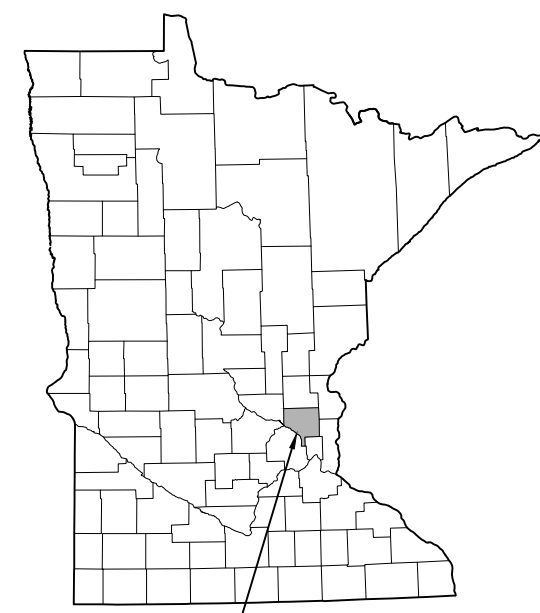
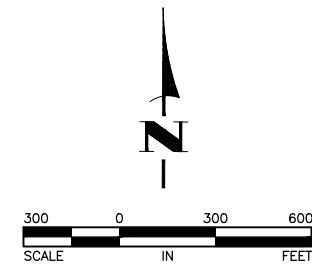
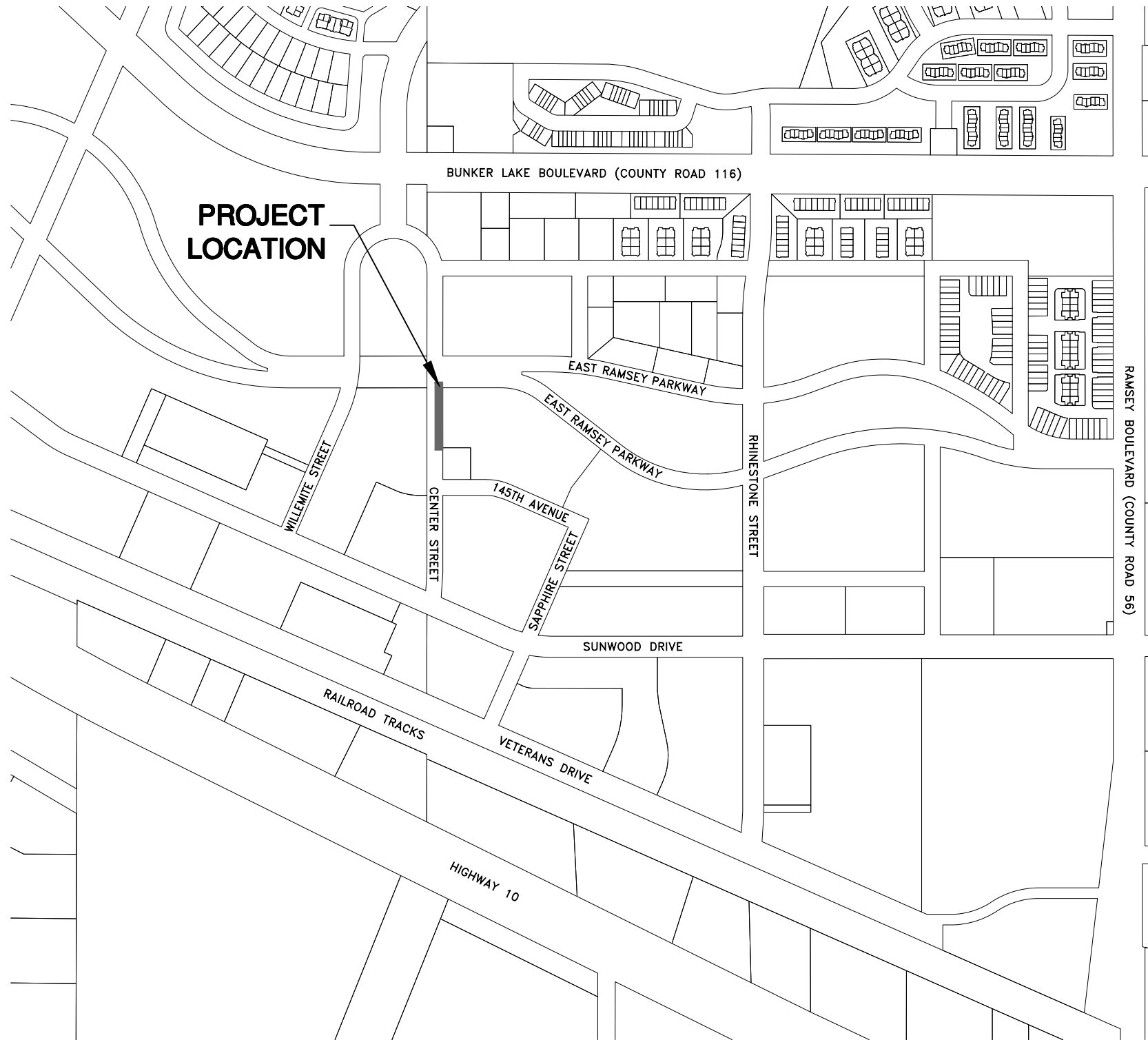


# CENTER STREET IMPROVEMENTS

## CITY OF RAMSEY, MINNESOTA



CITY OF RAMSEY,  
ANOKA COUNTY,  
MINNESOTA

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

### GOVERNING SPECIFICATIONS

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

THE 2013 EDITION OF THE CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) STANDARD SPECIFICATIONS SHALL APPLY.

ALL FEDERAL, STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES SHALL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES AND SIGNING 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.

### SHEET INDEX

THIS PLAN CONTAINS 18 SHEETS

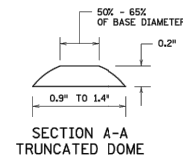
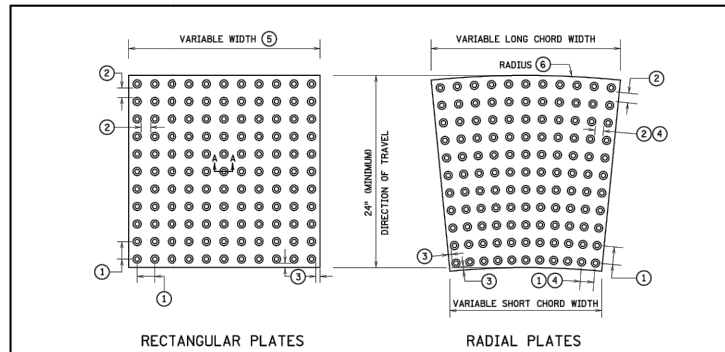
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2-3	DETAILS
4-5	EXISTING CONDITIONS AND REMOVALS PLAN
6-7	CONSTRUCTION PLAN
8	UTILITY PLAN
9	STRIPING PLAN
10	TRAFFIC CONTROL PLAN
11-12	ADA CURB RAMP DETAILS
13-18	ADA CURB RAMP STANDARD PLANS

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
BRUCE WESTBY, P.E.  
CITY ENGINEER

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

*Shane Nelson* \_\_\_\_\_ 43381 \_\_\_\_\_ DATE 9/7/20  
SHANE M. NELSON, P.E. LIC. NO.  
HAKANSON ANDERSON  
DESIGN ENGINEER

DATE	REVISION
6/16/21	REVISIONS PER CITY COMMENTS
7/16/21	REVISIONS PER CITY COMMENTS

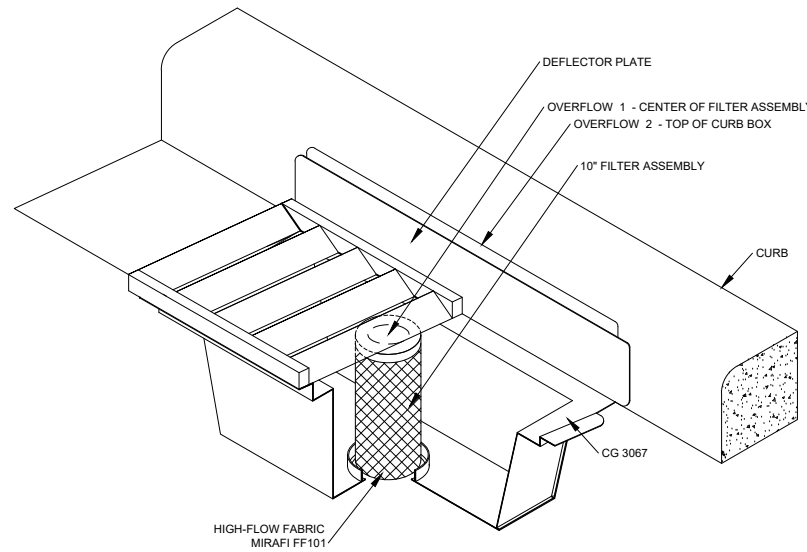


TYPICAL RADIAL TRUNCATED DOME PLATES			
RADIUS (FEET)	LONG CHORD WIDTH (INCHES)	SQUARE FEET PER PLATE	PLATES REQUIRED FOR 90 DEGREE TURN
10	23 1/2	3.53	8
15	18 3/4	2.93	15
15	23 1/2	3.67	12
20	18 3/4	3.00	20
20	18 1/4	2.98	20
25	20 1/2	3.28	23
25	23 3/8	3.77	20
30	22 3/4	3.65	25
35	22	3.56	30

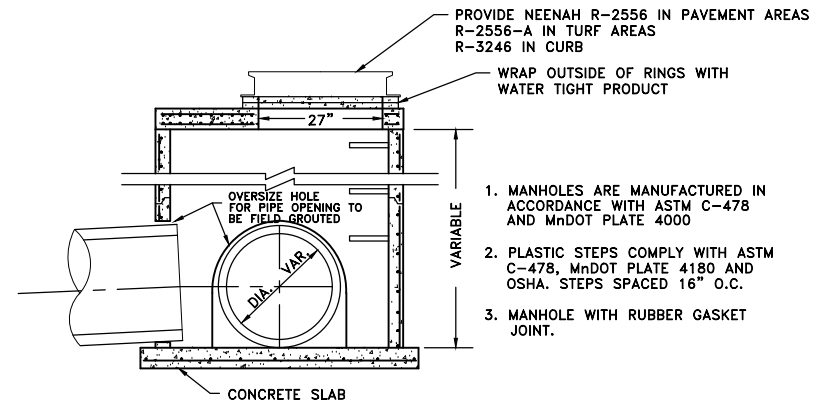
**NOTES:**

DETECTABLE WARNING SURFACES SHALL FOLLOW THE PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG).  
 DETECTABLE WARNINGS CONSIST OF TRUNCATED DOMES ALIGNED IN A SQUARE OR RADIAL GRID PATTERN.  
 DETECTABLE WARNINGS ARE REQUIRED:  
 -WHERE RAMPS, LANDINGS, OR BLENDED TRANSITIONS PROVIDE A FLUSH PEDESTRIAN CONNECTION TO THE ROADWAY.  
 -WHERE PEDESTRIAN ACCESS ROUTES CROSS COMMERCIAL DRIVEWAYS THAT ARE PROVIDED WITH TRAFFIC CONTROL DEVICES OR OTHERWISE PERMITTED TO OPERATE LIKE A PUBLIC ROADWAY.  
 -AT PEDESTRIAN RAILWAY CROSSINGS.  
 -ON RAIL PLATFORMS WHERE BOARDING EDGES ARE NOT PROTECTED.  
 DETECTABLE WARNINGS SHALL EXTEND:  
 -A MINIMUM OF 24\"/>

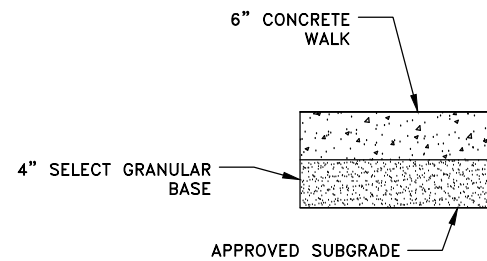
APPROVED AUGUST 23, 2010	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE 2531 2563	STANDARD PLATE NO. 7038A
<i>Sam Chy</i> STATE DESIGN ENGINEER	DETECTABLE WARNING SURFACE TRUNCATED DOMES	REVISED 01-09-2020 M.J.E.	



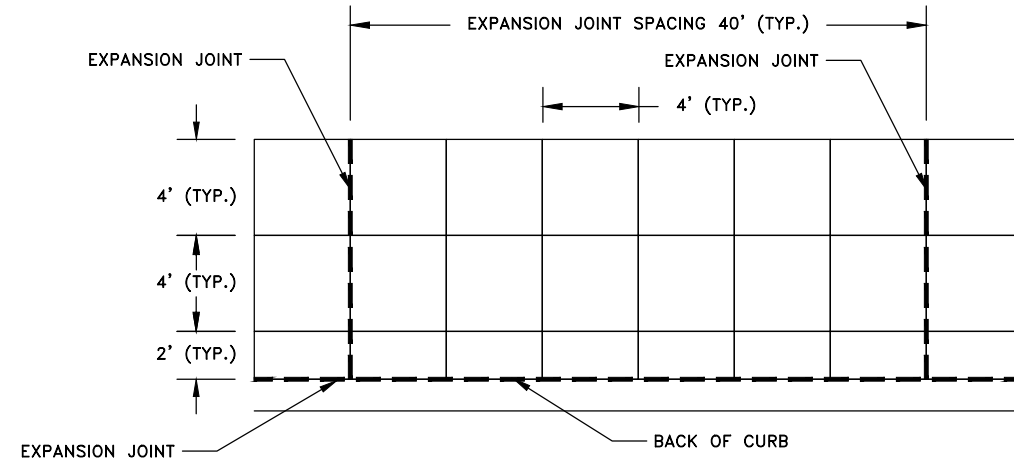
1 STORM DRAIN INLET PROTECTION TYPE 2 ③  
 2 POST-CURB



2 STANDARD CATCHBASIN MANHOLE  
 2 NO SCALE



3 CONCRETE SIDEWALK  
 2 NO SCALE



4 CONCRETE SIDEWALK JOINT LAYOUT  
 2 NO SCALE

Jul 22, 2021 - 11:39am K:\MUNICIPAL\RA3187\ENGINEERING\RA3187\_DETAILS.dwg

DATE	REVISION
6/16/21	REVISIONS PER CITY COMMENTS

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*Shane M. Nelson*  
 SHANE M. NELSON, P.E.  
 Date 9/7/20 Lic. No. 43381

