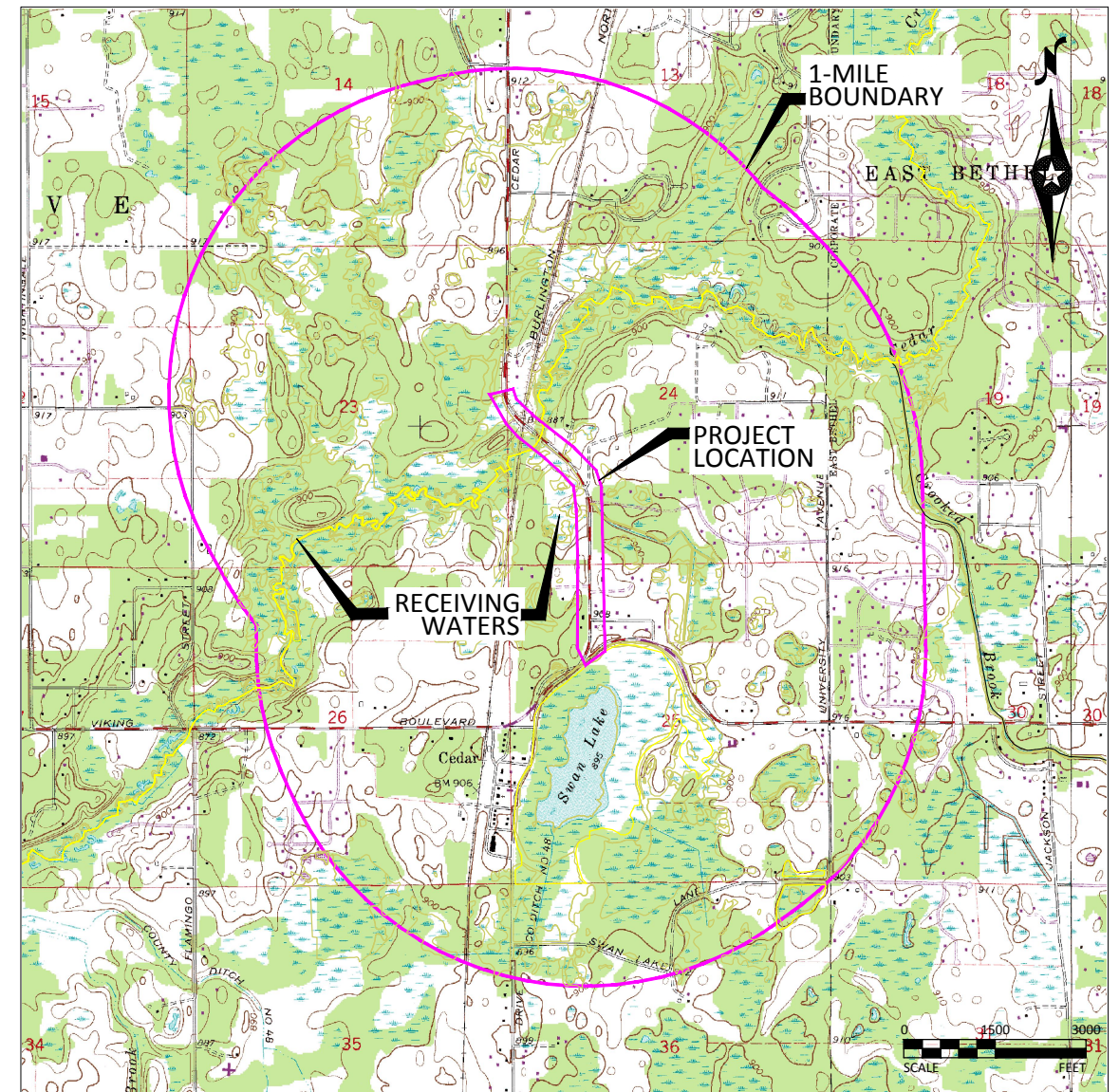
DOCUMENT RETENTION

The following documentation will be retained for a period of not less than 3-years from the date of submittal of the NOT in compliance with Part III.E of the Permit.

- The final SWPPP
- Copies of all stormwater related permits required for the project
- Records of all inspection and maintenance conducted during construction
- Copies of all permanent operation and maintenance agreements; including all right-of-way, contracts, covenants and other binding requirements regarding perpetual maintenance, and
- All required calculations for design of the temporary and permanent BMPs.

IMPLEMENTATION SCHEDULE AND PHASING:

- Submit SWPPP Updates to Engineer. Submittal shall include any requested changes to the SWPPP, including but not limited to: Trained Personnel, Locations for Stockpiles, Concrete Washout, Sanitation Facilities, Types and Locations of Erosion & Sediment Control. Failure to submit updates shall be considered acceptance of the SWPPP as designed with no changes.
- Install perimeter sediment control and inlet protection.
- Perform removals, milling and bituminous reclamation.
- Install culvert improvements.
- Perform site grading.
- Install pavement.
- Add additional temporary BMPs as necessary during construction based on inspection reports.
- Ensure final stabilization measures are complete.
- Submit Notice of Termination (NOT) to MPCA within 30 days of final stabilization.



RECEIVING WATERS:

Receiving waters, including surface water, wetlands, Public Waters, and stormwater ponds, are identified on the USGS 7.5 min quad map within one mile of the project boundary. Receiving waters that are impaired, the impairment, and WLA are listed as follows. All specific BMPs relative to construction activities listed in this permit for special and impaired waters have been incorporated into this plan. All specific BMPs listed in approved TMDLs and those BMPs listed for construction related waste load allocations have also been incorporated.

NAME OF WATER BODY	TYPE (ditch, pond, wetland, lake, etc.)	Appendix A Special Water?	Flows to Impaired Water Within 1 Mile?	USEPA Approved TMDL?
CEDAR CREEK	CREEK	NO	YES	YES
REACH: SWAN LAKE TO CEDAR CREEK	DITCH	NO	NO	NO

Impairments: E. coli

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN

DESCRIPTION	TITLE	LOCATION
TEMPORARY EROSION CONTROL MEASURES	SUPERELEV., TURF ESTAB. & ERSN. CONTL. PLAN	62-67
PERMANENT EROSION CONTROL MEASURES	SUPERELEV., TURF ESTAB. & ERSN. CONTL. PLAN	62-67
DIRECTION OF FLOW	SUPERELEV., TURF ESTAB. & ERSN. CONTL. PLAN	62-67
DRAINAGE TABULATION	DRAINAGE SUMMARY	57
EROSION AND SEDIMENT CONTROL DETAILS	TEMPORARY AND PERMANENT SEDIMENT CONTROL DETAILS	11-18
TEMPORARY EROSION AND SEDIMENT CONTROL TABULATION	QUANTITY TABULATION	8
TURF ESTABLISHMENT TABULATION	QUANTITY TABULATION	8
PERMANENT EROSION AND SEDIMENT CONTROL TABULATION	QUANTITY TABULATION	8

RESPONSIBLE PARTIES:

The Contractor and Owner must apply for coverage under the MPCA's General Storm Water Permit for Construction Activity as required by the National Pollutant Discharge Elimination System (NPDES) Phase II program. Coverage under the permit will begin automatically 7 calendar days after the electronic submittal date or after the postmarked date of a complete application. [Longer time frames apply to sites that disturb areas greater than 50 acres.]

The Contractor shall provide one or more trained Construction SWPPP Manager(s) knowledgeable and experienced in the application of erosion prevention and sediment control BMPs that will oversee the implementation of the SWPPP, and the installation, inspection and maintenance of the erosion prevention and sediment control BMPs. A Construction SWPPP Manager must be available for an on-site inspection within 72 hours upon request by the MPCA.

	COMPANY	CONTACT PERSON	PHONE
OWNER:	Anoka County	Elizabeth Markos	763-324-3116
SWPPP DESIGNER:	Bolton & Menk, Inc.	Lani Leichthy	952-890-0509
CONTRACTOR:	TBD		
CONSTRUCTION SWPPP MANAGER:	TBD		
PARTY RESPONSIBLE FOR LONG TERM O&M:	NA		
MPCA DUTY OFFICER	MPCA		651-649-5451 800-422-0798

The SWPPP Designer and Construction SWPPP Manager must have appropriate training. Documentation showing training commensurate with the job duties and responsibilities is required to be included in the SWPPP prior to any work beginning on the site. Training documentation for the SWPPP Designer is included on this sheet. The Contractor shall attach training documentation to this SWPPP for the Construction SWPPP Manager prior to the start of construction. This information shall be kept up to date until the project NOT is filed.

ADDITIONAL COMPENSATION

Payment for all work associated with Erosion and Sediment Control shall be as described in the Project Manual. Unless otherwise authorized by the Owner no additional payment shall be made for any work required to administer and maintain the site erosion and sediment control in compliance with the Minnesota Pollution Control Agency (MPCA) - General Storm Water Permit for Construction Activity (MN R100001) including but not limited to inspection, maintenance, and removal of BMPs or addition of BMPs to accommodate Contractor phasing.

SPECIAL ENVIRONMENTAL CONSIDERATIONS:

1) Was an environmental review required for this project or any part of a common plan of development or sale that includes all or any portion of this project?	NO
2) Does any portion of the site have the potential to affect threatened or endangered species or their critical habitat?	NO
3) Does any portion of this site discharge to a Calcareous fen.	NO
4) Will any portion of the site potentially affect properties listed on the National Register of Historic Places or a known or discovered archeological site?	NO
5) Have any Karst features have been identified in the project vicinity?	NO
6) Is compliance with temporary or permanent stormwater management design requirements infeasible for this project?	NO
7) Has the MN DNR promulgated "work in water restrictions" for any Public Water this site discharges to during fish spawning?	NO

GENERAL STORMWATER DISCHARGE REQUIREMENTS

All requirements listed in Part III of the Permit for the design of the permanent stormwater management system and discharge have been included in the preparation of this SWPPP. These include but are not limited to:

- The expected amount, frequency, intensity, and duration of precipitation.
- The nature of stormwater runoff and run-on at the site
- Peak flow rates and stormwater volumes to minimize erosion at outlets and downstream channel and stream bank erosion.
- The range of soil particle sizes expected to be present on the site.

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Lani Leichthy
LANOL L. LEICHTY
LIC. NO. 20846 DATE 01/29/2019



7533 SUNWOOD DR NW, SUITE 206
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

DESIGNED	NO.	ISSUED FOR	DATE
LLL			
DRAWN	JTP		
CHECKED	PML		
CLIENT PROJ. NO.	743.116130		

S.A.P. 002-613-001
13 BRIDGE REPLACEMENT & RD CONSTRUCTION
STORMWATER POLLUTION PREVENTION PLAN
PROJECT INFORMATION AND LOCATION MAP

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Information contained in this SWPPP narrative sheet summarizes requirements of the GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM/STATE DISPOSAL SYSTEM PROGRAM - Permit No: MN RI00001 as they apply to this project. All provisions of the permit including those not specifically cited herein shall apply to this project. The Contractor is responsible to be familiar with and comply with all conditions of the permit. The full text of the permit is available at: <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/construction-stormwater/mpca-to-re-issue-construction-stormwater-general-permit.html>

SWPPP AMENDMENTS

Permittee must amend SWPPP as necessary to include additional requirements to correct problems identified or address the following situations.

1. There is a change in design, construction, operation, maintenance, weather or seasonal conditions.
2. Inspections or investigations by site owner or operators, USEPA or MPCA officials determine the SWPPP is not minimizing discharge of pollutants to surface waters or underground waters or discharges are causing water quality standard exceedances.
3. The SWPPP is not achieving the objectives of minimizing pollutants in stormwater discharges associated with construction activity, or the SWPPP is not consistent with the terms and conditions of the permit.
4. The MPCA determines that the project's stormwater discharges may cause, have reasonable potential to cause, or contribute to non-attainment of any applicable water quality standard, or the SWPPP does not incorporate the applicable requirements of the permit.

EROSION PREVENTION PRACTICES

The location of areas not to be disturbed must be delineated on the project before site work begins.

Disturbance on steep slopes (>33.3%) shall be minimized. Where required, techniques such as phasing and stabilizing practices designed for steep slopes shall be used.

All exposed soils must be stabilized as soon as possible, but in no case later than 7 days after the construction activity has temporarily or permanently ceased.

For public waters that have been promulgated "work in water restrictions" during fish spawning time frames, all exposed soil areas that are within 200 feet of the water's edge, and drain to these waters must complete stabilization within 24-hours during the time period.

Stormwater conveyance channels shall be routed around unstabilized areas. Erosion controls and velocity dissipation devices shall be used at outlets within and along the length of any constructed conveyance channel.

The normal wetted perimeter of all ditches or swales, including storm water management pond slopes, that drain waters from the site must be stabilized within 200' of any property edge or discharge point, including storm sewer inlets, within 24 hours of connection.

Stabilization of the remaining portions of any temporary or permanent ditches or swales within 7 calendar days after connecting to a surface water or property edge and construction in that portion of the ditch has temporary or permanently ceased.

Temporary or permanent ditches or swales used as sediment containment during construction do not need to be stabilized during temporary period of use and shall be stabilized within 24 hours after no longer used as sediment containment.

Mulch, hydromulch, tackifier, or similar practice shall not be used in any portion of a temporary or permanent drainage ditch. Refer to erosion and sediment control plan for temporary and permanent stabilization measures for ditches and swales.

Stormwater discharges shall be directed to vegetated areas where feasible. Velocity dissipation devices shall be used at discharge point.

Phased construction will be used to extent practical or as indicated in the plans to minimize exposed soils.

Rapid stabilization shall be of type and quantity indicated in the project specifications. Additional rapid stabilization may be necessary to minimize erosion throughout the duration of the project. Type and quantity shall be determined by the engineer or inspector prior to installation. In extreme cases, the contractor shall use any available rapid stabilization to immediately mitigate erosion, then further remedy the situation with approval by owner or engineer.

SEDIMENT CONTROL PRACTICES

Practices must be established on all down gradient perimeters and be located up gradient of any buffer zones. Perimeter controls must be in place before up gradient land-disturbing activities begin and shall remain in place until final stabilization.

All sediment controls practices shall be re-installed if they have been adjusted or removed to accommodate short-term activities and replaced immediately after the short term activity has ceased. Short term activities shall be performed as quickly as possible. Sediment control practices shall be re-installed even before the next precipitation event if the activity is not complete.

All storm drains must be protected by appropriate BMPs during construction until all sources to the inlet have

been stabilized. Inlet protection may be removed for specific safety concerns identified by the Permittee or jurisdictional authority. The removal shall be documented in the SWPPP and retained on site. Temporary stockpiles must have silt fence or other effective sediment controls and shall not be placed in surface waters or natural buffers.

Vehicle tracking BMPs shall be installed to minimize track out of sediment from the construction site. Method shall be approved by engineer prior to commencement of construction activities. Street sweeping shall be used if vehicle tracking BMPs are not adequate to prevent sediment from being tracked onto the street.

Soil compaction shall be minimized and topsoil shall be preserved, unless infeasible or if construction activities dictate soil compaction or topsoil stripping.

A 50 foot natural buffer, or redundant BMPs (where a buffer is infeasible) must be maintained when a surface water is located within 50 feet of disturbance activities and site runoff flows to the surface water.

If polymers, flocculants, or other sedimentation treatment chemicals are used on site, 1) conventional erosion and sediment controls shall be sowed prior to chemical placement, 2) chemicals shall be chosen based on soil types, and expected turbidity, pH, and flow rate of stormwater flowing into the treatment system, and 3) chemicals shall be used with accepted engineering practices and dosing specifications.

TEMPORARY SEDIMENTATION BASINS

The temporary sedimentation basin shall be constructed and made operational prior to disturbance of 10 or more acres draining to a common location.

Temporary sedimentation basins are required prior to runoff leaving the construction site or entering surface waters when 10 or more acres of disturbed soils drain to a common location. The basin must provide 3,600 cubic feet of "storage below the outlet per acre drained. If hydraulic calculations are available, the temporary sedimentation basin must provide a storage volume equivalent to the 2-year, 24-hour storm, but in no case less than 1800 cubic feet per acre drained. The temporary sedimentation basin must be constructed and made operational concurrent with the start of soil disturbance up gradient of the pond. The temporary sedimentation basin shall be designed to prevent short circuiting. The outfall shall be designed to remove floatable debris, allow for complete drawdown of the pond for maintenance activities, and have energy dissipation. The emergency spillway shall be stabilized.

Temporary sedimentation basins shall be situated outside of surface waters and any required buffer zone, and must be designed to avoid draining wetlands, unless the impact is in compliance with the requirements of this permit.

Excessive sediment-laden water that is not properly filtered will not be permitted to discharge from site.

DEWATERING AND BASIN DRAINING

Turbid or sediment-laden waters related to dewatering or basin draining shall be discharged to a temporary or permanent sedimentation basin on the project site unless infeasible. The temporary or permanent basin may discharge to surface waters if the basin water has been visually checked to ensure adequate treatment has been obtained in the basin and that the nuisance conditions will not result from the discharge. Discharge points shall be adequately protected from erosion and proper velocity dissipation provided.

All water from dewatering or basin-draining activities must be discharged in a manner that does not cause nuisance conditions, erosion in the receiving channels or on down slope properties, or inundation in wetlands causing significant adverse impacts to the wetland.

If filters with backwash waters are used, the backwash water shall be hauled away for disposal, returned to the beginning of the treatment process, or incorporated into site in a manner that does not cause erosion. Backwash water may be discharged to sanitary sewer if permission is granted by the sanitary sewer authority.

POLLUTION PREVENTION

Building products that have the potential to leach pollutants must be under cover to prevent discharge or protected by an effective means designed to minimize contact with stormwater.

Pesticides, herbicides, insecticides, fertilizers, treatment chemicals, and landscape materials must be under cover.

Hazardous materials and toxic waste must be properly stored in sealed containers to prevent spills, leaks or other discharge. Restricted access storage areas must be provided to prevent vandalism.

Solid waste must be stored, collected and disposed of in compliance with Minn. R. CH 7035.

Portable toilets must be positioned so that they are secure and will not be tipped or knocked over. Sanitary waste must be disposed of properly in accordance with Minn. R. CH 7041.

Discharge of spilled or leaked chemicals, including fuel, from any area where chemicals or fuel will be loaded or unloaded shall be prevented using drip pans or absorbents. Supplies shall be available at all times to clean up discharged materials and that an appropriate disposal method must be available for recovered spilled materials.

Exterior vehicle or equipment washing on the project site shall be limited to a defined area of the site. Runoff from the washing area shall be contained in a sediment basin or other similarly effective controls and waste from the washing activity must be properly disposed of. No engine degreasing is allowed on site. Effective containment for all liquid and solid wastes generated by concrete and other washout operations related to construction activity shall be effectively contained. Liquid and solid washout waste shall not contact the ground, and containment must be designed so that it does not result in runoff from the washout operations or areas. A sign must be installed adjacent to each washout facility that requires site personnel to utilize the proper facilities for disposal of concrete and other washout wastes.

INFESTED WATERS:

MN DNR permits are not valid for work in waters that are designated as infested waters unless accompanied by and Infested Waters Permit or written notification from MN DNR that an Infested Waters Permit is not required. There is no exception for pre-existing permits. If a MN DNR Permit has been issued for the project and the water is later designated as infested, the Contractor shall halt all work covered by the MN DNR Permit until an Infested Water Permit or written notification that in Infested Water is not required is obtained.

INSPECTION & MAINTENANCE

A trained person shall routinely inspect the entire construction site at least once every 7 days during active construction and within 24-hours after a rainfall event greater than 0.5 inches in 24 hours. Following an inspection that occurs within 24-hours after a rainfall event, the next inspection must be conducted within 7 days.

All inspections and maintenance conducted during construction must be recorded within 24 hours in writing and records must be retained with the SWPPP. Inspection report forms are available in the Project Specifications. Inspection report forms other than those provided shall be approved by the engineer.

Where parts of the project site have permanent cover, but work remains on other parts of the site, inspections may be reduced on these areas to once per month.

Where the site has permanent cover on all exposed areas and no construction activity is occurring anywhere on site, the site must be inspected during non-frozen conditions at least once per month for 12 months. Following the 12th month of permanent cover and no construction activity, inspections shall be terminated until construction activity resumes or notification from MPCA has been issued that erosion has been detected at the site.

During frozen ground conditions, inspections may be suspended and shall resume within 24 hours after runoff occurs or 24 hours prior to resuming construction activity, whichever is first.

Inspection and maintenance shall resume until another Permittee has obtained coverage under this Permit or the project has undergone Final Stabilization, and an NOT has been submitted.

All erosion prevention and sediment control BMPs shall be inspected to ensure integrity and effectiveness during all routine and post-rainfall inspections. All non-functioning BMPs must be repaired, replaced, or supplemented with functional BMPs by the end of the next business day after discovery, or as soon as field conditions allow access.

All perimeter control devices must be repaired, replaced, or supplemented when they become non-functional or the sediment reaches one-half (1/2) of the height of the device. These repairs must be made by the end of the next business day after discovery, or as soon as field conditions allow.

Temporary and permanent sediment basins must be drained and the sediment removed when the depth of sediment collected in the basin reaches one-half (1/2) the storage volume. Drainage and sediment removal must be completed within 72 hours of discovery, or as soon as field conditions allow.

Surface waters, including drainage ditches and conveyance systems, must be inspected for erosion and sediment deposition during each inspection. All deltas and sediment deposited in drainage ways, catch basins, and other drainage systems shall be removed. The removal and stabilization must take place within seven (7) days of discovery unless precluded by legal, regulatory, or physical access constraints. The Permittee is responsible for obtaining all applicable permits prior to conducting any work in surface waters.

Construction site vehicle exit locations must be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment must be removed from all paved surfaces both on and off site within 24-hours of discovery, or if applicable, within a shorter time to comply with the permit.

Streets and other areas adjacent to the project must be inspected for evidence of off-site accumulations of sediment. If sediment is present, it must be removed in a manner and at a sufficient frequency to minimize off-site impacts.

All infiltration areas must be inspected to ensure that no sediment from ongoing construction activity is reaching the infiltration area and that equipment is not being driven across the infiltration area.

FINAL STABILIZATION

Final Stabilization is not complete until all of the following requirements have been met:

1. All soil disturbing activities at the site have been completed and all soils are stabilized by a uniform perennial vegetative cover with a density of 70% of its expected final growth density over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions.
2. Permanent stormwater management system is constructed, meets all requirements of the Permit, and is operating as designed. Temporary or permanent sedimentation basins that are to be used as permanent water quality management basins have been cleaned of any accumulated sediment. All sediment has been removed from conveyance systems, and ditches are stabilized with permanent cover.
3. All temporary synthetic and structural erosion prevention and sediment control BMPs have been removed. BMPs designed to decompose on site may be left in place.
4. For residential construction only, individual lots are considered finally stabilized if the structure(s) are finished, temporary erosion protection and down gradient perimeter control has been completed and the residence has been sold to the homeowner. Also, the "Homeowner Fact Sheet" has been provided to the homeowner

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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.

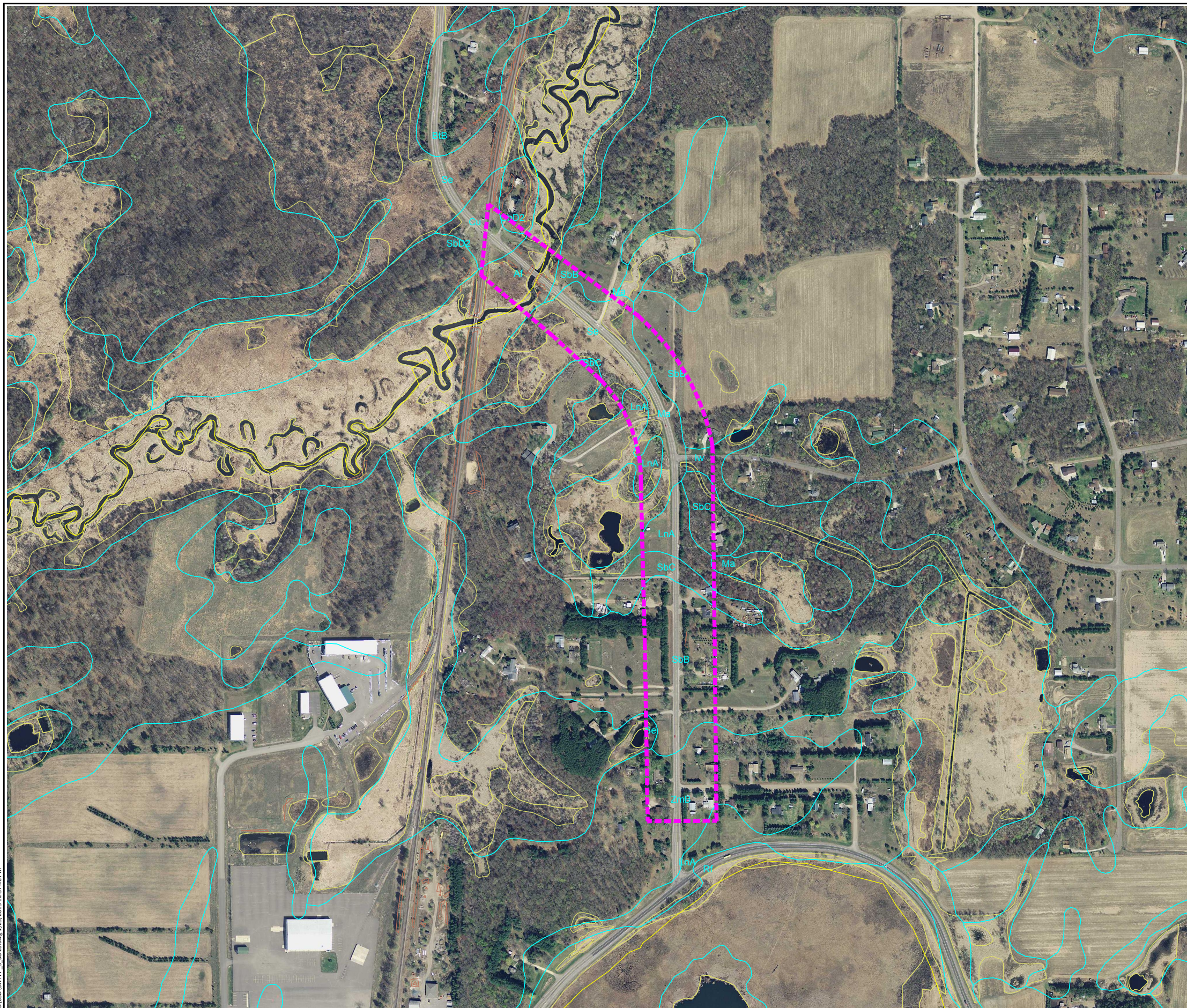
LANOL L. LEICHTY
LANOL L. LEICHTY
LIC. NO. 20846 DATE 01/29/2019



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DESIGNED	NO.	ISSUED FOR	DATE
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DRAWN	JTP		
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CLIENT PROJ. NO.	743.116130		

S.A.P. 002-613-001	SHEET
13 BRIDGE REPLACEMENT & RD CONSTRUCTION	60
STORMWATER POLLUTION PREVENTION PLAN	OF
NARRATIVE	92



LEGEND

- PROJECT BOUNDARY
- SOIL TYPE
- IMPAIRED, SPECIAL OR PROTECTED WATERS
- NATIONAL WETLANDS INVENTORY
- DWSMA, LOW VULNERABILITY
- STEEP SLOPES (>33.3%)
- RECEIVING WATERS

SOIL TYPE SUMMARY

Map Unit Symbol	Soil Name	Hyd. Soil Group	Erodibility
Af	Alluvial land	A/D	NHEL
BtB	Braham, 2-6% slopes	A	NHEL
Cu	Cut and Fill land		
Iw	Isanti	A/D	NHEL
LnA	Lino, 0-4% slopes	A/D	NHEL
Ma	Marsh	A/D	NHEL
Rf	Rifle	A/D	NHEL
SbB	Sartel, 2-6% slopes	A	NHEL
SbC	Sartel, 6-12% slopes	A	PHEL
SbD2	Sartel, 12-24% slopes	A	HEL
Se	Seelyeville	A/D	NHEL
ZmB	Zimmerman, 2-6% slopes	A	NHEL

NHEL - Not Highly Erodible Land
 PHEL - Potentially Highly Erodible Land
 HEL - Highly Erodible Land

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S.A.P. 002-613-001
 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
 STORMWATER POLLUTION PREVENTION PLAN
 SITE AND SOILS MAP

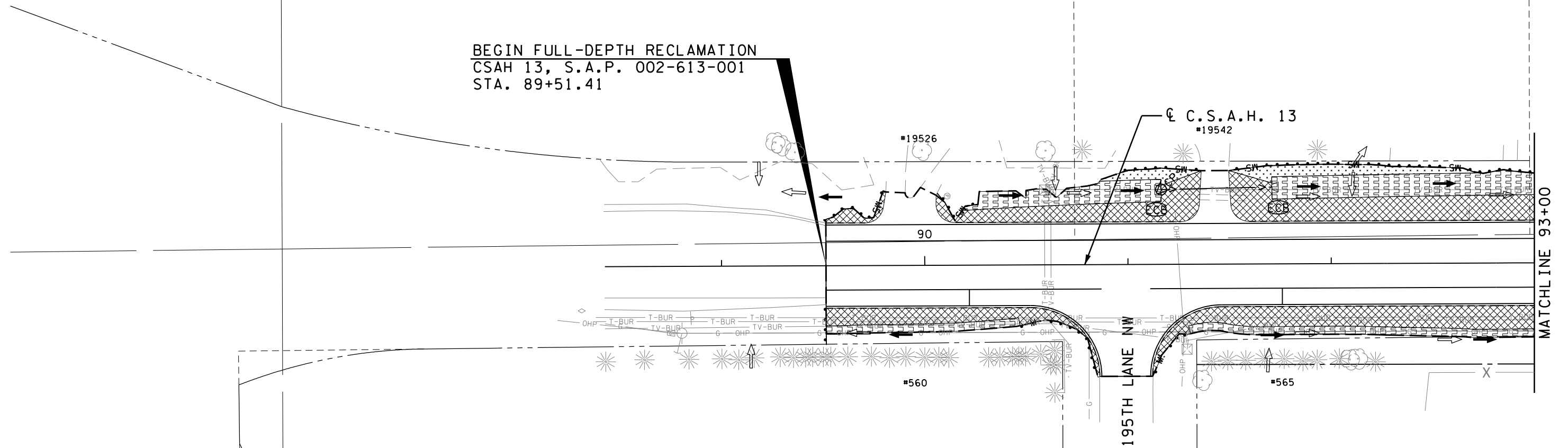
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SPECIFIC NOTES:

(1) SEE PLAN VIEW FOR LOCATION AND TYPE.



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GENERAL NOTES:

CONTRACTOR SHALL SUBMIT SITE MANAGEMENT PLAN PRIOR TO CONSTRUCTION FOR SPECIFIED AREAS SHOWN IN THE TURF ESTABLISHMENT PLAN.

ALL STOCKPILES SHALL HAVE HYDRAULIC STABILIZED FIBER MATRIX APPLIED AT THE END OF EACH WORK DAY.

ALL DISTURBED SLOPES SHALL HAVE THE FOLLOWING APPLIED, EXCEPT FOR AREAS LOCATED 200 LF FROM SURFACE WATERS, WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED IF PERMANENT TURF ESTABLISHMENT HAS NOT BEEN IMPLEMENTED:

- SEED MIXTURE 21-111
- FERTILIZER TYPE 1
- HYDRAULIC STABILIZED FIBER MATRIX

ALL DISTURBED SLOPES AND DITCH BOTTOMS LOCATED 200 LF FROM SURFACE WATERS SHALL HAVE THE FOLLOWING APPLIED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED IF PERMANENT TURF ESTABLISHMENT HAS NOT BEEN IMPLEMENTED:

- SEED MIXTURE 22-111 PLACED AT 96.8 LBS/ACRE
- FERTILIZER TYPE 3 (ANALYSIS 10-10-10) PLACED AT 387.2 LBS/ACRE
- EROSION CONTROL BLANKET CATEGORY 3N

THE LAST 200 LF OF ALL DISTURBED DITCH BOTTOMS THAT DISCHARGE OFFSITE, EXCEPT TO SURFACE WATERS, SHALL HAVE EROSION CONTROL BLANKET CATEGORY 3N APPLIED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED IF PERMANENT TURF ESTABLISHMENT HAS NOT BEEN IMPLEMENTED.

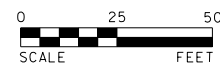
GENERAL NOTES (CONT'D):

ALL PVIOUS AREAS SHALL HAVE PERMANENT TURF ESTABLISHMENT IMPLEMENTED WITHIN 7 DAY AS FOLLOWS:

- 2574 FERTILIZER (1)
- 2575 EROSION CONTROL BLANKETS CATEGORY 3N (SEE PLAN VIEW FOR LOCATIONS)
- 2575 SEEDING
- 2575 DISK ANCHORING (WHEN MULCH IS USED)
- 2575 MOWING
- 2575 WEED SPRAYING
- 2575 WEED SPRAY MIXTURE
- 2575 SEED MIXTURE (1)
- 2575 HYDRAULIC REINFORCED FIBER MATRIX (SEE PLAN VIEW FOR LOCATIONS)
- 2575 MULCH MATERIAL (1)

LEGEND

- | | | | |
|--|--|--|---|
| | SEED MIX 25-121
FERTILIZER TYPE 3
MULCH TYPE 1 | | EROSION CONTROL BLANKET
CATEGORY 3N AT CULVERT END |
| | SEED MIX 35-221
FERTILIZER TYPE 3
MULCH TYPE 3 | | CULVERT END CONTROLS |
| | SEED MIX 35-221
FERTILIZER TYPE 3
EROSION CONTROL BLANKET
CATEGORY 3N | | SILT FENCE
(MACHINE SLICED) |
| | | | PROPOSED FLOW ARROW |
| | | | EXISTING FLOW ARROW |
| | | | SEDIMENT CONTROL LOG (SCL)
TYPE WOOD FIBER |
| | | | DELINEATED WETLAND |



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Peter M Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED TAL
DRAWN SJP
CHECKED PML

S.A.P. 002-613-001
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
TURF ESTAB., ERSN. CNTL. & SUPERELEV. PLAN

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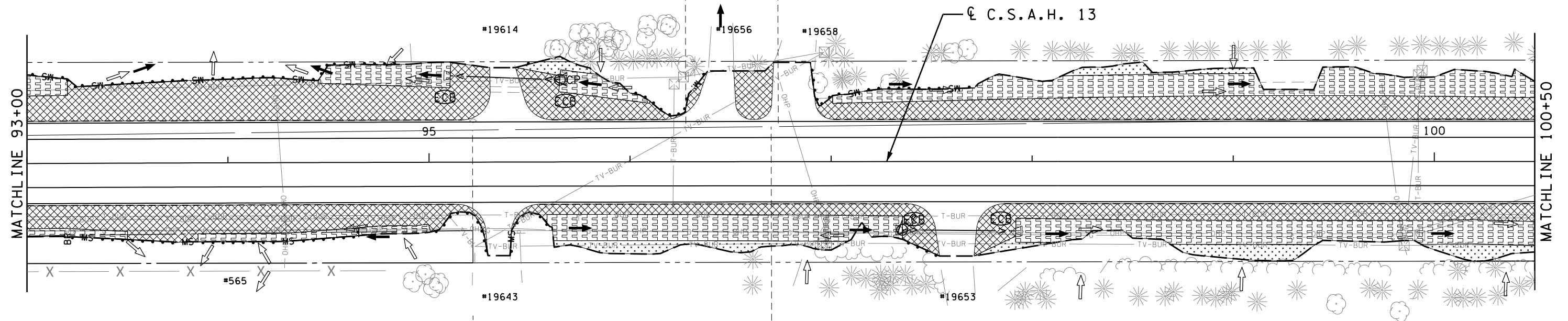
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SPECIFIC NOTES:

(1) SEE PLAN VIEW FOR LOCATION AND TYPE.



GENERAL NOTES:

CONTRACTOR SHALL SUBMIT SITE MANAGEMENT PLAN PRIOR TO CONSTRUCTION FOR SPECIFIED AREAS SHOWN IN THE TURF ESTABLISHMENT PLAN.

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 SEED MIXTURE 21-111
 FERTILIZER TYPE 1
 HYDRAULIC STABILIZED FIBER MATRIX

ALL DISTURBED SLOPES AND DITCH BOTTOMS LOCATED 200 LF FROM SURFACE WATERS SHALL HAVE THE FOLLOWING APPLIED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED IF PERMANENT TURF ESTABLISHMENT HAS NOT BEEN IMPLEMENTED:
 SEED MIXTURE 22-111 PLACED AT 96.8 LBS/ACRE
 FERTILIZER TYPE 3 (ANALYSIS 10-10-10) PLACED AT 387.2 LBS/ACRE
 EROSION CONTROL BLANKET CATEGORY 3N

THE LAST 200 LF OF ALL DISTURBED DITCH BOTTOMS THAT DISCHARGE OFFSITE, EXCEPT TO SURFACE WATERS, SHALL HAVE EROSION CONTROL BLANKET CATEGORY 3N APPLIED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED IF PERMANENT TURF ESTABLISHMENT HAS NOT BEEN IMPLEMENTED.

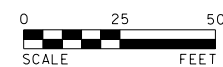
GENERAL NOTES (CONT'D):

ALL PERVIOUS AREAS SHALL HAVE PERMANENT TURF ESTABLISHMENT IMPLEMENTED WITHIN 7 DAY AS FOLLOWS:

- 2574 FERTILIZER (1)
- 2575 EROSION CONTROL BLANKETS CATEGORY 3N (SEE PLAN VIEW FOR LOCATIONS)
- 2575 SEEDING
- 2575 DISK ANCHORING (WHEN MULCH IS USED)
- 2575 MOWING
- 2575 WEED SPRAYING
- 2575 WEED SPRAY MIXTURE
- 2575 SEED MIXTURE (1)
- 2575 HYDRAULIC REINFORCED FIBER MATRIX (SEE PLAN VIEW FOR LOCATIONS)
- 2575 MULCH MATERIAL (1)

LEGEND

- | | | | |
|--|--|--|---|
| | SEED MIX 25-121
FERTILIZER TYPE 3
MULCH TYPE 1 | | EROSION CONTROL BLANKET
CATEGORY 3N AT CULVERT END |
| | SEED MIX 35-221
FERTILIZER TYPE 3
MULCH TYPE 3 | | CULVERT END CONTROLS |
| | SEED MIX 35-221
FERTILIZER TYPE 3
EROSION CONTROL BLANKET
CATEGORY 3N | | SILT FENCE
(MACHINE SLICED) |
| | | | PROPOSED FLOW ARROW |
| | | | EXISTING FLOW ARROW |
| | | | SEDIMENT CONTROL LOG (SCL)
TYPE WOOD FIBER |



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Peter M. Lemke
 PETER M. LEMKE
 LIC. NO. 40118 DATE 01-29-2019

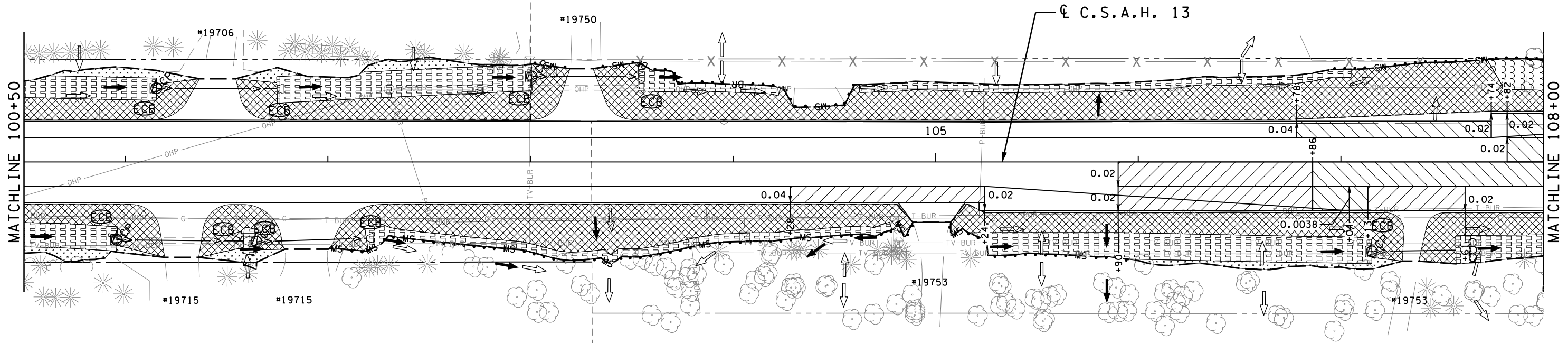
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 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
 TURF ESTAB., ERSN. CNTL. & SUPERELEV. PLAN

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 63
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SPECIFIC NOTES:

(1) SEE PLAN VIEW FOR LOCATION AND TYPE.



GENERAL NOTES:

CONTRACTOR SHALL SUBMIT SITE MANAGEMENT PLAN PRIOR TO CONSTRUCTION FOR SPECIFIED AREAS SHOWN IN THE TURF ESTABLISHMENT PLAN.

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 FERTILIZER TYPE 1
 HYDRAULIC STABILIZED FIBER MATRIX

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 EROSION CONTROL BLANKET CATEGORY 3N

THE LAST 200 LF OF ALL DISTURBED DITCH BOTTOMS THAT DISCHARGE OFFSITE, EXCEPT TO SURFACE WATERS, SHALL HAVE EROSION CONTROL BLANKET CATEGORY 3N APPLIED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED IF PERMANENT TURF ESTABLISHMENT HAS NOT BEEN IMPLEMENTED.

GENERAL NOTES (CONT'D):

ALL PERVIOUS AREAS SHALL HAVE PERMANENT TURF ESTABLISHMENT IMPLEMENTED WITHIN 7 DAY AS FOLLOWS:

- 2574 FERTILIZER (1)
- 2575 EROSION CONTROL BLANKETS CATEGORY 3N (SEE PLAN VIEW FOR LOCATIONS)
- 2575 SEEDING
- 2575 DISK ANCHORING (WHEN MULCH IS USED)
- 2575 MOWING
- 2575 WEED SPRAYING
- 2575 WEED SPRAY MIXTURE
- 2575 SEED MIXTURE (1)
- 2575 HYDRAULIC REINFORCED FIBER MATRIX (SEE PLAN VIEW FOR LOCATIONS)
- 2575 MULCH MATERIAL (1)

LEGEND

	SEED MIX 25-121 FERTILIZER TYPE 3 MULCH TYPE 1		RANDOM RIPRAP CL II
	SEED MIX 34-171 EROSION CONTROL BLANKET CATEGORY 3N		EROSION CONTROL BLANKET CATEGORY 3N AT CULVERT END
	SEED MIX 35-221 FERTILIZER TYPE 3 MULCH TYPE 3		CULVERT END CONTROLS
	SEED MIX 35-221 FERTILIZER TYPE 3 EROSION CONTROL BLANKET CATEGORY 3N		SILT FENCE (MACHINE SLICED)
			PROPOSED FLOW ARROW
			EXISTING FLOW ARROW
			SEDIMENT CONTROL LOG (SCL) TYPE WOOD FIBER
			DELINEATED WETLAND



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Peter M. Lemke
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S.A.P. 002-613-001
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 TURF ESTAB., ERSN. CNTL. & SUPERELEV. PLAN

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LEGEND

	SEED MIX 25-121 FERTILIZER TYPE 3 MULCH TYPE 1		RANDOM RIPRAP CL II
	SEED MIX 34-171 EROSION CONTROL BLANKET CATEGORY 3N		EROSION CONTROL BLANKET CATEGORY 3N AT CULVERT END
	SEED MIX 35-221 FERTILIZER TYPE 3 MULCH TYPE 3		CULVERT END CONTROLS
	SEED MIX 35-221 FERTILIZER TYPE 3 EROSION CONTROL BLANKET CATEGORY 3N		SILT FENCE (MACHINE SLICED)
			PROPOSED FLOW ARROW
			EXISTING FLOW ARROW
			SEDIMENT CONTROL LOG (SCL) TYPE WOOD FIBER
			DELINEATED WETLAND

GENERAL NOTES:

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FERTILIZER TYPE 1
HYDRAULIC STABILIZED FIBER MATRIX

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SEED MIXTURE 22-111 PLACED AT 96.8 LBS/ACRE
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EROSION CONTROL BLANKET CATEGORY 3N

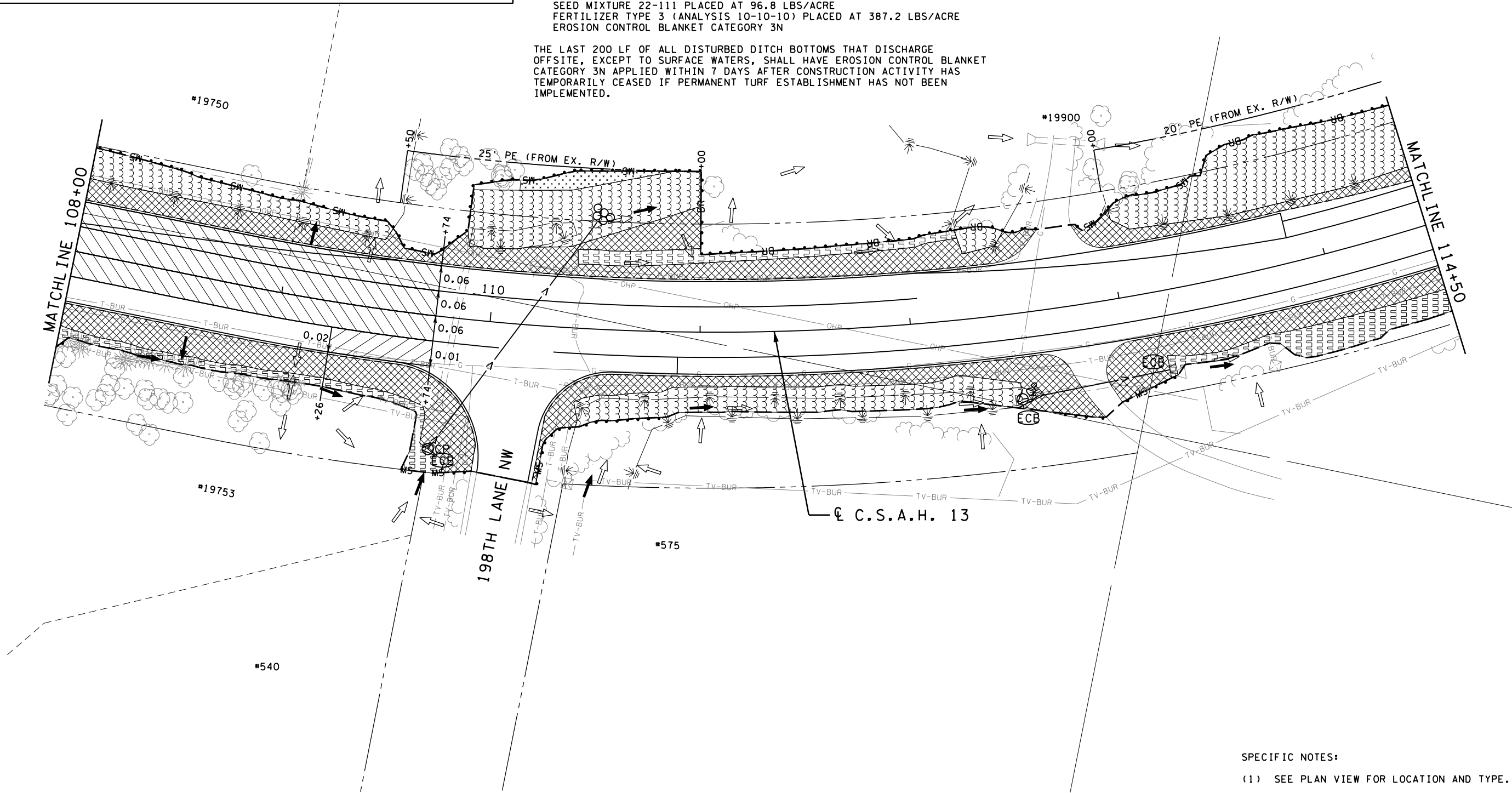
GENERAL NOTES (CONT'D):

ALL PERVIOUS AREAS SHALL HAVE PERMANENT TURF ESTABLISHMENT IMPLEMENTED WITHIN 7 DAY AS FOLLOWS:

2574 FERTILIZER (1)
2575 EROSION CONTROL BLANKETS CATEGORY 3N (SEE PLAN VIEW FOR LOCATIONS)
2575 SEEDING
2575 DISK ANCHORING (WHEN MULCH IS USED)
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2575 WEED SPRAYING
2575 WEED SPRAY MIXTURE
2575 SEED MIXTURE (1)
2575 HYDRAULIC REINFORCED FIBER MATRIX (SEE PLAN VIEW FOR LOCATIONS)
2575 MULCH MATERIAL (1)



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SPECIFIC NOTES:
(1) SEE PLAN VIEW FOR LOCATION AND TYPE.

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Peter M. Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED TAL	S.A.P. 002-613-001	SHEET 65
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CHECKED PML	TURF ESTAB., ERSN. CNTL. & SUPERELEV. PLAN	

SPECIFIC NOTES:

(1) SEE PLAN VIEW FOR LOCATION AND TYPE.

