MINNESOTA DEPARTMENT OF TRANSPORTATION
ANOKA COUNTY

CONSTRUCTION PLAN FOR: GRADING, AGGREGATE BASE, BITUMINOUS PAVEMENT, CONCRETE CURB & GUTTER, STORM SEWER AND ADA IMPROVEMENTS.

LOCATED ON C.S.A.H. 8 FROM T.H. 47(UNIVERSITY AVE NE) TO T.H. 65 NE (CENTRAL AVE NE)

C.S.A.H. 8 (OSBORNE RD NE) IMPROVEMENTS

STATE PROJ. NO. S.P. 002-608-012

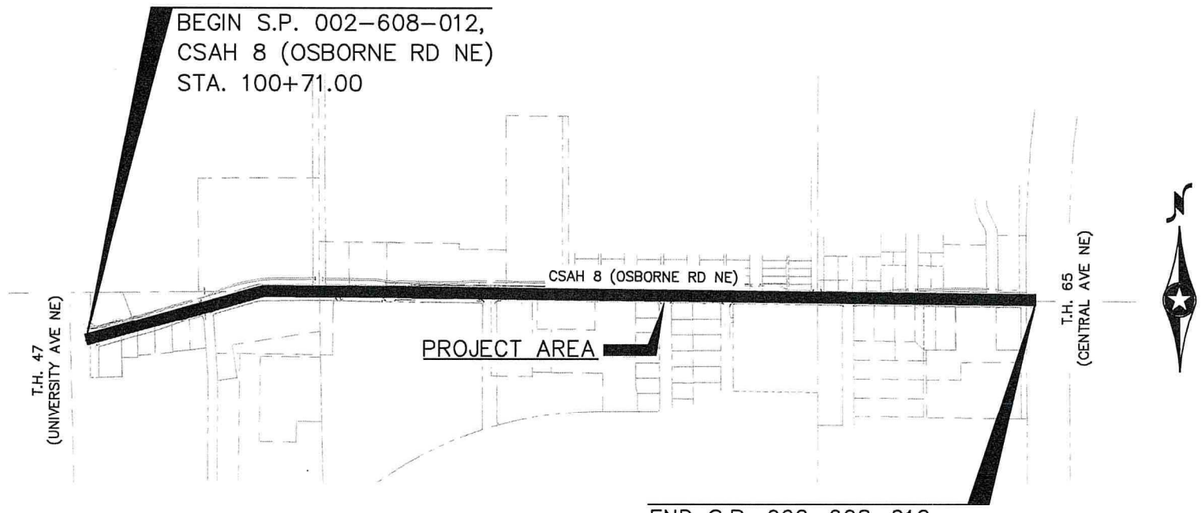
GROSS LENGTH	5,063.66	FEET	0.959	MILES
BRIDGES-LENGTH		FEET		MILES
EXCEPTIONS-LENGTH		FEET		MILES
NET LENGTH	5,063.66	FEET	0.959	MILES

PLAN SYMBOLS

- SECTION LINE
- RIGHT-OF-WAY
- EXISTING WATER, INGRESS, EGRESS EASEMENT

UTLITY SYMBOLS

- CATCH BASIN
- MANHOLE (STORM)
- MANHOLE (SEWER)
- HANDHOLE
- POWER POLE
- SIGNAL POLE
- GATE VALVE
- FIRE HYDRANT
- SEWER (STORM)
- SEWER (SANITARY)
- WATER MAIN
- GAS MAIN



CSAH 8 DESIGN DESIGNATION

DESIGN ESALS	2040	=	1,233,000
ADT (Current Year)	2018	=	8400
ADT (Future Year)	2040	=	8500
HCADT (Future Year)	2040	=	4.4%
FUNCTIONAL CLASSIFICATION		=	MINOR ARTERIAL
NO. OF TRAFFIC LANES		=	3
NO. OF PARKING LANES		=	0
SHOULDER WIDTH		=	1.5'
STRUCTURAL DESIGN		=	10 TON
R VALUE		=	N/A

DESIGN SPEED: 35 MPH

BASED ON: STOPPING SIGHT DISTANCE

HEIGHT OF EYE: 3.5' HEIGHT OF OBJECT: 2.0'

DESIGN DESIGNATION – (BIKE TRAIL)

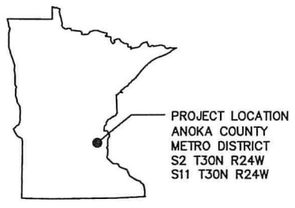
DESIGN SPEED: 20 MPH

BASED ON: STOPPING SIGHT DISTANCE

HEIGHT OF EYE: 4.5' HEIGHT OF OBJECT: 0.0'

STOP CONDITION AT POINT ID 400 ON ALIGNMENT PLAN

TRAIL STA 300+00 TO STA 350+83



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

INDEX MAP	2000	SCALE IN FEET
GENERAL LAYOUT	300	SCALE IN FEET
PLAN	50	SCALE IN FEET
INTERSECTION DETAILS	20	SCALE IN FEET
PROFILE	50 (HORIZ)	SCALE IN FEET
	10 (VERT)	SCALE IN FEET

MINN. PROJ. NO. HSIP 0221 (010)

GOVERNING SPECIFICATIONS

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

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

INDEX

THIS PLAN CONTAINS 189 SHEETS

BOLTON & MENK

12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
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: CODY L. CHRISTIANSON LICENSE # 57052

DATE: 05/26/2020 SIGNATURE: Cody Christianson

RECOMMENDED FOR APPROVAL James Kosluchar Digitally signed by James Kosluchar Date: 2020.05.29 12:30:51 -05'00' 20
CITY OF FRIDLEY CITY ENGINEER

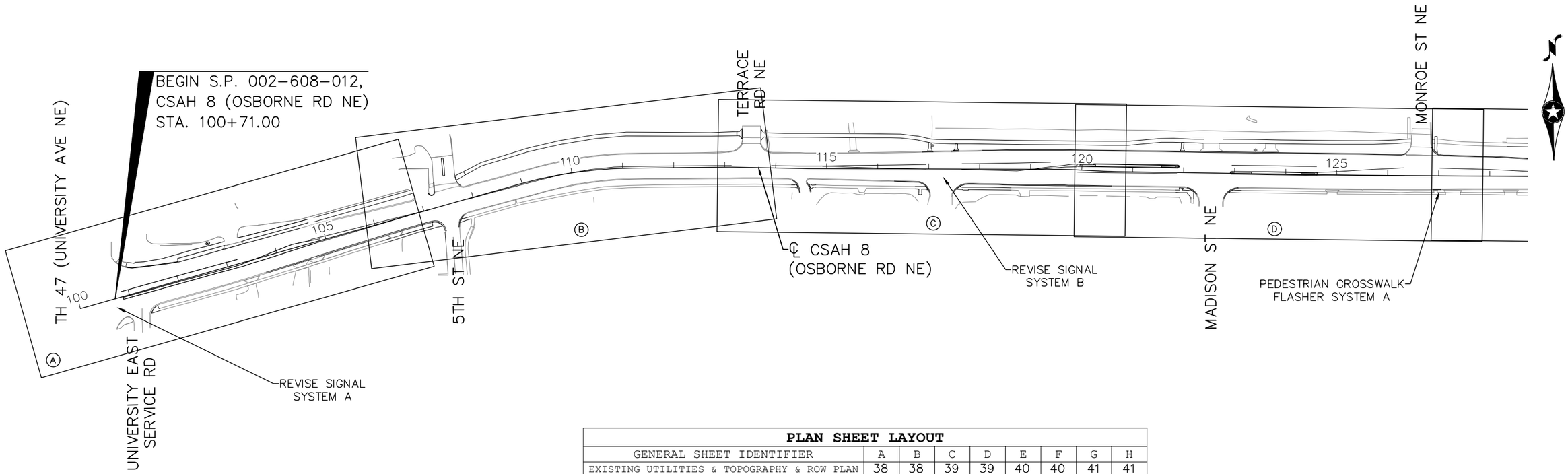
RECOMMENDED FOR APPROVAL Phil Gravel 5-29- 2020
CITY OF SPRING LAKE PARK CITY ENGINEER

RECOMMENDED FOR APPROVAL 5.28 2020
ANOKA COUNTY ENGINEER

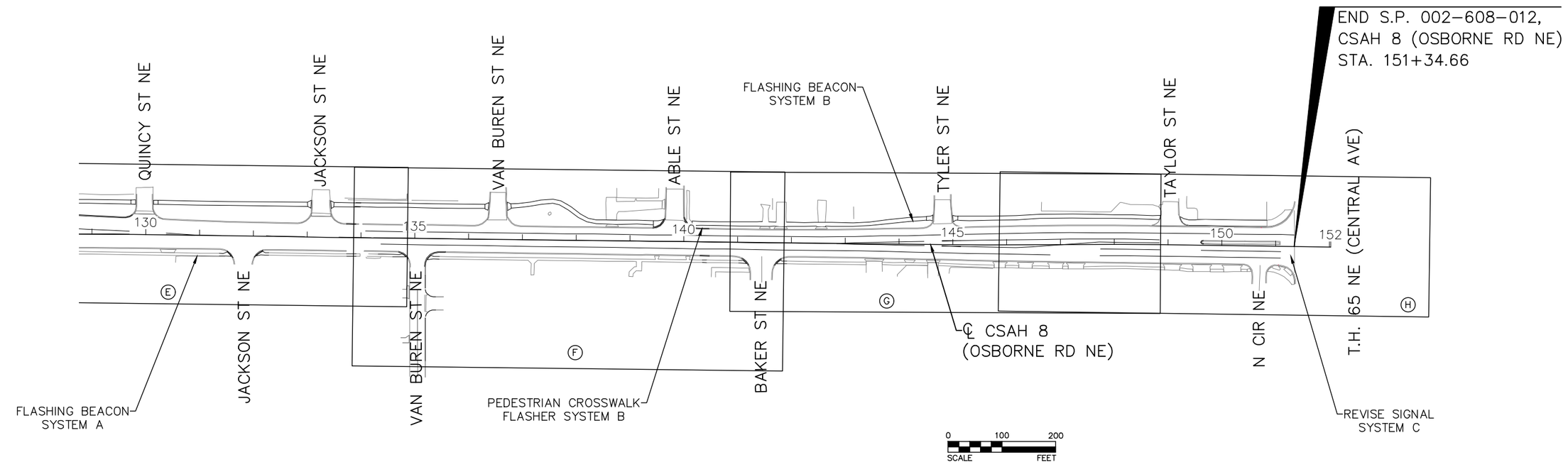
STATE AID APPROVALS:

6/9/ 2020
DISTRICT STATE AID ENGINEER:
REVIEWED FOR COMPLIANCE WITH STATE AID AND FEDERAL AID RULES/POLICY

for 6/9/ 2020
STATE AID ENGINEER:
APPROVED FOR STATE AID AND FEDERAL AID FUNDING



PLAN SHEET LAYOUT								
GENERAL SHEET IDENTIFIER	A	B	C	D	E	F	G	H
EXISTING UTILITIES & TOPOGRAPHY & ROW PLAN	38	38	39	39	40	40	41	41
REMOVAL PLAN	42	42	43	43	44	44	45	45
CONSTRUCTION PLAN	46	47	48	49	50	51/54	52	53
DRAINAGE PLAN	70	71	72	73	74	75	76	77
EROSION CONTROL PLAN	84	84	85	85	86	86	87	87



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0 100 200
SCALE FEET

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CODY L. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

DESIGNED	DRAWN	CHECKED
TJT	TJT	CLC

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REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
GENERAL LAYOUT

SHEET 2 OF 189

STATEMENT OF ESTIMATED QUANTITIES

TAB	SHEET NO.	ITEM NO.	ITEM DESCRIPTION	NOTES	UNIT	TOTAL ESTIMATED QUANTITIES	PARTICIPATING S.P. 002-608-012 COUNTY ROADWAY QUANTITY	PARTICIPATING S.P. 002-608-012 COUNTY STORM SEWER QUANTITY	NON-PART S.A.P. 002-608-012 COUNTY ROADWAY QUANTITY
		2021.501	MOBILIZATION		LUMP SUM	1	1		
		2031.502	FIELD OFFICE TYPE D		EACH	1	1		
B	8	2101.524	CLEARING		TREE	1	1		
B	8	2101.524	GRUBBING		TREE	1	1		
I	90	2102.503	PAVEMENT MARKING REMOVAL		LIN FT	17180	17180		
F	78	2104.502	REMOVE DRAINAGE STRUCTURE		EACH	6	6		
K	137	2104.502	REMOVE SIGN TYPE SPECIAL		EACH	6	6		
J	137	2104.502	REMOVE SIGN TYPE C		EACH	98	98		
K	137	2104.502	SALVAGE SIGN TYPE SPECIAL		EACH	27	27		
B	8	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)		LIN FT	353	353		
B	8	2104.503	SAWING BITUMINOUS PAVEMENT (MILL DEPTH)		LIN FT	934	934		
B	8	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)		LIN FT	5574	5574		
F	78	2104.503	REMOVE SEWER PIPE (STORM)		LIN FT	210	210		
B	8	2104.503	REMOVE CURB AND GUTTER		LIN FT	5079	5079		
B	8	2104.518	REMOVE CONCRETE PAVEMENT		SQ FT	3821	3821		
B	8	2104.518	REMOVE CONCRETE MEDIAN		SQ FT	4428	4428		
B	8	2104.518	REMOVE BITUMINOUS PAVEMENT		SQ FT	32652	32652		
B	8	2104.518	REMOVE BITUMINOUS WALK		SQ FT	34491			34491
B	8	2104.518	REMOVE CONCRETE WALK		SQ FT	4518	4518		
		2104.618	REMOVE STONE		SQ FT	147	147		
A	7	2106.507	EXCAVATION - COMMON	(P)	CU YD				
A	7	2106.507	SELECT GRANULAR EMBANKMENT (CV)	(P)	CU YD				
A	7	2106.507	COMMON EMBANKMENT (CV)	(P)	CU YD				
		2123.510	COMMON LABORERS	(1)	HOUR	40	40		
		2123.510	DOZER	(1)	HOUR	40	40		
		2123.510	10 CU YD TRUCK	(1)	HOUR	40	40		
		2123.510	3.0 CU YD FRONT END LOADER	(1)	HOUR	40	40		
		2123.610	CRAWLER MOUNTED BACKHOE	(1)	HOUR	40	40		
		2123.610	STREET SWEEPER (WITH PICKUP BROOM)	(1)	HOUR	40	40		
A	7	2211.507	AGGREGATE BASE (CV) CLASS 5	(P)	CU YD	1145	1014		131
B	8	2232.504	MILL BITUMINOUS SURFACE (3.0")		SQ YD	29593	29593		
C	8	2301.504	CONCRETE PAVEMENT 8"		SQ YD	866	866		
		2301.602	DRILL AND GROUT REINFORCMENT BAR (EPOXY COATED)		EACH	315	315		
D	8	2357.506	BITUMINOUS MATERIAL FOR TACK COAT		GALLON	1567	1567		
D	8	2360.509	TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)		TON	5402	5402		
D	8	2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (3,B)		TON	335	335		
D	8	2360.509	TYPE SP 12.5 BIT MIXTURE FOR PATCHING		TON	31	31		
D	8	2360.509	TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)(TRAIL)		TON	552			552
E	78	2451.507	FINE AGGREGATE BEDDING (CV)		CU YD	63		63	
E	78	2503.503	15" RC PIPE SEWER DES 3006 CL V		LIN FT	319		319	
E	78	2503.503	24" RC PIPE SEWER DES 3006 CL III		LIN FT	13		13	
E	78	2503.503	27" RC PIPE SEWER DES 3006 CL III		LIN FT	44		44	

NOTES:

(1) COMMON LABOR AND EQUIPMENT THAT MAY BE NEEDED, FOR USE AT THE DISCRETION OF ENGINEER FOR EXPLORATORY EXCAVATION DURING REMOVAL AND INSTALLATION OF STRUCTURES.

(P) DENOTES PLAN QUANTITY

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CODY J. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

DESIGNED TJT
DRAWN TJT
CHECKED CLC

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Email: Burnsville@bolton-menk.com
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REV	BY	DATE
2	TJT	07/01/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
STATEMENT OF ESTIMATED QUANTITIES

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TAB	SHEET NO.	ITEM NO.	ITEM DESCRIPTION	NOTES	UNIT	TOTAL ESTIMATED QUANTITIES	PARTICIPATING S.P. 002-608-012 COUNTY ROADWAY QUANTITY	PARTICIPATING S.P. 002-608-012 COUNTY STORM SEWER QUANTITY	NON-PART S.A.P. 002-608-012 COUNTY ROADWAY QUANTITY
E	78	2503.602	CONNECT INTO EXISTING STORM SEWER		EACH	6		6	
E	78	2503.602	CONNECT INTO EXISTING DRAINAGE STRUCTURE		EACH	5		5	
		2504.602	RELOCATE HYDRANT		EACH	1	1		
G	78	2506.502	CASTING ASSEMBLY		EACH	16		16	
G	78	2506.502	ADJUST FRAME AND RING CASTING		EACH	16		16	
E	78	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020		LIN FT	50		50	
		2506.521	FURNISH AND INSTALL CASTING	(3)	EACH	2		2	
E	78	2506.602	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 1		EACH	1		1	
E	78	2506.602	CONSTRUCT DRAINAGE STRUCTURE DESIGN SPECIAL 2		EACH	1		1	
C	8	2521.518	4" CONCRETE WALK		SQ FT	4085	4085		
C	8	2521.518	6" CONCRETE WALK		SQ FT	6490	6490		
C	8	2531.503	CONCRETE CURB AND GUTTER DESIGN B418 (MOD)	(2)	LIN FT	1160	1160		
C	8	2531.503	CONCRETE CURB AND GUTTER DESIGN B612		LIN FT	71	71		
C	8	2531.503	CONCRETE CURB AND GUTTER DESIGN B618		LIN FT	2363	2363		
C	8	2531.503	CONCRETE CURB AND GUTTER DESIGN B624		LIN FT	780	780		
C	8	2531.503	CONCRETE CURB DESIGN V10		LIN FT	13			13
C	8	2531.504	6" CONCRETE DRIVEWAY PAVEMENT		SQ YD	64	64		
C	8	2531.618	TRUNCATED DOMES		SQ FT	792	792		
		2563.601	TRAFFIC CONTROL		LUMP SUM	1	1		
I	90	2563.602	RAISED PAVEMENT MARKER TEMPORARY		EACH	906	906		
		2563.610	POLICE OFFICER		HOUR	40	40		
		2563.613	PORTABLE CHANGEABLE MESSAGE SIGN		UNIT DAY	60	60		
L	137	2564.502	OBJECT MARKER TYPE X4-2		EACH	7	7		
J	137	2564.518	SIGN PANELS TYPE C		SQ FT	691	691		
K	137	2564.602	INSTALL SIGN TYPE SPECIAL		EACH	27	27		
		2565.616	FLASHING BEACON SYSTEM A		SYSTEM	1	1		
		2565.616	FLASHING BEACON SYSTEM B		SYSTEM	1	1		
		2565.616	PEDESTRIAN CROSSWALK FLASHER SYSTEM A		SYSTEM	1	1		
		2565.616	PEDESTRIAN CROSSWALK FLASHER SYSTEM B		SYSTEM	1	1		
		2565.616	PEDESTRIAN CROSSWALK FLASHER SYSTEM C		SYSTEM	1	1		
		2565.616	REVISE SIGNAL SYSTEM A		SYSTEM	1	1		
		2565.616	REVISE SIGNAL SYSTEM B		SYSTEM	1	1		
		2565.616	REVISE SIGNAL SYSTEM C		SYSTEM	1	1		
		2565.616	TEMPORARY SIGNAL SYSTEM A		SYSTEM	1	1		
		2565.616	TEMPORARY SIGNAL SYSTEM B		SYSTEM	1	1		
		2573.501	STABILIZED CONSTRUCTION EXIT		LUMP SUM	1	1		
		2573.501	EROSION CONTROL SUPERVISOR		LUMP SUM	1	1		
H	88	2573.502	STORM DRAIN INLET PROTECTION		EACH	50	50		
H	88	2573.503	SILT FENCE, TYPE MS		LIN FT	2605	2605		
H	88	2573.503	SEDIMENT CONTROL LOG TYPE WOOD CHIP		LIN FT	40	40		
H	88	2574.508	FERTILIZER TYPE 3		POUND	460	460		
H	88	2575.505	SEEDING		ACRE	2.3	2		

NOTES:

(2) SEE DETAIL IN MISCELLANEOUS DETAILS

(3) ITEM INCLUDES ALL LABOR AND MATERIALS TO FURNISH AND INSTALL TRENCH FRAME AND SOLID GRATE SHOWN ON SHEET 80 OF THE DRAINAGE DETAILS.
ITEMS LOCATED STA 101+63.31, 43' LT AND 149+55.60, 34' LT. SEE SHEETS 46 AND 53 FOR PLAN LOCATION.

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CSAH 8 RECONSTRUCTION
STATEMENT OF ESTIMATED QUANTITIES

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H	88	2575.508	SEED MIXTURE 25-151		POUND	460	460		
H	88	2575.508	HYDRAULIC REINFORCED FIBER MATRIX		POUND	8977	8977		
H	88	2575.523	RAPID STABILIZATION METHOD 3		M GALLON	69	69		
I	90	2581.503	REMOVABLE PREFORM PAVEMENT MARKING TAPE		LIN FT	28905	28905		
I	90	2581.603	REMOVABLE PREFORMED PLASTIC MASK (BLACK)		LIN FT	400	400		
I	90	2581.618	REMOVABLE PREFORMED PLASTIC MASK (BLACK)		SQ FT	96	96		
I	90	2582.503	4" SOLID LINE PAINT		LIN FT	11600	11600		
I	90	2582.503	4" DOUBLE SOLID LINE PAINT		LIN FT	3000	3000		
M	138	2582.503	4" SOLID LINE MULTI - COMP		LIN FT	16341	16341		
M	138	2582.503	4" DOUBLE SOLID LINE MULTI - COMP		LIN FT	2363	2363		
M	138	2582.503	4" DOTTED LINE MULTI - COMP		LIN FT	83	83		
M	138	2582.503	8" DOTTED LINE MULTI-COMP		LIN FT	56	56		
M	138	2582.503	4" BROKEN LINE MULTI-COMP		LIN FT	810	810		
M	138	2582.503	24" SOLID LINE PREFORM THERMO GROUND IN ESR		LIN FT	91	91		
M	138	2582.518	PAVEMENT MESSAGE PREFORM THERMOPLASTIC		SQ FT	874	874		
M	138	2582.518	CROSSWALK PREFORM THERMOPLASTIC		SQ FT	3926	3926		
M	138	2582.518	CROSSWALK PREFORM THERMOPLASTIC GROUND IN ESR		SQ FT	676	676		
I	90	2582.518	PAVEMENT MESSAGE PAINT		SQ FT	80	80		
M	138	2582.618	PAVEMENT MARKING SPECIAL		SQ FT	945	945		

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REV	BY	DATE
1	ZAP	6/24/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
STATEMENT OF ESTIMATED QUANTITIES

SOIL AND CONSTRUCTION NOTES

1. TOP OF SUBGRADE ON THIS PROJECT IS DEFINED AS THE BOTTOM OF THE CLASS 5.

2. PRIOR TO CONSTRUCTION OR SUBCUTTING, STRIP ALL IN–PLACE SLOPE DRESSING MATERIALS IN AREAS TO BE DISTURBED BY CONSTRUCTION.

3. SLOPE DRESSING EXCAVATION IS INCLUDED IN EXCAVATION – COMMON. EXCAVATED SLOPE DRESSING SHALL BE REUSED AS SLOPE DRESSING EMBANKMENT AT MINIMUMN 6" DEPTH AS DIRECTED BY THE ENGINEER. SLOPE DRESSING EMBANKMENT IS INCLUDED IN THE COMMON EMBANKMENT (CV).

4. EXISTING / STRIPPED TOPSOIL SHALL BE STOCK PILED WITHIN THE PROJECT LIMITS.

5. PROVIDE A FULL DEPTH SAWCUT WHERE PLACING NEW PAVEMENT NEXT TO INPLACE PAVEMENT TO ENSURE A UNIFORM JOINT.

6. EMBANKMENT MATERIALS USED BENEATH THE ROAD CORE AND SIDEWALK AREAS SHALL MEET THE REQUIREMENTS OF SELECT GRADING MATERIALS PER MnDOT SPECIFICATION 2106.

7. WHERE EXCAVATIONS ARE MADE BELOW THE TOP OF SUBGRADE FOR INSTALLATION OF UTILITIES, BACKFILL WITH LIKE MATERIAL MEETING THE REQUIREMENTS OF SELECT GRADING MATERIAL. ORGANIC SOILS AND MATERIALS CONSIDERED UNSTABLE OR NON–STRUCTURAL GRADING MATERIALS SHALL NOT BE REUSED.

8. THE FOLLOWING COMPACTION TESTING SHALL BE USED:
   A. NON–STRUCTURAL GRADING MATERIALS: QUALITY COMPACTION METHOD (SPEC 2106)
   B. TRENCHES: QUALITY COMPACTION METHOD (SPEC 2451)
   C. SELECT GRADING MATERIAL: QUALITY COMPACTION METHOD
   D. GRANULAR, SELECT GRANULAR, & AGGREGATE BASE MATERIALS: QUALITY COMPACTION METHOD

9. IN ANY CASE WHERE GRANULAR EMBANKMENTS OR BACKFILL JOIN NON–GRANULAR SOIL EMBANKMENTS OR BACKFILL, PROVIDE A 1(V):20(H) TRANSITION TAPER BETWEEN THE CHANGES IN MATERIAL TO PREVENT AN ABRUPT SOILS DIFFERENTIAL. THE 1(V):20(H) TAPER SHALL BE CONSTRUCTED SO THAT THE GRANULAR BACKFILL MATERIAL OVERLAYS THE ADJACENT NON–GRANULAR SOIL BACKFILL.

10. WHERE CONNECTING NEW SURFACING ADJACENT TO ANY INPLACE PAVEMENTS TO BE WIDENED, CUT VERTICALLY TO THE BOTTOM OF THE INPLACE SURFACING OR THE BOTTOM OF THE NEW SURFACING DESIGN, WHICHEVER IS DEEPER. THEN AT A 2(V):1(H) SLOPE TO THE TOP OF THE RECOMMENDED SUBGRADE. DO NOT UNDERMINE ADJACENT PAVEMENTS.

11. AS A PRECAUTIONARY MEASURE FROM A SOILS STANDPOINT, TRAFFIC LANES TO BE USED ADJACENT TO CONSTRUCTION MUST BE DELINEATED TO KEEP VEHICLES A SAFE DISTANCE AWAY FROM THE ADJACENT EXCAVATION. THE DELINEATION SHOULD COINCIDE WITH POINTS ESTABLISHED BY PROJECTING 1(V):2(H) OR GREATER (FLATTER) SLOPE BETWEEN THE EDGE OF THE TRAFFIC SURFACE AND THE BOTTOM OF THE EXCAVATION.

12. ALL DISTURBED ROADWAY MATERIALS SUCH AS CONCRETE, BITUMINOUS, AND AGGREGATES MAY BE UTILIZED ACCORDING TO MnDOT SPECIFICATIONS AND PROJECT SPECIAL PROVISIONS FOR REUSED MATERIALS THE CONTRACTOR SHALL PERFORM ALL QUALITY CONTROL TESTING AS REQUIRED. MATERIALS NOT UTILIZED ON THIS PROJECT WILL BECOME THE PROPERTY OF THE CONTRACTOR AND DISPOSED OFF THE RIGHT OF WAY IN ACCORDANCE WITH MnDOT SPECIFICATION 2104.

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

14. THE CONTRACTOR SHALL PROVIDE A BITUMINOUS TACK COAT BETWEEN ALL BITUMINOUS LIFTS AND PRIOR TO PLACING ANY BITUMINOUS MIXTURES ON EXISTING PAVEMENT OR MILLED SURFACES IN ACCORDANCE WITH MnDOT SPECIFICATION 2357.

15. ALL SLOPES IN THIS PLAN ARE 1 VERTICAL TO X HORIZONTAL.

16. NO EXTRA PAYMENT WILL BE MADE FOR STOCKPILING CONSTRUCTION MATERIAL OR RECYCLED MATERIAL.

17. EXISTING PAVEMENT DEPTH IS ESTIMATED TO BE 6" ALONG THE CORRIDOR.

18. HEAVY EQUIPMENT SHALL NOT BE USED FOR THE REMOVAL AND CONSTRUCTION OF THE BITUMINOUS TRAIL. THE CONTRACTOR SHALL COORDINATE WITH ST PAUL REGIONAL WATER SERVICES.

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT	
STANDARD PLATES	
PLATE NO.	DESCRIPTION
3000M	REINFORCED CONCRETE PIPE (6 SHEETS)
3006H	GASKET JOINT FOR R.C. PIPE (2 SHEETS)
3007F	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3145G	CONCRETE PIPE OR PRECAST BOX CULVERT TIES
4005M	MANHOLE OR CATCH BASIN TYPE A & B CONE SECTIONS PRECAST - DESIGN F
4011E	PRECAST CONCRETE BASE
4020J	MANHOLE OR CATCH BASIN (FOR USE WITH OR WITHOUT TRAFFIC LOADS) (2 SHEETS)
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
4108F	ADJUSTING RINGS FOR CATCH BASINS AND MANHOLES
4110F	COVER CASTING FOR MANHOLE (FOR USE IN ALL TRAFFIC AREAS) - CASTING NO. 715 AND 716
4132G	CATCH BASIN FRAME CASTING (FOR SQUARE GRATE) - CASTING NO. 805
4154B	CATCH BASIN GRATE CASTING - CASTING NO. 816
4180J	MANHOLE OR CATCH BASIN STEP
7020K	CONCRETE CURB DESIGN B, DESIGN V, DESIGN S, DESIGN DR AND DESIGN BR
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100H	CONCRETE CURB AND GUTTER (DESIGN B and DESIGN V)
7109C	MEDIAN NOSE AND ISLAND (UNDIVIDED TO DIVIDED ROADWAY)
7111J	INSTALLATION OF CATCH BASIN CASTINGS (CONCRETE CURB AND GUTTER)
7113A	CONCRETE APPROACH NOSE DETAIL
8000J	CHANNELIZERS
8150C	INSTALLATION OF CULVERT MARKERS

TABULATION INDEX

H: \AKCO\T43118096\CAD\C3D\plans\Misc\118096_Std_Plates.dwg

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.

CODY J. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

DESIGNED TJT
DRAWN TJT
CHECKED CLC

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE

S.P. 002–608–012
CSAH 8 RECONSTRUCTION
STANDARD PLATES & CONSTRUCTION NOTES

EARTHWORK TABULATION

A

STATION TO STATION			LOCATION	2106 EXCAVATION - COMMON (2) CU YD	2106 COMMON EMBANKMENT (CV) (1) CU YD	2106 SELECT GRANULAR EMBANKMENT (CV) CU YD	2211 AGGREGATE BASE (CV) CLASS 5 (3) CU YD
C.S.A.H. 8: S.P. 002-608-012							
100+00.00	TO	114+00.00	RT/LT	279	25	388	445
114+00.00	TO	128+00.00	RT/LT	76	76		230
128+00.00	TO	142+00.00	RT/LT	478	411		323
142+00.00	TO	151+34.66	RT/LT				16
SUBTOTAL				**833**	**512**	**388**	**1014**
C.S.A.H. 8: S.P. 002-608-012 (NON-PARTICIPATING)							
100+00.00	TO	114+00.00	LT				120
128+00.00	TO	142+00.00	LT				11
SUBTOTAL							**131**
TOTALS				**833**	**512**	**388**	**1145**

NOTES:
(1) COMMON EMBANKMENT INCLUDES 6" MIN. DEPTH OF TOPSOIL.
(2) TOPSOIL STRIP IS INCLUDED IN THE EXCAVATION-COMMON QUANTITY.
(3) AGGREGATE BASE CLASS 5 INCLUDES 4" UNDER 4" AND 6" CONCRETE WALK.

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BOLTON & MENK
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Phone: (952) 890-0509
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A	TJT	07/01/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
EARTHWORK TABULATION

SHEET 7R OF 189

MISCELLANEOUS REMOVALS

B

STATION TO STATION			LOCATION	2101 CLEARING	2101 GRUBBING	2104 SAWING CONCRETE PAVEMENT (FULL DEPTH)	2104 SAWING BITUMINOUS PAVEMENT (MILL DEPTH)	2104 SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	2104 REMOVE CURB AND GUTTER	2104 REMOVE CONCRETE PAVEMENT	2104 REMOVE CONCRETE MEDIAN	2104 REMOVE CONCRETE WALK	2104 REMOVE BITUMINOUS PAVEMENT	2104 REMOVE BITUMINOUS WALK	2232 MILL BITUMINOUS SURFACE (3.0")
				TREE	TREE	LIN FT	LIN FT	LIN FT	LIN FT	SQ FT	SQ FT	SQ FT	SQ FT	SQ FT	SQ YD
C.S.A.H. 8: S.P. 002-608-012															
100+00.00	TO	107+00.00	RT/LT	1	1	23	177	1784	1654	745	2283	531	6059	6532	3603
107+00.00	TO	114+00.00	RT/LT			124	111	238	347	1262	122	740	437	4239	3927
114+00.00	TO	121+00.00	RT/LT			20	64	1047	1027		573	976	7264	5373	3970
121+00.00	TO	128+00.00	RT/LT			70	49	1372	1285	1735	1450	667	12937	4131	3768
128+00.00	TO	135+00.00	RT/LT			25	128	491	275			651	3373	4171	3928
135+00.00	TO	142+00.00	RT/LT			35	125	612	415	79		780	2501	3862	3926
142+00.00	TO	149+00.00	RT/LT			28	71		24			173		4587	4706
149+00.00	TO	151+34.66	RT/LT			28	209	30	52				81	1596	1765
			TOTALS	**1**	**1**	**353**	**934**	**5574**	**5079**	**3821**	**4428**	**4518**	**32652**	**34491**	**29593**

CONCRETE

C

STATION TO STATION			LOCATION	2301 CONCRETE PAVEMENT 8"	2521 4" CONCRETE WALK	2521 6" CONCRETE WALK	2531 CONCRETE CURB AND GUTTER DESIGN B418 (MOD)	2531 CONCRETE CURB AND GUTTER DESIGN B612	2531 CONCRETE CURB AND GUTTER DESIGN B618	2531 CONCRETE CURB AND GUTTER DESIGN B624	2531 CONCRETE CURB DESIGN V10	2531 6" CONCRETE DRIVEWAY PAVEMENT	2531 TRUNCATED DOMES
				SQ YD	SQ FT	SQ FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	SQ YD	SQ FT
C.S.A.H. 8: S.P. 002-608-012													
100+00.00	TO	107+00.00	RT/LT	413	1505	180	812			700		40	8
107+00.00	TO	114+00.00	RT/LT	194		580		71	54	80			76
114+00.00	TO	121+00.00	RT/LT		376	1471			782				140
121+00.00	TO	128+00.00	RT/LT	259	28	821			767				128
128+00.00	TO	135+00.00	RT/LT		1100	1246	174		278				184
135+00.00	TO	142+00.00	RT/LT		1076	1413	174		366		13	16	176
142+00.00	TO	149+00.00	RT/LT			674			58			8	56
149+00.00	TO	151+34.66	RT/LT			105			58				24
			TOTALS	**866**	**4085**	**6490**	**1160**	**71**	**2363**	**780**	**13**	**64**	**792**

BITUMINOUS

D

STATION TO STATION			LOCATION	2357 BITUMINOUS MATERIAL FOR TACK COAT (1)	2360 TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) (SPWEB340C)(2)	2360 TYPE SP 12.5 NON WEARING COURSE MIXTURE (3,B) (SPNWB330B)(2)	2360 TYPE SP 12.5 BIT MIXTURE FOR PATCHING (SPWEB340C)(2)	2360 TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)(TRAIL) (SPWEB240B)(2)
				GALLON	TON	TON	TON	TON
C.S.A.H. 8: S.P. 002-608-012								
100+00.00	TO	107+00.00	RT/LT	197	680	65	4	71
107+00.00	TO	114+00.00	RT/LT	199	684	9		73
114+00.00	TO	121+00.00	RT/LT	217	749	67		90
121+00.00	TO	128+00.00	RT/LT	220	758	119	23	69
128+00.00	TO	135+00.00	RT/LT	202	697	23		71
135+00.00	TO	142+00.00	RT/LT	208	718	52		77
142+00.00	TO	149+00.00	RT/LT	236	812			76
149+00.00	TO	151+34.66	RT/LT	88	304		4	25
			TOTALS	**1567**	**5402**	**335**	**31**	**552**

Notes:

(1) APPLY AT A RATE OF 0.05 GAL/SQ YD

(2) APPLY AT A RATE OF 115 POUNDS/ SY-IN

H: \AKCO\T43118096\CAD\C3D\plans\Tabs\118096_tab.dwg

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BOLTON & MENK
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BURNSVILLE, MINNESOTA 55337
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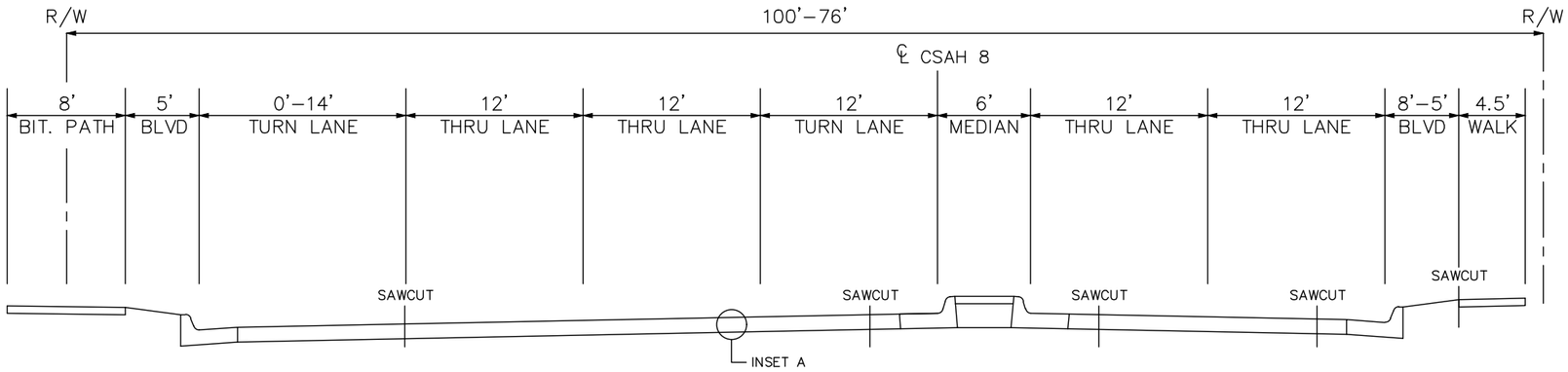
S.P. 002-608-012
CSAH 8 RECONSTRUCTION
QUANTITY TABULATIONS

EXISTING C.S.A.H. 8 / OSBORNE RD NE
STA. 100+71 TO STA. 104+89



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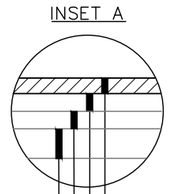
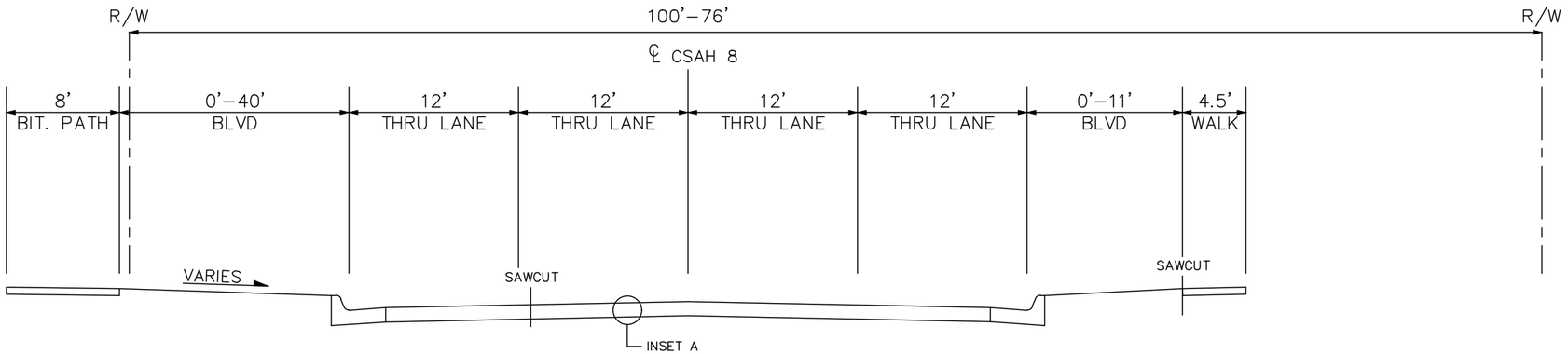


EXISTING C.S.A.H. 8 / OSBORNE RD NE
STA. 104+89 TO STA. 117+73
STA. 125+00 TO STA. 145+00



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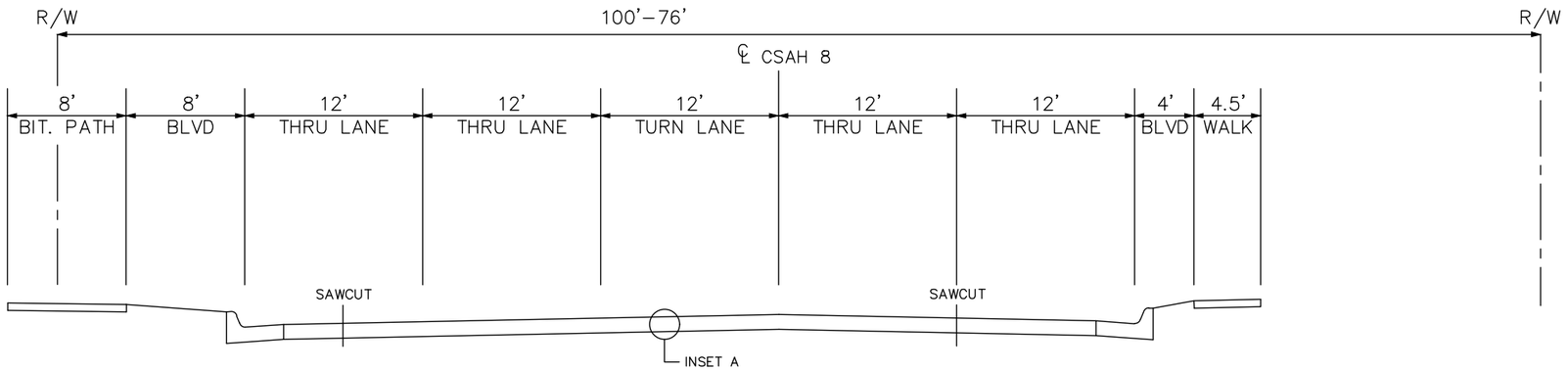
STA. 117+73 TO STA. 120+00



GENERAL NOTES:

SEE REMOVAL PLAN FOR PRECISE SAWCUT LOCATIONS, LENGTH, DEPTH & TYPE

H: \AKCO\T43118096\CAD\C3D\plans\Typicals\118096_typ01.dwg

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BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
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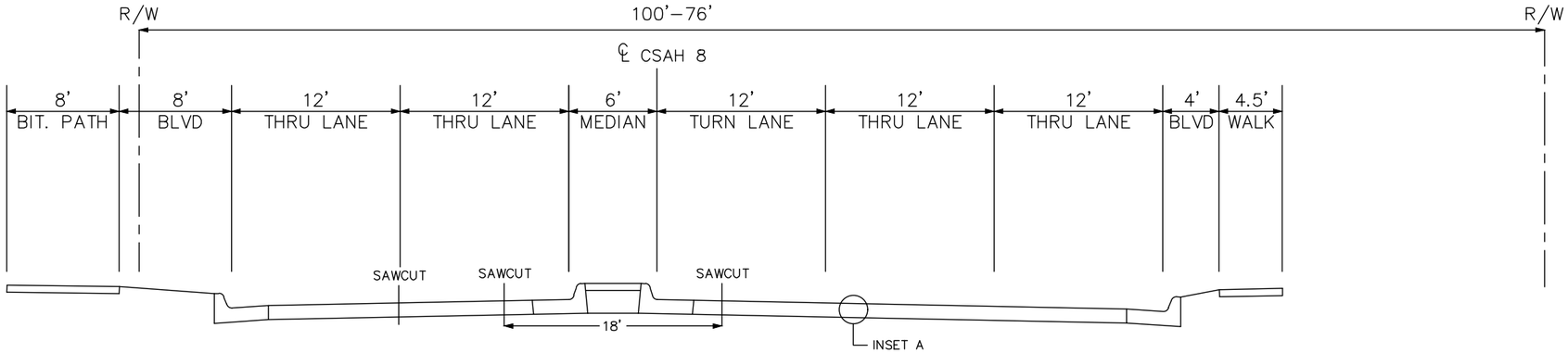
S.P. 002–608–012
CSAH 8 RECONSTRUCTION
TYPICAL SECTIONS

SHEET 9 OF 189

EXISTING C.S.A.H. 8 / OSBORNE RD NE
STA. 120+00 TO STA. 122+50



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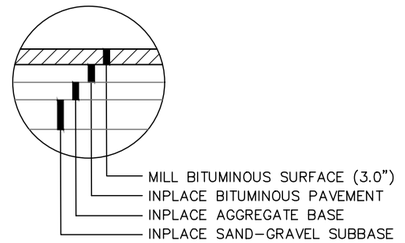

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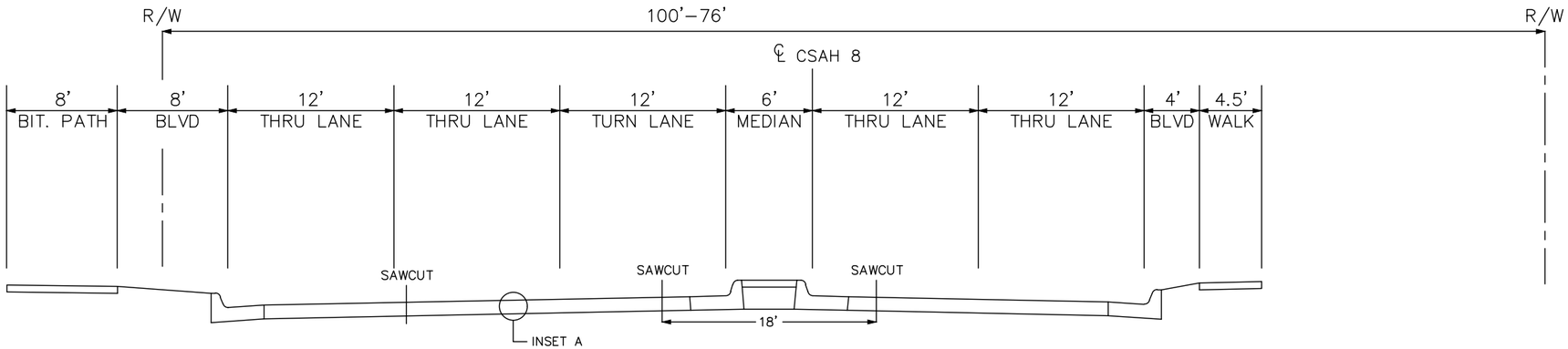
STA. 122+50 TO STA. 125+00



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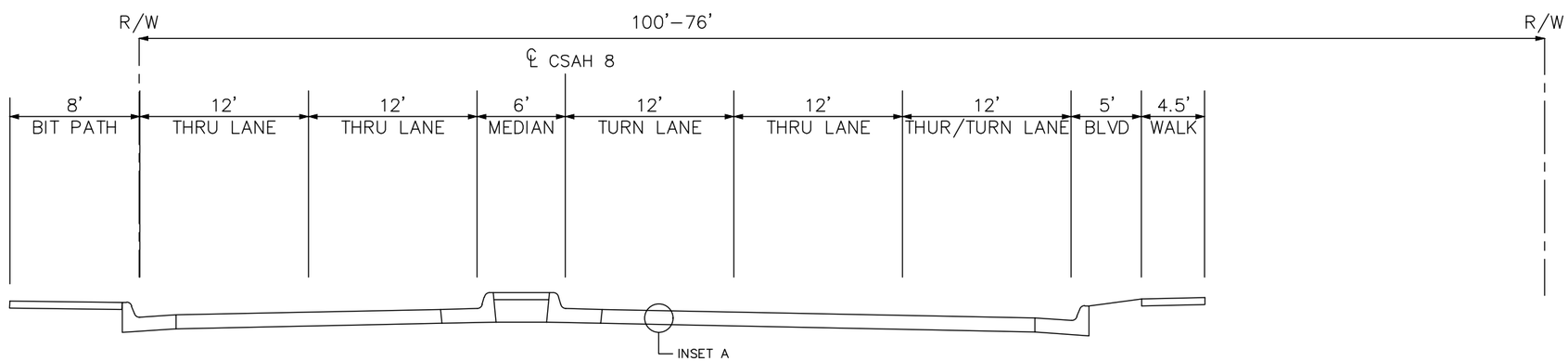
STA. 145+00 TO STA. 151+35



GENERAL NOTES:

SEE REMOVAL PLAN FOR PRECISE SAWCUT LOCATIONS, LENGTH, DEPTH & TYPE

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BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

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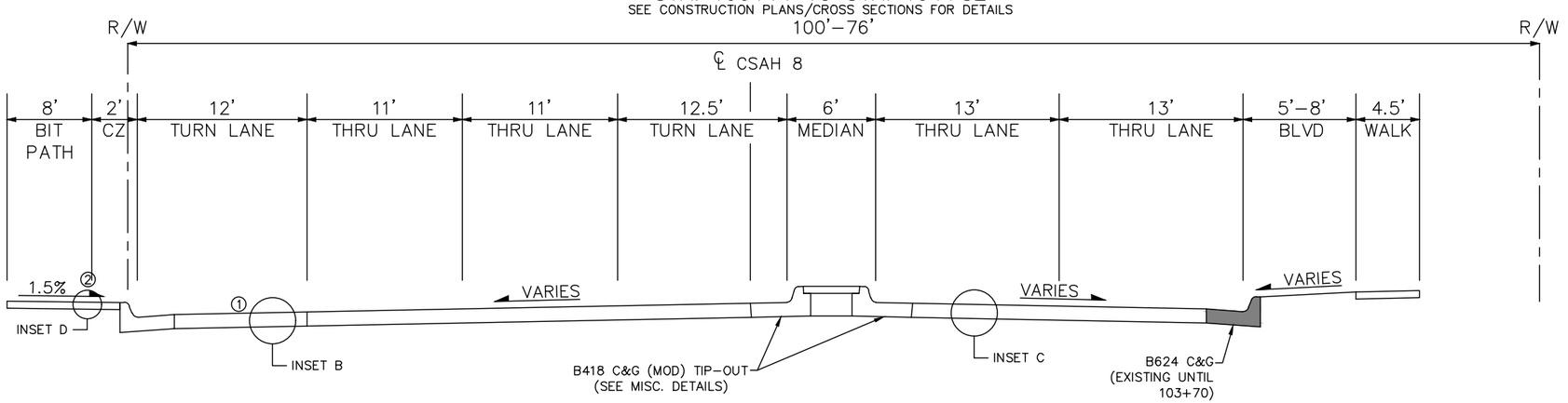
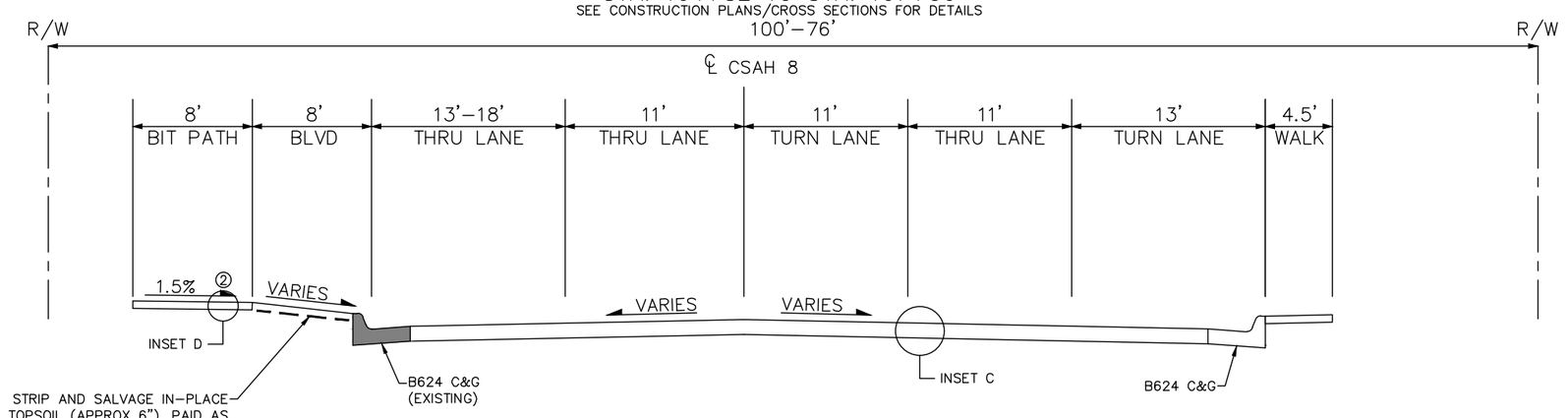
S.P. 002–608–012
CSAH 8 RECONSTRUCTION
TYPICAL SECTIONS

SHEET 10 OF 189

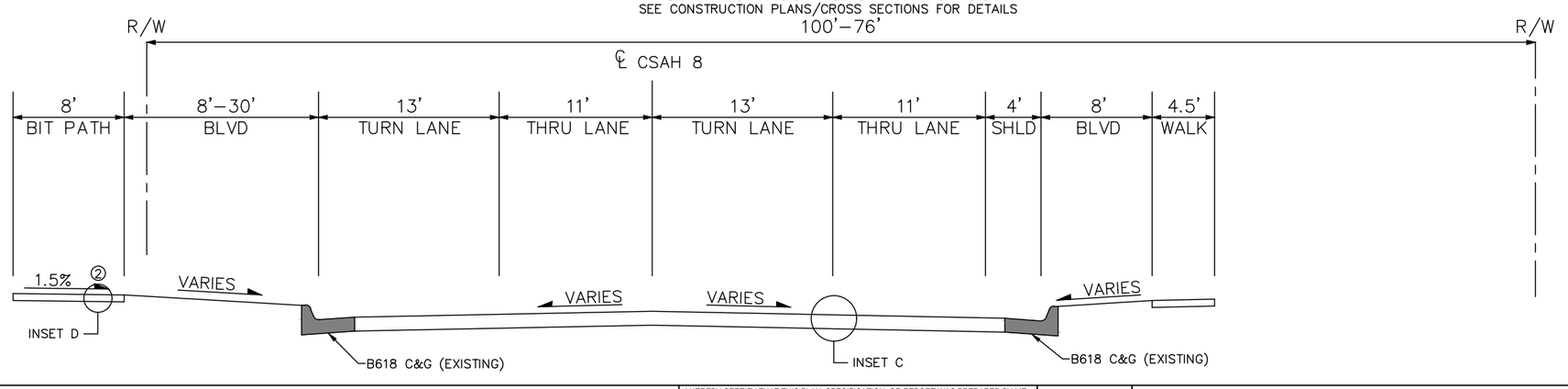
PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 100+71 TO STA. 104+82
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



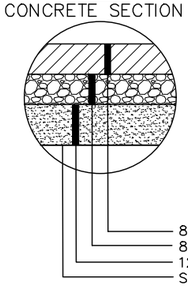
PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 104+82 TO STA. 107+50
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



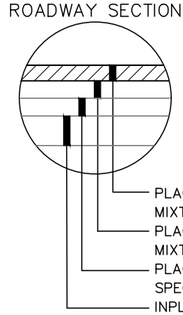
PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 107+50 TO STA. 110+00
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



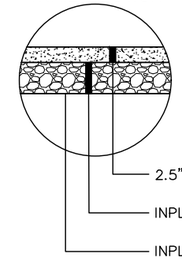
INSET B
CONCRETE SECTION



INSET C
ROADWAY SECTION



INSET D
TRAIL SECTION



GENERAL NOTES:

ALL DIMENSIONS ARE IN FEET, UNLESS OTHERWISE NOTED.

THE TOP OF GRADING GRADE IS DEFINED AS THE BOTTOM OF THE CLASS 5 AGGREGATE BASE.

UNLESS OTHERWISE INDICATED, THE GRADING GRADE AND TOP OF SUBGRADE WILL HAVE THE SAME SLOPE AS THE FINISHED ROAD SURFACE.

PATH TO HAVE 2 FT CLEAR ZONE ON EACH SIDE.

SPECIFIC NOTES:

① REINFORCED. SEE DETAIL IN MISCELLANEOUS DETAILS.

② REPLACING/ADDING AGGREGATE BASE ONLY UP TO 110+00

③ NON WEARING COURSE AND AGGREGATE BASE TO BE PLACED ONLY FROM SAWCUT TO SAWCUT/NEW CURB.

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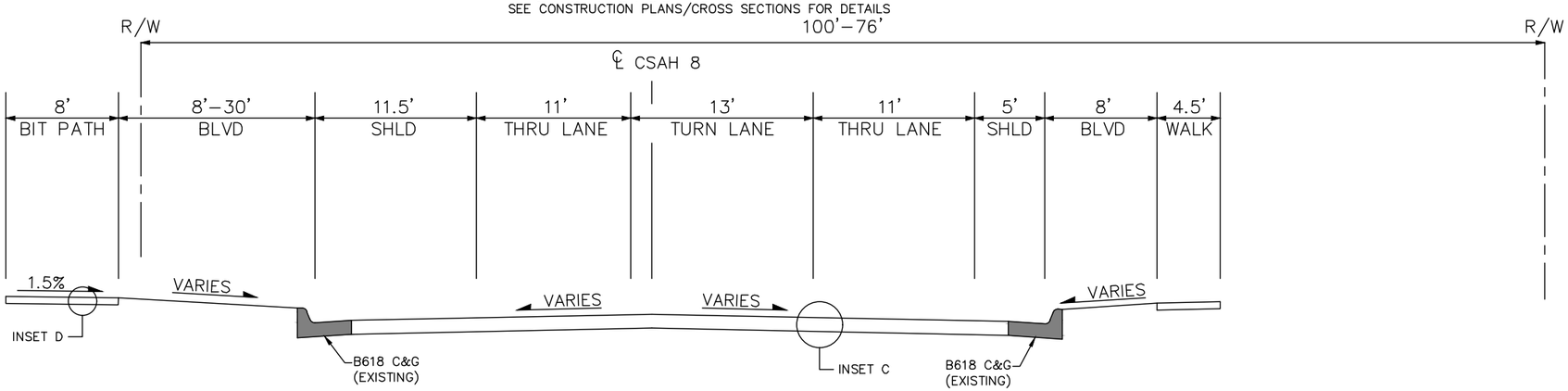
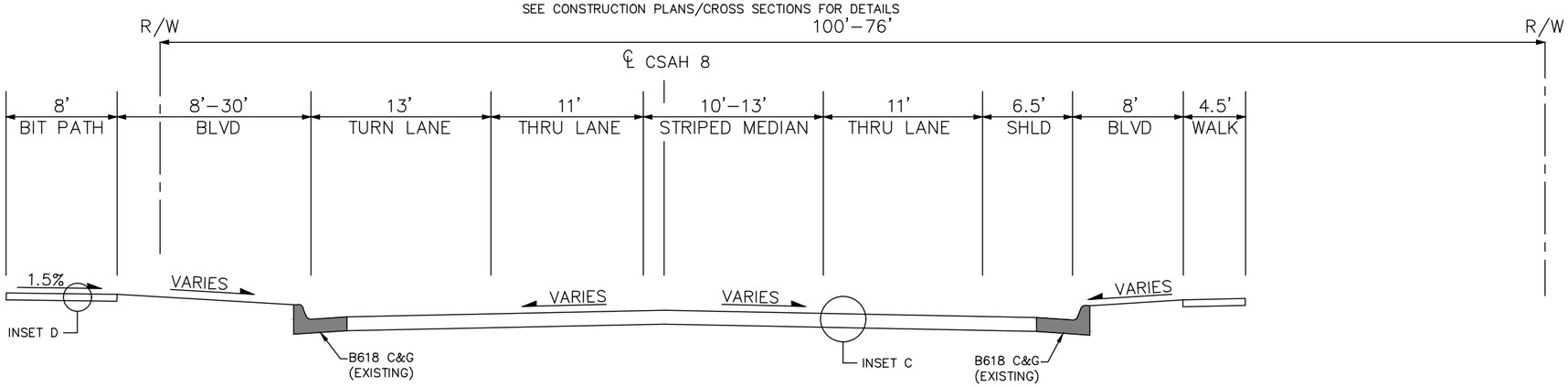
S.P. 002-608-012
CSAH 8 RECONSTRUCTION
TYPICAL SECTIONS

SHEET 11 OF 189

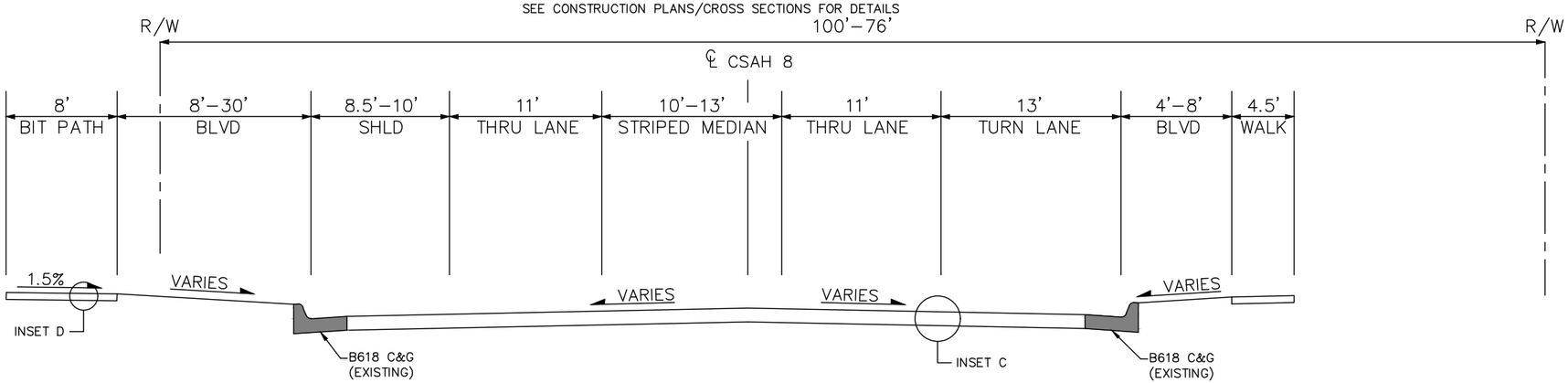
PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 110+00 TO STA. 114+00
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 114+00 TO STA. 115+50
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 115+50 TO STA. 117+50
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



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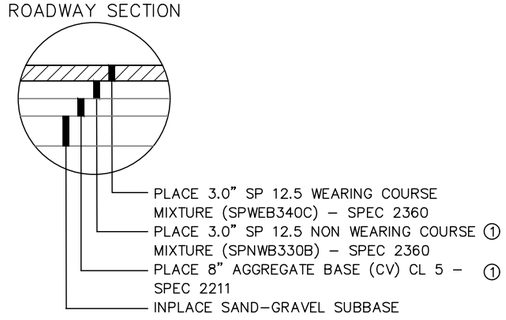
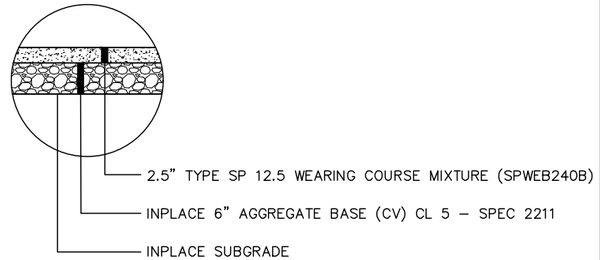
ROADWAY SECTION



INSET D
TRAIL SECTION



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DRAWN TJT
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CSAH 8 RECONSTRUCTION
TYPICAL SECTIONS

SHEET 12 OF 189

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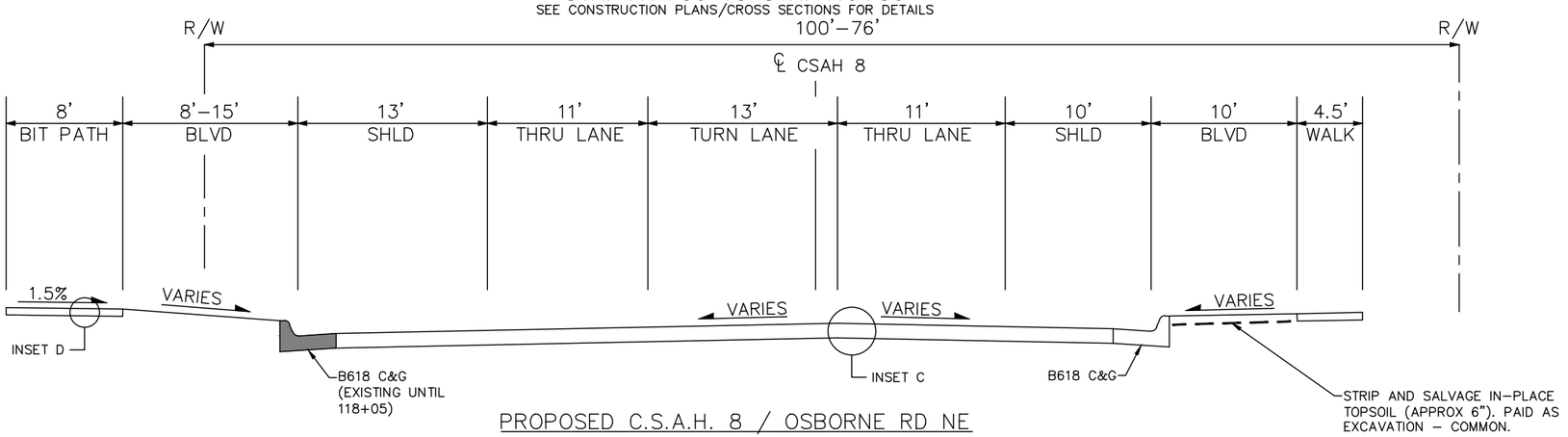
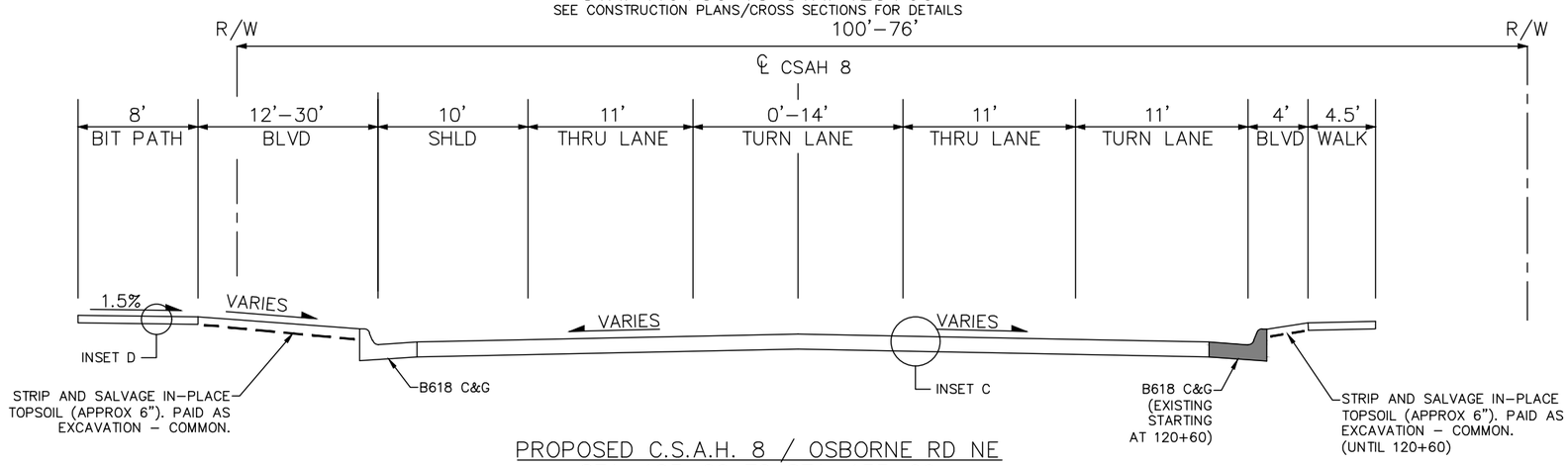
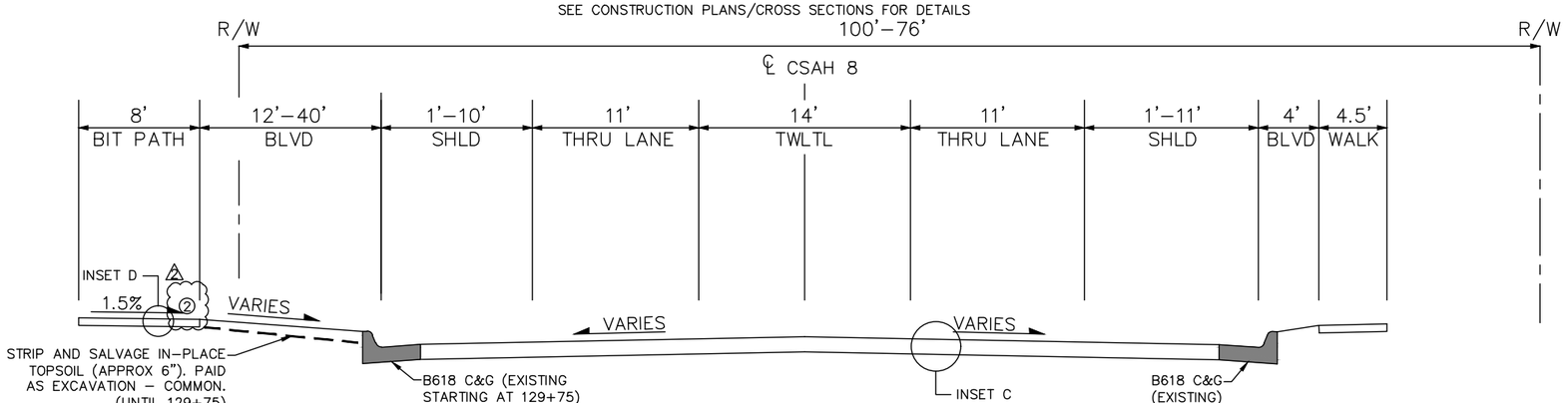
PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 117+50 TO STA. 119+50
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



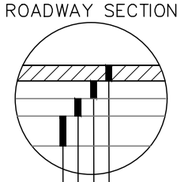
PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 119+50 TO STA. 123+00
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 123+00 TO STA. 133+69
STA. 134+40 TO STA. 140+25
STA. 140+96 TO STA. 146+50
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS

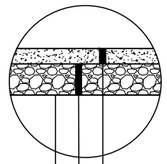


INSET C
ROADWAY SECTION



- PLACE 3.0" SP 12.5 WEARING COURSE MIXTURE (SPWEB340C) – SPEC 2360
- PLACE 3.0" SP 12.5 NON WEARING COURSE MIXTURE (SPNWB330B) – SPEC 2360 ①
- PLACE 8" AGGREGATE BASE (CV) CL 5 – SPEC 2211 ①
- INPLACE SAND–GRAVEL SUBBASE

INSET D
TRAIL SECTION



- 2.5" TYPE SP 12.5 WEARING COURSE MIXTURE (SPWEB240B)
- INPLACE 6" AGGREGATE BASE (CV) CL 5 – SPEC 2211 ②
- INPLACE SUBGRADE

GENERAL NOTES:

ALL DIMENSIONS ARE IN FEET, UNLESS OTHERWISE NOTED.

THE TOP OF GRADING GRADE IS DEFINED AS THE BOTTOM OF THE CLASS 5 AGGREGATE BASE.

UNLESS OTHERWISE INDICATED, THE GRADING GRADE AND TOP OF SUBGRADE WILL HAVE THE SAME SLOPE AS THE FINISHED ROAD SURFACE.

PATH TO HAVE 2 FT CLEAR ZONE ON EACH SIDE.

SPECIFIC NOTES:

① NON WEARING COURSE AND AGGREGATE BASE TO BE PLACED ONLY FROM SAWCUT TO SAWCUT/NEW CURB.

② REPLACING/ADDING AGGREGATE BASE BETWEEN STA. 137+00 – 138+00

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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.

CODY L. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

DESIGNED	DRAWN	CHECKED
TJT	TJT	CLC

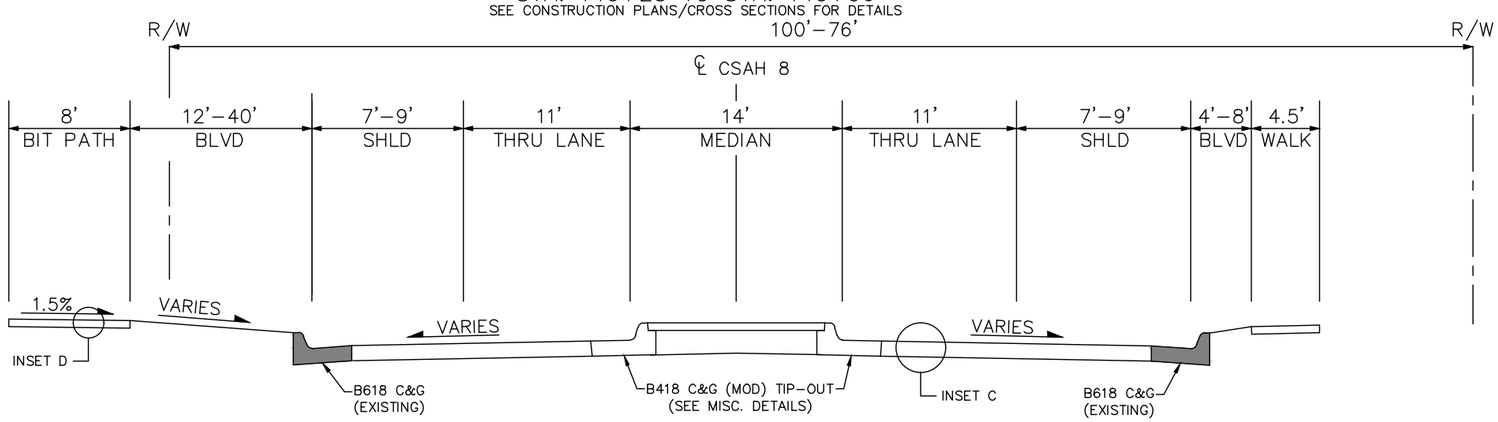
BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE
1	TJT	07/01/20

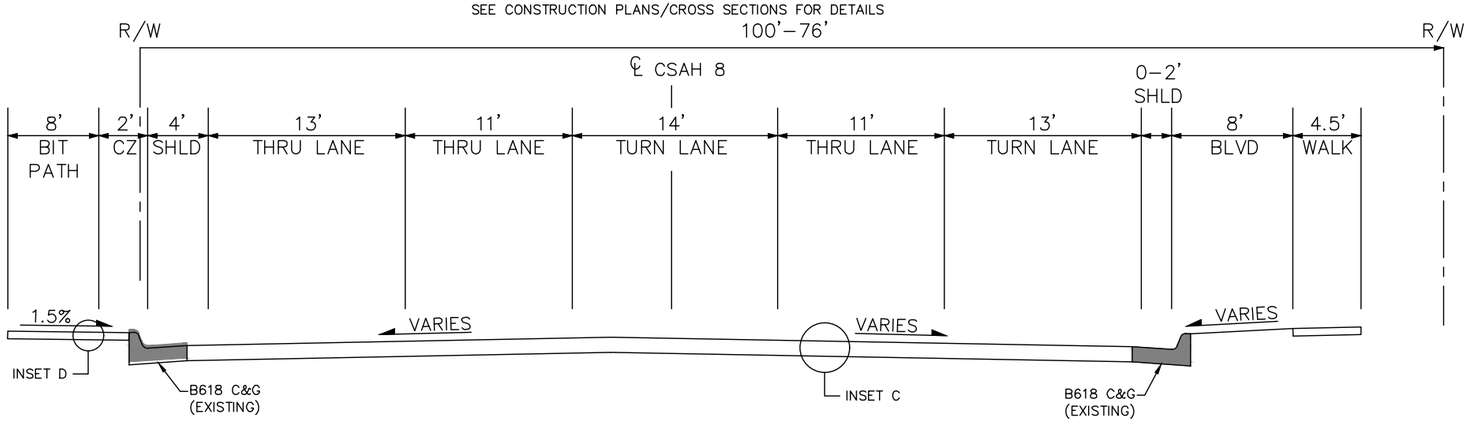
S.P. 002–608–012
CSAH 8 RECONSTRUCTION
TYPICAL SECTIONS

SHEET 13R OF 189

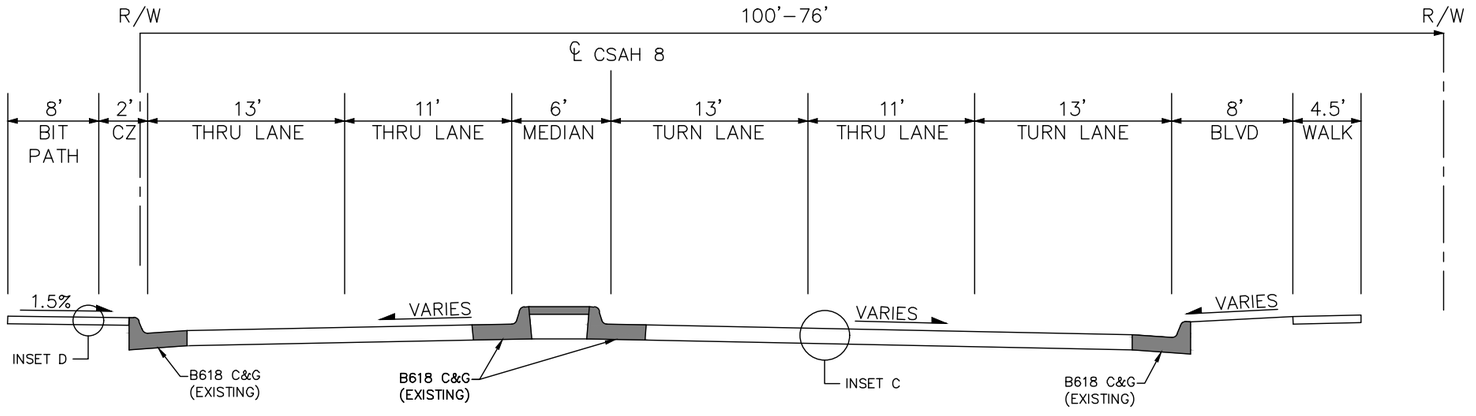
PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 133+69 TO STA. 134+40
STA. 140+25 TO STA. 140+96
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



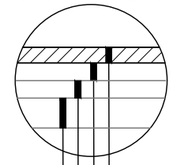
PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 146+50 TO STA. 149+60
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



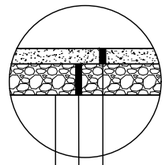
PROPOSED C.S.A.H. 8 / OSBORNE RD NE
STA. 149+60 TO STA. 151+35
SEE CONSTRUCTION PLANS/CROSS SECTIONS FOR DETAILS



INSET C
ROADWAY SECTION



INSET D
TRAIL SECTION



GENERAL NOTES:

ALL DIMENSIONS ARE IN FEET, UNLESS OTHERWISE NOTED.

THE TOP OF GRADING GRADE IS DEFINED AS THE BOTTOM OF THE CLASS 5 AGGREGATE BASE.

UNLESS OTHERWISE INDICATED, THE GRADING GRADE AND TOP OF SUBGRADE WILL HAVE THE SAME SLOPE AS THE FINISHED ROAD SURFACE.

PATH TO HAVE 2 FT CLEAR ZONE ON EACH SIDE.

SPECIFIC NOTES:

① NON WEARING COURSE AND AGGREGATE BASE TO BE PLACED ONLY FROM SAWCUT TO SAWCUT/NEW CURB.

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CODY L. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

DESIGNED	DRAWN	CHECKED
TJT	TJT	CLC

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

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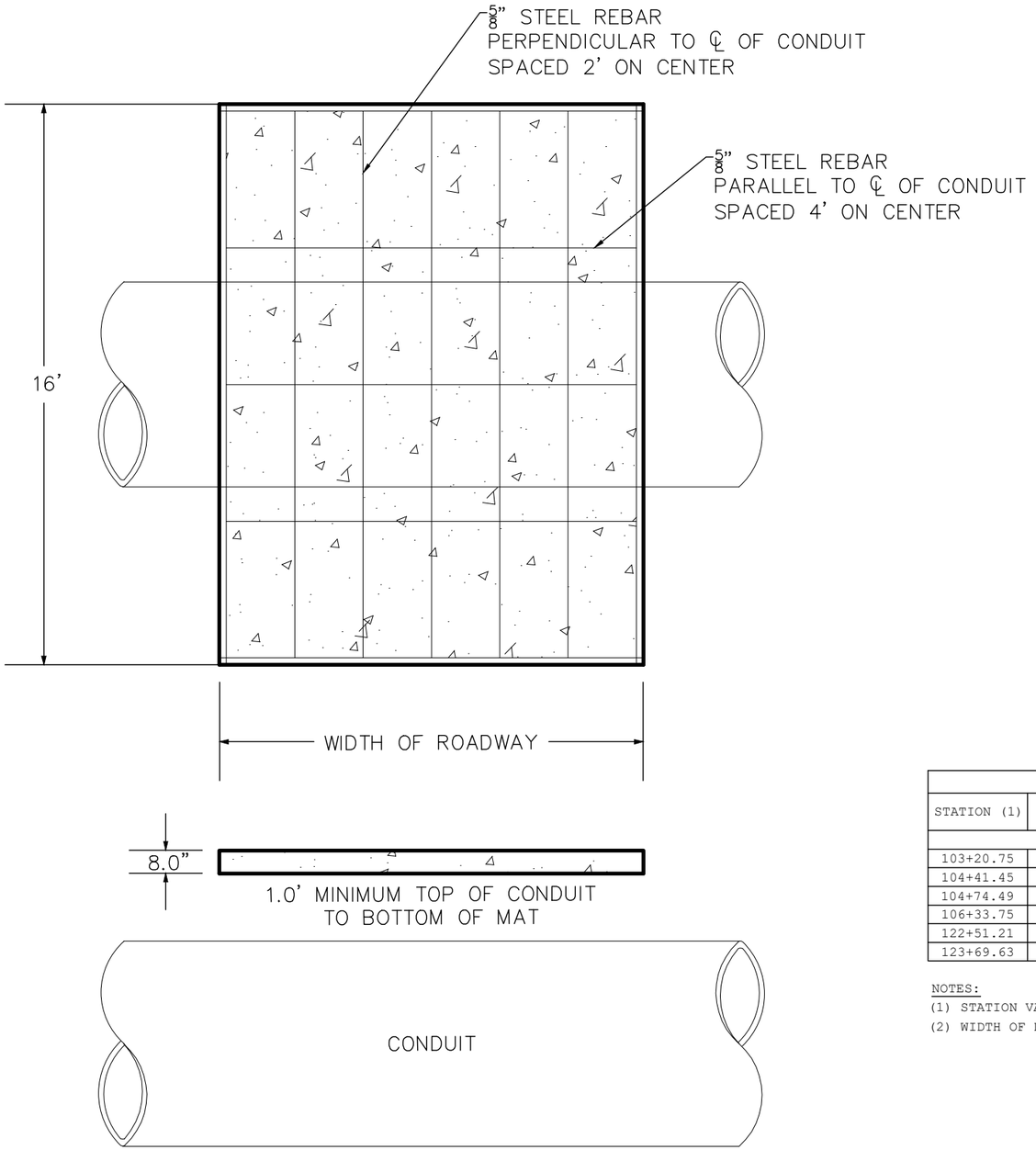
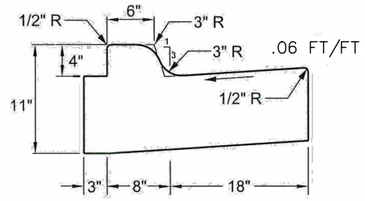
S.P. 002-608-012
CSAH 8 RECONSTRUCTION
TYPICAL SECTIONS

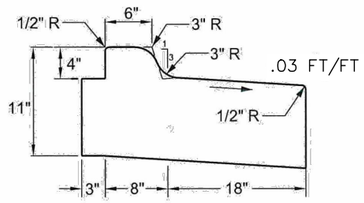
SHEET 14 OF 189



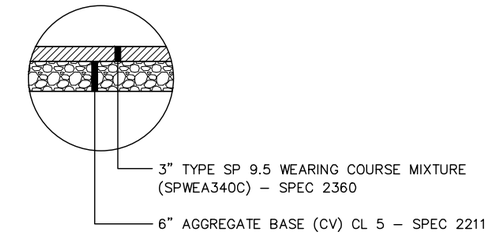
MEDIAN
B418 MODIFIED CURB & GUTTER
(NO VARIANCES ALLOWED)



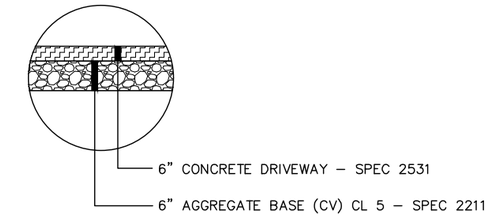
MEDIAN
TIP-OUT B418 MODIFIED CURB & GUTTER
(NO VARIANCES ALLOWED)



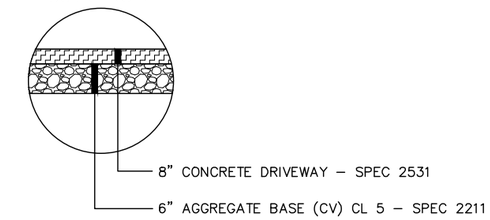
BITUMINOUS DRIVEWAY



CONCRETE DRIVEWAY
RESIDENTIAL



CONCRETE DRIVEWAY
COMMERCIAL



DRIVEWAY TABULATION

STATION (1)	LOCATION	DRIVEWAY TYPE	CURB TYPE	L1	S1	WIDTH (2)
				FT	%	FT
C.S.A.H. 8: S.P. 002-608-012						
103+20.75	LT	CONCRETE	STANDARD	8	VARIES	25
104+41.45	RT	CONCRETE	STANDARD	5.5	VARIES	17
104+74.49	RT	CONCRETE	STANDARD	5	VARIES	17
106+33.75	RT	CONCRETE	STANDARD	5	VARIES	17
122+51.21	LT	CONCRETE	STANDARD	31	1	30
123+69.63	LT	CONCRETE	STANDARD	31	3.2	20

NOTES:
(1) STATION VALUE AT CENTERLINE OF DRIVEWAY
(2) WIDTH OF DRIVEWAY AT BACKSIDE OF TRAIL/SIDEWALK

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4/28/2020

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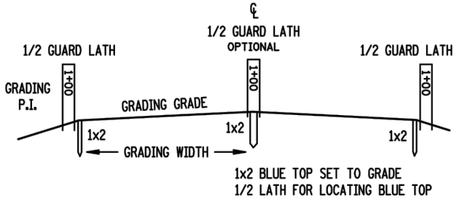
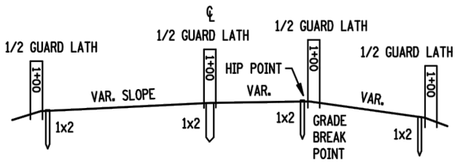
S.P. 002-608-012
CSAH 8 RECONSTRUCTION
MISCELLANEOUS DETAILS

BLUE TOPS

NORMAL SECTION

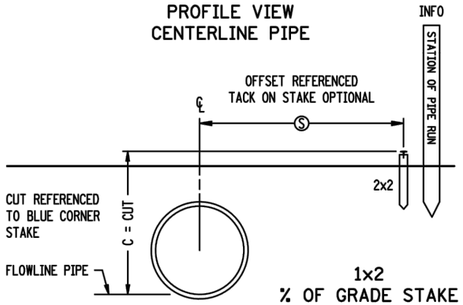


TRANSITION SECTION

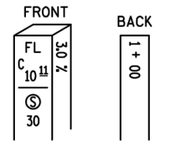


PIPE STAKING

PROFILE VIEW CENTERLINE PIPE

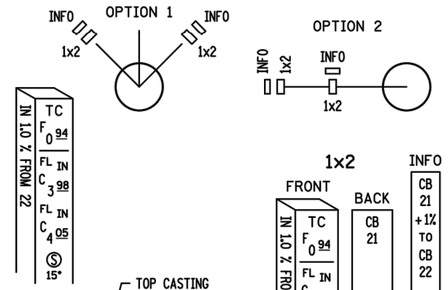


1x2 % OF GRADE STAKE



CATCH BASIN OR MANHOLE (CB/MH)

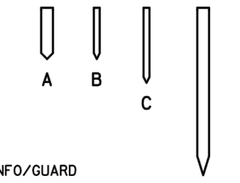
TOP VIEWS



FLOWLINE/INVERT + 0.7'

STANDARD STAKES

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



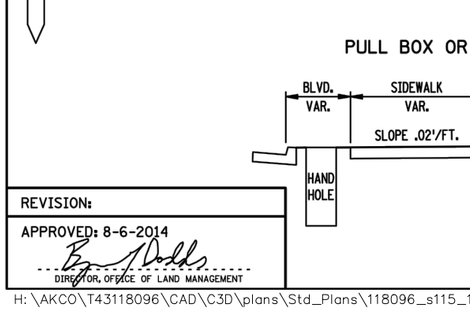
SIZES:
A = 2" X 2" X VAR. REF/INFO/GUARD
B = 1" X 2" X VAR. REF/INFO/GUARD
C = 1" X 2" X VAR. REF
D = LATH INFO/VIS/GUARD
1x2 OR LATH = INFO STAKES

ABBREVIATIONS

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

SLOPE STAKES

SINGLE ROADWAY - EXAMPLE 'A'



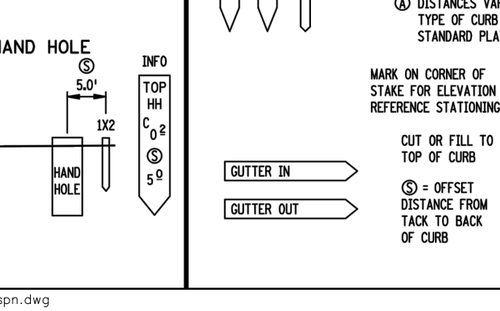
STAKE 'A'
FULL LATH AND HUB-STATION
DIST. TO ℄ WITH CUT/FILL TO ℄ (Z)
DIST. TO SHLD. WITH CUT/FILL TO SHLD. (Y) (Y1)
DIST. TO TOE OF SLOPE, CUT/FILL FROM HUB (X)
OFFSET TO SAFTY SLOPE
OFFSET TO HIP POINT

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

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

SLOPE STAKES

SINGLE ROADWAY - EXAMPLE 'B'

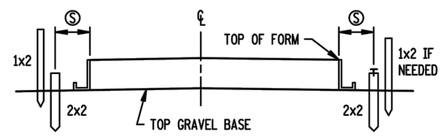


OPTION 2 OPTION 1

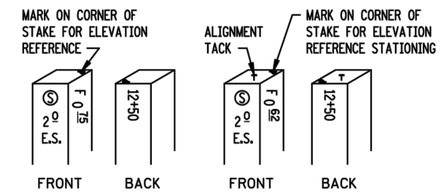
NOTES: ALL SLOPE STAKE REFERENCE DISTANCES GIVEN FROM ℄. STAKE TO BOTTOM OF TOP SOIL.

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

CONCRETE PAVING STATIONARY FORM



OFFSET TO CONTRACTOR'S OPTION



NOTE INFORMATION ON STAKE IF NECESSARY

RECOMMENDED STAKING INTERVALS

FIGURE A

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

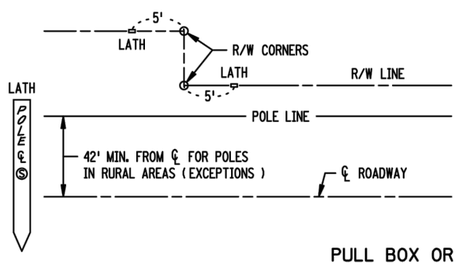
STAKING TOLERANCES (FEET)

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

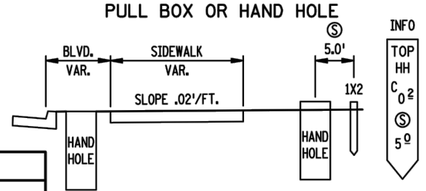
THE TOLERANCES ARE RELATIVE TO PROJECT DATUM

UTILITY (UTIL)

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



PULL BOX OR HAND HOLE

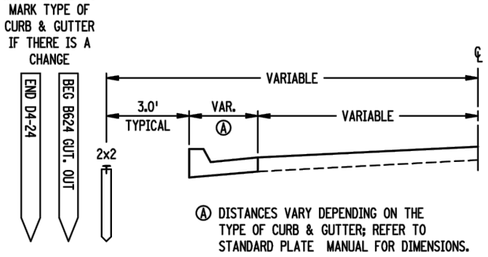


REVISION:

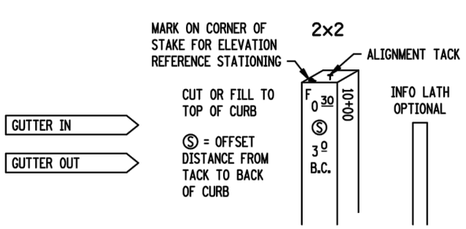
APPROVED: 8-6-2014
DIRECTOR, OFFICE OF LAND MANAGEMENT

CURB & GUTTER (CURB)

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

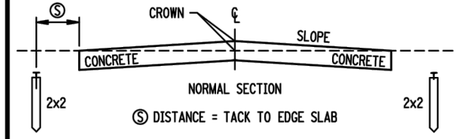


Ⓐ DISTANCES VARY DEPENDING ON THE TYPE OF CURB & GUTTER; REFER TO STANDARD PLATE MANUAL FOR DIMENSIONS.

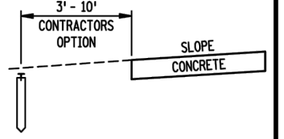


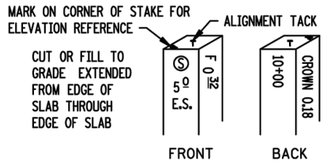
CONCRETE PAVING - SLIP FORM

OPTION A



OPTION B





DISCLAIMER

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

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.115 | 1 OF 2

APPROVED: 8-6-2014
REVISED:

STATE DESIGN ENGINEER

STAKING INFORMATION SHEET

S.P. 002-608-012 (C.S.A.H. 8) SHEET 16 OF 189 SHEETS

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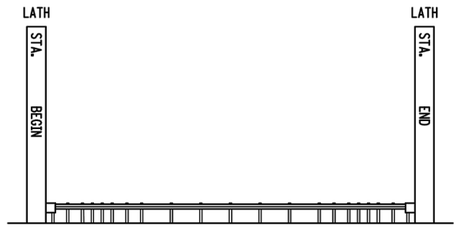
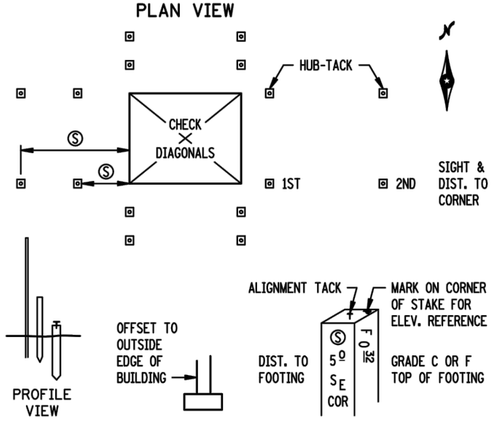
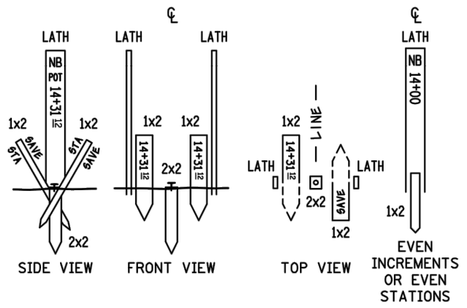
GUARDRAIL (GUARD)



BUILDING (BUILD) FOUNDATION / FOOTING



ALIGNMENT POINTS (ALIGN)



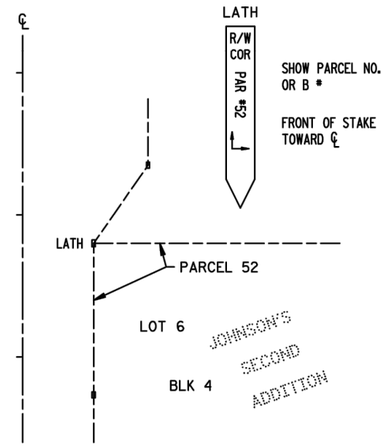
STAKE C = 2" X 2" HUB (LENGTH MAY VARY) SET AS TEMPORARY STAKE. MAY BE REPLACED BY MnDOT MARKER AFTER CONSTRUCTION IS COMPLETED.

SET AT GROUND LEVEL (TEMPORARY CONSTRUCTION STAKE).

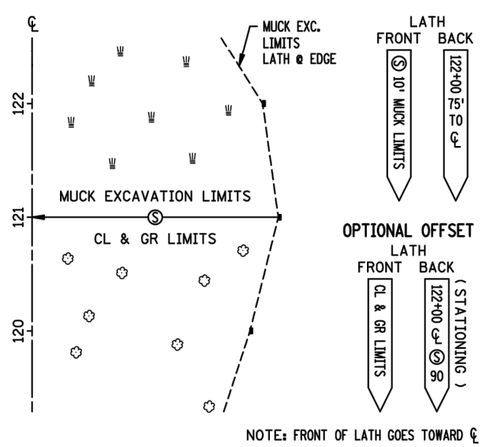
TACK SET AT ALIGNMENT POINTS.

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

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

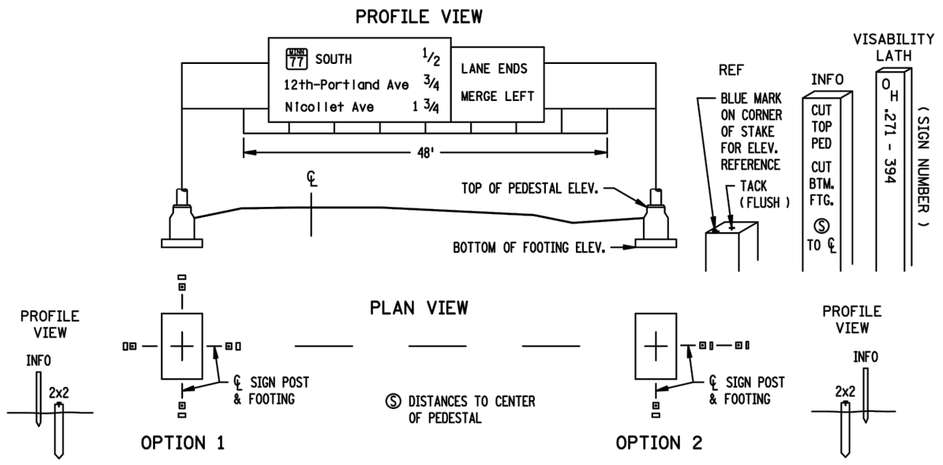


CLEAR & GRUBBING LIMITS (CLEAR) OR MUCK EXCAVATION LIMITS (MUCK)



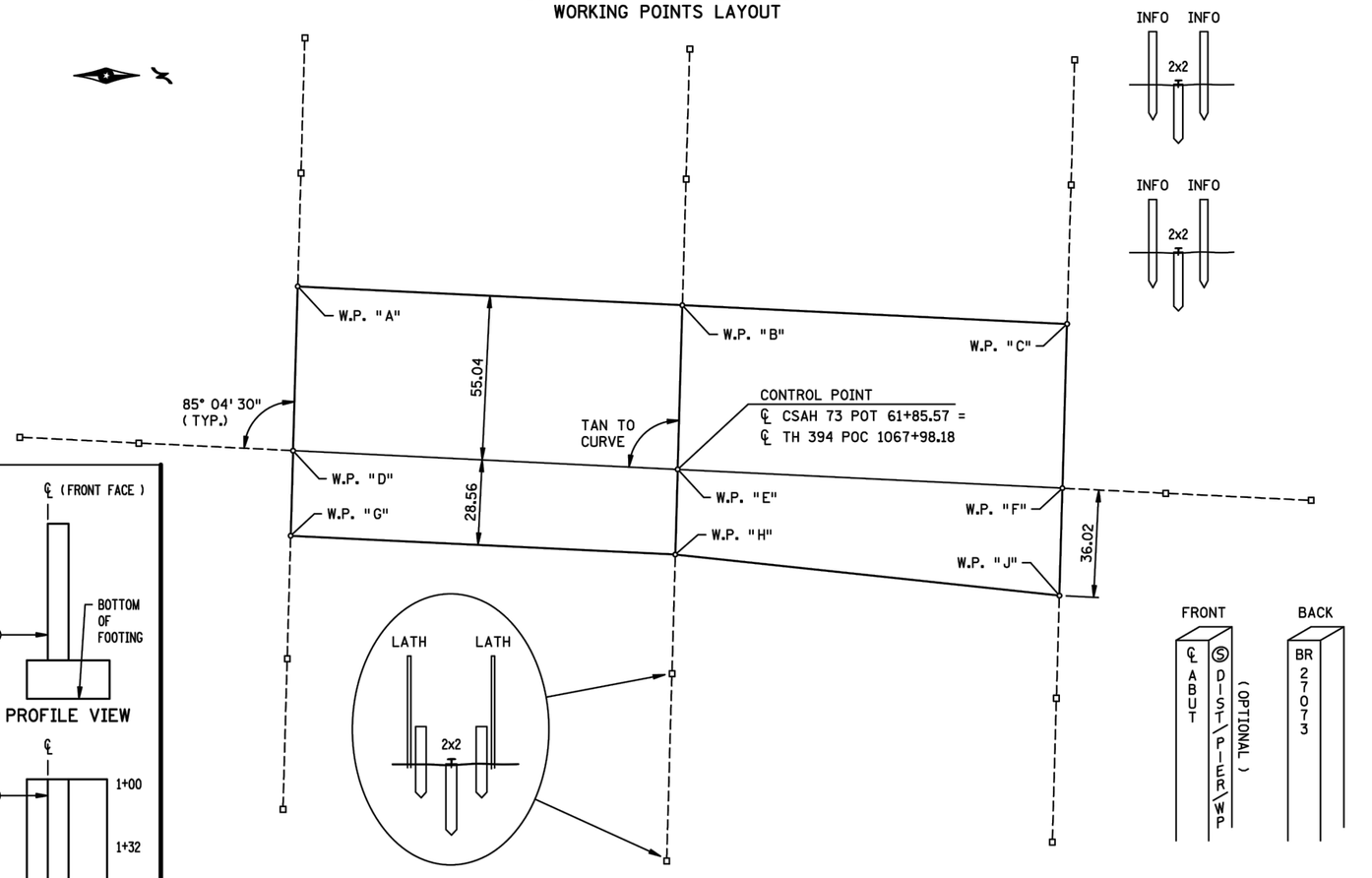
NOTE: FRONT OF LATH GOES TOWARD ℄

OVERHEAD SIGNS (SIGN)

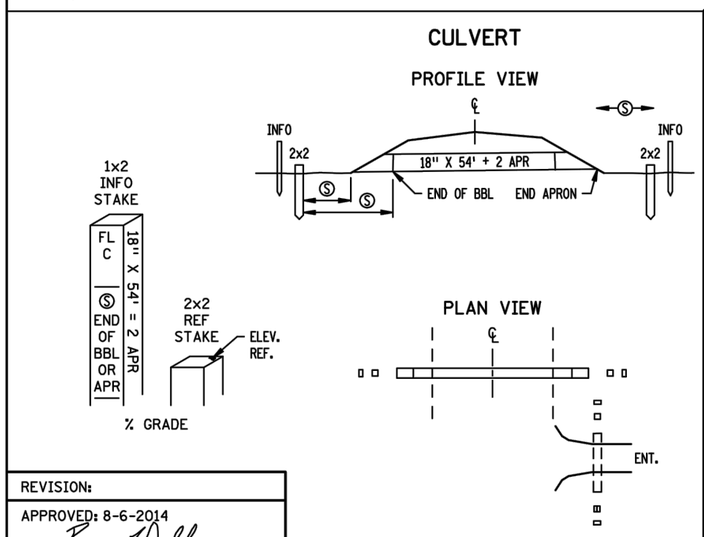


BRIDGESTAKING (BRIDGE)

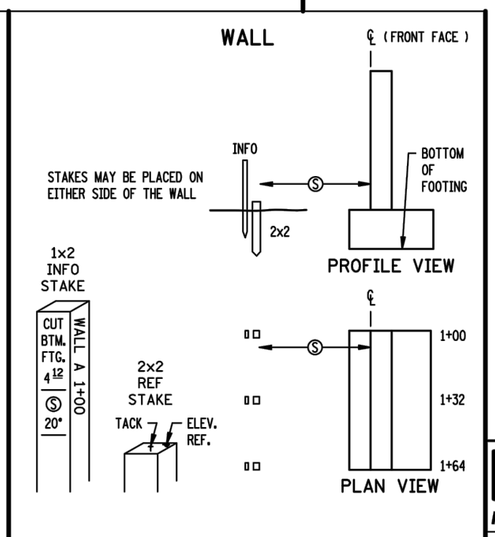
WORKING POINTS LAYOUT



CULVERT



WALL



REVISION:

APPROVED: 8-6-2014

DIRECTOR, OFFICE OF LAND MANAGEMENT

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.115 | 2 OF 2

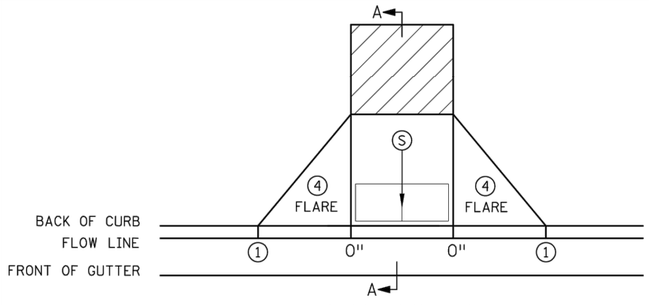
APPROVED: 8-6-2014

REVISED:

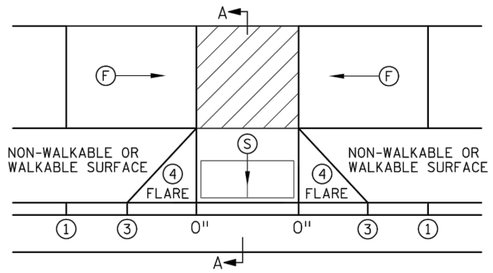
STATE DESIGN ENGINEER

STAKING INFORMATION SHEET

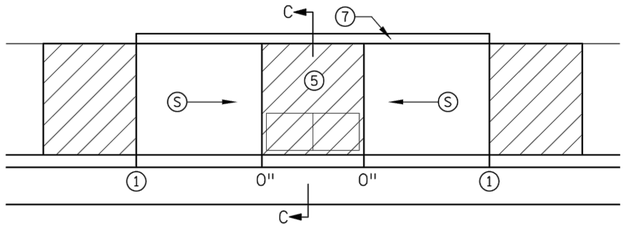
S.P. 002-608-012 (C.S.A.H. 8) SHEET 17 OF 189 SHEETS



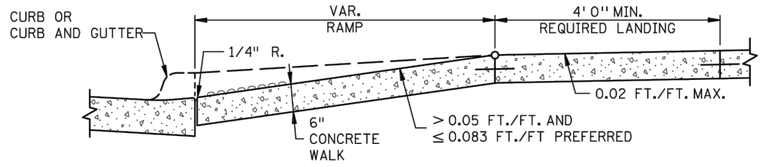
PERPENDICULAR



TIERED PERPENDICULAR

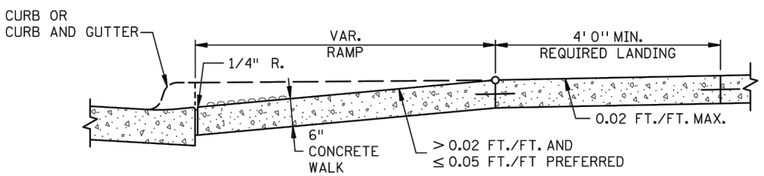


PARALLEL



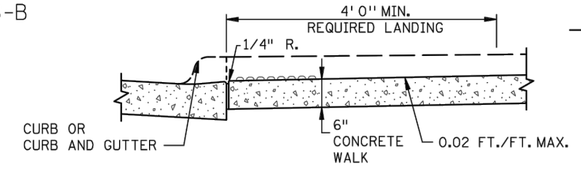
SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL



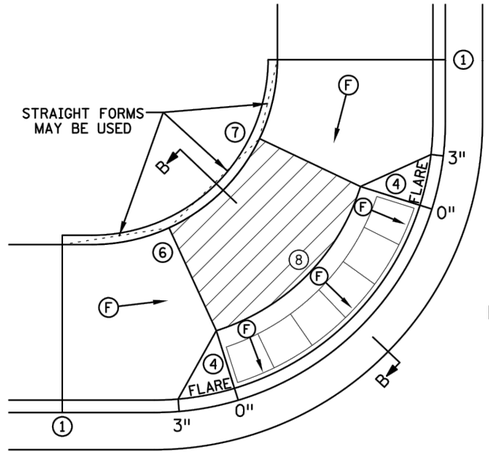
SECTION B-B

FAN

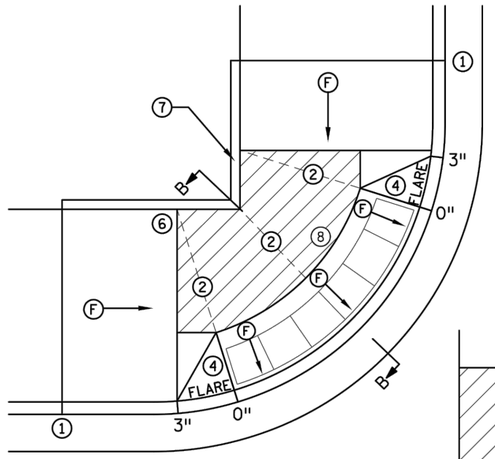


SECTION C-C

PARALLEL/DEPRESSED CORNER

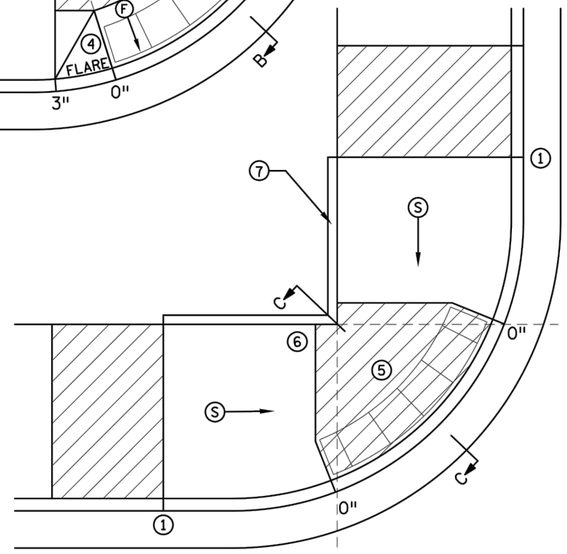


FAN (10)

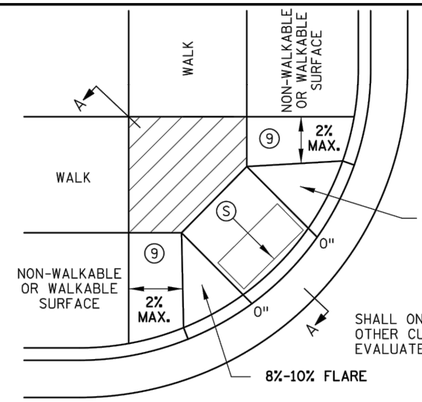


MODIFIED FAN (10)

USED WHEN RIGHT-OF-WAY IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

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

NOTES:

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

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

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

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

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

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

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

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

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

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

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

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

LEGEND

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

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

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 1 OF 6

APPROVED: 1-23-2017
REVISED:

STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

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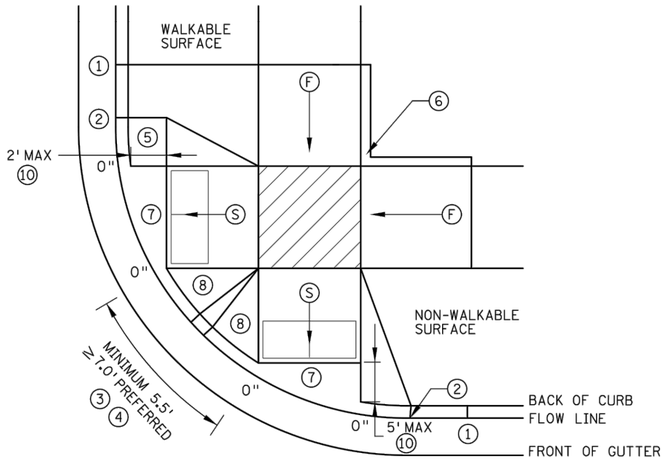
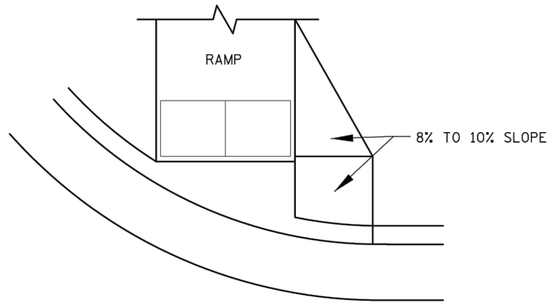


COMBINED DIRECTIONAL ⑨



DIRECTIONAL RAMP WALKABLE FLARE

NOTES:

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

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

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

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

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

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

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

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

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

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

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

① MATCH FULL CURB HEIGHT.

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

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

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

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

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

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

⑧ 8% TO 10% WALKABLE FLARE.

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

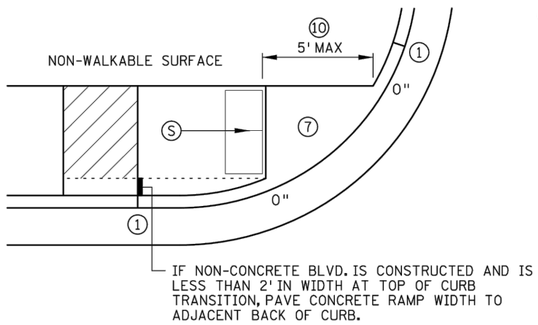
⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD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

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

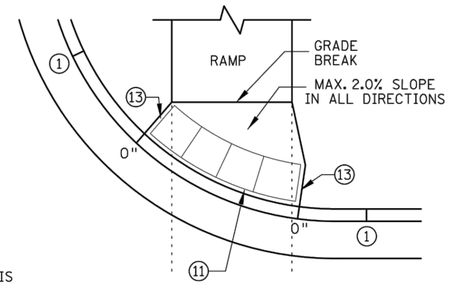
⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.

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

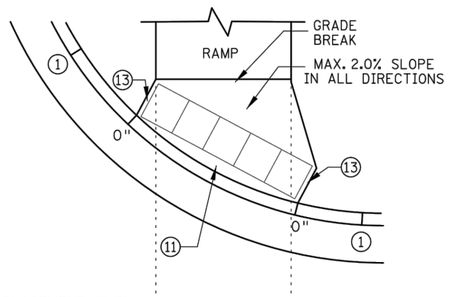
⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

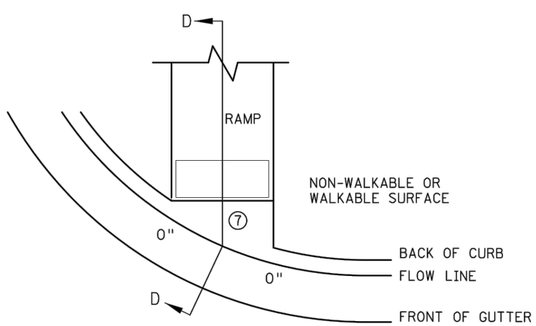


STANDARD ONE-WAY DIRECTIONAL ⑨

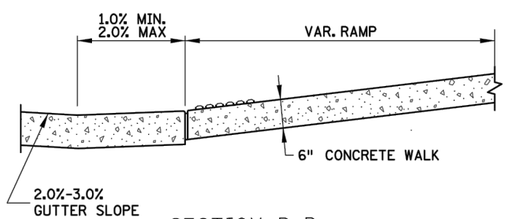


ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB

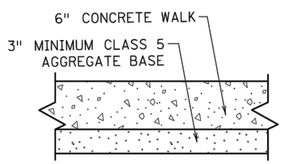




CURB FOR DIRECTIONAL RAMPS ⑭



SECTION D-D



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

LEGEND
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.
(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
(F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
X" CURB HEIGHT

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 2 OF 6

APPROVED: 1-23-2017
REVISED:

STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

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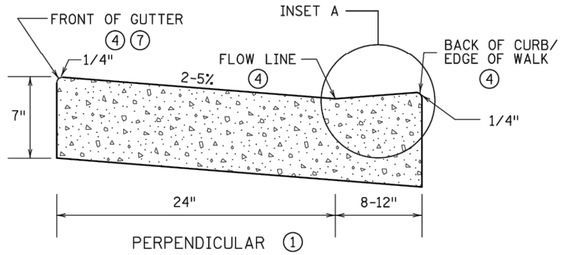
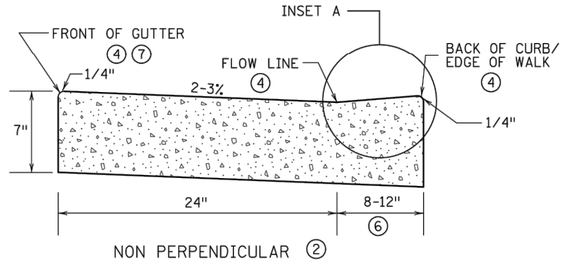
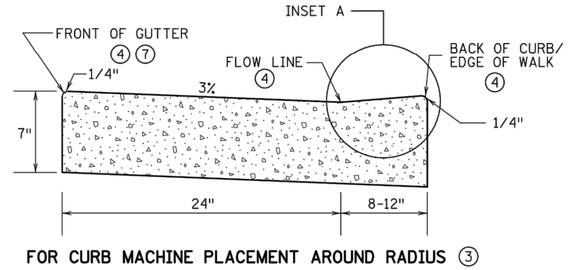


PERPENDICULAR (1)

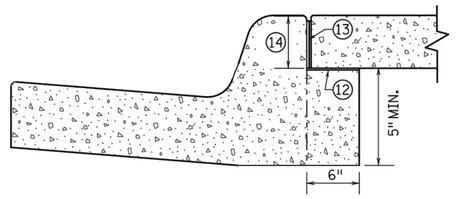


NON PERPENDICULAR (2)

PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL

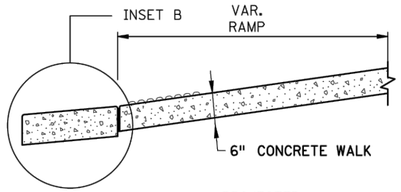


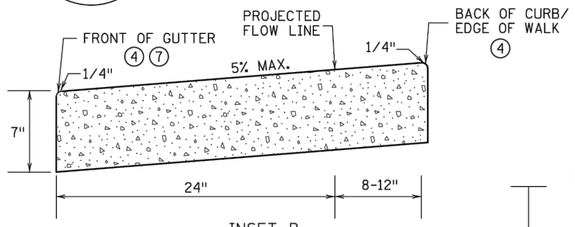
FOR CURB MACHINE PLACEMENT AROUND RADIUS (3)
(REGARDLESS OF RAMP TYPE)



OPTIONAL SILL CURB WHEN SIDEWALK IS AT BACK OF CURB

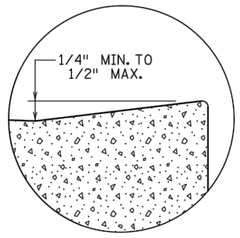
CONCRETE SILL TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



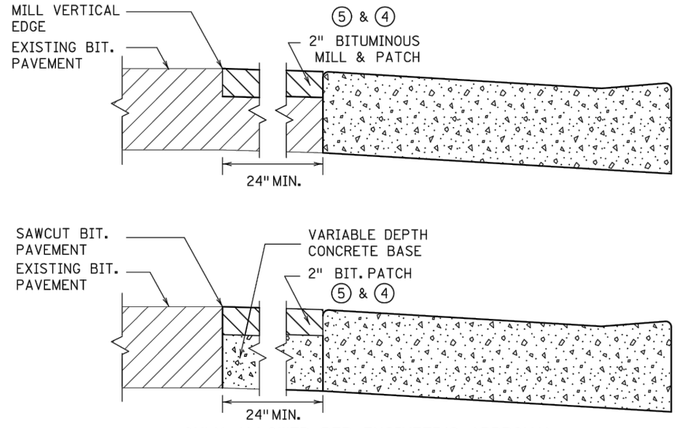


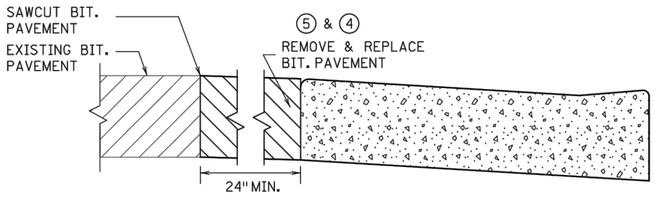
INSET B

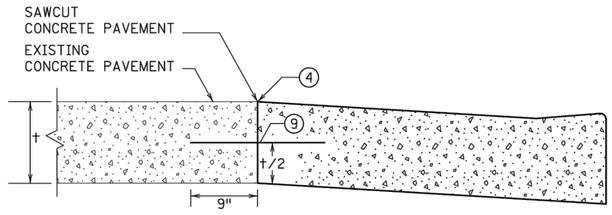
OUTFLOW GUTTER (8)



INSET A



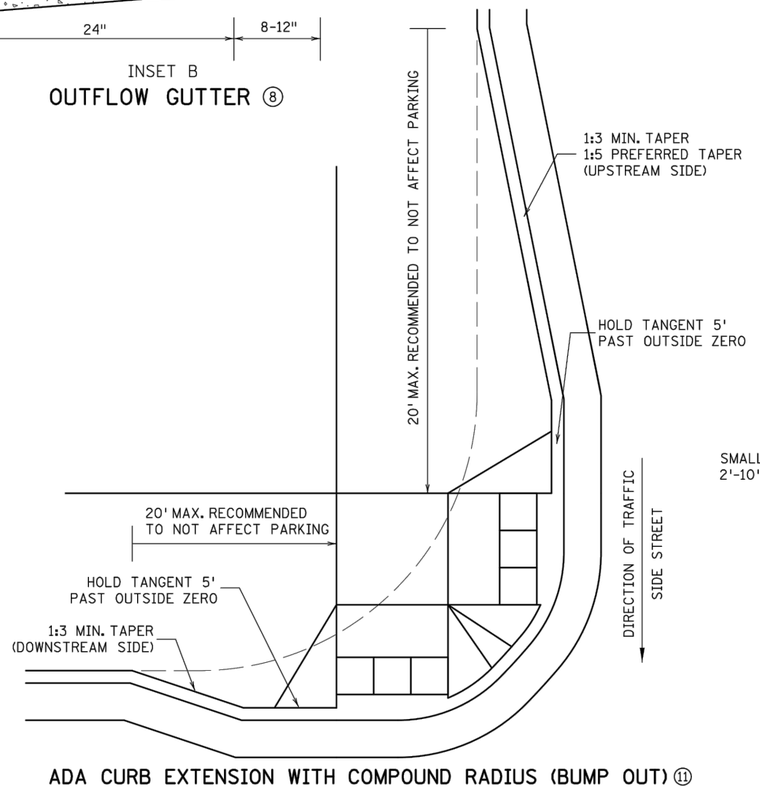




ONLY ALLOWED PER ENGINEER'S APPROVAL

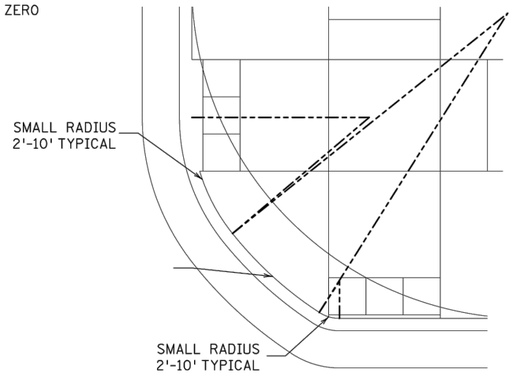
PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) (11)

DIRECTION OF TRAFFIC
MAIN STREET



COMBINED DIRECTIONAL (10)
(COMPOUND RADIUS)

NOTES:

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

NO PONDING SHALL BE PRESENT IN THE PAR.

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

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

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

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

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

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

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

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

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

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

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

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

(12) PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.

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

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

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STANDARD PLAN 5-297.250 | 3 OF 6

APPROVED: 1-23-2017
REVISED:

PEDESTRIAN CURB RAMP DETAILS

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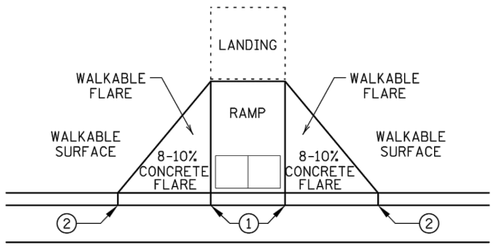
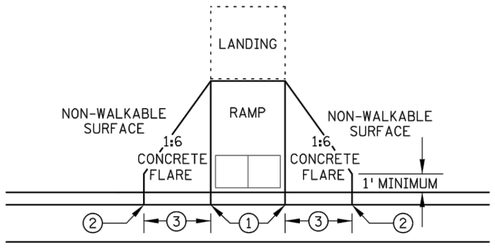
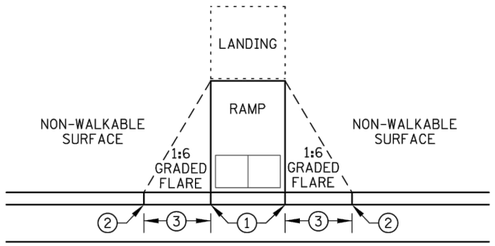


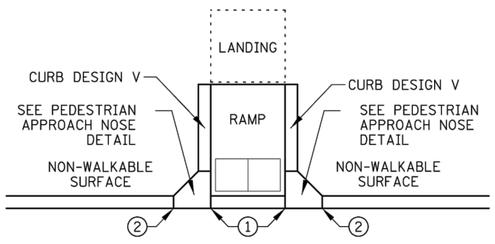
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

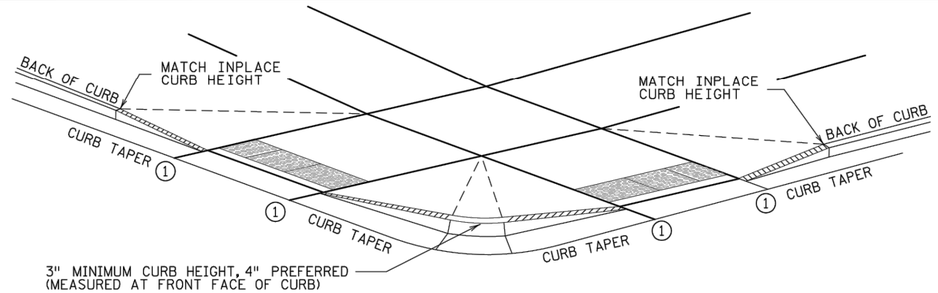


GRADED FLARES

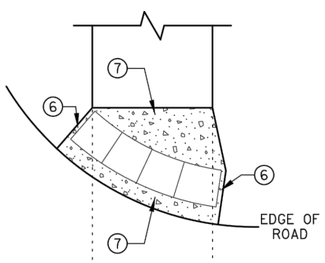


RETURNED CURB ⑤

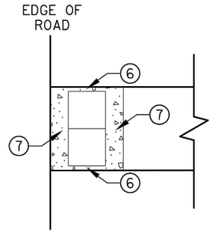
TYPICAL SIDE TREATMENT OPTIONS ④ ⑪



DETECTABLE EDGE WITH ⑧ CURB AND GUTTER

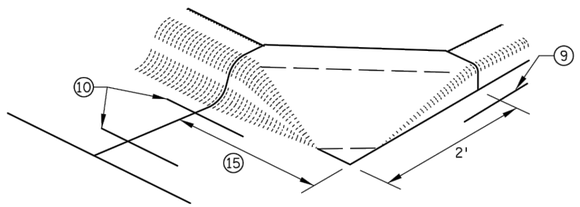


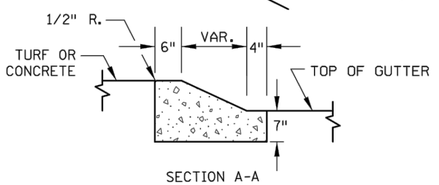
RADIAL DETECTABLE WARNING



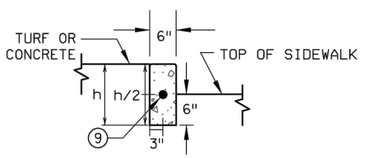
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

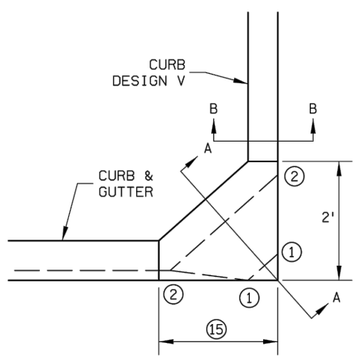




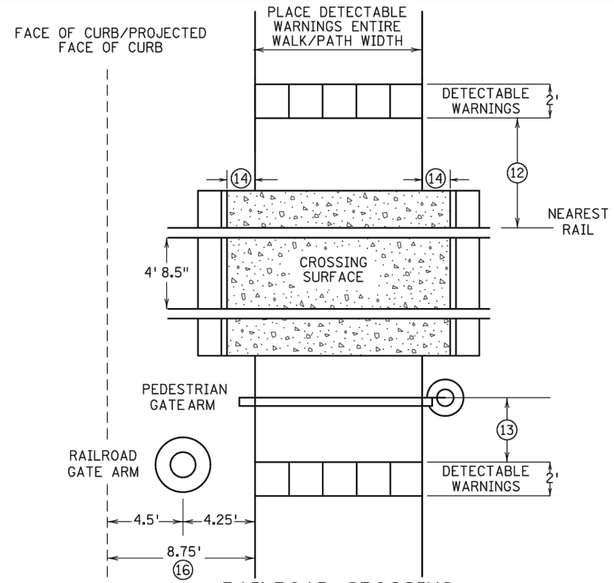
SECTION A-A



SECTION B-B



PEDESTRIAN APPROACH NOSE DETAIL
(FOR RETURNED CURB SIDE TREATMENT)



RAILROAD CROSSING PLAN VIEW

NOTES:

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

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

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

① 0" CURB HEIGHT.

