State Of Minnesota
City of Marshall, Minnesota
Project Number ST-002-2025

Construction Plans for Bituminous Overlays & Pedestrian Ramp Improvements within the City of Marshall

LEGEND

- ALIGNMENT STATIONS
- GAS LINE
- COMMUNICATION LINE
- FIBER LINE
- UNDERGROUND POWER
- STREET LIGHT
- EXISTING CATCH BASIN
- EXISTNG STORM MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING HYDRANT
- EXISTING WATER VALVE
- NEW CATCH BASIN
- NEW HYDRANT
- NEW WATER VALVE
- NEW SANITARY MANHOLE
- NEW STORM MANHOLE
- BENCHMARK TOP NUT HYDRANT

SPECIFICATION REFERENCE

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION".

ALL TRAFFIC CONTROL DEVISES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

THE CITY OF MARSHALL STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

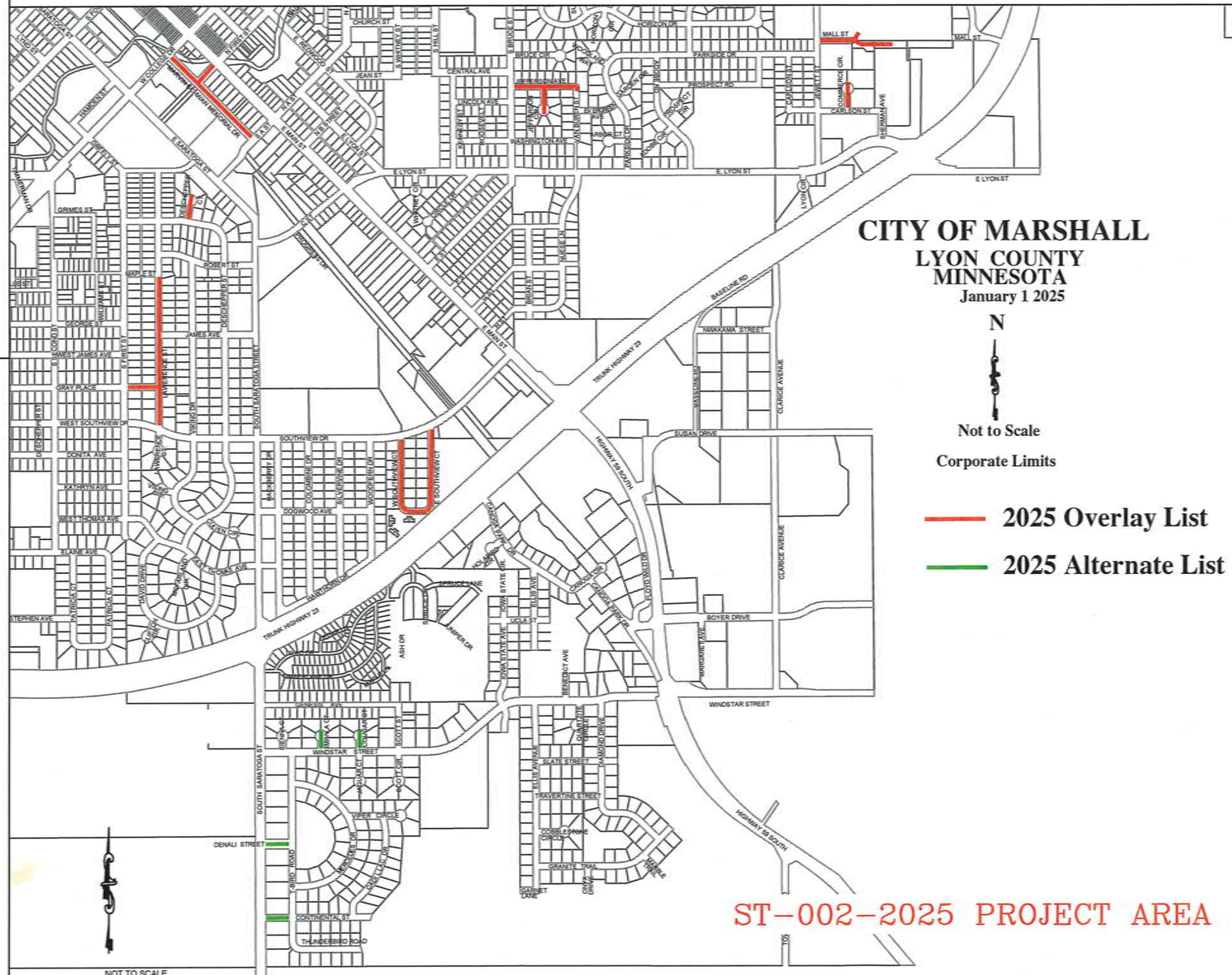
DESIGN DATA

DESIGN SPEED 30 MPH

STOPPING SIGHT DISTANCE BASED ON
3.5' HEIGHT OF EYE
0.5' HEIGHT OF OBJECT

SCALES

PLAN	1"=20'
PROFILE	NA
INDEX MAP	1"=100'
GENERAL LAYOUT	1"=20'



CITY OF MARSHALL
LYON COUNTY
MINNESOTA
January 1 2025

N

Not to Scale

Corporate Limits

2025 Overlay List

2025 Alternate List

ST-002-2025 PROJECT AREA

INDEX

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

APPROVED: CITY ENGINEER, MARSHALL MINNESOTA — DATE 2-13-25 REG NO 53322

DESIGNED BY: _____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE:

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 BITUMINOUS OVERLAYS

TITLE SHEET

CITY PROJECT NO. ST-002-2025

DATE 01/01/2025

STATE AID PROJECT NO.

SHEET NO. 1 OF 23

Statement of Estimated Quantities				
Note No.	Item No.	Item	Unit	Total Quantity
2,3,14	2104.503	Remove Concrete/Bituminous Pavement	Sq. Ft.	2049
2,3,12	2104.503	Remove Curb and Gutter	Lin. Ft.	660
2	2232.504	Mill Bituminous Surface	Sq. Yd.	27861
15	2301.504	Place Concrete Pavement 7"	Sq. Yd.	56.22
	2357.506	Bituminous Material for Tackcoat	Gallon	3214
4	2360.604	Bituminous Patching	Sq. Yd.	186.89
	2360.609	Type SP 9.5 Wearing Course Mix (SPWEA340B)	Ton	3083
	2504.602	Adjust Gate Valve & Box	Each	11
	2506.502	Adjust Frame and Ring Casting	Each	18
7,10,11	2521.518	4" Concrete Walk	Sq. Ft.	126
7,10,11	2521.518	6" Concrete Walk	Sq. Ft.	1381
12	2531.503	Concrete Curb and Gutter, Design B618	Lin. Ft.	660
7	2531.618	Truncated Domes	Sq. Ft.	91
6,8,9,13	2575.602	Site Restoration	Each	21
16	2563.601	Traffic Control	Lump Sum	1

*Alternate streets are not included in the Estimated Quanties.

Standard Plates	
Plate No.	Description
7038A	Detectable Warning Surface, Truncated Domes
7100H	Concrete Curb and Gutter
8000J	Channelizers
4026A	Concrete encased Adjusting Rings

The Following Standard Plates as Approved by the FHWA shall apply to this Project.

2025 1.5" Mill and Overlay Project

MIX DESIGNATION - SPWEA340B

Street	From-To	Bitum. Mixture (Ton)	Bitum. Tackcoat (Gallons)	Milling (Sq. Yd.)	Adjust Frame & Ring Casting (Each)	Adjust Valve Box (Each)
Southview Court (Edge Mill)	Southview Drive to Southview Drive	735	754	5,731	5	3
Deschepper Court (Edge Mill)	Deschepper Street	146	150	1,022	-	-
Deschepper Court Leveling	Deschepper Street	50	60	-	-	-
Commerce Circle (Edge Mill)	Carlson Street to Carlson Street	176	150	925	1	-
Mall Street (Mill All)	Jewett Street to Mall Parking lot	176	180	1,800	-	-
Mall Street (Edge Mill)	Mall Parking Lot to Clinic Driveway	106	109	874	-	1
Jefferson Avenue (Mill All)	Bruce Street to Van Buren Street	256	277	2,767	3	2
Jefferson Circle (Mill All)	Jefferson Avenue to Jefferson Avenue	141	152	1,523	-	-
Jefferson Circle Leveling	Jefferson Avenue to Jefferson Avenue	50	60	-	-	-
Lawrence Street (Mill All)	Maple Street to Southview Drive	572	618	6,179	2	2
Gray Place West (Mill All)	South 1st Street to Lawrence Street	118	127	1,274	1	-
Marvin Schwan Memorial Dr. (Mill All)	W. College Drive to S. A Street	466	478	4,780	1	1
S.1st Street (Mill All)	E. Main Street to Marvin Schwan Memorial Drive	91	99	986	-	2
2025 TOTALS		**3,083**	**3,214**	**27,861**	**13**	**11**

2025 1.5" Mill and Overlay Project Alternate Streets

MIX DESIGNATION - SPWEA340B

Street	From-To	Bitum. Mixture (Ton)	Bitum. Tackcoat (Gallons)	Milling (Sq. Yd.)	Adjust Frame & Ring Casting (Each)	Adjust Valve Box (Each)
Continental Street (Edge Mill)	Saratoga Street to Thunderbird Road	120	122	1,032	-	1
Denali Street (Mill All)	Saratoga Street to Thunderbird Road	131	142	1,419	-	-
Impala Court (Mill All)	Windstar Street	126	115	1,150		
Cougar Court (Mill All)	Windstar Street	126	115	1,150		
2025 ALTERNATE TOTALS		**503**	**494**	**4,751**	**0**	**1**

DESIGNED BY: _____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 MILL & OVERLAY PROJECT

ESTIMATED QUANTITY SHEET

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

Jason Anderson
DATE 12-13-25 LICENSE NO. 53322

CITY PROJECT NO. ST-002-2025
DATE 01/01/2025
STATE AID PROJECT NO. NA

Table for ADA Work on 2025 OVERLAY

Intersection	Quadrant	Remove Curb Lin. Ft.	Remove Concrete SW/Valley/Bit. Sq. Ft.	Bit Patching Sq. Ft.	Install Curb Lin. Ft.	Install 6" Sidewalk/DW Sq. Ft.	Install 4" Sidewalk Sq. Ft.	Install 7" Valley Gutter Sq. Ft.	Truncated Domes Sq. Ft.	Site Grading Restoration LS/Each
S. 1st St. and Marvin Schwan Memorial Dr.	NW	52	501	100	52	382		119	18	-
S. 1st St. and Marvin Schwan Memorial Dr.	NE	45	526	90	45	526			18	1
Marvin Schwan Memorial Dr. and S. A. St.	NW	25	153	50	25	60	60		9	1
Marvin Schwan Memorial Dr. and S. A. St.	SW	28	187	56	28	139	50		30	1
Lawrence Street and E. James Ave.	SE	31	72	62	31	67			16	1
2025 TOTALS		**181**	**1,439**	**358**	**181**	**1,174**	**110**	**119**	**91**	**4**

Table for ADA Work on 2025 OVERLAY Alternate Streets.

Intersection	Quadrant	Remove Curb Lin. Ft.	Remove Concrete SW/Valley/Bit. Sq. Ft.	Bit Patching Sq. Ft.	Install Curb Lin. Ft.	Install 6" Sidewalk/DW Sq. Ft.	Install 4" Sidewalk Sq. Ft.	Install 7" Valley Gutter Sq. Ft.	Truncated Domes Sq. Ft.	Site Grading Restoration LS/Each
Denali Street and Thunderbird Road	NW	18	154	36	18	88	40	16	8	1
Denali Street and Thunderbird Road	SW	18	144	36	18	69	40	20	8	1
Impala Court and Windstar Street	NW	15	115	30	15	55	45		9	1
Impala Court and Windstar Street	NE	15	108	30	15	55	45		9	1
Cougar Court and Windstar Street	NW	15	100	30	15	55	45		9	1
Cougar Court and Windstar Street	NE	15	101	30	15	55	45		9	1
2025 TOTALS		**96**	**722**	**192**	**96**	**377**	**260**	**36**	**52**	**6**

Table for Curb Work on 2025 OVERLAY

Street	Address	Remove Curb Lin. Ft.	Remove Concrete SW/Valley/Bit. Sq. Ft.	Bit Patching Sq. Ft.	Install Curb Lin. Ft.	Install 6" Sidewalk/DW Sq. Ft.	Install 4" Sidewalk Sq. Ft.	Install 7" Valley Gutter Sq. Ft.	Adjust Casting Each	Site Grading Restoration LS/Each
Southview Court	812-818	175	146	350	175	146				3
Southview Court	704	13		26	13					1
Southview Court	802	22		44	22					1
Jefferson Avenue	1103	17	35	34	17	35			1	1
South Bruce Street	503	10		20	10					1
Jefferson Avenue	1102	40		80	40					1
East Main Street (Rear yard on Marvin)	120	16		32	16					1
Marvin Schwan Memorial Drive	123	45	16	90	45		16			1
East Main Street (Rear yard on Marvin)	106	20		40	20					1
South 1st Street (Side yard on Marvin)	105	10		20	10					1
South 1st Street (Memorial Park)	Park	17	57	40	17			57	1	
Mall Street (including new Valley Gutter)	Mall	40	330	440	40			330		1
Lawrence Street (Hydrant)	600	8		16	8					1
Lawrence Street (Catchbasin/driveway)	600	10	12	20	10	12			1	1
Lawrence Street	515	16		32	16				1	1
Lawrence Street (Concrete in ADA table)	601								1	
Lawrence Street	502	20	14	40	20	14				1
2025 TOTALS		**479**	**610**	**1,324**	**479**	**207**	**16**	**387**	**5**	**17**

The City of Marshall reserves the right to remove streets or ADA improvments as necessary to match project budget, with no change to unit prices.
Alternate streets may be added to the project depending on actual bid prices and project budget, with no change to unit prices.
Bituminous Mixture Tonage based on 195#/sq yd for 1.5" depth on Edge Mill streets, 185#/sq yd for 1.5" depth Mill All streets.
Tack Gallons based on 0.10 g/sq yd
Milling Quantity based on 2-7' passes on each side of all roads. Milling depth shall be 1.5" at the curb and 0" at 14' from gutter.
Milling depth on the streets listed as (Mill All) shall be 1.5" on the entire road surface curb to curb.
Adjust Frame and Ring Casting Item May be decreased on the completely milled streets if not needed after milling.

DESIGNED BY: _____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 MILL & OVERLAY PROJECT

ESTIMATED QUANTITY TABLES

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

DATE 21325 LICENSE NO. 53322

CITY PROJECT NO. ST-002-2025
DATE 01/01/2025
STATE AID PROJECT NO. NA
SHEET NO. 3 OF 23

GENERAL / ADA CONSTRUCTION NOTES

1. Contractor to contact Gopher State One Call as to the location of all existing underground utilities.

2. Removal items shall become the property of the contractor and shall be disposed of per MnDot Spec. 2104.

3. All sawing of Bituminous, concrete sidewalks and curb and gutter shall be incidental to the removal item.

4. The Bituminous Patching bid item is estimated at 2' wide by the length of the curb removed. All associated costs shall be included in the Bituminous Patching bid item; including, but not limited to: sawing, removal, disposal, class 5, grading & patching.

5. The contractor shall furnish and install the necessary materials to control soil erosion within and from leaving the construction site. Temporary erosion control devices shall be constructed, maintained and left inplace until such time as permanent erosion control measures are inplace or instructed to remove them by the engineer. Roads shall be kept clean of excess soil by routine sweeping daily with a pickup broom.

6. All costs associated with the implementation of best management practices (BMP'S) to prevent soil and sediment loss and other pollutants from leaving the project site shall be incidental to the Site Restoration Bid Item. The contractor shall submit a specific pollution prevention plan describing the BMP'S that are to be implemented on the project for approval by the engineer.

7. The contractor is responsible for meeting all current ADA safety standards as they relate to the construction of the Curb and Gutter, sidewalks and handicapped ramps. The contractor is also responsible for laying out the cuts in the curb for the ADA ramps. All sidewalk joints shall be sawcut according to ADA standards. Should there be any areas that do not meet ADA standards after construction, the contractor shall immediately remove and replace the incorrect sidewalk, ADA ramp or curb at no cost to the owner.

8. The Site Restoration Bid Item shall include all costs for site grading, common excavation, class 5, salvage and reinstall existing topsoil, providing additional screened topsoil if short, tilling topsoil, seeding and hydromulching.

9. The existing topsoil shall be salvaged and reused on the project. If the contractor does not salvage the existing topsoil, the contractor shall provide screened topsoil at no cost to the project. The minimum depth of topsoil shall be 6". The topsoil shall be screened through a mechanical screener to remove large chunks and rocks.

10. Driveway and Sidewalk Concrete items shall include 4" of Aggregate Base, Class 5 and shall be incidental to the cost of the item.