GENERAL NOTES:

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- FERTILIZER TYPE 1
- HYDRAULIC STABILIZED FIBER MATRIX

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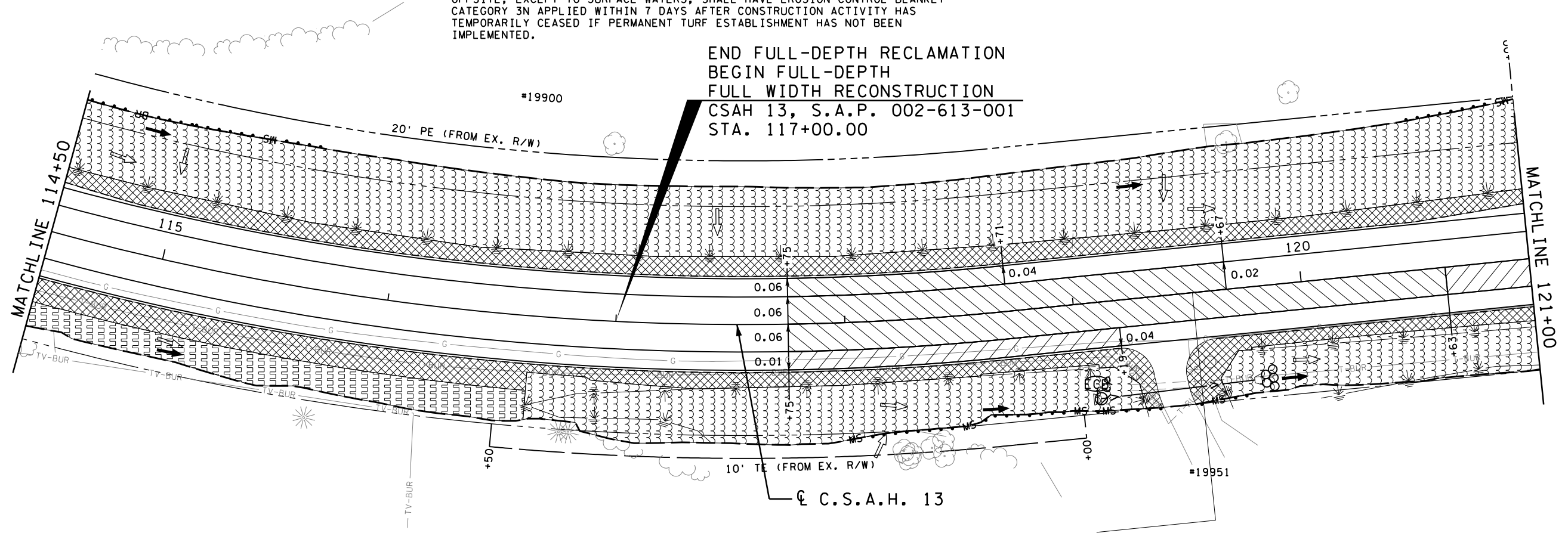
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GENERAL NOTES (CONT'D):

ALL PERVIOUS AREAS SHALL HAVE PERMANENT TURF ESTABLISHMENT IMPLEMENTED WITHIN 7 DAY AS FOLLOWS:

- 2574 FERTILIZER (1)
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- 2575 SEEDING
- 2575 DISK ANCHORING (WHEN MULCH IS USED)
- 2575 MOWING
- 2575 WEED SPRAYING
- 2575 WEED SPRAY MIXTURE
- 2575 SEED MIXTURE (1)
- 2575 HYDRAULIC REINFORCED FIBER MATRIX (SEE PLAN VIEW FOR LOCATIONS)
- 2575 MULCH MATERIAL (1)



LEGEND

	SEED MIX 25-121 FERTILIZER TYPE 3 MULCH TYPE 1		RANDOM RIPRAP CL II
	SEED MIX 34-171 EROSION CONTROL BLANKET CATEGORY 3N		EROSION CONTROL BLANKET CATEGORY 3N AT CULVERT END
	SEED MIX 35-221 FERTILIZER TYPE 3 MULCH TYPE 3		CULVERT END CONTROLS
	SEED MIX 35-221 FERTILIZER TYPE 3 EROSION CONTROL BLANKET CATEGORY 3N		SILT FENCE (MACHINE SLICED)
			PROPOSED FLOW ARROW
			EXISTING FLOW ARROW
			SEDIMENT CONTROL LOG (SCL) TYPE WOOD FIBER
			DELINEATED WETLAND



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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.

Peter M. Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED TAL
DRAWN SJP
CHECKED PML

S.A.P. 002-613-001
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
TURF ESTAB., ERSN. CNTL. & SUPERELEV. PLAN

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GENERAL NOTES:

CONTRACTOR SHALL SUBMIT SITE MANAGEMENT PLAN PRIOR TO CONSTRUCTION FOR SPECIFIED AREAS SHOWN IN THE TURF ESTABLISHMENT PLAN.

ALL STOCKPILES SHALL HAVE HYDRAULIC STABILIZED FIBER MATRIX APPLIED AT THE END OF EACH WORK DAY.

ALL DISTURBED SLOPES SHALL HAVE THE FOLLOWING APPLIED, EXCEPT FOR AREAS LOCATED 200 LF FROM SURFACE WATERS, WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED IF PERMANENT TURF ESTABLISHMENT HAS NOT BEEN IMPLEMENTED:

- SEED MIXTURE 21-111
- FERTILIZER TYPE 1
- HYDRAULIC STABILIZED FIBER MATRIX

ALL DISTURBED SLOPES AND DITCH BOTTOMS LOCATED 200 LF FROM SURFACE WATERS SHALL HAVE THE FOLLOWING APPLIED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED IF PERMANENT TURF ESTABLISHMENT HAS NOT BEEN IMPLEMENTED:

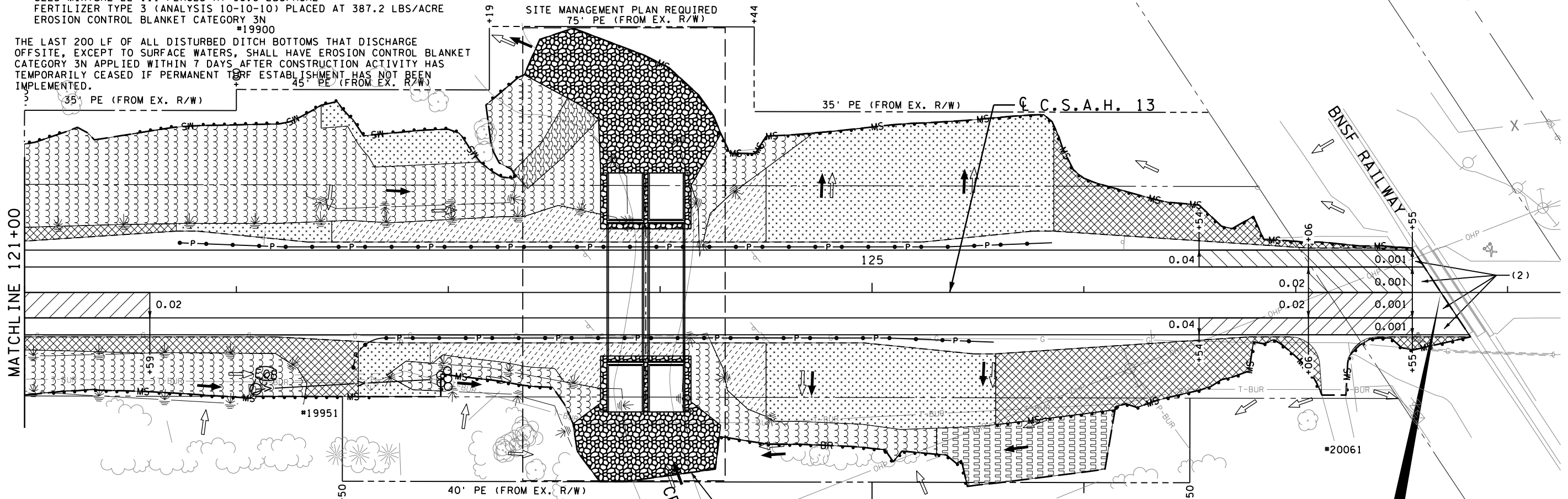
- SEED MIXTURE 22-111 PLACED AT 96.8 LBS/ACRE
- FERTILIZER TYPE 3 (ANALYSIS 10-10-10) PLACED AT 387.2 LBS/ACRE
- EROSION CONTROL BLANKET CATEGORY 3N

THE LAST 200 LF OF ALL DISTURBED DITCH BOTTOMS THAT DISCHARGE OFFSITE, EXCEPT TO SURFACE WATERS, SHALL HAVE EROSION CONTROL BLANKET CATEGORY 3N APPLIED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED IF PERMANENT TURF ESTABLISHMENT HAS NOT BEEN IMPLEMENTED.

GENERAL NOTES (CONT'D):

ALL PERVIOUS AREAS SHALL HAVE PERMANENT TURF ESTABLISHMENT IMPLEMENTED WITHIN 7 DAY AS FOLLOWS:

- 2574 FERTILIZER (1)
- 2575 EROSION CONTROL BLANKETS CATEGORY 3N (SEE PLAN VIEW FOR LOCATIONS)
- 2575 SEEDING
- 2575 DISK ANCHORING (WHEN MULCH IS USED)
- 2575 MOWING
- 2575 WEED SPRAYING
- 2575 WEED SPRAY MIXTURE
- 2575 SEED MIXTURE (1)
- 2575 HYDRAULIC REINFORCED FIBER MATRIX (SEE PLAN VIEW FOR LOCATIONS)
- 2575 MULCH MATERIAL (1)



MATCHLINE 121+00

END FULL-DEPTH
FULL WIDTH RECONSTRUCTION
CSAH 13, S.A.P. 002-613-001
STA. 127+68.50

LEGEND

	SEED MIX 25-121 FERTILIZER TYPE 3 MULCH TYPE 1		RANDOM RIPRAP CL IV
	SEED MIX 34-171 EROSION CONTROL BLANKET CATEGORY 3N		RANDOM RIPRAP CL II
	SEED MIX 35-221 FERTILIZER TYPE 3 MULCH TYPE 3		EROSION CONTROL BLANKET CATEGORY 3N AT CULVERT END
	SEED MIX 35-221 FERTILIZER TYPE 3 EROSION CONTROL BLANKET CATEGORY 3N		CULVERT END CONTROLS
	SEED MIX 35-221 FERTILIZER TYPE 3 HYDRAULIC REINFORCED FIBER MATRIX		SILT FENCE (MACHINE SLICED)
	SEED MIX 34-171 TURF REINFORCEMENT MAT CATEGORY 2		PROPOSED FLOW ARROW
	SANDY CLAY LOAM TOPSOIL BORROW EROSION CONTROL BLANKET CATEGORY 3P		EXISTING FLOW ARROW
			SEDIMENT CONTROL LOG (SCL) TYPE WOOD FIBER
			SITE MANAGEMENT PLAN AREA
			DELINEATED WETLAND

SPECIFIC NOTES:

- (1) SEE PLAN VIEW FOR LOCATION AND TYPE.
- (2) WARP PAVEMENT BETWEEN STA. 127+55 AND EDGE OF RAILROAD TRACKS.
- (3) FLOATATION SILT CURTAIN TYPE MOVING WATER

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SHEET
67
OF
92

PERMANENT SIGNING AND 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 AN 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.

PAINT:

GLASS BEADS SHALL BE APPLIED AT A RATE OF AT LEAST 8 LBS/GAL. IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE.

PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR AND PAVEMENT SURFACE TEMPERATURES IS 50°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.

MULTI-COMPONENT LIQUID:

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 MULTI-COMPONENT LIQUID MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE MULTI-COMPONENT LIQUID PAVEMENT MARKING.

APPLY MULTI-COMPONENT LIQUID 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).

SKIP STRIPE CYCLES;
4" BROKEN LINE - 10' STRIPE 40' GAP
8" DOTTED LINE = 3' SKIP + 12' GAP

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. INLAIS 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 CONSTRUCTION SPECIFICATIONS.







SKIP STRIPE CYCLES;
BROKEN LINE - 10' STRIPE 40' SKIP
DOTTED LINE (ROUNDAABOUT) - 3' STRIPE, 3' SKIP

INDEX




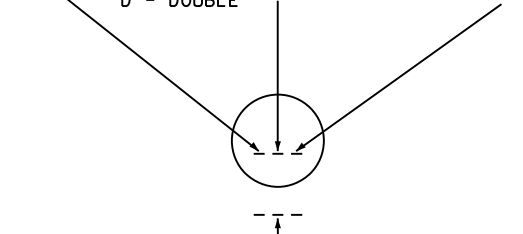
PERMANENT SIGNING & PAVEMENT MARKING

SHEET NO.	DESCRIPTION
68	TITLE SHEET
69-74	EXISTING SIGNING
75	TABULATIONS
76-79	SIGNING DETAILS
80-85	PROPOSED SIGNING & STRIPING

SYMBOLS & MATERIALS LEGEND

	CROSSWALK BLOCK PREF THERMO GR IN
	PAVEMENT MESSAGE (THRU-LEFT ARROW)
	PAVEMENT MESSAGE (THRU-RIGHT ARROW)
	PAVEMENT MESSAGE (RIGHT ARROW)
	PAVEMENT MESSAGE (LEFT ARROW)
	PAVEMENT MESSAGE (STRAIGHT ARROW)

STRIPING KEY

	CIRCLE-MULTI-COMP		OCTAGON-PREF THERMO				
	TRIANGLE-PAINT						
1ST DIGIT WIDTH 4", 8", ETC.	2ND DIGIT PATTERN S - SOLID B - BROKEN (10' ON 40' OFF) T - DOTTED (3' ON 12' OFF) D - DOUBLE	3RD DIGIT COLOR W - WHITE Y - YELLOW B - BLACK					
							
<table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; padding: 2px;">G=GROUND IN</td> <td style="border: 1px solid black; padding: 2px;">W=WET REFLECTIVE</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">C=CONTRAST</td> <td style="border: 1px solid black; padding: 2px;">E=ENHANCED SKID RESISTANCE</td> </tr> </table>				G=GROUND IN	W=WET REFLECTIVE	C=CONTRAST	E=ENHANCED SKID RESISTANCE
G=GROUND IN	W=WET REFLECTIVE						
C=CONTRAST	E=ENHANCED SKID RESISTANCE						
EXAMPLE: 4SW = 4" SOLID LINE WHITE PREF TAPE GCW = GROUND IN, CONTRAST, WET REFLECTIVE							

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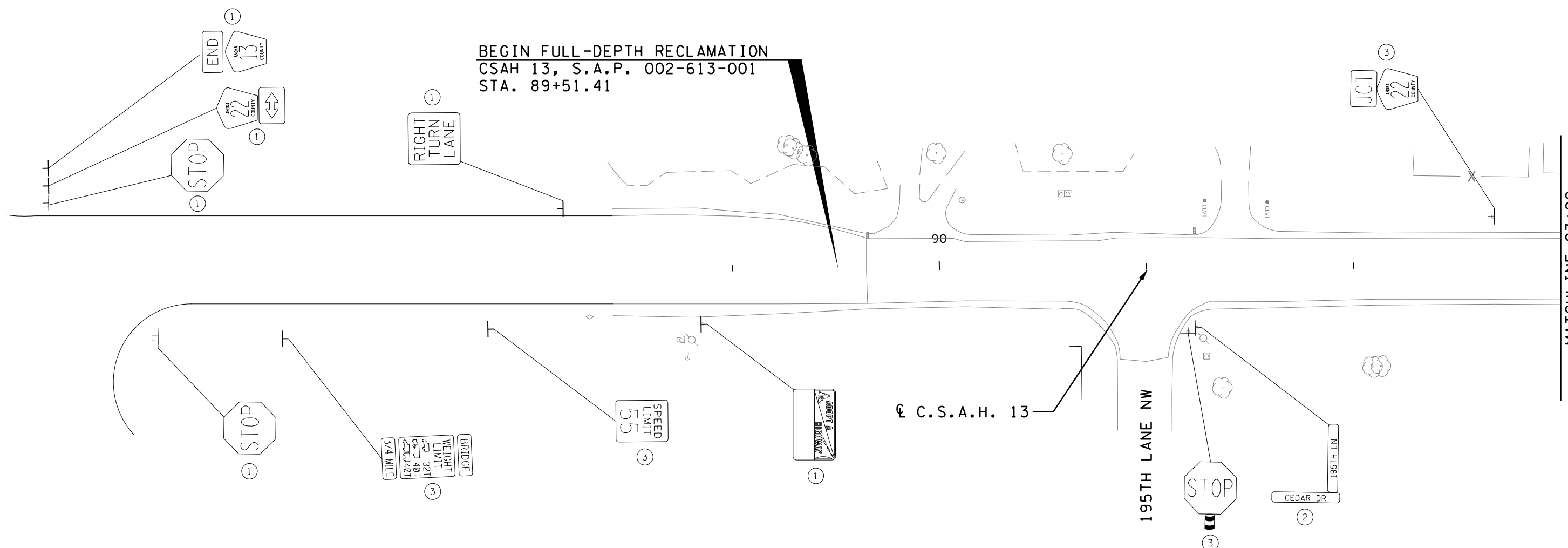
PRINT NAME: PETER M. LEMKE LICENSE #: 40118

DATE: 01-29-2019 SIGNATURE: *Peter M Lemke*

DESIGNER: JAKE PILZ

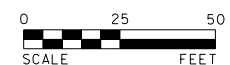


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STA. 89+51.41



LEGEND	
①	RETAIN INPLACE
②	SALVAGE
③	REMOVE

NOTES:
1. REMOVE BRIDGE WEIGHT LIMIT (R12-5) AND SUPPLEMENTAL SIGNS FOR SOUTHBOUND CEDAR DRIVE (CSAH 13) NEAR SIMMS ROAD (CSAH 86)



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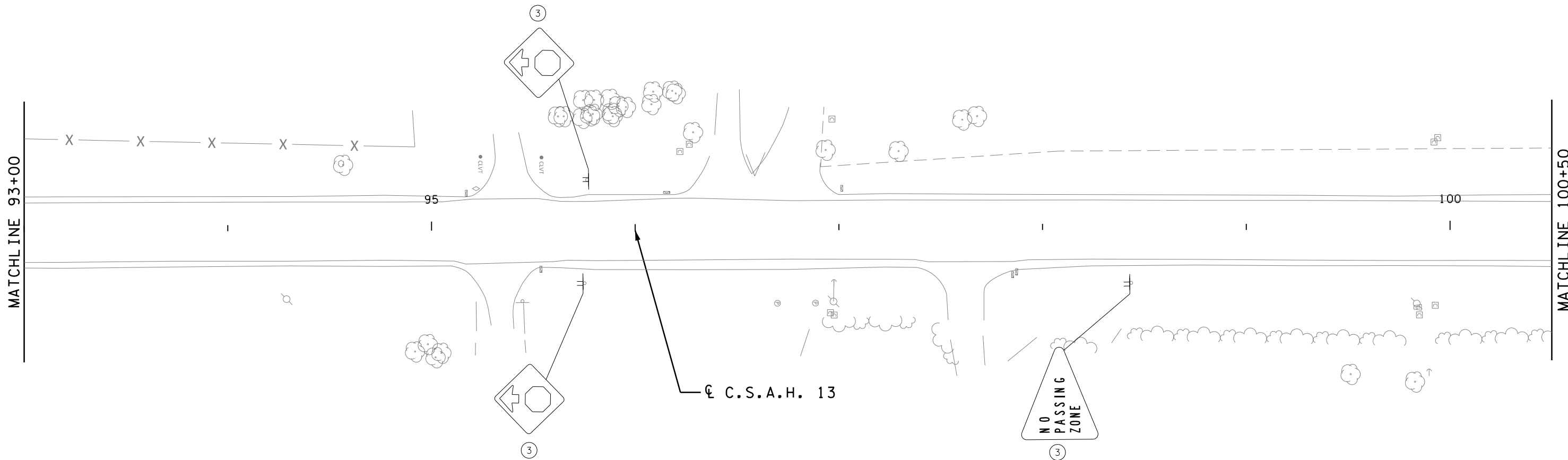
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S.A.P. 002-613-001	SHEET 69 OF 92
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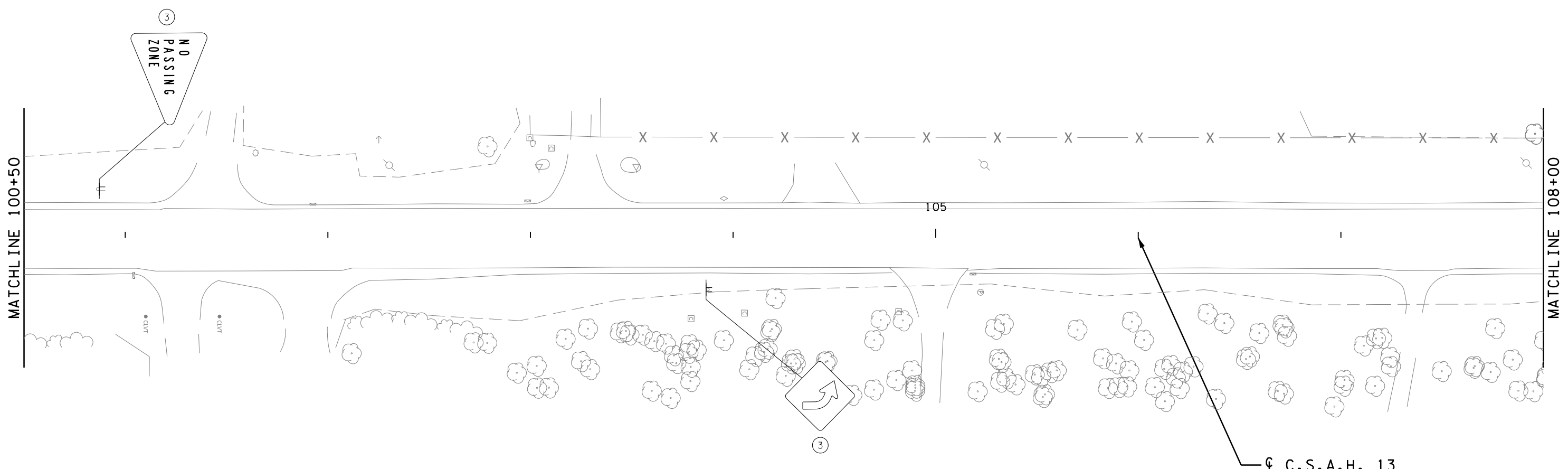
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LEGEND	
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②	SALVAGE
③	REMOVE



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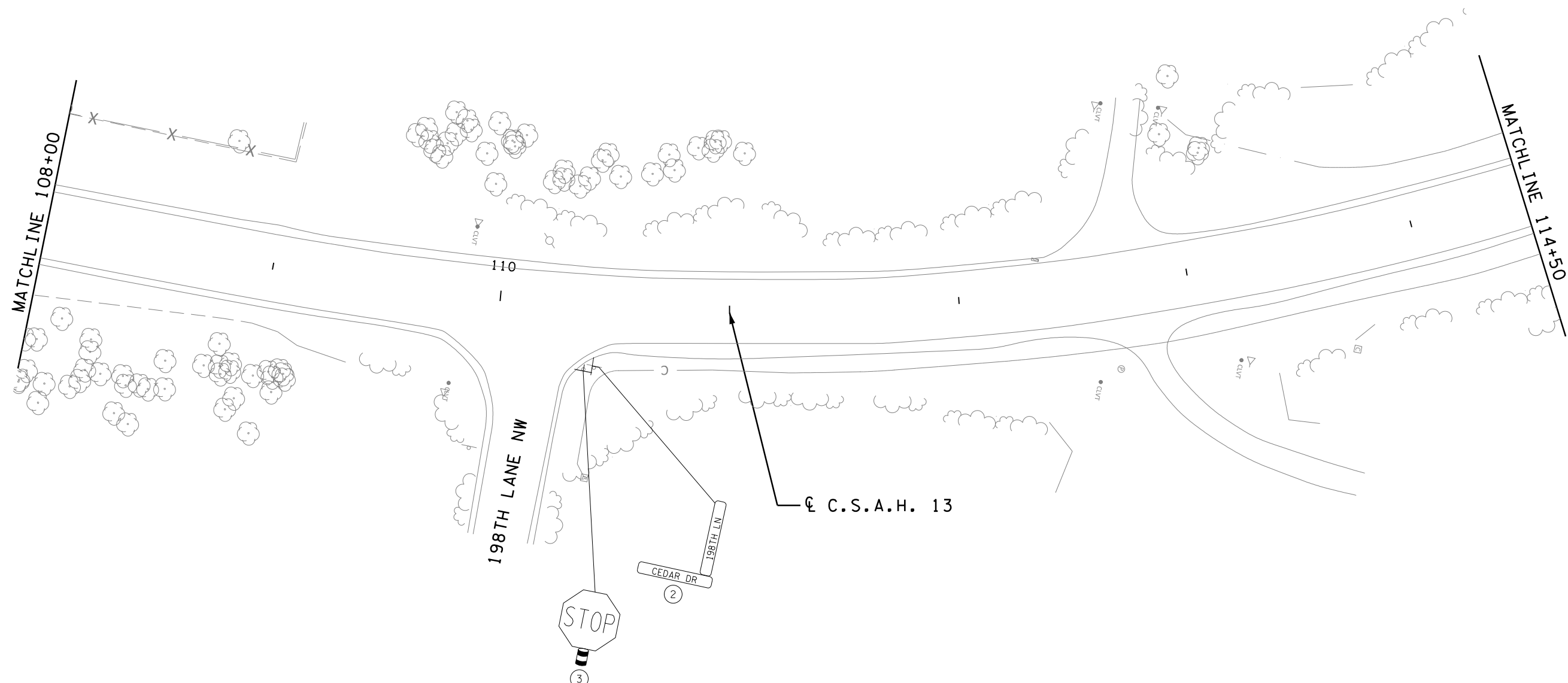
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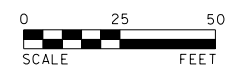
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LEGEND	
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③	REMOVE



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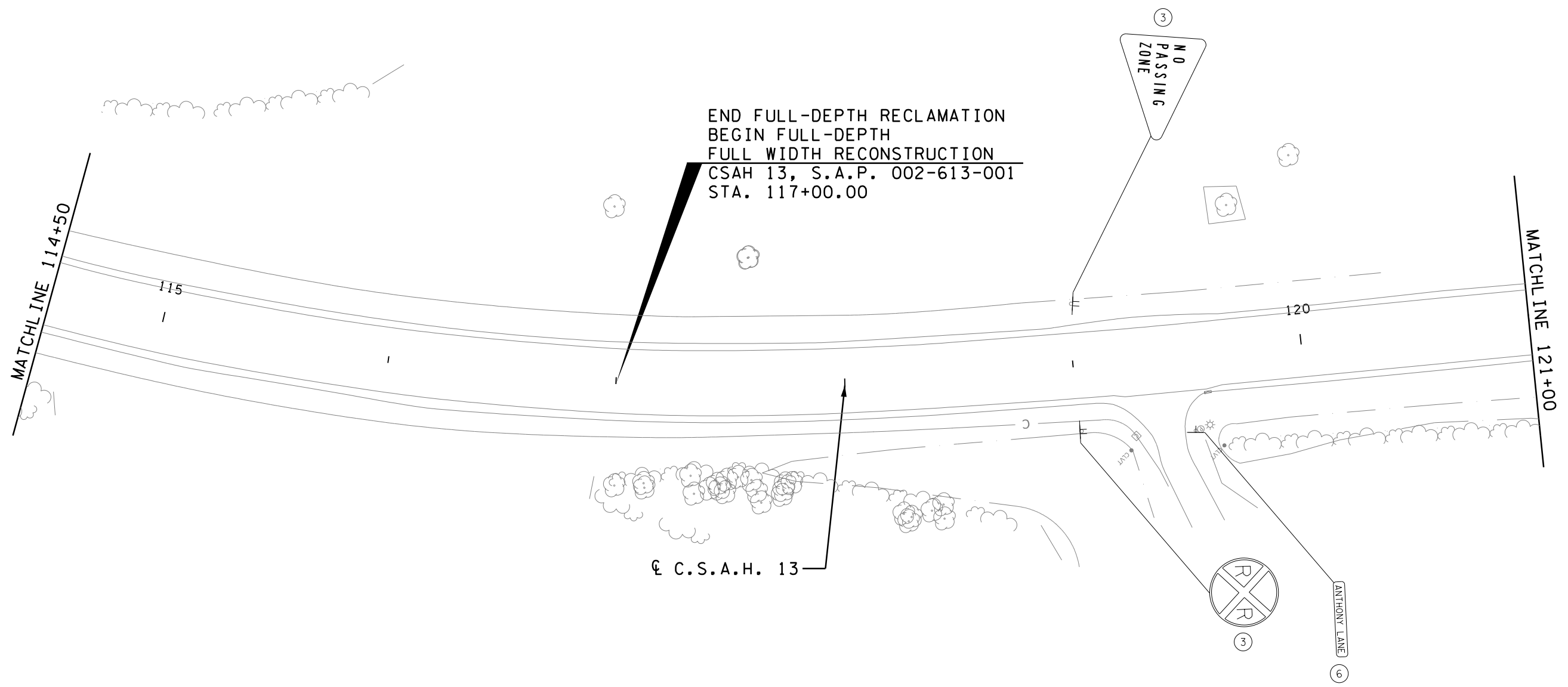
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LEGEND	
①	RETAIN INPLACE
②	SALVAGE
③	REMOVE
⑥	SALVAGE TO HOMEOWNER



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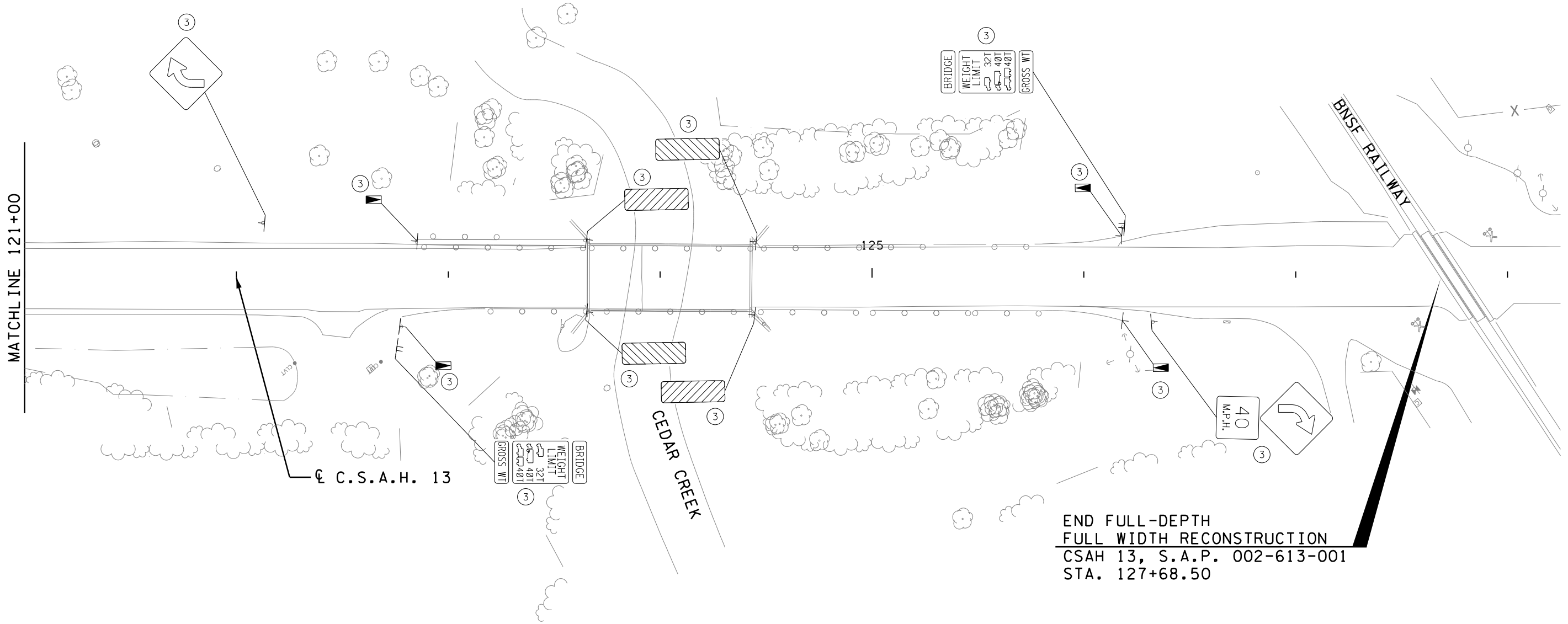
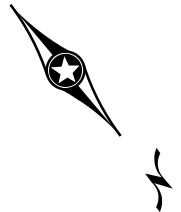
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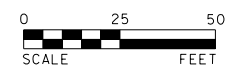
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		NO & TYPE	KNEE BRACES QTY	LENGTH FEET		SIZE INCH	AREA SQ FT	TOTAL AREA		
								S.A.P. 002-613-001		
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C-2	1	1-U	0	19	7	30 x 30	6.25	6.25	R1-1	STOP
C-3	1	1-U	0	20	7	21 x 15	2.19	2.19	M2-1a	JCT (BLUE)
						24 x 24	4.00	4.00	M1-6	ANOKA COUNTY 22
C-4	1	2-U	0	17	7	48 x 48	16.00	16.00	W3-1	STOP AHEAD
C-5	1	2-U	0	17	7	36 x 36	9.00	9.00	W3-1	STOP AHEAD
C-6	1	2-U	0	15	7	64 x 64 x 48	9.88	9.88	W14-3	NO PASSING ZONE
C-7	1	2-U	0	15	7	64 x 64 x 48	9.88	9.88	W14-3	NO PASSING ZONE
C-8	1	2-U	0	16	7	36 x 36	9.00	9.00	W1-2L	CURVE LEFT
C-9	1	2-U	0	15	7	30 x 30	6.25	6.25	R3-7R	RIGHT LANE MUST TURN RIGHT
C-10	1	1-U	0	15	7	30 x 30	6.25	6.25	R1-1	STOP
C-11	1	1-U	0	15	7	30 x 30	6.25	6.25	R4-X8	BYPASS LANE
C-12	1	1-U	0	15	7	36 Diameter	7.07	7.07	W10-1	RR ADVANCE WARNING
C-13	1	2-U	0	13	7	64 x 64 x 48	9.88	9.88	W14-3	NO PASSING ZONE
C-14	1	2-U	0	16	7	36 x 36	9.00	9.00	W1-2R	CURVE RIGHT
C-15	1	2-U	0	21	7	36 x 36	9.00	9.00	W1-2R	CURVE RIGHT
						18 x 18	2.25	2.25	W13-1	40 MPH
TOTAL								127.15		

SPECIFIC NOTES:

(1) MOUNTING HEIGHT IS MINIMUM (WITH A +6 INCH TOLERANCE).

GENERAL NOTES:

- POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
- SEE SIGNING DETAIL SHEETS 76-79 FOR STRUCTURAL DETAILS.
- SEE STANDARD SIGNS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS.
- SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS OF TYPE C SIGN PANELS.

INSTALL SIGN TYPE SPECIAL								M
SIGN NO	QTY (EACH) LOCAL NON-PARTICIPATING 100% COUNTY FUNDS	POSTS			MTG HT	PANEL		
		NO & TYPE	KNEE BRACES QTY	LENGTH FEET		LEGEND		
						FEET	FEET	
S-1	1	MOUNT ON SIGN ASSEMBLIES			CEDAR DR NW			
		MOUNT ON SIGN ASSEMBLIES			195TH LN NW			
S-2	1	MOUNT ON SIGN ASSEMBLIES			CEDAR DR NW			
		MOUNT ON SIGN ASSEMBLIES			198TH LN NW			
TOTAL	2							

PERMANENT PAVEMENT MARKINGS AND STRIPING						L	
STATION TO STATION	2582					PAVEMENT MESSAGE PREF THERMO	
	4" SOLID LINE MULTI-COM PONENT	4" SOLID LINE MULTI-COM PONENT	4" BROKEN LINE MULTI-COM PONENT	8" DOTTED LINE MULTI-COM PONENT	4" DOUBLE SOLID LINE MULTI-COM PONENT		
	(1)	(2)	(1)	(2)			
	WHITE LIN FT	YELLOW LIN FT	YELLOW LIN FT	WHITE LIN FT	YELLOW LIN FT		
C.S.A.H. 13: S.A.P. 002-613-001							
89+51.41 TO	127+68.50	7767	1527	342	30	1895	62
S.A.P. 002-613-001 SUBTOTALS		7767	1527	342	30	1895	62
		7767	1527	342	30	1895	62

SPECIFIC NOTES:

- LENGTH DOES NOT INCLUDE GAPS. BROKEN LINE STRIPE IS 10' STRIPE WITH A 40' SKIP.
- LENGTH DOES NOT INCLUDE GAPS. DOTTED LINE STRIPE IS 3' STRIPE WITH A 12' SKIP.

OBJECT MARKER				N
CODE NO	SIZE INCH	COLOR	QUANTITY	S.A.P. 002-613-001 TOTAL
X4-4 (L)	12 x 36	BLACK ON YELLOW	2	2
X4-4 (R)	12 x 36	BLACK ON YELLOW	2	2
X4-5 (1)	6 x 12	BLACK ON YELLOW	4	

SPECIFIC NOTES:

- INCLUDED IN PAY ITEM 2554 TANGENT END TERMINAL

GENERAL NOTES:

- FOR MARKER PLACEMENT, SEE SIGN PLACEMENT DETAIL SHEET.
- SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR MARKER DETAIL.

DELINEATOR				O
CODE NO	QUANTITY	QUANTITY		TOTAL
		COLOR		
		WHITE	YELLOW	
X4-13	2	2	0	2

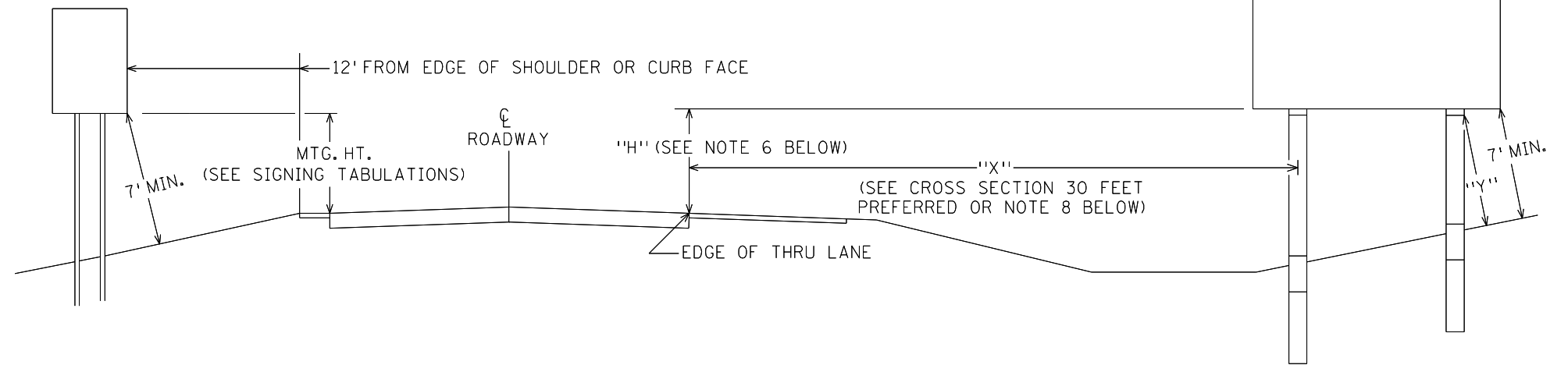
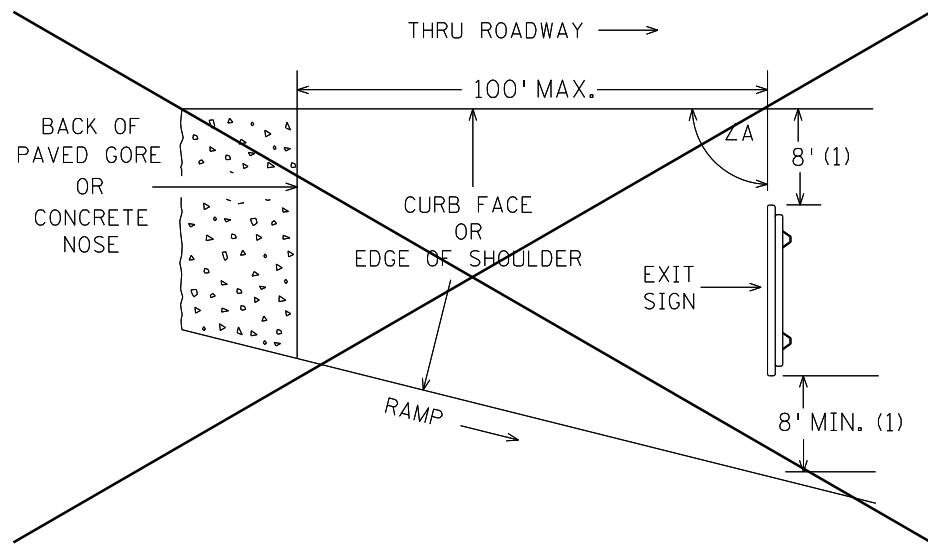
GENERAL NOTES:

- SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR DELINEATOR DETAIL.

TABULATIONS

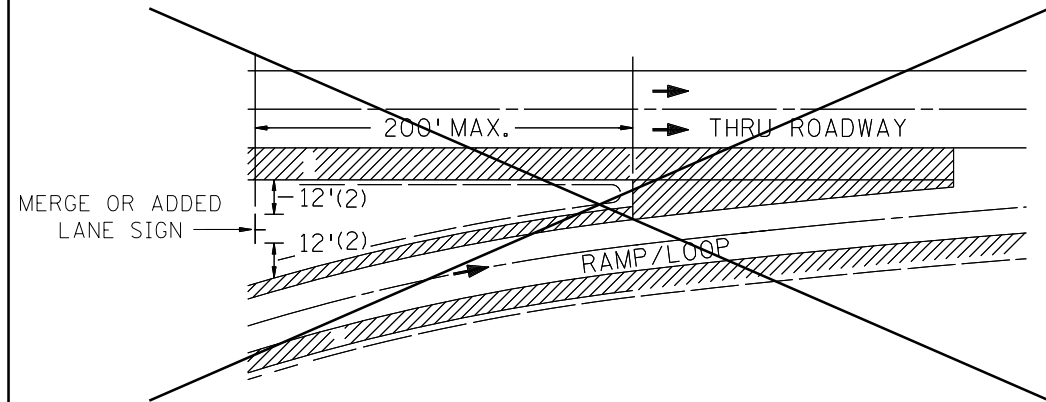
GORE PLACEMENT

ROADSIDE PLACEMENT



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

GUIDE SIGN - TYPE A



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.

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. "H" SHALL BE 7'.
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.

SIGN PLACEMENT

SIGNING DETAILS

REVISED: 4-28-17

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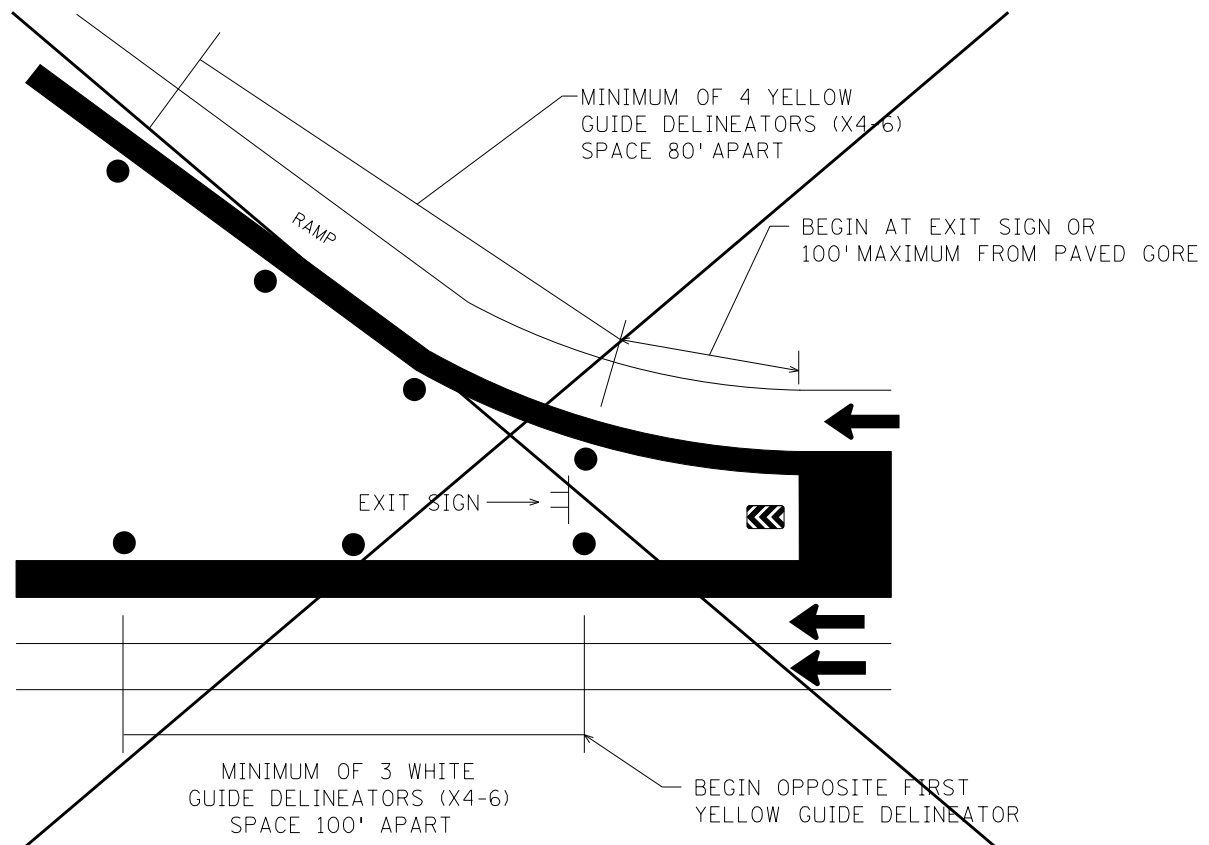
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Peter M Lemke

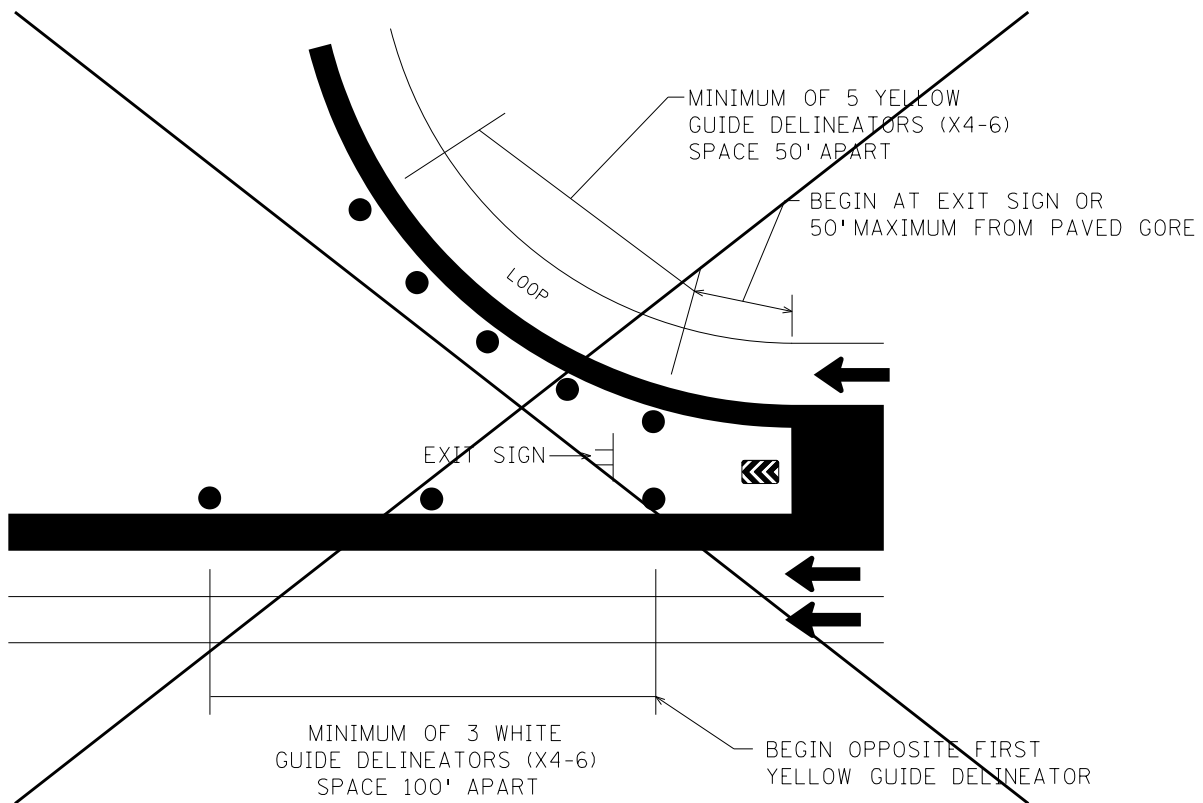
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

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JTP
DRAWN
SJP
CHECKED
PML

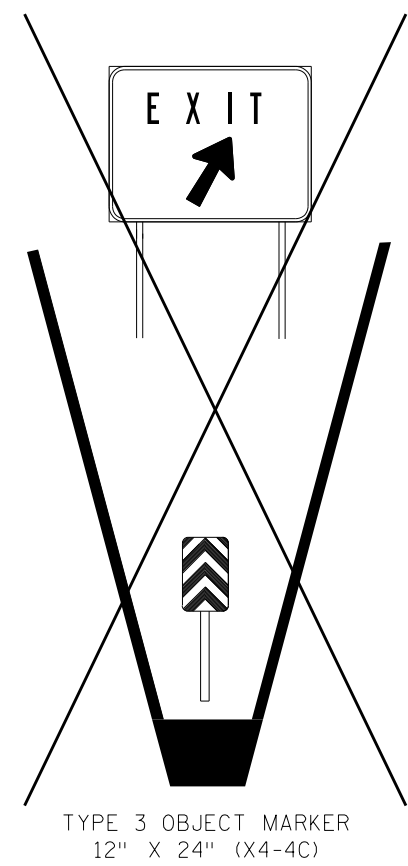
S.A.P. 002-613-001	SHEET
C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION	76
SIGNING & STRIPING PLAN	OF
	92



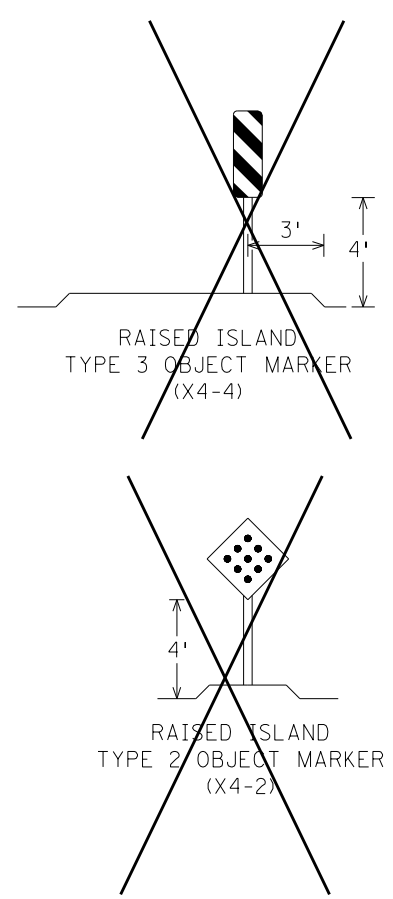
PLAN A
RAMP DELINEATION



PLAN B
LOOP DELINEATION

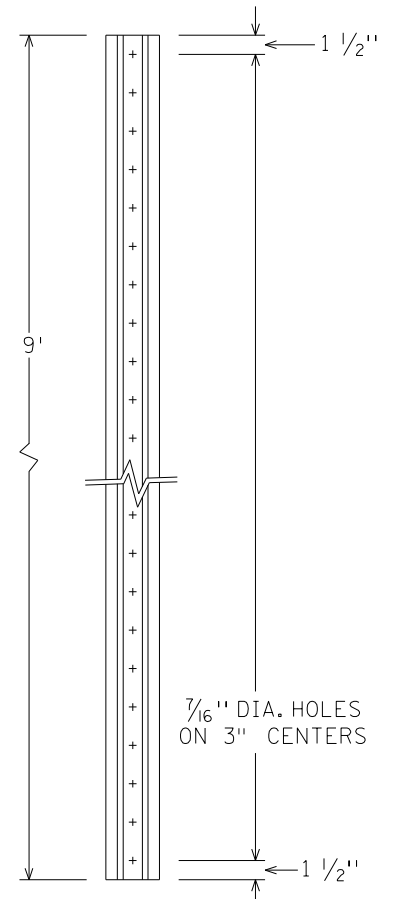


TYPE 3 OBJECT MARKER
12" X 24" (X4-4C)



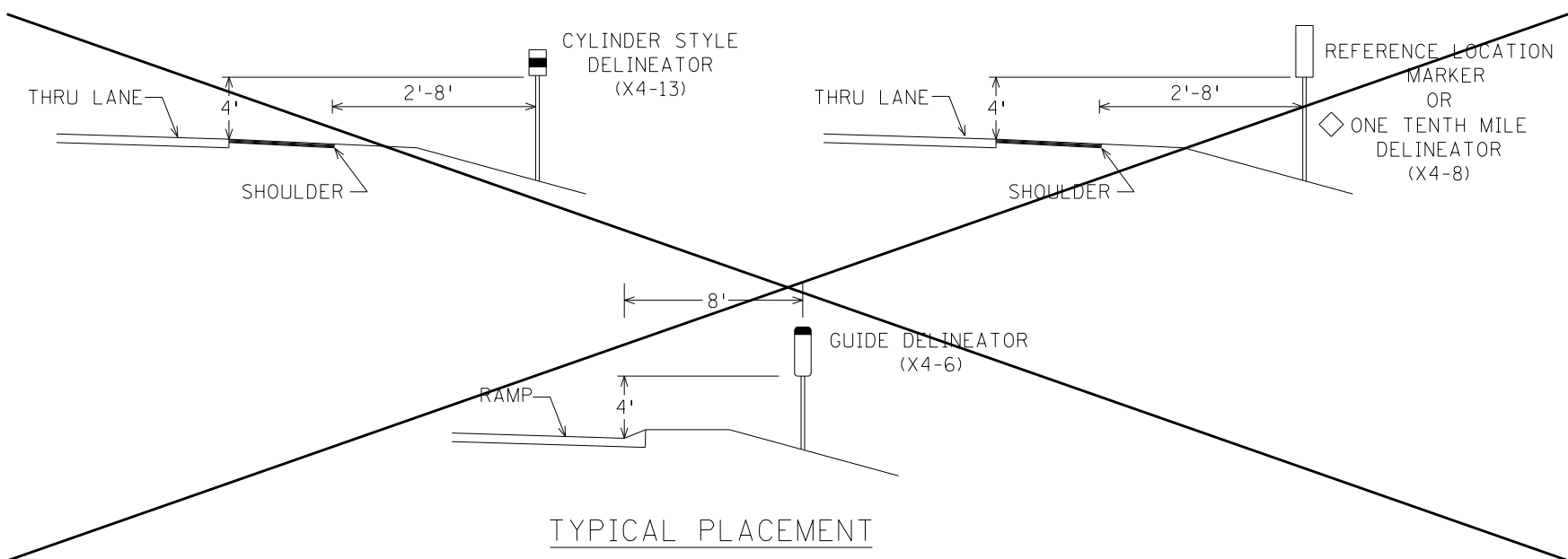
RAISED ISLAND
TYPE 3 OBJECT MARKER
(X4-4)

RAISED ISLAND
TYPE 2 OBJECT MARKER
(X4-2)



SEE ACHD SPEC.
ALL POSTS SHALL BE BLACK AND 3 LB./FT.

