

# DULUTH TRANSIT AUTHORITY

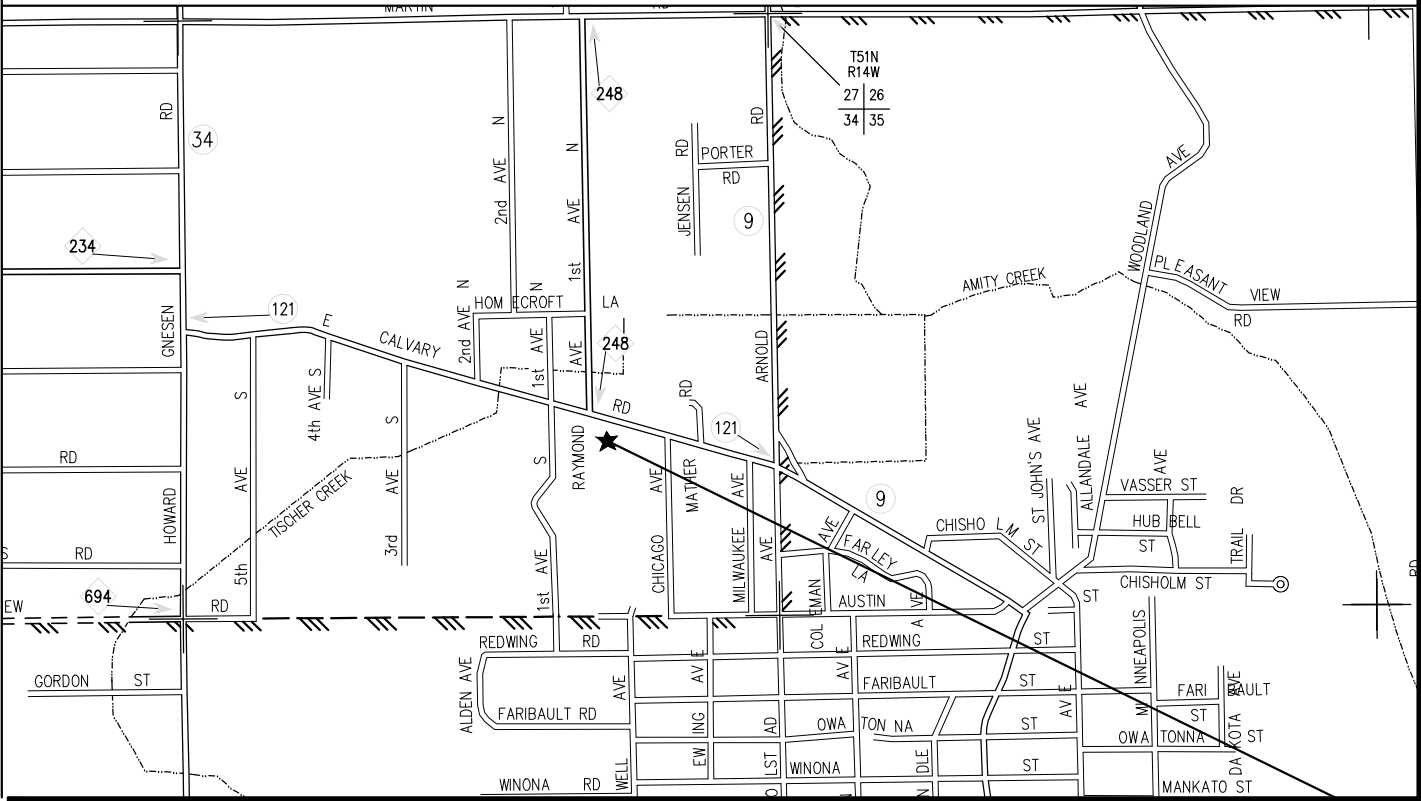
# CALVARY ROAD PARK AND RIDE REHAB



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21 W. Superior St., Ste. 500 | Duluth, MN 55802 | 218.727.8446

## INDEX MAP



## CONTACTS

### CLIENT

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DULUTH, MN 55806

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CLIENT:

DULUTH TRANSIT  
AUTHORITY

2402 W MICHIGAN ST.  
DULUTH, MN 55806

THIS SQUARE APPEARS 1/2" x 1/2"  
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A	08/16/19	ISSUED FOR REVIEW
NO	DATE	ISSUED FOR

NO	DATE	REVISION
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I HEREBY CERTIFY that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

SIGNATURE: *Daniel G. Shaw*

TYPED OR PRINTED NAME: DANIEL G. SHAW

DATE: 08-16-19 REG. NO.: 41423

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PROJECT NAME:

DULUTH TRANSIT  
AUTHORITY CALVARY RD.  
PARK AND RIDE

DRAWING TITLE:

TITLE SHEET

FILE: PROJ. NO:  
DRAWN BY: AFL/SMH 190561  
CHECKED BY: DJS/BJB

DRAWING NO:  
G0.00

## DRAWING INDEX

GENERAL		REVISION
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## GOVERNING SPECIFICATIONS

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

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MN MUTCD, INCLUDING THE FIELD MANUAL DATED JANUARY 2019.

<http://www.dot.state.mn.us/trafficeng/publ/fieldmanual/index.html>

## PROJECT LOCATION

ST. LOUIS COUNTY  
SEC. 34 T51N R14W

## WARNING











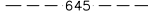
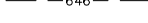
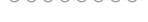


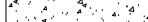
LOCATION OF ALL UNDERGROUND  
UTILITIES SHALL BE VERIFIED BY  
THE CONTRACTOR.  
CALL BEFORE DIGGING

MINNESOTA  
ONE-CALL SYSTEM  
1-800-252-1166  
REQUIRED BY  
MN STATUTE 216D




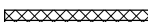
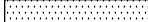

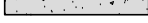

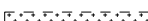


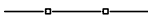



PLOT DATE: 8/31/2020 10:35:47 AM FILE: Q:\19Pro\190561\500 Drawings\Civil\190561 C100 - Notes & Legend.dwg

EXISTING LEGEND

	EXIST. FIRE HYDRANT
	EXIST. WATER VALVE
	ELECTRICAL LIGHT POLE
	ELECTRICAL UTILITY—LIGHT POLE
	HORIZONTAL CONTROL POINT
	EXIST. SIGN
	EXIST. DECIDUOUS TREE
	EXIST. CONIFEROUS TREE
	EXIST. BURIED SANITARY LINE
	EXIST. BURIED WATER LINE
	EXIST. CONTOUR (5' INTERVAL)
	EXIST. CONTOUR (1' INTERVAL)
	VEGETATION LINE
	EXIST. CONCRETE CURB & GUTTER
	EXIST. BITUMINOUS SURFACE
	EXIST. CONCRETE SURFACE

PROPOSED LEGEND

	CONSTRUCTION LIMITS
	SAWCUT
	REMOVE EXISTING PAVEMENT
	REMOVE EXISTING CURB AND GUTTER
	PAVEMENT BASE RECONSTRUCTION AREAS
	4" CONCRETE WALK
	BITUMINOUS PAVEMENT SEE PLAN
	4" TOPSOIL AND SOD
	CONCRETE S512 CURB AND GUTTER MNDOT STANDARD PLATE 7102K, DESIGN 'S'
	TRUNCATED DOME
	PROP. SILT FENCE
	PROP. INLET PROTECTION
	PROP. ROCK LOG

4  
C2.00

GENERAL CONSTRUCTION NOTES

- CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING PAVEMENTS DESIGNATED TO REMAIN. ANY PAVEMENTS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL UNDERGROUND UTILITIES. UTILIZE THE ONE CALL EXCAVATION NOTICE SYSTEM OF "GOPHER ONE CALL" CALL 1-800-252-1166. CONTRACTOR SHALL VERIFY WITH OWNER FOR PRIVATE ONSITE UTILITIES.
- GRADES SHOWN ARE FINISH SURFACE ELEVATIONS. THE CONTRACTOR SHALL MAKE APPROPRIATE DEDUCTIONS FOR VARYING SURFACES TO DETERMINE SUBGRADE ELEVATIONS.
- ALL EXISTING AND PROPOSED STRUCTURE ACCESS COVERS SHALL BE ADJUSTED TO FINISHED GRADE BY THE CONTRACTOR.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING. THE ENGINEER WILL PROVIDE CONTROL POINTS, BENCHMARKS AND ELECTRONIC FILES.
- DIMENSIONS ARE TO BACK EDGE OF CURBING UNLESS NOTED OTHERWISE.
- BASE BID SHALL INCLUDE RESTORATION OF ALL AREAS DISTURBED BY THE CONTRACTOR IN EXECUTION OF THE WORK. ALL DISTURBED AREAS SHALL BE RESTORED WITH SOD AND 4" DEPTH TOPSOIL UNLESS NOTED OTHERWISE ON THE PLANS.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL FOR THE PROJECT. TRAFFIC CONTROL MEASURES SHALL INCLUDE BUT NOT BE LIMITED TO ADVANCE WARNING SIGNAGE ON PUBLIC STREETS OF ROAD CLOSURE OR OBSTRUCTION, PROVIDING TRAFFIC BARRIERS AND SIGNAGE TO DIRECT BOTH VEHICULAR AND PEDESTRIAN TRAFFIC SAFELY AROUND AND THRU THE CONSTRUCTION ZONE.

