

12/5/2014 P:\PROJECTS\3674 - 2015 TAP Applications And Perkett Sidewalk Project\Design\Plans And Specifications\Final Plan And Submittals To NDDOT\FINAL SUBMITTAL COVER PAGE--Revised July 30, 2015.dwg

**THE CITY OF MINOT
WARD COUNTY, NORTH DAKOTA**

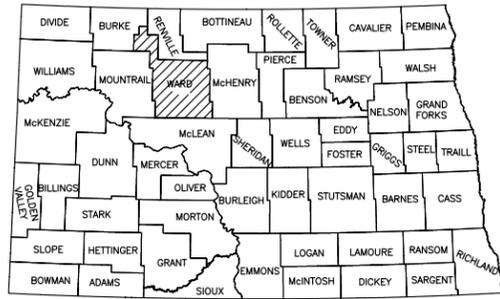
N.D.D.O.T. PROJECT NO. TAU-4-989(118)119 PCN NO. 20771

PERKETT SIDEWALK PROJECT

WARD COUNTY, MINOT, NORTH DAKOTA
SIDEWALK, CROSSWALK, AND A.D.A. RAMPS

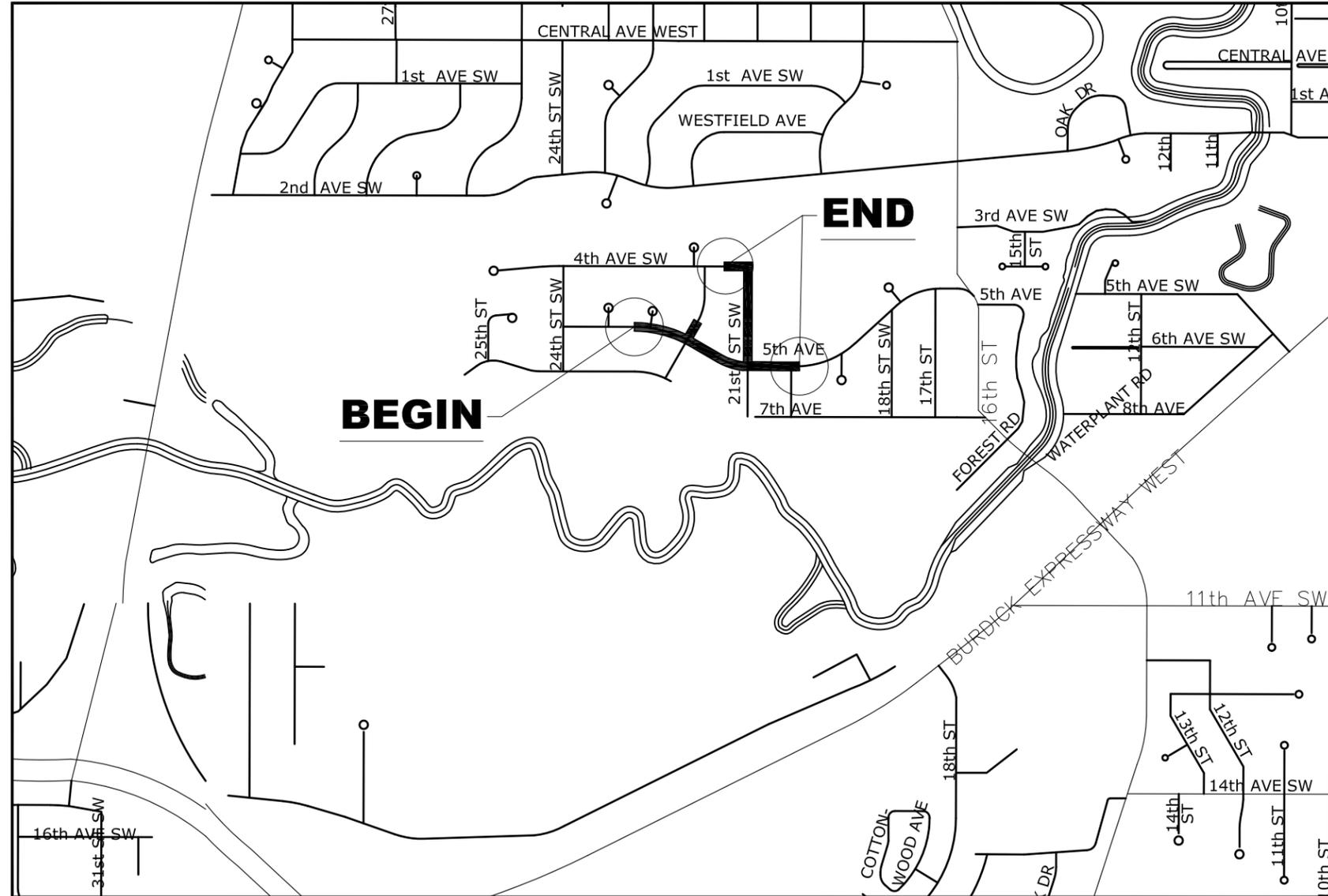
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JOB #16



STATE OF NORTH DAKOTA

SECTION-TOWNSHIP-RANGE
22-155N-83W



LENGTH OF PROJECT
5TH AVENUE SW ~ 0.2311 MILES
21ST STREET SW ~ 0.1326 MILES
22ND STREET SW ~ 0.0241 MILES
4TH AVENUE SW ~ 0.0394 MILES
TOTAL - 0.43 MILES

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota Department of Transportation October, 2014; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE:

7/30/2015

/Lance E. Meyer/

LANCE E. MEYER, P.E., CITY ENGINEER
CITY OF MINOT



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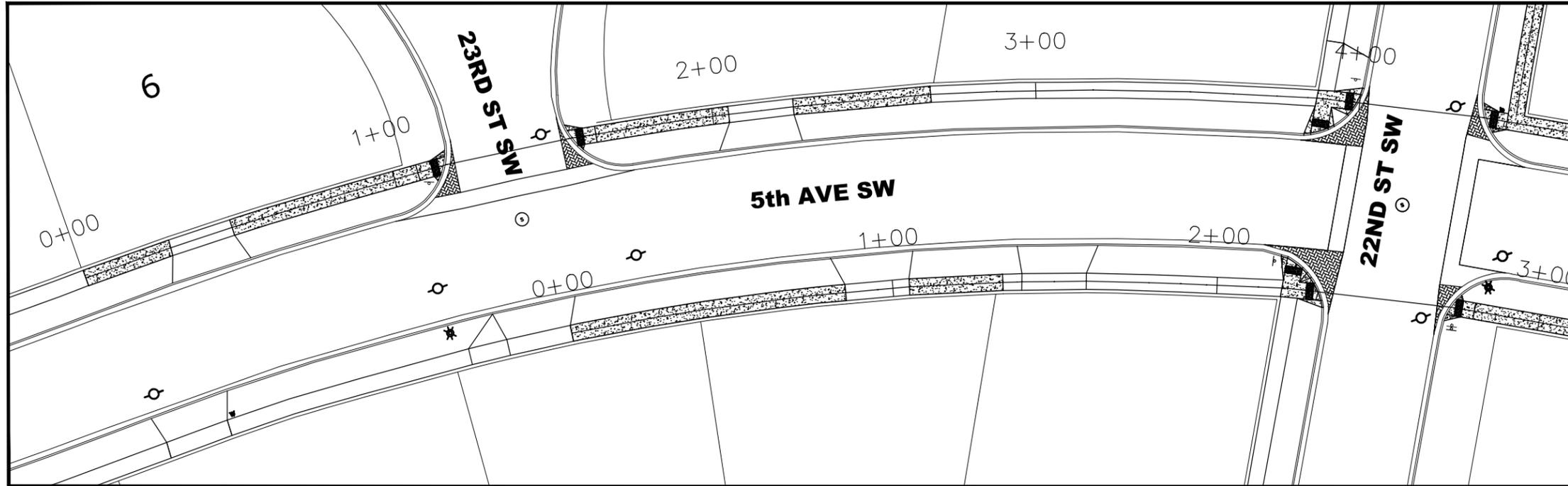


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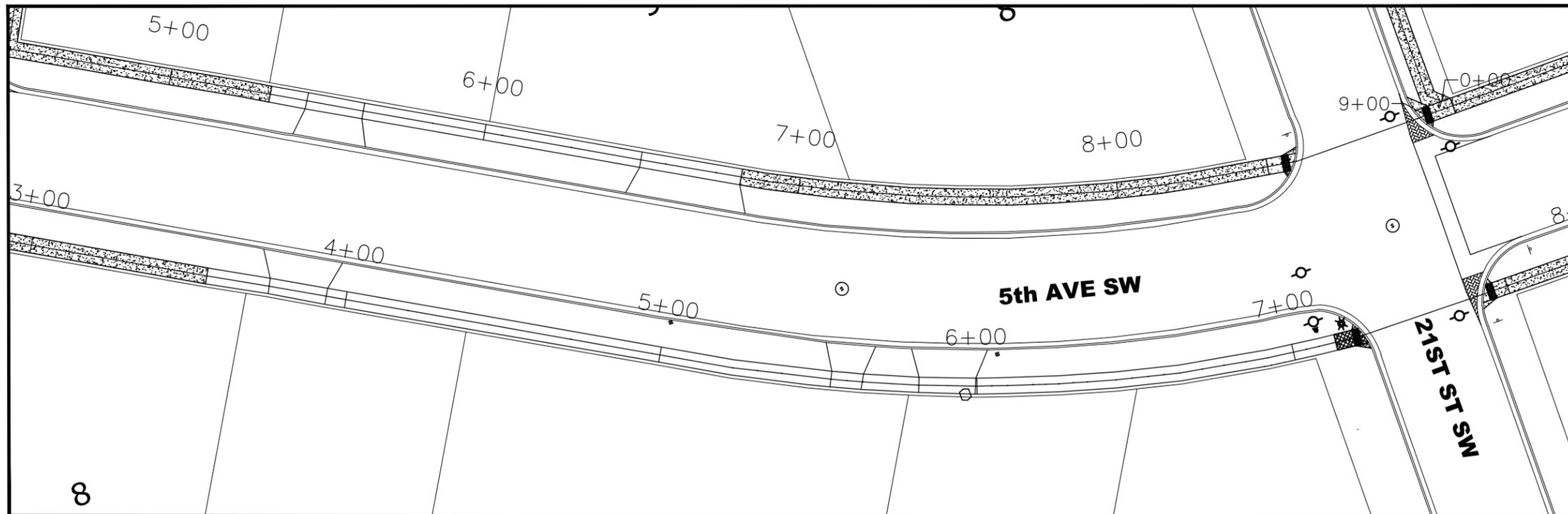
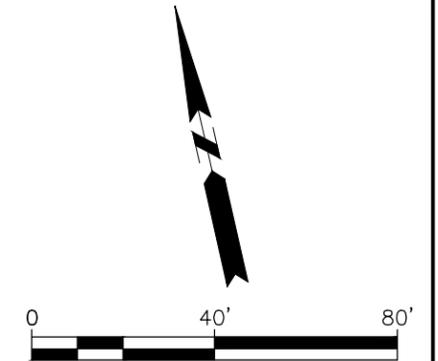
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MATCHLINE STA. 3+00
SEE THIS SHEET

 PROPOSED SIDEWALK



MATCHLINE STA. 3+00
SEE THIS SHEET

MATCHLINE STA. 8+00
SEE SECTION 4 SHEET 2

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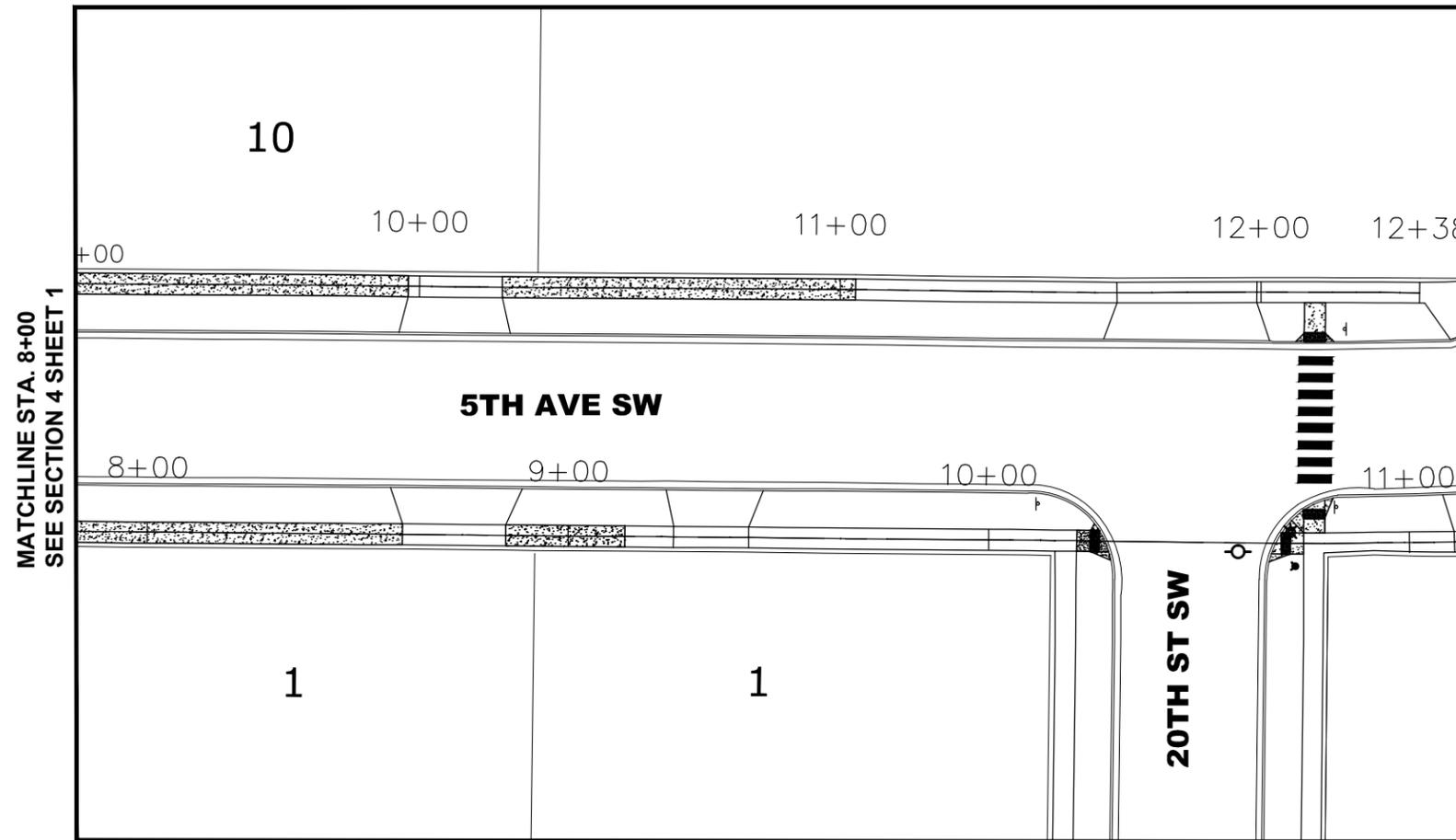
DESCRIPTION OF WORK:

Construct a 5' concrete sidewalk on the north and south sides of 5th Avenue SW between 20th Street SW and 23rd Street SW where no sidewalk is installed. New sidewalks will be tied into existing sidewalks. Construct a crosswalk across 5th Avenue at 20th Street SW. Signs, markings, and ADA ramps included.

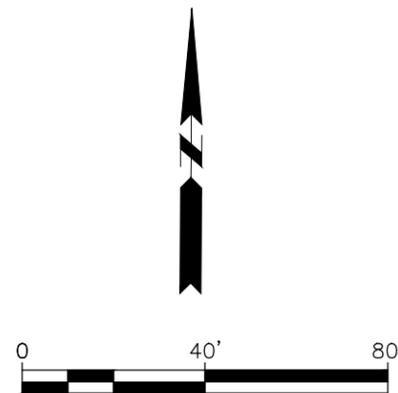
SCOPE
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-  PROPOSED SIDEWALK
-  PROPOSED CROSSWALK



DESCRIPTION OF WORK:

Construct a 5' concrete sidewalk on the north and south sides of 5th Avenue SW between 20th Street SW and 23rd Street SW where no sidewalk is installed. New sidewalks will be tied into existing sidewalks. Construct a crosswalk across 5th Avenue at 20th Street SW. Signs, markings, and ADA ramps included.

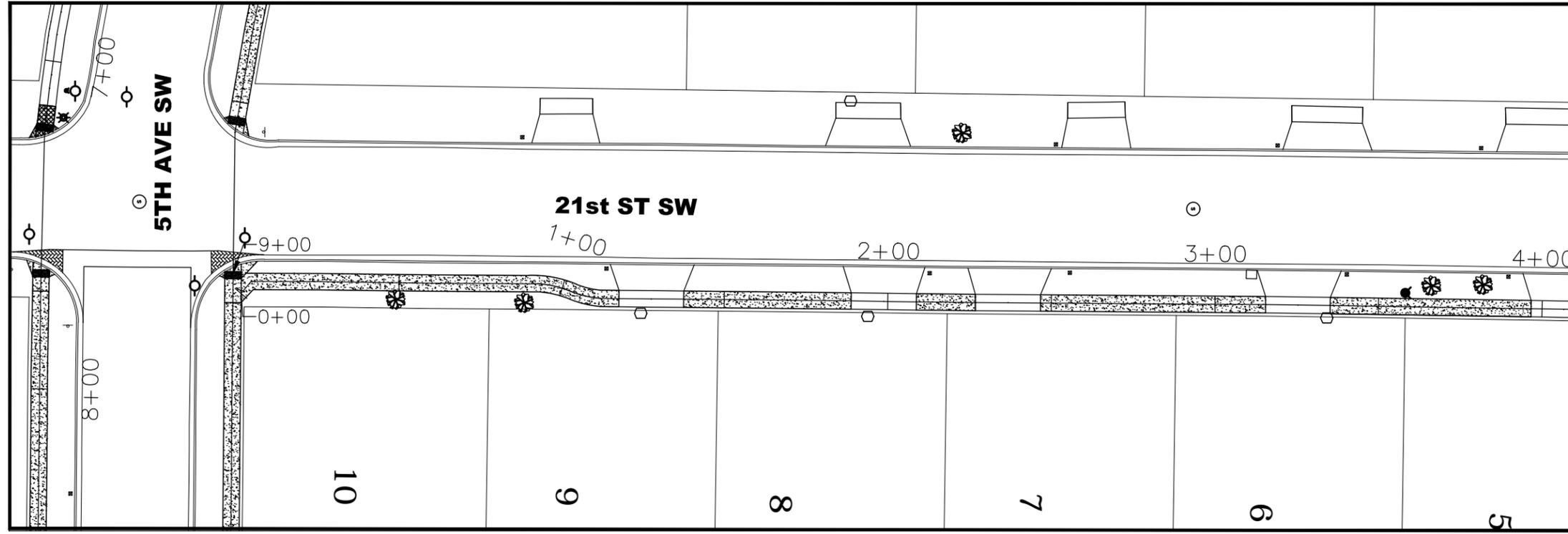
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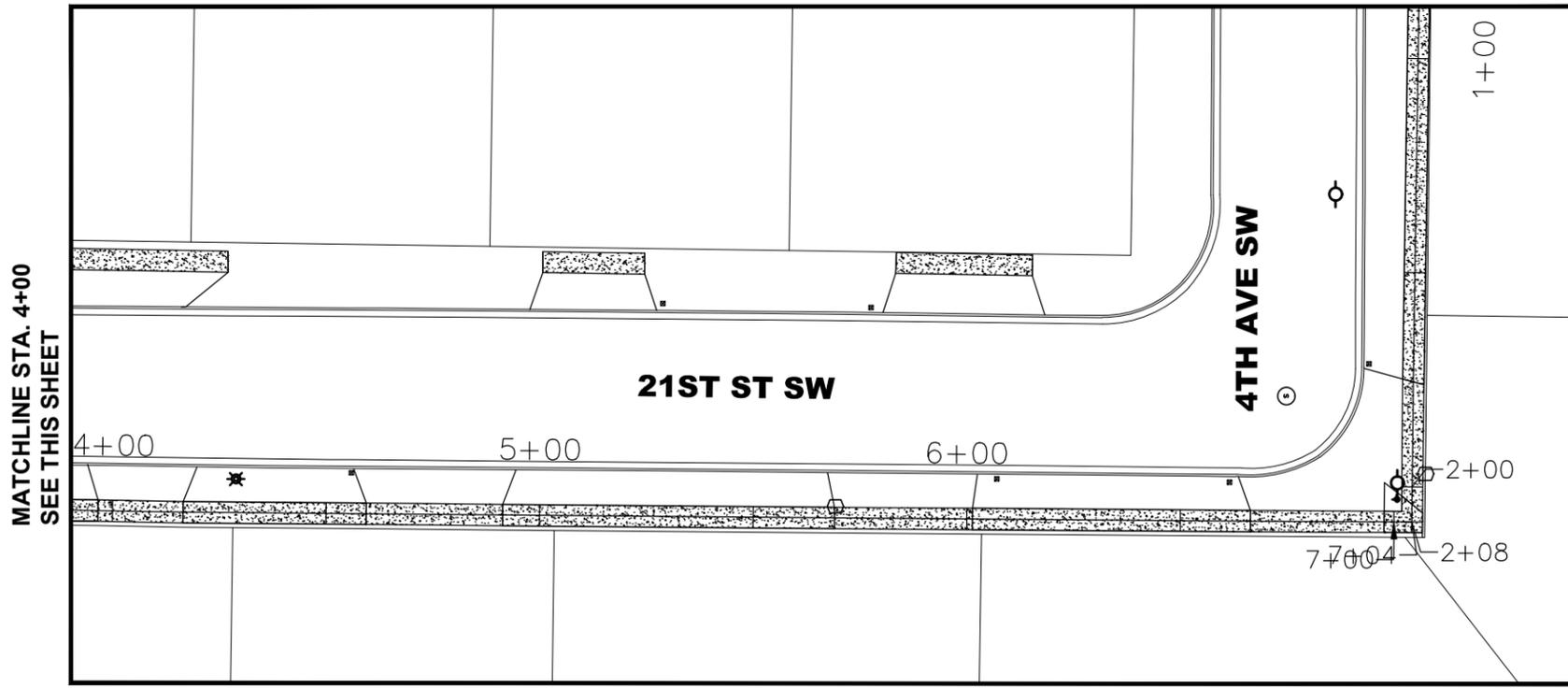
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MATCHLINE STA. 4+00
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 PROPOSED SIDEWALK

MATCHLINE STA. 1+00
SEE SECTION 4 SHEET 4



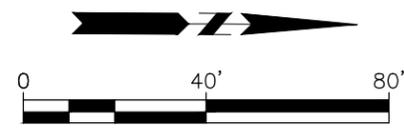
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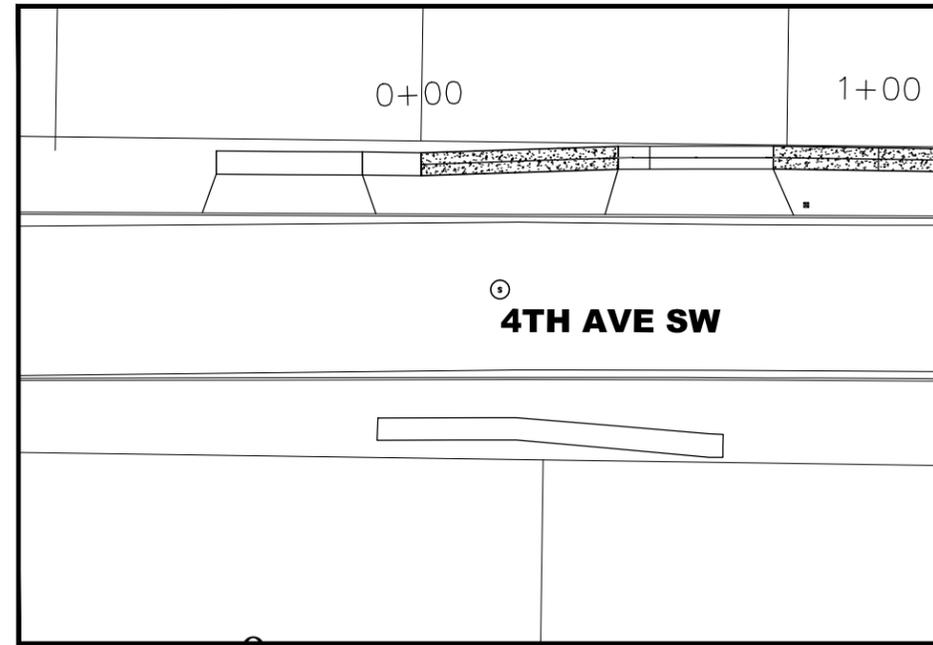
DESCRIPTION OF WORK:

Construct a 5' concrete sidewalk along the east side of 21st Street SW from 5th Avenue SW to 4th Avenue SW . New sidewalks will be tied into existing sidewalks. ADA ramps included.



SCOPE
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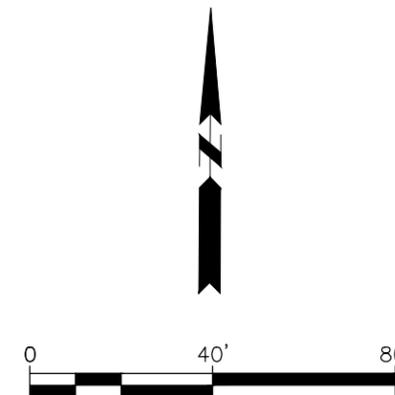


MATCHLINE STA. 1+00
SEE SECTION 4 SHEET 3

 PROPOSED SIDEWALK

DESCRIPTION OF WORK:

Construct a 5' concrete sidewalk on the north side of 4th Avenue SW from 21st Street SW to approximately 208 feet to the west of 21st Street SW. New sidewalks will be tied into existing sidewalks.



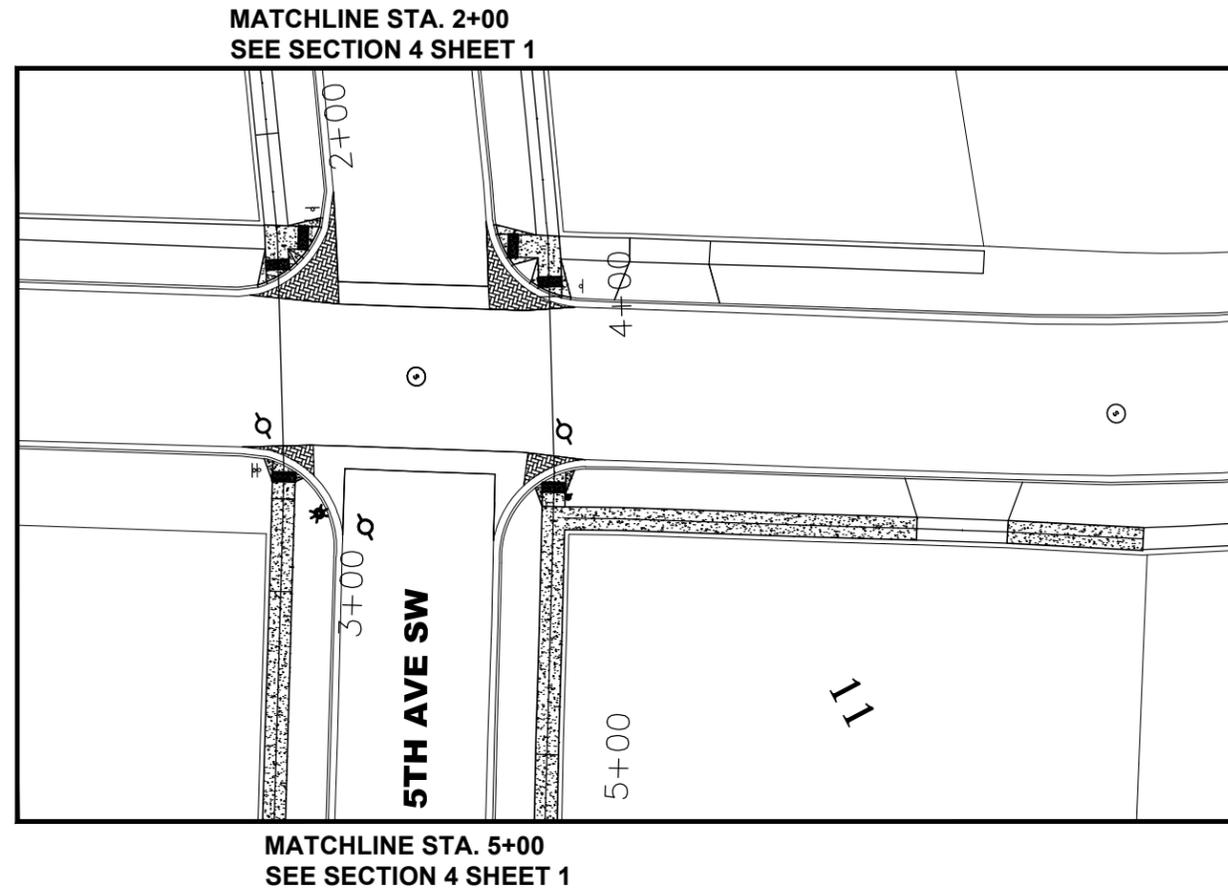
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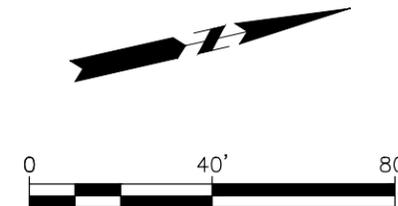
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DESCRIPTION OF WORK:

Construct a 5' concrete sidewalk along the east side of 22nd Street SW from 5th Avenue SW to 127 feet north of 5th Avenue SW. New sidewalks will be tied into existing sidewalks. ADA ramps included.



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SECTION 200

- 201-P01 CLEARING AND GRUBBING:** Existing rock landscaping and landscaping pavers shall be removed from the project and returned to the adjacent lot owner(s). Contractor shall use care in the removal of the landscaping rock and pavers and shall coordinate with the lot owner(s) as applicable for the delivery of the return materials. All shrubs shall be removed if they are within the sidewalk alignment.
- 202-P01 REMOVAL OF CONCRETE:** This Bid Item encompasses the removal of concrete valley gutters and the removal of existing sidewalk for ADA ramp installations. Concrete to be removed shall be sawed full depth to a vertical edge at the locations shown on the plans and to the limits as marked by the engineer in the field. The price for saw concrete shall be incidental to the concrete removal bid item.
- 202-P02 REMOVAL OF BITUMINOUS:** Bituminous surfacing to be removed shall be sawed full depth to a vertical edge at the locations shown on the plans and to the limits as marked by the engineer in the field. The price for saw bituminous surfacing shall be incidental to the bituminous pavement removal bid item.
- 203-P01 COMMON EXCAVATION TYPE C:** The quantities of common excavation to be paid shall be paid at plan quantity. Removing and salvaging topsoil where present and respreading said topsoil in its entirety in areas to be hydroseeded is included in the bid quantity for this item. Excavate no more than 3.5' wider than sidewalk and ADA ramp. Contractor responsible for any over excavation that has not been approved by the City Engineer.
- 251-P01 SEEDING CLASS III:**

Species	Pound Pure Live Seed / Acre
Kentucky Bluegrass	50
Perennial Rye Grass	20
Six-Week Fescue or Dural-hard Fescue	30
Annual Rye Grass	50
Total	150

SECTION 400

- 430-P01 HOT MIX ASPHALT:** The contractor shall use Commercial Grade Hot Mix Asphalt for all patching per the 2014 Edition of the North Dakota Department of Transportation Standard Specifications, Section 430.03F. The hot mix asphalt shall be laid in lifts not to exceed 2.5", the top lift shall not exceed 2". The oil used for tack shall be SS1H or CSS1H and shall be included in the price bid for Commercial Grade Hot Mix Asphalt. The hot mix asphalt shall be compacted in accordance with section 430.04I.3.

SECTION 700

- 704-P01 TRAFFIC CONTROL:** Traffic control shall consist of a temporary lane closure. Maintain access to driveways and 2 lanes (22') of traffic at all times. Cost for moving traffic control items to advance the contractor's operations shall be incidental to the traffic control signs, type III barricades, and tubular markers bid items. Traffic Control Devices shall comply with the following Standard Drawings: Standard D-704- 7,8, 9, 11, 12, 13, 14 are applicable. Quantities are based on a 1 lane closure on portions of 5th Avenue SW, 4th Avenue SW, 22nd Street SW, and 21st Street SW.
- 748-P01 CURB AND GUTTER - TYPE 1:** Forms shall be used on all faces of the curb and gutter.
- 750-P01 SIDEWALKS:** New sidewalk shall match existing sidewalk slabs at driveways. Expansion joints shall be installed where new sidewalk ties in with existing sidewalk and every 60' where no driveways exist.
- 750-03 DETECTABLE WARNING PANELS:** Detectable warning panels shall be federal yellow.



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ENVIRONMENTAL COMMITMENTS

ENVIRONMENTAL COMMITMENTS: The City of Minot, North Dakota Department of Transportation and the Federal Highway Administration have made several environmental commitments to various agencies and the public to secure approval of this project. The environmental commitments are as follows:

COMMITMENT NO. 1: Unavoidable impacts to wetlands will be mitigated onsite, adjacent to the project, or at a NDDOT approved mitigation site or bank. Approximately 0 *natural/jurisdictional*, 0 *natural/non-jurisdictional*, 0 *artificial/jurisdictional*, and 0 *artificial/non-jurisdictional* acres of wetlands will be impacted permanently, and 0 acres will be impacted temporarily.

ACTION TAKEN/REQUIRED: 0 acres of permanent impacts to jurisdictional wetlands will require mitigation.

Based on the NEPA documentation, no additional permits or environmental commitments have been identified beyond what is covered by the NDDOT's Standard Specification of Road and Bridge Construction.

Wetland Number	Cowardin Classification	Wetland Type	Wetland Size (acres)	Wetland Feature	USACE Jurisdictional Wetlands	Impacts to Wetlands	
						Temp.	Perm.
NO WETLANDS PRESENT							
TOTALS:			0.00			0.00	0.00

COMMITMENT NO. 2: There are 4 urban trees within the project right-of-way and easements. Approximately 0 of these trees will be impacted during construction.



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QUANTITIES

Item	Spec	Code	Description	Unit	Quantity
1	103	100	CONTRACT BOND	LS	1
2	201	330	CLEARING AND GRUBING	LS	1
3	202	112	REMOVAL OF CONCRETE	SY	269
4	202	130	REMOVAL OF CURB & GUTTER	LF	198
5	202	132	REMOVAL OF BITUMINOUS SURFACING	SY	61
6	203	103	COMMON EXCAVATION - TYPE C - (Plan Quantity)	CY	312
7	216	100	WATER	M GAL	19
8	251	300	SEEDING - CLASS III	ACRE	0.13
9	253	201	HYDRAULIC MULCH	ACRE	0.13
10	302	120	AGGREGATE BASE COURSE CL 5	TN	265
11	430	500	COMMERCIAL GRADE HOT MIX ASPHALT	TN	13
12	702	100	MOBILIZATION	LS	1
13	704	1000	TRAFFIC CONTROL SIGNS	UNIT	413
14	704	1052	TYPE III BARRICADES	EA	5
15	704	1067	TUBULAR MARKERS	EA	176
16	748	140	CURB & GUTTER - TYPE I	LF	198
17	748	1080	VALLEY GUTTER - TYPE 1 48IN	SY	229
18	750	115	SIDEWALK CONCRETE 4 IN	SY	1019
21	750	2115	DETECTABLE WARNING PANELS	SF	140
19	754	110	FLAT SHEET FOR SIGNS - TYPE XI - REFL SHEETING	SF	13.5
20	754	206	STEEL GALVANIZED POSTS - TELESCOPING PERFORATED	LF	29
22	754	593	RESET SIGN SUPPORT	EACH	4
23	762	1325	PREFORMED PATTERN PVMT MK 24IN LINE-GROOVED	LF	64



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QUANTITIES

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BASIS OF ESTIMATE

WATER

18 M GAL FOR DUST PALLIATIVE
2 GAL/TON FOR CL 5 AGGREGATE

AGGREGATE BASE COURSE CL 5

1.875 TON PER CUBIC YARD OF AGGREGATE BASE COURSE CL 5

SEEDING

DISTURBED AREAS WITHIN THE CONSTRUCTION LIMITS, EXCLUDING HARD SURFACED AREAS.

COMMERCIAL GRADE HOT MIX ASPHALT

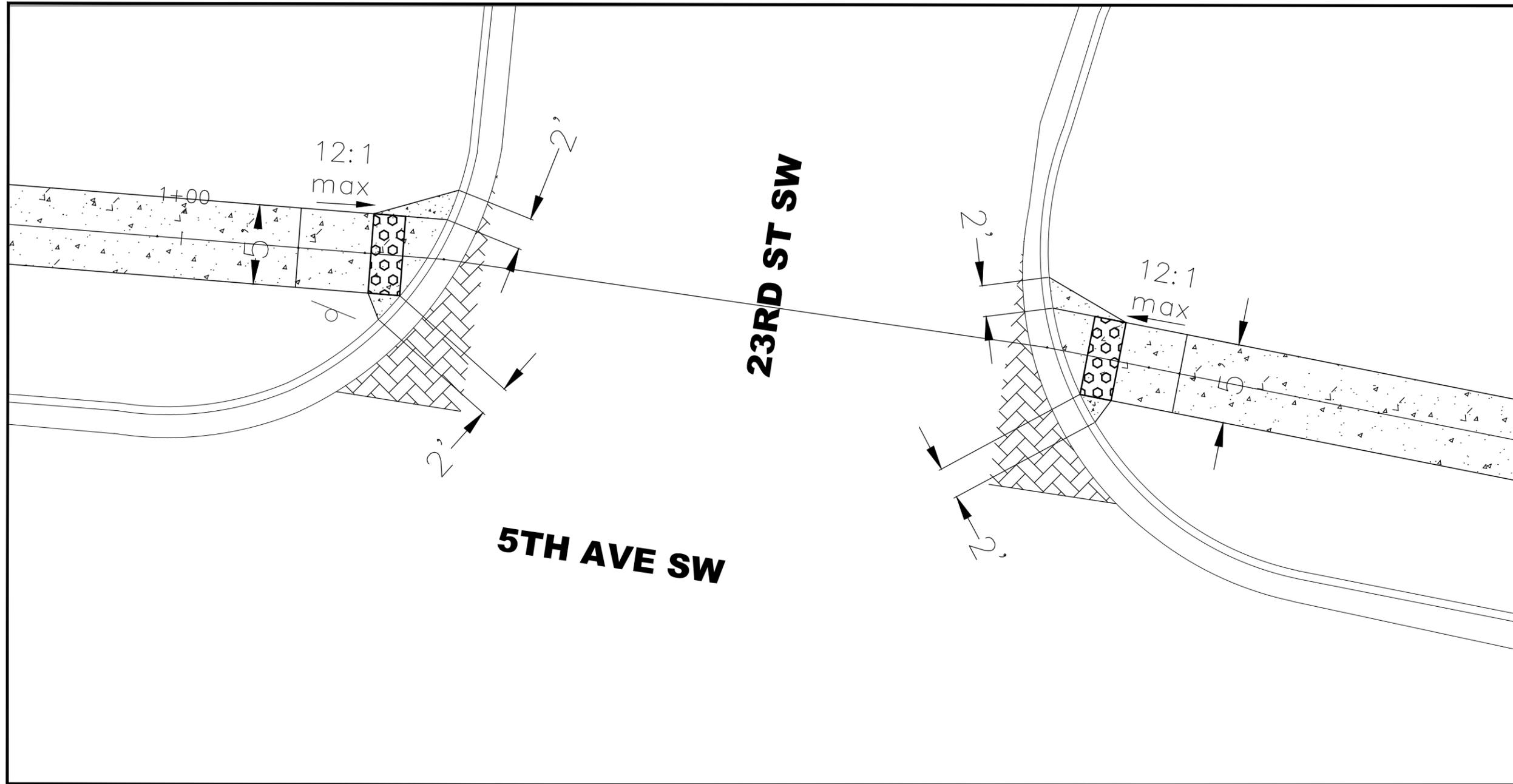
3.5" COMMERCIAL GRADE HOT MIX ASPHALT with PG 58-28 oil, 1.5"-2" LIFT THICKNESS.



