

LEGEND	
5+00	6+00
5	6
STREET CENTERLINE	
SURVEY BASELINE	
COUNTY	
SECTION	
QUARTER	
SIXTEENTH	
CORPORATE LIMITS	
EXISTING	
RIGHT OF WAY	
PERMANENT EASEMENT	
PROPERTY LINE	
R.R. RIGHT OF WAY	
SANITARY SEWER AND MANHOLE	
FORCE MAIN	
SANITARY SEWER SERVICE & CLEANOUT	
WATER MAIN, HYDRANT AND VALVE	
WATER SERVICE AND CURB STOP BOX	
WATER VALVE MANHOLE	
STORM SEWER, APRON, MANHOLE AND CATCH BASIN	
CULVERT	
BULKHEAD	
BURIED FIBER OPTIC CABLE	
BURIED FIBER OPTIC DUCT OR CONDUIT	
BURIED PHONE CABLE AND PEDESTAL	
BURIED PHONE DUCT OR CONDUIT AND MANHOLE	
BURIED TV CABLE AND PEDESTAL	
BURIED ELECTRIC CABLE	
BURIED ELECTRIC DUCT OR CONDUIT AND MANHOLE	
OVERHEAD ELECTRIC, POLE AND DOWN GUY ANCHOR	
LIGHT POLE	
TRAFFIC SIGNAL STANDARD	
GAS MAIN	
GAS SIGN, VALVE AND VENT	
PETROLEUM PIPELINE	
SOIL BORING	
TRAVERSE POINT	
CONCRETE CURB AND GUTTER	
EXISTING PAVEMENT OR SIDEWALK	
SIGN (HWY, PARK, STOP, ETC.)	
STREET NAME SIGN	
DITCH	
RAILROAD TRACKS	
FENCE (UNIDENTIFIED)	
BARBED WIRE FENCE	
CHAIN LINK FENCE	
ELECTRIC WIRE FENCE	
WOOD FENCE	
WOVEN WIRE FENCE	
PLATE BEAM GUARDRAIL	
CABLE GUARDRAIL	
DECIDUOUS AND CONIFEROUS TREE	
BUSH-SHRUB	
WOODED AREA	
WETLAND	
BUILDING	
PROPOSED	
NEW RIGHT OF WAY	
PERMANENT EASEMENT	
TEMPORARY EASEMENT	
SANITARY SEWER AND MANHOLE	
FORCE MAIN	
SANITARY SEWER SERVICE & CLEANOUT	
WATER MAIN, HYDRANT AND VALVE	
WATER SERVICE AND CURB STOP BOX	
WATER VALVE MANHOLE	
STORM SEWER, MANHOLE AND CATCH BASIN	
CULVERT	
BULKHEAD	
DRAIN PIPE	
DITCH	
CONCRETE CURB AND GUTTER	
SILT FENCE	
FLOTATION SILT CURTAIN	
BIOROLL	
LIGHT POLE	
TRAFFIC SIGNAL, STANDARD	
SIGN (HWY, PARK, STOP, ETC.)	
STREET LIGHT FEED POINT	
STREET LIGHTING CABLE	

MINNESOTA DEPARTMENT OF TRANSPORTATION

CITY OF DULUTH, MINNESOTA

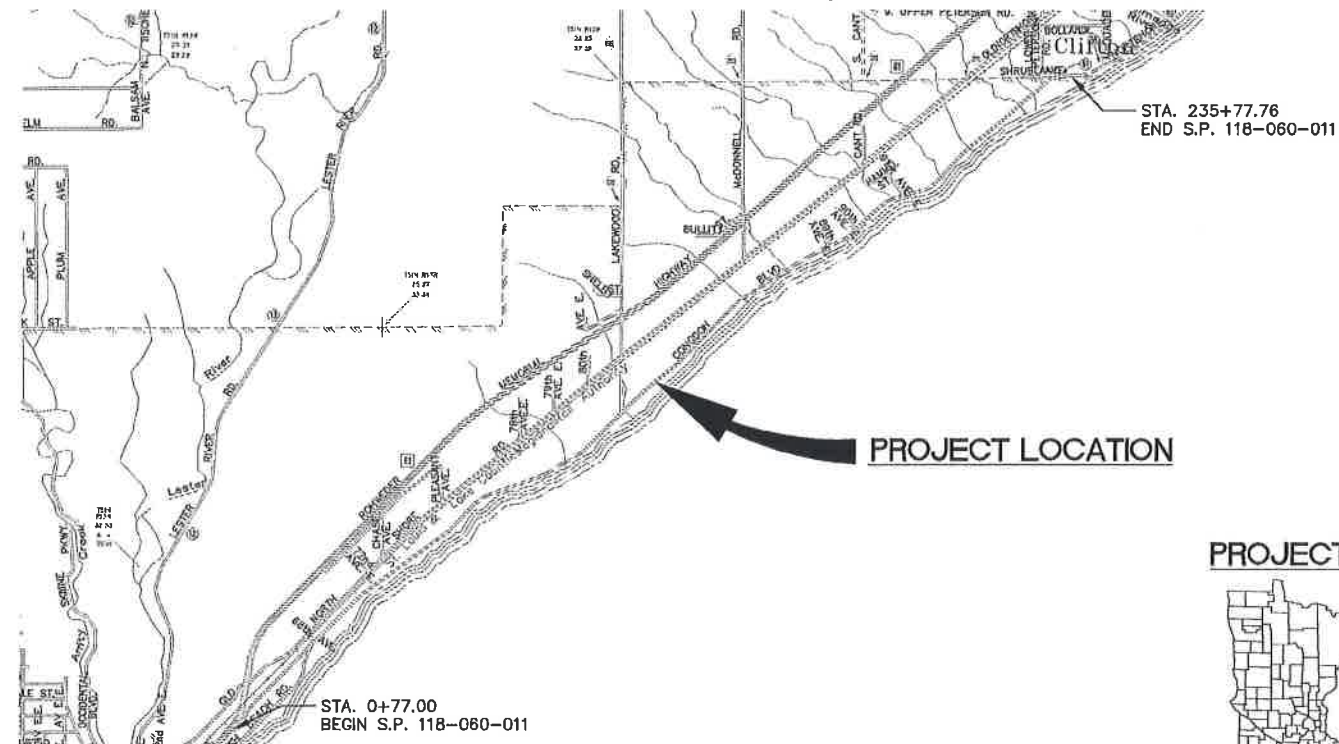
CONSTRUCTION PLANS FOR BITUMINOUS RECLAMATION AND BITUMINOUS SURFACING

CONGDON BOULEVARD

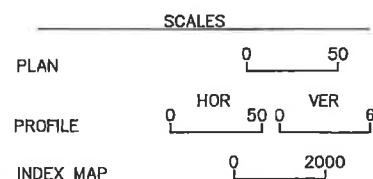
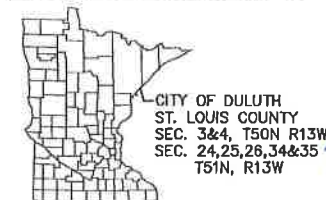
CITY PROJECT NO. 1035

S.P. 118-060-011

LOCATED ON CONGDON BOULEVARD FROM JUNCTION MN HWY 61 TO 0.17 MILES S.W. OF MCQUADE SAFE HARBOR (N.E. DULUTH CITY LIMITS)



PROJECT LOCATION



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

THE CONTRACTOR SHALL CALL THE GOPHER STATE ONE CALL SYSTEM AT 811 BEFORE COMMENCING EXCAVATION.



MINN PROJ. NO. STPF-RPRP-TA 6917 (242)

GOVERNING SPECIFICATIONS
THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MMUTCD, INCLUDING "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS", - CURRENT EDITION.
THE CITY OF DULUTH, MINNESOTA "2016 CONSTRUCTION STANDARDS".

INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL LAYOUT
3	STATEMENT OF ESTIMATED QUANTITIES
4-8	TABULATIONS
9-10	TYPICAL SECTIONS
11-19	STANDARD PLAN SHEETS
20	CONSTRUCTION DETAILS
21-29	ALIGNMENT AND SUPERELEVATION PLAN
30	ALIGNMENT TABULATION
31-39	EXISTING CONDITIONS AND REMOVALS
40-56	PLAN AND PROFILE
57-58	SWPPP PLAN
59-67	EROSION CONTROL AND TURF ESTABLISHMENT
68	CULVERT EXTENSION
69-72	SEDIMENT CONTROL PLAN SHEETS
73-75	TRAFFIC CONTROL
76	PAVEMENT MARKING LEGEND AND DETAILS
77-85	SIGNING AND STRIPING PLAN

THIS PLAN CONTAINS 85 SHEETS.

DESIGN DESIGNATION

STOPPING SIGHT DISTANCE BASED ON:
3.5' HEIGHT OF EYE 2' HEIGHT OF OBJECT

CONGDON BOULEVARD
S.P. 118-060-011

GROSS LENGTH	23,500.76 FEET 4.451 MILES
BRIDGE LENGTH	0 FEET 0.000 MILES
EXCEPTION LENGTH	0 FEET 0.000 MILES
NET LENGTH	23,500.76 FEET 4.451 MILES
DESIGN	10 TON
DESIGN SPEED	40 M.P.H. AND 50 M.P.H.
R-VALUE	10
ESALS	274,000
EXISTING A.D.T. (2017)	2651
20 YR. PROJECTED A.D.T. (2037)	3490
% HCADT (2037)	3.5 %
FUNCTIONAL CLASSIFICATION	MINOR ARTERIAL
NO. OF TRAFFIC LANES	2
NO. OF PARKING LANES	0
SHOULDER WIDTH	8 FT.

APPROVED: *[Signature]* 3/15/17
CITY ENGINEER DATE

APPROVED: *[Signature]* 3/15/17
CHIEF ENGINEER OF UTILITIES DATE

APPROVED: *[Signature]* 3/15/17
CHIEF ENGINEER OF TRANSPORTATION DATE

RECOMMENDED FOR APPROVAL: *[Signature]* 3-16-17
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY DATE

RECOMMENDED FOR APPROVAL: *[Signature]* 5-11-17
APPROVED FOR STATE AID AND FEDERAL FUNDING STATE AID ENGINEER DATE

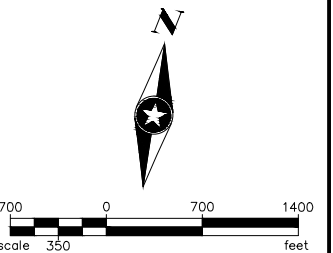
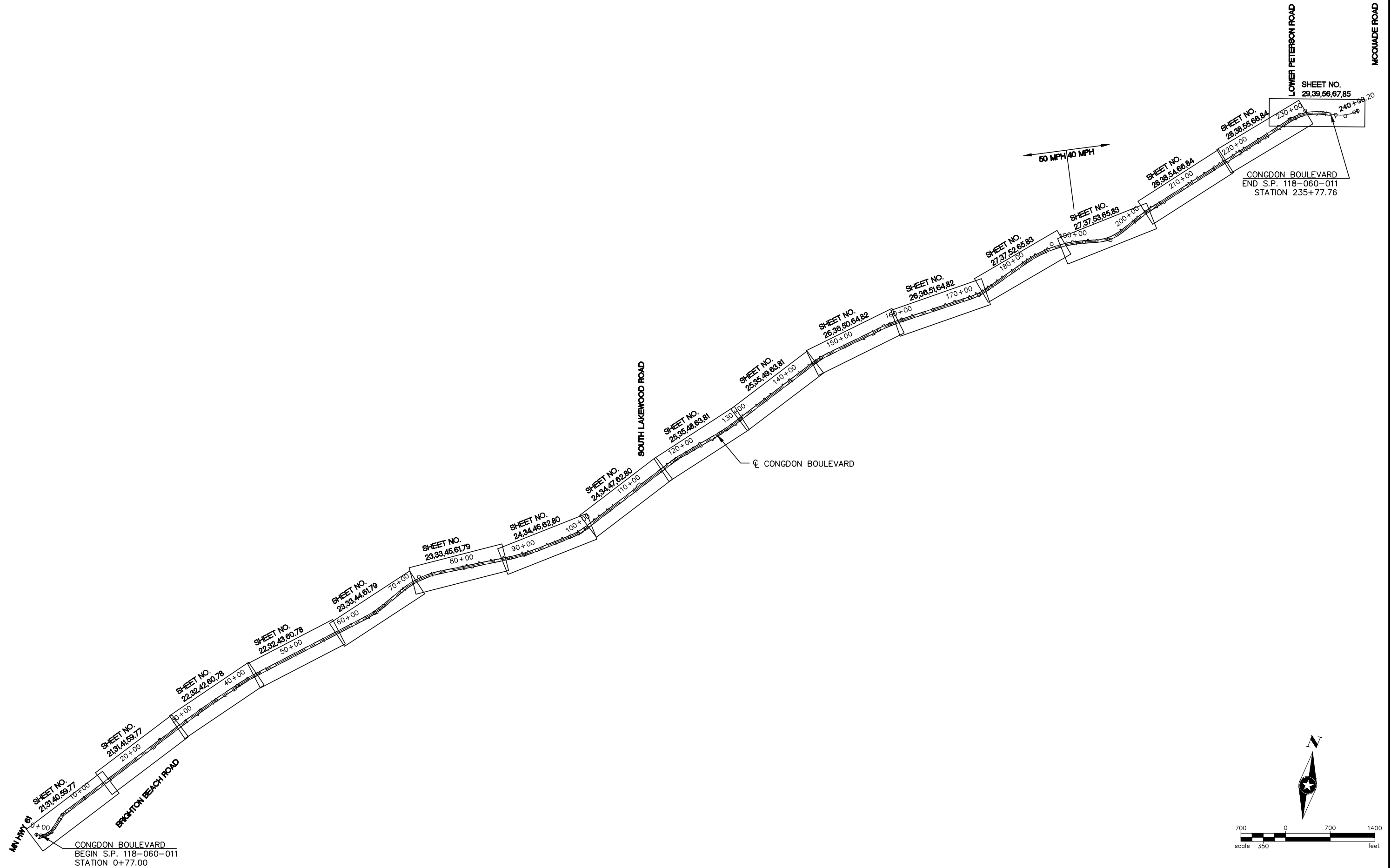
PHONE: 218.279.3000
418 W SUPERIOR ST STE 200
DULUTH, MN 55802-1512
www.sehinc.com

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.
[Signature] MATTHEW J. BOLF, PE
Date: 03/15/17 Lic. No. 43913

FILE NO.
DULUT 135859
1
85

S.P. 118-060-011

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DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913

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DULUTH, MN 55802-1512
www.sehinc.com

DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

GENERAL LAYOUT

FILE NO.
DULUT 135859

2
85

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STATEMENT OF ESTIMATED QUANTITIES									
NOTE	TAB	ITEM NO.	ITEM DESCRIPTION	UNIT	S.P. 118-060-011 (80% FEDERAL FUNDS - 20% LOCAL FUNDS)				
					TOTAL ESTIMATED QUANTITIES	ESTIMATED ROAD QUANTITIES	ESTIMATED SHOULDER 1 QUANTITIES	ESTIMATED SHOULDER 2 QUANTITIES	
						STA 0+77.00 - STA 235+77.76	STA 0+77.00 - STA 23+50.00	STA 23+50.00 - STA 235+77.76	
		2011.601	CONSTRUCTION SURVEYING	LUMP SUM	1	0.53	0.03	0.44	
		2021.501	MOBILIZATION	LUMP SUM	1	0.53	0.03	0.44	
		2101.511	CLEARING AND GRUBBING	LUMP SUM	1			1	
1	A	2104.501	REMOVE PIPE CULVERTS	(P) LIN FT	505			505	
	D	2104.501	REMOVE GUARDRAIL - PLATE BEAM	LIN FT	141			141	
	A	2104.503	REMOVE CONCRETE WALK	SQ FT	41			41	
	A	2104.505	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	(P) SQ YD	2058			2058	
		2104.505	REMOVE BITUMINOUS SHOULDER PAVEMENT	(P) SQ YD	389			389	
	D	2104.509	REMOVE ECCENTRIC LOADER BCT	EACH	13			13	
	A	2104.509	REMOVE PIPE APRON	EACH	9			9	
4		2104.509	REMOVE MAIL BOX SUPPORT	EACH	2			2	
	D	2104.509	REMOVE GUARDRAIL POST	EACH	216			216	
13	A	2104.511	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	9			9	
	A	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	1794	132	44	1618	
	D	2104.521	SALVAGE GUARDRAIL-PLATE BEAM	LIN FT	1366			1366	
3	F	2104.523	SALVAGE CONCRETE APRON	EACH	1			1	
14		2104.523	SALVAGE SIGN TYPE C	EACH	1			1	
17	F	2105.607	COMMON BORROW SPECIAL (LV)	CU YD	550			550	
	B	2118.502	AGGREGATE SURFACING (LV), CLASS 5	CU YD	135			135	
	B	2118.607	AGGREGATE SURFACING (CV) CLASS 1	CU YD	470		45	425	
4,16		2123.503	MOTOR GRADER	HOURL	60	35	2	23	
4,16		2123.525	8 TON STEEL-WHEELER ROLLER	HOURL	60	35	2	23	
12		2130.501	WATER	M GALLON	25	15	1	9	
5,19,20	B	2215.501	FULL DEPTH RECLAMATION	(P) SQ YD	99790	57900	4051	37839	
	B	2211.503	AGGREGATE BASE (CV) CLASS 5	CU YD	610			610	
19,20	B	2232.501	MILL BITUMINOUS SURFACE (6.0")	(P) SQ YD	41890		4088	37802	
19,20	B	2232.501	MILL BITUMINOUS SURFACE (8.5")	(P) SQ YD	57900	57900			
15	B	2357.606	BITUMINOUS MATERIAL FOR SHOULDER TACK	GALLON	3620		350	3270	
6	B	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	TON	19046	9988	815	8243	
6	B	2360.502	TYPE SP 12.5 NON WEARING COURSE MIXTURE (3,B)	TON	6658	6658			
	F	2451.507	GRANULAR BEDDING (CV)	CU YD	50			50	
	F	2501.511	15" CP PIPE CULVERT (SMOOTH)	LIN FT	449			449	
	F	2501.511	18" CP PIPE CULVERT (SMOOTH)	LIN FT	62			62	
	F	2501.515	15" GS PIPE APRON	EACH	39			39	
	F	2501.515	18" GS PIPE APRON	EACH	8			8	
7	F	2501.561	48" RC PIPE CULVERT DESIGN 3006 CLASS V	LIN FT	40			40	
3	F	2501.573	INSTALL CONCRETE APRON	EACH	1			1	
18	G	2501.603	CLEAN DRAINAGE DITCH	LIN FT	4257			4257	
	C	2504.602	ADJUST GATE VALVE AND BOX	EACH	1			1	
		2506.501	CONST. DRAINAGE STRUCTURE DES 84-4020	LIN FT	8			8	
		2506.516	CASTING ASSEMBLY	EACH	1			1	
	F	2511.501	RANDOM RIPRAP CLASS III	CU YD	171			171	
	E	2521.501	4" CONCRETE WALK	SQ FT	36			36	
	E	2531.618	TRUNCATED DOMES	SQ FT	16			16	
4		2540.602	MAIL BOX SUPPORT	EACH	2			2	
8	D	2554.523	END TREATMENT - TANGENT TERMINAL	EACH	11			11	
	D	2554.602	POST ASSEMBLY - PLATE BEAM	EACH	216			216	
	D	2554.602	LOWER GUARDRAIL POSTS	EACH	237			237	
	D	2554.603	INSTALL GUARDRAIL	LIN FT	1366			1366	
		2563.601	TRAFFIC CONTROL	LUMP SUM	1	0.53	0.03	0.44	
	H	2564.531	SIGN PANELS TYPE C	SQ FT	5			5	
14		2564.537	INSTALL SIGN TYPE C	EACH	1			1	
	J	2573.502	SILT FENCE, TYPE MS	LIN FT	10998		1673	9325	
	J	2573.530	STORM DRAIN INLET PROTECTION	EACH	4			4	
	J	2573.533	SEDIMENT CONTROL LOG TYPE ROCK	LIN FT	777			777	
		2573.535	STABILIZED CONSTRUCTION EXIT	LUMP SUM	1	0.53	0.03	0.44	
	J	2573.560	CULVERT END CONTROLS	EACH	42		3	39	
9	K	2574.508	FERTILIZER TYPE 4	POUND	658		41	617	
	K	2575.501	SEEDING	(P) ACRE	6		0.34	5.66	
10	K	2575.502	SEED MIXTURE 33-361	POUND	192		12	180	
11	K	2575.511	MULCH MATERIAL TYPE 3	TON	5		0.61	4.39	
	K	2575.519	DISK ANCHORING	ACRE	3		0.31	2.69	
	K	2575.523	EROSION CONTROL BLANKETS CATEGORY 3	SQ YD	13788		142	13646	
2		2582.502	4" DOUBLE SOLID LINE PAINT	LIN FT	23100	23100			
	I	2582.502	4" SOLID LINE EPOXY	LIN FT	55700		4531	51169	
	I	2582.502	4" BROKEN LINE EPOXY	LIN FT	6000	6000			
	I	2582.502	4" DOUBLE SOLID LINE EPOXY	LIN FT	8090	8090			

NOTES:	
1	INCLUDES APRONS.
2	INCLUDED FOR TRAFFIC CONTROL OPERATIONS.
3	48" RCP APRON.
4	AS DIRECTED BY THE ENGINEER.
5	2" BITUMINOUS AND 4" AGGREGATE BASE CLASS 5 ON MAINLINE. 1.0" BITUMINOUS AND 5.0" AGGREGATE BASE ON SHOULDERS.
6	COMPUTED AT A RATE OF 115 LBS./SQ. YD./IN. MUST BE CONSTRUCTED IN THE LIFTS SHOWN ON THE TYPICAL SECTIONS.
7	20 LIN. FT. TO BE USED AS DIRECTED BY THE ENGINEER.
8	SKT-350 OR ET-PLUS.
9	ANALYSIS 18-1-8 APPLIED AT A RATE OF 120 LBS./ACRE.
10	APPLIED AT A RATE OF 35 LBS./ACRE.
11	APPLIED AT A RATE OF 2 TONS/ACRE.
12	APPLIED AT A RATE OF 0.25 GALLONS/SQ. YD. AS DIRECTED BY THE ENGINEER.
13	SIDEWALK.
14	NO PASSING ZONE (DOUBLE POSTS)
15	APPLIED AT A RATE OF 0.25 GALLONS/SQ. YD.
16	FLAGGERS ARE INCIDENTAL.
17	FILL MATERIAL OVER 48" PIPE EXTENSION.
18	SEE SPECIAL PROVISIONS.
19	ANY EXCESS MATERIAL MOVED ONSITE OR REMOVED FROM SITE IS INCIDENTAL.
20	RECLAMATION OR MILLING MATERIAL TO BE USED FOR TEMPORARY ACCESS ON DRIVEWAYS THROUGHOUT THE PROJECT AND WILL BE CONSIDERED INCIDENTAL.

EXISTING UTILITIES	
COMPANY	SERVICE
GOPHER STATE ONE CALL	LOCATORS
CITY OF DULUTH	STREET LIGHTS, SIGNALS, WATER, GAS, SANITARY AND STORM SEWER
DULUTH NORTH SHORE SANITARY DISTRICT	SANITARY SEWER
MINNESOTA DEPARTMENT OF TRANSPORTATION	STREET LIGHTS
MINNESOTA POWER	ELECTRIC POWER
NORTHEAST SERVICE COOPERATIVE	FIBER OPTIC
CENTURY LINK	TELEPHONE
LAKE CONNECTIONS	FIBER OPTIC
CHARTER COMMUNICATIONS	CABLE TV

STANDARD PLATES	
THESE STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY	
PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE
3006G	GASKET JOINT FOR R.C. PIPE
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3133D	RIPRAP AT RCP OUTLETS
4020J	MANHOLE OR CATCH BASIN
4143E	STOOL GRATE & CONCRETE FRAME
8000J	CHANNELIZERS
8338D	W-BEAM GUARDRAIL & END ANCHORAGES
9000E	APPROACHES AND ENTRANCES - RECOMMENDED STANDARDS
9102E	TURF ESTABLISHMENT AREAS (AT PIPE CULVERT ENDS)
9350A	MAILBOX SUPPORT

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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


Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



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DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

STATEMENT OF ESTIMATED QUANTITIES

FILE NO.
DULUT 135859

3
85

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A - REMOVALS & SAWCUTS							
STATION TO STATION	LOCATION	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104
		REMOVE PIPE APRON	REMOVE PIPE CULVERTS	REMOVE SIDEWALK	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	SAWING CONCRETE PAVEMENT (FULL DEPTH)	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
		EACH	LIN FT	SQ FT	SQ YD	LIN FT	LIN FT
0+77.0	LT. & RT. (PROJECT START)						94
23+43.5	RT.						44
32+02.2	RT.						18
37+22.7	RT.						20
39+10.8	RT.						48
62+93.2	RT.						18
64+39.8	RT.						18
80+22.4	RT.						28
80+58.3	LT.				13		
81+42.8	RT.						24
84+48.3	LT.				36		12
89+49.0	LT.				57		12
90+48.8	LT.		20				
93+63.0	LT.				45		16
96+24.0	LT.				42		16
97+67.8	LT.		32		44		12
98+97.0	LT.				34		16
99+26.6	RT.						36
100+62.4	RT.						32
103+08.4	LT.		40				
104+66.6	LT.		25				
105+81.8	LT.		28		37		12
111+05.8	LT.						57
116+50.7	LT.						20
121+30.4	RT.			25		5	
121+30.1	LT.			16		4	
122+48.9	LT.						45
122+52.0	RT.						24
124+56.8	RT.		30				22
128+91.9	RT.						20
130+57.8	LT.				26		10
133+30.1	LT.				25		14
134+84.8	LT.		20		29		10
136+12.7	LT.		20		30		12
141+64.8	LT.				46		20
143+53.9	LT.				27		12
144+29.7	LT.				28		12
145+76.3	LT.		20		43		12
153+23.7	RT.						20
154+97.5	RT.						28
156+83.0	LT.						40
161+58.0	LT.		26		43		12
167+06.1	LT.				42		14
168+60.5	LT.				82		26
172+21.8	LT.		31		50		12
173+34.4	LT.	2			31		12
174+38.3	LT.				13		
176+15.9	LT.				32		12
177+16.0	LT.				31		12
178+96.9	LT.				30		10
181+06.4	LT.				30		12
181+90.5	LT.				32		12
182+57.1	LT.				34		12
188+54.6	LT.				41		12
189+45.4	LT.						20
191+91.0	LT.		27				
CONTINUED ON THIS PAGE							

A - REMOVALS & SAWCUTS - CONTINUED							
STATION TO STATION	LOCATION	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104
		REMOVE PIPE APRON	REMOVE PIPE CULVERTS	REMOVE CONCRETE WALK	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	SAWING CONCRETE PAVEMENT (FULL DEPTH)	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)
		EACH	LIN FT	SQ FT	SQ YD	LIN FT	LIN FT
200+50.3	LT.		27				
200+89.6	LT.				38		12
202+38.4	LT.		26		45		10
203+43.5	LT.				17		
204+26.1	RT.						16
205+58.5	RT.						24
210+41.8	LT.		21		37		14
211+01.7	LT.		21		36		14
212+12.4	LT.				38		12
213+35.1	LT.	2					
215+27.7	LT.				46		16
216+20.0	LT.				45		16
216+76.0	LT.	1			38		12
217+52.8	RT.				40		14
218+65.1	LT.	1			38		10
219+38.1	LT.				45		12
219+69.1	RT.				51		24
220+69.4	LT.	1					14
220+88.7	RT.		20		30		16
221+44.0	RT.				35		14
223+05.8	RT.				44		18
223+32.9	LT.	2					18
223+40.4	RT.				47		18
224+33.1	RT.				45		20
224+92.8	RT.		30		42		14
227+12.3	LT.				33		12
227+13.7	RT.				50		20
227+87.5	RT.						14
229+01.5	LT.		21		32		14
230+05.4	RT.				35		12
230+91.4	LT.				52		18
233+05.3	LT.						215
233+55.8	RT.		20		46		13
235+58.3	RT.						39
235+63.3	LT.						29
235+77.76	LT. & RT. (PROJECT END)						38
PROJECT ITEM TOTALS		9	505	41	2058	9	1794

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



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DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

TABULATIONS

FILE NO.
DULUT 135859

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B - BITUMINOUS, MILLING, RECLAMATION AND AGGREGATE

		SPEC. 2118	SPEC. 2211	SPEC. 2215	SPEC. 2118	SPEC. 2232	SPEC. 2232	SPEC. 2357	SPEC. 2360	SPEC. 2360
STATION TO STATION	LOCATION	AGGREGATE SURFACING (LV), CLASS 5	AGGREGATE BASE (CV) CLASS 5	FULL DEPTH RECLAMATION	AGGREGATE SURFACING (CV) CLASS 1	MILL BITUMINOUS SURFACE (6.0")	MILL BITUMINOUS SURFACE (8.5")	BITUMINOUS MATERIAL FOR SHOULDER TACK	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	TYPE SP 12.5 NON WEARING COURSE MIXTURE (3,B)
		CU YD	CU YD	SQ YD	CU YD	SQ YD	SQ YD	GALLON	TON	TON
0+77.0 - 235+77.8	MAINLINE (INCLUDES ROAD CONNECTIONS)			57900			57900		9988	6658
0+77.0 - 235+77.8	LT. & RT. (SHOULDERS)			41890	470	41890		3620	8430	
0+77.0 - 235+77.8	LT. & RT. (RESIDENTIAL DRIVEWAYS)	135	610						628	
PROJECT ITEM TOTALS		135	610	99790	470	41890	57900	3620	19046	6658

C - UTILITY ADJUSTMENTS

		SPEC. 2504
STATION TO STATION	LOCATION	ADJUST GATE VALVE AND BOX EACH
156+69.6	28.9' LT.	1
PROJECT ITEM TOTALS		1

E - SIDEWALK

		SPEC. 2521	SPEC. 2531
STATION TO STATION	LOCATION	4" CONCRETE WALK	TRUNCATED DOMES
		SQ FT	SQ FT
121+30.2	RT.	20	9
121+31.0	LT.	16	7
PROJECT ITEM TOTALS		36	16

D - GUARDRAIL

		SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2104	SPEC. 2554	SPEC. 2554	SPEC. 2554	SPEC. 2554
STATION TO STATION	LOCATION	SALVAGE GUARDRAIL - PLATE BEAM	REMOVE GUARDRAIL - PLATE BEAM	REMOVE GUARDRAIL POST	REMOVE ECCENTRIC LOADER BCT	POST ASSEMBLY - PLATE BEAM	INSTALL GUARDRAIL	END TREATMENT - TANGENT TERMINAL	LOWER GUARDRAIL POSTS
		LIN FT	LIN FT	EACH	EACH	EACH	LIN FT	EACH	EACH
47+51.0 - 49+50.2	RT.		115		2				
48+37.9 - 49+77.2	LT.	65		10	2	10	65	2	
75+97.3 - 79+73.1	RT.	300	13	46	2	46	300	2	
86+55.3 - 89+58.2	RT.								41
90+40.7 - 93+14.3	RT.	200		32	2	32	200	2	
148+38.1 - 152+14.4	RT.	500		80	2	80	500	2	
155+19.6 - 159+77.1	RT.								63
157+10.6 - 159+26.0	LT.	188		30	1	30	188	1	
175+42.1 - 181+71.7	RT.								93
185+74.1 - 187+71.1	LT.	113	13	18	2	18	113	2	
186+01.8 - 189+09.8	RT.								40
PROJECT ITEM TOTALS		1366	141	216	13	216	1366	11	237

NOTES:

- ① 20 LIN. FT. TO BE USED AS DIRECTED BY THE ENGINEER.
② CASTING NO. 731.

F - DRAINAGE

									SPEC. 2501	SPEC. 2501	SPEC. 2501	SPEC. 2501	SPEC. 2506	SPEC. 2506	SPEC. 2451	SPEC. 2104	SPEC. 2105	SPEC. 2501	SPEC. 2501	SPEC. 2511
				STRUCT. NO.																
STATION TO STATION	LOCATION	NORTHING	EASTING	INLET	OUTLET	INVERT IN	DRAINS TO	SLOPE	15" CP PIPE CULVERT (SMOOTH)	18" CP PIPE CULVERT (SMOOTH)	15" GS PIPE APRON	18" GS PIPE APRON	CONST. DRAINAGE STRUCTURE DES. 84-4020	CASTING ASSEMBLY	GRANULAR BEDDING (CV)	SALVAGE CONCRETE APRON	COMMON BORROW SPECIAL (LV)	INSTALL CONCRETE APRON	48" RC PIPE CULVERT DESIGN 3006 CLASS V	RANDOM RIPRAP CLASS III
						ELEV.	ELEV.		LIN FT	LIN FT	EACH	EACH	LIN FT	EACH	CU YD	EACH	CU YD	EACH	LIN FT	CU YD
48+73.8	RT.				19		633.00						8	1	50	1	550	1	40	171
90+48.8	29' LT.	3368895.86	4877502.22	20	21	625.42	625.29	0.64%	16		2									
97+67.5	34' LT.	3369255.87	4878121.08	22	23	623.61	623.18	1.25%	31		2									
103+08.0	30' LT.	3369610.17	4878516.21	24	25	624.88	624.65	0.56%	37		2									
104+66.6	30' LT.	3369724.34	4878626.30	27	26	627.30	627.10	0.67%	26		2									
105+80.0	29' LT.	3369804.68	4878706.01	29	28	628.45	628.13	1.52%	28		2									
124+57.6	36' RT.	3371047.13	4880109.36	30	31	618.00	617.84	0.50%	29		2									
134+83.8	29' LT.	3371806.73	4880803.89	33	32	624.63	624.49	0.50%	24		2									
136+12.0	29' LT.	3371898.52	4880893.38	35	34	626.49	626.36	0.51%	22		2									
145+77.4	31' LT.	3372588.02	4881572.96	36	37	632.04	631.88	0.53%	26		2									
161+56.7	30' LT.	3373447.49	4882903.52	38	39	630.23	630.06	0.51%	30		2									
172+20.2	32' LT.	3373931.07	4883846.37	41	40	624.33	623.42	2.32%		34		2								
173+32.2	34' LT.	3373996.24	4883932.88	43	42	626.37	626.06	1.27%				2								
191+90.7	34' LT.	3375028.00	4885457.63	44	45	628.45	628.13	0.97%		28		2								
202+37.7	33' LT.	3375606.74	4886273.37	46	47	622.27	622.12	0.50%	26		2									
210+41.2	30' LT.	3376136.51	4886879.51	49	48	620.84	620.05	3.10%	22		2									
211+00.4	32' LT.	3376176.66	4886923.07	51	50	621.24	621.08	0.63%	22		2									
213+35.1	32' LT.	3376330.41	4887100.50	53	52	621.26	620.64	2.01%				2								
216+85.6	33' LT.	3376561.74	4887363.83	54		624.02														
218+63.6	32' LT.	3376677.98	4887498.62	55		624.82														
220+69.7	29' LT.	3376810.97	4887656.09	56		625.34					1									
220+87.6	29' RT.	3376778.70	4887707.85	57	58	625.29	625.16	1.00%	22		2									
223+36.2	30' LT.	3376986.11	4887856.96	60	59	623.88	623.67	0.61%			2									
224+91.6	42' RT.	3377034.28	4888020.94	61	62	622.53	622.38	0.50%	27		2									
227+12.3	33' LT.	3377235.75	4888138.28	64	63	624.74	623.49	5.14%	20		2									
229+00.2	29' LT	3377355.88	4888282.79	66	65	625.24	624.77	1.92%	21		2									
233+56.2	36' RT.	3377488.36	4888714.93	67	68	624.18	623.93	1.78%	21		2									
PROJECT ITEM TOTALS									449	62	39	8	8	1	50	1	550	1	40	171

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DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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


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H - SIGN PANELS TYPE C										
		POSTS				SIGN PANEL				
SIGN NO.	SIGN PANELS TYPE C	NO. & TYPE	KNEE BRACES QUANT.	LENGTH (FT.)	MTG. HT. (FT.) (1)	SIZE (IN.)	AREA (SQ. FT.)	TOTAL AREA (SQ. FT.)	CODE NO.	PANEL LEGEND
C-1	1	1-U		12	7	24 x 30	5.00	5.00	R2-1	SPEED LIMIT 40
PROJECT ITEM TOTALS								5.00		

I - PAVEMENT MARKINGS				
		SPEC. 2582	SPEC. 2582	SPEC. 2582
STATION TO STATION	LOCATION	4" SOLID LINE EPOXY	4" BROKEN LINE EPOXY	4" DOUBLE SOLID LINE EPOXY
		LIN FT	LIN FT	LINE FT
0+77.0 - 235+77.76	LT. (4" WHITE FOG LINE)	23500		
0+77.0 - 235+77.76	RT. (4" WHITE FOG LINE)	23500		
0+77.0 - 235+77.76	C/L	8700	6000	8090
PROJECT ITEM TOTALS		55700	6000	8090

G - CLEAN DRAINAGE DITCH		
		SPEC. 2501
STATION TO STATION	LOCATION	CLEAN DRAINAGE DITCH
		LIN FT
90+28.5 - 90+69.1	LT.	20
97+39.6 - 97+95.3	LT.	20
102+78.4 - 106+06.0	LT.	225
123+38.9 - 124+83.6	RT.	113
131+75.9 - 133+22.1	LT.	146
133+41.5 - 137+25.3	LT.	332
137+49.5 - 138+42.2	LT.	93
138+66.5 - 139+50.7	LT.	84
141+86.0 - 142+86.6	LT.	101
143+83.8 - 144+16.7	LT.	33
144+47.1 - 145+06.9	LT.	61
145+52.7 - 146+02.1	LT.	20
147+52.3 - 156+39.8	LT.	888
159+55.59- 159+69.8	LT.	10
160+01.1 - 166+23.2	LT.	587
169+65.8 - 170+79.8	LT.	114
171+89.6 - 173.19.6	LT.	87
173+44.9 - 174+23.2	LT.	76
174+78.6 - 176+07.7	LT.	129
188+25.7 - 188+72.9	LT.	15
191+64.1 - 192+17.3	LT.	20
200+00.0 - 200+63.8	LT.	64
201+00.9 - 203+14.9	LT.	183
210+08.5 - 211+98.6	LT.	140
212+26.1 - 212+49.6	LT.	24
212+63.6 - 213+19.7	LT.	57
213+50.6 - 215+14.2	LT.	164
215+38.5 - 216+06.4	LT.	68
216+85.9 - 216+95.9	LT.	10
218+78.2 - 218+88.1	LT.	10
220+45.4 - 220+55.3	LT.	10
220+64.4 - 221+10.6	RT.	20
223+09.2 - 223+63.3	LT.	20
224+66.9 - 225+08.6	RT.	15
226+05.3 - 229+16.6	LT.	278
233+33.2 - 233+79.2	RT.	20
PROJECT ITEM TOTALS		4257

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J - TEMPORARY EROSION CONTROL					
STATION TO STATION	LOCATION	SPEC. 2573	SPEC. 2573	SPEC. 2573	SPEC. 2573
		SILT FENCE, TYPE MS	STORM DRAIN INLET PROTECTION	SEDIMENT CONTROL LOG TYPE ROCK	CULVERT END CONTROLS
		LIN FT	EACH	LIN FT	EACH
1+00 - 6+50	RT	595			
2+16 - 6+00	LT	381			
8+00 - 9+00	LT & RT	200			
8+58	LT				1
11+67 - 12+67	LT & RT	200			
12+17	LT				1
16+23 - 17+23	LT & RT	200			
16+73	LT				1
22+50 - 23+09	RT	97			
24+13 - 24+74	LT	68			
24+20 - 29+00	RT	480			
24+56	LT				1
25+13 - 25+45	LT	39			
25+34	LT				1
33+50 - 37+11	RT	373			
34+24 - 37+26	LT	302			
35+03	LT				1
36+53	LT				1
40+26 - 46+00	RT	579			
42+27 - 43+50	LT	123			
42+83	LT				1
47+00 - 48+28	RT	134			
48+28 - 49+26	RT			130	
48+64 - 49+20	LT	56			
49+26 - 50+00	RT	86			
52+25 - 53+39	RT	121			
52+39 - 53+39	LT	101			
52+89	LT				1
57+50 - 59+75	RT	225			
57+51 - 60+00	LT	249			
57+88	LT				1
59+26	LT				1
61+36 - 62+35	LT	99			
61+48 - 62+60	RT	122			
70+00 - 71+00	LT & RT	200			
70+69	LT				1
81+58 - 82+69	RT	120			
81+71	LT				1
84+75 - 86+00	RT	125			
85+66	LT				1
90+92 - 92+00	LT	114			
90+99 - 91+96	RT			98	
91+43	LT				1
93+50 - 94+50	RT	100			
93+75 - 94+50	LT	84			
94+07	LT				1
95+50 - 97+75	RT	226			
100+50 - 101+63	LT	119			
100+90	LT				1
102+00 - 105+00	RT	300			
104+18	LT				1
109+00 - 110+00	LT & RT	201			
109+44	LT				1
110+82 - 112+00	RT	118			
111+43 - 112+17	LT	93			
111+71	LT				1
117+75 - 118+90	LT & RT	247			
CONTINUED ON THIS PAGE					

J - TEMPORARY EROSION CONTROL CONTINUED					
STATION TO STATION	LOCATION	SPEC. 2573	SPEC. 2573	SPEC. 2573	SPEC. 2573
		SILT FENCE, TYPE MS	STORM DRAIN INLET PROTECTION	SEDIMENT CONTROL LOG TYPE ROCK	CULVERT END CONTROLS
		LIN FT	EACH	LIN FT	EACH
118+36	LT				1
121+75 - 122+35	LT	73			
122+14	LT				1
122+38	LT		2		
122+61	LT		1		
125+20	LT				1
125+50 - 127+00	RT	151			
126+50 - 127+25	LT	75			
126+91	LT				1
130+00 - 132+00	RT	200			
130+35	LT				1
131+03 - 132+00	LT	102			
131+70	LT				1
136+00 - 142+00	RT	600			
140+10	LT				1
141+00 - 141+64	LT	70			
141+34	LT				1
147+00 - 148+00	LT & RT	100		100	
149+53 - 150+66	RT			112	
150+21	LT				1
157+85 - 158+98	RT			112	
159+22 - 159+75	LT	62			
165+75 - 166+81	LT & RT	213			
166+23	LT				1
168+50	LT		1		
170+75 - 174+99	RT	431			
171+18	LT				1
174+79	LT				1
179+26 - 180+50	LT	125			
179+48 - 180+60	RT			112	
179+83	LT				1
186+99 - 188+14	RT			113	
194+75 - 195+75	RT	103			
195+01 - 196+00	LT	98			
195+63	LT				1
198+75 - 199+75	LT & RT	201			
199+15	LT				1
203+25 - 204+11	RT	88			
203+58 - 204+25	LT	76			
204+00	LT				1
206+06 - 208+75	LT & RT	552			
206+84	LT				1
211+75 - 213+00	RT	125			
212+54	LT				1
216+19 - 216+93	RT	74			
216+58	LT				1
221+52 - 222+75	RT	132			
221+63 - 222+50	LT	87			
222+02	LT				1
225+50 - 226+50	LT & RT	200			
226+01	LT				1
230+11 - 231+87	RT	183			
231+09	LT				1
PROJECT ITEM TOTALS		10998	4	777	42

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K - TURF ESTABLISHMENT							
		SPEC. 2575	SPEC. 2575	SPEC. 2575	SPEC. 2575	SPEC. 2575	SPEC. 2574
STATION TO STATION	LOCATION	SEEDING	SEED MIXTURE 33-361	MULCH MATERIAL TYPE 3	DISK ANCHORING	EROSION CONTROL BLANKETS CATEGORY 3	FERTILIZER TYPE 4
		ACRE	POUND	TON	ACRE	SQ YD	POUND
0+39.2 - 16+00.0	RT.	0.15	5.21	0.30	0.15		17.86
0+95.3 - 16+00.0	LT.	0.22	7.73	0.44	0.22		26.51
16+00.0 - 18+25.0	LT.	0.01	0.42			56	1.45
16+00.0 - 18+00.0	RT.	0.02	0.61			81	2.08
18+25.0 - 24+77.1	LT.	0.02	0.78	0.04	0.02		2.69
18+00.0 - 31+00.0	RT.	0.09	3.27	0.19	0.09		11.20
25+10.1 - 31+12.3	LT.	0.02	0.84			112	2.88
31+00.0 - 35+25.0	RT.	0.02	0.58			78	2.00
31+12.3 - 34+19.7	LT.	0.01	0.42	0.02	0.01		1.45
34+19.7 - 37+50.0	LT.	0.01	0.26			34	0.88
35+25.0 - 40+75.0	RT.	0.06	2.16	0.12	0.06		7.40
37+50.0 - 42+75.0	LT.	0.03	1.13	0.06	0.03		3.88
40+75.0 - 42+50.0	RT.	0.02	0.54			71	1.84
42+50.0 - 47+74.5	RT.	0.02	0.84	0.05	0.02		2.89
42+75.0 - 45+25.0	LT.	0.00	0.08			11	0.28
45+25.0 - 48+74.6	LT.	0.02	0.73	0.04	0.02		2.50
47+74.5 - 49+75.0	RT.	0.11	3.85			513	13.21
48+74.6 - 49+50.0	LT.	0.00	0.15			21	0.53
49+50.0 - 70+25.0	LT.	0.14	4.77	0.27	0.14		16.34
49+75.0 - 52+24.9	RT.	0.01	0.29	0.02	0.01		1.01
52+24.9 - 53+25.0	RT.	0.02	0.78			104	2.67
53+25.0 - 59+75.0	RT.	0.03	0.88	0.05	0.03		3.03
59+75.0 - 62+81.5	RT.	0.06	2.00			266	6.85
63+00.6 - 65+49.9	RT.	0.03	0.90	0.05	0.03		3.09
65+49.9 - 67+25.0	RT.	0.00	0.10			13	0.34
67+25.0 - 70+75.0	RT.	0.02	0.60	0.03	0.02		2.06
70+25.0 - 71+00.0	LT.	0.00	0.02			3	0.08
70+75.0 - 71+25.0	RT.	0.01	0.18			24	0.62
71+00.0 - 72+86.2	LT.	0.01	0.18	0.01	0.01		0.60
71+25.0 - 119+99.9	RT.	0.38	13.38	0.76	0.38		45.87
73+25.0 - 74+49.9	LT.	0.01	0.28			37	0.94
74+49.9 - 89+42.1	LT.	0.14	4.81	0.28	0.14		16.50
89+55.9 - 98+94.1	LT.	0.11	3.92			522	13.44
99+04.8 - 101+00.0	LT.	0.02	0.53	0.03	0.02		1.83
101+00.0 - 101+44.5	LT.	0.01	0.30			39	1.01
101+44.5 - 102+07.2	LT.	0.00	0.10	0.01	0.00		0.33
102+18.8 - 106+25.2	LT.	0.15	5.18			689	17.75
106+25.2 - 114+75.0	LT.	0.07	2.40	0.14	0.07		8.25
114+75.0 - 118+90.4	LT.	0.04	1.45			193	4.97
118+90.4 - 130+00.4	LT.	0.12	4.36	0.25	0.12		14.94
119+99.9 - 121+27.8	RT.	0.00	0.04			5	0.13
121+32.8 - 122+40.2	RT.	0.01	0.39	0.02	0.01		1.33
122+62.5 - 130+00.4	RT.	0.07	2.28			304	7.82
130+00.4 - 139+78.0	LT.	0.34	11.92			1587	40.88
130+00.4 - 133+83.5	RT.	0.02	0.74	0.04	0.02		2.54
133+83.5 - 145+74.8	RT.	0.05	1.84			245	6.30
139+90.3 - 141+63.4	LT.	0.02	0.77	0.04	0.02		2.64
141+76.4 - 166+99.3	LT.	0.87	30.40			4048	104.24
145+74.8 - 171+08.0	RT.	0.18	6.28	0.36	0.18		21.54
167+12.8 - 168+48.1	LT.	0.03	1.00	0.06	0.03		3.44
CONTINUED ON THIS PAGE							