DESIGNED BY: SMN
DRAWN BY: SJH
CHECKED BY: SMN

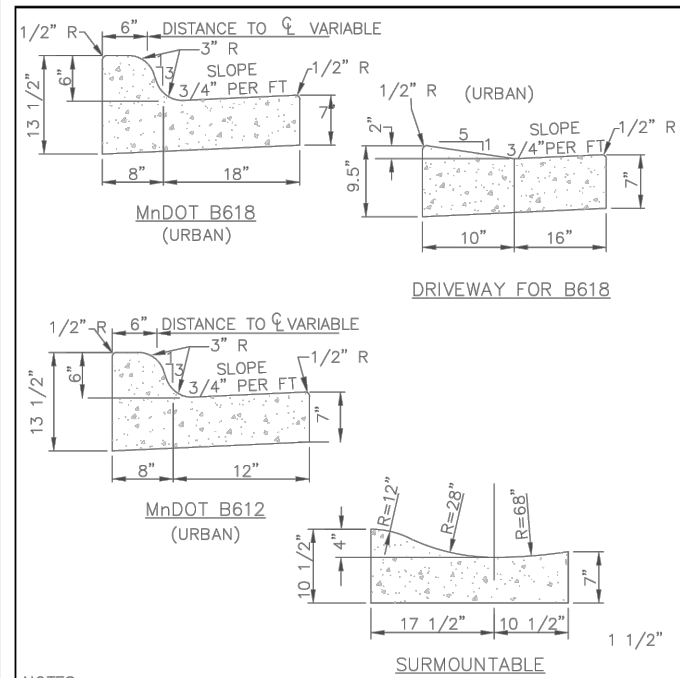


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CENTER STREET IMPROVEMENTS

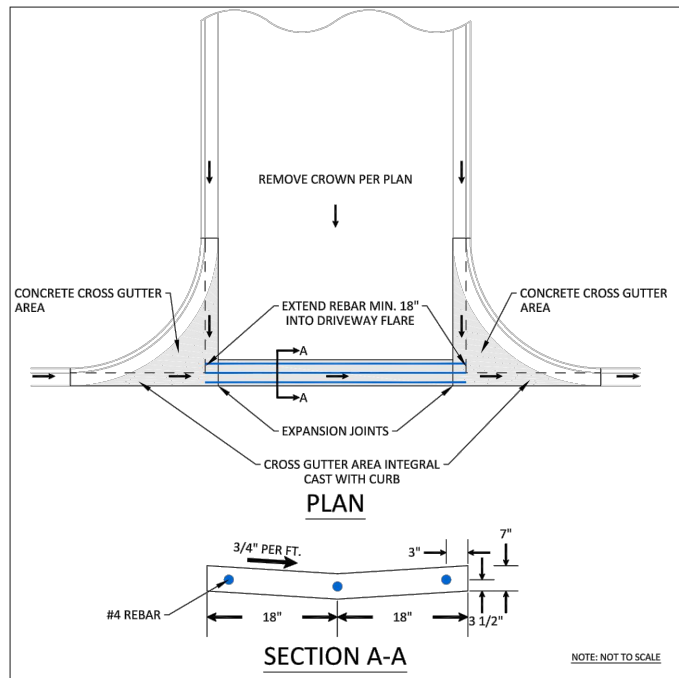
DETAILS  
 CITY OF RAMSEY, MINNESOTA

SHEET 2 OF 18 SHEETS  
 RA3187



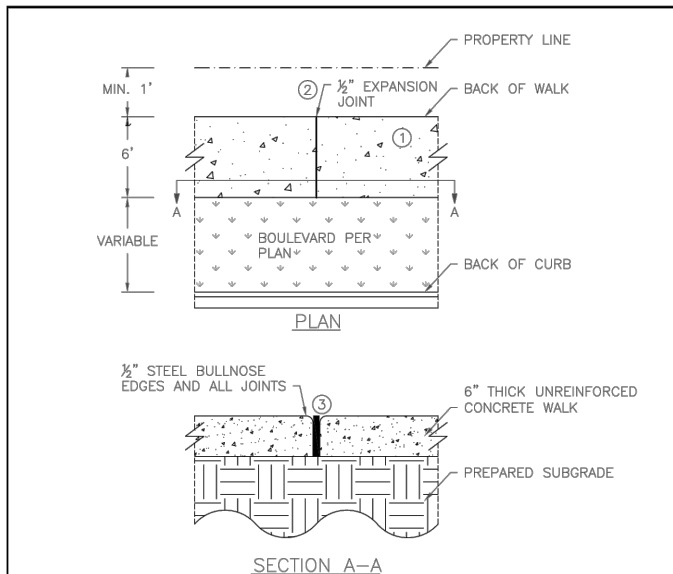
**NOTES:**  
 1. ON WEAR COURSE MILL THE EXISTING BITUMINOUS 1.5" BY 24" IN FRONT OF THE REPLACEMENT CURB.  
 2. ON BASE COURSE SAW CUT AND REMOVE EXISTING BITUMINOUS 18" IN FRONT OF THE REPLACEMENT CURB.

APPROVED: 1 - 2016  
**City of RAMSEY**  
 STANDARD DETAILS: CURB AND GUTTER  
 CITY PLATE No. STR-1



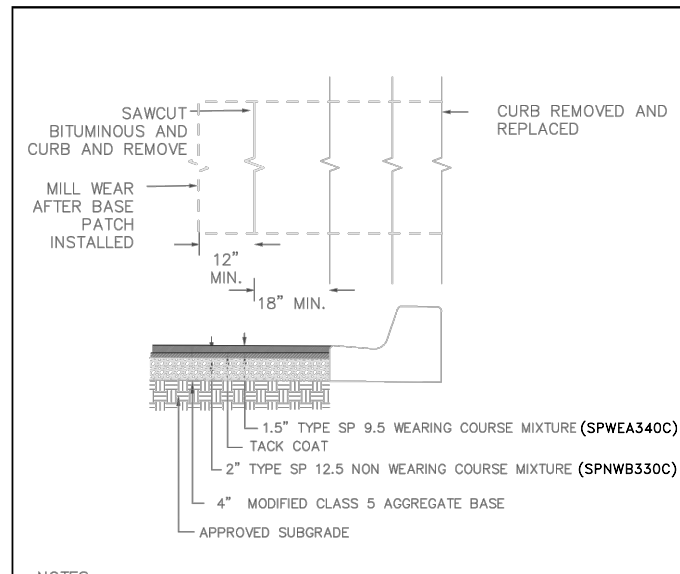
**NOTES:**  
 1. WITH REMOVAL OF EXISTING CURB AT A STREET, MILL BITUMINOUS TO A DEPTH OF 1.5" AND A WIDTH OF 18" IN EXISTING STREET.  
 2. TO BE USED WHENEVER CROSS DRAINAGE IS < 2%.  
 3. CONCRETE CURB AND GUTTER SHALL BE CAST INTEGRAL WITH CONCRETE CROSS GUTTER AREA.  
 4. CONCRETE CURB AND GUTTER SHALL BE PAID SEPARATELY FROM CONCRETE CROSS GUTTER AREA.

APPROVED: 3 - 2017  
**City of RAMSEY**  
 STANDARD DETAILS: CROSS GUTTER  
 CITY PLATE No. STR-2



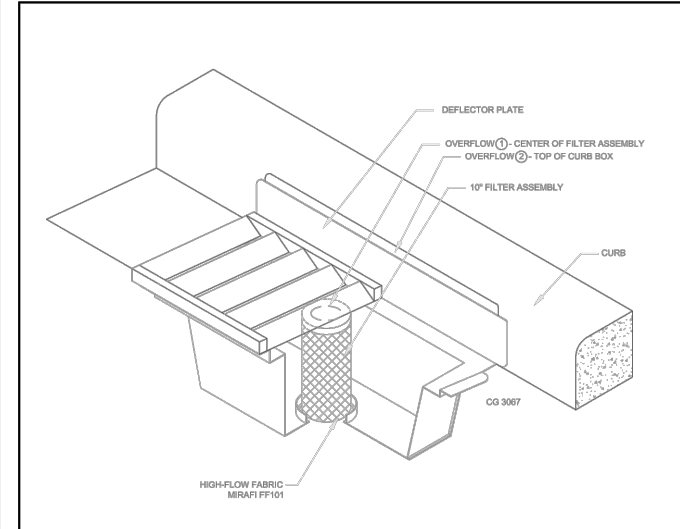
**NOTE:**  
 ① BROOM FINISH CONCRETE WALK SURFACE  
 ② MAXIMUM 100 FOOT SPACING BETWEEN EXPANSION JOINTS  
 ③ 1/2" EXPANSION JOINT MEETING MNDOT SPEC 3702. PROVIDE ONE PIECE OF FILLER FOR THE ENTIRE DEPTH AND WIDTH OF THE JOINT

APPROVED: 10 - 2015  
**City of RAMSEY**  
 STANDARD DETAILS: CONCRETE SIDEWALK  
 CITY PLATE No. STR-3



**NOTES:**  
 1. BITUMINOUS SHALL BE SAWCUT AND REMOVED AFTER CURB IS REPLACED.  
 2. CLASS 5 AND BITUMINOUS COURSES SHALL BE MECHANICALLY COMPACTED.  
 3. SEE CITY PLATE STR-26 FOR MODIFIED CLASS 5 SPECIFICATIONS.

APPROVED: 6 - 2016  
**City of RAMSEY**  
 STANDARD DETAILS: STREET PATCHING STANDARDS  
 CITY PLATE No. STR-25



**INLET PROTECTION - WIMCO OR EQUAL**  
 N.T.S.

**NOTE:**  
 THIS INLET PROTECTION SHALL BE USED IMMEDIATELY FOLLOWING CURB & GUTTER CONSTRUCTION. INLET PROTECTION SHALL REMAIN INSTALLED AND MAINTAINED UNTIL ALL HOME CONSTRUCTION IS COMPLETE.

APPROVED: 1 - 2016  
**City of RAMSEY**  
 STANDARD DETAILS: INLET PROTECTION  
 CITY PLATE No. ERO-2

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
 SHANE M. NELSON, P.E.  
 Date 9/7/20 Lic. No. 43381

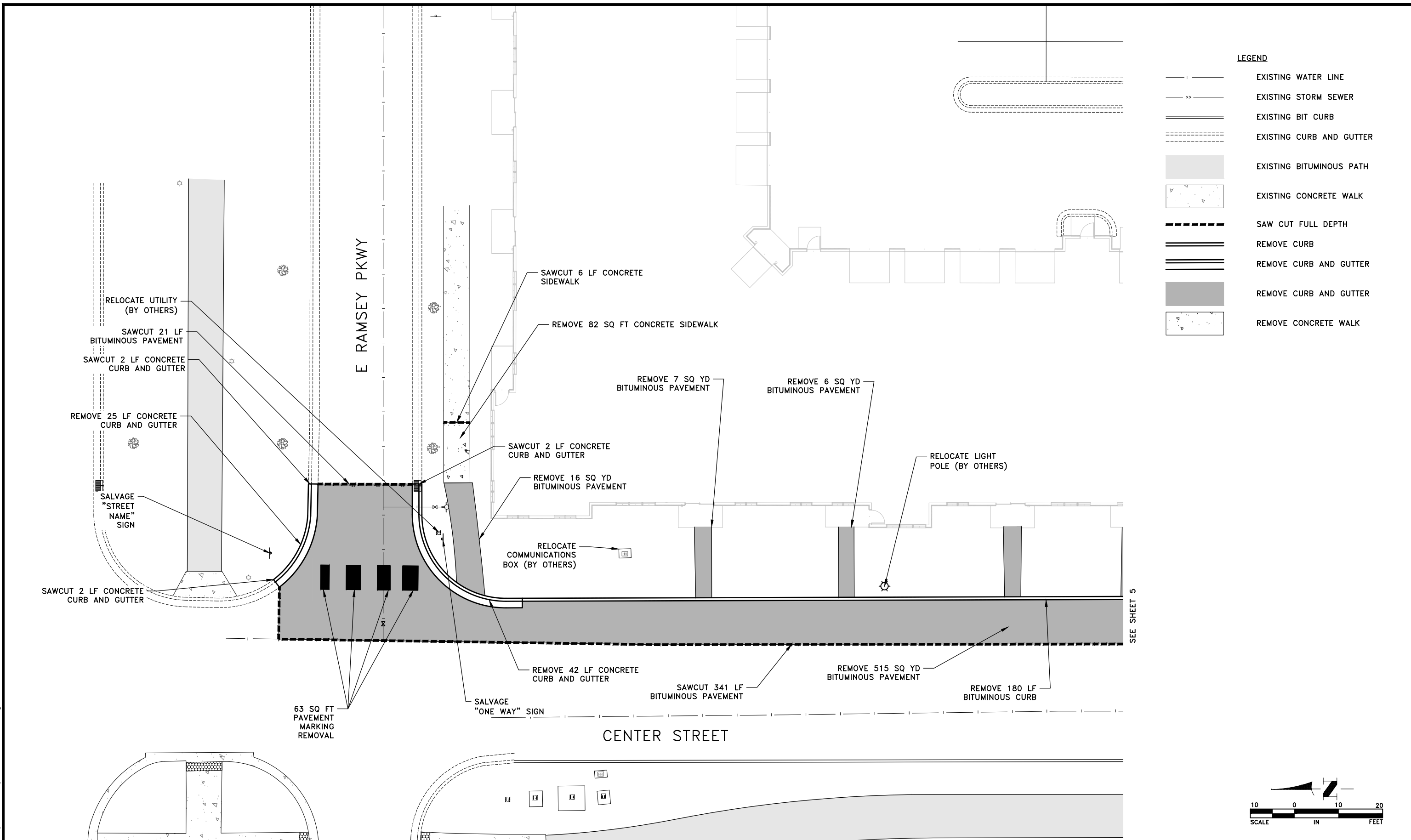
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**CENTER STREET IMPROVEMENTS**  
 CITY OF RAMSEY, MINNESOTA

SHEET 3 OF 18 SHEETS  
 RA3187

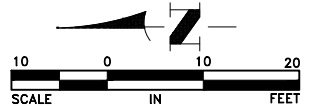
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**LEGEND**

	EXISTING WATER LINE
	EXISTING STORM SEWER
	EXISTING BIT CURB
	EXISTING CURB AND GUTTER
	EXISTING BITUMINOUS PATH
	EXISTING CONCRETE WALK
	SAW CUT FULL DEPTH
	REMOVE CURB
	REMOVE CURB AND GUTTER
	REMOVE CURB AND GUTTER
	REMOVE CONCRETE WALK



DATE	REVISION
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7/16/21	REVISIONS PER CITY COMMENTS

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*Shane M. Nelson*  
**SHANE M. NELSON, P.E.**  
 Date 9/7/20 Lic. No. 43381

DESIGNED BY: SMN
DRAWN BY: SJH
CHECKED BY: SMN

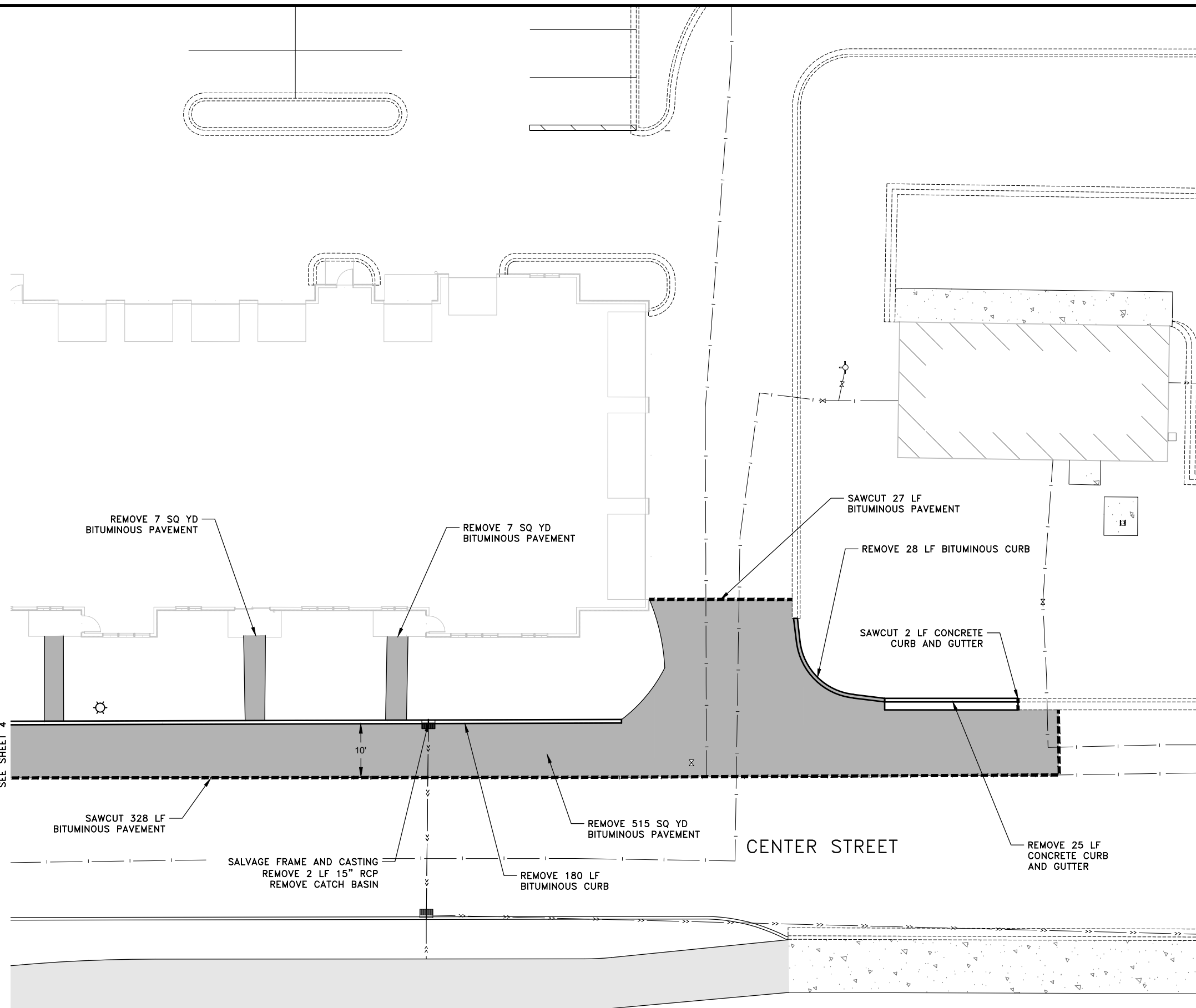


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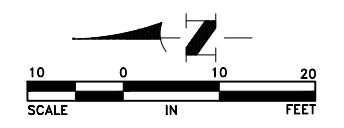
**EXISTING CONDITIONS AND REMOVALS**  
 CITY OF RAMSEY, MINNESOTA