DELINEATOR POST



TYPICAL PLACEMENT

DELINEATORS AND MARKERS

SIGNING DETAILS

REVISED: 10-2-2013

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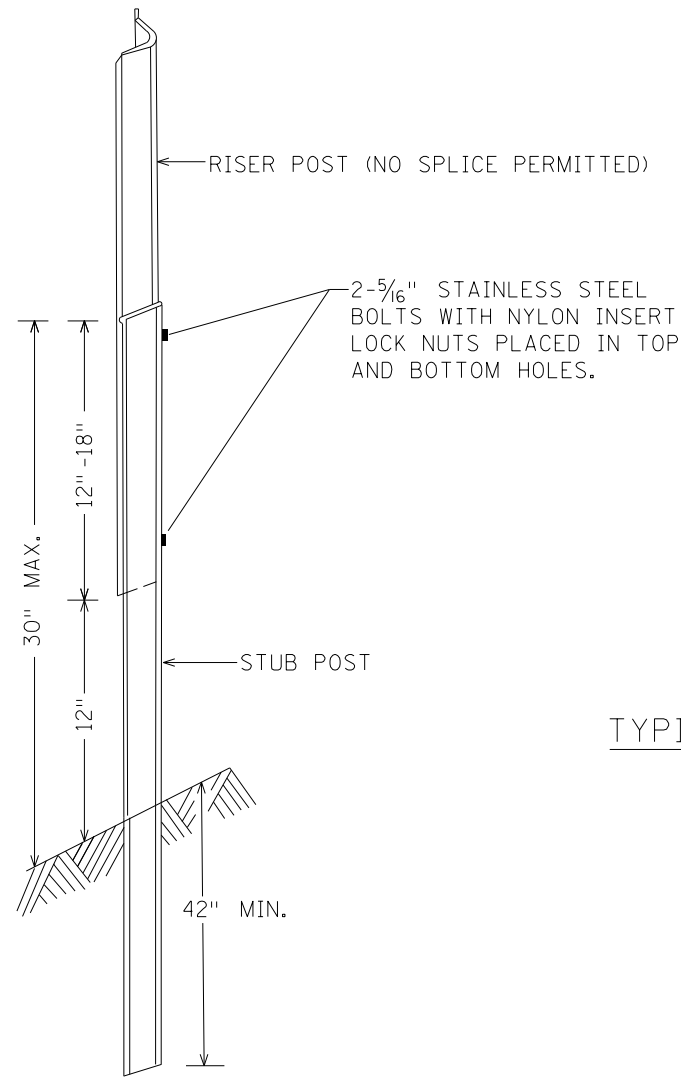
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Peter M. Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED JTP
DRAWN SJW
CHECKED PML

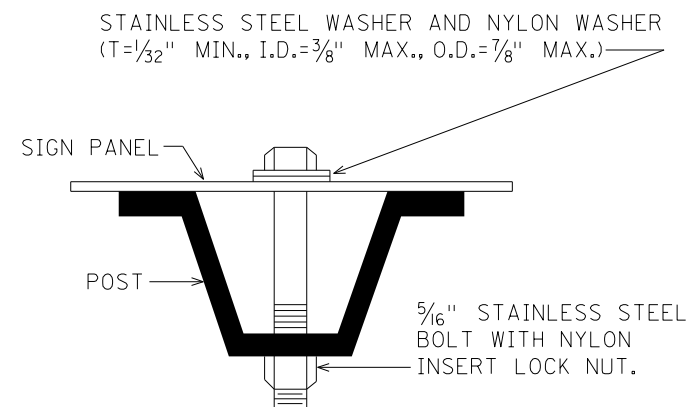
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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
SIGNING & STRIPING PLAN

SHEET 77 OF 92

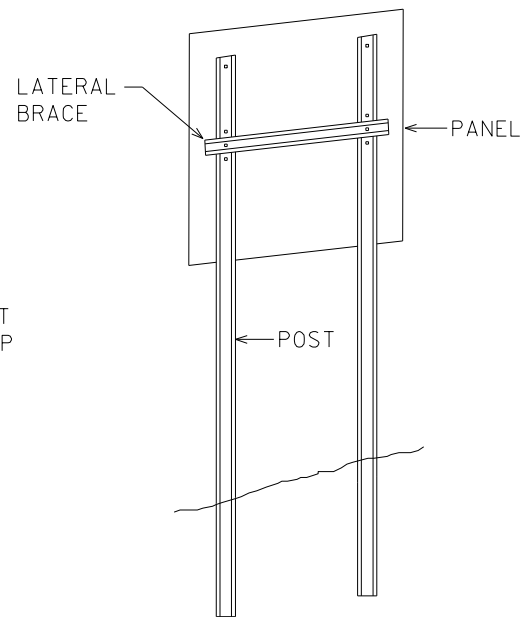
TYPE C & D POST



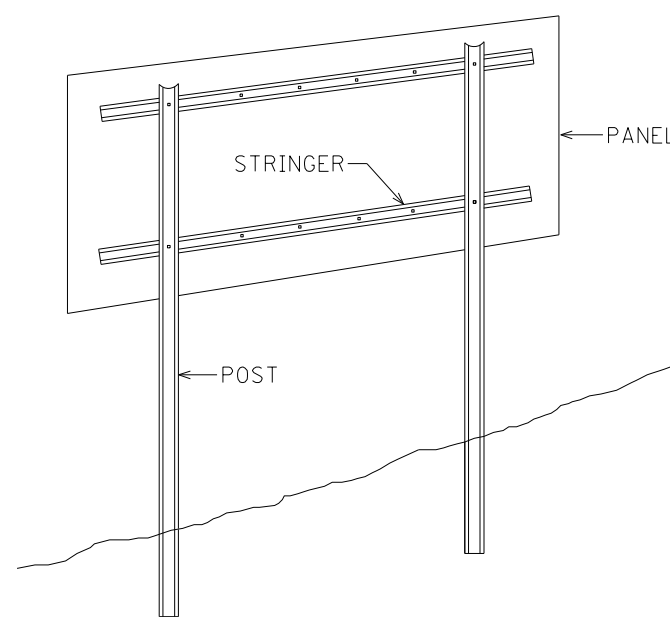
U POST BREAKAWAY SPLICE



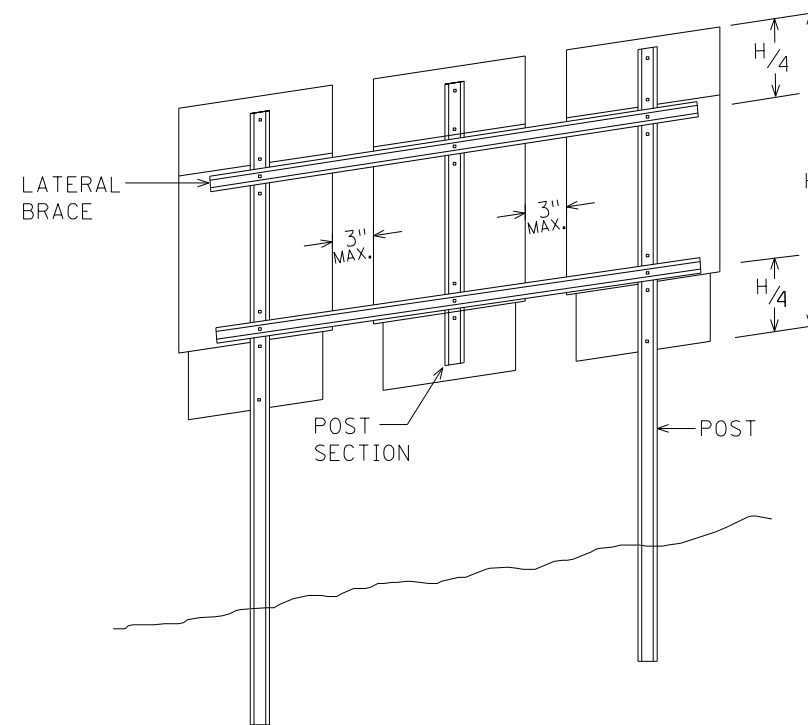
U POST MOUNTING
TYPE C SIGNS



TYPICAL TYPE C INSTALLATION



TYPICAL TYPE D INSTALLATION



MODIFIED TYPE C INSTALLATION

NOTES:

1. USE 3 LB/FT STUB POSTS. SHALL CONFORM TO ACHD SPEC.
2. USE 3 LB/FT RISER POSTS, STRINGERS, KNEE BRACES AND LATERAL BRACES. ALL SHALL CONFORM TO ACHD SPEC.
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 6' 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 ACHD SPEC AND BLACK IN ACCORDANCE WITH ACHD SPEC.
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 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

SIGNING DETAILS Sheet 1 of 2

REVISED: 5-5-2017

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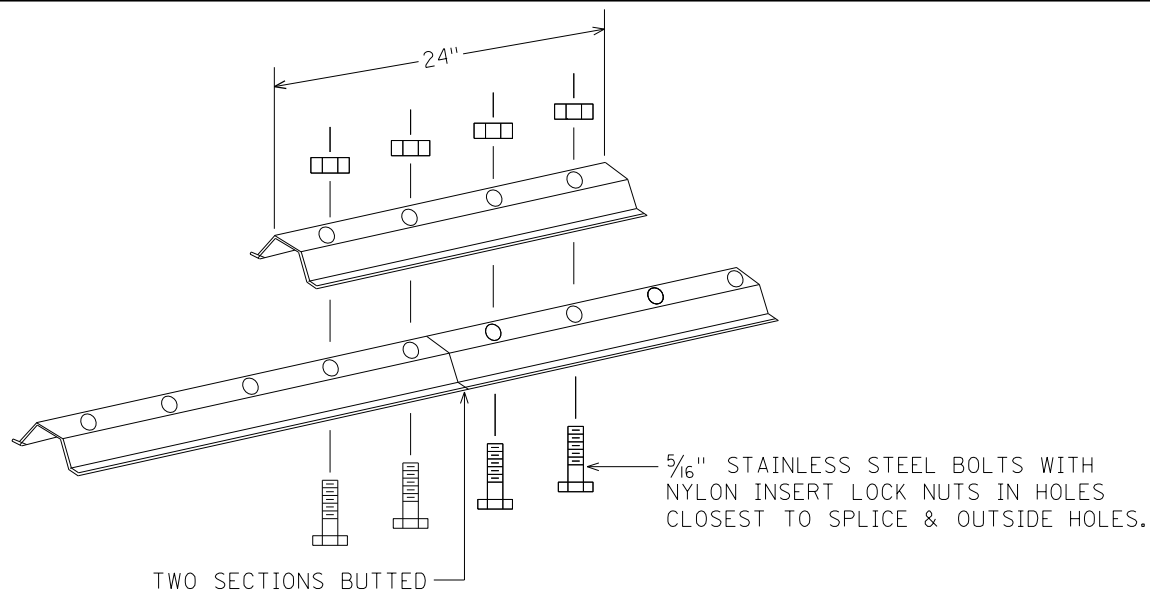
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PETER M. LEMKE
LIC. NO. 40118
DATE 01-29-2019

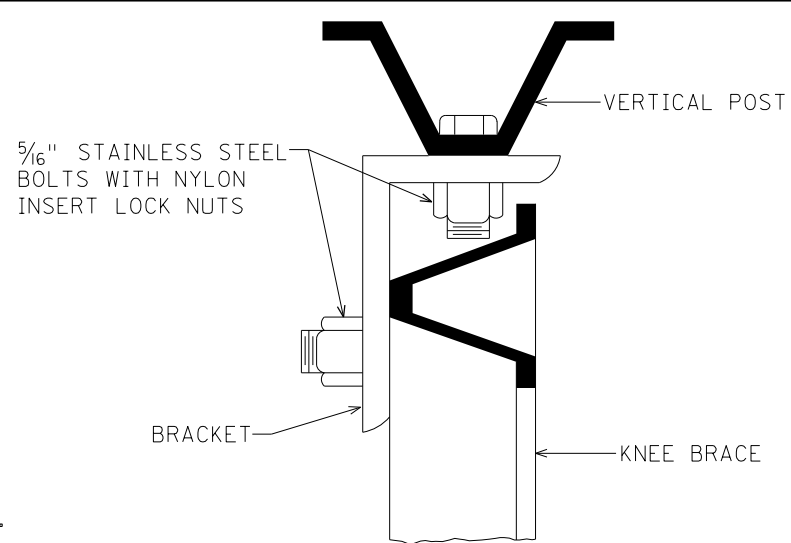
DESIGNED JTP
DRAWN SJUP
CHECKED PML

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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
SIGNING & STRIPING PLAN

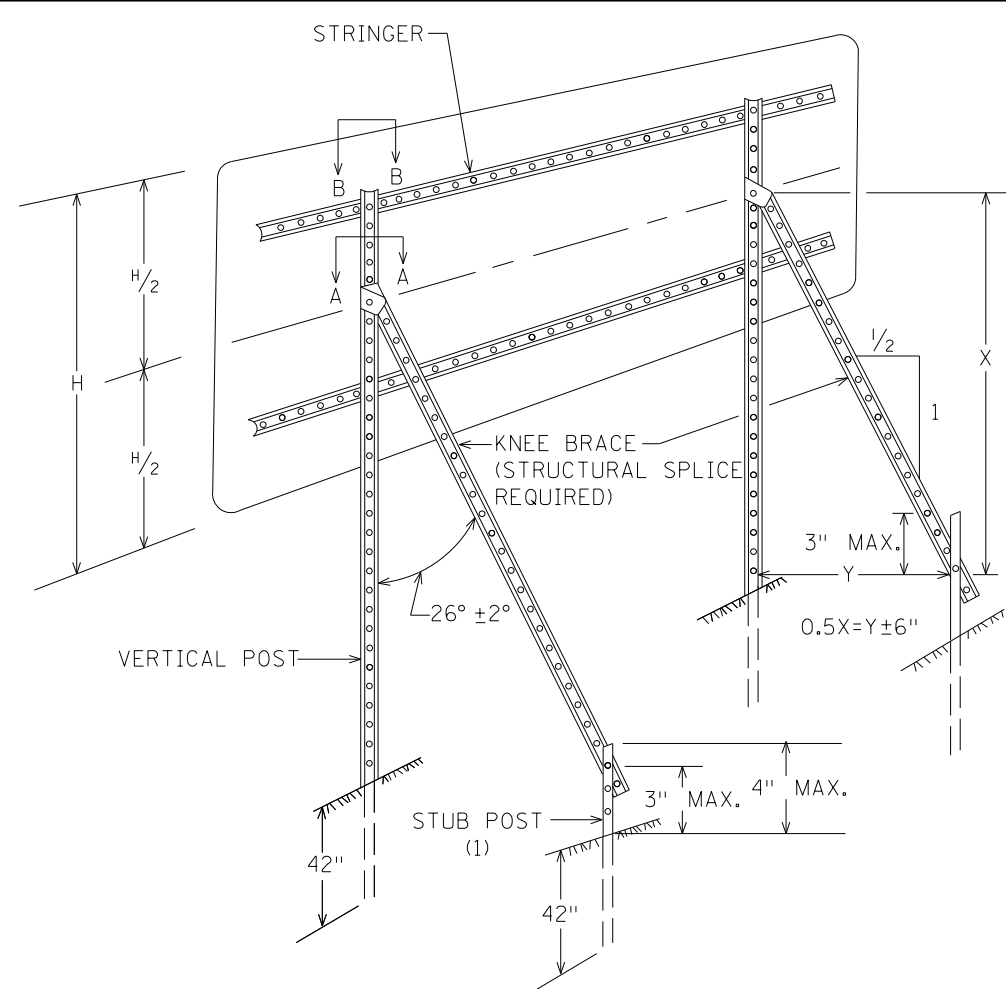
SHEET 78 OF 92



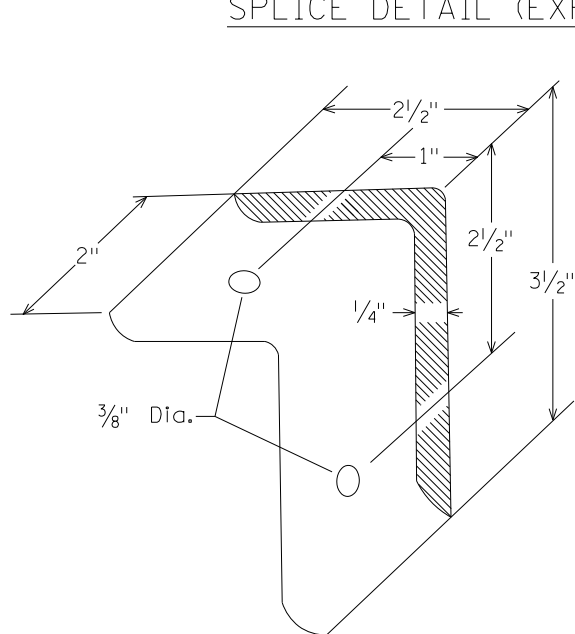
LATERAL BRACE OR STRINGER
SPLICE DETAIL (EXPLODED VIEW)



SECTION A-A

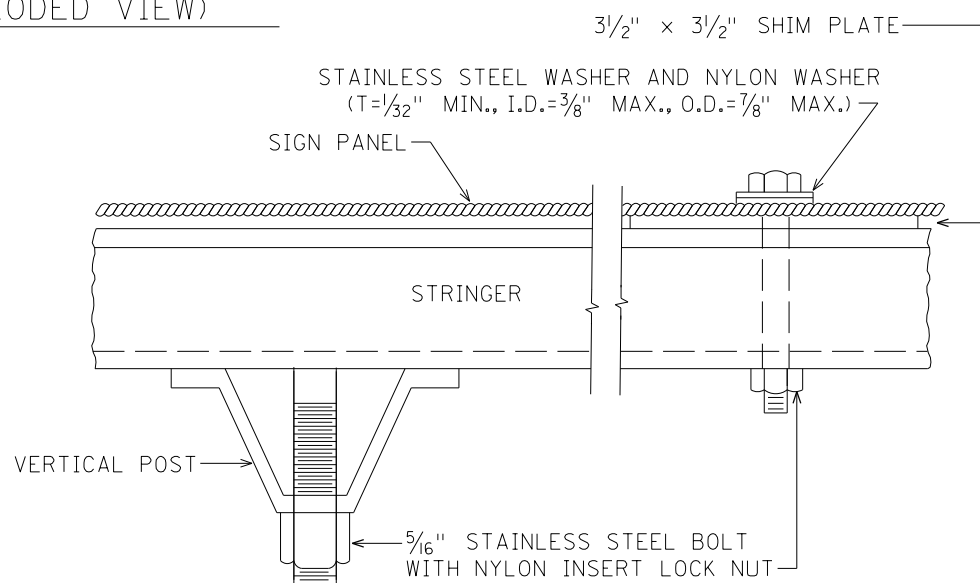


TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS

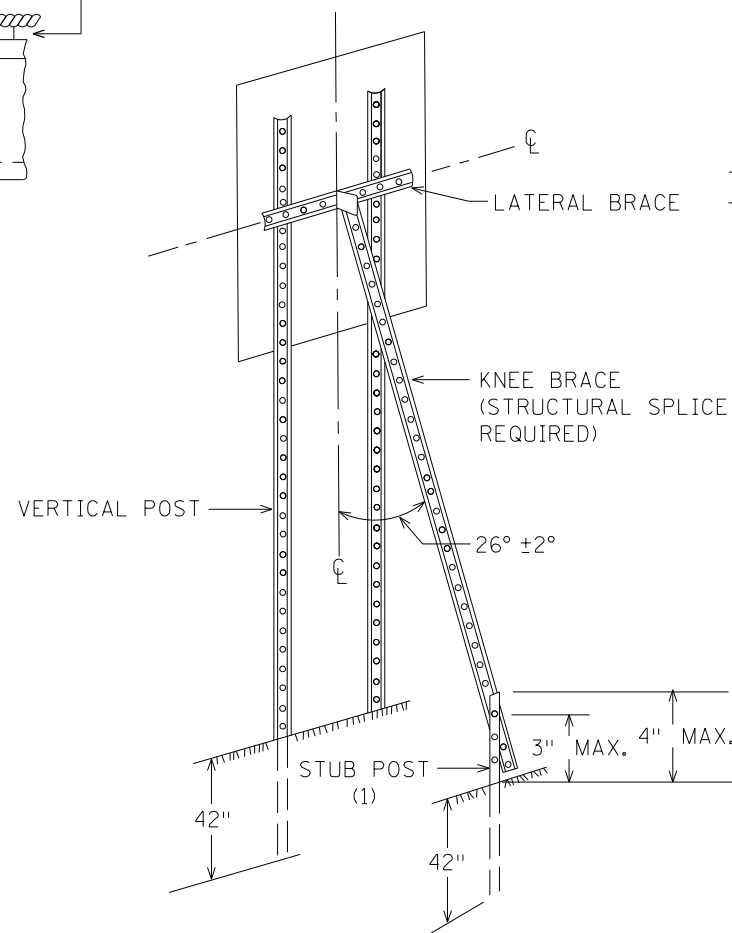


A-FRAME BRACKET

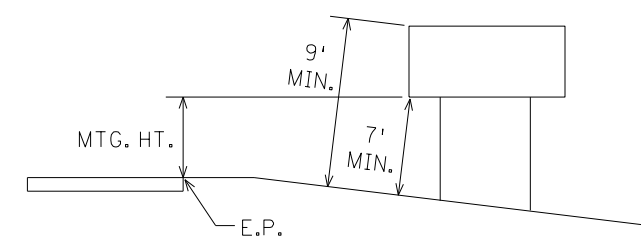
(STEEL MNDOT 3306 GALVANIZED PER MNDOT 3394)



SECTION B-B



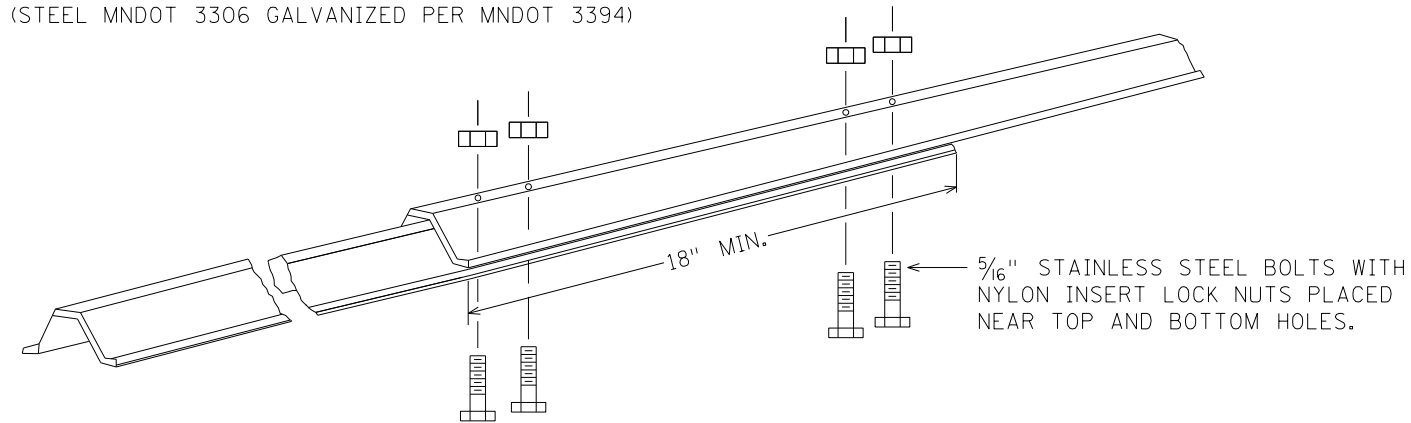
TYPICAL "A-FRAME" INSTALLATION
TYPE "C" SIGNS



TYPICAL MOUNTING

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

TYPE C & D SIGN
STRUCTURAL DETAILS



STRUCTURAL SPLICE

REVISED: 5-5-2017 (USE WHEN IT IS NECESSARY TO FABRICATE THE CORRECT LENGTH OF POST FROM TWO PIECES)

SIGNING DETAILS Sheet 2 of 2

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Peter M Lemke
PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

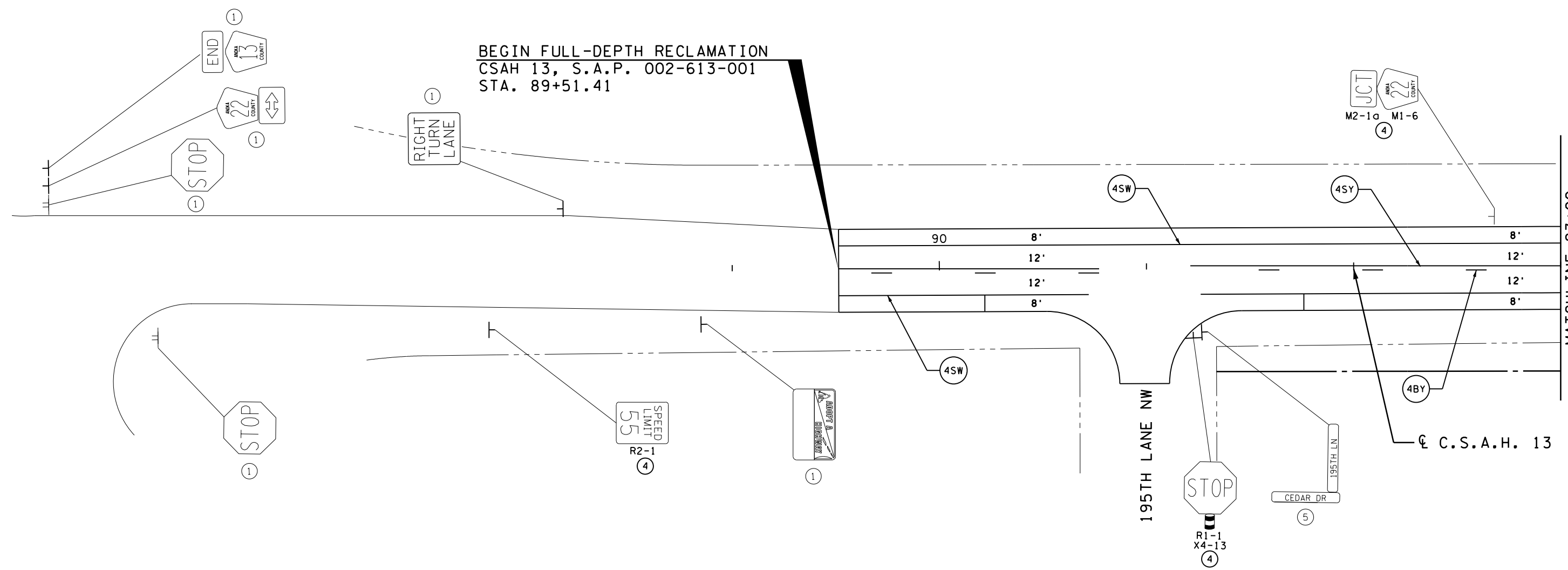
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SIGNING & STRIPING PLAN

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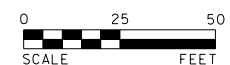


BEGIN FULL-DEPTH RECLAMATION
 CSAH 13, S.A.P. 002-613-001
 STA. 89+51.41



LEGEND	
①	RETAIN INPLACE
④	F+I
⑤	INSTALL

NOTES:
 1. LOCATIONS OF NO PASSING ZONES ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.



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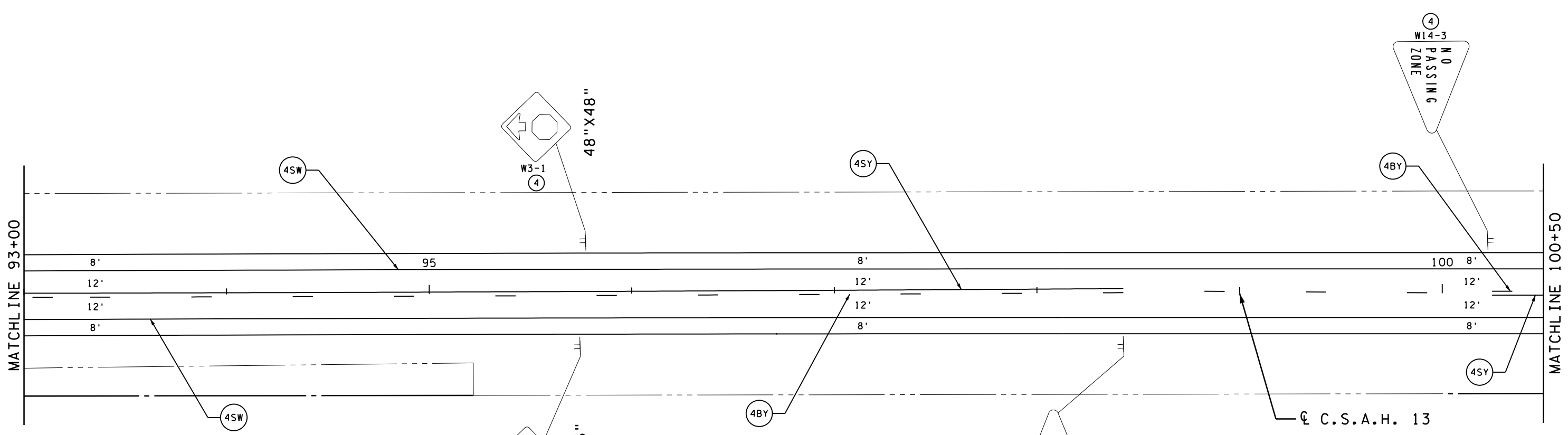
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Peter M. Lemke
 PETER M. LEMKE
 LIC. NO. 40118 DATE 01-29-2019

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CHECKED PML

PROPOSED SIGNING & STRIPING
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 SIGNING & STRIPING PLAN

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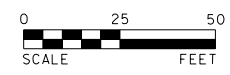


MATCHLINE 93+00

MATCHLINE 100+50

LEGEND	
①	RETAIN INPLACE
④	F+I
⑤	INSTALL

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Peter M. Lemke
 PETER M. LEMKE
 LIC. NO. 40118 DATE 01-29-2019

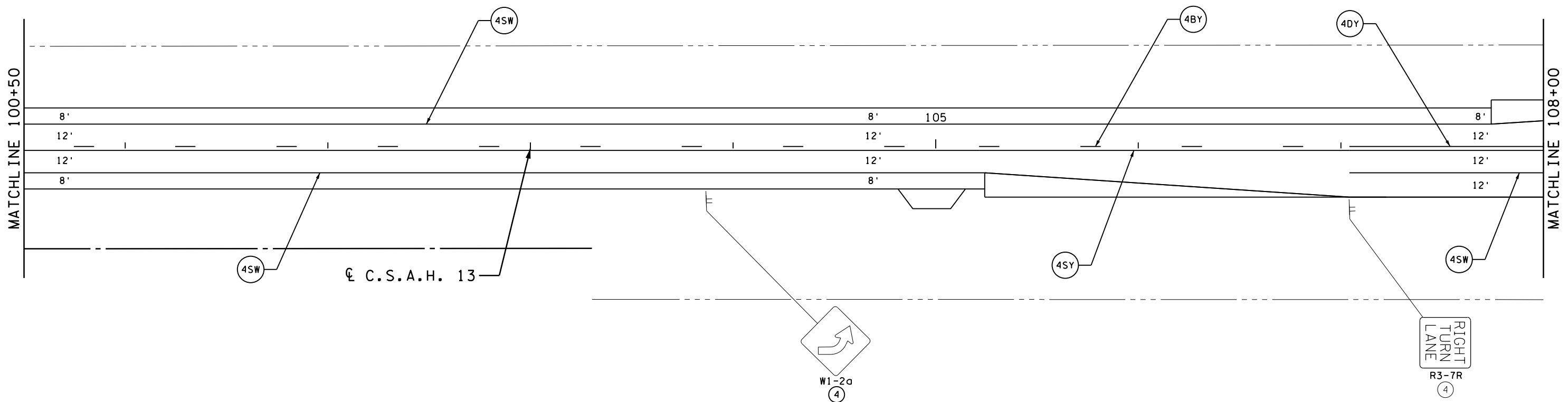
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 S.A.P. 002-613-001
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 SIGNING & STRIPING PLAN

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 OF
 92

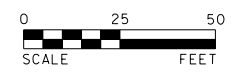
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LEGEND	
①	RETAIN INPLACE
④	F+I
⑤	INSTALL

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Peter M. Lemke
 PETER M. LEMKE
 LIC. NO. 40118 DATE 01-29-2019

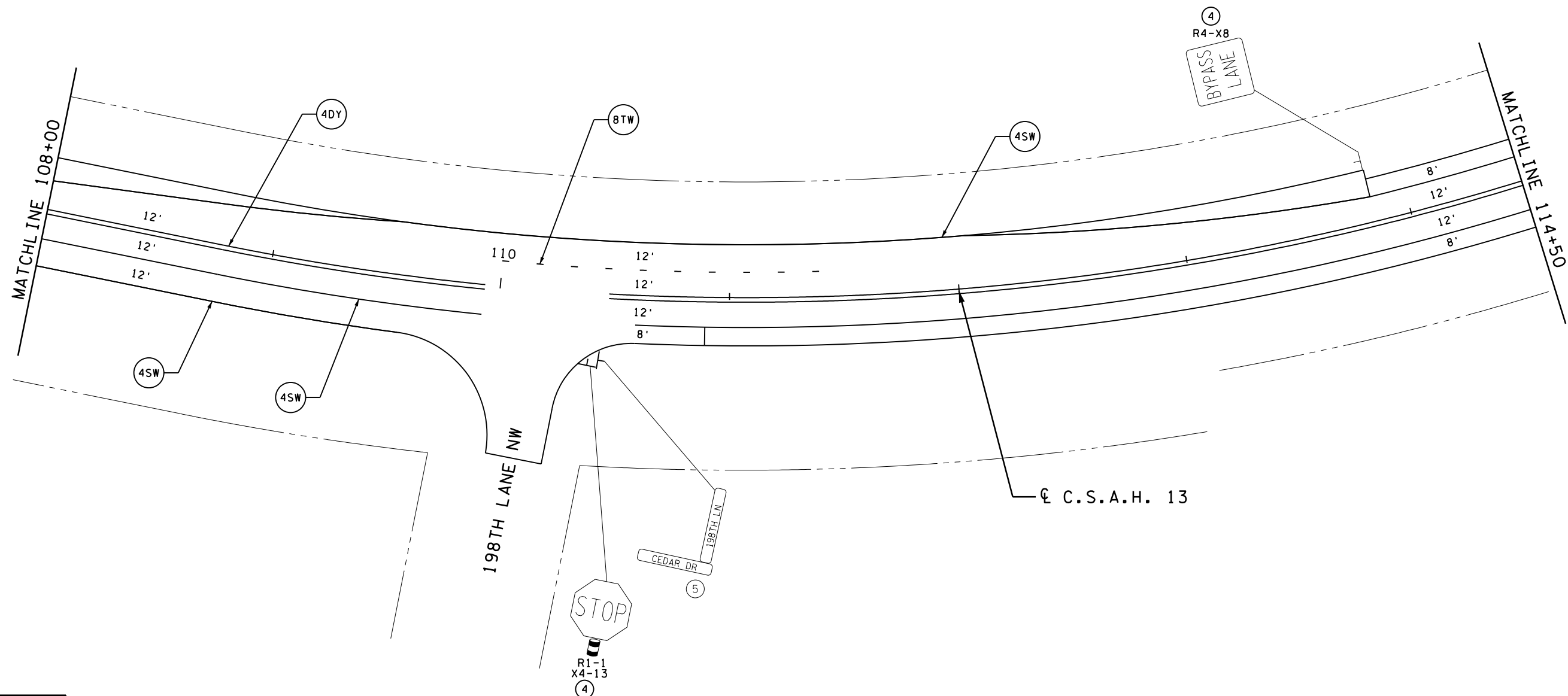
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PROPOSED SIGNING & STRIPING

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SIGNING & STRIPING PLAN

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 1/31/2019



LEGEND	
①	RETAIN INPLACE
④	F+I
⑤	INSTALL

NOTES:
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 Email: Burnsville@bolton-menk.com
 www.bolton-menk.com

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Peter M. Lemke
 PETER M. LEMKE
 LIC. NO. 40118 DATE 01-29-2019

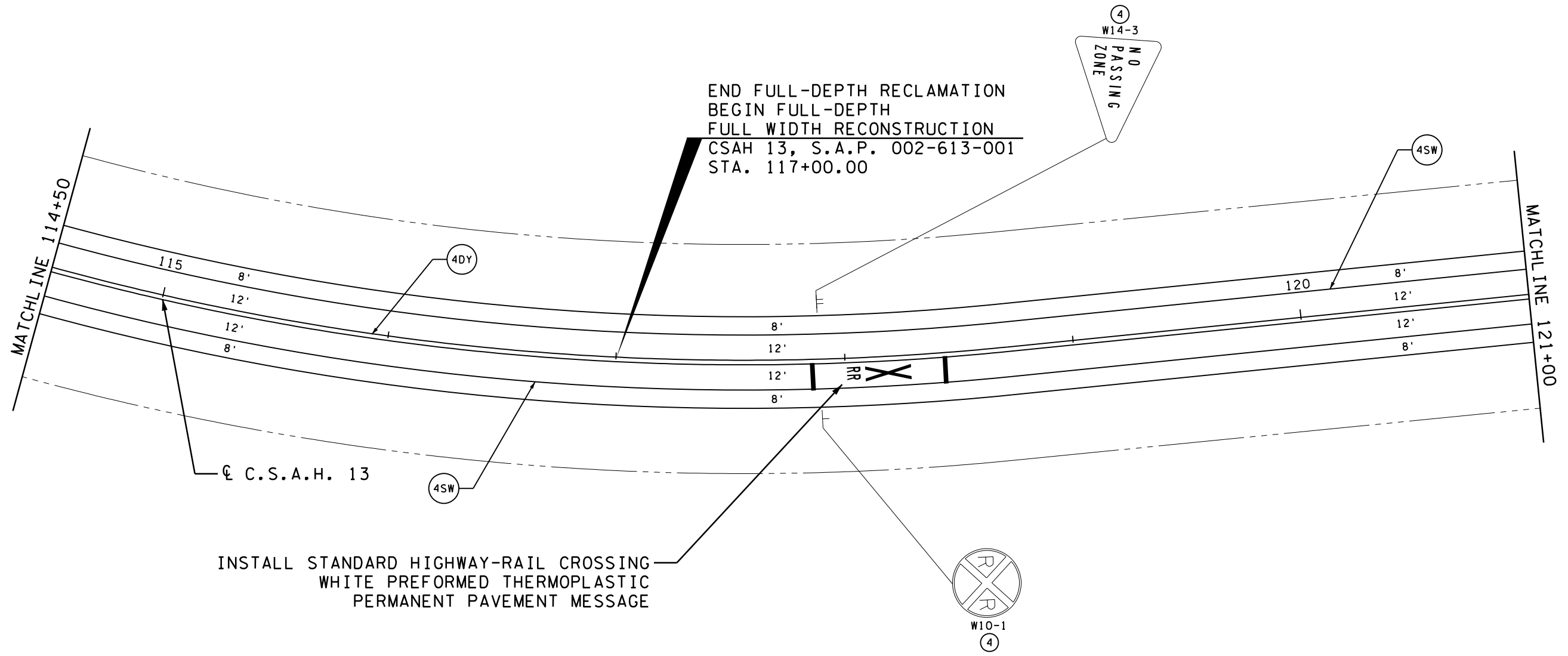
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CHECKED PML

PROPOSED SIGNING & STRIPING
 S.A.P. 002-613-001
 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION
 SIGNING & STRIPING PLAN

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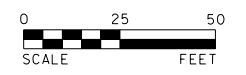


END FULL-DEPTH RECLAMATION
 BEGIN FULL-DEPTH
 FULL WIDTH RECONSTRUCTION
 CSAH 13, S.A.P. 002-613-001
 STA. 117+00.00

INSTALL STANDARD HIGHWAY-RAIL CROSSING
 WHITE PREFORMED THERMOPLASTIC
 PERMANENT PAVEMENT MESSAGE

LEGEND	
①	RETAIN INPLACE
④	F+I
⑤	INSTALL

NOTES:
 1. LOCATIONS OF NO PASSING ZONES ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.



12224 NICOLLET AVENUE
 BURNSVILLE, MINNESOTA 55337
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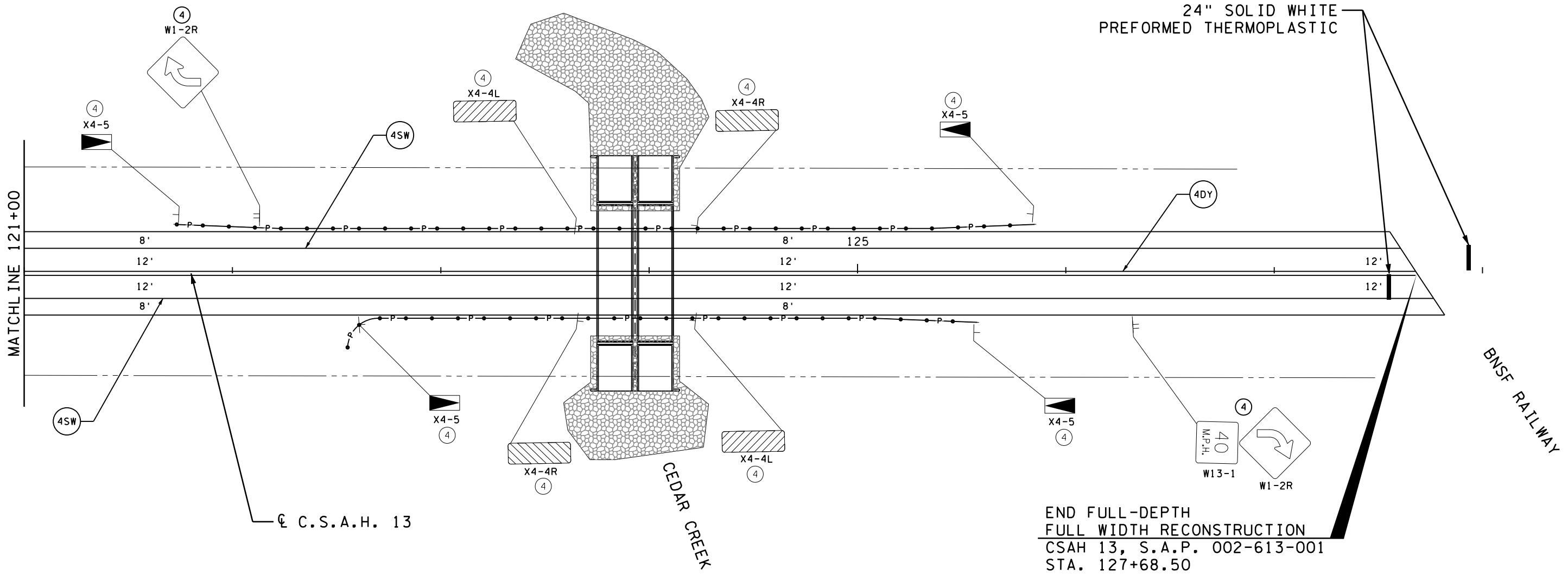
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24" SOLID WHITE
PREFORMED THERMOPLASTIC

MATCHLINE 121+00

BNSF RAILWAY

☉ C.S.A.H. 13

CEDAR CREEK

END FULL-DEPTH
FULL WIDTH RECONSTRUCTION
CSAH 13, S.A.P. 002-613-001
STA. 127+68.50

LEGEND	
①	RETAIN INPLACE
④	F+I
⑤	INSTALL

NOTE:
1. LOCATIONS OF NO PASSING ZONES ARE APPROXIMATE. EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. OBJECT MARKER TYPE X4-5 INCLUDED IN PAY ITEM 2554 TANGENT END TERMINAL



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STAGING AND TRAFFIC CONTROL PLAN

NOTES & GUIDELINES

GENERAL INFORMATION

1. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN THE TRAFFIC CONTROL IN THIS STAGING AND TRAFFIC CONTROL PLAN. IN PLACE SIGNING SHALL ALSO BE MAINTAINED OR TEMPORARILY RELOCATED DUE TO CONSTRUCTION ACTIVITIES.
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. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN ACCORDANCE WITH THE MN MUTCD.
6. THE REMOVAL OF TEMPORARY TRAFFIC CONTROL SHALL BE INCIDENTAL.
7. THE ITEM "TRAFFIC CONTROL" COVERS ALL DEVICES SHOWN ON THE PLAN SHEETS, TYPICAL LAYOUTS, MNMUTCD, THE "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL" AND OTHER SETUPS REQUIRED BY THE CONTRACTOR'S OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES NEEDED FOR THE PROJECT.
8. AS EACH ROADWAY IS COMPLETED, THE CONTRACTOR SHALL PLACE THE FINAL SIGNING AND PAVEMENT MARKINGS REQUIRED TO SAFELY OPEN THAT ROAD TO TRAFFIC. THIS WORK SHALL BE COMPLETED ON OR BEFORE THE DATE OF OPENING AS APPROVED BY THE ENGINEER.
9. CONTRACTOR SHALL MAINTAIN ACCESS AT ALL TIMES TO THE INTERSECTING STREETS, PRIVATE DRIVES, AND DRIVEWAYS UNLESS OTHERWISE NOTED IN THE PLANS. CONSTRUCTION MAY REQUIRE ADDITIONAL TEMPORARY TRAFFIC CONTROL NOT INDICATED IN THE PLANS.
10. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES DURING CONSTRUCTION.
11. WRITTEN NOTICE SHALL BE PROVIDED TO THE CITY OF OAK GROVE, ANOKA COUNTY AND MNDOT 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
12. 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.
13. SOME CONSTRUCTION MAY REQUIRE TEMPORARY LANE CLOSURES NOT SHOWN IN THE PLANS. REFER TO THE MNDOT TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL FOR STANDARD LANE CLOSURE SIGNAGE. TRAFFIC CONTROL PLANS AND ITEMS FOR TEMPORARY CLOSURES ARE INCIDENTAL.
14. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ANY WORK AREAS IN ACCORDANCE WITH THE MN MUTCD.
15. SEE MN MUTCD AND THE TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL FOR REQUIRED LONGITUDINAL DROP OFF GUIDELINES. APPROPRIATE DROP OFF TAPERED SLOPES AND TRAFFIC CONTROL SIGNS SHALL BE PROVIDED AT ALL TIMES.
16. THE CONTRACTOR SHALL NOTIFY MNDOT, ANOKA COUNTY, THE CITY OF OAK GROVE AT LEAST 7 DAYS PRIOR TO EACH STAGE CHANGE AND TRAFFIC CONTROL CHANGES.
17. THE CONTRACTOR SHALL NOTIFY ALL LOCAL EMERGENCY SERVICES A MINIMUM OF 72 HOURS PRIOR TO CLOSING OR OPENING C.S.A.H. 13, WHICH SHALL BE INCIDENTAL.