K - TURF ESTABLISHMENT CONTINUED							
		SPEC. 2575	SPEC. 2575	SPEC. 2575	SPEC. 2575	SPEC. 2575	SPEC. 2574
STATION TO STATION	LOCATION	SEEDING	SEED MIXTURE 33-361	MULCH MATERIAL TYPE 3	DISK ANCHORING	EROSION CONTROL BLANKETS CATEGORY 3	FERTILIZER TYPE 4
		ACRE	POUND	TON	ACRE	SQ YD	POUND
168+74.0 - 176+09.9	LT.	0.21	7.46			994	25.59
171+08.0 - 173+50.0	RT.	0.01	0.25			33	0.85
173+50.0 - 180+03.2	RT.	0.04	1.57	0.09	0.04		5.39
176+21.7 - 179+74.9	LT.	0.07	2.49	0.14	0.07		8.55
179+74.9 - 180+50.0	LT.	0.00	0.08			11	0.29
180+03.2 - 180+49.9	RT.	0.00	0.11			15	0.39
180+49.9 - 186+98.0	RT.	0.03	1.13	0.06	0.03		3.87
180+50.0 - 185+37.1	LT.	0.10	3.42	0.20	0.10		11.74
185+53.8 - 192+25.1	LT.	0.09	3.18			423	10.89
188+50.0 - 198+50.0	RT.	0.05	1.80	0.10	0.05		6.17
192+25.1 - 198+75.0	LT.	0.08	2.91	0.17	0.08		9.98
198+50.0 - 200+25.0	RT.	0.00	0.08			10	0.26
198+75.0 - 203+35.5	LT.	0.14	4.80			639	16.44
200+25.0 - 201+50.0	RT.	0.00	0.11	0.01	0.00		0.39
201+50.0 - 204+19.0	RT.	0.01	0.19			26	0.66
203+53.3 - 209+75.0	LT.	0.09	3.22	0.18	0.09		11.05
204+32.9 - 219+57.7	RT.	0.09	3.04	0.17	0.09		10.42
209+75.0 - 216+12.2	LT.	0.22	7.84			1044	26.88
216+27.2 - 216+71.0	LT.	0.01	0.30	0.02	0.01		1.02
216+81.2 - 217+00.1	LT.	0.01	0.22			29	0.74
217+00.1 - 218+60.3	LT.	0.03	0.88	0.05	0.03		3.02
218+70.8 - 219+33.4	LT.	0.02	0.68			91	2.33
219+42.3 - 219+83.7	LT.	0.01	0.26	0.01	0.01		0.89
219+80.8 - 221+37.4	RT.	0.03	1.08			144	3.70
219+92.5 - 232+01.5	LT.	0.19	6.70			892	22.96
221+50.3 - 224+27.8	RT.	0.03	1.08	0.06	0.03		3.72
224+41.8 - 227+04.0	RT.	0.04	1.57			209	5.37
227+23.5 - 229+99.7	RT.	0.03	1.15	0.07	0.03		3.96
230+10.2 - 233+49.2	RT.	0.02	0.85			113	2.92
233+62.4 - 235+41.7	RT.	0.01	0.45			60	1.55
234+37.0 - 235+54.3	LT.	0.01	0.25	0.01	0.01		0.87
PROJECT ITEM TOTALS		5.48	192	5	2.52	13788	658

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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


Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



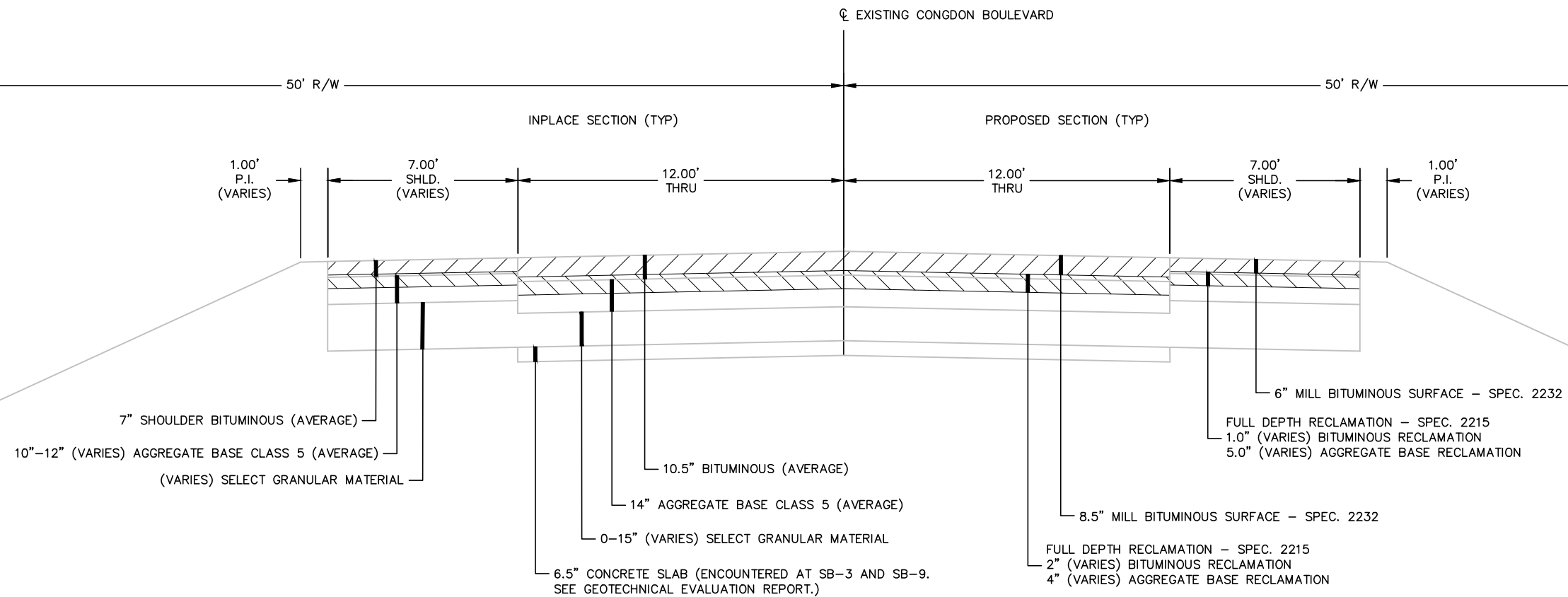
PHONE: 218.279.3000
418 W SUPERIOR ST STE 200
DULUTH, MN 55802-1512
www.sehinc.com

DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

TABULATIONS

FILE NO.
DULUT 135859

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APPLIES:
CONGDON BOULEVARD
FROM STA 0+77.00 TO STA 235+77.76

NOT TO SCALE

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



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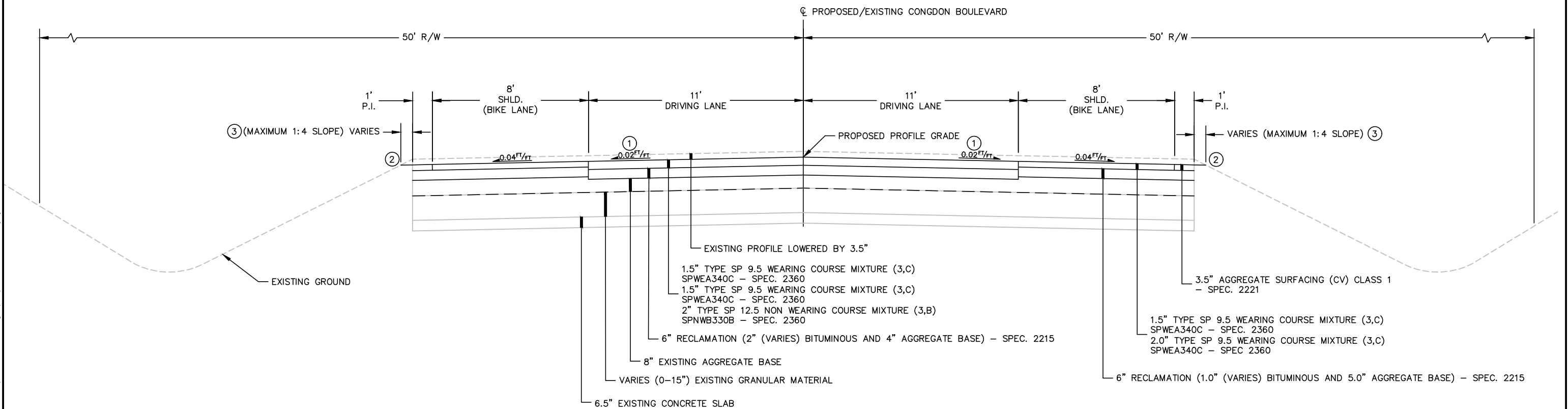
DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

EXISTING TYPICAL SECTION

FILE NO.
DULUT 135859

9
85

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APPLIES:
CONGDON BOULEVARD
FROM STA 0+77.00 TO STA 235+77.76

- NOTES:
- SEE SHEETS 21-29 FOR SUPERELEVATIONS.
MAXIMUM SUPERELEVATION ROLLOVER 0.07 FT./FT.
 - BITUMINOUS MATERIAL FOR SHOULDER TACK SPRAYED
ON A STRIP ALONG THE EDGE OF BITUMINOUS 2.0' OUT
FROM THE SHOULDER P.I. WITH A MINIMUM WIDTH OF
3.0', AS DIRECTED BY THE ENGINEER.
 - SEE CONSTRUCTION LIMITS FOR ACTUAL TIE DOWN
POINTS.

NOT TO SCALE

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913

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PHONE: 218.279.3000
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DULUTH, MN 55802-1512
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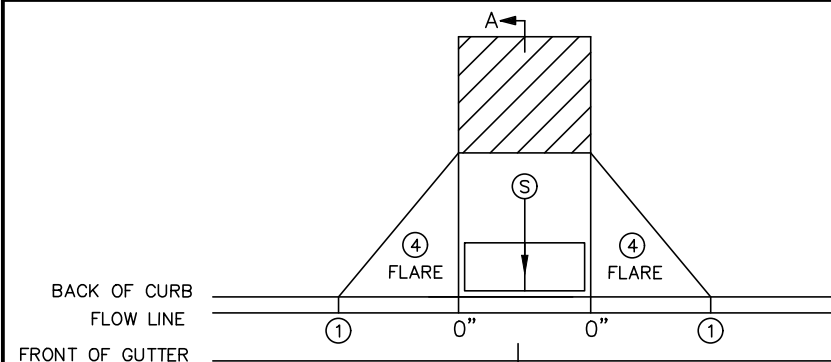
DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

PROPOSED TYPICAL SECTION

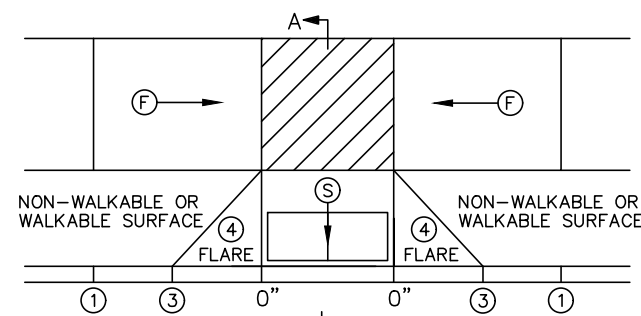
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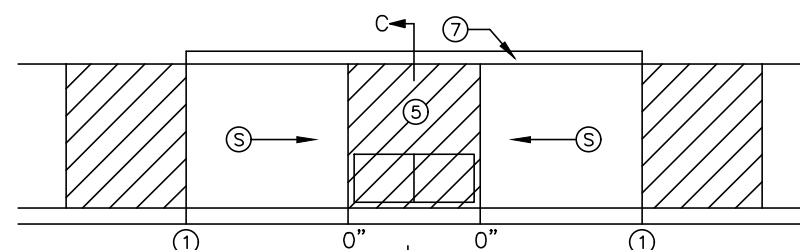
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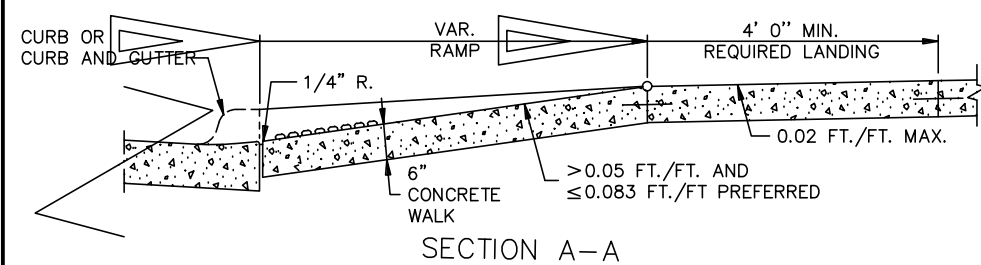
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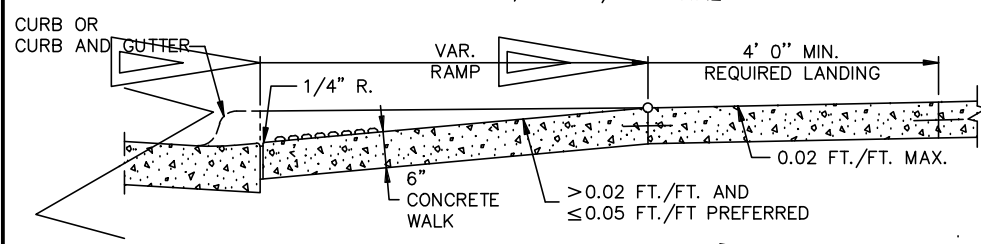
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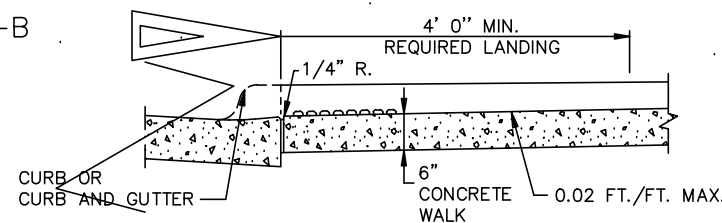
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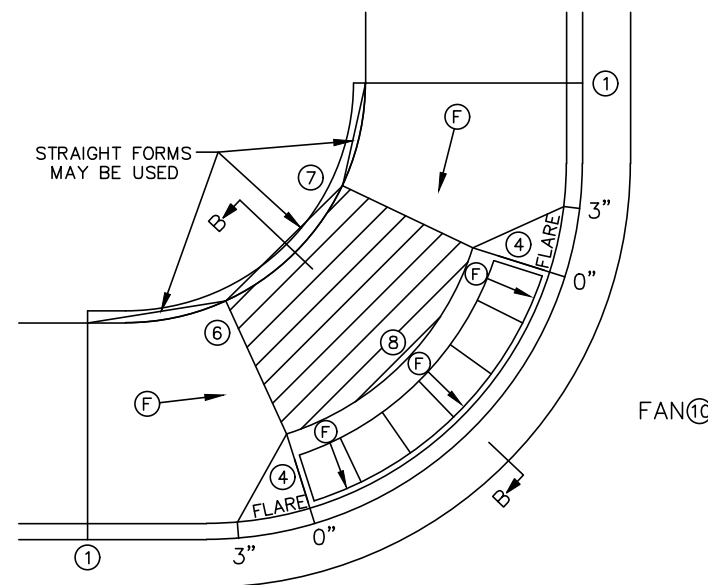
SECTION A-A
PERPENDICULAR/TIERED/DIAGONAL



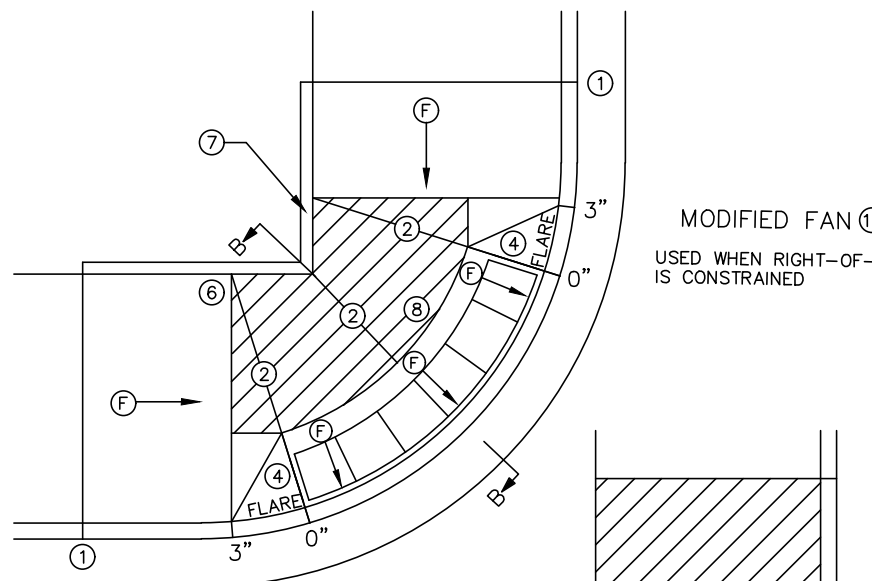
SECTION B-B
FAN



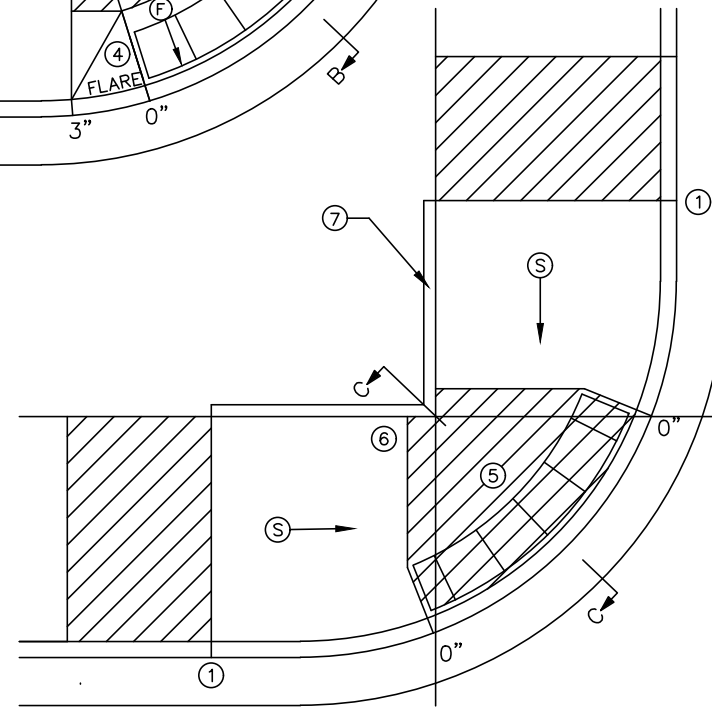
SECTION C-C
PARALLEL/DEPRESSED CORNER



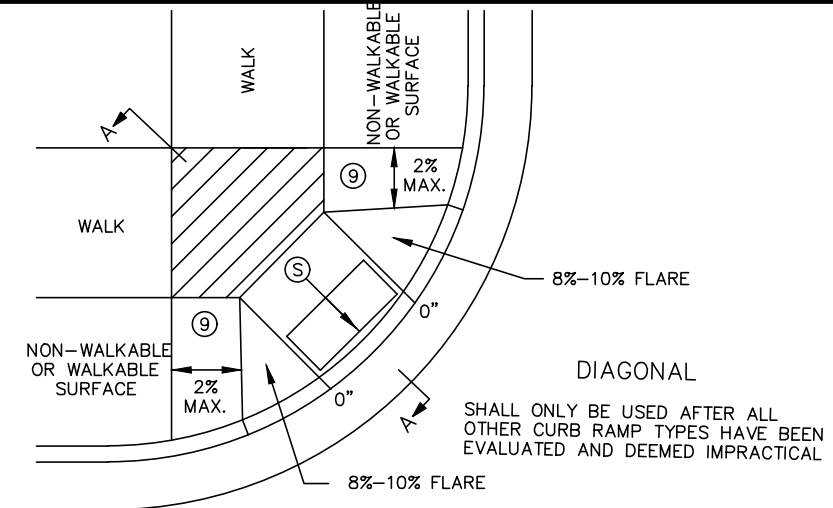
FAN ⑩



MODIFIED FAN ⑩
USED WHEN RIGHT-OF-WAY
IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

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 ⑩ 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.
- ⑩ 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%.
- ⑩ 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%.
- ⑩ 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 PAR.
- X" CURB HEIGHT

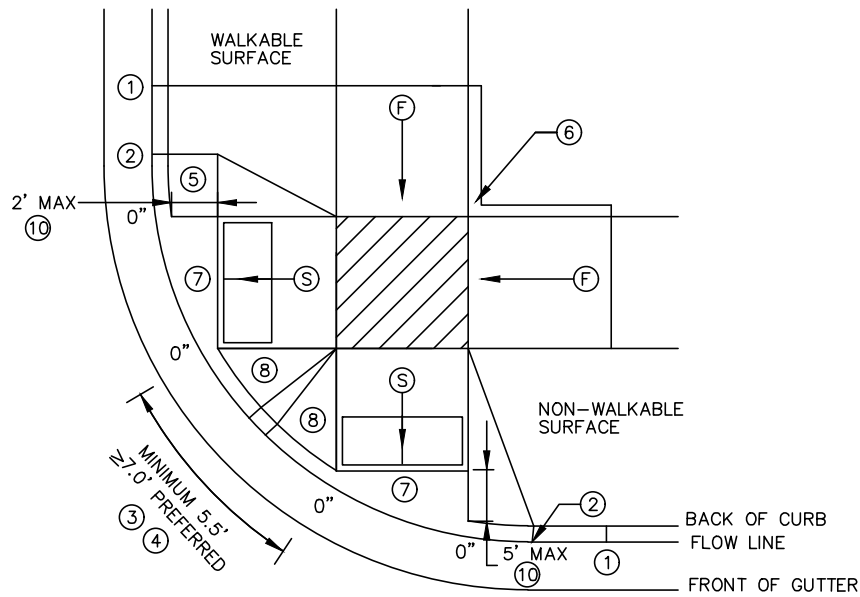
REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

MINNESOTA
DEPARTMENT OF TRANSPORTATION
STATE DESIGN ENGINEER

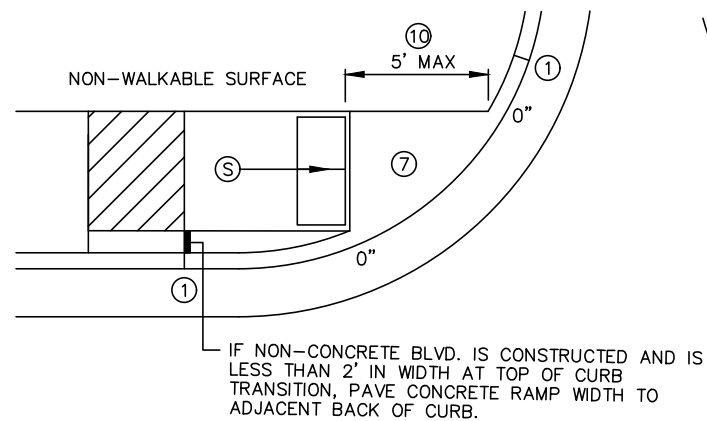
REVISED:
APPROVED:
1-23-2017

PEDESTRIAN CURB RAMP DETAILS
STANDARD PLAN 5-297.250 11 OF 85

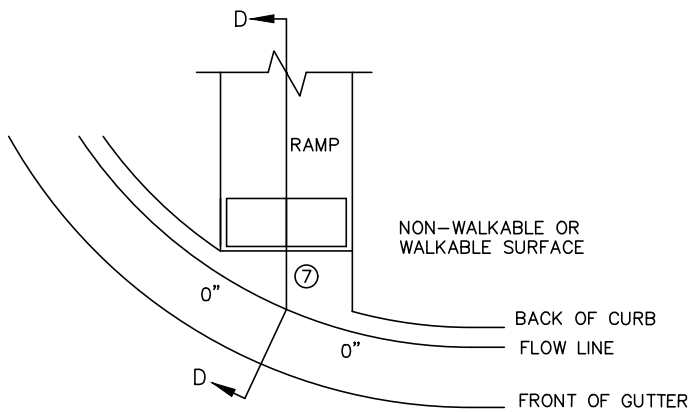
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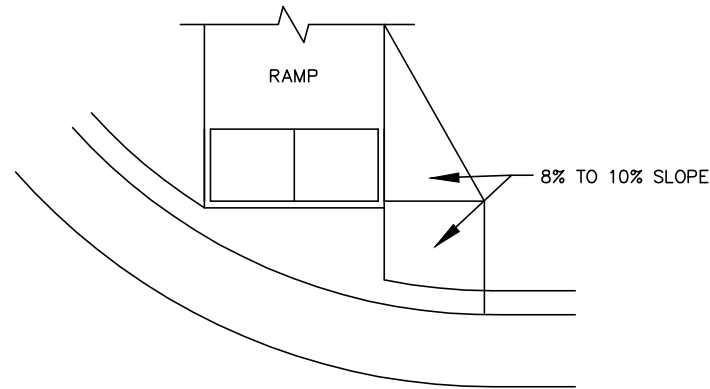
COMBINED DIRECTIONAL ⑨



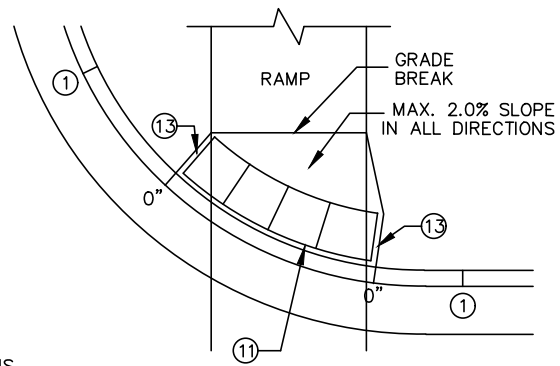
STANDARD ONE-WAY DIRECTIONAL ⑨



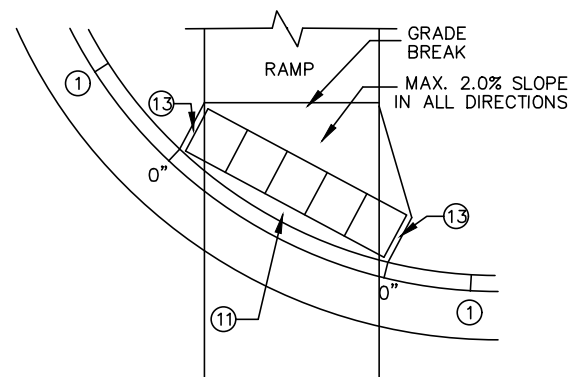
CURB FOR DIRECTIONAL RAMPS ⑭



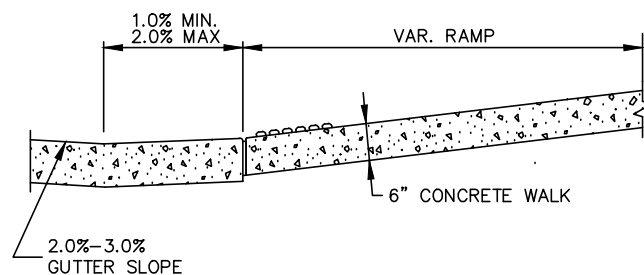
DIRECTIONAL RAMP WALKABLE FLARE



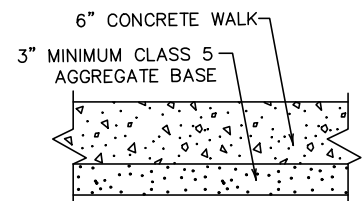
DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫



ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



SECTION D-D



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

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.

LEGEND

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

⑤ 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%.

⑥ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

⑦ 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



Tom S. J. H.
STATE DESIGN ENGINEER

REVISED:

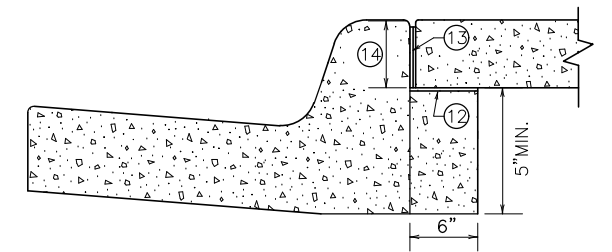
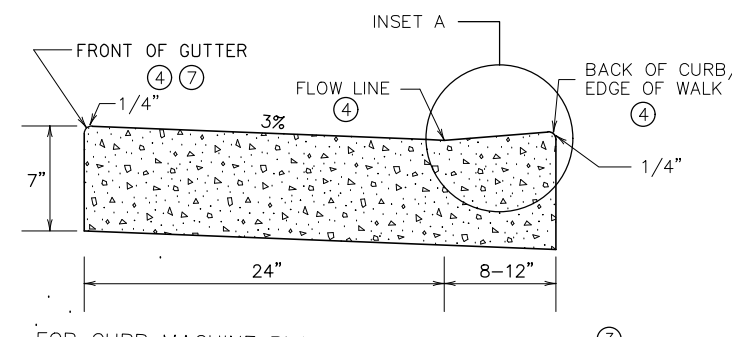
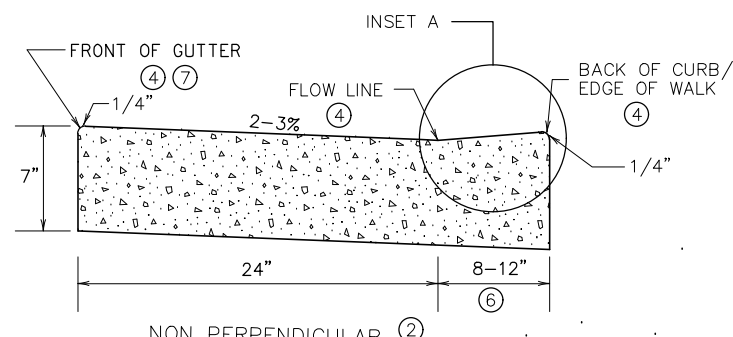
APPROVED:

1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

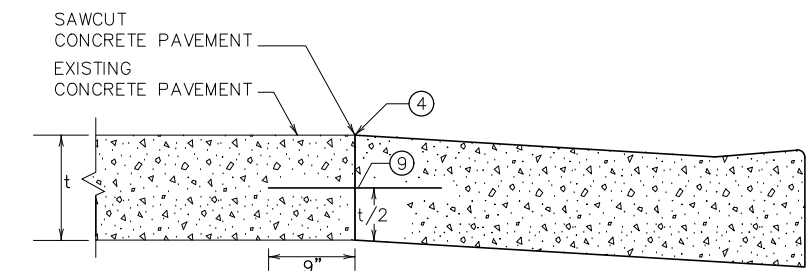
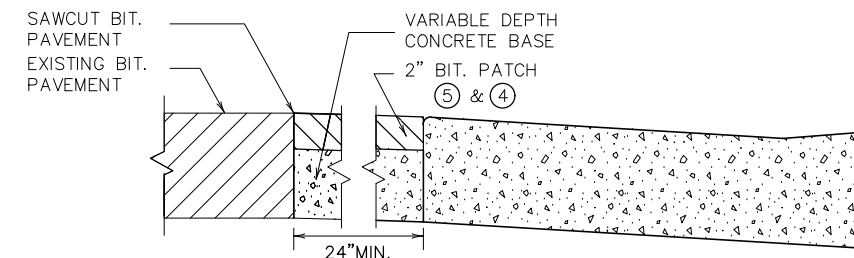
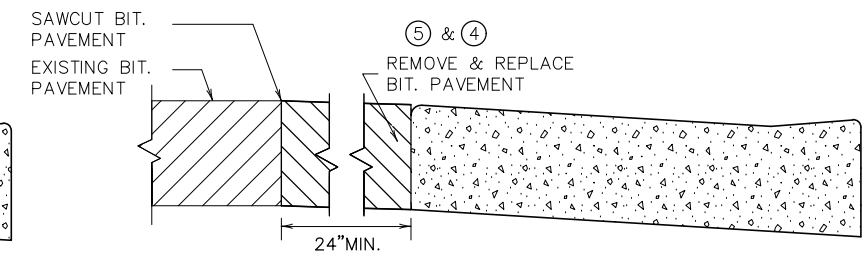
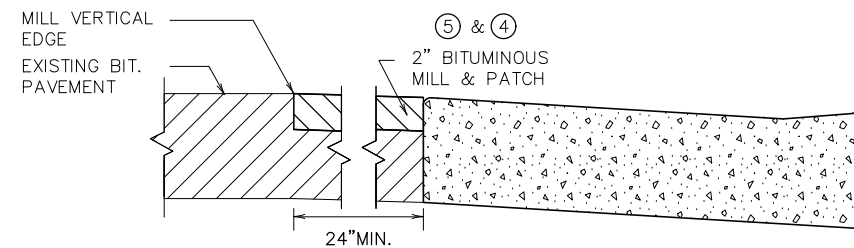
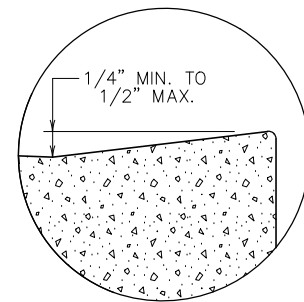
12 OF 85



OPTIONAL SILL CURB WHEN SIDEWALK
IS AT BACK OF CURB

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

PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



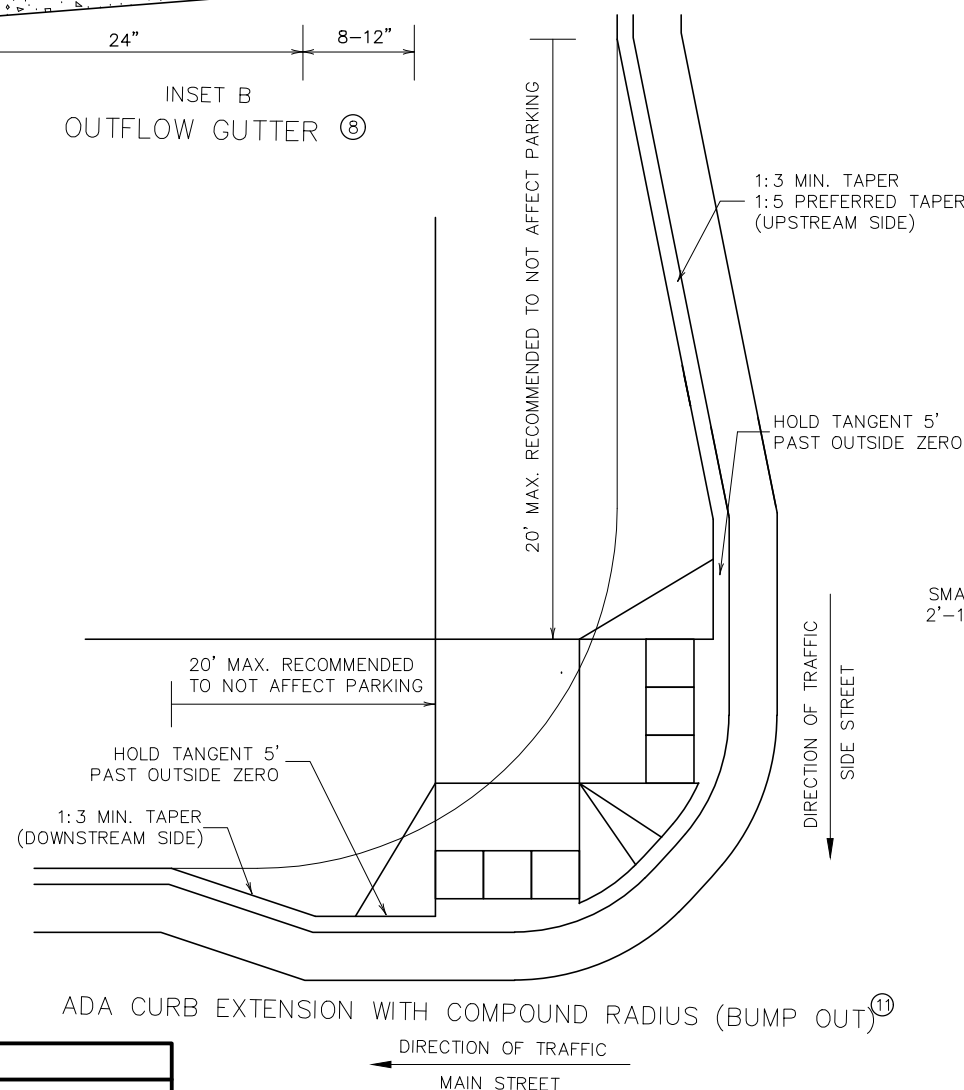
ONLY ALLOWED PER ENGINEER'S APPROVAL

PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER FOR USE ON CURB RAMP RETROFITS

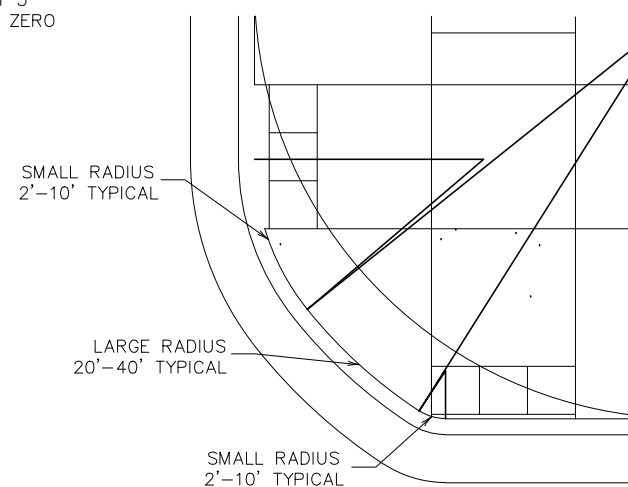
POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM. NO PONDING SHALL BE PRESENT IN THE PAR.

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 CURB 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.

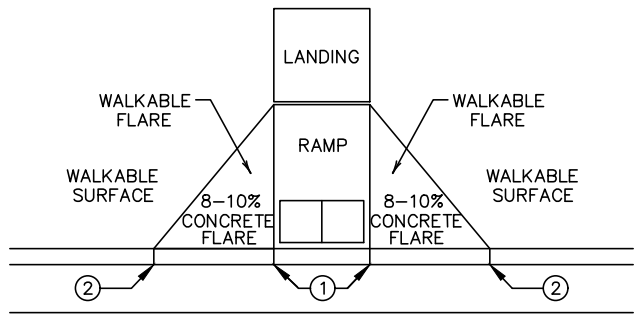


ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT)⁽¹¹⁾

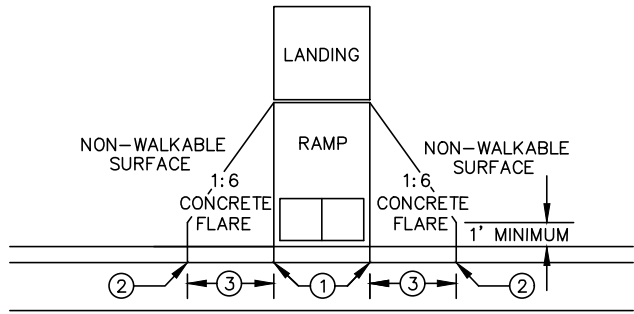


COMBINED DIRECTIONAL (COMPOUND RADIUS) ⁽¹⁰⁾

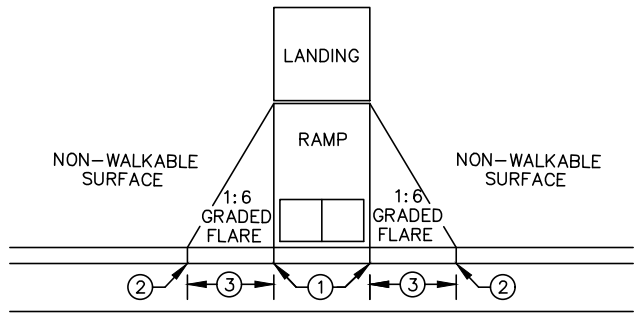
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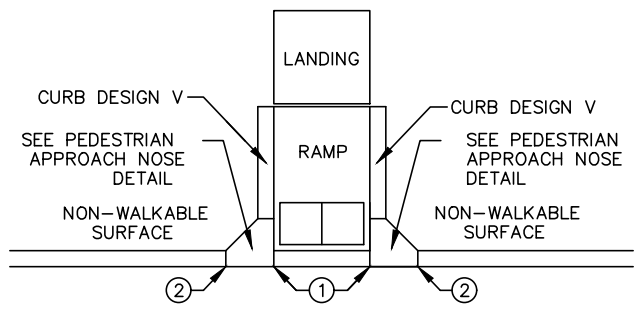
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

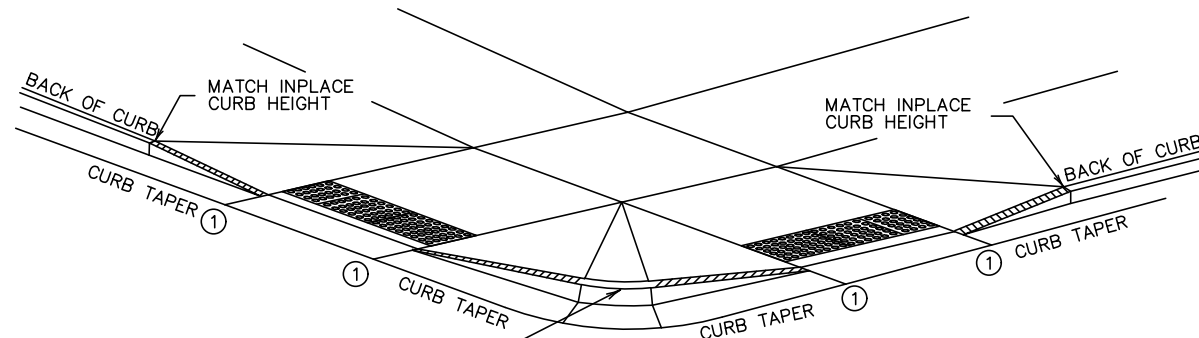


GRADED FLARES



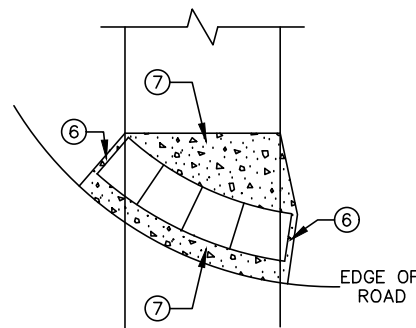
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑪

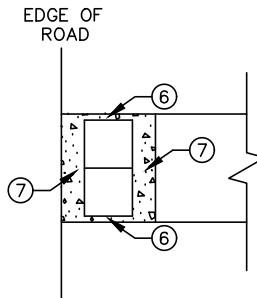


3" MINIMUM CURB HEIGHT, 4" PREFERRED
(MEASURED AT FRONT FACE OF CURB)
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH CURB AND GUTTER ⑧

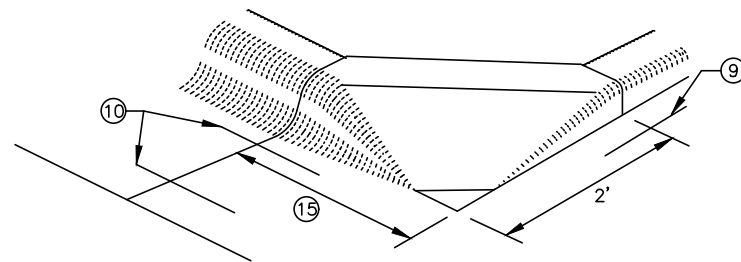


RADIAL DETECTABLE WARNING

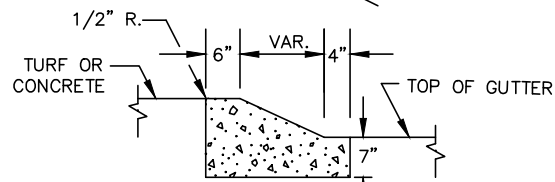


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

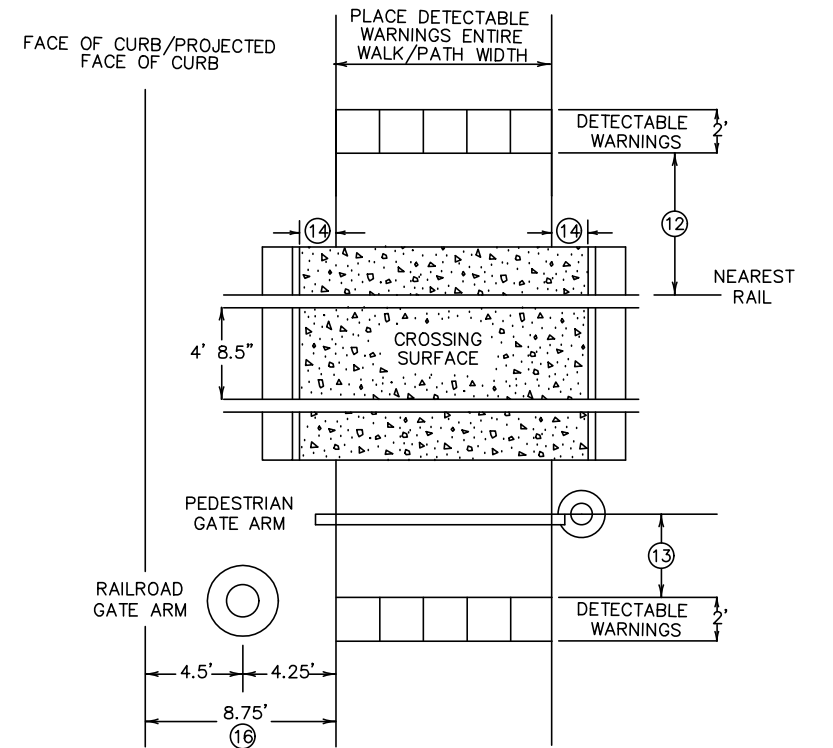


SECTION A-A



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.