SHEET 4 OF 18 SHEETS  
 RA3187



**LEGEND**

	EXISTING WATER LINE
	EXISTING STORM SEWER
	EXISTING BIT CURB
	EXISTING CURB AND GUTTER
	EXISTING BITUMINOUS PATH
	EXISTING CONCRETE WALK
	SAW CUT FULL DEPTH
	REMOVE CURB
	REMOVE CURB AND GUTTER
	REMOVE CURB AND GUTTER
	REMOVE CONCRETE WALK



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DESIGNED BY: SMN  
 DRAWN BY: SJH  
 CHECKED BY: SMN



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**CENTER STREET IMPROVEMENTS**

**EXISTING CONDITIONS AND REMOVALS**  
 CITY OF RAMSEY, MINNESOTA

SHEET 5 OF 18 SHEETS  
 RA3187

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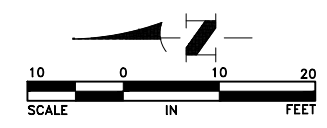
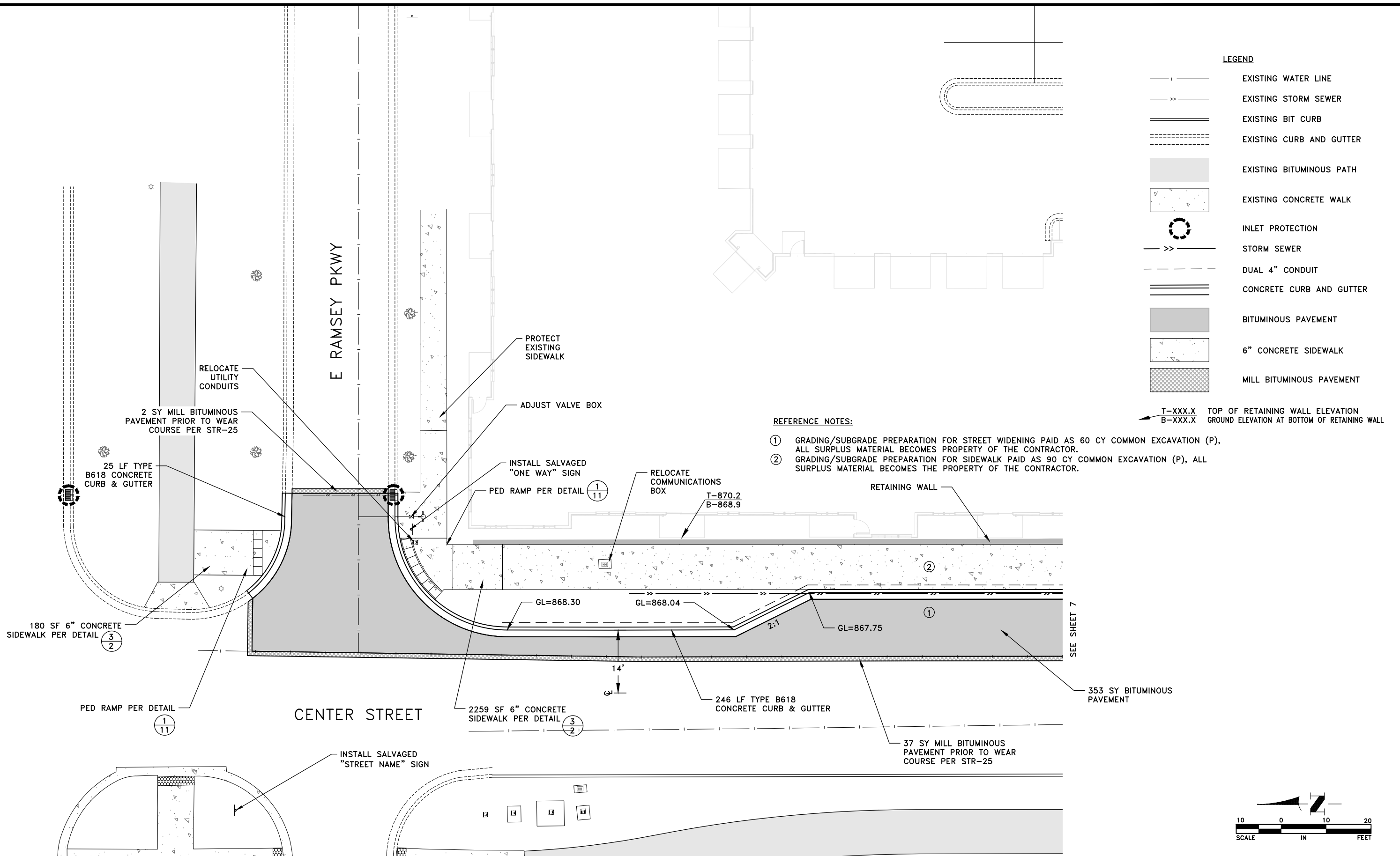
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	EXISTING WATER LINE
	EXISTING STORM SEWER
	EXISTING BIT CURB
	EXISTING CURB AND GUTTER
	EXISTING BITUMINOUS PATH
	EXISTING CONCRETE WALK
	INLET PROTECTION
	STORM SEWER
	DUAL 4" CONDUIT
	CONCRETE CURB AND GUTTER
	BITUMINOUS PAVEMENT
	6" CONCRETE SIDEWALK
	MILL BITUMINOUS PAVEMENT

T-XXX.X TOP OF RETAINING WALL ELEVATION  
B-XXX.X GROUND ELEVATION AT BOTTOM OF RETAINING WALL

**REFERENCE NOTES:**

- ① GRADING/SUBGRADE PREPARATION FOR STREET WIDENING PAID AS 60 CY COMMON EXCAVATION (P), ALL SURPLUS MATERIAL BECOMES PROPERTY OF THE CONTRACTOR.
- ② GRADING/SUBGRADE PREPARATION FOR SIDEWALK PAID AS 90 CY COMMON EXCAVATION (P), ALL SURPLUS MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR.



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**CENTER STREET IMPROVEMENTS**

**CONSTRUCTION PLAN**  
CITY OF RAMSEY, MINNESOTA


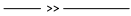







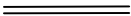

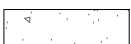

SHEET 6 OF 18 SHEETS  
RA3187

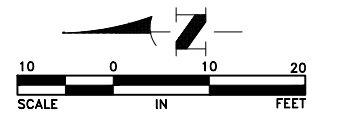
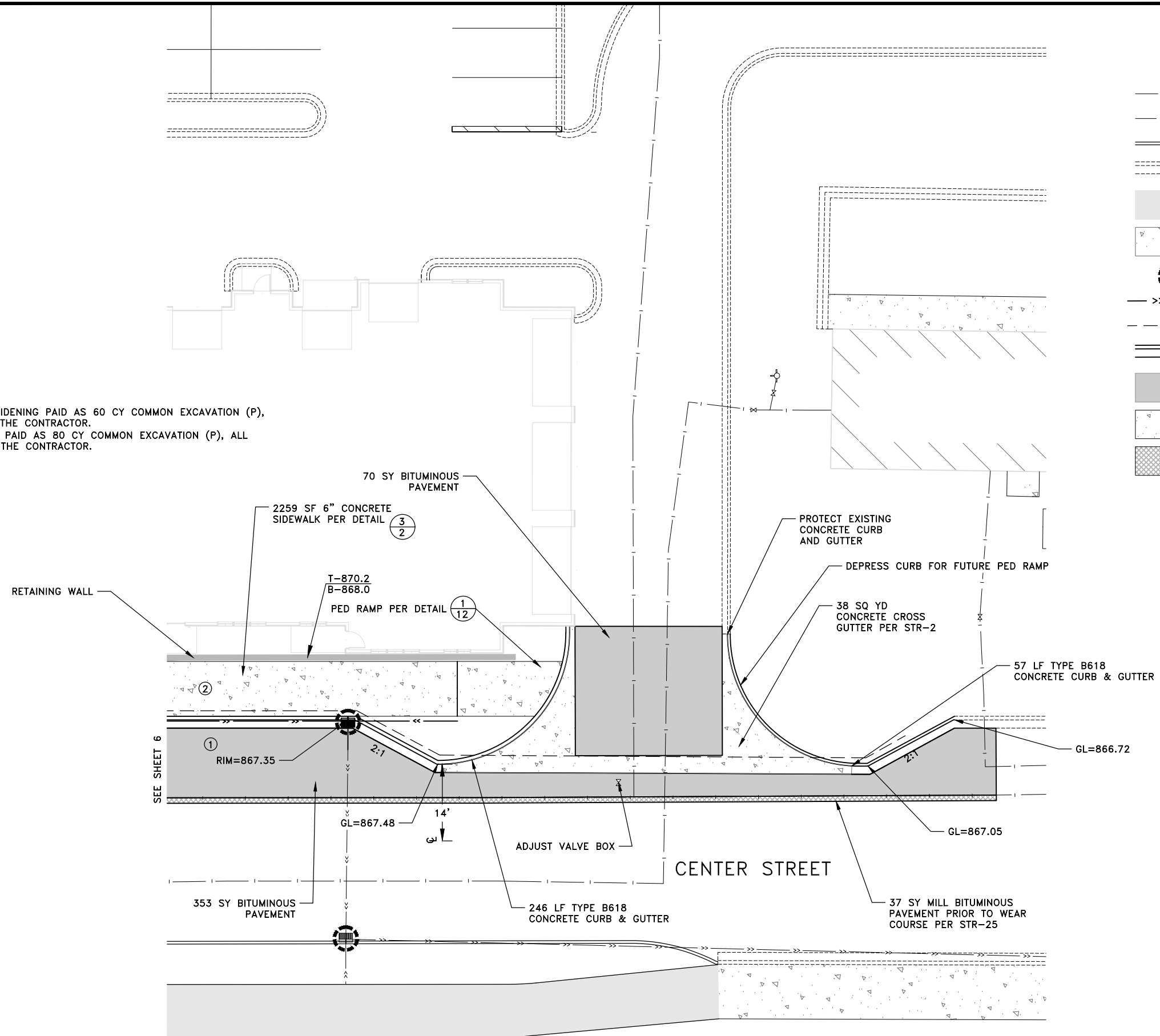
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**REFERENCE NOTES:**

- ① GRADING/SUBGRADE PREPARATION FOR STREET WIDENING PAID AS 60 CY COMMON EXCAVATION (P), ALL SURPLUS MATERIAL BECOMES PROPERTY OF THE CONTRACTOR.
- ② GRADING/SUBGRADE PREPARATION FOR SIDEWALK PAID AS 80 CY COMMON EXCAVATION (P), ALL SURPLUS MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR.

**LEGEND**

-  EXISTING WATER LINE
-  EXISTING STORM SEWER
-  EXISTING BIT CURB
-  EXISTING CURB AND GUTTER
-  EXISTING BITUMINOUS PATH
-  EXISTING CONCRETE WALK
-  INLET PROTECTION
-  STORM SEWER
-  DUAL 4" CONDUIT
-  CONCRETE CURB AND GUTTER
-  BITUMINOUS PAVEMENT
-  6" CONCRETE SIDEWALK
-  MILL BITUMINOUS PAVEMENT



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*Shane M. Nelson*  
**SHANE M. NELSON, P.E.**  
 Date 9/7/20 Lic. No. 43381

DESIGNED BY: SMN  
 DRAWN BY: SJH  
 CHECKED BY: SMN



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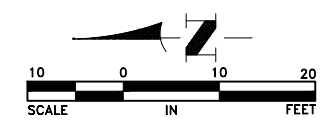
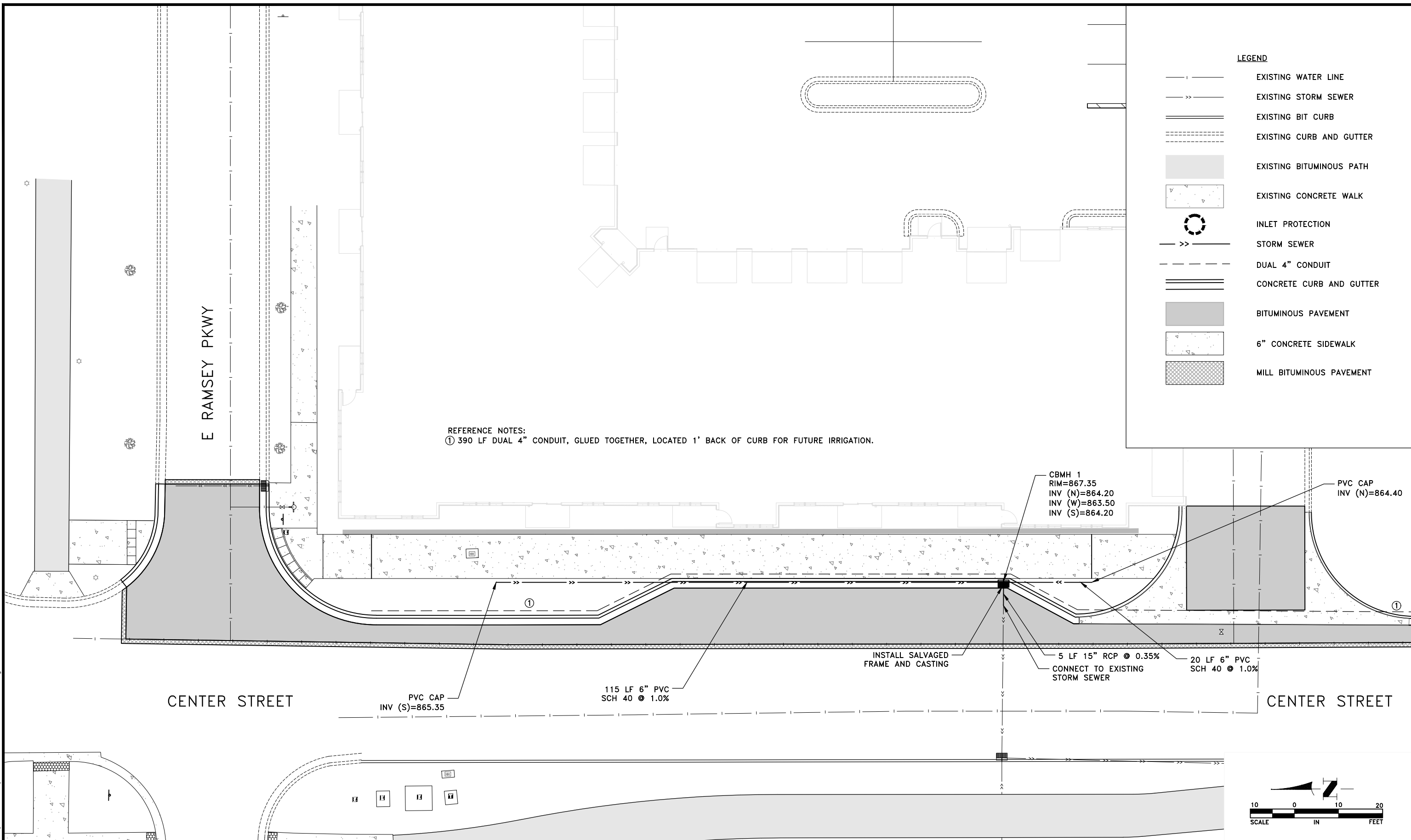
**CENTER STREET IMPROVEMENTS**