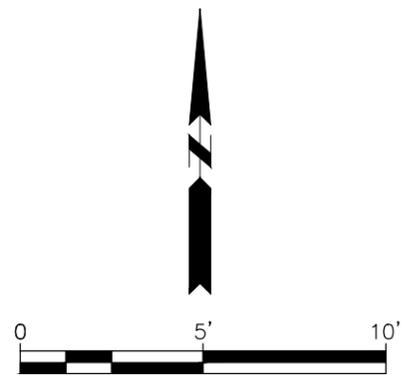
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BASIS
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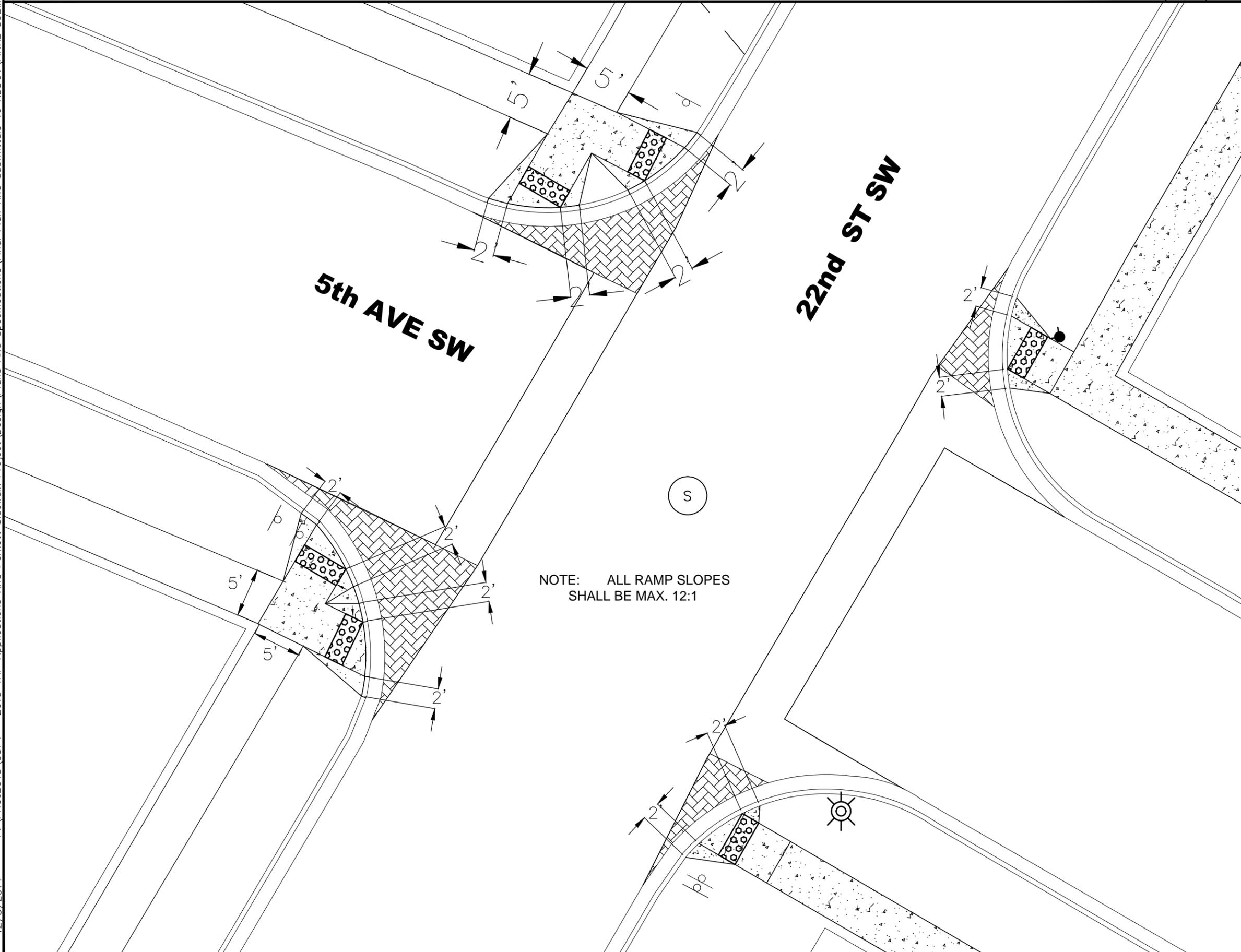


-  PROPOSED SIDEWALK
-  PROPOSED GUTTER APRON
-  PROPOSED TRUNCATED DOME

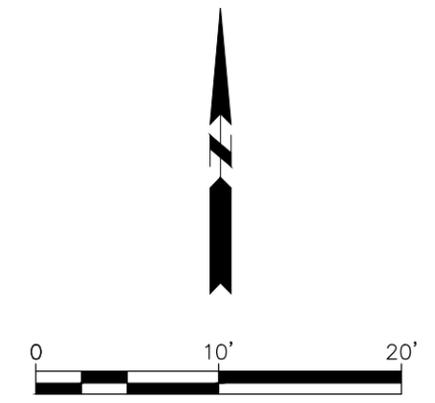
ADA RAMP
DETAILS

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NOTE: ALL RAMP SLOPES SHALL BE MAX. 12:1



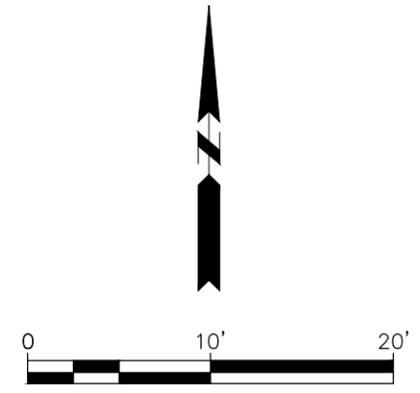
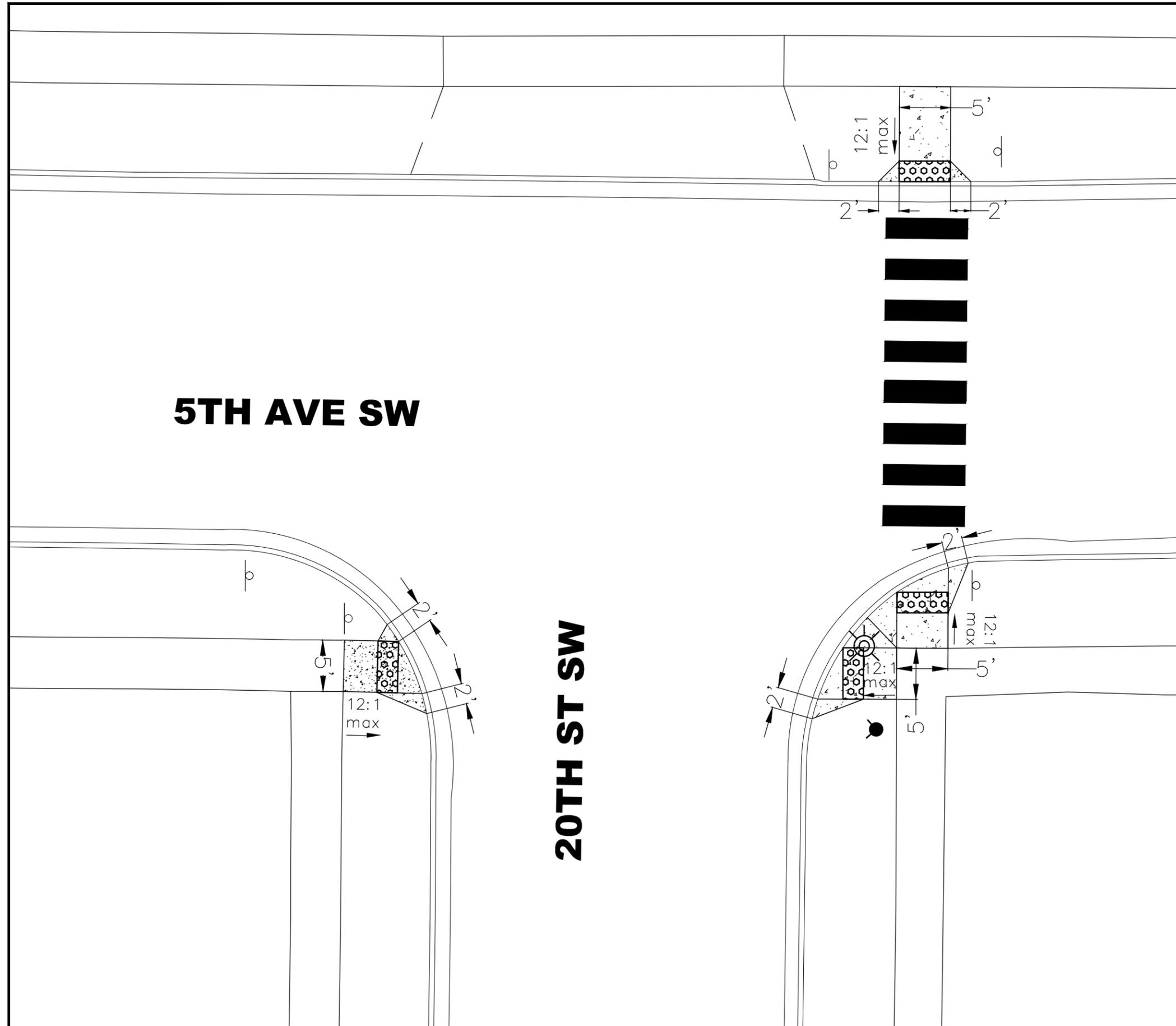
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ADA RAMP
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- PROPOSED SIDEWALK
- PROPOSED GUTTER APRON
- PROPOSED TRUNCATED DOME

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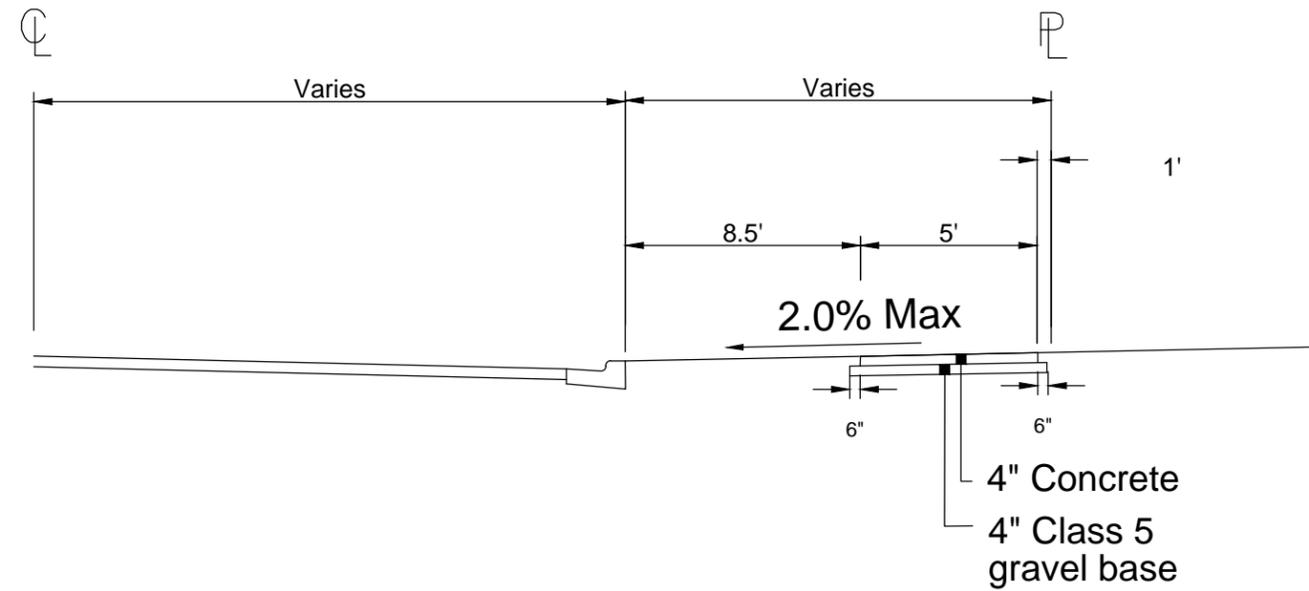
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TYPICAL CONCRETE SIDEWALK



CONTRACTION JOINTS:

1. 5' Spacing tooled joints.
2. 3/4" Min depth.
3. Broom finish.

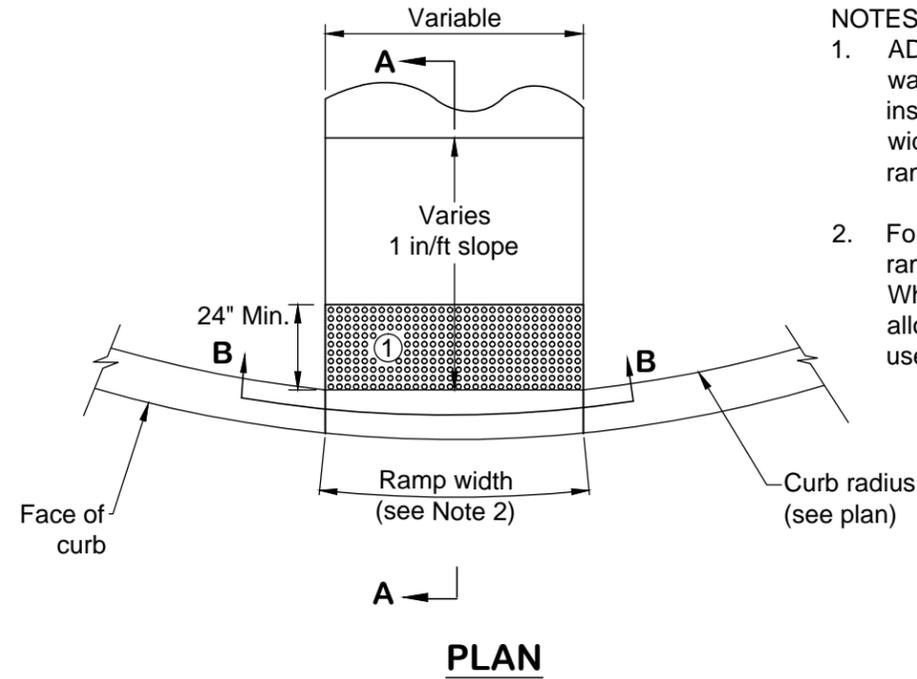
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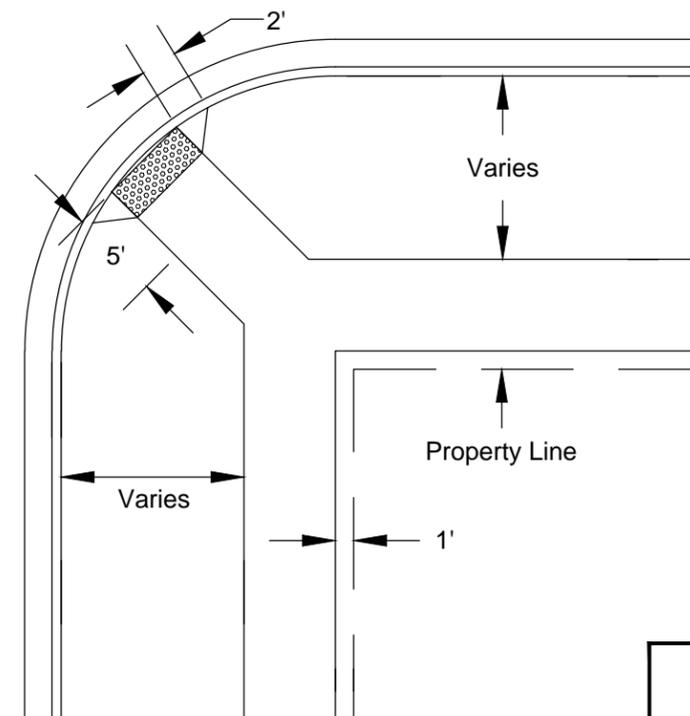
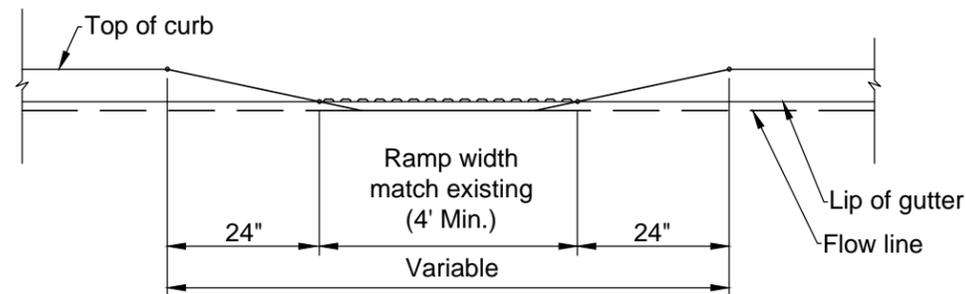
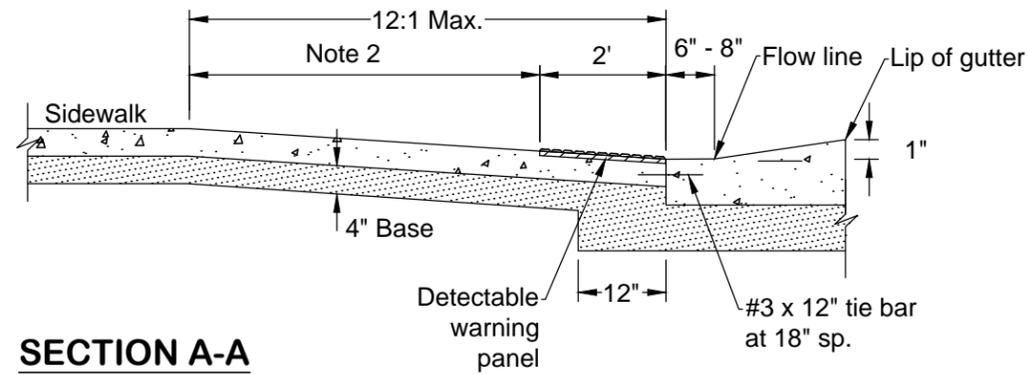
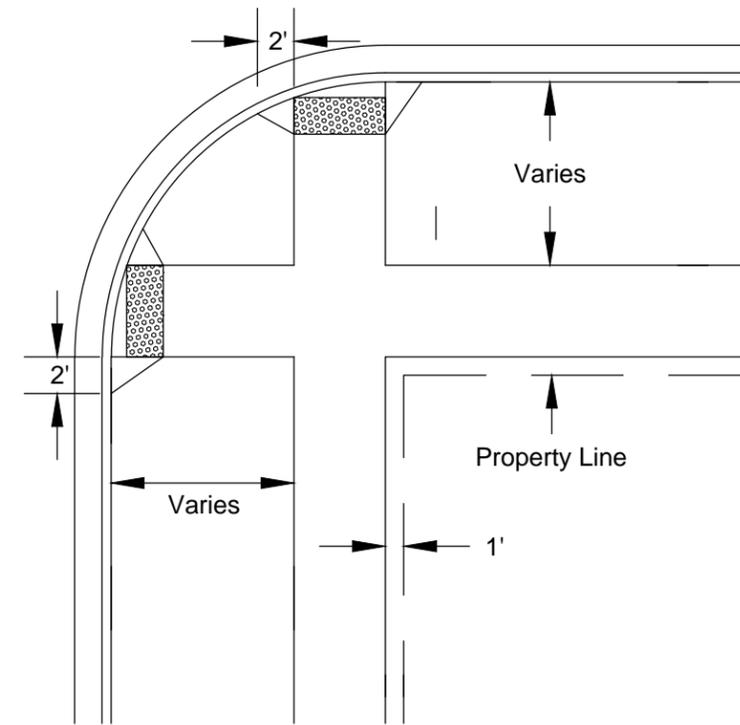
TYPICAL
SECTION

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- NOTES:**
1. ADA required detectable warning panels shall be installed to match the ramp width (the usable portion of ramp).
 2. For sidewalk installations, a 5' ramp width should be used. Where site conditions do not allow, a 4' ramp width may be used.



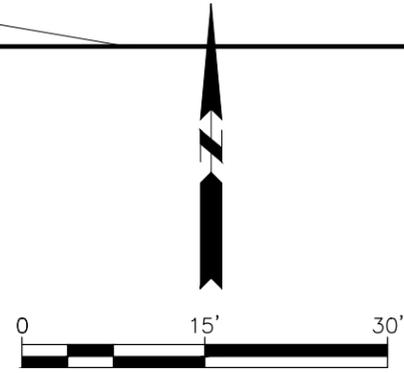
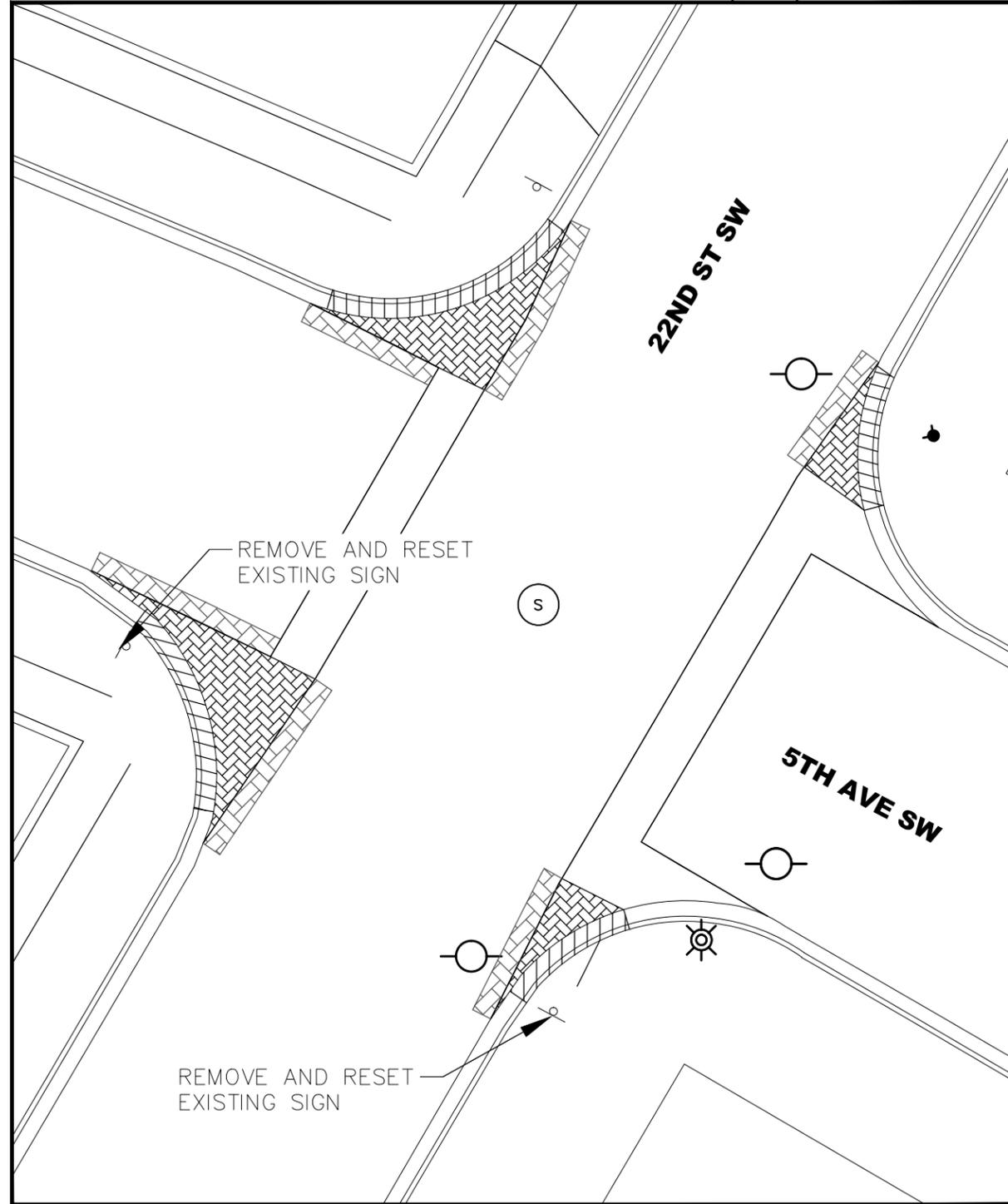
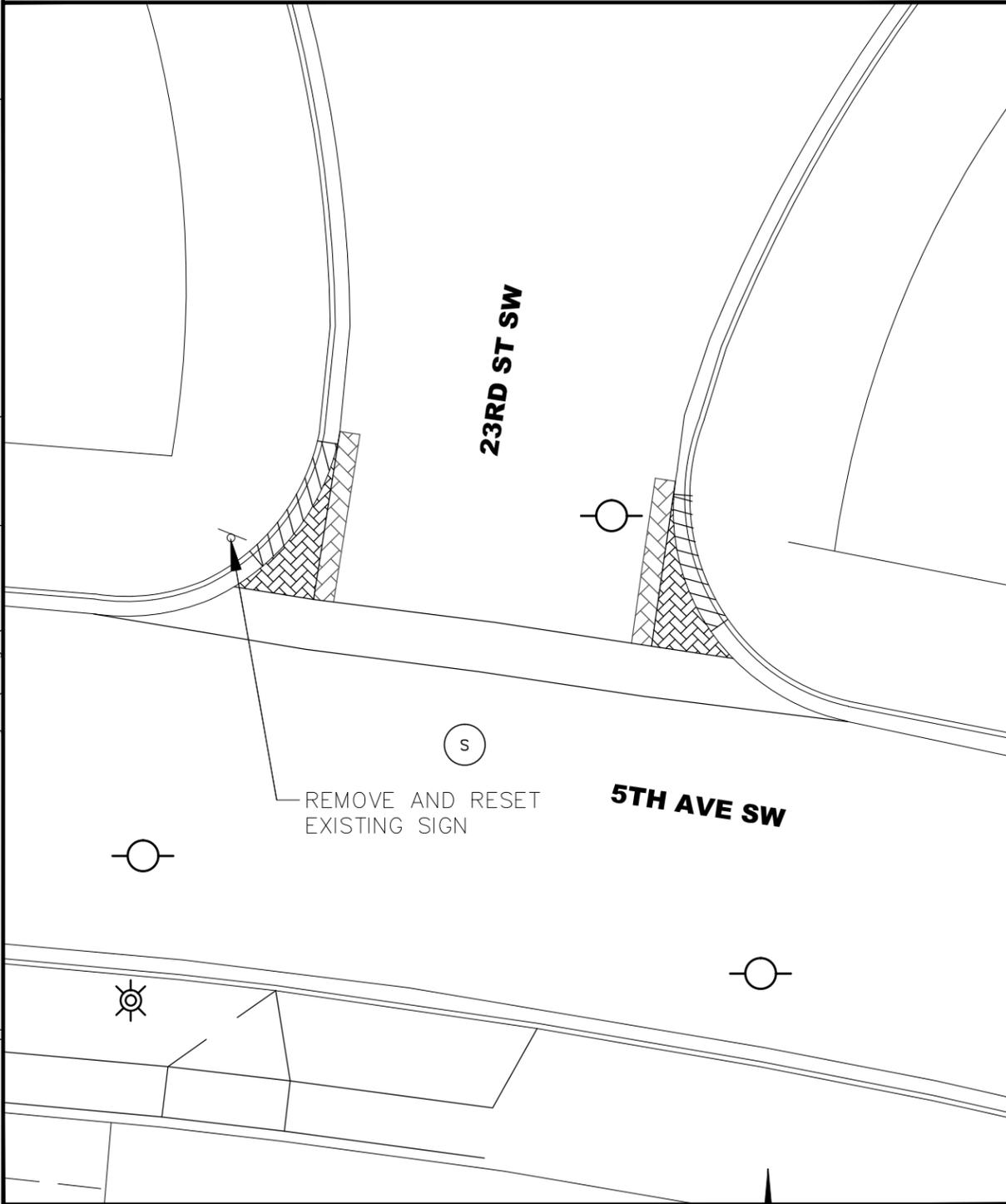
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- REMOVALS**
-  BITUMINOUS SURFACE
 -  VALLEY GUTTER
 -  CURB
 -  SIDEWALK

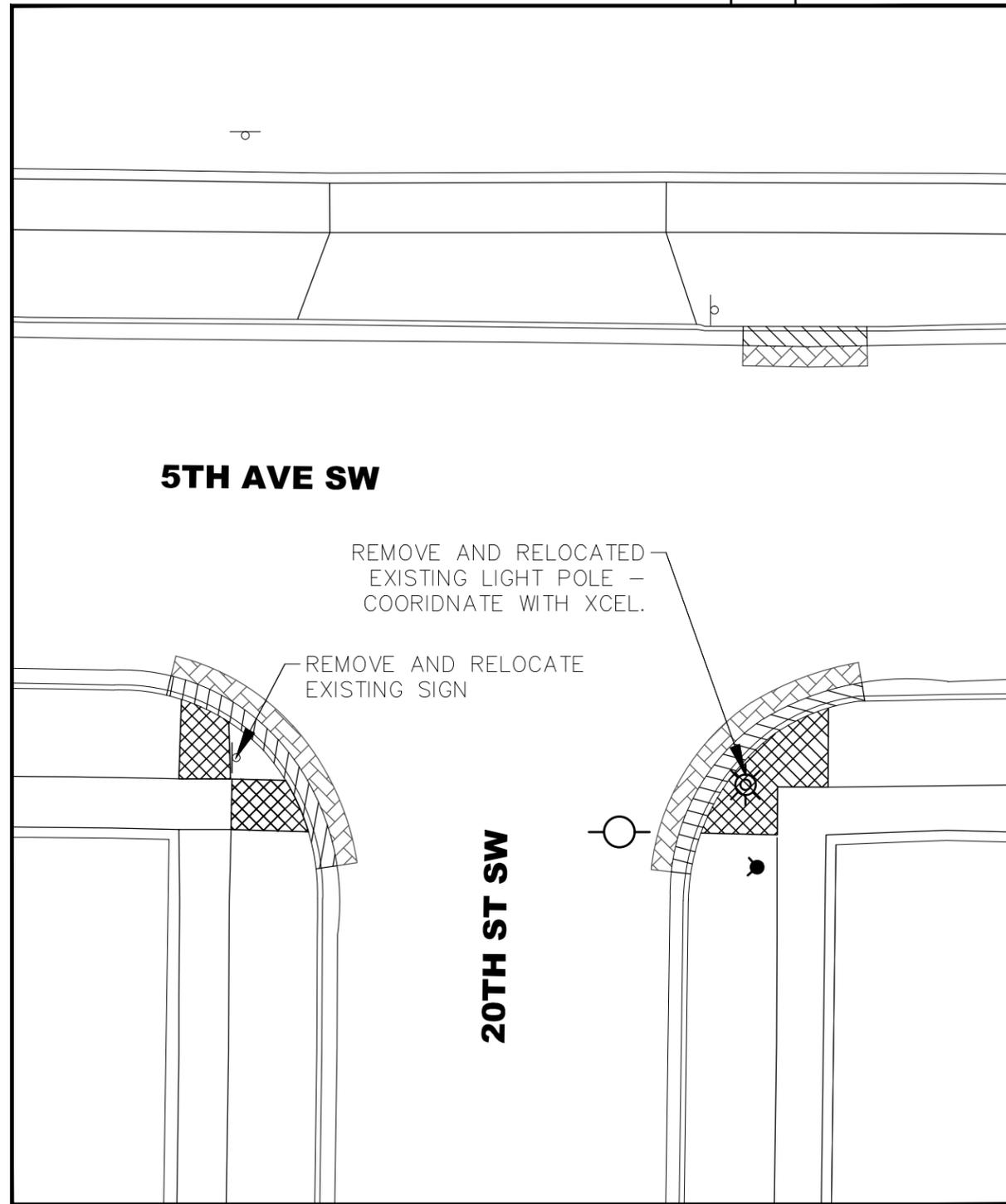
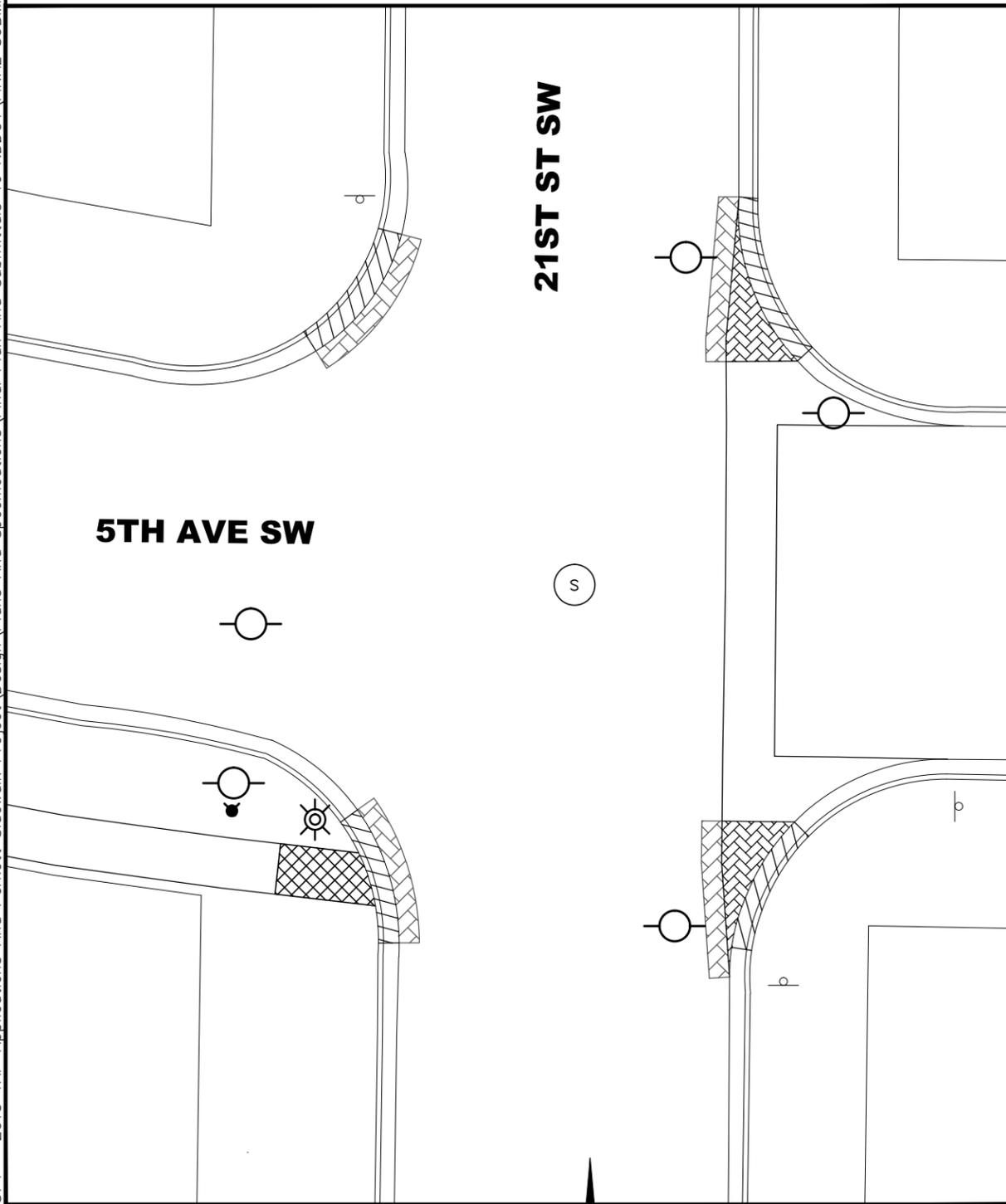
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REMOVAL
 DETAIL

P:\PROJECTS\3874 - 2015 TAP Applications And Perkett Sidewalk Project Design\Plans And Specifications\Final Plan And Submittals To NDDOT\FINAL SUBMITTAL.dwg
12/5/2014

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	40	2



REMOVALS

-  BITUMINOUS SURFACE
-  VALLEY GUTTER
-  CURB
-  SIDEWALK

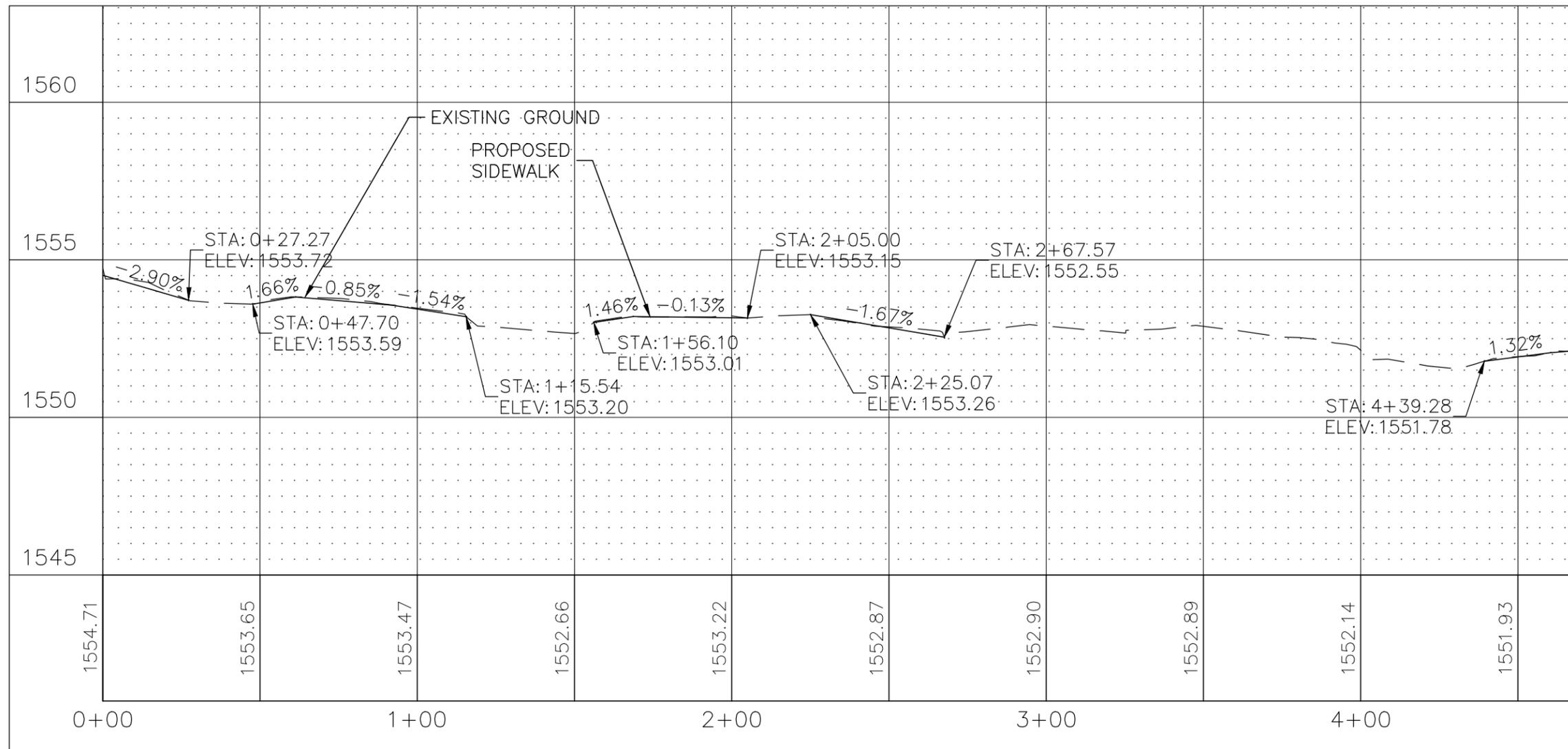
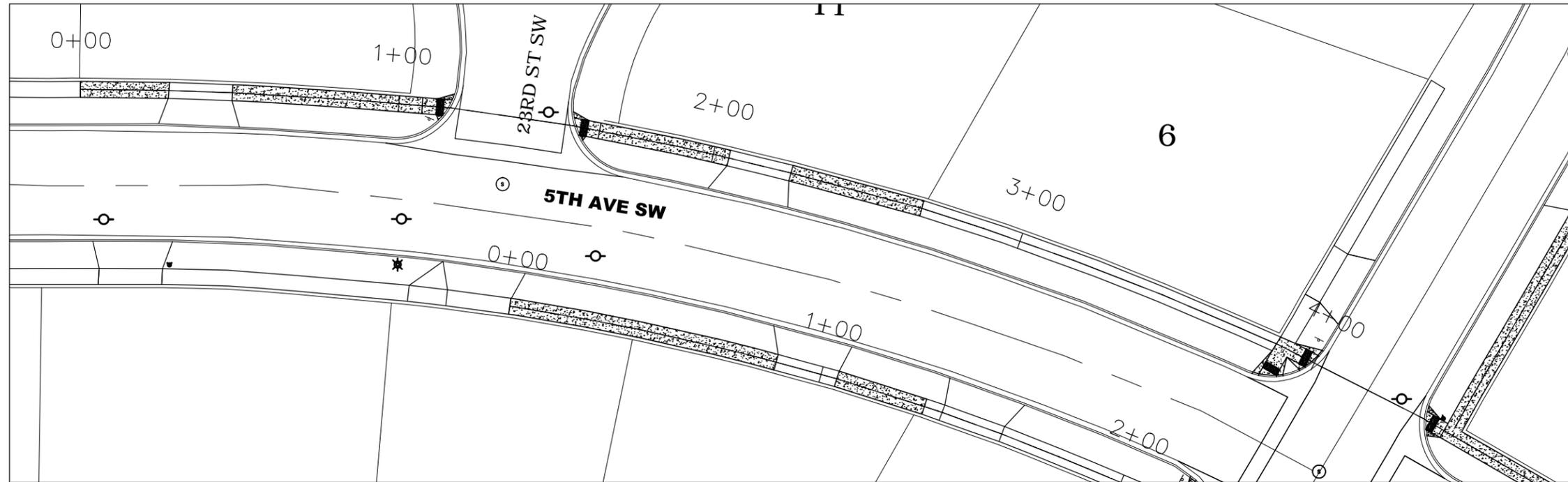


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REMOVAL
DETAIL

12/5/2014 P:\PROJECTS\3874 - 2015 TAP Applications And Perkett Sidewalk Project\Design\Plans And Specifications\Final Plan And Submittals To NDDOT\FINAL SUBMITTAL.dwg