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 DETAILED IN THE ATTACHED "TYPICAL TEMPORARY SIGN FRAMING AND INSTALLATION DETAILS". 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 WITHIN 2 WEEKS.
3. SIGN PLACEMENT SHALL NOT OBSTRUCT EXISTING SIGNS.
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. BARRICADES SHALL BE REFLECTORIZED ON BOTH SIDES.
6. LONGITUDINAL DROP OFFS SHALL BE SIGNED AS SHOWN IN THE "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS" FIELD MANUAL. THESE ARE NOT INDICATED IN THE PLANS BUT SHALL BE A PART OF THE TRAFFIC CONTROL.
7. THE CONTRACTOR SHALL COVER, CHANGE OR REMOVE INPLACE SIGNS THAT CONFLICT WITH THE TRAFFIC PATTERNS AS DIRECTED BY THE ENGINEER. ALL SIGNS ALTERED BY THE CONTRACTOR SHALL BE RETURNED TO THEIR ORIGINAL STATUS WHEN NORMAL PATTERNS ARE RESTORED. ALL SIGNS COVERED WITH OTHER SIGN PANELS OR BLANKS SHALL HAVE NYLON WASHERS SPACED BETWEEN THE SIGN AND THE PANEL.
8. ALL REQUIRED SIGNS SHALL BE MAINTAINED OR PLACED ON TEMPORARY STANDS DURING CONSTRUCTION.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EXTRA SIGNING NEEDED TO FACILITATE TRAFFIC SWITCHES OR FOR TRANSITIONING TRAFFIC FROM ONE STAGE TO ANOTHER.
9. 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.

SIGNING (CONTINUED)

10. THE FINAL LOCATION OF ALL SIGNS SHOWN IN THIS PLAN SHALL BE AS SHOWN OR A MINIMUM OF 300 FEET FROM ANY EXISTING SIGN. IF THE 300 FOOT MINIMUM CANNOT BE MAINTAINED, THE SIGN LOCATIONS SHALL BE ADJUSTED TO PROVIDE THE LARGEST SPACING AVAILABLE.
11. THE CONTRACTOR SHALL PROVIDE "ROAD WORK AHEAD" SIGNS ON ALL ROADS THAT INTERSECT THE PROJECT. SIGN PLACEMENT SHALL CONFORM TO THE MN MUTCD.
12. ALL CONSTRUCTION SIGNS SHALL BE REMOVED WHEN NO LONGER NEEDED. WHEN SIGNS ARE REMOVED, THE SIGN POSTS SHALL BE REMOVED WITHIN 2 WEEKS. THE SURROUNDING GROUND SHALL BE RETURNED TO ITS ORIGINAL CONDITION.
13. THE ACTUAL NUMBER OF BARRICADES REQUIRED AT EACH LOCATION MAY VARY DEPENDING UPON THE SIZE OF BARRICADES USED, THE WIDTH OF THE ROAD CLOSURE, AND THE MOVEMENT OF LOCAL AND CONSTRUCTION TRAFFIC.

CONSTRUCTION INFORMATION SIGNING

1. THE CONTRACTOR SHALL USE CONSTRUCTION INFORMATION SIGNING AS FOLLOWS:

PLACE G20-X2 WORK ZONE ADVANCE NOTICE SIGNS WITH THE CORRECT STARTING DATE DISPLAYED AT LEAST 14 DAYS IN ADVANCE OF BEGINNING CONSTRUCTION. ONCE WORK BEGINS, THE START DATE LEGEND SHALL BE COVERED BY A PLAQUE DISPLAYING FOLLOW DETOUR OR EXPECT DELAYS AS INDICATED IN PLAN.

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 PROJECT ENGINEER.

THE CONTRACTOR SHALL PROVIDE AND USE A MINIMUM OF THREE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) DURING CONSTRUCTION. LOCATION OF THE PCMS WILL BE DETERMINED BY THE ENGINEER. SEE SPECIAL PROVISIONS.















PROJECT STAGING NOTES

1. THE CONTRACTOR SHALL FOLLOW THE MOST RECENT VERSION OF THE "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL" FOR ANY SHORT TERM LANE AND/OR SHOULDER CLOSURES NECESSARY TO COMPLETE THE WORK IN ADDITION TO THE DETOURS AND DETAILS PROVIDED IN THE PLAN.
2. THE CONTRACTOR SHALL MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES DURING CONSTRUCTION BY USING ALTERNATE PEDESTRIAN ROUTES. SEE THE DETAILS ATTACHED TO THIS PLAN.



INDEX

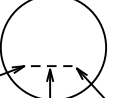
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86	TITLE SHEET
87	TRAFFIC CONTROL TABULATION SHEET
88	SPECIAL SIGN DETAILS
89	SPECIAL DETAILS
90-91	DETAILS
92	DETOUR & OVERVIEW

TRAFFIC CONTROL SYMBOLS


	CONSTRUCTION DURING CURRENT PHASE
	CLOSED TO TRAFFIC DURING CURRENT PHASE
	TEMPORARY PAVEMENT DURING CURRENT PHASE
	CONSTRUCTION DURING CURRENT PHASE TEMPORARY AGGREGATE ALLOWED FOR TRAFFIC SHIFTS AND TO MAINTAIN TURNING MOVEMENTS OR DRIVE ACCESS DURING CURRENT PHASE
	TRAFFIC CONTROL SIGN (SHOWN FACING LEFT)
	TYPE III BARRICADE = 
	DRUM CHANNELIZER (TYPE B) = 
	TUBE DELINEATOR
	TYPE A FLASHING WARNING LIGHTS
	DIRECTION OF TRAFFIC (THRU ARROW)
	TRPM'S
	REMOVABLE PREF PAVEMENT MESSAGE (LEFT ARROW) TAPE

STRIPING KEY

	TRIANGLE - PAINT WET REFLECTIVE
	PENTAGON - REMOVABLE PREFORMED PAVEMENT MARKING TAPE



1ST DIGIT WIDTH	2ND DIGIT PATTERN	3RD DIGIT COLOR
4" OR 6"	S - SOLID B - BROKEN D - DOUBLE T - DOTTED	W - WHITE Y - YELLOW B - BLACK

EXAMPLE:  = 4" SOLID LINE WHITE - REMOVABLE PREFORMED PLASTIC MARKING


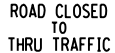
I HEREBY CERTIFY THAT SHEETS XX THROUGH XXX OF THIS PLAN WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.





PRINT NAME: PETER M. LEMKE LICENSE #: 40118.....





DATE: 01-29-2019 SIGNATURE: *Peter M Lemke*.....








DESIGNER: JAKE PILZ.....



TRAFFIC CONTROL TABULATION SHEET


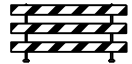
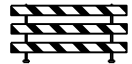
"R" SERIES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	R11-2	BLACK ON WHITE	48 X 30
	R11-4	BLACK ON WHITE	60 X 30

"W" SERIES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	W20-100R	BLACK ON ORANGE	30 X 24
	W20-100R	BLACK ON ORANGE	30 X 24
	W20-2	BLACK ON ORANGE	48 X 48
	W20-3	BLACK ON ORANGE	48 X 48

"M" SERIES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	M1-6	WHITE AND YELLOW ON BLUE	24 X 24
	M3-1a	WHITE ON BLUE	24 X 12
	M3-3a	WHITE ON BLUE	24 X 12
	M4-8	BLACK ON ORANGE	24 X 12

"M" SERIES CONTINUES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	M4-8a	BLACK ON ORANGE	24 X 18
	M4-10L	BLACK ON ORANGE	48 X 18
	M5-1aL	WHITE ON BLUE	21 X 15
	M5-1aR	WHITE ON BLUE	21 X 15
	M6-1aL	WHITE ON BLUE	21 X 15
	M6-1aR	WHITE ON BLUE	21 X 15
	M6-3a	WHITE ON BLUE	21 X 15

"G" SERIES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	G20-X2	BLACK ON ORANGE	138 X 114
	G20-X2	BLACK ON ORANGE	138 X 114

TRAFFIC CONTROL DEVICES			
SIGN	SIGN NO.	COLOR	SIZE (INCHES)
	TYPE 'A'	AMBER	FLASHER
	T3L	ORANGE ON WHITE	(6' MINIMUM)
	T3R	ORANGE ON WHITE	(6' MINIMUM)

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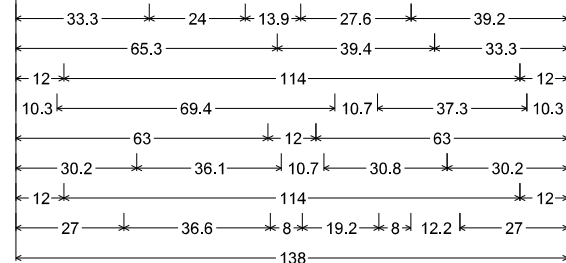
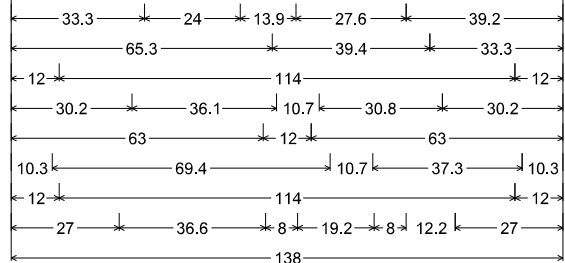
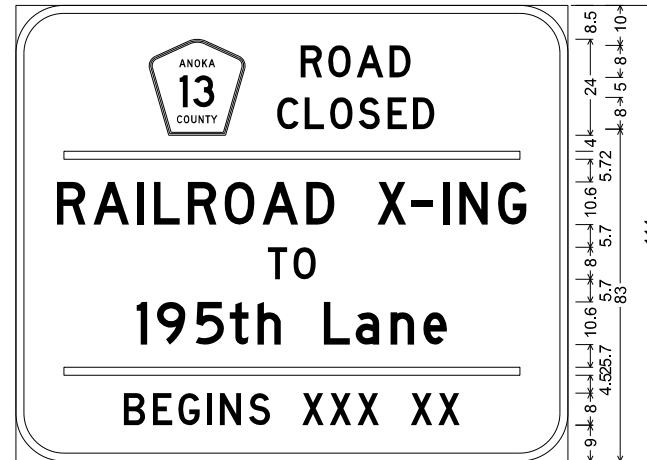
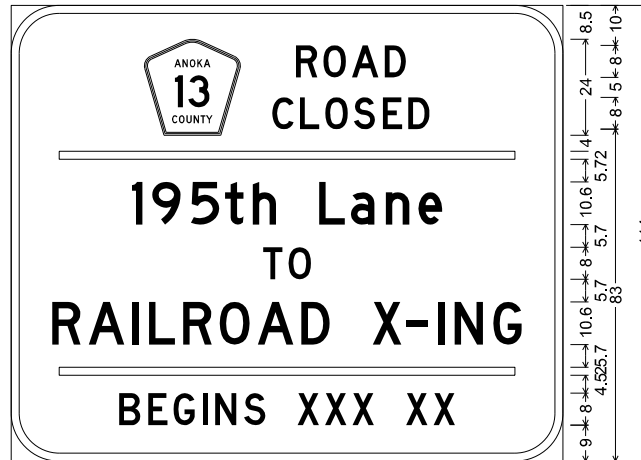
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C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION

STAGING & TRAFFIC CONTROL PLAN

SHEET
87
OF
92



12.0" Radius, 2.0" Border, Black on Orange;
 Pentagonal County 13 M1-6; [ROAD] D; [CLOSED] D;
 [195th Lane] D; [TO] D; [RAILROAD X-ING] D; [BEGINS] D;
 [XXX XX] D;

12.0" Radius, 2.0" Border, Black on Orange;
 Pentagonal County 13 M1-6; [ROAD] D; [CLOSED] D;
 [RAILROAD X-ING] D; [TO] D; [195th Lane] D; [BEGINS] D;
 [XXX XX] D;

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B	E	G	I	N	S	X	X	X	X
27.0	34.2	40.6	47.9	51.0	58.2	71.6	78.5	85.4	98.8

Ⓢ	R	O	A	D					
33.3	71.2	78.1	85.2	93.4					
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12.0									
B	E	G	I	N	S	X	X	X	X
27.0	34.2	40.6	47.9	51.0	58.2	71.6	78.5	85.4	98.8

GENERAL NOTES:
 1. ALL SIGN DIMENSIONS ARE IN INCHES.

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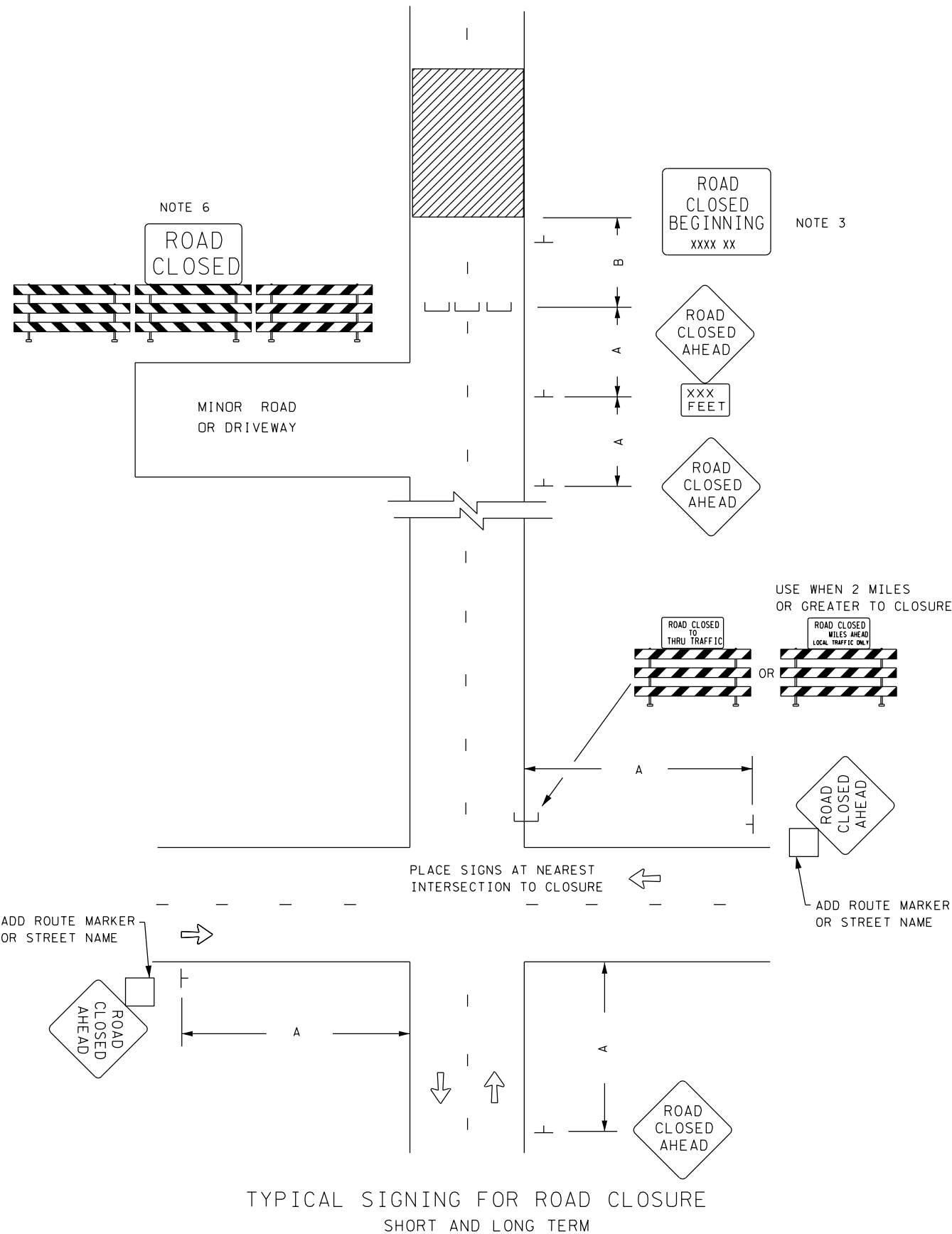
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 STAGING & TRAFFIC CONTROL PLAN

SHEET 88 OF 92



TYPICAL SIGNING FOR ROAD CLOSURE
SHORT AND LONG TERM

POSTED SPEED LIMIT PRIOR TO WORK STARTING (MPH)	SPACING OF CHANNELIZING DEVICES (G) FEET	SPACING OF ADVANCE WARNING SIGNS (A) FEET	DECISION SIGHT DISTANCE FEET	TAPER LENGTH (L) FEET	BUFFER SPACE (B) FEET
0 - 30	25	100	550	200	200
35 - 40	25	325	700	325	305
45 - 50	50	600	900	600	425
55	50	750	1200	700	500
60 - 65	50	1000	1400	800	650
70 - 75	50	1200	1600	900	820

NOTE:
NOT ALL INFORMATION IN THIS BOX MAY APPLY TO THIS DETAIL.

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PETER M. LEMKE
LIC. NO. 40118 DATE 01-29-2019

DESIGNED TAL	S.A.P. 002-613-001 C.S.A.H. 13 BRIDGE REPLACEMENT & RD CONSTRUCTION	SHEET 89 OF 92
DRAWN SJP		
CHECKED PML	STAGING & TRAFFIC CONTROL PLAN	

SPECIAL DETAILS

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, OR THE 9' MIN DEPICTED ON THE TYPICAL MOUNTING DETAIL ON THIS SHEET.

STANDARD CONSTRUCTION SIGNS IN MnDOT STANDARD SIGNS AND MARKINGS MANUAL

TABLE 1

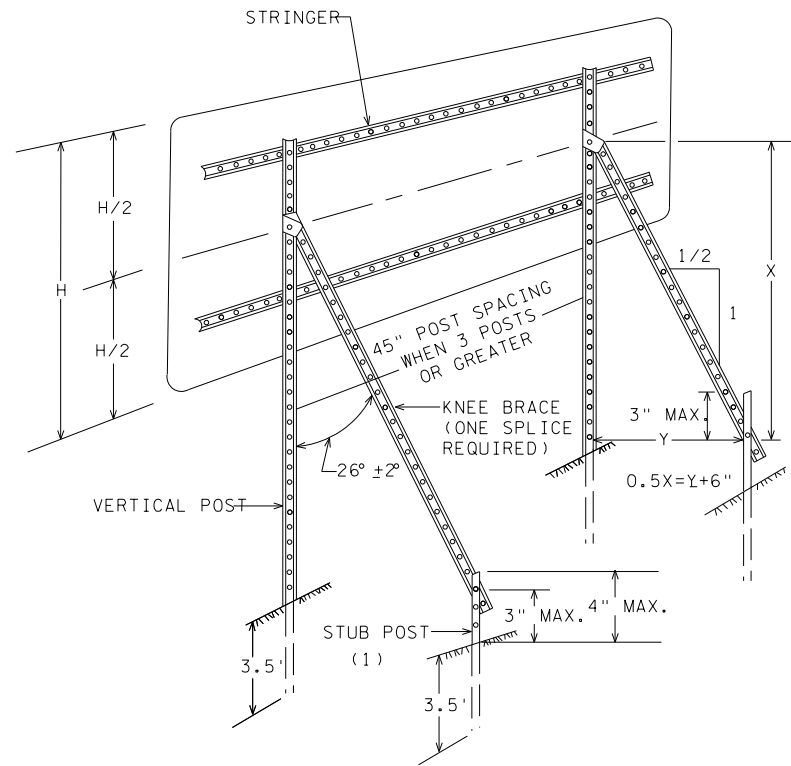
PANEL SIZE (IN.)	POSTS			
	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
24 x 24	1-U	18		13
30 x 24	1-U	18		13
36 x 30	2-U	24		13
36 x 36	2-U	18		14
42 x 36	2-U	30		14
48 x 48	2-U	30		15
60 x 60	2-U	42	1	16
66 x 60	2-U	42	2	16
72 x 72	2-U	42	2	17
96 x 54	2-U	54	2	19
96 x 84	2-U	54	2	19
132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

GENERAL NOTES:

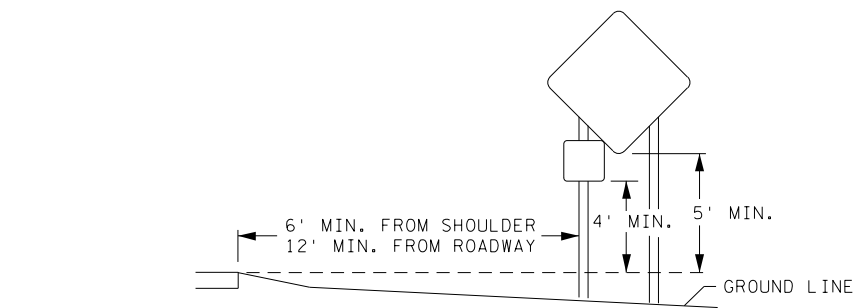
1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE MnDOT STANDARD SIGNS AND MARKINGS MANUAL FOR PUNCHING HOLES.
3. MINIMUM OF 45" SPACING BETWEEN POSTS MUST BE MAINTAINED WHEN USING MORE THEN TWO POST.

TABLE 2
SPECIAL DESIGN CONSTRUCTION SIGNS

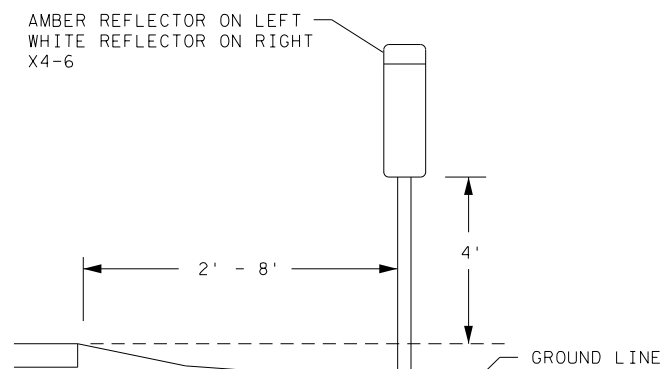
PANEL SIZE		POSTS			
LENGTH (IN.)	HEIGHT (IN.)	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
36	44	2-U	18	1	15
132	134	4-U	45	4	25
132	140	4-U	45	4	26



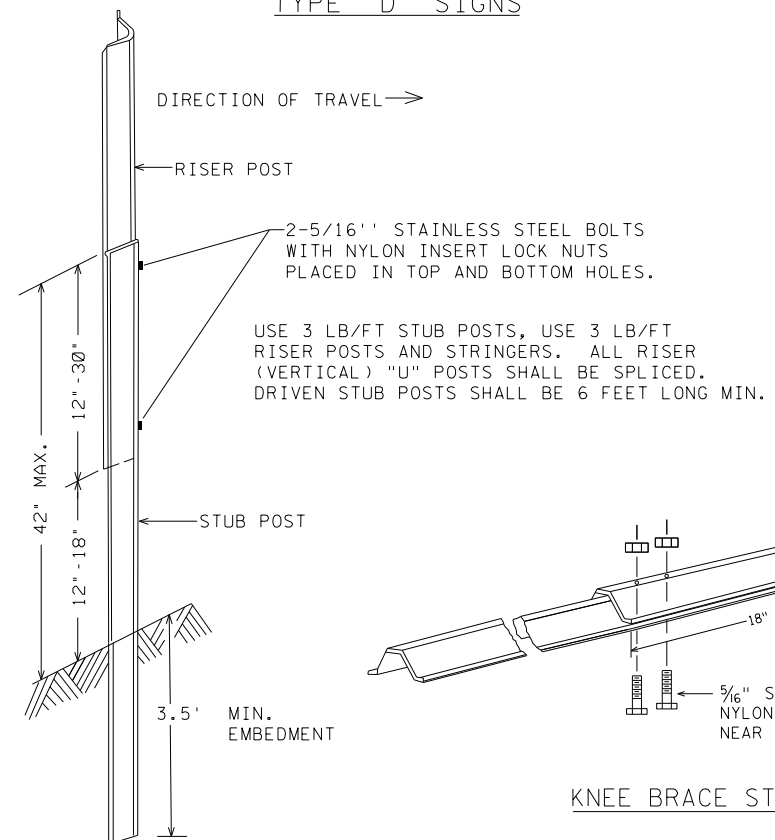
TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS



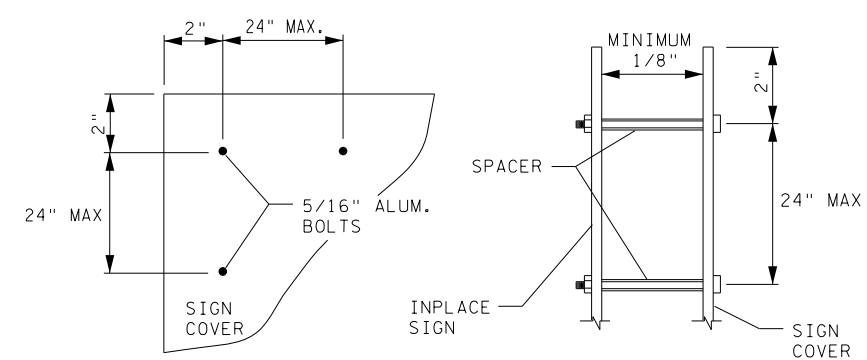
TYPICAL RURAL DESIGN



TYPICAL URBAN DESIGN

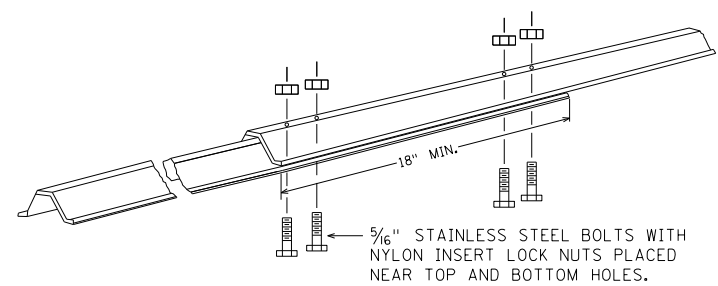


"U" POST BREAKAWAY SPLICE

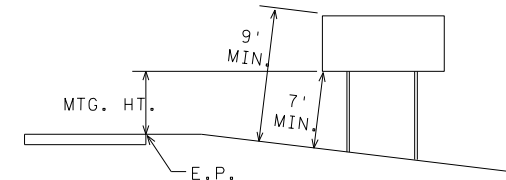


SIGN PANEL OVERLAY

SPACER SHALL BE A MATERIAL THAT DOES NOT HARM THE SIGN SHEETING FACE (SUCH AS PLASTIC OR RUBBER). REFER TO TRAFFIC ENGINEERING MANUAL CHAPTER 8 FOR MORE INFORMATION ON COVERING SIGNS



KNEE BRACE STRUCTURAL SPLICE



TYPICAL MOUNTING

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

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.

GUIDE SIGNS SHOWN TO BE COVERED SHALL BE COVERED WITH THE SAME COLOR AS THE SIGN BACKGROUND. THE CONTRACTOR SHALL PLACE COVERS OR ADDITIONAL SIGNS USING A MINIMUM 1/8" PLASTIC SPACER BETWEEN THE INPLACE SIGN AND THE COVERING MATERIAL. HOLES WILL BE DRILLED IN THE COVER AND THE INPLACE SIGN AND SHALL BE PLACED IN ACCORDANCE TO THE SIGN PANEL DETAIL. SPACERS ARE REQUIRED. MID-PANEL SPACING SHALL BE NO GREATER THAN 24".

DETAILS

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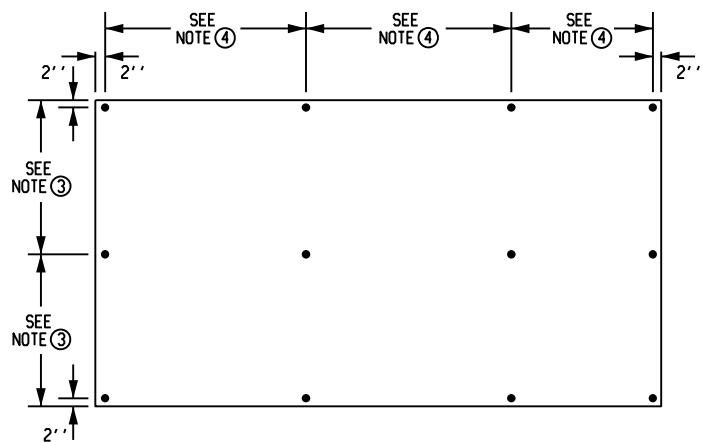
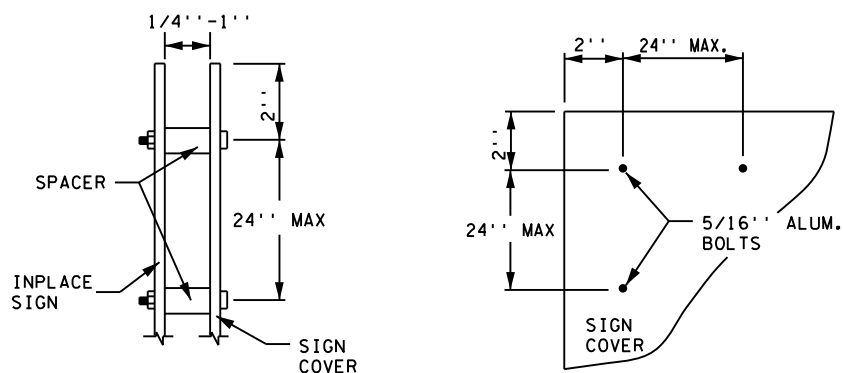
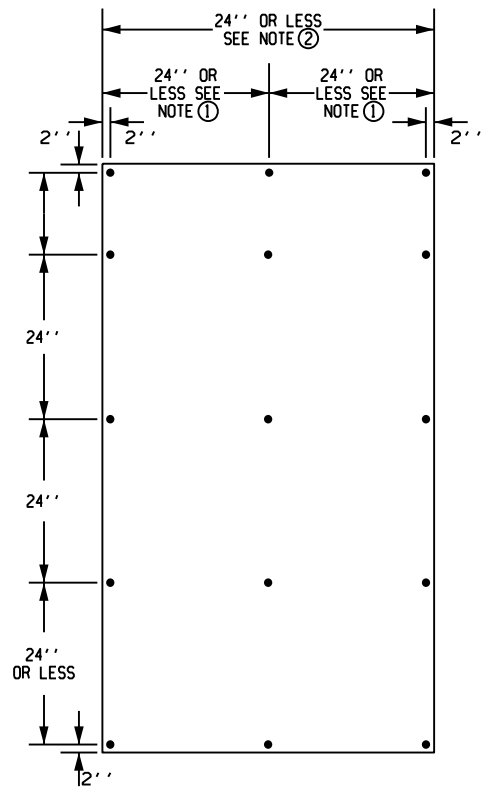
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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Peter M. Lemke
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STAGING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

SHEET
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OF
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OVERLAY ASSEMBLY STEPS FOR COVERING COMPLETE OR PORTION OF EXTRUDED SIGN PANEL:

- 1) DRILL 1/4" HOLES ON THE SHEET ALUMINUM OVERLAYS IN ACCORDANCE WITH THE HOLE SPACING ON THE DIAGRAM. OUTSIDE HOLES SHALL NOT BE SPACED MORE THAN 24" APART.
- 2) ATTACH PLASTIC SPACER(S) (1/4" MIN THICKNESS, 3/8" I.D. AND 7/8" O.D.) WITH DOUBLE FACED TAPE, CENTERED BEHIND EACH DRILLED HOLE.
- 3) POSITION THE FIRST OVERLAY PANEL'S BOTTOM EDGE FLUSH WITH THE BOTTOM OF THE INPLACE EXTRUDED SIGN PANEL AND THE OVERLAY PANEL'S LOWER LEFT EDGE FLUSH WITH THE LOWER LEFT EDGE OF THE BOTTOM INPLACE EXTRUDED PANEL SECTION.
- 4) DRILL ALL OF THE OUTSIDE HOLES THROUGH THE INPLACE EXTRUDED SIGN PANEL AND ATTACH THE OVERLAY PANEL WITH SHEET METAL SCREWS.
- 5) DRILL THE INNER HOLES THROUGH THE INPLACE EXTRUDED SIGN PANEL AND ATTACH WITH SHEET METAL SCREWS AS SPECIFIED IN STEP 4 ABOVE.
- 6) ABUT THE NEXT OVERLAY PANEL TO THE FIRST ATTACHED OVERLAY PANEL AND PERFORM THE SAME WORK AS SPECIFIED IN STEPS 4 AND 5 ABOVE.
- 7) PLACE EACH ADDITIONAL OVERLAY PANEL AS SPECIFIED IN STEP 6 ABOVE.

NOTES FOR COVERING COMPLETE OR PORTION OF EXTRUDED SIGN PANEL:

- ① THE CENTER SHEET METAL SCREWS SHALL BE SPACED AT 1/2 OF THE PANELS WIDTH.
- ② IF THE SHEET ALUMINUM PANEL IS GREATER THAN 48" WIDE, THE SHEET METAL SCREWS SPACING SHALL BE NO GREATER THAN 24". IF THE SHEET ALUMINUM PANEL IS LESS THAN 24" WIDE, THERE SHALL BE NO INNER HOLES.
- ③ VERTICAL SPACING FOR THE MOUNTING HOLES IS 50% OF THE PANEL HEIGHT. IF THE PANEL IS LESS THAN 24" HIGH, THERE SHALL BE NO INNER HOLES.
- ④ HORIZONTAL SPACING FOR MOUNTING HOLES SHALL NOT BE LESS THAN 15" NOR MORE THAN 24".

GENERAL NOTES:

SIGN PANEL OVERLAYS SHALL BE MADE OF A RIGID MATERIAL. (SHEET ALUMINUM, PLYWOOD, CORRUGATED PLASTIC, OR OTHER MATERIAL AS APPROVED BY THE ENGINEER), THE INSTALLATION SHALL ALLOW ADEQUATE AIR FLOW BETWEEN THE OVERLAY PANEL AND THE INPLACE SIGN PANEL BY PROVIDING A MINIMUM SPACING OF 1/4" (1" MAXIMUM).

IF SHEET METAL SCREWS ARE USED WITH CORRUGATED PLASTIC, FENDER WASHERS SHALL BE PLACED BETWEEN SCREWS AND PANEL OVERLAY.

SPACERS SHALL BE A MATERIAL THAT WILL NOT HARM THE SIGN SHEETING FACE (SUCH AS PLASTIC OR RUBBER).

ALL COVERING MATERIAL, MOUNTING HARDWARE AND FASTENERS SHALL BE REMOVED WHEN PANEL OVERLAY IS REMOVED.

SIGN PANEL OVERLAYS USED TO COVER ALL OR PART OF A SIGN SHALL BE THE SAME COLOR AS THE BACKGROUND COLOR OF THE SIGN TO BE COVERED AND SHALL COVER ALL OF THE SIGN OR MESSAGE TO BE COVERED UNLESS SHOWN OTHERWISE IN THE PLAN.

TAPE SHALL NOT BE APPLIED TO THE SIGN SHEETING SURFACE. PRE-MASK OR APPLICATION TAPE SHALL BE REMOVED PRIOR TO EXPOSURE TO SUNLIGHT.

OVERLAY ASSEMBLY COVERING TYPE C OR D SIGN PANEL:

A RIGID OPAQUE PANEL OVERLAY. THE OVERLAY PANEL SHOULD BE APPROXIMATELY THE SAME SIZE AS THE SIGN PANEL SUCH THAT THE SIGN MESSAGE IS COMPLETELY COVERED

HOOKS OR PREFORMED STRAPS EXTEND OVER TOP EDGE(S) OF SIGN PANEL

INPLACE SIGN

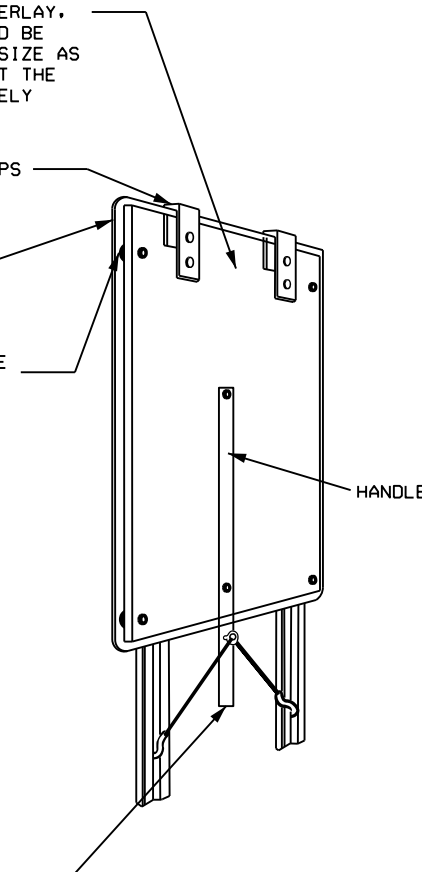
A SPACER IS REQUIRED IN ALL 4 CORNERS TO PROVIDE AIR FLOW GAP BETWEEN THE SIGN FACE AND OVERLAY PANEL

SPACERS SHALL ALLOW BETWEEN 1/4" TO 1" GAP AND BE A MATERIAL THAT WILL NOT HARM THE SIGN SHEETING FACE

ALL FASTENERS (SUCH AS BOLTS, HOOKS OR SCREWS) SHALL NOT TOUCH THE SIGN SHEETING FACE

THE OVERLAY PANEL SHALL BE ATTACHED TO THE SIGN STRUCTURE SUCH THAT IT WILL NOT MOVE DUE TO WIND

BOTTOM OF HANDLE SHALL BE SECURED TO PREVENT MOVEMENT. BOLT ON HANDLE SHALL BE ATTACHED TO OVERLAY PANEL AS TO NOT DAMAGE INPLACE SIGN PANEL.



TYPICAL TEMPORARY SIGN COVERING DETAILS

DETAILS

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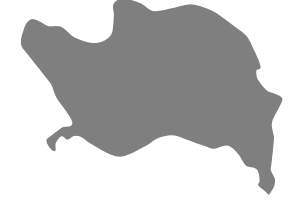
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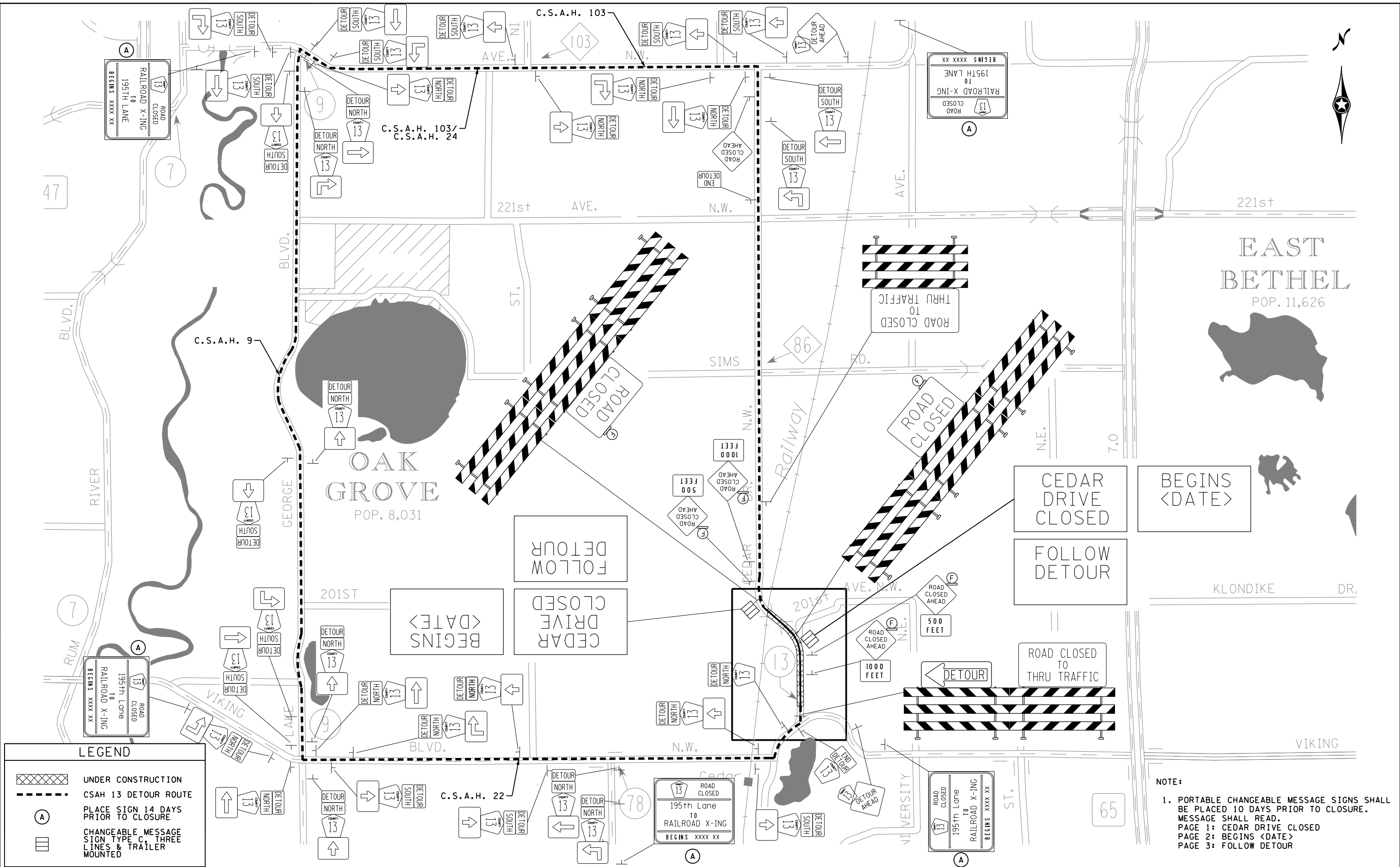
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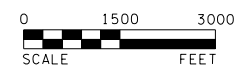
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- NOTE:
1. PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE PLACED 10 DAYS PRIOR TO CLOSURE. MESSAGE SHALL READ.
PAGE 1: CEDAR DRIVE CLOSED
PAGE 2: BEGINS <DATE>
PAGE 3: FOLLOW DETOUR

LEGEND

- UNDER CONSTRUCTION
- CSAH 13 DETOUR ROUTE
- PLACE SIGN 14 DAYS PRIOR TO CLOSURE
- CHANGEABLE MESSAGE SIGN TYPE C, THREE LINES & TRAILER MOUNTED