② FULL CURB HEIGHT.

③ 2' FOR 4" HIGH CURB AND 3' FOR 6" HIGH CURB.

④ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.

⑤ TYPICALLY USED FOR MEDIANS AND ISLANDS.

⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.

⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.

⑨ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.

⑩ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.

⑪ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE.

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

⑬ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑫.

⑭ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.

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

⑯ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

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MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 4 OF 6

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REVISED:

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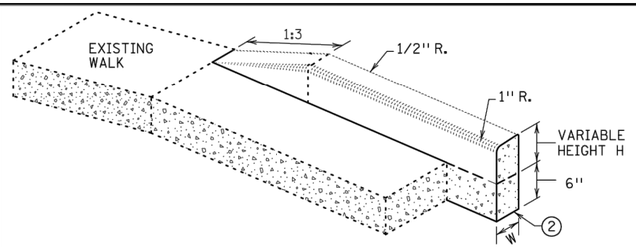
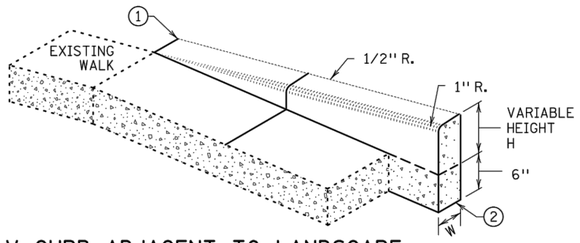
PEDESTRIAN CURB RAMP DETAILS



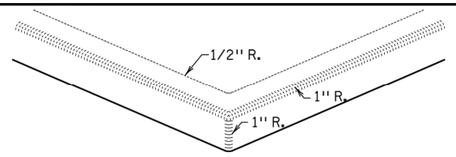
V CURB ADJACENT TO LANDSCAPE

CURB WITHIN SIDEWALK LIMITS

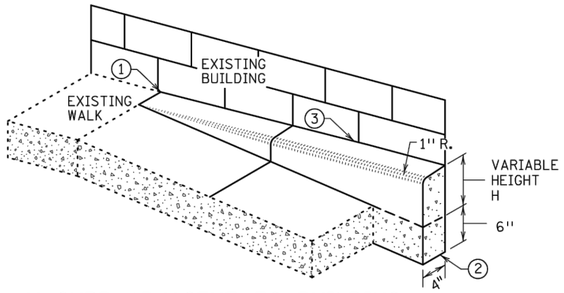


V CURB ADJACENT TO LANDSCAPE

CURB OUTSIDE SIDEWALK LIMITS

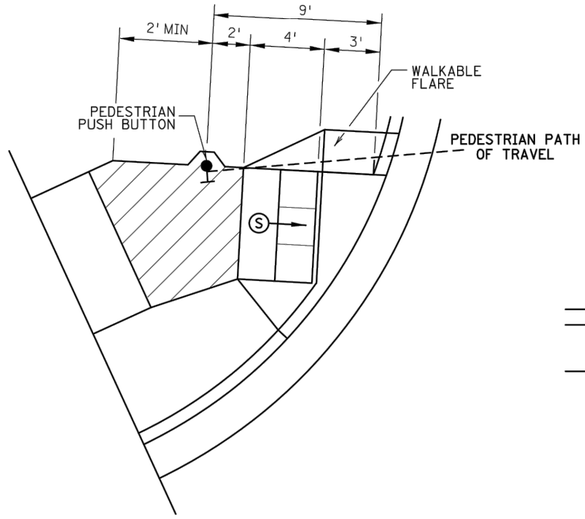


V CURB INTERSECTION



V CURB ADJACENT TO BUILDING OR BARRIER

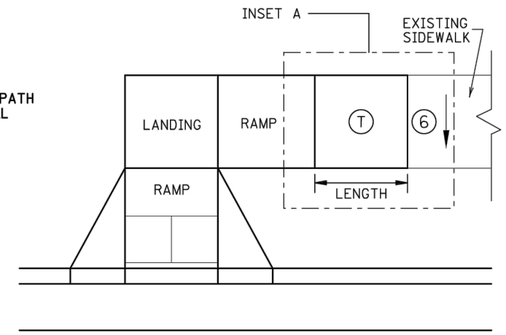
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
<6"	4"
≥6"	6"

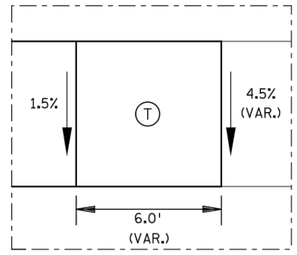


SEMI-DIRECTIONAL RAMP (3,4,9)

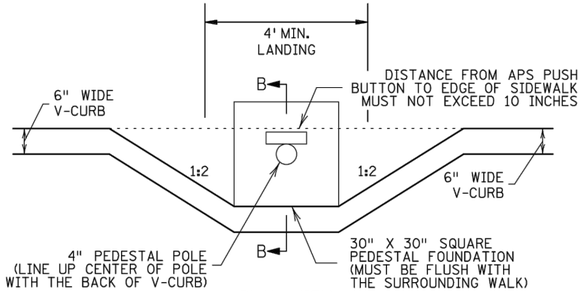
3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB

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

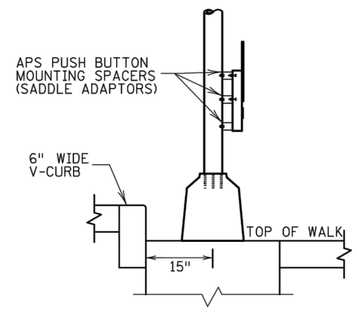




TRANSITION PANEL ④⑤

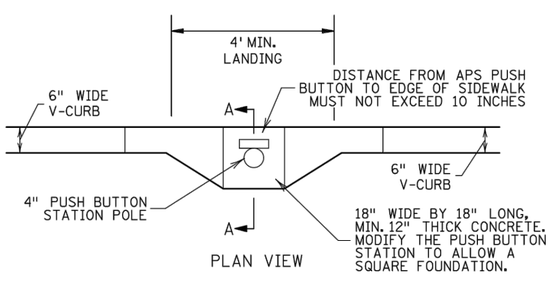


PLAN VIEW

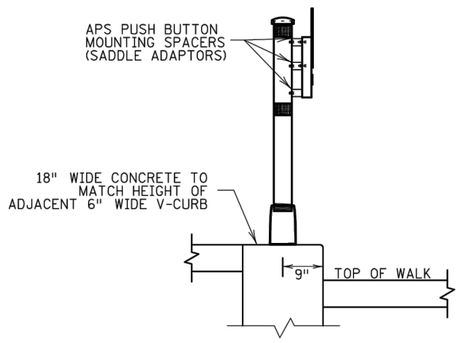


SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



PLAN VIEW



SECTION A-A

PUSH BUTTON STATION (V-CURB)

NOTES:

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

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

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

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

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

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

LEGEND

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

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

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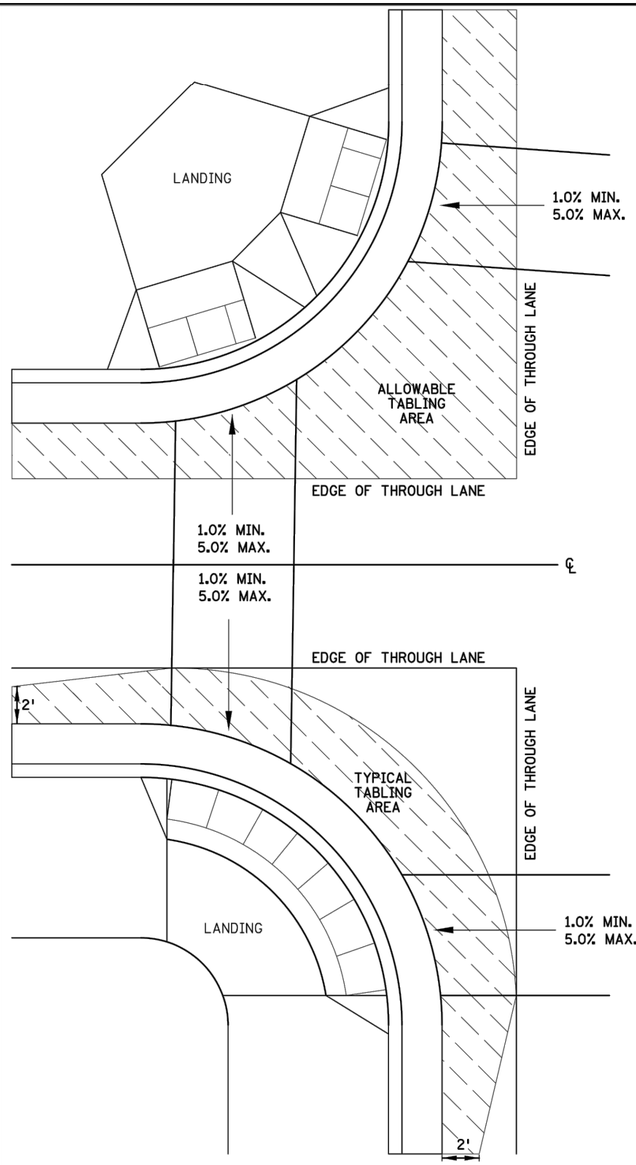
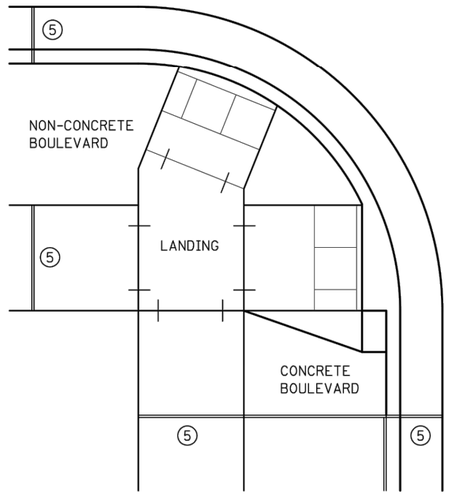
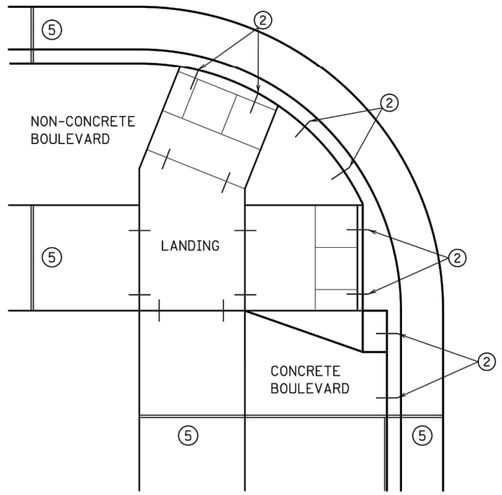
PEDESTRIAN CURB RAMP DETAILS



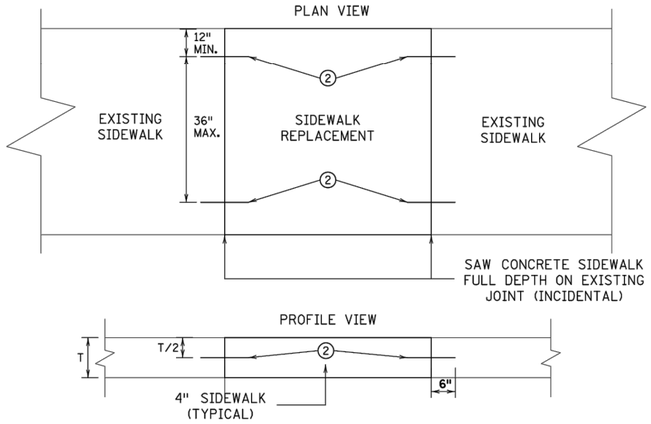
CURB LINE AND ROAD CROSSING ADJUSTMENTS



EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS

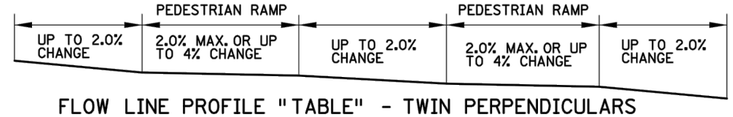


OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS ④

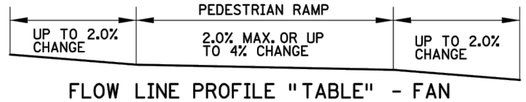


OPTIONAL SIDEWALK REINFORCEMENT

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



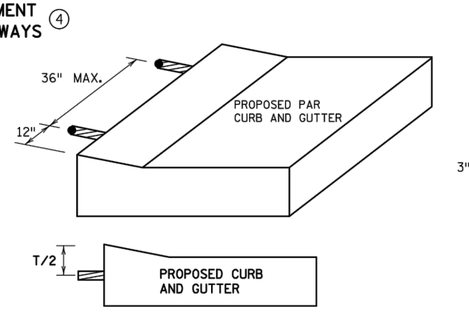
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS

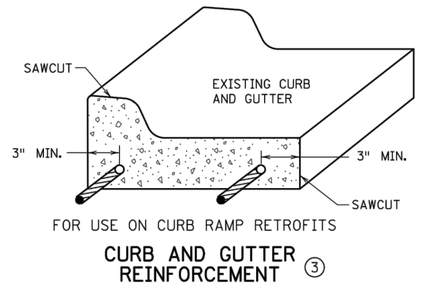


FLOW LINE PROFILE "TABLE" - FAN

FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

FLOW LINE PROFILE RAISE - FAN

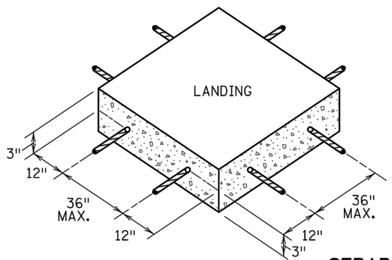


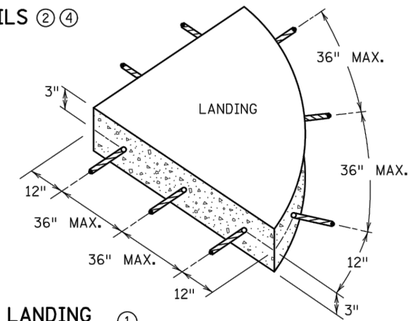


FOR USE ON CURB RAMP RETROFITS

CURB AND GUTTER REINFORCEMENT ③

OPTIONAL CURB LINE REINFORCEMENT DETAILS ②④





SEPARATE LANDING POUR REINFORCEMENT ①

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

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

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

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

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

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

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

NOTES:

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

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

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

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

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

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STANDARD PLAN 5-297.250 | 6 OF 6

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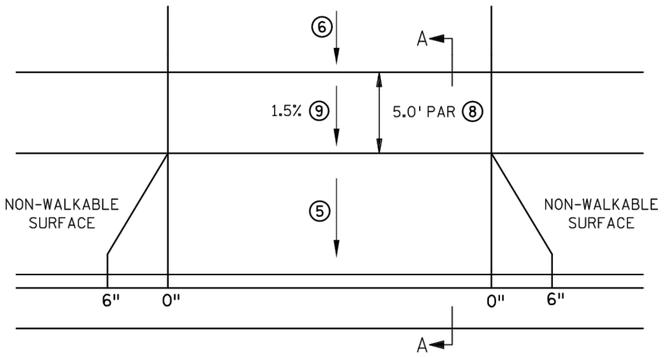
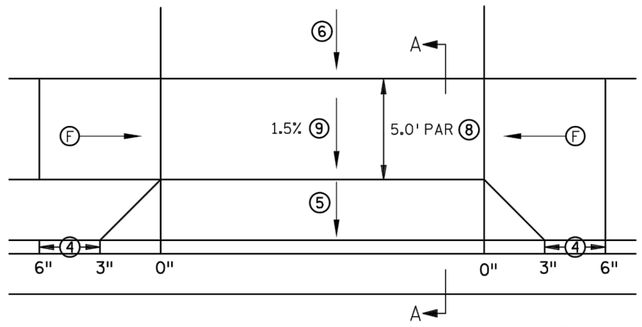
PEDESTRIAN CURB RAMP DETAILS

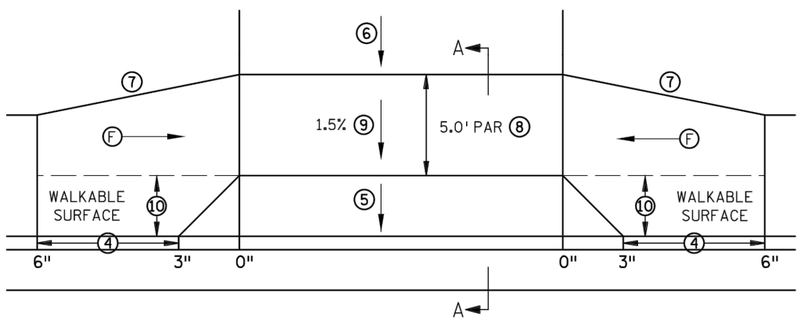
S.P. 002-608-012 (C.S.A.H. 8) SHEET 23 OF 189 SHEETS



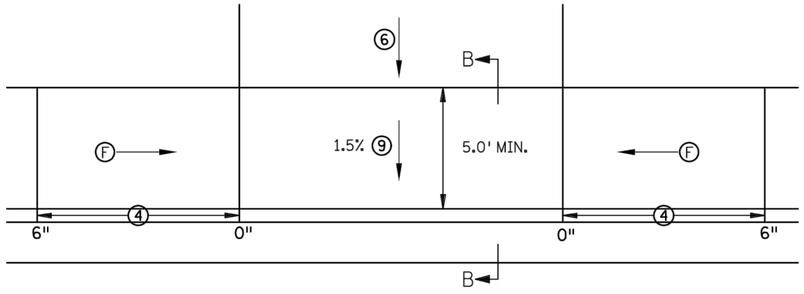
PERPENDICULAR DRIVEWAY ①



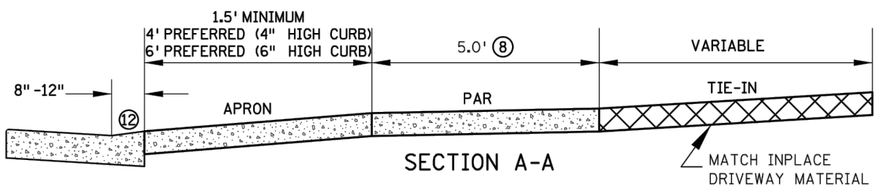
TIERED PERPENDICULAR DRIVEWAY ②

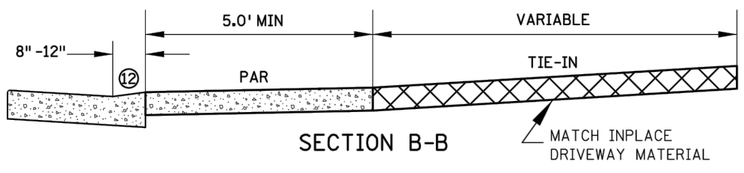


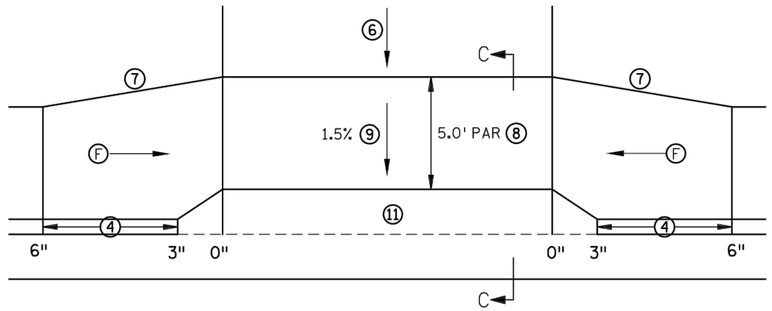
TIERED PERPENDICULAR OFFSET DRIVEWAY



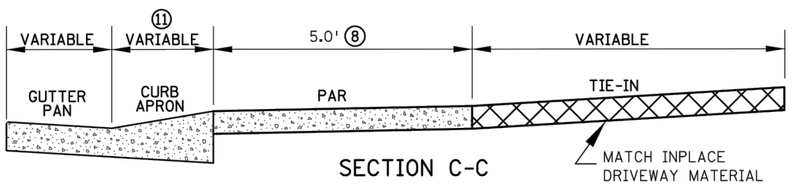
PARALLEL DRIVEWAY ③







VALLEY GUTTER DRIVEWAY



NOTES:

IN NO CASE SHALL SIDEWALK PROFILES EXCEED 5.0%, EXCEPT SIDEWALK PROFILES CAN MATCH ROADWAY GRADE IF ROADWAY GRADE IS GREATER THAN 5.0%. RAMPS FOR DRIVEWAYS ARE REQUIRED TO FOLLOW THE ABOVE SIDEWALK CRITERIA.

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

DRIVEWAY TYPES FROM MOST PREFERRED TO LEAST PREFERRED ARE AS FOLLOWS: PERPENDICULAR, TIERED PERPENDICULAR, TIERED PERPENDICULAR OFFSET & PARALLEL.

① TO BE USED WHEN THE DRIVEWAY PAR IS LEVEL WITH OR ABOVE THE TOP OF CURB, RESULTING IN A CONTINUOUS PAR PROFILE.

② TO BE USED WHEN THE DRIVEWAY PAR IS BELOW THE ROADWAY CURB HEIGHT. THIS DRIVEWAY TYPE CAN BE USED FOR BOTH PAVED (AS SHOWN) AND GRASS BOULEVARDS.

③ SHOULD BE USED FOR NEGATIVE SLOPED DRIVEWAYS. DW CURB TYPE 2 CURB SHOULD BE USED TO RAISE PAR ABOVE GUTTER AND REDUCE "ROLLER COASTER" EFFECT. 4" HIGH ROADWAY CURB SHOULD BE USED TO REDUCE "ROLLER COASTER" EFFECT ESPECIALLY WHEN MULTIPLE DRIVEWAYS ARE PRESENT.

④ TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

⑤ 8% MAX. PREFERRED, 10% MAX. FOR COMMERCIAL AND 12% MAX. FOR RESIDENTIAL. SEE GENERAL NOTES ON SHEET 2 FOR MORE INFORMATION.

⑥ 8% MAX. PREFERRED, SEE SHEET 2 FOR MORE INFORMATION.

⑦ 1:3 MIN. 1:5 PREFERRED FOR DRIVEWAY RETROFIT PROJECTS. 1:10 PREFERRED FOR SIDEWALK REPLACEMENT PROJECTS.

⑧ 5.0' MIN. PAR WIDTH IS THE STANDARD THROUGH DRIVEWAYS. IF FEASIBLE WIDEN DRIVEWAY PAR WIDTH TO MATCH APPROACHING SIDEWALK PAR WIDTHS. IN VERTICALLY CONSTRAINED AREAS PAR WIDTHS CAN INCREMENTALLY BE REDUCED TO 4.5' OR 4' MIN AFTER ALL OTHER OPTIONS HAVE BEEN APPLIED.

⑨ THE PEDESTRIAN ACCESS ROUTE, MAY NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.

⑩ SIDEWALK OFFSET TO BE LESS THAN OR EQUAL TO HALF THE APPROACHING SIDEWALK WIDTH.

⑪ VALLEY GUTTER APRON TO BE POURED INTEGRAL WITH THE CURB AND GUTTER. SEE SHEET 2 FOR MORE INFORMATION.

⑫ SEE SHEET 2 FOR CURB TYPE INFORMATION.

LEGEND	
Ⓕ	INDICATES DRIVEWAY RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
X"	CURB HEIGHT (INCHES)

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STANDARD PLAN 5-297.254 | 1 OF 4

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STATE DESIGN ENGINEER

DRIVEWAY AND SIDEWALK DETAILS

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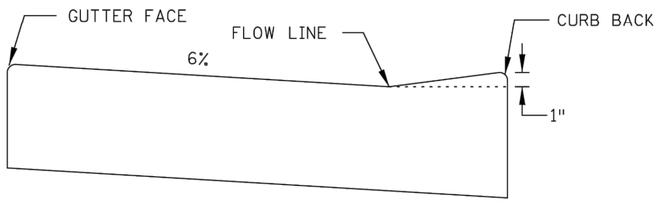
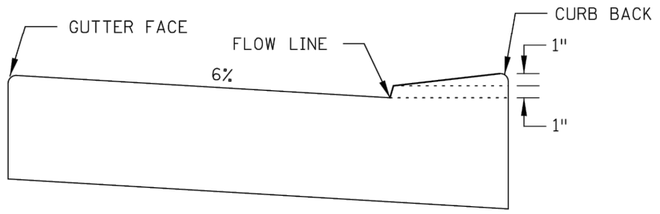


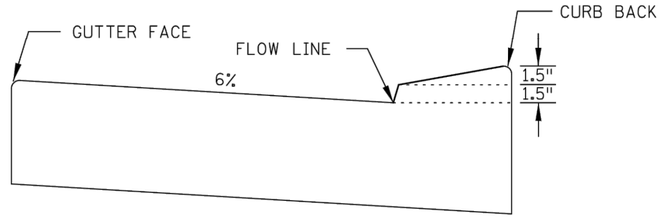
DW CURB STANDARD

STANDARD CURB AT DRIVEWAY



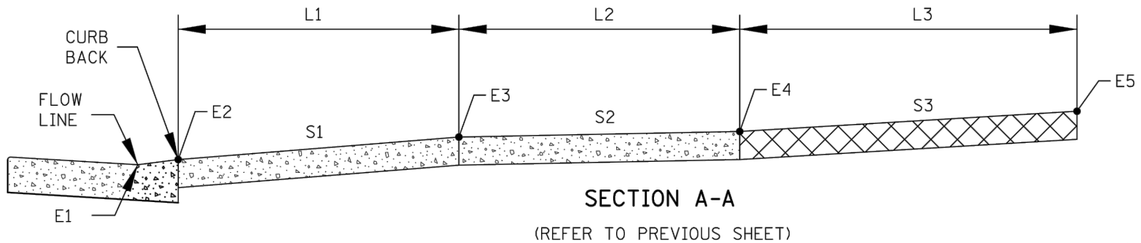
DW CURB TYPE 2

VERTICALLY CONSTRAINED



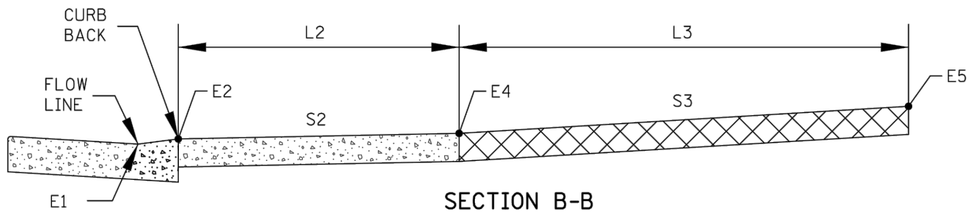
DW CURB TYPE 3

VERTICALLY CONSTRAINED



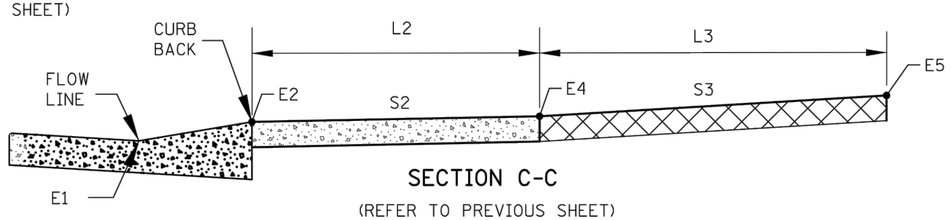
SECTION A-A

(REFER TO PREVIOUS SHEET)



SECTION B-B

(REFER TO PREVIOUS SHEET)

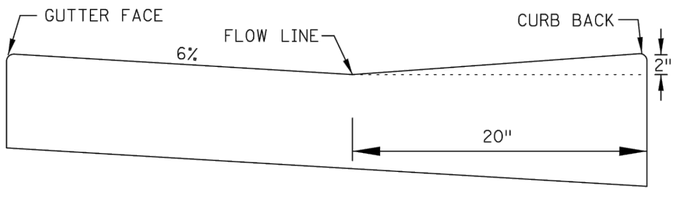


SECTION C-C

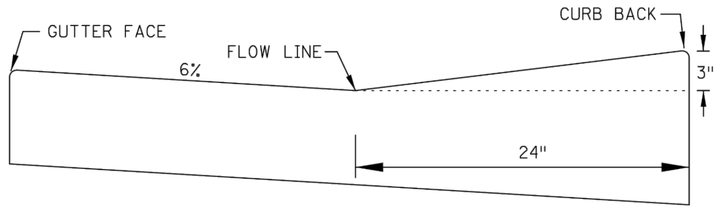
(REFER TO PREVIOUS SHEET)

DRIVEWAY TABULATION ①

STATION	SIDE	DRIVEWAY TYPE	CURB TYPE ③	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 ② %	E4	L3 FT	S3 %	EXISTING %	E5	COMMENTS



VG 220



VG 324

VALLEY GUTTER CURB

OTHER CURB HEIGHTS & CURB APRON LENGTHS CAN BE USED

NOTES:

DW CURB STANDARD SHALL BE USED WHEN THE DRIVEWAY ACTS AS A PEDESTRIAN RAMP. THE MAX. APRON SLOPE MUST ADHERE TO ADA CRITERIA AS WELL. DW CURB STANDARD SHOULD BE USED IF THERE IS ON STREET PARKING.

WHERE ROADWAY DRAINAGE IS A CONCERN (NEGATIVE SLOPED APRON) DW CURB TYPE 2 CAN BE USED TO HELP KEEP THE WATER ON PUBLIC RIGHT OF WAY.

S1 8% MAX PREFERRED, 10% MAX. COMMERCIAL AND 12% MAX. RESIDENTIAL. IF EXISTING GRADES ARE STEEPER DO NOT MAKE GRADES APPRECIABLY WORSE BY USING BEST PRACTICES SUCH AS DRIVEWAY CURB HEIGHTS, EXTENDING L3 AND/ OR STEEPEN S3.

DW CURB TYPE 3 SHALL ONLY BE USED IN EXTREME TIE-IN CASES.

S3 8% MAX PREFERRED, IF THIS SLOPE IS EXCEEDED OR IS CONTINUED FOR MORE THAN 5' ANALYZE THE NEED FOR VERTICAL CURVE(S). SEE ROAD DESIGN MANUAL, CHAPTER 5, FOR GEOMETRIC DESIGNS OF DRIVEWAYS.

① EXAMPLE SHOWN TO BE INCLUDED IN PLAN FOR EACH DRIVEWAY.

② SHOULD BE DESIGNED AT 1.5%.

③ DW CURB STANDARD SHALL BE THE STARTING POINT FOR ALL PERPENDICULAR AND TIERED DRIVEWAYS. DW CURB TYPES 2 AND 3 SHALL ONLY BE USED AFTER UTILIZING BEST PRACTICES SUCH AS MAXIMIZING S1, S3, AND L3.

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STANDARD PLAN 5-297.254 | 2 OF 4

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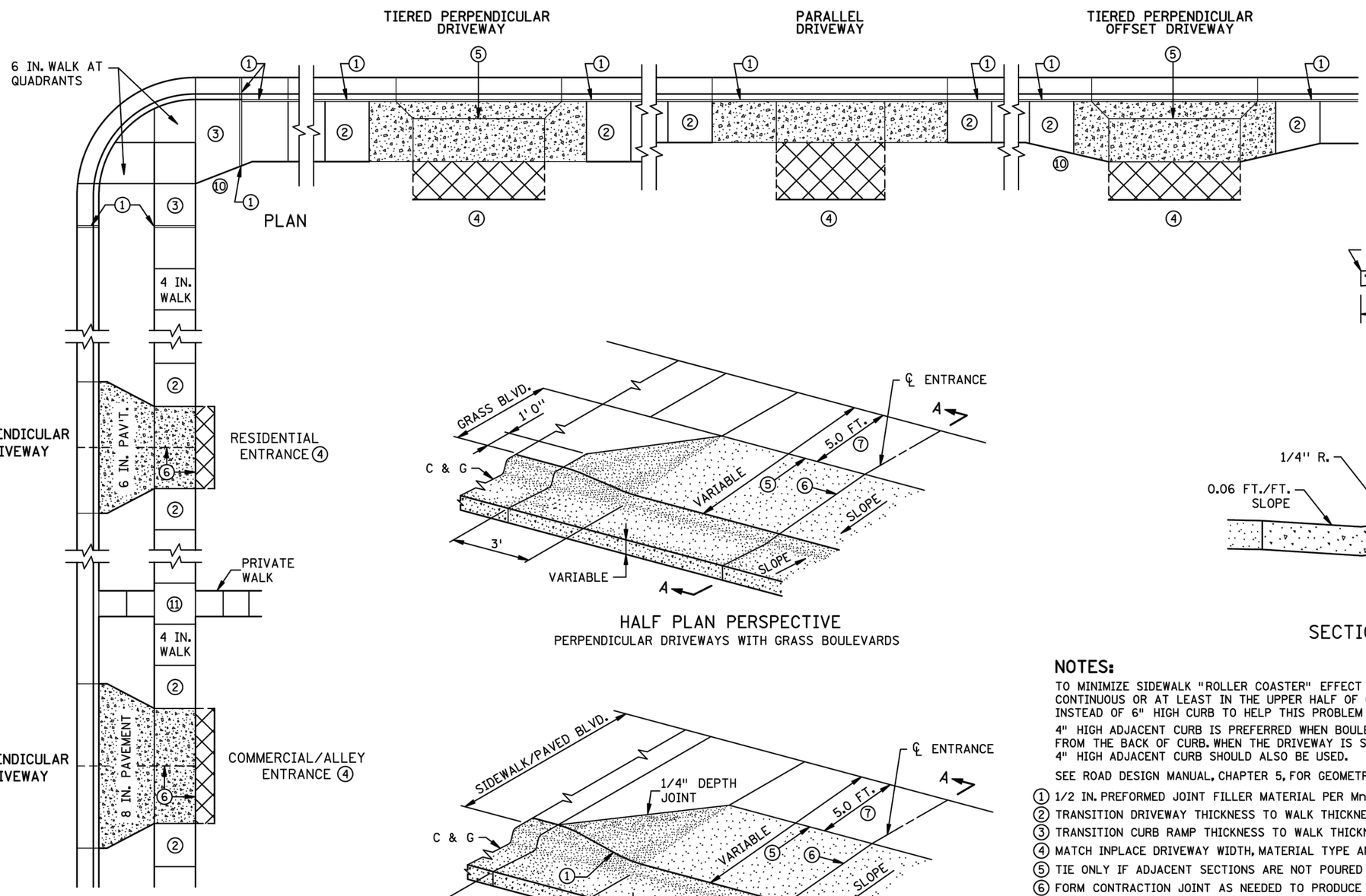
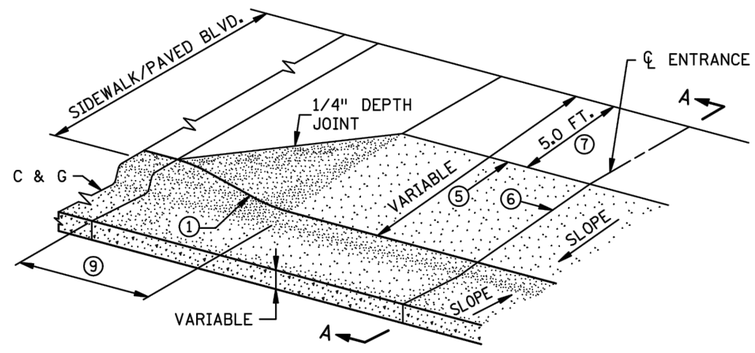
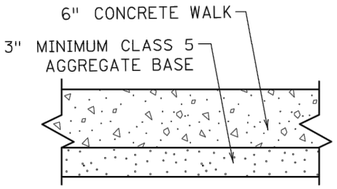
DRIVEWAY AND SIDEWALK DETAILS



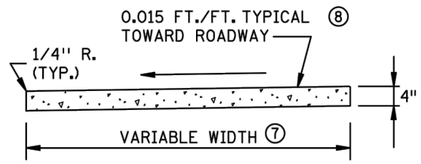
HALF PLAN PERSPECTIVE
PERPENDICULAR DRIVEWAYS WITH GRASS BOULEVARDS



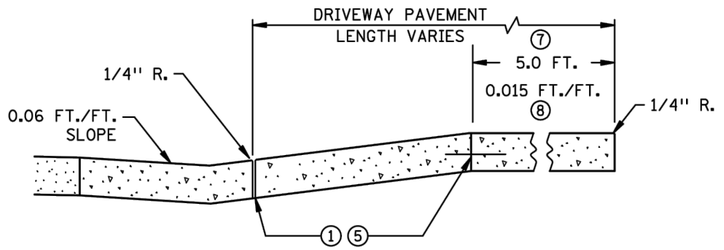
HALF PLAN PERSPECTIVE
PERPENDICULAR DRIVEWAYS WITH CONCRETE BOULEVARDS AND ALL TIERED DRIVEWAYS



SECTION THRU CURB RAMP



SECTION THRU WALK



SECTION A-A

SECTION THRU DRIVEWAY

NOTES:

TO MINIMIZE SIDEWALK "ROLLER COASTER" EFFECT IT IS DESIRABLE TO KEEP THE PAR ELEVATION CONTINUOUS OR AT LEAST IN THE UPPER HALF OF CURB HEIGHT. 4" HIGH CURB SHOULD BE USED INSTEAD OF 6" HIGH CURB TO HELP THIS PROBLEM WHEN APPLICABLE.

4" HIGH ADJACENT CURB IS PREFERRED WHEN BOULEVARDS 4' OR LESS ARE PRESENT MEASURED FROM THE BACK OF CURB. WHEN THE DRIVEWAY IS SLOPING DOWN FROM THE ROADWAY (NEGATIVE) 4" HIGH ADJACENT CURB SHOULD ALSO BE USED.

SEE ROAD DESIGN MANUAL, CHAPTER 5, FOR GEOMETRIC DESIGN OF DRIVEWAYS.

(1) 1/2 IN. PREFORMED JOINT FILLER MATERIAL PER MnDOT SPEC. 3702, EXCEPT AT GRASS BOULEVARDS.
(2) TRANSITION DRIVEWAY THICKNESS TO WALK THICKNESS.
(3) TRANSITION CURB RAMP THICKNESS TO WALK THICKNESS.
(4) MATCH INPLACE DRIVEWAY WIDTH, MATERIAL TYPE AND THICKNESS.
(5) TIE ONLY IF ADJACENT SECTIONS ARE NOT POURED MONOLITHICALLY. SEE SECTION A-A.
(6) FORM CONTRACTION JOINT AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANELS (MAXIMUM WIDTH 15 FT. BETWEEN JOINTS).
(7) 5.0' MIN. PAR WIDTH IS THE STANDARD THROUGH DRIVEWAYS. IF FEASIBLE WIDEN DRIVEWAY PAR WIDTH TO MATCH APPROACHING SIDEWALK PAR WIDTHS. IN VERTICALLY CONSTRAINED AREAS PAR WIDTHS CAN INCREMENTALLY BE REDUCED TO 4.5' OR 4' MIN AFTER ALL OTHER OPTIONS HAVE BEEN APPLIED.
(8) THE PEDESTRIAN ACCESS ROUTE CROSS-SLOPE, SHALL NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.
(9) 8% TO 10% FLARES SHALL BE USED WHEN ADJACENT TO WALKABLE SURFACES AND FOR ALL TIERED DRIVEWAYS WITH GRASS BOULEVARDS.
(10) 1:10 MIN. SIDEWALK OFFSET TAPER REQUIRED FOR SIDEWALK REPLACEMENT PROJECTS. 1:3 MIN. AND 1:5 MIN. PREFERRED SIDEWALK OFFSET TAPER FOR DRIVEWAY REPLACEMENT.
(11) LANDING REQUIRED, SEE NEXT SHEET FOR MORE INFORMATION.

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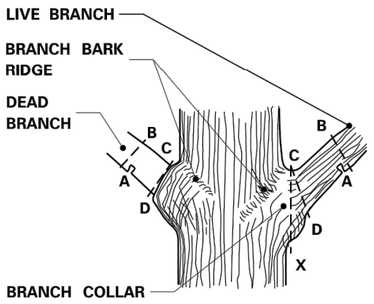
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.254 | 3 OF 4
APPROVED: 1-23-2017
REVISED:

DRIVEWAY AND SIDEWALK DETAILS



BRANCHES PRUNED AT TRUNK

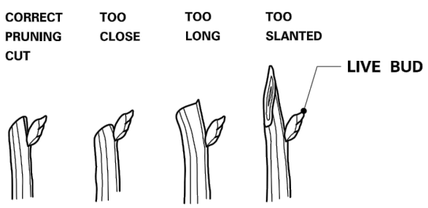
(SHIGO METHOD)

STEPS TO PRUNING WITH PRUNING SAW:

1. CUT PART WAY THROUGH THE BRANCH AT POINT A.
2. CUT COMPLETELY THROUGH BRANCH FROM POINT B TO A.
3. AT BRANCH COLLAR CUT FROM POINT C TO D.

INCORRECT CUT FROM POINT C TO X (TOO CLOSE) WILL RESULT IN DISCONTINUOUS CALLUS FORMATION AFTER ONE SEASON OF GROWTH.

CORRECT CUT FROM POINT C TO D (LEAVING BRANCH COLLAR BUT NOT THE STUB FROM POINT B TO A) WILL RESULT IN CONTINUOUS DOUGHNUT SHAPED CALLUS FORMATION AFTER ONE SEASON OF GROWTH.



BRANCHES PRUNED TO LIVE BUD

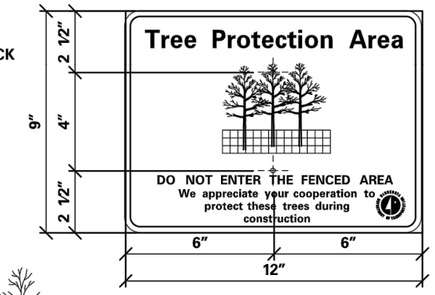
PRUNING NOTES:

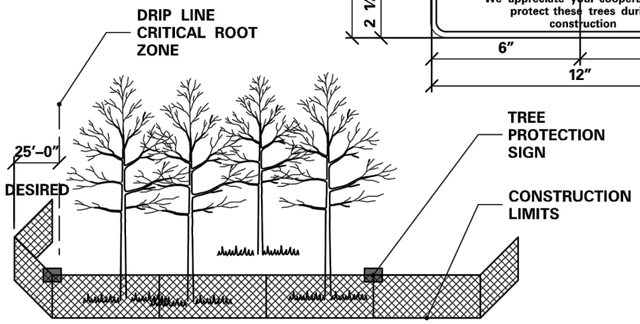
1. PRUNE USING CLEAN AND SHARP SCISSOR–TYPE PRUNER OR PRUNING SAW.
2. THE BEST TIME TO PRUNE IS LATE DORMANT SEASON OR EARLY SPRING.
3. AVOID PRUNING OAKS IN APRIL, MAY, JUNE OR JULY.
4. IF PRUNING IS NECESSARY OR IF WOUNDS OCCUR TO OAK TREES IN APRIL, MAY, JUNE OR JULY, IMMEDIATELY PAINT CUT SURFACE OR WOUND WITH LATEX PAINT OR SHELLAC.

PRUNING

(MnDOT 2571.3E.1 and 2571.3K.2.a(9))

1. FABRICATE 12″ X 9″ X 3⁄8″ SIGN WITH 0.75″ RADIUS CORNERS.
2. SIGN SHALL BE WHITE WITH BLACK LETTERING.
3. ATTACH SIGN TO POST USING 1″ LENGTH WOOD SCREWS.

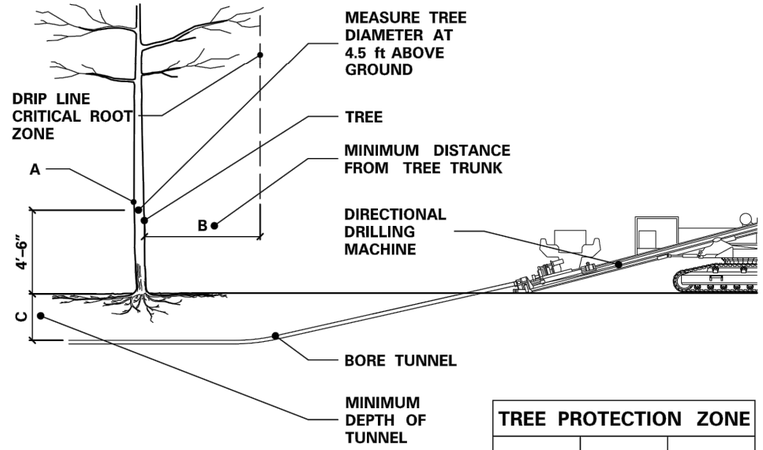




1. FURNISH AND INSTALL TEMPORARY FENCE AT THE TREE'S DRIPLINE OR CONSTRUCTION LIMITS AS SPECIFIED, PRIOR TO ANY CONSTRUCTION.
2. WHEN POSSIBLE PLACE FENCE 25 FEET BEYOND THE DRIP LINE.
3. PLACE TREE PROTECTION SIGNS ALONG FENCE AT 50′ INTERVALS.

TEMPORARY FENCE

(MnDOT 2572.3A.1)



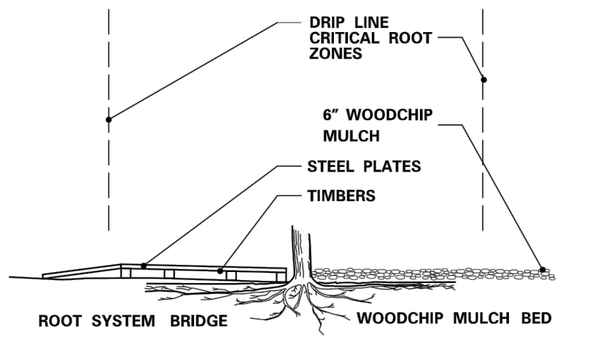
NOTE:

1. (A) IS THE DIAMETER OF TREES MEASURED 4′–6″ FEET ABOVE THE GROUND AND IS TERMED THE "DIAMETER AT BREAST HEIGHT," (DBH).
2. USING A TREE DIAMETER TAPE, WRAP THE TAPE AROUND THE GIRTH OF THE TREE, AT THE DBH, BEING CAREFUL NOT TO TWIST THE TAPE.

TREE PROTECTION ZONE		
A	B	C
< 2″	2′	2′
2–4″	4′	2.5′
> 4–9″	6′	2.5′
> 9–14″	10′	3′
> 14–19″	12′	3.25′
> 19″	15′	4′

UTILITY CONSTRUCTION

(MnDOT 2572.3A.5)



IF CONSTRUCTION VEHICLES MUST PASS OVER ROOT ZONES, THE CONTRACTOR MUST EITHER:

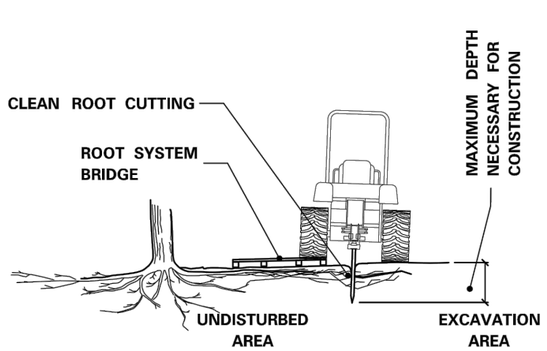
1. CONSTRUCT ROOT SYSTEM BRIDGES WITH STEEL PLATE SUPPORTED ON WOOD TIMBERS PLACED RADIALLY TO THE TREE TRUNK.

OR

2. PLACE A 6 INCH LAYER OF WOODCHIP MULCH OVER A TYPE III GEOTEXTILE (MnDOT 3733).

OTHER VEGETATION PROTECTION MEASURES

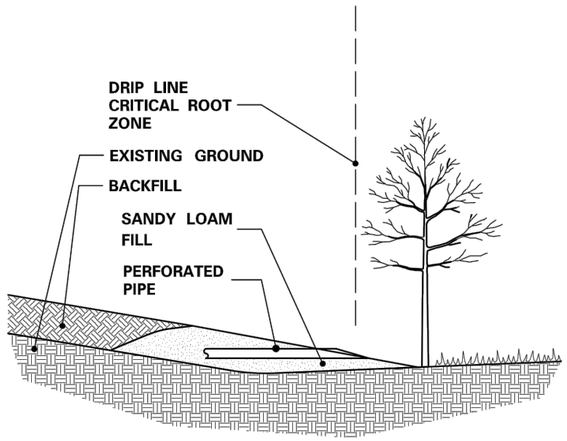
(MnDOT 2572.3A.12)



1. WHEN DESIGNATED IN THE PLAN OR DIRECTED BY THE ENGINEER, PRIOR TO EXCAVATION, ALL TREE ROOTS WILL BE CLEANLY CUT BY A VIBRATORY PLOW OR OTHER APPROVED ROOT CUTTER.
2. THE TREE ROOTS WILL BE CUT CLEANLY TO THE MINIMUM DEPTH NECESSARY FOR CONSTRUCTION.
3. IMMEDIATELY, AND CLEANLY CUT DAMAGED AND EXPOSED ROOTS.
4. ROOT ENDS EXPOSED BY EXCAVATION ACTIVITIES SHALL BE IMMEDIATELY COVERED WITH A 6″ LAYER OF ADJACENT SOIL.
5. EXPOSED CUT OAK ROOTS SHALL BE IMMEDIATELY (WITHIN 5 MINUTES) TREATED WITH A WOUND DRESSING MATERIAL CONSISTING OF LATEX PAINT OR SHELLAC.

CLEAN ROOT CUTTING

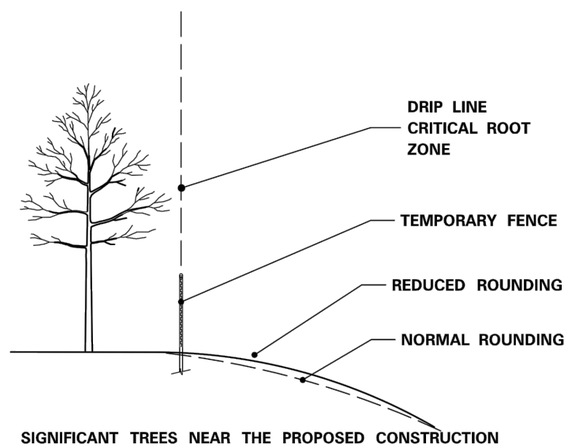
(MnDOT 2572.3A.2)



1. ANY FILL REQUIRED WITHIN THE DRIP LINE OF TREES, IS UNCOMPACTED ROOTING TOPSOIL BORROW.
2. EXCESSIVE FILL MAY REQUIRE PLACING PERFORATED PIPE WITH AT LEAST ONE DAYLIGHTED END OPENING AS AN AERATION SYSTEM.

ROOTING TOPSOIL BORROW

(MnDOT 2572.3A.4)



SIGNIFICANT TREES NEAR THE PROPOSED CONSTRUCTION LIMITS WILL BE IDENTIFIED IN THE PLAN OR BY THE ENGINEER AND WILL BE PRESERVED BY THE CONTRACTOR.

1. PLACE THE TEMPORARY FENCE.
2. REDUCE SLOPE ROUNDING WHERE ROOT ZONES ARE DISTURBED BY NORMAL SLOPE ROUNDING.
3. VARY BACKSLOPE STEEPNESS TO AVOID TREE LOSS OR UNNECESSARY ROOT DAMAGE.

SLOPE ROUNDING

REVISION:

APPROVED: DECEMBER 11, 2015

CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

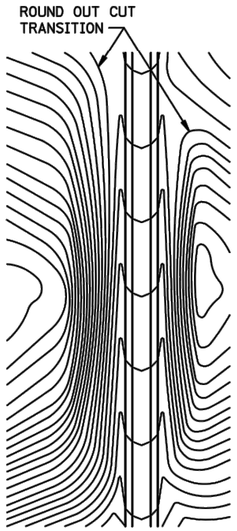
STANDARD PLAN 5–297.302 | 1 OF 1

APPROVED: 12-11-2015

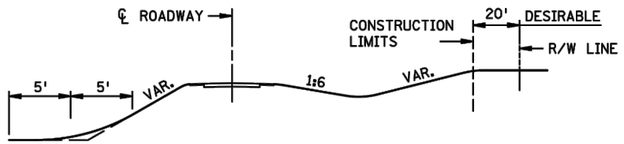
REVISED:

PROTECTION AND RESTORATION OF VEGETATION

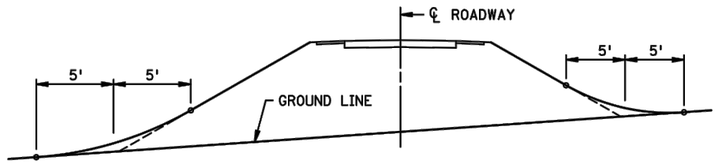
S.P. 002–608–012 (C.S.A.H. 8) SHEET 27 OF 189 SHEETS



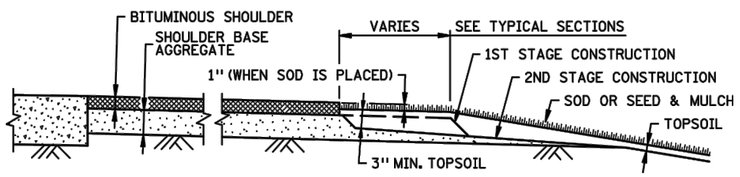
CONTOURING ROAD CUTS



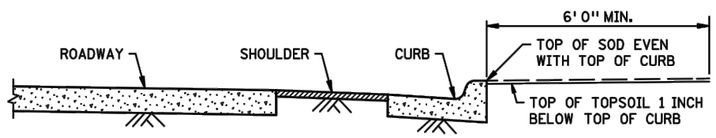
ROUNDING SHOULDERS AND BACKSLOPES



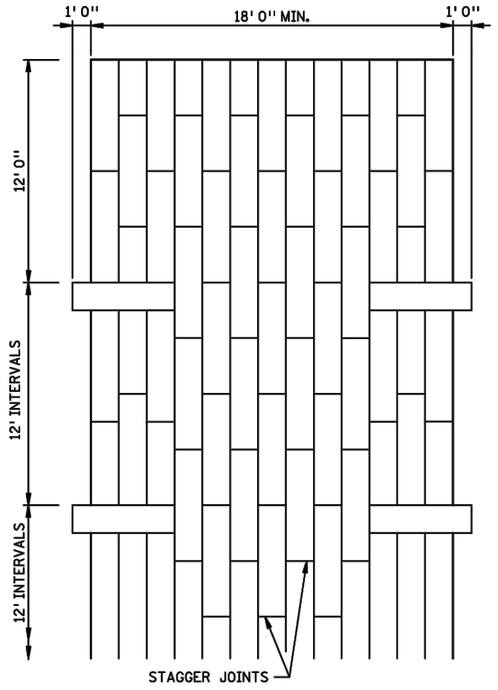
SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



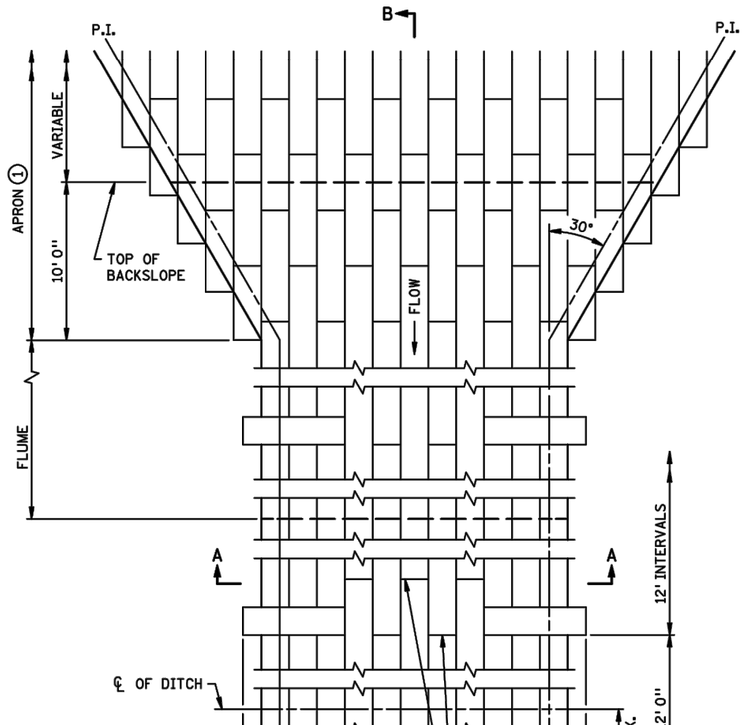
SHAPING AND TOPSOILING INSLOPES



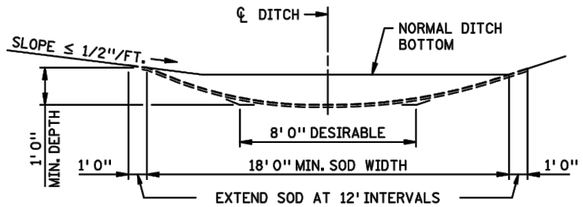
SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



PLAN VIEW

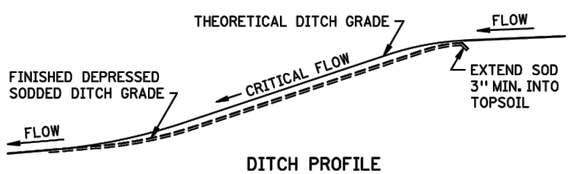


PLAN VIEW



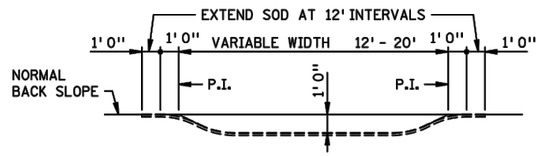
SODDED DITCH CROSS SECTION

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

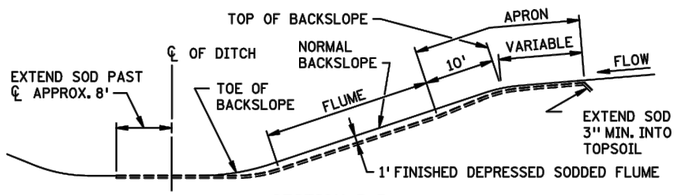


DITCH PROFILE

SODDED DITCH DETAILS



SECTION A-A



SECTION B-B

SODDED FLUME DETAILS

NOTES:

SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

① CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

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

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

STANDARD PLAN 5-297.404 | 1 OF 3

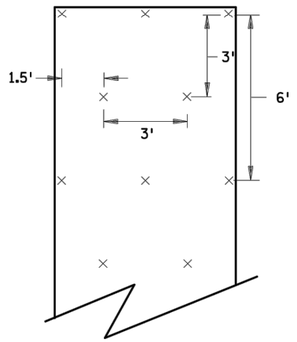
APPROVED: 2-28-2017

REVISED:

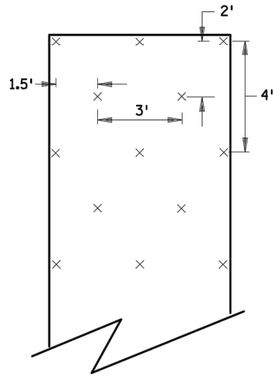
PERMANENT EROSION CONTROL

ALONG ROADWAYS, DITCHES AND FLUMES

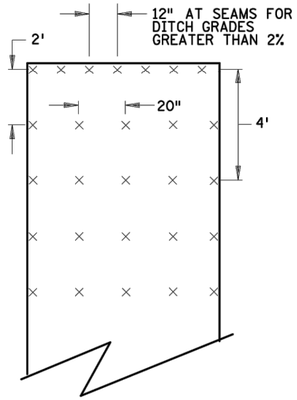
S.P. 002-608-012 (C.S.A.H. 8) SHEET 28 OF 189 SHEETS



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

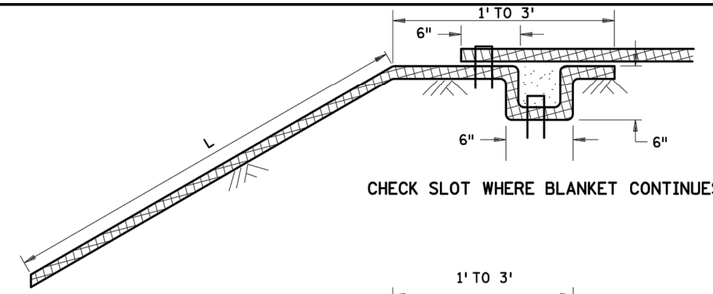


SLOPES 1:2 TO 1:1
170 STAPLES PER 100 SQ YD

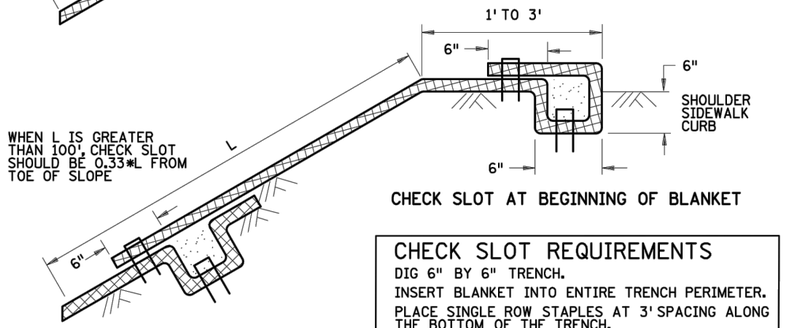


CHANNEL AND DITCH APPLICATIONS
350 STAPLES PER 100 SQ YD

BLANKET STAPLE PATTERN



CHECK SLOT WHERE BLANKET CONTINUES



CHECK SLOT AT BEGINNING OF BLANKET

CHECK SLOT REQUIREMENTS

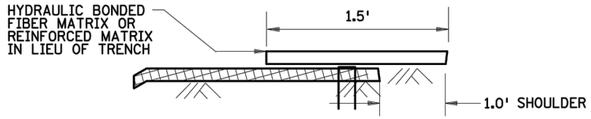
DIG 6" BY 6" TRENCH.

INSERT BLANKET INTO ENTIRE TRENCH PERIMETER.

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

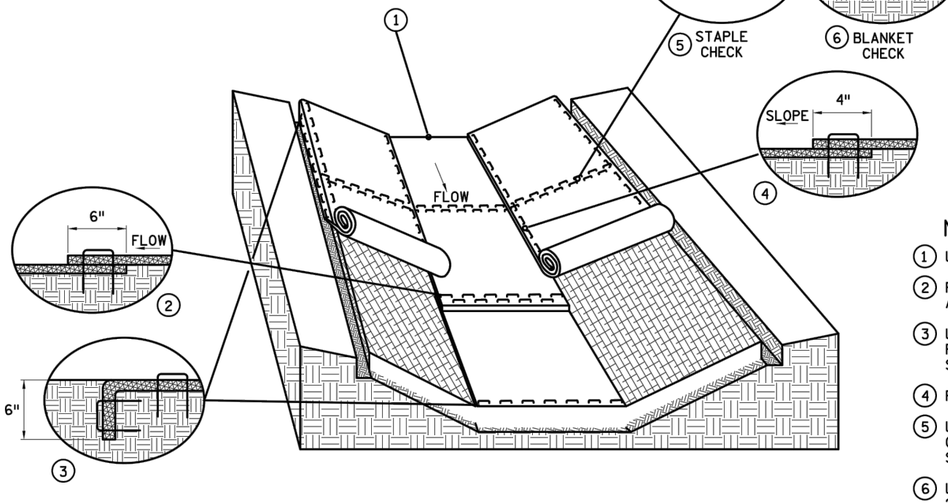
BACKFILL TRENCH WITH SOIL AND TAMP.

PLACE SINGLE ROW STAPLES AT 3' SPACING ON OVERLAP.

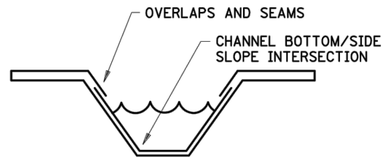


CHECK SLOT ALTERNATIVE
PLACE SINGLE ROW STAPLES AT 12" SPACING

CHECK SLOT DETAILS



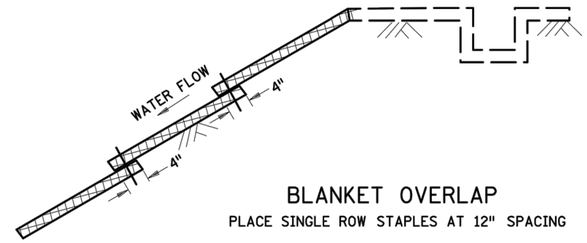
DITCH BLANKET STAPLE DETAIL



DITCH BLANKET CRITICAL POINTS (7)

NOTES:

1. USE CHECK SLOT DETAIL (NO ALTERNATES).
2. PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER.
3. USE 6" X 6" TRENCH TO PLACE BLANKET. PLACE SINGLE ROW OF STAPLES ON TOP AND TRENCH SIDES AT 12" SPACING. BACKFILL TRENCH WITH SOIL AND TAMP.
4. PLACE SINGLE ROW OF STAPLES AT 12" SPACING.
5. USE STAPLE CHECK FOR CHANNEL SLOPES LESS THAN 2.5% GRADE AT 100' INTERVALS. PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND AT 4" SPACING.
6. USE BLANKET CHECKS FOR THE FOLLOWING SLOPES:
   2.5%-3% 100' INTERVALS
   3%-5% 50' INTERVALS
   5%-7% 25' INTERVALS
7. CRITICAL POINTS SHALL BE SECURED WITH PROPER STAPLE PATTERNS.



BLANKET OVERLAP
PLACE SINGLE ROW STAPLES AT 12" SPACING

GENERAL BLANKET INSTALLATION REQUIREMENTS

REPP = ROLLED EROSION PREVENTION PRODUCT.

PREPARE SOIL AS PER SPECIFICATION 2574.

LAY PARALLEL OR PERPENDICULAR TO THE DIRECTION OF WATER FLOW.

OVERLAP ADJACENT STRIP EDGES A MINIMUM OF 4".

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

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

REVISION:

APPROVED: JANUARY 8, 2020
MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

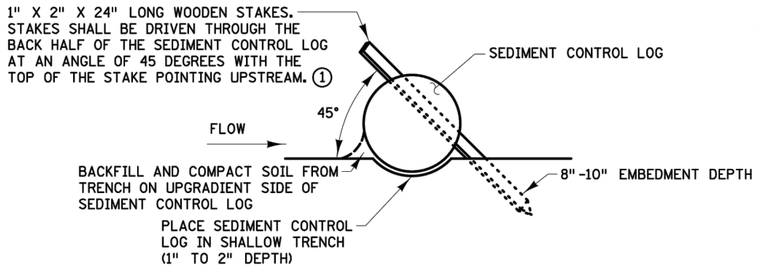
STANDARD PLAN 5-297.404 | 3 OF 3

APPROVED: 1-8-2020
REVISED:
THOMAS STYRBICKI
STATE DESIGN ENGINEER

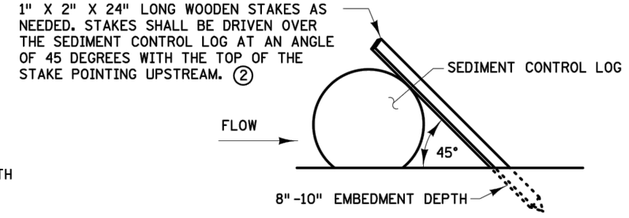
PERMANENT EROSION CONTROL

REPP (BLANKET) STAPLE PATTERN FOR SLOPES

S.P. 002-608-012 (C.S.A.H. 8) SHEET 29 OF 189 SHEETS

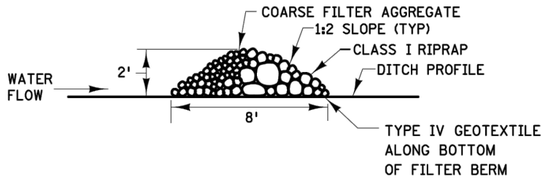


TYPES: STRAW, WOOD FIBER, OR COIR

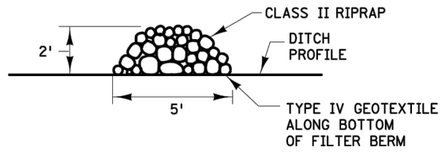


TYPES: WOOD CHIP, COMPOST, OR ROCK

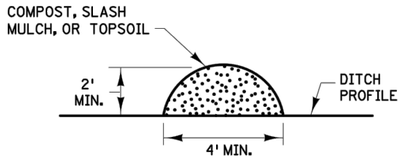
SEDIMENT CONTROL LOGS



TYPE 3 (ROCK WEEPER)

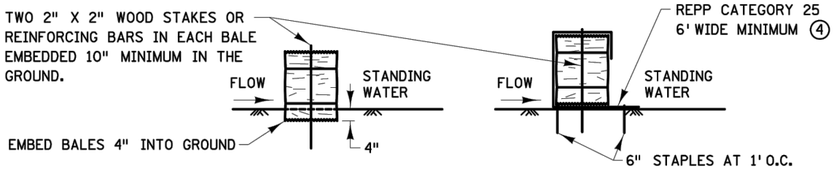


TYPE 5 (ROCK)



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

FILTER BERMS



EMBEDMENT METHOD

REPP (BLANKET) METHOD (ALTERNATE)

BALE BARRIERS (3)

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

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

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

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

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

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

REVISION:

APPROVED: JANUARY 8, 2020

MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

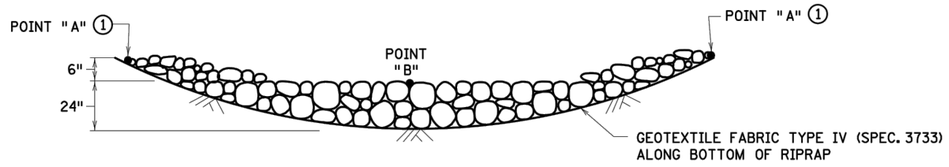
THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.405 | 2 OF 8

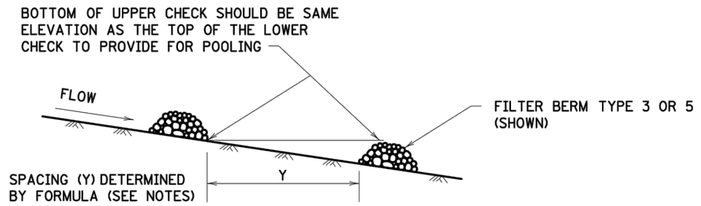
APPROVED: 1-8-2020
REVISED:

TEMPORARY SEDIMENT CONTROL

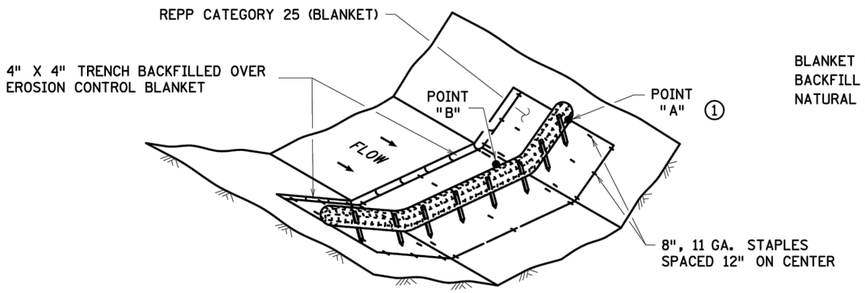
FILTER BERMS, SEDIMENT CONTROL LOGS, AND BALE BARRIERS

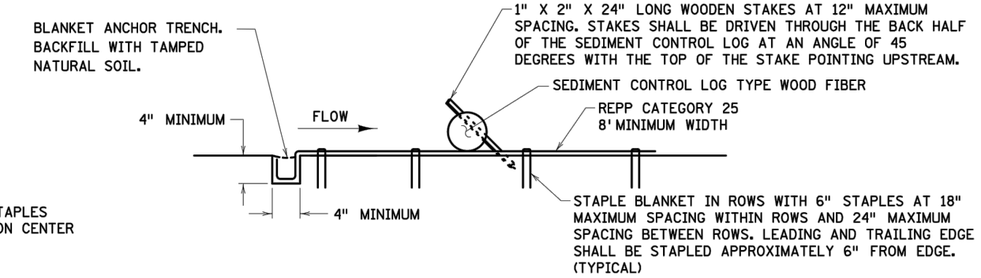


ROCK DITCH CHECKS
FILTER BERMS TYPE 3 (ROCK WEEPER) OR FILTER TYPE 5 (ROCK) ③
FOR USE ON ROUGH-GRADED AREAS
ONLY FOR USE OUTSIDE CLEAR ZONE ②

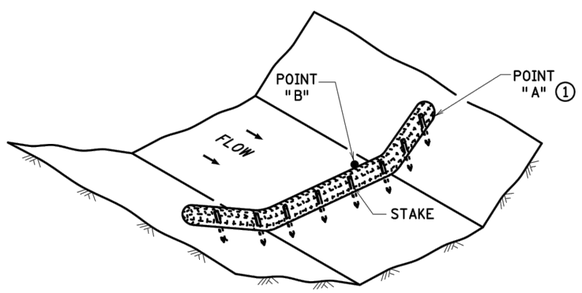


DITCH CHECK SPACING
FOR ALL FILTER BERM TYPES





SEDIMENT CONTROL LOG TYPE REPP (BLANKET) SYSTEM ④



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

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

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

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

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

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

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

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

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

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

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

REVISION:

APPROVED: JANUARY 8, 2020
MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

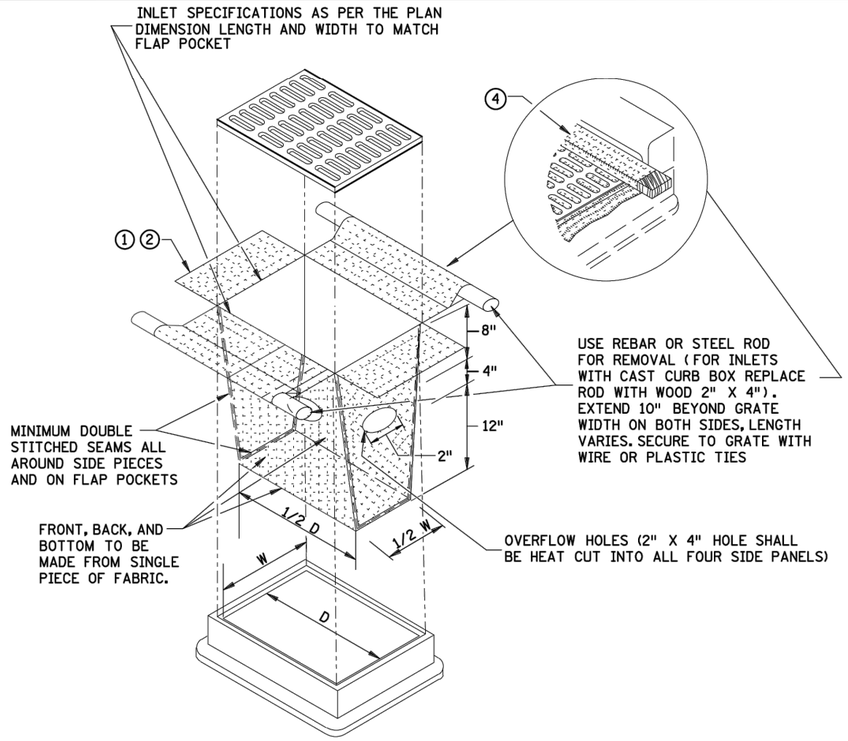
THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.405 | 3 OF 8

APPROVED: 1-8-2020
REVISED:

TEMPORARY SEDIMENT CONTROL
DITCH CHECK

S.P. 002-608-012 (C.S.A.H. 8) SHEET 31 OF 189 SHEETS

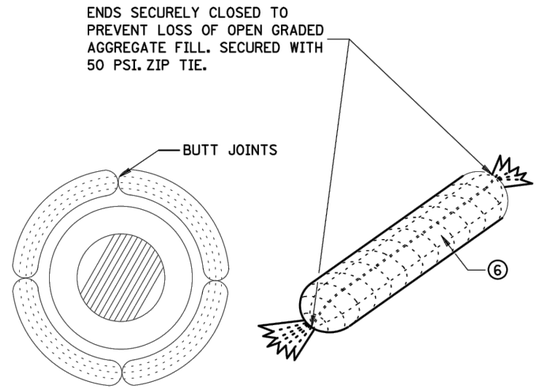


FILTER BAG INSERT ③

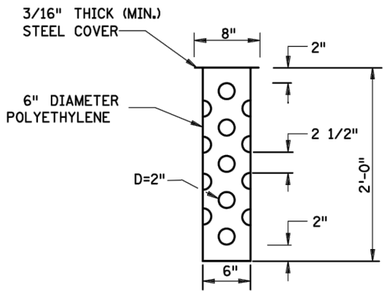
(CAN BE INSTALLED IN ANY INLET TYPE
WITH OR WITHOUT A CURB BOX)

SEDIMENT CONTROL INLET HAT

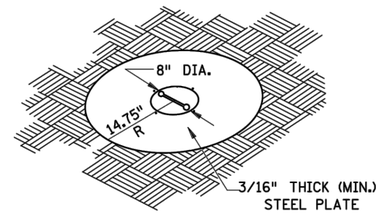
NOTE:
THE SEDIMENT CONTROL BARRIER SHALL BE A METAL OR PLASTIC/POLYETHYLENE RISER SIZED TO FIT INSIDE THE CATCH BASIN/MANHOLE; HAVE PERFORATIONS TO ALLOW FOR WATER INFILTRATION; HAVE AN OVERFLOW OPENING, FLANGES AND A LID/COVER.



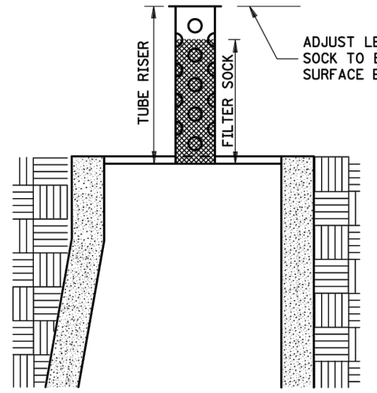
ROCK LOG/COMPOST LOG



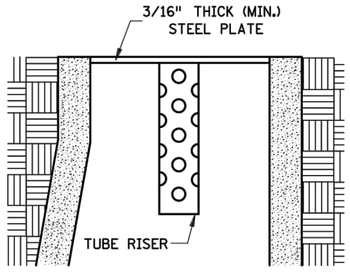
TUBE RISER



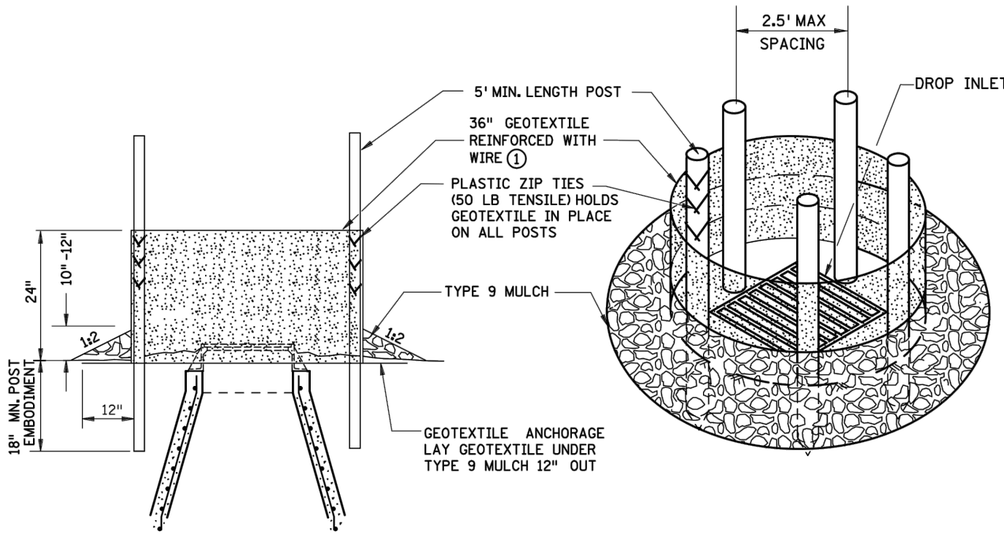
PERSPECTIVE VIEW



SECTION
(UP POSITION)



SECTION
(DOWN POSITION)



SILT FENCE RING AND ROCK FILTER BERM

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

POP-UP HEAD

NOTES:

SEE SPECS. 2573, 3137, & 3886.

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

1. ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.
2. FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
3. INSTALLATION NOTES:
   DO NOT PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE PLACED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.
4. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.
5. SOCK HEIGHT MUST NOT BE SO HIGH AS TO SLOW DOWN WATER FILTRATION TO CAUSE FLOODING OF THE ROADWAY.
6. GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.

REVISION:

APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

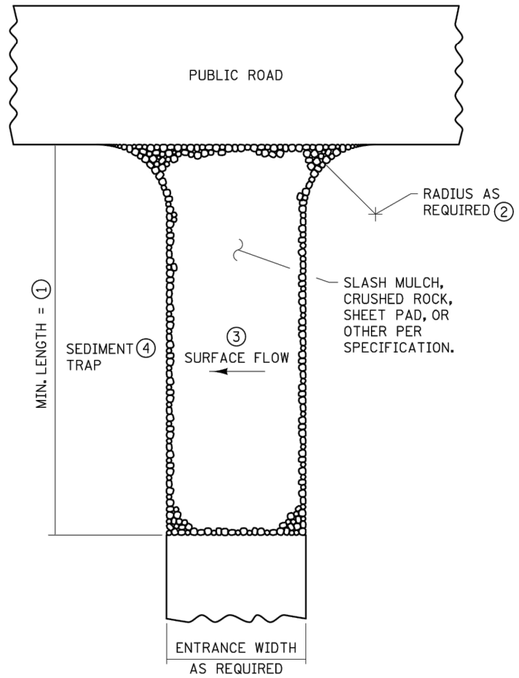
MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.405 | 4 OF 8

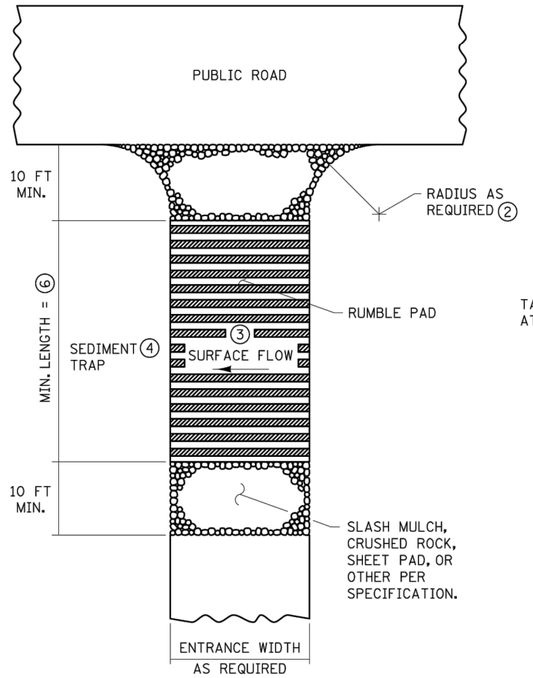
APPROVED: 2-28-2017
REVISED:
STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL

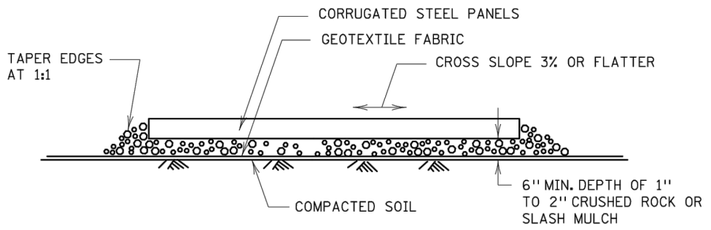
STORM DRAIN INLET PROTECTION



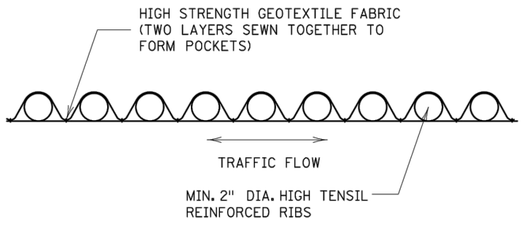
SLASH MULCH, CRUSHED ROCK, OR SHEET PAD CONSTRUCTION EXIT ⑤⑦



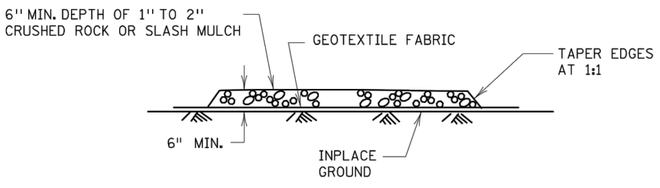
RUMBLE PAD CONSTRUCTION EXIT ⑤⑦



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.

REVISION:

APPROVED: 2-28-2017

CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

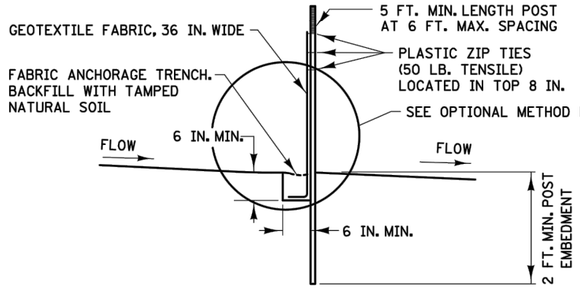
STANDARD PLAN 5-297.405 | 5 OF 8

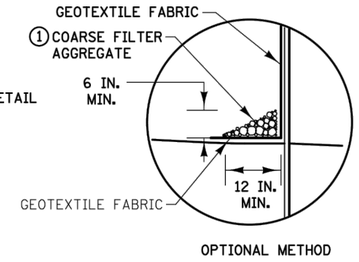
APPROVED: 2-28-2017
REVISED:

STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL

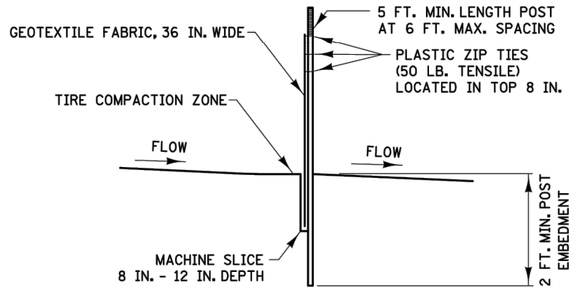
STABILIZED CONSTRUCTION EXIT



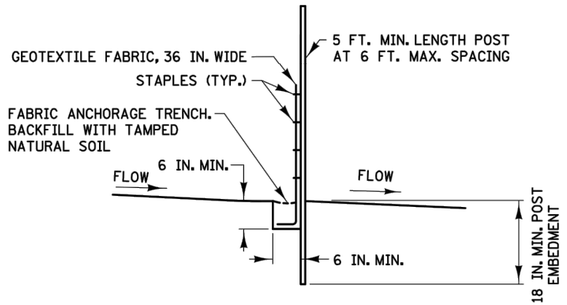


OPTIONAL METHOD

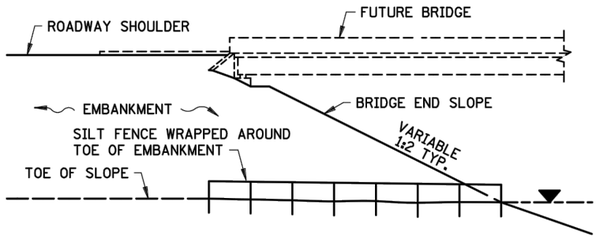
SILT FENCE TYPE HI ②
(HAND INSTALLED)



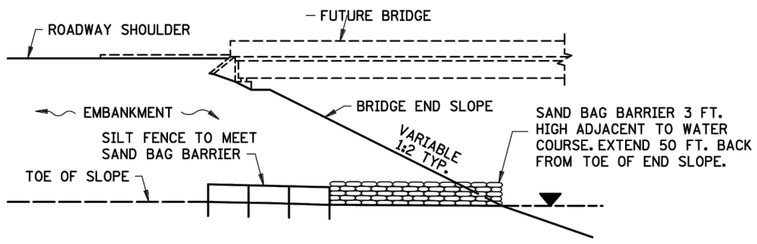
SILT FENCE TYPE MS ②
(MACHINE SLICED)



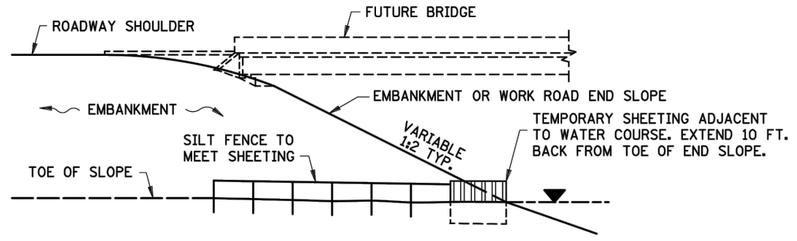
SILT FENCE TYPE PA ③
(PREASSEMBLED)



SILT FENCE ONLY ④



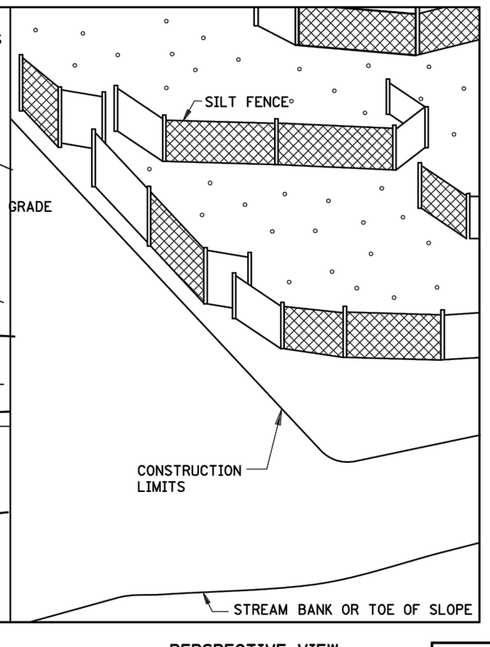
SILT FENCE WITH SAND BAGS ⑤



SILT FENCE WITH SHEETING ⑥

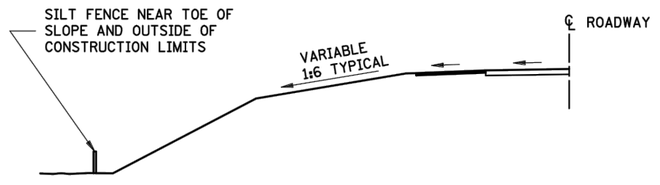
INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER

PLAN VIEW



PERSPECTIVE VIEW

J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

SEE SPECS. 2573, 3149 & 3886.

① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

② TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.

③ TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.

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

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

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

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

MINNESOTA DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

APPROVED: 2-28-2017
REVISED:

STANDARD PLAN 5-297.405 | **6 OF 8**

TEMPORARY SEDIMENT CONTROL

SILT FENCE

S.P. 002-608-012 (C.S.A.H. 8) SHEET 34 OF 189 SHEETS

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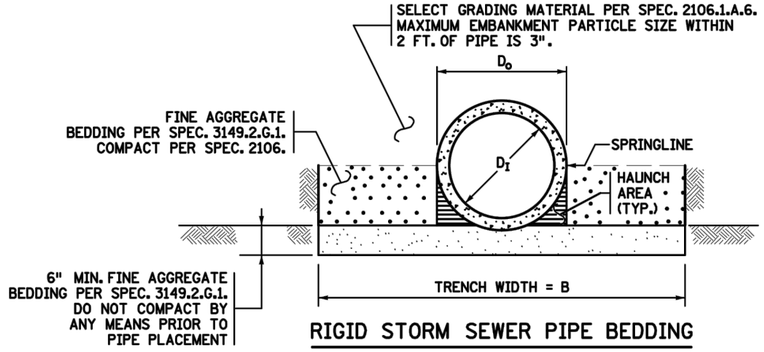
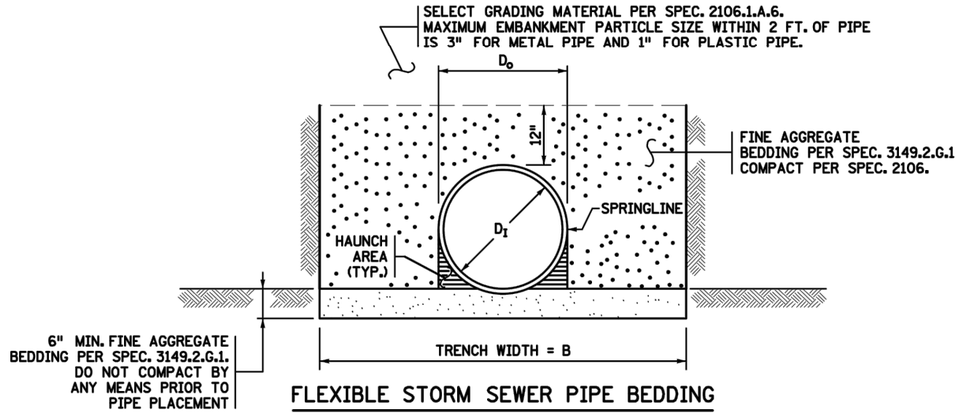


RIGID STORM SEWER PIPE BEDDING

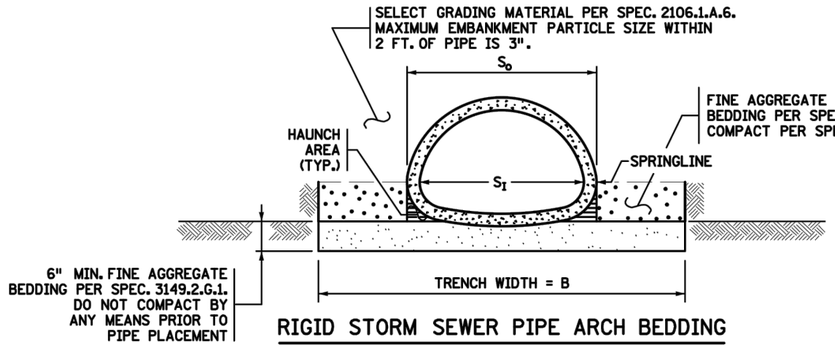
TRENCH BASE WIDTH ①②	
PIPE DIA. D_I OR S_I	TRENCH WIDTH B
< 42"	D_o + 24"
42" TO 54"	1.5 x D_o
> 54"	D_o + 36"

PLASTIC PIPE
WITH H > 10 FT.①②

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



FLEXIBLE STORM SEWER PIPE BEDDING



RIGID STORM SEWER PIPE ARCH BEDDING

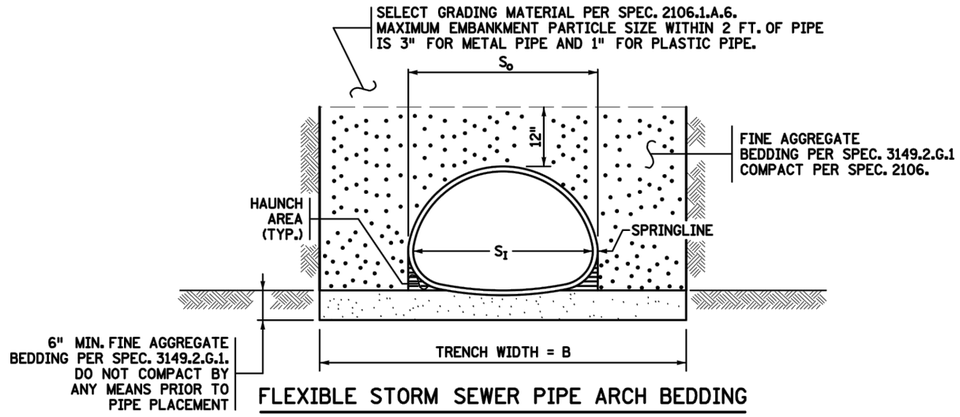
-LEGEND-

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

= UNDISTURBED SOIL

= COMPACTED BEDDING

= LOOSE BEDDING, COMPACTED AFTER PIPE PLACEMENT



FLEXIBLE STORM SEWER PIPE ARCH BEDDING

CONSTRUCTION SEQUENCE

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

NOTES

EXCAVATE & CONSTRUCT ALL TRENCHES AND SLOPES PER OSHA REQUIREMENTS.

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

PROTECT ALL PIPE DURING CONSTRUCTION PER SPEC. 2503.

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

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

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

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

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

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

REVISION:

APPROVED: JANUARY 18, 2019
Kevin Western
STATE BRIDGE ENGINEER

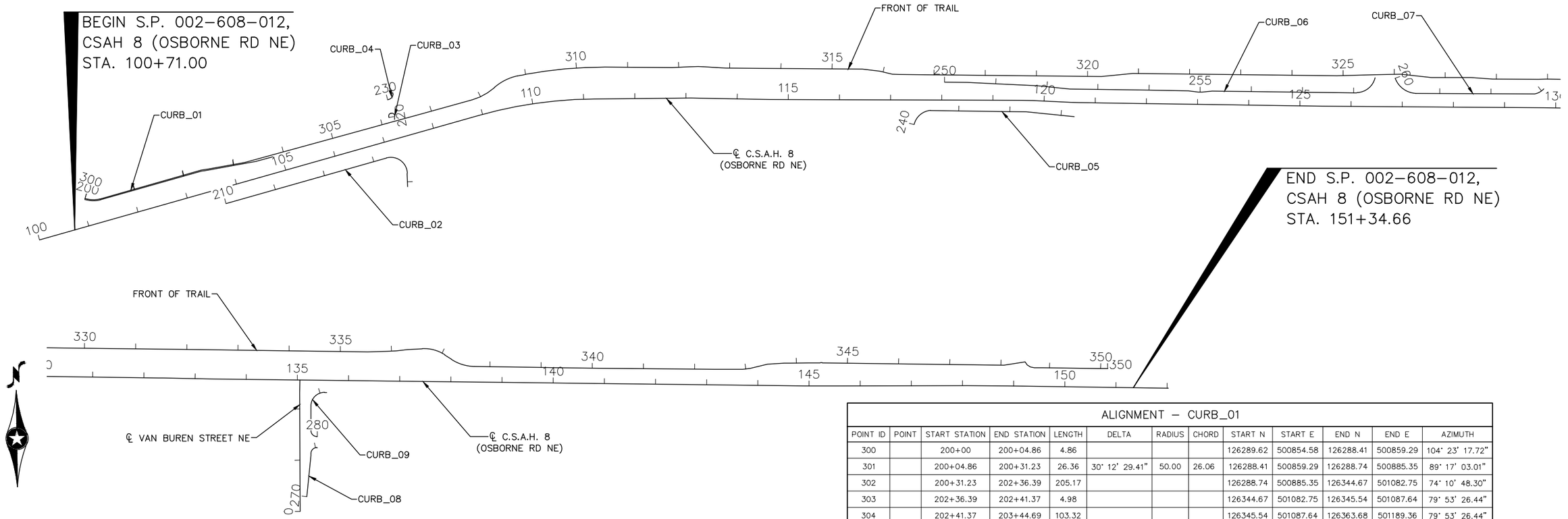
MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.442 | 1 OF 1

APPROVED: 01-18-2019
REVISED:

STATE DESIGN ENGINEER

STANDARD STORM SEWER BEDDING FOR RIGID AND FLEXIBLE PIPE



ALIGNMENT – CSAH 8

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
100		100+00	108+92.56	892.56				126210.34	500766.39	126453.66	501625.14	74° 10' 48.30"
101		108+92.56	111+19.75	227.20	15° 18' 52.42"	850.00	226.52	126453.66	501625.14	126485.82	501849.36	81° 50' 14.51"
102		111+19.75	113+09.99	190.24				126485.82	501849.36	126487.50	502039.59	89° 29' 40.72"
103		113+09.99	114+64.79	154.80				126487.50	502039.59	126484.76	502194.37	91° 00' 52.11"
104		114+64.79	119+56.76	491.97				126484.76	502194.37	126483.06	502686.34	90° 11' 52.12"
105		119+56.76	119+78.98	22.22	2° 32' 46.11"	500.00	22.22	126483.06	502686.34	126482.49	502708.55	91° 28' 15.18"
106		119+78.98	120+51.22	72.24				126482.49	502708.55	126479.03	502780.70	92° 44' 38.23"
107		120+51.22	120+67.82	16.61	1° 54' 10.30"	500.00	16.60	126479.03	502780.70	126478.52	502797.30	91° 47' 33.08"
108		120+67.82	125+44.45	476.63				126478.52	502797.30	126471.52	503273.87	90° 50' 27.94"
109		125+44.45	128+15.96	271.51				126471.52	503273.87	126469.62	503545.38	90° 24' 00.98"
110		128+15.96	129+77.97	162.01				126469.62	503545.38	126468.88	503707.38	90° 15' 49.34"
111		129+77.97	132+28.56	250.59				126468.88	503707.38	126465.64	503957.95	90° 44' 21.87"
112		132+28.56	132+37.78	9.22	1° 03' 25.27"	500.00	9.22	126465.64	503957.95	126465.44	503967.18	91° 16' 04.50"
113		132+37.78	133+36.97	99.19	1° 08' 12.17"	4999.50	99.19	126465.44	503967.18	126463.31	504066.34	91° 13' 41.06"
114		133+36.97	144+91.01	1154.04				126463.31	504066.34	126450.03	505220.30	90° 39' 34.97"
115		144+91.01	145+59.96	68.95	0° 47' 24.49"	5000.00	68.95	126450.03	505220.30	126449.71	505289.25	90° 15' 52.73"
116		145+59.96	148+09.88	249.92				126449.71	505289.25	126450.28	505539.17	89° 52' 10.49"
117		148+09.88	148+88.46	78.57	0° 54' 01.44"	5000.00	78.57	126450.28	505539.17	126449.84	505617.74	90° 19' 11.21"
118		148+88.46	152+02.35	313.89				126449.84	505617.74	126445.62	505931.61	90° 46' 11.93"

VAN BUREN

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
200		0+00	2+31.93	231.93				126204.76	504234.86	126436.69	504234.03	359° 47' 41.83"
201		2+31.93	2+56.62	24.69				126436.69	504234.03	126461.38	504234.31	0° 39' 34.97"

ALIGNMENT – CURB_01

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
300		200+00	200+04.86	4.86				126289.62	500854.58	126288.41	500859.29	104° 23' 17.72"
301		200+04.86	200+31.23	26.36	30° 12' 29.41"	50.00	26.06	126288.41	500859.29	126288.74	500885.35	89° 17' 03.01"
302		200+31.23	202+36.39	205.17				126288.74	500885.35	126344.67	501082.75	74° 10' 48.30"
303		202+36.39	202+41.37	4.98				126344.67	501082.75	126345.54	501087.64	79° 53' 26.44"
304		202+41.37	203+44.69	103.32				126345.54	501087.64	126363.68	501189.36	79° 53' 26.44"
305		203+44.69	203+78.70	34.01				126363.68	501189.36	126372.93	501222.09	74° 13' 05.88"

ALIGNMENT – CURB_02

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
310		210+00	213+25.43	325.43				126281.38	501130.82	126370.10	501443.93	74° 10' 48.30"
311		213+25.43	213+83.43	58.00	103° 51' 25.52"	32.00	50.38	126370.10	501443.93	126340.41	501484.63	126° 06' 31.07"
312		213+83.43	214+09.34	25.91				126340.41	501484.63	126314.51	501485.52	178° 02' 13.83"

ALIGNMENT – CURB_03

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
320		220+00	220+06.28	6.28				126445.61	501460.24	126451.89	501460.00	357° 53' 45.03"
321		220+06.28	220+15.49	9.20	87° 53' 45.03"	6.00	8.33	126451.89	501460.00	126457.67	501454.01	313° 56' 52.52"
322		220+15.49	220+16.72	1.23				126457.67	501454.01	126457.37	501452.82	256° 07' 24.96"
323		220+16.72	220+24.95	8.23	85° 41' 27.34"	5.50	7.48	126457.37	501452.82	126451.12	501448.71	213° 16' 41.29"
324		220+24.95	220+26.51	1.56				126451.12	501448.71	126449.58	501448.97	170° 25' 57.62"

ALIGNMENT – CURB_04

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
330		230+00	230+01.85	1.85				126484.22	501446.64	126484.64	501448.44	76° 43' 40.36"
331		230+01.85	230+17.14	15.29	81° 39' 43.09"	10.73	14.03	126484.64	501448.44	126496.01	501456.67	35° 53' 48.82"
332		230+17.14	230+21.96	4.82				126496.01	501456.67	126500.81	501456.25	355° 03' 57.27"

ALIGNMENT – CURB_05

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
340		240+00	240+44.98	44.98	71° 35' 54.82"	36.00	42.11	126435.88	502475.59	126463.24	502507.60	49° 28' 10.16"
341		240+44.98	241+15.12	70.14				126463.24	502507.60	126462.22	502577.73	90° 50' 05.28"
342		241+15.12	241+85.19	70.07				126462.22	502577.73	126461.20	502647.79	90° 50' 05.28"
343		241+85.19	242+32.42	47.22				126461.20	502647.79	126460.51	502695.01	90° 50' 05.28"
344		242+32.42	243+26.56	94.14				126460.51	502695.01	126451.15	502788.68	95° 42' 38.14"

0 100 200
SCALE FEET

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.

CODY J. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

DESIGNED TJT
DRAWN TJT
CHECKED CLC

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
ALIGNMENT PLAN AND TABULATIONS

SHEET 36 OF 189

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5/26/2020

ALIGNMENT – FRONT OF TRAIL

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
400		300+00	300+30.19	30.19	34° 24' 25.64"	50.27	29.74	126291.56	500855.08	126290.66	500884.80	91° 43' 37.14"
401		300+30.19	302+35.46	205.27				126290.66	500884.80	126346.62	501082.30	74° 10' 48.30"
402		302+35.46	302+48.39	12.94				126346.62	501082.30	126348.89	501095.03	79° 53' 26.44"
403		302+48.39	303+22.09	73.70				126348.89	501095.03	126361.83	501167.59	79° 53' 26.44"
404		303+22.09	305+84.37	262.28				126361.83	501167.59	126431.51	501420.44	74° 35' 36.60"
405		305+84.37	306+14.14	29.77				126431.51	501420.44	126439.42	501449.14	74° 35' 36.60"
406		306+14.14	306+74.59	60.45				126439.42	501449.14	126455.47	501507.41	74° 35' 36.60"
407		306+74.59	307+82.90	108.32				126455.47	501507.41	126484.25	501611.84	74° 35' 36.60"
408		307+82.90	308+32.25	49.35	26° 10' 54.01"	108.00	48.92	126484.25	501611.84	126507.59	501654.83	61° 30' 09.59"
409		308+32.25	308+83.78	51.52	29° 31' 17.02"	100.00	50.96	126507.59	501654.83	126530.59	501700.31	63° 10' 21.09"
410		308+83.78	308+90.54	6.76				126530.59	501700.31	126531.96	501706.93	78° 18' 31.99"
411		308+90.54	308+92.16	1.62				126531.96	501706.93	126532.30	501708.51	77° 56' 04.06"
412		308+92.16	308+94.72	2.56				126532.30	501708.51	126532.81	501711.02	78° 23' 02.59"
413		308+94.72	309+00.88	6.16				126532.81	501711.02	126533.97	501717.07	79° 09' 26.98"
414		309+00.88	310+55.70	154.82	11° 13' 01.51"	790.80	154.57	126533.97	501717.07	126548.07	501870.99	84° 45' 57.74"
415		310+55.70	311+87.03	131.33				126548.07	501870.99	126547.21	502002.32	90° 22' 28.49"
416		311+87.03	312+20.39	33.36				126547.21	502002.32	126548.54	502035.65	87° 43' 43.82"
417		312+20.39	312+38.29	17.91				126548.54	502035.65	126549.25	502053.55	87° 43' 43.82"
418		312+38.29	312+50.72	12.43				126549.25	502053.55	126548.57	502065.96	93° 05' 41.86"
419		312+50.72	312+83.58	32.86				126548.57	502065.96	126546.80	502098.77	93° 05' 41.86"
420		312+83.58	312+92.81	9.23				126546.80	502098.77	126546.30	502107.98	93° 05' 41.86"
421		312+92.81	315+59.27	266.46				126546.30	502107.98	126543.92	502374.44	90° 30' 45.25"
422		315+59.27	315+93.22	33.95				126543.92	502374.44	126539.98	502408.16	96° 39' 30.85"
423		315+93.22	316+18.63	25.41				126539.98	502408.16	126534.40	502432.94	102° 41' 45.95"
424		316+18.63	316+31.52	12.89				126534.40	502432.94	126533.54	502445.81	93° 47' 37.46"
425		316+31.52	320+27.01	395.48				126533.54	502445.81	126529.73	502841.28	90° 33' 07.04"
426		320+27.01	320+89.03	62.02				126529.73	502841.28	126535.47	502903.03	84° 41' 30.58"
427		320+89.03	324+87.96	398.92				126535.47	502903.03	126531.16	503301.93	90° 37' 07.90"
428		324+87.96	325+61.77	73.81				126531.16	503301.93	126533.24	503375.72	88° 23' 06.89"
429		325+61.77	326+12.98	51.21				126533.24	503375.72	126534.27	503426.92	88° 51' 23.55"
430		326+12.98	326+72.69	59.72				126534.27	503426.92	126527.52	503486.25	96° 29' 19.42"
431		326+72.69	327+50.08	77.39				126527.52	503486.25	126527.69	503563.64	89° 52' 12.83"
432		327+50.08	327+85.93	35.84				126527.69	503563.64	126525.16	503599.39	94° 02' 43.46"
433		327+85.93	327+92.76	6.83				126525.16	503599.39	126524.90	503606.22	92° 14' 03.25"
434		327+92.76	328+82.11	89.35				126524.90	503606.22	126524.24	503695.57	90° 25' 23.04"
435		328+82.11	328+98.09	15.98				126524.24	503695.57	126524.74	503711.54	88° 12' 32.18"
436		328+98.09	329+29.89	31.80				126524.74	503711.54	126524.35	503743.34	90° 42' 25.14"

ALIGNMENT – FRONT OF TRAIL

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
437		329+29.89	332+24.27	294.38				126524.35	503743.34	126520.71	504037.69	90° 42' 25.14"
438		332+24.27	332+59.80	35.53				126520.71	504037.69	126520.27	504073.22	90° 42' 25.14"
439		332+59.80	335+53.57	293.77				126520.27	504073.22	126516.65	504366.97	90° 42' 25.14"
440		335+53.57	335+87.72	34.15				126516.65	504366.97	126517.58	504401.11	88° 26' 30.39"
441		335+87.72	336+08.92	21.20				126517.58	504401.11	126518.40	504422.29	87° 46' 42.89"
442		336+08.92	336+31.36	22.44				126518.40	504422.29	126520.99	504444.58	83° 22' 37.10"
443		336+31.36	336+60.24	28.88				126520.99	504444.58	126522.30	504473.44	87° 24' 04.35"
444		336+60.24	337+06.22	45.98	35° 35' 58.92"	74.00	45.24	126522.30	504473.44	126510.44	504517.09	105° 12' 03.81"
445		337+06.22	337+22.30	16.08				126510.44	504517.09	126501.68	504530.58	123° 00' 03.27"
446		337+22.30	337+70.01	47.71	32° 09' 36.90"	85.00	47.09	126501.68	504530.58	126487.97	504575.63	106° 55' 14.82"
447		337+70.01	338+79.88	109.87				126487.97	504575.63	126486.36	504685.48	90° 50' 26.37"
448		338+79.88	339+34.16	54.29				126486.36	504685.48	126485.57	504739.76	90° 50' 26.37"
449		339+34.16	340+17.37	83.21				126485.57	504739.76	126484.35	504822.96	90° 50' 26.37"
450		340+17.37	342+39.14	221.77				126484.35	504822.96	126482.41	505044.72	90° 29' 57.87"
451		342+39.14	342+88.34	49.20				126482.41	505044.72	126482.41	505093.92	89° 59' 55.70"
452		342+88.34	342+93.97	5.62				126482.41	505093.92	126482.56	505099.55	88° 30' 38.81"
453		342+93.97	342+99.28	5.31				126482.56	505099.55	126482.97	505104.84	85° 36' 35.74"
454		342+99.28	343+09.59	10.31				126482.97	505104.84	126484.50	505115.04	81° 27' 54.09"
455		343+09.59	343+43.45	33.87				126484.50	505115.04	126492.32	505147.99	76° 38' 27.82"
456		343+43.45	343+76.26	32.81				126492.32	505147.99	126494.34	505180.74	86° 27' 56.92"
457		343+76.26	343+88.24	11.98				126494.34	505180.74	126494.44	505192.71	89° 31' 04.21"
458		343+88.24	344+24.74	36.50				126494.44	505192.71	126494.75	505229.21	89° 31' 04.21"
459		344+24.74	344+34.70	9.96				126494.75	505229.21	126494.84	505239.17	89° 31' 04.21"
460		344+34.70	344+46.85	12.16				126494.84	505239.17	126495.13	505251.32	88° 37' 06.29"
462		344+46.85	344+50.54	3.69	2° 06' 42.18"	100.00	3.69	126495.13	505251.32	126495.15	505255.01	89° 40' 27.38"
463		344+50.54	348+05.82	355.28				126495.15	505255.01	126490.62	505610.26	90° 43' 48.47"
464		348+05.82	348+47.97	42.15				126490.62	505610.26	126496.96	505651.92	81° 20' 57.15"
465		348+47.97	348+55.06	7.09				126496.96	505651.92	126490.85	505655.52	149° 33' 30.03"
466		348+55.06	348+62.88	7.82				126490.85	505655.52	126487.10	505662.38	118° 36' 35.55"
467		348+62.88	348+70.40	7.52				126487.10	505662.38	126485.60	505669.75	101° 31' 46.53"
468		348+70.40	348+76.86	6.46				126485.60	505669.75	126485.57	505676.22	90° 16' 13.17"
469		348+76.86	348+83.33	6.46				126485.57	505676.22	126485.54	505682.68	90° 16' 13.17"
470		348+83.33	348+87.42	4.09				126485.54	505682.68	126485.28	505686.77	93° 34' 15.95"
471		348+87.42	349+62.98	75.55				126485.28	505686.77	126484.22	505762.31	90° 48' 08.49"
472		349+62.98	349+94.20	31.23				126484.22	505762.31	126483.86	505793.54	90° 40' 24.24"
473		349+94.20	350+05.35	11.15				126483.86	505793.54	126483.71	505804.69	90° 45' 56.08"
474		350+05.35	350+13.76	8.41				126483.71	505804.69	126483.88	505813.09	88° 51' 42.73"

ALIGNMENT – CURB_06

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
350		250+00	250+44.77	44.77				126518.85	502535.00	126518.20	502579.77	90° 50' 05.28"
351		250+44.77	251+05.45	60.68				126518.20	502579.77	126515.29	502640.38	92° 44' 38.23"
352		251+05.45	251+81.57	76.12				126515.29	502640.38	126511.65	502716.41	92° 44' 38.23"
353		251+81.57	252+45.61	64.04				126511.65	502716.41	126505.27	502780.13	95° 43' 01.65"
354		252+45.61	253+97.04	151.43				126505.27	502780.13	126503.05	502931.55	90° 50' 27.94"
355		253+97.04	254+76.69	79.65				126503.05	502931.55	126501.71	503011.18	90° 57' 44.59"
357		258+06.31	258+55.97	49.66	75° 00' 47.08"	37.93	46.19	126497.55	503340.57	126526.84	503376.28	50° 38' 37.32"

ALIGNMENT – CURB_07

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
360		260+00	260+52.85	52.85	67° 12' 43.24"	45.06	49.87	126526.16	503415.44	126496.75	503455.72	126° 08' 32.61"
361		260+52.85	261+43.30	90.45				126496.75	503455.72	126496.12	503546.16	90° 24' 00.07"
362		261+43.30	261+43.67	0.37				126496.12	503546.16	126496.12	503546.53	90° 00' 59.22"
363		261+43.67	262+84.93	141.26				126496.12	503546.53	126495.48	503687.79	90° 15' 37.20"
364		262+84.93	263+05.60	20.67	37° 29' 50.21"	31.58	20.30	126495.48	503687.79	126505.33	503705.54	60° 57' 51.88"

ALIGNMENT – CURB_08

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
370		270+00	270+80.40	80.40				126233.61	504248.03	126313.62	504255.92	5° 37' 43.76"
371		270+80.40	270+84.40	4.00				126313.62	504255.92	126317.62	504255.91	359° 55' 05.62"
372		270+84.40	271+02.48	18.08	90° 04' 54.38"	11.50	16.28	126317.62	504255.91	126329.14	504267.41	44° 57' 32.81"
373		271+02.48	271+03.48	1.00				126329.14	504267.41	126329.14	504268.41	90° 00' 00.00"

ALIGNMENT – CURB_09

POINT ID	POINT	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	AZIMUTH
380		280+00	280+01	1.00				126351.14	504268.35	126351.14	504267.35	270° 00' 00.00"
381		280+01	280+19.05	18.05	89° 55' 05.62"	11.50	16.25	126351.14	504267.35	126362.62	504255.85	314° 57' 32.81"
382		280+19.05	280+66.72	47.67				126362.62	504255.85	126410.29	504255.78	359° 55' 05.62"
383		280+66.72	281+08.50	41.77	90° 19' 12.71"	26.50	37.58	126410.29	504255.78	126436.83	504282.39	45° 04' 41.98"
384		281+08.50	281+12.90	4.40				126436.83	504282.39	126436.81	504286.79	90° 14' 18.33"

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.

CODY J. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

DESIGNED TJT
DRAWN TJT
CHECKED CLC

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE

S.P. 002–608–012
CSAH 8 RECONSTRUCTION
ALIGNMENT PLAN AND TABULATIONS

BEGIN S.P. 002-608-012,
CSAH 8 (OSBORNE RD NE)
STA. 100+71.00

T.H. 47 (UNIVERSITY AVENUE NE)

UNIVERSITY EAST SERVICE RD

℄ CSAH 8
(OSBORNE RD NE)

PRIVATE INGRESS & EGRESS EASEMENT

DRAINAGE & UTLITY EASEMENT

SPRWS EASEMENT

TEMPORARY CONSTRUCTION EASEMENT

TEMPORARY CONSTRUCTION EASEMENT

MATCHLINE STA. 107+00

UTILITY OWNERS

THE FOLLOWING LIST SHOWS THE UTILITY COMPANIES INVOLVED WITH THIS PROJECT

CENTURY LINK = CENTURYLINK (CHUCK DAHER – cdaher@terratechllc.net)
SPRWS = ST PAUL REGIONAL WATER SERVICES (GRAEME CHAPLE – graeme.chaple@ci.stpaul.mn.us)
COMCAST = COMCAST CABLE, LLC (SCOTT RUPPERT – scott_ruppert@comcast.com)
XCEL POWER = XCEL ENERGY POWER (RYAN KAZECK – ryan.m.kazeck@xcelenergy.com)
CENTERPOINT = CENTERPOINT ENERGY MINNESOTA GAS (ANTHONY LAFFRADO – anthony.laffrado@centerpointenergy.com)

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 GUIDLINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

THE FOLLOWING PLANS ARE BASED UPON THE BEST INFORMATION AVAILABLE AND MAY NOT REFLECT THE ACTUAL EFFECTS ON THE UTILITIES BY CONSTRUCTION. ACTUAL DETERMINATIONS WILL BE MADE IN THE FIELD DURING CONSTRUCTION.

TEMPORARY CONSTRUCTION EASEMENT

SPRWS EASEMENT

℄ CSAH 8
(OSBORNE RD NE)

ANOKA COUNTY SIDEWALK EASEMENT

TEMPORARY CONSTRUCTION EASEMENT

MATCHLINE STA. 107+00

MATCHLINE STA. 114+00

TERRACE RD NE

5TH ST NE

LEGEND

Ⓗ	HAND HOLE	GAS	GAS LINE
	HYDRANT	OE	OVERHEAD POWER
	LIGHT POLE	W	WATER MAIN
Ⓢ	SANITARY MANHOLE	>>	STORM SEWER PIPE
Ⓓ	STORM MANHOLE	>	SANITARY SEWER PIPE
℄	ELECTRICAL CABINET		EXISTING WATER, INGRESS, EGRESS EASEMENT
	CATCH BASIN		EXISTING RIGHT-OF-WAY
	TRAFFIC SIGN		SECTION LINE
	TREE		WATER GATE VALVE
	UTILITY POLE		

0 25 50
SCALE FEET

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.

CODY J. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

DESIGNED TJT
DRAWN TJT
CHECKED CLC

BOLTON & MENK

12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
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REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
EXISITING UTILITIES & TOPOGRAPHY & ROW PLANS

SHEET 38 OF 189

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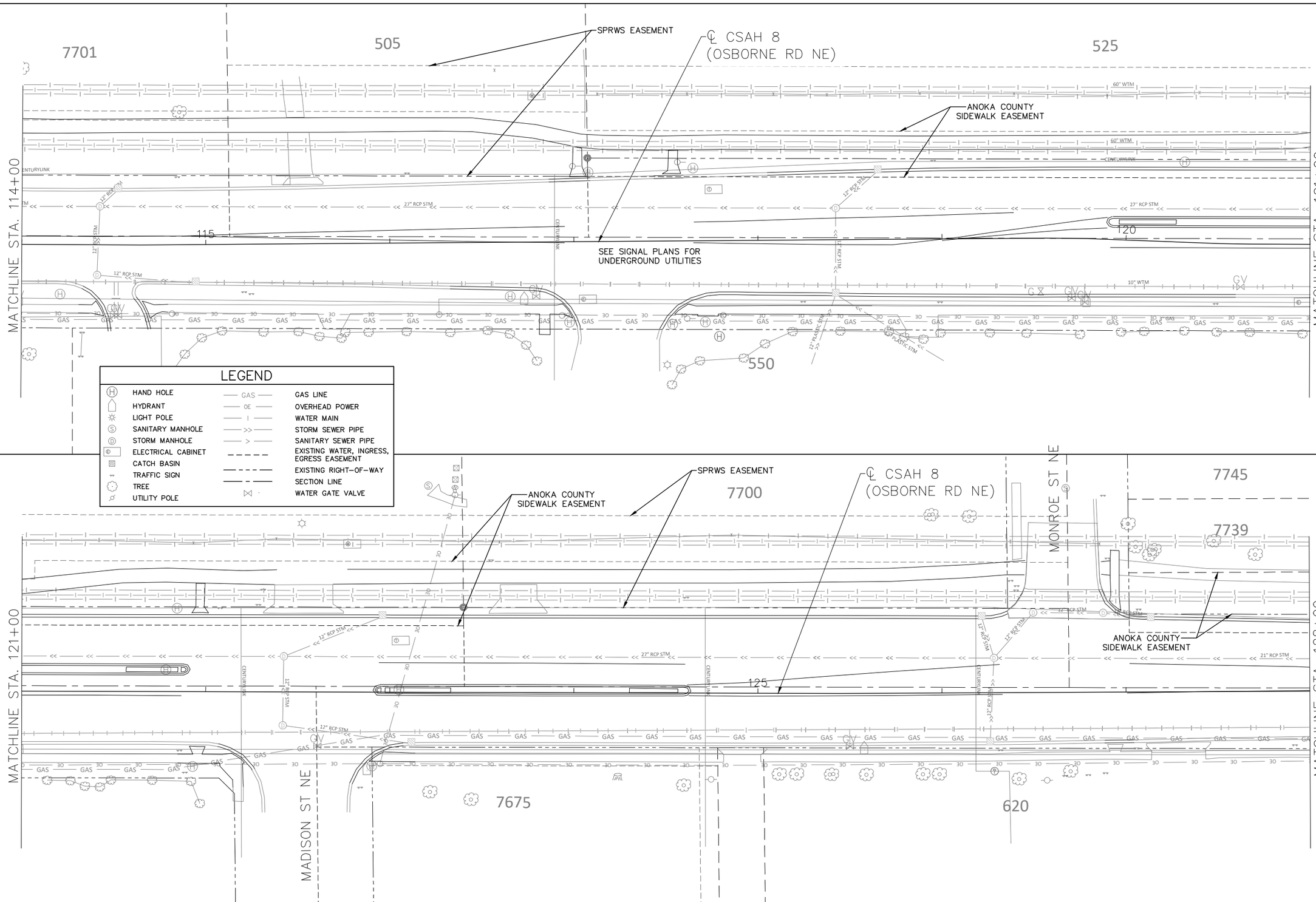

LEGEND

Ⓗ	HAND HOLE	GAS	GAS LINE
	HYDRANT	OE	OVERHEAD POWER
☼	LIGHT POLE	W	WATER MAIN
Ⓢ	SANITARY MANHOLE	>>	STORM SEWER PIPE
Ⓓ	STORM MANHOLE	>	SANITARY SEWER PIPE
	ELECTRICAL CABINET		EXISTING WATER, INGRESS, EGRESS EASEMENT
	CATCH BASIN		EXISTING RIGHT-OF-WAY
	TRAFFIC SIGN		SECTION LINE
	TREE		WATER GATE VALVE
	UTILITY POLE		

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SHEET 39 OF 189

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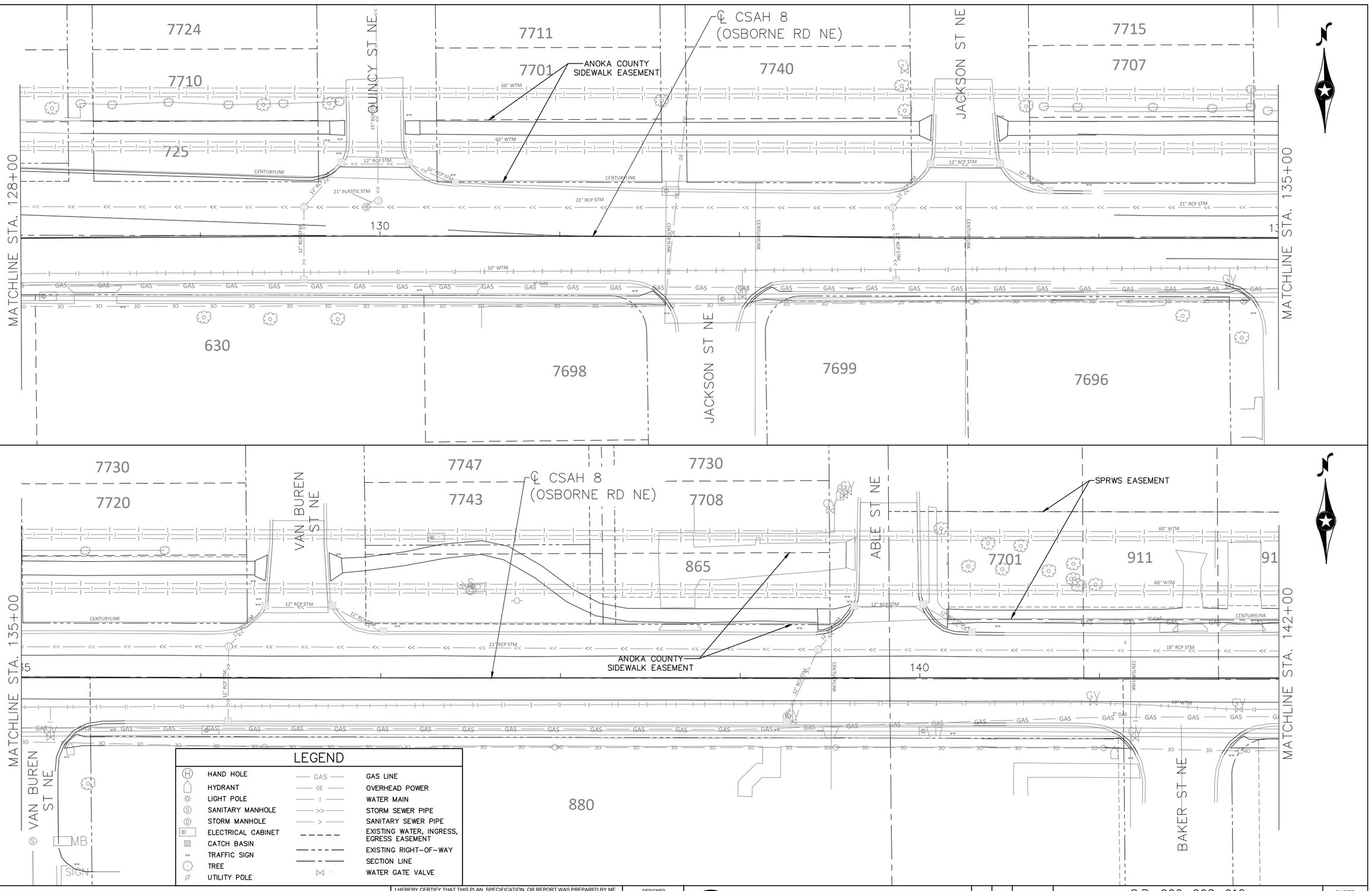

LEGEND

HAND HOLE	GAS LINE
HYDRANT	OVERHEAD POWER
LIGHT POLE	WATER MAIN
SANITARY MANHOLE	STORM SEWER PIPE
STORM MANHOLE	SANITARY SEWER PIPE
ELECTRICAL CABINET	EXISTING WATER, INGRESS, EGRESS EASEMENT
CATCH BASIN	EXISTING RIGHT-OF-WAY
TRAFFIC SIGN	SECTION LINE
TREE	WATER GATE VALVE
UTILITY POLE	

0 25 50
SCALE FEET

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SHEET 40 OF 189

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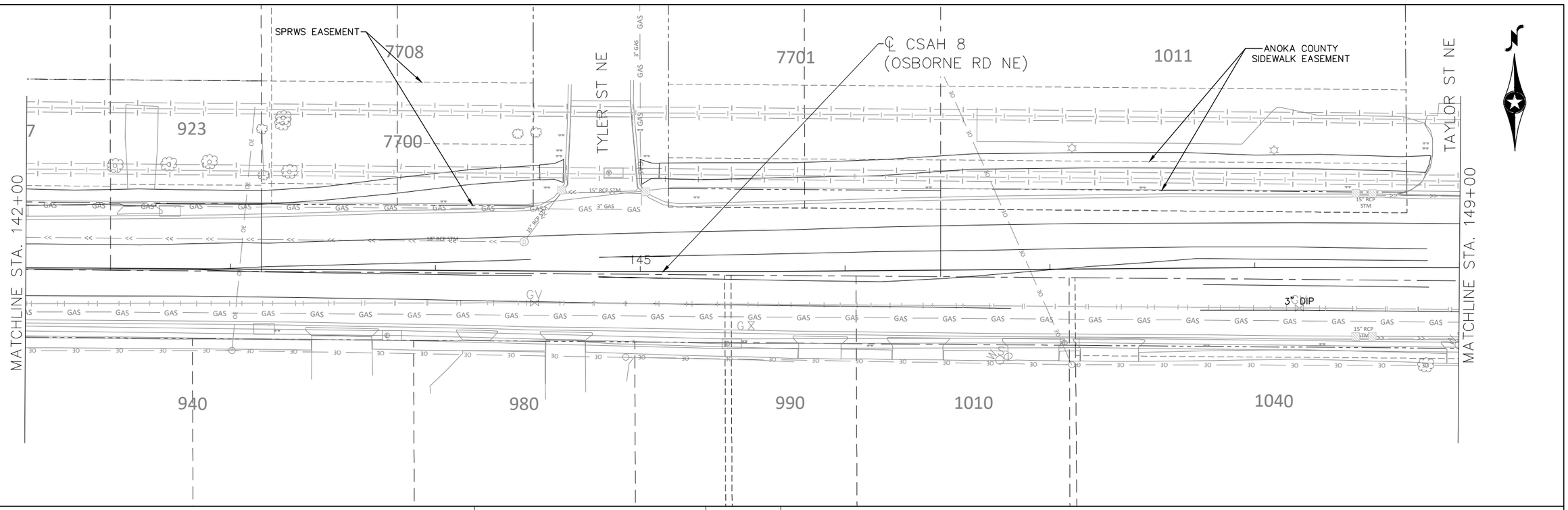

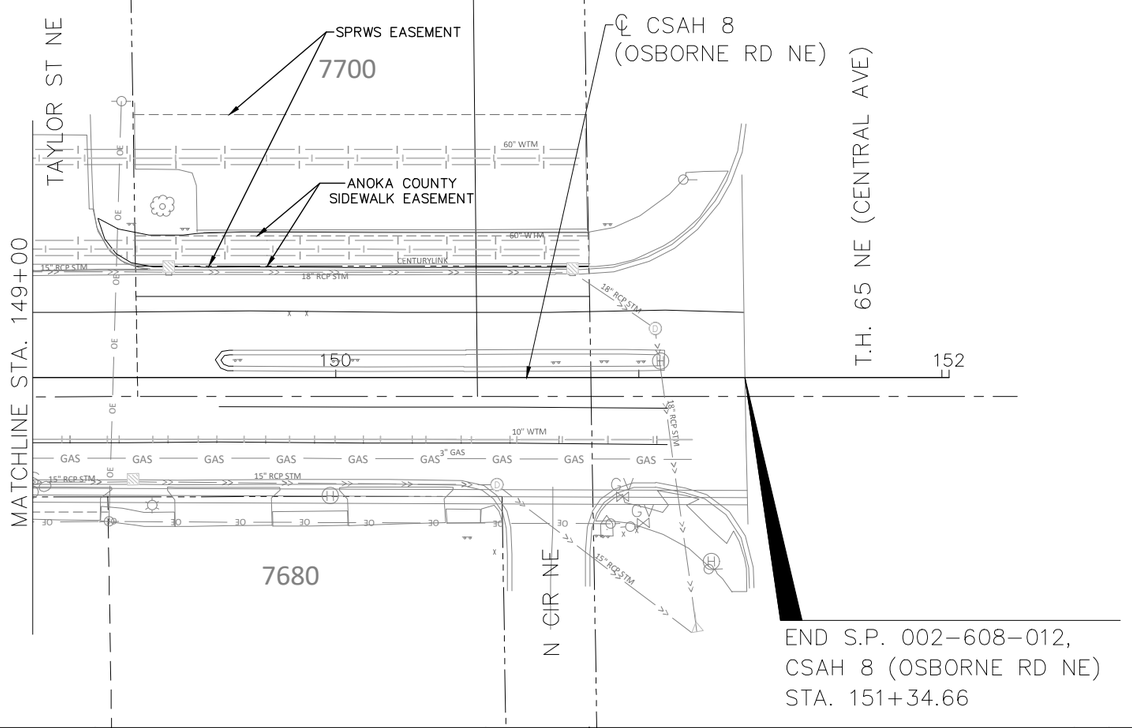

LEGEND

HAND HOLE	GAS	GAS LINE
HYDRANT	OE	OVERHEAD POWER
LIGHT POLE	I	WATER MAIN
SANITARY MANHOLE	>>	STORM SEWER PIPE
STORM MANHOLE	>	SANITARY SEWER PIPE
ELECTRICAL CABINET		EXISTING WATER, INGRESS, EGRESS EASEMENT
CATCH BASIN		EXISTING RIGHT-OF-WAY
TRAFFIC SIGN		SECTION LINE
TREE		WATER GATE VALVE
UTILITY POLE		

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℄ CSAH 8
(OSBORNE RD NE)

PROTECT LIGHTPOLE
(INCIDENTAL)

PROTECT HANDHOLE
(INCIDENTAL)

SEE REVISED SIGNAL PLANS

SALVAGE SIGN

UNIVERSITY AVENUE NE

UNIVERSITY EAST SERVICE RD

MATCHLINE STA. 107+00

LEGEND

MILL BITUMINOUS PAVEMENT	③ SAWING CONCRETE PAVEMENT (FULL DEPTH)
REMOVE CONCRETE MEDIAN & SIDEWALK	④ SAWING BITUMINOUS PAVEMENT (MILL DEPTH)
REMOVE CONCRETE PAVEMENT/DRIVEWAY	CLEAR AND GRUB (TREE)
REMOVE BITUMINOUS PAVEMENT/WALK	EXISTING WATER, INGRESS, EGRESS EASEMENT
REMOVE CURB AND GUTTER	SECTION LINE
① REMOVE DRAINAGE STRUCTURE	EXISTING RIGHT-OF-WAY
REMOVE STORM SEWER	CONSTRUCTION LIMITS
② SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	CLOSE DRIVEWAY ACCESS

NOTES:
1. ALL SALVAGED MATERIALS SHALL BE PROTECTED UNTIL DELIVERY TO COUNTY OR OTHERS. (SEE SPECS FOR HAUL SALVAGED MATERIAL).