REVISION:

APPROVED: JANUARY 23, 2017


OPERATIONS ENGINEER

MINNESOTA
DEPARTMENT OF TRANSPORTATION

STATE DESIGN ENGINEER

REVISED:

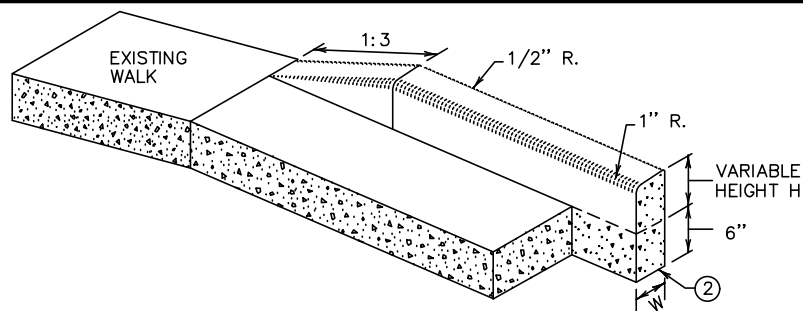
APPROVED:

1-23-2017

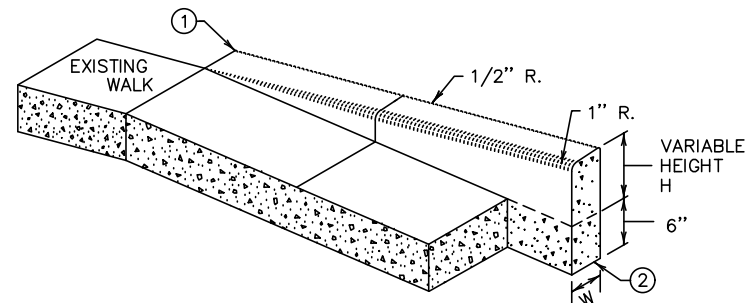
PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 14 OF 85

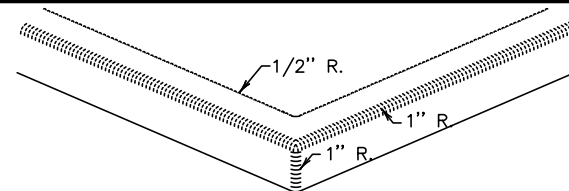
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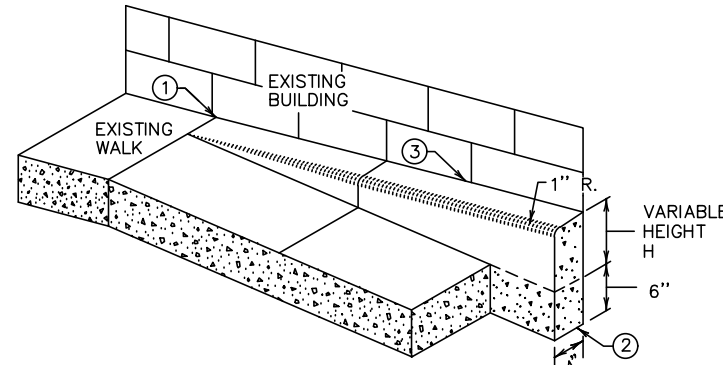
V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

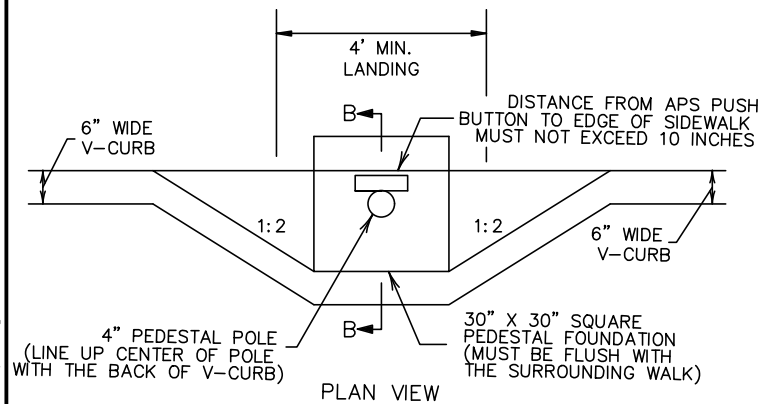


V CURB INTERSECTION

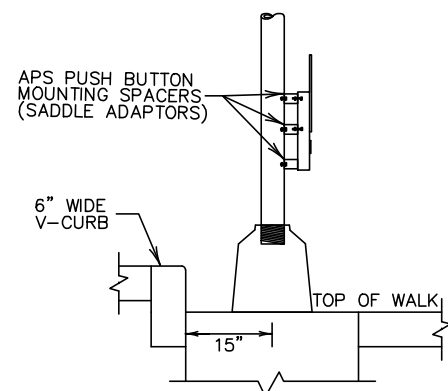


V CURB ADJACENT TO BUILDING
OR BARRIER

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

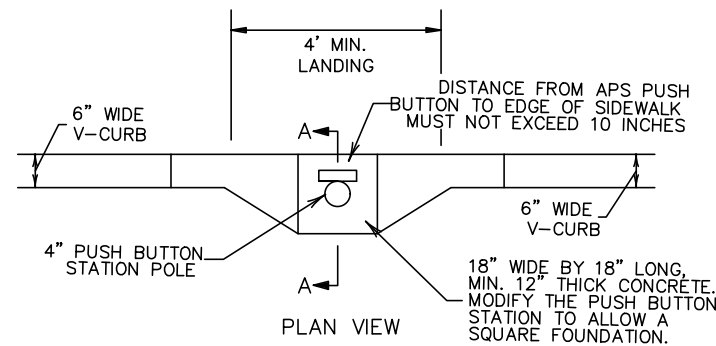


PLAN VIEW

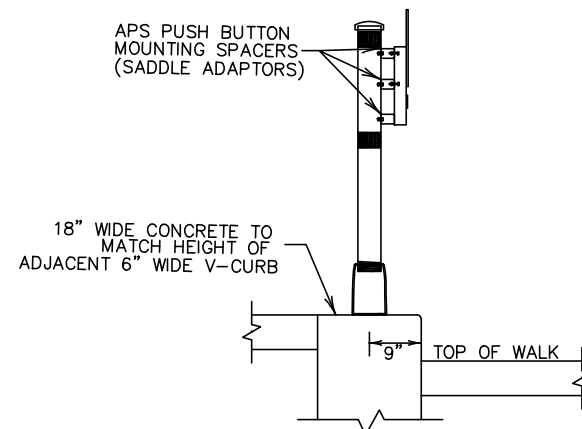


SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)

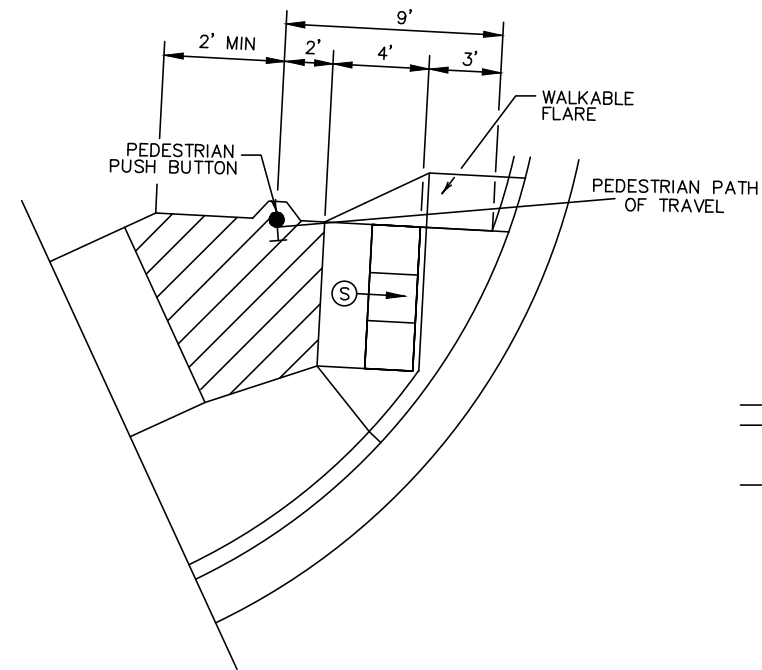


PLAN VIEW



SECTION A-A

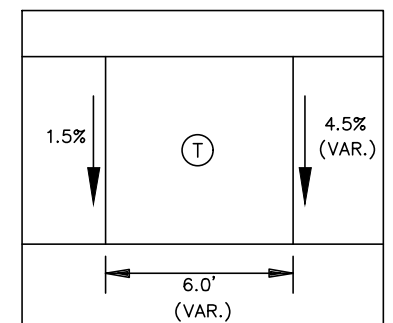
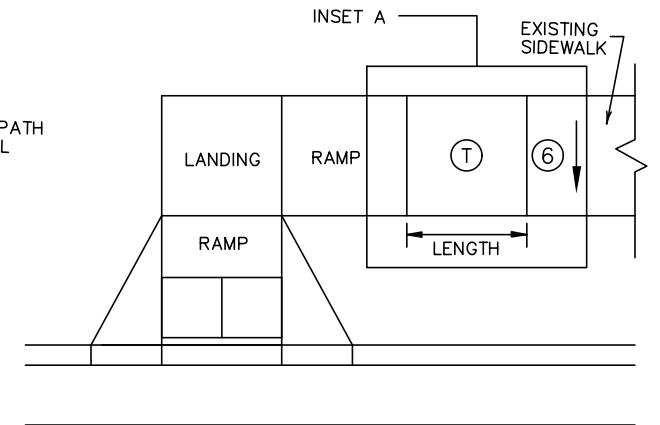
PUSH BUTTON STATION (V-CURB)



SEMI-DIRECTIONAL RAMP (3,4,9)

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

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



INSET A

TRANSITION PANEL ④ ⑤

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.

⑤ 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%.

④ 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 PAR.

① 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.



Tom S. J. H.
STATE DESIGN ENGINEER

REVISED:

APPROVED:

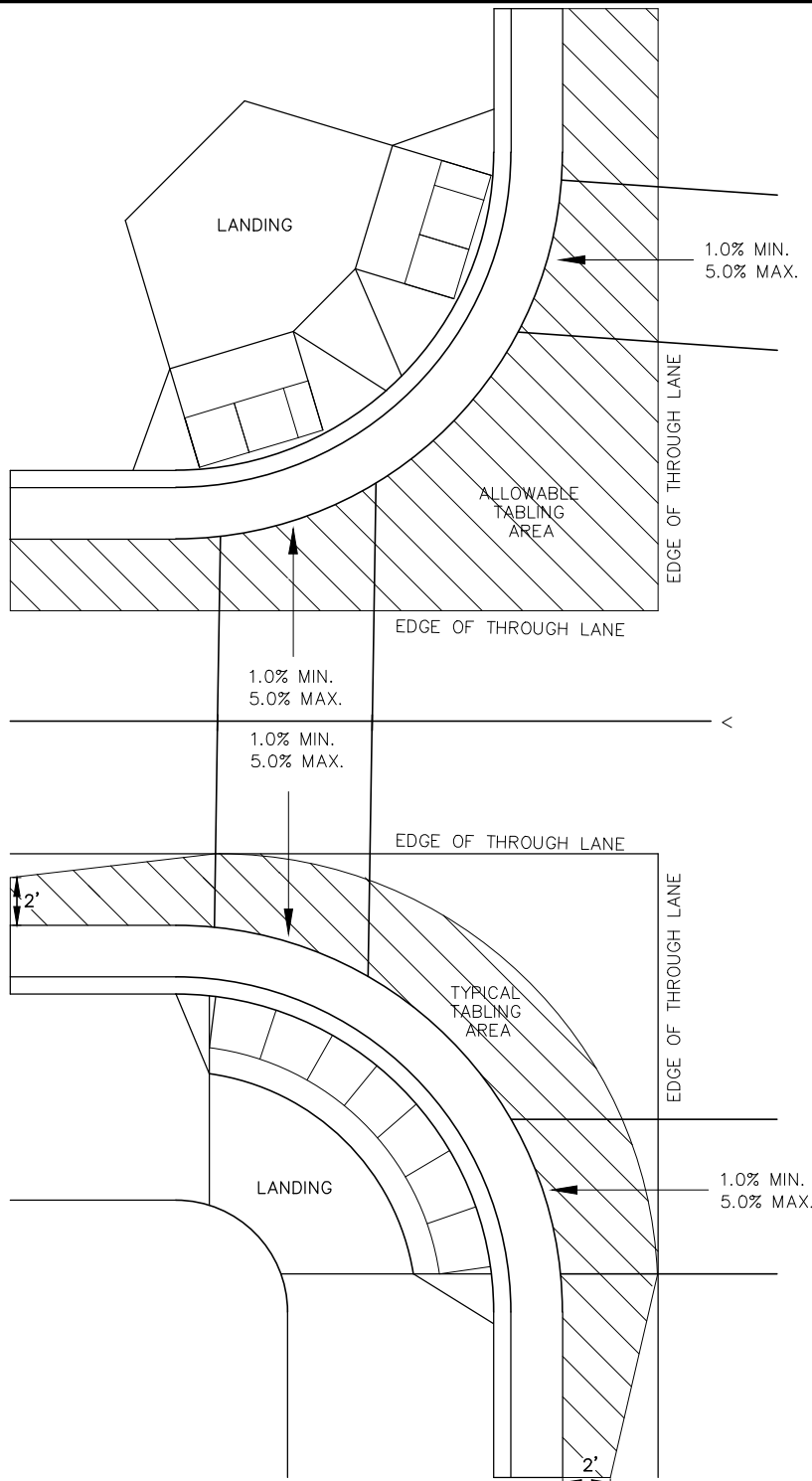
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PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

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CURB LINE AND ROAD CROSSING ADJUSTMENTS

"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.

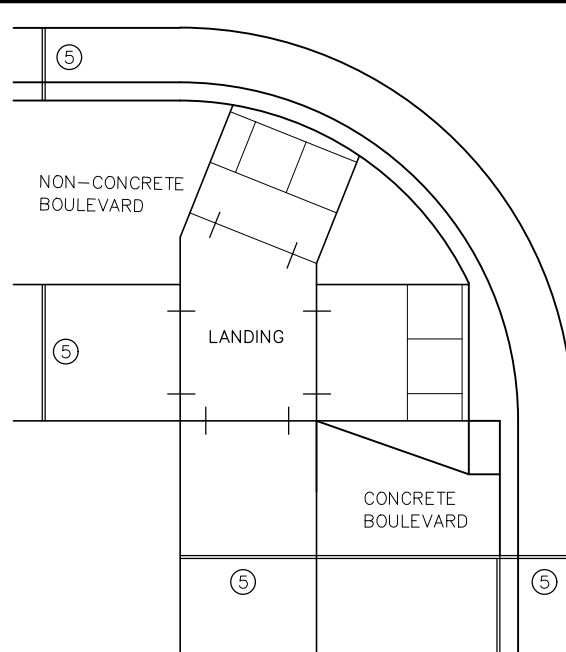
MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2% WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;

- 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

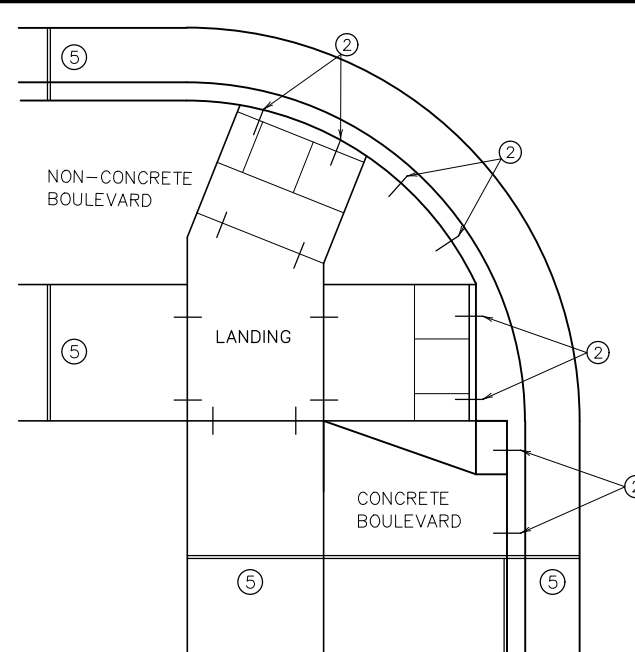
STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

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;

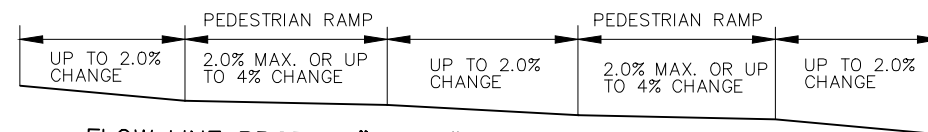
- 1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
- 2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
- 3) 5.0% RECOMMENDED MAX. FLOW LINE
- 4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL



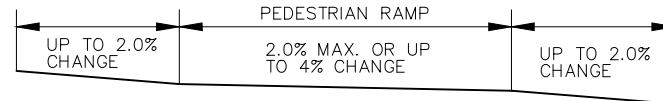
EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS



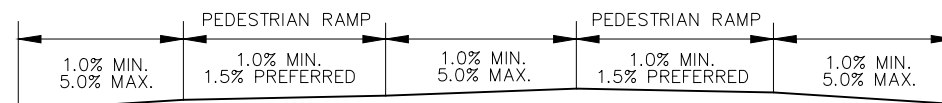
OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS



FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



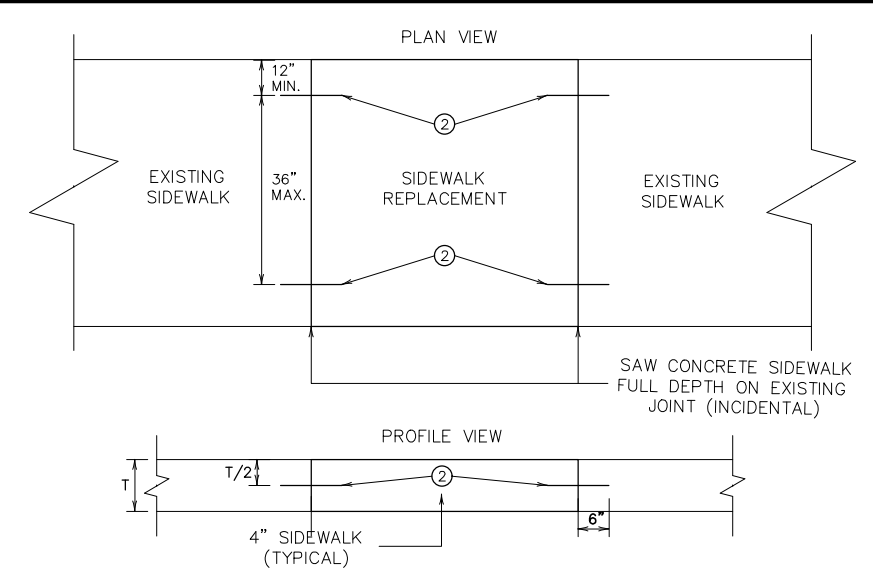
FLOW LINE PROFILE "TABLE" - FAN



FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

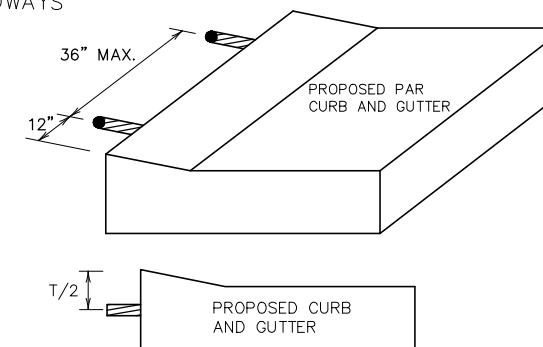


FLOW LINE PROFILE RAISE - FAN

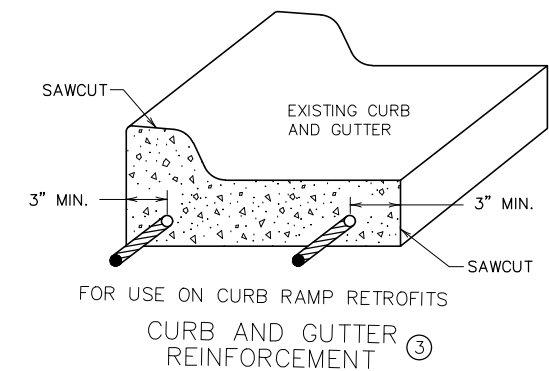


OPTIONAL SIDEWALK REINFORCEMENT

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

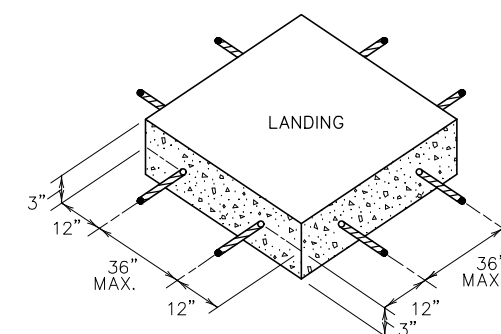


OPTIONAL CURB LINE REINFORCEMENT DETAILS

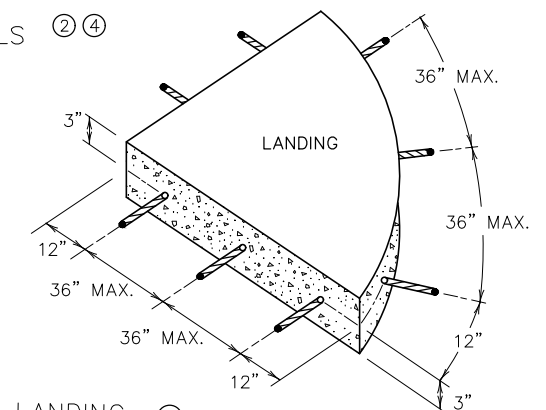


FOR USE ON CURB RAMP RETROFITS

CURB AND GUTTER REINFORCEMENT



SEPARATE LANDING POUR REINFORCEMENT



NOTES:

- 1) TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.
- 2) DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS AT 36" MAXIMUM CENTER TO CENTER (EPOXY COATED). BARS TO BE ADJUSTED TO MATCH RAMP GRADE.
- 3) DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS WITHIN RADIUS.
- 4) THIS OPTIONAL CURB LINE REINFORCEMENT DETAIL SHOULD ONLY BE USED ON BITUMINOUS ROADWAYS WHEN SPECIFIED IN THE PLAN.
- 5) 1/2 IN. PREFORMED JOINT FILLER MATERIAL PER MNDOT SPEC. 3702.

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER



STATE DESIGN ENGINEER

REVISED:

APPROVED:

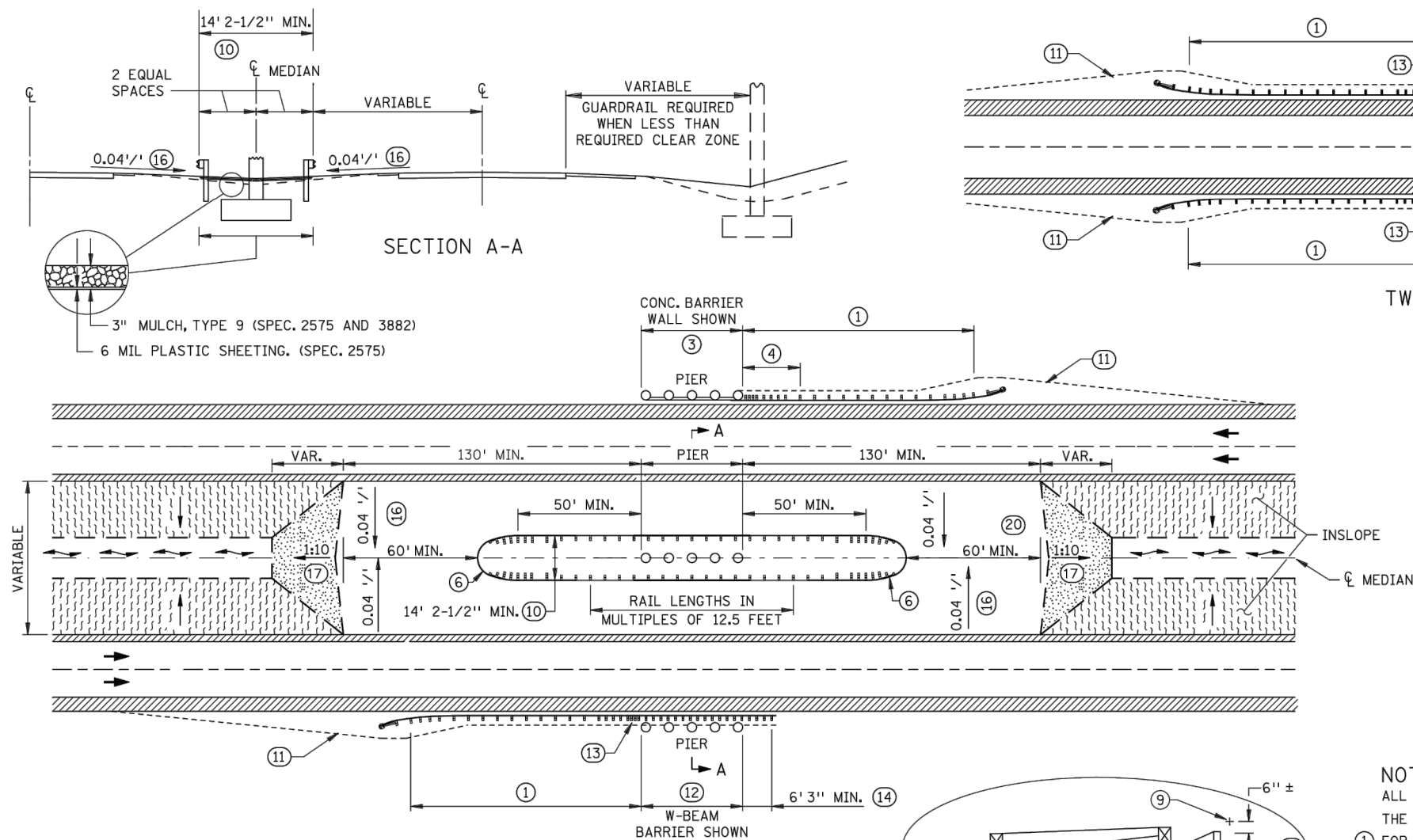
1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

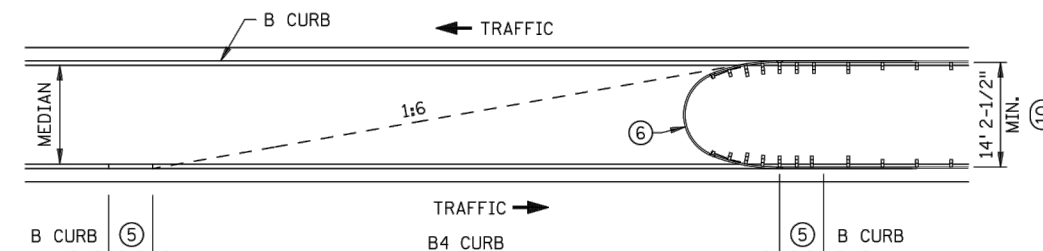
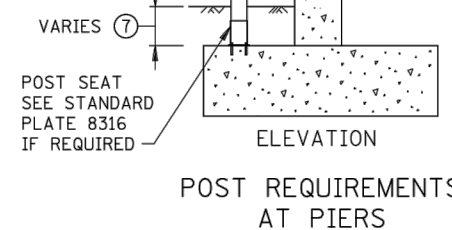
16 OF 85

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ESTIMATED DESIGN DEFLECTION TABLE FOR DESIGN B W-BEAM GUARDRAIL

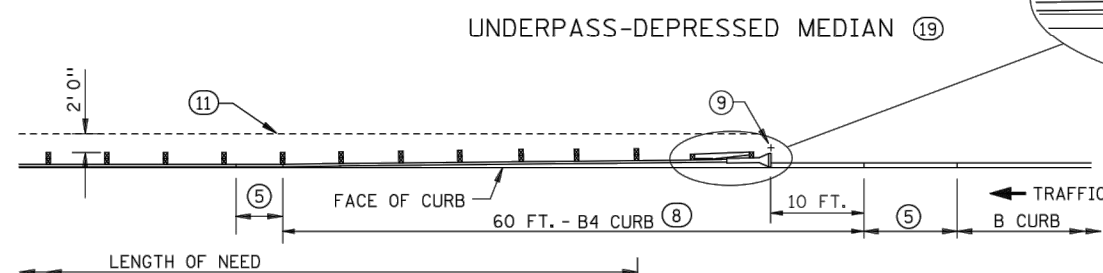
6' 3" POST SPACING	3' 0"
6' 3" POST SPACING WITH DOUBLE NESTED RAIL	2' 8"
MODIFIED 3' 1-1/2" POST SPACING	2' 3"
MODIFIED POST SPACING WITH DOUBLE NESTED RAIL	2' 0"



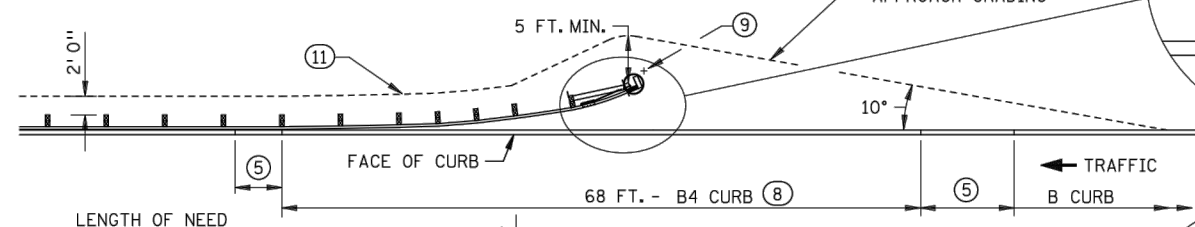
MODIFIED CURB AT RAISED MEDIAN

NOTES:

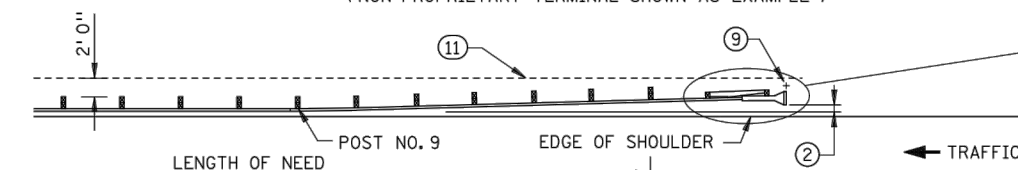
- ALL GUARDRAIL POSTS SHALL BE 6 FT. 3 IN. CENTER TO CENTER (DESIGN B), EXCEPT WHERE NOTED.
- THE LATEST APPROVED VERSION OF STANDARD PLATES SHOWN OR AS INDICATED IN THE PLANS SHALL APPLY.
- (1) FOR REQUIRED LENGTH OF INSTALLATION SEE ROAD DESIGN MANUAL CHAPTER 10.
- (2) THE LAST 50 FT. OF TANGENT TERMINALS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



PLAN VIEW MODIFIED CURB (18)



PLAN VIEW MODIFIED CURB AND SLOPE (18)
(NON-PROPRIETARY TERMINAL SHOWN AS EXAMPLE)



PLAN VIEW NO CURB (18)



STATE DESIGN ENGINEER

REVISED:

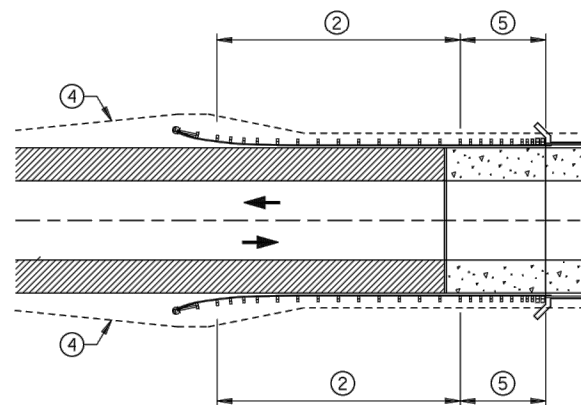
APPROVED:

5-27-2014

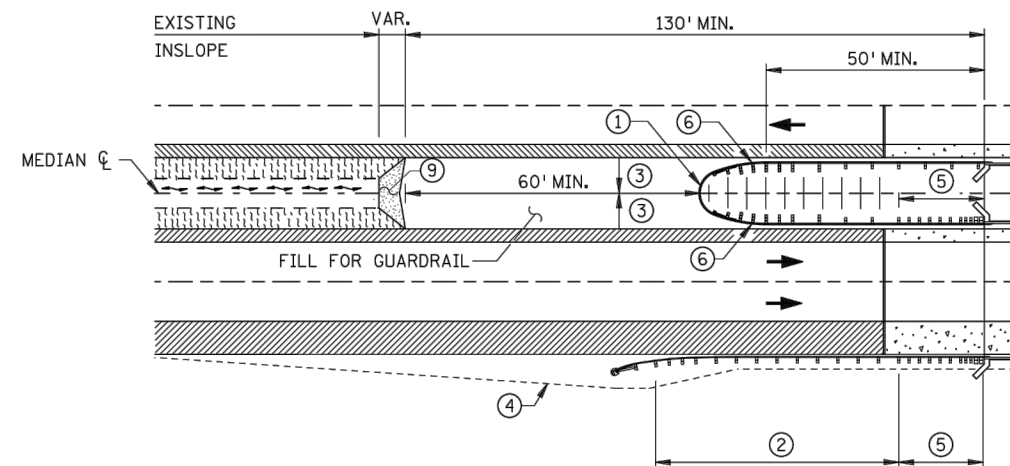
GUARDRAIL INSTALLATIONS AT MEDIANS
AND END TREATMENTS

STANDARD PLAN 5-297.601

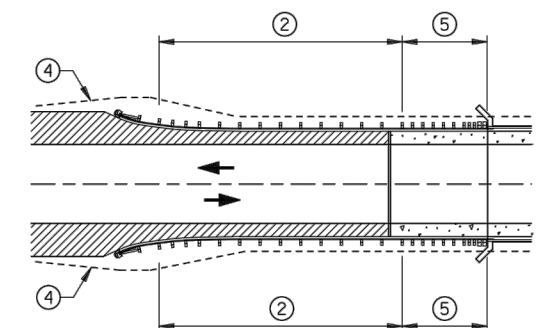
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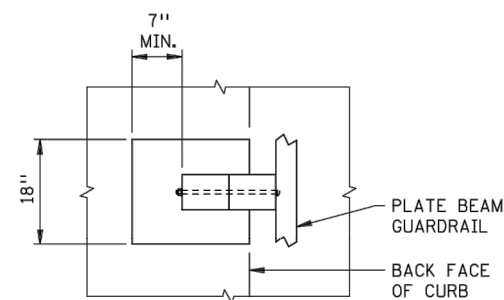
TWO - WAY BRIDGE
WITH FULL SHOULDERS



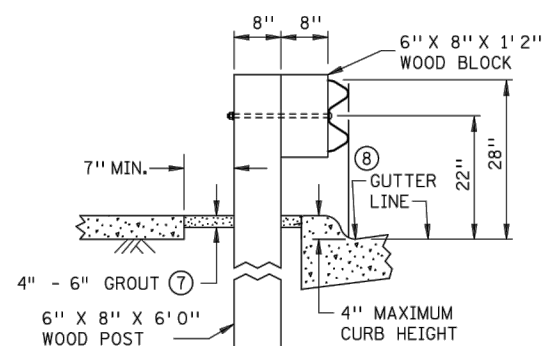
ONE - WAY BRIDGE
WITH FULL RIGHT SHOULDER
(FOR 14' 2-1/2" THRIE BEAM BULLNOSE)



TWO - WAY BRIDGE
WITHOUT FULL SHOULDERS

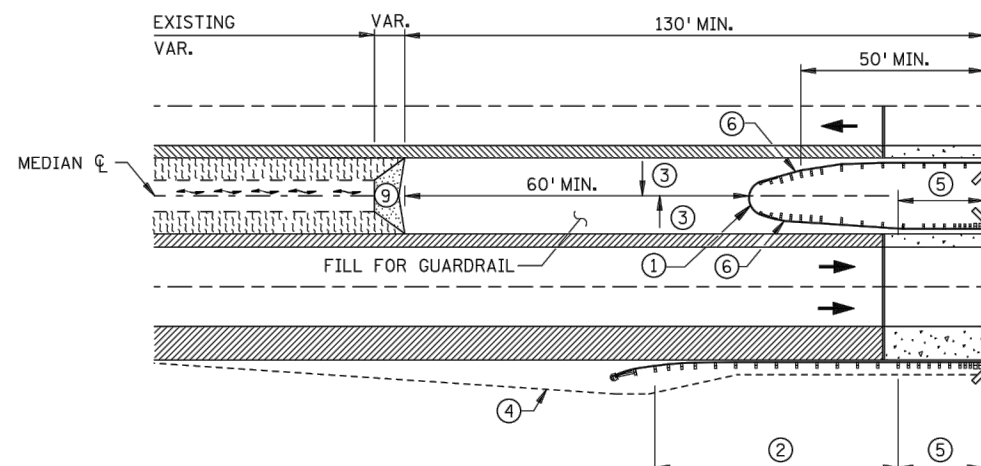


PLAN VIEW



ELEVATION

TYPICAL W-BEAM GUARDRAIL SECTION
AT POST SET IN CONCRETE



ONE - WAY BRIDGE
WITH FULL RIGHT SHOULDER
(FOR MEDIANS WIDER THAN 14' 2-1/2" THRIE BEAM BULLNOSE)

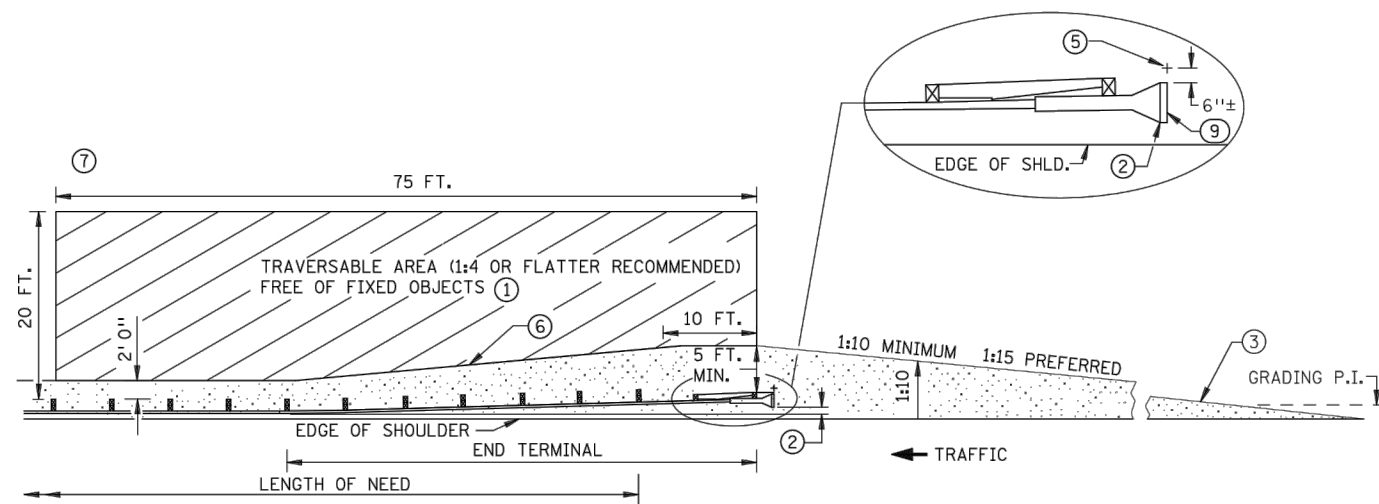
- NOTES:

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

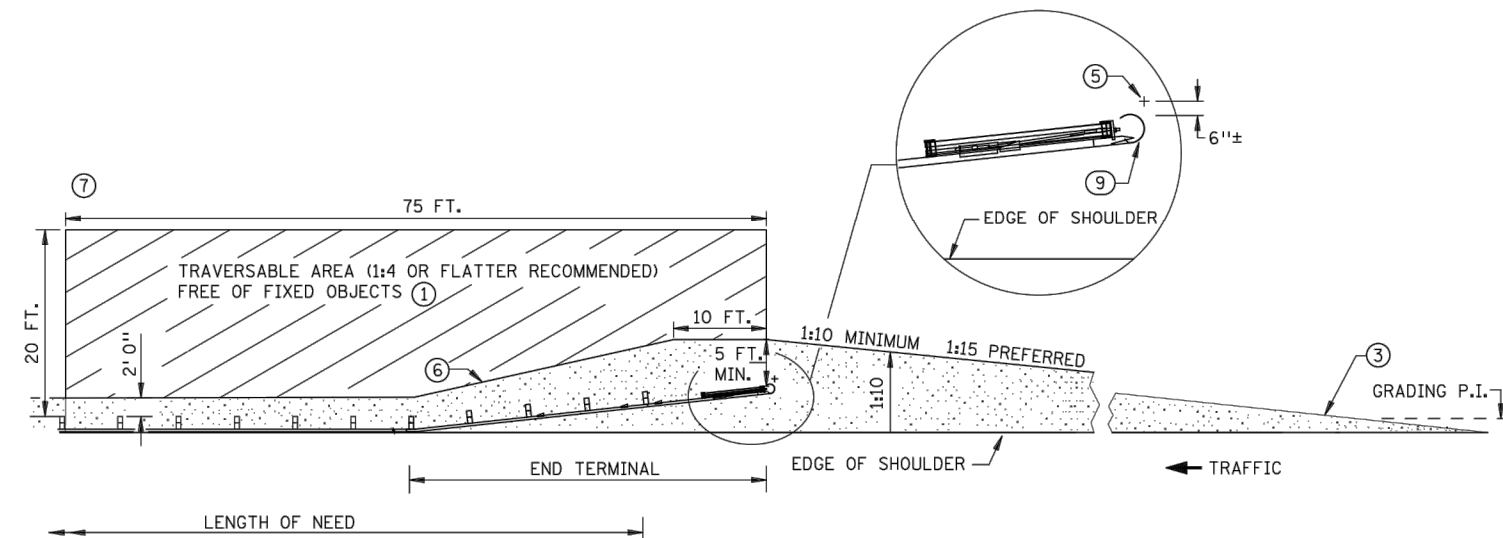
THE LATEST APPROVED VERSION OF STANDARD PLATES SHOWN OR AS INDICATED
IN THE PLANS SHALL APPLY.

- ① THRIE BEAM BULLNOSE, SEE STANDARD PLAN 5-297.611 FOR DETAILS.
- ② FOR THE REQUIRED LENGTH SEE ROAD DESIGN MANUAL CHAPTER 10.
- ③ 0.04 FT./FT. CROSS SLOPE TYPICAL, 0.10 FT./FT. CROSS SLOPE MAXIMUM.
- ④ 1:10 OR FLATTER SLOPE P.I.. APPROACH GRADING VARIES WITH TERMINAL TYPE.
- ⑤ PLATE BEAM GUARDRAIL ATTACHMENTS TO FIXED OBJECTS REQUIRE AN APPROVED TRANSITION SECTION.
- ⑥ FOR MEDIANS WIDER THAN THE 14 FT. 2-1/2 IN., BEFORE TAPERING THE APPROACH SIDE, TAPER THE OPPOSING SIDE AS SHOWN ON THE BULLNOSE DESIGN DETAIL. APPROACH TAPER SHOULD NOT EXCEED 1:25 IF THE BARRIER IS WITHIN THE SHY LINE OR 1:15 IF IT IS OUTSIDE.
- ⑦ GROUT MIX (BY VOLUME: 1 PART CEMENT [TYPE 1A], 14 PARTS SAND, 5 PARTS WATER).
- ⑧ PLACE FRONT FACE OF W-BEAM DIRECTLY ABOVE FRONT FACE OF CURB.
- ⑨ 1:10 SLOPE OR FLATTER.

