

# Marion County Public Works

## Engineering Standard Details

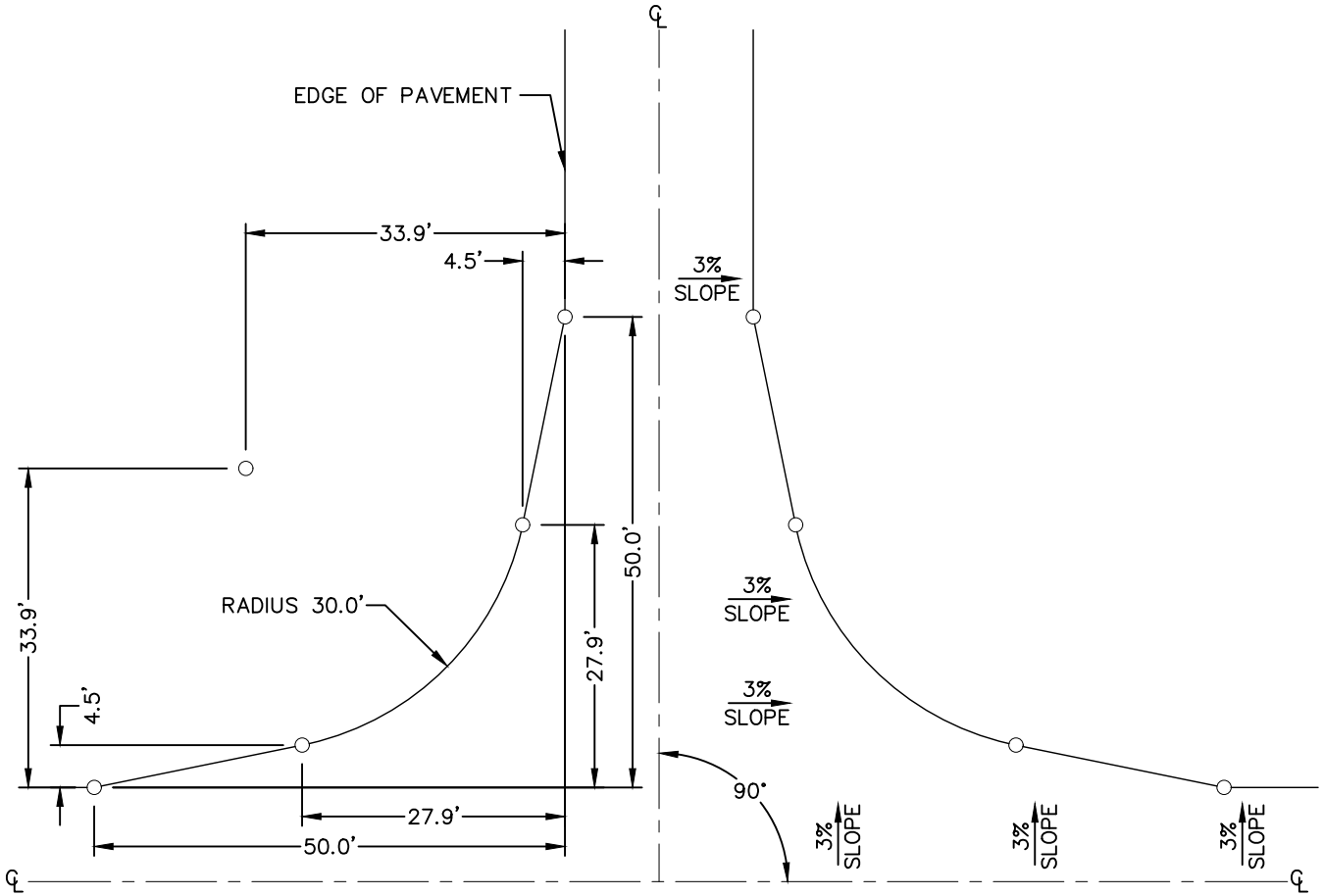
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**NOTES:**

1. DIMENSIONS GIVEN ARE FOR A 90° ANGLE OF INTERSECTION. FOR ANGLES DEVIATING BY MORE THAN 5°; SEE STANDARD DRAWING 'ARTEIAL INTERSECTIONS AND MAJOR COMMERCIAL-INDUSTRIAL DRIVEWAYS-VARIOUS ANGLES'.
2. SURFACING AND BASE COURSE OF THE INTERSECTION, INCLUDING THE FLARE AREA, SHALL CONFORM TO SECTION IV: ROADWAY DESIGN STANDARDS OF THE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARDS.

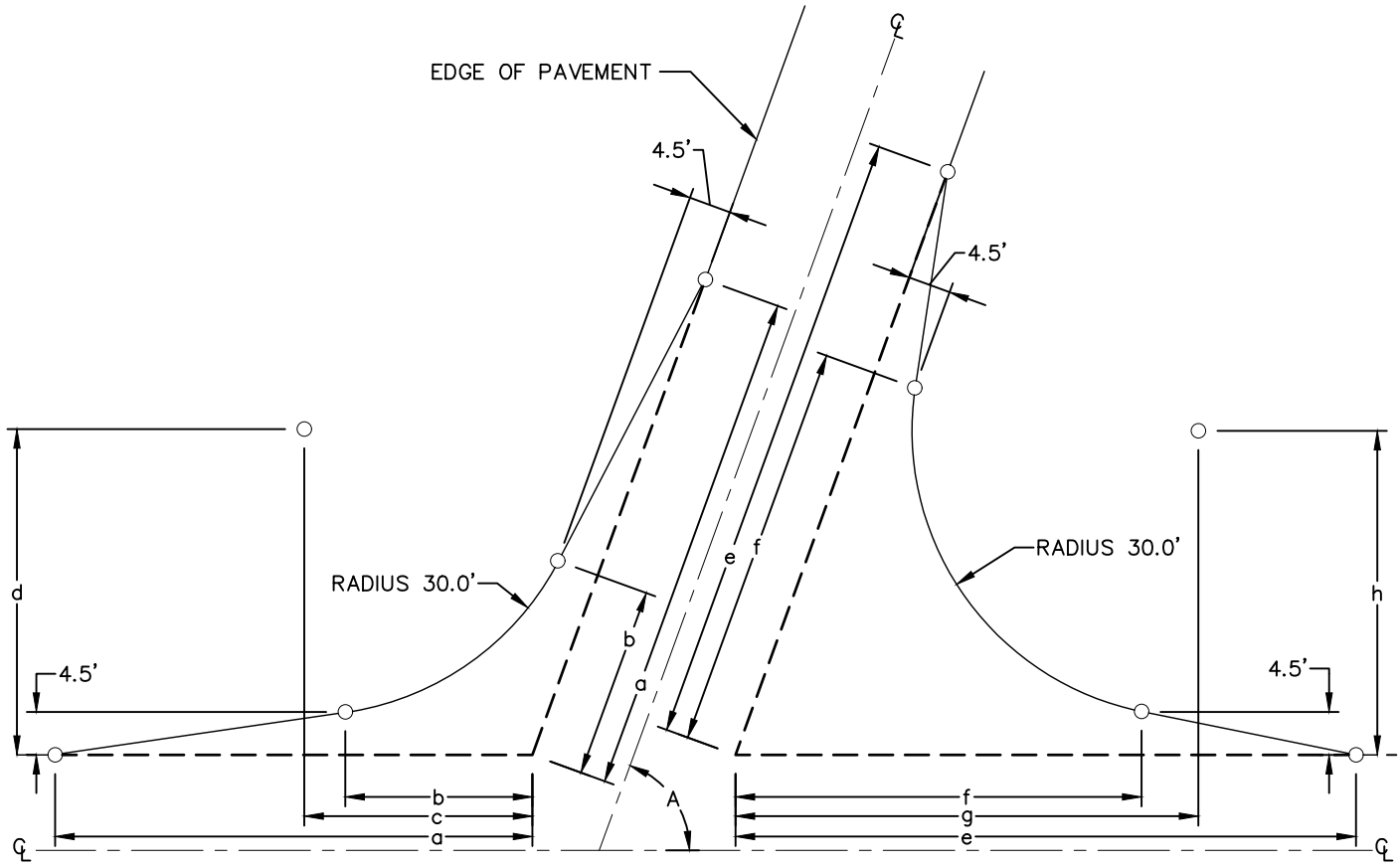
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**90° ARTEIAL INTERSECTIONS  
AND MAJOR  
COMMERCIAL-INDUSTRIAL  
DRIVEWAYS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
03/11/22	TITLE BLOCK & CLEAN UP	HS

CREATION DATE: 11/22/1993	REVISION DATE: 02/16/2023	SCALE: N.T.S	SHEET: 1 OF 2
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**NOTES:**

1. SURFACING AND BASE COURSE OF THE INTERSECTION, INCLUDING THE FLARE AREA, SHALL CONFORM TO SECTION IV: ROADWAY DESIGN STANDARDS OF MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARDS.
2. ALL DIMENSIONS IN THE TABLE BELOW ARE MEASURED IN FEET.

ANGLE A	a	b	c	d	e	f	g	h
60°	50.0	15.9	19.8	34.2	74.0	52.5	58.7	33.9
70°	50.0	19.5	23.9	34.2	65.0	42.8	48.50	34.00
80°	50.00	23.60	28.6	34.1	57.0	34.5	40.40	33.9
90°	50.0	27.9	33.9	33.9	a	b	c	d
100°	57.0	34.5	40.4	33.9	50.0	23.6	28.6	34.1
110°	65.0	42.8	48.5	34.0	50.0	19.6	23.9	34.2
120°	74.0	58.7	58.7	33.9	50.0	15.9	19.8	34.2

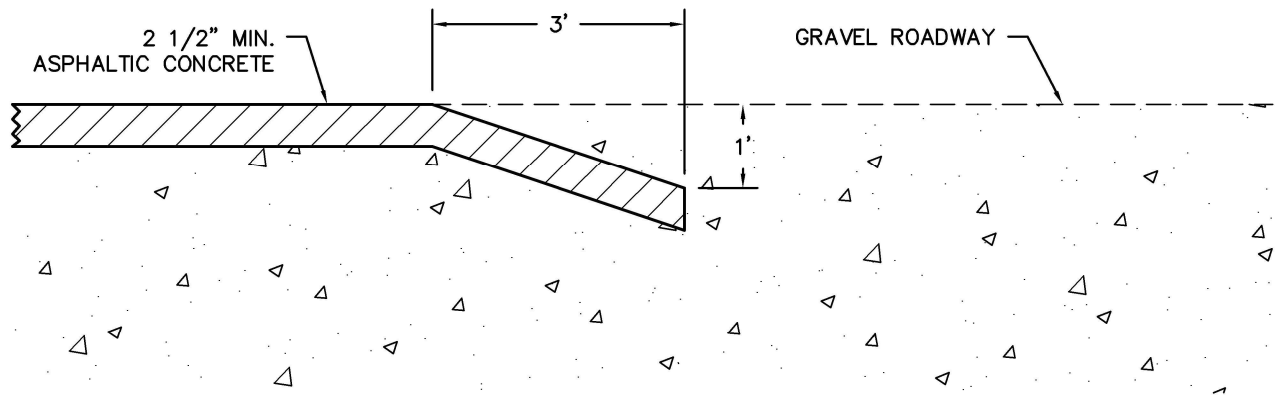
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DATE:	DESCRIPTION OF CHANGES:	BY:
03/11/22	TITLE BLOCK & CLEAN UP	HS

**MARION COUNTY DEPARTMENT OF PUBLIC WORKS**



**ARTERIAL INTERSECTIONS AND MAJOR COMMERCIAL-INDUSTRIAL DRIVEWAYS - VARIOUS ANGLES**

CREATION DATE: 11/22/1993	REVISION DATE: 02/16/2023	SCALE: N.T.S	SHEET: 2 OF 2
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**NOTES:**

1. ALL EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE AND BACKFILL SHALL BE 3/4" TO 1" MINUS AGGREGATE.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

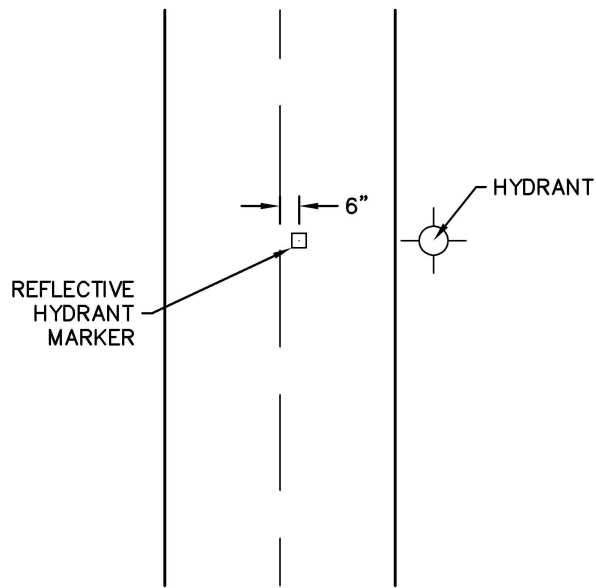


**ASPHALT ENDING AT  
GRAVEL ROADWAY**

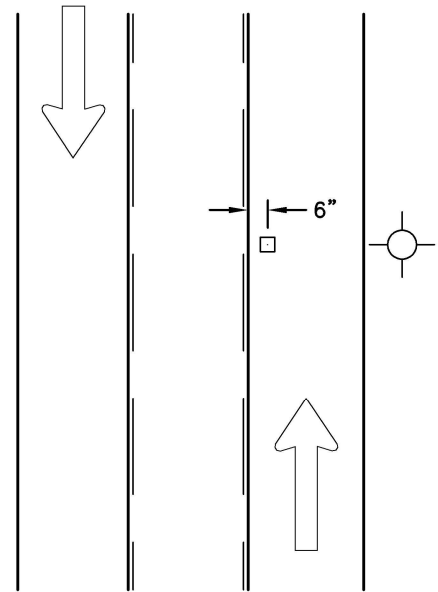
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
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CREATION DATE: 07/13/2005	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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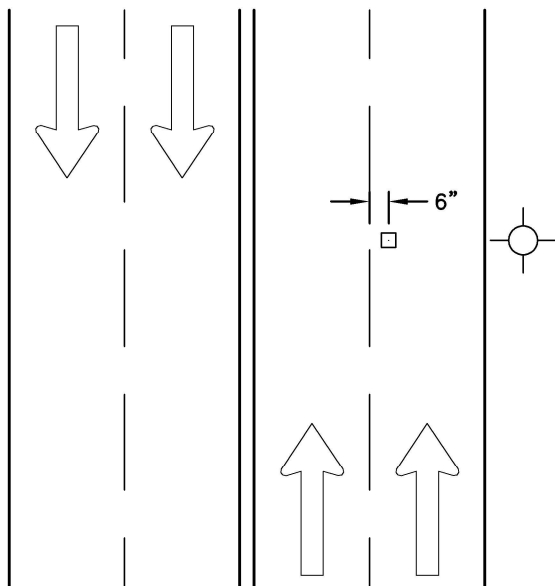
2 LANE  
ONE-WAY OR TWO-WAY



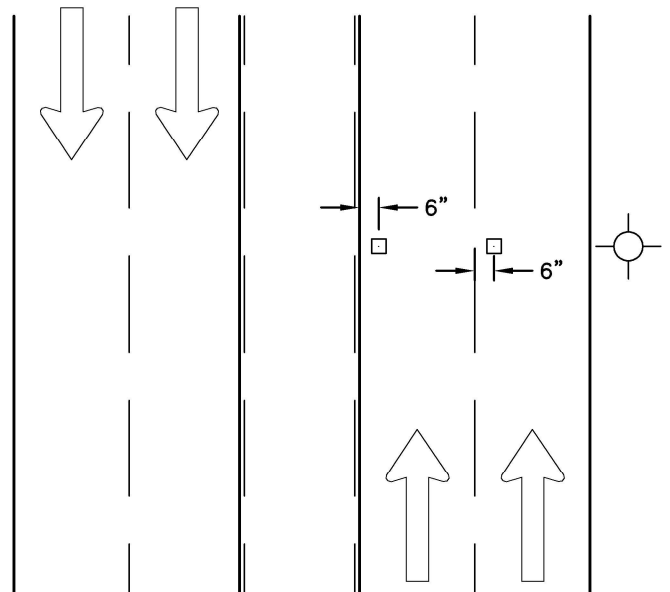
2 LANE TWO-WAY  
CONTINUOUS LEFT TURN LANE



4 LANE TWO-WAY  
UNDIVIDED



4 LANE TWO-WAY  
CONTINUOUS LEFT TURN LANE



NOTES:

1. FIRE HYDRANT LOCATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MOST RECENT VERSION OF MARION COUNTY FIRE CODE.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



AUTHORIZED HYDRANT  
MARKER INSTALLATION  
LOCATIONS

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
08/12/22	ADDED MC FIRE CODE NOTE	HS

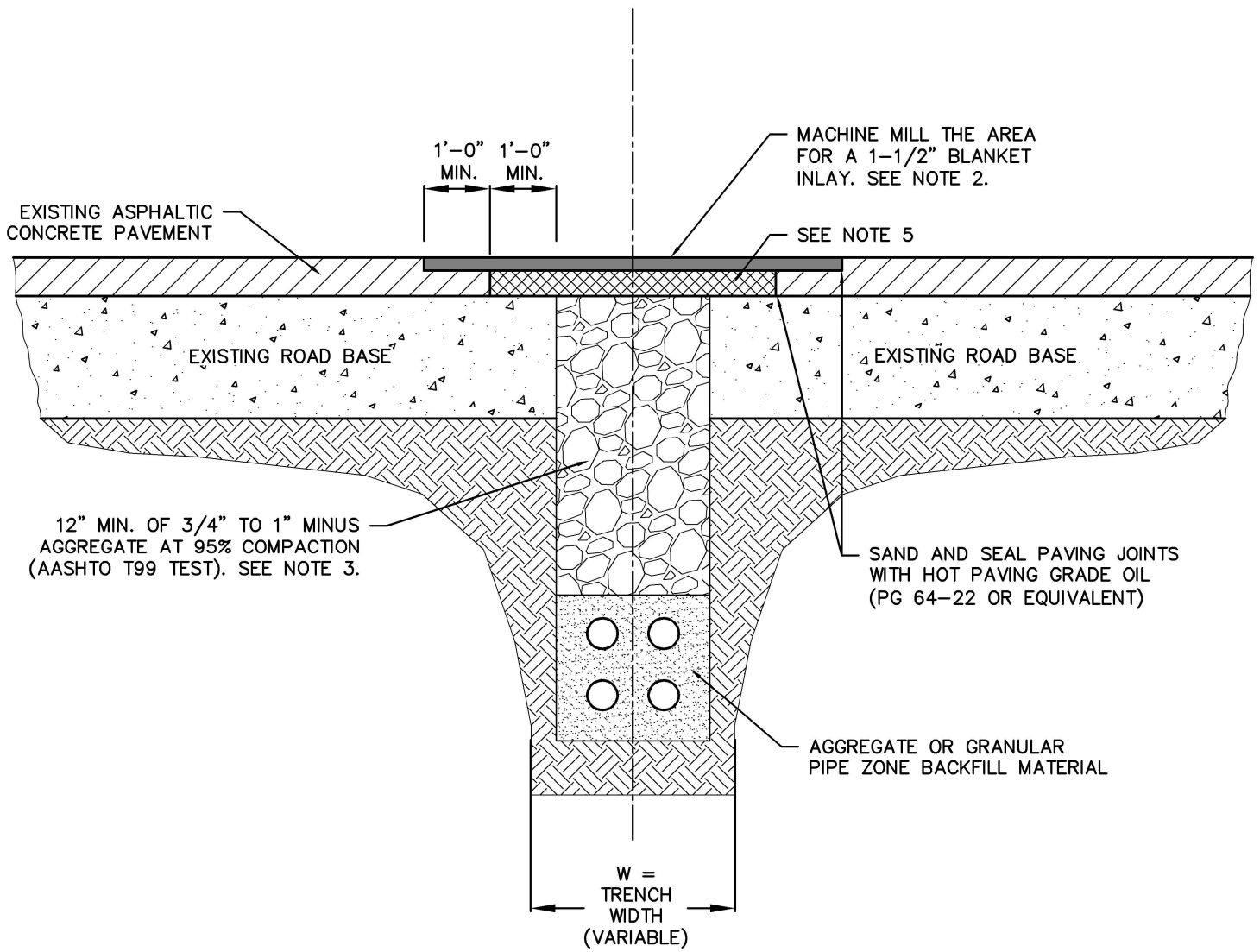
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11/19/1993

REVISION DATE:  
01/27/2023

SCALE:  
N.T.S

SHEET:  
1 OF 1

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**NOTES:**

1. BLANKET INLAYS TO BE CONSTRUCTED WITH LEVEL 2, 1/2", DENSE, PG 64-22 HMAc IN DRY PAVEMENT CONDITIONS, WHERE EXISTING PAVEMENT IS AT LEAST 60° F AND RISING. EVERY 10° F BELOW 60° F THE CONTRACTOR MUST ADD 1/2" DEPTH TO THE BLANKET INLAY. TACK ALL PAVEMENT TO BE INLAID WITH EMULSIFIED ASPHALT.
2. "T"-CUT IS ALWAYS REQUIRED, HOWEVER A BLANKET INLAY MAY NOT BE. IF REQUIRED, BOTH SHALL BE SHOWN ON PROJECT PLANS.
3. MAJOR ROADS AND SPECIAL CONDITIONS MAY REQUIRE NON-COMPRESSIBLE BACKFILL CEMENT SLURRY.
4. THE COUNTY ENGINEER OR COUNTY INSPECTOR SHALL DETERMINE THE WIDTH AND THE LENGTH OF THE INLAY PATCH TO BEST FIT TRAVEL PATTERNS.
5. ASPHALT CONCRETE PAVEMENT "T"-PATCH/"T"-CUT 6" THICK OR MATCH EXISTING PAVEMENT (WHICHEVER IS GREATER) UP TO THE LEVEL OF THE ORIGINAL PAVEMENT.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

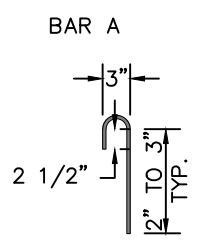
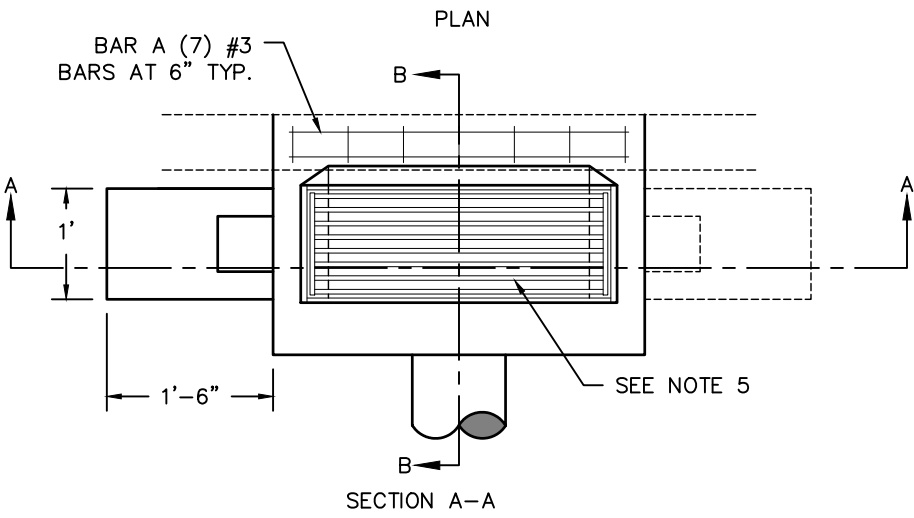


**BLANKET INLAY**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
01/27/23	NOTES ADDED	HS

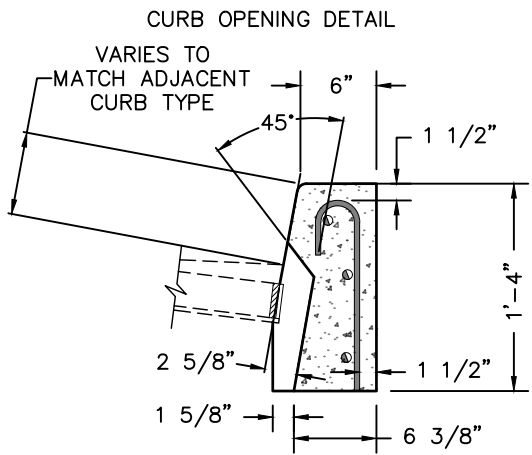
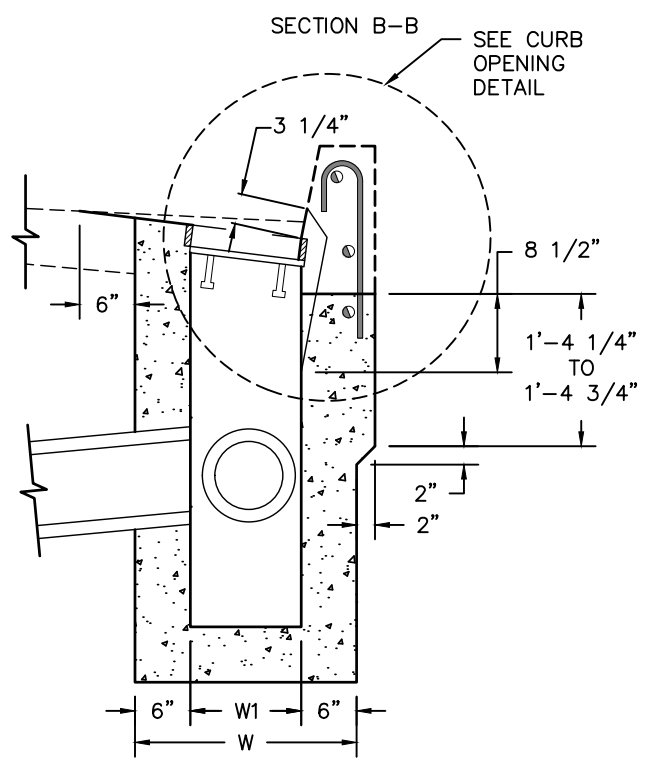
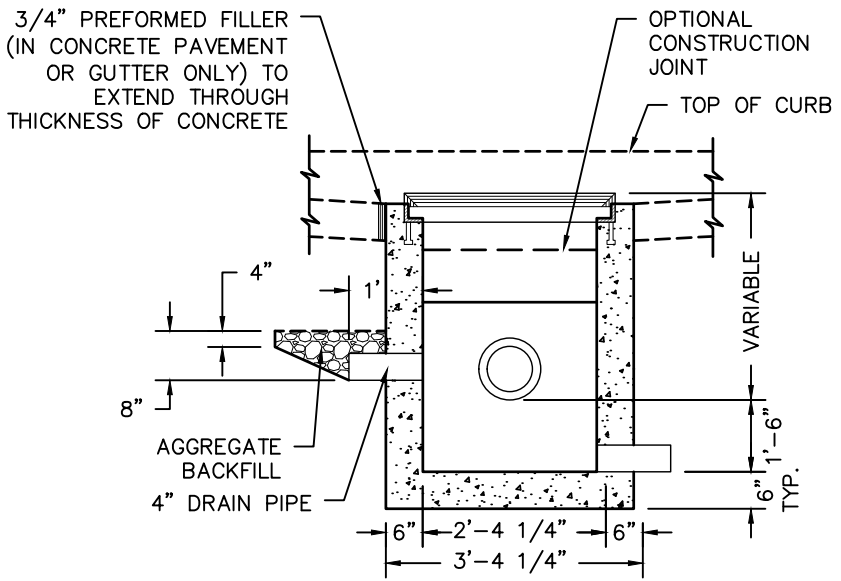
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INLET TYPE	W	W1
CG-1	2'-8 7/8"	1'-8 7/8"
CG-2	3'-3 3/8"	2'-3 3/8"

#3 REBAR



- NOTES:
1. BARS TO BE PLACED DURING CURB CONSTRUCTION.
  2. ALL BARS TO BE PLACED 1 1/2" CLEAR OF NEAREST FACE OF CONCRETE UNLESS SHOWN OR NOTED OTHERWISE.
  3. ALL BAR SPLICES SHALL BE 20" IN DIAMETER.
  4. WHERE PRECAST INLETS ARE USED AS AN ALTERNATE TO CAST-IN-PLACE INLETS, A 4" COMPACTED LEVELING BED OF SAND OR 1/4" CRUSHED AGGREGATE SHALL BE PROVIDED.
  5. FOR FRAME AND GRATE SPECIFICATIONS, SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'FRAME AND GRATES CONCRETE INLETS'.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

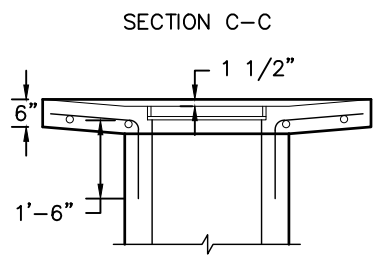
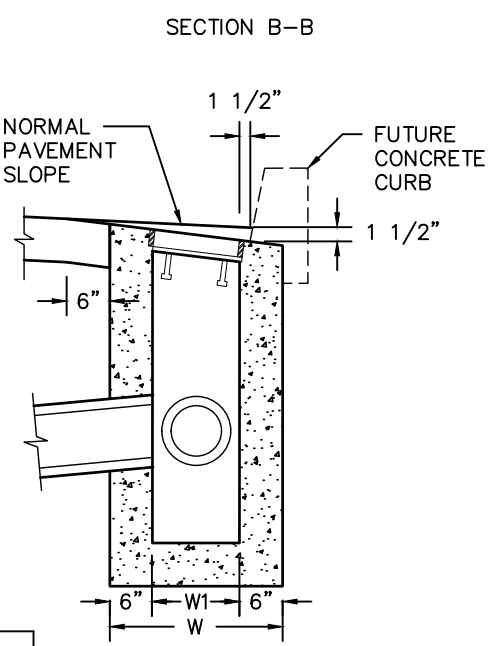
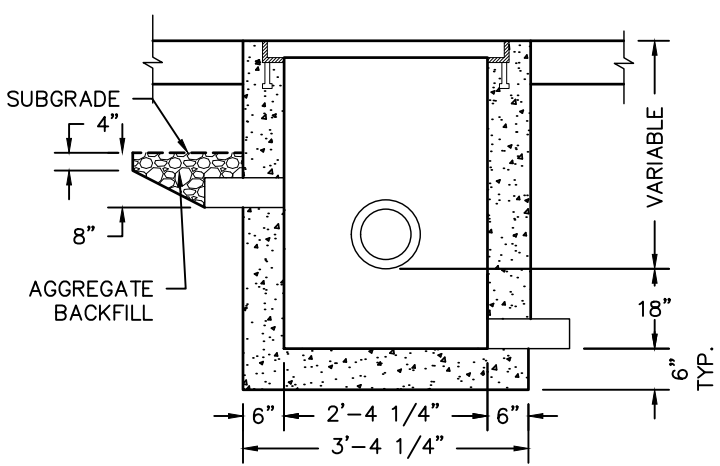
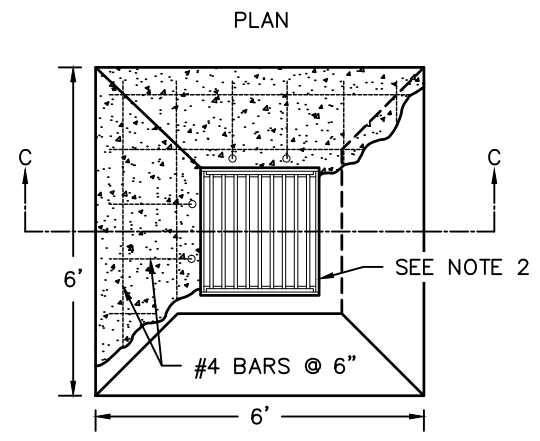
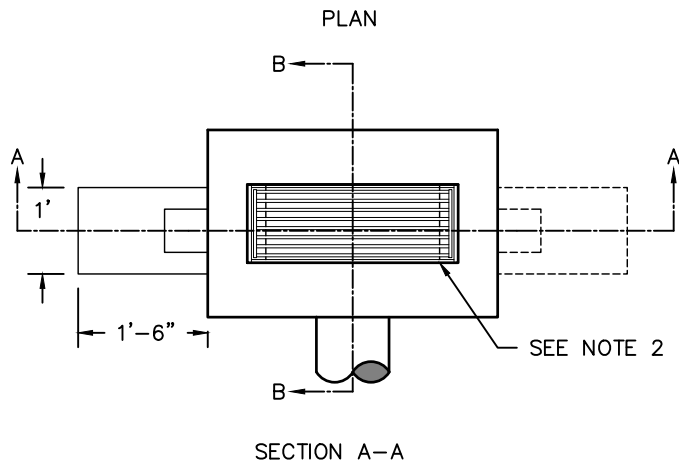


TYPE CG (CURBED)  
CONCRETE INLETS

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
08/12/22	#3 REBAR ONLY	HS

CREATION DATE: 11/12/2004	REVISION DATE: 01/26/2023	SCALE: N.T.S	SHEET: 1 OF 3
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INLET TYPE	W	W1
G-1	2'-8 7/8"	1'-8 7/8"
G-2, G-2M	3'-3 3/8"	2'-3 3/8"

**NOTE:**

1. ALL BARS TO BE PLACED 2" CLEAR OF NEAREST FACE OF CONCRETE UNLESS OTHERWISE APPROVED BY COUNTY ENGINEER.
2. FOR FRAME AND GRATE SPECIFICATIONS, SEE ENGINEERING STANDARD DETAIL 'FRAME AND GRATES CONCRETE INLETS'.
3. SEE ENGINEERING STANDARD DRAWING 'TYPE CG (CURBED) CONCRETE INLETS FOR CURB OPENING SPECIFICATIONS.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**G-1, G-2, AND G-2M  
CONCRETE INLETS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

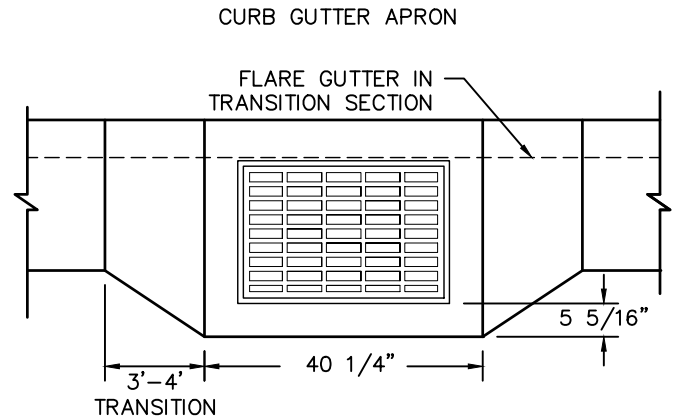
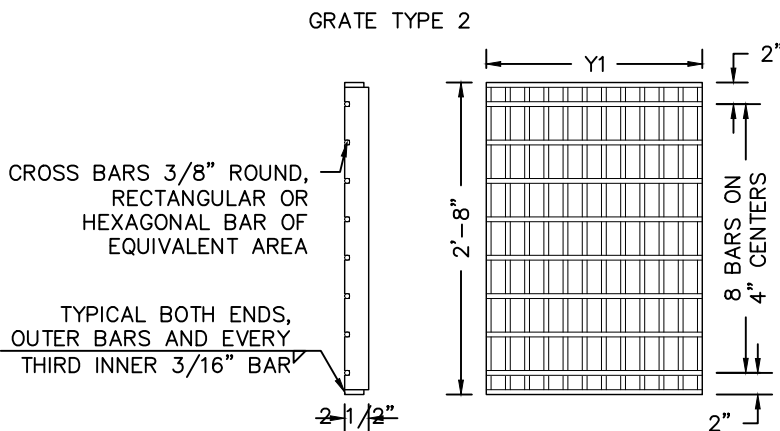
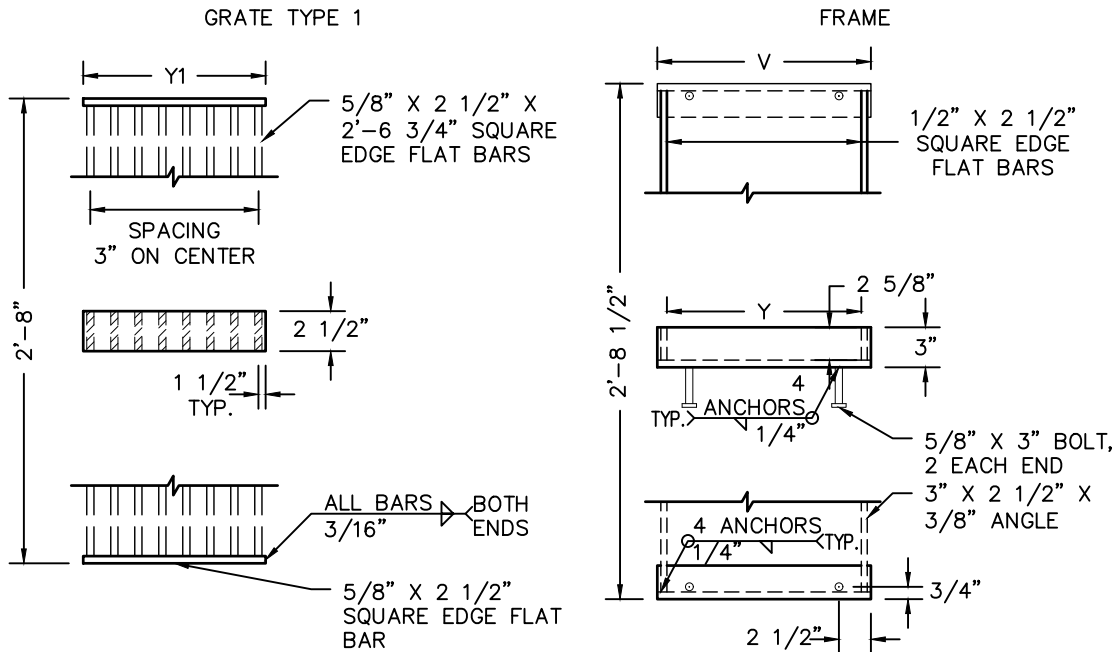
CREATION DATE: 11/12/2004	REVISION DATE: 01/26/2023	SCALE: N.T.S	SHEET: 2 OF 3
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INLET TYPE	FRAME		GRATE			REMARKS
	V	Y	Y1	NUMBER OF BARS	TYPE	
CG-1, G-1	1'-10 3/4"	1'-9 3/8"	1'-9"	12	2	
CG-1, G-2	2'-4 3/4"	2'-3 3/8"	1'-1 1/2"	8	2	2-GRATES
G-2M, G-2MA	2'-4 3/4"	2'-3 3/8"	2'-3"	9	1	

NOTES:

- 3/8" CROSS BARS SHALL BE FLUSH WITH THE GRATE SURFACE AND MAY BE FILLET WELDED, RESISTANCE WELDED, OR ELECTRO FORGED TO BEARING BARS.



- △ FILLET WELD
- FILLET WELD ALL AROUND

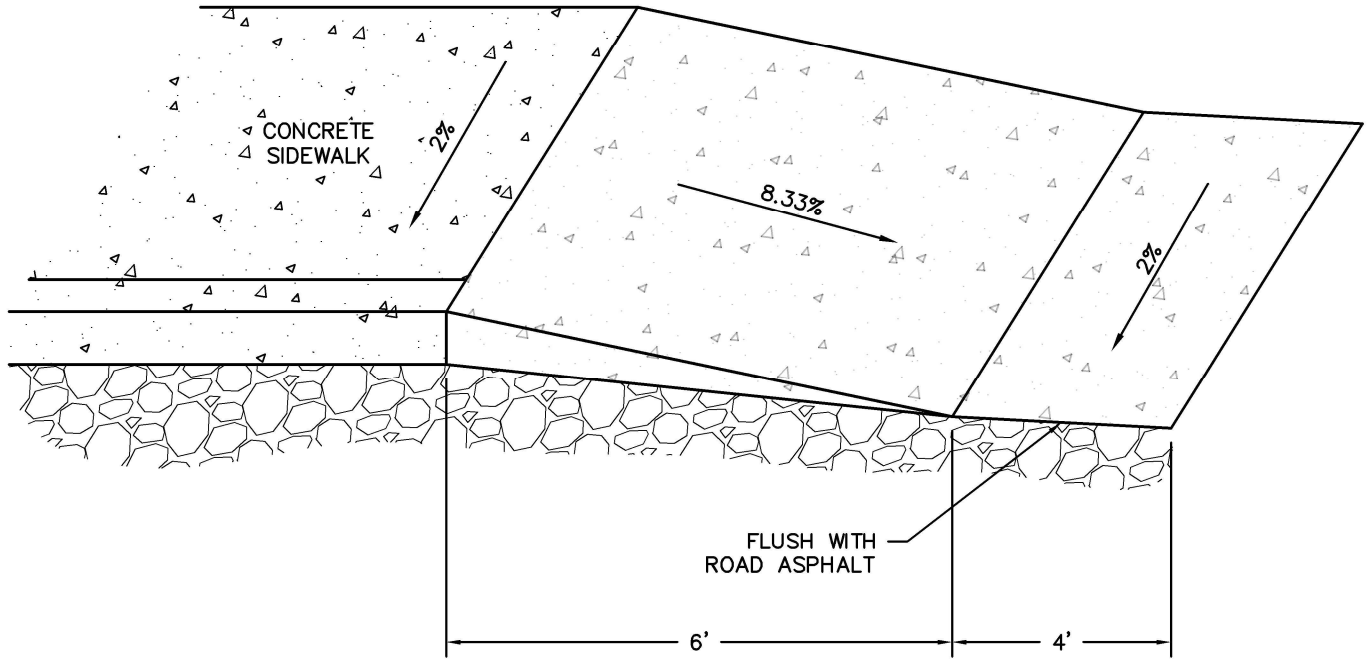
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

**MARION COUNTY DEPARTMENT OF PUBLIC WORKS**

**FRAME AND GRATES  
CONCRETE INLETS**

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**NOTE:**

1. RAMP MAY BE CONCRETE OR ASPHALT. AREA IS SHOWN IN LIGHTER CONCRETE HATCH.
2. DETAIL ASSUMES A 6" CURB HEIGHT.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

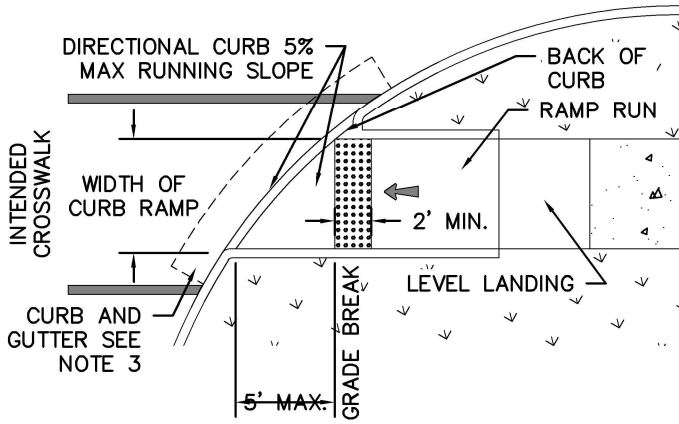


**CURBLINE SIDEWALK END  
RAMP TO ROAD**

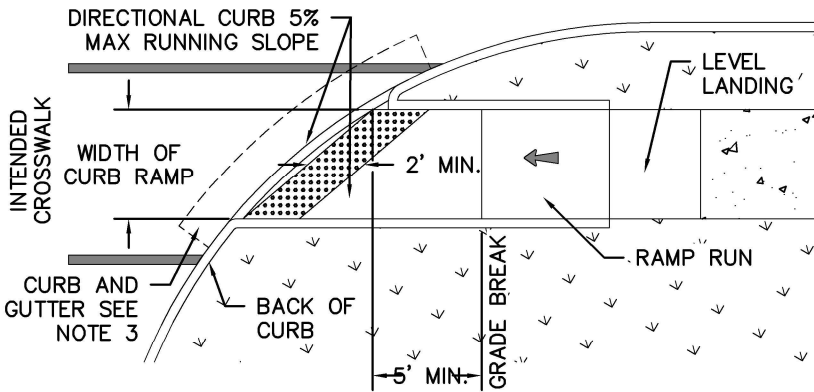
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CREATION DATE: 06/16/2005	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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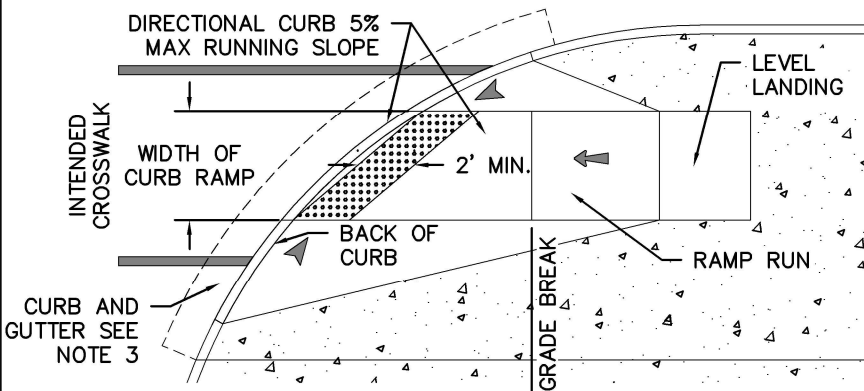
**CURB RAMP CROSSING  
GRADE BREAK LESS THAN OR EQUAL TO 5 FEET  
FROM BACK OF CURB**









**CURB RAMP CROSSING  
GRADE BREAK GREATER THAN 5 FEET  
FROM BACK OF CURB**



**CURB RAMP CROSSING  
DIRECTIONAL CURB WITH FLARED CONSTRUCTION**



**LEGEND:**

-  MARKED OR INTENDED CROSSING LOCATION
-  SIDEWALK
-  DETECTABLE WARNING SURFACE
-  LANDSCAPE AREA (NON-WALKABLE SURFACE)
-  RUNNING SLOPE 7.5% MAX. (MAX. 8.3% FINISHED SURFACE SLOPE)
-  FLARE SLOPE (MAX. 10.0% FINISHED SURFACE SLOPE)

**NOTES:**

1. DETECTABLE WARNING SURFACE DETAILS AND LOCATIONS ARE BASED ON APPLICABLE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARDS.
2. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'DETECTABLE WARNING SURFACE LOCATIONS' FOR NON-DIRECTIONAL CURBS.
3. ON MARION COUNTY ROADS, GUTTER MAY BE REQUIRED DEPENDENT ON EXISTING CONDITIONS.
4. DETECTABLE WARNING SURFACE PLACEMENT FOR PERPENDICULAR RAMPS VARY AS SHOWN.
5. DETECTABLE WARNING SURFACE PLACEMENT ACROSS THE GRADE BREAK IS PROHIBITED.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