11. All sidewalk landings and ramps shall be constructed to a concrete depth of 6". Quantities for the sidewalk landings and ramps are included in the 6" Sidewalk Bid Item. Transitional Panels of concrete sidewalk from 4" thickness to 6" thickness are included and shall be paid as 4" concrete sidewalk.

12. 3 each - 18" long #4 reinforcement bars shall be installed at the joint where the machine curb and hand placed curb join together such as on each side of a catch basin or at connections to the existing curb. The cost shall be considered incidental to the curb and gutter.

13. Site Restoration - MnDOT 2575 is the accepted method for re-establishing the turf on the project. However it is imperative that:

A) Site Preparation - Prior to seeding taking place, the site shall be prepared by removing all rocks and clumps of sod and soil,level and final shape all trenches and disturbed areas, and the surface area must be tilled to a minimum of 3 inches. It is critical that the seed bed be loosened to a point that there are a lot of spaces, cracks and crevices for the seed to filter into, otherwise it may end up on the surface only.

B) Fertilizer - The fertilizer shall be 22-5-10(NPK), commercial grade analysis, applied at a rate of 300 lbs/acre.

C) Seed Installation - Seed shall be installed by seeding evenly over the entire site by either broadcast or drill seeding method.

D) Seeding Rate - Seed shall be applied at the adjusted bulk rate of application for each mixture. The seed mixture shall be seed number 25-131(Replaces 260) (undeveloped areas) and 25-151 (Replaces 270) (existing lawns) and in conformance with MnDot Spec. 2575.

E) Harrowing - The site shall be harrowed, cultipacked or raked following seeding.

F) All seeded areas shall be covered with Hydraulic Matrix B.2, Type Hydraulic Mulch as per MnDot Spec. 3884. For Hydraulic Mulch, hydraulic spray equipment in a water-slurry mixture shall be used with an application rate of approximately 2500 pounds per acre. Use water to bale ratio as recommended by the manufacturer with a visual tracer to ensure uniform coverage. Increase the application rate and tackifier to roughened soils for complete coverage.

G) Category 0 Erosion Control Blanket may be used in lieu of Hydraulic Mulch. Blanket shall be remove once vegetation has been established.

14. Remove valley gutter quantities are included in the Remove Concrete/Bituminous Pavement bid item.

15. Place Concrete Pavement 7" bid item shall include all rebar needed to replace valley gutters and fillets. Doweling into existing valley gutter 1' on center shall be incidental to the Place Concrete Pavement 7" bid item.

16. Traffic Control shall conform to MnDOT 2563 and shall be compensation for all traffic control required for the project. Contractor shall submit plan to Engineer for review. However it is imperative that:

A) All traffic control devices shall conform to and be placed in accordance with the current "Minnesota Manual on Uniform Devices" (MNMUTCD) and Part VI, "Field Manual For Temporary Control Zone Layouts."

B) The Contractor shall use Type III barricades and type B channelizing devices (IE. Drum) to protect areas of work immediately adjacent to traffic. These devices shall have a warning light attached for night time use.

C) It shall be the responsibility of the contractor to construct all roads that are not being worked on to be smooth and passable.

D) Channelizers shall be used at the discretion of the Contractor for any Traffic Control that may not be identified in this set of plans (i.e. lane closures).

E) All necessary traffic control devices on this project shall be the responsibility of the contractor.

F) All flagging operations shall be included in the Traffic Control bid Item.

DESIGNED BY: _____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 MILL & OVERLAY PROJECT

GENERAL/ADA CONSTRUCTION NOTES

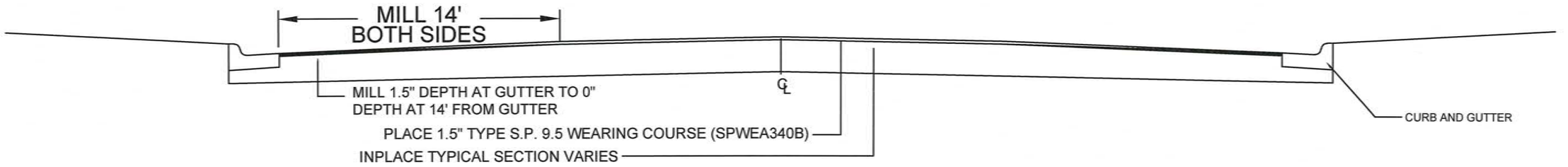
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

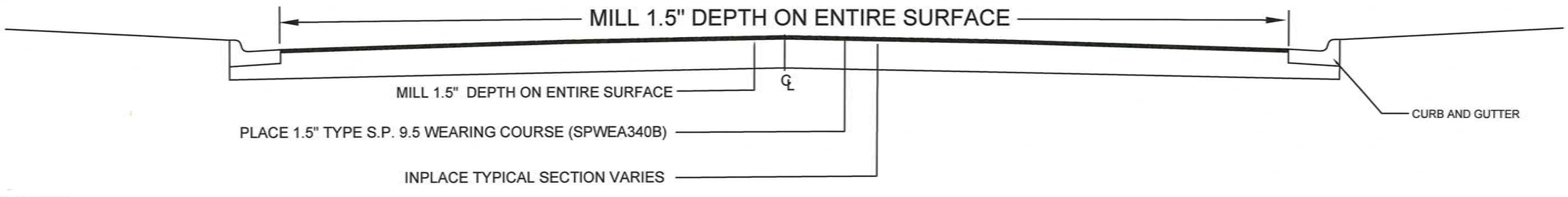
DATE 2-13-25 LICENSE NO. 53322

CITY PROJECT NO.	DATE
ST-002-2025	01/01/2025
STATE AID PROJECT NO.	SHEET NO.
NA	4 OF 23

CITY STREETS

VARIOUS LOCATIONS AND WIDTHS





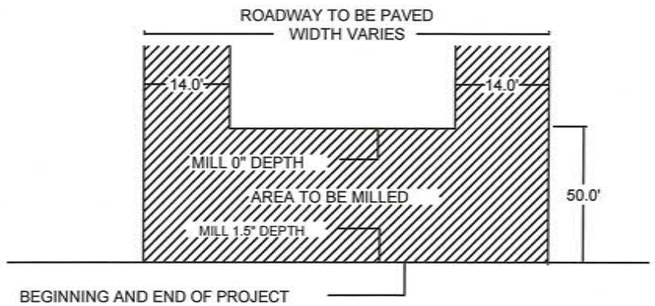
GENERAL NOTES

CONTRACTOR TO CONTACT GOPHER STATE ONE CALL AS TO THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES

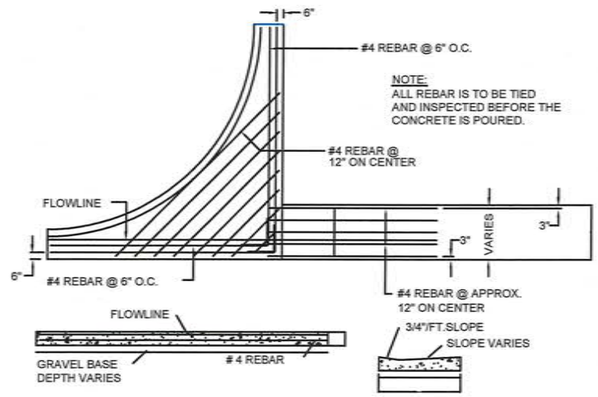
CONSTRUCTION NOTES

1. BITUMINOUS MILLINGS SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
2. CONTRACTOR SHALL MILL 14' ON EACH SIDE OF THE STREETS TO BE OVERLAYED. THE MILLING DEPTH SHALL BE THE DEPTH SPECIFIED AT THE GUTTERLINE. PAYMENT FOR THE MILLING SHALL BE 14' WIDE UNLESS OTHERWISE NOTED.
3. MILL THE SPECIFIED DEPTH ON THE ENTIRE ROAD SURFACE CURB TO CURB ON STREETS LISTED AS "MILL ALL".
4. THE CONTRACTOR SHALL MILL THE ENTIRE WIDTH OF THE STREET AT THE EACH END OF EACH STREET TO BE PAVED FOR A LENGTH OF 50' (SEE DETAIL SHEET)
5. THE VALVE BOX AND MANHOLE ADJUSTMENT ITEMS SHALL INCLUDE ALL COSTS OF MATERIALS USED. (ADJUSTING RINGS, RISERS, GROUT, BITUMINOUS MIXTURE, ETC.)
6. THE LOOP DETECTOR ITEM SHALL INCLUDE ALL COSTS TO REPLACE ANY LOOP DETECTOR DISTURBED DURING THE MILLING OPERATIONS. (APPLIES ONLY IF ITEM IS LISTED ON THE BID TAB)
7. CONTRACTOR TO PROVIDE ALL TRAFFIC CONTROL ACCORDING TO THE MOST CURRENT EDITION OF THE MINNESOTA MUTCD MANUAL.
8. CONTRACTOR SHALL, IMMEDIATELY AFTER THE BITUMINOUS MATERIAL IS COMPACTED AND COOLED, CLEAN ANY BITUMINOUS MATERIAL FROM THE MANHOLE AND WATERVALVE COVERS AND PICKHOLES.

MILLING DETAIL



NOT TO SCALE



VALLEY GUTTER DETAIL

Scale: NONE

DESIGNED BY: _____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 MILL & OVERLAY PROJECT

DETAIL SHEET VARIOUS LOCATIONS

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Jason Anderson
DATE 12/3/25 LICENSE NO. 53322

CITY PROJECT NO.	DATE
ST-002-2025	01/01/2025
STATE AID PROJECT NO.	SHEET NO.
NA	5 OF 23

501 SF CONCRETE/VALLEY REMOVAL
52 LF REMOVE C&G

526 SF CONCRETE/VALLEY REMOVAL
45 LF REMOVE C&G

MARVIN SCHWAN MEMORIAL DRIVE

SOUTH A ST. STREET

153 SF CONCRETE REMOVAL
25 LF REMOVE C&G

MARVIN SCHWAN MEMORIAL DRIVE

SOUTH A ST.

187 SF CONCRETE REMOVAL
28 LF REMOVE C&G

INSTALL:
52 LF C&G
382 SF 6" SIDEWALK
119 SF 7" VALLEY GUTTER
18 SF TRUNCATED DOMES
100 SF BIT. PATCHING

MARVIN SCHWAN MEMORIAL DRIVE

SOUTH 1ST STREET

INSTALL:
45 LF C&G
526 SF 6" SIDEWALK
18 SF TRUNCATED DOMES
90 SF BIT. PATCHING

GRAPHIC SCALE
10 0 10 20
(IN FEET)
1 inch = 20 ft.

INSTALL:
25 LF C&G
60 SF 6" SIDEWALK
60 SF 4" SIDEWALK
9 SF TRUNCATED DOMES
50 SF BIT. PATCHING

MARVIN SCHWAN MEMORIAL DRIVE

SOUTH A ST.

INSTALL:
28 LF C&G
139 SF 6" SIDEWALK
50 SF 4" SIDEWALK
30 SF TRUNCATED DOMES (9.5' RADIAL)
56 SF BIT. PATCHING

DESIGNED BY: _____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 MILL & OVERLAY PROJECT

MARVIN SCHWAN MEMORIAL ADA

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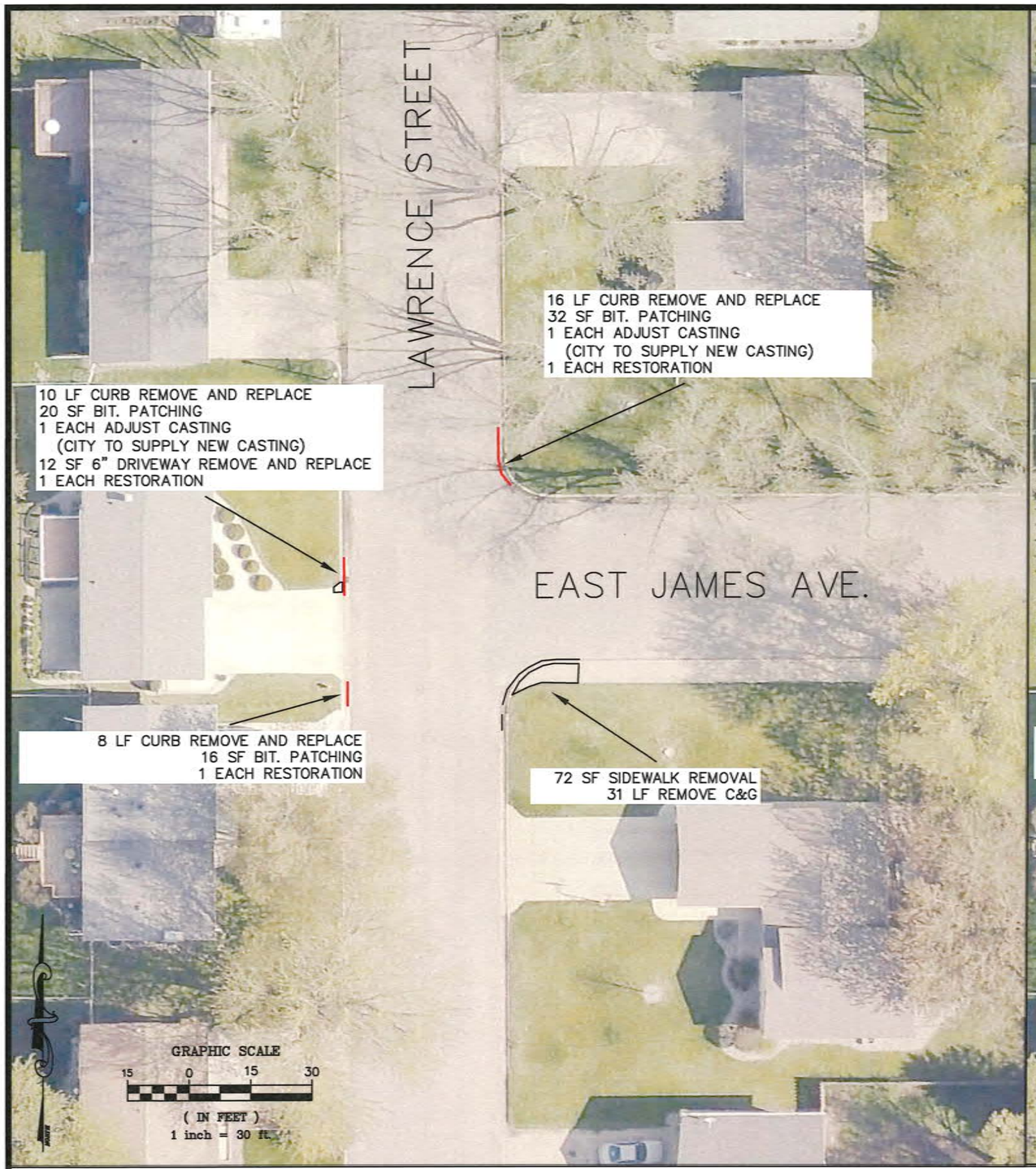
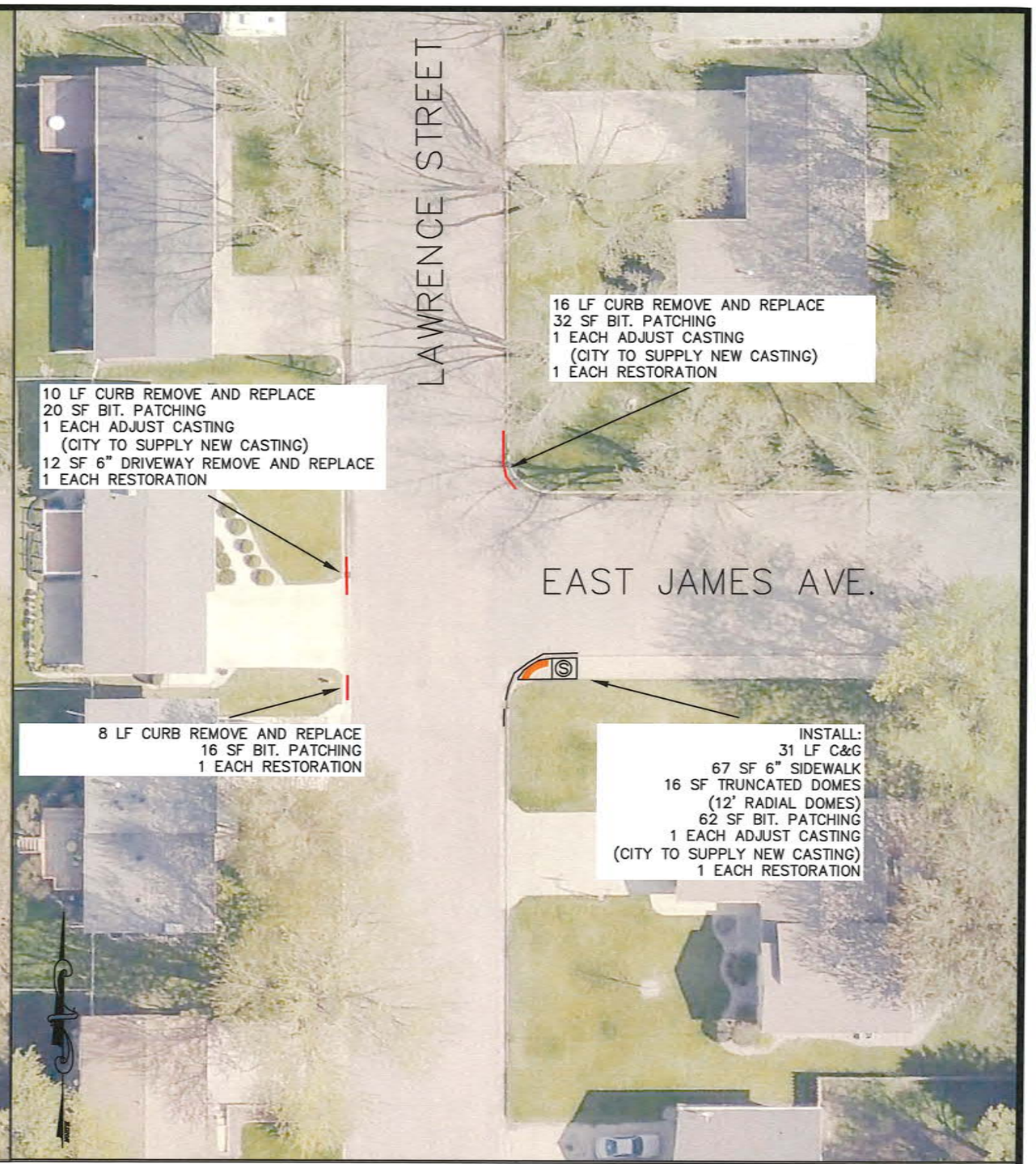
NA	6 OF 23