**CONSTRUCTION PLAN**  
 CITY OF RAMSEY, MINNESOTA

SHEET 7 OF 18 SHEETS  
 RA3187

- LEGEND**
- |—|—| EXISTING WATER LINE
  - >>—>> EXISTING STORM SEWER
  - ==== EXISTING BIT CURB
  - EXISTING CURB AND GUTTER
  - █ EXISTING BITUMINOUS PATH
  - ▨ EXISTING CONCRETE WALK
  - ⊙ INLET PROTECTION
  - >>—>> STORM SEWER
  - 4" DUAL CONDUIT
  - ==== CONCRETE CURB AND GUTTER
  - █ BITUMINOUS PAVEMENT
  - ▨ 6" CONCRETE SIDEWALK
  - ▨ MILL BITUMINOUS PAVEMENT

**REFERENCE NOTES:**  
 ① 390 LF DUAL 4" CONDUIT, GLUED TOGETHER, LOCATED 1' BACK OF CURB FOR FUTURE IRRIGATION.



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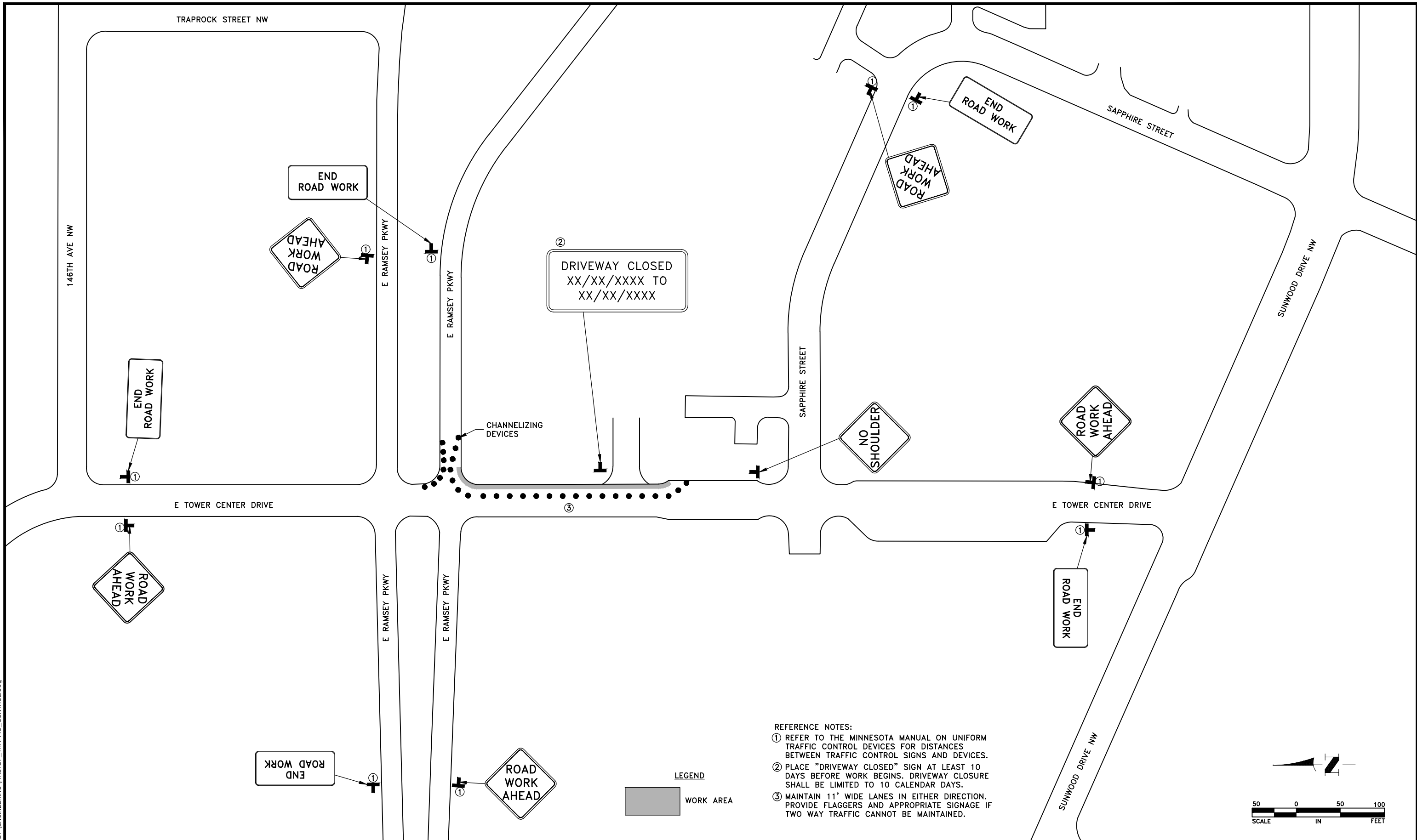
**CENTER STREET IMPROVEMENTS**

**UTILITY PLAN**  
 CITY OF RAMSEY, MINNESOTA

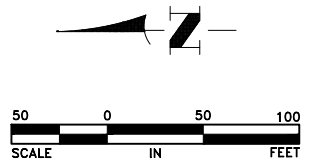
SHEET 8 OF 18 SHEETS  
 RA3187



Jul 22, 2021 - 11:40am  
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- REFERENCE NOTES:
- ① REFER TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR DISTANCES BETWEEN TRAFFIC CONTROL SIGNS AND DEVICES.
  - ② PLACE "DRIVEWAY CLOSED" SIGN AT LEAST 10 DAYS BEFORE WORK BEGINS. DRIVEWAY CLOSURE SHALL BE LIMITED TO 10 CALENDAR DAYS.
  - ③ MAINTAIN 11' WIDE LANES IN EITHER DIRECTION. PROVIDE FLAGGERS AND APPROPRIATE SIGNAGE IF TWO WAY TRAFFIC CANNOT BE MAINTAINED.



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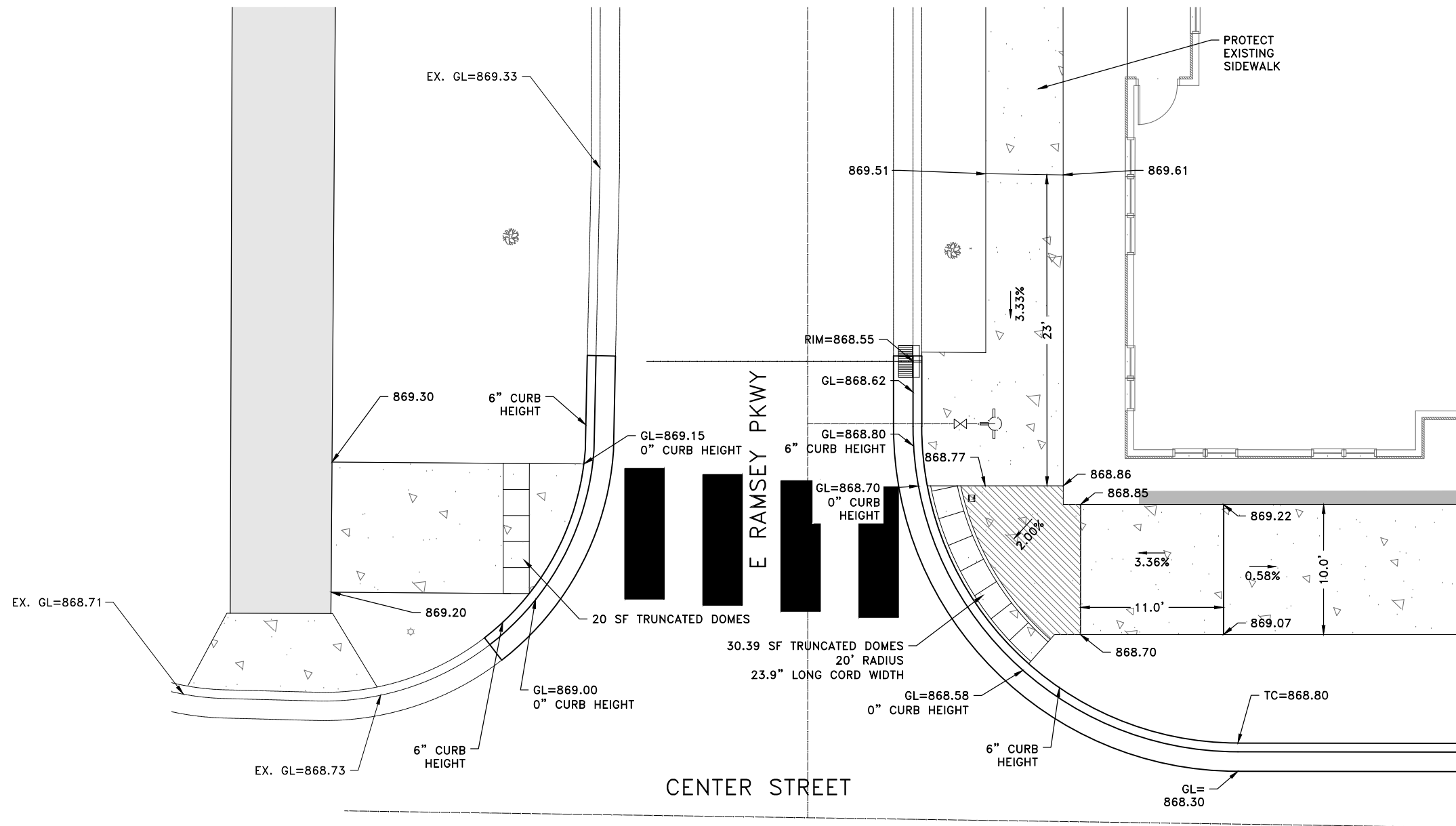


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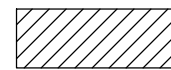
CENTER STREET IMPROVEMENTS

TRAFFIC CONTROL  
 CITY OF RAMSEY, MINNESOTA

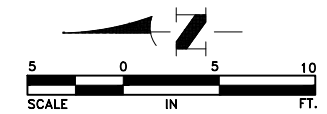
SHEET 10 OF 18 SHEETS  
 RA3187



1 NORTH ENTRANCE CURB RAMP DETAILS



LANDING - DO NOT EXCEED 2% IN ANY DIRECTION



Jul 22, 2021 - 11:40am K:\MUNICIPAL\RA3187\ENGINEERING\RA3187\_DETAILS.dwg

DATE	REVISION
6/16/21	REVISIONS PER CITY COMMENTS

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

*Shane M. Nelson*  
**SHANE M. NELSON, P.E.**  
 Date 9/7/20 Lic. No. 43381

DESIGNED BY: SMN  
 DRAWN BY: SJH  
 CHECKED BY: SMN

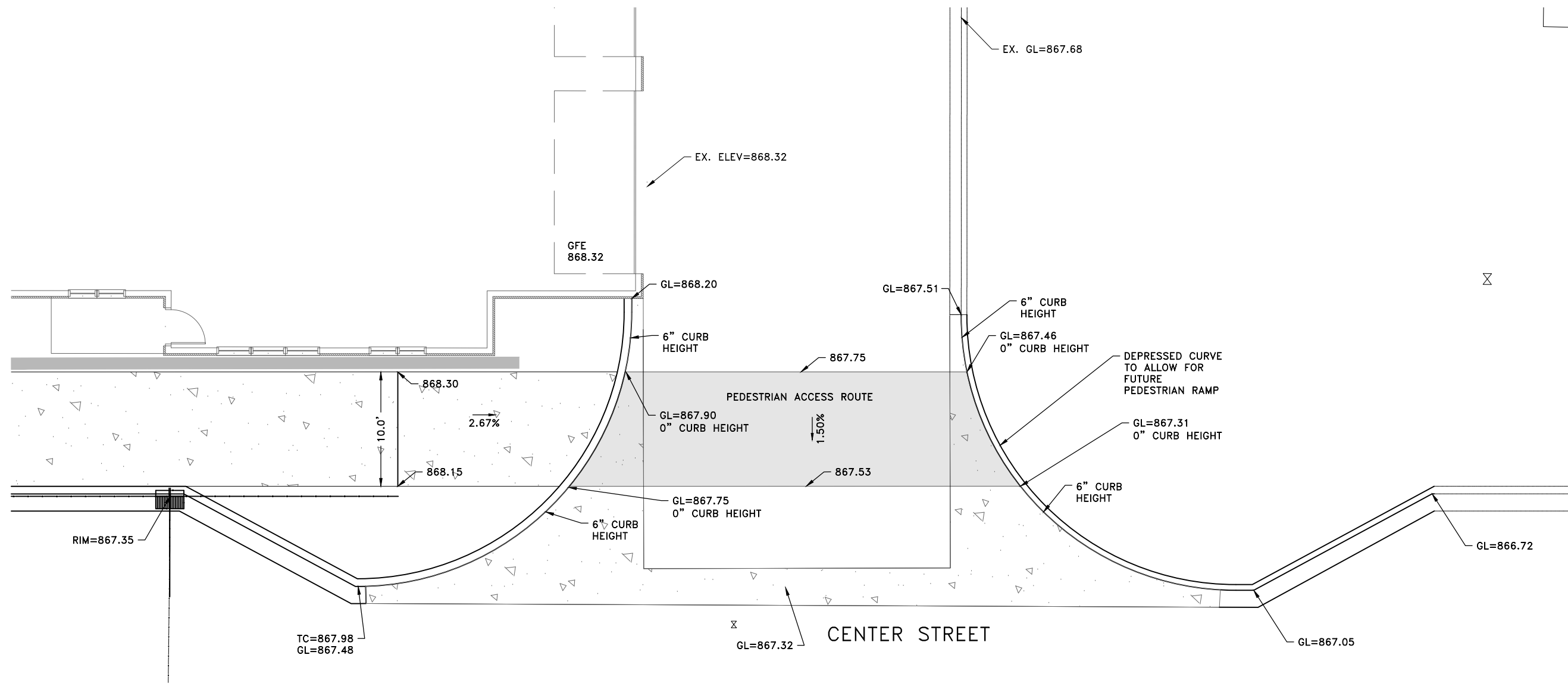


**Hakanson Anderson**  
 Civil Engineers and Land Surveyors  
 3601 Thurston Ave., Anoka, Minnesota 55303  
 763-427-5860 FAX 763-427-0520  
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**CENTER STREET IMPROVEMENTS**

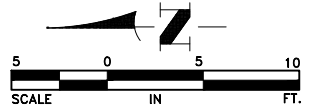
**ADA CURB RAMP DETAILS**  
 CITY OF RAMSEY, MINNESOTA

SHEET 11 OF 18 SHEETS  
 RA3187



2 SOUTH ENTRANCE CURB RAMP DETAILS

PEDESTRIAN ACCESS ROUTE



Jul 22, 2021 - 11:40am K:\MUNICIPAL\RA3187\ENGINEERING\RA3187\_DETAILS.dwg

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6/16/21	REVISIONS PER CITY COMMENTS

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

*Shane M. Nelson*  
 SHANE M. NELSON, P.E.  
 Date 9/7/20 Lic. No. 43381

DESIGNED BY: SMN  
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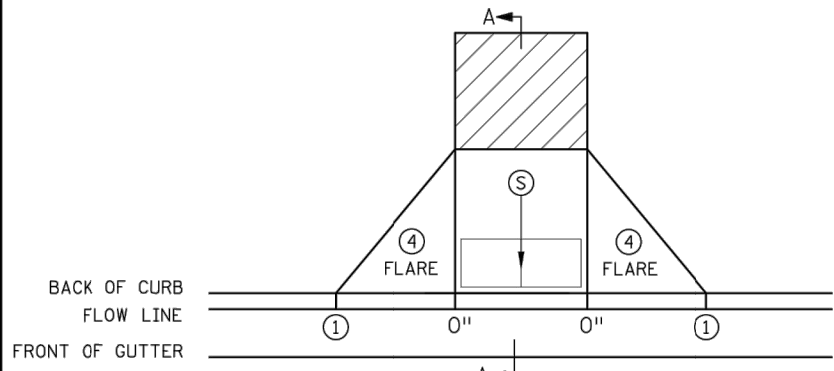
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ADA CURB RAMP DETAILS  
 CITY OF RAMSEY, MINNESOTA