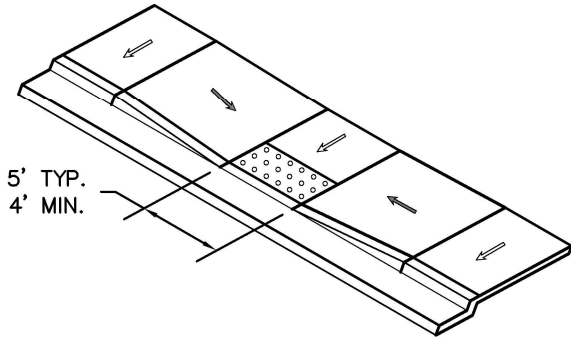


**DETECTABLE WARNING  
SURFACE LOCATIONS FOR  
DIRECTIONAL CURBS**

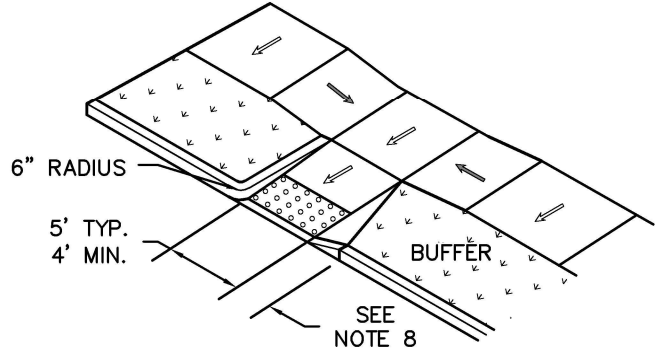
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CREATION DATE: 10/28/2022	REVISION DATE: 01/26/2023	SCALE: N.T.S	SHEET: 1 of 1
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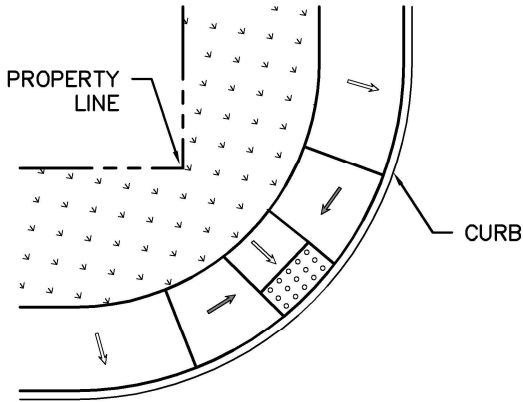
PARALLEL CURB LINE RAMP



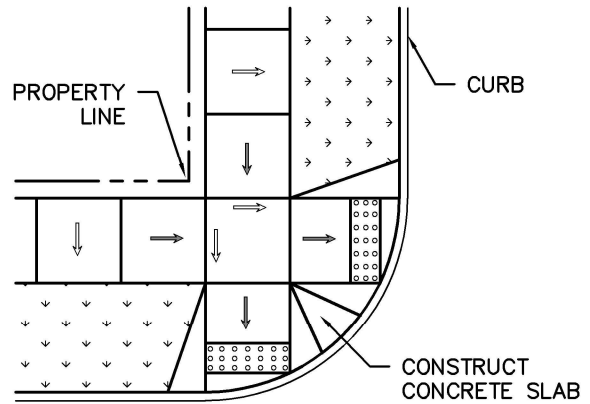
PARALLEL PROPERTY LINE RAMP



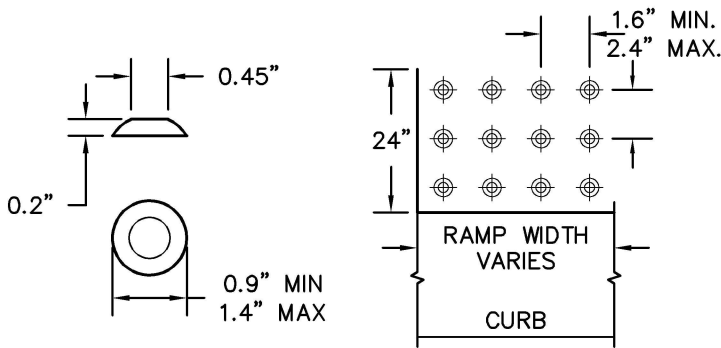
PARALLEL CURB LINE RAMP



PERPENDICULAR PROPERTY LINE RAMP



TRUNCATED DOME DETAIL



← SLOPE 1.5% MAX.  
(MAX. 2.0% FINISHED)

← SLOPE 7.5% MAX.  
(MAX. 8.3% FINISHED)

⊞ DETECTABLE WARNING SURFACE

NOTES:

1. 5' WIDTH - NEW CONSTRUCTION, 4' WIDTH - ALTERATIONS.
2. DETECTABLE WARNING SURFACE PANELS PLACED IN THE LOWER 2' OF RAMP THROAT.
3. TACTILE PANEL TO BE FULL WIDTH OF RAMP.
4. ARRANGE DOMES USING IN-LINE PATTERN ONLY, AS SHOWN IN TRUNCATED DOME DETAIL.
5. USE INSET TYPE ONLY.
6. DETECTABLE SURFACE AREA COLOR SHALL BE PER LOCAL JURISDICTION.
7. STANDARD BROOM FINISH ALL OTHER SIDEWALK RAMP AREAS.
8. RAMP FLARES SHALL BE 24" MIN. TO 36" MAX.
9. NO LIPS AT RAMPS.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



# DETECTABLE WARNING SURFACE LOCATIONS

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

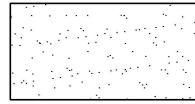
CREATION DATE: 03/01/2016	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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STANDARD HATCHES

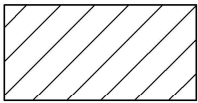
HATCH EXAMPLE      NAME OF PATTERN – REPRESENTED USE



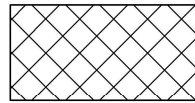
SOLID (TRANSPARENCY 25% TO 50%) – VARIOUS USES



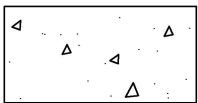
AR SAND – VARIOUS USES



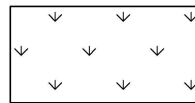
ANSI31 – PAVEMENT



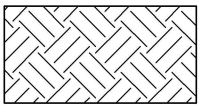
ANSI37 – VARIOUS USES



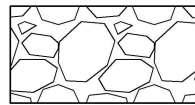
AR-CONC – CONCRETE



GRASS – ABOVE SURFACE EARTH



EARTH – BELOW SURFACE EARTH



GRAVEL – VARIOUS TYPES OF AGGREGATE

STANDARD ABBREVIATIONS

- MIN. = MINIMUM
- MAX. = MAXIMUM
- P.C.C. = PORTLAND CEMENT CONCRETE
- P.S.I. = POUNDS PER SQUARE INCH
- TYP. = TYPICAL
- CL = CENTERLINE
- DIA. = DIAMETER
- FT = FEET
- ' = FEET
- " = INCHES
- PMAC = POLYMER MODIFIED ASPHALT CEMENT
- HMAC = HOT MIX ASPHALTIC CEMENT
- PUE = PUBLIC UTILITY EASEMENT
- O.C. = ON CENTER
- ODOT = OREGON DEPARTMENT OF TRANSPORTATION

FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\DRAWING CONVENTIONS.DWG PLOTTED: 2023/02/21 4:31 PM

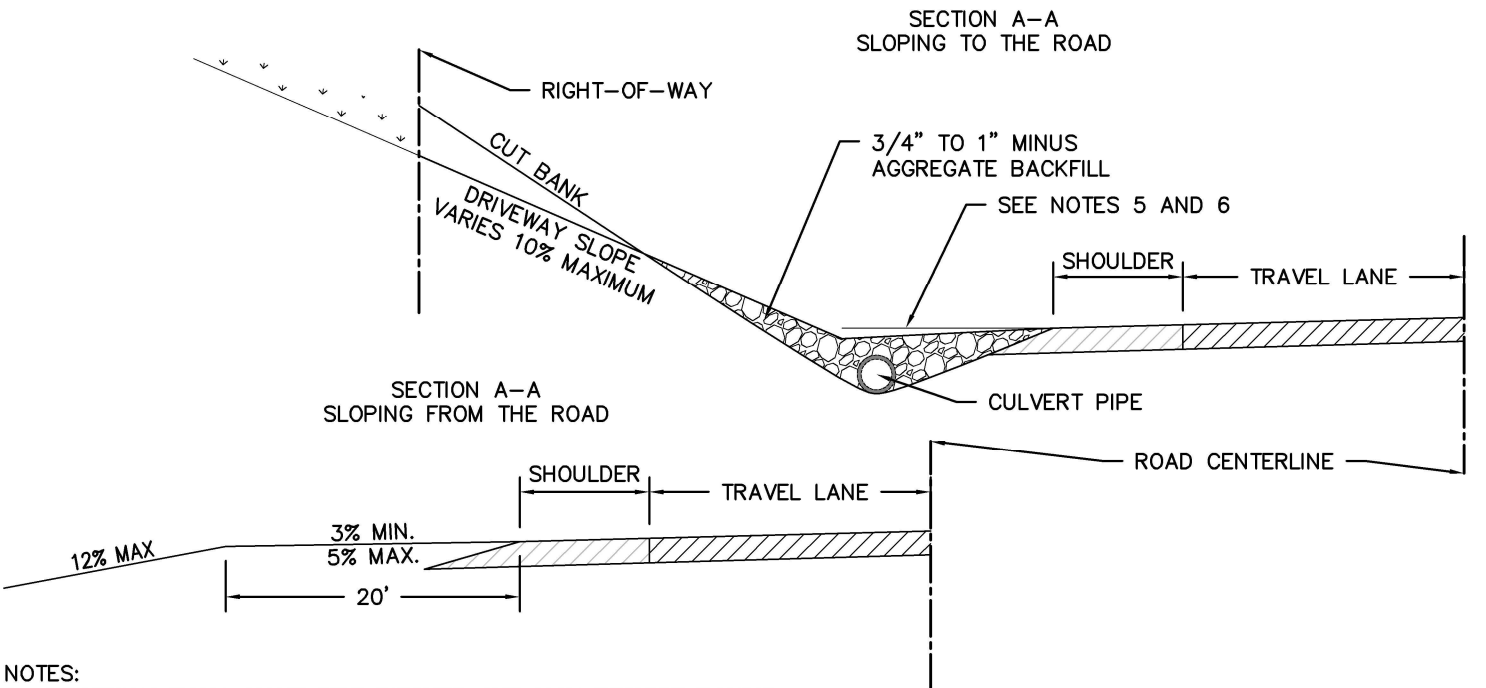
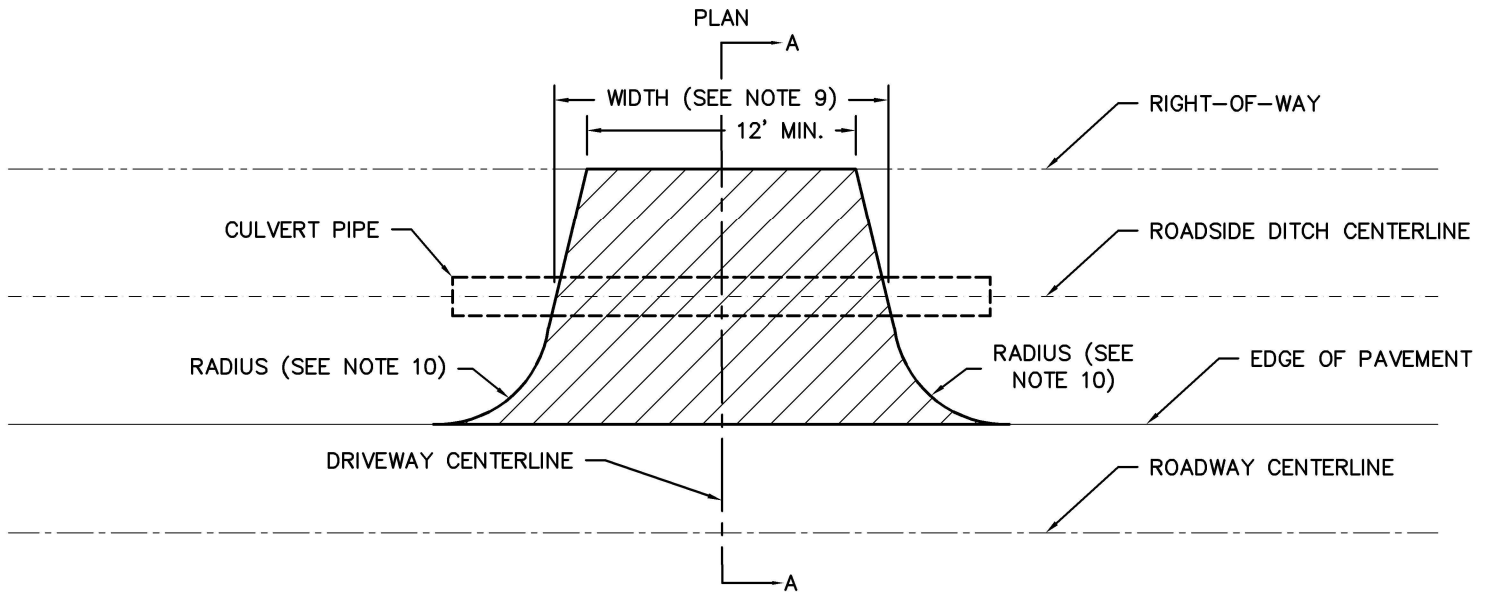
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**DRAFTING  
CONVENTIONS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 06/01/1994	REVISION DATE: 02/21/2023	SCALE: N.T.S	SHEET: 1 OF 1
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**NOTES:**

1. DRIVEWAY SHALL HAVE SIDE DITCHES AND MAY REQUIRE PAVING.
2. DRIVEWAY SHALL BE CROWNED (ABOUT 3" HIGHER IN THE MIDDLE TO SHED WATER TO THE SIDES) AND SHALL HAVE SIDE DITCHES.
3. STEEPER DRIVEWAYS MAY REQUIRE ASPHALT PAVING AND SLOTTED DRAINS OR WATER BARS ACROSS THE DRIVEWAY TO PICK UP DRAINAGE BEFORE IT FLOWS TO THE ROAD.
4. EXISTING SHOULDER MAY BE GRAVEL OR PAVEMENT.
5. TOP OF DRIVEWAY AT DITCH LINE SHALL BE AT LEAST 2 1/2" BELOW EDGE OF PAVEMENT.
6. IF NO DITCH IS PRESENT, LINE SHALL BE AT LEAST 2 1/2" BELOW EDGE OF PAVEMENT AT 10' BACK FROM EDGE OF PAVEMENT.
7. GRANULAR BACKFILL SHALL BE NO LESS THAN 6" IN DEPTH, UNLESS OTHERWISE APPROVED. WHEN PAVED, ASPHALT IS TO BE NO LESS THAN 2" ON TOP OF GRANULAR BACKFILL.
8. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARDS 'GENERAL NOTES - DRIVEWAY CONSTRUCTION STANDARDS'.
9. "WIDTH" IS THE TOP WIDTH OF ACCESS AT THE DITCH LINE; IF NO DITCH, AT DISTANCE OF 10' FROM EDGE OF PAVEMENT (MEASURED PARALLEL TO CENTER LINE OF THE ROADWAY OR ITS TANGENT).
10. "RADIUS" IS THE RADIUS IN FEET OF THE TRANSITION OR FLARE SECTION CONNECTING THE ACCESS TO THE EDGE OF THE HIGHWAY PAVEMENT.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



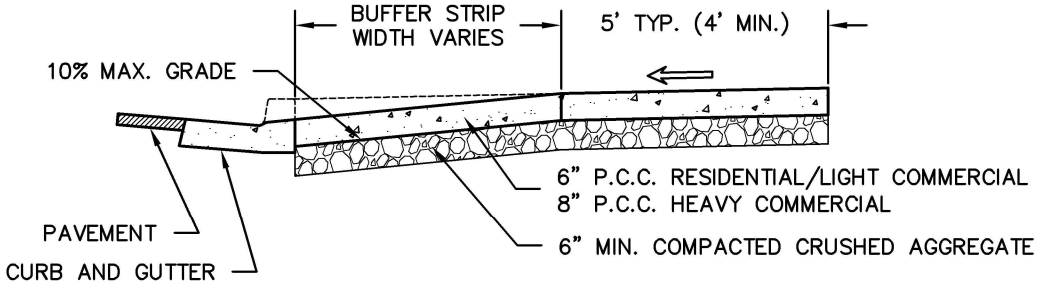
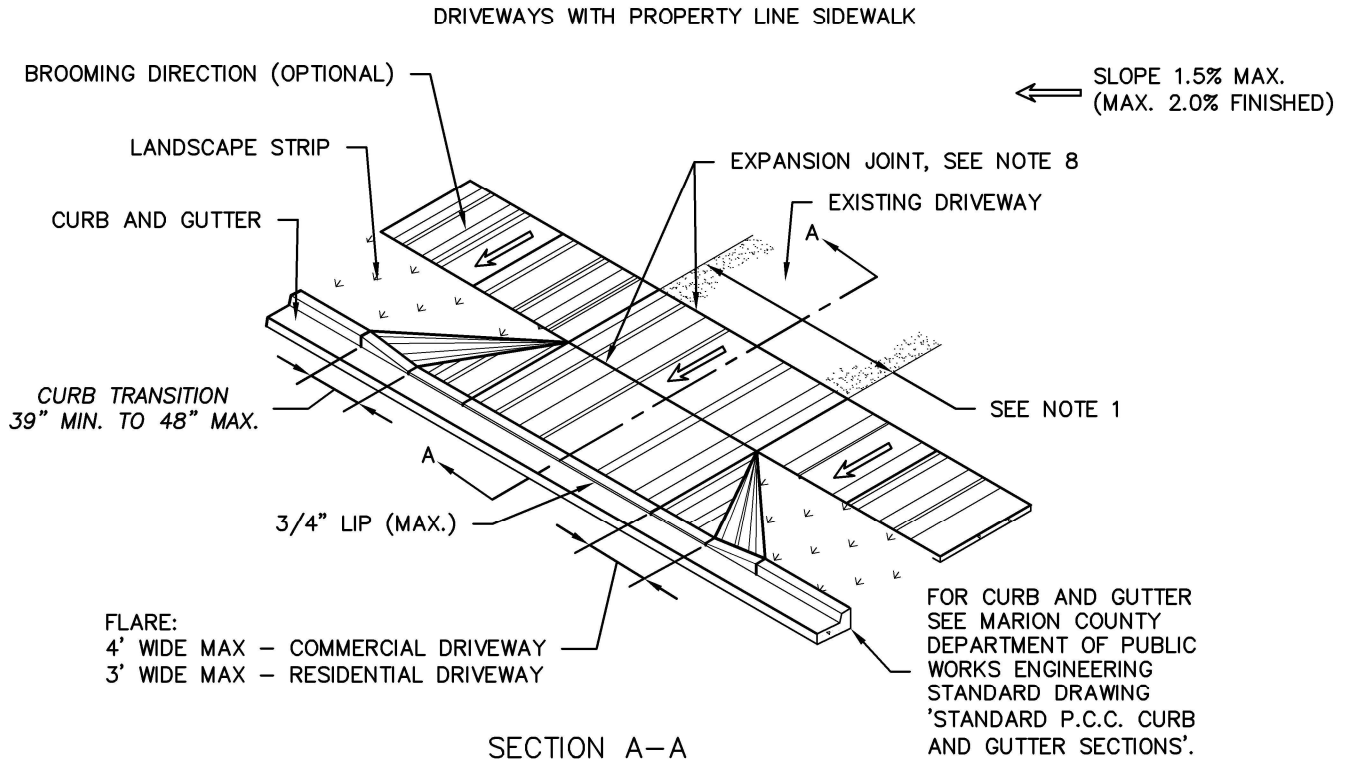
**DRIVEWAY ACCESS TO  
NON-CURBED (TURNPIKE)  
STREET**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
01/25/23	ADDED NOTE 7 THRU 10	HS

CREATION DATE: 11/22/1993	REVISION DATE: 01/25/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\DRIVEWAY APPROACH\PROPERTY LINE SIDEWALK.DWG PLOTTED: 2023/01/25 4:24 PM



**NOTES:**

1. DRIVEWAY WIDTH TYPICALLY SHOWN ON PROJECT PLANS. WHEN NOT SPECIFIED, WIDTH SHALL BE AS DIRECTED BY THE COUNTY ENGINEER. IN EITHER CASE, DRIVEWAY WIDTH SHALL NOT EXCEED LIMITS SET FORTH IN MARION COUNTY, ENGINEERING STANDARDS TABLE 6.
2. SIDEWALKS, INCLUDING PORTION CROSSING DRIVEWAY, SHALL HAVE TRANSVERSE CONTRACTION JOINTS AT 5' INTERVALS AND TOOL ROUNDED BEFORE BROOMING. ALL EDGES SHALL BE TOOL ROUNDED AFTER BROOMING.
3. WHEN EXISTING DRIVEWAY CANNOT MATCH NEW DRIVEWAY WITHIN SLOPE LIMITATIONS SHOWN, ADJUST EXISTING DRIVEWAY, NOT CURB AND SIDEWALK GRADE.
4. DRIVEWAY APPROACH DIMENSIONS SHALL NOT BE ADJUSTED WITHOUT SPECIFIC PRIOR (BEFORE FORMING) INSPECTOR APPROVAL.
5. CONCRETE STRENGTH SHALL BE 3000 P.S.I. IN 28 DAYS. NO COLOR ADDITIVES SHALL BE USED.
6. 2% MAX. CROSS SLOPE OF SIDEWALK IS MEASURED FROM BACK OF WALK TO FACE OF CURB. 8.33% MAX. SLOPE OF SIDEWALK TRANSITION TO DRIVEWAY IS RELATIVE TO RUNNING SLOPE OF SIDEWALK.
7. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'STANDARD SIDEWALK DETAILS' FOR ADDITIONAL RESTRICTIONS AND SPECIFICATIONS NOT SHOWN.
8. EXPANSION JOINTS 1/2" x 3-1/2" PREMOLDED JOINT MATERIAL AT LOCATIONS SHOWN.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



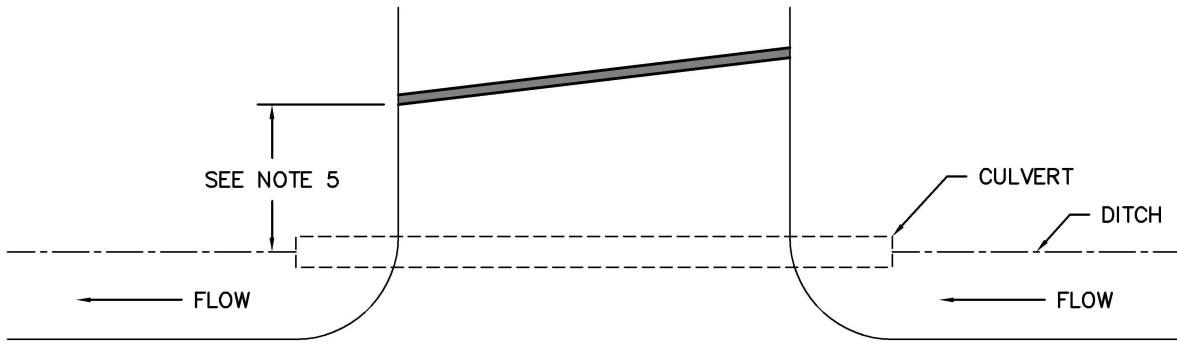
**DRIVEWAY APPROACH  
PROPERTY LINE SIDEWALK**

CREATION DATE: 01/18/2013	REVISION DATE: 01/25/2023	SCALE: N.T.S	SHEET: 1 OF 1
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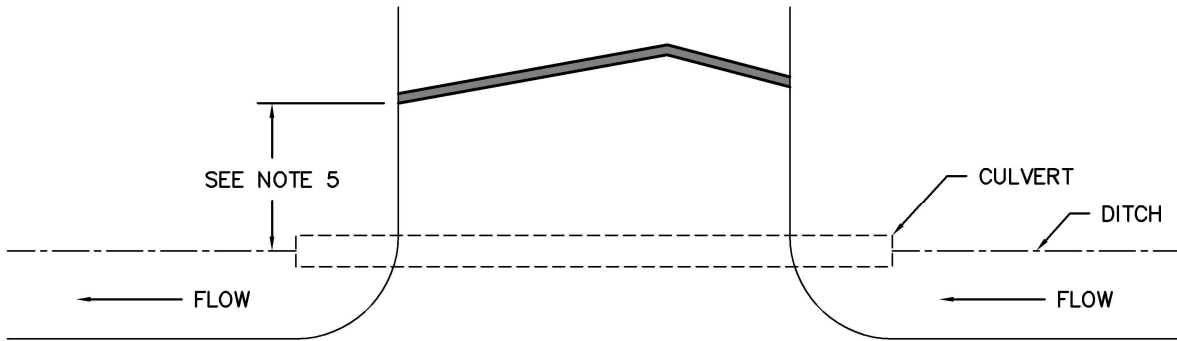
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\DRIVEWAY WATER BAR (BERM) CONSTRUCTION.DWG PLOTTED: 2023/01/05 4:40 PM

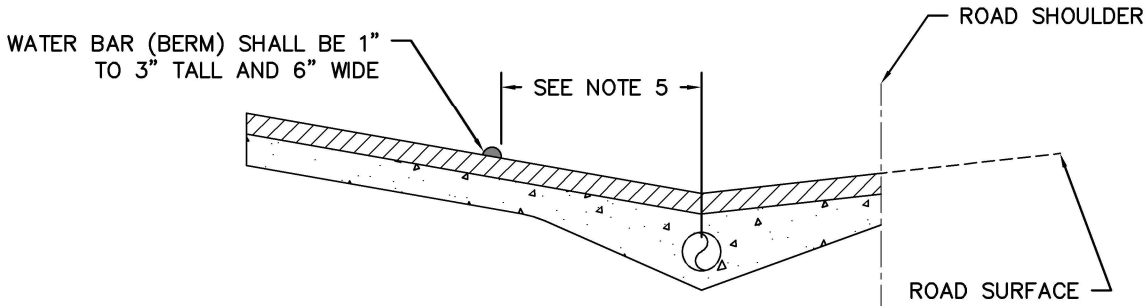
TYPICAL PLAN OF DRIVEWAY APPROACH WITH WATER BAR CONFIGURATION A



TYPICAL PLAN OF DRIVEWAY APPROACH WITH WATER BAR CONFIGURATION B



APPLICATION FOR ASPHALT DRIVEWAY APPROACHES



NOTES:

1. WATER BARS ARE REQUIRED ON DRIVEWAYS WITH SLOPES GREATER THAN 10%.
2. ASPHALT WATER BARS (BERMS) REQUIRE A TACK COAT OF LIQUID ASPHALT TO BE APPLIED BEFORE BUILDING THE BERM SO THAT IT WILL BE STABLE AND ADHERE TO THE DRIVEWAY SURFACE.
3. THE WATER BARS (BERMS) ARE TO BE OF ADEQUATE ELEVATION AND WIDTH TO ENSURE THAT THE WATER RUNOFF WILL NOT FLOW ONTO COUNTY ROAD SHOULDERS OR TRAVELING SURFACE.
4. THE WATER BARS (BERMS) CAN BE CONSTRUCTED IN EITHER THE 'A' OR 'B' CONFIGURATION SHOWN IN DRAWING ABOVE, TO DIRECT SURFACE RUNOFF ON EITHER SIDE OF DRIVEWAY TO A CONSTRUCTED DITCH SECTION. CONTROL OF WATER FLOW INTO EXISTING ROADSIDE DITCH IS THE PRIMARY PURPOSE OF THESE WATER BARS (BERMS).
5. THE NEAREST PART OF THE WATER BAR CONFIGURATION CONSTRUCTED SHALL BE 2' TO 5' BEHIND THE CULVERT, MEASURED FROM THE CENTER OF THE CULVERT, OR A MINIMUM OF 5' MEASURED FROM THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



DRIVEWAY WATER BAR (BERM) CONSTRUCTION

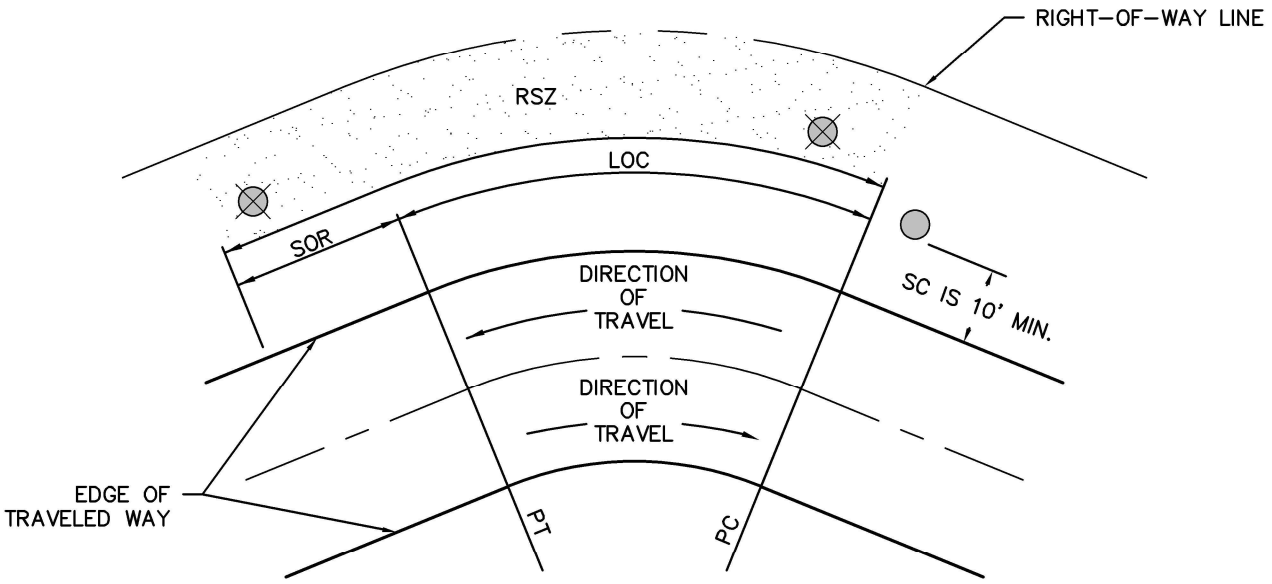
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 07/07/2005	REVISION DATE: 01/05/2023	SCALE: N.T.S	SHEET: 1 OF 1
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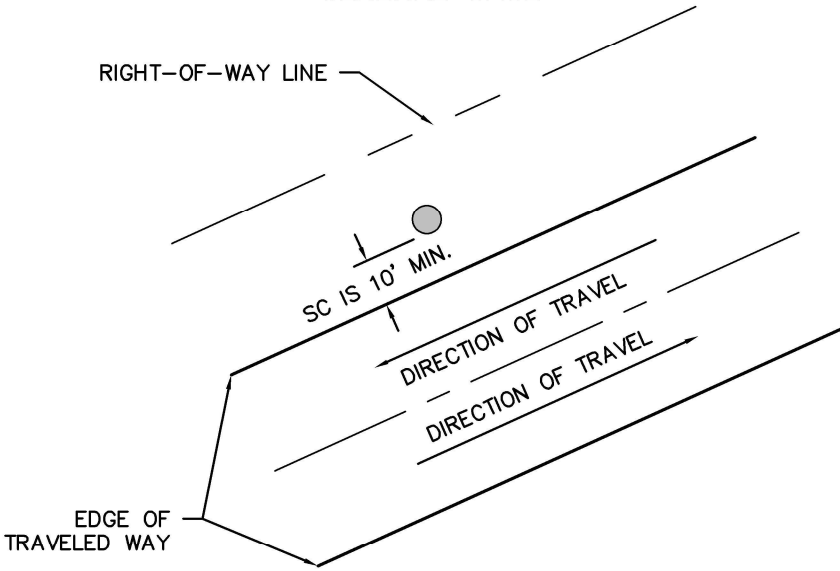


FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\FIXED OBJECT CLEARANCE REQUIREMENTS FOR TURNPIKE.DWG PLOTTED: 2023/01/27 3:43 PM

OUTSIDE OF CURVE



GENERAL CASE



NOTES:

1. NO STRUCTURES MAY BE PLACED ON THE OUTSIDE OF A CURVE WITH A POSTED SPEED LIMIT OF 40 MPH OR OVER UNLESS PRIOR APPROVAL IS OBTAINED FROM COUNTY ENGINEER.
2.  $PSL = LOC + SOR$

SPEED (MPH)	SOR
40	220
45	255
50	290
55	325

DEFINITIONS:

- P = POINT OF TANGENCY.
- PC = POINT OF CURVATURE.
- LOC = LENGTH OF CURVE (FEET) AT EDGE OF TRAVELED WAY FROM POINT OF CURVATURE TO POINT OF TANGENCY.
- SOR = SAFETY OVERRUN (FEET) BEYOND POINT OF TANGENCY.
- RSZ = RESTRICTED STRUCTURE ZONE, WHERE POLES AND/OR OBSTACLES MUST BE REMOVED OR BARRICADED AT MARION COUNTY'S DISCRETION.
- SC = STRUCTURE CLEARANCE TO NEAREST FACE OF STRUCTURE FROM EDGE OF TRAVELED WAY.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

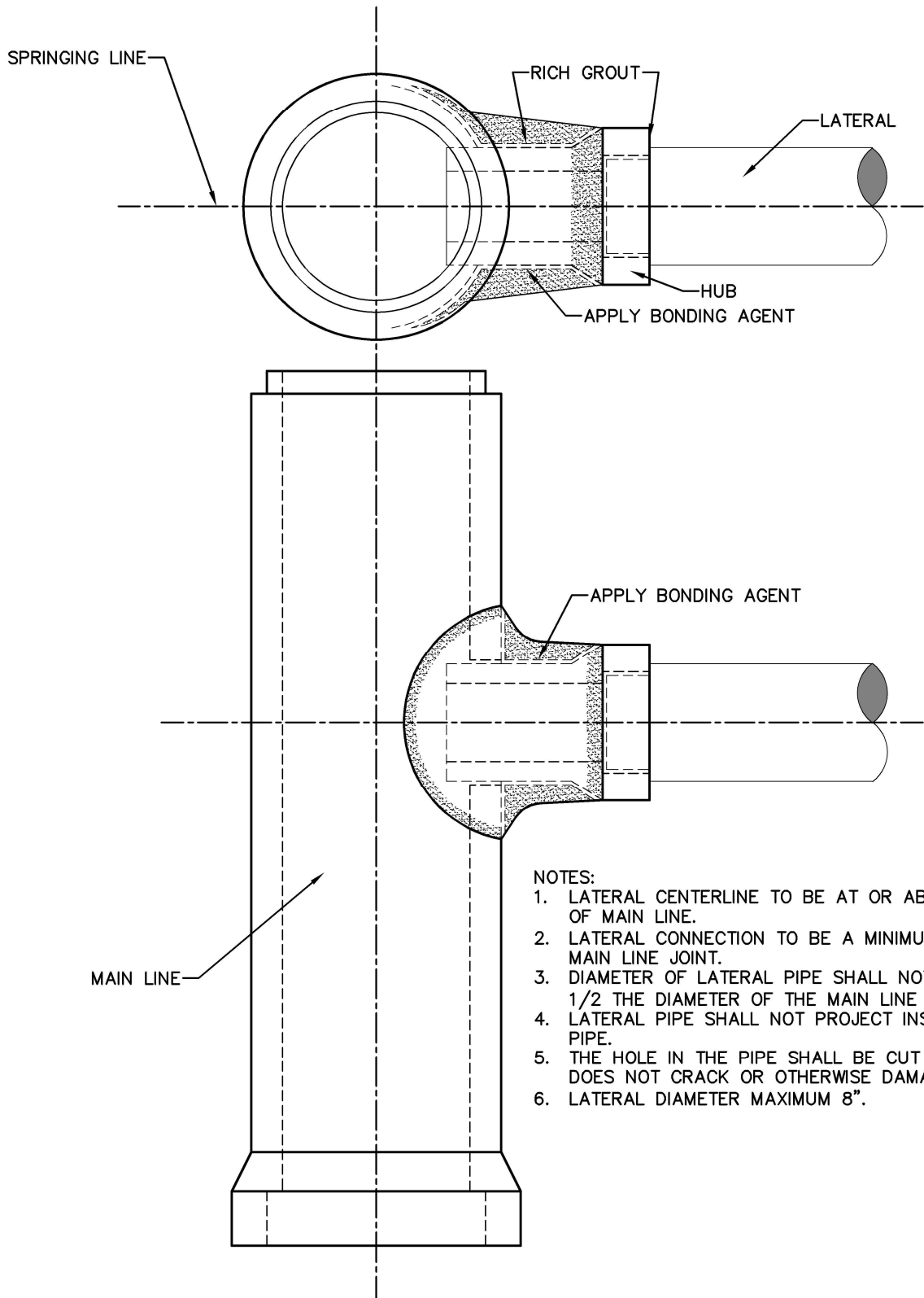


FIXED OBJECT CLEARANCE REQUIREMENTS FOR TURNPIKE

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
01/27/23	ADAPTED CITY OF FEDERAL WAY'S HS DETAIL AS SUBSTITUTE FOR EXISTING DETAIL	HS

CREATION DATE: 11/16/2004	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\LATERAL CONNECTION TO STORM DRAIN PIPE\_PVT.DWG PLOTTED: 2022/10/20 2:03 PM



- NOTES:**
1. LATERAL CENTERLINE TO BE AT OR ABOVE SPRINGING LINE OF MAIN LINE.
  2. LATERAL CONNECTION TO BE A MINIMUM OF 1 1/2' FROM MAIN LINE JOINT.
  3. DIAMETER OF LATERAL PIPE SHALL NOT BE GREATER THAN 1/2 THE DIAMETER OF THE MAIN LINE PIPE.
  4. LATERAL PIPE SHALL NOT PROJECT INSIDE OF THE MAIN LINE PIPE.
  5. THE HOLE IN THE PIPE SHALL BE CUT IN A MANNER THAT DOES NOT CRACK OR OTHERWISE DAMAGE THE PIPE.
  6. LATERAL DIAMETER MAXIMUM 8".

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

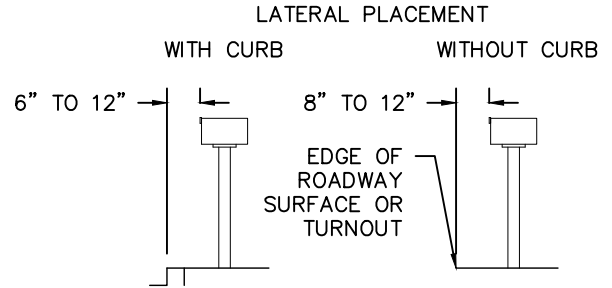
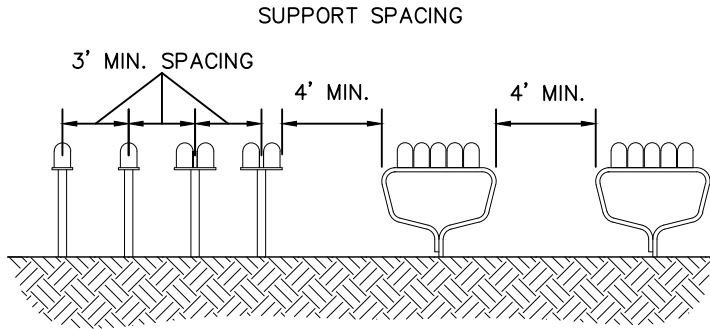


## LATERAL CONNECTION TO STORM DRAIN PIPE FROM PRIVATE PROPERTY

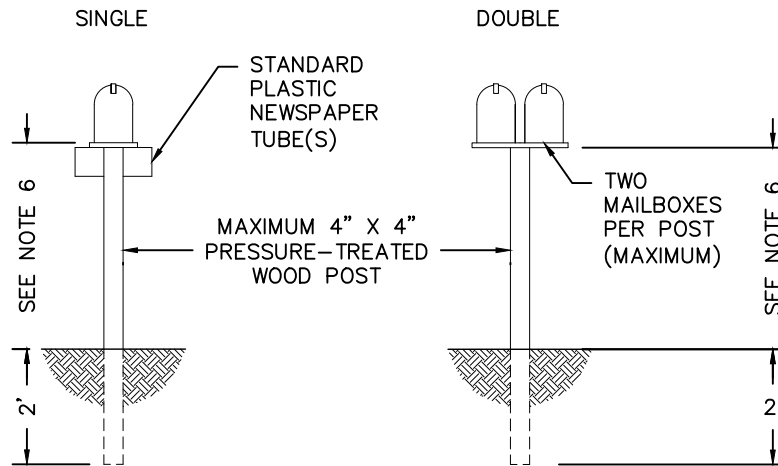
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 07/05/1994	REVISION DATE: 09/15/2022	SCALE: N.T.S	SHEET: 1 of 1
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FILE: G:\ENGINEERING\LDENG&PERMIT\SHARED\ENGINEERING\DETAILS\MAILBOX AND POST INSTALLATIONS IN ROW.DWG PLOTTED: 2023/01/27 2:30 PM



TYPICAL WOOD POST INSTALLATION



NOTES:

1. THE FOLLOWING TYPES OF MAILBOXES ARE GENERALLY NOT PERMITTED WITHIN MARION COUNTY'S RIGHT-OF-WAY:
  - 1.1. MASONRY STRUCTURES.
  - 1.2. FACADES OF ANY TYPE.
  - 1.3. WELDMENT STRUCTURES SUCH AS HEAVY CHAIN, CRANK SHAFTS, GEAR ASSEMBLIES, HORSESHOES, ETC.
  - 1.4. FARM IMPLEMENTS.
  - 1.5. MAILBOX ENCLOSURES SUCH AS WELL-CASING, PIPES, BOXES, CAGES, PLATE STEEL WELDMENTS, ETC.
  - 1.6. MAILBOXES ON HORIZONTAL PLANKS.
  - 1.7. MAILBOX RECEPTACLES HEAVIER THAN 11 POUNDS.
2. MAILBOXES OF HEAVY GAGE STEEL, CAST IRON, AND OTHER MATERIALS HAVE BEEN DESIGNED AND SOLD TO DETER VANDALISM. ALTHOUGH MANY OF THESE BOXES MEET THE U.S. POSTAL SERVICE REQUIREMENTS, IF THEY ARE GREATER THAN 11 LBS, THEY WILL NOT BE PERMITTED IN MARION COUNTY RIGHT-OF-WAY. THESE HEAVY-DUTY BOXES ARE POTENTIALLY HAZARDOUS TO OCCUPANTS OF ERRANT VEHICLES REGARDLESS OF THE TYPE OF SUPPORT THAT IS USED.
3. MAILBOX MUST BE SECURELY ATTACHED TO POST.
4. CONCRETE COLLAR MAY BE REQUIRED AS DIRECTED BY THE COUNTY ENGINEER.
5. MAILBOX INSTALLATIONS WITH GREATER THAN TWO MAILBOXES REQUIRE A MULTIPLE MAILBOX SUPPORT. SEE SHEET 2.
6. HEIGHT OF MAILBOX TYPICAL WITH LOCAL UNITED STATES POSTAL SERVICE OFFICE REQUIREMENTS.
7. SEE PAGE 2 OF MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'MAILBOX AND POST INSTALLATIONS IN COUNTY RIGHT-OF-WAY' FOR MORE DETAILS.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

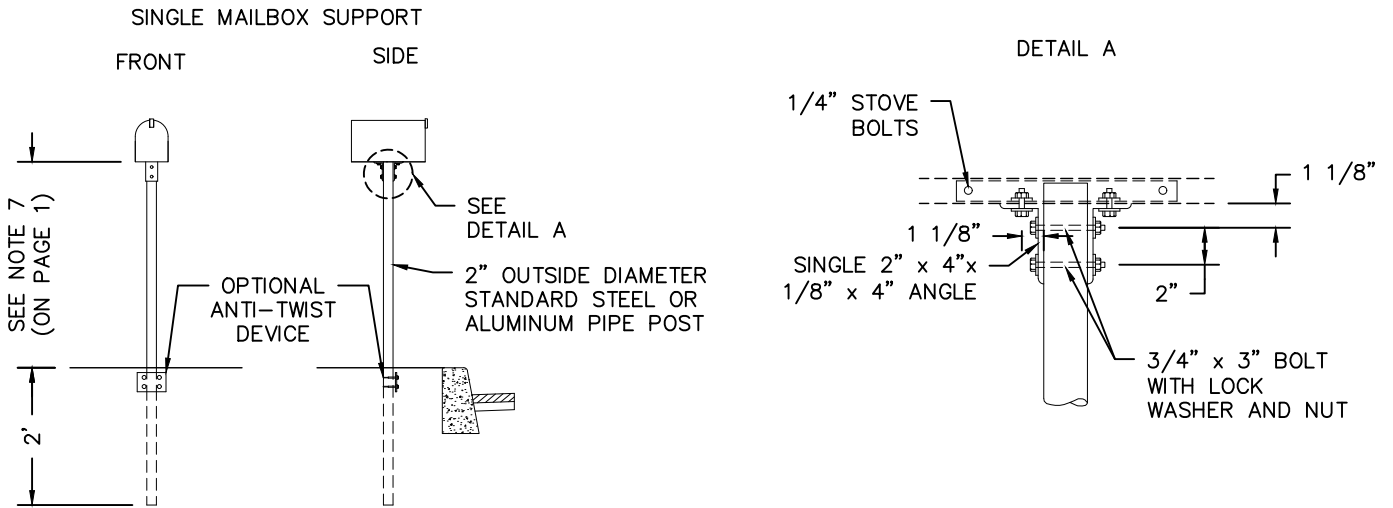


**MAILBOX AND POST  
INSTALLATIONS IN COUNTY  
RIGHT-OF-WAY**

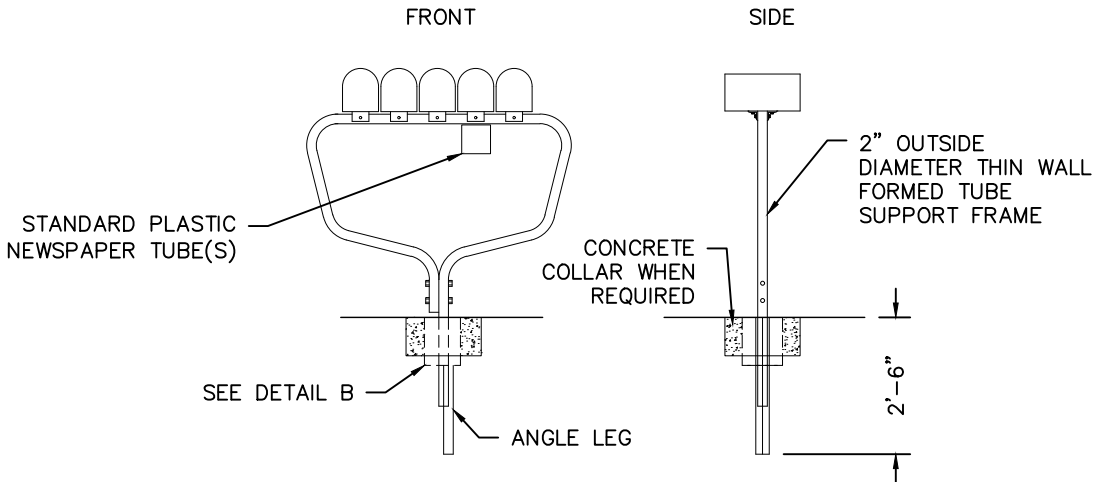
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 12/27/2006	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 2
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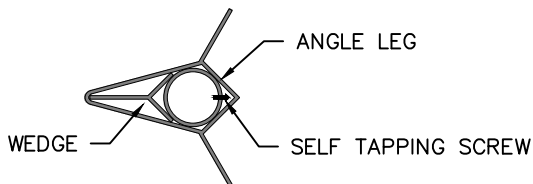
TYPICAL METAL POST INSTALLATION



MULTIPLE MAILBOX SUPPORT



DETAIL B  
POST MOUNTING  
FLUSH V-WING SOCKET



NOTES:

- SEE PAGE 1 OF MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'MAILBOX AND POST INSTALLATIONS IN COUNTY RIGHT-OF-WAY' FOR NOTES AND SPECIFICATIONS.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

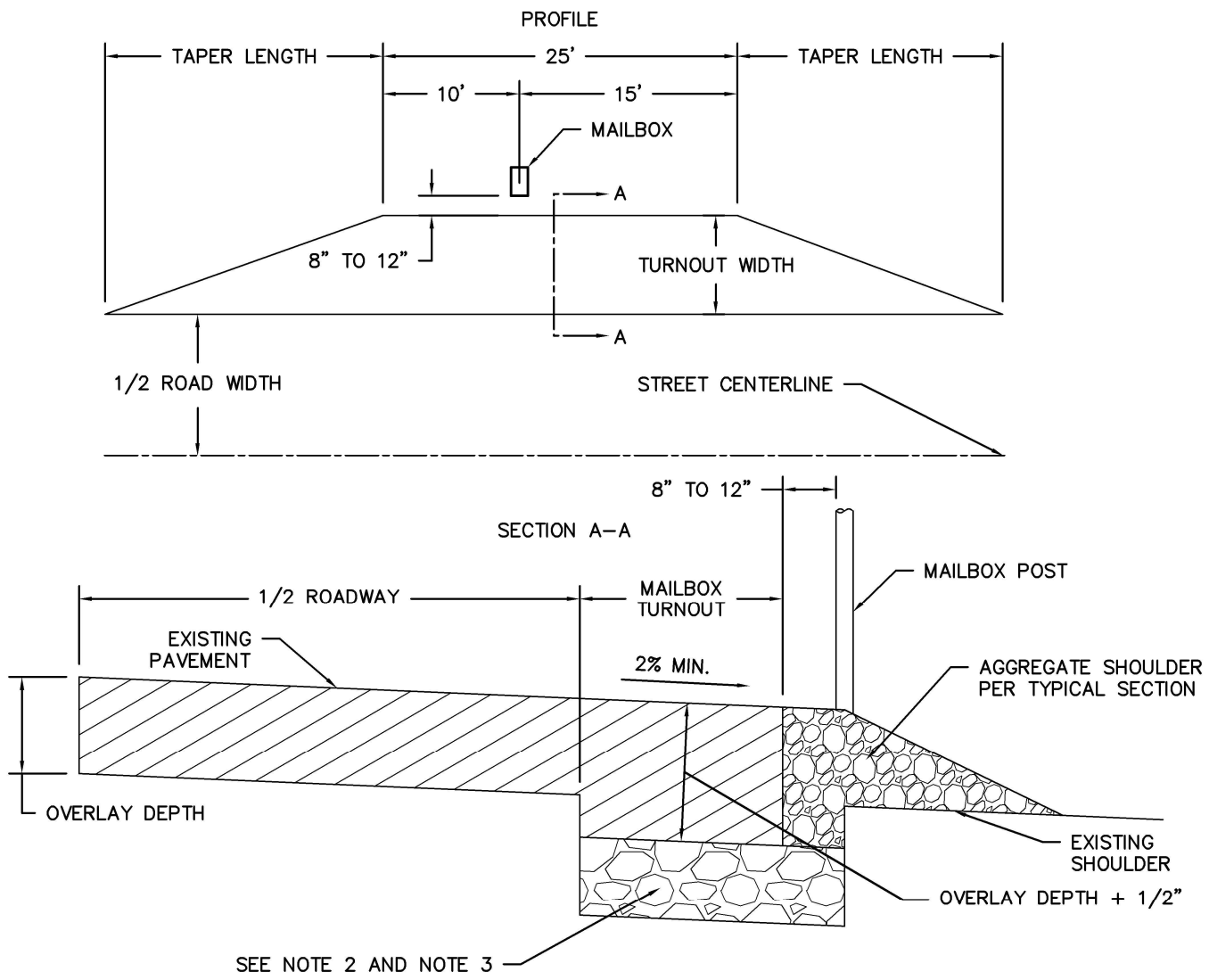


MAILBOX AND POST  
INSTALLATIONS IN COUNTY  
RIGHT-OF-WAY

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 12/27/2006	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 2 OF 2
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\MAILBOX TURNOUT.DWG PLOTTED: 2023/02/24 2:14 PM



**NOTES:**

1. IF SHOULDER IS ALREADY LOW, IT WILL BE NECESSARY TO BLADE DEEP ENOUGH TO REMOVE ANY SOD.
2. WHEN WIDENING IS NOT REQUIRED, EXCAVATE 6-1/2" AND PLACE 6" OF 3/4" TO 1" MINUS AGGREGATE.
3. WHEN ROAD WIDENING IS REQUIRED, SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWINGS 'ROAD WIDENING DETAILS - RURAL' AND 'ROAD WIDENING DETAILS - URBAN' FOR DEPTH OF EXCAVATION AND BASE.