REMOVE SIGN

REMOVE DECORATIVE ROCK/WOODCHIPS

REMOVE SIGN

5TH ST NE

MATCHLINE STA. 107+00

MATCHLINE STA. 114+00

TERRACE RD NE

℄ CSAH 8
(OSBORNE RD NE)

0 25 50
SCALE FEET

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S.P. 002-608-012
CSAH 8 RECONSTRUCTION
REMOVAL PLANS

SHEET 42 OF 189

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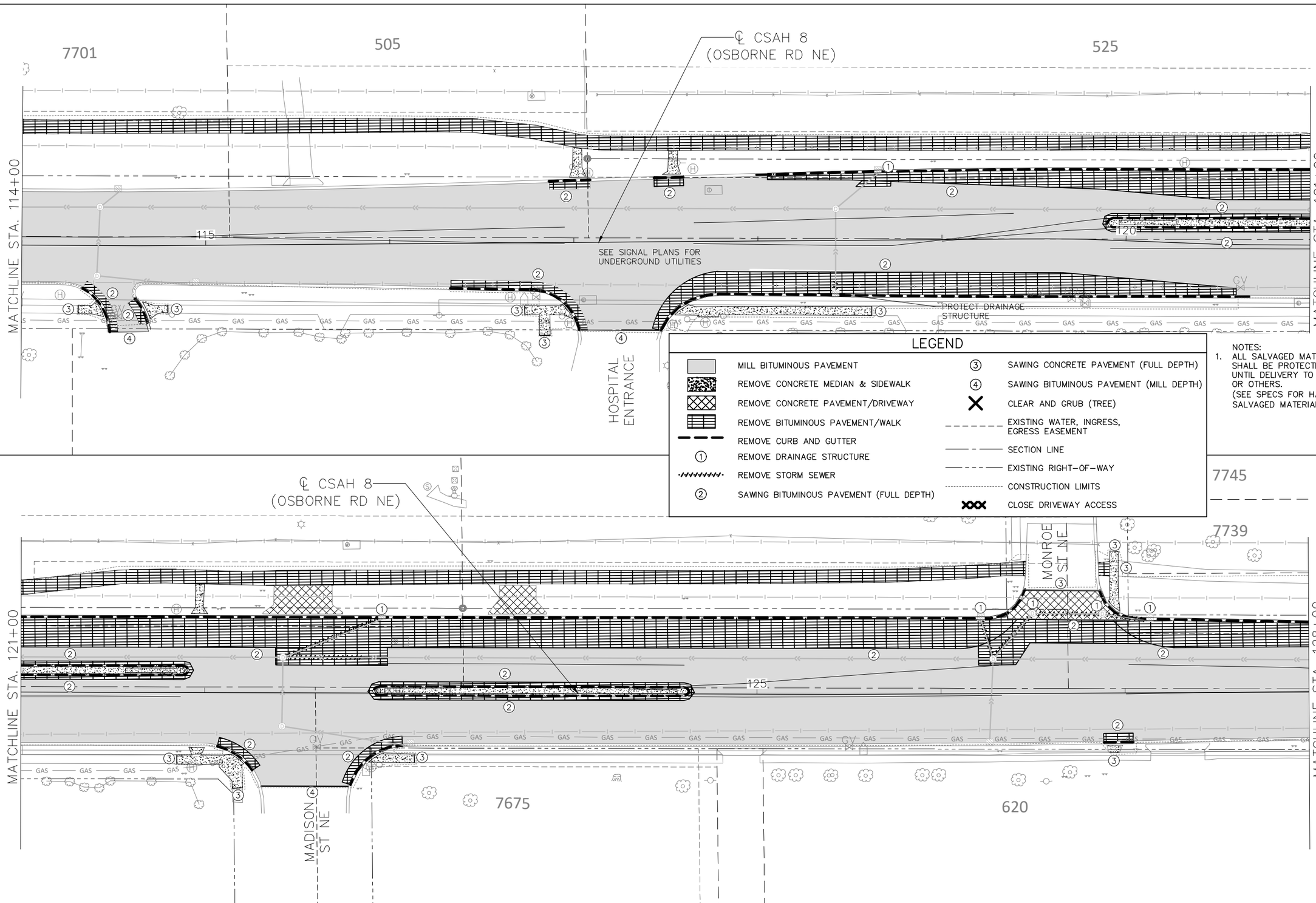

LEGEND

- MILL BITUMINOUS PAVEMENT
- REMOVE CONCRETE MEDIAN & SIDEWALK
- REMOVE CONCRETE PAVEMENT/DRIVEWAY
- REMOVE BITUMINOUS PAVEMENT/WALK
- REMOVE CURB AND GUTTER
- ① REMOVE DRAINAGE STRUCTURE
- REMOVE STORM SEWER
- ② SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
- ③ SAWING CONCRETE PAVEMENT (FULL DEPTH)
- ④ SAWING BITUMINOUS PAVEMENT (MILL DEPTH)
- CLEAR AND GRUB (TREE)
- EXISTING WATER, INGRESS, EGRESS EASEMENT
- SECTION LINE
- EXISTING RIGHT-OF-WAY
- CONSTRUCTION LIMITS
- XXX CLOSE DRIVEWAY ACCESS

NOTES:
1. ALL SALVAGED MATERIALS SHALL BE PROTECTED UNTIL DELIVERY TO COUNTY OR OTHERS. (SEE SPECS FOR HAUL SALVAGED MATERIAL).

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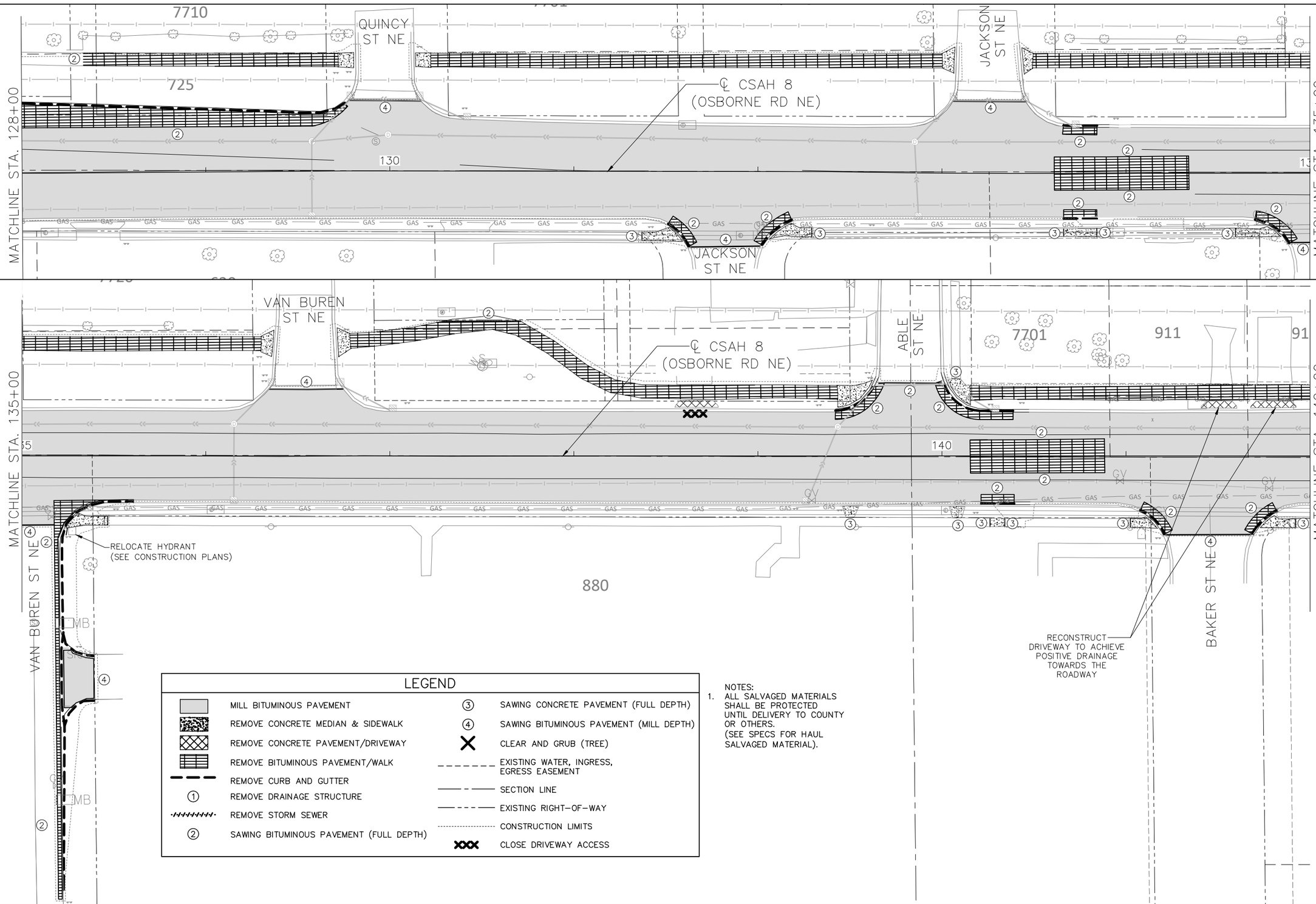
CSAH 8 RECONSTRUCTION
REMOVAL PLANS

SHEET 43 OF 189



LEGEND

MILL BITUMINOUS PAVEMENT	③ SAWING CONCRETE PAVEMENT (FULL DEPTH)
REMOVE CONCRETE MEDIAN & SIDEWALK	④ SAWING BITUMINOUS PAVEMENT (MILL DEPTH)
REMOVE CONCRETE PAVEMENT/DRIVEWAY	CLEAR AND GRUB (TREE)
REMOVE BITUMINOUS PAVEMENT/WALK	EXISTING WATER, INGRESS, EGRESS EASEMENT
REMOVE CURB AND GUTTER	SECTION LINE
① REMOVE DRAINAGE STRUCTURE	EXISTING RIGHT–OF–WAY
REMOVE STORM SEWER	CONSTRUCTION LIMITS
② SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	CLOSE DRIVEWAY ACCESS

NOTES:
1. ALL SALVAGED MATERIALS SHALL BE PROTECTED UNTIL DELIVERY TO COUNTY OR OTHERS. (SEE SPECS FOR HAUL SALVAGED MATERIAL).

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SCALE FEET

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CODY L. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

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CSAH 8 RECONSTRUCTION
REMOVAL PLANS

SHEET 44 OF 189

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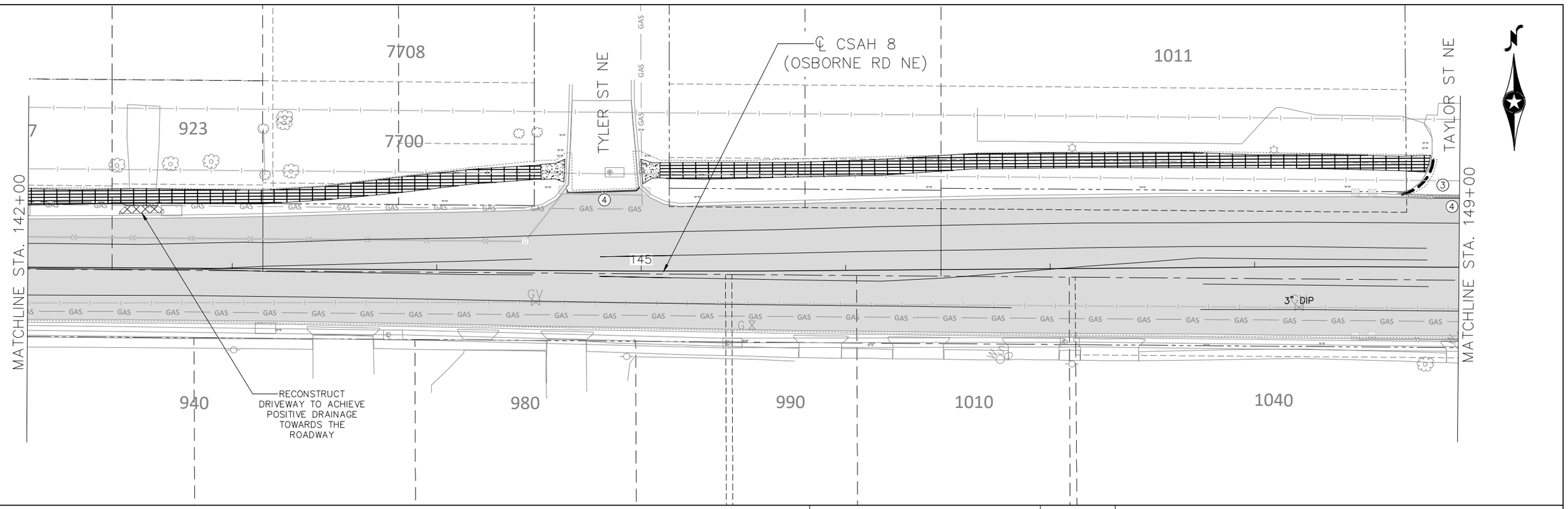

LEGEND

MILL BITUMINOUS PAVEMENT	③ SAWING CONCRETE PAVEMENT (FULL DEPTH)
REMOVE CONCRETE MEDIAN & SIDEWALK	④ SAWING BITUMINOUS PAVEMENT (MILL DEPTH)
REMOVE CONCRETE PAVEMENT/DRIVEWAY	CLEAR AND GRUB (TREE)
REMOVE BITUMINOUS PAVEMENT/WALK	EXISTING WATER, INGRESS, EGRESS EASEMENT
REMOVE CURB AND GUTTER	SECTION LINE
① REMOVE DRAINAGE STRUCTURE	EXISTING RIGHT–OF–WAY
REMOVE STORM SEWER	CONSTRUCTION LIMITS
② SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	CLOSE DRIVEWAY ACCESS

NOTES:
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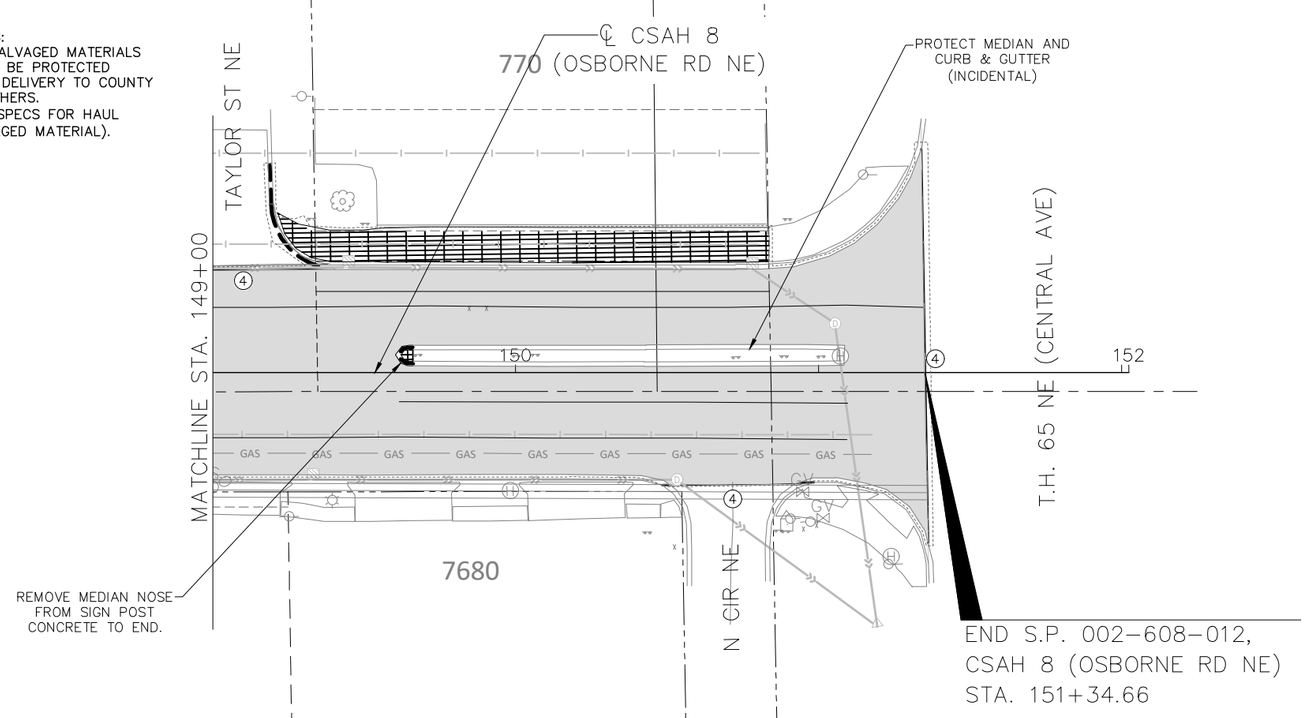

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CSAH 8 RECONSTRUCTION
REMOVAL PLANS

SHEET 45 OF 189

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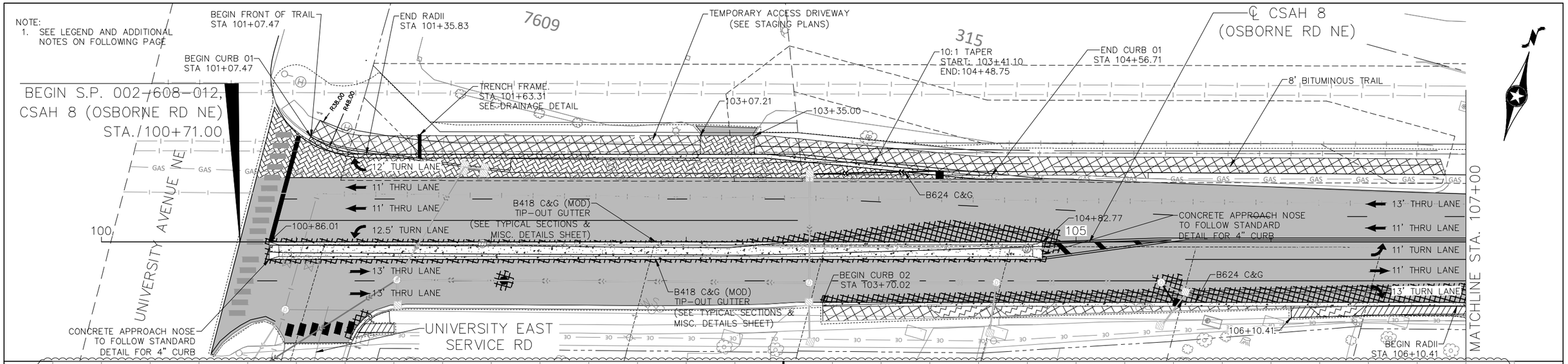
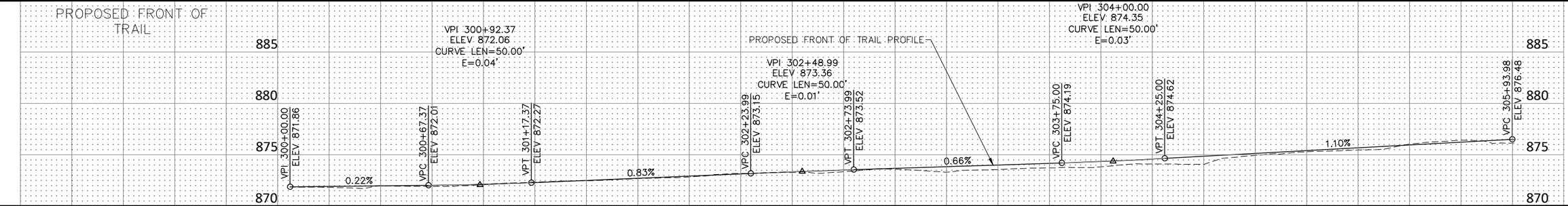
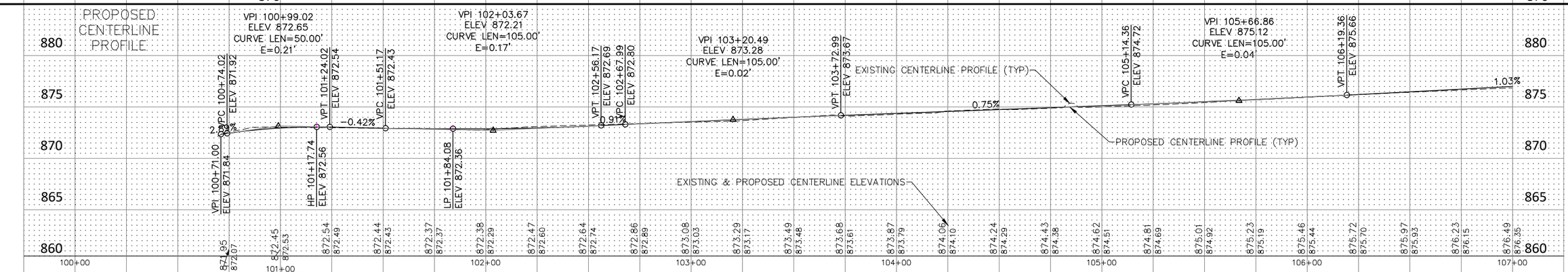
NOTE:
1. SEE LEGEND AND ADDITIONAL NOTES ON FOLLOWING PAGE







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1	CLC	6/24/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
CONSTRUCTION PLANS

SHEET 46R OF 189

LEGEND

▩	3" OVERLAY
▦	FULL DEPTH PAVEMENT
▤	6" CONCRETE DRIVEWAY PAVEMENT
▩	8" CONCRETE PAVEMENT
▨	4" CONCRETE WALK
☐	CONCRETE CURB/MEDIAN
●/■	NEW MANHOLE/CATCH BASIN STRUCTURES
▩	2.5" BITUMINOUS TRAIL
→	TRAFFIC FLOW
- - - -	EXISTING WATER, INGRESS, EGRESS EASEMENT
—— - ——	SECTION LINE
— - - —	EXISTING RIGHT-OF-WAY
········	CONSTRUCTION LIMITS

NOTES:

1. SEE INTERSECTION SHEETS FOR ADA, INTERSECTION AND PEDESTRIAN RAMP DETAILS.
2. ALL OFFSETS, RADII AND STATIONING ARE TO FACE OF CURB.
3. SEE TURF AND EROSION PLAN FOR RESTORATION INFORMATION.
4. ALL 8" CONCRETE PAVEMENT SHALL CONFORM TO DETAIL ON SHEET 15

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Cody Christianson
CODY J. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

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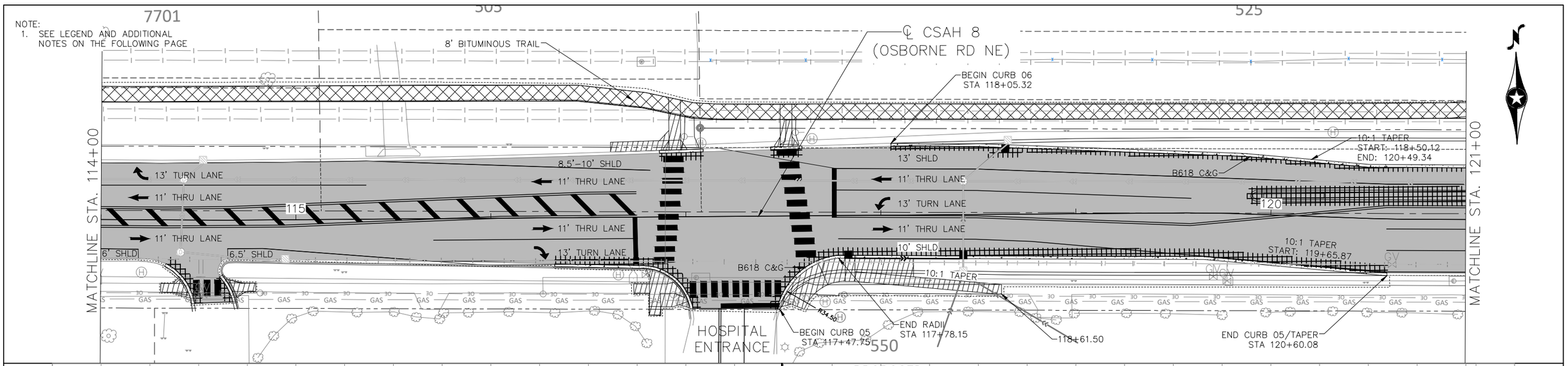
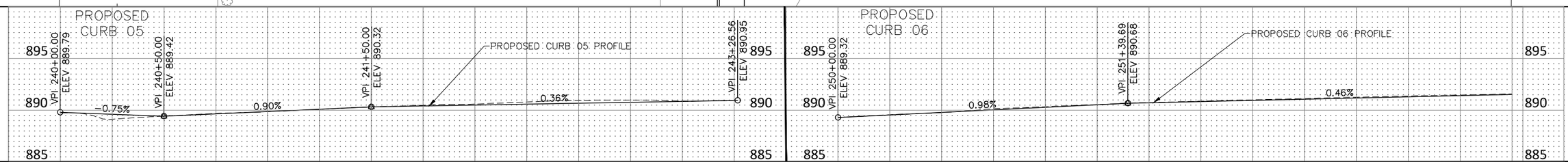
1	CLC	6/24/20

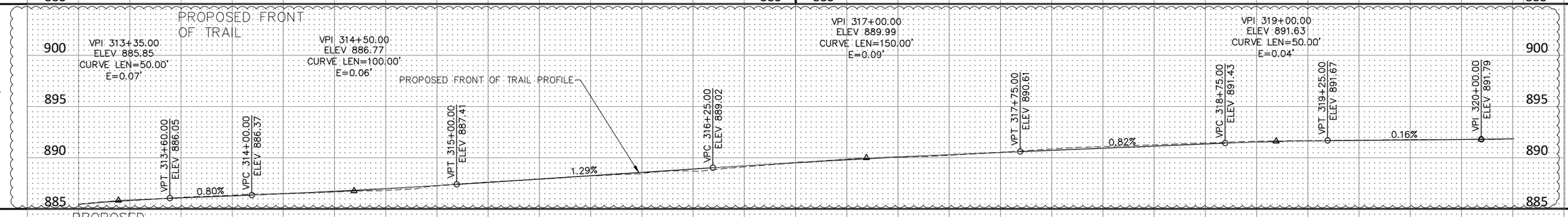
S.P. 002-608-012
CSAH 8 RECONSTRUCTION
CONSTRUCTION PLANS

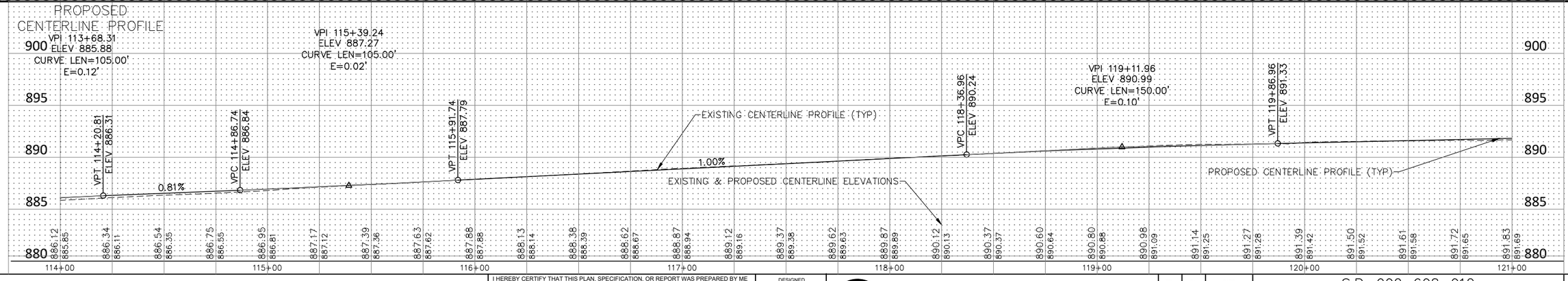
SHEET 47R OF 189

NOTE:
1. SEE LEGEND AND ADDITIONAL NOTES ON THE FOLLOWING PAGE









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TJT	TJT	CLC

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12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
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www.bolton-menk.com

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CSAH 8 RECONSTRUCTION
CONSTRUCTION PLANS

SHEET 48R OF 189

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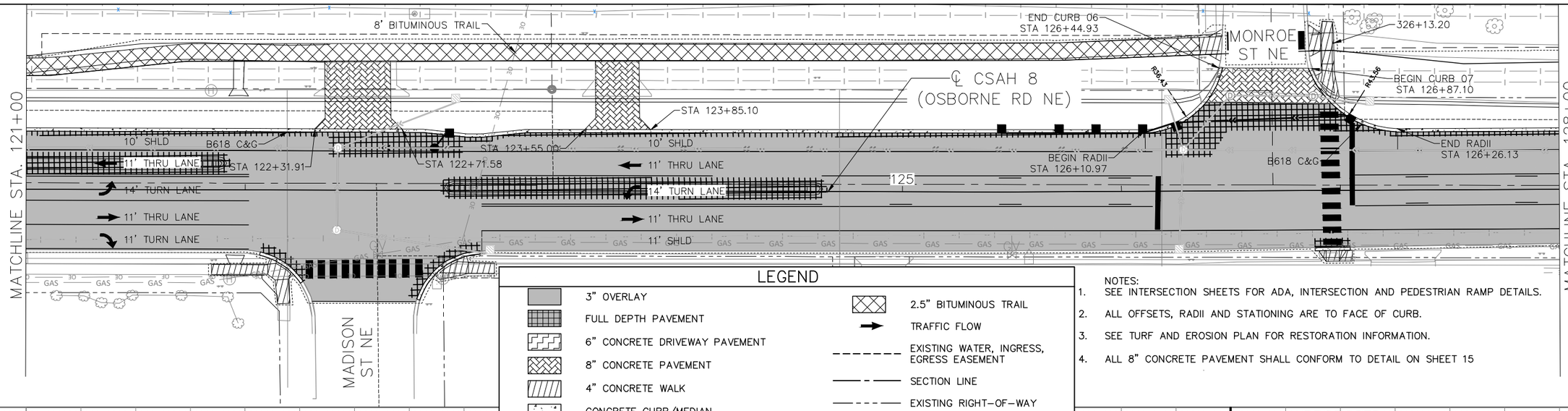

LEGEND

- 3" OVERLAY
- FULL DEPTH PAVEMENT
- 6" CONCRETE DRIVEWAY PAVEMENT
- 8" CONCRETE PAVEMENT
- 4" CONCRETE WALK
- CONCRETE CURB/MEDIAN
- NEW MANHOLE/CATCH BASIN STRUCTURES
- 2.5" BITUMINOUS TRAIL
- TRAFFIC FLOW
- EXISTING WATER, INGRESS, EGRESS EASEMENT
- SECTION LINE
- EXISTING RIGHT-OF-WAY
- CONSTRUCTION LIMITS

NOTES:
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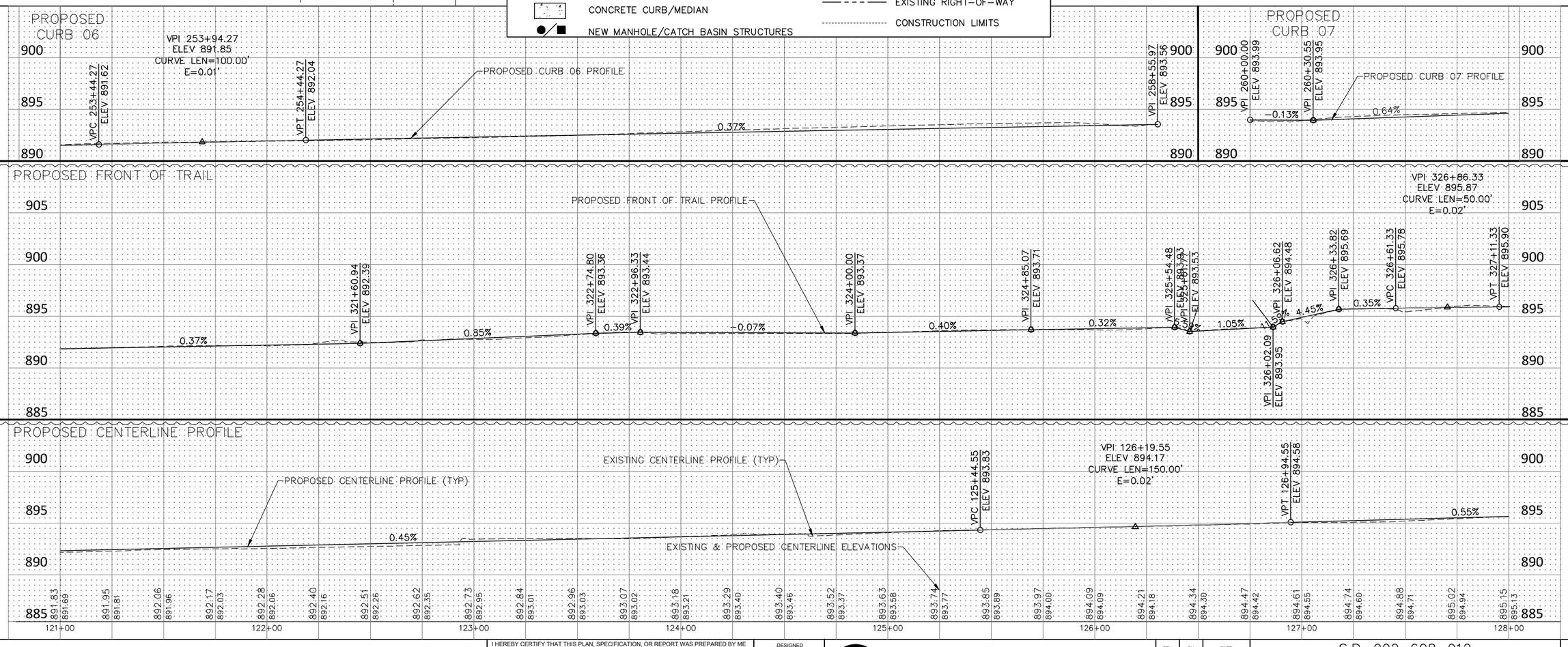
2. ALL OFFSETS, RADII AND STATIONING ARE TO FACE OF CURB.
3. SEE TURF AND EROSION PLAN FOR RESTORATION INFORMATION.
4. ALL 8" CONCRETE PAVEMENT SHALL CONFORM TO DETAIL ON SHEET 15



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CODY J. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

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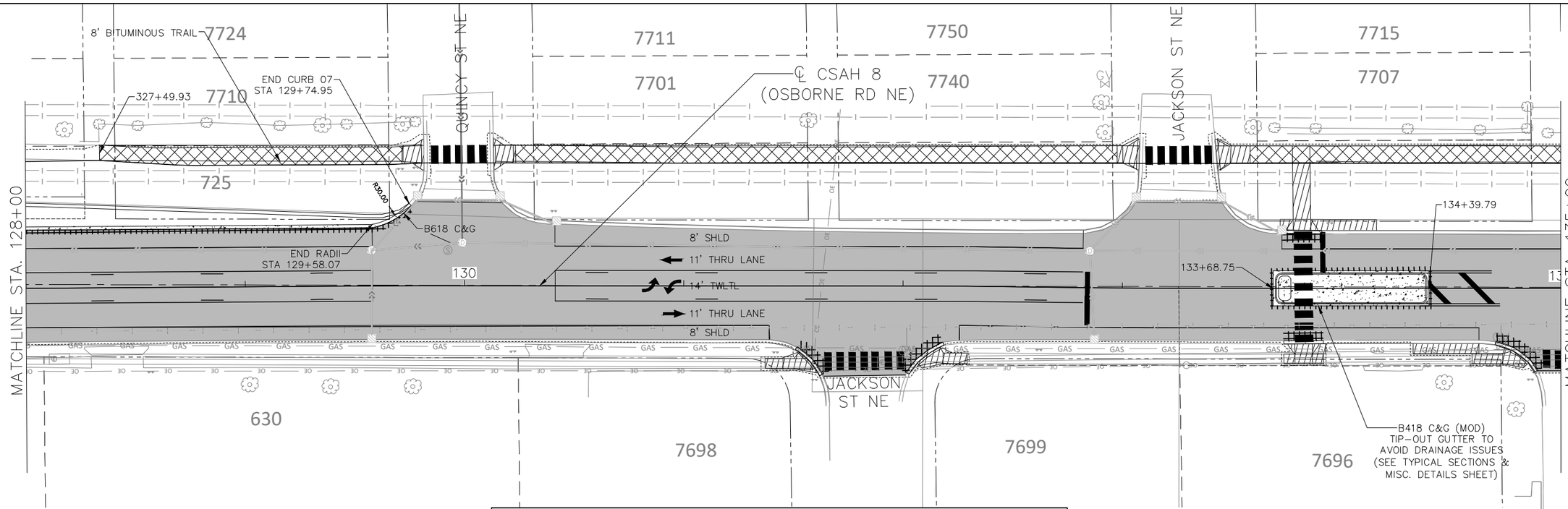

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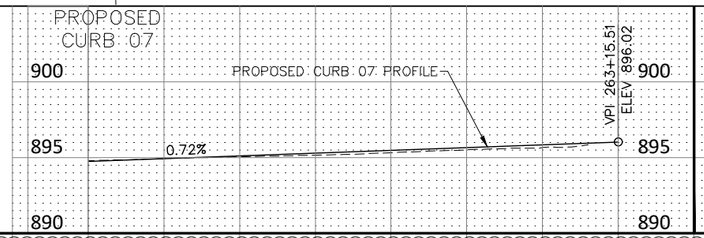

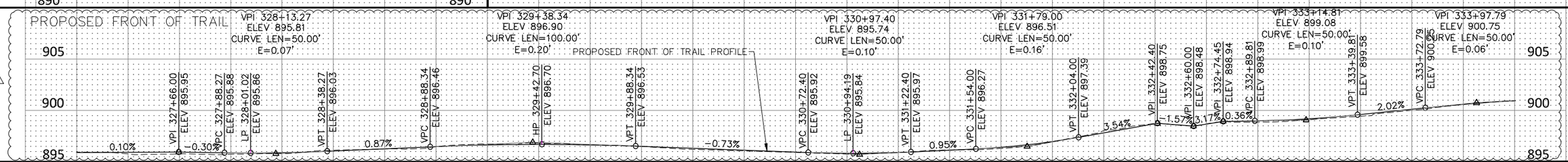

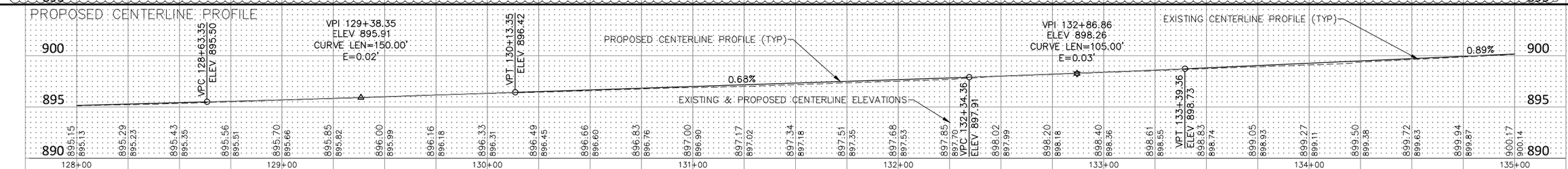

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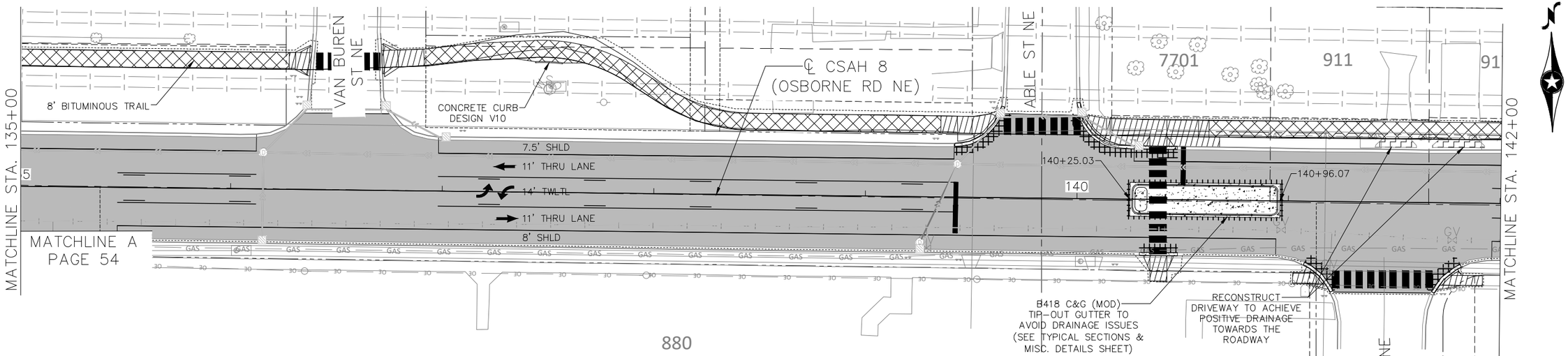

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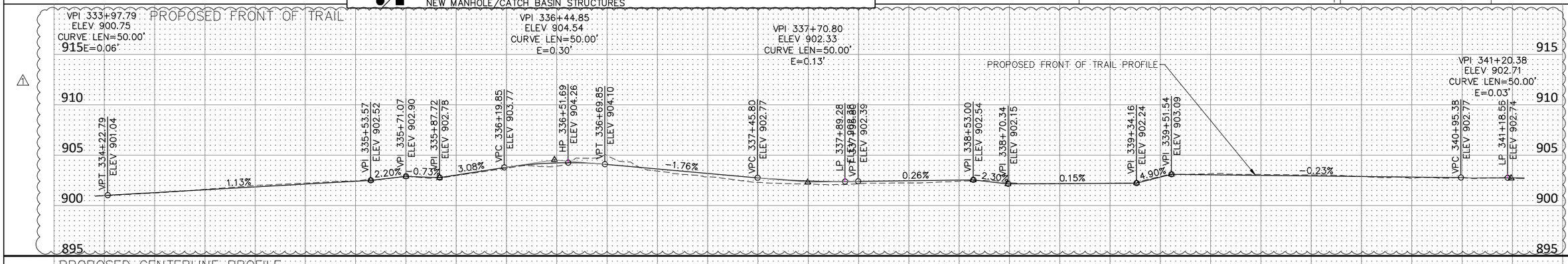

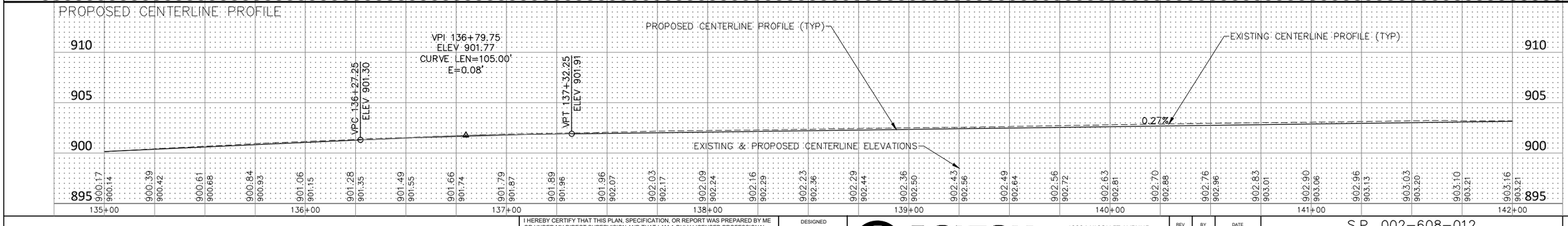

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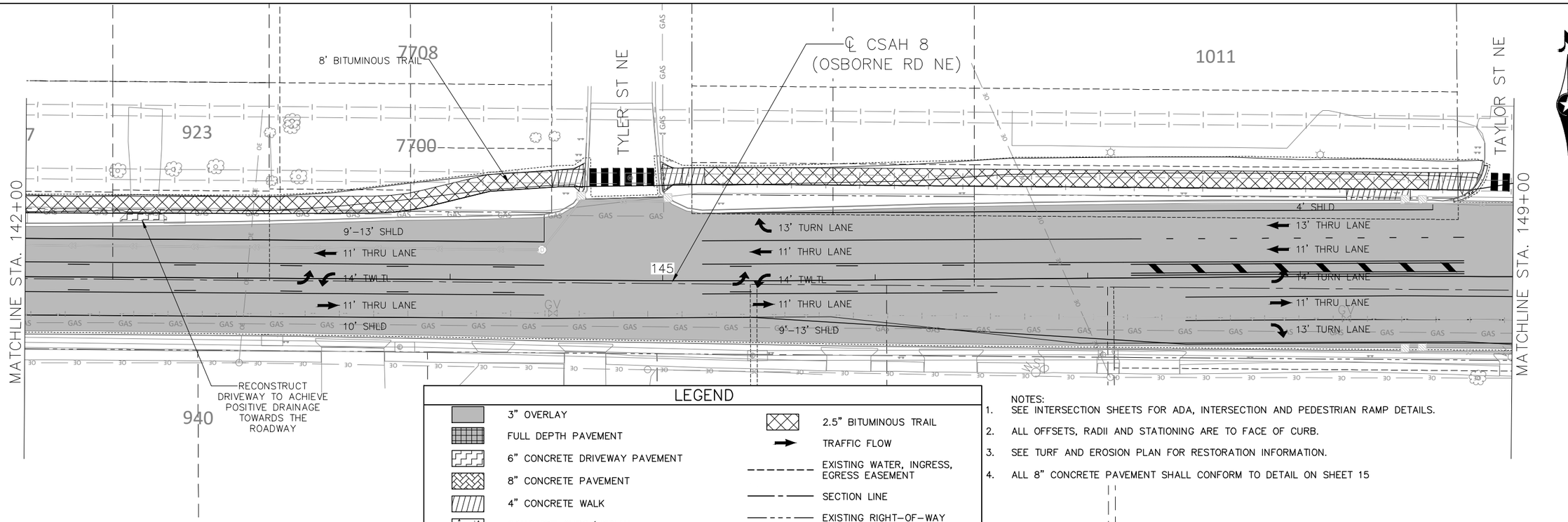

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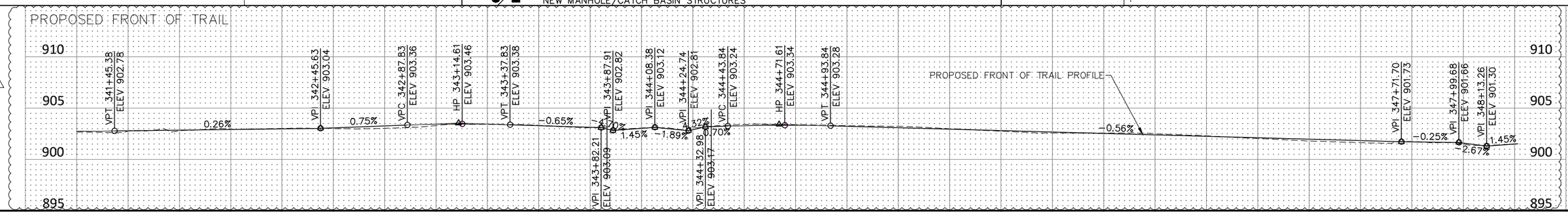

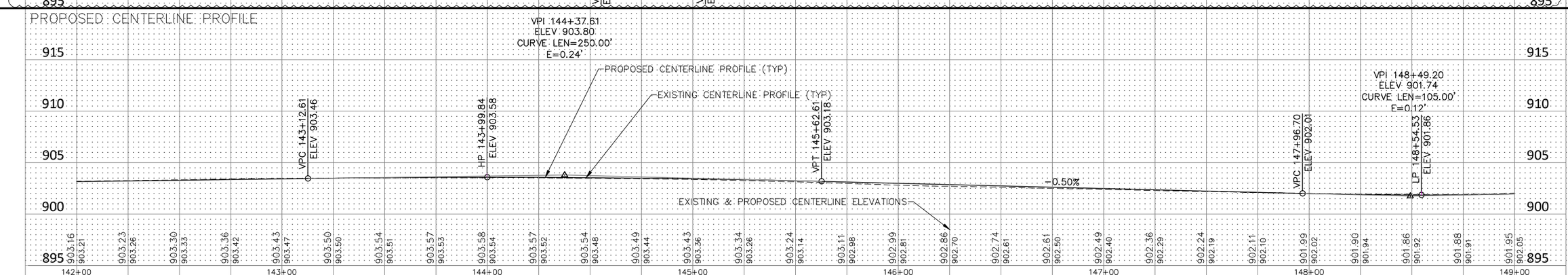

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SHEET 52R OF 189

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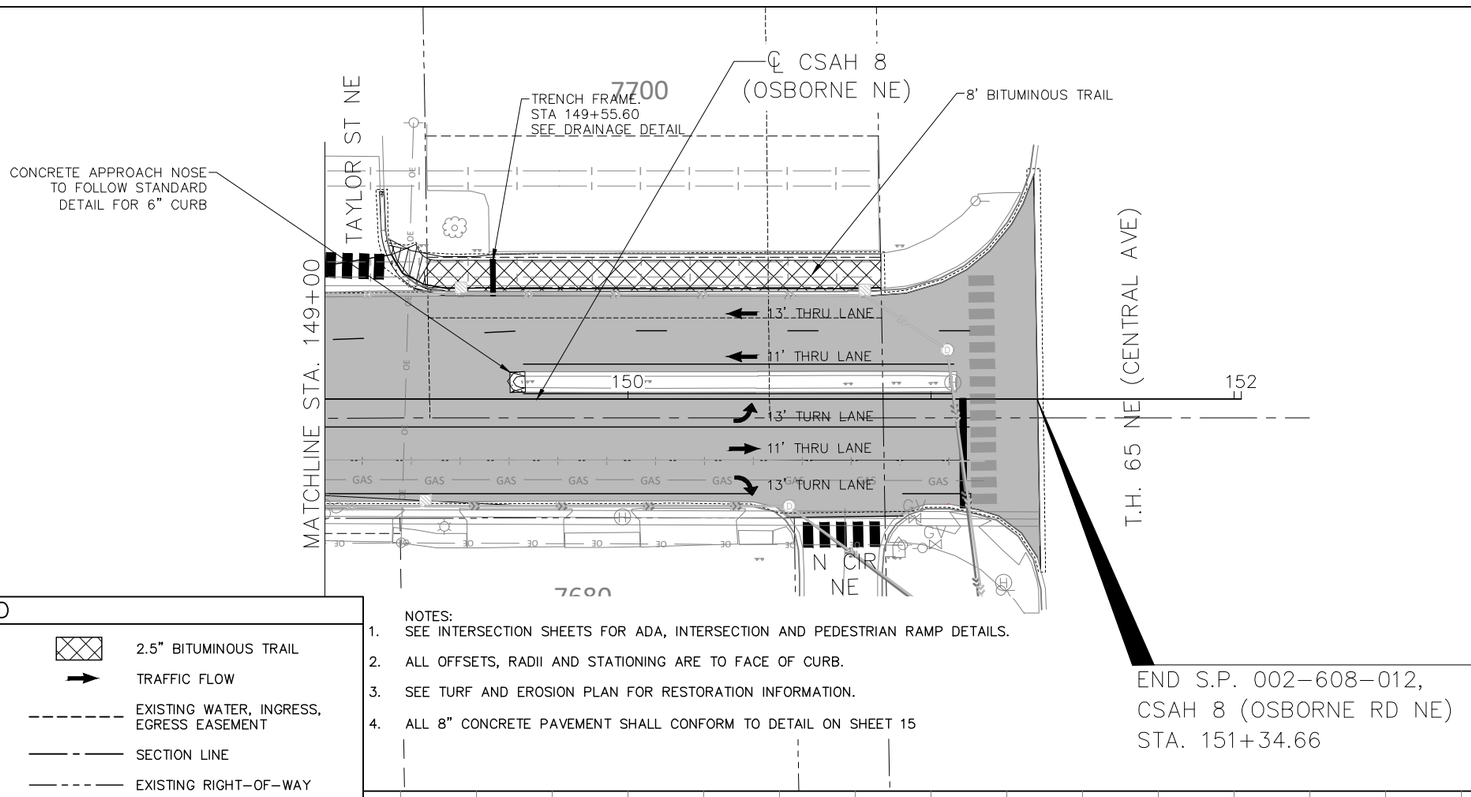

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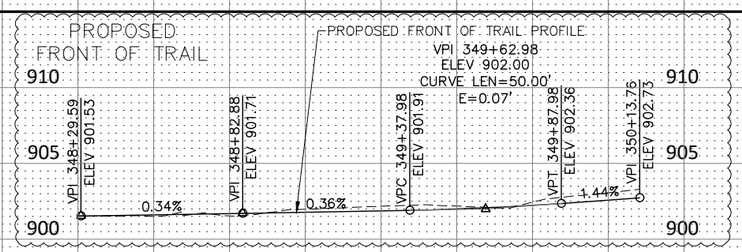

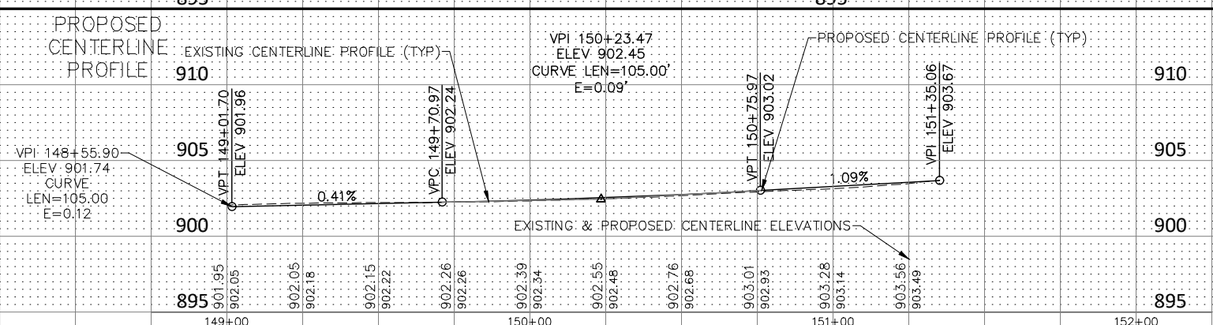

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CONSTRUCTION PLANS

SHEET 53R OF 189

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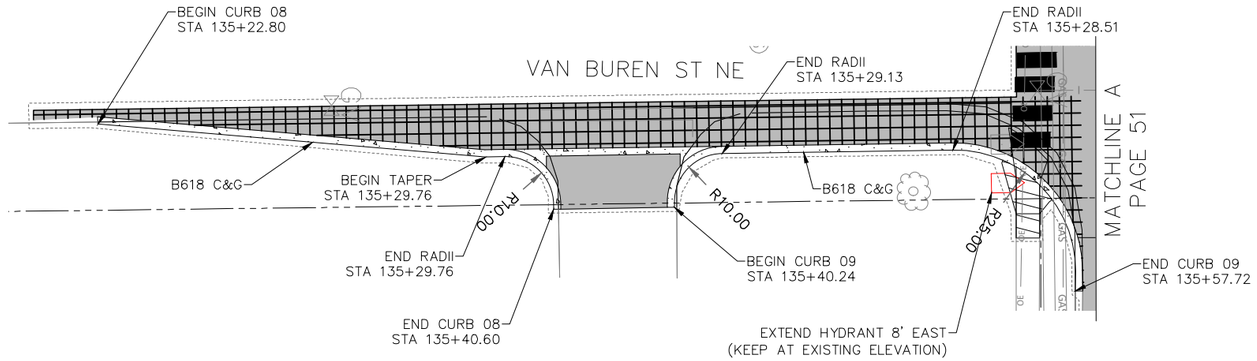

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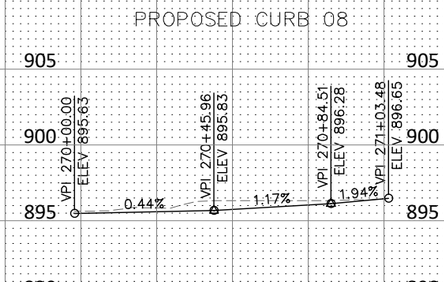

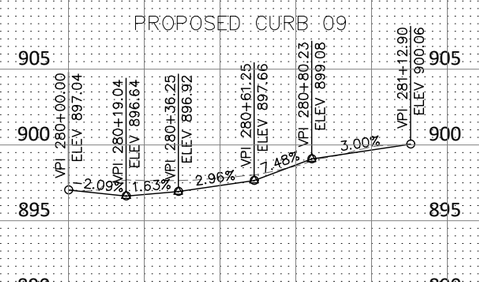

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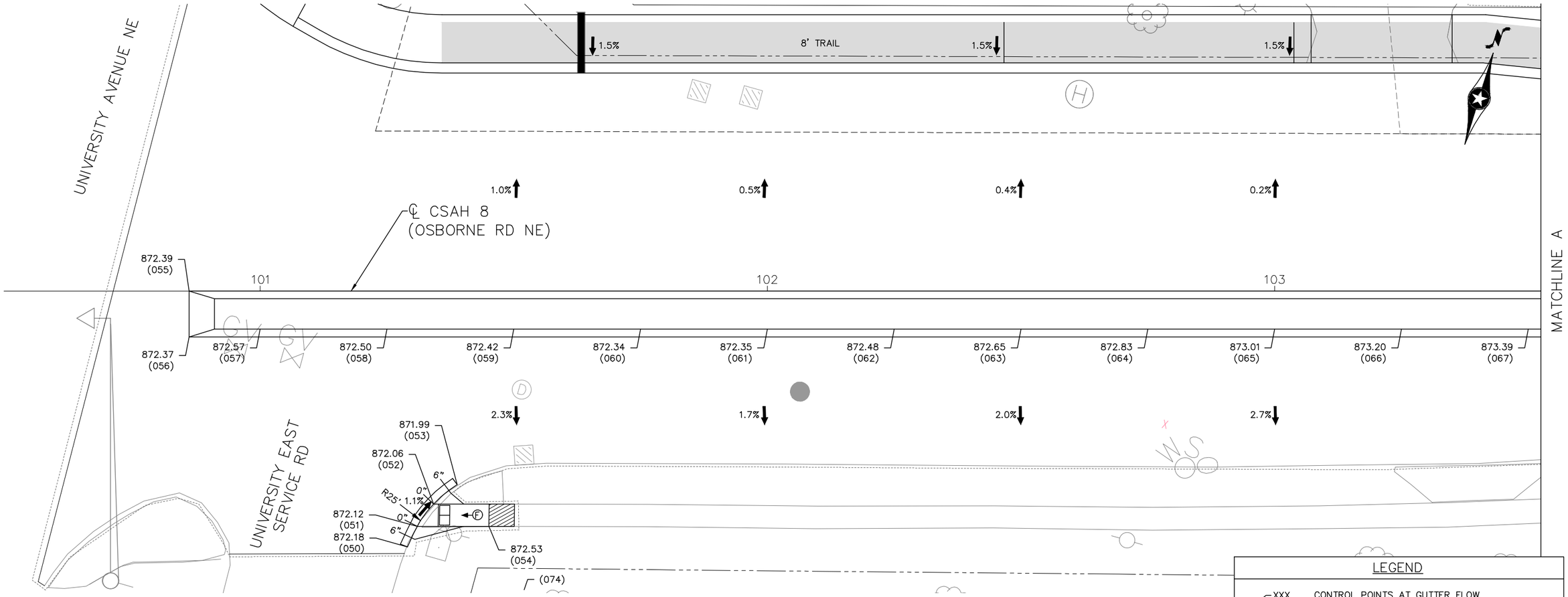

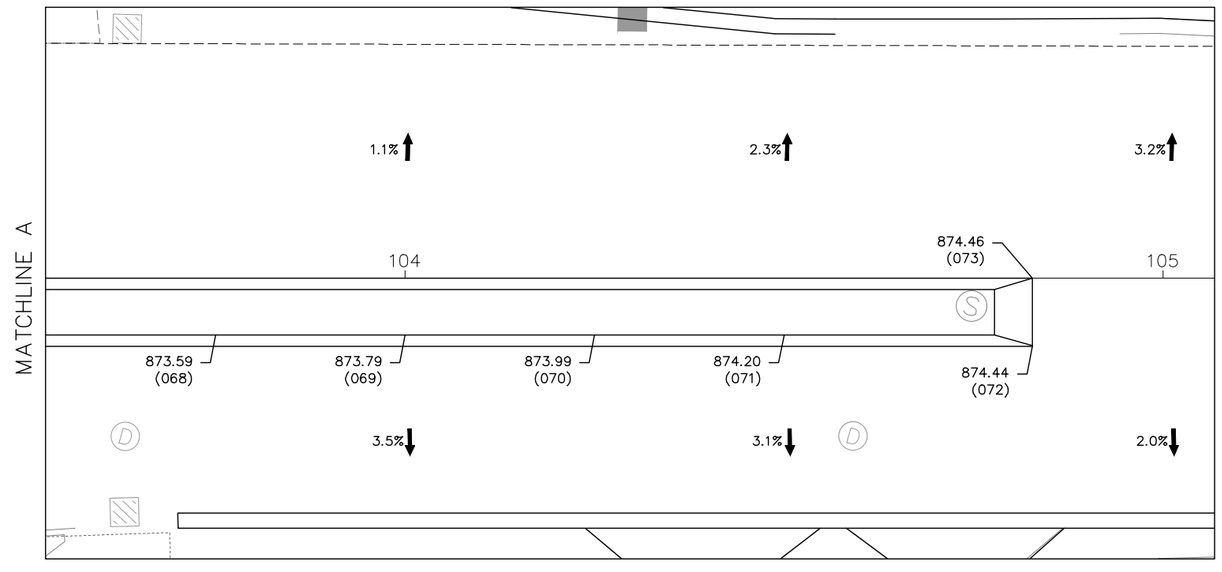

CONTROL POINTS			
Point No.	X	Y	NOTES
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051	500905.041012	126201.428590	
052	500906.926649	126206.544105	
053	500910.362389	126211.502132	MATCH EXISTING
054	500918.647714	126205.270051	
055	500849.137849	126233.785923	
056	500851.591382	126225.126814	
057	500864.644375	126230.384391	
058	500888.697457	126237.199758	
059	500912.750540	126244.015126	
060	500936.803622	126250.830493	
061	500960.856704	126257.645860	
062	500984.909787	126264.461228	
063	501008.962869	126271.276595	
064	501033.015951	126278.091963	
065	501057.069033	126284.907330	
066	501081.122116	126291.722697	
067	501105.175198	126298.538065	
068	501129.228280	126305.353432	
069	501153.281363	126312.168799	
070	501177.334445	126318.984167	
071	501201.387527	126325.799534	
072	501233.322325	126333.289110	
073	501230.868793	126341.948219	
074	500928.701757	126195.124149	R=25'

LEGEND

- XXX — CONTROL POINTS AT GUTTER FLOW LINE & PEDESTRIAN RAMPS
- TRUNCATED DOMES (SEE STANDARD PLATE 7038)
- CONSTRUCT CONCRETE CURB & GUTTER
- X" — CURB HEIGHT
- LANDING AREA – 4' X 4' MIN DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
- PEDESTRIAN ACCESS ROUTE
- (S) — INDICATES PEDESTRIAN RAMP – SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- (F) — INDICATES PEDESTRIAN RAMP – SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
- DRAINAGE FLOW ARROW
- CATCH BASIN
- EXISTING CATCH BASIN
- STORM SEWER MANHOLE
- EXISTING WATER, INGRESS, EGRESS EASEMENT
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INTERSECTION DETAILS

SHEET 55 OF 189

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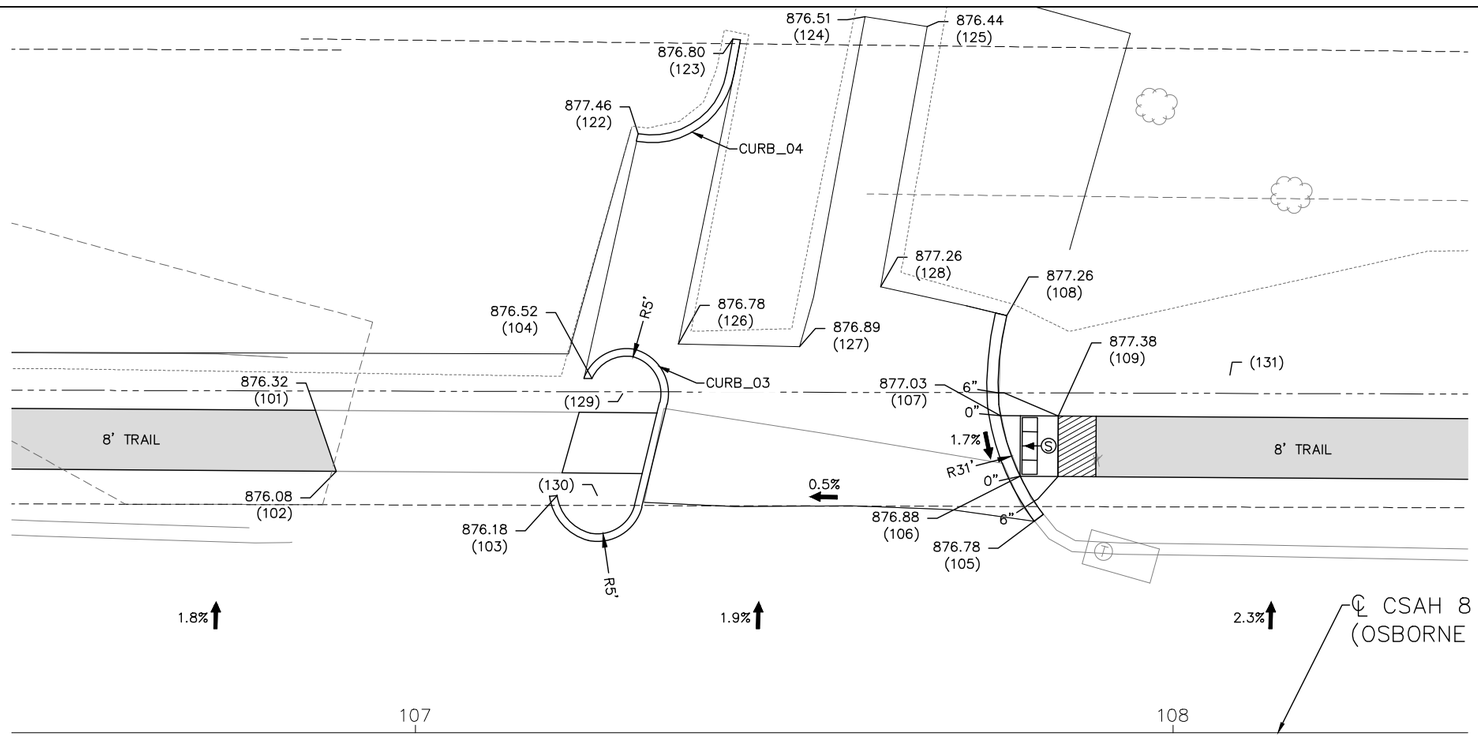

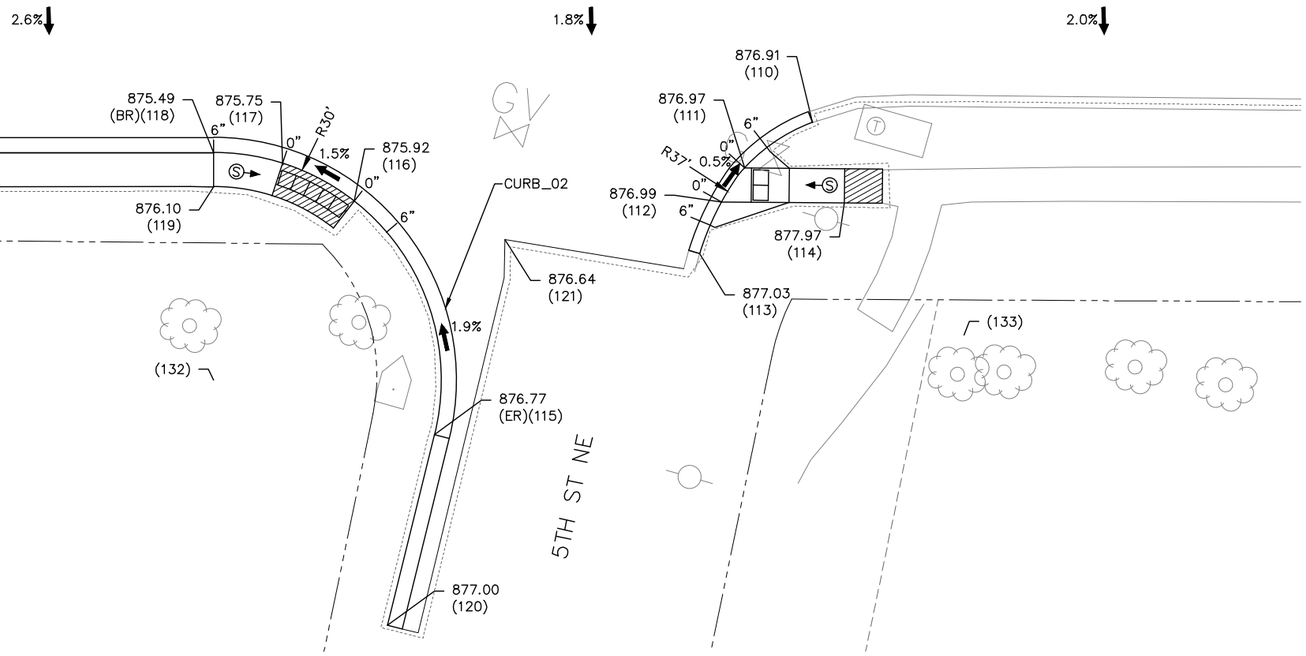

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103	501449.342000	126436.390000	MATCH EXISTING
104	501449.568786	126452.472101	MATCH EXISTING
105	501511.728620	126451.454430	MATCH EXISTING
106	501507.414163	126455.474562	
107	501502.746992	126462.486632	
108	501499.950000	126475.364000	MATCH EXISTING
109	501510.109165	126464.515411	
110	501519.397000	126393.575000	MATCH EXISTING
111	501512.410215	126385.345491	
112	501510.708294	126380.213426	
113	501509.793000	126372.840000	MATCH EXISTING
114	501526.357681	126384.500679	
115	501482.633975	126340.337052	
116	501464.036634	126367.066375	
117	501453.600295	126369.294515	
118	501444.473137	126368.173219	
119	501445.699903	126363.843664	
120	501483.521344	126314.444493	MATCH EXISTING
121	501484.578833	126367.652969	MATCH EXISTING
122	501446.636663	126485.217918	MATCH EXISTING
123	501455.262575	126500.632625	MATCH EXISTING
124	501471.225175	126508.243299	MATCH EXISTING
125	501479.445338	126509.228181	MATCH EXISTING
126	501459.282359	126459.954857	MATCH EXISTING
127	501474.747488	126463.991586	MATCH EXISTING
128	501482.893189	126474.490509	MATCH EXISTING
129	501454.008476	126451.669118	R=5'
130	501454.465526	126437.798350	R=5'
131	501530.436660	126475.857375	R=31'
132	501452.651578	126339.309520	R=30'
133	501546.288100	126372.041958	R=37'

LEGEND

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LIC. NO. 57052 DATE 05/26/2020

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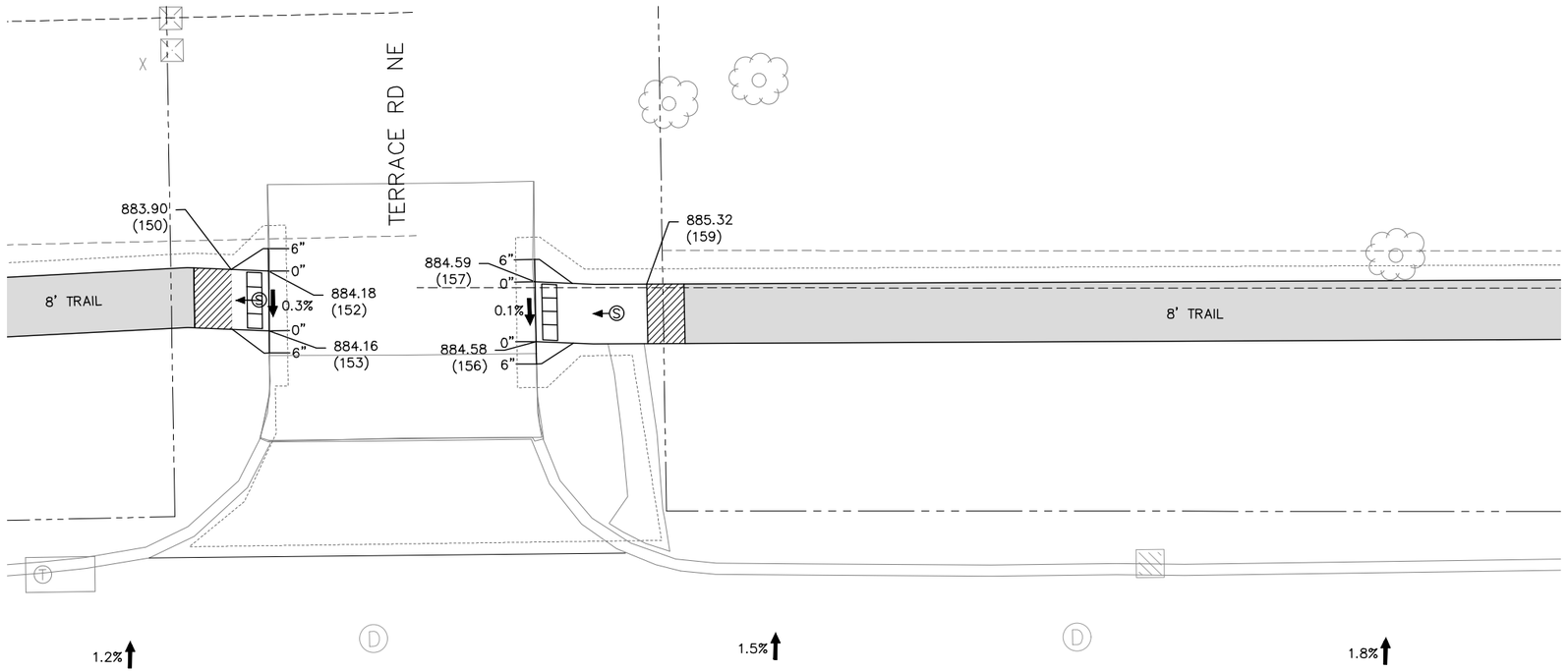

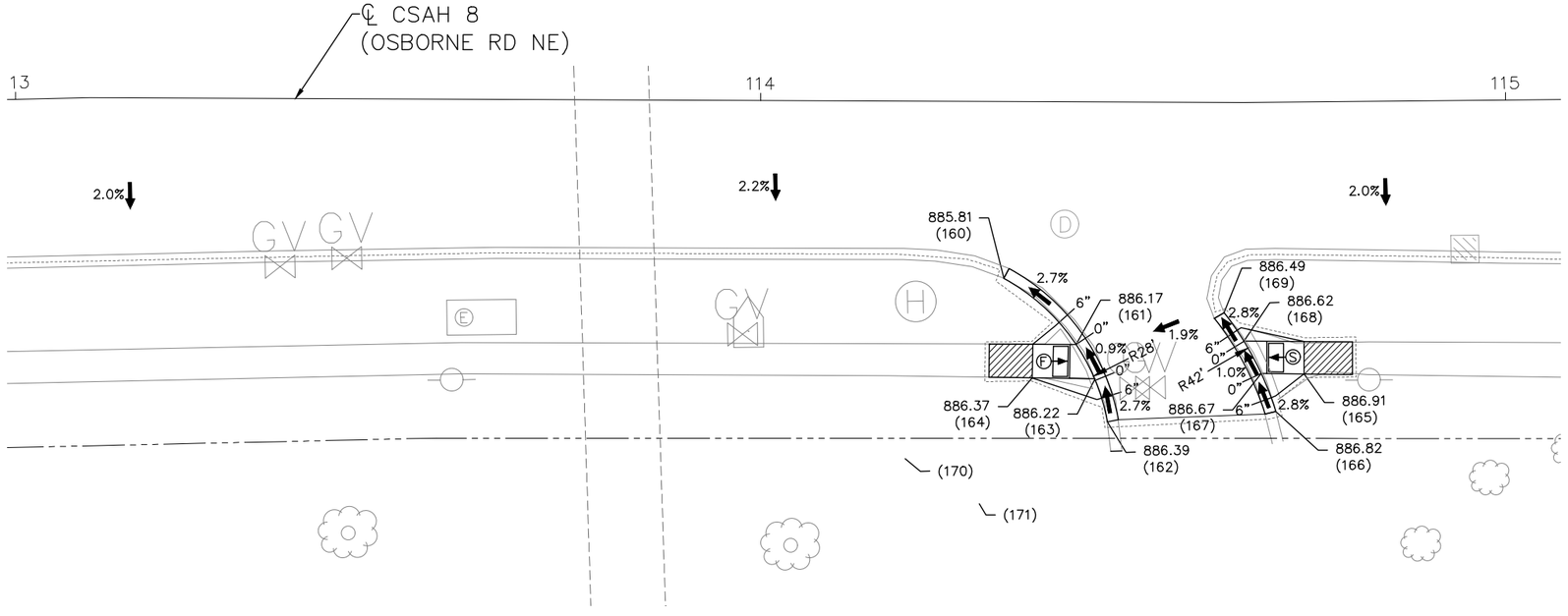

CONTROL POINTS			
Point No.	X	Y	NOTES
150	502059.485137	126556.935954	
152	502064.488842	126556.665636	MATCH EXISTING
153	502064.459066	126548.655328	MATCH EXISTING
156	502100.266872	126546.719204	MATCH EXISTING
157	502100.222634	126554.733282	MATCH EXISTING
159	502115.225599	126554.237469	
160	502161.902000	126461.598000	MATCH EXISTING
161	502171.498376	126452.593224	
162	502175.570380	126442.148617	MATCH EXISTING
163	502173.968777	126447.938922	
164	502165.558589	126448.175863	
165	502202.016678	126448.206497	
166	502198.175129	126443.218150	MATCH EXISTING
167	502196.280082	126448.349146	
168	502194.023270	126452.701629	
169	502191.412000	126456.574000	MATCH EXISTING
170	502148.368538	126437.559599	R=28'
171	502158.226381	126431.379201	R=42'

LEGEND

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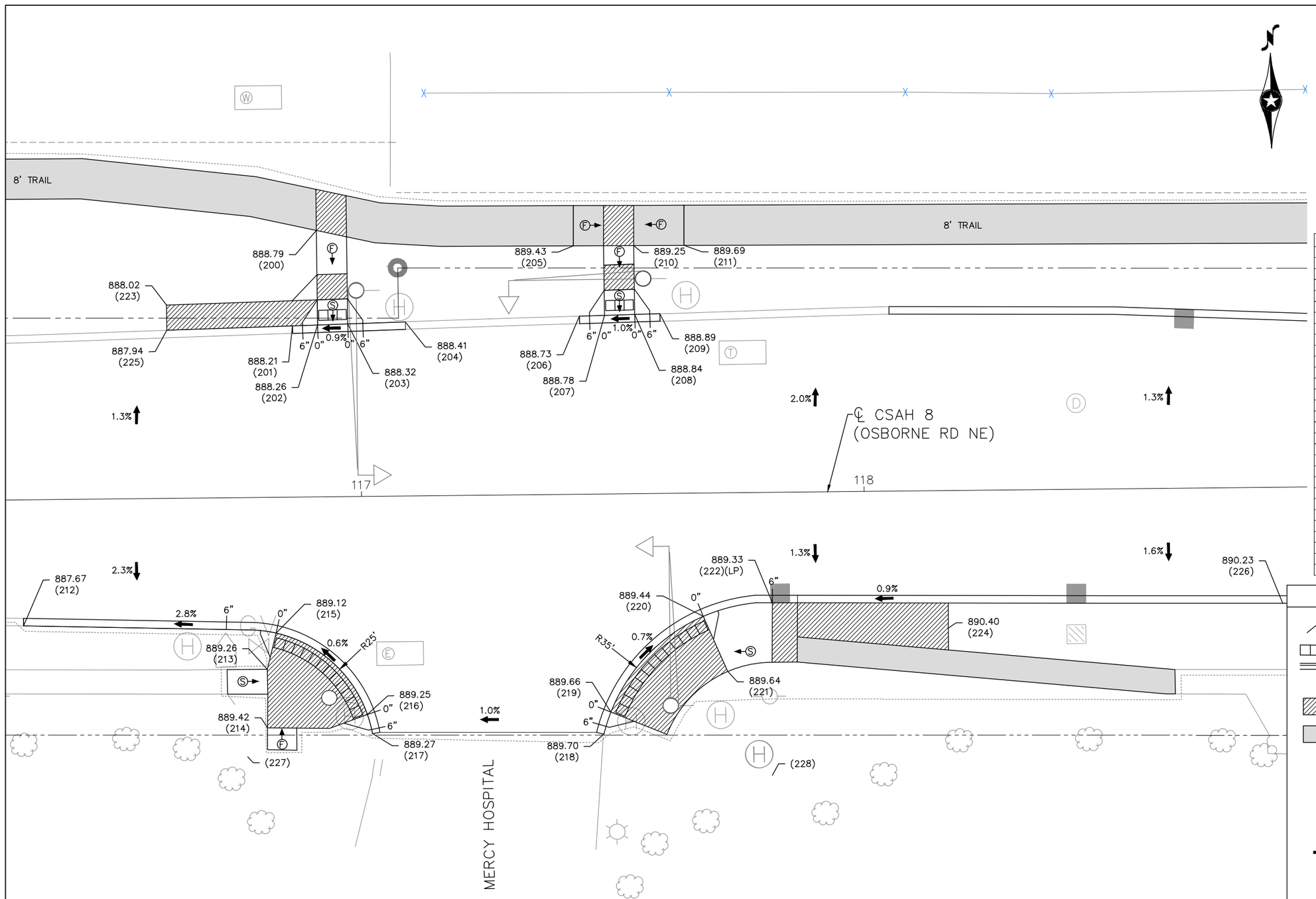

CONTROL POINTS			
Point No.	X	Y	NOTES
200	502421.314000	126537.017615	
201	502416.314459	126518.084329	
202	502421.314000	126518.191507	
203	502427.314000	126518.320133	
204	502438.748804	126518.565269	MATCH EXISTING
205	502472.415278	126533.288239	
206	502473.411447	126519.254084	MATCH EXISTING
207	502478.415000	126519.351198	
208	502484.415000	126519.457160	
209	502489.424733	126519.525260	MATCH EXISTING
210	502484.415000	126533.172637	
211	502494.414536	126533.076303	
212	502361.997000	126459.096000	MATCH EXISTING
213	502410.404588	126449.804740	
214	502410.279655	126438.140579	
215	502412.224980	126456.980635	
216	502430.175795	126440.529857	
217	502431.143555	126436.696581	MATCH EXISTING
218	502477.163472	126435.986790	MATCH EXISTING
219	502478.612962	126440.369138	
220	502497.273295	126459.202518	
221	502501.978062	126448.162737	
222	502511.020072	126461.694426	
223	502391.314000	126522.549526	
224	502545.943510	126456.185024	
225	502391.314000	126517.541248	
226	502612.581310	126460.214571	
227	502406.260794	126432.453411	R=25'
228	502510.567889	126427.368951	R=35'

LEGEND

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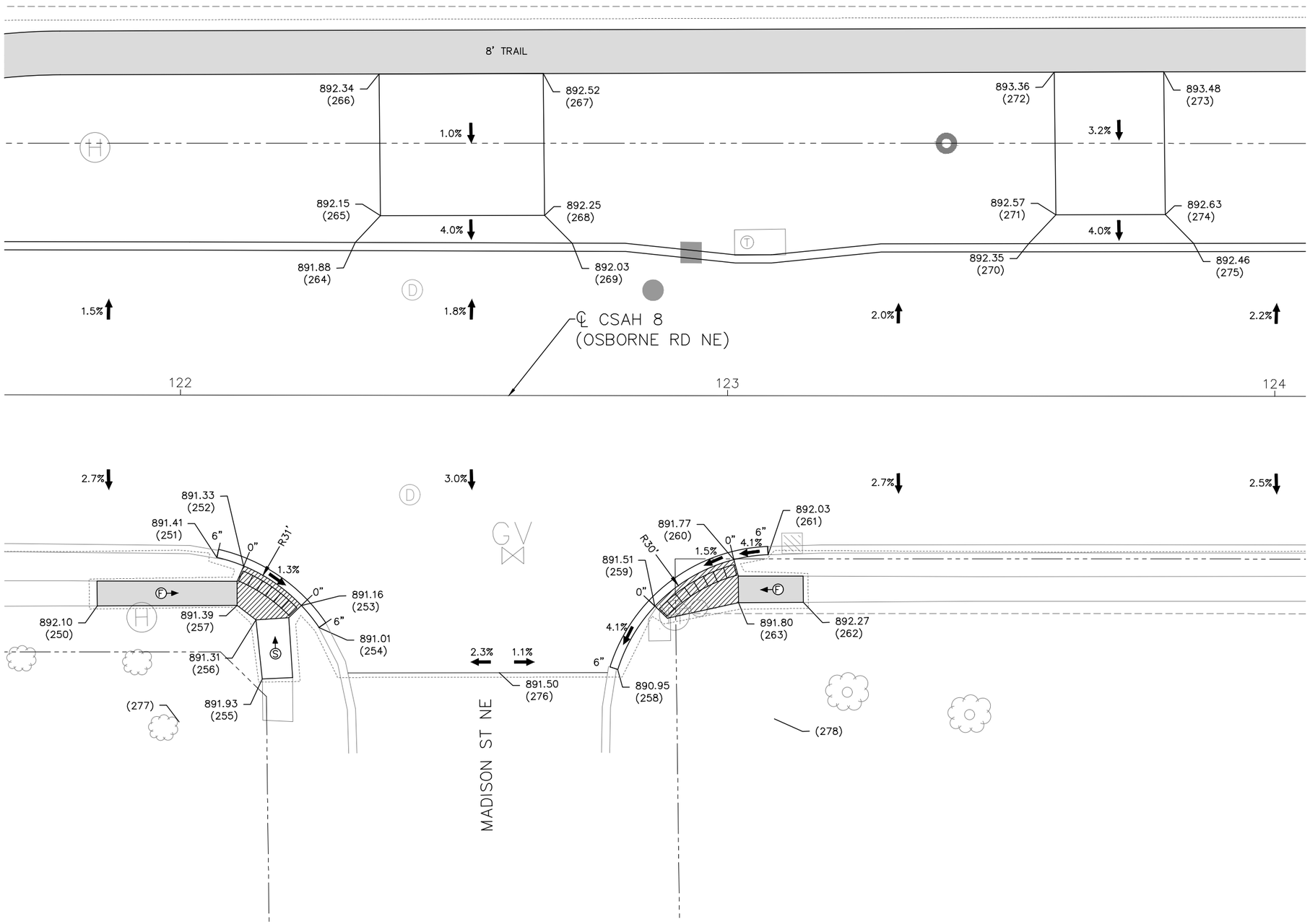

CONTROL POINTS			
Point No.	X	Y	NOTES
250	502913.705768	126438.229228	MATCH EXISTING
251	502935.684214	126446.765114	MATCH EXISTING
252	502940.556474	126445.138902	
253	502950.984500	126437.788500	
254	502954.164378	126433.730418	MATCH EXISTING
255	502943.694096	126424.495611	
256	502942.697568	126435.300231	
257	502939.297408	126437.975387	
258	503008.688228	126425.372377	MATCH EXISTING
259	503015.622779	126436.822042	
260	503030.196602	126445.137681	
261	503036.442000	126445.957000	MATCH EXISTING
262	503042.774279	126437.170431	MATCH EXISTING
263	503030.909283	126437.266328	
264	502961.772638	126504.039719	
265	502966.441553	126508.868171	
266	502966.527349	126534.786978	
267	502996.525599	126534.462949	
268	502996.439803	126508.544142	
269	503001.439752	126503.373345	
270	503084.848546	126502.186010	
271	503089.860633	126507.369359	
272	503089.946977	126533.453850	
273	503109.945810	126533.237831	
274	503109.859466	126507.153340	
275	503114.951309	126501.817266	
276	502986.963325	126424.951662	MATCH EXISTING
277	502928.394349	126416.812149	R=25'
278	503037.205299	126415.925664	R=35'

LEGEND

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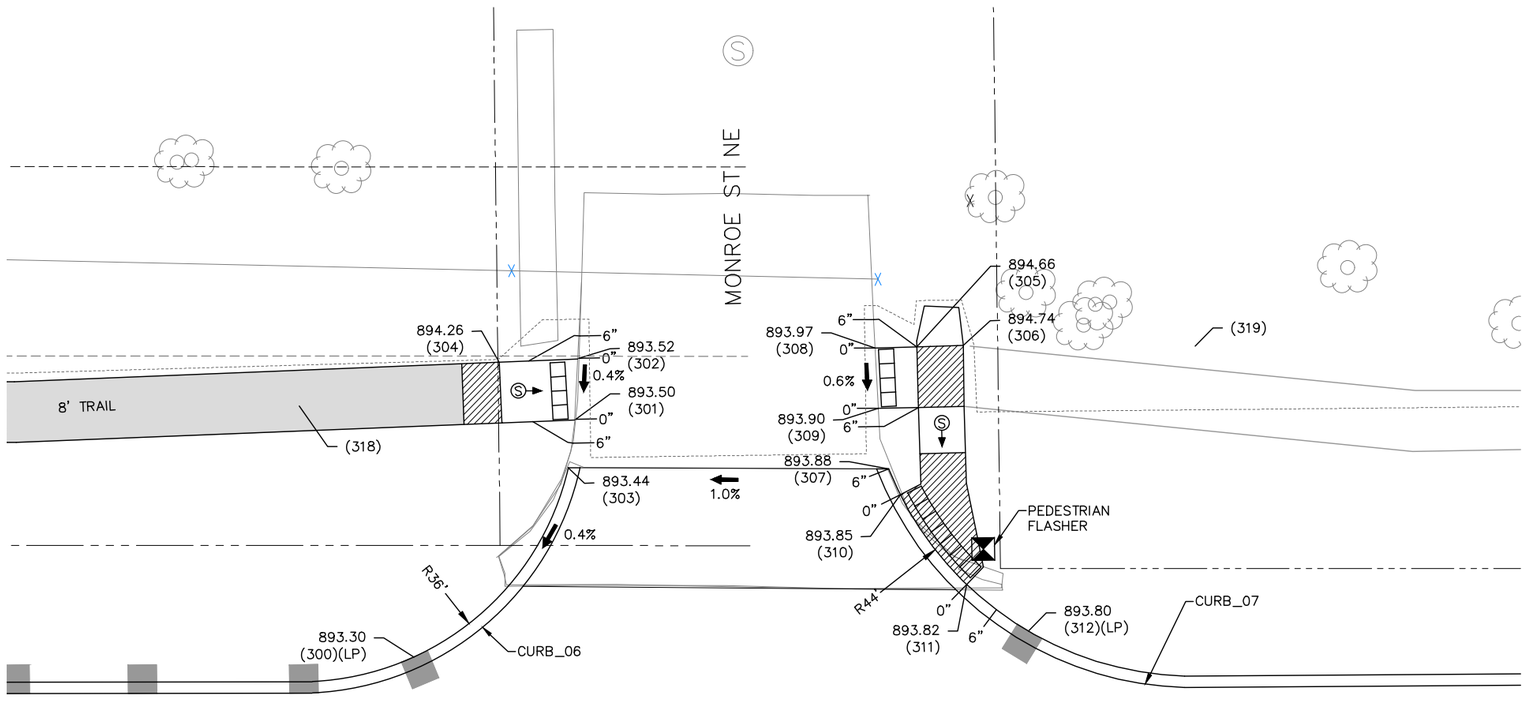

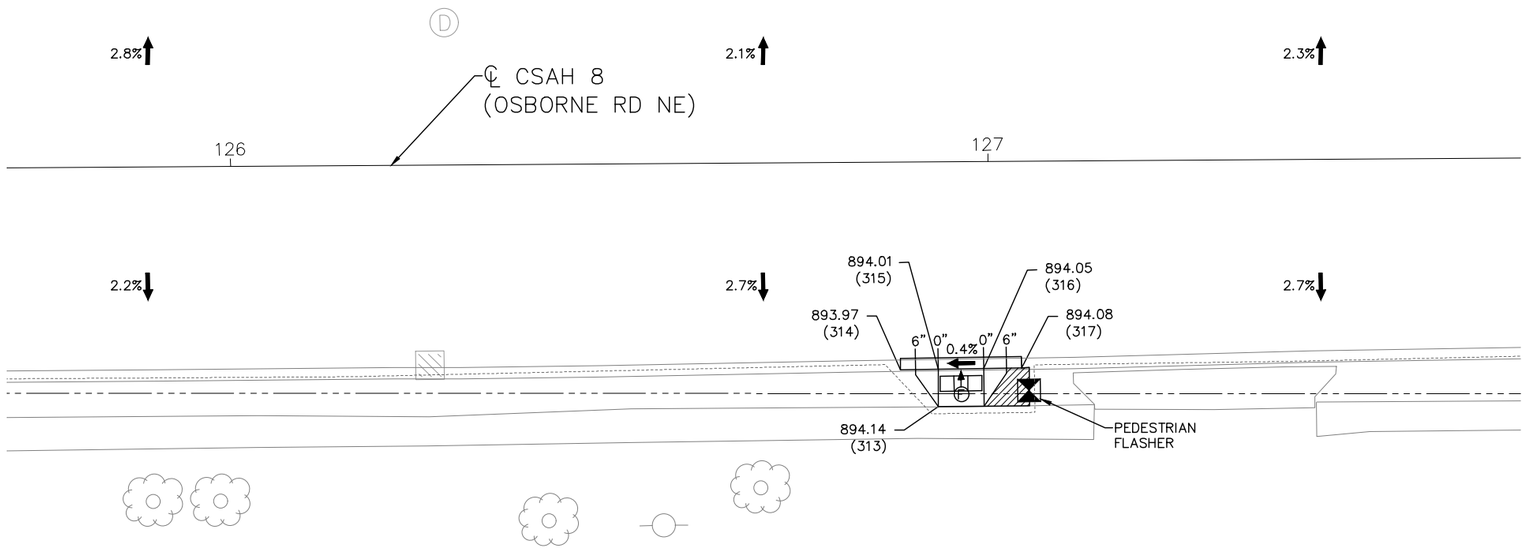

CONTROL POINTS			
Point No.	X	Y	NOTES
300	503354.065039	126502.139874	
301	503375.835063	126533.253082	MATCH EXISTING
302	503376.340706	126541.283910	MATCH EXISTING
303	503374.740280	126526.844000	MATCH EXISTING
304	503365.861618	126540.888428	
305	503420.987077	126542.201093	
306	503427.110279	126542.295351	MATCH EXISTING
307	503417.055313	126526.137000	MATCH EXISTING
308	503415.488066	126542.116444	MATCH EXISTING
309	503415.795426	126534.151423	MATCH EXISTING
310	503418.542017	126522.713902	
311	503427.131260	126510.746185	
312	503435.201072	126504.473240	
313	503422.447749	126438.179230	
314	503417.495138	126443.098600	MATCH EXISTING
315	503422.479652	126443.118641	
316	503428.486005	126443.142790	
317	503433.495546	126443.162932	MATCH EXISTING
318	503339.343648	126535.465183	R=36'
319	503457.713050	126541.760880	R=44'

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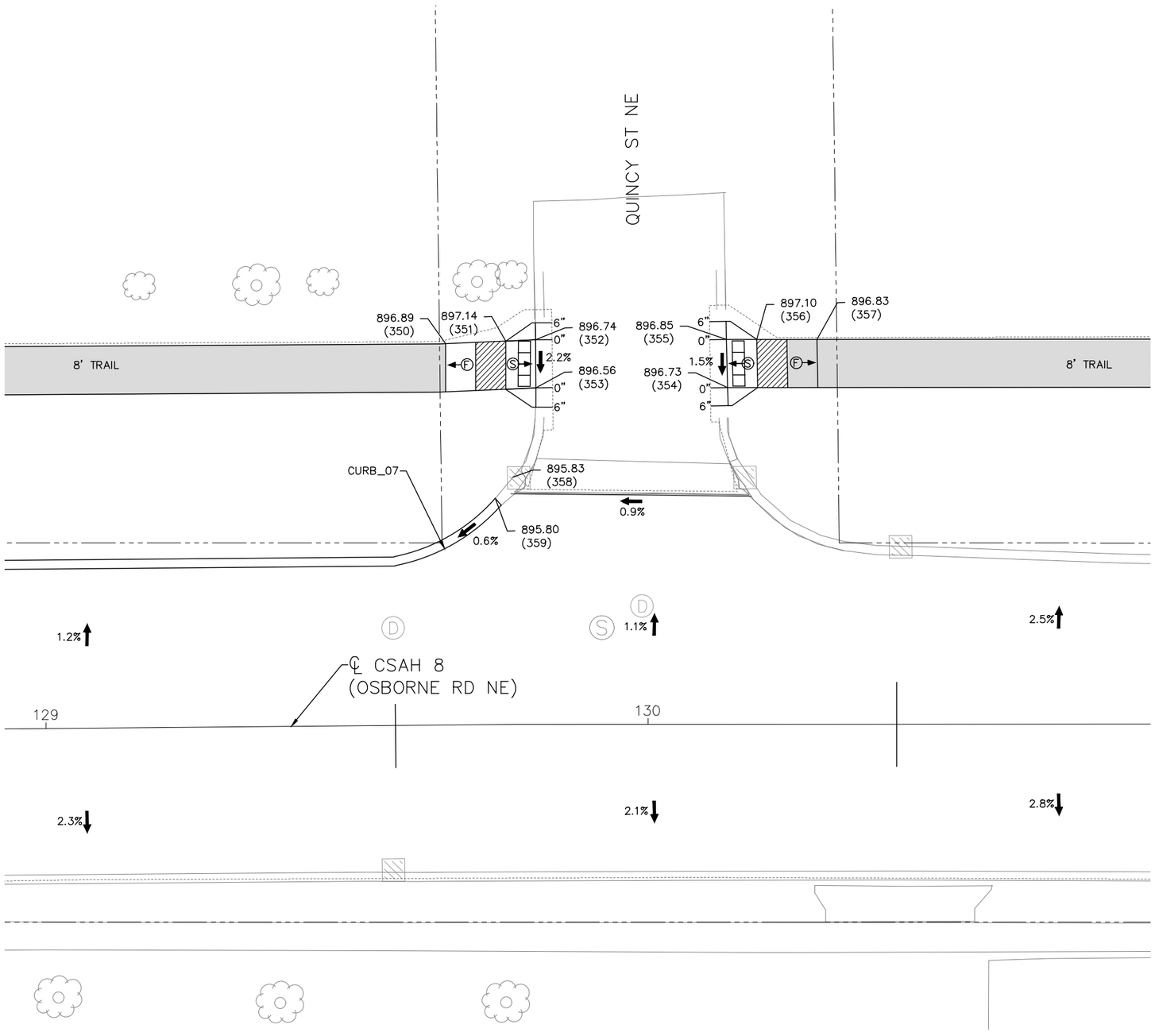

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Point No.	X	Y	NOTES
350	503696.636982	126532.269690	
351	503706.651864	126532.583253	
352	503711.583331	126532.737655	MATCH EXISTING
353	503711.518941	126524.737841	MATCH EXISTING
354	503743.390157	126524.344556	MATCH EXISTING
355	503743.315213	126532.346090	MATCH EXISTING
356	503748.316010	126532.284381	
357	503758.317605	126532.160964	
358	503707.514386	126509.936496	MATCH EXISTING
359	503704.537000	126506.467000	MATCH EXISTING

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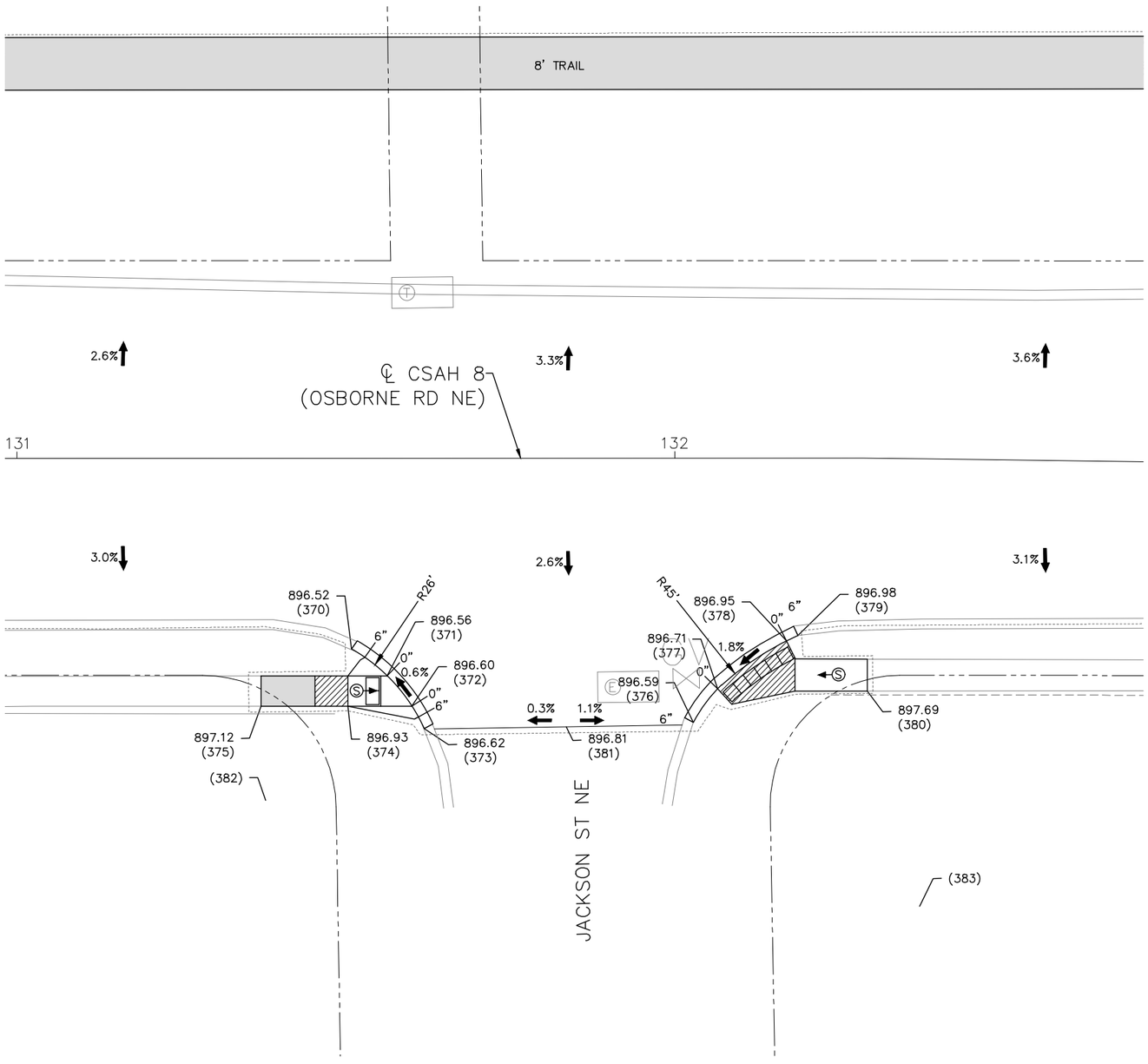

CONTROL POINTS			
Point No.	X	Y	NOTES
370	503879.880746	126437.660255	MATCH EXISTING
371	503885.205495	126433.537607	
372	503888.910939	126428.873017	
373	503890.731081	126425.413842	MATCH EXISTING
374	503879.191335	126429.000175	
375	503865.975043	126429.173078	MATCH EXISTING
376	503931.686000	126425.824000	MATCH EXISTING
377	503935.457973	126430.891183	
378	503945.968961	126438.023687	
379	503947.733000	126438.834000	MATCH EXISTING
380	503958.186719	126430.256032	MATCH EXISTING
381	503912.352362	126425.403462	MATCH EXISTING
382	503866.492872	126414.868672	R=26'
383	503965.684662	126397.428219	R=45'

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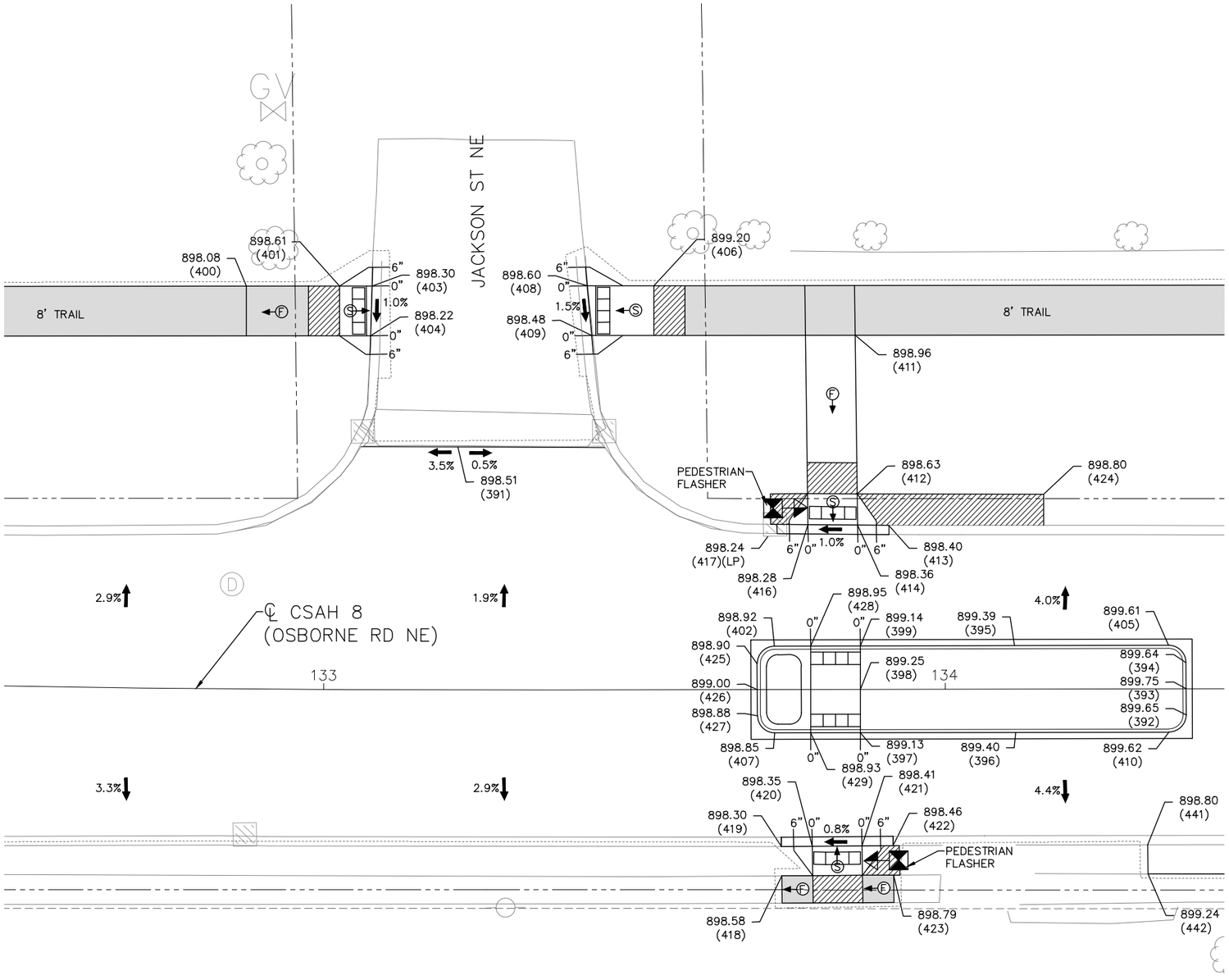

CONTROL POINTS			
Point No.	X	Y	NOTES
391	504051.470926	126502.621365	MATCH EXISTING
392	504168.106836	126457.944658	
393	504168.155148	126462.140380	
394	504168.203518	126466.341101	
395	504140.627104	126469.457821	
396	504140.627104	126455.461893	
397	504115.626643	126455.755529	
398	504115.721886	126462.744133	
399	504115.817276	126469.743499	
400	504017.768434	126528.959392	
401	504032.767292	126528.774309	
402	504101.997137	126469.902634	
403	504038.024229	126528.709440	MATCH EXISTING
404	504037.668546	126520.713220	MATCH EXISTING
405	504165.436931	126469.172143	
406	504083.364243	126528.149953	
407	504101.835999	126455.908561	
408	504072.641412	126528.282270	MATCH EXISTING
409	504073.263578	126520.273984	MATCH EXISTING
410	504165.275794	126455.178071	
411	504115.668263	126519.747036	
412	504115.668263	126494.201194	
413	504120.668263	126489.080292	MATCH EXISTING
414	504115.666148	126489.135346	
416	504107.668263	126489.367504	
417	504102.668263	126489.472131	MATCH EXISTING
418	504102.668263	126432.911125	MATCH EXISTING
419	504102.668961	126437.673074	MATCH EXISTING
420	504107.668417	126437.599147	
421	504115.668263	126437.533306	
422	504120.668351	126437.505706	MATCH EXISTING
423	504120.668263	126432.787898	MATCH EXISTING
424	504145.646972	126493.765424	
425	504099.166095	126467.136047	
426	504099.117725	126462.935325	
427	504099.069412	126458.739603	
428	504107.817599	126469.835613	
429	504107.627024	126455.841879	

LEGEND

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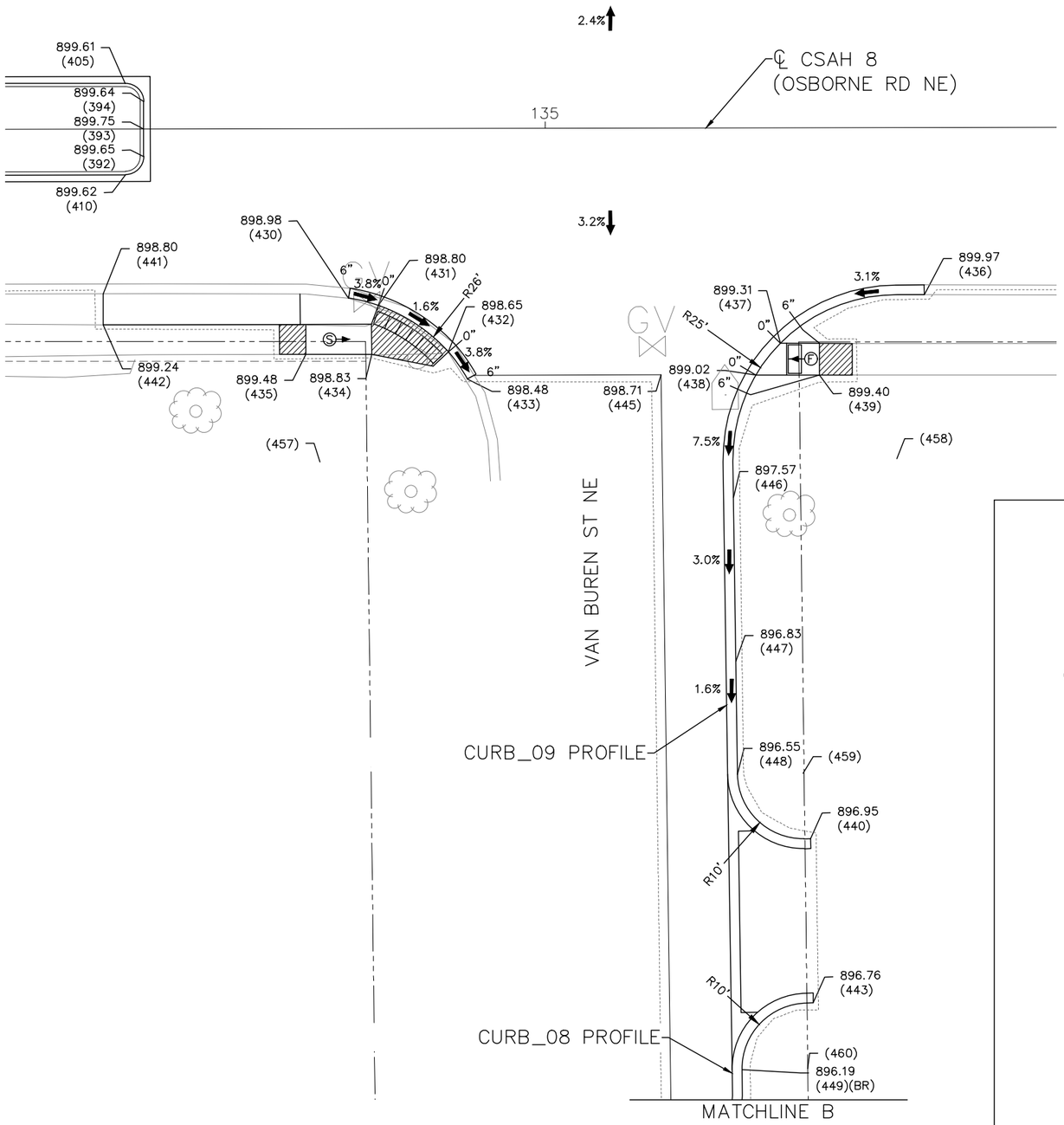

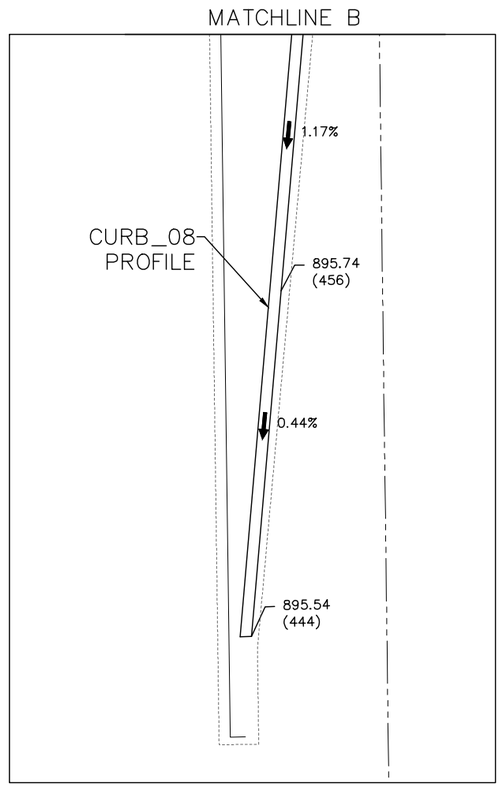

CONTROL POINTS			
Point No.	X	Y	NOTES
430	504199.030000	126435.968000	MATCH EXISTING
431	504203.550719	126434.780342	
432	504214.128514	126427.562137	
433	504216.967395	126423.391219	MATCH EXISTING
434	504202.440893	126427.348889	
435	504192.441671	126427.473646	
436	504286.778000	126435.313000	MATCH EXISTING
437	504264.737068	126428.195232	
438	504260.941515	126423.408649	
439	504270.634939	126423.284972	
440	504268.349516	126352.635234	MATCH EXISTING
441	504161.662372	126437.112225	MATCH EXISTING
442	504161.608161	126432.404252	MATCH EXISTING
443	504268.413739	126327.635234	MATCH EXISTING
444	504249.533640	126233.609631	MATCH EXISTING
445	504246.517379	126423.660098	MATCH EXISTING
446	504257.289275	126404.837995	
447	504257.324979	126379.821059	
448	504257.349526	126362.620962	
449	504257.413749	126317.620962	
456	504254.026920	126279.199484	
457	504194.361282	126411.056246	R=26'
458	504282.281384	126410.385208	R=25'
459	504267.349516	126362.635234	R=10'
460	504267.413739	126317.635234	R=10'

LEGEND

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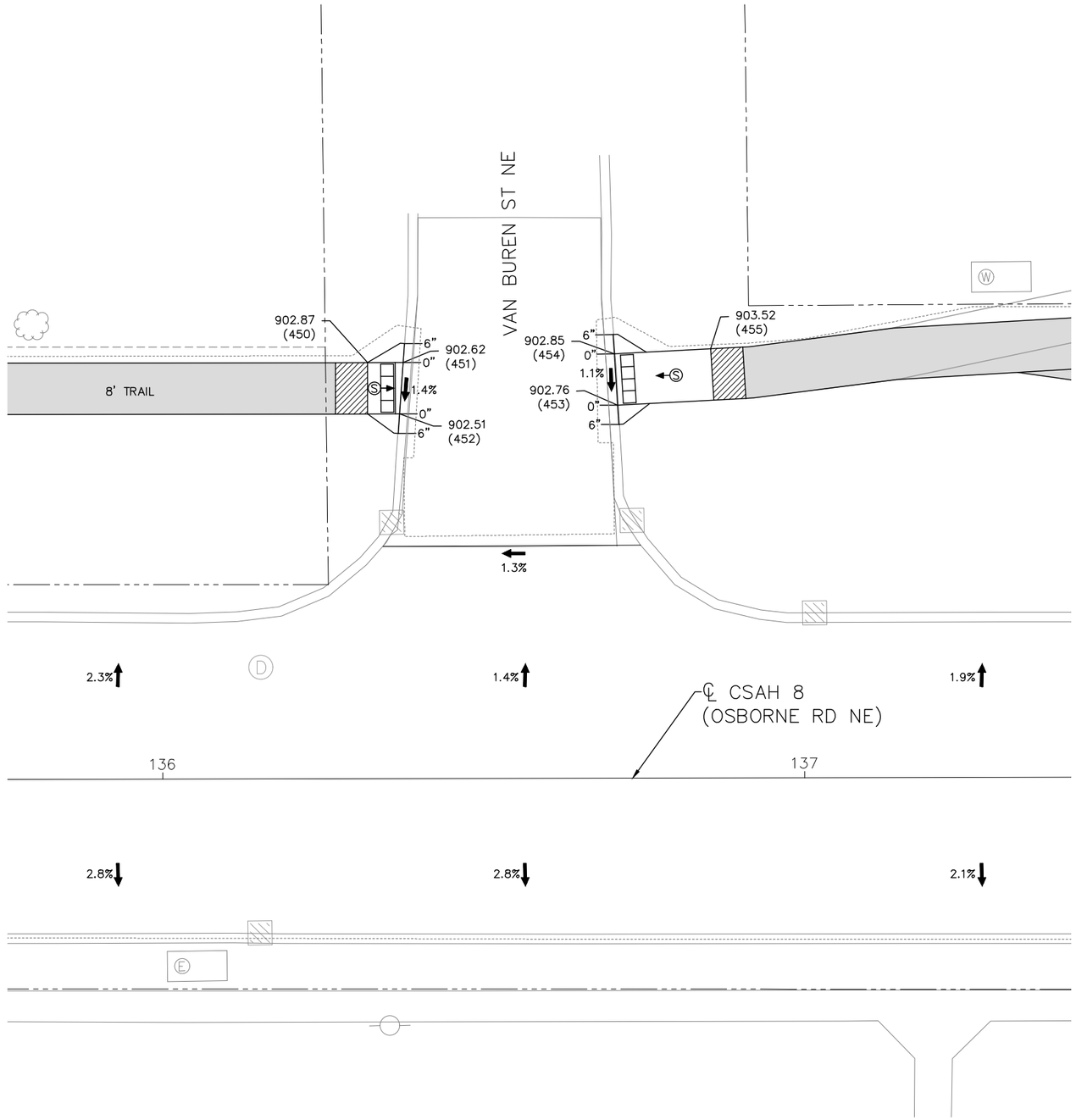

CONTROL POINTS			
Point No.	X	Y	NOTES
450	504362.119280	126524.710171	
451	504367.693799	126524.643258	MATCH EXISTING
452	504367.021880	126516.649065	MATCH EXISTING
453	504401.003005	126517.574300	MATCH EXISTING
454	504400.598192	126525.564614	MATCH EXISTING
455	504415.587972	126526.146075	

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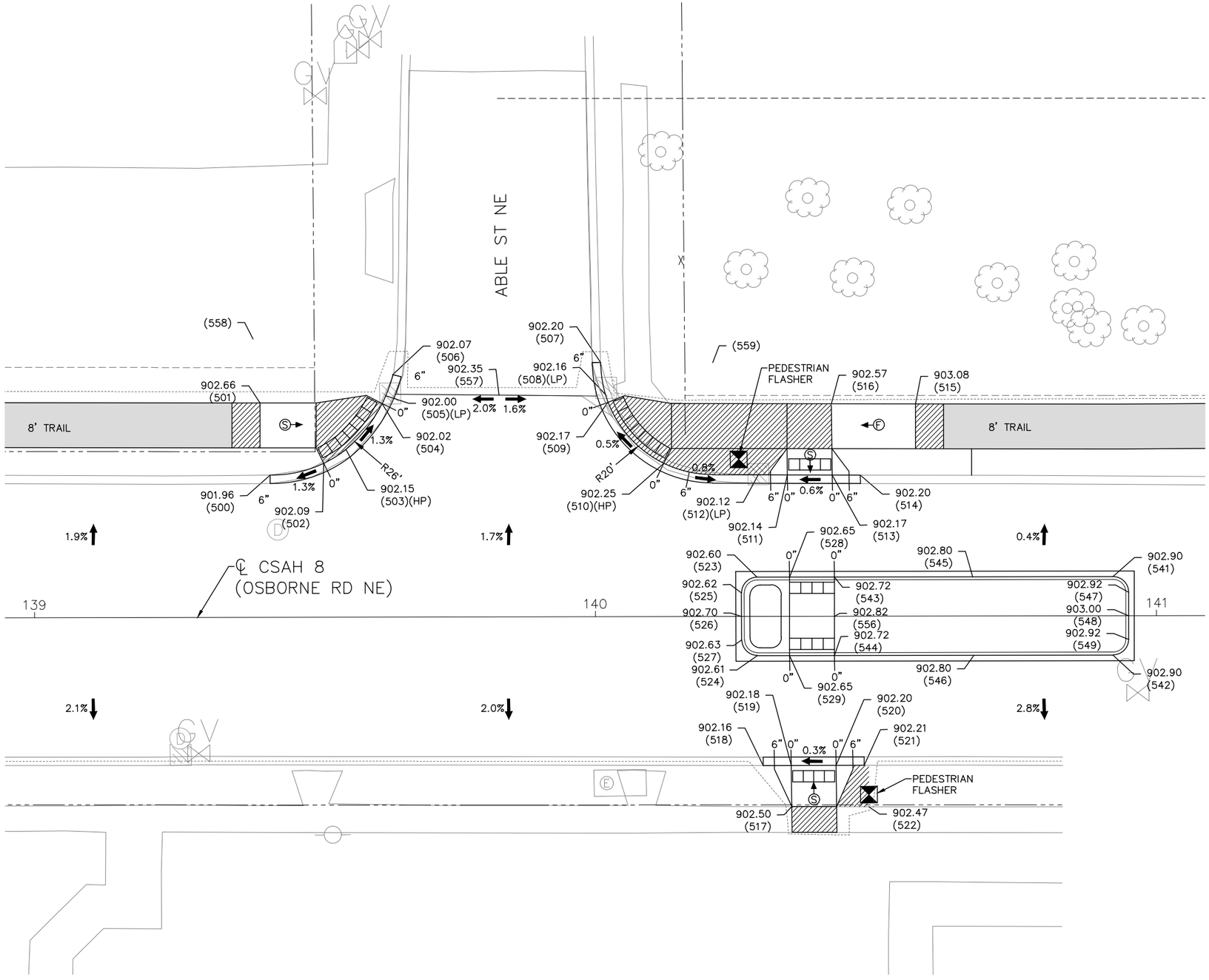

