

DESIGN DESIGNATION 53RD AVENUE
STA. 00+60.25 TO STA. 43+51.50

FUNTIONAL CLASSIFICATION COLLECTOR
R-VALUE 50
NO. & WIDTH OF TRAFFIC LANES 2 & 11.5 ft
NO. & WIDTH OF PARKING LANES 1 & 7 ft
ADT (PRESENT YEAR) 2022 8,000
ADT (PROJECTED YEAR) 2042 8,800
HCADT (PROJECTED YEAR) 2042 4.23%
DESIGN SPEED SPEED LOCALLY CONTROLLED
DESIGN LOAD 9 ton

MINNESOTA DEPARTMENT OF TRANSPORTATION

CITY OF FRIDLEY & COLUMBIA HEIGHTS

ANOKA COUNTY, MINNESOTA

53RD AVENUE TRAIL AND WALK IMPROVEMENTS

CONSTRUCTION PLAN FOR: GRADING, AGGREGATE BASE, PLANT MIXED BITUMINOUS PAVEMENT, CONCRETE CURB AND GUTTER, ADA IMPROVEMENTS, STORM SEWER, LANDSCAPING AND RELATED APPURTENANCES

S.A.P. 127-319-008 / S.A.P. 113-118-005
LOCATED ON 53rd Avenue FROM Main Street (CSAH 102) TO Central Avenue (TH 65)

GROSS LENGTH 5300.00 FEET 1.004 MILES
NET LENGTH 5300.00 FEET 1.004 MILES

LENGTH AND DESCRIPTION BASED UPON PROPOSED 53RD AVENUE CENTERLINE

--- GOVERNING SPECIFICATIONS ---
THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
"STANDARD SPECIFICATION FOR CONSTRUCTION" AND
THE "SUPPLEMENTAL SPECIFICATIONS" DATED SEPTEMBER 2022 SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM 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 DEVICES.

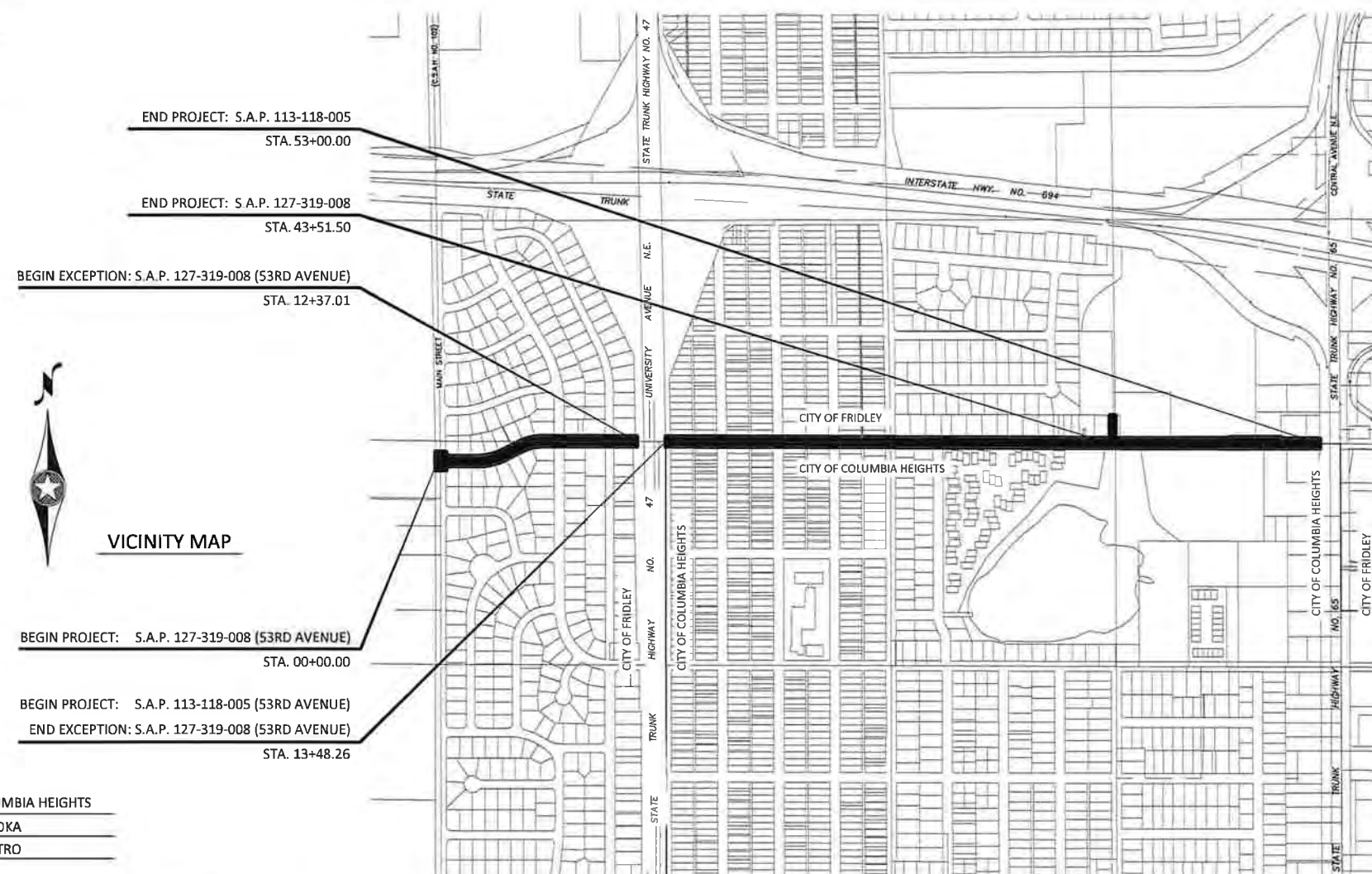
SHEET NUMBER	SHEET TITLE
GENERAL	
1	TITLE SHEET
2	LEGEND
3	GENERAL NOTES
4 - 8	STATEMENT OF ESTIMATED QUANTITIES, TABULATIONS
9	LOCATION PLAN
CIVIL	
10 - 13	EXISTING CONDITIONS AND REMOVALS PLAN
14 - 16	TYPICAL SECTIONS
17 - 18	ALIGNMENT PLAN
19 - 20	STORMWATER POLLUTION PREVENTION PLAN
21 - 28	CONSTRUCTION PLAN
29 - 36	RETAINING WALL PLAN AND PROFILE
37 - 40	INTERSECTION DETAILS
41 - 43	WATERMAIN PLAN & PROFILE
44 - 47	PAVEMENT MARKING & SIGNAGE PLAN
48 - 54	STANDARD DETAILS
55 - 67	PEDESTRIAN CURB RAMP, DRIVEWAY, SIDEWALK, & RETAINING WALL DETAILS
68 - 70	SIGNAL PLANS (FOR INFORMATION ONLY)
71 - 82	CROSS SECTIONS

THIS PLAN SET CONTAINS 82 SHEETS

TRAIL DESIGN DESIGNATION

STA. 00+00.00 TO STA. 53+00.00

FUNTIONAL CLASSIFICATION BIKE TRAIL
DESIGN SPEED 20 MPH
DESIGN SPEED FOR ROADWAY BASED ON ON STOPPING SIGHT DISTANCE:
HEIGHT OF EYE = 4.5 FT
HEIGHT OF OBJECT = 0.0 FT



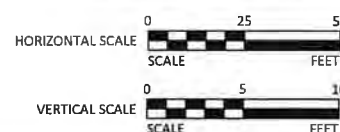
VICINITY MAP

PROJECT LOCATION



CITY: FRIDLEY / COLUMBIA HEIGHTS
COUNTY: ANOKA
DISTRICT: METRO

TYPICAL PLAN SCALE
UNLESS OTHERWISE NOTED:



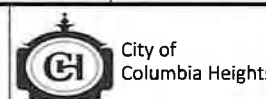
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D UNLESS OTHERWISE NOTED. THIS UTILITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

PROJECT DATUM

HORIZONTAL: ANOKA COUNTY (2011)
VERTICAL: NAVD88

RECORD DRAWING INFORMATION

DRAWN: TYL/JBQ
CHECKED: BJB
DATE: 5/20/23



7071 University Avenue NE
Fridley, MN 55432

DESIGNED	TYL	NO.	REVISION	DATE
DRAWN	TYL/JBQ			
CHECKED	BJB			
CLIENT PROJ NO	ST2023-21			

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

TITLE SHEET

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OF
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CONTRACT ADMINISTRATION

- 1. The Contractor shall notify the engineer in writing 48 hours prior to commencing work on any project item. Notification shall be given per project and per item.
- 2. The Contractor shall provide names and contact information of the Project Manager, Superintendent and Twenty-four Hour Emergency Response contact assigned to the project prior to commencing work.
- 3. The Superintendent shall be on site during all utility installation, reclaim, and paving operations.
- 4. If the Superintendent leaves the site, The Contractor shall designate a responsible representative capable of being on site within one-hour, contact information of the representative shall be provided to the Inspector 48 hours prior to Superintendent leaving site.
- 5. A Project Schedule showing project phasing, intermediate project deadlines, anticipated substantial completion and final completion shall be submitted by the Contractor at the Pre-Construction meeting.
- 6. The Project Manager and Superintendent shall schedule and attend a meeting once a week in the office of the City Engineer to discuss project schedule, progress, and issues.
- 7. A report of work completed the previous week, work scheduled to be completed the current week, and any change to the overall schedule or cost shall be submitted at each weekly project meeting. See Specifications.
- 8. All work shall conform with local ordinances, laws and rules.

PROJECT REPRESENTATIVE: TOUYIA LEE, Engineering 763-572-3557

HOURS OF OPERATION

- 1. Hours of work are limited to 7:00 am to 7:00 pm Monday through Friday, and 9:00 am to 7:00 pm on Saturdays, unless otherwise approved by the Engineer.

UTILITIES

- 1. The subsurface utility information in this plan is Utility Level "D". This Utility level was determined according to the guidelines of CI/ASCE 38-02, "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data".
- 2. The contractor is responsible for locating and protecting all existing utilities. The Contractor shall arrange locates with Gopher State One Call prior to the start of any excavation. Below are contacts for the major utilities related to this project:

a.	Gopher State One Call	800-252-1166	Emergency Call	811
b.	Centerpoint Energy	612-321-5502	Emergency	888-944-4564
c.	Nustar Energy	316-721-7073	Emergency	316-721-7073
d.	Xcel Energy	612-630-4568	Emergency	800-895-1999
e.	Century Link	612-998-1920		
f.	Comcast	800-778-9140		
- 3. In the event of an emergency related to utilities on the project Call 811. In the event of an accident or personal injury Call 911. Upon control of the emergency situation, the contractor shall contact the City within one hour of the incident. A full detailed incident report must be submitted to the Project Engineer within seven (7) days of the event.

CITY OWNED WATER

- 1. No water service shut-downs will be allowed for longer than 96 hours unless approved by the Engineer. See Specifications.
- 2. Water service shut down requests must be submitted in writing 72 hours before the planned shutdown.
- 3. Water will be available from a hydrant identified by the Engineer for the project. A meter is available through the City of Fridley and a security deposit will be submitted by the Contractor. See Specifications.

STAGING

- 1. The City will assist in identifying potential staging sites upon request, the Contractor shall be responsible to negotiate the use of theses areas. See Specifications.
- 2. The Contractor is responsible to propose a staging area for the work. No additional storage of equipment or materials will be allowed outside of city Right of Way.

NON-CITY OWNED FACILITIES

- 1. All non-City of Fridley manhole castings must be salvaged and replaced. Castings shall be adjusted to match the final road surface prior to paving the bituminous wear course.
- 2. Metropolitan Council may provide new castings for the MCES manhole structures. If new castings are not available at the time of paving, the existing castings will be replaced on each structure.

RESIDENTIAL NOTICES & SERVICES

- 1. The City will notify the residents of the start of work, and final completion. Coordination of all other notifications is the responsibility of the Contractor. See Specifications.
- 2. The Contractor shall notify residents, and City of Fridley Water Department, of water shut-offs or installation of temporary water service for their property at least 72 hours before the shut-down.
- 3. The Contractor shall notify the residents of work scheduled in each phase of the project.
- 4. Prior to starting work on a block, the Contractor shall hand deliver a notice to each property stating the starting date of the work, the dates of closure of the street, the planned date for paving, and expected date of final completion in that area.
- 5. Any work that will prevent residents from reaching their driveway requires a minimum of 72 hours notice before the work begins.
- 6. It the contractor is to do any work outside of City Right of Way, the Contractor must obtain a written agreement with the property owner and submit agreement to The Engineer prior to the start of the work.
- 7. The Contractor shall provide access for mail delivery, garbage collection, and bus service. Any time this access will not be available, the Contractor will provide temporary facilities, and insure service to the residents.

- 8. If access to garbage and recycling trucks will not be available to an area, the Contractor shall move all waste containers to the nearest end of block before 7:00am, and return them to the respective property before the end of the day.
- 9. The Contractor will notify The Engineer immediately and respond to Resident complaints within one (1) hour of notification of the complaint. This will include access issues, damage to property, interruption of service, general questions, or others.

LANDSCAPING, TOPSOIL, EROSION CONTROL

- 1. The Contractor is responsible for protecting all trees and landscaping in the limits of construction, and of adjacent properties. Protection of landscaping shall be incidental to the work.
- 2. Any tree adjacent to the work requiring trimming to prevent damage to the tree will be done prior to the work, and will be incidental to the work.
- 3. The Contractor shall be responsible for protection of the stormwater system according to the SWPPP (Sheets 19,20) and the NPDES Construction Stormwater Permit issued by the MPCA.
- 4. All inlet protection and silt fence must be in place prior to the start of the work.
- 5. The Contractor will be responsible for all reporting required by the NPDES Permit. See Specifications.
- 6. Restoration of all boulevards and other project areas must be completed within 7 days of cessation of work in the area, and prior to paving the wear course bituminous surface.

TRAFFIC CONTROL

- 1. The Contractor shall prepare a traffic control plan showing all signage for the project and detours required as a part of the project. The traffic control plan must be approved by the Engineer prior to any work in the project area.
- 2. The Contractor will be responsible for maintaining all traffic control during the project, and will be required to make changes if required.
- 3. All traffic control signage shall be removed within seven (7) days of completion of paving. See Specifications.

CONSTRUCTION STAKING

- 1. Staking - The Agency will provide one set of construction stakes for utilities and curb at the discretion of the Engineer.
- 2. The Contractor must request staking a minimum of 48 hours in advance.
- 3. The Contractor will be responsible for protection of the stakes, and any re-staking if needed. See Specifications.

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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Brandon J. Brodhag
BRANDON J. BRODHAG
U.C. NO. 59297 DATE 06/13/2023



City of
Columbia Heights



7071 University Avenue NE
Fridley, MN 55432

DESIGNED	TYL	NO.	ISSUED FOR	DATE
DRAWN	TYL/JBQ			
CHECKED	BJB			
CLIENT PROJ. NO.	ST2023-21			

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

GENERAL NOTES

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STATEMENT OF ESTIMATED QUANTITIES									
ITEM NO.	TAB NUMBER	MN/DOT SPEC		UNIT	TOTAL ESTIMATED QUANTITY	STATE AID PARTICIPATING S.A.P 127-319-008 (FRIDLEY)	STATE AID PARTICIPATING S.A.P 113-118-005 (COLUMBIA HEIGHTS)	LOCAL FUNDING/NON PARTICIPATING (FRIDLEY)	LOCAL FUNDING/NON PARTICIPATING (COLUMBIA HEIGHTS)
1		2021.501	MOBILIZATION	LUMP SUM	1	0.45	0.45	0.05	0.05
2	B	2101.505	CLEARING	ACRE	0.03	0.03			
3	B	2101.505	GRUBBING	ACRE	0.03	0.03			
4	B	2101.524	CLEARING	TREE	2	1	1		
5	B	2101.524	GRUBBING	TREE	7	1	6		
6	B	2104.502	SALVAGE SIGN PANEL TYPE C	EACH	10	9	1		
7	B	2104.502	REMOVE SIGN PANEL TYPE C	EACH	1		1		
8	B	2104.502	REMOVE DRAINAGE STRUCTURE	EACH	8	6	2		
9	B	2104.502	REMOVE CASTING	EACH	9		9		
10	B	2104.502	REMOVE HYDRANT AND GATE VALVE	EACH	6	2	1	1	2
11	B	2104.503	REMOVE WATERMAIN	LIN FT	470			110	360
12	B	2104.503	REMOVE CONCRETE CURB & GUTTER	LIN FT	6030	2760	2769	501	
13	B	2104.503	REMOVE PIPE SEWERS	LIN FT	133	91	42		
14	B	2104.503	REMOVE RETAINING WALL	LIN FT	90	64	26		
15	B	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	1111	768	209	134	
16	B	2104.504	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	SQ YD	189	169	20		
17	B	2104.504	REMOVE CONCRETE DRIVEWAY PAVEMENT	SQ YD	556	326	188	42	
18	B	2104.504	REMOVE CONCRETE WALK	SQ YD	79	8	71		
19	B	2104.518	REMOVE BITUMINOUS PAVEMENT	SQ FT	271	136	135		
20	F,J	2105.507	COMMON EXCAVATION (P) (EXCESS RECLAIM)	CU YD	2439	1857	582		
21	F,J	2105.507	COMMON EXCAVATION (P)	CU YD	483	131	352		
22	J	2106.507	SELECT GRANULAR EMBANKMENT (CV)	CU YD	386	101	285		
23	F	2112.519	SUBGRADE PREPERATION (P)	ROAD STA	44.03	27.19	15.24	1.6	
24	G	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	25	12.5	12.5		
25	F	2211.507	AGGREGATE BASE (CV) CLASS 5	CU YD	1137	492	645		
26	F	2215.504	FULL DEPTH RECLAMATION (P)	SQ YD	19806	12866	6652	288	
27	F	2331.603	BITUMINOUS JOINT SAW AND SEAL	LIN FT	3335	2462	873		
28	F	2357.506	BITUMINOUS MATERIAL FOR TACK COAT	GALLON	1063	688	358	17	
29	F	2360.509	TYPE SP 9.5 WEARING COURSE MIX (3,C)	TON	1766	1143	595	28	
30	F	2360.509	TYPE SP 12.5 NON WEARING COURSE MIX (3,C)	TON	2084	1303	747	34	
31	F	2360.509	TYPE SP 9.5 WEARING COURSE MIX (2,C) - TRAIL	TON	835	183	652		
32	F	2360.604	3" TYPE 9.5 WEARING COURSE MIX (3,C) - BITUMINOUS DRIVEWAY W/6" CL. 5 AGGREGATE	SQ YD	240	220	20		
33	F	2411.518	MODULAR BLOCK RETAINING WALL	SQ FT	1929	792	1137		
34	D	2503.503	FILL & ABANDON PIPE	LIN FT	427			427	
35	C	2503.503	12" RC PIPE SEWER DES 3006	LIN FT	151	113	38		
36	C	2503.602	CONNECT INTO EXISTING DRAINAGE STRUCTURE	EACH	6	2	4		
37	C	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	16	4	12		
38	D	2504.602	HYDRANT WITH 6" GATE VALVE ASSEMBLY (INSTALL ONLY)	EACH	3			3	
39	D	2504.602	INSTALL HYDRANT (FURNISH AND INSTALL)	EACH	3				3
40	D	2504.602	ADJUST GATE VALVE & BOX	EACH	23			12	11
41	D	2504.602	6" GATE VALVE & BOX	EACH	3				3
42	D	2504.602	12" GATE VALVE & BOX	EACH	1			1	
43	D	2504.602	CONNECT TO EXISTING WATERMAIN (INCLUDES PIT EXCAVATION)	EACH	9			4	5
44	D	2504.603	6" WATERMAIN DUCTILE IRON CL 52(OPEN CUT INSTALLATION)	LIN FT	949			571	378
45	D	2504.608	FITTINGS	POUND	775			410	365
46	C	2506.502	CASTING ASSEMBLY	EACH	25	7	18		
47	C	2506.502	ADJUST FRAME & RING CASTING (SEWER)	EACH	14			12	2
48	C	2506.502	ADJUST EXISTING FRAME AND RING CASTING (STORM)	EACH	26	1	4	12	9
49	C	2506.502	INSTALL CASTING (STORM)	EACH	17	6	11		
50	C	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN G	LIN FT	34.86	11.20	23.66		
51	C	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN H	LIN FT	2.67	2.67	0.00		
52	C	2506.503	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	34.01	9.54	24.47		

STATEMENT OF ESTIMATED QUANTITIES (CONTINUED)									
ITEM NO.	TAB NUMBER	MN/DOT SPEC		UNIT	TOTAL ESTIMATED QUANTITY	STATE AID PARTICIPATING LOCAL STREETS S.A.P 127-319-008 (FRIDLEY)	STATE AID PARTICIPATING LOCAL STREETS S.A.P 113-118-005 (COLUMBIA HEIGHTS)	LOCAL FUNDING/NON PARTICIPATING (FRIDLEY)	LOCAL FUNDING/NON PARTICIPATING (COLUMBIA HEIGHTS)
53	E	2521.518	4" CONCRETE WALK	SQ FT	11691	11691			
54	E	2521.518	6" CONCRETE WALK	SQ FT	9706	4606	5100		
55	E	2531.503	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	5224	2293	2408	501	22
56	E	2531.503	CONCRETE CURB & GUTTER DESIGN B624	LIN FT	828	467	361		
57	E	2531.504	6" CONCRETE DRIVEWAY PAVEMENT	SQ YD	451	411	40		
58	E	2531.618	TRUNCATED DOMES	SQ FT	1088	296	792		
59		2540.601	REPAIR/REPLACE PET FENCE & IRRIGATION SYSTEM	LUMP SUM	1	0.5	0.5		
60		2563.601	TRAFFIC CONTROL	LUMP SUM	1	0.45	0.45	0.05	0.05
61	I	2564.502	INSTALL SIGN TYPE C	EACH	25	16	9		
62	I	2564.518	SIGN PANELS TYPE C	SQ FT	29.5	21.5	8		
63	I	2565.602	RIGID PVC LOOP DETECTOR 6'X6'	EACH	9	9			
64	I	2565.602	RIGID PVC LOOP DETECTOR 6'X12'	EACH	1	1			
65	G	2573.502	STORM DRAIN INLET PROTECTION	EACH	43	27	16		
66	G	2573.503	SILT FENCE MS	LIN FT	1092	310	756	26	
67	G	2574.507	COMMON TOPSOIL BORROW	CU YD	255	119	132	4	
68	G	2574.508	FERTILIZER TYPE 3 (350 LB/AC)	POUND	130.55	73.5	52.5	4.55	
69	G	2575.504	ROLLED EROSION PREVENTION CATEGORY 15	SQ YD	1041	291	750		
70	G	2575.505	SEEDING	ACRE	0.373	0.21	0.15	0.013	
71	G	2575.508	SEED MIXTURE 25-151 (120 LB/AC)	POUND	44.76	25.2	18	1.56	
72	G	2575.508	HYDRAULIC BONDED FIBER MATRIX (3500 LB/AC)	POUND	1305.5	735	525	45.5	
73	H	2582.503	4" BROKEN LINE: EPOXY	LIN FT	506	506			
74	H	2582.503	4" SOLID LINE: EPOXY	LIN FT	6873	4072	2801		
75	H	2582.503	4" DOUBLE SOLID LINE: EPOXY	LIN FT	395	395			
76	H	2582.518	CROSSWALK: EPOXY	SQ FT	2658	1356	1302		
77	H	2582.518	PAVEMENT MESSAGE PAINT	SQ FT	62	62			
78	H	2582.503	24" SOLID LINE: EPOXY	LIN FT	88	88			

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C	STORM SEWER	5
D	WAERMAIN	6
E	CONCRETE	6
F	ROADWAY SECTION, AGGREGATE & BITUMINOUS	7
G	EROSION CONTROL AND TURF ESTABLISHMENT	7
H	PAVEMENT MARKINGS	8
I	SIGNING AND STRIPING	8
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STANDARD PLATES	
ITEM NO.	ITEM
4026B	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
4110F	COVER CASTING FOR MANHOLE
4126F	CATCH BASIN FRAME CASTING
4149C	GRATE CASTING FOR CATCH BASIN
7038A	DETECTABLE WARNING SURFACE TRUNCATED DOMES
7100H	CONCRETE CURB AND GUTTER
7111J	INSTALLATION OF CATCH BASIN CASTINGS
8132B	PREFORMED RIGID PVC CONDUIT LOOP DETECTOR (3 SHEETS)

BASIS OF ESTIMATED QUANTITIES		A
ITEM	CONVERSION	
MASS OF BITUMINOUS MATERIAL	110 lb/sy-in	
BITUMINOUS TACK COAT	0.06 gal/sy	
HYDRAULIC BONDED FIBER MATRIX	3500 lb/ac	
SEED, MIXTURE 25-151	120 lb/ac	
FERTILIZER TYPE 3 (22-5-10)	350 lb/ac	



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

Brandon J. Brodhag
BRANDON J. BRODHAG
59297
DATE 06/13/2023



7071 University Avenue NE
Fridley, MN 55432

DESIGNED	TYL	NO.	ISSUED FOR	DATE
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

STATEMENT OF ESTIMATED QUANTITIES

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MISCELLANEOUS REMOVALS																			B
ALIGNMENT	STATION	CLEARING	GRUBBING	CLEARING	GRUBBING	SALVAGE SIGN TYPE C	REMOVE SIGN TYPE C	REMOVE DRAINAGE STRUCTURE	REMOVE CASTING	REMOVE HYDRANT (AND GATE VALVE)	REMOVE WATERMAIN	REMOVE CONCRETE CURB & GUTTER	REMOVE PIPE SEWER	REMOVE RETAINING WALL	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	REMOVE CONCRETE DRIVEWAY PAVEMENT	REMOVE CONCRETE WALK	REMOVE BITUMINOUS PAVEMENT
		ACRE	ACRE	TREE	TREE	EACH	EACH	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT	LF	LIN FT	SQ YD	SQ YD	SQ YD	SQ FT
MSAS STREET, S.A.P. 127-319-008 (FRIDLEY)																			
53RD AVENUE NE	00+00 TO 12+37					1		2				1360	12		382	108	63	8	136
53RD AVENUE NE	13+48 TO 27+29	0.01	0.01			3		4				1000	79	64	236	61	114		
53RD AVENUE NE	27+29 TO 40+70	0.02	0.02	1	1	5		-		2		393		4	150		149		
53RD AVENUE NE	40+70 TO 53+00											7							
	TOTAL	0.03	0.03	1	1	9		6		2		2760	91	64	768	169	326	8	136
MSAS STREET, S.A.P. 113-118-005 (COLUMBIA HEIGHTS)																			
53RD AVENUE NE	13+48 TO 27+29			1	6	1	1	2	6			1322	30	26	139	20	174	62	
53RD AVENUE NE	27+29 TO 40+70								3			1447	12		70		14		
53RD AVENUE NE	40+70 TO 53+00									1								9	135
	TOTAL			1	6	1	1	2	9	1		2769	42	26	209	20	188	71	135
LOCAL FUNDING/NON PARTICIPATING (FRIDLEY)																			
53RD AVENUE NE	00+00 TO 12+37																		
53RD AVENUE NE	13+48 TO 27+29																		
53RD AVENUE NE	27+29 TO 40+70										110	501			134		42		
53RD AVENUE NE	40+70 TO 53+00																		
	TOTAL										110	501			134		42		
LOCAL FUNDING/NON PARTICIPATING (COLUMBIA HEIGHTS)																			
53RD AVENUE NE	13+48 TO 27+29									2	360								
53RD AVENUE NE	27+29 TO 40+70																		
53RD AVENUE NE	40+70 TO 53+00																		
	TOTAL									2	360								
PROJECT SUBTOTAL		0.03	0.03	2	7	10	1	8	9	5	470	6030	133	90	1111	189	556	79	271

MSAS STREET, S.A.P. 127-319-008 (FRIDLEY)													C
DRAINAGE NUMBER		STRUCTURE LOCATION			DRAINAGE STRUCTURE					TOP OF CASTING ELEVATION	OUTLET ELEV.	INLET ELEV.	DRAINAGE PIPE
		ALIGN.	STATION	OFFSET	TYPE	PAY HEIGHT			CASTING ASSEMBLY TYPE				STEPS REQ'D
48-4020	DES G					DES H	LIN FT	LIN FT		LIN FT	LIN FT		
5000	6000	53rd Ave CL					3.98		NEENAH R3250-A	N	843.24	839.26	
5001	6000	53rd Ave CL				5.28			NEENAH R3067-V	N	843.30	838.02	30
5003	6002	53rd Ave CL					3.22		NEENAH R3250-A	N	842.41	839.19	15
5004	6003	53rd Ave CL						2.67	NEENAH R3250-A	N	842.37	839.7	10
5010	6012	53rd Ave CL					4.00		NEENAH R3250-A	N	873.13	869.13	
5013	6016	53rd Ave CL				4.26			NEENAH R3067-V	N	887.84	883.58	
6017	5013	53rd Ave CL										883.63	28
6018	5013	53rd Ave CL										884.06	30
9.54						11.20	2.67						113

MSAS STREET, S.A.P. 113-118-005 (COLUMBIA HEIGHTS)														C	
DRAINAGE NUMBER		STRUCTURE LOCATION			DRAINAGE STRUCTURE						TOP OF CASTING ELEVATION	OUTLET ELEV.	INLET ELEV.	DRAINAGE PIPE	
		ALIGN.	STATION	OFFSET	TYPE	PAY HEIGHT			CASTING ASSEMBLY TYPE	STEPS REQ'D				12" RCP CLASS II	
48-4020	DES G					DES H									
FLOWS FROM:	FLOWS TO:					LIN FT	LIN FT	LIN FT							
5002	6002	53rd Ave CL					3.21		NEENAH R3250-A	N	842.41	839.20		10	
5005	6003	53rd Ave CL					3.41		NEENAH R3250-A	N	842.38	838.97		15	
5006	6006	53rd Ave CL					4.78		NEENAH R3250-A	N	849.02	844.24		15	
5007	6007	53rd Ave CL				5.46			NEENAH R3067-V	N	853.67	848.21	848.21		
5008	6010	53rd Ave CL					5.00		NEENAH R3250-A	N	857.48	852.48		14	
5009	6011	53rd Ave CL				5.13			NEENAH R3067-V	N	871.59	866.46			
5011	6015	53rd Ave CL					4.21		NEENAH R3250-A	N	874.03	869.82		14	
5012	6016	53rd Ave CL				4.26			NEENAH R3067-V	N	887.84	883.58	883.58		
5014	6021	53rd Ave CL					3.05		NEENAH R3250-A	N	891.06	888.01		10	
5015	6024	53rd Ave CL				5.18			NEENAH R3067-V	N	891.69	886.51	886.51		
5016	6025	53rd Ave CL				4.44			NEENAH R3067-V	N	890.40	885.96	885.96		
						24.47	23.66	0.00							38



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Brandon J. Brodhag
BRANDON J. BRODHAG
UC NO. 59297 DATE 06/13/2023



City of
Columbia Heights



7071 University Avenue NE
Fridley, MN 55432

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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

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WATERMAIN											D
ALIGNMENT	STATION	FILL AND ABANDON PIPE	HYDRANT WITH 6" GATE VALVE ASSEMBLY (INSTALL ONLY)	INSTALL HYDRANT (FURNISH AND INSTALL)	ADJUST GATE VALVE & BOX	6" GATE VALVE & BOX	12" GATE VALVE & BOX	CONNECT TO EXISTING WATERMAIN	6" DIP WATERMAIN CL 52	FITTINGS	
		LIN FT	EACH	EACH	EACH	EACH	EACH	EACH	LIN FT	POUND	
MSAS STREET, S.A.P. 127-319-008 (FRIDLEY)											
53RD AVENUE NE	00+00 TO 53+00										
MSAS STREET, S.A.P. 113-118-005 (COLUMBIA HEIGHTS)											
53RD AVENUE NE	13+48 TO 53+00										
LOCAL FUNDING/NON PARTICIPATING (FRIDLEY)											
53RD AVENUE NE	00+00 TO 53+00	427	3		12		1	4	571	410	
LOCAL FUNDING/NON PARTICIPATING (COLUMBIA HEIGHTS)											
53RD AVENUE NE	13+48 TO 53+00			2	11	2		4	372	240	
PROJECT SUBTOTAL		427	3	2	23	2	1	8	943	650	

CONCRETE							E
ALIGNMENT	STATION	4" CONCRETE WALK	6" CONCRETE WALK	CONCRETE CURB & GUTTER DESIGN B618	CONCRETE CURB & GUTTER DESIGN B624	6" CONCRETE DRIVEWAY PAVEMENT	TRUNCATED DOMES
		SQ FT	SQ FT	LIN FT	LIN FT	SQ YD	SQ FT
MSAS STREET, S.A.P. 127-319-008 (FRIDLEY)							
53RD AVENUE NE	00+00 TO 12+37	30	1371	1208	152	86	196
53RD AVENUE NE	13+48 TO 27+29	4957	1993	726	274	124	88
53RD AVENUE NE	27+29 TO 40+70	6664	1242	352	41	201	12
53RD AVENUE NE	40+70 TO 53+00	40		7			
	TOTAL	11691	4606	2293	467	411	296
MSAS STREET, S.A.P. 113-118-005 (COLUMBIA HEIGHTS)							
53RD AVENUE NE	13+48 TO 27+29		2228	1104	218	40	330
53RD AVENUE NE	27+29 TO 40+70		1458	1304	143		225
53RD AVENUE NE	40+70 TO 53+00		1414				237
	TOTAL		5100	2408	361	40	792
LOCAL FUNDING/NON PARTICIPATING (FRIDLEY)							
53RD AVENUE NE	00+00 TO 12+37						
53RD AVENUE NE	13+48 TO 27+29						
53RD AVENUE NE	27+29 TO 40+70			501		22	
53RD AVENUE NE	40+70 TO 53+00						
	TOTAL			501		22	
LOCAL FUNDING/NON PARTICIPATING (COLUMBIA HEIGHTS)							
53RD AVENUE NE	13+48 TO 27+29						
53RD AVENUE NE	27+29 TO 40+70						
53RD AVENUE NE	40+70 TO 53+00						
	TOTAL						
PROJECT SUBTOTAL		11691	9706	5202	828	473	1088



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ROADWAY SECTION, AGGREGATE & BITUMINOUS															F
ALIGNMENT	STATION	COMMON EXCAVATION (P) (CV) (30% EXCESS RECLAIM)	COMMON EXCAVATION (P) (CV)	SELECT GRANULAR EMBANKMENT (CV)	SUBGRADE PREPERATION (P)	AGGREGATE BASE (CV) CLASS 5	FULL DEPTH RECLAMATION	BITUMINOUS JOINT SAW AND SEAL	BITUMINOUS MATERIAL FOR TACK COAT	TYPE SP 9.5 WEARING COURSE MIX (3,C)	TYPE SP 12.5 NON WEARING COURSE MIX (3,C)	TYPE SP 9.5 WEARING COURSE MIX (2,C) - TRAIL	3" TYPE SP 9.5 WEARING COURSE MIX (3,C) (BITUMINOUS DRIVEWAY) WITH 6" CL. 5 AGGREGATE	MODULAR BLOCK RETAINING WALL	
		CU YD	CU YD	CU YD	ROAD STA	CU YD	SQ YD	LIN FT	GALLON	TON	TON	TON	SQ YD	SQ FT	
MSAS STREET, S.A.P. 127-319-008 (FRIDLEY)															
53RD AVENUE NE	00+00 TO 12+37	692	26	42	11.95	221	5782	978	306	509	509	183	220		
53RD AVENUE NE	13+48 TO 27+29	560	57	31	6.93	143	3442	695	182	303	379			231	
53RD AVENUE NE	27+29 TO 40+70	488	48	28	6.73	128	3028	684	161	267	334			561	
53RD AVENUE NE	40+70 TO 53+00	117			1.58		614	105	39	64	81				
	TOTAL	1857	131	101	27.19	492	12866	2462	688	1143	1303	183	220	792	
MSAS STREET, S.A.P. 113-118-005 (COLUMBIA HEIGHTS)															
53RD AVENUE NE	13+48 TO 27+29	280	141	78	6.93	215	3054	417	162	269	336	217	20	478	
53RD AVENUE NE	27+29 TO 40+70	244	133	84	6.73	230	3019	403	160	266	333	251		181	
53RD AVENUE NE	40+70 TO 53+00	58	78	123	1.58	200	579	53	36	60	78	184		478	
	TOTAL	582	352	285	15.24	645	6652	873	358	595	747	652	20	1137	
LOCAL FUNDING/NON PARTICIPATING (FRIDLEY)															
53RD AVENUE NE	00+00 TO 12+37														
53RD AVENUE NE	13+48 TO 27+29														
53RD AVENUE NE	27+29 TO 40+70	63			1.6		288		17	28	34				
53RD AVENUE NE	40+70 TO 53+00														
	TOTAL	63			1.6		288		17	28	34				
LOCAL FUNDING/NON PARTICIPATING (COLUMBIA HEIGHTS)															
53RD AVENUE NE	13+48 TO 27+29														
53RD AVENUE NE	27+29 TO 40+70														
53RD AVENUE NE	40+70 TO 53+00														
	TOTAL														
PROJECT TOTAL		2502	483	386	44.03	1137	19806	3335	1063	1766	2084	835	240	1929	

EROSION CONTROL & TURF ESTABLISHMENT											G
ALIGNMENT	STATION	STREET SWEEPER (WITH PICKUP BROOM)	STORM DRAIN INLET PROTECTION	SILT FENCE MS	COMMON TOPSOIL BORROW	FERTILIZER TYPE 3 (350 LB/AC)	ROLLED EROSION PREVENTION CATEGORY 15	SEEDING	SEED MIXTURE 25-151 (120 LB/AC)	HYDRAULIC BONDED FIBER MATRIX (3500 LB/AC)	
		HOUR	EACH	LIN FT	CU YD	POUND	SQ YD	ACRE	POUND	POUND	
MSAS STREET, S.A.P. 127-319-008 (FRIDLEY)											
53RD AVENUE NE	00+00 TO 12+37	12.5	8		38	35.00		0.10	12	350	
53RD AVENUE NE	13+48 TO 27+29		16		44	19.25		0.055	6.6	192.5	
53RD AVENUE NE	27+29 TO 40+70		3	310	37	19.25	291	0.055	6.6	192.5	
53RD AVENUE NE	40+70 TO 53+00										
	TOTAL	12.5	27	310	119	73.5	291	0.21	25.2	735	
MSAS STREET, S.A.P. 113-118-005 (COLUMBIA HEIGHTS)											
53RD AVENUE NE	13+48 TO 27+29	12.5	13		41	19.25		0.055	6.6	192.5	
53RD AVENUE NE	27+29 TO 40+70		3	584	43	19.25	750	0.055	6.6	192.5	
53RD AVENUE NE	40+70 TO 53+00			172	48	14.00		0.04	4.8	140	
	TOTAL	12.5	16	756	132	52.5	750	0.15	18	525	
LOCAL FUNDING/NON PARTICIPATING (FRIDLEY)											
53RD AVENUE NE	00+00 TO 12+37										
53RD AVENUE NE	13+48 TO 27+29										
53RD AVENUE NE	27+29 TO 40+70			26	4	4.55		0.013	1.56	45.5	
53RD AVENUE NE	40+70 TO 53+00										
	TOTAL			26	4	4.55		0.013	1.56	45.5	
LOCAL FUNDING/NON PARTICIPATING (COLUMBIA HEIGHTS)											
53RD AVENUE NE	13+48 TO 27+29										
53RD AVENUE NE	27+29 TO 40+70										
53RD AVENUE NE	40+70 TO 53+00										
	TOTAL										
PROJECT TOTAL		25	43	1092	255	130.55	1041	0.373	44.76	1305.5	



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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

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PAVEMENT MARKINGS								H
ALIGNMENT	STATION	4" BROKEN LINE EPOXY	4" SOLID LINE EPOXY	4" DOUBLE SOLID LINE EPOXY	CROSSWALK EPOXY	PAVEMENT MESSAGE PAINT	24" STOP BAR EPOXY PAINT	
		YELLOW	WHITE	YELLOW	WHITE	WHITE	WHITE	
		LIN FT	LIN FT	LIN FT	SQ FT	SQ FT	LIN FT	
MSAS STREET, S.A.P. 127-319-008 (FRIDLEY)								
53RD AVENUE NE	00+00 TO 12+37	136	2026	125	462	62	25	
53RD AVENUE NE	13+48 TO 27+29	128	535	270	630		46	
53RD AVENUE NE	27+29 TO 40+70	201	1251		264		17	
53RD AVENUE NE	40+70 TO 53+00	41	260					
	TOTAL	506	4072	395	1356	62	88	
MSAS STREET, S.A.P. 113-118-005 (COLUMBIA HEIGHTS)								
53RD AVENUE NE	13+48 TO 27+29		984		882		24	
53RD AVENUE NE	27+29 TO 40+70		1117		420			
53RD AVENUE NE	40+70 TO 53+00		700					
	TOTAL		2801		1302		24	
LOCAL FUNDING/NON PARTICIPATING (FRIDLEY)								
53RD AVENUE NE	00+00 TO 12+37							
53RD AVENUE NE	13+48 TO 27+29							
53RD AVENUE NE	27+29 TO 40+70							
53RD AVENUE NE	40+70 TO 53+00							
	TOTAL							
LOCAL FUNDING/NON PARTICIPATING (COLUMBIA HEIGHTS)								
53RD AVENUE NE	13+48 TO 27+29							
53RD AVENUE NE	27+29 TO 40+70							
53RD AVENUE NE	40+70 TO 53+00							
	TOTAL							
PROJECT TOTAL		506	6873	395	2898	62	112	

SIGN PANELS										I
SIGN	DESCRIPTION	W	H	SQ. FT. EACH	SIGN TOTALS				SIGN TOTAL	SIGN SQ. FT. TOTAL
					MSAS STREET, S.A.P. 127-319-008 (FRIDLEY)	MSAS STREET, S.A.P. 113-118-005 (COLUMBIA HEIGHTS)	LOCAL FUNDING/NON PARTICIPATING (FRIDLEY)	LOCAL FUNDING/NON PARTICIPATING (COLUMBIA HEIGHTS)		
R8-3A	R8-3A (12 X 12) 	12	12	1	3	8			11	11
W11-2	W11-2 (30 X 30) 	30	30	6.25	2				2	12.5
W16-7P	W16-7P (24 X 18) 	24	18	3	2				2	6
INSTALL SALVAGED SIGN TYPE C					9	1			10	
INSTALL SIGN TOTAL					16	9			25	29.5
SIGN SQ. FT. TOTAL					21.5	8			29.5	

EARTHWORK										J
MSAS STREET, S.A.P. 127-319-008 (FRIDLEY)										
ALIGN.	STATION	Excavation				Embankment				
		RECLAIM	COMMON	TOPSOIL	TOTAL	AGGREGATE (CL. 5)	COMMON	TOPSOIL	TOTAL	
53RD AVENUE CL	0+00 TO 53+00	159	131	119	409	291	101	118	510	
MSAS STREET, S.A.P. 113-118-005 (COLUMBIA HEIGHTS)										
ALIGN.	STATION	Excavation				Embankment				
		RECLAIM	COMMON	TOPSOIL	TOTAL	AGGREGATE (CL. 5)	COMMON	TOPSOIL	TOTAL	
53RD AVENUE CL	0+00 TO 53+00	493	352	123	968	922	285	141	1348	
TOTAL		652	483	242	1377	1213	386	259	1858	



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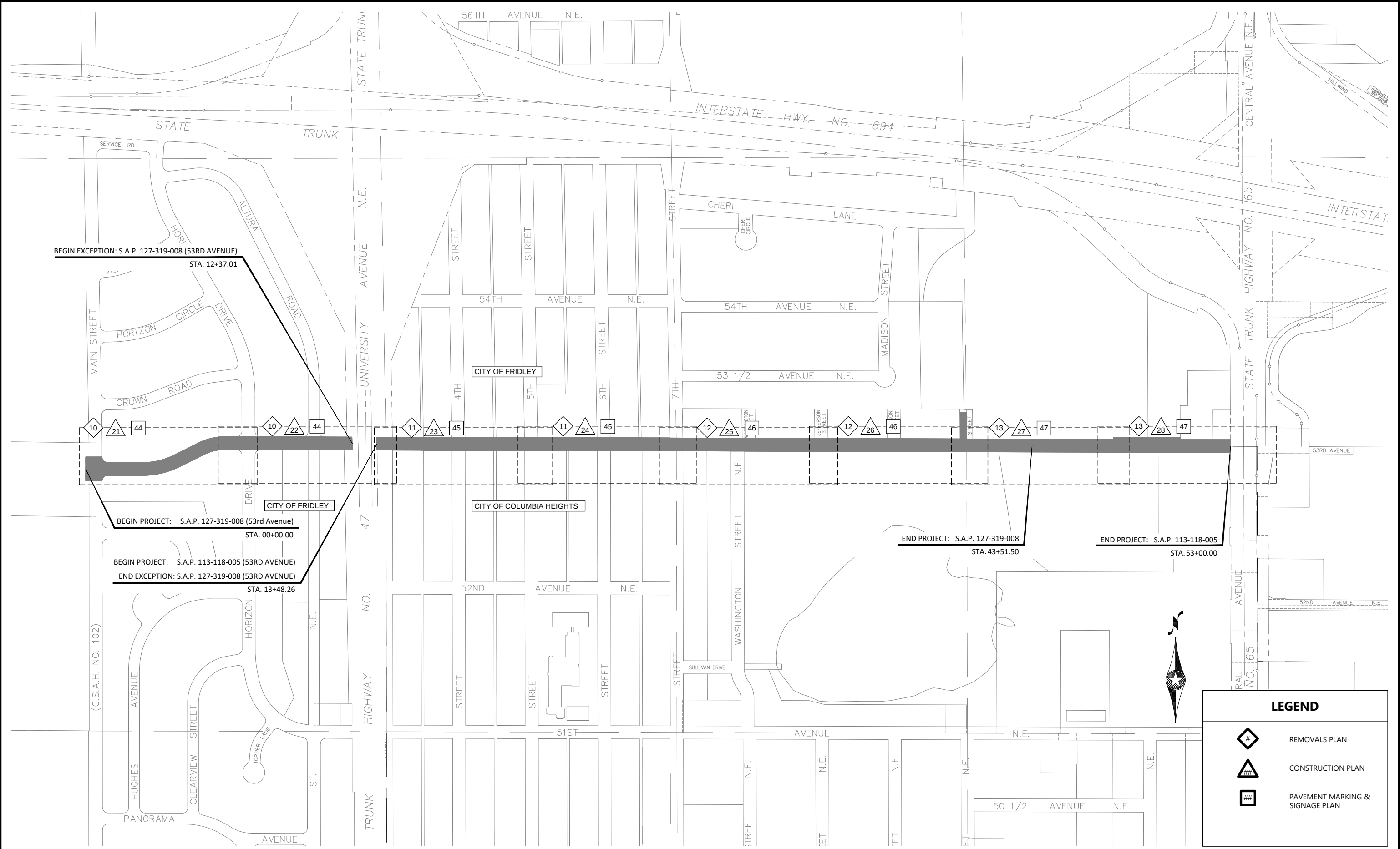
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

QUANTITY TABULATIONS

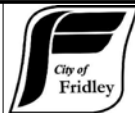
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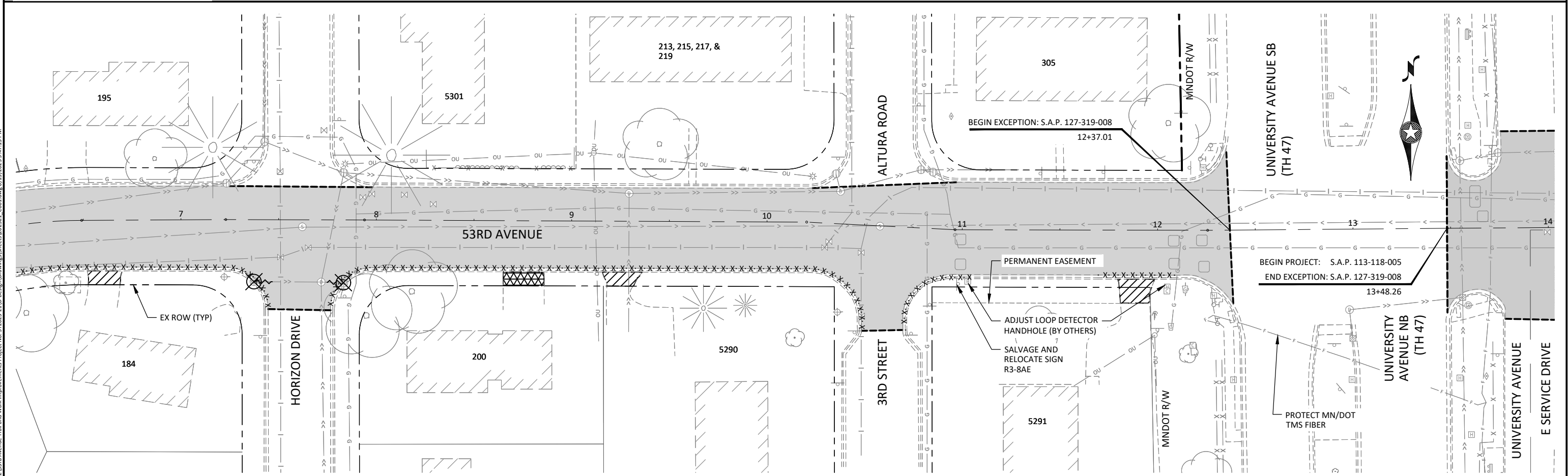
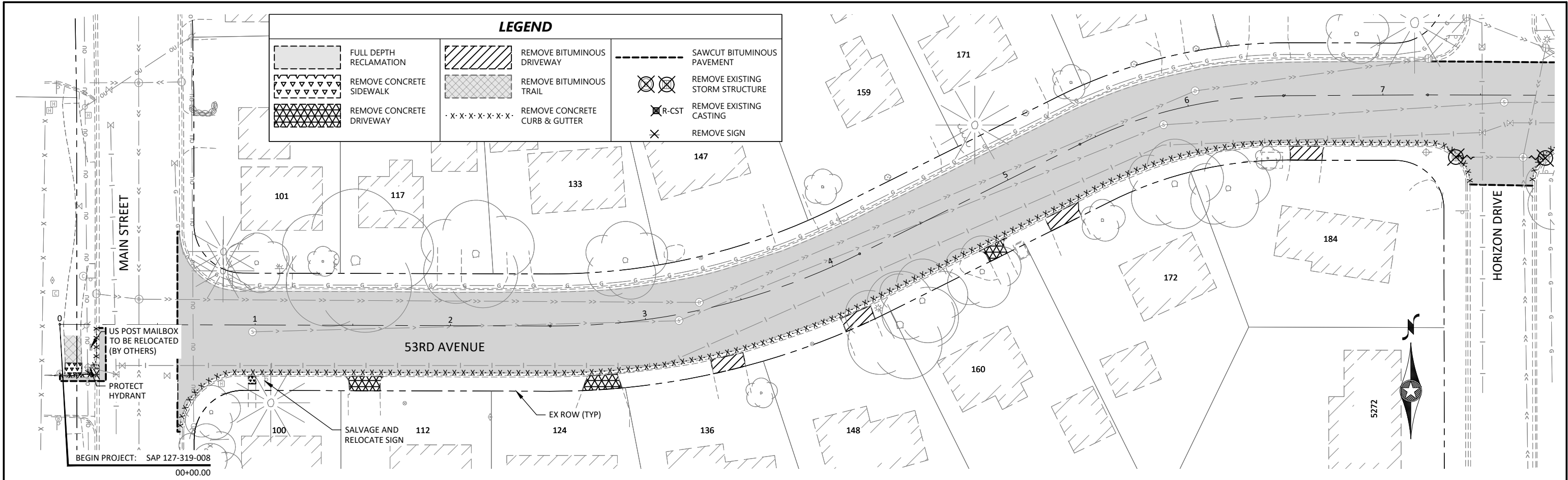
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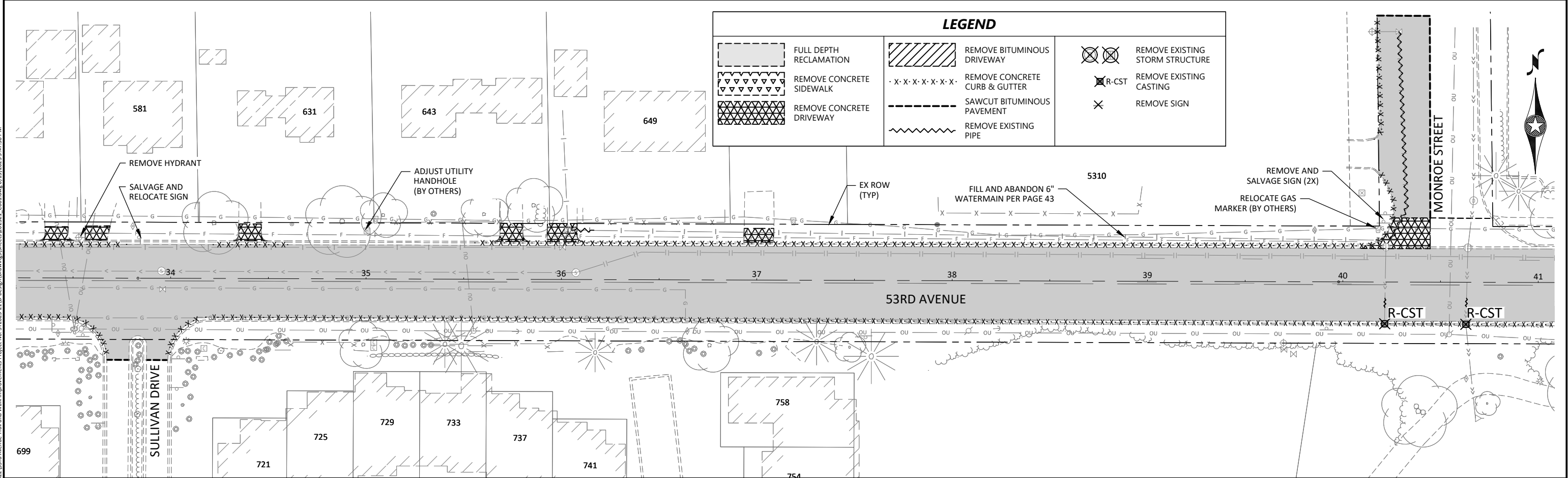
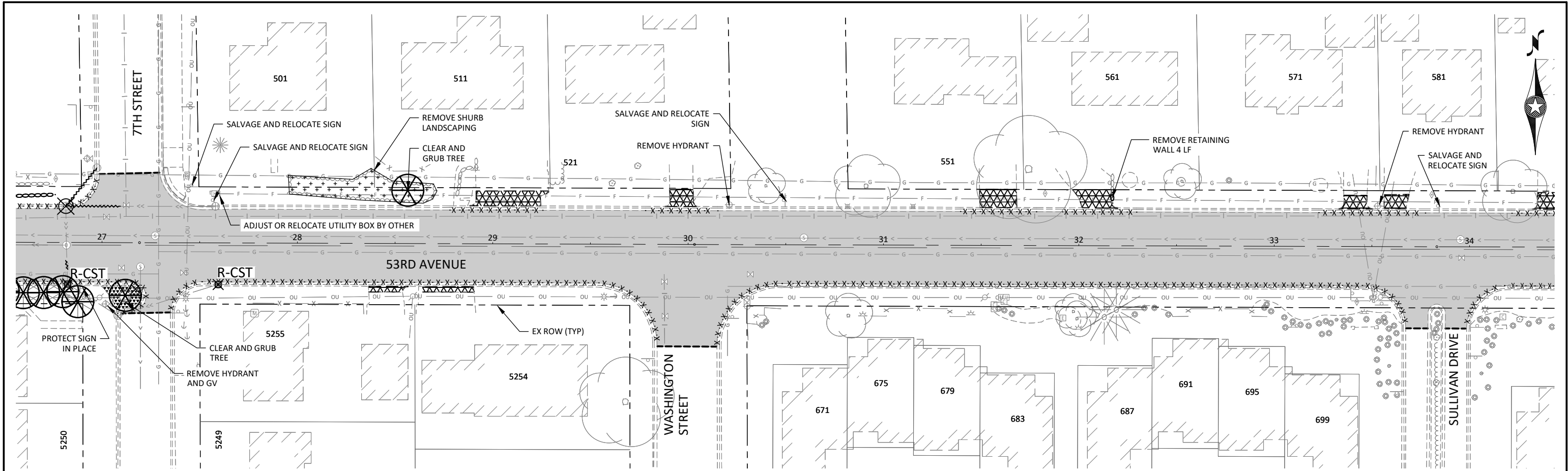
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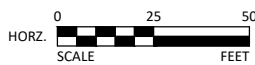
LOCATION PLAN

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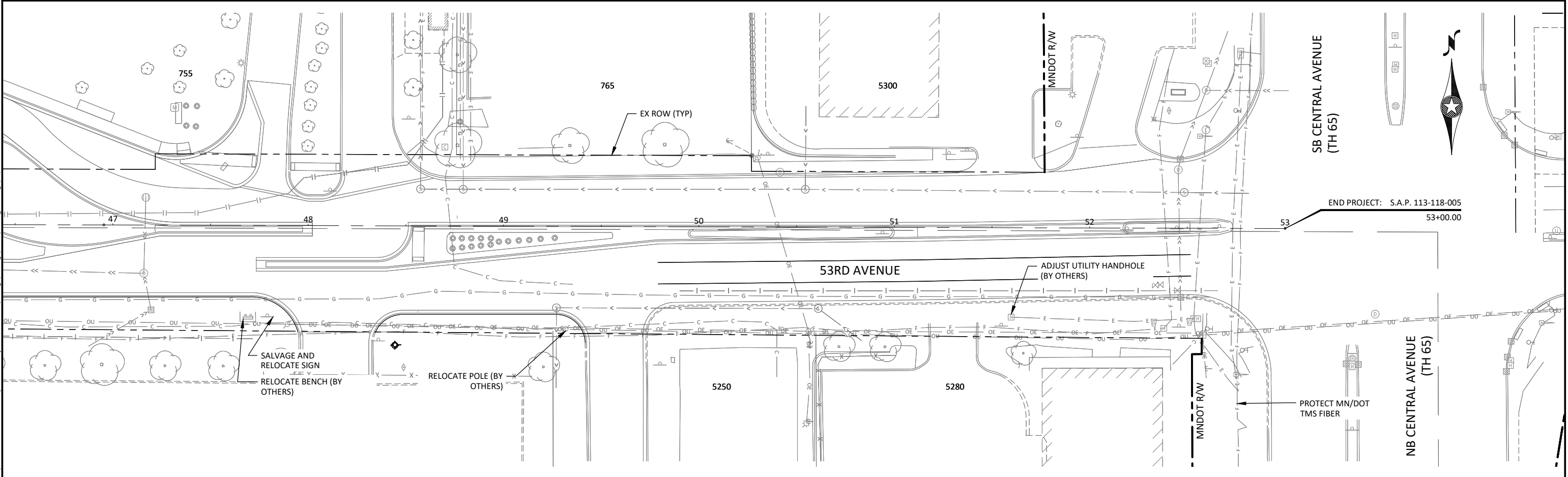
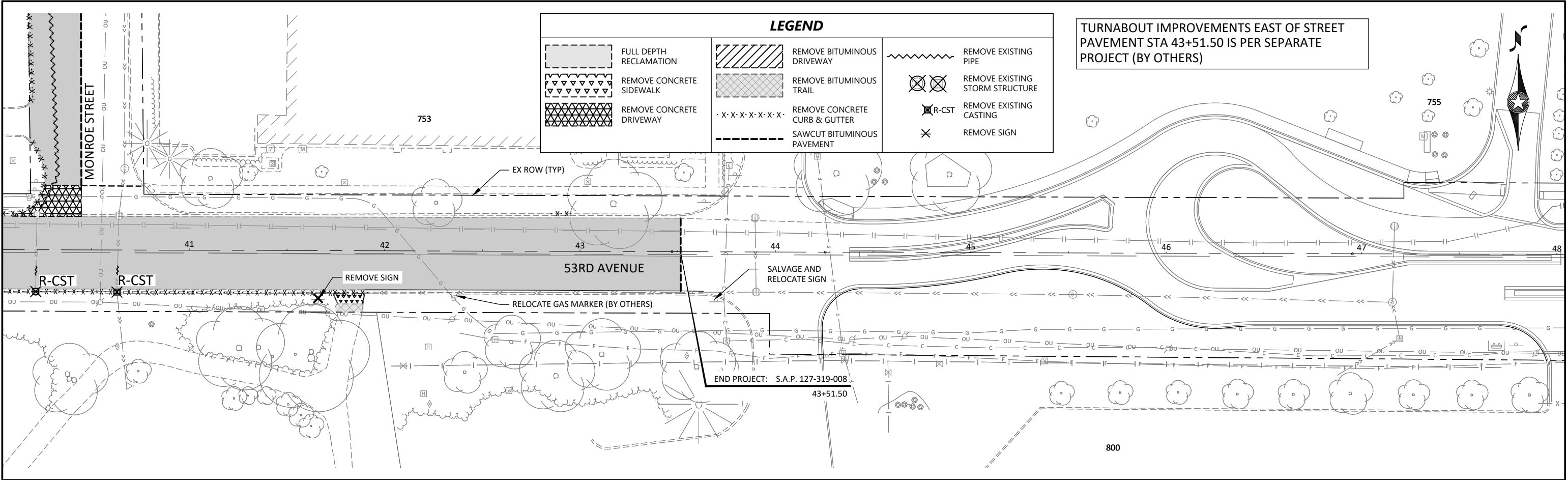


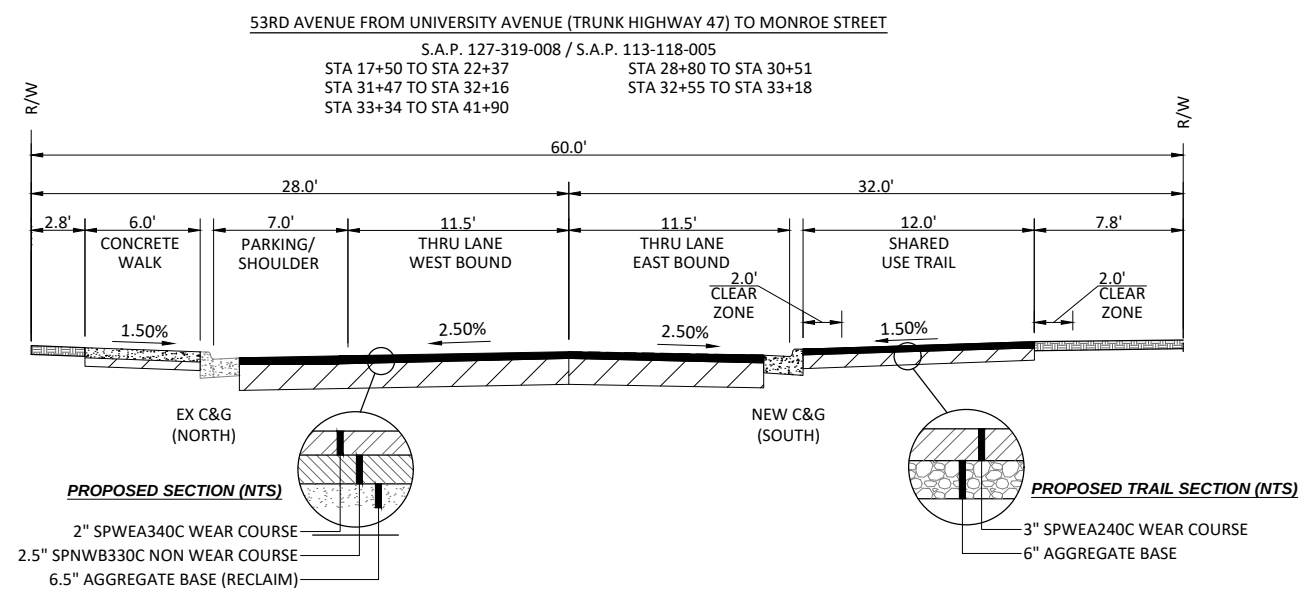
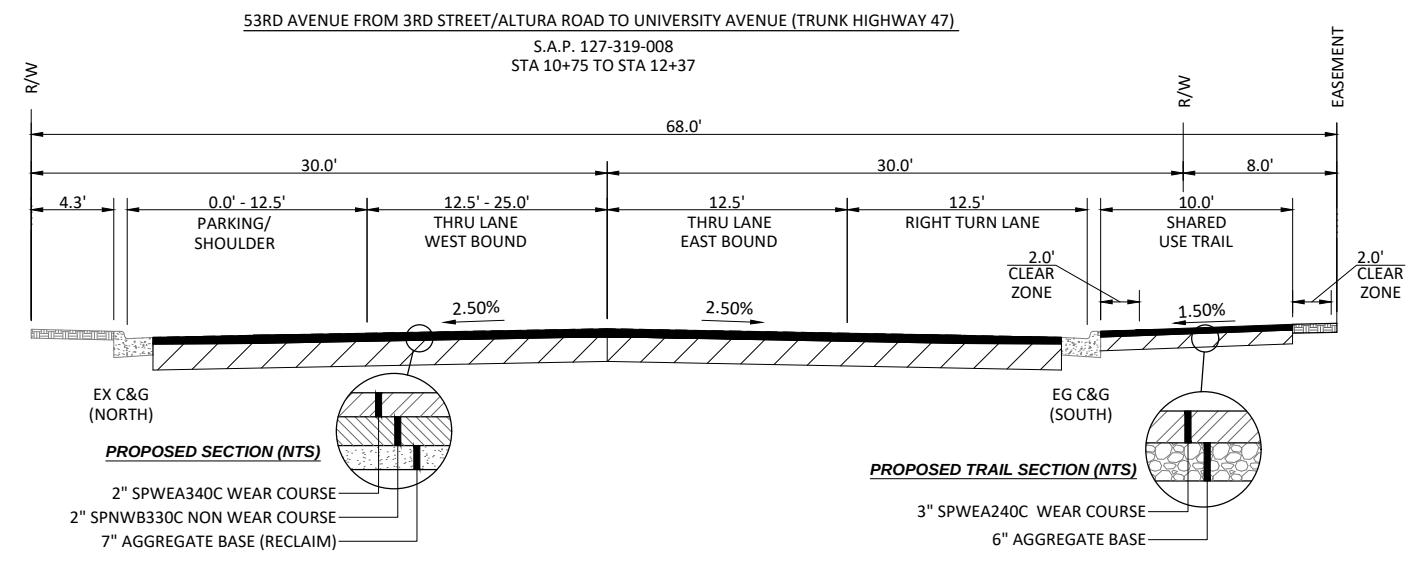
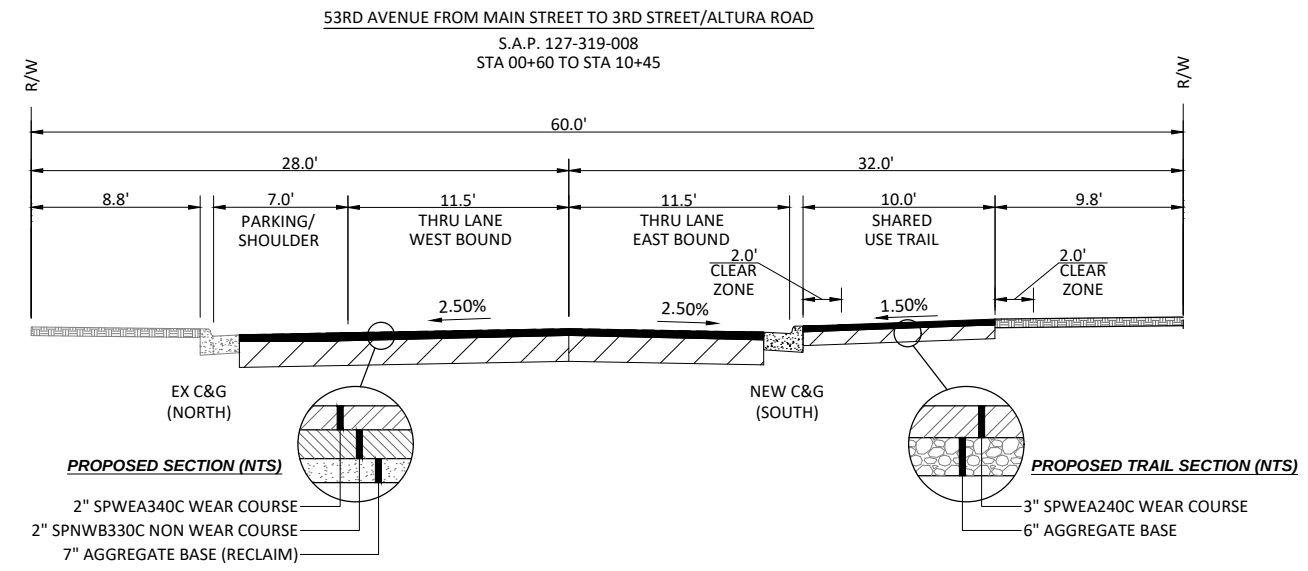
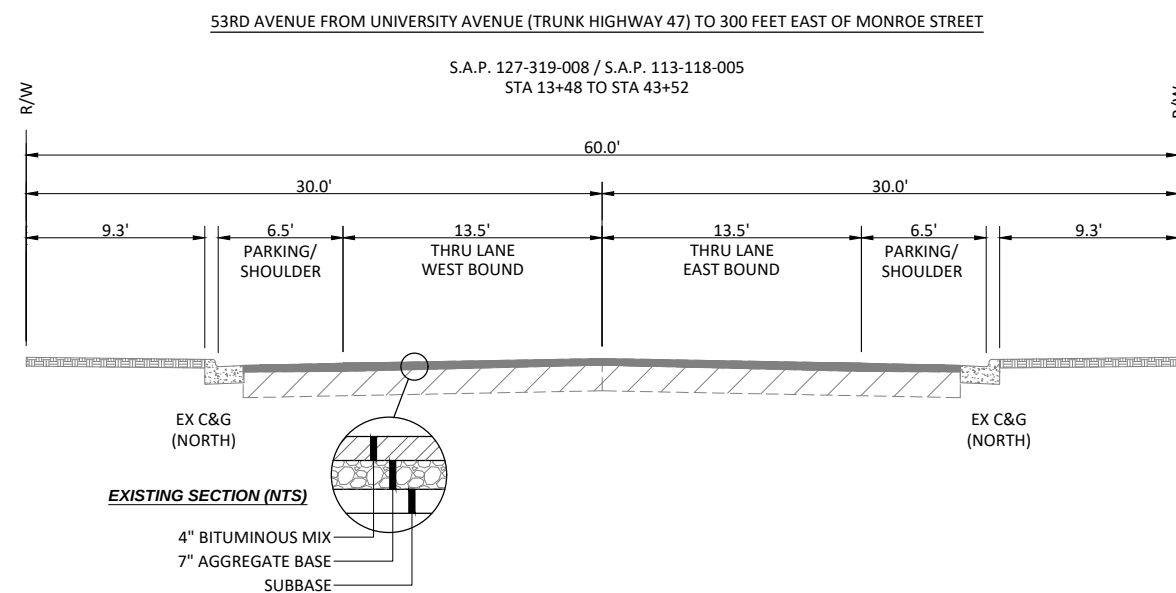
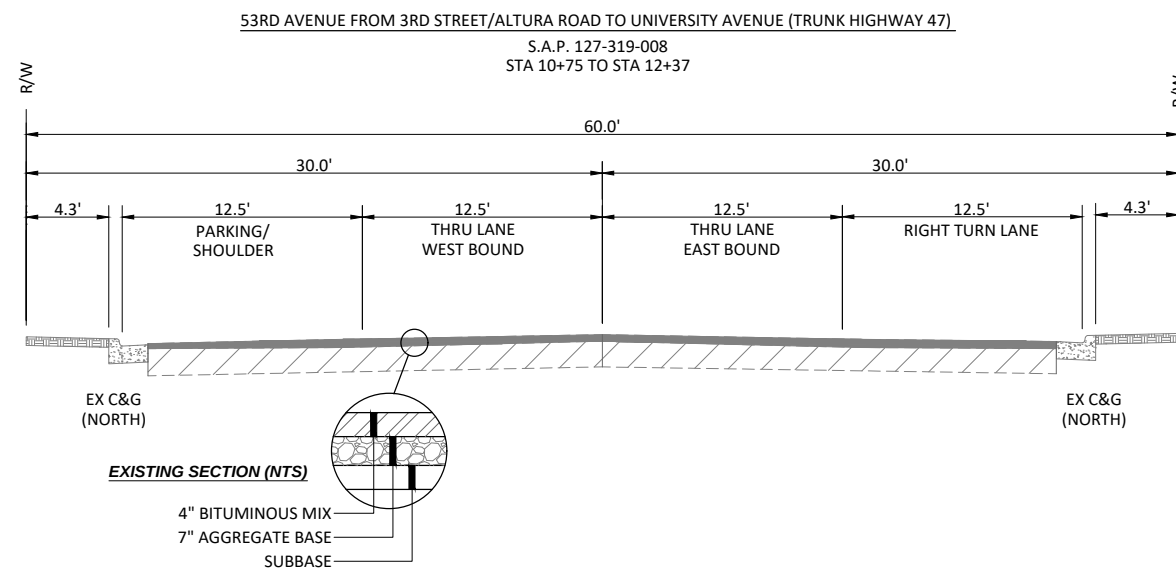
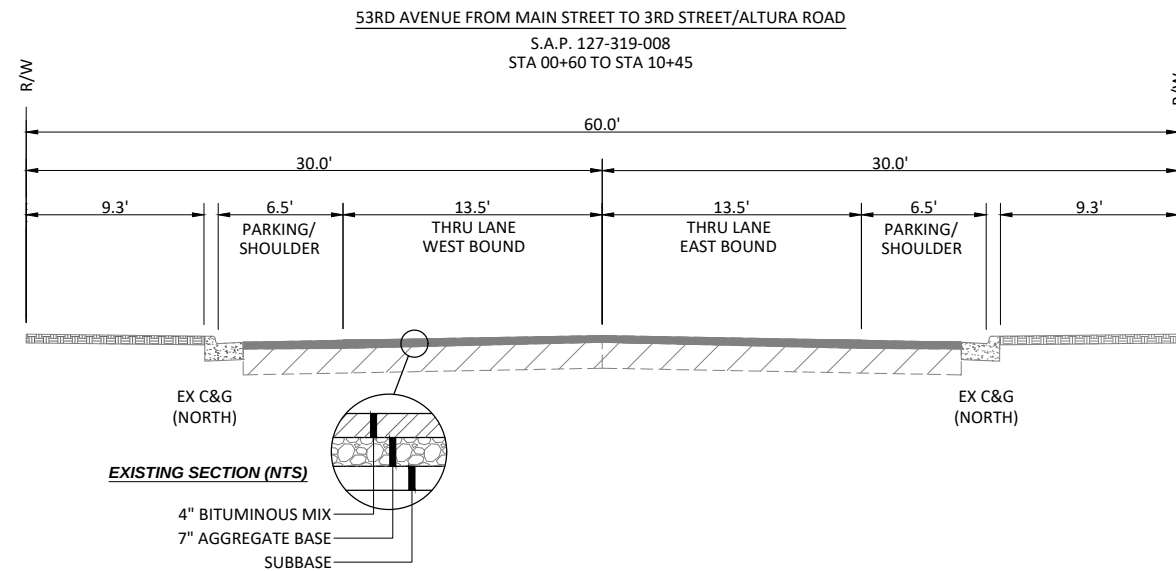
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EXISTING CONDITIONS & REMOVALS PLAN

SHEET
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OF
82



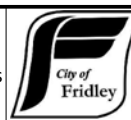


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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BRANDON J. BRODHAG
UC NO. 59297 DATE 06/13/2023