DESIGNED BY: ____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 MILL & OVERLAY PROJECT

LAWRENCE STREET ADA/CURB

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

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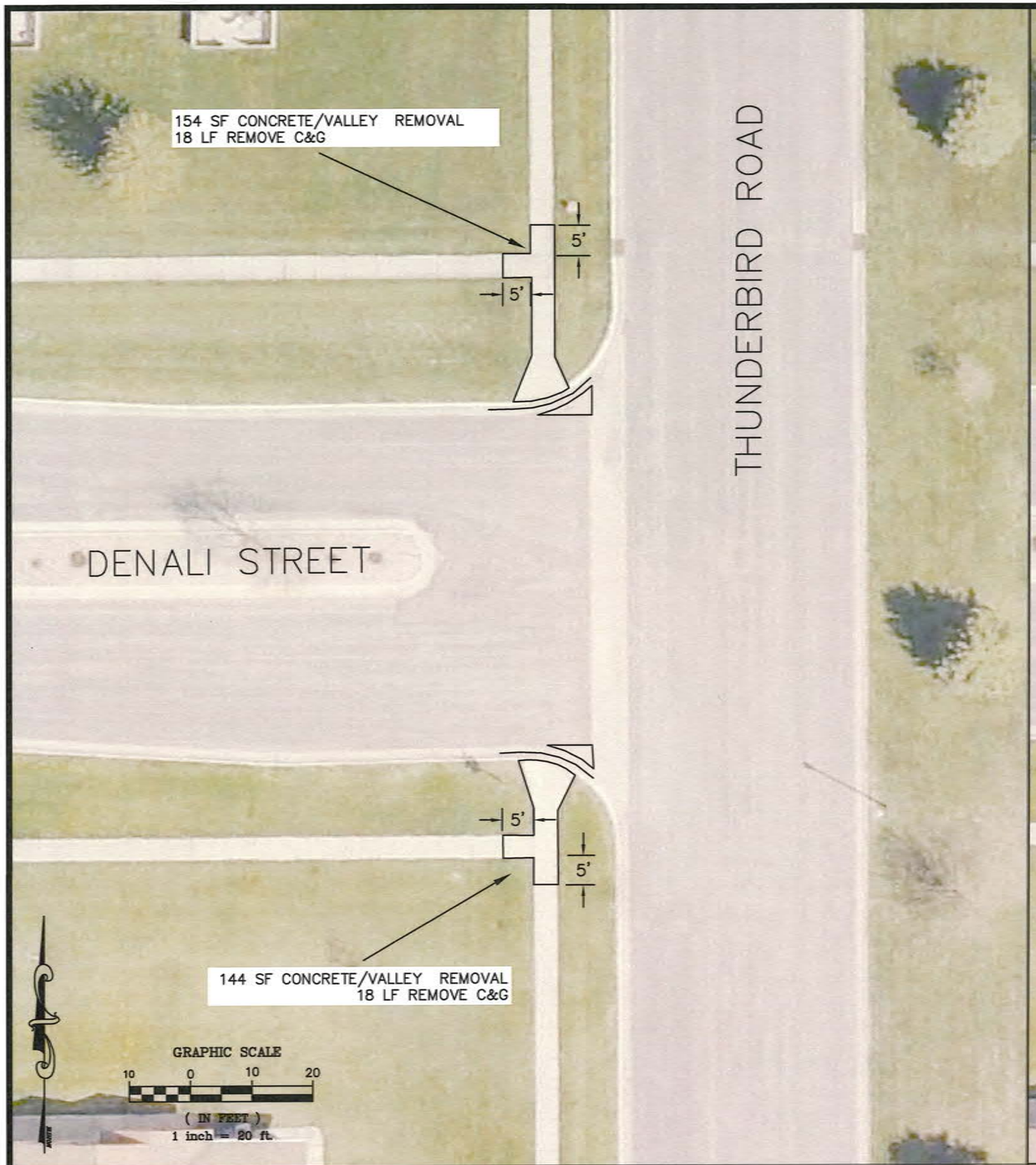
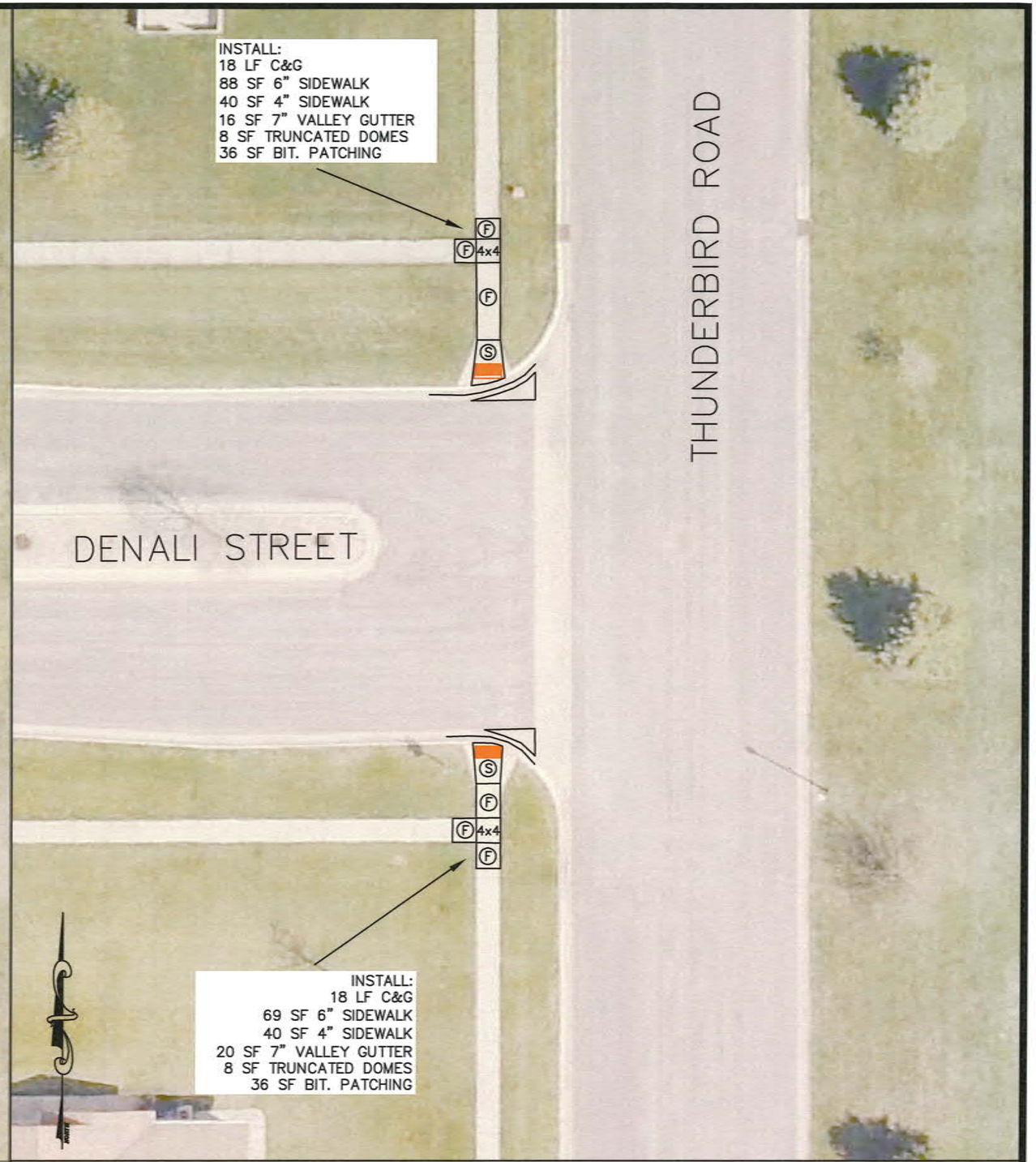
NA	7 OF 23





DESIGNED BY: _____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

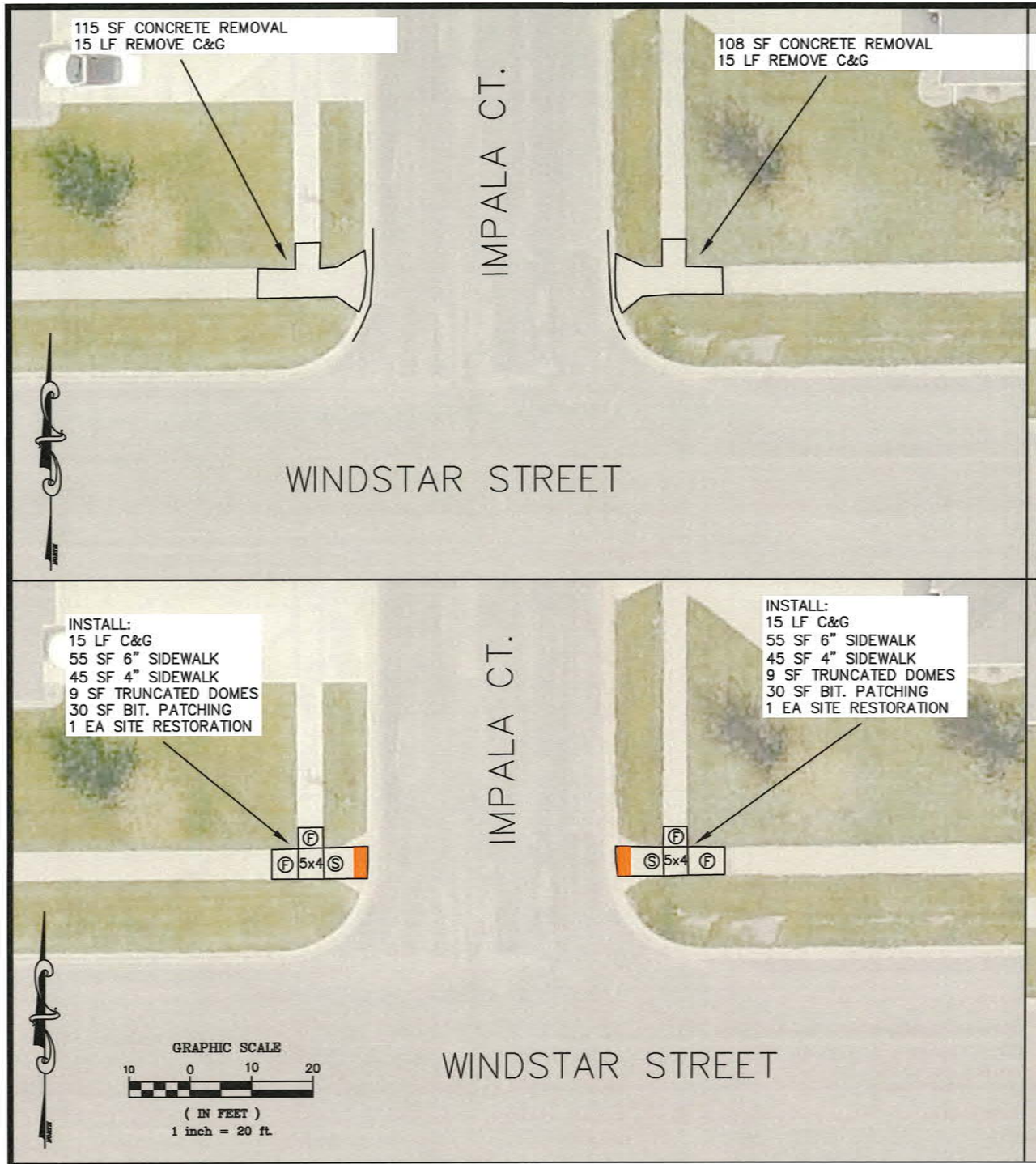
2025 MILL & OVERLAY PROJECT

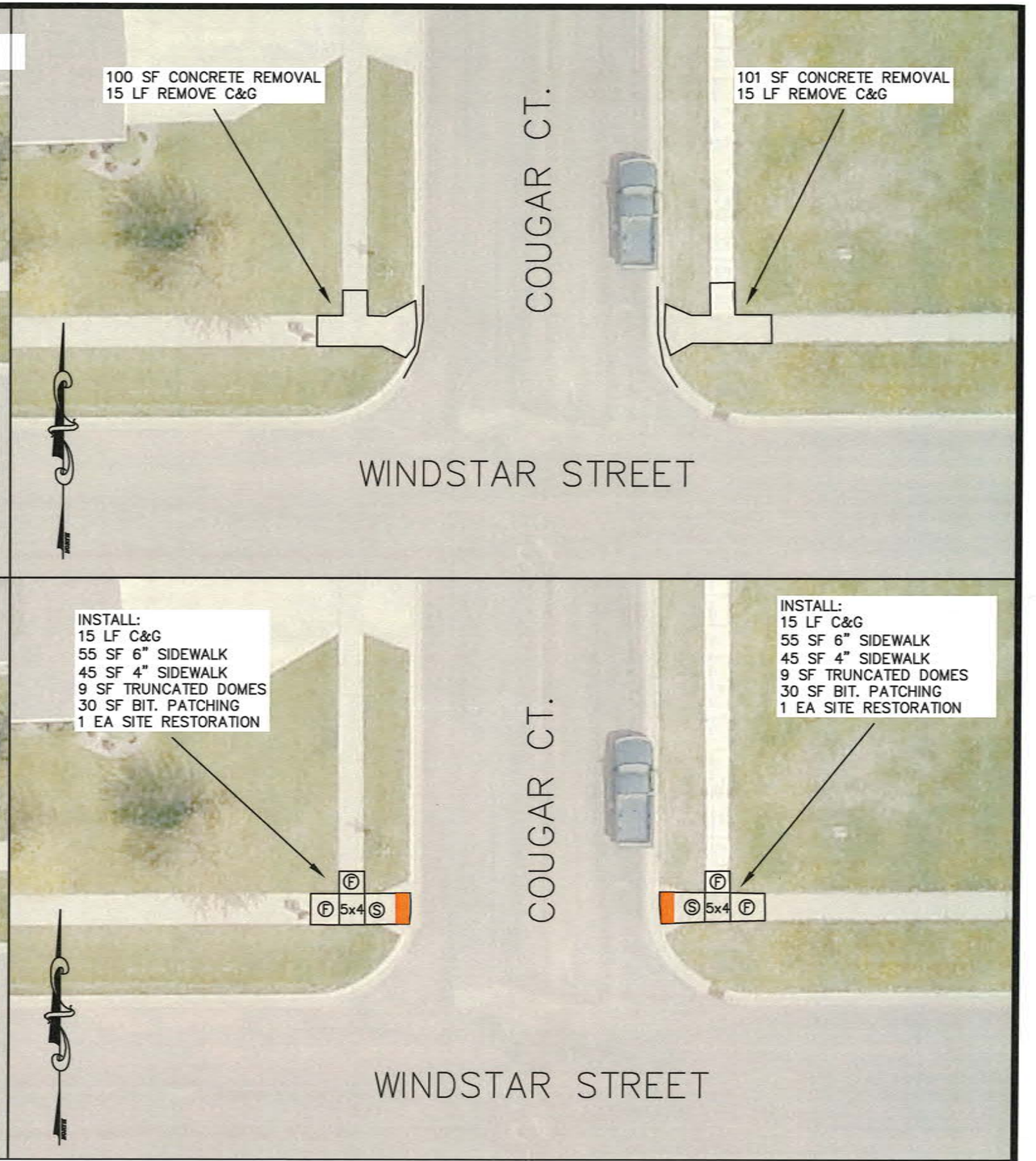
DENALI STREET ADA ALTERNATE STREET

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

DATE 2-13-25 LICENSE NO. 53322

CITY PROJECT NO.	DATE
ST-002-2025	01/01/2025
STATE AID PROJECT NO.	SHEET NO.
NA	8 OF 23





DESIGNED BY: _____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 MILL & OVERLAY PROJECT