CONTROL POINTS			
Point No.	X	Y	NOTES
500	504671.688000	126481.715000	MATCH EXISTING
501	504670.075981	126494.589874	
502	504681.272836	126483.700058	
503	504685.264000	126486.118000	
504	504691.805606	126494.220584	
505	504692.461484	126495.592837	
506	504693.779734	126499.328592	MATCH EXISTING
507	504730.833000	126501.040000	MATCH EXISTING
508	504731.594844	126495.386844	
509	504732.030010	126493.888242	
510	504741.867278	126482.812472	
511	504763.889459	126480.487958	
512	504758.697728	126480.558950	
513	504771.888586	126480.369396	
514	504776.887991	126480.291641	MATCH EXISTING
515	504786.889459	126492.875832	
516	504771.889459	126493.095932	
517	504763.889459	126421.368391	MATCH EXISTING
518	504758.889884	126428.769755	MATCH EXISTING
519	504763.889459	126428.704556	
520	504771.888874	126428.610099	
521	504776.888449	126428.544914	MATCH EXISTING
522	504777.628511	126421.164341	MATCH EXISTING
523	504758.233041	126462.346454	
524	504758.071903	126448.352381	
525	504755.401999	126459.579867	
526	504755.353626	126455.378961	
527	504755.305316	126451.183423	
528	504764.037790	126462.279614	
529	504763.848118	126448.285870	
543	504772.037467	126462.187500	
544	504771.847714	126448.193757	
545	504796.679706	126461.903752	
546	504796.679706	126447.907824	
547	504824.439422	126458.784921	
548	504824.378043	126454.589888	
549	504824.342739	126450.388478	
556	504771.942075	126455.187950	
557	504712.681591	126495.407253	MATCH EXISTING
558	504668.930535	126505.996759	R=26'
559	504750.838843	126500.687343	R=20'

LEGEND

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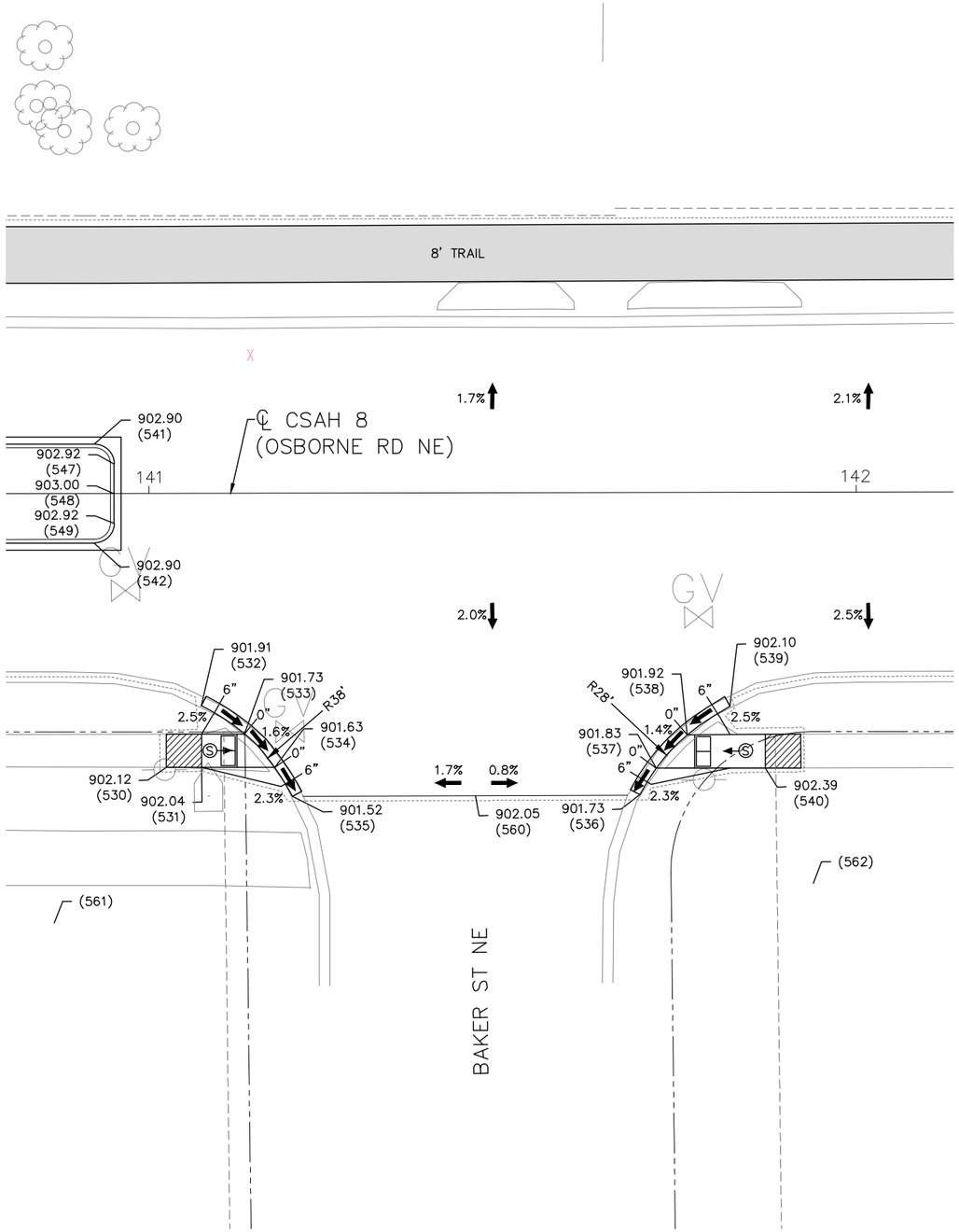

CONTROL POINTS			
Point No.	X	Y	NOTES
530	504831.248121	126415.775818	MATCH EXISTING
531	504836.247557	126415.700712	
532	504836.354334	126424.384784	MATCH EXISTING
533	504842.378756	126420.342601	
534	504846.587439	126415.545379	
535	504849.043235	126411.427932	MATCH EXISTING
536	504898.182583	126411.014743	MATCH EXISTING
537	504900.538236	126414.725155	
538	504904.985952	126419.379991	
539	504911.067508	126423.364222	MATCH EXISTING
540	504915.987483	126414.533081	
541	504821.672835	126461.615963	
542	504821.511697	126447.621891	
560	504874.945344	126411.157659	MATCH EXISTING
561	504815.149284	126394.003423	R=38'
562	504922.542882	126398.151944	R=28'

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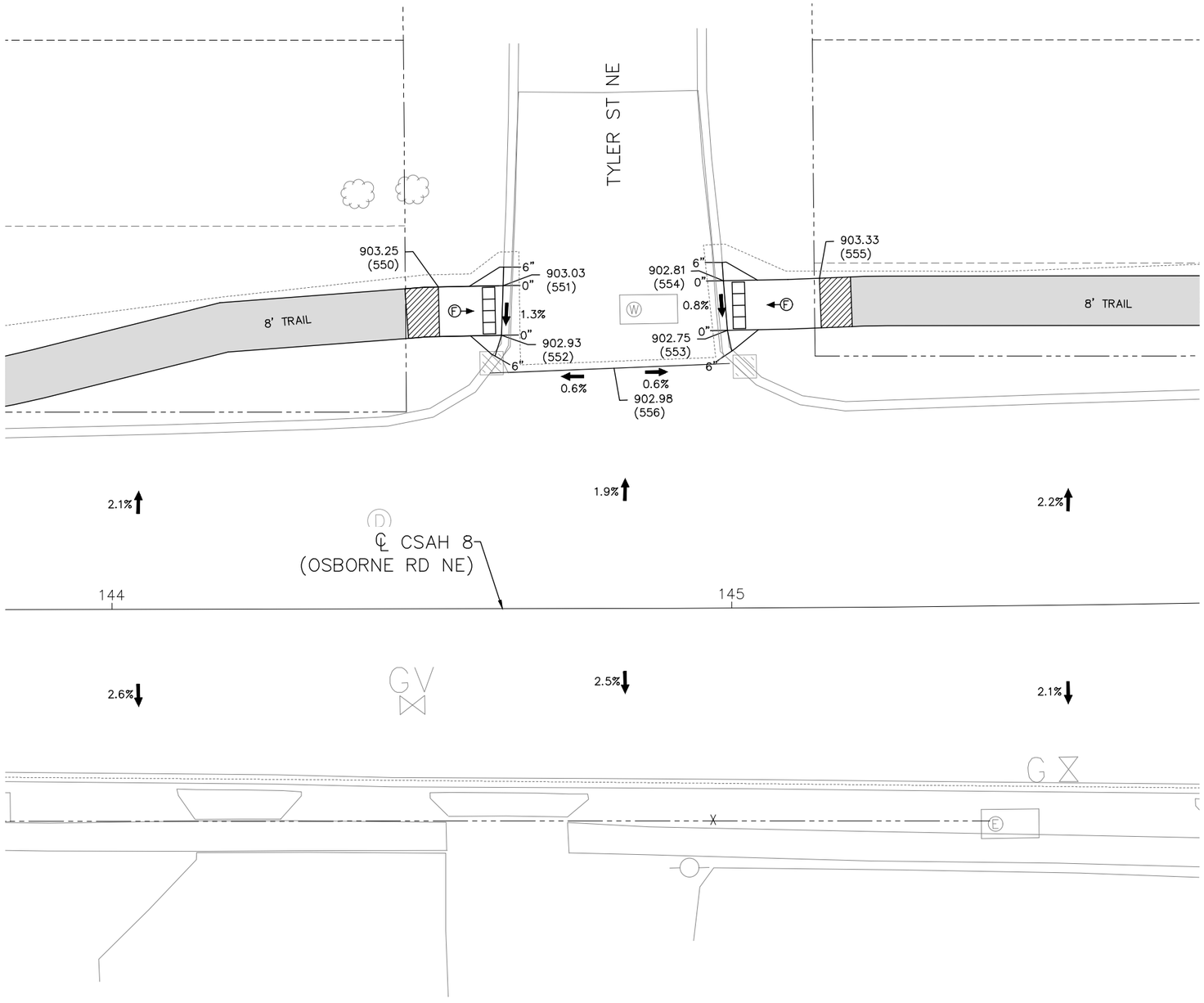

CONTROL POINTS			
Point No.	X	Y	NOTES
550	505182.645398	126502.360433	
551	505193.100120	126502.448416	MATCH EXISTING
552	505192.707691	126494.444830	MATCH EXISTING
553	505229.211059	126494.752026	MATCH EXISTING
554	505228.664504	126502.747710	MATCH EXISTING
555	505244.144468	126502.958181	
556	505210.797000	126488.863000	MATCH EXISTING

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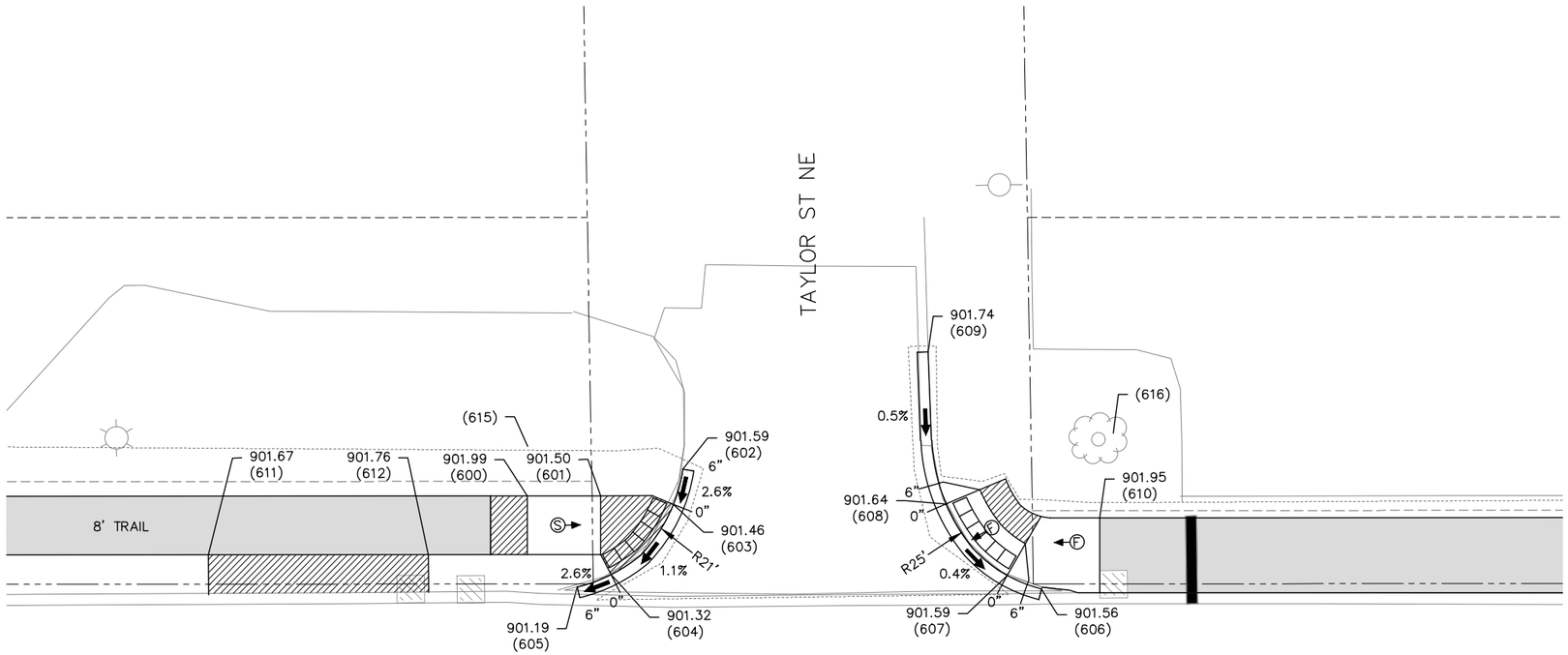

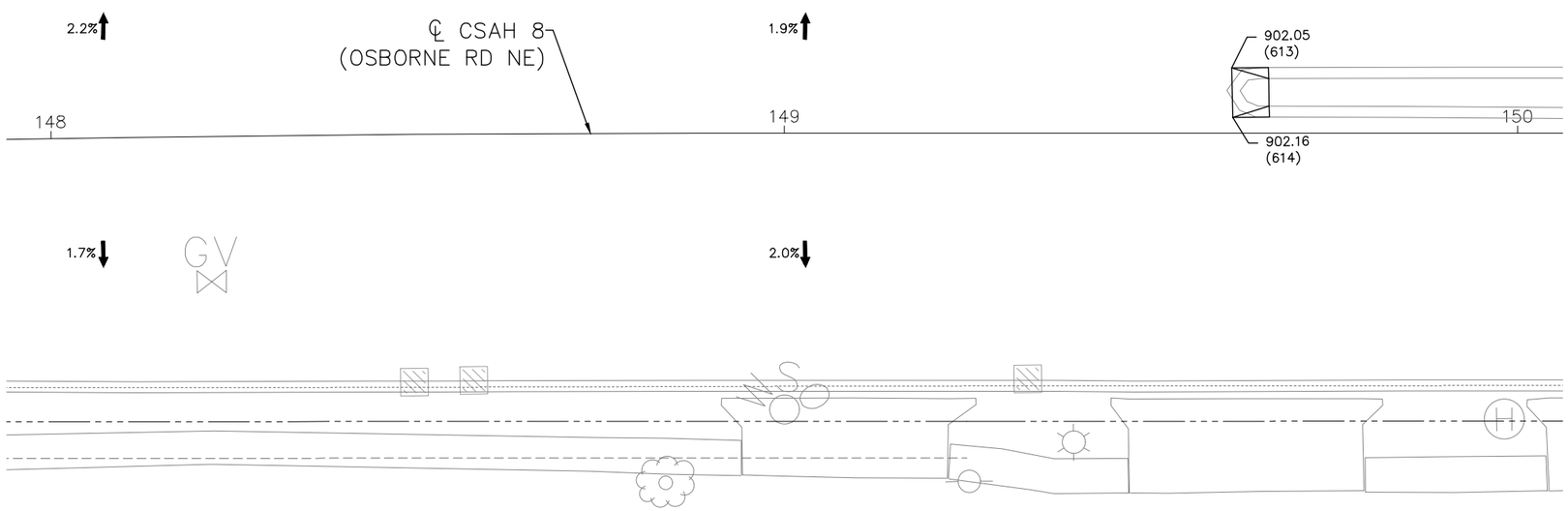

CONTROL POINTS			
Point No.	X	Y	NOTES
600	505594.875202	126498.819254	
601	505604.874390	126498.691825	
602	505616.130872	126502.183245	MATCH EXISTING
603	505614.787918	126497.435764	
604	505606.142584	126487.969412	
605	505601.539096	126486.336833	MATCH EXISTING
606	505664.821020	126485.188784	MATCH EXISTING
607	505660.158998	126487.092399	
608	505651.929719	126496.946435	
609	505649.780000	126517.775000	MATCH EXISTING
610	505672.909852	126494.800825	
611	505551.293110	126491.374008	
612	505581.292311	126490.991703	
613	505690.414784	126457.752023	
614	505690.432825	126450.996813	
615	505595.010246	126505.594105	R=21'
616	505674.878324	126506.338656	R=25'

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CODY J. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

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DRAWN ZAP
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BURNSVILLE, MINNESOTA 55337
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INTERSECTION DETAILS

SHEET 69 OF 189

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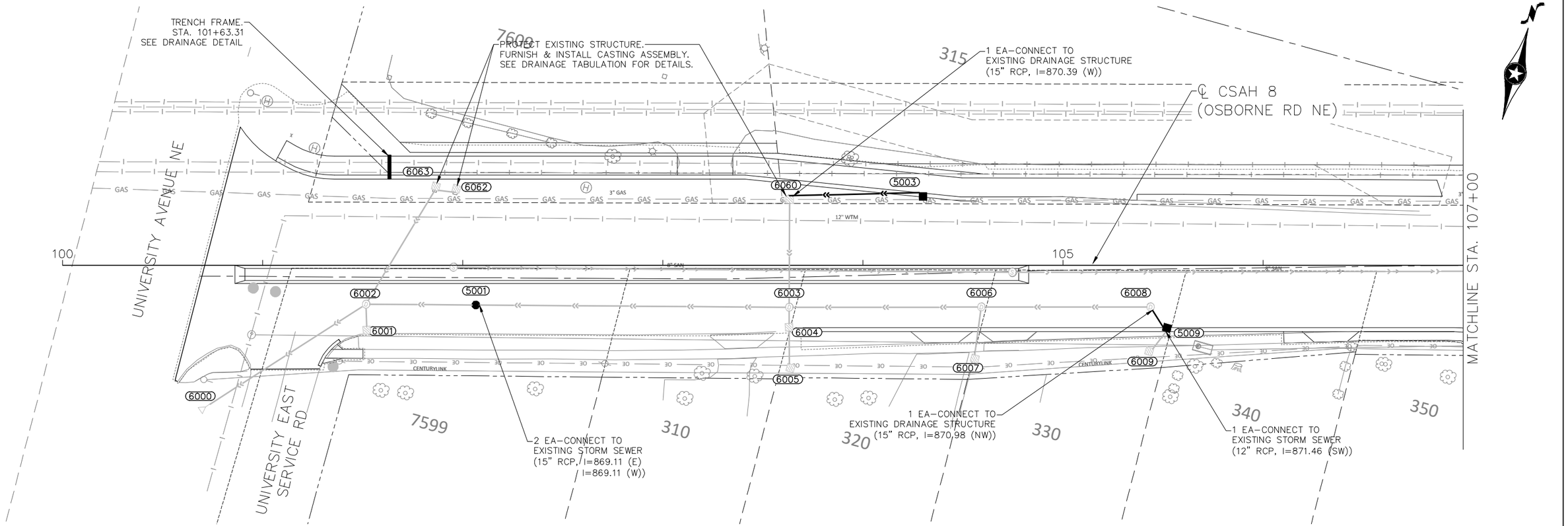

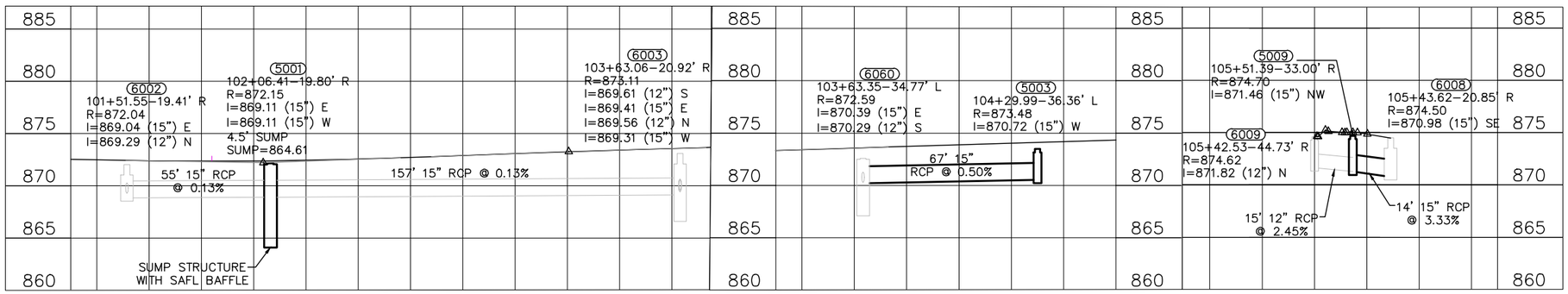

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ROBERTA R. CRONQUIST
LIC. NO. 52570 DATE 05/26/2020

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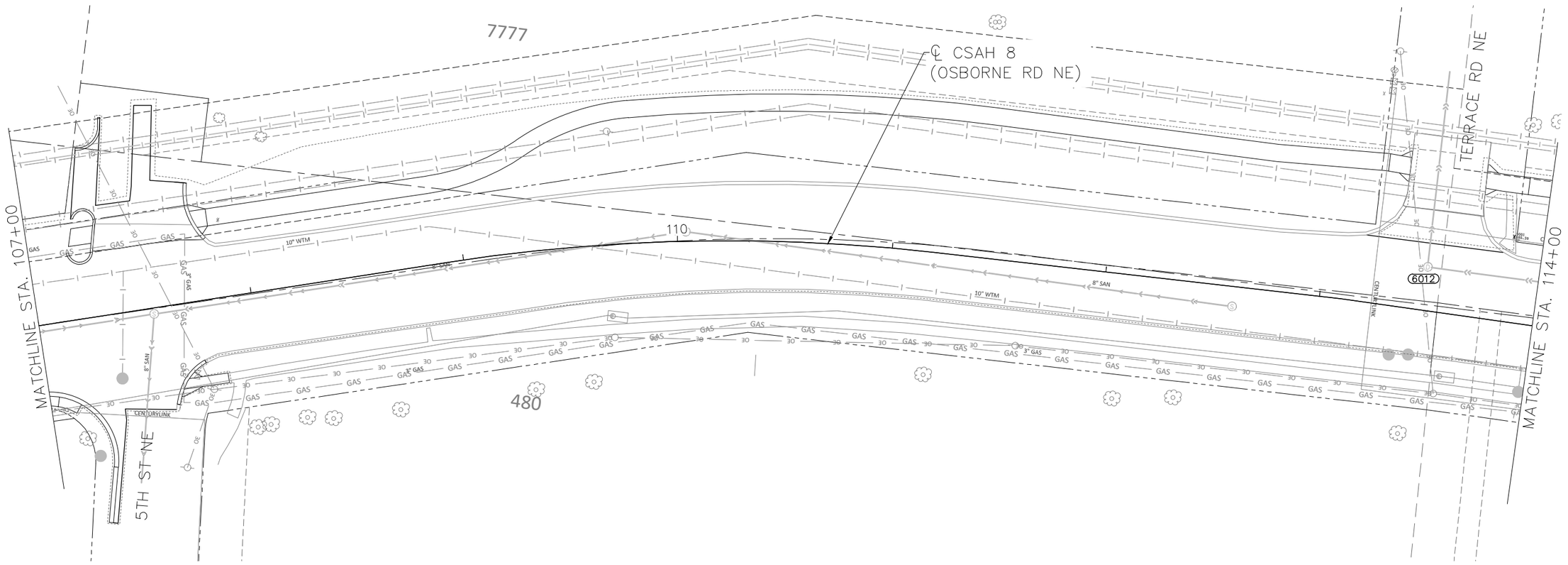

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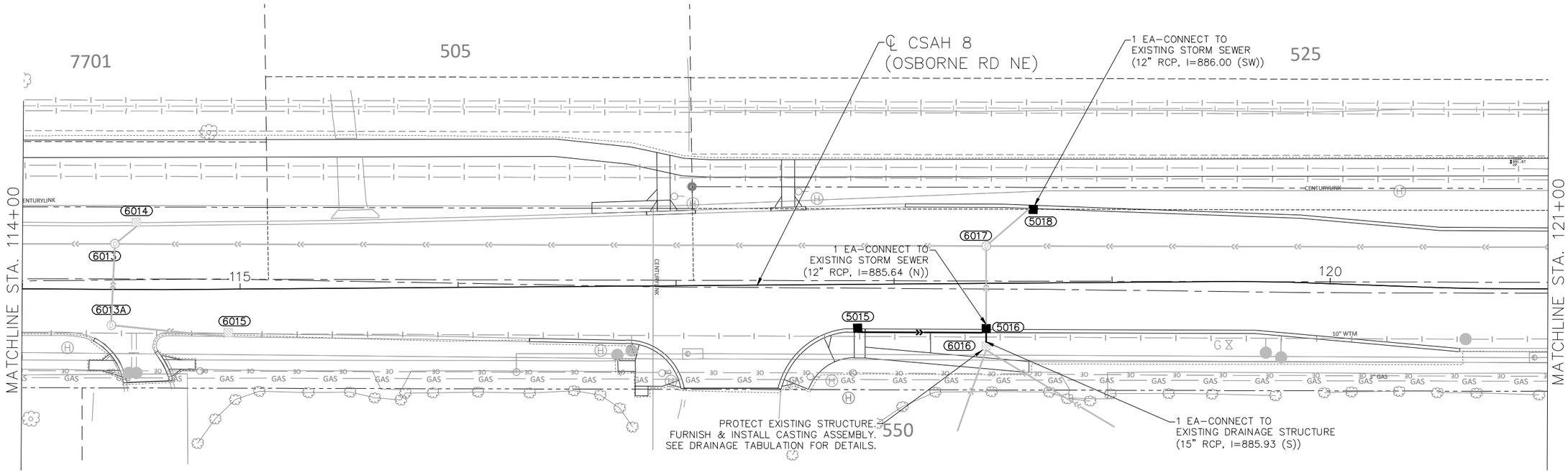

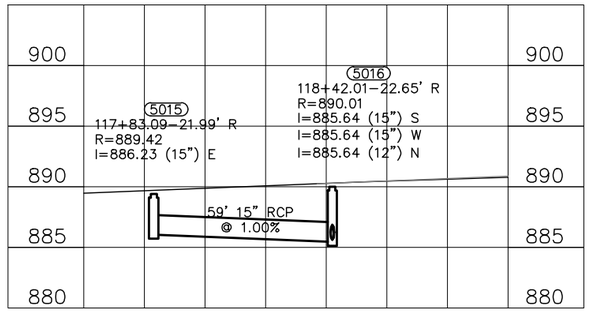

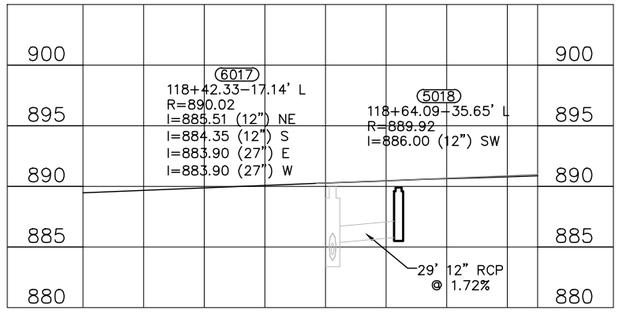

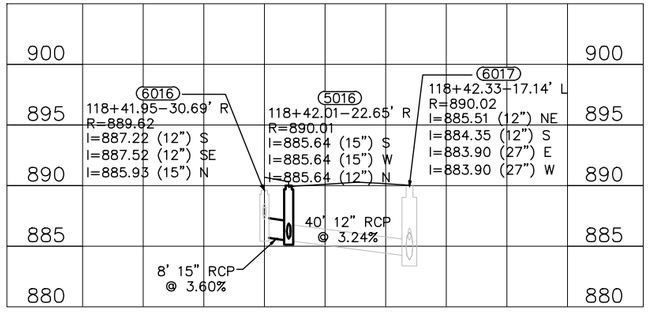

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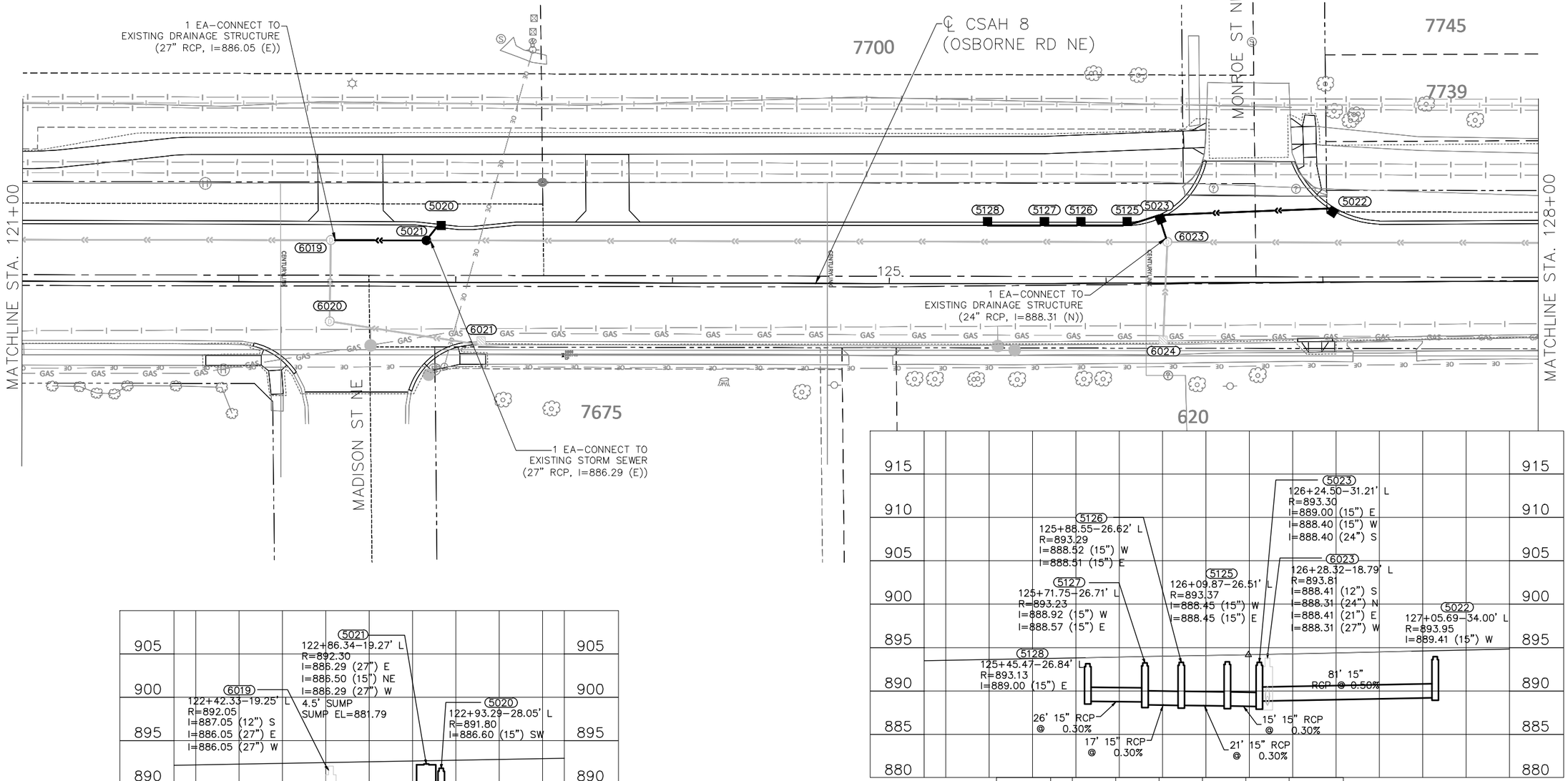

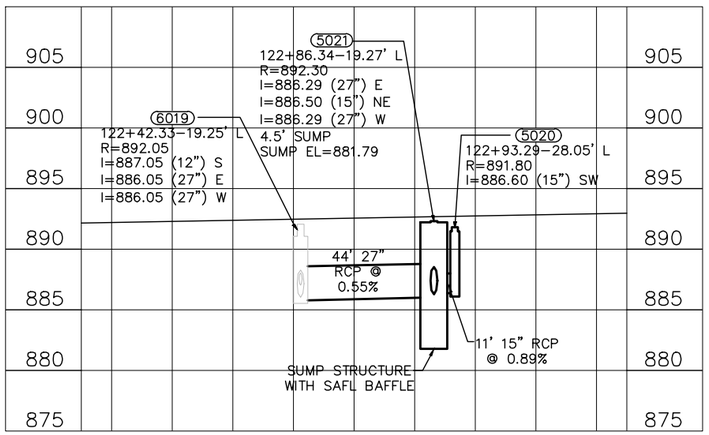

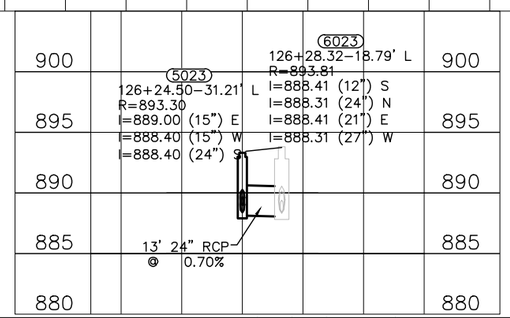

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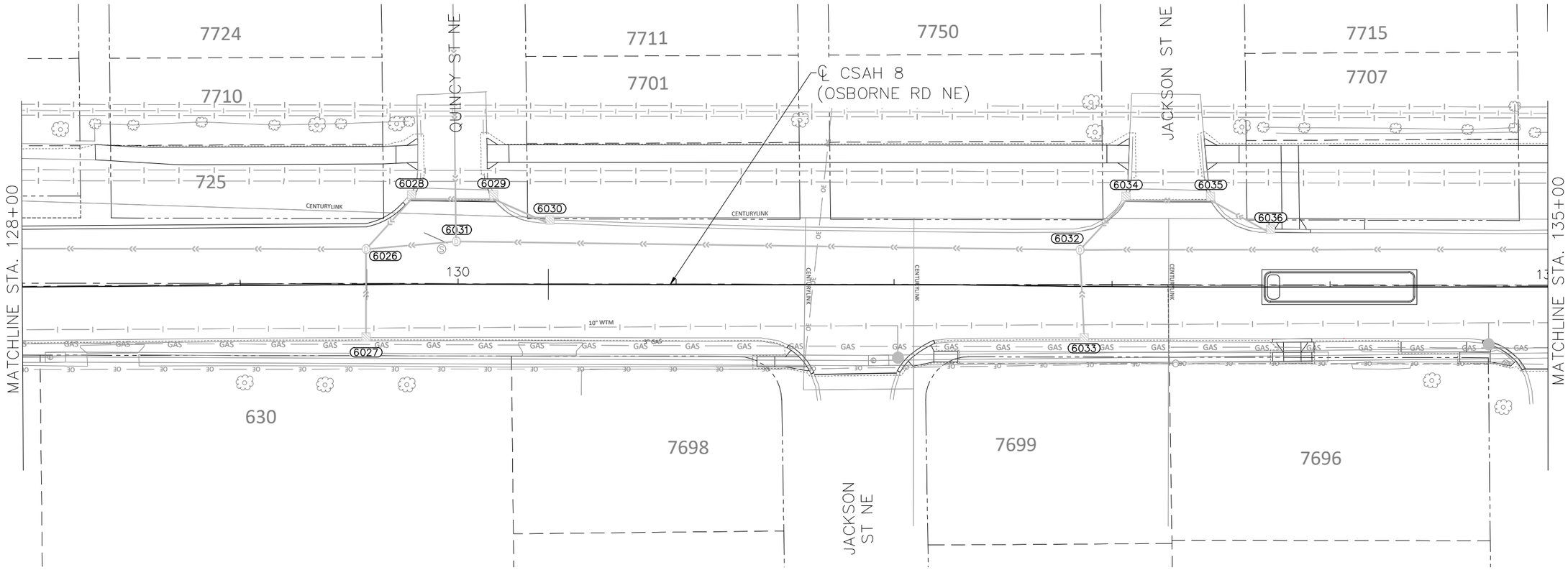

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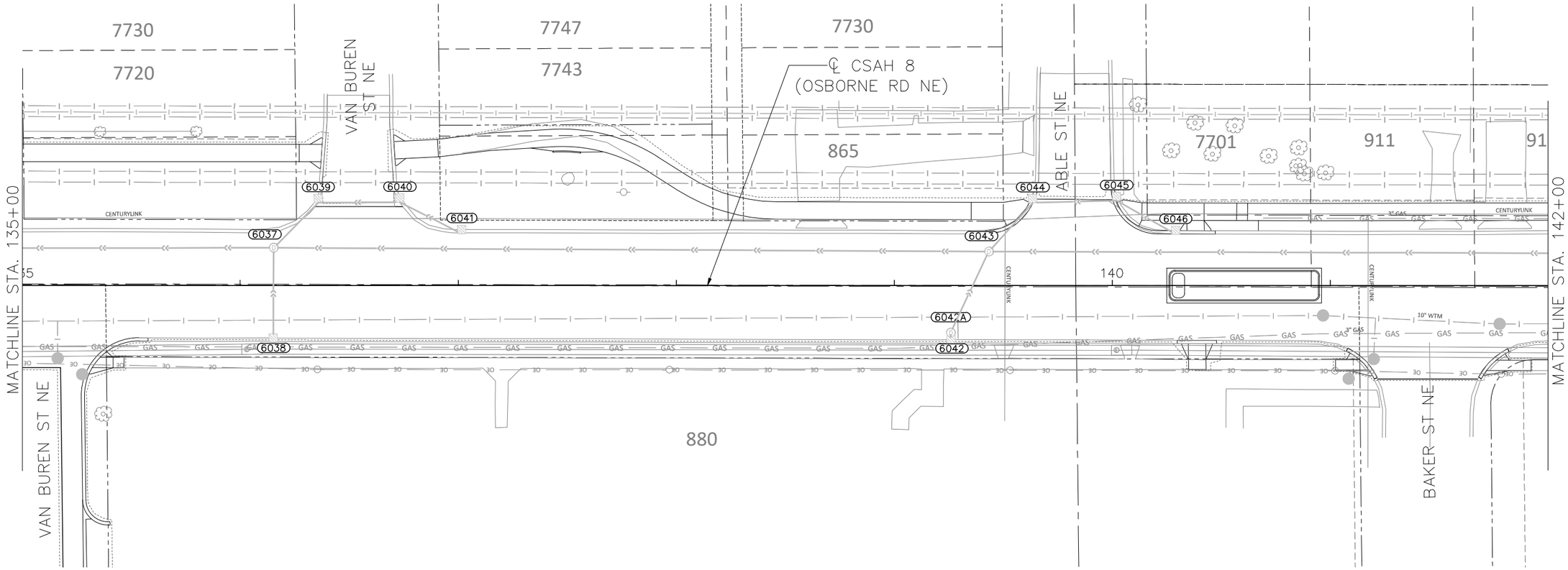

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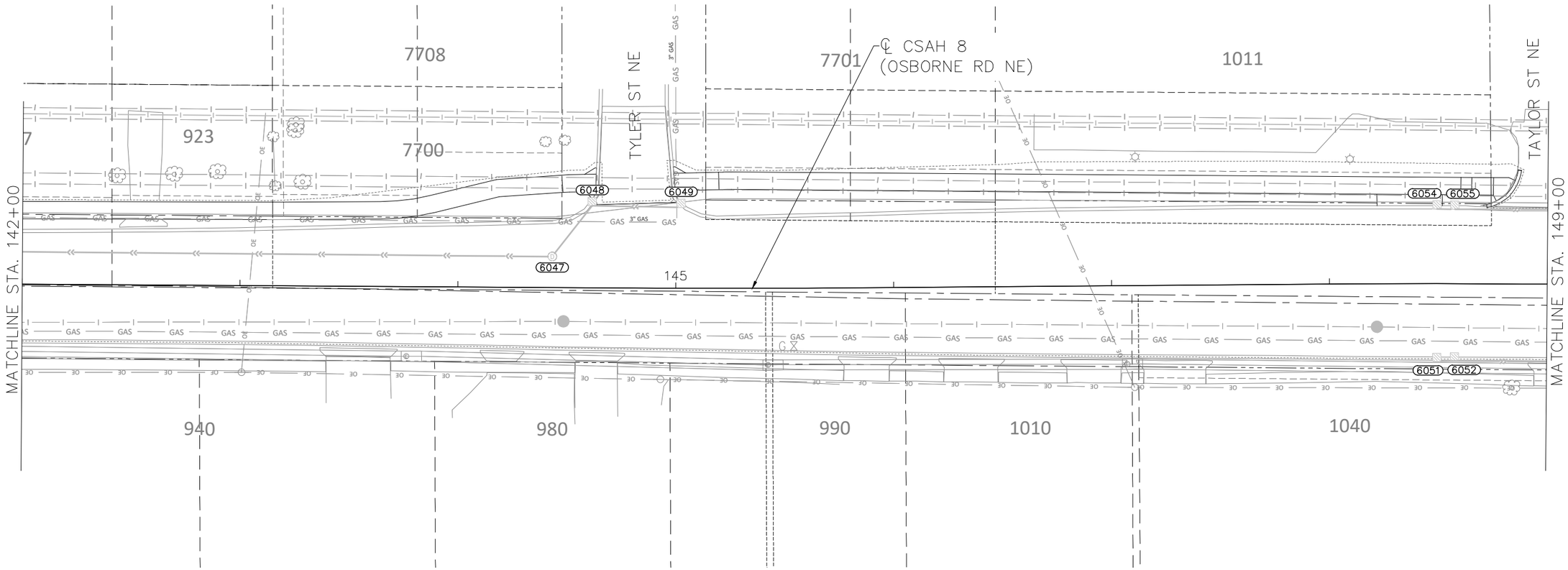

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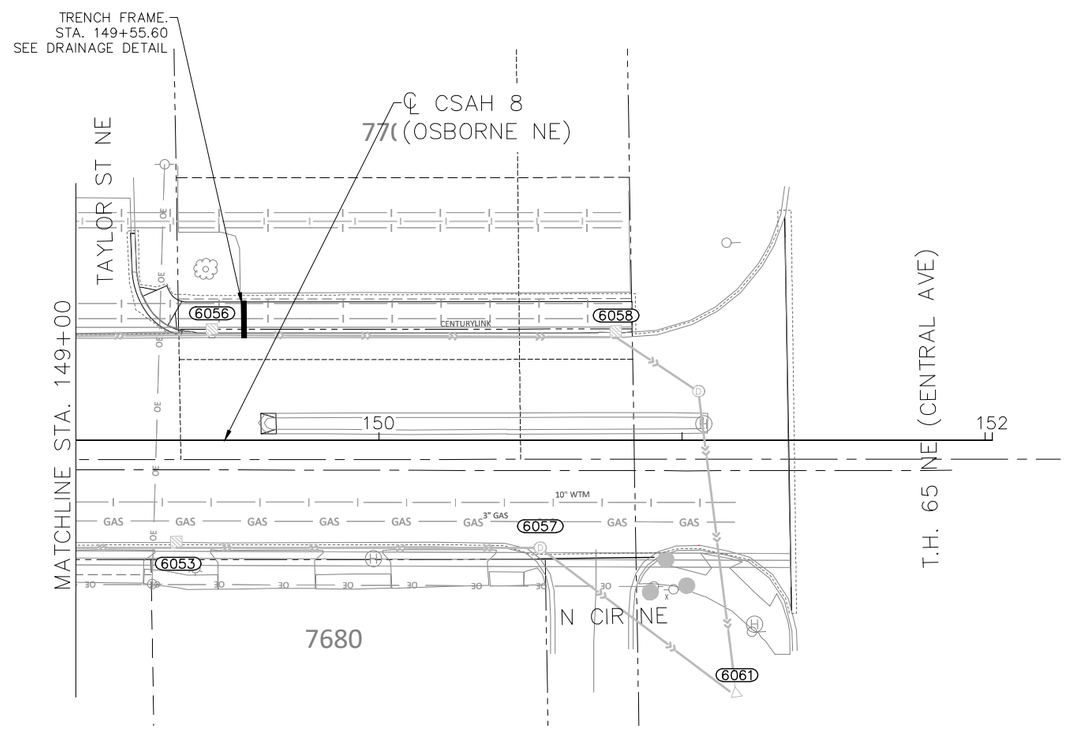

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CSAH 8 RECONSTRUCTION
DRAINAGE PLANS

SHEET 77 OF 189

DRAINAGE TABULATION

E

STRUCTURE NO.		CENTER OF CASTING LOCATION										RC PIPE SEWER DES 3006							
FLOWS FROM	FLOWS TO	ALIGN.	STATION	OFFSET	48-4020	DESIGN SPECIAL 1	DESIGN SPECIAL 2	CASTING ASSEMBLY TYPE	TOP OF CASTING ELEV	OUTLET ELEV. (1)	INLET ELEV. (2)	SLOPE OF PIPE	15" CL V	24" CL III	27" CL III	FINE AGG. BED. (CV)	STEPS REQUIRED	CONNECT TO EX DRAINAGE STRUCTURE	CONNECT TO EX STORM SEWER	REMARKS
					LIN FT	EACH	EACH						LIN FT	LIN FT	LIN FT	CU YD		EACH	EACH	
5001	6002	CSAH 8	102+06.41	19.8' RT		1			872.15	869.11							YES		2	
5003	6060	CSAH 8	104+29.99	36.4' LT	2.6			B - 9	873.48	870.72	870.39	0.50%	67			10	NO	1		
6060		CSAH 8	103+63.35	34.8' LT				A - 7	872.59								N/A			
5009	6008	CSAH 8	105+51.39	33.0' RT	3.1			B - 9	874.70	871.46	870.98	3.33%	14			2	NO	1	1	
5015	5016	CSAH 8	117+83.09	22.0' RT	3.7			B - 9	889.42	886.23	885.64	1.00%	59			9	NO			
6016	5016	CSAH 8	118+41.95	30.7' RT				A - 7	889.62	885.93	885.64	3.60%	8			2	N/A	1		
5016	6017	CSAH 8	118+42.01	22.7' RT	4.2			B - 9	890.01	885.64							NO		1	
5018	6017	CSAH 8	118+64.09	35.7' LT	3.9			B - 9	890.01	886.00							NO		1	
5020	5021	CSAH 8	122+93.29	28.1' LT	5.1			B - 9	891.80	886.60	886.50	0.89%	11			2	YES			
5021	6019	CSAH 8	122+86.34	19.3' LT			1		892.31	886.29	886.05	0.55%			44	10	N/A	1	1	
5022	5023	CSAH 8	127+05.69	34.0' LT	4.4			B - 9	893.95	889.41	889.00	0.50%	81			12	NO			
5128	5127	CSAH 8	125+45.47	26.8' LT	4.0			B - 9	893.13	889.00	888.92	0.30%	26			4	NO			
5127	5126	CSAH 8	125+71.75	26.7' LT	4.6			B - 9	893.23	888.57	888.52	0.30%	17			3	YES			
5126	5125	CSAH 8	125+88.55	26.6' LT	4.7			B - 9	893.29	888.51	888.45	0.30%	21			3	YES			
5125	5023	CSAH 8	126+09.87	26.5' LT	4.8			B - 9	893.37	888.45	888.40	0.30%	15			3	YES			
5023	6023	CSAH 8	126+24.50	31.2' LT	4.8			B - 9	893.30	888.40	888.31	0.70%		13		3	YES	1		
6062		CSAH 8	101+96.23	36.4' LT				A - 7	871.56								N/A			
6063		CSAH 8	101+86.00	37.6' LT				A - 7	871.47								N/A			
				PROJECT TOTALS	49.9	1	1						319	13	44	63		5	6	

NOTES: - THE CASTING (RIM, R) ELEVATION IS AT:
- CENTER OF THE GRATE/COVER FOR AREA DRAINS/MANHOLES.
- CENTER OF GRATE FOR CATCH BASIN GRATES.
- INVERT ELEVATIONS ARE GIVEN TO THE CENTER OF STRUCTURE IN TABLES AND PROFILES
- ELEVATIONS FOR RC PIPE CULVERTS ARE TO THE END OF THE APRON.
- STATION AND OFFSET ARE TO CENTER OF CASTING FOR MANHOLES, GUTTER LINE FOR CATCH BASINS OR END OF APRON UNLESS OTHERWISE NOTED.
- ADJUSTING RINGS ARE INCIDENTAL.
- IF STEPS REQUIRED, STRUCTURE TO INCLUDE MANHOLE STEPS 16" ON CENTER. SEE MNDOT STANDARD PLATE 4180.

(1) OUTLET ELEVATION AT UPSTREAM STRUCTURE

(2) INLET ELEVATION AT DOWNSTREAM STRUCTURE

STORM SEWER REMOVAL TABULATION

F

STRUCTURE LOCATION			REMOVE DRAINAGE STRUCTURE	REMOVE RC PIPE SEWER	REMARKS
ALIGN.	STATION	OFFSET	EACH	LIN FT	
CSAH 8	105+56	26' RT	1	22	
CSAH 8	118+65	37' LT	1	4	
CSAH 8	212+96	45' LT	1	98	INCLUDES PIPE REMOVAL ON MAINLINE TO ACCOMMODATE SAFFLE BAFLE
CSAH 8	126+50	43' LT	1	30	
CSAH 8	126+88	43' LT	1	34	
CSAH 8	127+14	40' LT	1	22	
		TOTAL	6	210	

CASTING ASSEMBLY (STORM)

G

ASSEMBLY NO.	RING OR FRAME CASTING	COVER OR GRATE CASTING	CURB BOX	2506 QUANTITY (EACH)
B - 9	MODIFIED 805 (SEE DRAINAGE DETAILS)	816		12
A - 7	700-7	716		4
TOTALS				16

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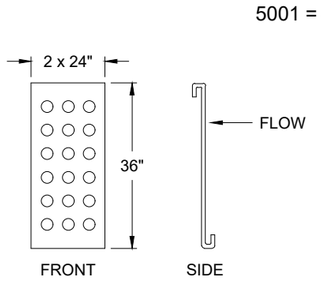
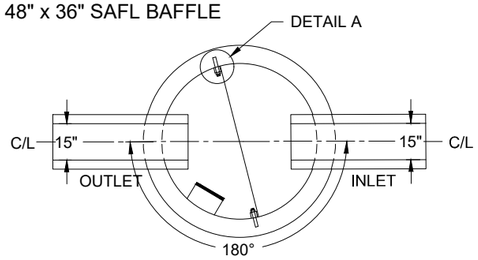
DRAINAGE TABULATIONS

DRAINAGE STRUCTURE DESIGN SPECIAL 1

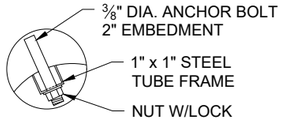
5001 = 48" x 36" SAFL BAFFLE



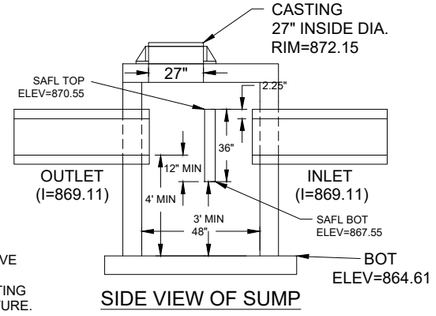
SAFL BAFFLE PANEL



TOP VIEW OF SUMP



DETAIL A



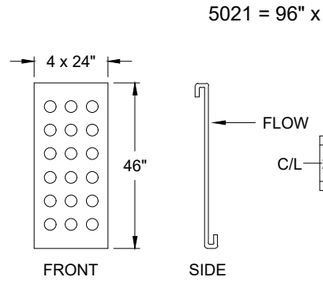
SIDE VIEW OF SUMP

NOTES:

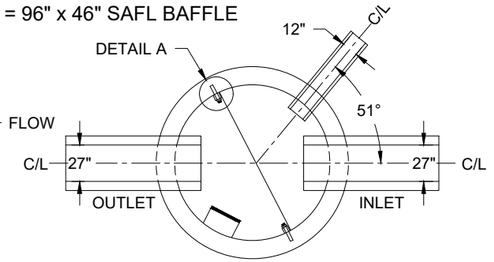
* UPSTREAM TECHNOLOGIES INC. IS THE EXCLUSIVE LICENSEE OF THE SAFL BAFFLE.
* CONTRACTOR MUST VERIFY LOCATION OF CASTING AND STEPS PRIOR TO INSTALLATION OF STRUCTURE.

DRAINAGE STRUCTURE DESIGN SPECIAL 2

5021 = 96" x 46" SAFL BAFFLE



SAFL BAFFLE PANEL



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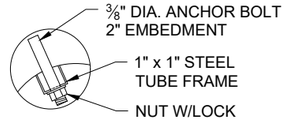

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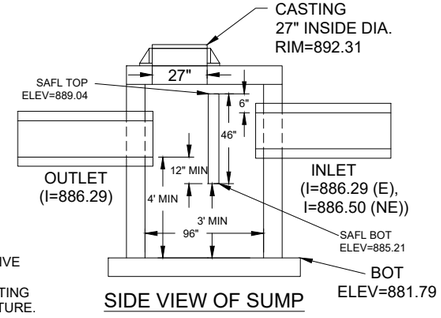

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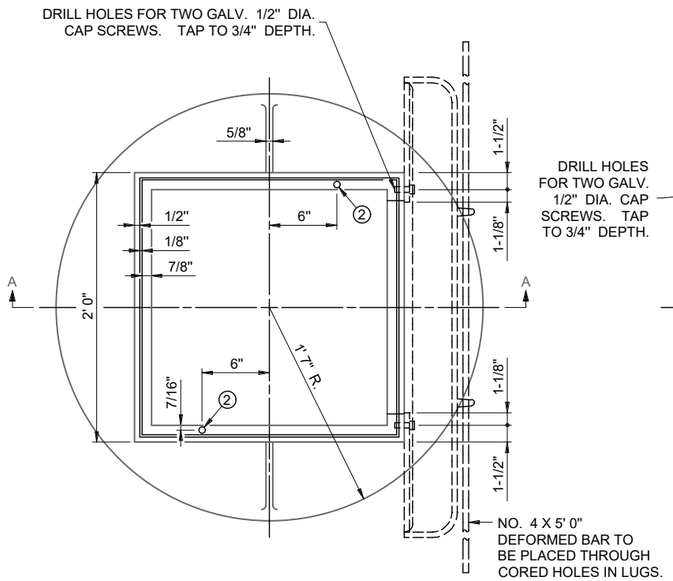
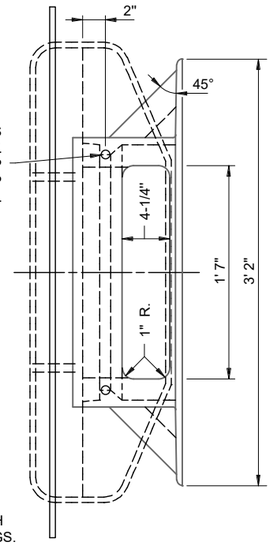
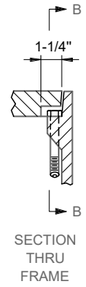


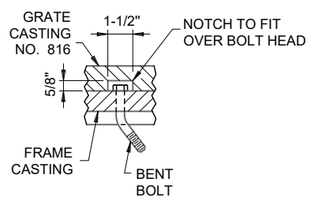
TOP VIEW



END VIEW

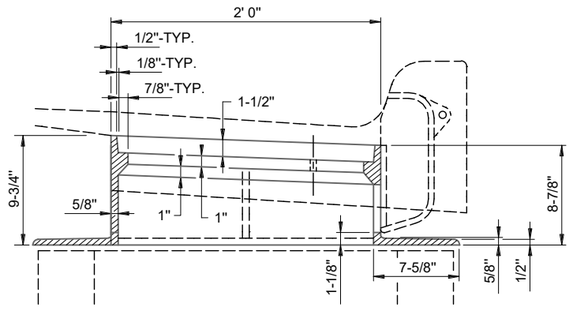


SECTION THRU FRAME



VIEW B-B

GRATE AND FRAME WITH BOLT INSTALLED ②



SECTION A-A

CASTINGS USED FOR ASSEMBLY	
GRATE	816 (4154)
CURB BOX ①	NO. 823A (4160)

NOTES:

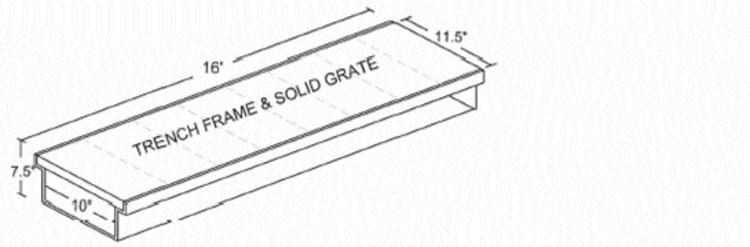
USE 1/4" FILLETS IN ALL CORNERS.

SEE STANDARD PLATE 7111 FOR INSTALLATION REQUIREMENTS.

① APPLIES TO DESIGN B OR V CURB AND CURB AND GUTTER.

② AT LOCATIONS INDICATED IN TOP VIEW, PROVIDE 9/16" DIA. HOLES WHEN GRATE NO. 816 (4154) IS USED WITH THIS FRAME. FIELD PLACE 1/2" DIA. X 4" LONG GALV. BOLT IN UP STREAM SIDE AND BEND UNDERSIDE TO PREVENT REMOVAL. THIS WILL PREVENT GRATE NO. 816 (4154) FROM BEING PLACED IN WRONG DIRECTION AND NOT BEING BICYCLE SAFE.

MODIFIED 805 CASTING



TRENCH FRAME WITH SOLID COVER. TO BE INSTALLED IN BITUMINOUS TRAIL.
TOTAL LENGTH OF TRENCH FRAME IS 12' WITH A SOLID GRATE. BOTH ENDS TO BE OPEN, LIGHT DUTY.
NEENAH R-4995-B1 WITH SOLID COVER OR EQUIVALENT.

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SCALE 0 25 50 FEET

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.

ROBERTA R. CRONQUIST
LIC. NO. 52570 DATE 05/26/2020

DESIGNED JDZ
DRAWN JDZ
CHECKED RRC

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

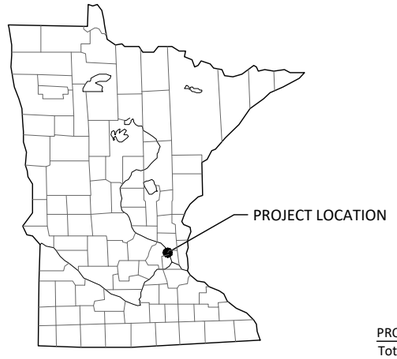
REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
DRAINAGE DETAILS

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

CSAH 8 RECONSTRUCTION 2019

CITY OF FRIDLEY
ANOKA COUNTY, MINNESOTA



LEGEND

- 1-MILE BOUNDARY
- PROJECT BOUNDARY
- OR IMPAIRED, SPECIAL OR PROTECTED WATERS
- NATIONAL WETLANDS INVENTORY
- RECEIVING WATERS

RESPONSIBLE PARTIES:
The Contractor and Owner will be joint applicants under the MPCA's General Stormwater Permit for Construction Activity as required by the National Pollutant Discharge Elimination System (NPDES) Phase II program.

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	CHRIS OSTERHUS	763-324-3189
SWPPP DESIGNER:	Bolton & Menk, Inc.	XXXXX	952-890-0509
CONTRACTOR:	TBD	TBD	TBD
CONSTRUCTION SWPPP MANAGER:	TBD	TBD	TBD
PARTY RESPONSIBLE FOR LONG TERM O&M:	CITY OF FRIDLEY/SPRING LAKE PARK	XXXXX	XXX-XXX-XXXX

The SWPPP Designer, Construction SWPPP Manager, and BMP Installer 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 the Narrative sheet. The Contractor shall attach training documentation to this SWPPP for the Construction SWPPP Manager and BMP Installer 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 Stormwater 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.

DOCUMENT RETENTION
Permittees must make the SWPPP, including all inspection reports, maintenance records, training records and other information required by this permit, available to federal, state, and local officials within three (3) days upon request for the duration of the permit and for three (3) years following the NOT.

GENERAL STORMWATER DISCHARGE REQUIREMENTS
All requirements listed in Section 5.1 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:

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

Permanent stormwater treatment systems for this project have been designed in accordance with the guidance in the MN Stormwater Manual in place at the time of bidding. Copies of the design information and calculations are part of this SWPPP and will be provided in digital format upon written request to the Engineer.

PROJECT AREAS:

Total Project Size (disturbed area) =	10.8	ACRES
Existing area of impervious surface =	8.6	ACRES
Post construction area of impervious surface =	8.4	ACRES
Total new impervious surface area created =	0.0	ACRES

Planned Construction Start Date:	07/06/2020
Estimated Construction Completion Date:	09/11/2020

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

	Wet Sedimentation Basin
	Infiltration/Filtration
	Regional Pond
	Permanent Stormwater Management Not Required

None needed because no net new impervious surface will be created.

PROJECT LOCATION:

COUNTY	TOWNSHIP	RANGE	SECTION	LATITUDE	LONGITUDE
ANOKA	30	24	1,2,11,12	45.10787°	-93.25290°

TEMPORARY EROSION AND SEDIMENT CONTROL BMP SUMMARY	QUANTITY	UNIT
Sediment Control Log Type Wood Chip	40	LIN FT
Silt Fence - Type MS	2605	LIN FT
Storm Drain Inlet Protection	46	EA
Rapid Stabilization Method 3 (500% of the area shown on ESC plans)	69	MGAL

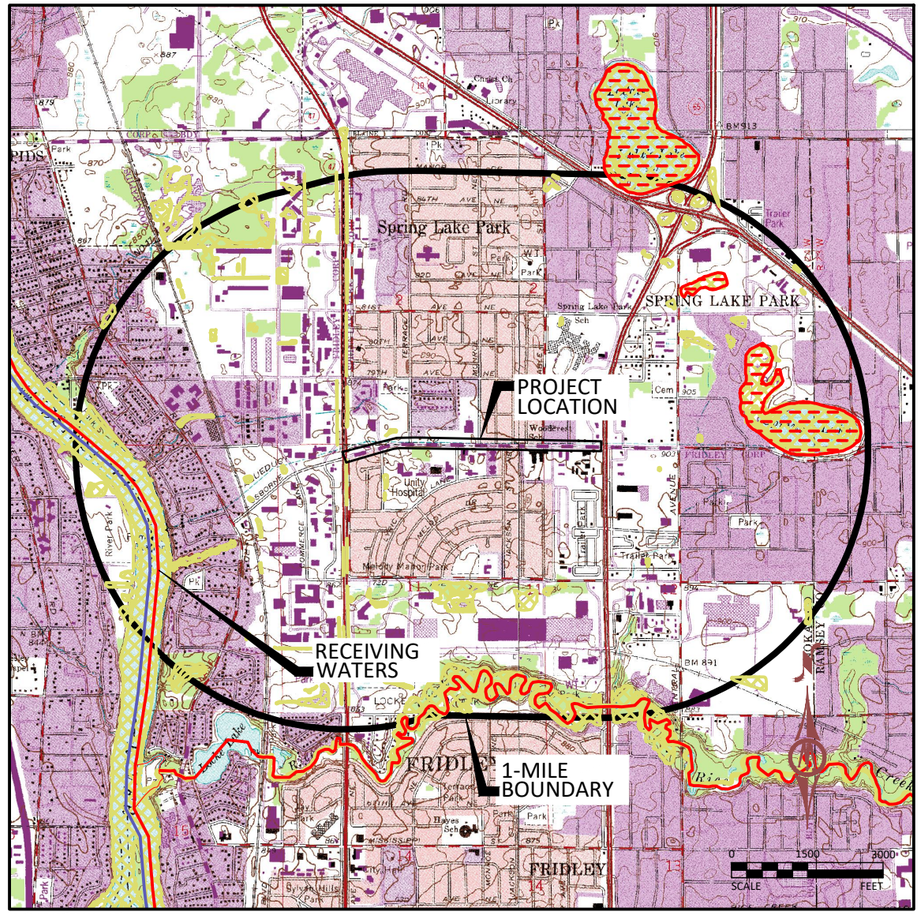
PERMANENT EROSION AND SEDIMENT CONTROL BMP SUMMARY	QUANTITY	UNIT
Seeding (See Turf Establishment Plan for Seed Mix Requirements)	2.3	AC
Hydraulic Reinforced Fiber Matrix	8977	POUND

DESCRIPTION OF CONSTRUCTION ACTIVITIES AND STORMWATER MANAGEMENT:
Construction activities include: Minor site grading, mill and overlay, several curb realignments and median reconstruction which necessitates relocation of several catch basins and one storm sewer lead.

Stormwater currently drains from east to west in a storm sewer system under CSAH 8 (Osborne Road). It is assumed that this system discharges into a treatment pond located south of CSAH 8 and east of East River Road and ultimately discharges into the Mississippi River which is a special water identified as Restricted by the MPCA Construction Stormwater General Permit.

After construction is complete stormwater will follow the same drainage pattern as the existing conditions.

This project does not include the construction of any stormwater management BMPs on site.



RECEIVING WATERS:
Receiving waters, including surface water, wetlands, Public Waters, and stormwater ponds, within 1-mile of the project boundary are identified on the USGS 7.5 min quad map above. Receiving waters that are impaired, the impairment, and WLA are listed as follows. All specific BMPs relative to construction activities listed in the permit for special, prohibited, restricted, or impaired 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.)	Special, Prohibited, Restricted Water [1]	Flows to Impaired Water Within 1-Mile [2]	USEPA Approved Construction Related TMDL [3]
Mississippi River	River	Yes	Yes	No

[1] Special, prohibited, and restricted waters are listed in Section 23 of the MN Construction Stormwater General Permit (MNR100001).
[2] Identified as impaired under section 303 (d) of the federal Clean Water Act for phosphorus, turbidity, TSS, dissolved oxygen, and/or aquatic biota.
[3] Construction Related TMDLs include those related to: phosphorus, turbidity, TSS, dissolved oxygen, and/or aquatic biota.

IMPLEMENTATION SCHEDULE AND PHASING: The Contractor is required to provide an updated schedule and site management plan meeting the minimum requirements of Section 1717 of the Minnesota Standard Specifications for Construction.

1) 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.
2) Install perimeter sediment control, inlet protection, and construction exit.
3) Perform necessary removals.
4) Perform preliminary site grading.
5) Construct proposed utilities.
6) Construct proposed curb relocations and mill and overlay.
7) Stabilize site as indicated on construction plans.
8) Add additional temporary BMPs as necessary during construction based on inspection reports.
9) Ensure final stabilization measures are complete.
10) Provide digital copy of all Field SWPPP Documentation including Inspection Reports and SWPPP Revisions to the Owner.
11) Submit Notice of Termination (NOT) to MPCA. NOTE: The NOT must be submitted to MPCA before Final Stabilization is considered complete.

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DESIGNED JDZ
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REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SWPPP AND WATER RESOURCES NOTES

SHEET 81 OF 189

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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 RI0000I (Permit) 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: https://www.pca.state.mn.us/sites/default/files/wq-strm2-80a.pdf

SWPPP AMENDMENTS AND SUBMITTALS

Contractor must prepare and submit to the Engineer a SWPPP amendment as necessary to include additional Best Management Practices (BMPs) to correct problems identified or address the following situations.

1. Contact information and training documentation for Construction SWPPP Manager and BMP Installer,
2. There is a change in construction method of phasing, operation, maintenance, weather or seasonal conditions not anticipated during the design of the SWPPP including but not limited to:
   a. Types and/or Locations of BMPs
   b. Material Storage and Spill Response
   c. Fueling Plans
   d. Locations for Stockpiles, Concrete Washout, and Sanitation Facilities and
   e. Project Phasing
3. It is determined that the SWPPP is not achieving objectives of minimizing pollutants in stormwater discharges associated with construction activity, or
4. The SWPPP is not consistent with the terms and conditions of the permit.

The Contractor may implement SWPPP amendments immediately and is not required to wait for Engineer review of the submittal. The responsibility for completeness of SWPPP amendments and compliance with the Permit lies with the Contractor. Review, comment, or lack of comment by the Engineer on a SWPPP amendment shall not absolve the responsibilities of the Contractor in any way.

If a change order is issued for a design change the SWPPP amendment will be prepared by the Engineer and included in the change order.

In addition to SWPPP amendments, the Contractor shall submit to the Engineer Weekly Erosion and Sediment Control Schedule meeting the requirements of MnDOT 1717.

The Contractor shall keep copies of all SWPPP amendments, Weekly Erosion and Sediment Control Schedules, inspection logs, and maintenance logs with the field copy of the SWPPP. A PDF copy of these documents will be provided along with a copy of the final Field Copy of the SWPPP to the Engineer along with the signed Notice of Termination when final stabilization is complete.

EROSION PREVENTION PRACTICES

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.

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 the wetted perimeter of a temporary or permanent drainage ditch or swale section with a continuous slope of greater than 2 percent.

Energy dissipation shall be installed at all temporary or permanent pipe outlets within 24 hours of connection to a surface water or permanent stormwater treatment system.

The Contractor shall phase construction and use construction methods to the extent practical to minimize exposed soils. The project phasing shall be documented in the Weekly Erosion and Sediment Control Schedule.

SEDIMENT CONTROL PRACTICES

Down gradient BMPs including perimeter BMPs must be in place before up gradient land- disturbing activities begin and shall remain in place until final stabilization.

All BMPs that have been adjusted or removed to accommodate short-term activities shall be re-installed or replaced the earlier of the end of the work day or before the next precipitation event even if the activity is not complete.

Inlet BMPs may be removed for specific safety concerns. The BMPs shall be replaced as soon as the safety concern is resolved. The removal shall be documented in the SWPPP as a SWPPP amendment.

Temporary stockpiles must have sediment control BMPs. The Contractor shall prepare and submit to the Engineer a SWPPP amendment showing the location of temporary stockpiles and the BMPs for each stockpile. The SWPPP amendment must meet the minimum requirements of Section 9 of the Permit.

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

The use of polymers, flocculants, or other sedimentation treatment chemicals are not proposed as part of this SWPPP as designed by the Engineer. If methods or phasing of construction require the use of any of these chemicals, the Contractor shall prepare and submit to the Engineer a SWPPP amendment that meets the minimum requirements of Section 9 of the Permit.

TEMPORARY SEDIMENTATION BASINS

A temporary sedimentation basin has not been included in this SWPPP as designed by the Engineer. If a basin is later determined to be desirable or necessary the Contractor shall prepare and submit to the Engineer a SWPPP amendment. Temporary sedimentation basins shall meet or exceed the minimum requirements of Section 14 of the Permit and shall include a basin draining plan meeting or exceeding the minimum requirements of Section 10 of the Permit. Where the site discharges to Special and/or Impaired Waters the SWPPP amendment shall also meet or exceed the minimum requirements of Section 23 of the permit.

DEWATERING

A dewatering plan has not been included in this SWPPP as designed by the Engineer. If dewatering is required for this project, the Contractor shall prepare and submit to the Engineer a SWPPP amendment. All dewatering shall meet or exceed the minimum requirements of Section 10 of the Permit.

POLLUTION PREVENTION

Products and materials that have the potential to leach pollutants that are stored on the site must be stored in a manner designed to minimize contact with stormwater. Materials that are not a source of potential contamination to stormwater or that are designed for exposure to stormwater are not required to be covered.

Hazardous materials including but not limited to pesticides, fertilizer, petroleum products, curing compounds and toxic waste must be properly stored and protected from stormwater exposure as recommended by the manufacturer in an access restricted area.

Solid waste must be stored, collected and disposed of in compliance with Minnesota Administrative Rules Chapter 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.

Exterior vehicle or equipment washing on the project site shall be limited to a defined area of the site. No engine degreasing is allowed on site. 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.

The Contractor shall prepare and submit a SWPPP amendment detailing the location and BMPs proposed for storage of materials, solid waste, portable toilets, and exterior vehicle or equipment washing on the site. The SWPPP amendment shall include a spill prevention and response plan that is appropriate for the materials proposed to be on the site. The SWPPP amendment sheet meet or exceed the minimum requirements of Section 12 of the Permit.

INSPECTION & MAINTENANCE

A trained person shall routinely inspect the entire construction site at the time interval indicated on this sheet of the SWPPP 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 at the time interval indicated in the Receiving Waters Table found on the SITE PLAN AND INFORMATION SHEET of the SWPPP.

All inspections and maintenance conducted during construction must be recorded on the day it is completed and 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.

The Contractor may request a change in inspection schedule for the following conditions:

a. Inspections of areas with permanent cover to be reduced to once per month,
b. Inspections of areas that have permanent cover and have had no construction activity for 12 months to be suspended until construction resumes,
c. Inspections of areas where construction is suspended due to frozen ground conditions, inspections to be suspended until the earlier of within 24 hours of runoff occurring, or upon resuming construction.

No change in inspection schedule shall occur until authorized by the Engineer.

Inspections must include:

1. All erosion prevention and sediment control BMPs and Pollution Prevention Management Measures to ensure integrity and effectiveness.
2. Surface waters, including drainage ditches and conveyance systems for evidence of erosion and sediment deposition.
3. Construction site vehicle exit locations, streets and curb and gutter systems within and adjacent to the project for sedimentation from erosion or tracked sediment from vehicles.
4. Infiltration areas 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.

All non-functioning BMPs and those BMPs where sediment reaches one-half (1/2) of the depth of the BMP, or in the case of sediment basins one-half (1/2) of the storage volume, must be repaired, replaced, or supplemented by the end of the next business day after discovery, or as soon as field conditions allow.

Permittees must repair, replace or supplement all nonfunctional BMPs with functional BMPs by the end of the next business day after discovery, or as soon as field conditions allow.

Any sediment that escapes the site must be removed and the area stabilized within 7 calendar days of discovery unless precluded by legal, regulatory, or physical access in which case the work shall be completed within 7 calendar days of authorization. Paved surfaces such as streets shall have any escaped or tracked sediment removed by the end of the day that it is discovered. Sediment release, other than paved surfaces that can be cleaned up with street sweeping shall be reported immediately upon discovery to the Engineer.

PUBLIC WATER RESTRICTIONS:

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. MN DNR permits are not valid for work in waters that are designated as infested waters unless accompanied by an Infested Waters Permit or written notification has been obtained from MN DNR stating that such 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 Waters Permit is obtained or that written notification is obtained stating that such permit is not required.

FINAL STABILIZATION

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

1. Substantial Completion has been reached and no ground disturbing activities are anticipated.
2. Permanent cover has been installed with an established minimum uniform perennial vegetation density of 70 percent of its expected final growth. Vegetation is not required in areas where no vegetation is proposed by this project such as impervious surfaces or the base of a sand filter.
3. Accumulated sediment has been removed from all permanent stormwater treatment systems as necessary to ensure the system is operating as designed.
4. All sediment has been removed from conveyance systems
5. All temporary synthetic erosion prevention and sediment control BMPs have been removed. BMPs designated on the SWPPP to remain to decompose on-site may remain.
6. For residential construction only, permit coverage terminates on individual lots if the structures are finished and temporary erosion prevention and downgradient perimeter control is complete, the residence sells to the homeowner, and the permittee distributes the MPCA's "Homeowner Fact Sheet" to the homeowner.
7. For agricultural land only (e.g., pipelines across cropland), the disturbed land must be returned to its preconstruction agricultural use prior to submitting the NOT.

SITE STABILIZATION COMPLETION:

Stabilization of exposed soils shall begin immediately and shall be completed after the construction activity has temporarily or permanently ceased no later than:	7 calendar days

SITE INSPECTION INTERVAL:

A trained person shall routinely inspect the entire construction site during active construction at an interval of no less than:	3 calendar days

SPECIAL ENVIRONMENTAL CONSIDERATIONS AND PERMITS:

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 disharges to during fish spawning?	NO

TYPE OF PERMIT	PERMITTING AGENCY	PERMIT STATUS AND CONDITIONS
Construction Stormwater NPDES	MPCA	
Watershed District Permit	CCWD	Permit #19-230 - Conditional Approval 3/24/2020

SWPPP DESIGNER TRAINING DOCUMENTATION:

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ROBERTA R. CRONQUIST
LIC. NO. 52570 DATE 05/26/2020

DESIGNED JDZ
DRAWN JDZ
CHECKED RRC

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
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REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SWPPP AND WATER RESOURCES NOTES

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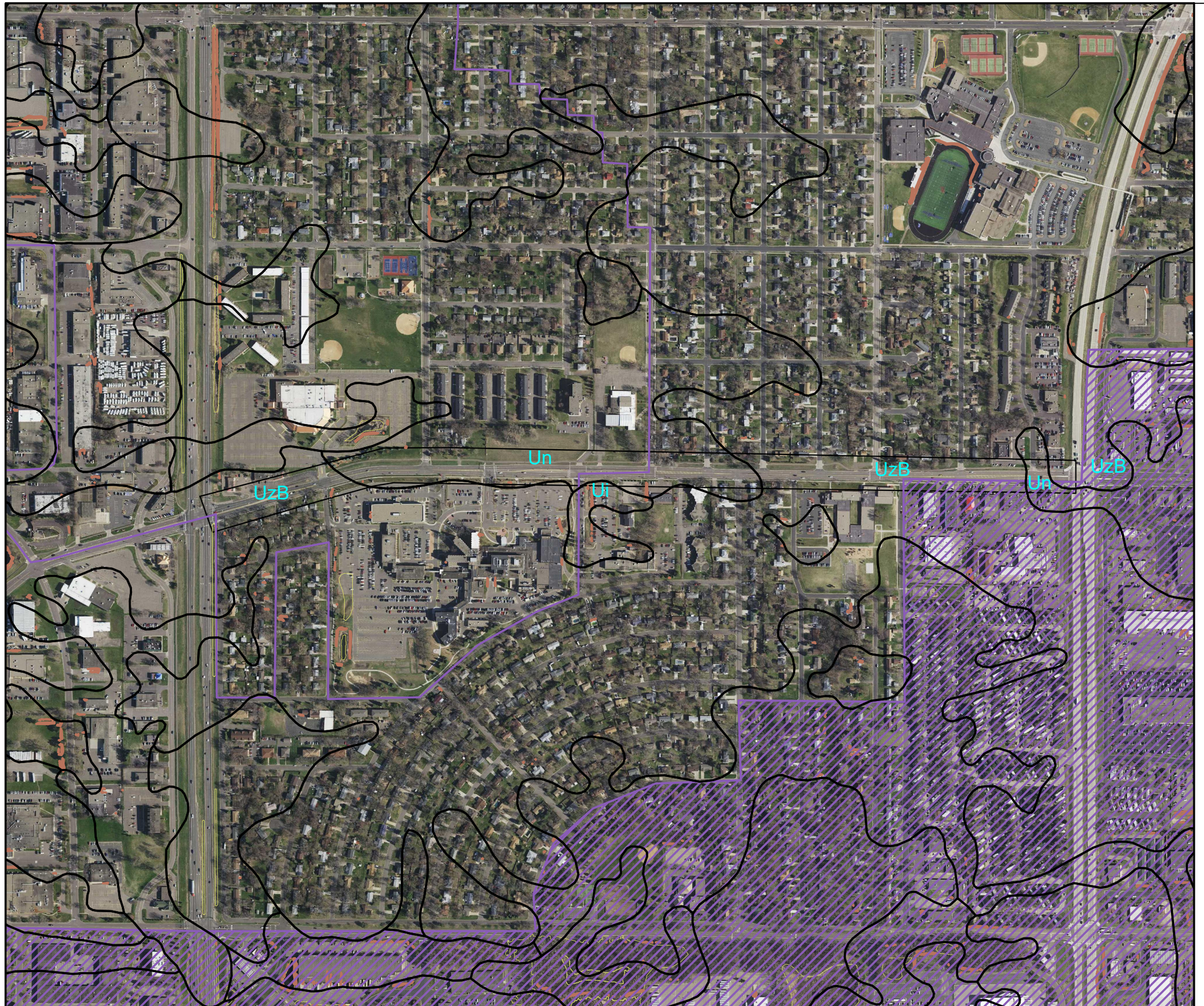

LEGEND

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

0 300 600
SCALE FEET

SOIL TYPE SUMMARY

Map Unit Symbol	Soil Name	Hyd. Soil Group	Erodibility
Ui	Isanti	A/D	NHEL
Un	Urban Land		NHEL
UzB	Urban Land		NHEL

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

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN

DESCRIPTION	SHEET NO.
SITE MAP	1
DIRECTION OF FLOW	84-87
FINAL STABILIZATION	84-87
SOILS	83
DRAINAGE STRUCTURES	70-77
DRAINAGE TABULATION	78
STORM SEWER PLAN & PROFILE SHEETS	70-77
EROSION & SEDIMENT CONTROL DETAILS	81-82
EROSION CONTROL TABULATION	88
TURF ESTABLISHMENT TABULATION	88
NARRATIVE & NOTES	82

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12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

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S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SWPPP AND WATER RESOURCES NOTES

SHEET 83 OF 189

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STABILIZED CONSTRUCTION EXIT TO BE PLACED BY CONTRACTOR AS NECESSARY, CONSISTENT WITH CONSTRUCTION PHASING.

UNIVERSITY AVENUE NE

UNIVERSITY EAST SERVICE RD

℄ CSAH 8 (OSBORNE RD NE)

MATCHLINE STA. 107+00

MATCHLINE STA. 114+00

TERRACE RD NE

5TH ST NE

LEGEND

MS — MS — SILT FENCE, TYPE MS	SEED MIXTURE 25-151 FERTILIZER TYPE 3 HYDRAULIC REINFORCED FIBER MATRIX
STORM DRAIN INLET PROTECTION/ CULVERT END CONTROL	PROPOSED SURFACE FLOW ARROW
PROPOSED CATCH BASIN	EXISTING SURFACE FLOW ARROW
EXISTING CATCH BASIN	SEDIMENT CONTROL LOG, TYPE WOOD CHIP

NOTES:

1. STABILIZATION MUST BE INITIALIZED IMMEDIATELY FOR ALL EXPOSED SOIL AREAS AND COMPLETED WITHIN 7 CALENDAR DAYS AFTER CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE IS TEMPORARILY OR PERMANENTLY CEASED.
2. RAPID STABILIZATION ITEMS SHALL BE USED FOR ALL TEMPORARY STABILIZATION TO MEET PERMIT REQUIREMENTS. CONTRACTOR SHALL UTILIZE APPROPRIATE RAPID STABILIZATION ITEMS BASED ON SITE CONDITIONS.
3. SOIL STOCKPILES MUST BE STABILIZED WITHIN SEVEN (7) DAYS OF INACTIVITY.
4. MULCH, SOD, TURF REINFORCEMENT MATS, AND PERMANENT ROLLED EROSION CONTROL PRODUCTS SHALL NOT BE USED.

THIS STREET DRAINS NORTH. 2 EACH–INLET PROTECTION TO BE PROVIDED MID–BLOCK

STABILIZED CONSTRUCTION EXIT TO BE PLACED BY CONTRACTOR AS NECESSARY, CONSISTENT WITH CONSTRUCTION PHASING.

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ROBERTA R. CRONQUIST
LIC. NO. 52570 DATE 05/26/2020

DESIGNED JDZ
DRAWN JDZ
CHECKED RRC

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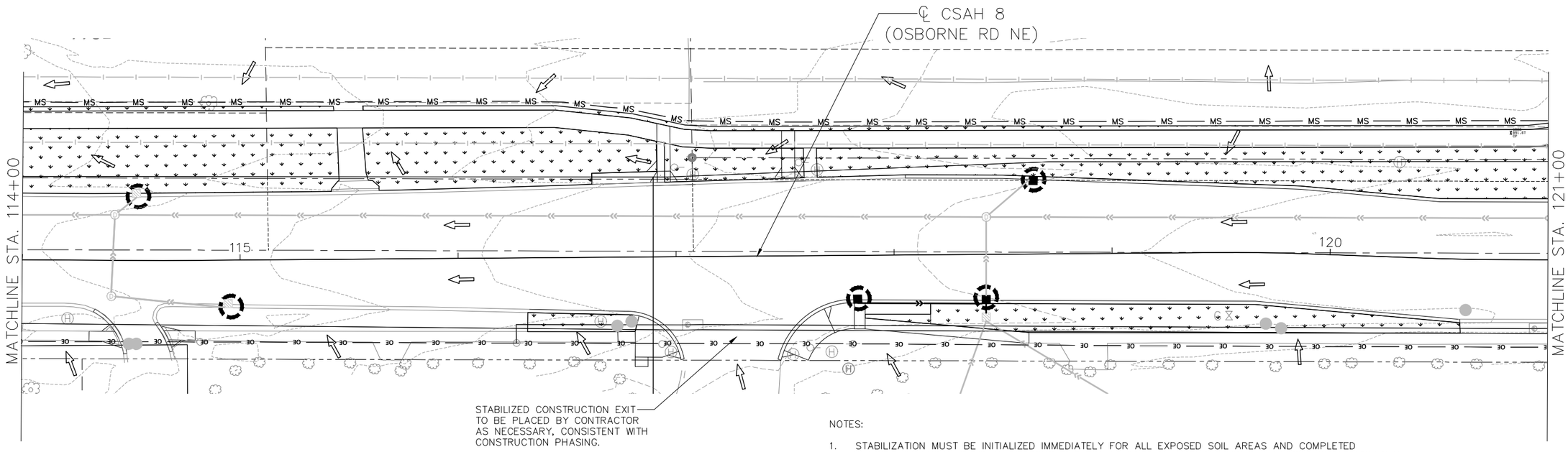
CSAH 8 RECONSTRUCTION
EROSION CONTROL AND TURF ESTABLISHMENT PLANS



LEGEND

- MS — MS — SILT FENCE, TYPE MS
- STORM DRAIN INLET PROTECTION/ CULVERT END CONTROL
- PROPOSED CATCH BASIN
- EXISTING CATCH BASIN
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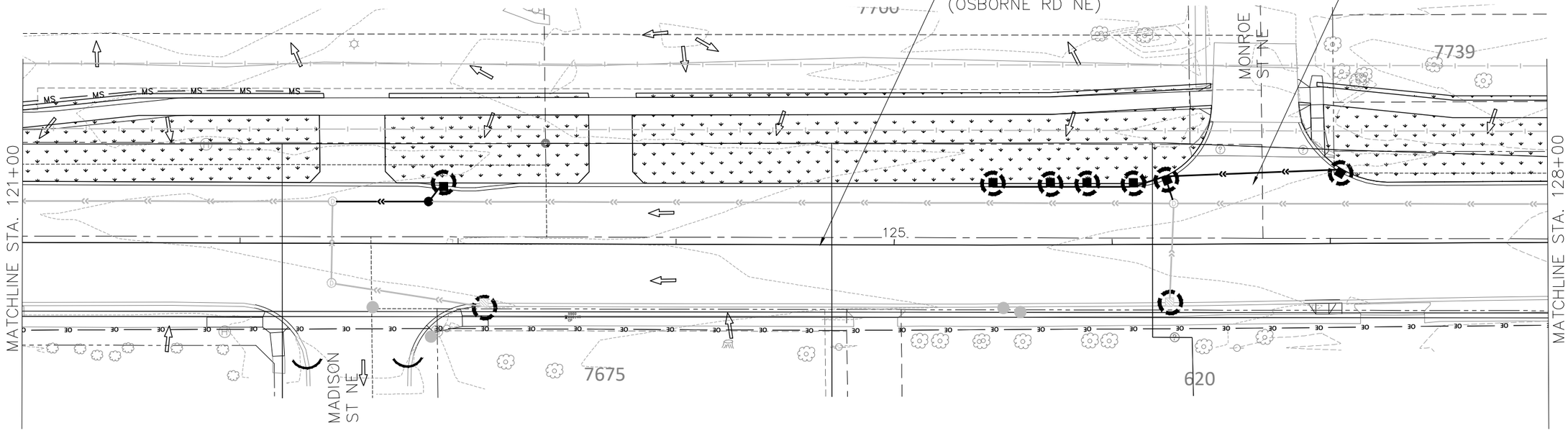

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SHEET 85 OF 189

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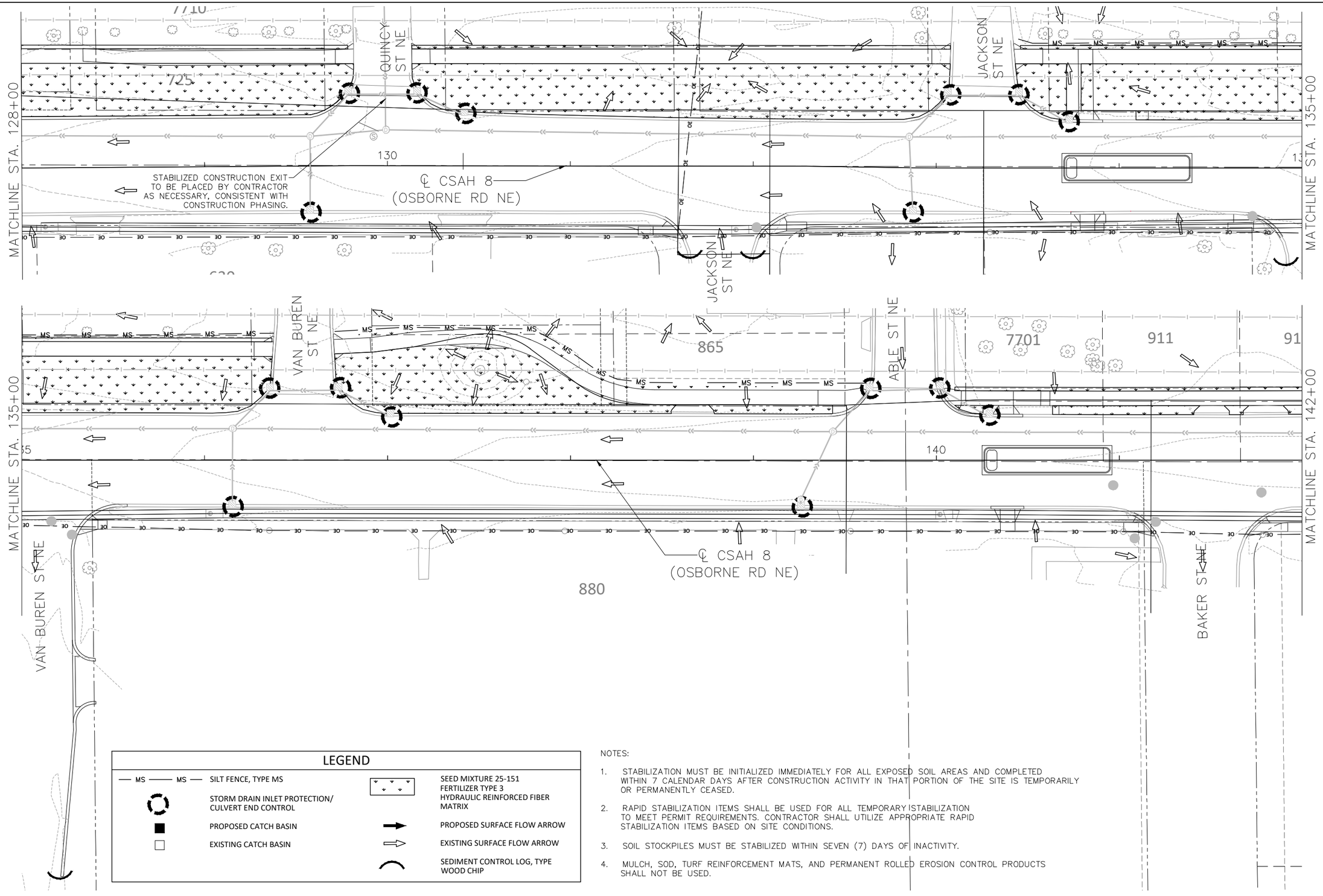

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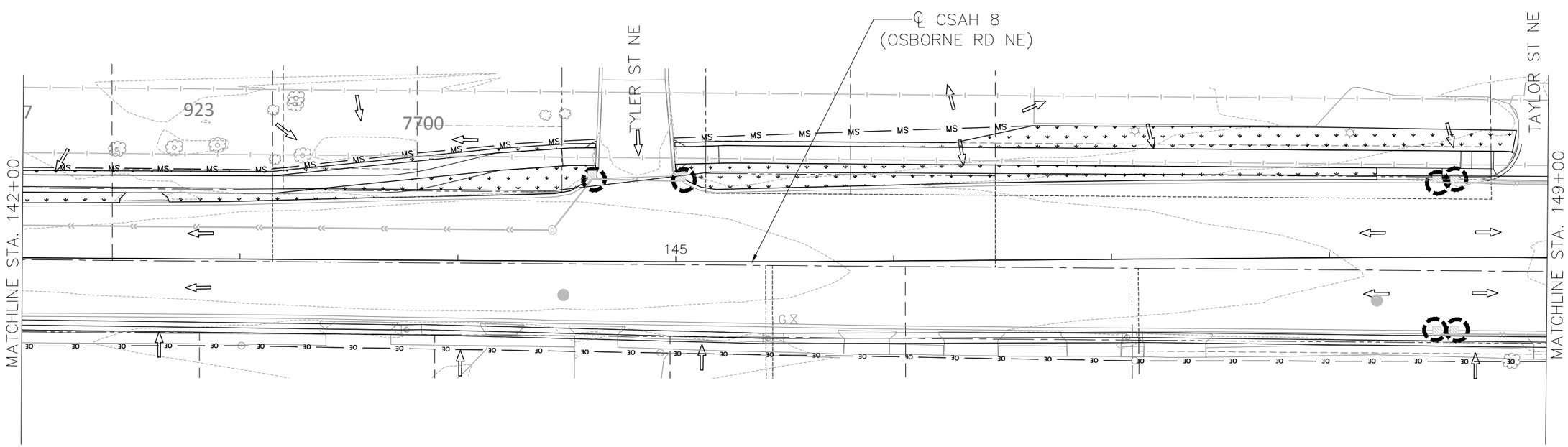

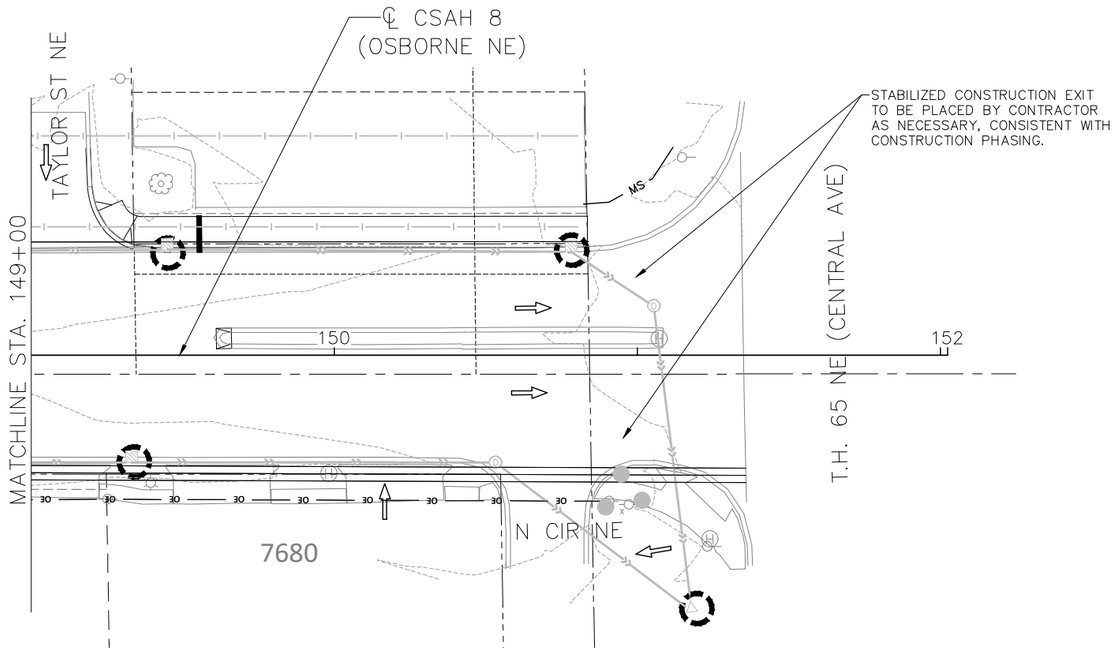

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EROSION CONTROL AND TURF ESTABLISHMENT PLANS

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EROSION CONTROL & TURF ESTABLISHMENT											H
STATION TO STATION			LOCATION	RAPID STABILIZATION METHOD 3	SILT FENCE, TYPE MS (3)	STORM DRAIN INLET PROTECTION (3)	SEDIMENT CONTROL LOG TYPE WOOD CHIP (3)	SEEDING	SEED MIXTURE 25-151	FERTILIZER TYPE 3 (1)	HYDRAULIC REINFORCED FIBER MATRIX
				M GALLON	LIN FT	EACH	LIN FT	ACRE	POUND	POUND	POUND
100+00	TO	107+00	RT/LT	3	100	10		0.1	27	27	521
107+00	TO	114+00	RT/LT	12	580		10	0.4	83	83	1618
114+00	TO	121+00	RT/LT	12	735	5		0.4	88	88	1722
121+00	TO	128+00	RT/LT	15	140	9	10	0.5	90	90	1762
128+00	TO	135+00	RT/LT	12	160	8	15	0.4	86	86	1684
135+00	TO	142+00	RT/LT	9	420	8	5	0.3	51	51	994
142+00	TO	149+00	RT/LT	6	430	6		0.2	35	35	676
149+00	TO	152+00	RT/LT		40	4					
			TOTALS	**69**	**2605**	**50**	**40**	**2.3**	**460**	**460**	**8977**

Notes:

(1) USE FERTILIZER TYPE 3 ANALYSIS 22-5-10 @ 200 LB/ACRE

(2) WEED SPRAY MIXTURE QUANTITY BASED ON 0.5 GAL/ACRE. MIXTURE SHALL BE 2, 4-D AMINE LABELED FOR BOTH AQUATIC AND R/W USE AND FORMULATED AT 3.8 LB ACID EQUIVALENT PER GALLON.

(3) INCLUDES ALL REQUIRED MAINTENANCE, REPLACEMENT, AND REMOVAL FOR THE DURATION OF THE PROJECT.

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CSAH 8 RECONSTRUCTION

EROSION CONTROL AND TURF ESTABLISHMENT PLANS

STAGING AND TRAFFIC CONTROL NOTES

GENERAL INFORMATION

1. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES AT ALL TIMES DURING CONSTRUCTION. (NOT SHOWN IN THE PLANS)
2. THE CONTRACTOR SHALL FURNISH, PLACE AND MAINTAIN THE DEVICES IN THIS STAGING AND TRAFFIC CONTROL PLAN UNLESS OTHERWISE NOTED. IN PLACE SIGNING MUST ALSO BE MAINTAINED OR TEMPORARILY RELOCATED DUE TO CONSTRUCTION ACTIVITIES AS SPECIFIED IN 1710.6 OF MNDOT'S STANDARD SPECIFICATIONS FOR CONSTRUCTION. REGULATORY SIGNS ARE CONSIDERED CRITICAL AND MUST BE TEMPORARILY RELOCATED. (THIS ACTION APPLIES FOR WORK FROM ONE STAGE TO ANOTHER. THIS IS NOT FINAL SIGN PLACEMENT WORK).
3. FIELD CONDITIONS MAY REQUIRE MODIFICATIONS OF THIS LAYOUT AS DEEMED NECESSARY BY THE ENGINEER.
4. ALL DISTANCES ARE APPROXIMATE.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL WORK AREAS NEAR TRAFFIC IN ACCORDANCE WITH THE MNMUTCD.
6. PRIOR TO EACH ROADWAY OPENING TO TRAFFIC, THE CONTRACTOR SHALL PLACE THE FINAL SIGNING AND PAVEMENT MARKINGS REQUIRED TO SAFELY OPEN THAT ROAD TO TRAFFIC, UNLESS OTHERWISE IDENTIFIED IN THESE PLANS. THIS WORK SHALL BE COMPLETED ON OR BEFORE THE DATE OF OPENING AS APPROVED BY THE ENGINEER.
7. SIGN PLACEMENTS SHALL NOT OBSTRUCT EXISTING SIGNS.
8. 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.
9. THE ITEM "TRAFFIC CONTROL" COVERS ALL DEVICES SHOWN ON THE PLAN SHEETS AND OTHER SETUPS REQUIRED BY THE CONTRACTOR'S OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES NEEDED FOR THE PROJECT.
10. IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OR MANNER OTHER THAN SHOWN IN THIS STAGING AND TRAFFIC CONTROL PLAN, THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER FOR REVISED PLAN PRIOR TO IMPLEMENTATION.
11. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED IN ACCORDANCE WITH THE MN MUTCD.
12. THE REMOVAL OF TEMPORARY TRAFFIC CONTROL SHALL BE INCIDENTAL TO TRAFFIC CONTROL.
13. ALL PLAN SHEETS ARE TO SCALE UNLESS OTHERWISE NOTED WITH DISTANCES SPECIFIED.
14. SEE SPECIAL PROVISIONS FOR ADDITIONAL TRAFFIC CONTROL REQUIREMENTS.
15. SEE SPECIAL PROVISIONS FOR ADDITIONAL COMPLETION DATES AND STAGING REQUIREMENTS.
16. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS."

PAVEMENT MARKING:

1. OBLITERATE ANY CONFLICTING PAVEMENT MARKINGS AS DIRECTED BY THE ENGINEER.
2. PAINT, POLYMER LANE TAPE AND/OR TRPM'S ARE ACCEPTABLE TEMPORARY STRIPING ALTERNATIVES ACCORDING TO ACTUAL CONDITIONS ENCOUNTERED AS DIRECTED BY THE ENGINEER. GENERALLY, ONLY PAINT WILL BE USED BEFORE MAY 1ST OR WHEN THE OTHER MANUFACTURER'S SPECIFICATIONS CAN NOT BE MET.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND INSTALLATION OF TEMPORARY AND FINAL STRIPING, MNDOT TRAFFIC PERSONNEL MAY ASSIST IN THE SPOTTING OF TRANSITION AREAS, GORES AND TAPERS.

SIGNING

1. ALL TRAFFIC CONTROL DEVICES 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 INSTALLED, THEY SHALL BE MOUNTED ON POSTS DRIVEN INTO THE GROUND AT THE PROPER HEIGHT AND LATERAL OFFSET AS DETAILED IN THE TEMP SIGN FRAMING AND INSTALLATION DETAILS IN THE PLAN. IF THIS IS NOT POSSIBLE, THEY WILL BE MOUNTED ON PORTABLE SUPPORTS AS APPROVED BY THE ENGINEER. WHEN THE SIGNS ARE REMOVED THE SIGN POSTS SHALL ALSO BE REMOVED AS SOON AS POSSIBLE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EXTRA SIGNING NEEDED TO FACILITATE TRAFFIC SWITCHES OR FOR TRANSITIONING TRAFFIC FROM ONE STAGE TO ANOTHER.
4. ALL ORANGE WARNING AND ORANGE GUIDE SIGNS SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MNDOT APPROVED PRODUCT LIST FOR "SHEETING FOR RIGID TEMPORARY WORK ZONE SIGNS."
5. BARRICADES SHALL BE FABRICATED WITH SIGN SHEETING MATERIAL AS LISTED ON THE MNDOT APPROVED PRODUCT LIST FOR BARRICADE SHEETING. NOTE THAT ASTM TYPE VII SHEETING IS NOT ALLOWED ON BARRICADES AFTER JANUARY 1, 2010.
6. THE CONTRACTOR SHALL COORDINATE THE PLACEMENT OF THE FINAL SIGNS TO ASSURE THAT THE FINAL SIGNS ARE PLACED PRIOR TO OPENING ALL LANES, OR PROVIDE TEMPORARY SIGNING AT THEIR EXPENSE UNTIL THE FINAL SIGNING IS PLACED.
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. REFER TO TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL DISTANCE CHARTS FOR EXACT SIGN SPACING BASED ON POSTED SPEED LIMITS.

CONSTRUCTION INFORMATION SIGNING

1. THE CONTRACTOR SHALL USE CONSTRUCTION INFORMATION SIGNING AS SHOWN IN THE PLAN AND WHICH ARE TO BE USED AS FOLLOWS: CONSTRUCTION INFORMATION SIGNING NOT VISIBLE TO THE MOTORING PUBLIC ONCE WORK BEGINS WILL BE MOVED BY THE CONTRACTOR TO A SITE IN ADVANCE OF THE WORK ZONE OR CLOSURE AS DIRECTED BY THE PLAN OR THE ENGINEER
2. THE CONTRACTOR SHALL PLACE "ROAD WORK AHEAD" SIGNS WITH ROUTE SIGNS ON ALL ROADS THAT INTERSECT C.S.A.H. 8 WITHIN 1 MILE OF CONSTRUCTION AREA. SIGN PLACEMENT SHALL CONFORM TO THE MNMUTCD. ALL OF THESE SIGNS ARE NOT SHOWN IN THE PLAN.
3. PLACE "END ROAD WORK" SIGNS PER PLAN. THESE SIGNS SHALL BE PLACED AT THE BEGINNING OF CONSTRUCTION AND SHOULD STAY INPLACE UNTIL ALL WORK HAS BEEN COMPLETED.
4. THE CONTRACTOR SHALL PROVIDE SIX G20–X2 SIGNS FOR THE DURATION OF THE PROJECT. THE SIGNS SHOULD BE PLACED AT THE FOLLOWING LOCATIONS UNLESS OTHERWISE DIRECTED BY THE ENGINEER, ONE WEEK PRIOR TO PROJECT START:
   - –NORTHBOUND & SOUTHBOUND T.H. 47
   - –NORTHBOUND & SOUTHBOUND T.H. 65
   - –EASTBOUND C.S.A.H. 8, WEST OF T.H. 47
   - –WESTBOUND C.S.A.H. 8, EAST OF T.H. 65

STAGING NOTES

1. ALL SIGNING, STRIPING AND TRAFFIC CONTROL DEVICES FOR EACH STAGE SHALL BE APPROVED BY THE ENGINEER PRIOR TO STARTING CONSTRUCTION.
2. ANY WORK AREAS NOT SHOWN IN THE STAGING AND TRAFFIC CONTROL PLAN SHALL BE COMPLETED USING SHORT TERM CLOSURE OF THE RIGHT OR LEFT LANE. THE CONTRACTOR SHALL FOLLOW LAYOUTS IN THE MNDOT TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL FOR STANDARD RIGHT LANE AND LEFT LANE CLOSURE SIGNAGE.
3. CONTRACTOR TO COORDINATE WORK ON SIGNALS AT T.H. 47/C.S.A.H. 8 AND T.H. 65/C.S.AH. 8 WITH MNDOT.
4. CONTRACTOR TO COORDINATE WORK ON SIGNALS AT C.S.A.H. 8/HOSPITAL ACCESS WITH ANOKA COUNTY.
5. PRIOR TO REMOVAL OF LOOP DETECTION FOR TRAFFIC SIGNALS AT T.H. 47/C.S.A.H. 8 AND T.H. 65/C.S.A.H. 8, CONTRACTOR SHALL INSTALL TEMPORARY CAMERAS FOR LANE DETECTION. SEE SIGNAL PLANS.
6. TRAFFIC SIGNAL AT C.S.A.H. 8/HOSPITAL ACCESS SHALL OPERATE AS ALL WAY RED FLASHING UNTIL NEW LOOP DETECTION HAS BEEN INSTALLED.
7. CONTRACTOR TO MAINTAIN 11' WIDTH TRAVEL LANES.
8. CONTRACTOR TO MAINTAIN PEDESTRIAN FACILITIES ON NORTH OR SOUTH SIDE OF ROADWAY AT ALL TIMES. PEDESTRIAN CROSSINGS IN COMPLIANCE WITH ADA SHALL BE MAINTAINED ACROSS CSAH 8 AT MONROE STREET, THE HOSPITAL ACCESS, AND ABLE STREET AT ALL TIMES. CONTRACTOR IS RESPONSIBLE FOR ALL BARRICADES AND SIGNING AS NECESSARY TO DIRECT PEDESTRIANS TO APPROPRIATE CROSSINGS AND FACILITIES.

STAGE 1:

3. STAGE 1 WORK CONSISTS OF THE RECONSTRUCTION OF EASTBOUND LANES OF C.S.A.H. 8.
4. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 1 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).
5. CONTRACTOR TO REMOVE MEDIANS NOTED IN REMOVAL PLANS PRIOR TO STAGE 1 AND BEFORE SHIFTING TRAFFIC INTO C.S.A.H. 8 WESTBOUND LANES.
6. CONTRACTOR IS REQUIRED TO MAINTAIN ONE LANE OF TRAVEL FOR EACH DIRECTION OF C.S.A.H. 8.

STAGE 2:

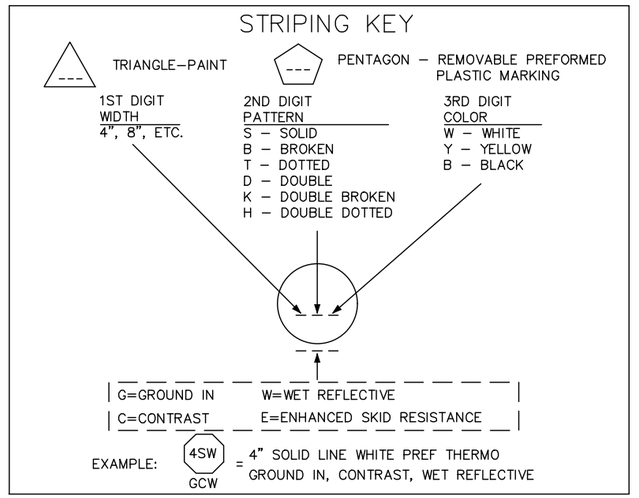
1. STAGE 2 WORK CONSISTS OF THE RECONSTRUCTION OF WESTBOUND LANES OF C.S.A.H. 8.
2. CONTRACTOR IS REQUIRED TO MAINTAIN ONE LANE OF TRAVEL FOR EACH DIRECTION OF C.S.A.H. 8.

STAGE 3:

1. STAGE 3 WORK CONSISTS OF CONSTRUCTING MEDIANS ON C.S.A.H. 8.
2. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 3 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

TRAFFIC CONTROL SYMBOLS

- TYPE A FLASHING WARNING LIGHTS
- RETROREFLECTIVE DRUM, TYPE 1 OR TYPE II BARRICADE, VERTICAL PANEL
- SIGN POST (SHOWN FACING LEFT)
- TYPE III BARRICADE
- CONSTRUCTION DURING PHASE
- CONSTRUCTION DURING PHASE UNDER TRAFFIC
- PAVEMENT MESSAGE PAINT



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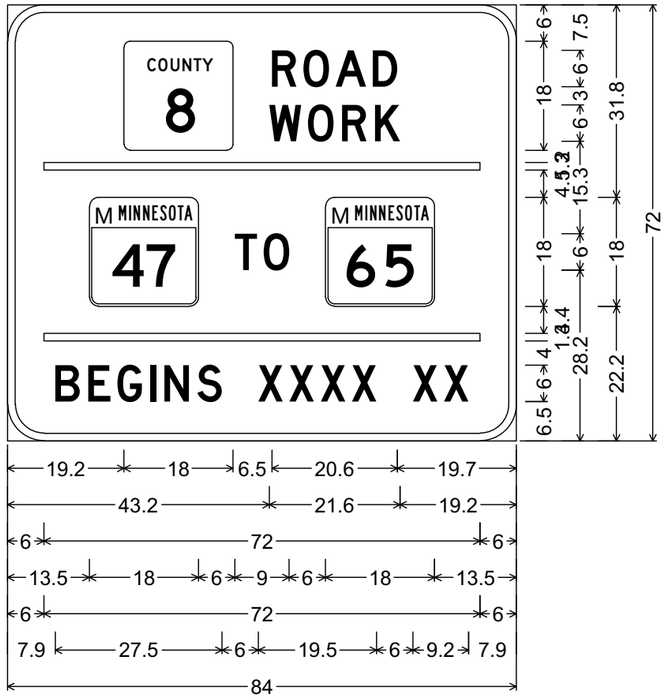
CSAH 8 RECONSTRUCTION
STAGING AND TRAFFIC CONTROL PLAN

SHEET 89 OF 189

TEMPORARY TRAFFIC CONTROL								I
STAGE	2102 PAVEMENT MARKING REMOVAL	2564 RAISED PAVEMENT MARKER TEMPORARY	2581 REMOVABLE PREFORMED PAVEMENT MARKING TAPE	2581 REMOVABLE PREFORMED PLASTIC MASK (BLACK)	2581 REMOVABLE PREFORMED PLASTIC MASK (BLACK) (1)	2582 4" SOLID LINE PAINT	2582 4" DOUBLE SOLID LINE PAINT	2582 PAVEMENT MESSAGE PAINT (2)
	LIN FT	EACH	LIN FT	LIN FT	SQ FT	LIN FT	LIN FT	SQ FT
C.S.A.H. 8: S.P. 002-608-012								
STAGE 1	8600	416	2775	400	96	11600	3000	32
SUBTOTALS	8600	416	2775	400	96	11600	3000	32
STAGE 2	4680	490	17330					32
SUBTOTALS	4680	490	17330					32
STAGE 3	3900		8800					16
SUBTOTALS	3900		8800					16
TOTALS	17180	906	28905	400	96	11600	3000	80

NOTES:
(1) LEFT ARROWS ARE 48 SQ FT.
(2) LEFT ARROWS ARE 16 SQ FT.



G40-X2(1d)

6.0" Radius, 1.3" Border, Black on Orange;
Rounded Rectangle 1.0" Radius White; [ROAD] D;
[WORK] D; State Highway 47 M1-5b; [TO] D;
State Highway 65 M1-5b; [BEGINS] D;
[XXXX XX] D;
Table of letter and object lefts.