7071 University Avenue NE
Fridley, MN 55432

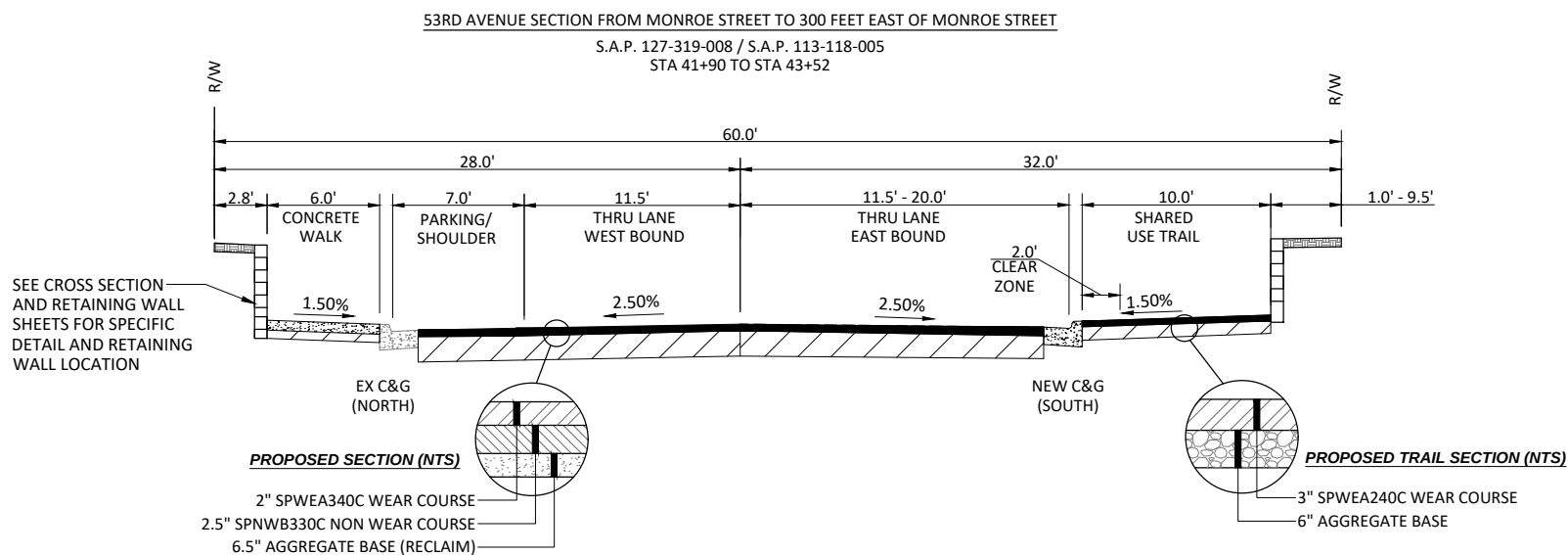
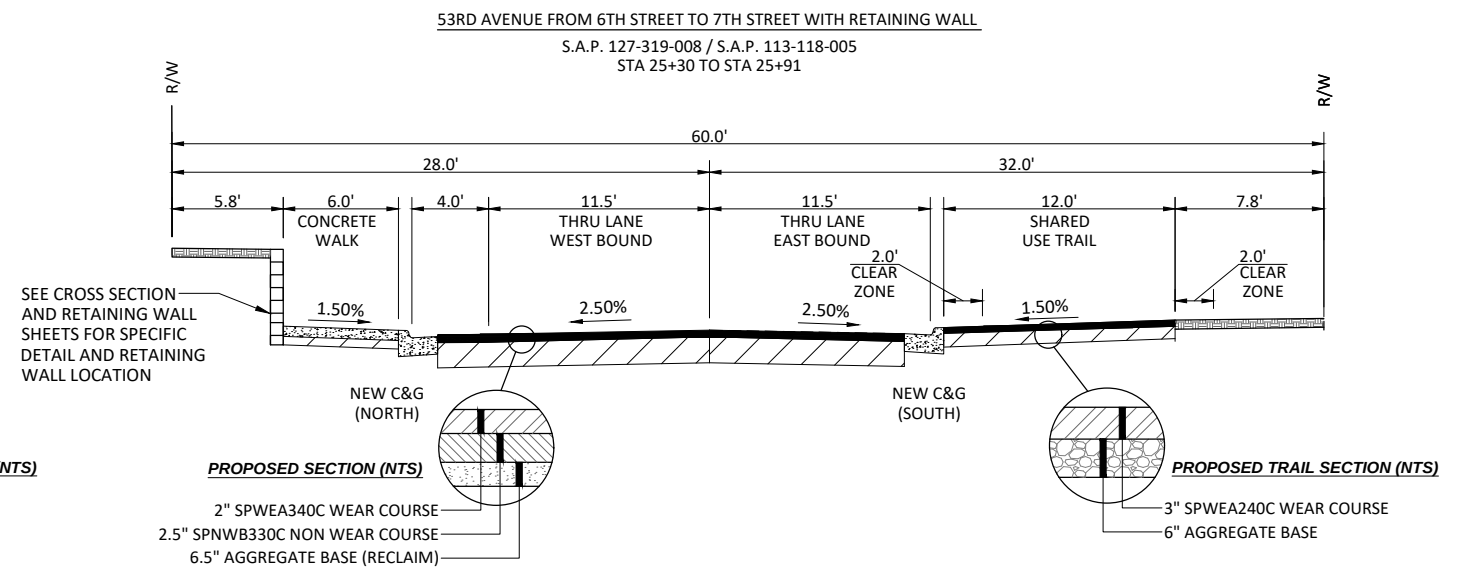
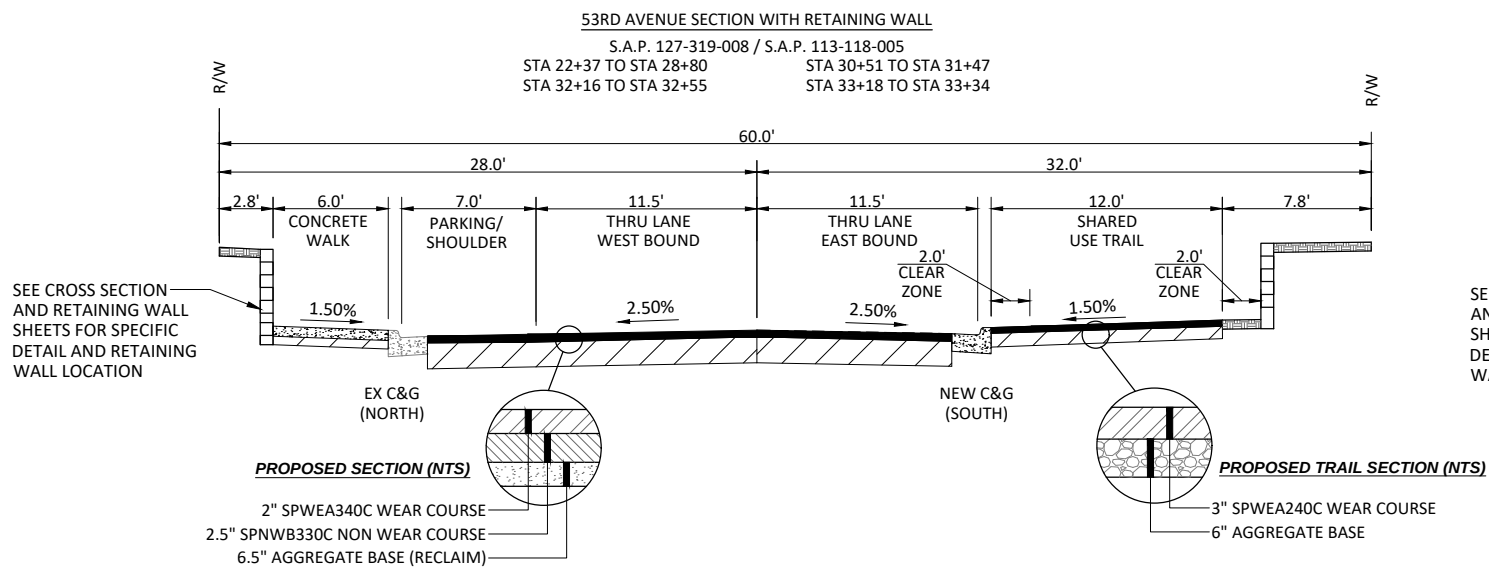
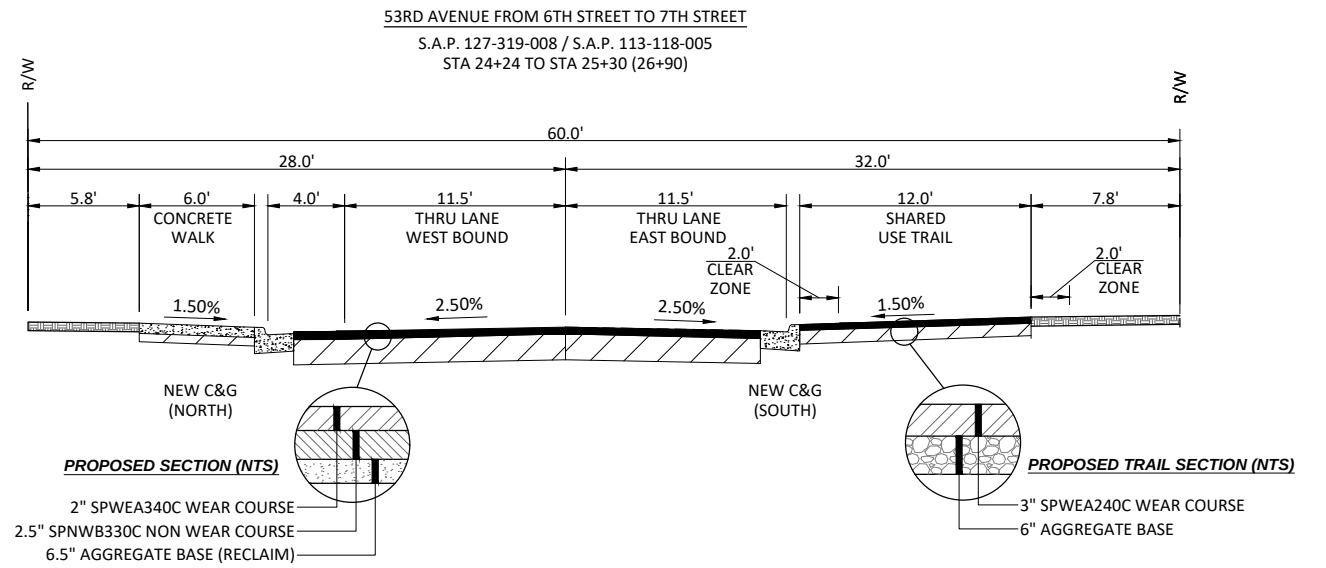
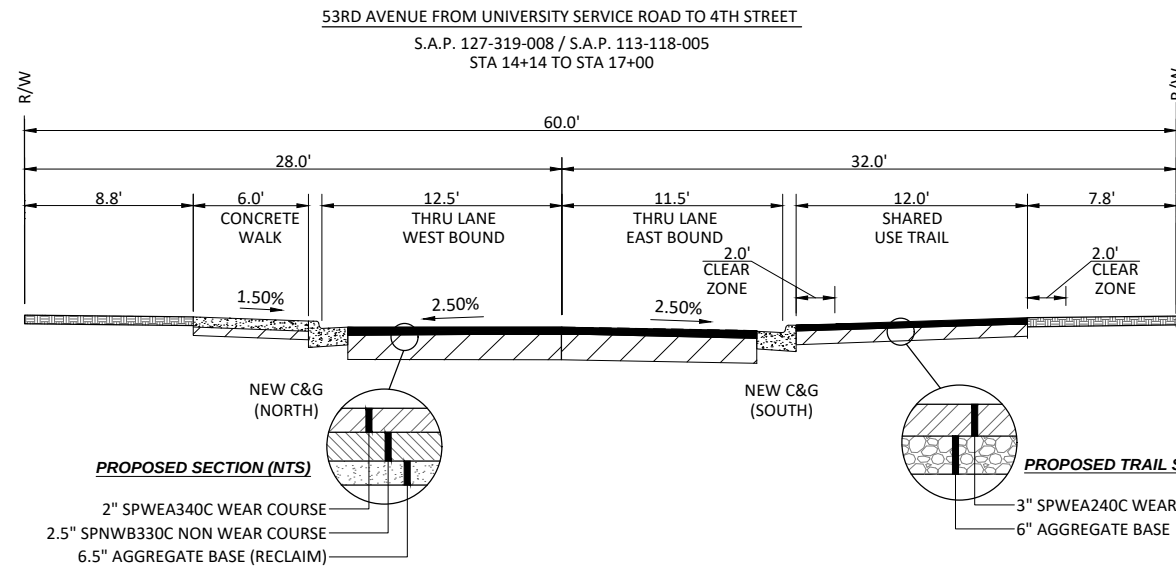
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CLIENT PROJ. NO.	ST2023-21			

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

TYPICAL SECTIONS

SHEET
14
OF
82



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Brandon J. Brodhag
BRANDON J. BRODHAG
UC NO. 59297 DATE 06/13/2023



7071 University Avenue NE
Fridley, MN 55432

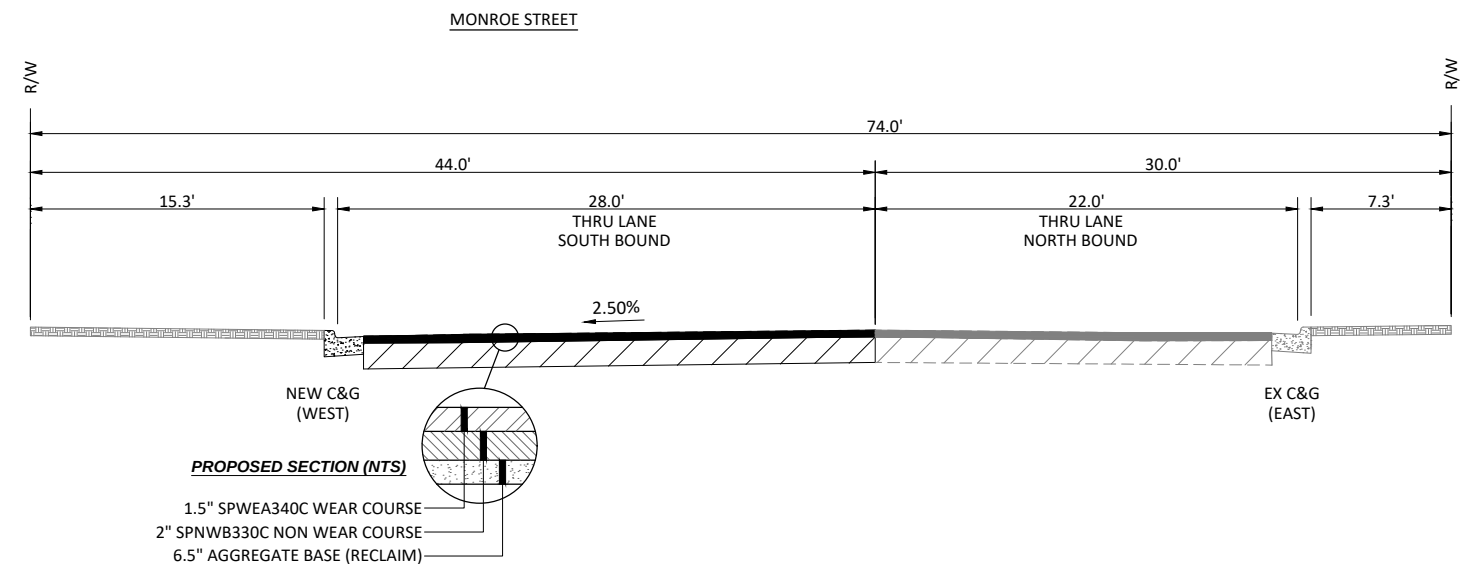
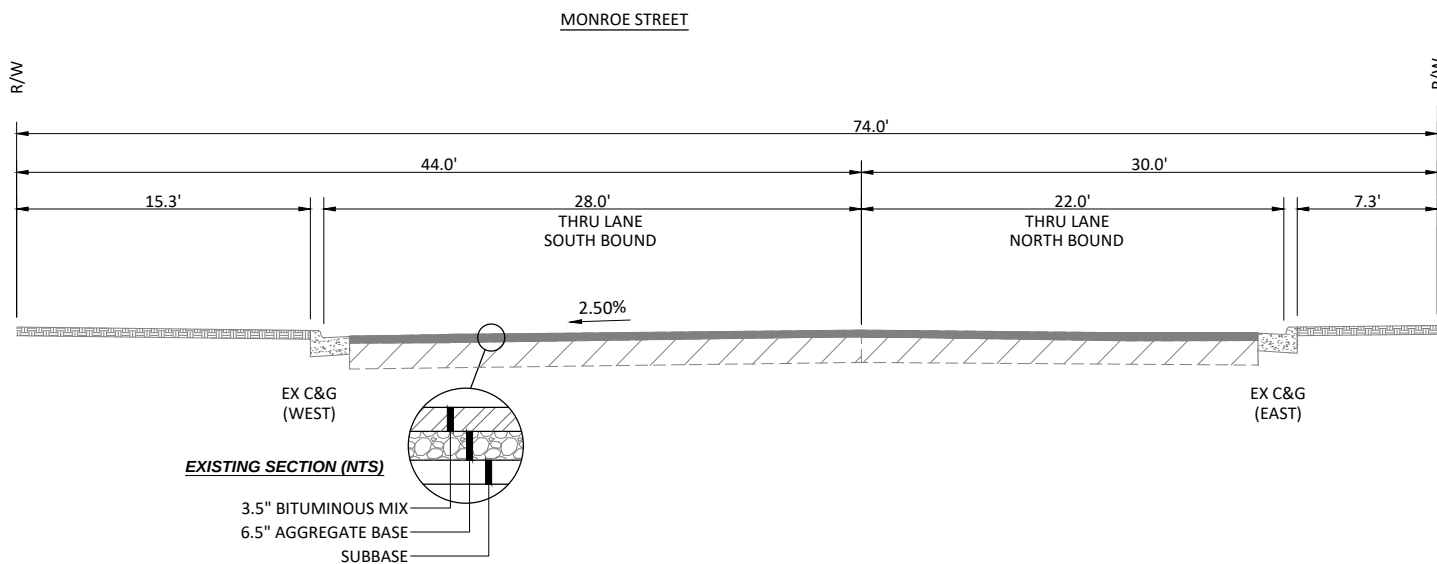
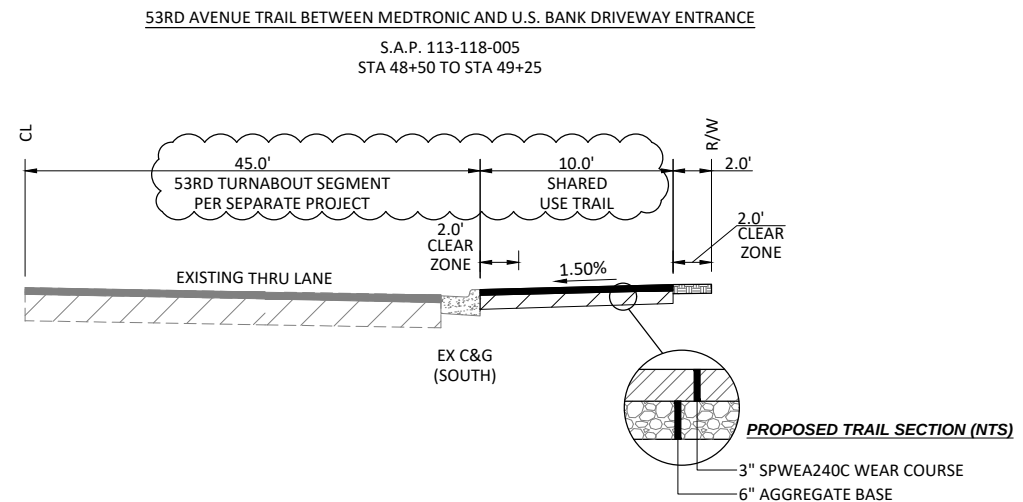
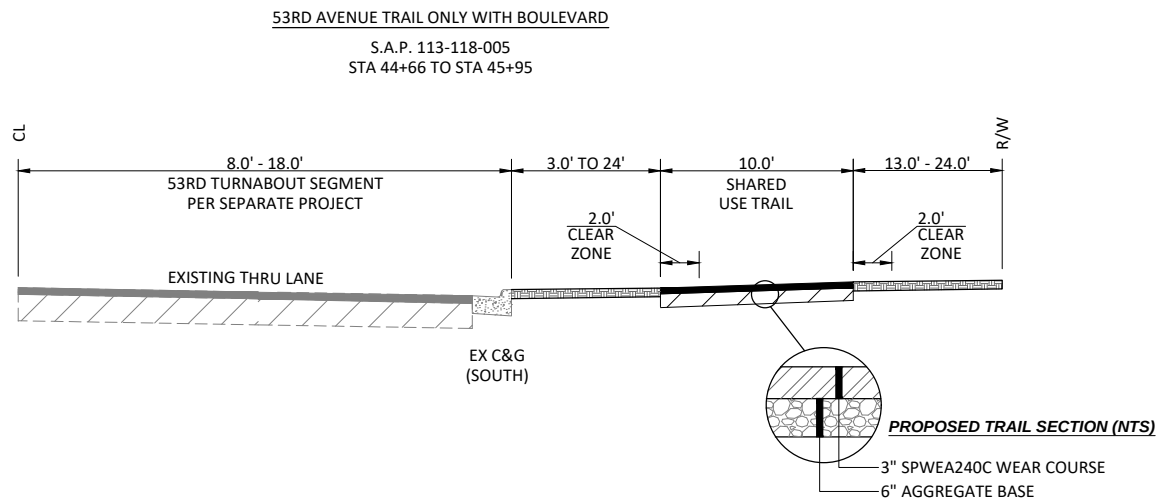
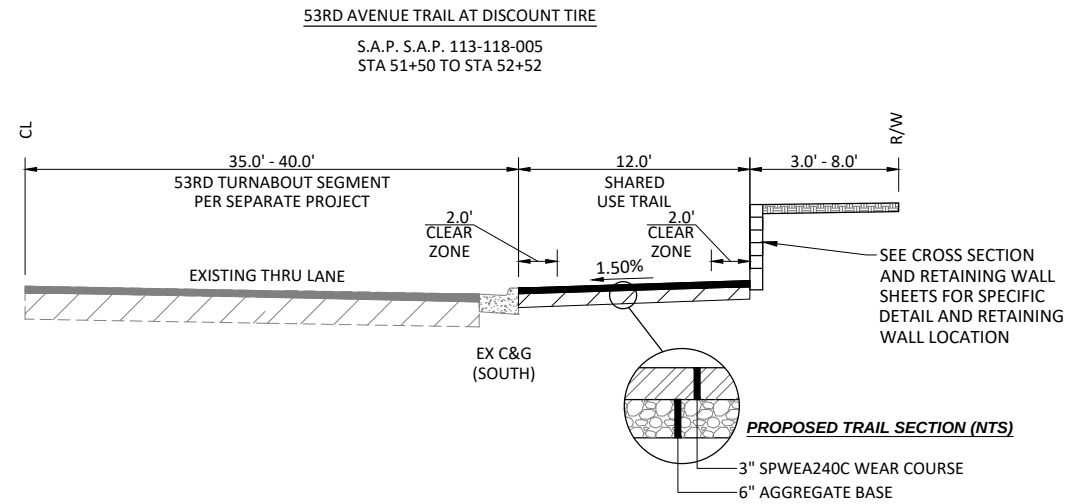
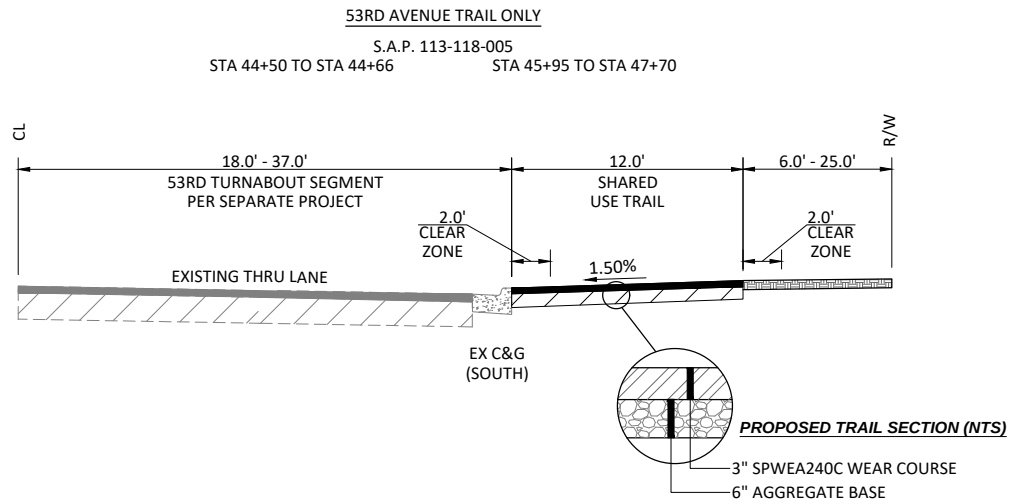
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BJB			
CLIENT PROJ. NO.	NO.	ISSUED FOR	DATE
ST2023-21			

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

TYPICAL SECTIONS

SHEET
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OF
82



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Brandon J. Brodhag
BRANDON J. BRODHAG
U.C. NO. 59297 DATE 06/13/2023



City of
Columbia Heights



7071 University Avenue NE
Fridley, MN 55432

DESIGNED	TYL	NO.	ISSUED FOR	DATE
DRAWN	TYL/JBQ			
CHECKED	BJB			
CLIENT PROJ. NO.	ST2023-21			

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

TYPICAL SECTIONS

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OF
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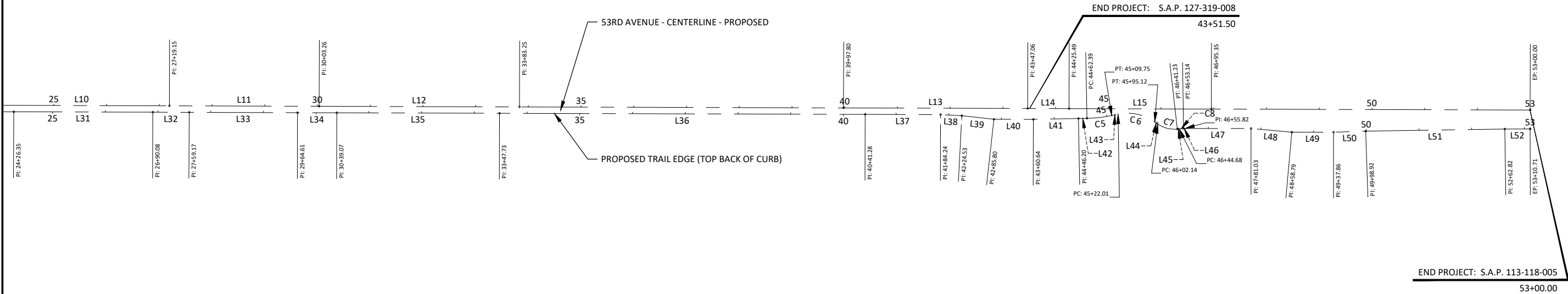
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53RD AVENUE - CENTERLINE - PROPOSED											
NUMBER	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	LINE / CHORD DIRECTION
L1	0+00	0+60.23	60.23				110528.69	499610.50	110528.50	499670.72	S89° 49' 28"
L2	0+60.23	2+51.05	190.83				110528.50	499670.72	110527.87	499861.55	S89° 48' 36"E
C1	2+51.05	4+15.17	164.12	26°37'49"	353.10	162.64	110527.87	499861.55	110564.80	500019.95	N76° 52' 29"E
L3	4+15.17	5+41.06	125.88				110564.80	500019.95	110620.86	500132.66	N63° 33' 35"E
C2	5+41.06	6+49.11	108.06	26°08'45"	236.79	107.12	110620.86	500132.66	110645.67	500236.87	N76° 36' 27"E
L4	7+93.92	10+20.24	226.32				110645.66	500381.68	110644.77	500608.00	S89° 43' 29"E
L5	10+96.31	12+25.63	129.31				110640.88	500683.97	110640.57	500813.28	S89° 51' 53"E
L6	13+48.27	14+28.22	79.96				110641.62	500935.92	110642.20	501015.87	N89° 35' 05"E
L7	14+28.22	17+23.15	294.93				110642.20	501015.87	110641.21	501310.80	S89° 48' 31"E
L8	17+23.15	20+55.63	332.48				110641.21	501310.80	110640.35	501643.27	S89° 51' 02"E
L9	20+55.63	23+87.23	331.60				110640.35	501643.27	110639.46	501974.88	S89° 50' 47"E
L10	23+87.23	27+19.15	331.92				110639.46	501974.88	110638.49	502306.79	S89° 50' 01"E
L11	27+19.15	30+03.26	284.11				110638.49	502306.79	110637.57	502590.90	S89° 48' 53"E
L12	30+03.26	33+83.25	379.99				110637.57	502590.90	110636.41	502970.89	S89° 49' 27"E
L13	39+97.80	43+47.06	349.26				110634.52	503585.44	110633.44	503934.70	S89° 49' 21"E
L14	43+47.06	44+25.49	78.43				110633.44	503934.70	110633.21	504013.13	S89° 49' 50"E
L15	44+25.49	46+95.35	269.86				110633.21	504013.13	110632.38	504282.98	S89° 49' 27"E

PROPOSED TOP BACK OF CURB													
NUMBER	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	LINE / CHORD DIRECTION		
L16	0+00	0+88.11	88.11				110516.25	499610.55	110516.26	499698.66	N89° 59' 33"E		
L17	0+88.11	2+52.83	164.72				110516.26	499698.66	110515.70	499863.38	S89° 48' 22"E		
C3	2+52.83	4+18.21	165.39	25°56'30"	365.28	163.98	110515.70	499863.38	110552.80	500023.10	N76° 55' 33"E		
L18	4+18.21	5+46.81	128.60				110552.80	500023.10	110610.04	500138.26	N63° 33' 54"E		
C4	5+46.81	6+50.84	104.03	26°32'01"	224.64	103.10	110610.04	500138.26	110633.51	500238.66	N76° 50' 49"E		
L19	6+50.84	7+22.44	71.60				110633.51	500238.66	110633.84	500310.26	N89° 44' 00"E		
L20	7+22.44	7+98.25	75.81				110633.84	500310.26	110633.26	500386.06	S89° 33' 43"E		
L21	7+98.25	10+25.60	227.35				110633.26	500386.06	110632.59	500613.41	S89° 49' 50"E		
L22	10+25.60	10+94	68.40				110632.59	500613.41	110616.09	500679.79	S76° 02' 19"E		
L23	10+94	12+14.46	120.46				110616.09	500679.79	110615.79	500800.25	S89° 51' 30"E		
L24	12+14.46	14+29.19	214.73				110615.79	500800.25	110630.00	501014.50	N86° 12' 19"E		
L25	14+29.19	16+88.96	259.77				110630.00	501014.50	110629.15	501274.28	S89° 48' 44"E		
L26	16+88.96	17+60.84	71.88				110629.15	501274.28	110628.94	501346.16	S89° 49' 56"E		
L27	17+60.84	20+21.37	260.53				110628.94	501346.16	110628.22	501606.69	S89° 50' 36"E		
L28	20+21.37	20+93.87	72.50				110628.22	501606.69	110628.22	501679.18	N90° 00' 00"E		
L29	20+93.87	23+54.15	260.28				110628.22	501679.18	110627.41	501939.46	S89° 49' 15"E		
L30	23+54.15	24+26.35	72.20				110627.41	501939.46	110627.16	502011.66	S89° 48' 04"E		
L31	24+26.35	26+90.08	263.74				110627.16	502011.66	110626.47	502275.40	S89° 50' 58"E		
L32	26+90.08	27+59.17	69.09				110626.47	502275.40	110626.16	502344.49	S89° 44' 43"E		
L33	27+59.17	29+64.61	205.43				110626.16	502344.49	110625.53	502549.92	S89° 49' 27"E		
L34	29+64.61	30+39.07	74.46				110625.53	502549.92	110625.30	502624.38	S89° 49' 25"E		
L35	30+39.07	33+47.73	308.66				110625.30	502624.38	110624.35	502933.04	S89° 49' 27"E		
L36	33+47.73	40+41.28	693.56				110624.35	502933.04	110622.25	503626.59	S89° 49' 34"E		
L37	40+41.28	41+84.24	142.96				110622.25	503626.59	110621.81	503769.55	S89° 49' 24"E		
L38	41+84.24	42+24.53	40.29				110621.81	503769.55	110619.75	503809.79	S87° 04' 45"E		
L39	42+24.53	42+85.80	61.26				110619.75	503809.79	110613.02	503870.68	S83° 41' 12"E		

PROPOSED TOP BACK OF CURB													
NUMBER	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	LINE / CHORD DIRECTION		
L40	42+85.80	43+60.64	74.84				110613.02	503870.68	110612.81	503945.52	S89° 50' 24"E		
L41	43+60.64	44+46.20	85.56				110612.81	503945.52	110614.44	504031.06	N88° 54' 20"E		
L42	44+46.20	44+62.39	16.19				110614.44	504031.06	110614.75	504047.25	N88° 54' 24"E		
C5	44+62.39	45+09.75	47.36	10°44'28"	252.62	47.29	110614.75	504047.25	110620.08	504094.24	N83° 32' 10"E		
L43	45+09.75	45+22.01	12.27				110620.08	504094.24	110622.59	504106.24	N78° 09' 56"E		
C6	45+22.01	45+95.12	73.11	47°08'42"	88.85	71.07	110622.59	504106.24	110608.13	504175.82	S78° 15' 43"E		
L44	45+95.12	46+02.14	7.02				110608.13	504175.82	110604.08	504181.55	S54° 41' 22"E		
C7	46+02.14	46+41.23	39.09	41°45'11"	53.64	38.23	110604.08	504181.55	110594.55	504218.57	S75° 33' 58"E		
L45	46+41.23	46+44.68	3.46				110594.55	504218.57	110594.94	504222.01	N83° 33' 27"E		
C8	46+44.68	46+53.14	8.46	5°35'34"	86.64	8.45	110594.94	504222.01	110595.47	504230.44	N86° 21' 14"E		
L46	46+53.14	46+55.82	2.68				110595.47	504230.44	110595.51	504233.12	S89° 09' 01"E		
L47	46+55.82	47+81.03	125.21				110595.51	504233.12	110595.51	504358.33	N90° 00' 00"E		
L48	47+81.03	48+58.79	77.76				110595.51	504358.33	110588.51	504435.78	S84° 50' 07"E		
L49	48+58.79	49+37.86	79.06				110588.51	504435.78	110588.51	504514.84	N90° 00' 00"E		
L50	49+37.86	49+98.92	61.06				110588.51	504514.84	110590.56	504575.87	N88° 04' 44"E		
L51	49+98.92	52+62.82	263.90				110590.56	504575.87	110594.53	504839.74	N89° 08' 20"E		
L52	52+62.82	53+10.71	47.89				110594.53	504839.74	110594.71	504887.63	N89° 46' 55"E		

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53RD AVENUE - CENTERLINE - PROPOSED											
NUMBER	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	LINE / CHORD DIRECTION
L1	0+00	0+60.23	60.23				110528.69	499610.50	110528.50	499670.72	S89° 49' 28"
L2	0+60.23	2+51.05	190.83				110528.50	499670.72	110527.87	499861.55	S89° 48' 36"E
C1	2+51.05	4+15.17	164.12	26°37'49"	353.10	162.64	110527.87	499861.55	110564.80	500019.95	N76° 52' 29"E
L3	4+15.17	5+41.06	125.88				110564.80	500019.95	110620.86	500132.66	N63° 33' 35"E
C2	5+41.06	6+49.11	108.06	26°08'45"	236.79	107.12	110620.86	500132.66	110645.67	500236.87	N76° 36' 27"E
L4	7+93.92	10+20.24	226.32				110645.66	500381.68	110644.77	500608.00	S89° 43' 29"E
L5	10+96.31	12+25.63	129.31				110640.88	500683.97	110640.57	500813.28	S89° 51' 53"E
L6	13+48.27	14+28.22	79.96				110641.62	500935.92	110642.20	501015.87	N89° 35' 05"E
L7	14+28.22	17+23.15	294.93				110642.20	501015.87	110641.21	501310.80	S89° 48' 31"E
L8	17+23.15	20+55.63	332.48				110641.21	501310.80	110640.35	501643.27	S89° 51' 02"E
L9	20+55.63	23+87.23	331.60				110640.35	501643.27	110639.46	501974.88	S89° 50' 47"E
L10	23+87.23	27+19.15	331.92				110639.46	501974.88	110638.49	502306.79	S89° 50' 01"E
L11	27+19.15	30+03.26	284.11				110638.49	502306.79	110637.57	502590.90	S89° 48' 53"E
L12	30+03.26	33+83.25	379.99				110637.57	502590.90	110636.41	502970.89	S89° 49' 27"E
L13	39+97.80	43+47.06	349.26				110634.52	503585.44	110633.44	503934.70	S89° 49' 21"E
L14	43+47.06	44+25.49	78.43				110633.44	503934.70	110633.21	504013.13	S89° 49' 50"E
L15	44+25.49	46+95.35	269.86				110633.21	504013.13	110632.38	504282.98	S89° 49' 27"E

PROPOSED TOP BACK OF CURB											
NUMBER	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	LINE / CHORD DIRECTION
L16	0+00	0+88.11	88.11				110516.25	499610.55	110516.26	499698.66	N89° 59' 33"E
L17	0+88.11	2+52.83	164.72				110516.26	499698.66	110515.70	499863.38	S89° 48' 22"E
C3	2+52.83	4+18.21	165.39	25°56'30"	365.28	163.98	110515.70	499863.38	110552.80	500023.10	N76° 55' 33"E
L18	4+18.21	5+46.81	128.60				110552.80	500023.10	110610.04	500138.26	N63° 33' 54"E
C4	5+46.81	6+50.84	104.03	26°32'01"	224.64	103.10	110610.04	500138.26	110633.51	500238.66	N76° 50' 49"E
L19	6+50.84	7+22.44	71.60				110633.51	500238.66	110633.84	500310.26	N89° 44' 00"E
L20	7+22.44	7+98.25	75.81				110633.84	500310.26	110633.26	500386.06	S89° 33' 43"E
L21	7+98.25	10+25.60	227.35				110633.26	500386.06	110632.59	500613.41	S89° 49' 50"E
L22	10+25.60	10+94	68.40				110632.59	500613.41	110616.09	500679.79	S76° 02' 19"E
L23	10+94	12+14.46	120.46				110616.09	500679.79	110615.79	500800.25	S89° 51' 30"E
L24	12+14.46	14+29.19	214.73				110615.79	500800.25	110630.00	501014.50	N86° 12' 19"E
L25	14+29.19	16+88.96	259.77				110630.00	501014.50	110629.15	501274.28	S89° 48' 44"E
L26	16+88.96	17+60.84	71.88				110629.15	501274.28	110628.94	501346.16	S89° 49' 56"E
L27	17+60.84	20+21.37	260.53				110628.94	501346.16	110628.22	501606.69	S89° 50' 36"E
L28	20+21.37	20+93.87	72.50				110628.22	501606.69	110628.22	501679.18	N90° 00' 00"E
L29	20+93.87	23+54.15	260.28				110628.22	501679.18	110627.41	501939.46	S89° 49' 15"E
L30	23+54.15	24+26.35	72.20				110627.41	501939.46	110627.16	502011.66	S89° 48' 04"E
L31	24+26.35	26+90.08	263.74				110627.16	502011.66	110626.47	502275.40	S89° 50' 58"E
L32	26+90.08	27+59.17	69.09				110626.47	502275.40	110626.16	502344.49	S89° 44' 43"E
L33	27+59.17	29+64.61	205.43				110626.16	502344.49	110625.53	502549.92	S89° 49' 27"E
L34	29+64.61	30+39.07	74.46				110625.53	502549.92	110625.30	502624.38	S89° 49' 25"E
L35	30+39.07	33+47.73	308.66				110625.30	502624.38	110624.35	502933.04	S89° 49' 27"E
L36	33+47.73	40+41.28	693.56				110624.35	502933.04	110622.25	503626.59	S89° 49' 34"E
L37	40+41.28	41+84.24	142.96				110622.25	503626.59	110621.81	503769.55	S89° 49' 24"E
L38	41+84.24	42+24.53	40.29				110621.81	503769.55	110619.75	503809.79	S87° 04' 45"E
L39	42+24.53	42+85.80	61.26				110619.75	503809.79	110613.02	503870.68	S83° 41' 12"E

PROPOSED TOP BACK OF CURB											
NUMBER	START STATION	END STATION	LENGTH	DELTA	RADIUS	CHORD	START N	START E	END N	END E	LINE / CHORD DIRECTION
L40	42+85.80	43+60.64	74.84				110613.02	503870.68	110612.81	503945.52	S89° 50' 24"
L41	43+60.64	44+46.20	85.56				110612.81	503945.52	110614.44	504031.06	N88° 54' 20"E
L42	44+46.20	44+62.39	16.19				110614.44	504031.06	110614.75	504047.25	N88° 54' 24"E
C5	44+62.39	45+09.75	47.36	10°44'28"	252.62	47.29	110614.75	504047.25	110620.08	504094.24	N83° 32' 10"E
L43	45+09.75	45+22.01	12.27				110620.08	504094.24	110622.59	504106.24	N78° 09' 56"E
C6	45+22.01	45+95.12	73.11	47°08'42"	88.85	71.07	110622.59	504106.24	110608.13	504175.82	S78° 15' 43"E
L44	45+95.12	46+02.14	7.02				110608.13	504175.82	110604.08	504181.55	S54° 41' 22"E
C7	46+02.14	46+41.23	39.09	41°45'11"	53.64	38.23	110604.08	504181.55	110594.55	504218.57	S75° 33' 58"E
L45	46+41.23	46+44.68	3.46				110594.55	504218.57	110594.94	504222.01	N83° 33' 27"E
C8	46+44.68	46+53.14	8.46	5°35'34"	86.64	8.45	110594.94	504222.01	110595.47	504230.44	N86° 21' 14"E
L46	46+53.14	46+55.82	2.68				110595.47	504230.44	110595.51	504233.12	N89° 09' 01"E
L47	46+55.82	47+81.03	125.21				110595.51	504233.12	110595.51	504358.33	N90° 00' 00"E
L48	47+81.03	48+58.79	77.76				110595.51	504358.33	110588.51	504435.78	S84° 50' 07"E
L49	48+58.79	49+37.86	79.06				110588.51	504435.78	110588.51	504514.84	N90° 00' 00"E
L50	49+37.86	49+98.92	61.06				110588.51	504514.84	110590.56	504575.87	N88° 04' 44"E
L51	49+98.92	52+62.82	263.90				110590.56	504575.87	110594.53	504839.74	N89° 08' 20"E
L52	52+62.82	53+10.71	47.89				110594.53	504839.74	110594.71	504887.63	N89° 46' 55"E



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

Brandon J. Brodhag
BRANDON J. BRODHAG
UC NO. 59297 DATE 06/13/2023



7071 University Avenue NE
Fridley, MN 55432

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CLIENT PROJ. NO.	BJB			
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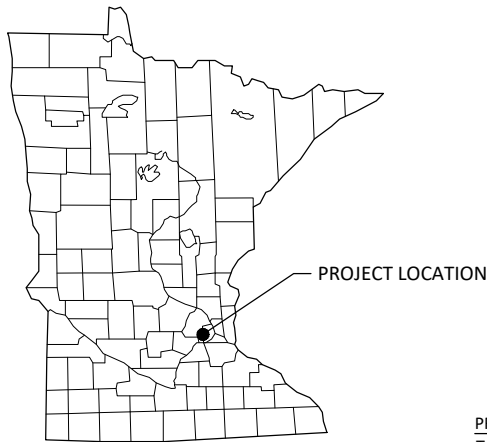
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

ALIGNMENT PLAN

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CITIES OF FRIDLEY AND COLUMBIA HEIGHTS
ANOKA COUNTY, MINNESOTA



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

A Construction SWPPP Manager must be available for an on-site inspection within 72 hours upon request by the MPCA.

	COMPANY	CONTACT PERSON	PHONE
OWNER:	City of Fridley	Jim Kosluchar	763-572-3554
SWPPP DESIGNER:	City of Fridley	Brandon Brodhag	763-238-8086
CONTRACTOR:	TBD	TBD	TBD
CONSTRUCTION SWPPP MANAGER:	TBD	TBD	TBD
PARTY RESPONSIBLE FOR LONG TERM O&M:	City of Fridley	Public Works	763-572-3566

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

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

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

Total Project Size (disturbed area) =	5.4	ACRES
Existing area of impervious surface =	4.6	ACRES
Post construction area of impervious surface =	5.1	ACRES
Total new impervious surface area created =	0.5	ACRES

Planned Construction Start Date:	<u>07/01/2023</u>
Estimated Construction Completion Date:	<u>11/17/2023</u>

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

NOTE: Street reclaimed with new trail and walk addition

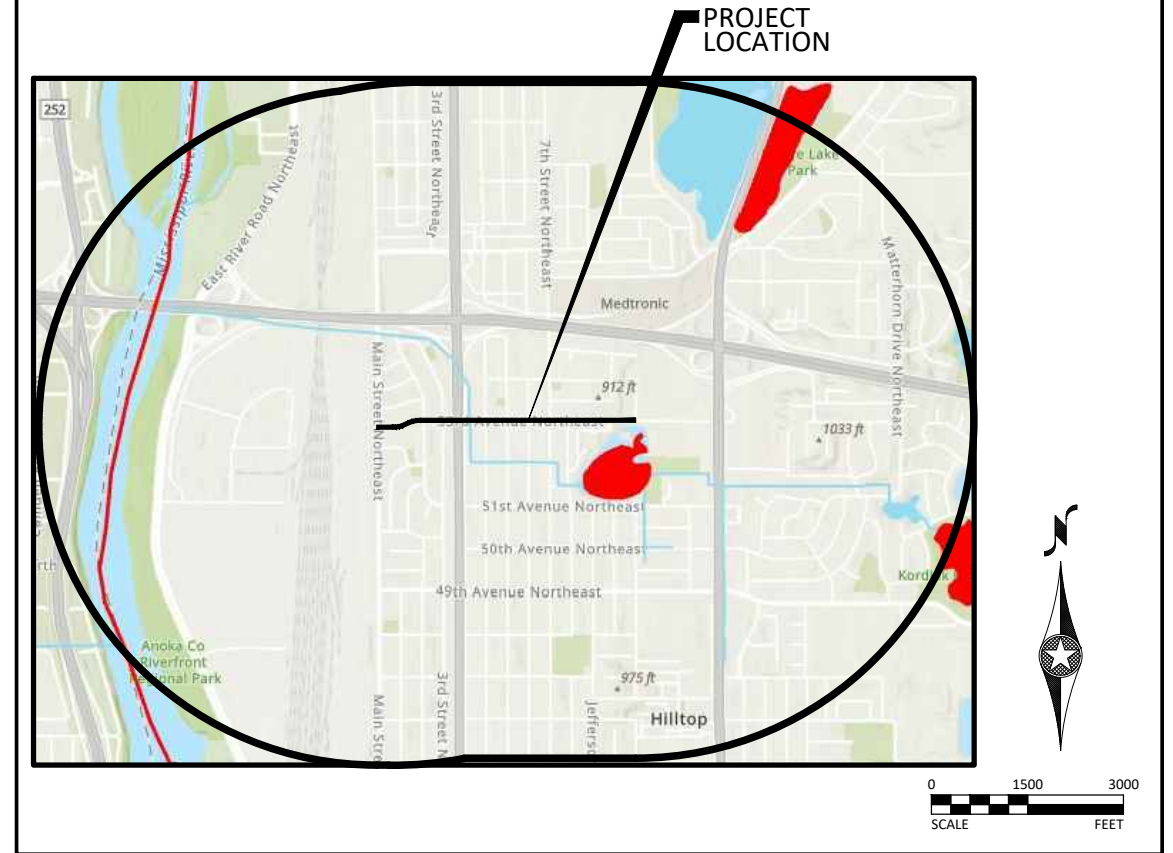
COUNTY	TOWNSHIP	RANGE	SECTION	LATITUDE	LONGITUDE
ANOKA	T30N	R24W	23,26	45°03'52"	93°15'29"

[illegible]

Construction activities include: Site grading, aggregate base, plant mixed bituminous pavement, concrete curb and gutter, ADA improvements, storm sewer and water extension, landscaping, and related appurtenances.

Stormwater currently drains to the Mississippi River and Sullivan Lake

After construction is complete stormwater will drain to the Mississippi River and Sullivan Lake



Receiving waters, including surface water, wetlands, Public Waters, and stormwater ponds, within 1-mile of the project boundary are identified on the USGS 7.5 min quad map above. Receiving waters that are impaired, the impairment, and WLA are listed as follows. All specific BMPs relative to construction activities listed in the permit for special, prohibited, restricted, or impaired have been incorporated into this plan. All specific BMPs listed in approved TMDLs and those BMPs listed for construction related waste load allocations have also been incorporated.

NAME OF WATER BODY	TYPE (ditch, pond, wetland, lake, etc.)	Special, Prohibited, Restricted Water ¹	Flows to Impaired Water Within 1-Mile ²	USEPA Approved Construction Related TMDL ³
MISSISSIPPI RIVER	RIVER	NO	YES	YES
SULLIVAN LAKE	LAKE	NO	YES	YES

³ Construction Related TMDLs include those related to: phosphorus, turbidity, TSS, dissolved oxygen, and/or aquatic biota.

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

- 1) Submit SWPPP Updates to Engineer. Submittal shall include any requested changes to the SWPPP, including but not limited to: Trained Personnel, Locations for Stockpiles, Concrete Washout, Sanitation Facilities, Types and Locations of Erosion & Sediment Control. Failure to submit updates shall be considered acceptance of the SWPPP as designed with no changes.
- 2) Install perimeter sediment control, inlet protection, and construction exit.
- 3) Add additional temporary BMPs as necessary during construction based on inspection reports.
- 4) Ensure final stabilization measures are complete.
- 5) Provide digital copy of all Field SWPPP Documentation including Inspection Reports and SWPPP Revisions to the Owner.
- 6) Submit Notice of Termination (NOT) to MPCA. NOTE: The NOT must be submitted to MPCA before Final Stabilization is considered complete.



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BRANDON J. BRODHAG
59297
06/13/2023

City of
Columbia Heights

7071 University Avenue NE
Fridley, MN 55432

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STORMWATER POLLUTION PREVENTION PLAN

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Information contained in this SWPPP narrative sheet summarizes requirements of the GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM/STATE DISPOSAL SYSTEM PROGRAM - Permit No: MN R100001 (Permit) as they apply to this project. All provisions of the Permit including those not specifically cited herein shall apply to this project. The Contractor is responsible to be familiar with and comply with all conditions of the permit. The full text of the Permit is available at: <https://www.pca.state.mn.us/sites/default/files/wq-strm2-80a.pdf>

SWPPP AMENDMENTS AND SUBMITTALS

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

1. Contact information and training documentation for Construction SWPPP Manager and BMP Installer,

2. There is a change in construction method of phasing, operation, maintenance, weather or seasonal conditions not anticipated during the design of the SWPPP including but not limited to:

a. Types and/or Locations of BMPs

b. Material Storage and Spill Response

c. Fueling Plans

d. Locations for Stockpiles, Concrete Washout, and Sanitation Facilities and

e. Project Phasing

3. It is determined that the SWPPP is not achieving objectives of minimizing pollutants in stormwater discharges associated with construction activity, or

4. The SWPPP is not consistent with the terms and conditions of the permit.

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

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

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

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

EROSION PREVENTION PRACTICES

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

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

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

Mulch, hydromulch, tackifier, or similar practice shall not be used in any portion of the wetted perimeter of a temporary or permanent drainage ditch or swale section with a continuous slope of greater than 2 percent.

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

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

SEDIMENT CONTROL PRACTICES

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

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

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

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

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

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

TEMPORARY SEDIMENTATION BASINS

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

DEWATERING

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

POLLUTION PREVENTION

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

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

Solid waste must be stored, collected and disposed of in compliance with Minnesota Administrative Rules Chapter 7035.

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

Exterior vehicle or equipment washing on the project site shall be limited to a defined area of the site. No engine degreasing is allowed on site. A sign must be installed adjacent to each washout facility that requires site personnel to utilize the proper facilities for disposal of concrete and other washout wastes.

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

INSPECTION & MAINTENANCE

A trained person shall routinely inspect the entire construction site at the time interval indicated on this sheet of the SWPPP during active construction and within 24-hours after a rainfall event greater than 0.5 inches in 24 hours. Following an inspection that occurs within 24-hours after a rainfall event, the next inspection must be conducted at the time interval indicated in the Receiving Waters Table found on the SITE PLAN AND INFORMATION SHEET of the SWPPP.

All inspections and maintenance conducted during construction must be recorded on the day it is completed and must be retained with the SWPPP. Inspection report forms are available in the Project Specifications. Inspection report forms other than those provided shall be approved by the engineer.

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

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

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

Inspections must include:

1. All erosion prevention and sediment control BMPs and Pollution Prevention Management Measures to ensure integrity and effectiveness.
2. Surface waters, including drainage ditches and conveyance systems for evidence of erosion and sediment deposition.
3. Construction site vehicle exit locations, streets and curb and gutter systems within and adjacent to the project for sedimentation from erosion or tracked sediment from vehicles.
4. Infiltration areas to ensure that no sediment from ongoing construction activity is reaching the infiltration area and that equipment is not being driven across the infiltration area.

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

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

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

PUBLIC WATER RESTRICTIONS:

For public waters that have been promulgated "work in water restrictions" during fish spawning time frames, all exposed soil areas that are within 200 feet of the water's edge, and drain to these waters must complete stabilization within 24-hours during the time period. MN DNR permits are not valid for work in waters that are designated as infested waters unless accompanied by an Infested Waters Permit or written notification has been obtained from MN DNR stating that such permit is not required. There is no exception for pre-existing permits. If a MN DNR Permit has been issued for the project and the water is later designated as infested, the Contractor shall halt all work covered by the MN DNR Permit until an Infested Waters Permit is obtained or that written notification is obtained stating that such permit is not required.

FINAL STABILIZATION

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

1. Substantial Completion has been reached and no ground disturbing activities are anticipated.
2. Permanent cover has been installed with an established minimum uniform perennial vegetation density of 70 percent of its expected final growth. Vegetation is not required in areas where no vegetation is proposed by this project such as impervious surfaces or the base of a sand filter.

3. Accumulated sediment has been removed from all permanent stormwater treatment systems as necessary to ensure the system is operating as designed.
4. All sediment has been removed from conveyance systems
5. All temporary synthetic erosion prevention and sediment control BMPs have been removed. BMPs designated on the SWPPP to remain to decompose on-site may remain.
6. For residential construction only, permit coverage terminates on individual lots if the structures are finished and temporary erosion prevention and downgradient perimeter control is complete, the residence sells to the homeowner, and the permittee distributes the MPCA's "Homeowner Fact Sheet" to the homeowner.
7. For agricultural land only (e.g., pipelines across cropland), the disturbed land must be returned to its preconstruction agricultural use prior to submitting the NOT.

SITE STABILIZATION COMPLETION:

Stabilization of exposed soils shall begin immediately and shall be completed after the construction activity has temporarily or permanently ceased no later than:	14 calendar days
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SITE INSPECTION INTERVAL:

A trained person shall routinely inspect the entire construction site during active construction at an interval of no less than:	7 calendar days
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SPECIAL ENVIRONMENTAL CONSIDERATIONS AND PERMITS:

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

TYPE OF PERMIT	PERMITTING AGENCY	PERMIT STATUS AND CONDITIONS
Construction Stormwater NPDES	MPCA	Shall be obtained by Contractor



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Brandon Brodhag
BRANDON J. BRODHAG
LIC. NO. 59297 DATE 06/13/2023



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Fridley, MN 55432

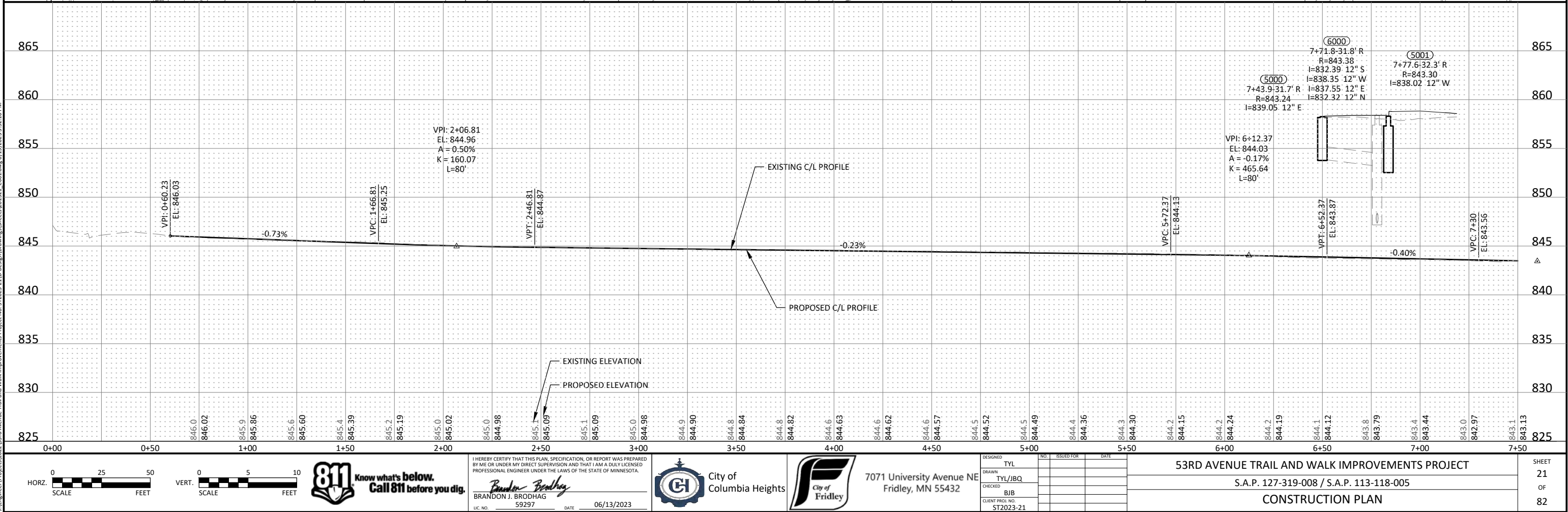
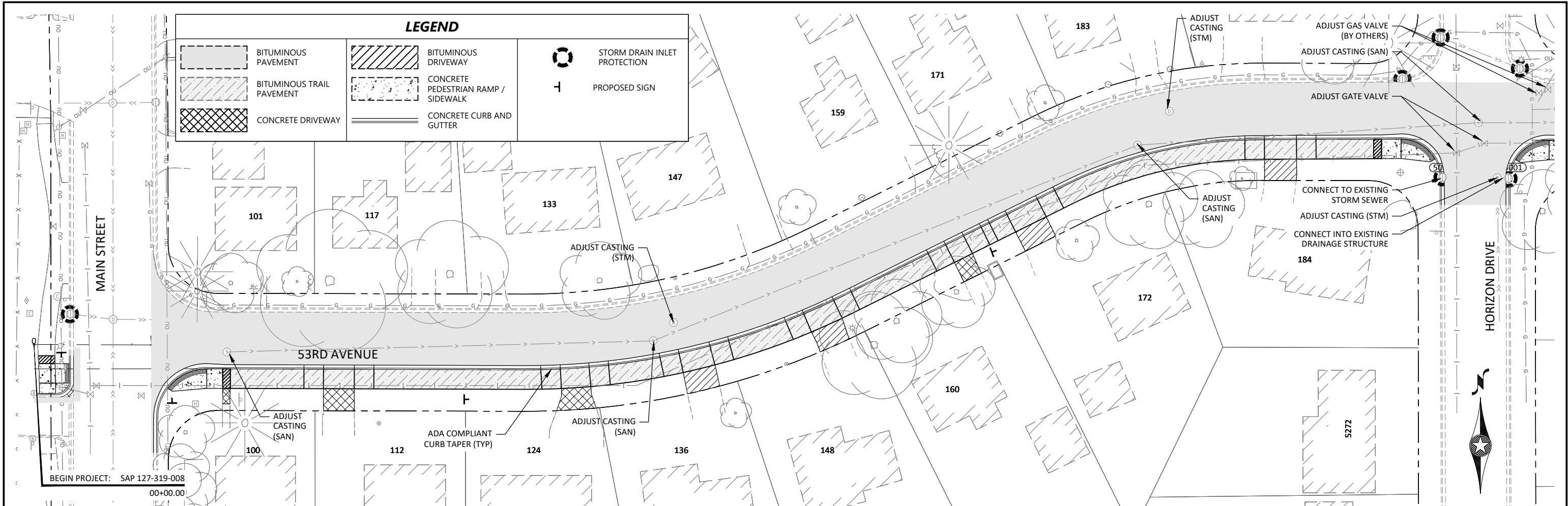
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

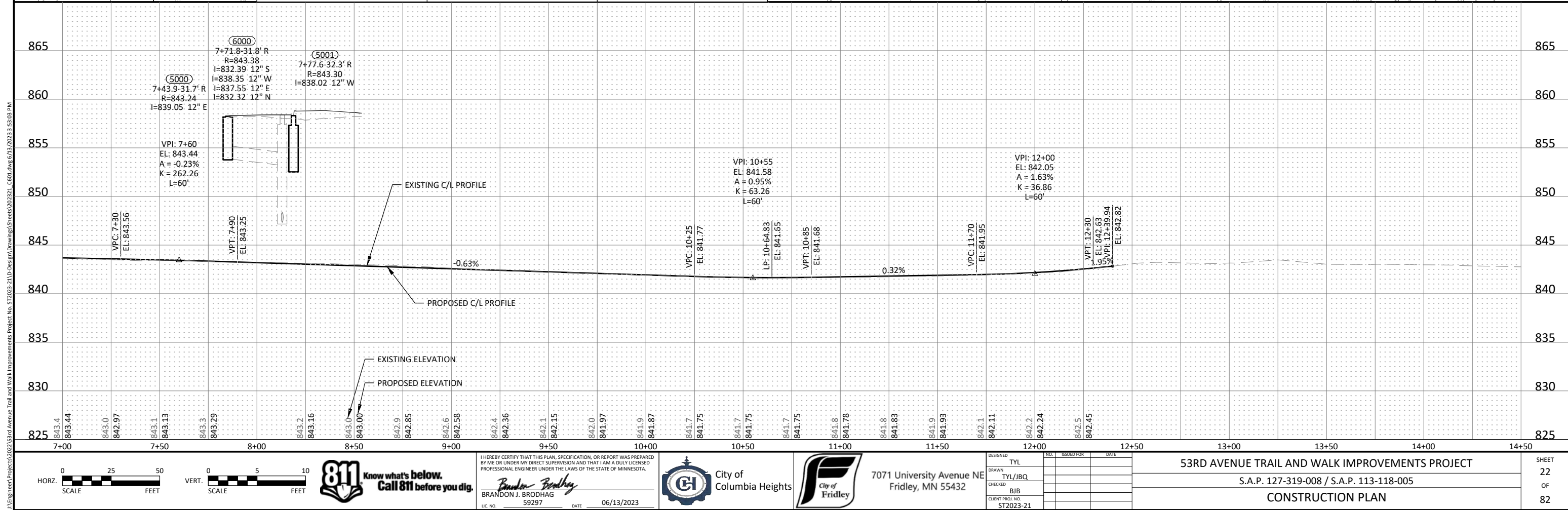
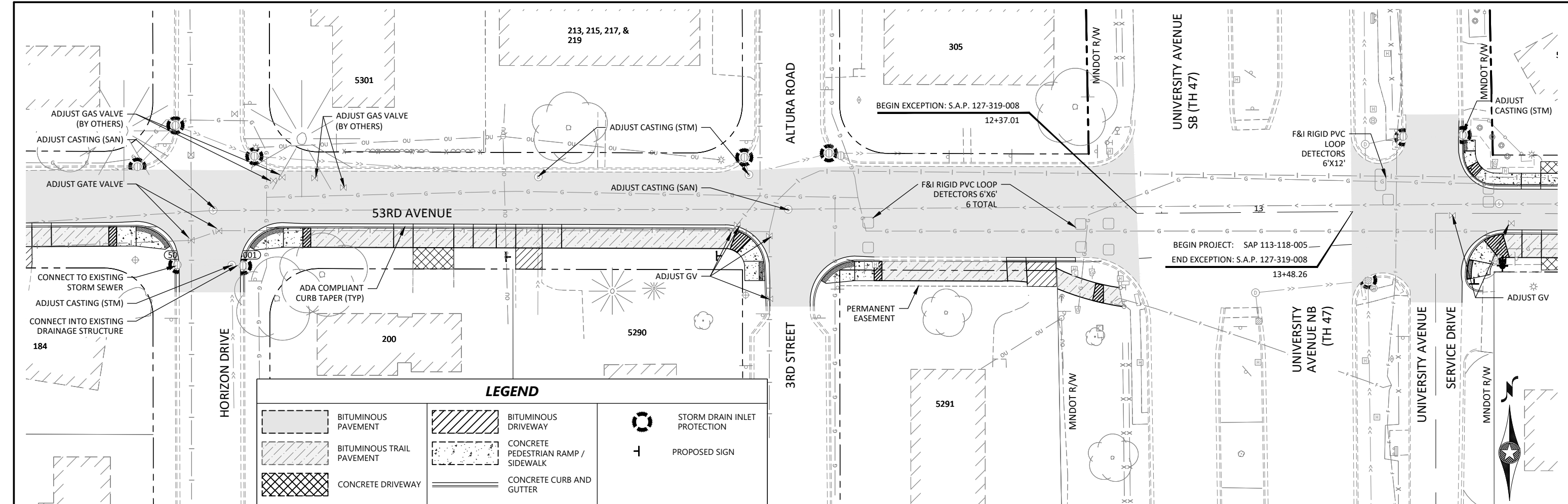
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STORMWATER POLLUTION PREVENTION PLAN

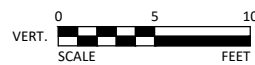
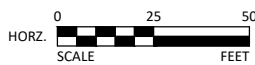
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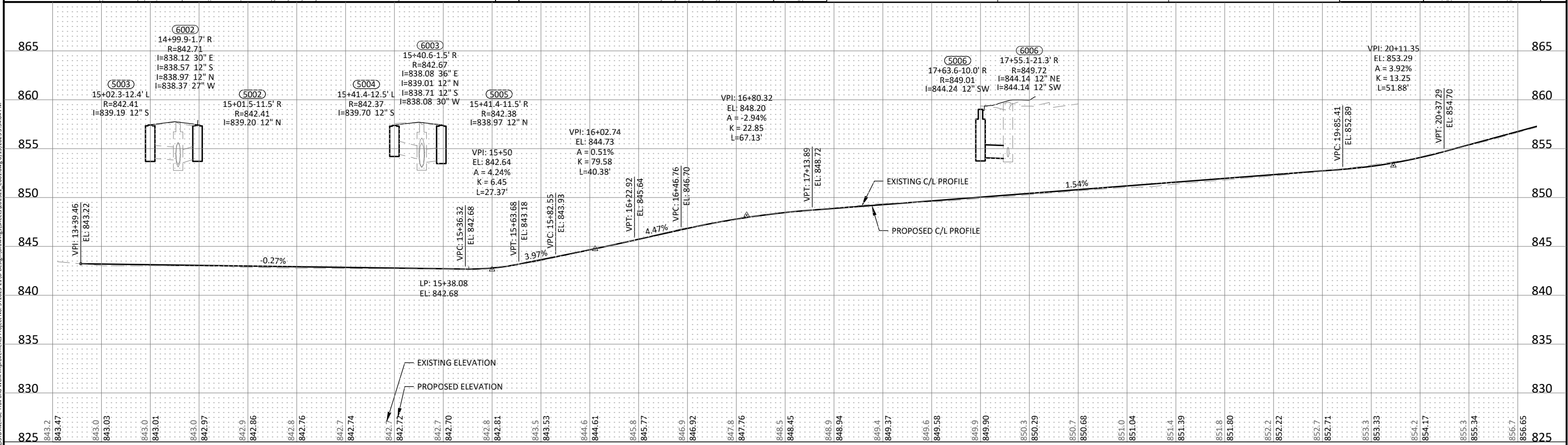
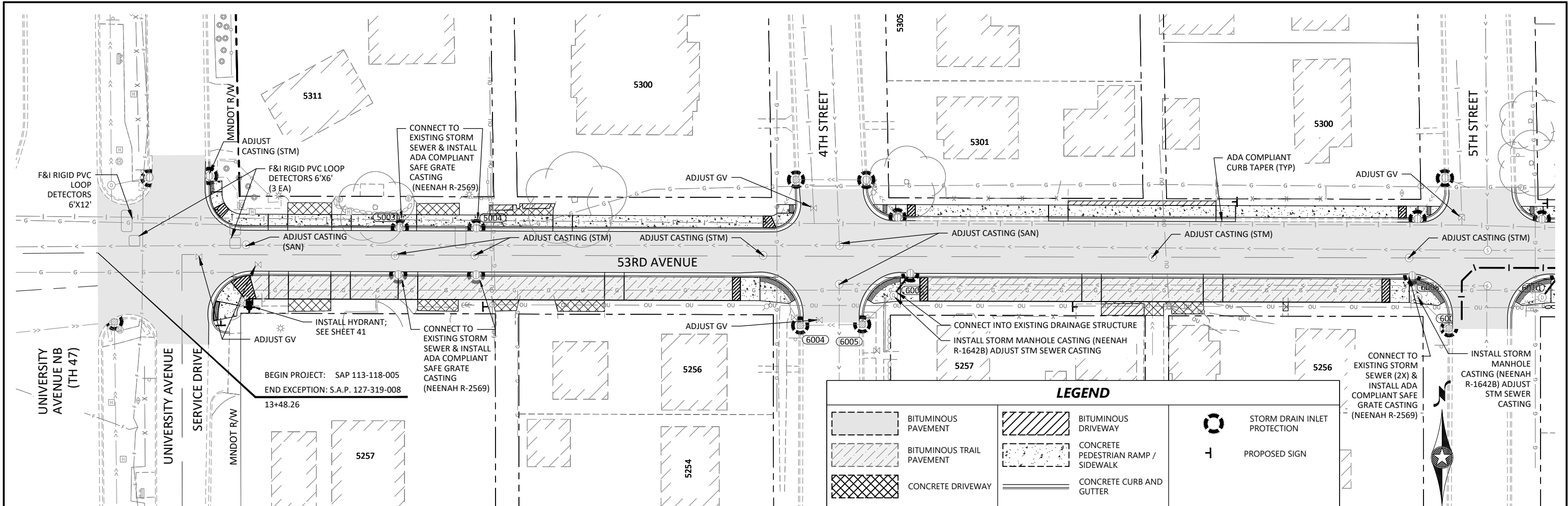