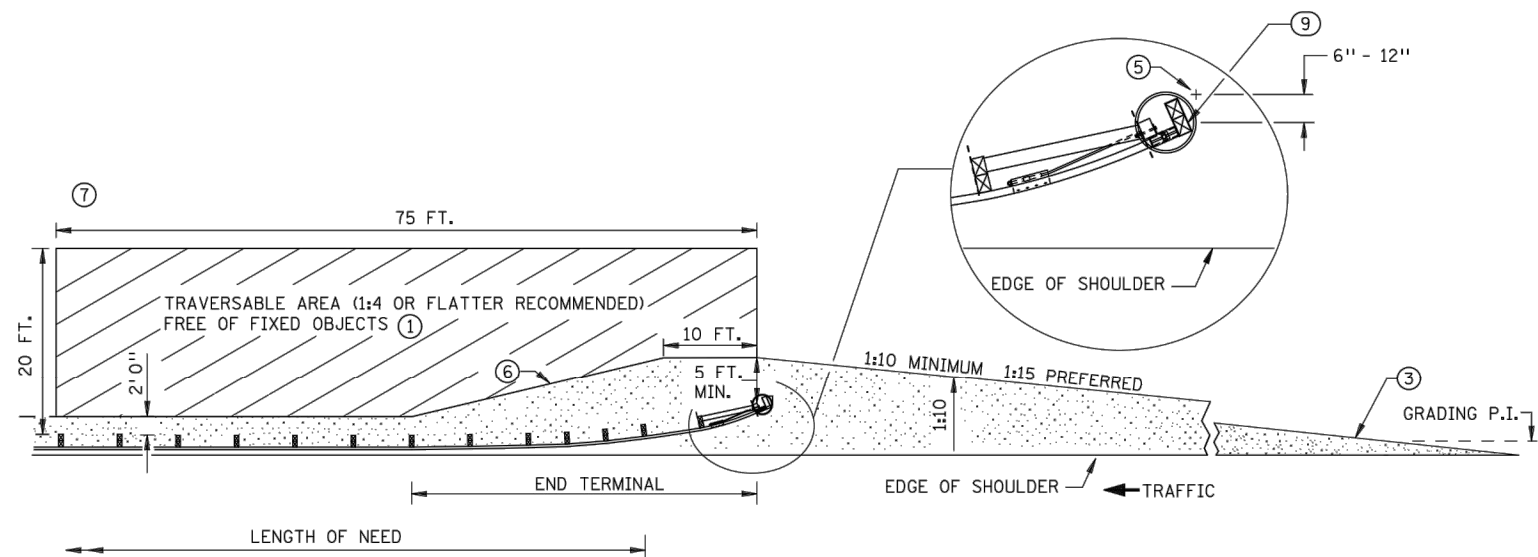
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PLAN VIEW
(PROPRIETARY TANGENT TERMINAL SHOWN AS EXAMPLE)



PLAN VIEW 8
(PROPRIETARY FLARED TERMINAL SHOWN AS EXAMPLE)



PLAN VIEW 4 8
(ELT)

NOTES:

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

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

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

GRADING AND DRAINAGE HARDWARE ARE NOT INCIDENTAL TO GUARDRAIL INSTALLATION.

- ① SLOPES BETWEEN 1:3 AND 1:4 PERMITTED WHEN 1:4 OR FLATTER IS NOT POSSIBLE. FOR SLOPES STEEPER THAN 1:3 THE AREA IMMEDIATELY BEHIND AND BEYOND THE END TERMINAL SHOULD, AT LEAST, BE SIMILAR IN CROSS SECTION TO THE UNSHIELDED ROADSIDE AREA UPSTREAM OF THE END TERMINAL.
- ② THE LAST 50 FT. OF TANGENT TERMINALS CAN BE FLARED AT 1:50 TAPER.
- ③ WHEN GRADING PLATFORMS ARE BUILT, THEY MUST BE SMOOTHLY TRANSITIONED TO EXISTING SIDE SLOPE SO THE ENTIRE ROADSIDE APPROACH TO THE BARRIER REMAINS TRAVERSABLE, AS WELL AS THE AREA IMMEDIATELY BEHIND IT.

④ SEE STANDARD PLATE 8329.

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

⑥ 1:10 OR FLATTER SLOPE P.I.

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

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

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



Christy By
STATE DESIGN ENGINEER

REVISED:

APPROVED:

5-27-2014

GUARDRAIL INSTALLATIONS AT MEDIANS AND END TREATMENTS

(FOR NEW CONSTRUCTION AND RETROFITS WITHOUT SITE RESTRICTIONS)

STANDARD PLAN 5-297.601

3 OF 3

GRAVEL DRIVEWAY

NTS

The diagram illustrates a cross-section of a road construction project involving a rock excavation and trench backfill. At the top, horizontal layers are labeled from left to right: PAVEMENT, BASE, SUBBASE, and SOILS. Below these, a dashed vertical line indicates the centerline or edge of the excavation. The ground surface is shown as a sloped embankment. Key labels include:

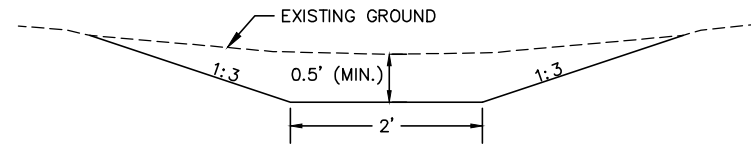
- SUBGRADE**: Indicated by a dashed horizontal line.
- TOPSOIL**: Located at the surface level on the right side.
- SUBSOIL**: Located below the topsoil layer on the right side.
- BACKFILL HEIGHT**: Two arrows indicate the height of the backfill material above the subgrade on both sides of the excavation.
- ROCK TRENCH BACKFILL HEIGHT**: An arrow indicates the height of the backfill material above the rock trench bottom.
- ROCK TRENCH**: A rectangular area at the bottom of the excavation, filled with rock.
- BEDROCK**: A hatched area representing the natural rock foundation.
- O.D. + 24" = PAY WIDTH FOR ROCK EXC. & ROCK TRENCH BACKFILL**: A label indicating the required width of the excavation and backfill.
- ENCASEMENT ZONE**: A circular area around the rock trench, defined by dimensions: 12" MIN. (vertical), 12" MIN. (horizontal), and 6" MIN. (diagonal).
- COARSE FILTER AGGREGATE MN/DOT 3149.2.H (INCIDENTAL TO PIPE)**: A label pointing to the material surrounding the rock trench.

NOTES:

- EXCESS EXCAVATION MATERIAL SHALL BE DISPOSED OF OFF PROJECT R.O.W. (INCIDENTAL)
- PAY WIDTH FOR ROCK EXCAVATION SHALL BE BASED ON OUTSIDE DIAMETER OF PIPE PLUS 24".
- A MINIMUM OF 1 CUBIC YARD OF STRUCTURE EXCAVATION, CLASS R, WILL BE PAID FOR EVERY 10' OF PIPE WHERE ROCK REMOVAL IS REQUIRED.
- TRENCH STABILIZATION BEDDING MATERIAL MAY BE USED IN AREAS AS DETERMINED BY THE ENGINEER.
- ENCASEMENT ZONE MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM STANDARD PROCTOR DENSITY.
- BACKFILL SHALL BE SELECT GRADING MATERIAL FOUND ON-SITE WHEN DEEMED SUITABLE BY THE ENGINEER OR AS OTHERWISE DEFINED IN THE PROJECT SPECIAL PROVISIONS. WHEN ON-SITE MATERIAL IS NOT SUITABLE AND WHEN BACKFILL MATERIAL IS NOT SPECIFIED, IMPORTED MATERIAL MEETING MN/DOT 3149.2.D.1 GRANULAR BACKFILL SHALL BE PROVIDED. USE OF NATIVE ON-SITE MATERIAL IS INCIDENTAL.
- COMPACT BACKFILL MATERIALS TO 100% OF MAXIMUM STANDARD PROCTOR DENSITY FOR THE UPPER 3' BELOW THE SUBGRADE, AND TO 95% OF MAXIMUM STANDARD PROCTOR DENSITY BELOW THE UPPER 3'.

EX-3

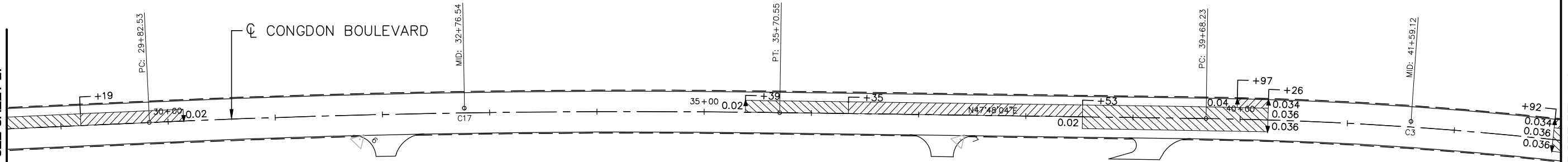
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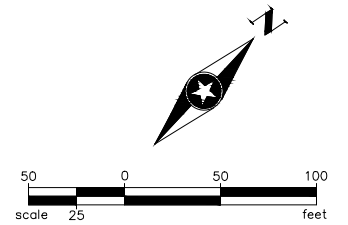
DITCH CLEANING DETAIL

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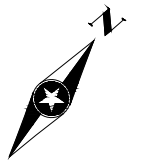
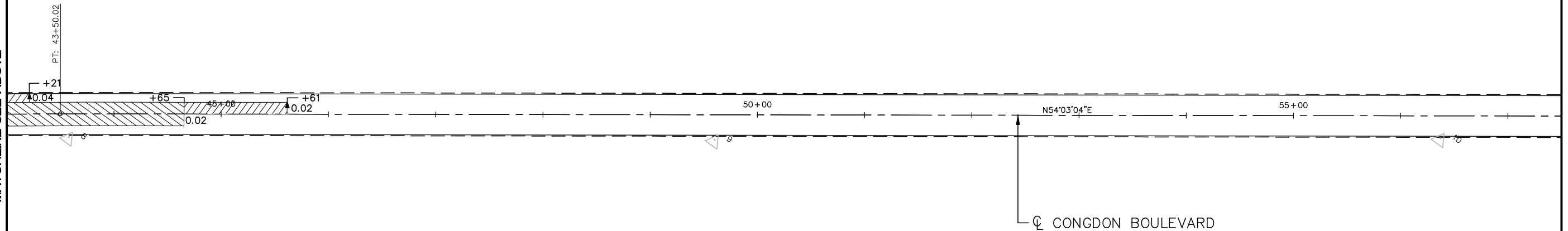
MATCHLINE SEE SHEET 21



CONGDON BOULEVARD



MATCHLINE SEE ABOVE



DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



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DULUTH, MN 55802-1512
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DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

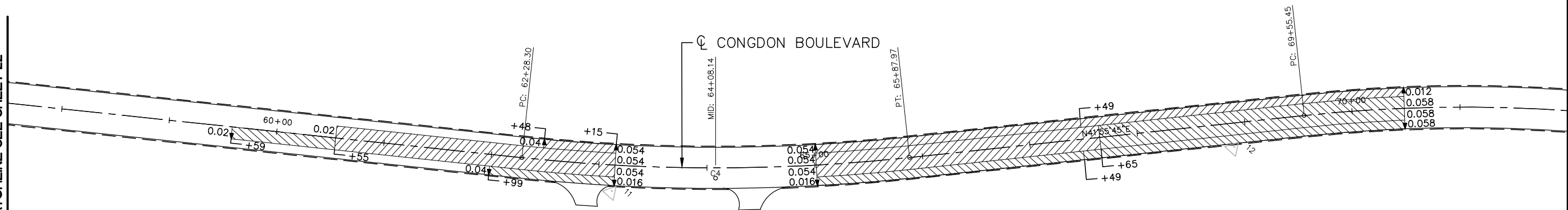
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FILE NO.
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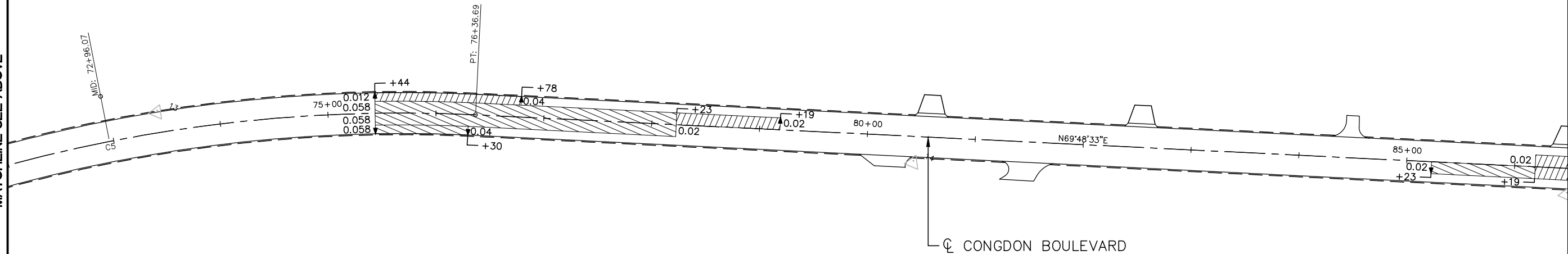
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CONGDON BOULEVARD

MATCHLINE SEE ABOVE



MATCHLINE SEE SHEET 24

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

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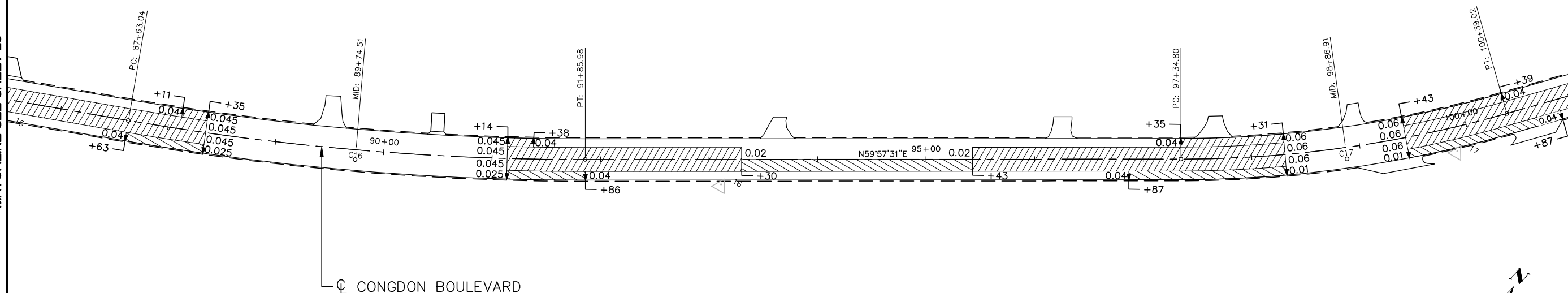
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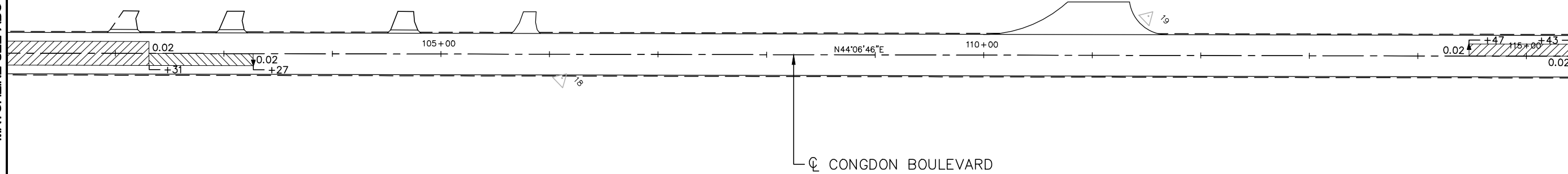
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MATCHLINE SEE ABOVE



MATCHLINE SEE SHEET 25

DRAWN BY: REH
DESIGNER: MJB
CHECKED BY: JCK
DESIGN TEAM

NO.	BY	DATE	REVISIONS

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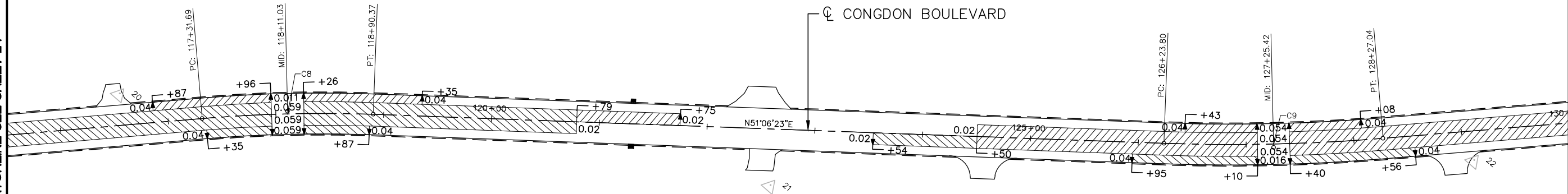
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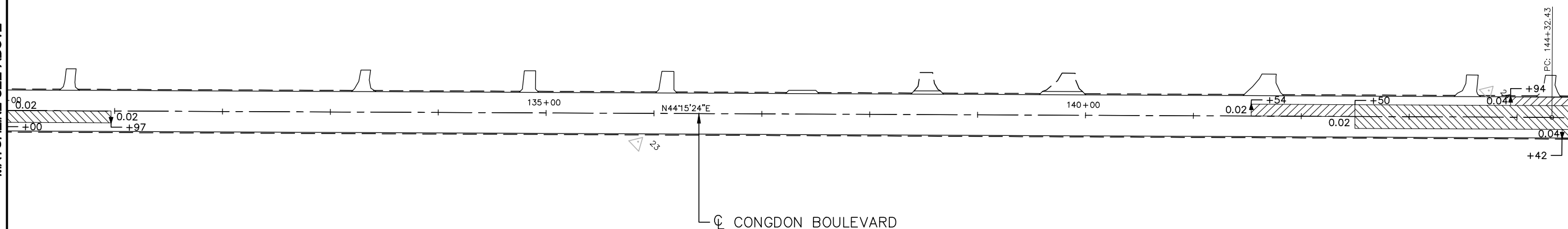
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MATCHLINE SEE BELOW

CONGDON BOULEVARD

MATCHLINE SEE ABOVE



MATCHLINE SEE SHEET 26

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DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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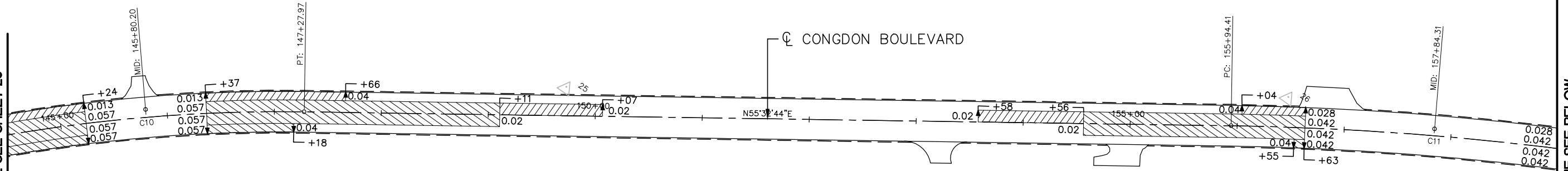
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DULUT 135859

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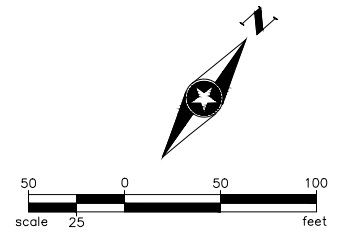
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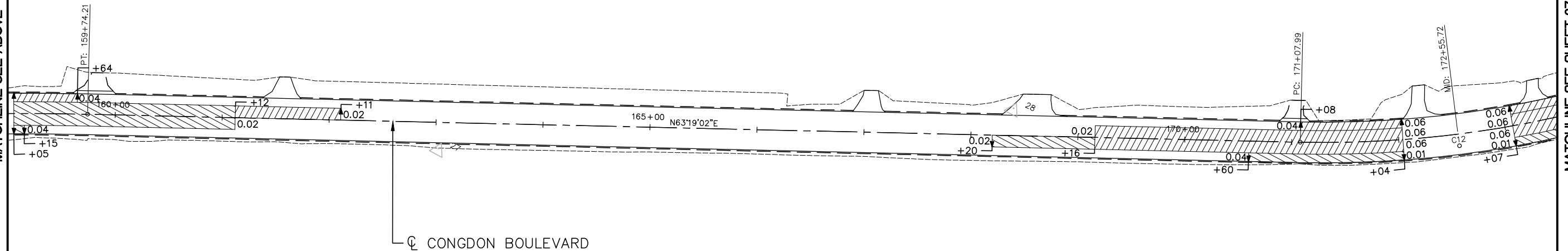


MATCHLINE SEE BELOW

CONGDON BOULEVARD



MATCHLINE SEE ABOVE



MATCHLINE SEE SHEET 27

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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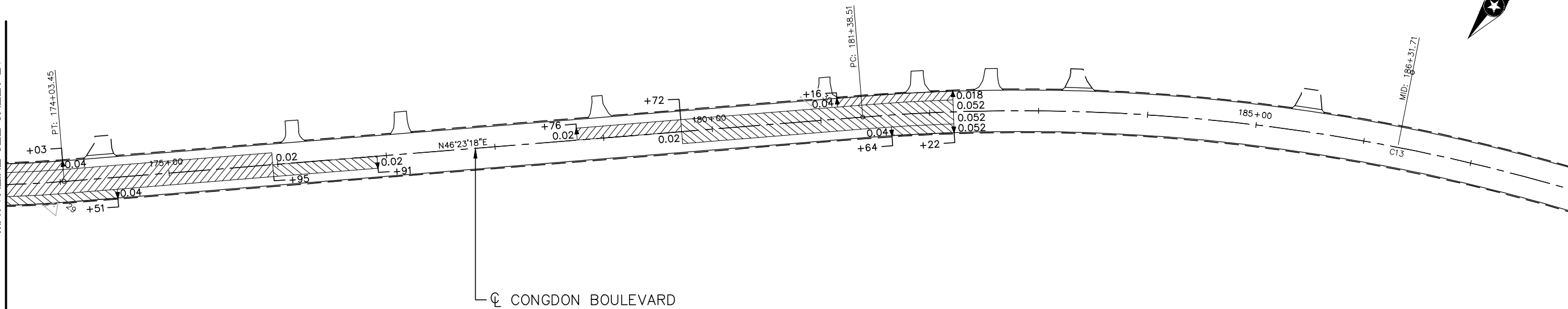
ALIGNMENT AND SUPERELEVATION

FILE NO.
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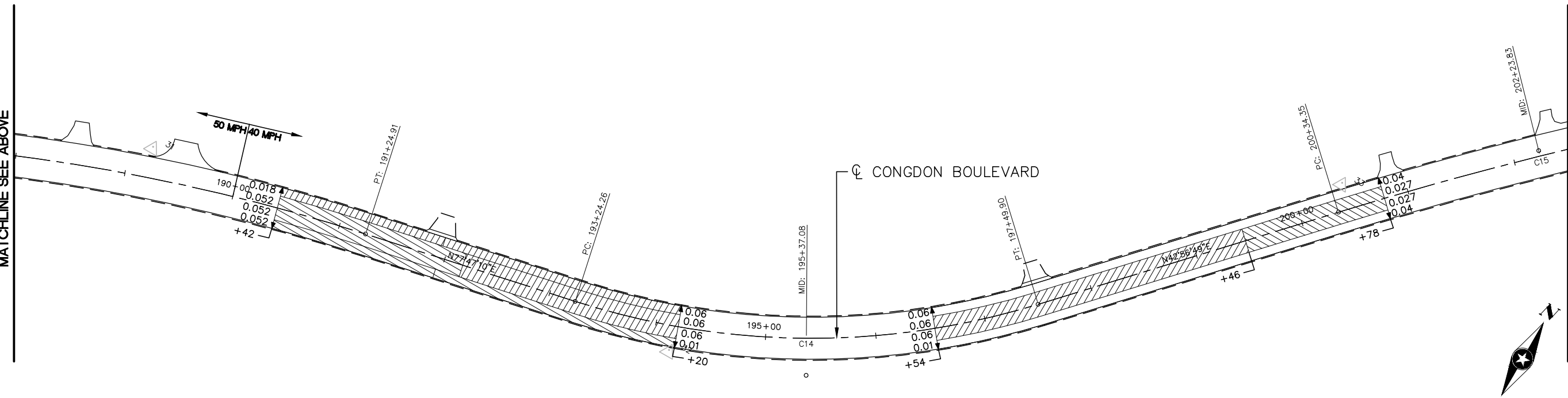


MATCHLINE SEE BELOW

CONGDON BOULEVARD



MATCHLINE SEE ABOVE



MATCHLINE SEE SHEET 28

DRAWN BY: REH
DESIGNER: MJB
CHECKED BY: JCK
DESIGN TEAM

NO.	BY	DATE

REVISIONS

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CONGDON BOULEVARD
S.P. 118-060-011

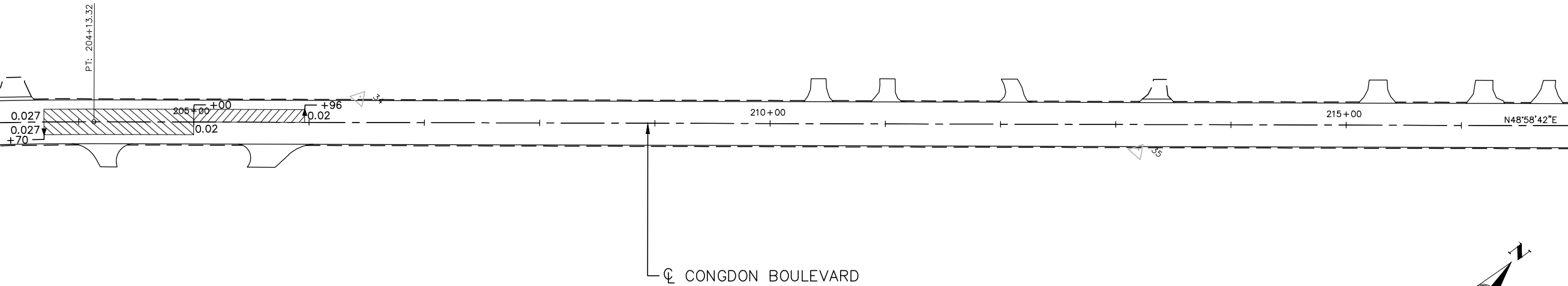
ALIGNMENT AND SUPERELEVATION

FILE NO.
DULUT 135859

27
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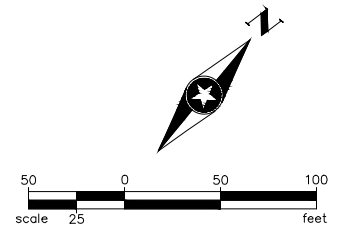
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MATCHLINE SEE SHEET 27

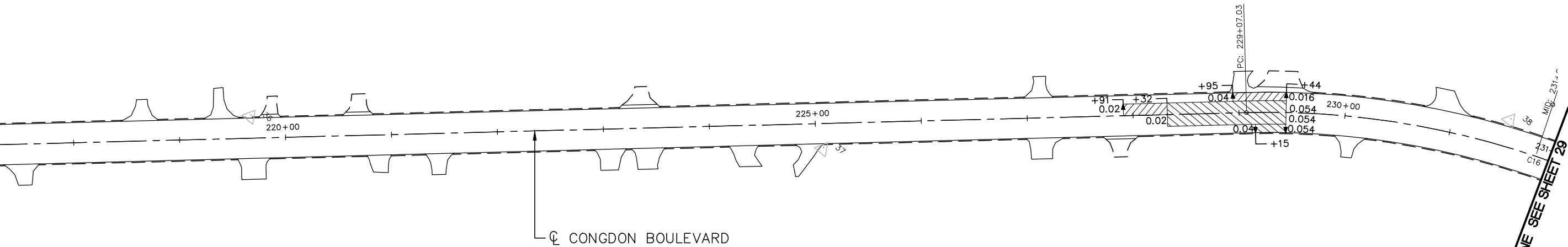


CL CONGDON BOULEVARD

CONGDON BOULEVARD



MATCHLINE SEE ABOVE



CL CONGDON BOULEVARD

MATCH LINE SEE SHEET 29

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DESIGNER: MJB				
CHECKED BY: JCK				
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Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



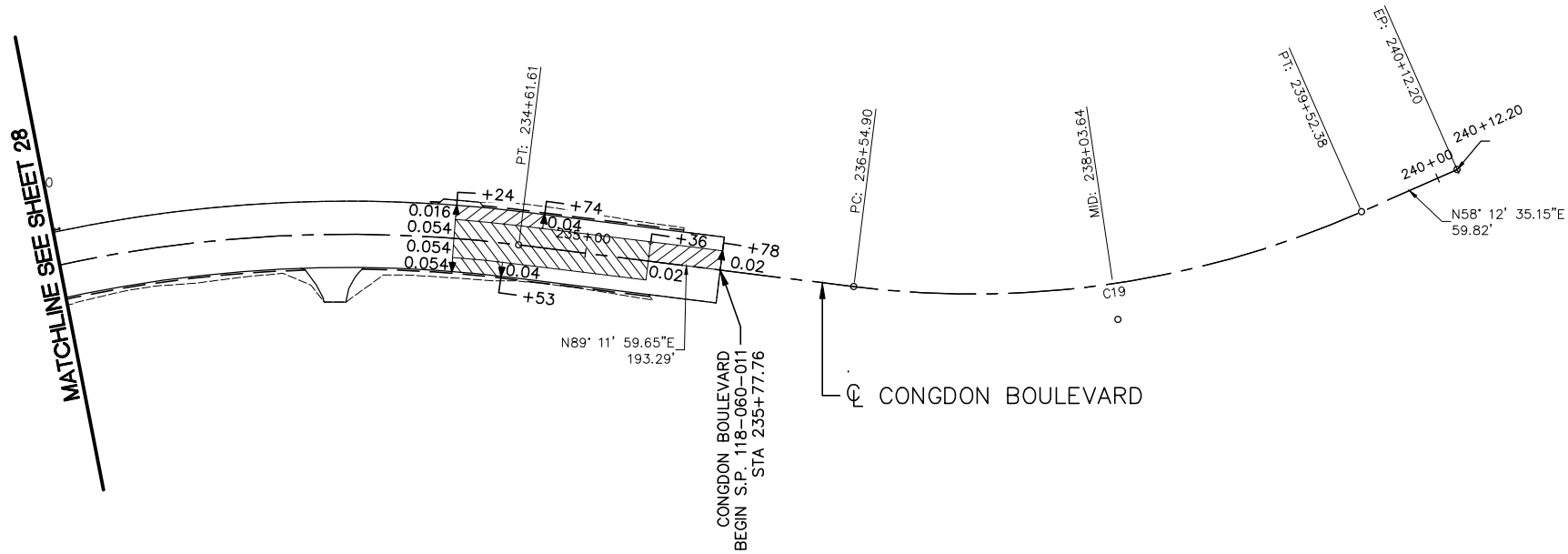
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DESIGN TEAM	NO.	BY	DATE	REVISIONS

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Date: 2/8/2017 Lic. No. 43913

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DULUT 135859

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ALIGNMENT TABULATION - CONGDON BLVD									
POINT ID	POINT	STATION	DELTA	RADIUS	TANGENT	LENGTH	NORTHING	EASTING	BEARING
L1	POB	0+00.00				69.64	3363360.1482	4870543.7614	S 88° 17' 33" E
C1	PC	0+69.64	040° 24' 46"	150.00	55.21	105.80	3363358.0731	4870613.3748	
L17	PT	1+75.44				8.19	3363390.9509	4870711.6416	N 51° 17' 40" E
C18	PC	1+83.64	027° 22' 05"	270.00	65.74	128.97	3363396.0734	4870718.0343	
L18	PT	3+12.61				163.50	3363497.2718	4870795.9969	N 23° 55' 35" E
C2	PC	4+76.11	020° 28' 18"	500.00	90.29	178.65	3363646.7228	4870862.3068	
L15	PT	6+54.76				2327.77	3363793.7615	4870962.0925	N 44° 23' 53" E
C17	PC	29+82.53	003° 24' 11"	9900.00	294.10	588.02	3365456.9437	4872590.6927	
L16	PT	35+70.55				397.68	3365864.6197	4873014.3257	N 47° 48' 04" E
C3	PC	39+68.23	006° 15' 00"	3500.00	191.08	381.79	3366131.7461	4873308.9377	
L2	PT	43+50.02				1878.28	3366372.2756	4873605.1860	N 54° 03' 04" E
C4	PC	62+28.30	012° 07' 20"	1700.00	180.51	359.67	3367474.9454	4875125.7352	
L3	PT	65+87.97				367.48	3367715.2086	4875392.4822	N 41° 55' 45" E
C5	PC	69+55.45	027° 52' 48"	1400.00	347.50	681.24	3367988.6023	4875638.0351	
L4	PT	76+36.69				1126.35	3368367.0747	4876196.3876	N 69° 48' 33" E
C6	PC	87+63.04	009° 51' 02"	2460.00	211.99	422.94	3368755.8346	4877253.5245	
L5	PT	91+85.98				548.83	3368935.1320	4877636.0016	N 59° 57' 31" E
C7	PC	97+34.80	015° 50' 44"	1100.00	153.08	304.21	3369209.8890	4878111.0991	
L6	PT	100+39.02				1692.67	3369396.4368	4878350.1760	N 44° 06' 46" E
C8	PC	117+31.69	006° 59' 37"	1300.00	79.44	158.68	3370611.7249	4879528.4008	
L7	PT	118+90.37				733.43	3370718.6372	4879645.5244	N 51° 06' 23" E
C9	PC	126+23.80	006° 50' 59"	1700.00	101.74	203.24	3371179.1402	4880216.3639	
L8	PT	128+27.04				1605.39	3371315.8888	4880366.5515	N 44° 15' 24" E
C10	PC	144+32.43	011° 17' 20"	1500.00	148.25	295.54	3372465.7055	4881486.9139	
L9	PT	147+27.97				866.43	3372655.7574	4881712.6162	N 55° 32' 44" E
C11	PC	155+94.41	007° 46' 19"	2800.00	190.19	379.80	3373145.9441	4882427.0552	
L10	PT	159+74.21				1133.78	3373338.9528	4882753.8228	N 63° 19' 02" E
C12	PC	171+07.99	016° 55' 44"	1000.00	148.82	295.47	3373848.0752	4883766.8600	
L11	PT	174+03.45				735.06	3374017.5506	4884007.5772	N 46° 23' 18" E
C13	PC	181+38.51	031° 23' 52"	1800.00	505.92	986.39	3374524.5730	4884539.7859	
L12	PT	191+24.91				199.36	3374980.5732	4885400.5565	N 77° 47' 10" E
C14	PC	193+24.26	034° 50' 21"	700.00	219.63	425.64	3375022.7498	4885595.4028	
L13	PT	197+49.90				284.45	3375229.9801	4885959.6989	N 42° 56' 49" E
C15	PC	200+34.35	006° 01' 53"	3600.00	189.66	378.96	3375438.1907	4886153.4986	
L14	PT	204+13.32				2493.72	3375701.4974	4886425.8057	N 48° 58' 42" E
C16	PC	229+07.03	040° 13' 17"	790.00	289.27	554.58	3377338.2330	4888307.2222	
L19	PT	234+61.61				193.29	3377532.1308	4888814.7020	N 89° 12' 00" E
C19	PC	236+54.90	030° 59' 24"	550.00	152.48	297.48	3377534.8299	4889007.9709	
L20	END	239+52.38				59.82	3377617.2859	4889290.0368	N 58° 12' 35" E

CONTROL POINT TABULATION				
POINT #	RAW DESCRIPTION	ELEVATION	NORTHING	EASTING
1	set spk	651.618	3363399.894	4870764.461
2	set spk	649.675	3363723.058	4870877.664
3	set spk	644.552	3364295.396	4871483.638
4	set spk	647.221	3364645.821	4871827.036
5	set spk	649.616	3365015.443	4872192.443
6	set spk	650.765	3365579.336	4872745
7	set spk	649.296	3365961.324	4873154.441
8	set spk	653.144	3366359.457	4873624.415
9	set spk	650.65	3366711.558	4874112.887
10	set spk	646.142	3367110.837	4874659.561
11	set spk	641.598	3367507.826	4875208.436
12	set spk	635.678	3367923.743	4875609.341
13	set spk	639.959	3368255.741	4875923.602
14	set spk	633.034	3368486.313	4876586.287
15	set spk	626.598	3368695.515	4877154.823
16	set spk	624.489	3368977.824	4877755.793
17	set spk	627.457	3369343.537	4878328.112
18	set spk	630.3	3369792.267	4878764.562
19	set spk	632.014	3370220.395	4879098.794
20	set pk	630.622	3370579.145	4879455.433
21	set spk	622.52	3370910.759	4879966.67
22	set spk	620.751	3371356.241	4880443.603
23	set spk	627.457	3371840.712	4880914.676
24	set spk	635.413	3372440.871	4881428.286
25	set spk	632.103	3372816.521	4881899.098
26	set spk	637.676	3373198.791	4882455.183
27	set spk	629.974	3373464.705	4883058.54
28	set pk	624.59	3373750.129	4883515.433
29	set spk	629.415	3373994.123	4884014.782
30	set spk	635.965	3374508.461	4884490.415
31	set spk	632.298	3374952.777	4885194.589
32	set spk	628.581	3375027.05	4885691.112
33	set spk	624.34	3375462.801	4886143.087
34	set spk	619.822	3375870.147	4886585.361
35	set spk	623.522	3376280.227	4887124.067
36	set spk	628.137	3376738.375	4887584.459
37	set spk	625.953	3377058.735	4888020.658
38	set spk	629.64	3377492.564	4888503.267

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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 Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



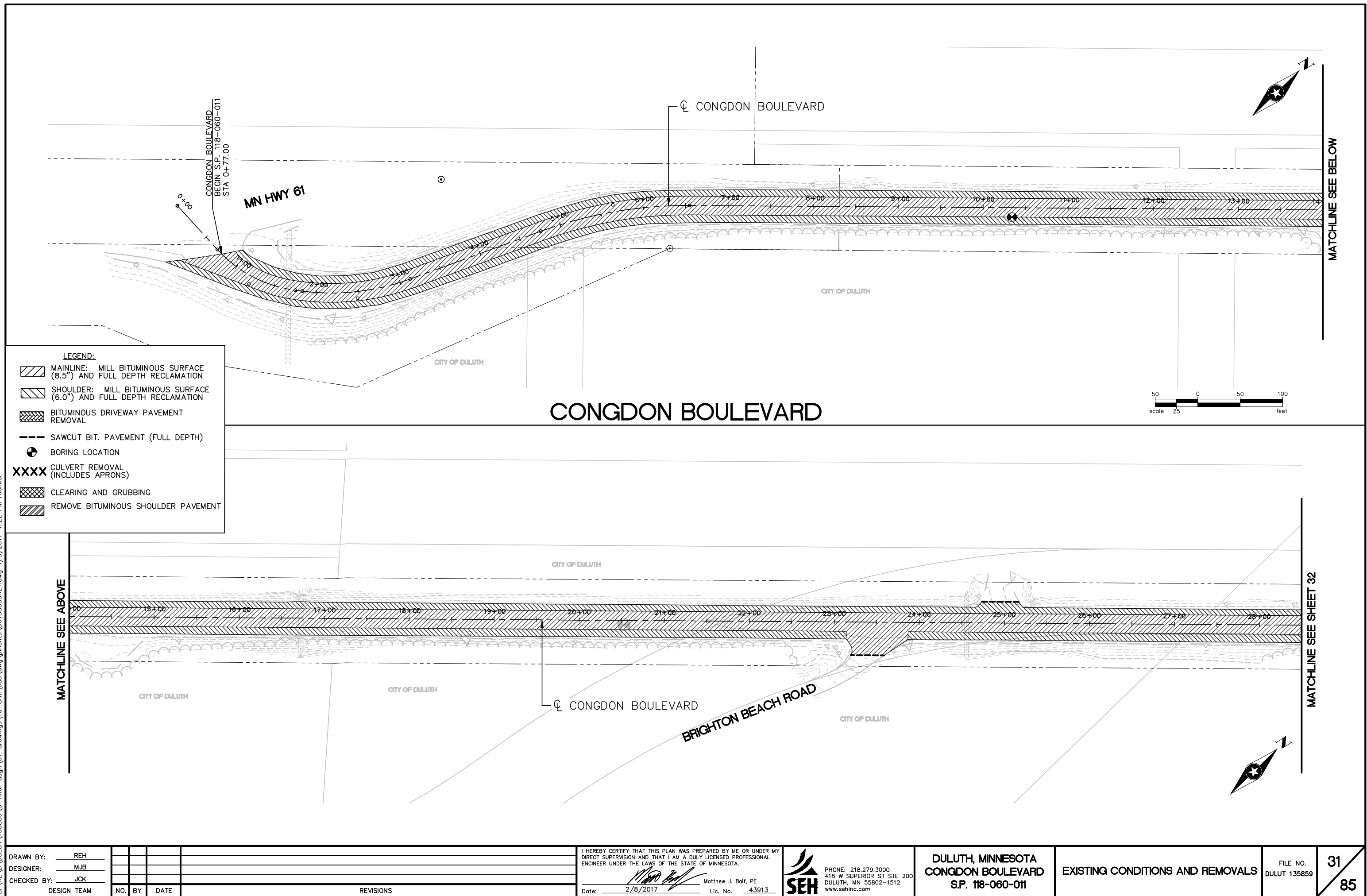
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ALIGNMENT TABULATION

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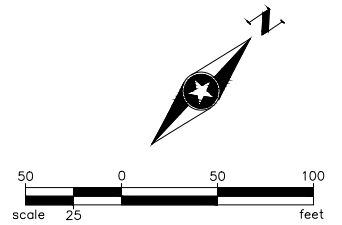


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MATCHLINE SEE SHEET 31

MATCHLINE SEE BELOW

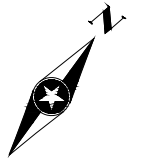
CONGDON BOULEVARD



- LEGEND:**
- MAINLINE: MILL BITUMINOUS SURFACE (8.5") AND FULL DEPTH RECLAMATION
 - SHOULDER: MILL BITUMINOUS SURFACE (6.0") AND FULL DEPTH RECLAMATION
 - BITUMINOUS DRIVEWAY PAVEMENT REMOVAL
 - SAWCUT BIT. PAVEMENT (FULL DEPTH)
 - BORING LOCATION
 - XXXX CULVERT REMOVAL (INCLUDES APRONS)
 - CLEARING AND GRUBBING
 - REMOVE BITUMINOUS SHOULDER PAVEMENT

MATCHLINE SEE ABOVE

MATCHLINE SEE SHEET 33



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DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



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EXISTING CONDITIONS AND REMOVALS

FILE NO.
DULUT 135859

32
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DESIGNER: <u>MJB</u>				
CHECKED BY: <u>JCK</u>				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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Date: 2/8/2017 Lic. No. 43913



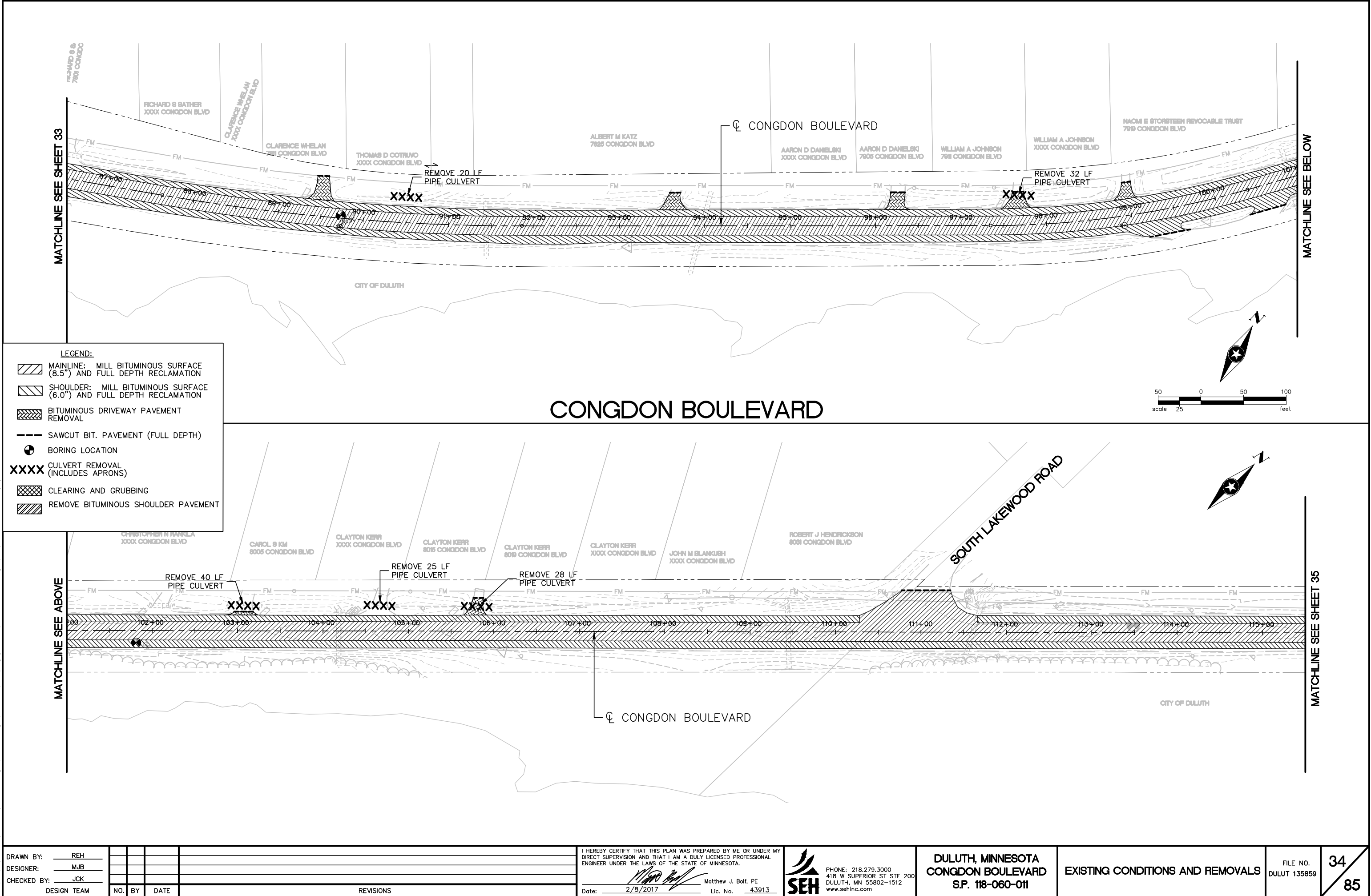
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EXISTING CONDITIONS AND REMOVALS

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DULUT 135859

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Date: 2/8/2017 Lic. No. 43913

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EXISTING CONDITIONS AND REMOVALS

FILE NO.
DULUT 135859

34
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LEGEND:

MAINLINE: MILL BITUMINOUS SURFACE (8.5") AND FULL DEPTH RECLAMATION

SHOULDER: MILL BITUMINOUS SURFACE (6.0") AND FULL DEPTH RECLAMATION

BITUMINOUS DRIVEWAY PAVEMENT REMOVAL

SAWCUT BIT. PAVEMENT (FULL DEPTH)