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	60	1

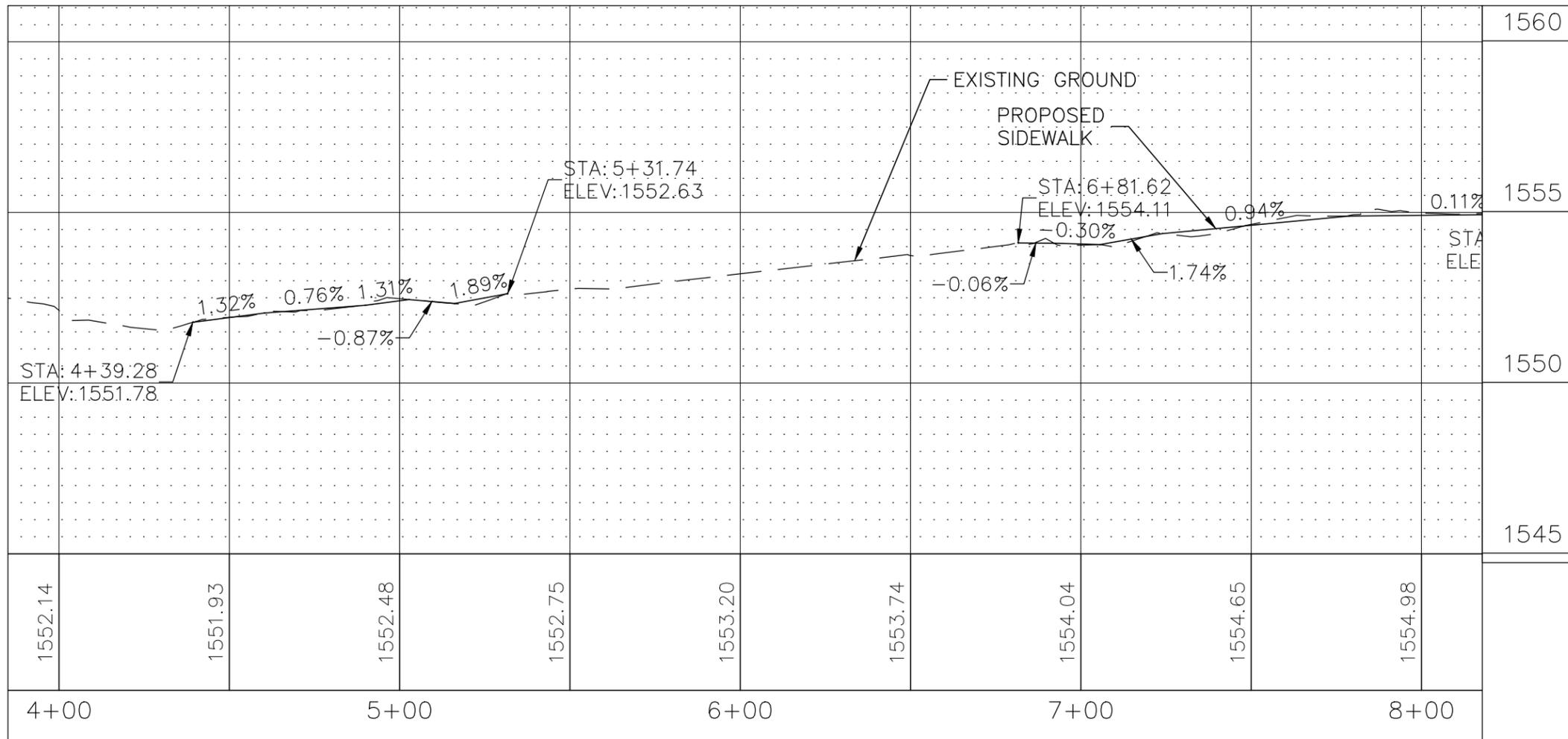
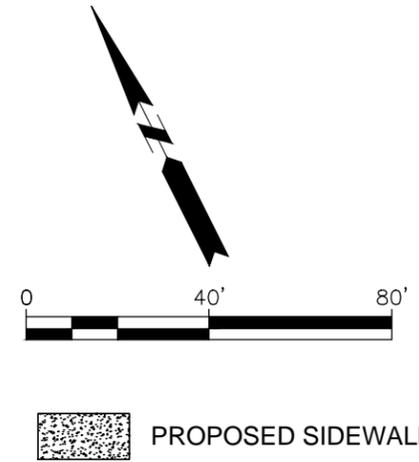
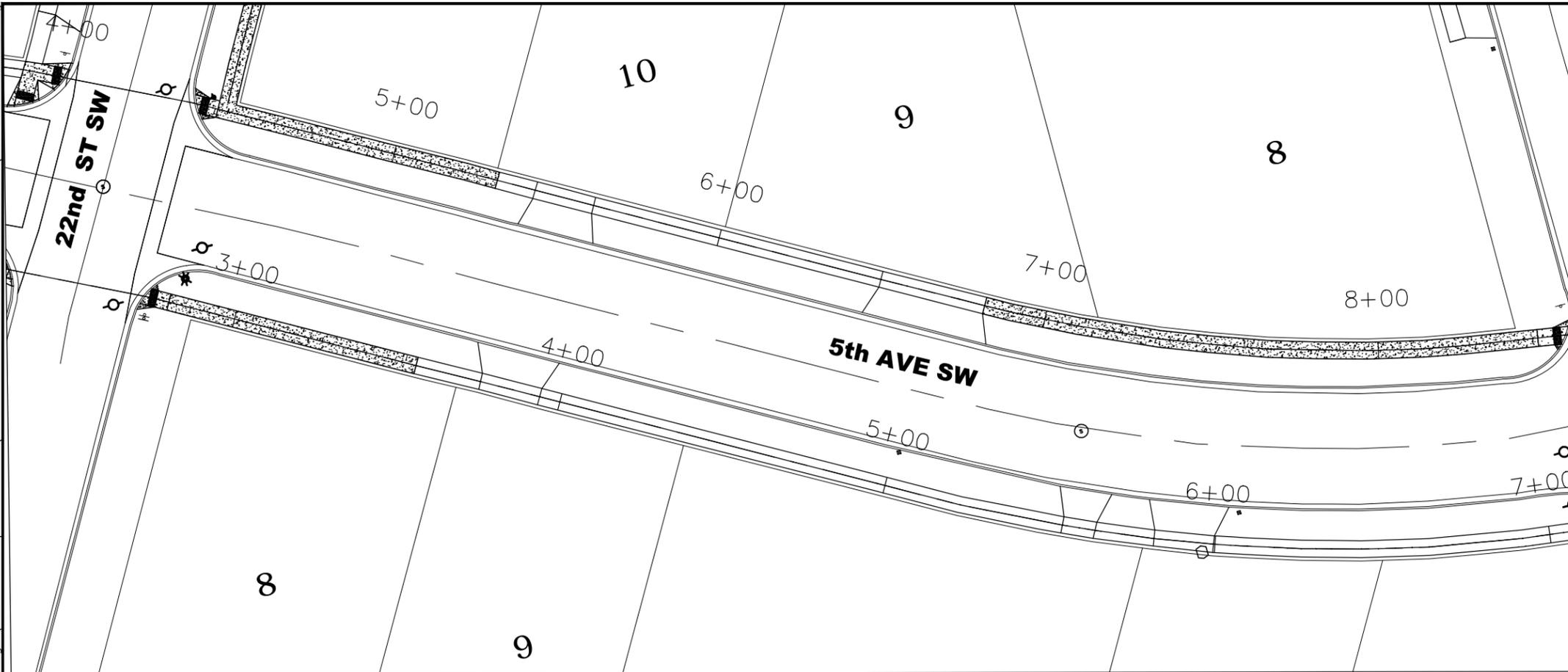


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PLAN AND PROFILE
 5TH AVE SW NORTH SIDE
 STA 0+00 TO 4+00

12/5/2014 P:\PROJECTS\3874 - 2015 TAP Applications And Perkett Sidewalk Project\Design\Plans And Specifications\Final Plan And Submittals To NDDOT\FINAL SUBMITTAL.dwg

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	60	2



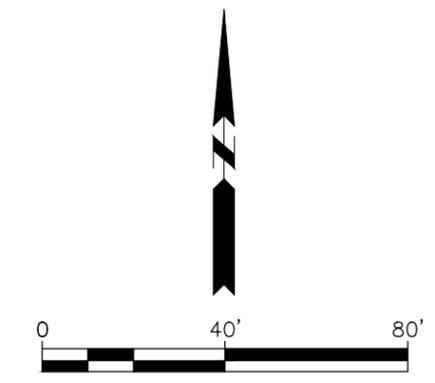
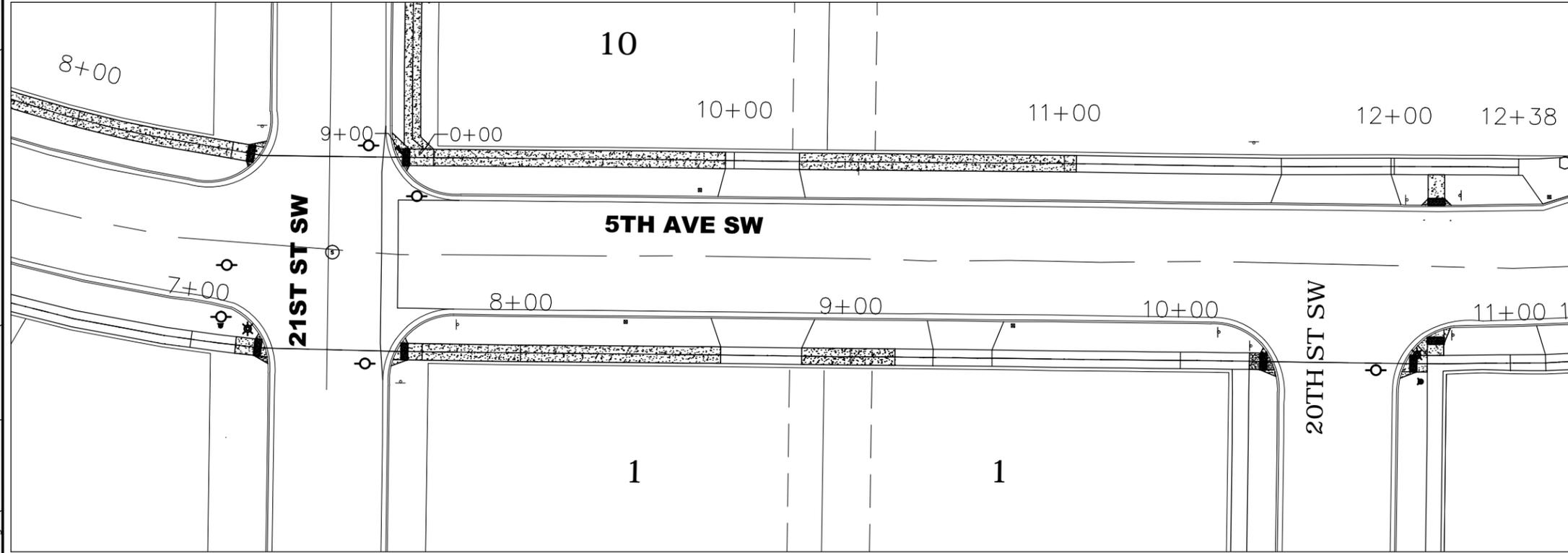
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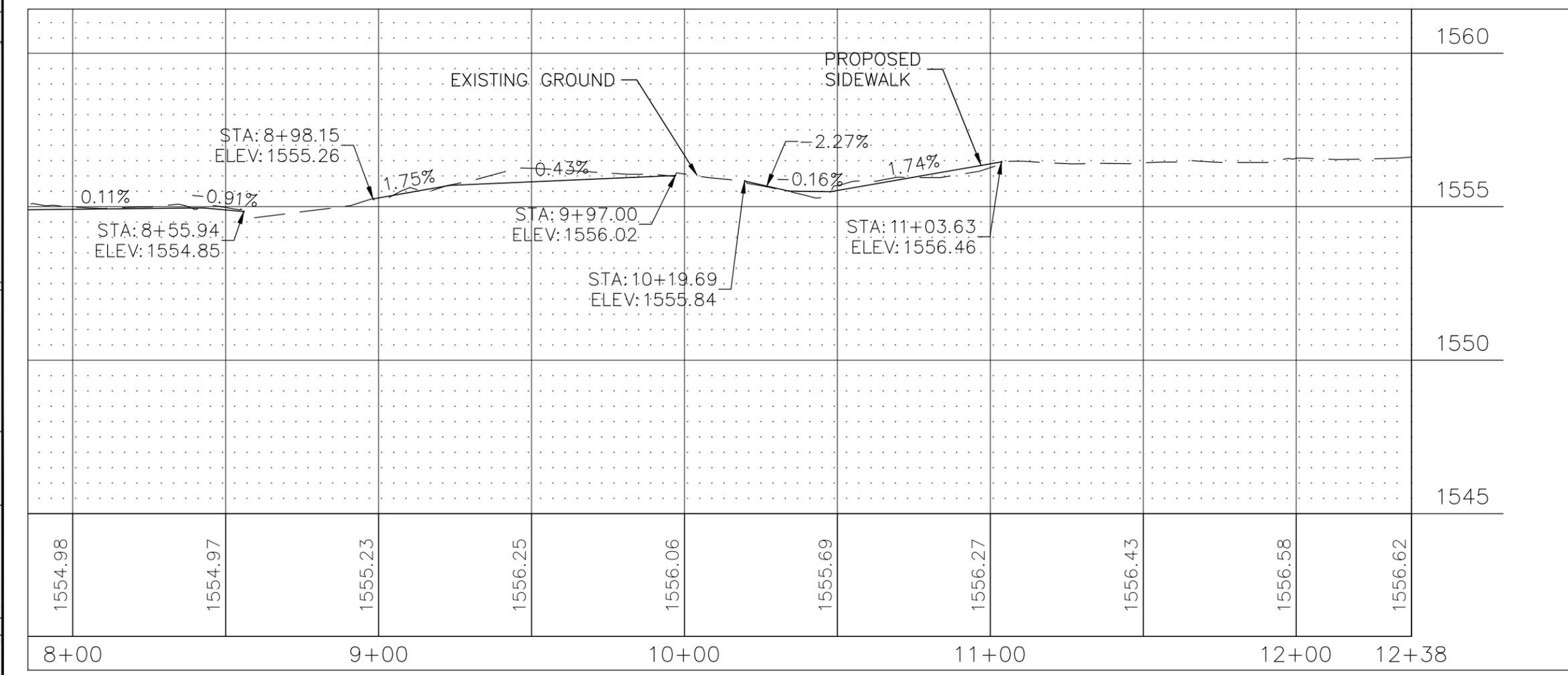
PLAN AND PROFILE
 5TH AVE SW NORTH SIDE
 STA 4+00 TO 8+00

12/5/2014 P:\PROJECTS\3874 - 2015 TAP Applications And Perkett Sidewalk Project\Design\Plans And Specifications\Final Plan And Submittals To NDDOT\FINAL SUBMITTAL.dwg

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	60	3



PROPOSED SIDEWALK



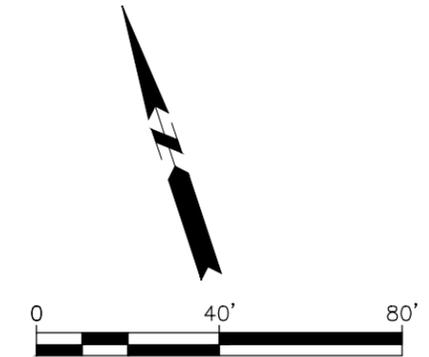
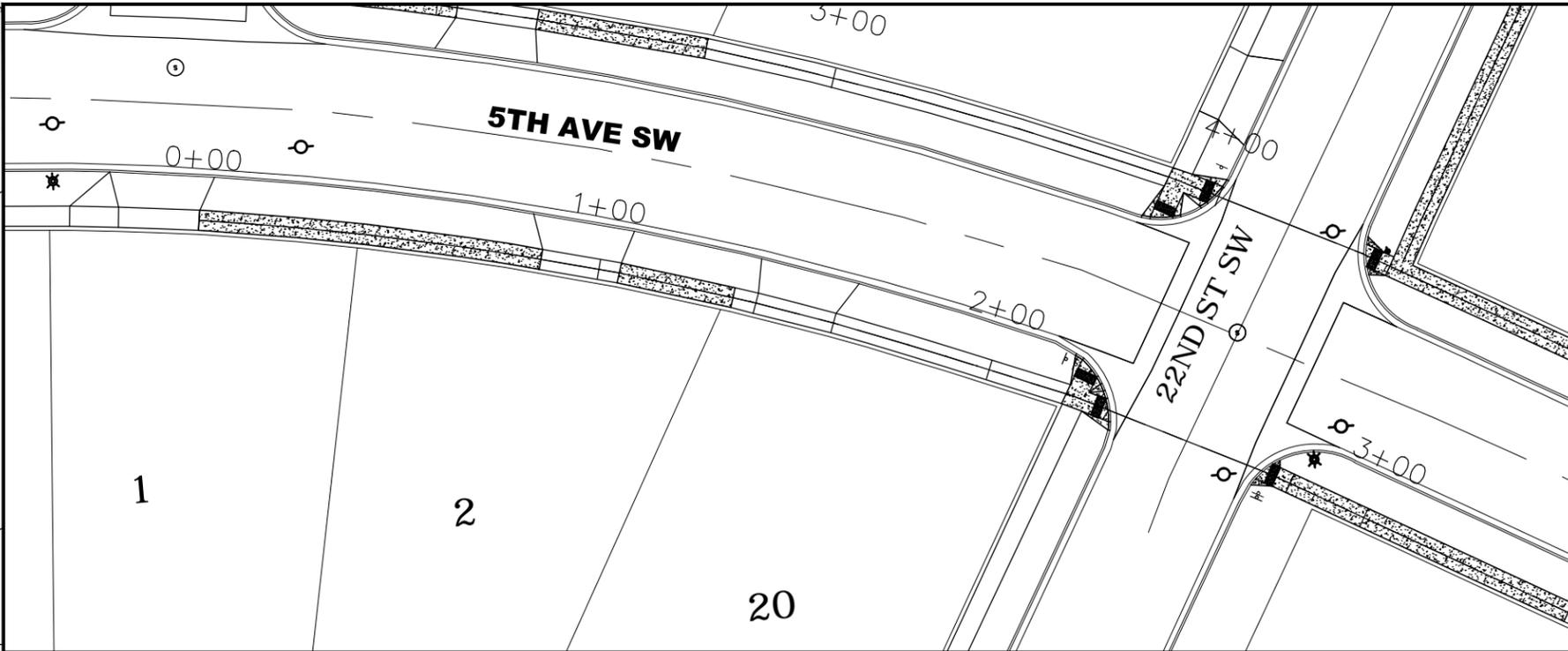
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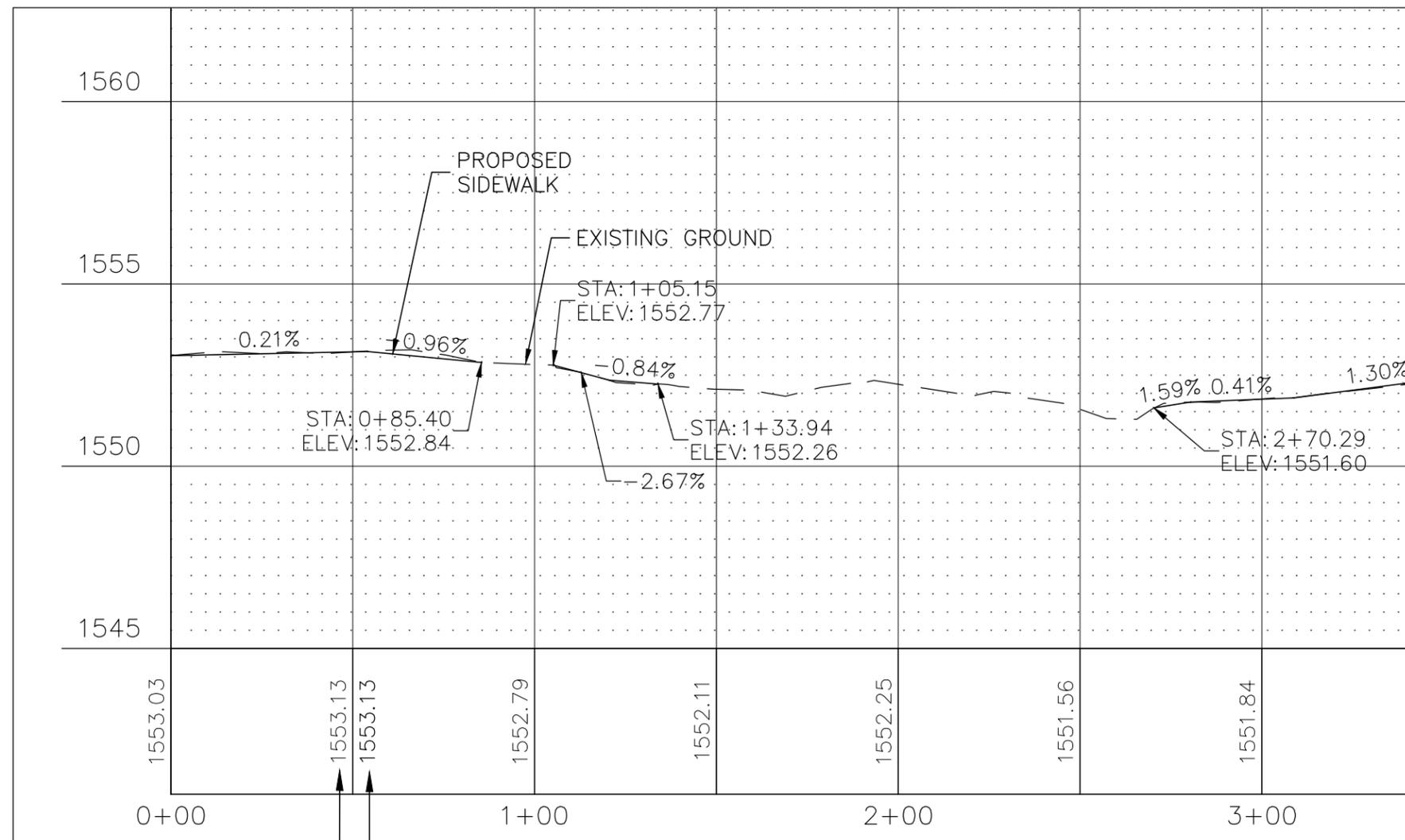
PLAN AND PROFILE
 5TH AVE SW NORTH SIDE
 STA 8+00 TO 12+48

12/5/2014 P:\PROJECTS\3874 - 2015 TAP Applications And Perkett Sidewalk Project\Design\Plans And Specifications\Final Plan And Submittals To NDDOT\FINAL SUBMITTAL.dwg

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	60	4



PROPOSED SIDEWALK



PROPOSED SIDEWALK ELEV. (TYP)
 EXISTING GROUND ELEV. (TYP)

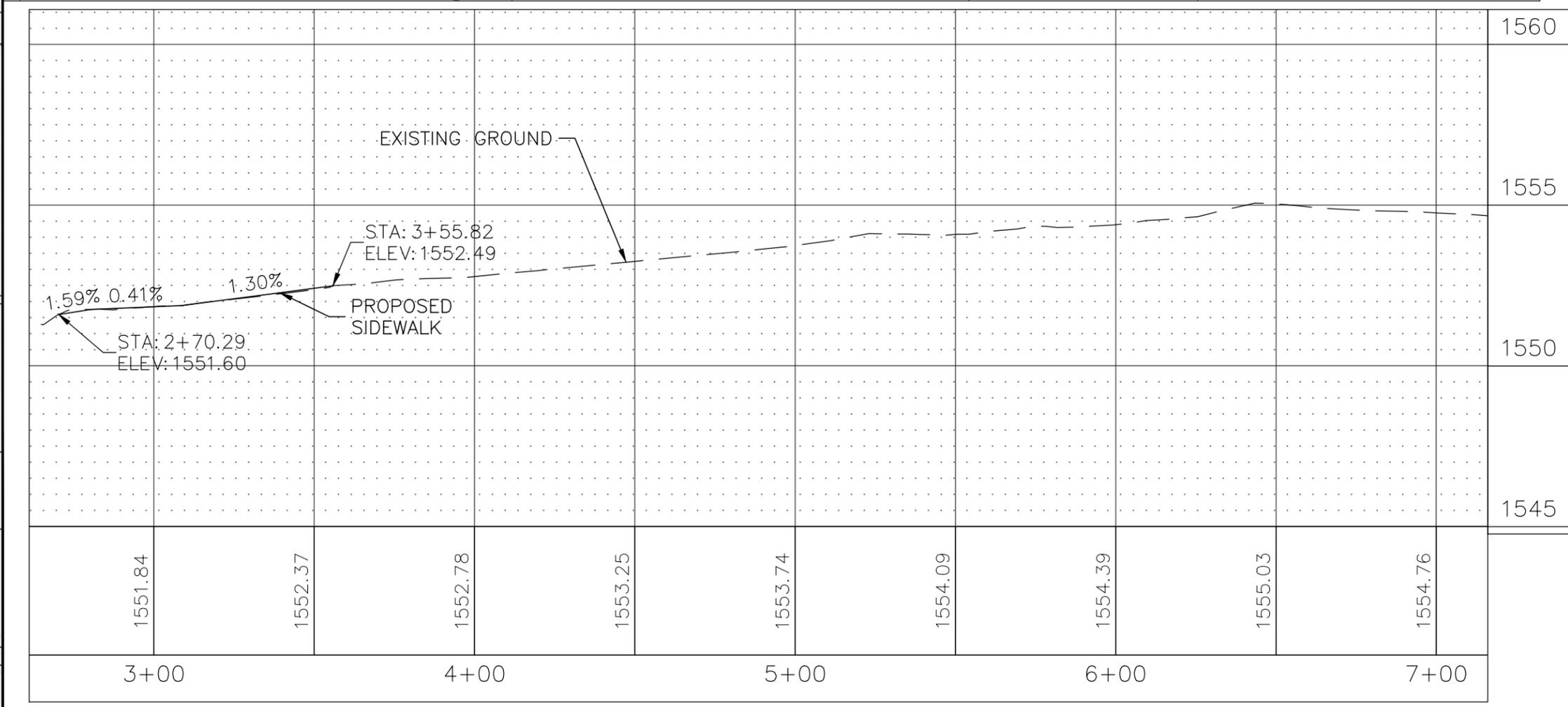
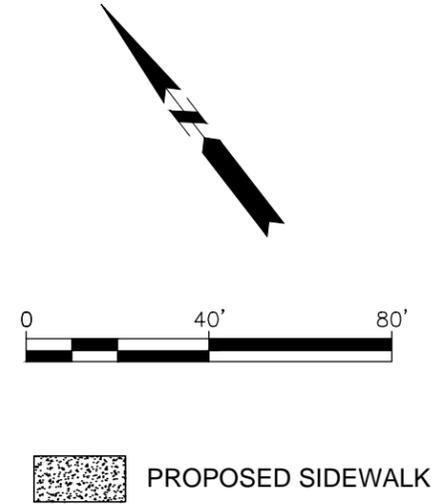
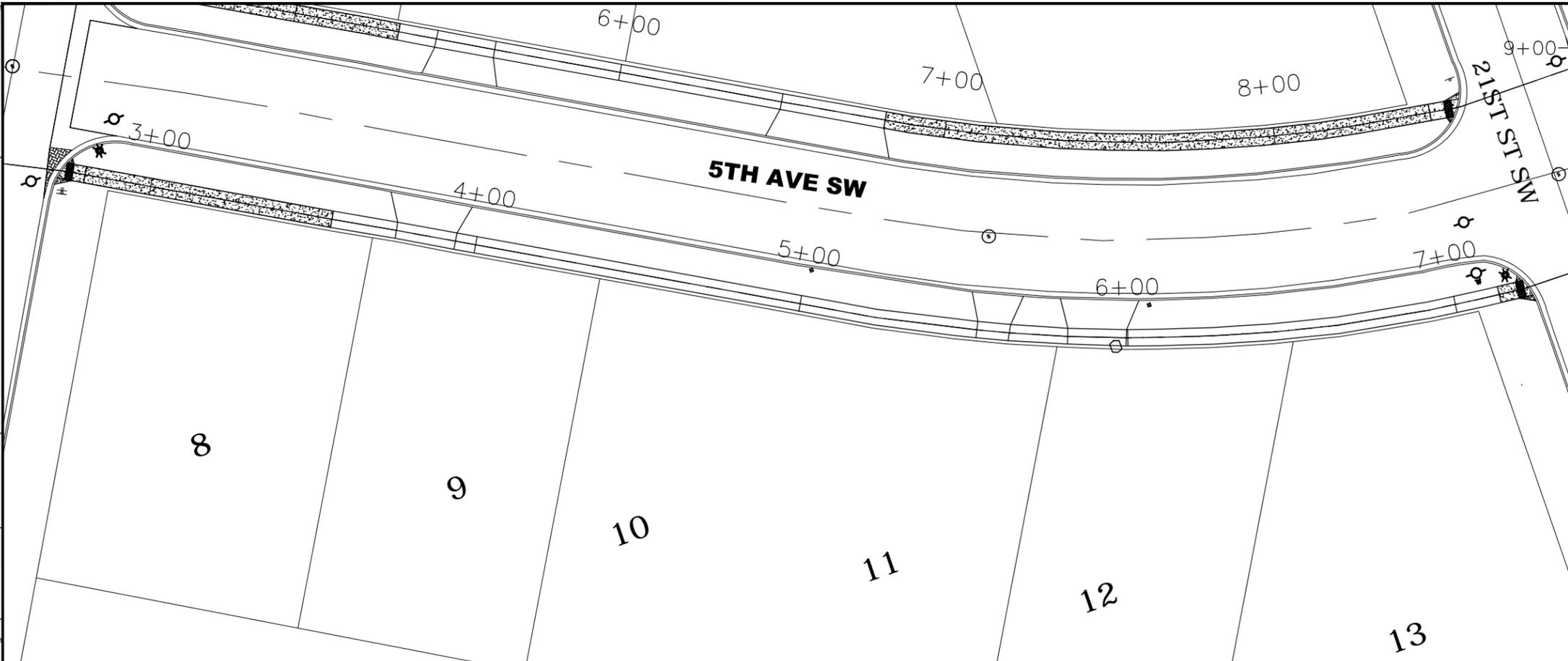
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PLAN AND PROFILE
 5TH AVE SW SOUTH SIDE
 STA 0+00 TO 3+00

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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	60	5



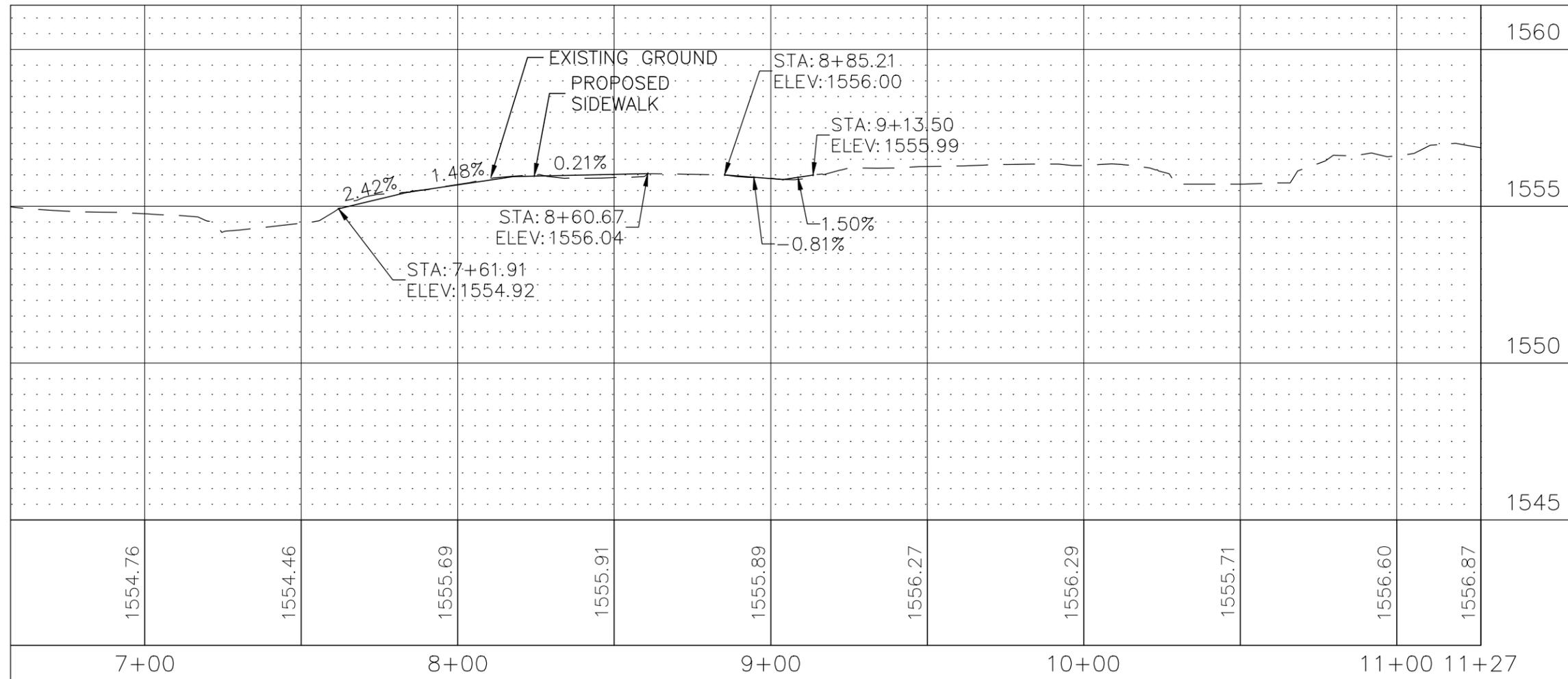
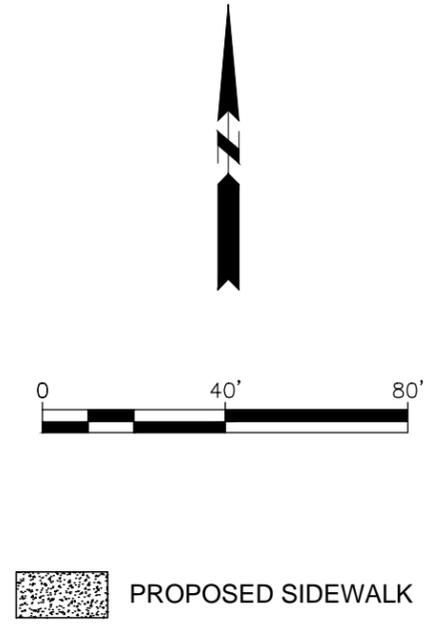
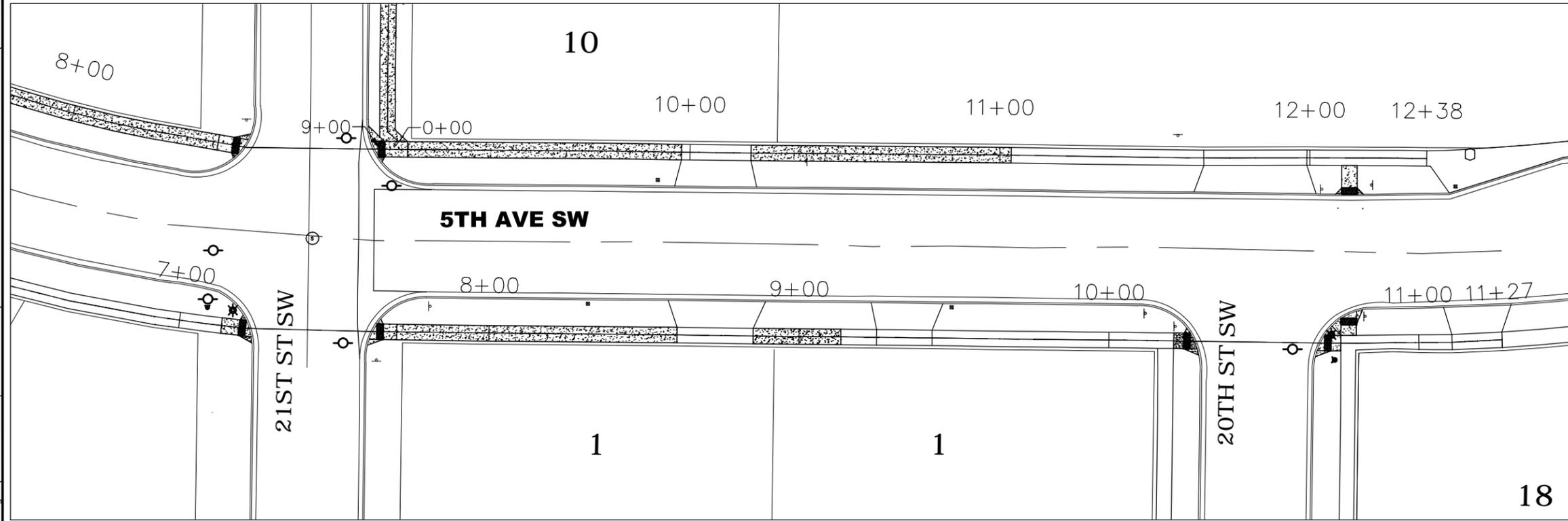
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PLAN AND PROFILE
 5TH AVE SW SOUTH SIDE
 STA 3+00 TO 7+00

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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	60	6



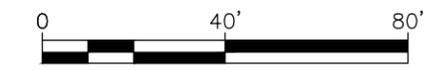
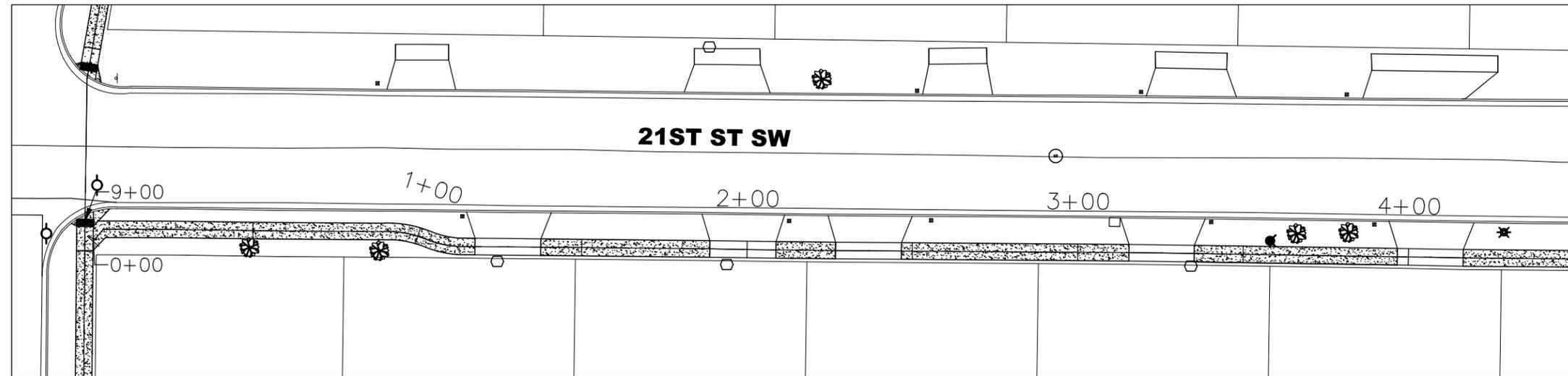
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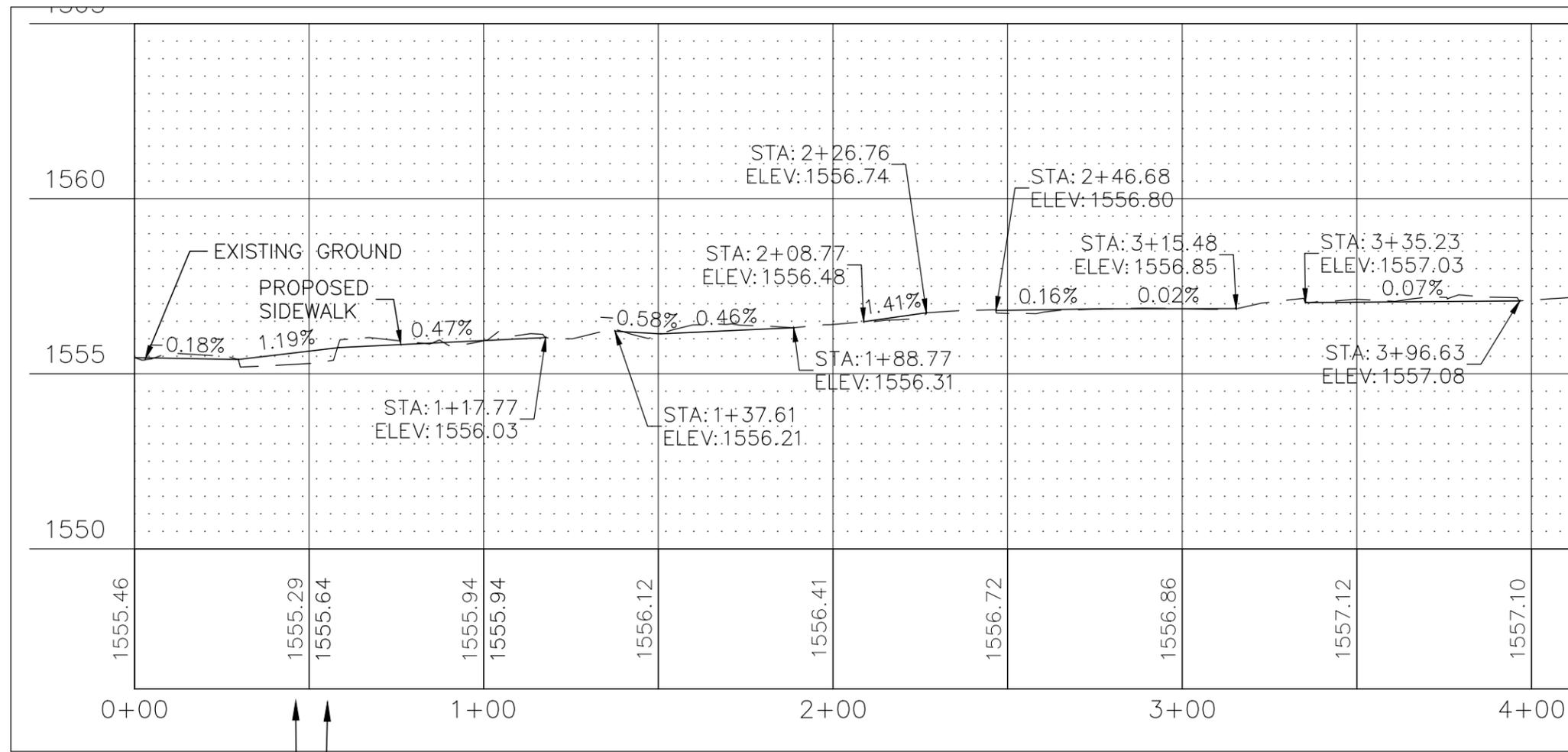
PLAN AND PROFILE
 5TH AVE SW SOUTH SIDE
 STA 7+00 TO 11+27