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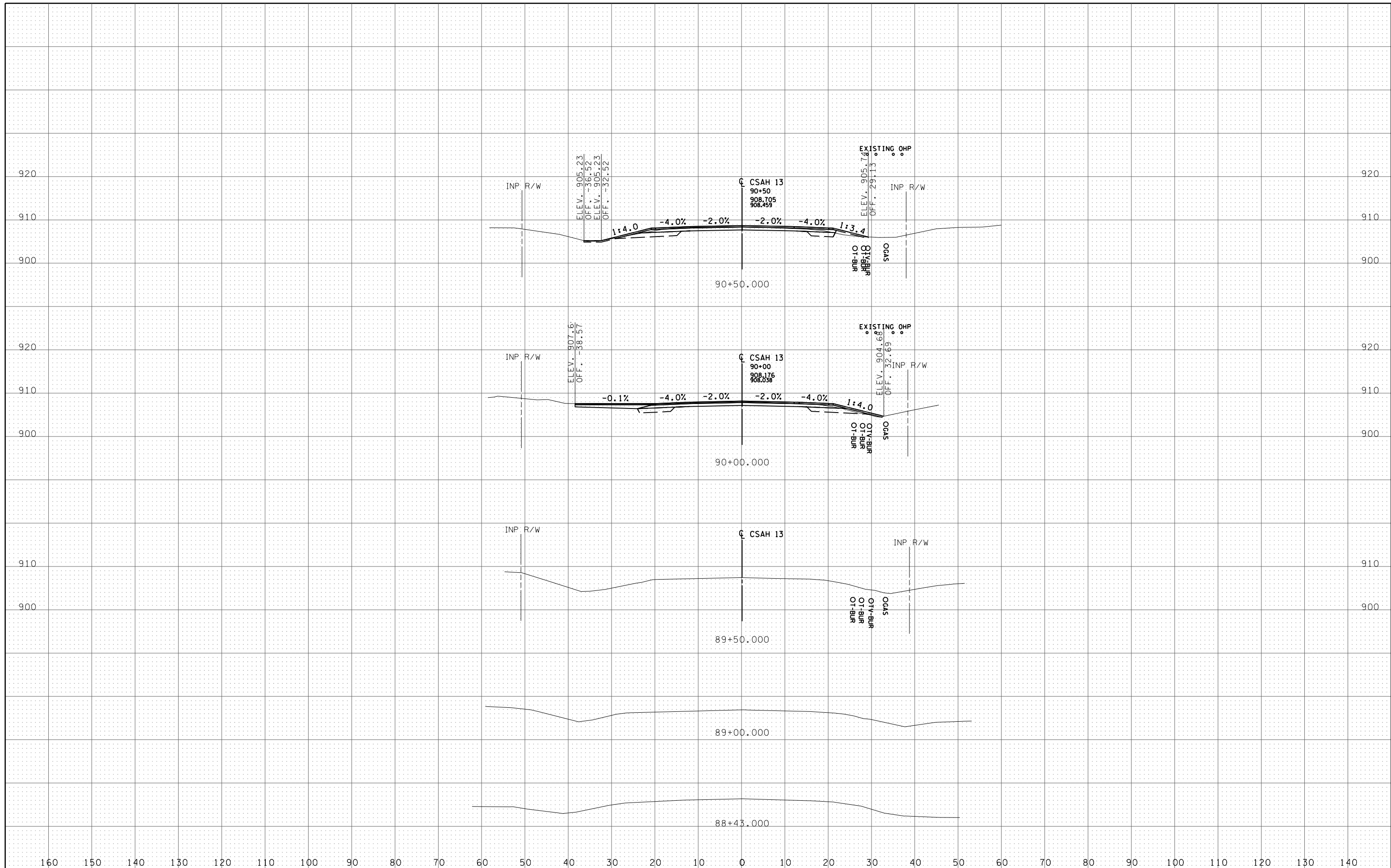
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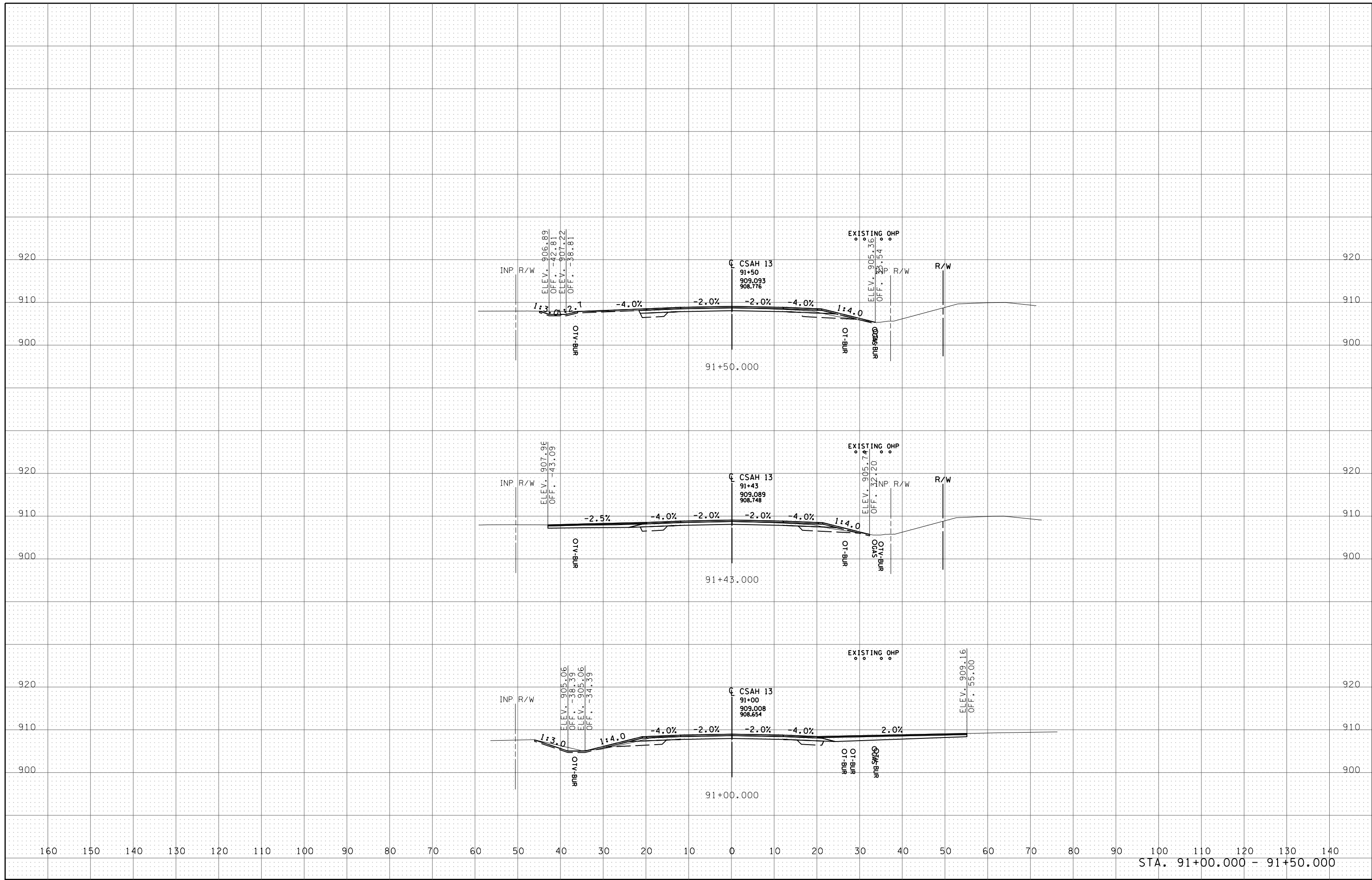
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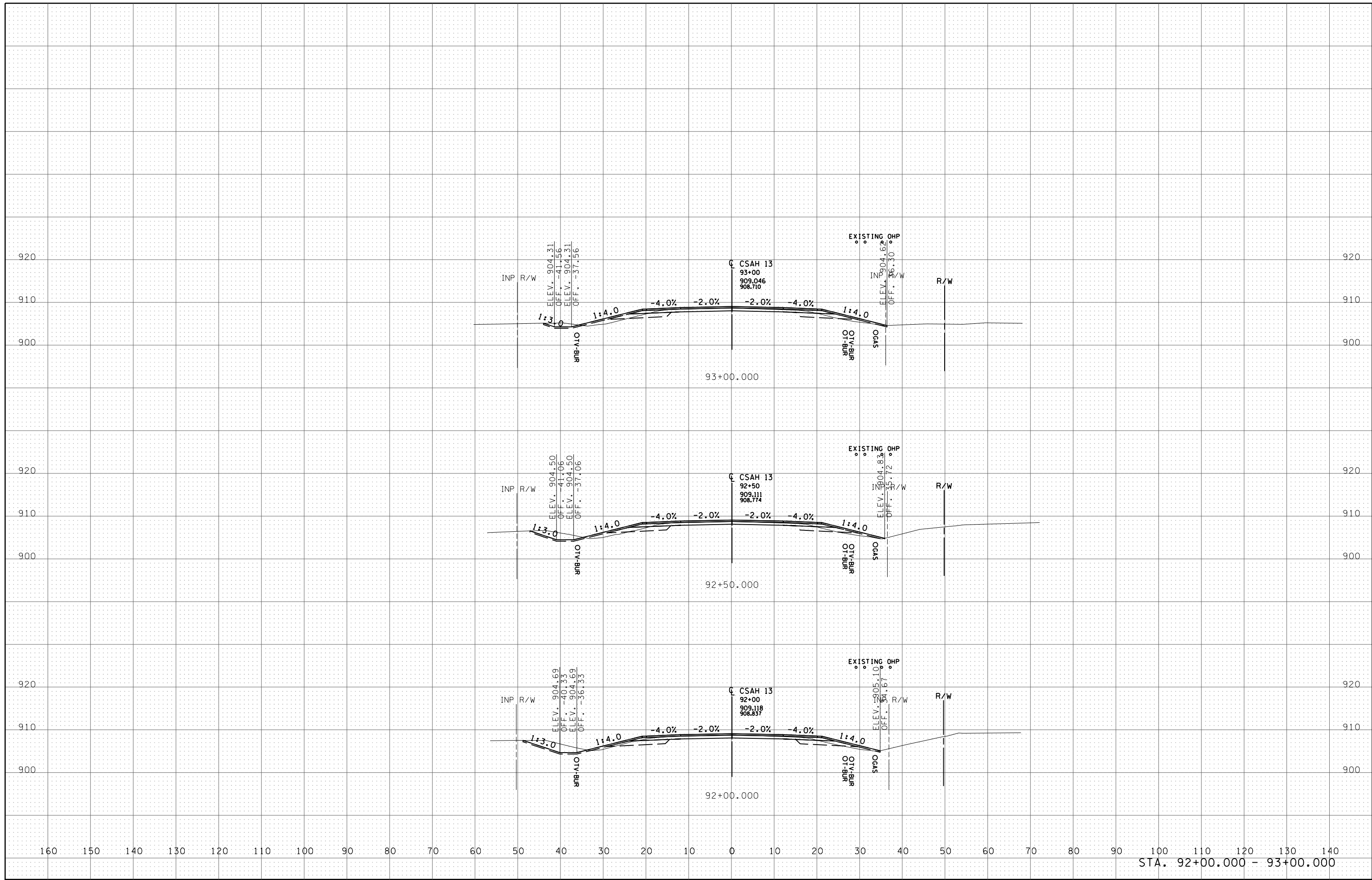
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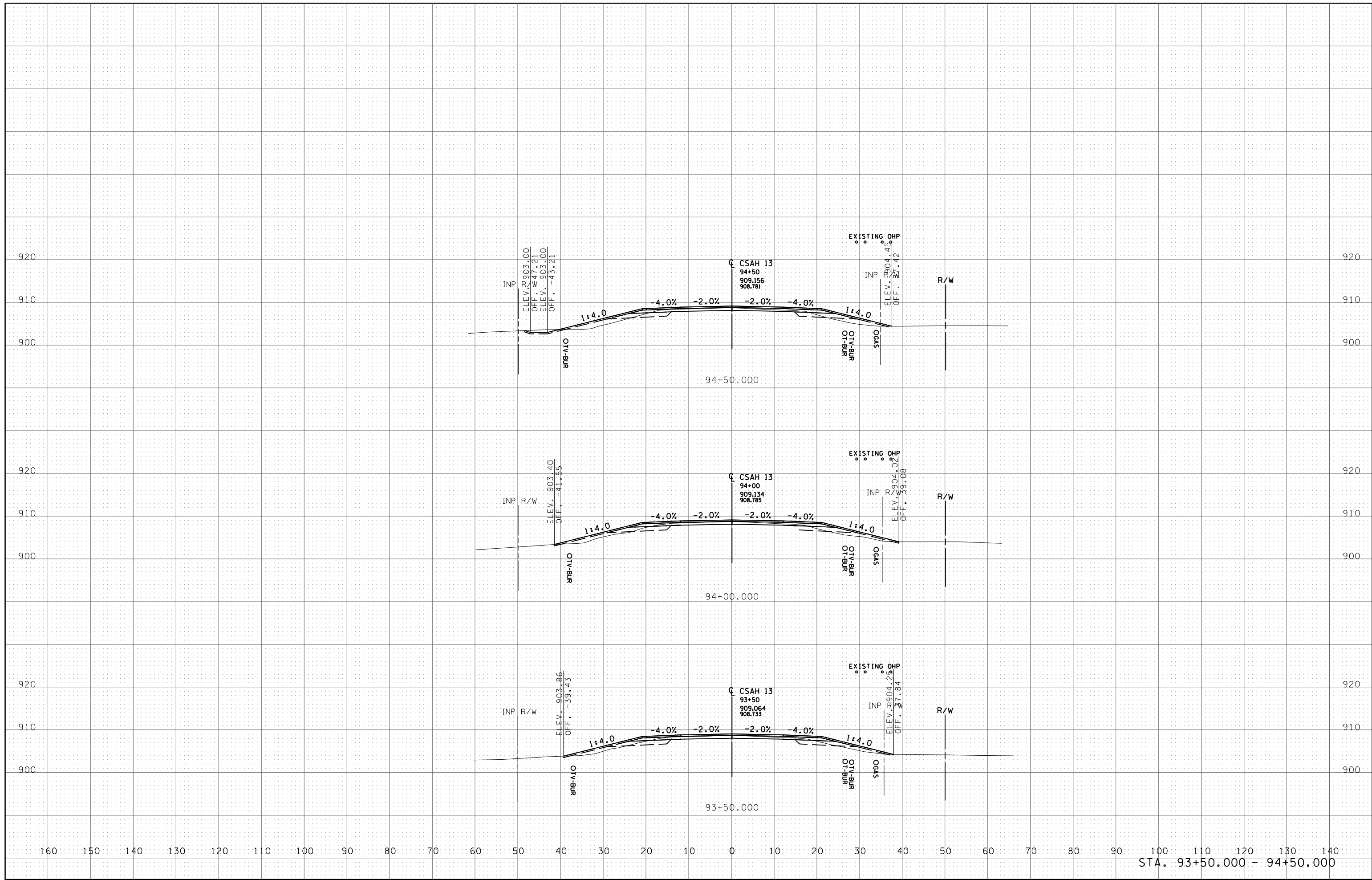
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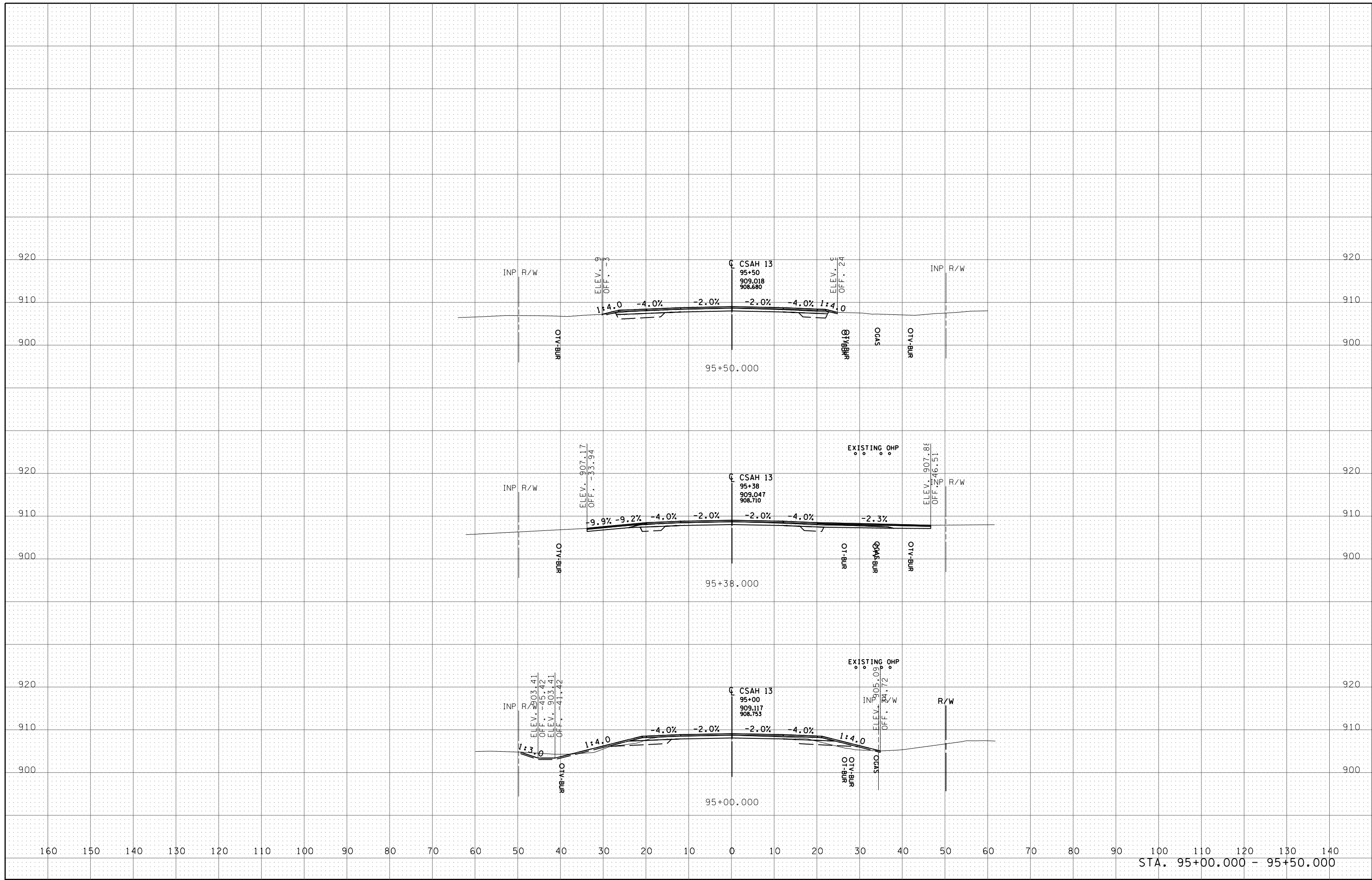
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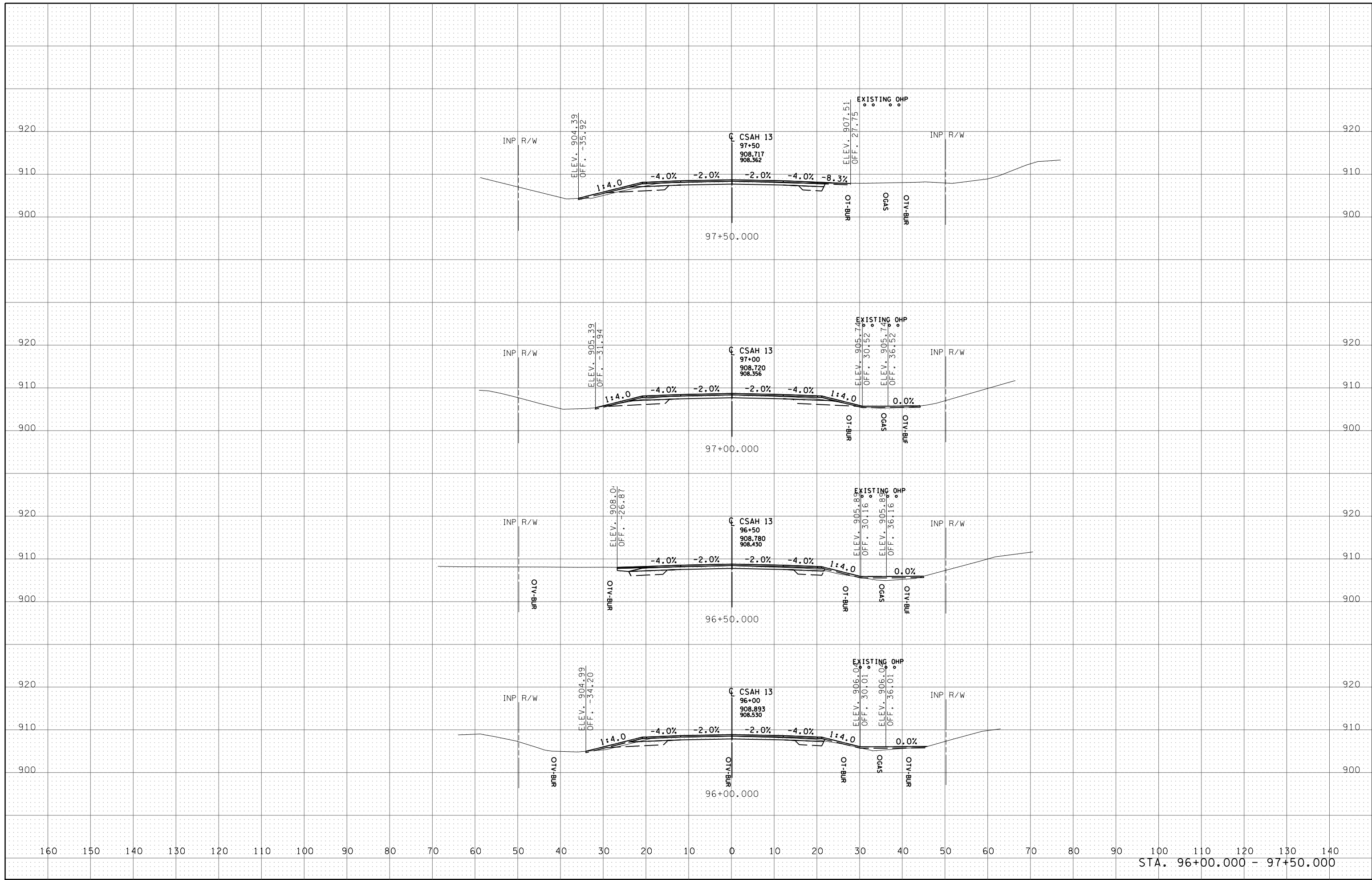


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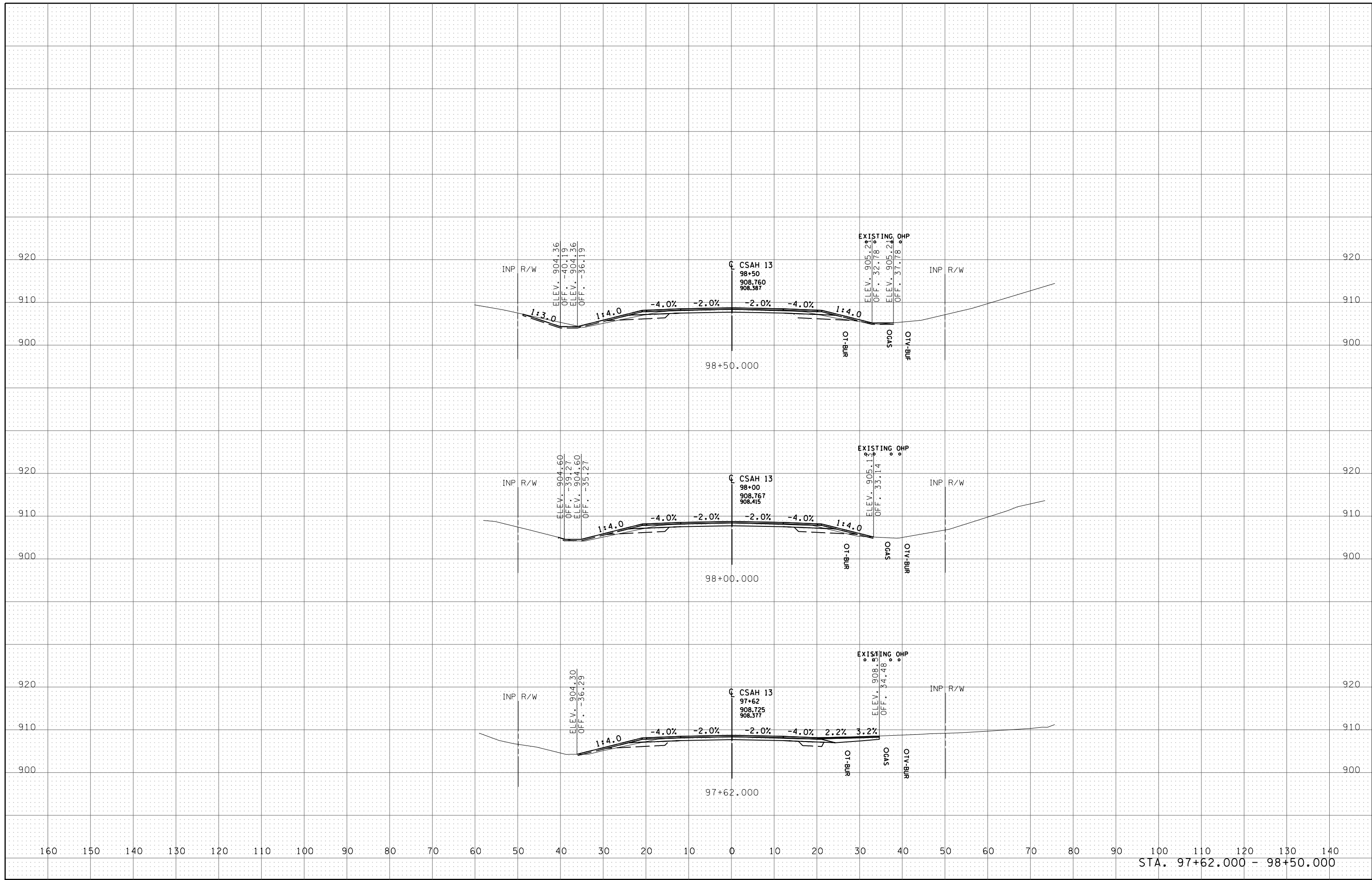


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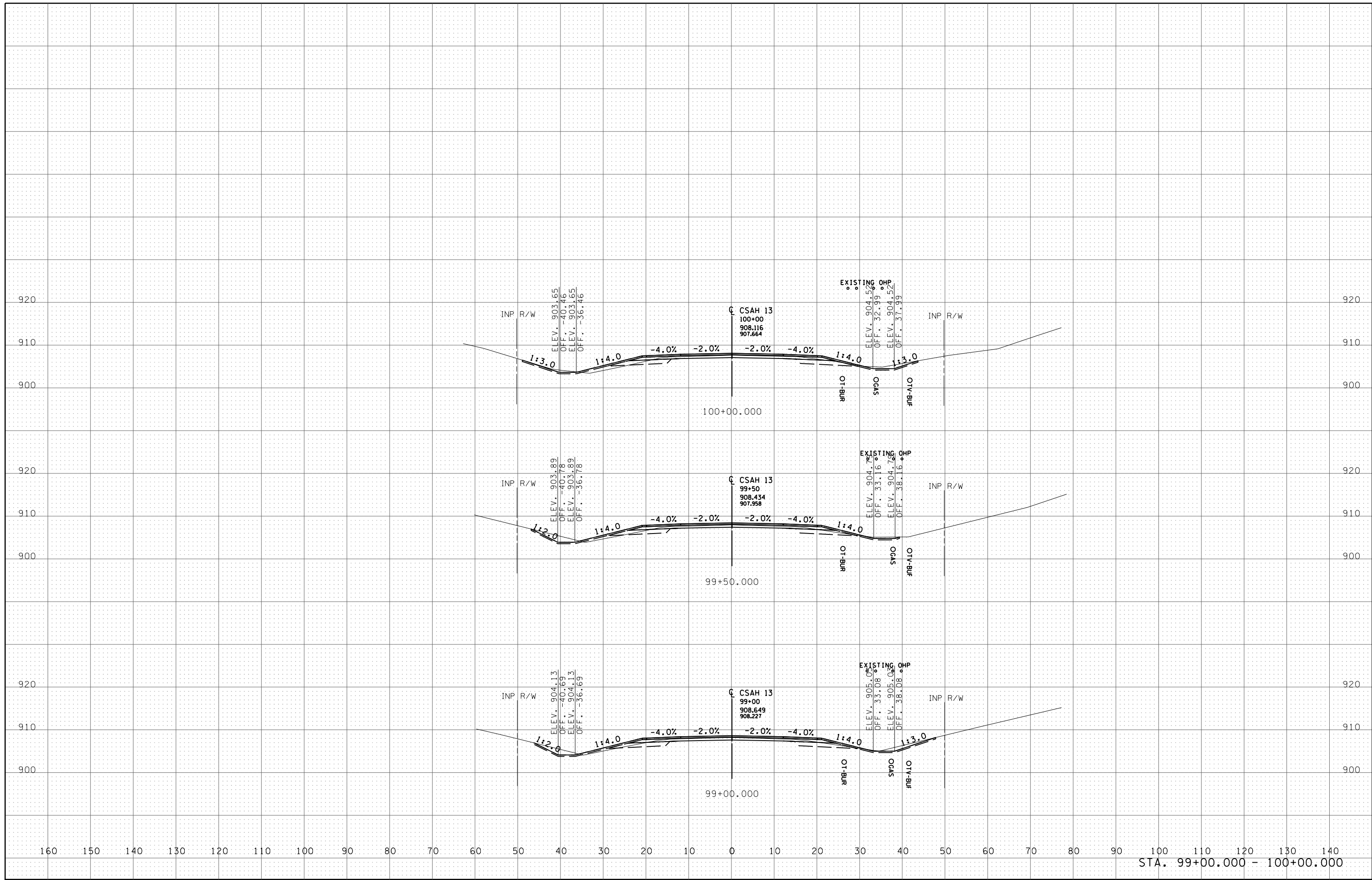
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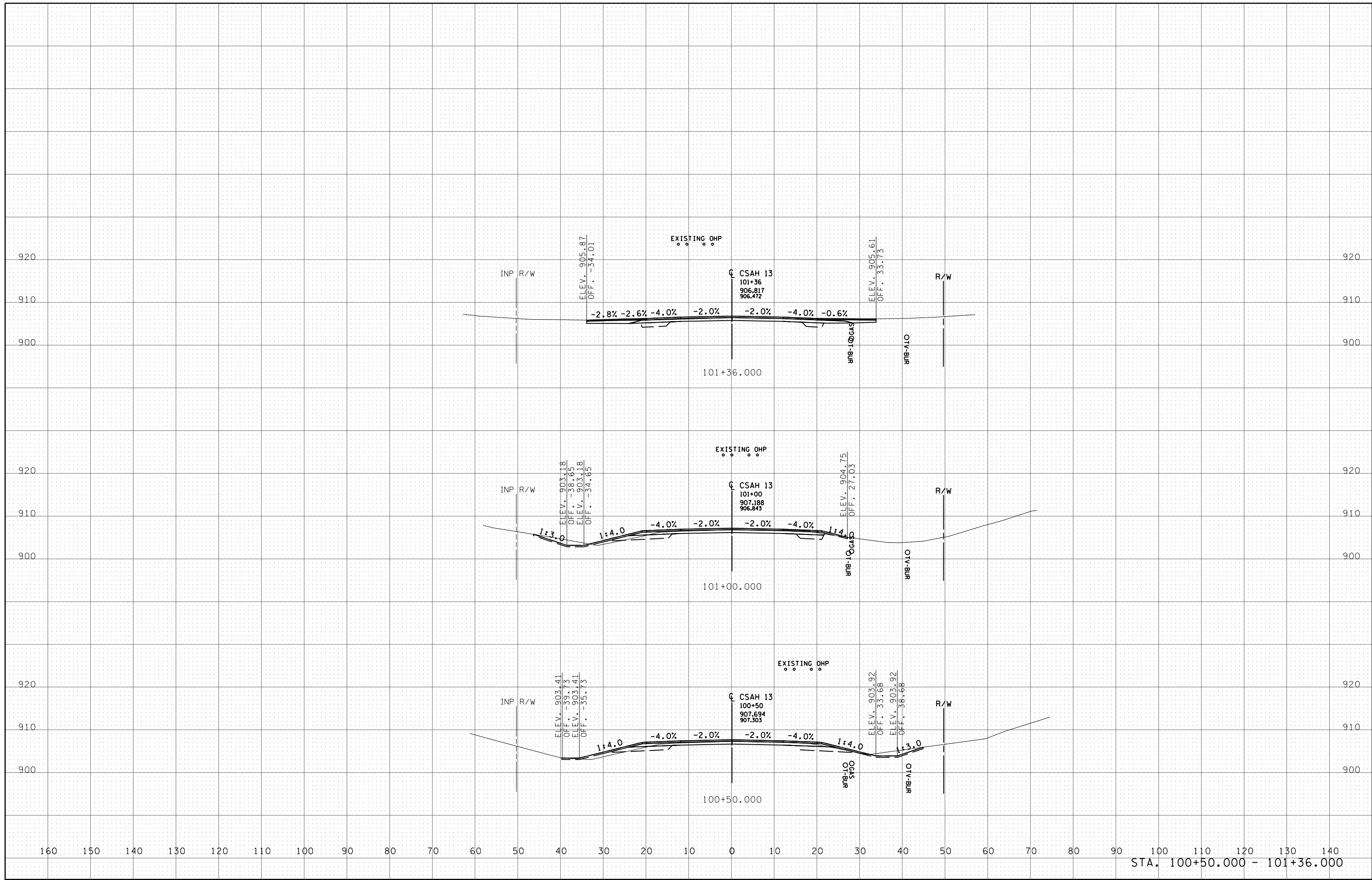
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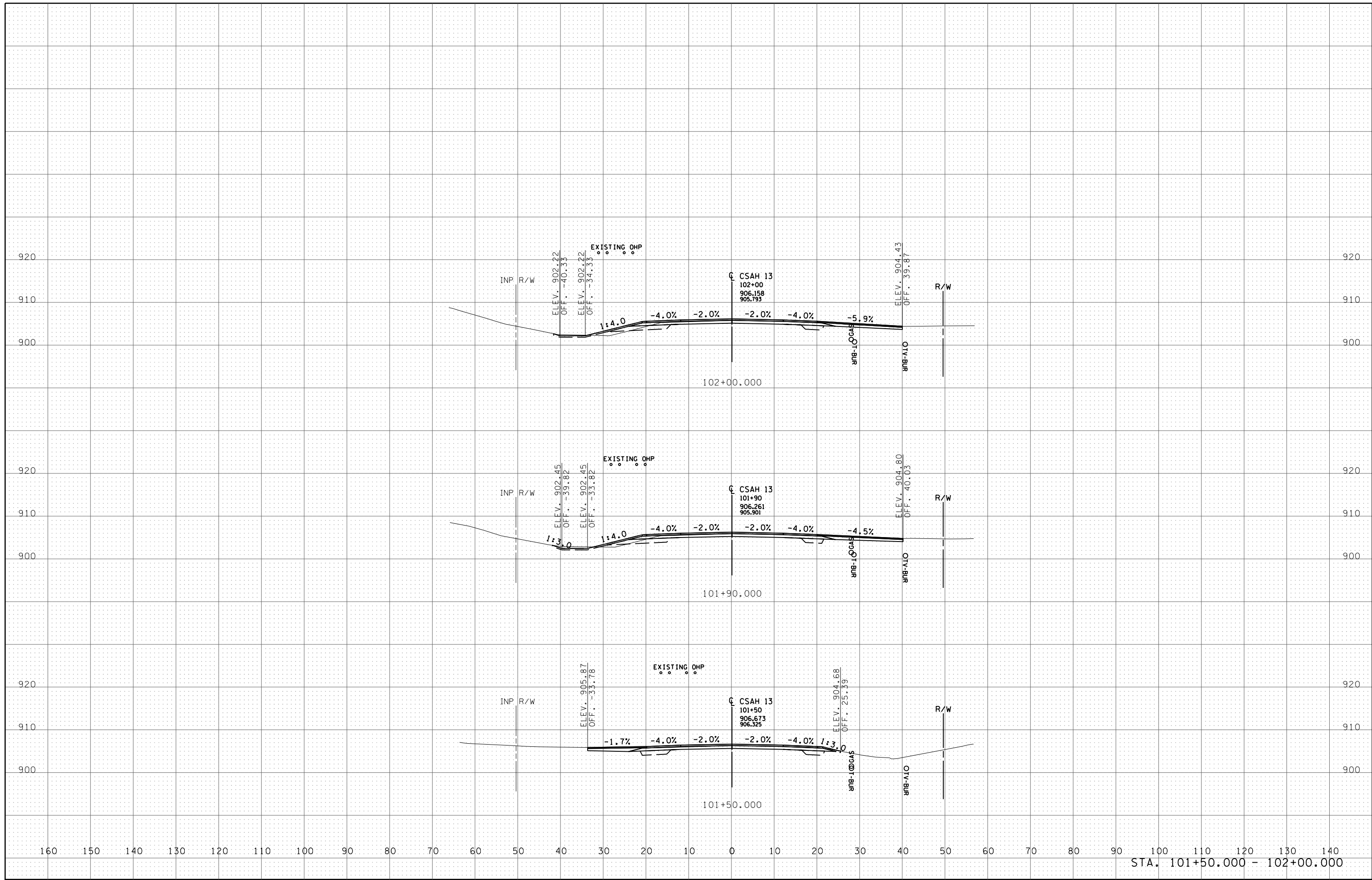
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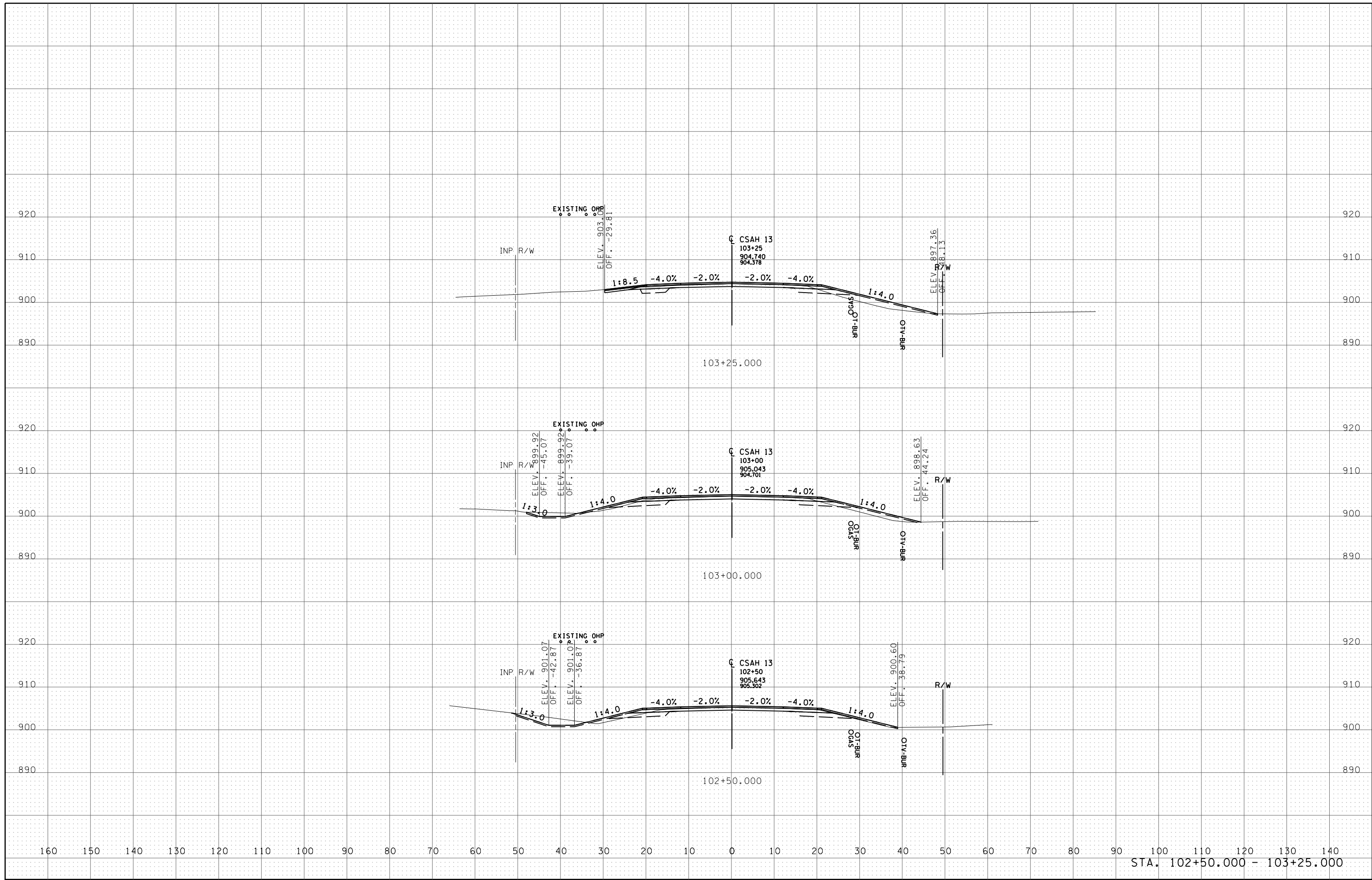
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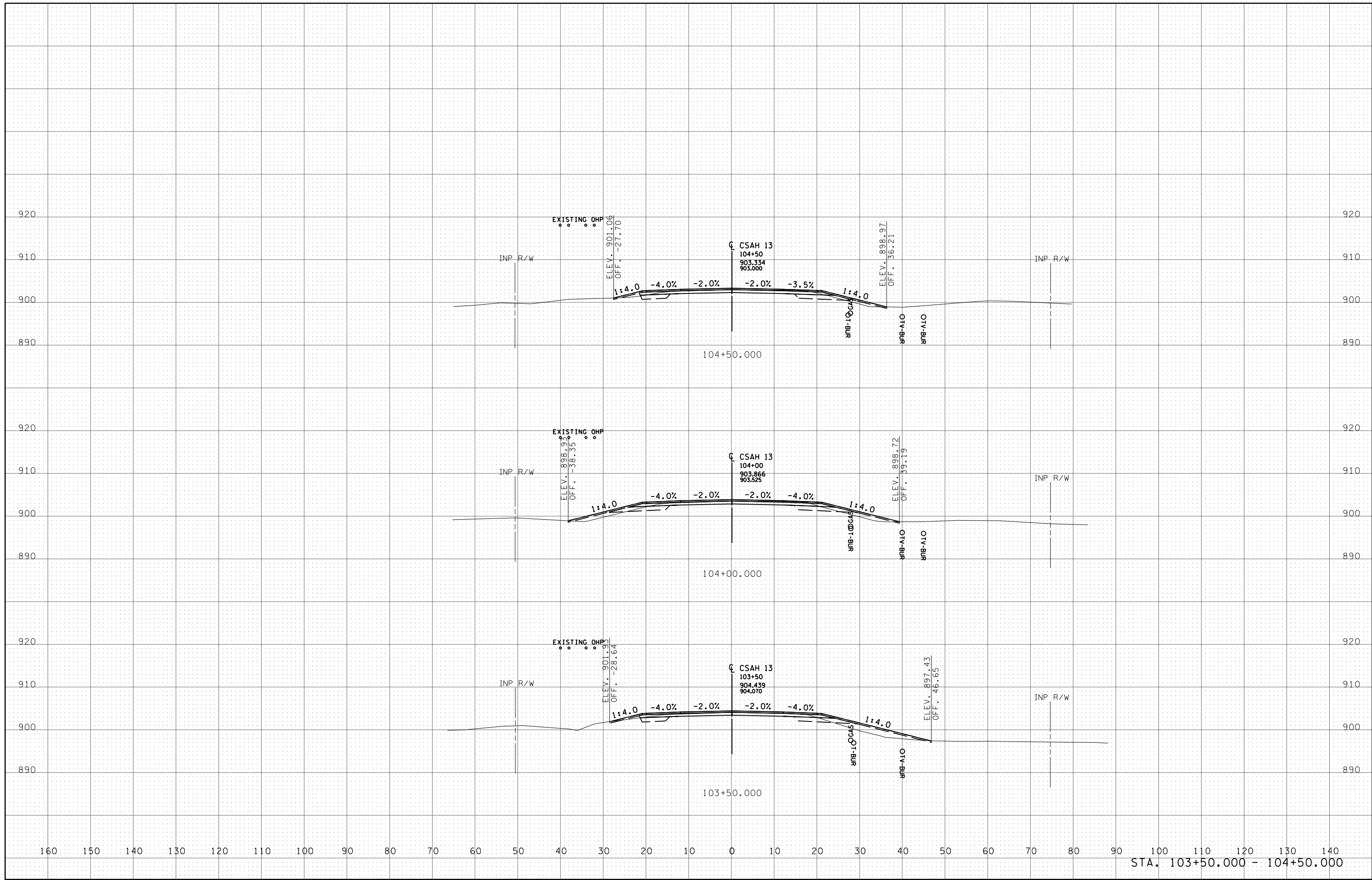


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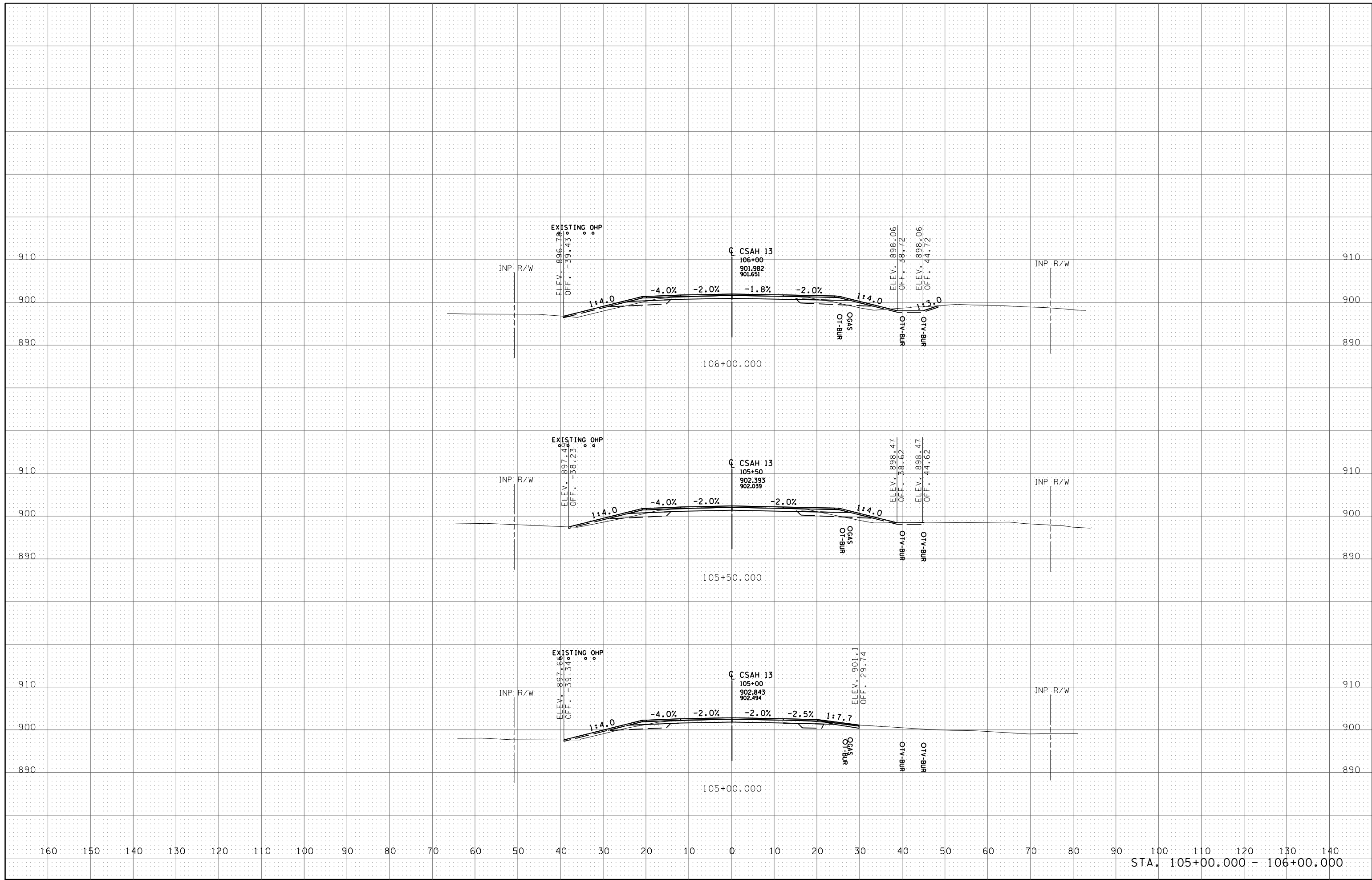