8 19.2	R 43.7	O 48.8	A 54.2	D 60.3
W 43.2	O 49.6	R 55.2	K 60.7	
— 6.0				
47 13.5	T 37.5	O 42.3	65 52.5	
— 6.0				
B 7.9	E 13.4	G 18.1	I 23.6	N 25.9	S 31.4
X 41.4	X 46.5	X 51.7	X 56.9	X 66.9	X 72.1

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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

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12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
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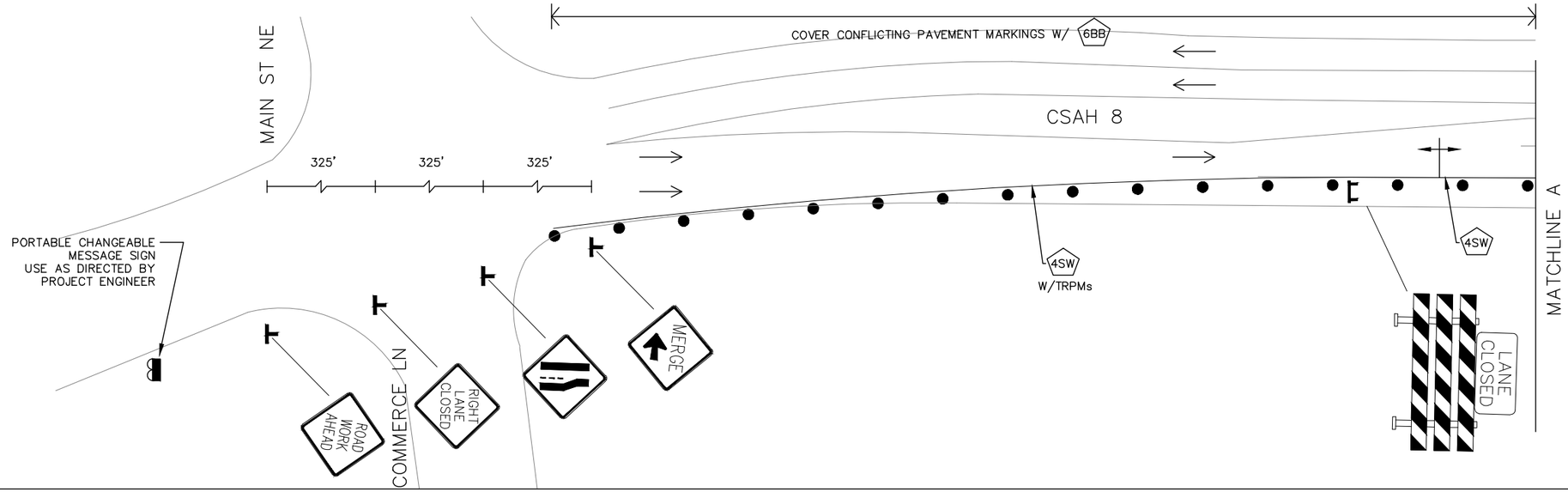
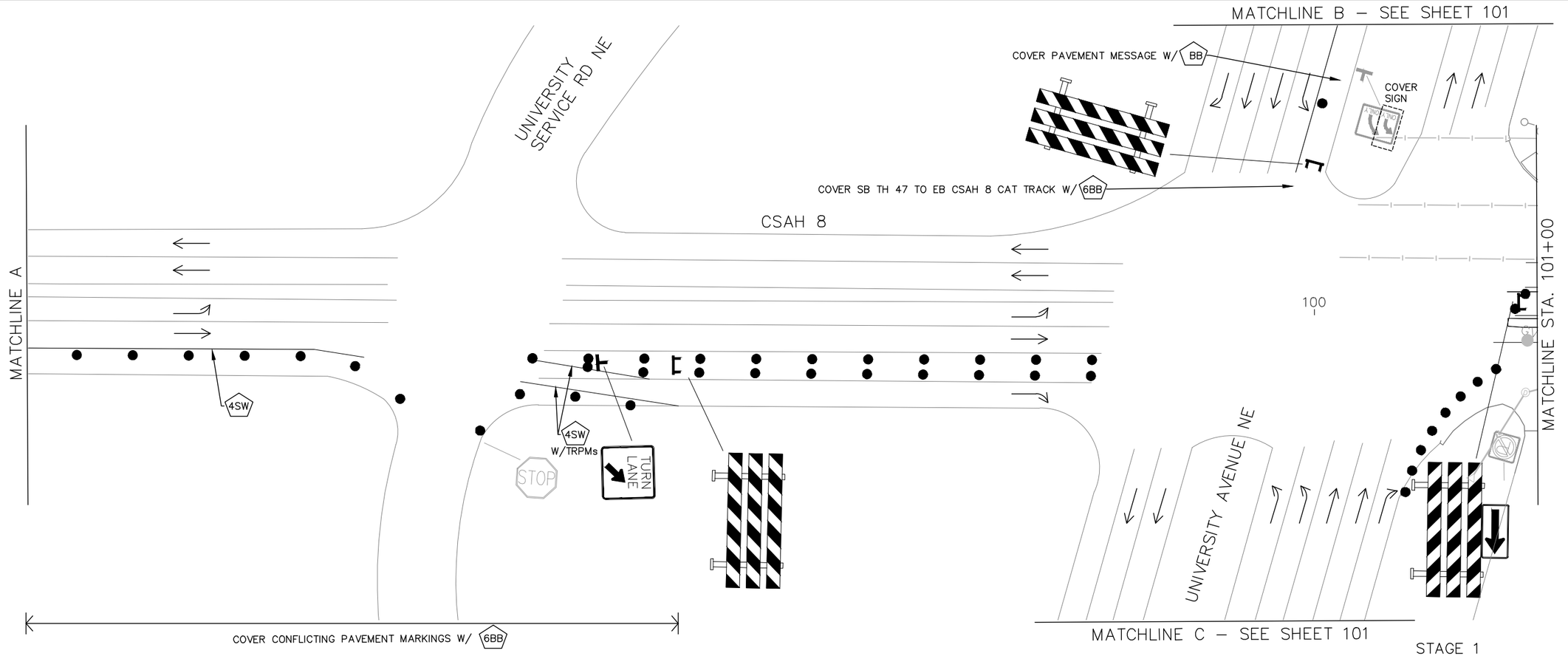
STAGING AND TRAFFIC CONTROL PLAN





STAGE 1

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6/3/2020

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SCALE 0 25 50 FEET

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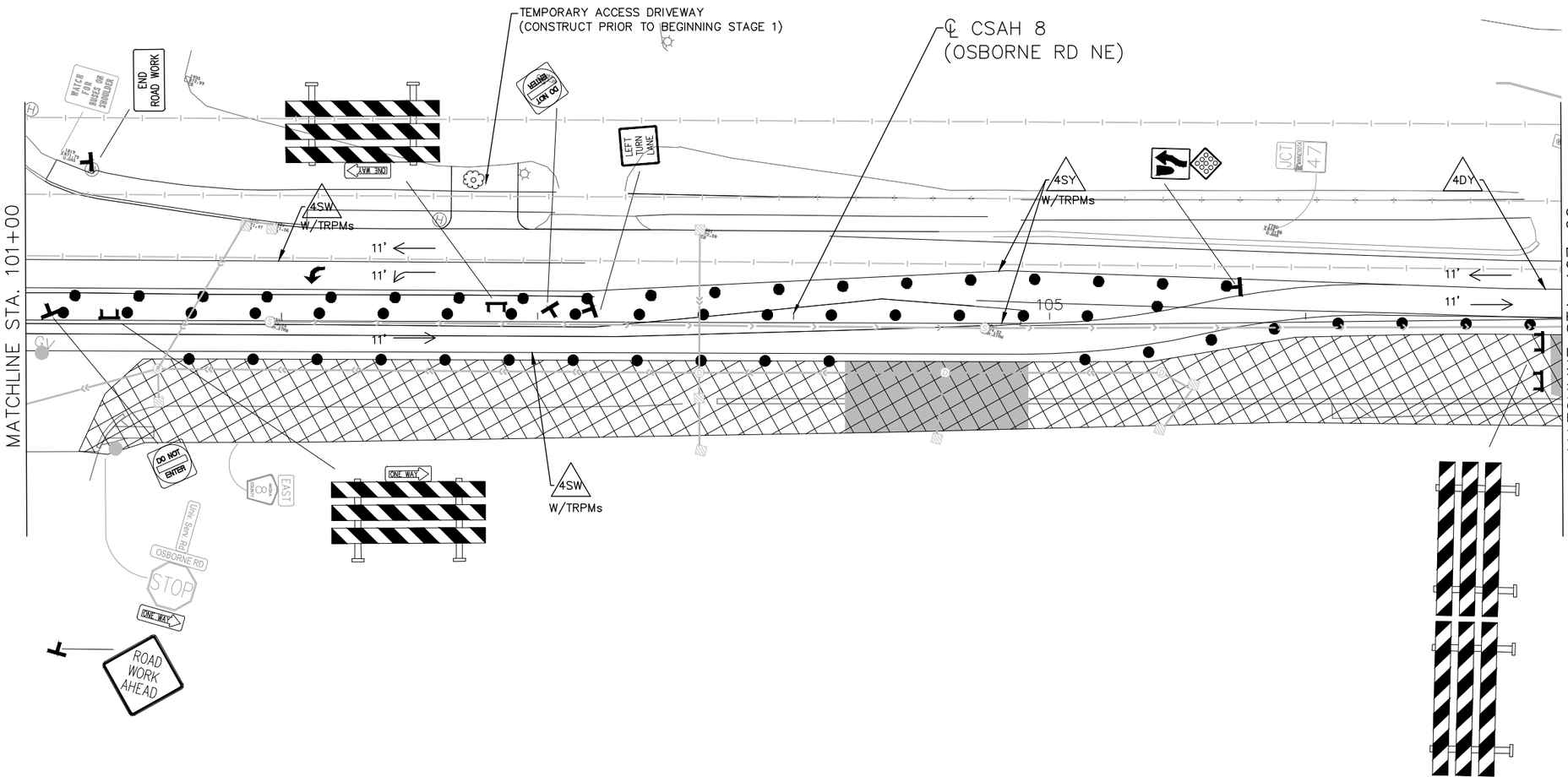
SHEET 91 OF 189



NOTE:
1. CONTRACTOR TO REMOVE MEDIAN UNDER SHORT TERM TRAFFIC CLOSURES PRIOR TO BEGINNING STAGE 1.
2. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 1 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 1

0 25 50
SCALE FEET

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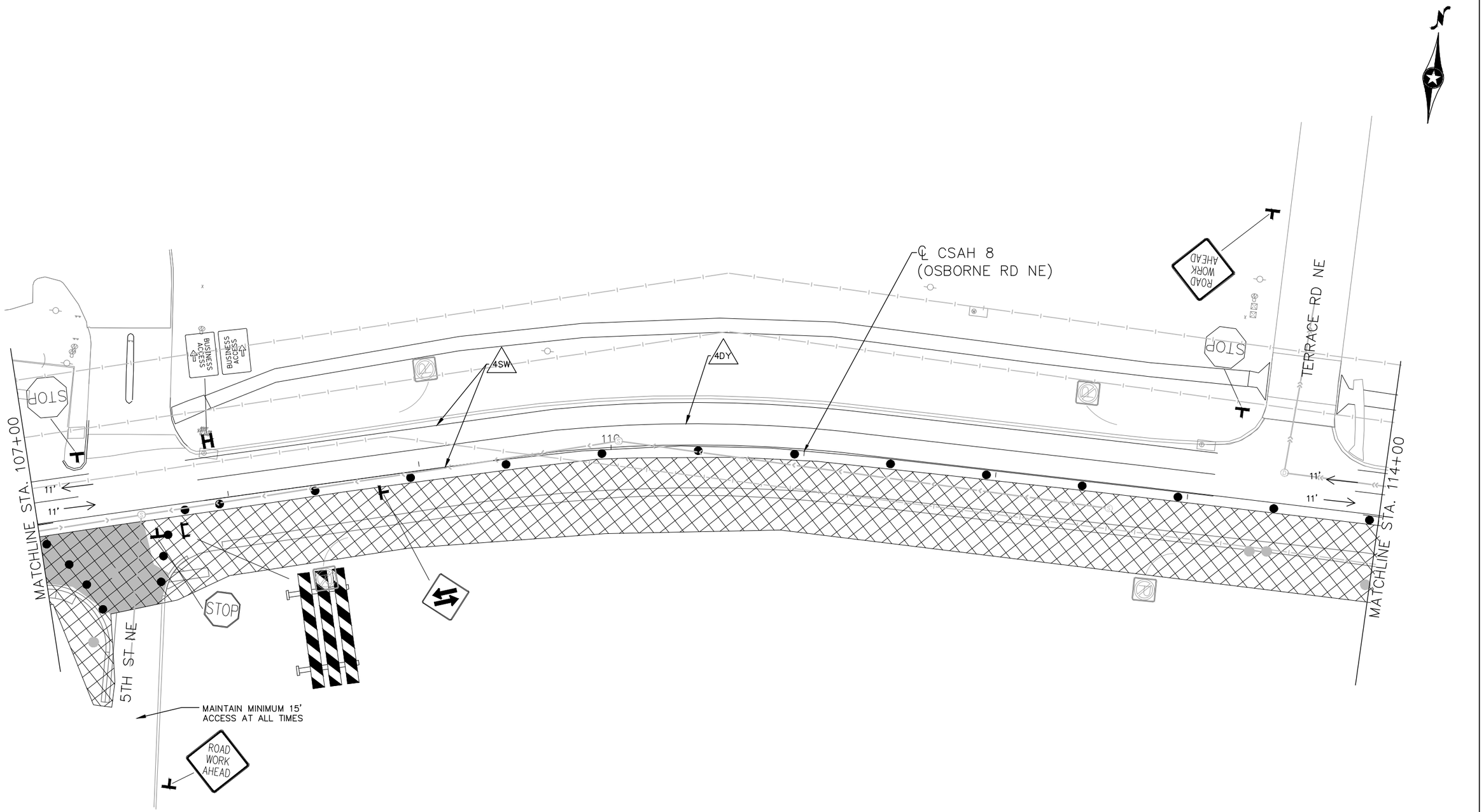
SHEET 92 OF 189



NOTE:
1. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 1 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 1

0 25 50
SCALE FEET

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STAGING AND TRAFFIC CONTROL PLAN

SHEET 93 OF 189

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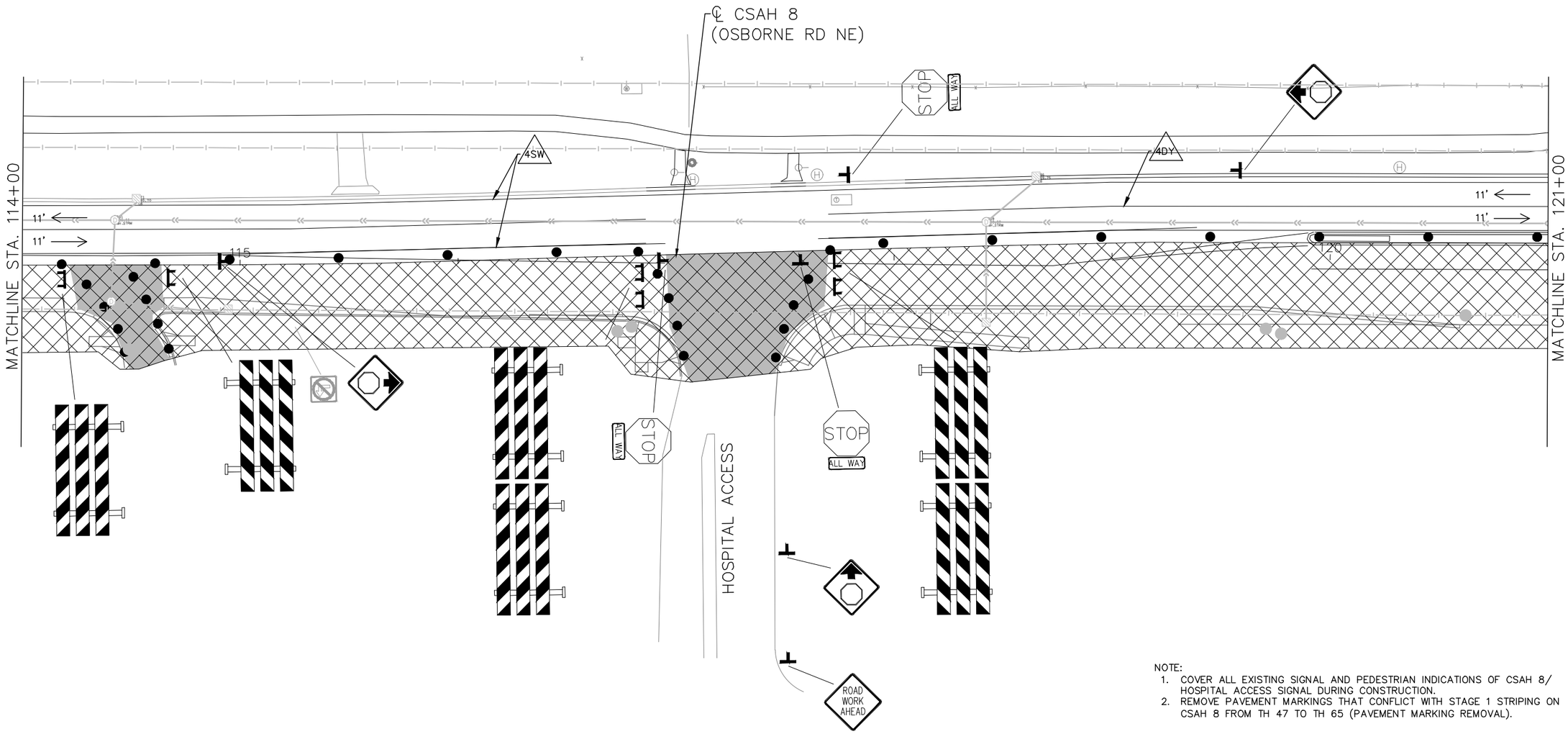

NOTE:
1. COVER ALL EXISTING SIGNAL AND PEDESTRIAN INDICATIONS OF CSAH 8/ HOSPITAL ACCESS SIGNAL DURING CONSTRUCTION.
2. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 1 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 1

0 25 50
SCALE FEET

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STAGING AND TRAFFIC CONTROL PLAN

SHEET 94 OF 189

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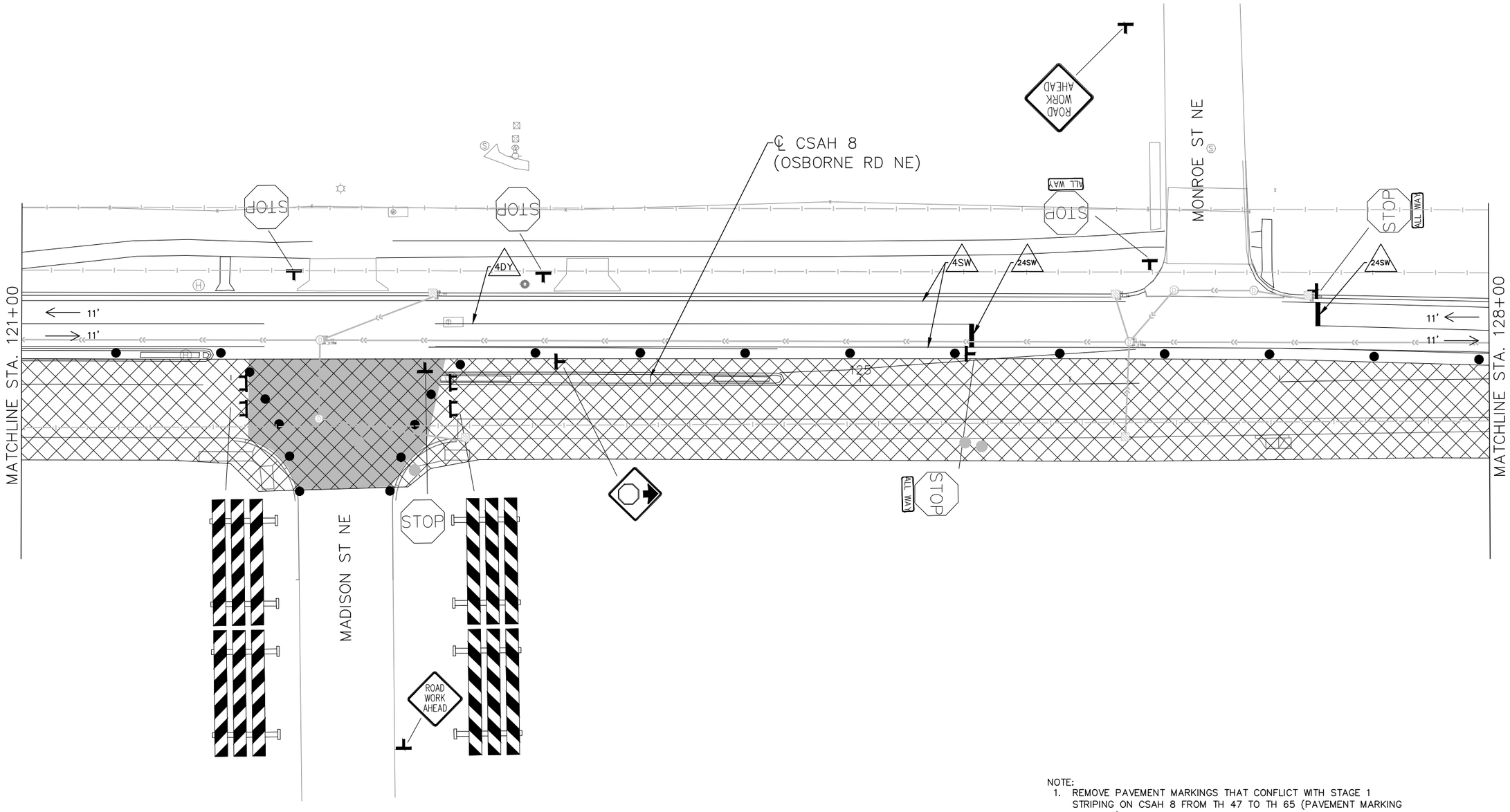

NOTE:
1. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 1 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 1

0 25 50
SCALE FEET

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STAGING AND TRAFFIC CONTROL PLAN

SHEET 95 OF 189

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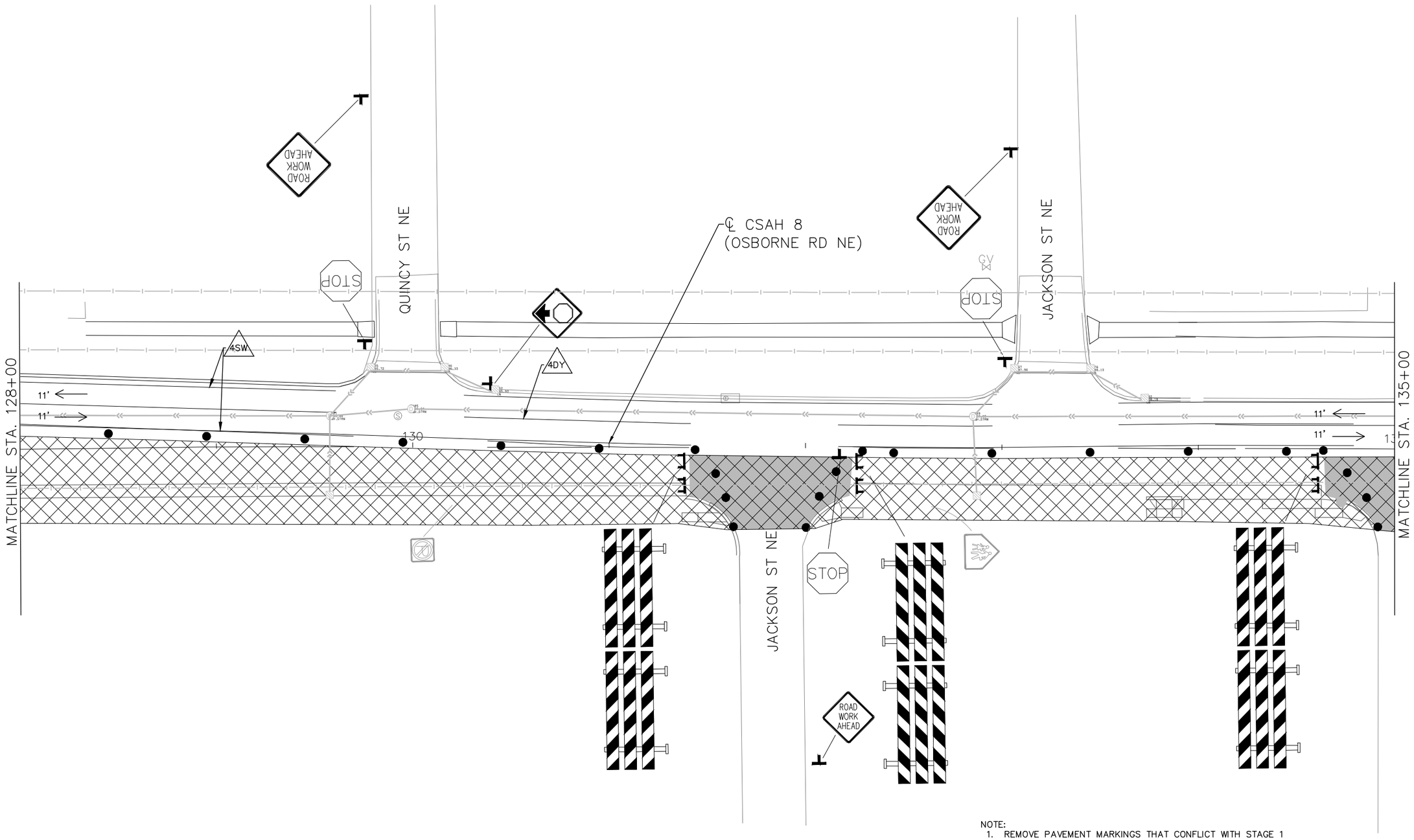

NOTE:
1. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 1 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 1

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SCALE 0 25 50 FEET

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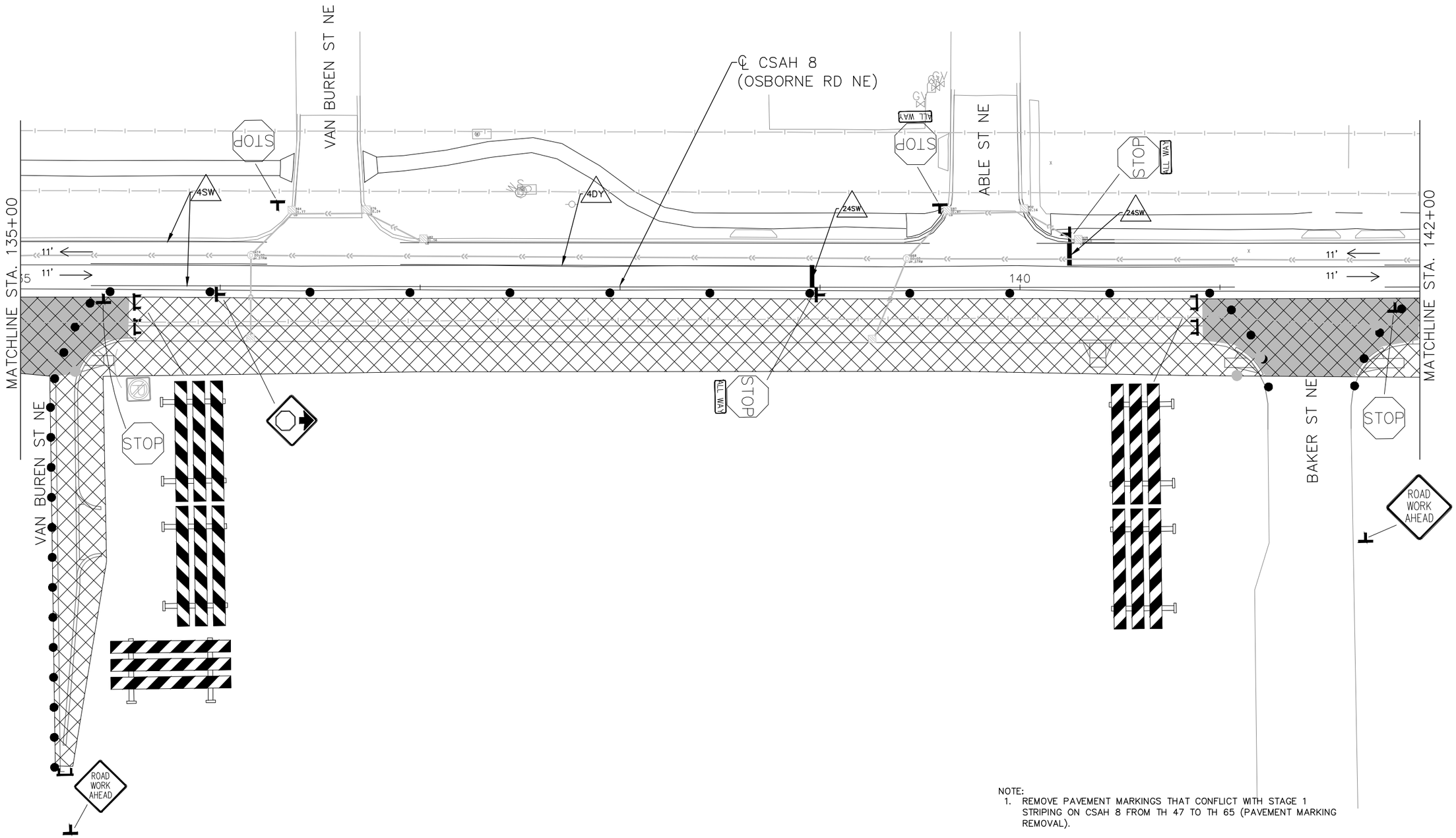

NOTE:
1. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 1 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 1

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SCALE FEET

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SHEET 97 OF 189

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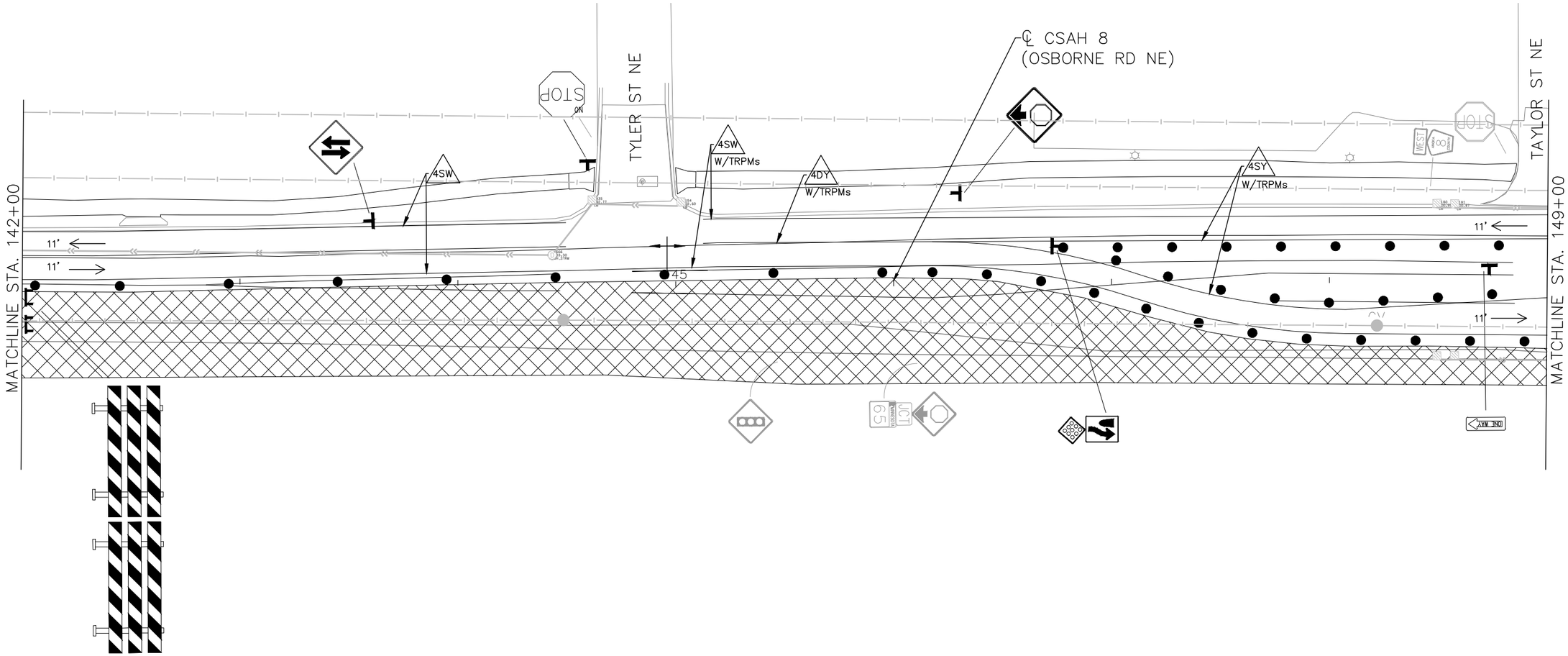

NOTE:
1. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 1 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 1

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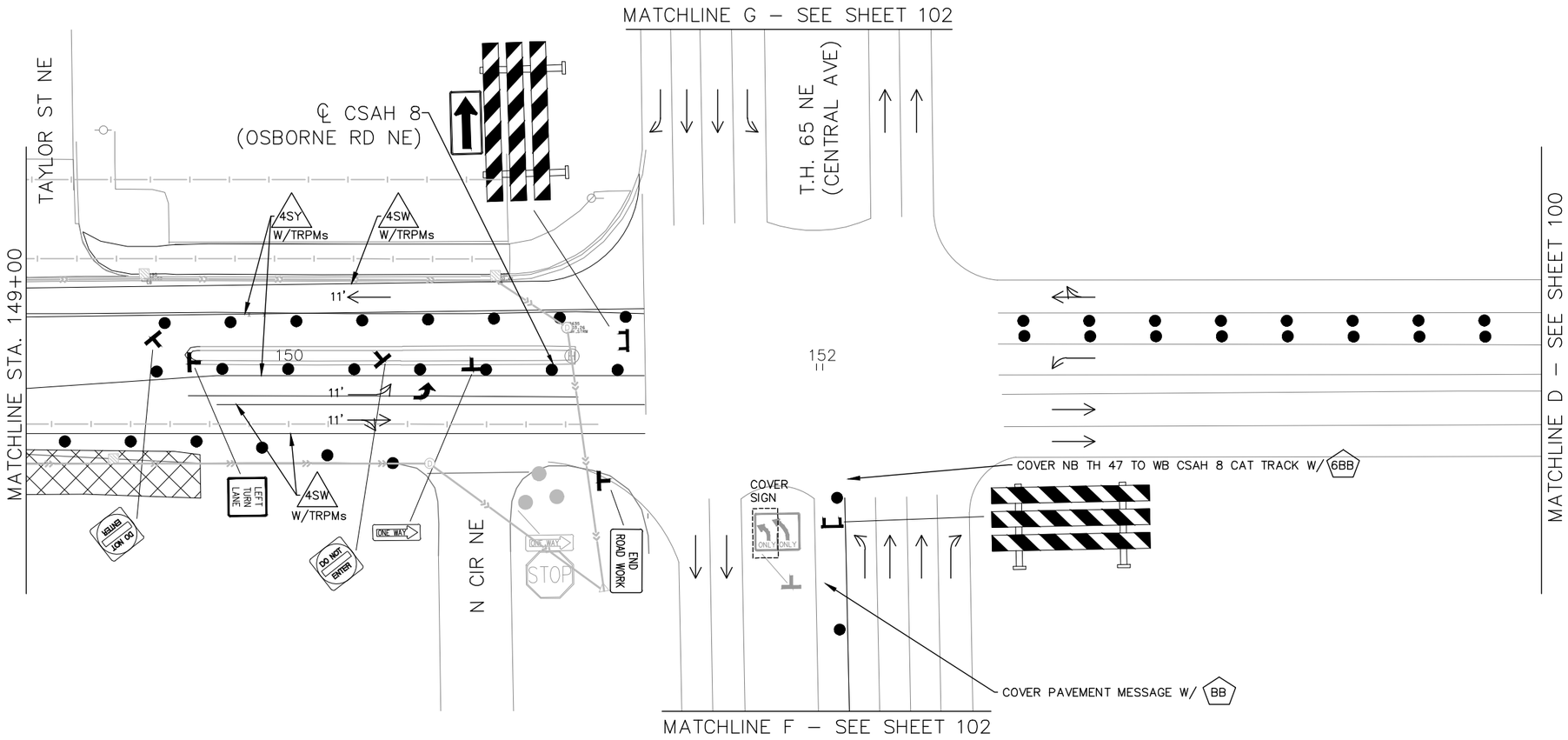
STAGING AND TRAFFIC CONTROL PLAN

SHEET 98 OF 189



NOTE:
1. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 1 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 1

0 25 50
SCALE FEET

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SHEET 99 OF 189

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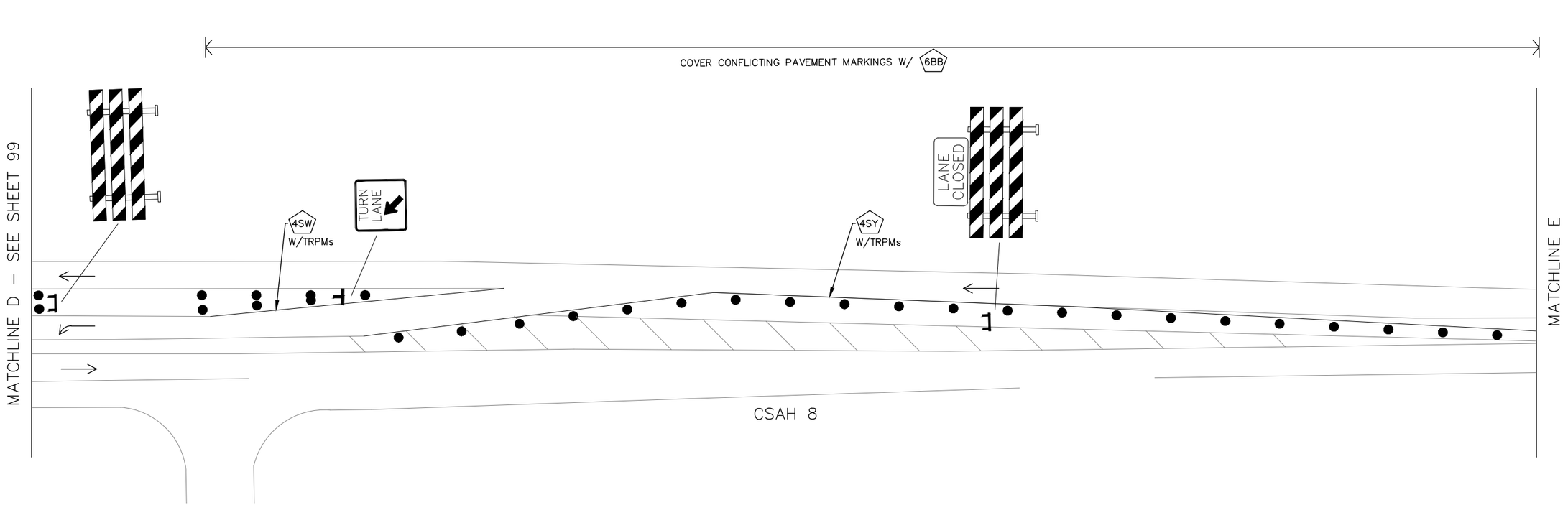

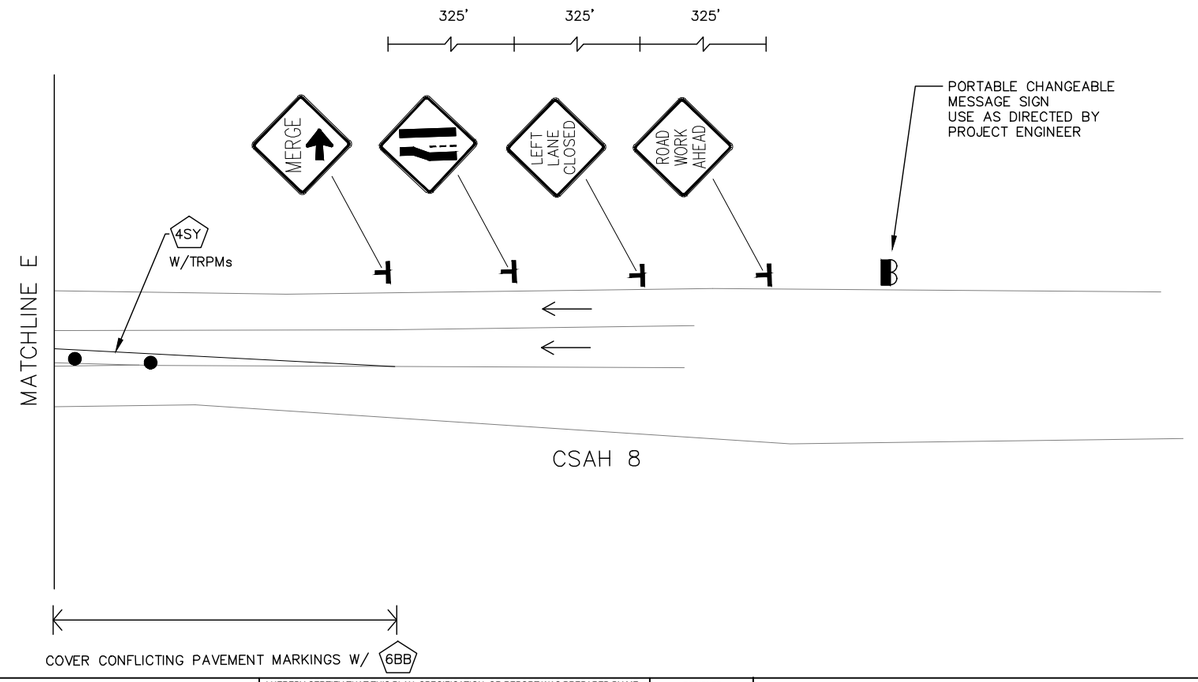

STAGE 1

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SCALE FEET

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SHEET 100 OF 189

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MATCHLINE H

4SW

UNIVERSITY AVENUE NE

COVER SIGN

COVER PAVEMENT MESSAGE W/ BB

MATCHLINE B – SEE SHEET 91

ROAD WORK AHEAD

TURN LANE CLOSED

4SW

MATCHLINE H

MATCHLINE C – SEE SHEET 91

UNIVERSITY AVENUE NE

ROAD WORK AHEAD

STAGE 1

0 25 50
SCALE FEET

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SHEET 101 OF 189

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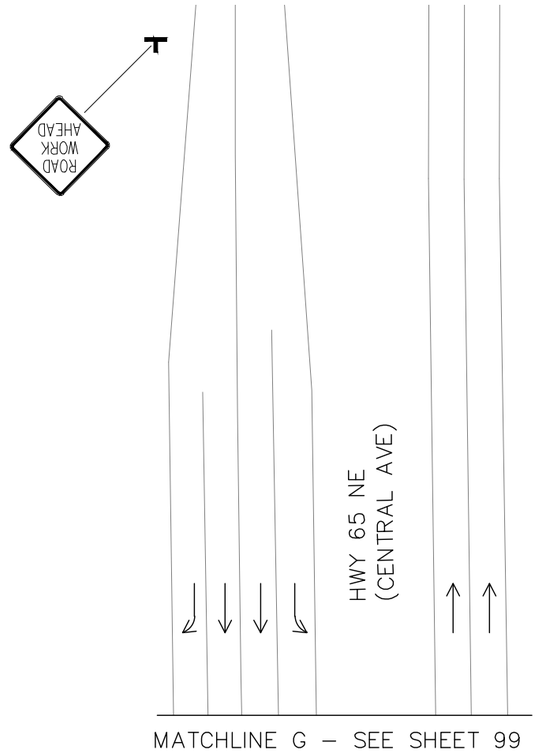

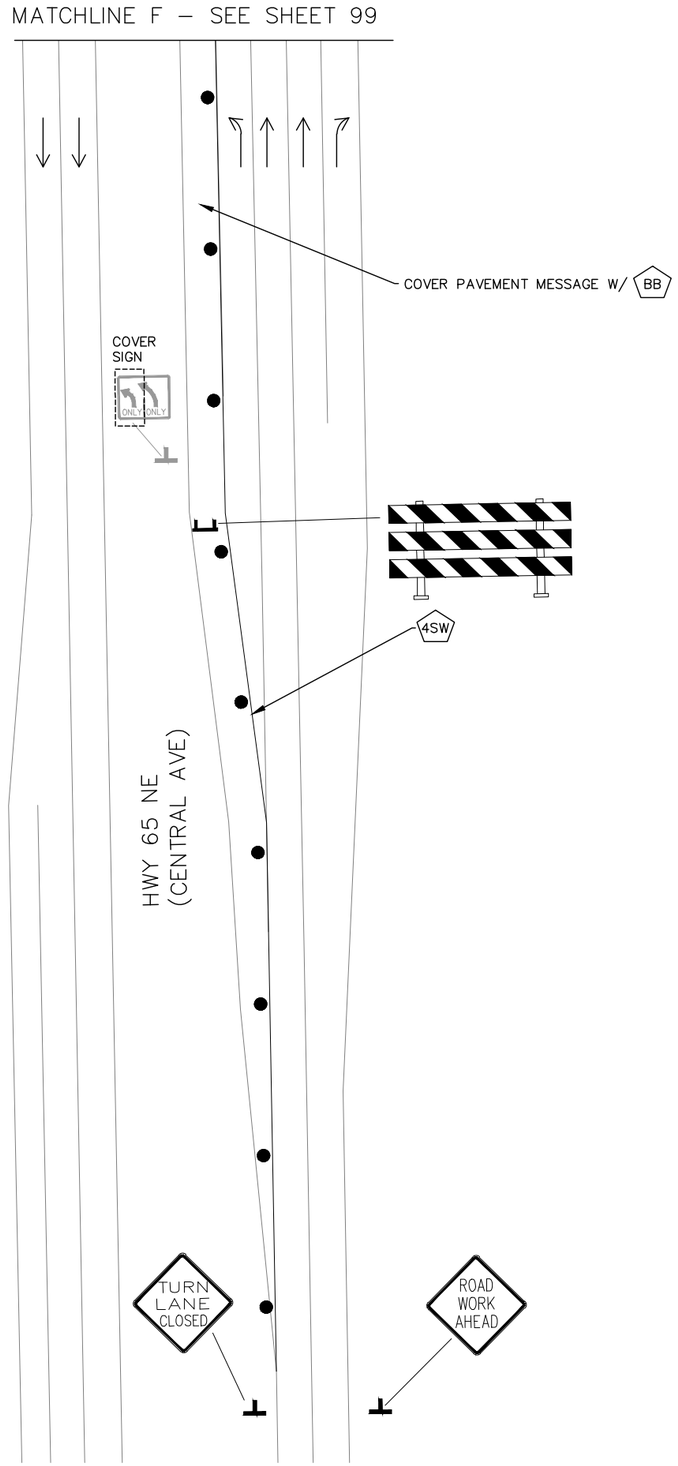

STAGE 1

0 25 50
SCALE FEET

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SHEET 102 OF 189

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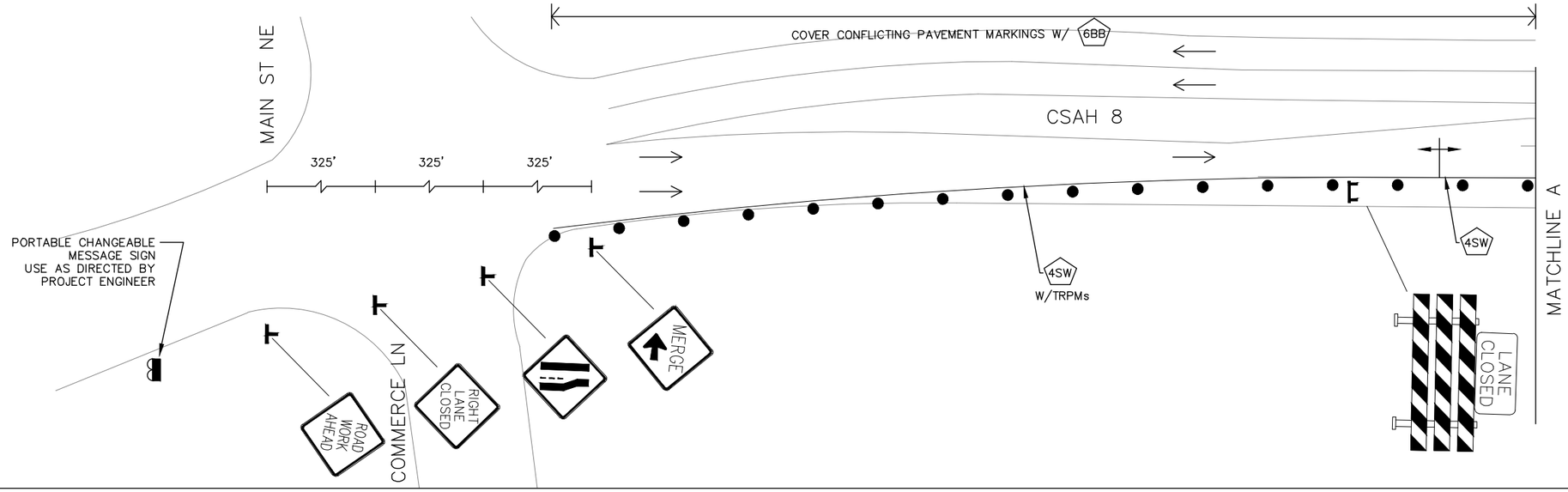

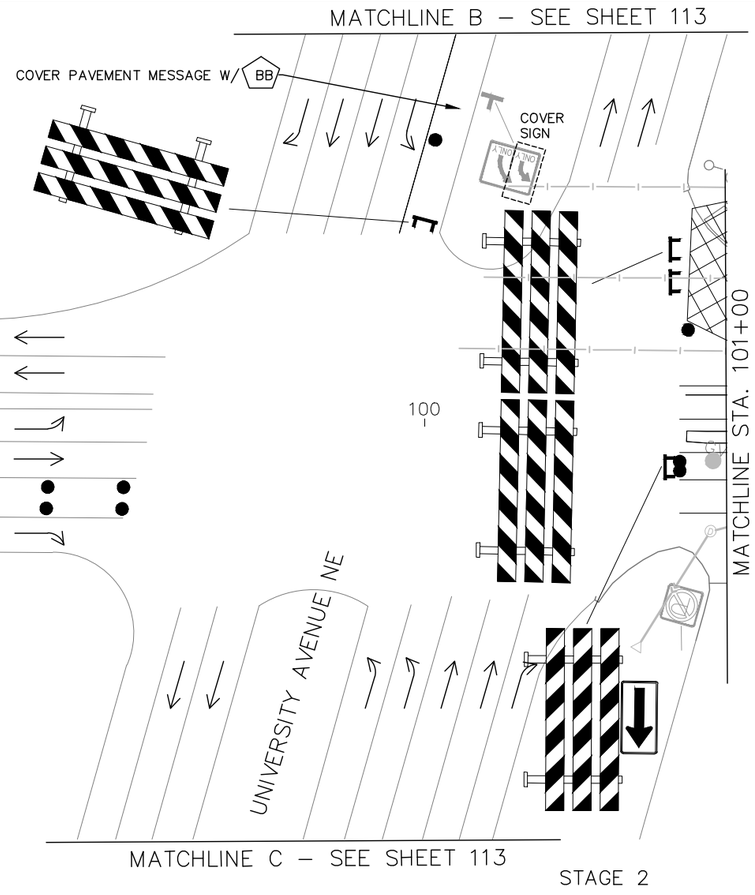

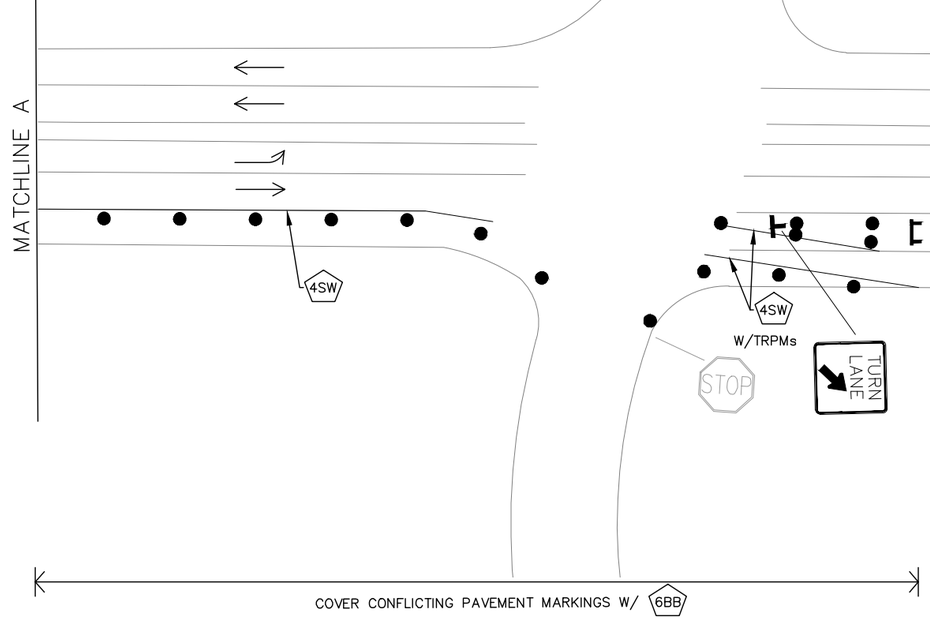

STAGE 2

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SCALE FEET

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SHEET 103 OF 189

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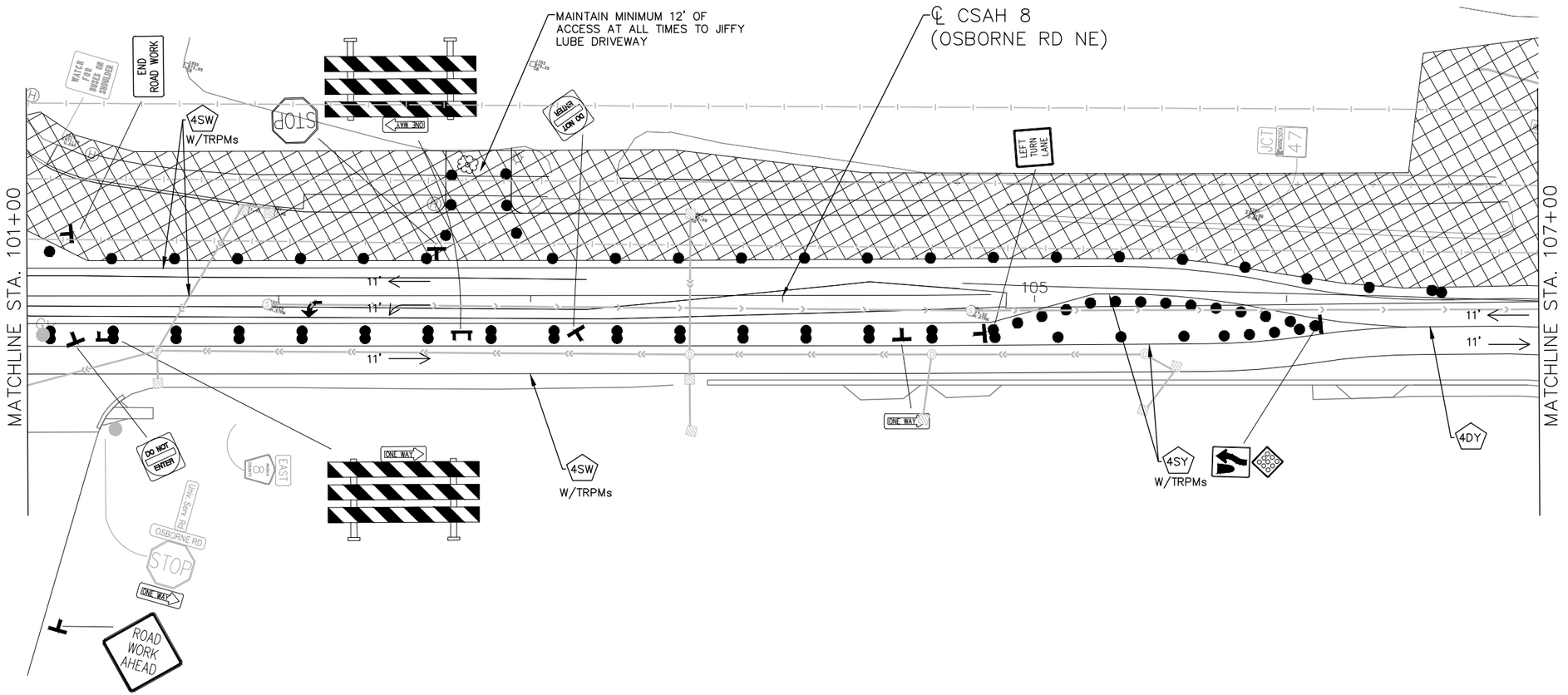

NOTE:
1. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 2 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 2

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SCALE FEET

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CSAH 8 RECONSTRUCTION
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SHEET 104 OF 189

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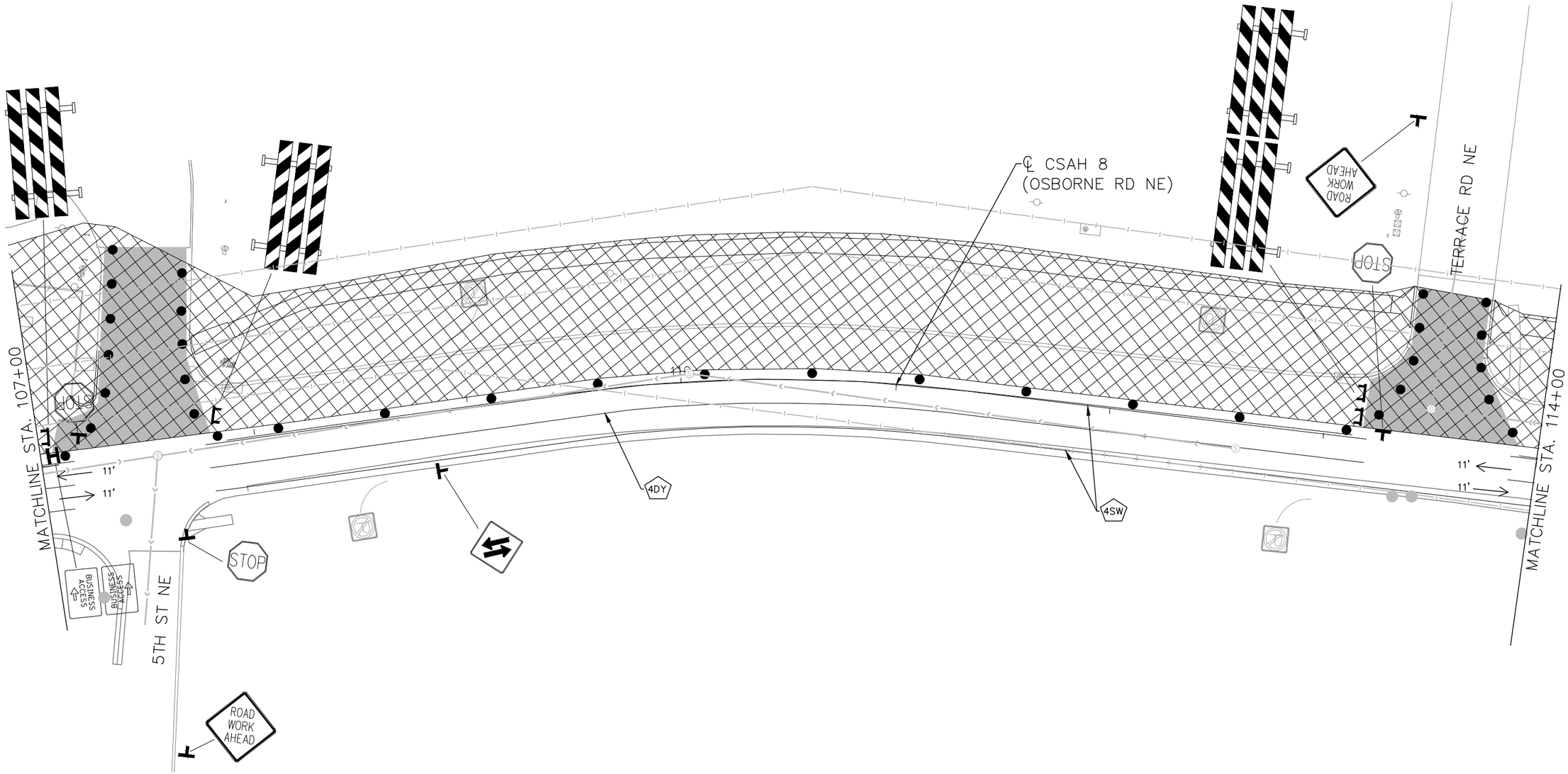

STAGE 2

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SCALE 0 25 50 FEET

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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED	DRAWN	CHECKED
ZAP	ZAP	BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
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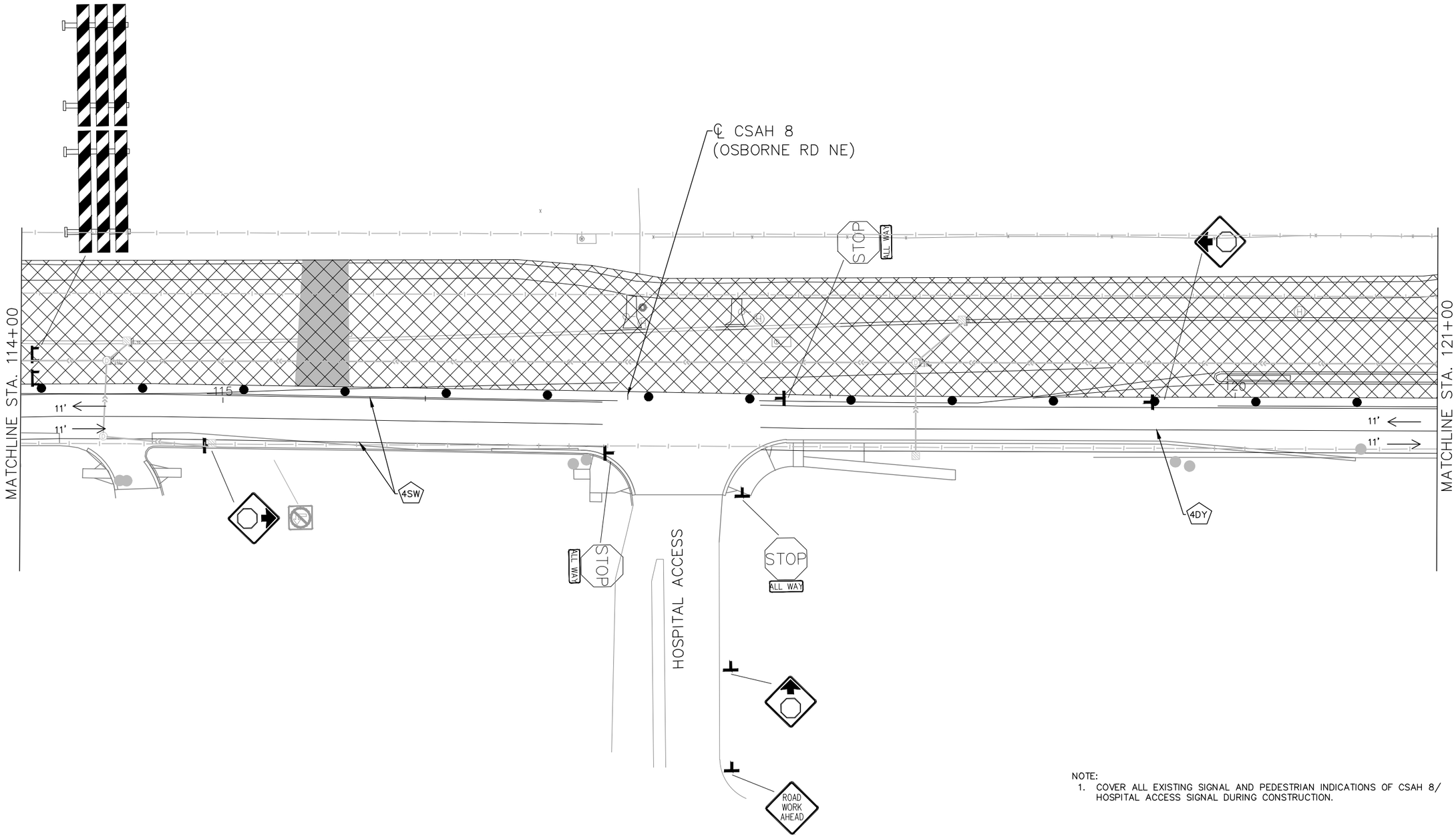
CSAH 8 RECONSTRUCTION
STAGING AND TRAFFIC CONTROL PLAN

SHEET 105 OF 189



NOTE:
1. COVER ALL EXISTING SIGNAL AND PEDESTRIAN INDICATIONS OF CSAH 8/ HOSPITAL ACCESS SIGNAL DURING CONSTRUCTION.

STAGE 2

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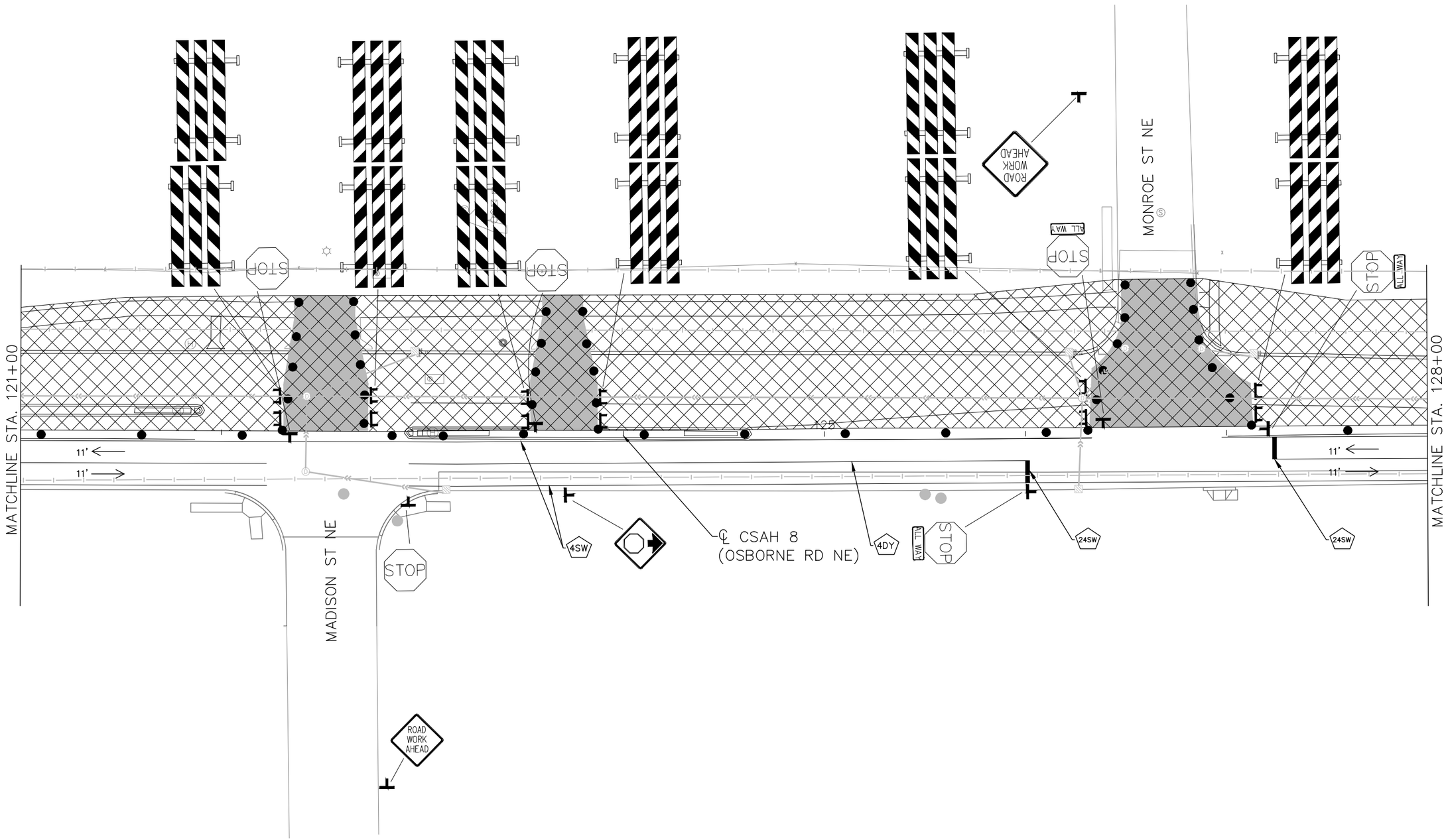
SHEET 106 OF 189



STAGE 2

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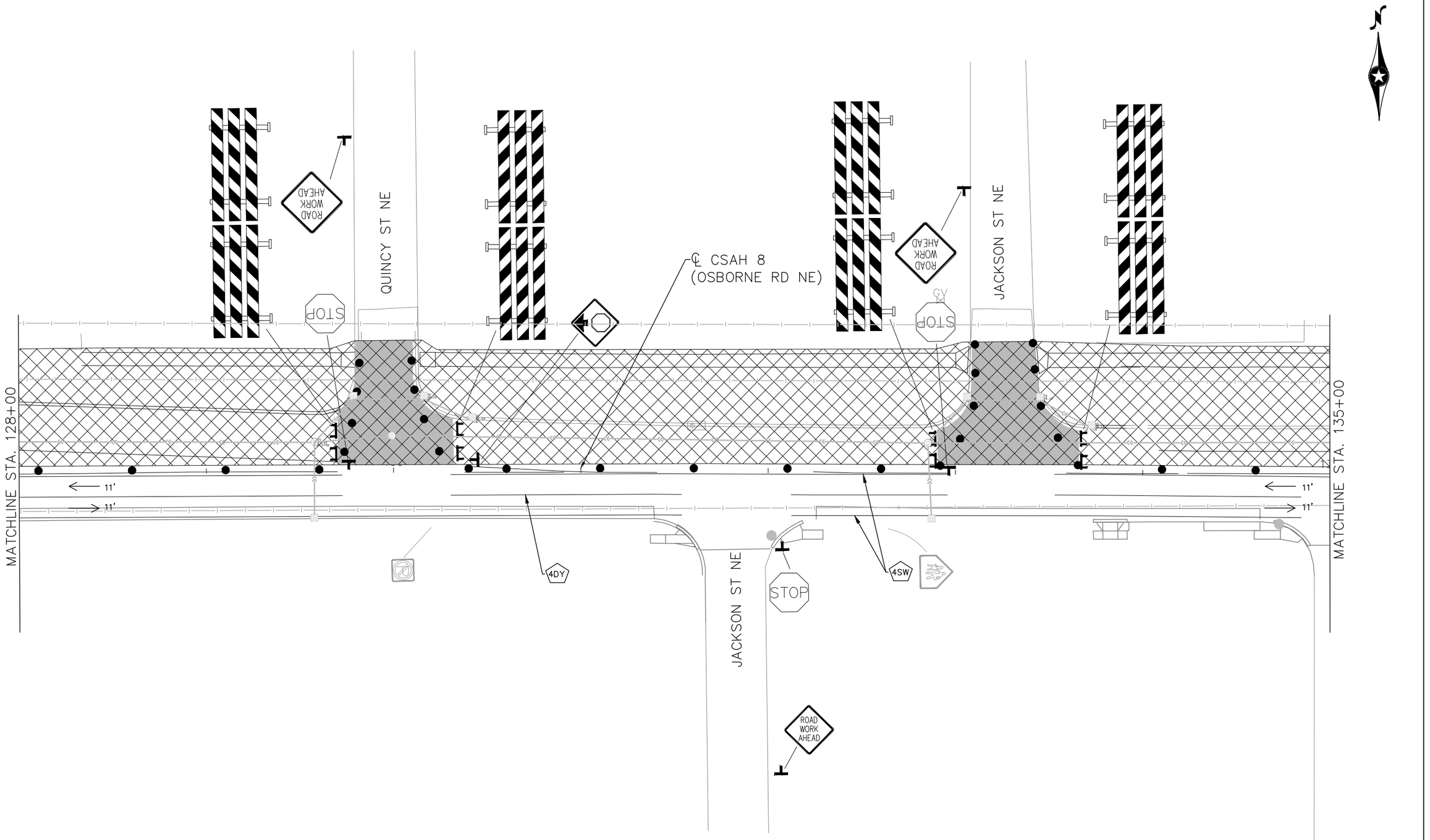
STAGING AND TRAFFIC CONTROL PLAN

SHEET 107 OF 189



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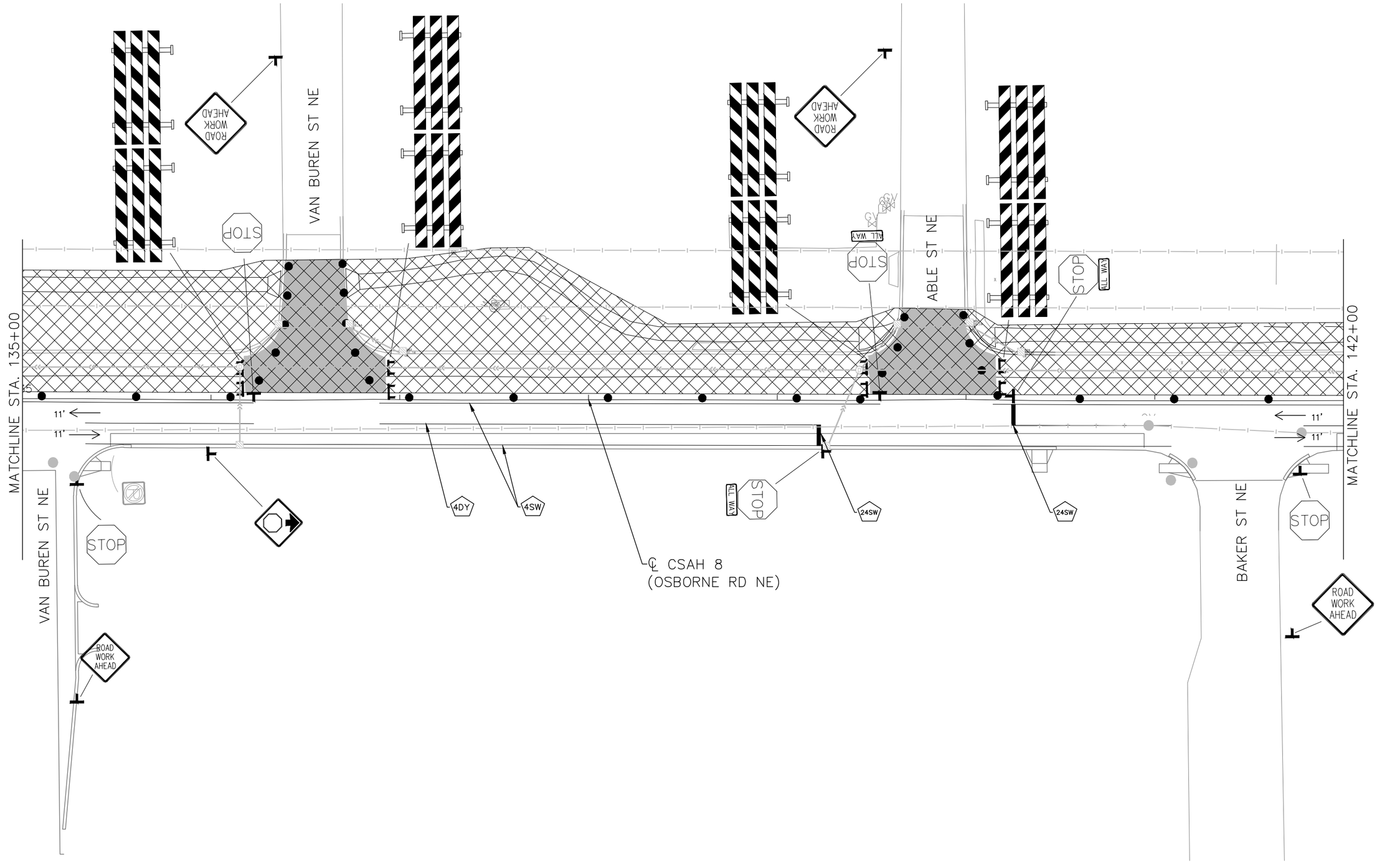
SHEET 108 OF 189



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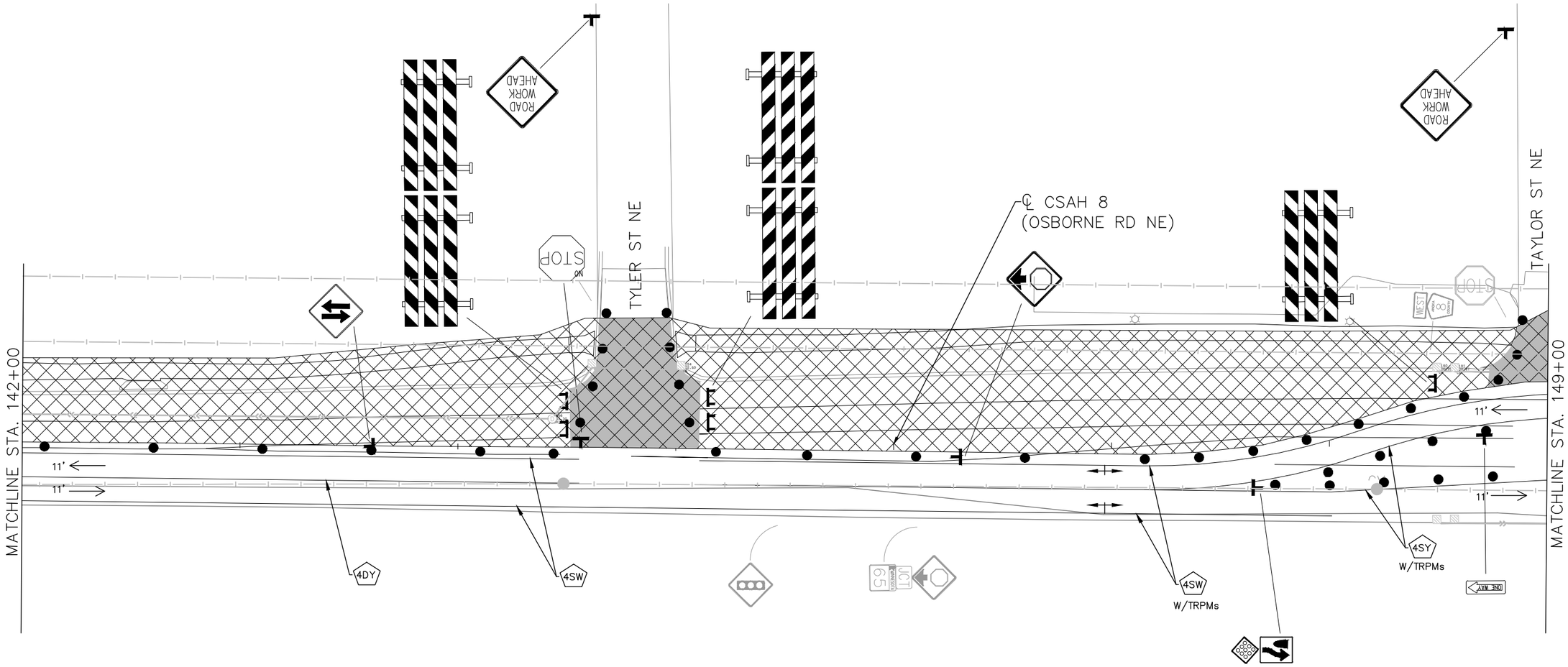

NOTE:
1. REMOVE PAVEMENT MARKINGS THAT CONFLICT WITH STAGE 2 STRIPING ON CSAH 8 FROM TH 47 TO TH 65 (PAVEMENT MARKING REMOVAL).

STAGE 2

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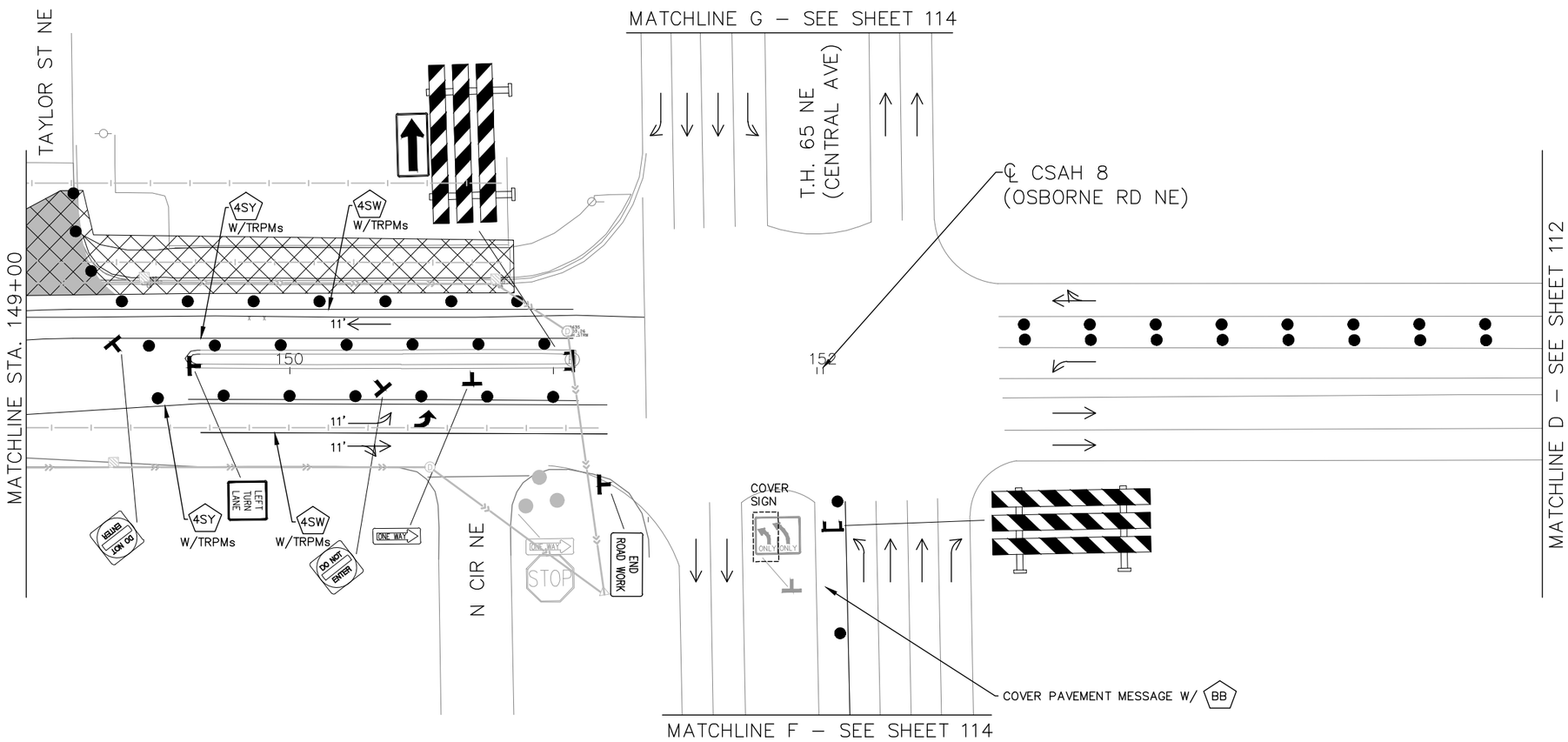

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STAGE 2

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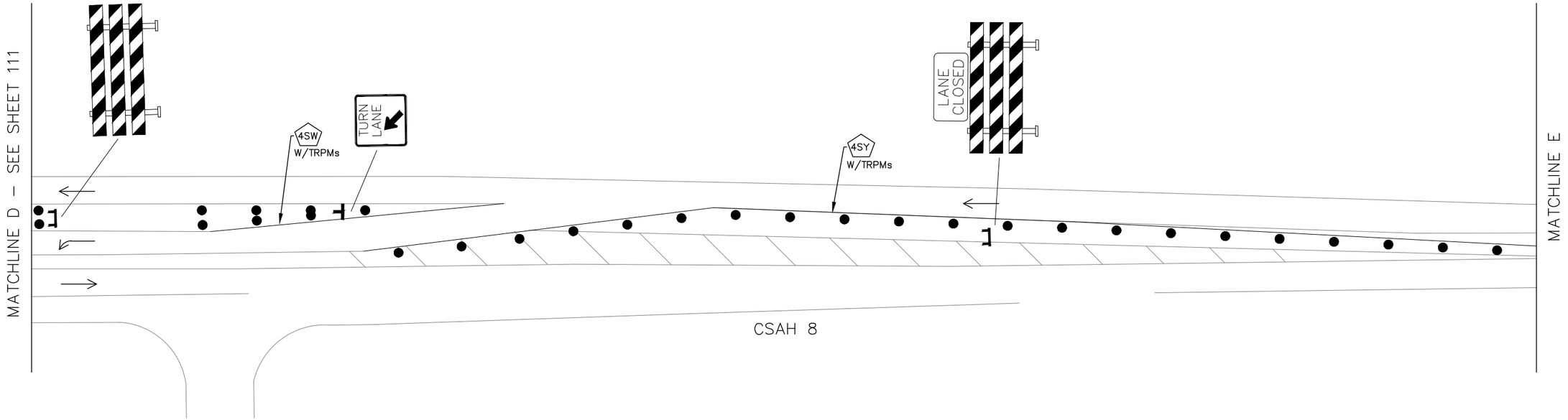
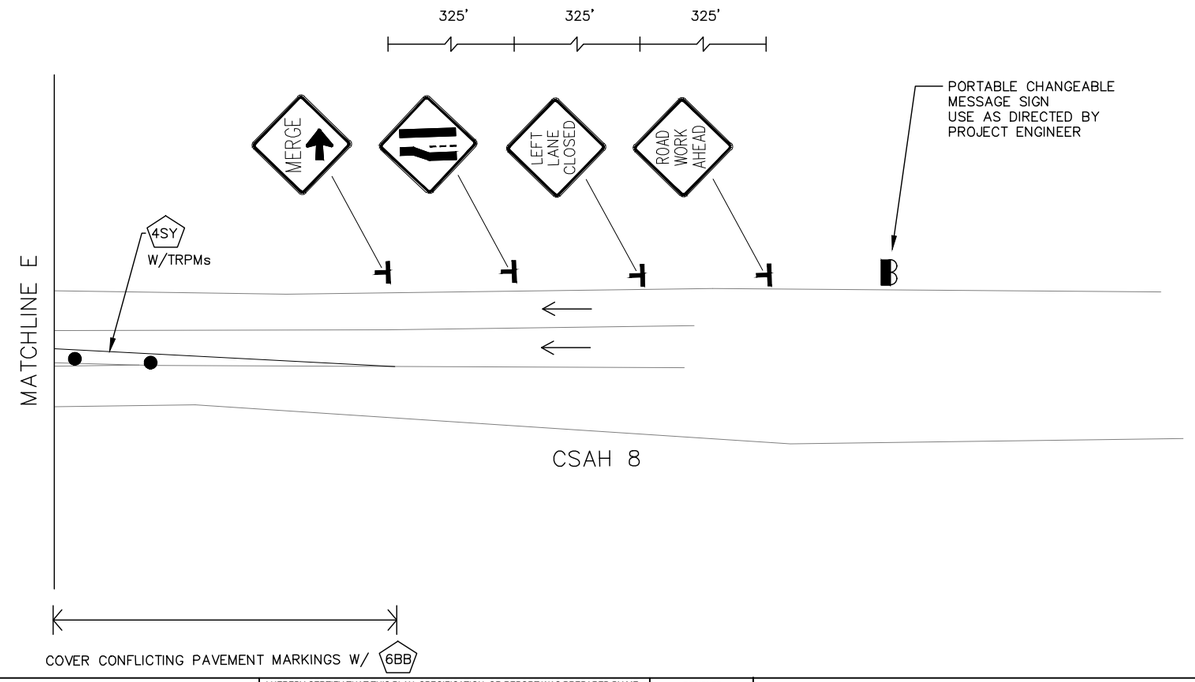
STAGING AND TRAFFIC CONTROL PLAN

SHEET 111 OF 189





STAGE 2

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SHEET 112 OF 189

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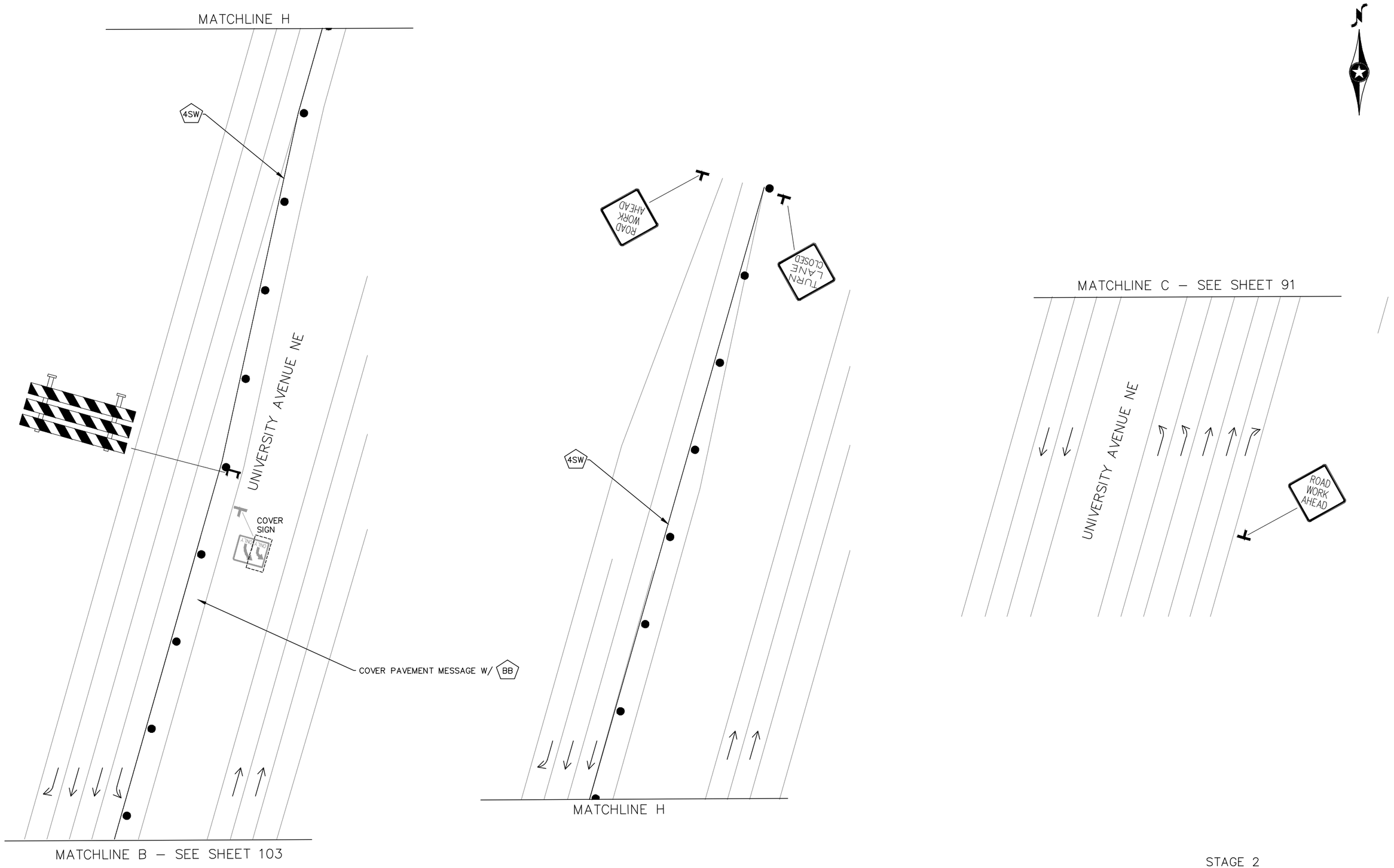

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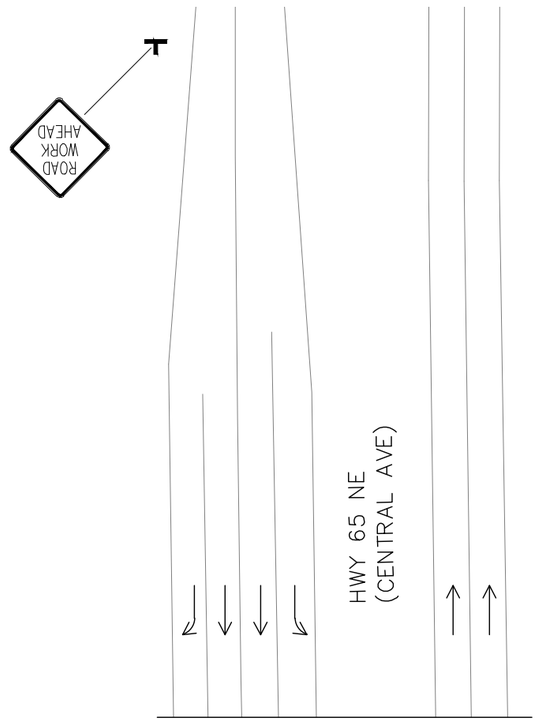

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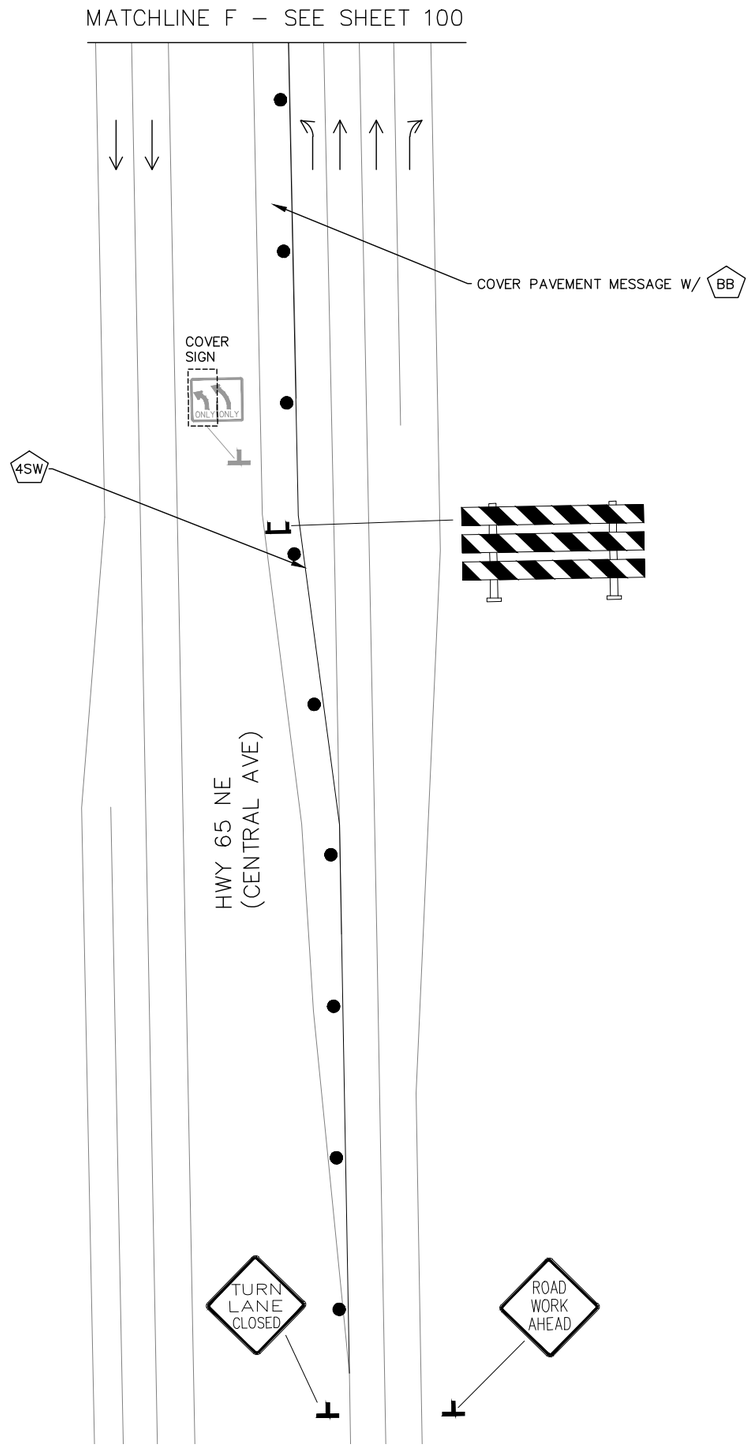

STAGE 2

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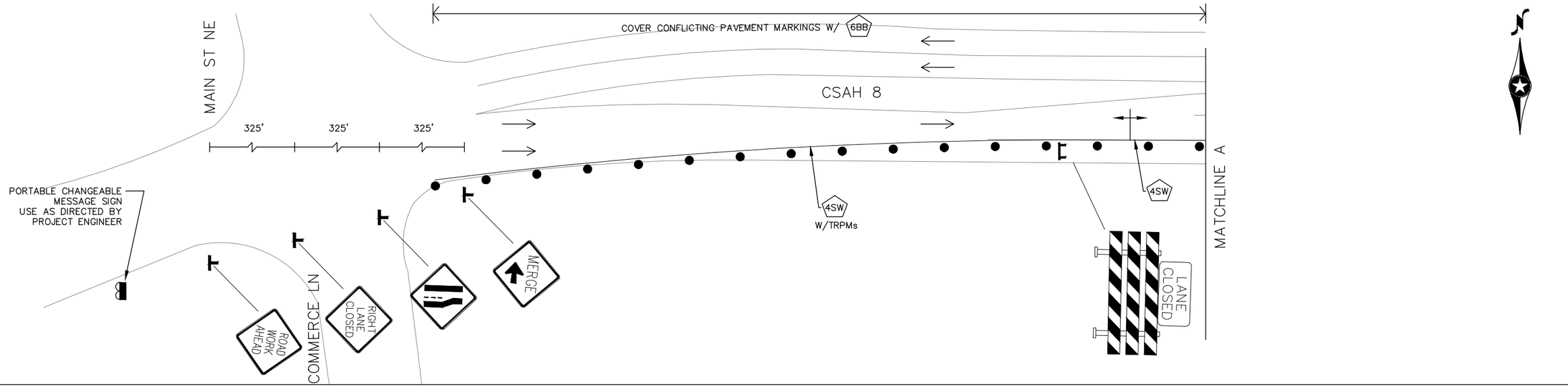

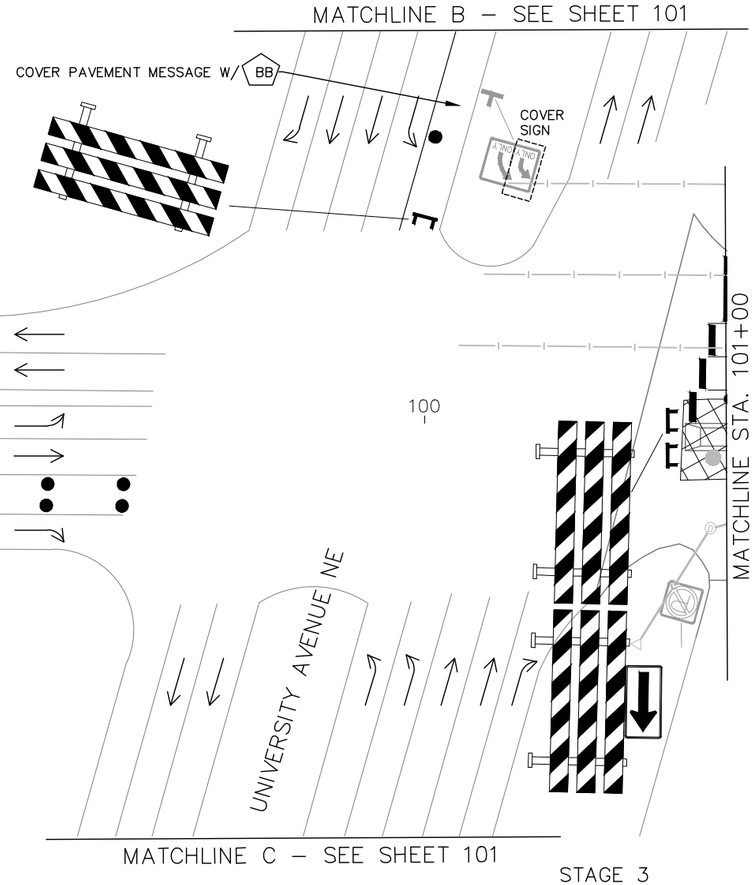

STAGE 3

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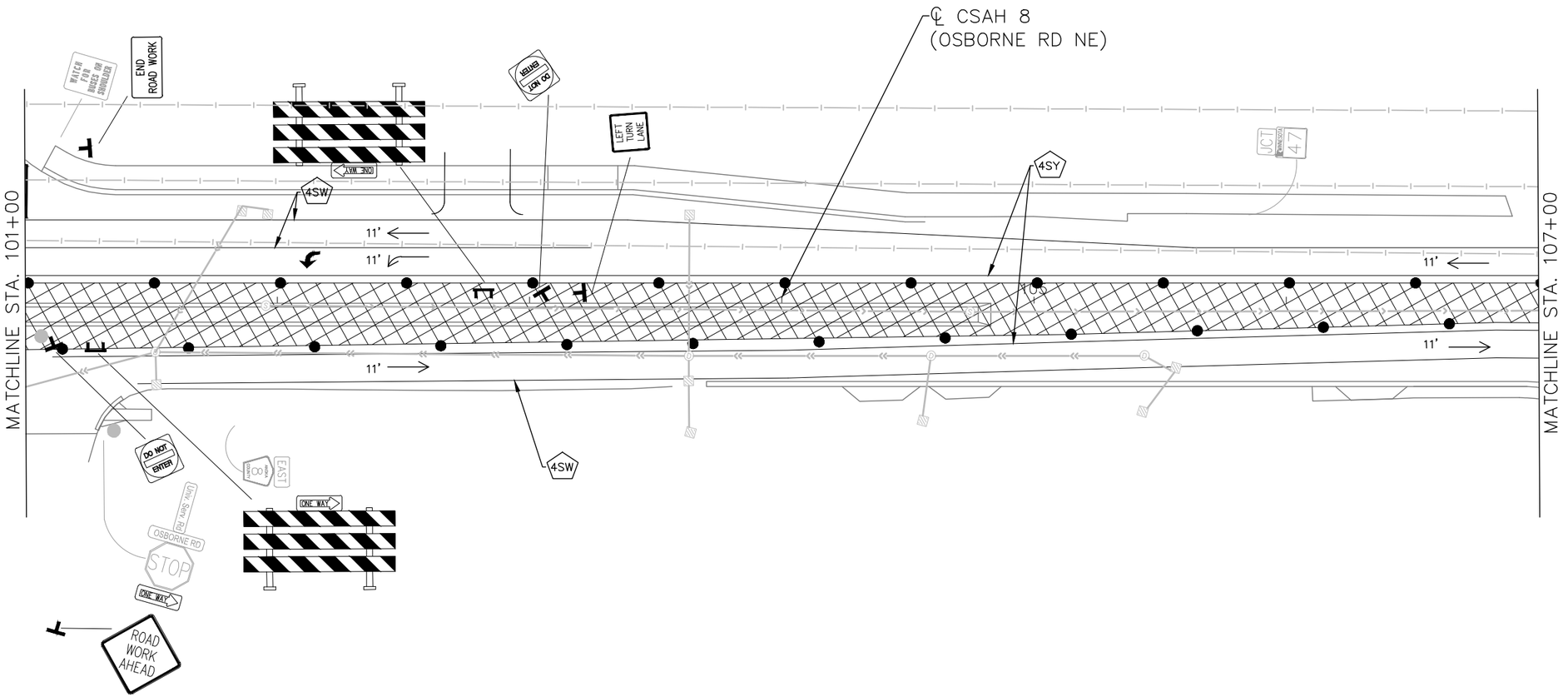
SHEET 115 OF 189



NOTE:
1. CONTRACTOR TO REUSE EB STAGE 2 PAVEMENT MARKINGS FOR EB STAGE 3 PAVEMENT MARKINGS .

STAGE 3

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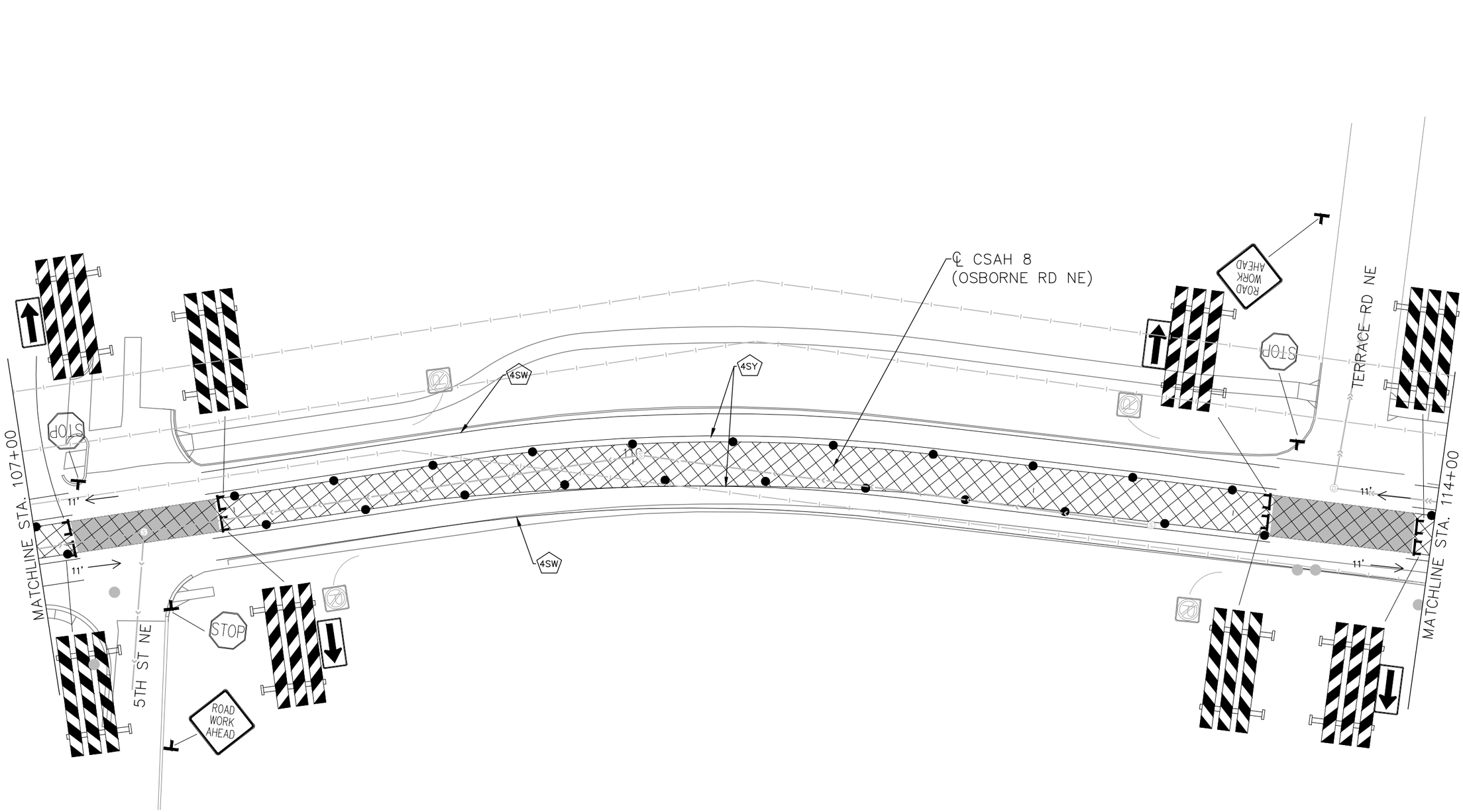
SHEET 116 OF 189



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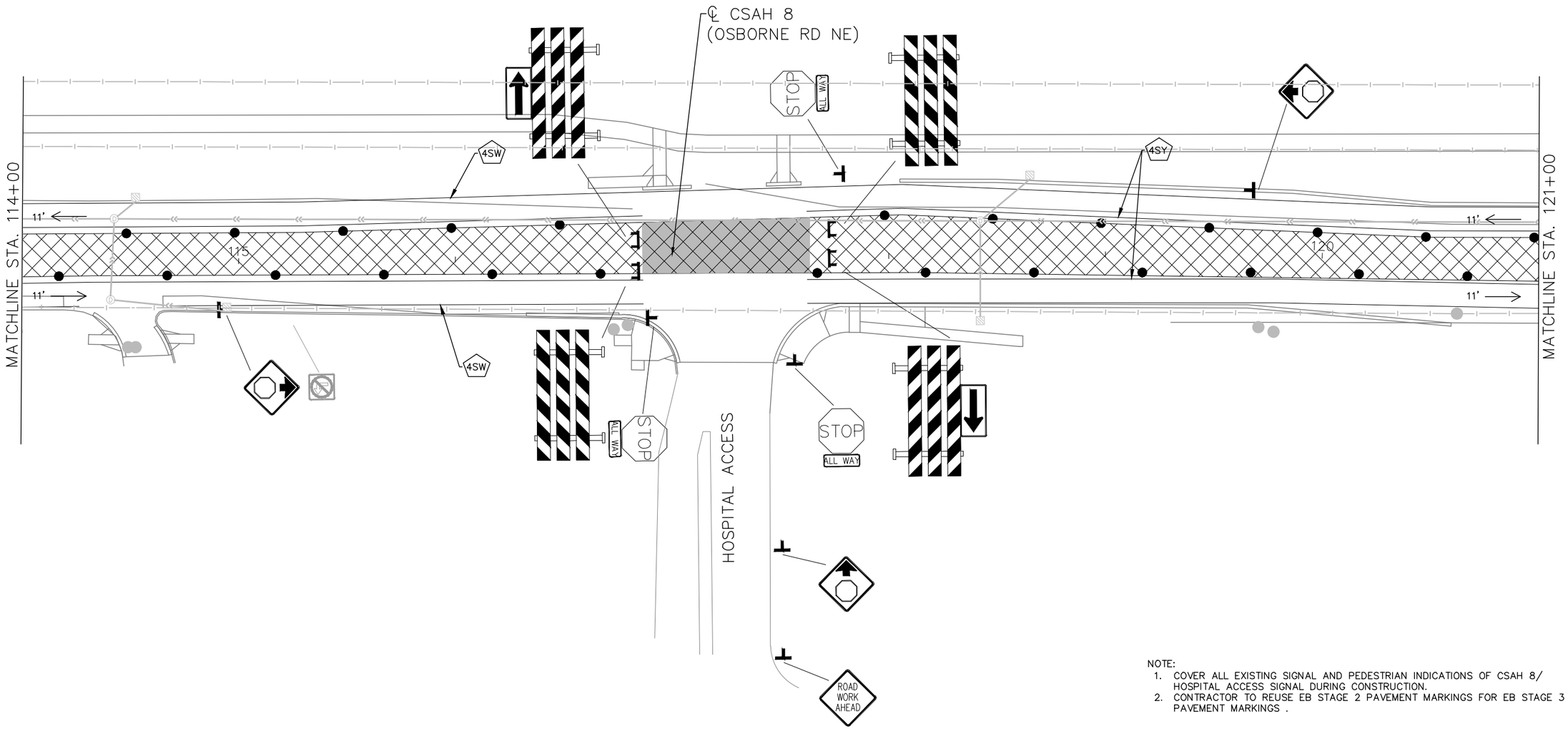
SHEET 117 OF 189



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STAGE 3

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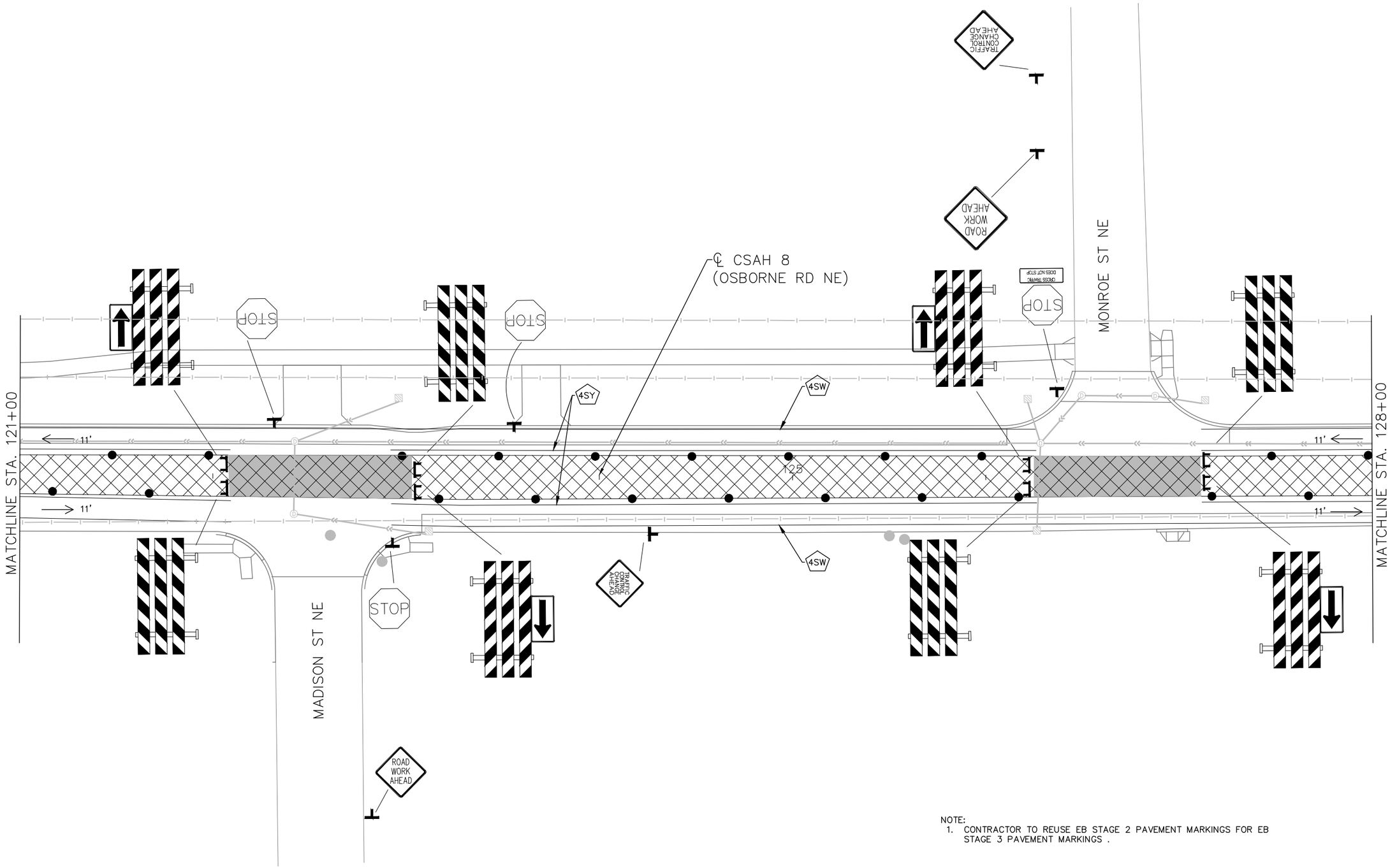

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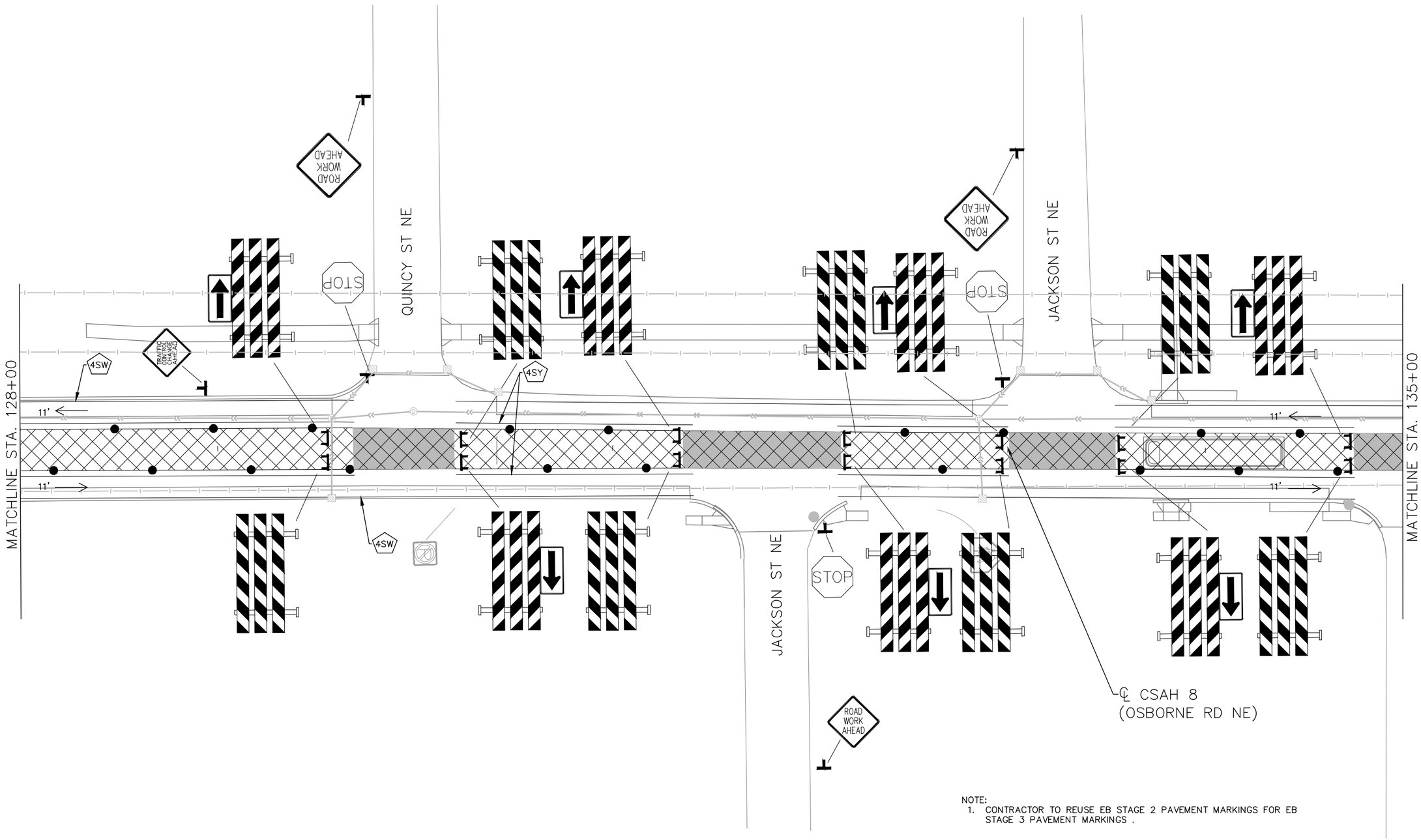

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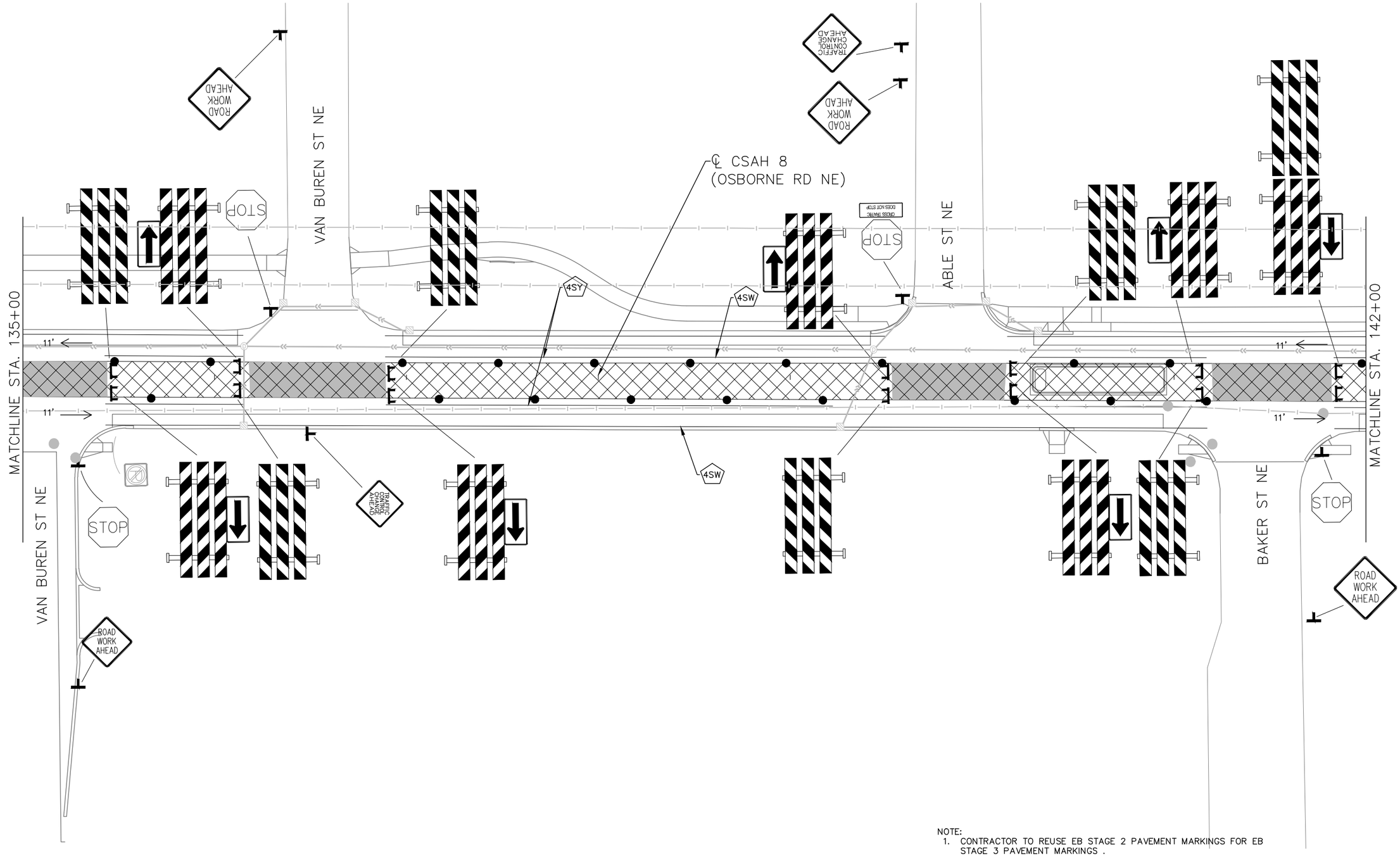

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DESIGNED	DRAWN	CHECKED
ZAP	ZAP	BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

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CSAH 8 RECONSTRUCTION
STAGING AND TRAFFIC CONTROL PLAN

SHEET 121 OF 189

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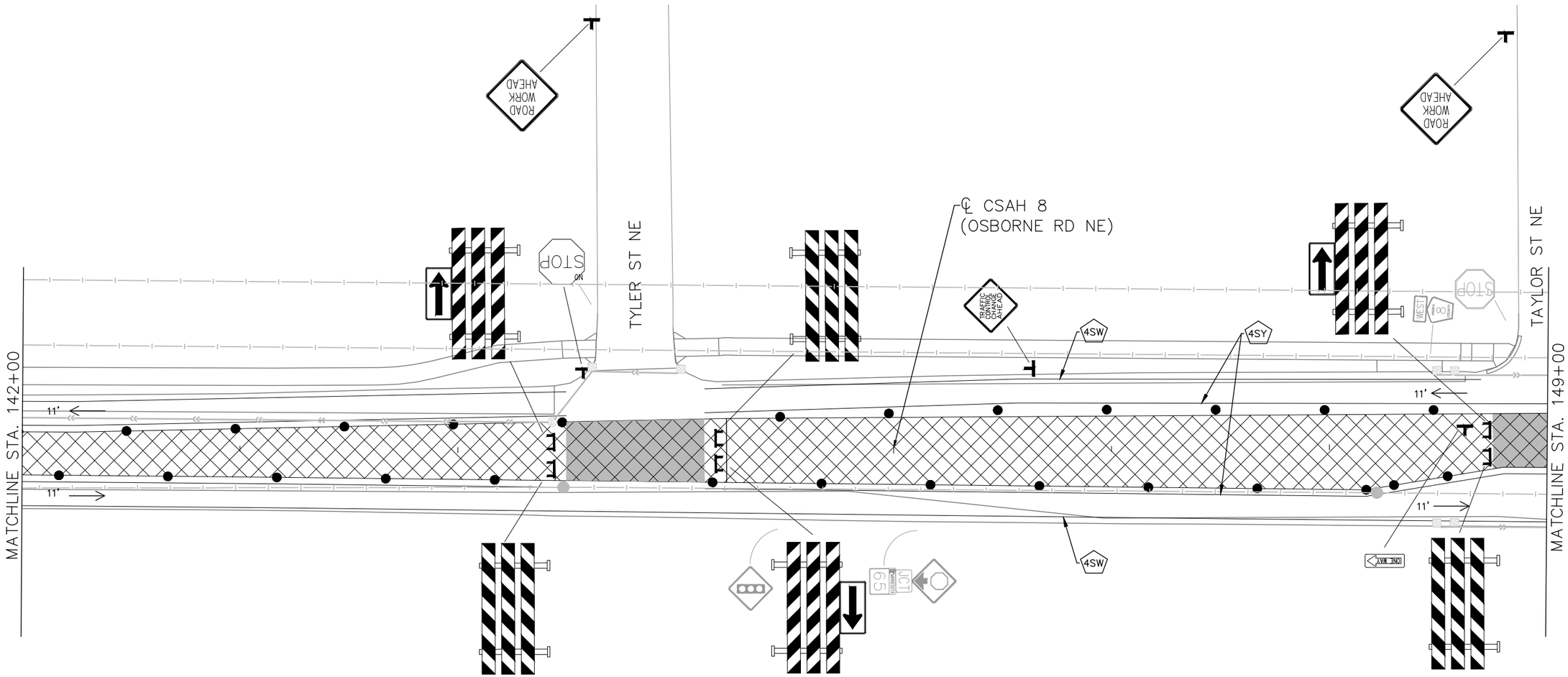
6/3/2020



NOTE:
1. CONTRACTOR TO REUSE EB STAGE 2 PAVEMENT MARKINGS FOR EB STAGE 3 PAVEMENT MARKINGS .

STAGE 3

0 25 50
SCALE FEET

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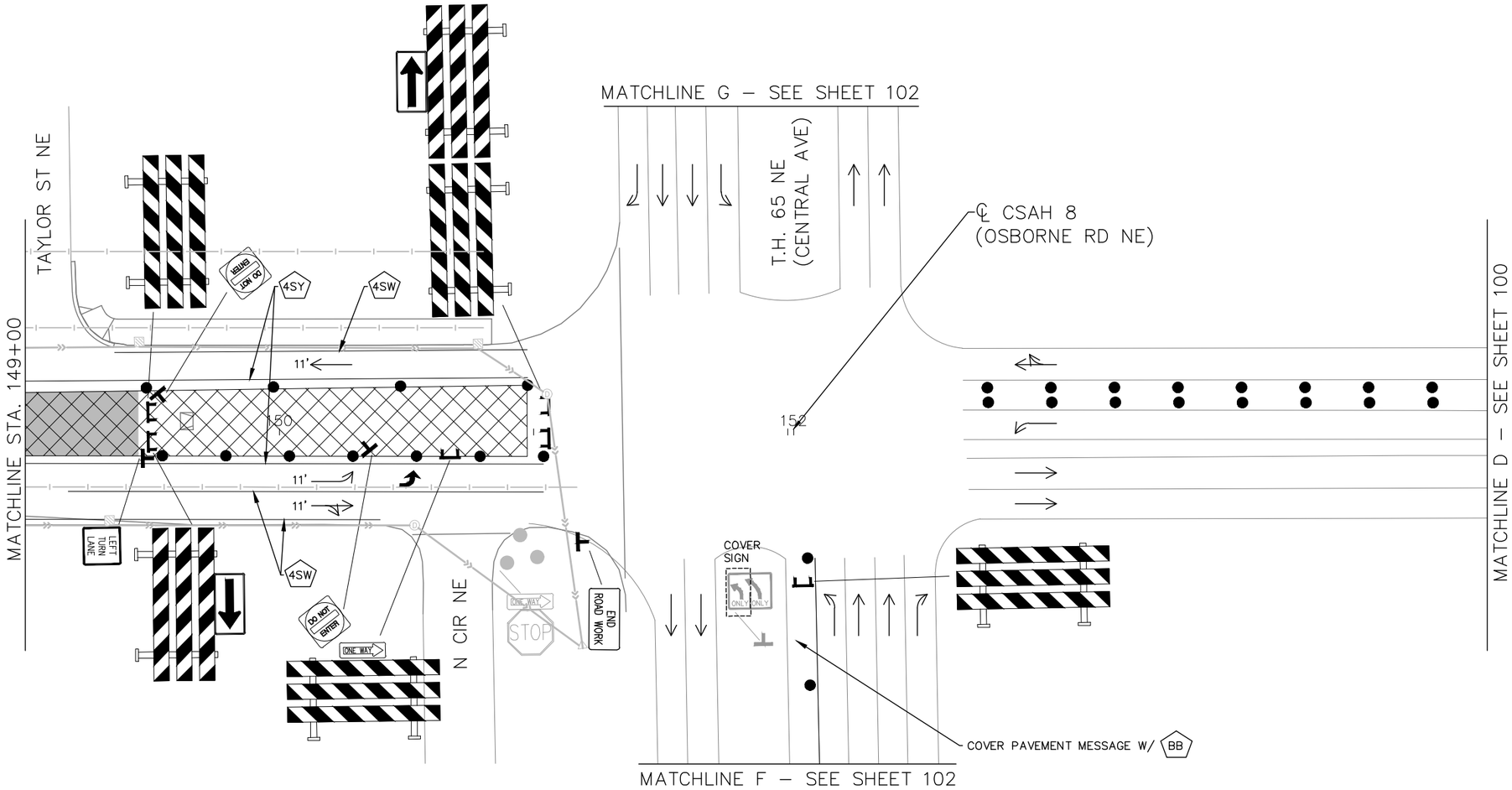

STAGE 3

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SCALE FEET

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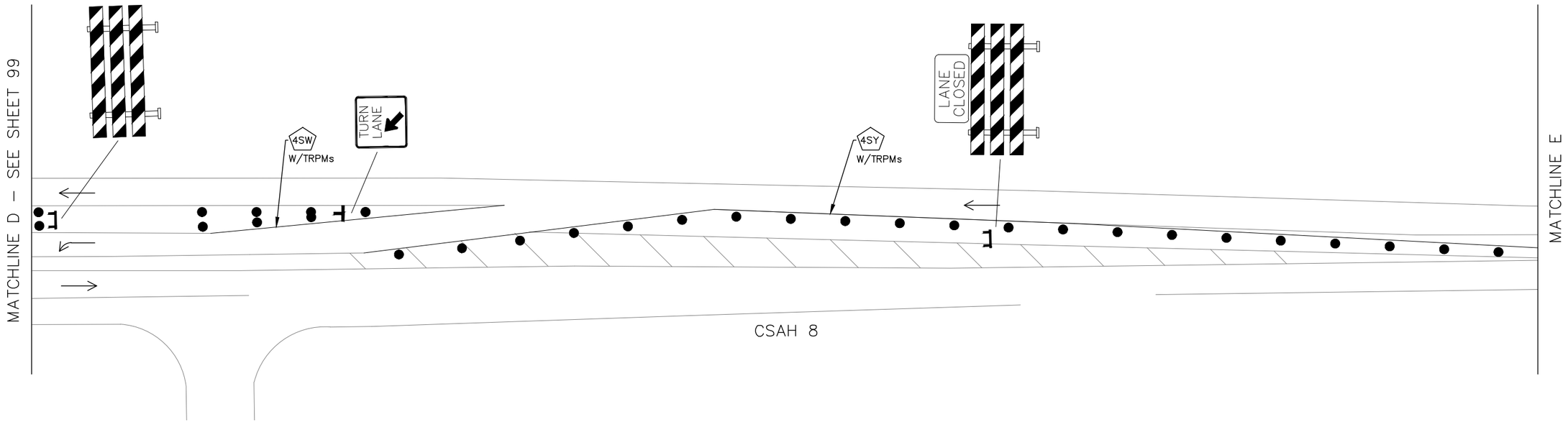

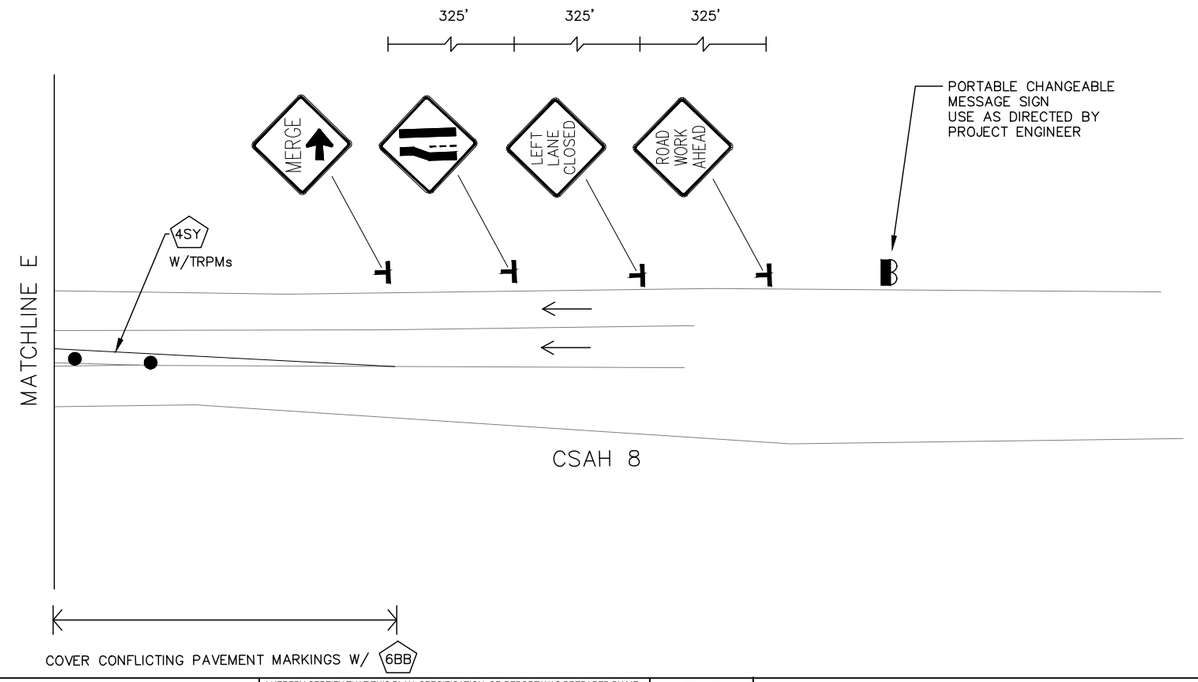

STAGE 3

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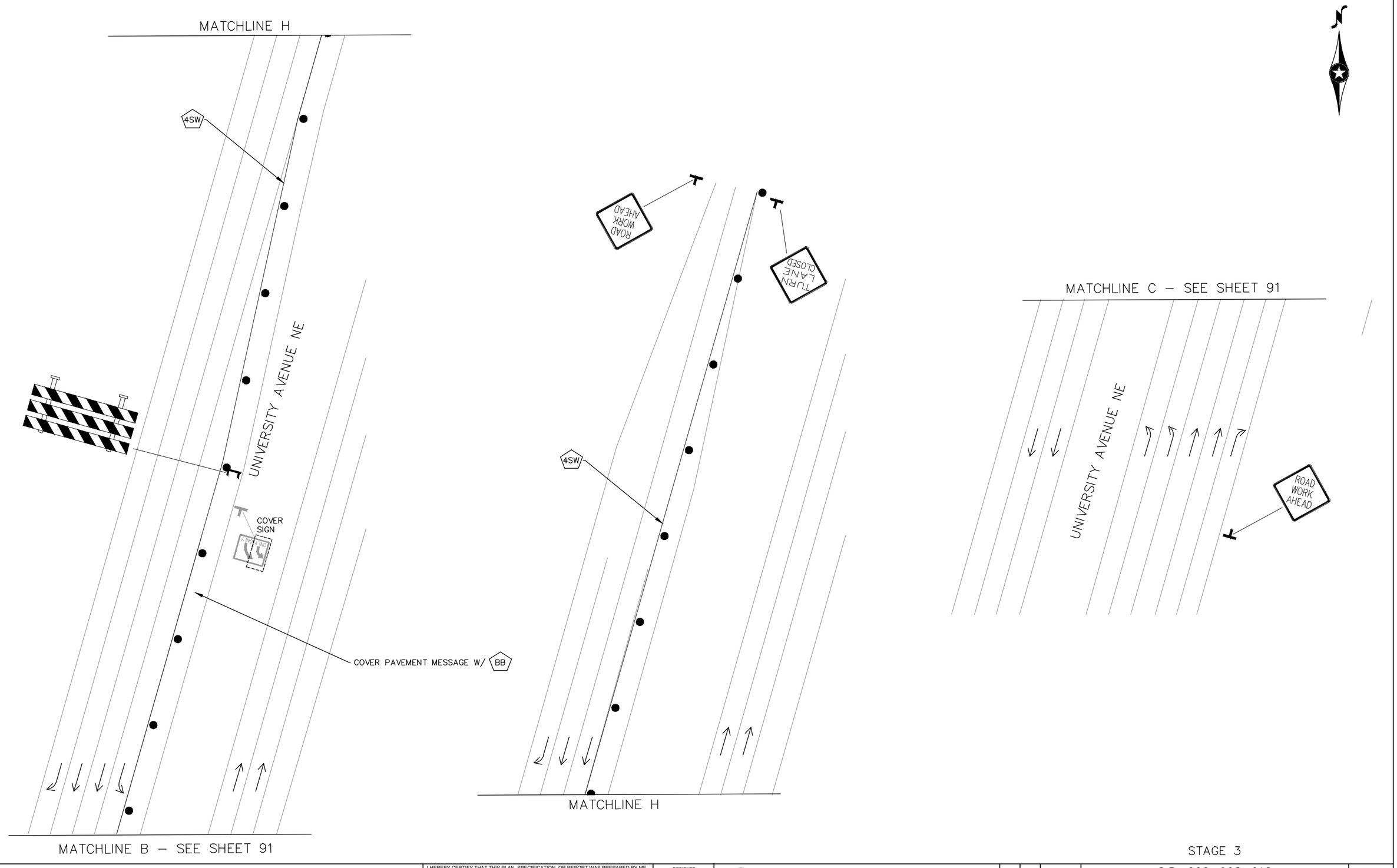

STAGE 3

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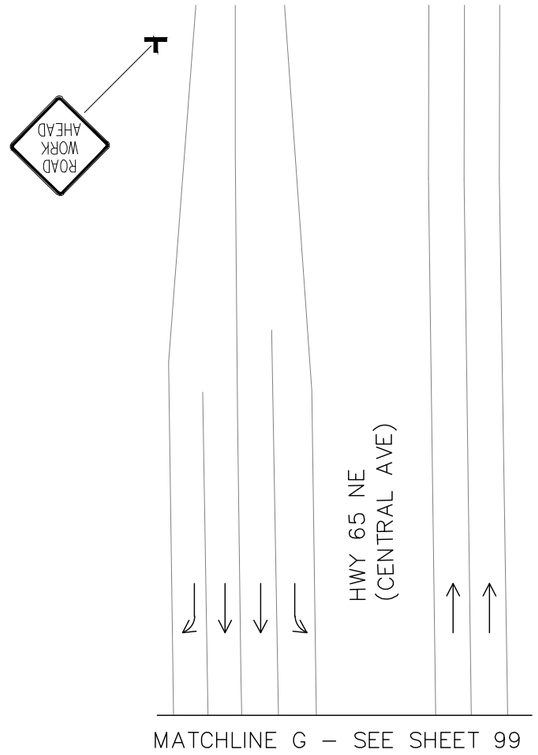
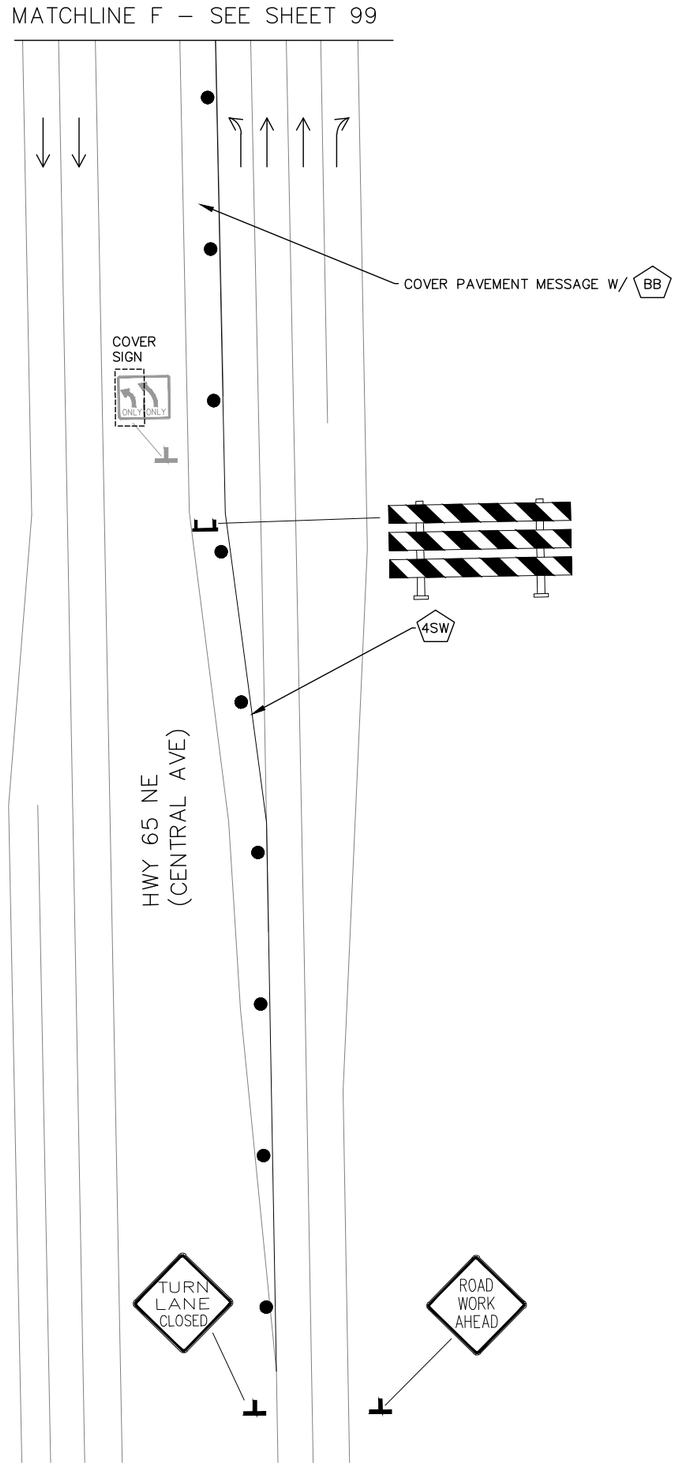
SHEET 125 OF 189





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STAGING AND TRAFFIC CONTROL PLAN

SHEET 126 OF 189

PERMANENT PAVEMENT MARKING PLAN
NOTES AND GUIDELINES

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

EDGE LINES AND LANE LINES ARE TO BE BROKEN ONLY AT INTERSECTIONS WITH PUBLIC ROADS AND AT PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A 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 $\frac{1}{4}$ INCH UNDER OR $\frac{1}{4}$ 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 ONE-HALF FOOT 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.

MULTI COMPONENT (MULTI COMP):
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 TREATMENT AND/OR LAITANCE ON LOW SPEED (SPEED LIMIT 35 MPH OR LESS) URBAN PORTLAND CEMENT CONCRETE ROADWAYS. SANDBLAST CLEANING SHALL BE USED FOR ALL EPOXY PAVEMENT MARKINGS.

THE MULTI COMP MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING. GLASS BEANS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE EPOXY RESIN LINE TO PROVIDE AN IMMEDIATE NO-TRACK SYSTEM.

A MULTI COMP RESIN LINE 4" WIDE AND 15 MILL THICKNESS (WET), REQUIRES AN APPLICATION RATE OF ONE (1) GALLON OF COMPONENTS FOR 320 FEET OF LINE. GLASS BEADS SHALL BE APPLIED AT A POUND PER GALLON RATE SUFFICIENT TO ACHIEVE AN ACCEPTABLE NO-TRACK SYSTEM.