MAILBOX TURNOUT TABLE		
ROAD WIDTH	TURNOUT WIDTH	TAPER LENGTH
20'	4'	12'
22' TO 32'	3'	10'

4. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DETAIL 'MAILBOX AND POST INSTALLATIONS IN COUNTY RIGHT-OF-WAY'.

**MARION COUNTY DEPARTMENT OF PUBLIC WORKS**

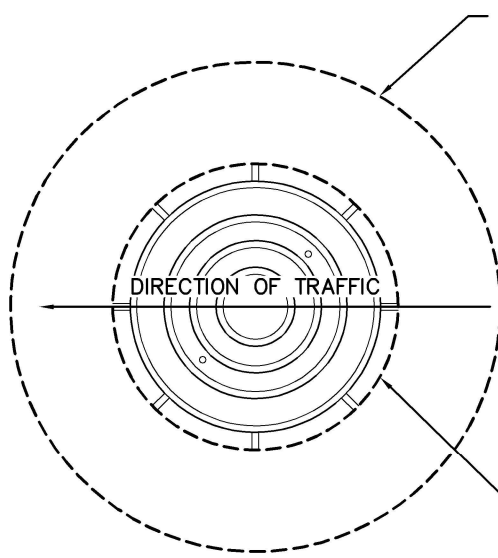
## MAILBOX TURNOUT

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
01/27/23	COMBINED MAILBOX TURNOUT DETAIL AND TYPICAL SECTION FOR MAILBOX TURNOUT	HS

CREATION DATE:	REVISION DATE:	SCALE:	SHEET:
11/16/2004	02/24/2023	N.T.S	1 OF 1

FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\MANHOLE ADJUSTMENT SEQUENCE.DWG PLOTTED: 2023/01/30 2:28 PM

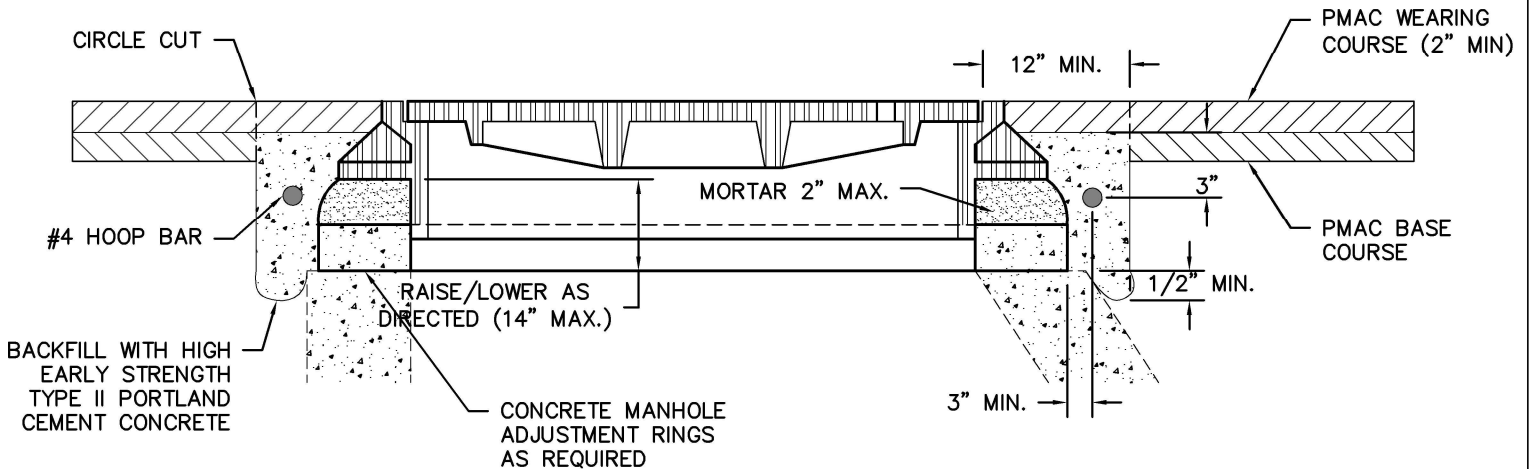
MANHOLE CIRCULAR SAWCUT



FINISH JOINT WITH ASPHALTIC SEAL AND SAND. CIRCULAR SAWCUT.

SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'MANHOLE CASTING DETAILS' FOR DETAILS.

SECTION VIEW



NOTES:

1. PRIOR TO PAVING, LOWER MANHOLE BY REMOVING FRAME/COVER AND ADJUSTMENT RINGS (AS NECESSARY). PLACE STEEL PLATE OVER MANHOLE. STEEL PLATE SHALL BE CAPABLE OF H20 (16,000 LBS) TRAFFIC LOADING SPECIFICATIONS AS SET BY AASHTO.
2. CIRCULAR SAW CUT EXCAVATION AROUND MANHOLE 12" MINIMUM FROM MANHOLE FRAME. NOTE: SAW CUT SHALL BE SEGMENTAL.
3. RAISE MANHOLE FRAME AND COVER TO GRADE AND PROFILE BY INSTALLING CONCRETE RINGS AND LEVELING MORTAR.
4. BACKFILL WITH HIGH EARLY-STRENGTH PORTLAND CEMENT CONCRETE TO FINISH GRADE OF PMAC BASE COURSE. COMPACT SUBGRADE AS SPECIFIED PRIOR TO PLACEMENT OF PORTLAND CEMENT CONCRETE.
5. COVER MANHOLE WITH STEEL PLATE. STEEL PLATE SHALL OVERLAP SAW CUT 24" MINIMUM, AND SHALL BE CAPABLE OF H20 (16,000 LBS) TRAFFIC LOADING SPECIFICATIONS AS SET BY AASHTO.
6. APPLY TACK COAT TO EXPOSED CONCRETE SURFACES PRIOR TO PAVING.
7. AFTER PORTLAND CEMENT CONCRETE HAS CURED (3000 PSI IN 24 HOURS), PLACE PMAC WEARING COURSE AS SHOWN.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

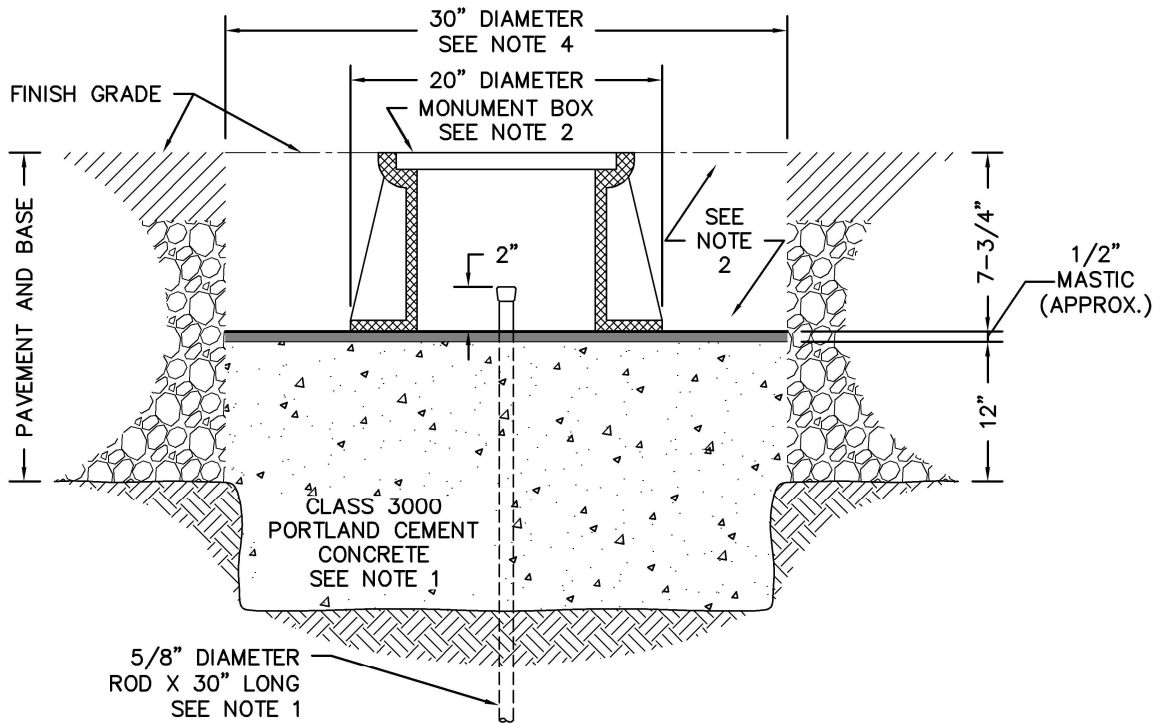


MANHOLE ADJUSTMENT SEQUENCE (AFTER FINAL PAVING)

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
11/08/22	ADAPTED CURRENT CITY OF SALEM DETAIL TO EXISTING MC DWG	HS

CREATION DATE: 11/09/2004	REVISION DATE: 11/08/2022	SCALE: N.T.S	SHEET: 1 OF 1
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**NOTES:**

1. THE FOLLOWING MATERIALS AND ITEMS OF WORK SHALL BE PROVIDED BY THE PRIVATE SURVEYOR: PROVIDE, DRIVE AND SET CAP ON 5/8" DIAMETER ROD, WITH PORTLAND CEMENT CONCRETE BASE.
2. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE THE FOLLOWING MATERIALS AND ITEMS OF WORK: EXCAVATION, INCLUDING EXCAVATION BELOW NORMAL ROADWAY EXCAVATION PAYLINE, PLACING 1/2" MASTIC, PROVIDING, SETTING AND ADJUSTING MONUMENT BOX TO FINISH GRADE, BACKFILLING AND PAVING. BACKFILL SHALL CONSIST OF HMAC PAVEMENT (PORTLAND CEMENT CONCRETE MAY BE ALLOWED WITH PRIOR APPROVAL OF THE COUNTY ENGINEER OR COUNTY SURVEYOR)
3. PROPOSED LOCATIONS OF MONUMENTS SHALL BE SHOWN ON THE PROJECT PLANS AND ARE APPROXIMATE ONLY. EXACT LOCATION WILL BE DETERMINED AT THE TIME OF CONSTRUCTION.
4. 24" DIAMETER HOLE IS ACCEPTABLE FOR 14" DIAMETER BOX ON LOCAL STREETS WITH PREVAILING SPEEDS LESS THAN 35 MPH.

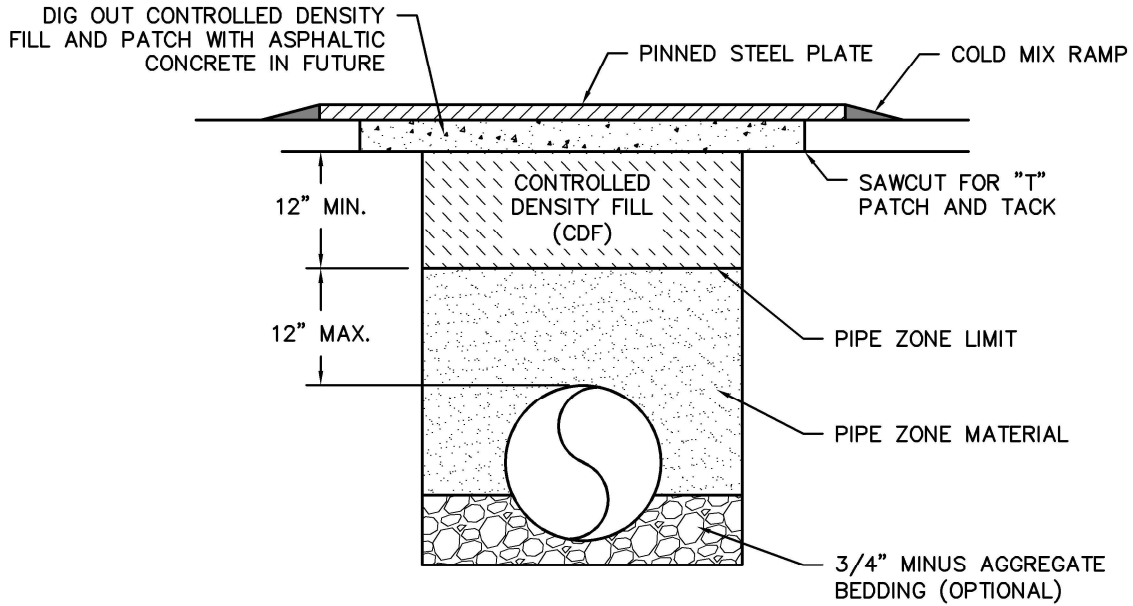
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**MONUMENT BOX  
INSTALLATION**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 09/15/1999	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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**NOTES:**

1. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING SPECIAL PROVISION 'NON-COMPRESSIBLE BACKFILL (CDF-CONTROLLED DENSITY FILL)' FOR SPECIFICATIONS.
2. PROVIDE BATCH TICKETS AND TEST CYLINDERS FOR EACH LOAD TO THE COUNTY INSPECTOR, WHEN REQUIRED.
3. IF CDF IS USED AS A DRIVABLE SURFACE, IT MUST BE DUG OUT BEFORE PAVING.

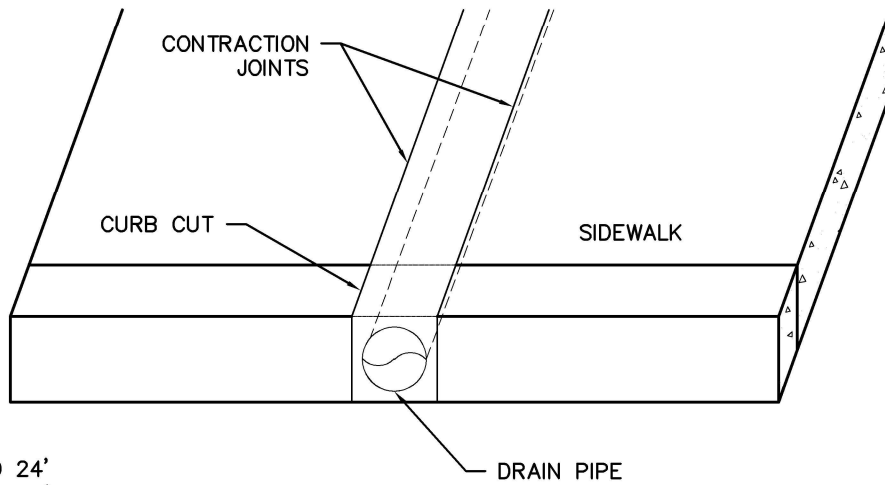
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
01/27/23	UPDATE FORMATTING AND SEPARATE DETAIL FROM SPECIAL PROVISION	HS

**MARION COUNTY DEPARTMENT OF PUBLIC WORKS**

**NON-COMPRESSIBLE  
BACKFILL  
(CDF - CONTROLLED  
DENSITY FILL)**

CREATION DATE: 01/04/1995	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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**NOTES:**

1. APPROACH WIDTH (W):
  - 1.1. RESIDENTIAL 12" TO 24'
  - 1.2. COMMERCIAL 28' TO 40'
    - 1.2.1. FOR COMMERCIAL DRIVEWAYS, WIDTH SHALL BE SET BY COUNTY ENGINEER ON A SITE SPECIFIC BASIS.
2. FLARE:
  - 2.1. 36" FOR COMMERCIAL AND INDUSTRIAL WHERE TRAVEL LANE IN STREET IS ADJACENT TO CURB. (I.E. PARKING PROHIBITED).
  - 2.2. NONE REQUIRED FOR RESIDENTIAL AND COMMERCIAL WHERE PARKING IS ALLOWED IN STREET ADJACENT TO CURB.
3. BROOMING DIRECTION:
  - 3.1. BACK OF WALK TO FACE OF CURB.
4. DEEP SCORING, SHINING & EXPANSION JOINTS:
  - 4.1. DEEP SCORED CONTRACTION JOINTS ARE TO BE MADE EVERY 5' OF SIDEWALK AND EVERY 15' OF CURB. WHEN CURB IS CUT TO ALLOW FOR A DRAIN LINE, A DEEP SCORE IS TO BE MADE AT BOTH CURB EDGES, NOT OVER PIPE. SEE NOTE 4.4.5. BELOW.
  - 4.2. DEEP SCORED CONTRACTION JOINTS ARE TO BE FORMED TO A DEPTH OF 1-1/4" x 1/4" IN WIDTH.
  - 4.3. EXPANSION JOINTS USING 1/2" X 3-1/2" PRE-MOLDED JOINT FILLER MATERIAL ARE REQUIRED AT:
    - 4.3.1. ALONG SIDEWALK AT DRIVEWAY - A PROPERTY LINE SIDEWALK WILL REQUIRE EXPANSION JOINTS ON BOTH SIDES OF SIDEWALK.
    - 4.3.2. ALONG SIDEWALK WHERE IT INTERSECTS ANOTHER SIDEWALK.
    - 4.3.3. AT EDGES OF UTILITY VAULTS OR OTHER STRUCTURES EXPOSED TO SIDEWALK.
    - 4.3.4. IN SIDEWALK TO ISOLATE A WHEELCHAIR RAMP.
    - 4.3.5. ON CURBSIDE SIDEWALKS PLACED AT 90° ACROSS THE SIDEWALK AT BEGINNING (TOP) OF CURB TRANSITION.
    - 4.3.6. NO RUNNING PIECE OF SIDEWALK SHALL BE MORE THAN 40' WITHOUT AN EXPANSION JOINT.
5. CONCRETE SPECIFICATIONS:
  - 5.1. A MINIMUM OF 3,000 PSI CONCRETE IN 28 DAYS SHALL BE USED FOR ALL CURBS, DRIVEWAY APPROACHES AND SIDEWALKS.
  - 5.2. CONCRETE SHALL BE AIR ENTRAINED; TOTAL AIR CONTENT (PERCENT BY VOLUME OF CONCRETE) SHALL BE BETWEEN 5% AND 7%.
6. CURB REMOVAL:
  - 6.1. WHEN FULL HEIGHT CURB SECTION IS REMOVED, THE FOLLOWING PROVISIONS SHALL APPLY:
    - 6.1.1. VERTICAL SAW CUTS SHALL BE MADE AT OUTSIDE EDGES OF CURB TRANSITIONS. THIS APPLIES TO BOTH TYPE A AND TYPE C CURBS. WHEN WEEP HOLES ARE TO BE INSTALLED, ADDITIONAL CURB WILL NEED TO BE REMOVED.
    - 6.1.2. FOR TYPE A CURB AND GUTTER, THE ENTIRE CURB AND GUTTER SHALL BE REMOVED AND RE-POURED. MATERIAL IN CURB AREA SHALL BE REMOVED TO SUBGRADE AND RE-POURED. PROVIDE 6" OF CONCRETE BELOW FLOW LINE IN CURB AREA.
    - 6.1.3. TYPE C CURB SHALL BE REMOVED TO FULL DEPTH AND RE-POURED. PROVIDE 10" OF CONCRETE BELOW ASPHALT IN CURB AREA.
7. DRAIN LINES:
  - 7.1. WEEP HOLES FOR DRAINS ARE TO EXIT IN A FULL HEIGHT CURB SECTION OUTSIDE CURB TRANSITION AREA OF DRIVEWAY. DRAIN LINES IN SIDEWALK ARE TO BE LOCATED UNDER OR ADJACENT TO A CONTRACTION JOINT. DRAIN LINES ARE TO CROSS SIDEWALKS AT 90° (PERPENDICULAR) TO CURB.
  - 7.2. WHERE CURB CUTS ARE MADE FOR CONSTRUCTION OF A DRIVEWAY APPROACH, ONE DRAIN LINE IS ALLOWABLE IN CURB TRANSITION AREA IF LINE IS PLACED DIRECTLY ADJACENT TO CURB CUT (HIGHEST POINT OF TRANSITION).
  - 7.3. DRAIN LINES ARE TO BE PLACED AT GUTTER FLOW LINE.
  - 7.4. DRAIN PIPE IS TO BE PLACED ADJACENT TO CURB CUT. A CONTRACTION JOINT IS TO BE SCORED ALONG BOTH CUTS.

FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING - STANDARD DETAILS\NOTES FOR URBAN STREETS.DWG PLOTTED: 2023/01/27 3:40 PM

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

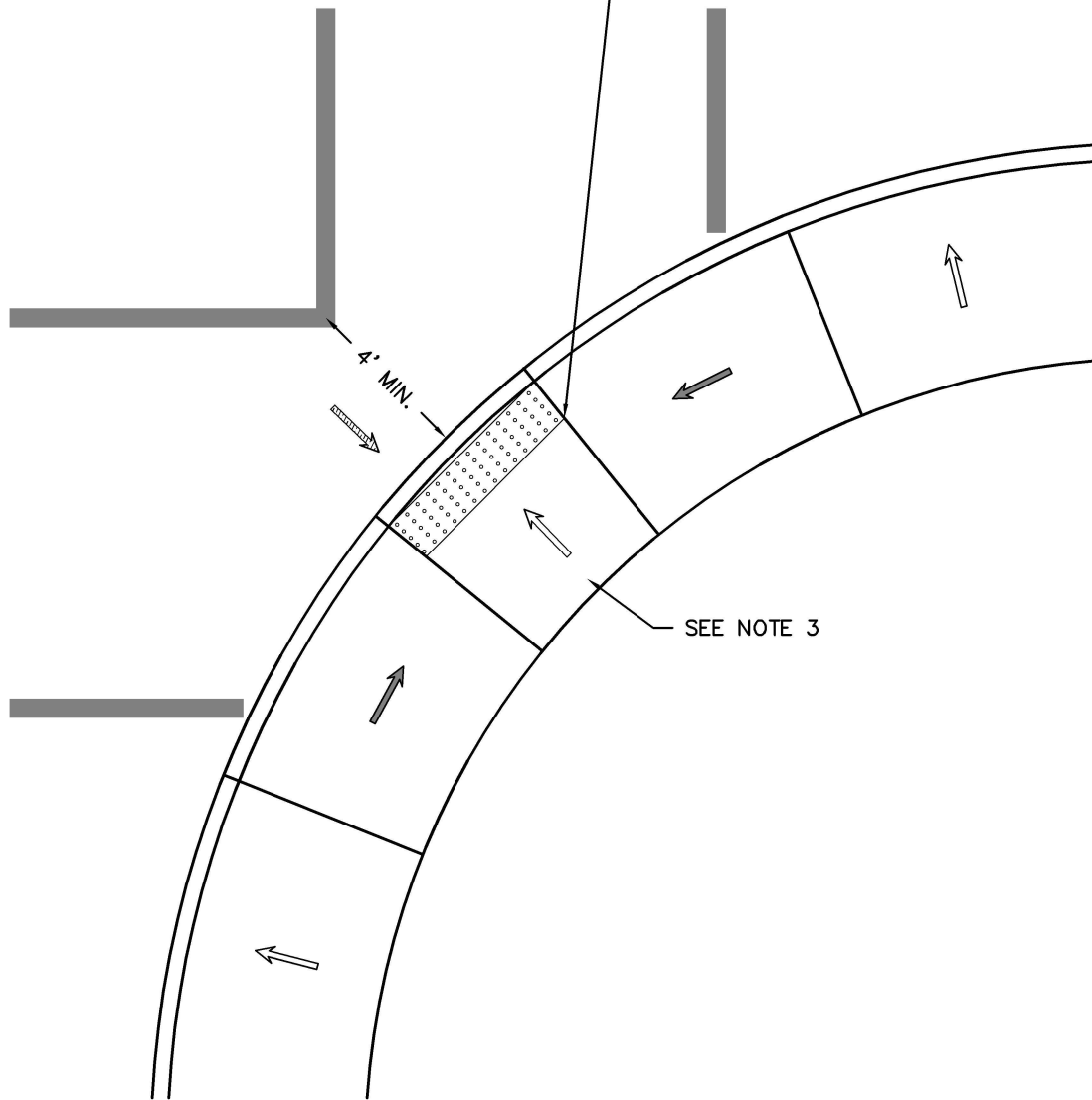


NOTES FOR  
URBAN STREETS

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
01/18/13	NOTE 5 CHANGE TO 3000 PSI	DC
03/01/16	COMBINE SHEETS	RP

CREATION DATE: 01/18/2013	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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SEE 'DETECTABLE WARNING SURFACE LOCATIONS' DETAIL



**NOTES:**

1. USE ALTERATIONS ONLY WHEN SITE OR DESIGN CONSTRAINTS PROHIBIT INSTALLING NEW RAMPS.
2. RAMPS SHALL HAVE 2% MAX. CROSS SLOPE.
3. TURNING SPACE NOTES:
  - 3.1. NEW CONSTRUCTION SHALL BE 4' x 4' MINIMUM
  - 3.2. ALTERATIONS TO EXISTING SHALL BE 3' x 3' MINIMUM.
  - 3.3. MAXIMUM SLOPE SHALL BE 2% IN ANY DIRECTION.

- Slope 1.5% max. (Max. 2.0% finished)
- Slope 7.5% max. (Max. 8.3% finished)
- Detectable Warning Surface
- Counter Slope (5.0% max.)

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

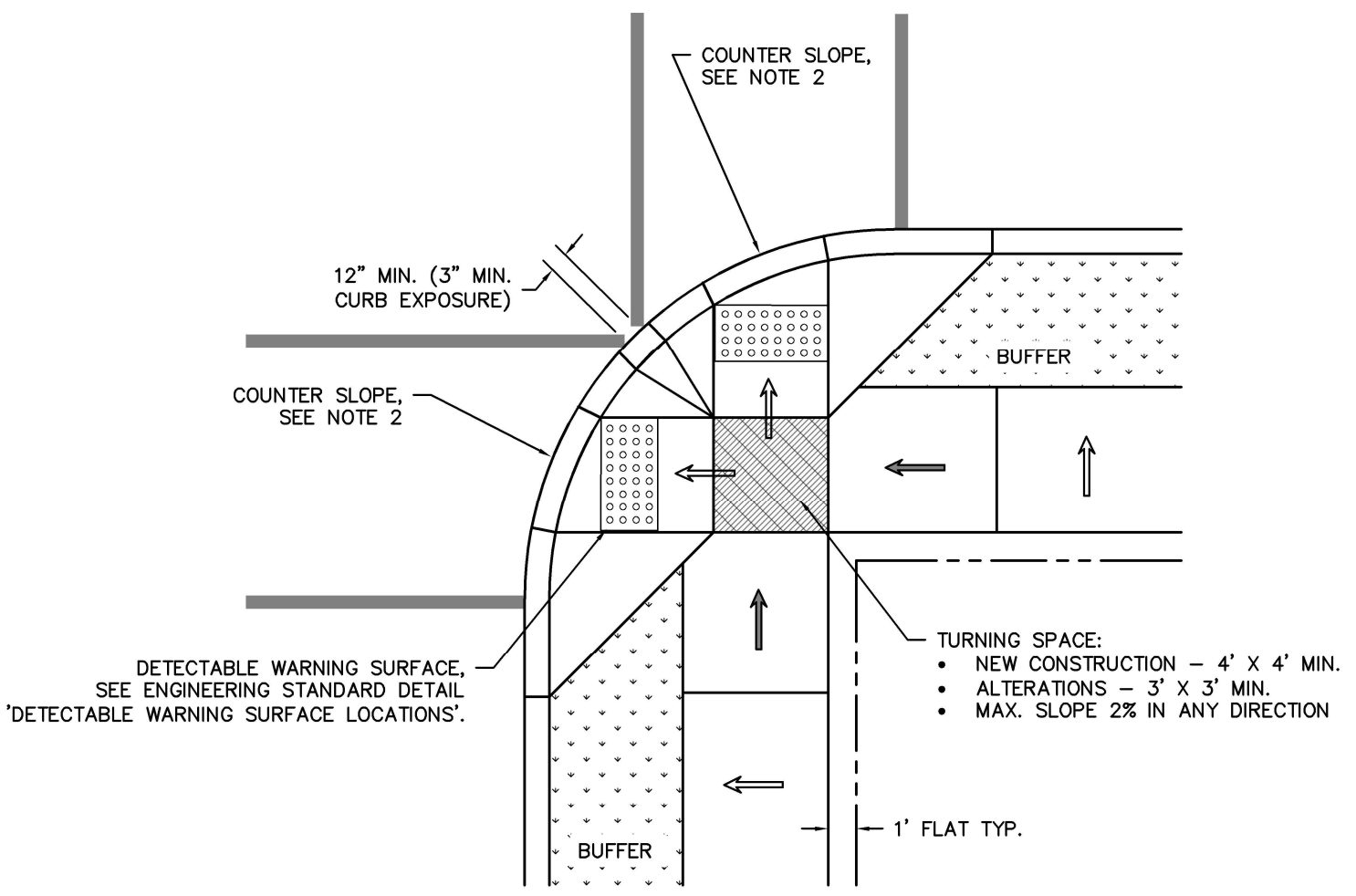


**PARALLEL CURB LINE  
SIDEWALK RAMP**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
04/06/17	SLOPE RANGE ADJUSTMENT	RP

CREATION DATE: 03/01/2016	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\PARALLEL PROPERTY LINE RAMPS.DWG PLOTTED: 2023/01/06 4:09 PM



- NOTES:**
1. USE ALTERATIONS TURNING SPACE ONLY WHEN SITE OR DESIGN CONSTRAINTS PROHIBIT A LARGER AREA.
  2. COUNTER SLOPE IS 5% MAX, CROSS SLOPE IS 2% MAX.


← SLOPE 1.5% MAX.  
(MAX. 2.0% FINISHED)

← SLOPE 7.5% MAX.  
(MAX. 8.3% FINISHED)

▣ DETECTABLE WARNING SURFACE

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

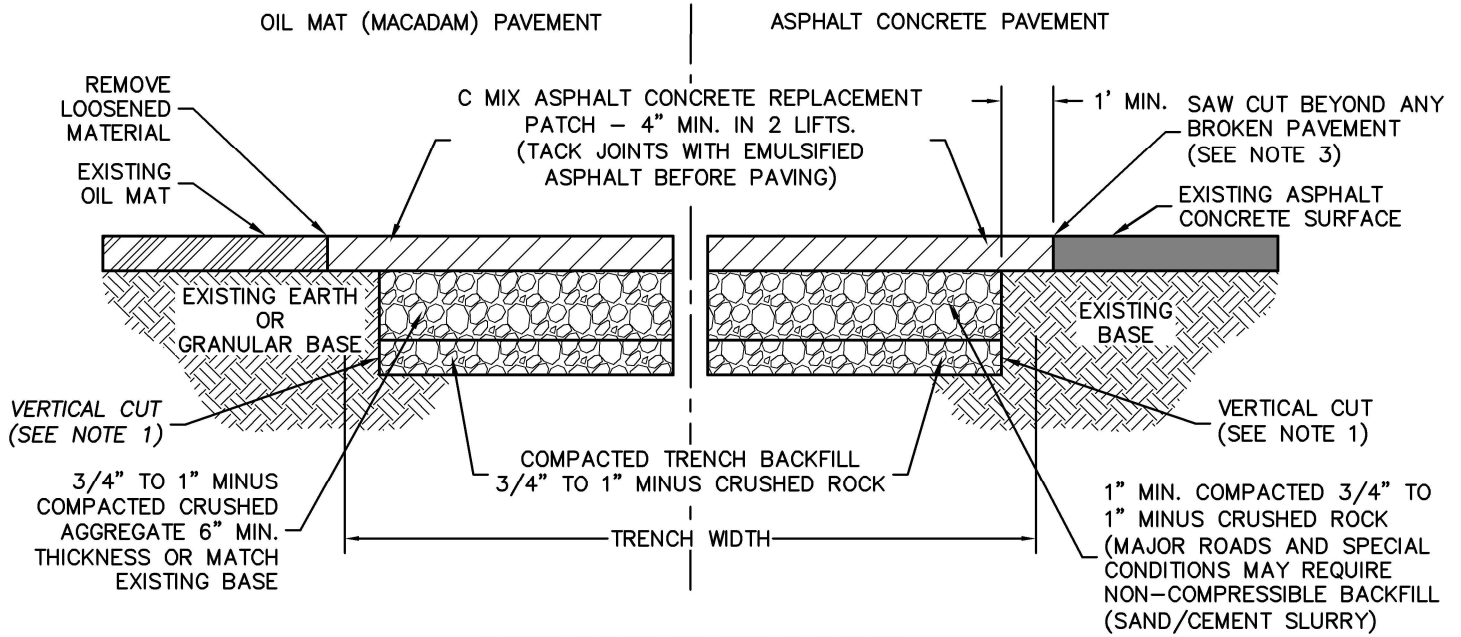


**PARALLEL PROPERTY LINE RAMPS**

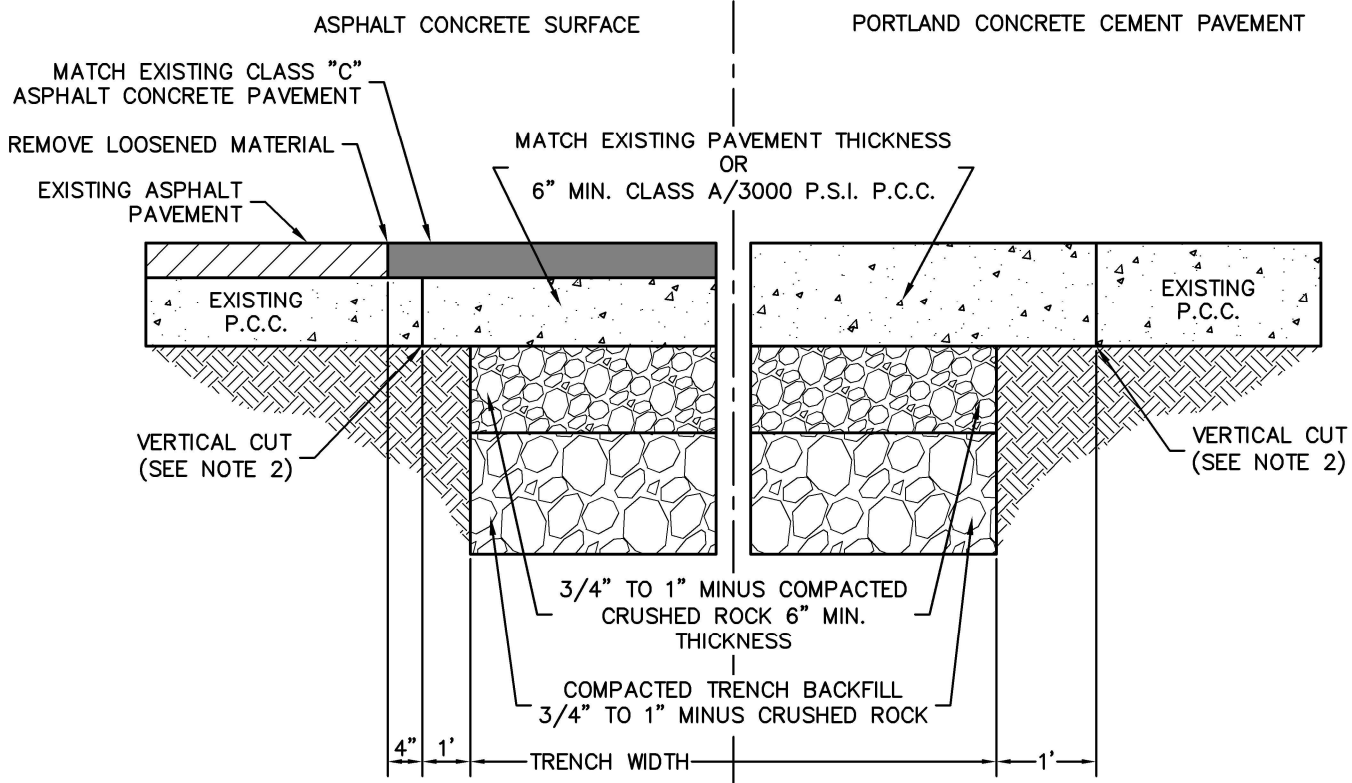
CREATION DATE: 03/01/2016	REVISION DATE: 01/06/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\PAVEMENT DETAILS\PAVEMENT PATCHING.DWG PLOTTED: 2023/01/25 4:38 PM

TYPICAL PATCH FOR FLEXIBLE PAVEMENT



TYPICAL PATCH FOR RIGID PAVEMENT



NOTES:

1. CUTS IN ASPHALT CONCRETE PAVEMENT SHALL BE MADE WITH HYDRAULICALLY-OPERATED SPADE-TIPPED PAVEMENT BREAKER, CUTTING WHEEL, CONCRETE SAW, OR OTHER APPROVED METHOD. INTERMITTENT PUNCHING WITH A POINTED JACK HAMMER BIT WILL NOT BE PERMITTED.
2. CUTS IN PORTLAND CONCRETE CEMENT PAVEMENT SHALL BE MADE WITH A CONCRETE SAW.
3. SAND AND SEAL 4" BAND OVER JOINT WITH AR4000 OR EQUIVALENT.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



PAVEMENT PATCHING

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 10/28/1993	REVISION DATE: 01/25/2023	SCALE: N.T.S	SHEET: 1 OF 1
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# SOIL CONSERVATION SERVICE TR-55 LAG-T<sub>c</sub> METHOD PEAK DISCHARGE COMPUTATION SHEET

PROJECT \_\_\_\_\_ WATERSHED CONDITION \_\_\_\_\_  
 BY \_\_\_\_\_ DATE \_\_\_\_\_  
 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

## INPUT

1.	_____ (IN) (24 HOUR) (____ -YR FREQ.) RAINFALL (MAP EXHIBIT 2-3A)		FIGURE 10		
2.	_____ RUNOFF CURVE NO. (EXHIBIT 2-2A)				<b>T<sub>c</sub> FACTOR</b> <b>1.67</b> CONSTANT X
3.	_____ FT HYDRAULIC LENGTH	FIGURE 3-3		9.	_____ HR BASIC LOG X
4.	_____ % WATERSHED SLOPE	FIGURE 3-4		10.	_____ HYDR. LENGTH ADJ. X
5.	_____ % HYDR. LENGTH MODIFIED			11.	_____ IMP. AREA ADJ. =
6.	_____ % IMPERVIOUS AREA			12.	_____ HR <b>T<sub>c</sub></b>
7.	_____ SQ MI DRAINAGE AREA (DA)			13.	<b>PEAK FACTOR</b> _____ IN RUNOFF VOLUME X
8.	_____ % PONDS, SWAMPS	TABLE E-2, E-3, OR E-4 (LOCATION DETERMINES TABLE)		14.	_____ CSM/IN BASIC PEAK DISCHARGE X
				15.	_____ SQ. MI. DRAINAGE AREA X
				16.	_____ PONDS, SWAMPS ADJ. =
				17.	_____ CFS <b>ADJUSTED PEAK DISCHARGE</b>

FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\PEAK DISCHARGE COMPUTATION SHEET.DWG PLOTTED: 2022/11/30 8:45 AM

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



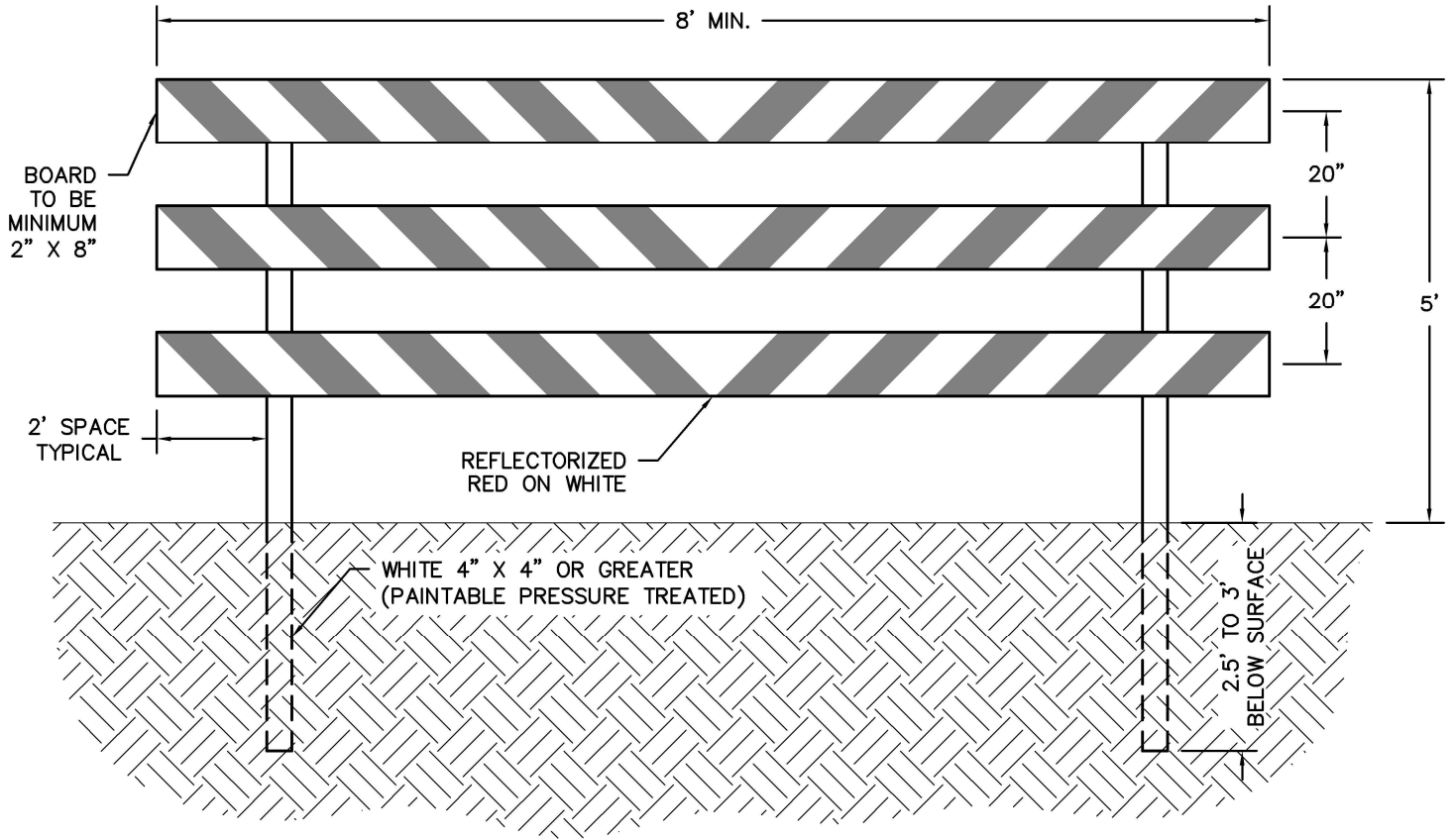
## PEAK DISCHARGE COMPUTATION SHEET

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 07/08/1994	REVISION DATE: 11/29/2022	SCALE: N.T.S	SHEET: 1 of 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\PERMANENT BARRICADE UNIT.DWG PLOTTED: 2023/01/27 4:00 PM



- NOTES:**
- REFLECTORIZED SHEETING SHALL BE ENGINEERING GRADE AND CONFORM TO THE FEDERAL HIGHWAY ADMINISTRATIONS 'MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES'.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

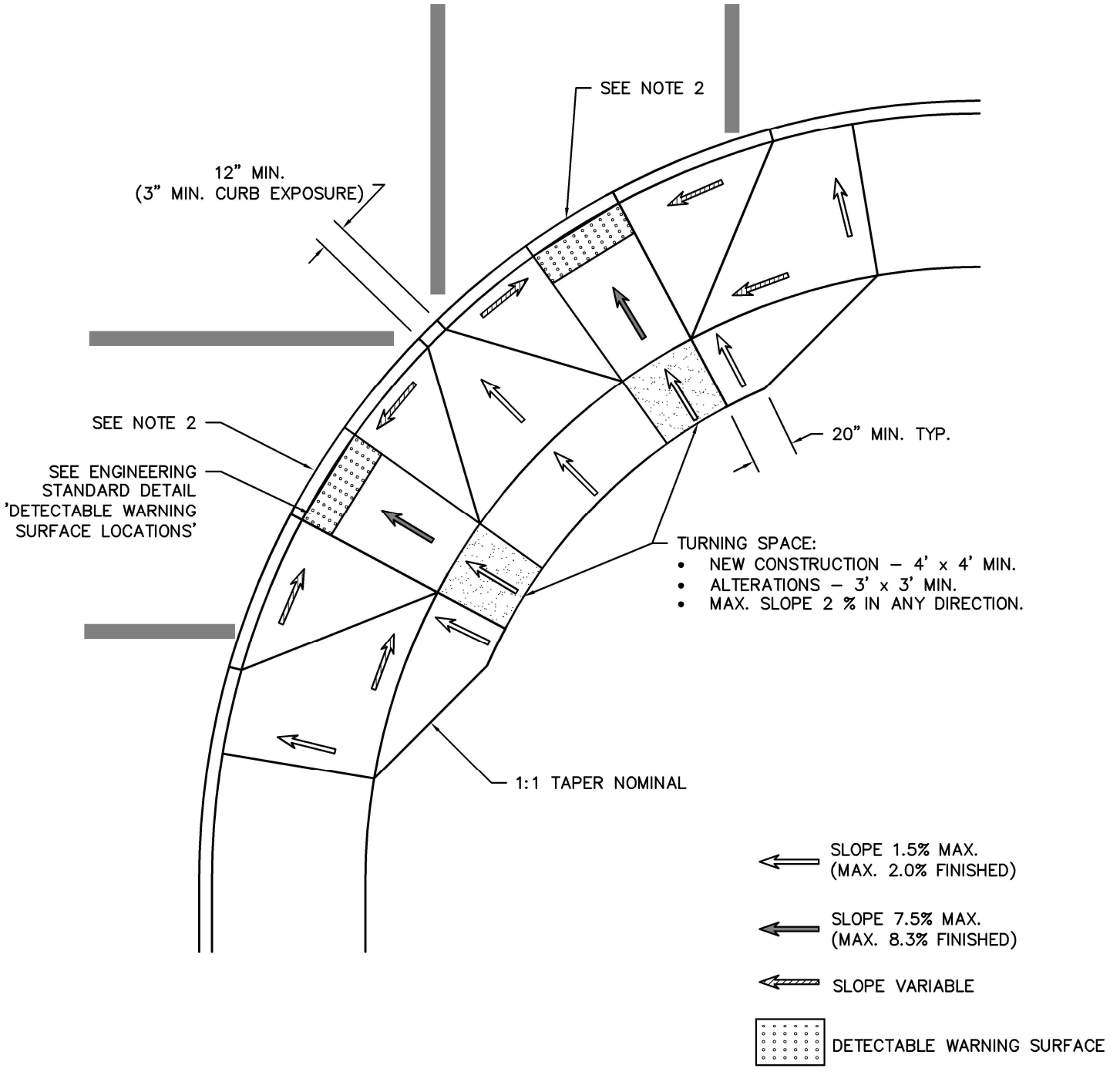


**PERMANENT  
BARRICADE UNIT**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 10/28/1993	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING - STANDARD DETAILS\PERPENDICULAR CURB LINE SIDEWALK RAMP.DWG PLOTTED: 2023/01/09 12:07 PM



**NOTES:**

1. USE ALTERATIONS ONLY WHEN SITE OR DESIGN CONSTRAINTS PROHIBIT INSTALLING A 4' x 4' AREA.
2. COUNTER SLOPE SHALL BE 5% MAX. CROSS SLOPE SHALL BE 2% MAX.