ALTERNATE STREET ADA

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

DATE 2-13-25 LICENSE NO. 53322

CITY PROJECT NO.	DATE
ST-002-2025	01/01/2025
STATE AID PROJECT NO.	SHEET NO.
NA	9 OF 23

DESIGNED BY: ____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

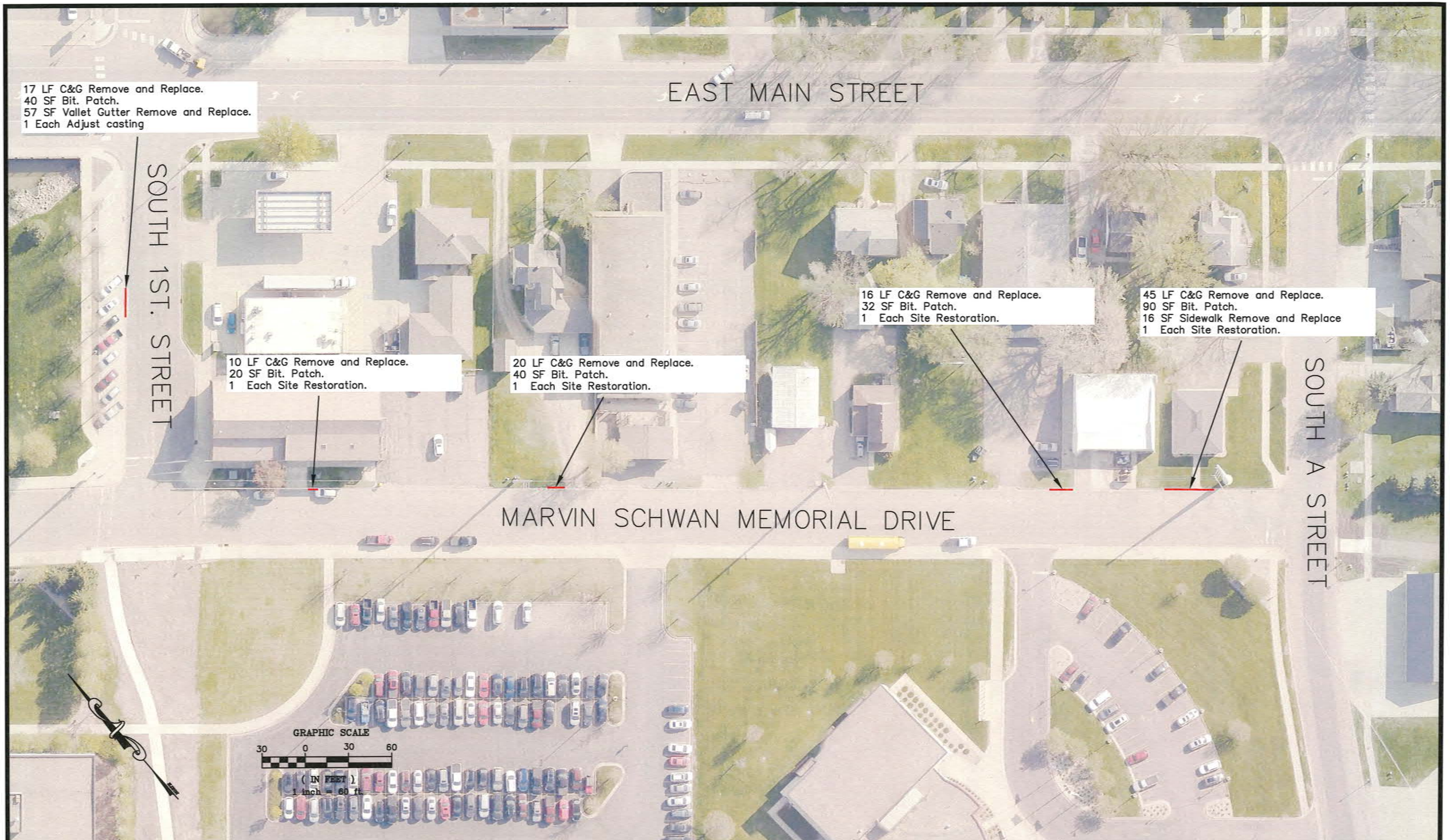
2025 MILL & OVERLAY PROJECT

Jefferson Curb Repairs

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

DATE 2-13-25 LICENSE NO. 53322

CITY PROJECT NO.	DATE
ST-002-2025	01/01/2025
STATE AID PROJECT NO.	SHEET NO.
NA	10 OF 23



DESIGNED BY:	DATE	REVISIONS	INIT.	MARSHALL	ENGINEERING DEPARTMENT 344 WEST MAIN STREET MARSHALL, MINNESOTA 56258	2025 MILL & OVERLAY PROJECT	I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	CITY PROJECT NO. ST-002-2025	DATE 01/01/2025
DRAWN BY: JAR						Marvin Schwan Curb Repairs	DATE 2-13-25 LICENSE NO. 53322	STATE AID PROJECT NO. NA	SHEET NO. 11 OF 23
APPROVED BY: JRA									
SCALE: NA									

175 LF C&G Remove and Replace.
350 SF Bit. Patch.
146 SF Driveway Remove and Replace.
(3–2' Wide Driveway Locations)
3 Each Site Restorations.

13 LF C&G Remove and Replace.
26 SF Bit. Patch.
1 Each Site Restoration.

SOUTHVIEW COURT

SOUTHVIEW DRIVE

22 LF C&G Remove and Replace.
44 SF Bit. Patch.
1 Each Site Restoration.

SOUTHVIEW COURT

GRAPHIC SCALE
30 0 30 60
(IN FEET)
1 inch = 60 ft.

DESIGNED BY:
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 MILL & OVERLAY PROJECT

Southview Court Curb Repairs

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
DATE 2-13-25 LICENSE NO. 53322

CITY PROJECT NO.	DATE
ST–002–2025	01/01/2025
STATE AID PROJECT NO.	SHEET NO.
NA	12 OF 23

MAPLE STREET

LAWRENCE STREET

MALL PARKING LOT

MALL STREET

MALL STREET

20 LF C&G Remove and Replace.
40 SF Bit. Patch.
14 SF 6" Driveway Remove and Replace
1 Each Site Restoration.

330 SF Remove Bituminous Pavement
330 SF Install 7" Valley Gutter 6' wide.
440 SF Bituminous Patch (4' each side)

40 LF C&G Remove and Replace.
80 SF Bit. Patch.
1 Each Site Restoration.

GRAPHIC SCALE
15 0 15 30
(IN FEET)
1 inch = 30 ft.

DESIGNED BY: _____
DRAWN BY: JAR
APPROVED BY: JRA
SCALE: NA

DATE	REVISIONS	INIT.

MARSHALL

ENGINEERING DEPARTMENT
344 WEST MAIN STREET
MARSHALL, MINNESOTA
56258

2025 MILL & OVERLAY PROJECT

Lawrence/Mall Street Curb Repairs

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

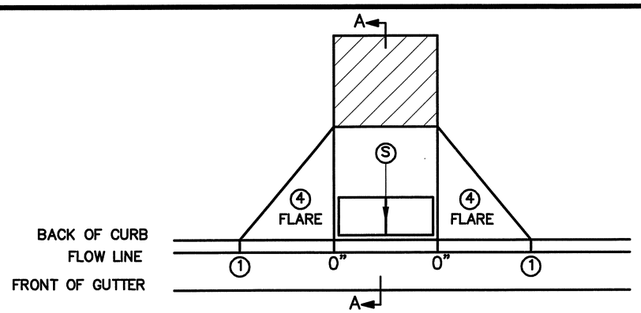
DATE 2-13-25 LICENSE NO. 53322

CITY PROJECT NO. ST-002-2025

DATE 01/01/2025

STATE AID PROJECT NO. NA

SHEET NO. 13 OF 23



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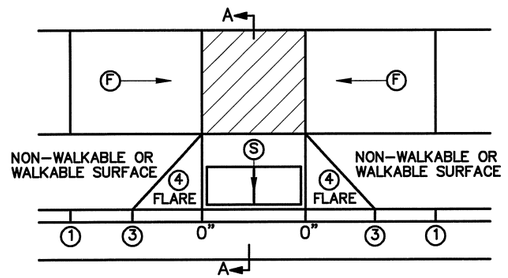
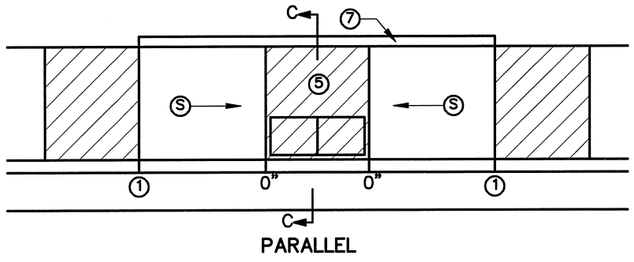
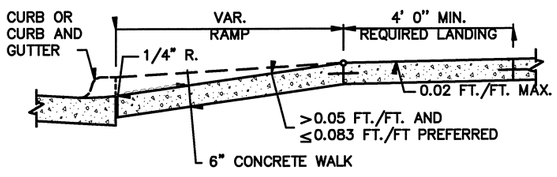


TIERED PERPENDICULAR

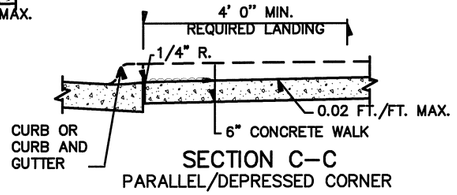


PARALLEL



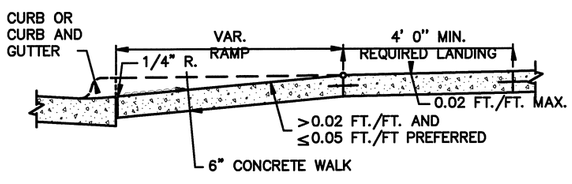
SECTION A–A

PERPENDICULAR/TIERED/DIAGONAL



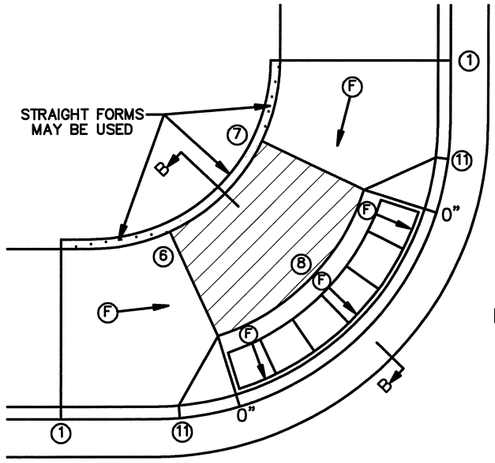
SECTION C–C

PARALLEL/DEPRESSED CORNER

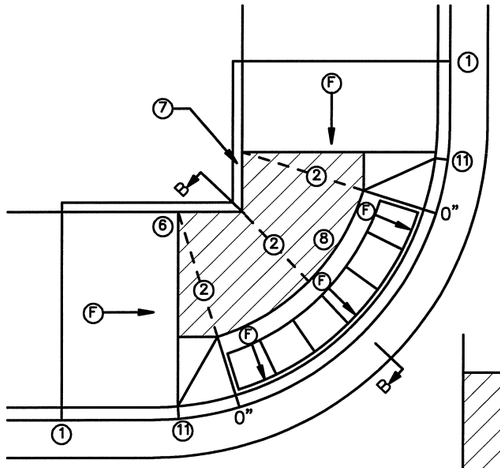


SECTION B–B

FAN

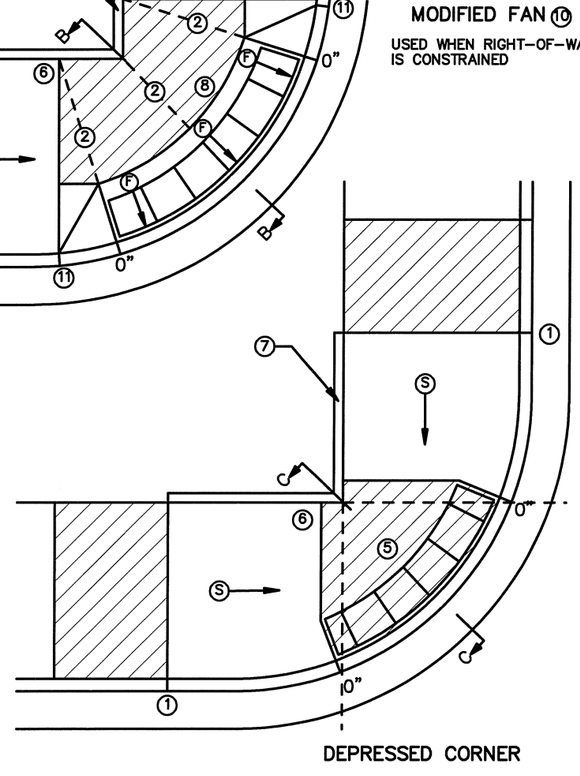


FAN (10)

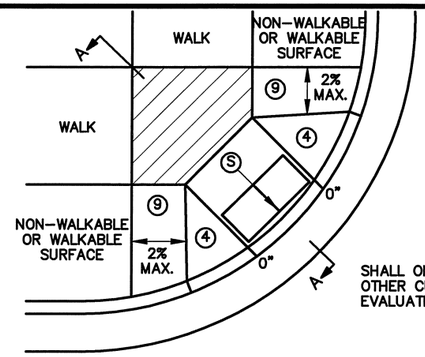


MODIFIED FAN (10)

USED WHEN RIGHT–OF–WAY IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

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

NOTES:

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

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

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

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

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.

WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.

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

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED–USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" – 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

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

(1) MATCH FULL HEIGHT CURB.

(2) 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.

(3) 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.

(4) SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.

(5) DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.

(6) THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)

(7) WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

(8) A 7' MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.

(9) PAVE FULL WALK WIDTH.

(10) "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

(11) INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8–10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND

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

(S) INDICATES PEDESTRIAN RAMP – SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

(F) INDICATES PEDESTRIAN RAMP – SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA – 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

X" CURB HEIGHT

REVISION:

APPROVED: 11–04–2021

JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5–297.250 | 1 OF 6

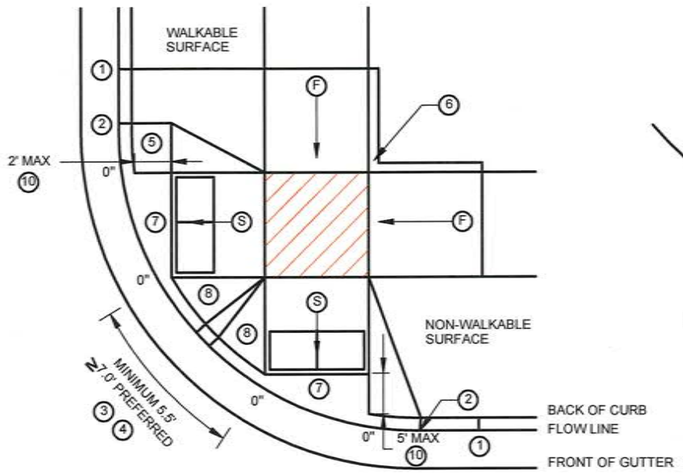
APPROVED 11–04–2021
REVISED:

STATE DESIGN ENGINEER

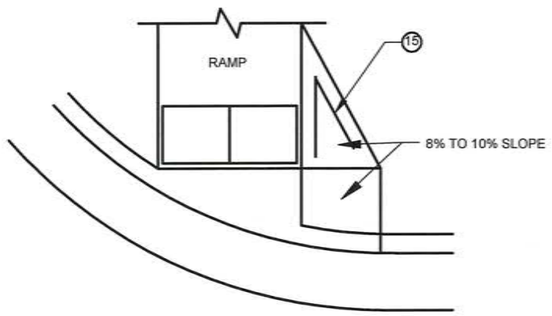
PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO.