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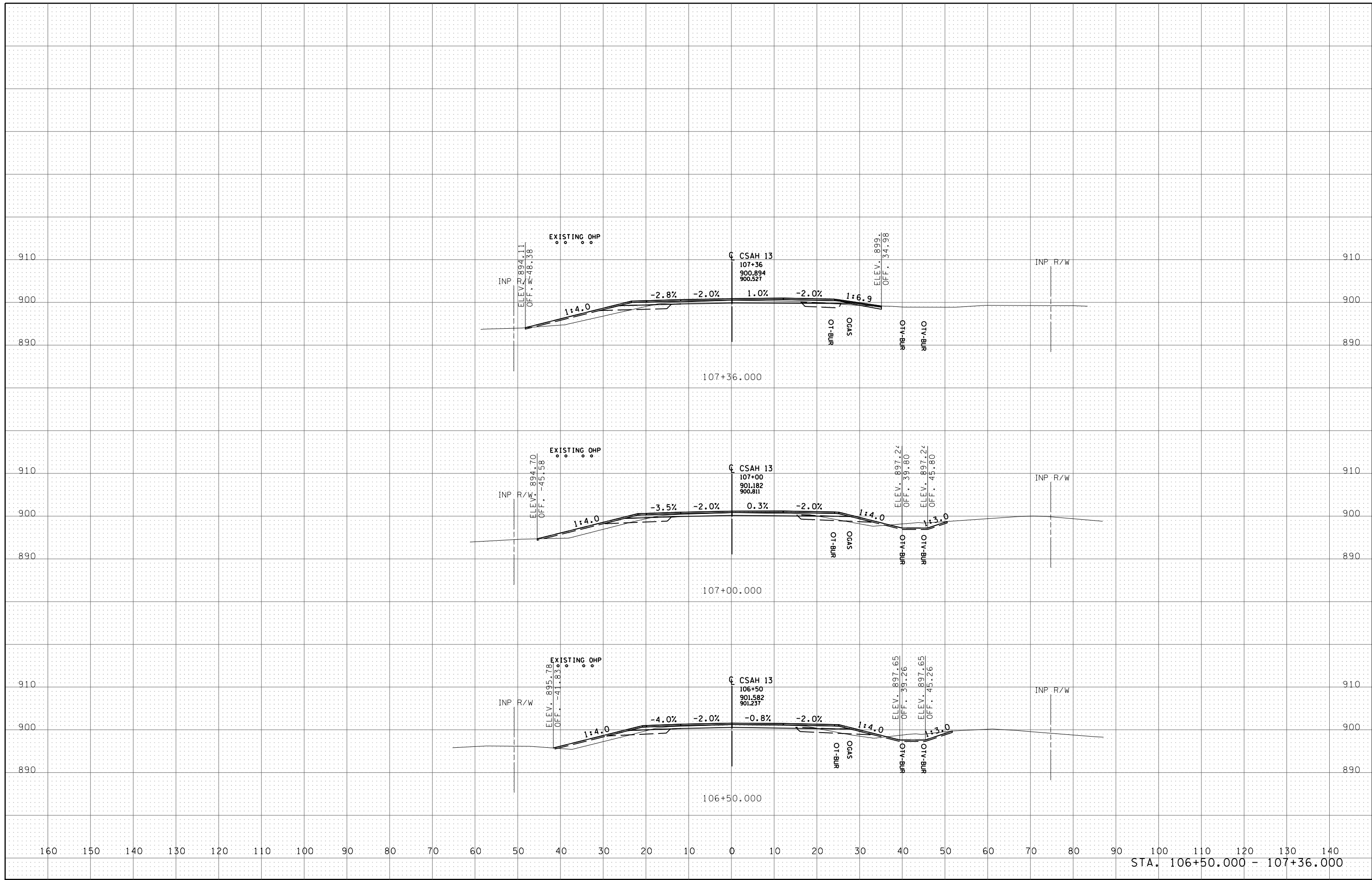
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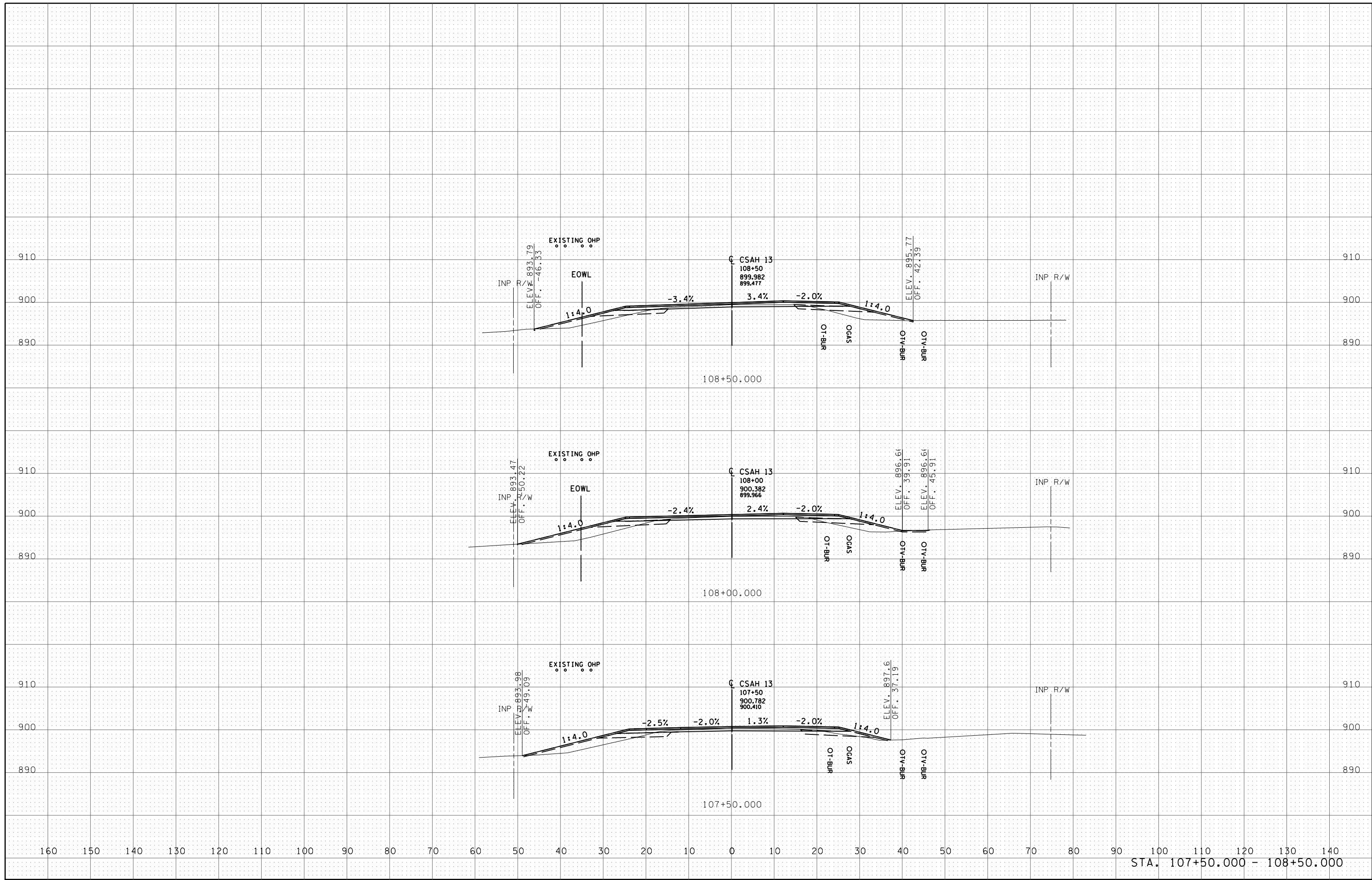
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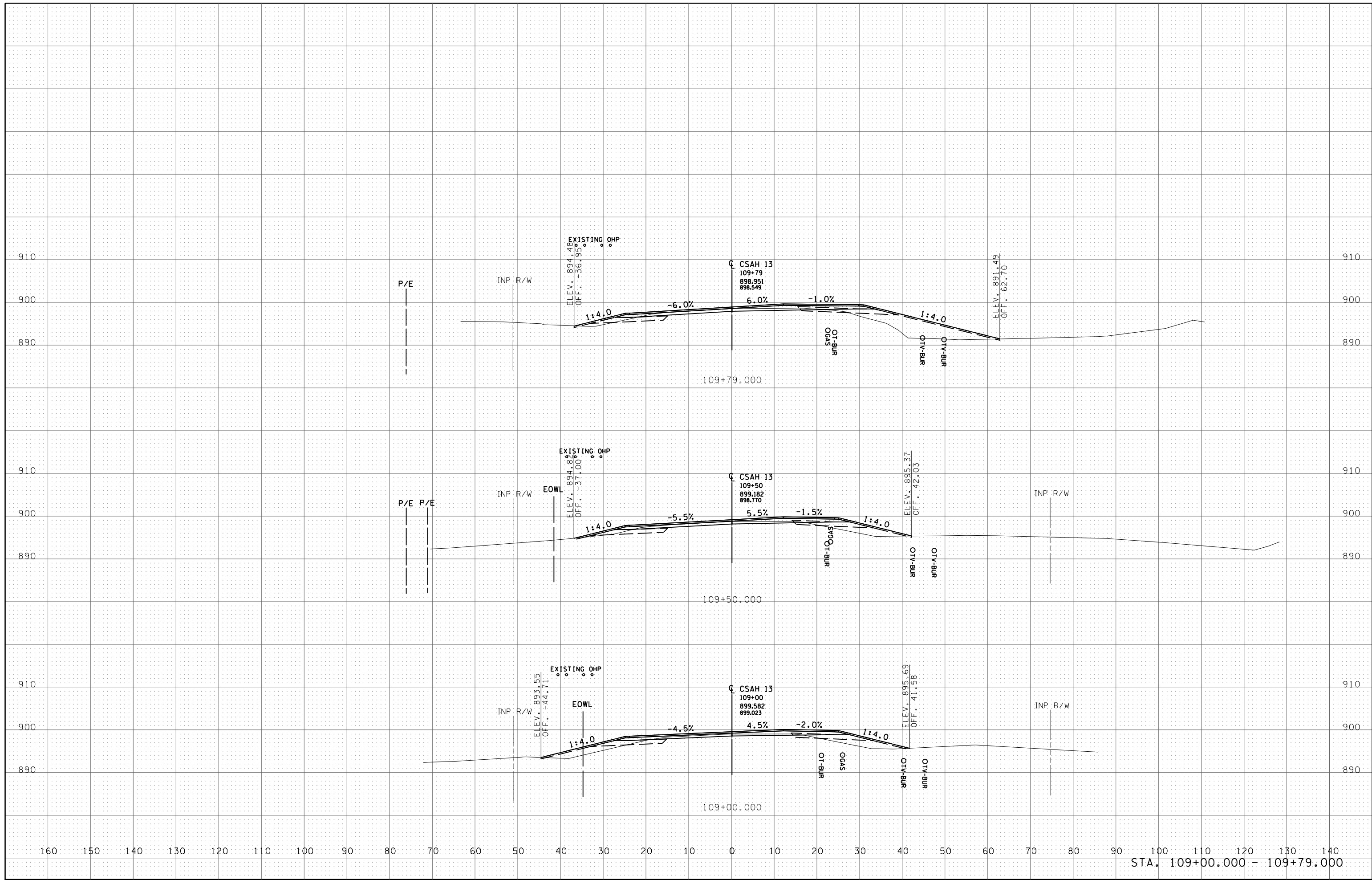
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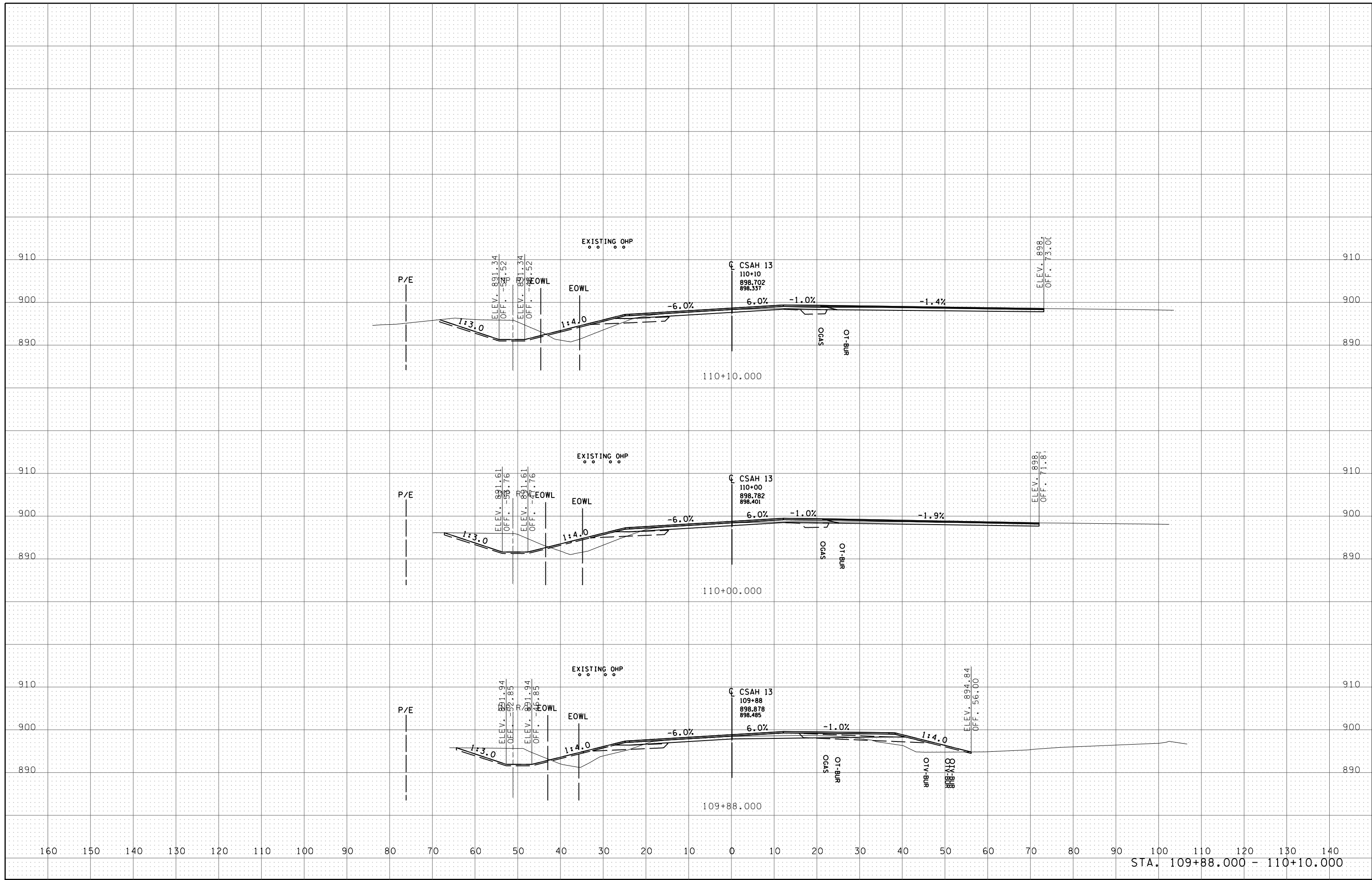
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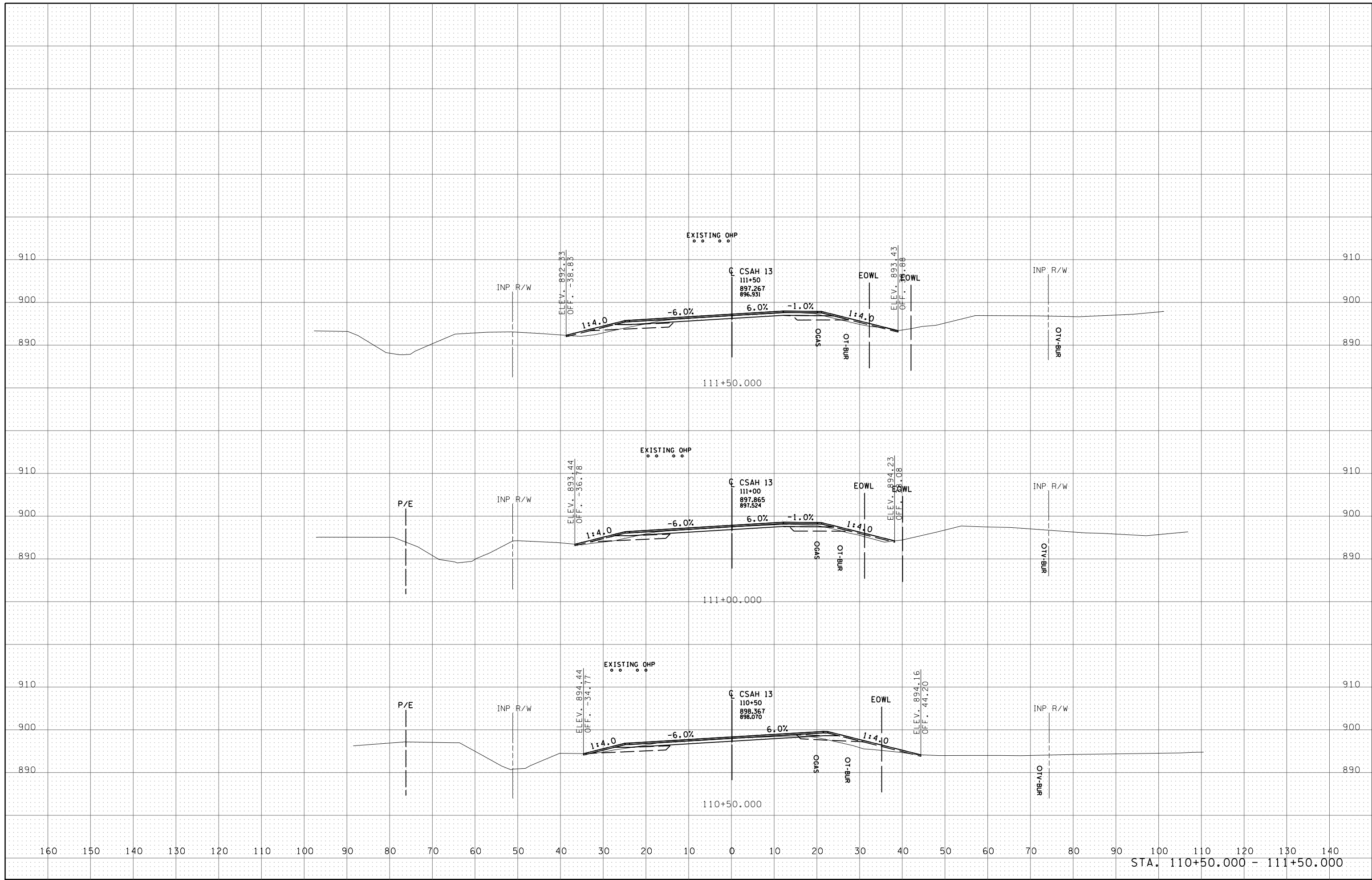
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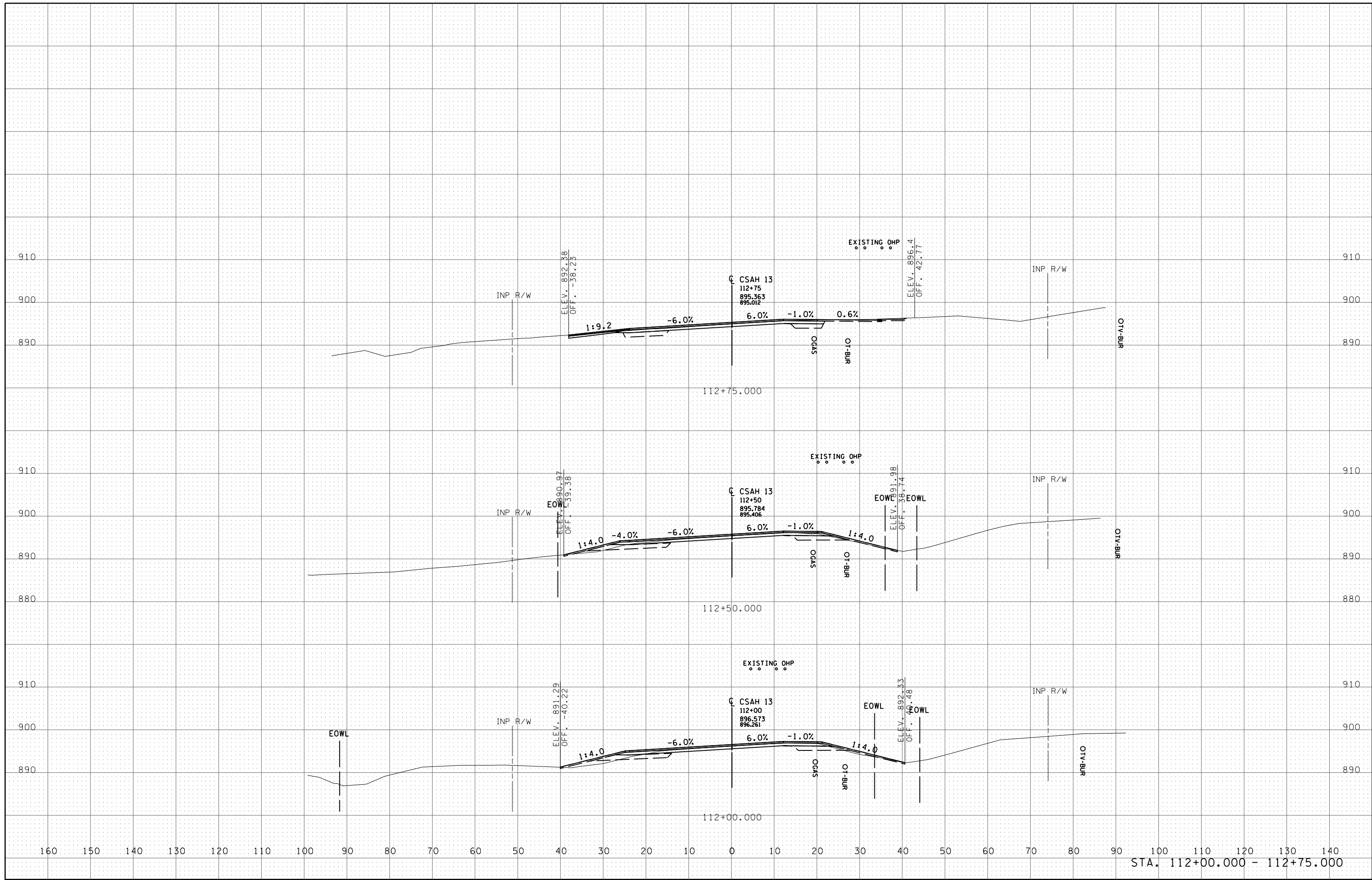
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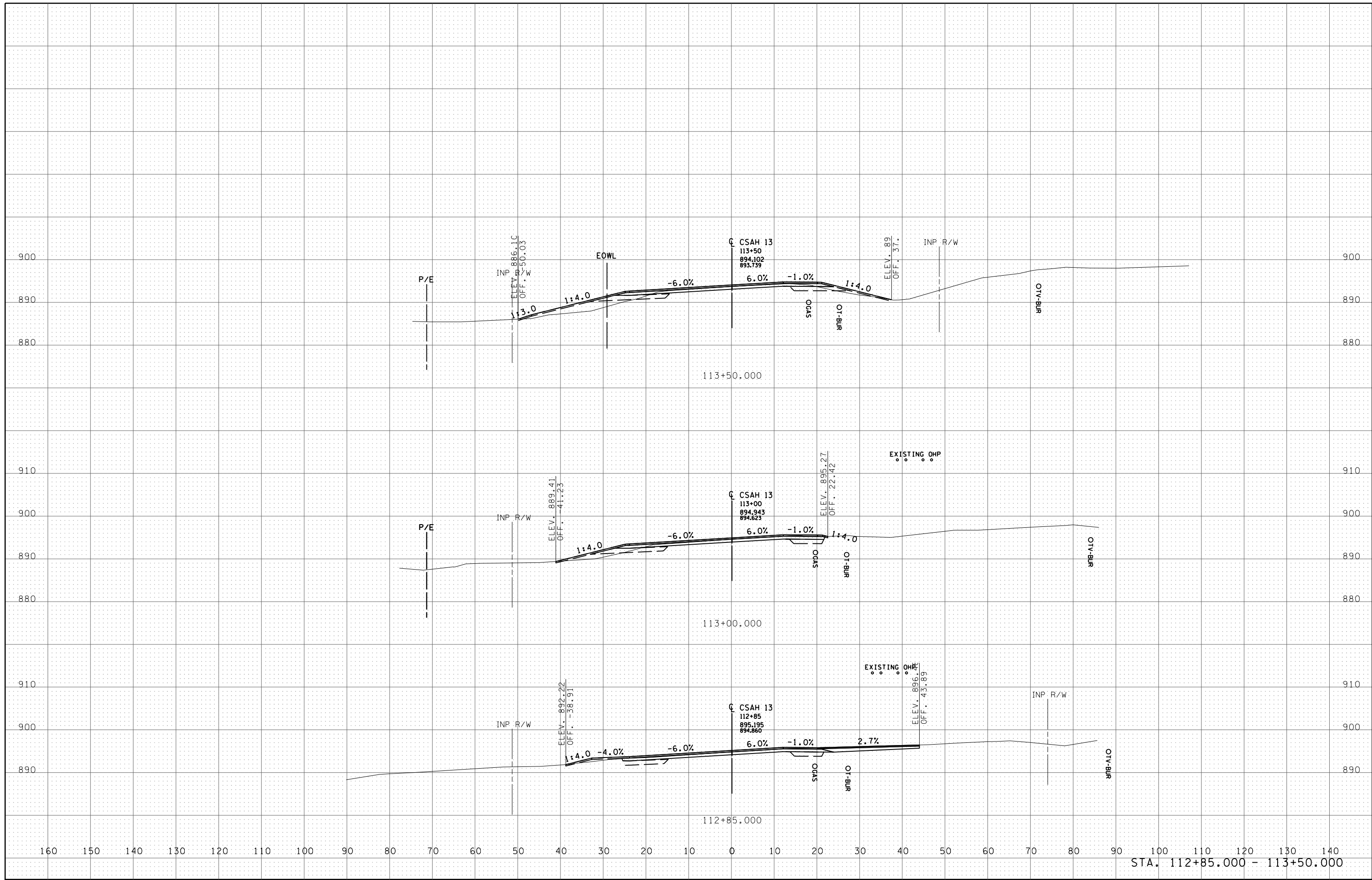
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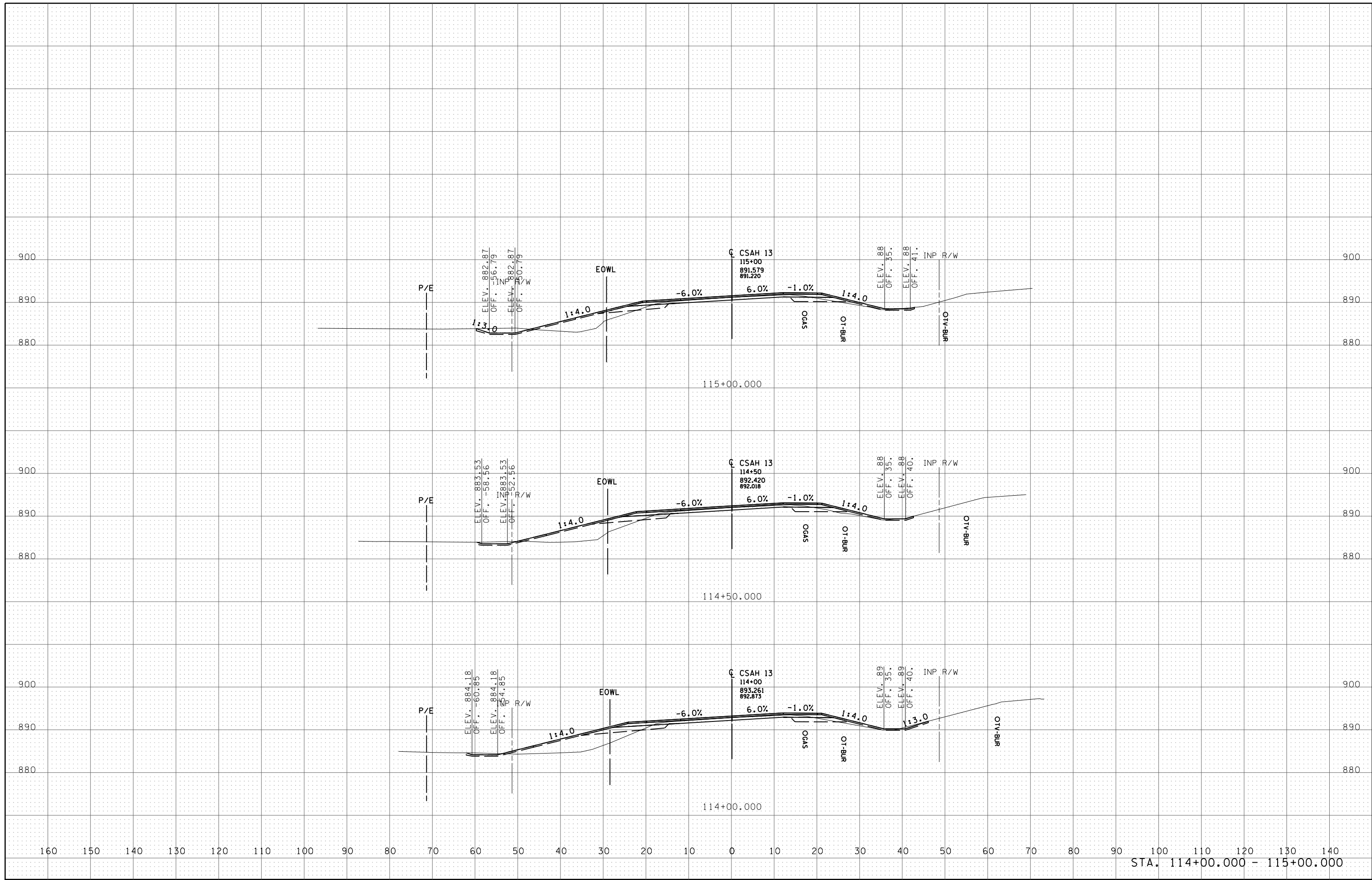
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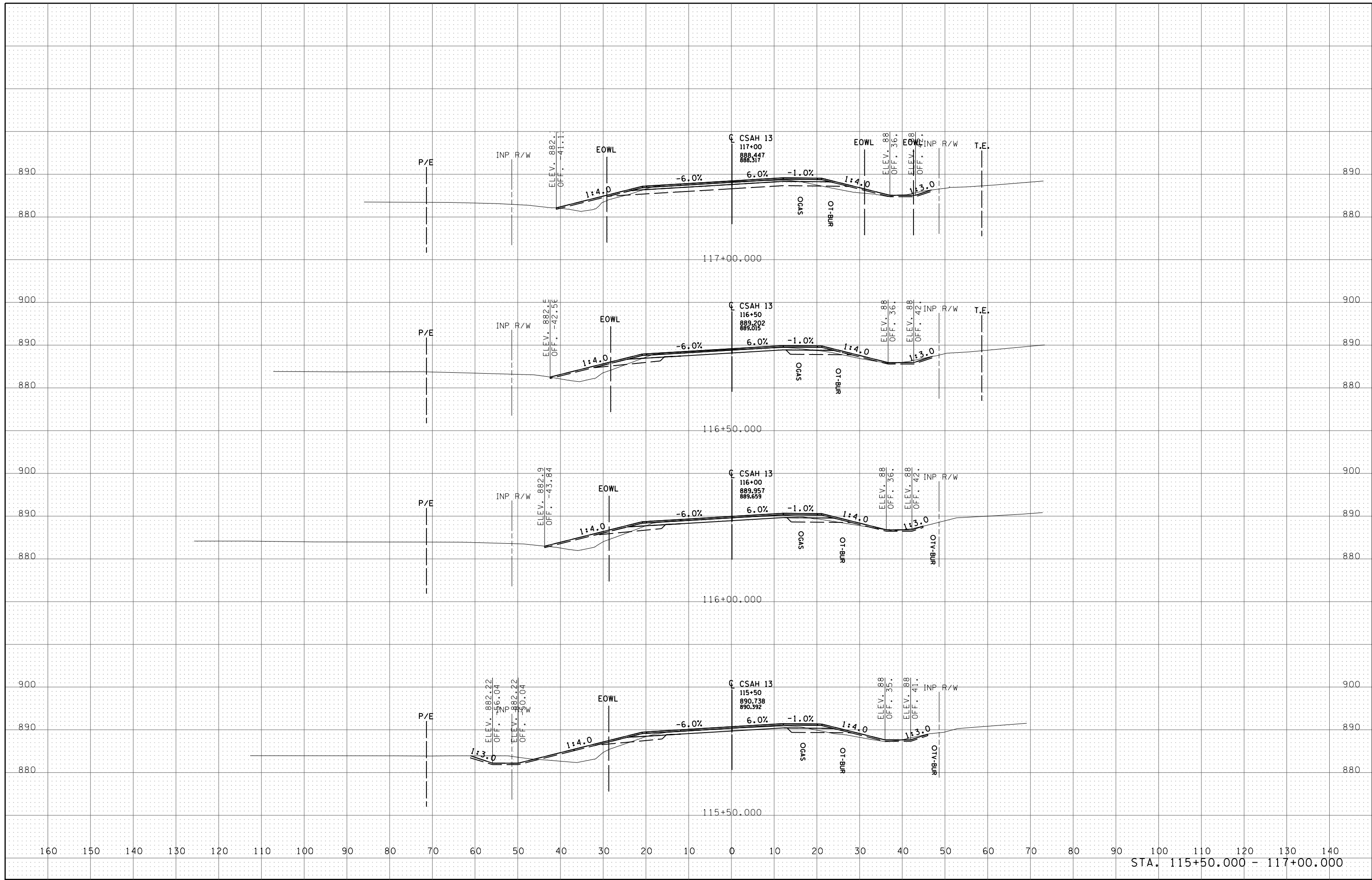
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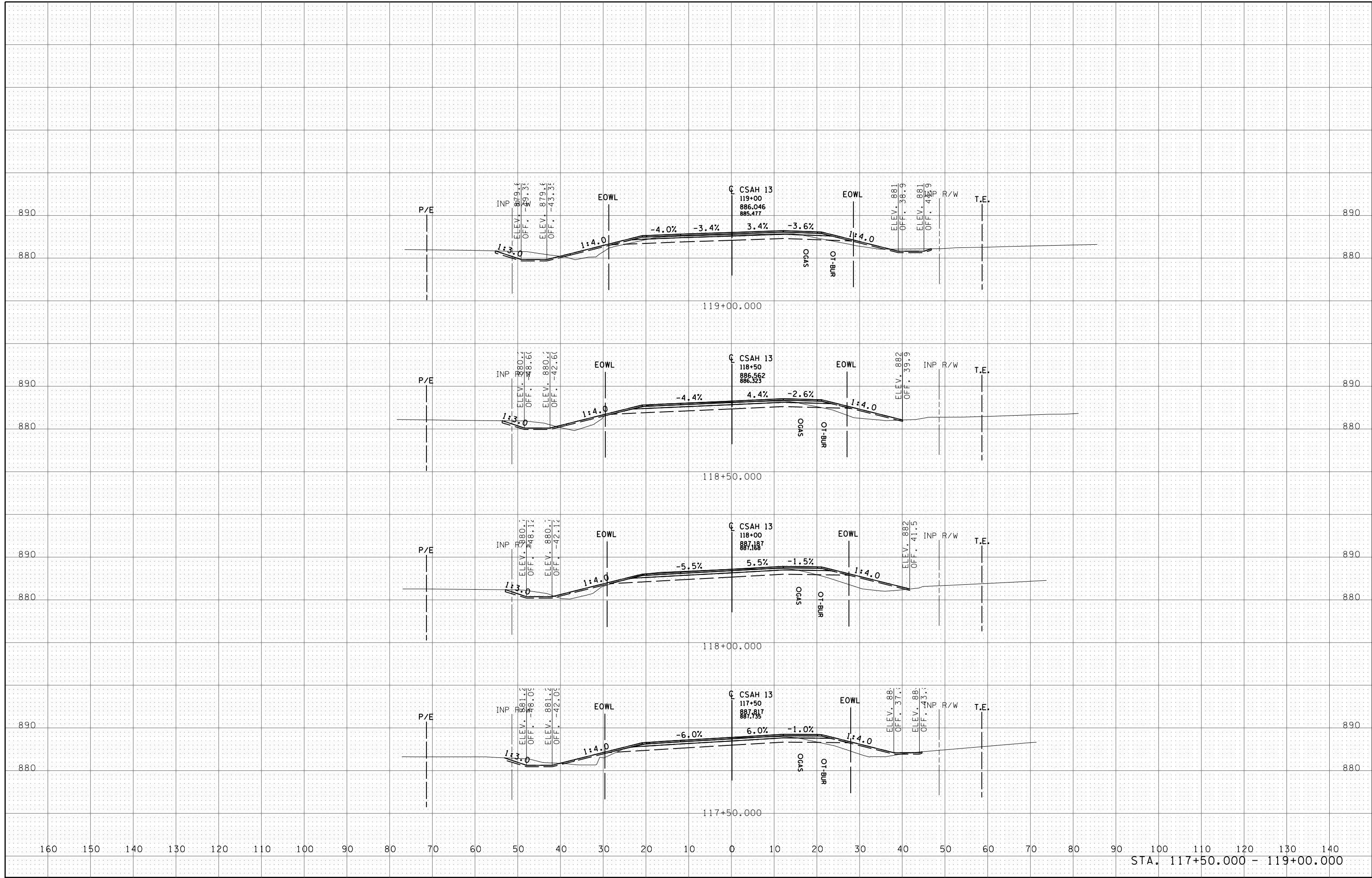
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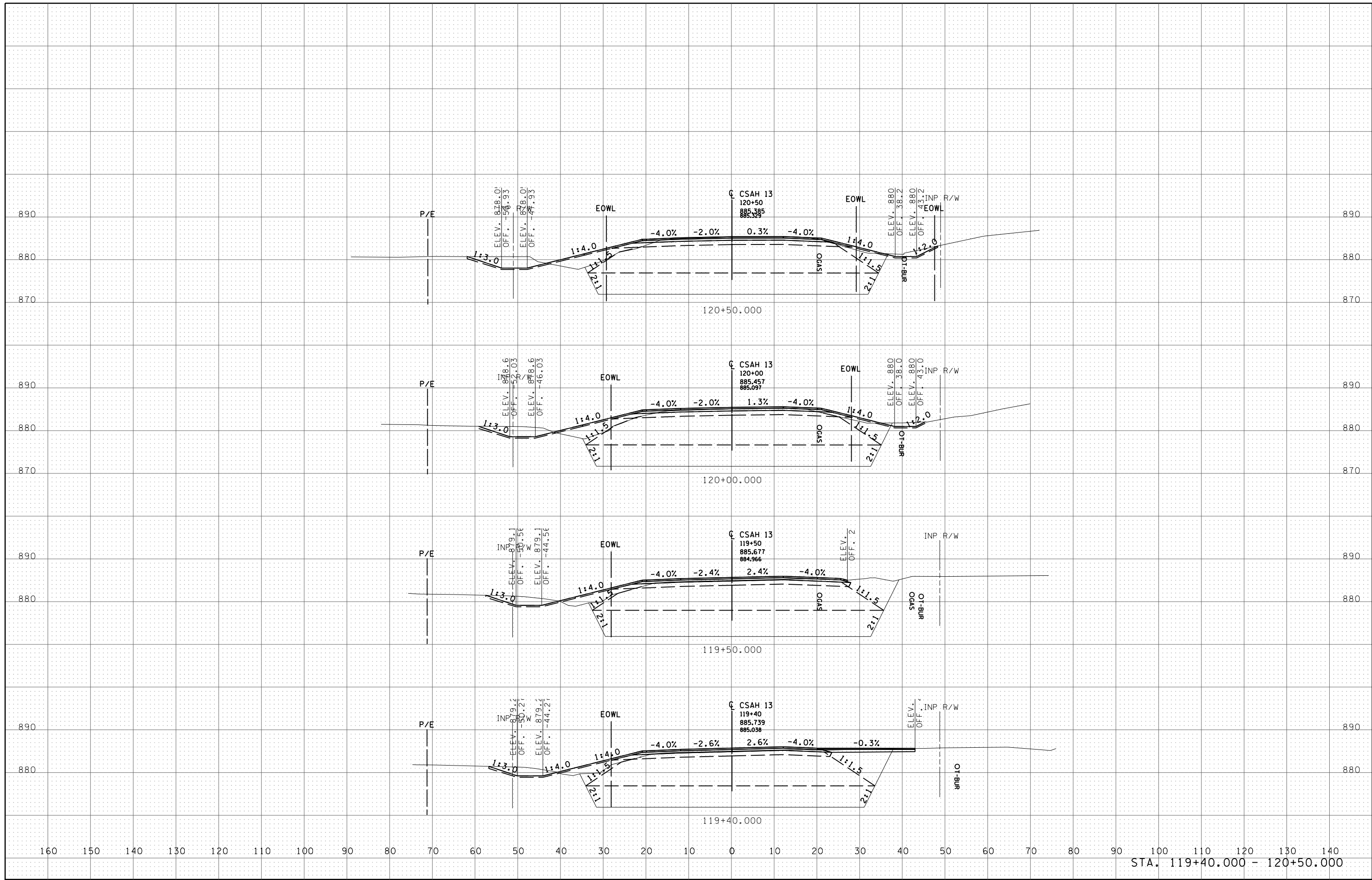
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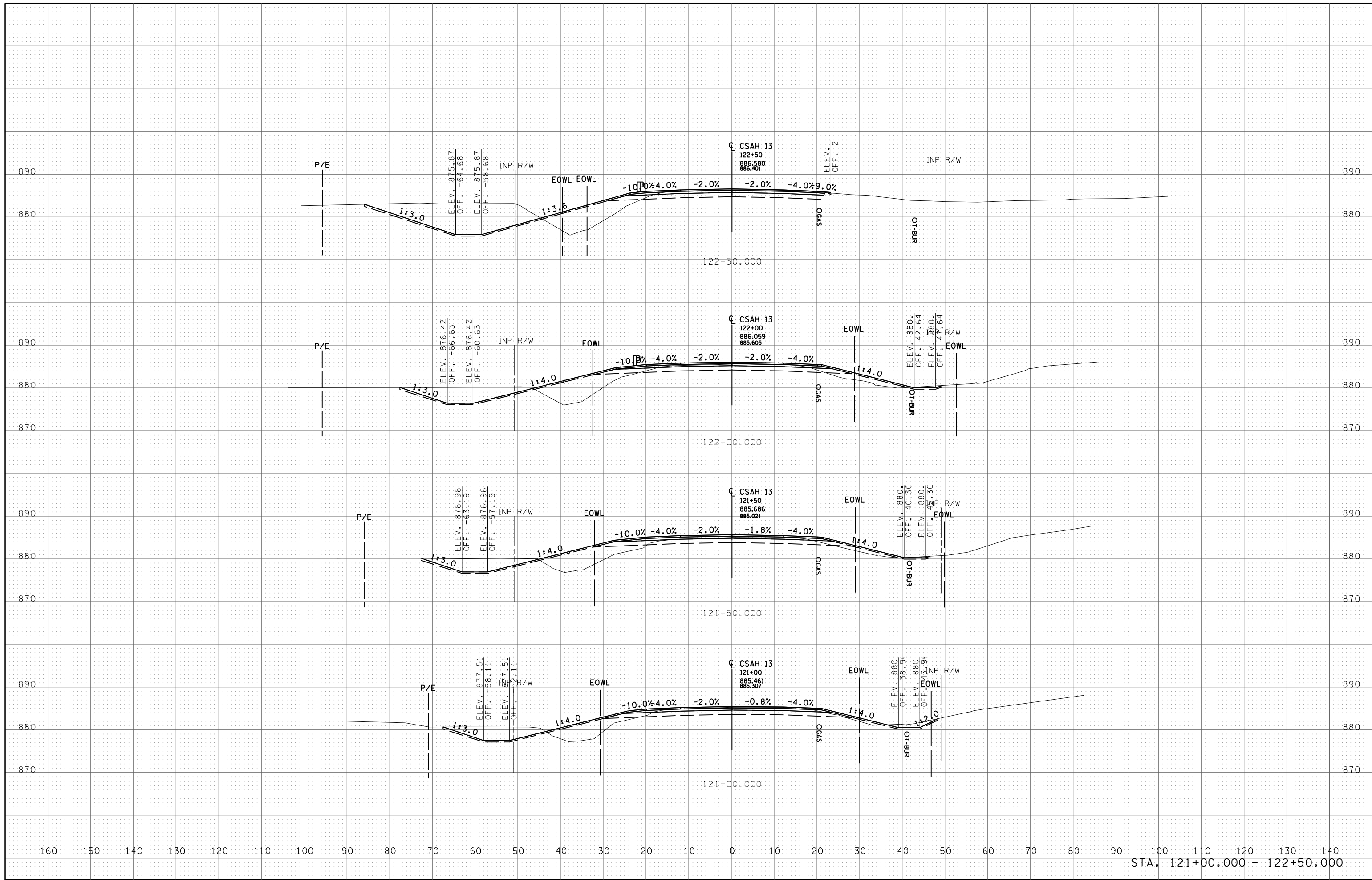
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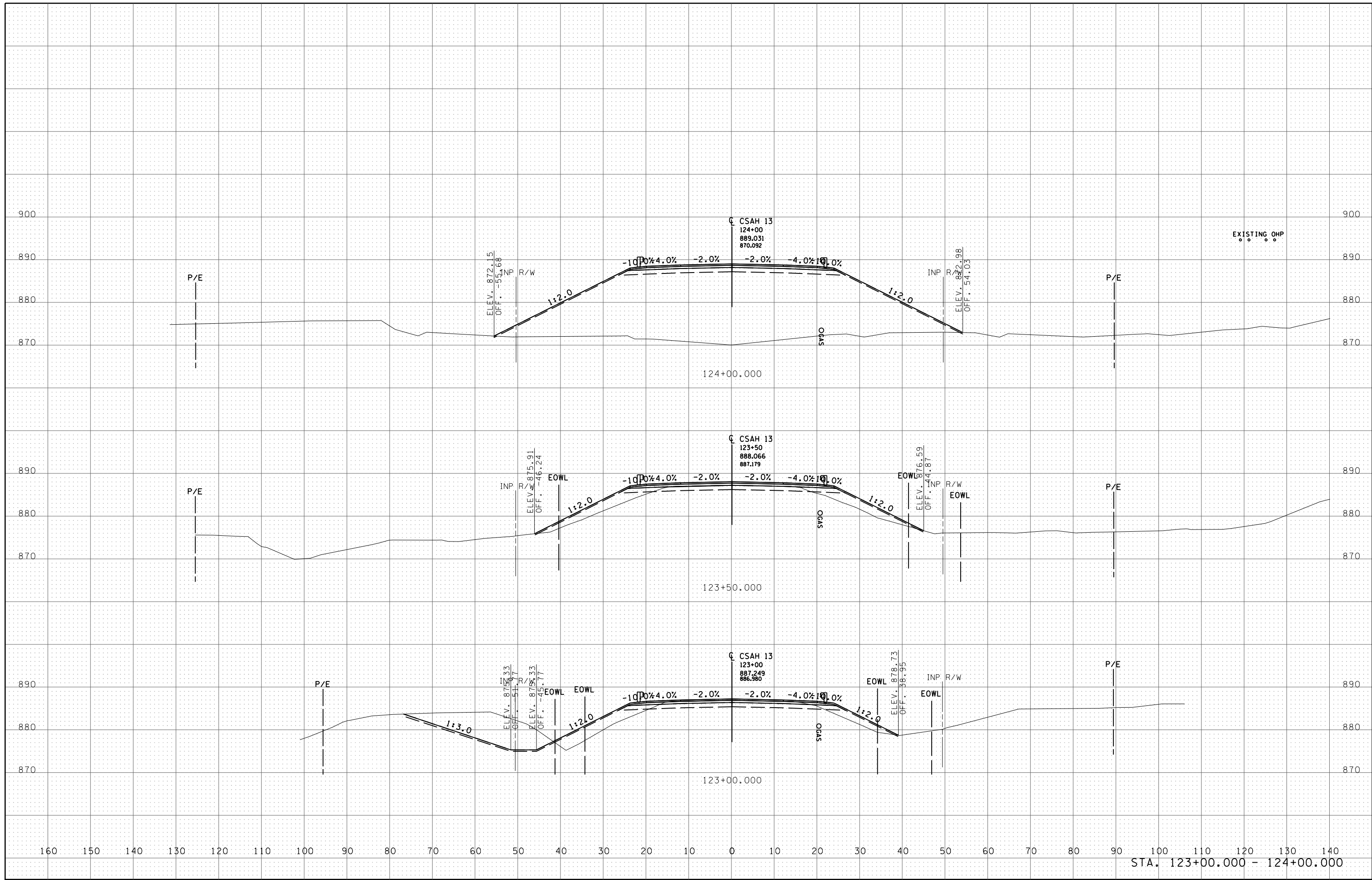
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STA. 119+40.00 - 120+50.00

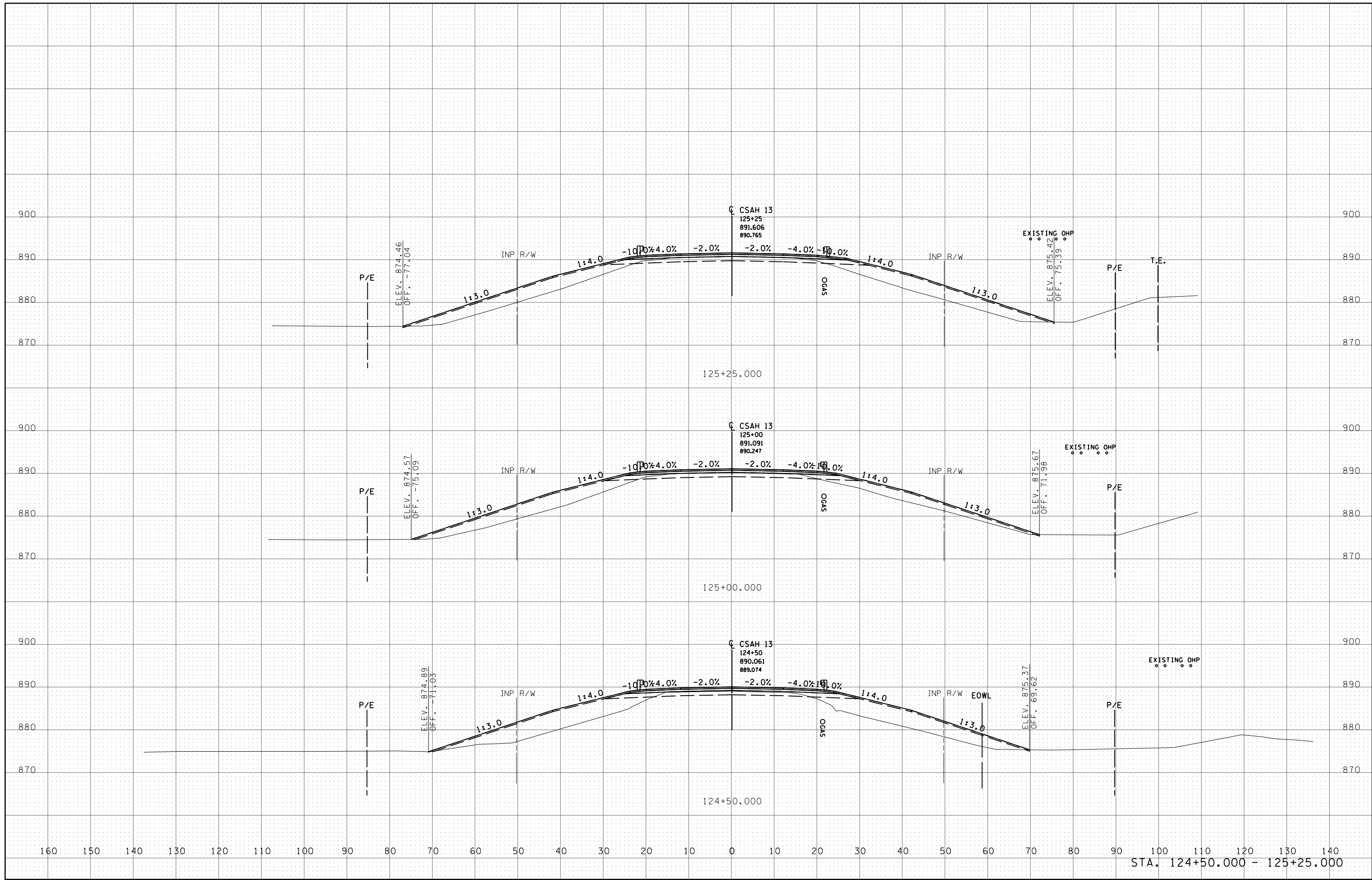


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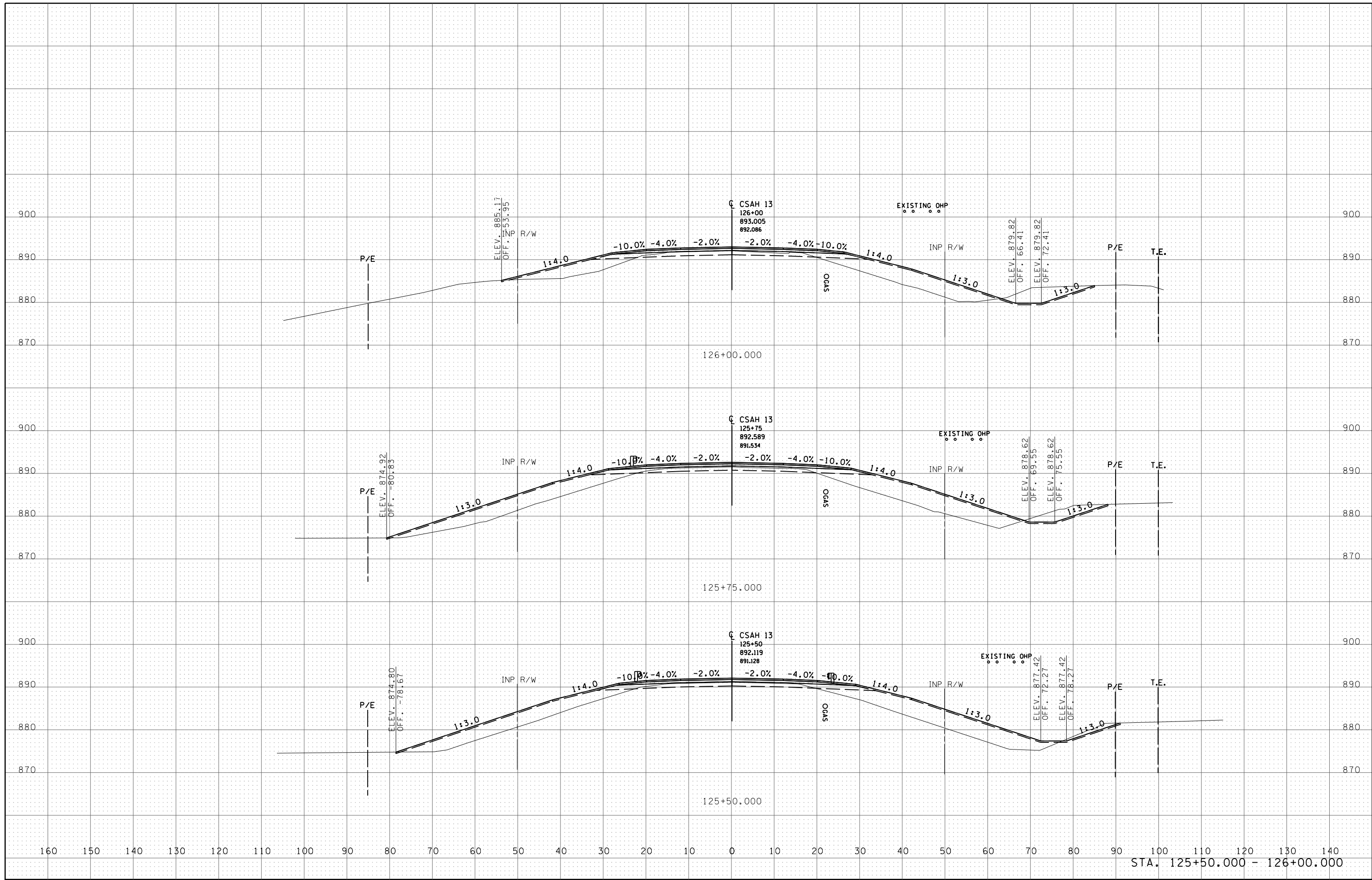