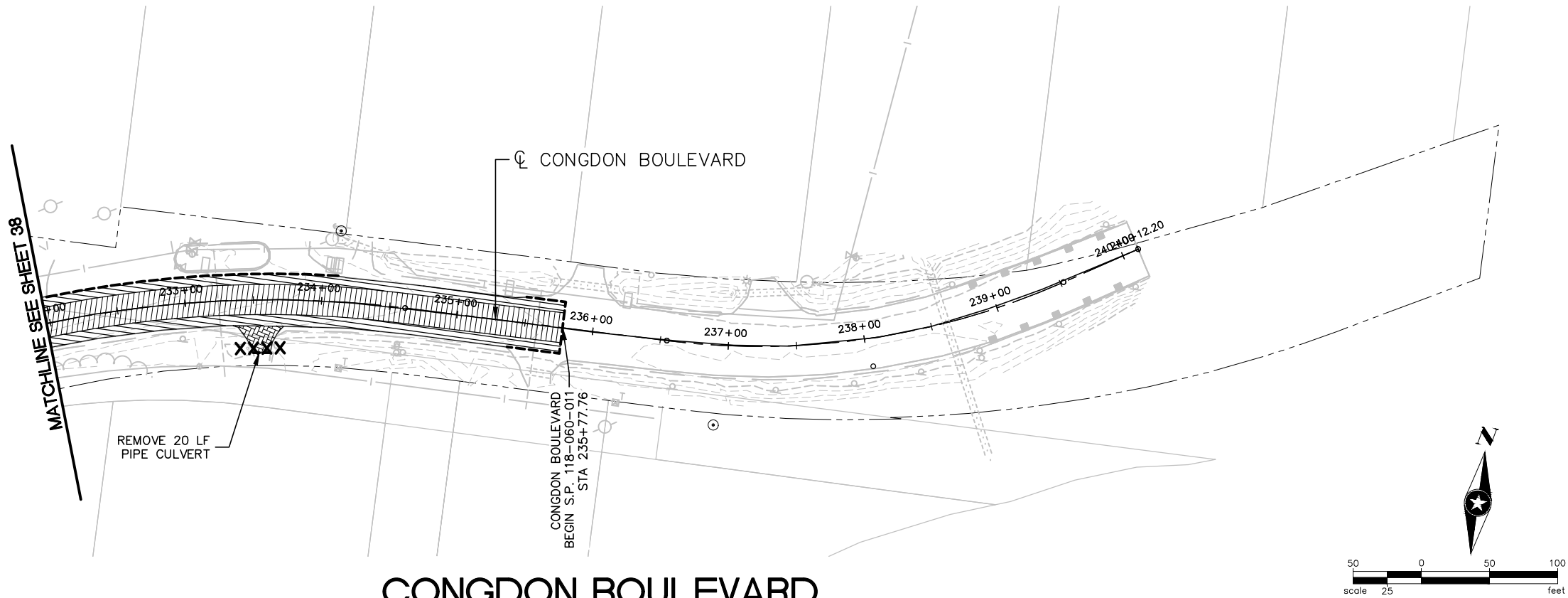
BORING LOCATION

XXXX

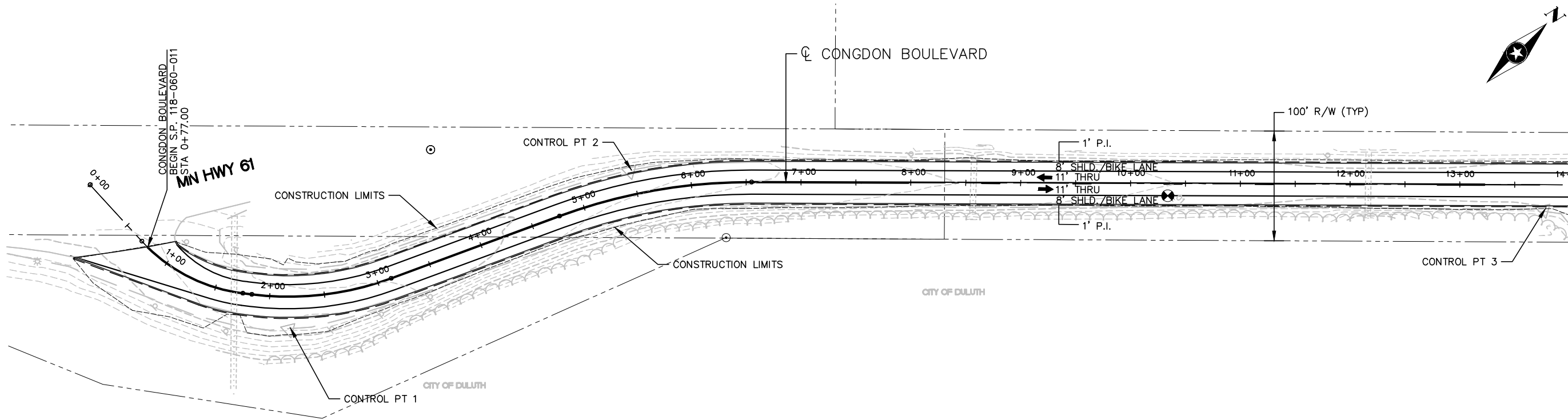
CULVERT REMOVAL (INCLUDES APRONS)

CLEARING AND GRUBBING

REMOVE BITUMINOUS SHOULDER PAVEMENT

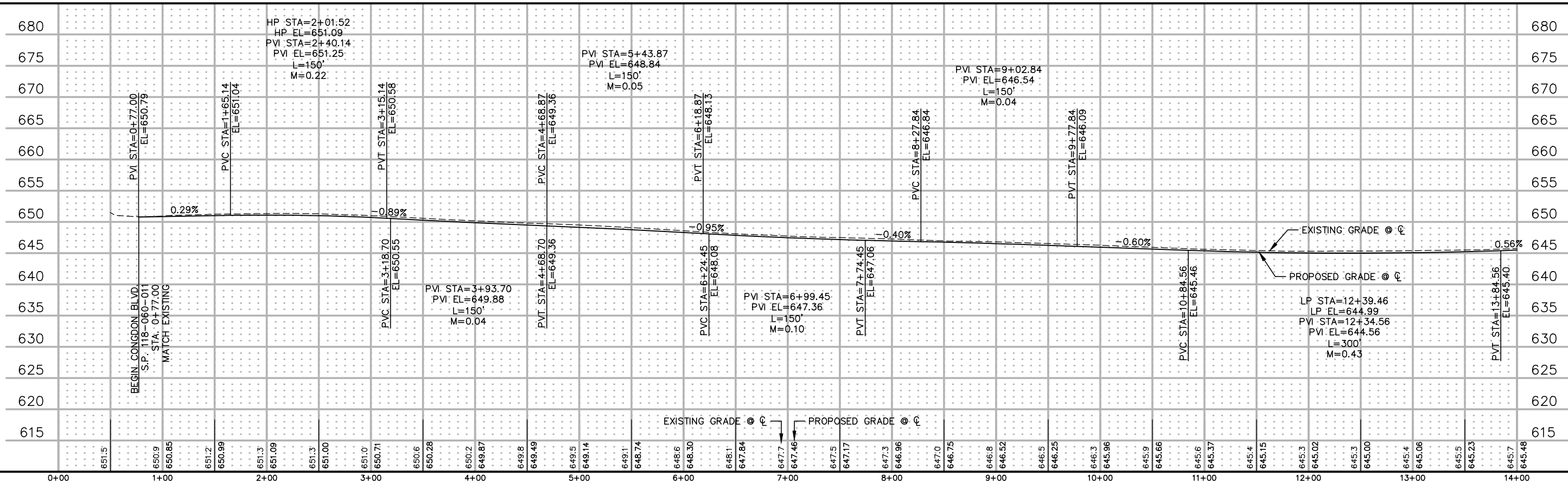


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MATCH LINE SEE SHEET 41

CONGDON BOULEVARD



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Matthew J. Bolt, PE
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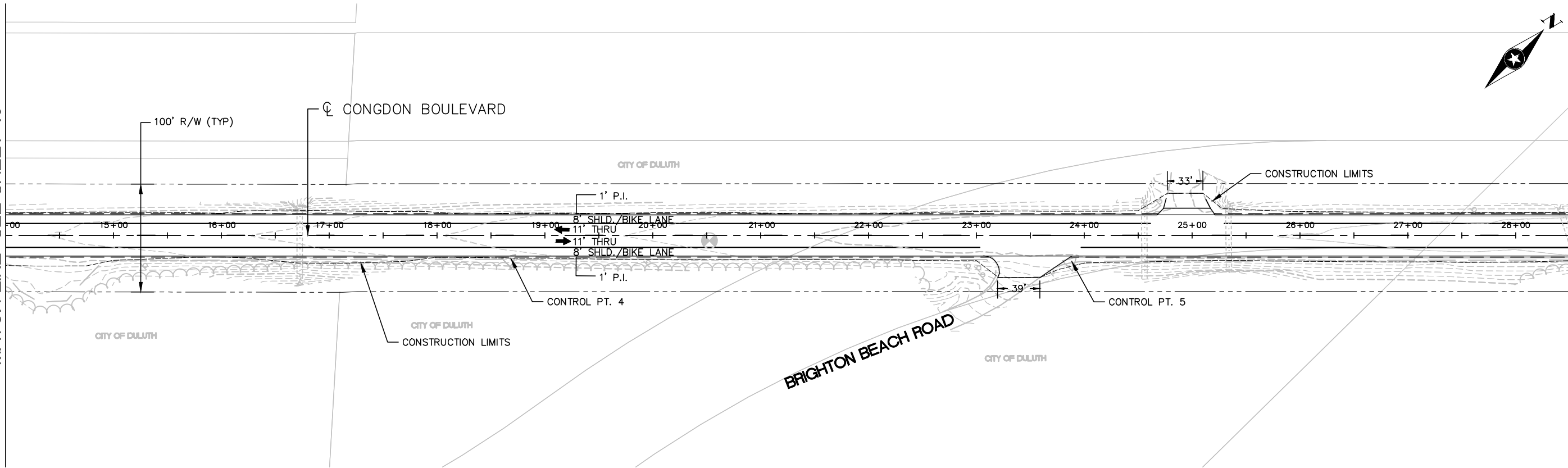
PLAN AND PROFILE

FILE NO.
DULUT 135859

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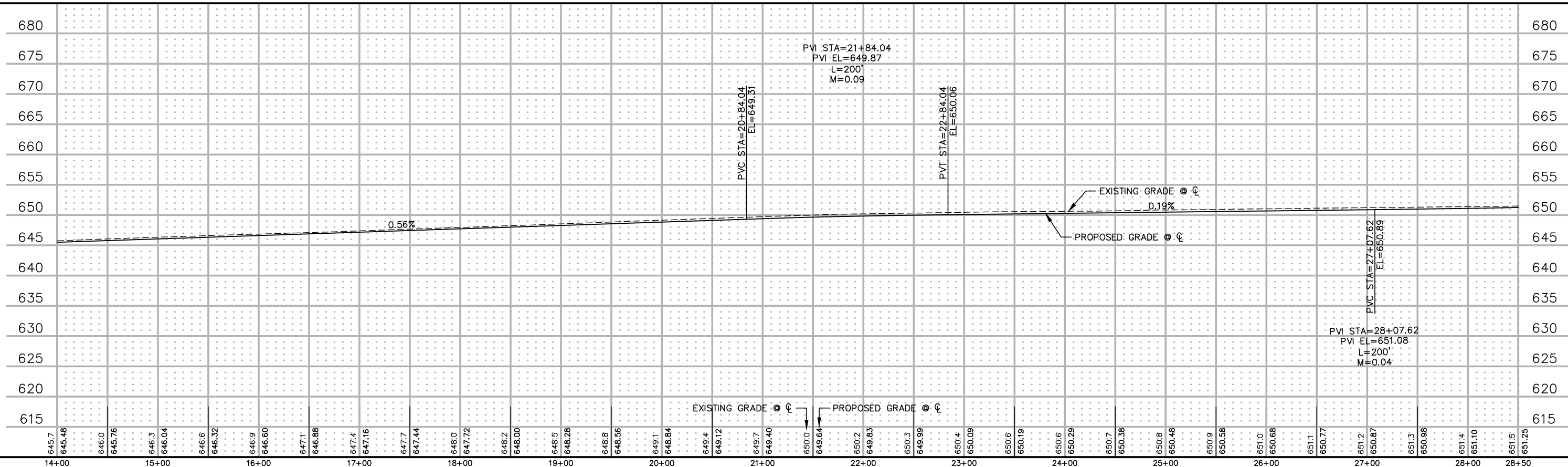
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MATCH LINE SEE SHEET 40



MATCH LINE SEE SHEET 42

CONGDON BOULEVARD



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DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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Matthew J. Bolf, PE
Date: 2/8/2017 Lic. No. 43913

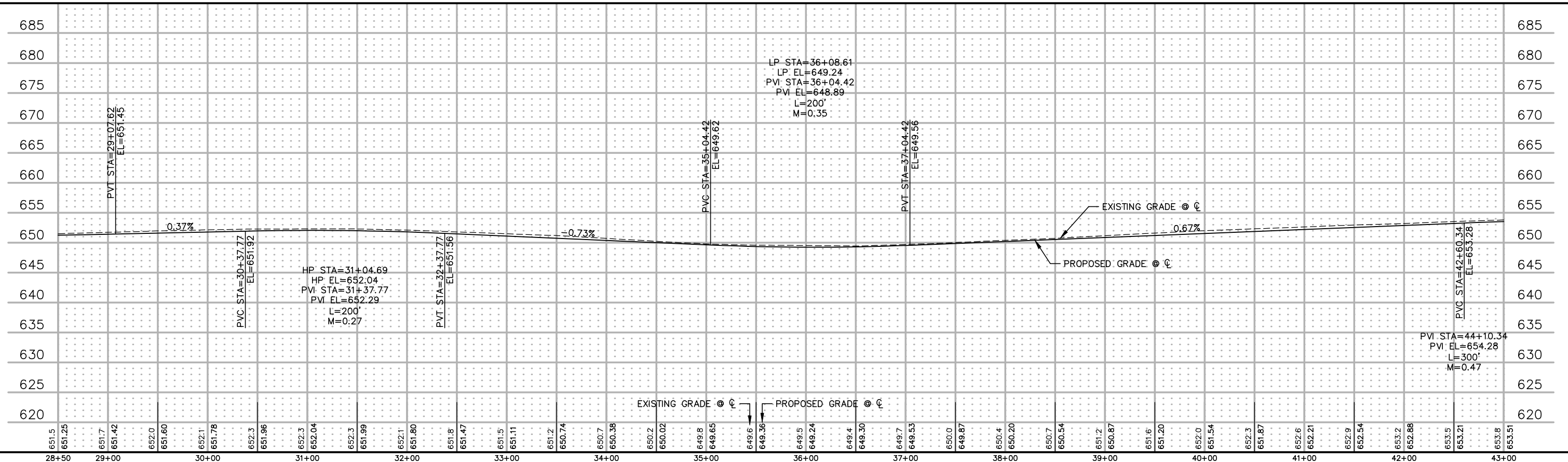
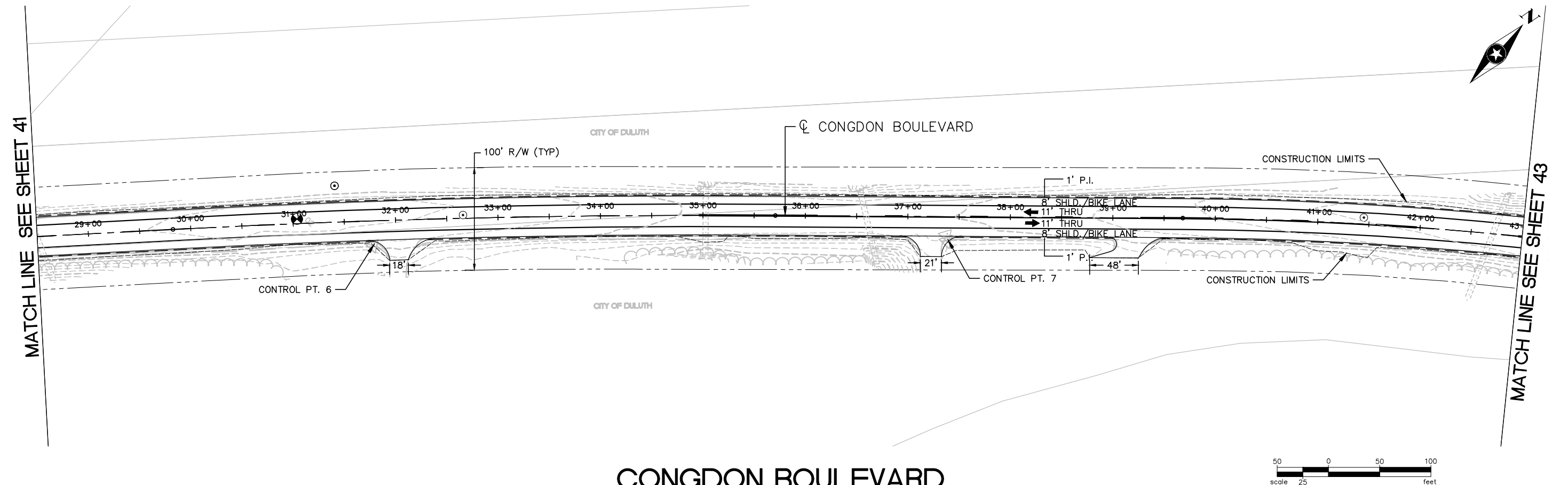
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S.P. 118-060-011**

PLAN AND PROFILE

FILE NO.
DULUT 135859

**41
85**



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DESIGNER: MJB
CHECKED BY: JCK
DESIGN TEAM

NO.	BY	DATE

REVISIONS

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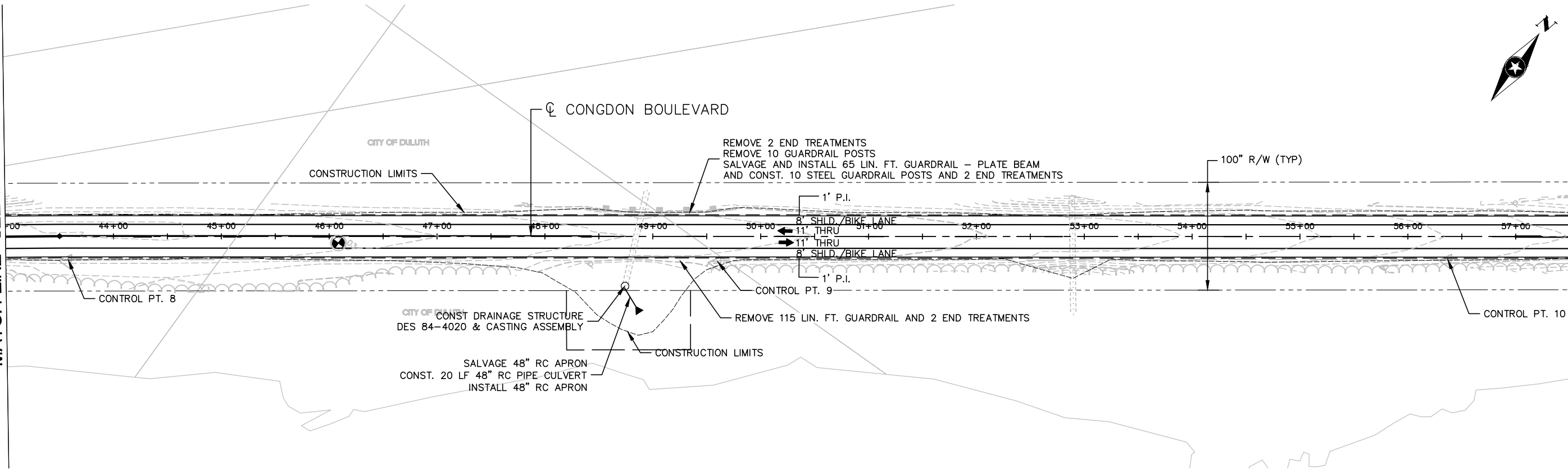
PLAN AND PROFILE

FILE NO. 4
DULUT 135859

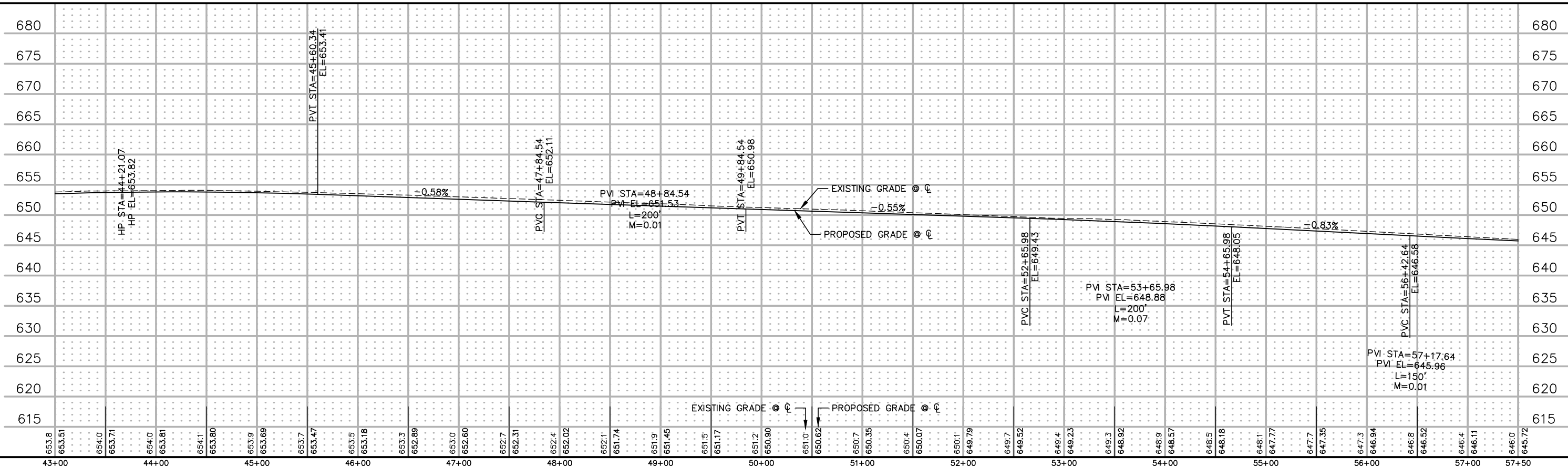
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MATCH LINE SEE SHEET 42



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DESIGNER: MJB
CHECKED BY: JCK
DESIGN TEAM

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Matthew J. Bolf, PE
Lic. No. 43913
Date: 2/8/2017



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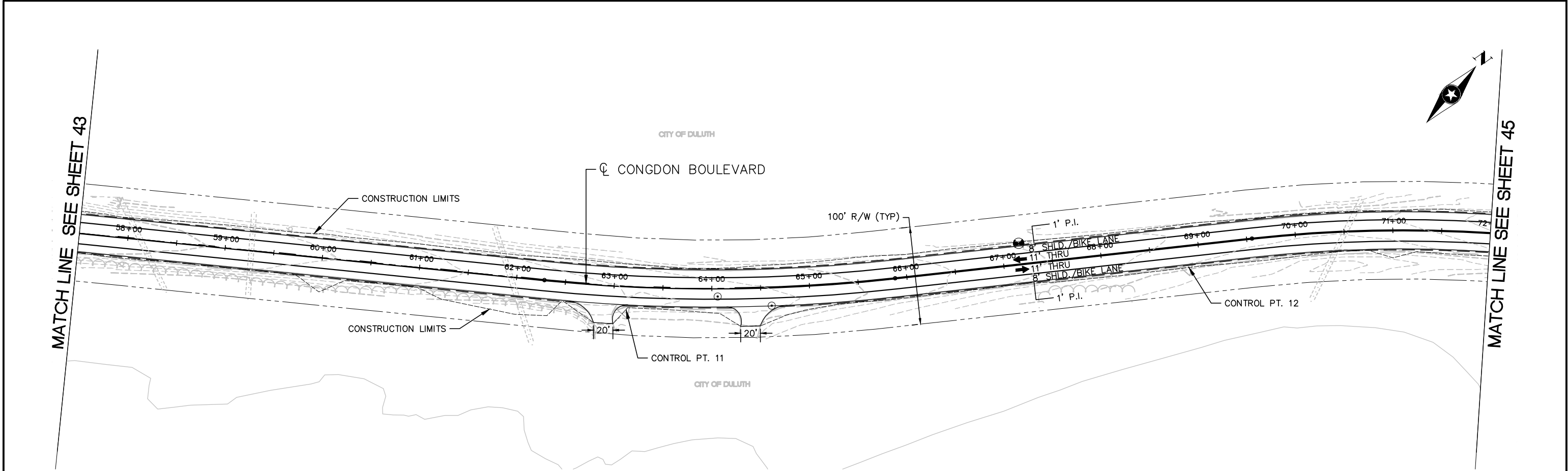
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S.P. 118-060-011

PLAN AND PROFILE

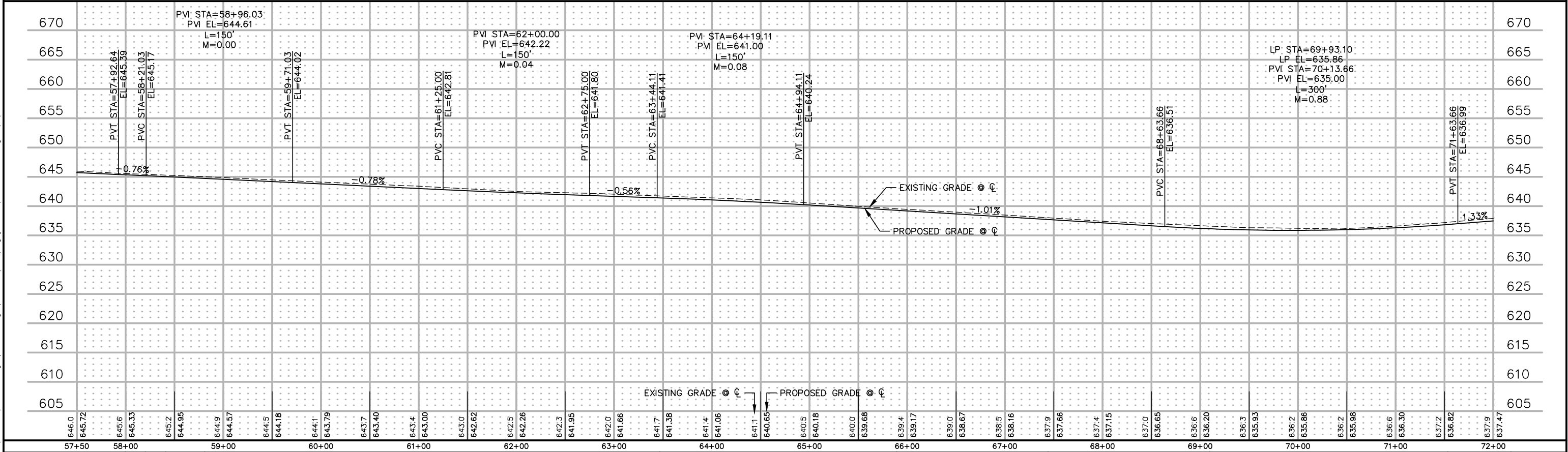
FILE NO.
DULUT 135859

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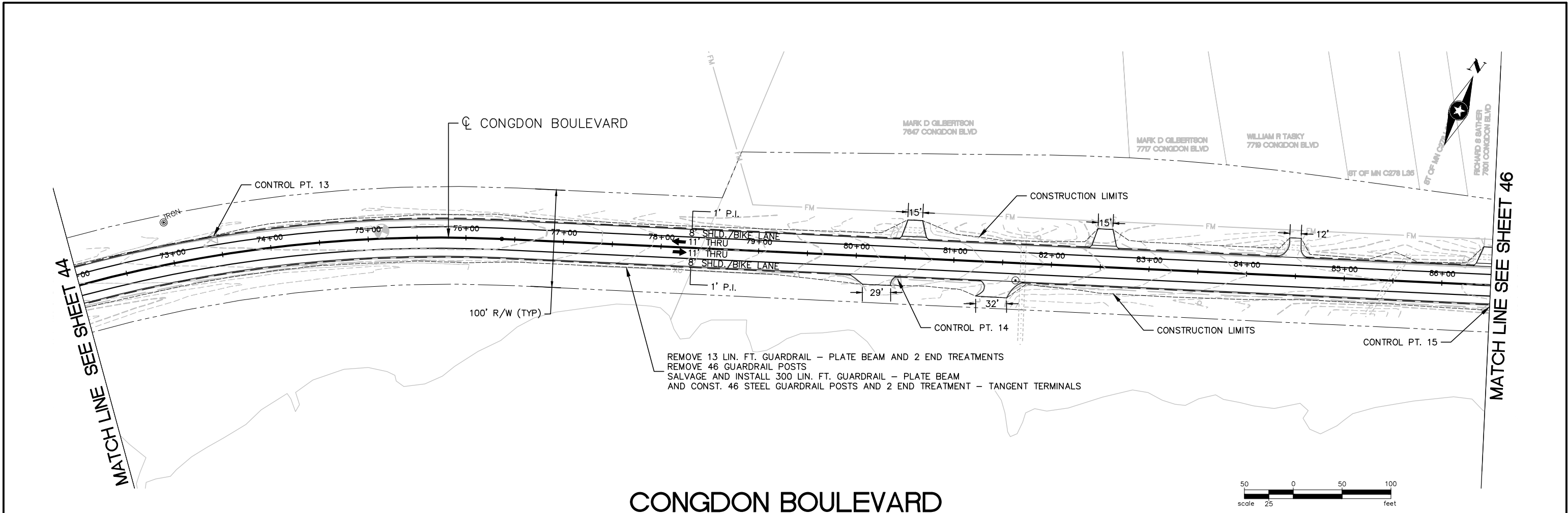


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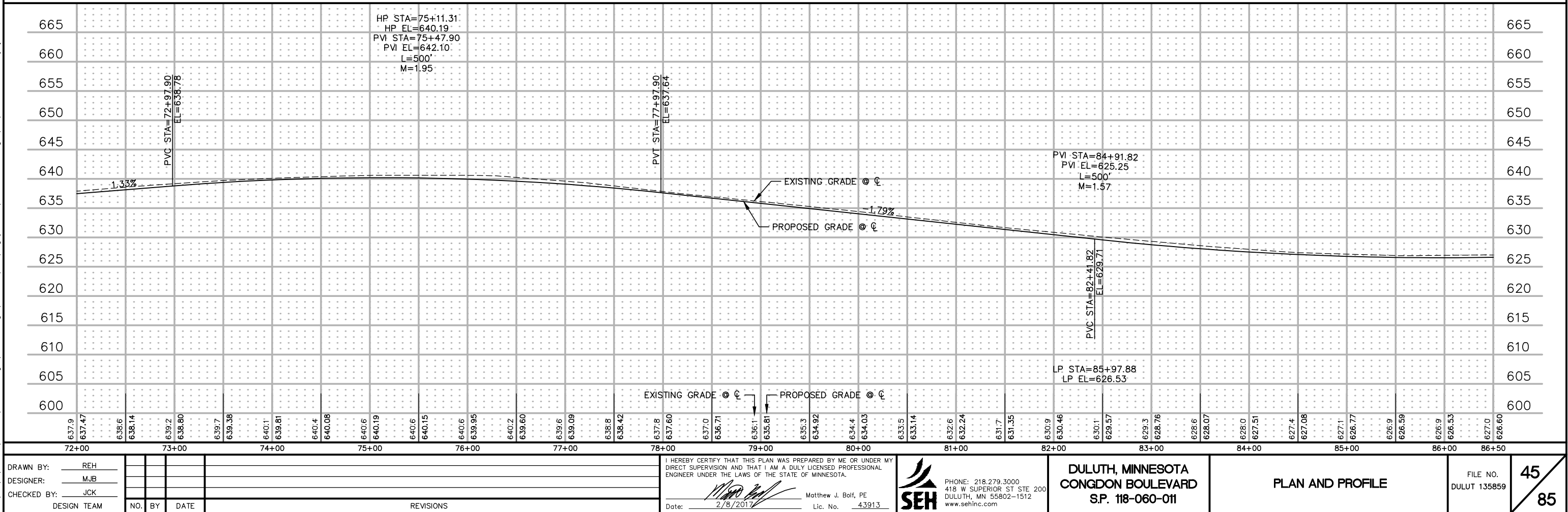


DRAWN BY: REH	DESIGNER: MJB	CHECKED BY: JCK	DESIGN TEAM	NO.	BY	DATE	REVISIONS	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. Date: 2/8/2017 Matthew J. Bolf, PE Lic. No. 43913		 PHONE: 218.279.3000 418 W SUPERIOR ST STE 200 DULUTH, MN 55802-1512 www.sehinc.com	DULUTH, MINNESOTA CONGDON BOULEVARD S.P. 118-060-011	PLAN AND PROFILE	FILE NO. DULUT 135859	44 85
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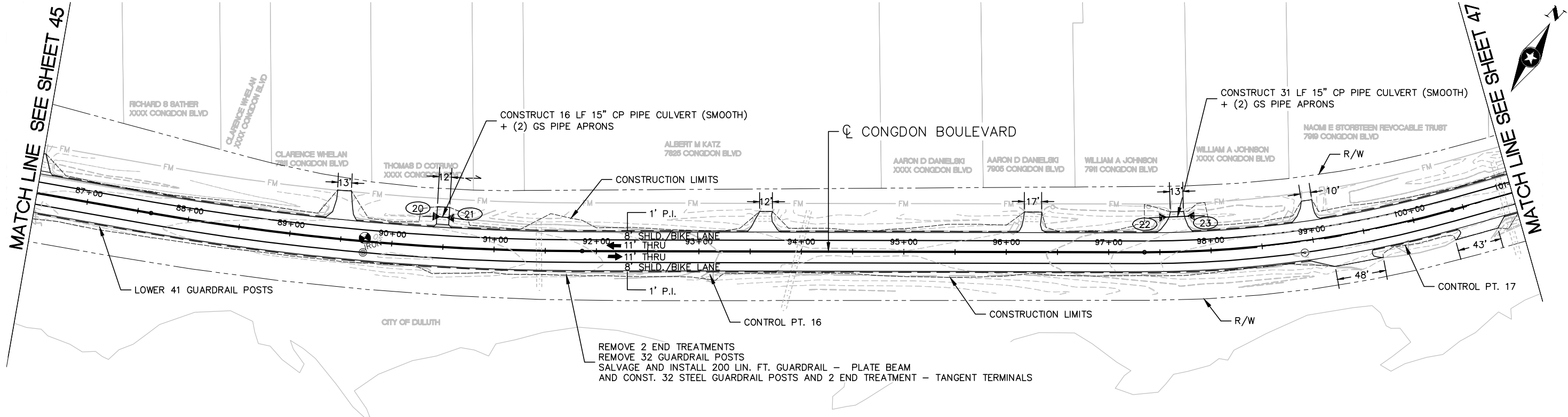
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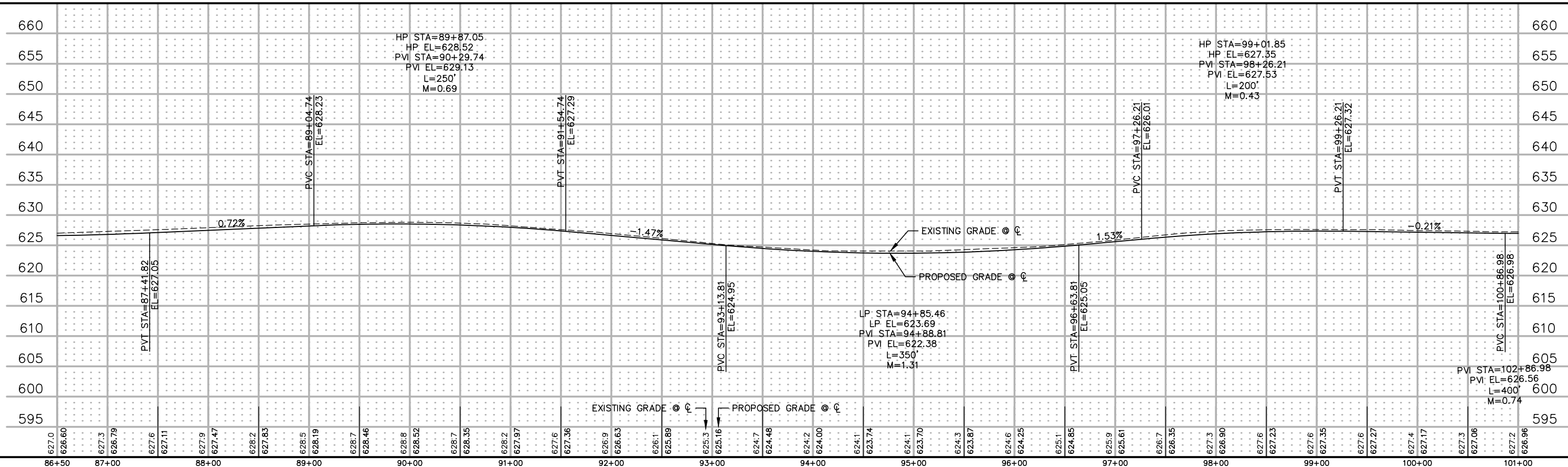
CONGDON BOULEVARD



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CONGDON BOULEVARD



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DESIGNER: MJB
CHECKED BY: JCK
DESIGN TEAM

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

Matthew J. Bolf, PE
Lic. No. 43913
Date: 2/8/2017

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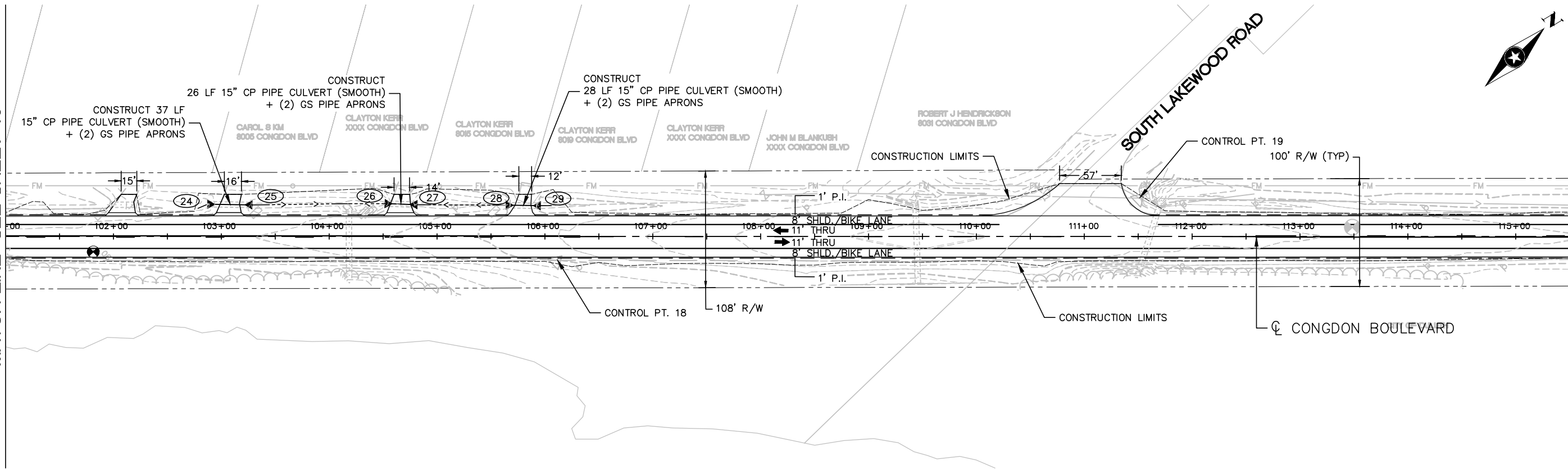
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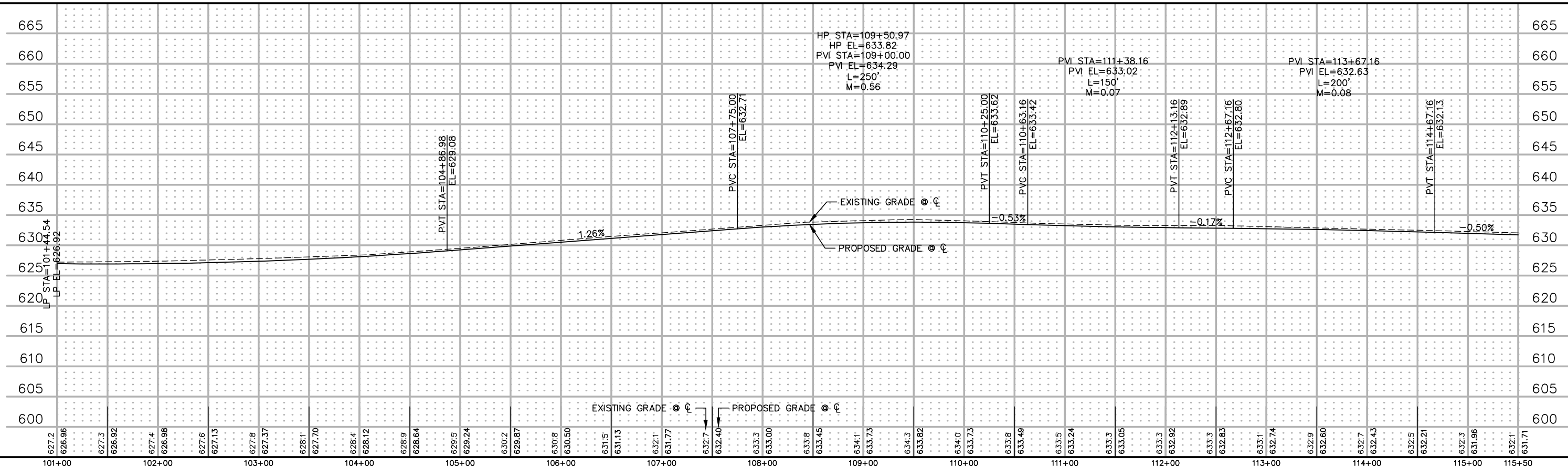
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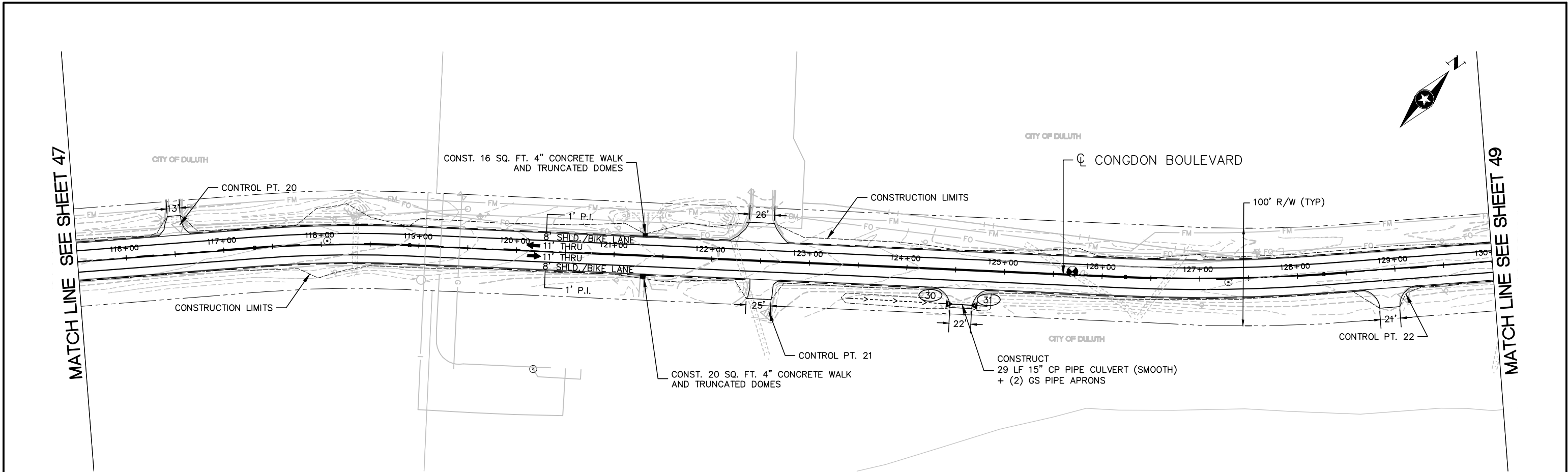
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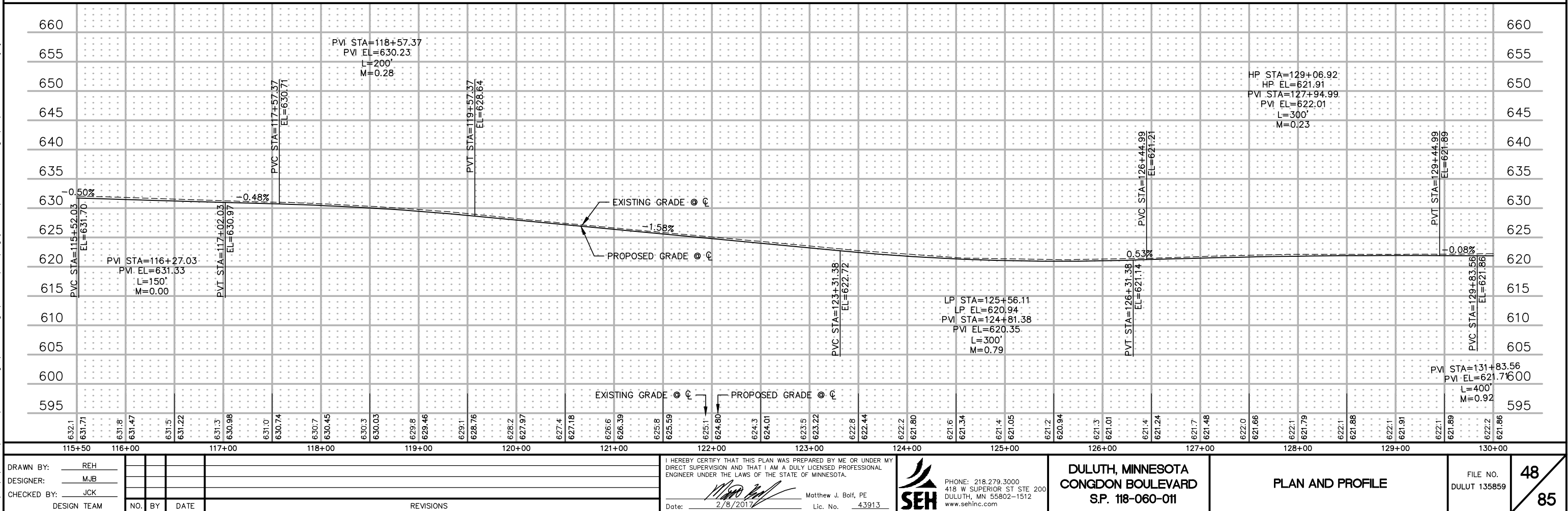
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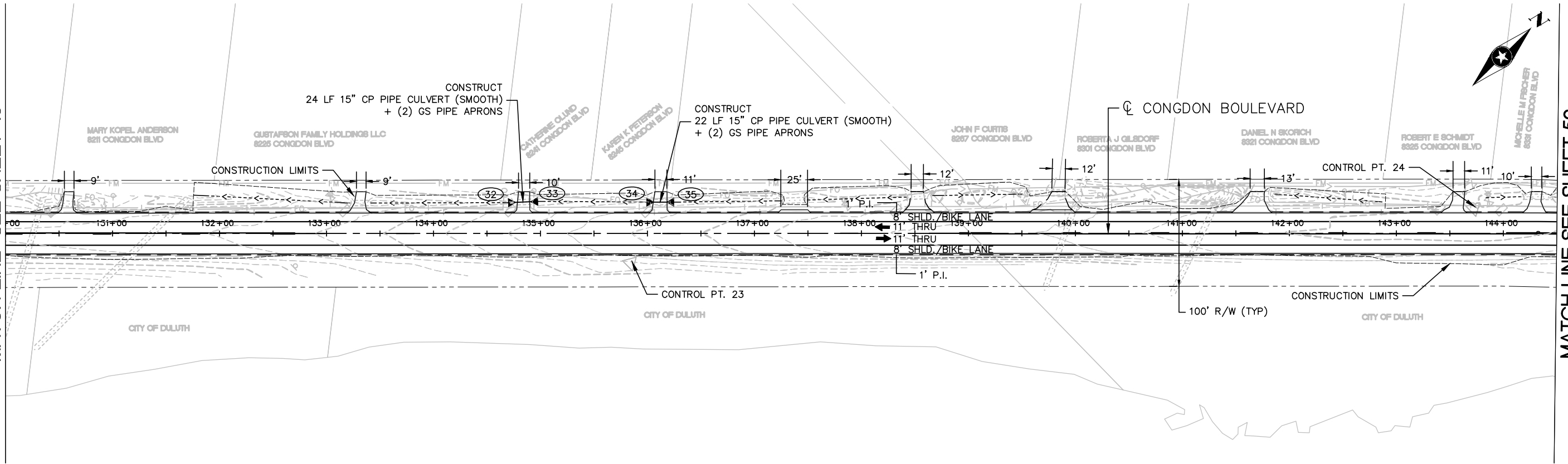