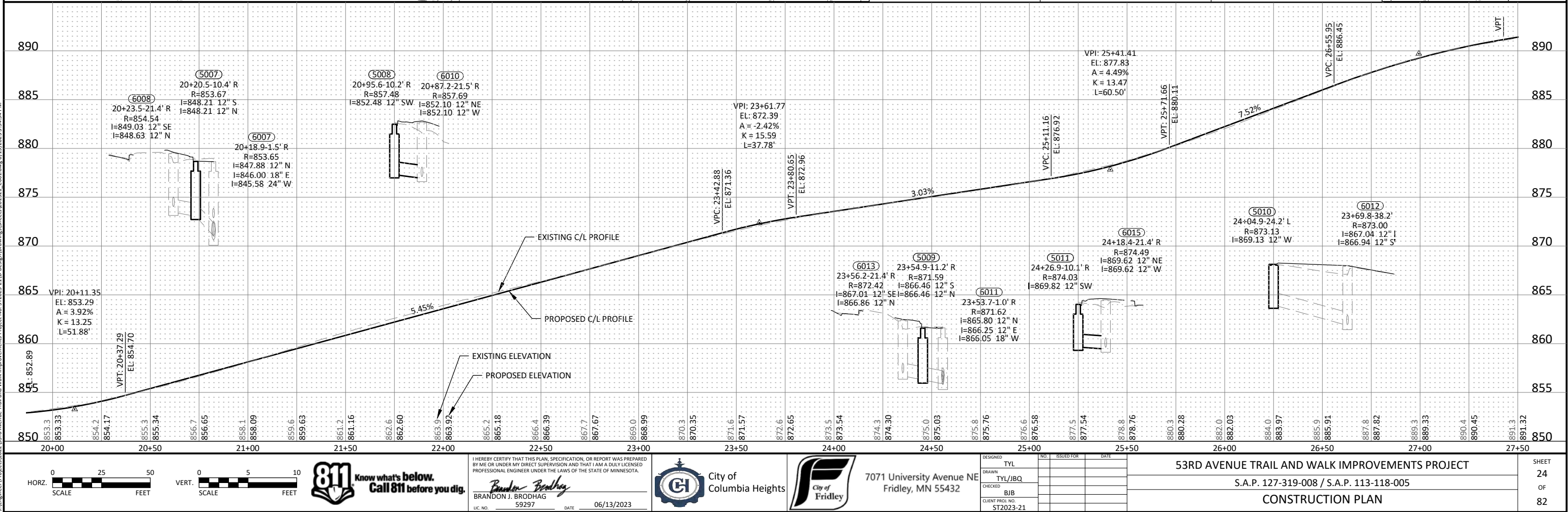
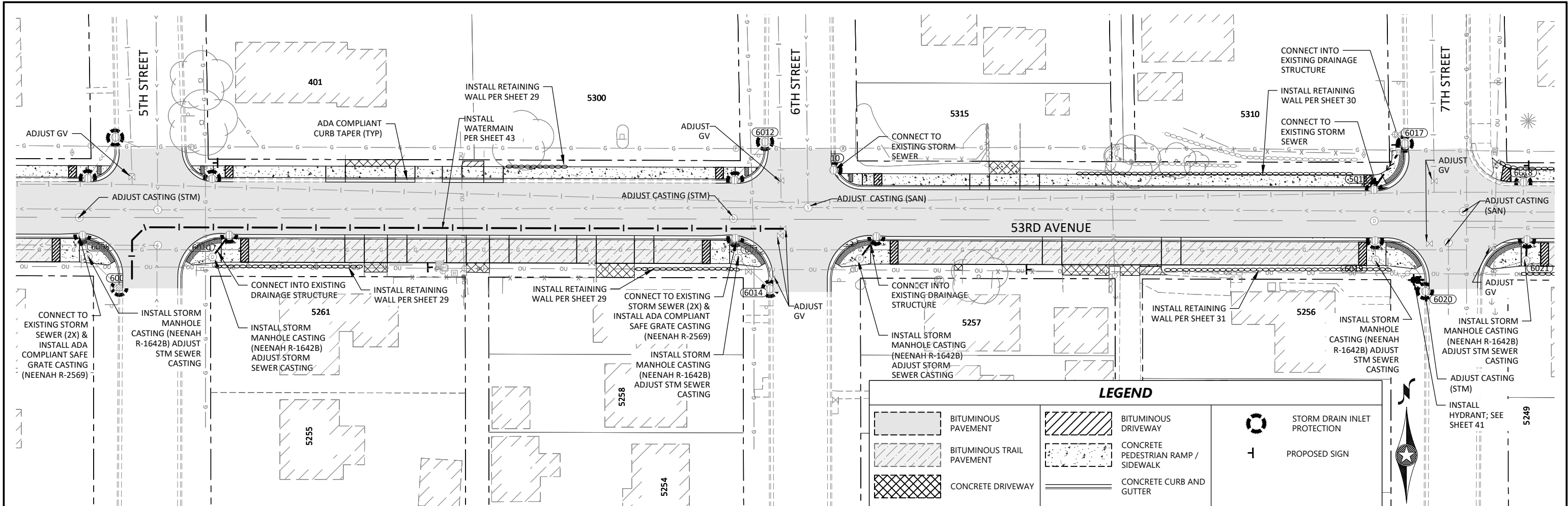
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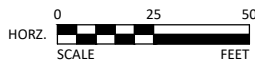
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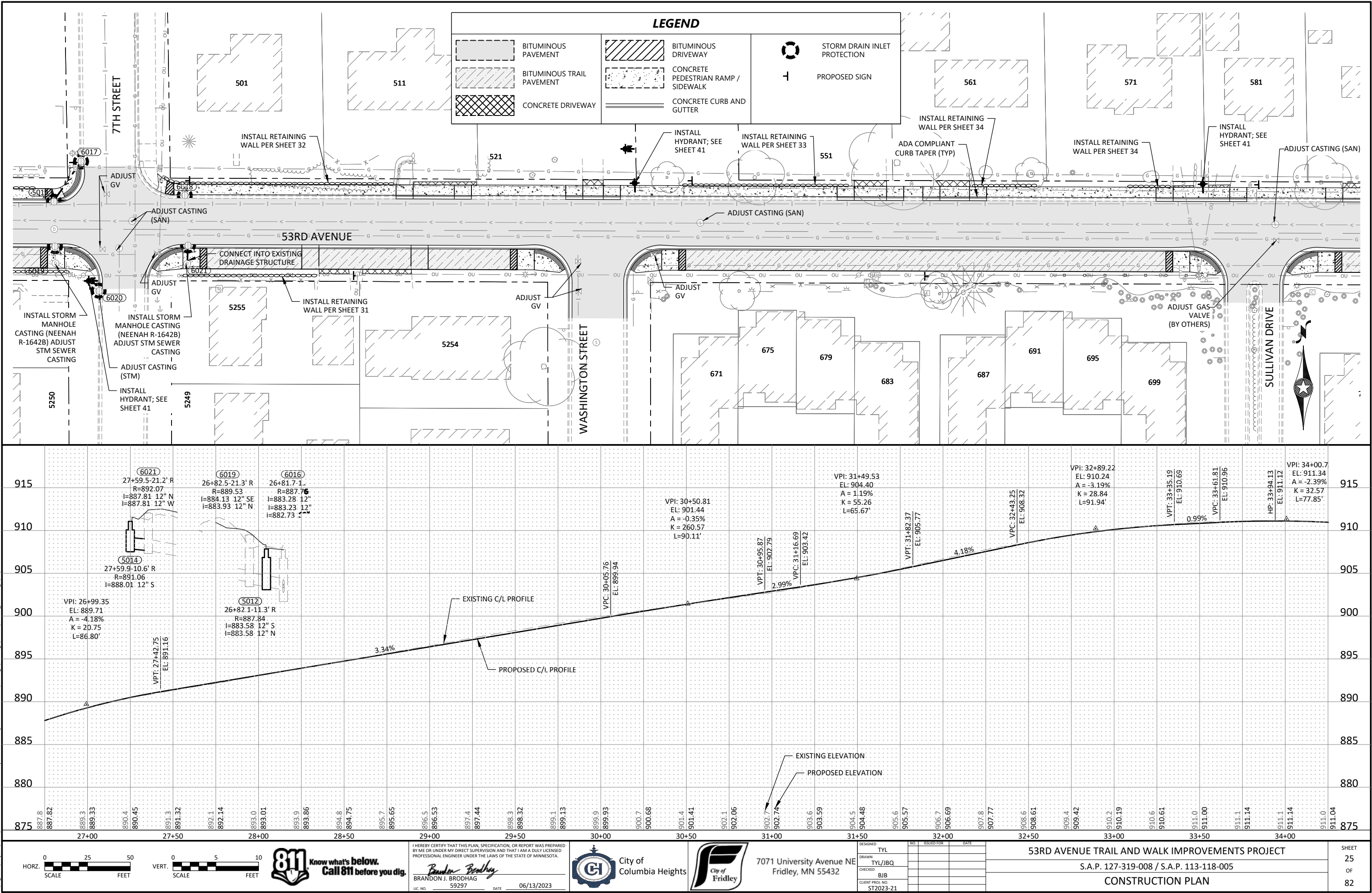
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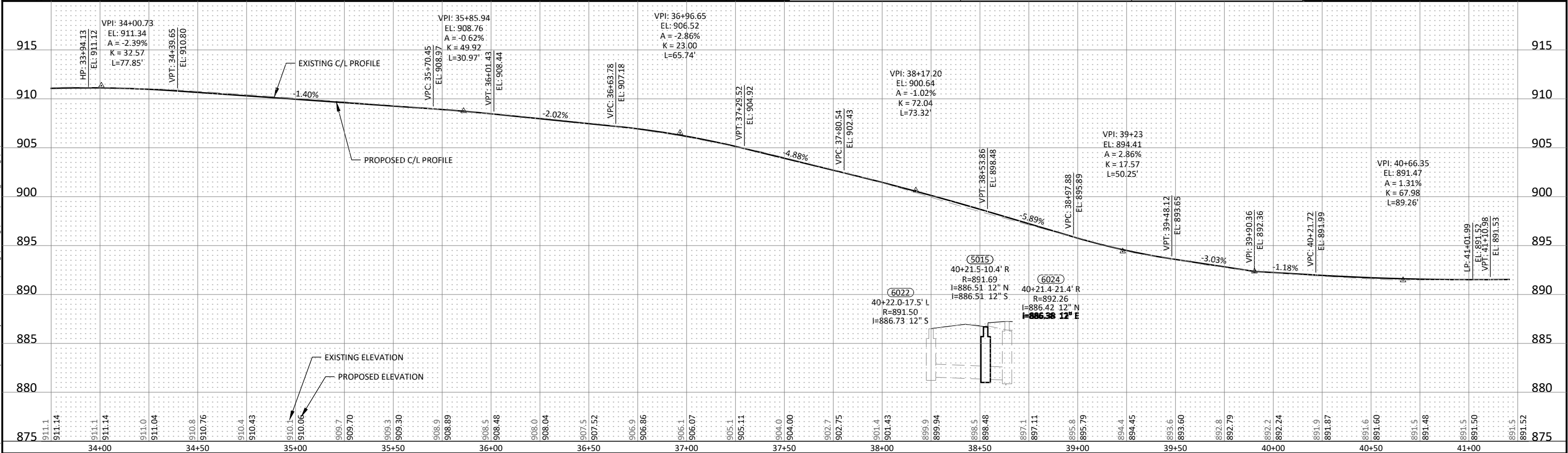
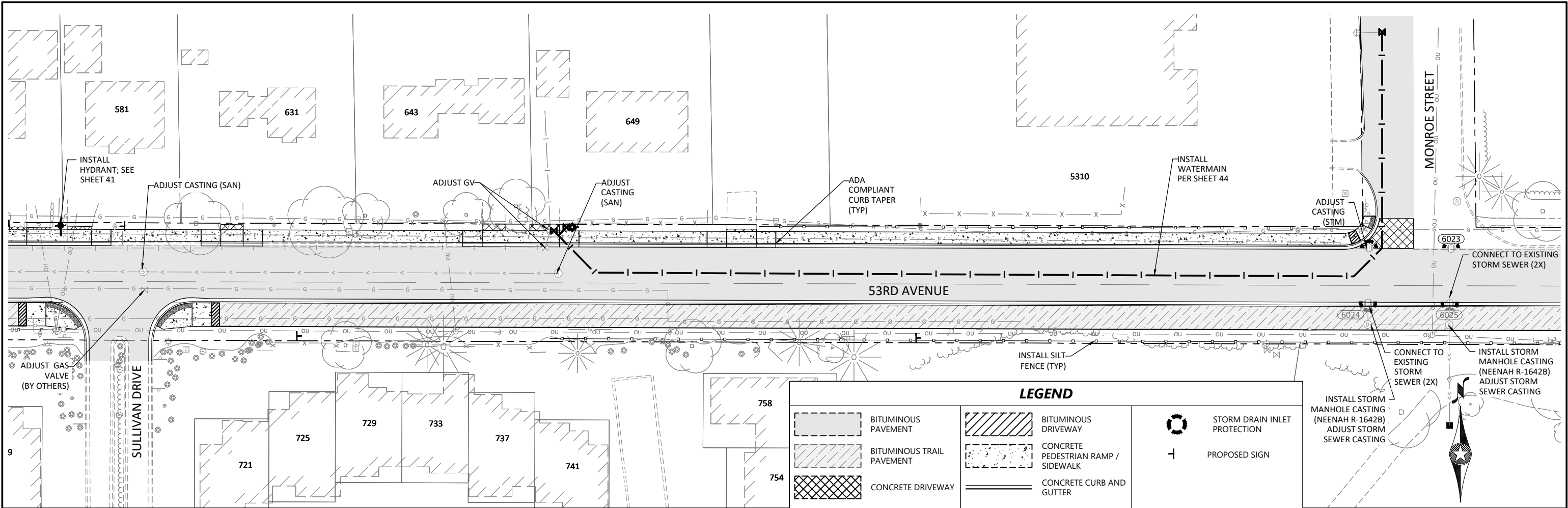
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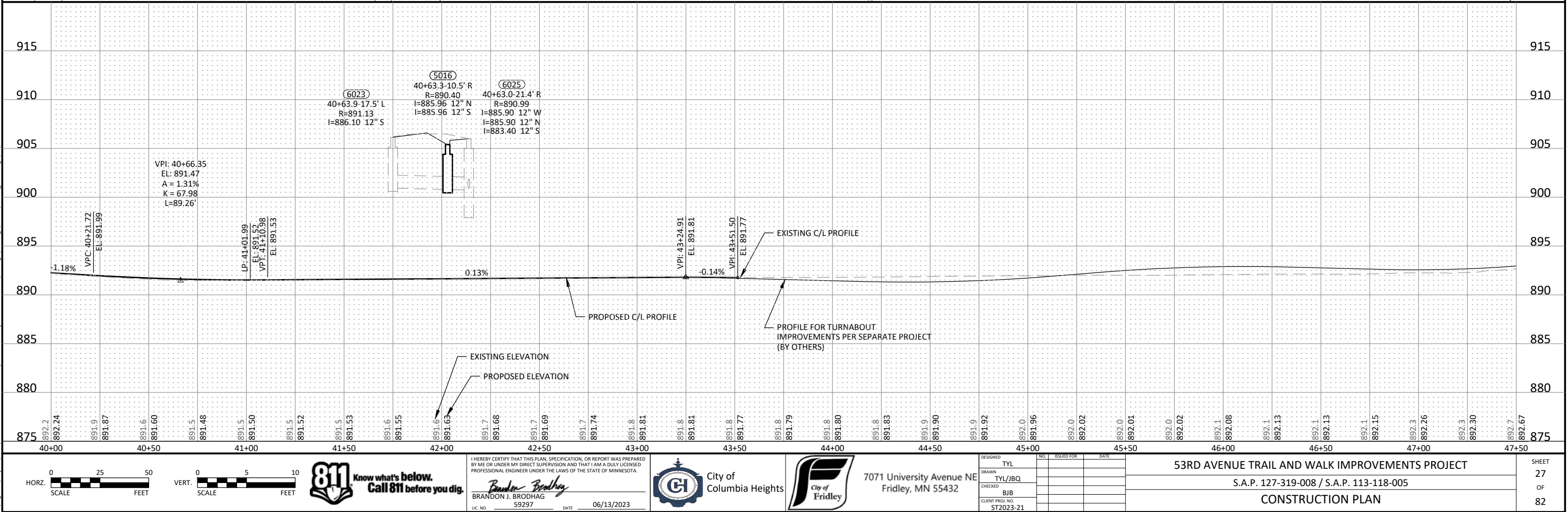
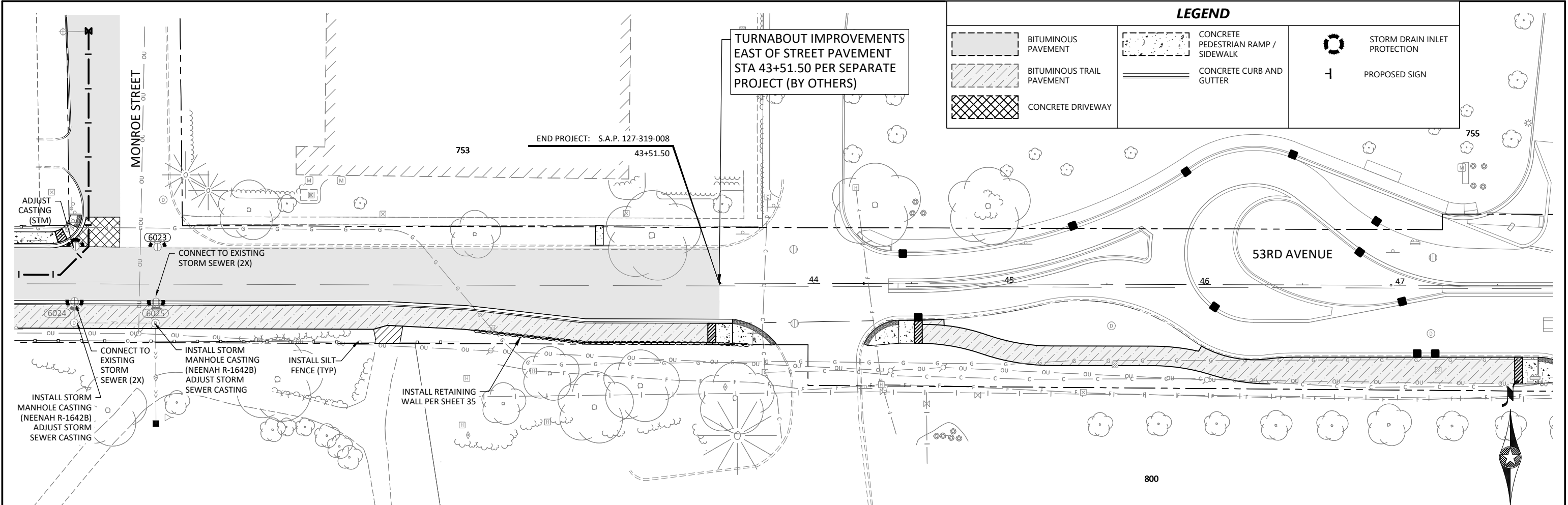
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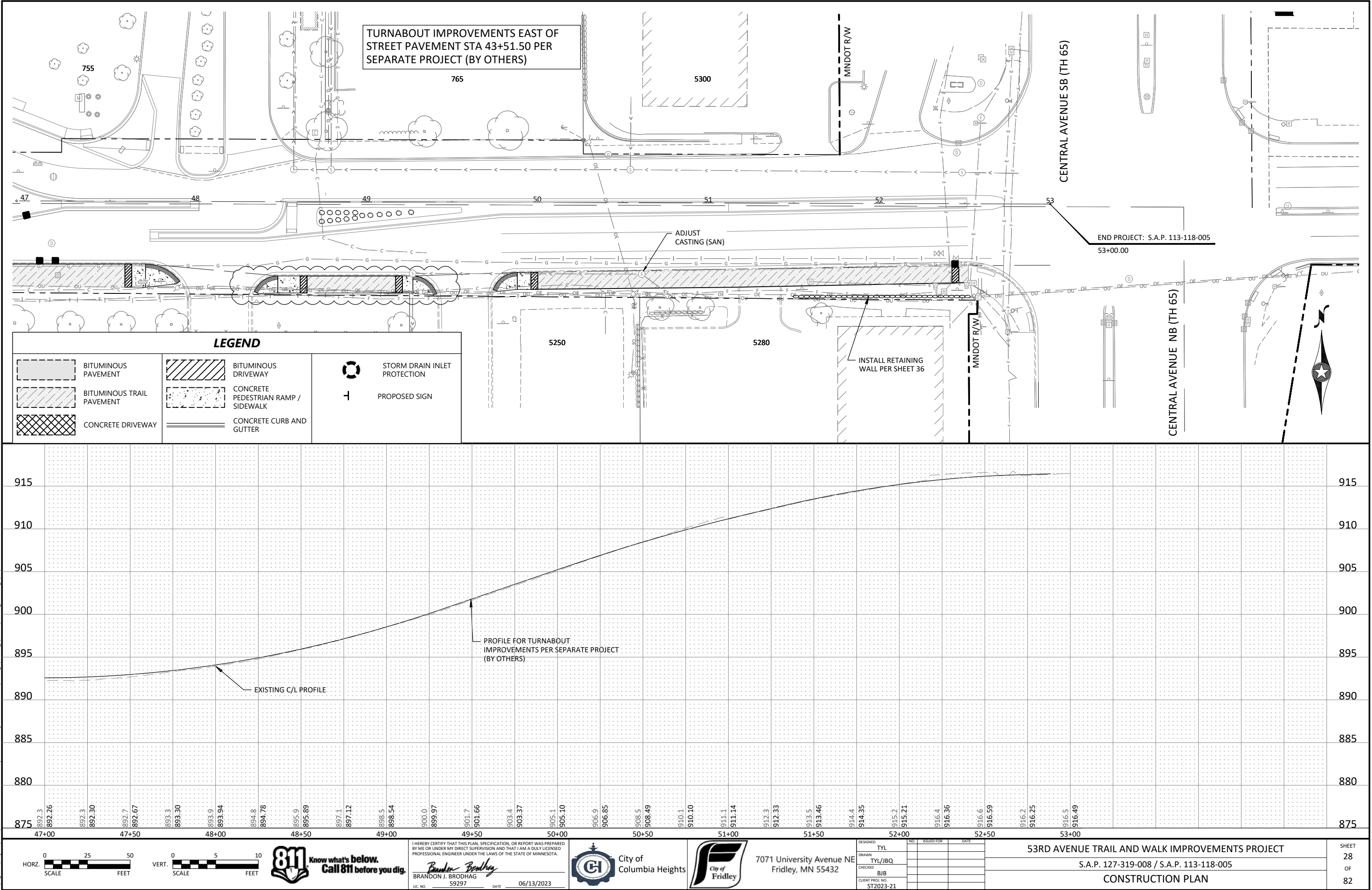
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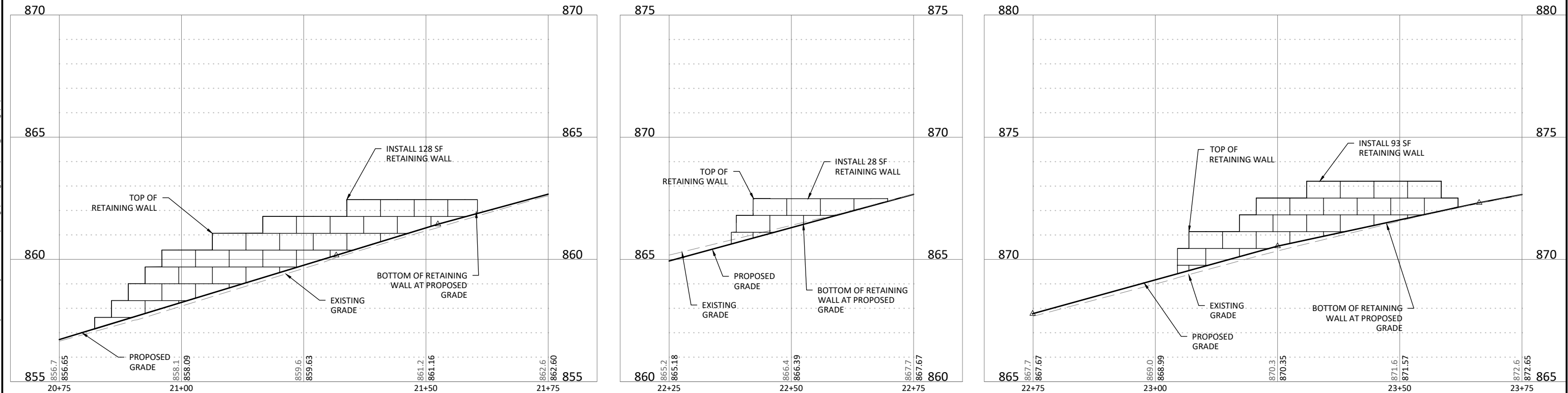
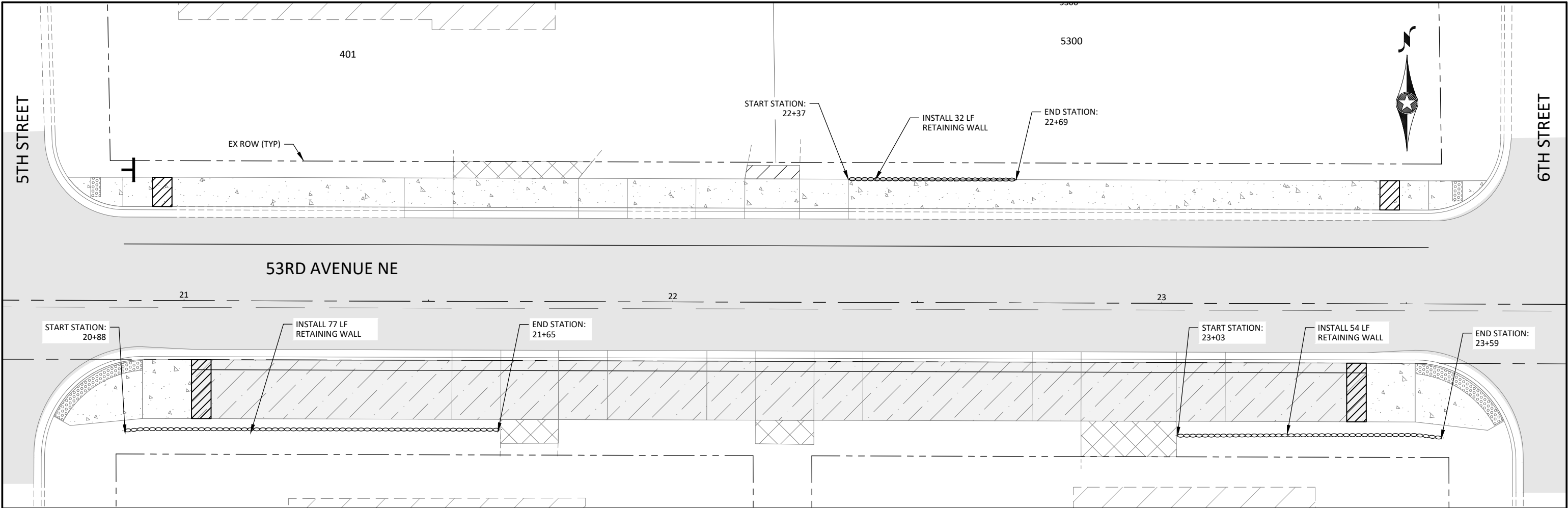
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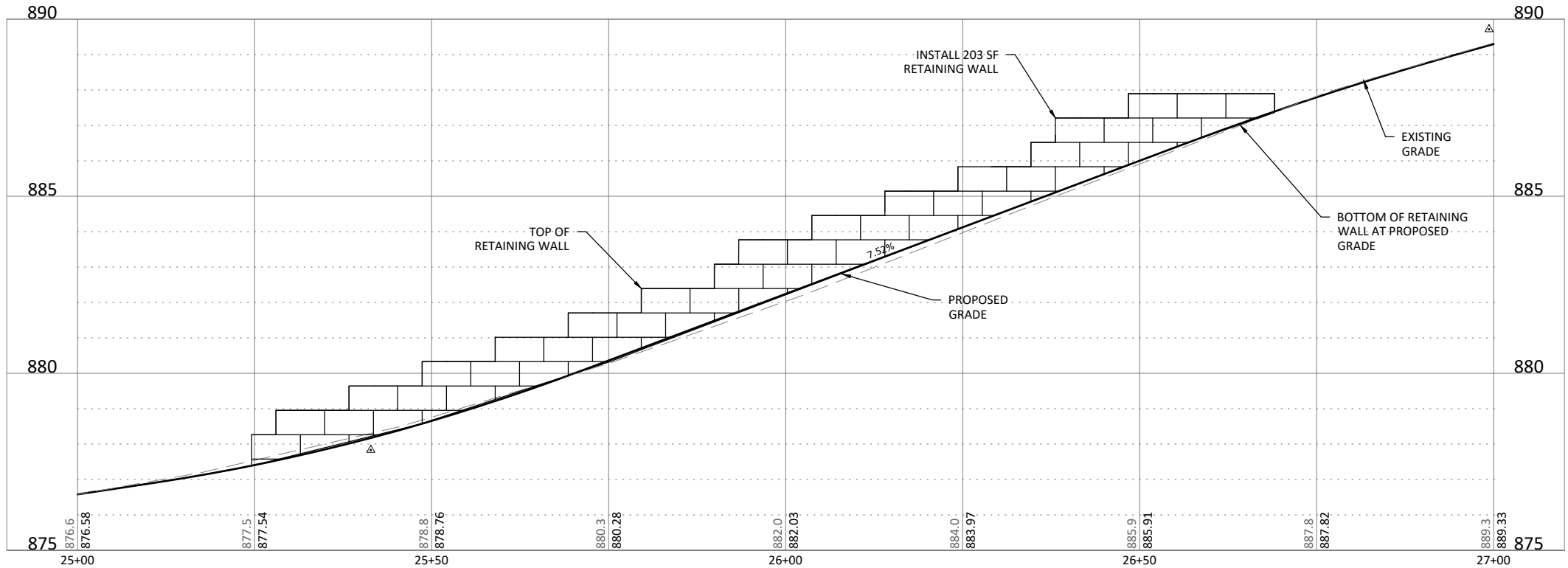
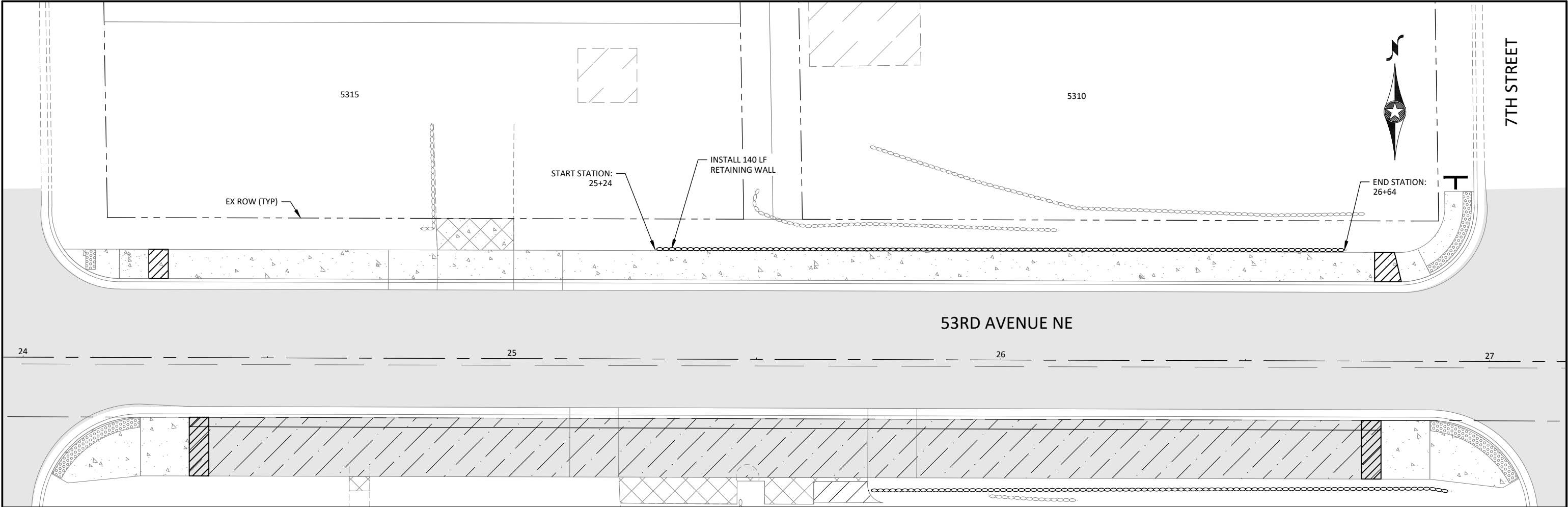












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Brandon J. Brodhag
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UC NO. 59297 DATE 06/13/2023



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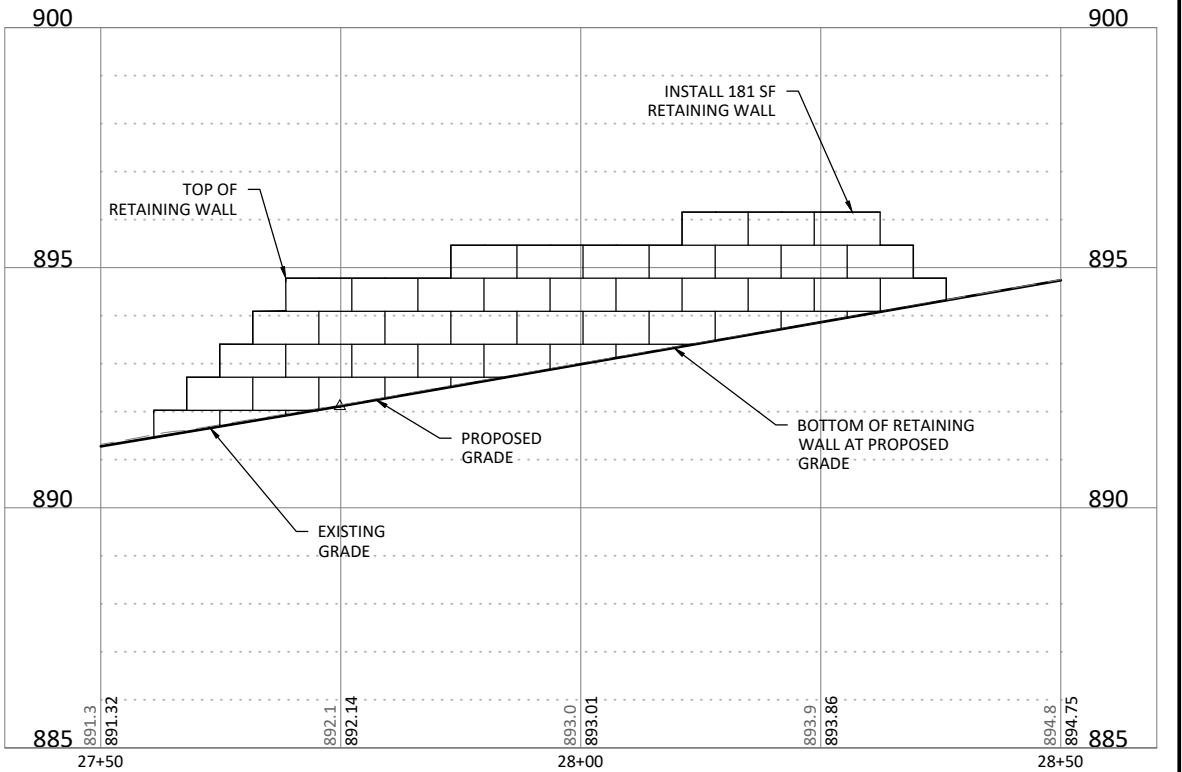
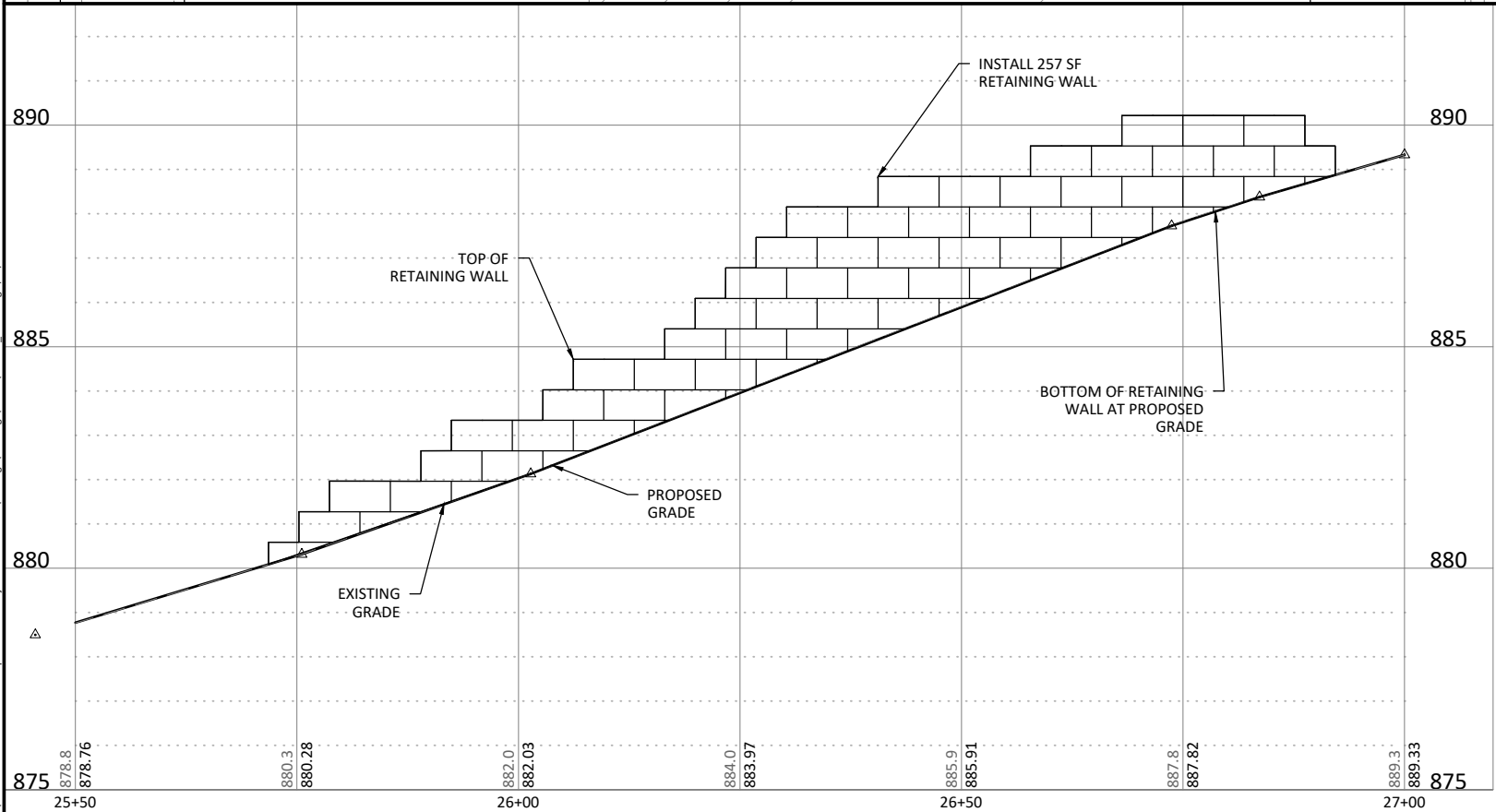
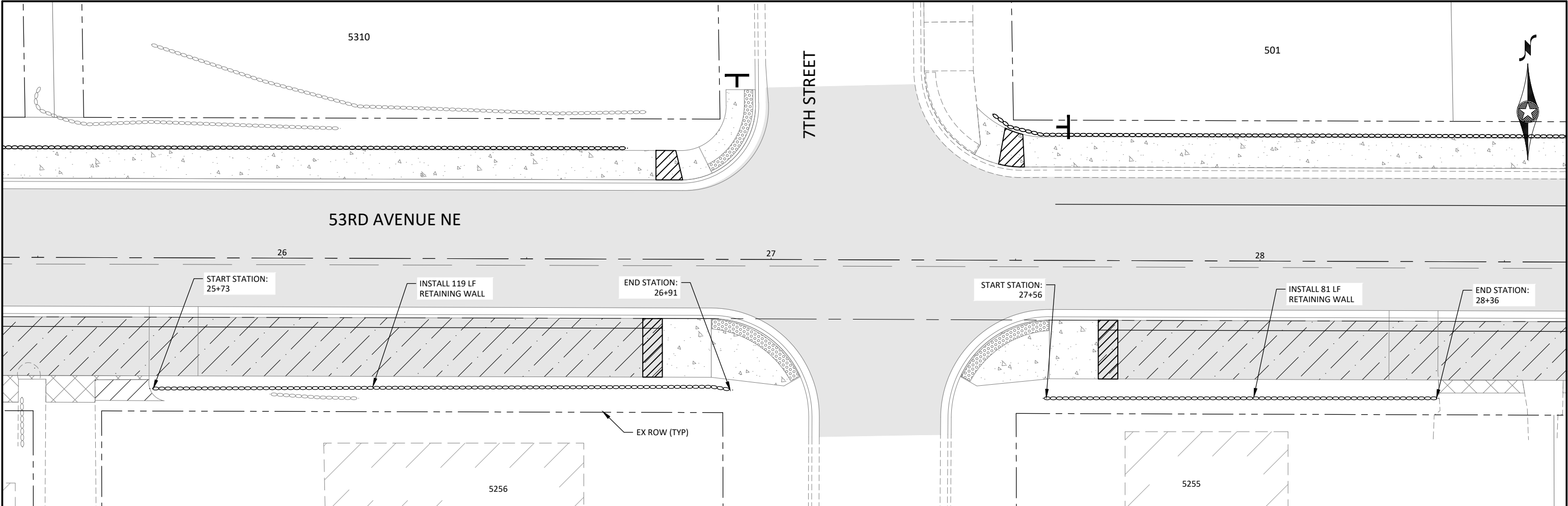
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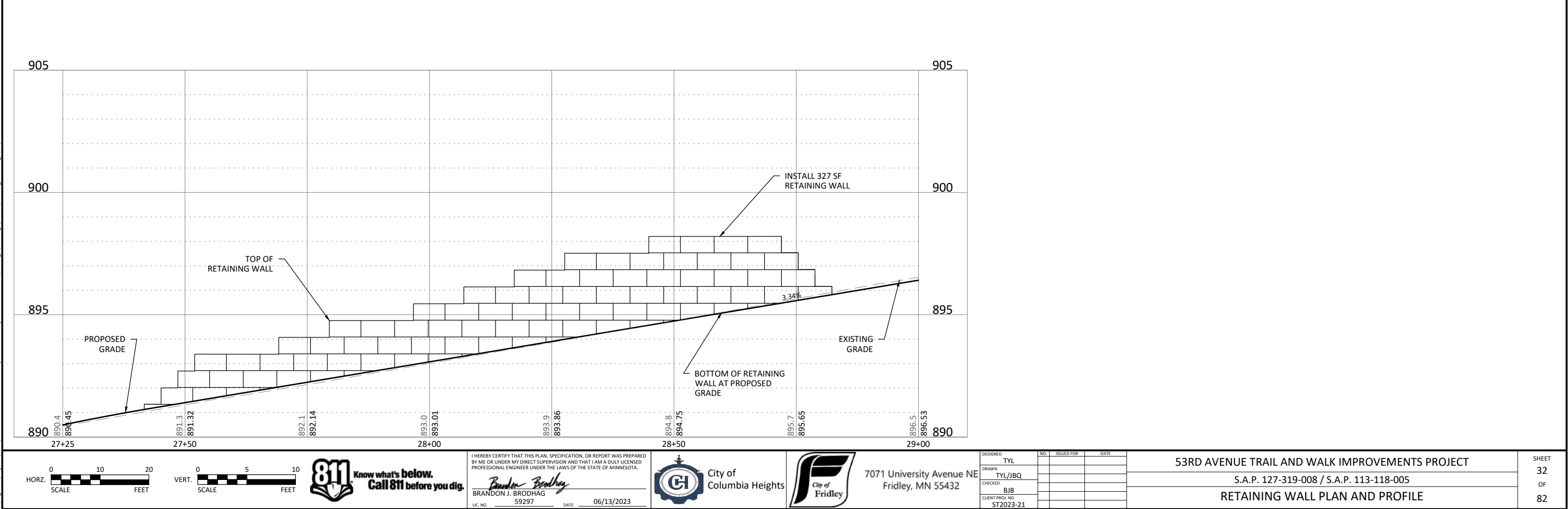
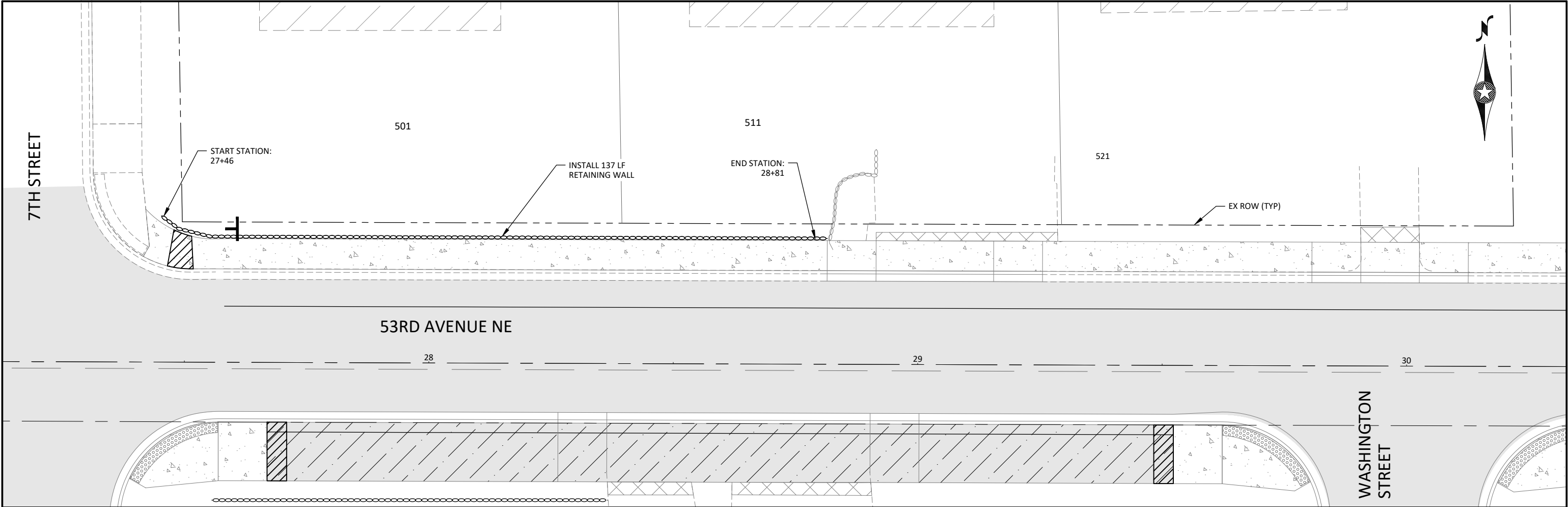
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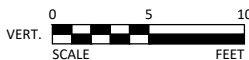
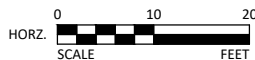
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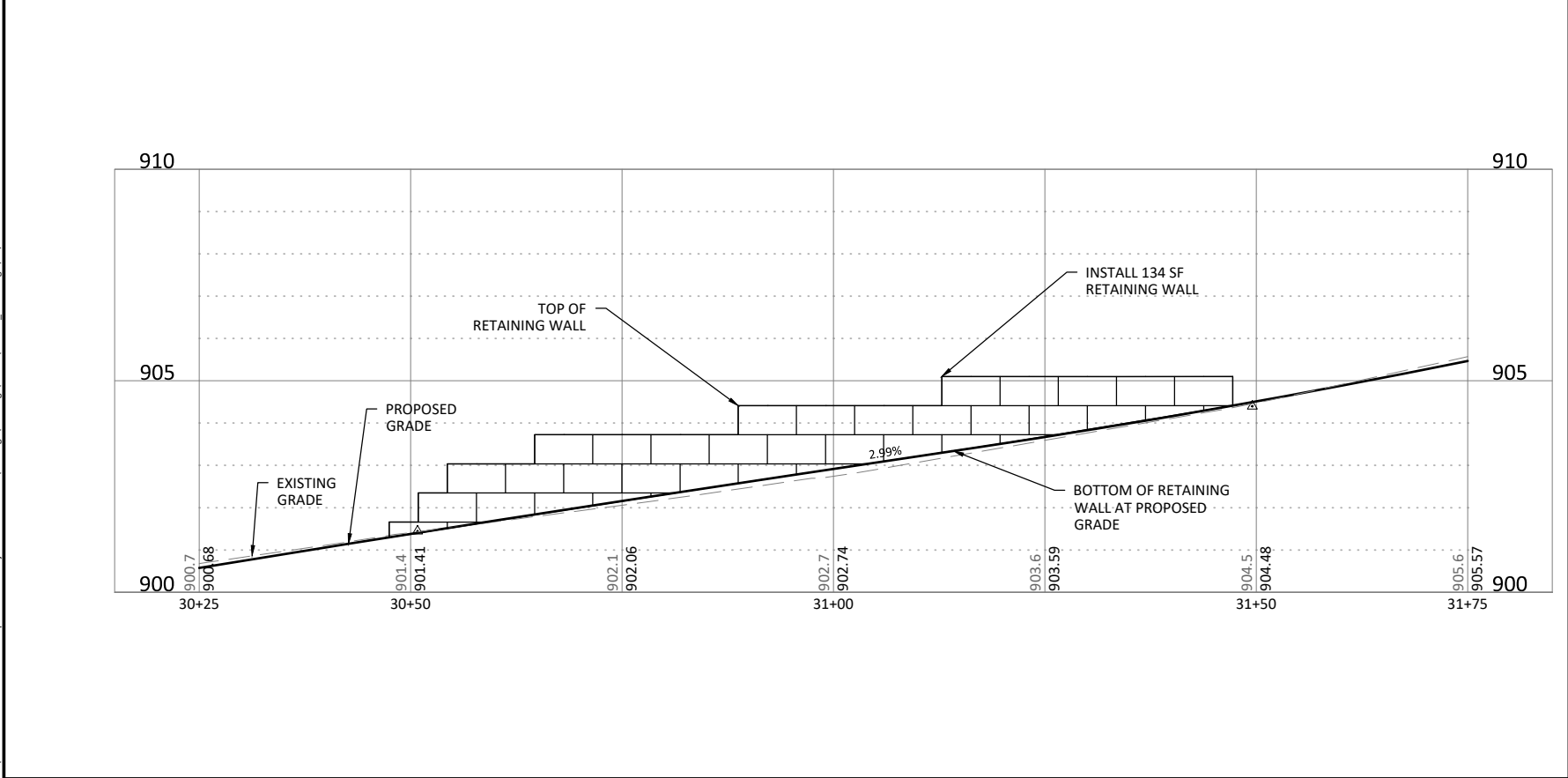
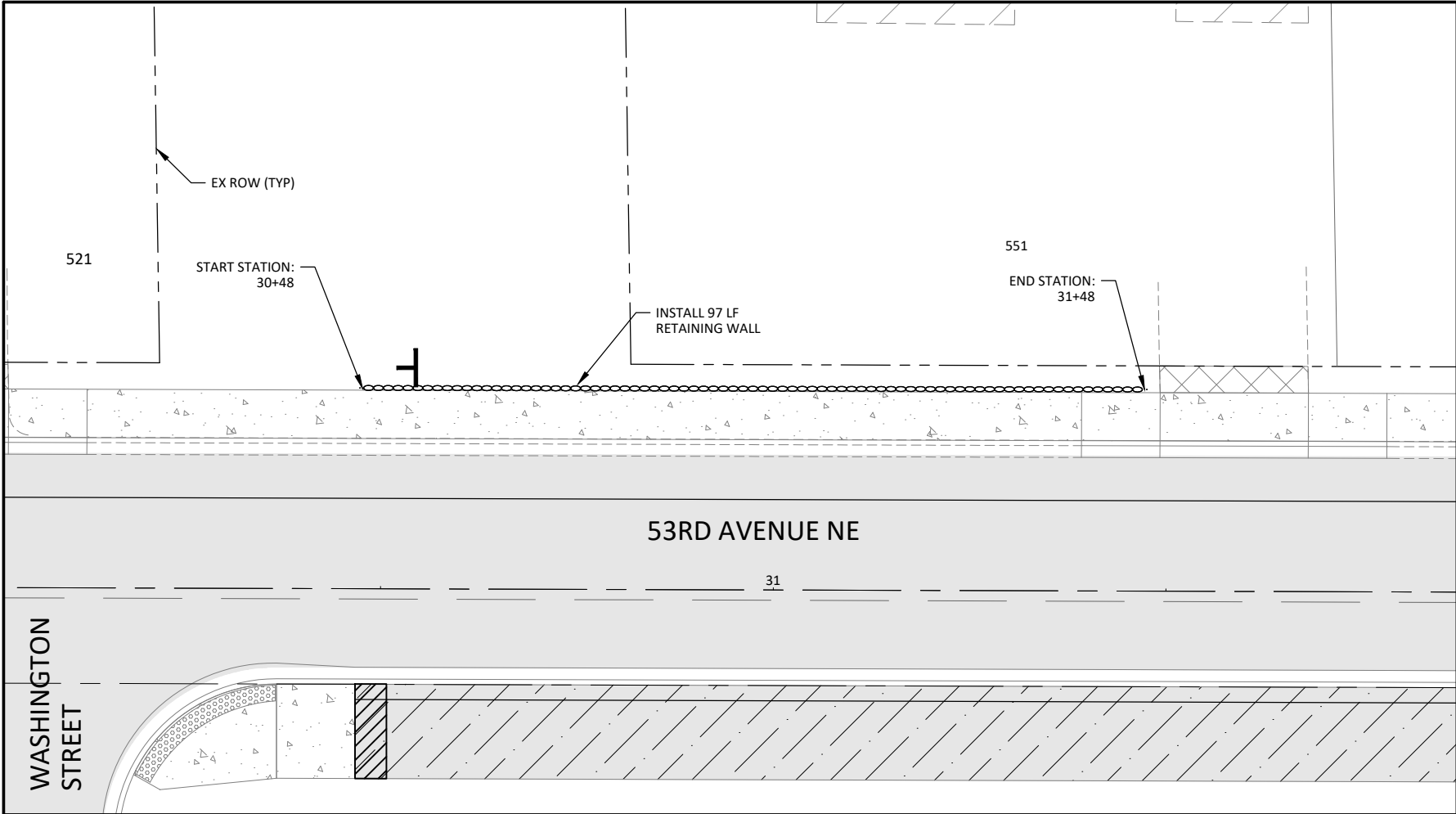
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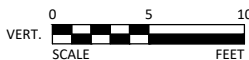
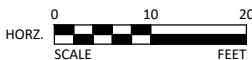
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RETAINING WALL PLAN AND PROFILE

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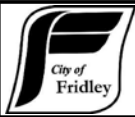
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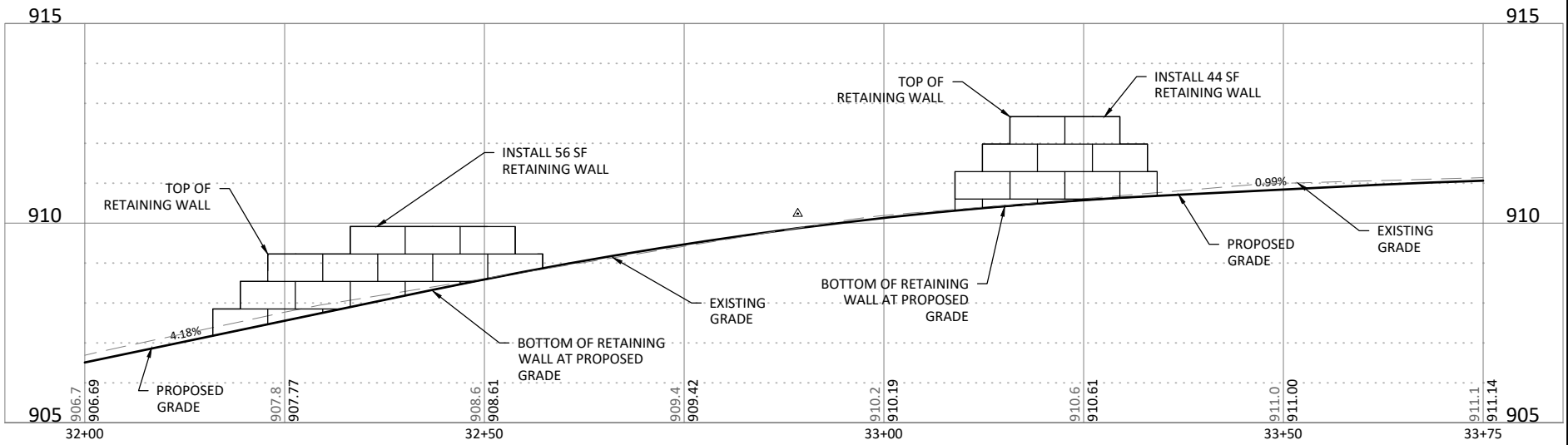
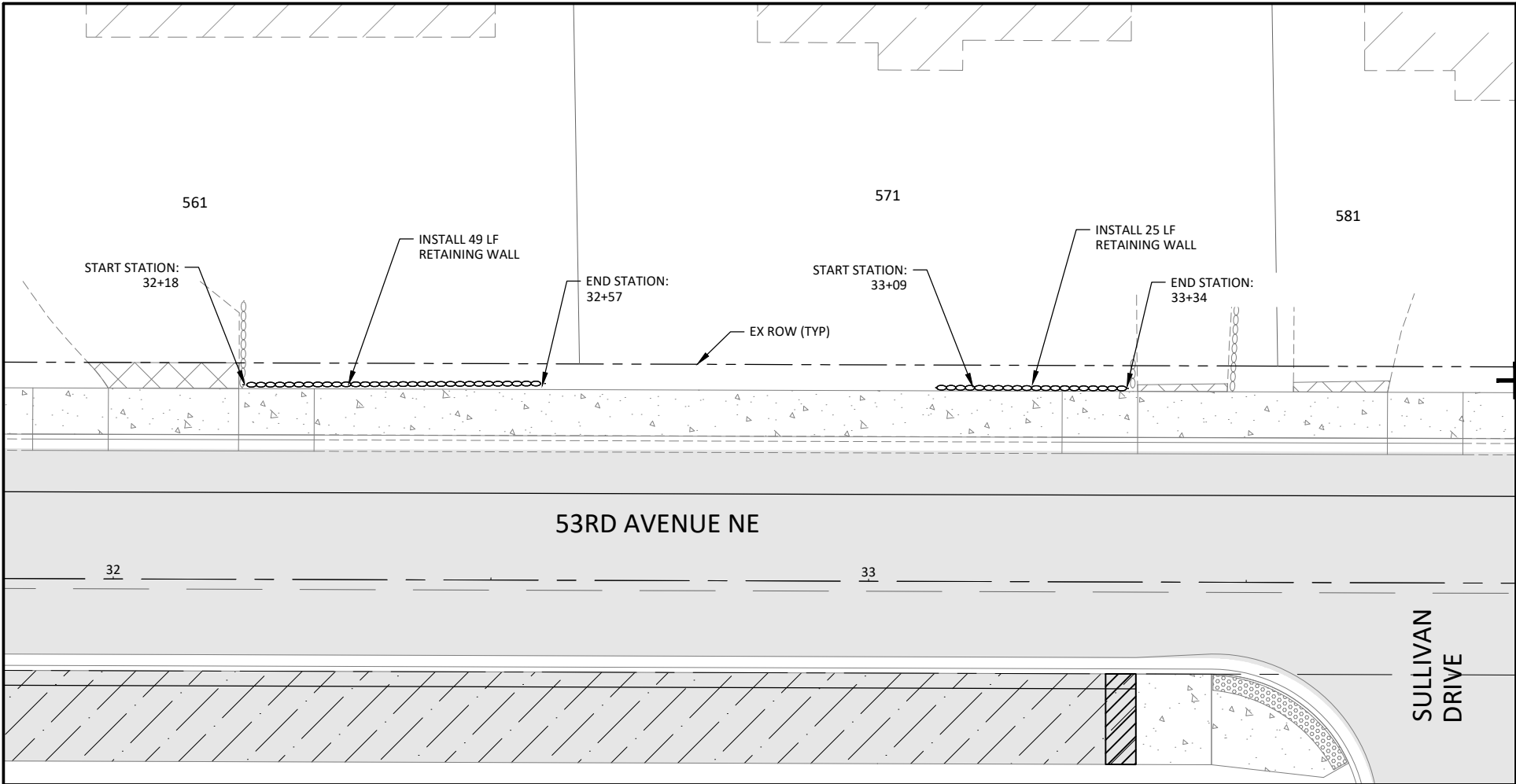
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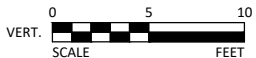
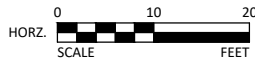
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RETAINING WALL PLAN AND PROFILE

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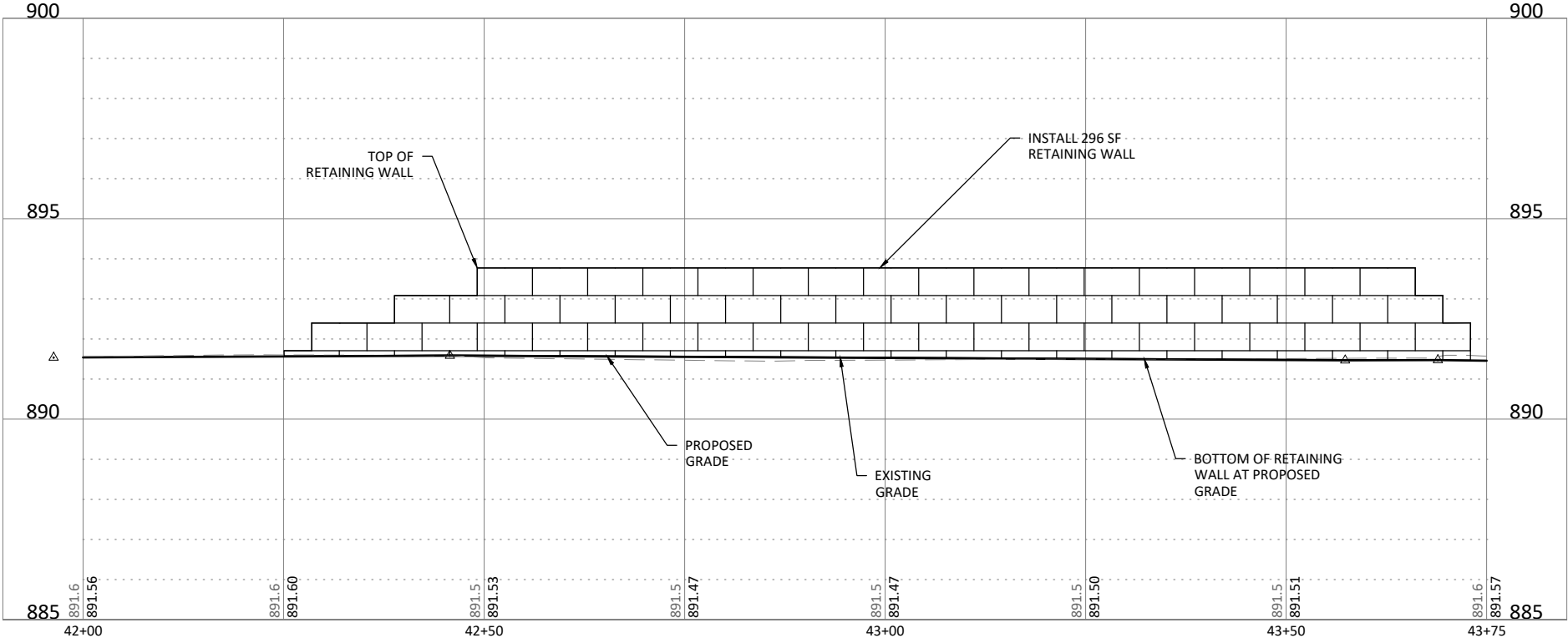
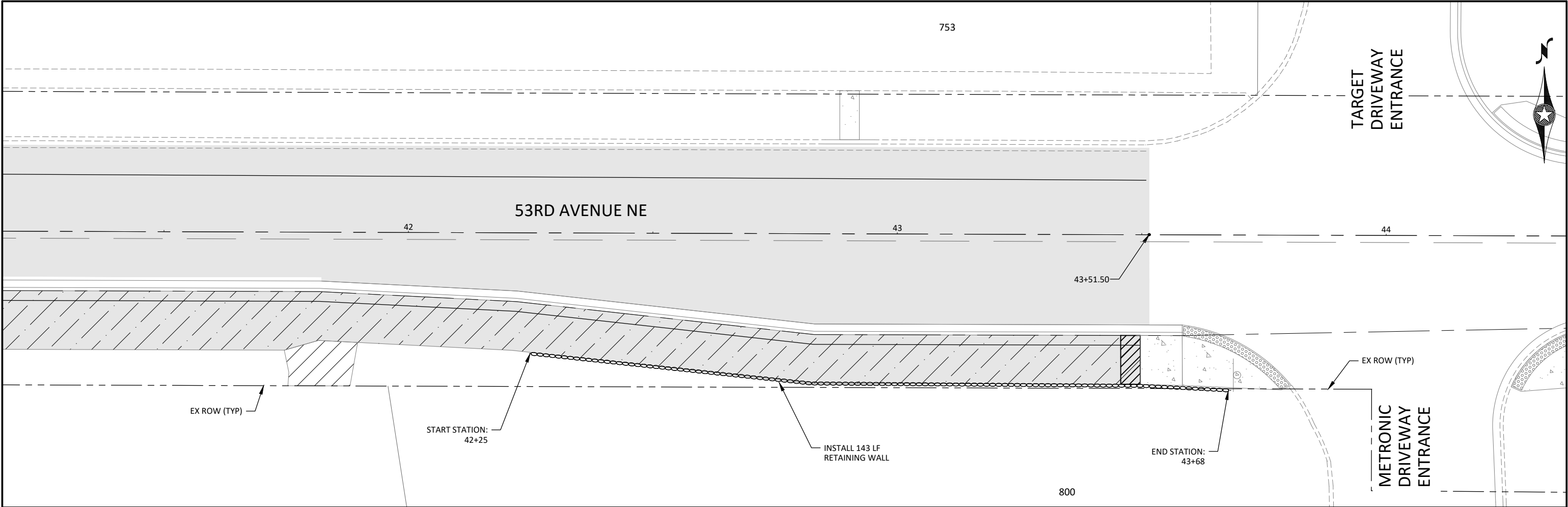
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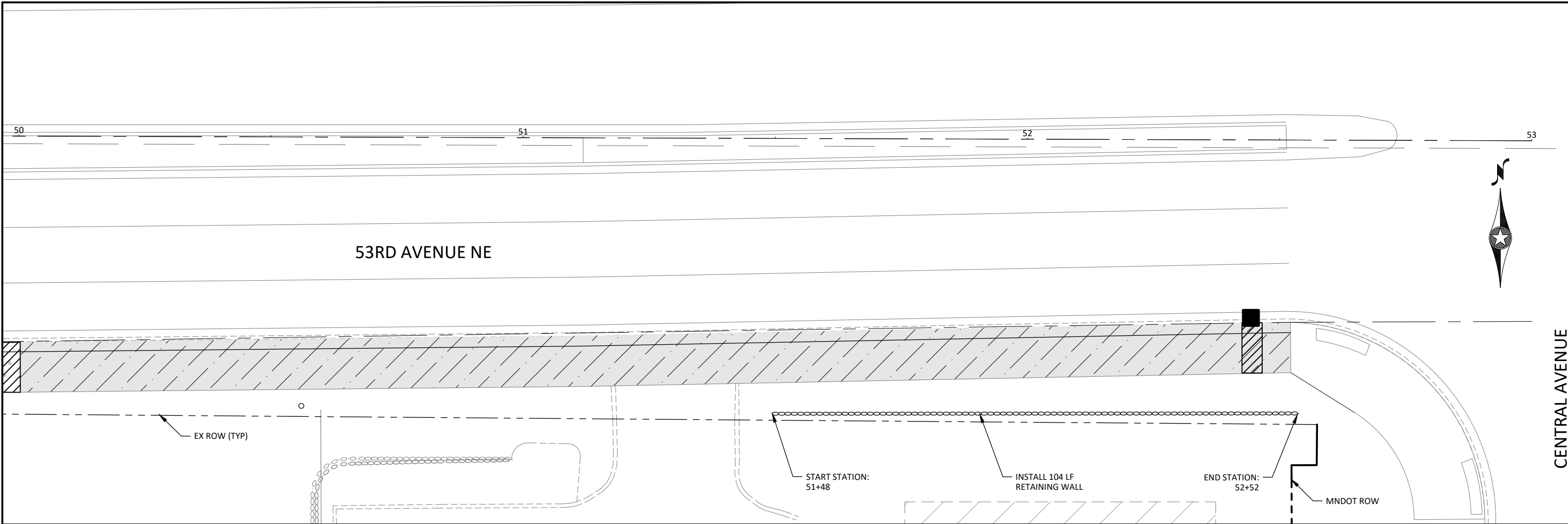
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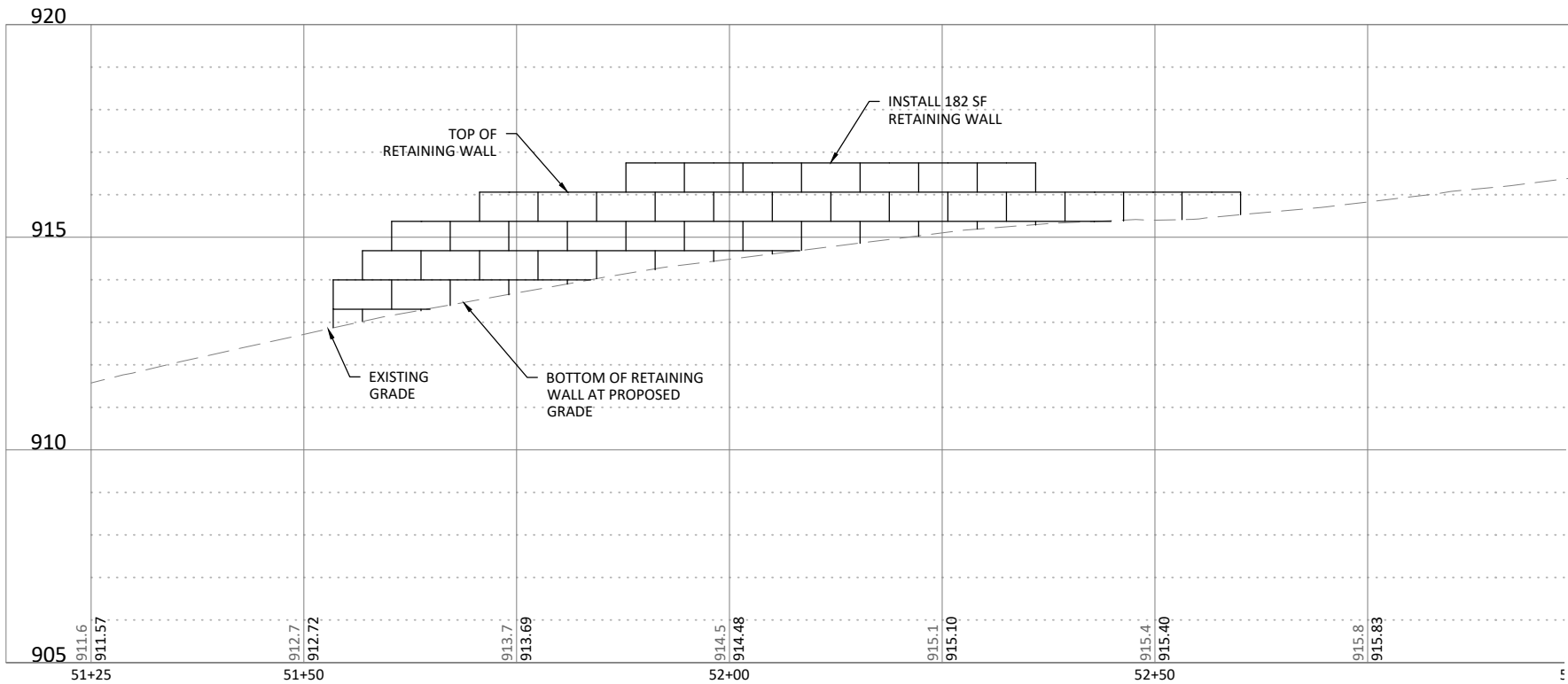
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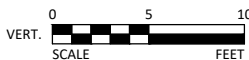
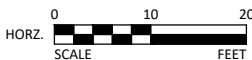




CENTRAL AVENUE
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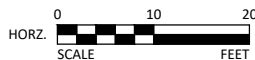
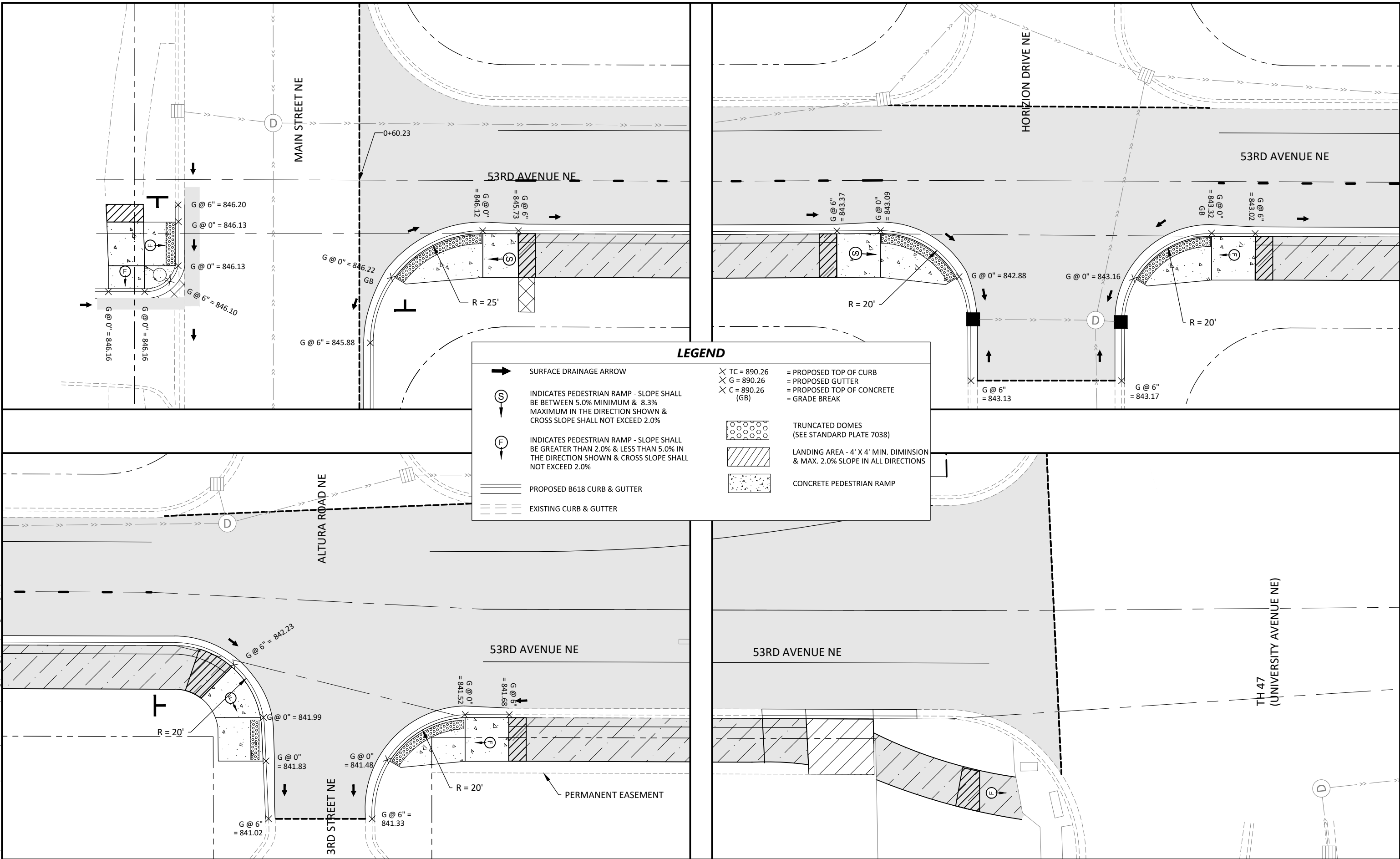
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S.A.P. 127-319-008 / S.A.P. 113-118-005

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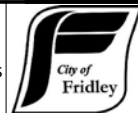
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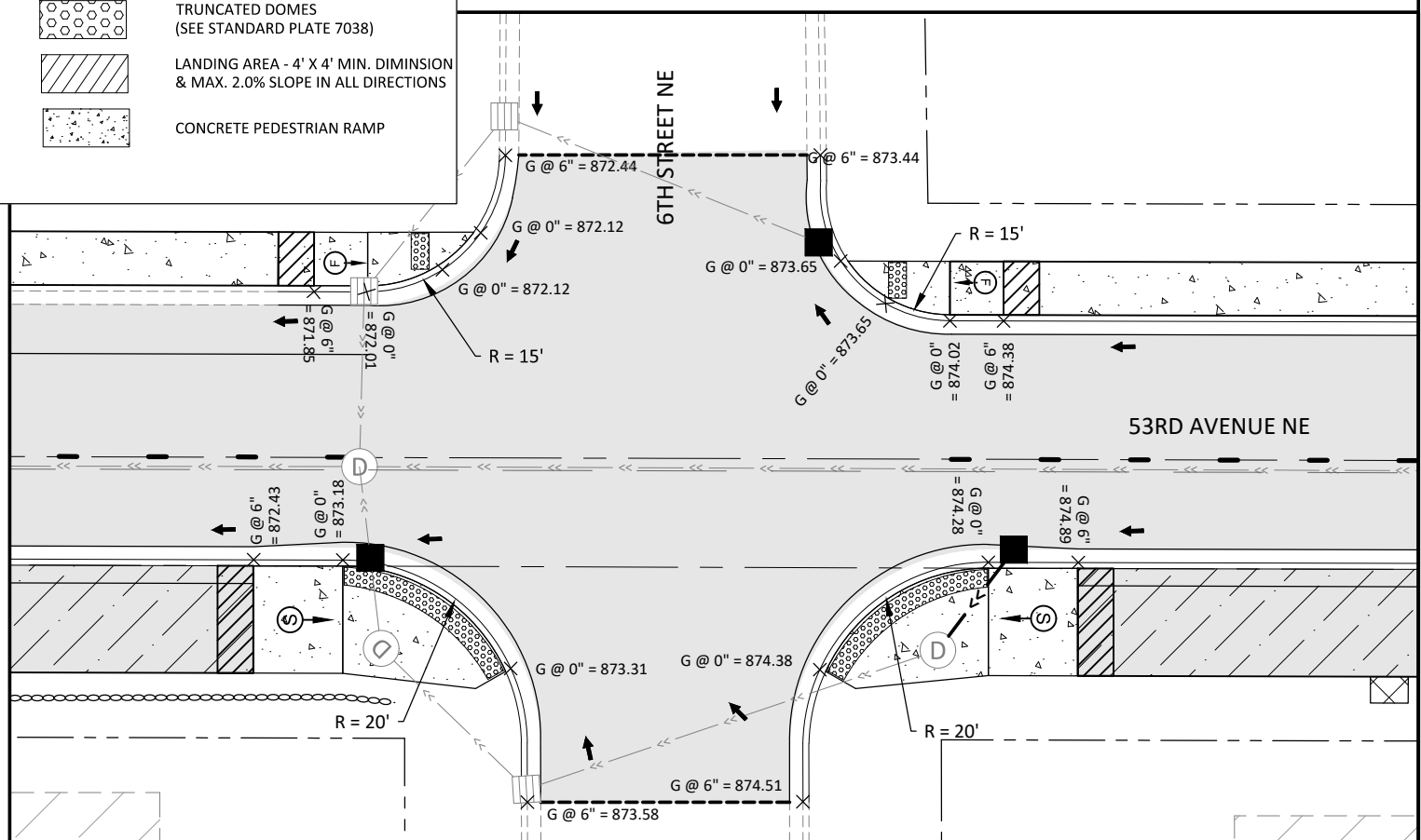
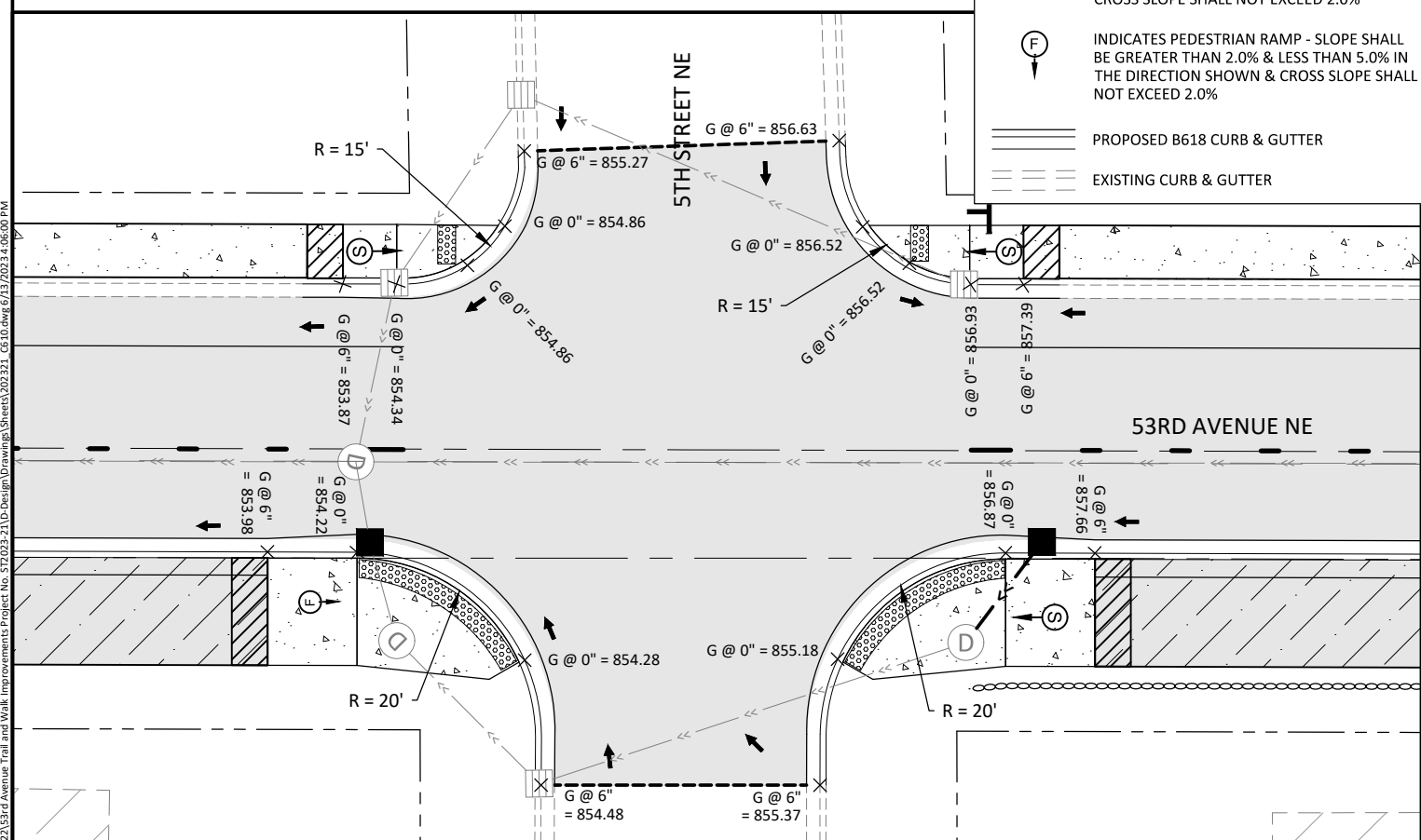
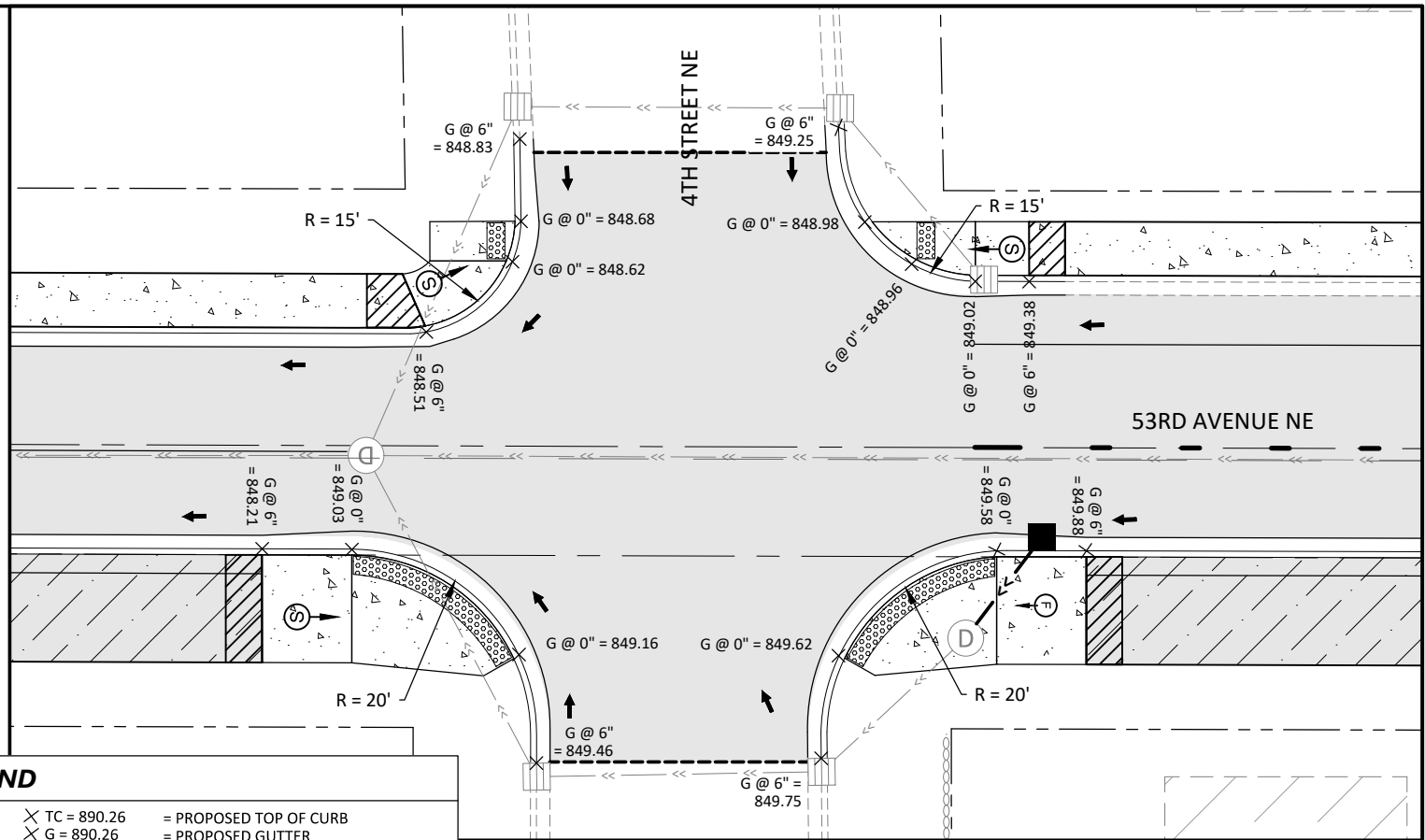
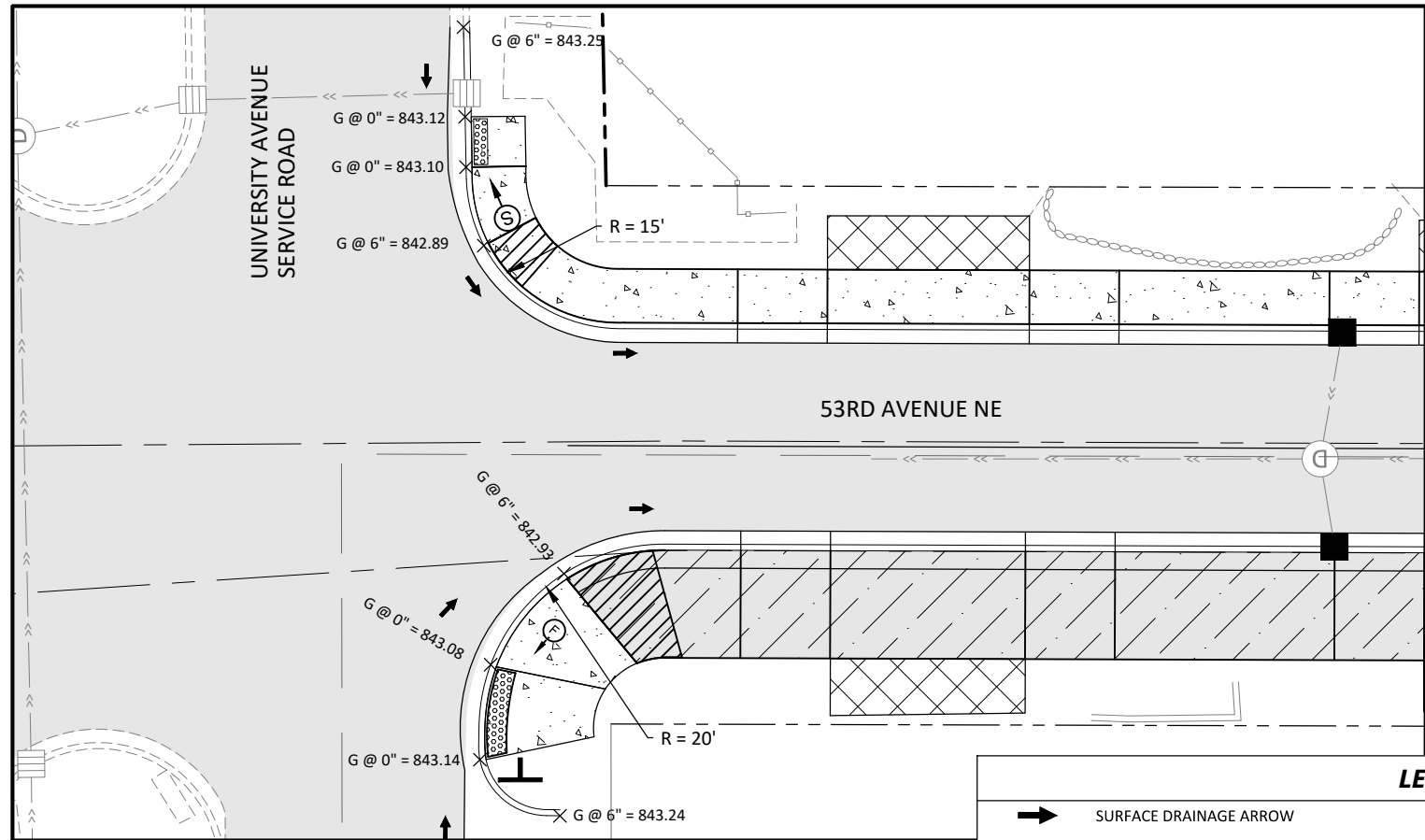
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT
S.A.P. 127-319-008 / S.A.P. 113-118-005
INTERSECTION DETAILS