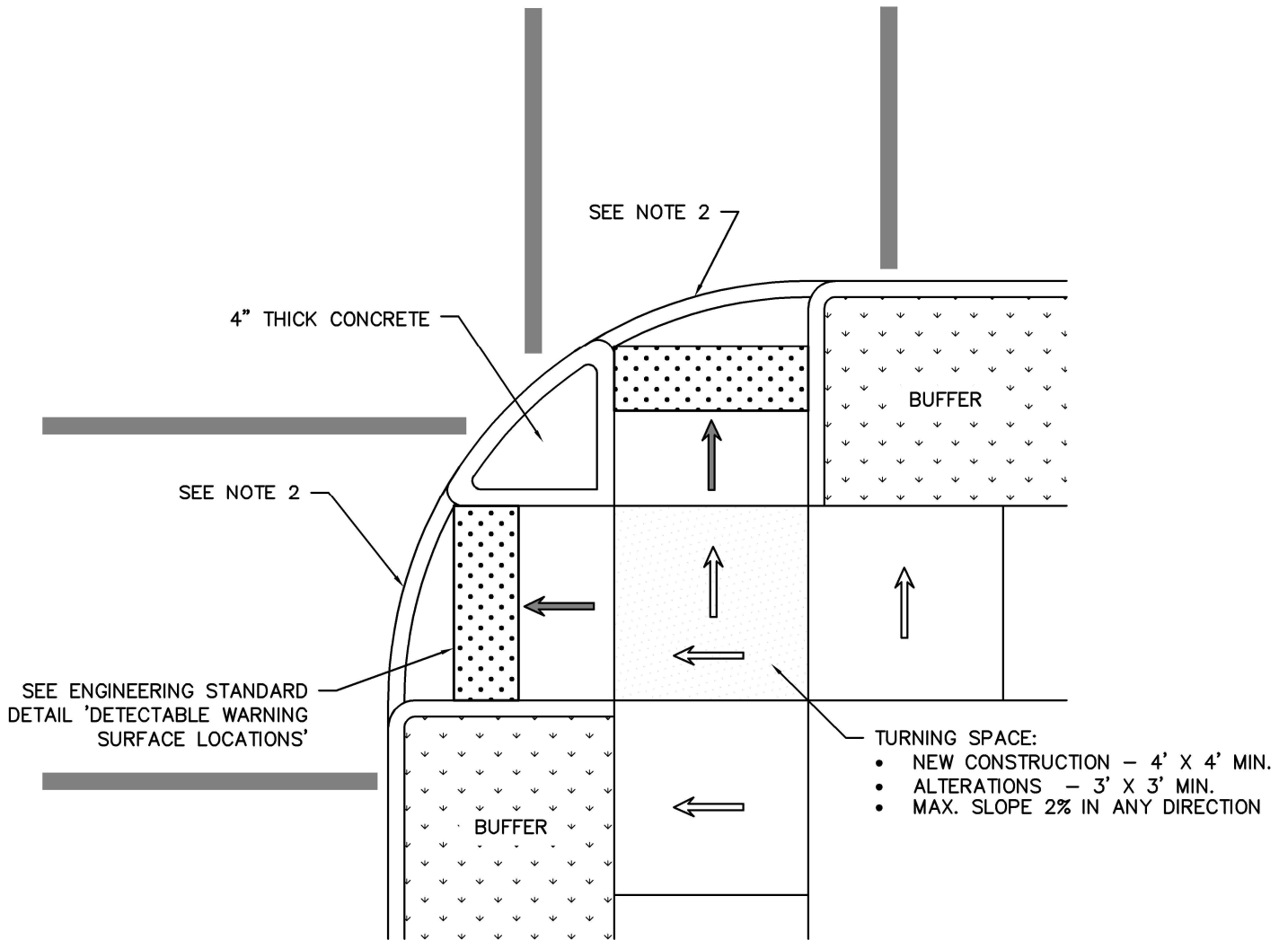
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**PERPENDICULAR CURB  
LINE SIDEWALK RAMP**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
04/06/17	SLOPE RANGE ADJUSTMENT	HS

CREATION DATE: 03/01/2016	REVISION DATE: 01/09/2023	SCALE: N.T.S	SHEET: 1 OF 1
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**NOTES:**

1. USE ALTERATIONS TURNING SPACE ONLY WHEN SITE OR DESIGN CONSTRAINTS PROHIBIT A LARGER AREA.
2. COUNTER SLOPE SHALL BE 5% MAX, CROSS SLOPE SHALL BE 2% MAX.

← SLOPE 1.5% MAX.  
(MAX. 2.0% FINISHED)

← SLOPE 7.5% MAX.  
(MAX. 8.3% FINISHED)

▤ DETECTABLE WARNING SURFACE

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



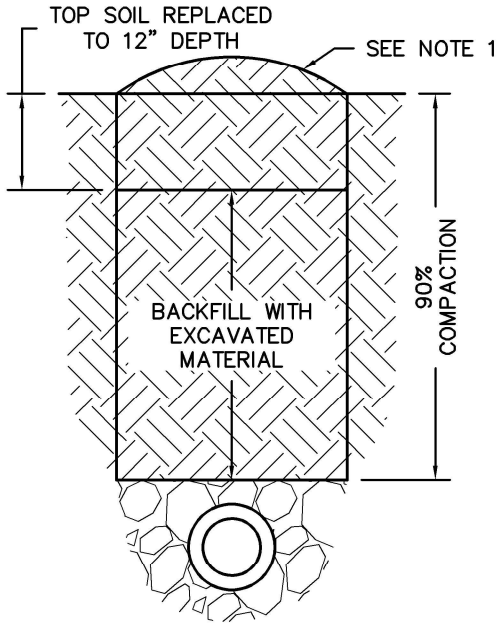
PERPENDICULAR  
PROPERTY LINE RAMPS

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
04/06/17	SLOPE RANGE ADJUSTMENT	RP

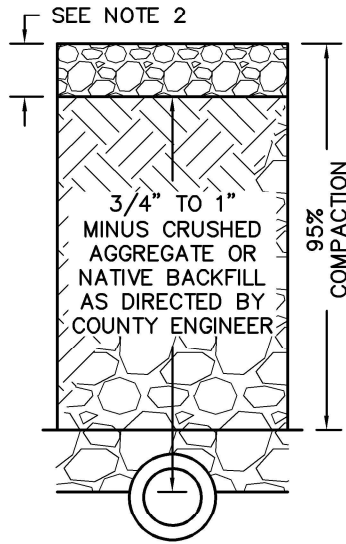
CREATION DATE: 03/01/2016	REVISION DATE: 01/09/2023	SCALE: N.T.S	SHEET: 1 OF 1
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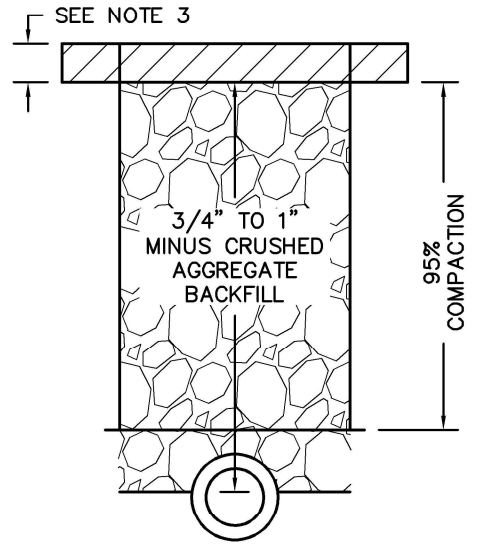
NATURAL OR OTHER THAN ROADWAY SURFACE (IN EASEMENT)



GRAVELED OR DIRT ROAD SURFACE (COUNTRY ROAD)

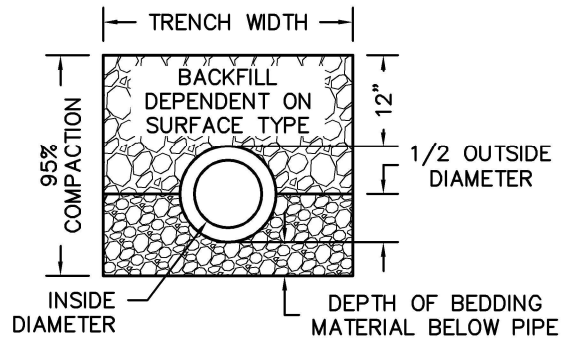


ASPHALT CONCRETE OR OILED GRAVEL SURFACE (COUNTRY ROAD)



CLASS B  
LOAD FACTOR = 1.9

INSIDE DIAMETER	MINIMUM DEPTH OF BEDDING MATERIAL BELOW PIPE
27" OR LESS	4"
30"-60"	5"
66" OR MORE	6"



NOTES:

- UNLESS OTHERWISE DIRECTED BY THE COUNTY ENGINEER, MOUND TOP OF TRENCH.
- UNLESS OTHERWISE SPECIFIED, RESURFACING SHALL CONSIST OF 8" OF 3/4" TO 1" MINUS CRUSHED AGGREGATE.
- UNLESS OTHERWISE SPECIFIED, PAVEMENT THICKNESS SHALL CONFORM WITH MARION COUNTY ENGINEERING STANDARDS.
- FOR ROCK OR OTHER INCOMPRESSIBLE MATERIALS, THE TRENCH SHALL BE OVEREXCAVATED A MINIMUM OF 6" AND REFILLED WITH AGGREGATE MATERIAL AS DIRECTED BY THE COUNTY ENGINEER.
- BEDDING AND BACKFILL MATERIALS IN THE PIPE ZONE SHALL BE COMPACTED AS SPECIFIED PRIOR TO BACKFILLING THE REMAINDER OF THE TRENCH.
- ENGINEER MAY REQUIRE NON-COMPRESSIBLE BACKFILL IN PLACE OF AGGREGATE. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DETAIL 'NON-COMPRESSIBLE BACKFILL (CDF - CONTROLLED DENSITY FILL)' FOR SPECIFICS.

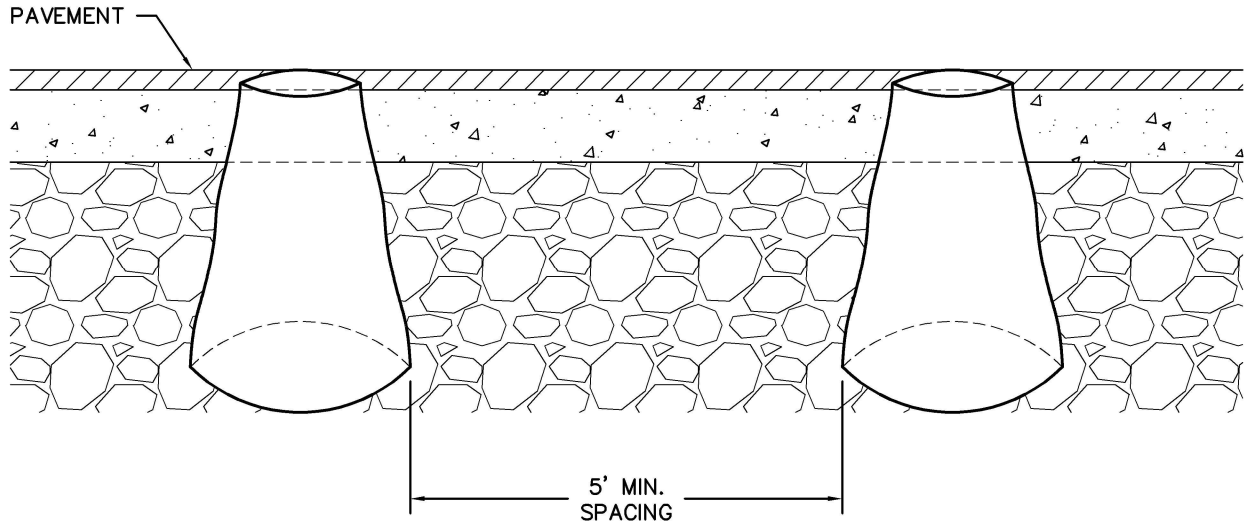
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



PIPE BEDDING AND TRENCH BACKFILL

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 07/05/1994	REVISION DATE: 01/25/2023	SCALE: N.T.S	SHEET: 1 of 1
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**NOTES:**

1. ALL HOLES SHALL BE CORE DRILLED. THE MAXIMUM DIAMETER OF THE CORE SHALL BE 10".
2. PRIOR TO BACKFILLING, ALL SIDES OF THE POTHOLE SHALL BE VISIBLE FROM THE SURFACE. POTHOLE WALLS THAT CANNOT BE SEEN SHALL BE EXCAVATED OPEN.
3. IF POTHoles ARE CLOSER THAN 5' APART (EDGE TO EDGE AT BASE OF POTHOLE) THEN POTHoles SHALL BE DUG OUT TO BE A CONTINUOUS TRENCH.
4. POTHoles ARE TO BE BACKFILLED WITH A NON-COMPRESSIBLE BACKFILL (CDF - CONTROLLED DENSITY FILL) AND TOPPED WITH 6" OF COLD ASPHALT MIX AND LEFT 1/2" ABOVE GRADE.
5. TRENCHES SHALL BE BACKFILLED WITH CONTROLLED DENSITY FILL, "T" PATCHED WITH A MINIMUM OF 6" OF ASPHALT OR MATCH EXISTING PAVEMENT (WHICHEVER IS GREATER) UP TO THE LEVEL OF THE ORIGINAL PAVEMENT. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'BLANKET INLAY' FOR MORE DETAILS.
6. POTHoles OR TRENCHES WITHIN 5' FROM EDGE OF ROAD OR FACE OF CURB SHALL BE BACKFILLED WITH CDF AND TOPPED WITH 6" OF COMPACTED 3/4" TO 1" MINUS AGGREGATE OR AS DIRECTED BY COUNTY INSPECTOR.
7. CDF BATCH TICKETS MUST BE GIVEN TO THE COUNTY INSPECTOR BEFORE PAVING.

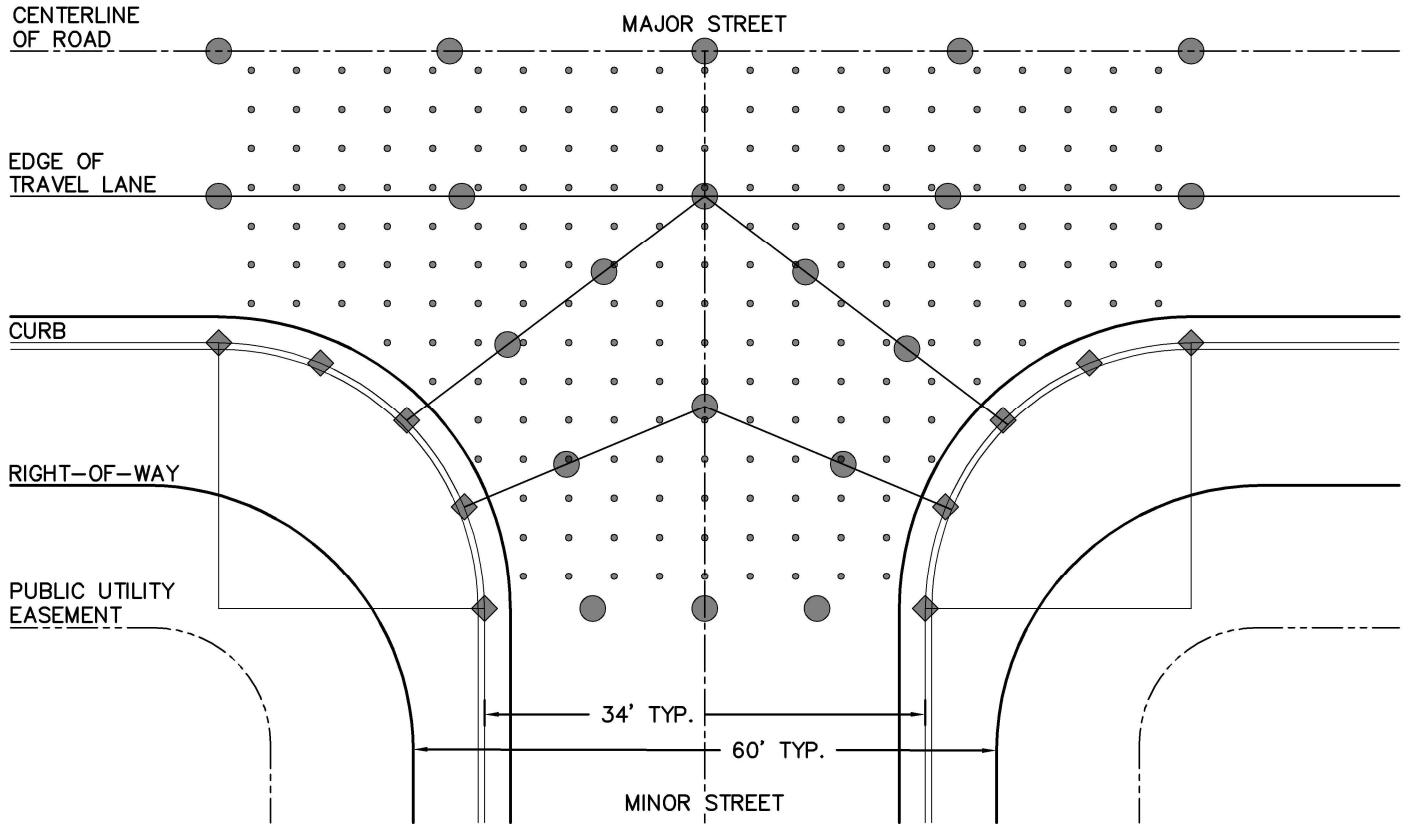
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**POTHOLE CONSTRUCTION**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 03/02/2011	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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**INSTRUCTIONS:**

1. LABEL FINISHED PAVEMENT ELEVATIONS AT LARGE DOTS.
2. LABEL PROJECTED TOP OF CURB AND FLOW LINE ELEVATIONS AT DIAMONDS.
3. DRAW ARROWS FOR SURFACE FLOW DIRECTION AT SMALL DOTS.
4. MODIFY TYPICAL DIMENSIONS SHOWN AS NEEDED.

**GENERAL NOTES:**

1. THE CENTERLINE OF THE MINOR STREET SHALL TIE INTO THE EDGE OF THE TRAVEL LANE OF THE MAJOR STREET.
2. DIMENSIONS SHOWN ARE TYPICAL AND SHALL BE USED FOR EXAMPLE.

**LEGEND:**

- FINISHED PAVEMENT ELEVATIONS
- ◆ PROJECTED TOP OF CURB AND FLOW LINE ELEVATIONS
- SURFACE FLOW DIRECTION MARKERS

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

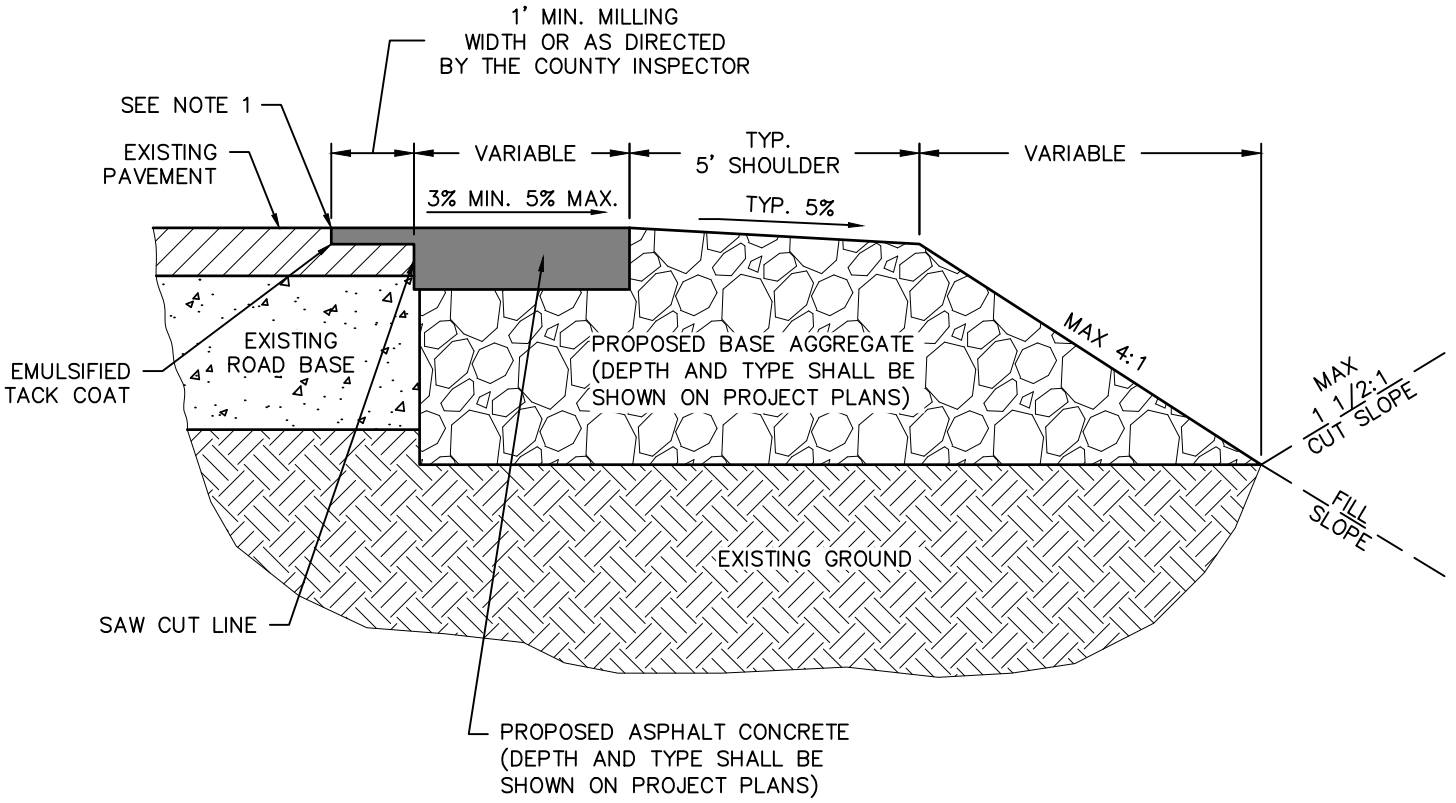


**ROAD GRADE AND ELEVATION**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 06/01/2005	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\ROAD WIDENING DETAILS.DWG PLOTTED: 2023/01/27 9:48 AM



**NOTES:**

1. MILL EXISTING PAVEMENT TO A MINIMUM DEPTH OF 1 1/2". SAND AND SEAL PAVING JOINTS WITH HOT PAVING GRADE OIL (PG 64-22 OR EQUIVALENT)

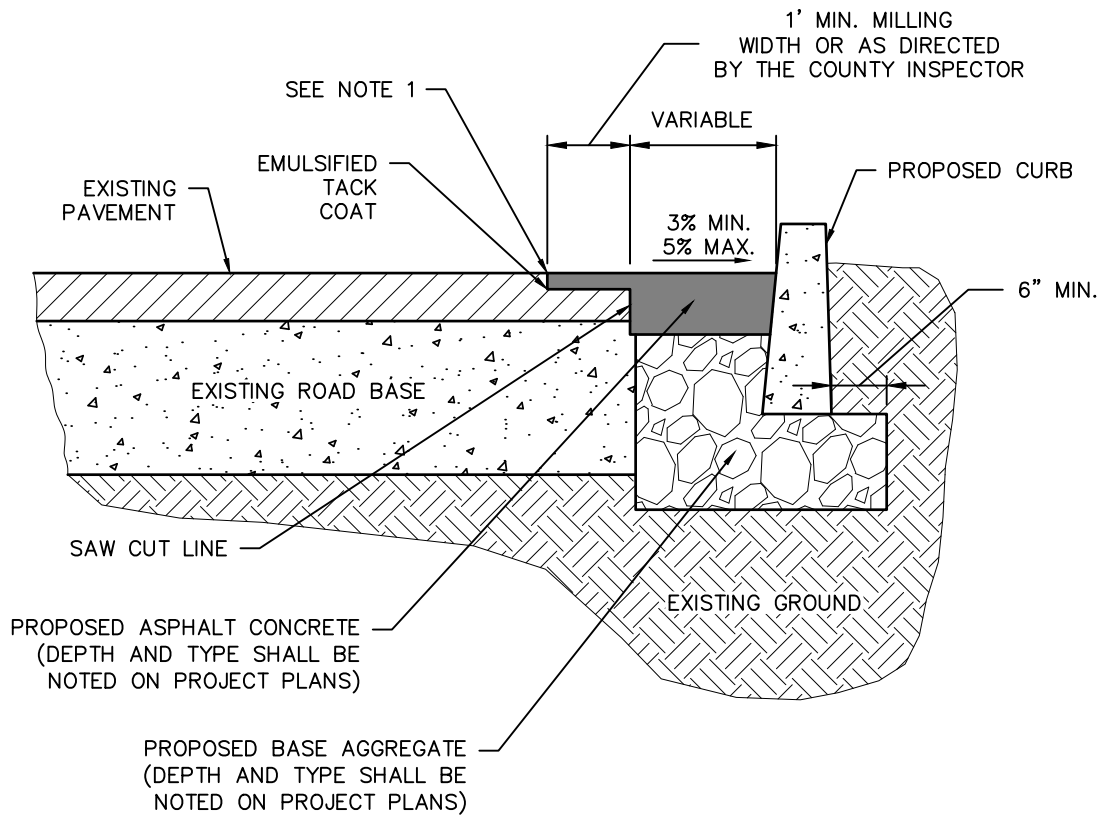
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**ROAD WIDENING DETAILS - RURAL**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 05/01/2003	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 2
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**NOTES:**

1. MILL EXISTING PAVEMENT TO A MINIMUM DEPTH OF 1 1/2". SAND AND SEAL PAVING JOINTS WITH HOT PAVING GRADE OIL (PG 64-22 OR EQUIVALENT)

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



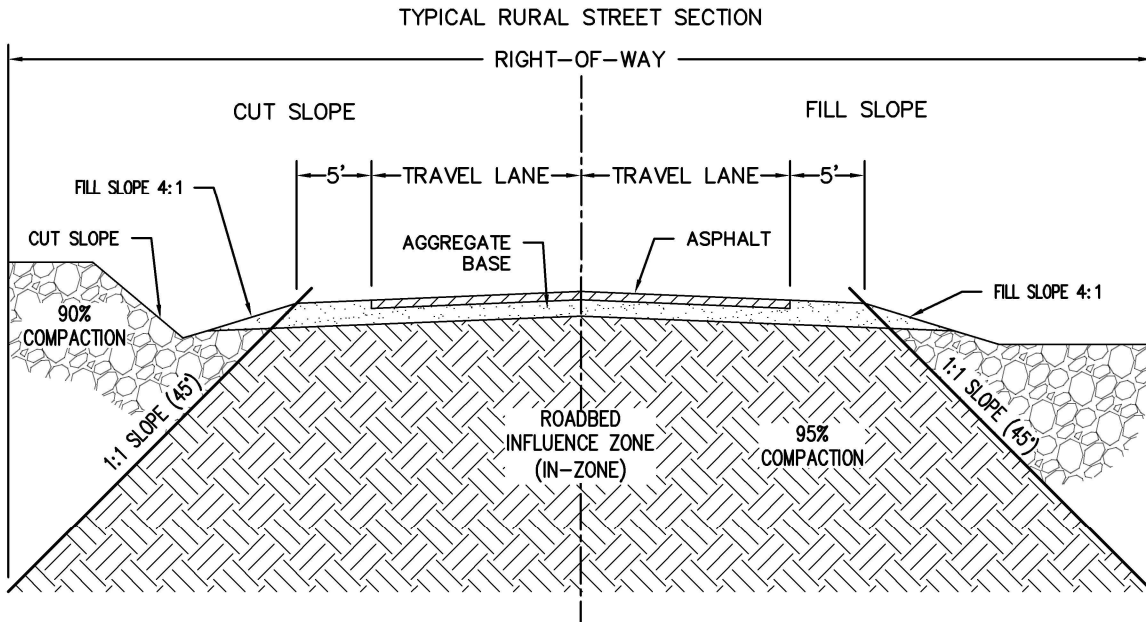
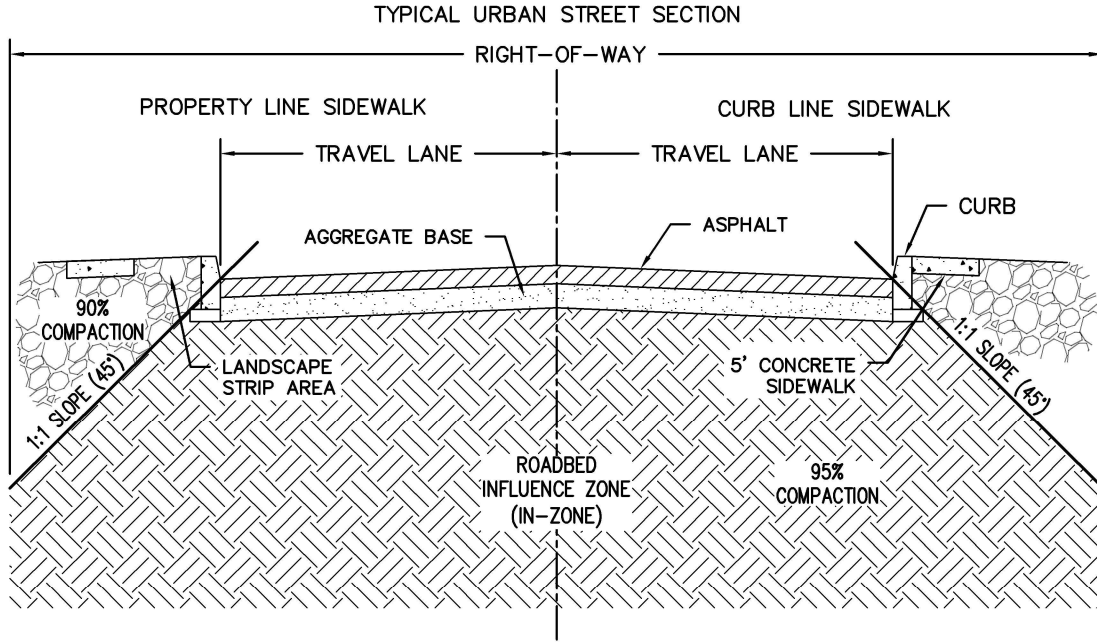
**ROAD WIDENING DETAILS -  
URBAN**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 05/01/2003	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 2 OF 2
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\ROADBED INFLUENCE ZONE (IN-ZONE).DWG PLOTTED: 2023/01/27 3:17 PM



**NOTES:**

1. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING SPECIAL PROVISION 'UNDERGROUND WORK IN THE ROADBED INFLUENCE ZONE (IN-ZONE)' FOR ADDITIONAL SPECIFICATIONS.

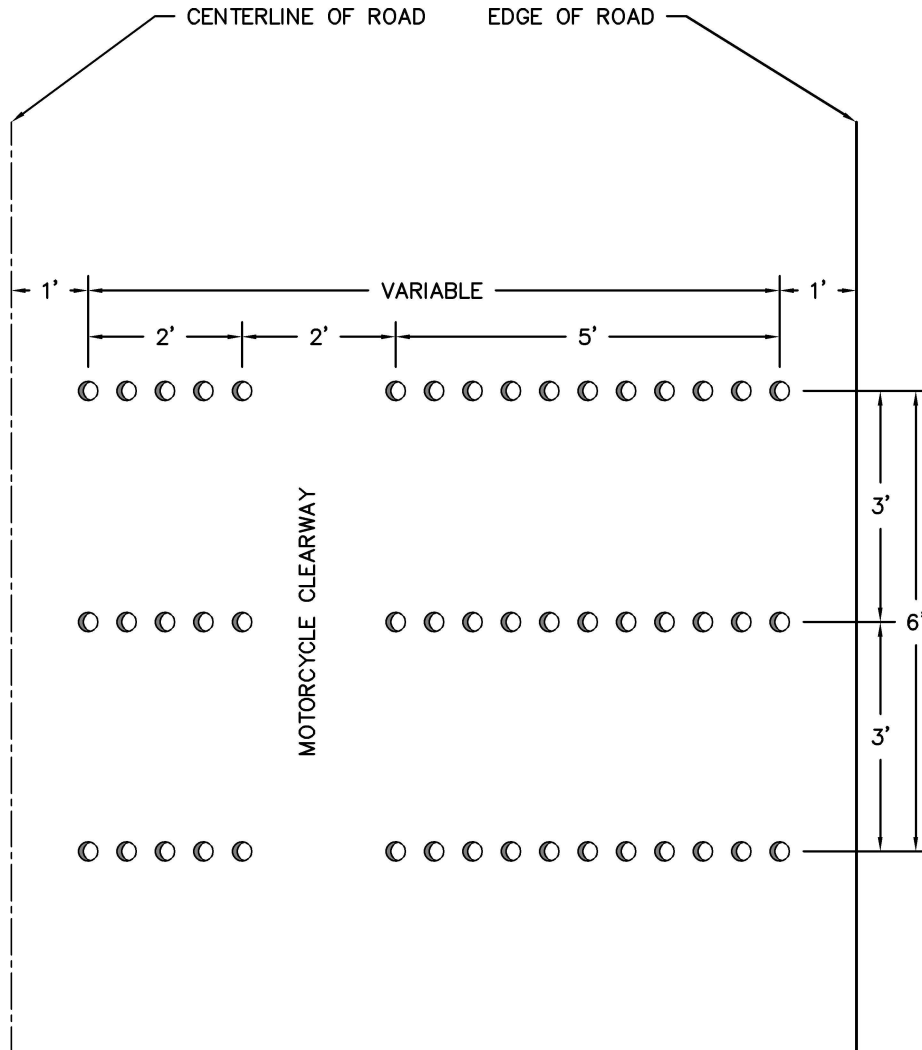
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**ROADBED INFLUENCE ZONE (IN-ZONE)**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
01/27/23	MODIFIED FORMAT AND APPEARANCE	HS

CREATION DATE: 02/02/2001	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 of 1
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NOTES:  
 1. DIMENSIONS SHOWN ARE TYPICAL. THEY SHALL BE VARIED AS NECESSARY TO CONFORM TO PAVEMENT WIDTH

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



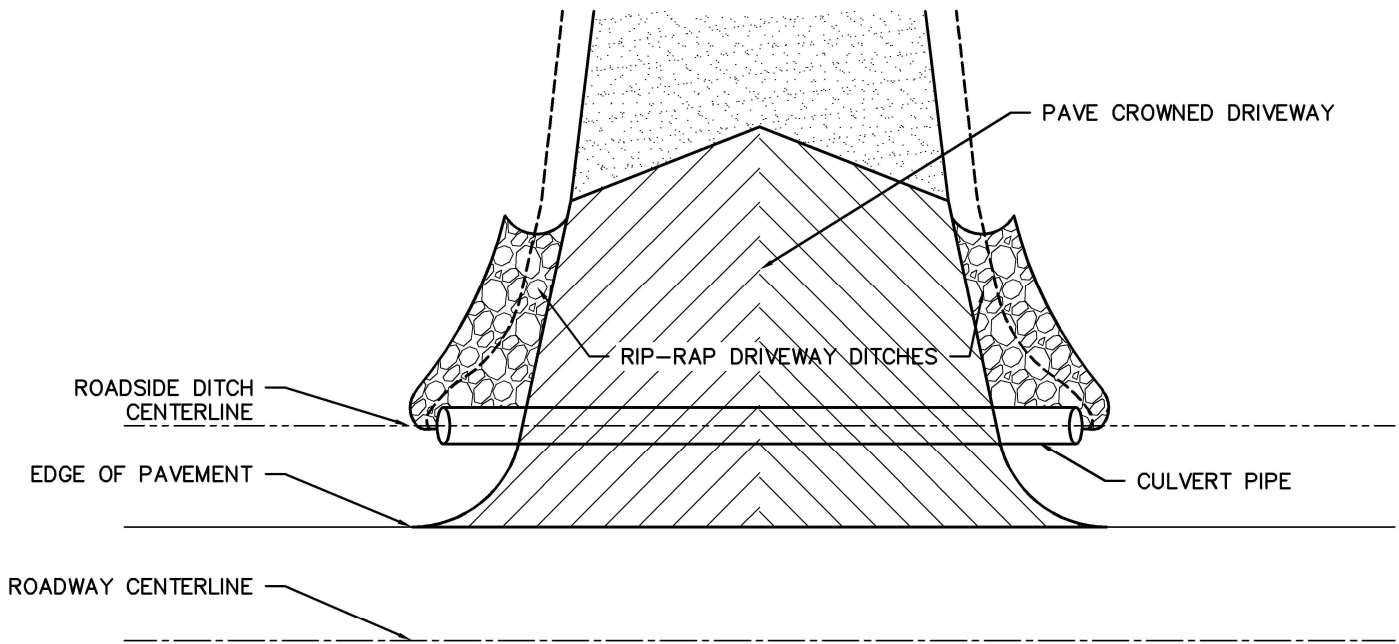
RUMBLE STRIPS

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 10/28/1993	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\SLOPING DRIVEWAY PROVISIONS.DWG PLOTTED: 2023/01/27 3:21 PM

DRIVEWAY SLOPING UP FROM ROAD



NOTES:

1. THE SURFACE ELEVATION ON THE ACCESS OVER THE CULVERT PIPE SHALL BE 2 1/2" LOWER THAN THE EDGE OF THE ROAD PAVEMENT. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARDS FOR MORE DETAILS.
2. IF THE DIFFERENCE IN ELEVATION BETWEEN THE DRIVEWAY ELEVATION AT THE CULVERT AND A POINT 20' BACK FROM THE CULVERT IS:
  - 2.1. 1' OR LESS, THE DRIVEWAY SHALL HAVE DITCHES ON EACH SIDE TO DRAIN INTO THE ROADSIDE DITCH AND SHALL BE CROWNED TO SHED THE DRAINAGE TO THE DITCHES.
  - 2.2. 1' TO 2', THE DRIVEWAY SHALL BE PAVED FROM THE ROAD TO 10' BEYOND THE CULVERT. THE DRIVEWAY SHALL BE CROWNED AND THE DRIVEWAY DITCHES SHALL BE RIP-RAPPED ALONG THE PAVED DRIVEWAY.
  - 2.3. 2' OR MORE, THE DRIVEWAY SHALL BE PAVED FROM THE ROAD TO 15' BEYOND THE CULVERT. THE DRIVEWAY SHALL BE CROWNED WITH THE DRIVEWAY DITCHES PAVED ALONG THE PAVED DRIVEWAY. THERE SHALL ALSO BE A SLOTTED DRAIN OR WATER BAR ANGLED ACROSS THE PAVED DRIVEWAY. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DETAIL 'SLOTTED DRAIN DETAIL' FOR MORE DETAILS.
3. RIP-RAP 4" TO 6" PIT RUN X MIN. 8" THICK OR OREGON DEPARTMENT OF TRANSPORTATION CLASS 50.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