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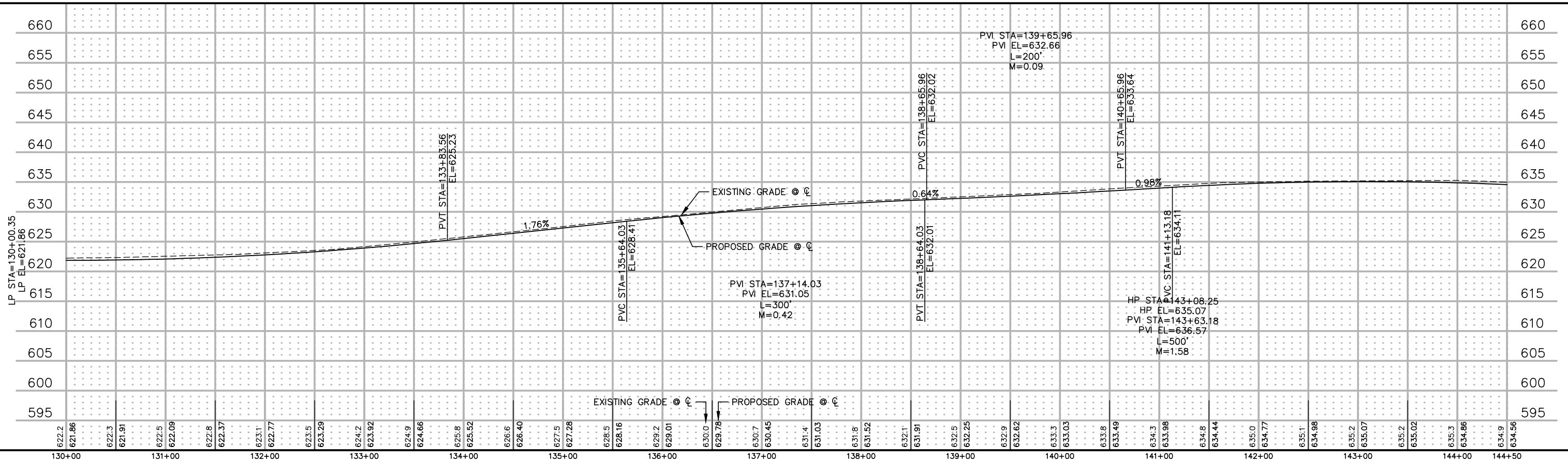
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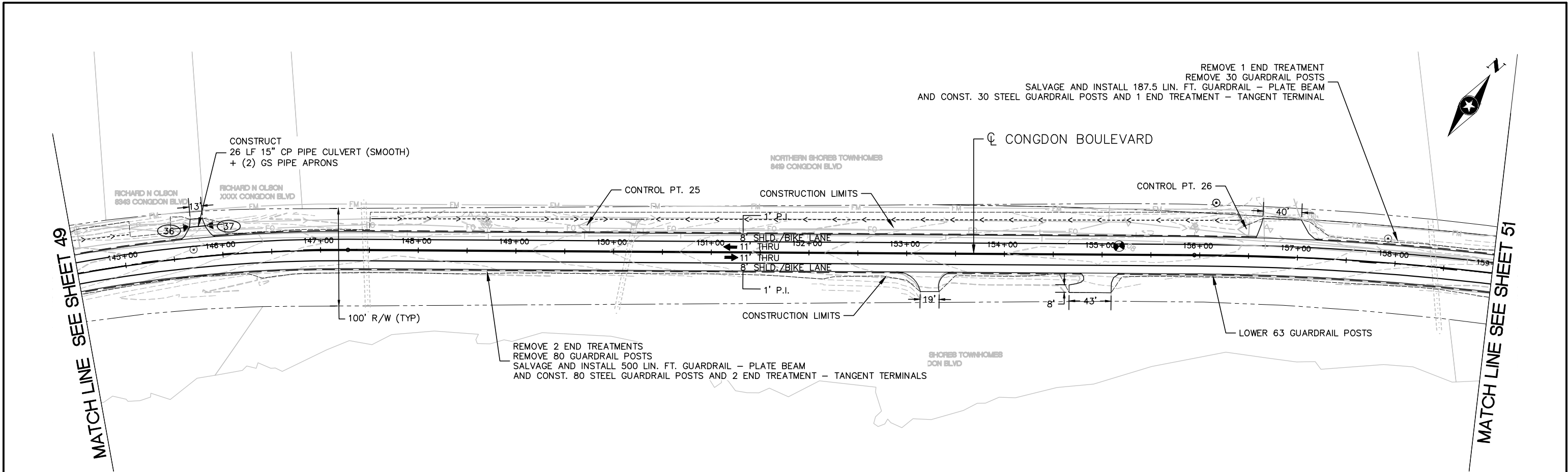
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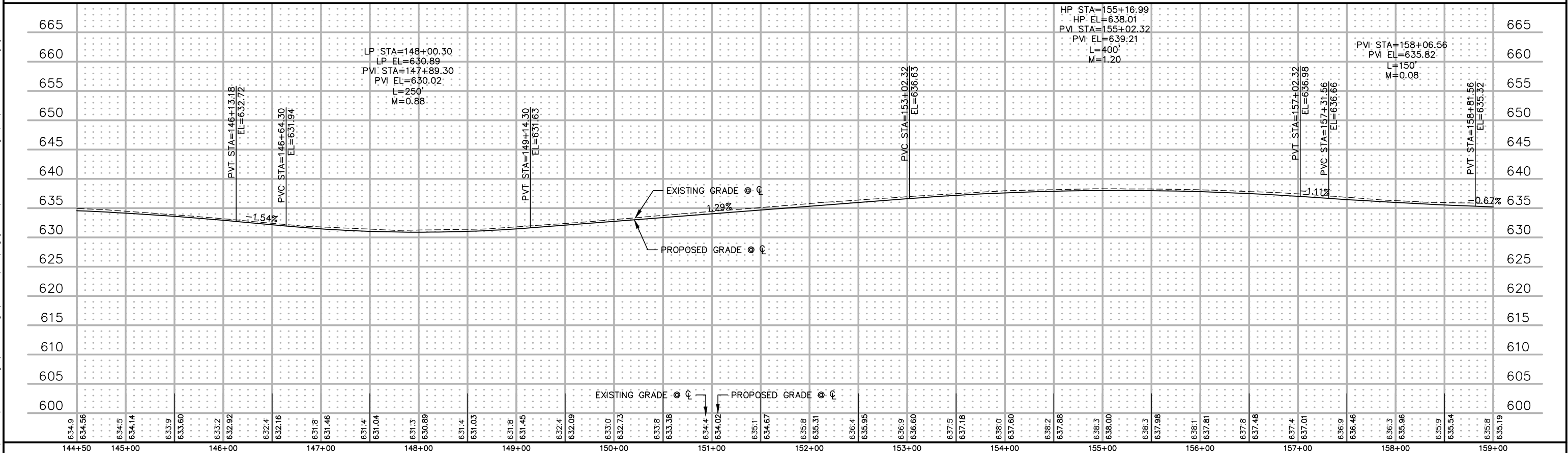
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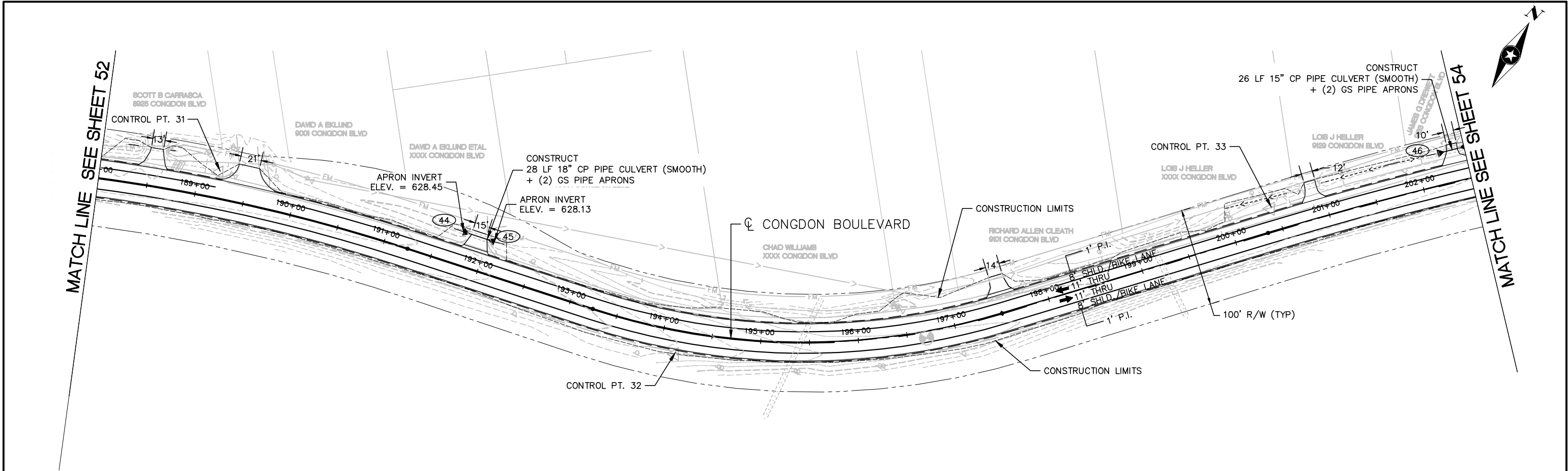


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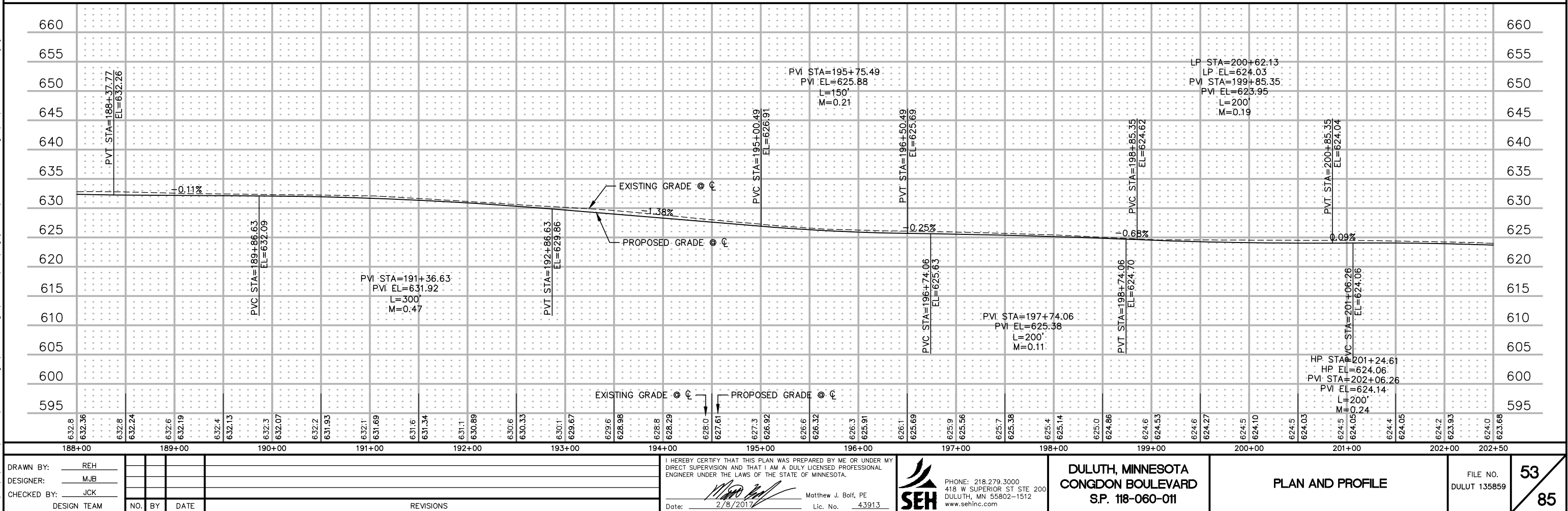


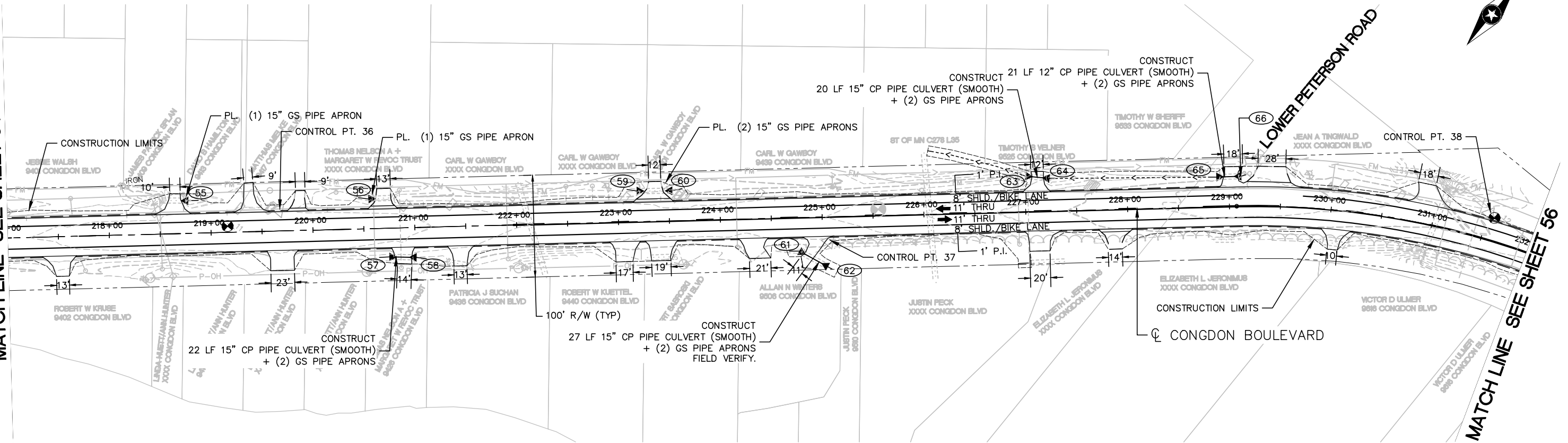
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CONGDON BOULEVARD





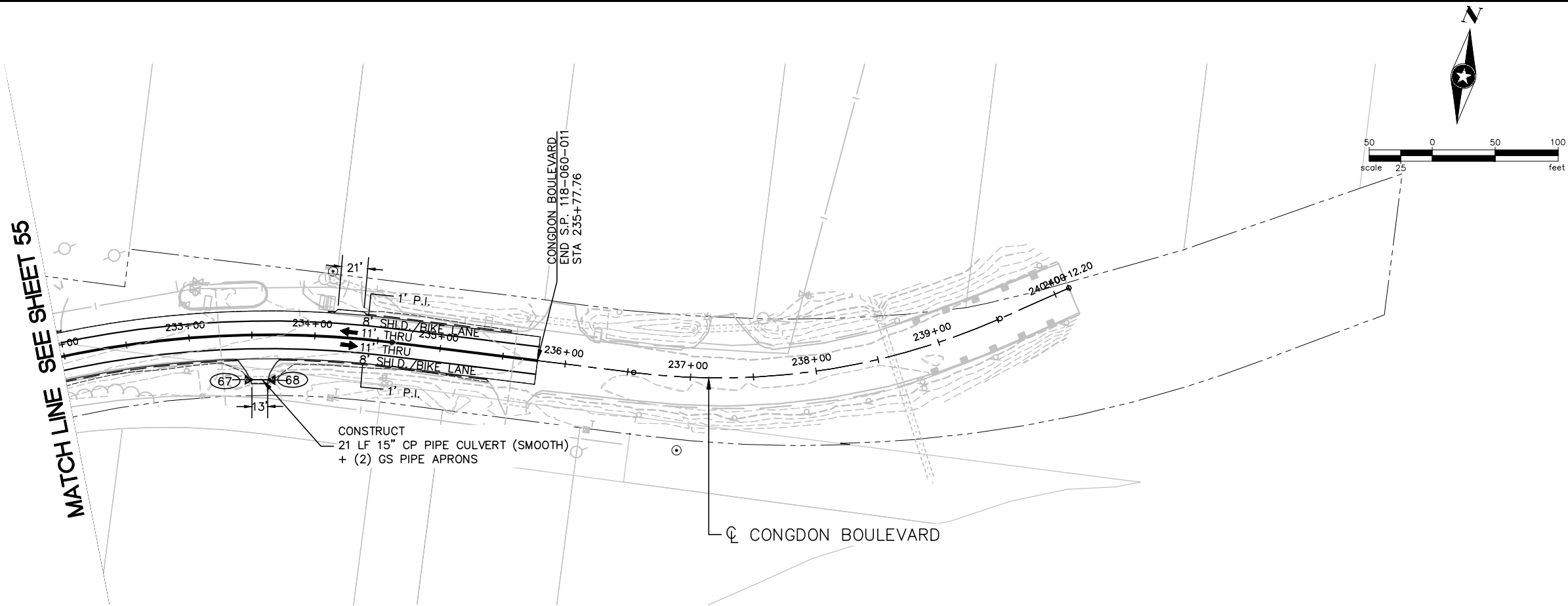
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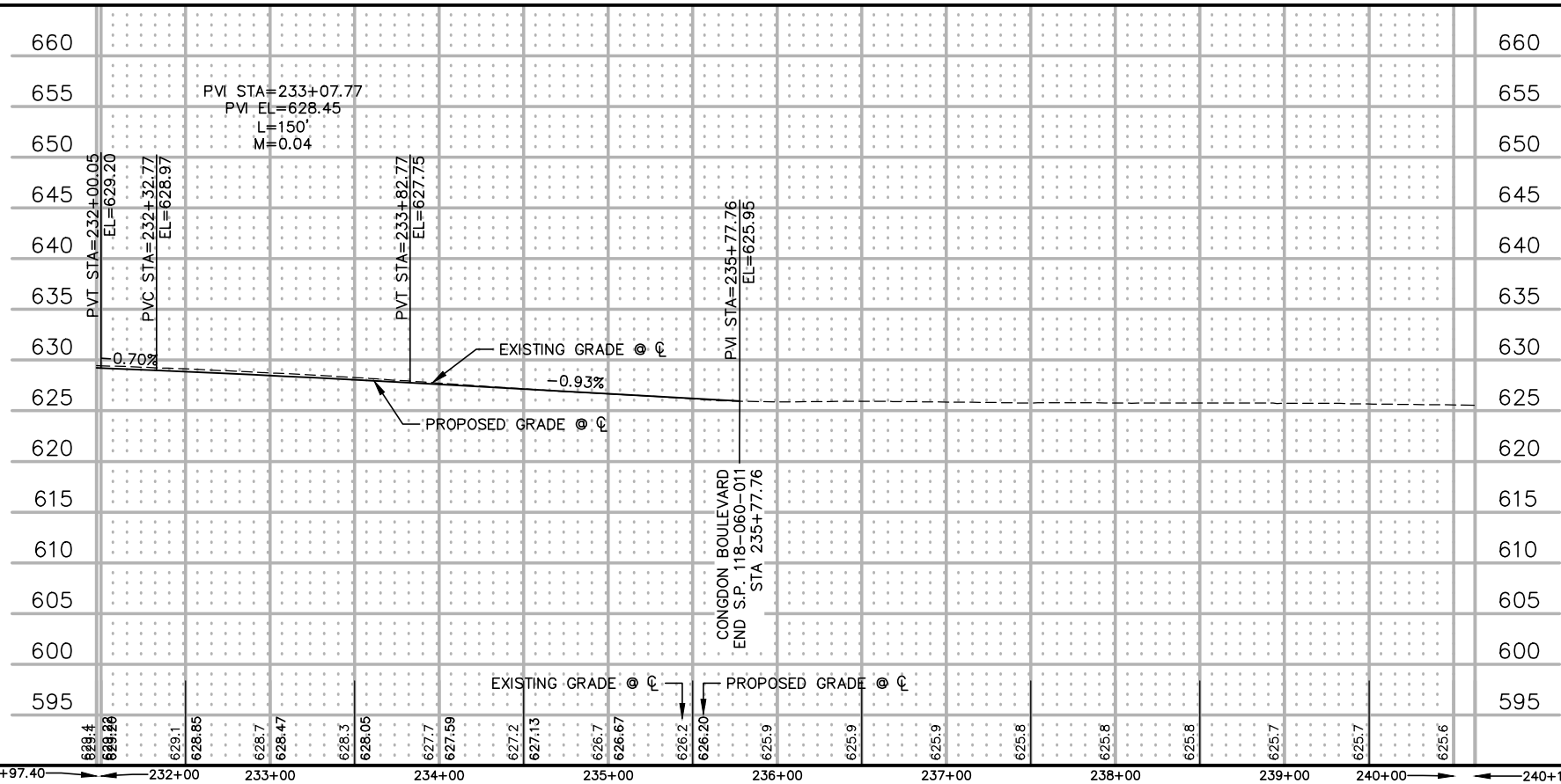
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PLAN AND PROFILE	FILE NO.	55
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CHECKED BY: JCK
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PLAN AND PROFILE

FILE NO.
DULUT 135859

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STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

SWPPP SUMMARY/OVERVIEW:

THIS STORM WATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN DEVELOPED TO ADDRESS THE REQUIREMENTS OF NPDES PERMIT MN R100001, PART III, SUBPART A. THIS SWPPP INCLUDES A COMBINATION OF NARRATIVE AND PLAN SHEETS THAT DESCRIBE THE TEMPORARY AND PERMANENT STORM WATER MANAGEMENT PLAN FOR THE PROJECT.

PROJECT INFORMATION:

LOCATION:	CONGDON BOULEVARD – HWY 61 TO MCQUADE ROAD
LATITUDE/LONGITUDE:	46.842044, –91.996862
PROJECT DESCRIPTION:	BITUMINOUS RECLAMATION AND SURFACING
SOIL DISTURBING ACTIVITIES:	DITCHING

CONTACTS:

OWNER:	CITY OF DULUTH
CONTACT:	PATRICK LOOMIS, PROJECT ENGINEER
ADDRESS:	411 WEST 1ST STREET
PHONE:	218–730–5094
EMAIL:	PLOOMIS@DULUTHMN.GOV

ENGINEER:	SHORT ELLIOTT HENDRICKSON INC. (SEH)
CONTACT:	MATT BOLF, PE
PHONE:	218.279.3025
EMAIL:	MBOLF@SEHINC.COM
PROJECT NO.:	DULUT 135859

KNOWLEDGEABLE PERSON/CHAIN OF RESPONSIBILITY

THE CONTRACTOR SHALL IDENTIFY A PERSON KNOWLEDGEABLE AND EXPERIENCED IN THE APPLICATION OF EROSION PREVENTION AND SEDIMENT CONTROL BMPs WHO WILL OVERSEE THE IMPLEMENTATION OF THE SWPPP, INCLUDING: INSTALLATION, INSPECTION AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMPs. THE GENERAL CONTRACTOR SHALL ATTACH CONTACT INFORMATION TO THE SWPPP PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY.

CONTRACTOR: _____
CONTACT: _____
PHONE: _____
EMAIL: _____

THE CONTRACTOR SHALL ESTABLISH A CHAIN OF RESPONSIBILITY FOR ALL CONTRACTORS AND SUB-CONTRACTORS ON SITE TO ENSURE THE SWPPP IS BEING PROPERLY IMPLEMENTED AND MAINTAINED. THE CONTRACTOR SHALL PROVIDE THE CHAIN OF RESPONSIBILITY TO THE OWNER AND ATTACH TO THE SWPPP PRIOR TO ANY CONSTRUCTION ACTIVITY.

GENERAL SWPPP RESPONSIBILITIES:

THE CONTRACTOR SHALL KEEP THE SWPPP, INCLUDING ALL AMENDMENTS AND INSPECTION AND MAINTENANCE RECORDS ON SITE DURING CONSTRUCTION.

THE SWPPP WILL BE AMENDED AS NEEDED AND/OR AS REQUIRED BY PROVISIONS OF THE PERMIT. AMENDMENTS WILL BE APPROVED BY BOTH THE OWNER AND CONTRACTOR AND WILL BE ATTACHED OR OTHERWISE INCLUDED WITH THE SWPPP DOCUMENTS. THE SWPPP AMENDMENTS SHALL BE INITIATED, FACILITATED, AND PROCESSED BY THE CONTRACTOR. THE SWPPP AND AMENDMENTS SHALL BE KEPT ON SITE BY THE CONTRACTOR WHENEVER CONSTRUCTION ACTIVITY IS IN PROGRESS.

THE CONTRACTOR SHALL DOCUMENT AMENDMENTS TO THE SWPPP AS A RESULT OF INSPECTION(S) WITHIN 7 DAYS.

BOTH THE OWNER AND CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER TERMINATION AND/OR TRANSFER OF THE PERMIT.

TRAINING DOCUMENTATION:

PREPARER/DESIGNER OF SWPPP:	JOHN KRYSIAK
EMPLOYER:	SHORT ELLIOTT HENDRICKSON INC.
TRAINING AND DATE OBTAINED:	DESIGN OF CONSTRUCTION STORMWATER POLLUTION PREVENTION PLANS (2013)
NAME OF INSTRUCTOR(S):	JOHN CHAPMAN

THE CONTRACTOR (OPERATOR) SHALL ADD TO THE SWPPP TRAINING RECORDS FOR THE FOLLOWING PERSONNEL:

–INDIVIDUALS OVERSEEING THE IMPLEMENTATION OF, REVISING, AND AMENDING THE SWPPP
–INDIVIDUALS PERFORMING INSPECTIONS
–INDIVIDUALS PERFORMING OR SUPERVISING THE INSTALLATION, MAINTENANCE AND REPAIR OF BMPs

TRAINING MUST RELATE TO THE INDIVIDUAL’S JOB DUTIES AND RESPONSIBILITIES AND SHALL INCLUDE:

- 1) DATES OF TRAINING
- 2) NAME OF INSTRUCTORS
- 3) CONTENT AND HOURS OF TRAINING

THE CONTRACTOR SHALL ENSURE THAT THE INDIVIDUALS ARE TRAINED BY LOCAL, STATE, FEDERAL AGENCIES, PROFESSIONAL ORGANIZATIONS, OR OTHER ENTITIES WITH EXPERTISE IN EROSION PREVENTION, SEDIMENT CONTROL, PERIMETER CONTROL, PERMANENT STORMWATER MANAGEMENT AND THE MINNESOTA NPDES/SDS CONSTRUCTION STORMWATER PERMIT.

PROJECT SUMMARY:

TOTAL PROJECT AREA:	54 AC
TOTAL LAND AREA TO BE CONSTRUCTED:	28 AC
PRE-CONSTRUCTION IMPERVIOUS AREA:	23 AC
POST-CONSTRUCTION IMPERVIOUS AREA:	23 AC
IMPERVIOUS LAND ADDED:	0 AC

RECEIVING WATER(S) WITHIN ONE MILE FROM PROJECT BOUNDARIES:

ID	NAME	TYPE	SPECIAL WATER CLASSIFICATION	TMDL
16–0001–00	LAKE SUPERIOR	LAKE	MERCURY IN FISH TISSUE PCB IN FISH TISSUE	N/A
ADDITIONAL BMPs AND/OR ACTIONS REQUIRED:				
N/A				

DOES THE PROJECT DISCHARGE TO A CALCAREOUS FEN:	NO
IS THE PROJECT LOCATED IN A KARST AREA:	NO
PROJECTS LOCATED IN KARST AREA MEASURES IMPLEMENTED TO ENSURE PROTECTION OF DRINKING WATER SUPPLY:	
X	

SITE SOIL INFORMATION:

(SOIL INFORMATION PROVIDED IS FOR NPDES PERMIT INFORMATION ONLY. SOIL INFORMATION WAS OBTAINED FROM THE USGS WEBSITE. THE CONTRACTOR SHALL NOT RELY ON THIS SOIL INFORMATION FOR CONSTRUCTION PURPOSES.)

SOIL NAME:	HYDROLOGIC CLASSIFICATION:
SILT LOAM	B
SILTY CLAY LOAM	D
SILTY CLAY	D
CLAY	D
GRAVELLY SAND LOAM	A
SANDY LOAM	A
ANTICIPATED RANGE OF SOIL PARTICLE SIZES	LOAMY SOILS

RELATED REVIEWS & PERMITS:

ENVIRONMENTAL, WETLAND, ENDANGERED OR THREATENED SPECIES, ARCHEOLOGICAL, LOCAL, STATE, AND/OR FEDERAL REVIEWS/PERMITS:

TYPE OF PERMIT/REVIEW:	REQUIRED ACTION(S):
X	X
X	X

IMPLEMENTATION SEQUENCE:

THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING SEQUENCE.
THE ENGINEER MAY APPROVE ADJUSTMENTS TO THE SEQUENCE AS NEEDED.

1.	INSTALL ROCK CONSTRUCTION ENTRANCE(S)
2.	INSTALL PERIMETER CONTROL AND STABILIZE DOWN GRADIENT BOUNDARIES
3.	COMPLETE SITE GRADING
4.	INSTALL UTILITIES, STORM SEWER, INLET PROTECTION, CURB & GUTTER, PAVING
5.	COMPLETE FINAL GRADING AND STABILIZE DISTURBED AREAS
6.	AFTER CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, REMOVE ACCUMULATED SEDIMENT, REMOVE BMPs, AND RE-STABILIZE ANY AREAS DISTURBED BY THEIR REMOVAL.

THE FOLLOWING DOCUMENTS ARE CONSIDERED PART OF THE SWPPP:

PLAN AND PROFILE PLAN SHEETS 39–55
EROSION CONTROL AND TURF ESTABLISHMENT PLAN SHEETS 58–66
CONSTRUCTION DETAILS PLAN SHEETS 19
SWPPP NOTE AND DETAIL SHEETS 56–57
SEDIMENT CONTROL STANDARD PLAN SHEETS 68–71
PROJECT SPECIFICATIONS
PROJECT BID FORM

PROJECT SPECIFIC NOTES:

XX

DRAWN BY: REH					
DESIGNER: MJB					
CHECKED BY: JCK					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	

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Matthew J. Bolf
Matthew J. Bolf, PE
Date: 2/8/2017 Lic. No. 43913



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STORMWATER POLLUTION PREVENTION
PLAN (SWPPP)

FILE NO.
DULUT 135859

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EROSION PREVENTION MEASURES AND TIMING:
THE CONTRACTOR IS RESPONSIBLE FOR ALL EROSION PREVENTION MEASURES FOR THE PROJECT.

EROSION PREVENTION MEASURES SHOWN ON PLANS ARE THE ABSOLUTE MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL EROSION PREVENTION MEASURES AS NECESSARY TO PROPERLY MANAGE THE PROJECT AREA.

THE CONTRACTOR SHALL PLAN AND IMPLEMENT APPROPRIATE CONSTRUCTION PRACTICES AND CONSTRUCTION PHASING TO MINIMIZE EROSION AND RETAIN VEGETATION WHENEVER POSSIBLE.

THE CONTRACTOR SHALL DELINEATE AREAS NOT TO BE DISTURBED AND/OR TO BE PROTECTED WITH FLAGS, STAKES, SIGNS, SILT FENCE, OR OTHER MEANS NECESSARY TO PROTECT THESE AREAS BEFORE CONSTRUCTION BEGINS ON THE SITE.

THE CONTRACTOR SHALL STABILIZE OF ALL EXPOSED SOILS IMMEDIATELY TO LIMIT SOIL EROSION. IN NO CASE SHALL ANY EXPOSED AREAS, INCLUDING STOCK PILES, HAVE EXPOSED SOILS FOR MORE THAN 7 DAYS WITHOUT PROVIDING TEMPORARY OR PERMANENT STABILIZATION.

DRAINAGE PATHS, DITCHES, AND/OR SWALES SHALL HAVE TEMPORARY OR PERMANENT STABILIZATION WITHIN 24 HOURS OF CONNECTING TO A SURFACE WATER OR 24 HOURS AFTER CONSTRUCTION ACTIVITY IN THE DITCH/SWALE HAS TEMPORARILY OR PERMANENTLY CEASED.

THE CONTRACTOR SHALL COMPLETE THE STABILIZATION OF ALL EXPOSED SOILS WITHIN 24 HOURS THAT LIE WITHIN 200 FEET OF PUBLIC WATERS PROMULGATED "WORK IN WATER RESTRICTIONS" BY THE MN DNR DURING SPECIFIED FISH SPAWNING TIMES.

THE CONTRACTOR SHALL IMPLEMENT STORMWATER CONVEYANCE CHANNELS WHEN APPROPRIATE TO ROUTE WATER AROUND UNSTABILIZED AREAS ON SITE TO REDUCE EROSION.

THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL BMPS AND VELOCITY DISSIPATION DEVICES ALONG CONSTRUCTED STORMWATER CONVEYANCE CHANNELS AND OUTLETS.

THE CONTRACTOR SHALL STABILIZE TEMPORARY AND/OR PERMANENT DRAINAGE DITCHES OR SWALES WITHIN 200 LINEAL FEET FROM PROPERTY EDGE, OR DISCHARGE POINT(S) WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE.

TEMPORARY OR PERMANENT DITCHES OR SWALES USED AS A SEDIMENT CONTAINMENT SYSTEM DURING CONSTRUCTION MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM.

THE CONTRACTOR SHALL NOT UTILIZE HYDROMULCH, TACKIFIER, POLYACRYLAMIDE OR SIMILIAR EROSION PREVENTION PRACTICES AS A FORM OF STABILIZATION FOR TEMPORARY OR PERMANENT DRAINAGE DITCHES OR SWALES.

THE CONTRACTOR SHALL ENSURE PIPE OUTLETS HAVE TEMPORARY OR PERMANENT ENERGY DISSIPATION WITH IN 24 HOURS OF CONNECTION TO A SURFACE WATER.

THE CONTRACTOR SHALL DIRECT DISCHARGES FROM BMPS TO VEGETATED AREAS TO INCREASE SEDIMENT REMOVAL AND MAXIMIZE STORMWATER INFILTRATION. VELOCITY DISSIPATION DEVICES MUST BE USED TO PREVENT EROSION WHEN DIRECTING STORMWATER TO VEGETATED AREAS.

SEDIMENT CONTROL MEASURES AND TIMING:
THE CONTRACTOR IS RESPONSIBLE FOR ALL SEDIMENT CONTROL MEASURES FOR THE PROJECT.

SEDIMENT CONTROL MEASURES SHOWN ON PLANS ARE THE ABSOLUTE MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL SEDIMENT CONTROL MEASURES AS NECESSARY TO PROPERLY MANAGE THE PROJECT AREA.

THE CONTRACTOR SHALL ENSURE SEDIMENT CONTROL MEASURES ARE ESTABLISHED ON ALL DOWN GRADIENT PERIMETERS BEFORE ANY UPGRADIENT LAND DISTURBING ACTIVITIES BEGIN. THESE MEASURES SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS BEEN ESTABLISHED.

THE CONTRACTOR SHALL ENSURE THERE ARE NO UNBROKEN SLOPE LENGTH GREATER THAN 75 FEET ON SLOPES 3:1 OR STEEPER.

THE CONTRACTOR SHALL ENSURE SEDIMENT CONTROL PRACTICES REMOVED OR ADJUSTED FOR SHORT-TERM ACTIVITIES BE RE-INSTALLED IMMEDIATELY AFTER THE SHORT-TERM ACTIVITY HAS BEEN COMPLETED. SEDIMENT CONTROL PRACTICES MUST BE REINSTALLED BEFORE THE NEXT PRECIPITATION EVENT EVEN IF THE SHORT-TERM ACTIVITY IS NOT COMPLETE.

THE CONTRACTOR SHALL ENSURE STORM DRAIN INLETS AND CULVERT INLETS ARE PROTECTED BY APPROPRIATE BMPS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAS BEEN STABILIZED. INLET AND CULVERT PROTECTION SHALL CONFORM TO THE CURRENT MNDOT SPECIFICATIONS.

THE CONTRACTOR SHALL ENSURE STOCK PILES ARE PROVIDED WITH AN EFFECTIVE SEDIMENT PERIMETER CONTROL AND STOCK PILES SHALL NOT BE PLACED IN ANY TYPE OF SURFACE WATER OR NATURAL BUFFER.

THE CONTRACTOR SHALL INSTALL PERIMETER CONTROL AROUND ALL STAGING AREAS, BORROW PITS, AND AREAS CONSIDERED ENVIRONMENTALLY SENSITIVE.

THE CONTRACTOR SHALL ENSURE VEHICLE TRACKING BE MINIMIZED WITH EFFECTIVE BMPS. WHERE THE BMPS FAIL TO PREVENT SEDIMENT FROM TRACKING ONTO STREETS THE CONTRACTOR SHALL CONDUCT STREET SWEEPING TO REMOVE ALL TRACKED SEDIMENT.

THE CONTRACTOR SHALL IMPLEMENT CONSTRUCTION PRACTICES TO MINIMIZE SOIL COMPACTION.

THE CONTRACTOR SHALL ENSURE ALL CONSTRUCTION ACTIVITY REMAIN WITHIN PROJECT LIMITS AND THAT ALL IDENTIFIED RECEIVING WATER BUFFERS ARE MAINTAINED.

RECEIVING WATER	BUFFER
LAKE SUPERIOR	100 FT

THE CONTRACTOR SHALL NOT UTILIZE SEDIMENT CONTROL CHEMICALS ON SITE.

EROSION PREVENTION BMP SUMMARY:
SEE EROSION AND SEDIMENT CONTROL PLAN SHEET AND BID FORM FOR TYPE, LOCATION, AND QUANTITY OF EROSION PREVENTION BMPS.

SEDIMENT CONTROL BMP SUMMARY:
SEE EROSION AND SEDIMENT CONTROL PLAN SHEETS AND BID FORM FOR TYPE, LOCATION, AND QUANTITY OF SEDIMENT CONTROL BMPS.

DEWATERING AND BASIN DRAINING ACTIVITIES:
THE CONTRACTOR IS RESPONSIBLE FOR ADHERING TO ALL DEWATERING AND SURFACE DRAINAGE REGULATIONS.

WATER FROM DEWATERING ACTIVITIES SHALL DISCHARGE TO A TEMPORARY AND/OR PERMANENT SEDIMENT BASIN.

IF WATER CANNOT BE DISCHARGED TO A SEDIMENTATION BASIN, IT SHALL BE TREATED WITH OTHER APPROPRIATE BMPS, TO EFFECTIVELY REMOVE SEDIMENT.

DISCHARGE THAT CONTAINS OIL OR GREASE MUST BE TREATED WITH AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE PRIOR TO DISCHARGE.

DISCHARGE POINTS SHALL BE PROTECTED FROM EROSION AND SCOUR.

DISCHARGE WATER SHALL BE DISPERSED OVER AN ACCEPTED ENERGY DISSIPATION MEASURE.

WATER FROM DEWATERING SHALL BE DISCHARGED IN A MANNER THAN DOES NOT CAUSE NUISANCE CONDITIONS, EROSION, OR INUNDATION OF WETLANDS.

BACKWASH WATER USED FOR FILTERING SHALL BE HAULED AWAY FOR DISPOSAL, RETURNED TO THE BEGINNING OF TREATMENT PROCESS, OR INCORPORATED INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION. THE CONTRACTOR SHALL REPLACE AND CLEAN FILTER MEDIAS USED IN DEWATERING DEVICES WHEN REQUIRED TO MAINTAIN ADEQUATE FUNCTION.

INSPECTION AND MAINTENANCE:
ALL INSPECTIONS, MAINTENANCE, REPAIRS, REPLACEMENTS, AND REMOVAL OF BMPS IS TO BE CONSIDERED INCIDENTAL TO THE BMP BID ITEMS.

THE CONTRACTOR IS RESPONSIBLE FOR COMPLETING SITE INSPECTIONS, AND BMP MAINTENANCE TO ENSURE COMPLIANCE WITH THE PERMIT REQUIREMENTS.

THE CONTRACTOR SHALL INSPECT THE CONSTRUCTION SITE ONCE EVERY 7 DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS.

THE CONTRACTOR SHALL DOCUMENT A WRITTEN SUMMARY OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES CONDUCTED WITHIN 24 HOURS OF OCCURRENCE. RECORDS OF EACH ACTIVITY SHALL INCLUDE THE FOLLOWING:

- DATE AND TIME OF INSPECTIONS;
- NAME OF PERSON(S) CONDUCTING INSPECTION;
- FINDINGS AND RECOMMENDATIONS FOR CORRECTIVE ACTIONS IF NECESSARY;
- CORRECTIVE ACTIONS TAKEN;
- DATE AND AMOUNT OF RAINFALL EVENTS;
- POINTS OF DISCHARGE OBSERVED DURING INSPECTION AND DESCRIPTION OF THE DISCHARGE
- AMENDMENTS MADE TO THE SWPPP.

THE CONTRACTOR SHALL SUBMIT A COPY OF THE WRITTEN INSPECTIONS TO THE ENGINEER AND OWNER ON A MONTHLY BASIS. IF MONTHLY INSPECTION REPORTS ARE NOT SUBMITTED, MONTHLY PAYMENTS MAY BE HELD.

THE CONTRACTOR SHALL KEEP THE SWPPP, ALL INSPECTION REPORTS, AND AMENDMENTS ONSITE. THE CONTRACTOR SHALL DESIGNATE A SPECIFIC ONSITE LOCATION TO KEEP THE RECORDS

THE CONTRACTOR IS RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF TEMPORARY AND PERMANENT WATER QUALITY BMP'S, AS WELL AS EROSION AND SEDIMENT CONTROL BMP'S.

THE CONTRACTOR SHALL INSPECT EROSION PREVENTION AND SEDIMENTATION CONTROL BMPS TO ENSURE INTEGRITY AND EFFECTIVENESS. ALL NONFUNCTIONAL BMPS SHALL BE REPAIRED, REPLACED, OR SUPPLEMENTED WITH FUNCTIONAL BMPS WITHIN 24 HOURS OF FINDING. THE CONTRACTOR SHALL INVESTIGATE AND COMPLY WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS:

PERIMETER CONTROL DEVICES, INCLUDING SILT FENCE SHALL BE REPAIRED, OR REPLACED, WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/3 OF THE DEVICE HEIGHT. THESE REPAIRS SHALL BE MADE WITHIN 24 HOURS OF DISCOVERY.

TEMPORARY AND PERMANENT SEDIMENT BASINS SHALL BE DRAINED AND THE SEDIMENT REMOVED WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES ½ THE STORAGE VOLUME. DRAINAGE AND REMOVAL MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY.

SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION. THE CONTRACTOR SHALL REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS. THE CONTRACTOR SHALL RE-STABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL. REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN 7 DAYS OF DISCOVERY, UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL CONSTRAINTS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL LOCAL, REGIONAL, STATE AND FEDERAL AUTHORITIES AND OBTAIN ANY APPLICABLE PERMITS, PRIOR TO CONDUCTING ANY WORK IN SURFACE WATERS.

CONSTRUCTION SITE VEHICLE EXIT LOCATIONS SHALL BE INSPECTED DAILY FOR EVIDENCE OF SEDIMENT TRACKING ONTO PAVED SURFACES. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES WITHIN 24 HOURS OF DISCOVERY.

IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED IN A MANOR AND AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS.

INFILTRATION AREAS SHALL BE INSPECTED FOR SIGNS OF SEDIMENTATION AND COMPACTION.

POLLUTION PREVENTION MANAGEMENT MEASURES:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POLLUTION PREVENTION MANAGEMENT MEASURES.

ALL POLLUTION PREVENTION MEASURES ARE CONSIDERED INCIDENTAL TO THE MOBILIZATION BID ITEM, UNLESS OTHERWISE NOTED.

THE CONTRACTOR IS RESPONSIBLE FOR INFORMING ALL VISITORS AND/OR PERSONNEL ON-SITE OF THE POLLUTION PREVENTION MANAGEMENT MEASURES. POLLUTION PREVENTION MANAGEMENT MEASURES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER DISPOSAL, IN COMPLIANCE WITH MPCA DISPOSAL REQUIREMENTS, OF ALL HAZARDOUS MATERIALS, SOLID WASTE, AND PRODUCTS ON-SITE.