EROSION CONTROL NOTES

- MNDOT (2018 EDITION) STND. SPEC. 1717.2. EROSION CONTROL, SHALL APPLY.
- THE CONTRACTOR IS RESPONSIBLE FOR EC QUALITY CONTROL ON THIS PROJECT (MNDOT 1717.2 B). CONTRACTOR SHALL PHASE/SEQUENCE THE PROJECT TO MINIMIZE EXPOSURE TO EROSION. CONTRACTOR SHALL PLACE OR OTHERWISE CONSTRUCT EROSION CONTROL AND SEDIMENT CONTAINMENT DEVICES TO MINIMIZE THE RUNOFF, TRACKING, AND SEDIMENT LOSS FROM DISTURBED AREAS OF THE PROJECT SITE.
- SEDIMENT AND EROSION CONTROL DEVICES SHALL BE FUNCTIONAL BEFORE SITE IS DISTURBED.
- RECEIVING WATER FOR STORM WATER FROM THE PROJECT AREA INCLUDES EXISTING STORM SEWER SYSTEMS, AND TISCHER CREEK.
- DISTURBED SLOPES NOT ACTIVELY WORKED SHALL BE PROTECTED FROM SOIL EROSION WITH TEMPORARY OR PERMANENT COVER WITHIN PERMIT REQUIREMENTS BUT IN NO CASE GREATER THAN 7 DAYS OF BEING WORKED. USE EROSION CONTROL BLANKET WITH SOIL STAPLES OR ENGINEER APPROVED EQUAL.
- AT MINIMUM, THE FOLLOWING CONTROLS WILL BE IMPLEMENTED AT THE CONSTRUCTION SITE:
  - EROSION CONTROL BLANKETS SHALL BE USED ON ALL SLOPES 1:3 OR STEEPER.
  - SILT FENCES SHALL BE USED IN CONJUNCTION WITH OTHER EROSION BMP'S.
  - ROCK DITCH CHECKS OR APPROVED EQUAL ARE TO BE USED TO REDUCE DITCH VELOCITIES AND EROSION.
  - STORM INLETS SHALL BE PROTECTED WITH INLET PROTECTION DEVICE.
  - PERMANENT VEGETATION WILL BE ESTABLISHED RIGHT AFTER TOPSOIL IS RE-SPREAD.
  - CONTROL ALL SITE WASTED, DEBRIS, MATERIAL STORAGE AND CONCRETE WASHOUT TO PREVENT IMPACTS TO ANY DRAINAGE.
- ALL SLOPES AND DITCHES SHALL BE STABILIZED PRIOR TO OPENING NEW CULVERTS INTO EXISTING DRAINAGE WAYS.
- IF ANY STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN 3 DAYS, SEDIMENT AND EROSION CONTROL DEVICES SHALL BE USED.
- WATER PUMPED OR OTHERWISE DISCHARGED FROM THE SITE DURING CONSTRUCTION DEWATERING SHALL BE DIRECTED THROUGH EFFECTIVE FILTERING DEVICE(S).
- THE CONTRACTOR SHALL TAKE ALL POSSIBLE PRECAUTIONS TO PREVENT APPRECIABLE SOIL TRACKING ONTO ROADWAYS. APPRECIABLE SOIL, MUD, OR DEBRIS WASHED, TRACKED, OR DEPOSITED ONTO PAVED SURFACES SHALL BE REMOVED PRIOR TO THE END OF EACH WORKDAY.
- STABILIZED CONSTRUCTION ENTRANCE(S) SHALL BE REMOVED AND AREA RESTORED AFTER GRADING IS COMPLETE.
- MNDOT 1717.2 B. THE CONTRACTOR QC PROGRAM SHALL ENSURE THAT A COMPETENT INDIVIDUAL SHALL INSPECT EROSION AND SEDIMENT CONTROL DEVICES WEEKLY AND AFTER EACH RAIN EVENT. ALL NONFUNCTIONAL DEVICES SHALL BE REPAIRED, REPLACED, OR CLEANED.
- WHERE NOT OTHERWISE SPECIFIED, RAPID STABILIZATION METHOD 4 SHALL BE USED WHEN QUICK STABILIZATION IS NEEDED. USE CATEGORY 3 EROSION CONTROL BLANKET (ECB) (NORTH AMERICAN GREEN S150 OR APPROVED EQUAL). USE WITH SEED MIXTURE 22-112 PER MNDOT 2575.3. THE UPGRADE END OF EACH BLANKET STRIP SHALL BE BURIED AT LEAST 6-INCHES IN A VERTICAL CHECK SLOT. STAPLES SHALL BE PLACED AT SEAMS AND THROUGHOUT THE BLANKET AT A MAXIMUM SPACING IN ALL DIRECTIONS OF 3-FEET.
- THE EROSION CONTROL ELEMENTS SHOWN ON THIS PLAN ARE STARTING POINT FOR EROSION PREVENTION AND SEDIMENT CONTROL ON THE SITE, AND THE CONTRACTOR'S OPERATIONS AND PHASING OF THE CONSTRUCTION ACTIVITY SHALL REQUIRE THE CONTRACTOR TO MODIFY AND AMEND THIS PLAN AS CONDITIONS WARRANT AND AS BMP'S ARE ADDED, DELETED, OR MODIFIED ON THE SITE. ANY AMENDMENTS SHALL BE NOTED ON THE PLAN AND KEPT AS A RECORD AVAILABLE AT THE SITE.



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

SIGNATURE: *Daniel G. Shaw*

TYPED OR PRINTED NAME: DANIEL G. SHAW

DATE: 08-16-19 REG. NO.: 41423

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PROJECT NAME:  
DULUTH TRANSIT  
AUTHORITY CALVARY RD.  
PARK AND RIDE

DRAWING TITLE:  
CONSTRUCTION NOTES  
AND LEGEND

FILE:  
DRAWN BY: AFL  
CHECKED BY: DGS

PROJ. NO:  
190561  
DRAWING NO:  
C100









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PARK AND RIDE**

DRAWING TITLE:  
**CONSTRUCTION DETAILS**

FILE: PROJ. NO:  
DRAWN BY: AFL **190561**  
CHECKED BY: DGS DRAWING NO:

**C2.01**

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

5" DIAMETER GEOTEXTILE SOCK,  
TYPE WOVEN MONOFILAMENT  
CONFORMING TO SPEC. 3886,  
TABLE 3886-1. MACHINE SLICE

SEAM JOINED BY TWO ROWS OF  
STITCHING WITH A PLASTIC MESH  
BACKING OR HEAT BONDED.  
(OR APPROVED EQUIVALENT)

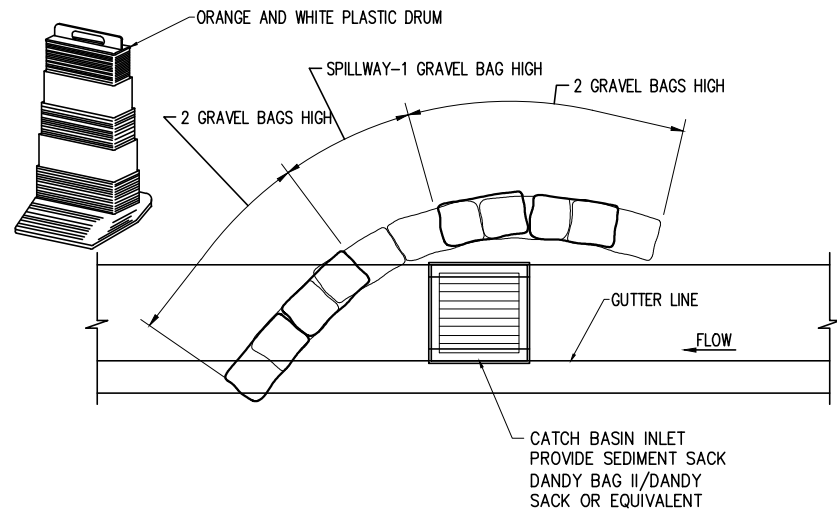
FILL ROCK LOG WITH 45 LBS.  
OF OPEN GRADED AGGREGATE  
CONSISTING OF SOUND,  
DURABLE PARTICLES OF  
CRUSHED QUARRY ROCK OR  
GRAVEL CONFORMING TO THE  
FOLLOWING GRADATION.

GRADATION	
SIEVE SIZE	PERCENT PASSING
1-1/2 INCH	100
1 INCH	95-100
3/4 INCH	65-95
3/8 INCH	30-65
NO. 4	10-35
NO.10	3-20
NO. 40	0-8
NO. 200	0-3

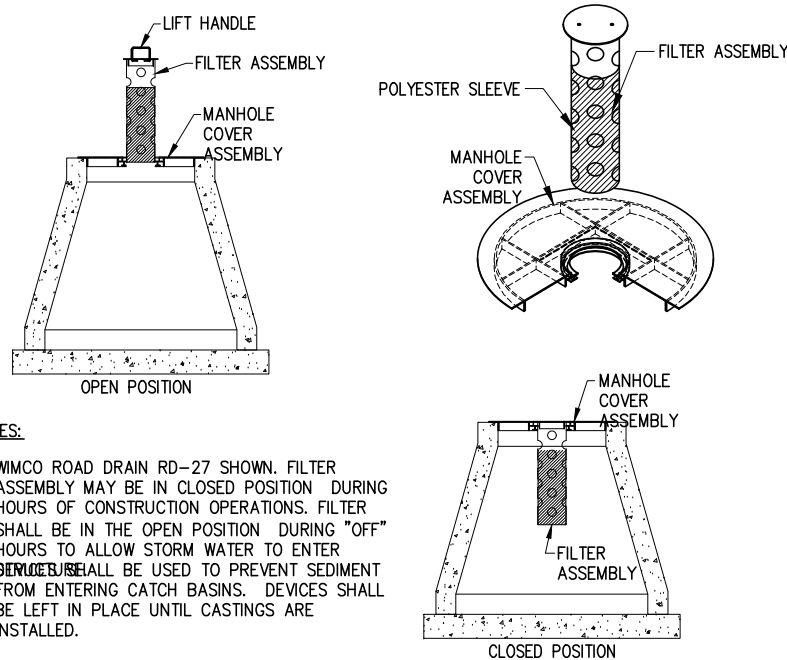
NOTE: CRUSHED CONCRETE OR  
BITUMINOUS SHALL NOT BE  
USED FOR OPEN GRADED  
AGGREGATE.