SLOPING DRIVEWAY PROVISIONS

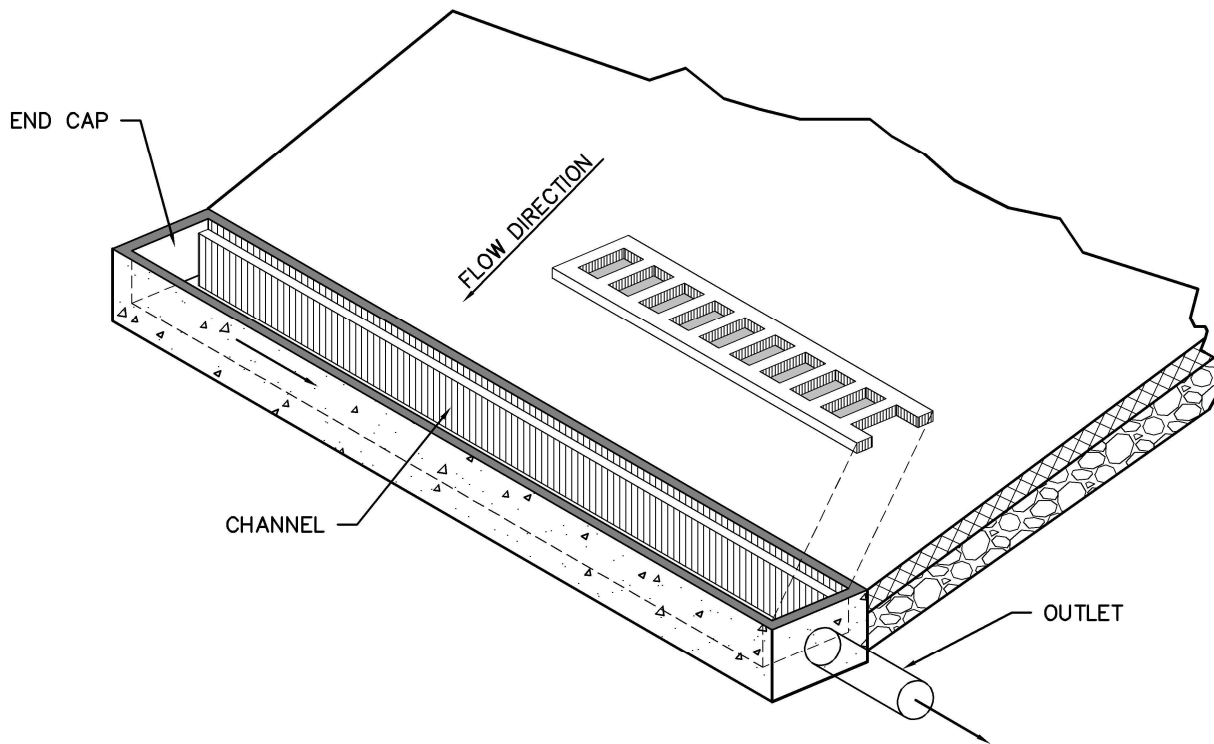
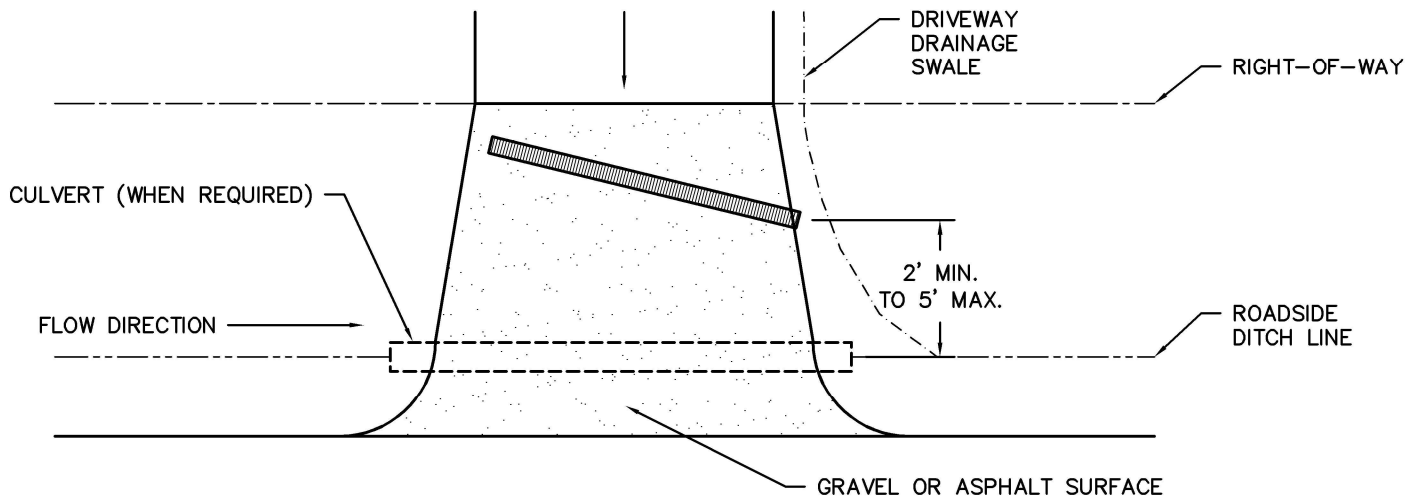
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 06/21/2005	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\SLOTTED DRAIN DETAIL.DWG PLOTTED: 2023/01/25 8:41 AM

DRAIN TO DRIVEWAY DRAINAGE SWALE  
OR PIPE TO COUNTY ROADSIDE DITCH



NOTES:

1. CONSTRUCT SLOTTED DRAIN PER MANUFACTURER'S SPECIFICATIONS, MUST BE NO LESS THAN 2' BUT NO MORE THAN 5' MEASURED FROM THE CENTER OF THE CULVERT TO CENTER OF OUTLET OR A MINIMUM OF 5' MEASURED FROM THE EDGE OF ROADWAY PAVEMENT.
2. SLOTTED DRAIN TO BE MAINTAINED BY PROPERTY OWNER.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



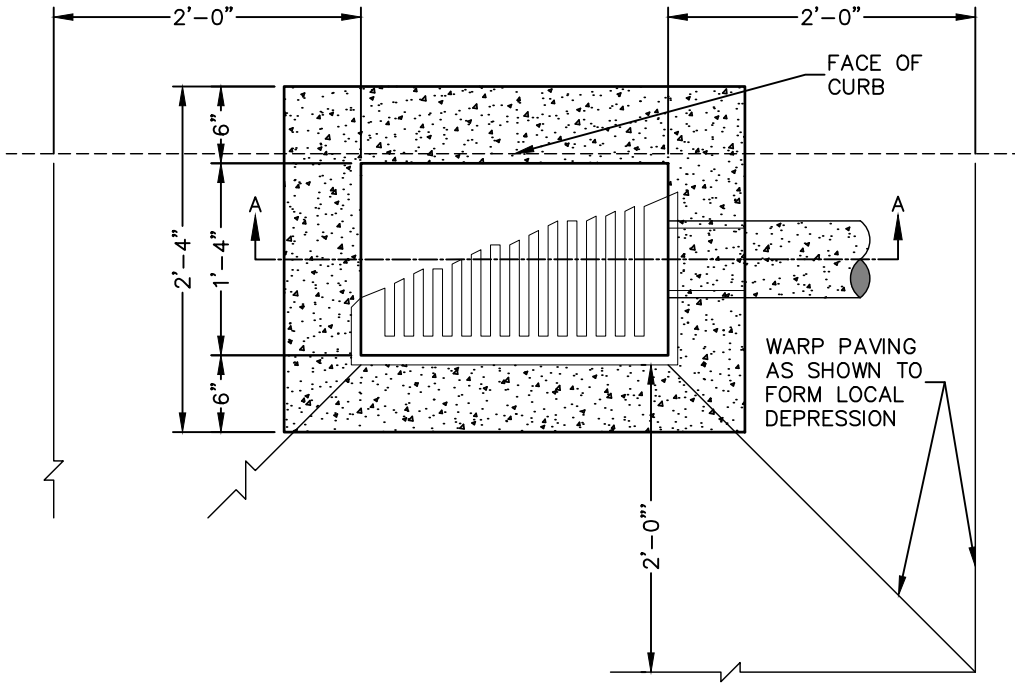
SLOTTED DRAIN DETAIL

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

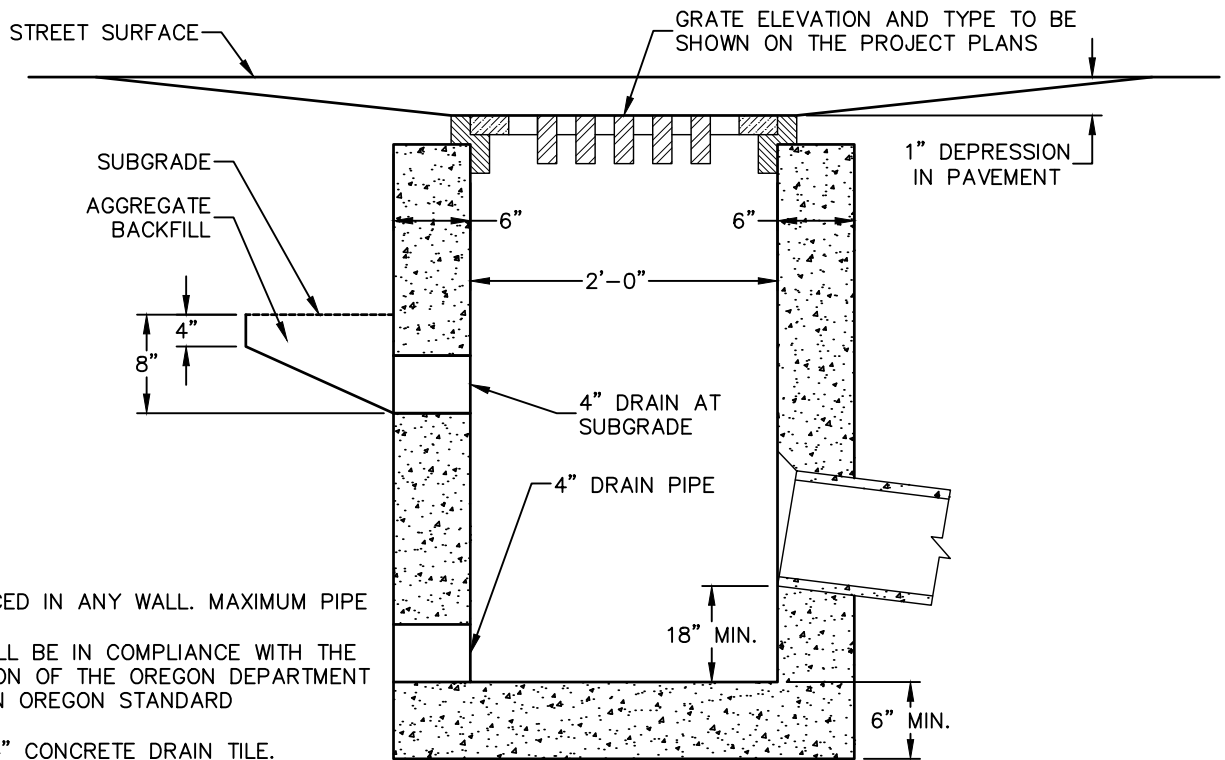
CREATION DATE: 06/15/2005	REVISION DATE: 01/24/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDEN&PERMIT\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\CATCH BASIN DETAILS.DWG PLOTTED: 2023/02/21 10:41 AM

PLAN



SECTION A-A



NOTES:

1. PIPES CAN BE PLACED IN ANY WALL. MAXIMUM PIPE SIZE IS 18".
2. ALL CONCRETE SHALL BE IN COMPLIANCE WITH THE MOST RECENT EDITION OF THE OREGON DEPARTMENT OF TRANSPORTATION OREGON STANDARD SPECIFICATIONS.
3. DRAINS SHALL BE 4" CONCRETE DRAIN TILE.
4. TO CONSTRUCT CLEANOUTS, REPLACE GRATE WITH 1'-3 1/2" X 1'-11 1/2" STEEL PLATE 3/4" THICK. DRILL ONE 1" DIAMETER LIFT HOLE NEAR ONE END PLATE.
5. LOCATION, PIPE SIZE, AND ELEVATION, SHALL BE SHOWN ON PROJECT PLANS. STATION SHOWN ON PROJECT PLANS IS TO CENTERLINE OF CATCH BASIN.
6. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DETAIL 'CATCH BASIN GRATES AND FRAMES TYPES A AND B' FOR GRATE AND FRAME DETAILS.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

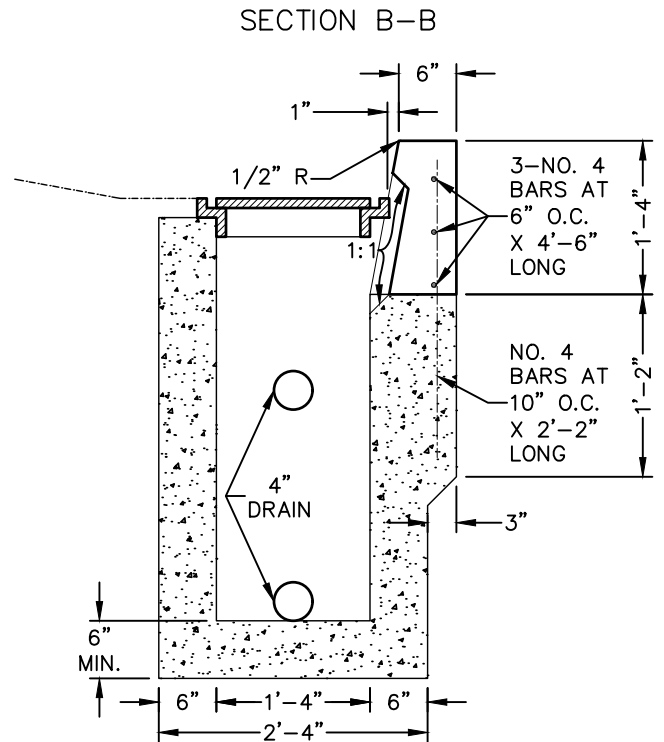
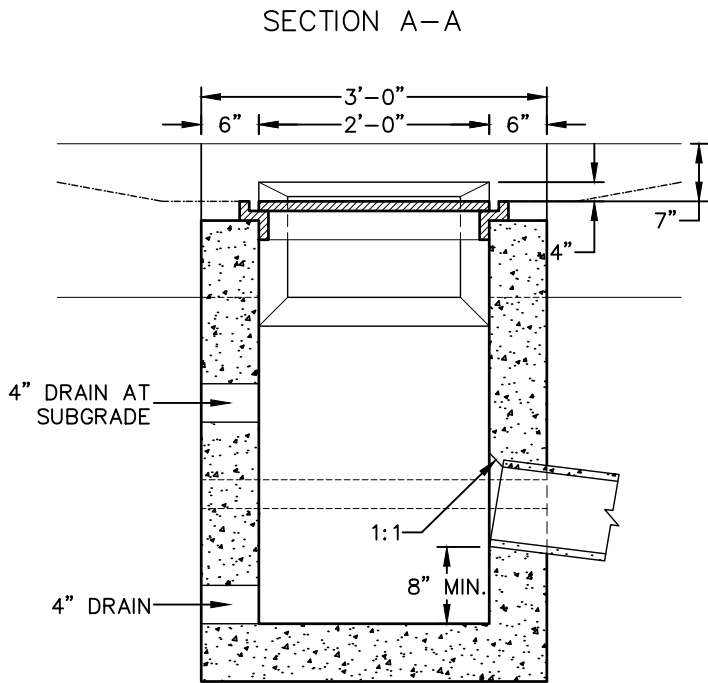
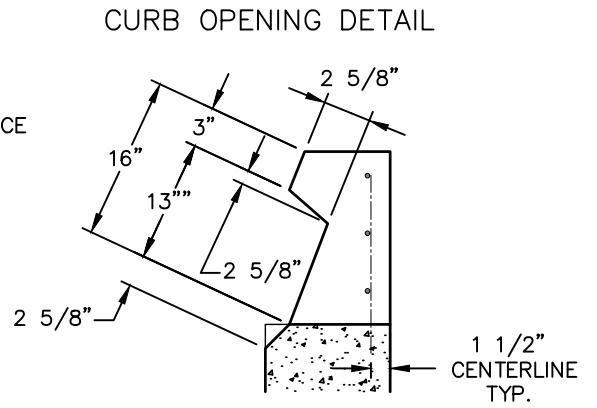
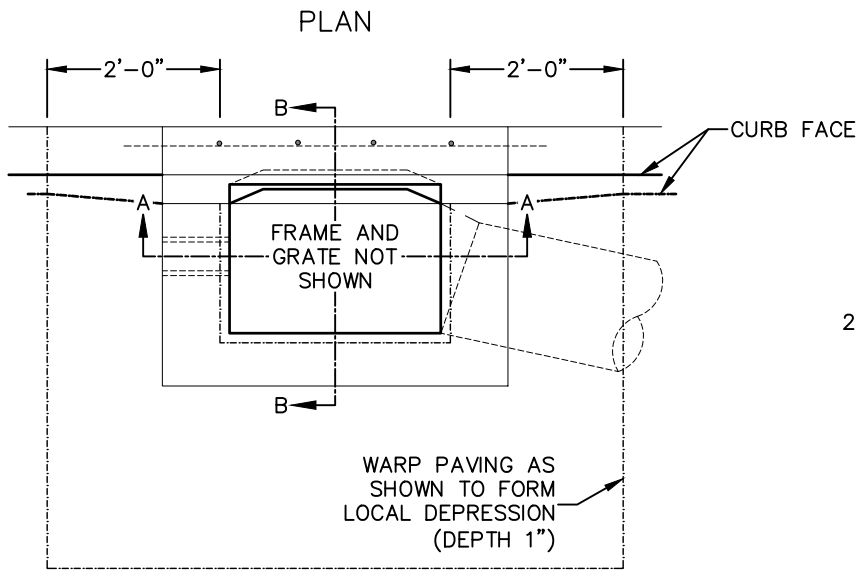


TYPE 1 CATCH BASIN AND CLEANOUT

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:

CREATION DATE: 02/08/1985	REVISION DATE: 02/16/2023	SCALE: N.T.S	SHEET: 1 OF 7
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FILE: G:\ENGINEERING\LDENG&PERMIT\SHARED\ENGINEERING\DETAILS\STANDARD DETAILS\CATCH BASIN DETAILS.DWG PLOTTED: 2023/01/03 12:08 PM



NOTES:

1. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DETAIL 'CATCH BASIN GRATES AND FRAMES TYPE A AND B' FOR MORE DETAILS.
2. DRAINS SHALL BE 4" CONCRETE DRAIN TILE.
3. LOCATION, PIPE SIZE, AND ELEVATION SHALL BE SHOWN ON PROJECT PLANS.
4. PIPES CAN BE PLACED IN ANY WALL.
5. MAXIMUM PIPE SIZE 18"
6. STATION SHOWN ON PROJECT PLAN SHALL BE TO CENTERLINE OF CATCH BASIN.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

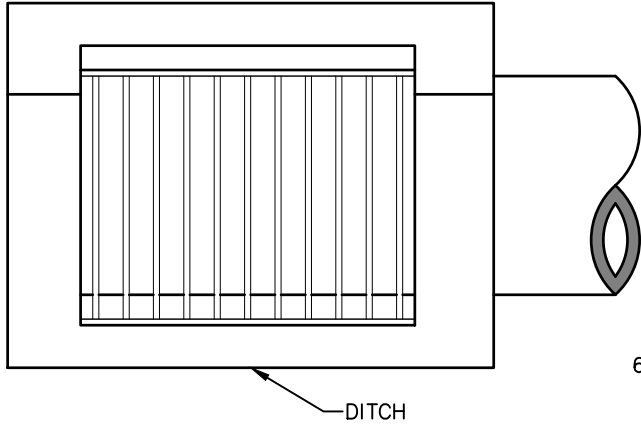


TYPE 2 (SIDE INLET)  
CATCH BASIN

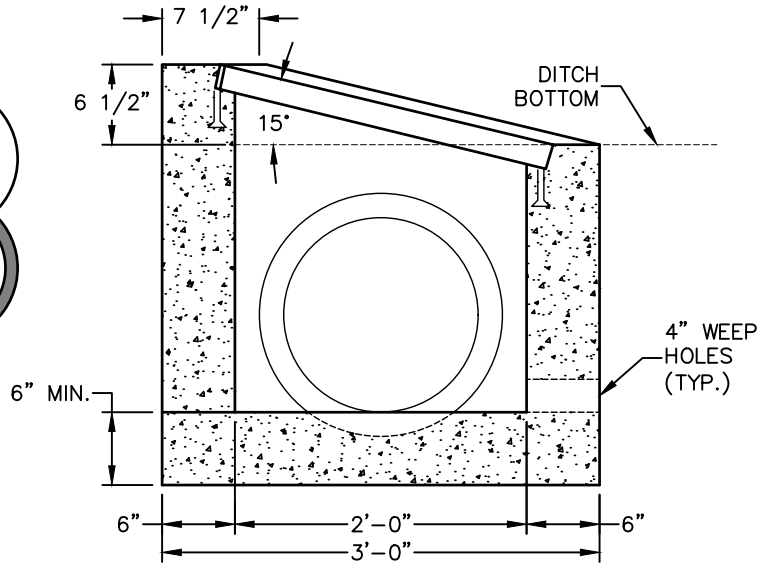
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:

CREATION DATE: 02/08/1985 REVISION DATE: 12/28/2022 SCALE: N.T.S. SHEET: 2 OF 7

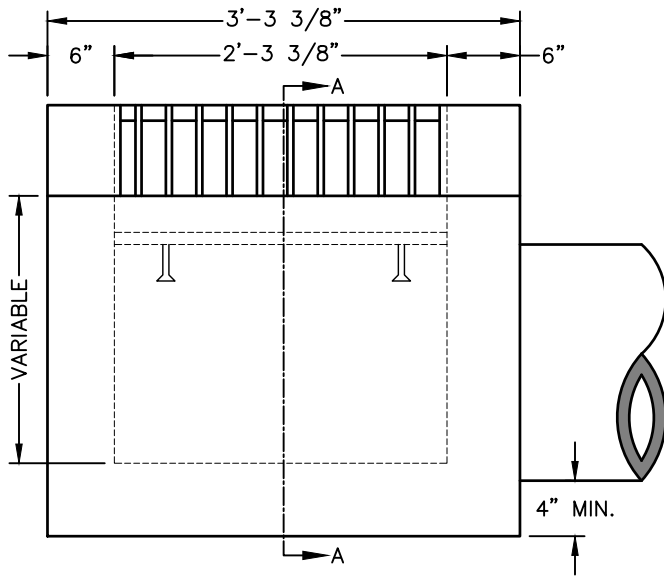
PLAN



SECTION A-A



ELEVATION



NOTES:

1. LOCATION, PIPE SIZE, AND ELEVATION, SHALL BE SHOWN ON PROJECT PLANS.
2. CATCH BASIN MAY BE BUILT WITH OR WITHOUT A SUMP, AS DIRECTED BY THE COUNTY ENGINEER.
3. FRAME AND GRATE MATERIAL SHALL BE STEEL (A.S.T.M. A-36) AND BE GALVANIZED IN ACCORDANCE WITH A.S.T.M A-123.
4. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DETAIL 'TYPE 3 CATCH BASIN FRAME AND GRATE' FOR MORE DETAILS.
5. PLACE CLASS 50 RIP-RAP IN FRONT OF CATCHBASIN 4' TO 5' LONG, 1' IN DEPTH.
6. RIP-RAP SHALL BE GROUTED.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



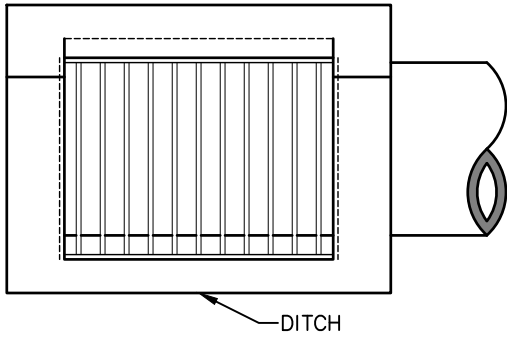
**TYPE 3 CATCH BASIN WITH  
15 DEGREE SLOPED  
GRATE**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

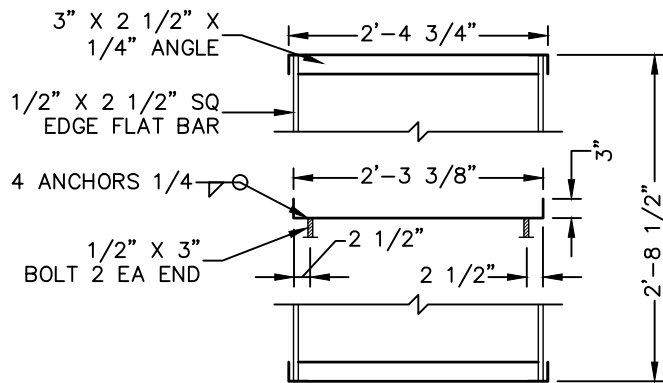
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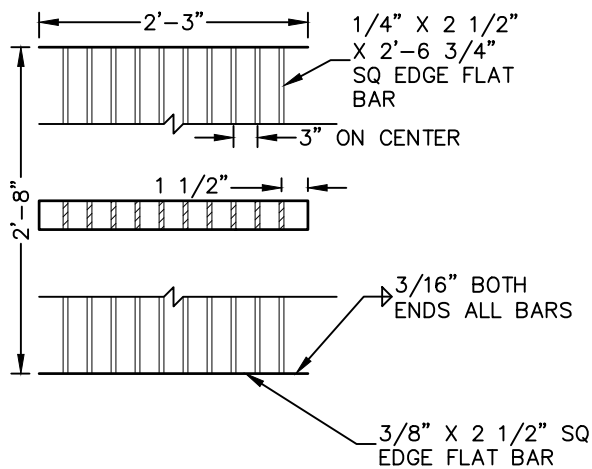
PLAN



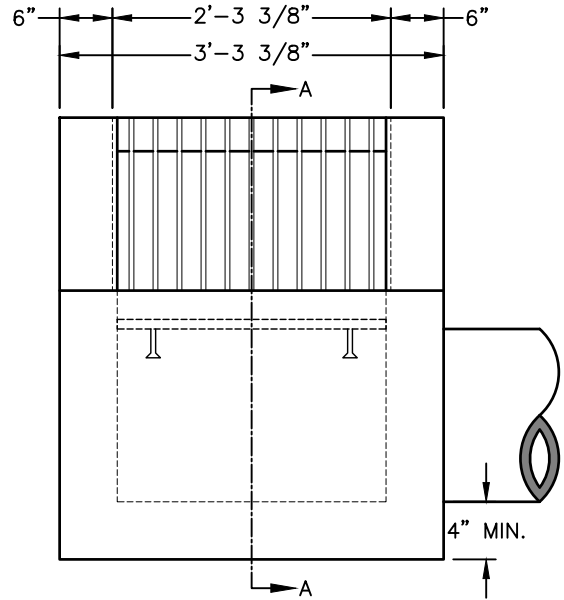
FRAME



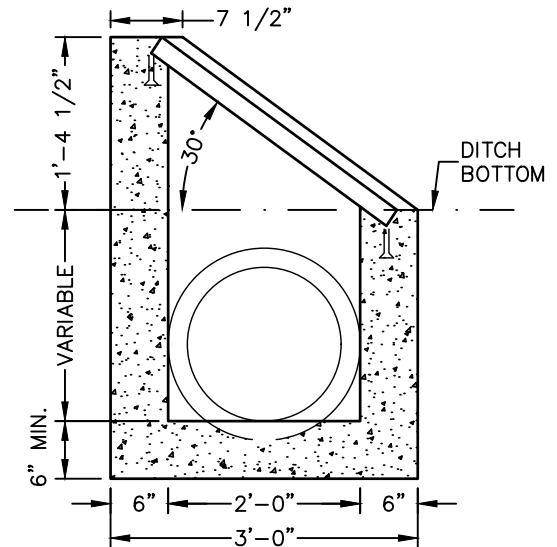
GRATE



ELEVATION



SECTION A-A



NOTES:

1. LOCATION, PIPE SIZE, AND ELEVATION, SHALL BE SHOWN ON PROJECT PLANS.
2. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DETAIL 'TYPE 1 AND CLEANOUT' FOR MORE DETAILS.
3. CATCH BASIN MAY BE BUILT WITH OR WITHOUT A SUMP, AS DIRECTED BY THE COUNTY ENGINEER.
4. FRAME AND GRATE MATERIAL SHALL BE STEEL (A.S.T.M. A-36) AND BE GALVANIZED IN ACCORDANCE WITH A.S.T.M A-123.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



TYPE 3 CATCH BASIN  
FRAME AND GRATE

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 02/08/1985	REVISION DATE: 12/28/2022	SCALE: N.T.S	SHEET: 4 OF 7
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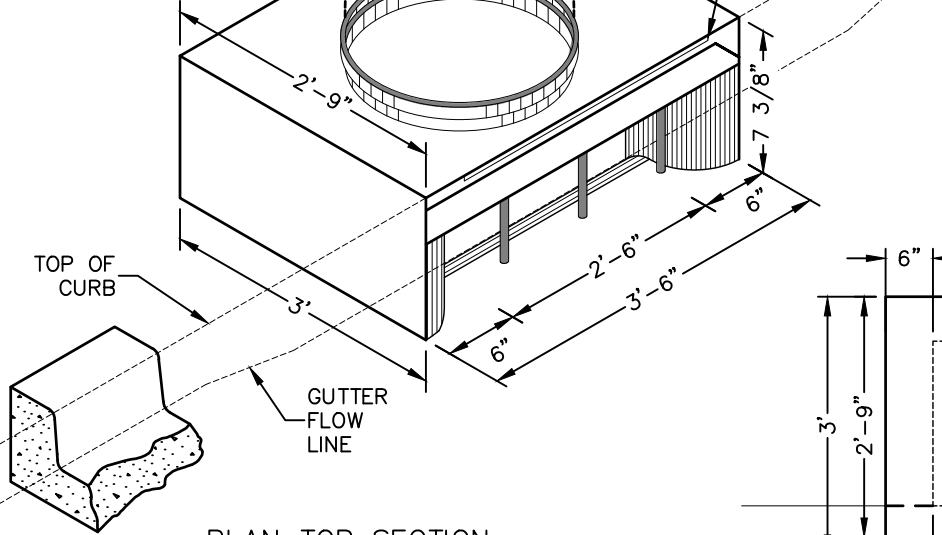
PERSPECTIVE VIEW

24 3/4" CLASS 30 CAST IRON HEAVY TRAFFIC LOADING COVER. DIAMOND STYLE SURFACE (INLAND FOUNDRY NO. 706 OR APPROVED EQUAL).

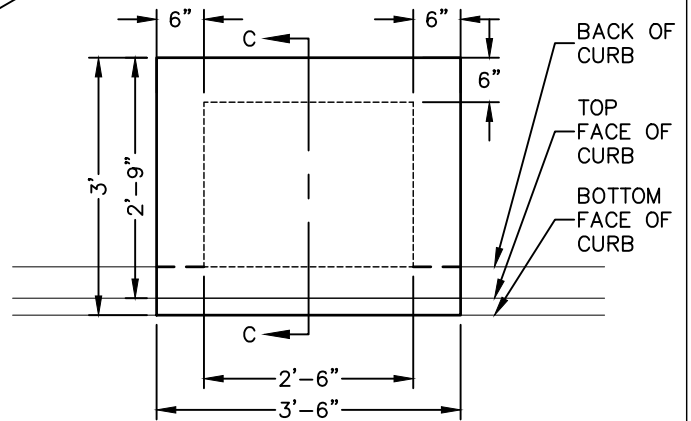
CLASS 30, 4 1/4" X 23 1/4" FLANGE UP CAST IRON FRAME RING HEAVY TRAFFIC LOADING (INLAND FOUNDRY NO. 706 OR APPROVED EQUAL).

1" PICK HOLES (2)

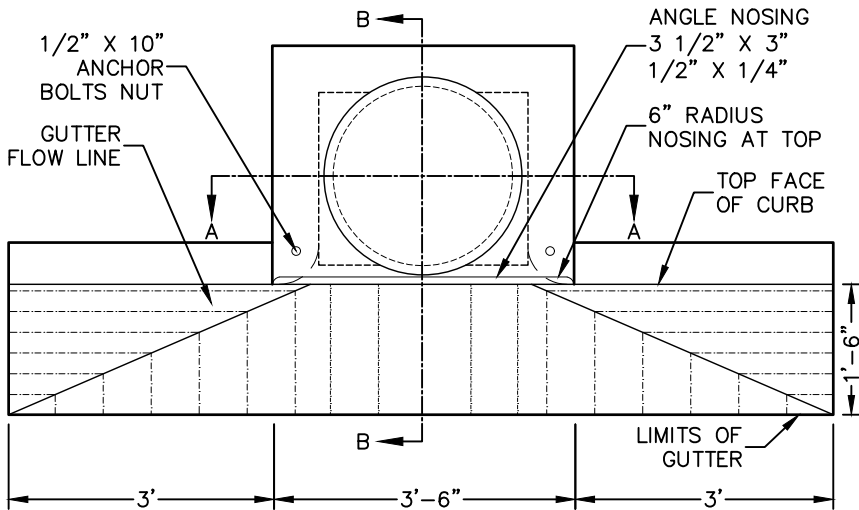
3 1/2" X 3" 1/2" X 1/4" ANGLE NOSING



PLAN BASE SECTION



PLAN TOP SECTION



- NOTES:
1. CONCRETE SHALL ATTAIN A STRENGTH OF 3000 P.S.I. IN 28 DAYS.
  2. TOP SHALL BE REINFORCED WITH 4" X 4"-6-6 WIRE MESH.
  3. ALL METAL PARTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
  4. COVER SHALL BE ASTM 1-48 CLASS 30 CAST IRON.
  5. DRAIN SHALL BE P.V.C. (SCHEDULE 40) WITH CAP. DRAIN PIPE SHALL HAVE 6 3/8" DIAMETER HOLES IN LOWER SIDE. CAP SHALL HAVE 4 3/8" DIAMETER DRILL HOLES. TWO DRAINS REQUIRED WHEN CATCH BASIN LOCATED AT SAG VERTICAL CURVE.
  6. SEE STANDARD DETAIL 'TYPE 4 CATCH BASIN B' FOR ADDITIONAL DETAILS.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



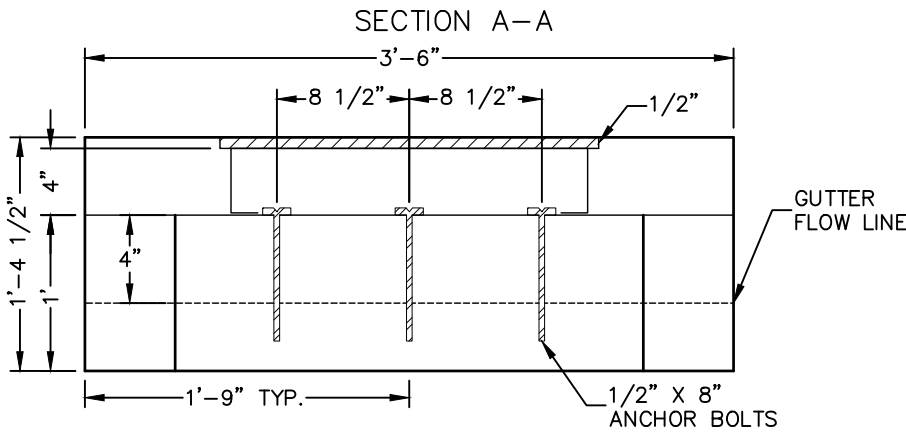
TYPE 4 CATCH BASIN - A

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:

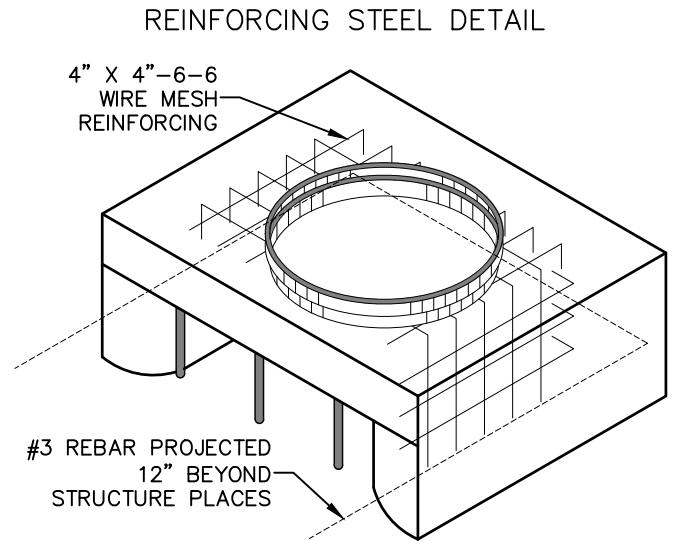
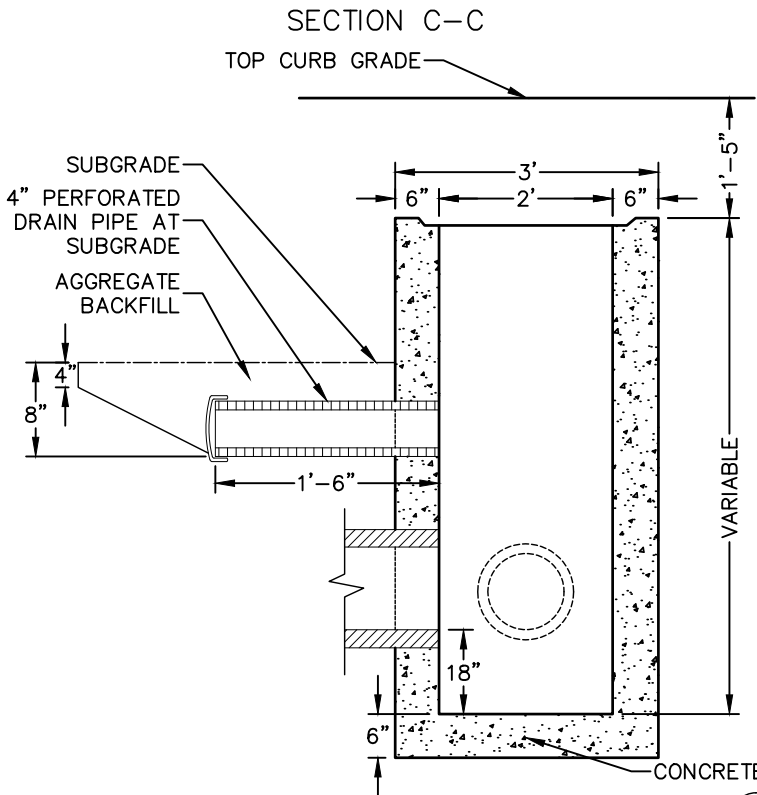
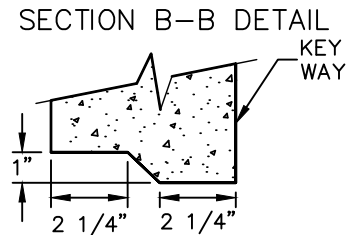
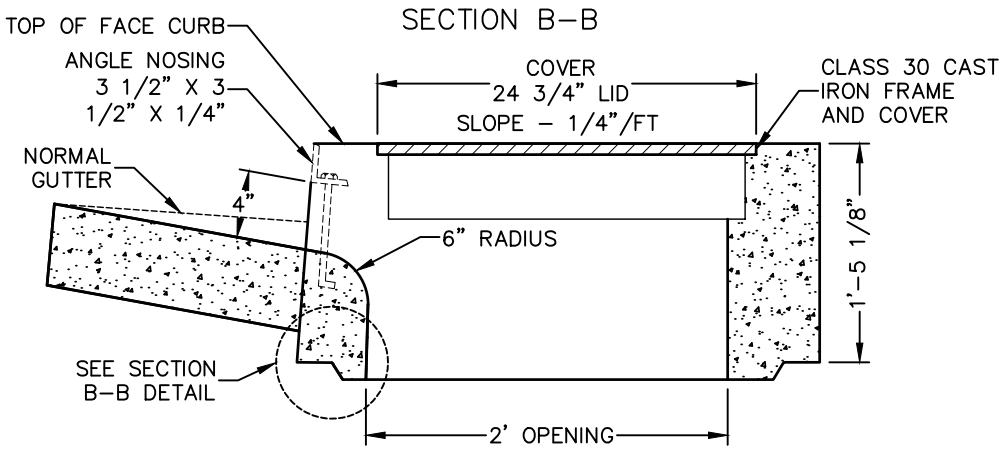
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NOTES:  
 1. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DETAIL 'TYPE 4 CATCH BASIN - A' FOR FULL DETAILS AND NOTES.



MARION COUNTY DEPARTMENT OF PUBLIC WORKS



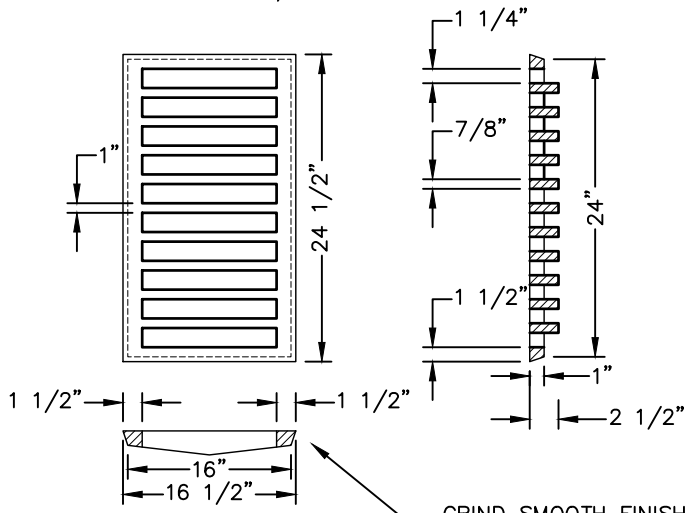
TYPE 4 CATCH BASIN - B

REVISIONS		
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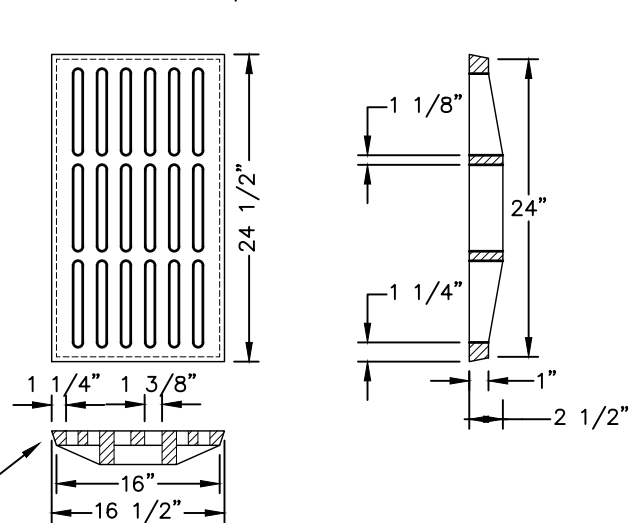
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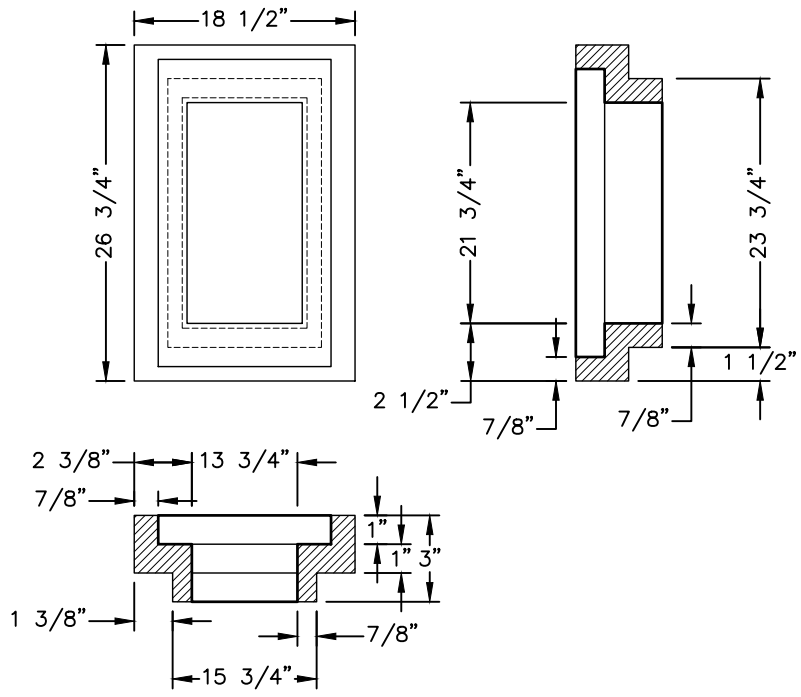
**TYPE A GRATE**  
1-1/4" CLEAR SPACING



**TYPE B GRATE**  
1-3/8" CLEAR SPACING



**CAST IRON / CAST STEEL GRATE FRAMES**



**NOTES**

1. ALL CASTINGS SHALL CONFORM TO ASTM A-48 (AASHTO M105) FOR GRAY IRON CASTINGS, CLASS 30, OR (AASHTO M192), CLASS 70, FOR CAST STEEL.
2. ROUNDS, FILLETS, TAPERS AND OTHER MINOR MODIFICATIONS TO THE DIMENSIONS SHOWN FOR CASTINGS MAY BE MADE TO CONFORM TO COMMON SHOP PRACTICES, AS DETERMINED BY COUNTY ENGINEER.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



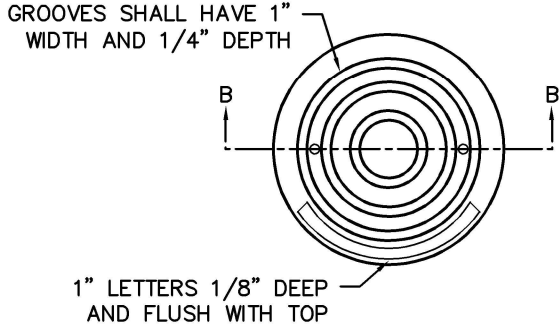
**CATCH BASIN  
GRATES AND FRAMES  
TYPES A AND B**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

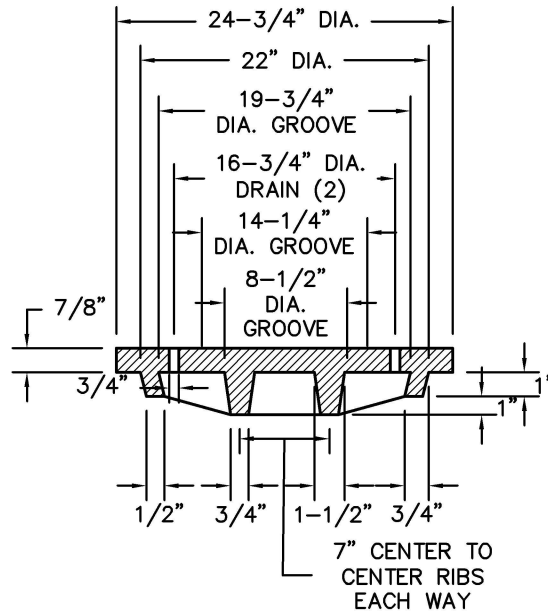
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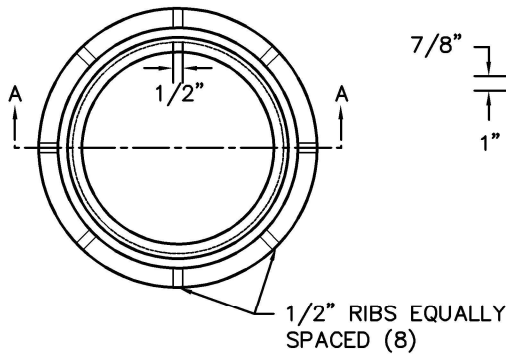
MANHOLE COVER



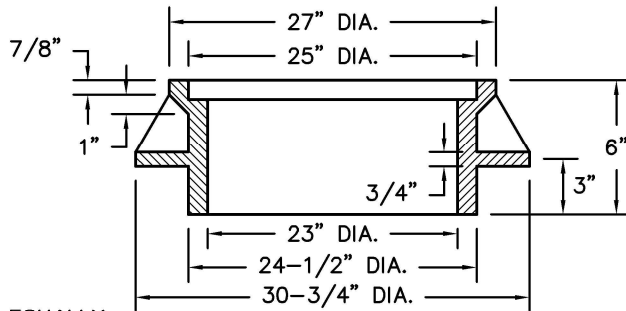
SECTION B-B



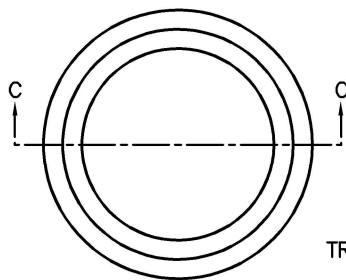
MANHOLE FRAME



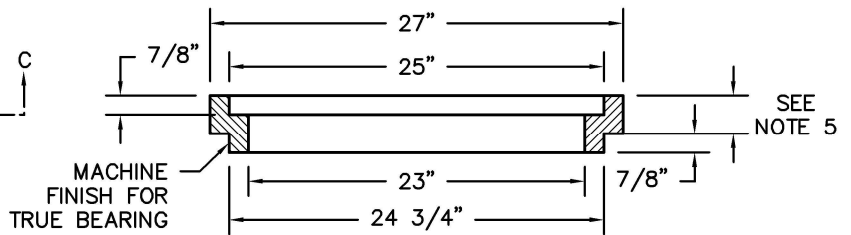
SECTION A-A



ADJUSTMENT RING



SECTION C-C



NOTES:

- COVER AND FRAME TO BE MACHINED FOR TRUE BEARING.
- SANITARY SEWER MANHOLE COVERS SHALL HAVE 2 HOLE LIDS.
- STORM DRAIN MANHOLE COVERS SHALL HAVE 16 HOLE LIDS.
- CAST IRON ADJUSTMENT RINGS ALLOWED ONLY WITH OVERLAYS AND NOT ON NEW MANHOLES. MAXIMUM 1 ADJUSTMENT RING PER MANHOLE.
- STANDARD DEPTHS ARE 1.5", 2", 2.5", OR 3".