OPERATIONS SHALL BE CONDUCTED ONLY WHEN THE ROAD PAVEMENT SURFACE TEMPERATURES ARE 50 DEGREES FAHRENHEIT OR GREATER.

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

PREFORMED THERMOPLASTIC:
THE PREFORMED THERMOPLASTIC MARKINGS SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS ON CLEAN AND DRY SURFACES. SEE SPECIAL PROVISIONS FOR PREFORMED THERMOPLASTIC MARKING SPECIFICATIONS.

PAINT:
AT THE TIME OF APPLYING THE MARKING MATERIAL, THE APPLICATION AREA SHALL BE FREE OF CONTAMINATION. THE CONTRACTOR SHALL CLEAN THE ROADWAY SURFACE PRIOR TO THE LINE APPLICAITON IN A MANNER AND TO THE EXTENT REQUIRED BY THE ENGINEER.

GLASS BEADS SHALL BE APPLIED IMMEDIATELY AFTER APPLICATION OF THE PAINT LINE.

EXCEPT WHEN USED AS A TEMPORARY MARKING, PAVEMENT MARKINGS SHALL ONLY BE APPLIED IN SEASONABLE WEATHER WHEN AIR TEMPERATURE IS 50 DEGREES FARHENHEIT OR HIGHER AND SHALL NOT BE APPLIED WHEN THE WIND OR OTHER CONDITIONS CAUSE A FILD OR DUST TO BE DEPOSITED ON THE PAVEMENT SURFACE AFTER CLEANING AND BEFORE THE MARKING MATERIAL CAN BE APPLIED.

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.

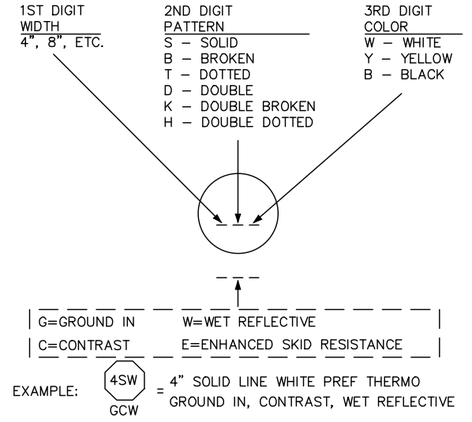
PERMANENT SIGNING AND PAVEMENT MARKING PLAN INDEX

SYMBOLS & MATERIALS LEGEND

- CROSSWALK BLOCK WHITE PREFORM THERMOPLASTIC
- CROSSWALK BLOCK WHITE PREFORM THERMOPLASTIC GROUND IN ENHANCED SKID RESISTANCE
- PAVEMENT MESSAGE (LT ARROW) WHITE PREFORM THERMOPLASTIC
- PAVEMENT MESSAGE (RT ARROW) WHITE PREFORM THERMOPLASTIC
- PAVEMENT MESSAGE (ONLY) WHITE PREFORM THERMOPLASTIC

STRIPING KEY

- CIRCLE–MULTI–COMPONENT
- SQUARE–PREF TAPE
- TRIANGLE–PAINT
- OCTAGON–PREF THERMO



I HEREBY CERTIFY THAT SHEETS 127 THROUGH 142 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: BRYAN T. NEMETH LICENSE # 43354

DATE: 05/26/2020 SIGNATURE:

DESIGNER: BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
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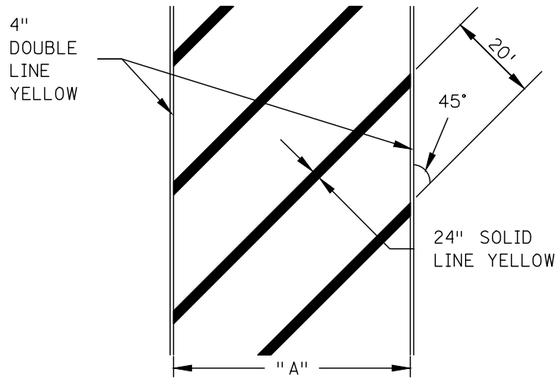
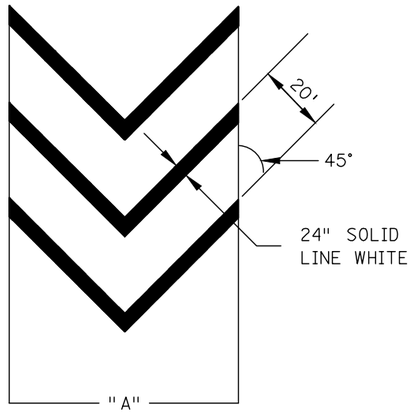
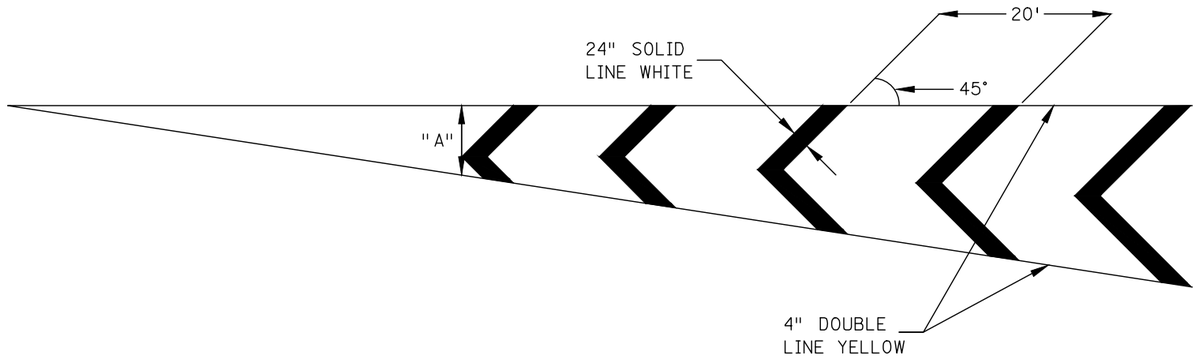
SIGNING AND PERMANENT PAVEMENT MARKING PLAN

SHEET 127 OF 189

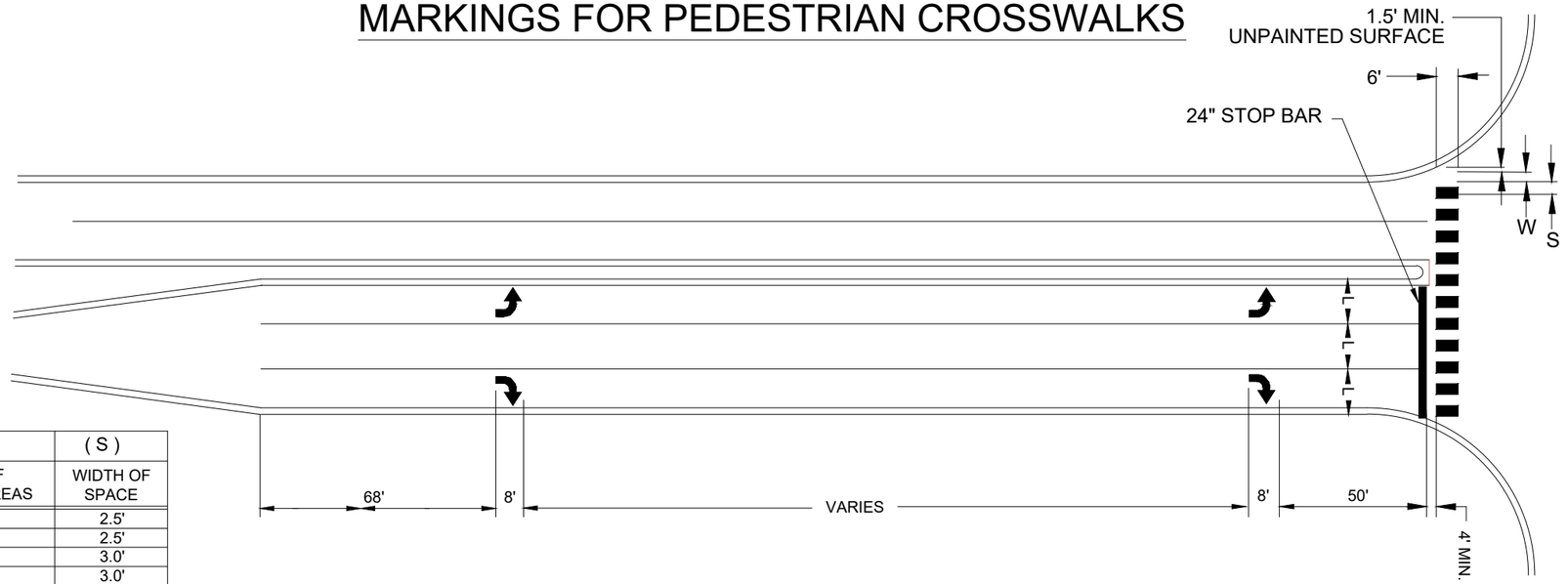
CROSSHATCHING







MARKINGS FOR PEDESTRIAN CROSSWALKS



(L)	(W)	(S)
WIDTH OF INSIDE LANE	WIDTH OF PAINTED AREAS	WIDTH OF SPACE
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'

NOTES: CROSSWALKS:

1.) PAINTED AREAS ARE TO BE CENTERED ON CENTER AND LANE LINES, EVEN IF INTERSECTION IS NOT ALIGNED.

2.) LOCATION OF ZEBRA CROSSWALKS AND STOP BARS, SIGNAL LOOPS AND PED RAMPS ARE APPROXIMATE. FINAL LOCATIONS ARE TO BE DETERMINED AND FIELD VERFIED DURING CONSTRUCTION BY THE FIELD ENGR.

3.) ZEBRA CROSSWALKS ARE TO BE PARALLEL TO THE DRIVING LANE OR LANES. EVEN IF THE STREET IS ON AN ANGLE TO THE INTERSECTION.

4.) A MIN. OF 1.5' (450mm) CLEAR DISTANCE MUST BE LEFT ADJACENT TO THE CURB. IF LAST PAINTED AREA FALLS INTO THIS AREA, IT MUST BE OMITTED.

5.) ON TWO LANE STREETS, USE SPACING SHOWN FOR AN 11' (3.3mm) INSIDE LANE.

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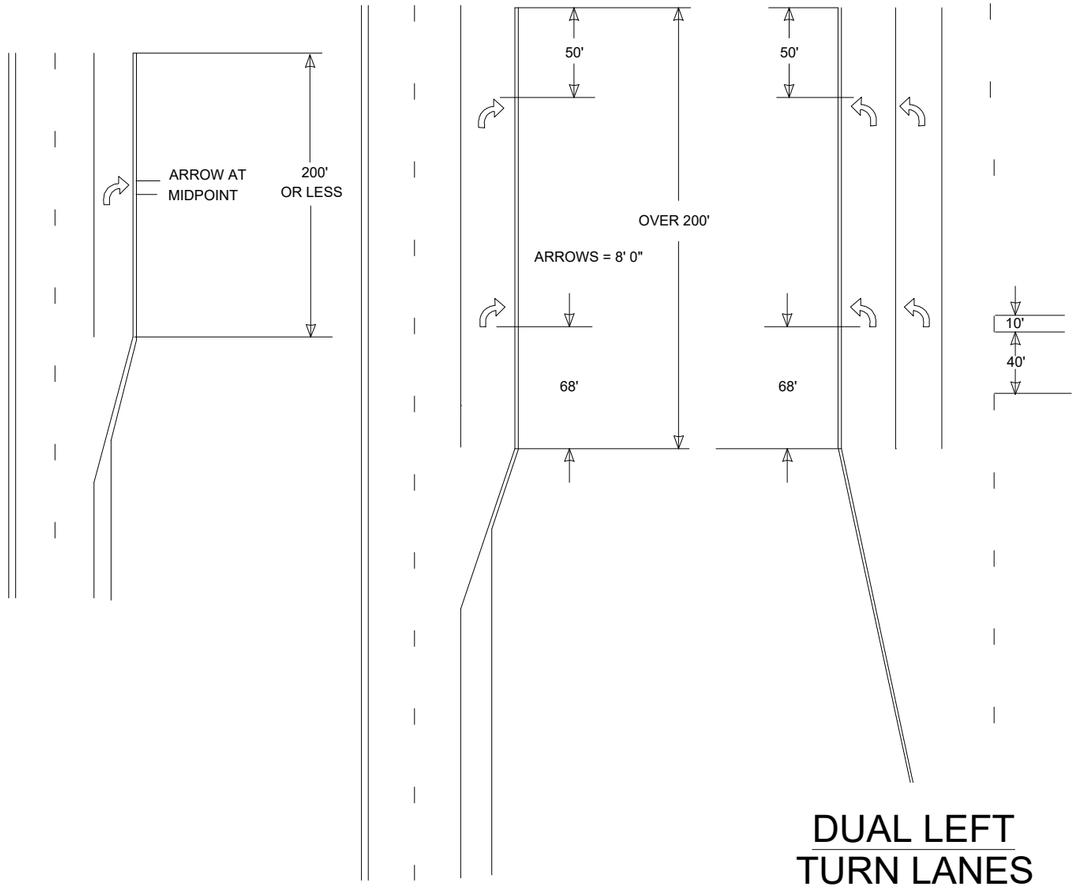
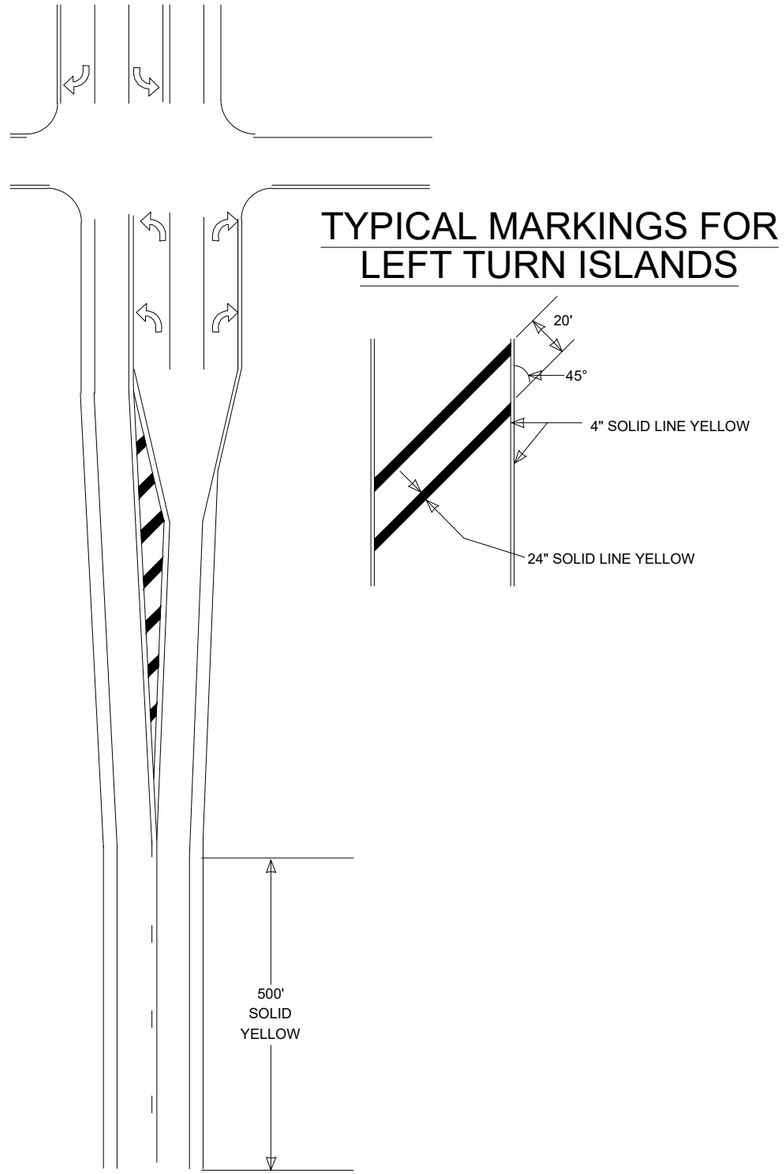
TYPICAL MESSAGE PLACEMENT FOR TURN LANES



DUAL LEFT TURN LANES

TYPICAL MARKINGS FOR LEFT TURN ISLANDS



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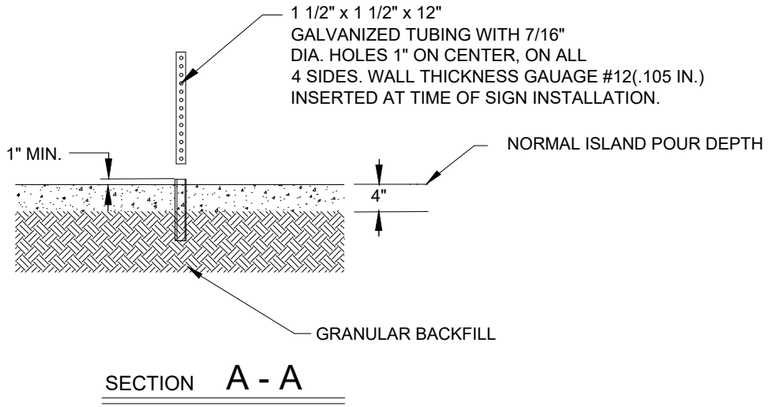

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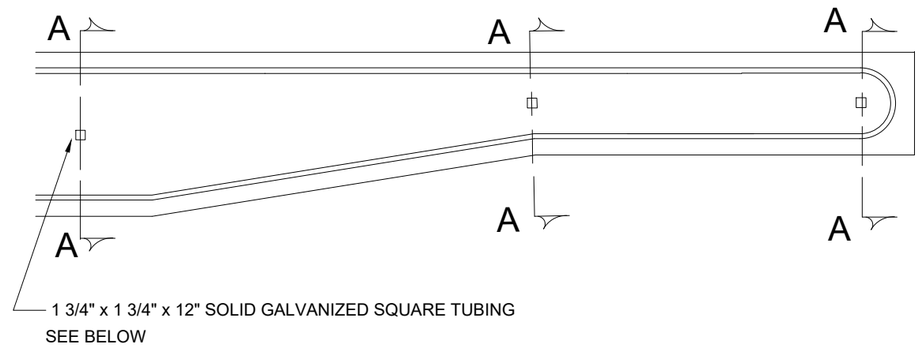
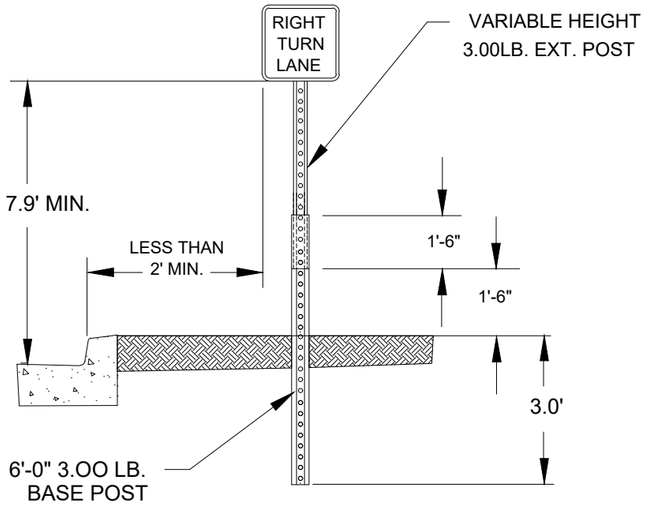
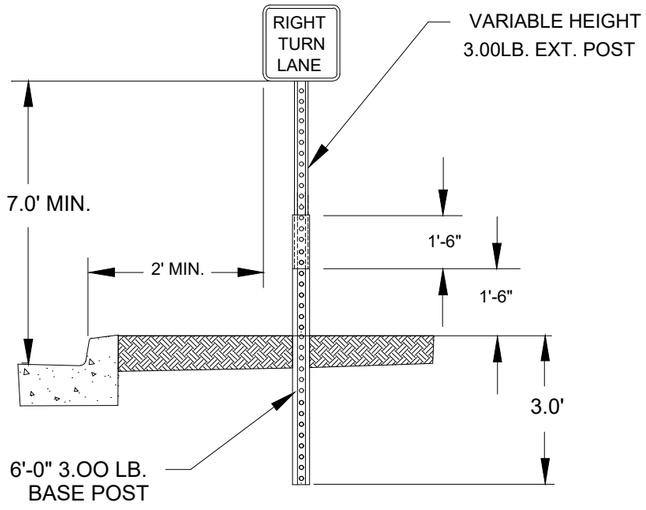


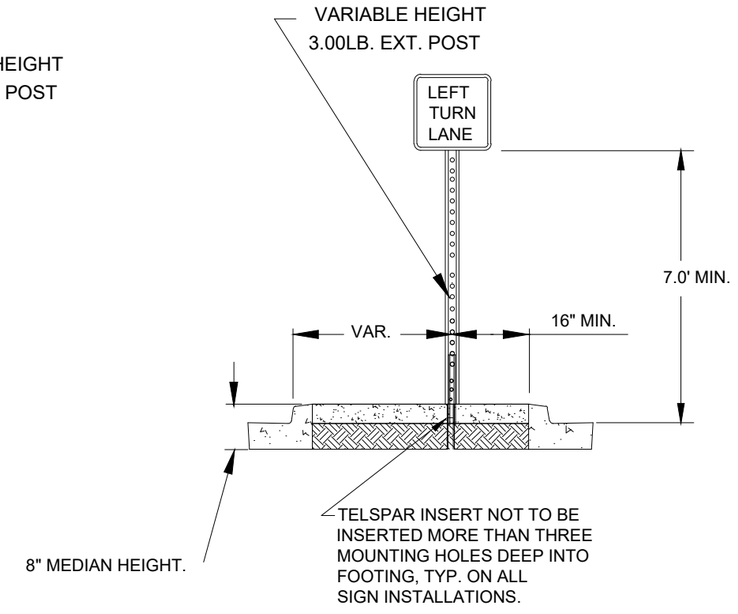
GROUND POST MOUNT SIGN
INSTALLATION TYPICAL
FOR AREAS LESS THAN THE 2' MIN



GROUND POST MOUNT SIGN
INSTALLATION TYPICAL



ISLAND MOUNT BREAK-AWAY SIGN
INSTALLATION TYPICAL



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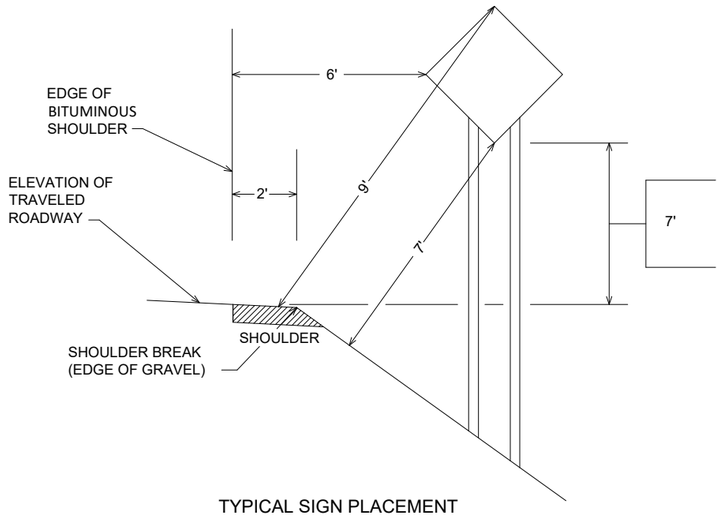
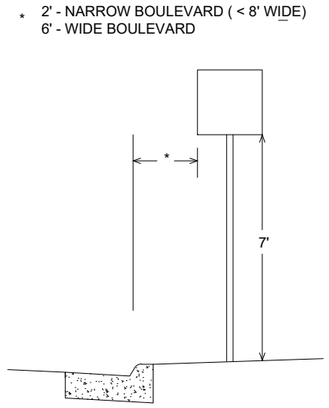
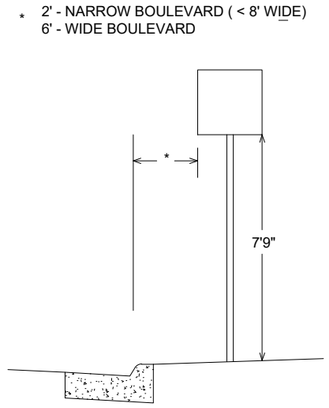
RURAL

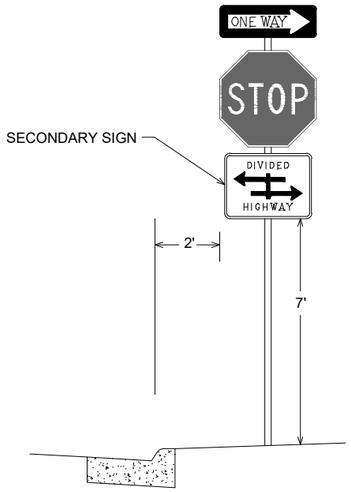


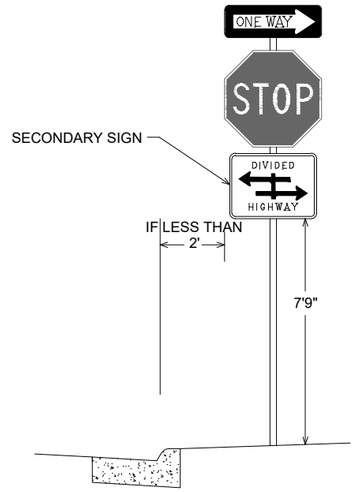
TYPICAL SIGN PLACEMENT

URBAN





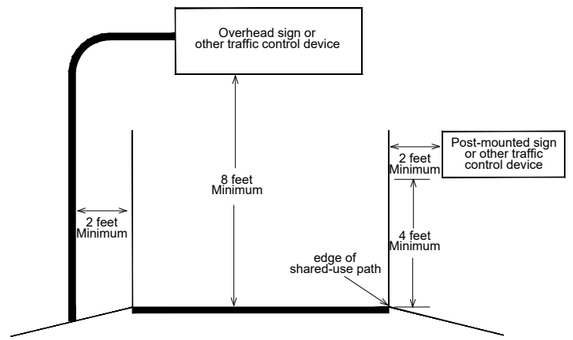




TYPICAL SIGN PLACEMENT

NOTE:

- ALL DIMENSIONS ARE MINIMUMS
- MAINTAIN 2' CLEAR FROM SIGNS TO BITUMINOUS TRAIL
- 7'9" SIGN CLEARANCE IF CANNOT MAINTAIN 2' CLEAR FROM SIGNS TO BITUMINOUS TRAIL



TYPICAL SIGN PLACEMENT
SHARED-USE PATH

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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED	DRAWN	CHECKED
BTN	JDZ	BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
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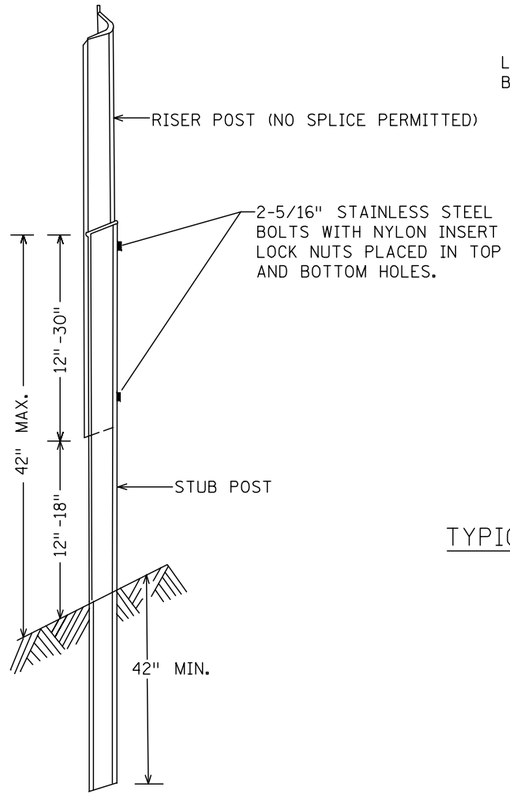
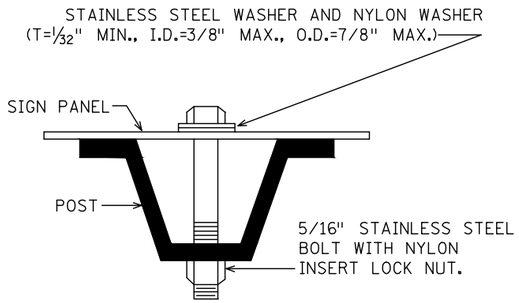
CSAH 8 RECONSTRUCTION
SIGNING AND PERMANENT PAVEMENT MARKING PLAN

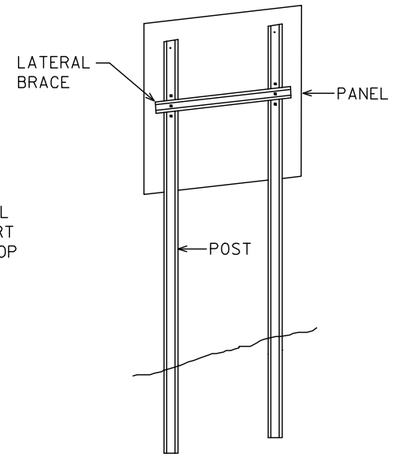
TYPE C & D POST



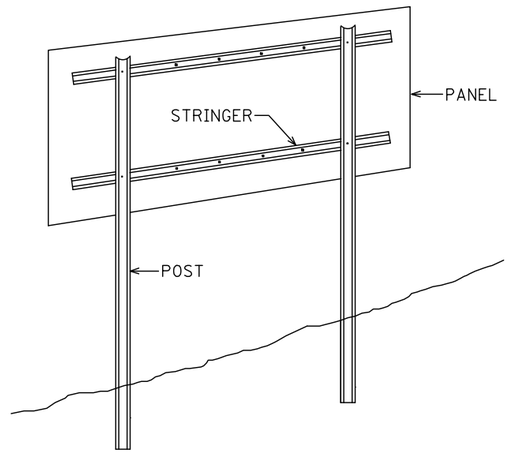
U POST BREAKAWAY SPLICE



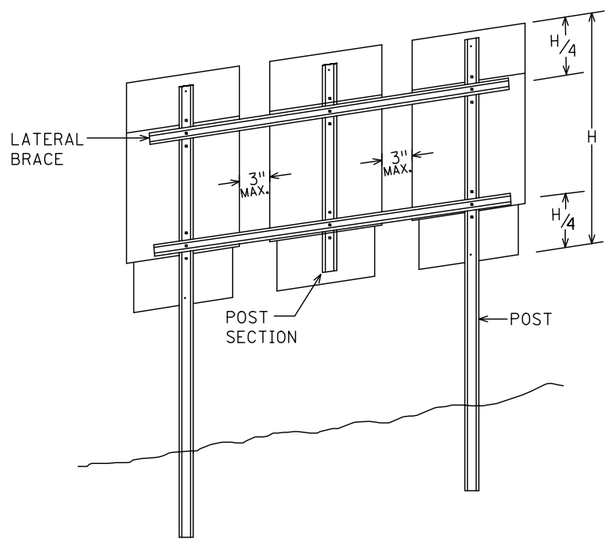
U POST MOUNTING
TYPE C SIGNS



TYPICAL TYPE C INSTALLATION



TYPICAL TYPE D INSTALLATION



MODIFIED TYPE C INSTALLATION

NOTES:

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

TYPE C & D SIGN
STRUCTURAL DETAILS

Sheet 1 of 2

05 MAY 2017

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LIC. NO. 43354 DATE 05/26/2020

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BTN	JDZ	BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
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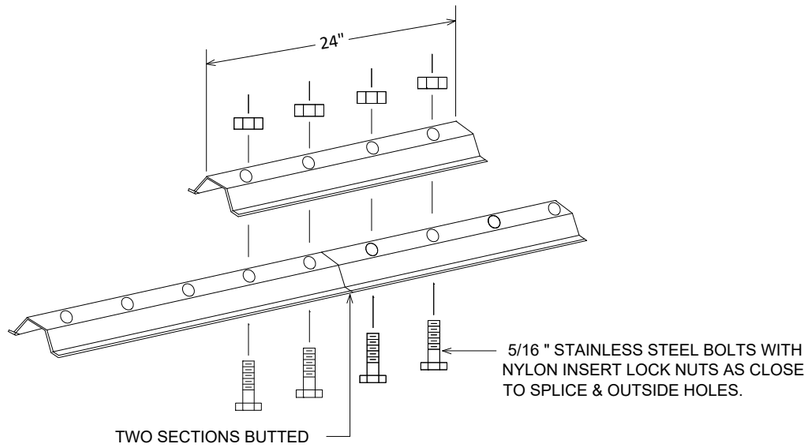
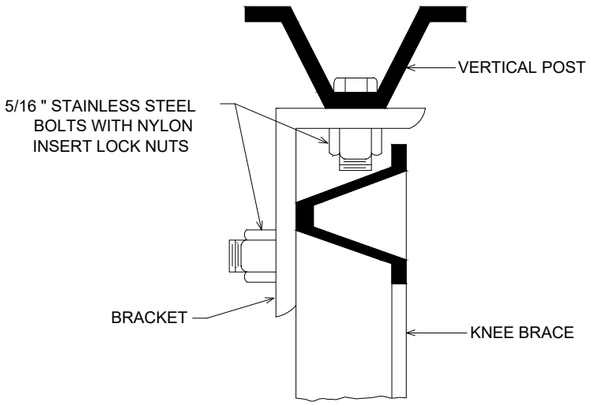
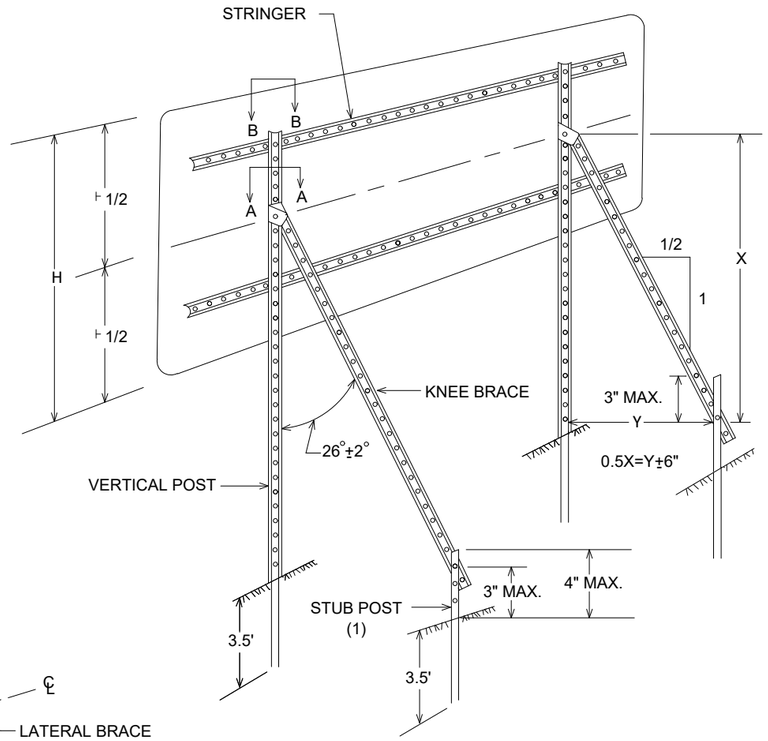
SHEET 132 OF 189



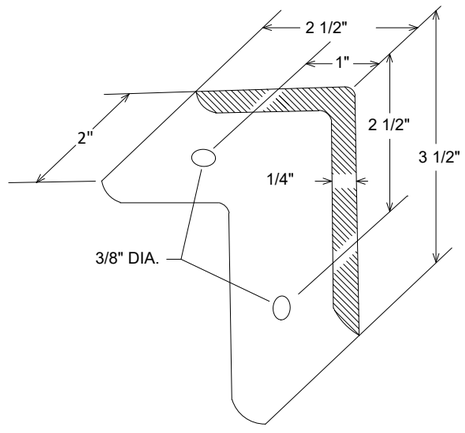
LATERAL BRACE OR STRINGER SPLICE DETAIL (EXPLODED VIEW)



SECTION A-A

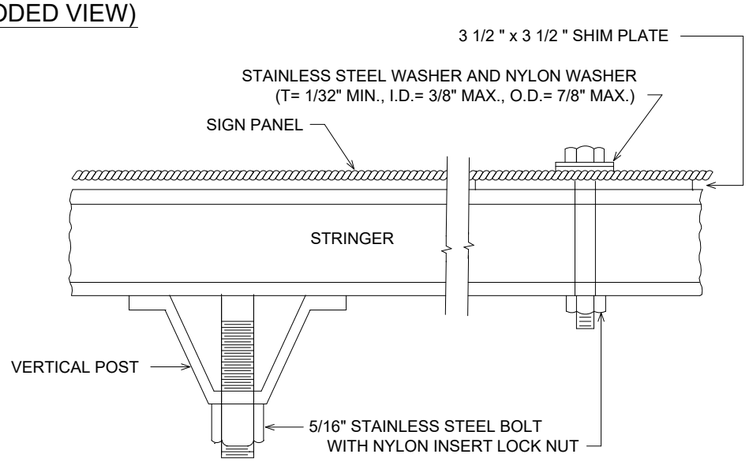


TYPICAL "A-FRAME" INSTALLATION TYPE "D" SIGNS

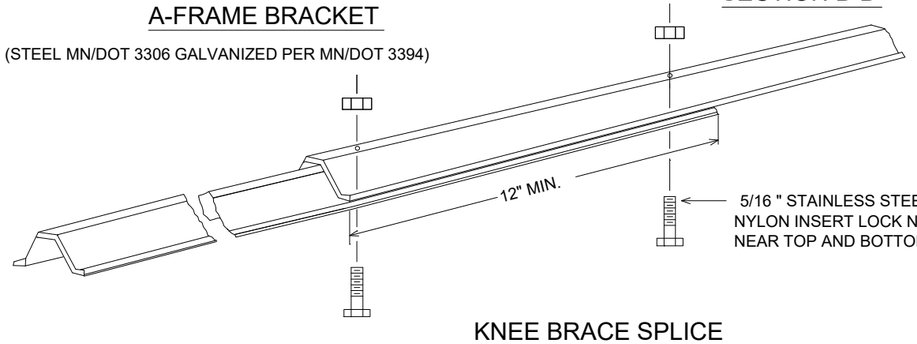


A-FRAME BRACKET

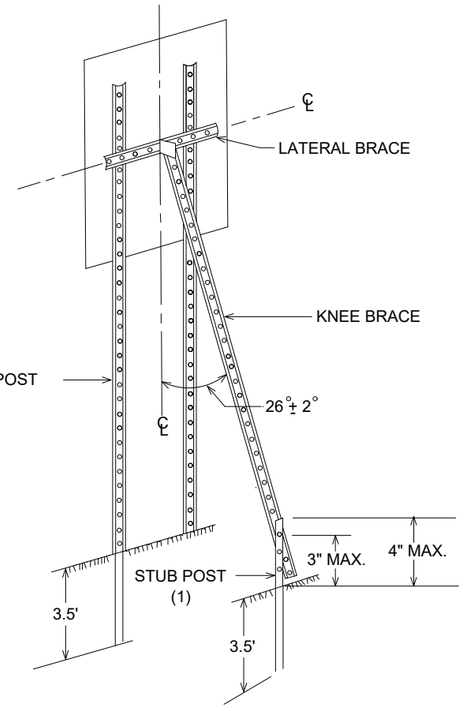
(STEEL MN/DOT 3306 GALVANIZED PER MN/DOT 3394)



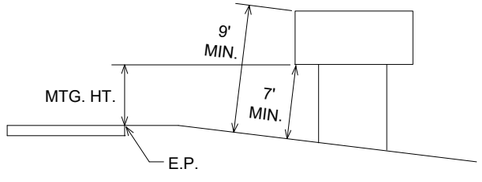
SECTION B-B



KNEE BRACE SPLICE



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



TYPICAL MOUNTING

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

TYPE C & D SIGN STRUCTURAL DETAILS

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zacharypa
5/27/2020
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DESIGNED BTN
DRAWN JDZ
CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
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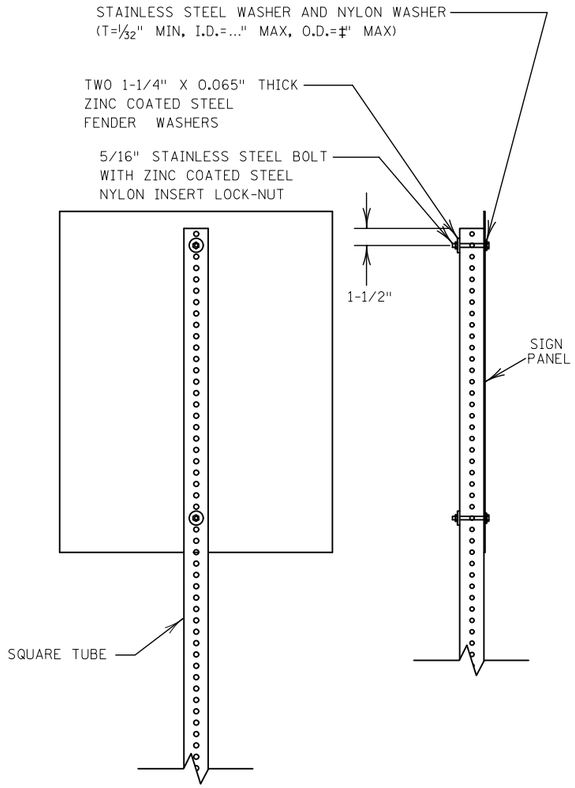
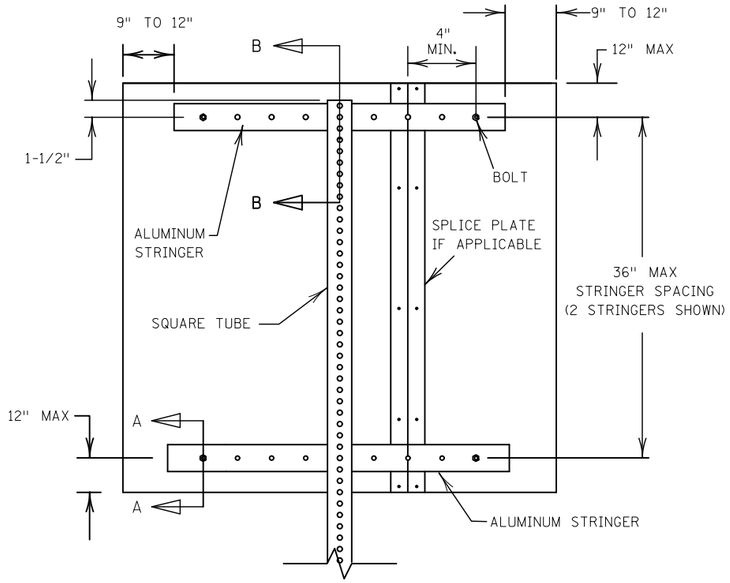
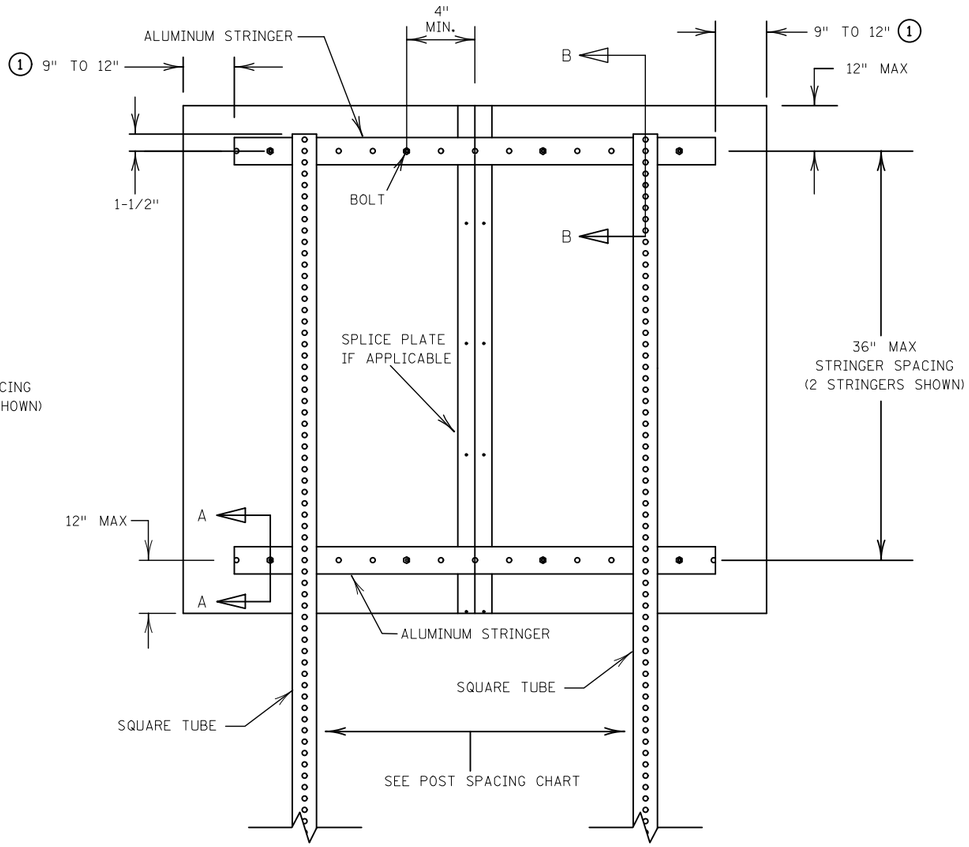


FOR SIGN PANELS UP TO 30" WIDE

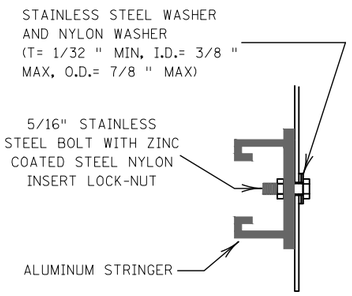


FOR SIGN PANELS 36" WIDE
OR GREATER ON ONE POST

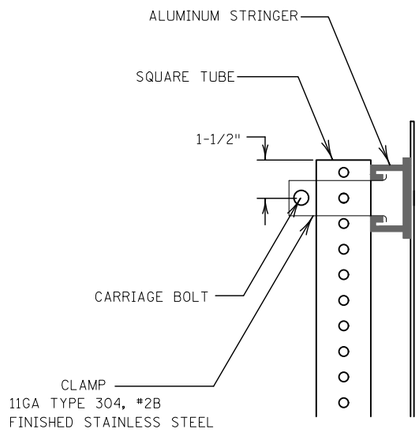


FOR SIGN PANELS ON TWO OR MORE POSTS

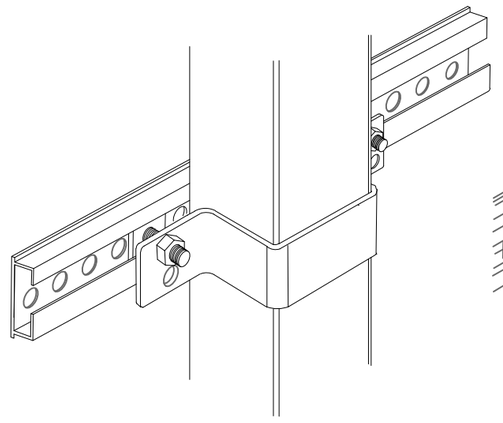
(1) IF POST SPACING REQUIRES PLACEMENT OF A POST WITHIN THIS AREA, EXTEND STRINGERS AS NEEDED TO ACCOMMODATE THE STRINGER TO POST CLAMP.



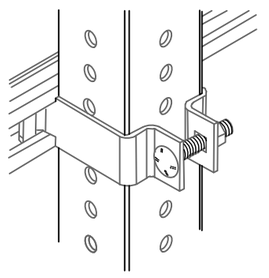
VIEW A-A



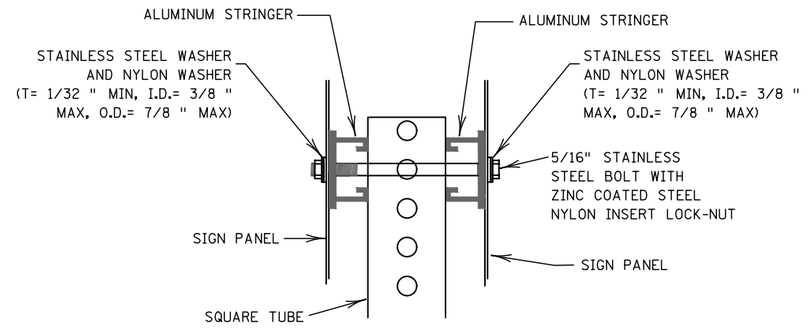
VIEW B-B



CLAMP DETAIL
4" SQUARE TUBE



CLAMP DETAIL
2" AND 2 ½" SQUARE TUBE



BACK TO BACK
SIGN MOUNTING WITH STRINGERS

NOTES:
1. BOLT SIGN PANELS TO STRINGERS OR RISER POSTS AT NO GREATER THAN 24 INCH SPACING.
   SEE THE MNDOT STANDARD SIGNS AND MARKINGS MANUAL FOR MOUNTING HOLES (PUNCH CODES) INFORMATION.
2. STRINGERS SHALL BE CENTERED ON SIGN PANEL.

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zacharypa 5/27/2020

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DESIGNED BTN
DRAWN JDZ
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BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
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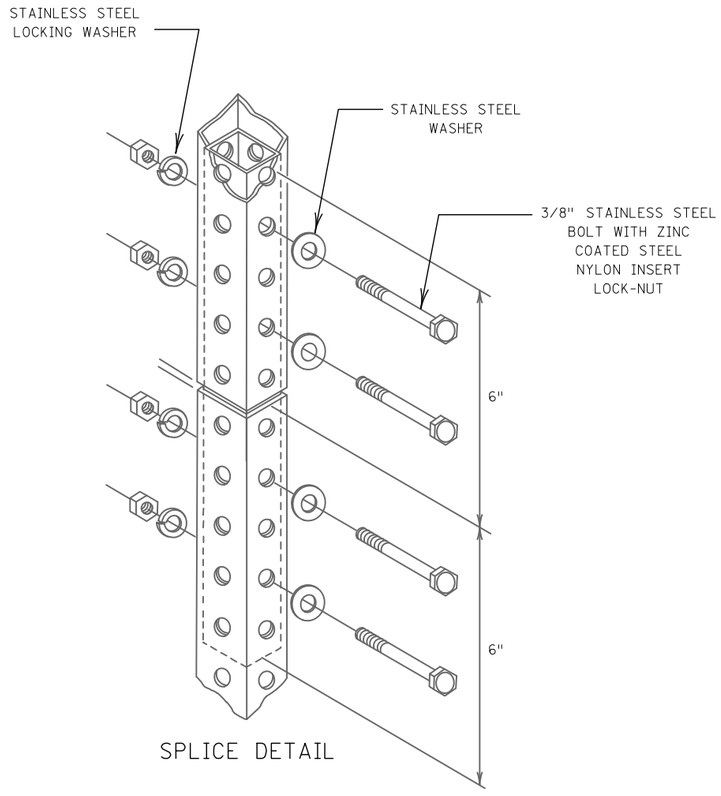

SPLICE DETAIL

NO MORE THAN ONE SPLICE PER POST.

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

INTERIOR POST STUD SHALL BE ONE SIZE SMALLER FOR A TIGHT FIT. IF RISER POST IS 2-1/2", INTERIOR POST IS 2-3/16". IF RISER POST IS 2", INTERIOR POST IS 1-3/4".

PANEL WIDTH	SQUARE TUBE POST SPACING						
	2 POSTS	3 POSTS	4 POSTS	5 POSTS	6 POSTS	7 POSTS	8 POSTS
(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)	(IN)
24	12						
30	12						
36	12						
42	18						
48	24						
54	30						
60	36						
66	36						
72	42						
78	42						
84	48						
90	48	42					
96	48	42					
102	54	42					
108	54	42					
114	60	42					
120	60	48					
126	66	48					
132	66	48	42				
138	72	48	42				
144	72	48	42				
150	78	54	42				
156	78	54	42				
162	84	54	42				
168	84	60	48				
174	90	60	48	42			
180	90	60	48	42			
186	96	66	48	42			
192	96	66	48	42			
198	102	66	54	42			
204	102	72	54	42			
210	108	72	54	42			
216	108	72	54	48	42		
222	114	78	60	48	42		
228	114	78	60	48	42		
234	120	78	60	48	42		
240	120	84	60	48	42		
246		84	66	54	42		
252		84	66	54	42		
258		90	66	54	42	42	
264		90	66	54	48	42	
270		90	72	54	48	42	
276		96	72	60	48	42	
282		96	72	60	48	42	
288		96	72	60	48	42	
294		102	78	60	54	42	
300		102	78	60	54	42	42
306		102	78	66	54	42	42
312		108	78	66	54	48	42
318		108	84	66	54	48	42
324		108	84	66	54	48	42
330		114	84	66	60	48	42
336		114	84	72	60	48	42

DISTANCES ARE CENTER-TO-CENTER OF POSTS

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NUMBER OF STRINGERS FOR 4 INCH POSTS

PANEL HEIGHT (INCHES)	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324	330	336
144			5	5	5	5	5	6	6	5	5	5	5	5	5	6	6	6	6	7	5	5	5	5	6	6	6	6	6	7	5	5	6	6	6	6	6	6	7	7																	
138			5	5	5	5	5	6	6	7	5	5	5	5	5	5	6	6	6	7	7	5	5	5	5	6	6	6	6	6	7	7	5	6	6	6	6	6	6	7	7	7															
132			4	4	4	4	5	5	6	7	4	4	4	5	5	5	5	6	6	6	7	7	5	5	5	5	6	6	6	6	6	7	7	7	5	6	6	6	6	6	6	7	7	7	7											
126				4	4	4	5	5	6	6	7	4	4	4	5	5	5	5	6	6	6	7	7	7	5	5	5	6	6	6	6	6	6	7	7	7	5	6	6	6	6	6	6	7	7	7	7	7								
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48										3	3	3	3	3	4	4	4	4	4	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	4	4	4	4	4	4	4	4					
42										2	3	3	3	3	3	4	4	4	4	2	2	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	3	3	3	3	3	3	3	3	3	4	4	4	4					
36										2	2	2	3	3	3	3	3	3	3	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3					
30										2	2	2	2	2	2	3	3	3	3	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	3	3	3	3	3	3					
24										2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2					
18										2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2					
12										2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324	330	336
										1 POST										2 POST																					3 POST																

4 POST

PANEL WIDTH (INCHES)

NUMBER OF ALUMINUM STRINGERS FOR 2 1/2 INCH OR SMALLER POSTS

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

PANEL WIDTH (INCHES)

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BRYAN T. NEMETH
LIC. NO. 43364 DATE 05/26/2020

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BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
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S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNING AND PERMANENT PAVEMENT MARKING PLAN

SALVAGE & INSTALL SIGN TYPE SPECIAL — K

SIGN NUMBER	QUANTITY EACH	2564 S.P. 002-608-012 TOTAL (EACH)	DESCRIPTION
S-201	1	1	WATCH FOR BUSES ON SHOULDER
S-202	1	1	UNIV. SERV. RD/OSBORNE RD
S-203	1	1	5TH ST NE/OSBORNE RD
S-204	4	4	TRANSIT SIGN 824
S-205	1	1	TERRACE RD/OSBORNE RD
S-206	1	1	MADISON ST/OSBORNE RD
S-207	1	1	MONROE ST/OSBORNE RD
S-208	1	1	QUINCY ST/OSBORNE RD
S-209	7	7	TRANSIT SIGN 10
S-210	1	1	JACKSON ST NE (GREEN)/OSBORNE RD
S-211	1	1	JACKSON ST (BLUE)/OSBORNE RD
S-212	1	1	VAN BUREN ST (GREEN)/OSBORNE RD
S-213	1	1	VAN BUREN ST (BLUE)/OSBORNE RD
S-214	1	1	ABLE ST/OSBORNE RD
S-215	1	1	BAKER ST/OSBORNE RD
S-216	1	1	TYLER ST/OSBORNE RD
S-217	1	1	TAYLOR ST/OSBORNE RD
S-218	1	1	HWY 65 W SERV RD/ OSBORNE RD
TOTALS		27	

OBJECT MARKER & DELINEATORS — L

PANEL CODE NUMBER	S.A.P. 002-608-012	LOCATION
DELINEATOR TYPE RECOVERABLE	8	MEDIAN (YELLOW)
TOTALS	8	

SIGN PANELS TYPE C — J

SIGN NUMBER	QUANTITY EACH	POST: NUMBER OF POSTS	POST: POST TYPE	POST: RISER POST SIZE (INCHES)	POST: SURFACE TYPE	POST: LENGTH (FT)	MTG. HT. (1) (FT)	SIGN PANELS SIZE (IN)	AREA (SQ FT)	2564 S.P. 002-608-012 TOTAL (SQ FT)	PANEL CODE NUMBER	DESCRIPTION
C-1	2	1	ST	2 1/2	SOIL	13	7	24 X 24	4.00	8	R8-3	NO PARKING
C-2	6	1	ST	2	CONCRETE	15	7	24 X 30	5.00	30	R4-7c	KEEP RIGHT
								X 18		0	X4-2	DELINEATOR
C-3	4	1	ST	2	SOIL (2)	13	7	30 X 30	6.25	25	R5-1	DO NOT ENTER
C-4	3	1	ST	2	CONCRETE	12	7	36 X 12	3.00	9	R6-1	ONE WAY
C-5	3	1	ST	2 1/2	SOIL	14	7	36 X 12	3.00	9	R6-1	ONE WAY
								30 X 30	6.25	19	R1-1	STOP
C-6	1	1	ST	2	CONCRETE	14	7	24 X 12	2.00	2	M3-2a	EAST
			ST					24 X 24	4.00	4	M1-6	ANOKA COUNTY 8
C-7	1	1	ST	2 1/2	CONCRETE	15	7	36 X 36	9.00	9	W9-1	RIGHT LANE ENDS
								24 X 18	3.00	3	W20-100P	100 FEET
C-8	4	1	ST	2	SOIL	13	7	30 X 30	6.25	25	R3-X1	RIGHT TURN LANE
C-9	3	1	ST	2 1/2	SOIL (3)	15	7	24 X 30	5.00	15	R2-1	SPEED LIMIT
								24 X 24	4.00	12	R8-3	NO PARKING
C-10	1	1	ST	2	CONCRETE	13	7	30 X 30	6.25	6	R3-X2	LEFT TURN LANE
C-11	2	1	ST	2 1/2	CONCRETE	14	7	24 X 24	4.00	8	R3-4	NO U-TURN
								24 X 30	5.00	10	R4-7c	KEEP RIGHT
								X 18	0.00	0	X4-2	DELINEATOR
C-12	2	1	ST	2	SOIL	13	7	30 X 30	6.25	13	R3-7R	RIGHT LANE MUST TURN RIGHT
C-13	1	1	ST	2	SOIL	16	7	21 X 15	2.19	2	M2-1a	JUNCTION
								24 X 24	4.00	4	M1-5a	MINNESOTA 47
								24 X 24	4.00	4	R8-3	NO PARKING
C-14	3	1	ST	2 1/2	SOIL	13	7	54 X 30	11.25	34	R3-8ACA	LEFT/THRU/RIGHT ONLY
C-15	16	1	ST	2	SOIL	13	7	30 X 30	6.25	100	R1-1	STOP
C-16	1	1	ST	2	SOIL	15	7	54 X 30	11.25	11	R3-8ACA	LEFT/THRU/RIGHT ONLY
								24 X 24	4.00	4	R8-3	NO PARKING
C-17	1	1	ST	2	SOIL	15	7	36 X 30	7.50	8	R3-8ACA	LEFT/THRU ONLY
								24 X 24	4.00	4	R8-3	NO PARKING
C-18	3	1	ST	2	SOIL	13	7	30 X 30	6.25	19	W3-3	SIGNAL AHEAD
C-19	17	1	ST	2	SOIL	12	7	18 X 18	2.25	38	R1-1	STOP
C-20	1	1	ST	2	SOIL	13	7	24 X 24	4.00	4	R3-2	NO LEFT TURN
C-21	2	1	ST	2	SOIL	13	7	36 X 30	7.50	15	R3-8ACA	LEFT/THRU ONLY
C-22	2	1	ST	2 1/2	SOIL	17	7	42 X 12	3.50	7	R4-X7P	BEGIN
								24 X 36	6.00	0	R3-9b	CENTER LEFT TURN LANE
								24 X 24	4.00	8	R8-3	NO PARKING
C-23	2	1	ST	2 1/2	SOIL	17	7	42 X 12	3.50	7	R4-X7P	END
								24 X 36	6.00	0	R3-9b	CENTER LEFT TURN LANE
								24 X 24	4.00	8	R8-3	NO PARKING
C-24	4	1	ST	2 1/2	SOIL	15	7	30 X 30	6.25	25	W11-2	PEDESTRIAN
								24 X 18	3.00	12	W20-100P	150 FEET
C-25	7	1	ST	2 1/2	SOIL	16	7	24 X 36	6.00	42	R3-9b	CENTER LEFT TURN LANE
								24 X 24	4.00	28	R8-3	NO PARKING
C-26	2	1	ST	2 1/2	SOIL	17	7	36 X 36	9.00	18	S1-1	SCHOOL PEDESTRIAN
								36 X 36				SCHOOL SPEED ZONE AHEAD
C-27	2	1	ST	2	SOIL	13	7	24 X 30	5.00	10	S5-2	END SCHOOL ZONE
C-28	3	1	ST	2	SOIL	13	7	24 X 30	5.00	15	R2-1	SPEED LIMIT
C-29	2	1	ST	2 1/2	SOIL	15	7	36 X 36	9.00	18	S1-1	SCHOOL PEDESTRIAN
								24 X 18	3.00	6	W20-100P	150 FEET
C-30	1	1	ST	2 1/2	SOIL	15	7	30 X 30	6.25	6	R1-1	STOP
								18 X 24	3.00	3		NO PARKING SCHOOL HOURS
C-31	1	1	ST	2	SOIL	14	7	21 X 15	2.19	2	M2-1a	JUNCTION
								24 X 24	4.00	4	M1-5a	MINNESOTA 65
C-32	1	1	ST	2 1/2	SOIL	16	7	30 X 30	6.25	6	R5-1	DO NOT ENTER
								30 X 30	6.25	6	R5-1	DO NOT ENTER
C-33	1	1	ST	2	SOIL	14	7	24 X 12	2.00	2	M3-2a	WEST
								24 X 24	4.00	4	M1-6	ANOKA COUNTY 8
									TOTALS	691		

NOTES:

(1) MOUNTING HEIGHT IS 7' MINIMUM. SEE SIGNING DETAIL SHEEET 174 FOR TYPICAL MOUNTING.

(2) 2 WILL BE MOUNTED IN SOIL. 2 WILL BE MOUNTED IN CONCRETE.

(3) 2 WILL BE MOUNTED IN SOIL. 1WILL BE MOUNTED IN CONCRETE.

GENERAL NOTES:

1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NO INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE SHEETS 131 TO 132 FOR STRUCTURAL DETAILS.
3. SEE STANDARD SIGNS MANUAL FOR PUNCHING CODE AND DETAILED DRAWINGS OF TYPE C SIGN PANELS.
4. FOR MOUNTING DETAILS, SEE SHEET 131 TO 132.

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BRYAN T. NEMETH

LIC. NO. 43384 DATE 05/26/2020

DESIGNED BTN | DRAWN JDZ | CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
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REV.	BY	DATE

S.P. 002-608-012

CSAH 8 RECONSTRUCTION

SIGNING AND PERMANENT PAVEMENT MARKING PLAN

PERMANENT PAVEMENT MARKINGS AND STRIPING

T

ROADWAY	2582 PAVEMENT MESSAGE (5) PREFORM THERMOPLASTIC	2582 PAVEMENT MARKING SPECIAL (4)	2582 4" SOLID LINE MULTI-COMPONENT (6)	2582 4" SOLID LINE MULTI-COMPONENT	2582 4" SOLID LINE MULTI-COMPONENT	2582 4" DOUBLE SOLID LINE MULTI-COMPONENT	2582 4" BROKEN LINE (1) MULTI-COMPONENT	2582 4" BROKEN LINE (1) MULTI-COMPONENT	2582 4" DOTTED LINE MULTI-COMPONENT	2582 8" DOTTED LINE (2) MULTI-COMPONENT	2582 24" SOLID LINE PREFORM THERMO GROUND IN ESR	2582 CROSSWALK PREFORM THERMOPLASTIC (3)	2582 CROSSWALK PREFORM THERMOPLASTIC GROUND IN ENHANCED SKID RESISTANCE (3)
			WHITE	WHITE	YELLOW	YELLOW	WHITE	YELLOW	WHITE	WHITE	WHITE	WHITE	WHITE
	SQ FT	SQ FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	SQ FT	SQ FT
CSAH 8	874	945	850	11511	3980	2363	240	570	83	56	91	3926	676
TOTALS	**874**	**945**	**850**	**11511**	**3980**	**2363**	**240**	**570**	**83**	**56**	**91**	**3926**	**676**

NOTES:

(1) LENGTH DOES NOT INCLUDE GAPS. BROKEN LINE STRIPE IS 10' STRIPE WITH A 40' GAP.

(2) LENGTH DOES NOT INCLUDE GAPS. DOTTED LINE STRIPE IS 3' STRIPE WITH A 12' GAP UNLESS NOTED OTHERWISE IN PLAN SHEET.

(3) CROSSWALK BLOCKS ARE 18 SQ FT.

(4) INCLUDES BOTH YELLOW AND WHITE GORE STRIPING AND STOP BARS.

(5) INCLUDES BOTH YELLOW AND WHITE PAVEMENT MESSAGES.

⚠ (6) LENGTH IS DOUBLED TO INCLUDE 8" SOLID LINE WHITE MULTI-COMPONENT.

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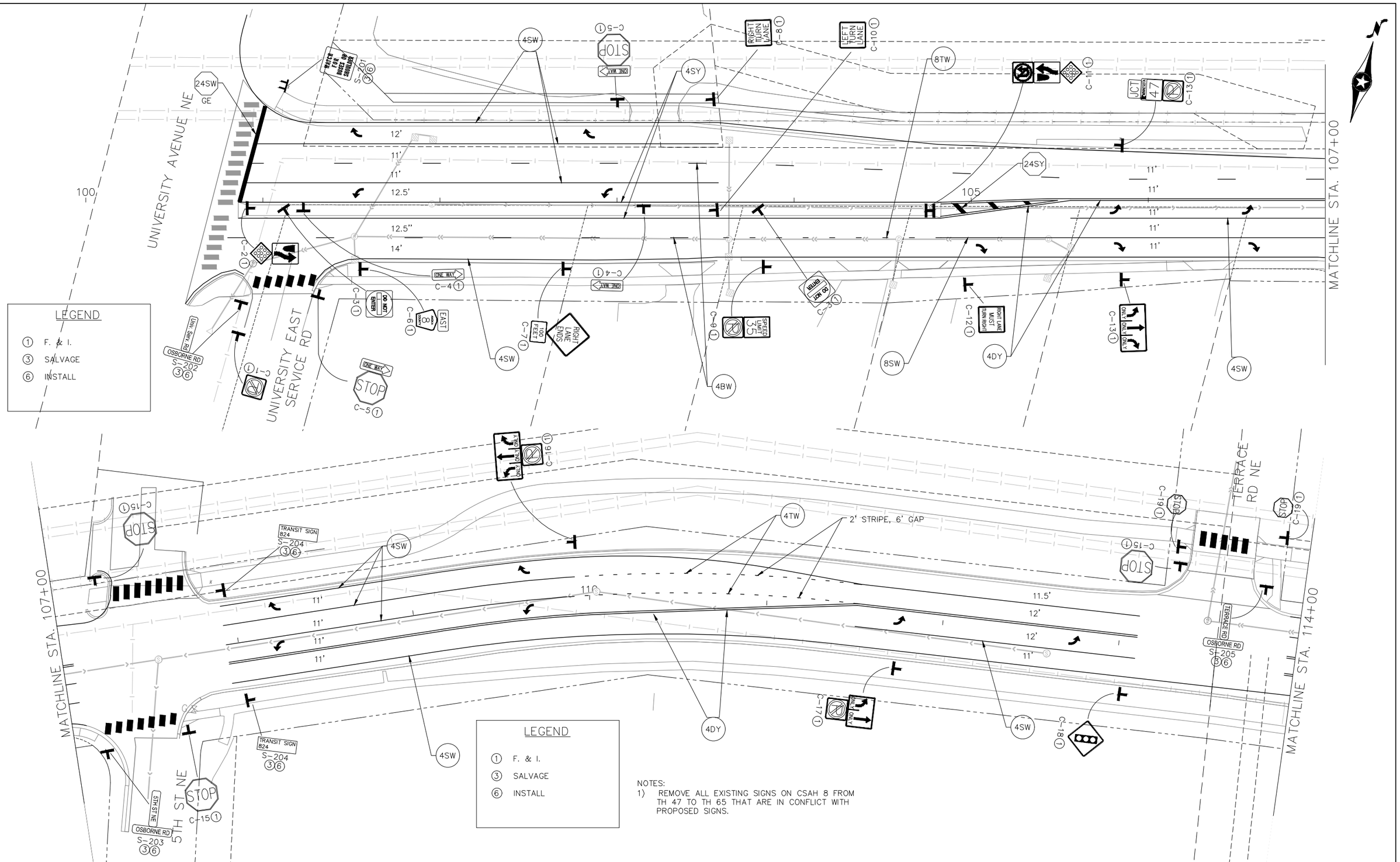
SIGNING AND PERMANENT PAVEMENT MARKING PLAN



LEGEND

① F. & I.
③ SALVAGE
⑥ INSTALL

NOTES:
1) REMOVE ALL EXISTING SIGNS ON CSAH 8 FROM TH 47 TO TH 65 THAT ARE IN CONFLICT WITH PROPOSED SIGNS.

0 25 50
SCALE FEET

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SHEET 139 OF 189

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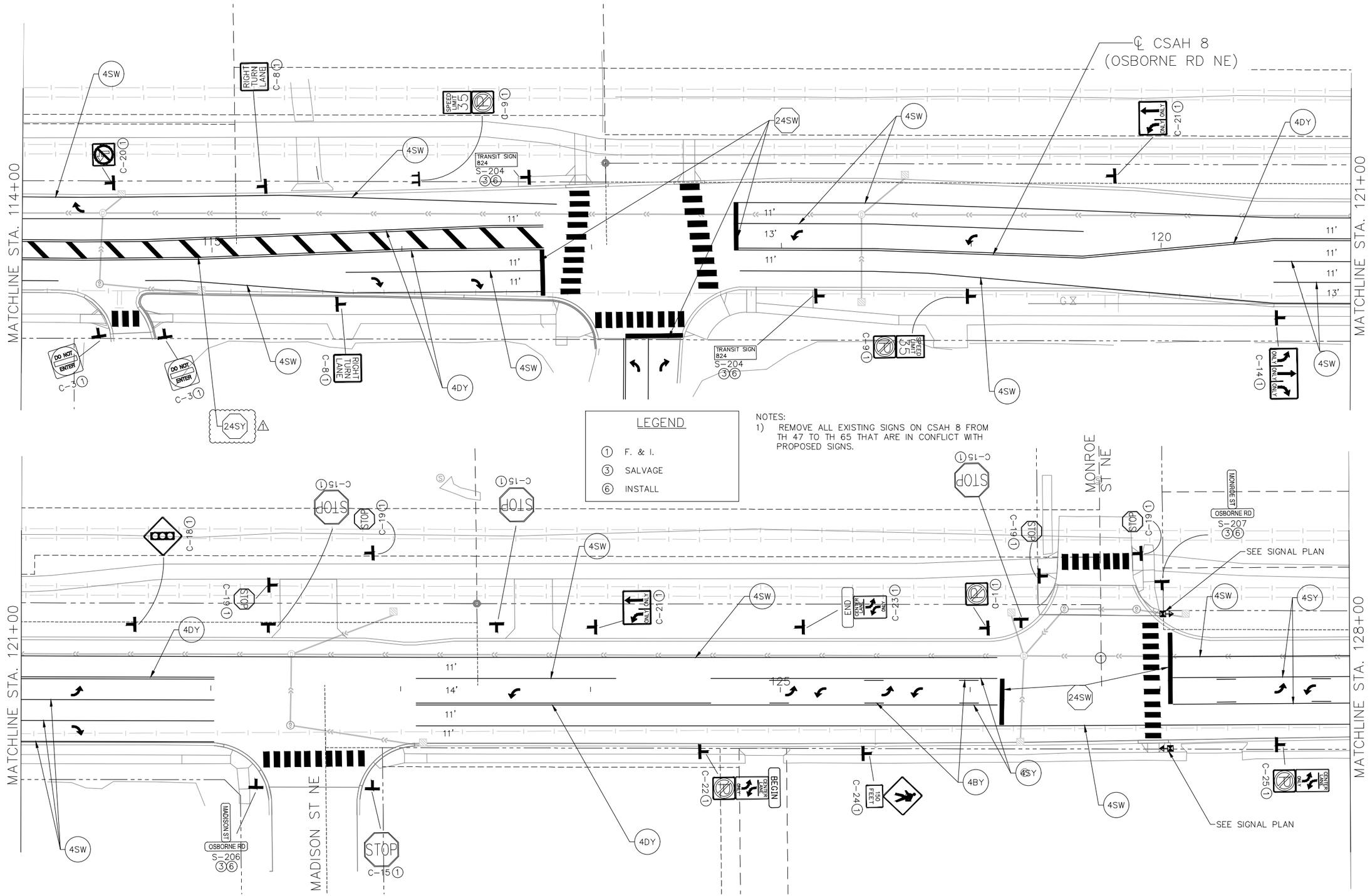
6/12/2020



LEGEND

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NOTES:
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SCALE 0 25 50 FEET

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SHEET 140R OF 189

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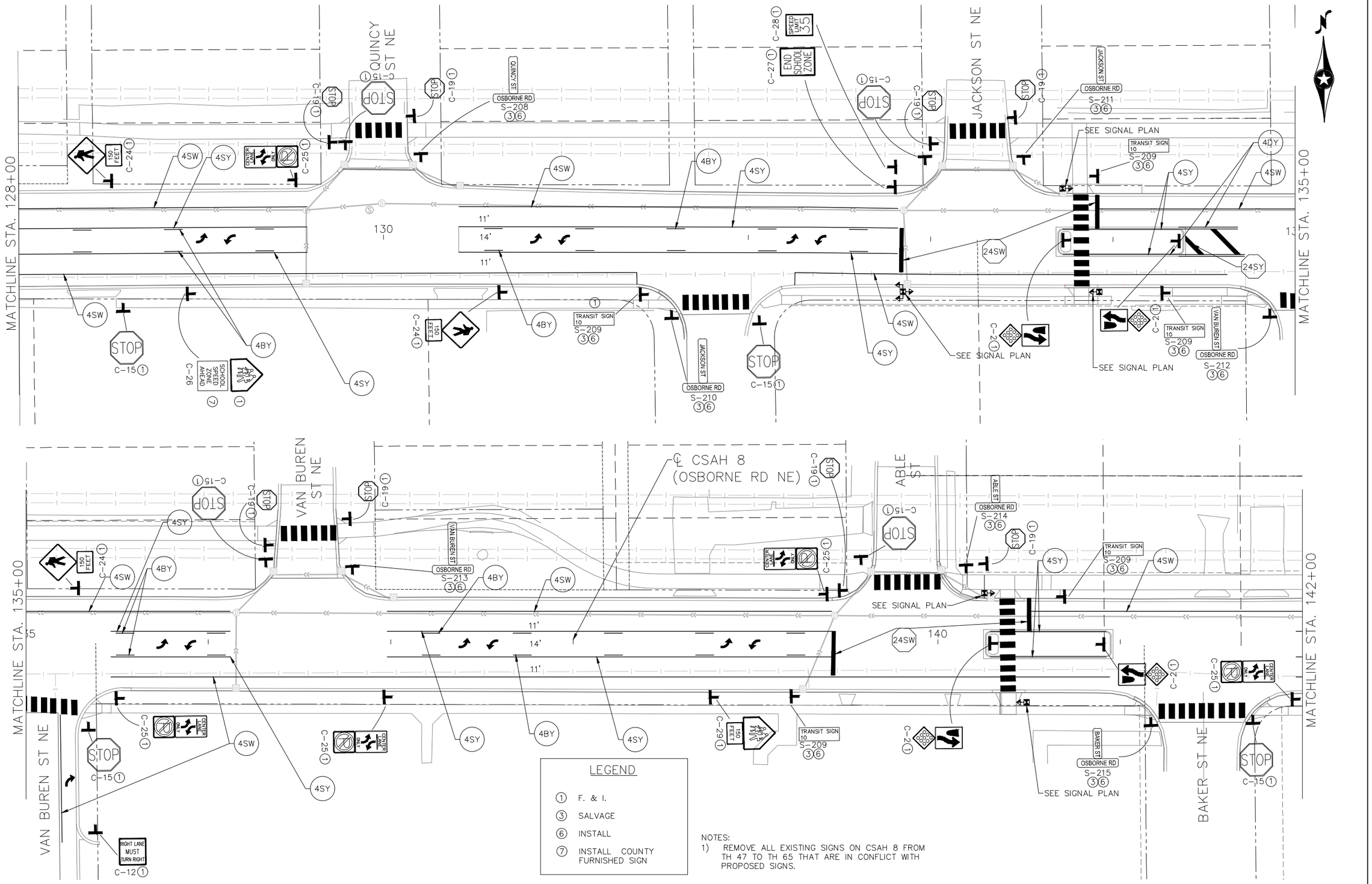

LEGEND

1. F. & I.
3. SALVAGE
6. INSTALL
7. INSTALL COUNTY FURNISHED SIGN

NOTES:
1) REMOVE ALL EXISTING SIGNS ON CSAH 8 FROM TH 47 TO TH 65 THAT ARE IN CONFLICT WITH PROPOSED SIGNS.

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SCALE FEET

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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED	DRAWN	CHECKED
BTN	JDZ	BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNING AND PERMANENT PAVEMENT MARKING PLAN

SHEET 141 OF 189

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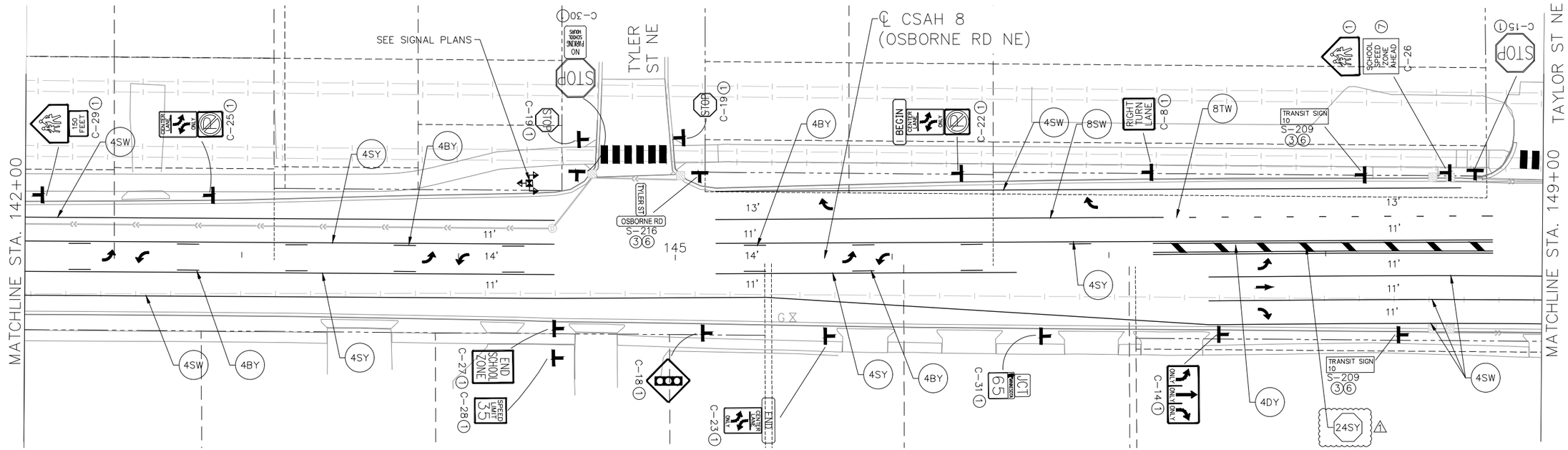

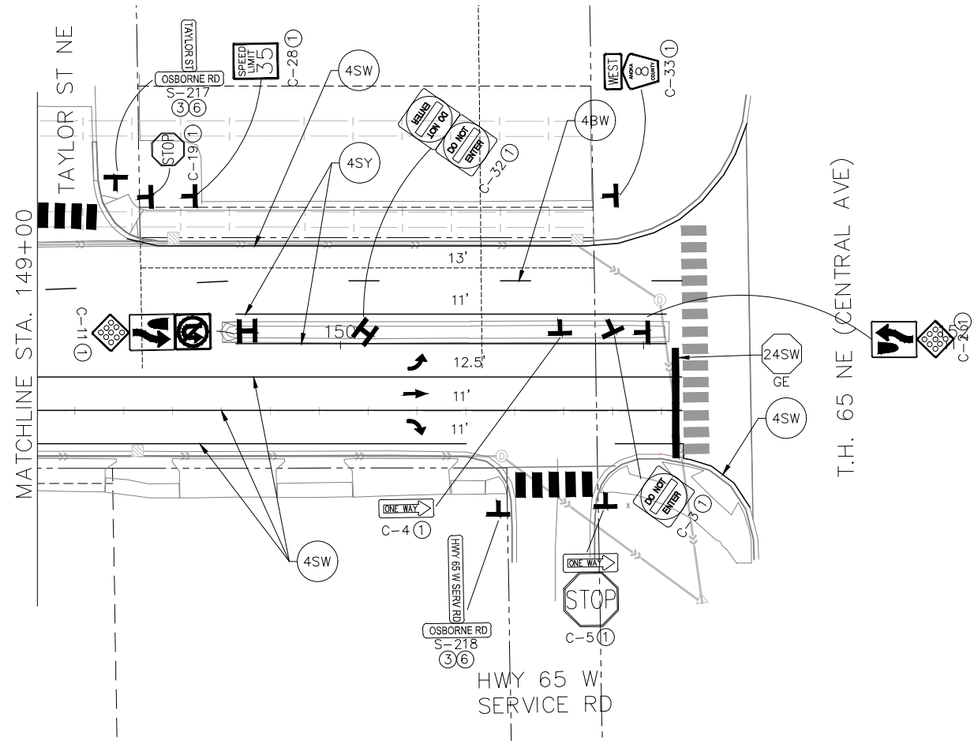

LEGEND

1	F. & I.
3	SALVAGE
6	INSTALL
7	INSTALL COUNTY FURNISHED SIGN

NOTES:
1) REMOVE ALL EXISTING SIGNS ON CSAH 8 FROM TH 47 TO TH 65 THAT ARE IN CONFLICT WITH PROPOSED SIGNS.

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LIC. NO. 43384 DATE 05/26/2020

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BURNSVILLE, MINNESOTA 55337
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REV.	BY	DATE
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S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNING AND PERMANENT PAVEMENT MARKING PLAN

SHEET 142R OF 189

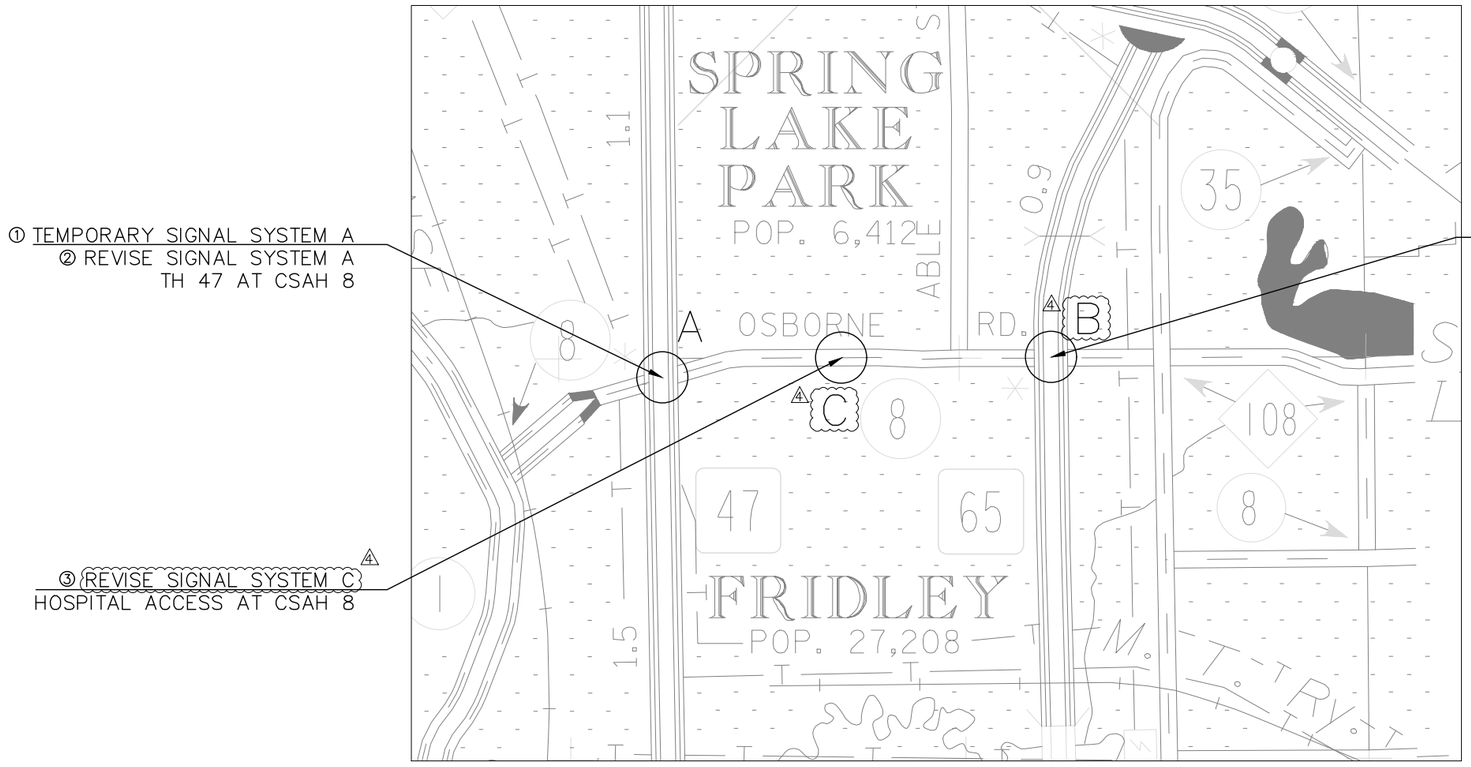
ABBREVIATIONS

APS	ACCESSIBLE PEDESTRIAN SIGNAL
AWF	ADVANCE WARNING FLASHER
C.D.	COUNT DOWN
D2–1 (e.g.)	DETECTOR (PHASE 2, NO. 1)
DEG	DEGREES
DWK	DON'T WALK
EQ.G	EQUIPMENT GROUND
EVP	EMERGENCY VEHICLE PRE–EMPTION
F&I	FURNISH AND INSTALL
FL	FLASH/FLASHING
FYA	FLASHING YELLOW ARROW
FYLA	FLASHING YELLOW LEFT ARROW
GLA	GREEN LEFT ARROW
GRN	GREEN INDICATION
GR. RD.	GROUND ROD
GRA	GREEN RIGHT ARROW
GTA	GREEN THRU ARROW
HH	HANDHOLE
HPS	HIGH PRESSURE SODIUM
IND	INDICATION
IMC	INTERMEDIATE METAL CONDUIT
INP	INPLACE
INS. GR.	INSULATED GROUND
JB	JUNCTION BOX
LED	LIGHT EMITTING DIODE
LUM	LUMINAIRE
NEU	NEUTRAL
NMC	NONMETALLIC CONDUIT
P1–1 (e.g.)	PEDESTRIAN INDICATION (PHASE 1, NO.1)
PB	PUSH BUTTON
PB2–1 (e.g.)	PUSH BUTTON (PHASE 2, NO. 1)
PEC	PHOTOELECTRIC CELL
PED	PEDESTRIAN
PVC	POLYVINYL CHLORIDE (CONDUIT)
RED	RED INDICATION
R&S	REMOVE AND SALVAGE
RLA	RED LEFT ARROW
RSC	RIGID STEEL CONDUIT
S&I	SALVAGE AND INSTALL
SOP	SOURCE OF POWER
SPR	SPARE
STA	STATION
WLK	WALK
YEL	YELLOW INDICATION
YLA	YELLOW LEFT ARROW
YRA	YELLOW RIGHT ARROW

SYMBOLS

- HANDHOLE
- HANDHOLE SPECIAL
- EQ.G CONNECTION
- EVP CONFIRMATORY LIGHT
- EVP DETECTOR
- EVP DETECTOR AND CONFIRMATORY LIGHT
- FIBER OPTIC VAULT (FO)
- LUMINAIRE NO. (1)
- SIGNAL BASE NO. (3)
- SIGNAL FACE NO./FLASHER FACE NO. (3-2)
- BARREL MOUNT BASE NO. (BM 4)
- WOOD POLE NO. (WP 1)
- SPLICE
- VIDEO DETECTION (V___)
- MICROWAVE DETECTION (M___)
- SONIC DETECTION (S___)

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL



NOTES:

① THE TEMPORARY SIGNAL CONSISTS OF FURNISHING AND INSTALLING (1) VIDEO DETECTION CAMERA (WITH MOUNT AND CABLES) TO BE USED WHILE THE LOOP DETECTORS ARE OUT OF SERVICE.

② THE REVISE SIGNAL SYSTEM INCLUDES FURNISHING AND INSTALLING PVC LOOP DETECTORS, A HAND HOLE, AND CONDUIT.

③ THE REVISE SIGNAL SYSTEM INCLUDES FURNISHING AND INSTALLING PVC LOOP DETECTORS AND PUSH BUTTONS.

④ THE REVISE SIGNAL SYSTEM INCLUDES FURNISHING AND INSTALLING PVC LOOP DETECTORS.

STANDARD PLATES – SIGNAL SYSTEMS

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

PLATE NO.		DESCRIPTION
▻ 7038	A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
▻ 7113	A	CONCRETE APPROACH NOSE DETAIL
▻ 8110	E	TRAFFIC SIGNAL BRACKETING (POLE MOUNTED)
► 8112	I	PEDESTAL FOUNDATION
▻ 8117	G	PRECAST CONCRETE HAND HOLE
▻ 8118	D	SERVICE EQUIPMENT AND POLE
▻ 8119	C	GROUND MOUNTED CABINET FOUNDATION
▻ 8120	Q	POLE FOUNDATION (PA–85)
▻ 8121	H	TRANSFORMER BASE AND POLE BASE PLATE (2 SHEETS)
► 8122	F	PEDESTAL AND PEDESTAL BASE (2 SHEETS)
▻ 8123	G	POLE AND MAST ARM (2 SHEETS)
▻ 8126	L	POLE FOUNDATION (PA90 AND PA100)
▻ 8129	A	SHIM AND WASHER
▻ 8130	E	SAW CUT LOOP DETECTORS
► 8132	B	PREFORMED RIGID PVC CONDUIT LOOP DETECTOR (3 SHEETS)

► STANDARD PLATES APPLICABLE TO THIS PROJECT

I HEREBY CERTIFY THAT SHEETS 143R THROUGH 167R 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.

Bryan T. Nmeth

NAME BRYAN T. NEMETH LIC. NO. 43354 DATE 05/26/2020

DESIGNER ZACH A. PARSONS

0 1000 2000
SCALE FEET

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
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CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 143R OF 189

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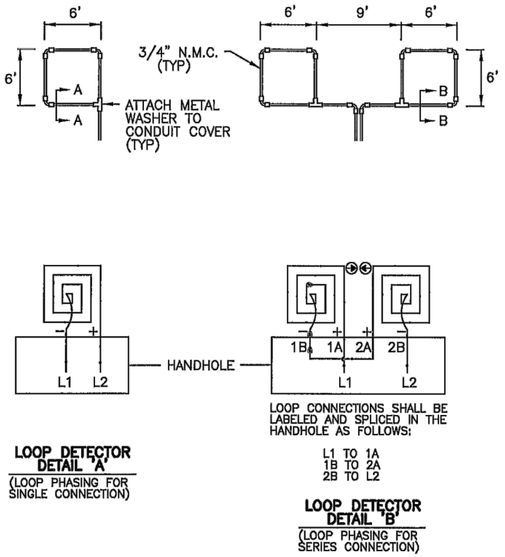
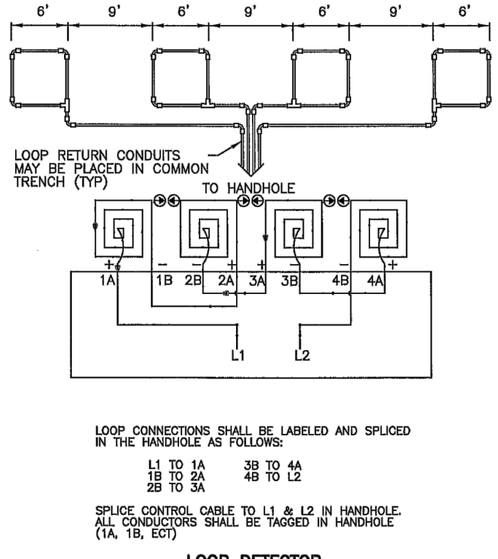


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A
1B TO 2A
2B TO L2

LOOP DETECTOR DETAIL 'A'
(LOOP PHASING FOR SINGLE CONNECTION)

LOOP DETECTOR DETAIL 'B'
(LOOP PHASING FOR SERIES CONNECTION)

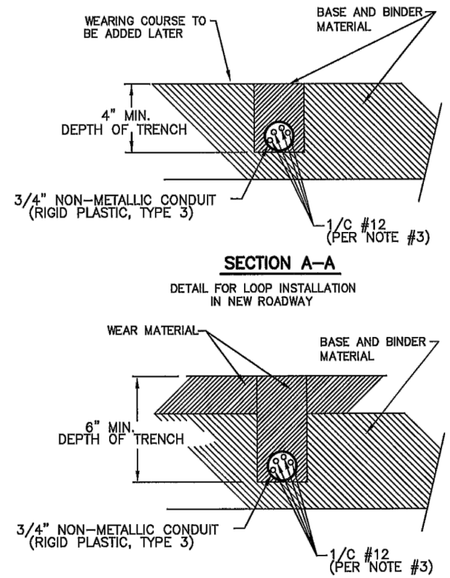


LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

L1 TO 1A
1B TO 2A
2B TO 3A
3B TO 4A
4B TO L2

SPLICE CONTROL CABLE TO L1 & L2 IN HANDHOLE. ALL CONDUCTORS SHALL BE TAGGED IN HANDHOLE (1A, 1B, ECT)

LOOP DETECTOR DETAIL 'C'
(LOOP PHASING FOR SERIES CONNECTION)

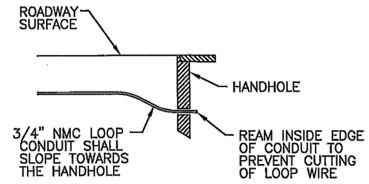


SECTION A–A

DETAIL FOR LOOP INSTALLATION IN NEW ROADWAY

SECTION B–B

DETAIL FOR LOOP INSTALLATION IN EXISTING ROADWAY



DRAINAGE DETAIL

LOOP DETECTOR WIRING

1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (5) TURNS PER FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
5) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
6) LOOPS 6' x 6' THRU 6' x 14' SHALL HAVE (4) TURNS.
7) LOOPS 6' x 15' AND LARGER SHALL HAVE (2) TURNS.

NOTES:

1. USE THIS LOOP DETECTOR DETAIL FOR REVISE SIGNAL SYSTEM B.
2. USE MNDOT STANDARD PLATE NO. 8132 (PREFORMED RIGID PVC CONDUIT LOOP DETECTORS) FOR REVISE SIGNAL SYSTEMS A & C.

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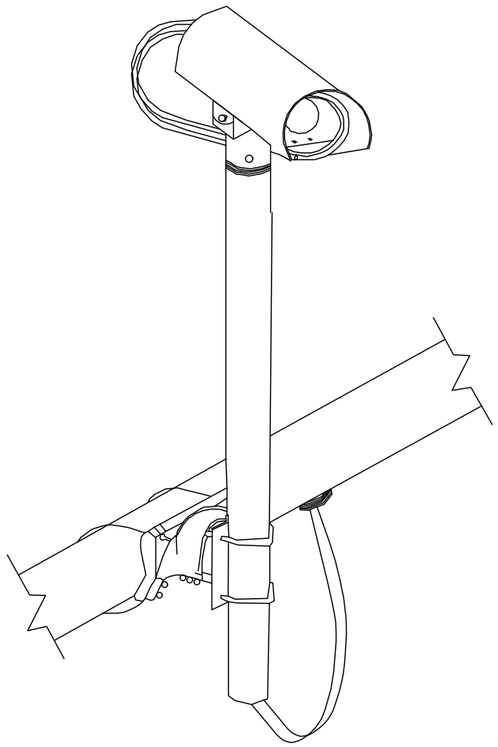
SIGNAL PLANS

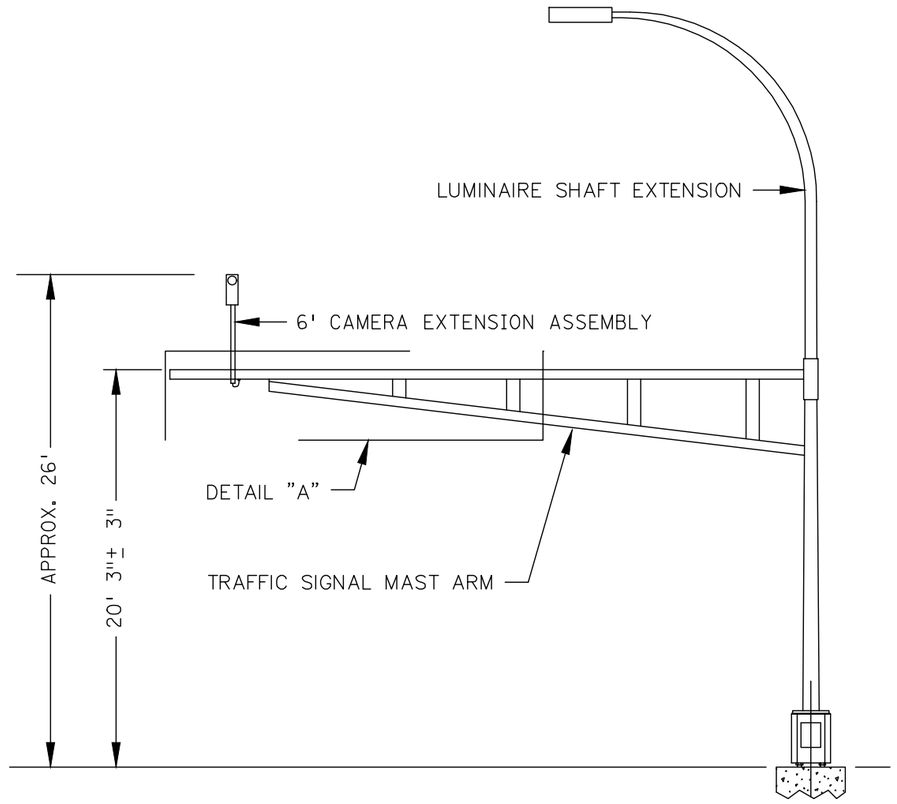
MAST ARM CAMERA INSTALLATION



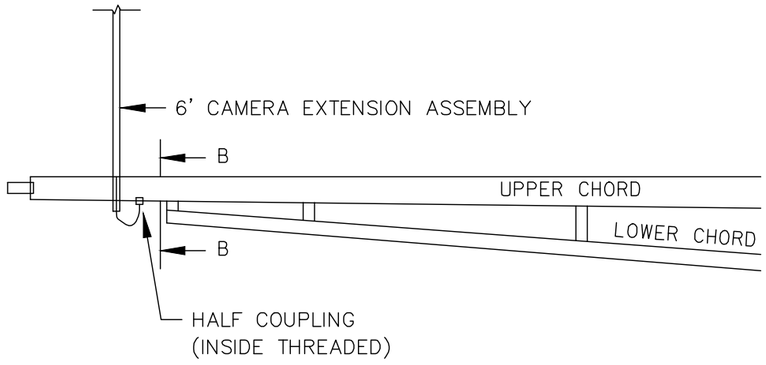
NOTES:

1) THE CONTRACTOR SHALL FURISH AND INSTALL ALL VIDEO CAMERA DETECTION FOR TEMPORARY SIGNAL SYSTEMS A AND B. THE COMPONENTS MAY BE NEW OR USED AND WILL REMAIN THE PROPERTY OF THE CONTRACTOR WHEN THE SIGNALS ARE REMOVED. SEE THE SPECIAL PROVISIONS FOR VIDEO DETECTION SYSTEM REQUIREMENTS.

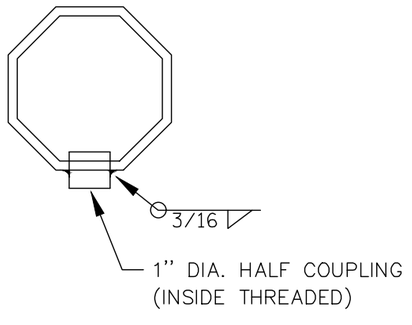
TYPICAL MAST ARM CAMERA MOUNTING DETAILS



DETAIL "A" (MAST ARM)



SECTION B–B (UPPER CHORD)



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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED	DRAWN	CHECKED
ZAP	ZAP	BTN

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12224 NICOLLET AVENUE
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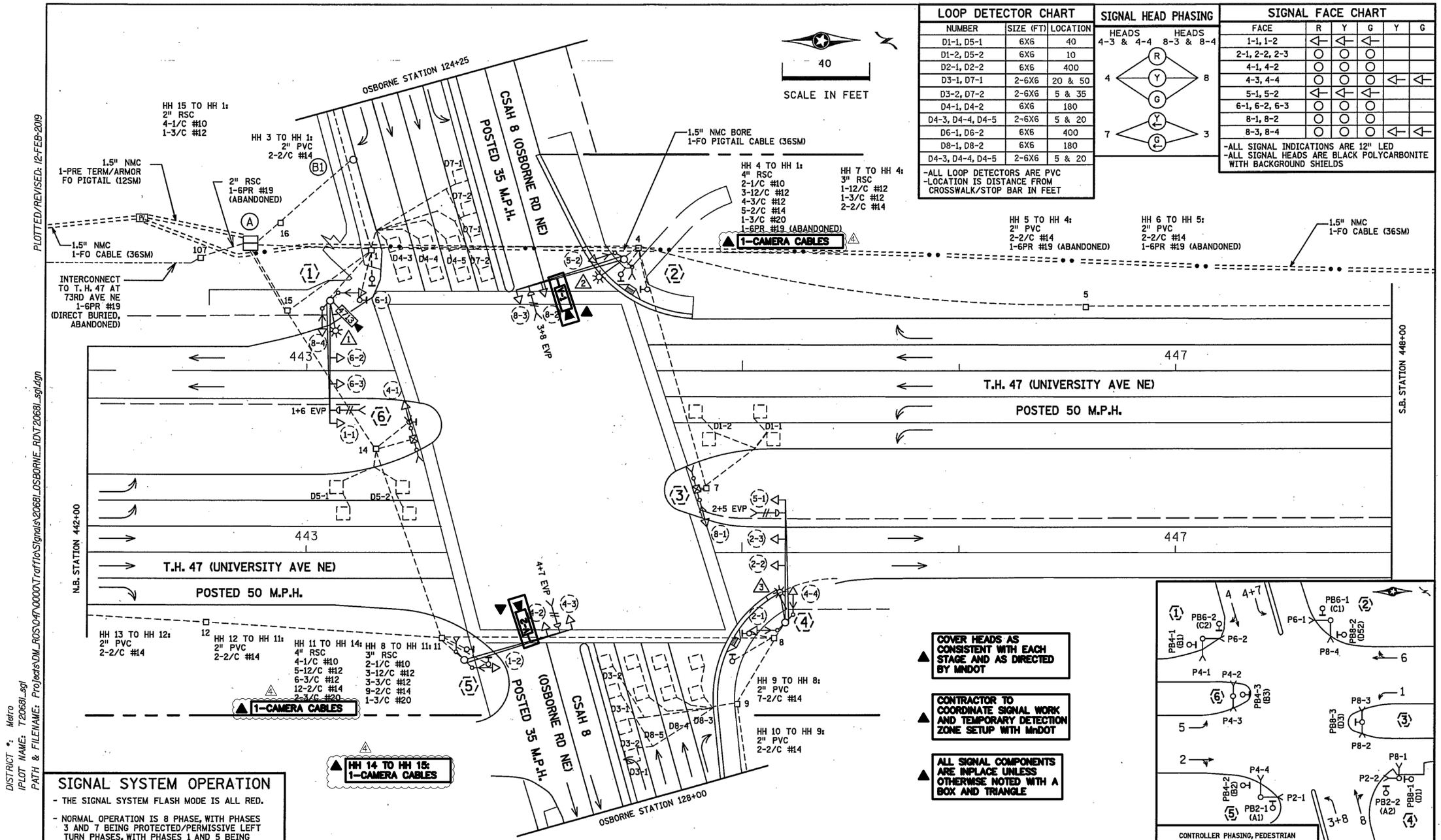
SIGNAL PLANS



LOOP DETECTOR CHART		
NUMBER	SIZE (FT)	LOCATION
D1-1, D5-1	6X6	40
D1-2, D5-2	6X6	10
D2-1, D2-2	6X6	400
D3-1, D7-1	2-6X6	20 & 50
D3-2, D7-2	2-6X6	5 & 35
D4-1, D4-2	6X6	180
D4-3, D4-4, D4-5	2-6X6	5 & 20
D6-1, D6-2	6X6	400
D8-1, D8-2	6X6	180
D4-3, D4-4, D4-5	2-6X6	5 & 20

-ALL LOOP DETECTORS ARE PVC
-LOCATION IS DISTANCE FROM CROSSWALK/STOP BAR IN FEET

SIGNAL HEAD PHASING

SIGNAL FACE CHART					
FACE	R	Y	G	Y	G
1-1, 1-2	○	←	←		
2-1, 2-2, 2-3	○	○	○		
4-1, 4-2	○	○	○		
4-3, 4-4	○	○	○	←	←
5-1, 5-2	←	←	←		
6-1, 6-2, 6-3	○	○	○		
8-1, 8-2	○	○	○		
8-3, 8-4	○	○	○	←	←

-ALL SIGNAL INDICATIONS ARE 12" LED
-ALL SIGNAL HEADS ARE BLACK POLYCARBONITE WITH BACKGROUND SHIELDS

▲ COVER HEADS AS CONSISTENT WITH EACH STAGE AND AS DIRECTED BY MNDOT

▲ CONTRACTOR TO COORDINATE SIGNAL WORK AND TEMPORARY DETECTION ZONE SETUP WITH MnDOT

▲ ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE

SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE, WITH PHASES 3 AND 7 BEING PROTECTED/PERMISSIVE LEFT TURN PHASES, WITH PHASES 1 AND 5 BEING PROTECTED LEFT TURN PHASES.

BY	DATE	REVISIONS
J3T	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

INTERSECTION LAYOUT (1 OF 2)
T.H. 47 (UNIVERSITY AVE.) AT
CSAH 8 (OSBORNE RD.)
FRIDLEY, ANOKA COUNTY

S.A.P. NO. | DRAWN BY: | CKD BY: | DATE:
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE: _____
STATE ~~PROJ.NO.~~ (T.H.47) SHEET NO. 1 OF 5 SHEETS

TEMPORARY SIGNAL SYSTEM A

DISTRICT *: Metro
IPLOT NAME: T20681_sgl
PATH & FILENAME: Projects\DM_ROS\04\0000\Traffic\Signals\20681_OSBORNE_RDNT20681_sgl.dgn

PLOTTED/REVISED: 12-FEB-2019

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7/13/2020

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BRYAN T. NEMETH
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DESIGNED ZAP
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CHECKED BTN

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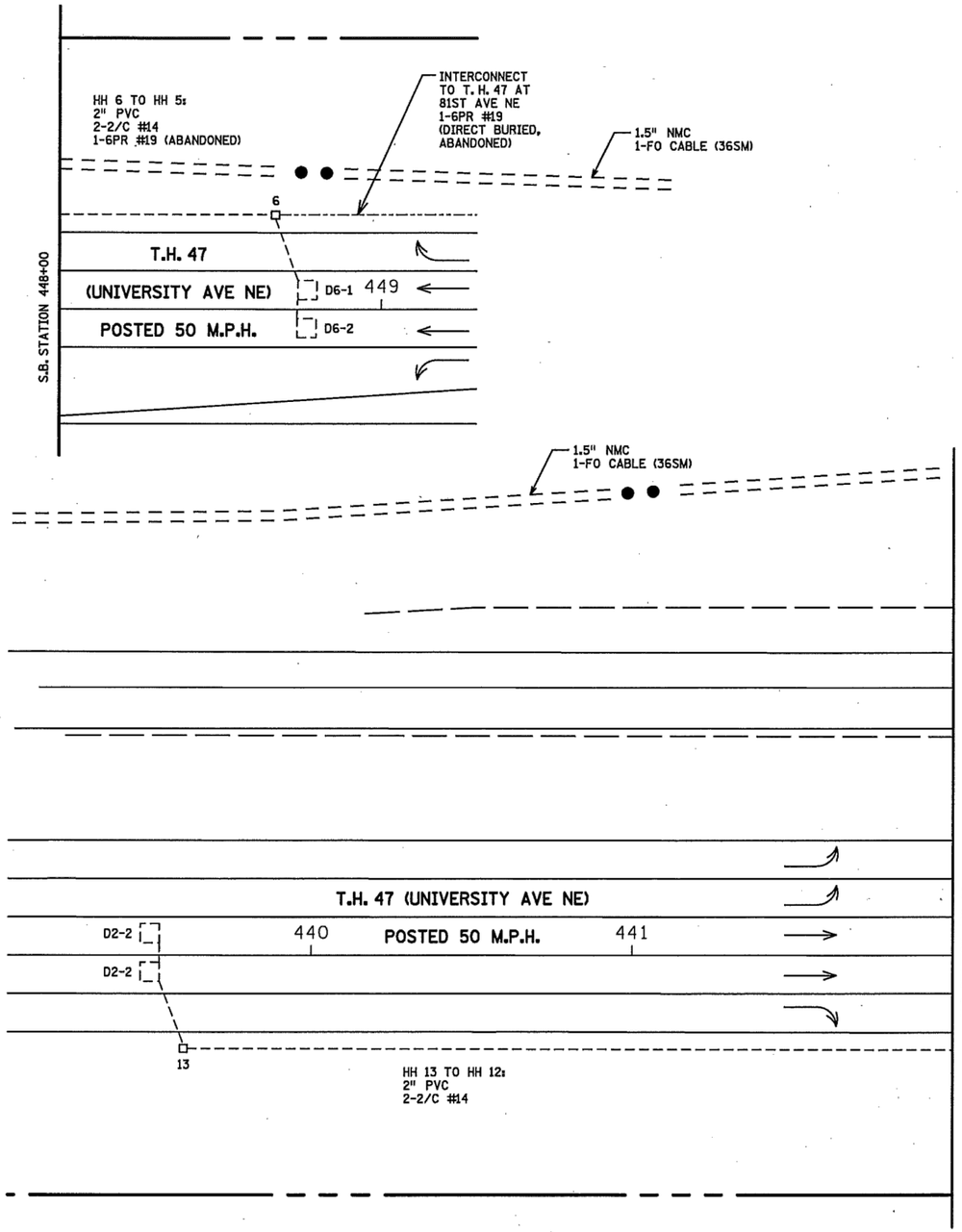
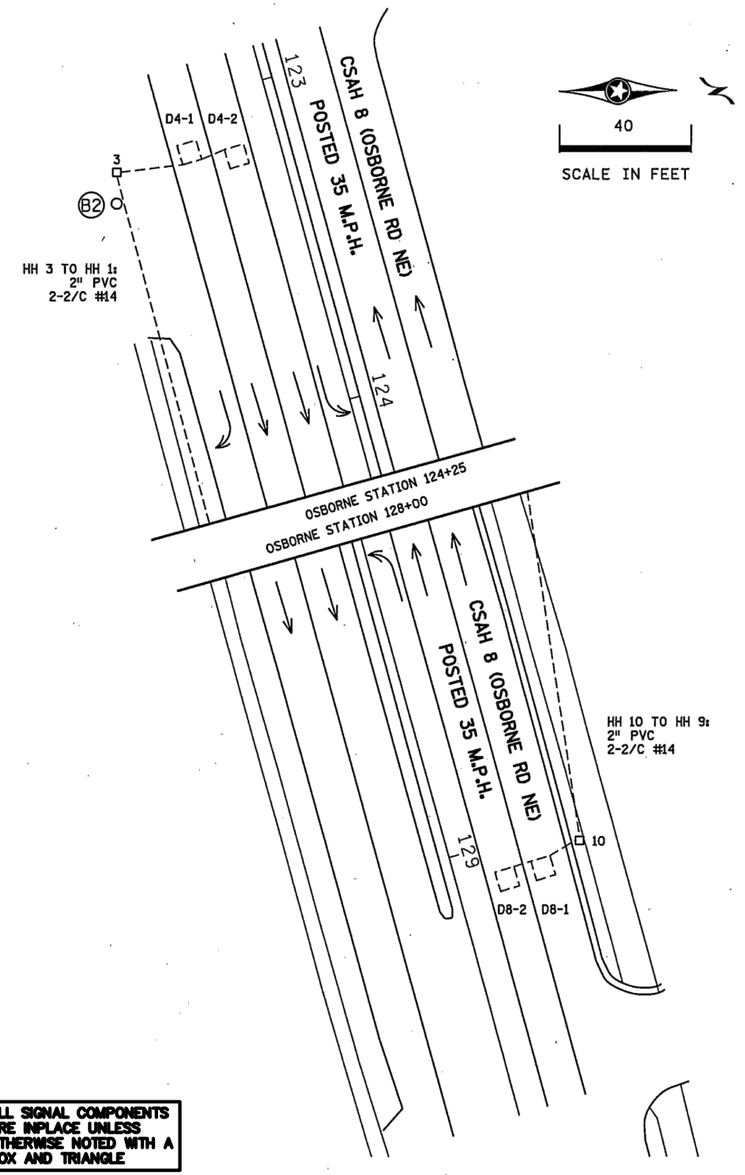
S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 146R OF 189





▲ ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE

BY	DATE	REVISIONS
J3T	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

INTERSECTION LAYOUT (2 OF 2)
T.H. 47 (UNIVERSITY AVE.) AT
CSAH 8 (OSBORNE RD.)
FRIDLEY, ANOKA COUNTY

S.A.P. NO. | DRAWN BY: | CKD BY: | DATE:

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE: _____

STATE PROJ.NO. (T.H.47) SHEET NO. 2 OF 5 SHEETS

TEMPORARY SIGNAL SYSTEM A

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SIGNAL PLANS

SHEET 147 OF 189

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(1) S.B. STA. 443+10, 32.2' LT.
PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
1-X6-350/CAM 400 EXTENSION (MOUNTED AT 350 DEG, INCLUDES LIGHTNING ROD)
7/16" GROUND BRAID & GROUND ROD)
1-VIDEO CAMERA WITH MOUNT
3-ONE WAY SIGNALS OVERHEAD AT 0', 17', 29'
ONE WAY SIGNAL MOUNTED AT 45 DEG (RC DESIGN)
ONE WAY SIGNAL MOUNTED AT 225 DEG (RC DESIGN)
1-C.D. PED HEAD MOUNTED AT 45 DEG
1-C.D. PED HEAD MOUNTED AT 225 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 1+6)
LUMINAIRE 250W HPS
1-R6-1L SIGN (ONE WAY) (48" X 18")
1-R6-1R SIGN (ONE WAY) (48" X 18")
1-INTERNALLY LIT TYPE D SIGN
EXTEND INTO HH 1:
3" RSC
2-1/C #10
3-12/C #12
2-3/C #12
1-3/C #20
1-7/16" GROUND BRAID TO GROUND ROD
1-COM CABLE (CAT 5E)

(6) N.B. STA. 443+49, 52.5' LT.
PEDESTAL FOUNDATION
15' PEDESTAL POLE PLUS BASE
ONE WAY SIGNAL MOUNTED AT 270 DEG (RC DESIGN)
1-C.D. PED HEAD MOUNTED AT 90 DEG
1-C.D. PED HEAD MOUNTED AT 270 DEG
EXTEND INTO HH 14:
2" RSC
1-12/C #12
1-3/C #12
1-2/C #14

(5) N.B. STA. 443+73, 49.5' RT.
PA100 POLE FOUNDATION
TYPE PA100-A-50
2-ONE WAY SIGNALS OVERHEAD AT 0' AND 11'
ONE WAY SIGNAL MOUNTED AT 45 DEG (RC DESIGN)
1-C.D. PED HEAD MOUNTED AT 45 DEG
1-C.D. PED HEAD MOUNTED AT 225 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 4+7)
1-R10-X12 SIGN (36" X 48") ADJACENT TO HEAD (4-3)
1-INTERNALLY LIT TYPE D SIGN
EXTEND INTO HH 11:
3" RSC
2-1/C #10
2-12/C #12
3-3/C #12
1-2/C #14
1-3/C #20
▲ **1-VIDEO DETECTOR (V-2) ON MAST ARM (CAMERA FACING EB TRAFFIC) WITH 6' CAMERA EXTENSION ASSEMBLY**
⚠4 **1-CAMERA CABLES**

(2) S.B. STA. 444+45, 51.6' LT.
PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350 DEG)
2-ONE WAY SIGNALS OVERHEAD AT 0' AND 11'
ONE WAY SIGNAL MOUNTED AT 45 DEG (RC DESIGN)
1-C.D. PED HEAD MOUNTED AT 45 DEG
1-C.D. PED HEAD MOUNTED AT 225 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 3+8)
LUMINAIRE 250W HPS
1-R10-X12 SIGN (36" X 48") ADJACENT TO HEAD (8-3)
1-INTERNALLY LIT TYPE D SIGN
EXTEND INTO HH 4:
3" RSC
2-1/C #10
2-12/C #12
3-3/C #12
1-2/C #14
1-3/C #20
▲ **1-VIDEO DETECTOR (V-1) ON MAST ARM (CAMERA FACING WB TRAFFIC) WITH 6' CAMERA EXTENSION ASSEMBLY**
⚠4 **1-CAMERA CABLES**

(3) N.B. STA. 444+79, 29.3' LT.
PEDESTAL FOUNDATION
15' PEDESTAL POLE PLUS BASE
ONE WAY SIGNAL MOUNTED AT 270 DEG (RC DESIGN)
1-C.D. PED HEAD MOUNTED AT 90 DEG
1-C.D. PED HEAD MOUNTED AT 270 DEG
1-APS PB AND SIGN (DLB ARROW) (PB8-3)
EXTEND INTO HH 7:
2" RSC
1-12/C #12
1-3/C #12

(4) N.B. STA. 445+20, 32.2' RT.
PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
3-ONE WAY SIGNALS OVERHEAD AT 0', 17', 29'
ONE WAY SIGNAL MOUNTED AT 45 DEG (RC DESIGN)
ONE WAY SIGNAL MOUNTED AT 225 DEG (RC DESIGN)
1-C.D. PED HEAD MOUNTED AT 45 DEG
1-C.D. PED HEAD MOUNTED AT 225 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 2+5)
LUMINAIRE 250W HPS
1-R6-1L SIGN (ONE WAY) (48" X 18")
1-R6-1R SIGN (ONE WAY) (48" X 18")
1-INTERNALLY LIT TYPE D SIGN
EXTEND INTO HH 8:
3" RSC
2-1/C #10
3-12/C #12
2-3/C #12
1-3/C #20

(A) S.B. STA. 442+74, 59 LT.
EQUIPMENT PAD
SERVICE CABINET
CONTROLLER AND CABINET

CONTROLLER CABINET TO HH1:
4" RSC
6-12/C #12
5-3/C #12
15-2/C #14
2-3/C #20
1-CAT 5E (COM CABLE)
1-6PR #19 (ABANDONED)
▲ ⚠4 **1-CAMERA CABLES**

CONTROLLER CABINET TO HH 15:
4" RSC
6-12/C #12
6-3/C #12
15-2/C #14
2-3/C #20
▲ ⚠4 **1-CAMERA CABLES**

CONTROLLER CABIINET TO HH 107:
2" RSC
1-6PR #19

COMTROLLER CABINET TO PULL VAULT:
1-1.5" NMC (IN SPARE 3")
1-PRE-TERMINATED ARMORED FO PIGTAIL (12SM)

1-3" RSC STUBBED OUT (THREADED AND CAPPED BOTH ENDS)
3/4" RSC STUBBED OUT (FOR TELEPHONE LINE)

CONTROLLER CABINET TO SERVICE CABINET:
2" RSC
2-1/C #6
1-1/C #6 INS. GR.

SERVICE CABINET TO SOP VIA HH 16:
2" RSC
3-1/C #2

SERVICE CABINET TO HH 15:
2" RSC
8-1/C #10
2-3/C #12

(B1) SOP (WOOD POLE WITH OVERHEAD CABLE TO TRANSFORMERAT B2 BY XCEL ENERGY)
2" RSC RISER, WEATHERHEAD AND CONDUIT INTO HH 16:
3-1/C #2

(B2) SOP (WOOD POLE AND TRANSFORMER BY XCEL ENERGY)
2" RSC RISER, WEATHERHEAD AND CONDUIT INTO HH 16:
3-1/C#2 OVERHEAD TO TRANSFORMER (BY XCEL ENERGY)

PED PB STATION
1-APS PB AND SIGN (LT ARROW) (PB4-1)
EXTEND INTO HH 1:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (LT ARROW) (PB6-1)
EXTEND INTO HH 4:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (LT ARROW) (PB8-1)
EXTEND INTO HH 8:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB4-2)
EXTEND INTO HH 11:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB6-2)
EXTEND INTO HH 1:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB8-2)
EXTEND INTO HH 4:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (RT ARROW) (PB2-2)
EXTEND INTO HH 8:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN (LT ARROW) (PB2-1)
EXTEND INTO HH 11:
1 1/4" PVC
1-2/C #14

▲ **ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE**

BY	DATE	REVISIONS
J3T	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

INTERSECTION NOTES
T.H. 47 (UNIVERSITY AVE.) AT
CSAH 8 (OSBORNE RD.)
FRIDLEY, ANOKA COUNTY

S.A.P. NO. ~~DRAWN BY:~~ ~~CKD BY:~~ ~~DATE:~~
CERTIFIED BY _____ LIC. NO. _____ DATE: _____
LICENSED PROFESSIONAL ENGINEER
~~STATE PROJ. NO.~~ (T.H.47) ~~SHEET NO. 3 OF 5 SHEETS~~

TEMPORARY SIGNAL SYSTEM A

DISTRICT: Metro
IPLOT NAME: T20681_sgl
PATH & FILENAME: Projects\DM_ROS\047\0000\Traffic\Signals\20681_OSBORNE_RDNT20681_sgl.dgn
PLOTTED/REVISED: 12-FEB-2019

AutoCAD PDF (General Documentation).pc3 1:21 PM BMI Trans.ctb
zacharypa 7/13/2020
H:\AKCO\T43118096\CAD\C3D\plans\Signal\118096_sgl004 - 5.dwg

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.
BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

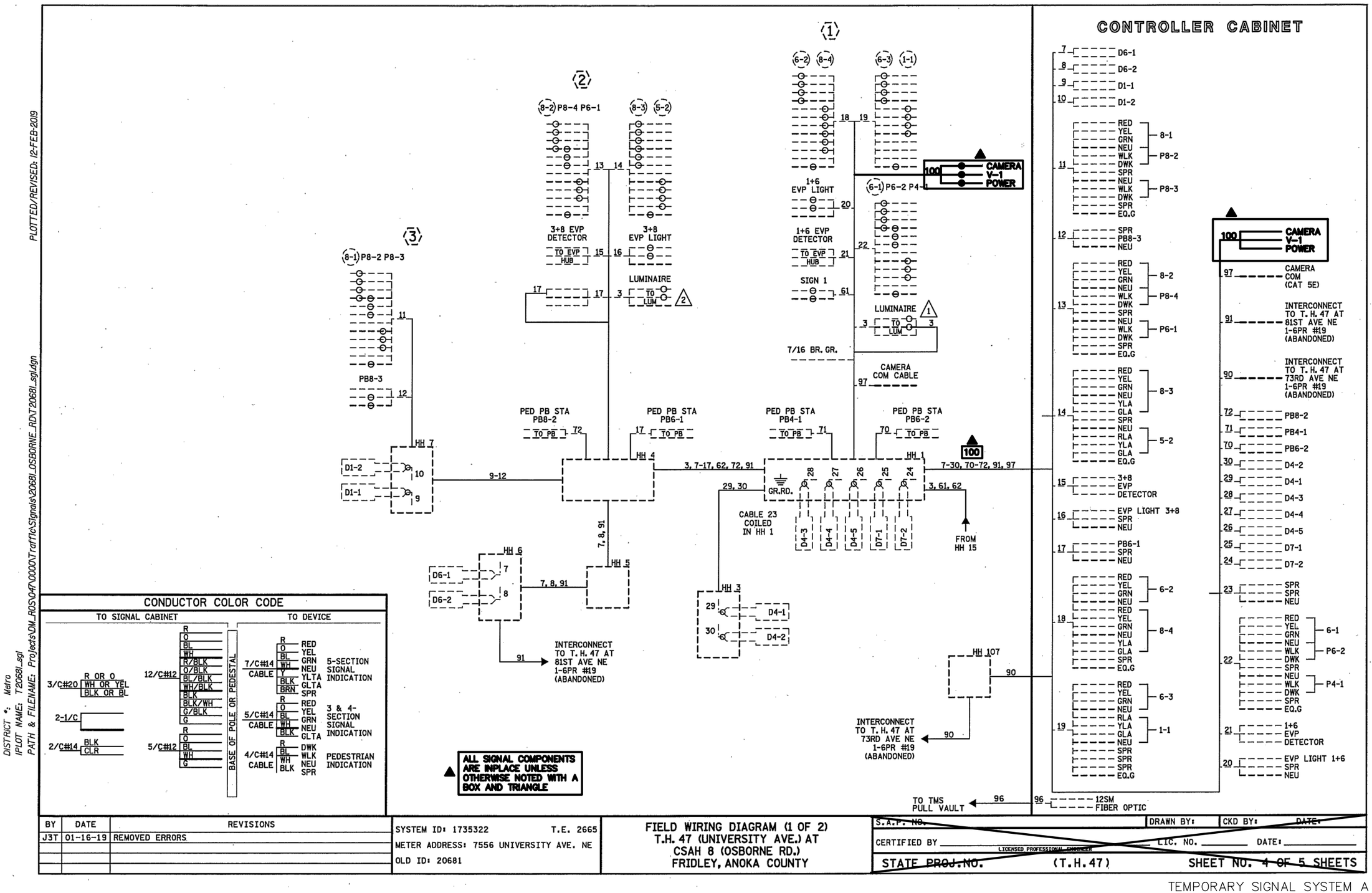
DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE
4	ZAP	7/13/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 148R OF 189



BY	DATE	REVISIONS
J3T	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

FIELD WIRING DIAGRAM (1 OF 2)
T.H. 47 (UNIVERSITY AVE.) AT CSAH 8 (OSBORNE RD.) FRIDLEY, ANOKA COUNTY

S.A.P. NO. | DRAWN BY: | CKD BY: | DATE:

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE: _____

STATE PROJ.NO. (T.H.47) SHEET NO. 4 OF 5 SHEETS

TEMPORARY SIGNAL SYSTEM A

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.

BRYAN T. NEMETH
LIC. NO. 43364 DATE 05/26/2020

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BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV.	BY	DATE

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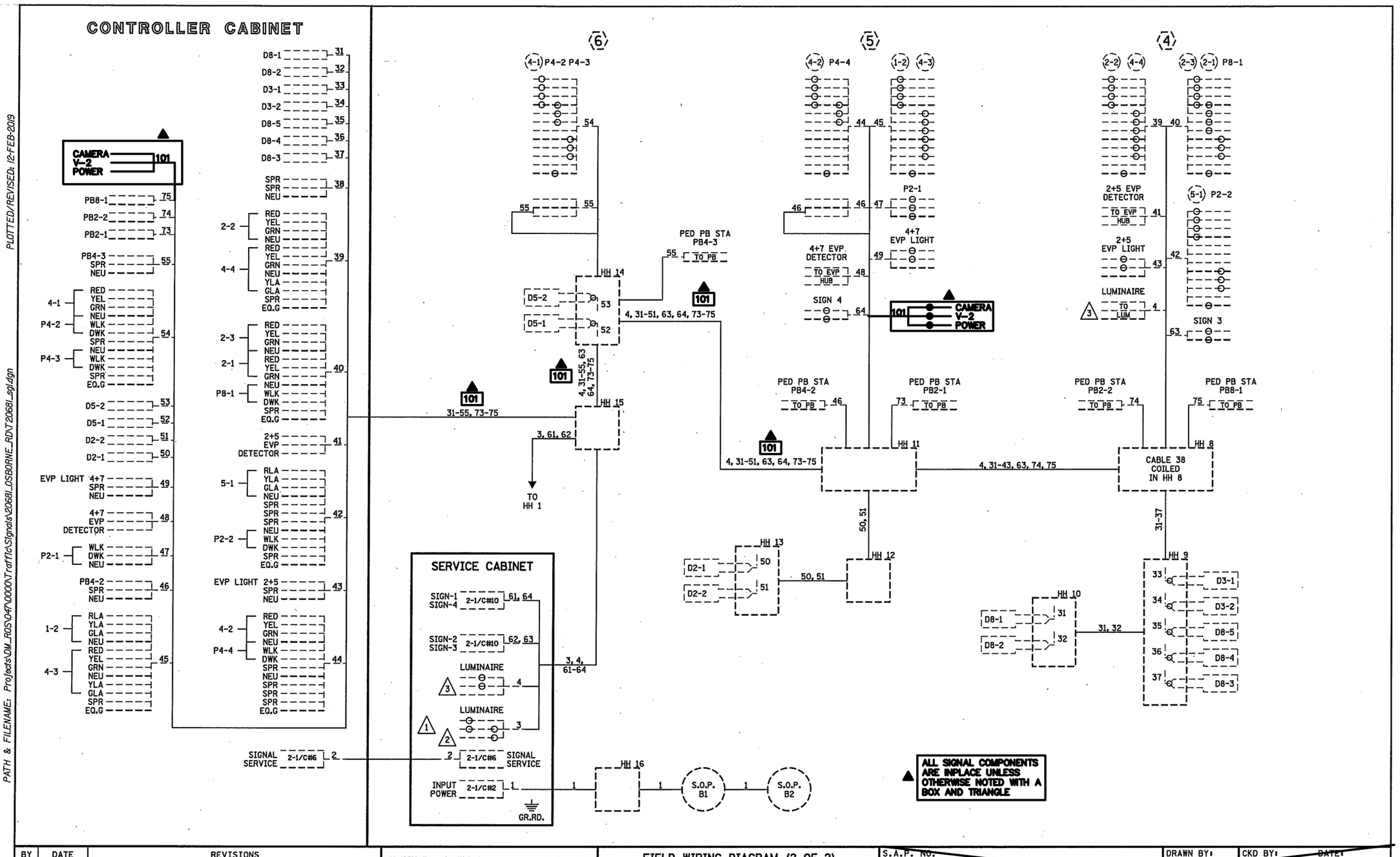
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 149 OF 189



DISTRICT *: Metro
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PLOTTED/REVISED: 12-FEB-2019

BY	DATE	REVISIONS
J3T	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

FIELD WIRING DIAGRAM (2 OF 2)
T.H. 47 (UNIVERSITY AVE.) AT
CSAH 8 (OSBORNE RD.)
FRIDLEY, ANOKA COUNTY

S.A.P. NO. ~~XXXXXXXXXX~~ DRAWN BY: CKD BY: ~~DATE:~~

CERTIFIED BY _____ LIC. NO. _____ DATE: _____
LICENSED PROFESSIONAL ENGINEER

~~STATE PROJ.NO.~~ (T.H.47) SHEET NO. 5 ~~OF 5 SHEETS~~

TEMPORARY SIGNAL SYSTEM A

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.

BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

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BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 150 OF 189

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LOOP DETECTOR CHART

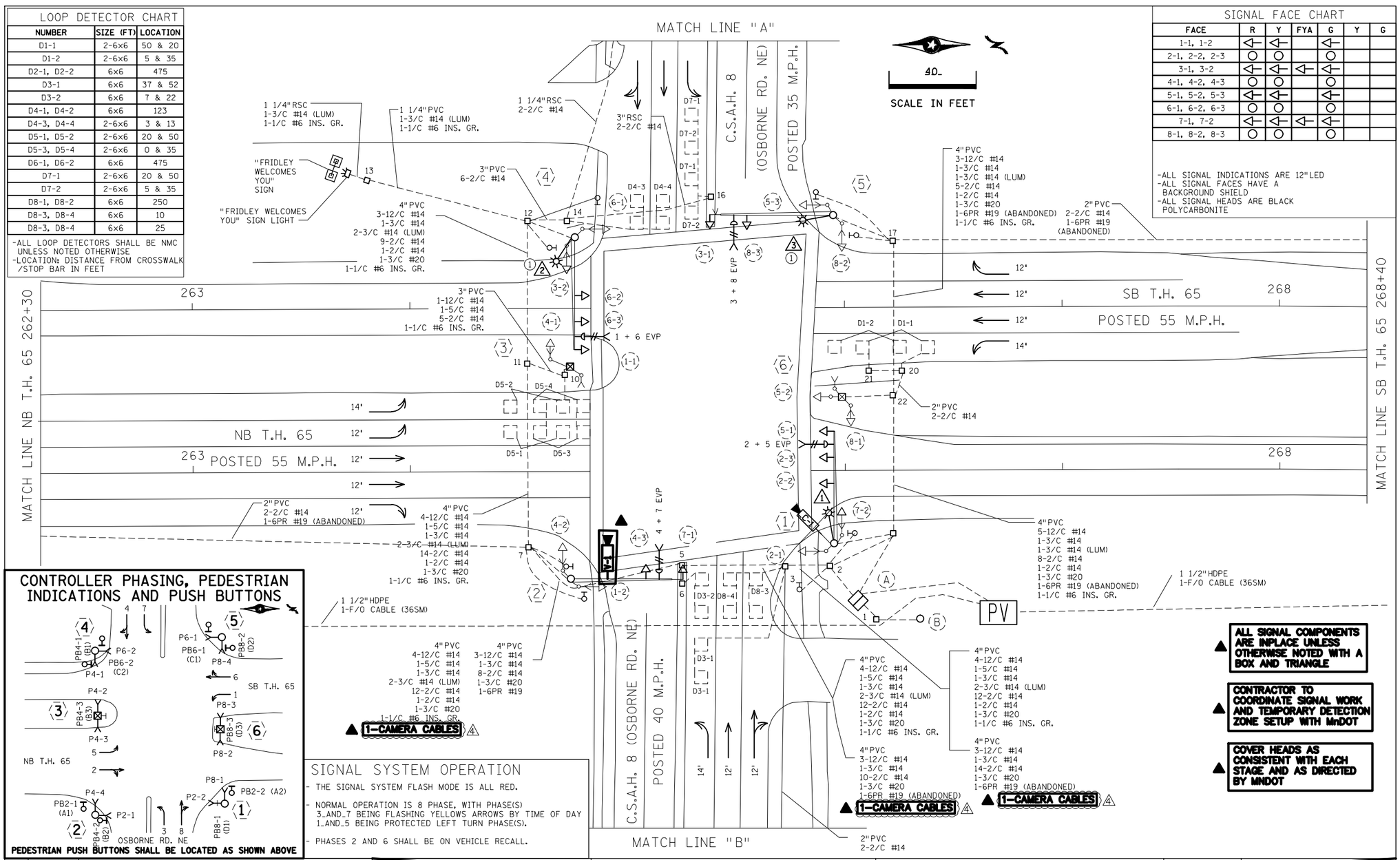
NUMBER	SIZE (FT)	LOCATION
D1-1	2-6x6	50 & 20
D1-2	2-6x6	5 & 35
D2-1, D2-2	6x6	475
D3-1	6x6	37 & 52
D3-2	6x6	7 & 22
D4-1, D4-2	6x6	123
D4-3, D4-4	2-6x6	3 & 13
D5-1, D5-2	2-6x6	20 & 50
D5-3, D5-4	2-6x6	0 & 35
D6-1, D6-2	6x6	475
D7-1	2-6x6	20 & 50
D7-2	2-6x6	5 & 35
D8-1, D8-2	6x6	250
D8-3, D8-4	6x6	10
D8-3, D8-4	6x6	25

-ALL LOOP DETECTORS SHALL BE NMC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM CROSSWALK /STOP BAR IN FEET

SIGNAL FACE CHART

FACE	R	Y	FYA	G	Y	G
1-1, 1-2	◁	◁		◁		
2-1, 2-2, 2-3	○	○		○		
3-1, 3-2	◁	◁	◁	◁		
4-1, 4-2, 4-3	○	○		○		
5-1, 5-2, 5-3	◁	◁		◁		
6-1, 6-2, 6-3	○	○		○		
7-1, 7-2	◁	◁	◁	◁		
8-1, 8-2, 8-3	○	○		○		

-ALL SIGNAL INDICATIONS ARE 12"LED
-ALL SIGNAL FACES HAVE A BACKGROUND SHIELD
-ALL SIGNAL HEADS ARE BLACK POLYCARBONITE



CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE, WITH PHASE(S) 3_AND_7 BEING FLASHING YELLOWS ARROWS BY TIME OF DAY 1_AND_5 BEING PROTECTED LEFT TURN PHASE(S).
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE

CONTRACTOR TO COORDINATE SIGNAL WORK AND TEMPORARY DETECTION ZONE SETUP WITH MnDOT

COVER HEADS AS CONSISTENT WITH EACH STAGE AND AS DIRECTED BY MNDOT

BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519
METER ADDRESS: 1101 OSBORNE RD N.E.
OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
INTERSECTION LAYOUT
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ---------- DRAWN BY:SJK CKD BY:CDB DATE:9/10/19

CERTIFIED BY _____ LIC. NO. _____ DATE: _____
LICENSED PROFESSIONAL ENGINEER

STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS31 OF SS41 SHEETS

TEMPORARY SIGNAL SYSTEM B

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.

BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED ZAP
DRAWN ZAP
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BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE
4	ZAP	7/13/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 151R OF 189

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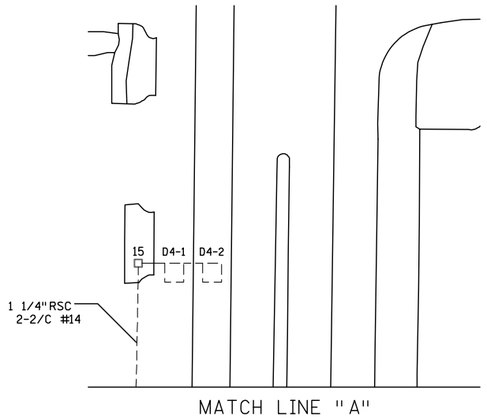
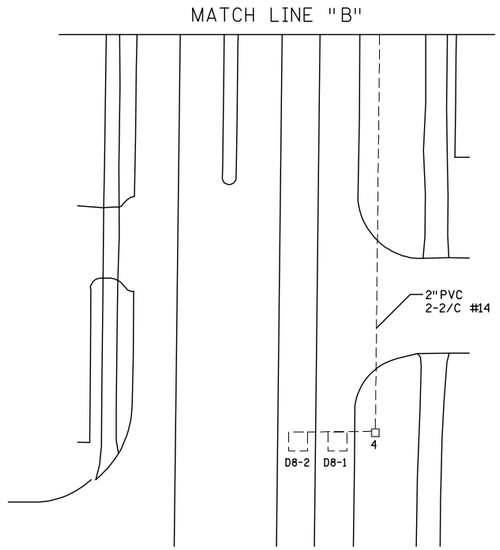
zacharypa 7/13/2020

ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE





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SCALE IN FEET

BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519
METER ADDRESS: 1101 OSBORNE RD N.E.
OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
MATCH LINES
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ----------
DRAWN BY: SJK CKD BY: CDB DATE: 9/10/19
CERTIFIED BY ---------- LIC. NO. ---------- DATE: ----------
LICENSED PROFESSIONAL ENGINEER
STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS32 OF SS41 SHEETS

TEMPORARY SIGNAL SYSTEM B

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.

BRYAN T. NEMETH
LIC. NO. 43364 DATE 05/26/2020

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DRAWN ZAP
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BOLTON & MENK
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BURNSVILLE, MINNESOTA 55337
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Email: Burnsville@bolton-menk.com
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SIGNAL PLANS

SHEET 152 OF 189

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POLE NOTES

(1)

PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-50-X6-350/CAM 400 EXTENSION (MOUNTED AT 350 DEG)
1-VIDEO CAMERA WITH MOUNT
3-ONE WAY SIGNALS OVERHEAD
(0', 11' AND 23' FROM END OF MAST ARM)
1-ONE WAY SIGNAL POLE MOUNTED AT 45 DEG (7-2)
1-APS PUSH BUTTON AND SIGN (PB8-1) (LT ARROW)
2-C. D. PED INDS MOUNTED AT 45 & 225 DEG
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT PHASES (2+5)
LUMINAIRE-LED
1-R6-1R SIGN (ONE WAY)
1-R6-1L SIGN (ONE WAY)
1-TYPE D SIGN (D-2)
1-TYPE D SIGN (D-1)
EXTEND INTO HH 23:
3"PVC
3-12/C #14
1-3/C #14
1-3/C #14 (LUM)
2-2/C #14
1-3/C #20
21-7/16" GROUNDING BRAID TO GROUND ROD IN HH 23:
1-3/C #14 (CAMERA POWER)
1-COM CABLE
1-COAXIAL CABLE

(2)

PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-50
2-ONE WAY SIGNALS OVERHEAD
(0' AND 11' FROM END OF MAST ARM)
1-ONE WAY SIGNAL MOUNTED ON A 5' EXTENSION AT 0' (7-1)
1-R10-X12 SIGN ADJACENT TO SIGNAL HEAD (7-1)
2-ONE WAY SIGNALS MOUNTED AT 45 & 225 DEG
2-C. D. PED INDS MOUNTED AT 45 & 225 DEG
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT PHASES (4+7)
1-R10-12 SIGN (36 X 48) ADJACENT TO HEAD (4-4)
1-TYPE D SIGN (D-3)
EXTEND INTO HH 7:
3"PVC
3-12/C #14
1-3/C #14
2-2/C #14
1-3/C #20
2-1/C #6 INS. GR.

▲ **1-VIDEO DETECTOR (V-1) ON MAST ARM (CAMERA FACING EB TRAFFIC) WITH 6' CAMERA EXTENSION ASSEMBLY**
▲ (4) **1-CAMERA CABLES**

(3)

PEDESTAL FOUNDATION
(W/1" PVC STUB OUT & 5/8" X 15' GR.ROD)
13' SIGNAL PEDESTAL POLE PLUS BASE
ONE WAY SIGNAL
2-C. D. PED INDS
1-APS PB AND SIGN (PB4-3) (DBL ARROW)
EXTEND INTO HH 10:
3"PVC
1-12/C #14
1-5/C #14
1-2/C #14
2-1/C #6 INS. GR.

(A)

EQUIPMENT PAD
SERVICE CABINET
CONTROLLER AND CABINET
4"PVC TO HH 2:
4-12/C #14
1-5/C #14
1-3/C #14
11-2/C #14
2-2/C #14
1-3/C #20
1-1/C #6 INS. GR.
4"PVC TO HH 2:
3-12/C #14
1-3/C #14
10-2/C #14
1-3/C #20
1-6PR #19
4"PVC TO HH 23:
5-12/C #14
1-3/C #14
6-2/C #14
1-2/C #14
1-3/C #20
1-6PR #19
1-1/C #6 INS. GR.
4"PVC TO HH 23:
3-12/C #14
1-3/C #14
2-2/C #14
1-3/C #20
1-3/C #14 (CAMERA POWER)
1-COM CABLE
1-COAXIAL CABLE

▲ **1-CAMERA CABLES**

CONTROLLER CABINET TO TMS PULL VAULT
1 1/2" PVC INSIDE EXISTING 3" PVC:
1-6SM FIBER OPTIC

2" STUBBED OUT (BOTH ENDS CAPPED)
3/4"PVC STUBBED OUT (CAPPED FOR TELEPHONE LINE)
SERVICE CABINET TO CONTROLLER CABINET:
2"PVC
2-1/C #6
1-1/C #6 INS. GR.
SERVICE CABINET TO HH 1:
2"PVC
3-1/C #2
SERVICE CABINET TO HH 2:
2"PVC
4-3/C #14 (LUM)
HH 2 TO HH 23:
2"PVC
2-3/C #14 (LUM)

(4)

PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-50-D30-9 (DAVIT AT 10 DEG)
3-ONE WAY SIGNALS OVERHEAD
(0', 11' AND 23' FROM END OF MAST ARM)
1-ONE WAY SIGNAL POLE MOUNTED AT 45 DEG (3-2)
2-ONE WAY SIGNALS MOUNTED AT 45 & 225 DEG
2-C. D. PED INDS MOUNTED AT 45 & 225 DEG
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT PHASES (1+6)
LUMINAIRE-LED
1-R6-1R SIGN (ONE WAY)
1-R6-1L SIGN (ONE WAY)
1-TYPE D SIGN (D-5)
1-TYPE D SIGN (D-4)
EXTEND INTO HH 12:
3"PVC
3-12/C #14
1-3/C #14
1-3/C #14 (LUM)
2-2/C #14
1-3/C #20
2-1/C #6 INS. GR.

(5)

PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
2-ONE WAY SIGNALS OVERHEAD
(0' AND 11' FROM END OF MAST ARM)
1-ONE WAY SIGNAL MOUNTED ON A 5' EXTENSION AT 0' (3-1)
1-R10-X12 SIGN ADJACENT TO SIGNAL HEAD (3-1)
2-ONE WAY SIGNALS MOUNTED AT 45 & 225 DEG
2-C. D. PED INDS MOUNTED AT 45 & 225 DEG
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT PHASES (3+8)
LUMINAIRE-LED
1-R10-12 SIGN (36 X 48) ADJACENT TO HEAD (8-4)
1-TYPE D SIGN (D-6)
EXTEND INTO HH 17:
3"PVC
3-12/C #14
1-3/C #14
1-3/C #14 (LUM)
2-2/C #14
1-3/C #20
1-1/C #6 INS. GR.

(6)

PEDESTAL FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
13' SIGNAL PEDESTAL POLE PLUS BASE
2-ONE WAY SIGNALS
2-C. D. PED INDS
1-APS PB AND SIGN (PB8-3) (DBL ARROW)
EXTEND INTO HH 22:
3"PVC
2-12/C #14
1-2/C #14
2-1/C #6 INS. GR.

(B)

SOP-45' WOOD POLE (XCEL ENERGY)
2"PVC RISER AND WEATHERHEAD
2"PVC INTO HH 1:
3-1/C #2

▲ **ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE**

APS PED PB STA (PB2-1)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 7:
1-2/C #14

APS PED PB STA (PB2-2)
1-APS PB AND SIGN (RT ARROW)
1" PVC TO HH 2:
1-2/C #14

APS PED PB STA (PB4-1)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 12:
1-2/C #14

APS PED PB STA (PB4-2)
1-APS PB AND SIGN (RT ARROW)
1" PVC TO HH 7:
1-2/C #14

APS PED PB STA (PB6-1)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 17:
1-2/C #14

APS PED PB STA (PB6-2)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 12:
1-2/C #14

APS PED PB STA (PB8-1)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 2:
1-2/C #14

APS PED PB STA (PB8-2)
1-APS PB AND SIGN (RT ARROW)
1" PVC TO HH 17:
1-2/C #14

BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519
METER ADDRESS: 1101 OSBORNE RD N.E.
OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
POLE NOTES
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ---------- DRAWN BY: SJK CKD BY: CDB DATE: 9/10/19
CERTIFIED BY: ---------- LIC. NO. ---------- DATE: ----------
LICENSED PROFESSIONAL ENGINEER
STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS33 OF SS41 SHEETS

TEMPORARY SIGNAL SYSTEM B

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.
BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

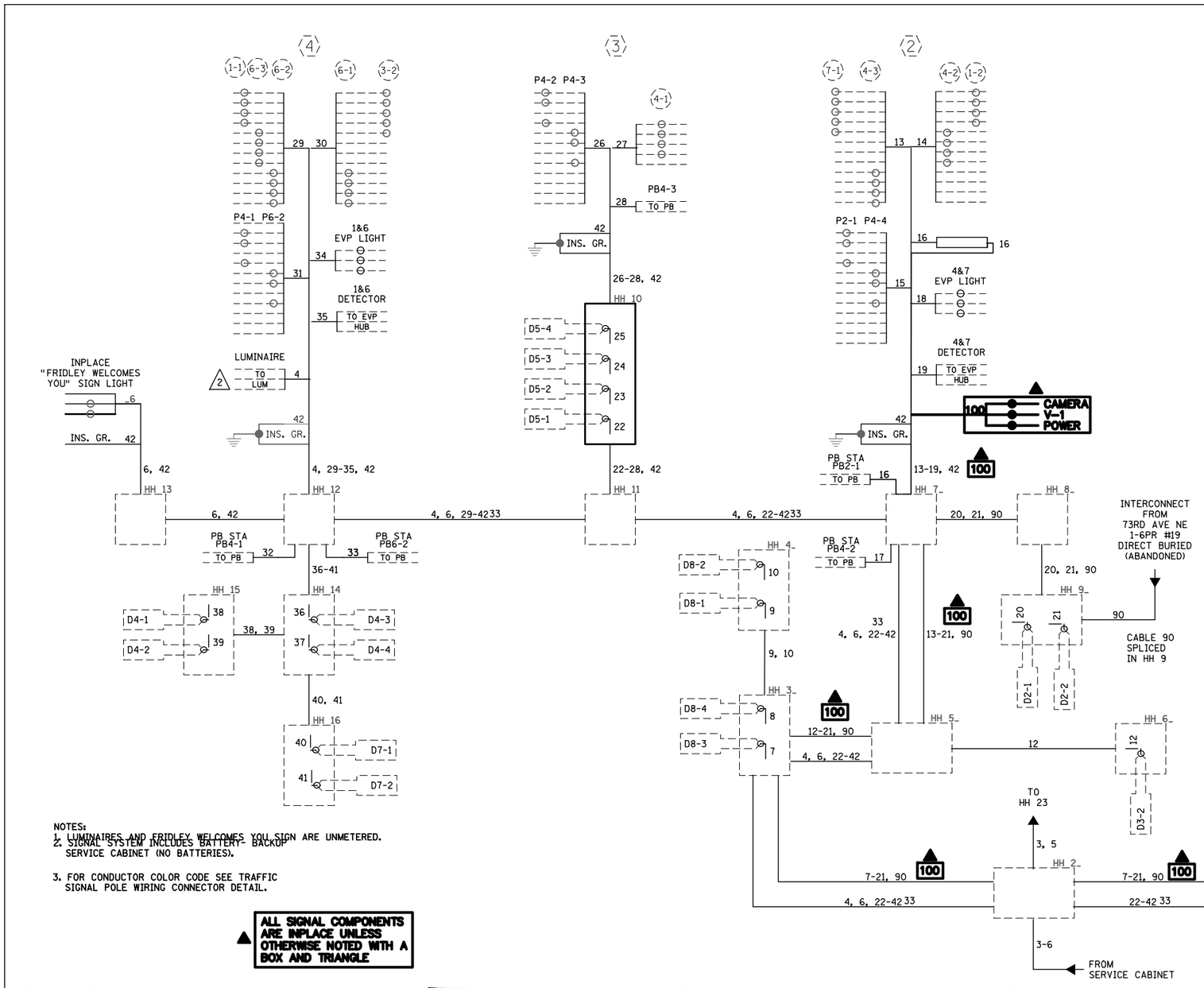
DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

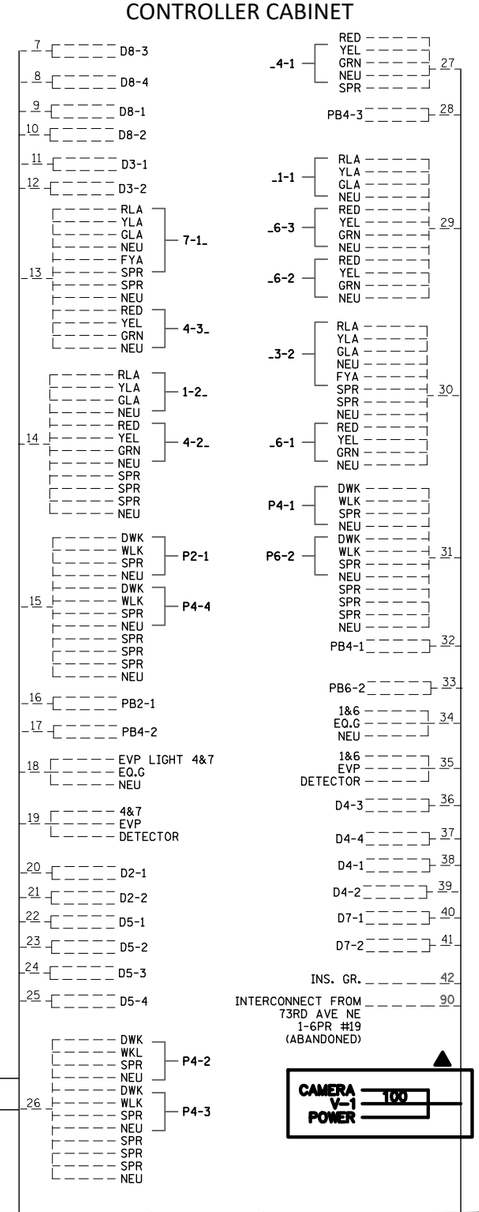
REV	BY	DATE
4	ZAP	7/13/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 153R OF 189



CONTROLLER CABINET



BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519

METER ADDRESS: 1101 OSBORNE RD N.E.

OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
WIRING DIAGRAM 1 OF 2
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ----------

DRAWN BY:SJK CKD BY:CDB DATE:9/10/19

CERTIFIED BY ---------- LICENSED PROFESSIONAL ENGINEER LIC. NO. ---------- DATE: ----------

STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS34 OF SS41 SHEETS

TEMPORARY SIGNAL SYSTEM B

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BRYAN T. NEMETH
LIC. NO. 43364 DATE 05/26/2020

DESIGNED ZAP
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www.bolton-menk.com

REV.	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 154 OF 189

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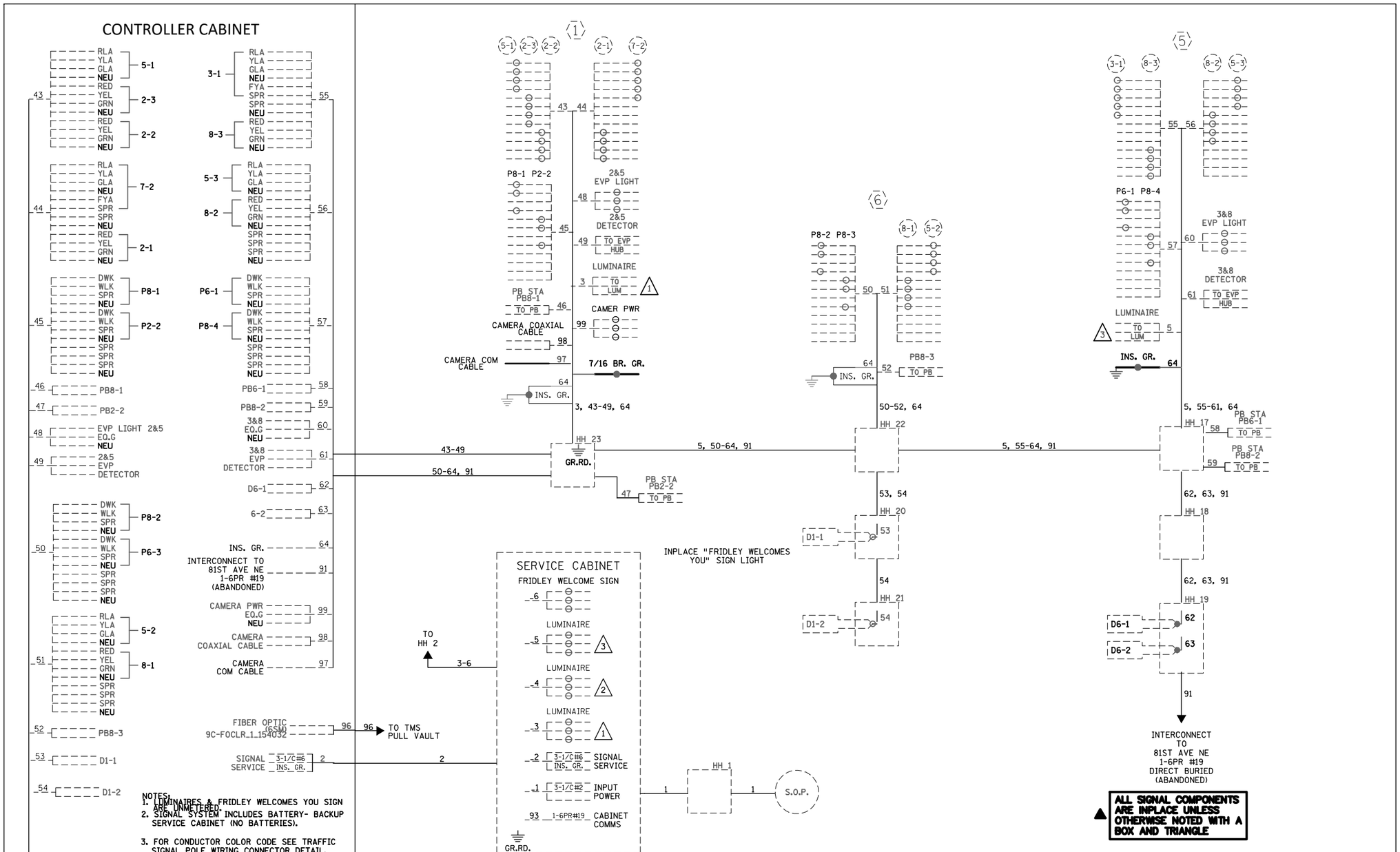
5/22/2020



BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519

METER ADDRESS: 1101 OSBORNE RD N.E.

OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
WIRING DIAGRAM 2 OF 2
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ---------- DRAWN BY:SJK CKD BY:CBB DATE:9/10/19

CERTIFIED BY ---------- LIC. NO. ---------- DATE: ----------
LICENSED PROFESSIONAL ENGINEER

STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS35 OF SS41 SHEETS

TEMPORARY SIGNAL SYSTEM B

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LIC. NO. 43384 DATE 05/26/2020

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REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 155 OF 189

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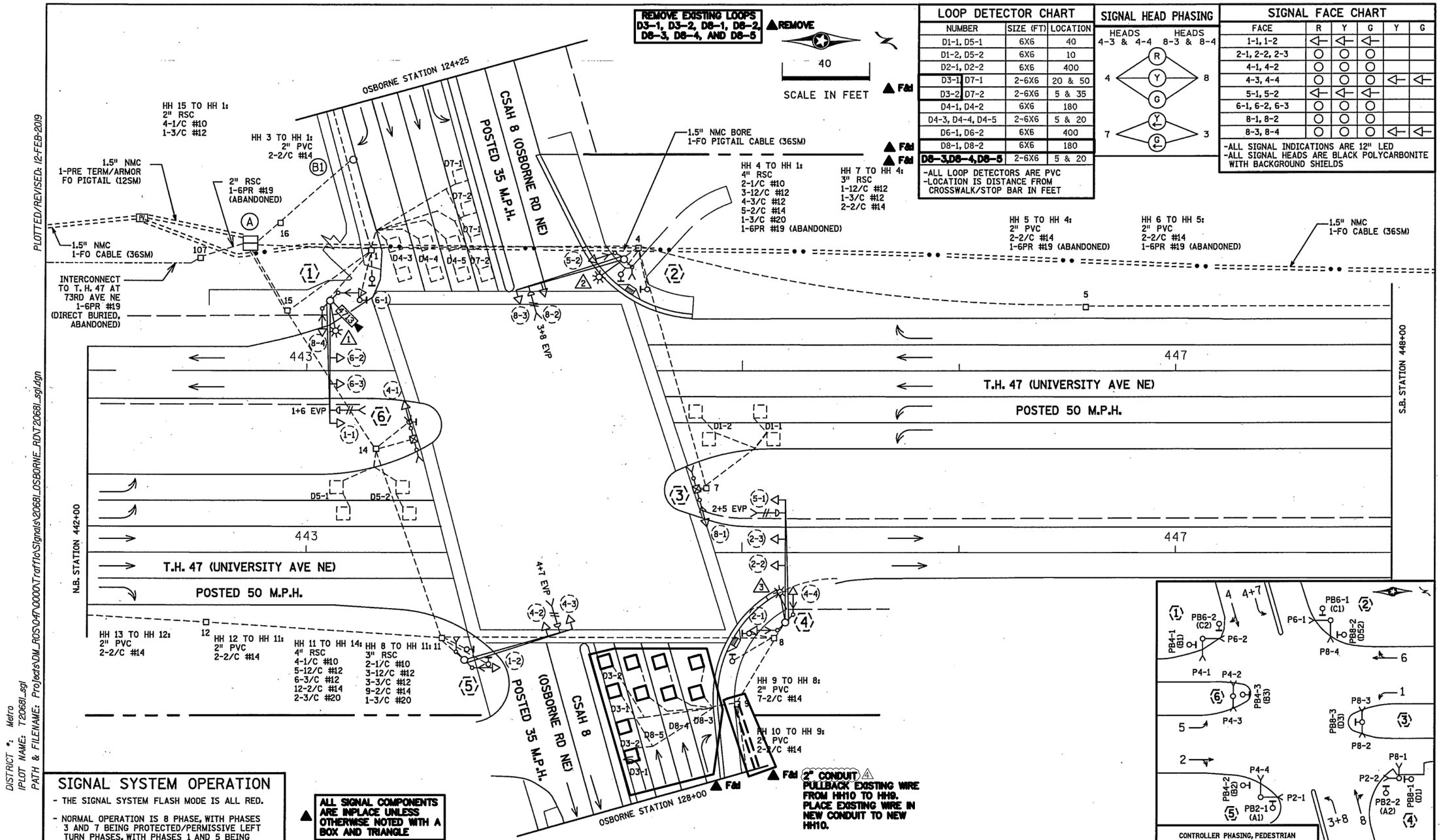

LOOP DETECTOR CHART		
NUMBER	SIZE (FT)	LOCATION
D1-1, D5-1	6X6	40
D1-2, D5-2	6X6	10
D2-1, D2-2	6X6	400
D3-1, D7-1	2-6X6	20 & 50
D3-2, D7-2	2-6X6	5 & 35
D4-1, D4-2	6X6	180
D4-3, D4-4, D4-5	2-6X6	5 & 20
D6-1, D6-2	6X6	400
D8-1, D8-2	6X6	180
D8-3,D8-4,D8-5	2-6X6	5 & 20

-ALL LOOP DETECTORS ARE PVC
-LOCATION IS DISTANCE FROM CROSSWALK/STOP BAR IN FEET

SIGNAL HEAD PHASING

HEADS 4-3 & 4-4 HEADS 8-3 & 8-4

SIGNAL FACE CHART					
FACE	R	Y	G	Y	G
1-1, 1-2	○	←	←		
2-1, 2-2, 2-3	○	○	○		
4-1, 4-2	○	○	○		
4-3, 4-4	○	○	○	←	←
5-1, 5-2	←	←	←		
6-1, 6-2, 6-3	○	○	○		
8-1, 8-2	○	○	○		
8-3, 8-4	○	○	○	←	←

-ALL SIGNAL INDICATIONS ARE 12" LED
-ALL SIGNAL HEADS ARE BLACK POLYCARBONITE WITH BACKGROUND SHIELDS

SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE, WITH PHASES 3 AND 7 BEING PROTECTED/PERMISSIVE LEFT TURN PHASES, WITH PHASES 1 AND 5 BEING PROTECTED LEFT TURN PHASES.

▲ ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE

BY	DATE	REVISIONS
J3T	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

INTERSECTION LAYOUT (1 OF 2)
T.H. 47 (UNIVERSITY AVE.) AT CSAH 8 (OSBORNE RD.)
FRIDLEY, ANOKA COUNTY

S.A.P. NO. DRAWN BY: CKD BY: DATE:
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE: _____
STATE PROJ.NO. (T.H.47) SHEET NO. 1 OF 5 SHEETS

REVISE SIGNAL SYSTEM A

DISTRICT *: Metro
IPLOT NAME: T20681_sgl
PATH & FILENAME: Projects\DM_ROS\04\0000\Traffic\Signals\20681_OSBORNE_RDNT20681_sgl.dgn
PLOTTED/REVISED: 12-FEB-2019

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zacharypa 7/13/2020
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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

BOLTON & MENK
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BURNSVILLE, MINNESOTA 55337
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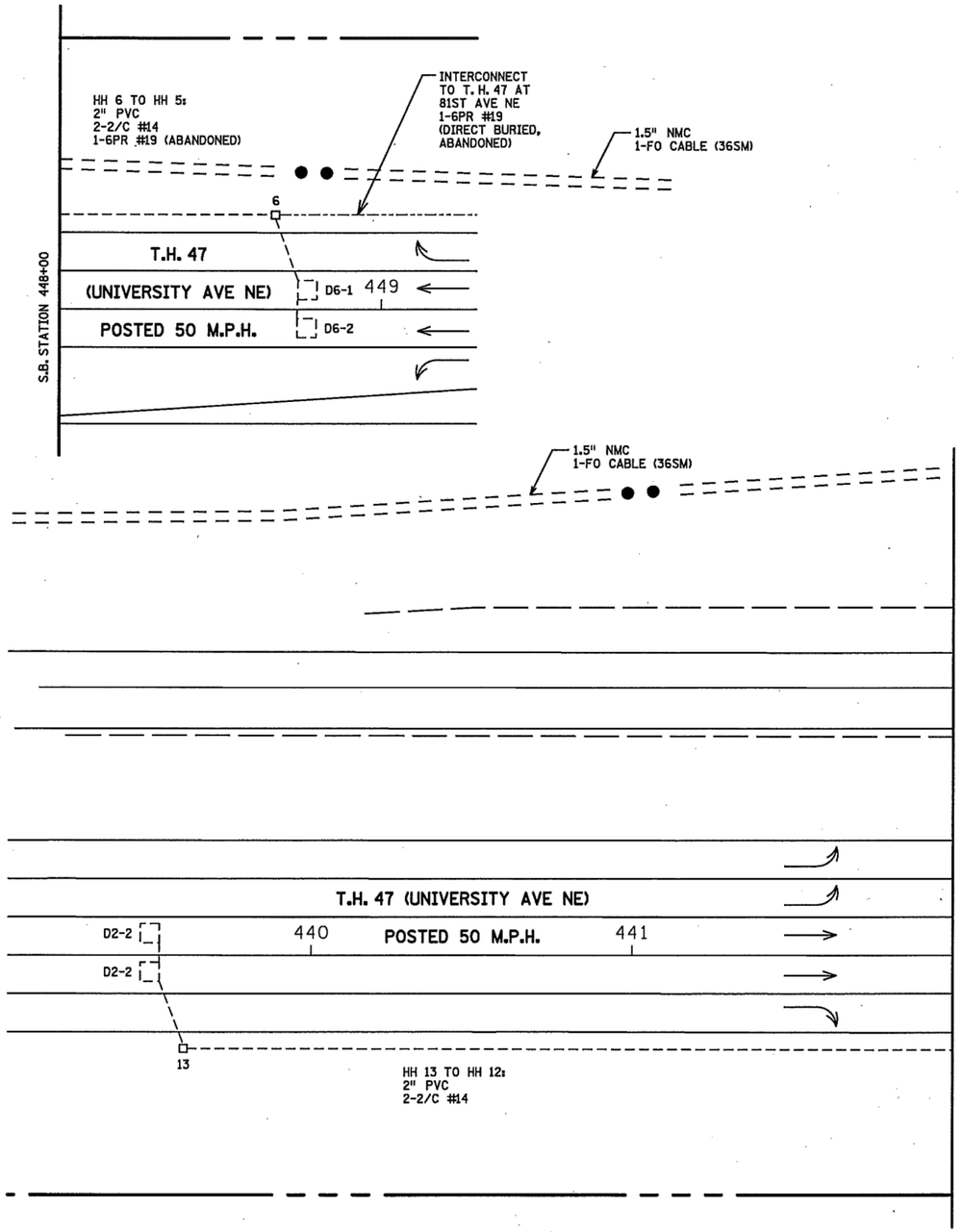
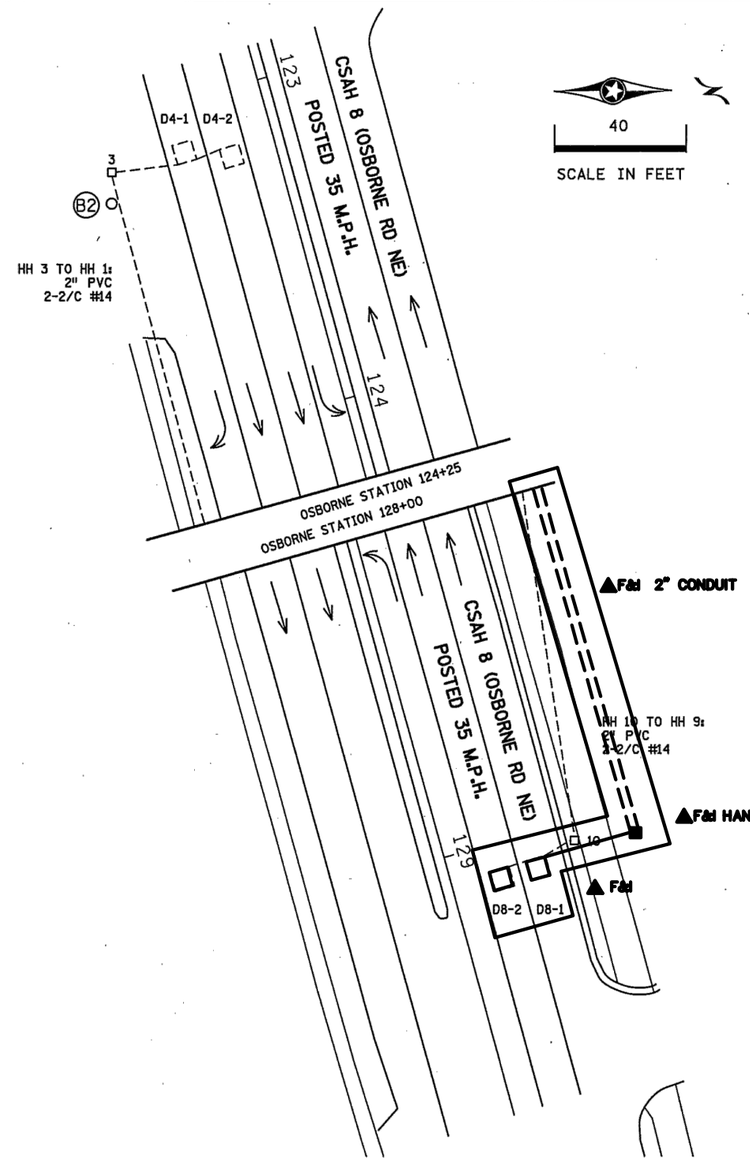
REV	BY	DATE
4	ZAP	7/13/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 156R OF 189





▲ ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE

BY	DATE	REVISIONS
JJT	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

INTERSECTION LAYOUT (2 OF 2)
T.H. 47 (UNIVERSITY AVE.) AT
CSAH 8 (OSBORNE RD.)
FRIDLEY, ANOKA COUNTY

S.A.P. NO. | DRAWN BY: | CKD BY: | DATE:

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE: _____

STATE PROJ. NO. (T.H.47) SHEET NO. 2 OF 5 SHEETS

REVISE SIGNAL SYSTEM A

DISTRICT : Metro
PLOT NAME: T20681_sgl
PATH & FILENAME: Projects\DM_ROS\047\0000\Traffic\Signals\20681_OSBORNE_RDNT20681_sgl.dgn
PLOTTED/REVISED: 12-FEB-2019

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zacharypa 5/26/2020

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REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

(1) S.B. STA. 443+10, 32.2' LT.
PA100 POLE FOUNDATION
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
1-X6-350/CAM 400 EXTENSION (MOUNTED AT 350 DEG, INCLUDES LIGHTNING ROD)
7/16" GROUND BRAID & GROUND ROD)
1-VIDEO CAMERA WITH MOUNT
3-ONE WAY SIGNALS OVERHEAD AT 0', 17', 29'
ONE WAY SIGNAL MOUNTED AT 45 DEG (RC DESIGN)
ONE WAY SIGNAL MOUNTED AT 225 DEG (RC DESIGN)
1-C. D. PED HEAD MOUNTED AT 45 DEG
1-C. D. PED HEAD MOUNTED AT 225 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 1+6)
LUMINAIRE 250W HPS
1-R6-1L SIGN (ONE WAY) (48" X 18")
1-R6-1R SIGN (ONE WAY) (48" X 18")
1-INTERNALLY LIT TYPE D SIGN
EXTEND INTO HH 1:
3" RSC
2-1/C #10
3-12/C #12
2-3/C #12
1-3/C #20
1-7/16" GROUND BRAID TO GROUND ROD
1-COM CABLE (CAT 5E)

(6) N.B. STA. 443+49, 52.5' LT.
PEDESTAL FOUNDATION
15' PEDESTAL POLE PLUS BASE
ONE WAY SIGNAL MOUNTED AT 270 DEG (RC DESIGN)
1-C. D. PED HEAD MOUNTED AT 90 DEG
1-C. D. PED HEAD MOUNTED AT 270 DEG
EXTEND INTO HH 14:
2" RSC
1-12/C #12
1-3/C #12
1-2/C #14

(5) N.B. STA. 443+73, 49.5' RT.
PA100 POLE FOUNDATION
TYPE PA100-A-50
2-ONE WAY SIGNALS OVERHEAD AT 0' AND 11'
ONE WAY SIGNAL MOUNTED AT 45 DEG (RC DESIGN)
1-C. D. PED HEAD MOUNTED AT 45 DEG
1-C. D. PED HEAD MOUNTED AT 225 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 4+7)
1-R10-X12 SIGN (36" X 48") ADJACENT TO HEAD (4-3)
1-INTERNALLY LIT TYPE D SIGN
EXTEND INTO HH 11:
3" RSC
2-1/C #10
2-12/C #12
3-3/C #12
1-2/C #14
1-3/C #20

(2) S.B. STA. 444+45, 51.6' LT.
PA100 POLE FOUNDATION
TYPE PA100-A-50-D40-9 (DAVIT AT 350 DEG)
2-ONE WAY SIGNALS OVERHEAD AT 0' AND 11'
ONE WAY SIGNAL MOUNTED AT 45 DEG (RC DESIGN)
1-C. D. PED HEAD MOUNTED AT 45 DEG
1-C. D. PED HEAD MOUNTED AT 225 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 3+8)
LUMINAIRE 250W HPS
1-R10-X12 SIGN (36" X 48") ADJACENT TO HEAD (8-3)
1-INTERNALLY LIT TYPE D SIGN
EXTEND INTO HH 4:
3" RSC
2-1/C #10
2-12/C #12
3-3/C #12
1-2/C #14
1-3/C #20

(3) N.B. STA. 444+79, 29.3' LT.
PEDESTAL FOUNDATION
15' PEDESTAL POLE PLUS BASE
ONE WAY SIGNAL MOUNTED AT 270 DEG (RC DESIGN)
1-C. D. PED HEAD MOUNTED AT 90 DEG
1-C. D. PED HEAD MOUNTED AT 270 DEG
1-APS PB AND SIGN (DLB ARROW) (PB8-3)
EXTEND INTO HH 7:
2" RSC
1-12/C #12
1-3/C #12

(4) N.B. STA. 445+20, 32.2' RT.
PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
3-ONE WAY SIGNALS OVERHEAD AT 0', 17', 29'
ONE WAY SIGNAL MOUNTED AT 45 DEG (RC DESIGN)
ONE WAY SIGNAL MOUNTED AT 225 DEG (RC DESIGN)
1-C. D. PED HEAD MOUNTED AT 45 DEG
1-C. D. PED HEAD MOUNTED AT 225 DEG
1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 2+5)
LUMINAIRE 250W HPS
1-R6-1L SIGN (ONE WAY) (48" X 18")
1-R6-1R SIGN (ONE WAY) (48" X 18")
1-INTERNALLY LIT TYPE D SIGN
EXTEND INTO HH 8:
3" RSC
2-1/C #10
3-12/C #12
2-3/C #12
1-3/C #20

(A) S.B. STA. 442+74, 59 LT.
EQUIPMENT PAD
SERVICE CABINET
CONTROLLER AND CABINET

CONTROLLER CABINET TO HH1:
4" RSC
6-12/C #12
5-3/C #12
15-2/C #14
2-3/C #20
1-CAT 5E (COM CABLE)
1-6PR #19 (ABANDONED)

CONTROLLER CABINET TO HH 15:
4" RSC
6-12/C #12
6-3/C #12
15-2/C #14
2-3/C #20

CONTROLLER CABIINET TO HH 107:
2" RSC
1-6PR #19

COMTROLLER CABINET TO PULL VAULT:
1-1.5" NMC (IN SPARE 3")
1-PRE-TERMINATED ARMORED FO PIGTAIL (12SM)

1-3" RSC STUBBED OUT (THREADED AND CAPPED BOTH ENDS)
3/4" RSC STUBBED OUT (FOR TELEPHONE LINE)

CONTROLLER CABINET TO SERVICE CABINET:
2" RSC
2-1/C #6
1-1/C #6 INS. GR.

SERVICE CABINET TO SOP VIA HH 16:
2" RSC
3-1/C #2

SERVICE CABINET TO HH 15:
2" RSC
8-1/C #10
2-3/C #12

(B1) SOP (WOOD POLE WITH OVERHEAD CABLE TO TRANSFORMERAT B2 BY XCEL ENERGY)

2" RSC RISER, WEATHERHEAD AND CONDUIT INTO HH 16:
3-1/C #2

(B2) SOP (WOOD POLE AND TRANSFORMER BY XCEL ENERGY)

2" RSC RISER, WEATHERHEAD AND CONDUIT INTO HH 16:
3-1/C#2 OVERHEAD TO TRANSFORMER (BY XCEL ENERGY)

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB4-1)
EXTEND INTO HH 1:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB6-1)
EXTEND INTO HH 4:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB8-1)
EXTEND INTO HH 8:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB4-2)
EXTEND INTO HH 11:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB6-2)
EXTEND INTO HH 1:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB8-2)
EXTEND INTO HH 4:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(RT ARROW) (PB2-2)
EXTEND INTO HH 8:
1 1/4" PVC
1-2/C #14

PED PB STATION
1-APS PB AND SIGN
(LT ARROW) (PB2-1)
EXTEND INTO HH 11:
1 1/4" PVC
1-2/C #14

▲ **ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE**

BY	DATE	REVISIONS
J3T	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

INTERSECTION NOTES
T.H. 47 (UNIVERSITY AVE.) AT
CSAH 8 (OSBORNE RD.)
FRIDLEY, ANOKA COUNTY

S.A.P. NO. ~~S.A.P. NO.~~ | DRAWN BY: | CKD BY: | ~~DATE:~~
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE: _____
STATE ~~PROJ. NO.~~ (T.H.47) SHEET NO. ~~3 OF 5 SHEETS~~

REVISE SIGNAL SYSTEM A

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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED ZAP
DRAWN ZAP
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Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 158 OF 189

DISTRICT *: Metro
IPLOT NAME: T20681_sgl
PATH & FILENAME: Projects\DM_ROS\047\0000\Traffic\Signals\20681_OSBORNE_RDNT20681_sgl.dgn
PLOTTED/REVISED: 12-FEB-2019
AutoCAD PDF (General Documentation).pc3 8:23 AM BMI Trans.ctb
zacharypa 5/26/2020
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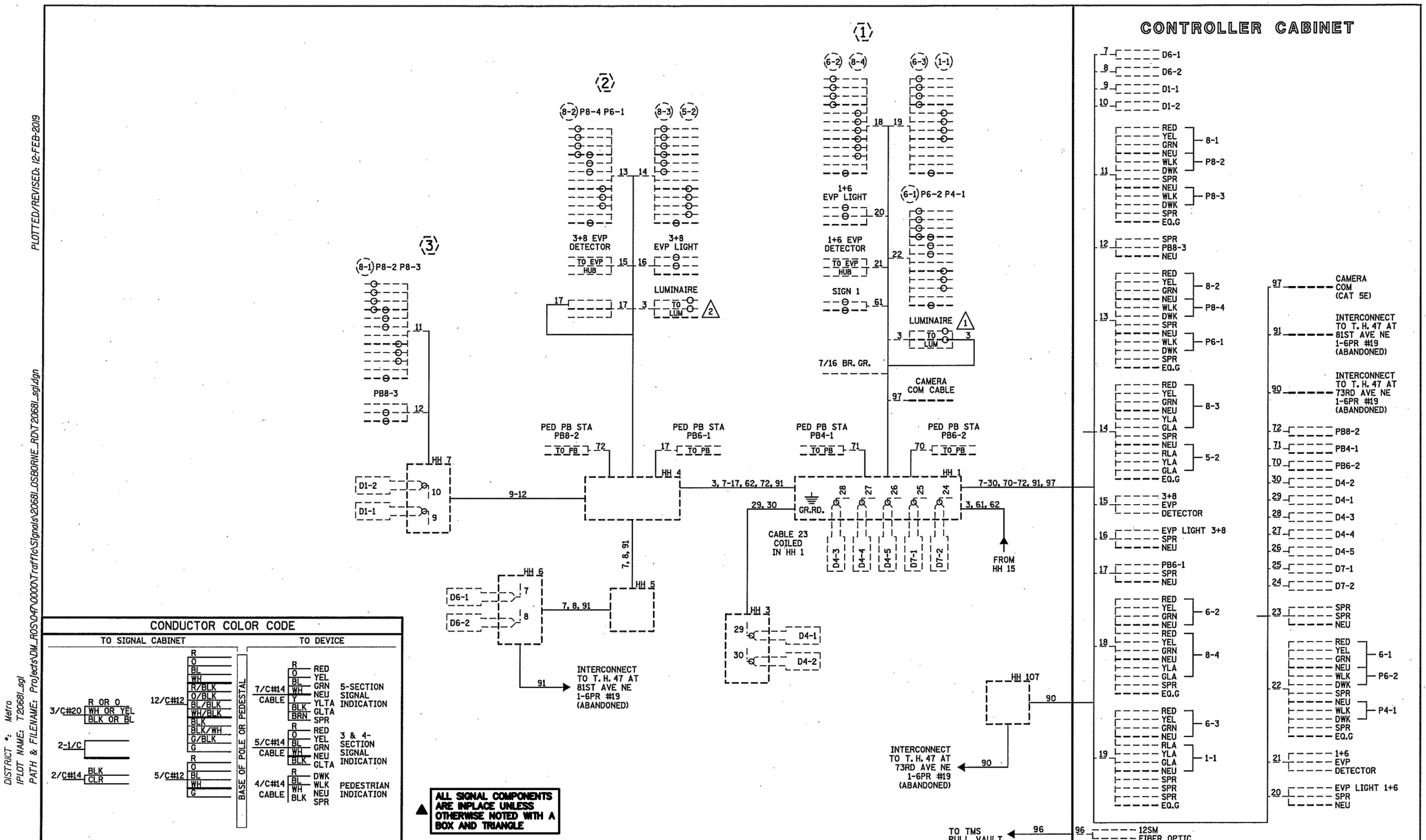

BY	DATE	REVISIONS
J3T	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

FIELD WIRING DIAGRAM (1 OF 2)
T.H. 47 (UNIVERSITY AVE.) AT CSAH 8 (OSBORNE RD.)
FRIDLEY, ANOKA COUNTY

S.A.P. NO. | DRAWN BY: | CKD BY: | DATE:

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE: _____

STATE PROJ.NO. (T.H.47) SHEET NO. 4 OF 5 SHEETS

REVISE SIGNAL SYSTEM A

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BRYAN T. NEMETH
LIC. NO. 43364 DATE 05/26/2020

DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

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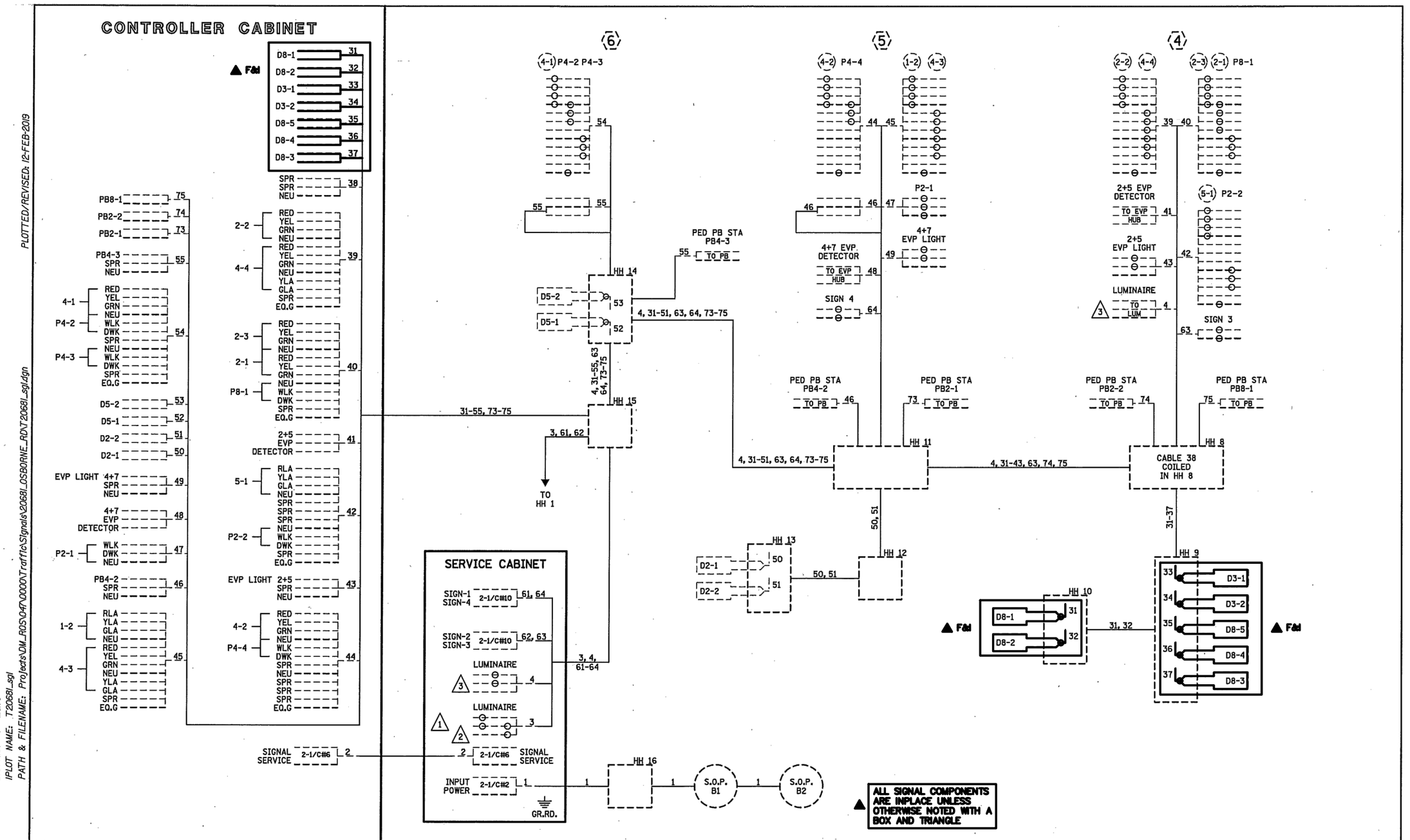
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV.	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 159 OF 189



DISTRICT *: Metro
IPLOT NAME: T20681_sgl
PATH & FILENAME: Projects\DM_R05\047\0000\Traffic\Signals\20681_OSBORNE_RDNT20681_sgl.dgn
PLOTTED/REVISED: 12-FEB-2019

BY	DATE	REVISIONS
J3T	01-16-19	REMOVED ERRORS

SYSTEM ID: 1735322 T.E. 2665
METER ADDRESS: 7556 UNIVERSITY AVE. NE
OLD ID: 20681

FIELD WIRING DIAGRAM (2 OF 2)
T.H. 47 (UNIVERSITY AVE.) AT
CSAH 8 (OSBORNE RD.)
FRIDLEY, ANOKA COUNTY

S.A.P. NO. ~~XXXXXXXXXX~~ DRAWN BY: CKD BY: ~~DATE:~~
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE: _____
~~STATE PROJ.NO.~~ (T.H.47) SHEET NO. 5 OF ~~5~~ SHEETS

REVISE SIGNAL SYSTEM A

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.
BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 160 OF 189

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REMOVE EXISTING LOOPS D1-1, D1-2, D2-1, D2-2, D6-1, AND D6-2 ▲REMOVE

LOOP DETECTORS

NUMBER	SIZE	FUNCTION	LOCATION
D1-1	2-6'X 6'	10/11	20' & 50'
D1-2	2-6'X 6'	10/11	5' & 35'
D2-1	6'X 6'	1	260'
D6-1	6'X 6'	1	260'
D8-1	6'X	3/8	120'
D8-3	2-6'X 6'	7	5'
D8-4	2-6'X 6'	1	5'

▲ F&I

LOCATION=DISTANCE FROM STOP LINE TO DETECTOR

FUNCTIONS:
1 - CALL AND EXTEND
2 - CALL ONLY
3 - EXTEND ONLY
4 - CALL ONLY DENS
5 - DLY CALL ONLY
6 - DLY CALL ONLY DENSITY
7 - DLY CALL IMMED EXTEND
8 - CARRY OVER
9 - ADVISORY
10 - CALL Ø1 DURING Ø8 GREEN
11 - EXTEND Ø1 AND Ø6

NOTES:

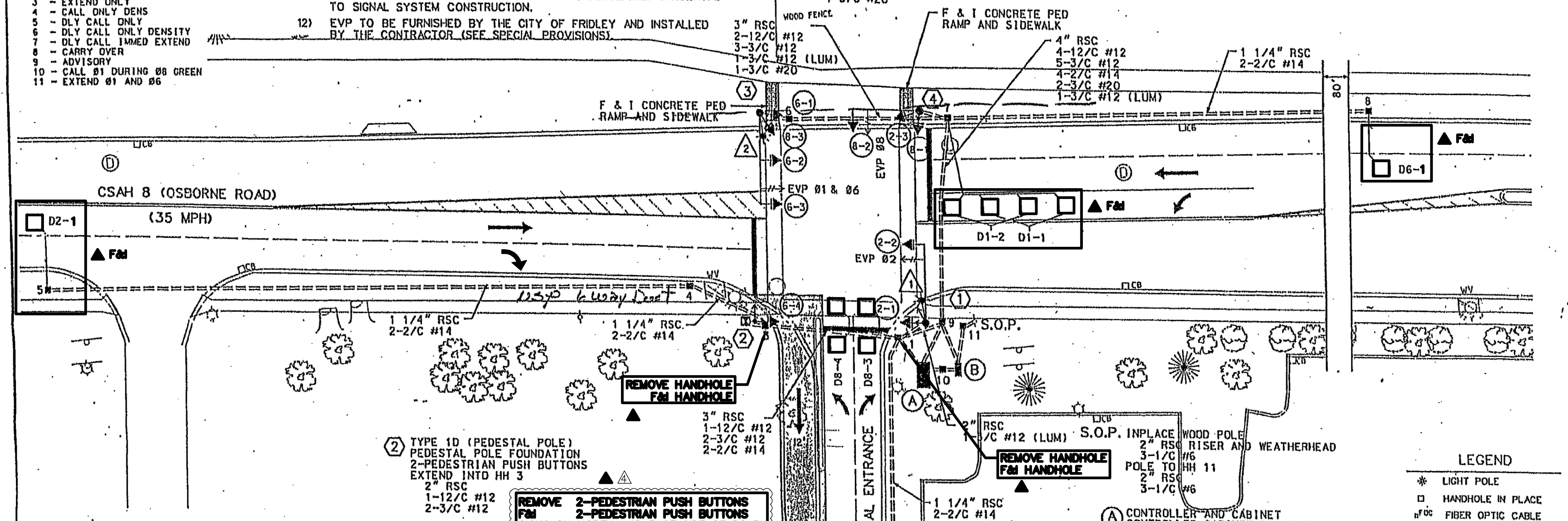
1) SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
2) EACH SIGNAL FACE SHALL HAVE A BACKGROUND SHIELD.
3) EACH LUMINAIRE SHALL HAVE A PEC AND CHECK SWITCH.
4) SEE SHEET NO. 5 AND SPECIAL PROVISIONS FOR SERVICE CABINET DETAILS.
5) DIRECTIONAL SIGNS (TYPE D) TO BE FURNISHED AND INSTALLED ON MAST ARMS AT POLES 1, 3 AND 4 AND SHALL BE CONSIDERED INCIDENTAL.
6) SEE SPECIAL PROVISIONS FOR HANDHOLE TYPE.
7) SEE SPECIAL PROVISIONS FOR CONTRACTORS RESPONSIBILITY FOR LOCATION OF UTILITIES.
8) ALL PEDESTRIAN INDICATIONS SHALL BE 12" X 12".
9) ALL SIGNAL FACES SHALL BE 12 INCH 3 SECTION R-Y-G, EXCEPT FACES (6-3)(6-4) WHICH SHALL BE 12 INCH 5 SECTION R-Y-G-YLTA-GLTA.
10) ALL VEHICLE SIGNAL INDICATIONS SHALL USE GLASS LENSES.
11) CONCRETE PED RAMPS AND SIDEWALKS SHALL BE CONSTRUCTED AT LOCATIONS SHOWN ON PLAN AND SHALL BE CONSIDERED INCIDENTAL TO SIGNAL SYSTEM CONSTRUCTION.
12) EVP TO BE FURNISHED BY THE CITY OF FRIDLEY AND INSTALLED BY THE CONTRACTOR (SEE SPECIAL PROVISIONS).

REMOVE PEDESTRIAN PUSH BUTTON
F&I PEDESTRIAN PUSH BUTTON
AND SIGN MOUNTED ON WEST SIDE OF POLE

(3) TYPE PA90-A35-D30-9 (DAVIT AT 350°)
PA90 POLE FOUNDATION
2-ONEWAY SIGNALS OVERHEAD (0' AND 18' FROM END OF MAST ARM)
R10-12 (24x30) MOUNTED 3' FROM END OF MAST ARM
ONEWAY EVP DETECTOR AND LIGHT (6' FROM END OF MASTARM)
TYPE 10B - AT 0°
TYPE 10A - AT 270°
LUMINAIRE 250 WATT HPS
1-PEDESTRIAN PUSH BUTTON
EXTEND TO HH 6
3" RSC
2-12/C #12
3-3/C #12
1-3/C #12 (LUM)
1-3/C #20

(4) TYPE PA90-A25
PA90 POLE FOUNDATION
ONEWAY SIGNAL OVERHEAD
ONEWAY EVP DETECTOR AND LIGHT (6' FROM END OF MASTARM)
TYPE 10A - AT 0°
TYPE 10B - AT 270°
1-PEDESTRIAN PUSH BUTTON
EXTEND INTO HH 7
3" RSC
2-12/C #12
2-3/C #12
1-3/C #20

N7088



(2) TYPE 1D (PEDESTAL POLE)
PEDESTAL POLE FOUNDATION
2-PEDESTRIAN PUSH BUTTONS
EXTEND INTO HH 3
2" RSC
1-12/C #12
2-3/C #12

REMOVE 2-PEDESTRIAN PUSH BUTTONS
F&I 2-PEDESTRIAN PUSH BUTTONS
SIGNS ON NORTH AND EAST SIDE OF POLE

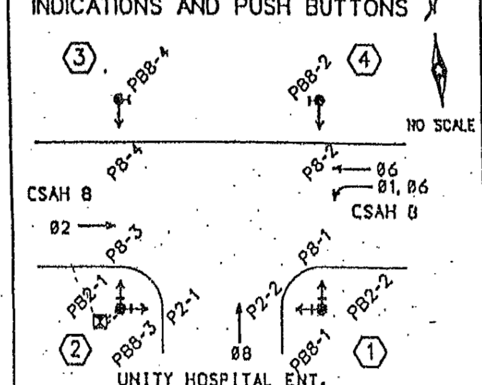
(1) TYPE PA90-A30-D30-9 (DAVIT AT 350°)
PA90 POLE FOUNDATION
ONEWAY SIGNAL OVERHEAD
EVP DETECTOR AND LIGHT (6' FROM END OF MAST ARM)
TYPE 10B - AT 270°
TYPE 30A - AT 0°
LUMINAIRE 250 WATT HPS
2-PEDESTRIAN PUSH BUTTONS
EXTEND TO HH 1
3" RSC
1-12/C #12
4-3/C #12
1-3/C #12 (LUM)
1-3/C #20

REMOVE 2-PEDESTRIAN PUSH BUTTONS
F&I 2-PEDESTRIAN PUSH BUTTONS
SIGNS ON NORTH AND WEST SIDE OF POLE

ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE

NOTE: CONTRACTOR IS RESPONSIBLE TO REPLACE ANY LOOP DETECTORS DAMAGED BY CONSTRUCTION

CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



S.O.P. INPLACE WOOD POLE
2" RSC RISER AND WEATHERHEAD
3-1/C #6
POLE TO HH 11
2" RSC
3-1/C #6

(A) CONTROLLER AND CABINET
CONTROLLER CABINET TO HH 1
4" RSC
2-12/C #12
6-3/C #12
1-3/C #20
6-2/C #14
CONTROLLER CABINET TO HH 9
4" RSC
4-12/C #12
5-3/C #12
2-3/C #20
4-2/C #14
CONTROLLER CABINET TO HH 10
1 1/4 RSC
3-1/C #6
STUBOUT 3" RSC FOR FUTURE USE

(B) SERVICE CABINET FOUNDATION
SERVICE CABINET TO HH 11
2" RSC
3-1/C #6
SERVICE CABINET TO HH 10 (SERVICE)
1 1/4" RSC
3-1/C #6
SERVICE CABINET TO HH 9 (LIGHTING)
1 1/4" RSC

LEGEND

- LIGHT POLE
- HANDHOLE IN PLACE
- FIBER OPTIC CABLE
- PROPOSED HANDHOLE
- EXISTING CONDUIT
- INPLACE WIRES
- INPLACE SIGN
- POWER POLE
- CONCRETE PED RAMPS AND SIDEWALK
- WIDENING BY OTHERS

ELECTRICAL ENG. CERT.

INTERSECTION LAYOUT
C.S.A.H. 8 (OSBORNE RD) AND THE UNITY HOSPITAL ENTRANCE
C.P. 93-26-08

OSM Orr Schelen Mayeron & Associates, Inc.

REVISE SIGNAL SYSTEM (C) ▲

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.

BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED ZAP | DRAWN ZAP | CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE
▲	ZAP	7/13/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

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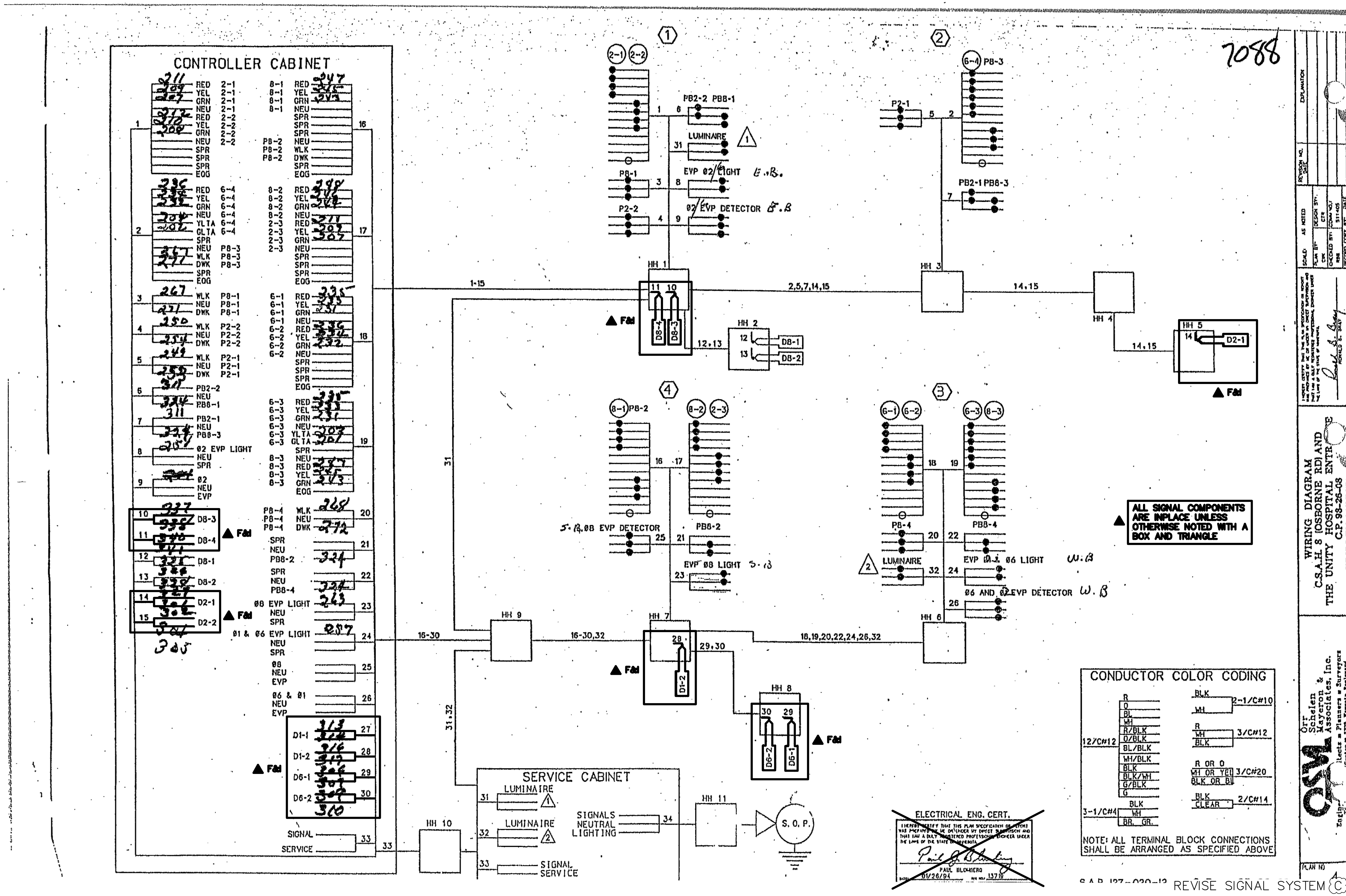

7088
CONTROLLER CABINET
SERVICE CABINET
LUMINAIRE
SIGNALS
NEUTRAL
LIGHTING
SIGNAL
SERVICE
S.O.P.
HH 1
HH 2
HH 3
HH 4
HH 5
HH 6
HH 7
HH 8
HH 9
HH 10
HH 11
02 EVP LIGHT
02 EVP DETECTOR
5 & 08 EVP DETECTOR
EVP 08 LIGHT
06 AND 01 EVP DETECTOR
ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE
CONDUCTOR COLOR CODING
NOTE: ALL TERMINAL BLOCK CONNECTIONS SHALL BE ARRANGED AS SPECIFIED ABOVE
ELECTRICAL ENG. CERT.
PAUL BLOMBERG
01/26/94
WIRING DIAGRAM
C.S.A.H. 8 (OSBORNE RD) AND THE UNITY HOSPITAL ENTRANCE
C.P. 93-26-03
FRIDLEY, MINNESOTA
Orr Schelen Mayeron & Associates, Inc.
REVISE SIGNAL SYSTEM

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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED	ZAP
DRAWN	ZAP
CHECKED	BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE
A	ZAP	7/13/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

LOOP DETECTOR CHART		
NUMBER	SIZE (FT)	LOCATION
D1-1	2-6x6	50 & 20
D1-2	2-6x6	5 & 35
D2-1, D2-2	6x6	475
D3-1	6x6	37 & 52
D3-2	6x6	7 & 22
▲ Fdl D4-1, D4-2	6x6	123
D4-3, D4-4	2-6x6	3 & 13
D5-1, D5-2	2-6x6	20 & 50
D5-3, D5-4	2-6x6	0 & 35
D6-1, D6-2	6x6	475
▲ Fdl D7-1	2-6x6	20 & 50
D7-2	2-6x6	5 & 35
D8-1, D8-2	6x6	250
D8-3, D8-4	6x6	10
D8-3, D8-4	6x6	25

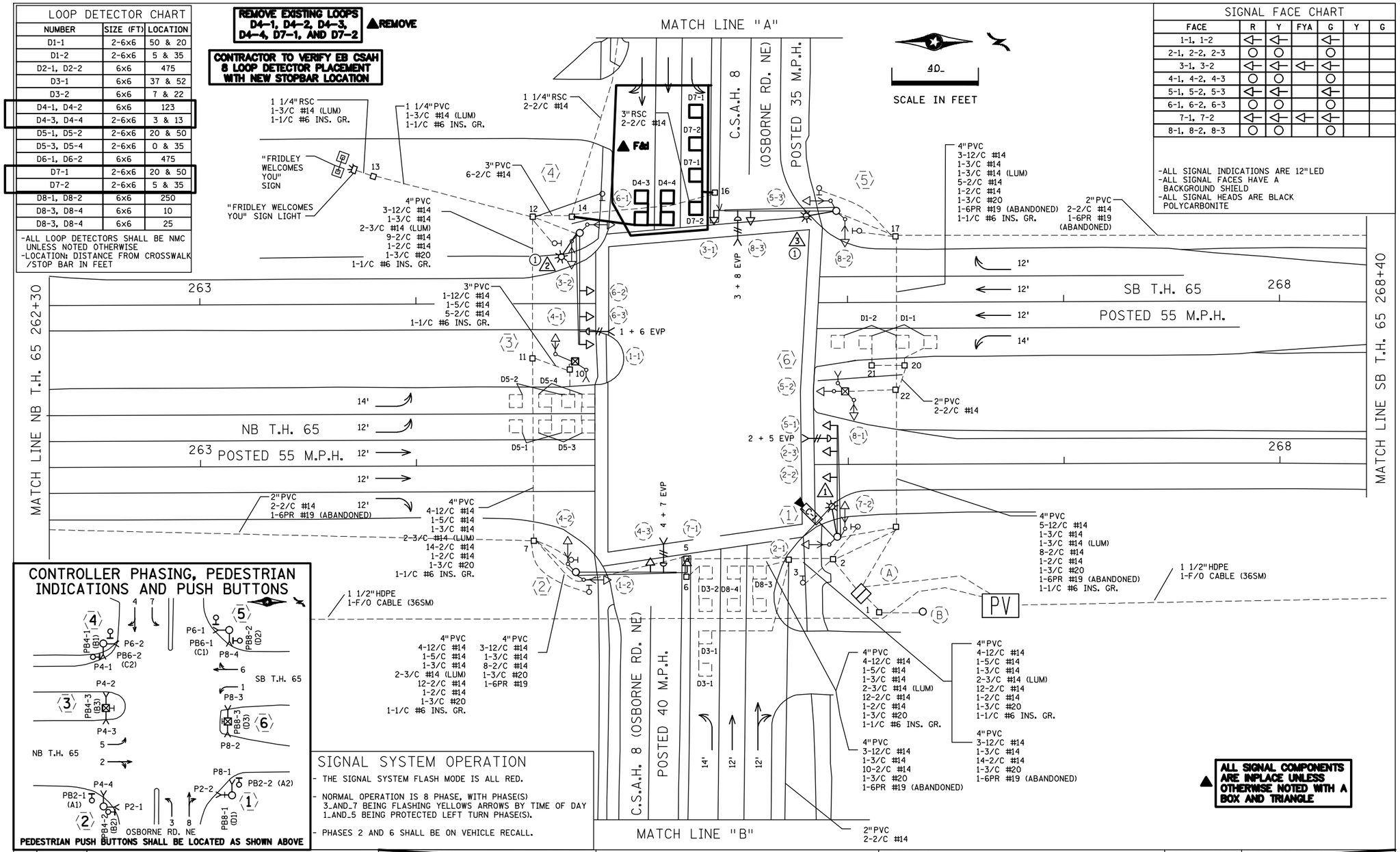
-ALL LOOP DETECTORS SHALL BE NMC UNLESS NOTED OTHERWISE
-LOCATION: DISTANCE FROM CROSSWALK /STOP BAR IN FEET

REMOVE EXISTING LOOPS D4-1, D4-2, D4-3, D4-4, D7-1, AND D7-2 ▲REMOVE

CONTRACTOR TO VERIFY EB CSAH 8 LOOP DETECTOR PLACEMENT WITH NEW STOPBAR LOCATION

SIGNAL FACE CHART						
FACE	R	Y	FYA	G	Y	G
1-1, 1-2	◁	◁		◁		
2-1, 2-2, 2-3	○	○		○		
3-1, 3-2	◁	◁	◁	◁		
4-1, 4-2, 4-3	○	○		○		
5-1, 5-2, 5-3	◁	◁		◁		
6-1, 6-2, 6-3	○	○		○		
7-1, 7-2	◁	◁	◁	◁		
8-1, 8-2, 8-3	○	○		○		

-ALL SIGNAL INDICATIONS ARE 12"LED
-ALL SIGNAL FACES HAVE A BACKGROUND SHIELD
-ALL SIGNAL HEADS ARE BLACK POLYCARBONITE



CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS

PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 8 PHASE, WITH PHASE(S) 3_AND_7 BEING FLASHING YELLOWS ARROWS BY TIME OF DAY 1_AND_5 BEING PROTECTED LEFT TURN PHASE(S).
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

▲ ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE

BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519
METER ADDRESS: 1101 OSBORNE RD N.E.
OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
INTERSECTION LAYOUT
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ---------- DRAWN BY: SJK CKD BY: CDB DATE: 9/10/19
CERTIFIED BY ---------- LICENSED PROFESSIONAL ENGINEER LIC. NO. ---------- DATE: ----------
STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS31 OF SS41 SHEETS

REVISE SIGNAL SYSTEM (B) ⚠4

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.
BRYAN T. NEMETH
LIC. NO. 43364 DATE 05/26/2020

DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE
⚠4	ZAP	7/13/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 163R OF 189

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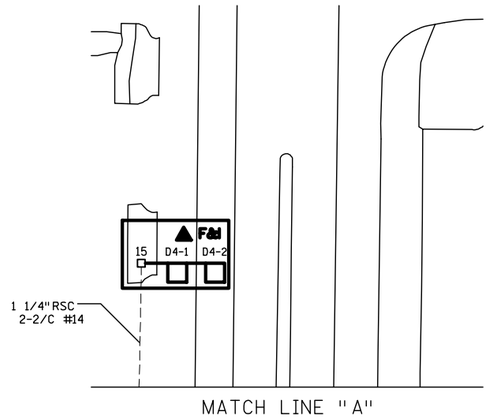
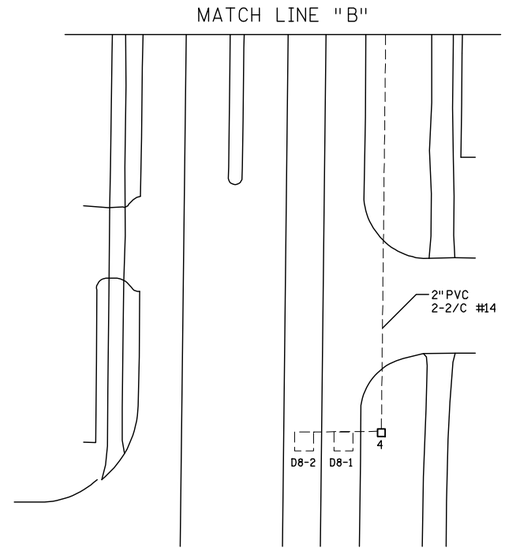
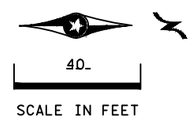
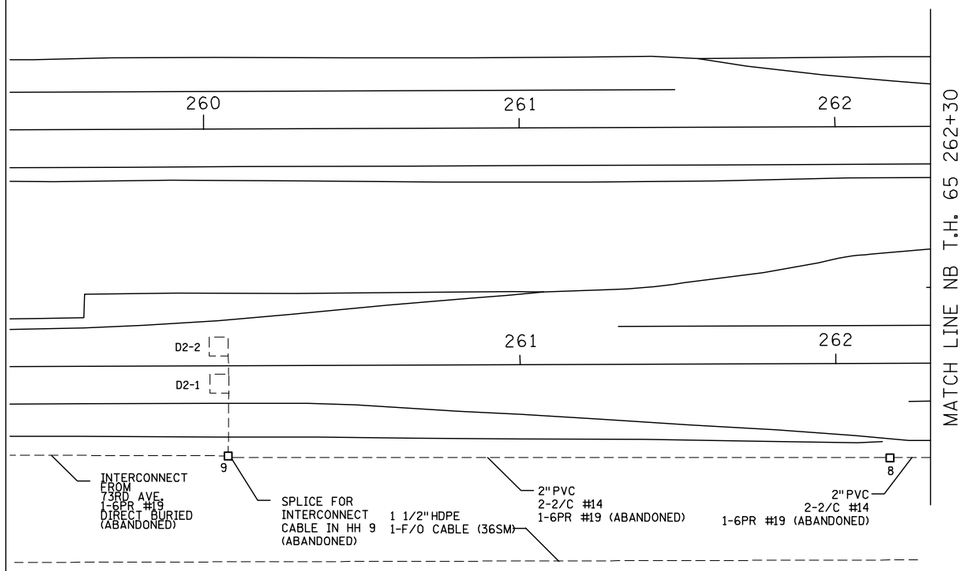
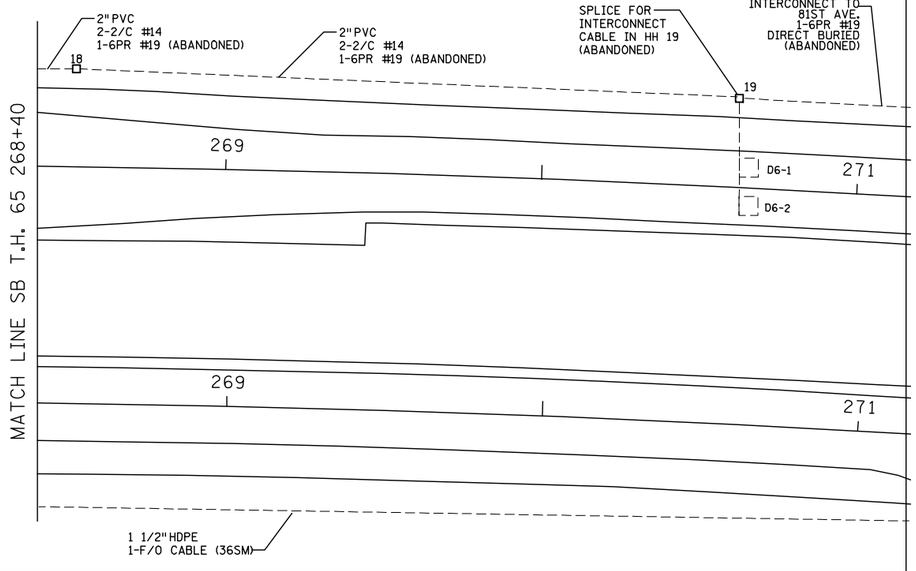


▲ ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE









BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519
METER ADDRESS: 1101 OSBORNE RD N.E.
OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
MATCH LINES
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ----------
DRAWN BY: SJK CKD BY: CDB DATE: 9/10/19
CERTIFIED BY ---------- LIC. NO. ---------- DATE: ----------
LICENSED PROFESSIONAL ENGINEER
STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS32 OF SS41 SHEETS

REVISE SIGNAL SYSTEM (B) ⚠4

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.

BRYAN T. NEMETH
LIC. NO. 43364 DATE 05/26/2020

DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
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Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE
⚠4	ZAP	7/13/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 164R OF 189

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POLE NOTES

(1)

PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-50-X6-350/CAM 400 EXTENSION (MOUNTED AT 350 DEG)
1-VIDEO CAMERA WITH MOUNT
3-ONE WAY SIGNALS OVERHEAD
(0', 11' AND 23' FROM END OF MAST ARM)
1-ONE WAY SIGNAL POLE MOUNTED AT 45 DEG (7-2)
1-APS PUSH BUTTON AND SIGN (PB8-1) (LT ARROW)
2-C. D. PED INDS MOUNTED AT 45 & 225 DEG
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT PHASES (2+5)
LUMINAIRE-LED
1-R6-1R SIGN (ONE WAY)
1-R6-1L SIGN (ONE WAY)
1-TYPE D SIGN (D-2)
1-TYPE D SIGN (D-1)
EXTEND INTO HH 23:
3"PVC
3-12/C #14
1-3/C #14
1-3/C #14 (LUM)
2-2/C #14
1-3/C #20
21-7/16" GROUNDING BRAID TO GROUND ROD IN HH 23:
1-3/C #14 (CAMERA POWER)
1-COM CABLE
1-COAXIAL CABLE

(2)

PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-50
2-ONE WAY SIGNALS OVERHEAD
(0' AND 11' FROM END OF MAST ARM)
1-ONE WAY SIGNAL MOUNTED ON A 5' EXTENSION AT 0' (7-1)
1-R10-X12 SIGN ADJACENT TO SIGNAL HEAD (7-1)
2-ONE WAY SIGNALS MOUNTED AT 45 & 225 DEG
2-C. D. PED INDS MOUNTED AT 45 & 225 DEG
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT PHASES (4+7)
1-R10-12 SIGN (36 X 48) ADJACENT TO HEAD (4-4)
1-TYPE D SIGN (D-3)
EXTEND INTO HH 7:
3"PVC
3-12/C #14
1-3/C #14
2-2/C #14
1-3/C #20
2-1/C #6 INS. GR.

(3)

PEDESTAL FOUNDATION
(W/1" PVC STUB OUT & 5/8" X 15' GR.ROD)
13' SIGNAL PEDESTAL POLE PLUS BASE
ONE WAY SIGNAL
2-C. D. PED INDS
1-APS PB AND SIGN (PB4-3) (DBL ARROW)
EXTEND INTO HH 10:
3"PVC
1-12/C #14
1-5/C #14
1-2/C #14
2-1/C #6 INS. GR.

(A)

EQUIPMENT PAD
SERVICE CABINET
CONTROLLER AND CABINET
4"PVC TO HH 2:
4-12/C #14
1-5/C #14
1-3/C #14
11-2/C #14
2-2/C #14
1-3/C #20
1-1/C #6 INS. GR.
4"PVC TO HH 2:
3-12/C #14
1-3/C #14
10-2/C #14
1-3/C #20
1-6PR #19

4"PVC TO HH 23:
5-12/C #14
1-3/C #14
6-2/C #14
1-2/C #14
1-3/C #20
1-6PR #19
1-1/C #6 INS. GR.
4"PVC TO HH 23:
3-12/C #14
1-3/C #14
2-2/C #14
1-3/C #20
1-3/C #14 (CAMERA POWER)
1-COM CABLE
1-COAXIAL CABLE

CONTROLLER CABINET TO TMS PULL VAULT
1 1/2" PVC INSIDE EXISTING 3" PVC:
1-6SM FIBER OPTIC

2" STUBBED OUT (BOTH ENDS CAPPED)
3/4"PVC STUBBED OUT (CAPPED FOR TELEPHONE LINE)
SERVICE CABINET TO CONTROLLER CABINET:
2"PVC
2-1/C #6
1-1/C #6 INS. GR.
SERVICE CABINET TO HH 1:
2"PVC
3-1/C #2
SERVICE CABINET TO HH 2:
2"PVC
4-3/C #14 (LUM)
HH 2 TO HH 23:
2"PVC
2-3/C #14 (LUM)

(4)

PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-50-D30-9 (DAVIT AT 10 DEG)
3-ONE WAY SIGNALS OVERHEAD
(0', 11' AND 23' FROM END OF MAST ARM)
1-ONE WAY SIGNAL POLE MOUNTED AT 45 DEG (3-2)
2-ONE WAY SIGNALS MOUNTED AT 45 & 225 DEG
2-C. D. PED INDS MOUNTED AT 45 & 225 DEG
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT PHASES (1+6)
LUMINAIRE-LED
1-R6-1R SIGN (ONE WAY)
1-R6-1L SIGN (ONE WAY)
1-TYPE D SIGN (D-5)
1-TYPE D SIGN (D-4)
EXTEND INTO HH 12:
3"PVC
3-12/C #14
1-3/C #14
1-3/C #14 (LUM)
2-2/C #14
1-3/C #20
2-1/C #6 INS. GR.

(5)

PA100 POLE FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
TYPE PA100-A-55-D40-9 (DAVIT AT 350 DEG)
2-ONE WAY SIGNALS OVERHEAD
(0' AND 11' FROM END OF MAST ARM)
1-ONE WAY SIGNAL MOUNTED ON A 5' EXTENSION AT 0' (3-1)
1-R10-X12 SIGN ADJACENT TO SIGNAL HEAD (3-1)
2-ONE WAY SIGNALS MOUNTED AT 45 & 225 DEG
2-C. D. PED INDS MOUNTED AT 45 & 225 DEG
ONE WAY EVP DETECTOR AND
CONFIRMATORY LIGHT PHASES (3+8)
LUMINAIRE-LED
1-R10-12 SIGN (36 X 48) ADJACENT TO HEAD (8-4)
1-TYPE D SIGN (D-6)
EXTEND INTO HH 17:
3"PVC
3-12/C #14
1-3/C #14
1-3/C #14 (LUM)
2-2/C #14
1-3/C #20
1-1/C #6 INS. GR.

(6)

PEDESTAL FOUNDATION
(W/1" PVC STUB OUT & 5/8 " X 15' GR. ROD)
13' SIGNAL PEDESTAL POLE PLUS BASE
2-ONE WAY SIGNALS
2-C. D. PED INDS
1-APS PB AND SIGN (PB8-3) (DBL ARROW)
EXTEND INTO HH 22:
3"PVC
2-12/C #14
1-2/C #14
2-1/C #6 INS. GR.

(B)

SOP-45' WOOD POLE (XCEL ENERGY)
2"PVC RISER AND WEATHERHEAD
2"PVC INTO HH 1:
3-1/C #2

▲ ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE

APS PED PB STA (PB2-1)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 7:
1-2/C #14

APS PED PB STA (PB2-2)
1-APS PB AND SIGN (RT ARROW)
1" PVC TO HH 2:
1-2/C #14

APS PED PB STA (PB4-1)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 12:
1-2/C #14

APS PED PB STA (PB4-2)
1-APS PB AND SIGN (RT ARROW)
1" PVC TO HH 7:
1-2/C #14

APS PED PB STA (PB6-1)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 17:
1-2/C #14

APS PED PB STA (PB6-2)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 12:
1-2/C #14

APS PED PB STA (PB8-1)
1-APS PB AND SIGN (LT ARROW)
1" PVC TO HH 2:
1-2/C #14

APS PED PB STA (PB8-2)
1-APS PB AND SIGN (RT ARROW)
1" PVC TO HH 17:
1-2/C #14

BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519
METER ADDRESS: 1101 OSBORNE RD N.E.
OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
POLE NOTES
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ---------- DRAWN BY: SJK CKD BY: CDB DATE: 9/10/19
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER LIC. NO. _____ DATE: _____
STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS33 OF SS41 SHEETS

REVISE SIGNAL SYSTEM (B) ▲

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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

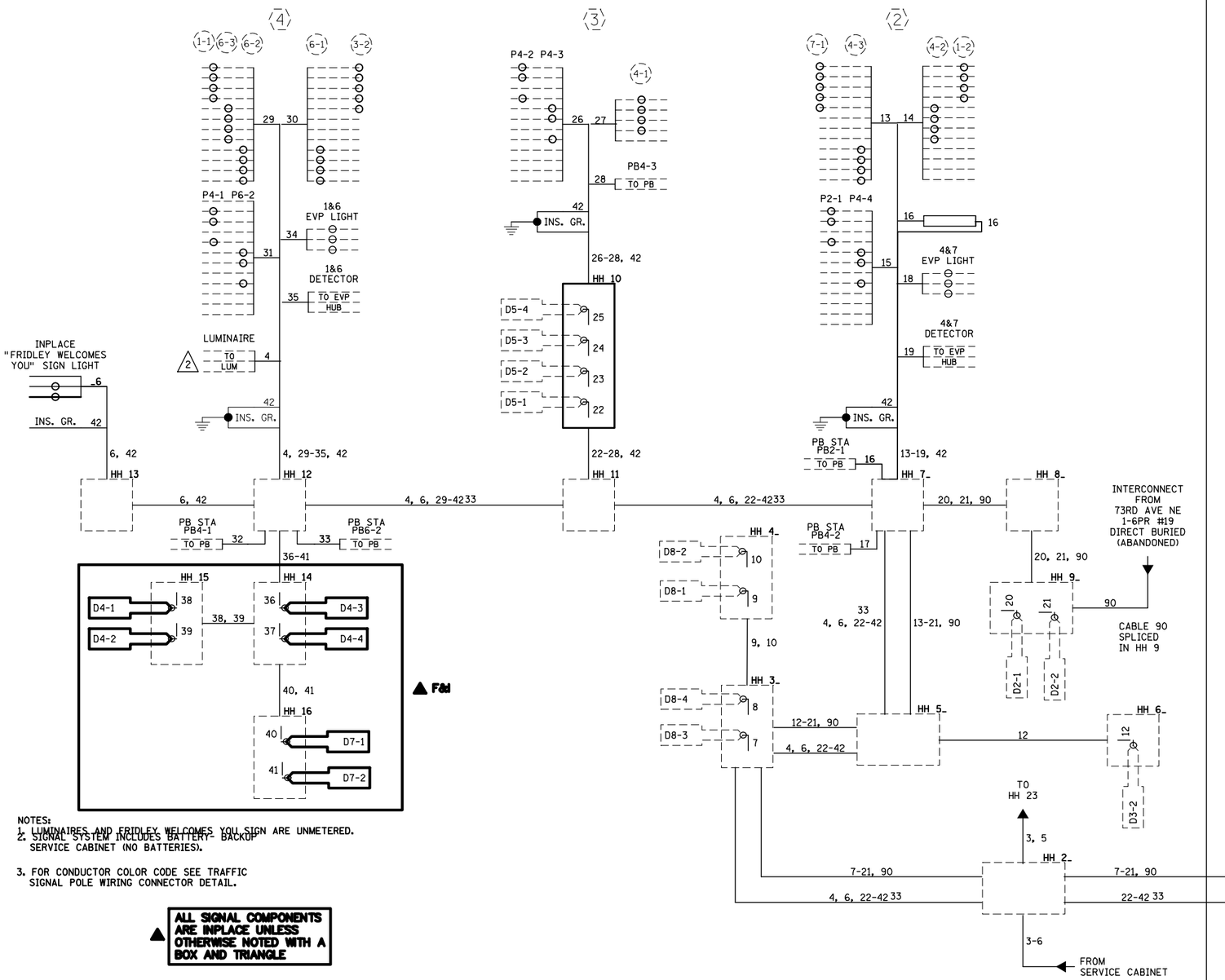
DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE
▲	ZAP	7/13/20

S.P. 002-608-012
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 165R OF 189

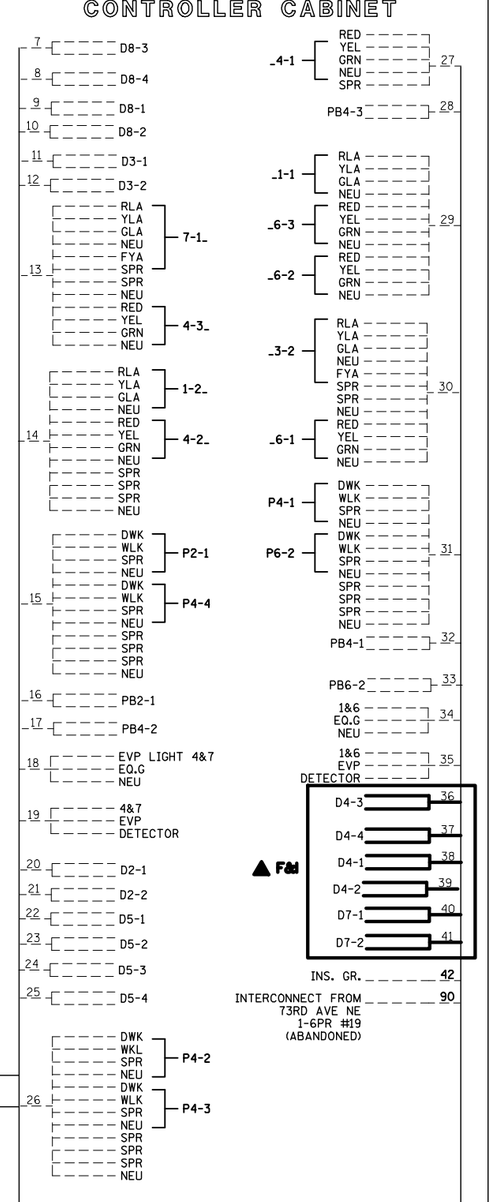


NOTES:
1. LUMINAIRES AND FRIDLEY WELCOMES YOU SIGN ARE UNMETERED.
2. SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET (NO BATTERIES).

3. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL.

▲ ALL SIGNAL COMPONENTS ARE INPLACE UNLESS OTHERWISE NOTED WITH A BOX AND TRIANGLE

CONTROLLER CABINET



BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519
METER ADDRESS: 1101 OSBORNE RD N.E.
OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
WIRING DIAGRAM 1 OF 2
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ____ DRAWN BY: SJK CKD BY: CDB DATE: 9/10/19
CERTIFIED BY ____ LICENSED PROFESSIONAL ENGINEER LIC. NO. ____ DATE: ____
STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS34 OF SS41 SHEETS

REVISE SIGNAL SYSTEM (B) ▲4

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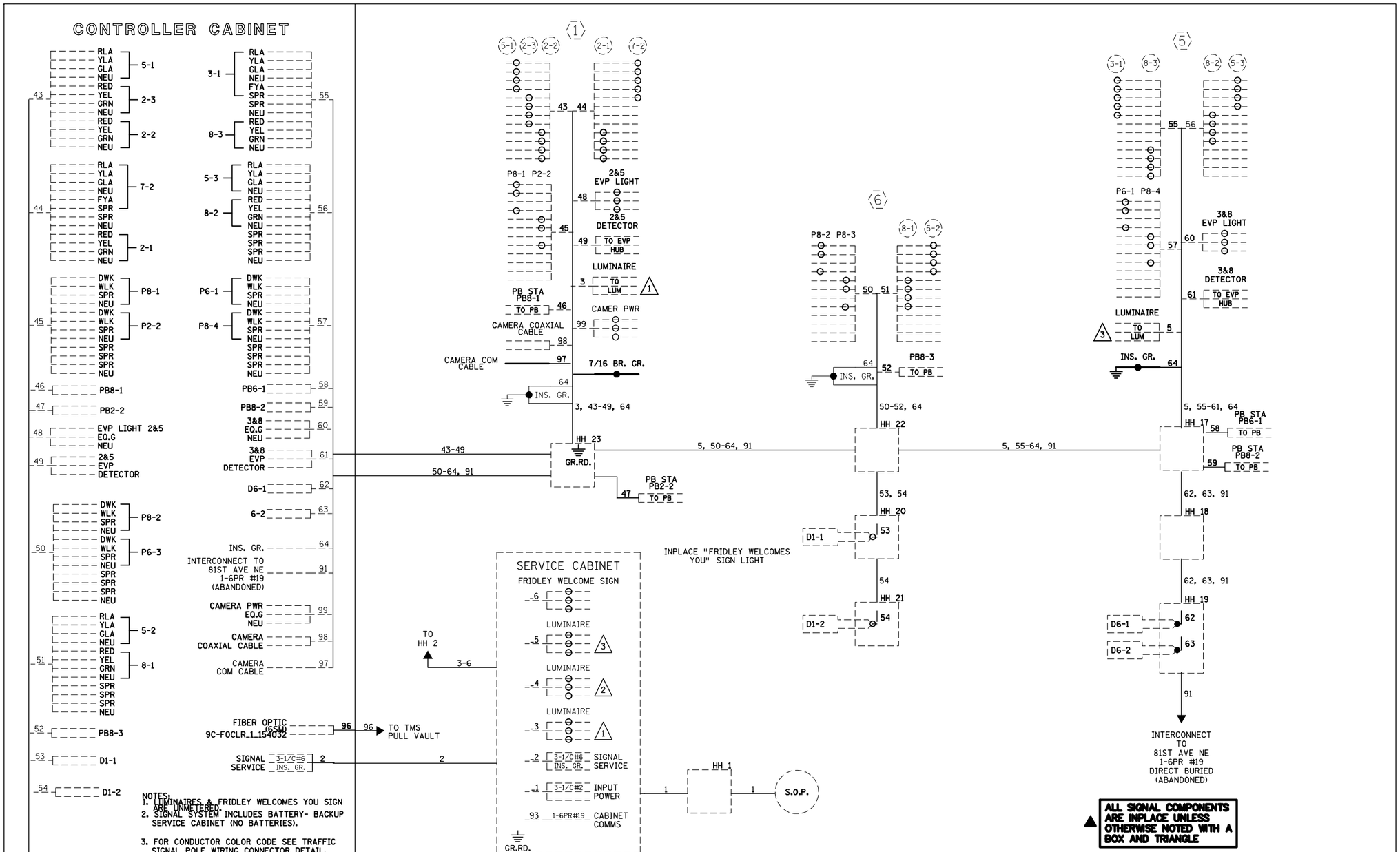

BY	DATE	REVISIONS

SYSTEM ID: 1735535 T.E. 19519
METER ADDRESS: 1101 OSBORNE RD N.E.
OLD SYSTEM ID: 21163

REVISE SIGNAL SYSTEM J
WIRING DIAGRAM 2 OF 2
T.H.65 AT C.S.A.H.8 (OSBORNE RD NE)
IN SPRING LAKE PARK/FRIDLEY, ANOKA COUNTY

S.A.P. NO. ---------- DRAWN BY:SJK CKD BY:CBB DATE:9/10/19

CERTIFIED BY ---------- LIC. NO. ---------- DATE: ----------
LICENSED PROFESSIONAL ENGINEER

STATE PROJ.NO. 2726-84 (T.H.65) SHEET NO. SS35 OF SS41 SHEETS

REVISE SIGNAL SYSTEM (B) ⚠4

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SIGNAL PLANS

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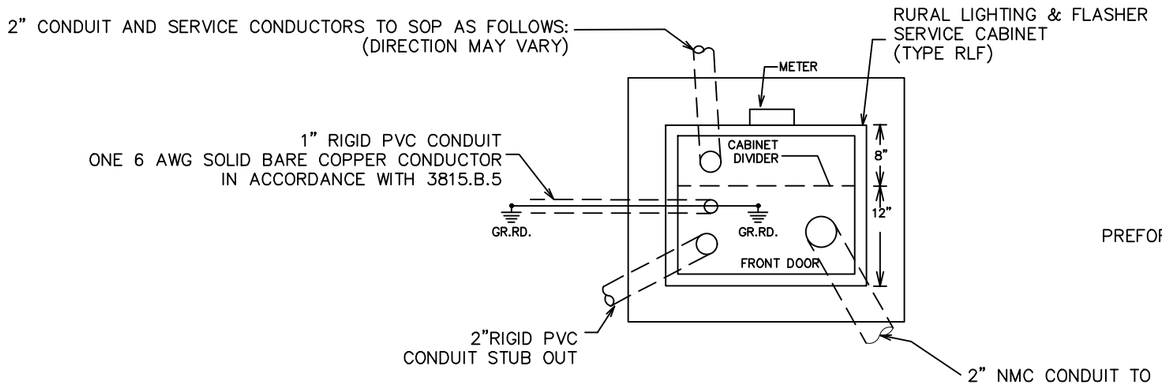
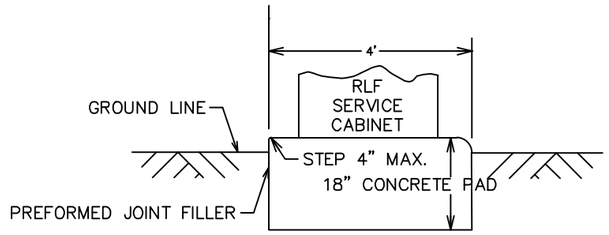
TYPICAL PAD WITH RURAL LIGHTING AND FLASHER CABINET

SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)

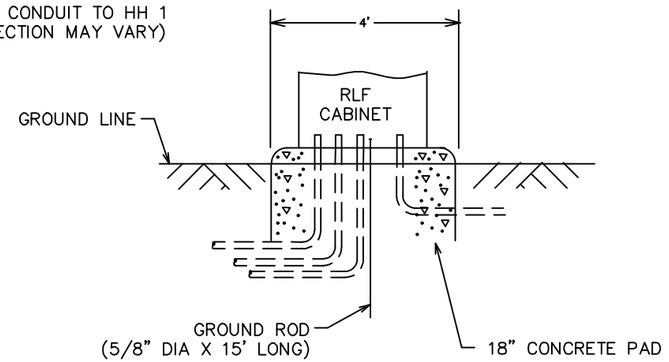
PLAN VIEW



SIDE VIEW



FRONT VIEW



NOTES:

1. BRUSH ON ANTI–SEIZE LUBRICANT MUST BE APPLIED TO ALL ANCHOR ROD THREADS PROTRUDING ABOVE THE CONCRETE PAD BEFORE THE CABINET IS PLACED.

2. THE OUTER EDGE OF THE ENTIRE EQUIPMENT PAD AND CONCRETE WALK SHALL BE BEVELED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.

3. THE TOP OF THE CONDUITS SHALL BE CAPPED AFTER PLACEMENT (UNTIL CABLES ARE PLACED).

4. CONDUIT SHALL PROJECT A MINIMUM OF 2" WITH END BELLS ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).

5. AFTER CONDUCTORS ARE PLACED, SEAL CONDUITS IN ACCORDANCE WITH 2565.3D.2b

6. SUPPLY TWO 15 FOOT LONG GROUND ROD ELECTRODES IN ACCORDANCE WITH 2545.3.R. PLACE ONE OF THE GROUND RODS IN THE EQUIPMENT PAD IN ACCORDANCE WITH 2545.3 F.3 AND THE OTHER OUTSIDE OF THE PAD WITH A MINIMUM OF 6 FEET OF SEPARATION BETWEEN ELECTRODES. BOND THE TWO GROUND RODS TOGETHER WITH ONE CONTINUOUS LENGTH UN–SPLICED CONDUCTOR FROM THE OUTER MOST GROUND ROD TO THE GROUND BUS BAR IN THE CABINET. USE NRTL LISTED CLAMPS SUITABLE FOR DIRECT BURIAL OR EXOTHERMICALLY WELD THE 6 AWG SOLID CONDUCTOR TO THE GROUND RODS. PLACE THE BONDING CONNECTION TO THE EQUIPMENT PAD GROUND ROD ABOVE THE CONCRETE. APPLY DE–OX COMPOUND TO THE GROUNDING CONNECTIONS AFTER FINAL ASSEMBLY.

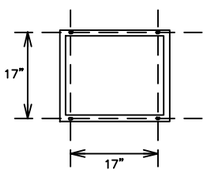
7. CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PAD.

8. THE EXACT LOCATION OF CONDUITS WITHIN THE PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

9. ANCHOR RODS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).

10. CABINET TO BE CENTERED ON THE PAD.

R.L.F. SERVICE CABINET BOLT PATTERN



DIMENSION SHOWN ARE CENTER ROD TO CENTER ROD

CONTRACTOR SHALL VERIFY BOLT PATTERN WITH ANOKA COUNTY HIGHWAY DEPARTMENT PRIOR TO INSTALLATION

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ZAP	ZAP	BTN

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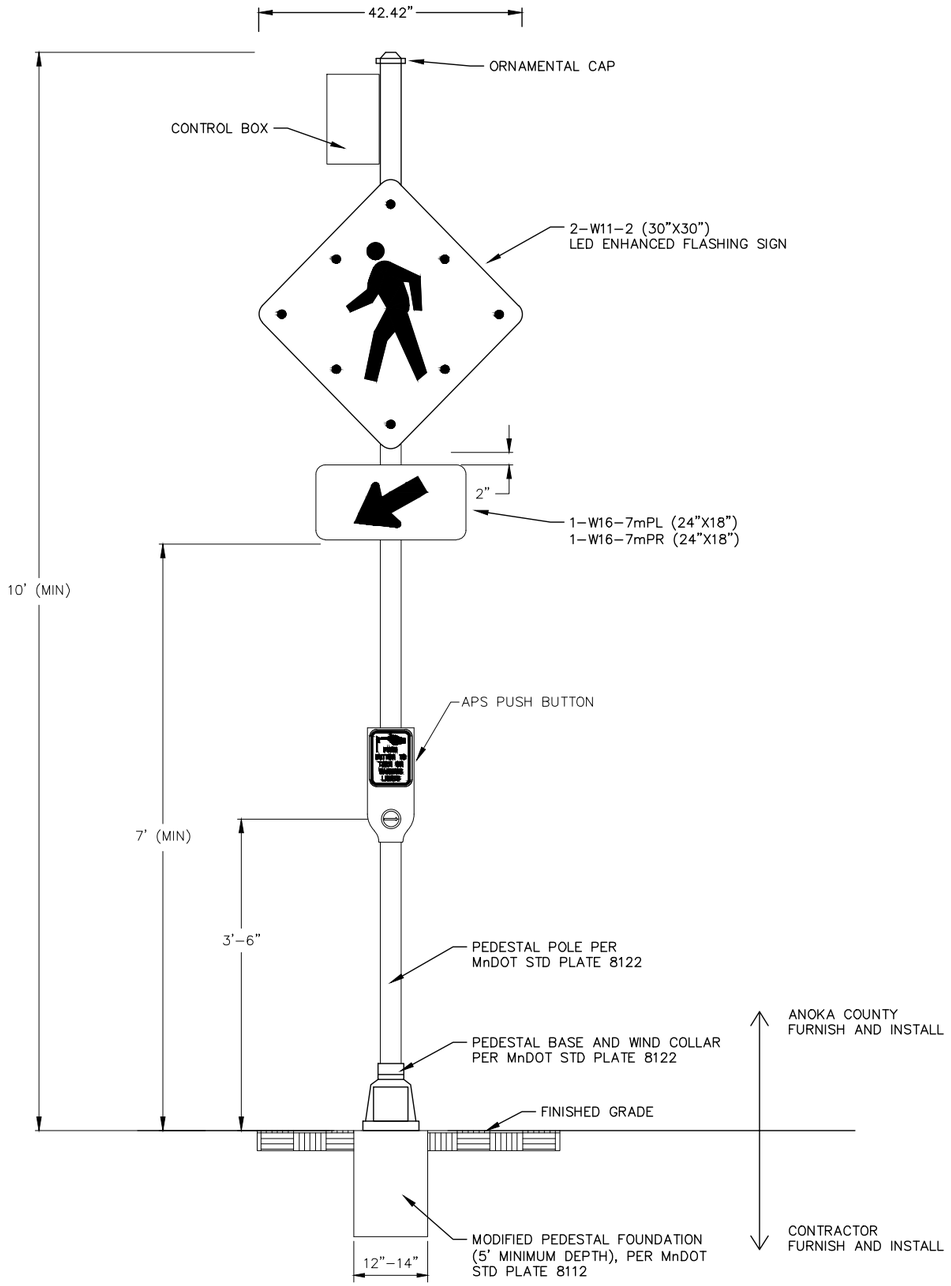
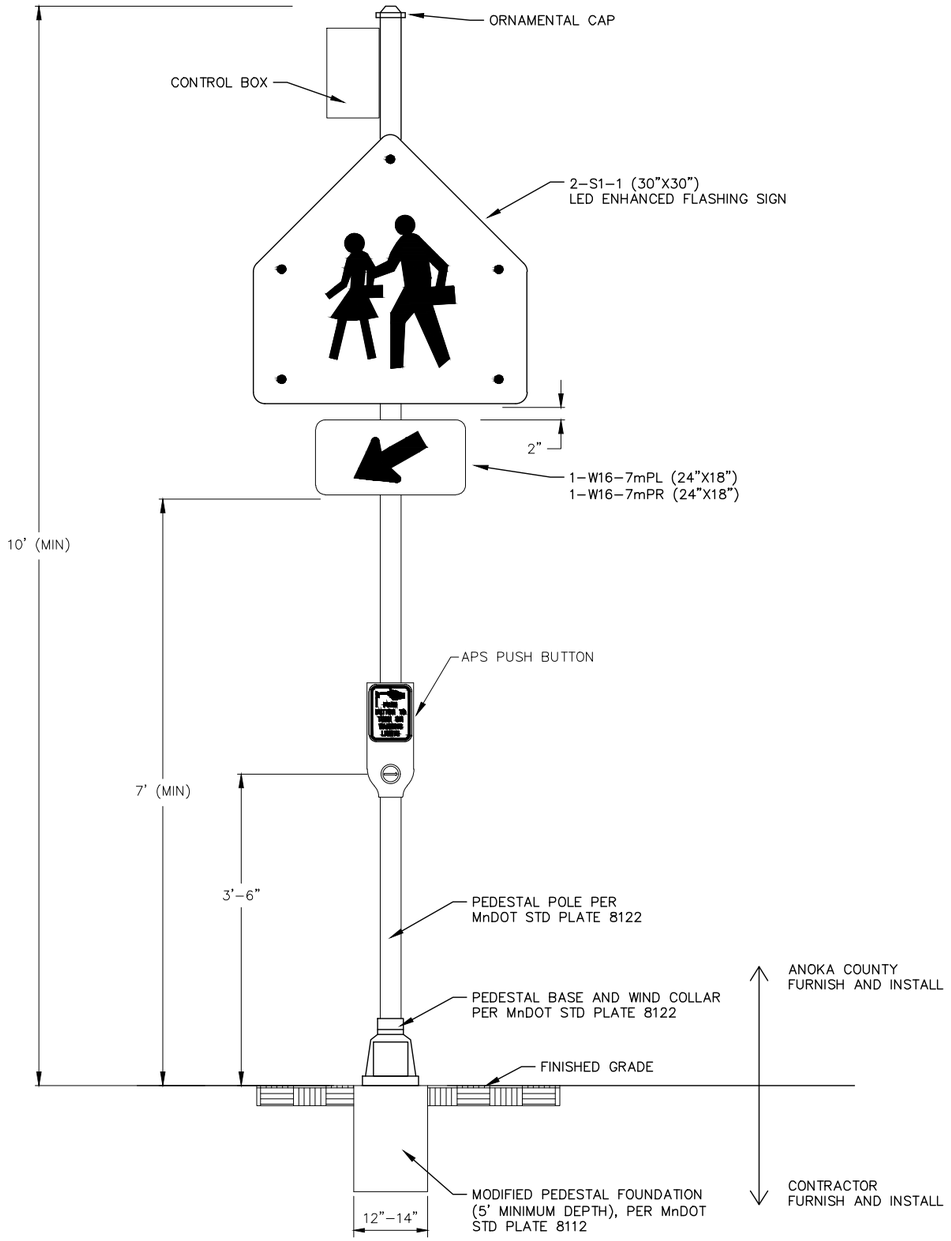
SIGNAL PLANS



LED ENHANCED
PEDESTRIAN CROSSING SIGN



LED ENHANCED
SCHOOL CROSSING SIGN

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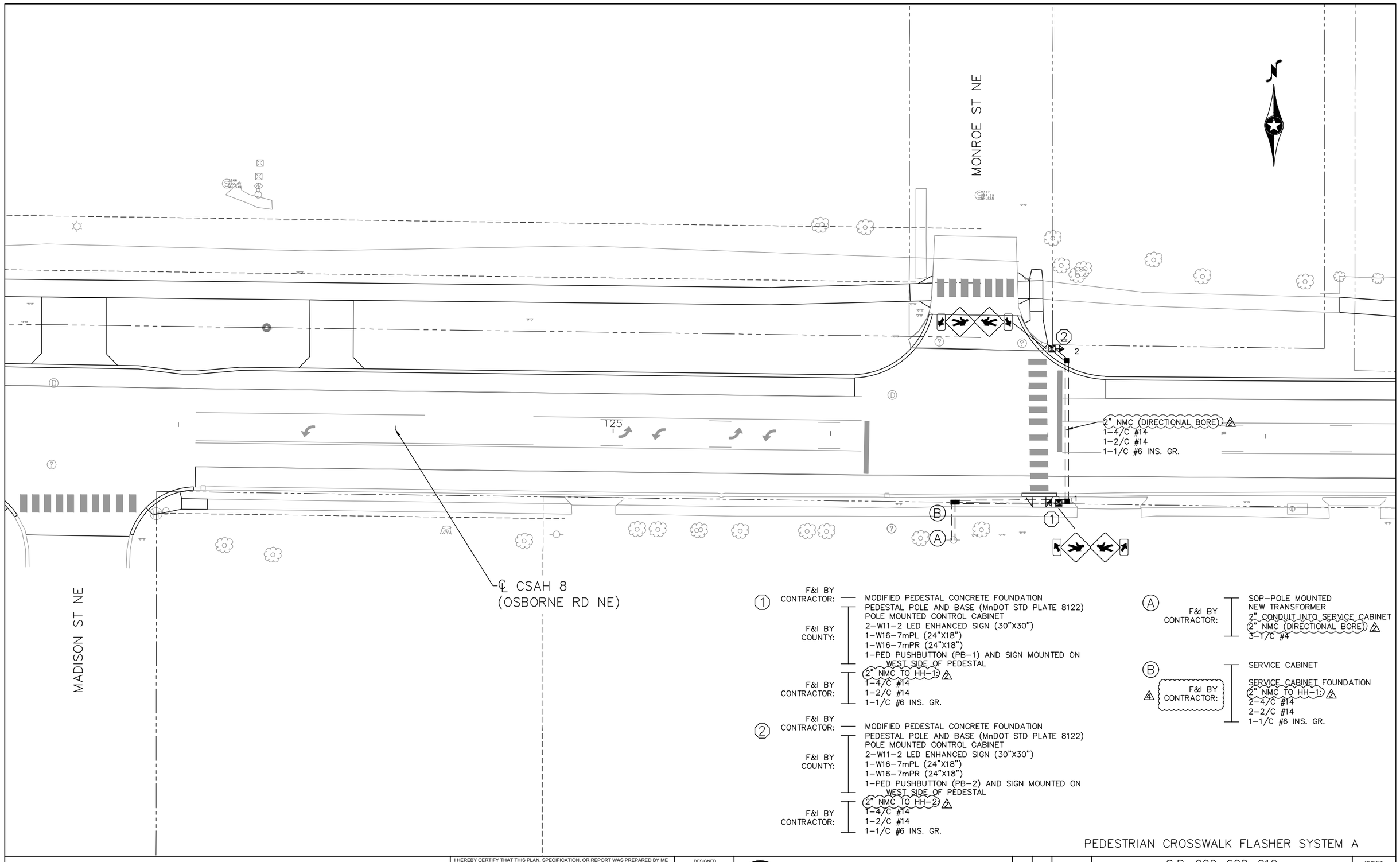
CSAH 8 RECONSTRUCTION
SIGNAL PLANS



① F&I BY CONTRACTOR:
- MODIFIED PEDESTAL CONCRETE FOUNDATION
- PEDESTAL POLE AND BASE (MnDOT STD PLATE 8122)
- POLE MOUNTED CONTROL CABINET

F&I BY COUNTY:
- 2–W11–2 LED ENHANCED SIGN (30"X30")
- 1–W16–7mPL (24"X18")
- 1–W16–7mPR (24"X18")
- 1–PED PUSHBUTTON (PB–1) AND SIGN MOUNTED ON WEST SIDE OF PEDESTAL

F&I BY CONTRACTOR:
- 2" NMC TO HH–1: ⚠2
- 1–4/C #14
- 1–2/C #14
- 1–1/C #6 INS. GR.

② F&I BY CONTRACTOR:
- MODIFIED PEDESTAL CONCRETE FOUNDATION
- PEDESTAL POLE AND BASE (MnDOT STD PLATE 8122)
- POLE MOUNTED CONTROL CABINET

F&I BY COUNTY:
- 2–W11–2 LED ENHANCED SIGN (30"X30")
- 1–W16–7mPL (24"X18")
- 1–W16–7mPR (24"X18")
- 1–PED PUSHBUTTON (PB–2) AND SIGN MOUNTED ON WEST SIDE OF PEDESTAL

F&I BY CONTRACTOR:
- 2" NMC TO HH–2: ⚠2
- 1–4/C #14
- 1–2/C #14
- 1–1/C #6 INS. GR.

Ⓐ F&I BY CONTRACTOR:
- SOP–POLE MOUNTED
- NEW TRANSFORMER
- 2" CONDUIT INTO SERVICE CABINET
- 2" NMC (DIRECTIONAL BORE) ⚠2
- 3–1/C #4

Ⓑ ⚠4 F&I BY CONTRACTOR:
- SERVICE CABINET
- SERVICE CABINET FOUNDATION
- 2" NMC TO HH–1: ⚠2
- 2–4/C #14
- 2–2/C #14
- 1–1/C #6 INS. GR.

PEDESTRIAN CROSSWALK FLASHER SYSTEM A

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zacharypa 7/13/2020

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⚠4	ZAP	7/13/20

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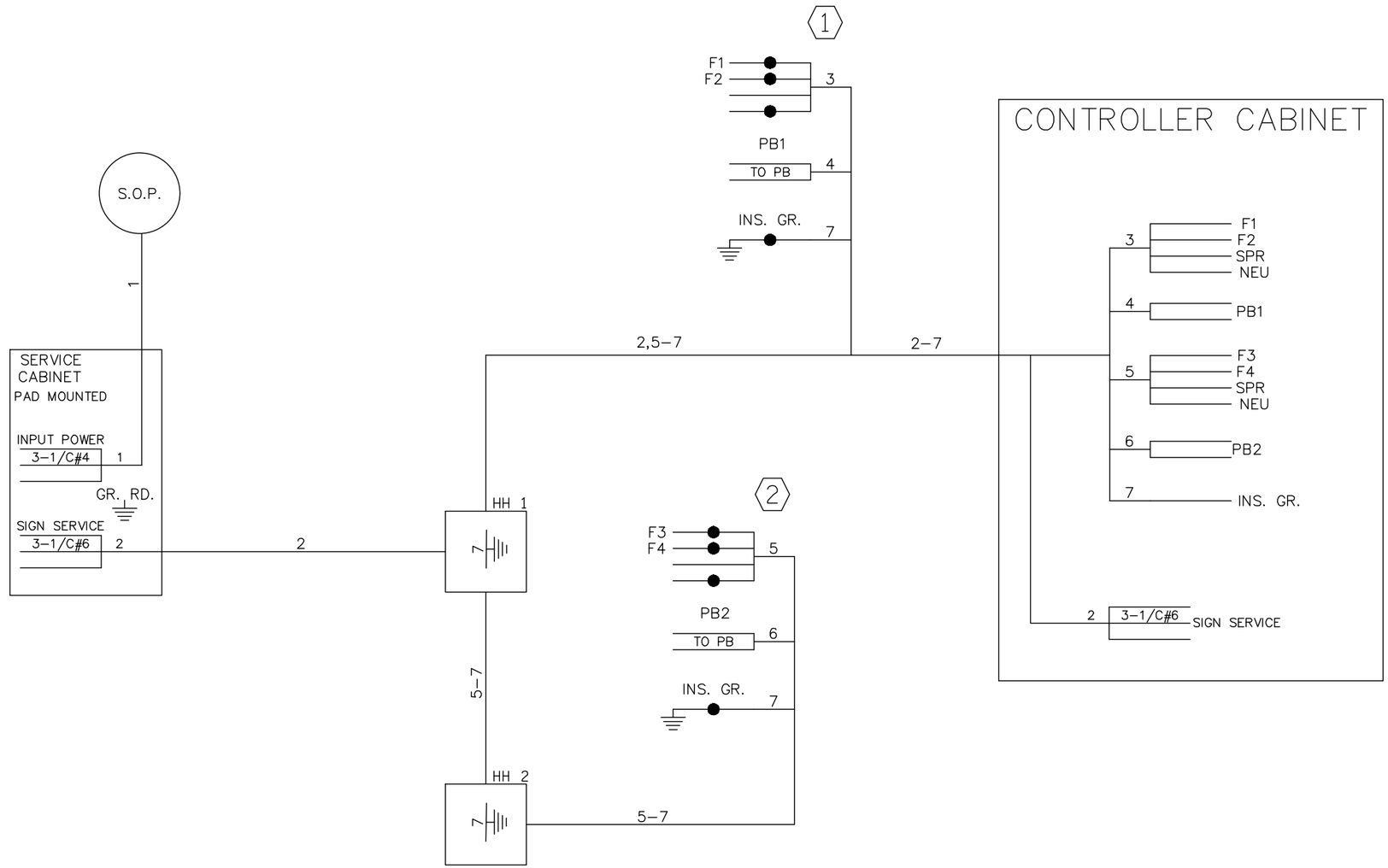
SIGNAL PLANS

SHEET 170R2 OF 189



PEDESTRIAN CROSSWALK FLASHER SYSTEM A

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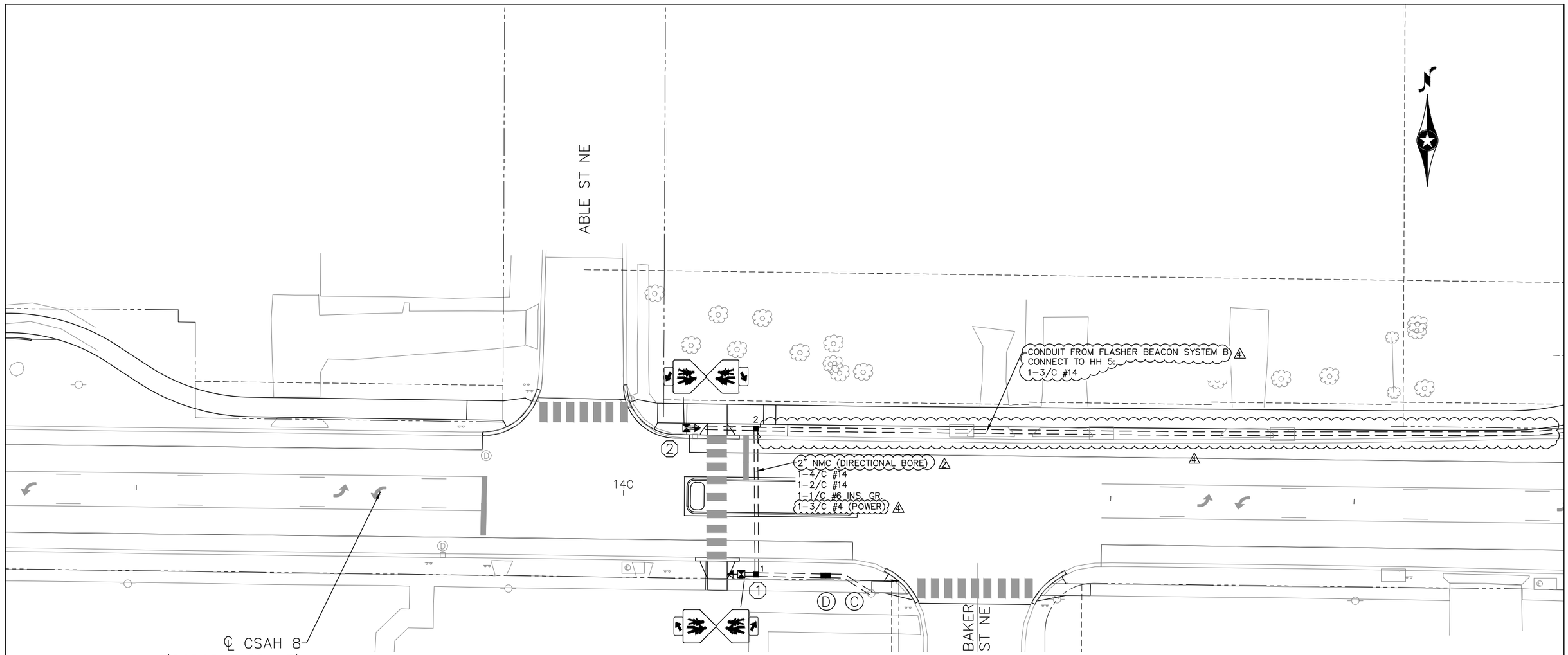

① F&I BY CONTRACTOR: MODIFIED PEDESTAL CONCRETE FOUNDATION
PEDESTAL POLE AND BASE (MnDOT STD PLATE 8122)
POLE MOUNTED CONTROL CABINET
F&I BY COUNTY: 2-S1-1 LED ENHANCED SIGN (30"X30")
1-W16-7mPL (24"X18")
1-W16-7mPR (24"X18")
1-PED PUSHBUTTON (PB-1) AND SIGN MOUNTED ON WEST SIDE OF PEDESTAL
2" NMC TO HH-1: ⚠2
F&I BY CONTRACTOR: 1-4/C #14
1-2/C #14
1-1/C #6 INS. GR.