THE CONTRACTOR SHALL ENSURE BUILDING PRODUCTS THAT HAVE THE POTENTIAL TO LEACH POLLUTANTS ARE KEPT UNDER COVER TO PREVENT THE DISCHARGE OF POLLUTANTS.

THE CONTRACTOR SHALL ENSURE PESTICIDES, HERBICIDES, INSECTICIDES, FERTILIZERS, TREATMENT CHEMICALS, AND LANDSCAPE MATERIALS ARE COVERED TO PREVENT THE DISCHARGE OF POLLUTANTS.

THE CONTRACTOR SHALL ENSURE HAZARDOUS MATERIALS AND TOXIC WASTE IS PROPERLY STORED IN SEALED CONTAINERS TO PREVENT SPILLS, LEAKS, OR OTHER DISCHARGE. STORAGE AND DISPOSAL OF HAZARDOUS WASTE OR HAZARDOUS MATERIALS MUST BE IN COMPLIANCE WITH MINN. R. CH. 7045 INCLUDING SECONDARY CONTAINMENT AS APPLICABLE.

THE CONTRACTOR SHALL ENSURE ASPHALT SUBSTANCES USED ON-SITE SHALL ARE APPLIED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

THE CONTRACTOR SHALL ENSURE PAINT CONTAINERS AND CURING COMPOUNDS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT AND/OR CURING COMPOUNDS SHALL NOT BE DISCHARGED INTO THE STORM SEWER SYSTEM AND SHALL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURE'S INSTRUCTION.

THE CONTRACTOR SHALL ENSURE SOLID WASTE BE STORED, COLLECTED AND DISPOSED OF PROPERLY IN COMPLIANCE WITH MINN. R. CH. 7035.

THE CONTRACTOR SHALL ENSURE POTABLE TOILETS ARE 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.

THE CONTRACTOR SHALL MONITOR ALL VEHICLES ON-SITE FOR LEAKS AND RECEIVE REGULAR PREVENTION MAINTENANCE TO REDUCE THE CHANCE OF LEEKAGE.

EXTERNAL WASHING OF TRUCKS AND OTHER CONSTRUCTION VEHICLES AND ENGINE DEGREASING ARE PROHIBITED AT THE CONSTRUCTION SITE.

THE CONTRACTOR SHALL ENSURE WASHOUT WASTE MUST CONTACT THE GROUND AND BE PROPERLY DISPOSED OF IN COMPLIANCE WITH MPCA RULES.

THE CONTRACTOR SHALL INCLUDE SPILL KITS WITH ALL FUELING SOURCES AND MAINTENANCE ACTIVITIES. SECONDARY CONTAINMENT MEASURES SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR.

THE CONTRACTOR SHALL ENSURE SPILLS ARE CONTAINED AND CLEANED UP IMMEDIATELY UPON DISCOVERY. SPILLS LARGE ENOUGH TO REACH THE STORM WATER CONVEYANCE SYSTEM SHALL BE REPORTED TO THE MINNESOTA DUTY OFFICER AT 1.800.422.0798.

FINAL STABILIZATION:
THE CONTRACTOR IS RESPONSIBLE FOR ENSURING FINAL STABILIZATION OF THE ENTIRE SITE. FINAL STABILIZATION INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

ALL SOIL DISTURBING ACTIVITIES HAVE BEEN COMPLETED.

ALL EXPOSED SOILS HAVE BEEN UNIFORMLY STABILIZED WITH AT LEAST 70% VEGETATION COVERAGE.

PERMANENT STORM WATER MANAGEMENT SYSTEM(S) ARE CONSTRUCTED AND ARE OPERATING AS DESIGNED.

ALL DRAINAGE DITCHES, PONDS, AND ALL STORM WATER CONVEYANCE SYSTEMS HAVE BEEN CLEARED OF SEDIMENT AND STABILIZED WITH PERMANENT COVER TO PRECLUDE EROSION.

ALL TEMPORARY BMPS HAVE BEEN REMOVED AND PROPERLY DISPOSED OF.

IN RESIDENTIAL CONSTRUCTION, INDIVIDUAL LOTS ARE CONSIDERED FINALLY STABILIZED IF THE STRUCTURE(S) ARE FINISHED AND TEMPORARY EROSION PROTECTION AND DOWNGRADIENT PERIMETER CONTROL HAS BEEN COMPLETED, THE RESIDENCE HAS BEEN SOLD TO THE HOMEOWNER, AND THE HOMEOWNER HAS BEEN PROVIDED A "HOMEOWNER FACT SHEET" BY THE CONTRACTOR TO INFORM THE HOMEOWNER OF THE NEEDS FOR, AND BENEFITS OF, PERMANENT COVER.

AGRICULTURAL LAND DISTURBED HAS BEEN RETURNED TO ITS PRECONSTRUCTION AGRICULTURAL USE.

FINAL STABILIZATION SHALL BE PREFORMED IN ACCORDANCE WITH THE CURRENT MNDOT SPECIFICATION.

DRAWN BY: REH					
DESIGNER: MJB					
CHECKED BY: JCK					
DESIGN TEAM	NO.	BY	DATE		REVISIONS

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

 Matthew J. Bolf, PE
Date: 2/8/2017 Lic. No. 43913



PHONE: 218.279.3000
418 W SUPERIOR ST STE 200
DULUTH, MN 55802-1512
www.sehinc.com

DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

STORMWATER POLLUTION
PREVENTION PLAN (SWPPP)

FILE NO.
DULUT 135859

58
85

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MATCHLINE SEE SHEET 59

MATCHLINE SEE BELOW

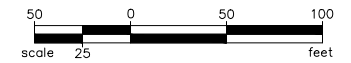
CITY OF DULUTH

CL CONGDON BOULEVARD

CITY OF DULUTH

LEGEND:

- DRAINAGE DIRECTIONAL FLOW ARROW
- STABILIZED CONSTRUCTION EXIT
- STORM DRAIN INLET PROTECTION
- SILT FENCE, TYPE MS
- SEED (MIX 33-361), FERTILIZER TYPE 4 (18-1-8), MULCH MATERIAL TYPE 3
- SEED (MIX 33-361), FERTILIZER TYPE 4 (18-1-8) EROSION CONTROL BLANKET CAT 3
- CULVERT END CONTROLS
- RIPRAP CL. III
- CLEAN DRAINAGE DITCH (TYP)
- SEDIMENT CONTROL LOG TYPE ROCK



CONGDON BOULEVARD

MATCHLINE SEE ABOVE

MATCHLINE SEE SHEET 61

CITY OF DULUTH

CL CONGDON BOULEVARD

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DESIGNER: MJB					
CHECKED BY: JCK					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	

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Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



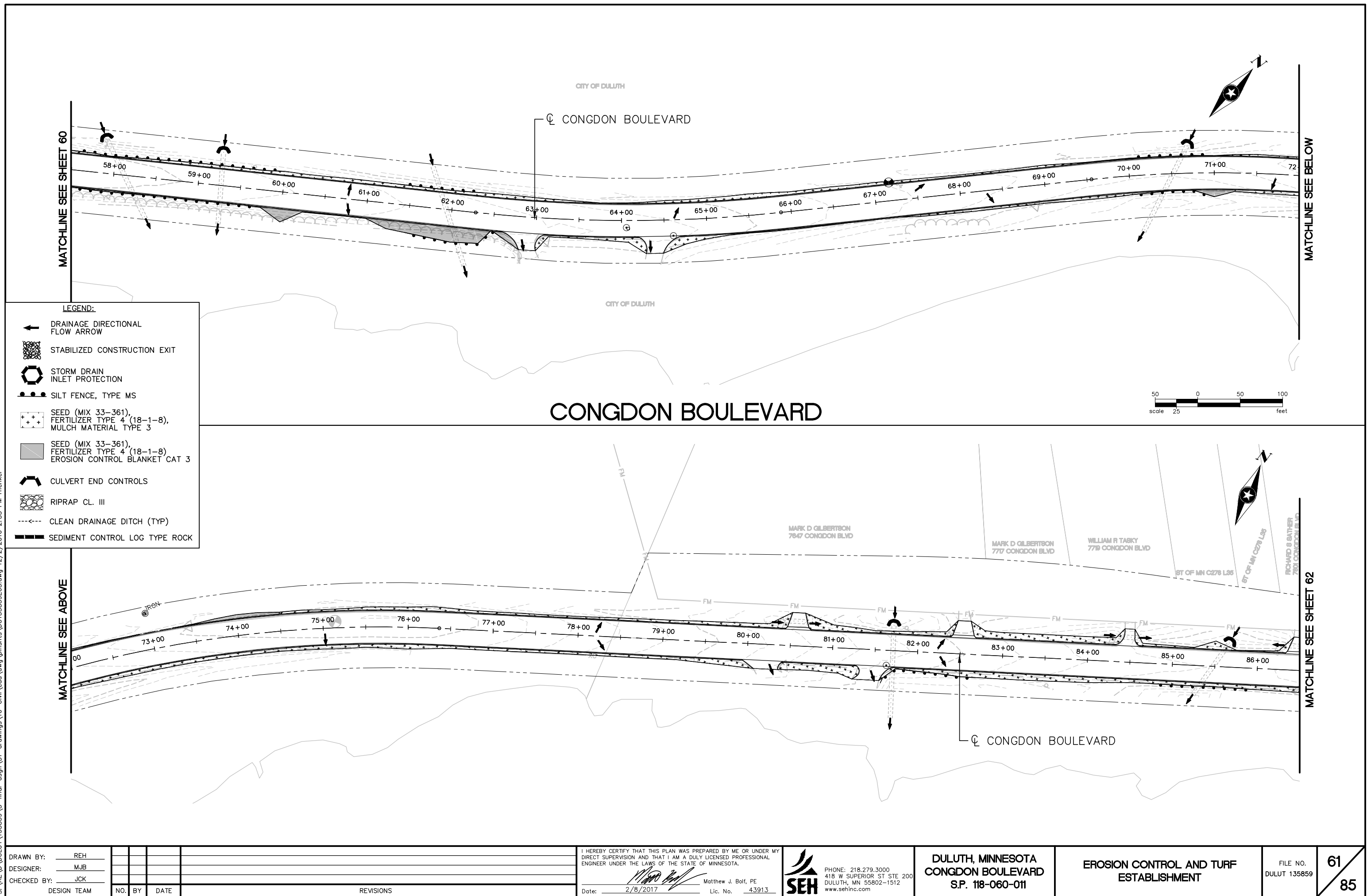
PHONE: 218.279.3000
418 W SUPERIOR ST STE 200
DULUTH, MN 55802-1512
www.sehinc.com

DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

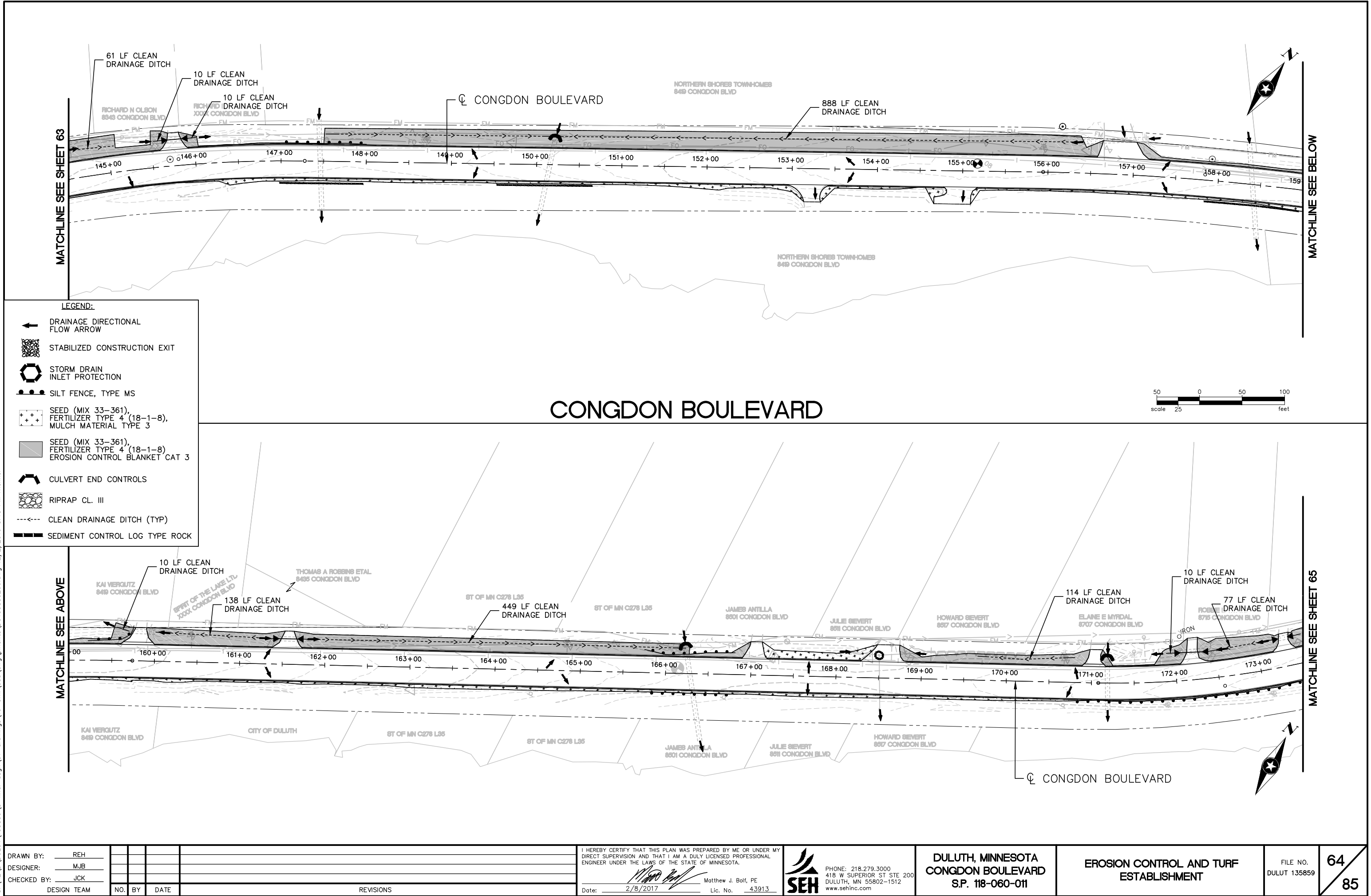
EROSION CONTROL AND TURF
ESTABLISHMENT

FILE NO.
DULUT 135859

60
85



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DESIGNER:	MJB				
CHECKED BY:	JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS	

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Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913

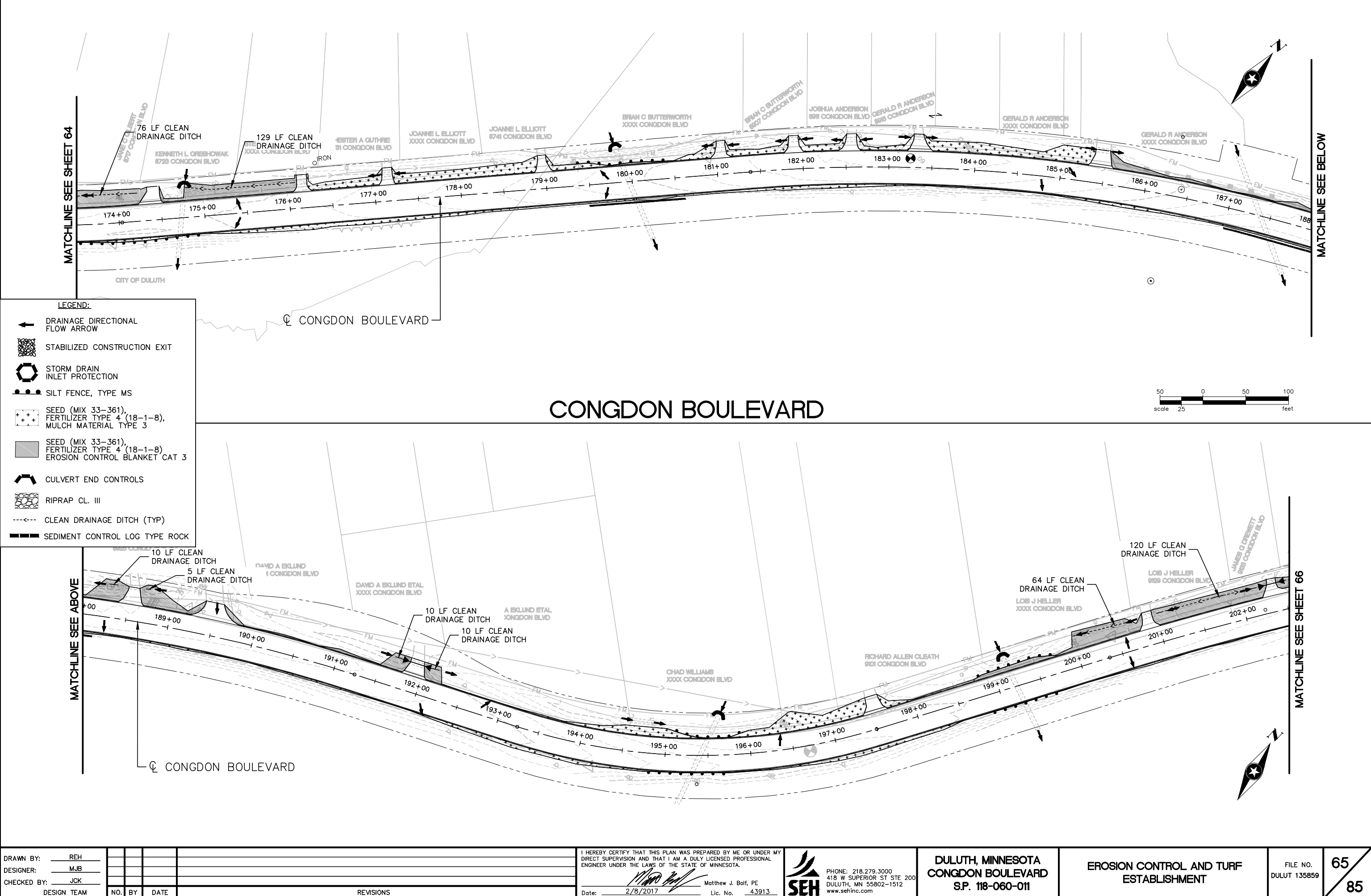
SEH
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418 W SUPERIOR ST STE 200
DULUTH, MN 55802-1512
www.sehinc.com

**DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011**

**EROSION CONTROL AND TURF
ESTABLISHMENT**

FILE NO. DULUT 135859	64 85
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Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913

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S.P. 118-060-011

EROSION CONTROL AND TURF
ESTABLISHMENT

FILE NO.
DULUT 135859

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LEGEND:



DRAINAGE DIRECTIONAL
FLOW ARROW



STABILIZED CONSTRUCTION EXIT



STORM DRAIN
INLET PROTECTION



SILT FENCE, TYPE MS



SEED (MIX 33-361),
FERTILIZER TYPE 4 (18-1-8),
MULCH MATERIAL TYPE 3



SEED (MIX 33-361),
FERTILIZER TYPE 4 (18-1-8)
EROSION CONTROL BLANKET CAT 3



CULVERT END CONTROLS



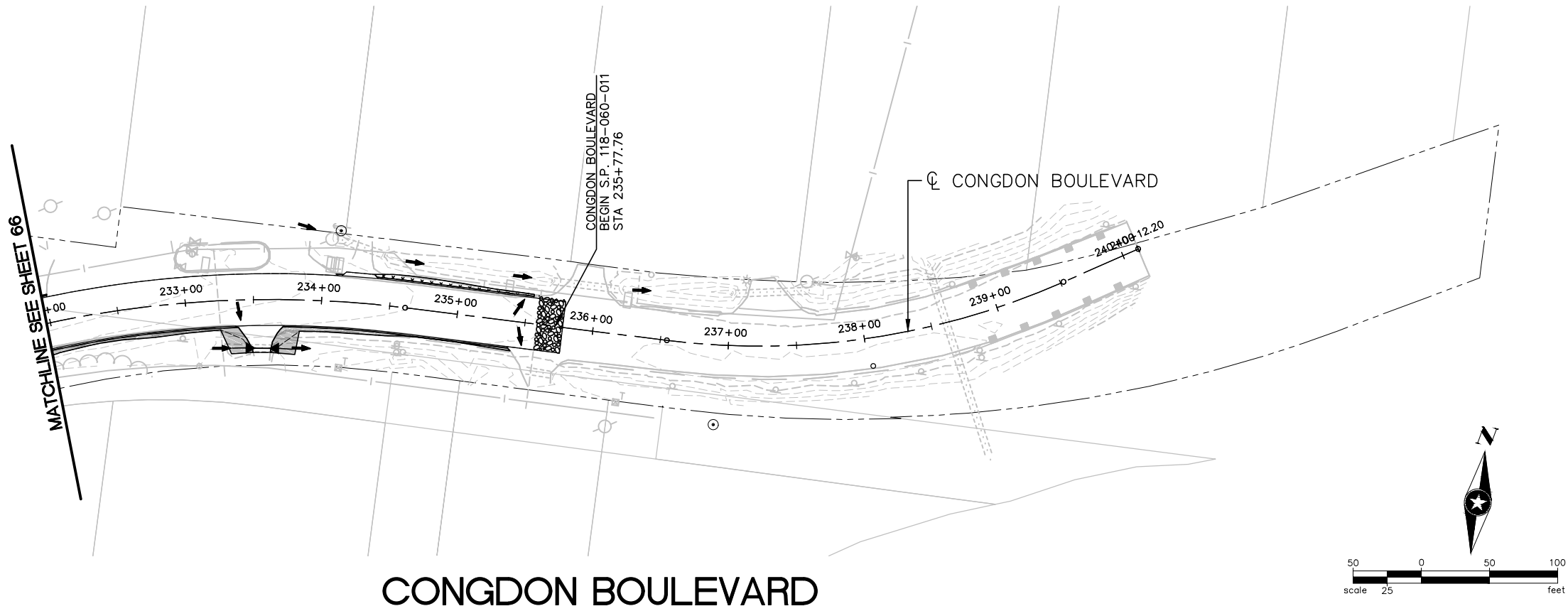
RIPRAP CL. III



CLEAN DRAINAGE DITCH (TYP)



SEDIMENT CONTROL LOG TYPE ROCK



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DESIGNER: MJB				
CHECKED BY: JCK				
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Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913



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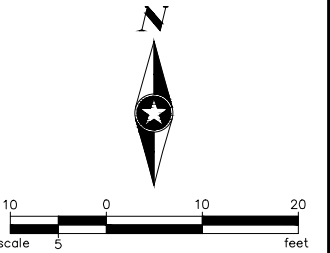
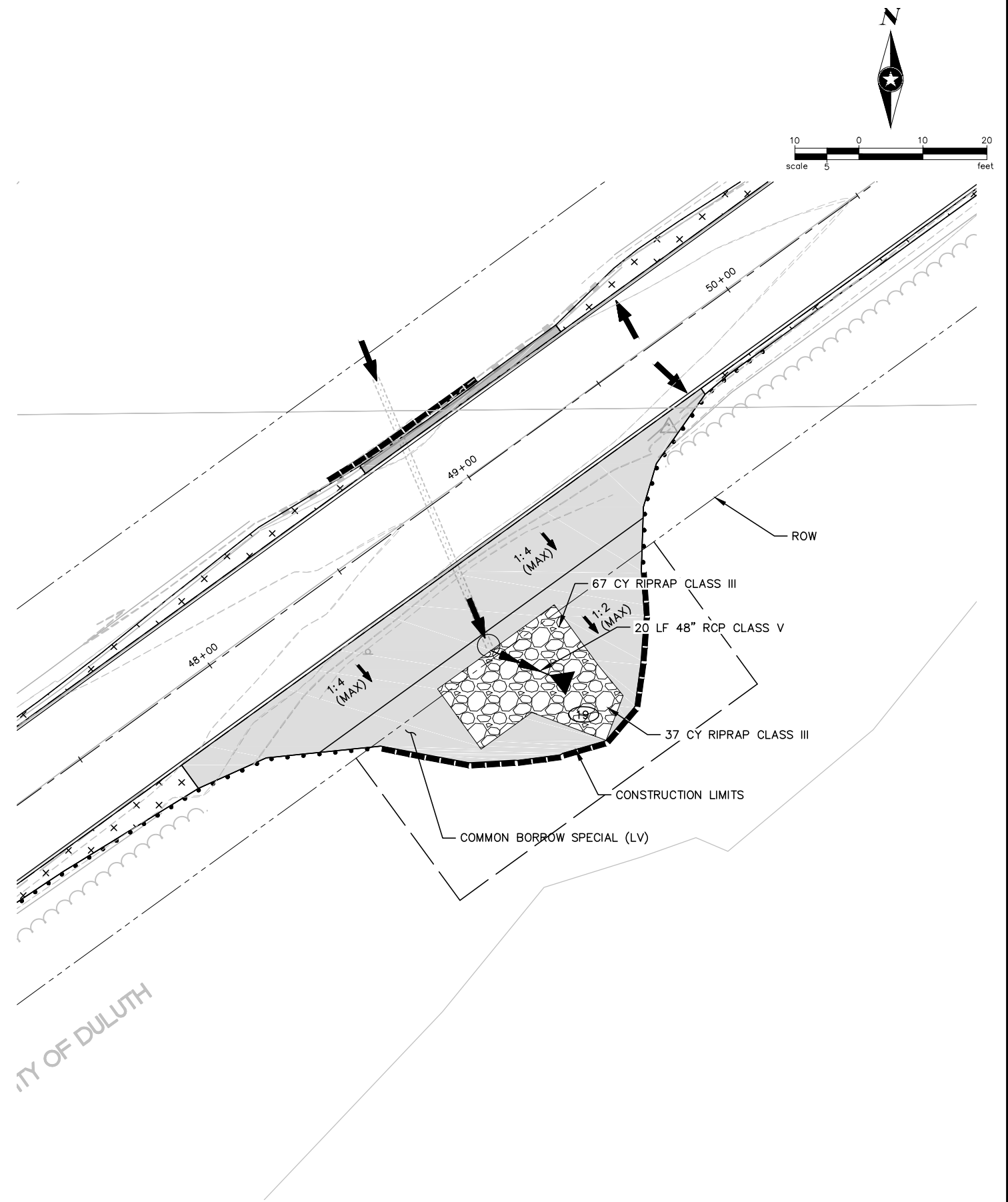
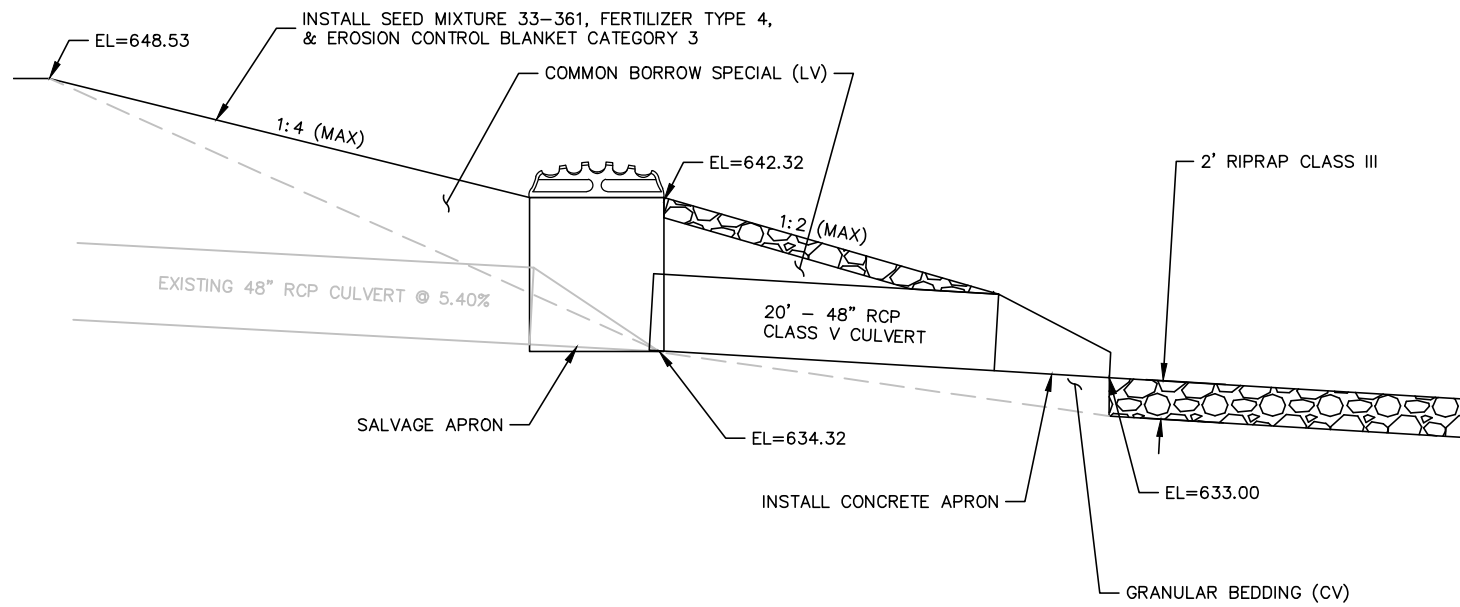
DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

EROSION CONTROL AND TURF
ESTABLISHMENT

FILE NO.
DULUT 135859

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DESIGNER: MJB				
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DESIGN TEAM	NO.	BY	DATE	REVISIONS

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Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913

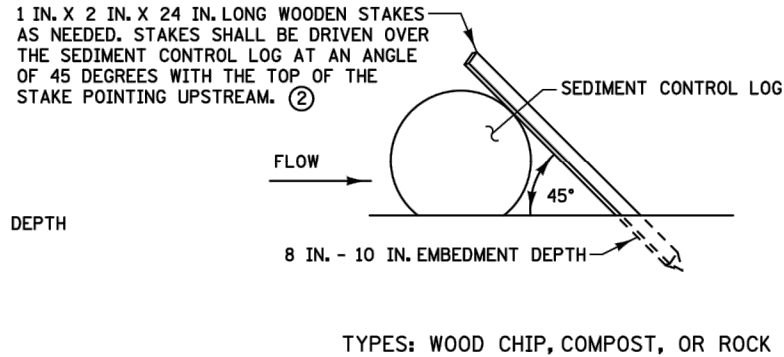
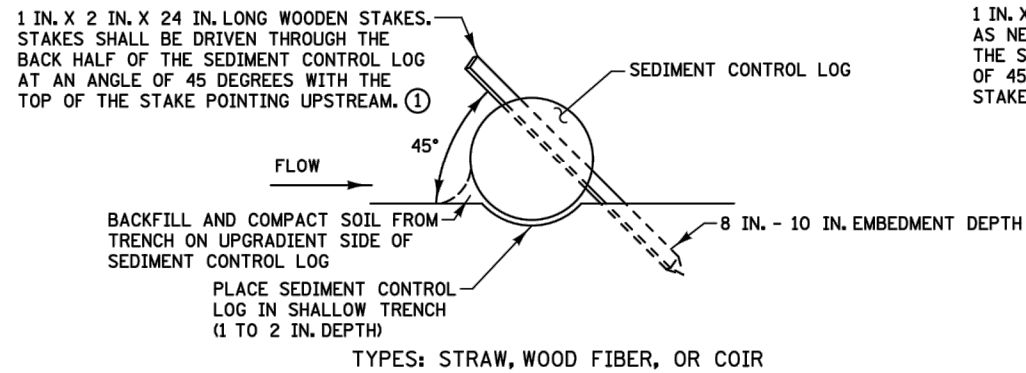


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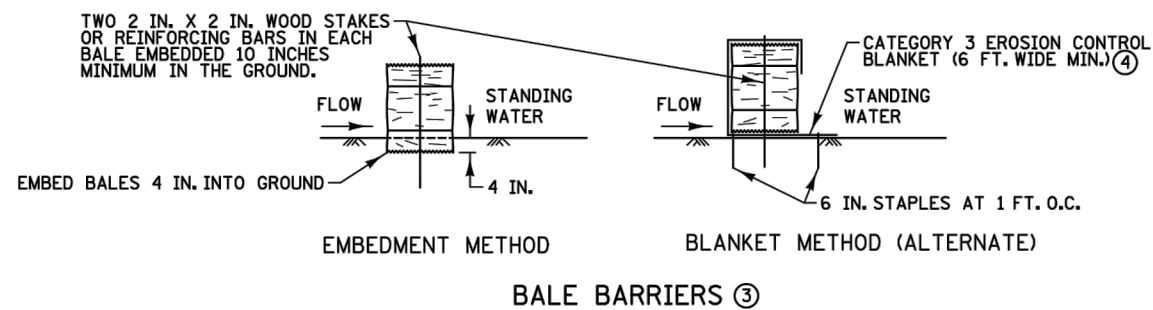
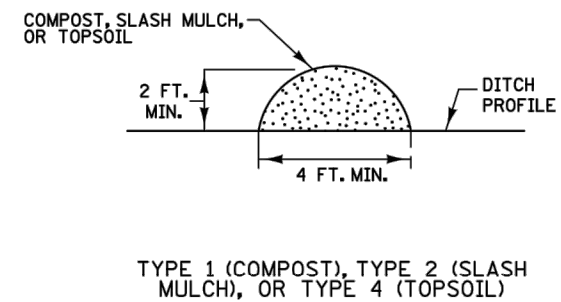
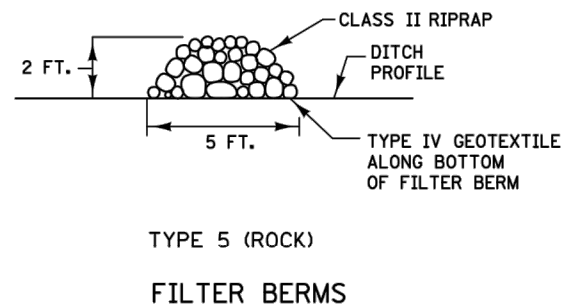
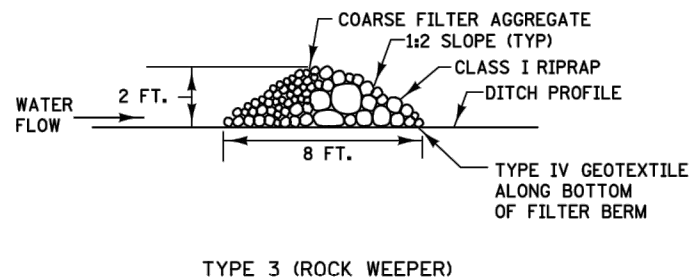
DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

CULVERT EXTENSION	FILE NO. DULUT 135859	68 85
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SEDIMENT CONTROL LOGS



NOTES:

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

- ① SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1 FOOT FOR DITCH CHECKS OR 2 FEET FOR OTHER APPLICATIONS.
- ② PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.
- ③ TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS WHERE STANDING WATER OCCURS (6 INCH MAX. DEPTH). BALES SHALL CONSIST OF TYPE 1 MULCH OF APPROXIMATELY 14 IN. X 18 IN. X 36 IN. LONG. BALES SHALL BE PLACED ON EDGE AND BUTTED TIGHT TO ADJACENT BALES.
- ④ INSTEAD OF TRENCHING, PLACE BALE ON THE BLANKET AND WRAP BLANKET AROUND THE BALE. PLACE STAKE THROUGH BALE AND BLANKET.

REVISION:

APPROVED: 8-6-2014

[Signature]
CHIEF ENVIRONMENTAL OFFICER



REVISED:

[Signature]
STATE DESIGN ENGINEER

APPROVED:

8-6-2014

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

STANDARD PLAN 5-297.405

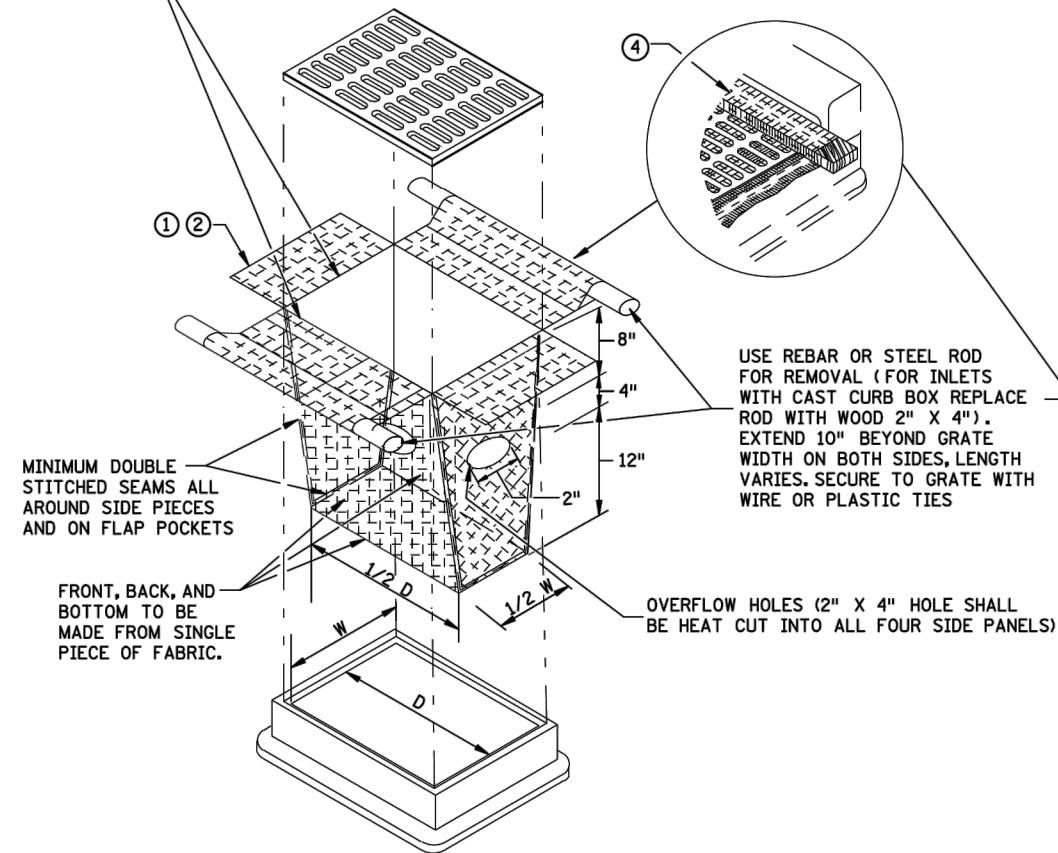
2 OF 7

CONGDON BOULEVARD - DULUTH, MINNESOTA

Sheet No. 69 Of 85 Sheets

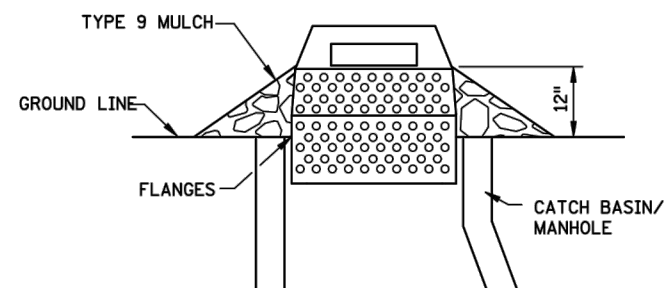
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INLET SPECIFICATIONS AS PER THE PLAN
DIMENSION LENGTH AND WIDTH TO MATCH
FLAP POCKET



FILTER BAG INSERT ③

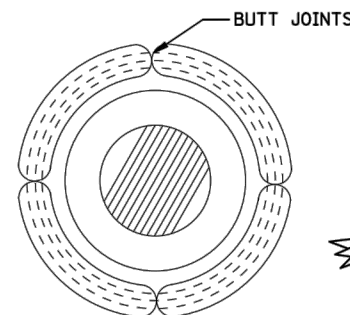
(CAN BE INSTALLED IN ANY INLET TYPE
WITH OR WITHOUT A CURB BOX)



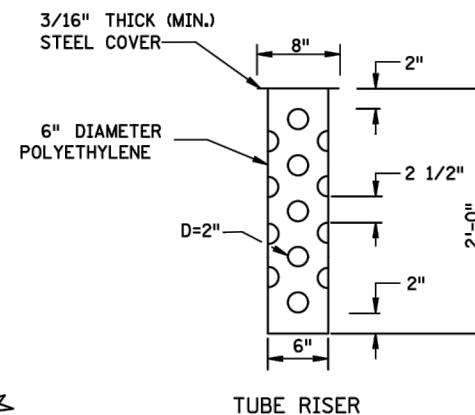
SEDIMENT CONTROL INLET HAT

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.

ENDS SECURELY CLOSED TO
PREVENT LOSS OF OPEN GRADED
AGGREGATE FILL. SECURED WITH
50 PSI. ZIP TIE.

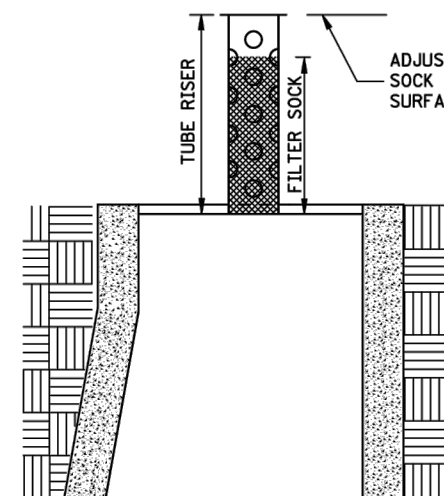


ROCK LOG/COMPOST LOG

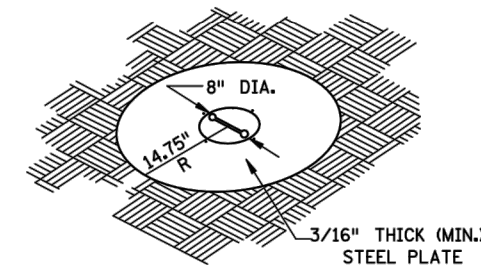


TUBE RISER

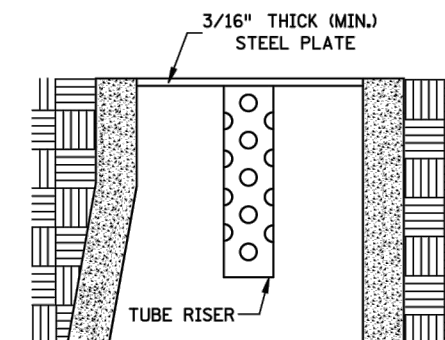
ADJUST LEVEL OF FILTER
SOCK TO BE BELOW ROAD
SURFACE ELEV. ⑤



SECTION (UP POSITION)

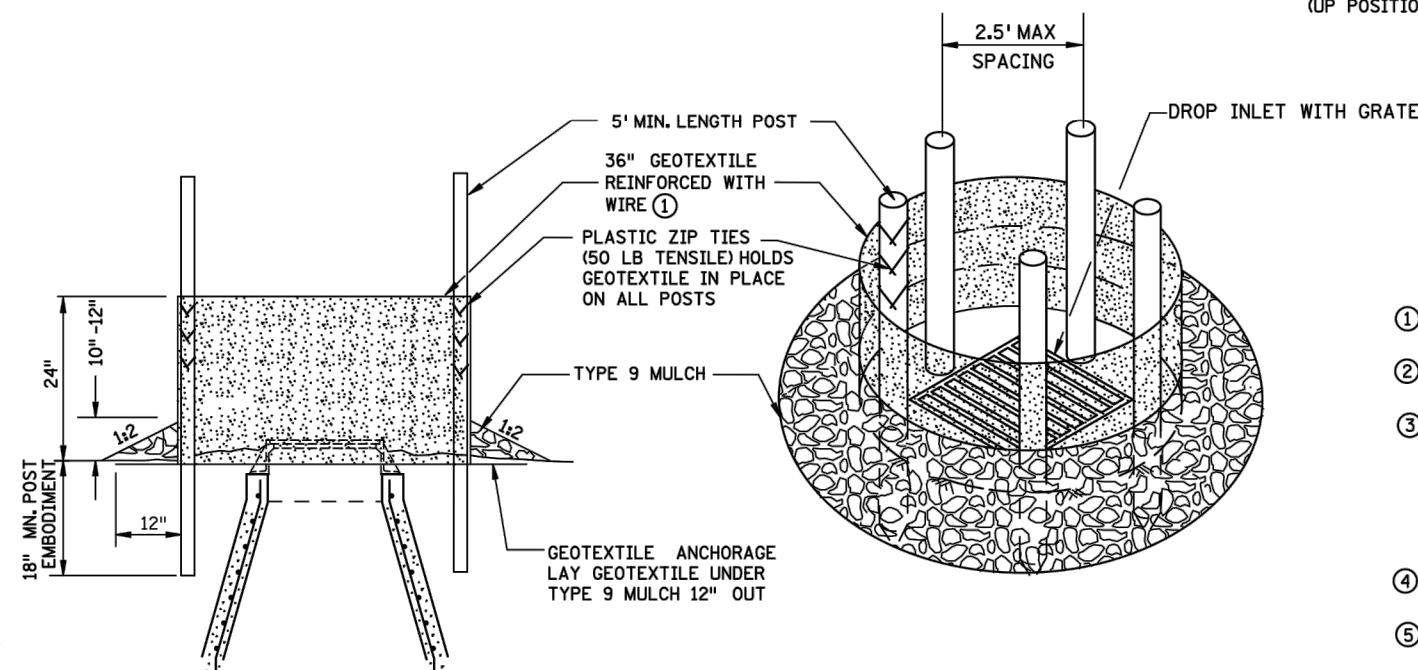


PERSPECTIVE VIEW



SECTION (DOWN POSITION)

POP-UP HEAD



SILT FENCE RING AND ROCK FILTER BERM

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

NOTES:

SEE SPECS. 2573, 3137, & 3886.