12/5/2014 P:\PROJECTS\3874 - 2015 TAP Applications And Perkett Sidewalk Project\Design\Plans And Specifications\Final Plan And Submittals To NDDOT\FINAL SUBMITTAL.dwg

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	60	7



PROPOSED SIDEWALK



↑ PROPOSED SIDEWALK ELEV. (TYP)
 ↑ EXISTING GROUND ELEV. (TYP)

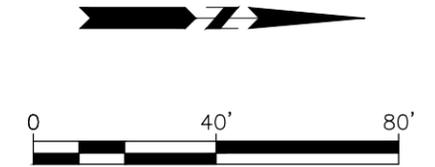
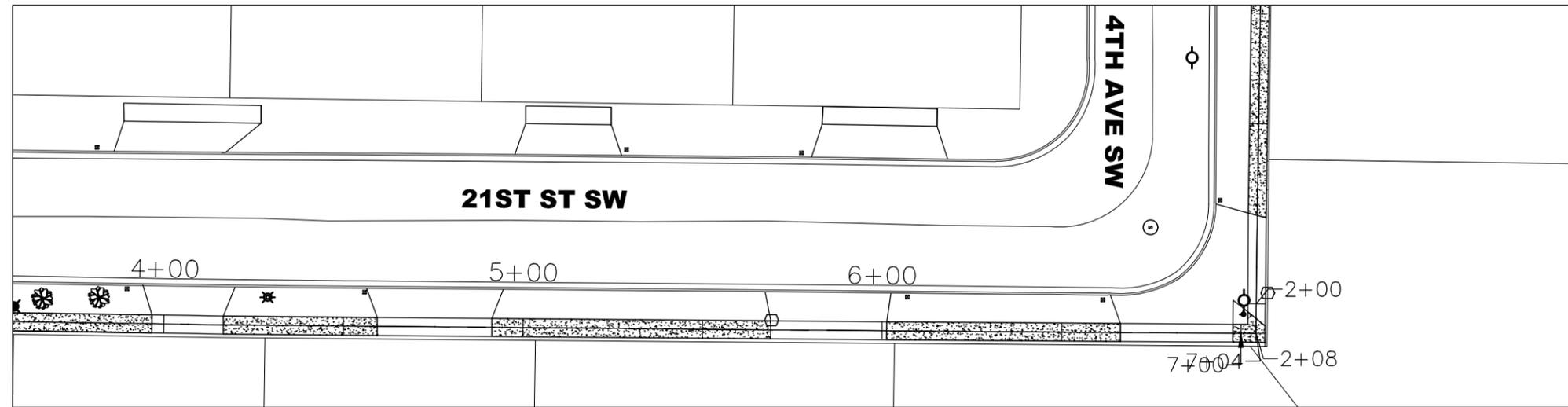


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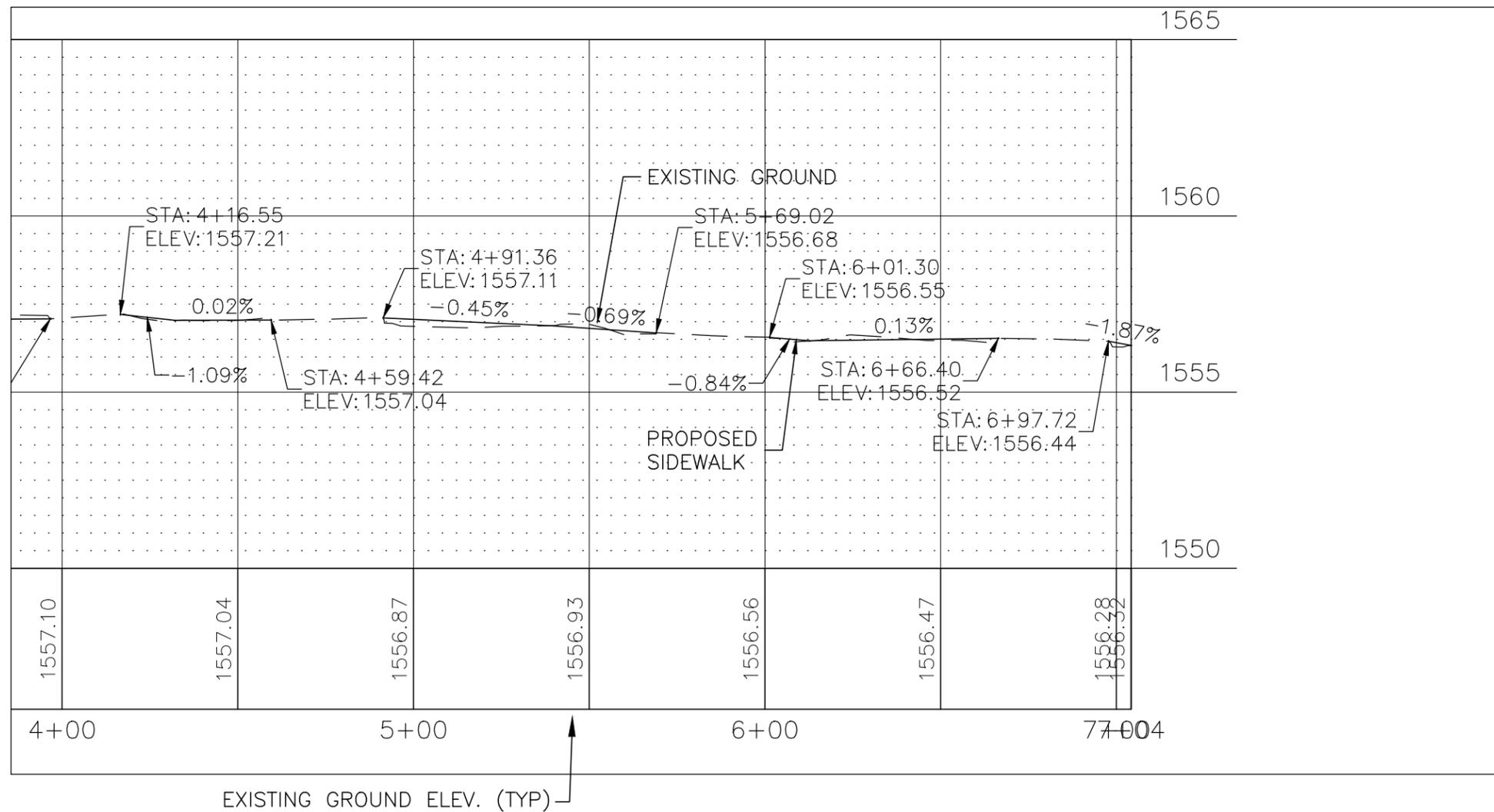
PLAN AND PROFILE
 21ST STREET SW
 STA 0+00 TO 4+00

P:\PROJECTS\3874 - 2015 TAP Applications And Perkett Sidewalk Project\Design\Plans And Specifications\Final Plan And Submittals To NDDOT\FINAL SUBMITTAL.dwg

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	60	8



 PROPOSED SIDEWALK



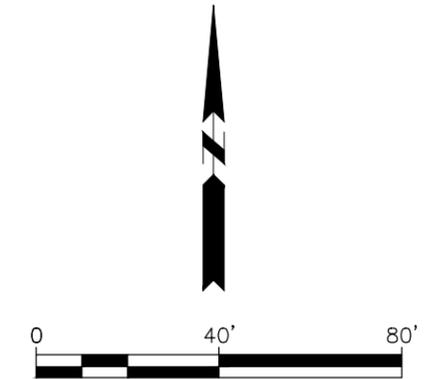
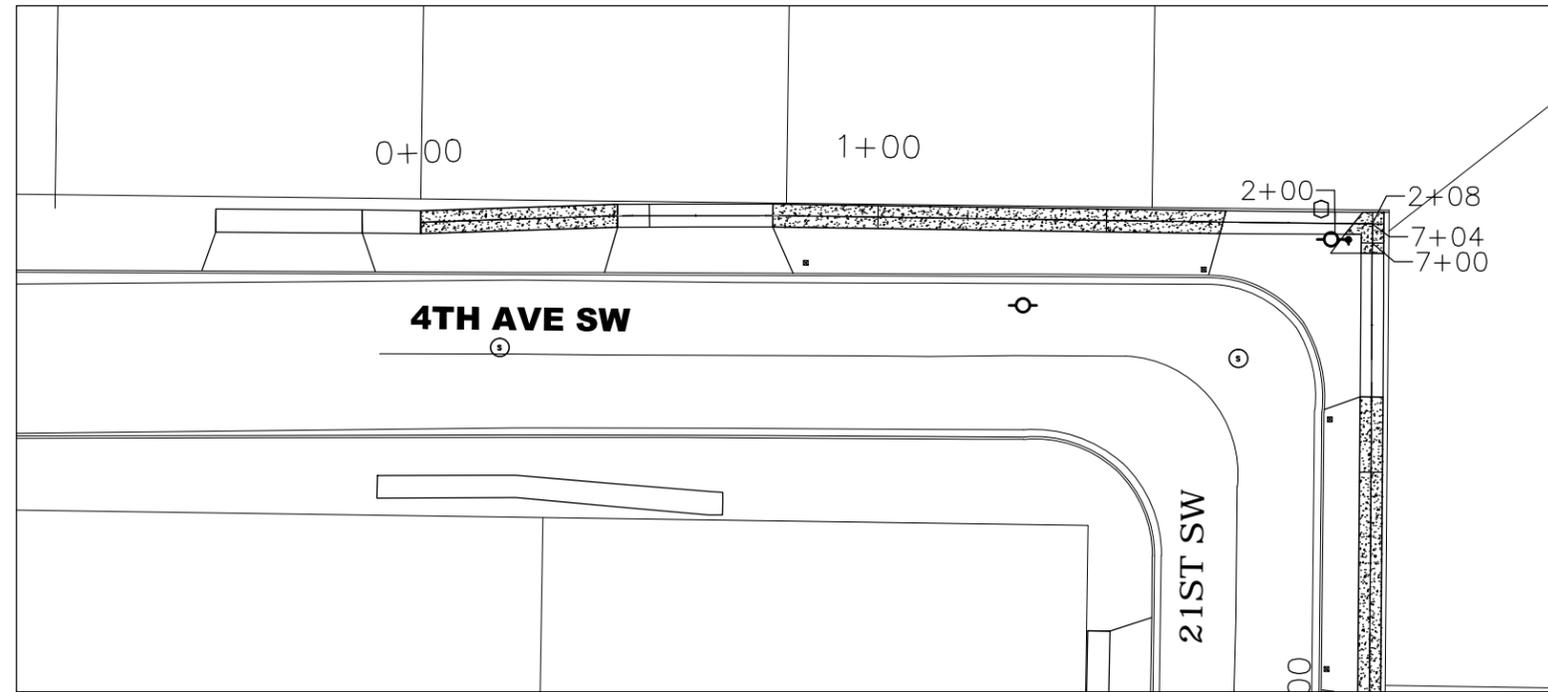
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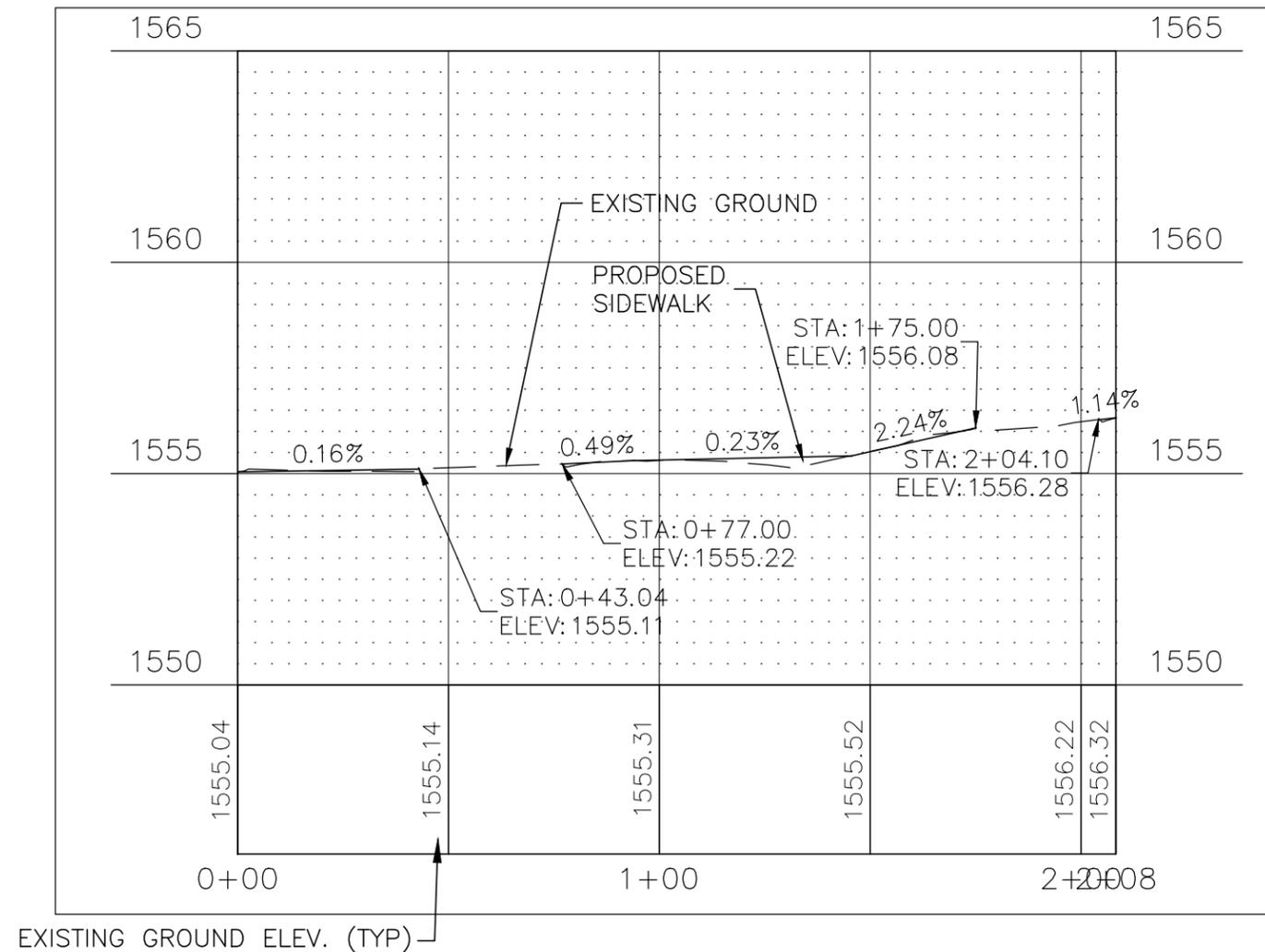
PLAN AND PROFILE
21ST STREET SW
STA 4+00 TO 7+04

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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	60	9



 PROPOSED SIDEWALK



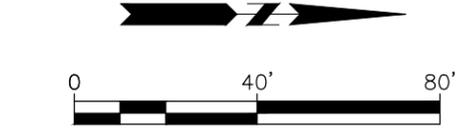
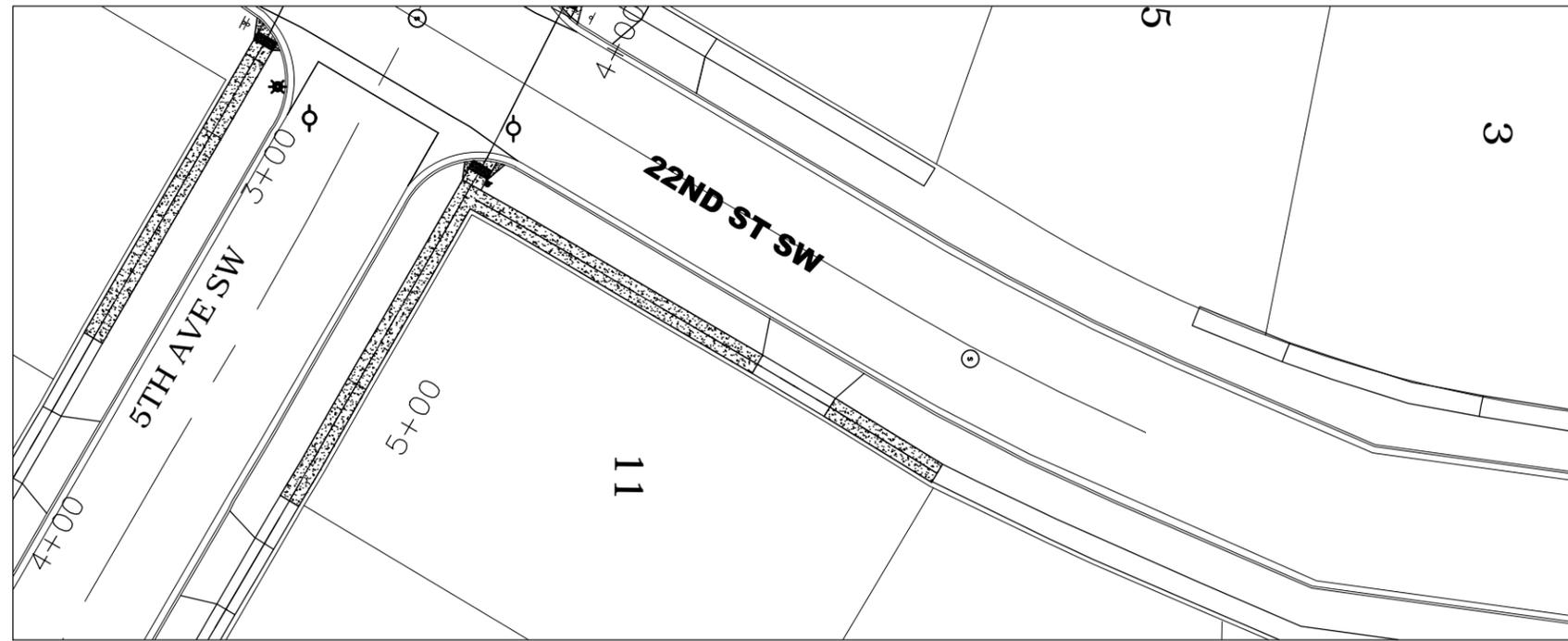
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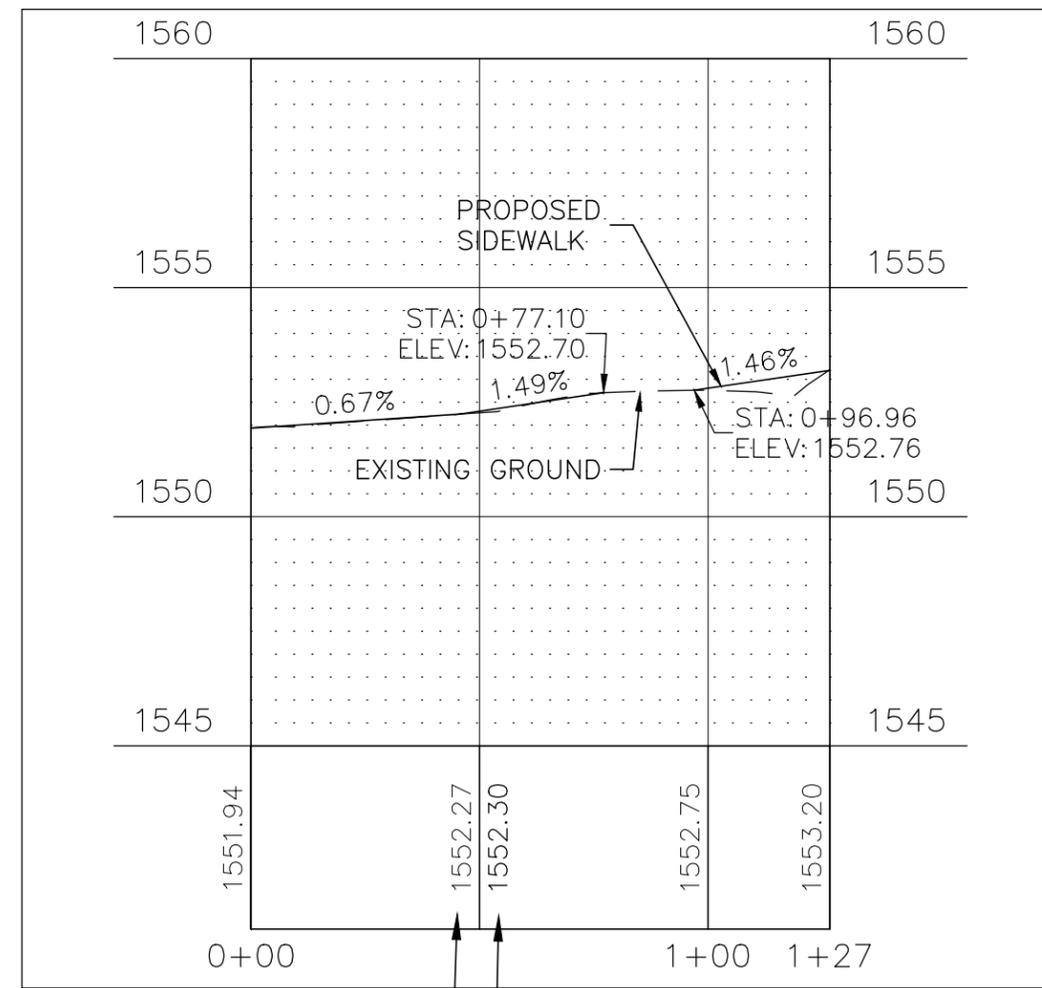
PLAN AND PROFILE
 4TH AVENUE SW
 STA 0+00 TO 2+08

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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	SRU-4-989(118)119	20771	60	10



 PROPOSED SIDEWALK



EXISTING GROUND ELEV. (TYP)
PROPOSED SIDEWALK ELEV. (TYP)

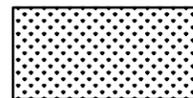
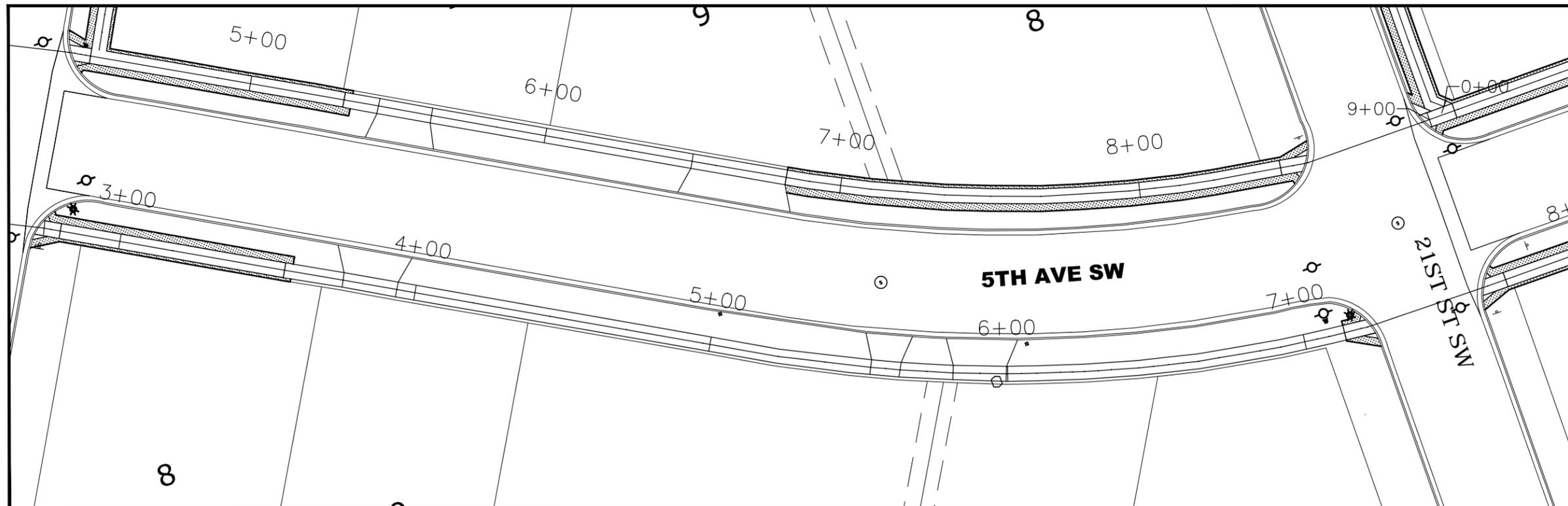
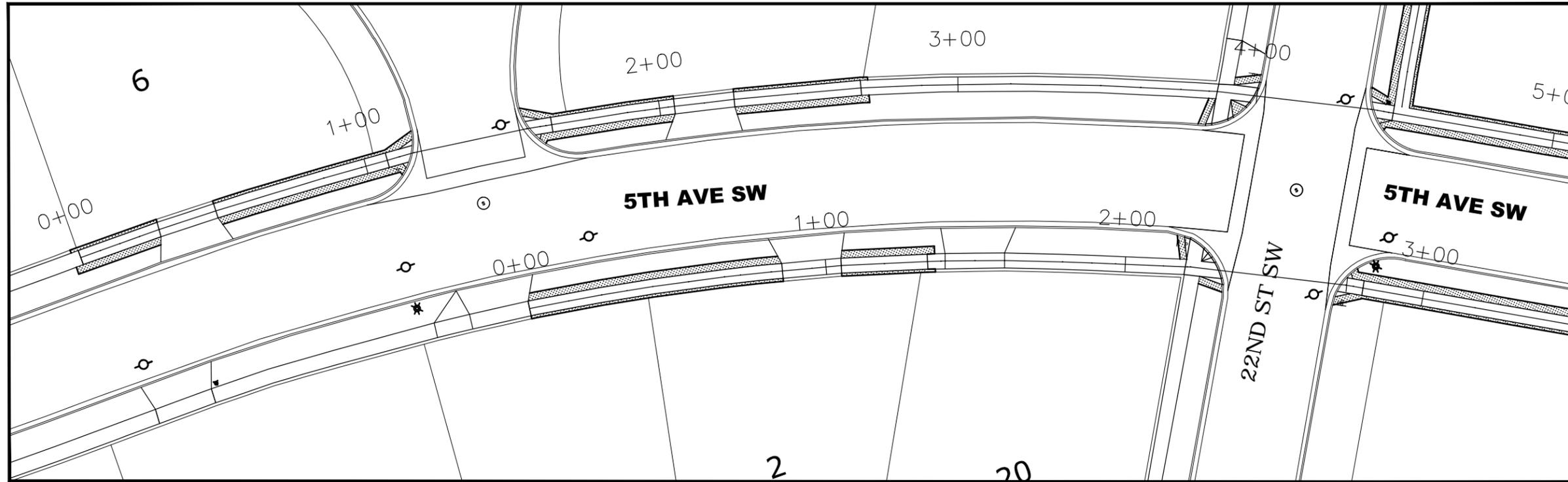
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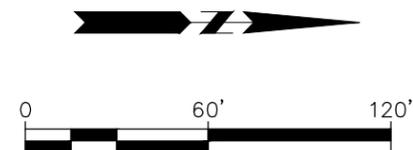
PLAN AND PROFILE
22ND STREET SW
STA 0+00 TO 4+00

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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	77	1



SEEDING AREA

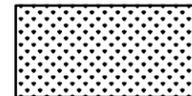
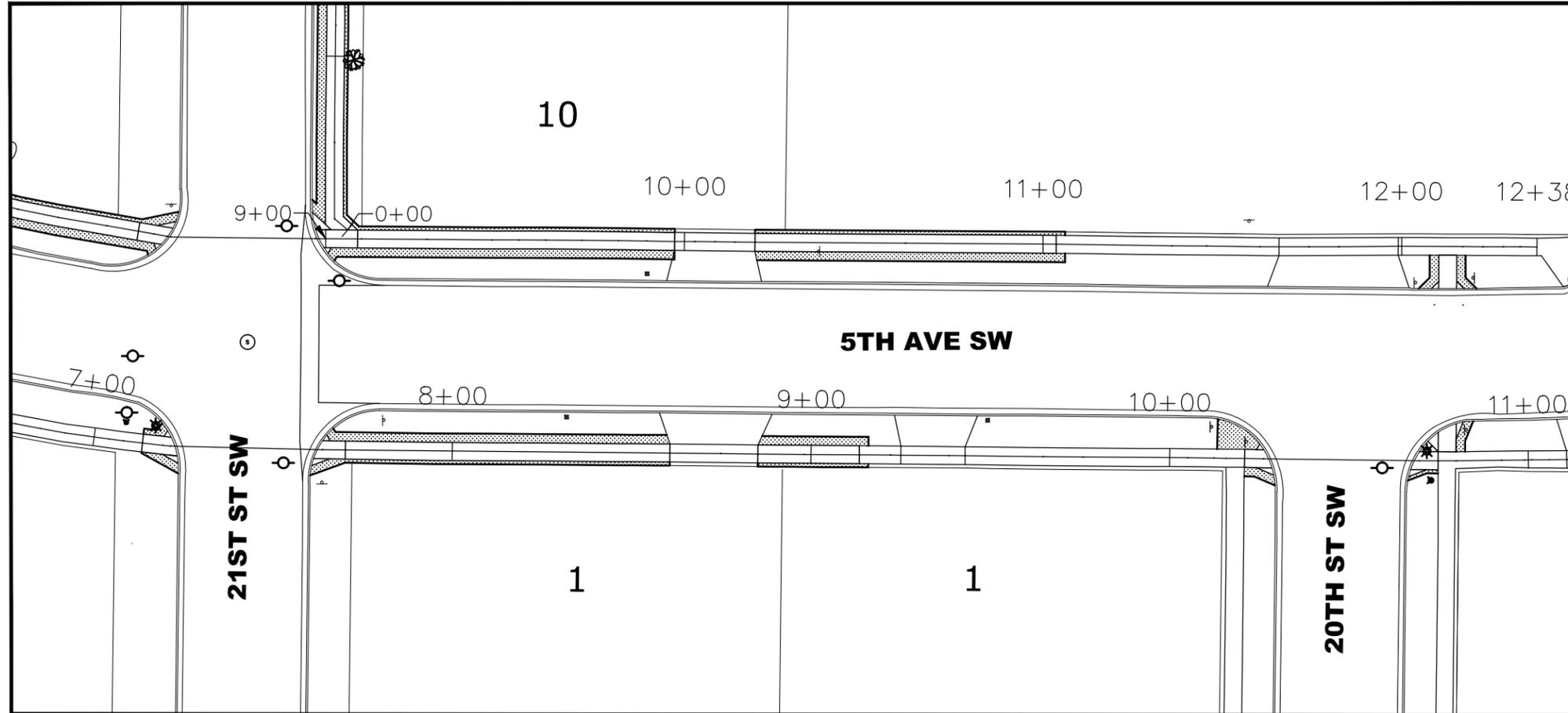


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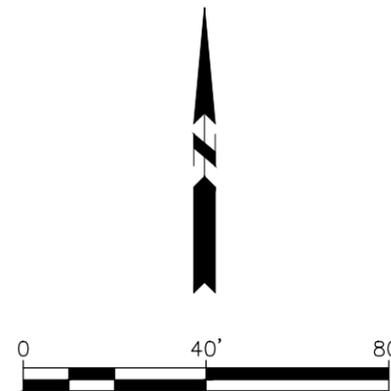
SEEDING AREA

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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	77	2



SEEDING AREA

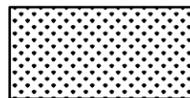
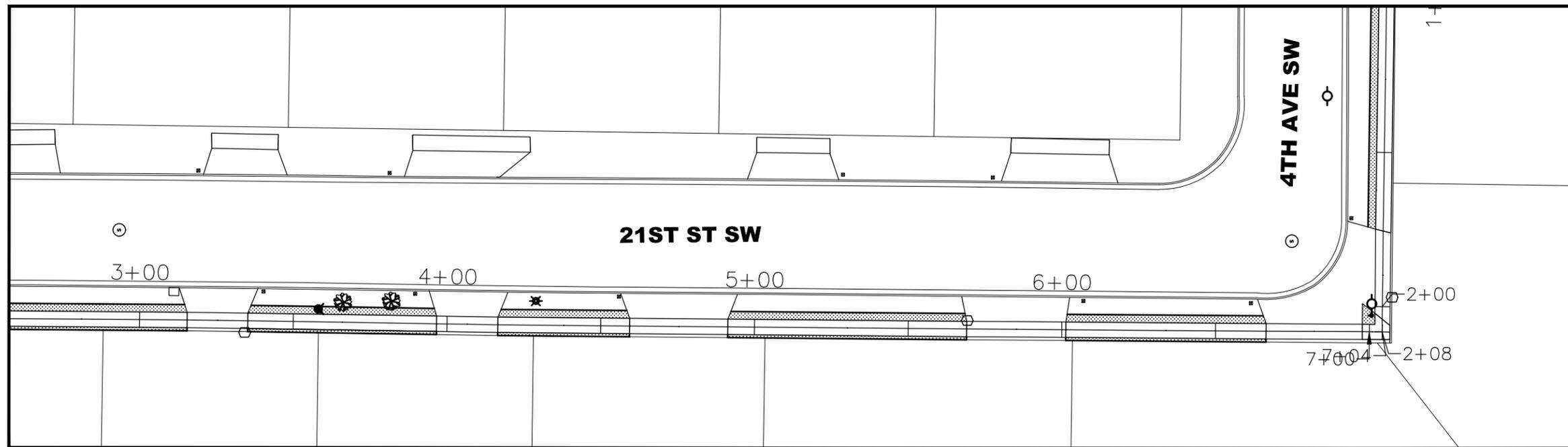
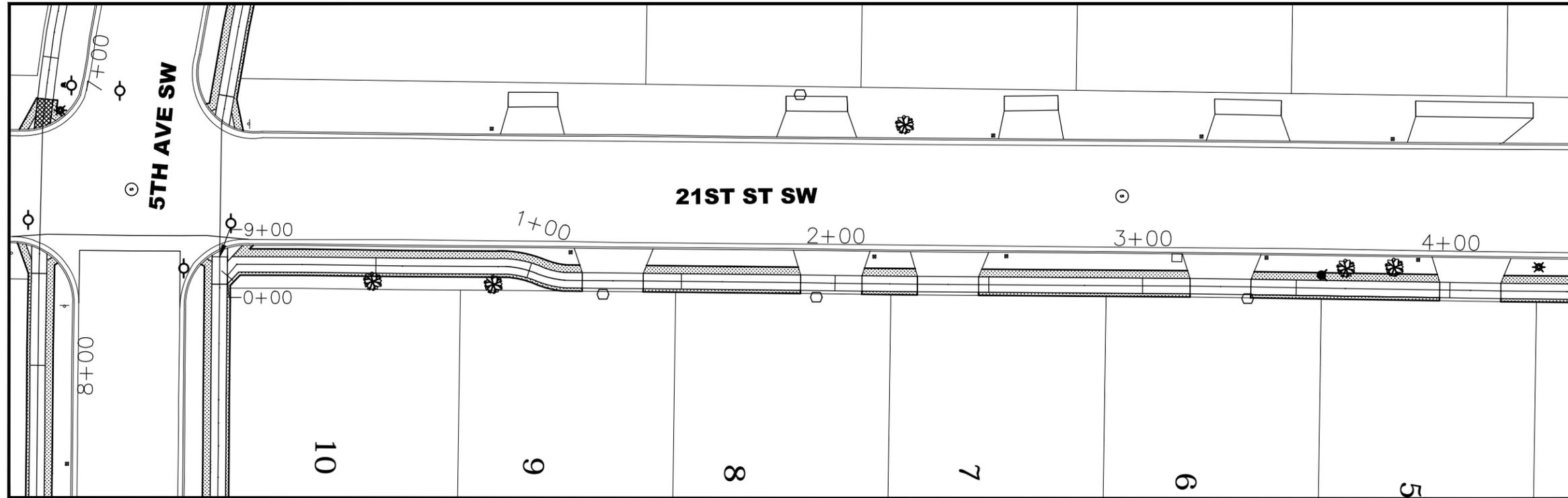


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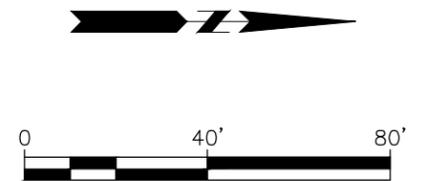
SEEDING AREA

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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	77	3



SEEDING AREA



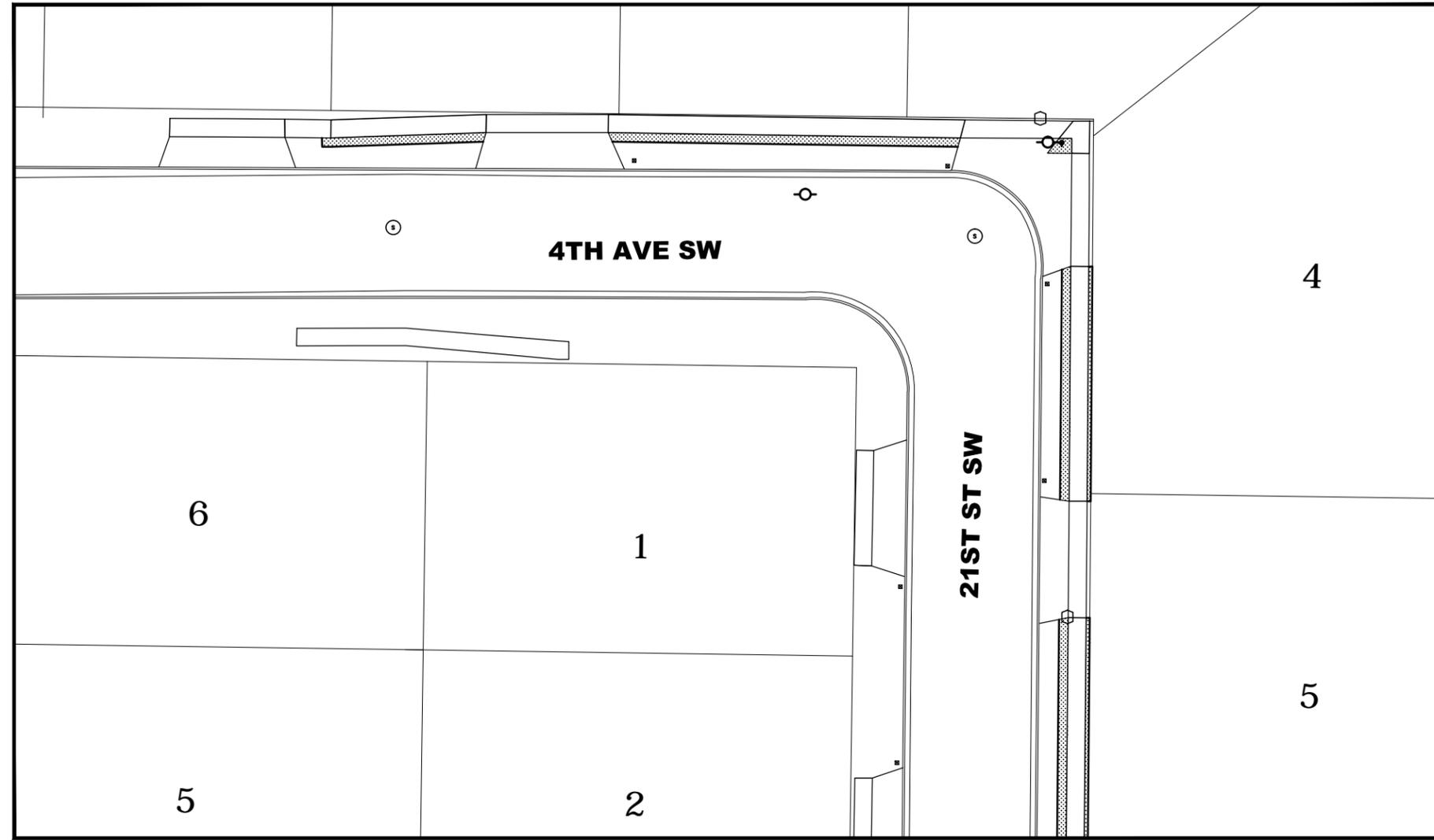
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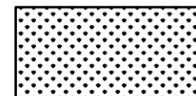
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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	SRU-4-989(118)119	20771	77	4