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LEGEND

→ SURFACE DRAINAGE ARROW



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



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

===== PROPOSED B618 CURB & GUTTER

===== EXISTING CURB & GUTTER

× TC = 890.26
× G = 890.26
× C = 890.26 (GB)

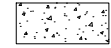
= PROPOSED TOP OF CURB
= PROPOSED GUTTER
= PROPOSED TOP OF CONCRETE
= GRADE BREAK



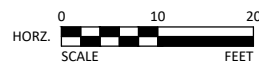
TRUNCATED DOMES
(SEE STANDARD PLATE 7038)



LANDING AREA - 4' X 4' MIN. DIMENSION & MAX. 2.0% SLOPE IN ALL DIRECTIONS



CONCRETE PEDESTRIAN RAMP



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UC NO. 59297 DATE 06/13/2023



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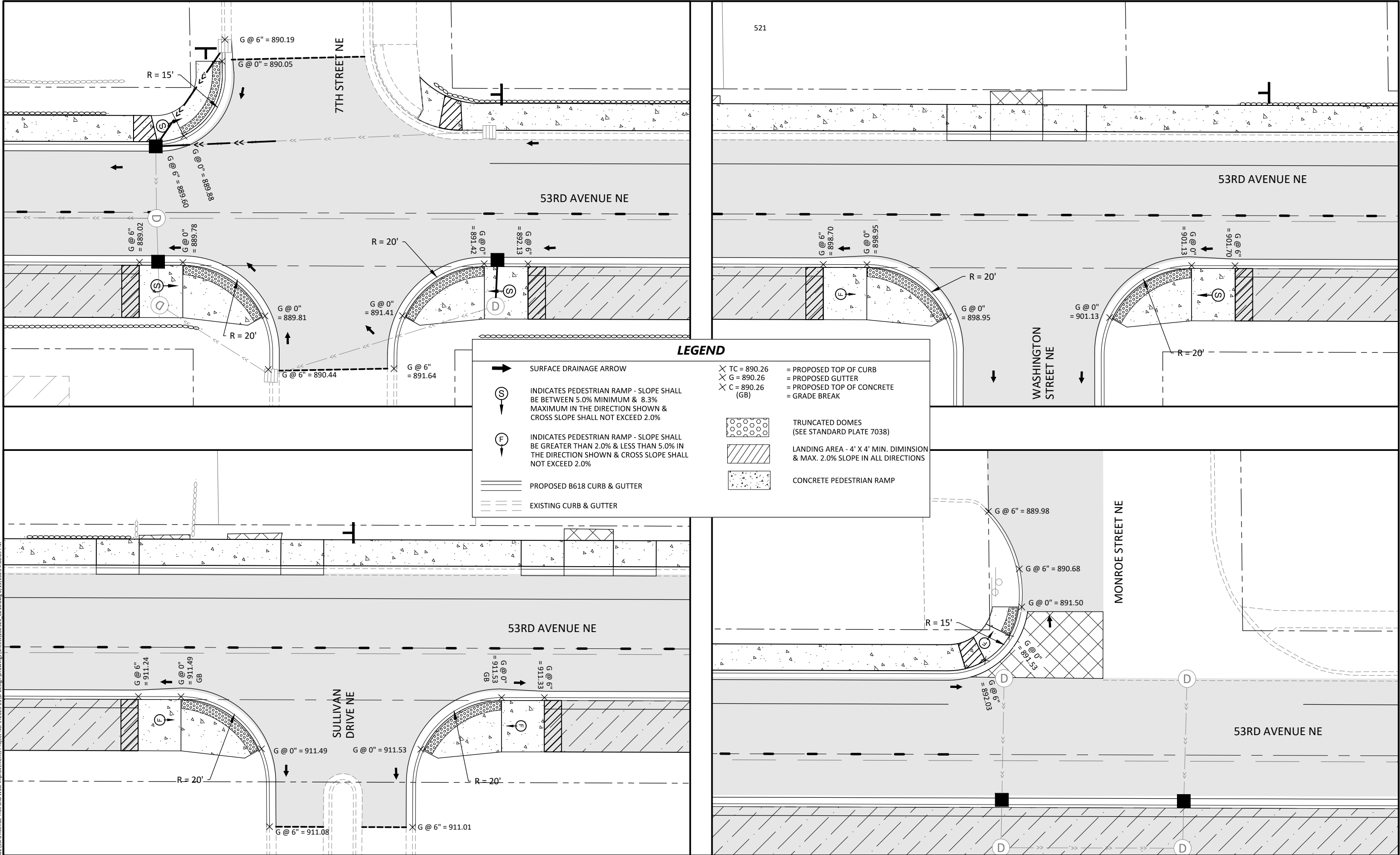
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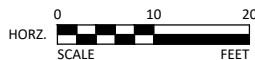
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INTERSECTION DETAILS

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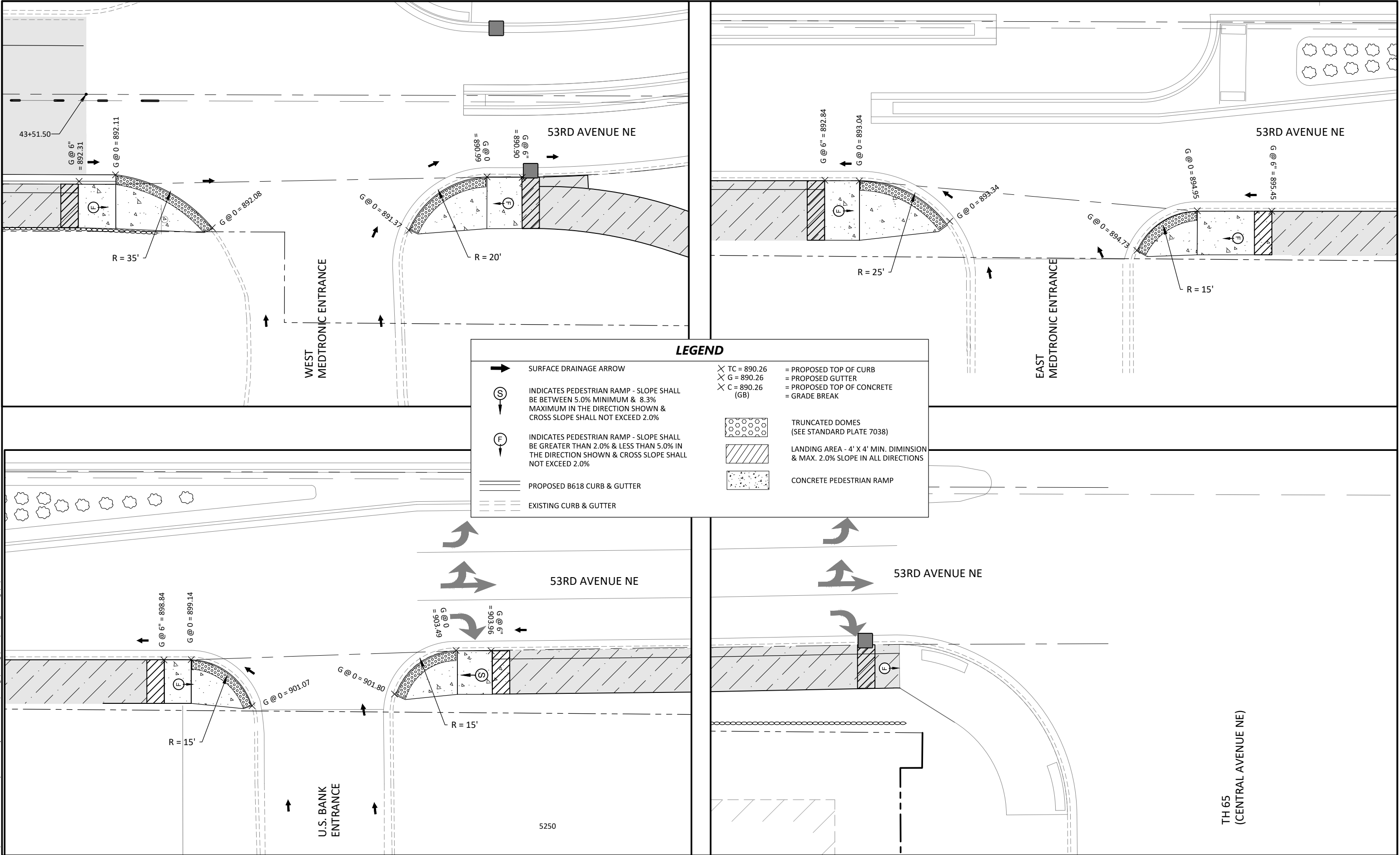
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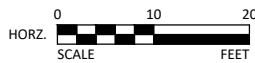
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INTERSECTION DETAILS

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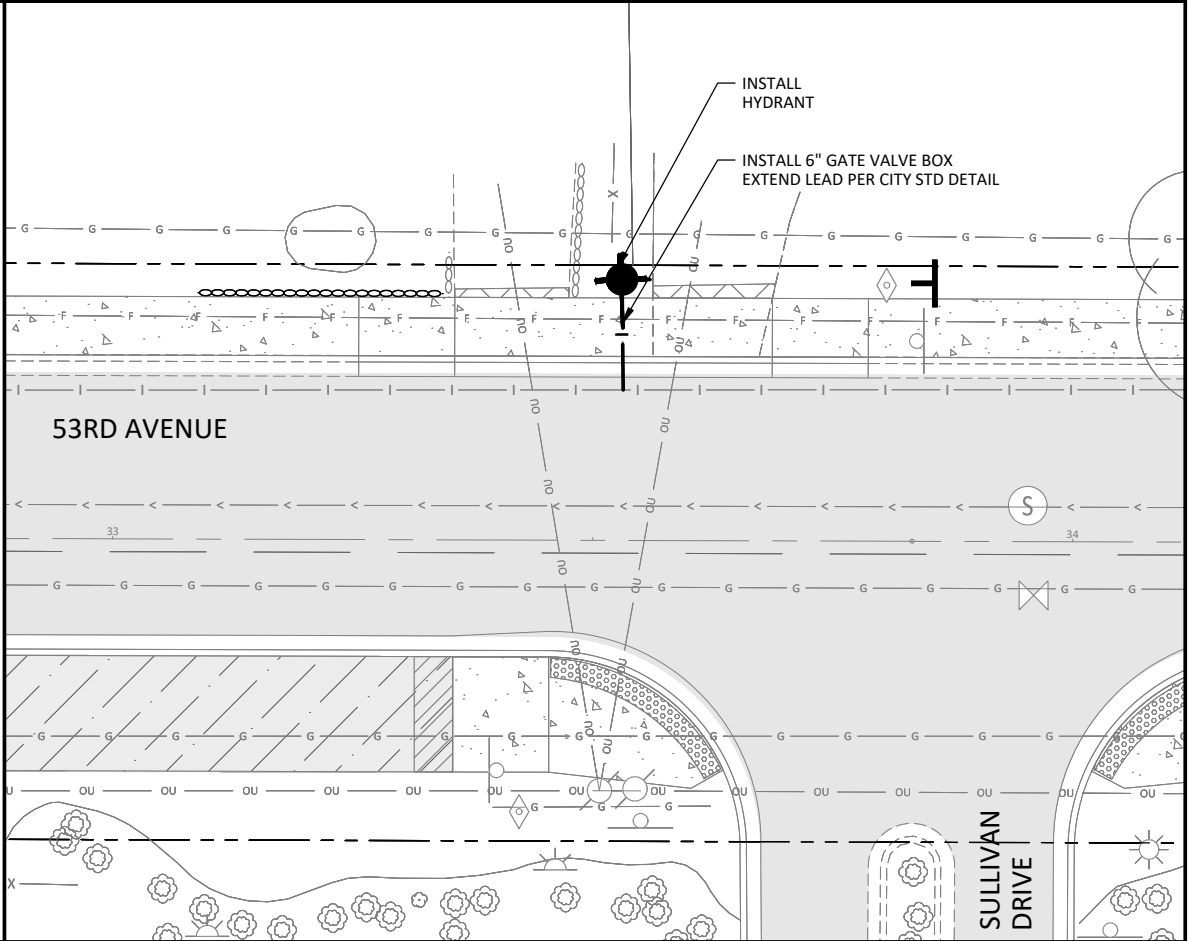
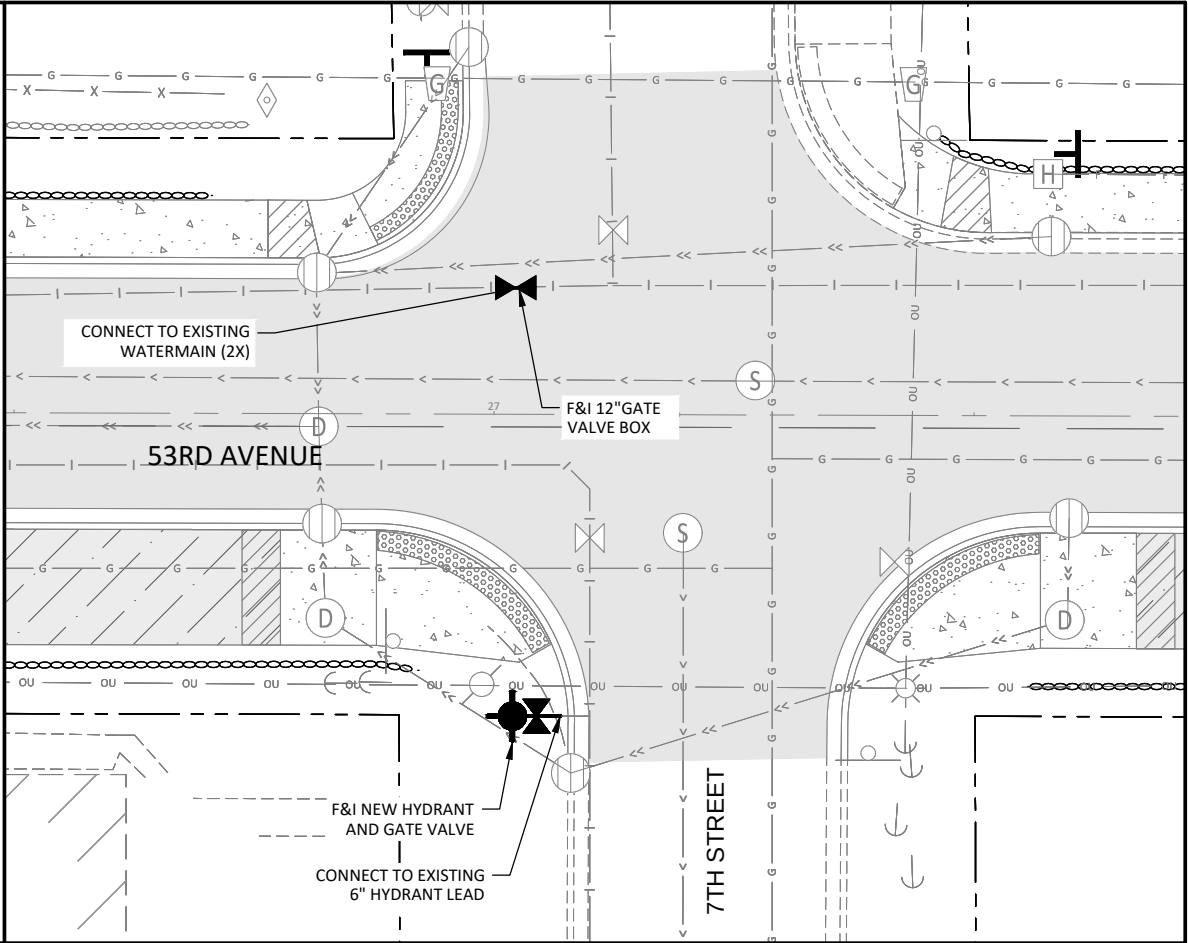
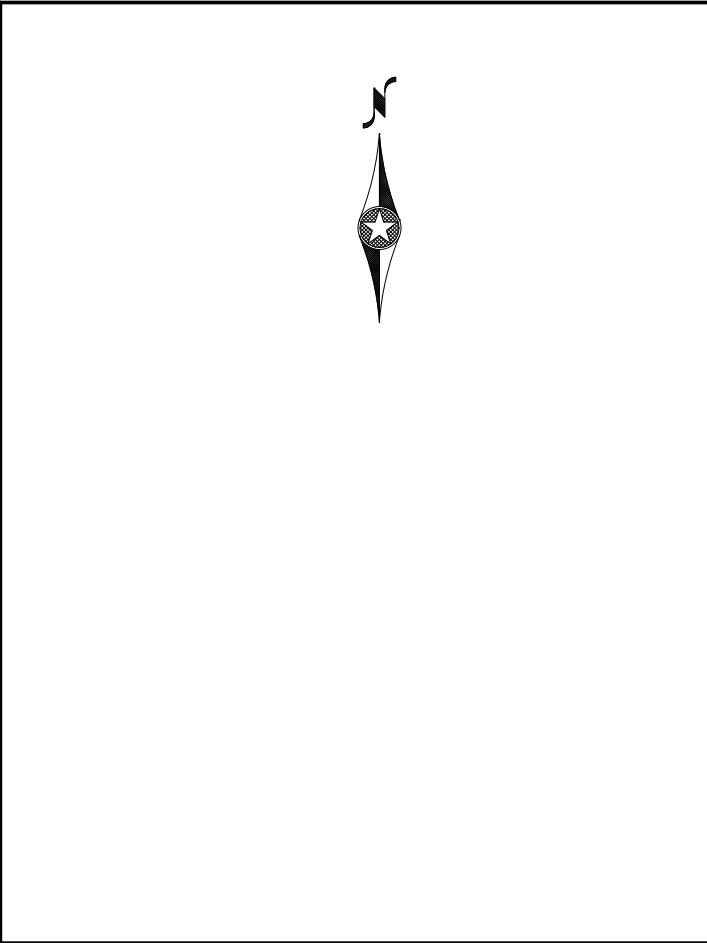
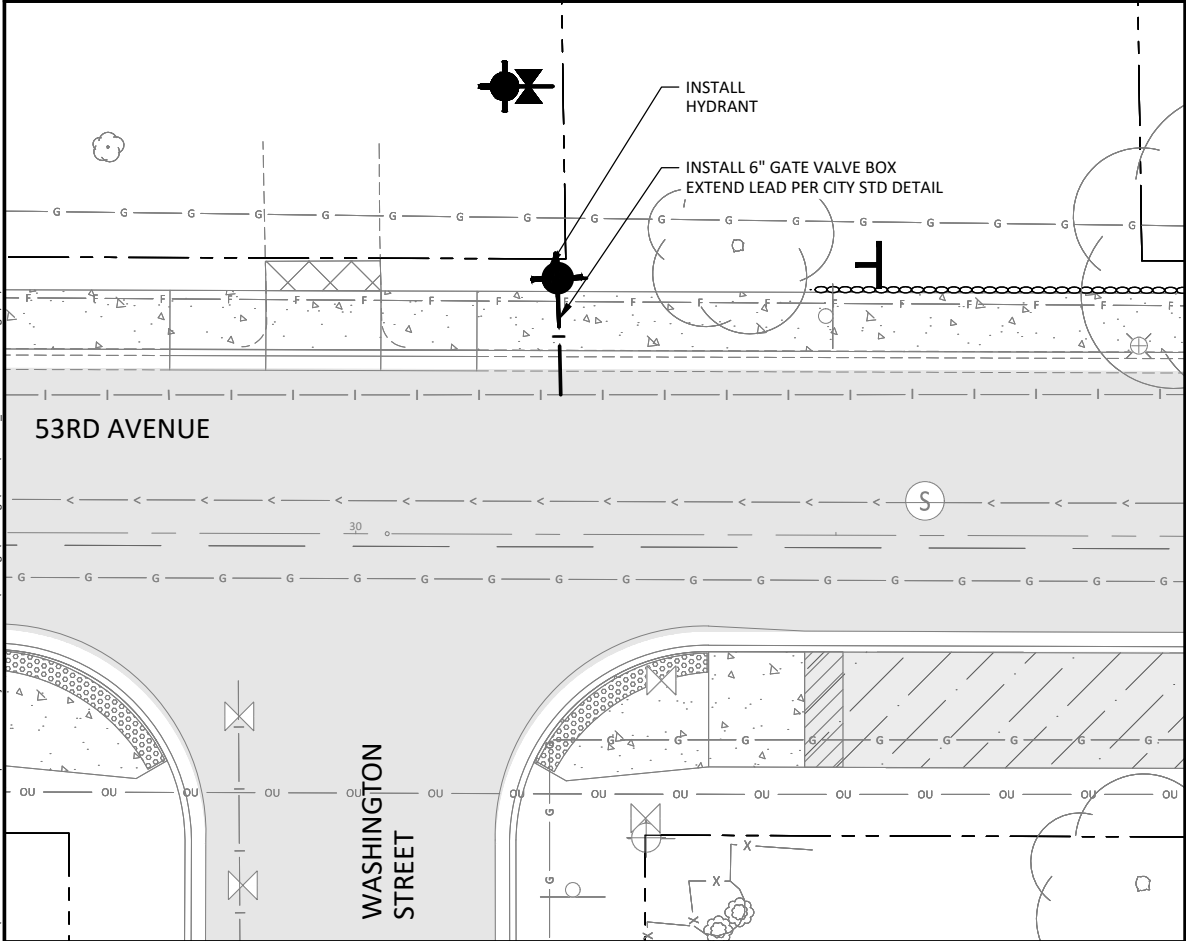
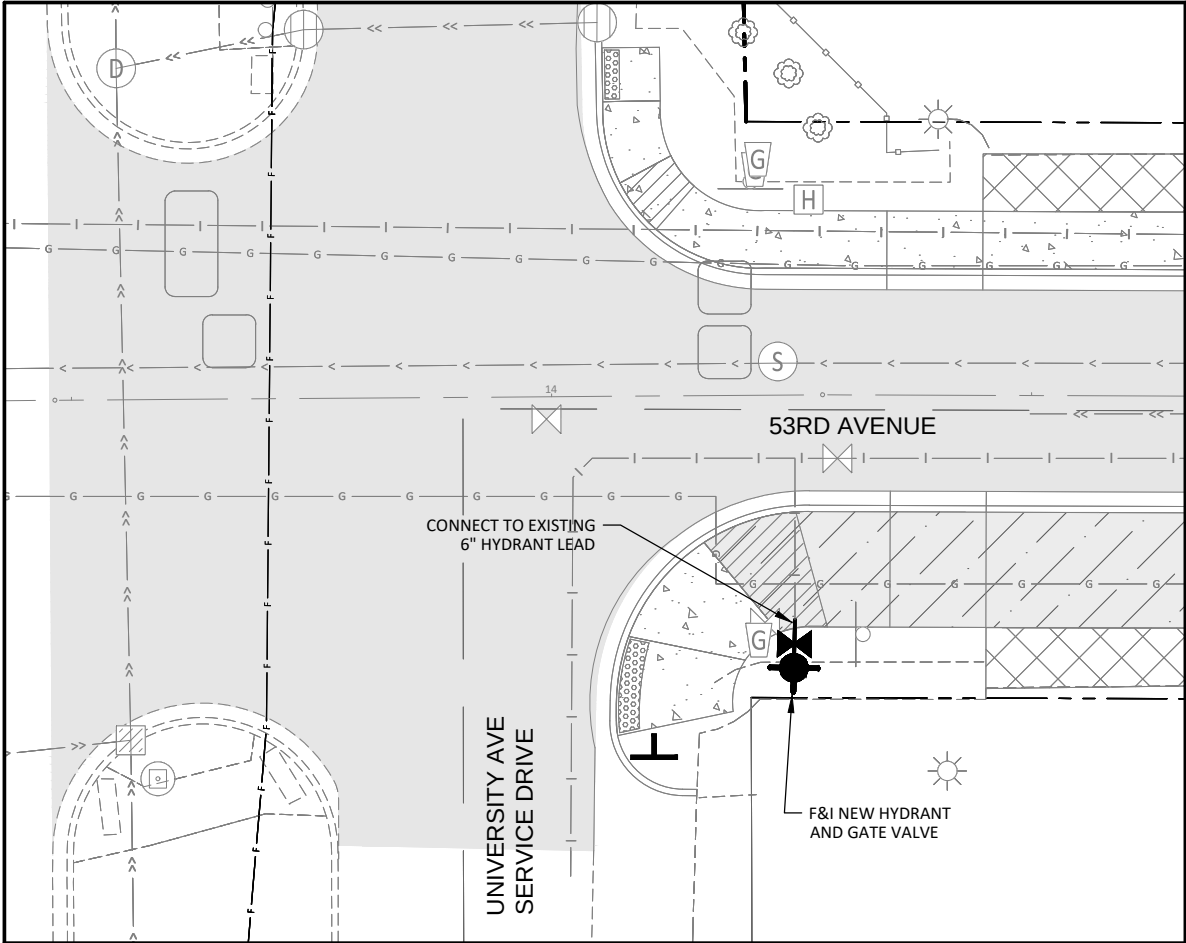
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INTERSECTION DETAILS

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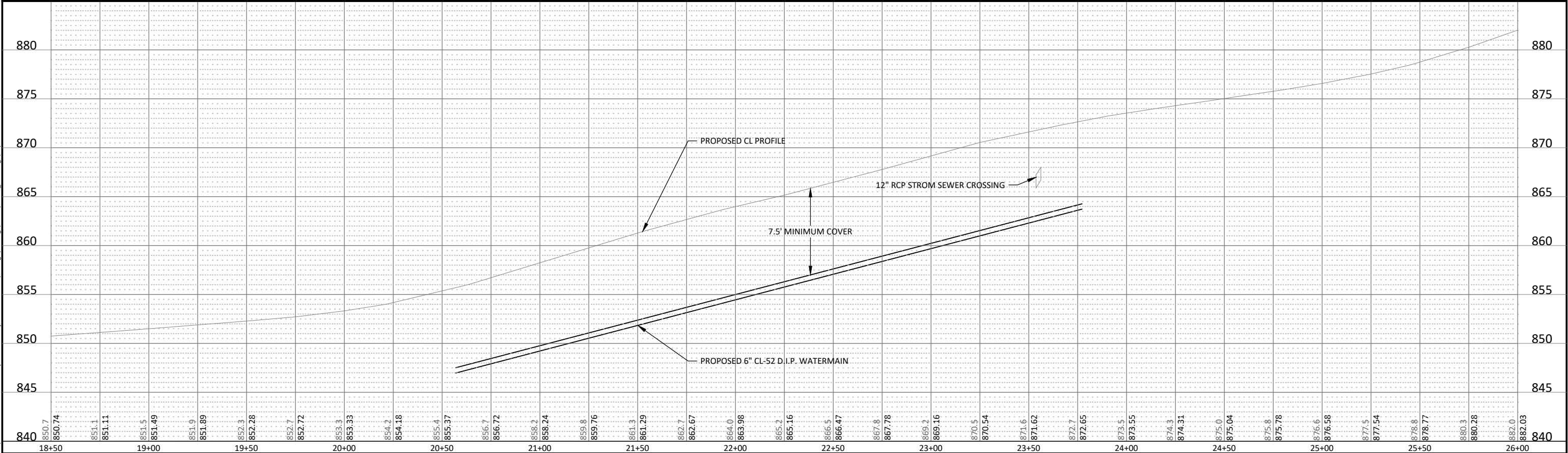
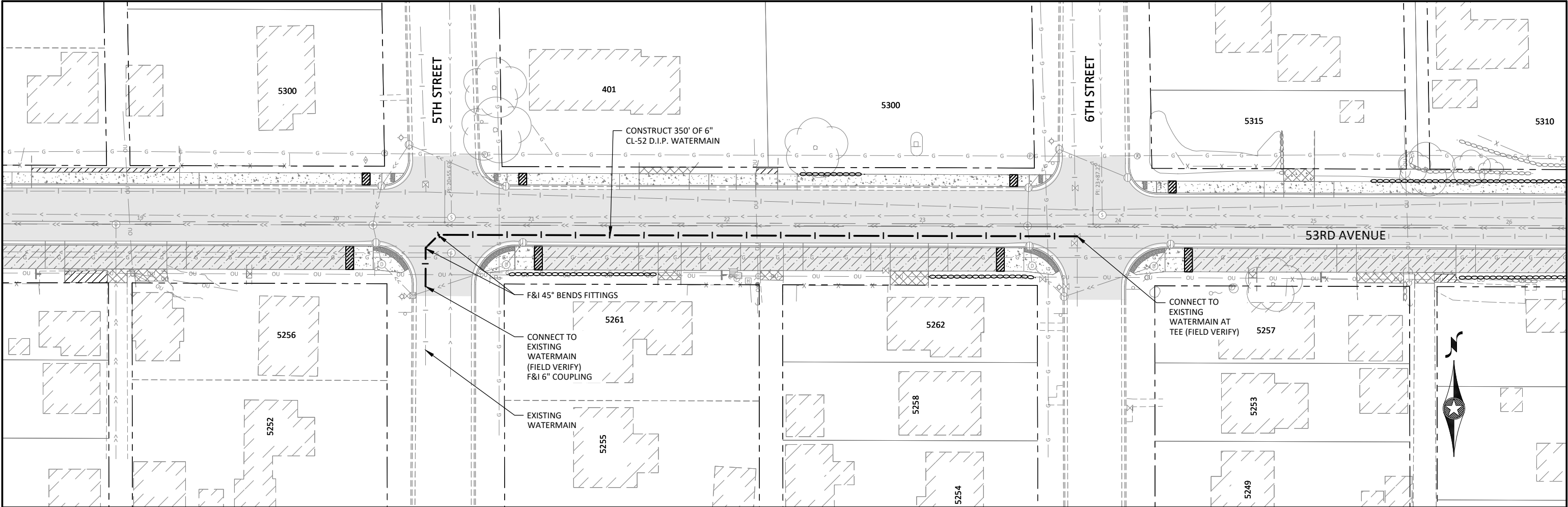


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WATERMAIN PLAN AND PROFILE

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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

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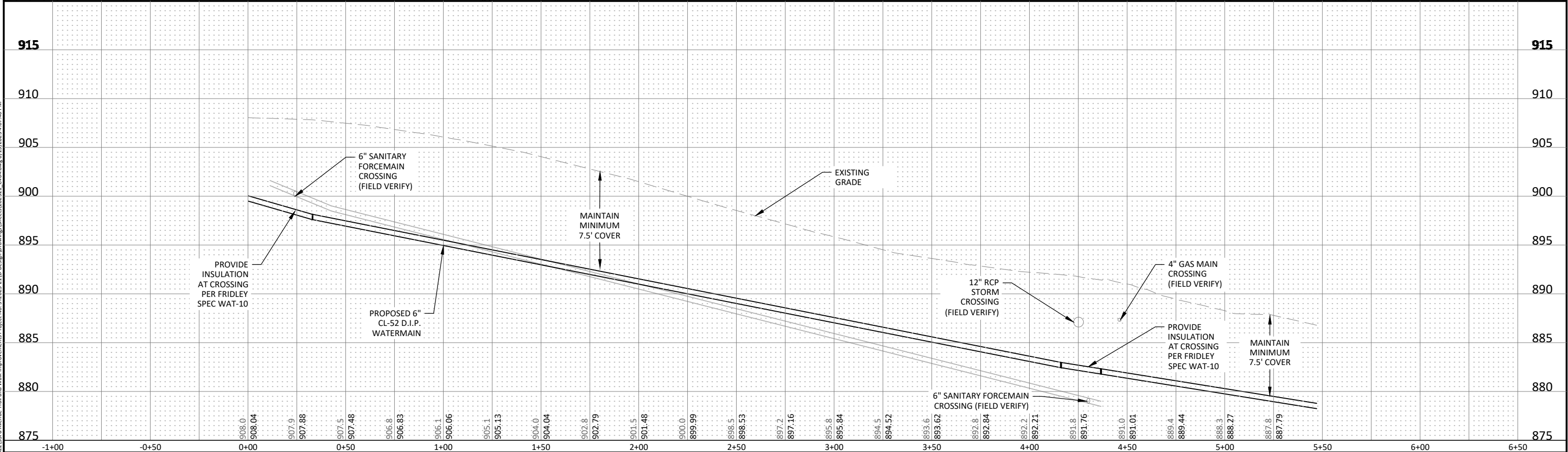
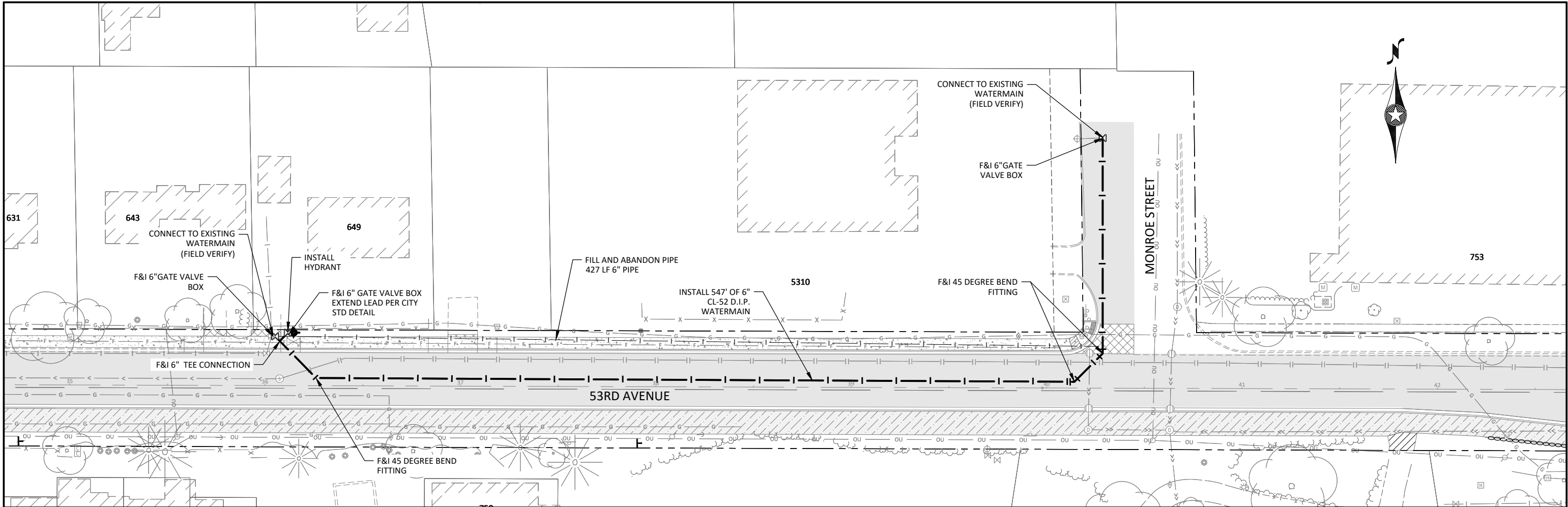
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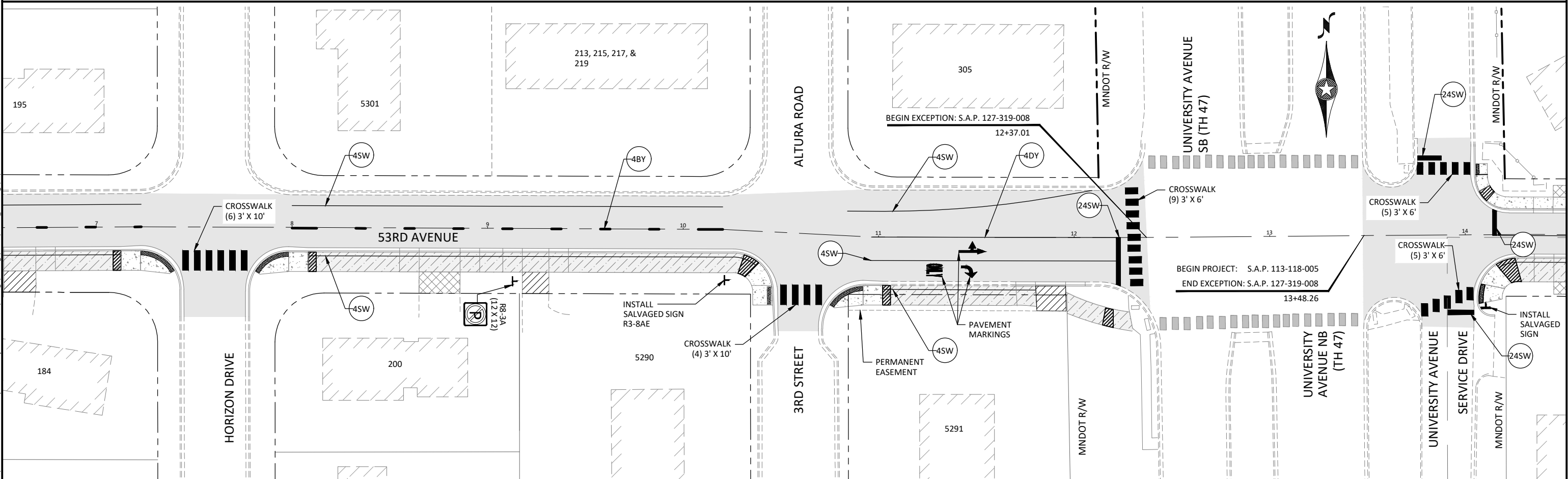
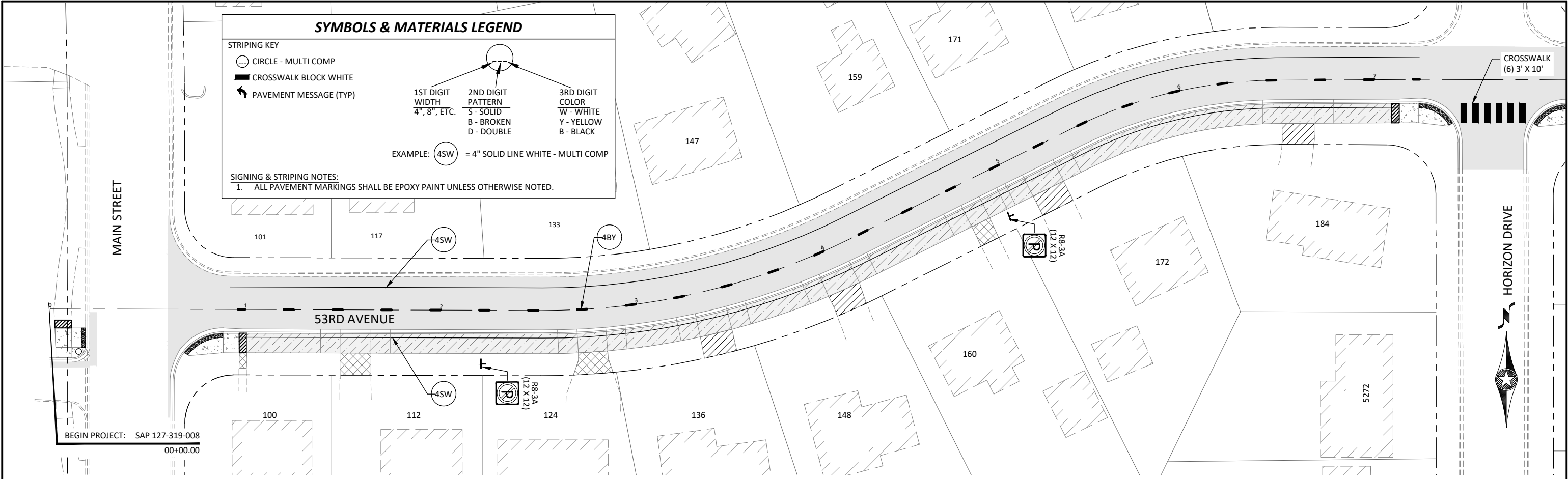
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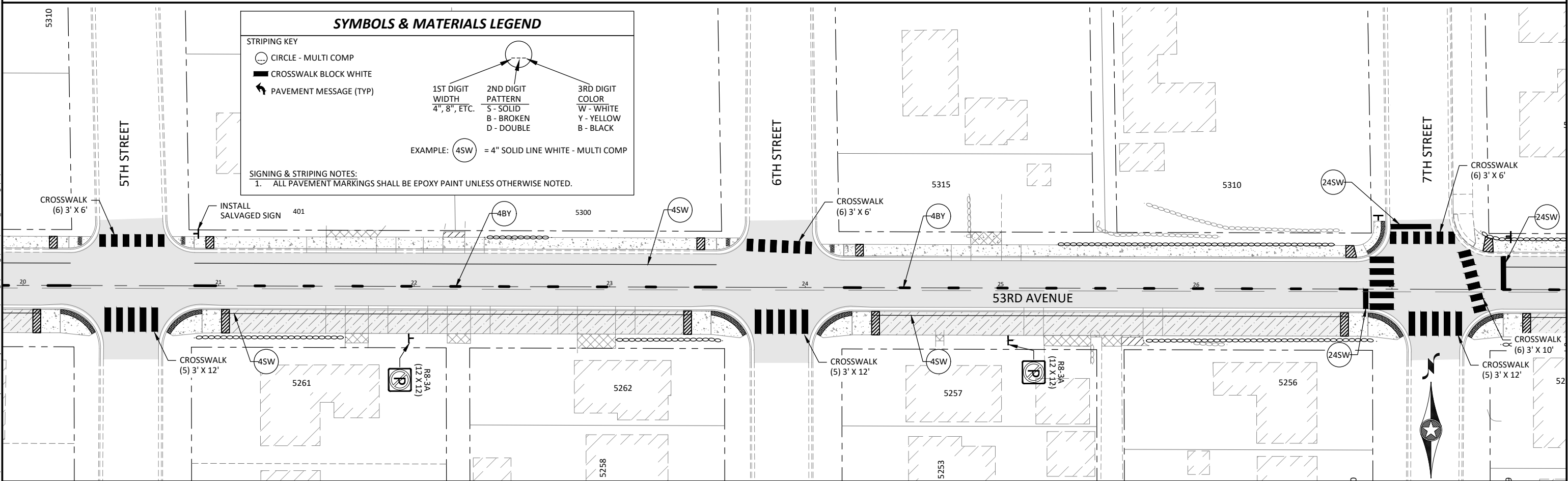
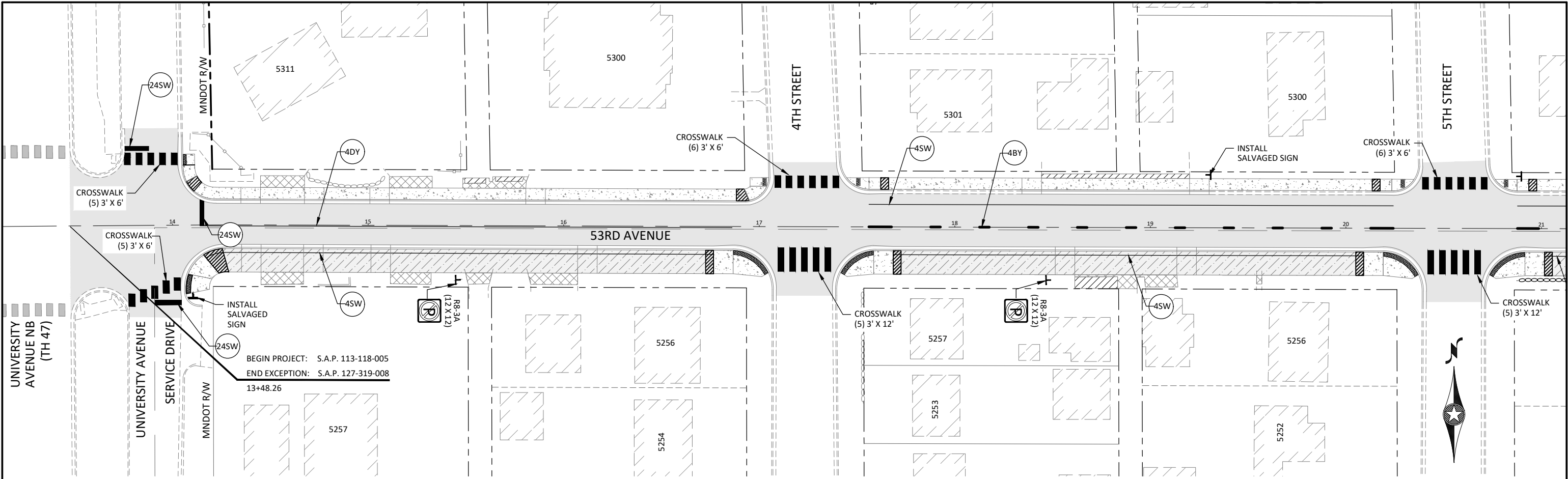
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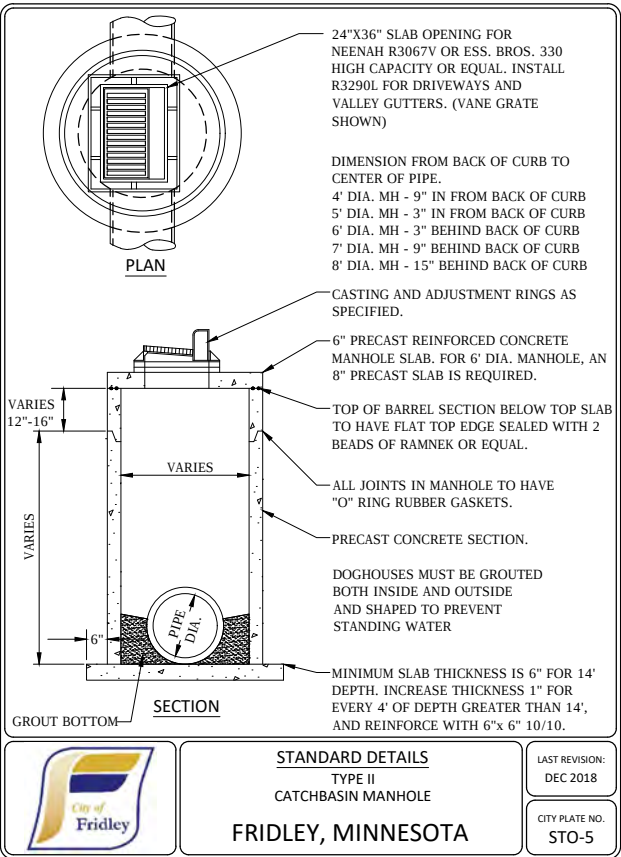
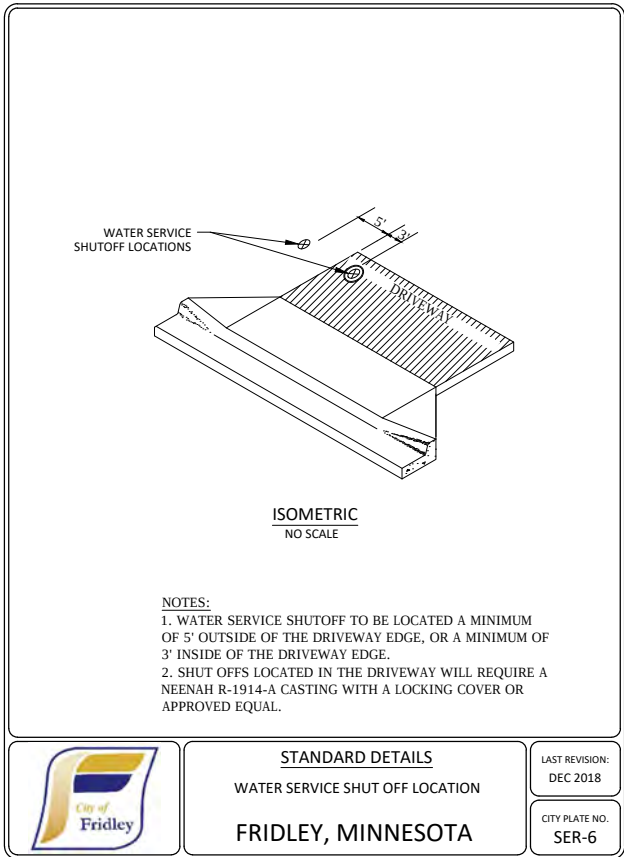
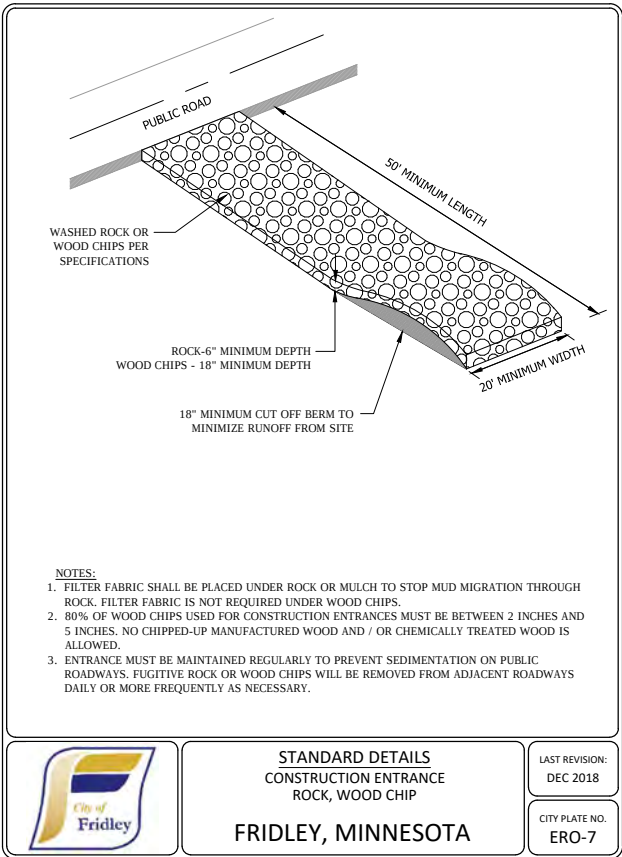
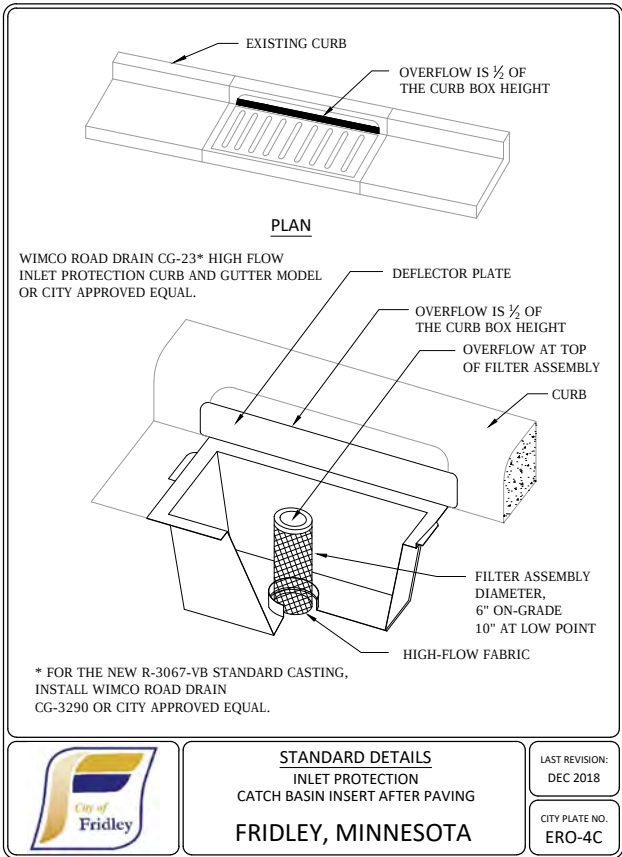
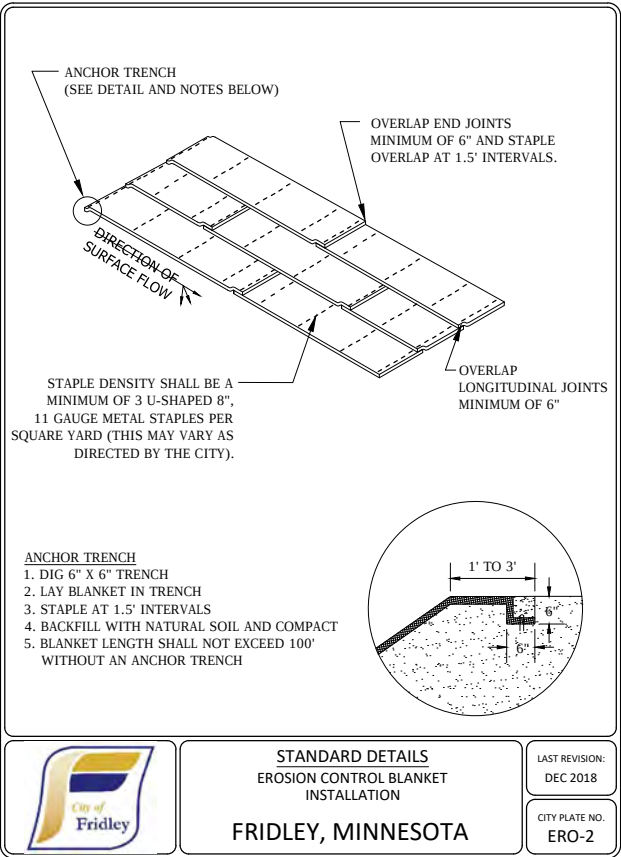
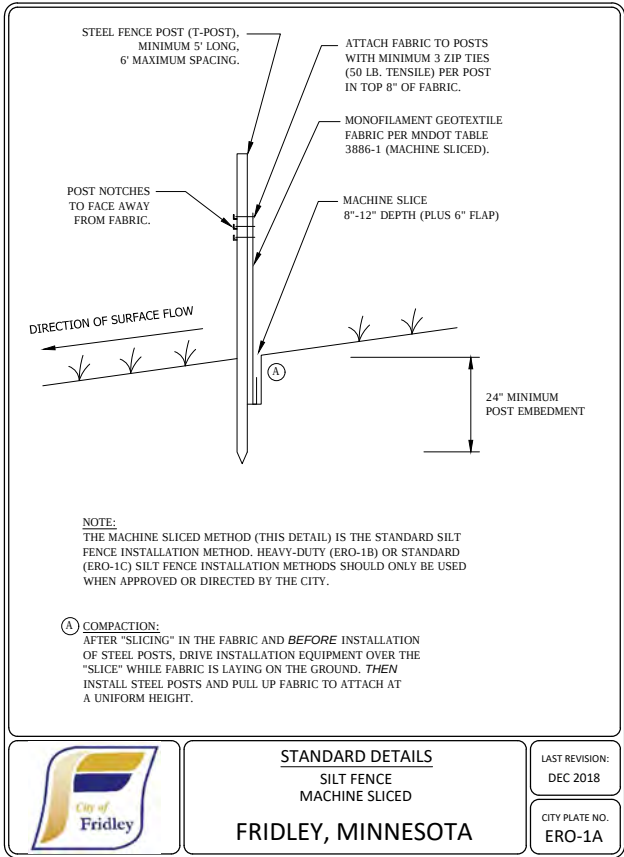
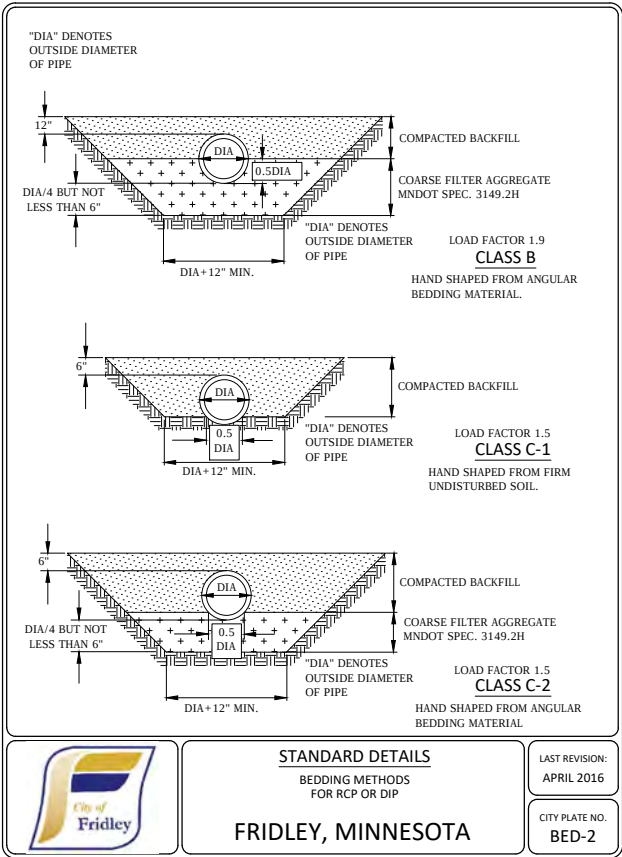
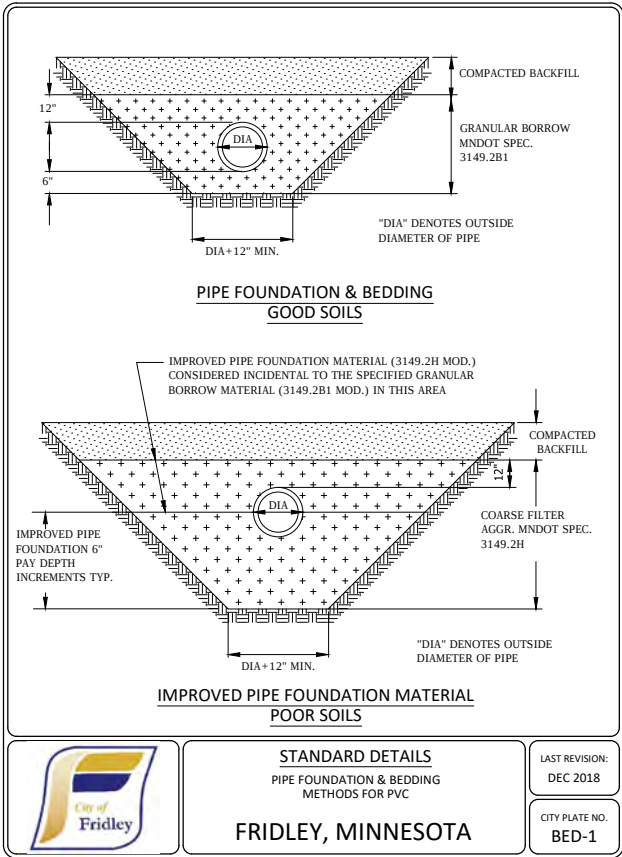
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Brandon J. Brodhag
BRANDON J. BRODHAG
UC NO. 59297 DATE 06/13/2023



City of
Columbia Heights



7071 University Avenue NE
Fridley, MN 55432

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ST2023-21			

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

STANDARD DETAIL PLATES - FRIDLEY

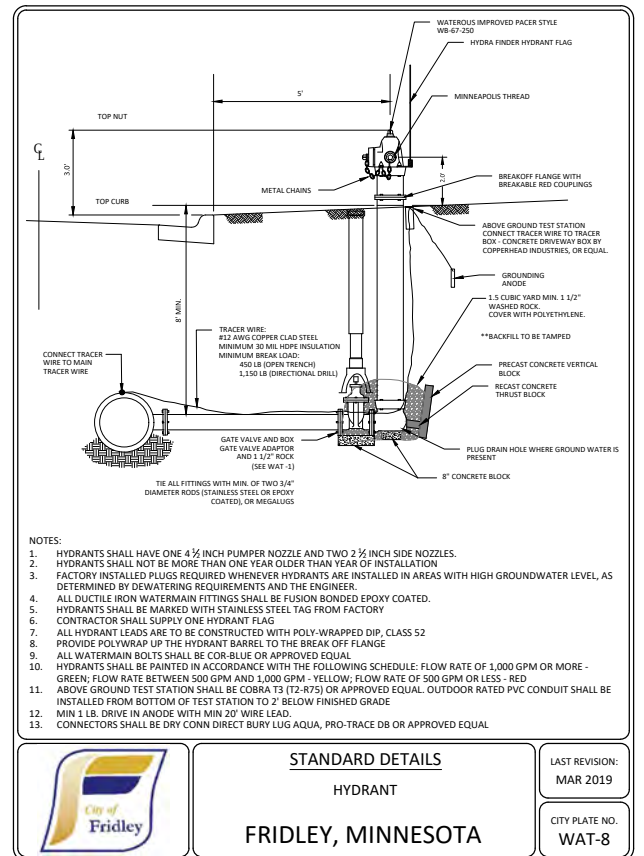
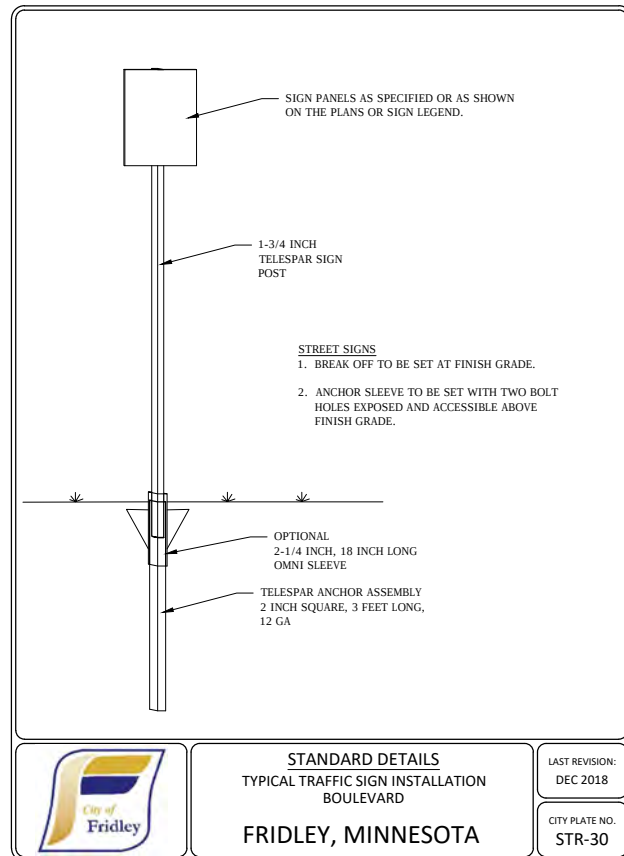
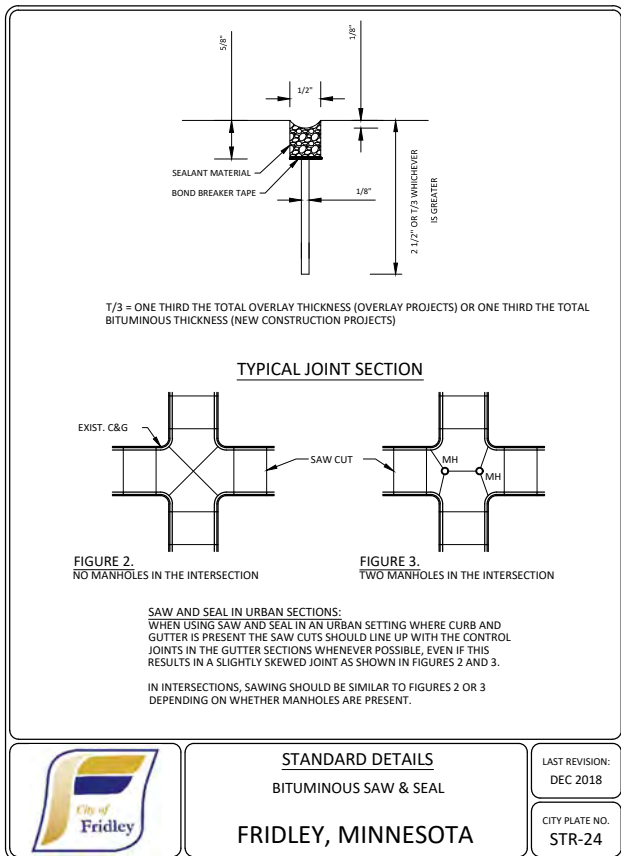
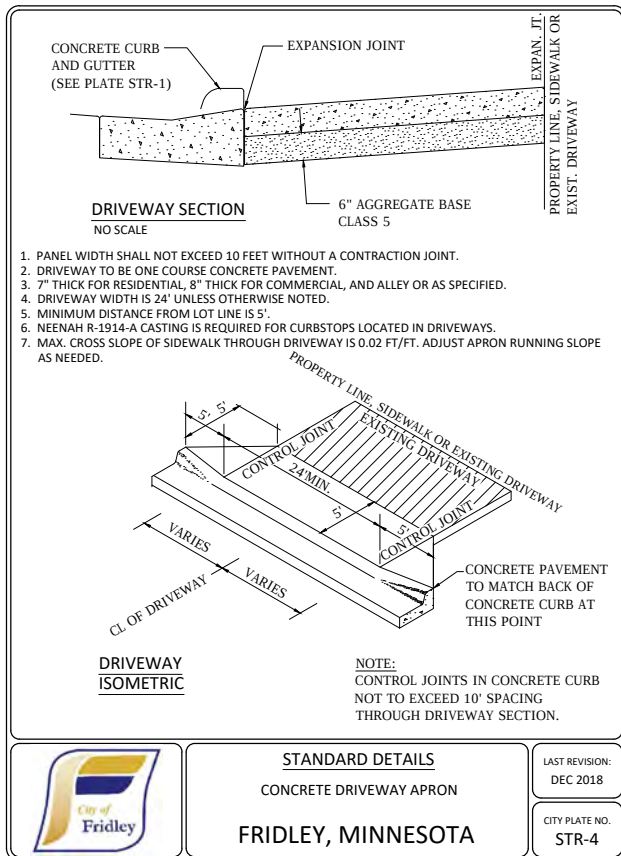
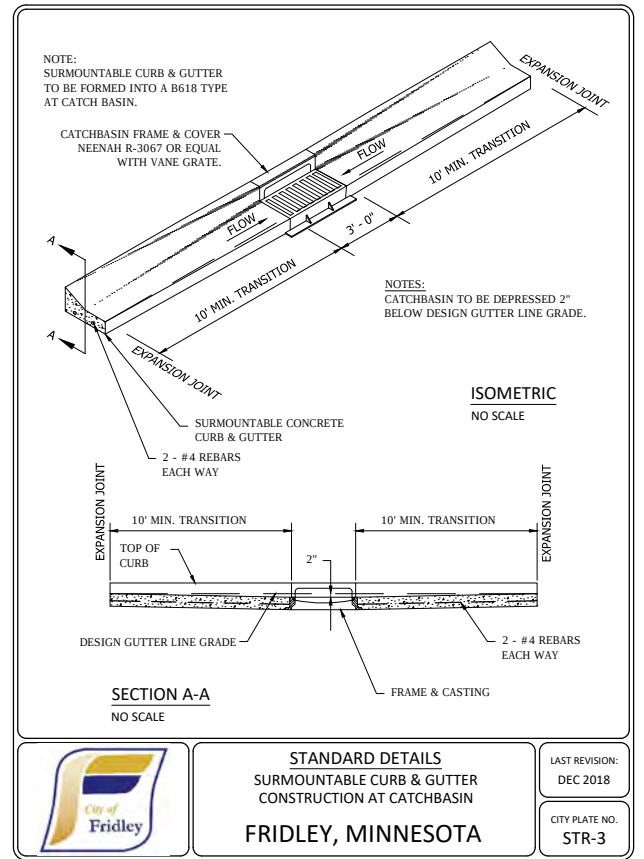
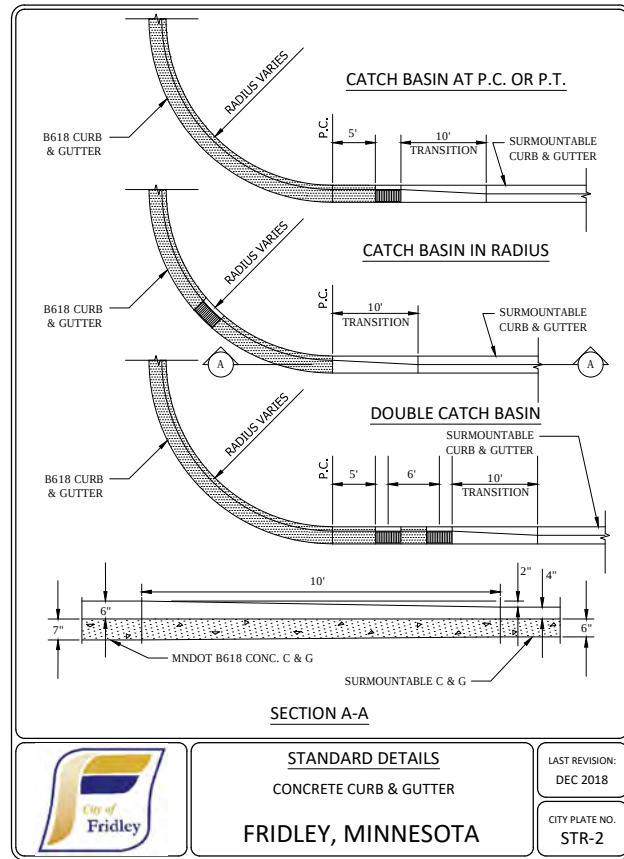
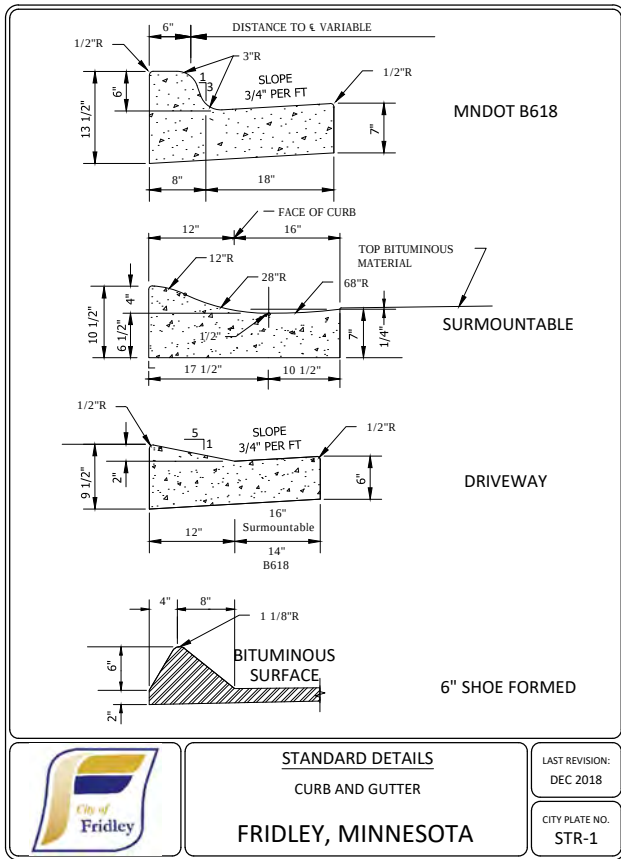
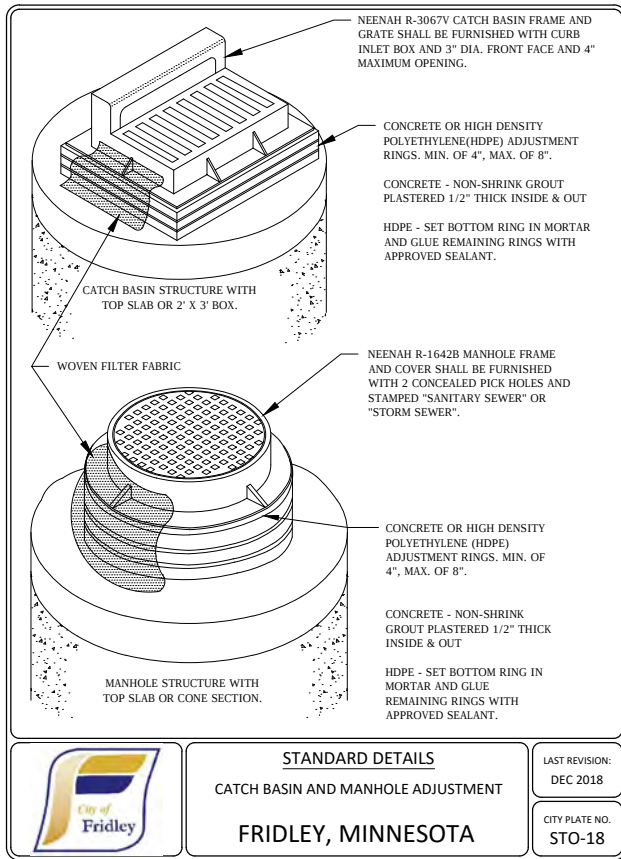
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82

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U.C. NO. 59297 DATE 06/13/2023



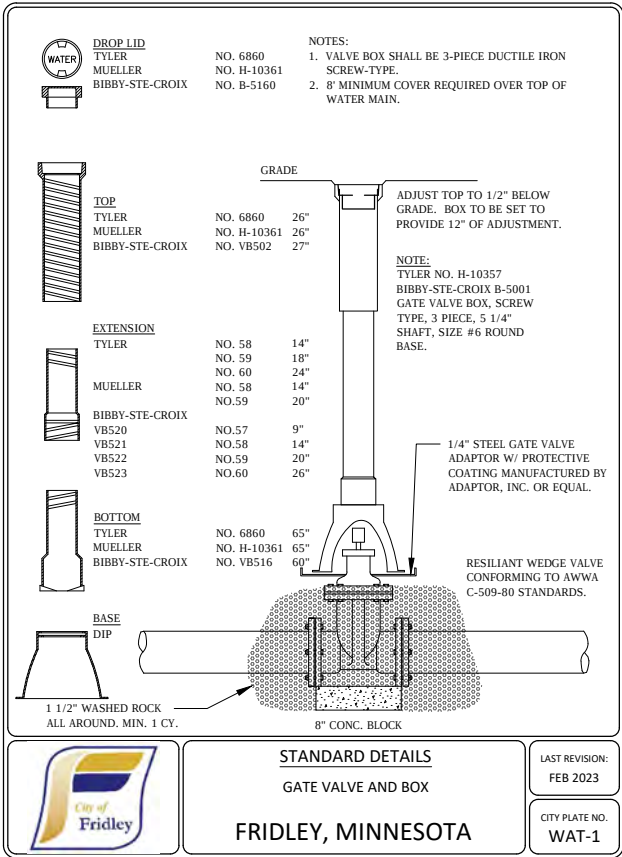
7071 University Avenue NE
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT
S.A.P. 127-319-008 / S.A.P. 113-118-005
STANDARD DETAIL PLATES - FRIDLEY

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The diagram shows a cross-section of a foundation. It consists of a rectangular concrete footing with a width of 24 inches and a depth of 36 inches. A wall is shown resting on the footing. The footing is wider than the wall, and the wall is shown with a vertical reinforcement bar (rebar) extending through it. The footing is shown with a textured surface, indicating it is concrete. The wall is shown with a smooth surface, indicating it is also concrete. The diagram is a technical drawing used to illustrate the dimensions and components of a foundation.

§ STRUCTURE

SECTION

12" TO BACK OF CURB LINE

CASTING

2-6 2" THICK ADJUSTING RINGS WITH EPDM EXTERNAL SEAL

24" X 36" PRECAST SECTION.

4" D.I.P. SLEEVE

4" PERFORATED DRAIN PIPE W/FILTER SEE DETAIL

PLASTER OUTSIDE STRIKE CLEAN INSIDE

VARIES

5"

24"

6" PRECAST BASE

GROUT INVERT TO INVERT ELEVATION

DRAIN PIPE

CLASS 5

OVER

10"

Diagram illustrating the cross-section of a trench installation for a 4" diameter perforated PVC pipe. The pipe is surrounded by a 6" thick layer of washed pea gravel filter aggregate. The aggregate is overlapped by a geotextile fabric wrap (MNDOT 3733, Type 1) which is 10" wide. The pipe is 4" in diameter. The entire assembly is on a subgrade. Labels include: CLASS 5, OVERLAP, SUBGRADE, 4" DIA. PERF. PVC PIPE, 1% GRADE, WASHED PEA GRAVEL, FILTER AGGREGATE, GEOTEXTILE FABRIC WRAP, and MNDOT 3733, TYPE 1.