SHEET NO. 14 OF 23 SHEETS

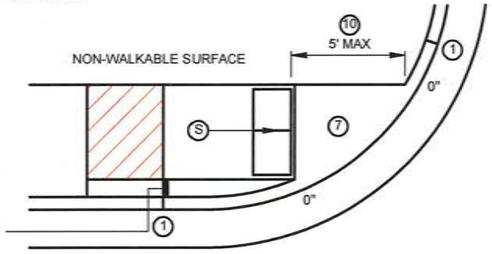


COMBINED DIRECTIONAL

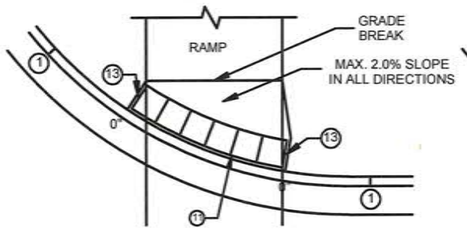


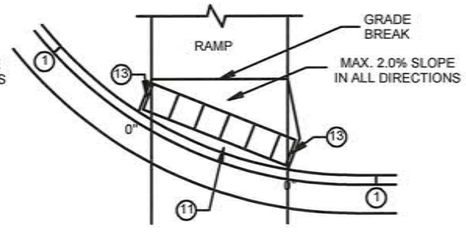
DIRECTIONAL RAMP WALKABLE FLARE

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



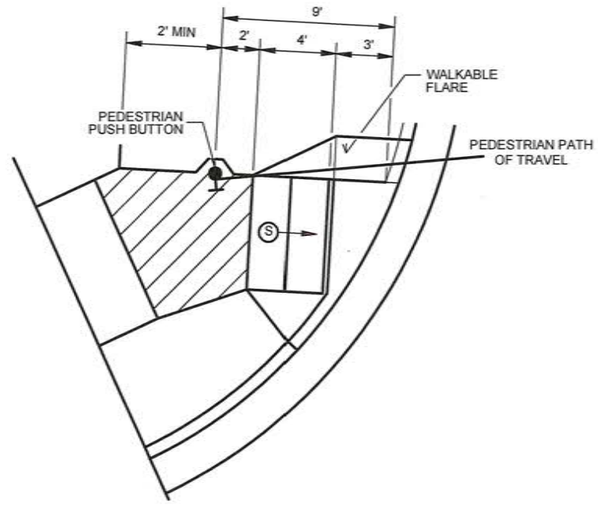
STANDARD ONE-WAY DIRECTIONAL (9)





DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED (12)

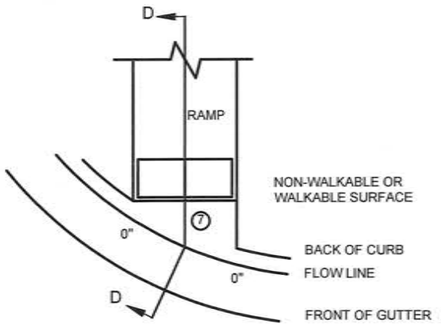
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB

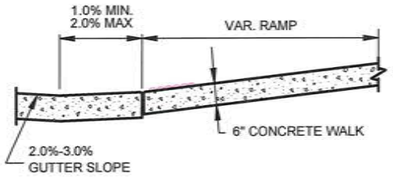


SEMI-DIRECTIONAL RAMP (3)(4)(9)

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

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





SECTION D-D

CURB FOR DIRECTIONAL RAMPS (14)

NOTES:

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

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

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

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

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

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

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

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

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

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES (11) & (12) FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.

(1) MATCH FULL CURB HEIGHT.

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

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

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

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

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

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

(8) 8% TO 10% WALKABLE FLARE.

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

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

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

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

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

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

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

LEGEND

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

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

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

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

X" CURB HEIGHT

REVISION:

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JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 2 OF 6

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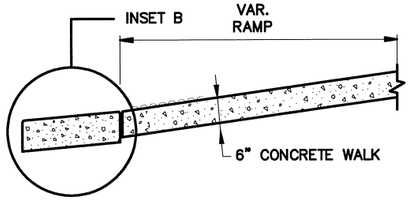
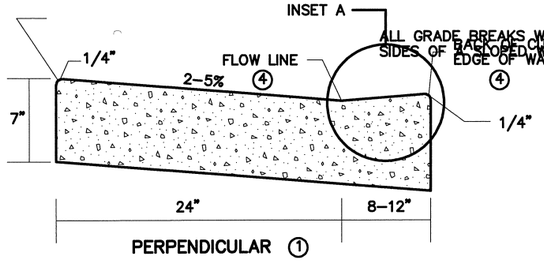
REVISED:
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

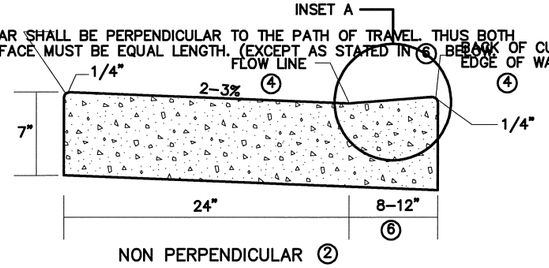
STATE PROJ. NO.

SHEET NO. 15 OF 23 SHEETS





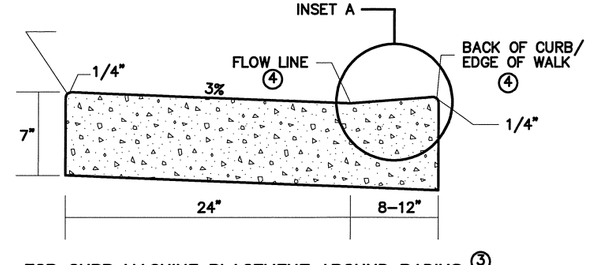
PERPENDICULAR ①



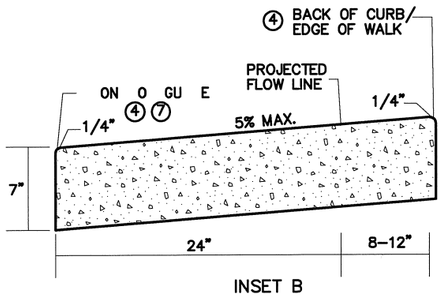
NON PERPENDICULAR ②

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

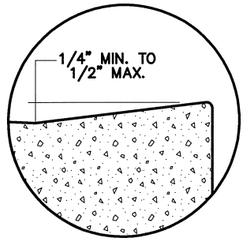
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



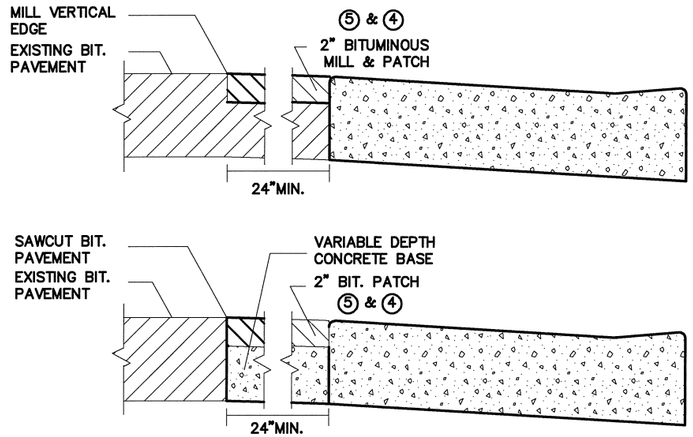
FOR CURB MACHINE PLACEMENT AROUND RADIUS ③
(REGARDLESS OF RAMP TYPE)



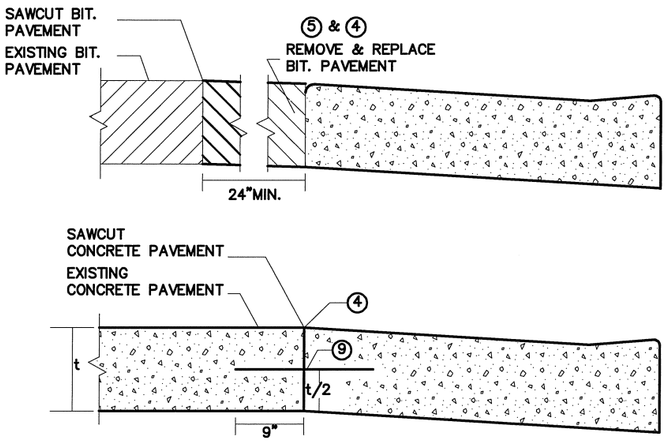
INSET B
OUTFLOW GUTTER ⑧



INSET A

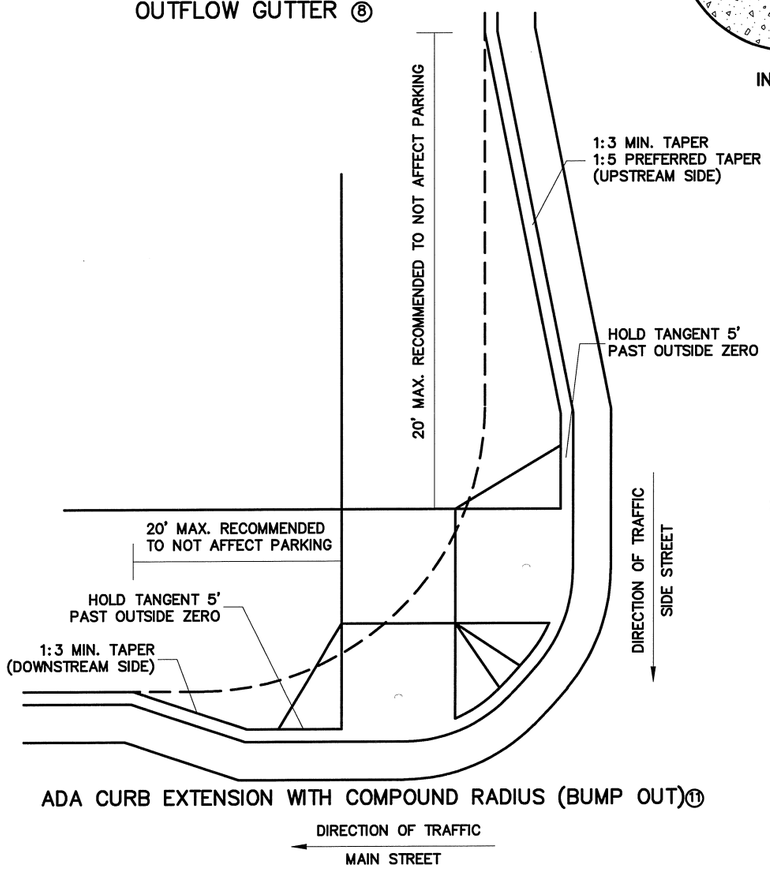


ONLY ALLOWED PER ENGINEER'S APPROVAL

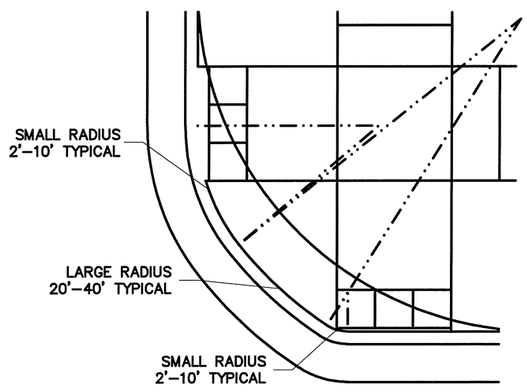


PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT)⑪



COMBINED DIRECTIONAL ⑩
(COMPOUND RADIUS)

NOTES:

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

NO PONDING SHALL BE PRESENT IN THE PAR.

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

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

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

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

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

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

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

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

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

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

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

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

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STANDARD PLAN 5–297.250 | 3 OF 6

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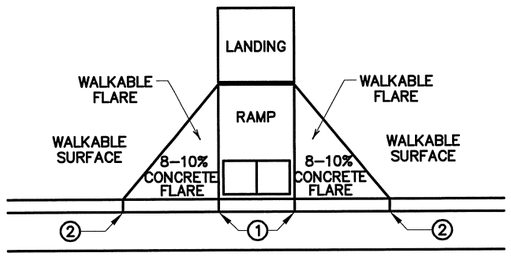
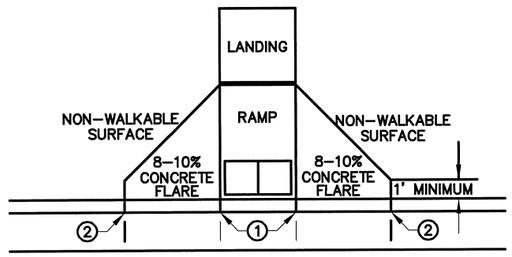
PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO.

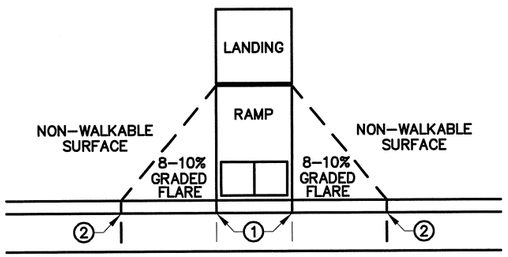
SHEET NO. 16 OF 23 SHEETS



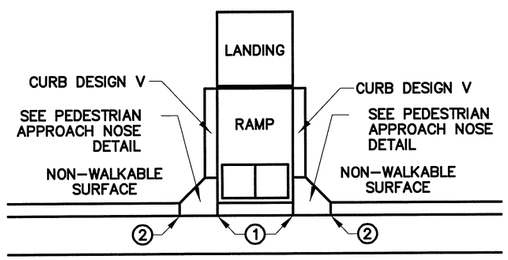
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON–WALKABLE SURFACE

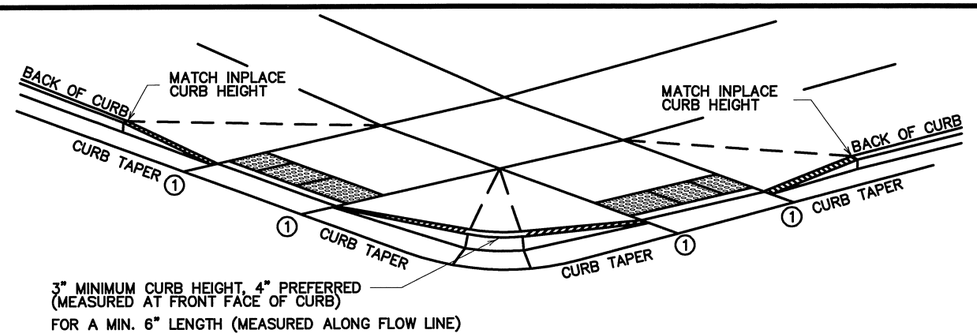


GRADED FLARES

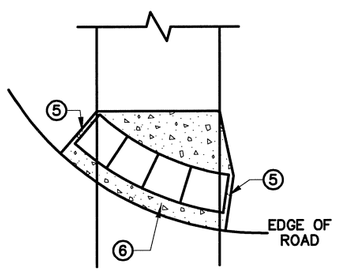


RETURNED CURB ④

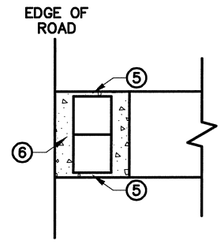
TYPICAL SIDE TREATMENT OPTIONS ③ ⑩



DETECTABLE EDGE WITH ⑦
CURB AND GUTTER

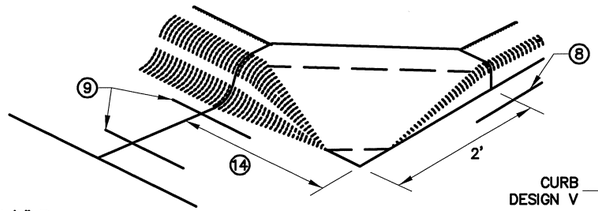


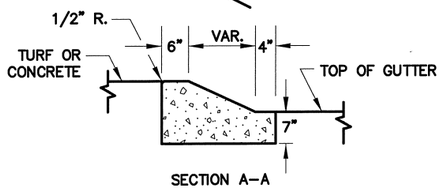
RADIAL DETECTABLE WARNING



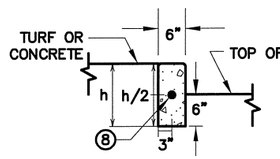
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

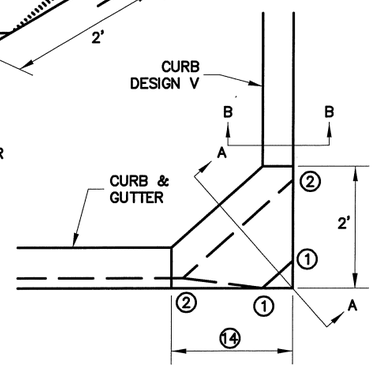




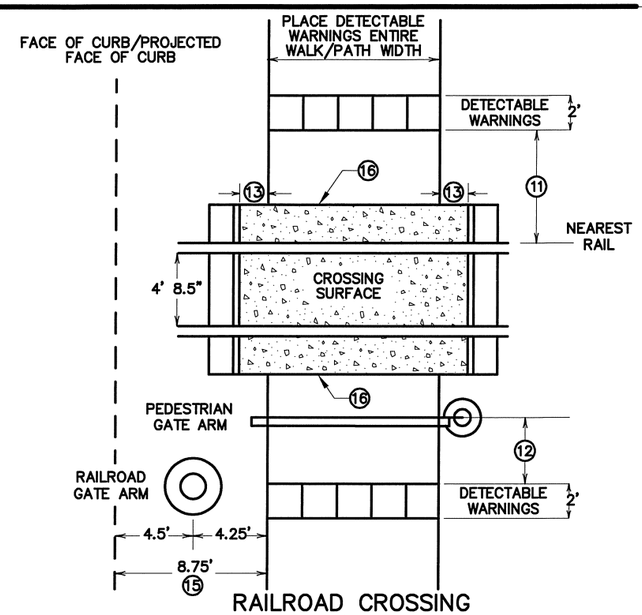
SECTION A–A



SECTION B–B



PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8–10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

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

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

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

① 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.