#### CONSTRUCTION REQUIREMENTS FOR ROCK LOGS

#### 4 TEMPORARY DITCH CHECK - TYPE ROCK LOG DETAIL NOT TO SCALE



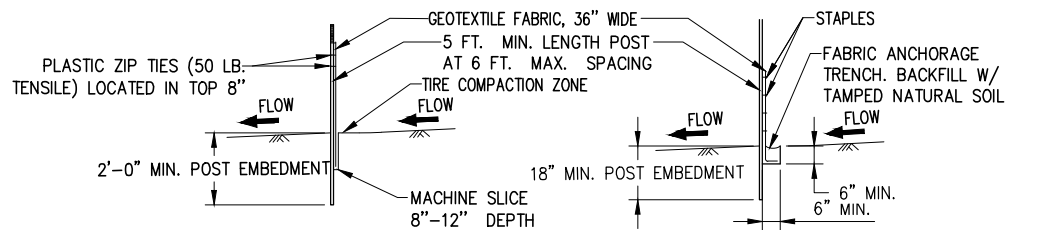
#### 3 INLET PROTECTION TYPE II NOT TO SCALE



#### NOTES:

1. WIMCO ROAD DRAIN RD-27 SHOWN. FILTER ASSEMBLY MAY BE IN CLOSED POSITION DURING HOURS OF CONSTRUCTION OPERATIONS. FILTER SHALL BE IN THE OPEN POSITION DURING "OFF" HOURS TO ALLOW STORM WATER TO ENTER
2. ~~SEE SPEC. 3886-1.1~~ SHALL BE USED TO PREVENT SEDIMENT FROM ENTERING CATCH BASINS. DEVICES SHALL BE LEFT IN PLACE UNTIL CASTINGS ARE INSTALLED.

#### 2 INLET PROTECTION TYPE I NOT TO SCALE



**SILT FENCE, MACHINE SLICED**  
DESIGN GUIDELINES:  
TO PROTECT AREAS FROM SHEET FLOW.  
MAXIMUM CONTRIBUTING AREA: 1 ACRE

**SILT FENCE, PREASSEMBLED**  
DESIGN GUIDELINES:  
TO PROTECT AREAS FROM SHEET FLOW.  
MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.

#### 1 SILT FENCE NOT TO SCALE





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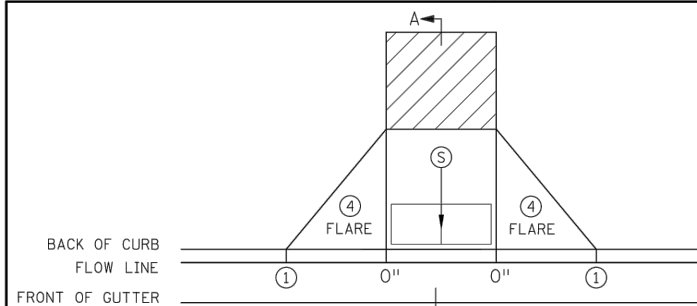
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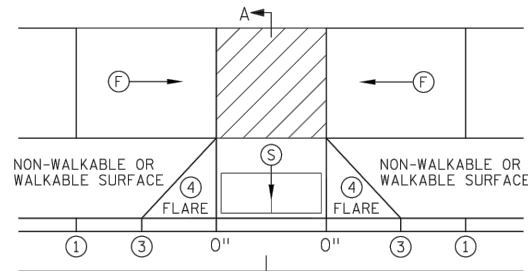
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FILE:  
DRAWN BY: AFL  
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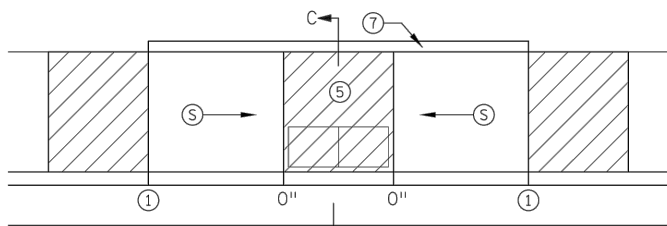
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DRAWING NO:  
**C2.02**



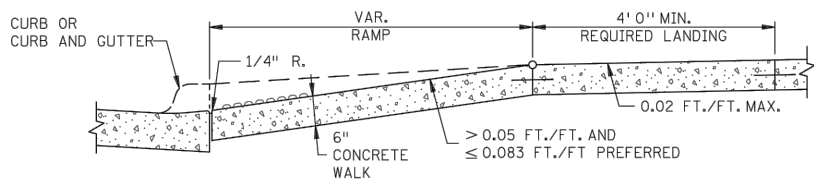
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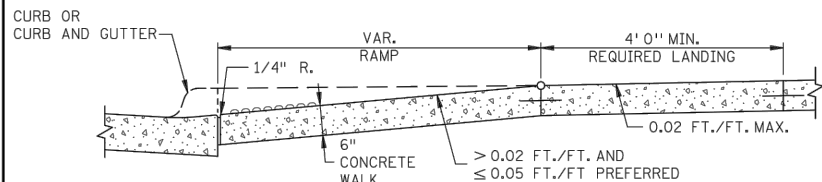
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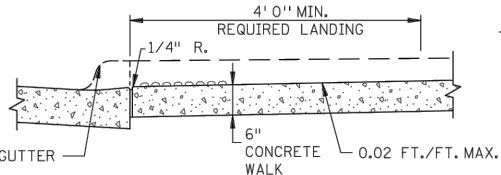
PARALLEL



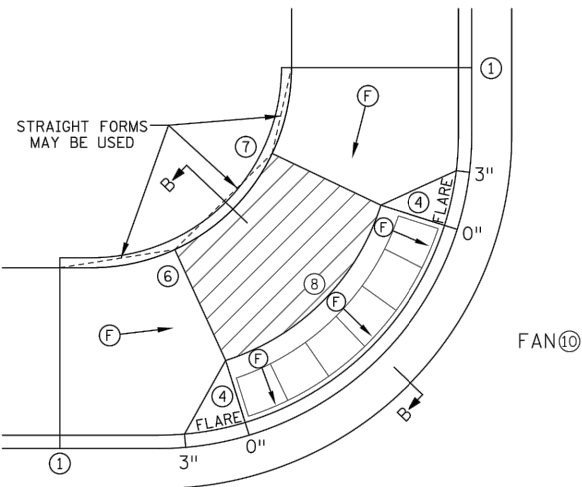
SECTION A-A  
PERPENDICULAR/TIERED/DIAGONAL



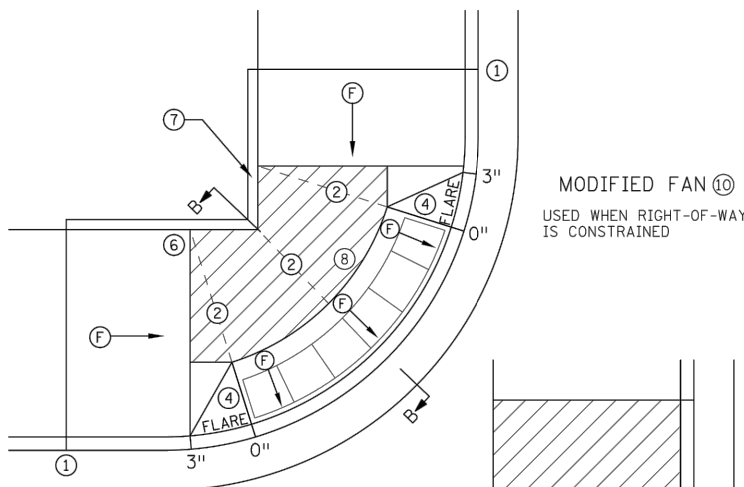
SECTION B-B  
FAN



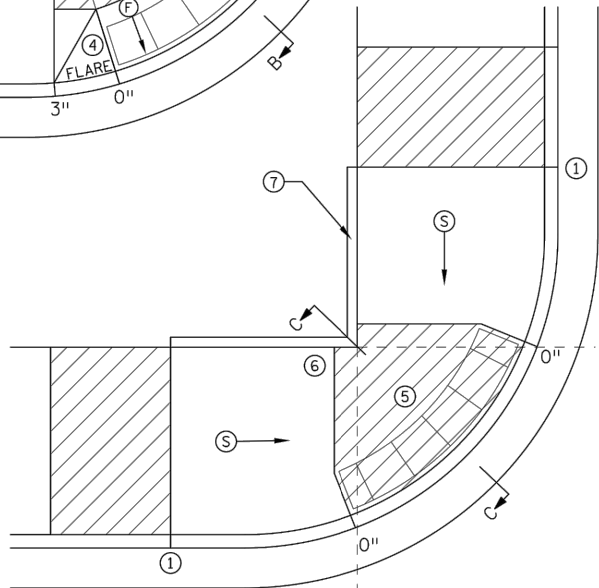
SECTION C-C  
PARALLEL/DEPRESSED CORNER



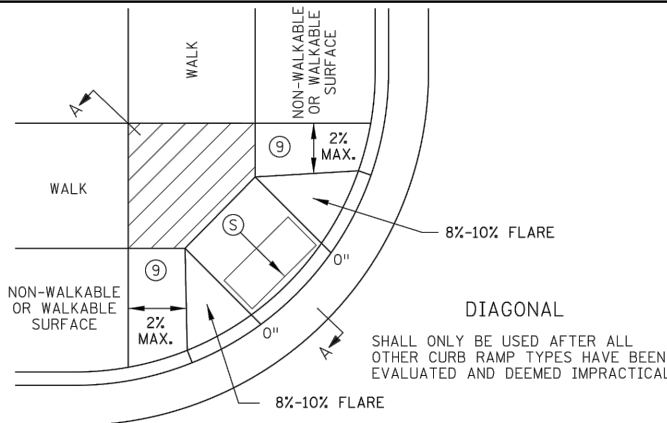
FAN 10



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



DEPRESSED CORNER



DIAGONAL

NOTES:

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

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

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

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES. ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH, EXCEPT AS STATED IN 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

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

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

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 1 OF 6



STATE DESIGN ENGINEER  
*Tom Shaw*  
1-23-2017

REVISED:

APPROVED:

REVISION:

APPROVED: JANUARY 23, 2017

OPERATIONS ENGINEER

PLOT DATE: 8/24/2020 6:06:07 AM FILE: Q:\19Proj\190561\500 Drawings\Civil\190561 C200 - Details.dwg





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CLIENT:  
**DULUTH TRANSIT  
AUTHORITY**

2402 W MICHIGAN ST.  
DULUTH, MN 55806

THIS SQUARE APPEARS 1/2" x 1/2"  
ON FULL SIZE SHEETS.

A	08/16/19	ISSUED FOR REVIEW
NO	DATE	ISSUED FOR

NO	DATE	REVISION
----	------	----------

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.

SIGNATURE: *Daniel G. Shaw*

TYPED OR PRINTED NAME: DANIEL G. SHAW

DATE: 08-16-19 REG. NO.: 41423

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PROJECT NAME:

**DULUTH TRANSIT  
AUTHORITY CALVARY RD.  
PARK AND RIDE**

DRAWING TITLE:  
**CONSTRUCTION DETAILS**

FILE:  
DRAWN BY: AFL  
CHECKED BY: DGS

PROJ. NO:  
**190561**  
DRAWING NO:  
**C2.03**

#### 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.

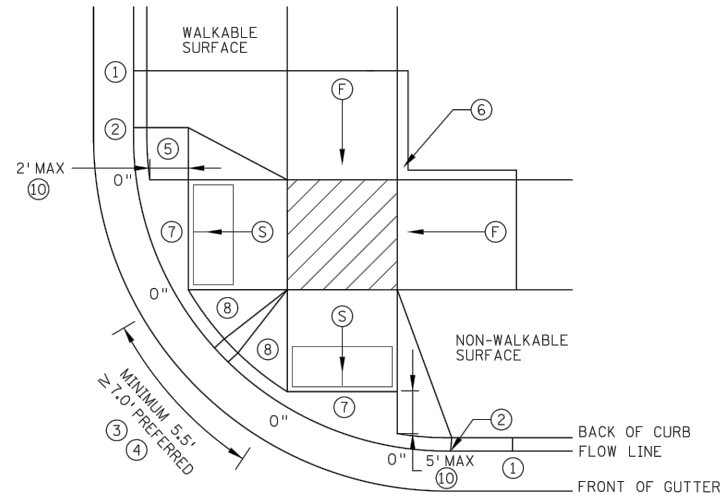
WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

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

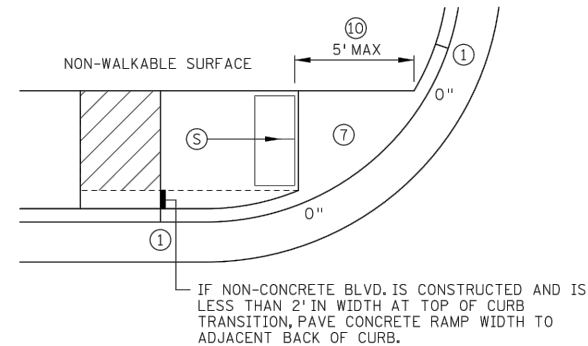
4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER ENTIRE WIDTH OF SHARED-USE PATH AND THE ENTIRE PAR WIDTH OF THE WALK. DETECTABLE WARNING SHOULD BE 6" LESS THAN THE PAR/PATH 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.

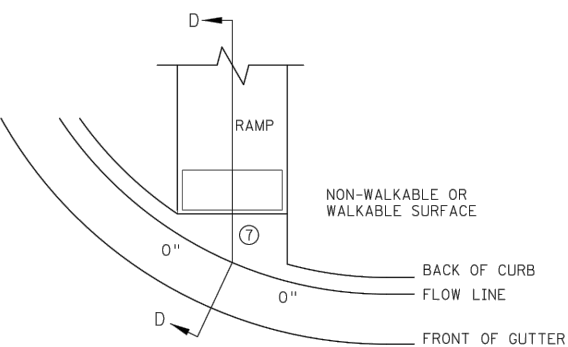
- ① MATCH FULL CURB HEIGHT.
- ② 3" HIGH CURB WHEN USING A 3' LONG RAMP  
4" HIGH CURB WHEN USING A 4' LONG RAMP.
- ③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)  
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).
- ④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH 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.



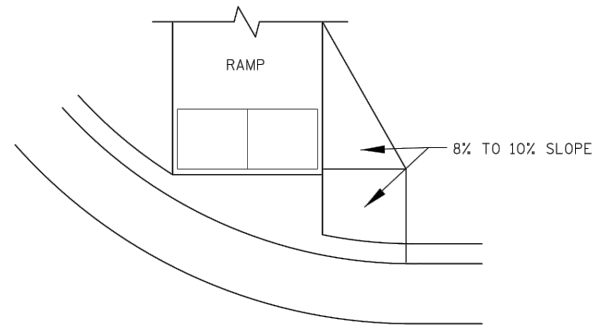
COMBINED DIRECTIONAL ⑨



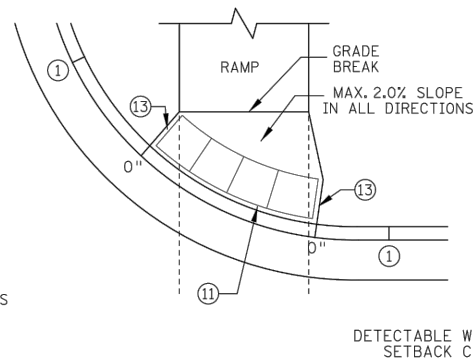
STANDARD ONE-WAY DIRECTIONAL ⑨



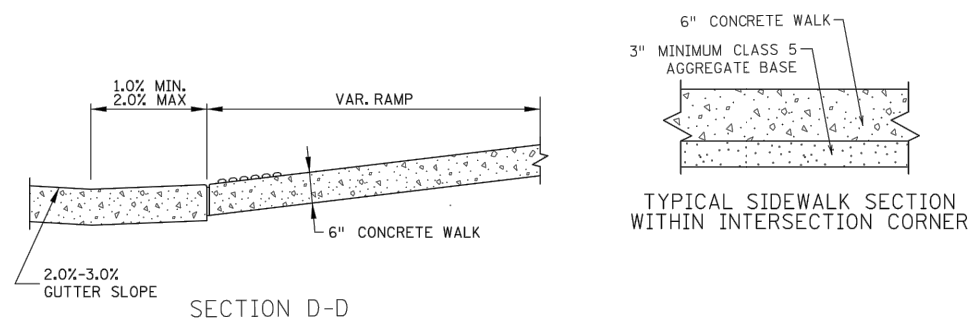
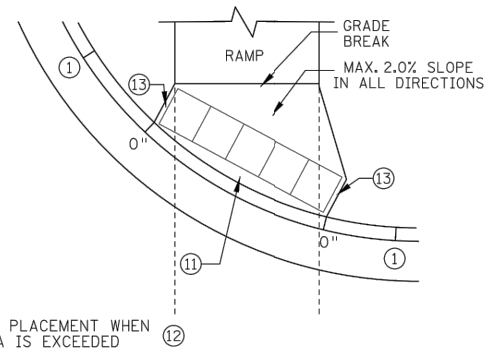
CURB FOR DIRECTIONAL RAMPS ⑭



DIRECTIONAL RAMP WALKABLE FLARE



ONE-WAY DIRECTIONAL WITH DETECTABLE  
WARNING AT BACK OF CURB



TYPICAL SIDEWALK SECTION  
WITHIN INTERSECTION CORNER

LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
⑤	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
⑥	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
⑦	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PAR.
X"	CURB HEIGHT

#### PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 2 OF 6



Tom Shaw  
STATE DESIGN ENGINEER

REVISED:

APPROVED:

1-23-2017

REVISION:
APPROVED: JANUARY 23, 2017 OPERATIONS ENGINEER





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CLIENT:  
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DULUTH, MN 55806

THIS SQUARE APPEARS 1/2" x 1/2"  
ON FULL SIZE SHEETS.