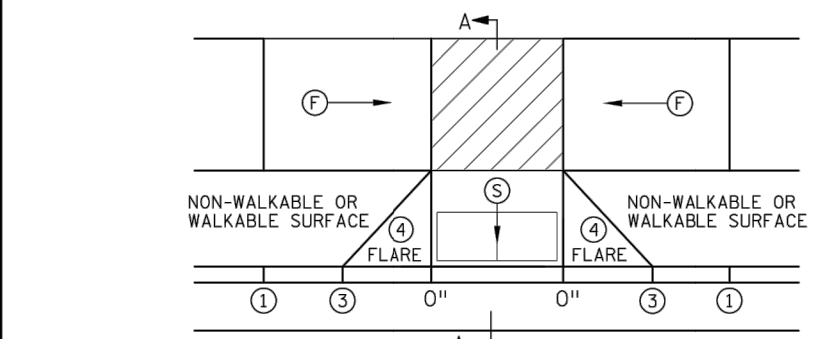
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PLOTTED/REVISED: 4-APR-2018

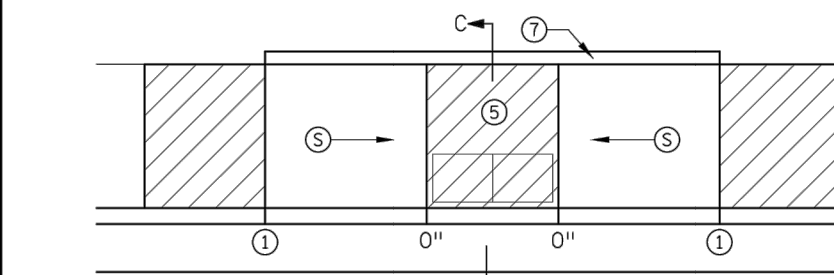
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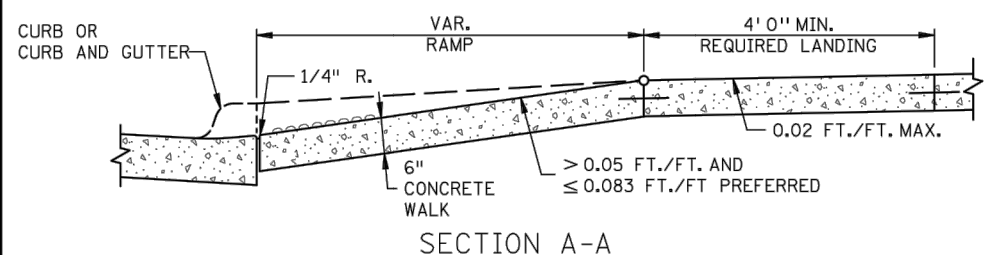
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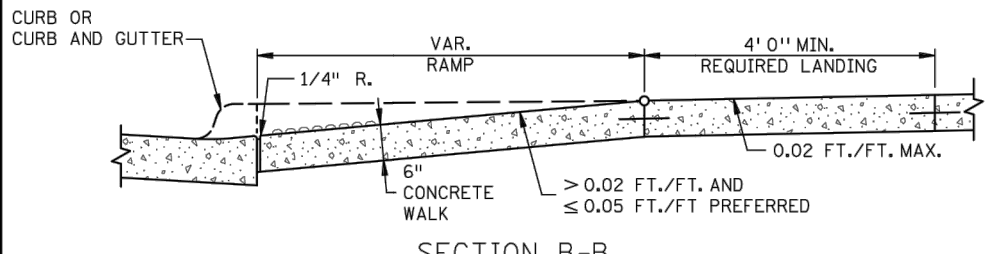
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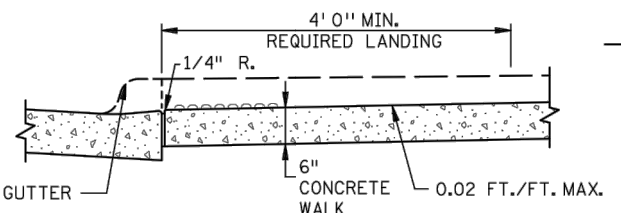
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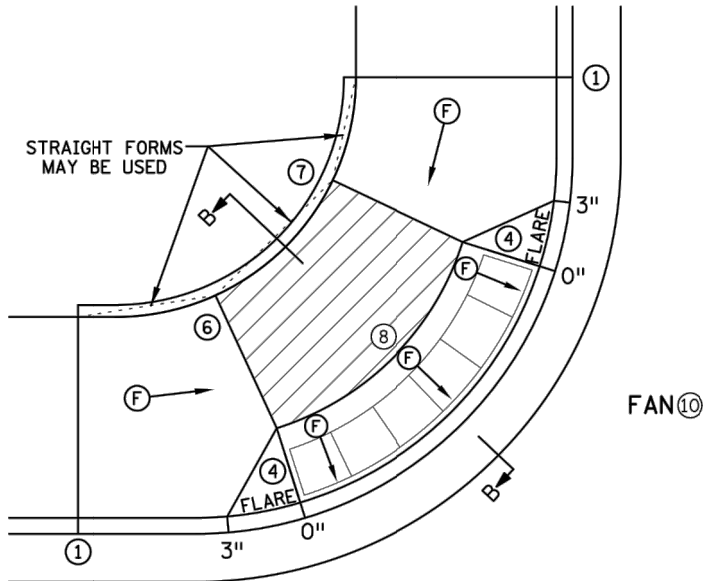
SECTION A-A  
 PERPENDICULAR/TIERED/DIAGONAL



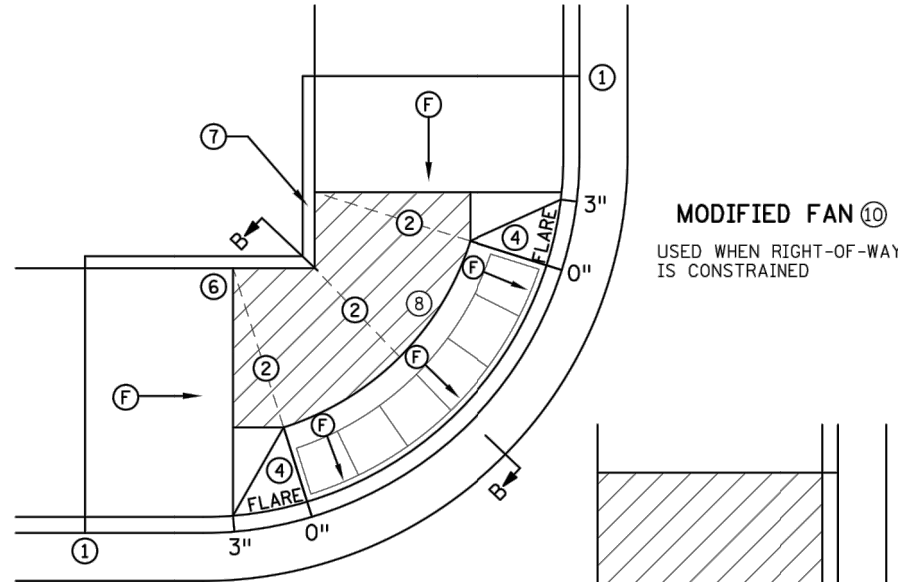
SECTION B-B  
 FAN



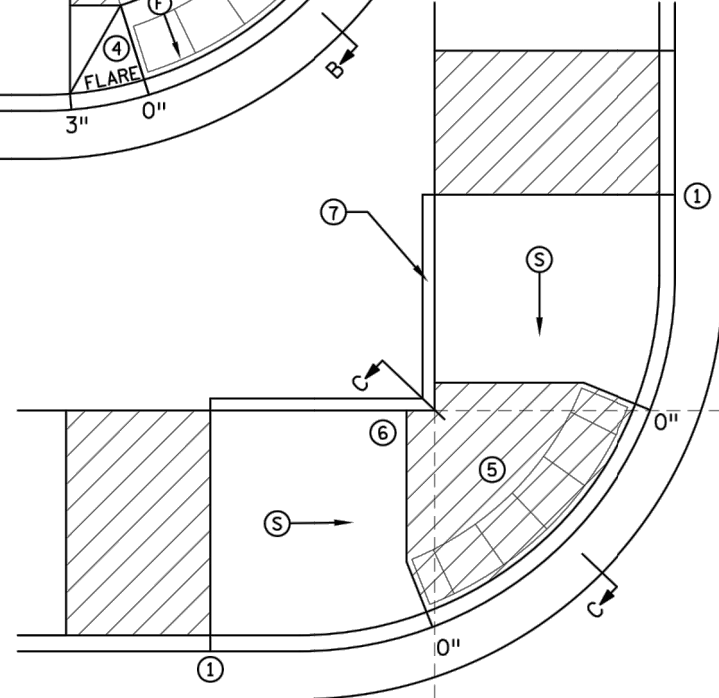
SECTION C-C  
 PARALLEL/DEPRESSED CORNER



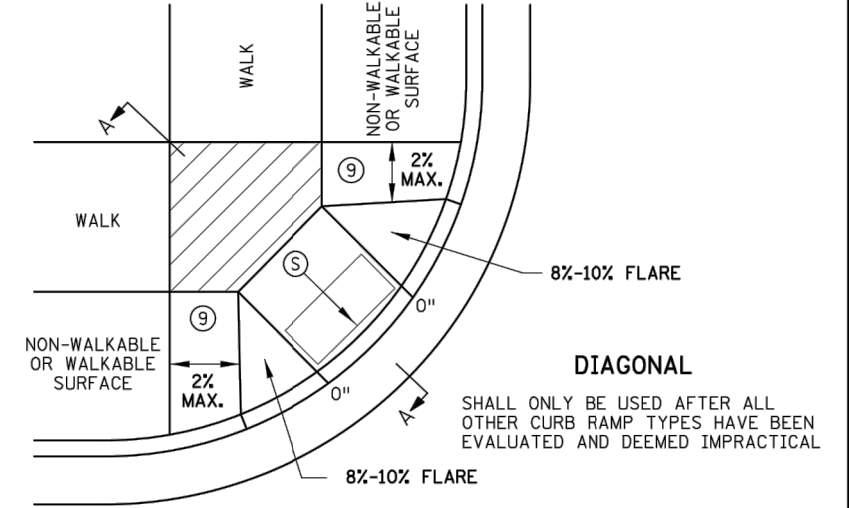
FAN ⑩



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



DEPRESSED CORNER



DIAGONAL

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

NOTES:

- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.
  - INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.
  - SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.
  - CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.
  - ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH. (EXCEPT AS STATED IN ⑥ BELOW.)
  - TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISIONS - PROSECUTION OF WORK (ADA).
  - TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
  - WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.
  - ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.
  - 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/TRAIL WIDTH. ARC LENGTH OF RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.
  - RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.
- ① MATCH FULL HEIGHT CURB.
  - ② 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
  - ③ 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
  - ④ SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS, WHEN INITIAL LANDING IS AT FULL CURB HEIGHT.
  - ⑤ DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
  - ⑥ THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)
  - ⑦ WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
  - ⑧ A 7' MIN TOP RADIUS GRADE BREAK REQUIRED TO BE CONSTRUCTIBLE.
  - ⑨ PAVE FULL WALK WIDTH.
  - ⑩ "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

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

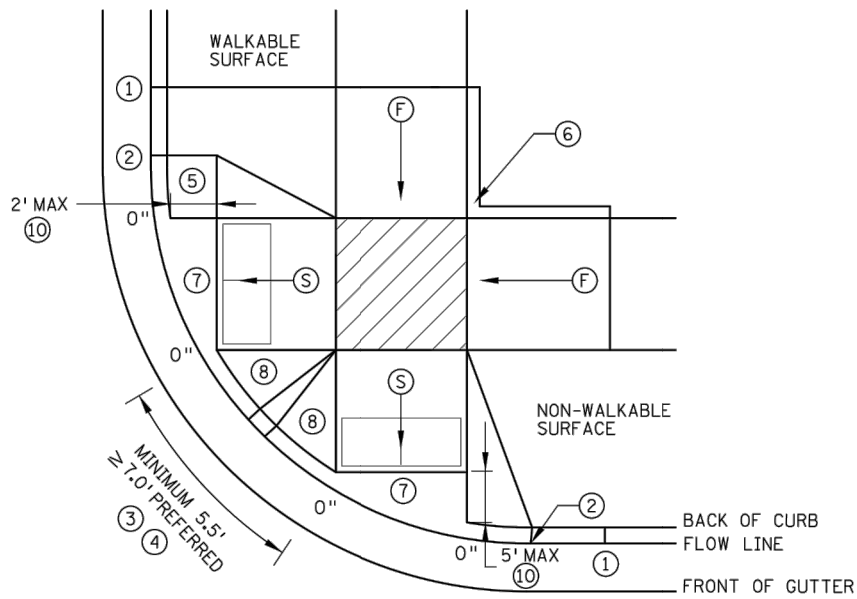
REVISION:  
 APPROVED: JANUARY 23, 2017  
 OPERATIONS ENGINEER

**m** MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STANDARD PLAN 5-297.250 1 OF 6  
 APPROVED: 1-23-2017  
 REVISOR:  
 STATE PROJ. NO. (T.H.)

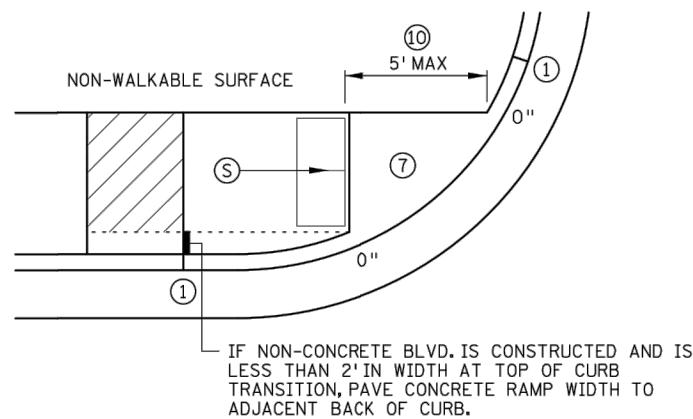
**PEDESTRIAN CURB RAMP DETAILS**  
 SHEET NO. 13 OF 18 SHEETS

PLOTTED/REVISED: 4-APR-2018

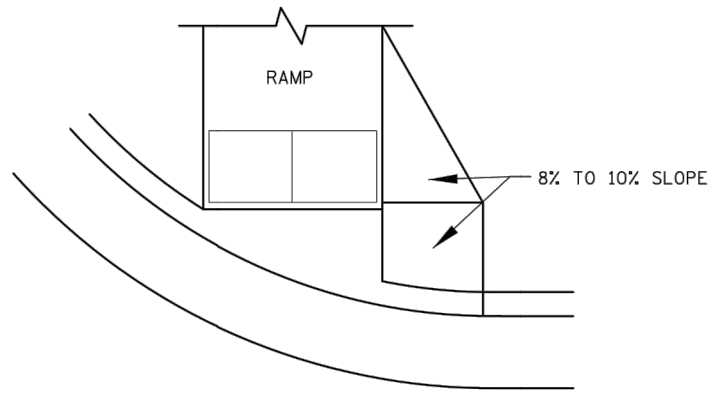
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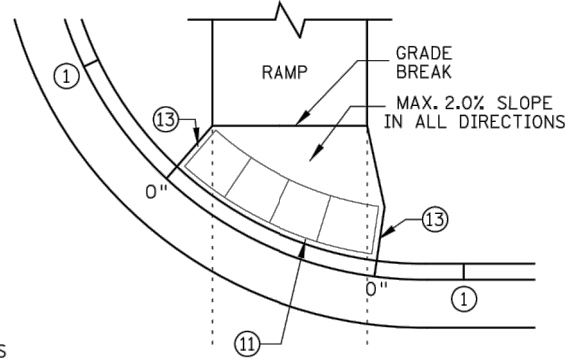
COMBINED DIRECTIONAL ⑨