② FULL CURB HEIGHT.

③ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.

④ TYPICALLY USED FOR MEDIANS AND ISLANDS.

⑤ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑥ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED–USE PATH TO PROVIDE VISUAL CONTRAST.

⑦ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO–INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS. AND UNIFORMLY RISES TO A 3–INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.

⑧ DRILL AND GROUT 1 – NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.

⑨ DRILL AND GROUT 2 – NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.

⑩ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE. CONSTRUCT THESE TAPERS AT 0"–3" AT 8–10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.

⑪ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.

⑫ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑪.

⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED–USE PATH.

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

⑮ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A–E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

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OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5–297.250 | 4 OF 6

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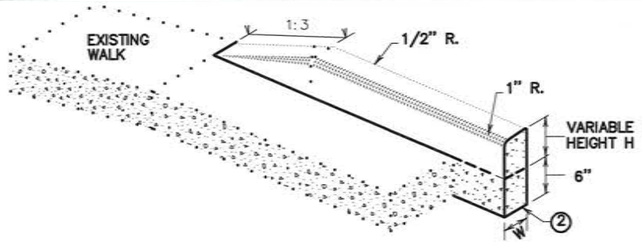
PEDESTRIAN CURB RAMP DETAILS

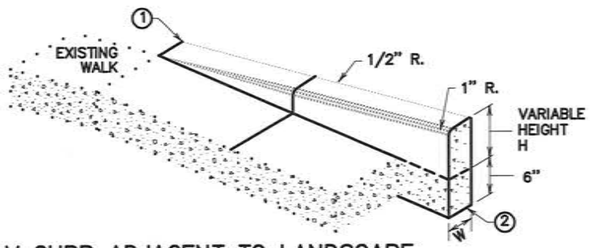
STATE PROJ. NO.

SHEET NO. 17 OF 23 SHEETS



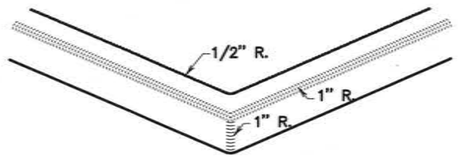
V CURB ADJACENT TO LANDSCAPE

CURB WITHIN SIDEWALK LIMITS



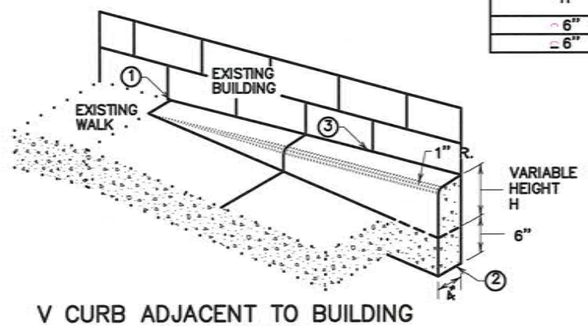
V CURB ADJACENT TO LANDSCAPE

CURB OUTSIDE SIDEWALK LIMITS

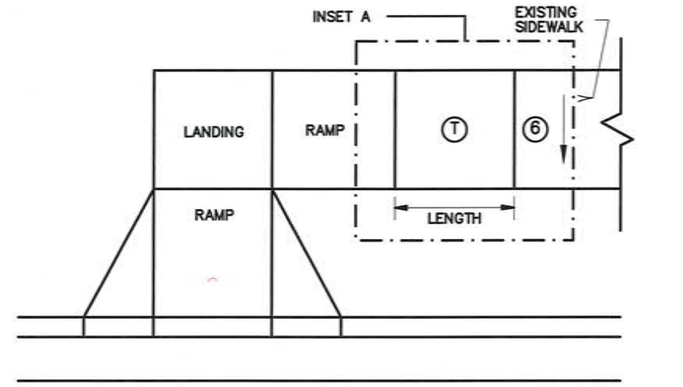


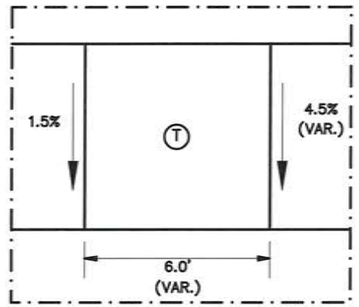
V CURB INTERSECTION

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



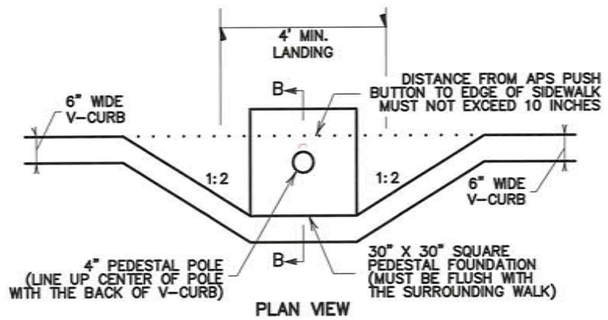
V CURB ADJACENT TO BUILDING OR BARRIER



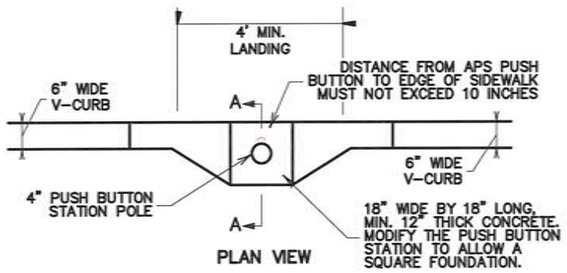


TRANSITION PANEL ④⑤

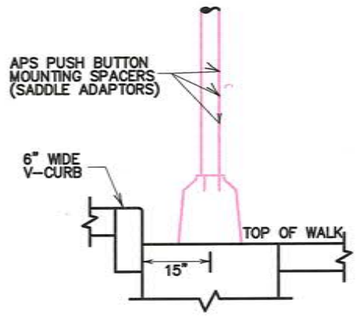
INSET A



PLAN VIEW

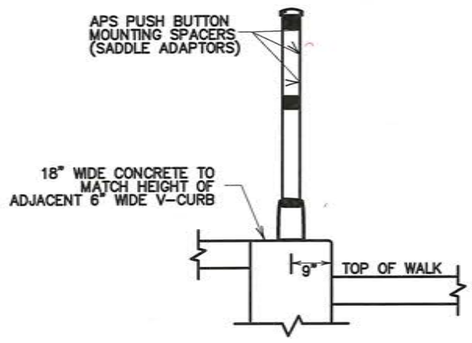


PLAN VIEW



SECTION B–B

SIGNAL PEDESTAL & PUSH BUTTON (V–CURB)



SECTION A–A

PUSH BUTTON STATION (V–CURB)

NOTES:

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

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

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

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

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

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

② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

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

④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.

⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

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

Ⓢ INDICATES PEDESTRIAN RAMP – SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA – 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

Ⓣ TRANSITION PANEL(S) – TO BE USED FOR TRANSITIONING THE CROSS–SLOPE OF A RAMP TO THE EXISTING WALK CROSS–SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

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JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5–297.250 | 5 OF 6

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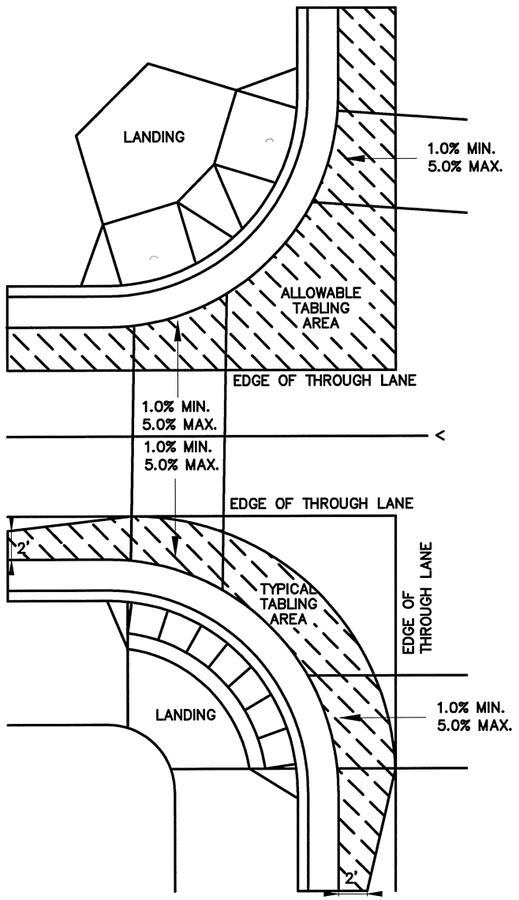
STATE DESIGN ENGINEER

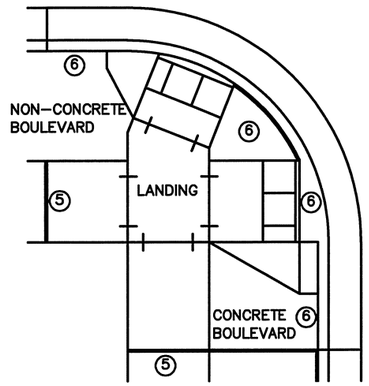
PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO.

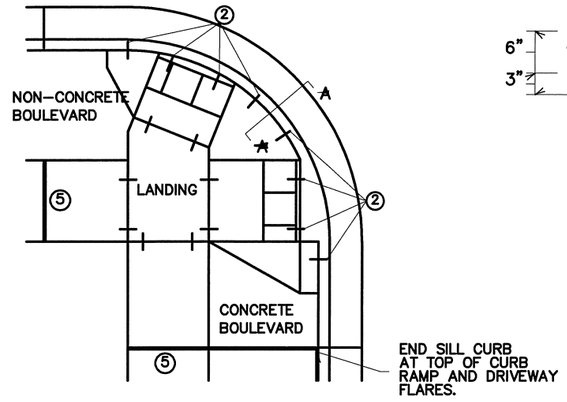
SHEET NO. 18 OF 23 SHEETS



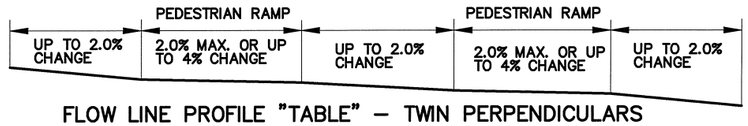
CURB LINE AND ROAD CROSSING ADJUSTMENTS



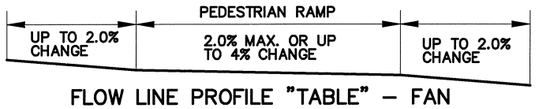
EXPANSION MATERIAL PLACEMENT
FOR CONCRETE ROADWAYS



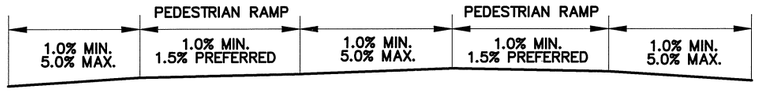
CURB LINE REINFORCEMENT ④
PLACEMENT ON BITUMINOUS ROADWAYS



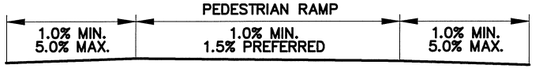
FLOW LINE PROFILE "TABLE" – TWIN PERPENDICULARS



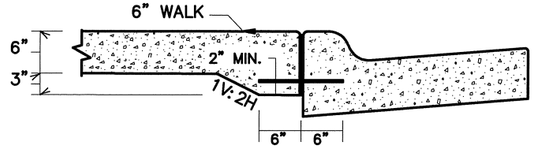
FLOW LINE PROFILE "TABLE" – FAN



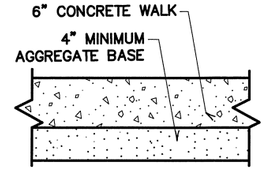
FLOW LINE PROFILE RAISE – TWIN PERPENDICULARS



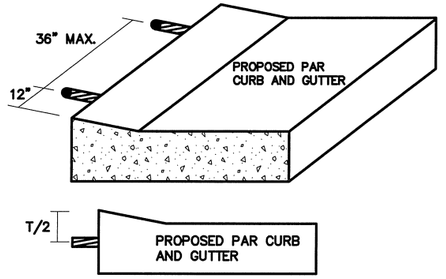
FLOW LINE PROFILE RAISE – FAN

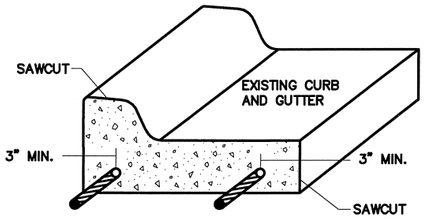


SECTION VIEW A–A
THICKENED SECTION
THROUGH CURB RAMP FLARES



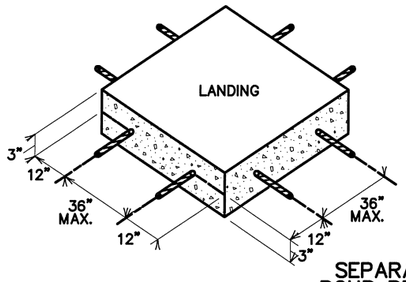
TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER

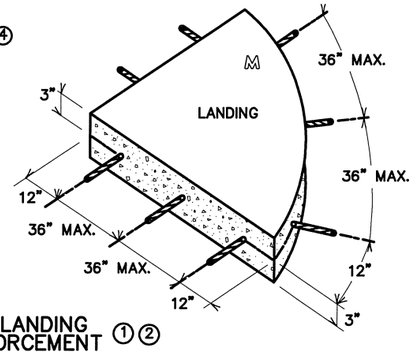




CURB AND GUTTER
REINFORCEMENT ③

CURB RAMP REINFORCEMENT DETAILS ②④





SEPARATE LANDING
POUR REINFORCEMENT ①②

GENERAL NOTES:

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

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

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

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

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

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

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

NOTES:

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

② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.

③ DRILL AND GROUT 2 – NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.

④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.

⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A–E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

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STANDARD PLAN 5–297.250 | 6 OF 6

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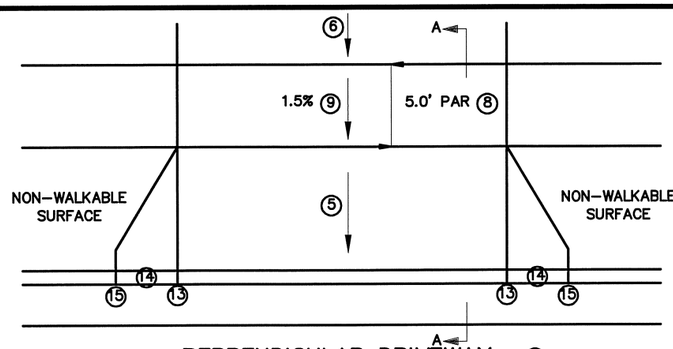
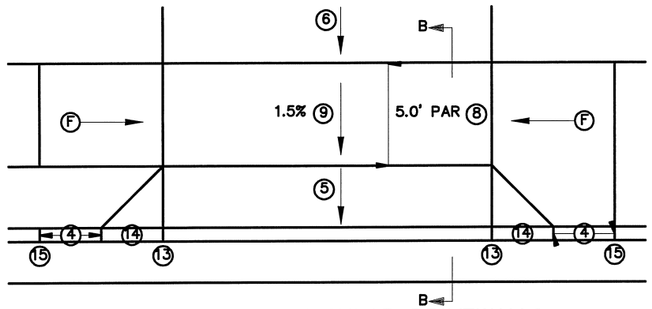
PEDESTRIAN CURB RAMP DETAILS

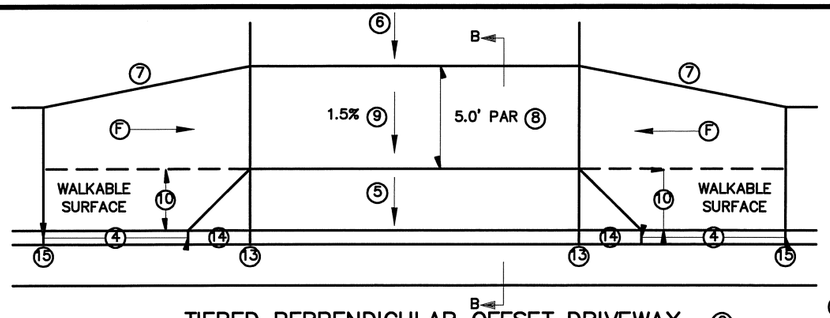
STATE PROJ. NO. | SHEET NO. 19 OF 23 SHEETS



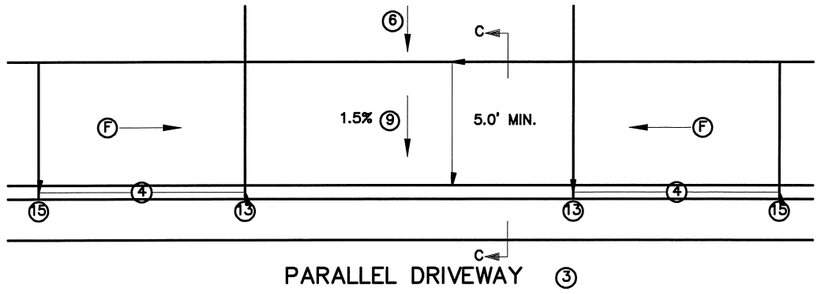
PERPENDICULAR DRIVEWAY ①



TIERED PERPENDICULAR DRIVEWAY ②



TIERED PERPENDICULAR OFFSET DRIVEWAY ②



PARALLEL DRIVEWAY ③

LEGEND

Ⓕ INDICATES DRIVEWAY RAMP – SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

NOTES:

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

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

MAINTAIN EXISTING DRAINAGE PATTERNS FLOWING TO PUBLIC RIGHT OF WAY.