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PEDESTAL POLE AND BASE (MnDOT STD PLATE 8122)
POLE MOUNTED CONTROL CABINET
F&I BY COUNTY: 2-S1-1 LED ENHANCED SIGN (30"X30")
1-W16-7mPL (24"X18")
1-W16-7mPR (24"X18")
1-PED PUSHBUTTON (PB-2) AND SIGN MOUNTED ON EAST SIDE OF PEDESTAL
2" NMC TO HH-2: ⚠2
F&I BY CONTRACTOR: 1-4/C #14
1-2/C #14
1-1/C #6 INS. GR.

Ⓒ F&I BY CONTRACTOR: SOP-POLE MOUNTED TRANSFORMER
2" CONDUIT INTO SERVICE CABINET
2" NMC (DIRECTIONAL BORE) ⚠2
3-1/C #4

Ⓓ ⚠4 F&I BY CONTRACTOR: SERVICE CABINET
SERVICE CABINET FOUNDATION
2" NMC TO HH-1: ⚠2
2-4/C #14
2-2/C #14
1-1/C #6 INS. GR.
1-3/C #4 (POWER) ⚠4

PEDESTRIAN CROSSWALK FLASHER SYSTEM B

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7/13/2020

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⚠4	ZAP	7/13/20

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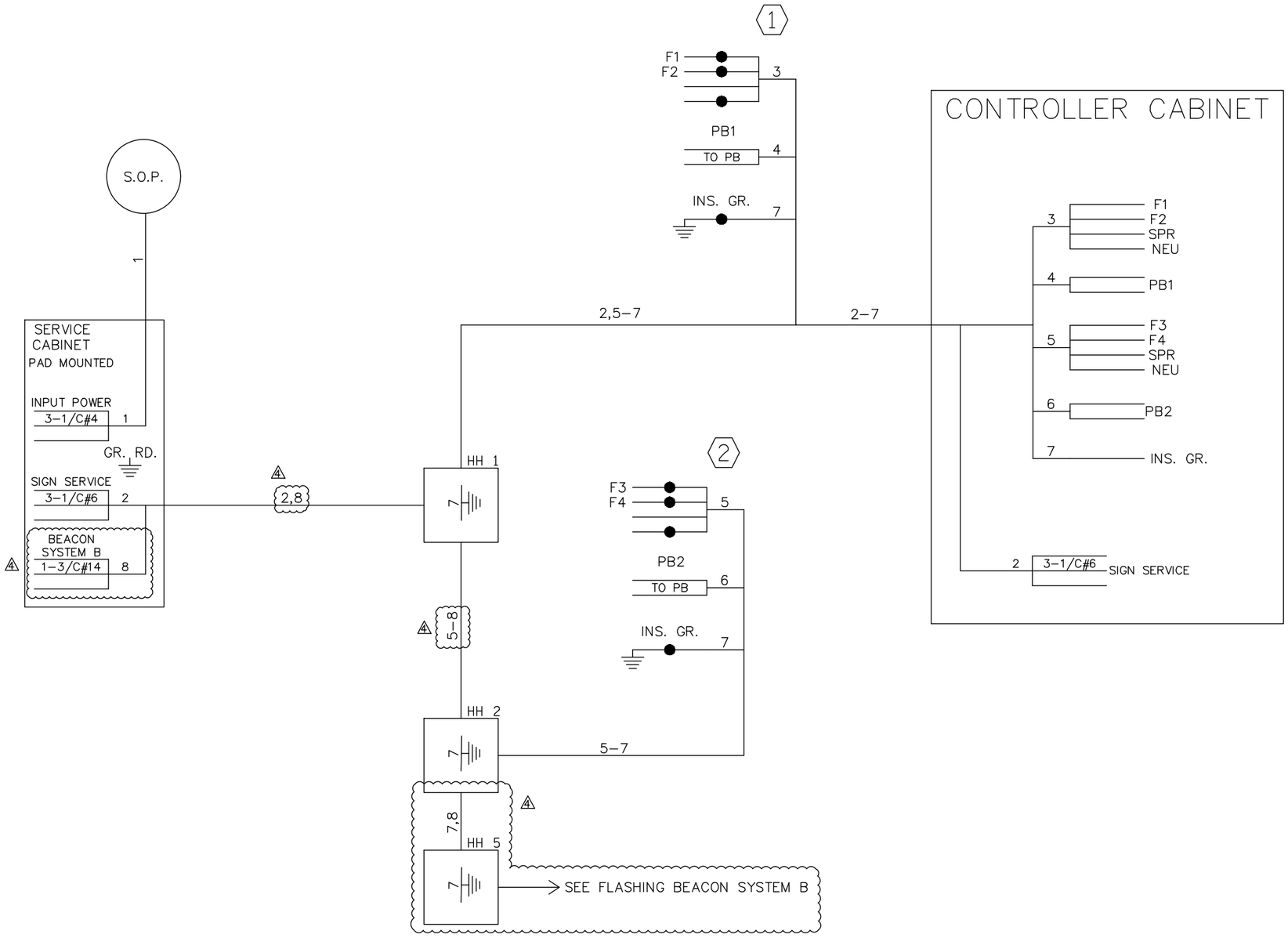
CSAH 8 RECONSTRUCTION
SIGNAL PLANS

SHEET 172R2 OF 189



PEDESTRIAN CROSSWALK FLASHER SYSTEM B

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7/13/2020

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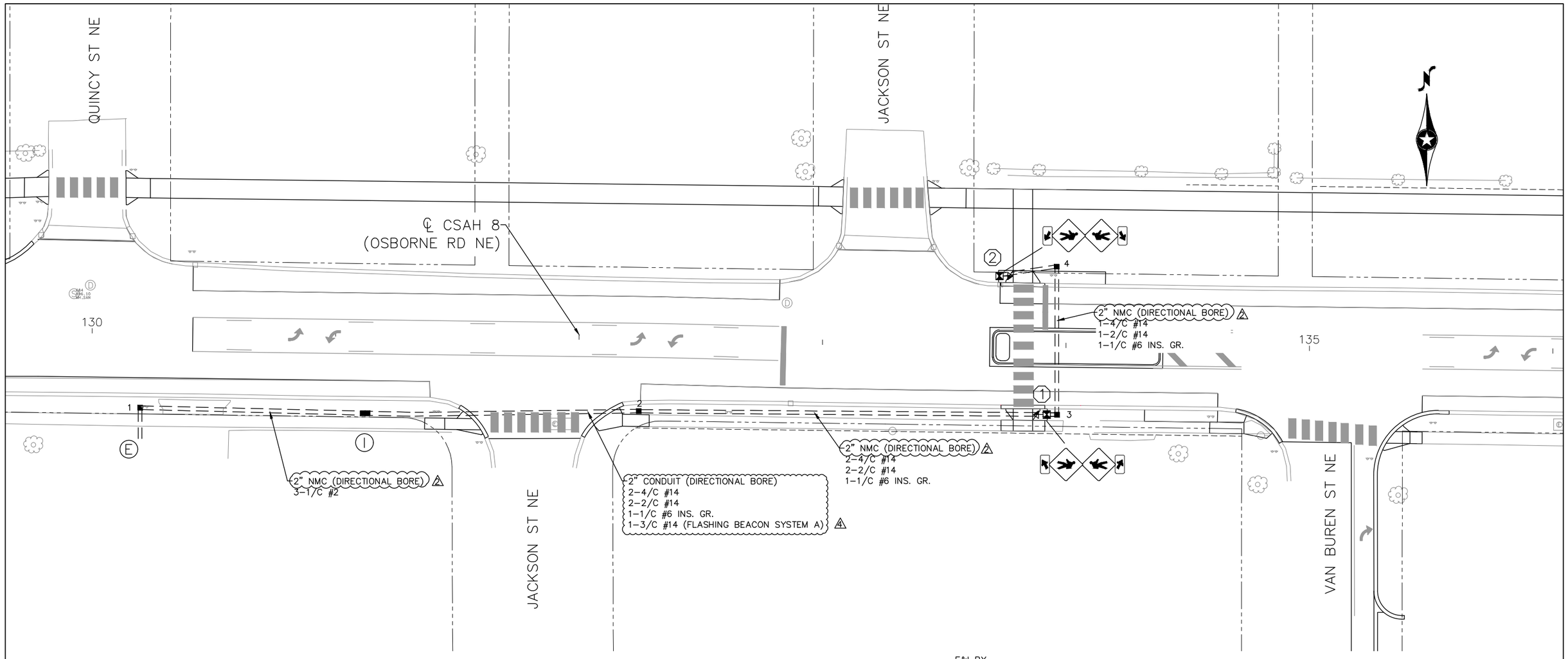

PEDESTRIAN CROSSWALK FLASHER SYSTEM C NOTES:

1) HANDHOLE 1 AND 2 SHALL BE SHARED WITH BEACON FLASHER SYSTEM A.

(1)

F&I BY CONTRACTOR:
- MODIFIED PEDESTAL CONCRETE FOUNDATION
- PEDESTAL POLE AND BASE (MnDOT STD PLATE 8122)
- POLE MOUNTED CONTROL CABINET
- 2-S1-1 LED ENHANCED SIGN (30"X30")
- 1-W16-7mPL (24"X18")
- 1-W16-7mPR (24"X18")
- 1-PED PUSHBUTTON (PB-1) AND SIGN MOUNTED ON WEST SIDE OF PEDESTAL

F&I BY COUNTY:
- 2" NMC TO HH-3 ⚠2
- 1-4/C #14
- 1-2/C #14
- 1-1/C #6 INS. GR.

F&I BY CONTRACTOR:

(2)

F&I BY CONTRACTOR:
- MODIFIED PEDESTAL CONCRETE FOUNDATION
- PEDESTAL POLE AND BASE (MnDOT STD PLATE 8122)
- POLE MOUNTED CONTROL CABINET
- 2-S1-1 LED ENHANCED SIGN (30"X30")
- 1-W16-7mPL (24"X18")
- 1-W16-7mPR (24"X18")
- 1-PED PUSHBUTTON (PB-2) AND SIGN MOUNTED ON EAST SIDE OF PEDESTAL

F&I BY COUNTY:
- 2" NMC TO HH-4 ⚠2
- 1-4/C #14
- 1-2/C #14
- 1-1/C #6 INS. GR.

F&I BY CONTRACTOR:

(E)

F&I BY CONTRACTOR:
- SOP-POLE MOUNTED
- 2" CONDUIT INTO SERVICE CABINET
- 2" NMC (DIRECTIONAL BORE) ⚠2
- 3-1/C #4

(I)

⚠4 F&I BY CONTRACTOR:
- SERVICE CABINET
- SERVICE CABINET FOUNDATION
- 2" NMC TO HH-1 ⚠2
- 2-4/C #14
- 2-2/C #14
- 1-1/C #6 INS. GR.
- 1-3/C #14 (FLASHING BEACON SYSTEM A) ⚠4

PEDESTRIAN CROSSWALK FLASHER SYSTEM C

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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

REV	BY	DATE
⚠3	CLC	7/8/20
⚠4	ZAP	7/13/20

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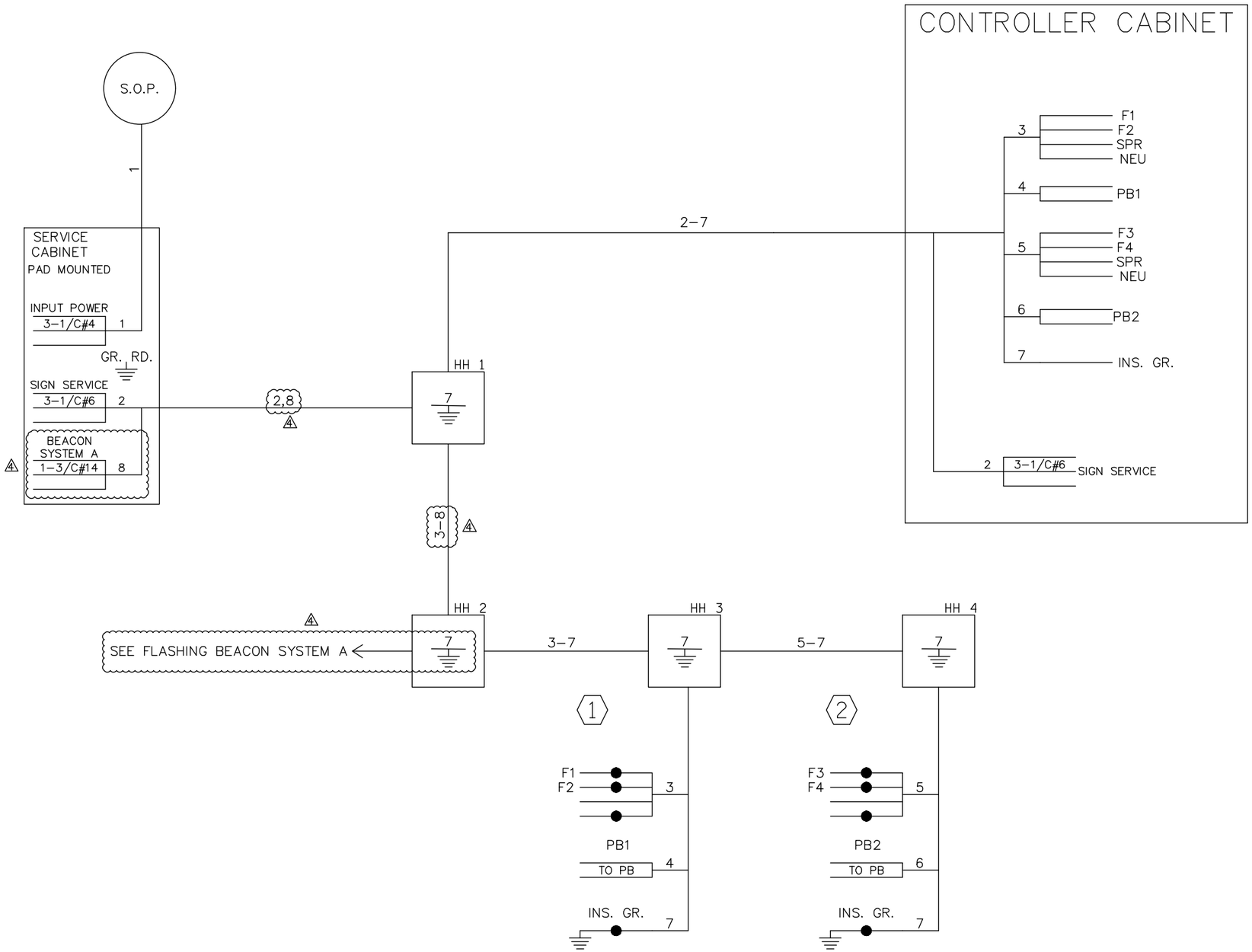
CSAH 8 RECONSTRUCTION
SIGNAL PLANS



PEDESTRIAN CROSSWALK FLASHER SYSTEM C

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Email: Burnsville@bolton-menk.com
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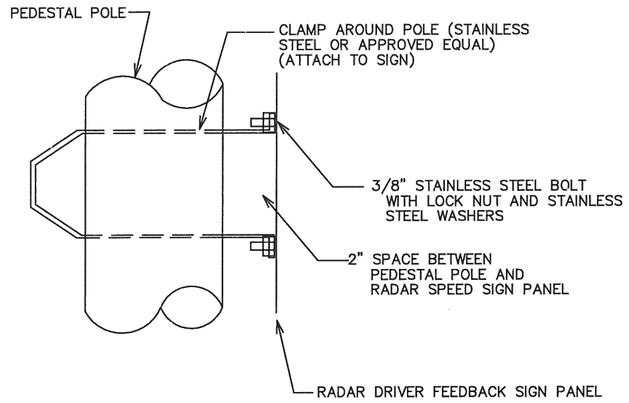
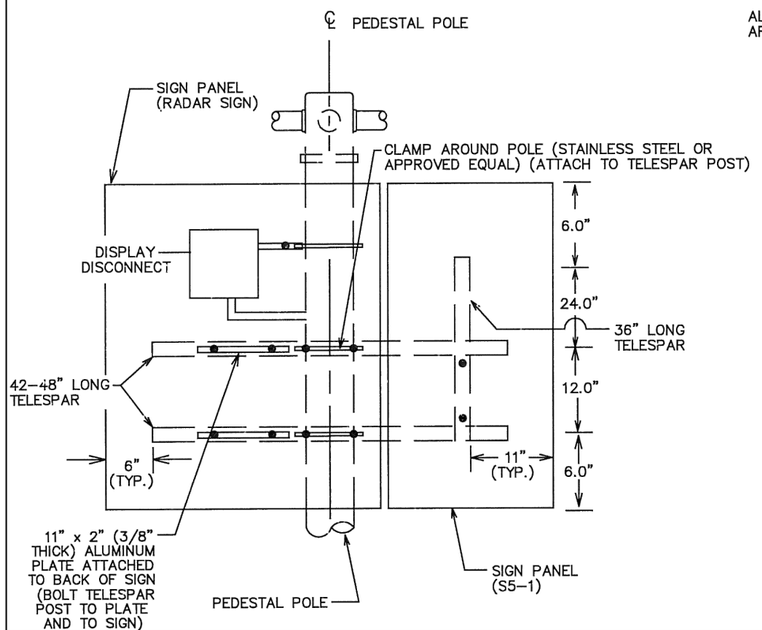
SHEET 175R OF 189

FLASHER SIGN MOUNTING ATTACHMENT DETAILS

SIDE DETAIL



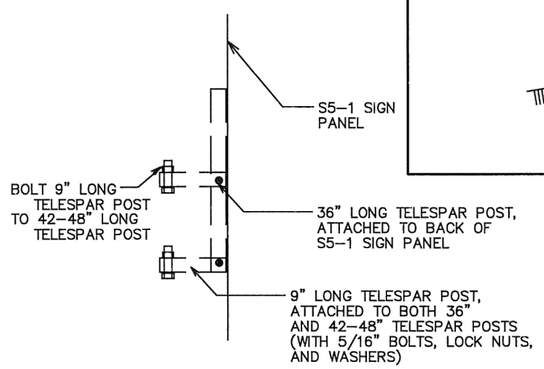
FRONT DETAIL



3/8" STAINLESS STEEL BOLTS WITH STAINLESS STEEL WASHERS & LOCK NUTS

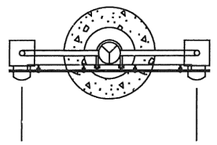
ALL TELESPAR POSTS ARE 2" POSTS.

SIDE DETAIL



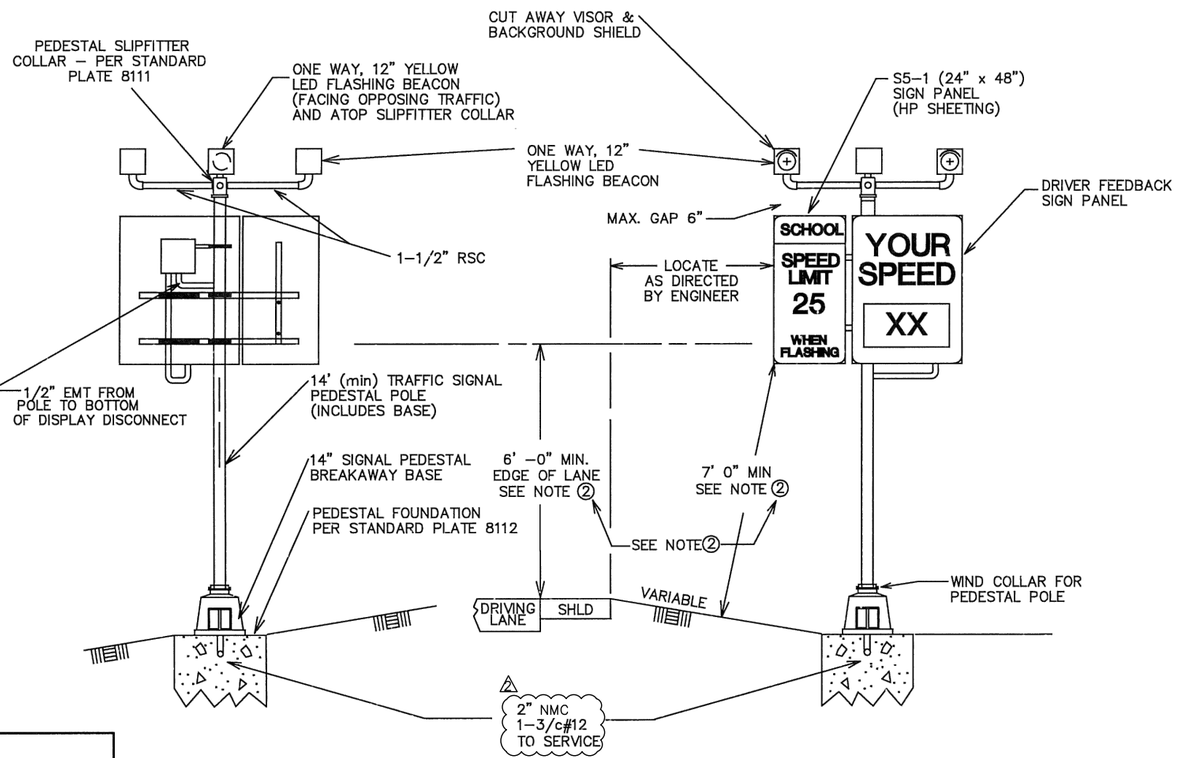
HARDWIRE POWERED FLASHER POLE DETAILS

TOP VIEW



BACK VIEW

FRONT VIEW



② OWNER SHALL MEET BOTH MINIMUM REQUIRED MOUNTING HEIGHTS WITH THE SHORTEST PEDESTAL POLE POSSIBLE OR AS DIRECTED BY THE ENGINEER.

THIS PLAN SHEET IS BEING PROVIDED FOR INFORMATIONAL PURPOSES ONLY (COUNTY WILL FURNISH AND INSTALL ALL ABOVE GROUND FLASHER PEDESTAL POLE MOUNTED COMPONENTS NEEDED FOR EACH FLASHER SYSTEM).

DESIGNED ZAP
DRAWN ZAP
CHECKED BTN

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
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www.bolton-menk.com

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SHEET 176R OF 189

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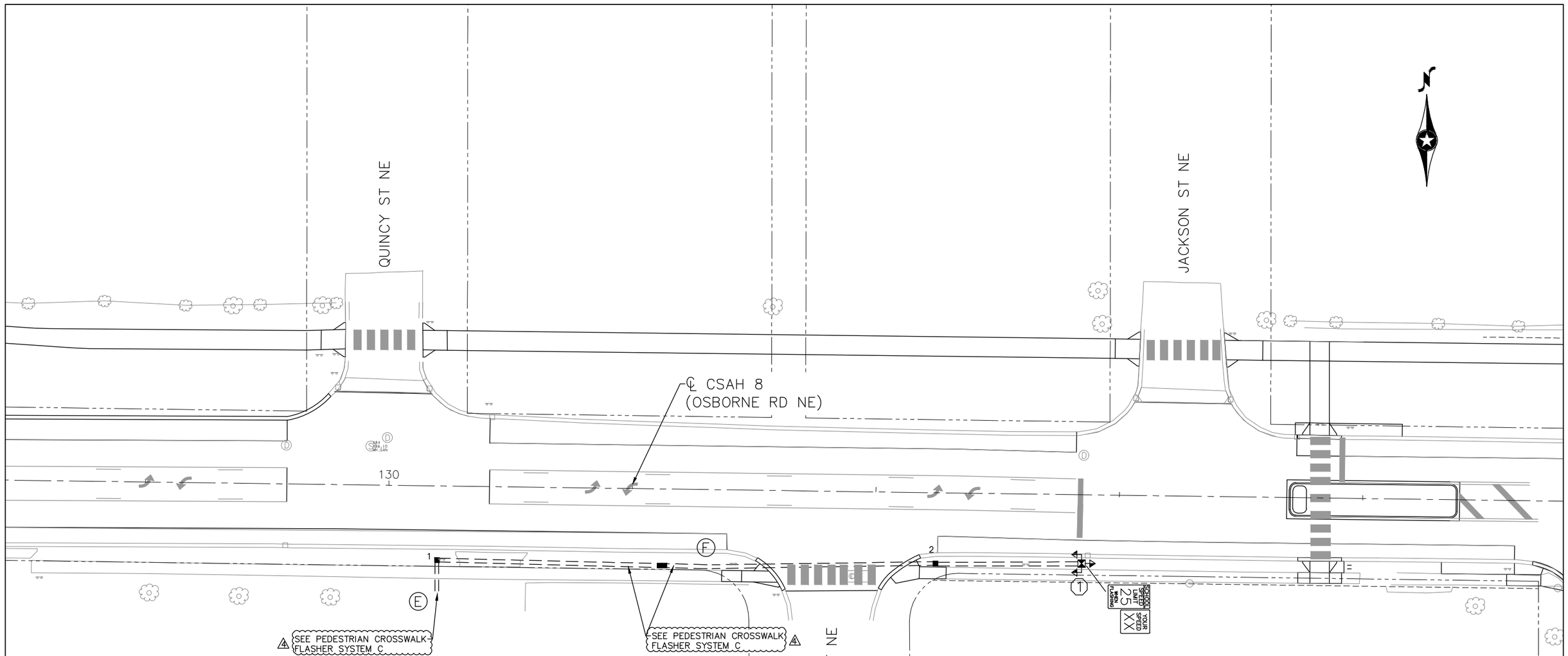

FLASHING BEACON SYSTEM A NOTES:

1) SEE SPECIAL PROVISIONS AND DETAILS FOR FURTHER INFORMATION REGARDING FLASHING BEACON SYSTEM INSTALLATION.
2) FLASHER/SIGN SYSTEM WILL BE TIME OF DAY ACTUATED.
3) LOCATION OF FOUNDATIONS AND HANDHOLE SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
4) SEE DETAILS FOR FURTHER INFORMATION REGARDING SIGN AND POST REMOVAL AND INSTALLATION WORK TO BE COMPLETED BY CONTRACTOR AS PART OF ENTIRE PROJECT.
5) ALL YELLOW FLASHERS WILL BE LED.
6) SEE DETAILS FOR FURTHER INFORMATION REGARDING MOUNTING OF ALL FLASHER POLE MATERIALS AND ELECTRICAL EQUIPMENT.
7) HANDHOLE SHALL BE PVC HANDHOLE WITH METAL FRAME AND COVER PER DETAILS INCLUDED IN THE SPECIAL PROVISIONS AND SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
8) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTACT WITH POWER COMPANY FOR POWER CONNECTION.
9) HANDHOLE 1 AND 2 SHALL BE SHARED WITH PEDESTRIAN CROSSWALK FLASHER SYSTEM C.

(1)

F&I BY CONTRACTOR:
- MODIFIED PEDESTAL CONCRETE FOUNDATION
- 2" NMC FROM PEDESTAL BASE TO HH 2 TO SERVICE CABINET: (4)
- 1-3/C #14

F&I BY COUNTY:
- 14' PEDESTAL POLE AND BASE
- WIND COLLAR FOR PEDESTAL POLE
- 2-12" LED YELLOW FLASHERS WITH VISORS, BRACKETING, AND SLIPFITTER COLLAR (FACING EB TRAFFIC)
- 1-12" LED YELLOW FLASHER WITH VISOR (MOUNT ATOP SLIPFITTER COLLAR) (FACING WB TRAFFIC)
- DYNAMIC SPEED DISPLAY SIGN (YOUR SPEED XX) - (30"X41") - POLE MOUNTED
- S5-1 (SCHOOL-SPEED LIMIT 25-WHEN FLASHING) SIGN PANEL (24"X48") - POLE MOUNTED
- DISPLAY DISCONNECT CABINET - MOUNTED ON BACK OF RADAR SPEED SIGN
- 1/2" FLEXIBLE CONDUIT FROM CABINET TO BOTTOM OF RADAR SPEED SIGN
- 1/2" FLEXIBLE CONDUIT FROM CABINET TO PEDESTAL POLE INTERNAL CABLES AND CONDUCTORS NEEDED TO OPERATE YELLOW FLASHERS AND SPEED SIGN

FLASHING BEACON SYSTEM A

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BRYAN T. NEMETH
LIC. NO. 43384 DATE 05/26/2020

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Email: Burnsville@bolton-menk.com
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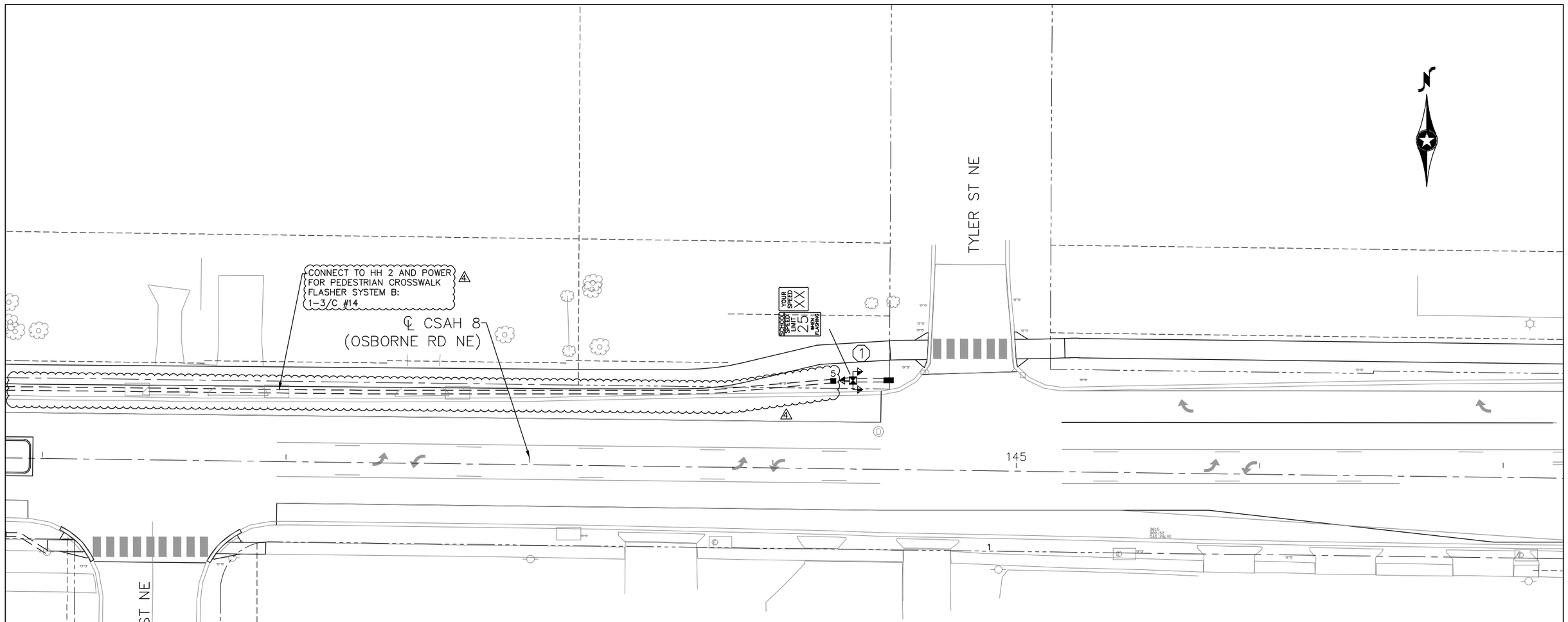

FLASHING BEACON SYSTEM B NOTES:

1) SEE SPECIAL PROVISIONS AND DETAILS FOR FURTHER INFORMATION REGARDING FLASHING BEACON SYSTEM INSTALLATION.
2) FLASHER/SIGN SYSTEM WILL BE TIME OF DAY ACTUATED.
3) LOCATION OF FOUNDATIONS AND HANDHOLE SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
4) SEE DETAILS FOR FURTHER INFORMATION REGARDING SIGN AND POST REMOVAL AND INSTALLATION WORK TO BE COMPLETED BY CONTRACTOR AS PART OF ENTIRE PROJECT.
5) ALL YELLOW FLASHERS WILL BE LED.
6) SEE DETAILS FOR FURTHER INFORMATION REGARDING MOUNTING OF ALL FLASHER POLE MATERIALS AND ELECTRICAL EQUIPMENT.
7) HANDHOLE SHALL BE PVC HANDHOLE WITH METAL FRAME AND COVER PER DETAILS INCLUDED IN THE SPECIAL PROVISIONS AND SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
8) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTACT WITH POWER COMPANY FOR POWER CONNECTION.

(1) F&I BY CONTRACTOR:
- MODIFIED PEDESTAL CONCRETE FOUNDATION
- 2" NMC FROM PEDESTAL BASE TO HH 5 TO HH 2 TO HH 1 TO SERVICE CABINET: 1-3/C #14 (4)

F&I BY COUNTY:
- 14' PEDESTAL POLE AND BASE
- WIND COLLAR FOR PEDESTAL POLE
- 2-12" LED YELLOW FLASHERS WITH VISORS, BRACKETING, AND SLIPFITTER COLLAR (FACING WB TRAFFIC)
- 1-12" LED YELLOW FLASHER WITH VISOR (MOUNT ATOP SLIPFITTER COLLAR) (FACING EB TRAFFIC)
- DYNAMIC SPEED DISPLAY SIGN (YOUR SPEED XX) - (30"X41") - POLE MOUNTED
- S5-1 (SCHOOL-SPEED LIMIT 25-WHEN FLASHING) SIGN PANEL (24"X48") - POLE MOUNTED
- DISPLAY DISCONNECT CABINET - MOUNTED ON BACK OF RADAR SPEED SIGN
- 1/2" FLEXIBLE CONDUIT FROM CABINET TO BOTTOM OF RADAR SPEED SIGN
- 1/2" FLEXIBLE CONDUIT FROM CABINET TO PEDESTAL POLE INTERNAL CABLES AND CONDUCTORS NEEDED TO OPERATE YELLOW FLASHERS AND SPEED SIGN

FLASHING BEACON SYSTEM B

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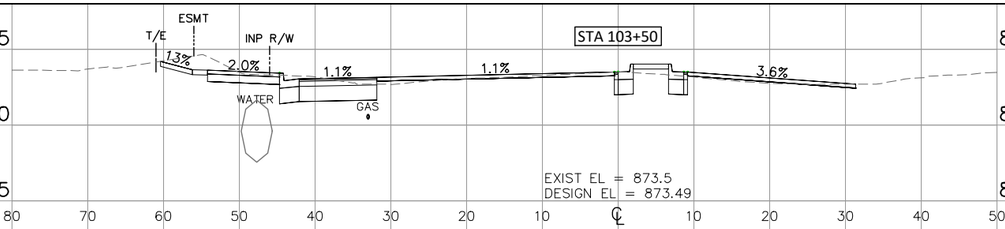
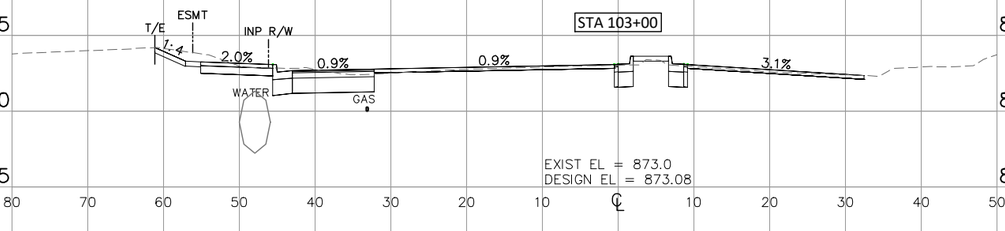
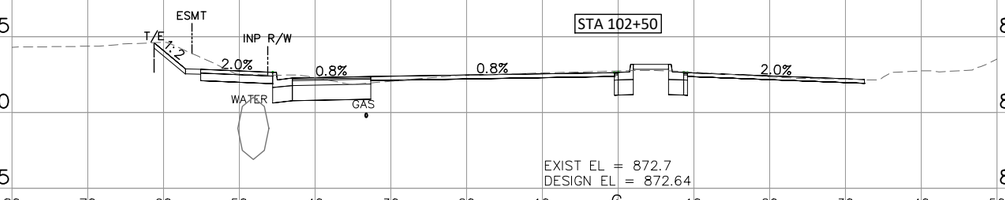
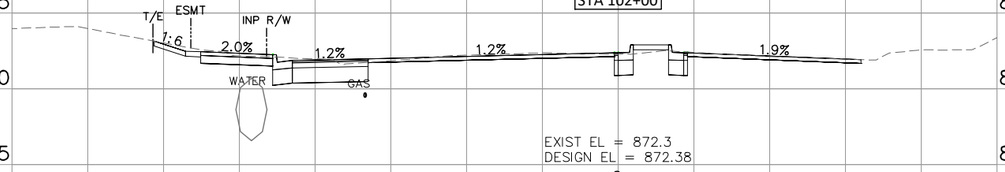
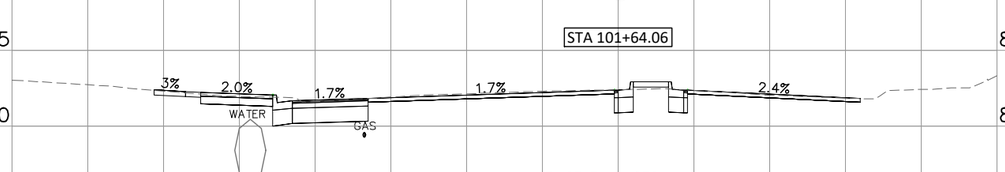
SHEET 178R2 OF 189

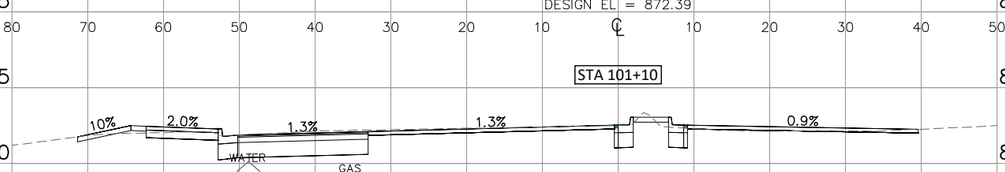


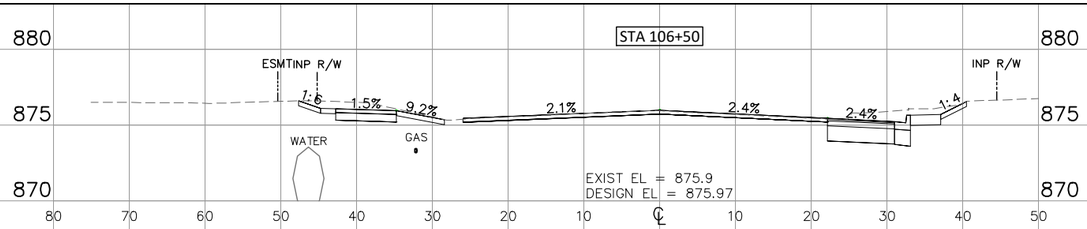


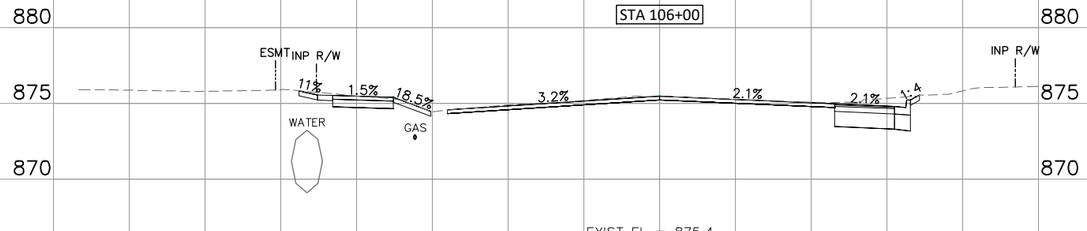


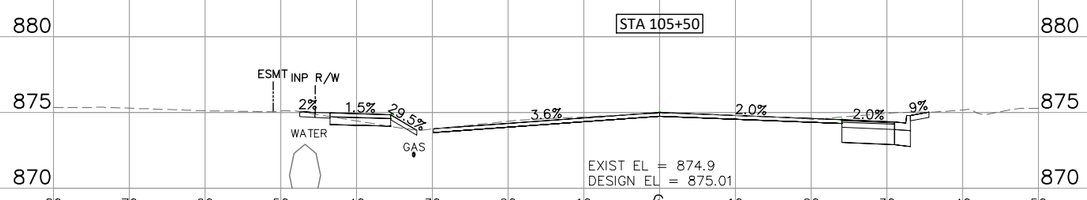


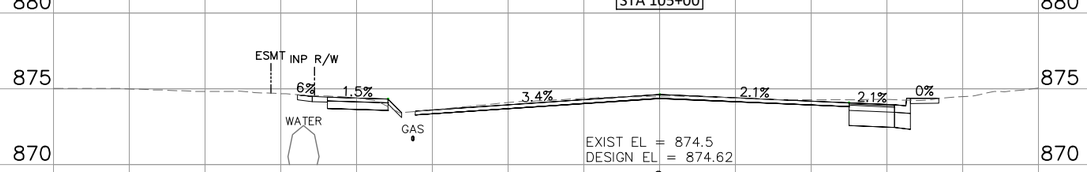


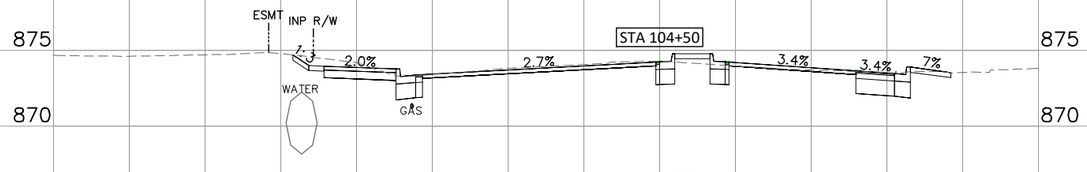


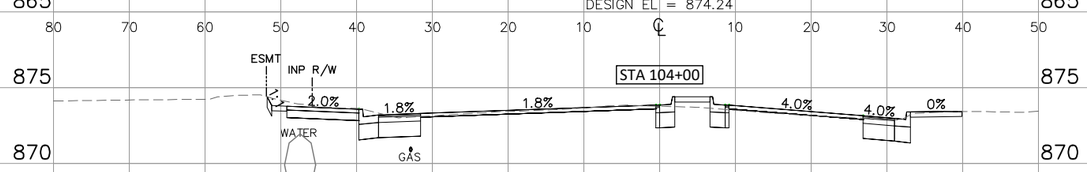












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CODY L. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

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TJT	TJT	CLC

BOLTON & MENK
12224 NICOLLET AVENUE
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Phone: (952) 890-0509
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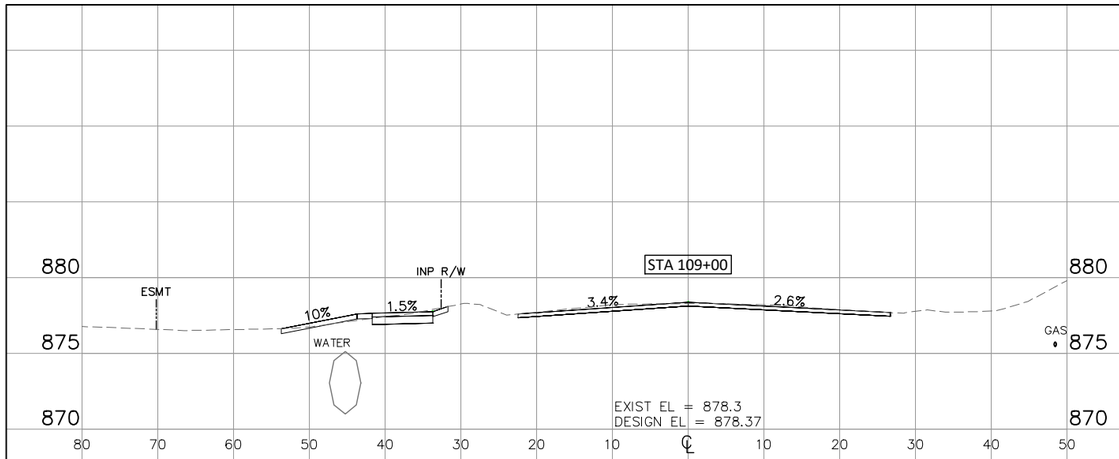
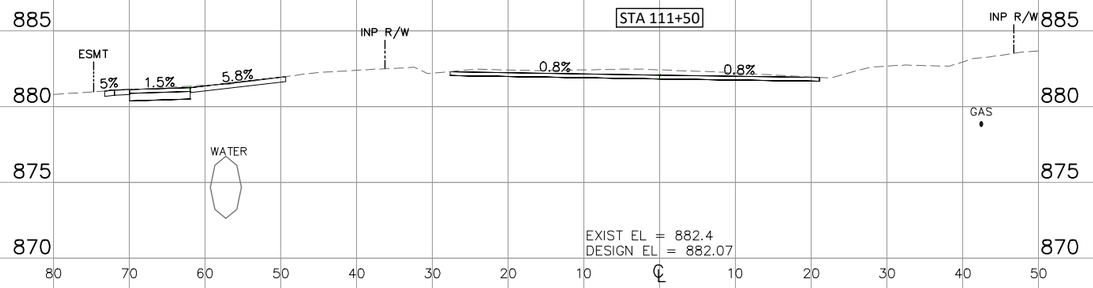
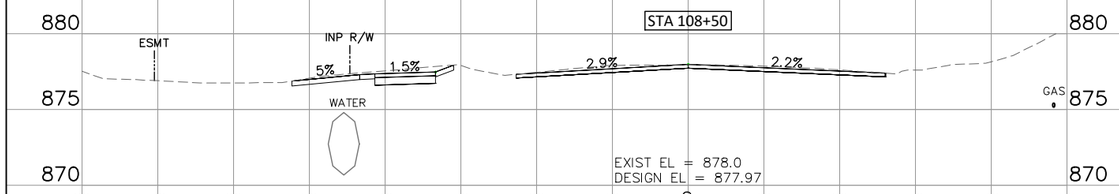
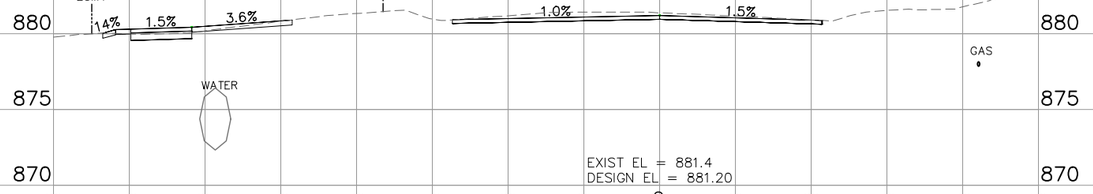
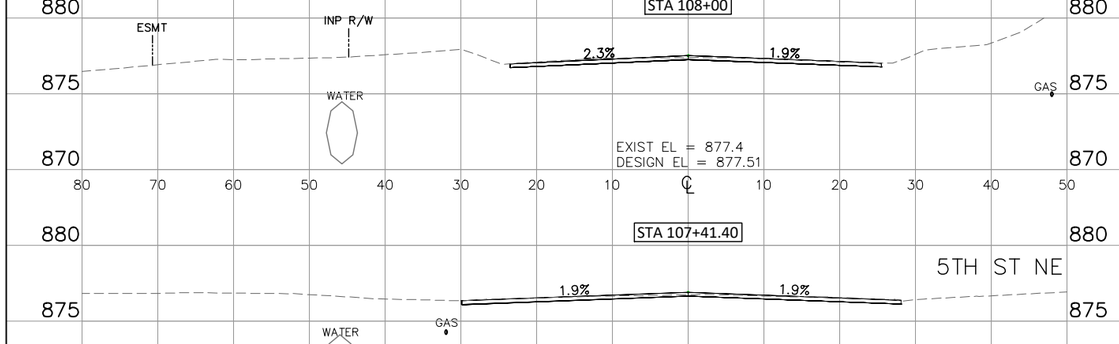
SHEET 179 OF 189

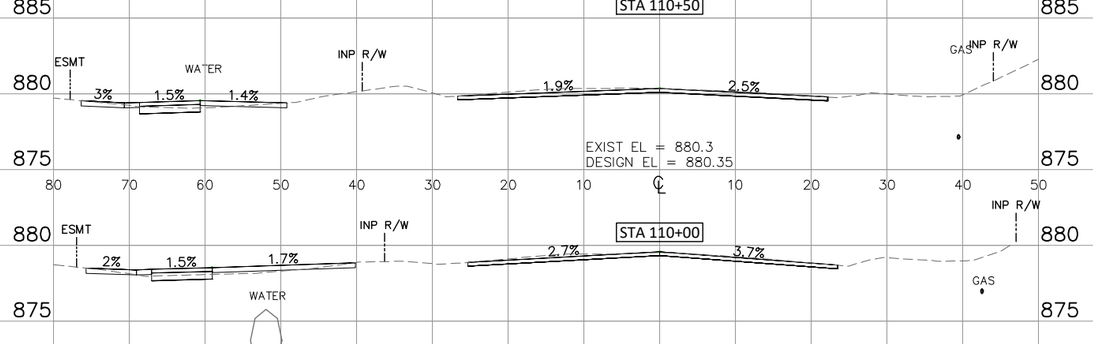


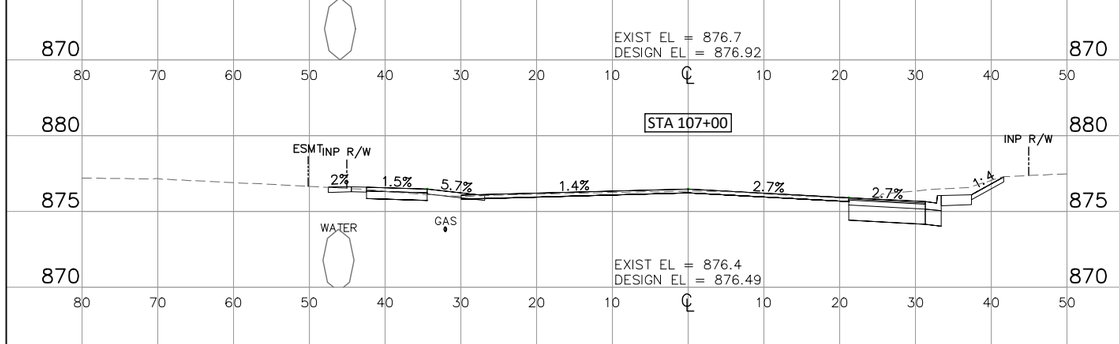


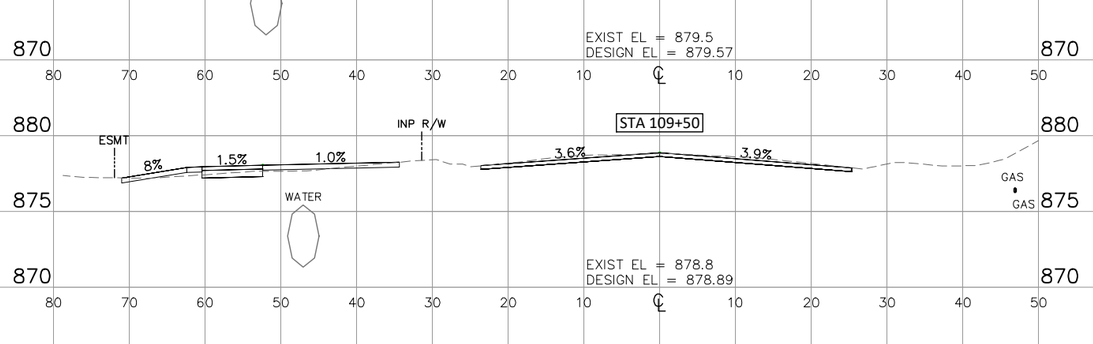


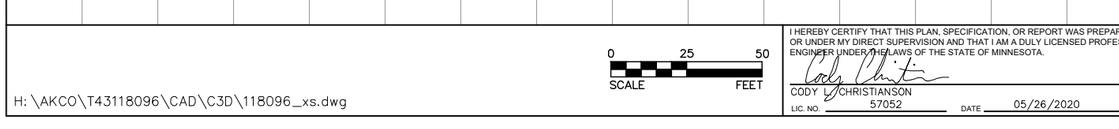


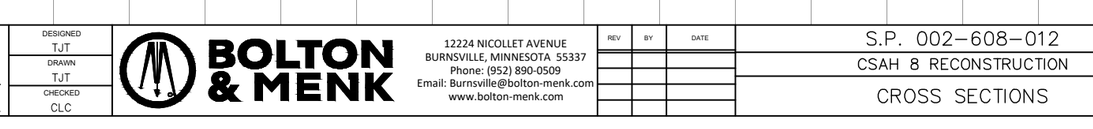












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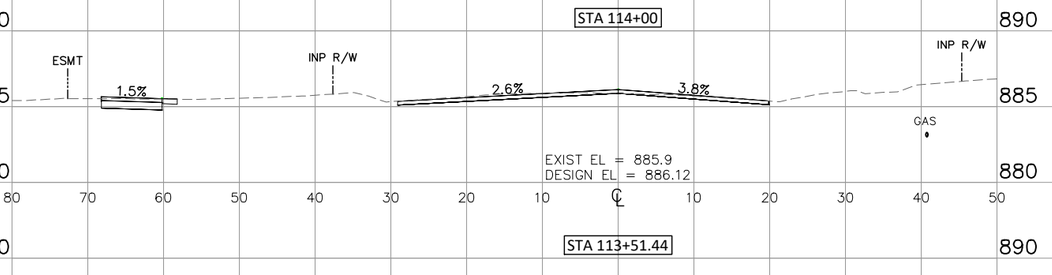
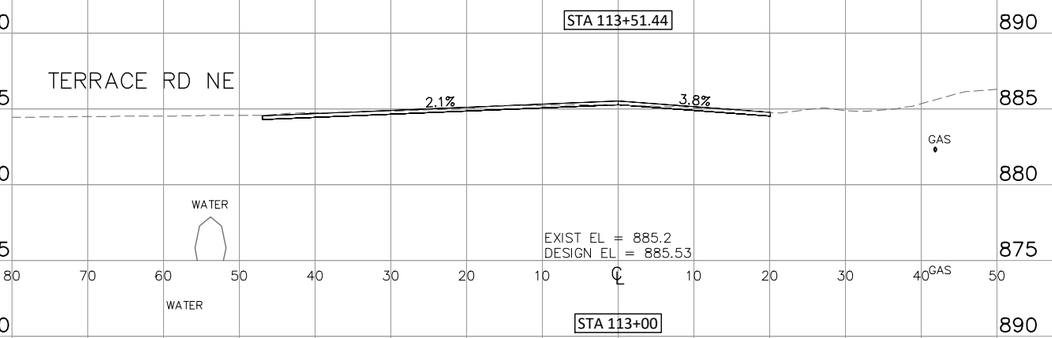
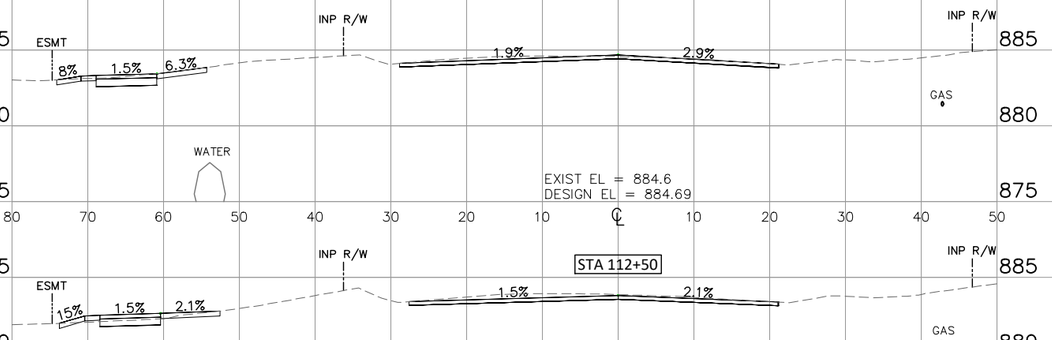
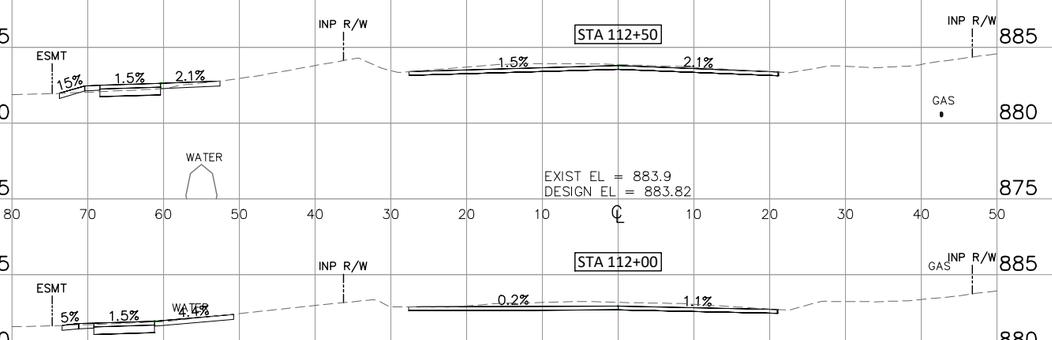
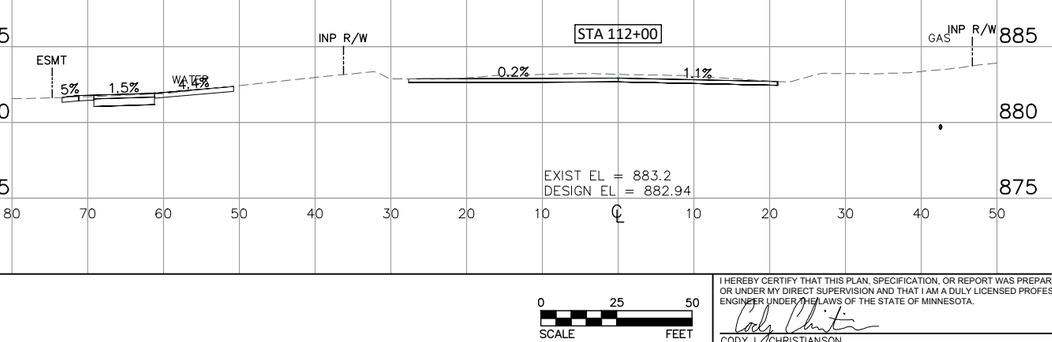
SHEET 180 OF 189

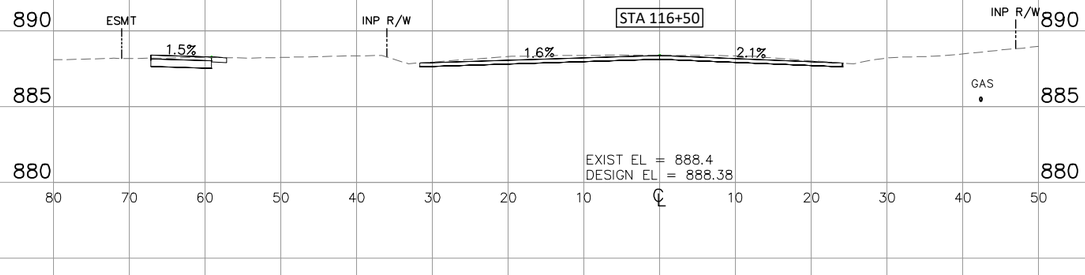


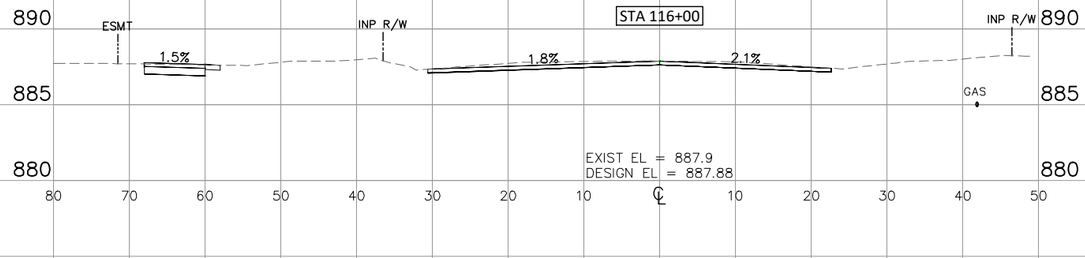


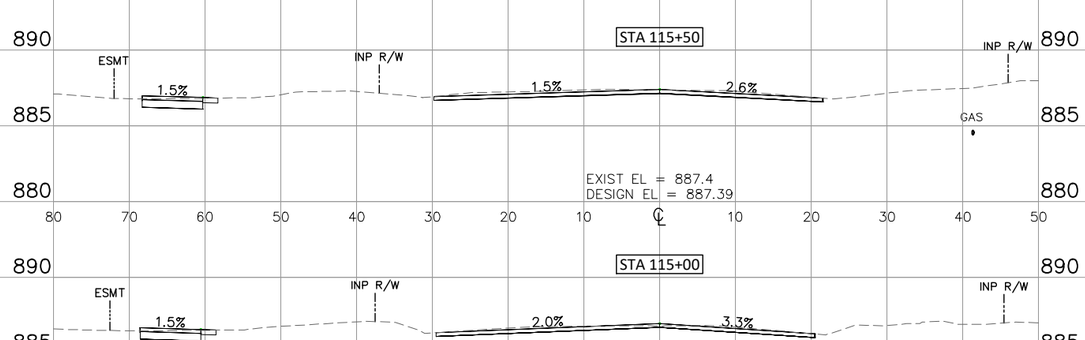


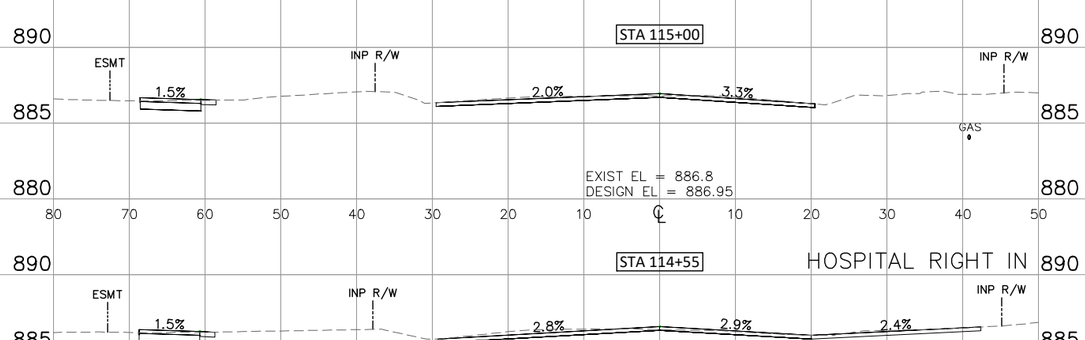


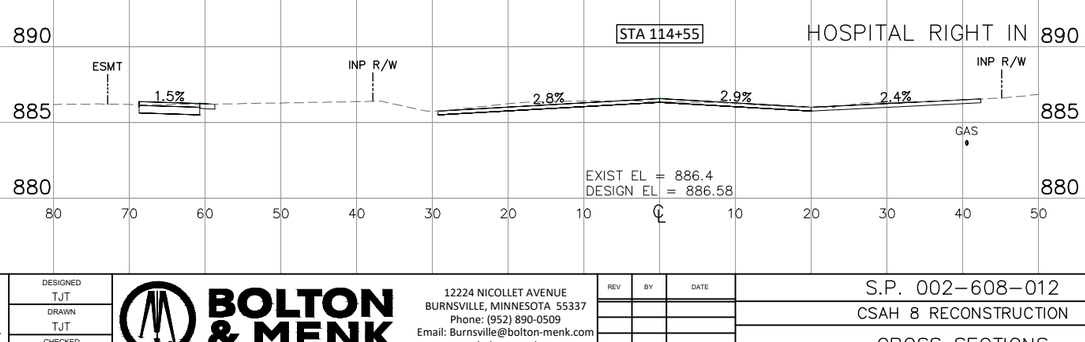












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CODY L. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

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BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

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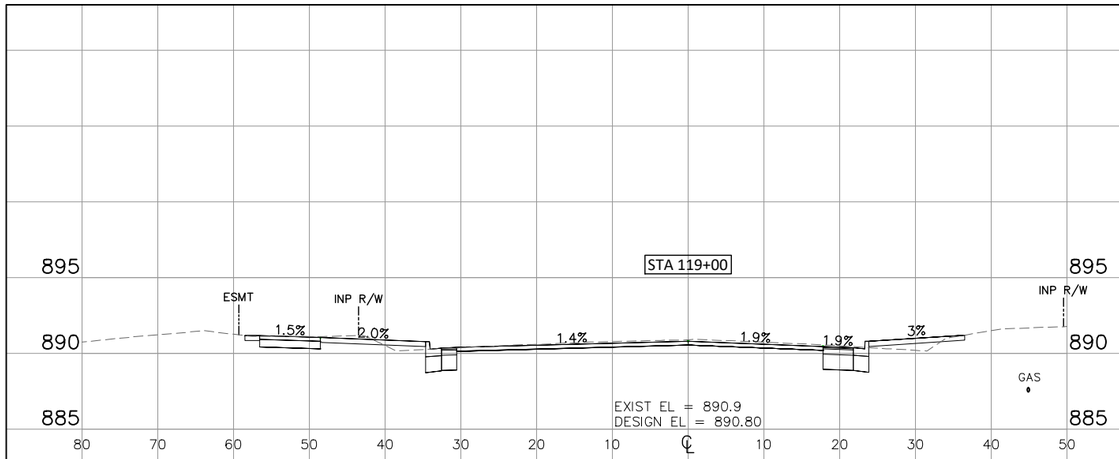
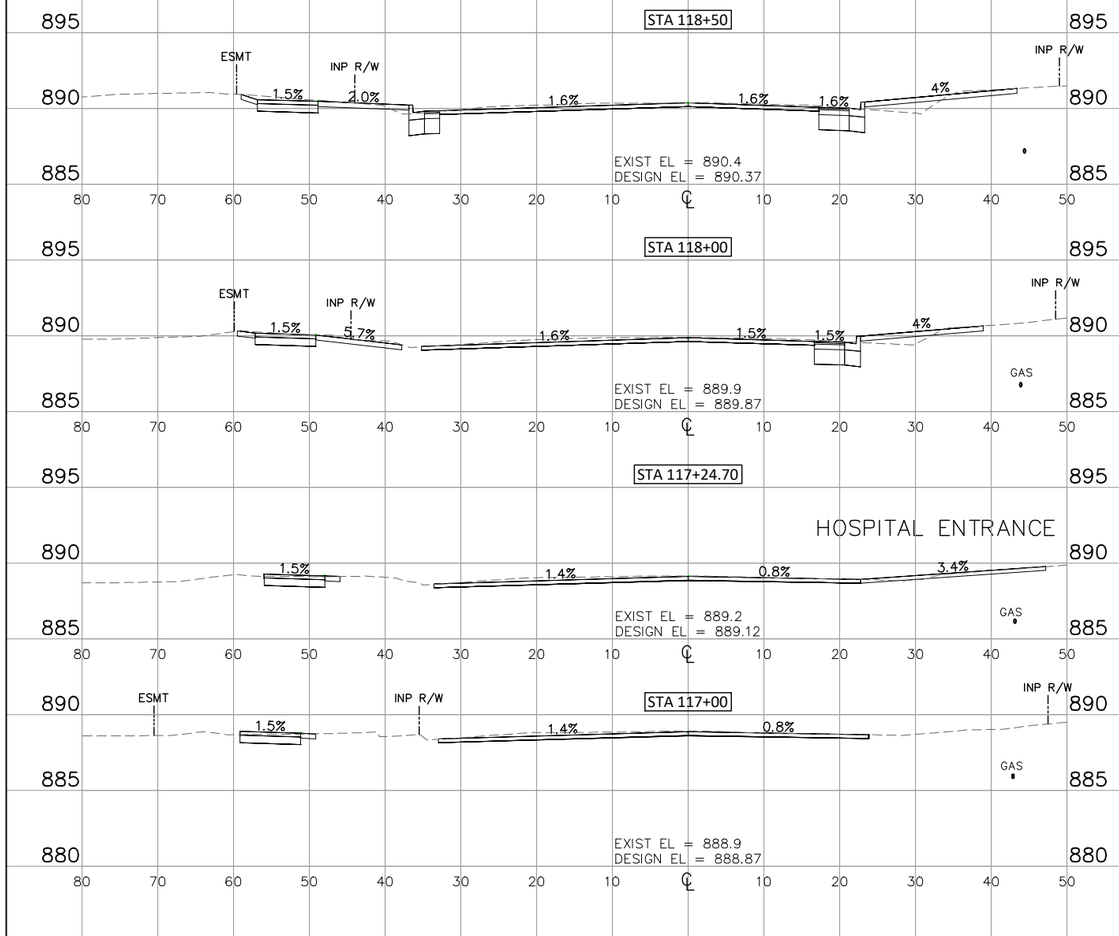
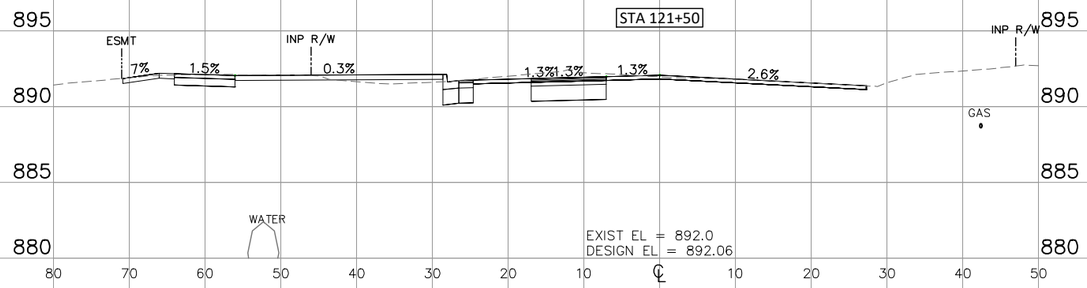
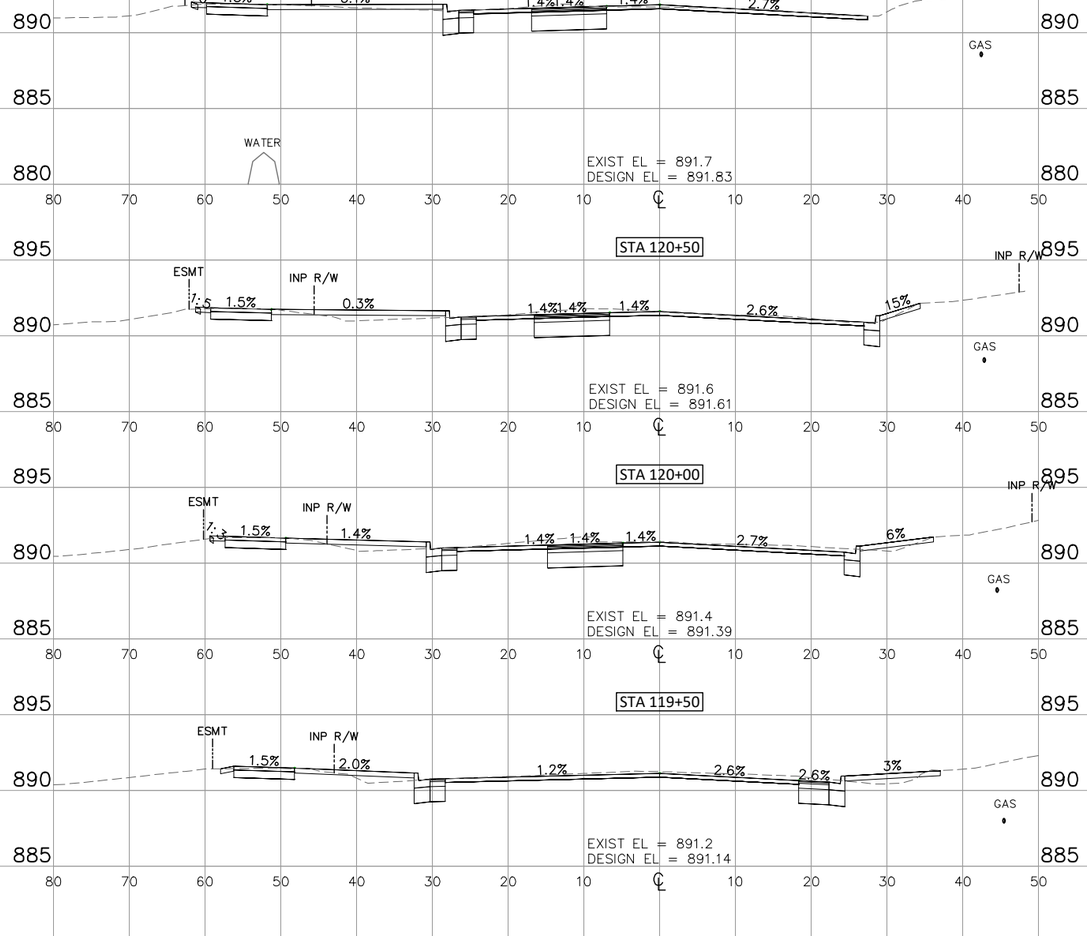
SHEET 181 OF 189









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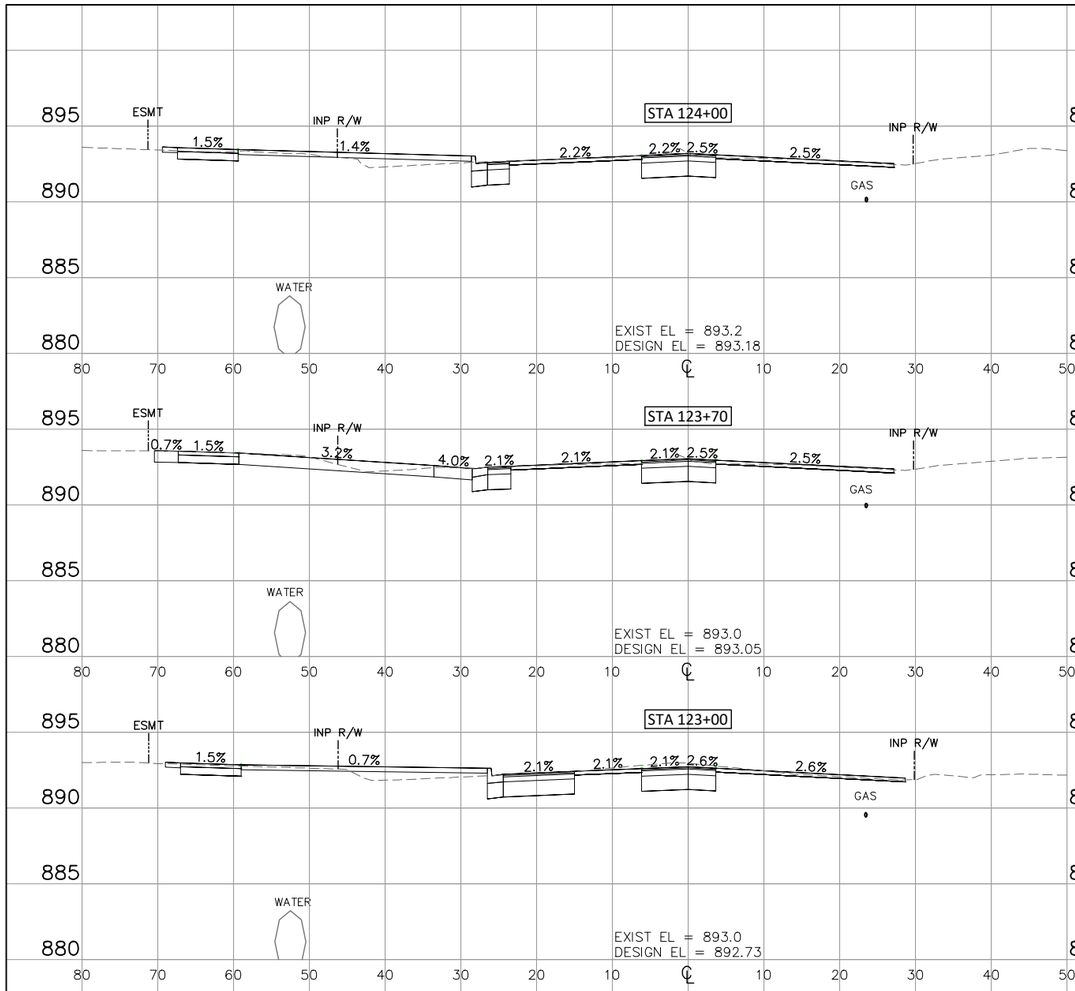

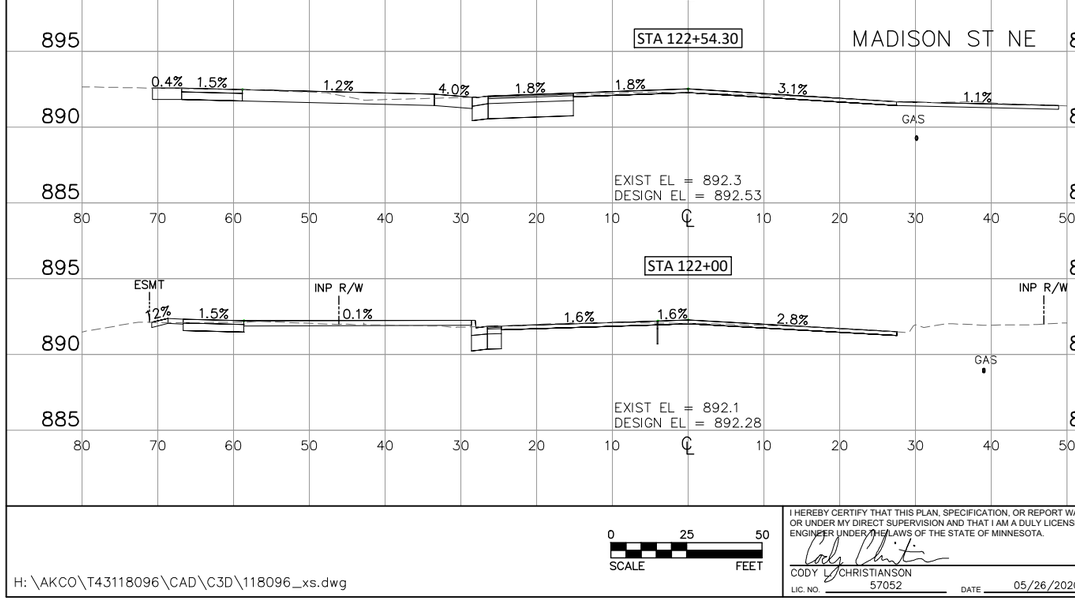

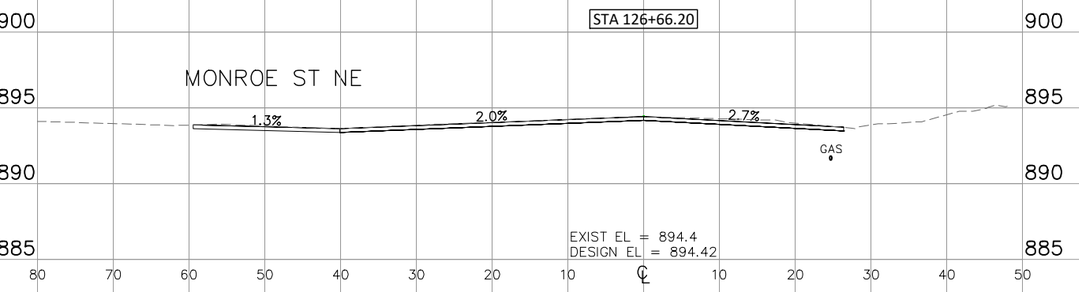

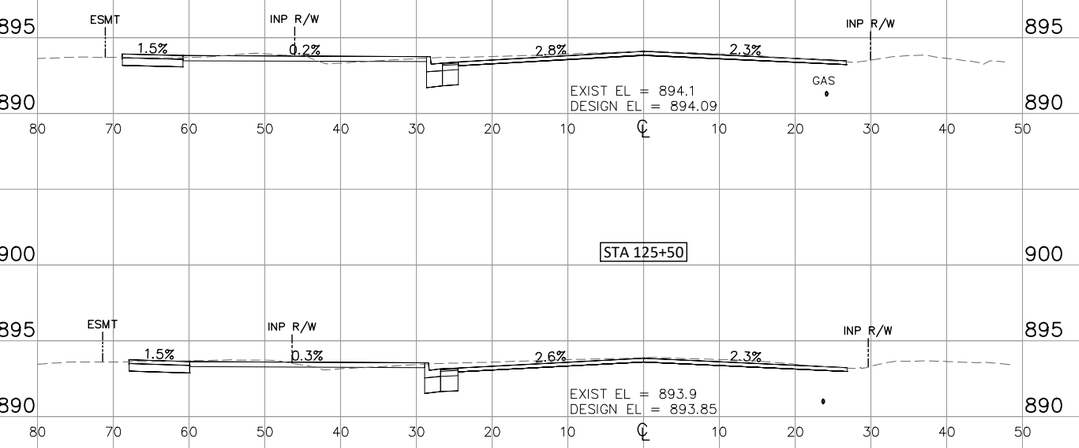

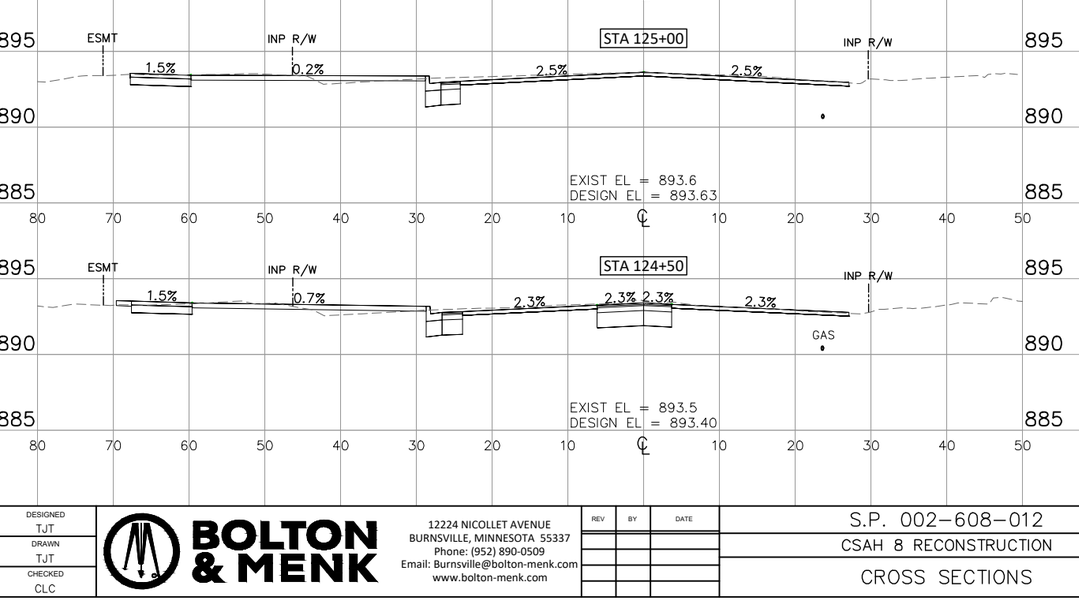

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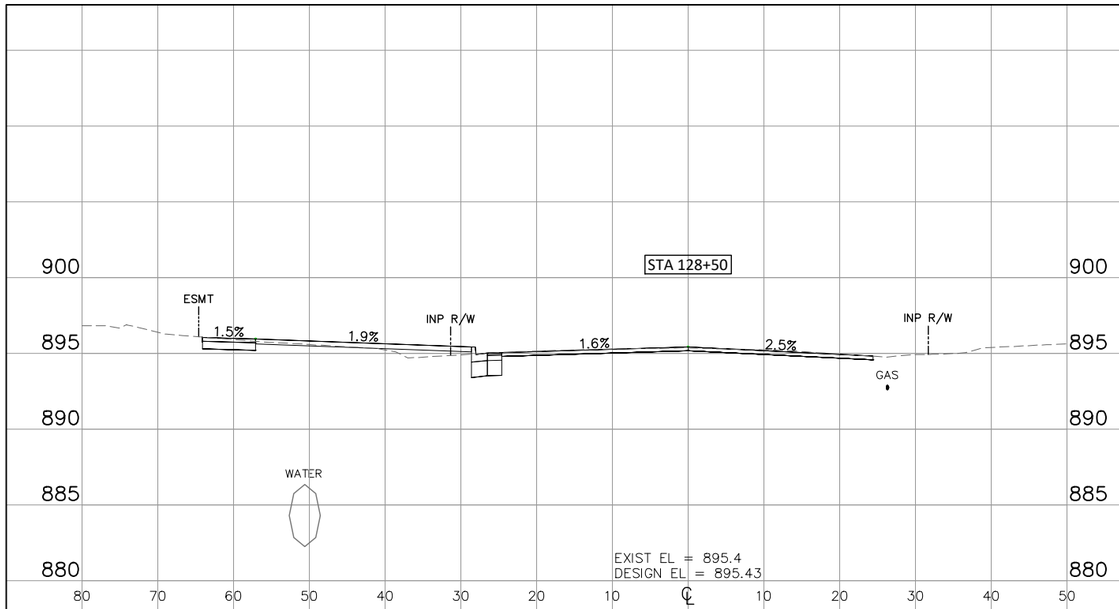

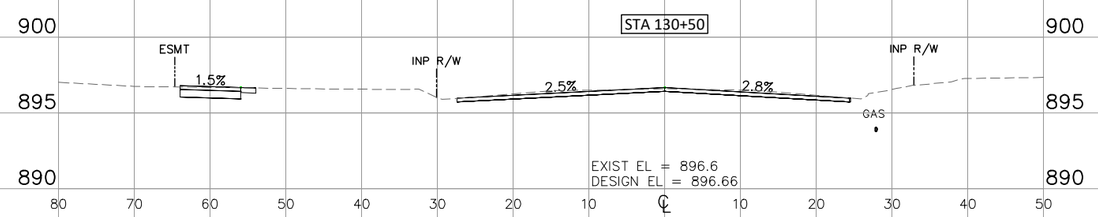

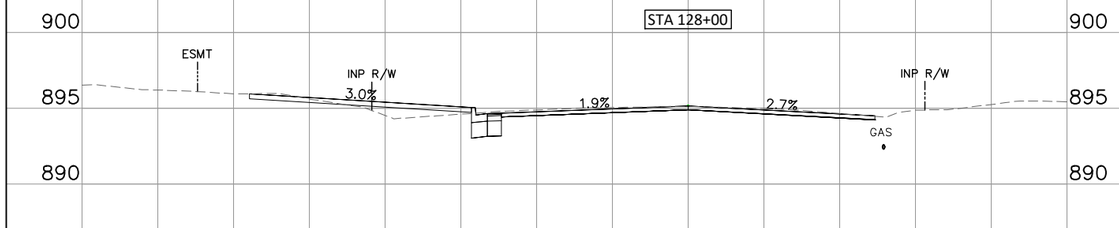

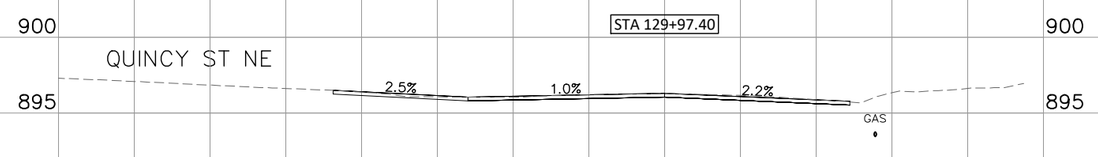

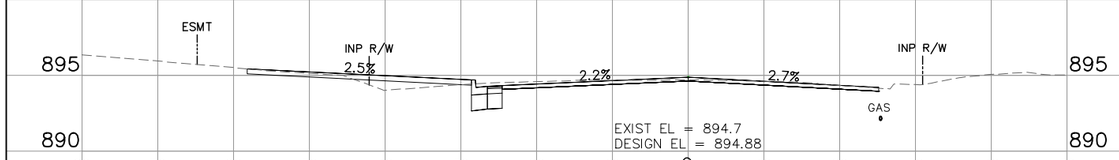

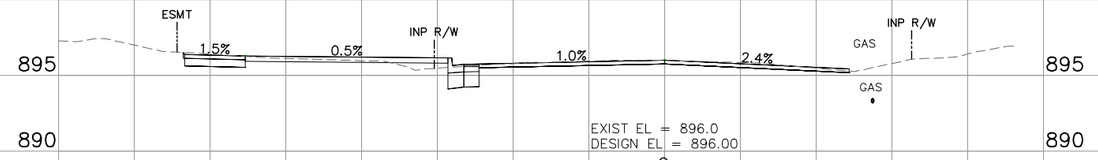

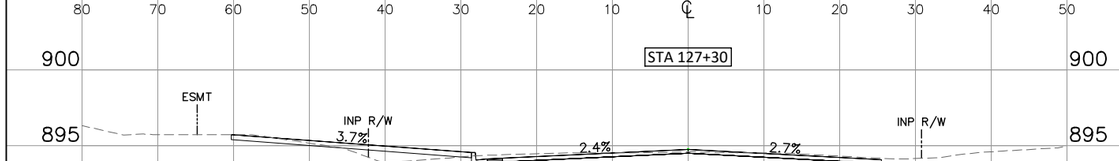

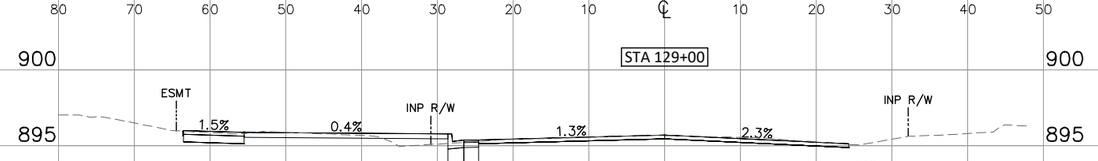

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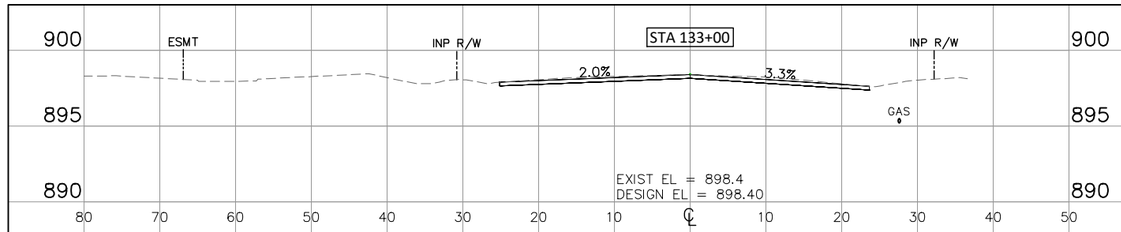

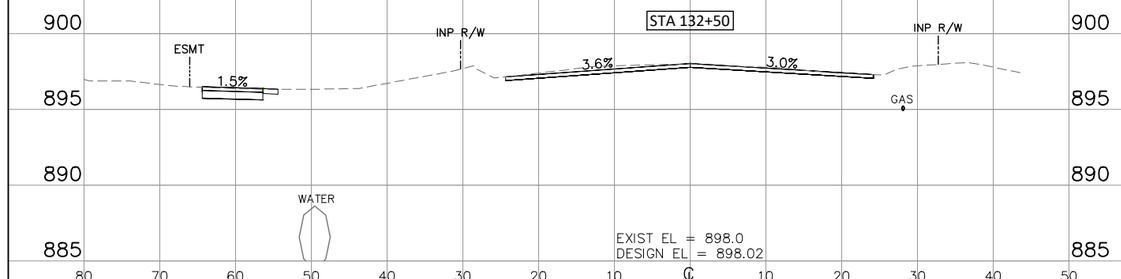

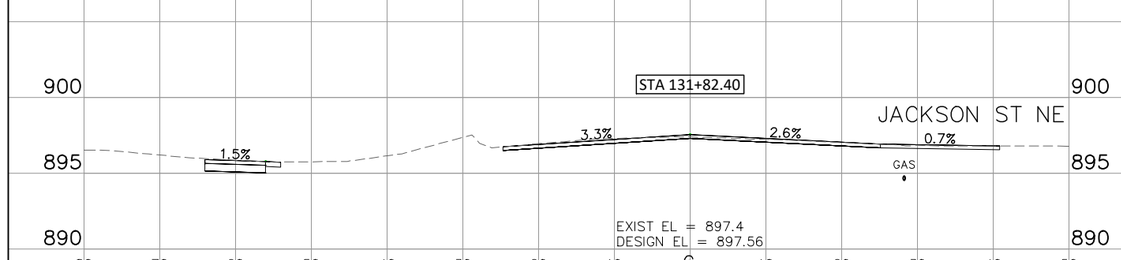

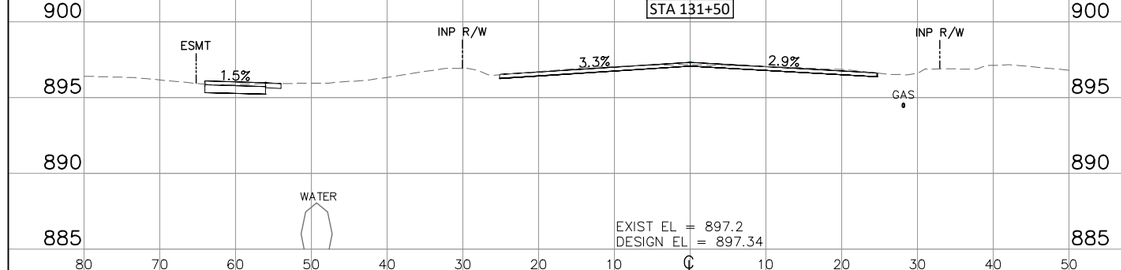

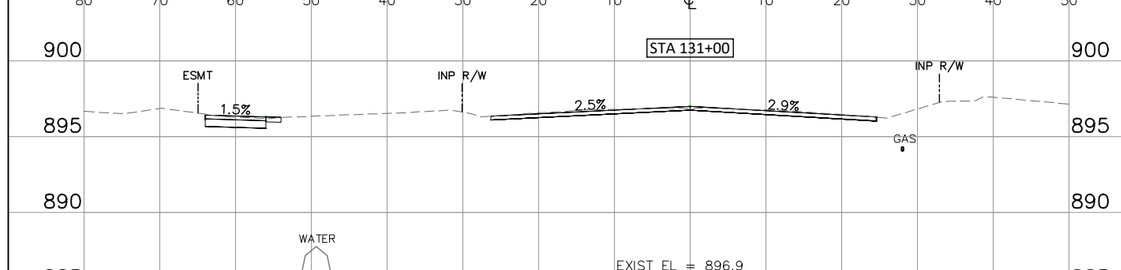

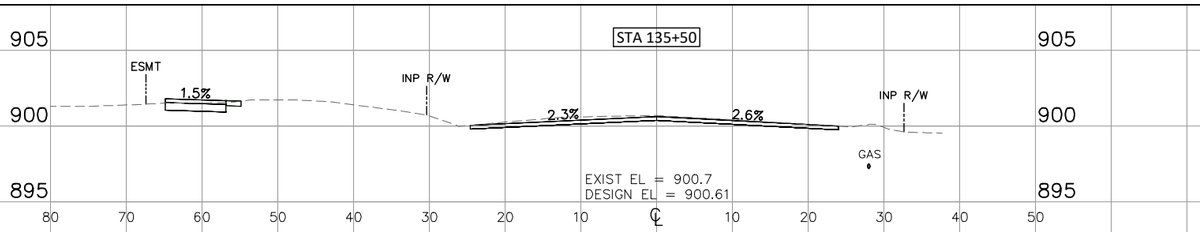

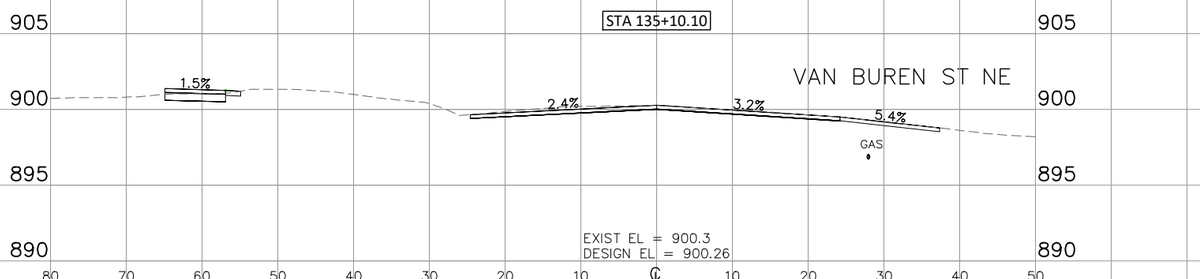

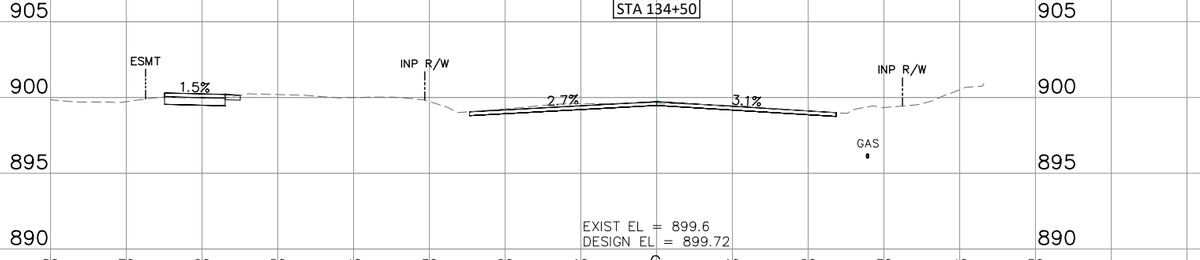

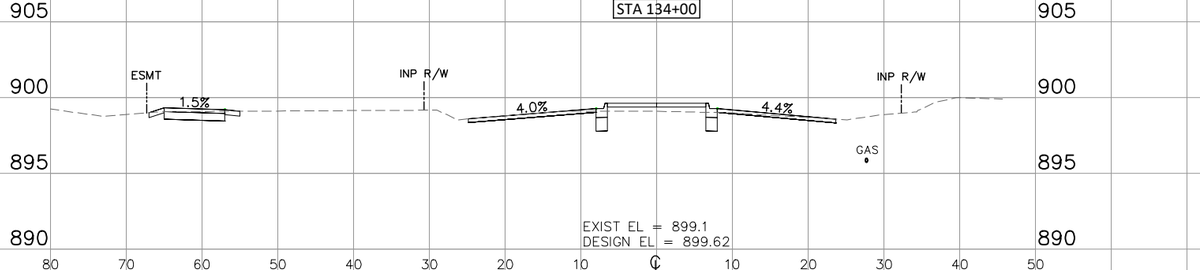

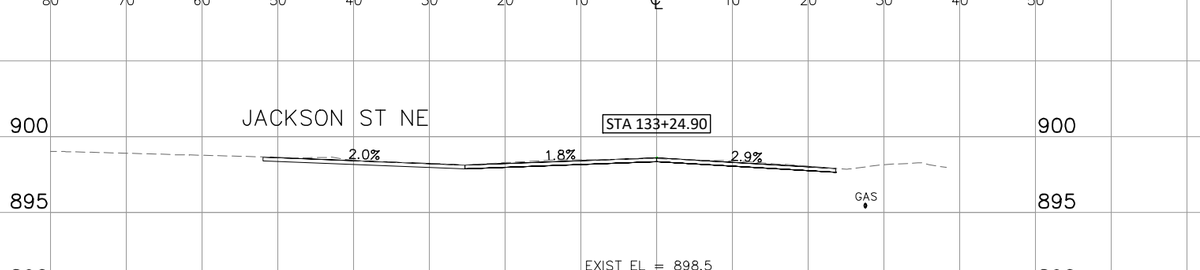

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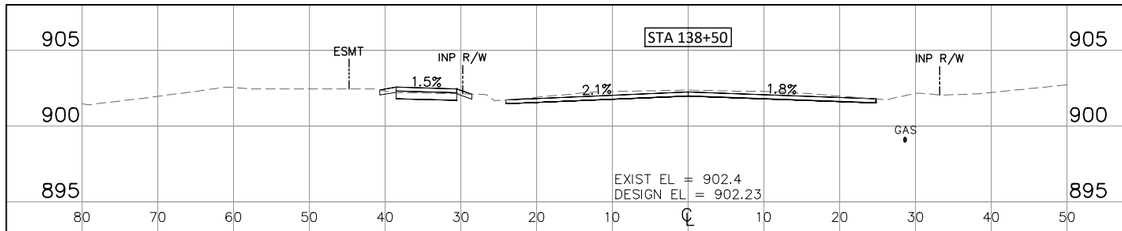

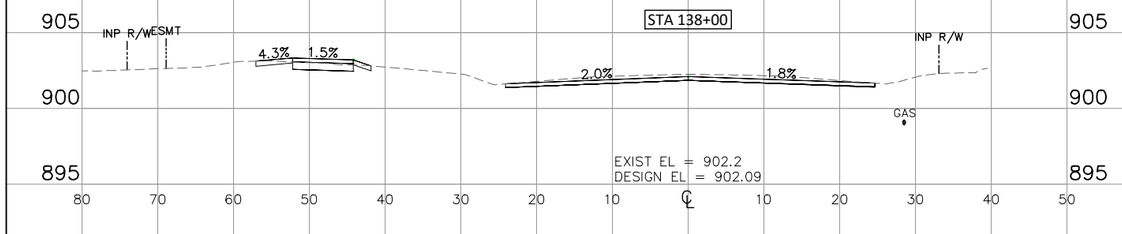

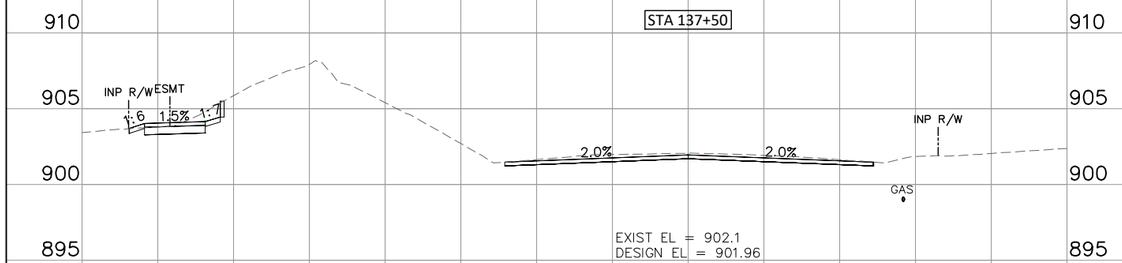

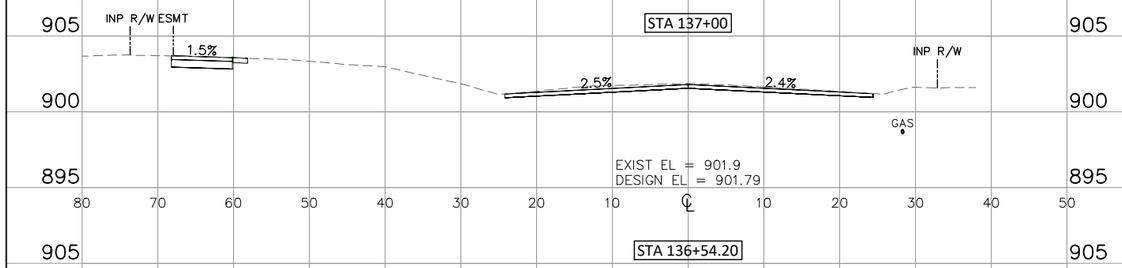

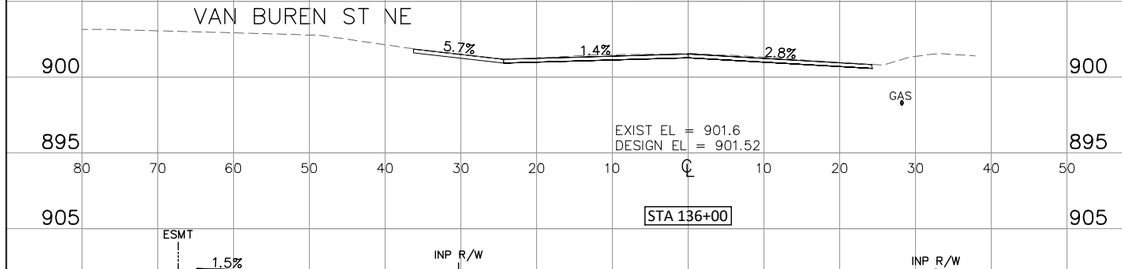

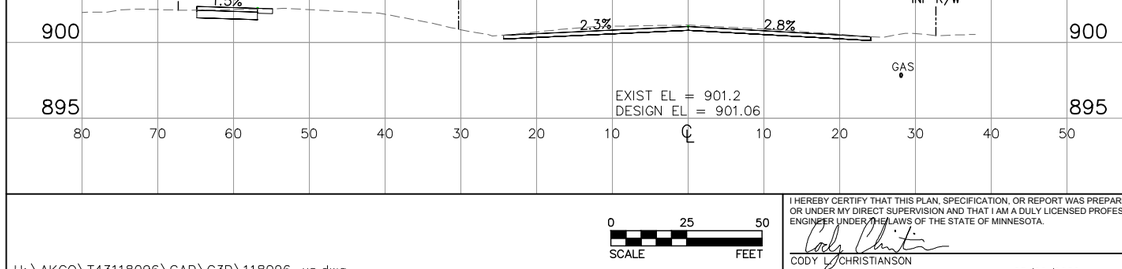

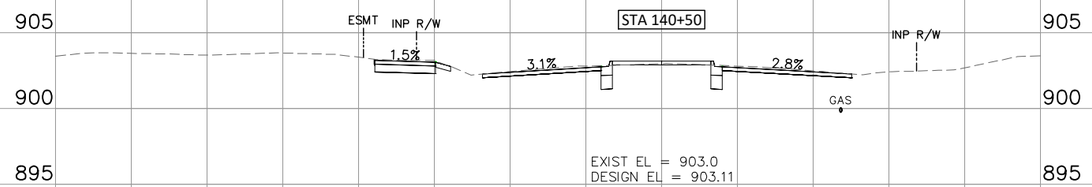

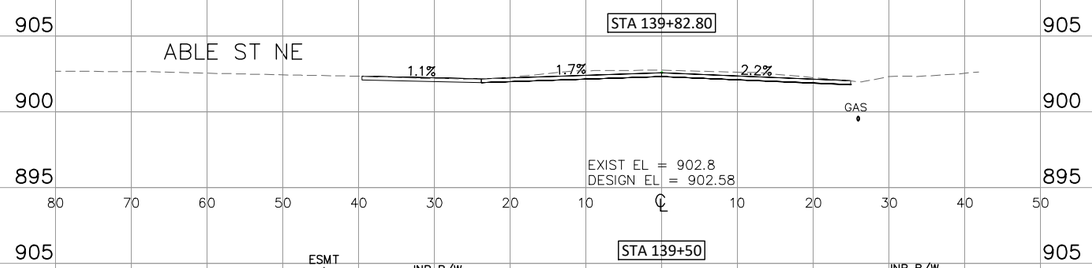

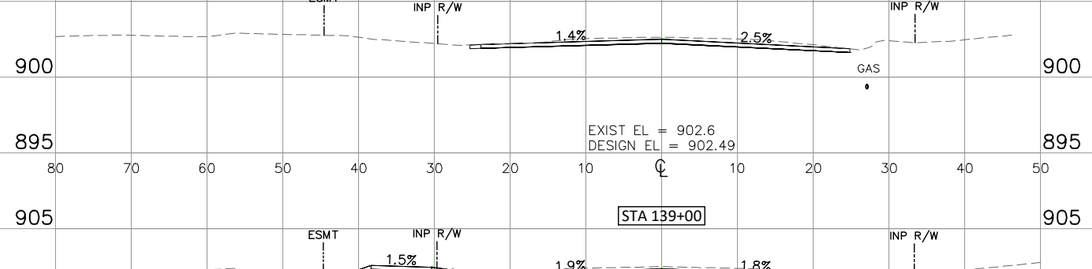

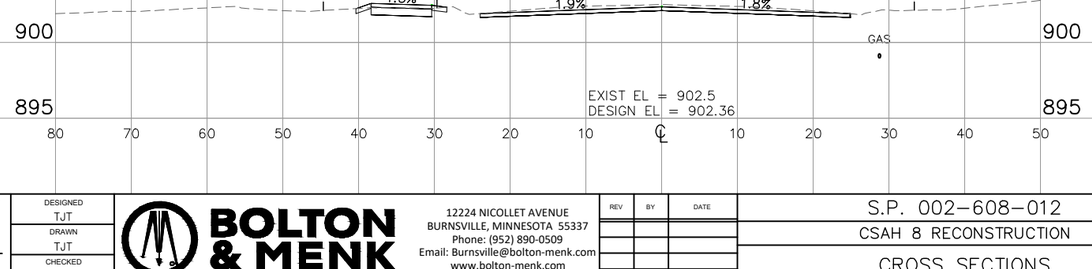

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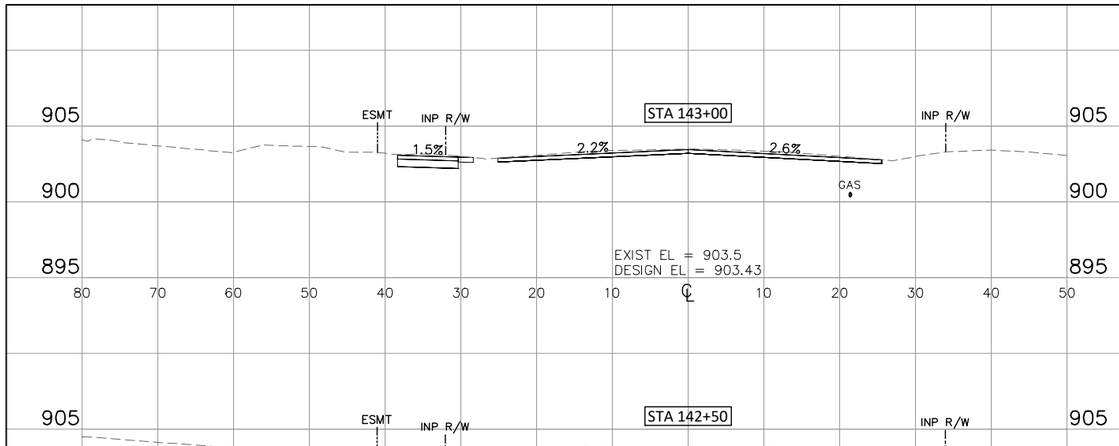

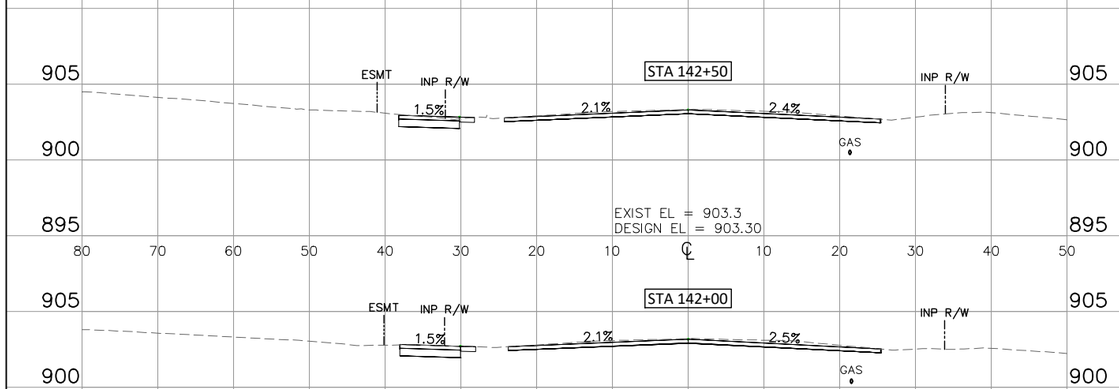

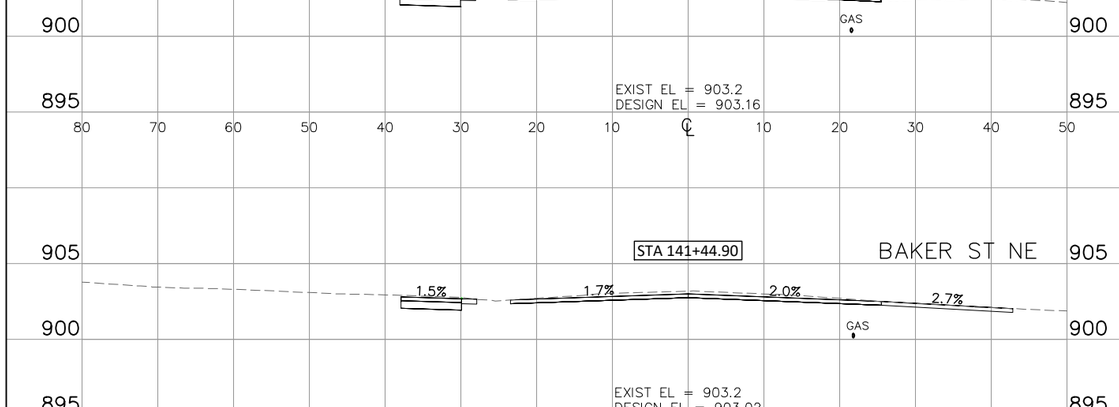

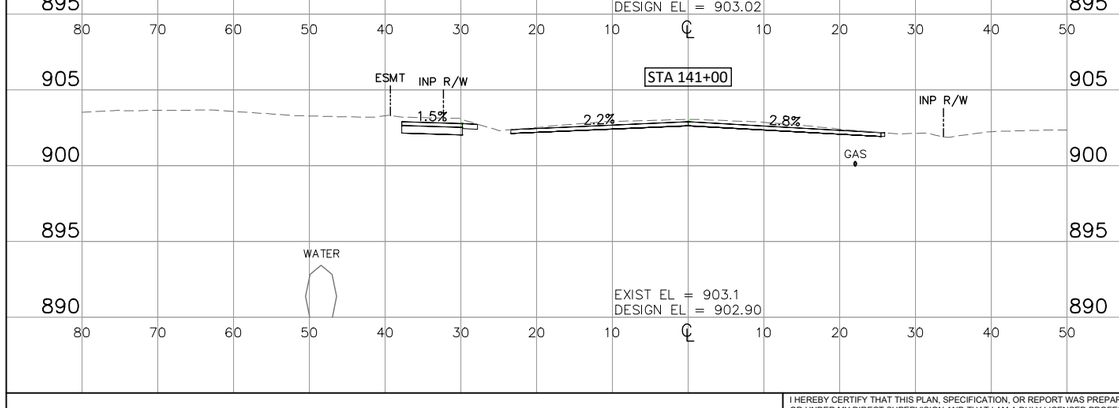

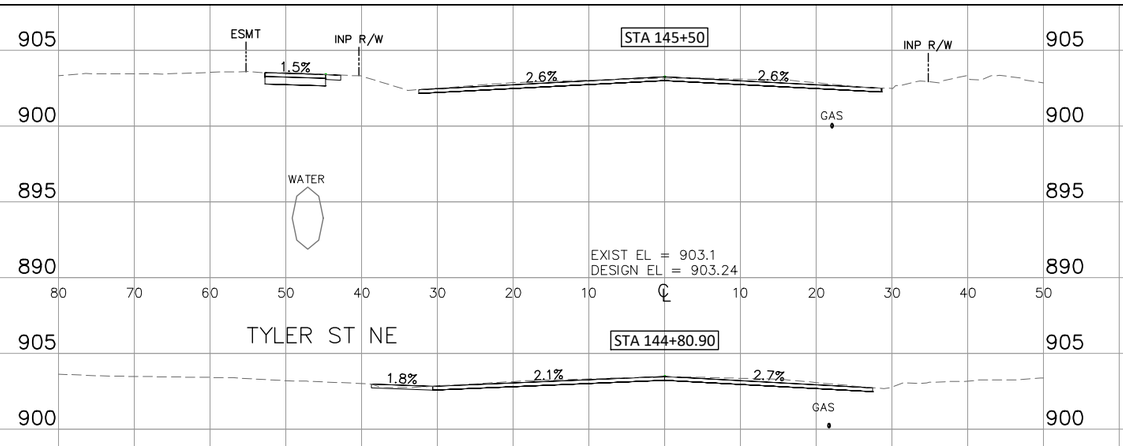

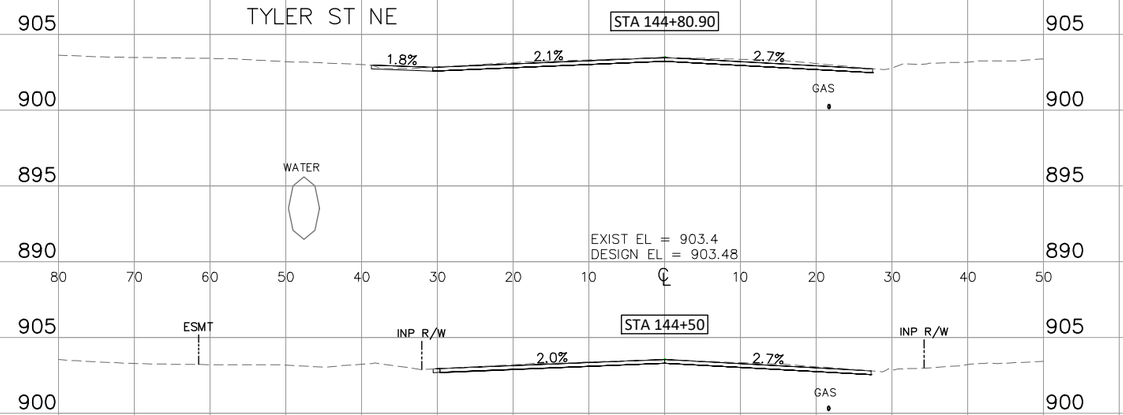

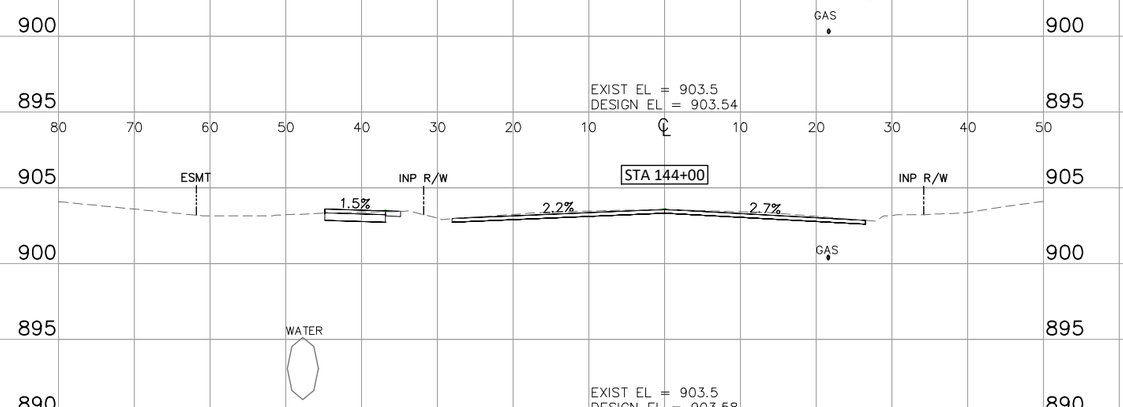

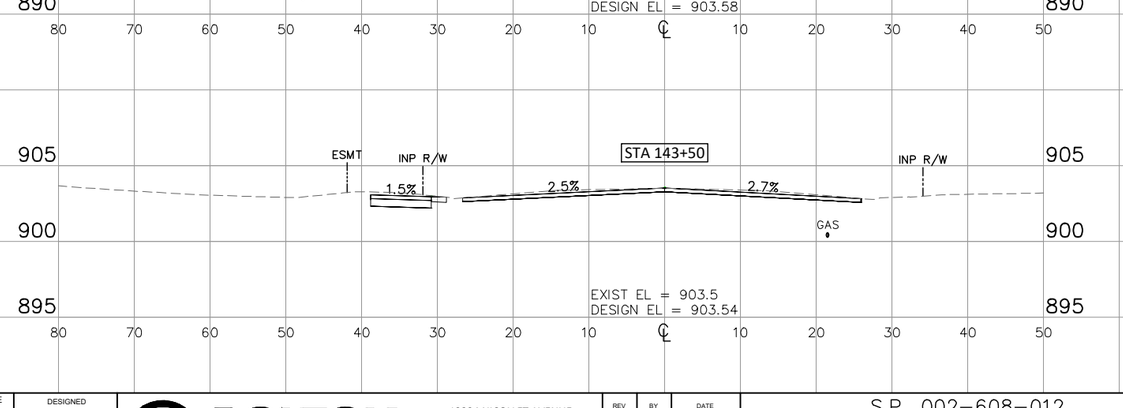

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CODY L. CHRISTIANSON
LIC. NO. 57052 DATE 05/26/2020

DESIGNED	DRAWN	CHECKED
TJT	TJT	CLC

BOLTON & MENK
12224 NICOLLET AVENUE
BURNSVILLE, MINNESOTA 55337
Phone: (952) 890-0509
Email: Burnsville@bolton-menk.com
www.bolton-menk.com

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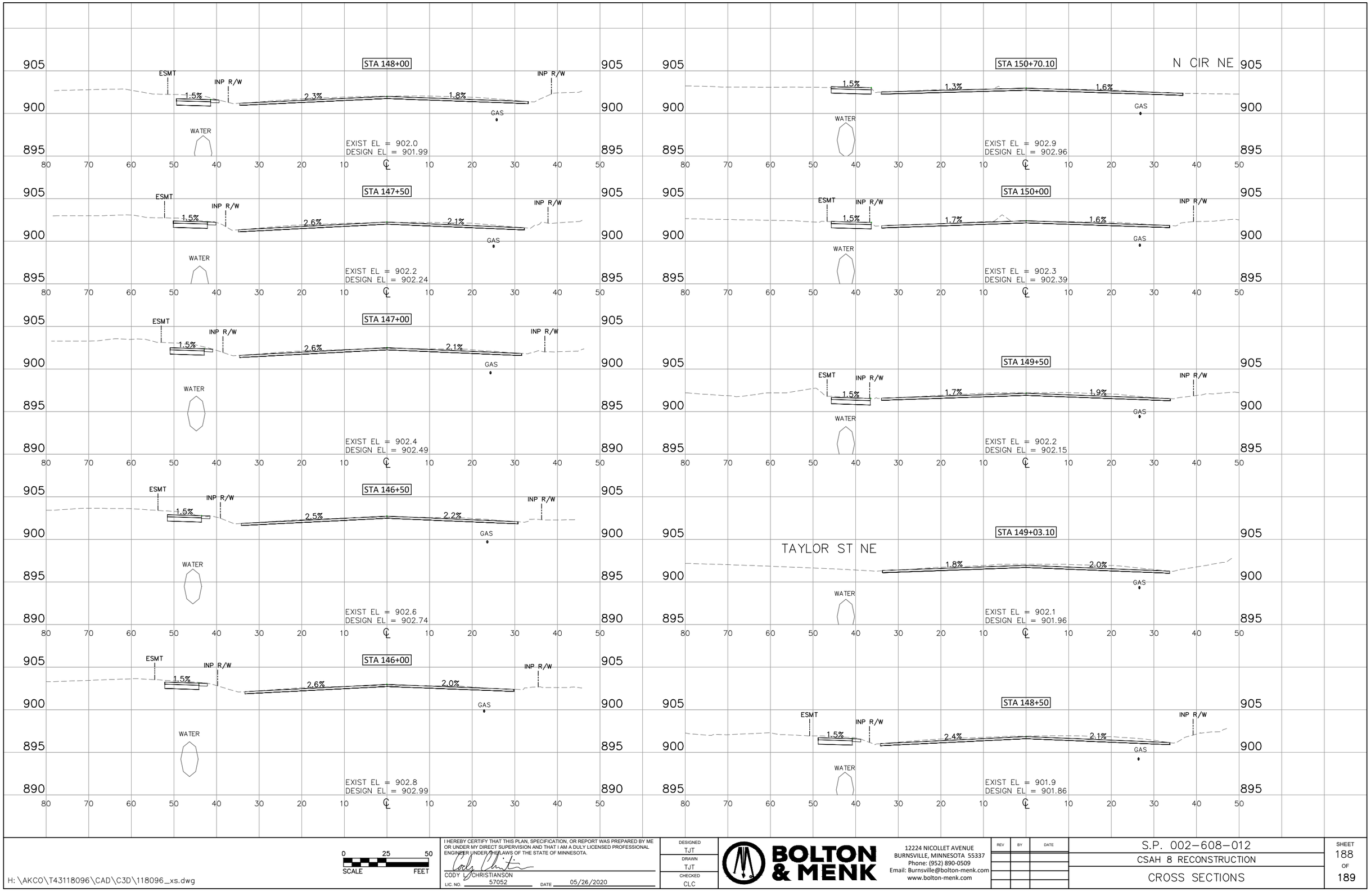

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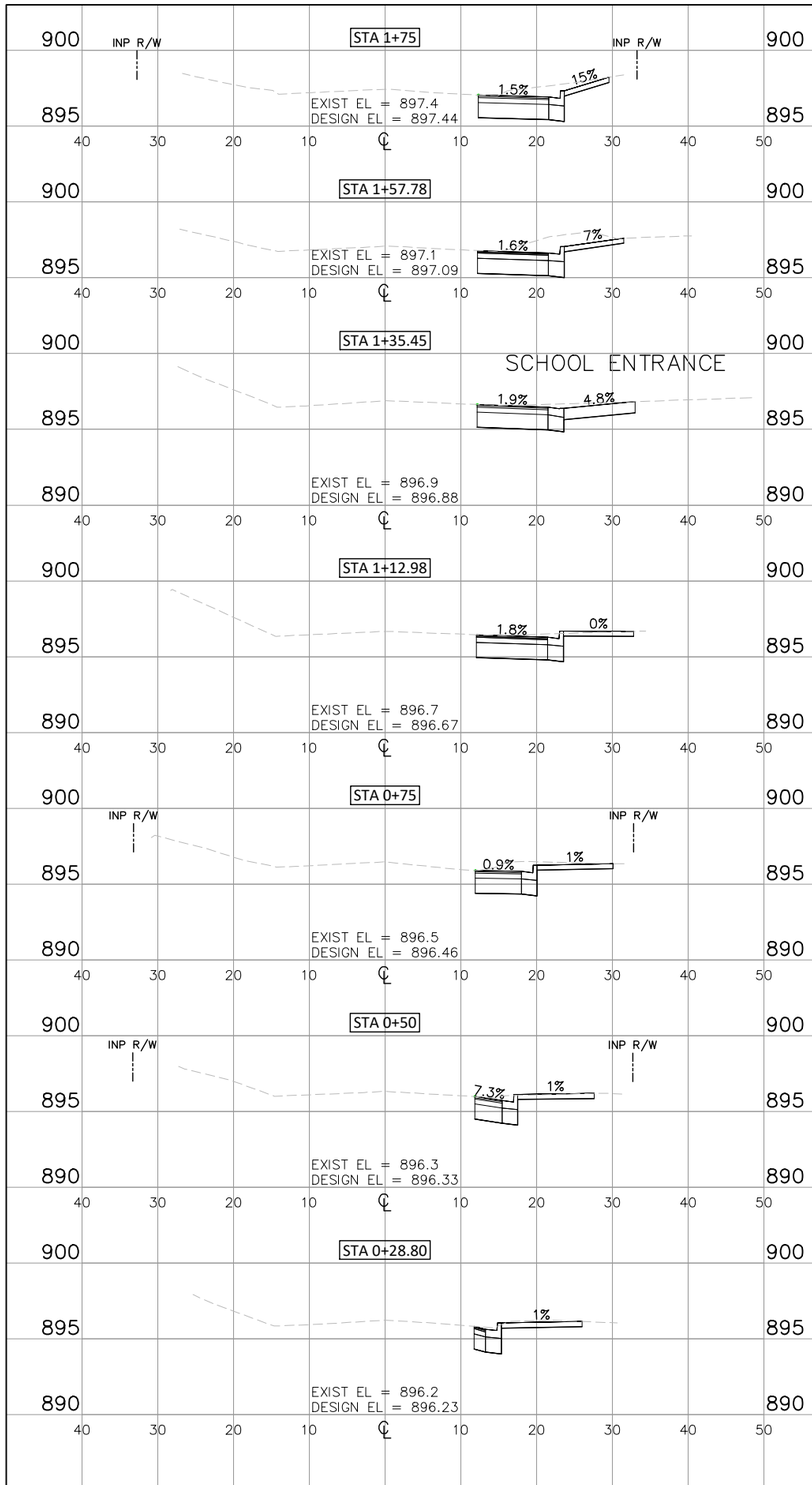

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