-
- Diagram illustrating the plan view of a structure. The structure is circular with a diameter of 24". An opening is centered in the top slab, with a width of 36". The opening is centered in the top slab.

PRECAST CONCRETE SLAB
REINFORCED FOR STREET
LOADING.

↑ 5"
VARIES $\angle$

CAST BASE

SECTION

FOR B618 CURB & GUTTER

PLAN

1- NO. 4 REBAR IN FRONT OF CASTING 5' IN LENGTH
POUR 4" CONCRETE IN FRONT OF CASTING WITH 5' NO. 4 REBAR.

2- NO. 4 REBARS ON EACH SIDE OF CASTING 10' IN LENGTH.

Labels in diagram: 1/2" EXPANSION JOINT, GUTTER, 3.0', 1.2", CASTING, 1/2" EXPANSION JOINT, TOP OF CURB, SECTION.

STEPS LOCATION

BACK OF CURB LINE
24" X 36" OPENING

— REINFORCED SLAB
FOR STREET LOADING

CL

NEENAH CASTING
R-3246V OR EQUAL
UNLESS OTHERWISE NOTED

2-6 2" THICK HDPE ADJUSTING RINGS
WITH EPDM EXTERNAL SEAL

— RUBBER GASKET
TYPICAL ALL JOINTS

PRECAST SECTION

CONCRETE BLOCK MASONRY
TO BE USED ONLY WHEN
NECESSARY. PLASTER OUTSIDE
STRIKE INSIDE CLEAN.

GROUT INVERT

TO INVERT $\neg$

ELEVATION

494

6" PREC



P

City of

Fridley

146

	MANHOLE TYPE							
	B-1	C-1	D-1	E-1	F-1	G-1	H-1	I-1
P	48"	60"	66"	72"	78"	84"	96"	120"
K	14"	13"	13"	13"	13"	13"	13.5"	15"
T	6"	8"	8"	8"	8"	9"	9"	12"
W	58"	72"	79"	86"	93"	100"	113"	142"
A	3"	11"	15"	18"	21"	25"	31"	43"

	MANHOLE TYPE							
	B	C	D	E	F	G	H	I
P	48"	60"	66"	72"	78"	84"	96"	120"
K	6"	7"	8"	8"	9"	9"	9"	12"
T	6"	8"	8"	8"	8"	9"	9"	12"
W	58"	72"	78"	86"	93"	100"	113"	142"
A	9.5"	15.5"	19.5"	21.5"	24.5"	27.5"	34.5"	46"

STEPS LOCATION

— 27" DIAMETER OPENING

— REINFORCED SLAB FOR STREET LOADING

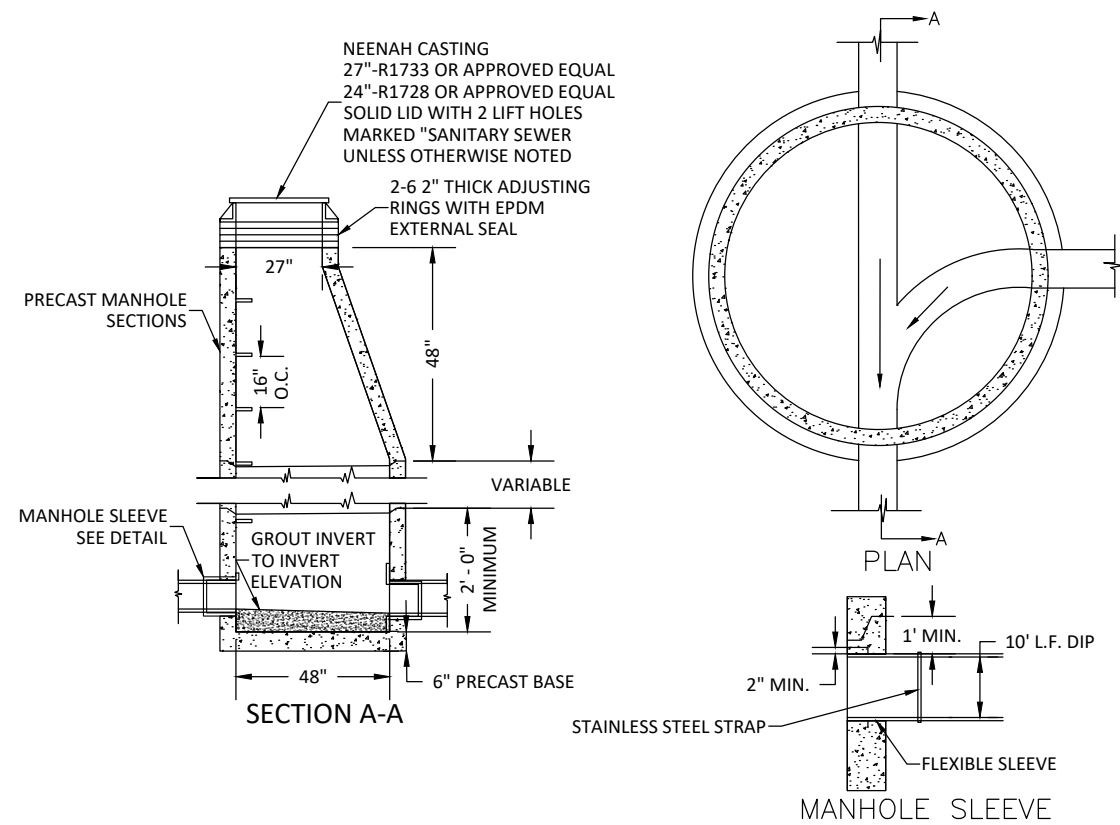
NEENAH CASTING
27"-R1733 OR APPROVED EQUAL
24"-R1728 OR APPROVED EQUAL
SOLID LID WITH 2 LIFT HOLES MARKED
"SANITARY SEWER" UNLESS OTHERWISE NOTED
2-6 2" THICK HDPE ADJUSTING RINGS
WITH EPDM EXTERNAL SEAL

RUBBER GASKET
TYPICAL ALL JOINTS

R.C.P. BARREL
PRECAST SECTION

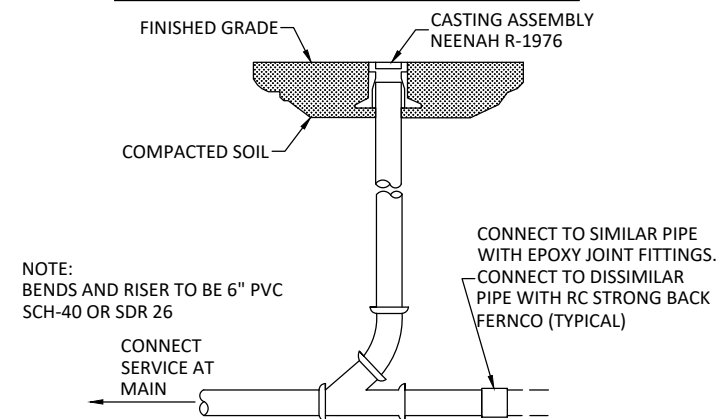
CONCRETE BLOCK MASONRY
TO BE USED ONLY WHEN
NECESSARY. PLASTER OUTSIDE
STRIKE INSIDE CLEAN.

STANDARD 4' DIA. SANITARY SEWER MANHOLE

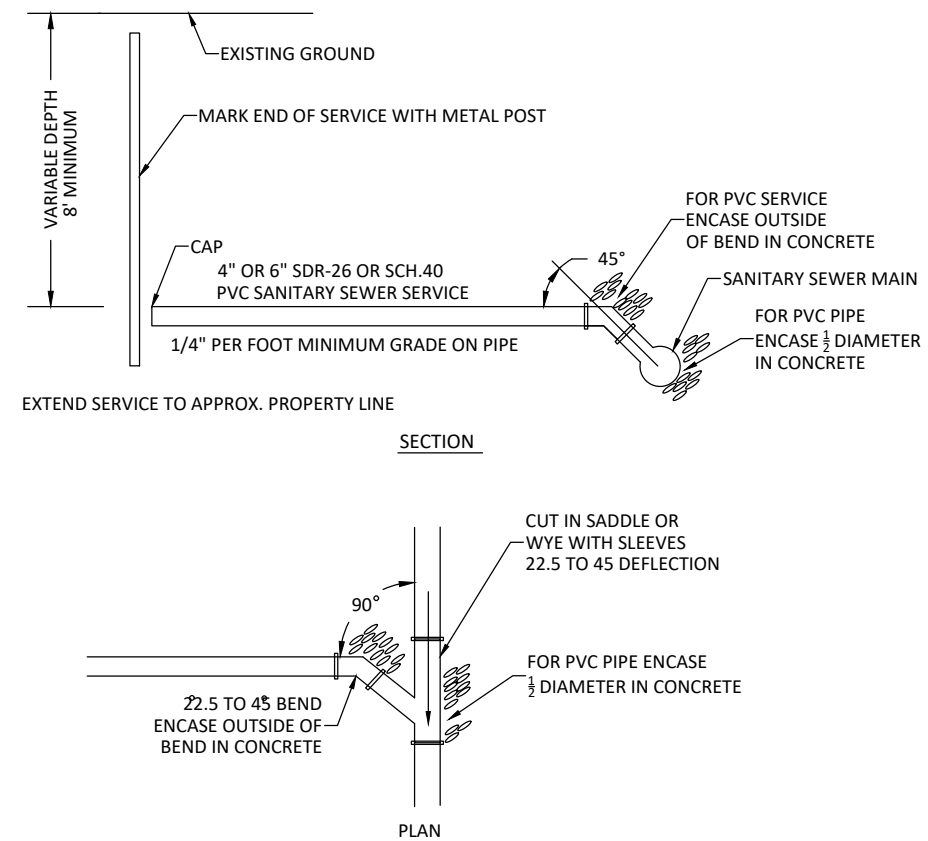


- NO WOOD SHALL BE USED FOR ADJUSTING CASTING
- ADJUSTING RINGS - SPECIFIED HDPE RINGS OR EQUAL UNLESS CONCRETE RINGS ARE NOTED ON THE PLANS OR DIRECTED BY THE CITY ENGINEER
- A 12" OR 16" BARREL SECTION SHALL BE INSTALLED UNDER THE CONE WHENEVER POSSIBLE
- STEPS SHALL BE CAST IRON, ALUMINUM, OR STEEL REINFORCED PLASTIC, LOCATED OVER DOWNSTREAM PIPE
- LIFT HOLES NOT PERMITTED IN MANHOLE SECTIONS
- FLEXIBLE EXTERNAL RUBBER SEAL REQUIRED ON JOINTS
- PIPE CONNECTIONS TO MANHOLE SHALL BE MADE WATER TIGHT BY CAST INPLACE RUBBER SLEEVE & CEMENT MORTAR. INSIDE SURFACE SHALL BE FINISHED SMOOTH
- INSTALL 10 L.F. DIP AT MANHOLE. TRANSITION TO PVC PIPE

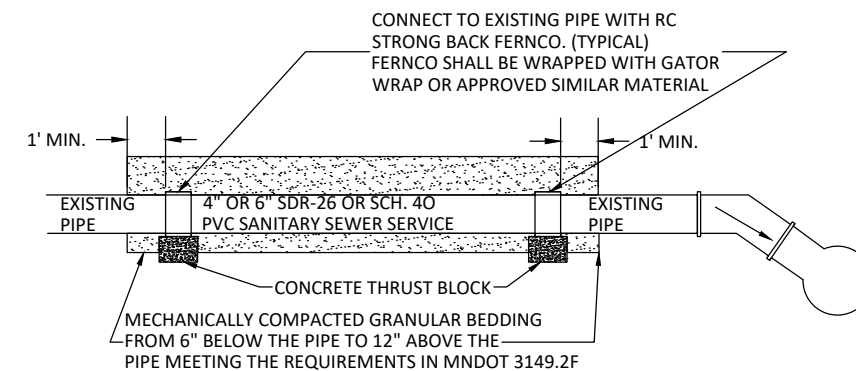
SANITARY SEWER SERVICE CLEANOUT



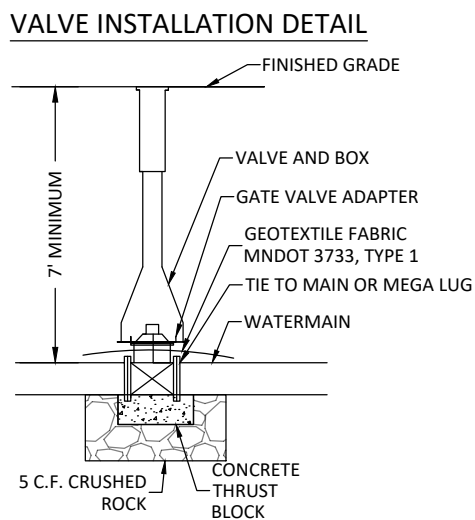
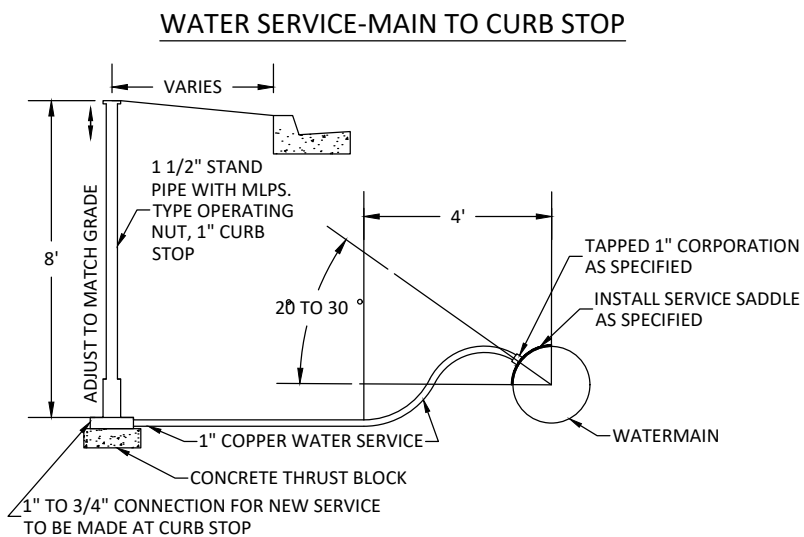
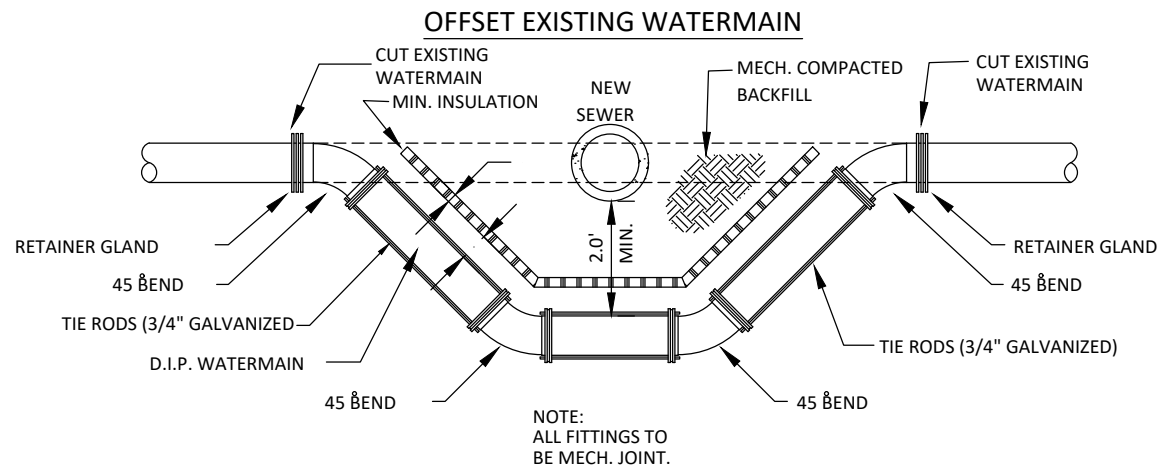
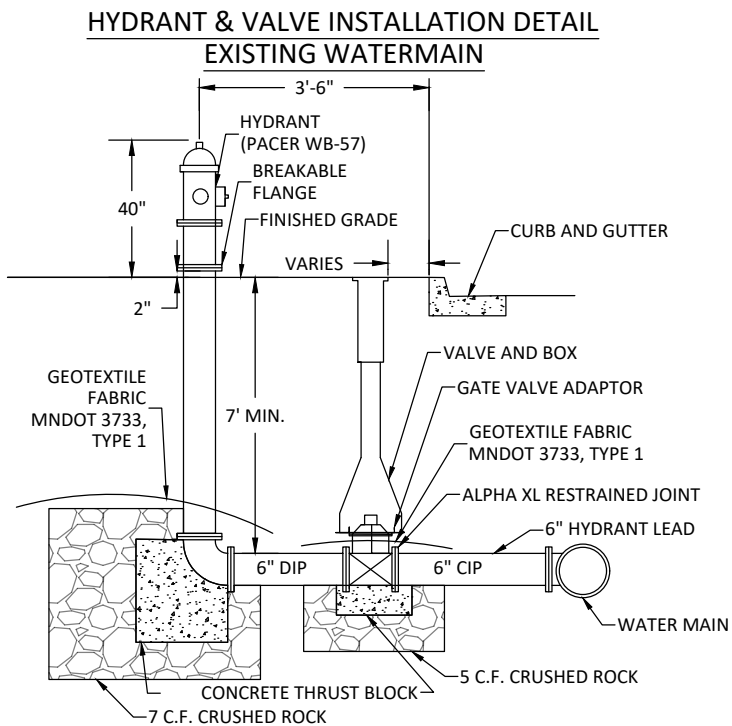
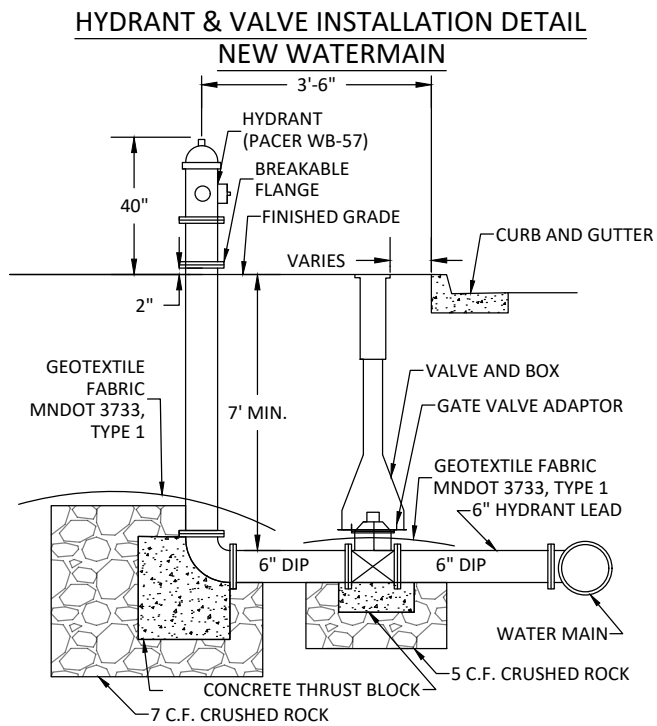
SANITARY SEWER SERVICE



SANITARY SEWER SERVICE LATERAL REPAIR



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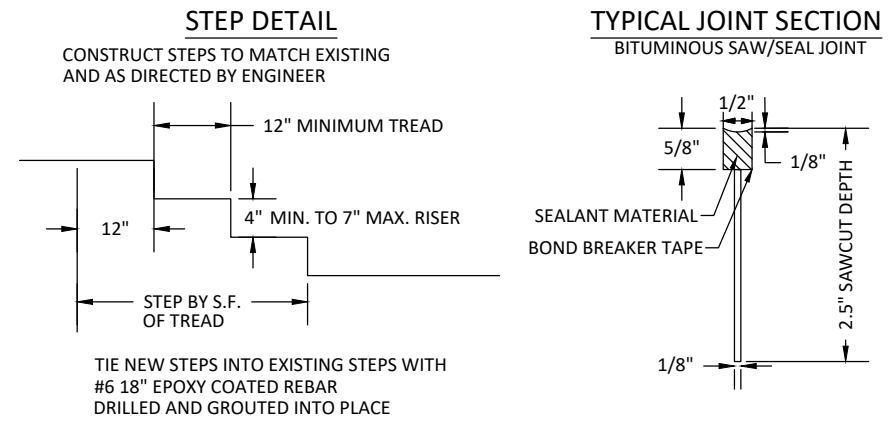
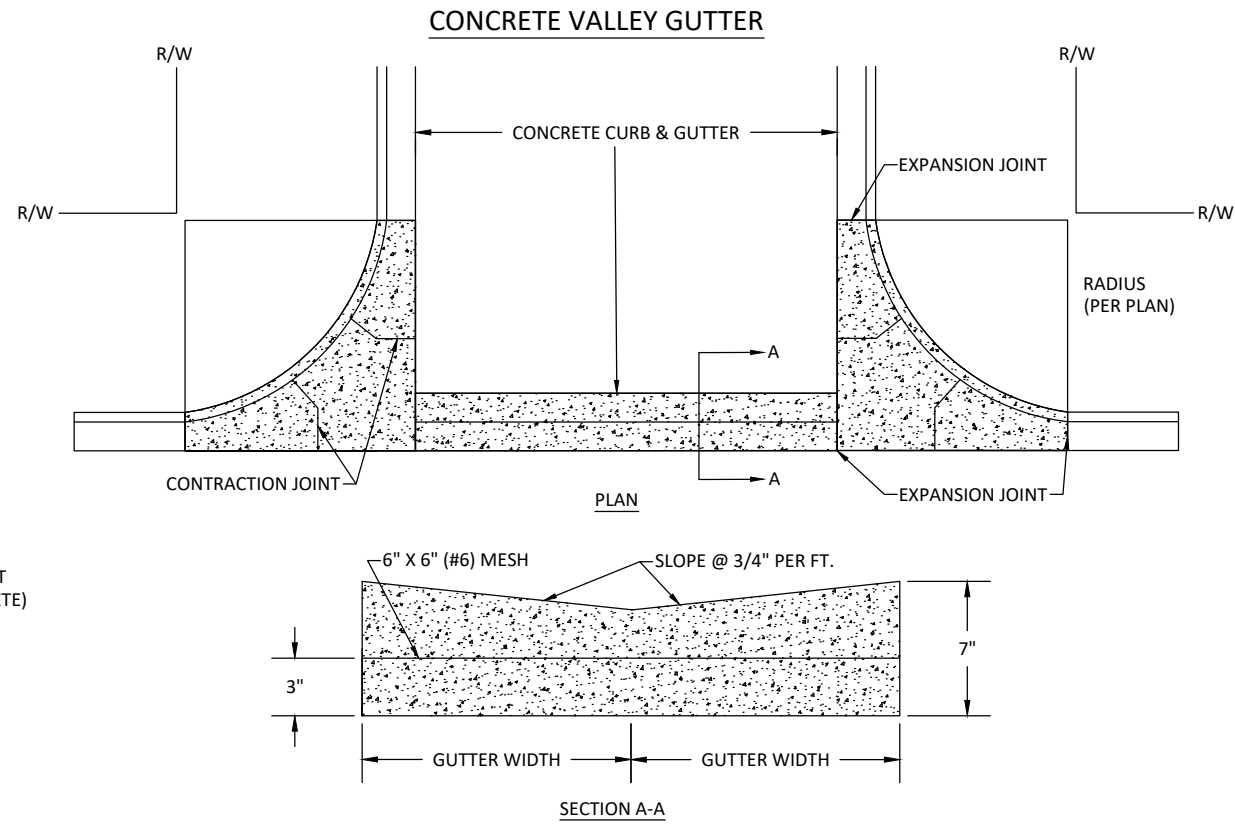
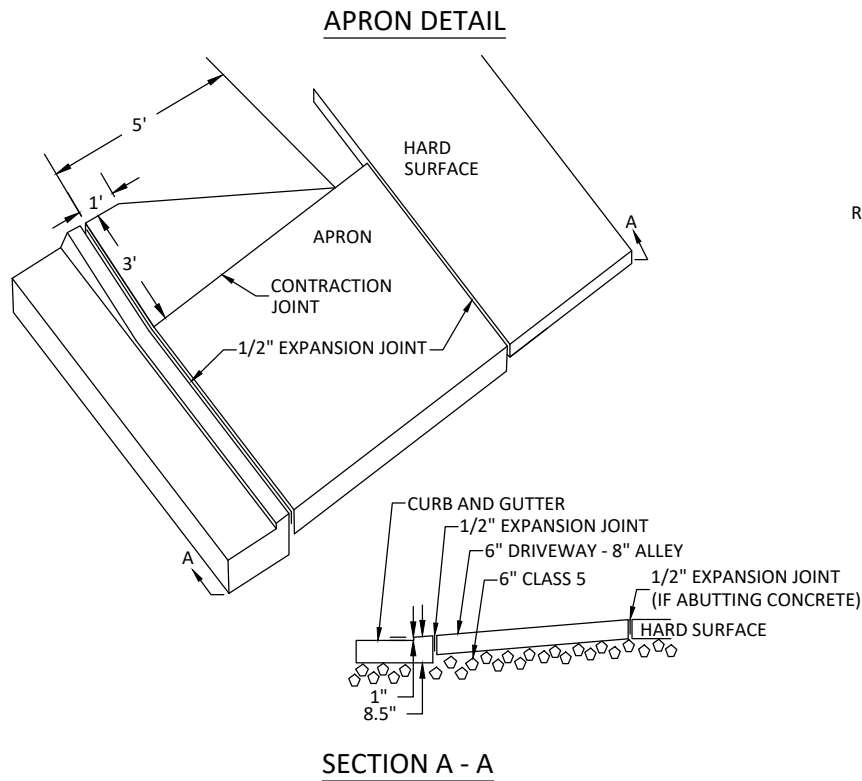
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

STANDARD DETAILS - COLUMBIA HEIGHTS

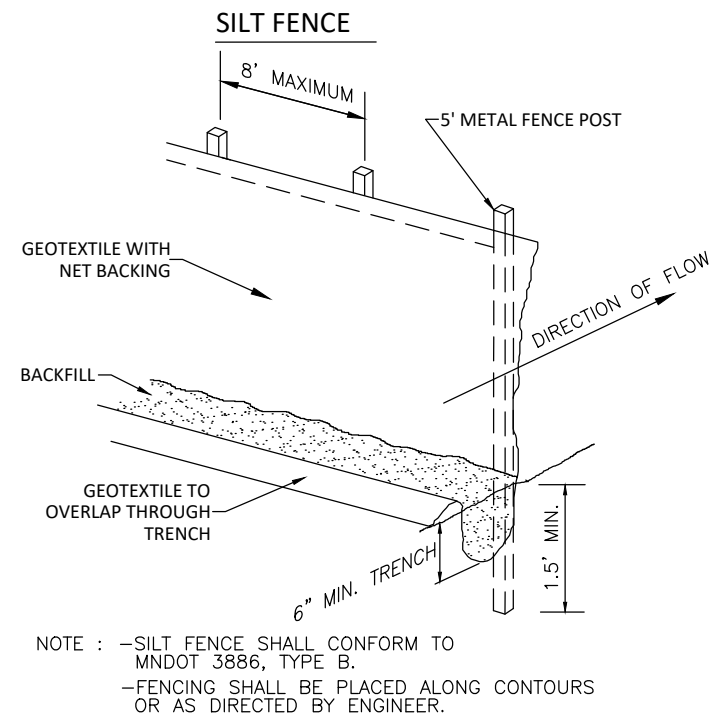
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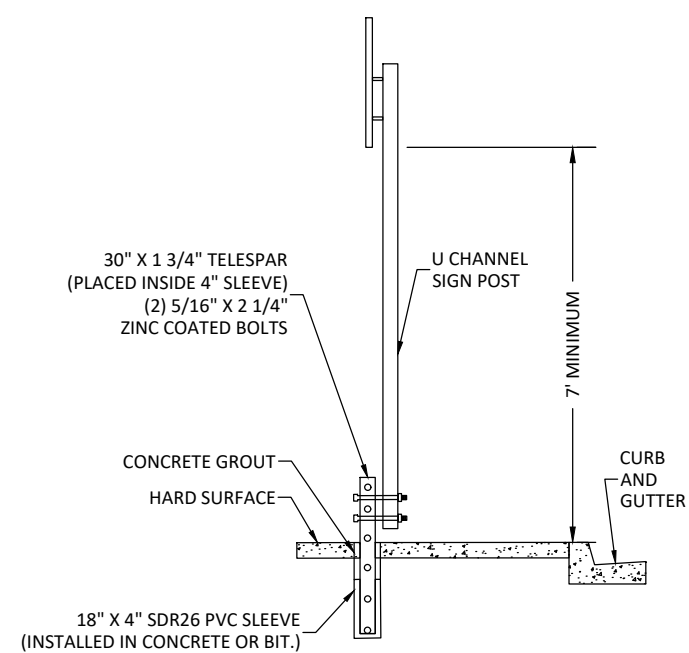


AGGREGATE BASE DEPTH SPECIFICATION
UNLESS OTHERWISE SPECIFIED

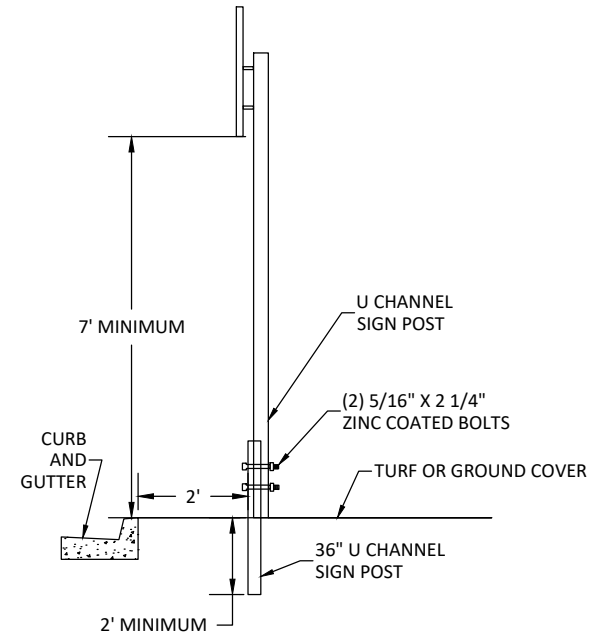
CONCRETE WALK	-	4" CLASS 5
CONCRETE STEP	-	4" CLASS 5
CONCRETE DRIVE	-	6" CLASS 5
CONCRETE ALLEY	-	6" CLASS 5
CURB & GUTTER	-	9" CLASS 5
CONCRETE X-GUTTER	-	9" CLASS 5
BITUMINOUS TRAIL	-	6" CLASS 5
BITUMINOUS DRIVE	-	6" CLASS 5
BITUMINOUS ALLEY	-	6" CLASS 5
BITUMINOUS X DRAIN	-	6" CLASS 5



SIGN POST INSTALLATION - HARD SURFACE



**SIGN POST INSTALLATION
TURF OR GROUND COVER**



MnDOT STANDARD PLATES	
THESE STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY	
PLATE NO.	DESCRIPTION
4005 M	MANHOLE TYPE B CONE
4010 H	CONCRETE SHORT CONE AND ADJUSTING RING
4022 A	MANHOLE OR CATCH BASIN COVER - 2'X3' OPENING
7020 K	CONCRETE CURB, DESIGN V
7038 A	DETECTABLE WARNING SURFACE
7100 H	CONCRETE CURB AND GUTTER
7102 K	CONCRETE CURB AND GUTTER
8000 K	CHANNELIZERS - TYPE A, B AND C (3 SHEETS)



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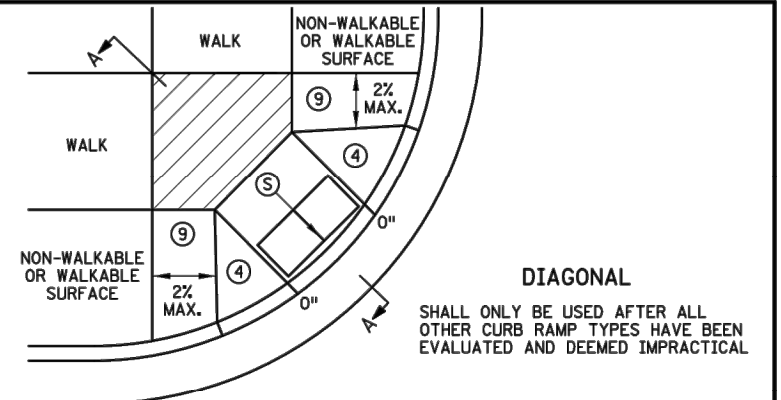
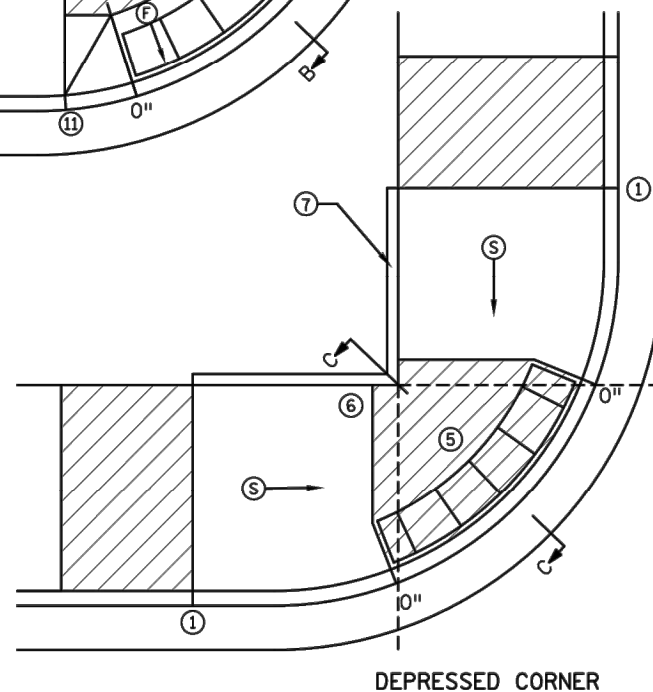
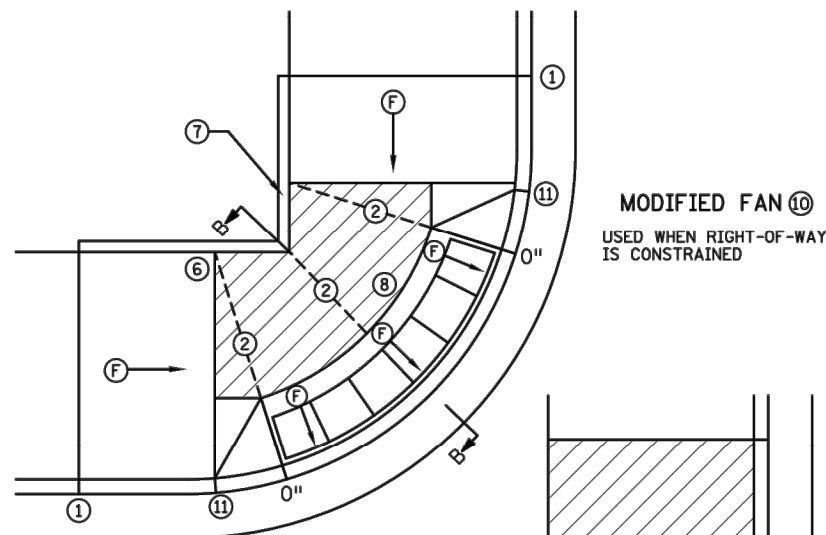
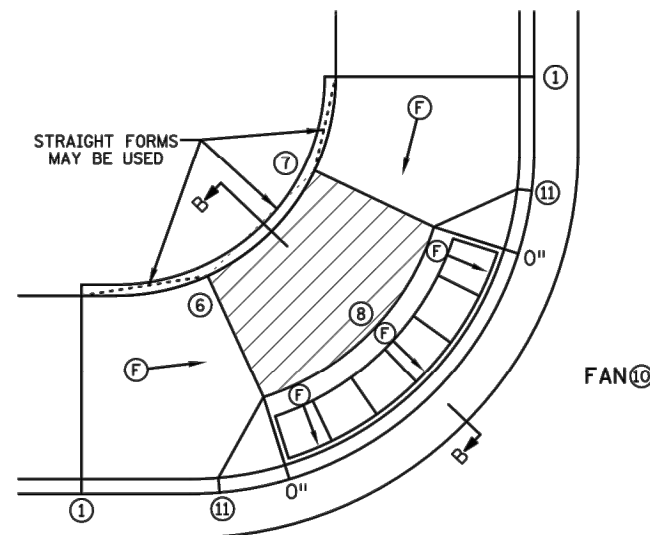
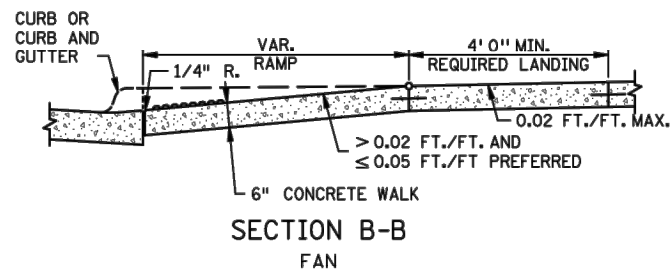
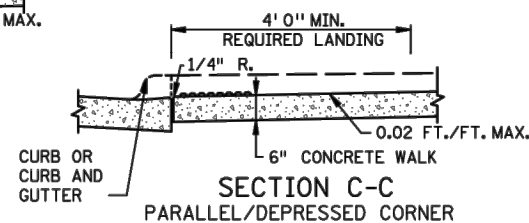
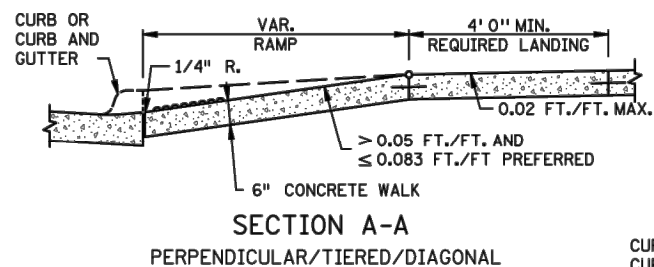
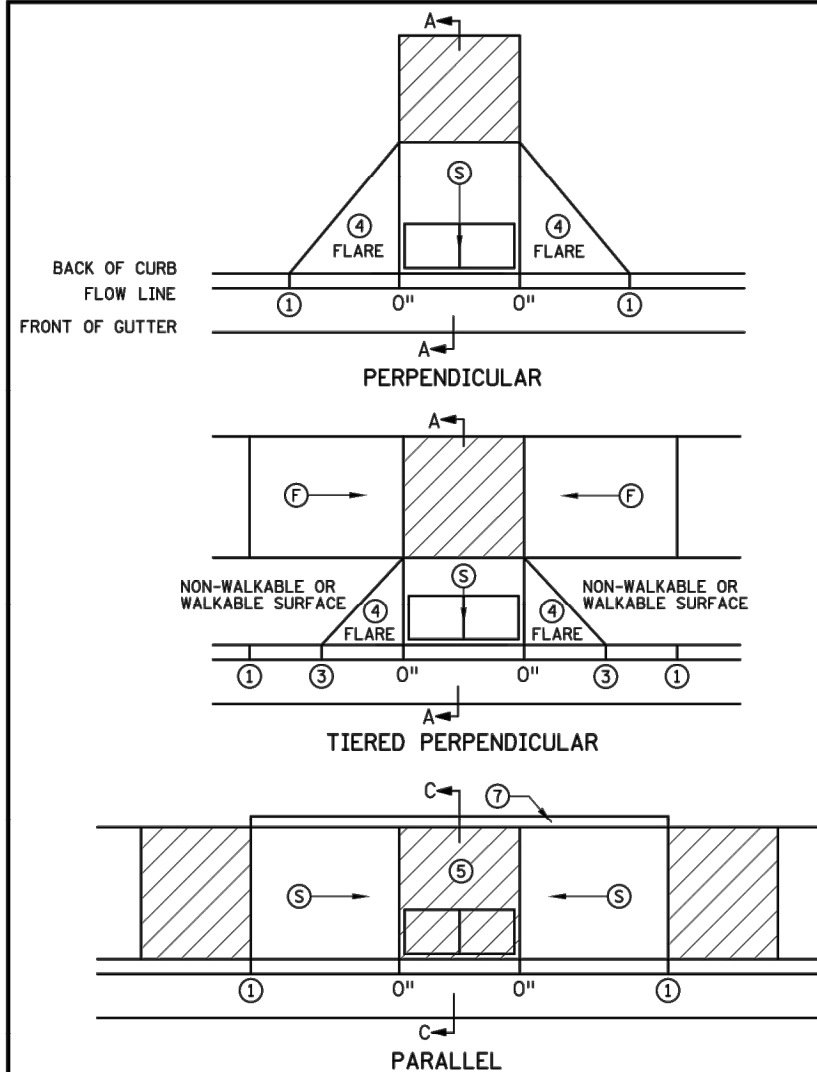
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NOTES:

- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.
- INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.
- SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.
- CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.
- ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH, EXCEPT AS STATED IN 6 BELOW.
- TO ENSURE 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 SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.
- WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE. MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.
- 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 THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.
- WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE 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.
 - 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 LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
 - 8 A 7' MIN TOP RADIUS GRADE BREAK IS 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.
 - 11 INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

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

REVISION:
APPROVED: 11-04-2021
<i>Jeffrey Perkins</i>
JEFFREY PERKINS
OPERATIONS DIVISION

m MINNESOTA DEPARTMENT OF TRANSPORTATION	STANDARD PLAN 5-297.250	1 OF 6
	APPROVED: 11-04-2021 REVISED:	
	STATE PROJ. NO.	(TH) SHEET NO. OF SHEETS

PEDESTRIAN CURB RAMP DETAILS



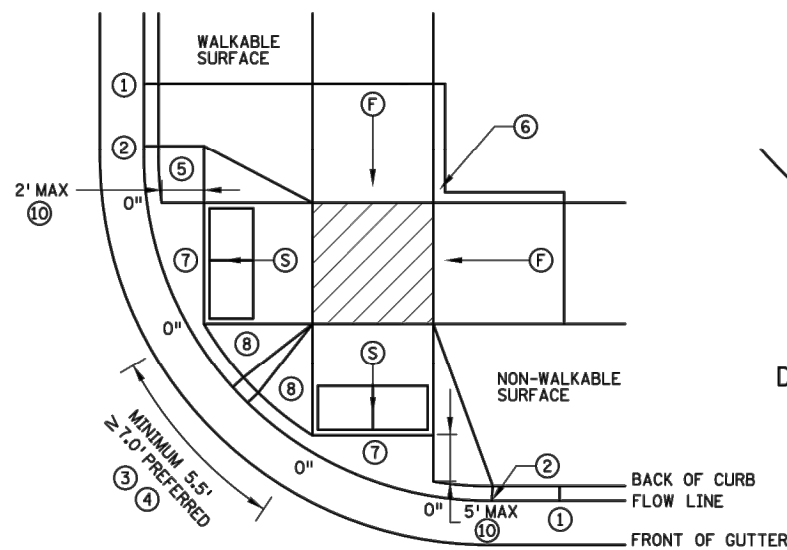
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CLIENT PROJ. NO.	ST2023-21			

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

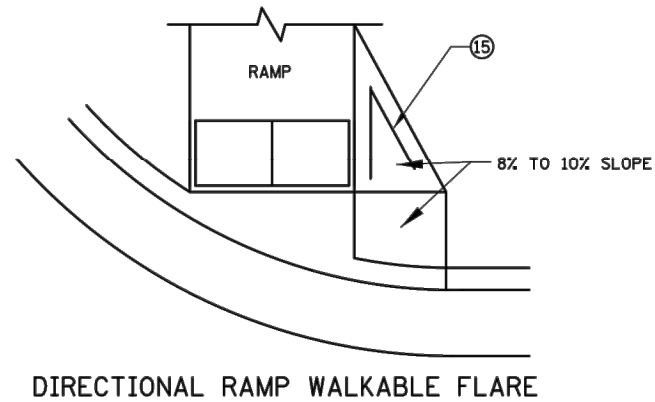
S.A.P. 127-319-008 / S.A.P. 113-118-005

PEDESTRIAN CURB RAMP DETAILS

SHEET
55
OF
82

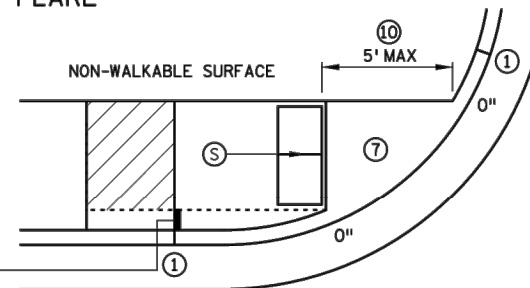


COMBINED DIRECTIONAL

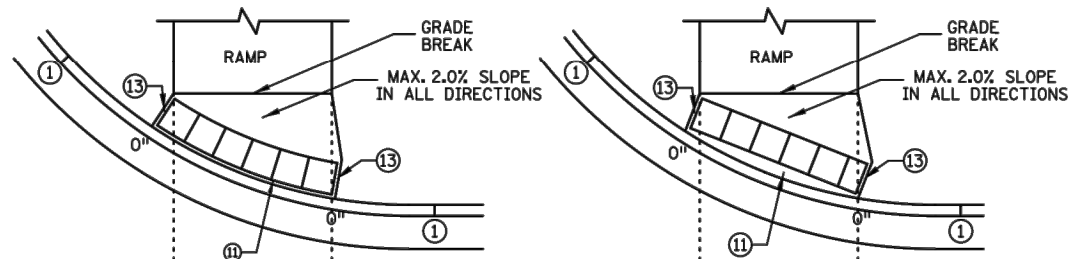


DIRECTIONAL RAMP WALKABLE FLARE

IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.

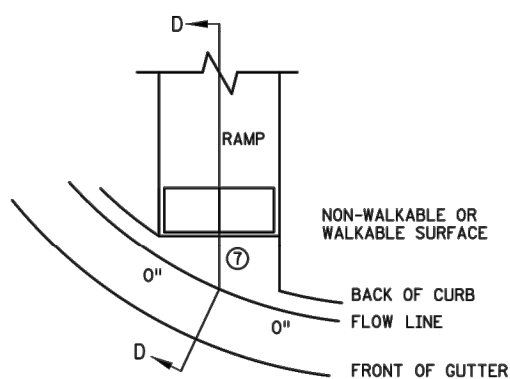


STANDARD ONE-WAY DIRECTIONAL ⑩

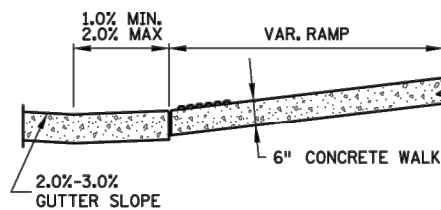


DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

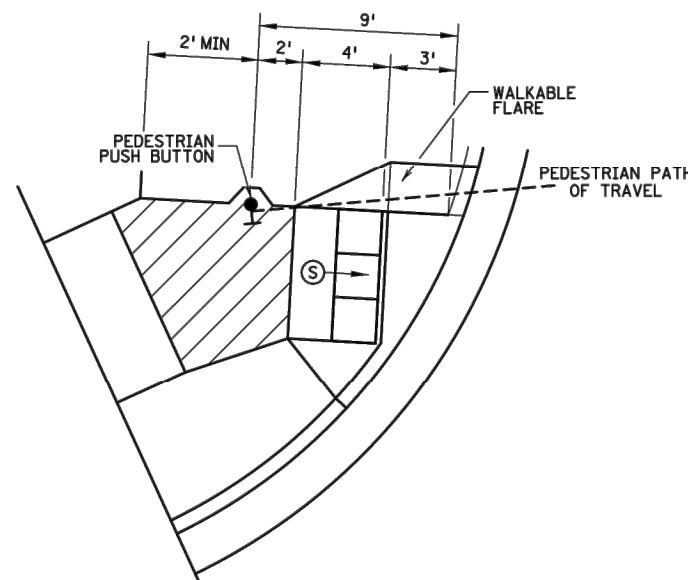
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



CURB FOR DIRECTIONAL RAMPS ⑭



SECTION D-D



SEMI-DIRECTIONAL RAMP ③④⑨

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)

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 THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE 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 SHALL 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.

⑮ PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

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 PAR.

X" CURB HEIGHT

REVISION:

APPROVED: 11-04-2021

Jeff J. Perkins
JEFFREY PERKINS
OPERATIONS DIVISION



STANDARD PLAN 5-297.250

2 OF 6

THOMAS TYRIBICKI
STATE DESIGN ENGINEER

APPROVED: 11-04-2021

REVISED:

STATE PROJ. NO.

PEDESTRIAN CURB RAMP DETAILS

(T.H.) SHEET NO. OF SHEETS



7071 University Avenue NE
Fridley, MN 55432

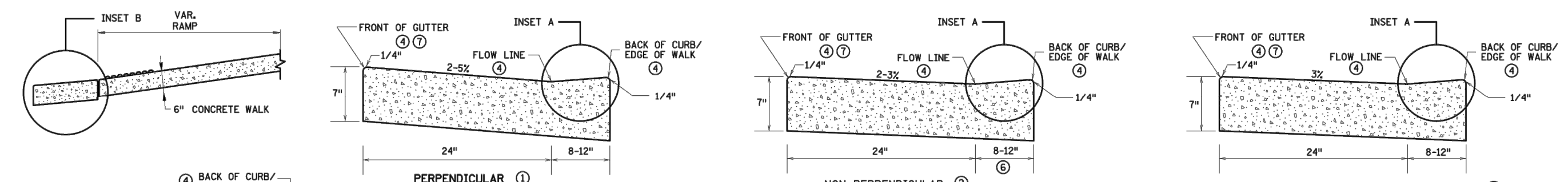
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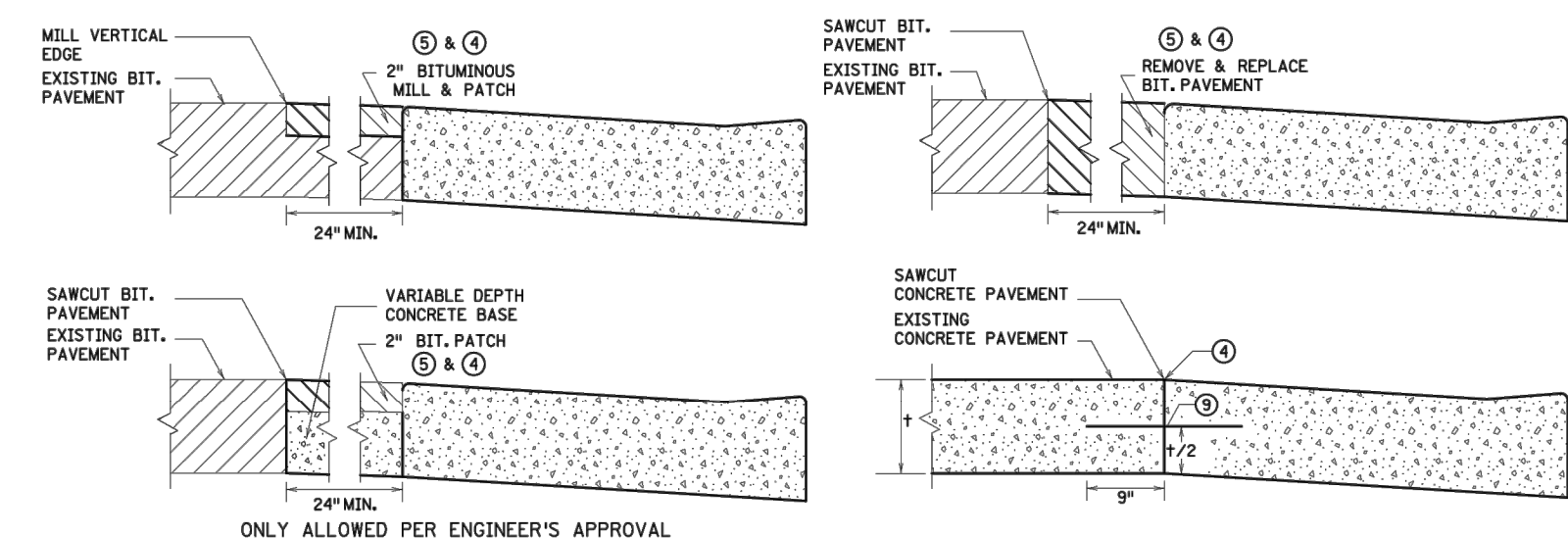
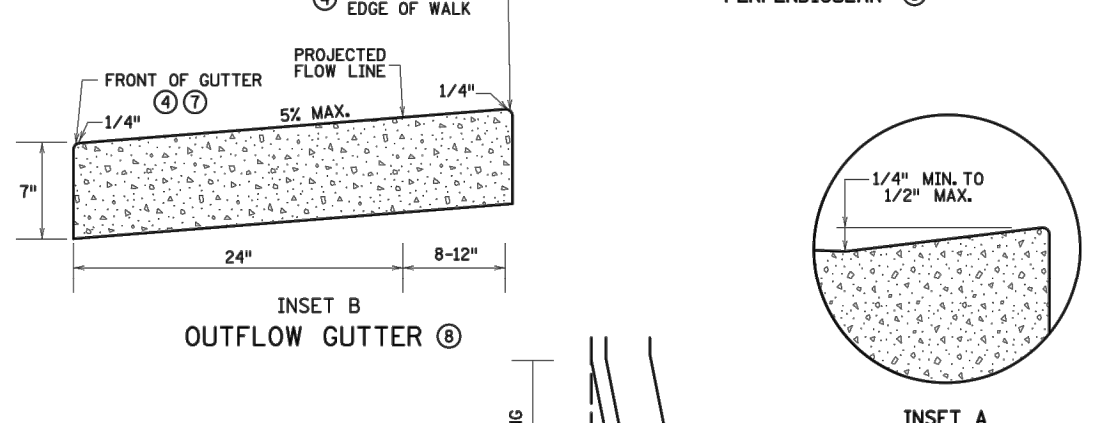
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PEDESTRIAN CURB RAMP DETAILS

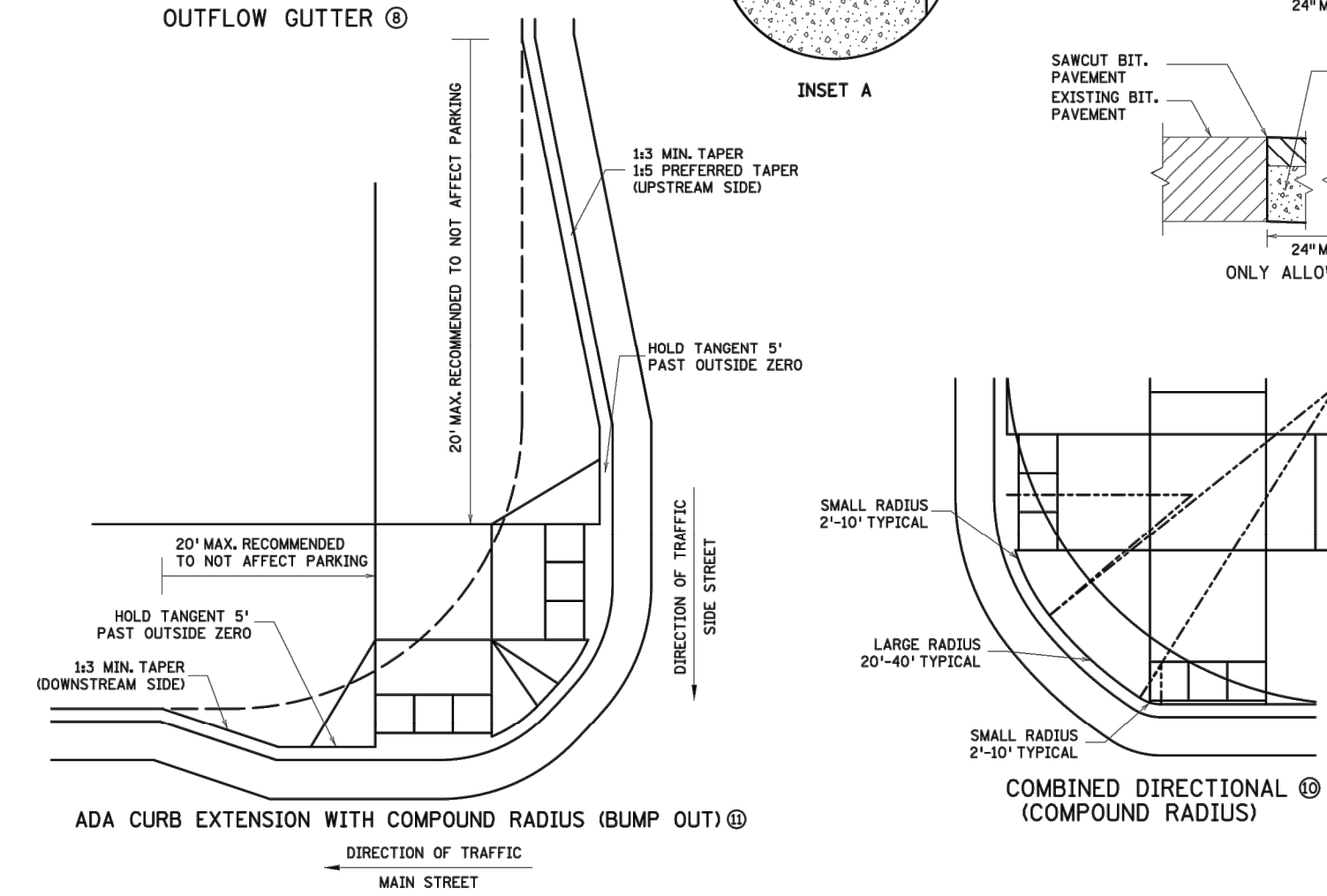
SHEET
56
OF
82



PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



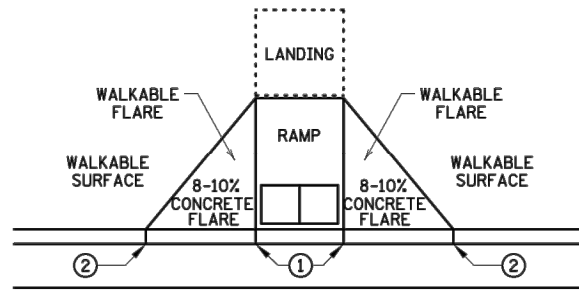
PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER
FOR USE ON CURB RAMP RETROFITS



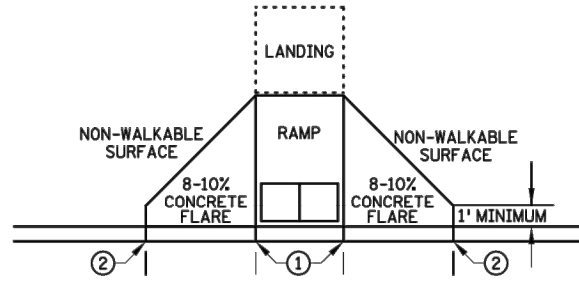
COMBINED DIRECTIONAL (COMPOUND RADIUS)

- NOTES:**
- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM. NO PONDING SHALL BE PRESENT IN THE PAR.
 - ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.
 - 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 RAMP.
 - FOR USE AT CURB RAMP CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
 - BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMP.
 - THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
 - 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.
 - VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
 - TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.
 - SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
 - 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.
 - 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.
 - 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.

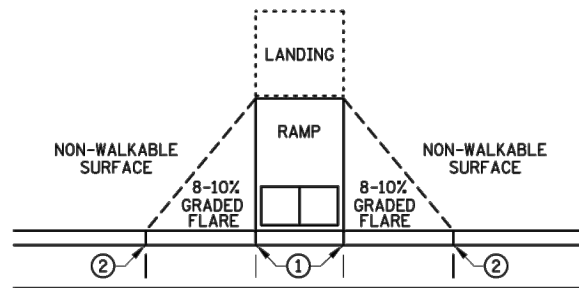
REVISION:	STANDARD PLAN 5-297.250	3 OF 6	PEDESTRIAN CURB RAMP DETAILS	
APPROVED: 11-04-2021 <i>Jeff J. Perkins</i> JEFFREY PERKINS OPERATIONS DIVISION	APPROVED: 11-04-2021 <i>Tom S.</i> THOMAS STYRBICKI STATE DESIGN ENGINEER	STATE PROJ. NO.	(TH)	SHEET NO. OF SHEETS



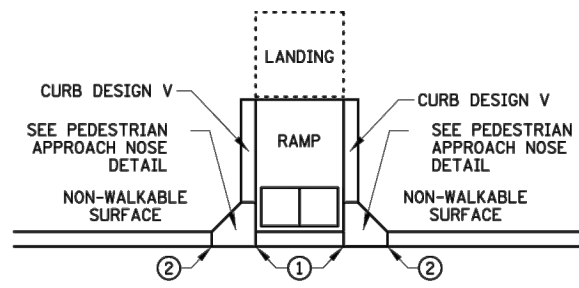
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

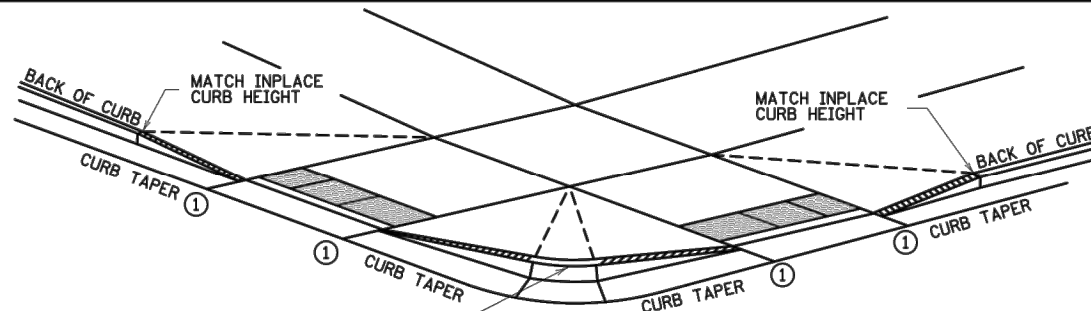


GRADED FLARES



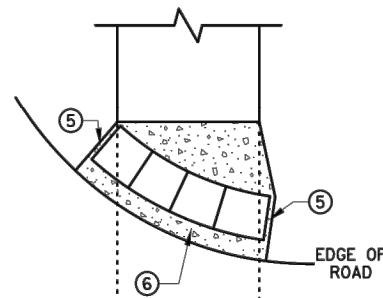
RETURNED CURB ④

TYPICAL SIDE TREATMENT OPTIONS ③ ⑩

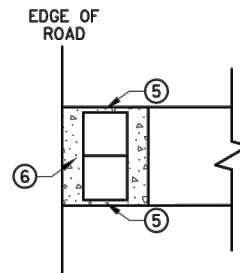


3" MINIMUM CURB HEIGHT, 4" PREFERRED
(MEASURED AT FRONT FACE OF CURB)
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑦
CURB AND GUTTER

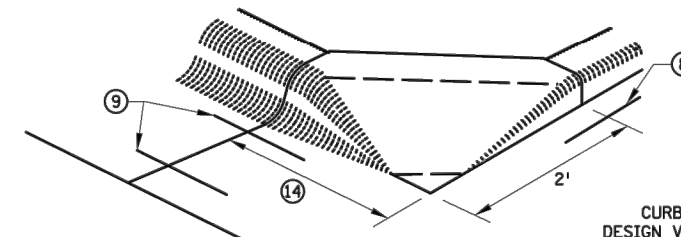


RADIAL DETECTABLE WARNING

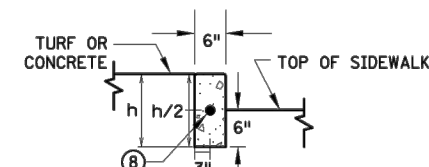


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

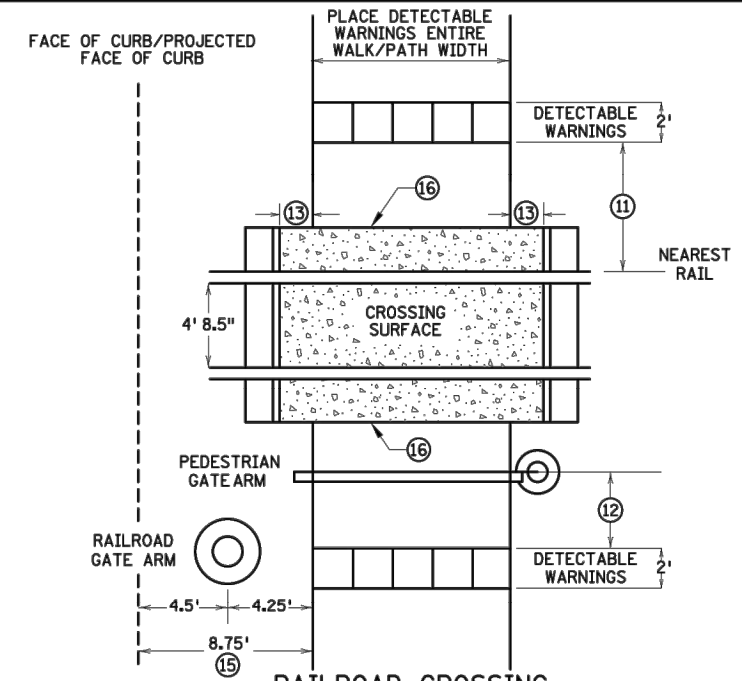


SECTION A-A



SECTION B-B

PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



NOTES:

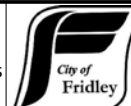
- INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.
- SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS 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 RAMP FROM THE BACK OF CURB.
- ① 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.
- ② FULL CURB HEIGHT.
- ③ 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.
- ④ TYPICALLY USED FOR MEDIANS AND ISLANDS.
- ⑤ 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.
- ⑥ 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.
- ⑦ 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.
- ⑧ 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.
- ⑨ 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.
- ⑩ 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. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.
- ⑪ 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.
- ⑫ 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 ⑪.
- ⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
- ⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
- ⑮ 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.
- ⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

REVISION:
APPROVED: 11-04-2021
<i>Jeff J. Perkins</i>
JEFFREY PERKINS
OPERATIONS DIVISION



STANDARD PLAN 5-297.250	4 OF 6
APPROVED: 11-04-2021	REVISED:
STATE PROJ. NO.	(TH) SHEET NO. OF SHEETS

PEDESTRIAN CURB RAMP DETAILS



7071 University Avenue NE
Fridley, MN 55432

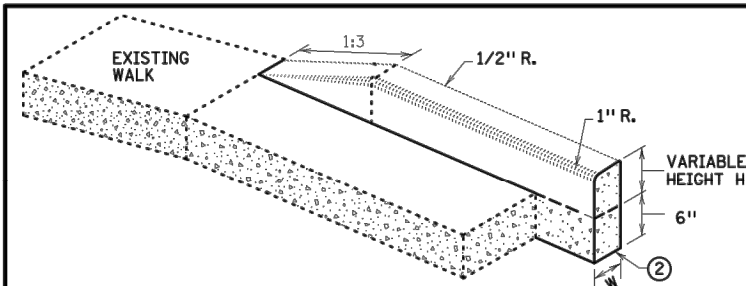
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TYL/JBQ			
CHECKED	NO.	ISSUED FOR	DATE
BJB			
CLIENT PROJ. NO.	NO.	ISSUED FOR	DATE
ST2023-21			

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

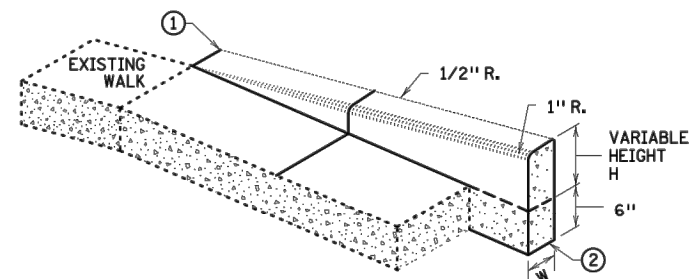
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PEDESTRIAN CURB RAMP DETAILS

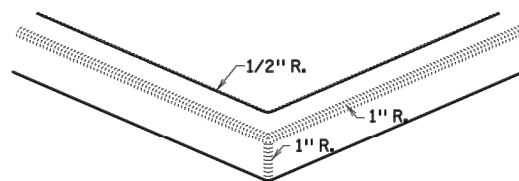
SHEET
58
OF
82



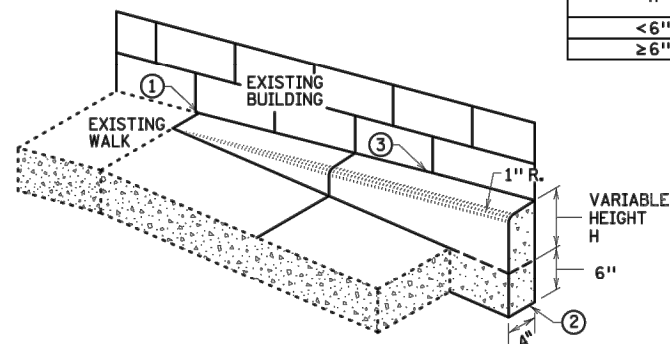
V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS

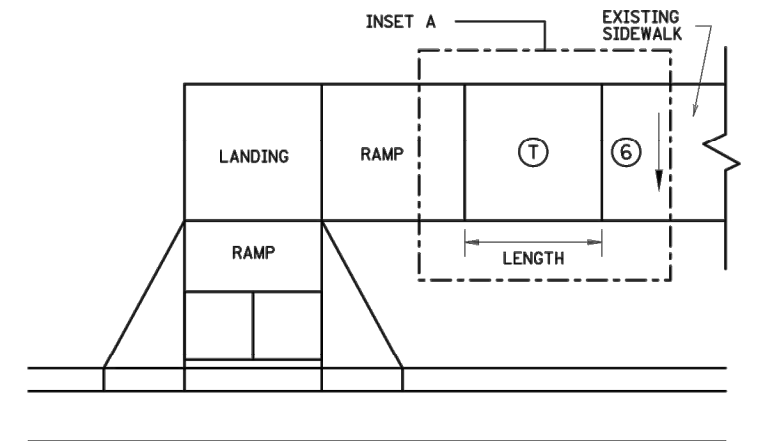


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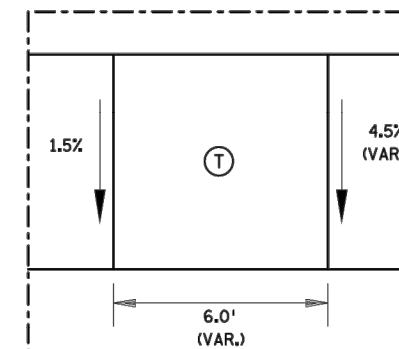


V CURB ADJACENT TO BUILDING
OR BARRIER

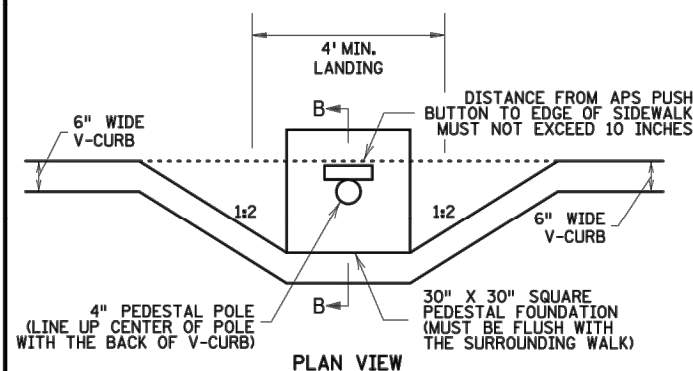
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



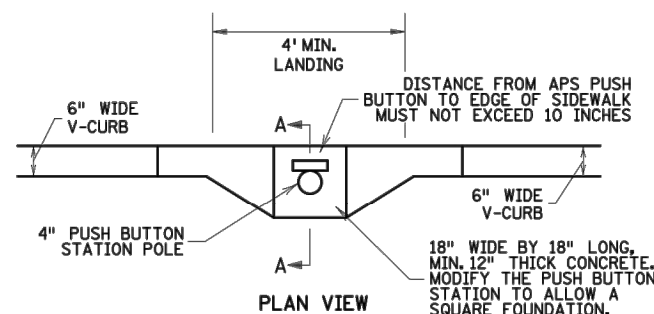
TRANSITION PANEL ④ ⑤



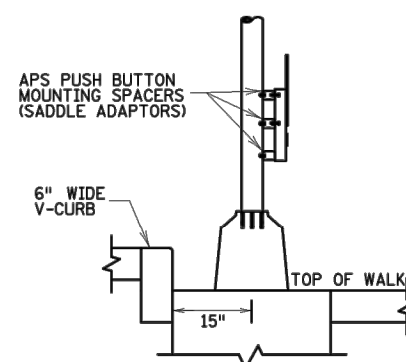
INSET A



PLAN VIEW

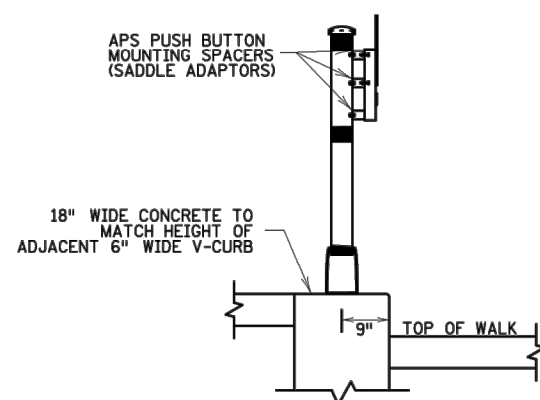


PLAN VIEW



SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION A-A

PUSH BUTTON STATION (V-CURB)

NOTES:

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

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

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

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

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

① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.

② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

③ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM 1/2" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.

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%.
- ⑤ 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.
- ⑤ 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.

REVISION:

APPROVED: 11-04-2021

Jeffrey Perkins
OPERATIONS DIVISION



STANDARD PLAN 5-297.250

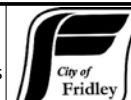
5 OF 6

APPROVED: 11-04-2021
REVISOR: 11-04-2021
THOMAS TYRIBICKI
STATE DESIGN ENGINEER

STATE PROJ. NO.