A	08/16/19	ISSUED FOR REVIEW
NO	DATE	ISSUED FOR

NO	DATE	REVISION
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I HEREBY CERTIFY that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

SIGNATURE: *Daniel G. Shaw*

TYPED OR PRINTED NAME: DANIEL G. SHAW

DATE: 08-16-19 REG. NO.: 41423

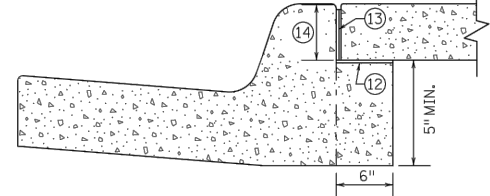
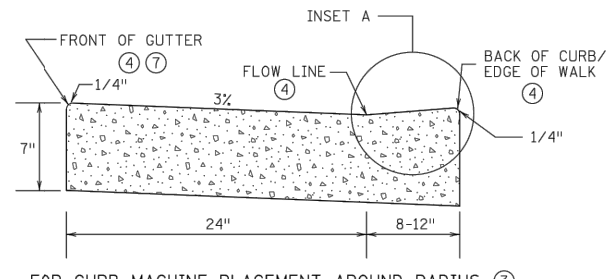
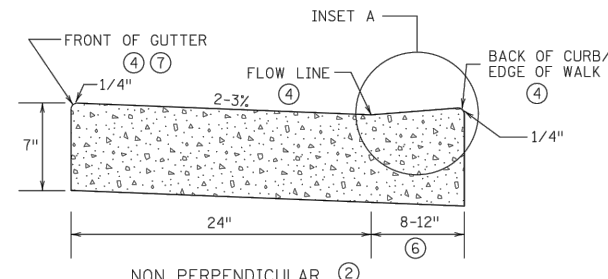
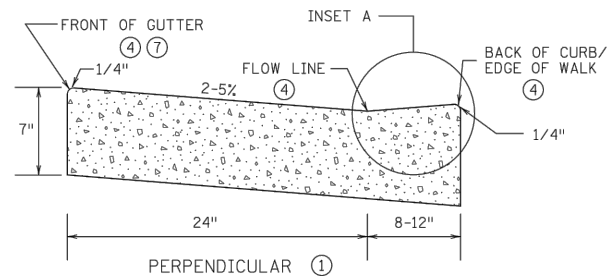
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PROJECT NAME:

**DULUTH TRANSIT  
AUTHORITY CALVARY RD.  
PARK AND RIDE**

DRAWING TITLE:  
**CONSTRUCTION DETAILS**

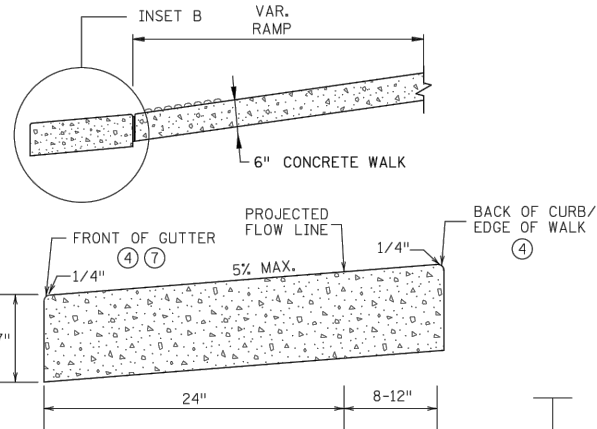
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PROJ. NO:  
**190561**  
DRAWING NO:  
**C2.04**



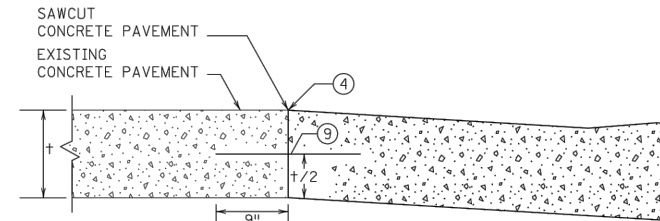
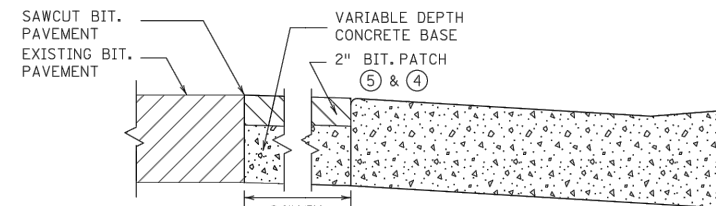
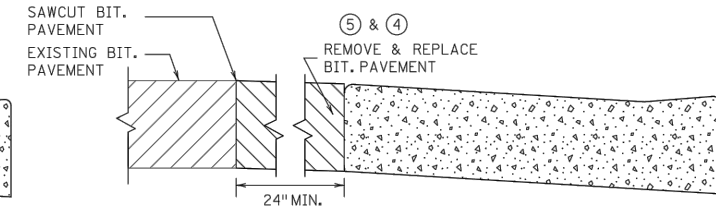
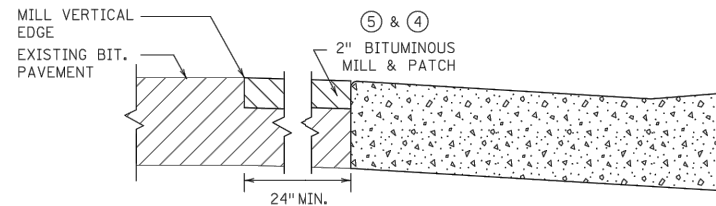
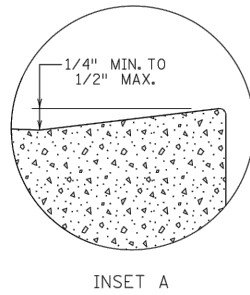
OPTIONAL SILL CURB WHEN SIDEWALK  
IS AT BACK OF CURB

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 RAMP.

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

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

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.

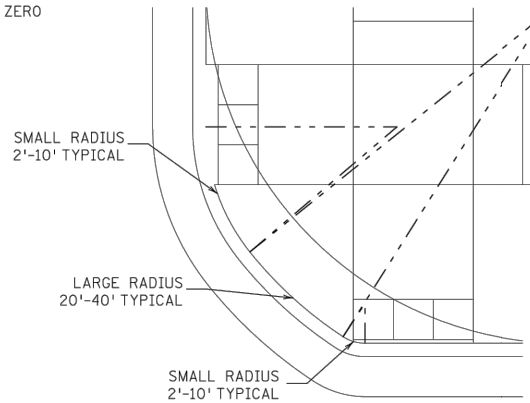
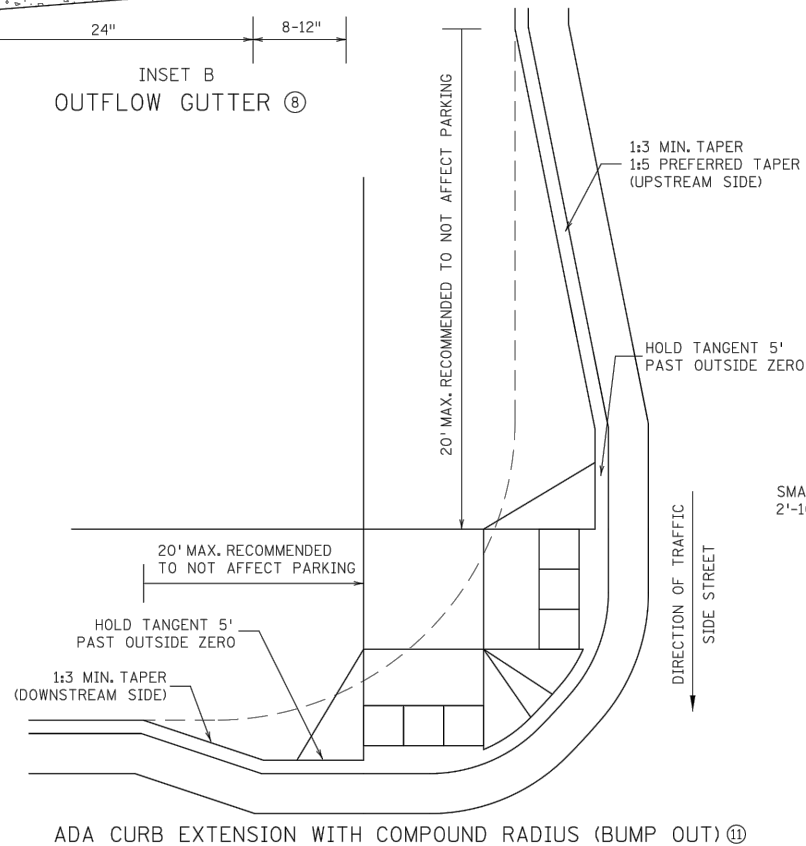
⑩ HELPS PROVIDE TWO SEPARATE RAMP, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.

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.



COMBINED DIRECTIONAL ⑩  
(COMPOUND RADIUS)

REVISION:  
APPROVED: JANUARY 23, 2017  
OPERATIONS ENGINEER

DIRECTION OF TRAFFIC  
MAIN STREET



REVISOR:  
APPROVED:  
1-23-2017  
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 3 OF 6





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THIS SQUARE APPEARS 1/2" x 1/2"  
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A	08/16/19	ISSUED FOR REVIEW
NO	DATE	ISSUED FOR

NO	DATE	REVISION
----	------	----------

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.