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

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

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

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

① PERPENDICULAR DRIVEWAYS ARE THE STANDARD AND STARTING POINT FOR ALL DRIVEWAY DESIGN AND CONSTRUCTION. SHOULD BE USED TO ACHIEVE CONTINUOUS PAR PROFILE THROUGH THE DRIVEWAY. OBTAINING A PERPENDICULAR DRIVEWAY DESIGN BECOMES MORE CRITICAL WITH STEEP ROADWAY PROFILES.

② TO BE USED WHEN PERPENDICULAR DRIVEWAY DESIGN CANNOT BE ACHIEVED, THE DRIVEWAY PAR IS BELOW ROADWAY CURB HEIGHT. THIS DRIVEWAY TYPE CAN BE USED FOR BOTH PAVED (AS SHOWN) AND GRASS BOULEVARDS.

③ TO BE USED WHEN PERPENDICULAR AND TIERED PERPENDICULAR DRIVEWAY DESIGN CANNOT BE ACHIEVED. CAN BE USED FOR STEEP NEGATIVE SLOPED DRIVEWAYS. DW CURB TYPE 2 SHOULD BE USED TO RAISE PAR ABOVE GUTTER AND REDUCE "ROLLER COASTER" EFFECT. 4" HIGH ROADWAY CURB SHOULD BE USED TO REDUCE "ROLLER COASTER" EFFECT ESPECIALLY WHEN MULTIPLE DRIVEWAYS ARE PRESENT.

④ TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

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

⑥ S3 8% MAXIMUM, IF THE SLOPE IS EXCEEDED OR CONTINUED FOR MORE THAN 5', ANALYZE VEHICLE TEMPLATES FOR VERTICAL CLEARANCE. IF EXISTING DRIVEWAY IS NEGATIVELY DRAINING, S3 CAN BECOME SLIGHTLY MORE NEGATIVE TO ACHIEVE PERPENDICULAR DRIVEWAY DESIGN IF THE VERTICAL CLEARANCE IS ACHIEVED IN VEHICLE TEMPLATES.

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

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

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

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

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

⑫ SEE SHEET 2 FOR CURB TYPE INFORMATION.

⑬ 0" CURB IS AT FLOW LINE. SEE DRIVEWAY TABLE FOR BACK OF CURB HEIGHTS.

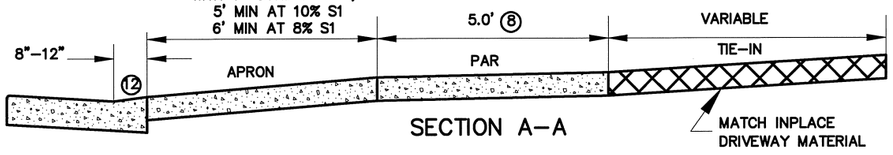
⑭ 3' LONG AT 8–10% PREFERRED FOR INITIAL CURB TAPER. REDUCE CURB TAPER SLOPE IF NECESSARY TO MATCH ADJACENT SIDEWALK GRADES.

⑮ MATCH FULL CURB HEIGHT.

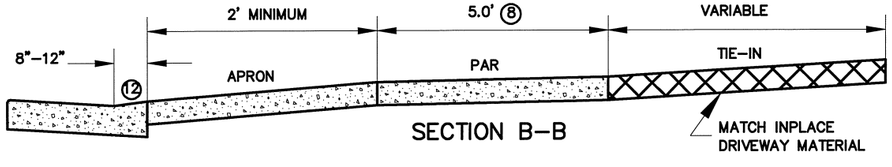
⑯ 1:2 TAPER RATE ON INTEGRAL DRIVEWAY APRONS.

⑰ SEE SHEET 4 FOR WHEN 6" WALK IS REQUIRED.

WITH 4" CURB HEIGHT;
3' MIN AT 10% S1
4' MIN AT 8% S1
WITH 6" CURB HEIGHT;
5' MIN AT 10% S1
6' MIN AT 8% S1



SECTION A–A



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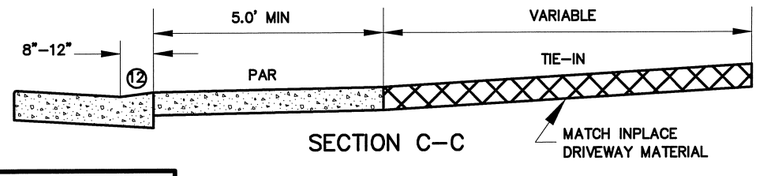
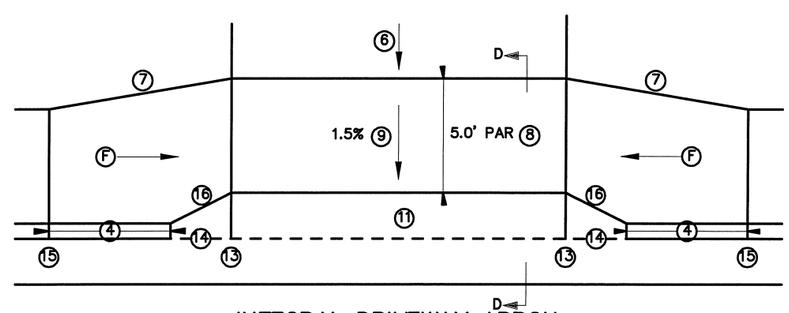
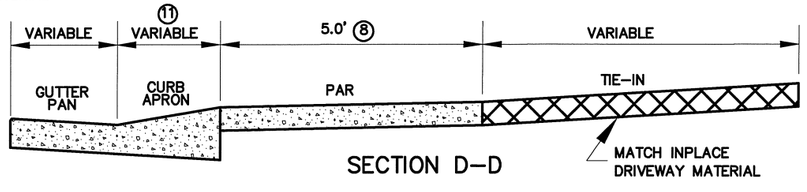


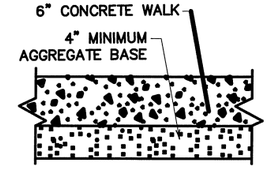
SECTION C–C



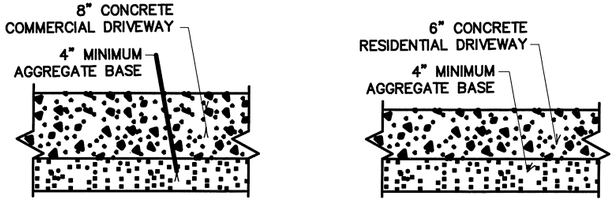
INTEGRAL DRIVEWAY APRON



SECTION D–D



TYPICAL SIDEWALK SECTION ⑰



TYPICAL DRIVEWAY SECTIONS

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STANDARD PLAN 5–297.254 | 1 OF 4

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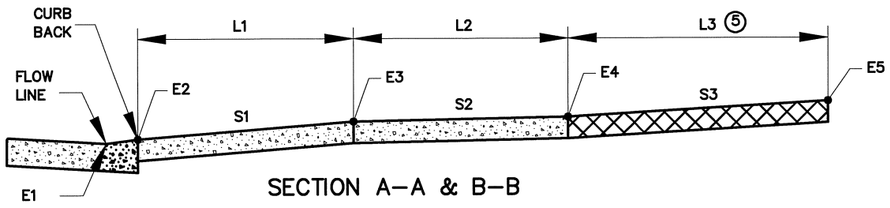
DRIVEWAY AND SIDEWALK DETAILS

STATE PROJ. NO.

SHEET NO. 20 OF 23 SHEETS

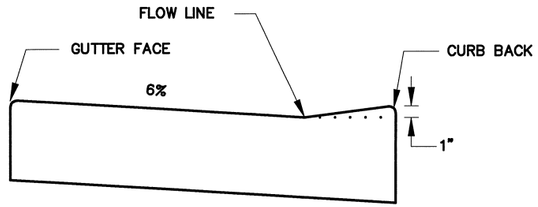
DRIVEWAY TABLE ①

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



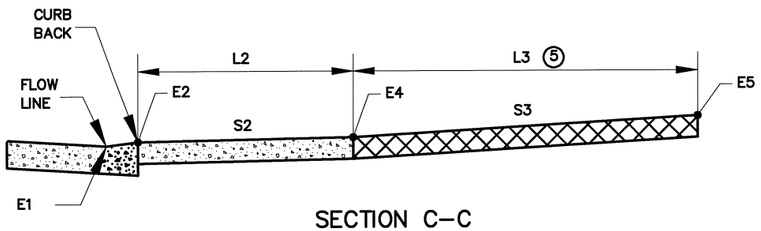
SECTION A–A & B–B

(REFER TO PREVIOUS SHEET)



DW CURB TYPE 1

STANDARD CURB AT DRIVEWAY



SECTION C–C

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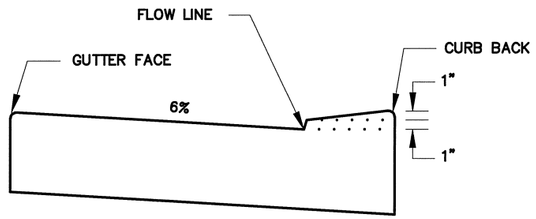
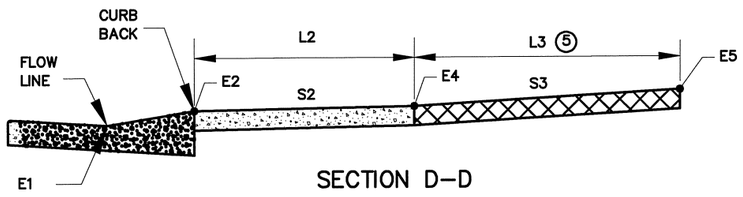


DW CURB TYPE 2

VERTICALLY CONSTRAINED



SECTION D–D

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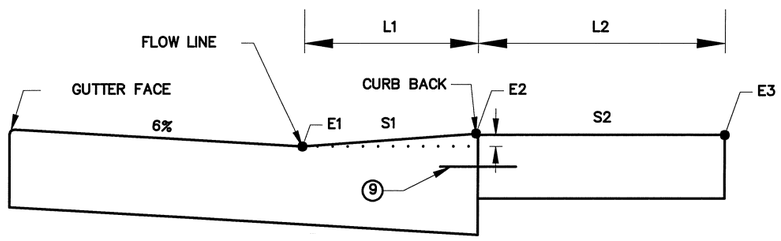

INTEGRAL DRIVEWAY APRON (IDA)

NOTES:

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

DW CURB TYPE 1 SHALL BE USED WHEN THE DRIVEWAY ACTS AS A PEDESTRIAN RAMP. THE MAX. APRON SLOPE MUST ADHERE TO ADA CRITERIA AS WELL. DW CURB TYPE 1 SHOULD BE USED IF THERE IS ON STREET PARKING.

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

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

S3 8% MAXIMUM, IF THIS SLOPE IS EXCEEDED OR CONTINUED FOR MORE THAN 5', ANALYZE VEHICLE TEMPLATES FOR VERTICAL CLEARANCE. SEE FACILITY DESIGN GUIDE, CHAPTER 6, FOR GEOMETRIC DESIGNS OF DRIVEWAYS.

① EXAMPLE SHOWN TO BE INCLUDED IN PLAN FOR EACH DRIVEWAY THAT HAS PAR THROUGH IT.

② REFERS TO THE FOLLOWING TYPES; PERPENDICULAR DRIVEWAY, TIERED PERPENDICULAR OFFSET DRIVEWAY, TIERED PERPENDICULAR DRIVEWAY, PARALLEL DRIVEWAY, AND INTEGRAL DRIVEWAY APRON.

③ DW CURB TYPE 1 IS THE STANDARD AND SHALL BE THE STARTING POINT FOR ALL PERPENDICULAR AND TIERED DRIVEWAYS. DW CURB TYPE 2 SHALL ONLY BE USED AFTER UTILIZING BEST PRACTICES SUCH AS MAXIMIZING S1, S3, AND L3.

④ SHOULD BE DESIGNED AT 1.5%.

⑤ ACQUIRE ADEQUATE L3 TO ALLOW FOR CONTINUOUS PAR PROFILE (UNIFORM SIDEWALK SECTION) THROUGH THE DRIVEWAY APRON.

⑥ PROVIDE INPLACE TIE–IN SLOPE INFORMATION AT BACK OF PROPOSED WALK (S3 AREA).

⑦ INFORMATION TO BE INCORPORATED INTO DRIVEWAY TABLE WHEN INTEGRAL DRIVEWAY APRON IS USED. OTHER CURB HEIGHTS & CURB APRON LENGTHS CAN BE USED.

⑧ L1 & S1 FOR INTEGRAL DRIVEWAY APRON IS TO FLOWLINE. 12.5% IS MAXIMUM PREFERRED SLOPE.

⑨ TIE ADJACENT SECTIONS. CONCRETE DRIVEWAY APRON AND CONCRETE DRIVEWAY SIDEWALK SHALL BE CONSTRUCTED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. DRILL AND GROUT OR CAST IN–PLACE THROUGH HOLES IN THE FORMS NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINT.

TYPICAL INTEGRAL DRIVEWAY APRON ⑦

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

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OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

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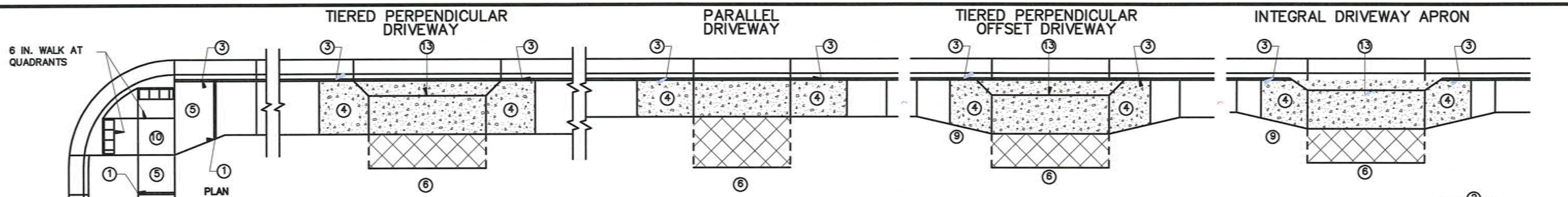
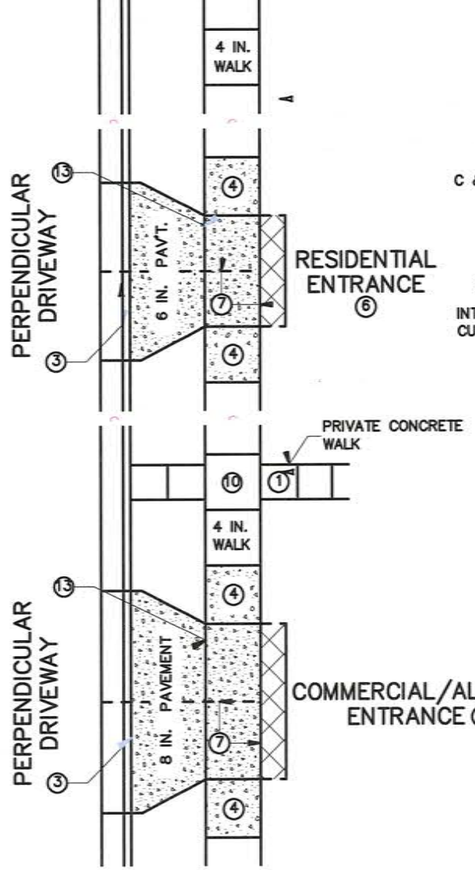
STATE DESIGN ENGINEER

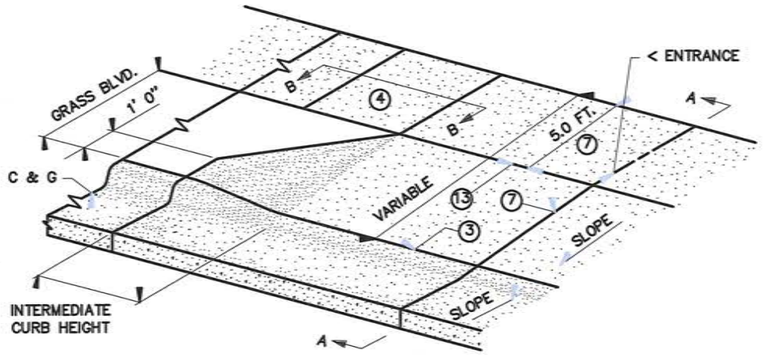
DRIVEWAY AND SIDEWALK DETAILS

STATE PROJ. NO.