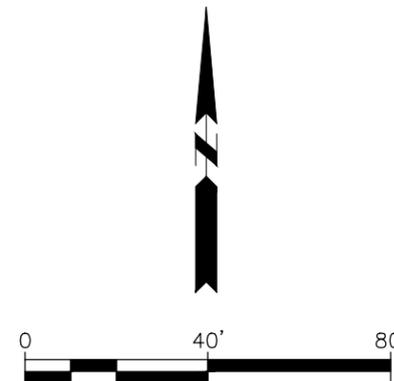


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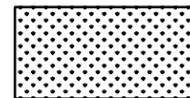
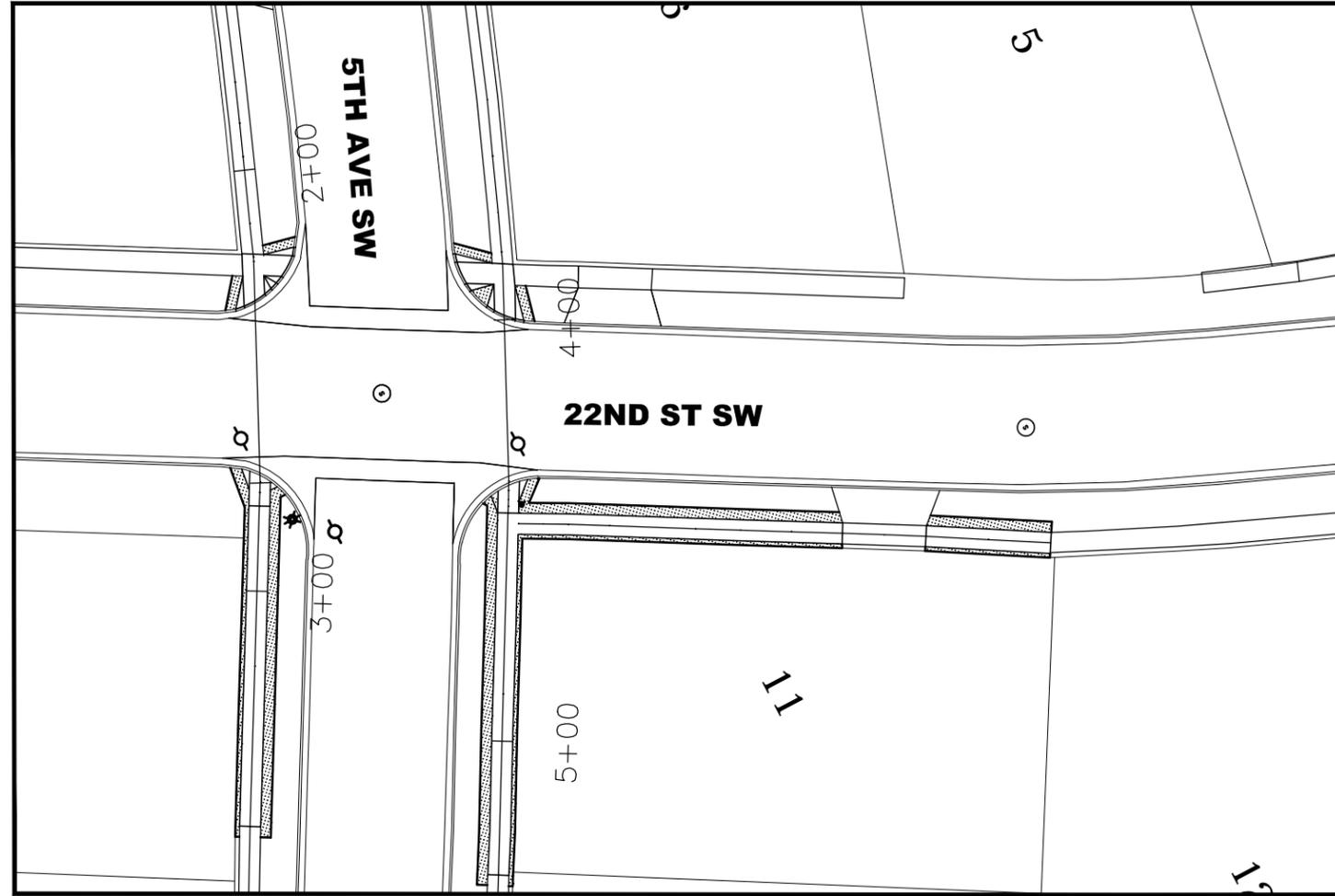


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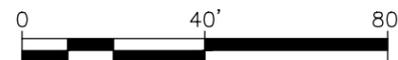


SEEDING AREA

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	77	5



SEEDING AREA

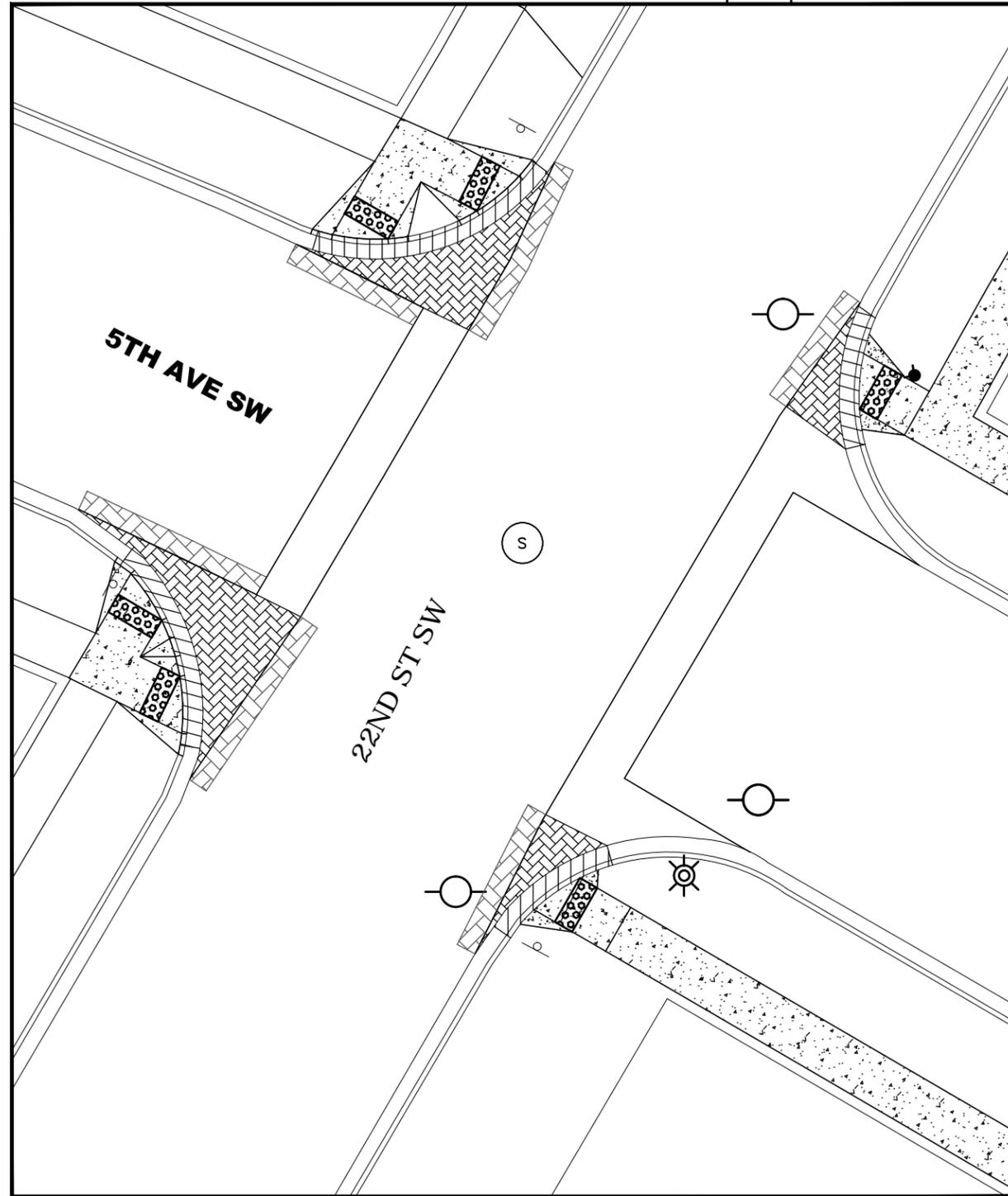
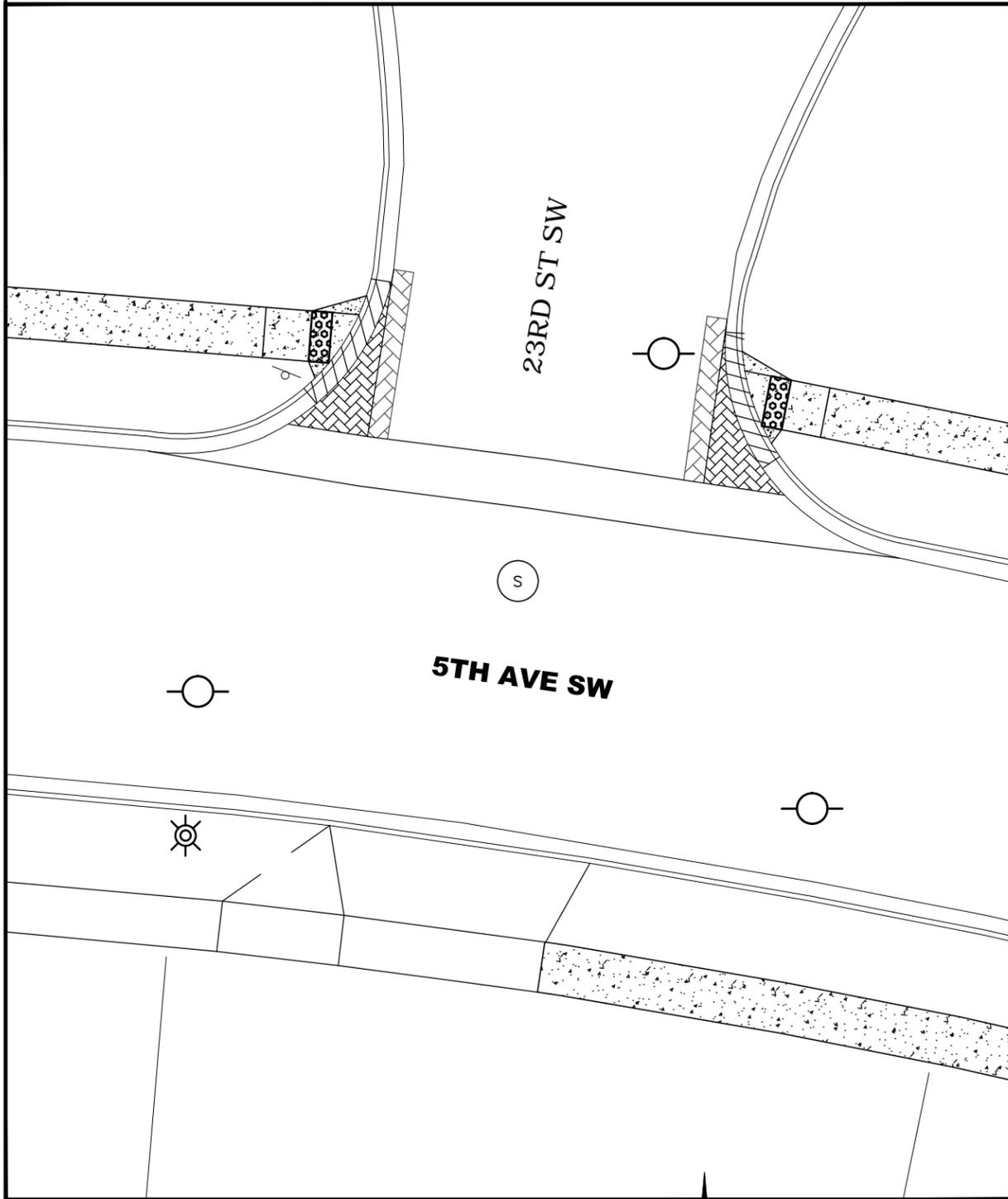


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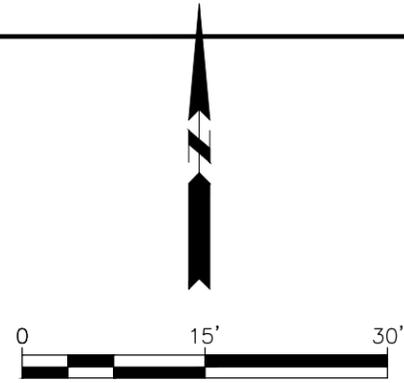
STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	90	1



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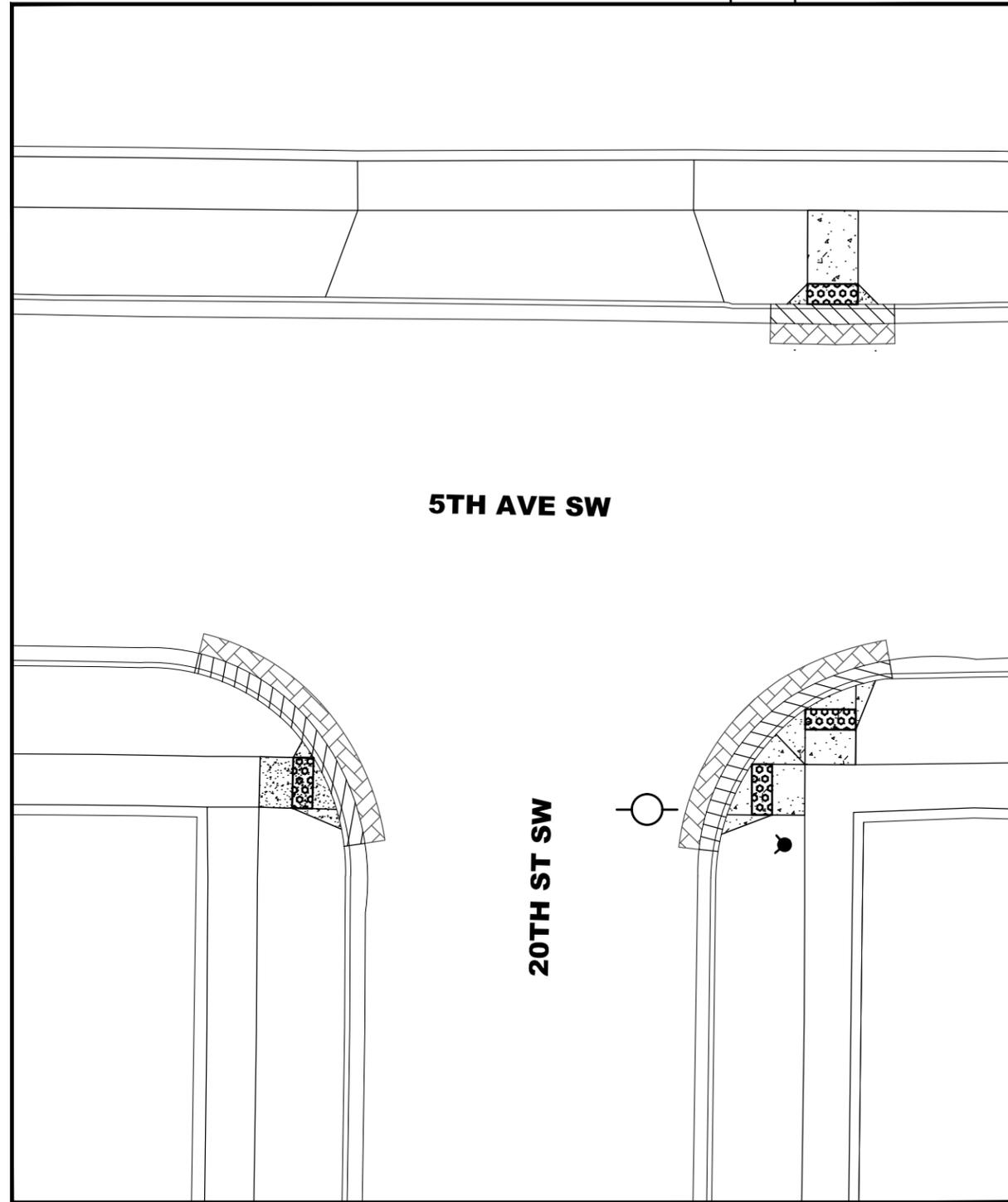
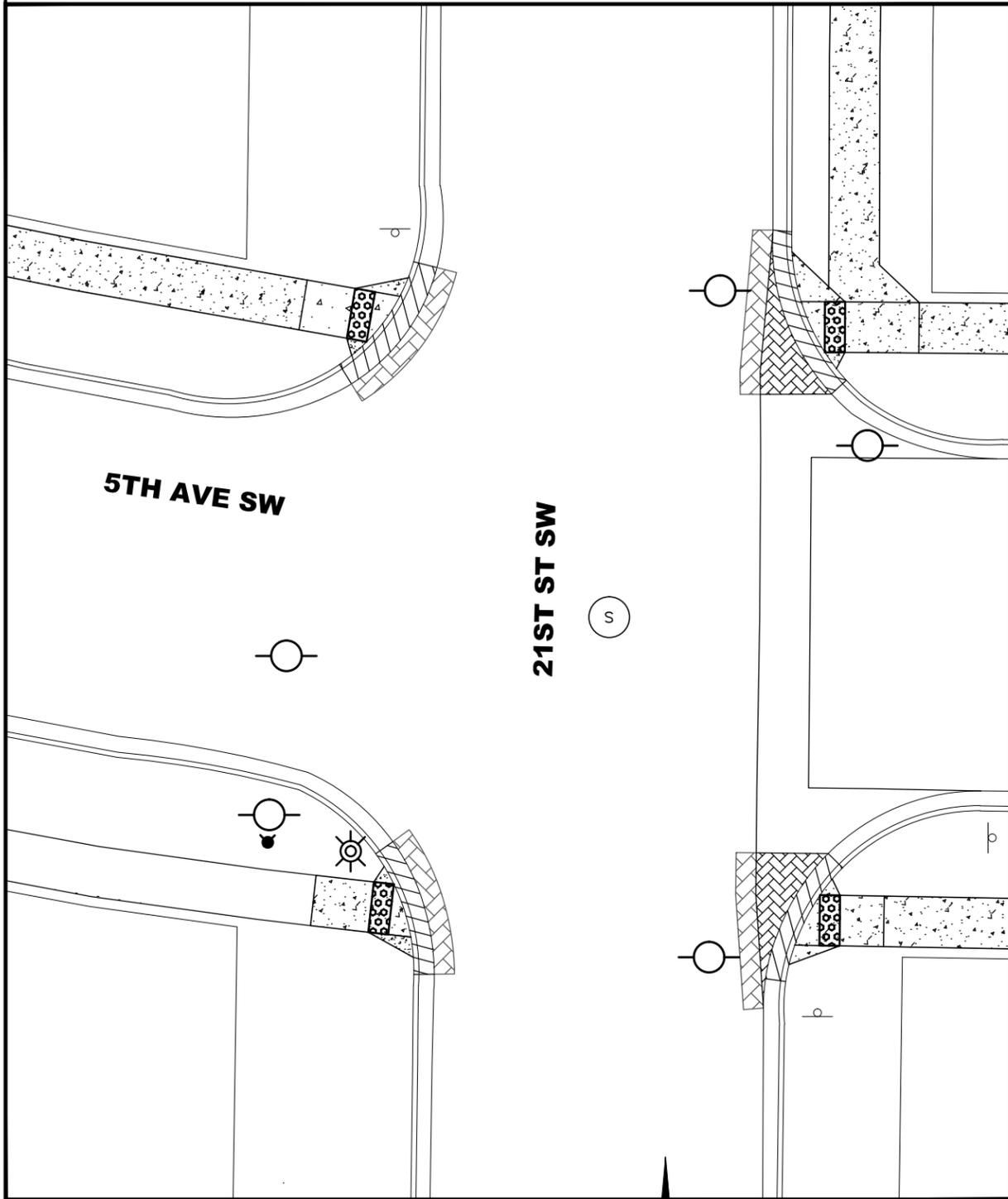
-  SIDEWALK
-  CURB
-  HMA - COMMERCIAL GRADE
-  DETECTABLE WARNING PANEL
-  VALLEY GUTTER



12/5/2014 PAVING

PAVING

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	90	2



-  SIDEWALK
-  HMA - COMMERCIAL GRADE
-  VALLEY GUTTER
-  CURB
-  DETECTABLE WARNING PANEL

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PAVING

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	100	1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)	-	6	-
G20-1-60	60"x24"	ROAD WORK NEXT _____ MILES	-	34	-
G20-1b-60	60"x24"	WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only)	-	26	-
G20-2-48	48"x24"	END ROAD WORK	2	19	38
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)	-	18	-
G20-10-108	108"x48"	CONTRACTOR SIGN	-	64	-
G20-50a-72	72"x36"	ROAD WORK NEXT _____ MILES RT & LT ARROWS	-	37	-
G20-52a-72	72"x24"	ROAD WORK NEXT _____ MILES RT or LT ARROW	-	30	-
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT	-	59	-
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)	-	10	-
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)	-	10	-
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)	-	10	-
M3-1-24	24"x12"	NORTH (Mounted on route marker post)	-	7	-
M3-2-24	24"x12"	EAST (Mounted on route marker post)	-	7	-
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)	-	7	-
M3-4-24	24"x12"	WEST (Mounted on route marker post)	-	7	-
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)	-	7	-
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT	-	15	-
M4-10-48	48"x18"	DETOUR ARROW RIGHT or LEFT	-	23	-
M5-1-21	21"x15"	ARROW AHD AND RT or LT (Mounted on route marker post)	-	7	-
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)	-	7	-
M5-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)	-	7	-
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)	-	7	-
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)	-	7	-
R1-1-48	48"x48"	STOP	-	32	-
R1-1a-18	18"x18"	STOP and SLOW PADDLE Back to Back	-	5	-
R1-2-60	60"x60"	YIELD	-	29	-
R2-1-48	48"x60"	SPEED LIMIT	-	39	-
R2-1a-24	24"x18"	MINIMUM FEE \$80 (Mounted on Speed Limit post)	-	10	-
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT	-	35	-
R4-1-48	48"x60"	DO NOT PASS	-	39	-
R4-7-48	48"x60"	KEEP RIGHT SYMBOL	-	39	-
R5-1-48	48"x48"	DO NOT ENTER	-	35	-
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT	-	13	-
R7-1-12	12"x18"	NO PARKING	-	11	-
R9-9	24"x12"	SIDEWALK CLOSED	5	12	60
RT0-6-24	24"x36"	STOP HERE ON RED	-	16	-
R11-2-48	48"x30"	ROAD CLOSED	-	28	-
R11-2a-48	48"x30"	STREET CLOSED	-	28	-
R11-3a-60	60"x30"	ROAD CLOSED _____ MILES AHEAD LOCAL TRAFFIC ONLY	-	31	-
R11-3c-60	60"x30"	STREET CLOSED _____ MILES AHEAD LOCAL TRAFFIC ONLY	-	31	-
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC	-	31	-
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW	-	35	-
W1-4-48	48"x48"	RIGHT or LEFT REVERSE CURVE ARROW	-	35	-
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW	-	35	-
W1-6-48	48"x24"	LARGE ARROW	-	26	-
W3-1-48	48"x48"	STOP AHEAD SYMBOL	-	35	-
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL	-	35	-
W3-4-48	48"x48"	BE PREPARED TO STOP	-	35	-
W3-5-48	48"x48"	SPEED REDUCTION AHEAD	-	35	-
W4-2-48	48"x48"	RIGHT or LEFT LANE TRANSITION SYMBOL	-	35	-
W5-1-48	48"x48"	ROAD NARROWS	1	35	35
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE	-	35	-
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW	-	35	-
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL	-	35	-
W8-1-48	48"x48"	BUMP	-	35	-
W8-3-48	48"x48"	PAVEMENT ENDS	-	35	-
W8-7-48	48"x48"	LOOSE GRAVEL	-	35	-
W8-9a-48	48"x48"	SHOULDER DROP-OFF	-	35	-
W8-11-48	48"x48"	UNEVEN LANES	-	35	-
W8-12-48	48"x48"	NO CENTER STRIPE	-	35	-
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY	-	35	-
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or ____ FT.	-	35	-
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or ____ FT.	-	35	-
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY	-	35	-
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL	-	35	-
W12-2-48	48"x48"	LOW CLEARANCE SYMBOL	-	35	-
W13-1-24	24"x24"	____ MPH ADVISORY SPEED PLATE (Mounted on warning sign post)	-	11	-
W13-4-48	48"x60"	RAMP ARROW	-	39	-
W14-3-48	48"x36"	NO PASSING ZONE	-	23	-
W20-1-48	48"x48"	ROAD WORK AHEAD or ____ FT or ____ MILE	8	35	280
W20-2-48	48"x48"	DETOUR AHEAD or ____ FT	-	35	-
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or ____ FT.	-	35	-
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or ____ FT.	-	35	-
W20-5-48	48"x48"	RIGHT or LEFT LANE CLOSED AHEAD or ____ FT.	-	35	-
W20-7a-48	48"x48"	FLAGGING SYMBOL	-	35	-
W20-7k-24	24"x18"	____ FEET (Mounted on warning sign post)	-	10	-
W20-8-48	48"x48"	STREET CLOSED	-	35	-
W20-51-48	48"x48"	EQUIPMENT WORKING	-	35	-
W20-52-54	54"x12"	NEXT _____ MILES (Mounted on warning sign post)	-	12	-
W21-1a-48	48"x48"	WORKERS SYMBOL	-	35	-
W21-2-48	48"x48"	FRESH OIL	-	35	-
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or ____ FT	-	35	-

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-5-48	48"x48"	SHOULDER WORK	-	35	-
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED	-	35	-
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or ____ FT.	-	35	-
W21-6a-48	48"x48"	SURVEY CREW AHEAD	-	35	-
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or ____ FT.	-	35	-
W21-51-48	48"x48"	MATERIAL ON ROADWAY	-	35	-
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK	-	35	-
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)	-	11	-

SPEC & CODE	DESCRIPTION	TOTAL UNITS
704-1000	TRAFFIC CONTROL SIGNS	413

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY
704-0100	FLAGGING	MHR	
704-1041	ATTENUATION DEVICE-TYPE B-55	EACH	
704-1043	ATTENUATION DEVICE-TYPE B-65	EACH	
704-1044	ATTENUATION DEVICE-TYPE B-70	EACH	
704-1050	TYPE I BARRICADES	EACH	
704-1051	TYPE II BARRICADES	EACH	
704-1052	TYPE III BARRICADES	EACH	5
704-1060	DELINEATOR DRUMS	EACH	
704-1065	TRAFFIC CONES	EACH	
704-1067	TUBULAR MARKERS	EACH	176
704-1070	DELINEATOR	EACH	
704-1072	FLEXIBLE DELINEATORS	EACH	
704-1081	VERTICAL PANELS - BACK TO BACK	EACH	
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH	
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH	
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH	
704-1095	TYPE B FLASHERS	EACH	
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH	
762-0200	RAISED PAVEMENT MARKERS	EACH	
762-0420	SHORT TERM 4IN LINE - TYPE R	LF	
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF	
762-1500	OBLITERATION OF PVMT MK	SF	
772-2110	FLASHING BEACON - POST MOUNTED	EACH	

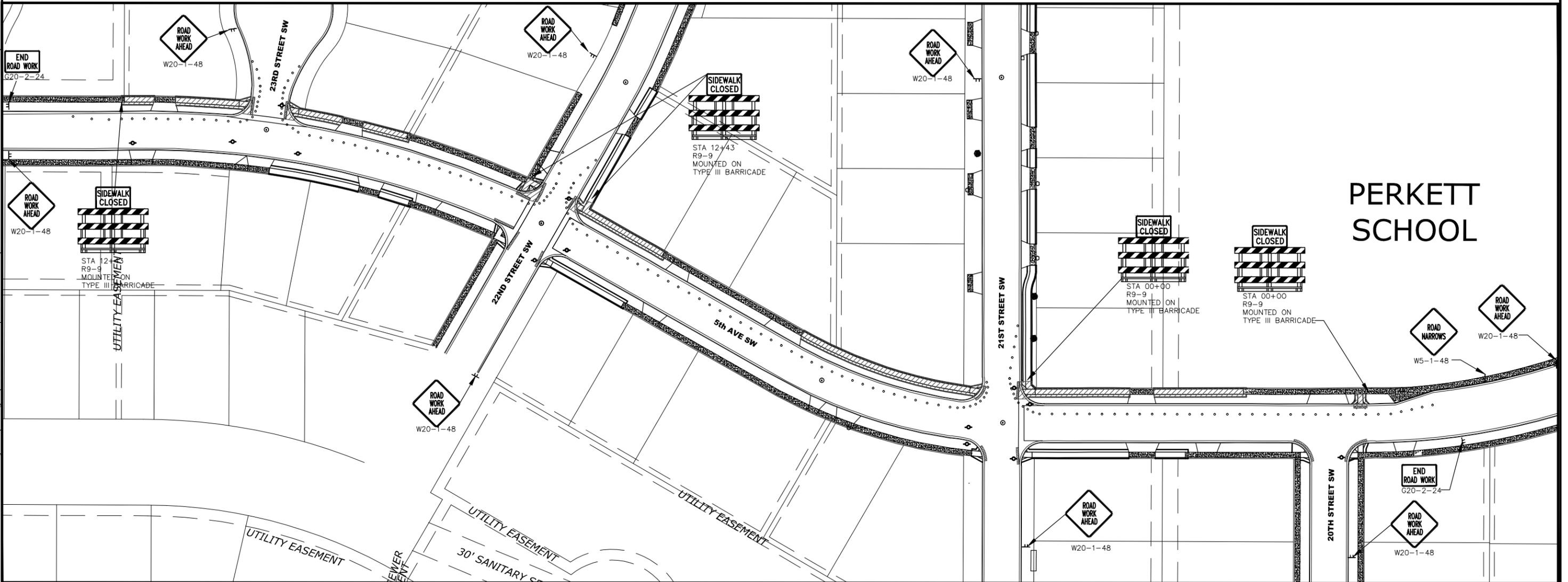


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TRAFFIC CONTROL DEVICE LIST

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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	100	2



PERKETT SCHOOL

-  CLASS III BARRICADE
-  SIGN
-  TUBULAR MARKERS
-  WORK AREA

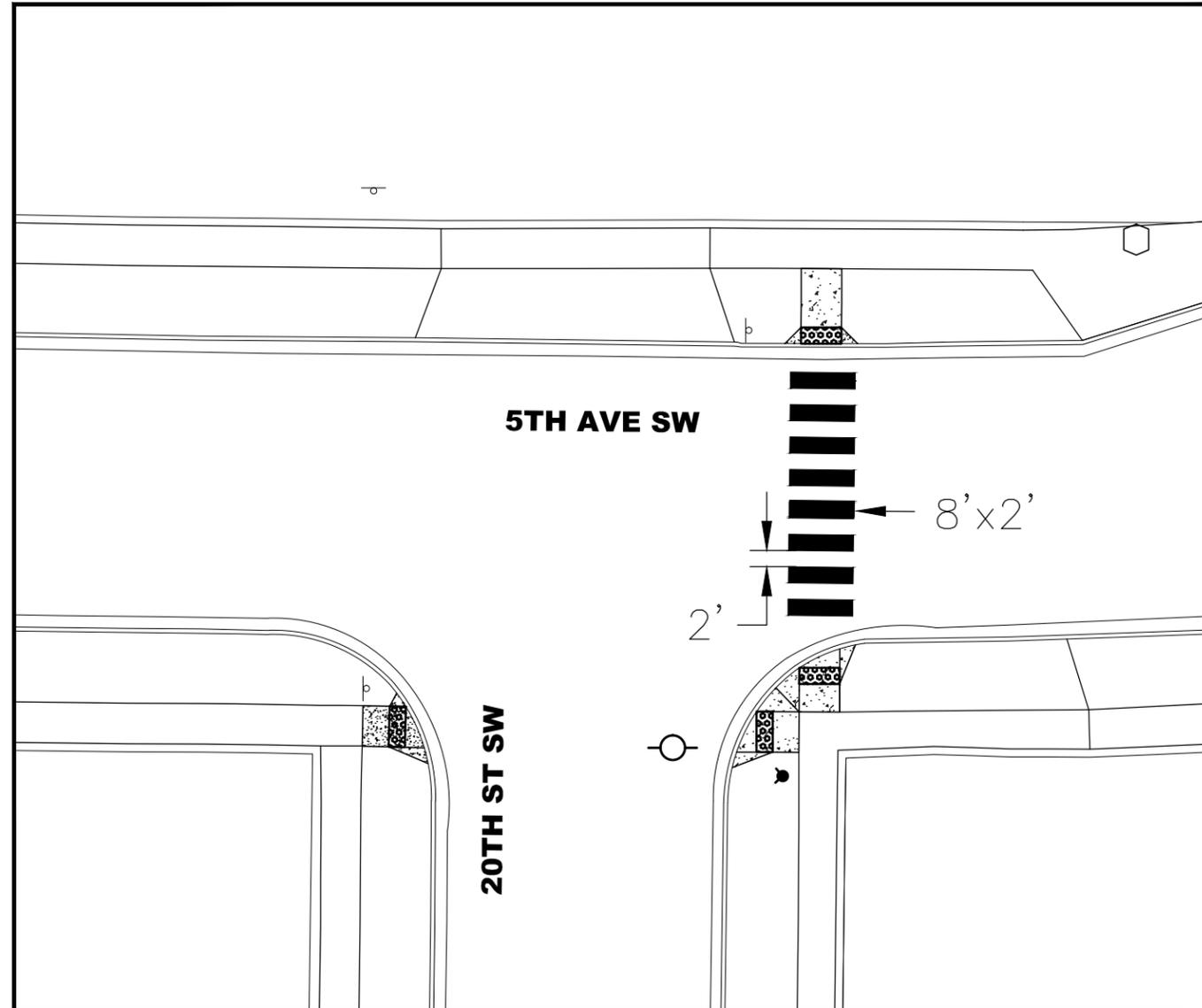
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TRAFFIC CONTROL

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STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	120	1



-  STRIPING
-  PROPOSED SIDEWALK

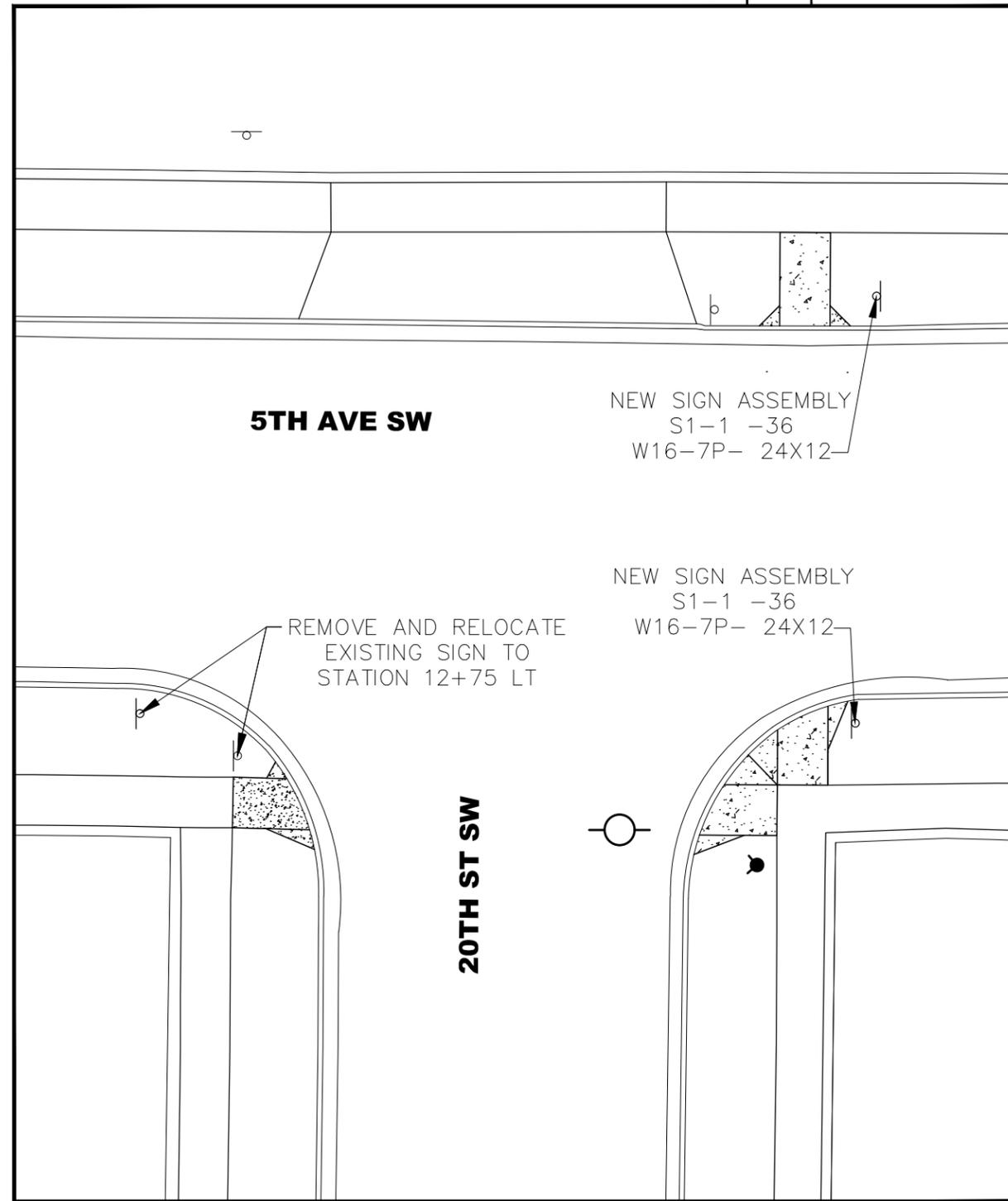
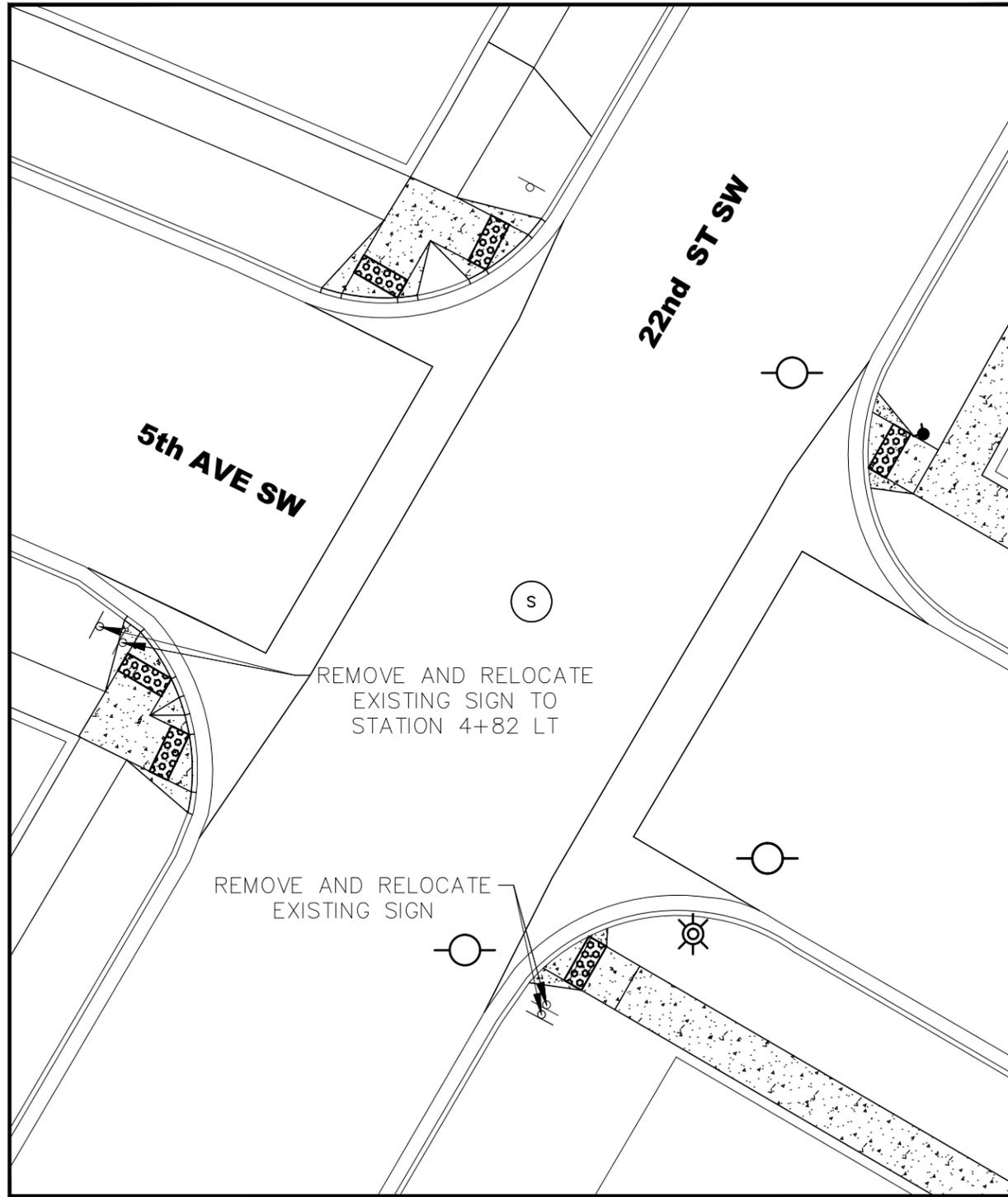
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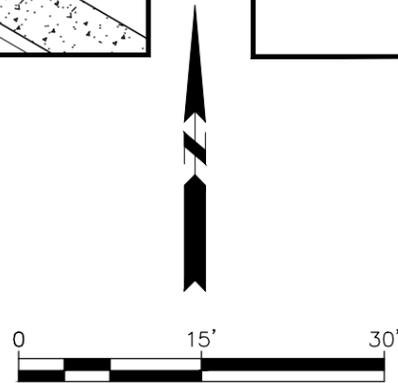
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12/5/2014

STATE	PROJECT NO.	PCN NO.	SECTION NO.	SHEET NO.
ND	TAU-4-989(118)119	20771	120	2



PROPOSED SIDEWALK



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SIGNING

NDDOT ABBREVIATIONS

? This is a special text character used in the labeling of existing features. It indicates a feature that has an unknown characteristic, potentially based on: lack of description, location accuracy or purpose.