SIGNATURE: *Daniel G. Shaw*

TYPED OR PRINTED NAME: DANIEL G. SHAW

DATE: 08-16-19 REG. NO.: 41423

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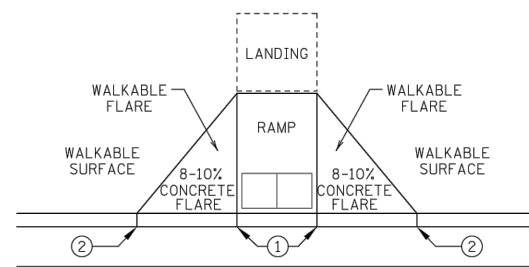
PROJECT NAME:

**DULUTH TRANSIT  
AUTHORITY CALVARY RD.  
PARK AND RIDE**

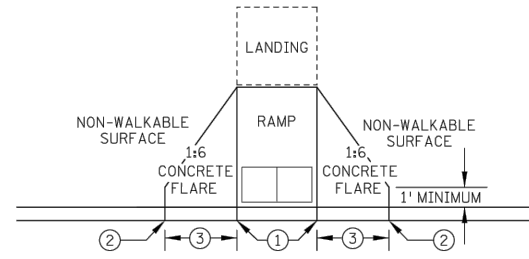
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**CONSTRUCTION DETAILS**

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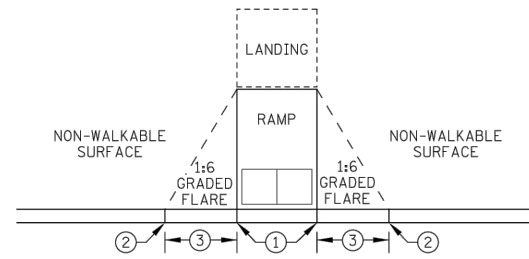
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**190561**  
DRAWING NO:  
**C2.05**



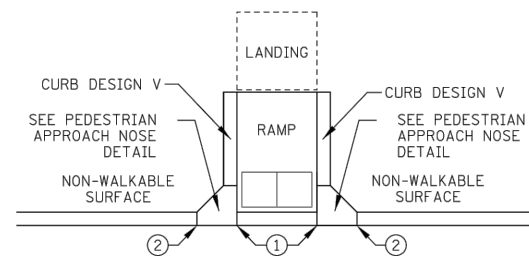
PAVED FLARES  
ADJACENT TO WALKABLE SURFACE



PAVED FLARES  
ADJACENT TO NON-WALKABLE SURFACE

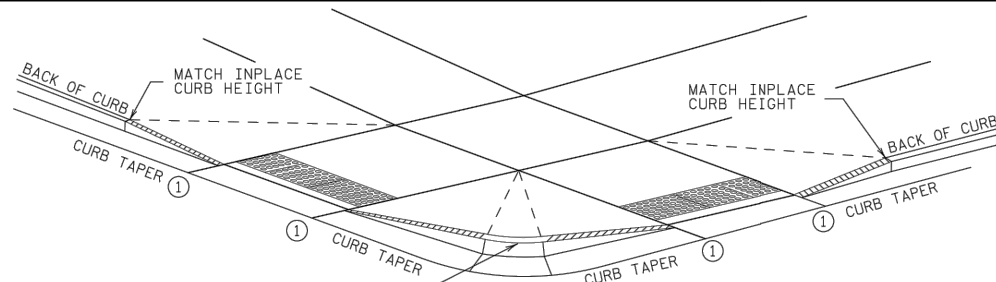


GRADED FLARES



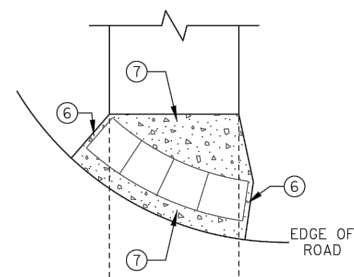
RETURNED CURB ⑤

TYPICAL SIDE TREATMENT OPTIONS ④ ⑪

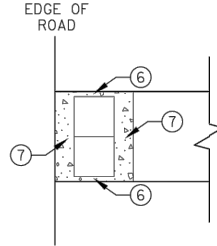


3" MINIMUM CURB HEIGHT, 4" PREFERRED  
(MEASURED AT FRONT FACE OF CURB)  
FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH ⑧  
CURB AND GUTTER

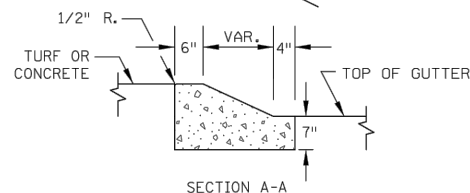
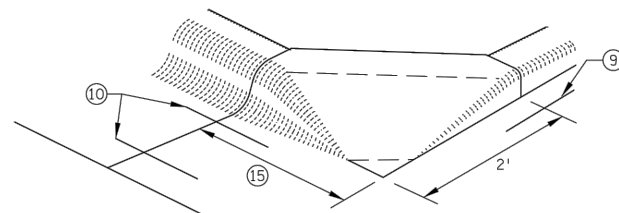


RADIAL DETECTABLE WARNING

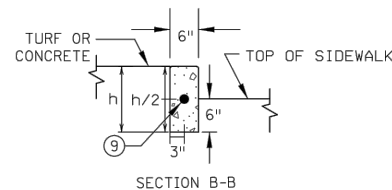


RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER



SECTION A-A



SECTION B-B

PEDESTRIAN APPROACH  
NOSE DETAIL  
(FOR RETURNED CURB  
SIDE TREATMENT)



STATE DESIGN ENGINEER  
*Ron Shaw*

REVISED:

APPROVED:

1-23-2017

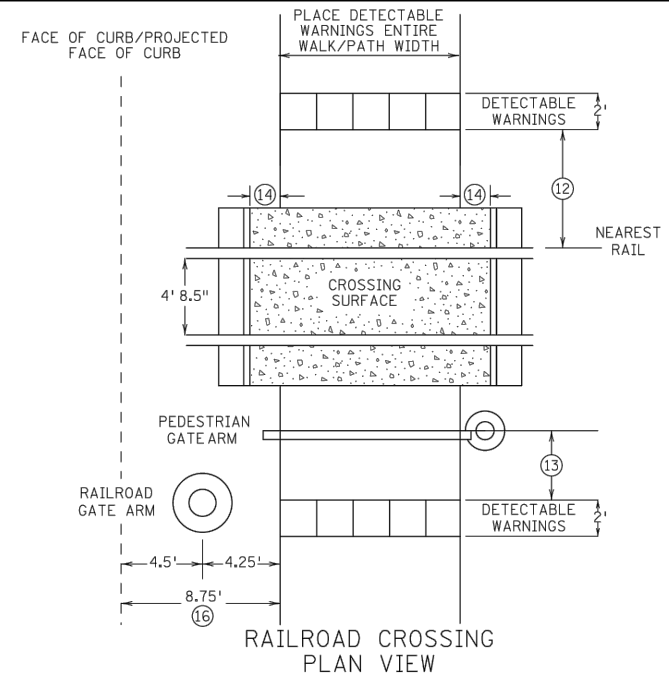
PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250

4 OF 6

NOTES:

- SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
- A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.
- 0" CURB HEIGHT.
- FULL CURB HEIGHT.
- 2' FOR 4" HIGH CURB AND 3' FOR 6" HIGH CURB.
- 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.
- TYPICALLY USED FOR MEDIANS AND ISLANDS.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
- 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
- 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.



RAILROAD CROSSING  
PLAN VIEW

REVISION:  
APPROVED: JANUARY 23, 2017  
*[Signature]*  
OPERATIONS ENGINEER





PERFORMANCE  
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DESIGN.

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CLIENT:  
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NO	DATE	REVISION
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SIGNATURE: *Daniel G. Shaw*

TYPED OR PRINTED NAME: DANIEL G. SHAW

DATE: 08-16-19 REG. NO.: 41423

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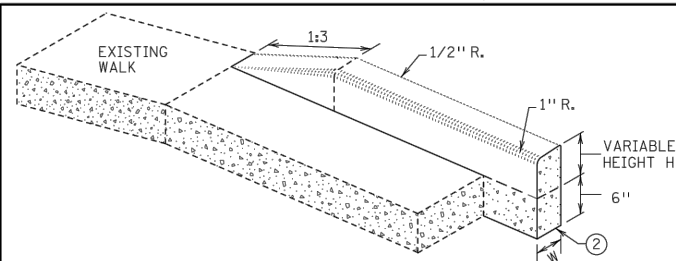
PROJECT NAME:

**DULUTH TRANSIT  
AUTHORITY CALVARY RD.  
PARK AND RIDE**

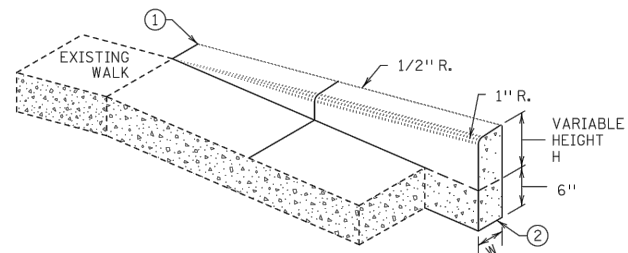
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FILE:  
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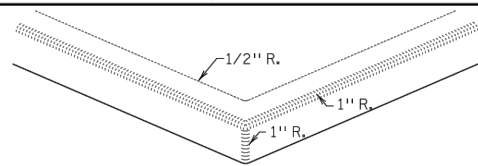
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DRAWING NO:  
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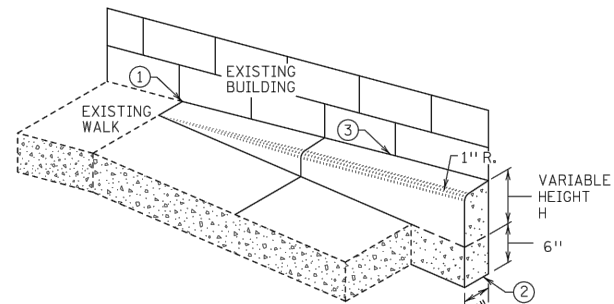
V CURB ADJACENT TO LANDSCAPE  
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE  
CURB OUTSIDE SIDEWALK LIMITS