PEDESTRIAN CURB RAMP DETAILS

(TH) SHEET NO. OF SHEETS



7071 University Avenue NE
Fridley, MN 55432

DESIGNED	NO.	ISSUED FOR	DATE
TYL			
DRAWN	NO.	ISSUED FOR	DATE
TYL/JBQ			
CHECKED	NO.	ISSUED FOR	DATE
BJB			
CLIENT PROJ. NO.	NO.	ISSUED FOR	DATE
ST2023-21			

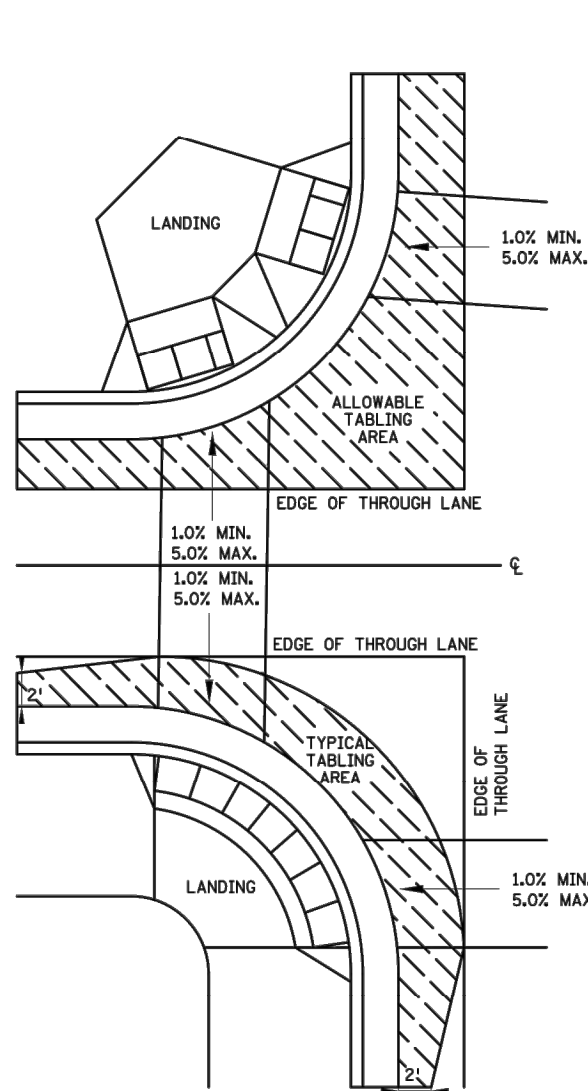
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

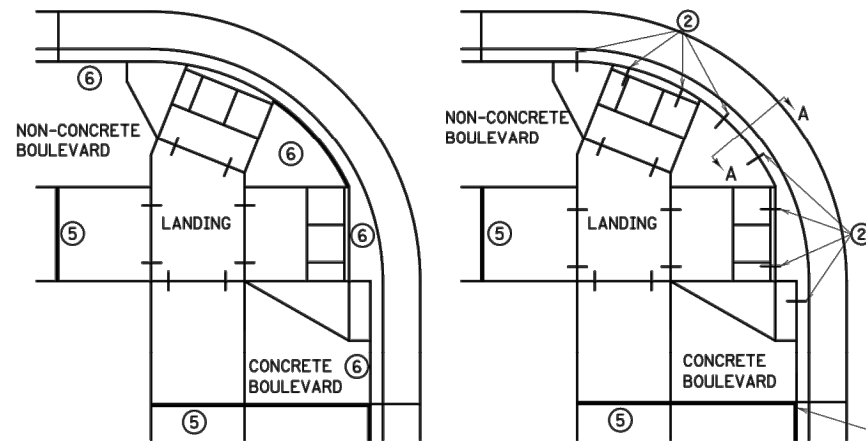
PEDESTRIAN CURB RAMP DETAILS

SHEET
59
OF
82

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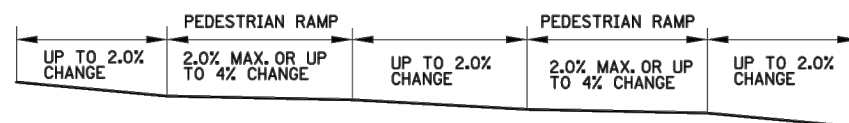


CURB LINE AND ROAD CROSSING ADJUSTMENTS

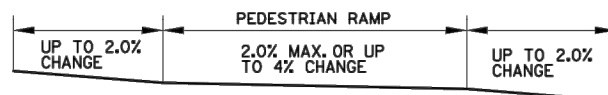


EXPANSION MATERIAL PLACEMENT
FOR CONCRETE ROADWAYS

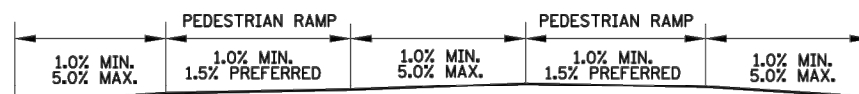
CURB LINE REINFORCEMENT ④
PLACEMENT ON BITUMINOUS ROADWAYS



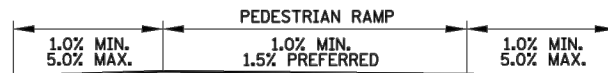
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



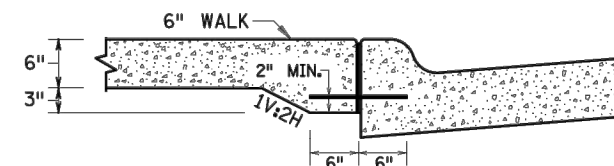
FLOW LINE PROFILE "TABLE" - FAN



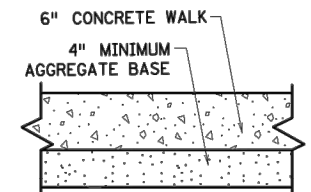
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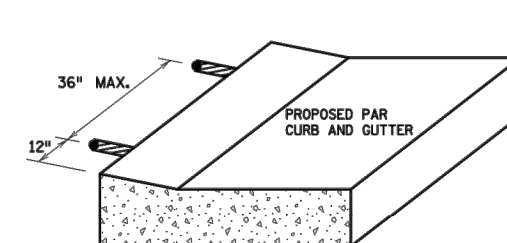
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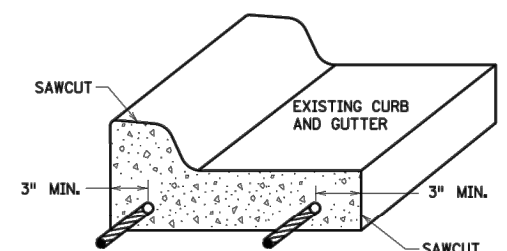
SECTION VIEW A-A
THICKENED SECTION
THROUGH CURB RAMP FLARES



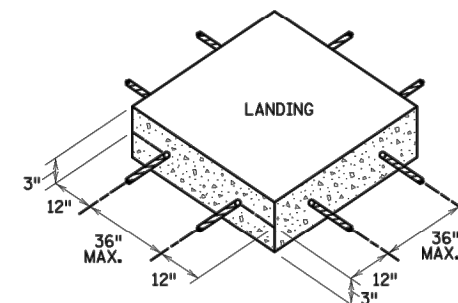
TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER



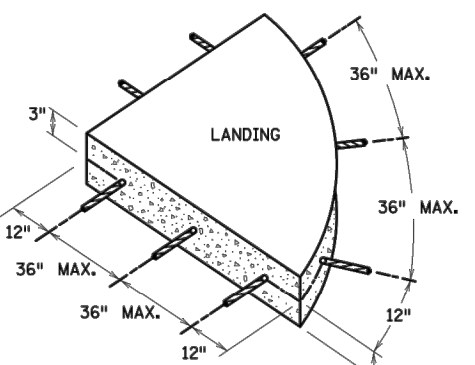
CURB RAMP REINFORCEMENT DETAILS ② ④



CURB AND GUTTER
REINFORCEMENT ③



SEPARATE LANDING
POUR REINFORCEMENT ① ②



GENERAL NOTES:

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

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

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

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

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

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

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

NOTES:

- ① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.
- ② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.
- ③ DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.
- ④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.
- ⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.
- ⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

REVISION:

APPROVED: 11-04-2021

Jeff J. Perkins
JEFFREY PERKINS
OPERATIONS DIVISION



STANDARD PLAN 5-297.250

6 OF 6

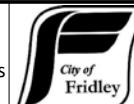
APPROVED: 11-04-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STATE PROJ. NO.

PEDESTRIAN CURB RAMP DETAILS

(TH) SHEET NO. OF SHEETS



7071 University Avenue NE
Fridley, MN 55432

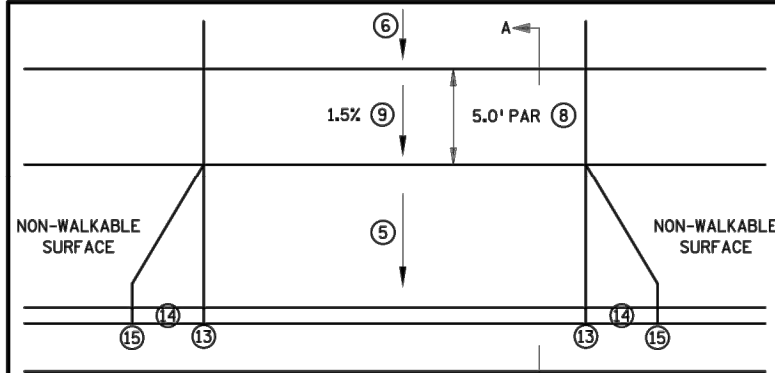
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

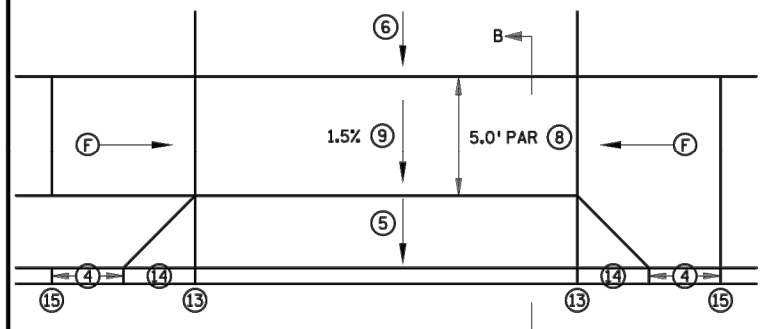
S.A.P. 127-319-008 / S.A.P. 113-118-005

PEDESTRIAN CURB RAMP DETAILS

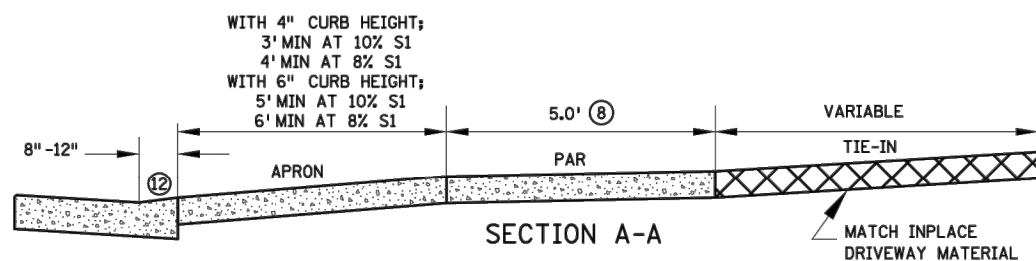
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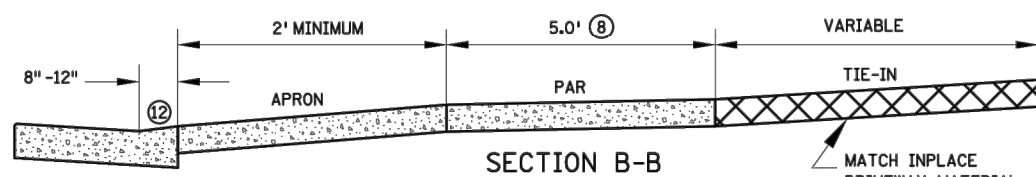
PERPENDICULAR DRIVEWAY ①



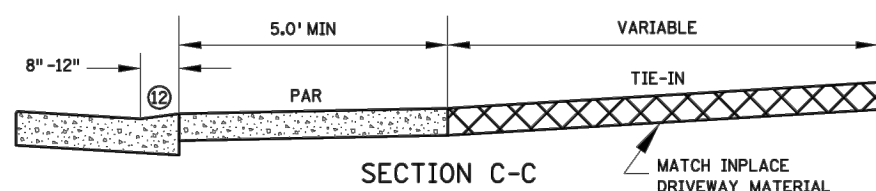
TIERED PERPENDICULAR DRIVEWAY ②



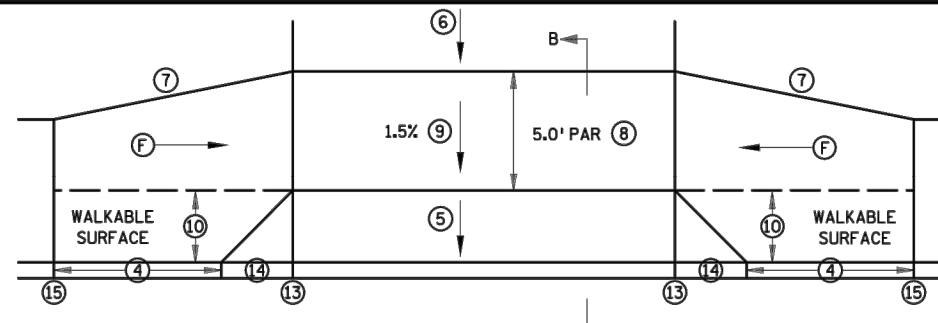
SECTION A-A



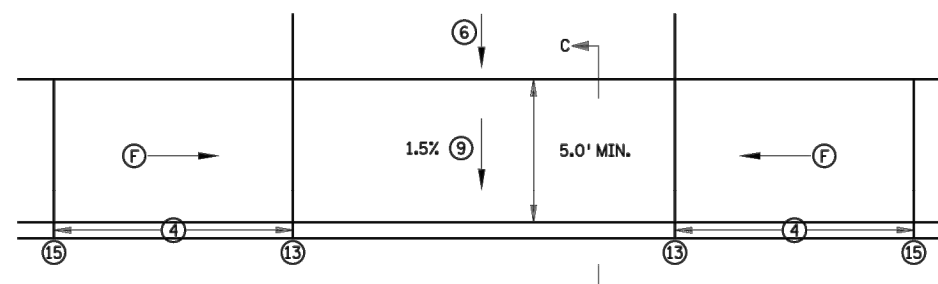
SECTION B-B



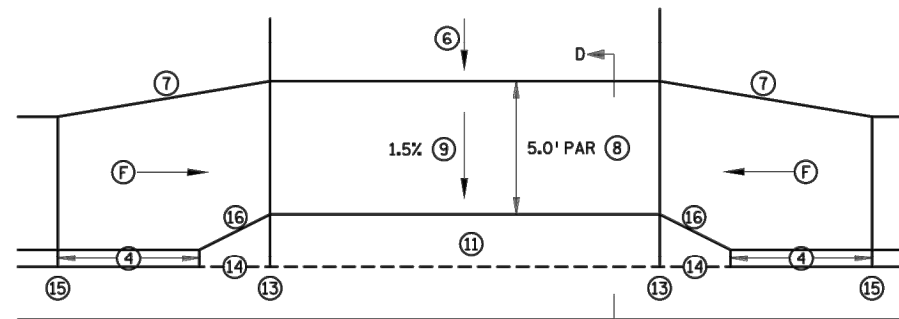
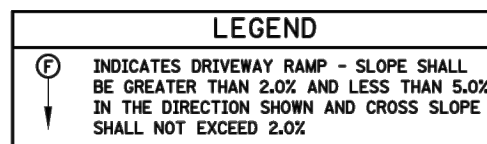
SECTION C-C



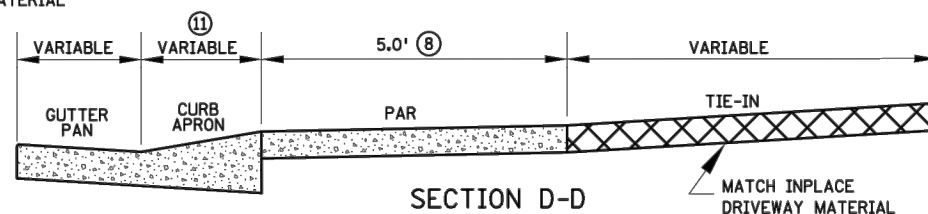
TIERED PERPENDICULAR OFFSET DRIVEWAY ②



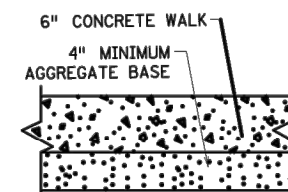
PARALLEL DRIVEWAY ③



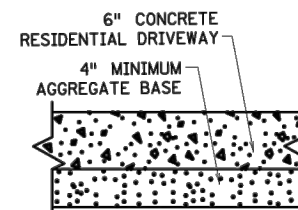
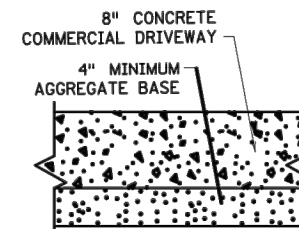
INTEGRAL DRIVEWAY APRON



SECTION D-D



TYPICAL SIDEWALK SECTION ①⑦



TYPICAL DRIVEWAY SECTIONS

NOTES:

ALL SIDEWALK AND BOULEVARD WIDTHS SHALL BE MEASURED FROM BACK OF CURB.

IN URBAN ROADWAY SECTIONS, 6" CURB HEIGHT SHOULD BE USED WHEN 6' OR GREATER BOULEVARD WIDTH IS PROPOSED. WHEN BOULEVARD IS LESS THAN 6' WIDE, 4" CURB HEIGHT SHOULD BE USED.

MAINTAIN EXISTING DRAINAGE PATTERNS FLOWING TO PUBLIC RIGHT OF WAY.

ACQUIRE ADEQUATE L3 TO ALLOW FOR A CONTINUOUS PAR PROFILE THROUGH THE DRIVEWAY (UNIFORM TYPICAL SIDEWALK SECTION) THROUGH THE DRIVEWAY APRON.

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

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

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

- PERPENDICULAR DRIVEWAYS ARE THE STANDARD AND STARTING POINT FOR ALL DRIVEWAY DESIGN AND CONSTRUCTION. SHOULD BE USED TO ACHIEVE CONTINUOUS PAR PROFILE THROUGH THE DRIVEWAY. OBTAINING A PERPENDICULAR DRIVEWAY DESIGN BECOMES MORE CRITICAL WITH STEEP ROADWAY PROFILES.
- TO BE USED WHEN PERPENDICULAR DRIVEWAY DESIGN CANNOT BE ACHIEVED, THE DRIVEWAY PAR IS BELOW ROADWAY CURB HEIGHT. THIS DRIVEWAY TYPE CAN BE USED FOR BOTH PAVED (AS SHOWN) AND GRASS BOULEVARDS.
- TO BE USED WHEN PERPENDICULAR AND TIERED PERPENDICULAR DRIVEWAY DESIGN CANNOT BE ACHIEVED, CAN BE USED FOR STEEP NEGATIVE SLOPED DRIVEWAYS. DW CURB TYPE 2 SHOULD BE USED TO RAISE PAR ABOVE GUTTER AND REDUCE "ROLLER COASTER" EFFECT. 4" HIGH ROADWAY CURB SHOULD BE USED TO REDUCE "ROLLER COASTER" EFFECT ESPECIALLY WHEN MULTIPLE DRIVEWAYS ARE PRESENT.
- TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
- 8% STANDARD, 10% MAX. FOR COMMERCIAL AND 12% MAX. FOR RESIDENTIAL. SEE GENERAL NOTES ON SHEET 2 FOR MORE INFORMATION.
- S3 8% MAXIMUM, IF THE SLOPE IS EXCEEDED OR CONTINUED FOR MORE THAN 5', ANALYZE VEHICLE TEMPLATES FOR VERTICAL CLEARANCE. IF EXISTING DRIVEWAY IS NEGATIVELY DRAINING, S3 CAN BECOME SLIGHTLY MORE NEGATIVE TO ACHIEVE PERPENDICULAR DRIVEWAY DESIGN IF THE VERTICAL CLEARANCE IS ACHIEVED IN VEHICLE TEMPLATES.
- 1:3 MIN. 1:5 PREFERRED FOR DRIVEWAY RETROFIT PROJECTS. 1:10 PREFERRED FOR SIDEWALK REPLACEMENT PROJECTS.
- 5.0' MIN. PAR WIDTH IS THE STANDARD THROUGH DRIVEWAYS. IF FEASIBLE WIDEN DRIVEWAY PAR WIDTH TO MATCH APPROACHING SIDEWALK PAR WIDTHS. IN VERTICALLY CONSTRAINED AREAS PAR WIDTHS CAN INCREMENTALLY BE REDUCED TO 4.5' OR 4' MIN AFTER ALL OTHER OPTIONS HAVE BEEN APPLIED.
- THE PEDESTRIAN ACCESS ROUTE, MAY NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.
- SIDEWALK OFFSET TO BE LESS THAN OR EQUAL TO HALF THE APPROACHING SIDEWALK WIDTH.
- INTEGRAL DRIVEWAY APRON TO BE POURED MONOLITHICALLY/INTEGRAL WITH THE CURB AND GUTTER. SEE SHEET 2 FOR MORE INFORMATION.
- SEE SHEET 2 FOR CURB TYPE INFORMATION.
- 0" CURB IS AT FLOW LINE. SEE DRIVEWAY TABLE FOR BACK OF CURB HEIGHTS.
- 3' LONG AT 8-10% PREFERRED FOR INITIAL CURB TAPER. REDUCE CURB TAPER SLOPE IF NECESSARY TO MATCH ADJACENT SIDEWALK GRADES.
- MATCH FULL CURB HEIGHT.
- 1:2 TAPER RATE ON INTEGRAL DRIVEWAY APRONS.
- SEE SHEET 4 FOR WHEN 6" WALK IS REQUIRED.

REVISION:

APPROVED: 11-04-2021

Jeffrey Perkins
OPERATIONS DIVISION



STANDARD PLAN 5-297.254

1 OF 4

THOMAS RYBICKI
STATE DESIGN ENGINEER

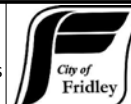
APPROVED: 11-04-2021

REVISED:

STATE PROJ. NO.

DRIVEWAY AND SIDEWALK DETAILS

(TH) SHEET NO. OF SHEETS



7071 University Avenue NE
Fridley, MN 55432

DESIGNED	NO.	ISSUED FOR	DATE
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DRAWN	NO.	ISSUED FOR	DATE
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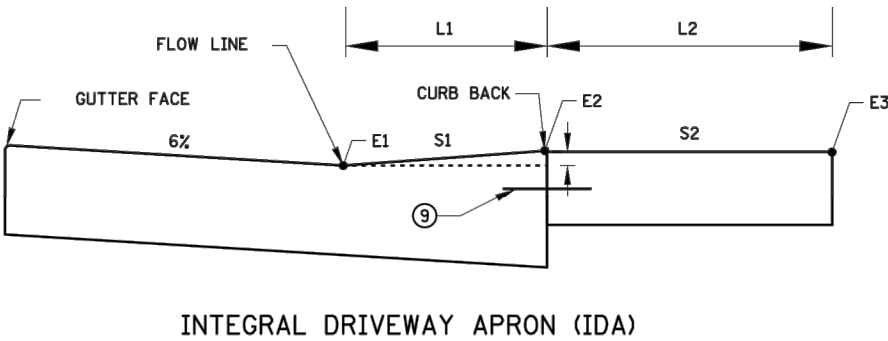
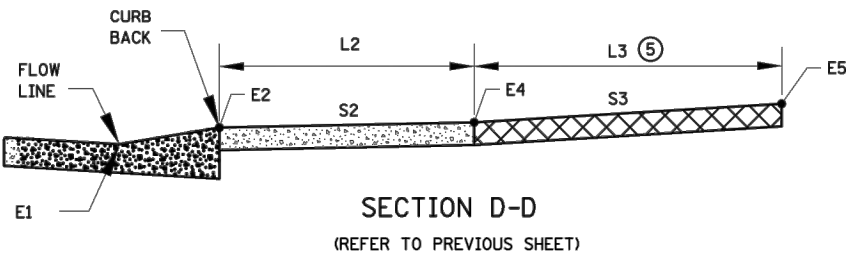
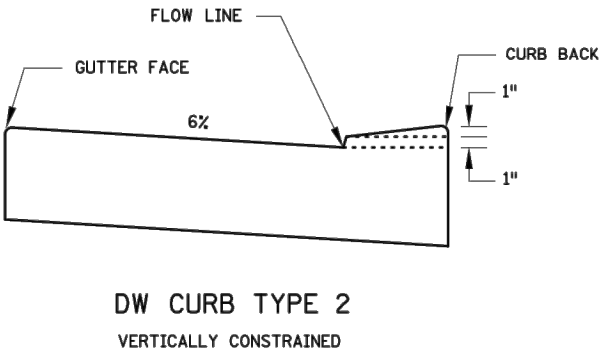
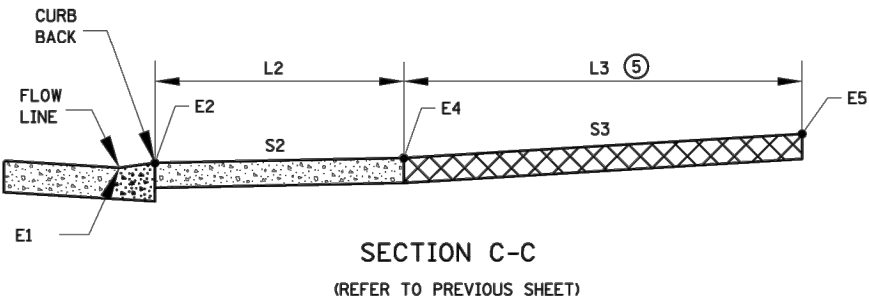
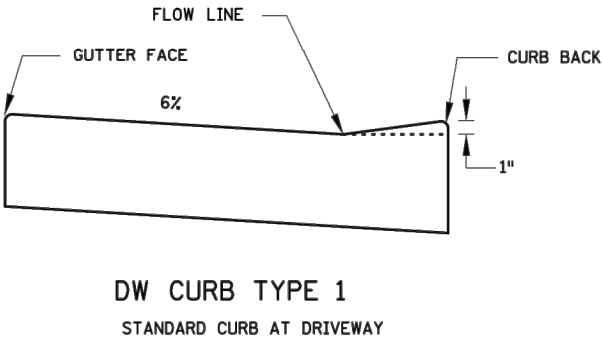
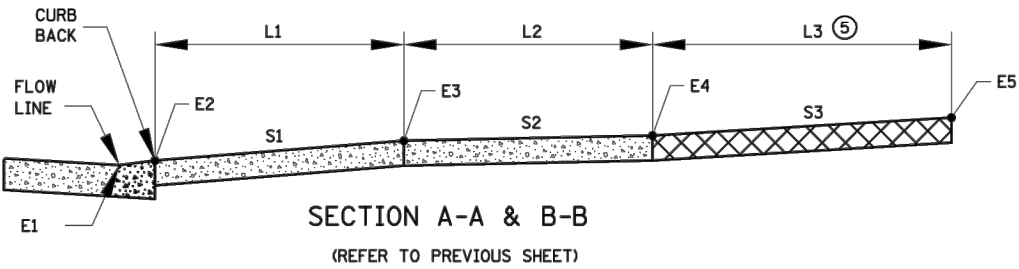
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

DRIVEWAY AND SIDEWALK DETAILS

SHEET
61
OF
82

DRIVEWAY TABLE ①																
STATION	SIDE	DRIVEWAY TYPE ②	CURB TYPE ③	E1	E2	L1	S1	E3	L2	S2 ④	E4	L3 ⑤	S3	EXISTING ⑥	E5	COMMENTS
						FT	%		FT	%		FT	%	%		



TYPICAL INTEGRAL DRIVEWAY APRON ⑦			
CURB TYPE	L1	E2	S1 ⑧
	FT		%
IDA 216	1.33	+0.16	12.5
IDA 220	1.67	+0.16	10
IDA 324	2	+0.24	12.5
IDA 432	2.67	+0.33	12.5

- NOTES:**
- ALL SIDEWALK AND BOULEVARD WIDTHS SHALL BE MEASURED FROM BACK OF CURB.
- DW CURB TYPE 1 SHALL BE USED WHEN THE DRIVEWAY ACTS AS A PEDESTRIAN RAMP. THE MAX. APRON SLOPE MUST ADHERE TO ADA CRITERIA AS WELL. DW CURB TYPE 1 SHOULD BE USED IF THERE IS ON STREET PARKING.
- WHERE ROADWAY DRAINAGE IS A CONCERN (NEGATIVE SLOPED APRON) DW CURB TYPE 2 CAN BE USED TO HELP KEEP THE WATER ON PUBLIC RIGHT OF WAY.
- S1 8% STANDARD, 10% MAX. COMMERCIAL AND 12% MAX. RESIDENTIAL. IF EXISTING GRADES ARE STEEPER DO NOT MAKE GRADES APPRECIABLY WORSE BY USING BEST PRACTICES SUCH AS DRIVEWAY CURB HEIGHTS, EXTENDING L3 AND/OR STEEPEN S3.
- S3 8% MAXIMUM, IF THIS SLOPE IS EXCEEDED OR CONTINUED FOR MORE THAN 5', ANALYZE VEHICLE TEMPLATES FOR VERTICAL CLEARANCE. SEE FACILITY DESIGN GUIDE, CHAPTER 6, FOR GEOMETRIC DESIGNS OF DRIVEWAYS.
- ① EXAMPLE SHOWN TO BE INCLUDED IN PLAN FOR EACH DRIVEWAY THAT HAS PAR THROUGH IT.
- ② REFERS TO THE FOLLOWING TYPES; PERPENDICULAR DRIVEWAY, TIERED PERPENDICULAR OFFSET DRIVEWAY, TIERED PERPENDICULAR DRIVEWAY, PARALLEL DRIVEWAY, AND INTEGRAL DRIVEWAY APRON.
- ③ DW CURB TYPE 1 IS THE STANDARD AND SHALL BE THE STARTING POINT FOR ALL PERPENDICULAR AND TIERED DRIVEWAYS. DW CURB TYPE 2 SHALL ONLY BE USED AFTER UTILIZING BEST PRACTICES SUCH AS MAXIMIZING S1, S3, AND L3.
- ④ SHOULD BE DESIGNED AT 1.5%.
- ⑤ ACQUIRE ADEQUATE L3 TO ALLOW FOR CONTINUOUS PAR PROFILE (UNIFORM SIDEWALK SECTION) THROUGH THE DRIVEWAY APRON.
- ⑥ PROVIDE INPLACE TIE-IN SLOPE INFORMATION AT BACK OF PROPOSED WALK (S3 AREA).
- ⑦ INFORMATION TO BE INCORPORATED INTO DRIVEWAY TABLE WHEN INTEGRAL DRIVEWAY APRON IS USED. OTHER CURB HEIGHTS & CURB APRON LENGTHS CAN BE USED.
- ⑧ L1 & S1 FOR INTEGRAL DRIVEWAY APRON IS TO FLOWLINE, 12.5% IS MAXIMUM PREFERRED SLOPE.
- ⑨ TIE ADJACENT SECTIONS. CONCRETE DRIVEWAY APRON AND CONCRETE DRIVEWAY SIDEWALK SHALL BE CONSTRUCTED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. DRILL AND GROUT OR CAST IN-PLACE THROUGH HOLES IN THE FORMS NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINT.

REVISION:

APPROVED: 11-04-2021

Jeffrey Perkins
JEFFREY PERKINS
OPERATIONS DIVISION



STANDARD PLAN 5-297.254

2 OF 4

Tom Styrbicki
THOMAS STYRBICKI
STATE DESIGN ENGINEER

APPROVED: 11-04-2021

REVISED:

STATE PROJ. NO.

DRIVEWAY AND SIDEWALK DETAILS

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

DRIVEWAY AND SIDEWALK DETAILS

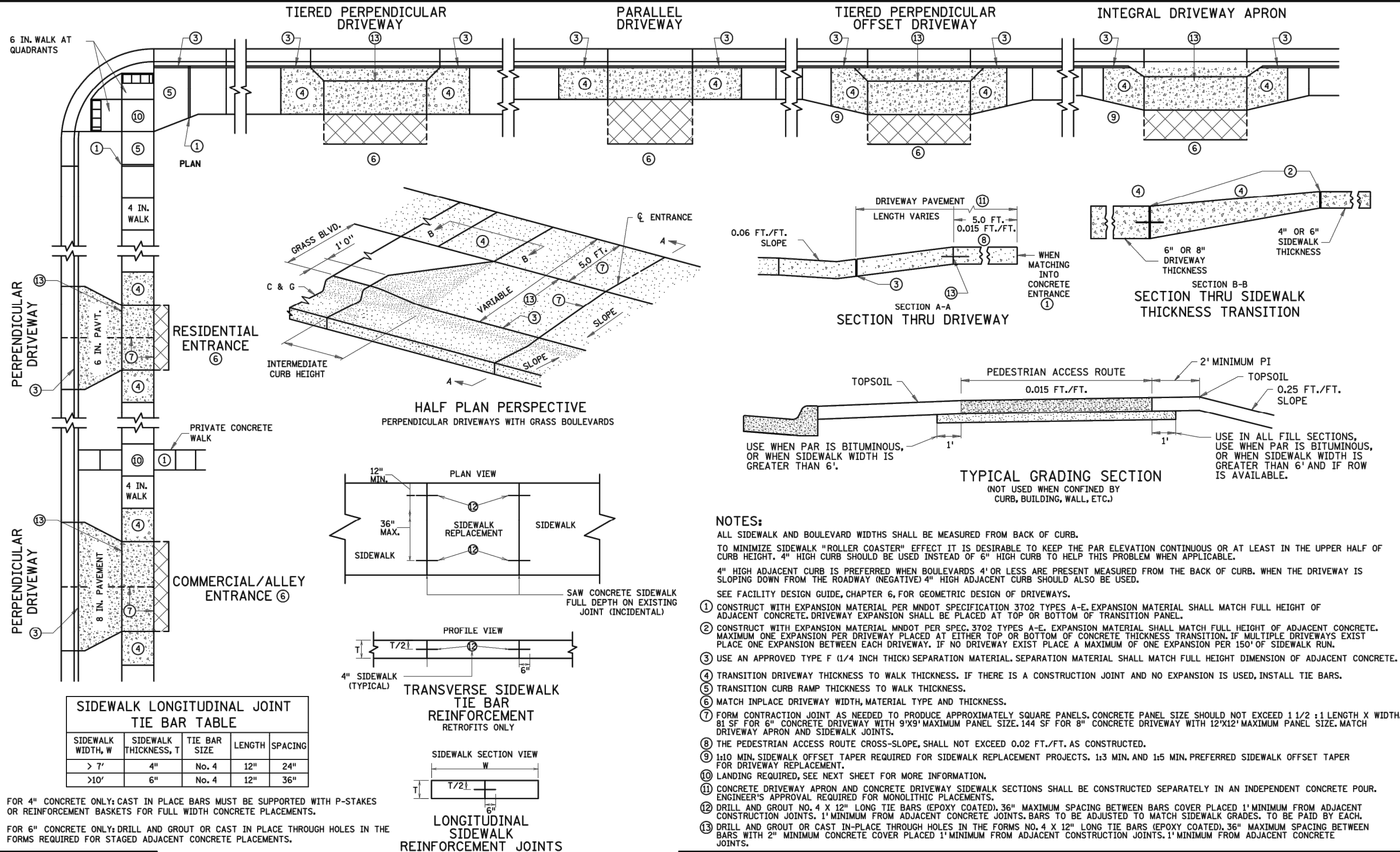


7071 University Avenue NE
Fridley, MN 55432

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NOTES:

- ALL SIDEWALK AND BOULEVARD WIDTHS SHALL BE MEASURED FROM BACK OF CURB.
- TO MINIMIZE SIDEWALK "ROLLER COASTER" EFFECT IT IS DESIRABLE TO KEEP THE PAR ELEVATION CONTINUOUS OR AT LEAST IN THE UPPER HALF OF CURB HEIGHT. 4" HIGH CURB SHOULD BE USED INSTEAD OF 6" HIGH CURB TO HELP THIS PROBLEM WHEN APPLICABLE.
- 4" HIGH ADJACENT CURB IS PREFERRED WHEN BOULEVARDS 4' OR LESS ARE PRESENT MEASURED FROM THE BACK OF CURB. WHEN THE DRIVEWAY IS SLOPING DOWN FROM THE ROADWAY (NEGATIVE) 4" HIGH ADJACENT CURB SHOULD ALSO BE USED.
- SEE FACILITY DESIGN GUIDE, CHAPTER 6, FOR GEOMETRIC DESIGN OF DRIVEWAYS.
- CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE. DRIVEWAY EXPANSION SHALL BE PLACED AT TOP OR BOTTOM OF TRANSITION PANEL.
- CONSTRUCT WITH EXPANSION MATERIAL MNDOT PER SPEC. 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE. MAXIMUM ONE EXPANSION PER DRIVEWAY PLACED AT EITHER TOP OR BOTTOM OF CONCRETE THICKNESS TRANSITION. IF MULTIPLE DRIVEWAYS EXIST PLACE ONE EXPANSION BETWEEN EACH DRIVEWAY. IF NO DRIVEWAY EXIST PLACE A MAXIMUM OF ONE EXPANSION PER 150' OF SIDEWALK RUN.
- USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.
- TRANSITION DRIVEWAY THICKNESS TO WALK THICKNESS. IF THERE IS A CONSTRUCTION JOINT AND NO EXPANSION IS USED, INSTALL TIE BARS.
- TRANSITION CURB RAMP THICKNESS TO WALK THICKNESS.
- MATCH INPLACE DRIVEWAY WIDTH, MATERIAL TYPE AND THICKNESS.
- FORM CONTRACTION JOINT AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANELS. CONCRETE PANEL SIZE SHOULD NOT EXCEED 1 1/2 : 1 LENGTH X WIDTH. 81 SF FOR 6" CONCRETE DRIVEWAY WITH 9'X9' MAXIMUM PANEL SIZE. 144 SF FOR 8" CONCRETE DRIVEWAY WITH 12'X12' MAXIMUM PANEL SIZE. MATCH DRIVEWAY APRON AND SIDEWALK JOINTS.
- THE PEDESTRIAN ACCESS ROUTE CROSS-SLOPE, SHALL NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.
- 1:10 MIN. SIDEWALK OFFSET TAPER REQUIRED FOR SIDEWALK REPLACEMENT PROJECTS. 1:3 MIN. AND 1:5 MIN. PREFERRED SIDEWALK OFFSET TAPER FOR DRIVEWAY REPLACEMENT.
- LANDING REQUIRED, SEE NEXT SHEET FOR MORE INFORMATION.
- CONCRETE DRIVEWAY APRON AND CONCRETE DRIVEWAY SIDEWALK SECTIONS SHALL BE CONSTRUCTED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. ENGINEER'S APPROVAL REQUIRED FOR MONOLITHIC PLACEMENTS.
- DRILL AND GROUT NO. 4 X 12" LONG TIE BARS (EPOXY COATED), 36" MAXIMUM SPACING BETWEEN BARS COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS. BARS TO BE ADJUSTED TO MATCH SIDEWALK GRADES. TO BE PAID BY EACH.
- DRILL AND GROUT OR CAST IN-PLACE THROUGH HOLES IN THE FORMS NO. 4 X 12" LONG TIE BARS (EPOXY COATED), 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS.

REVISION: 12-23-2021

APPROVED: 11-04-2021

Jeff J. Perkins
JEFFREY PERKINS
OPERATIONS DIVISION



STANDARD PLAN 5-297.254

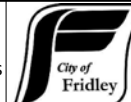
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APPROVED: 11-04-2021
REVISED: 12-23-2021

STATE PROJ. NO.

DRIVEWAY AND SIDEWALK DETAILS

(TH) SHEET NO. OF SHEETS



7071 University Avenue NE
Fridley, MN 55432

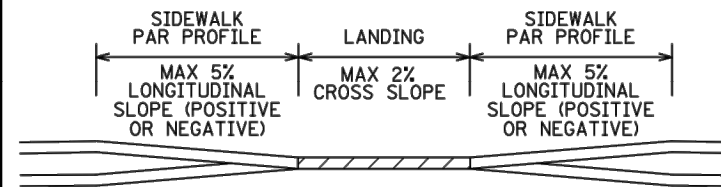
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

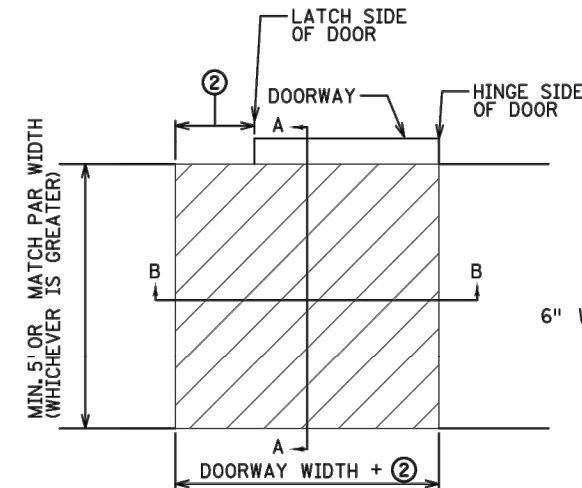
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DRIVEWAY AND SIDEWALK DETAILS

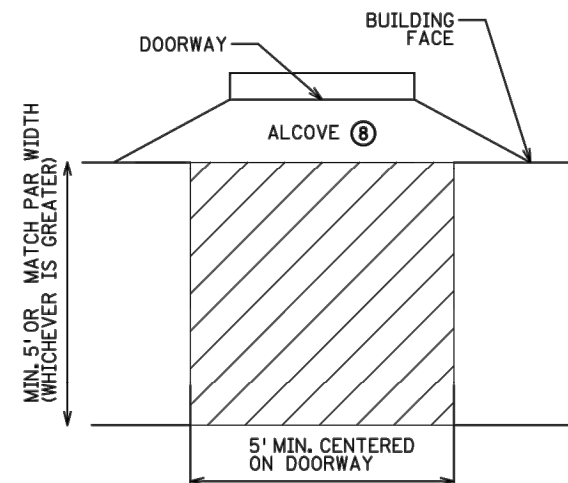
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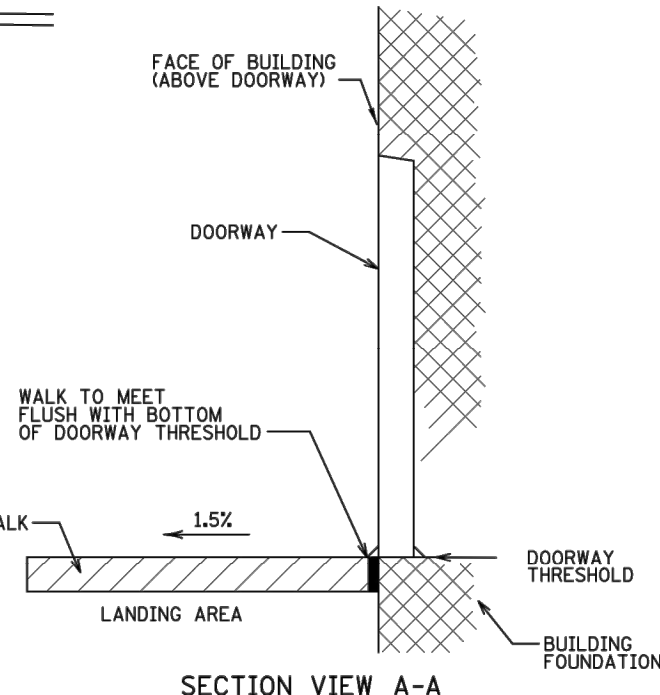
SECTION VIEW B-B



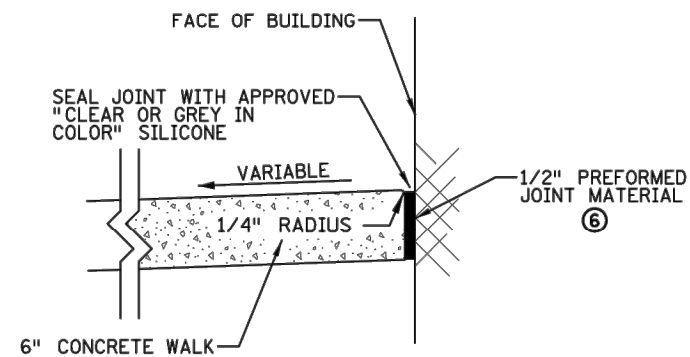
PLAN VIEW DOORWAY



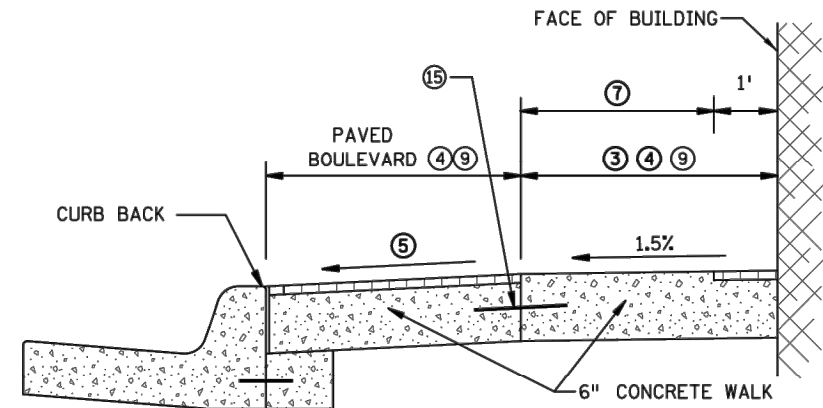
PLAN VIEW DOORWAY WITH ALCOVE
SIDEWALK LANDING REQUIREMENTS ①



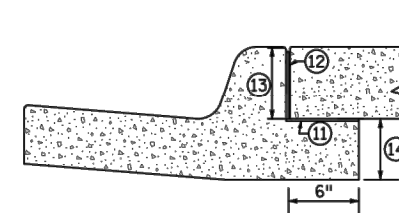
SECTION VIEW A-A



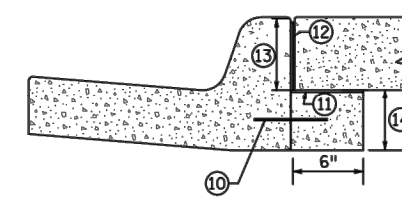
BUILDING JOINT SEAL (INCIDENTAL)



DOWNTOWN SIDEWALK TYPICAL SECTION



SLIP FORM SILL



FIXED FORM SILL

SILL CURB SHOULD BE USED AT ALL LOCATIONS WHEN CONCRETE WALK IS AT BACK OF CURB, INCLUDING PAVED BOULEVARD.
SILL CURB SHALL NOT BE USED IN CURB RAMP AND DRIVEWAY AREAS, INCLUDING CONCRETE FLARES.
SILL CURB WITH 4" WALK CAN USE FIXED OR SLIP FORM OPTIONS.

NOTES:

- 6" WALK IS REQUIRED:
- 1) IN ALL SIDEWALK LOCATIONS WHERE VARIABLE SLOPED CONCRETE BOULEVARDS ARE PAVED, SUCH AS COMMERCIAL (STORE FRONT, DOWNTOWN) AREAS.
 - 2) ANYTIME DRILL AND REINFORCEMENT IS USED TO TIE LONGITUDINAL JOINTS TOGETHER.
 - 3) TO ELIMINATE LONGITUDINAL JOINT WHEN INCREASING PANEL SIZE OVER 36SF.
 - 4) AT LOCATIONS WHERE MAINTENANCE EQUIPMENT WILL SUBJECT CONCRETE TO HEAVY LOADS.
- ALL SIDEWALK AND BOULEVARD WIDTHS SHALL BE MEASURED FROM BACK OF CURB.
FIELD ADJUST SIDEWALK PROFILES TO MEET ALL DOORWAY THRESHOLDS.
SIDEWALK MUST MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING TO THE ROADWAY.
SEE SPECIAL PROVISIONS FOR SILICONE SPECIFICATIONS.
- ① LANDING CRITERIA IS REQUIRED FOR ALL DOORS, STEPS, AND PRIVATE WALKS. FEASIBILITY DECREASES WITH NARROWER BOULEVARDS AND STEEPER SIDEWALK PROFILES.
 - ② 18" MIN. WHEN DOOR SWINGS OUTWARD FROM BUILDING. 12" MIN. WHEN DOOR SWINGS INWARD FROM BUILDING.
 - ③ 6' MIN. PAR REQUIRED WHEN ADJACENT TO BUILDINGS.
 - ④ 2/3 PAR TO 1/3 BOULEVARD SHOULD BE USED WHEN FEASIBLE. HOLD UNIFORM BOULEVARD WIDTH. 4' PREFERRED MINIMUM BOULEVARD.
 - ⑤ 1%-5% FOR THE MAJORITY OF THE BLOCK, WITH EXCEPTIONS UP TO 8% IN CONSTRAINED AREAS.
 - ⑥ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM 1/2" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.
 - ⑦ TO MINIMIZE VIBRATION AND ROLLING RESISTANCE, AREA SHALL BE FREE OF PAVERS, STAMPED CONCRETE, AND/OR EXCESSIVE JOINTING.
 - ⑧ 2% MAX. PER BUILDING CODE. IF GREATER THAN 2%, FLATTEN AS FEASIBLE.
 - ⑨ FORM CONTRACTION JOINTS AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANEL SIZE. CONCRETE PANEL SIZE SHOULD NOT EXCEED 1/2 : 1 LENGTH X WIDTH.
 - ⑩ DRILL AND GROUT NO. 4 X 8" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS. TIE BARS SHALL BE EMBEDDED 4" WITH 2" MINIMUM CONCRETE COVER AND ARE INCIDENTAL TO SILL PLACEMENT.
 - ⑪ FURNISH AND INSTALL THE FULL WIDTH OF THE TOP OF SILL A MINIMUM 2ML THICK POLYTHENE SHEETING.
 - ⑫ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.
 - ⑬ DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.
 - ⑭ 6" WALK: 5" MIN. FOR B424; 7" MIN. FOR B624
4" WALK: 7" MIN. FOR B424; 9" MIN. FOR B624
 - ⑮ DRILL AND GROUT NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONCRETE JOINTS.

REVISION:

APPROVED: 11-04-2021

Jeff J. Perkins
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OPERATIONS DIVISION

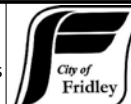
STANDARD PLAN 5-297.254 4 OF 4

APPROVED: 11-04-2021
REVISOR:

THOMAS STYRBIK
STATE DESIGN ENGINEER

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

DRIVEWAY AND SIDEWALK DETAILS



7071 University Avenue NE
Fridley, MN 55432

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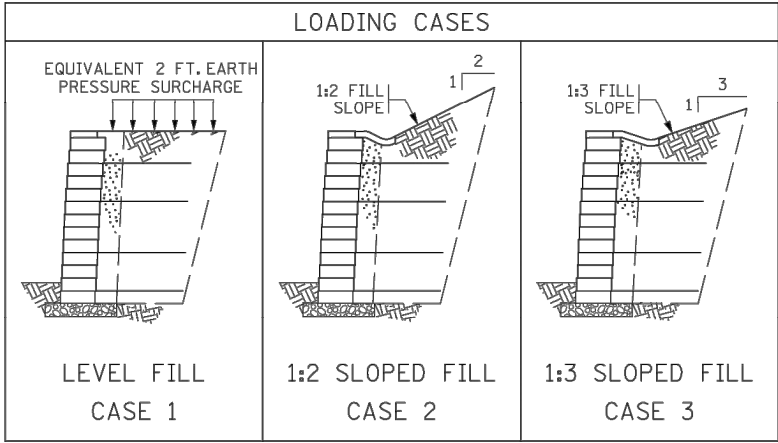
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

DRIVEWAY AND SIDEWALK DETAILS

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DESIGN CRITERIA
DESIGN CRITERIA FOLLOWS THE "AASHTO LRFD BRIDGE DESIGN SPECIFICATION" (7TH EDITION, 2014) EXCEPT FOR THE DEVIATIONS NOTED BELOW. DESIGN CRITERIA ARE IN ACCORDANCE WITH MnDOT POLICY, AS RECORDED IN THE MnDOT ROAD DESIGN MANUAL, OR FACILITY DESIGN GUIDE.
A. THE MINIMUM REINFORCEMENT LENGTH IS 7 FT. FROM THE FRONT OF THE BLOCK OR 0.8H FOR CASE 1 AND CASE 3 AND 1.2H FOR CASE 2, WHICHEVER IS GREATER.
B. THE REINFORCEMENT FILL FRICTION ANGLE IS 34°.
C. THE LATERAL EARTH PRESSURE COMPUTATION FOR EXTERNAL STABILITY CALCULATIONS USES AN INTERFACE FRICTION ANGLE SET EQUAL TO THE RETAINED BACKFILL ANGLE.
D. THE LATERAL EARTH PRESSURE COMPUTATION FOR INTERNAL STABILITY CALCULATIONS USES THE EFFECTS OF WALL FACE BATTER.
LOAD FACTORS - STRENGTH LIMIT STATE
HORIZONTAL EARTH PRESSURE (γ_{eh}) = 1.5 FOR EXTERNAL STABILITY HORIZONTAL EARTH PRESSURE (γ_{eh}) = 1.35 FOR INTERNAL STABILITY VERTICAL PRESSURE FROM DEAD LOAD OF EARTH FILL (γ_{ev}) = 1.35 FOR BEARING CAPACITY VERTICAL PRESSURE FROM DEAD LOAD OF EARTH FILL (γ_{ev}) = 1.0 FOR SLIDING AND PULL OUT EQUIVALENT EARTH PRESSURE SURCHARGE (γ) = 1.35
RESISTANCE FACTORS - STRENGTH LIMIT STATE
BEARING ϕ_{BR} = 0.65 DIRECT SLIDING ϕ_{DS} = 1.0 GEOGRID STRENGTH ϕ = 0.9 GEOGRID BLOCK CONNECTION STRENGTH ϕ = 0.9 GEOGRID PULLOUT ϕ = 0.9
SEE FOUNDATION REPORT FOR NOMINAL SOIL BEARING RESISTANCE OF FOUNDATION SOIL.
CASE 1 AND 3 - NOMINAL SOIL BEARING RESISTANCE OF 2000 PSF IS REQUIRED FOR WALLS UP TO 12 FT IN HEIGHT. FOR WALLS GREATER THAN 12 FT IN HEIGHT, THE REQUIRED NOMINAL BEARING RESISTANCE IS EQUAL TO 2000 PSF + (H-10)(1500 PSF) WHERE H IS IN FEET.
CASE 2 - NOMINAL SOIL BEARING RESISTANCE OF 2500 PSF IS REQUIRED FOR WALLS UP TO 12 FT IN HEIGHT. FOR WALLS GREATER THAN 12 FT IN HEIGHT, THE REQUIRED NOMINAL BEARING RESISTANCE IS EQUAL TO 2500 PSF + (H-10)(2200 PSF) WHERE H IS IN FEET.
REINFORCED WALL FILL CHARACTERISTICS: A. USE STRUCTURAL BACKFILL (SPEC. 3149.2D2) B. INTERNAL ANGLE OF FRICTION (ϕ_r) = 34° MINIMUM C. COHESION (C) = 0 D. MOIST UNIT WEIGHT (γ_r) = 125 PCF COARSE FILTER AGGREGATE CHARACTERISTICS: A. COARSE FILTER AGGREGATE TO MEET SPEC. 3149.2H.
RETAINED BACKFILL CHARACTERISTICS: A. INTERNAL ANGLE OF FRICTION (ϕ_b) = 30° B. COHESION (C) = 0 C. MOIST UNIT WEIGHT (γ_b) = 120 PCF
FOUNDATION SOILS CHARACTERISTICS: A. INTERNAL ANGLE OF FRICTION (ϕ_f) = 30° B. COHESION (C) = 0 C. UNIT WEIGHT (γ_f) = 120 PCF

④
④
①②

SAMPLE OF ESTIMATED QUANTITIES TABULATION FOR MODULAR BLOCK WALLS ③		
	UNIT	QUANTITY
STRUCTURE EXCAVATION CLASS ---	CU. YD.	
STRUCTURAL BACKFILL (CV)	CU. YD.	
STRUCTURAL CONCRETE (1P42)	CU. YD.	
COARSE FILTER AGGREGATE	CU. YD.	
MODULAR BLOCK RETAINING WALL	SQ. FT.	
TYPE 1 GEOTEXTILE	SQ. YD.	

- ① VERTICAL FACE AREA OF MODULAR BLOCK AS MEASURED FROM PLAN TOP OF WALL TO 2 FT. BELOW FINISHED GRADE AT BOTTOM OF WALL.
② PAY ITEM FOR MBW WALLS SHALL BE 2411.
③ REFER TO TABULATIONS / ESTIMATE SHEETS FOR QUANTITIES.
④ FOR USE AS LEVELING PAD.

DEFINITION OF TERMS	
MBW	= MODULAR BLOCK WALL
C.I.P.	= CAST-IN-PLACE
H	= WALL HEIGHT FROM TOP OF CAP TO BOTTOM OF LOWERMOST BLOCK UNIT
S	= VERTICAL REINFORCEMENT SPACING
REINFORCEMENT COVERAGE RATIO	= WIDTH OF SOIL REINFORCEMENTS TO HORIZONTAL SPACING (100% COVERAGE RATIO REQUIRED)

NOTES TO CONTRACTOR:

APPROVED COMBINATIONS OF MODULAR BLOCK UNIT AND SOIL REINFORCEMENT AND APPROVED MODULAR BLOCK UNIT PRODUCTS ARE MAINTAINED BY THE FOUNDATION UNIT (GEOTECHNICAL ENGINEERING SECTION), AND ARE POSTED AT <https://www.dot.state.mn.us> ONLY APPROVED PRODUCT COMBINATIONS AND APPROVED BLOCK UNITS PRODUCED FROM APPROVED SOURCES SHALL BE USED.

PROVIDE DETAILED SHOP DRAWINGS FOR CONSTRUCTION CONTAINING:

- A COPY OF MnDOT STANDARD SHEETS FOR LOADING CASE(S) USED WITH BLOCK TYPE AND SPACING NOTED ON THE "MODULAR BLOCK WALL REINFORCEMENT LAYOUT" TABLE.
- ELEVATION VIEW WITH REINFORCEMENT PLACEMENT REQUIREMENTS, WALL FACING LAYOUT, AND GEOMETRIC INFORMATION. TOP OF WALL MAY EXTEND UP TO 4" ABOVE PLAN TOP OF WALL ELEVATION.
- PLAN VIEW WITH BOTTOM AND TOP OF WALL ALIGNMENT, AND PLAN LIMITS OF WALL ALIGNMENT.
- CROSS SECTIONS DETAILING BATTER, REINFORCEMENT, VERTICAL SPACING, REINFORCEMENT LENGTHS, SUBSURFACE DRAINAGE, SURFACE DRAINAGE, AND WATER RUNOFF COLLECTION ABOVE WALL.
- REINFORCEMENT LAYOUT: REINFORCEMENT SHALL BE PLACED AT 100% COVERAGE RATIO. REINFORCEMENT ELEVATIONS SHALL BE CONSISTENT ACROSS LENGTH OF WALL STRUCTURE.
- BLOCK, REINFORCEMENT AND FILL PLACEMENT METHODS AND REQUIREMENTS.
- DETAIL ALL WALL FILL PENETRATIONS AND WALL FACE PENETRATIONS. DETAIL REINFORCEMENT AND/OR WALL FACING UNIT PLACEMENT AROUND PENETRATIONS. VERTICAL PENETRATIONS GREATER THAN 1 FT. DIAMETER REQUIRE A STRUCTURAL GEOGRID DIVERSION SYSTEM AND/OR PREINSTALLED SLEEVES.
- DETAILS THAT ARE SPECIFIC TO VENDOR PRODUCTS AND THEIR INTERACTION WITH OTHER PROJECT COMPONENTS.
- LIST INFORMATION ON APPROVED COMBINATION OF MBW UNIT AND GEOSYNTHETIC REINFORCEMENT, INCLUDING MnDOT CLASSIFICATION CODE, NOMINAL BLOCK WIDTH, PROPERTIES FOR FIELD IDENTIFICATION, AND INSTALLATION INSTRUCTIONS.
- DETAILS OF CAP UNITS AND INSTALLATION/FASTENING INSTRUCTIONS FOR THE CAPS. CAP UNITS SHALL BE SET IN A BED OF ADHESIVE DESIGNED TO WITHSTAND MOISTURE AND TEMPERATURE EXTREMES, REMAIN FLEXIBLE, AND SHALL BE SPECIFICALLY FORMULATED FOR BONDING MASONRY TO MASONRY.
- CERTIFICATION BY PROFESSIONAL ENGINEER EXPERIENCED IN MBW DESIGN THAT THE CONSTRUCTION LAYOUT MEETS THE REQUIREMENTS OF PLANS AND MnDOT MBW STANDARDS. DEVIATION FROM STANDARD DESIGN TABLES ARE PERMITTED BY VALUE ENGINEERING SUBMITTAL ONLY ON PROJECTS WITH OVER 5000 SQ. FT. OF WALL.
- CONTRACTOR MUST PROVIDE AN MBW SUBMITTAL THAT DETAILS EROSION PREVENTION AND PERMANENT PLANT STABILIZATION. THE SUBMITTAL MUST ALSO MEET THE REQUIREMENTS OF SPEC. 1712.2.

GENERAL NOTES:

UTILITIES:

EXISTING AND PROPOSED UTILITIES ARE SHOWN IN THE GRADING PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING FACILITIES AND SHALL EXERCISE CARE IN ADJACENT CONSTRUCTION.

EXCAVATION AND EARTHWORK:

ALL EXCAVATION AND EMBANKMENT WORK SHALL CONFORM TO SPEC. 2451.

CAST-IN-PLACE CONCRETE:

ALL CONCRETE SHALL CONFORM TO SPEC. 2461, EXCEPT AS NOTED.

CONSTRUCTION:

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

GEOMETRICS AND GRADES:

DATA FOR BASELINE GEOMETRY IS TABULATED FOR WALL ALIGNMENT, SEE LAYOUT SHEETS. WALL ALIGNMENT REFERENCE IS ALONG FRONT FACE OF WALL.

THE FILL SLOPE CONVENTION OF 1 VERTICAL TO HORIZONTAL IS USED IN THIS PLAN.

COMPACTION REQUIREMENTS:

COMPACT REINFORCED WALL FILL IN ACCORDANCE WITH SPEC. 2106.3G UNLESS RECOMMENDED OTHERWISE BY THE ENGINEER.

ENGINEER DEFINITIONS:

MBW DESIGNER- MN PROF. ENGINEER RETAINED BY CONTRACTOR.
PROJECT DESIGNER- MnDOT OR CONSULTANT ENGINEER
FOUNDATIONS UNIT- MnDOT
ENGINEER- MnDOT

BASIS OF DESIGN:

IN ADDITION TO THE STANDARD SHEETS, INCLUDE PLAN AND FRONT ELEVATION VIEWS OF THE MODULAR BLOCK RETAINING WALLS IN THE PLANS. THE PLAN VIEW MUST SHOW ALIGNMENT BASELINE, LIMITS OF BOTTOM OF WALL ALIGNMENT, AND LIMITS OF TOP OF WALL ALIGNMENT AS ALIGNMENTS VARY WITH BATTER OF WALL SYSTEM ACTUALLY SUPPLIED. THE FRONT ELEVATION MUST IDENTIFY BOTTOM AND TOP OF WALL ELEVATIONS, EXISTING GRADES, AND FINISHED GRADES.

IF THE WALL IS CURVED, THE RADIUS AT THE BOTTOM AND THE TOP OF EACH WALL SEGMENT AND THE P.C. AND P.T. STATION POINTS OFF OF BASELINE AND LIMITS OF BOTTOM AND TOP OF WALL ALIGNMENT MUST BE SHOWN.

REFERENCE STANDARD PLATES AND PROVIDE DETAILS FOR TRAFFIC BARRIERS, CURB AND GUTTER, HANDRAILS AND FENCING AS REQUIRED BY PROJECT CONDITIONS. SEE AASHTO MANUALS, MnDOT ROAD DESIGN MANUAL OR FACILITY DESIGN GUIDE, STANDARD PLATES AND DETAILS FOR REQUIREMENTS.

SHOW SURFACE DRAINAGE PATTERNS IN THE PLAN VIEW. PROVIDE DIMENSIONS FOR WIDTH AND DEPTH OF THE DRAINAGE SWALE AS WELL AS THE TYPE OF IMPERVIOUS LINER MATERIAL. COLLECT SURFACE WATER RUNOFF ABOVE AND DIVERT AROUND WALL FACE.

DETAIL LINES AND GRADES OF THE INTERNAL DRAINAGE COLLECTION PIPE. DETAIL OR NOTE THE DESTINATION OF INTERNAL WALL DRAINS AS WELL AS THE METHOD OF TERMINATION (DAYLIGHT END OF PIPE OR CONNECTION INTO HYDRAULIC STRUCTURE). SPACE DRAIN PIPE OUTLET NOT MORE THAN 150 FT.

SOFT SOILS AND/OR HIGH WATER CONDITIONS (DEFINED AS GROUNDWATER WITHIN A DEPTH EQUAL TO THE WALL HEIGHT (H) MAY NOT BE SUITABLE FOR APPLICATION OF STANDARD DESIGNS AND REQUIRE SPECIAL CONSIDERATION BY THE FOUNDATIONS UNIT.

STANDARD DESIGN CHARTS ARE NOT APPLICABLE TO:

- PROJECT/SITES WHERE FOUNDATION SOILS SHEAR STRENGTH AND/OR BEARING RESISTANCE DO NOT MEET OR EXCEED VALUES USED IN THE DEVELOPMENT OF STANDARD DESIGN CHARTS.
- PROJECTS WITH A LARGE QUANTITY OF FACE AREA WHERE PROJECT SPECIFIC DESIGNS ARE RECOMMENDED, AS DEFINED IN MnDOT ROAD DESIGN MANUAL OR FACILITY DESIGN GUIDE.
- WHERE SLOPES IN FRONT OF WALL ARE STEEPER THAN 1:3.
- WHERE MAXIMUM WALL HEIGHT EXCEEDS 12 FT.
- WHERE WALLS ARE TIERED.
- WALLS WITH NOISE WALLS.

IF USING CONCRETE RAILING, INCLUDE STANDARD BRIDGE DETAIL "CONCRETE RAILING (TYPE F)" IN PLAN SET.

PROVIDE PROJECT SPECIFIC AESTHETIC REQUIREMENTS INCLUDING COLOR AND FASCIA SURFACING IN THE SPECIAL PROVISIONS.

MnDOT ROAD DESIGN MANUAL OR FACILITY DESIGN GUIDE CONTAINS GUIDELINES, TRAFFIC SAFETY AND OTHER ASPECTS.

LEAD EXPERT OFFICE

AMBER BLANCHARD
ACTING DIRECTOR
OFFICE OF MATERIALS
AND ROAD RESEARCH



STANDARD PLAN 5-297.640

1 OF 2

Tom Styrbicki
THOMAS STYRBICKI
STATE DESIGN ENGINEER

APPROVED: 03-29-2023
REVISED:

STATE PROJ. NO. _____

MODULAR BLOCK RETAINING WALL GENERAL NOTES

(T.H.) SHEET NO. OF SHEETS



7071 University Avenue NE
Fridley, MN 55432

DESIGNED	NO.	ISSUED FOR	DATE
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TYL/JBQ			
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CLIENT PROJ. NO.			
ST2023-21			

53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

RETAINING WALL DETAILS

SHEET
65
OF
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MODULAR WALL STORMWATER MANAGEMENT AND VEGETATION ESTABLISHMENT NOTES

THE FOLLOWING MUST BE ADDRESSED IN DESIGN AND INCORPORATED INTO THE PLAN SUBMITTALS:

1. STORMWATER MANAGEMENT OF OVERLAND AND SLOPE TOE FLOWS-
INCLUDE IN WALL PACKAGE SUBMITTAL THAT DETAILS HOW OVERLAND AND TOE OF SLOPE FLOWS WILL BE MANAGED AROUND AND THROUGH DURING ALL PHASES OF WALL CONSTRUCTION.
INCLUDE THE FOLLOWING:
A. DESCRIBE EROSION PREVENTION BMPS, AND METHODS FOR APPROPRIATE INSTALLATION.
B. DETAIL HOW TEMPORARY OR PERMANENT STABILIZATION WILL BE INCORPORATED INTO THE WORK.
C. DETAIL HOW SLOPE TOE WILL BE DEFENDED FROM SEDIMENT LOSS DURING ALL PHASES OF WALL CONSTRUCTION, INCLUDING CONTINGENCY PROGRAM FOR SEDIMENT RECOVERY OUTSIDE OF CONSTRUCTION LIMITS.
2. TOP AND END WALL STABILIZATION-
INCLUDE IN WALL PACKAGE SUBMITTAL ESTIMATED QUANTITIES, PRECISE BEST PRACTICES FOR EXPOSED SOIL STABILIZATION FOR ALL PHASES OF CONSTRUCTION. DETAIL TIME FRAMES FOR INTERIM AND CONCURRENT STABILIZATION MEASURES, ALONG WITH STANDARD INSTALLATION DETAILS THAT FOLLOW MnDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION (LATEST EDITION) OR NATIONWIDE GENERAL INDUSTRY PRACTICE.
USE 1:4 SLOPE STEEPNESS TO DIFFERENTIATE BETWEEN RELATIVELY FLAT AND CRITICAL SLOPE. STEEPNESS FOR DETERMINING APPROPRIATE SLOPE COVERS THAT PREVENT EROSION DURING THE VEGETATIVE ESTABLISHMENT PHASE. INCLUDE THE FOLLOWING:
A. DEFINE THE COHESIVE SOIL TYPES FOR MAXIMIZING EROSION STABILITY FOR SWALE AND UPGRADIENT AREAS.
B. OBTAIN SOIL FERTILITY TEST RESULTS OF PROPOSED TOPSOILS. BASE FERTILIZER APPLICATION RECOMMENDATION FROM TEST RESULTS.
C. DEFINE ADDITIONAL SOIL AMENDMENTS TO MAXIMIZE VEGETATIVE GROWTH.
D. DEFINE THE SEED MIXTURES APPROPRIATE TO SOLAR ASPECT, REGION, ADJACENT PERENNIAL COVER TYPES, AND EXPECTED MAINTENANCE PROTOCOLS.
E. USE CRITICAL PATH PLANNING FOR OPTIMUM SEEDING DATE INCORPORATION INTO THE WORK..
3. TOE OF WALL STABILIZATION-
INCLUDE ITEMS ABOVE IN PACKAGE SUBMITTAL FOR EXPOSED SOIL STABILIZATION, WITH ADDITIONAL STABILIZATION PROGRAM DELIVERY IF CONVEYANCE FLOW OR SATURATED SOIL CONDITION IS ALSO PRESENT.
4. DRAIN TILE OUTLETS-
INCLUDE IN WALL PACKAGE SUBMITTAL IMMEDIATE STABILIZATION PROGRAM INCLUDING BMPS FOR DRAIN TILE OUTLET OR WALL OPENINGS OR PENETRATIONS.
5. CONCRETE WASTE/EXCESS MATERIAL MANAGEMENT-
INCLUDE IN WALL PACKAGE SUBMITTAL A MATERIAL MANAGEMENT PROGRAM THAT ADDRESSES CONCRETE WASTE GROUND CONTACT PREVENTION, SPILL MANAGEMENT, AND EXCESS MATERIAL DISPOSAL.
6. VEGETATION MANAGEMENT PROGRAM-
A. PREVENT EROSION. SUBMIT A CONTINGENCY PLAN FOR EXTREME WEATHER GREATER THAN A 2 YEAR TYPE STORM AND EROSIVE CONDITIONS. IMMEDIATELY IMPLEMENT THE CONTINGENCY PLAN WHEN DAMAGE IS DETECTED.
B. ESTABLISH VEGETATION. SUBMIT A VEGETATION ESTABLISHMENT MONITORING PROGRAM THAT WEEKLY OR MORE OFTEN DETERMINES PLANT HEALTH AND DEVELOPMENT. DEVELOP A CORRECTIVE ACTION PLAN WHEN VEGETATION IS NOT DEVELOPING ADEQUATE COVER DENSITY OR SPECIES DIVERSITY BASED ON SEED MIX DEFINED IN THE WALL SUBMITTAL.
C. PROVIDE AUTOMATED TEMPORARY IRRIGATION SYSTEM UNTIL PERENNIAL SEEDING OR SOD COMPONENTS ARE A MINIMUM OF 6 INCHES OF COVER HEIGHT. APPLY WATER AT A RATE OF 1 INCH PER WEEK, EVENLY AND UNIFORMLY APPLIED EACH DAY. IRRIGATION IS NOT NECESSARY ON RAIN DAYS. ENSURE APPROPRIATE SPECIES DENSITY HAS OCCURRED THAT MEETS CONTRACT REQUIREMENTS AND ENVIRONMENTAL COMMITMENTS.
D. CONTROL ANNUAL WEEDS THAT LIMIT PERENNIAL VEGETATIVE COVER BY MECHANICAL METHODS.
E. CONTROL ALL NOXIOUS STATE LISTED WEEDS BY MECHANICAL OR PRECISION HERBICIDE METHODS.
7. LIST AND PROVIDE TEMPORARY AND PERMANENT STABILIZATION ESTIMATED QUANTITY ITEMS AND TABULATIONS IN WALL SUBMITTAL PACKAGE. THE TABULATION OF ESTIMATED QUANTITIES SHOULD INCLUDE ITEMS LIKE TOPSOIL BORROW, FERTILIZER TYPES, TEMPORARY EROSION PREVENTION ITEMS, PERMANENT EROSION PREVENTION ITEMS, SEED MIXTURE TYPES, SEDIMENT CONTROL BMP TYPES, AND IRRIGATION.

LEAD EXPERT OFFICE

AMBER BLANCHARD
ACTING DIRECTOR
OFFICE OF MATERIALS
AND ROAD RESEARCH



DEPARTMENT
OF
TRANSPORTATION

STANDARD PLAN 5-297.640

2 OF 2



THOMAS STYRBICKI
STATE DESIGN ENGINEER

APPROVED: 03-29-2023
REVISED:

STATE PROJ. NO.