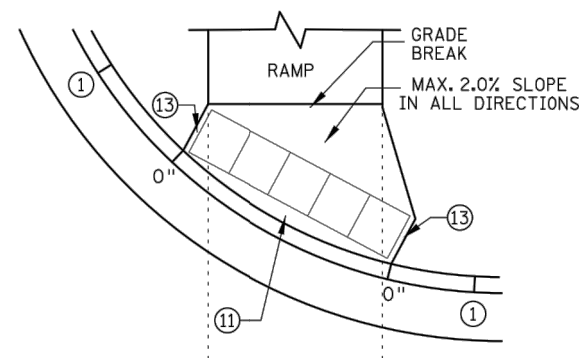
STANDARD ONE-WAY DIRECTIONAL ⑨



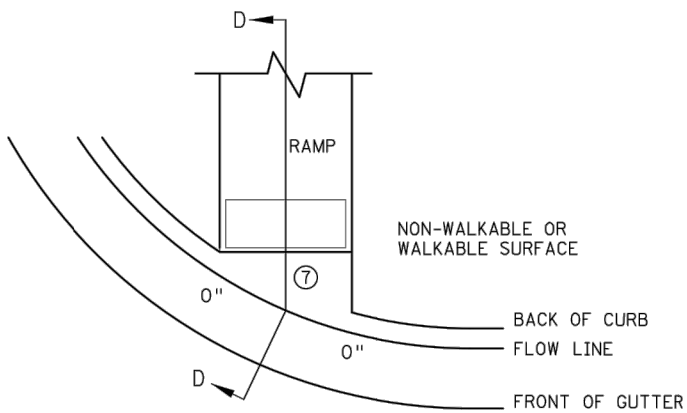
DIRECTIONAL RAMP WALKABLE FLARE



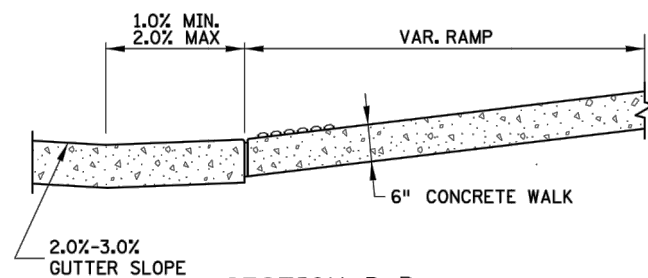
DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED



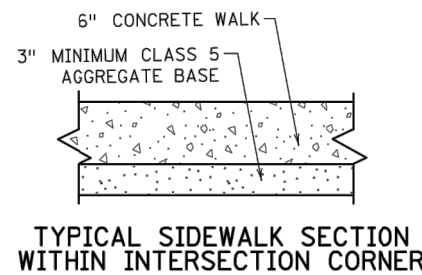
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



CURB FOR DIRECTIONAL RAMPS ⑭



SECTION D-D



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

NOTES:

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

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

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

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

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

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

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

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

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

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

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

- ① MATCH FULL CURB HEIGHT.
- ② 3" HIGH CURB WHEN USING A 3' LONG RAMP  
4" HIGH CURB WHEN USING A 4' LONG RAMP.
- ③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)  
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).
- ④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.
- ⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHOULD BE USED. SEE THE DETAIL ON THIS SHEET.
- ⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
- ⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
- ⑧ 8% TO 10% WALKABLE FLARE.
- ⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
- ⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- ⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
- ⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.
- ⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

**LEGEND**

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

- Ⓢ 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%.
- ⓕ 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 PAR.
- X" CURB HEIGHT

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER



STANDARD PLAN 5-297.250

2 OF 6

PEDESTRIAN CURB RAMP DETAILS

STATE DESIGN ENGINEER

APPROVED: 1-23-2017  
REVISED:

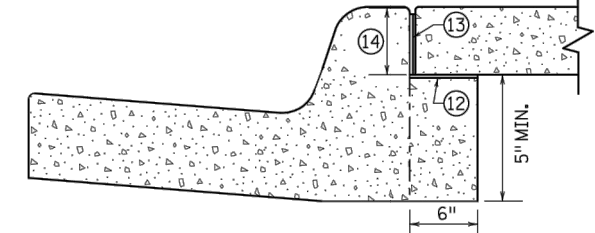
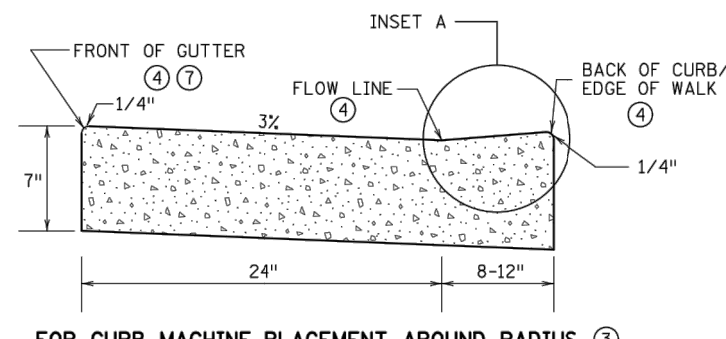
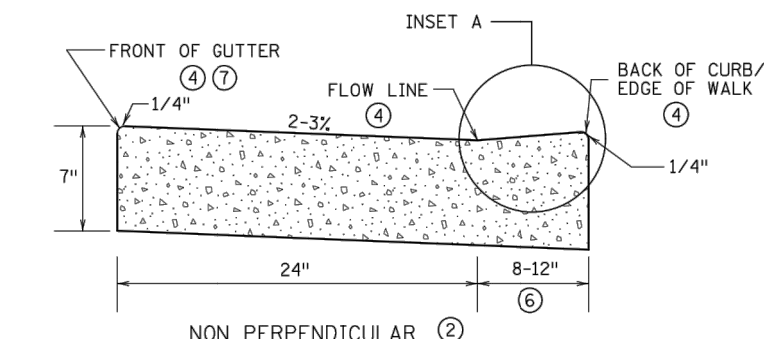
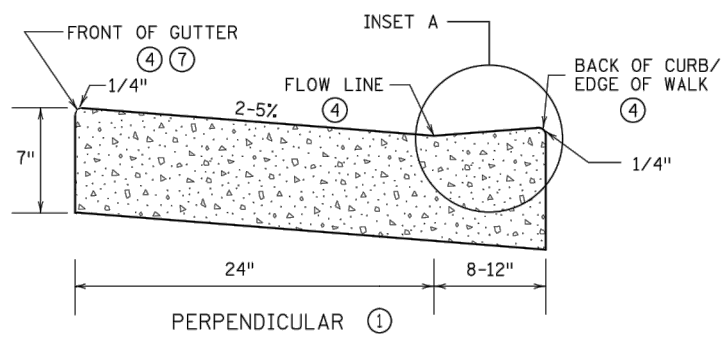
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(T.H. )

SHEET NO. 14 OF 18 SHEETS

PLOTTED/REVISED: 4-APR-2018

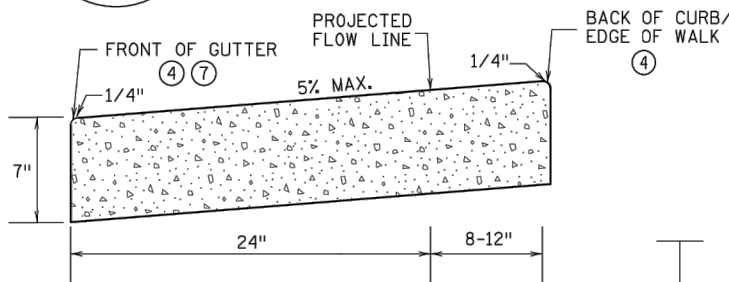
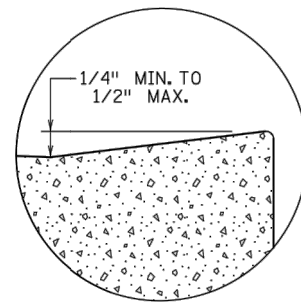
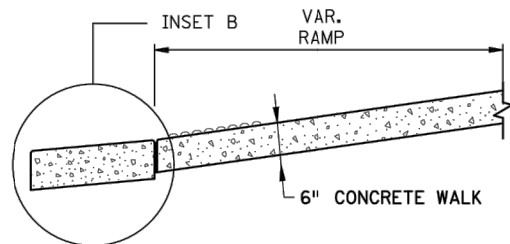
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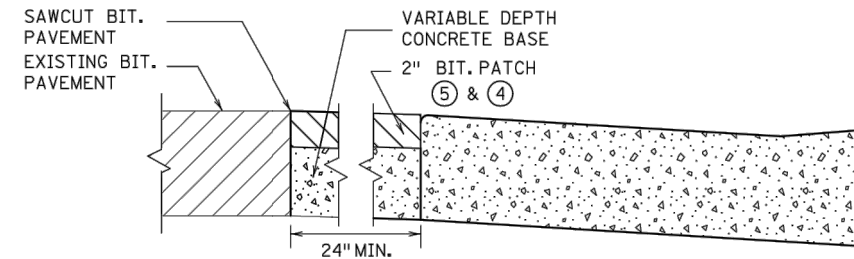
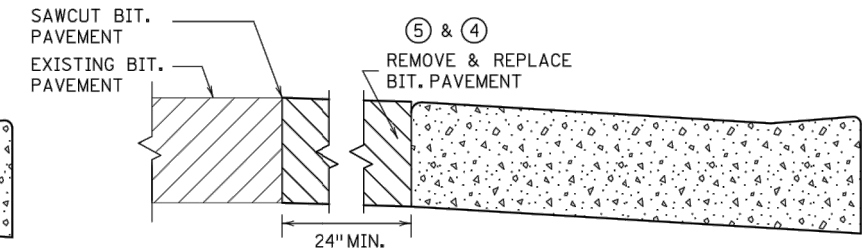
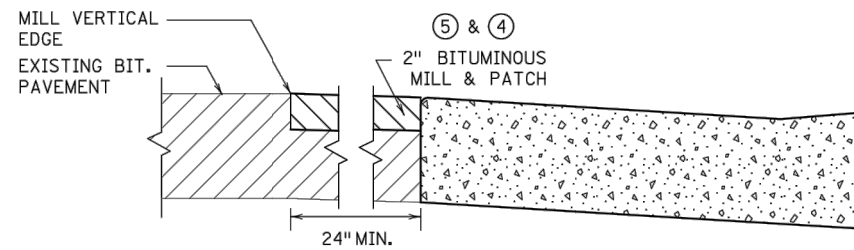
OPTIONAL SILL CURB WHEN SIDEWALK IS AT BACK OF CURB

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

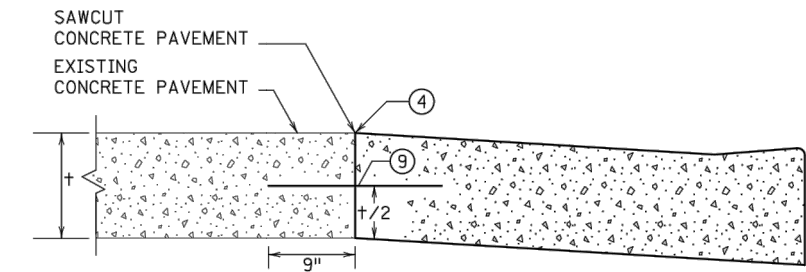
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL



INSET B OUTFLOW GUTTER (8)



ONLY ALLOWED PER ENGINEER'S APPROVAL



PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS

NOTES:

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

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

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

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

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

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

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

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

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

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

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

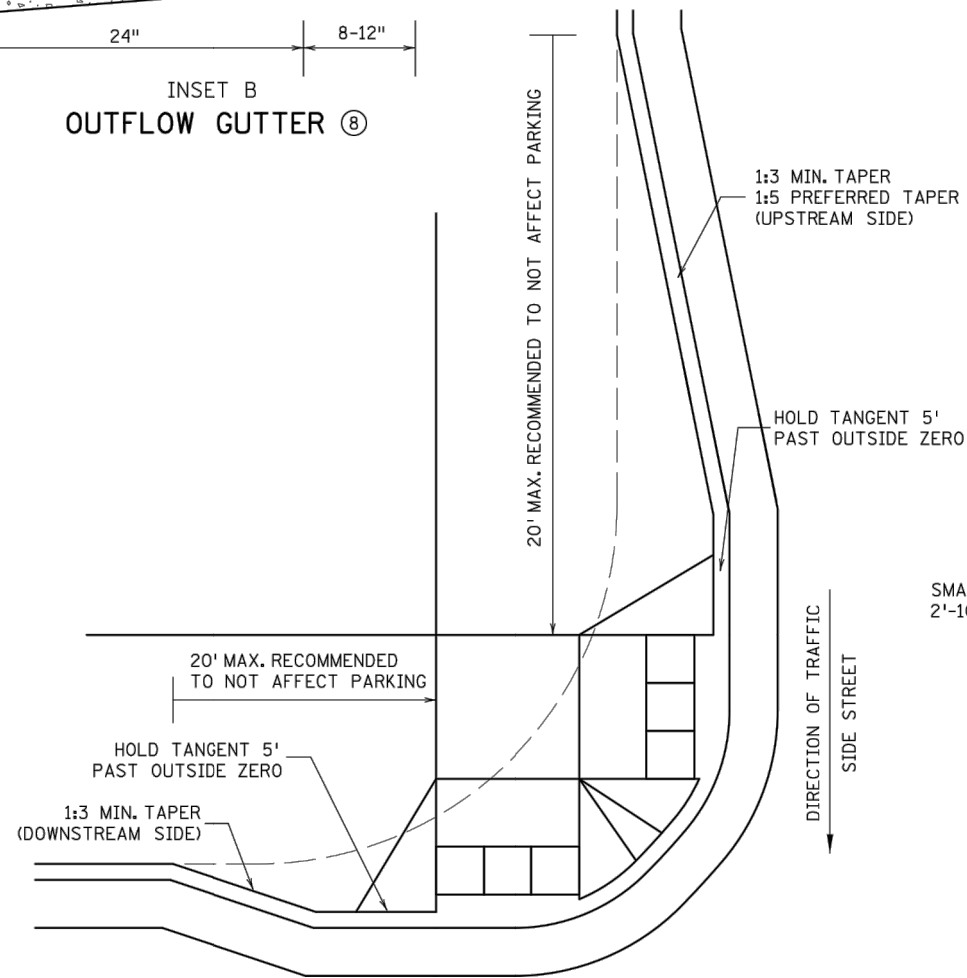
(10) HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.

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

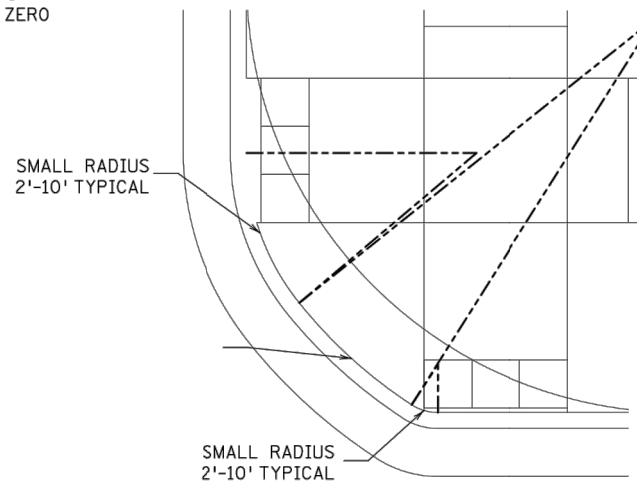
(12) PLACE BOND BREAKER BETWEEN WALK AND TOP OF SILL.

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

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



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



COMBINED DIRECTIONAL (COMPOUND RADIUS) (12)

REVISION:

APPROVED: JANUARY 23, 2017

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STANDARD PLAN 5-297.250

3 OF 6

PEDESTRIAN CURB RAMP DETAILS

APPROVED: 1-23-2017  
REVISED:

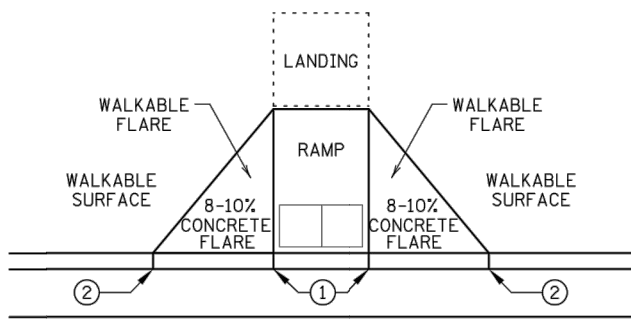
STATE PROJ. NO.