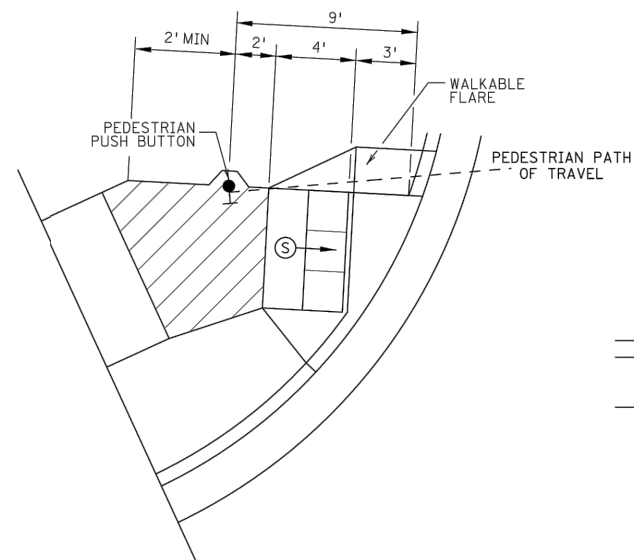


V CURB INTERSECTION



V CURB ADJACENT TO BUILDING  
OR BARRIER

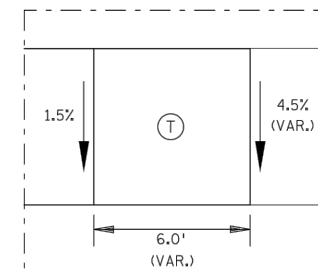
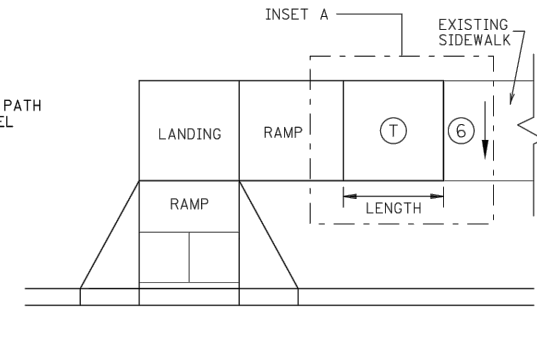
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



SEMI-DIRECTIONAL RAMP (3,4,9)

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

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



TRANSITION PANEL ④ ⑤

#### NOTES:

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

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

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

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

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

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

② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

③ EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.

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

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

⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

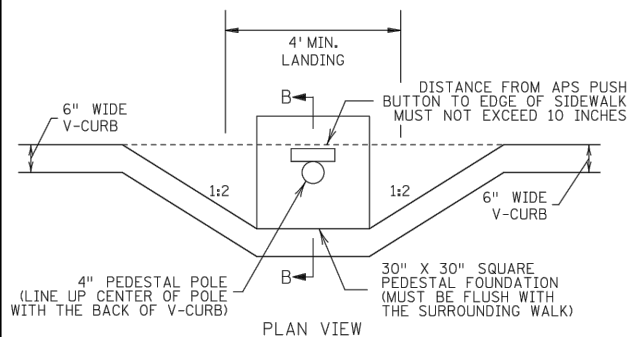
#### LEGEND

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

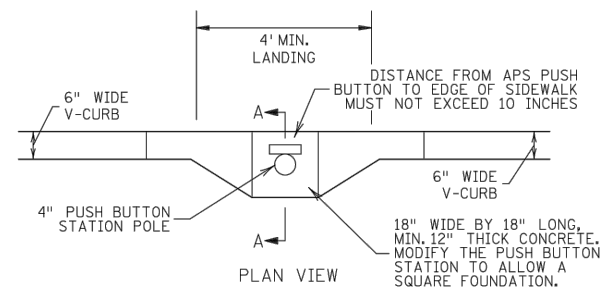
⑤ INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

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

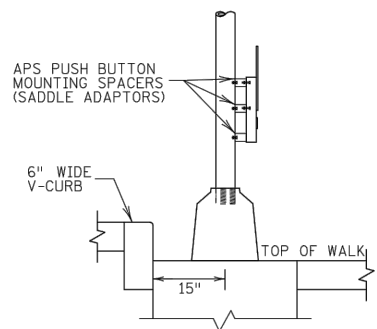
③ TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1' LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.



PLAN VIEW

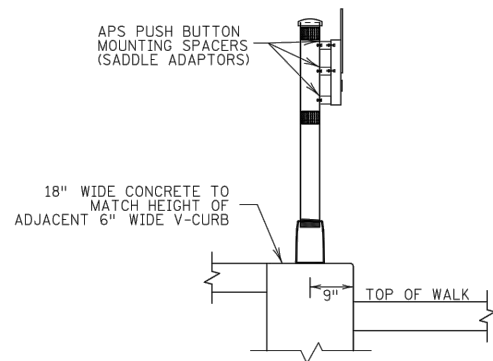


PLAN VIEW



SECTION B-B

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION A-A

PUSH BUTTON STATION (V-CURB)

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER



REVISOR:  
*Tom G. Shaw*  
STATE DESIGN ENGINEER

APPROVED:  
1-23-2017

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250 5 OF 6





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NO	DATE	ISSUED FOR

NO	DATE	REVISION
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SIGNATURE: *Daniel G. Shaw*

TYPED OR PRINTED NAME: DANIEL G. SHAW

DATE: 08-16-19 REG. NO.: 41423

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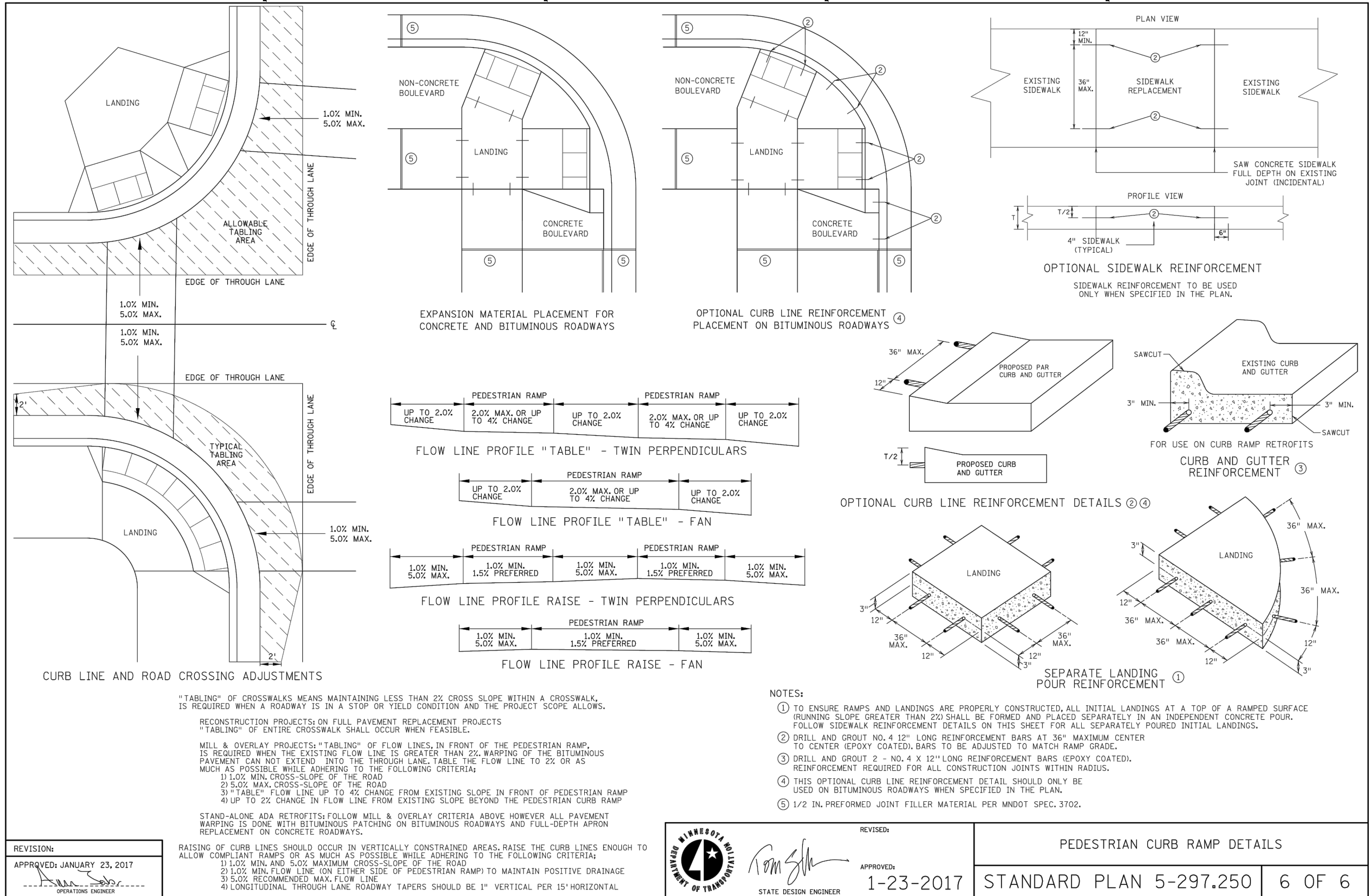
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AUTHORITY CALVARY RD.  
PARK AND RIDE

DRAWING TITLE:

CONSTRUCTION DETAILS

FILE: DRAWN BY: AFL  
CHECKED BY: DGS

PROJ. NO:  
**190561**  
DRAWING NO:  
**C2.07**



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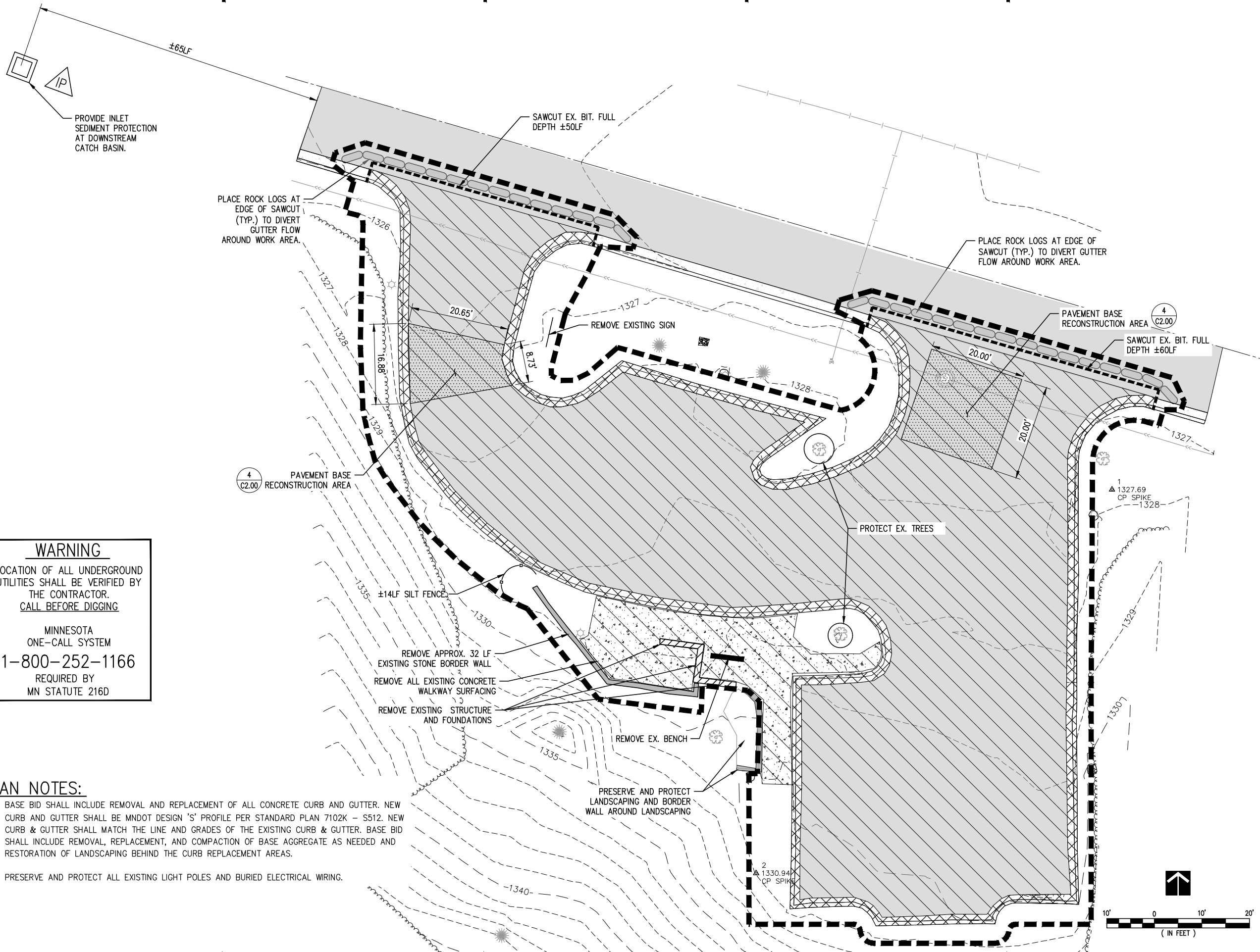
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**REMOVALS & EROSION  
CONTROL PLAN**

FILE:  
DRAWN BY: AFL  
CHECKED BY: DGS

PROJ. NO:  
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DRAWING NO:  
**C4.00**



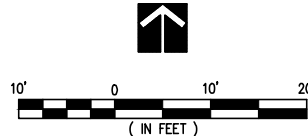
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LOCATION OF ALL UNDERGROUND  
UTILITIES SHALL BE VERIFIED BY  
THE CONTRACTOR.  
CALL BEFORE DIGGING

MINNESOTA  
ONE-CALL SYSTEM  
**1-800-252-1166**  
REQUIRED BY  
MN STATUTE 216D

**PLAN NOTES:**

1. BASE BID SHALL INCLUDE REMOVAL AND REPLACEMENT OF ALL CONCRETE CURB AND GUTTER. NEW CURB AND GUTTER SHALL BE MNDOT DESIGN 'S' PROFILE PER STANDARD PLAN 7102K - S512. NEW CURB & GUTTER SHALL MATCH THE LINE AND GRADES OF THE EXISTING CURB & GUTTER. BASE BID SHALL INCLUDE REMOVAL, REPLACEMENT, AND COMPACTION OF BASE AGGREGATE AS NEEDED AND RESTORATION OF LANDSCAPING BEHIND THE CURB REPLACEMENT AREAS.
2. PRESERVE AND PROTECT ALL EXISTING LIGHT POLES AND BURIED ELECTRICAL WIRING.



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NO	DATE	REVISION
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TYPED OR PRINTED NAME: DANIEL G. SHAW

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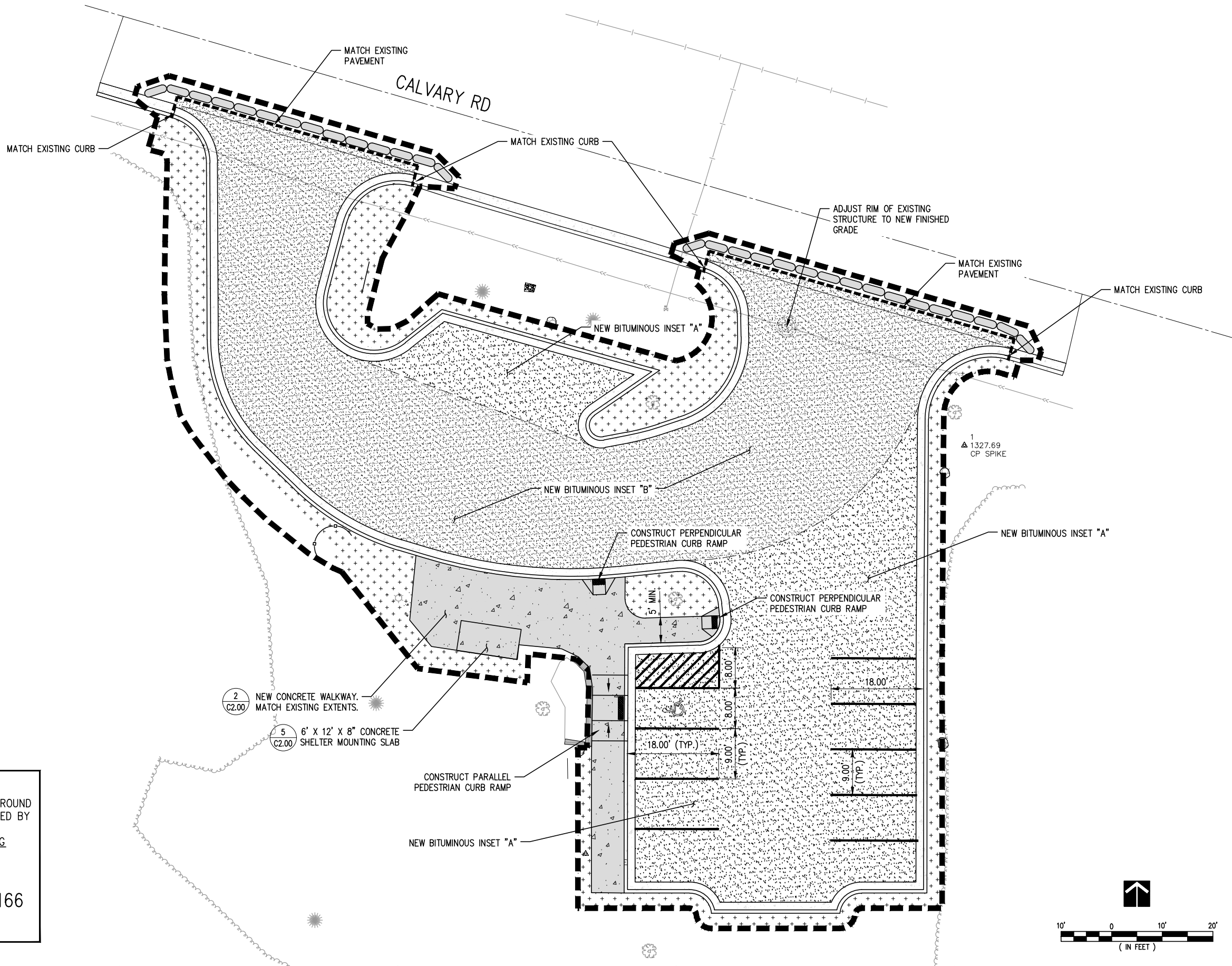
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**SURFACING PLAN**

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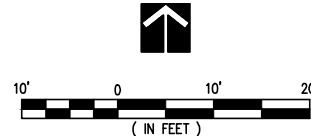
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**C5.00**



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