MODULAR BLOCK RETAINING WALL
STORMWATER MANAGEMENT AND VEGETATION NOTES

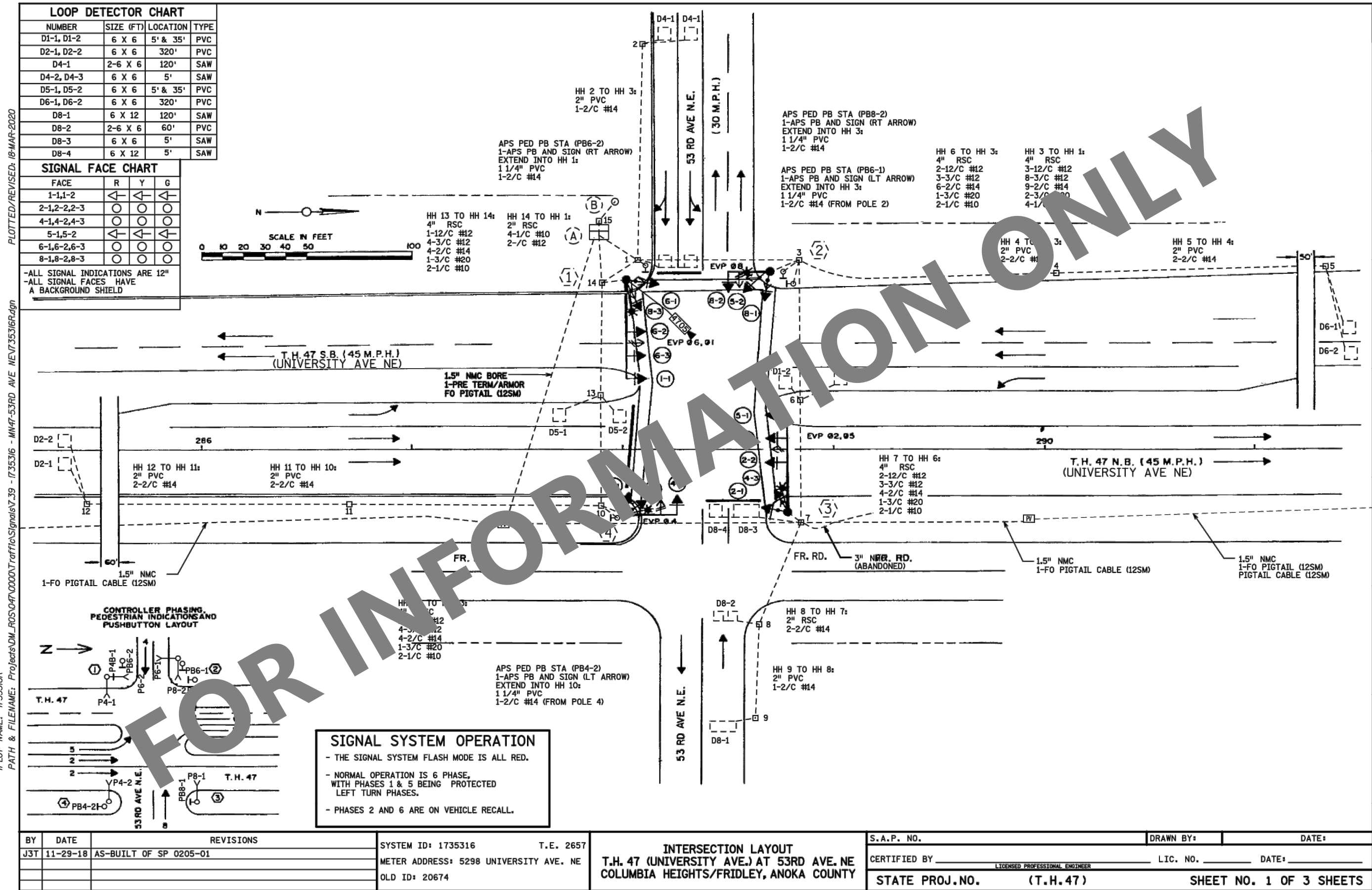
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT
S.A.P. 127-319-008 / S.A.P. 113-118-005
RETAINING WALL DETAILS

DISTRICT #: Metro
PLOT NAME: 1735316
PATH & FILENAME: Projects\DM_Roadway\0000\Traffic\Signal\1735316 - MN47-53RD AVE NE\1735316.dgn



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DISTRICT #: Metro
PLOT NAME: 1735316R
PATH & FILENAME: Projects\DM_R05\04\Traffic\Signal\17.39 - 1735316 - MN47-53RD AVE NE\1735316R.dgn

PLOTTED/REVISED: 18-MAR-2020

① A100 POLE FOUNDATION
TYPE A100-A-50
1-X6-350/CAM 400 EXTENSION (MOUNTED AT 350 DEG)
(INCLUDES LIGHTNING ROD)
7/16" GROUND BRAID & GROUND ROD)
1-VIDEO CAMERA WITH MOUNT
LUMINAIRE - 200 WATT HPS WITH PEC
3-ONE WAY SIGNALS (OVERHEAD)
MID MAST ARM MOUNTS 12 AND 24 FT FROM END
2-TYPE 10B AT 0 AND 270 DEG
2-CD PED INDS
1-APS PB AND SIGN (LT ARROW) (PB4-1)
ONE WAY EVP DETECTOR AND LIGHT (6&1)
INTERNALLY ILLUMINATED SIGN WITH PEC AND SIGN
SWITCH ON POLE
EXTEND INTO HH 14:
3" RSC
2-12/C #12
3-3/C #12
2-1/C #10
1-3/C #20
1-7/16" GROUND BRAID
TO GROUND ROD
1-COM CABLE (CAT 5E)

④ P90 POLE FOUNDATION
TYPE P90-A-25-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE - 200 WATT HPS WITH PEC
ONE WAY SIGNAL (OVERHEAD)
TYPE 10A AT 0 DEG
TYPE 10B AT 270 DEG
1-CD PED IND
1-PEDESTRIAN PUSHBUTTON AND SIGN (R10-4o)
ONE WAY EVP DETECTOR AND LIGHT (4)
INTERNALLY ILLUMINATED SIGN WITH PEC AND SIGN
SWITCH ON POLE
EXTEND INTO HH 10:
3" RSC
1-12/C #12
4-3/C #12
2-1/C #10
1-3/C #20
1-2/C #14

② P90 POLE FOUNDATION
TYPE P90-A-20-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE-200 WATT HPS WITH PEC
ONE WAY SINGAL (OVERHEAD)
2-TYPE 10B AT 0 AND 270 DEG
2-CD PED INDS
ONE WAY EVP DETECTOR AND LIGHT (8)
INTERNALLY ILLUMINATED SIGN WITH PEC AND SIGN
SWITCH ON POLE
EXTEND INTO HH 3:
3" RSC
1-12/C #12
5-3/C #12
2-1/C #10
1-3/C #20
1-2/C #14

③ A100 POLE FOUNDATION
TYPE A100-A-50-D40-9 (DAVIT AT 350 DEG)
LUMINAIRE - 200 WATT HPS WITH PEC
CAMERA OBSERVATION CABLES TO TMS CABINET)
3-ONE WAY SIGNALS (OVERHEAD)
MID MAST ARM MOUNTS 12 AND 24' FROM END
TYPE 10A AT 0 DEG
TYPE 10B AT 270 DEG
1-CD PED IND
1-APS PB AND SIGN (LT ARROW) (PB8-1)
ONE WAY EVP DETECTOR AND LIGHT (2&5)
INTERNALLY ILLUMINATE SIGN WITH PEC AND SIGN
SWITCH ON POLE
EXTEND INTO HH 7:
3" RSC
2-12/C #12
3-12/C #12
2-1/C #10
1-3/C #20

① EQUIPMENT PAD
CONTROLLER AND CABINET
SERVICE EQUIPMENT (PAD MOUNTED)
CABINET TO HH 1:
4" RSC
3-12/C #12
6-3/C #12
13-2/C #14
2-3/C #20
CABINET TO HH 1:
4" RSC
3-12/C #12
5-3/C #12
4-2/C #14
2-3/C #20
COM CABLE (CAT 5E)
RSC STUB OUT
FOR #18 (DIRECT BURIED TO 57TH AVE
(ABANDONED)
3" RSC STUB OUT
1-6PR #19 (DIRECT BURIED TO 49TH AVE
NE- ABANDONED)
METER TO HH 15:
2" RSC
3-1/C #2
LOAD CENTER TO CABINET:
1 1/4" RAC
2-1/C #6
1-1/C #6 BR. GR.
LOAD CENTER TO HH 14:
2" RSC
8-1/C #10
4-3/C #12

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

② SOP-INPLACE WOOD POLE (NSP)
EXTEND INTO HH 15:
2" RSC WITH 3-1/C #2
2" RSC RISER AND WEATHERHEAD
WITH 3-1/C #2

BY	DATE	REVISIONS	SYSTEM ID: 1735316	T.E. 2657	S.A.P. NO.	DRAWN BY:	DATE:
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			OLD ID: 20674		STATE PROJ.NO. (T.H.47)		SHEET NO. 2 OF 3 SHEETS

INTERSECTION LAYOUT NOTES
T.H. 47 (UNIVERSITY AVE.) AT 53RD AVE. NE
COLUMBIA HEIGHTS/FRIDLEY, ANOKA COUNTY



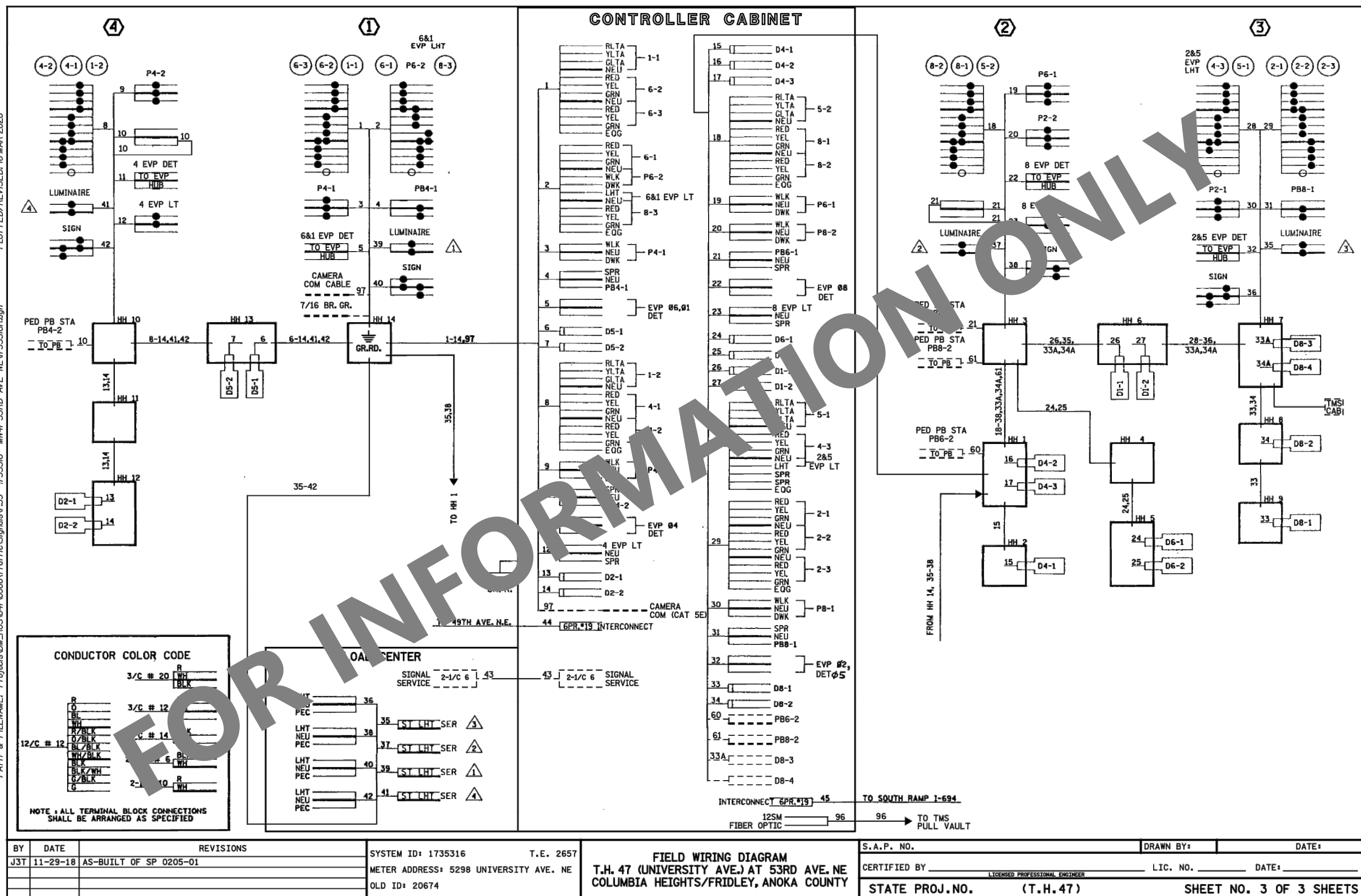
7071 University Avenue NE
Fridley, MN 55432

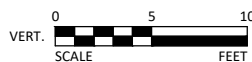
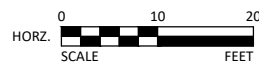
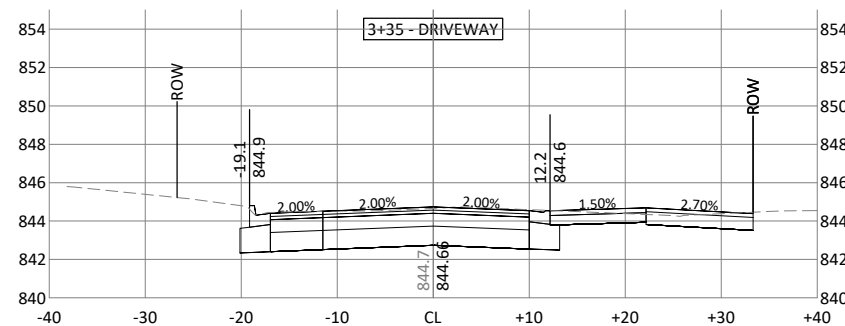
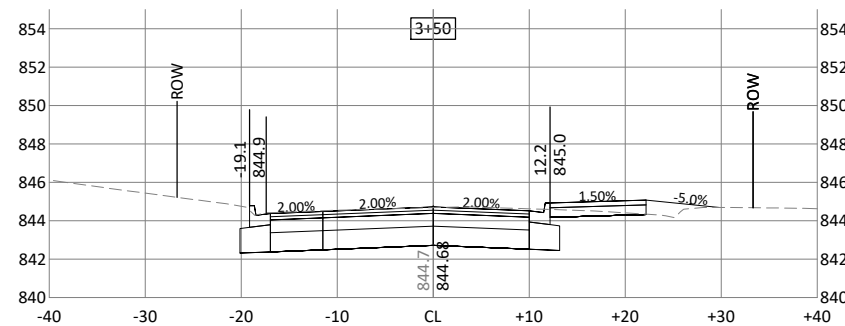
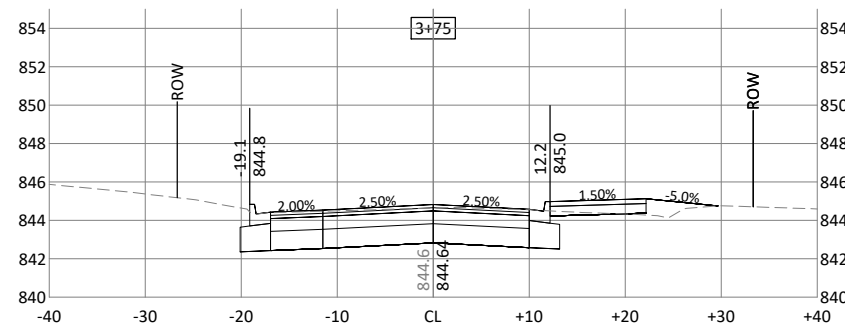
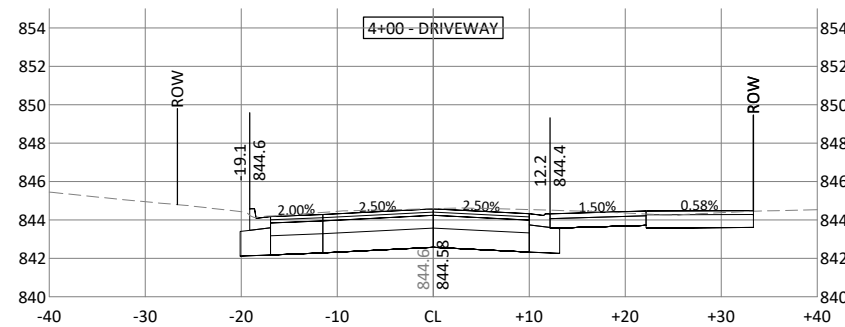
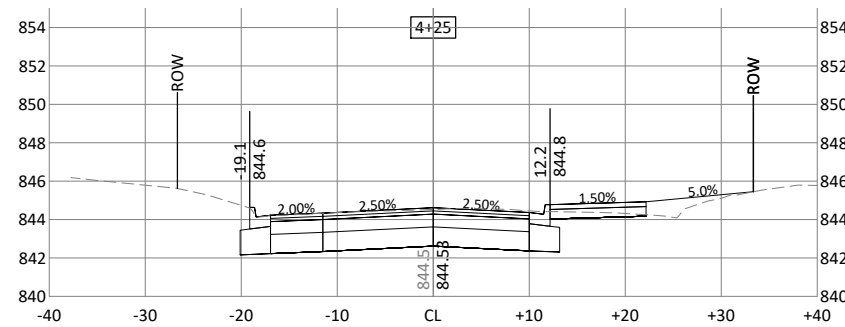
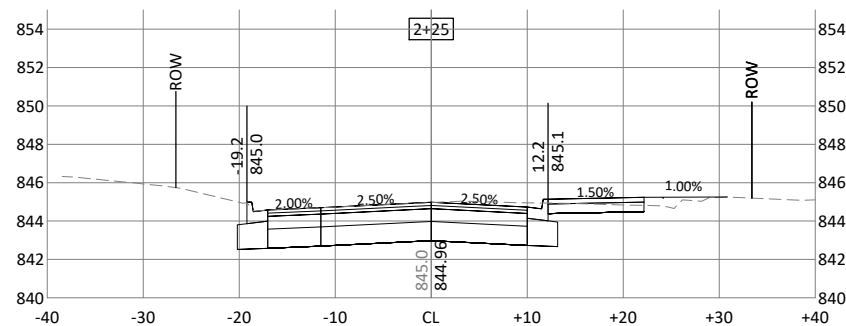
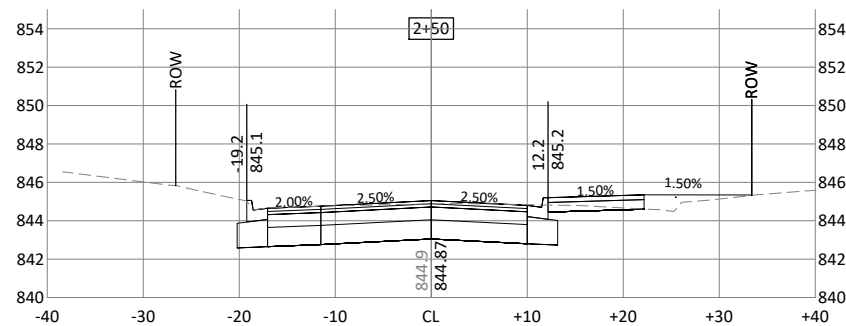
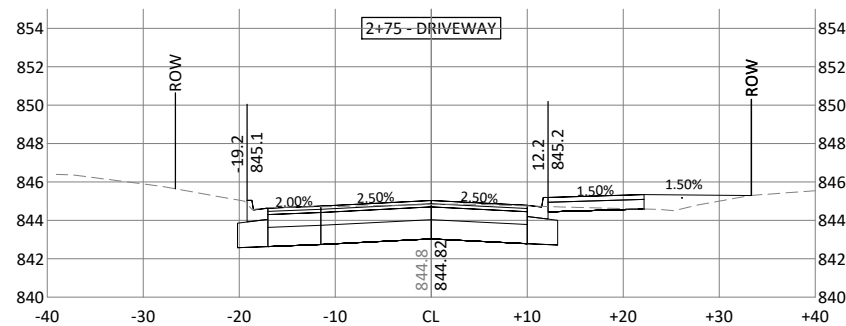
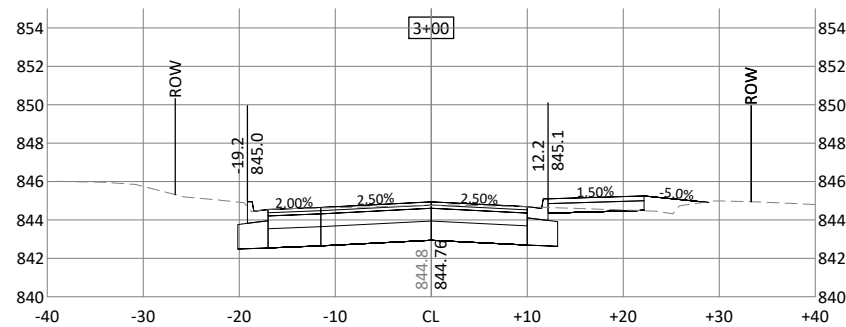
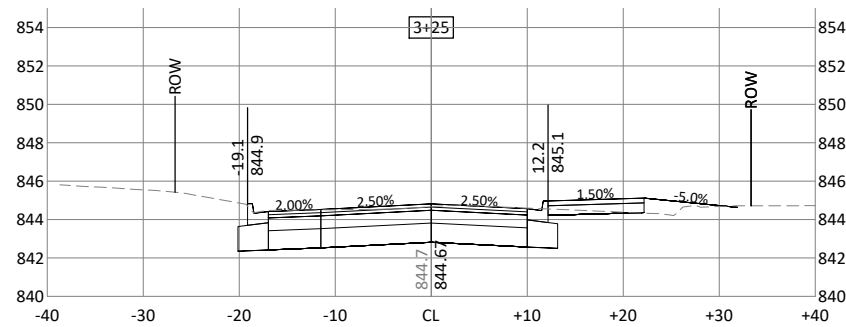
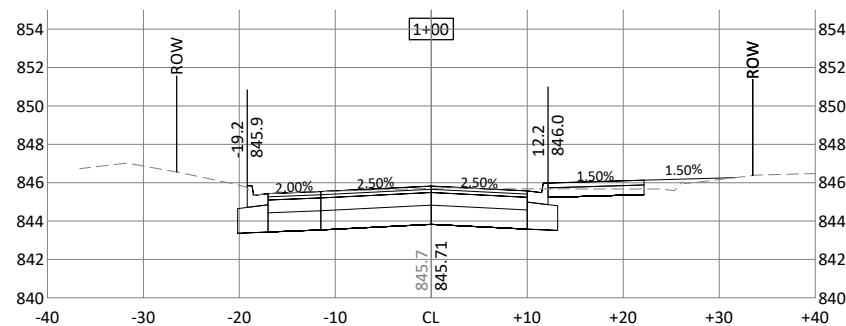
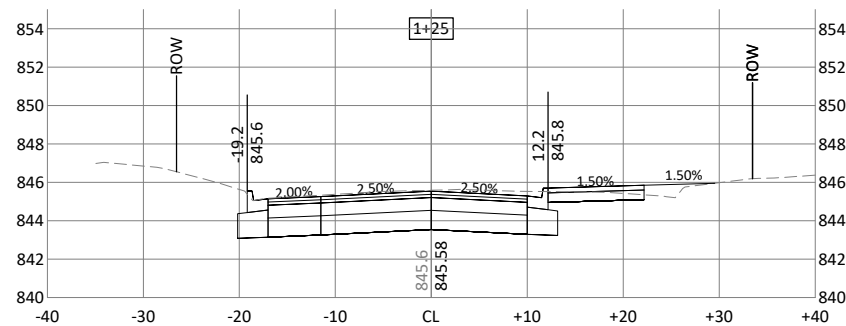
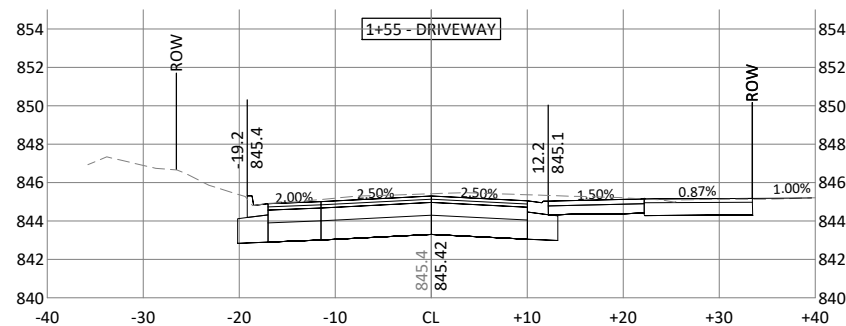
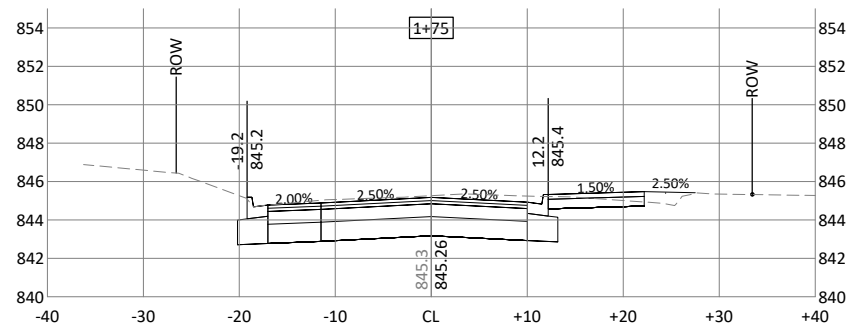
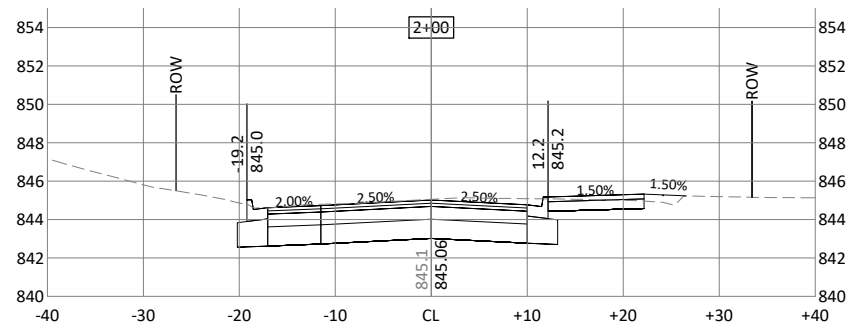
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S.A.P. 127-319-008 / S.A.P. 113-118-005
FOR INFORMATION ONLY - SIGNAL PLANS FOR 53RD AVE & UNIVERSITY

SHEET
69
OF
82

PATH & FILENAME: Projects\DM_R05\047\0000\Traffic\Signals\7.39 - I735316 - MN47-53RD AVE NEV735316R.dgn





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

BRANDON J. BRODHAG
UC. NO. 59297 DATE 06/13/2023

City of
Columbia Heights

7071 University Avenue NE
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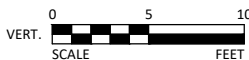
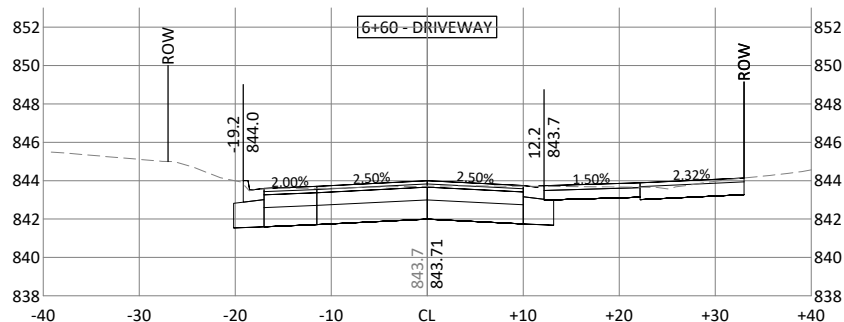
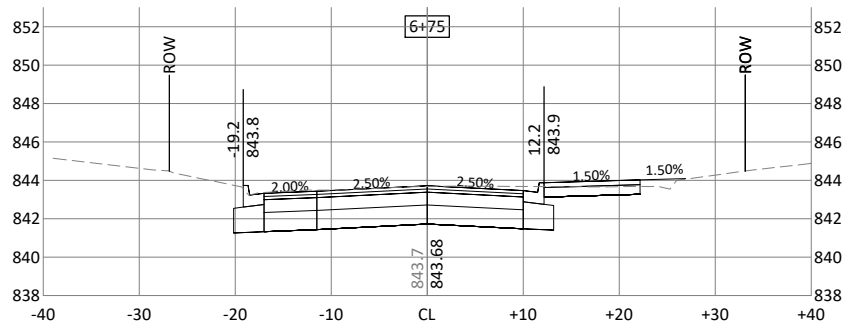
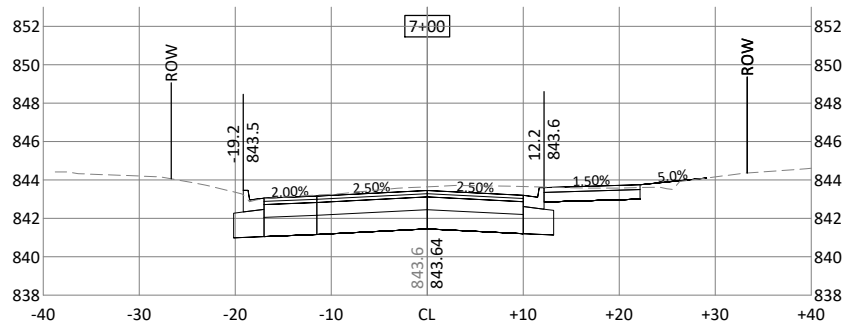
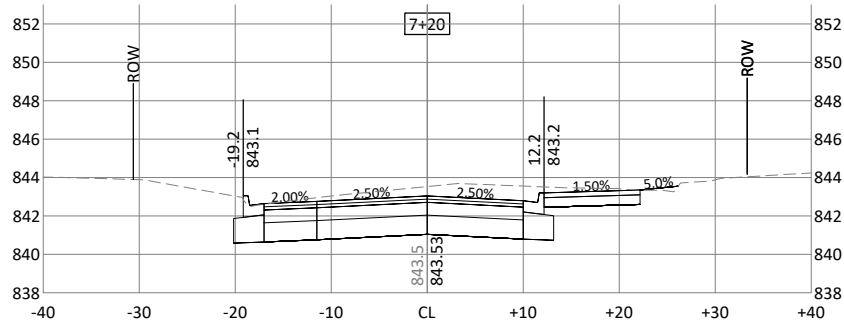
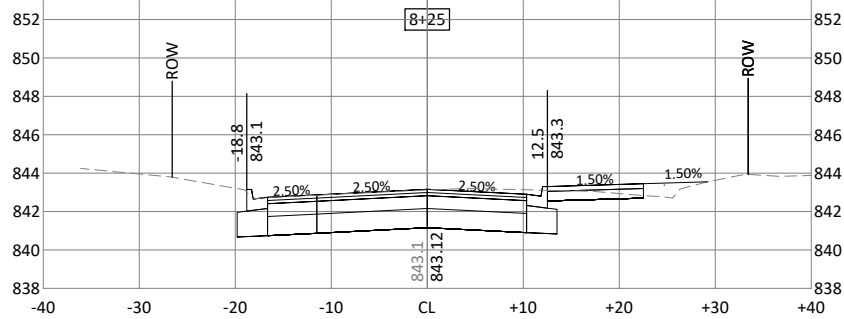
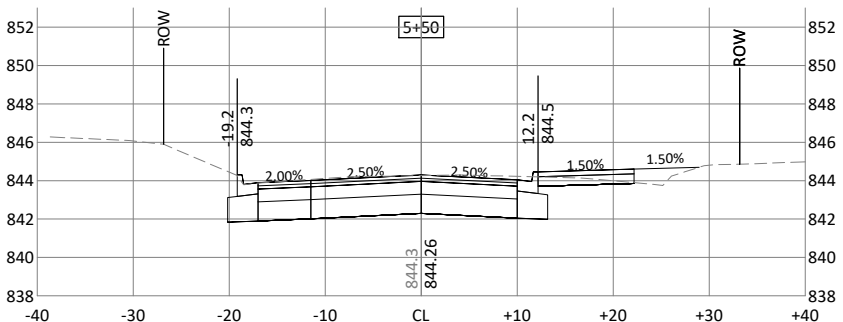
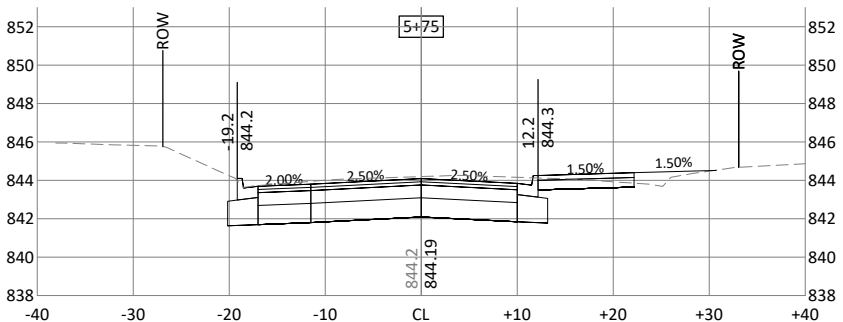
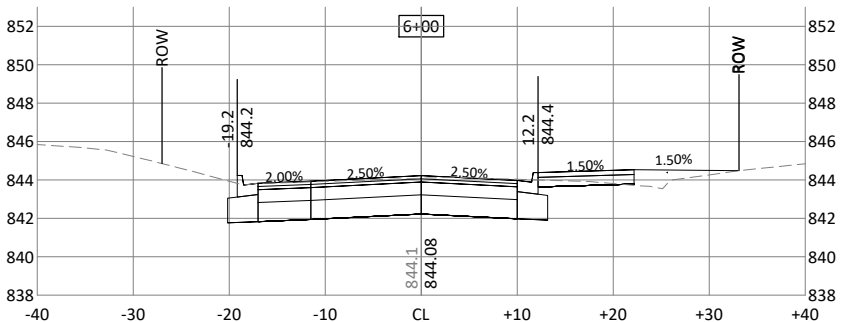
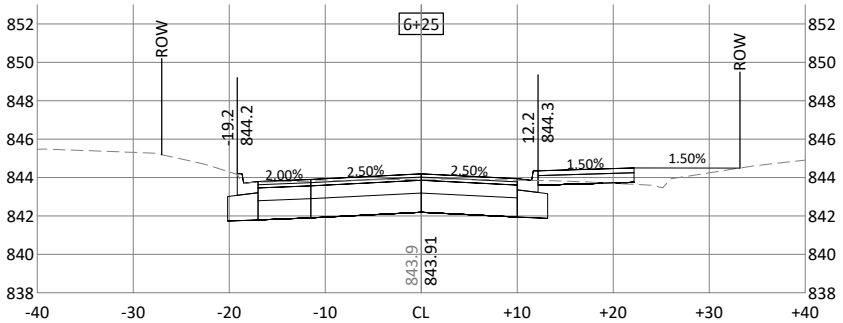
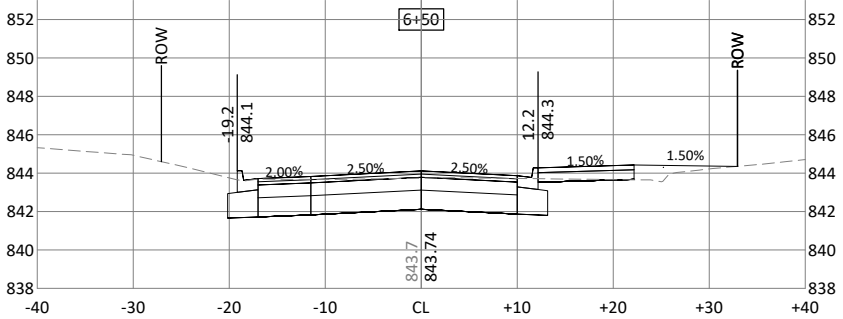
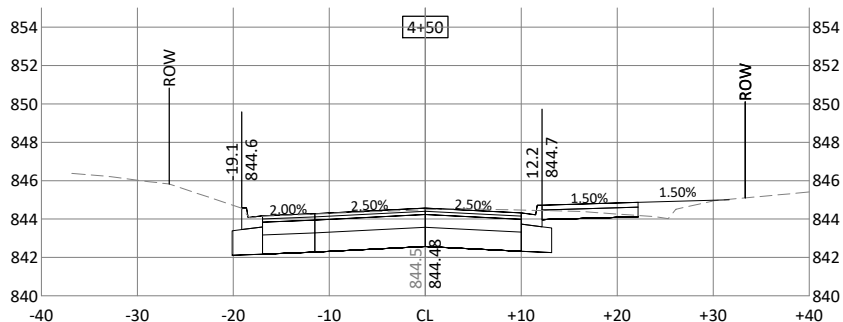
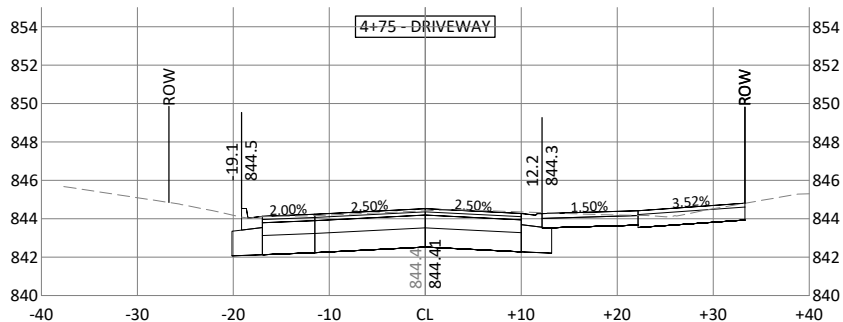
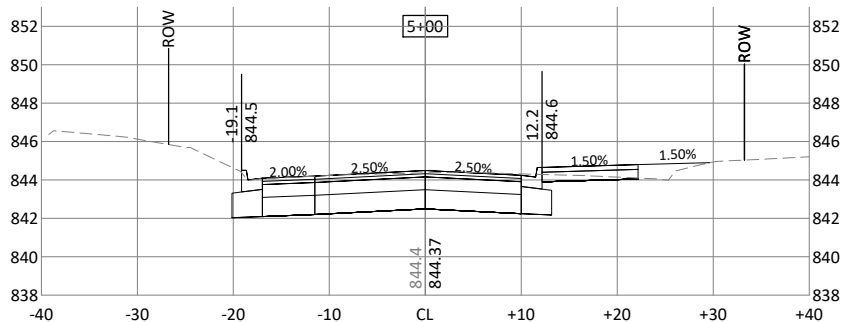
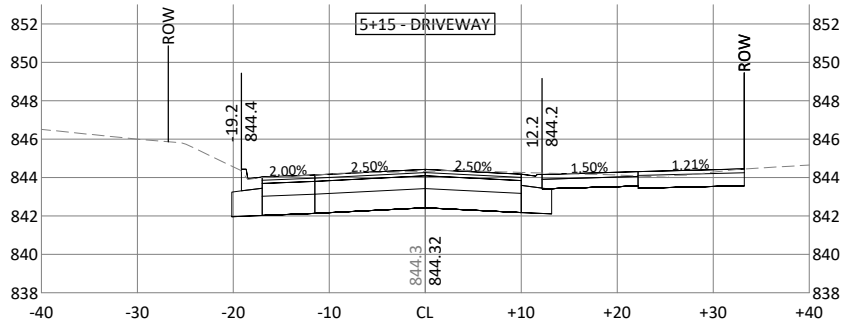
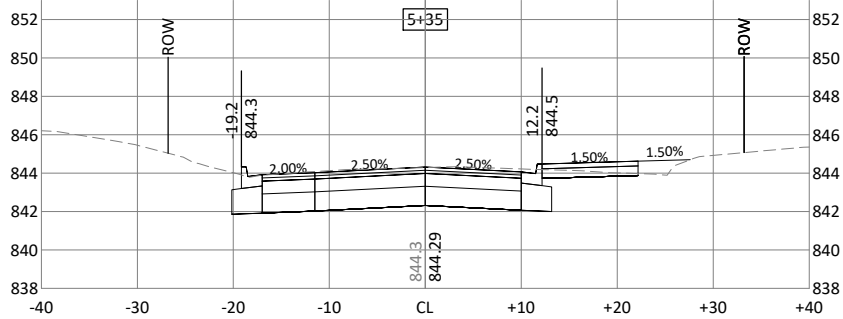
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

CROSS SECTIONS

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OF
82

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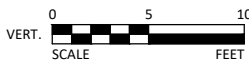
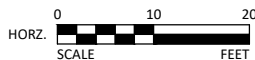
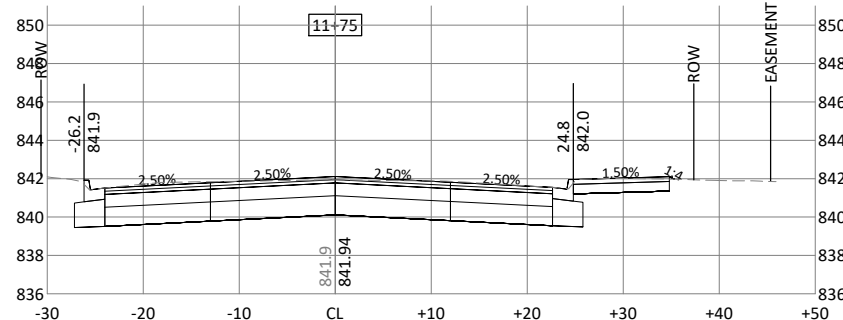
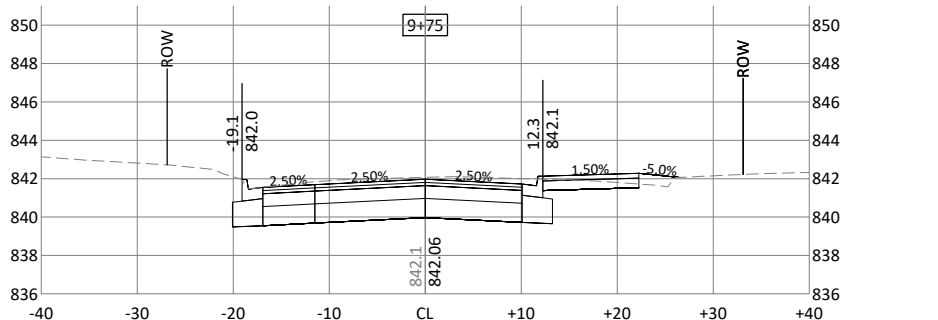
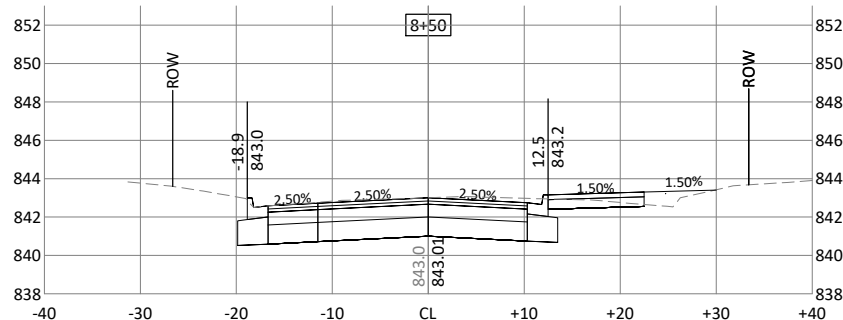
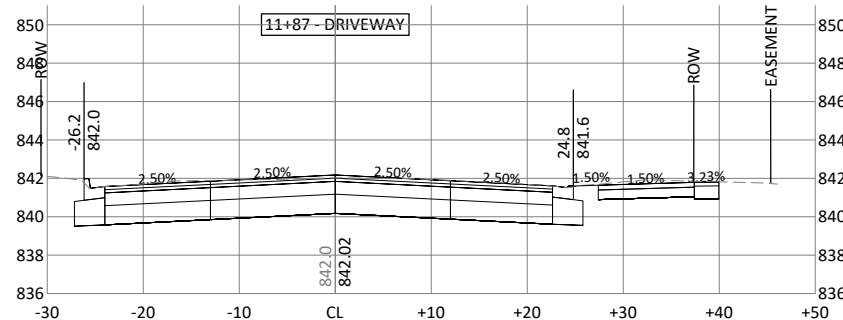
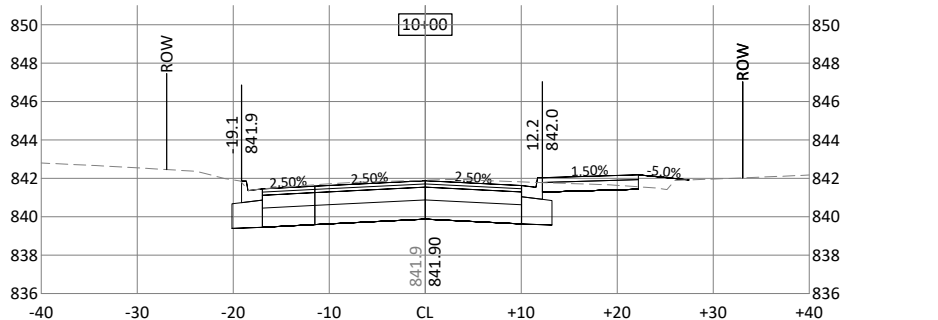
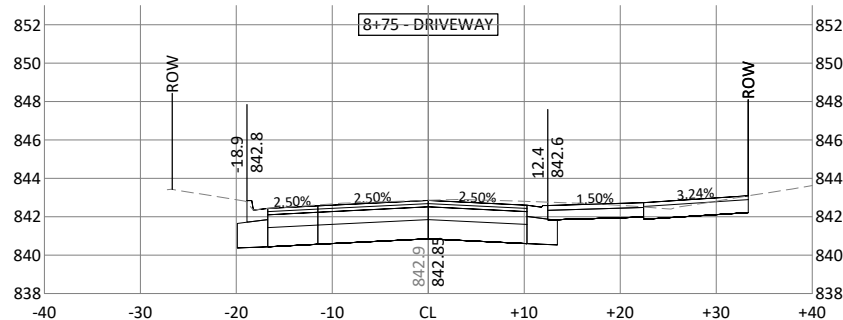
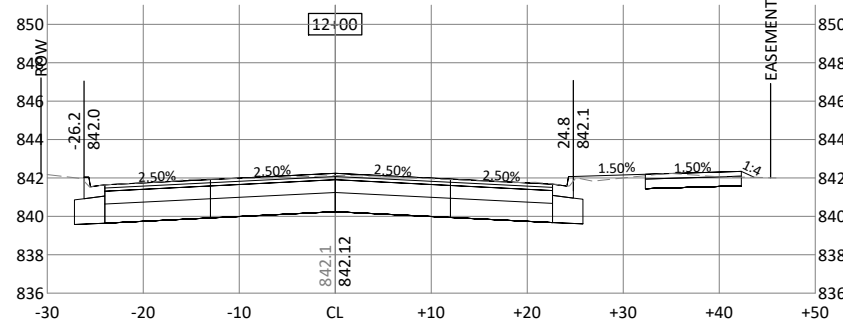
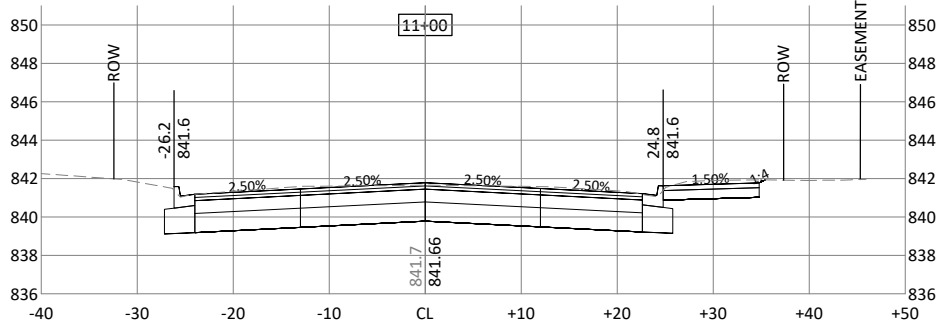
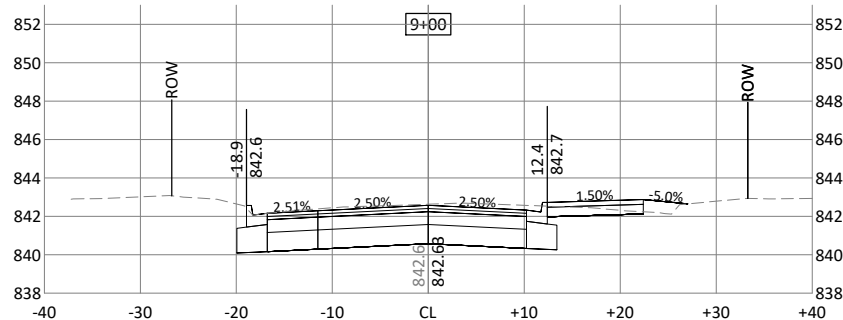
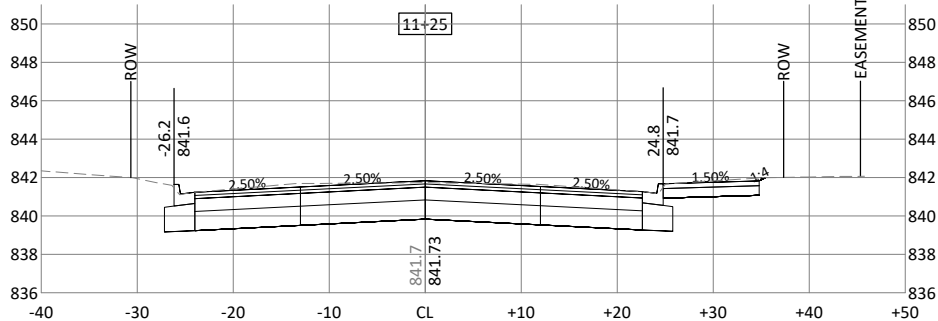
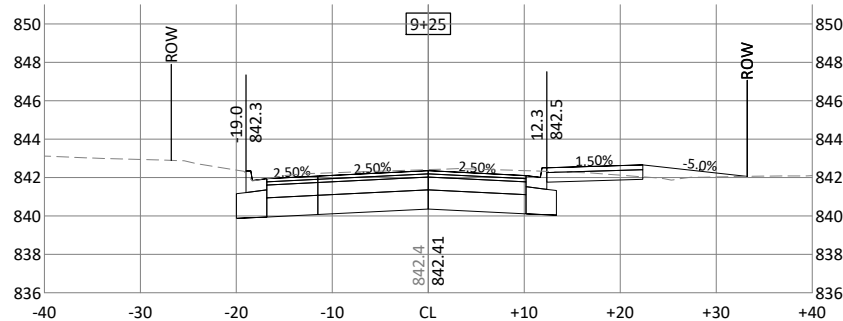
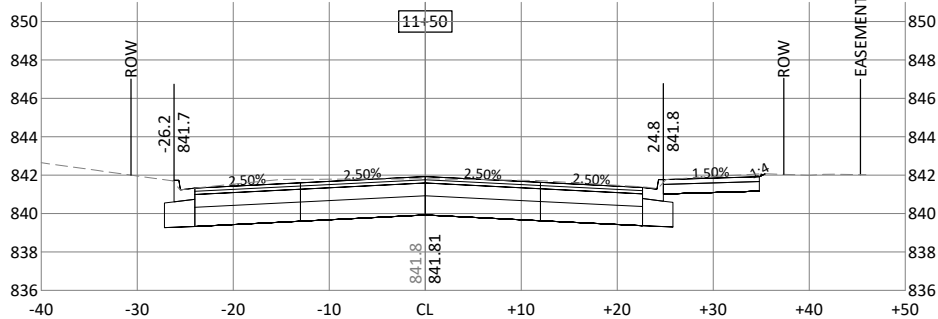
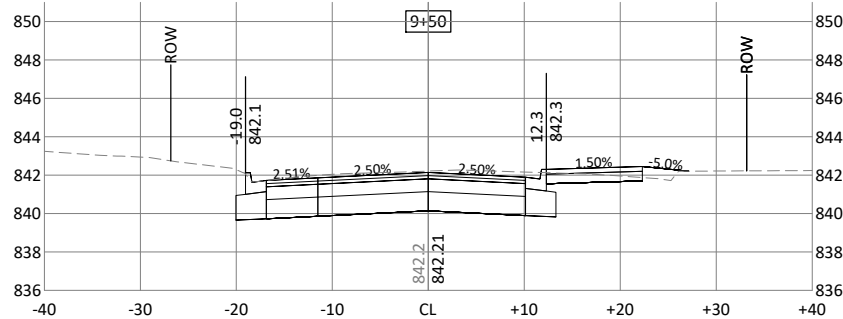
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Brandon J. Brodhag
BRANDON J. BRODHAG
UC NO. 59297 DATE 06/13/2023



City of
Columbia Heights



7071 University Avenue NE
Fridley, MN 55432

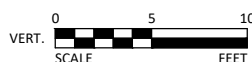
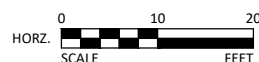
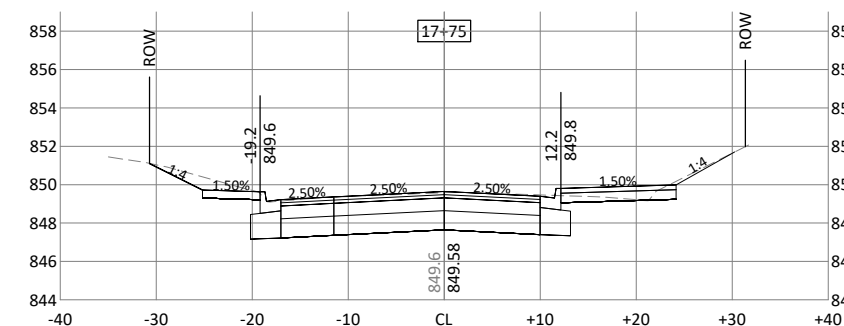
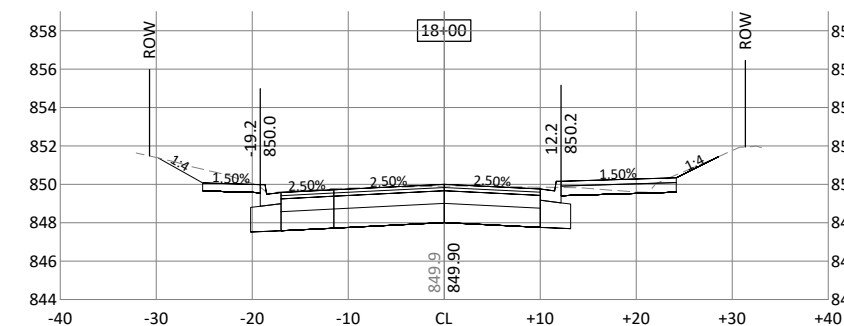
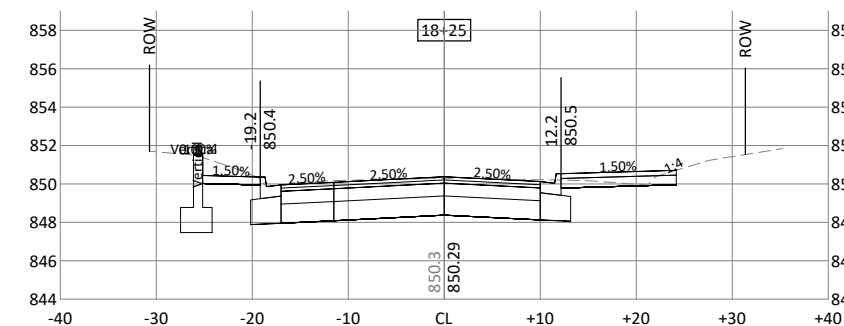
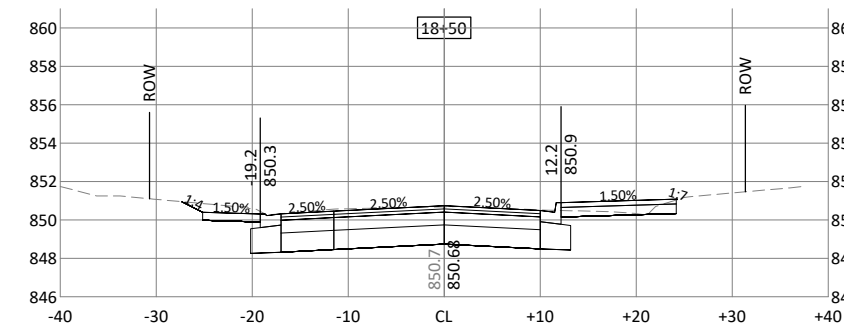
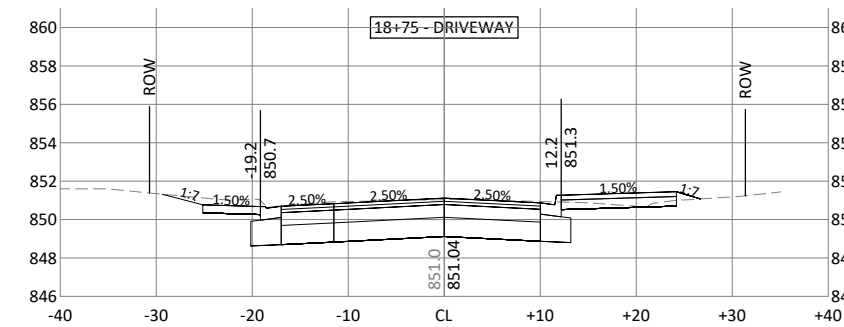
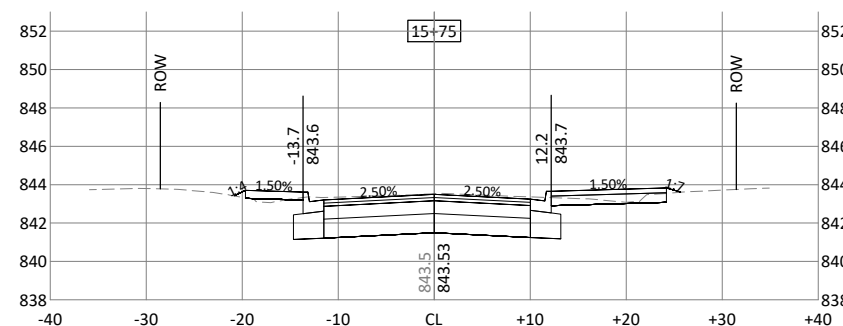
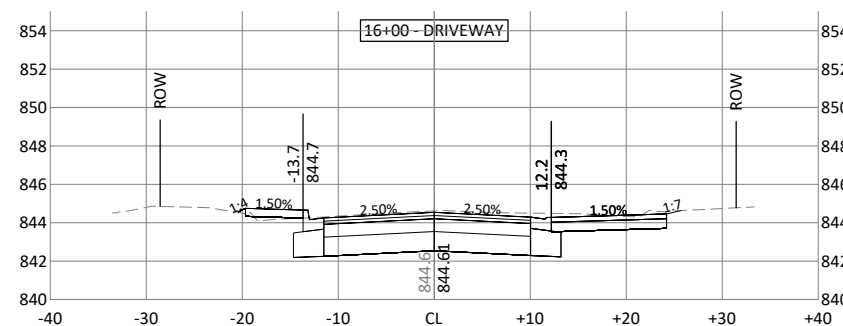
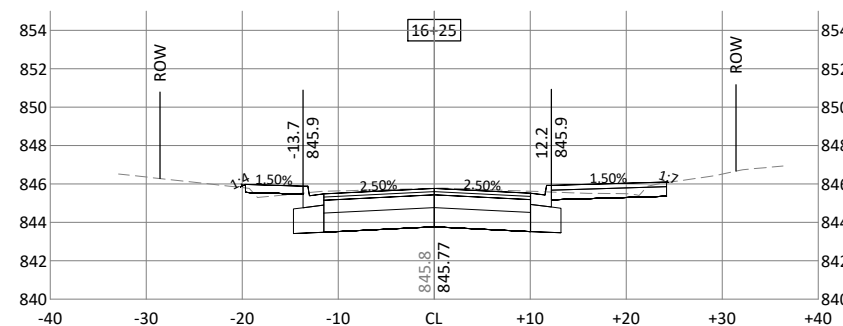
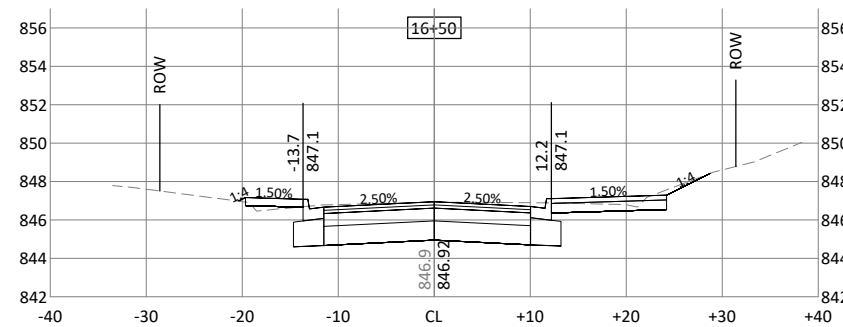
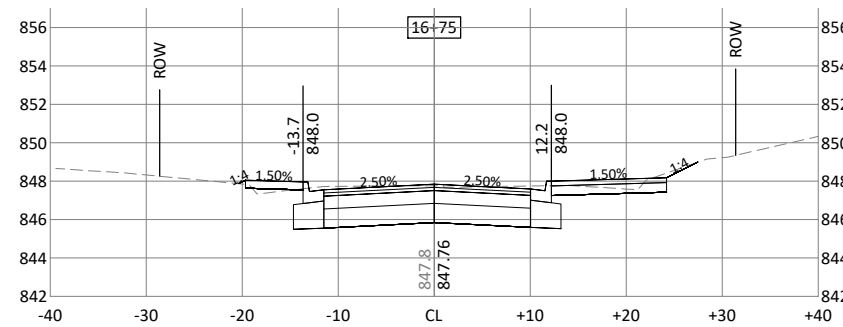
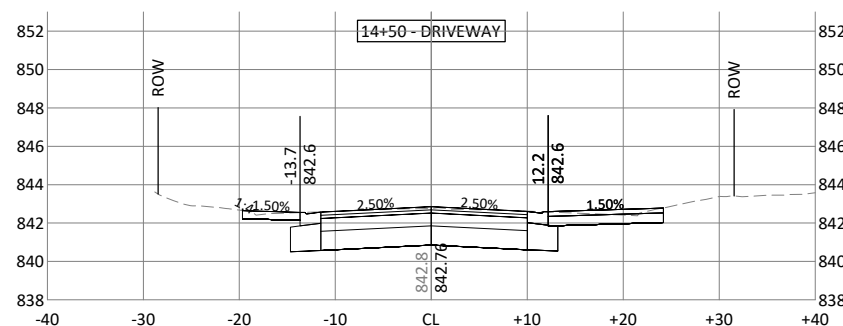
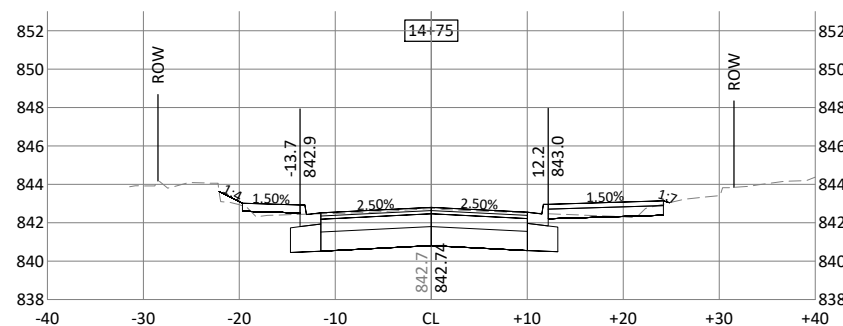
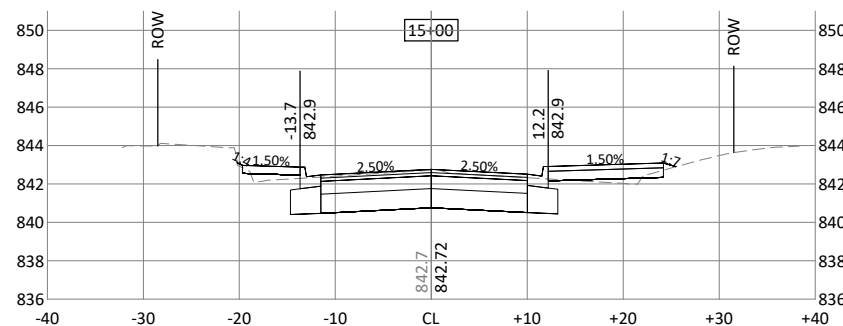
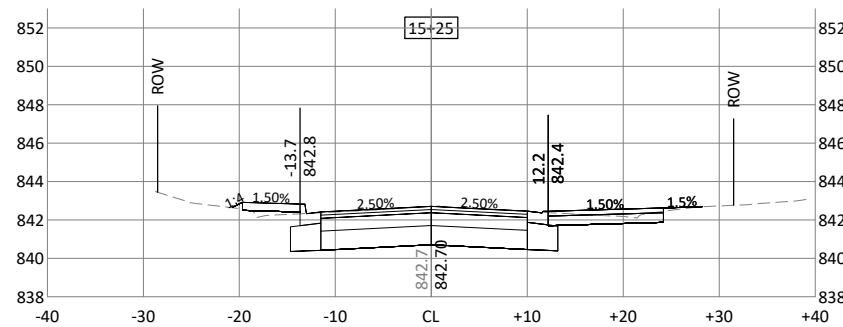
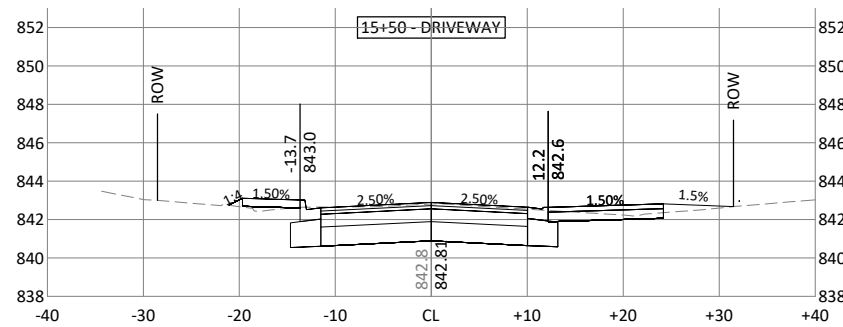
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

CROSS SECTIONS

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BRANDON J. BRODHAG
59297
DATE 06/13/2023

City of
Columbia Heights

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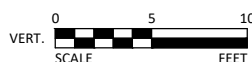
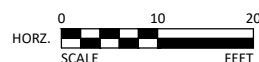
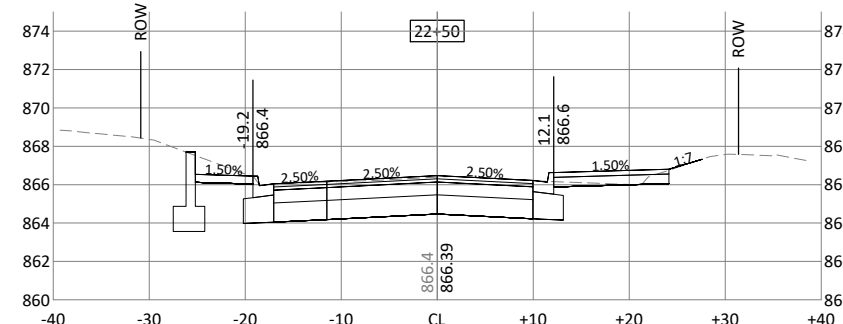
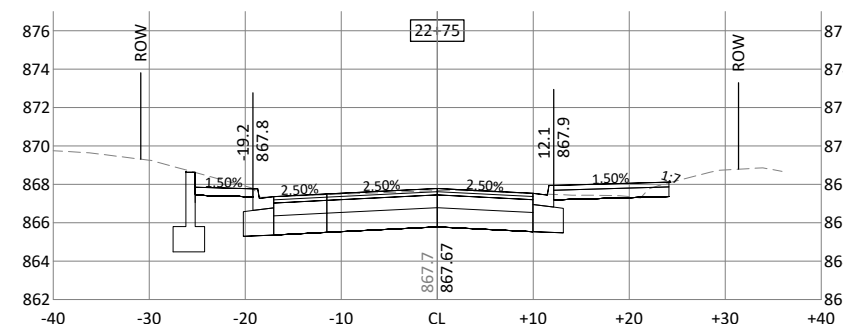
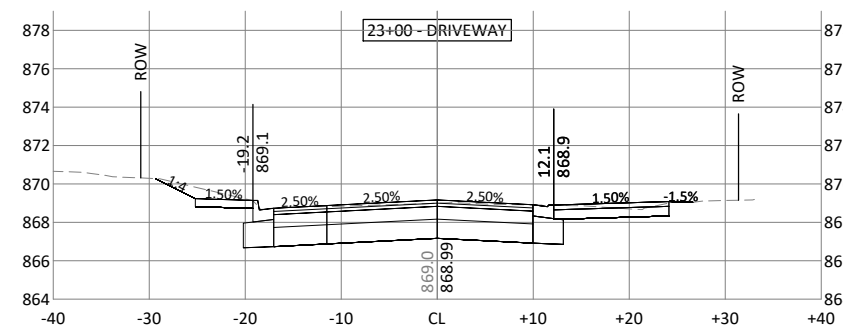
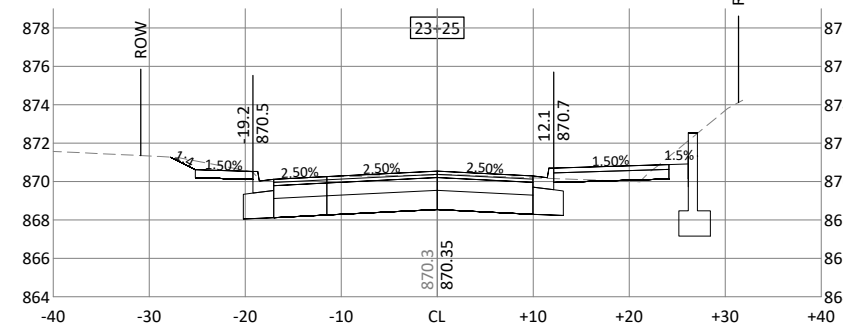
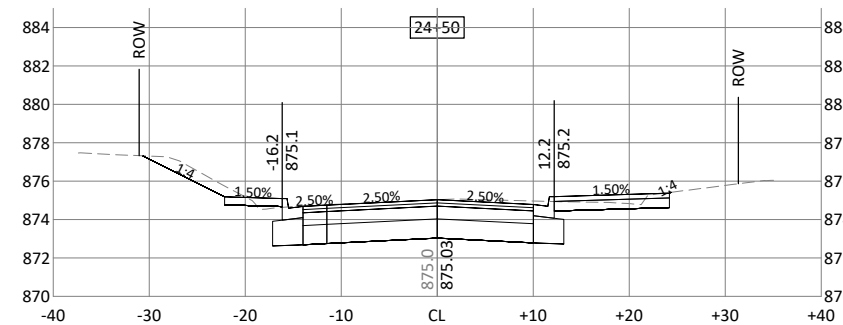
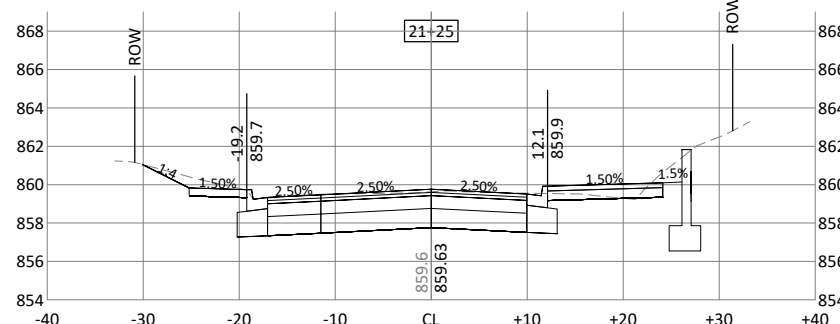
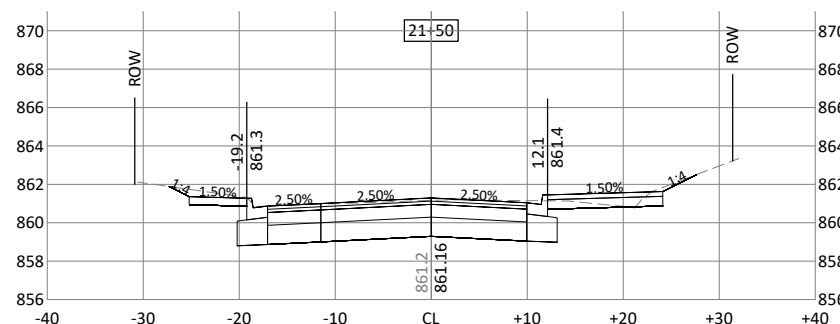
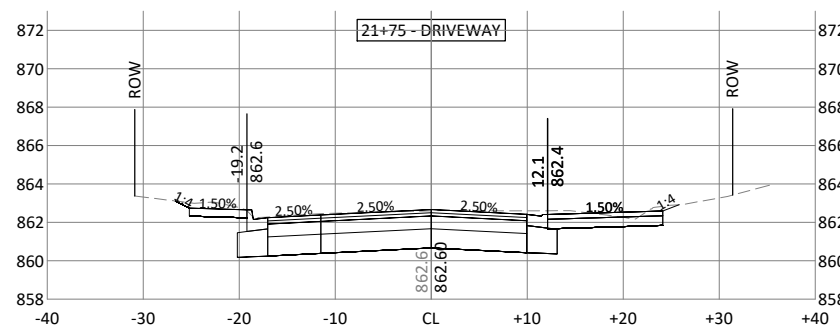
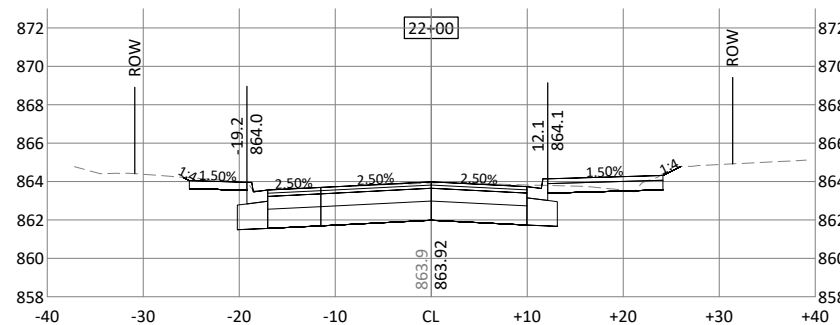
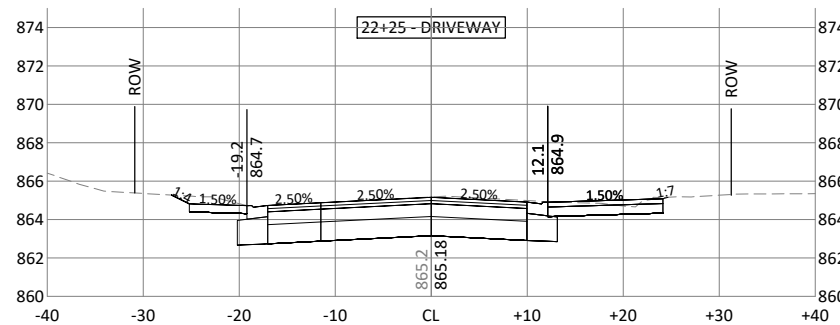
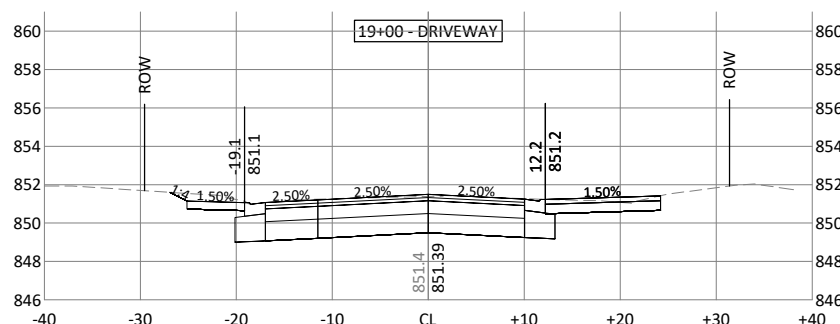
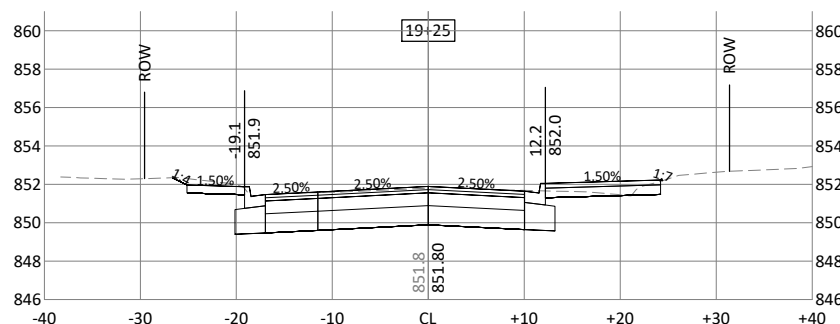
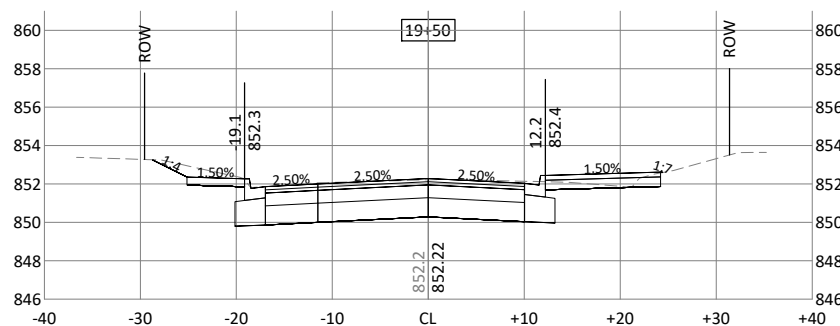
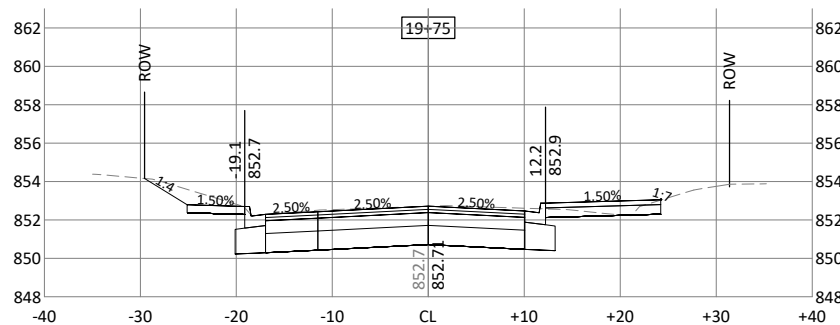
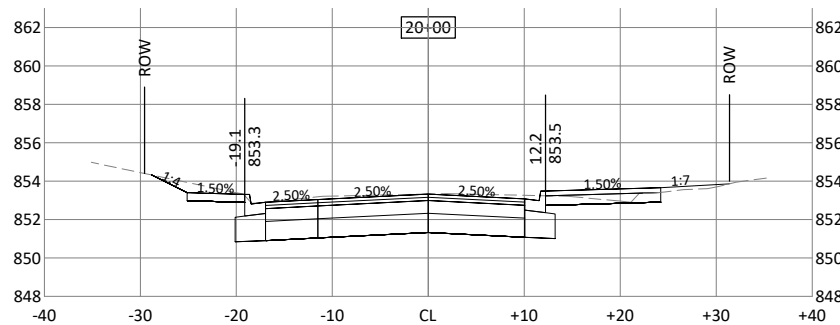
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