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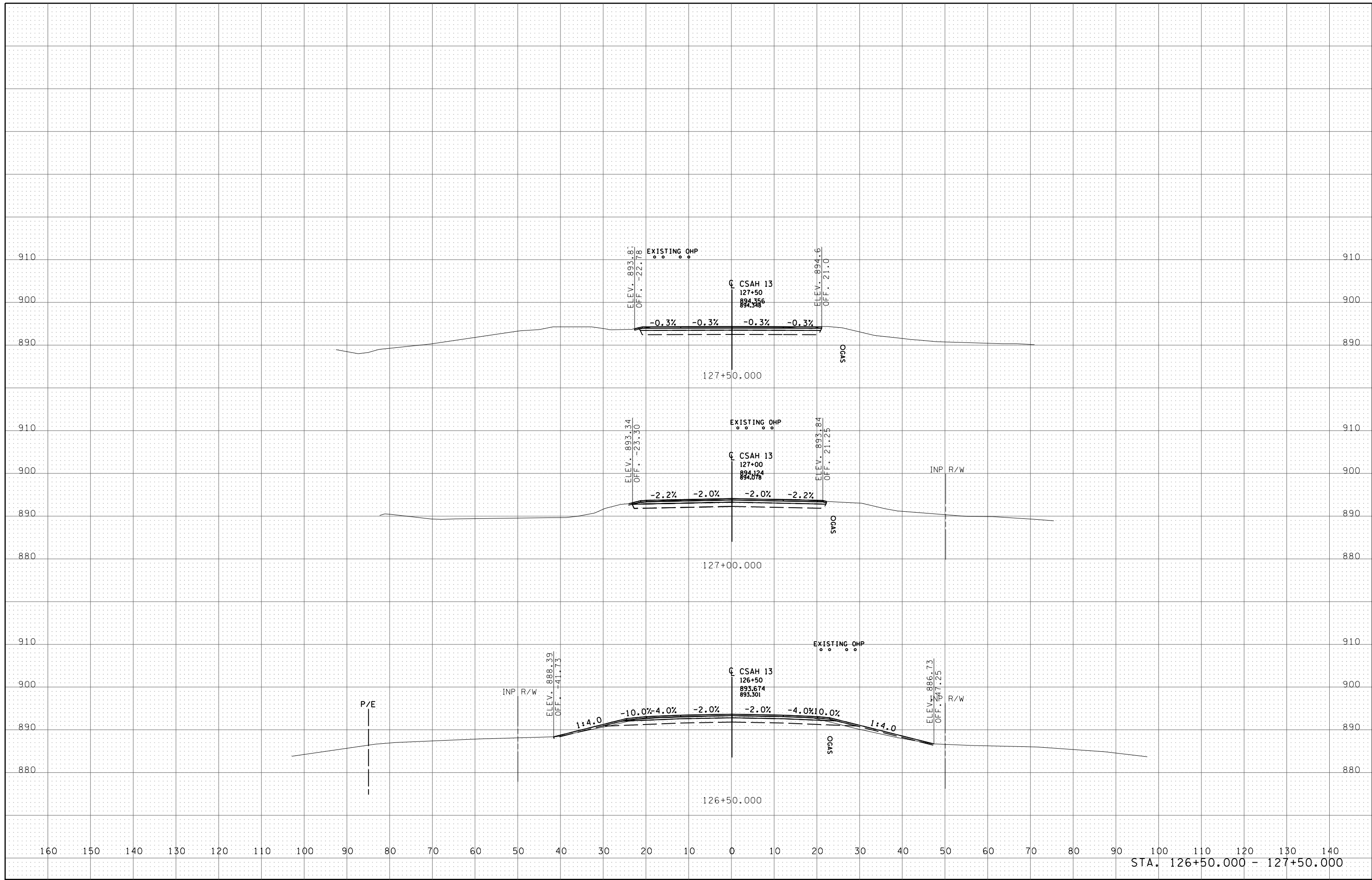
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STA. 124+50.000 - 125+25.000

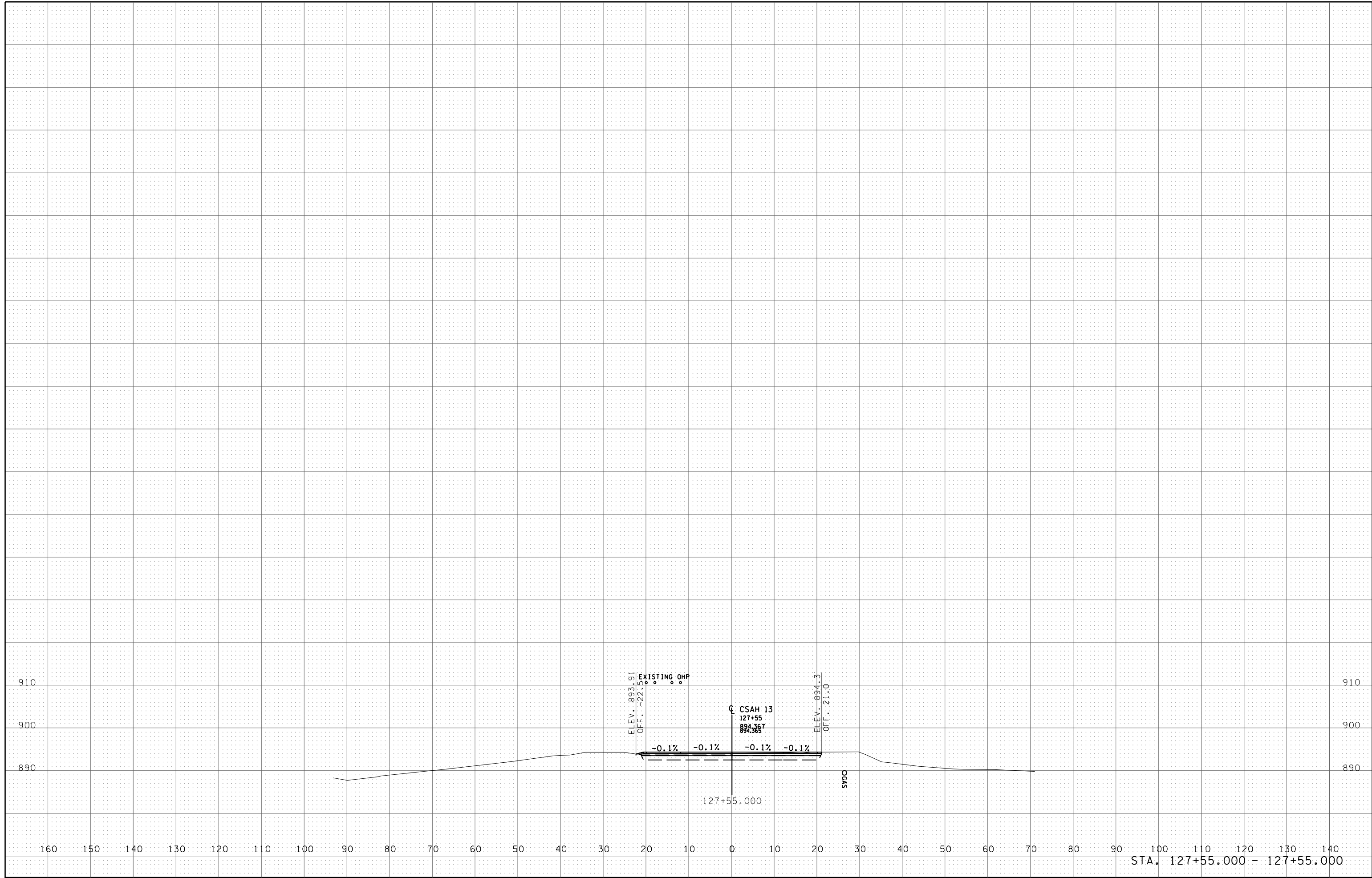


STA. 125+50.000 - 126+00.000



STA. 126+50.000 - 127+50.000

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STA. 127+55.000 - 127+55.000

DESIGN DATA

DESIGNED IN ACCORDANCE WITH 2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

HL-93 LIVE LOAD
 BARREL INSIDE WIDTH = 16'-0"
 BARREL INSIDE HEIGHT = 12'-0"
 BARREL LENGTH = 65'-0"
 EST. MIN. FILL DEPTH (A) = 4.9'
 EST. MAX. FILL DEPTH (B) = 6.3'
 SKEW ANGLE = 0°

DESIGN SPEED = 55 MPH
 CURRENT ADT (2019) = 1870
 PROJECTED ADT (2039) = 3070

HL-93 LRFR
 BRIDGE OPERATING RATING FACTOR RF = 1.30

LIST OF SHEETS

NO.	DESCRIPTION
B1	GENERAL PLAN AND ELEVATION
B2 - B4	BRIDGE STANDARD PLANS
B5	BRIDGE MISCELLANEOUS DETAILS
B6	BRIDGE SURVEY
B7	BRIDGE SURVEY PLAN AND PROFILE
B8	BORING INFORMATION

CONSTRUCTION NOTES:

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

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

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

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

REFER TO TITLE SHEET FOR THE SUBSURFACE UTILITY INFORMATION.



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

SIGNED: *[Signature]* DATE 01-29-2019

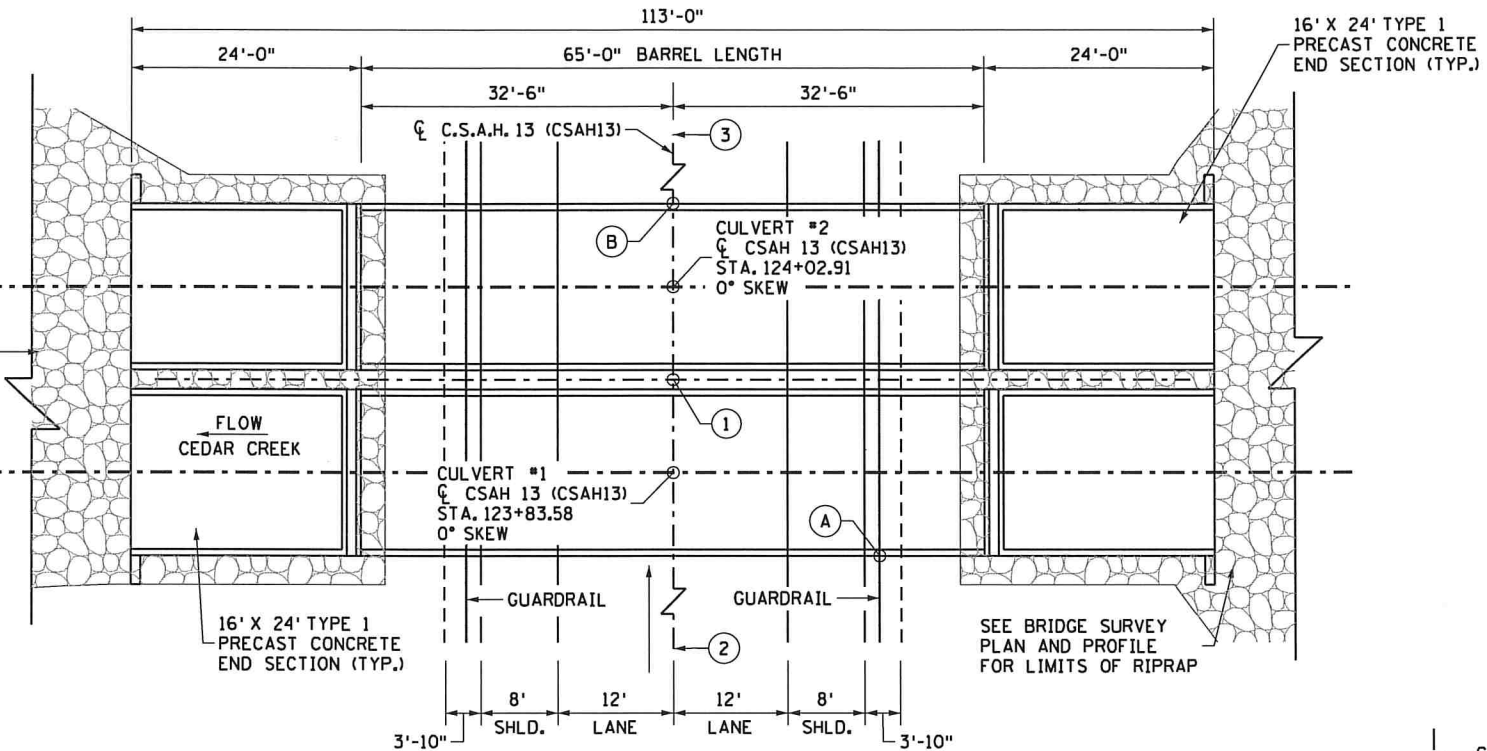
NAME: RYAN R. EVANS LIC NO. 53920

APPROVED: *[Signature]* 2/15/19
 ANOKA COUNTY DATE

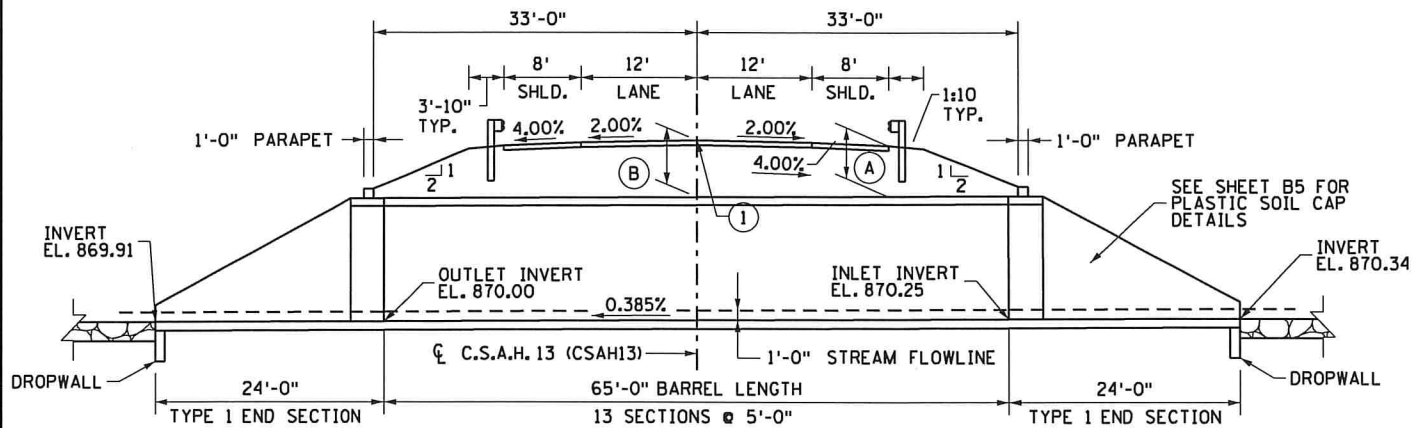
BRIDGE NO. 02J51
 LOCATED IN THE CITY OF OAK GROVE MN.
 0.7 MI NORTH OF C.S.A.H. 22
 ON C.S.A.H. 13
 16'x12' CONCRETE BOX CULVERT

IDENTIFICATION NO. 513
GENERAL PLAN AND ELEVATION

SEC. 24 T 33 N R 24 W
 ANOKA COUNTY



GENERAL PLAN - DOUBLE 16'-0" X 12'-0" PRECAST CONCRETE BOX CULVERT



GENERAL ELEVATION - DOUBLE 16'-0" X 12'-0" PRECAST CONCRETE BOX CULVERT

SCHEDULE OF QUANTITIES FOR BRIDGE NO. 02J51

ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITY
2104.601	REMOVE REGULATED WASTE MATERIAL (BRIDGE)	LUMP SUM	1
2104.601	REGULATED WASTE EVALUATION	LUMP SUM	1
2105.601	DEWATERING	LUMP SUM	1
2411.507	GRANULAR BACKFILL (CV)	CU YD	2877
2411.601	STRUCTURE EXCAVATION	LUMP SUM	1
2412.502	16X12 PRECAST CONCRETE BOX CULVERT END SECTION	EACH	4
2412.503	16X12 PRECAST CONCRETE BOX CULVERT	LIN FT	130
2442.501	REMOVE EXISTING BRIDGE	LUMP SUM	1
2451.507	FINE AGGREGATE BEDDING (CV)	CU YD	182
2511.507	RANDOM RIPRAP CLASS IV	CU YD	892

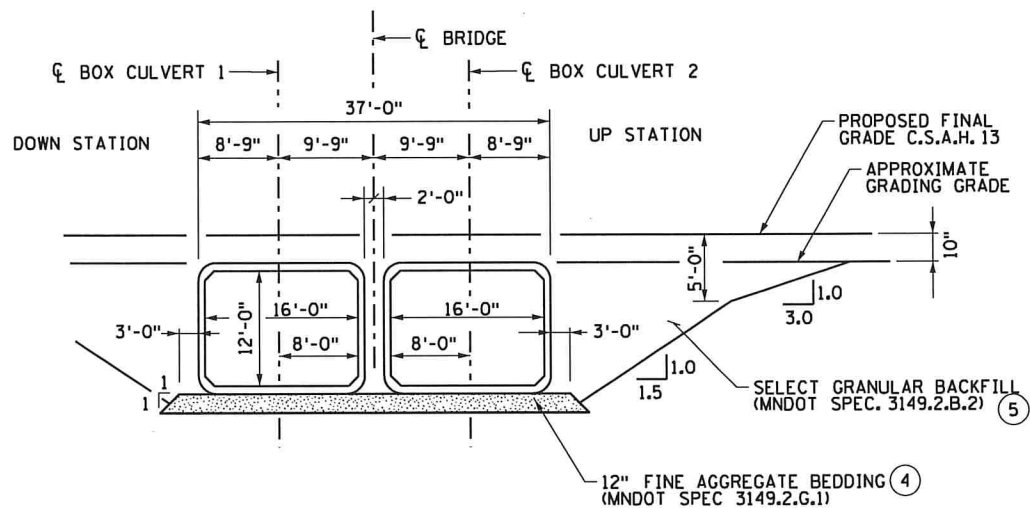
NOTES:

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

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

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

CONTRACTOR SHALL FURNISH A REGULATED WASTE ASSESSMENT PRIOR TO BRIDGE DEMOLITION - SEE SPECIAL PROVISIONS. PRESENCE OF TREATED WOOD (AND OTHER REGULATED MATERIALS TYPICALLY PRESENT ON SIMILAR STRUCTURES) SHALL BE ANTICIPATED AND INCLUDED IN THE PRICE BID FOR 'REMOVE REGULATED WASTE MATERIAL (BRIDGE)'. UNEXPECTED MATERIALS ENCOUNTERED SHALL BE PAID AS EXTRA WORK AS OUTLINED IN THE SPECIAL PROVISIONS.



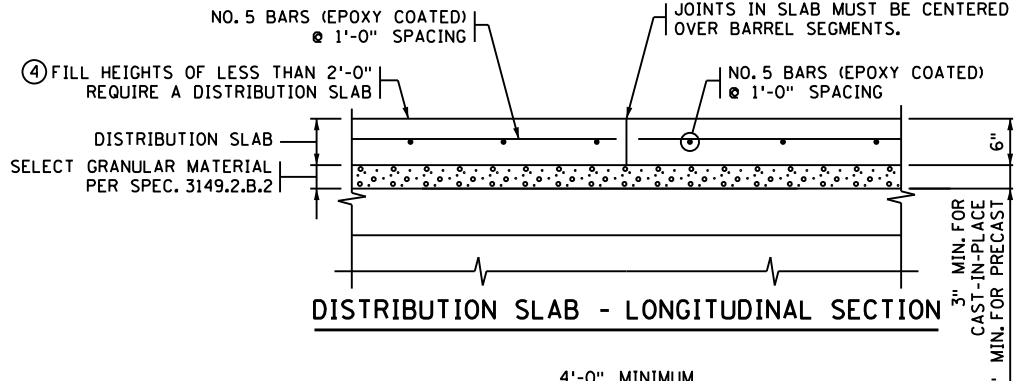
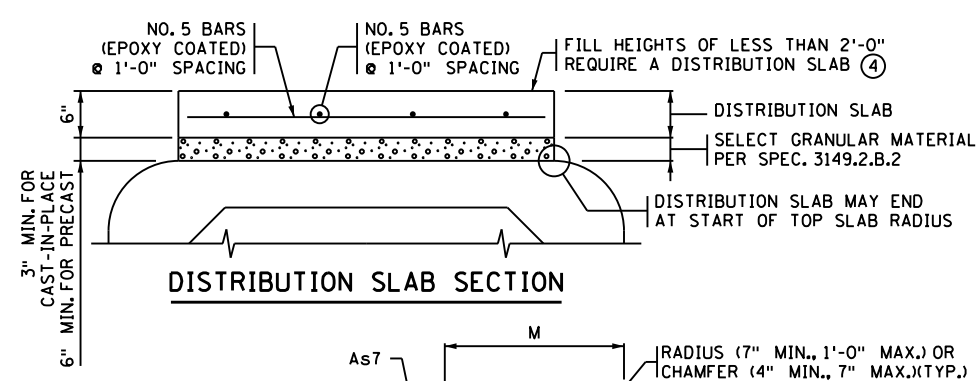
TYPICAL SECTION

④ FIELD GEOTECHNICAL ENGINEER SHALL OBSERVE AND CONFIRM THE COMPETENCY OF THE SOILS IN THE ENTIRE EXCAVATION BOTTOM PRIOR TO NEW FILL PLACEMENT FOR CULVERT SUPPORT. BURIED TOPSOIL OR SWAMP DEPOSITS SHALL BE REMOVED FROM BELOW THE CULVERT AS DIRECTED BY THE FIELD GEOTECHNICAL ENGINEER. IF APPROVED BY THE ENGINEER, IN WET CONDITIONS THE CONTRACTOR MAY SUBSTITUTE 18" OF COARSE FILTER AGGREGATE PER 3149.2.H COMPACTED TO THE QUALITY COMPACTION REQUIREMENTS OF SPEC. 2211.3.D.2.b. WRAP WITH GEOTEXTILE FABRIC TYPE IV PER SPEC. 3733. SEAM ALL FABRIC SIDES AND ENDS PER SPEC TABLE 3733-1 INCLUDING FOOTNOTE (e) OR OVERLAP A MINIMUM OF 3 FT. ALL AT NO ADDITIONAL COST.

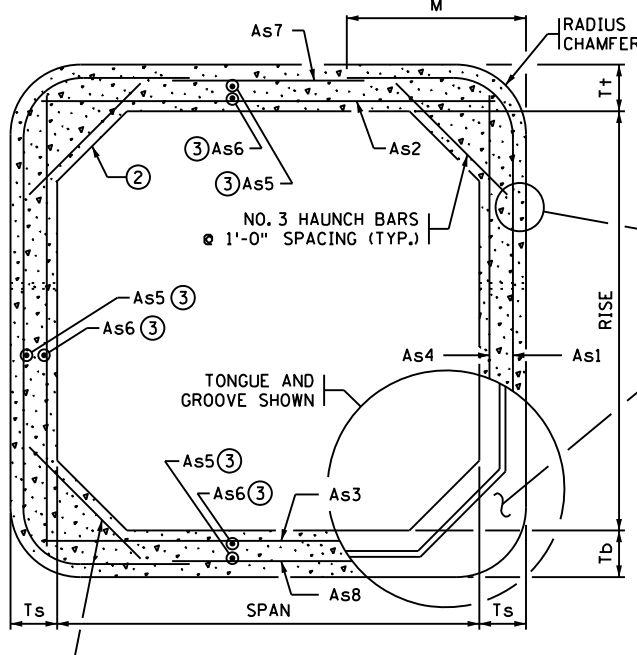
⑤ CULVERT BACKFILL SHOULD BE PLACED AND COMPACTED PER THE REQUIREMENTS OF MNDOT SPEC. 2105.3.F.1. MAXIMUM EMBANKMENT PARTICLE SIZE WITHIN 2 FT. OF CULVERT IS 3" PER SPEC. TABLE 2105-4.

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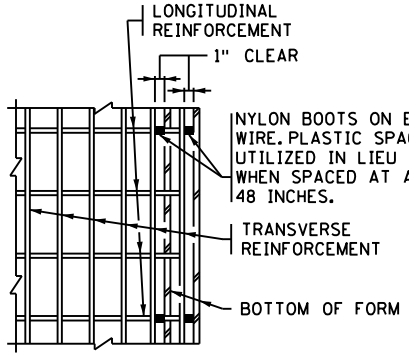
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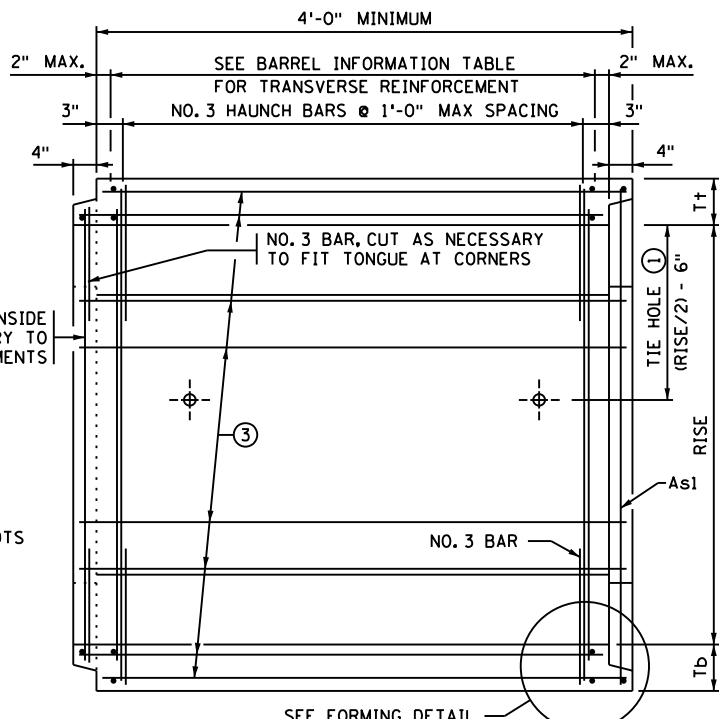
- ### CONSTRUCTION NOTES
- CONSTRUCT CULVERTS PER SPEC. 2412 EXCEPT AS NOTED.
- REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES AND TO STANDARD FIGURE 5-395.115 FOR MATERIAL REQUIREMENTS FOR FILL BETWEEN ADJACENT BOXES.
- PROVIDE WELDED WIRE REINFORCEMENT, SHEAR REINFORCEMENT AND REINFORCEMENT BARS PER THE APPLICABLE REQUIREMENTS OF AASHTO M259.
- 1/2" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.
- ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:
- (a) 1 OR 2 LAYERS OF WELDED WIRE REINFORCEMENT OR
 - (b) 1 LAYER OF WELDED WIRE REINFORCEMENT AND 1 LAYER OF REINFORCEMENT BARS OR
 - (c) 1 LAYER OF REINFORCEMENT BARS.
- DEVELOP REINFORCEMENT IN ACCORDANCE WITH AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WELDED WIRE REINFORCEMENT, INCREASE THE AREA OF REINFORCEMENT BY 8%, AND SUBMIT DESIGN CALCULATIONS VERIFYING COMPLIANCE WITH AASHTO 5.7.3.4. "CONTROL OF CRACKING BY DISTRIBUTION OF REINFORCEMENT".
- MAXIMUM SIZE OF REINFORCEMENT BARS IS NO. 6. THE MAXIMUM WELDED WIRE REINFORCEMENT SIZE IS W23 PER LAYER (MAXIMUM OF 2 LAYERS).
- SPACE CENTER TO CENTER OF TRANSVERSE WIRES NOT LESS THAN 2" NOR MORE THAN 4". SPACE CENTER TO CENTER OF LONGITUDINAL WIRES NOT MORE THAN 8".
- WHEN USING As1, As7, AND As8 REINFORCEMENT AS ONE CONTINUOUS CAGE WITH SPLICES OCCURRING IN THE CENTER OF THE TOP AND BOTTOM OF THE BOX SECTION, THE MIN. LAP LENGTH FOR THE As7 AND As8 IS 15".
- WELDING IS NOT PERMITTED ON REINFORCEMENT BARS OR WELDED WIRE REINFORCEMENT, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE REINFORCEMENT IS ACCEPTABLE.
- WHEN REINFORCEMENT IS CUT, PLACE ADDITIONAL REINFORCEMENT ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.
- USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED.
- SHOP DRAWING APPROVAL PER SPEC. 3238.2.A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.
- COMPACT THE FIRST 1.5' (LOOSE) OF FILL ABOVE THE BOX WITH LIGHT COMPACTION EQUIPMENT SUCH AS PLATE COMPACTORS OR WALK BEHIND ROLLERS.
- TRANSVERSE REINFORCEMENT IS PARALLEL TO THE CULVERT SPAN. LONGITUDINAL REINFORCEMENT IS PERPENDICULAR TO THE CULVERT SPAN.
- ① USE 1" DIAMETER CULVERT TIES. SEE STANDARD PLATE NO. 3145 FOR DETAILS.
 - ② USE 12" VERTICAL, 12" HORIZONTAL HAUNCHES ON ALL BOX SIZES.
 - ③ PLACE LONGITUDINAL REINFORCEMENT DENOTED AS As5 AND As6 IN ALL SLABS AND WALLS WITH A MINIMUM OF 0.06 SQ. IN./FT.
 - ④ ROADWAY OR SHOULDER FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A 6" THICK DISTRIBUTION SLAB WITH CONCRETE MIX 3S52.
- PLACE CAST-IN-PLACE DISTRIBUTION SLABS WITH 3" MIN. SELECT GRANULAR MATERIAL PER SPEC. 3149.2.B.2 BETWEEN BARREL AND DISTRIBUTION SLAB.
- PRECAST DISTRIBUTION SLABS MAY BE USED FOR FILL HEIGHTS OVER 1'-0". PROVIDE 6" MINIMUM SELECT GRANULAR MATERIAL PER SPEC. 3149.2.B.2 BETWEEN BARREL AND SLAB.
- EXTEND THE WIDTH OF THE DISTRIBUTION SLAB TO THE OUTSIDE EDGES OF THE ROADWAY SHOULDERS UNLESS DIRECTED BY THE ENGINEER.
- REDESIGN THE DISTRIBUTION SLAB PER THE MNDOT PAVEMENT DESIGN MANUAL IF IT IS USED AS PAVEMENT SURFACE.
- PAYMENT FOR THE DISTRIBUTION SLAB AND SELECT GRANULAR MATERIAL BENEATH THE SLAB IS CONSIDERED INCIDENTAL.
- ⑤ REFER TO SPEC. 2412 FOR SEALANT REQUIREMENTS.



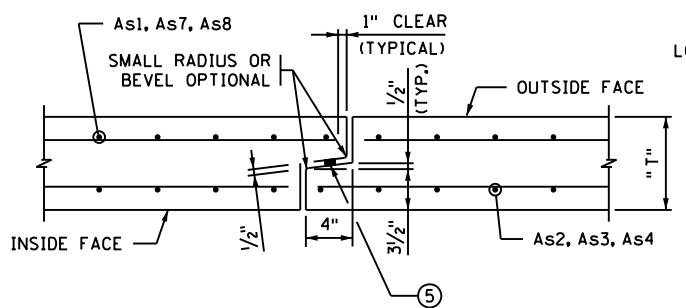
HAUNCH BAR LENGTH:
 31" FOR 8" WALL THICKNESS
 34" FOR 9" WALL THICKNESS
 34" FOR 10" WALL AND 10" SLAB
 36" FOR 10" WALL AND 11" SLAB
 38" FOR 10" WALL AND 12" SLAB
 38" FOR 11" WALL THICKNESS



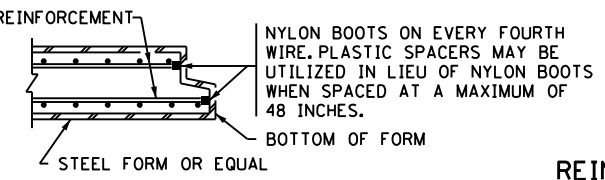
PLAN



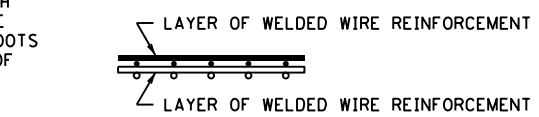
LONGITUDINAL BARREL SECTION



TONGUE AND GROOVE JOINT DETAIL



SECTION FORMING DETAIL



REINFORCEMENT LAYER DETAIL

WHEN MORE THAN ONE LAYER OF WELDED WIRE REINFORCEMENT IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, PLACE THE WIRES OF THE WELDED WIRE REINFORCEMENT AS SHOWN

BARREL INFORMATION TABLE ***																									
LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DISTRIBUTION SLAB REQUIRED *	RECESSED TIE RODS REQUIRED **	DIMENSIONS					WEIGHT (LBS./FT.)	WELDED WIRE REINFORCEMENT												
							SPAN (FT.)	RISE (FT.)	T+ (IN.)	Tb (IN.)	Ts (IN.)		As1		As2		As3		As4		As7		As8		
													AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)
STA. 123+83.58	16 X 12	3	5000	6-10	NO	NO	16	12	10	11	9	7600	.99	22'-7"	4'-8"	1.67	16'-6"	1.75	16'-6"	0.24	12'-6"	0.27	11'-7"	0.27	11'-7"
STA. 124+02.91	16 X 12	3	5000	6-10	NO	NO	16	12	10	11	9	7600	.99	22'-7"	4'-8"	1.67	16'-6"	1.75	16'-6"	0.24	12'-6"	0.27	11'-7"	0.27	11'-7"

* ALL CLASS 1 CULVERTS WITH FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. IF A DISTRIBUTION SLAB IS NOT REQUIRED, INDICATE "NO" IN THIS BOX.

** FOR PEDESTRIAN CULVERT APPLICATIONS HIDE-AWAY OR RECESSED TIE CONNECTIONS ARE REQUIRED, SEE STANDARD PLATE 3145. IF REQUIRED, INDICATE "YES" IN THIS BOX.

*** BOX CULVERTS WITH SPANS FROM 6 TO 14 FT. ARE DESIGNED FOR HL-93 LIVE LOADS (AASHTO LRFD 3.6.2.1) NOT INCLUDING THE DESIGN LANE LOAD. BOXES WITH SPANS OF 16 FT. ARE DESIGNED FOR HL-93 LIVE LOADS INCLUDING THE DESIGN LANE LOAD.

REVISION: FEBRUARY 22, 2018

APPROVED: MARCH 24, 2011

Nancy S. Dubenberger
 STATE BRIDGE ENGINEER

CERTIFIED BY: *[Signature]*
 LICENSED PROFESSIONAL ENGINEER
 NAME: RYAN R. EVANS
 DATE: 01-29-2019
 LIC. NO. 53920

PRECAST CONCRETE
 BARREL DETAILS

DES: RRE DR: JMR APPROVED:
 CHK: JDA CHK: RRE
 BRIDGE NO. 02J51

STATE AID PROJ. NO. 002-613-001 SHEET NO. B2 OF B8

FIG. 5-395.101(A)

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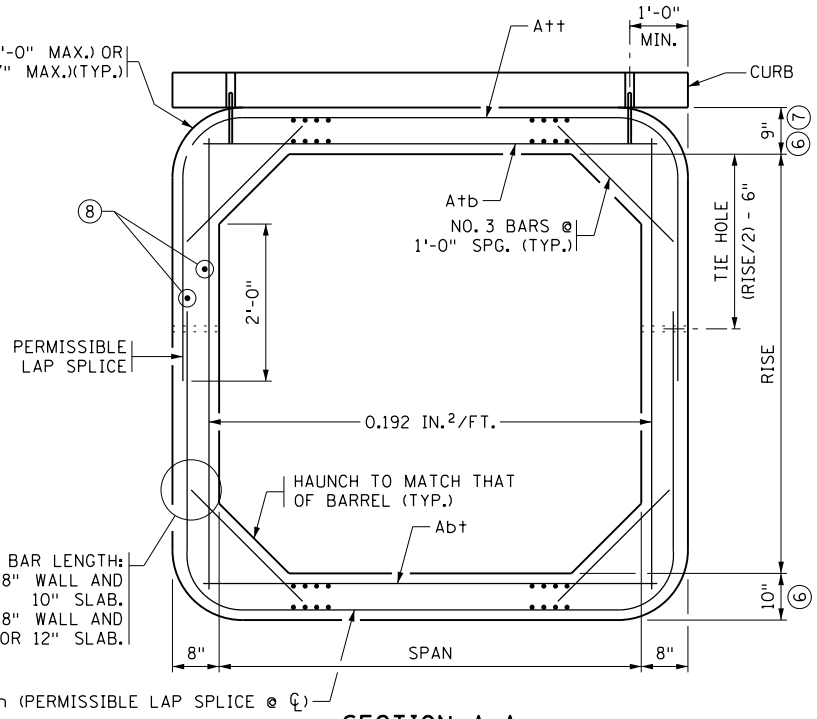
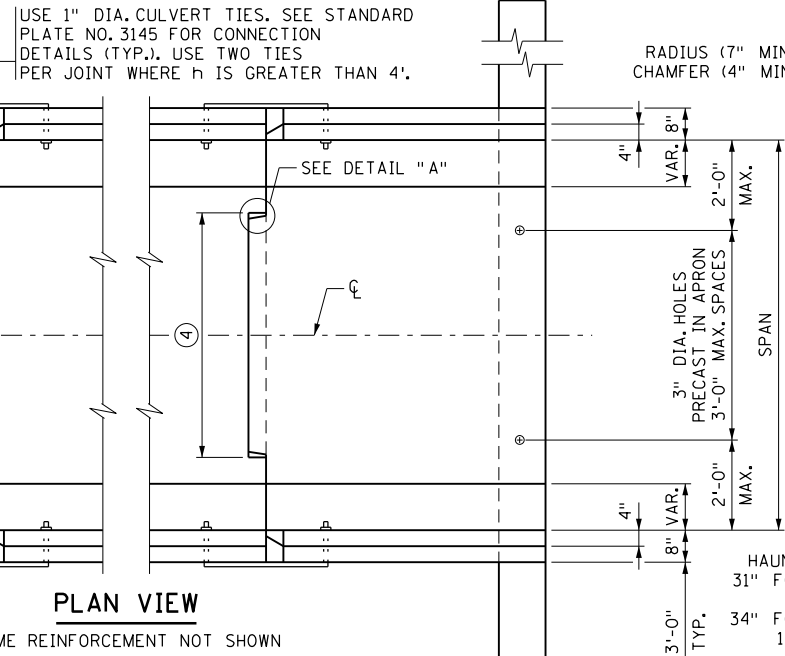
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REVISION: FEBRUARY 22, 2018

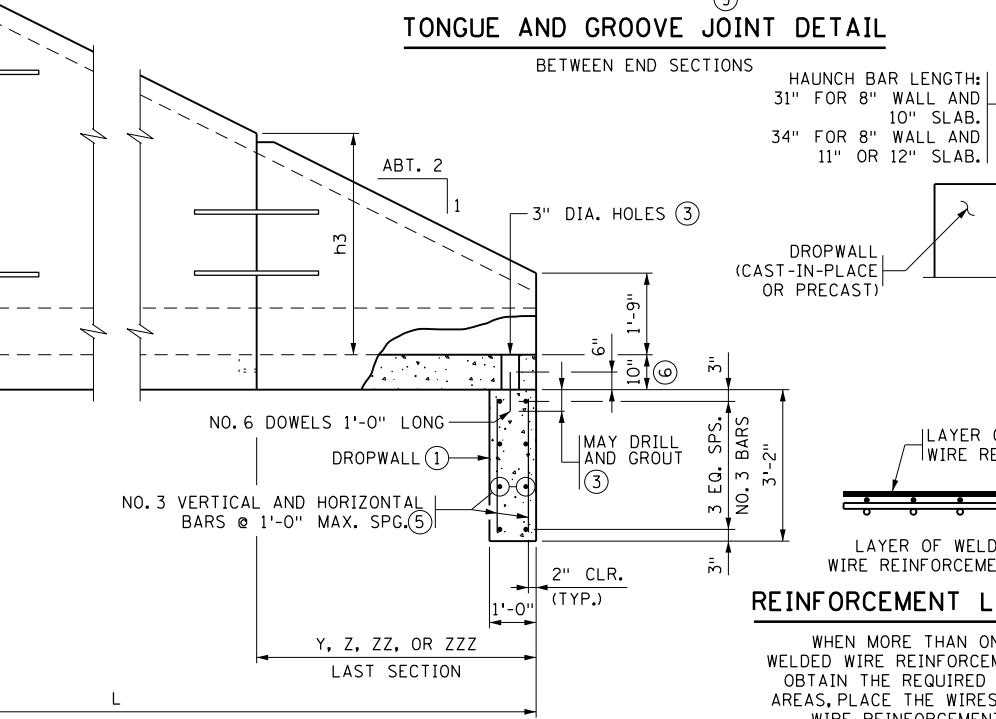
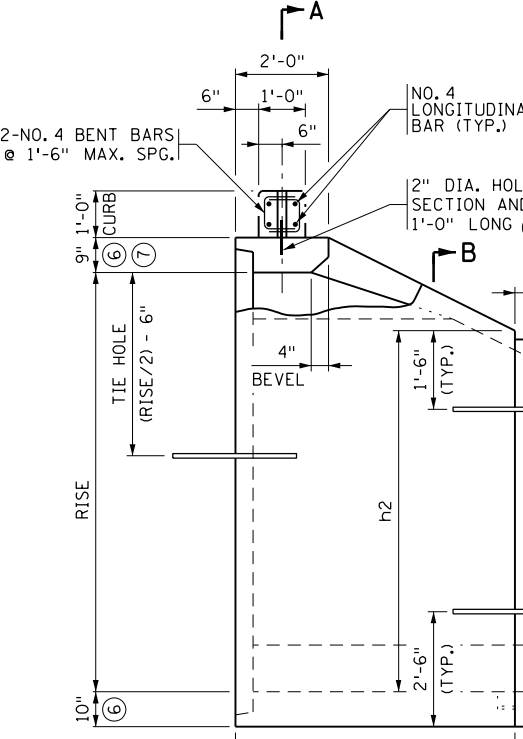
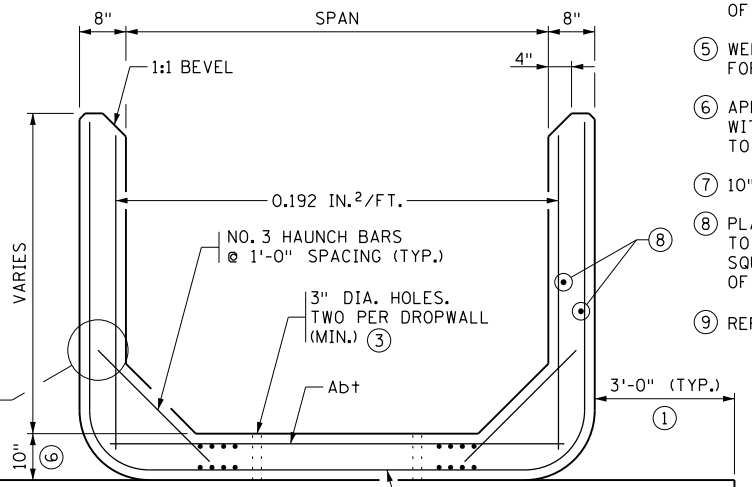
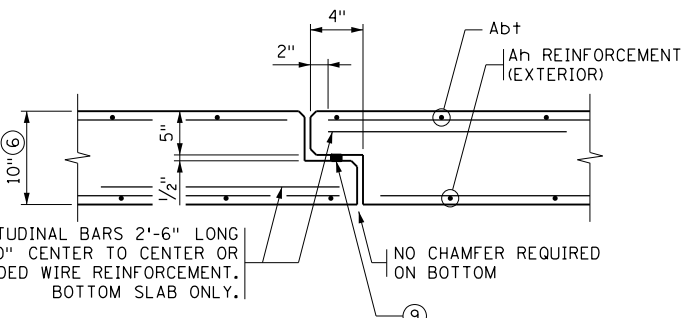
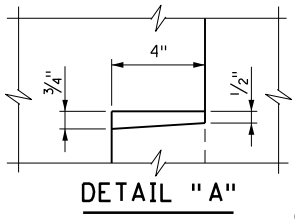
APPROVED: MARCH 24, 2011

Nancy S. Amburger
 STATE BRIDGE ENGINEER

STATE AID PROJ. NO. 002-613-001



- ### CONSTRUCTION NOTES
- SEE STANDARD FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.
- USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED.
- ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.
- ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.
- SEE STANDARD FIG. 5-395.115 FOR EMBANKMENT PROTECTION.
- FINISH ALL EXPOSED EDGES OF CONCRETE WITH 1/2" OR 3/4" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.
- MAXIMUM SIZE OF REINFORCEMENT BARS IS NO. 6, EXCEPT NO. 7 OR 8 BARS MAY BE USED FOR A+t ON SPANS GREATER THAN 14'. THE MAXIMUM WELDED WIRE REINFORCEMENT SIZE IS W23 PER LAYER (MAXIMUM OF 2 LAYERS).
- WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE STANDARD FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL ARE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL CONCRETE MIX IS 3S52, OR 3Y82 IF PRECAST. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS. DROPWALL NOT REQUIRED FOR NON-WATERWAY USE.
 - CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.
 - FILL HOLE WITH GROUT. GROUT CONSISTS OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE IA AIR ENTRAINED PORTLAND CEMENT. GROUT MIX MAXIMUM SLUMP IS 4".
 - 3'-6" MIN. TONGUE AND 3'-7" MIN. GROOVE FOR CULVERTS WITH 6'-0" SPANS. 5'-0" MIN. TONGUE AND 5'-1" MIN. GROOVE FOR CULVERTS WITH SPANS GREATER THAN 6'-0". CENTER TONGUE AND GROOVE ON 1/4 OF EACH APRON JOINT. TONGUE AND GROOVE JOINT ON ALL THREE SIDES OF APRON IS PERMISSIBLE.
 - WELDED WIRE REINFORCEMENT OF EQUAL AREA MAY BE SUBSTITUTED FOR REBAR.
 - APRON TOP AND BOTTOM SLAB THICKNESS MAY BE 8" FOR CULVERTS WITH 6' SPANS ONLY. BOTTOM SLAB THICKNESS MAY BE INCREASED UP TO 2" MAX. PROVIDED CONCRETE COVER IS 1/2" MIN., 2" MAX.
 - 10" MINIMUM TOP SLAB FOR 14' AND 16' SPANS.
 - PLACE LONGITUDINAL REINFORCEMENT PERPENDICULAR TO THE CULVERT SPAN WITH A MINIMUM OF 0.06 SQUARE INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE BARREL.
 - REFER TO SPEC. 2412 FOR SEALANT REQUIREMENTS.



REINFORCEMENT LAYER DETAIL

WHEN MORE THAN ONE LAYER OF WELDED WIRE REINFORCEMENT IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, PLACE THE WIRES OF THE WELDED WIRE REINFORCEMENT AS SHOWN.