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



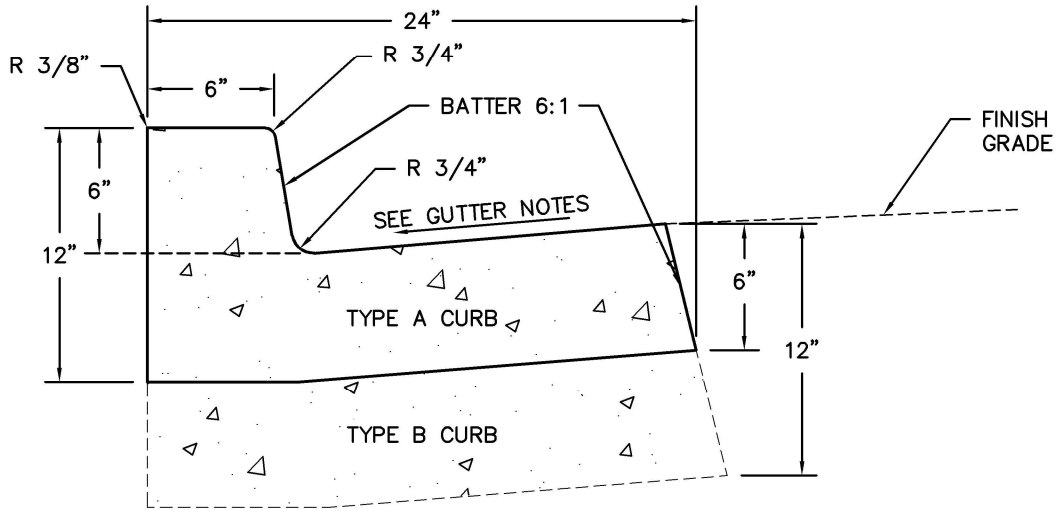
STANDARD MANHOLE CASTING DETAILS

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
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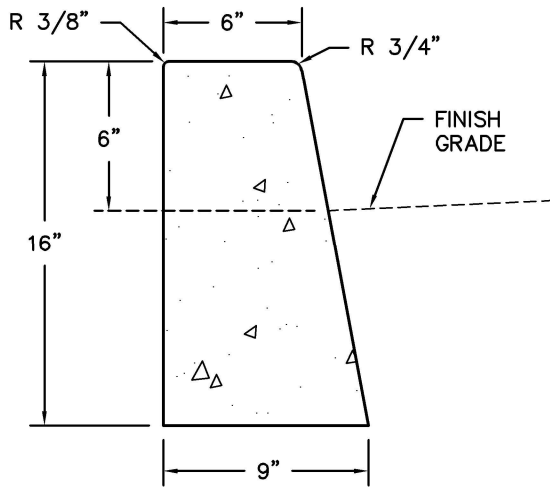
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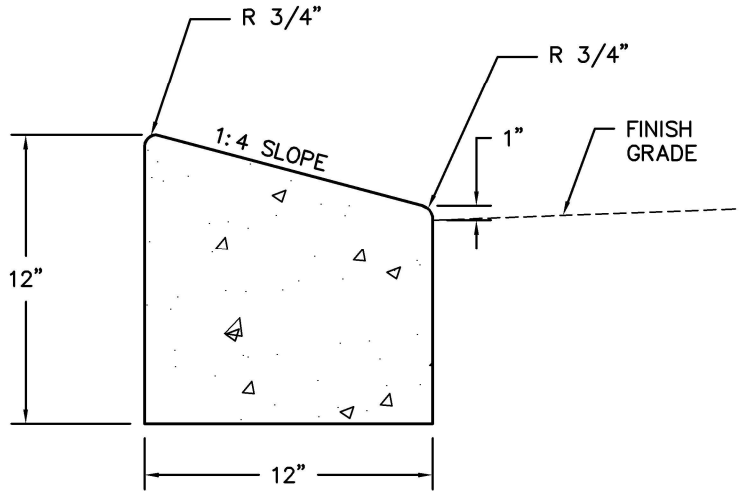
TYPE A OR B CURB



TYPE C CURB



TYPE D CURB



GUTTER NOTES:

1. SLOPE 5% NORMAL.
2. SLOPE -5% MAX ON HIGH SIDE CURB ON STREETS HAVING SHED SECTION.

GENERAL NOTES:

3. CURB TYPE SHALL BE SHOWN ON PLANS.
4. CONSTRUCT EXPANSION JOINTS AT 200 FOOT MAXIMUM SPACING.
5. CONSTRUCT CONTRACTION JOINTS AT 10 FOOT SPACING.
6. 3000 PSI CONCRETE TO BE USED FOR ALL CURBS, UNLESS NOTED OTHERWISE ON PROJECT PLANS.
7. CURBS AND GUTTERS SHOWN MAY BE USED WITH EITHER ASPHALTIC CONCRETE OR PORTLAND CEMENT CONCRETE PAVEMENTS.
8. TRANSITIONS FROM ONE TYPE OF CURB TO ANOTHER SHALL BE SHOWN ON PROJECT PLANS.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

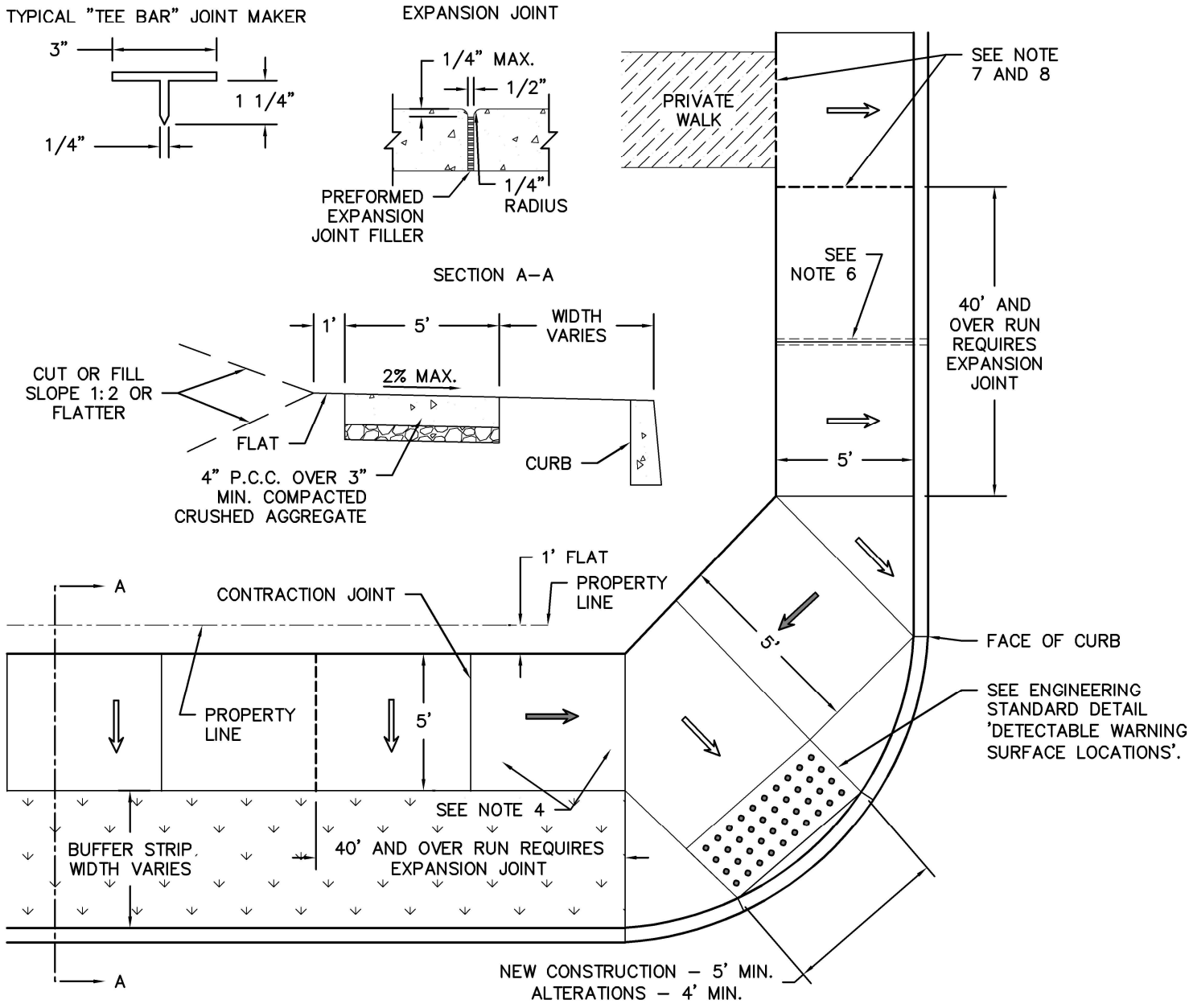


STANDARD P.C.C.  
CURB AND GUTTER

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

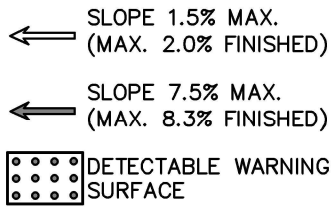
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\STANDARD SIDEWALK DETAILS.DWG PLOTTED: 2023/01/24 1:50 PM




**NOTES:**

1. PREMOLDED JOINT FILLER MATERIAL SHALL BE PLACED ON ALL EDGES OF UTILITY VAULTS OR STRUCTURES EXPOSED TO SIDEWALK. MATERIAL SHALL BE RECESSED OR CUT TO WITHIN 1/2" OF FINISHED CONCRETE SURFACE.
2. 3000 P.S.I. CONCRETE IN 28 DAYS TO BE USED ON SIDEWALKS. NO COLOR ADDITIVES ARE ALLOWED.
3. PAVEMENT, TURF OR PLANTED AREAS DISTURBED BY SIDEWALK CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER.
4. TRANSITION SLOPE TO SIDEWALK (8.33% MAX LONGITUDINAL SLOPE, BUT NOT EXCEEDING 12' TOTAL LENGTH).
5. CONTRACTION JOINTS SHALL BE 1-1/4" x 1/4" WIDE, SPACED 5' ON CENTER.
6. INSTALL 3" ROOF DRAINS UNDER SIDEWALK TO MEET EXISTING WEEP HOLES IN CURB. PROVIDE CONTRACTION JOINT OVER OR ADJACENT TO DRAIN PIPE. WHERE NO WEEP HOLES EXIST, INSTALL WEEP HOLES AND DRAINS AS DIRECTED BY COUNTY ENGINEER.
7. EXPANSION JOINTS 1/2" x 3-1/2" PREMOLDED JOINT FILLER MATERIAL, SPACED 40' ON CENTER.
8. PLACE EXPANSION JOINTS AT ADJACENT CONCRETE STRUCTURES, IN LONG RUNS OF WALK OVER 40', AND AT SIDEWALK RAMPS.



REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
04/06/17	SLOPE RANGE ADJUSTMENT	RP

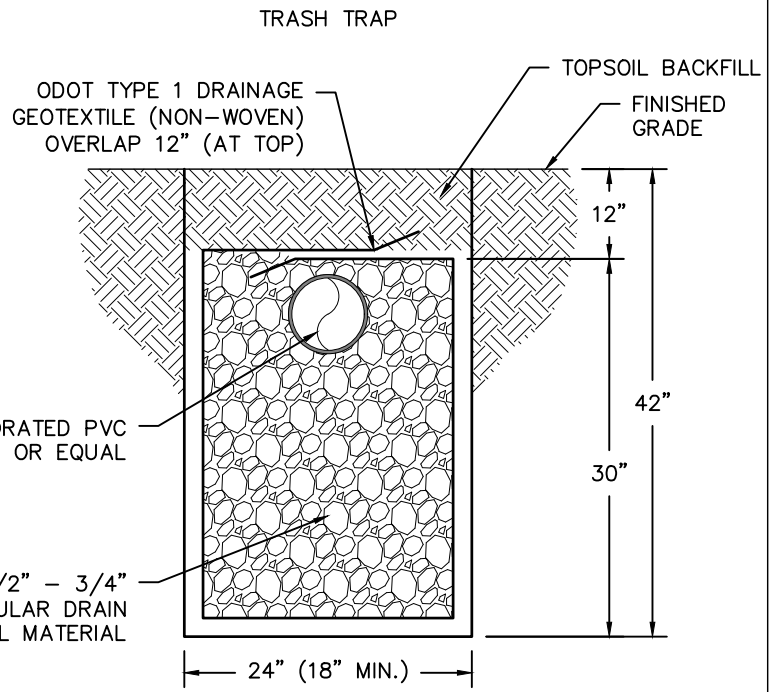
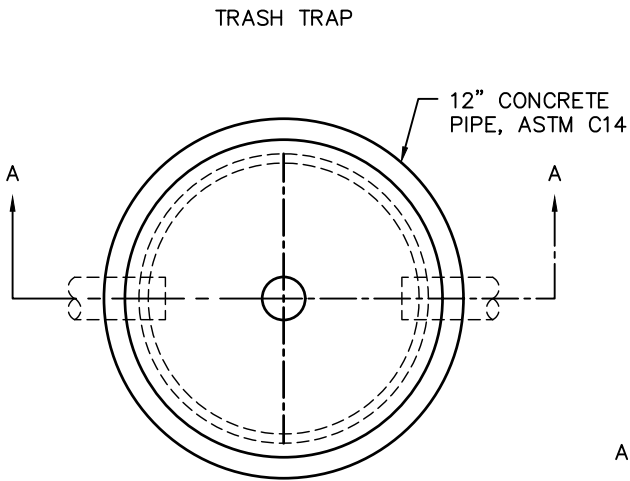
**MARION COUNTY DEPARTMENT OF PUBLIC WORKS**



**STANDARD SIDEWALK DETAILS**

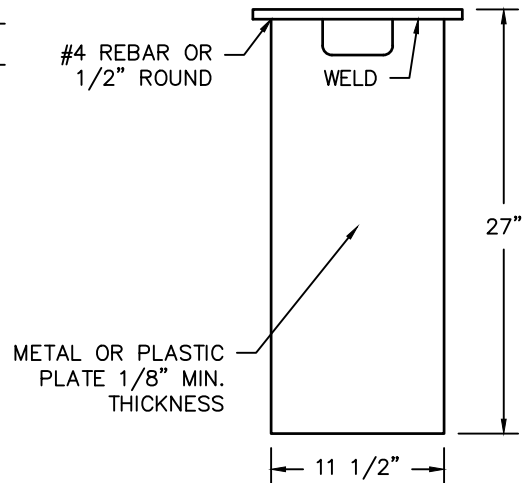
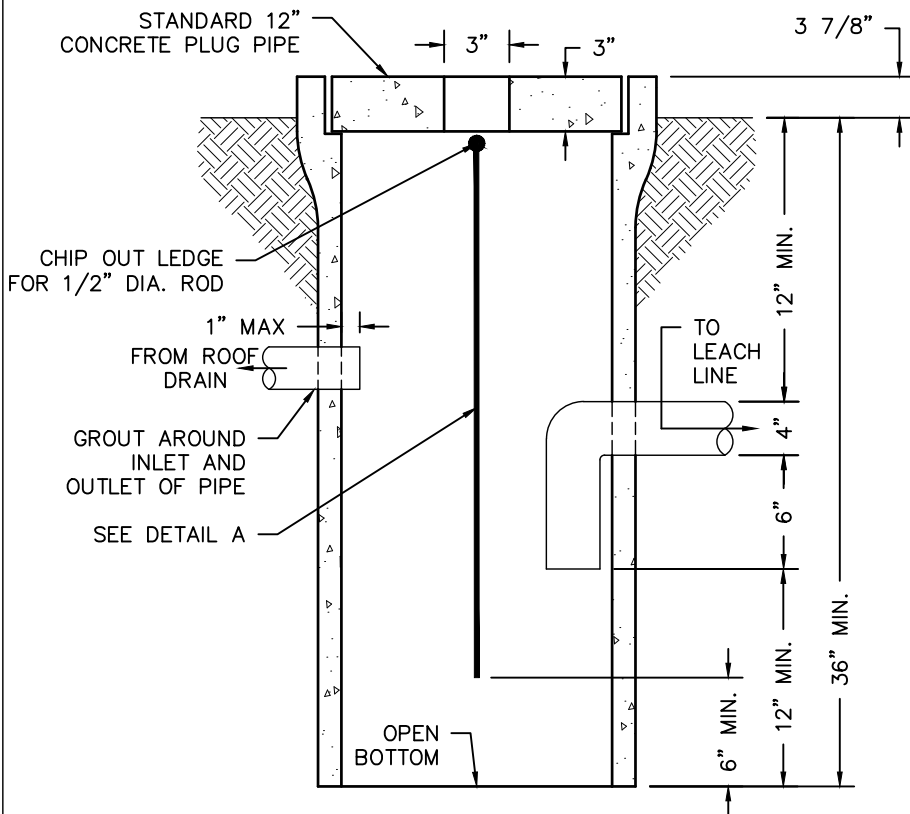
CREATION DATE: 02/02/1985	REVISION DATE: 01/24/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\STANDARD TRASH TRAP AND LEACH LINE.DWG PLOTTED: 2022/12/28 9:39 AM



SECTION A-A

DETAIL A



MARION COUNTY DEPARTMENT OF PUBLIC WORKS

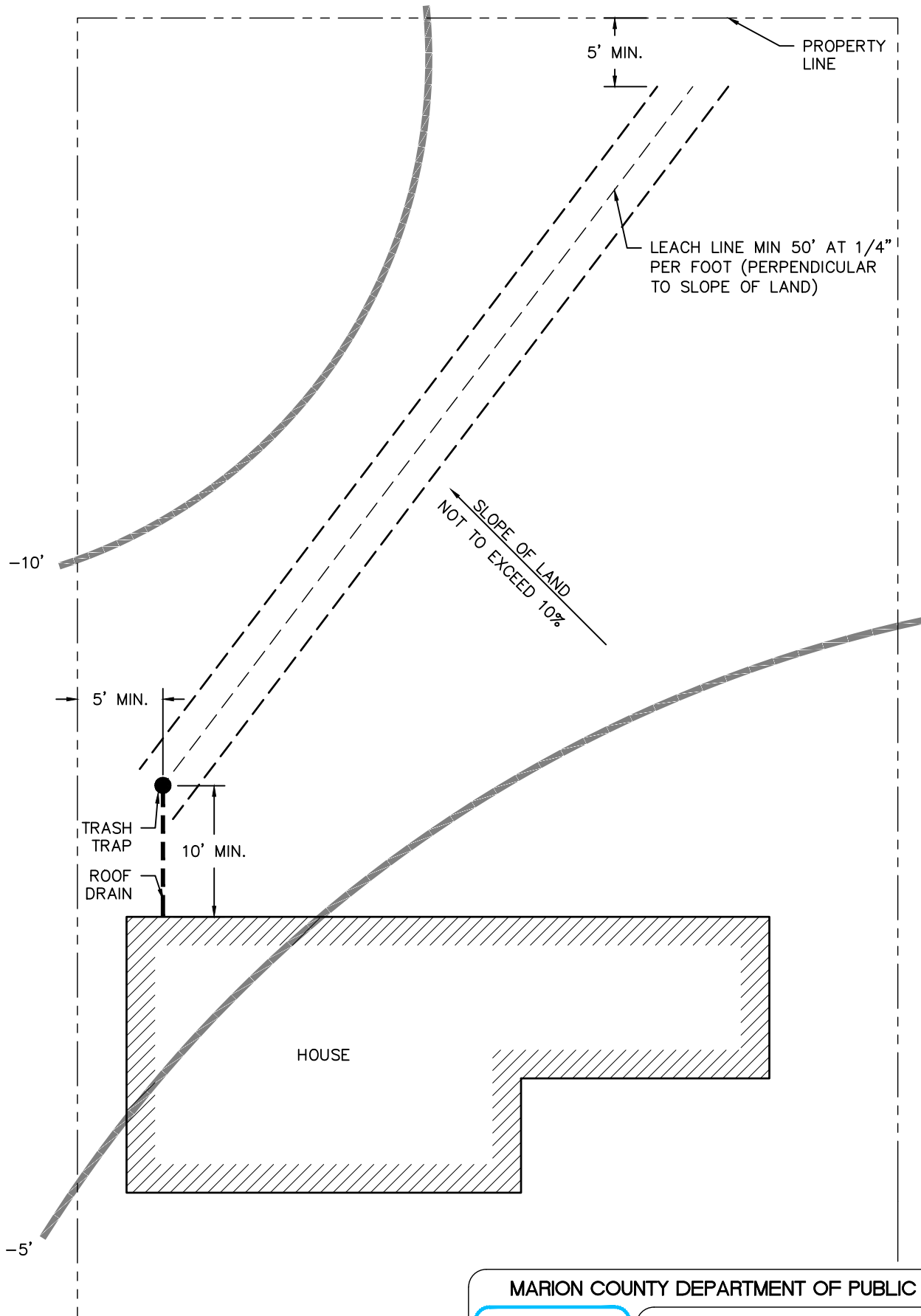


STANDARD TRASH TRAP AND LEACH LINE DETAILS

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:

CREATION DATE: 12/20/2004	REVISION DATE: 12/28/2022	SCALE: N.T.S	SHEET: 1 OF 2
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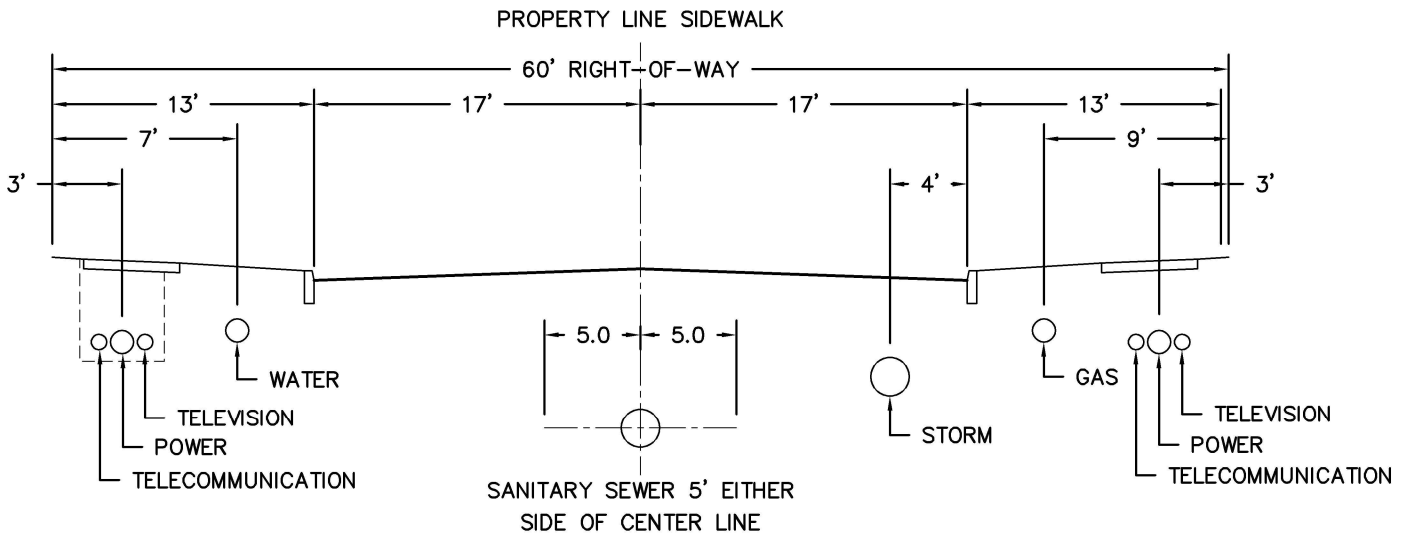
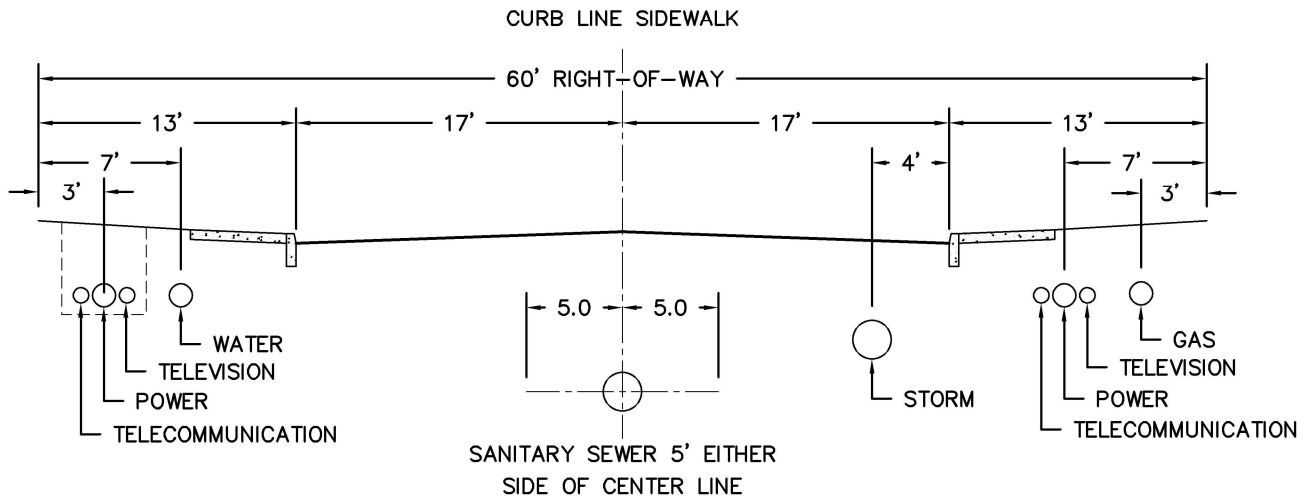
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



# STANDARD TRASH TRAP AND LEACH LINE PLAN

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:

CREATION DATE: 12/20/2004	REVISION DATE: 12/28/2022	SCALE: N.T.S	SHEET: 2 OF 2
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**NOTES:**

1. TELECOMMUNICATIONS AND POWER SHALL BE PLACED ON THE SOUTH OR WEST SIDE OF THE ROAD. GAS SHALL BE PLACED ON THE NORTH OR EAST SIDE OF THE ROAD.
2. UTILITY DEPTH SHALL BE AS SHOWN IN THE TABLE BELOW. DEPTH SHALL BE MEASURED FROM THE BOTTOM OF DITCH, IF PRESENT.

UTILITY UNDERGROUND DEPTH (SEE NOTE 2)	
TYPE	DEPTH
POWER	36"
GAS (SEE NOTE 7)	36"
TELECOMMUNICATION	30"
TELEVISION	30"
WATER	30"
STORM	30"
SANITARY SEWER	SEE NOTE 3

3. SEWER DEPTH SHALL COMPLY WITH LOCAL JURISDICTION REQUIREMENTS.
4. FOR NATURAL GAS RELINING, 30" DEPTH MAY BE ALLOWED IF SHOWN ON PROJECT PLANS.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

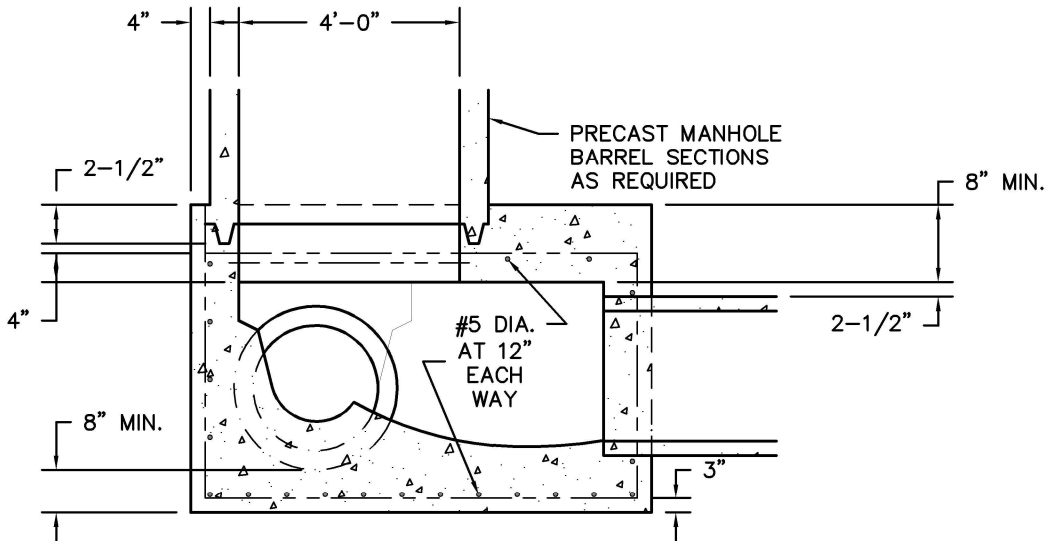
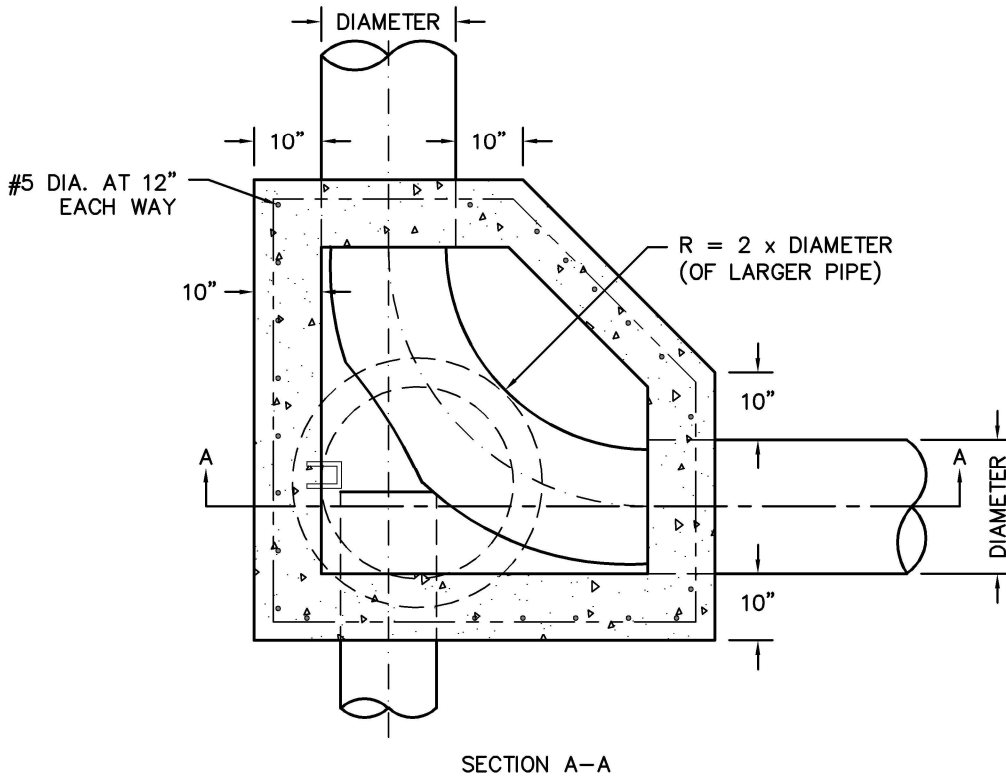


**STANDARD UTILITY  
LOCATION FOR URBAN  
STREETS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 10/26/1993	REVISION DATE: 02/16/2023	SCALE: N.T.S	SHEET: 1 of 1
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SPECIAL BASE FOR MANHOLES AT ANGLE POINT IN LINE



NOTES:

1. PRECAST MANHOLE BARREL SECTIONS, ECCENTRIC CONE AND STANDARD FRAME AND COVER SHALL CONFORM TO ENGINEERING STANDARD DETAIL 'STORM DRAIN STANDARD PRECAST MANHOLE'.
2. ALL CONCRETE SHALL BE CLASS 3000 -1 1/2.
3. FORM CHANNELS IN MANHOLE AS SHOWN TO CONFORM TO INSIDE DIAMETERS OF PIPES.
4. PLYWOOD FORM MANHOLE BASE.
5. LOCATION, PIPE SIZE AND ELEVATION SHALL BE SHOWN ON PROJECT PLANS.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



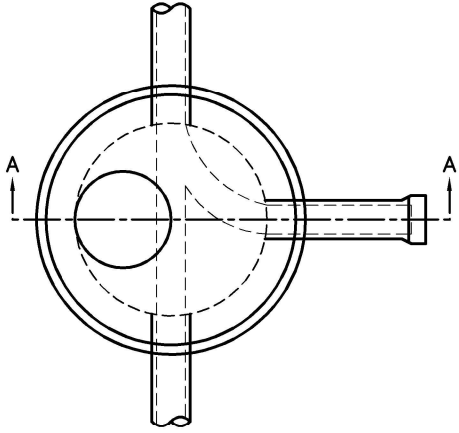
STORM DRAIN MANHOLE FOR PIPE 24" AND OVER

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

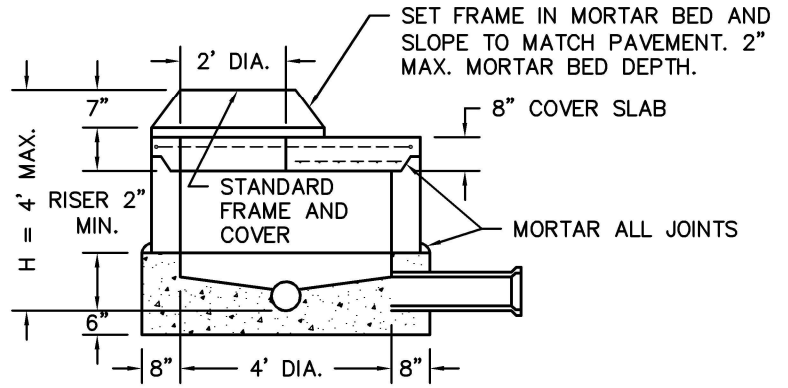
CREATION DATE: 06/28/1994	REVISION DATE: 01/17/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\STORM DRAIN SHALLOW PRECAST MANHOLE.DWG PLOTTED: 2023/01/17 11:26 AM

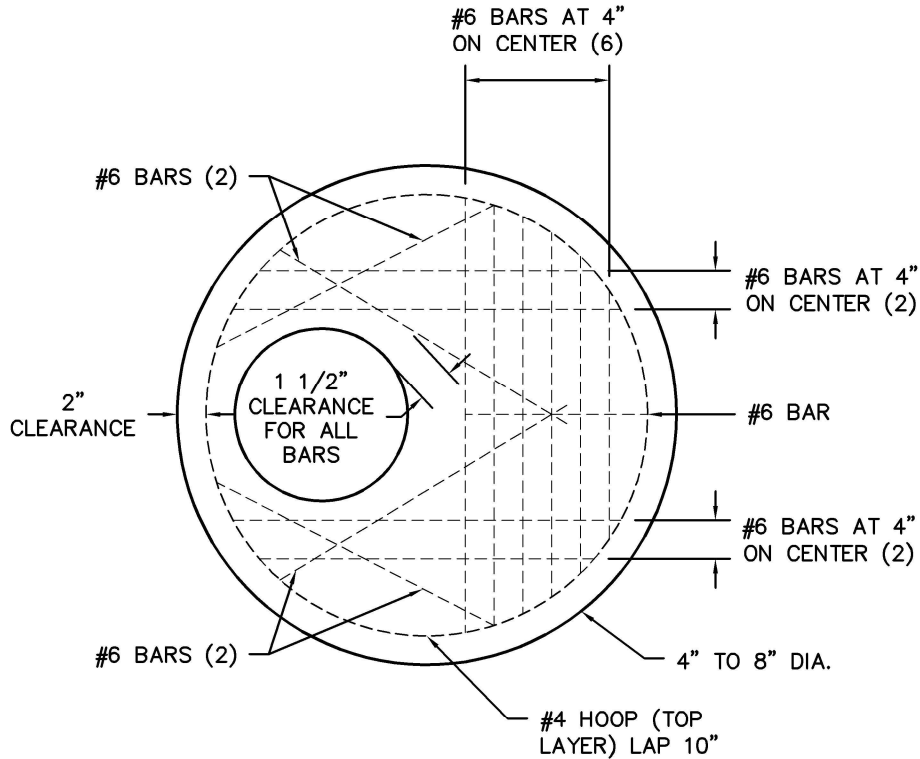
PLAN  
(FRAME AND COVER NOT SHOWN)



SECTION A-A



COVER SLAB REINFORCEMENT



NOTES:

1. PRECAST BARREL SHALL BE REINFORCED CONCRETE MANHOLE SECTION CONFORMING TO ASTM C478, AASHTO M199.
2. SEE ENGINEERING STANDARD DETAIL 'STANDARD MANHOLE CASTING DETAILS' FOR MANHOLE FRAME AND COVER SPECIFICATIONS.
3. ALL CONCRETE SHALL BE CLASS 3000-1 1/2.
4. FORM CHANNELS IN MANHOLE AS SHOWN.
5. MAXIMUM PIPE SIZE SHALL BE 21". LOCATION, SIZE, AND ELEVATION SHALL BE SHOWN ON PROJECT PLANS.
6. PLYWOOD FORM MANHOLE BASE.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

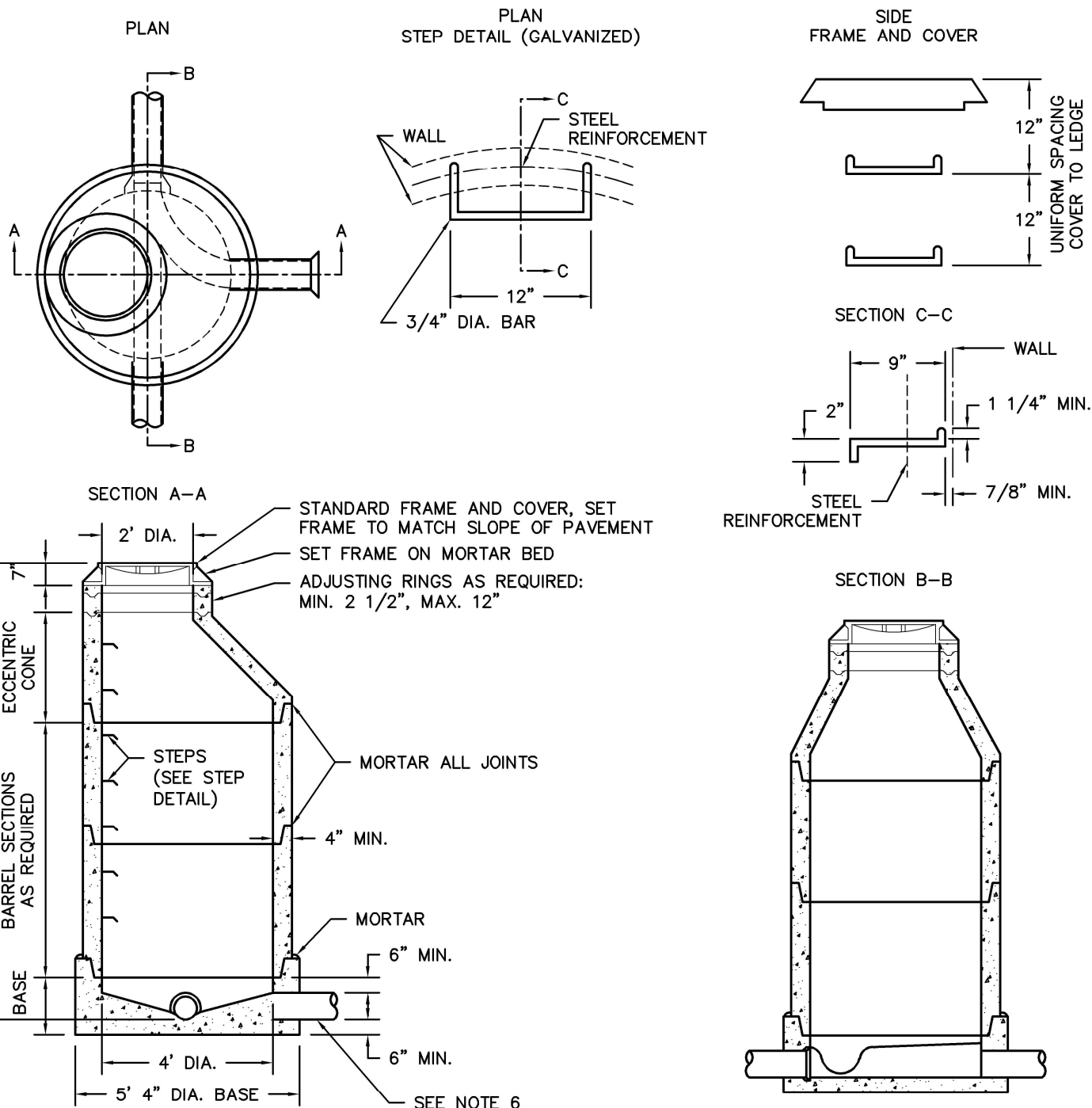


**STORM DRAIN SHALLOW  
PRECAST MANHOLE  
(H LESS THAN 4'-0")**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	


CREATION DATE: 06/27/1994	REVISION DATE: 01/17/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDEN&PERMITS\SHARED\ENGINEERING\DETAILS\STORM DRAIN STANDARD PRECAST MANHOLE.DWG PLOTTED: 2023/01/23 10:25 AM



- NOTES:
1. PRECAST BARREL, CONE, AND ADJUSTMENT RINGS SHALL BE REINFORCED CONCRETE MANHOLE SECTIONS CONFORMING TO ASTM C 478, AASHTO M199.
  2. FOR STANDARD MANHOLE FRAME AND COVER DETAILS SEE ENGINEERING STANDARD DETAIL 'STANDARD MANHOLE CASTING DETAILS'.
  3. FOR MANHOLE WITH "H" LESS THAN 4'-0" SEE ENGINEERING STANDARD DETAIL 'STORM DRAIN SHALLOW PRECAST MANHOLE (H LESS THAN 4'-0")'.
  4. INSIDE JOINTS SHALL NOT EXCEED 3/8" IN THICKNESS.
  5. FORM CHANNELS IN MANHOLE BASE AS SHOWN.
  6. MAXIMUM PIPE SIZE SHALL BE 21". LOCATION, PIPE SIZE, AND ELEVATION SHALL BE SHOWN ON PROJECT PLANS.
  7. PLYWOOD FORM MANHOLE BASE.
  8. CONCRETE FOR BASE SHALL BE CLASS 3000 1-1/2.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**STORM DRAIN STANDARD PRECAST MANHOLE**

CREATION DATE: 06/27/1994	REVISION DATE: 01/23/2023	SCALE: N.T.S	SHEET: 1 OF 1
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REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

## STORM SEWER DESIGN SHEET

PROJECT:	DESIGNED BY:	DATE:
DESIGN FREQUENCY:		PAGE: <input type="text"/> OF <input type="text"/>

FROM STATION	TO STATION	LENGTH (FEET)	DB INDEX NUMBER	DB AREA (ACRES)	TDA (ACRES)	RUNOFF COEFFICIENT	AVERAGE RUNOFF COEFFICIENT	BASIN $t_c$ (MIN.)	TOTAL $t_c$ (MIN.)	AVG. RAIN INT. (INCHES/HR)	DESIGN DISCHARGE (C.F.S.)	INVERT SLOPE (%)	PIPE SIZE (INCHES)	CAPACITY FULL (C.F.S.)	VELOCITY FULL (C.F.S.)