CROSS SECTIONS

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59297
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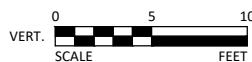
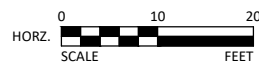
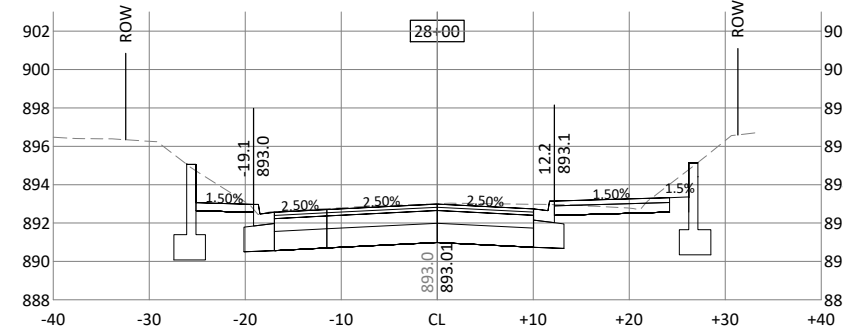
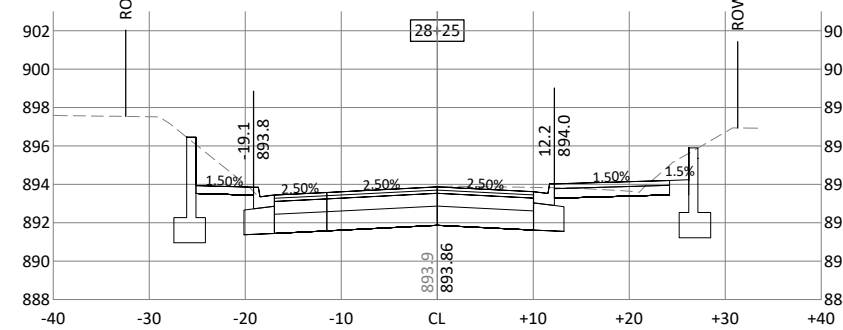
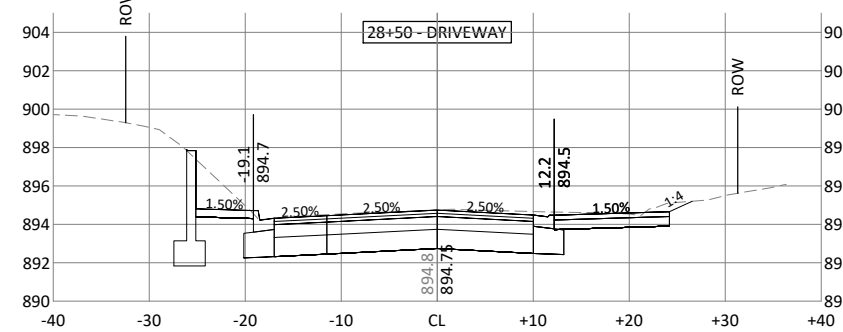
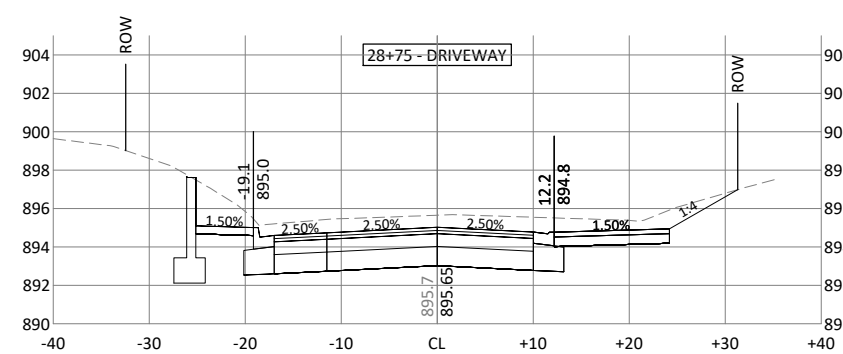
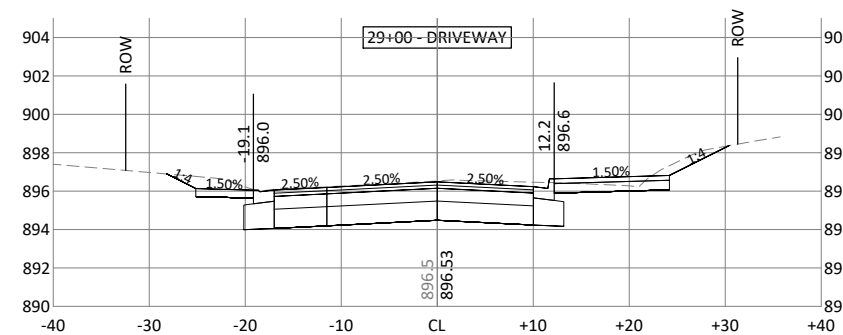
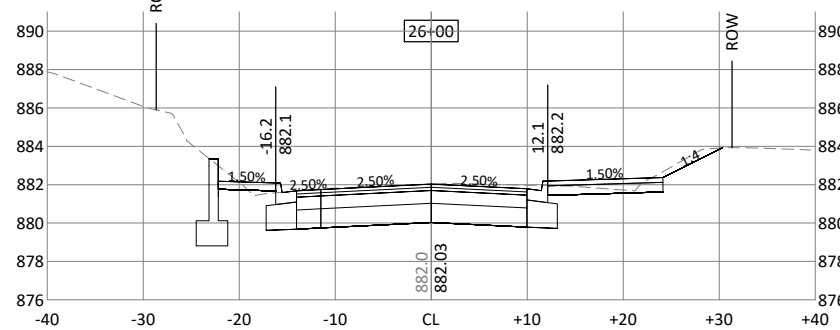
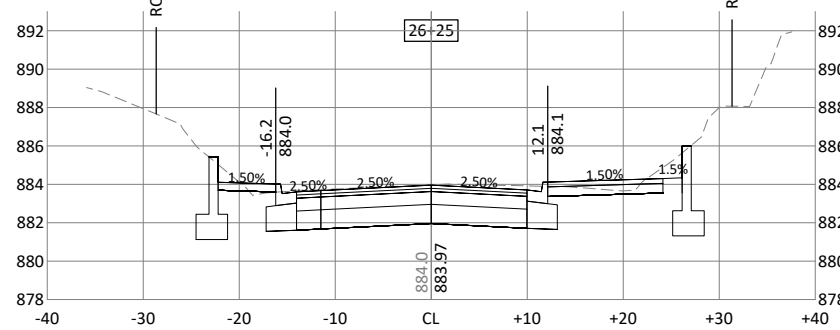
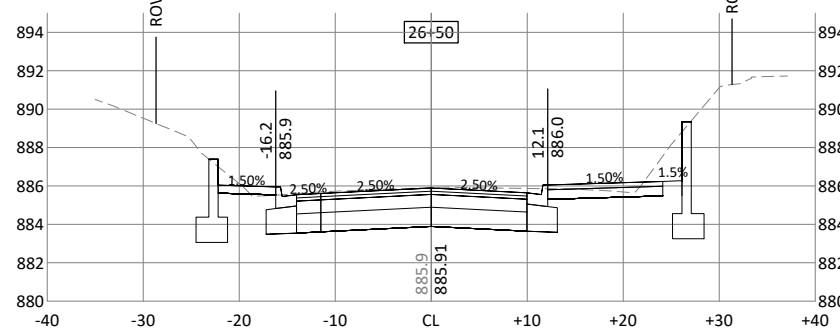
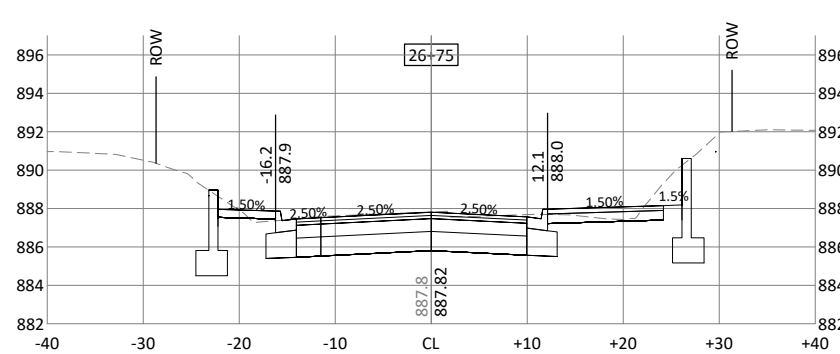
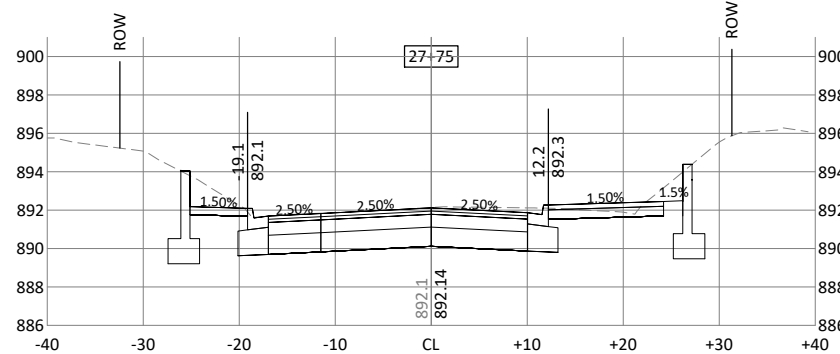
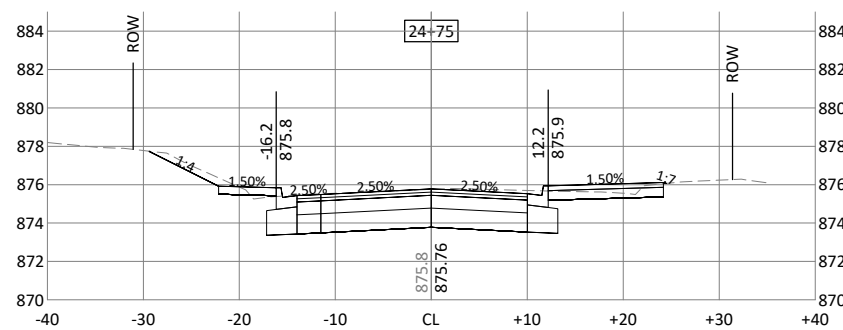
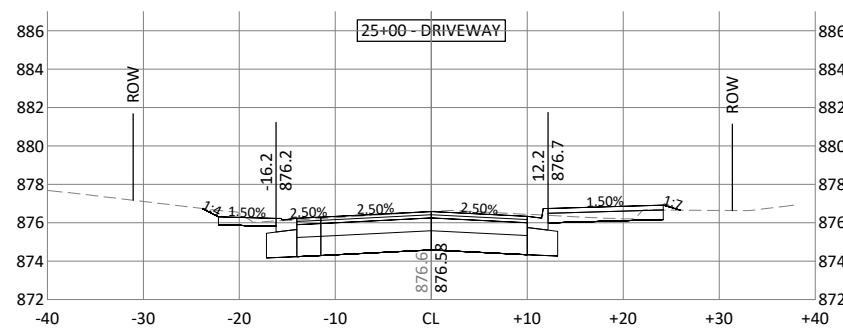
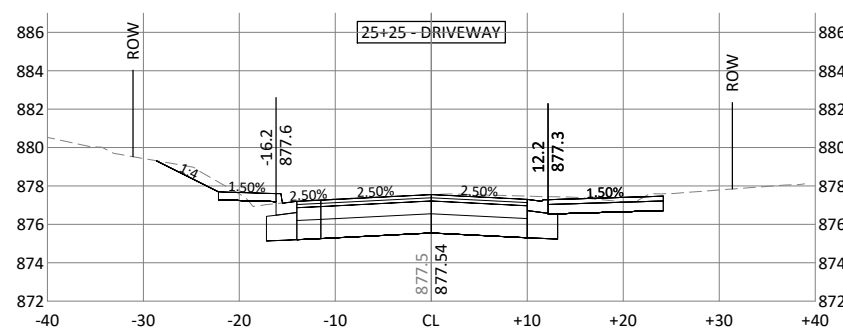
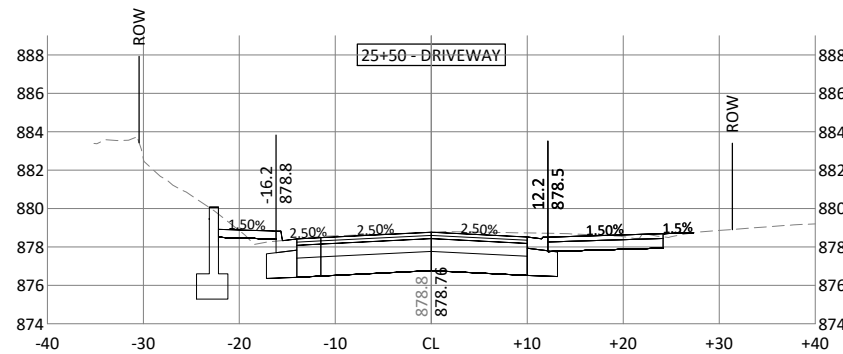
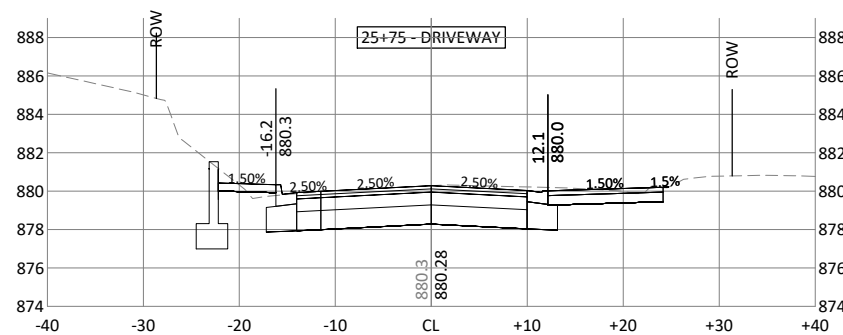
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

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82



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BRANDON J. BRODHAG
UC. NO. 59297 DATE 06/13/2023

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Fridley, MN 55432

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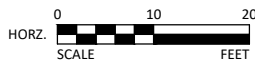
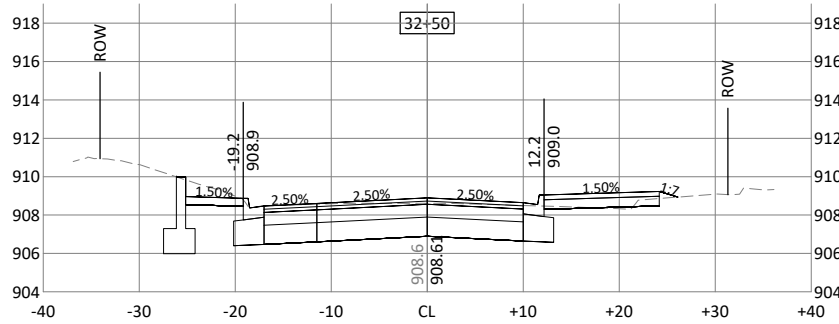
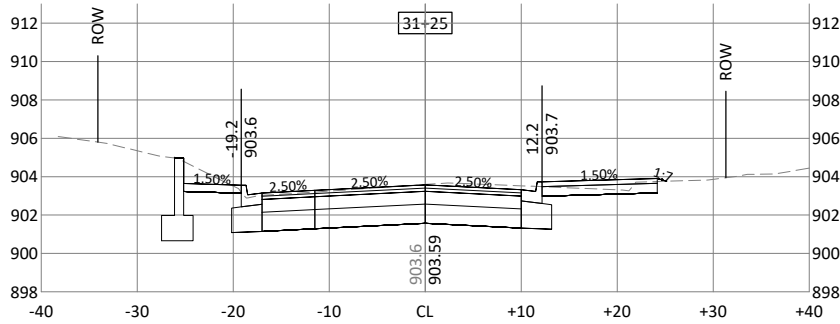
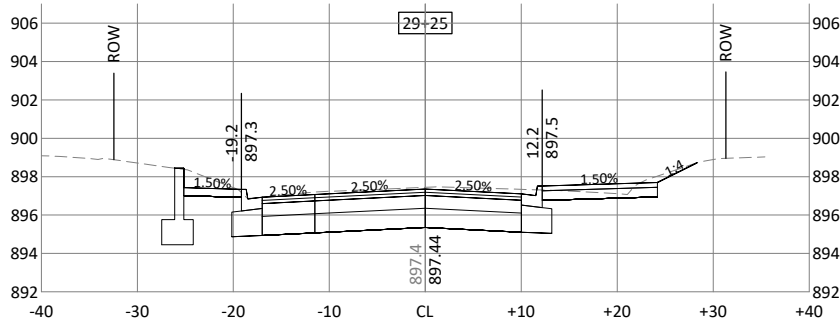
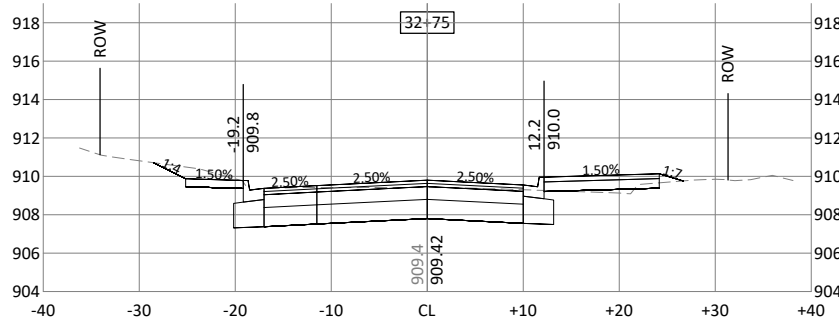
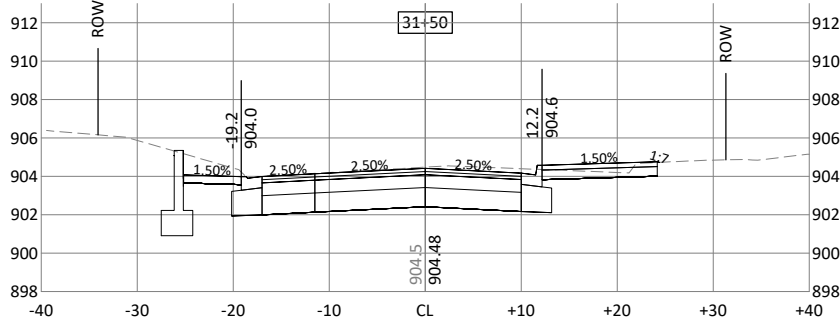
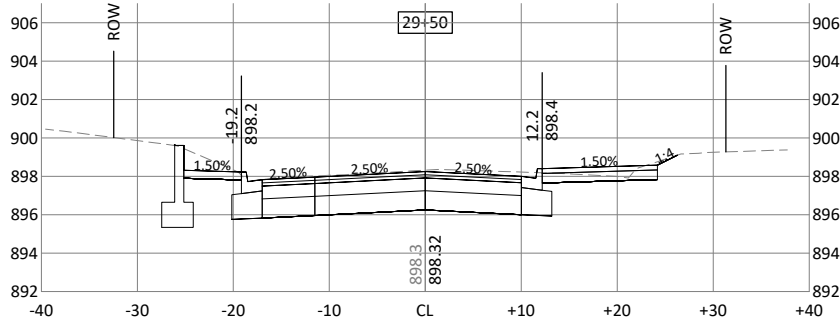
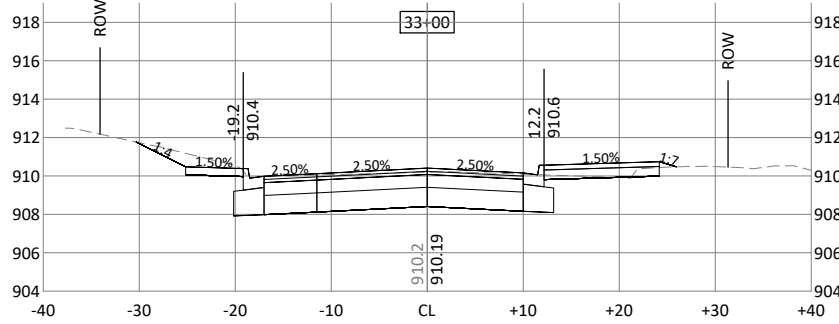
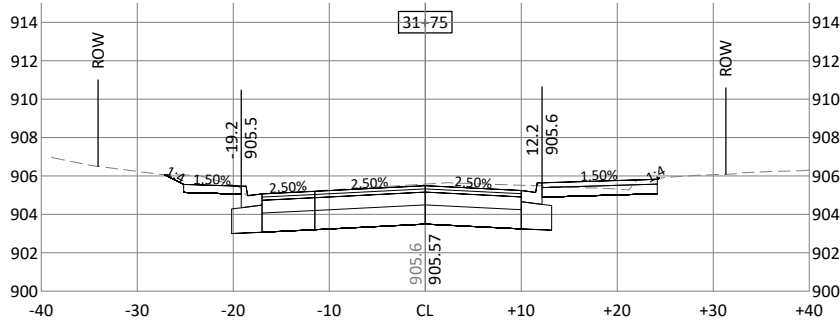
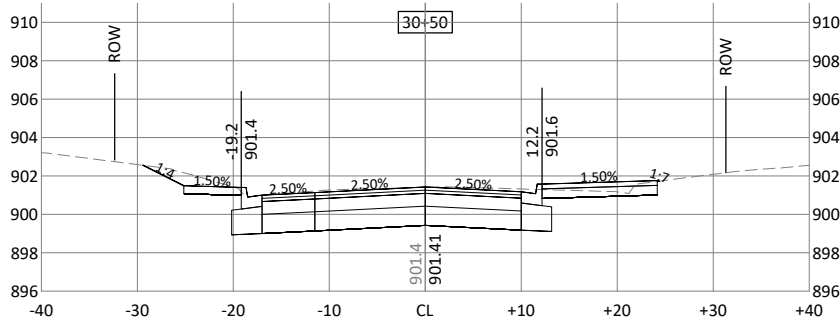
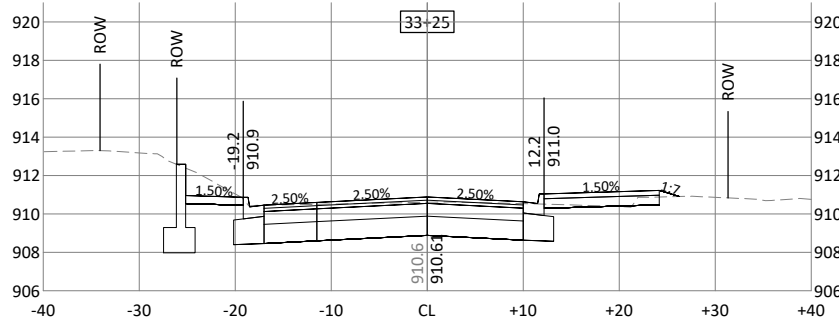
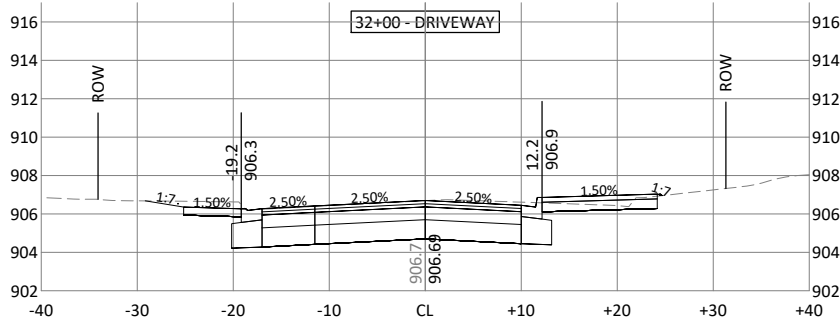
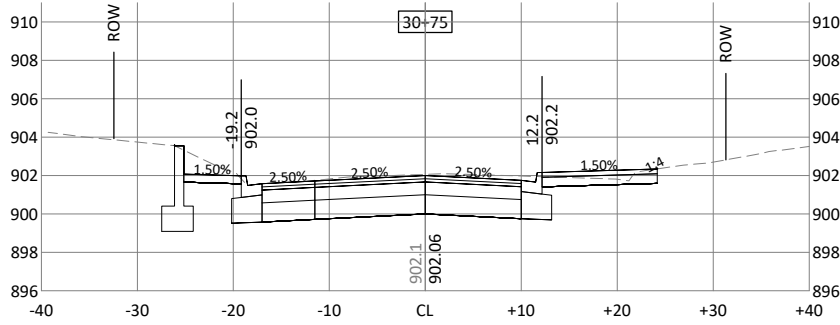
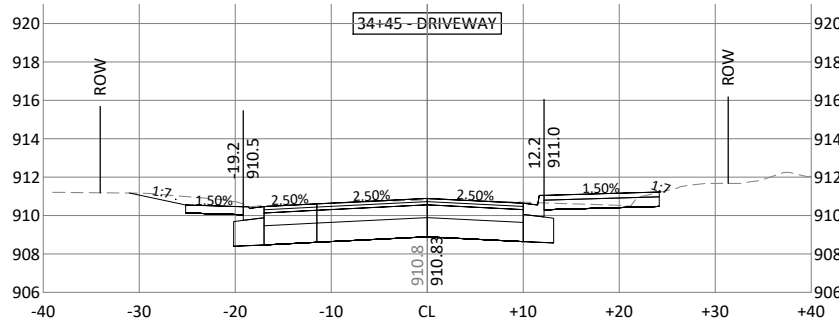
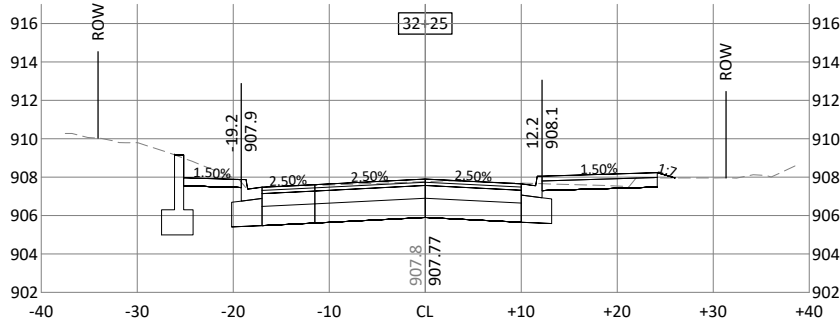
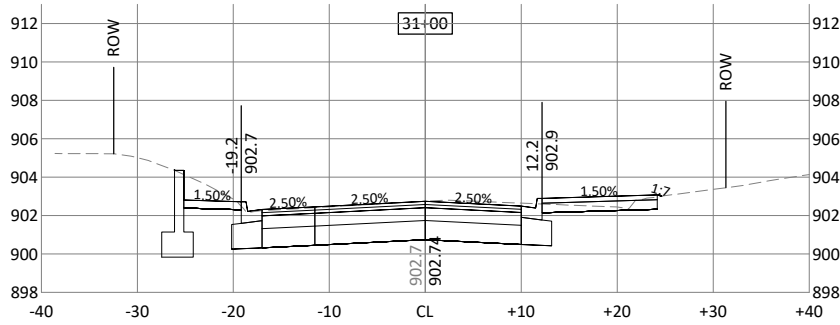
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

CROSS SECTIONS

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82

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UC NO. 59297 DATE 06/13/2023



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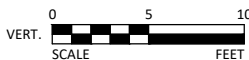
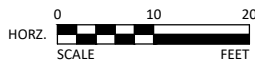
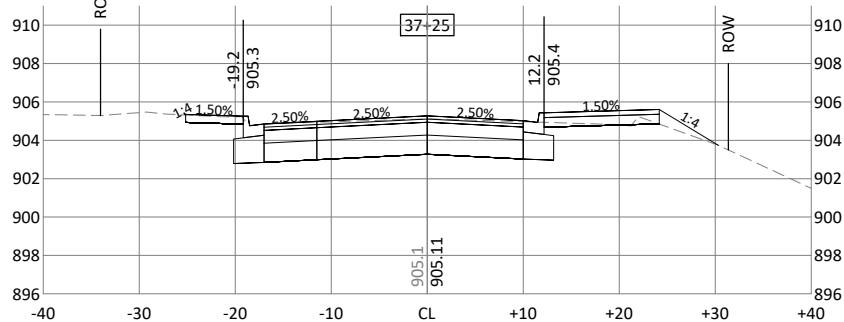
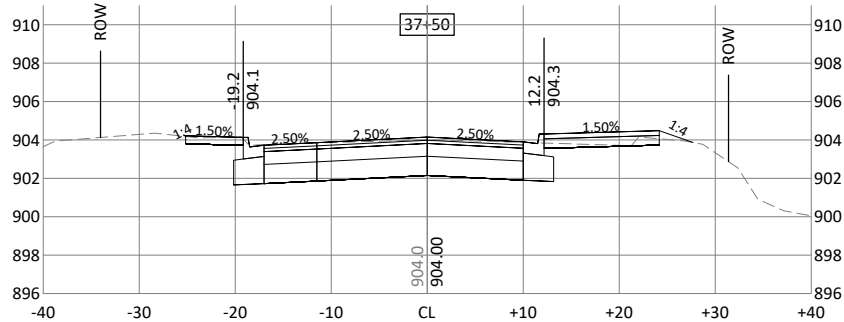
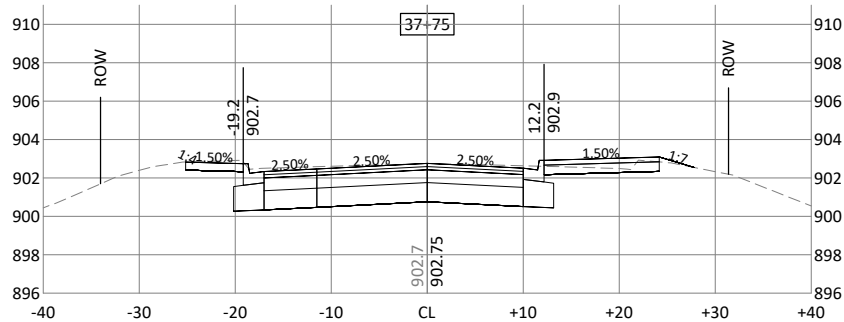
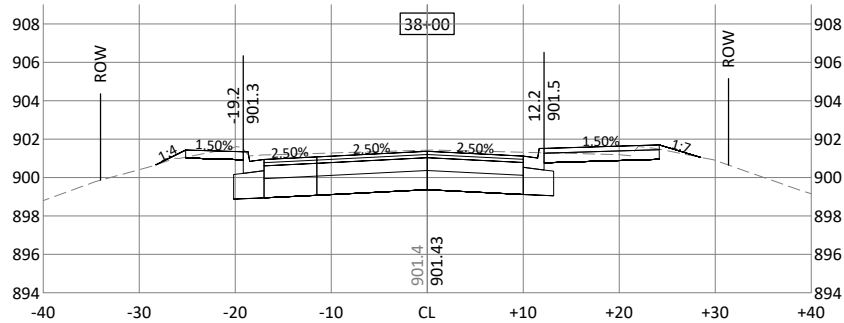
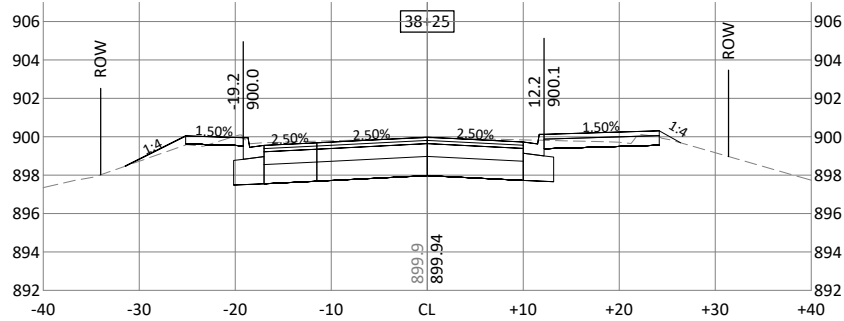
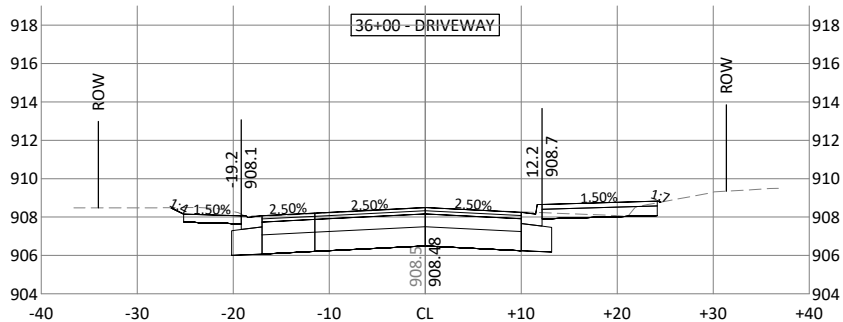
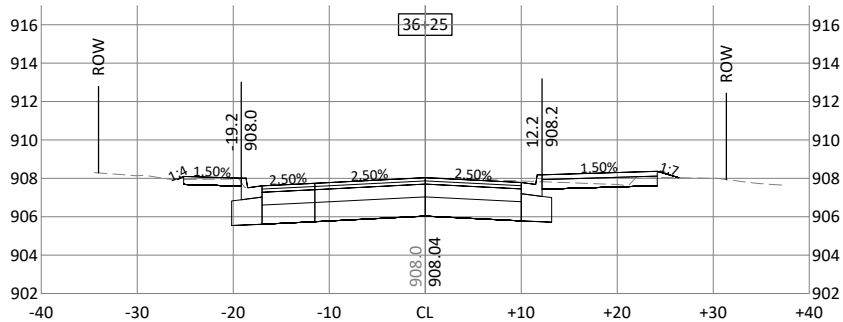
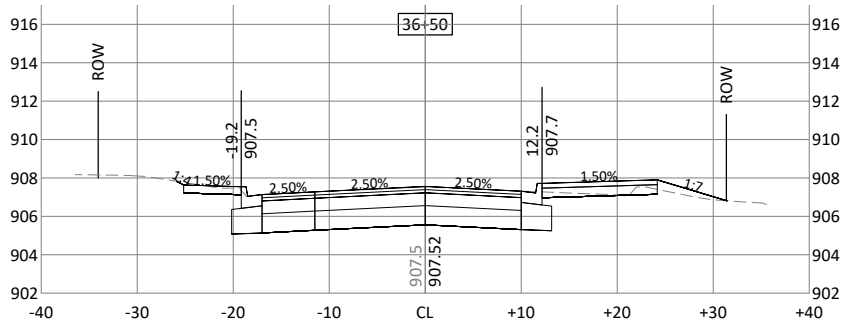
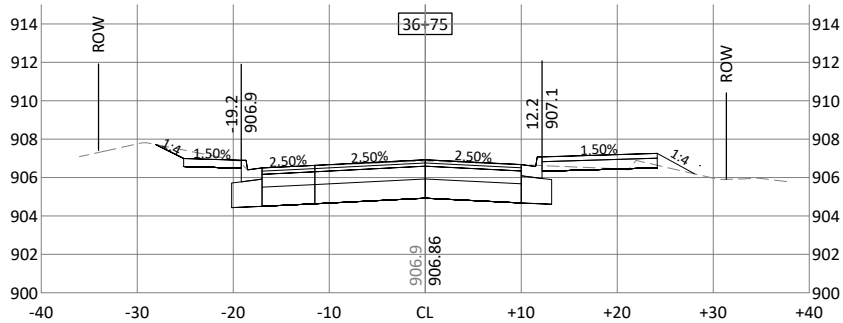
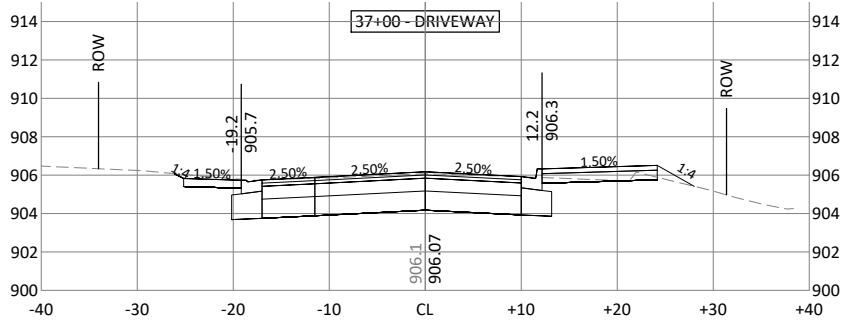
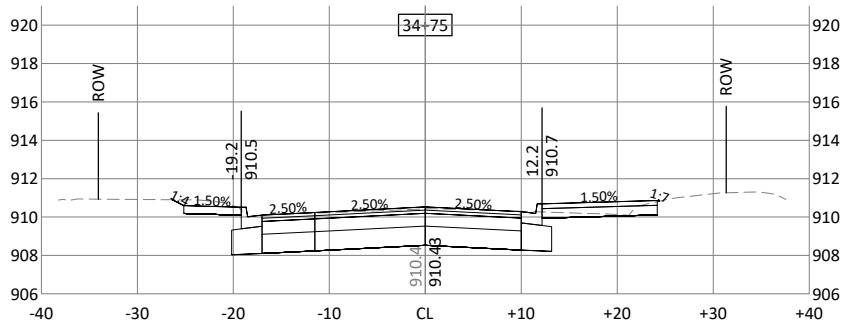
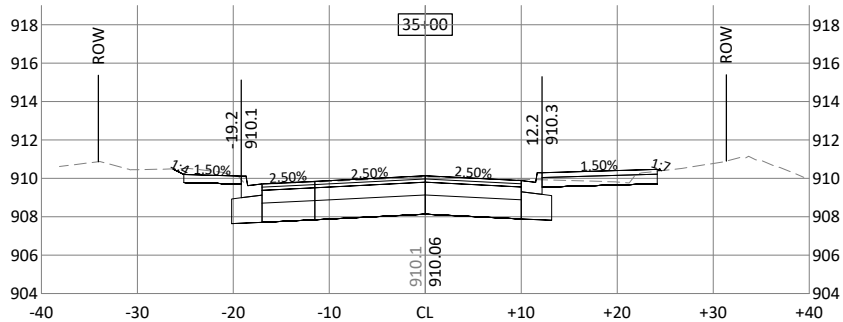
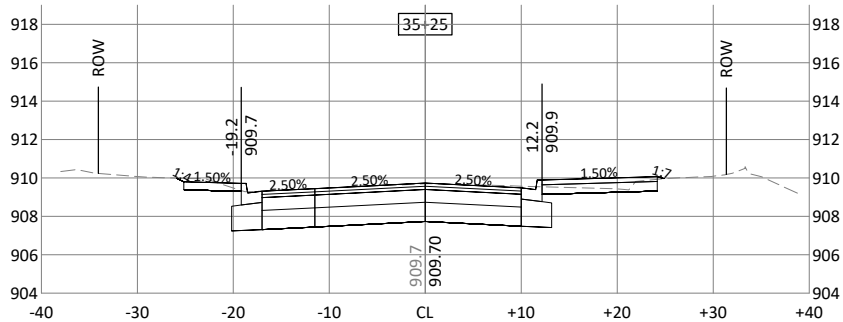
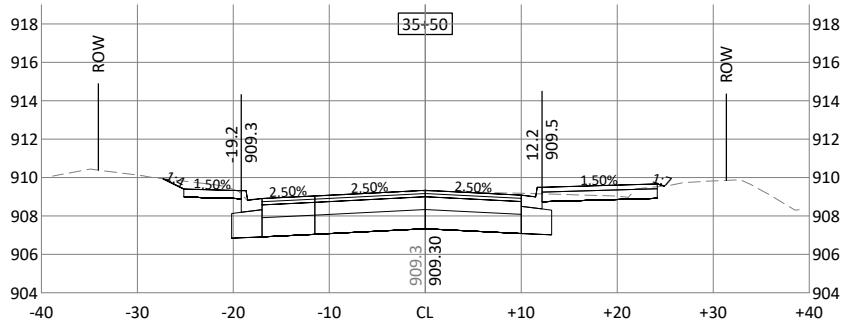
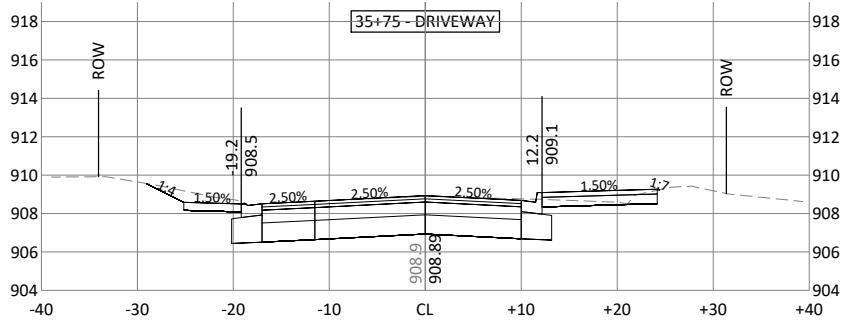
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

CROSS SECTIONS

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Brandon J. Brodhag
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UC NO. 59297 DATE 06/13/2023



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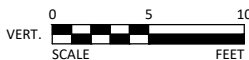
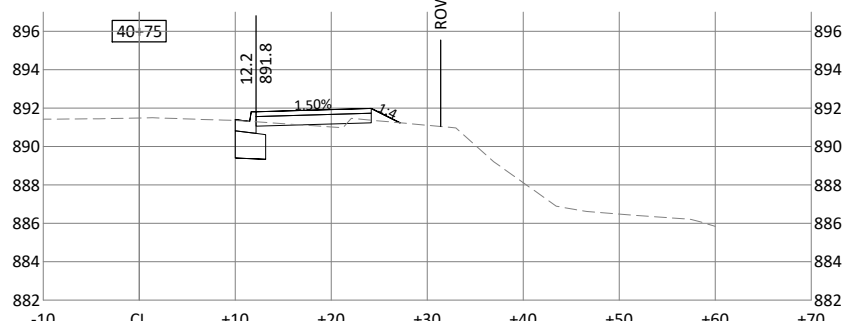
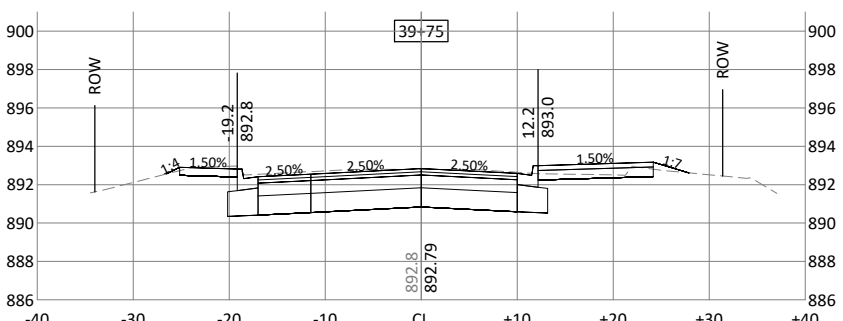
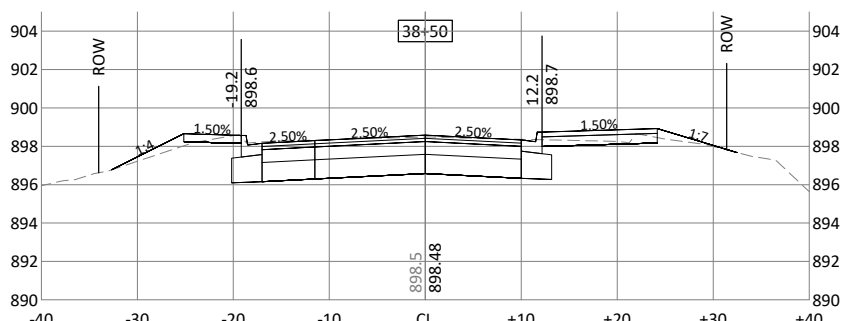
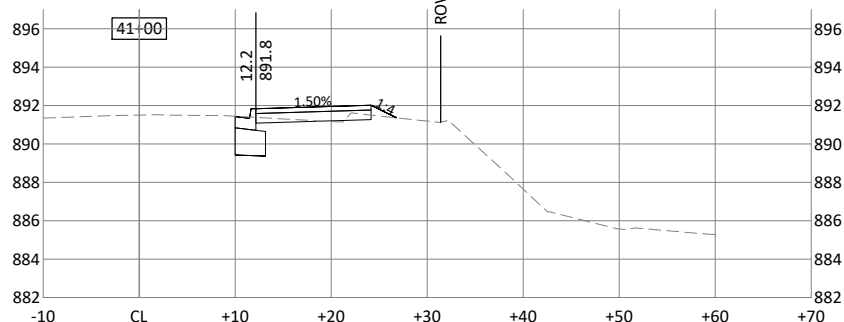
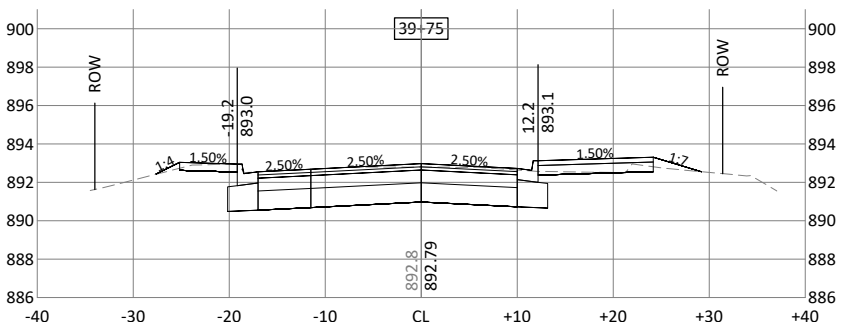
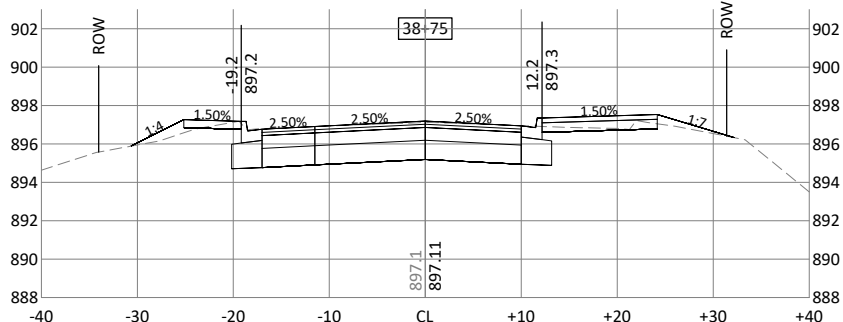
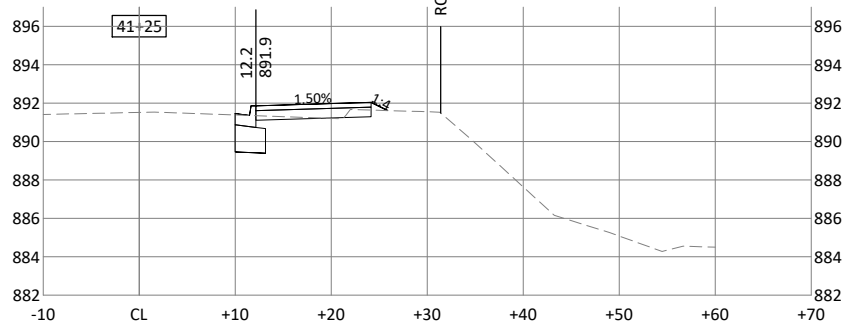
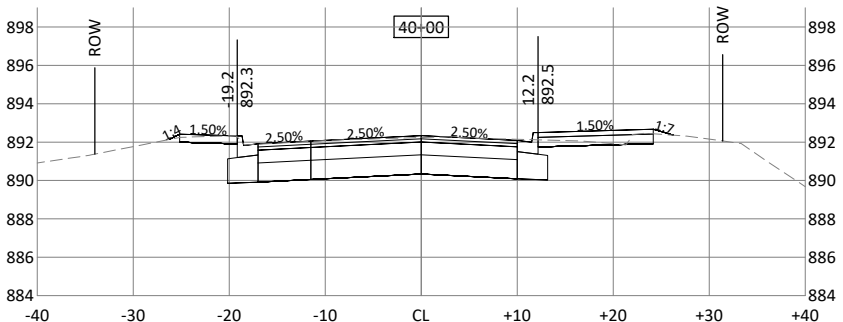
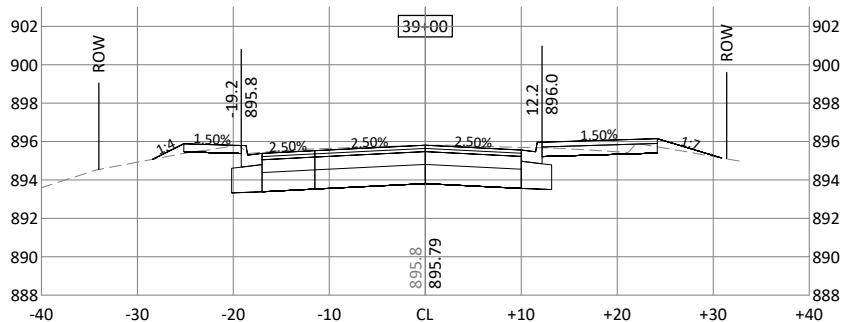
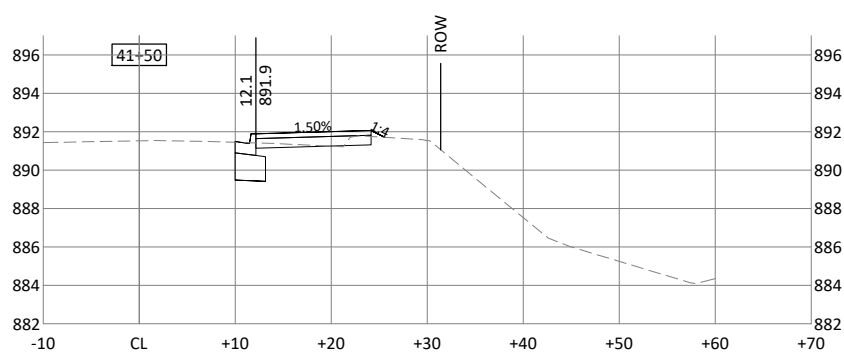
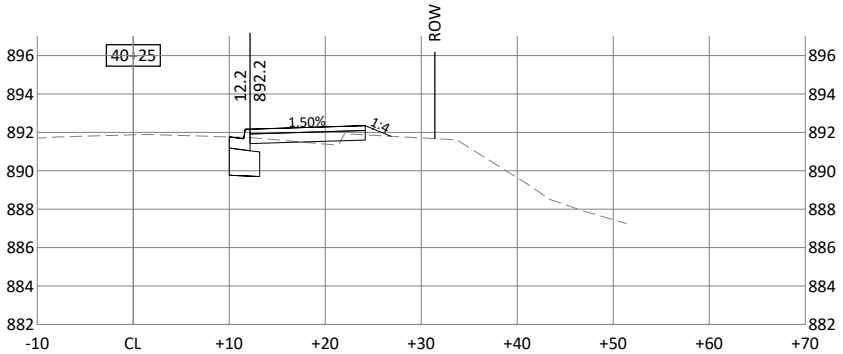
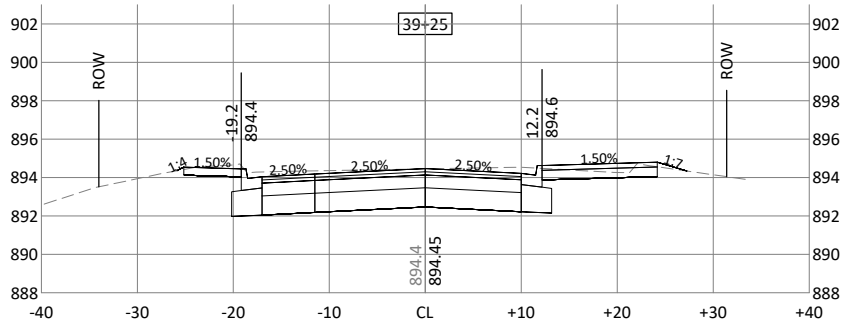
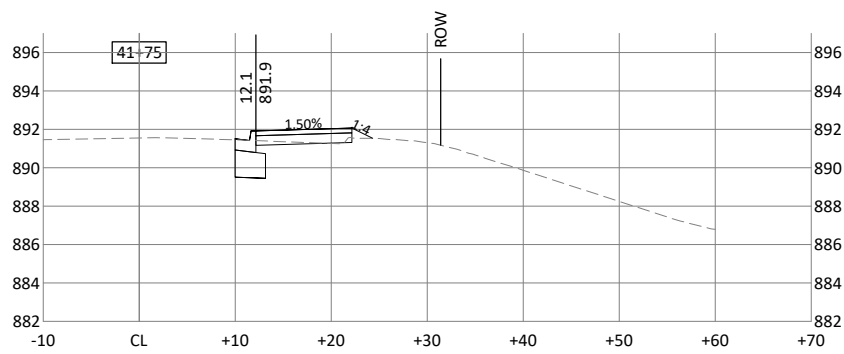
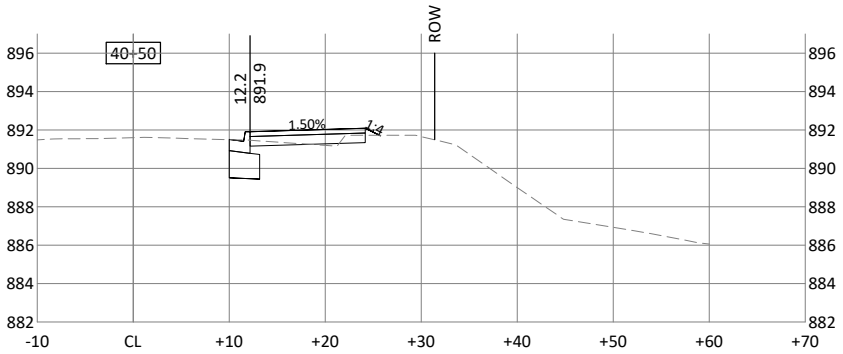
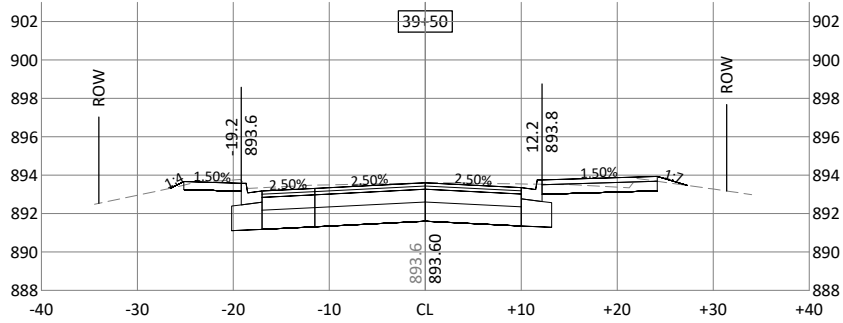
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53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

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CROSS SECTIONS

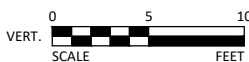
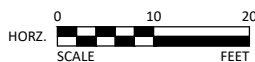
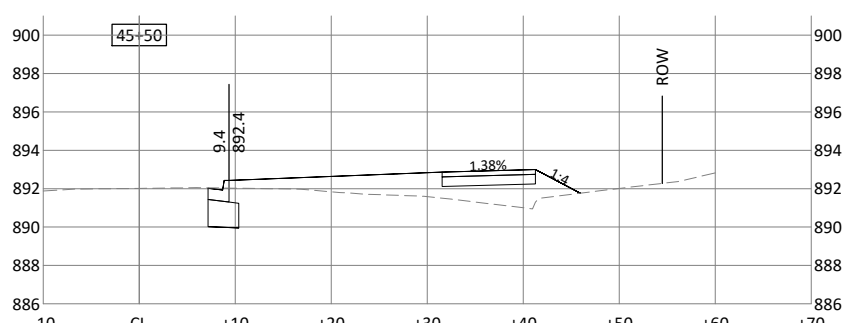
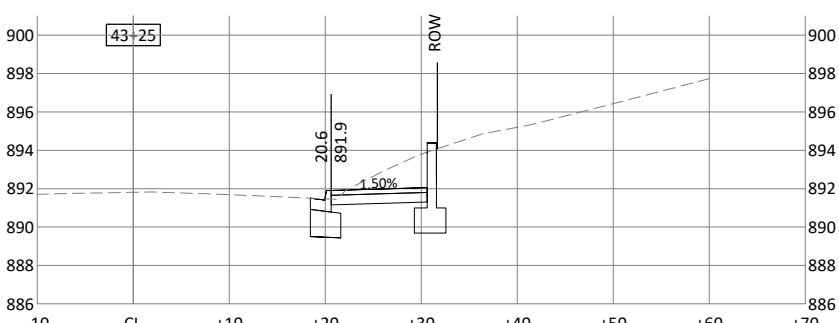
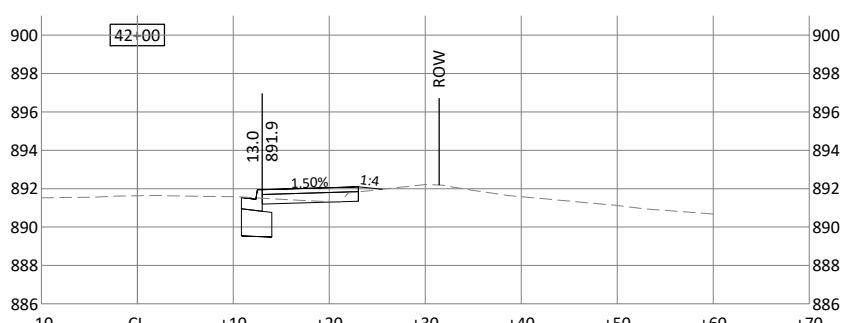
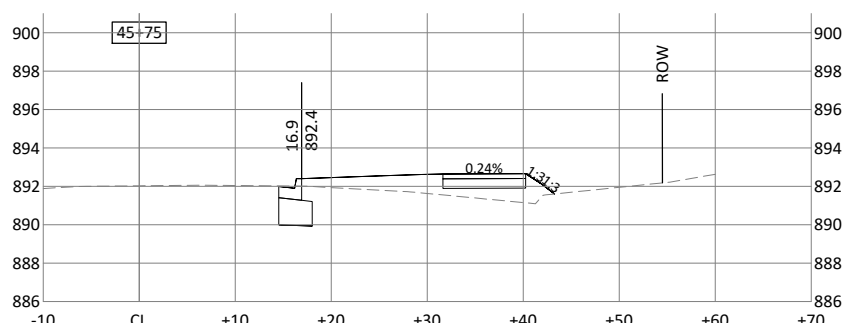
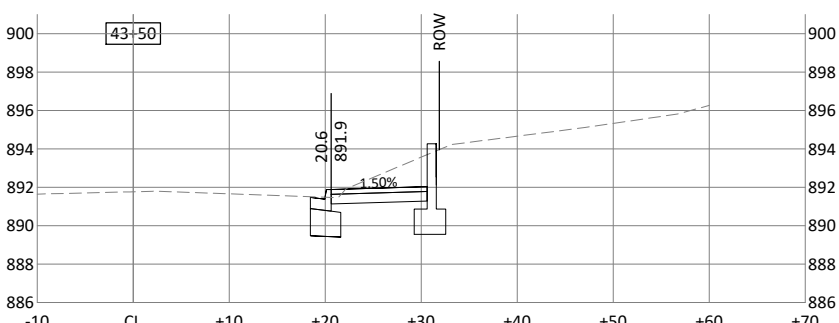
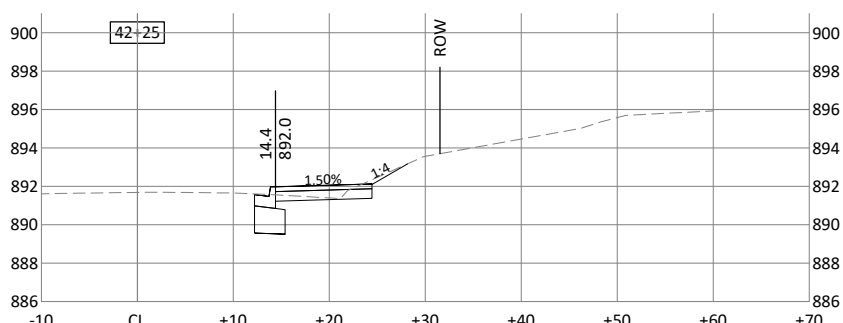
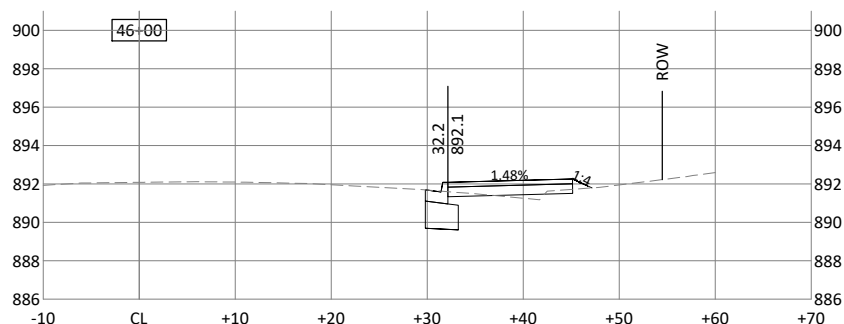
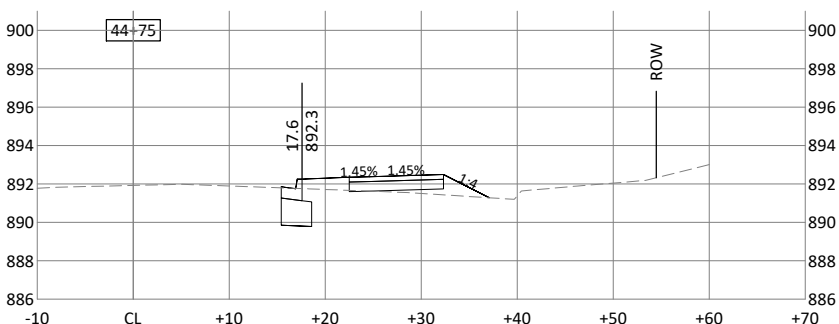
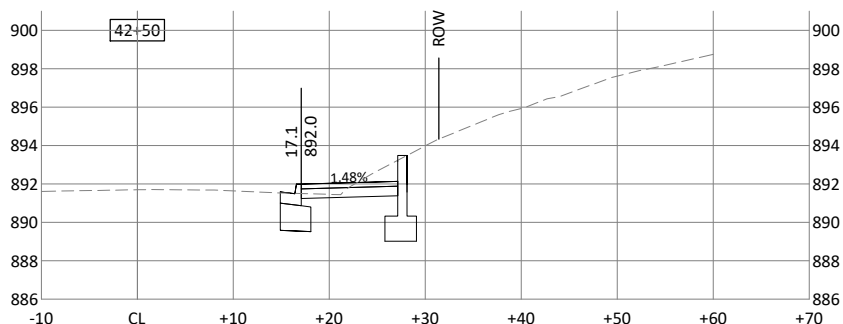
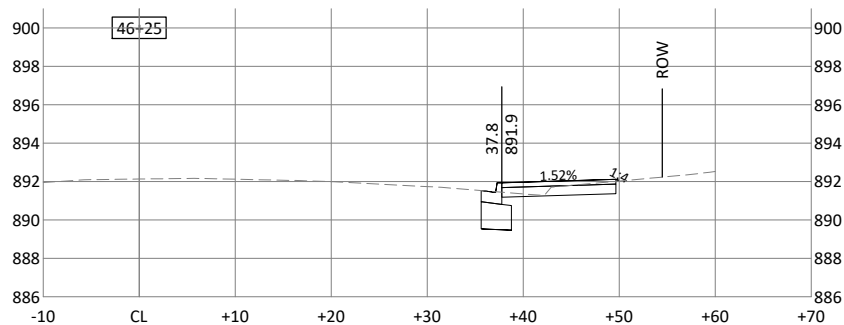
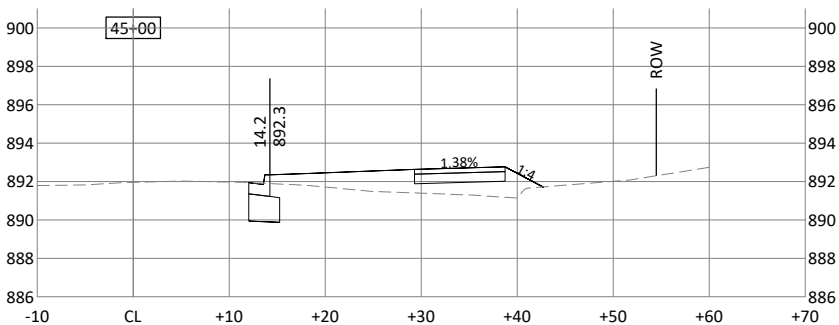
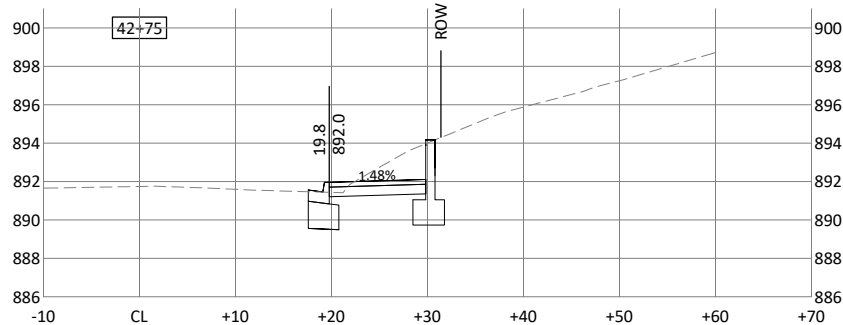
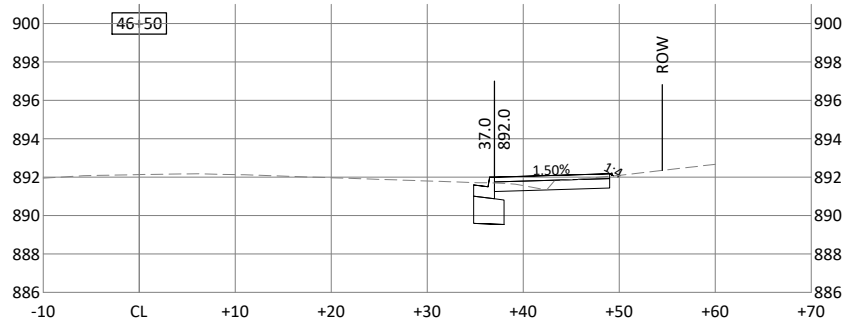
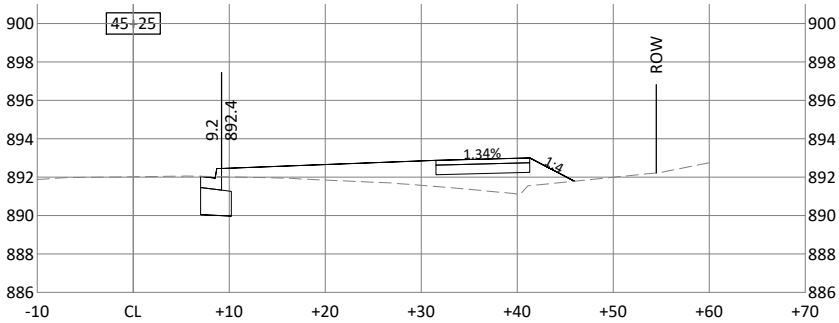
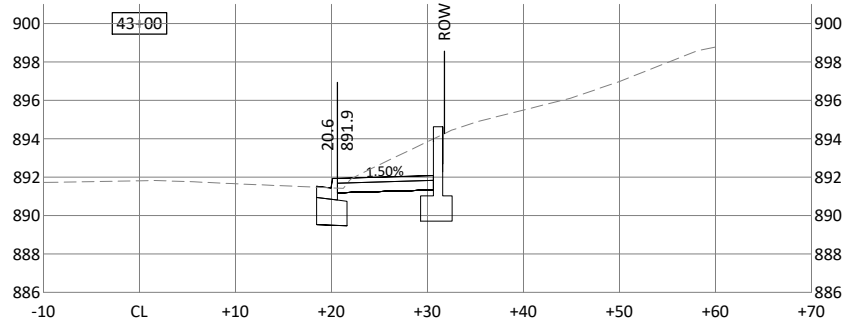
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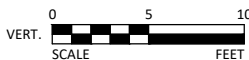
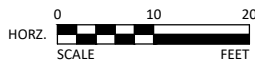
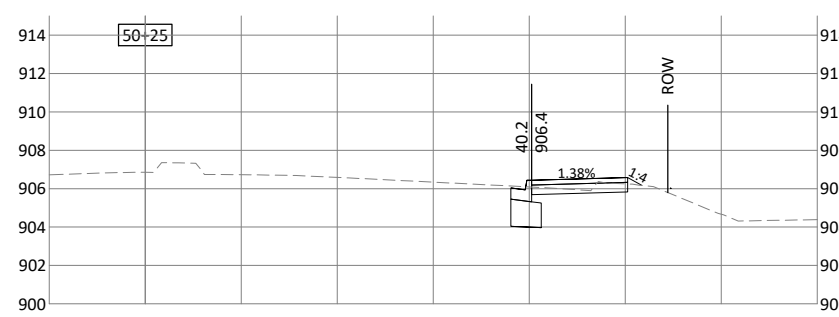
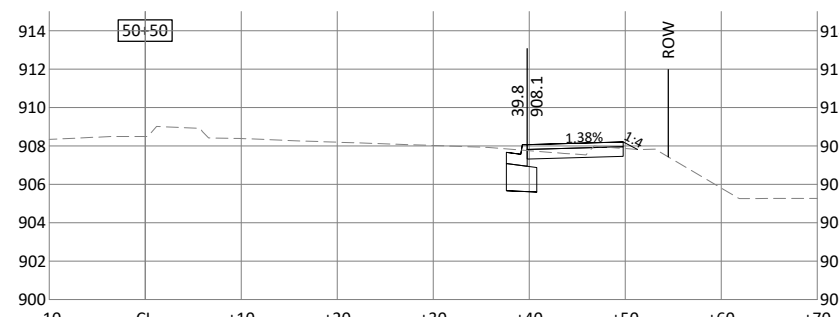
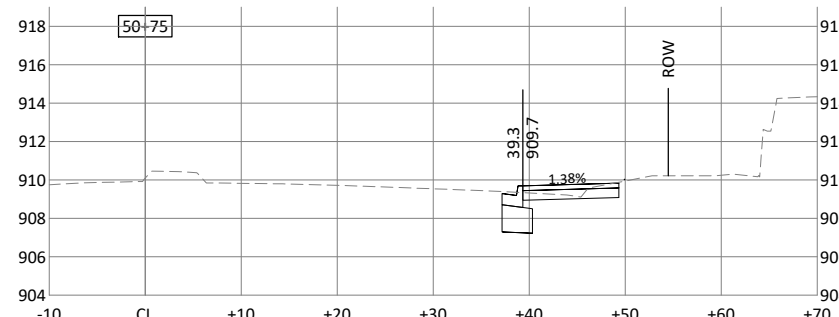
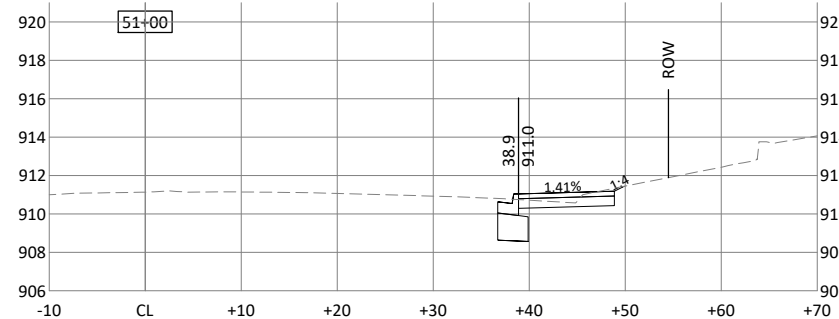
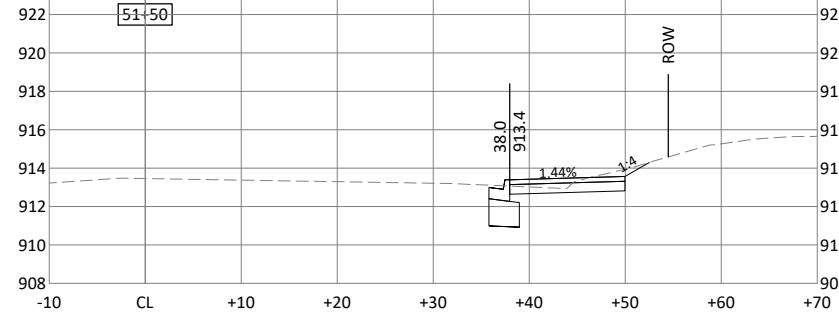
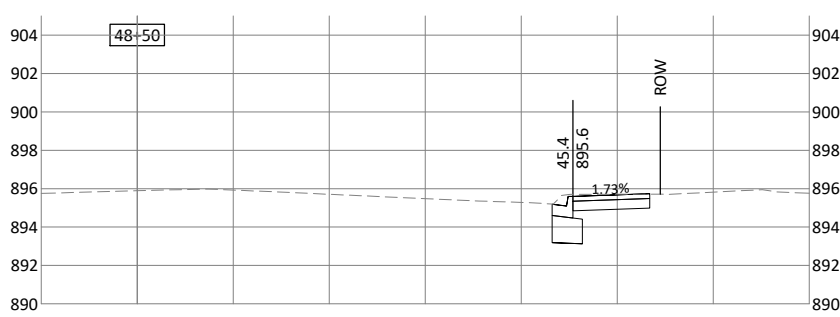
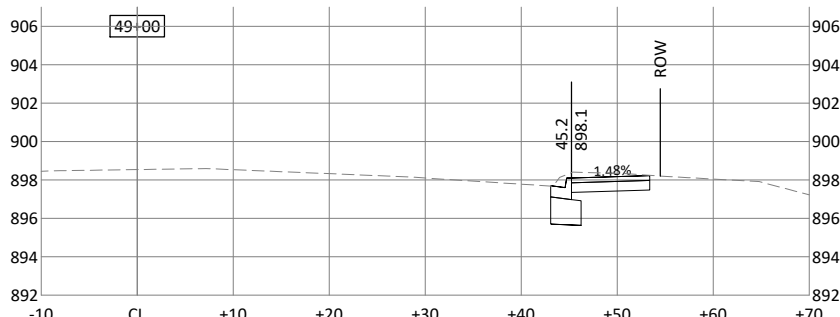
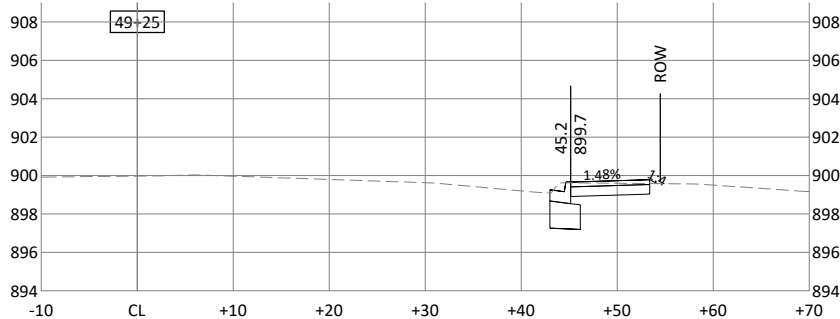
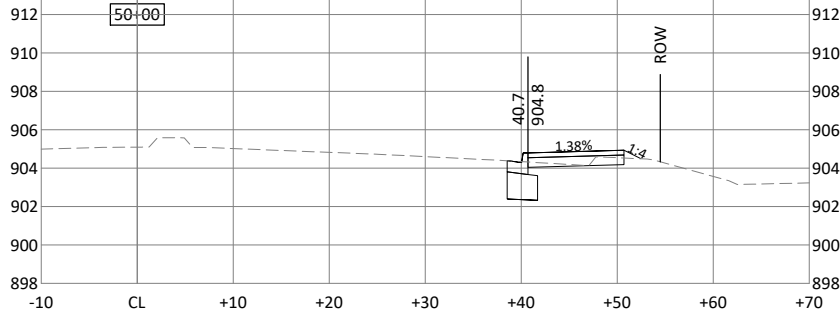
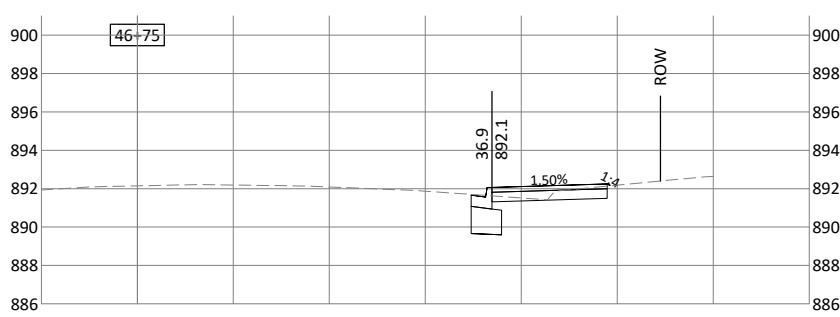
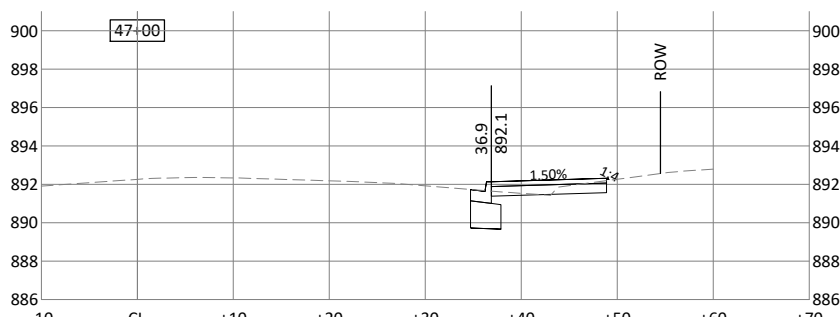
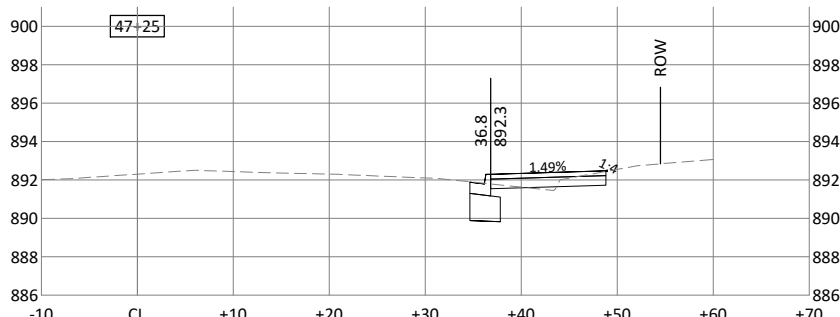
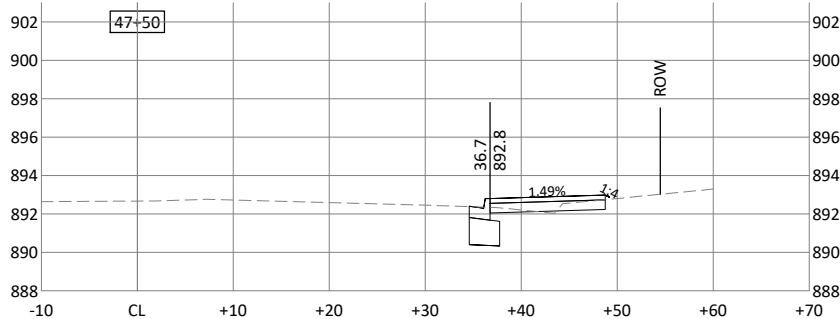
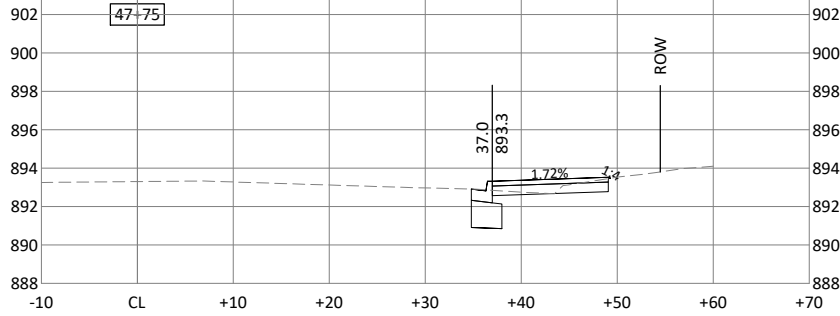
53RD AVENUE TRAIL AND WALK IMPROVEMENTS PROJECT

S.A.P. 127-319-008 / S.A.P. 113-118-005

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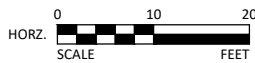
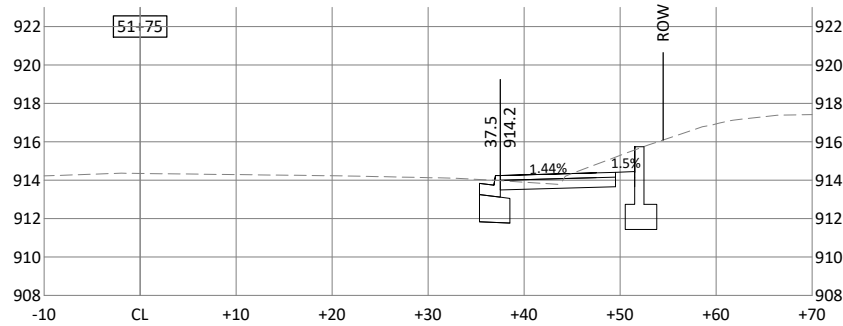
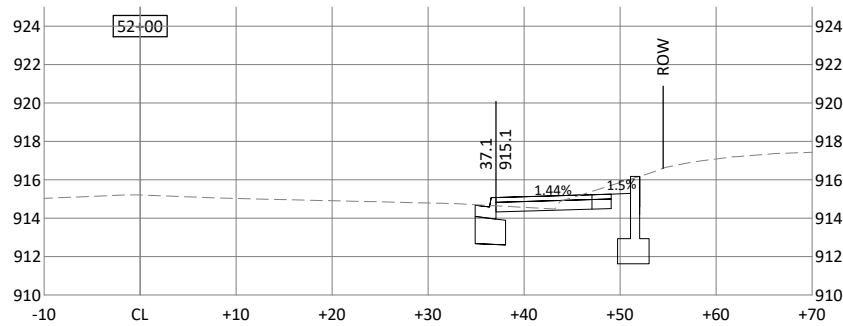
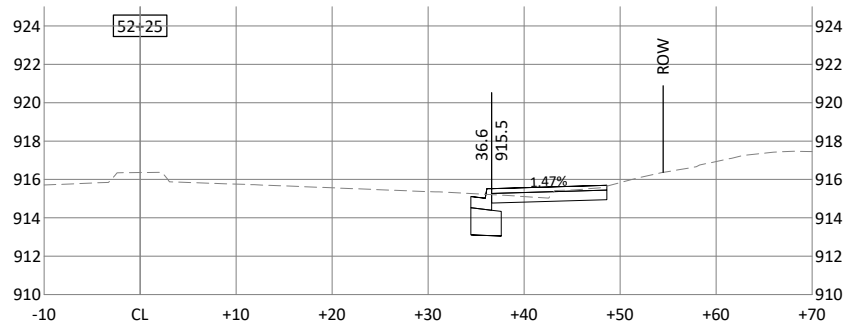
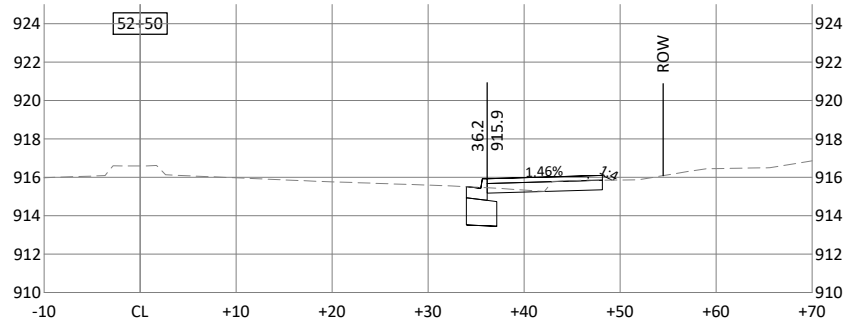
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