Abn abandoned
 Abut abutment
 Ac acres
 Adj adjusted
 Aggr aggregate
 Ahd ahead
 ARV air release valve
 Align alignment
 Al alley
 Alt alternate
 Alum aluminum
 ADA Americans with Disabilities Act
 A ampere
 & and
 Appr approach
 Approx approximate
 ACP asbestos cement pipe
 Asph asphalt
 AC asphalt cement
 Assmd assumed
 @ at
 Atten attenuation
 ATR automatic traffic recorder
 Ave Avenue
 Avg average
 ADT average daily traffic
 Az azimuth
 Bk back
 BF back face
 Bs backsight
 Balc balcony
 B Wire barbed wire
 Barr barricade
 Btry battery
 Brg bearing
 BI beehive inlet
 Beg begin
 BM bench mark
 Bkwy bikeway
 Bit bituminous
 Blk block
 Bd Ft board feet
 BH bore hole
 BS both sides
 Bot bottom
 Blvd Boulevard
 Bndry boundary
 BC brass cap
 Brkwy breakaway
 Br bridge
 Bldg building

BV butterfly valve
 Byp bypass
 C Gdrl cable guardrail
 Calc calculate
 Cd candela
 CIP cast iron pipe
 CB catch basin
 CRS cationic rapid setting
 C Gd cattle guard
 C To C center to center
 Cl or C centerline
 Cm centimeter
 Ch chain
 Chnlk chain-link
 Ch Blk channel block
 Ch Ch channel change
 Chk check
 Chsld chiseled
 Cir circle
 Cl class
 Cl clay
 Cl F clay fill
 Cl Hvy clay heavy
 Cl Lm clay loam
 Clnt clean-out
 Clr clear
 Cl&gr clearing & grubbing
 Co S coal slack
 Comb. combination
 Coml commercial
 Compr compression
 CADD computer aided drafting & design
 Conc concrete
 Cond conductor
 Const construction
 Cont continuous
 CSB continuous split barrel sample
 Contr contraction
 Contr contractor
 CP control point
 Coord coordinate
 Cor corner
 Corr corrected
 CAES corrugated aluminum end section
 CAP corrugated aluminum pipe
 CMES corrugated metal end section
 CMP corrugated metal pipe
 CPVCP corrugated poly-vinyl chloride pipe
 CSES corrugated steel end section
 CSP corrugated steel pipe
 C coulomb
 Co County
 Crse course
 C Gr course gravel
 CS course sand

Ct Court
 Xarm cross arm
 Xbuck cross buck
 Xsec cross sections
 Xing crossing
 Xrd Crossroad
 Crn crown
 CF cubic feet
 M3 cubic meter
 M3/s cubic meters per second
 CY cubic yard
 Cy/mi cubic yards per mile
 Culv culvert
 C&G curb & gutter
 CI curb inlet
 CR curb ramp
 CS curve to spiral
 C cut
 Dd Ld dead load
 Defl deflection
 Defm deformed
 Deg or D degree
 DInt delineate
 DIntr delineator
 Depr depression
 Desc description
 Det detail
 DWP detectable warning panel
 Dtr detour
 Dia diameter
 Dir direction
 Dist distance
 DM disturbed material
 DB ditch block
 DG ditch grade
 Dbl double
 Dn down
 Dwg drawing
 Dr drive
 Drwy driveway
 DI drop inlet
 D dry density
 Ea each
 Esmt easement
 E East
 EB Eastbound
 Elast elastomeric
 EL electric locker
 E Mtr electric meter
 Elec electric/al
 EDM electronic distance meter
 Elev or El elevation
 Ellipt elliptical
 Emb embankment
 Emuls emulsion/emulsified

ES end section
 Engr engineer
 ESS environmental sensor station
 Eq equal
 Eq equation
 Evgr evergreen
 Exc excavation
 Exst existing
 Exp expansion
 Expy Expressway
 E external of curve
 Extru extruded
 FOS factor of safety
 F Fahrenheit
 FS far side
 F farad
 Fed Federal
 FP feed point
 Ft feet/foot
 Fn fence
 Fn P fence post
 FO fiber optic
 FB field book
 FD field drive
 F fill
 FAA fine aggregate angularity
 FS fine sand
 FH fire hydrant
 Fl flange
 Flrd flared
 FES flared end section
 F Bcn flashing beacon
 FA flight auger sample
 FL flow line
 Ftg footing
 FM force main
 Fs foresight
 Fnd found
 Fdn foundation
 Frac fractional
 Frwy freeway
 Frt front
 FF front face
 F Disp fuel dispenser

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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NDDOT ABBREVIATIONS

D-101-2

FFP	fuel filler pipes	IP	iron Pipe	M	mega	Ped	pedestrian
FLS	fuel leak sensor	Jt	joint	Mer	meridian	PPP	pedestrian pushbutton post
Furn	furnish/ed	J	joule	M	meter	Pen.	penetration
Gal	gallon	Jct	junction	M/s	meters per second	Perf	perforated
Galv	galvanized	K	kelvin	M	mid ordinate of curve	Per.	perimeter
Gar	garage	Kn	kilo newton	Mi	mile	PL	pipeline
Gs L	gas line	Kpa	kilo pascal	MM	mile marker	PI	place
G Reg	gas line regulator	Kg	kilogram	MP	mile post	P&P	plan & profile
GMV	gas main valve	Kg/m3	kilogram per cubic meter	MI	milliliter	PL	plastic limit
G Mtr	gas meter	Km	kilometer	Mm	millimeter	PI	plate
GSV	gas service valve	K	Kip(s)	Mm/hr	millimeters per hour	Pt	point
GVP	gas vent pipe	LS	Land Surveyor (licensed)	Min	minimum	PCC	point of compound curve
GV	gate valve	LSIT	Land Surveyor In Training	Misc	miscellaneous	PC	point of curve
Ga	gauge	Ln	lane	Mon	monument	PI	point of intersection
Geod	geodetic	Lg	large	Mnd	mound	PRC	point of reverse curvature
GIS	Geographical Information System	Lat	latitude	Mtbl	mountable	PT	point of tangent
G	giga	Lt	left	Mtd	mounted	POC	point on curve
GPS	Global Positioning System	L	length of curve	Mtg	mounting	POT	point on tangent
Gov	government	Lens	lenses	Mk	muck	PE	polyethylene
Grd	graded/grade	Lvl	level	Mun	municipal	PVC	polyvinyl chloride
Gr	gravel	LB	level book	N	nano	PCC	Portland Cement concrete
Grnd	ground	LvIng	leveling	NGS	National Geodetic Survey	Lb or #	pounds
GWM	ground water monitor	Lht	light	NS	near side	PP	power pole
Gdrl	guardrail	LP	light pole	Neop	neoprene	Preempt	preemption
Gtr	gutter	Ltg	lighting	Ntwk	network	Prefab	prefabricated
H Plg	H piling	Lig Co	lignite coal	N	newton	Prfmd	performed
Hdwl	headwall	Lig Sl	lignite slack	N	North	Prep	preparation
Ha	hectare	LF	linear foot	NE	North East	Press.	pressure
Ht	height	Liq	liquid	NW	North West	PRV	pressure relief valve
HI	height of instrument	LL	liquid limit	NB	Northbound	Prestr	prestressed
Hel	helical	L	litre	No. or #	number	Pvt	private
H	henry	Lm	loam	Obsc	obscure(d)	PD	private drive
HZ	hertz	Loc	location	Obsn	observation	Prod.	production/produce
HDPE	high density polyethylene	LC	long chord	Ocpd	occupied	Prog	programmed
HM	high mast	Long.	longitude	Ocpy	occupy	Prop.	property
HP	high pressure	Lp	loop	Off Loc	office location	Prop Ln	property line
HPS	high pressure sodium	LD	loop detector	O/s	offset	Ppsd	proposed
Hwy	highway	Lm	lumen	OC	on center	PB	pull box
Hor	horizontal	Lum	luminaire	C	one dimensional consolidation		
HBP	hot bituminous pavement	L Sum	lump sum	OC	organic content		
Hr	hour(s)	Lx	lux	Orig	original		
Hyd	hydrant	ML	main line	O To O	out to out		
Ph	hydrogen ion content	M Hr	man hour	OD	outside diameter		
Id	identification	MH	manhole	OH	overhead		
In or "	inch	Mkd	marked	PMT	pad mounted transformer		
Incl	inclinometer tube	Mkr	marker	Pg	pages		
IMH	inlet manhole	Mkg	marking	Pntd	painted		
ID	inside diameter	MA	mast arm	Pr	pair		
Inst	instrument	Matl	material	Pnl	panel		
Intchg	interchange	Max	maximum	Pk	park		
Intmdt	intermediate	MC	meander corner	PK	Parker-Kalon nail		
Intscn	intersection	Meas	measure	Pa	pascal		
Inv	invert	Mdn	median	PSD	passing sight distance		
IM	iron monument	MD	median drain	Pvmt	pavement		
IPn	Iron Pin	MC	medium curing	Ped	pedestal		

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NDDOT ABBREVIATIONS

D-101-3

Qty	quantity	Sig	signal	TS	tangent to spiral	WB	Westbound
Qtr	quarter	Si Cl	silt clay	Tel	telephone	Wrng	wiring
Rad or R	radius	Si Cl Lm	silty clay loam	Tel B	Telephone Booth	W/	with
RR	railroad	Si Lm	silty loam	Tel P	telephone pole	W/o	without
Rlwy	railway	Sgl	single	Tv	television	WC	witness corner
Rsd	raised	SC	slow curing	Temp	temperature	WGS	World Geodetic System
RTP	random traverse point	SS	slow setting	Temp	temporary	Z	zenith
Rge or R	range	Sm	small	TBM	temporary bench mark		
RC	rapid curing	S	South	T	tesla		
Rec	record	SE	South East	T	thinwall tube sample		
Rcy	recycle	SW	South West	T/mi	tons per mile		
RPCC	recycled Portland cement concrete	SB	Southbound	Ts	topsoil		
Ref	reference	Sp	spaces	Twp or T	township		
R Mkr	reference marker	Spcl	special	Traf	traffic		
RM	reference monument	SA	special assembly	TSCB	traffic signal control box		
Refl	reflectorized	SP	special provisions	Tr	trail		
RCB	reinforced concrete box	G	specific gravity	Transf	transformer		
RCES	reinforced concrete end section	Spk	spike	TB	transit book		
RCP	reinforced concrete pipe	SC	spiral to curve	Trans	transition		
RCPS	reinforced concrete pipe sewer	ST	spiral to tangent	TT	transmission tower		
Reinf	reinforcement	SB	split barrel sample	Trans	transverse		
Res	reservation	SH	sprinkler head	Trav	traverse		
Ret	retaining	SV	sprinkler valve	TP	traverse point		
Rev	reverse	Sq	square	Trtd	treated		
Rt	right	SF	square feet	Trmt	treatment		
R/W	right of way	Km2	square kilometer	Qc	triaxial compression		
Riv	river	M2	square meter	TERO	tribal employment rights ordinance		
Rd	road	SY	square yard	Tpl	triple		
Rdbd	road bed	Stk	stake	TP	turning point		
Rdwy	roadway	Std	standard	Typ	typical		
RWIS	Roadway Weather Information System	N	standard penetration test	Qu	unconfined compressive strength		
Rk	rock	Std Specs	Standard Specifications	Ugrnd	underground		
Rt	route	Sta	station	USC&G	US Coast & Geodetic Survey		
Salv	salvage(d)	Sta Yd	station yards	USGS	US Geologic Survey		
Sd	sand	Stm L	steam line	Util	utility		
Sdy Cl	sandy clay	SEC	steel encased concrete	VG	valley gutter		
Sdy Cl Lm	sandy clay loam	SSD	stopping sight distance	Vap	vapor		
Sdy Fl	sandy fill	SD	storm drain	Vert	vertical		
Sdy Lm	sandy loam	St	street	VC	vertical curve		
San	sanitary sewer line	SPP	structural plate pipe	VCP	vitrified clay pipe		
Sc	scoria	SPPA	structural plate pipe arch	V	volt		
Sec	seconds	Str	structure	Vol	volume		
Sec	section	Subd	subdivision	Wkwy	walkway		
SL	section line	Sub	subgrade	W	water content		
Sep	separation	Sub Prep	subgrade preparation	WGV	water gate valve		
Seq	sequence	Ss	subsoil	WL	water line		
Serv	service	SE	superelevation	WM	water main		
Sh	shale	SS	supplement specification	WMV	water main valve		
Sht	sheet	Supp	supplemental	W Mtr	water meter		
Shtng	sheeting	Surf	surfacing	WSV	water service valve		
Shldr	shoulder	Surv	survey	WW	water well		
Sw	sidewalk	Sym	symmetrical	W	watt		
S	siemens	SI	Systems International	Wrng	wearing		
SD	sight distance	Tan	tangent	Wb	weber		
SN	sign number	T	tangent (semi)	WIM	Weigh In Motion		
				W	West		

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NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

D-101-10

702COM 702 Communications
 ACCENT Accent Communications
 AGASSIZ WU Agassiz Water Users Incorporated
 AGC Associated General Contractors of America
 AII PI Alliance Pipeline
 ALL SEAS WU All Seasons Water Users Association
 AMOCO PI Amoco Pipeline Company
 AMRDA HESS Amerada Hess Corporation
 AT&T AT&T Corporation
 B PAW Bear Paw Energy Incorporated
 BAKER ELEC Baker Electric
 BASIN ELEC Basin Electric Cooperative Incorporated
 BEK TEL Bek Communications Cooperative
 BELLE PL Belle Fourche Pipeline Company
 BLM Bureau of Land Management
 BNSF Burlington Northern Santa Fe Railway
 BOEING Boeing
 BRNS RWD Barnes Rural Water District
 BURK-DIV ELEC Burke-Divide Electric Cooperative
 BURL WU Burleigh Water Users
 Cable One Cable One
 CABLE SERV Cable Services
 CAP ELEC Capital Electric Cooperative Incorporat
 CASS CO ELEC Cass County Electric Cooperative
 CASS RWU Cass Rural Water Users Incorporated
 CAV ELEC Cavalier Rural Electric Cooperative
 CBLCOM Cablecom Of Fargo
 CENEX PL Cenex Pipeline
 CENT PL WATER DIST Central Pipe Line Water District
 CENT PWR ELEC Central Power Electric Cooperative
 COE Corps of Engineers
 CONS TEL Consolidated Telephone
 CONT RES Continental Resource Inc
 CPR Canadian Pacific Railway
 D O E Department Of Energy
 DAK CARR Dakota Carrier Network
 DAK CENT TEL Dakota Central Telephone
 DAK RWD Dakota Rural Water District
 DGC Dakota Gasification Company
 DICKEY R NET Dickey Rural Networks
 DICKEY RWU Dickey Rural Water Users Association
 DICKEY TEL Dickey Telephone
 DNRR Dakota Northern Railroad
 DOME PL Dome Pipeline Company
 DVELEC Dakota Valley Electric Cooperative
 DVMW Dakota, Missouri Valley & Western
 ENBRDG Enbridge Pipelines Incorporated
 ENVENTIS Enventis Telephone
 FALK MNG Falkirk Mining Company
 FHWA Federal Highway Administration
 G FKS-TRL WD Grand Forks-trail Water District
 GETTY TRD & TRAN Getty Trading & Transportation
 GLDN W ELEC Golden West Electric Cooperative
 GRGS CO TEL Griggs County Telephone

GT PLNS NAT GAS Great Plains Natural Gas Company
 HALS TEL Halstad Telephone Company
 IDEA1 Idea1
 INT-COMM TEL Inter-Community Telephone Company
 KANEB PL Kaneb Pipeline Company
 KEM ELEC Kem Electric Cooperative Incorporated
 KOCH GATH SYS Koch Gathering Systems Incorporated
 LKHD PL Lakehead Pipeline Company
 LNGDN RWU Langdon Rural Water Users Incorporated
 LWR YELL R ELEC Lower Yellowstone Rural Electric
 MCKNZ CON McKenzie Consolidated Telcom
 MCKENZIE ELEC McKenzie Electric Cooperative
 MCKNZ WRD McKenzie County Water Resource District
 MCLEOD McLeod USA
 MCLN ELEC McLean Electric Cooperative
 MCLN-SHRDN R WAT McLean-Sheridan Rural Water
 MDU Montana-dakota Utilities
 MID-CONT CABLE Mid-Continent Cable
 MIDSTATE TEL Midstate Telephone Company
 MINOT CABLE Minot Cable Television
 MINOT TEL Minot Telephone Company
 MISS W W S Missouri West Water System
 MNKOTA PWR Minnkota Power
 MOR-GRAN-SOU ELEC Mor-gran-sou Electric Cooperative
 MOUNT-WILLI ELEC Mountrail-williams Electric Cooperative
 MRE LBTY TEL Moore & Liberty Telephone
 MUNICIPAL City Water And Sewer
 MUNICIPAL City Of '.....'
 N CENT ELEC North Central Electric Cooperative
 N VALL W DIST North Valley Water District
 ND PKS & REC North Dakota Parks And Recreation
 ND TEL North Dakota Telephone Company
 NDDOT North Dakota Department of Transportation
 NDSU SOIL SCI DEPT NDSU Soil Science Department
 NEMONT TEL Nemont Telephone
 NODAK R ELEC Nodak Rural Electric Cooperative
 NOON FRMS TEL Noonan Farmers Telephone Company
 NPR Northern Plains Railroad
 NSP Northern States Power
 NTH PRAIR RW Northern Prairie Rural Water Association
 NTHN BRDR PL Northern Border Pipeline
 NTHN PLNS ELEC Northern Plains Electric Cooperative Incorporated
 NTHWSTRN REF Northwestern Refinery Company
 NW COMM Northwest Communication Cooperation
 ONEOK Oneok gas
 OSHA Occupational Safety and Health Administration
 OTTR TL PWR Otter Tail Power Company
 P L E M Prairielands Energy Marketing
 POLAR COM Polar Communications
 PVT ELEC Private Electric
 QWEST Qwest Communications
 R&T W SUPPLY R & T Water Supply Association
 RAMSEY R SEW Ramsey Rural Sewer Association
 RAMSEY RW Ramsey Rural Water Association
 RAMSEY UTIL Ramsey County Rural Utilities

RED RIV TEL Red River Rural Telephone
 RESVTN TEL Reservation Telephone
 ROBRTS TEL Roberts Company Telephone
 R-RIDER ELEC Roughrider Electric Coop
 RRVW Red River Valley & Western Railroad
 RSR ELEC R.S.R. Electric Cooperative
 S E W U South East Water Users Incorporated
 SCOTT CABLE Scott Cable Television Dickinson
 SHERDN ELEC Sheridan Electric Cooperative
 SHEYN VLY ELEC Sheyenne Valley Electric Cooperative
 SKYTECH Skyland Technologies Incorporated
 SLOPE ELEC Slope Electric Cooperative Incorporated
 SOURIS RIV TELCOM Souris River Telecommunications
 ST WAT COMM State Water Commission
 STATE LN WATER State Line Water Cooperative
 STER ENG Sterling Energy
 STUT RWU Stutsman Rural Water Users
 SW PL PRJ Southwest Pipeline Project
 T M C Turtle Mountain Communications
 TCI TCI of North Dakota
 TESORO GHG PLNS PL Tesoro High Plains Pipeline
 TRI-CNTY WU Tri-County Water Users Incorporated
 TRL CO RWU Traill County Rural Water Users
 UNTD TEL United Telephone
 UPPR SOUR WUA Upper Souris Water Users Association
 US SPRINT U.S. Sprint
 USAF MSL CABLE U.S.A.F. Missile Cable
 USFWS US Fish and Wildlife Service
 USW COMM U.S. West Communications
 VRNDRY ELEC Verendrye Electric Cooperative
 W RIV TEL West River Telephone Incorporated
 WEB W. E. B. Water Development Association
 WILLI RWA Williams Rural Water Association
 WILSTN BAS PL Williston Basin Interstate Pipeline Company
 WLSH RWD Walsh Water Rural Water District
 WOLVRTN TEL Wolverton Telephone
 XLENER Xcel Energy
 YSVR Yellowstone Valley Railroad

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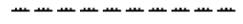
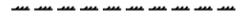
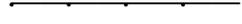
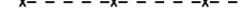
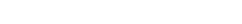
Line Styles

.....	Limits of Const Transition Line	—— s —— s ——	Floating Silt Curtain	—— ——— ———	Existing Aggregate (Cross Section View)	- - - - -	Existing Centerline
.....	Bale Check	—— ——— T ——	Existing Telephone Line	—— ——— ———	Existing Curb and Gutter (Cross Section View)	- - - - -	Supplemental Contour
.....	Rock Check	—— ——— TV ——	Existing TV Line	—— ——— ———	Existing Riprap	—— - - - - -	Right of Way
.....	Sight Distance Triangle Line	Void — void — void — v	Existing Assumed Ground (Not Surveyed)	—— ——— ———	Existing Underground Vault or Lift Station	—— - - - - -	Existing Right of Way
- - - - -	Small Hidden Object	Void — void — void — v	Tentative Ground Line	—— ——— ———	Tangent Line	—— - - - - -	Existing Right of Way Railroad
- - - - -	Dimension Leader	—— ——— w ——	Existing Water or Steam Line	- - - - -	Hidden Object	- - - - -	Failure Line
- - - - -	Existing Ground	=====	Existing Under Drain	—— ——— ———	Existing Dirt Surface	- - - - -	Existing Conditions
- - - - -	Existing Topsoil (Cross Section View)	=====	Under Drain	—— ——— ———	Existing Conduit	- - - - -	Existing Ground (Details)
—— ——— ———	Large Hidden Object	=====	Wall	—— ——— ———	Topsoil Profile	—— - - - - -	Existing Sixteenth Section Line
—— ——— ———	Edge Drain	=====	Existing Slotted Drain	- - - - -	Existing Conductor	- - - - -	Existing Right of Way Not State Owned
—— D —— D ——	Geotextile Fabric Type D	—— + —— + ——	Existing Cemetary Boundary	- - - - -	Conductor	- - - - -	Phantom Object
—— ——— E ——	Existing Electrical	—— ——— ———	Centerline Pavement Marking	- - - - -	Fiber Optic	- - - - -	Centerline Main
—— ——— FO ——	Existing Fiber Optic Line	=====	Barrier with Centerline Pavement Marking	- - - - -	Existing Loop Detector	-	Existing Guardrail Cable
—— ——— FO ——	Existing TV Fiber Optic	=====	Barrier Pavement Marking	- - - - -	Subgrade, Subcut or Ditch Grade	— • — • — • — •	Existing Guardrail Metal
—— ——— G ——	Existing Gas Pipe	- - - - -	Stripe 4 IN Dotted Extension White	—— ——— ———	Existing Asphalt Surface	—— . —— . —— . —— . —— .	Existing Edge of Water
—— Geo —— Geo ——	Geogrid	- - - - -	Stripe 8 IN Dotted Extension White	—— ——— ———	Existing Asphalt (Cross Section View)	- - - - -	Excavation Limits
—— ——— OH ——	Existing Overhead Utility Line	- - - - -	Stripe 8 IN Lane Drop	—— ——— ———	Existing Reinforcement Rebar	——	Existing Government Lot Line
—— ——— P ——	Existing Power	—— v v v v ——	Wetland Mitigation	—— ——— ———	Existing Tie Point Line	.....	Existing Adjacent Block Lines
—— ——— PL ——	Existing Fuel Pipeline	- - - - -	Existing Box Culvert Bridge	—— ——— ———	Existing State or International Line	.....	Existing Adjacent Lot Lines
—— ——— PL ——	Existing Undefined Above Ground Pipe Line	- - - - -	Existing Concrete Surface	—— ——— ———	Existing Quarter Section Line	.....	Existing Adjacent Property Line
—— ——— R —— R ——	Geotextile Fabric Type R	- - - - -	Existing Drainage Structure	—— ——— ———	Existing County	.....	Existing Adjacent Subdivision Lines
—— ——— R —— R ——	Geotextile Fabric Type R1	- - - - -	Easement	—— ——— ———	Existing Section Line	.....
—— REMOVE —— REMOVE ——	Remove Line	- - - - -	Existing Concrete	—— ——— ———	Existing Township	.....
—— RR —— RR ——	Geotextile Fabric Type RR	- - - - -	Existing Easement	—— ——— ———	Existing Railroad Centerline	
—— S —— S ——	Geotextile Fabric Type S	—— ——— ———	Existing Gravel Surface	—— - - - - -	Centerline	

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Line Styles

	Subgrade Reinforcement		Existing Railroad Switch		Sheet Piling
	Existing Down Guy Wire Down Guy		Overhead Sign Structure Cantilever		W-Beam w Posts
	Existing Fence		24 Inch Pipe		Existing W-Beam Guardrail with Posts
	Existing Railroad		Reinforced Concrete Pipe		Exst Wet Area-Vegetation Break
	Existing Sanitary Sewer		Signal Head with Mast Arm		Existing Wetland Delineated
	Existing Sanitary Force Main		Existing Signal Head with Mast Arm		
	Existing Storm Drain		Tie Bar at Random Spacing		
	Existing Storm Drain Force Main		3-Cable w Posts		
	Fence		Existing 3-Cable w Posts		
	Silt Fence		Site Boundary		
	Existing Field Line		Fiber Rolls		
	Exst Flow		Doweled Joint		
	Flow		Tie Bar 30 Inch 4 Foot Center to Center		
	Existing Culvert		Tie Bar 18 Inch 3 Foot Center to Center		
	Existing Curb		Existing Berm, Dike, Pit, or Earth Dam		
	Existing Valley Gutter		Existing Ditch Block		
	Existing Driveway Gutter		Depression Contours		
	Existing Curb and Gutter		Existing City Corporate Limits or Reservation Boundary		
	Existing Mountable Curb and Gutter		Gravel Pit - Borrow Area		
	Existing Double Micro Loop Detector		Existing Tree Boundary		
	Micro Loop Detector Double		Tree Row		
	Existing Overhead Sign Structure		Existing Brush or Shrub Boundary		
	Existing Micro Loop Detector		Existing Retaining Wall		
	Micro Loop Detector		Existing Planter or Wall		
	Existing Overhead Sign Structure Cantilever		Retaining Wall (Plan View)		

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Symbols

	North Arrow (Half Scale)		Attenuation Device		Existing Railroad Battery Box		Existing Delineator Type E
	Truck Mounted Attenuator		Diamond Grade Delineator Type A		Existing Bush or Shrub		Existing EFB Misc
	Type I Barricade		Diamond Grade Delineator Type B		Existing Gas Cap or Stub		Existing Flashing Beacon
	Type II Barricade		Diamond Grade Delineator Type C		Existing Sanitary Cap or Stub		Existing Pipe Mounted Flasher
	Type III Barricade		Diamond Grade Delineator Type D		Existing Storm Drain Cap or Stub		Existing Pad Mounted Feed Point
	Catch Basin		Diamond Grade Delineator Type E		Existing Water Cap or Stub		Existing Pipe Mounted Feed Point with Pad
	Cairn or Stone Circle		Flexible Delineator		Existing Sanitary Cleanout		Existing Pole Mounted Feed Point
	Video Detection Camera		Flexible Delineator Type A		Existing Concrete Foundation		Existing Railroad Frog
	Storm Drain Cap or Stub		Flexible Delineator Type B		Existing Traffic Signal Controller		Existing Snow Gate 18
	Corrugated Metal End Section 18 Inch		Flexible Delineator Type C		Existing Pad Mounted Signal Controller		Existing Snow Gate 28
	Corrugated Metal End Section 24 Inch		Flexible Delineator Type D		Existing Sixteenth Section Corner		Existing Snow Gate 40
	Corrugated Metal End Section 30 Inch		Flexible Delineator Type E		Existing Quarter Section Corner		Existing Headwall
	Corrugated Metal End Section 36 Inch		Delineator Type A		Existing Section Corner		Existing Pedestrian Head with Number
	Corrugated Metal End Section 42 Inch		Delineator Type A Reset		Existing Railroad Crossbuck		Existing Signal Head
	Corrugated Metal End Section 48 Inch		Delineator Type B		Existing Satellite Dish		Existing Sprinkler Head
	Concrete Foundation		Delineator Type B Reset		Existing Fuel Dispensers		Existing Fire Hydrant
	Ground Connection Conductor		Delineator Type C		Existing Flexible Delineator Type A		Existing Catch Basin Drop Inlet
	Neutral Connection Conductor		Delineator Type D		Existing Flexible Delineator Type B		Existing Curb Inlet
	Phase 1 Connection Conductor		Delineator Type E		Existing Flexible Delineator Type C		Existing Manhole Inlet
	Phase 2 Connection Conductor		Delineator Drums		Existing Flexible Delineator Type D		Existing Junction Box
	Traffic Cone		Spot Elevation		Existing Flexible Delineator Type E		
	Signal Controller		Existing Access Control Arrow		Existing Delineator Type A		
	Pad Mounted Signal Controller		Existing Artifact		Existing Delineator Type B		
	Alignment Data Point		Existing Flashing Beacon		Existing Delineator Type C		
	Emergency Vehicle Detector		Existing Benchmark		Existing Delineator Type D		

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Symbols

	Existing Light Standard		Existing Manhole with Valve Water		Existing Telephone Pole		Existing Undefined Manhole
	Existing High Mast Light Standard 10 Luminaire		Existing Water Manhole		Existing Wood Pole		Existing Undefined Pull Box
	Existing High Mast Light Standard 3 Luminaire		Existing Mile Post Type A		Existing Post		Existing Undefined Pedestal
	Existing High Mast Light Standard 4 Luminaire		Existing Mile Post Type B		Existing Pedestrian Push Button Post		Existing Undefined Valve
	Existing High Mast Light Standard 5 Luminaire		Existing Mile Post Type C		Existing Control Point CP		Existing Undefined Pipe Vent
	Existing High Mast Light Standard 6 Luminaire		Existing Reference Marker		Existing Control Point GPS-RTK		Existing Gas Valve
	Existing High Mast Light Standard 7 Luminaire		Existing RW Marker		Existing Control Point TRI		Existing Water Valve
	Existing High Mast Light Standard 8 Luminaire		Existing Utility Marker		Existing Reference Marker Point NGS		Existing Fuel Pipe Vent
	Existing High Mast Light Standard 9 Luminaire		Iron Monument Found		Existing Pull Box		Existing Gas Pipe Vent
	Existing Overhead Sign Structure Load Center		Iron Pin R/W Monument		Existing Intelligent Transportation Pull Box		Existing Sanitary Pipe Vent
	Existing Luminaire		Existing Object Marker Type I		Existing Water Pump		Existing Storm Drain Pipe Vent
	Existing Light Standard Luminaire		Existing Object Marker Type II		Existing Slotted Reinforced Concrete Pipe		Existing Water Pipe Vent
	Existing Federal Mailbox		Existing Object Marker Type III		Existing RR Profile Spot		Existing Weather Station
	Existing Private Mailbox		Existing Electrical Pedestal		Existing Fuel Leak Sensors		Existing Ground Water Well Bore Hole
	Existing Meander Section Corner		Existing Telephone Pedestal		Existing Highway Sign		Existing Windmill or Tower
	Existing Meter		Existing Fiber Optic Telephone Pedestal		Existing Miscellaneous Spot		Existing Witness Corner
	Existing Electrical Manhole		Existing TV Pedestal		Existing Lighting Standard Pole		Flashing Beacon
	Existing Gas Manhole		Existing Fiber Optic TV Pedestal		Existing Traffic Signal Standard		Flagger
	Existing Sanitary Manhole		Existing Fuel Filler Pipes		Existing Transformer		Pipe Mounted Flasher
	Existing Sanitary Force Main Manhole		Existing Traverse PI Aerial Panel		Existing Large Evergreen Tree		Sanitary Force Main with Valve
	Existing Sanitary Manhole with Valve		Existing Pole		Existing Small Evergreen Tree		
	Existing Storm Drain Manhole		Existing Power Pole		Existing Large Tree		
	Existing Force Main Storm Drain Manhole		Existing Power Pole with Transformer		Existing Small Tree		
	Existing Force Main Storm Drain Manhole with Valve				Existing Tree Trunk		
	Existing Telephone Manhole				Existing Pad Mounted Traffic Signal Control Box		

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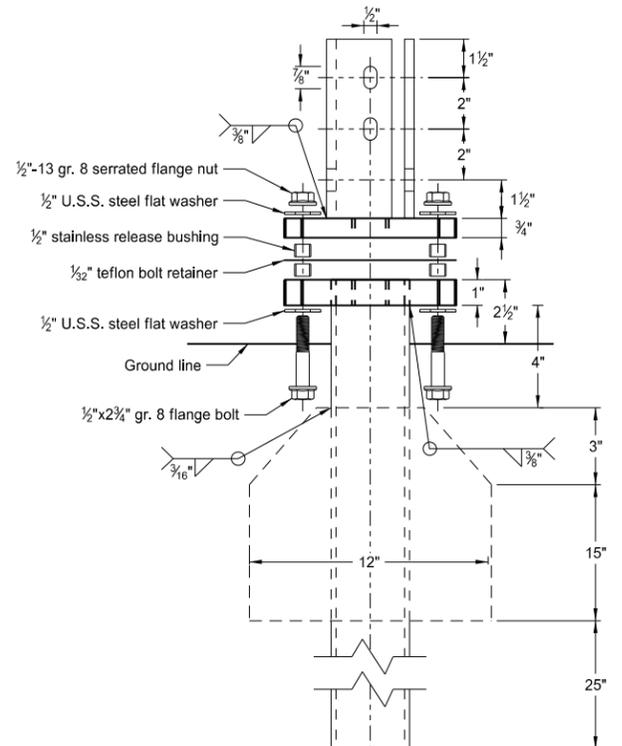
Symbols

D-101-32

 Pad Mounted Feed Point  Pipe Mounted Feed Point with Pad  Pole Mounted Feed Point  Headwall  Double Headwall with Vegetation Barrier  Single Headwall with Vegetation Barrier  Pole Mounted Head  Sprinkler Head  Fire Hydrant  Inlet Type 1  Inlet Type 2  Double Inlet Type 2  Inlet Gate Type 2  Junction Box  High Mast Light Standard 10 Luminaire  High Mast Light Standard 3 Luminaire  High Mast Light Standard 4 Luminaire  High Mast Light Standard 5 Luminaire  High Mast Light Standard 6 Luminaire  High Mast Light Standard 7 Luminaire  High Mast Light Standard 8 Luminaire  High Mast Light Standard 9 Luminaire  Relocate Light Standard  Overhead Sign Structure Load Center  Light Standard 100 Watt High Pressure Sodium Vapor Luminaire	 Light Standard 1000 Watt High Pressure Sodium Vapor Luminaire  Light Standard 150 Watt High Pressure Sodium Vapor Luminaire  Light Standard 175 Watt High Pressure Sodium Vapor Luminaire  Light Standard 200 Watt High Pressure Sodium Vapor Luminaire  Light Standard 250 Watt High Pressure Sodium Vapor Luminaire  Light Standard 310 Watt High Pressure Sodium Vapor Luminaire  Light Standard 35 Watt High Pressure Sodium Vapor Luminaire  Light Standard 400 Watt High Pressure Sodium Vapor Luminaire  Light Standard 50 Watt High Pressure Sodium Vapor Luminaire  Light Standard 70 Watt High Pressure Sodium Vapor Luminaire  Light Standard 700 Watt High Pressure Sodium Vapor Luminaire  Manhole  Manhole 48 Inch  Sanitary Force Main Manhole  Sanitary Sewer Manhole  Storm Drain Manhole  Storm Drain Manhole with Inlet  Reset Mile Post  Mile Post Type A  Mile Post Type B  Mile Post Type C  Right of Way Marker  Tubular Marker  Alignment Monument  Iron Pin Reference Monument	 Object Marker Type I  Object Marker Type II  Object Marker Type III  Caution Mode Arrow Panel  Back to Back Vertical Panel Sign  Double Direction Arrow Panel  Left Directional Arrow Panel  Right Directional Arrow Panel  Sequencing Arrow Panel  Truck Mounted Arrow Panel  Power Pole  Wood Pole  Pedestrian Push Button Post  Property Corner  Pull Box  Intelligent Transportation Pull Box  Sanitary Pump  Storm Drain Pump  Reinforced Pavement  Reinforced Concrete End Section 15 Inch  Reinforced Concrete End Section 18 Inch  Reinforced Concrete End Section 24 Inch  Reinforced Concrete End Section 30 Inch  Reinforced Concrete End Section 36 Inch  Reinforced Concrete End Section 42 Inch	 Reinforced Concrete End Section 48 Inch  Reinforced Concrete End Section 54 Inch  Reset Right of Way Marker  Reset USGS Marker  Right of Way Markers  Riser 30 Inch  Continuous Split Barrel Sample  Flight Auger Sample  Split Barrel Sample  Thinwall Tube Sample  Highway Sign  SNOW GATE 18 FT  SNOW GATE 28 FT  SNOW GATE 40 FT  Standard Penetration Test  Transformer  Inclinometer Tube  Underdrain Cleanout  Excavation Unit  Water Valve
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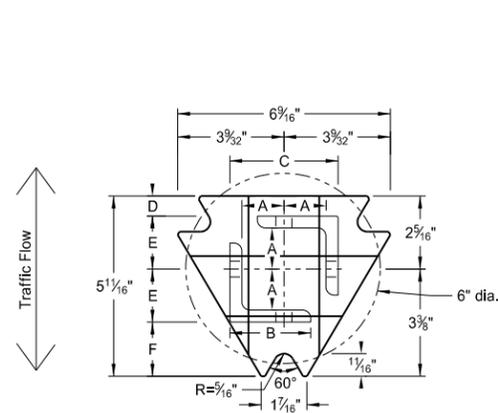
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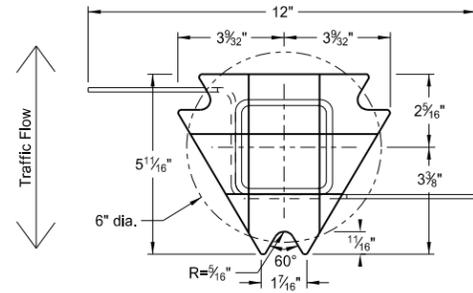


Multi-Directional Slip Base Assembly

Perforated Tube



Top Post Receiver
Plate - ASTM A572 grade 50
Angle Receiver - 2 1/2"x2 1/2"x3/8" ASTM A36 structural angle



Bottom Soil Stub
Tube - 3"x3"x7 gauge ASTM A500 grade B tube
Stabilizing Wing - 7 gauge H.R.P.O. ASTM A1011
Plate - ASTM A572 grade 50

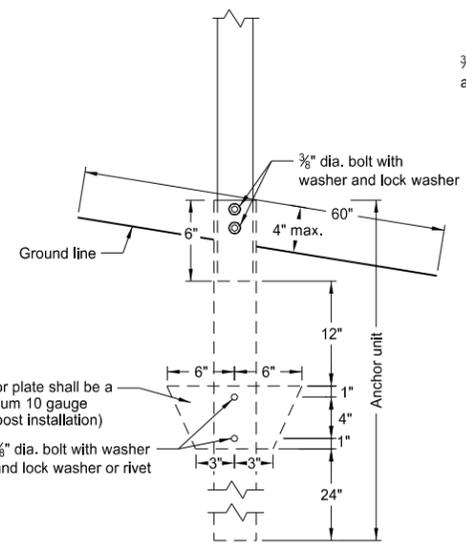
Notes:

1. Slip base bolts shall be torqued as specified by the manufacturer.
2. Anchor shall have a yield strength of 43.9 KSI and tensile strength of 59.3 KSI.
3. The 4" vertical clearance is required for the anchor or breakaway base. The 4"x60" measurement shall be made above and below post location and also back and ahead of the post.
4. When used in concrete sidewalk, anchor shall be same except without the wings.
5. Four post signs shall have over 7' between the first and the fourth posts.