$t_c$  = TIME OF CONCENTRATION  
 C.F.S = CUBIC FEET PER SECOND  
 TDA = TOTAL DRAINAGE AREA  
 AVG RAIN INT = AVERAGE RAINFALL INTENSITY  
 DB = DRAINAGE BASIN

REVISIONS	
DATE:	DESCRIPTION OF CHANGES:
	NONE



MARION COUNTY DEPARTMENT OF PUBLIC WORKS

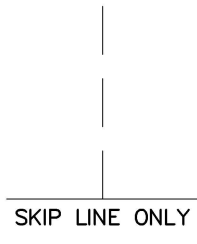
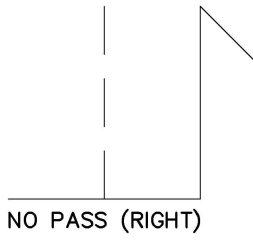
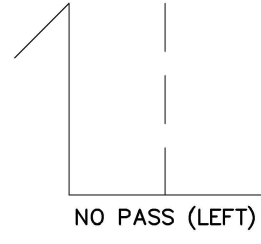
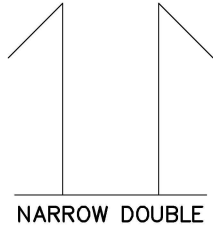
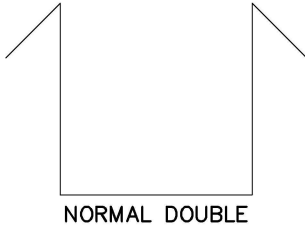
STORM SEWER DESIGN SHEET

CREATION DATE:	REVISION DATE:	SCALE:	SHEET:
07/06/1994	01/27/2023	N.T.S	1 OF 1

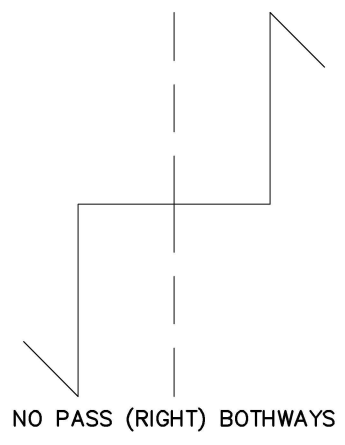
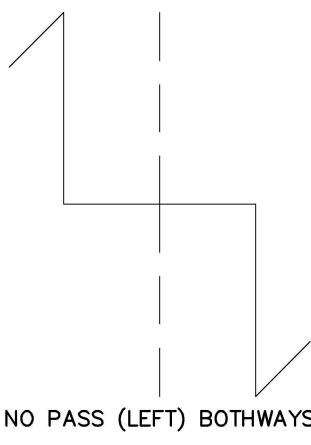
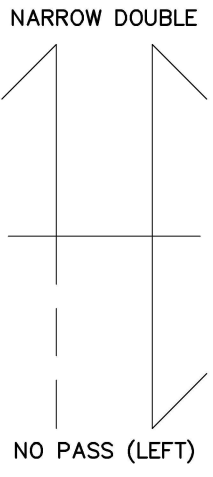
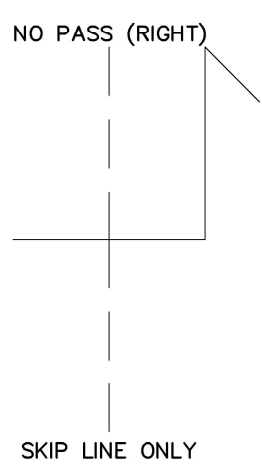
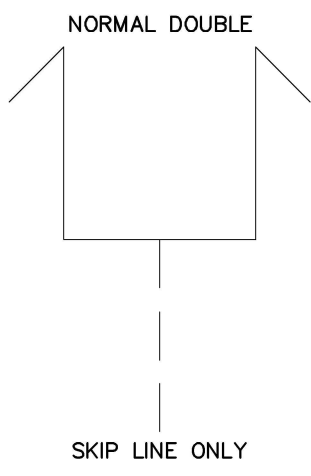
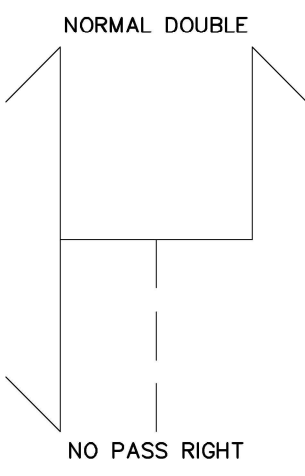


FILE: G:\ENGINEERING\LDEN&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\STRIPING CHANGES SYMBOLS.DWG PLOTTED: 2023/01/27 3:47 PM

ONE DIRECTIONAL STRIPING




TWO DIRECTIONAL STRIPING



NOTES:  
 1. STRIPING SYMBOLS ARE TO BE PAINTED BY STRIPING COMPANY PRIOR TO PAINTING STRIPES ON A ROAD.

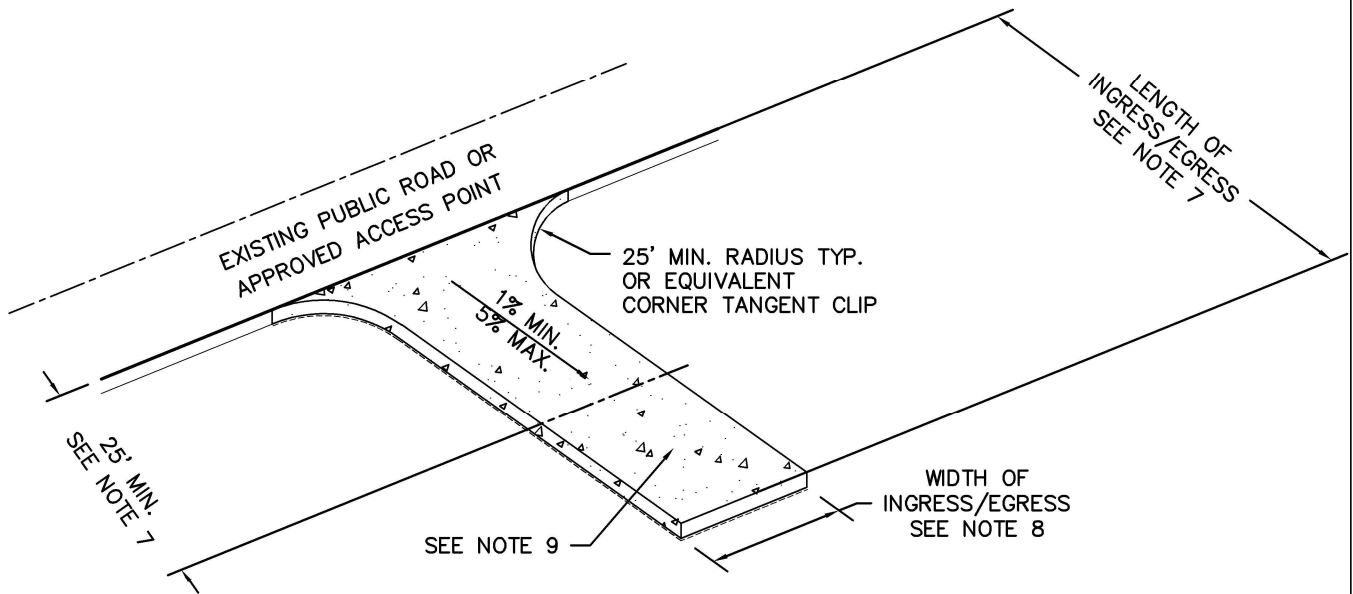
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
01/27/23	DIGITIZED DETAIL	HS

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**STRIPING CHANGES SYMBOLS**

CREATION DATE: 06/26/2005	REVISION DATE: 01/27/2023	SCALE: N.T.S	SHEET: 1 OF 1
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**MAINTENANCE NOTES:**

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2" STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF STRUCTURES USED TO TRAP SEDIMENT.
2. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
3. ALL TRUCKS TRANSPORTING SATURATED SOILS SHALL BE WELL SEALED. WATER DRIPPAGE FROM TRUCKS MUST BE REDUCED TO 1 GALLON PER HOUR PRIOR TO LEAVING THE SITE.

**CONSTRUCTION NOTES:**

4. THE AREA OF THE CONSTRUCTION ENTRANCE SHALL BE STRIPPED OF ALL TOPSOIL, VEGETATION, ROOTS, AND OTHER NON-COMPACTABLE MATERIAL.
5. SUBGRADE SHALL BE COMPACTED AND PROOF ROLLED PRIOR TO PLACEMENT OF GRANULAR MATERIAL. FAILURE TO PASS PROOF ROLL WILL REQUIRE USE OF WET WEATHER SECTION, SEE NOTE 8.

**NOTES:**

6. IF PRACTICABLE, GRADE 25' MIN. OF CONSTRUCTION ENTRANCE TO DRAIN AWAY FROM STREET GRADE. ADJACENT AREAS TO DRAIN AWAY FROM TEMPORARY CONSTRUCTION ENTRANCE.
7. WIDTH OF INGRESS/EGRESS AREA:
  - 7.1. FOR RESIDENTIAL, 20' LONG X 20' WIDE WITH 8" DEEP OF 3/4" TO 1" MINUS CLEAN CRUSHED ROCK OVER GEOTEXTILE FABRIC.
  - FOR COMMERCIAL, 50' LONG X 20' WIDE WITH 8" TO 18" OF 3/4" TO 1" MINUS CLEAN CRUSHED ROCK OVER GEOTEXTILE FABRIC.
8. PLACE 3" TO 6" PIT RUN (ANGULAR) ROCK OVER 8 OUNCE NON-WOVEN GEOTEXTILE FABRIC.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**TEMPORARY  
CONSTRUCTION  
ENTRANCE**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:

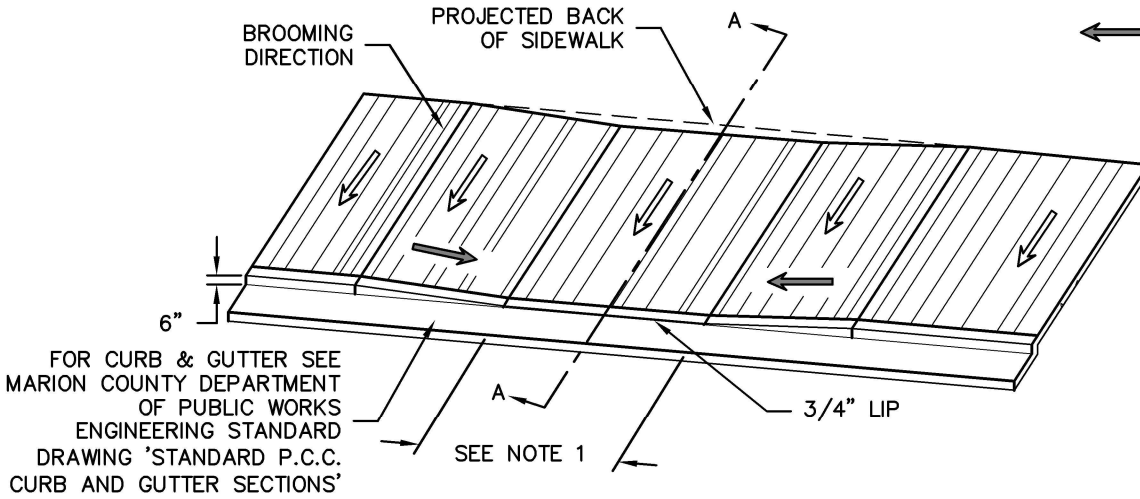
CREATION DATE: 07/05/2005	REVISION DATE: 01/06/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\TYPE 1 DRIVEWAY APPROACH CURB LINE SIDEWALK.DWG PLCTED: 2023/07/24 1:46 PM

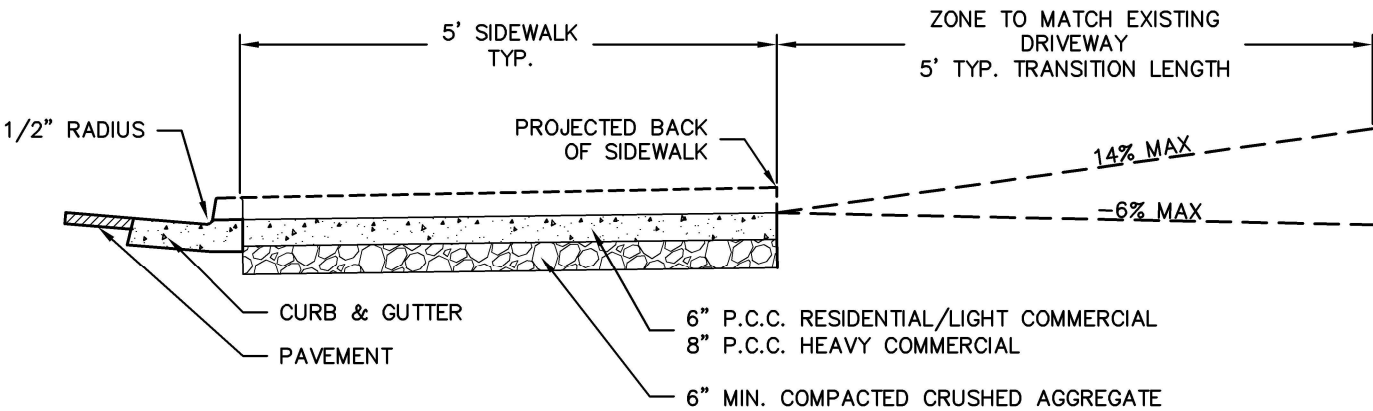
DRIVEWAYS WITH CURB LINE SIDEWALK

← SLOPE 1.5% MAX.  
(MAX. 2.0% FINISHED)

← SLOPE 7.5% MAX.  
(MAX. 8.3% FINISHED)



SECTION A-A



- NOTES:
1. DRIVEWAY WIDTH TYPICALLY SHOWN ON PROJECT PLANS. WHEN NOT SPECIFIED, WIDTH SHALL BE AS DIRECTED BY THE COUNTY ENGINEER. IN EITHER CASE, DRIVEWAY WIDTH SHALL NOT EXCEED THE LIMITS SET FORTH IN MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARDS TABLE 6.
  2. SIDEWALKS, INCLUDING PORTION CROSSING DRIVEWAY, SHALL HAVE TRANSVERSE CONTRACTION JOINTS AT 5' INTERVALS AND TOOL ROUNDED BEFORE BROOMING. ALL EDGES SHALL BE TOOL ROUNDED AFTER BROOMING.
  3. WHEN EXISTING DRIVEWAY CANNOT MATCH NEW DRIVEWAY WITHIN SLOPE LIMITATIONS SHOWN, ADJUST EXISTING DRIVEWAY, NOT CURB AND SIDEWALK GRADE.
  4. DRIVEWAY APPROACH DIMENSIONS SHALL NOT BE ADJUSTED WITHOUT SPECIFIC PRIOR (BEFORE FORMING) INSPECTOR APPROVAL.
  5. CONCRETE STRENGTH SHALL BE 3000 P.S.I. IN 28 DAYS. NO COLOR ADDITIVES SHALL BE USED.
  6. 2% MAX. SIDEWALK CROSS SLOPE IS MEASURED FROM BACK OF WALK TO FACE OF CURB. 8.33% MAX. SIDEWALK TRANSITION CROSS SLOPE IS RELATIVE TO RUNNING SLOPE OF SIDEWALK.
  7. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'STANDARD SIDEWALK DETAILS' FOR ADDITIONAL RESTRICTIONS AND SPECIFICATIONS NOT SHOWN.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



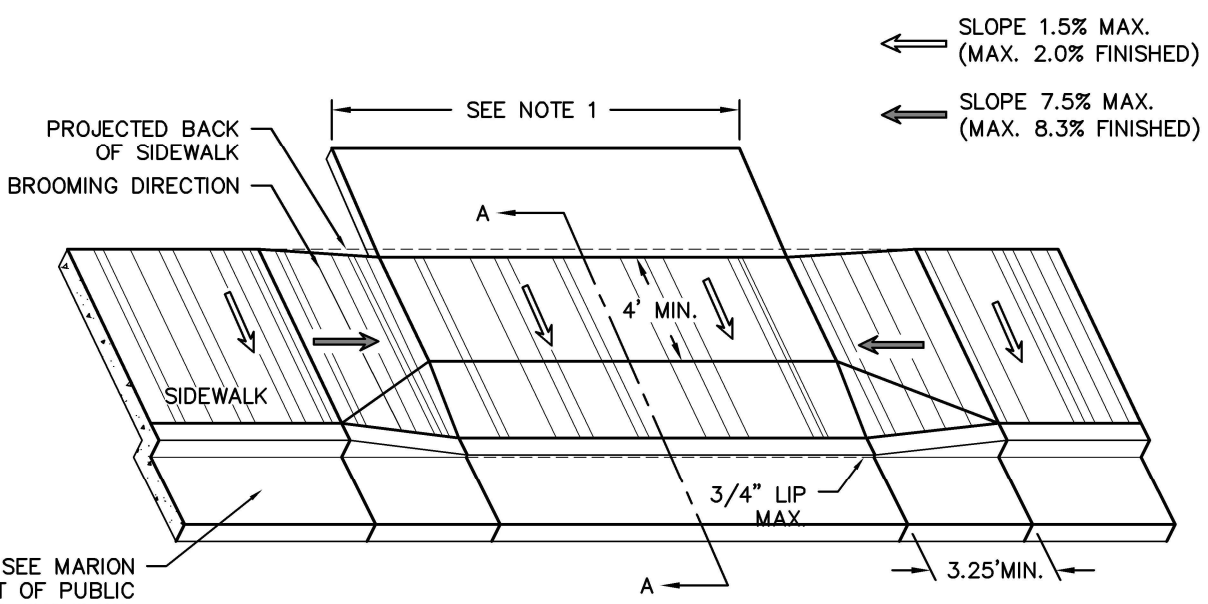
TYPE 1 DRIVEWAY  
APPROACH CURB  
LINE SIDEWALK

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 03/01/2016 REVISION DATE: 07/24/2023 SCALE: N.T.S. SHEET: 1 OF 1

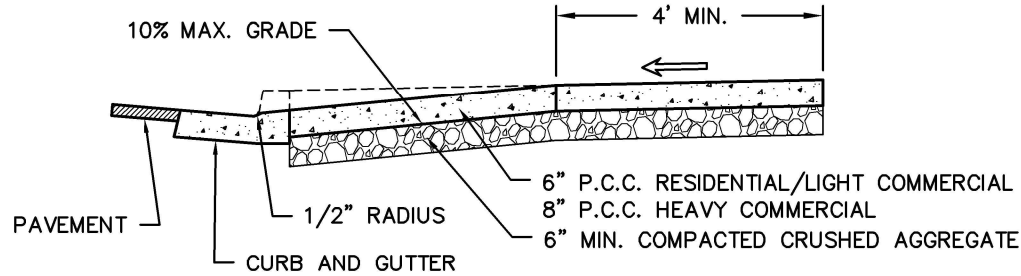
FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\TYPE 2 DRIVEWAY APPROACH CURB LINE SIDEWALK.DWG PLCTED: 2023/01/26 10:56 AM

DRIVEWAYS WITH CURB LINE SIDEWALK



FOR CURB AND GUTTER SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'STANDARD P.C.C. CURB AND GUTTER SECTIONS'

SECTION A-A



NOTES:

1. DRIVEWAY WIDTH NORMALLY SHOWN ON PROJECT PLANS. WHEN NOT SHOWN, WIDTH SHALL BE AS DIRECTED BY THE COUNTY ENGINEER. IN EITHER CASE, DRIVEWAY WIDTH SHALL NOT EXCEED THE LIMITS SET FORTH IN MARION COUNTY ENGINEERING STANDARDS TABLE 6.
2. SIDEWALKS, INCLUDING THE PORTION CROSSING A DRIVEWAY, SHALL HAVE TRANSVERSE CONTRACTION JOINTS AT 5' INTERVALS AND TOOL ROUNDED BEFORE BROOMING. ALL EDGES SHALL BE TOOL ROUNDED AFTER BROOMING.
3. WHEN EXISTING DRIVEWAY CANNOT MATCH NEW DRIVEWAY WITHIN SLOPE LIMITATIONS SHOWN, ADJUST EXISTING DRIVEWAY, NOT CURB AND SIDEWALK GRADE.
4. DRIVEWAY APPROACH DIMENSIONS SHALL NOT BE ADJUSTED WITHOUT SPECIFIC PRIOR (BEFORE FORMING) COUNTY INSPECTOR APPROVAL.
5. CONCRETE STRENGTH SHALL BE 3000 P.S.I. IN 28 DAYS. NO COLOR ADDITIVES SHALL BE USED.
6. SEE MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARD DRAWING 'STANDARD SIDEWALK DETAILS' FOR ADDITIONAL RESTRICTIONS AND SPECIFICATIONS NOT SHOWN.
7. COMMERCIAL DRIVEWAYS ARE REQUIRED TO OBTAIN COUNTY ENGINEER APPROVAL FOR THIS TYPE OF APPROACH.

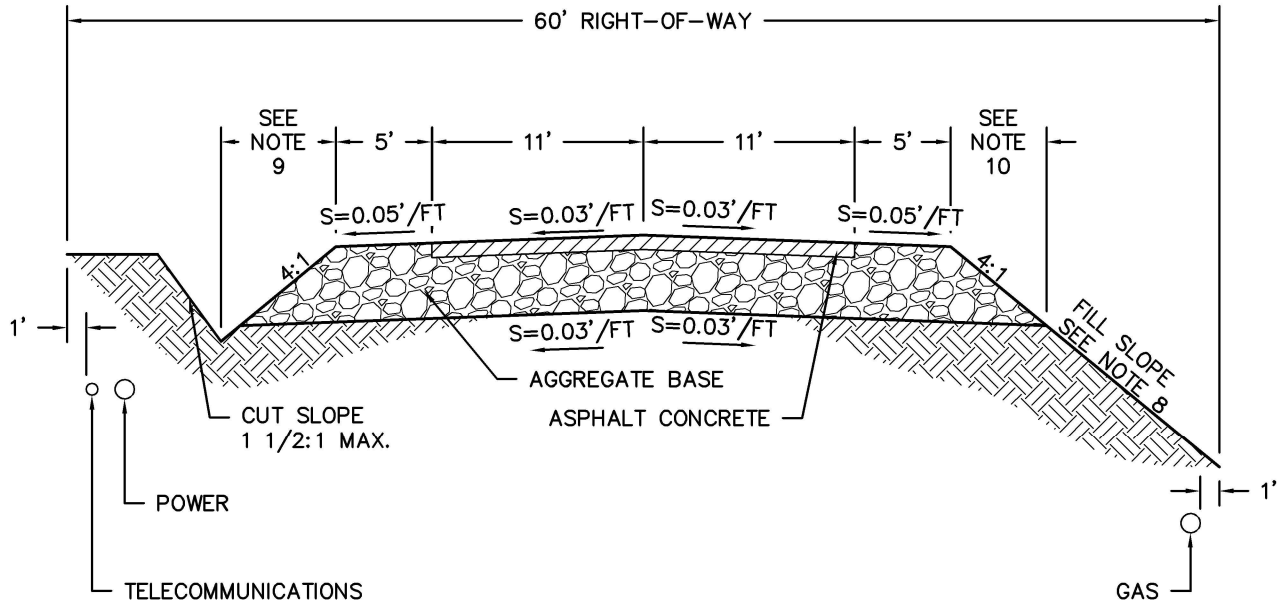
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



TYPE 2 DRIVEWAY APPROACH CURB LINE SIDEWALK

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
03/01/16	NOTE WAS LISTED AS 3300 PSI	DC
03/01/16	EXPANSION JOINTS REMOVED	RP
03/01/16	LIP CHANGED TO 3/4"	RP
01/26/23	CHANGE TO CLEAR WIDTH TO 4' AND DIMENSION CHANGES	HS

CREATION DATE:	REVISION DATE:	SCALE:	SHEET:
03/01/2016	01/26/2023	N.T.S	1 OF 1



**NOTES:**

1. ASPHALT CONCRETE AND AGGREGATE BASE SHALL CONFORM TO MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARDS, UNLESS OTHERWISE REQUIRED BY COUNTY ENGINEER.
2. UTILITIES MAY BE PLACED IN SHOULDER AREA IF CUT OR FILL SLOPES EXTEND OUTSIDE OF RIGHT-OF-WAY.
3. IN NEW SUBDIVISIONS, TELECOMMUNICATIONS AND POWER SHALL BE PLACED ON THE SOUTH OR WEST SIDE OF THE ROAD. GAS SHALL BE PLACED ON THE NORTH OR EAST SIDE OF THE ROAD, UNLESS OTHERWISE APPROVED BY COUNTY ENGINEER.
4. MEASURING FROM THE TOP OF THE UTILITY, MINIMUM DEPTH SHALL BE AS SHOWN IN THE TABLE BELOW. DEPTH SHALL BE MEASURED FROM THE BOTTOM OF DITCH, IF PRESENT.

UTILITY TYPE	DEPTH
POWER	36"
GAS	36" (SEE NOTE 7)
TELECOMMUNICATION	30"
WATER	30"
STORM	30"
SANITARY SEWER	SEE NOTE 6

5. 50' RIGHT-OF-WAY WIDTH IS PERMITTED ON CUL-DE-SACS LESS THAN 500' LONG.
6. SANITARY SEWER DEPTH SHALL COMPLY WITH LOCAL JURISDICTION REQUIREMENTS.
7. FOR NATURAL GAS RELINING, 30" DEPTH MAY BE ALLOWED IF SHOWN AND APPROVED ON PROJECT PLANS.
8. FILL SLOPE SHALL BE 4:1 MAX. AND 2:1 MAX. WITH GUARDRAIL.
9. LOCAL ROADS SHALL HAVE A 6' FORE SLOPE AND COLLECTOR ROADS SHALL HAVE A 7' FORE SLOPE.
10. LOCAL ROADS SHALL HAVE A 4' FORE SLOPE AND COLLECTOR ROADS SHALL HAVE A 5' FORE SLOPE.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

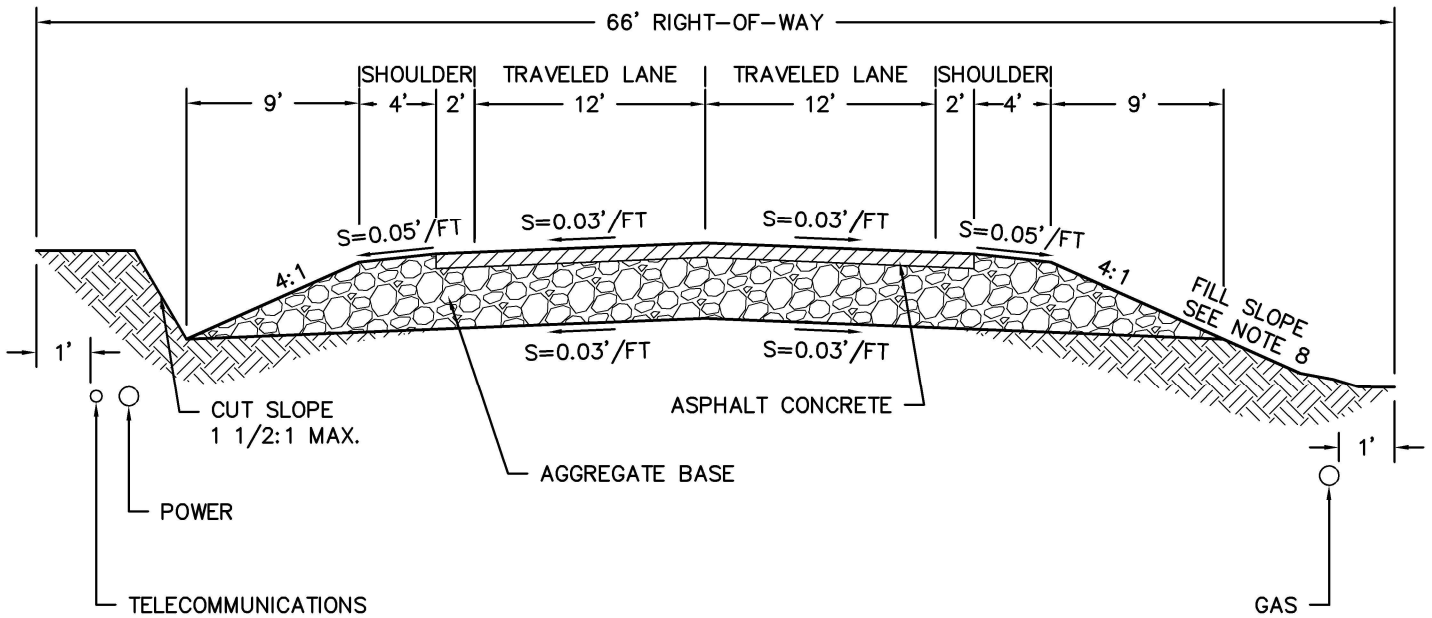


TYPICAL 22' WIDE TURNPIKE SECTION AND UTILITY LOCATION FOR RURAL, LOCAL AND COLLECTOR ROADS

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 09/16/1981	REVISION DATE: 01/17/2023	SCALE: N.T.S	SHEET: 1 of 1
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**NOTES:**

1. ASPHALT CONCRETE AND AGGREGATE BASE SHALL CONFORM TO MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARDS, UNLESS OTHERWISE REQUIRED BY COUNTY ENGINEER.
2. UTILITIES MAY BE PLACED IN SHOULDER AREA IF CUT OR FILL SLOPES EXTEND OUTSIDE OF RIGHT-OF-WAY
3. IN NEW SUBDIVISIONS, TELECOMMUNICATIONS AND POWER SHALL BE PLACED ON THE SOUTH OR WEST SIDE OF THE ROAD. GAS SHALL BE PLACED ON THE NORTH OR EAST SIDE OF THE ROAD, UNLESS OTHERWISE APPROVED BY COUNTY ENGINEER.
4. MINIMUM UTILITY DEPTH SHALL BE AS SHOWN IN THE TABLE BELOW. DEPTH SHALL BE MEASURED FROM THE BOTTOM OF DITCH, IF PRESENT.

UTILITY TYPE	DEPTH
POWER	36"
GAS	36" (SEE NOTE 7)
TELECOMMUNICATION	30"
WATER	30"
STORM	30"
SANITARY SEWER	SEE NOTE 6

5. SEWER DEPTH SHALL COMPLY WITH LOCAL JURISDICTION REQUIREMENTS.
6. FOR NATURAL GAS RELINING, 30" DEPTH MAY BE ALLOWED IF SHOWN AND APPROVED ON PROJECT PLANS.
7. FILL SLOPE SHALL BE 4:1 MAX. AND 2:1 MAX. WITH GUARDRAIL.

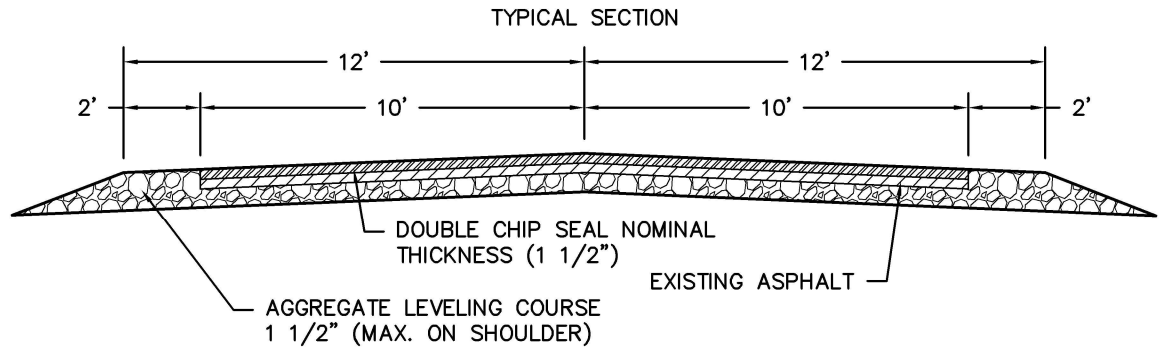
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

**MARION COUNTY DEPARTMENT OF PUBLIC WORKS**

**TYPICAL 28' WIDE TURNPIKE SECTION AND UTILITY LOCATION FOR RURAL ARTERIAL ROADS**

CREATION DATE: 01/09/1985	REVISION DATE: 01/17/2023	SCALE: N.T.S	SHEET: 1 OF 1
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MINIMUM

	EMULSION		AGGREGATE	
	TYPE	GALLONS PER SQUARE YARD	SIZE	POUNDS PER SQUARE YARD
1ST SPREAD	HFRS-P2	0.5	1/2" TO 1/4"	32
2ND SPREAD	HFRS-P2	0.5	3/8" TO #4	33
FOG COAT	HFRS-P1	0.15	N/A	N/A

NOTES:

1. PLEASE EXERCISE EXTREME CAUTION TO PREVENT EXCESS AGGREGATE AND/OR EMULSION FROM ENTERING WATERWAYS AT ALL ROADSIDE DITCHES, CULVERTS, BRIDGES, SWALES, AND ADJACENT WETLAND AREAS.
2. PLEASE FOLLOW THE WETLAND/WATERS DELINEATION MAPS FOR EACH ROADWAY MILE.
3. THE EMULSION ASPHALT SHALL MEET THE SPECIFICATIONS OF AASHTO M316. AGGREGATES SHALL BE IN DESIGNATED SIZES AND SHALL CONFORM TO THE CURRENT OREGON DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
4. ROADWAY AND DITCH SLOPE VARIES.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

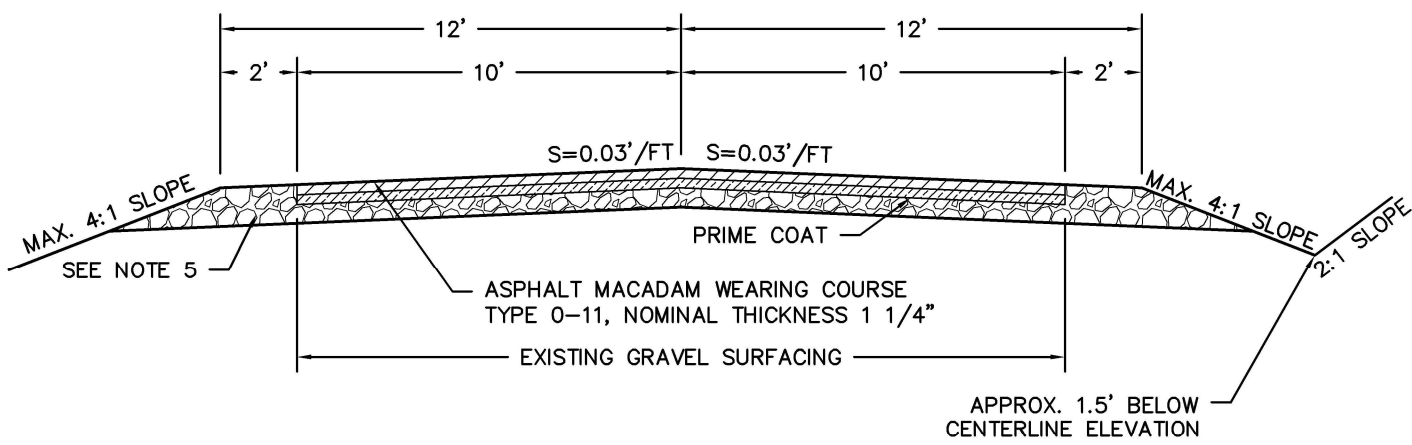


**TYPICAL ASPHALT  
 DOUBLE CHIP SEAL  
 SURFACING DETAILS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 03/10/2020	REVISION DATE: 01/23/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\STANDARD DETAILS\TYPICAL ASPHALT PENETRATION MACADAM (0-11) SURFACING DETAILS.DWG PLOTTED: 2023/01/27 3:08 PM



	ASPHALT		AGGREGATE	
	TYPE	GALLONS/SQUARE YARD	GRAVEL	CUBIC YARDS/SQUARE YARD*
PRIME COAT	MC-250	0.55	3/4" MINUS	0.019
1ST SPREAD	CRS-2	0.45	1 1/4"-3/4"	0.019
2ND SPREAD	CRS-2	0.55	3/4"-1/2"	0.019
3RD SPREAD	CRS-2	0.55	1/2"-1/4"	0.014
SEAL COAT	CRS-2	0.45	1/4"-#10 SCREENED	0.009

\*MEASURED IN TRUCK

**NOTES:**

1. THE MINIMUM THICKNESS OF THE AGGREGATE LEVELING COURSE MAY HAVE TO BE INCREASED, DEPENDING ON THE THICKNESS AND CONDITION OF THE EXISTING GRAVEL SURFACE.
2. CONSTRUCTION OF DRAINAGE CULVERTS, ROADSIDE DITCHES AND/OR ELEVATION OF ROADWAY MAY BE REQUIRED.
3. WHERE THE MACADAM PAVEMENT IS WIDER THAN THE EXISTING GRAVEL SURFACE, THE AGGREGATE LEVELING COURSE SHALL HAVE A MINIMUM THICKNESS OF 6".
4. THE CATIONIC EMULSION ASPHALT SHALL MEET THE SPECIFICATIONS OF AASHTO M208-72 OR ASTM D2397-73. AGGREGATES SHALL BE IN DESIGNATED SIZES AND SHALL CONFORM TO THE MOST RECENT OREGON DEPARTMENT OF TRANSPORTATION STANDARDS.
5. AGGREGATE LEVELING COURSE MIN. COMPACTION THICKNESS IS 1 1/2" UNDER ASPHALT MACADAM AND 2 3/4" MAX. ON SHOULDER.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

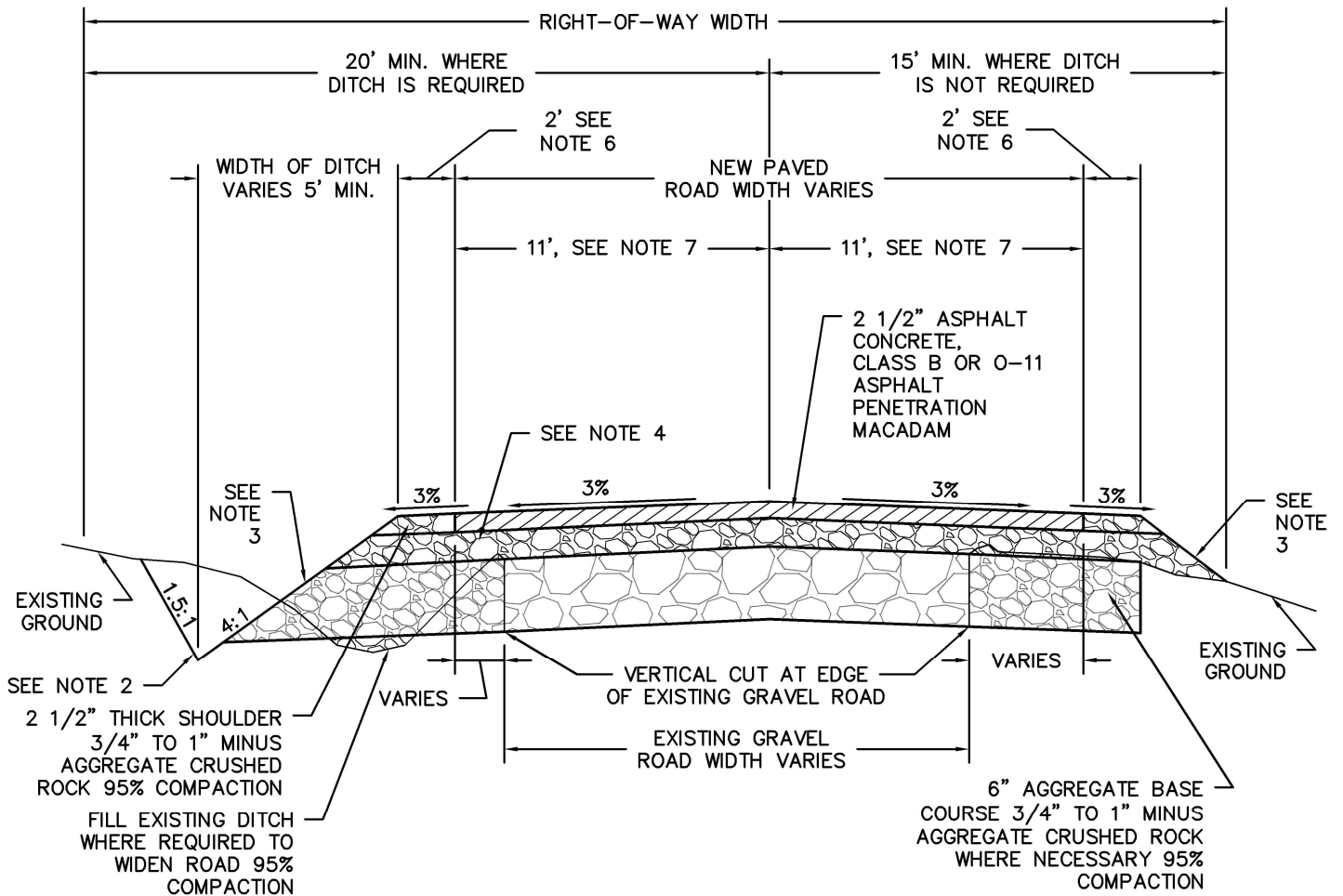


**TYPICAL ASPHALT PENETRATION MACADAM (0-11) SURFACING DETAILS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 02/11/1986	REVISION DATE: 01/06/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\TYPICAL CROSS SECTION FOR PAVING GRAVEL ROADS.DWG PLOTTED: 2023/01/23 2:47 PM



**NOTES:**

1. DISPOSE OF EXCAVATED MATERIAL OFF-SITE.
2. EXCAVATE DITCH WHERE REQUIRED TO PROVIDE DRAINAGE, SHALL BE SHOWN ON PROJECT PLANS.
3. TAPER SHOULDER TO MATCH EXISTING GROUND WHERE NO DITCH IS REQUIRED, SHALL BE SHOWN ON PROJECT PLANS.
4. 3" MINIMUM LEVELING COURSE 3/4" TO 1" MINUS AGGREGATE CRUSHED ROCK 95% COMPACTION. AGGREGATE LEVELING COURSE PLUS EXISTING GRAVEL SHALL EQUAL A THICKNESS OF 9".
5. 3:1 WHERE RIGHT-OF-WAY WIDTH IS LESS THAN 50'.
6. 1' WHERE RIGHT-OF-WAY WIDTH IS LESS THAN 40'.
7. 10' WHERE RIGHT-OF-WAY WIDTH IS LESS THAN 50'.