SHEET NO. 21 OF 23 SHEETS

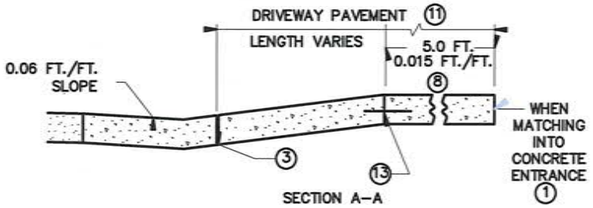




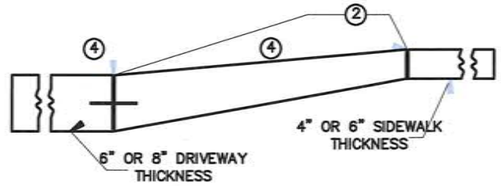


HALF PLAN PERSPECTIVE

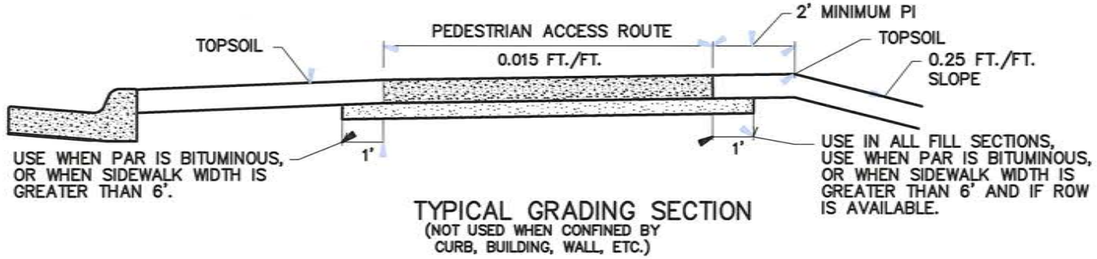
PERPENDICULAR DRIVEWAYS WITH GRASS BOULEVARDS



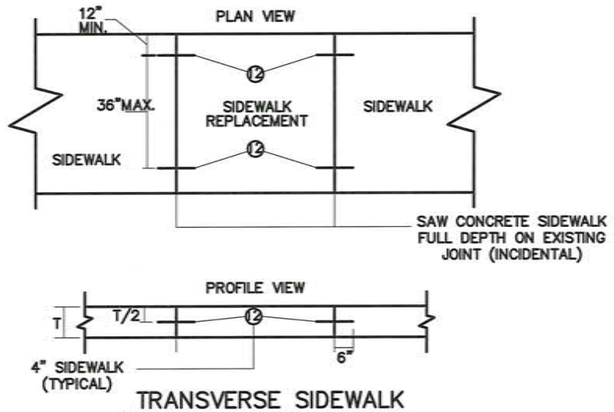
SECTION THRU DRIVEWAY



SECTION THRU SIDEWALK THICKNESS TRANSITION



TYPICAL GRADING SECTION
(NOT USED WHEN CONFINED BY CURB, BUILDING, WALL, ETC.)

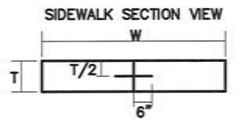


TRANSVERSE SIDEWALK TIE BAR REINFORCEMENT

RETROFITS ONLY

SIDEWALK LONGITUDINAL JOINT TIE BAR TABLE

SIDEWALK WIDTH, W	SIDEWALK THICKNESS, T	TIE BAR SIZE	LENGTH	SPACING
> 7'	4"	No. 4	12"	24"
>10'	6"	No. 4	12"	36"



LONGITUDINAL SIDEWALK REINFORCEMENT JOINTS

FOR 4" CONCRETE ONLY: CAST IN PLACE BARS MUST BE SUPPORTED WITH P–STAKES OR REINFORCEMENT BASKETS FOR FULL WIDTH CONCRETE PLACEMENTS.

FOR 6" CONCRETE ONLY: DRILL AND GROUT OR CAST IN PLACE THROUGH HOLES IN THE FORMS REQUIRED FOR STAGED ADJACENT CONCRETE PLACEMENTS.

NOTES:

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

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

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

SEE FACILITY DESIGN GUIDE, CHAPTER 6, FOR GEOMETRIC DESIGN OF DRIVEWAYS.

① CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A–E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE. DRIVEWAY EXPANSION SHALL BE PLACED AT TOP OR BOTTOM OF TRANSITION PANEL. MAXIMUM 2 EXPANSIONS PER DRIVEWAY.

② CONSTRUCT WITH EXPANSION MATERIAL MNDOT PER SPEC. 3702 TYPES A–E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE. MAXIMUM ONE EXPANSION PER DRIVEWAY PLACED AT EITHER TOP OR BOTTOM OF CONCRETE THICKNESS TRANSITION. IF MULTIPLE DRIVEWAYS EXIST PLACE ONE EXPANSION BETWEEN EACH DRIVEWAY. IF NO DRIVEWAY EXIST PLACE A MAXIMUM OF ONE EXPANSION PER 150' OF SIDEWALK RUN.

③ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

④ TRANSITION DRIVEWAY THICKNESS TO WALK THICKNESS. IF THERE IS A CONSTRUCTION JOINT AND NO EXPANSION IS USED, INSTALL TIE BARS.

⑤ TRANSITION CURB RAMP THICKNESS TO WALK THICKNESS.

⑥ MATCH INPLACE DRIVEWAY WIDTH, MATERIAL TYPE AND THICKNESS.

⑦ FORM CONTRACTION JOINT AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANELS. CONCRETE PANEL SIZE SHOULD NOT EXCEED 1 1/2 : 1 LENGTH X WIDTH. 81 SF FOR 6" CONCRETE DRIVEWAY WITH 9'X9' MAXIMUM PANEL SIZE. 144 SF FOR 8" CONCRETE DRIVEWAY WITH 12'X12' MAXIMUM PANEL SIZE. MATCH DRIVEWAY APRON AND SIDEWALK JOINTS.

⑧ THE PEDESTRIAN ACCESS ROUTE CROSS–SLOPE, SHALL NOT EXCEED 0.02 FT./FT. AS CONSTRUCTED.

⑨ 1:10 MIN. SIDEWALK OFFSET TAPER REQUIRED FOR SIDEWALK REPLACEMENT PROJECTS. 1:3 MIN. AND 1:5 MIN. PREFERRED SIDEWALK OFFSET TAPER FOR DRIVEWAY REPLACEMENT.

⑩ LANDING REQUIRED, SEE NEXT SHEET FOR MORE INFORMATION.

⑪ CONCRETE DRIVEWAY APRON AND CONCRETE DRIVEWAY SIDEWALK SECTIONS SHALL BE CONSTRUCTED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. ENGINEER'S APPROVAL REQUIRED FOR MONOLITHIC PLACEMENTS.

⑫ DRILL AND GROUT NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS. BARS TO BE ADJUSTED TO MATCH SIDEWALK GRADES. TO BE PAID BY EACH.

⑬ DRILL AND GROUT OR CAST IN–PLACE THROUGH HOLES IN THE FORMS NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS.

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DRIVEWAY AND SIDEWALK DETAILS

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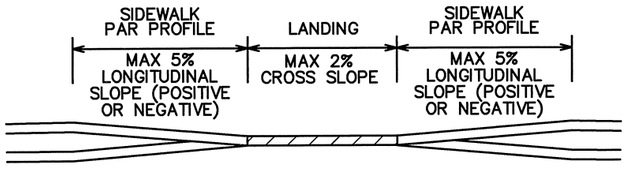
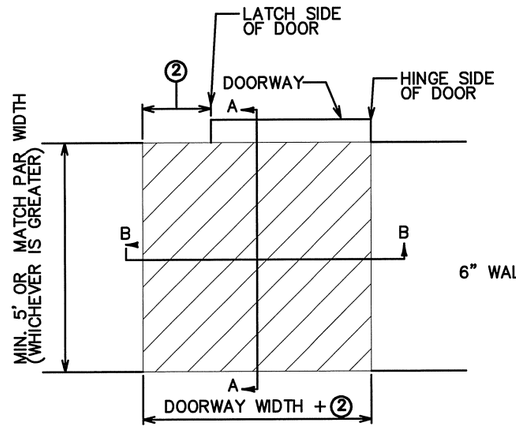
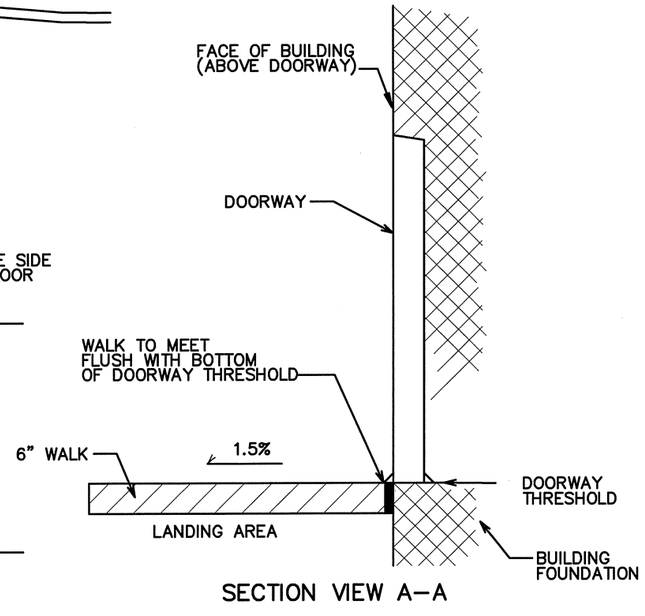


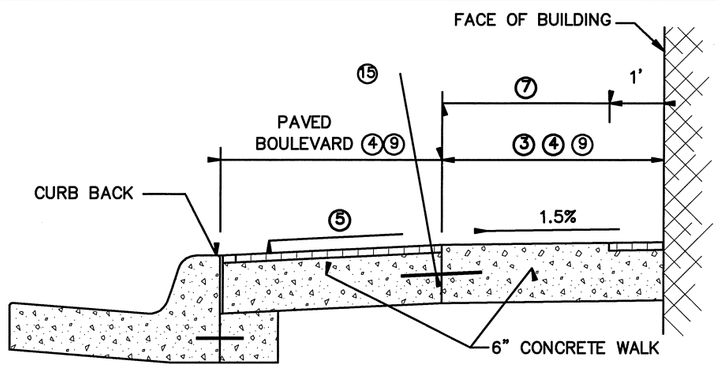
SECTION VIEW B–B



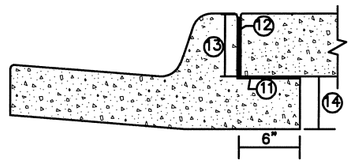
PLAN VIEW DOORWAY



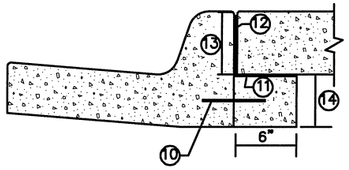
SECTION VIEW A–A



DOWNTOWN SIDEWALK TYPICAL SECTION

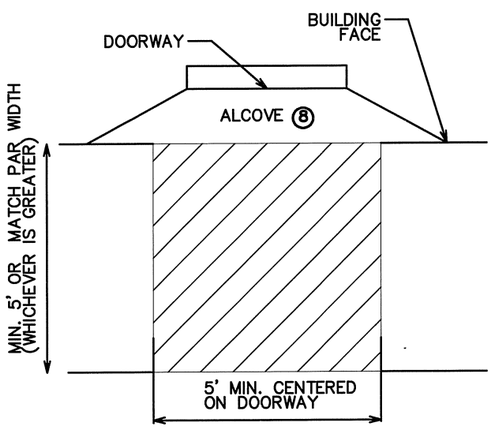


SLIP FORM SILL



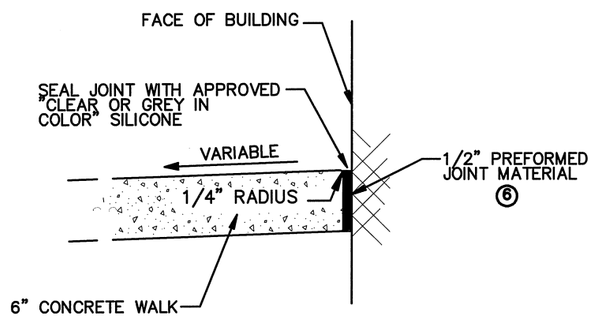
FIXED FORM SILL

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



PLAN VIEW DOORWAY WITH ALCOVE

SIDEWALK LANDING REQUIREMENTS①



BUILDING JOINT SEAL (INCIDENTAL)

NOTES:

6" WALK IS REQUIRED:
1) IN ALL SIDEWALK LOCATIONS WHERE VARIABLE SLOPED CONCRETE BOULEVARDS ARE PAVED, SUCH AS COMMERCIAL (STORE FRONT, DOWNTOWN) AREAS.
2) ANYTIME DRILL AND REINFORCEMENT IS USED TO TIE LONGITUDINAL JOINTS TOGETHER.
3) TO ELIMINATE LONGITUDINAL JOINT WHEN INCREASING PANEL SIZE OVER 36SF.
4) AT LOCATIONS WHERE MAINTENANCE EQUIPMENT WILL SUBJECT CONCRETE TO HEAVY LOADS.

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

FIELD ADJUST SIDEWALK PROFILES TO MEET ALL DOORWAY THRESHOLDS.

SIDEWALK MUST MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING TO THE ROADWAY.

SEE SPECIAL PROVISIONS FOR SILICONE SPECIFICATIONS.

① LANDING CRITERIA IS REQUIRED FOR ALL DOORS, STEPS, AND PRIVATE WALKS. FEASIBILITY DECREASES WITH NARROWER BOULEVARDS AND STEEPER SIDEWALK PROFILES.
② 18" MIN. WHEN DOOR SWINGS OUTWARD FROM BUILDING. 12" MIN WHEN DOOR SWINGS INWARD FROM BUILDING.
③ 6' MIN. PAR REQUIRED WHEN ADJACENT TO BUILDINGS.
④ 2/3 PAR TO 1/3 BOULEVARD SHOULD BE USED WHEN FEASIBLE. HOLD UNIFORM BOULEVARD WIDTH. 4' PREFERRED MINIMUM BOULEVARD.
⑤ 1%–5% FOR THE MAJORITY OF THE BLOCK, WITH EXCEPTIONS UP TO 8% IN CONSTRAINED AREAS.
⑥ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A–E EXPANSION. LEAVE A MINIMUM 1/2" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.
⑦ TO MINIMIZE VIBRATION AND ROLLING RESISTANCE, AREA SHALL BE FREE OF PAVERS, STAMPED CONCRETE, AND/OR EXCESSIVE JOINTING.
⑧ 2% MAX. PER BUILDING CODE. IF GREATER THAN 2%, FLATTEN AS FEASIBLE.
⑨ FORM CONTRACTION JOINTS AS NEEDED TO PRODUCE APPROXIMATELY SQUARE PANEL SIZE. CONRETE PANEL SIZE SHOULD NOT EXCEED 11/2 : 1 LENGTH X WIDTH.
⑩ DRILL AND GROUT NO. 4 X 8" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONSTRUCTION JOINTS. 1' MINIMUM FROM ADJACENT CONCRETE JOINTS. TIE BARS SHALL BE EMBEDDED 4" WITH 2" MINIMUM CONCRETE COVER AND ARE INCIDENTAL TO SILL PLACEMENT.
⑪ FURNISH AND INSTALL THE FULL WIDTH OF THE TOP OF SILL A MINIMUM 2ML THICK POLYTHENE SHEETING.
⑫ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.
⑬ DIMENSION TO BE SAME AS SIDEWALK THICKNESS, 4" MIN.
⑭ 6" WALK: 5" MIN. FOR B424; 7" MIN. FOR B624
4" WALK: 7" MIN. FOR B424; 9" MIN. FOR B624
⑮ DRILL AND GROUT NO. 4 X 12" LONG TIE BARS (EPOXY COATED). 36" MAXIMUM SPACING BETWEEN BARS WITH 2" MINIMUM CONCRETE COVER PLACED 1' MINIMUM FROM ADJACENT CONCRETE JOINTS.

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