DEVICES MUST BE ADJUSTED ACCORDINGLY AS TO NOT CAUSE FLOODING ON ROADWAY
THAT WOULD IMPEDE 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: 8-6-2014

Chief Environmental Officer
CHIEF ENVIRONMENTAL OFFICER



Christopher Ky
STATE DESIGN ENGINEER

REVISED:

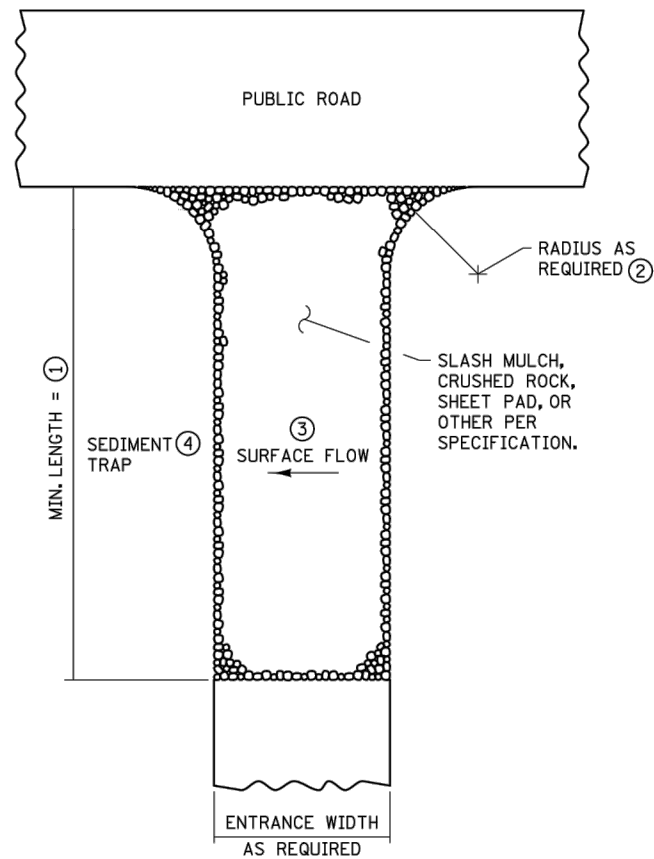
APPROVED:

8-6-2014

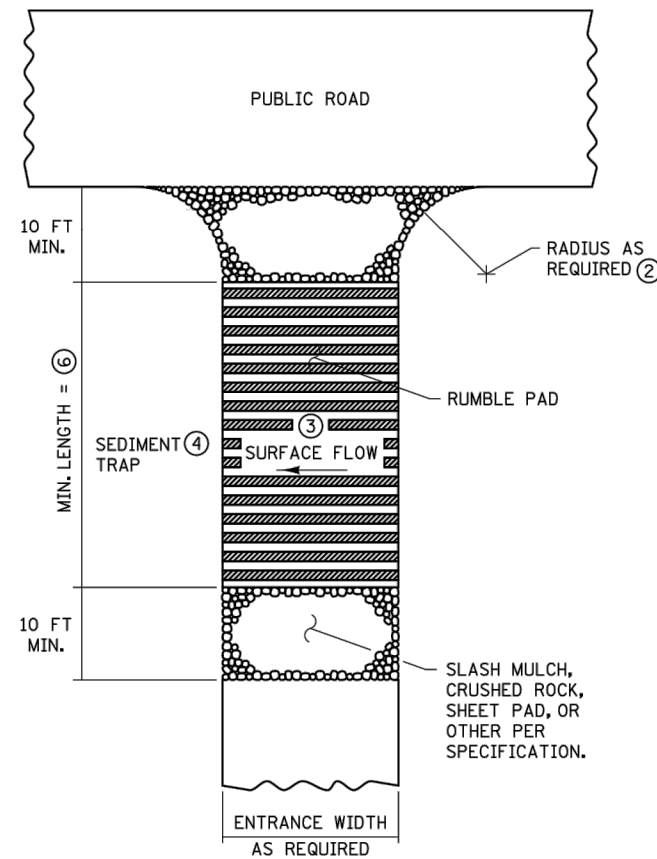
TEMPORARY SEDIMENT CONTROL
STORM DRAIN INLET PROTECTION

STANDARD PLAN 5-297.405

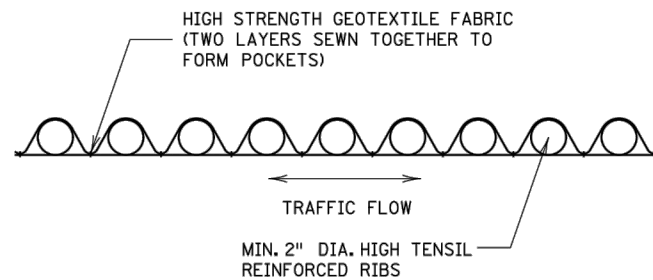
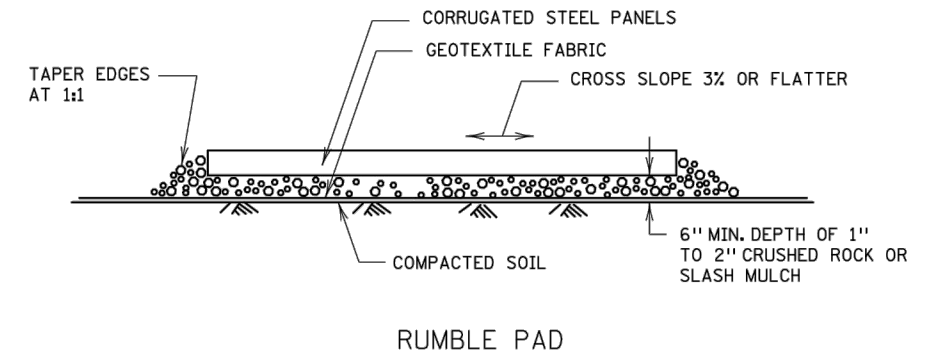
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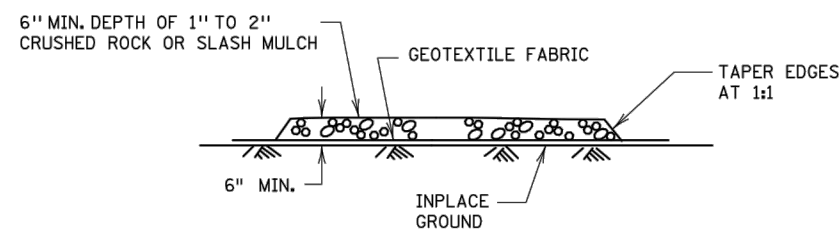
SLASH MULCH, CRUSHED ROCK, OR SHEET
PAD CONSTRUCTION EXIT ⑤⑦



RUMBLE PAD
CONSTRUCTION EXIT ⑤⑦



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.

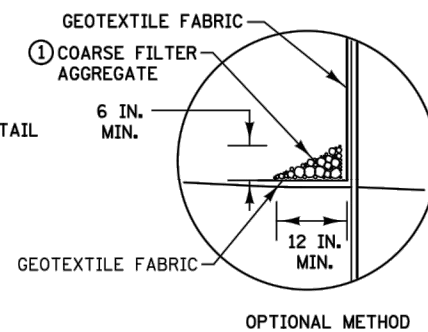
REVISION:
APPROVED: 8-6-2014
[Signature]
CHIEF ENVIRONMENTAL OFFICER

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

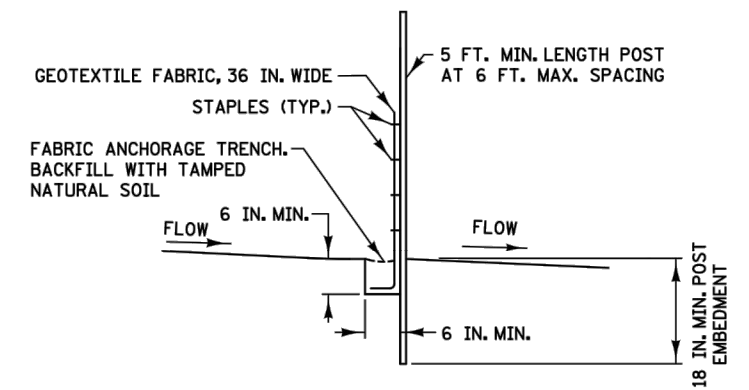
TEMPORARY SEDIMENT CONTROL
CONSTRUCTION EXITS

STANDARD PLAN 5-297.405

5 OF 7

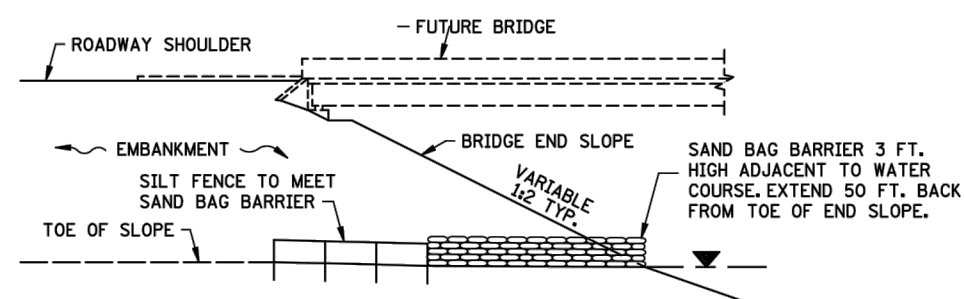


SILT FENCE TYPE HI ②
(HAND INSTALLED)



SILT FENCE TYPE MS ②
(MACHINE SLICED)

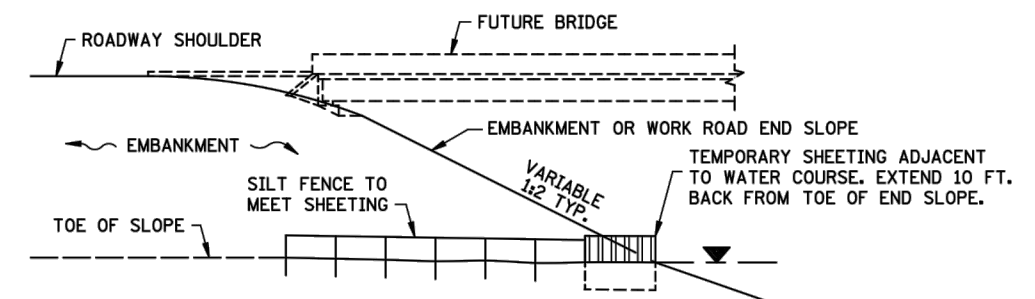
SILT FENCE TYPE PA ③
(PREASSEMBLED)



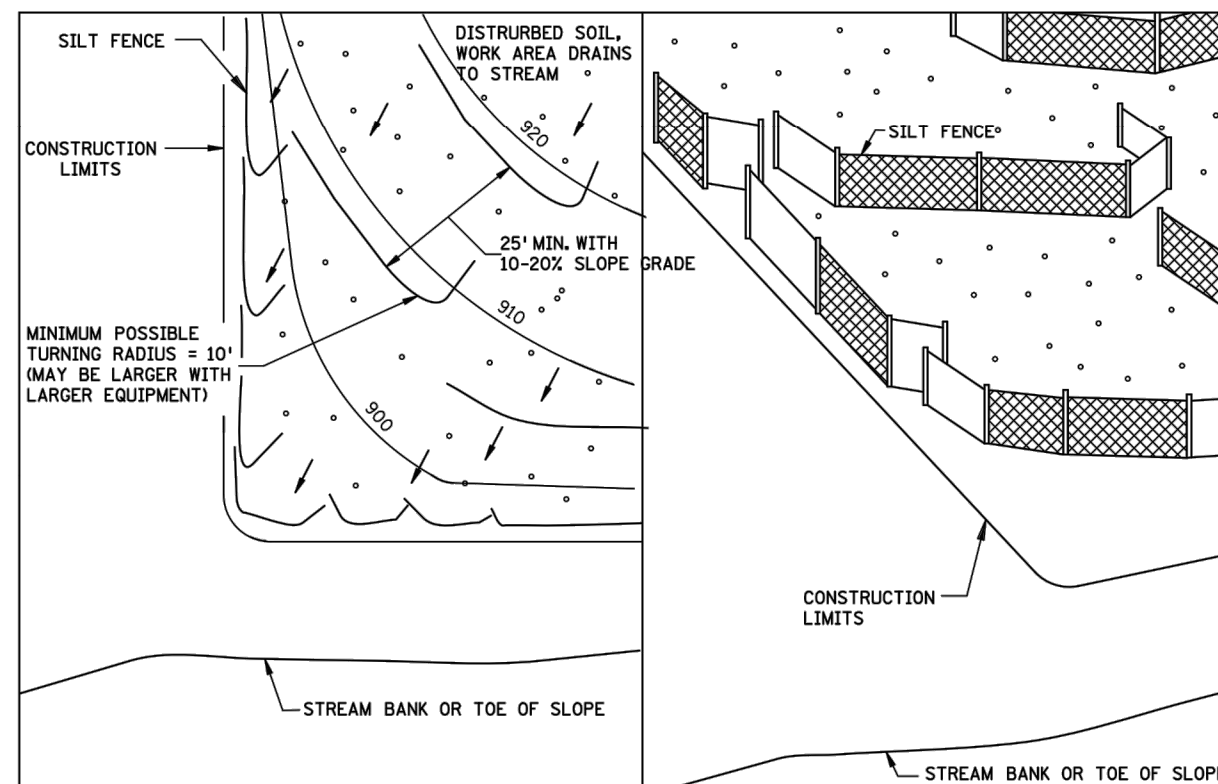
SILT FENCE ONLY ④

SILT FENCE WITH SAND BAGS ⑤

INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER



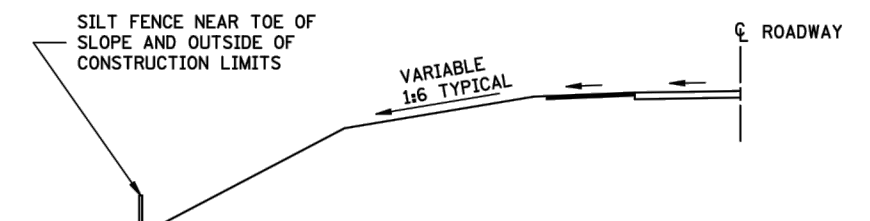
SILT FENCE WITH SHEETING ⑥



PLAN VIEW

PERSPECTIVE VIEW

J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

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 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: 8-6-2014

[Signature]

CHIEF ENVIRONMENTAL OFFICER


 REVISED: _____
 Christopher Ry
 STATE DESIGN ENGINEER
 APPROVED: _____
 8-6-2014

TEMPORARY SEDIMENT CONTROL SILT FENCE	
STANDARD PLAN 5-297.405	6 OF 7

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NOTES & GUIDELINES

GENERAL INFORMATION:

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

SIGNING:

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

PAVEMENT MARKING:

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

CONSTRUCTION INFORMATION SIGNING:

1. G20-X1 CLOSURE NOTICE SIGNS PAIRED WITH G20-X3 WORK ENDS SIGNS TO DISPLAY THE CORRECT START DATE AND AN ESTIMATED FINISH DATE AS APPROVED BY THE PROJECT ENGINEER.
G20-X2 WORK ZONE ADVANCE NOTICE SIGNS WITH THE CORRECT STARTING DATE DISPLAYED BEFORE WORK BEGINS. ONCE WORK BEGINS, THE START DATE LEGEND SHALL BE COVERED BY THE SUGGESTED PLAQUE CONTAINED IN THIS PLAN. IF NO ALTERNATE MESSAGE IS SUGGESTED OR IF DIRECTED BY THE PROJECT ENGINEER, THE CORRECT ESTIMATED FINISH DATE, MONTH, OR SEASON SHALL BE DISPLAYED.
CONSTRUCTION INFORMATION SIGNING NOT VISIBLE TO THE MOTORING PUBLIC ONCE WORK BEGINS WILL BE MOVED BY THE CONTRACTOR TO A SITE IN ADVANCE OF THE WORK ZONE OR CLOSURE AS DIRECTED BY THE PLAN OR PROJECT ENGINEER.

TRAFFIC CONTROL DEVICES & SYMBOLS LEGEND

SYMBOL DESCRIPTION

- AREA CLOSED TO TRAFFIC / WORK AREA
- └

TRAFFIC CONTROL SIGN
- └

TYPE III BARRICADE = 
- Ⓢ

TYPE A FLASHING WARNING LIGHT

INDEX

TRAFFIC CONTROL
SHEET NO. DESCRIPTIONS

- 72TITLE SHEET
- 73DETOURS
- 74TYPICALS

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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



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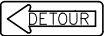
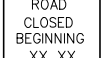
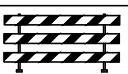
TRAFFIC CONTROL	FILE NO. DULUT 135859	73 85
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GENERAL NOTES:
THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS SHALL BE ADJUSTED ACCORDING TO FIELD CONDITIONS.

COVER ANY SIGNS THAT ARE NOT CONSISTENT WITH TRAFFIC OPERATIONS. COVER OR OBLITERATE ANY CONFLICTING PAVEMENT MARKINGS.

THE CONTRACTOR SHALL SUBMIT PROPOSED TRAFFIC CONTROL PLANS FOR CONSTRUCTION ALONG CONGDON BOULEVARD TO THE ENGINEER FOR APPROVAL AT LEAST SEVEN (7) DAYS PRIOR TO THE START OF CONSTRUCTION.

POSTED SPEED LIMIT PRIOR TO WORK STARTING (MPH)	SPACING OF ADVANCE WARNING SIGNS (A) FEET	TAPER LENGTH (L) FEET	SPACING OF CHANNELIZING DEVICES (G) FEET	BUFFER SPACE (B) FEET
0-30	250	200	25	85
35-40	325	350	25	170
45-50	400	600	50	280
55	750	700	50	335

TRAFFIC CONTROL SIGNS / DEVICES			
SIGN OR DEVICE	CODE NO.	COLOR	SIZE (INCHES)
	M4-10R	BLACK ON ORANGE	48 X 18
	M4-10L	BLACK ON ORANGE	48 X 18
	W20-2	BLACK ON ORANGE	48 X 48
	W20-1	BLACK ON ORANGE	48 X 48
	G20-X1	BLACK ON ORANGE	72 X 60
	TYPE III BARRICADE	-	-
	TYPE "A" FLASHER	-	-
	--	BLACK ON ORANGE	24 X 18

TRAFFIC CONTROL SIGNS / DEVICES			
SIGN OR DEVICE	CODE NO.	COLOR	SIZE (INCHES)
	R11-2	BLACK ON WHITE	48 X 30
	R11-4	BLACK ON WHITE	60 X 30
	M4-8a	BLACK ON ORANGE	24 X 18
	M4-9mR	BLACK ON ORANGE	30 X 24
	M4-9mL	BLACK ON ORANGE	30 X 24
	M4-9T	BLACK ON ORANGE	30 X 24
	M4-9m	BLACK ON ORANGE	30 X 24
	M4-9m ATR90	BLACK ON ORANGE	30 X 24
	M4-9T ATL90	BLACK ON ORANGE	30 X 24



WZ-1;
1.5" Radius, 0.4" Border, 0.4" Indent, Black on Orange;
[Congdon Blvd] D;



WZ-1;
1.5" Radius, 0.4" Border, 0.4" Indent, Black on Orange;
[North Shore Drive] D;

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO AND BE INSTALLED IN ACCORDANCE WITH THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD) AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS" DATED JANUARY 2014.

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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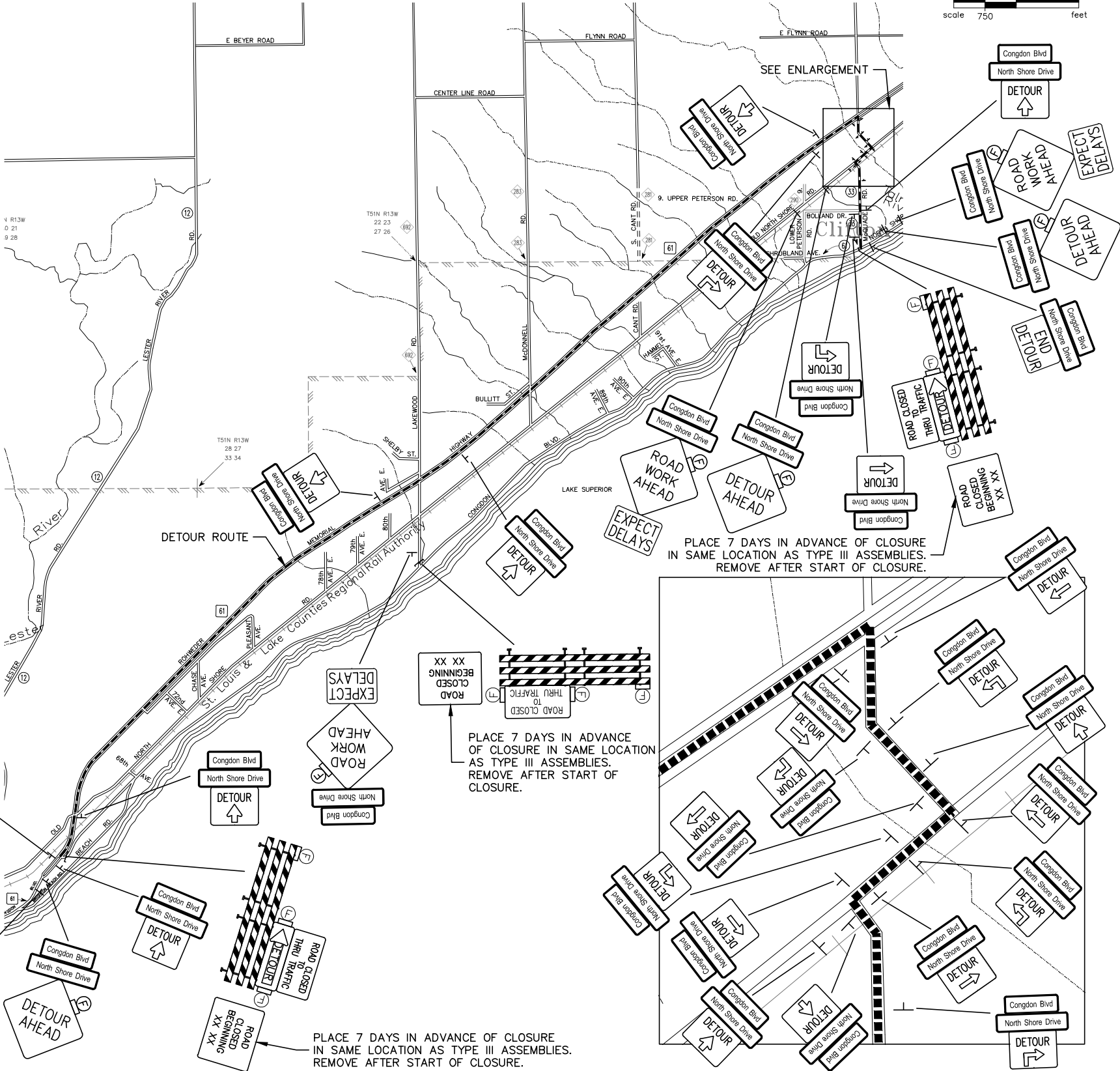
DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

TRAFFIC CONTROL

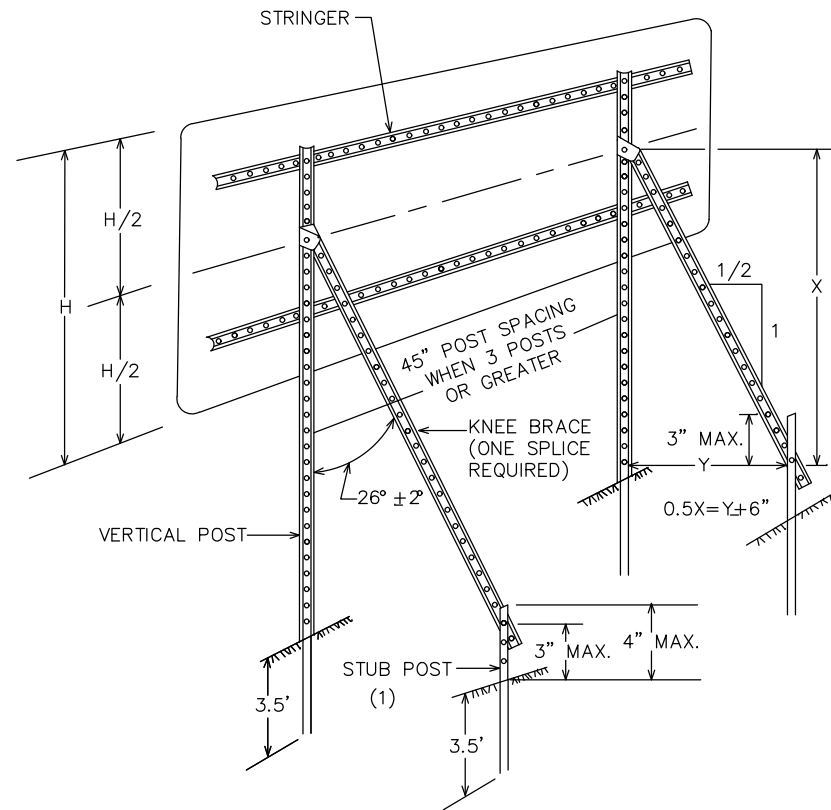
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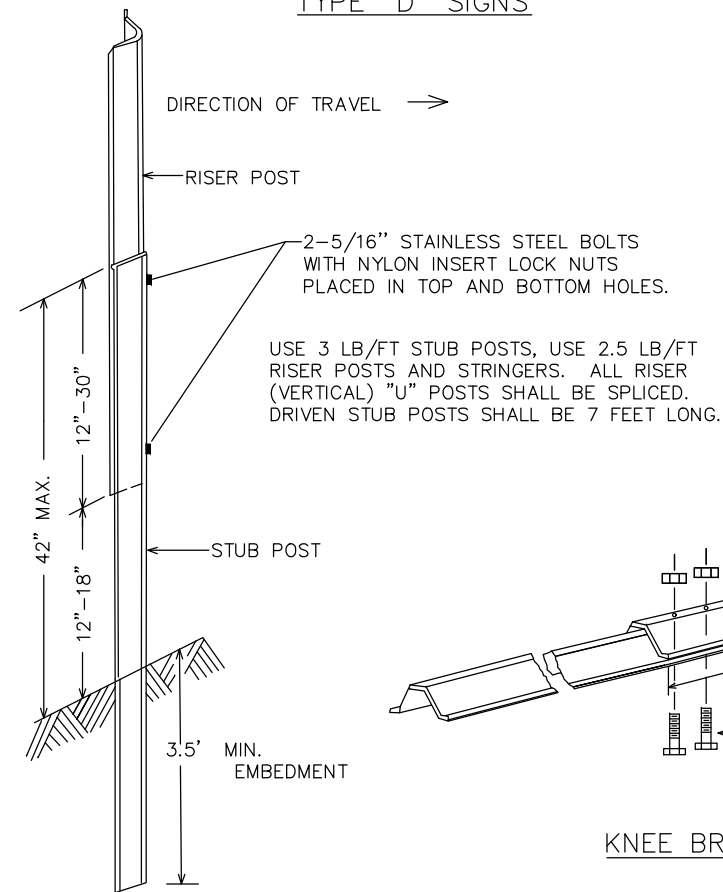
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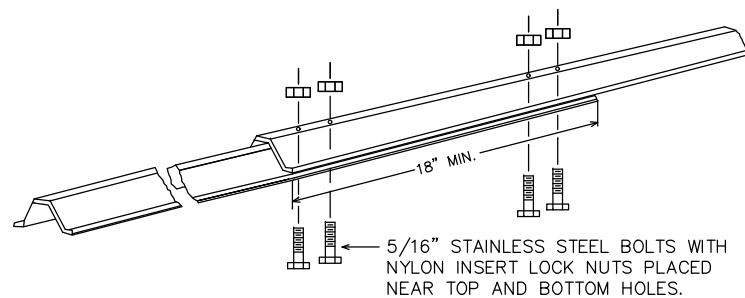
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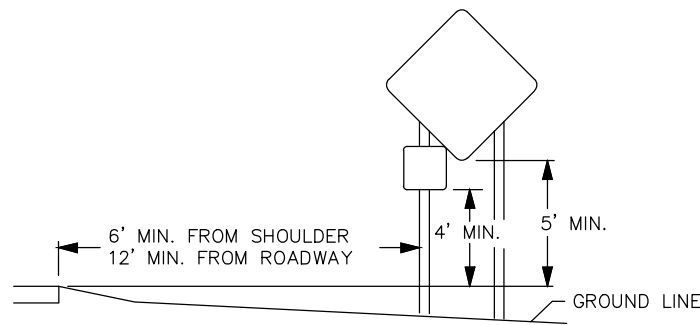
TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS



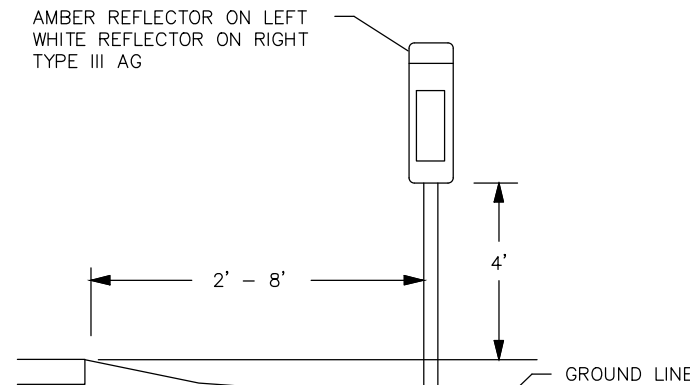
"U" POST BREAKAWAY SPLICE



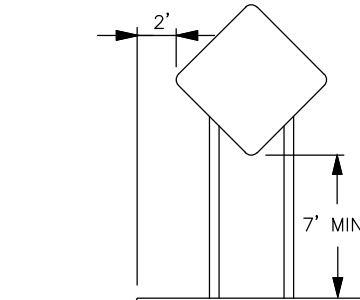
KNEE BRACE STRUCTURAL SPLICE



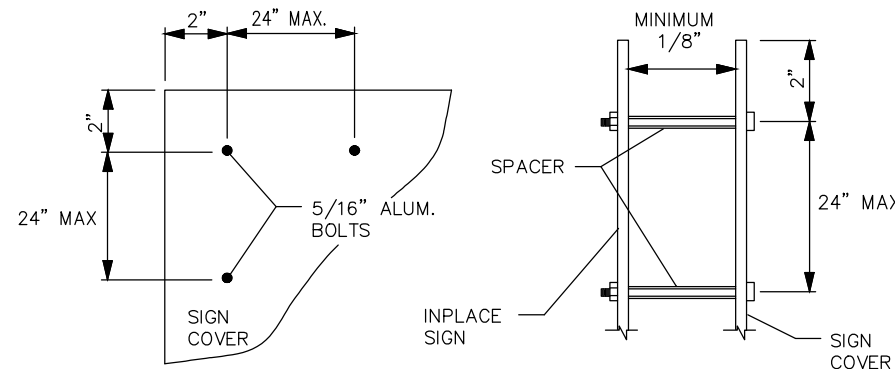
TYPICAL RURAL DESIGN



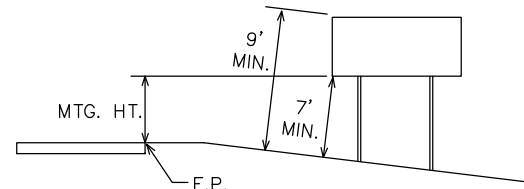
DELINEATION MOUNTING



TYPICAL URBAN DESIGN



SIGN PANEL OVERLAY



TYPICAL MOUNTING

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

TYPICAL TEMPORARY SIGN FRAMING AND INSTALLATION DETAILS

SIGN DATA

SIGNS TO BE INSTALLED ON DRIVEN U-POSTS, SHALL BE INSTALLED IN ACCORDANCE WITH TABLE 1 OR TABLE 2 BELOW. IF THE TTC PLAN PLACES TTC DEVICES ADJACENT TO EXISTING STRUCTURES, THEN THEY SHOULD BE INSTALLED SLIGHTLY BEYOND THAT STRUCTURE, SO AS TO NOT COMPROMISE THAT STRUCTURE AND THE NEW DEVICE'S CRASHWORTHINESS (NO MORE THAN TWO U-POSTS WITHIN 84 INCHES, ALIGNED IN THE SAME PLANE). SIGN PANELS SHALL BE INSTALLED ON SIGN STRUCTURES TO MEET THE 5' MIN DEPICTED ON THE TYPICAL RURAL DESIGN DETAIL, THE 7' MIN DEPICTED ON THE TYPICAL URBAN DESIGN DETAIL, OR 7' MIN AND 9' MIN DEPICTED ON THE TYPICAL MOUNTING DETAIL ON THIS SHEET.

TABLE 1

STANDARD CONSTRUCTION SIGNS IN MN/DOT STANDARD SIGNS MANUAL

PANEL SIZE (IN.)	POSTS			
	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
24 x 24	2-U	18		13
30 x 24	2-U	18		13
36 x 30	2-U	24		13
36 x 36	2-U	18		14
42 x 36	2-U	30		14
48 x 48	2-U	30		15
60 x 60	2-U	42	1	16
72 x 72	2-U	42	2	17
96 x 54	2-U	54	2	16
168 x 132	4-U	48	4	20

GENERAL NOTES:

- POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
- SEE STANDARD SIGNS MANUAL FOR PUNCHING HOLES.

TABLE 2

SPECIAL DESIGN CONSTRUCTION SIGNS

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

DESIGNER NOTE:

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

NOTES:

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

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

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

DRAWN BY: REH					
DESIGNER: MJB					
CHECKED BY: JCK					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	

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Matthew J. Bolt
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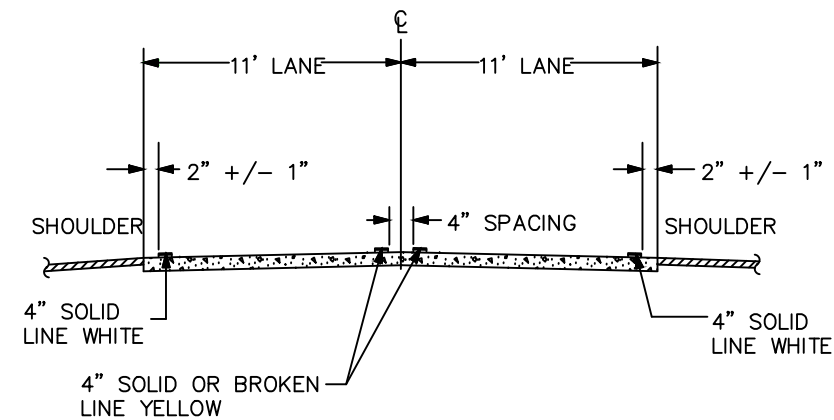
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TRAFFIC CONTROL

FILE NO.
DULUT 135859

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85

76 LEGEND AND DETAILS
77-84 PLANS



SYMBOLS & MATERIALS LEGEND

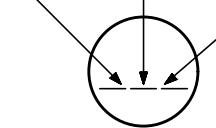
 CIRCLE-EPOXY

2ND DIGIT
PATTERN

S – SOLID
B – BROKEN
D – DOUBLE

3RD DIGIT
COLOR

W - WHITE
Y - YELLOW



EXAMPLE: (4SW) = 4" SOLID WHITE-EPOXY

DRAWN BY: <u>REH</u>				
DESIGNER: <u>MJB</u>				
CHECKED BY: <u>JCK</u>				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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PAVEMENT MARKING LEGEND AND DETAILS

FILE NO.
DULUT 135859

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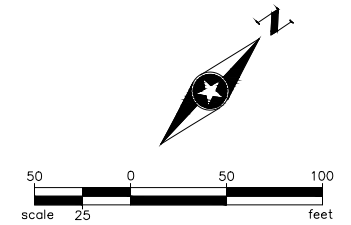
MATCHLINE SEE SHEET 77

MATCHLINE SEE BELOW

SIGN NOTES:

- ① LEAVE AS IS
- ② F&I SIGN TYPE C
- ③ SALVAGE SIGN TYPE C
- ④ INSTALL SIGN TYPE C

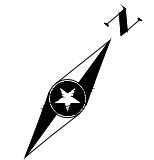
CONGDON BOULEVARD



MATCHLINE SEE ABOVE

MATCHLINE SEE SHEET 79

CONGDON BOULEVARD



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DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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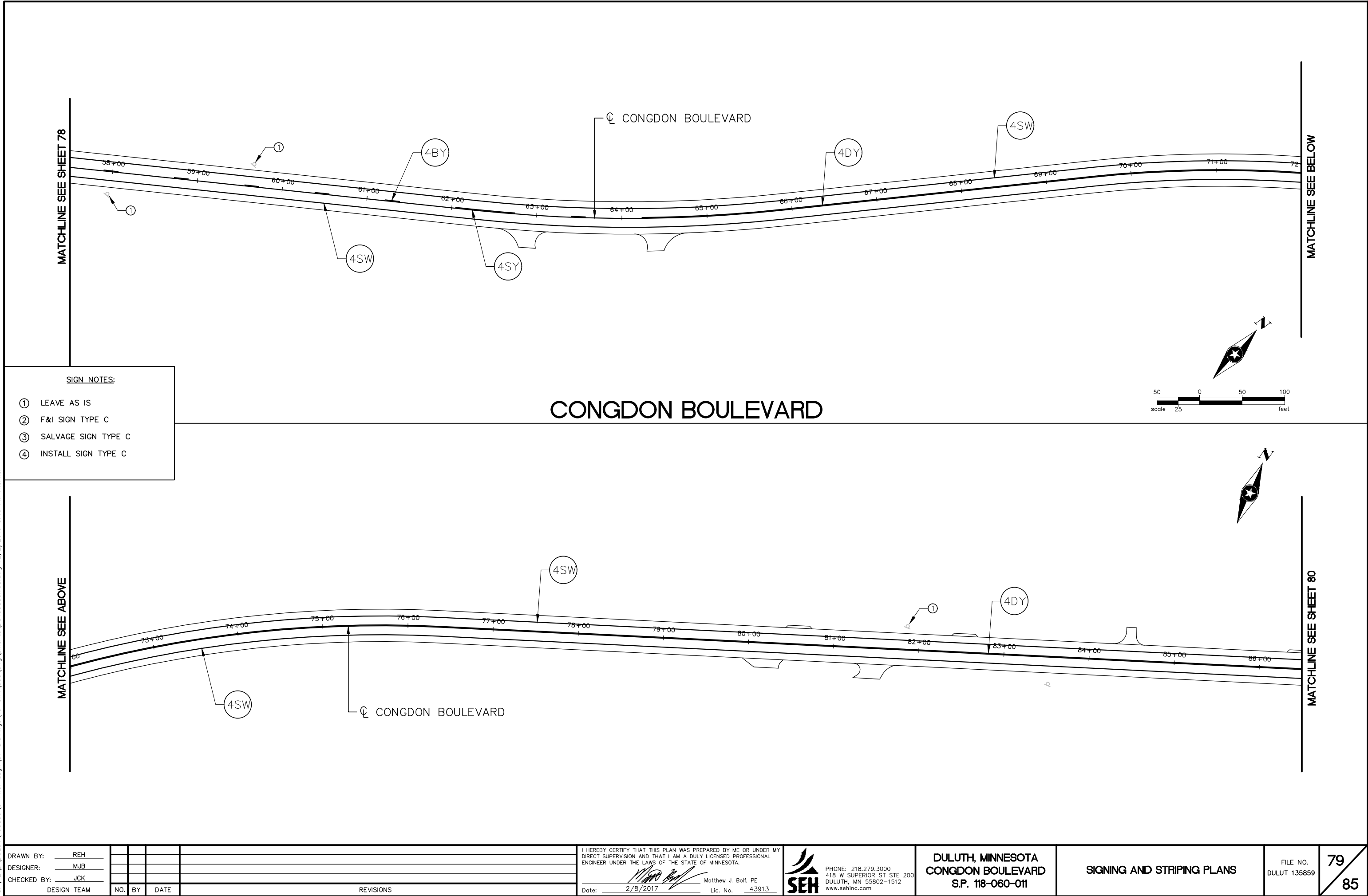
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SIGNING AND STRIPING PLANS

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DULUT 135859

78
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DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

Matthew J. Bolt
Matthew J. Bolt, PE
Date: 2/8/2017 Lic. No. 43913

SEH
PHONE: 218.279.3000
418 W SUPERIOR ST STE 200
DULUTH, MN 55802-1512
www.sehinc.com

DULUTH, MINNESOTA
CONGDON BOULEVARD
S.P. 118-060-011

SIGNING AND STRIPING PLANS

FILE NO.
DULUT 135859

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MATCHLINE SEE SHEET 79

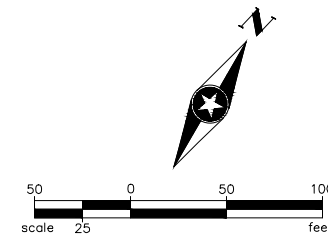
CL CONGDON BOULEVARD

MATCHLINE SEE BELOW

SIGN NOTES:

- ① LEAVE AS IS
- ② F&I SIGN TYPE C
- ③ SALVAGE SIGN TYPE C
- ④ INSTALL SIGN TYPE C

CONGDON BOULEVARD



MATCHLINE SEE ABOVE

CL CONGDON BOULEVARD

MATCHLINE SEE SHEET 81

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

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SIGNING AND STRIPING PLANS

FILE NO.
DULUT 135859

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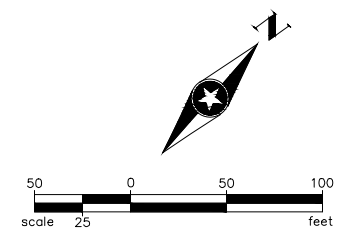
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MATCHLINE SEE BELOW

SIGN NOTES:

- ① LEAVE AS IS
- ② F&I SIGN TYPE C
- ③ SALVAGE SIGN TYPE C
- ④ INSTALL SIGN TYPE C

CONGDON BOULEVARD



MATCHLINE SEE ABOVE

MATCHLINE SEE SHEET 82

CONGDON BOULEVARD

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

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SIGNING AND STRIPING PLANS

FILE NO.
DULUT 135859

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MATCHLINE SEE SHEET 81

MATCHLINE SEE BELOW

SIGN NOTES:

- ① LEAVE AS IS
- ② F&I SIGN TYPE C
- ③ SALVAGE SIGN TYPE C
- ④ INSTALL SIGN TYPE C

CONGDON BOULEVARD



MATCHLINE SEE ABOVE

MATCHLINE SEE SHEET 83

CONGDON BOULEVARD

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

Matthew J. Bolt
Matthew J. Bolt, PE
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SIGNING AND STRIPING PLANS

FILE NO.
DULUT 135859

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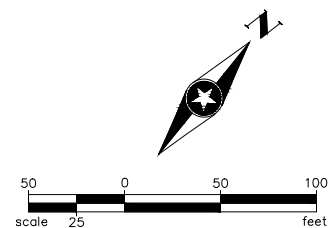
MATCHLINE SEE SHEET 82

MATCHLINE SEE BELOW

SIGN NOTES:

- ① LEAVE AS IS
- ② F&I SIGN TYPE C
- ③ SALVAGE SIGN TYPE C
- ④ INSTALL SIGN TYPE C

CONGDON BOULEVARD



MATCHLINE SEE ABOVE

MATCHLINE SEE SHEET 84

CONGDON BOULEVARD

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

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Matthew J. Bolt, PE
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SIGNING AND STRIPING PLANS

FILE NO.
DULUT 135859

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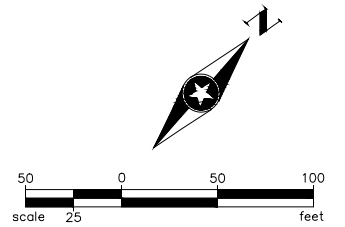
MATCHLINE SEE SHEET 83

MATCHLINE SEE BELOW

SIGN NOTES:

- ① LEAVE AS IS
- ② F&I SIGN TYPE C
- ③ SALVAGE SIGN TYPE C
- ④ INSTALL SIGN TYPE C

CONGDON BOULEVARD



MATCHLINE SEE ABOVE

MATCH LINE SEE SHEET 85

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

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SIGNING AND STRIPING PLANS

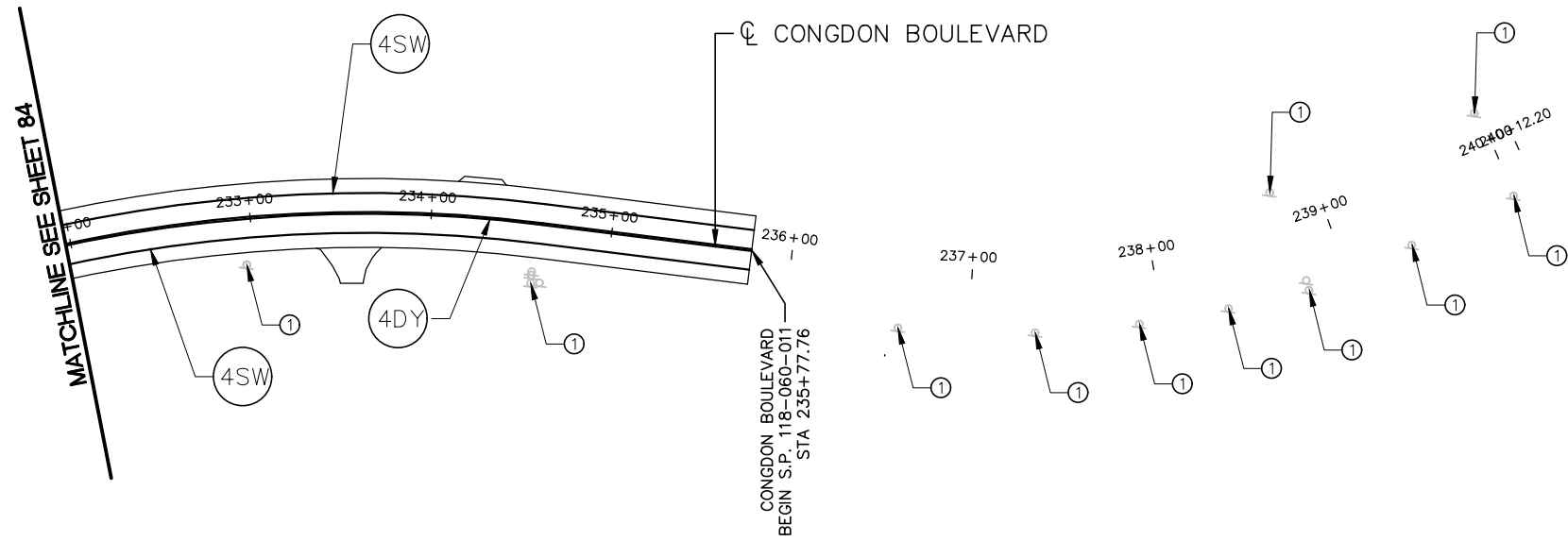
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DULUT 135859

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SIGN NOTES:

- ① LEAVE AS IS
② F&I SIGN TYPE C
③ SALVAGE SIGN TYPE C
④ INSTALL SIGN TYPE C



CONGDON BOULEVARD

DRAWN BY: REH				
DESIGNER: MJB				
CHECKED BY: JCK				
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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

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