A+t, A+b REINFORCEMENT

SPAN (FT.)	A+t (IN ² /FT.)	A+b (IN ² /FT.)
6	0.27	0.44
8	0.47	0.60
10	0.62	0.74
12	0.88	1.06
14	1.20	1.58
16	1.52	2.09

Ab+t REINFORCEMENT

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

APRON DIMENSIONS & Ah REINFORCEMENT

RISE FT.	L FT.	SECTION 1		SECTION 2		SECTION 3		SECTION 4		SECTION 5		h6	
		X	Ah	Y	Ah	Z	Ah	ZZ	Ah	ZZZ	Ah		
4	8	8' (4')	0.192	1'-9" (3'-9")	(4') (0.192)								
5	10	6'	0.192	3'-9"	4'	0.192	1'-9"						
6	12	6'	0.192	4'-9"	6'	0.192	1'-9"						
7	14	6'	0.192	5'-9"	8' (4')	0.192	1'-9" (3'-9")	(4') (0.192)		(1'-9")			
8	16	6'	0.20	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"			
9	18	6'	0.29	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"			
10	20	6'	0.42	8'-9"	6'	0.29	5'-9"	8' (4')	0.192	1'-9" (3'-9")	(4') (0.192)	(1'-9")	
11	22	6'	0.60	9'-9"	6'	0.42	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"
12	24	6'	0.78	10'-9"	6'	0.60	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"
13	26	6'	1.03	11'-9"	6'	0.78	8'-9"	6'	0.28	5'-9"	8' (4')	0.192	1'-9" (3'-9")
14	28	6'	1.38	12'-9"	6'	1.03	9'-9"	6'	0.40	6'-9"	6'	0.192	3'-9"

NOTE: Ah IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN²/FT.) VALUES IN () MAY BE USED FOR END SECTIONS WITH SPANS OF 14' AND 16' ONLY.

CERTIFIED BY *[Signature]* 01-29-2019
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: RYAN R. EVANS LIC. NO. 53920

TITLE: PRECAST CONCRETE END SECTION
 TYPE I - SINGLE OR DOUBLE BARREL
 FOR SKEWS UP TO 7 1/2'

DES: RRE DR: JMR APPROVED:
 CHK: JDA CHK: RRE

BRIDGE NO. 02J51

FIG. 5-395.102

CONSTRUCTION NOTES

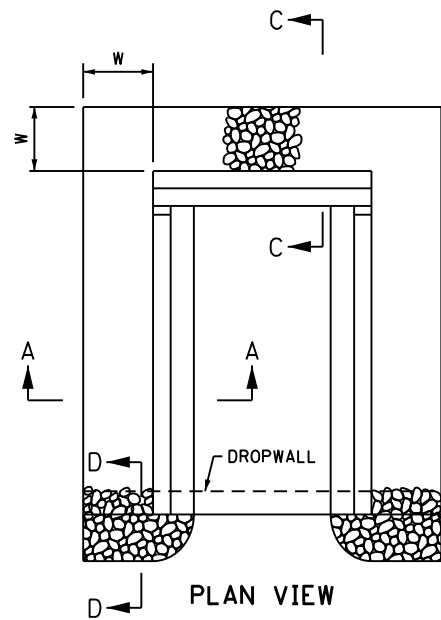
THIS PLAN SHEET IS FOR CULVERT EMBANKMENT PROTECTION ONLY. REFER TO THE GRADING PLANS FOR ADDITIONAL RIPRAP OR OTHER SCOUR PROTECTION MEASURES.

PROVIDE RIPRAP PER SPECS. 2511 AND 3601.

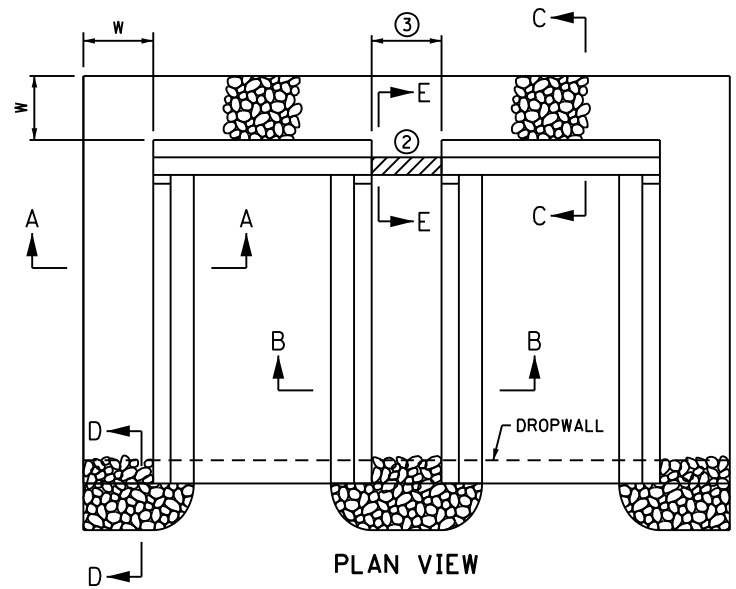
① FOR TYPE OF GEOTEXTILE FILTER MATERIAL REQUIRED, SEE SPEC. 3733. PROVIDE GEOTEXTILE STRIPS CONTINUOUS WITHOUT OVERLAPS, EXCEPT FOR THE TOP STRIP, WHICH SHOULD SHINGLE VERTICAL STRIPS. BURY THE TOP EDGE TO PREVENT UNDERMINING.

② IF THE DISTANCE BETWEEN DOUBLE BARRELS IS LESS THAN 2'-0" USE EITHER PEA ROCK OR LEAN MIX BACKFILL (SPEC. 2520) BETWEEN THE CULVERTS AS APPROVED BY THE ENGINEER. IF PEA ROCK IS USED PROVIDE APPROVED GROUT SEEPAGE CUTOFF CORE, MINIMUM 12" THICK BETWEEN THE CULVERT'S TWO ENDS AND PROVIDE CLASS I GROUTED RIPRAP IN LIEU OF CLASS III RIPRAP.

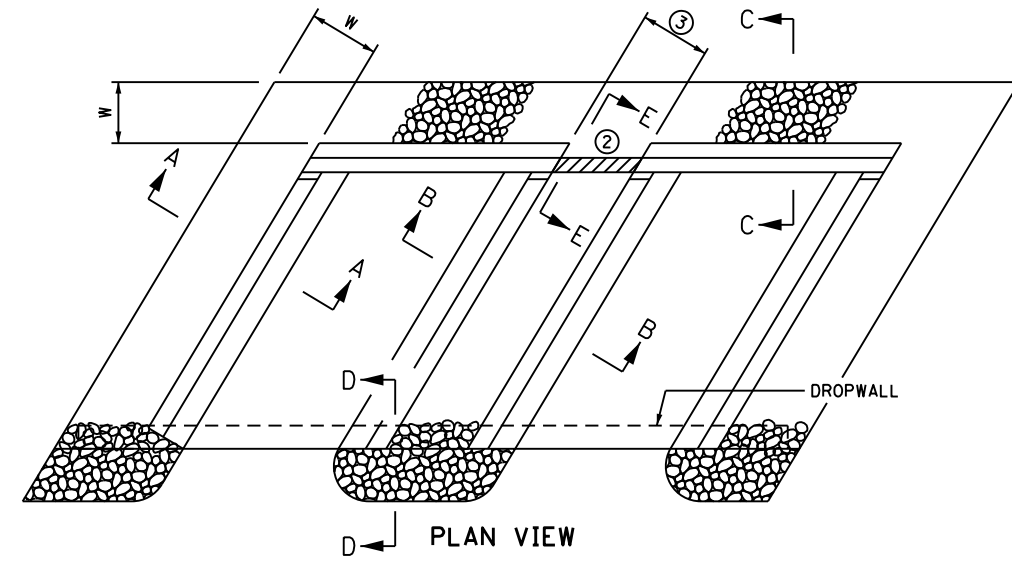
③ REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES.



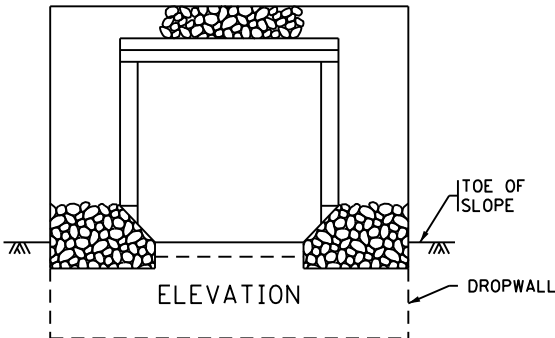
PLAN VIEW



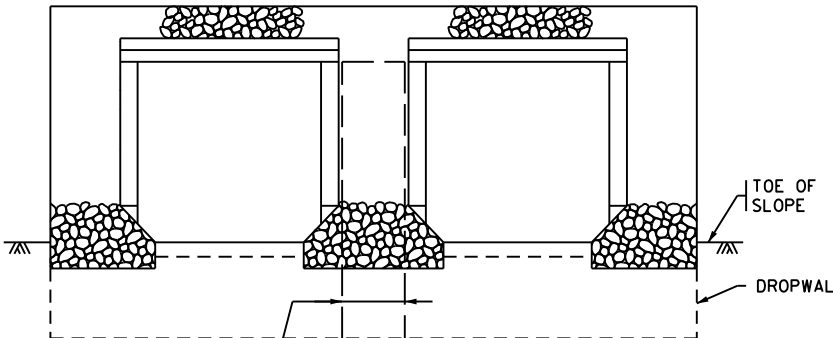
PLAN VIEW



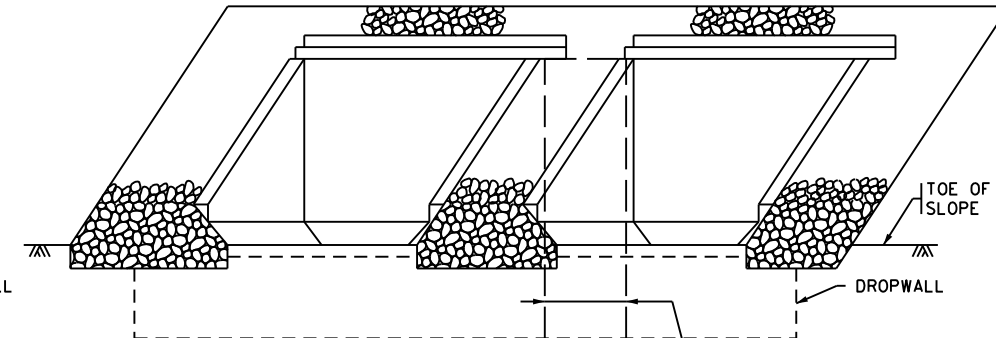
PLAN VIEW



ELEVATION



ELEVATION



ELEVATION

SINGLE BARREL

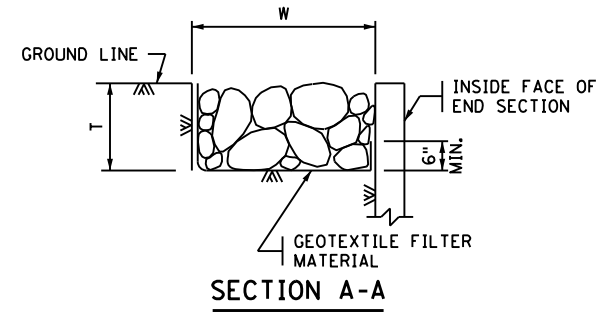
CLASS III OR IV SHOWN FOR SKEWS UP TO 7 1/2°

MULTIPLE BARREL

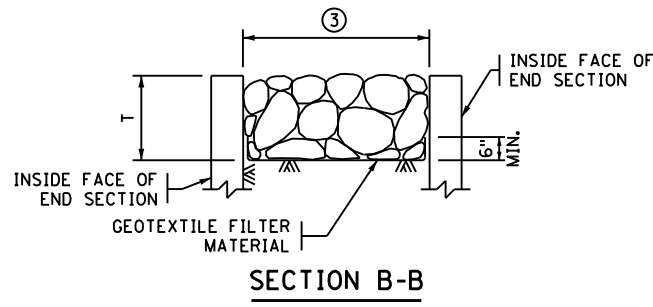
FOR SKEWS UP TO 7 1/2° CLASS III OR IV SHOWN DOUBLE BARREL SHOWN

MULTIPLE BARREL

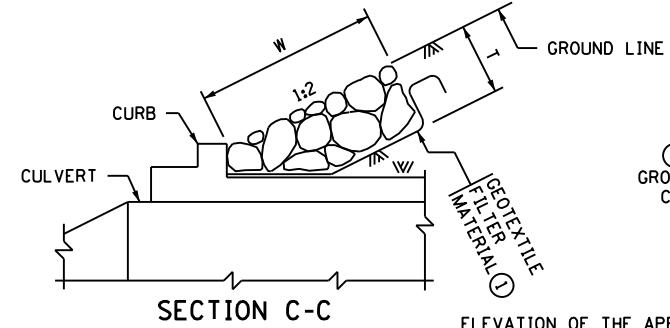
FOR SKEWS OVER 7 1/2° CLASS III OR IV SHOWN DOUBLE BARREL SHOWN, OTHER BARREL CONFIGURATIONS SIMILAR.



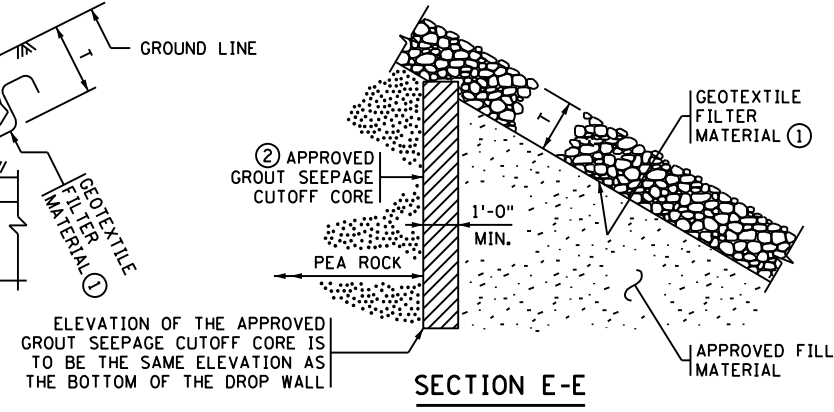
SECTION A-A



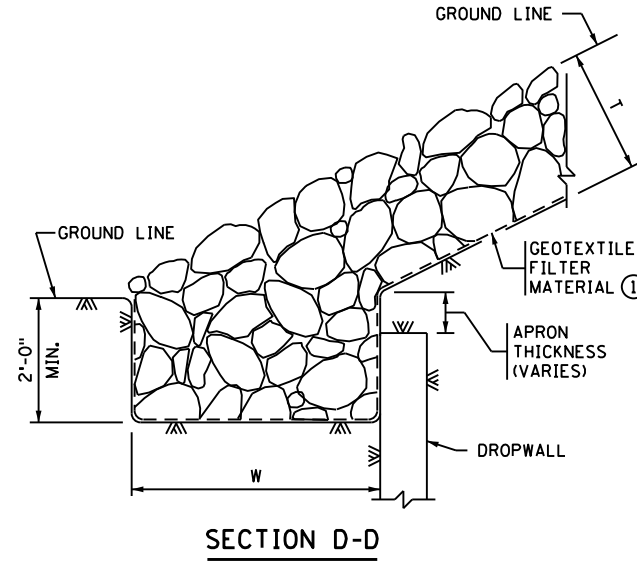
SECTION B-B



SECTION C-C



SECTION E-E



SECTION D-D

RIPRAP CLASS

RIPRAP CLASS	RIPRAP CLASS	T	W
□	III	1'-6"	3'-0"
⊗	IV	2'-0"	4'-0"

FIG. 5-395.115

REVISION: 10-09-2015
 APPROVED: SEPTEMBER 11, 2014
Nancy S. Dubenberger
 STATE BRIDGE ENGINEER

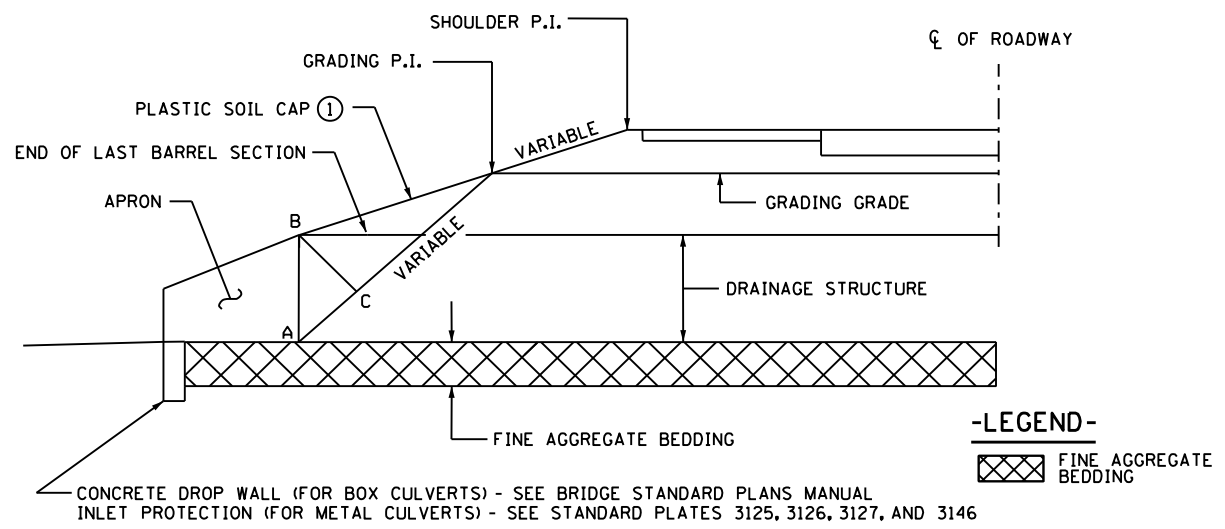
CERTIFIED BY: *Ryan R. Evans*
 LICENSED PROFESSIONAL ENGINEER
 NAME: RYAN R. EVANS
 DATE: 01-29-2019
 LIC. NO. 53920

TITLE: **EMBANKMENT PROTECTION FOR BOX CULVERTS**

DES: RRE
 CHK: JDA
 DR: JMR
 CHK: RRE
 APPROVED:
 BRIDGE NO. 02J51

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

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

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

THE TREATMENT IS REQUIRED ON THE INLET END.

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

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

BOX CULVERT BEDDING AND PLASTIC SOIL CAP

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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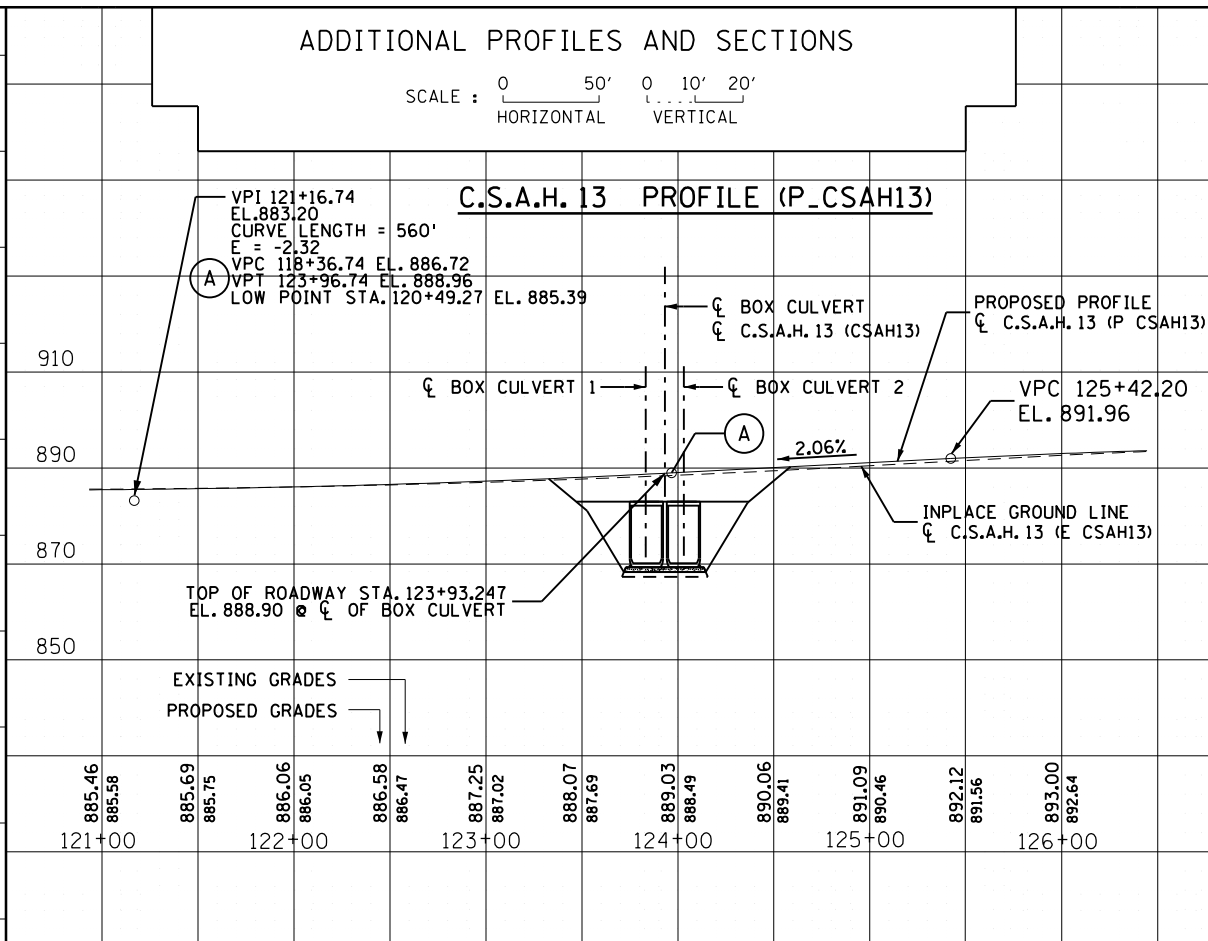
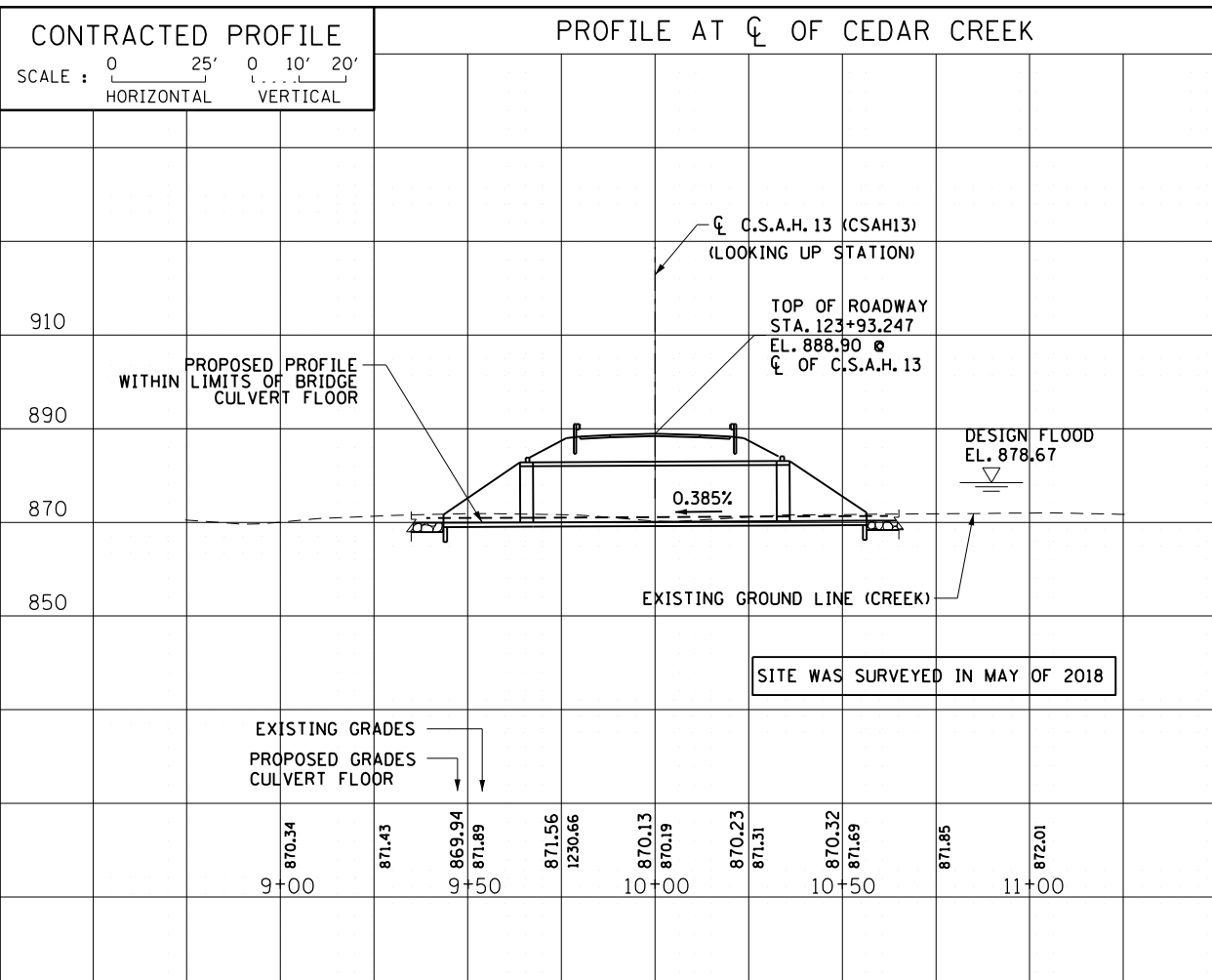
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

RYAN R. EVANS
 LIC. NO. 53920 DATE 01-29-2019

TITLE: BRIDGE MISCELLANEOUS DETAILS

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	JDA	CHECK	RRE	
S.A.P. 002-613-001				
SHEET NO. B5 OF B8				

BRIDGE NO. 02J51



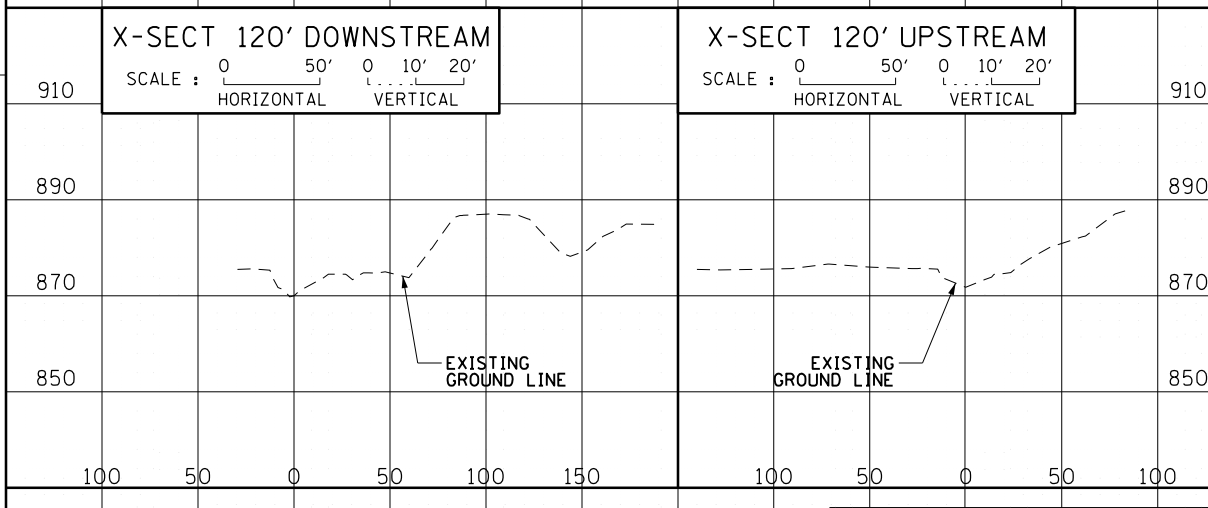
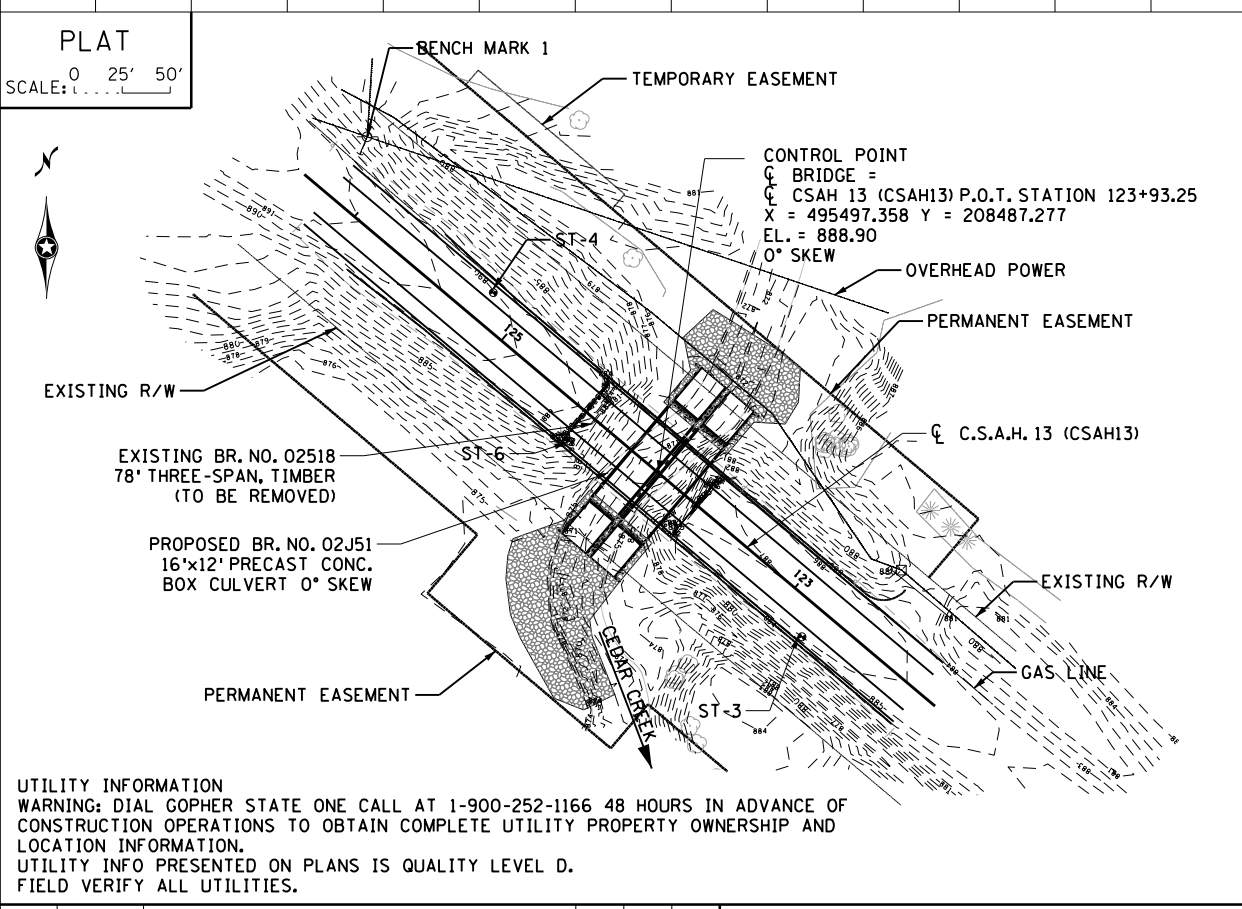
LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
NONE OBSERVED
- OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY): GIVEN LOCATION, TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.
- APPARENT HIGHWATER ELEVATION OBTAINED FROM:
- OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: 08-28-2018

STREAM OR DITCH DESIGNATION: CEDAR CREEK
DRAINAGE AREA: 63.6 SQ. MI.
MAX. FLOOD ON RECORD: UNKNOWN
MAXIMUM OBSERVED HIGHWATER ELEVATION: UNKNOWN
DESIGN FLOOD (50 YR. FREQ.): 817 C.F.S.
HEADWATER ELEVATION: 878.67 FT.
DESIGN MEAN VELOCITY THROUGH STRUCTURE: 3.6 F.P.S.
BASIC FLOOD (100 YR. FREQ.): 999 C.F.S.
HEADWATER ELEVATION: 879.33 FT.
TOTAL STAGE INCREASE: 0.50 FT.
MEAN VELOCITY THROUGH STRUCTURE: 4.0 F.P.S.
GREATEST FLOOD (500 YR. FREQ.): 1500 C.F.S.
HEADWATER ELEVATION: 880.98 FT.
DESIGN MEAN VELOCITY THROUGH STRUCTURE: 5.2 F.P.S.
FLOWLINE ELEVATION: 870.25 FT. (APPX 1' BURIED)
SKEW ANGLE: 0°



ENGINEER'S RECOMMENDATION

DATE: 8-3-2018

2 LINE - 16' x 12' PRECAST CONCRETE BOX CULVERT
40' ROADWAY - 0° SKEW

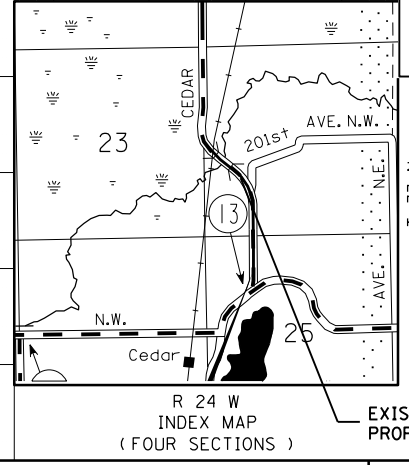
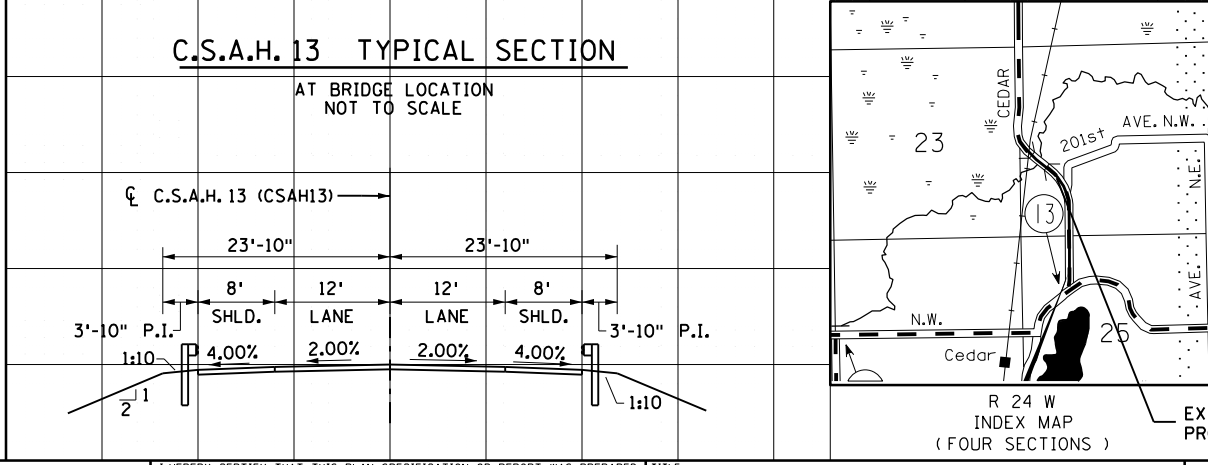
BRIDGE SURVEY SHEETS MADE FROM:

FILES:
JOB130.GPK, CD116130_AL.DGN, CD116130_BR_TOPO.DGN,
CD116130_GM.DGN, CD116130_PR.DGN

GEODETIC SYSTEM - MNDOT MONUMENT DENN,
ELEVATION 899.194 (NAVD 88)

BENCH MARK 1 ELEVATION 889.18 (N.A.V.D. 88 ADJ.)
BENCH TIE IN SOUTH SIDE OF POWER POLE,
20 FT. NE OF BITUMINOUS EDGE, 180 FT. NW OF
CEDAR CREEK BRIDGE, 15 FT. FROM NORTHERN
END OF BRIDGE GUARDRAIL

DATE: 08-28-2018



MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

LOCATED IN THE CITY OF OAK GROVE MN.
0.7 MI NORTH OF C.S.A.H. 22
ON C.S.A.H. 13
16'x12' CONCRETE BOX CULVERT

SEC. 24 T 33 N R 24 W
CITY: OAK GROVE COUNTY: ANOKA

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.

BOLTON & MENK

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

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RYAN R. EVANS
LIC. NO. 53920 DATE 01-29-2019

BRIDGE SURVEY

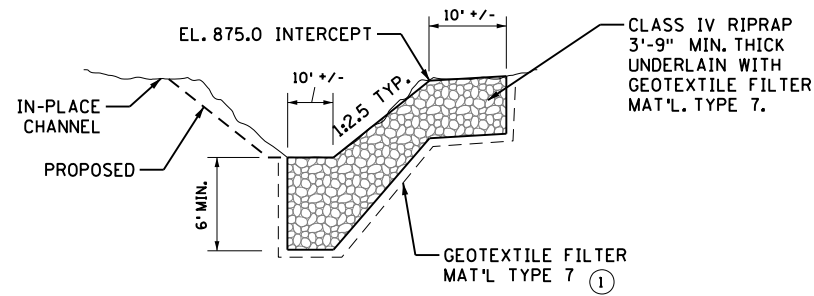
DESIGNED	CHKD.	DRAWN	APP'D.
RRE	JDA	JMR	RRE

S.A.P. 002-613-001

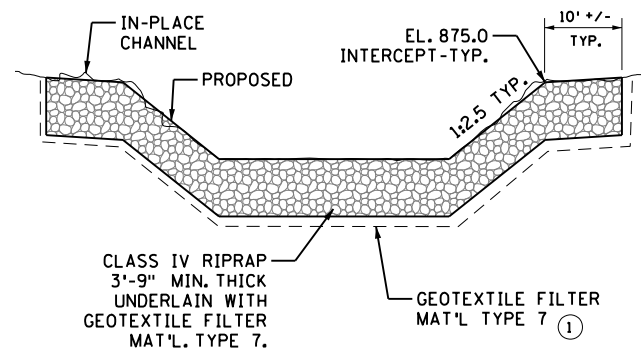
SHEET NO. B6 OF B8

BRIDGE NO. 02J51

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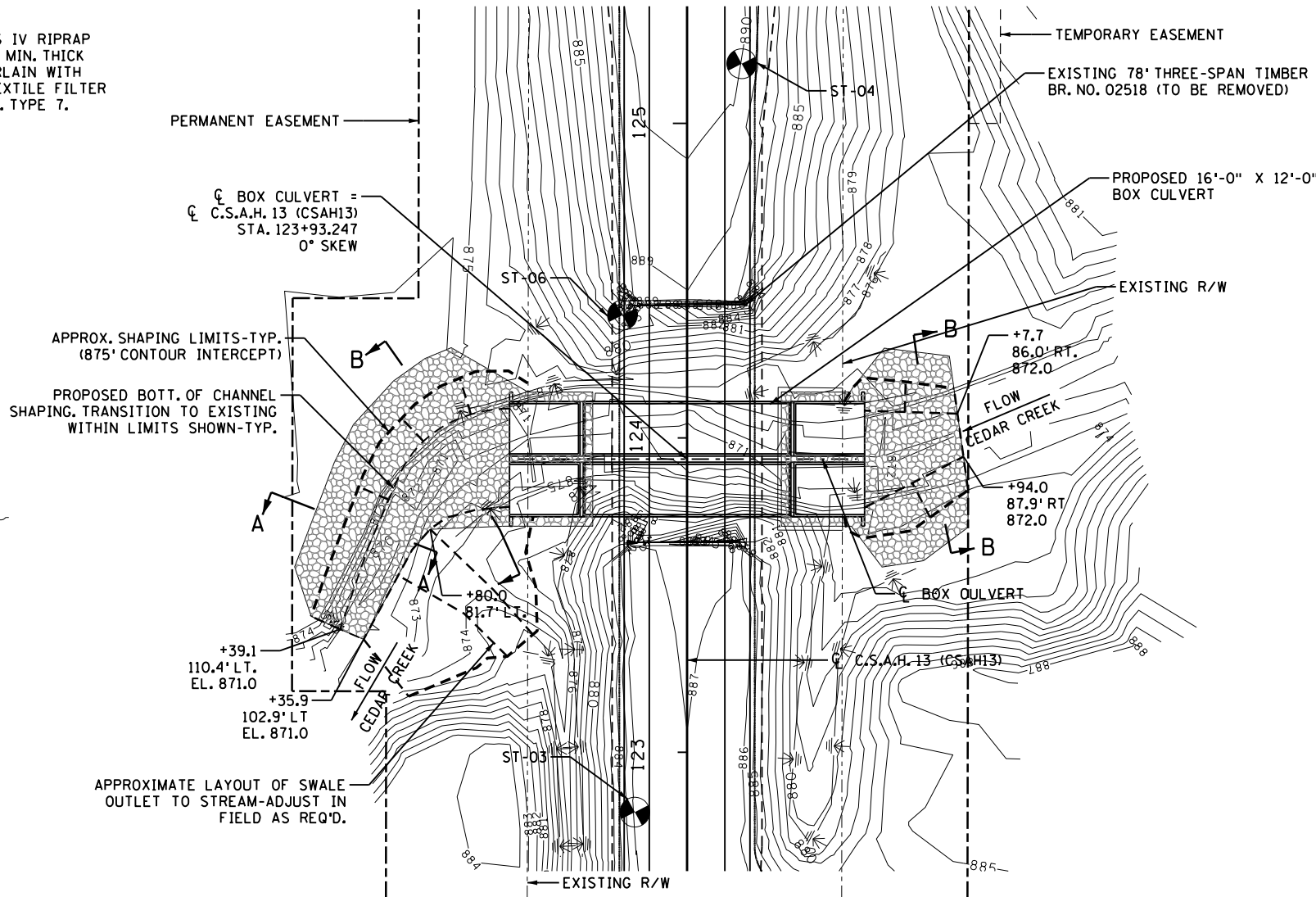


SECTION A-A

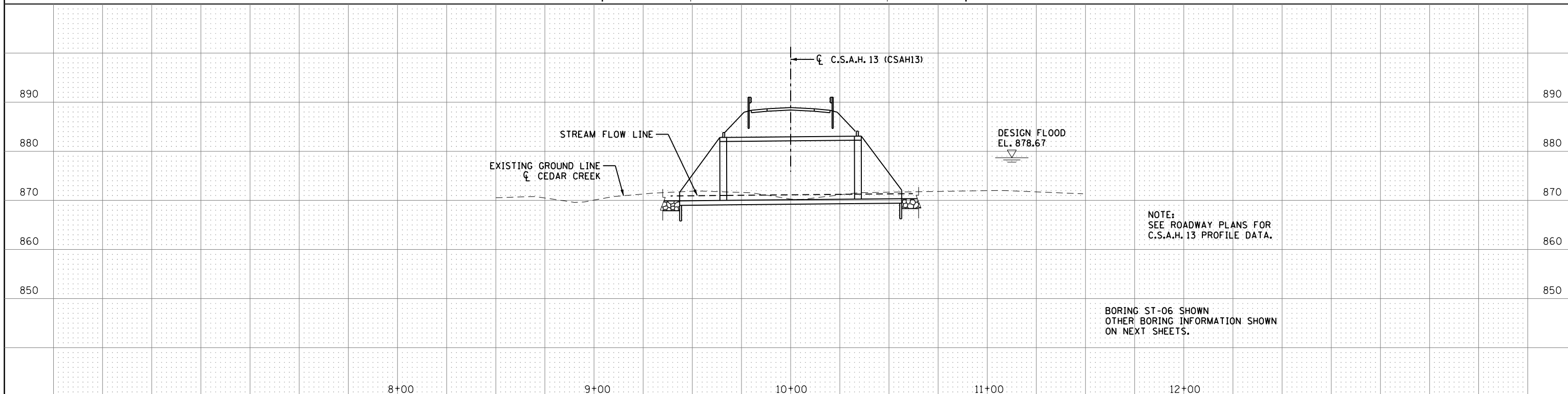


SECTION B-B

① ALTERNATE GRANULAR FILTER MATERIAL PERMISSIBLE WITH APPROVAL FROM THE ENGINEER.



NOTE: SEE ROADWAY PLANS FOR C.S.A.H. 13 ALIGNMENT DATA.



NOTE: SEE ROADWAY PLANS FOR C.S.A.H. 13 PROFILE DATA.

BORING ST-06 SHOWN OTHER BORING INFORMATION SHOWN ON NEXT SHEETS.

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.

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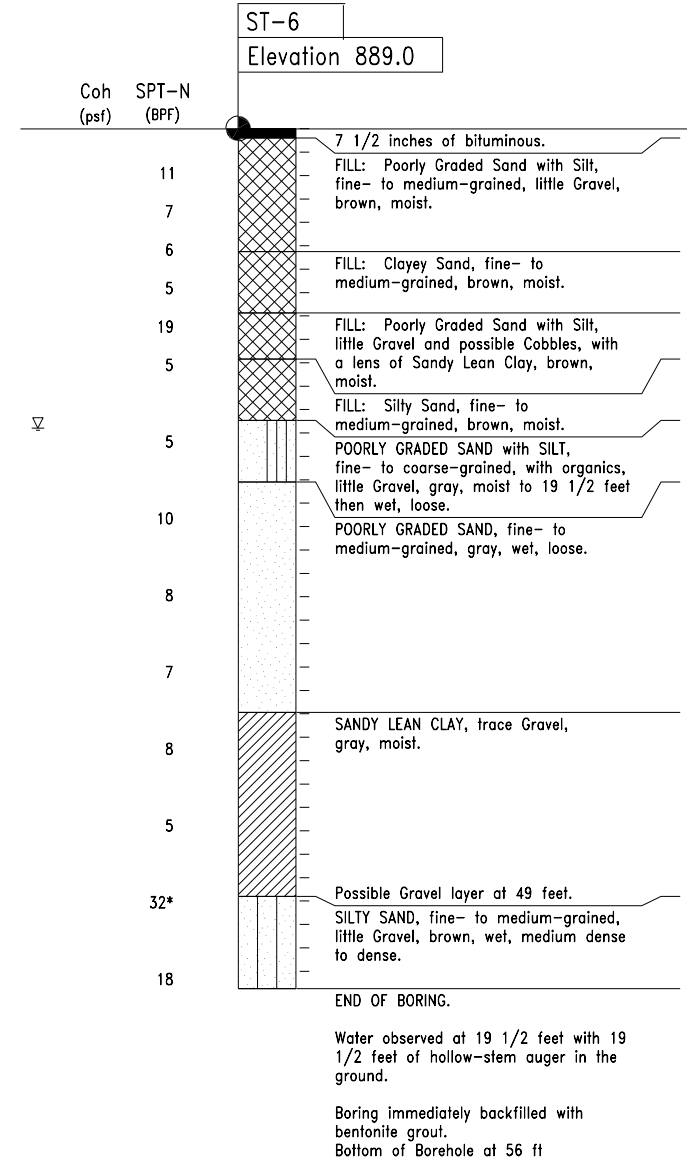
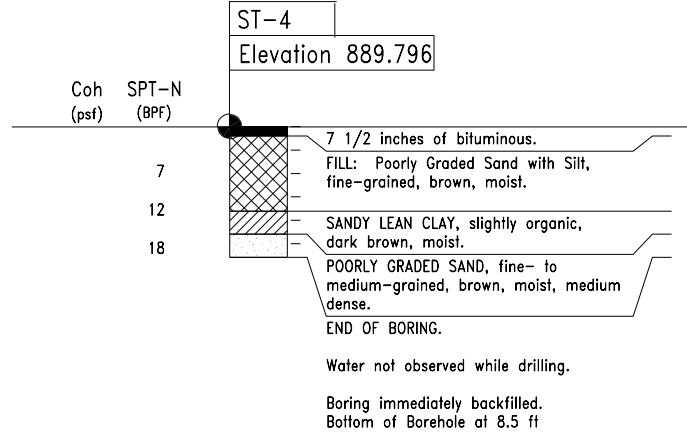
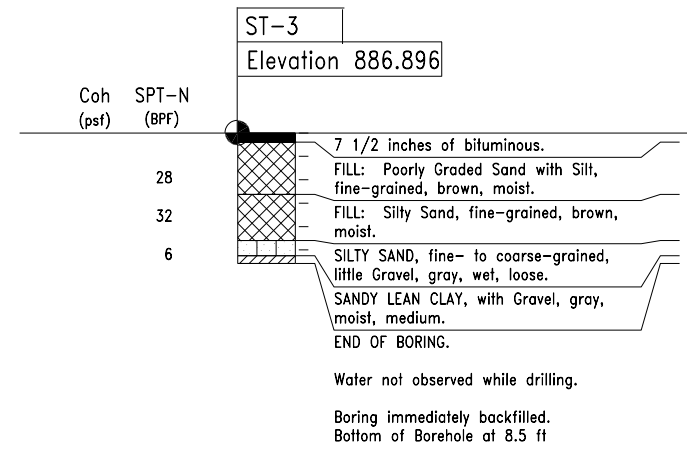
TITLE: BRIDGE SURVEY PLAN AND PROFILE

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	JDA	CHECK	RRE	

S.A.P. 002-613-001
 SHEET NO. B7 OF B8

BRIDGE NO. 02J51

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NOTE
 SEE BRIDGE SURVEY PLAN AND PROFILE SHEET B7 FOR BORING LOCATIONS.

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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 LIC. NO. 53920 DATE 01-29-2019

TITLE: BORING INFORMATION

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CHECKED	JDA	CHECK	RRE	
S.A.P. 002-613-001				
SHEET NO. B8 OF B8				

BRIDGE NO.
 02J51