(T.H. )

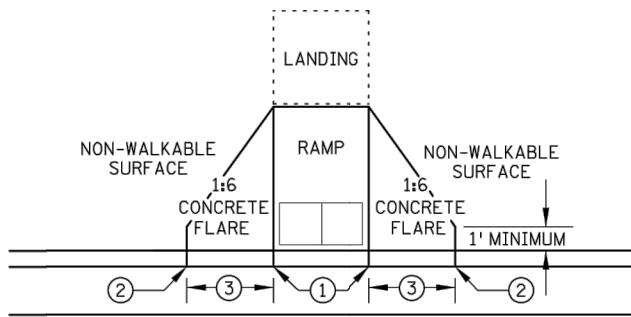
SHEET NO. 15 OF 18 SHEETS

PLOTTED/REVISED: 4-APR-2018

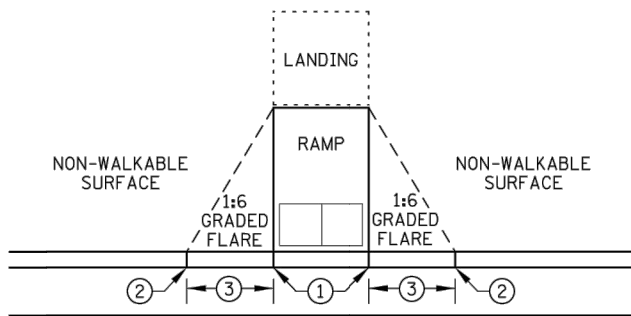
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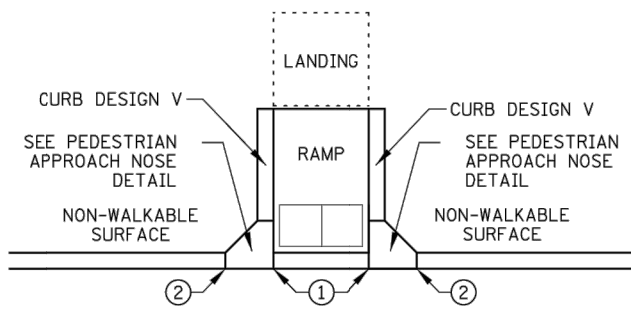
PAVED FLARES  
ADJACENT TO WALKABLE SURFACE



PAVED FLARES  
ADJACENT TO NON-WALKABLE SURFACE

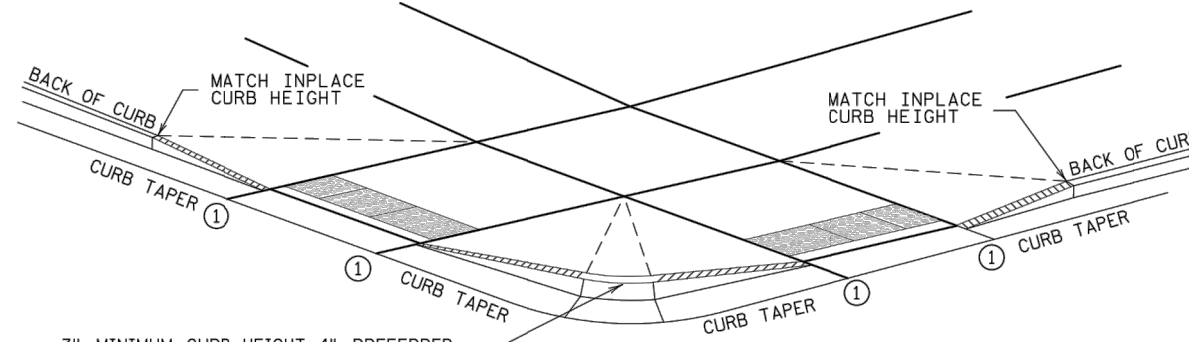


GRADED FLARES



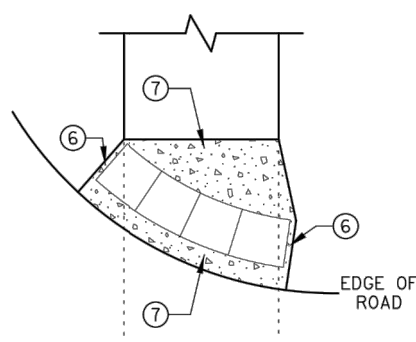
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑪

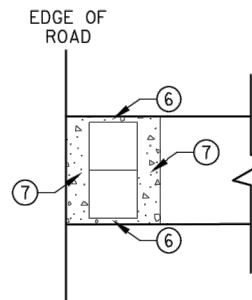


3" MINIMUM CURB HEIGHT, 4" PREFERRED  
(MEASURED AT FRONT FACE OF CURB)  
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑧  
CURB AND GUTTER

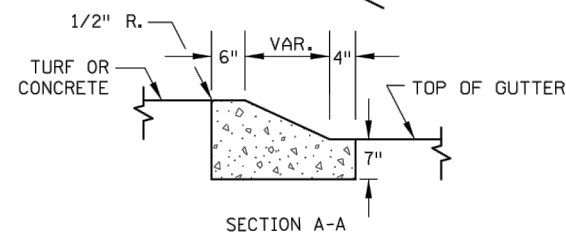
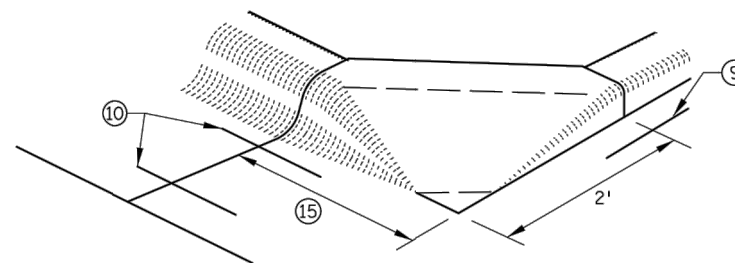


RADIAL DETECTABLE WARNING

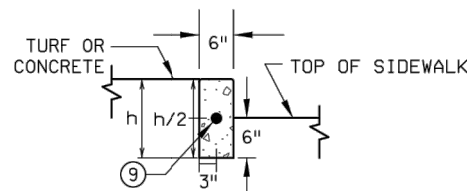


RECTANGULAR DETECTABLE WARNING

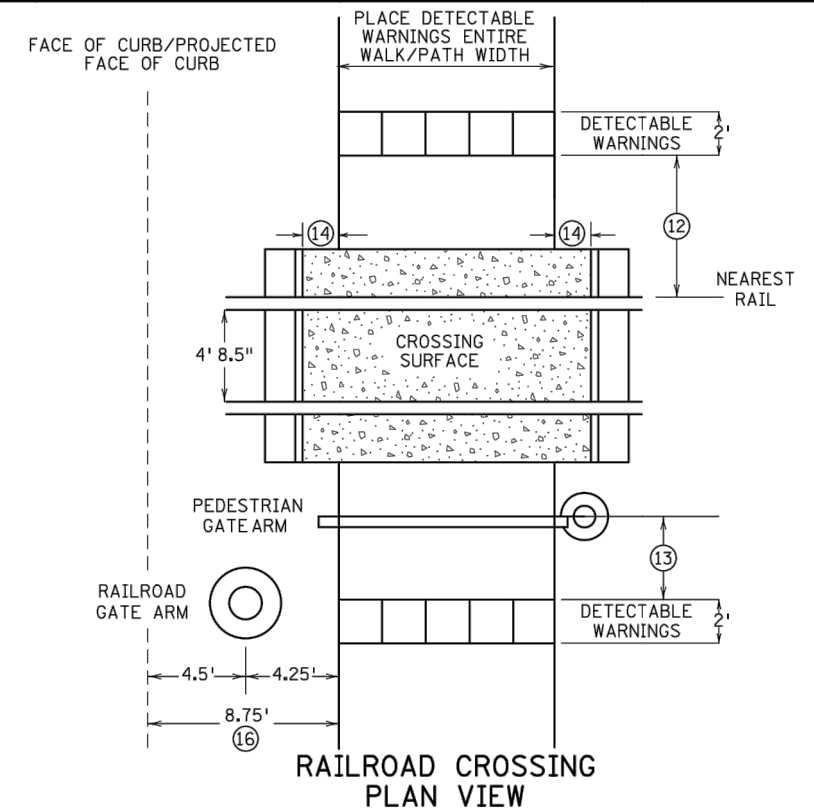
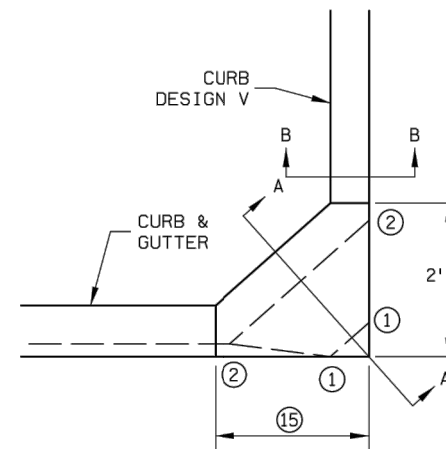
DETECTABLE EDGE WITHOUT CURB AND GUTTER



SECTION A-A



SECTION B-B



RAILROAD CROSSING  
PLAN VIEW

NOTES:

- SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
- A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMP FROM THE BACK OF CURB.
- ① 0" CURB HEIGHT.
- ② FULL CURB HEIGHT.
- ③ 2' FOR 4" HIGH CURB AND 3' FOR 6" HIGH CURB.
- ④ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
- ⑤ TYPICALLY USED FOR MEDIANS AND ISLANDS.
- ⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
- ⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.
- ⑨ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.
- ⑩ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.
- ⑪ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6" LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE.
- ⑫ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.
- ⑬ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑫.
- ⑭ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
- ⑮ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
- ⑯ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

REVISION:  
APPROVED: JANUARY 23, 2017  
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PEDESTRIAN APPROACH  
NOSE DETAIL  
(FOR RETURNED CURB  
SIDE TREATMENT)



STANDARD PLAN 5-297.250

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APPROVED: 1-23-2017  
REVISED:

STATE DESIGN ENGINEER

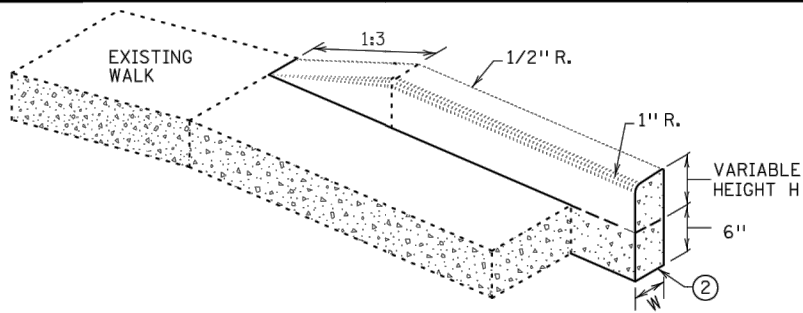
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PEDESTRIAN CURB RAMP DETAILS

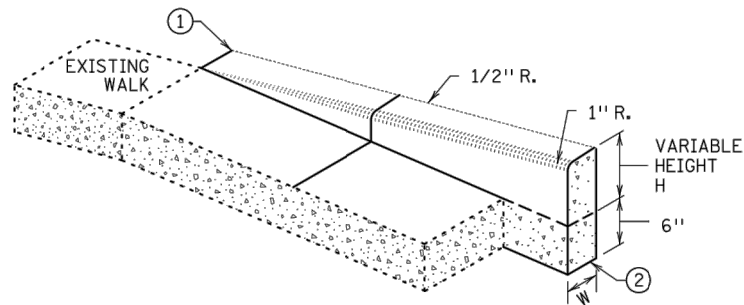
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PLOTTED/REVISED: 4-APR-2018

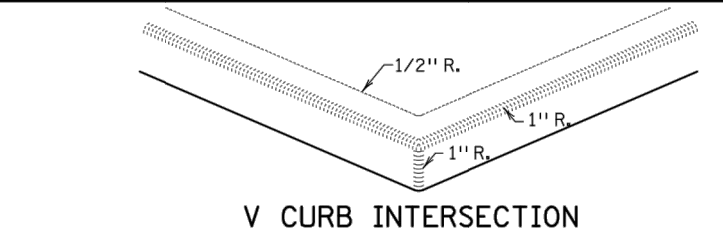
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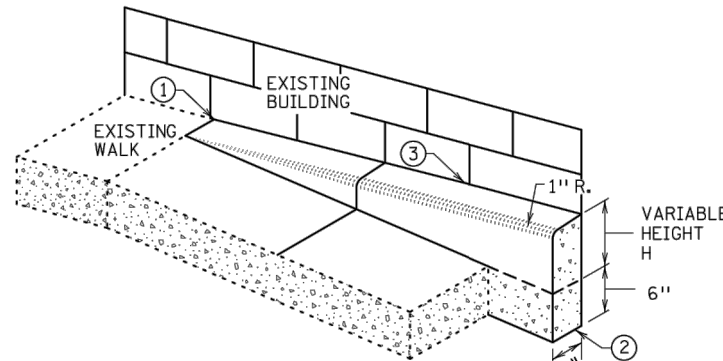
V CURB ADJACENT TO LANDSCAPE  
 CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE  
 CURB OUTSIDE SIDEWALK LIMITS

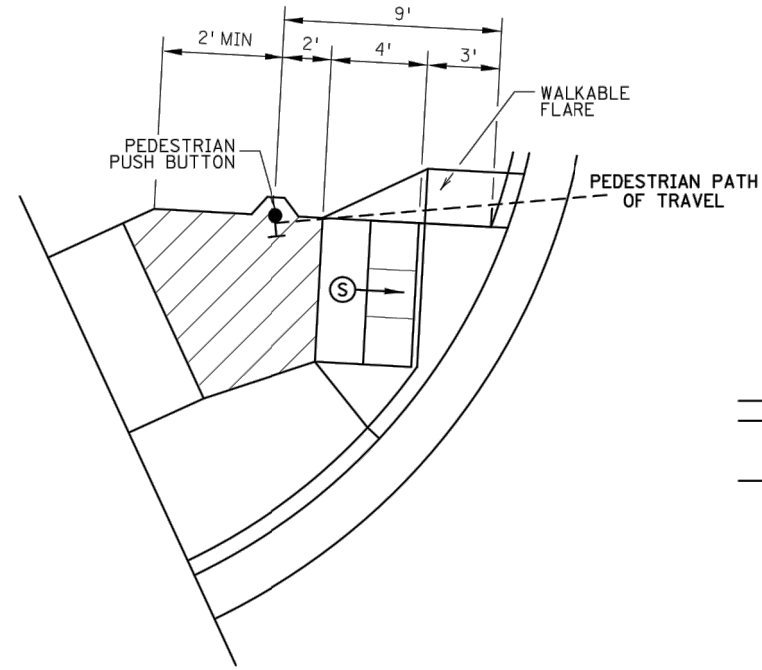


V CURB INTERSECTION



V CURB ADJACENT TO BUILDING  
 OR BARRIER

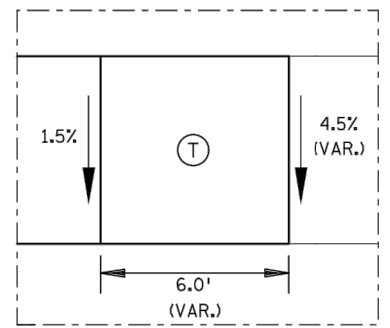
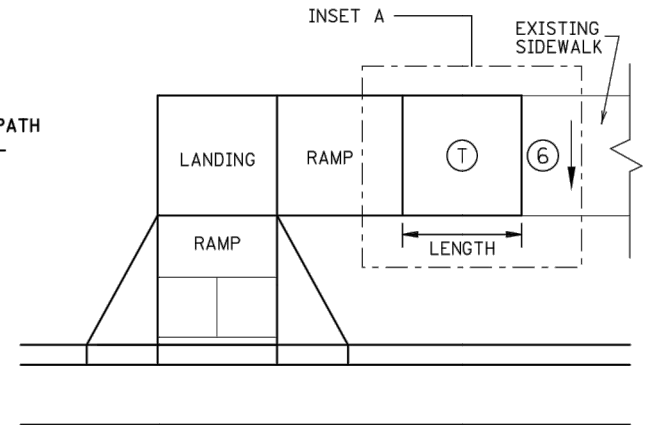
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