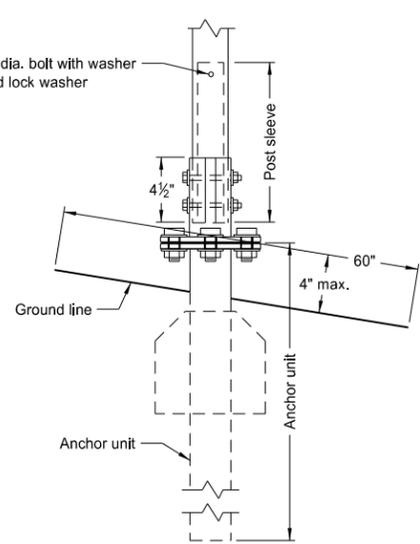
Telescoping Perforated Tube						
Number of Posts	Post Size in.	Wall Thickness Gauge	Sleeve Size in.	Wall Thickness Gauge	Slip Base	Anchor Size without Slip Base in.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			(A)	3
1	2 1/2	10			Yes	
1	2 1/4	12	2	12	Yes	
1	2 1/2	12	2 1/4	12	Yes	
2	2	12			No	2 1/4
2	2 1/4	12			No	2 1/2
2	2 1/2	12			Yes	
2	2 1/2	12			Yes	
2	2 1/4	10	2	12	Yes	
2	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/2	12			Yes	
3 & 4	2 1/2	10			Yes	
3 & 4	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/4	12	2	12	Yes	
3 & 4	2 1/2	10	2 3/16	10	Yes	

Properties of Telescoping Perforated Tube						
Tube Size in.	Wall Thickness in.	U.S. Standard Gauge	Weight per Foot lbs.	Moment of Inertia in. ⁴	Cross Sec. Area in. ²	Section Modulus in. ³
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499
2 3/16 x 2 3/16	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.785

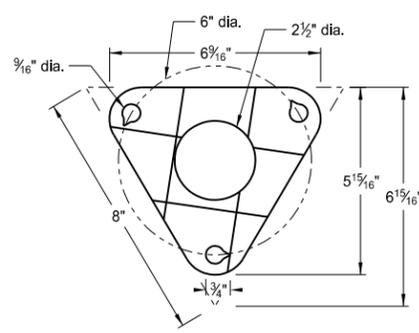
Top Post Receiver Data Table						
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16"x10 ga.	1 9/64"	2 1/2"	3 1/32"	2 5/32"	1 33/64"	1 1/8"
2 1/2"x10 ga.	1 9/32"	2 1/2"	3 5/16"	5/8"	1 21/32"	1 3/4"



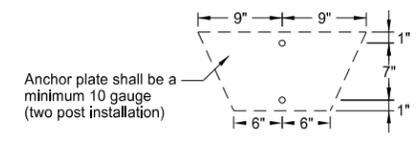
Anchor Unit and Post Assembly



Multi-Directional Slip Base Anchor Unit and Post Sleeve Assembly



Bolt Retainer for Base Connection
Bolt Retainer - 1/32" Reprocessed Teflon



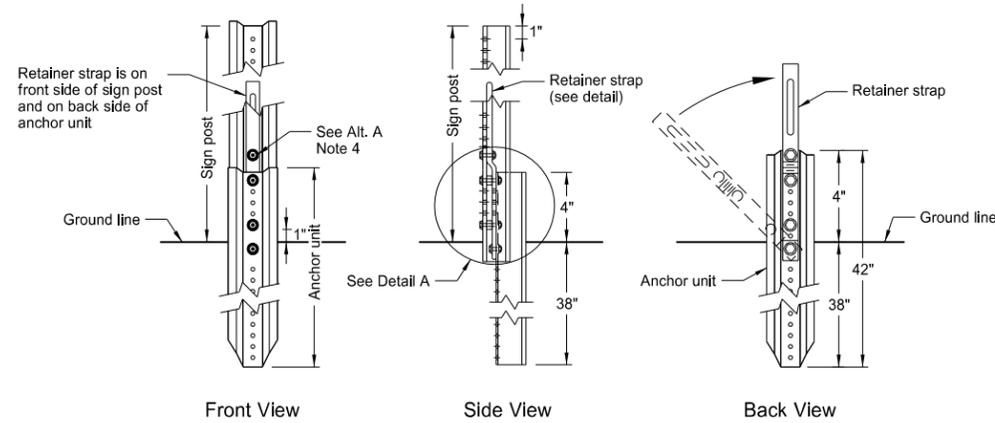
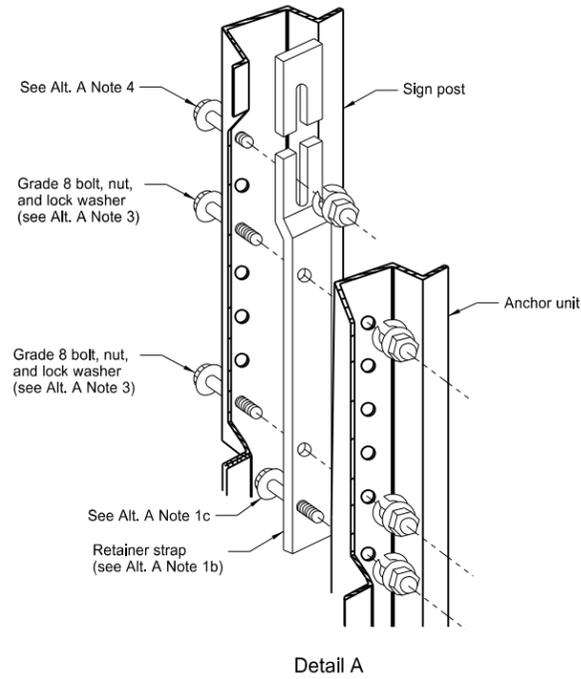
Anchor plate shall be a minimum 10 gauge (two post installation)

- (A) The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak.
 (B) The 2 3/16"x10 ga. may be inserted into 2 1/2"x10 ga. for additional wind load.

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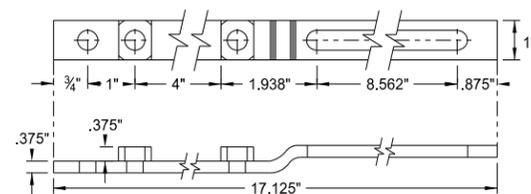
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U-Channel Post

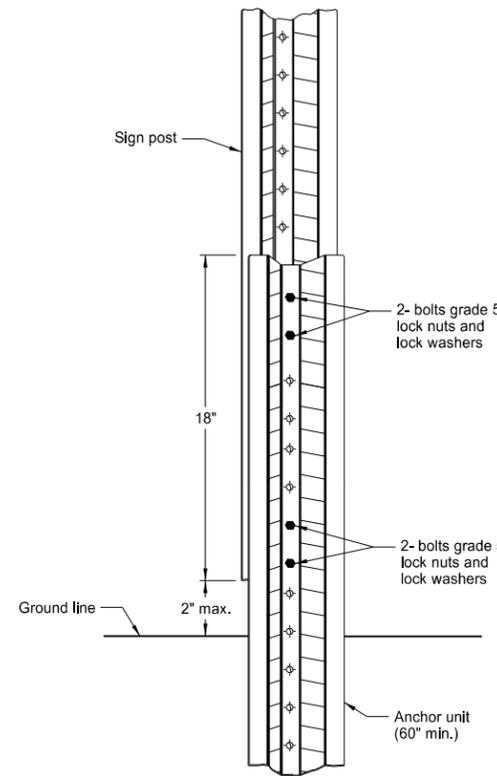


Breakaway U-Channel Detail Alternate A

A maximum of 2 posts shall be installed within 7'.

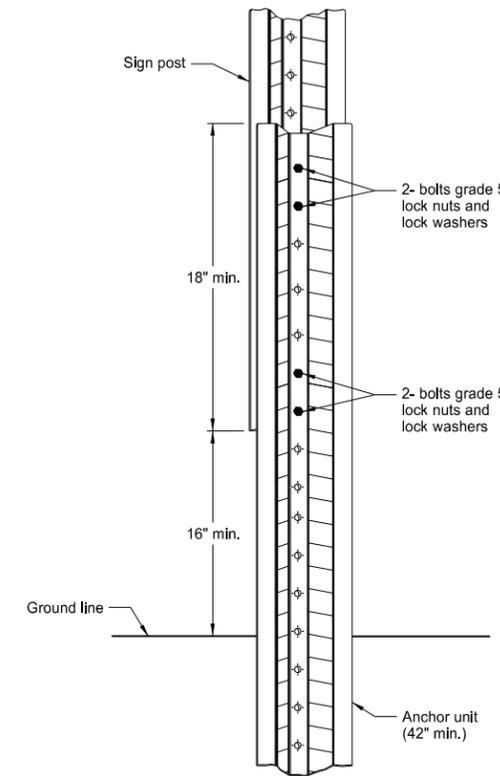


Retainer Strap Detail



Breakaway U-Channel Splice Detail Alternate B (2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.



Breakaway U-Channel Splice Detail Alternate C (2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.

Alternate A Steps of Installation:

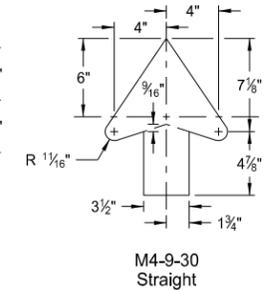
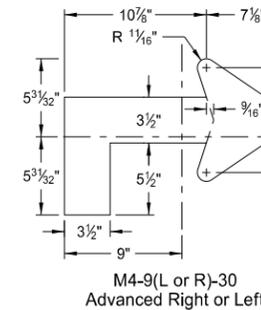
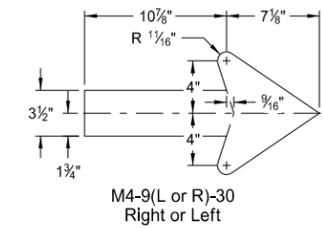
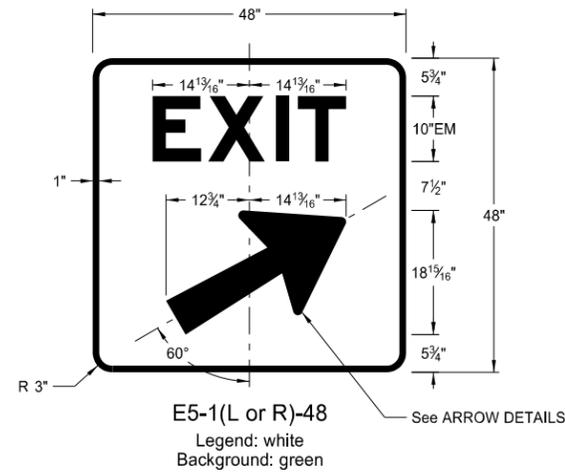
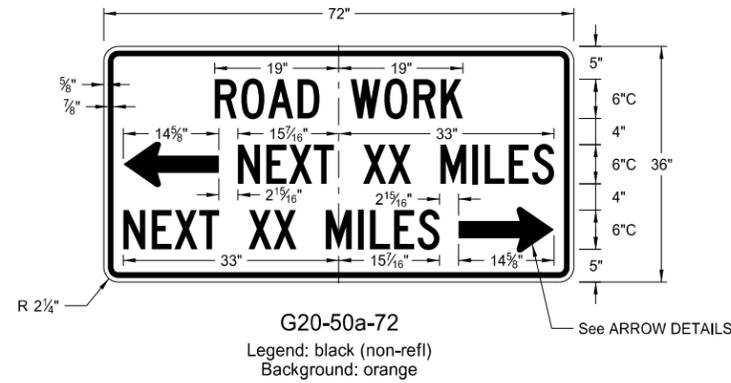
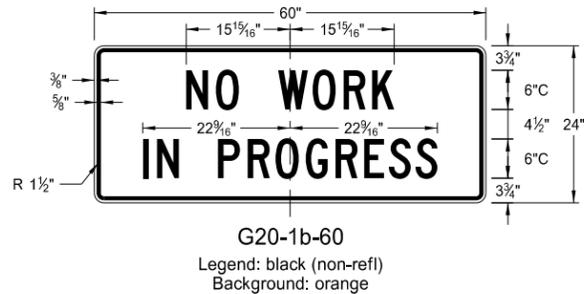
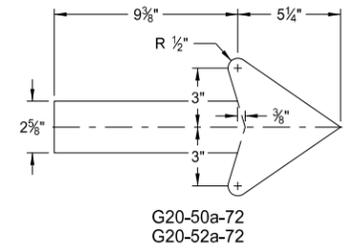
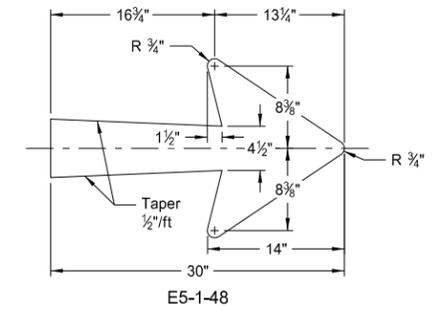
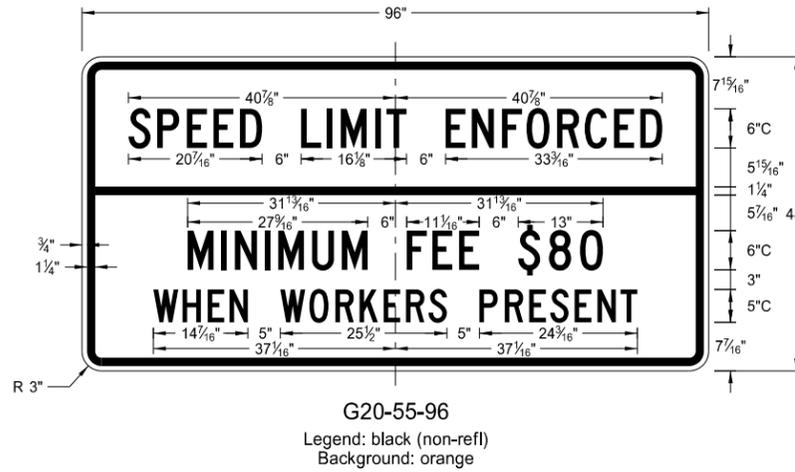
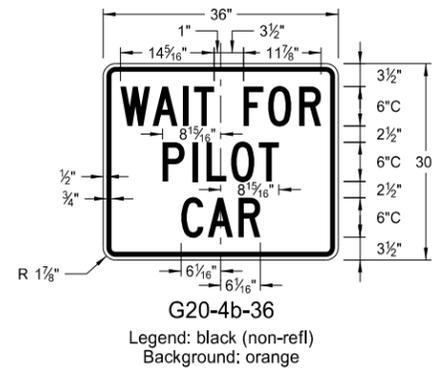
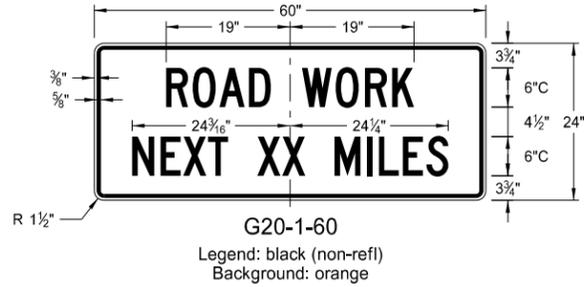
1. a) Drive anchor unit to within 12" of ground level.
b) Proper assembly established by lining up the bottom hole of retainer strap with the 6th hole from the top of the anchor unit.
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.
d) Rotate strap 90° to left.
2. a) Drive anchor unit to 4" above ground.
b) Rotate strap to vertical position.
3. a) Place 5/16"x2" bolt, lock washer and nut in bottom of sign post to facilitate alignment of sign post with proper hole in anchor unit.
b) Alternately tighten two connector bolts.
4. Complete assembly by tightening 5/16"x2" bolt (this fastens sign post to retainer strap).
5. The base post, strap and sign post shall be properly nested. Proper nesting occurs when all flat surfaces of the base post, strap, and sign post at the bolts have full contact across the entire width.

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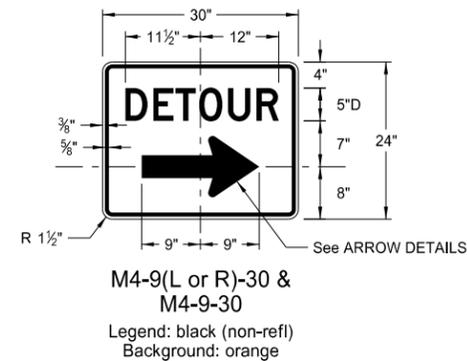
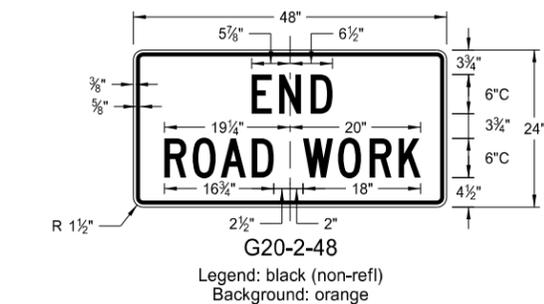
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CONSTRUCTION SIGN DETAILS
 TERMINAL AND GUIDE SIGNS

D-704-9



ARROW DETAILS



NOTES:

(A) Arrow may be right or left of the legend to indicate construction to the right or left.

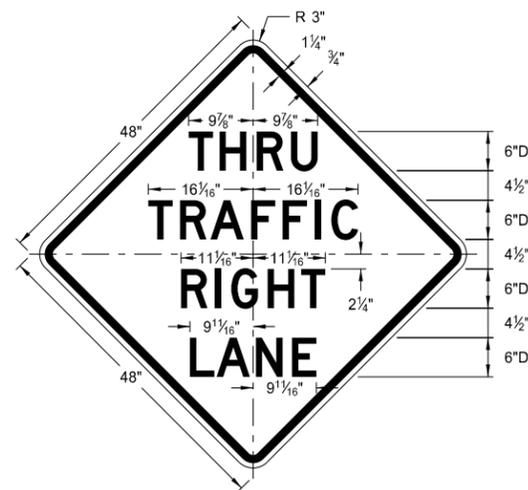
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
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DATE	CHANGE

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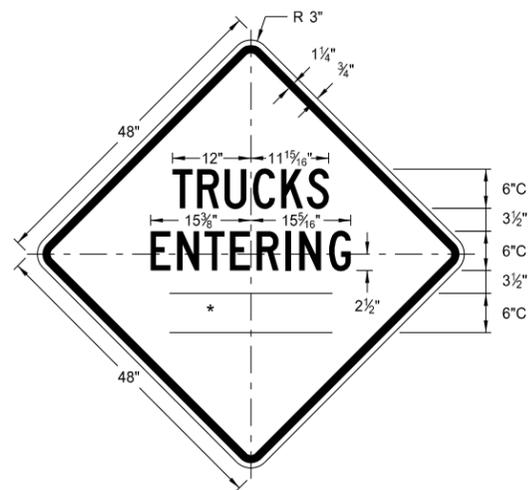
CONSTRUCTION SIGN DETAILS
WARNING SIGNS

WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
½ MILE	Reduce 50%
1 MILE	Standard

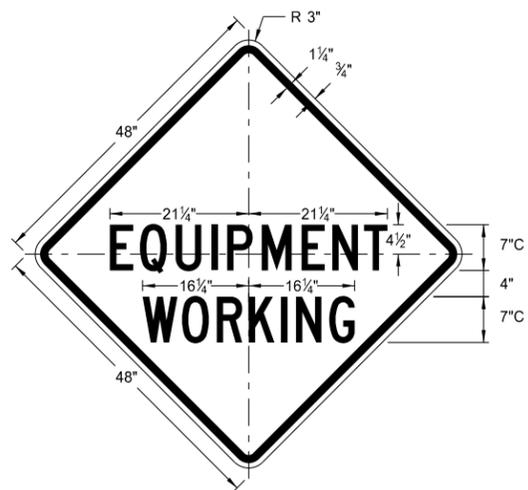
* DISTANCE MESSAGES



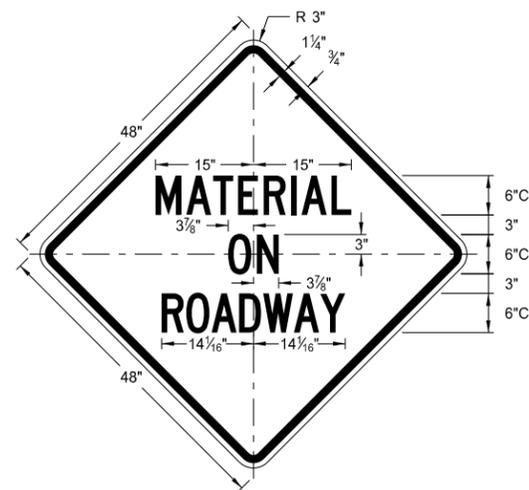
W5-8-48
Legend: black (non-refl)
Background: orange



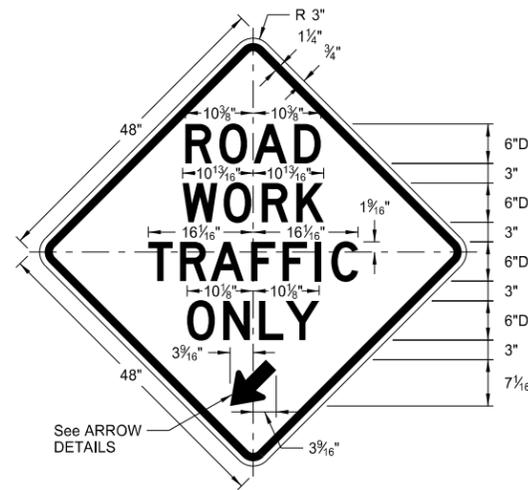
W8-54-48
Legend: black (non-refl)
Background: orange



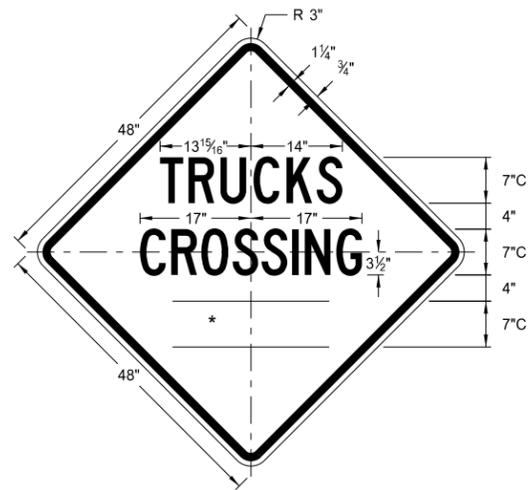
W20-51-48
Legend: black (non-refl)
Background: orange



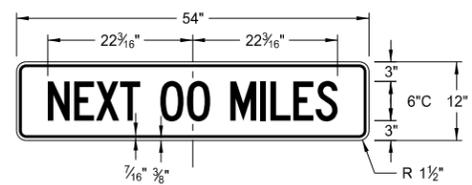
W21-51-48
Legend: black (non-refl)
Background: orange



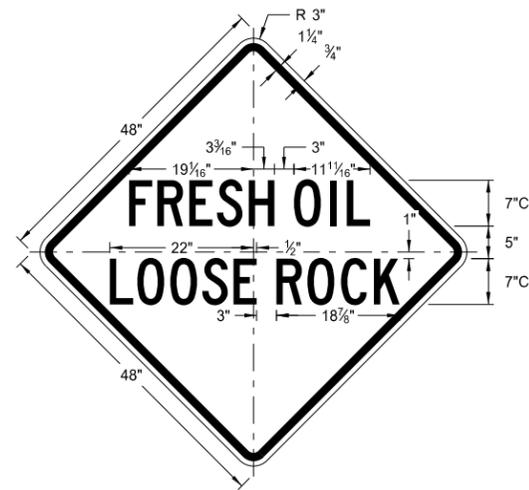
W5-9-48
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Background: orange



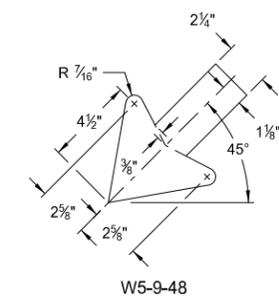
W8-55-48
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Background: orange



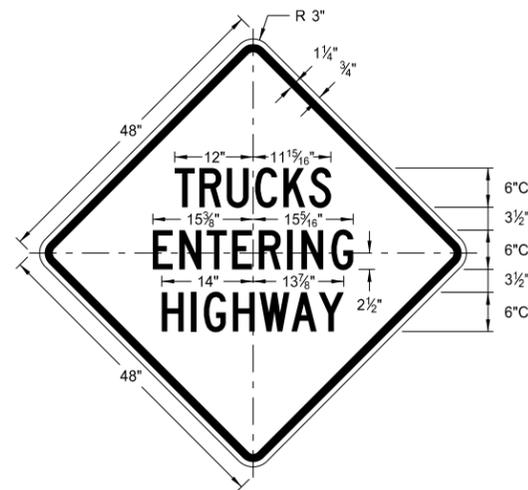
W20-52-54
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Background: orange



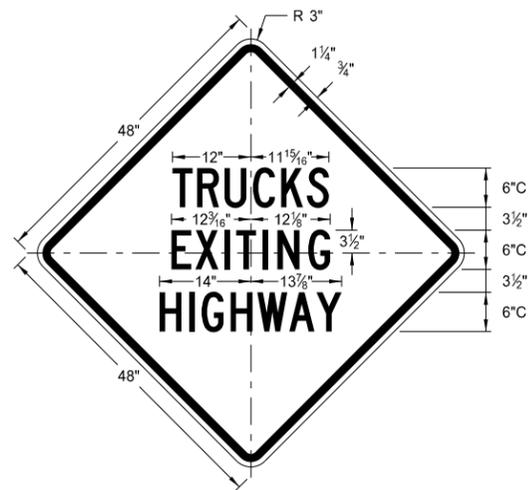
W22-8-48
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Background: orange



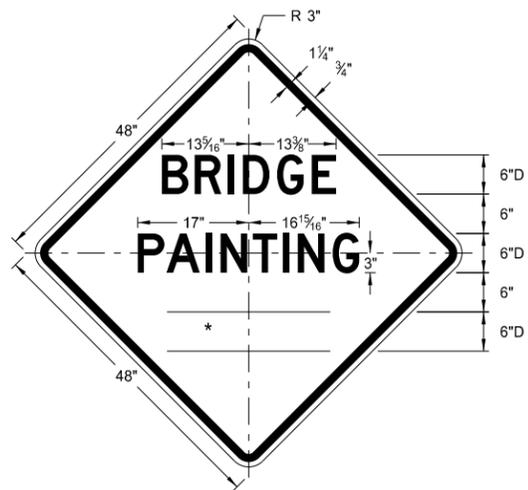
W5-9-48
ARROW DETAILS



W8-53-48
Legend: black (non-refl)
Background: orange



W8-56-48
Legend: black (non-refl)
Background: orange



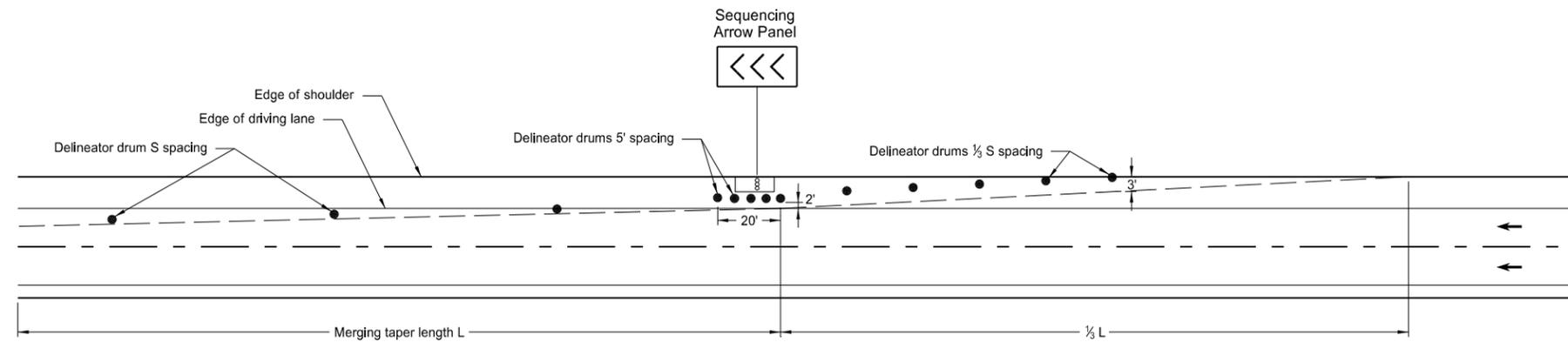
W21-50-48
Legend: black (non-refl)
Background: orange

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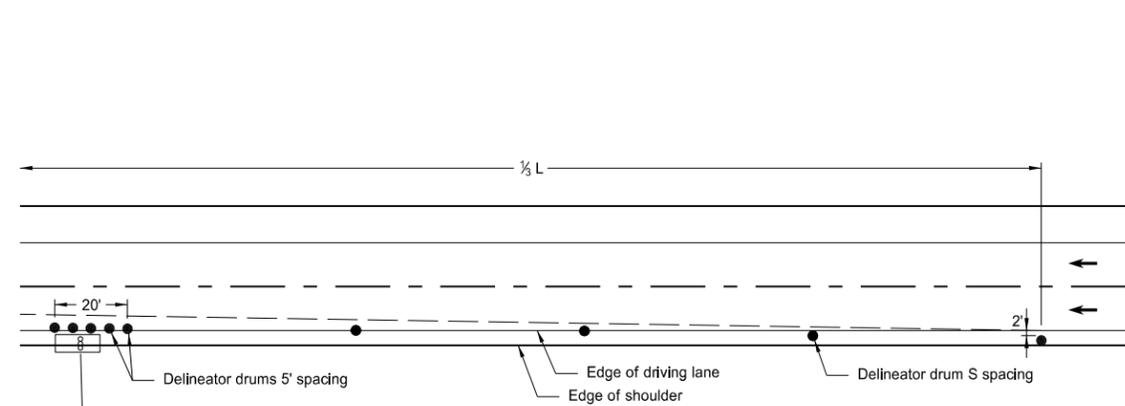
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SHOULDER CLOSURE TAPERS

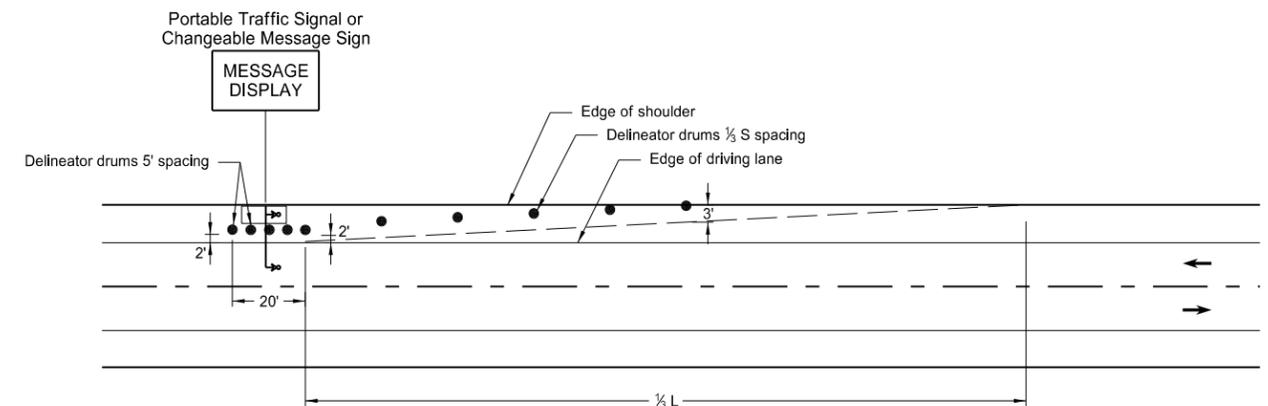
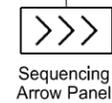
D-704-12



SHOULDER CLOSURE WITH LANE CLOSURE
(when shoulder is 8' or wider)



SHOULDER CLOSURE USED WITH LANE CLOSURE
(when shoulder is less than 8' wide)



PORTABLE TRAFFIC SIGNAL OR CHANGEABLE MESSAGE SIGN ON SHOULDER

KEY	
● Delineator Drum	∞ Sequencing Arrow Panel
• Message Display	↳ Portable Traffic Signal

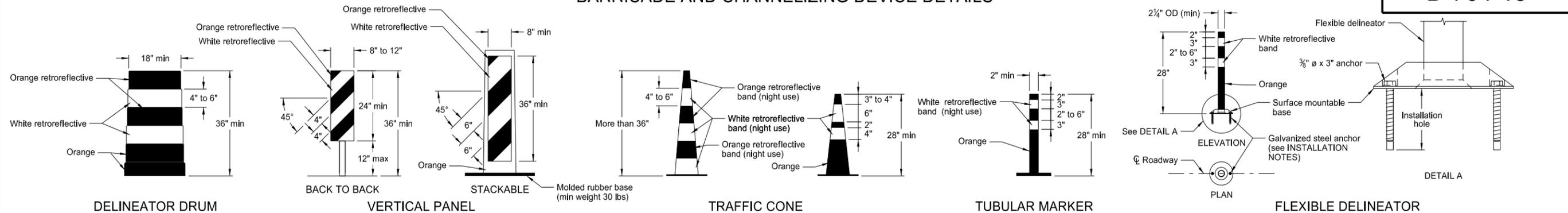
Notes:

- S = Posted Speed Limit in mph
W = Width of offset in feet
L = Taper length in feet
L = WS²/60 (40mph or less)
L = WS (45mph or more)
- If a shoulder taper is used, it should have a length of approximately 1/3L. If a shoulder is used as a travel lane, a normal merging or shifting taper should be used.
- When paved shoulders of 8 foot width or more are closed, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct vehicular traffic to remain within the traveled way.

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BARRICADE AND CHANNELIZING DEVICE DETAILS



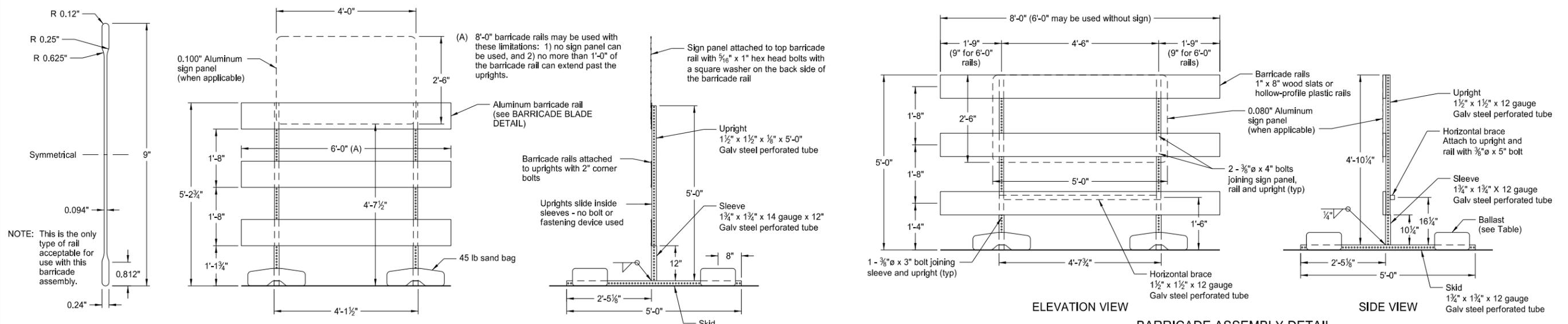
- INSTALLATION NOTES:**
1. Drill installation holes to diameter and depth as required by manufacturer's specifications.
 2. For removal, remove anchors and fill installation hole with an epoxy designed to bond to pavement surface.
 3. In lieu of bolted down base, the contractor may use an 8" x 8" butyl pad or hot melt butyl. Butyl shall be removed as close as possible to pavement surface.

The markings on drums shall be horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide. Each drum shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflectORIZED spaces between the horizontal orange and white stripes shall not exceed 3" wide. Stripes shall not be placed on ribs or indentations in the drum. Drums shall have closed tops that will not allow collection of construction debris or other debris. Ballast shall not be placed on the top of a drum.

Markings for vertical panels shall be alternating orange and white retroreflective stripes, sloping downward in the direction vehicular traffic is to pass. Retroreflective sheeting shall be placed on both sides of panel and shall have a minimum of 270 square inches of retroreflective area facing vehicular traffic. Where the height of the retroreflective material on the vertical panel is 36 inches or more, a stripe width of 6 inches shall be used.

RetroreflectORIZATION of cones more than 36" in height shall be provided by alternating orange and white retroreflective stripes. Each cone shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflectORIZED space between the orange and white stripes shall not exceed 3" wide.

RetroreflectORIZATION of tubular markers more than 42" in height shall be provided by alternating four 4" to 6" wide orange and white stripes with the top stripe being orange.

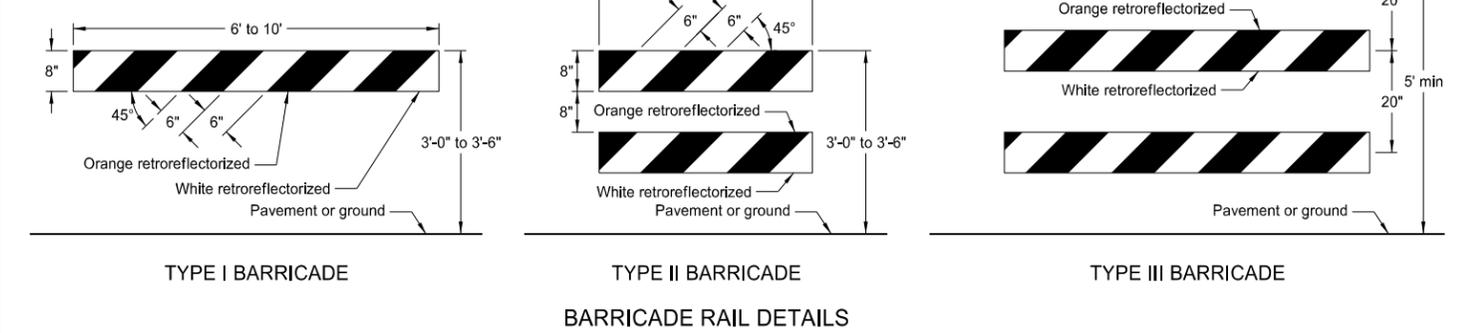


BARRICADE BLADE DETAIL

BARRICADE ASSEMBLY DETAIL (Aluminum Barricade Rails)

BARRICADE ASSEMBLY DETAIL (Wood or Plastic Rails)

NOTE: Markings for barricades shall be alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Retroreflective sheeting shall be placed on both sides of the rails and shall have a minimum of 270 square inches of visible retroreflective area facing vehicular traffic. When the barricade length is less than 36", the rail stripe width shall be 4".

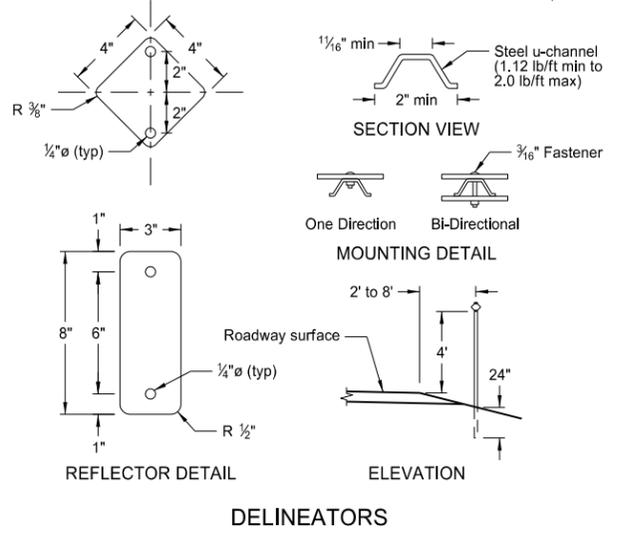


TYPE I BARRICADE

TYPE II BARRICADE

TYPE III BARRICADE

BARRICADE RAIL DETAILS



REFLECTOR DETAIL

ELEVATION

DELINEATORS

MINIMUM BALLAST (For each side of barricade support)

Without Sign	4 - 25 lb sandbags
With Sign	6 - 25 lb sandbags

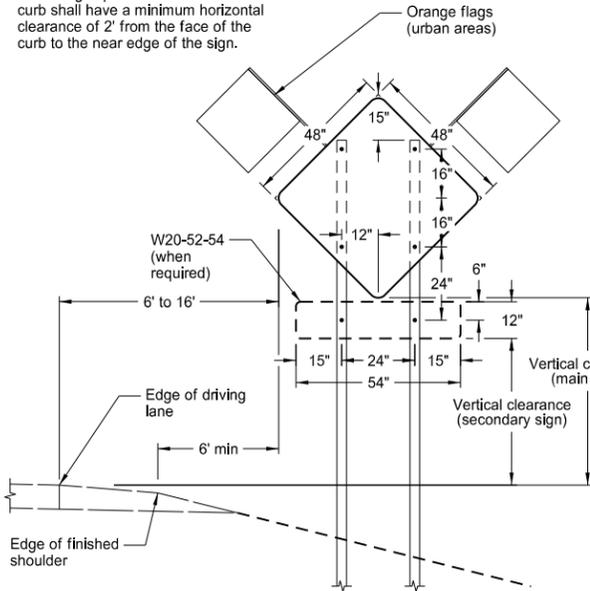
Note: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

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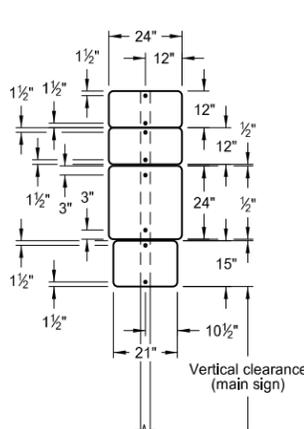
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CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

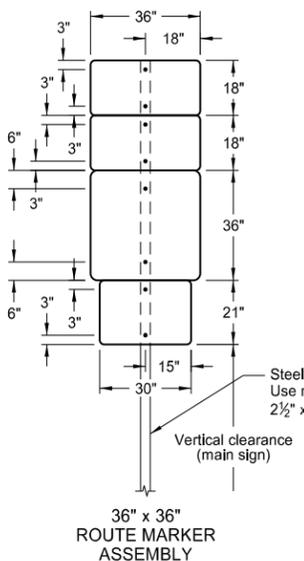
Note: Signs placed in sections with curb shall have a minimum horizontal clearance of 2' from the face of the curb to the near edge of the sign.



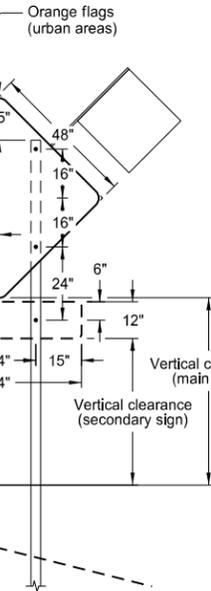
TYPICAL SECTION
(48" x 48" diamond warning sign shown)



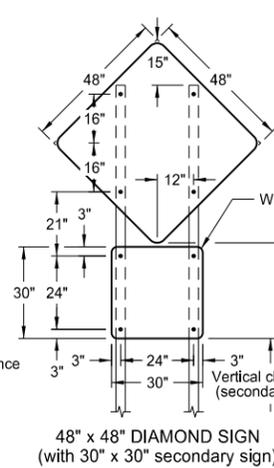
24" x 24" ROUTE MARKER ASSEMBLY



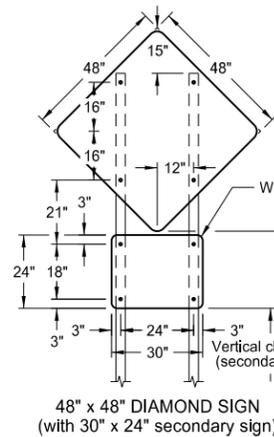
36" x 36" ROUTE MARKER ASSEMBLY



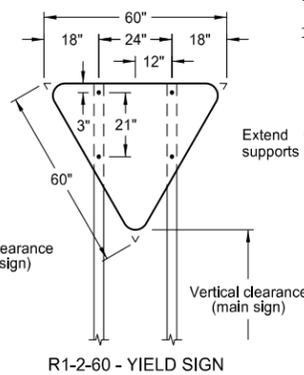
18" x 18" DIAMOND SIGN



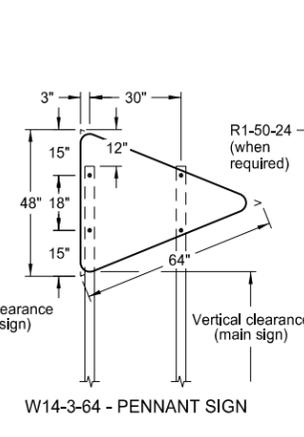
48" x 48" DIAMOND SIGN
(with 30" x 30" secondary sign)



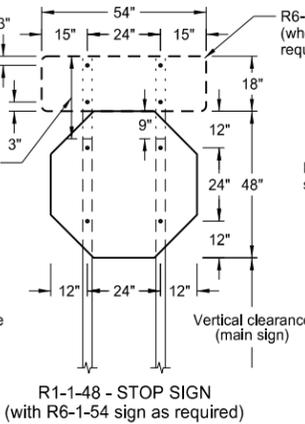
48" x 48" DIAMOND SIGN
(with 30" x 24" secondary sign)



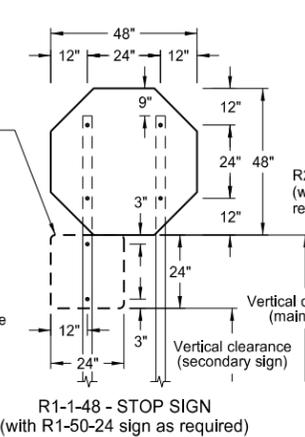
R1-2-60 - YIELD SIGN



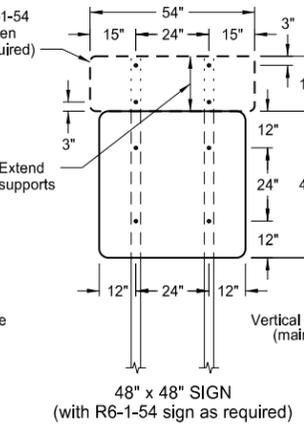
W14-3-64 - PENNANT SIGN



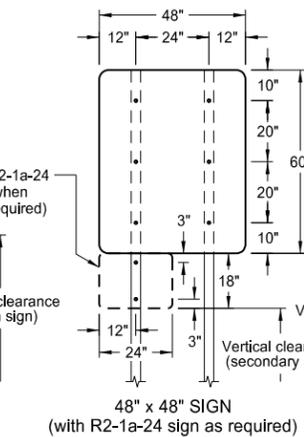
R1-1-48 - STOP SIGN
(with R6-1-54 sign as required)



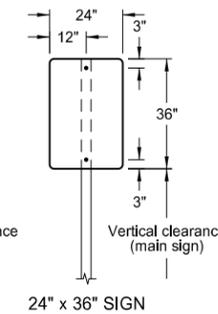
R1-1-48 - STOP SIGN
(with R1-50-24 sign as required)



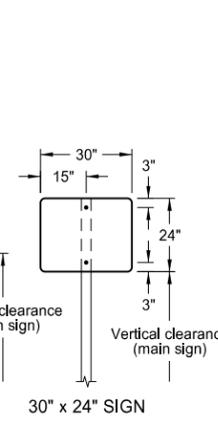
48" x 48" SIGN
(with R6-1-54 sign as required)



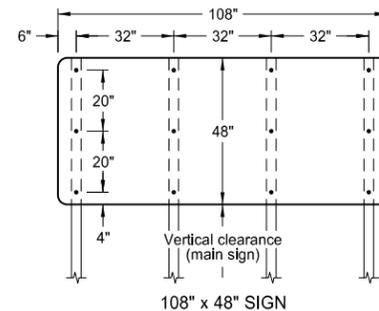
48" x 48" SIGN
(with R2-1a-24 sign as required)



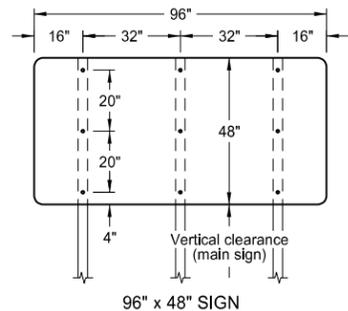
24" x 36" SIGN



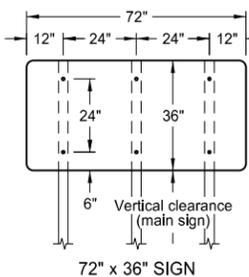
30" x 24" SIGN



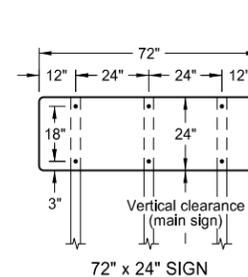
108" x 48" SIGN



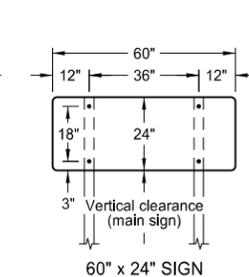
96" x 48" SIGN



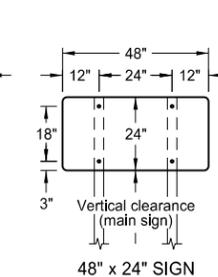
72" x 36" SIGN



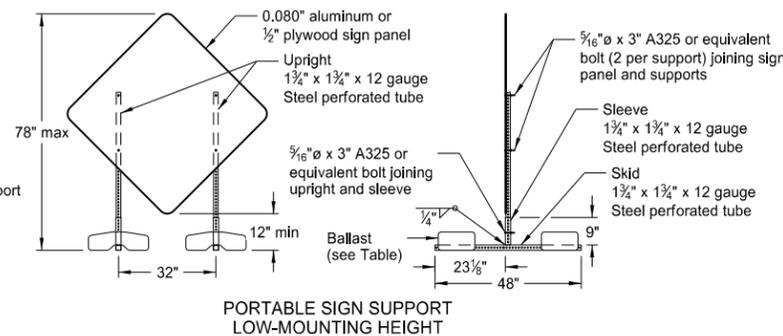
72" x 24" SIGN



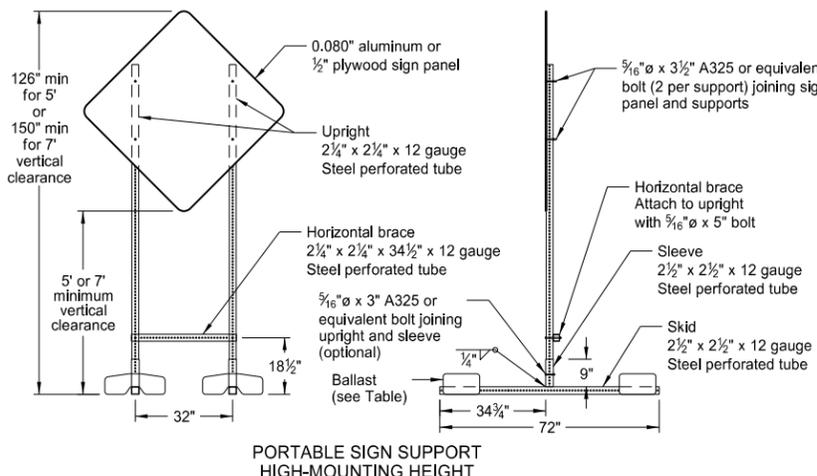
60" x 24" SIGN



48" x 24" SIGN



PORTABLE SIGN SUPPORT
LOW-MOUNTING HEIGHT



PORTABLE SIGN SUPPORT
HIGH-MOUNTING HEIGHT

NOTES:

1. Sign Supports: Supports shall be galvanized or painted. Minimum post sizes are 2.5 lb/ft u-channel or 2" x 2" x 12 gauge steel perforated tube, except where noted. When installing signs on u-channel, the minimum post size for assemblies containing a secondary sign is 3.0 lb/ft. Post sizes are based on a wind speed of 55 MPH.

Signs over 50 square feet should be installed on 2 1/2" x 2 1/2" perforated tube supports as a minimum.

Guy wires shall not be attached to sign supports. Wind beams may be attached to u-posts behind the sign panels.

2. Sign Panels: Provide sign panels made of 0.100" aluminum, 1/2" plywood, or other approved material, except where noted. All holes to be punched round for 3/8" bolts.

3. Alternate Messages: The signs that have alternate messages may have these alternate messages placed on a reflectorized plate (without a border) and installed and removed as required. (i.e. "Left" and "Right" message on a lane closure sign)

4. Route Marker Auxiliary Signs: Provide route marker auxiliary signs, such as the cardinal direction and directional arrows, with a background and legend that match the route marker they are used with:

Interstate - white legend on blue background
Interstate Business Loop - white legend on green background
US and State - black legend on white background
County - yellow legend on blue background

5. Vertical Clearance: Install signs with a vertical clearance of 5'-0" (see TYPICAL SECTION.) In areas where parking or pedestrian movements are likely or the view of the sign may be obstructed, install signs with a vertical clearance of 7'-0" from the top of the curb or from the near edge of the driving lane in absence of a curb.

The vertical clearance to secondary signs is 1'-0" less than the vertical clearance as stated above.

Large signs having an area exceeding 50 square feet shall have a minimum clearance of 7'-0" from the ground at the post.

6. Portable Signs: Provide portable signs that meet the vertical clearance as stated above. Use portable signs when it is necessary to place signs within the pavement surface.

When portable signs are used for 5 days or less, low-mounting height (minimum 12" vertical clearance) sign supports may be used as long as the view of the sign is not obstructed. Time delays caused by unforeseen circumstances, such as equipment breakdown, rain, subgrade failures, etc., will not accrue towards the 5 day period. The R9-8 through R9-11a series, W1-5 through W1-8 series, M4-10, and E5-1 may be used for longer than 5 days.

Signs mounted to the portable sign supports shown in the LOW-MOUNTING HEIGHT and HIGH-MOUNTING HEIGHT Details shall have a maximum surface area of 16 square feet.

MINIMUM BALLAST
(For each side of sign support base)

Sign Panel Mounting Height (ft)	Number of 25 lb sandbags for 4' x 4' sign panel
1'	6
5'	8
7'	10

Note: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-4-13	
REVISIONS	
DATE	CHANGE
11-14-13	Revised Note 6.

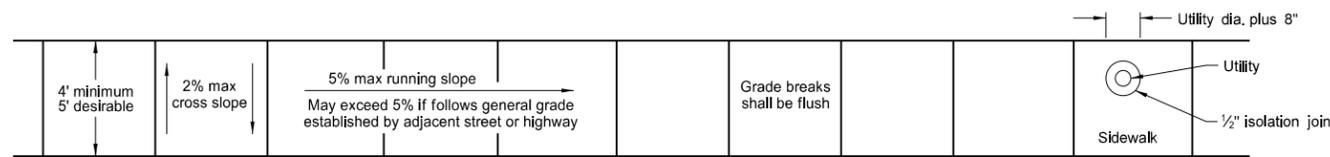
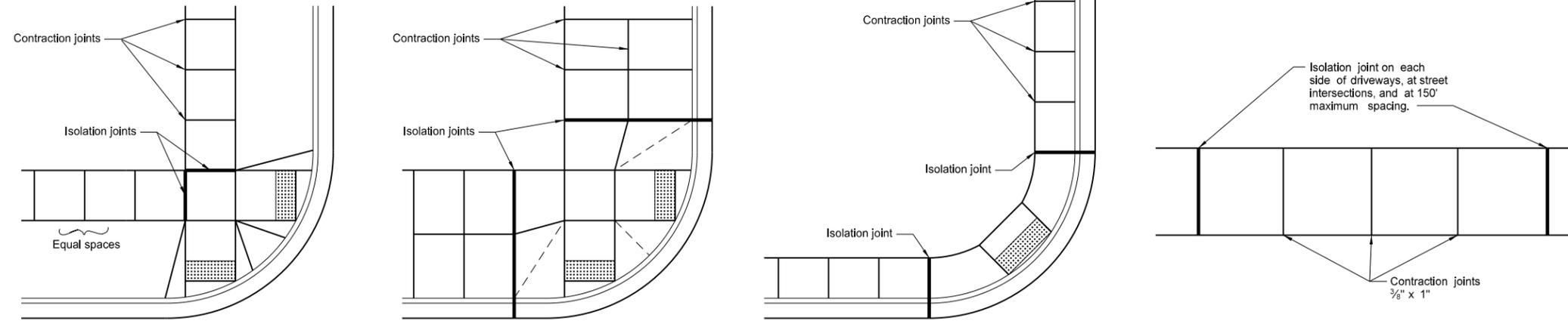
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SIDEWALK

D-750-2

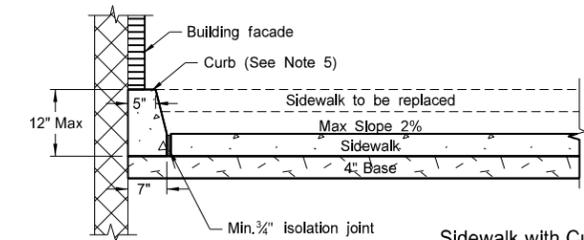
NOTES:

1. Curb ramp and detectable warning panel layouts are for informational purposes only. See Standard Drawing D-750-3 for curb ramp and detectable warning panel details.
2. Joint Spacing: Transverse contraction joint spacing shall vary from 4' to 6' to create approximate square panels. Longitudinal contraction joints shall be used where the sidewalk width is 8' or greater, and shall be spaced at half the sidewalk width. The contraction joints may be sawed or a grooved joint, and shall be a minimum of 1/3 the depth of the concrete. When the sidewalk is adjacent to the curb & gutter, the sidewalk joint spacing shall be varied to match up with the curb & gutter joints. Isolation joints should also be used between separately poured concretes, or between old and new concrete. The cost for all labor, equipment, and material necessary to construct contraction and isolation joints shall be included in the price bid for sidewalk concrete.
3. 4" sidewalk concrete thickness to be used unless otherwise specified in the plans.
4. 4" base material thickness to be used unless otherwise specified in the plans. All labor and materials necessary to place the base material shall be included in the price bid for "Salvage Base Course" or "Aggregate Base Course CL 5."
5. Landscaping is preferred to modify existing ground slope changes as needed. If not possible, such as adjacent buildings, a vertical curb may be used as shown in the detail below. The curb will be paid for at the unit price bid for the item "Curb - Type I" per lineal foot.

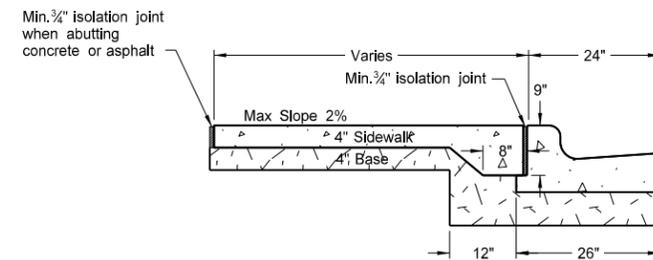


Sidewalk Width and Grade

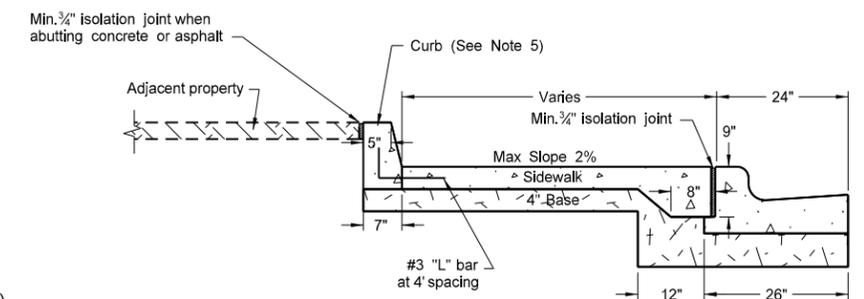
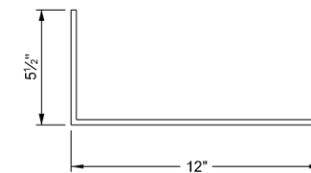
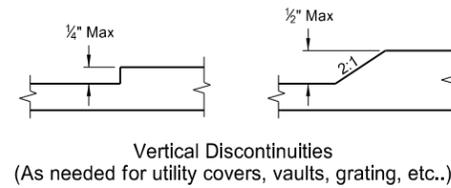
Utility Blockout



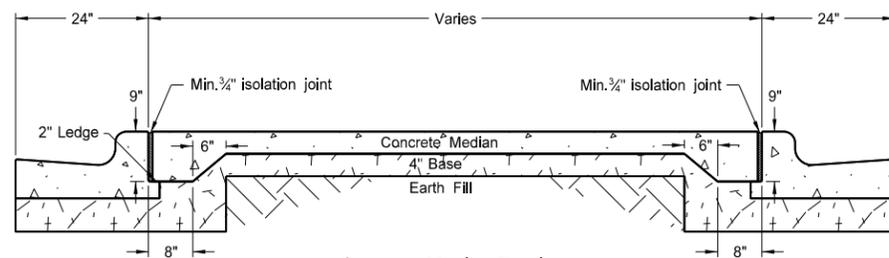
Sidewalk with Curb Detail (Building face application)



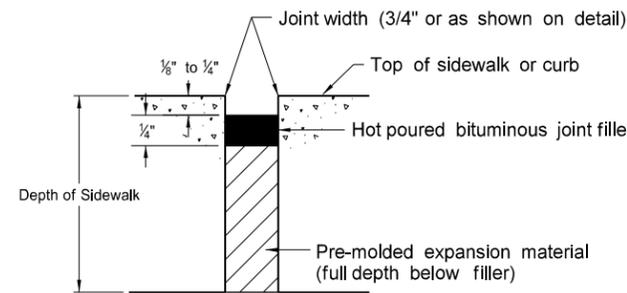
Sidewalk Detail (Installed adjacent to curb and gutter)



Sidewalk with Curb Detail (Adjacent property application)



Concrete Median Detail



Typical Isolation Joint Seal (longitudinal and transverse)

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CURB RAMP DETAILS

D-750-3

+More Right of Way

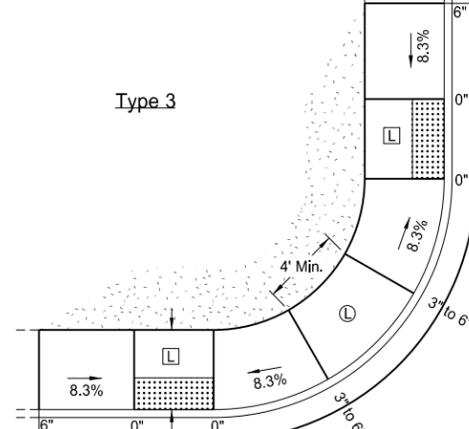
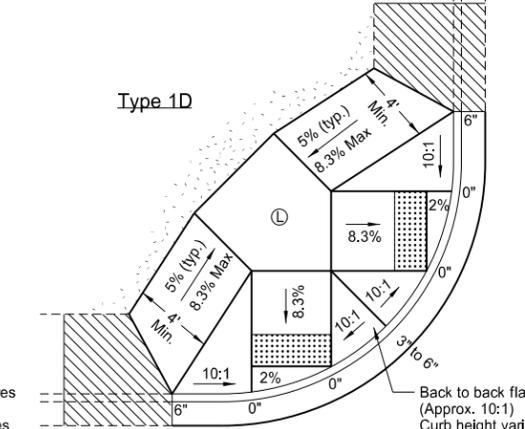
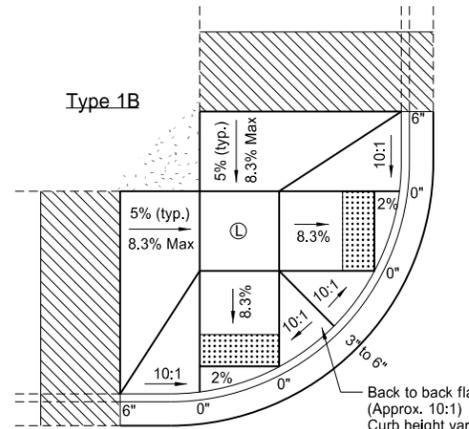
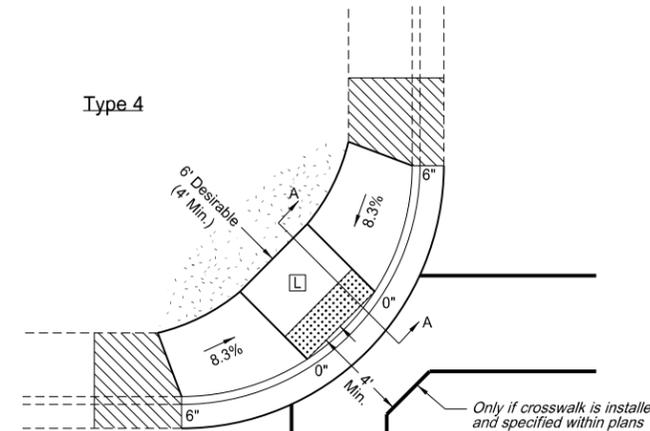
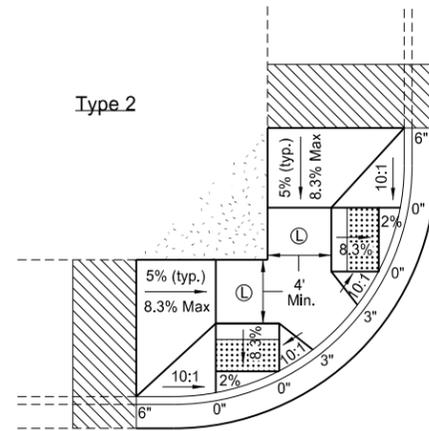
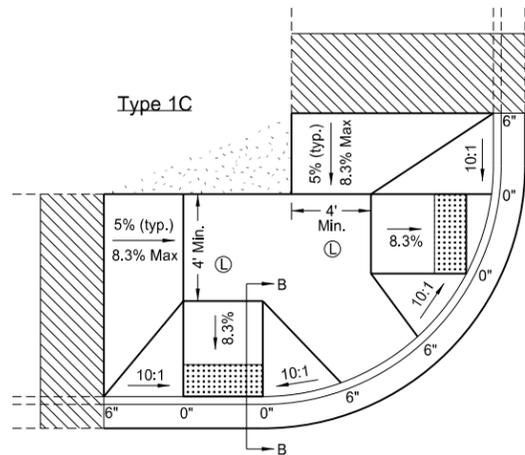
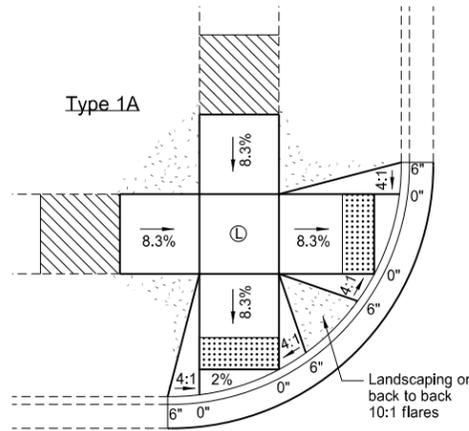
Less Right of Way

NOTES:

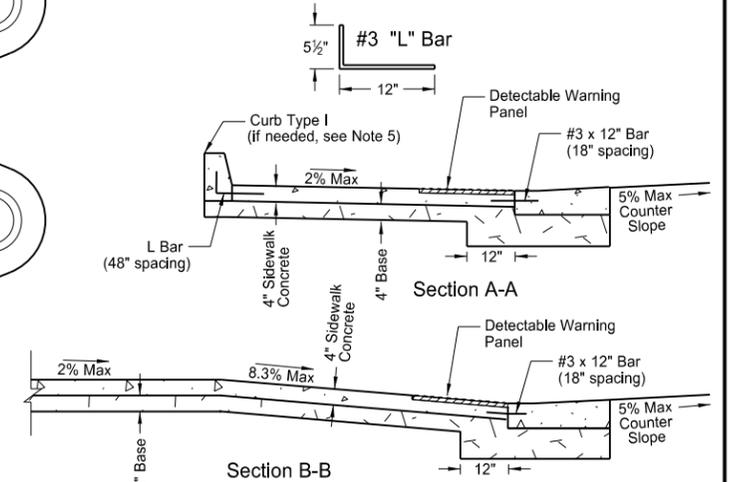
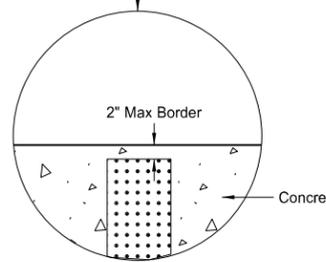
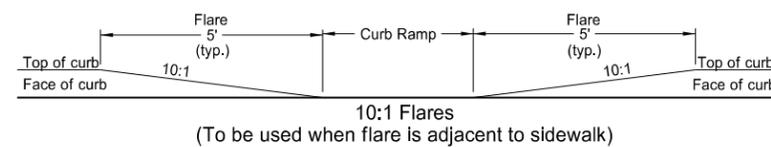
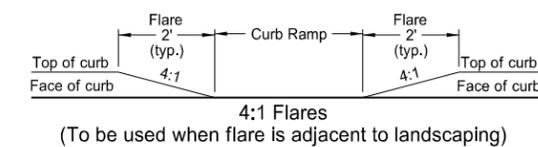
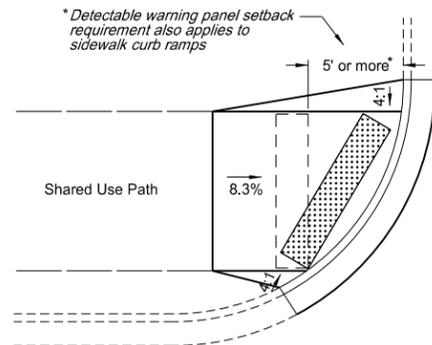
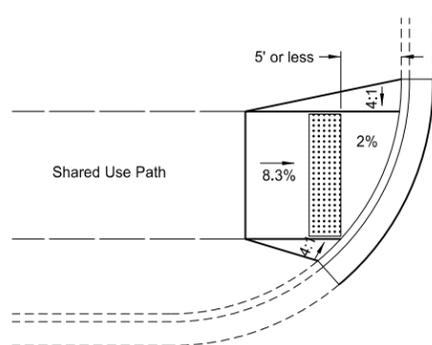
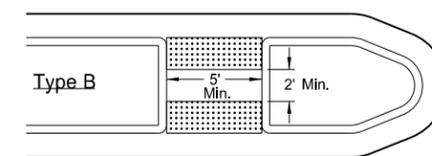
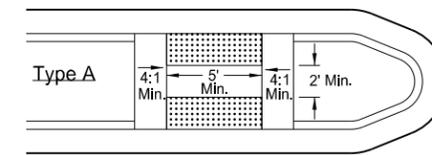
- Ramp width is defined as the useable portion of the ramp, excluding flares if used.
Curb ramp width should match the existing sidewalk width. 4' width minimum.
Ramp width for shared-use paths should match the existing shared use path width.
Ramp length shall be maximum of 15'.
- Landings shall be a minimum of 4' x 4' and shall have a max 2% slope in any direction. Landings are desirably 5' x 5' or larger.
- Detectable warning panels shall match the ramp width. Radial panels may also be used. The detectable warning panel may be located within the lower landing.
- The pedestrian access route shall be continuous 4' min. width. Max 2% cross slope applies to all concrete, excluding flares.
- Landscaping is preferred to modify existing ground slope changes as needed. If not possible, such as adjacent buildings, a vertical curb may be used as shown in the detail below. The curb will be paid for at the unit price bid for the item "Curb - Type I" per lineal foot.

LEGEND:

- : Detectable Warning Panel
- : Landscaping
- : Transitional tie-in segment if needed for retrofits. Max grade slope 8.3%.
- : Upper Landing
- : Lower Landing
- 0", 3", or 6" : Curb Height
- 8.3% : All slopes shown are max grades. Flatter slopes may be used.



Median Refuge Islands (Cut-Through)



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11-26-13	
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DATE	CHANGE

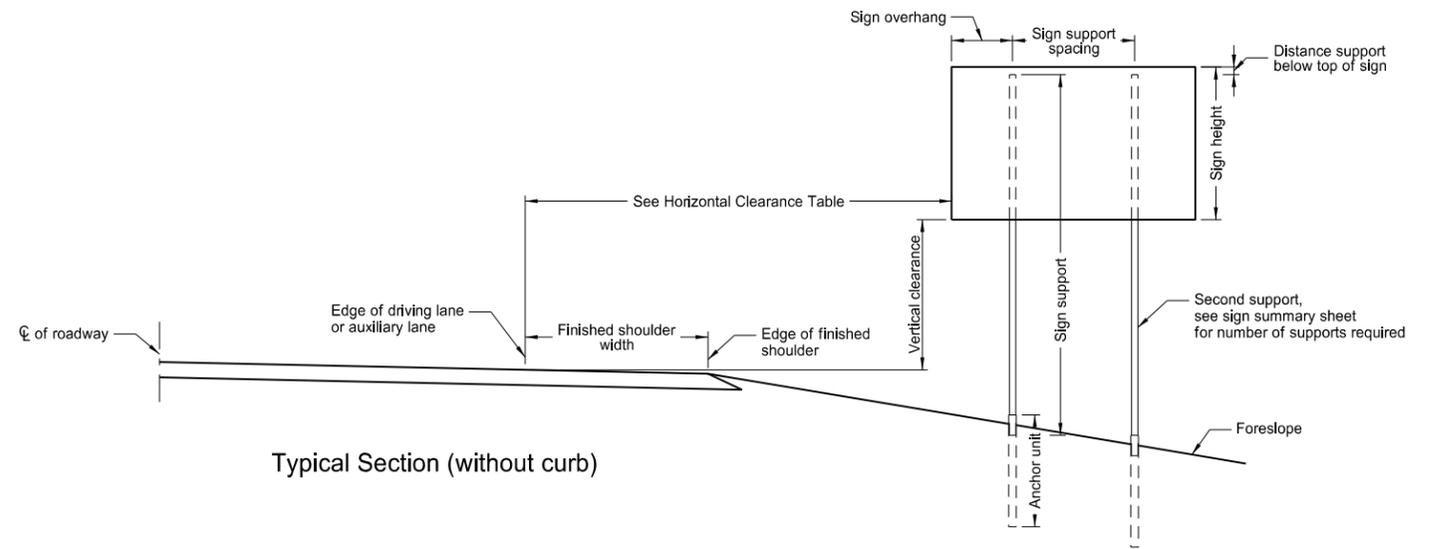
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PERFORATED TUBE ASSEMBLY DETAILS

D-754-23

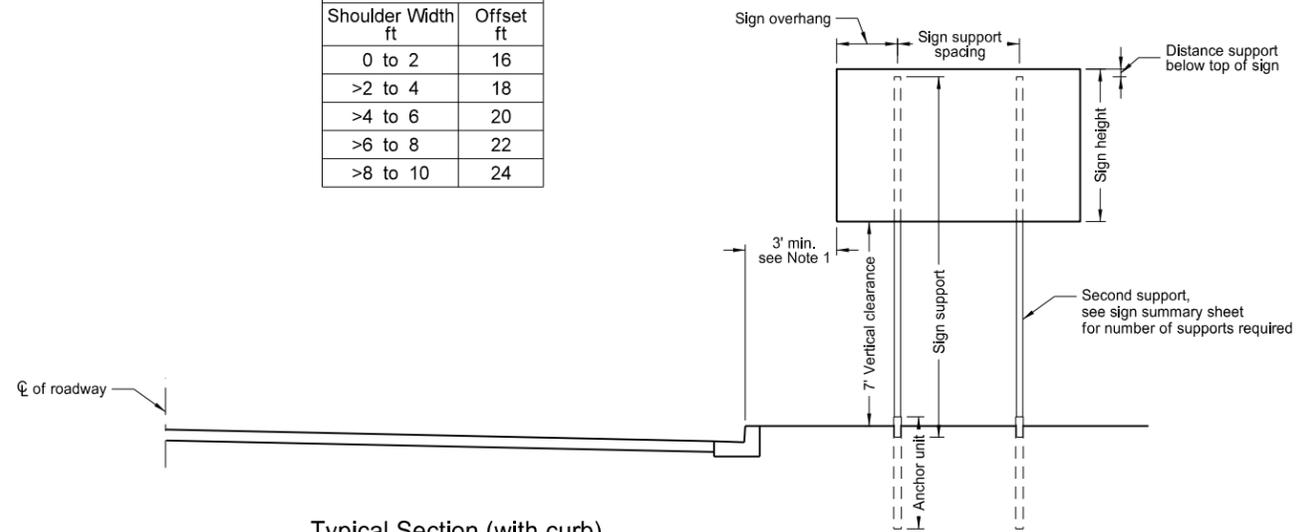
Notes:

1. Curbed Roadways: The clearance from the face of the curb should be 3' except where right of way or sidewalk width is limited, a minimum clearance of 2' shall be provided. The horizontal clearance may need to be increased to maintain a minimum sidewalk clear width of 4' from the sign support, not including any attached curb.
2. Minimum vertical clearance: Signs installed at the side of the road in rural districts shall be at least 5' measured from the bottom of the sign to the edge of the driving lane or auxiliary lane. Where parking or pedestrian movements occur, the clearance to the bottom of the sign shall be at least 7'.
- Signs on expressways shall be installed with a minimum height of 7'.
- Adopt-a-highway signs installed on Freeways shall be at least 7' above the edge of the driving lane.
- The vertical clearance shall have a maximum height of 6" above the vertical clearance specified above.
3. Offset signs: Where signs are placed at least 30 feet or more from the edge of the traveled way, the height to the bottom of such sign shall be 5' above the edge of the driving lane.
4. The clearance from edge of shared use path to edge of sign should be 3' except where width is limited, a minimum clearance of 2' shall be provided.

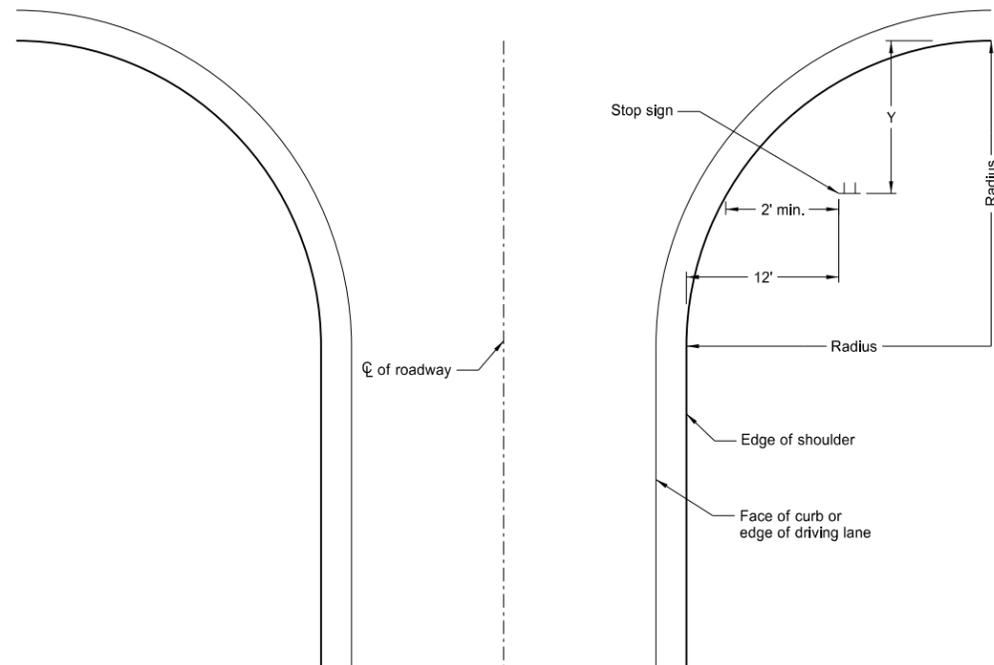


Typical Section (without curb)

Horizontal Clearance Table	
Shoulder Width ft	Offset ft
0 to 2	16
>2 to 4	18
>4 to 6	20
>6 to 8	22
>8 to 10	24



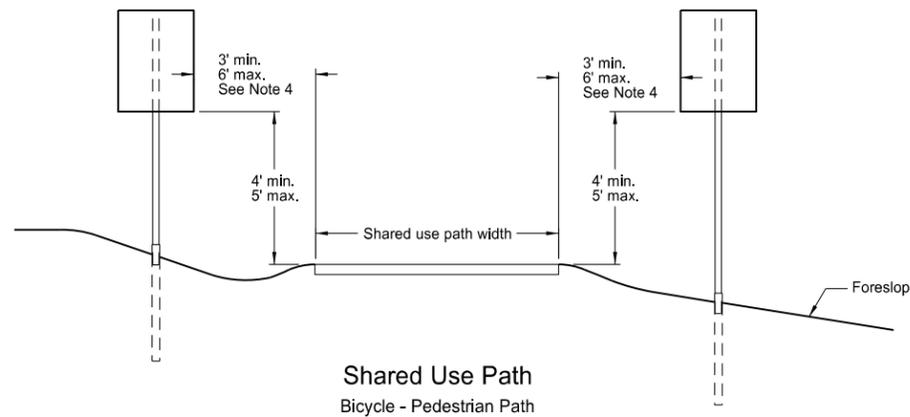
Typical Section (with curb)
Residential or Business District



Stop Sign Location
Wide Throat Intersection

This layout is to be used for the placement of "Stop" signs.

Radius ft.	Y-max. ft.	Y-min. ft.
40	50	15
45	50	18
50	50	21
55	50	25
60	50	28
65	50	32
70	50	35
75	50	39
80	50	43



Shared Use Path
Bicycle - Pedestrian Path

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
REVISIONS	
DATE	CHANGE
7-8-14	Revised note 2, added note 4.

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