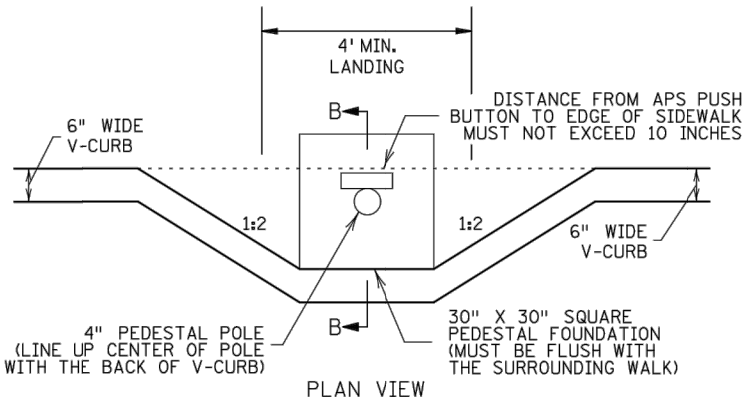
SEMI-DIRECTIONAL RAMP (3,4,9)

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

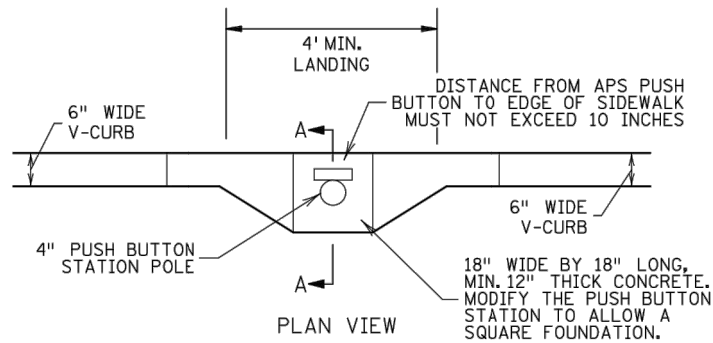
PRIMARYLY USED FOR APS APPLICATIONS  
 WHERE THE PAR DOES NOT CONTINUE PAST  
 THE PUSH BUTTON (DEAD-END SIDEWALK)



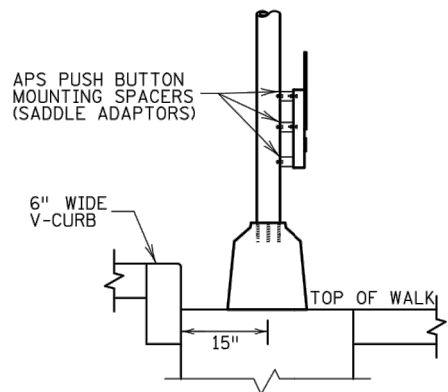
TRANSITION PANEL (4,5)



PLAN VIEW

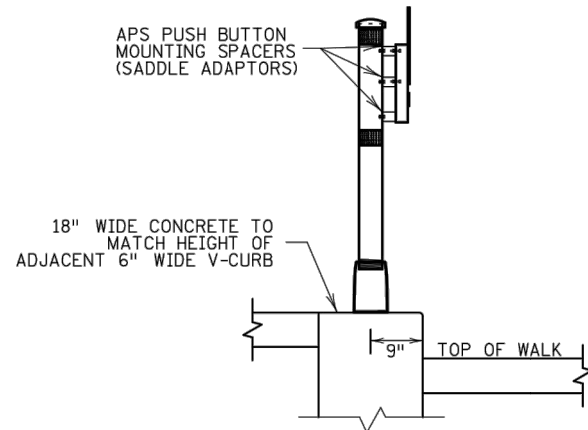


PLAN VIEW



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) EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.

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

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

(6) EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

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

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

REVISION:
APPROVED: JANUARY 23, 2017
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STANDARD PLAN 5-297.250

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PEDESTRIAN CURB RAMP DETAILS

APPROVED: 1-23-2017  
 REVISED:

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 STATE DESIGN ENGINEER

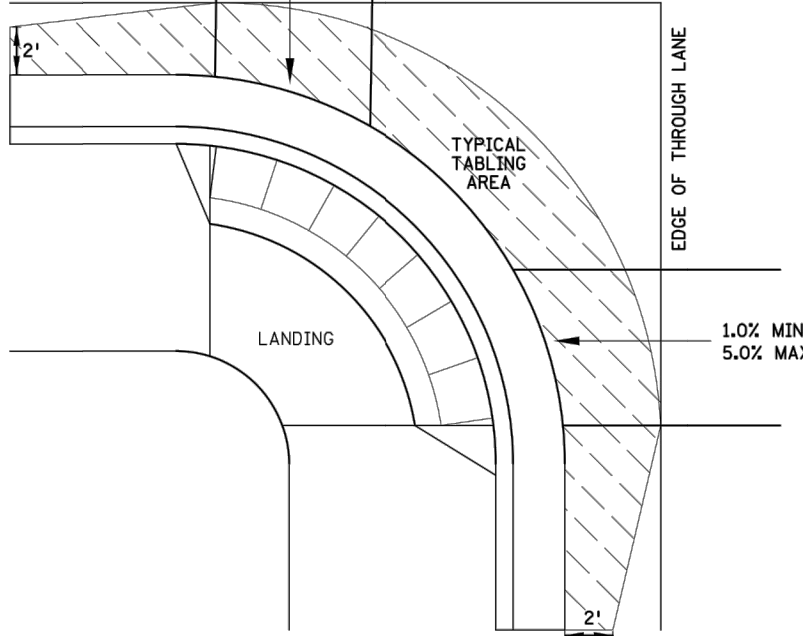
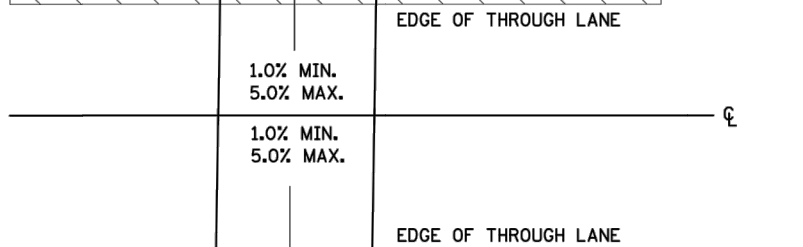
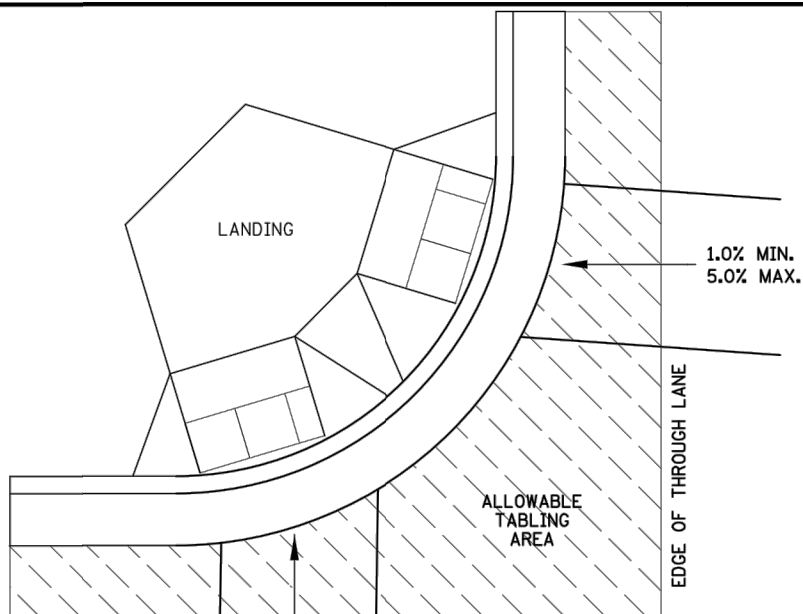
STATE PROJ. NO.

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SHEET NO. 17 OF 18 SHEETS

PLOTTED/REVISED: 4-APR-2018

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### CURB LINE AND ROAD CROSSING ADJUSTMENTS

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

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

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

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

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

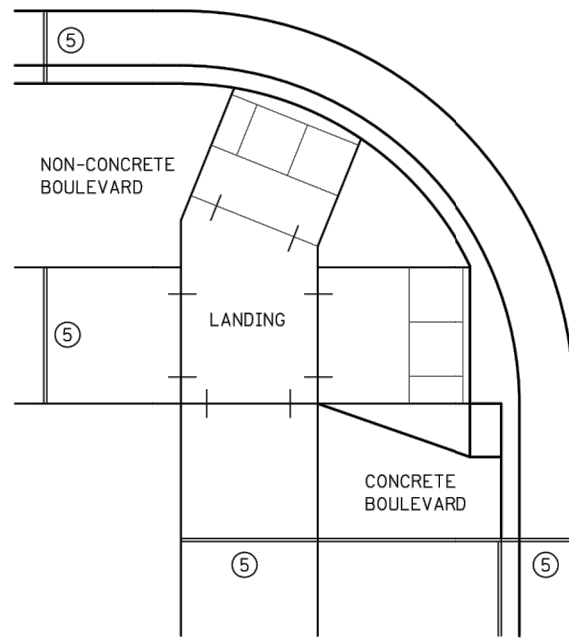
RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:

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

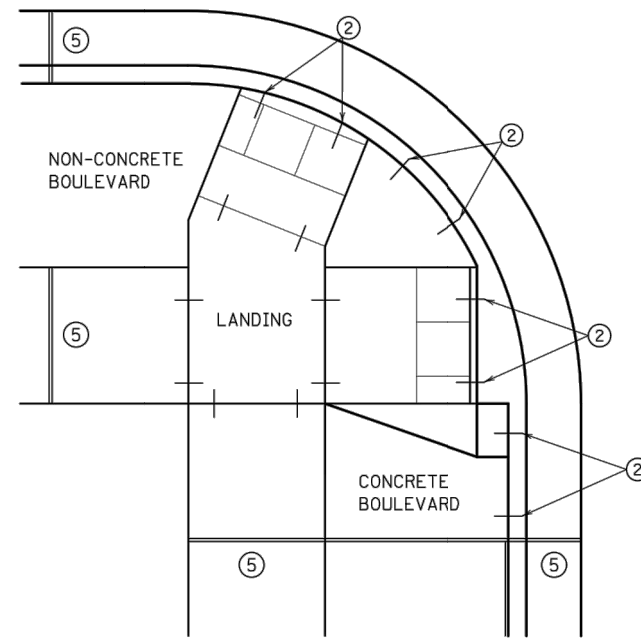
REVISION:

APPROVED: JANUARY 23, 2017

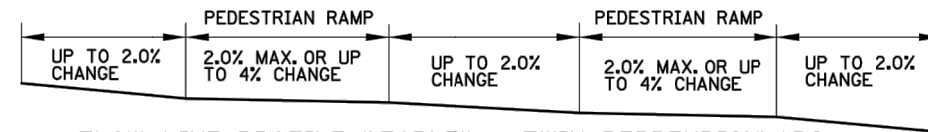
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OPERATIONS ENGINEER



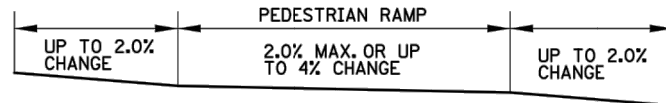
### EXPANSION MATERIAL PLACEMENT FOR CONCRETE AND BITUMINOUS ROADWAYS



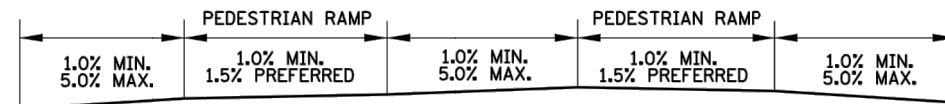
### OPTIONAL CURB LINE REINFORCEMENT PLACEMENT ON BITUMINOUS ROADWAYS



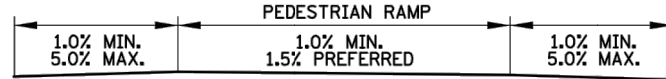
### FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



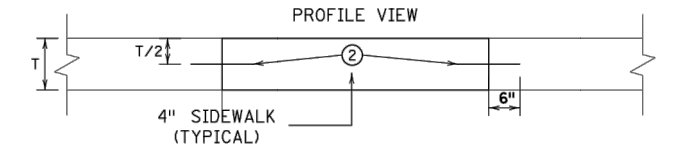
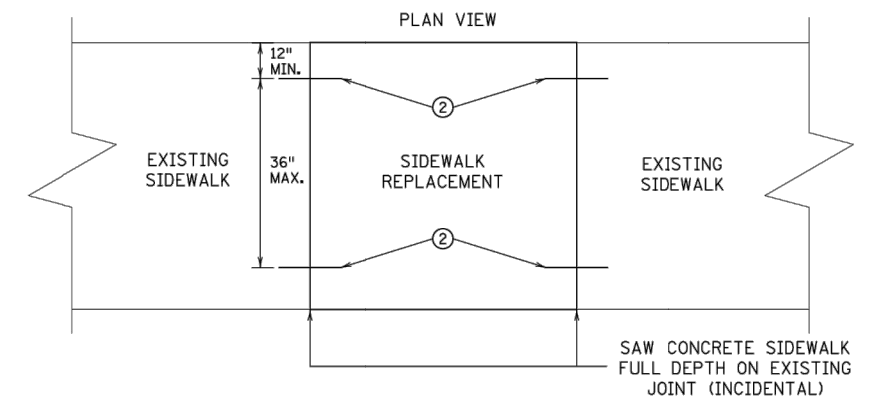
### FLOW LINE PROFILE "TABLE" - FAN



### FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

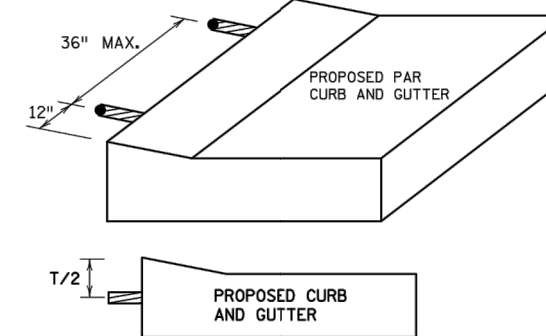


### FLOW LINE PROFILE RAISE - FAN

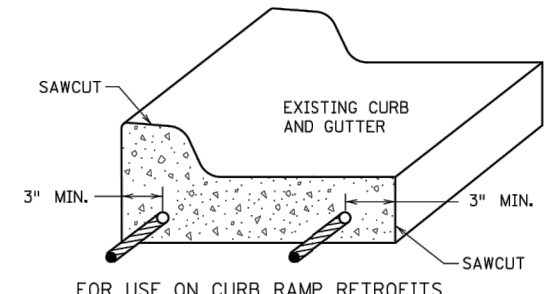


### OPTIONAL SIDEWALK REINFORCEMENT

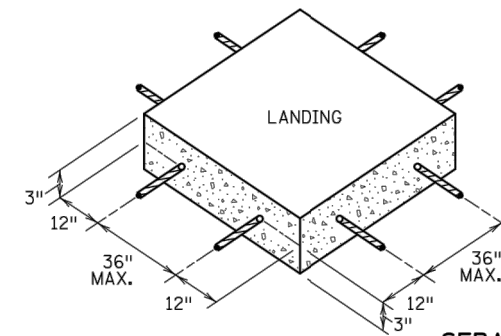
SIDEWALK REINFORCEMENT TO BE USED ONLY WHEN SPECIFIED IN THE PLAN.



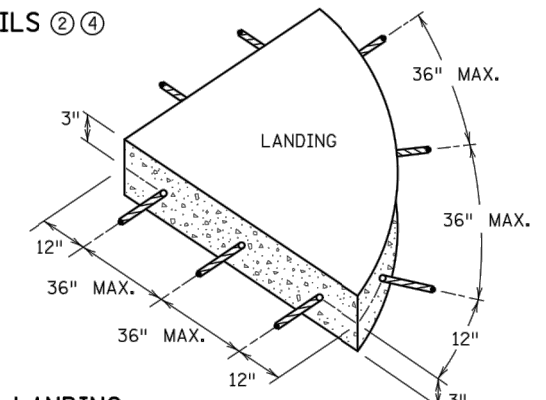
### OPTIONAL CURB LINE REINFORCEMENT DETAILS



### CURB AND GUTTER REINFORCEMENT



### SEPARATE LANDING POUR REINFORCEMENT



### NOTES:

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



STANDARD PLAN 5-297.250

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### PEDESTRIAN CURB RAMP DETAILS

APPROVED: 1-23-2017  
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SHEET NO. 18 OF 18 SHEETS