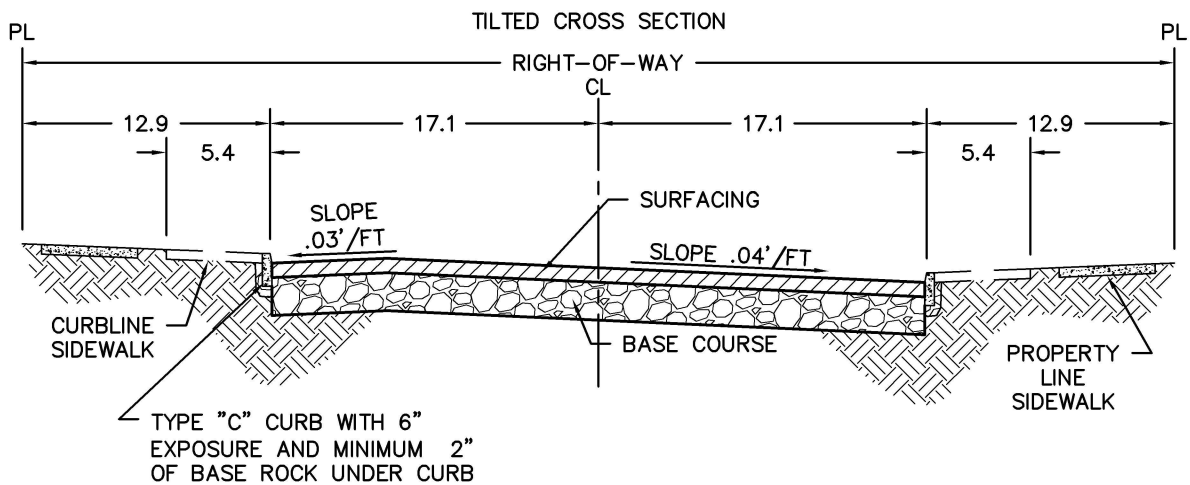
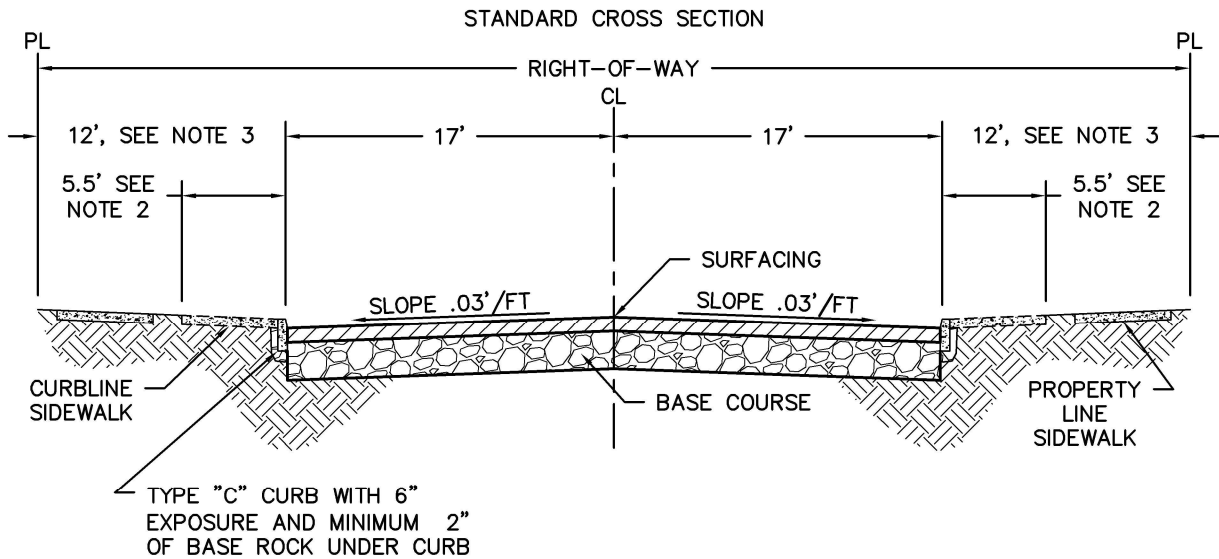
MARION COUNTY DEPARTMENT OF PUBLIC WORKS



**TYPICAL CROSS SECTION FOR PAVING GRAVEL ROADS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 01/31/1989	REVISION DATE: 01/23/2023	SCALE: N.T.S	SHEET: 1 OF 1
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**NOTES**

1. SURFACING, BASE COURSE, AND SIDEWALK SHALL CONFORM TO MARION COUNTY DEPARTMENT OF PUBLIC WORKS ENGINEERING STANDARDS.
2. 50' RIGHT-OF-WAY, CURB-LINE SIDEWALK.
3. REQUIRES 60' RIGHT-OF-WAY.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

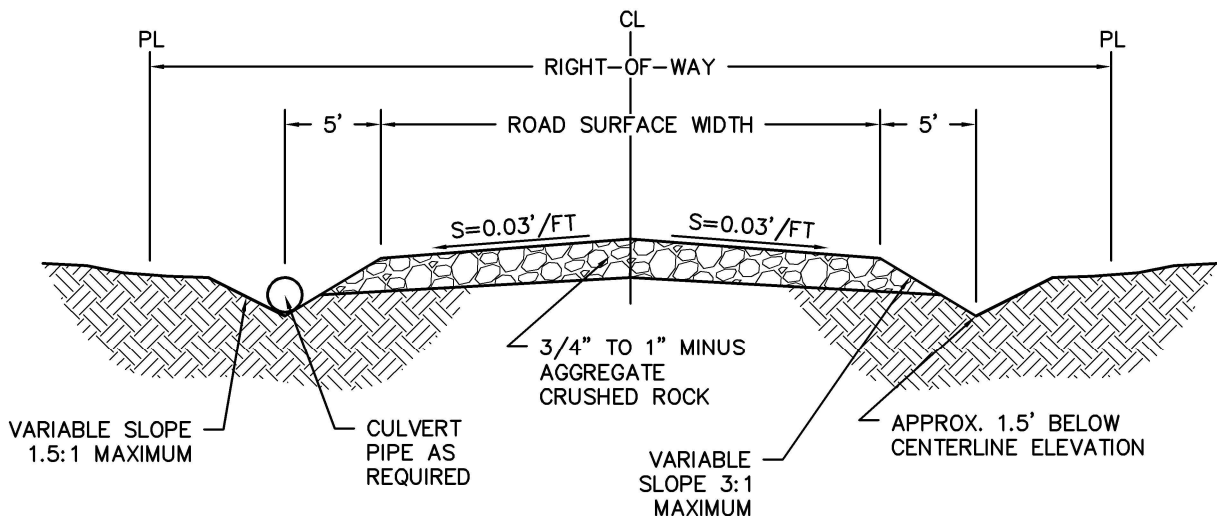


**TYPICAL CROSS SECTION FOR URBAN STREETS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 09/16/1981	REVISION DATE: 01/24/2023	SCALE: N.T.S	SHEET: 1 OF 1
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FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\TYPICAL GRAVEL SECTION FOR PRIVATELY MAINTAINED RURAL ROADS.DWG PLOTTED: 2023/01/23 12:13 PM



**NOTES:**

1. SURFACE WIDTH AND CRUSHED ROCK SHALL CONFORM TO THE FOLLOWING:

NUMBER OF DWELLINGS SERVED	SURFACE WIDTH (FEET)	3/4" TO 1" MINUS AGGREGATE CRUSHED ROCK THICKNESS (INCHES)
1	10'	6"
2 OR MORE	16'	8"

2. UTILITIES SHALL BE LOCATED AS SHOWN ON ENGINEERING STANDARD DETAIL 'TYPICAL 22' WIDE TURNPIKE SECTION AND UTILITY LOCATION FOR RURAL, LOCAL, AND COLLECTOR ROADS'.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

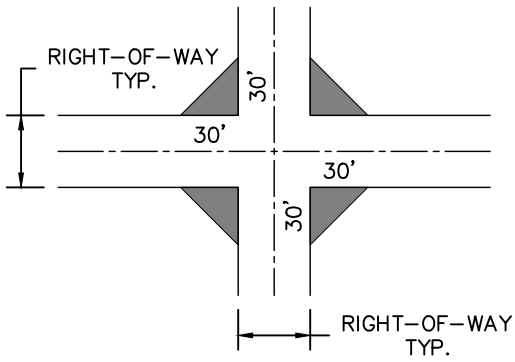


**TYPICAL GRAVEL SECTION FOR PRIVATELY MAINTAINED RURAL ROADS**

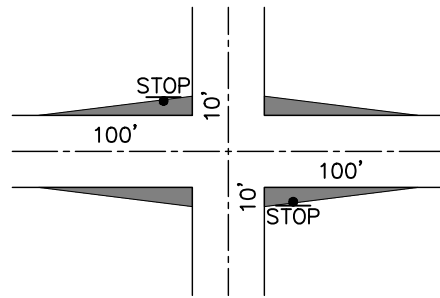
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 12/15/2009	REVISION DATE: 01/23/2023	SCALE: N.T.S	SHEET: 1 OF 1
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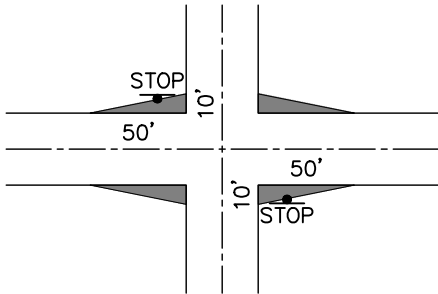
LOCAL/LOCAL (NO STOP)



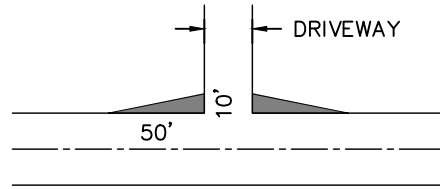
LOCAL/COLLECTOR OR ARTERIAL



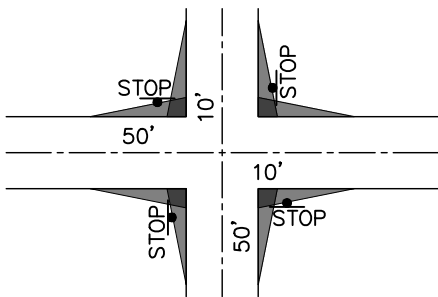
LOCAL/LOCAL (TWO-WAY STOP)



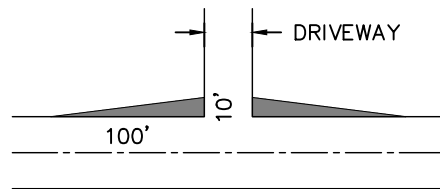
DRIVEWAY/LOCAL



LOCAL/LOCAL (FOUR-WAY STOP)



DRIVEWAY/COLLECTOR OR ARTERIAL



NOTES:

1. DIMENSIONS ARE TYPICAL, AND APPLY TO EACH TRIANGLE IN A GIVEN SCENARIO.
2. REFER TO MARION COUNTY CODE 17.110.770.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



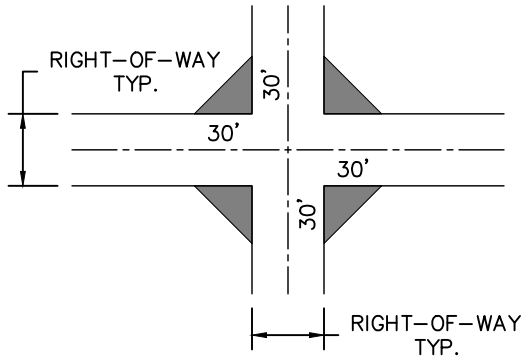
VISION CLEARANCE  
RURAL

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

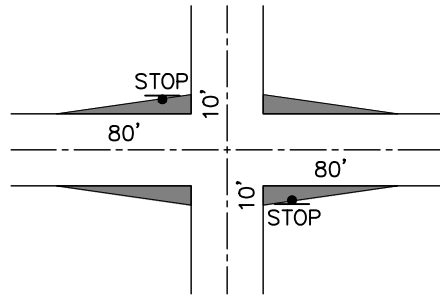
CREATION DATE: 07/30/2004	REVISION DATE: 09/23/2022	SCALE: N.T.S	SHEET: 1 OF 2
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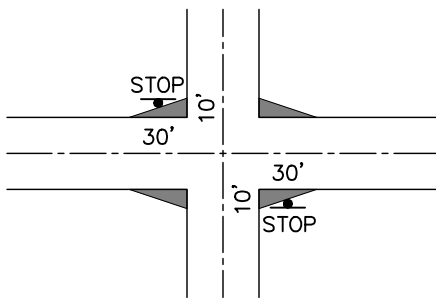
LOCAL/LOCAL (NO STOP)



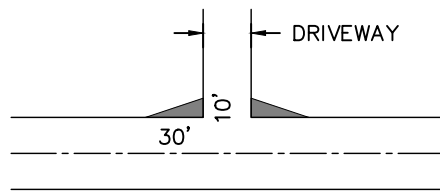
LOCAL/COLLECTOR OR ARTERIAL



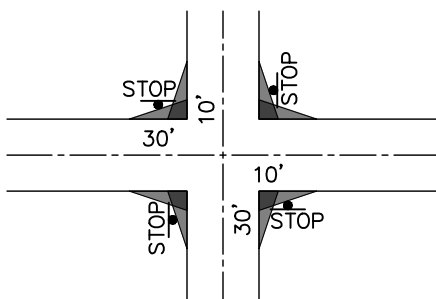
LOCAL/LOCAL (TWO-WAY STOP)



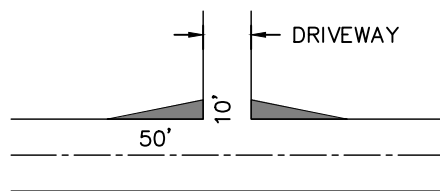
DRIVEWAY/LOCAL



LOCAL/LOCAL (FOUR-WAY STOP)



DRIVEWAY/COLLECTOR OR ARTERIAL



NOTES:

1. DIMENSIONS ARE TYPICAL, AND APPLY TO EACH TRIANGLE IN A GIVEN SCENARIO.
2. REFER TO MARION COUNTY CODE 16.27.200.

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

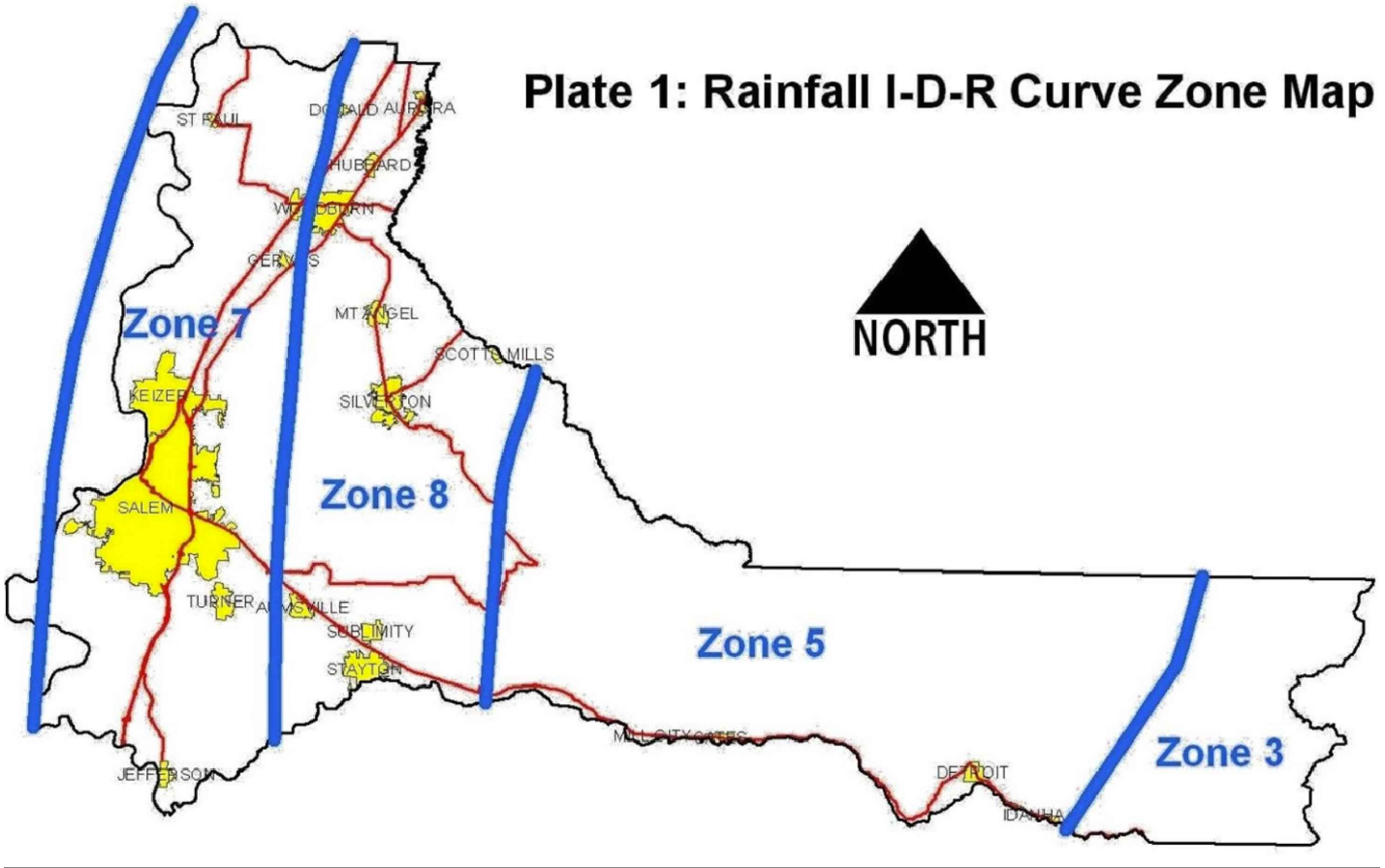
**MARION COUNTY DEPARTMENT OF PUBLIC WORKS**

## VISION CLEARANCE

### URBAN

CREATION DATE:	REVISION DATE:	SCALE:	SHEET:
07/30/2004	09/23/2022	N.T.S	2 of 2

# Plate 1: Rainfall I-D-R Curve Zone Map



**NOTES:**

1. PEAK INTENSITY SHALL BE DERIVED FROM ODOT'S RAINFALL INTENSITY-DURATION-RECURRENCE (IDR) CURVES FOR A GIVEN ZONE.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

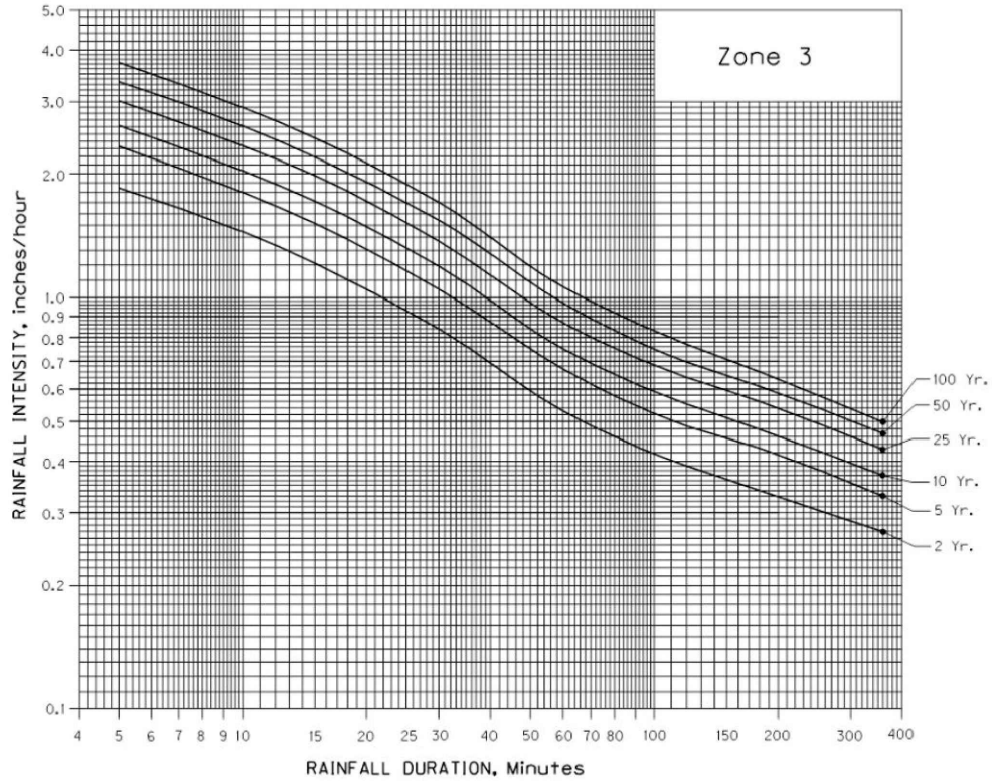


## RAINFALL INTENSITY-DURATION CURVES: ZONE MAP

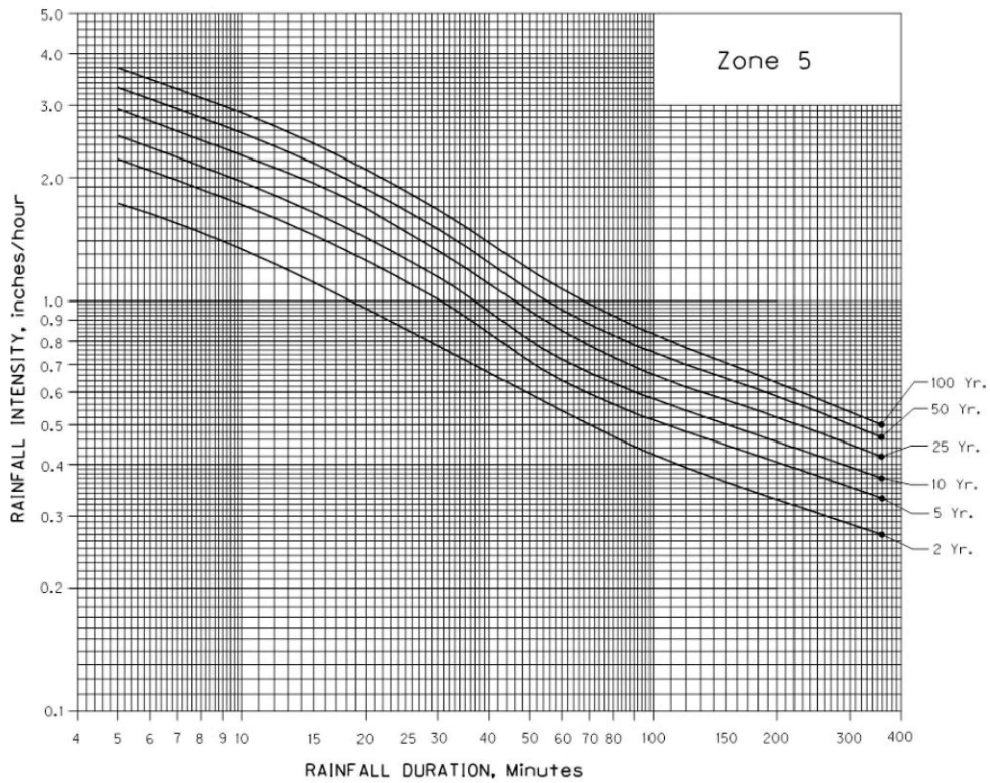
REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 01/18/1983	REVISION DATE: 02/21/2023	SCALE: N.T.S	SHEET: 1 OF 3
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RAINFALL INTENSITY - DURATION - RECURRENCE INTERVAL CURVES



RAINFALL INTENSITY - DURATION - RECURRENCE INTERVAL CURVES



SOURCE:  
 1. OREGON DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION  
 HYDRAULICS DESIGN MANUAL, 2014.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

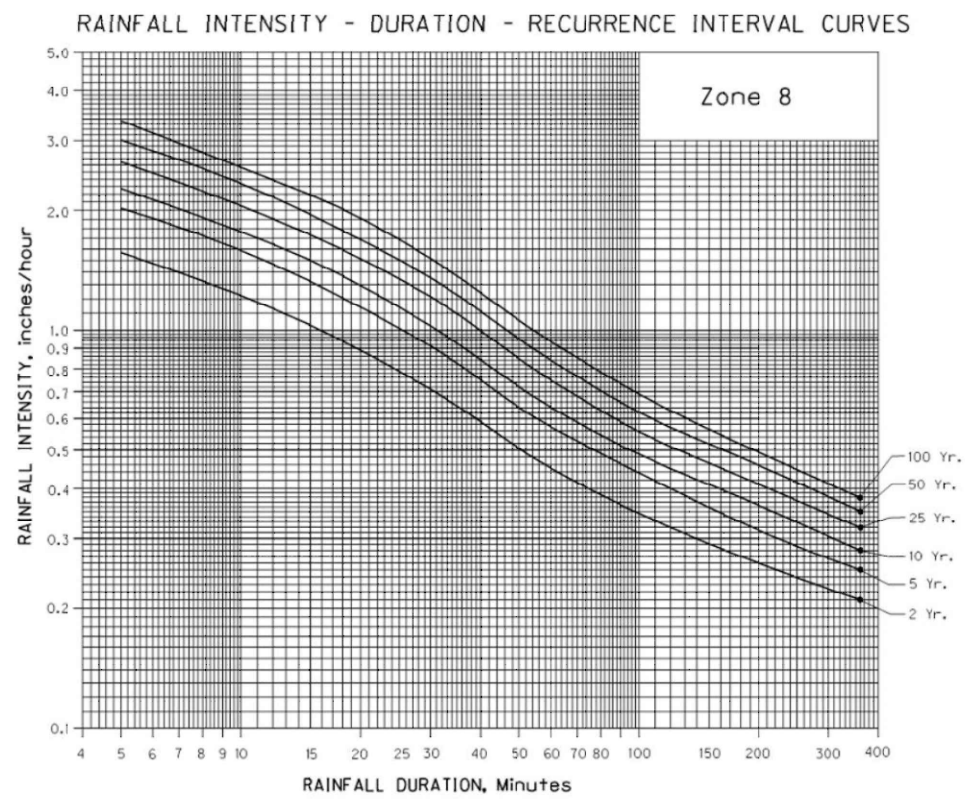
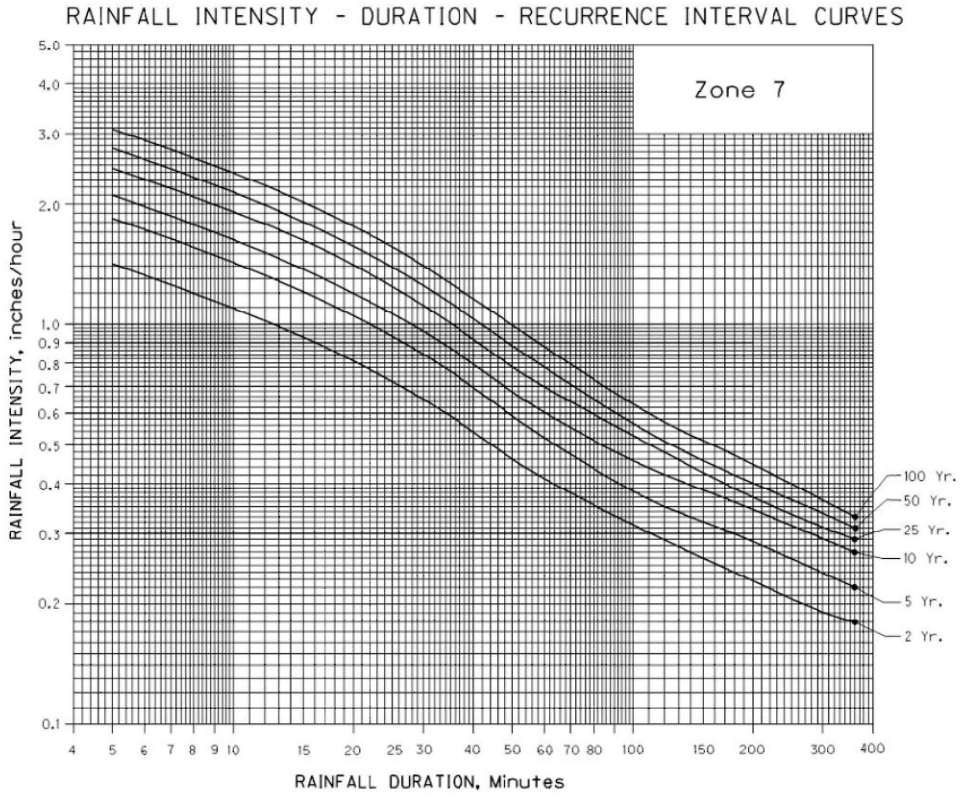


RAINFALL  
 INTENSITY-DURATION  
 CURVES: ZONES 3 AND 5


REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 01/18/1983	REVISION DATE: 02/21/2023	SCALE: N.T.S	SHEET: 2 OF 3
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SOURCE:  
 1. OREGON DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION  
 HYDRAULICS DESIGN MANUAL, 2014.



**Marion County**

**MARION COUNTY DEPARTMENT OF PUBLIC WORKS**

**RAINFALL INTENSITY-DURATION CURVES: ZONES 7 AND 8**

CREATION DATE:	REVISION DATE:	SCALE:	SHEET:
01/18/1983	02/21/2023	N.T.S	3 of 3

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

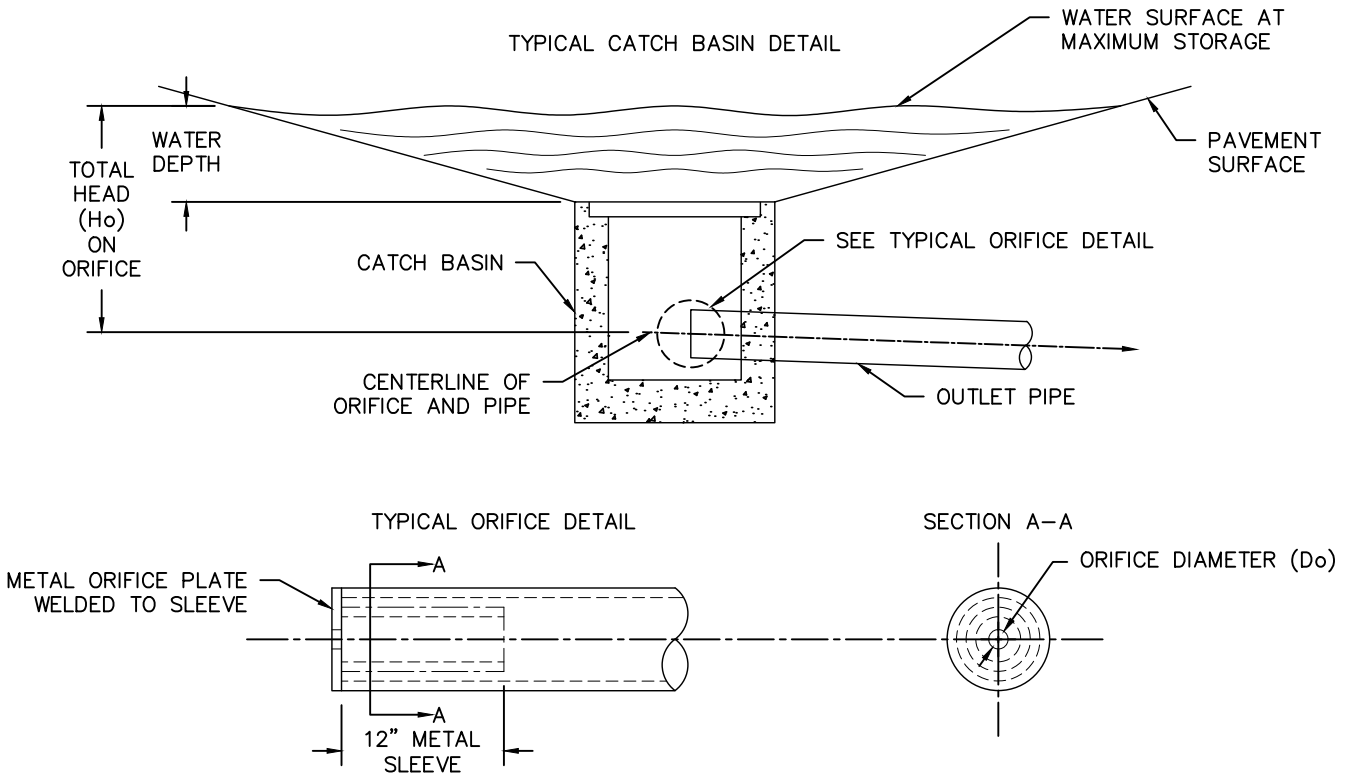


FILE: G:\ENGINEERING\LDENG&PERMITS\SHARED\ENGINEERING\DETAILS\ENGINEERING STANDARD DETAILS\STORM WATER DETENTION 5 ACRES OR LESS.DWG PLOTTED: 2023/02/21 5:02 PM

AREAS OF DEVELOPED SITE (ACRES) SEE NOTE 1	ALLOWABLE OUTFLOW (CUBIC FEET PER SECOND)	ORIFICE DIAMETER (INCHES) SEE NOTE 2	VOLUME OF WATER TO BE STORED (CUBIC FEET)	WEATER DEPTH OVER INLET GRATE (FEET) SEE NOTE 3	WATER STORAGE AREA (SQUARE FEET) SEE NOTE 3
0.5	0.10	1 11/16	780	0.5	4,690
1.0	0.20	2 3/8	1,560	0.5	9,380
1.5	0.30	2 7/8	2,350	0.5	14,070
2.0	0.40	3 5/16	3,130	0.5	18,760
2.5	0.50	3 11/16	3,910	0.5	23,450
3.0	0.60	4	4,690	0.5	28,150
3.5	0.70	4 3/8	5,470	0.5	32,830
4.0	0.80	4 11/16	6,250	0.5	37,520
4.5	0.90	4 15/16	7,040	0.5	42,220
5.0	1.00	5 3/16	7,820	0.5	46,910

**NOTES:**

1. FOR AREAS LESS THAN 0.5 ACRE, DETENTION IS NOT REQUIRED. FOR AREAS GREATER THAN 5.0 ACRES, THE DETENTION SYSTEM MUST BE DESIGNED ON A SITE-SPECIFIC BASIS WITH AN ALLOWABLE OUTFLOW BASED ON A 5-YEAR STORM WITH A RUNOFF FACTOR OF 0.20 AND STORAGE FOR A 10-YEAR STORM WITH A RUNOFF FACTOR OF 0.90.
2. ORIFICE DIAMETER (Do) IS BASED ON THE ALLOWABLE FLOW (Qo) AND AN ASSUMED TOTAL HEAD (Ho) ON THE ORIFICE OF 2.00 FEET (SEE TYPICAL DETAILS). IF THE TOTAL HEAD IS DIFFERENT, THE DIAMETER MUST BE DETERMINED FROM THE GRAPH ON SHEET 2.
3. IF SITE CONDITIONS NECESSITATE THE USE OF A DIFFERENT WATER STORAGE AREA, THE WATER DEPTH MUST BE CALCULATED AND AN ORIFICE DIAMETER DETERMINED PER NOTE 2 ABOVE. IN MOST CASES, THE FOLLOWING FORMULA CAN BE USED FOR CALCULATING THE DEPTH:
  - 3.1. WATER DEPTH = 3 X VOLUME OF STORED WATER ÷ WATER STORAGE AREA
4. CATCH BASIN MAY BE ROUND, SQUARE, OR RECTANGULAR.



MARION COUNTY DEPARTMENT OF PUBLIC WORKS



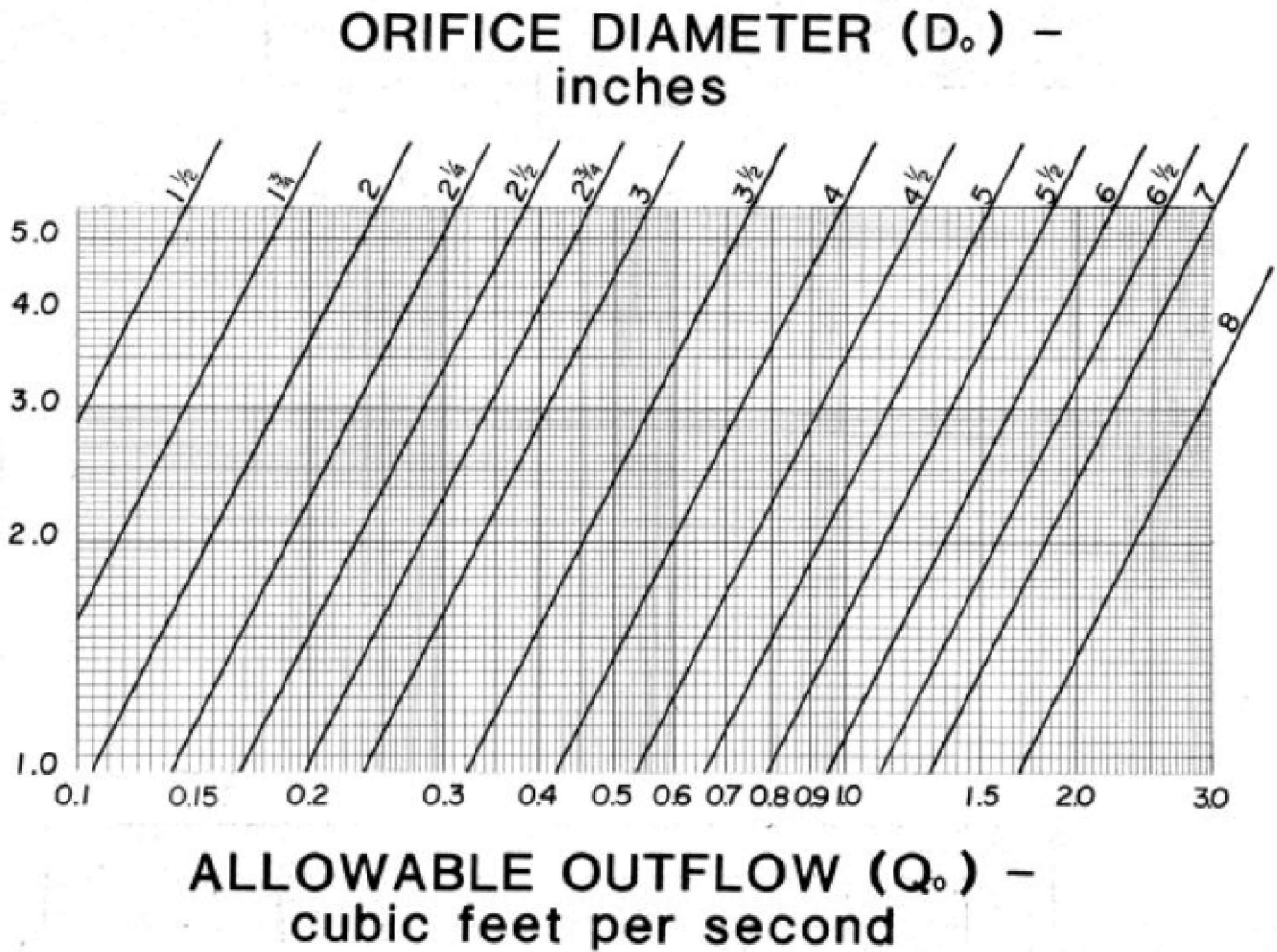
**STORM WATER DETENTION  
FOR SITES OF  
5 ACRES OR LESS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 10/10/1985	REVISION DATE: 02/21/2023	SCALE: N.T.S	SHEET: 1 OF 2
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**TOTAL HEAD ON ORIFICE ( $H_o$ ) -**  
feet



MARION COUNTY DEPARTMENT OF PUBLIC WORKS

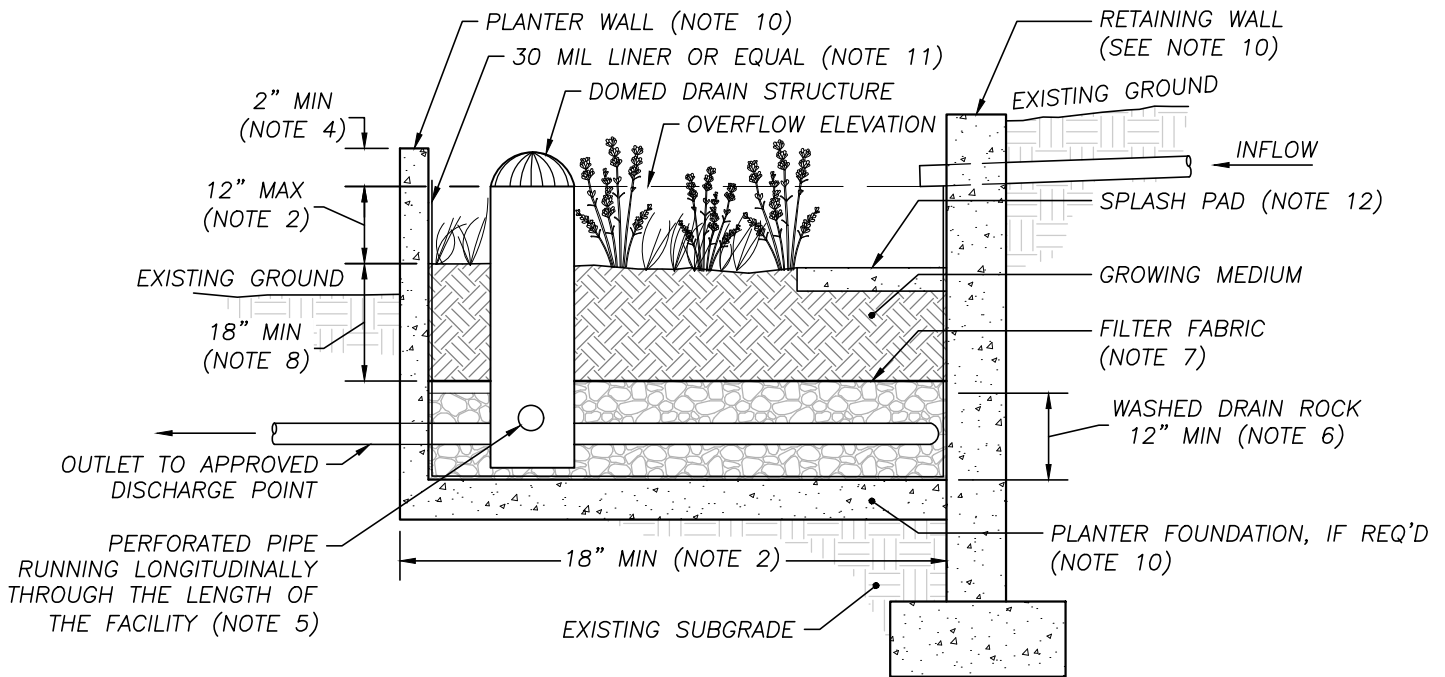


**STORM WATER DETENTION  
FOR SITES OF  
5 ACRES OR LESS**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 10/10/1985	REVISION DATE: 02/17/2023	SCALE: N.T.S	SHEET: 2 OF 2
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FILE: G:\ENGINEERING\PROJECTCENTRAL\PROJECTS\_NON-CIP\STORMWATERSTANDARDSUPDATE\CAD\DRAWING\STORMWATER\_STANDARD\_DETAILS.DWG PLOTTED: 2022/06/08 1:45 PM



**GENERAL NOTES**

1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO AND DURING.
2. DIMENSIONS:
  - WIDTH: 18" MINIMUM
  - DEPTH OF PLANTER (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
  - SLOPE OF PLANTER: 0.5% OR LESS
3. SETBACKS:
  - PLANTERS MUST BE MINIMUM OF 5 FEET FROM PROPERTY LINE.
4. OVERFLOW:
  - INLET ELEVATION MUST ALLOW FOR 2" OF FREEBOARD, MINIMUM.
  - PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
  - SIZE OVERFLOW FOR THE 50-YEAR DESIGN STORM. IDENTIFY OVERFLOW ROUTE IN THE STORMWATER MANAGEMENT PLAN.
5. PIPING:
  - PERFORATED UNDERDRAIN PIPING: SHALL BE ABS SCH. 40, DUCTILE IRON, OR PVC SCH.40, 6" MINIMUM DIAMETER. PVC NOT ALLOWED ABOVE GROUND.
6. DRAIN ROCK:
  - SIZE FOR FLOW-THROUGH PLANTER: 1 1/2" - 3/4" WASHED
  - DEPTH: 12" MINIMUM
7. SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM SHALL BE WITH FILTER FABRIC.
8. GROWING MEDIUM:
  - DEPTH: 18" MINIMUM
  - FACILITY SURFACE AREA MAY BE REDUCED BY 20% WHEN GROWING MEDIA DEPTH IS INCREASED TO 30" OR MORE.
9. VEGETATION: FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX H.
10. PLANTER FOUNDATION AND WALLS:
  - MATERIALS SHALL BE 4" REINFORCED CONCRETE, OR OTHER DURABLE MATERIAL.
  - CONCRETE WALLS SHALL BE INCLUDED ON FOUNDATION PLANS.
  - INSTALL INVERTED CURB AS NEEDED BETWEEN PLANTER AND ROAD SUBGRADE.
  - WALL HEIGHTS GREATER THAN 24" ABOVE GRADE REQUIRE HANDRAIL.
11. WATERPROOF LINER (IF REQUIRED):
  - LINER SHALL BE 30 MIL PVC OR EQUIVALENT, FOR FLOW THROUGH FACILITIES.
  - A WATERPROOF LINER IS NOT REQUIRED IF THE FOUNDATION OR WALL MATERIAL IS WATERPROOF REINFORCED CONCRETE OR APPROVED EQUAL.
12. INSTALL SPLASH PAD TO TRANSITION FROM INLET TO GROWING MEDIUM. SEE DETAIL 007

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

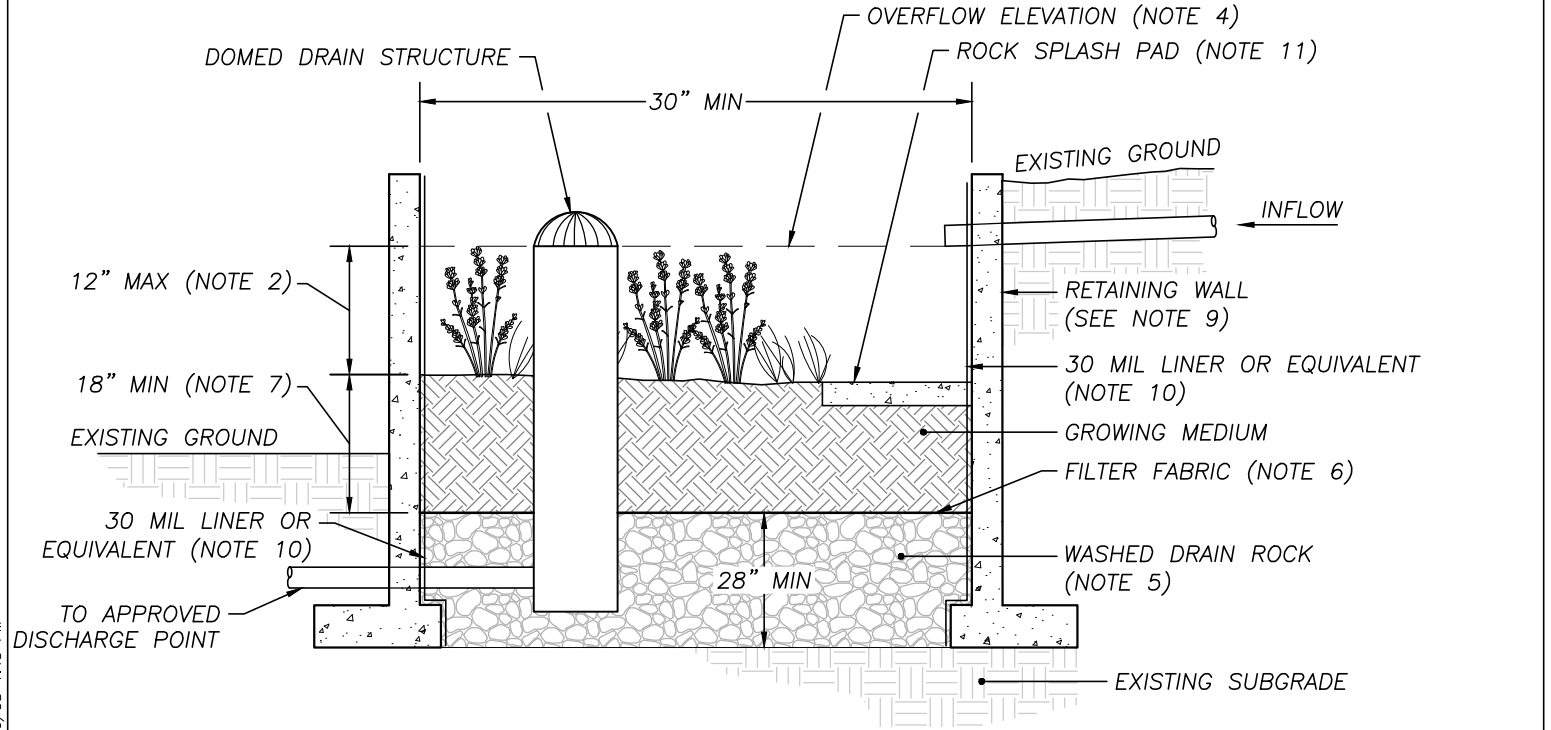


**TREATMENT PLANTER BOX**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 00/00/0000	REVISION DATE: 00/00/0000	SCALE: N.T.S	SHEET: 001
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FILE: G:\ENGINEERING\PROJECTCENTRAL\PROJECTS\_NON-CIP\STORMWATERSTANDARDUPDATE\CAD\DRAWING\STORMWATER\_STANDARD\_DETAILS.DWG PLOTTED: 2022/06/08 1:45 PM



**GENERAL NOTES**

1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. DIMENSIONS:
  - WIDTH: 30" MINIMUM
  - DEPTH OF PLANTER (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
  - SLOPE OF PLANTER: 0.5% OR LESS
3. SETBACKS:
  - PLANTERS MUST BE MINIMUM OF 5 FEET FROM PROPERTY LINE.
4. OVERFLOW:
  - OVERFLOW ELEVATION MUST ALLOW FOR 12" OF FREEBOARD, MINIMUM.
  - SIZE OVERFLOW FOR THE 50-YEAR DESIGN STORM. IDENTIFY OVERFLOW ROUTE IN THE STORMWATER MANAGEMENT PLAN.
5. DRAIN ROCK:
  - SIZE: 1 1/2" - 3/4" WASHED
  - DEPTH: 28" MINIMUM
6. SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM SHALL BE WITH FILTER FABRIC.
7. GROWING MEDIUM:
  - DEPTH: 18" MINIMUM
8. VEGETATION: FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX H.
9. PLANTER WALLS:
  - MATERIALS SHALL BE CONCRETE OR OTHER DURABLE MATERIAL.
  - CONCRETE WALLS SHALL BE INCLUDED ON FOUNDATION PLANS.
  - INSTALL INVERTED CURB AS NEEDED BETWEEN PLANTERS AND ROAD SUBGRADE.
  - WALL HEIGHTS GREATER THAN 24" ABOVE GRADE REQUIRE HANDRAIL.
10. WATERPROOF LINER:
  - LINER SHALL BE 30 MIL PVC OR EQUIVALENT.
  - A WATERPROOF LINER IS NOT REQUIRED IF THE WALL MATERIAL IS WATERPROOF REINFORCED CONCRETE OR APPROVED EQUAL.
11. INSTALL SPLASH PAD TO TRANSITION FROM INLET TO GROWING MEDIUM. SEE DETAIL 007

**MARION COUNTY DEPARTMENT OF PUBLIC WORKS**



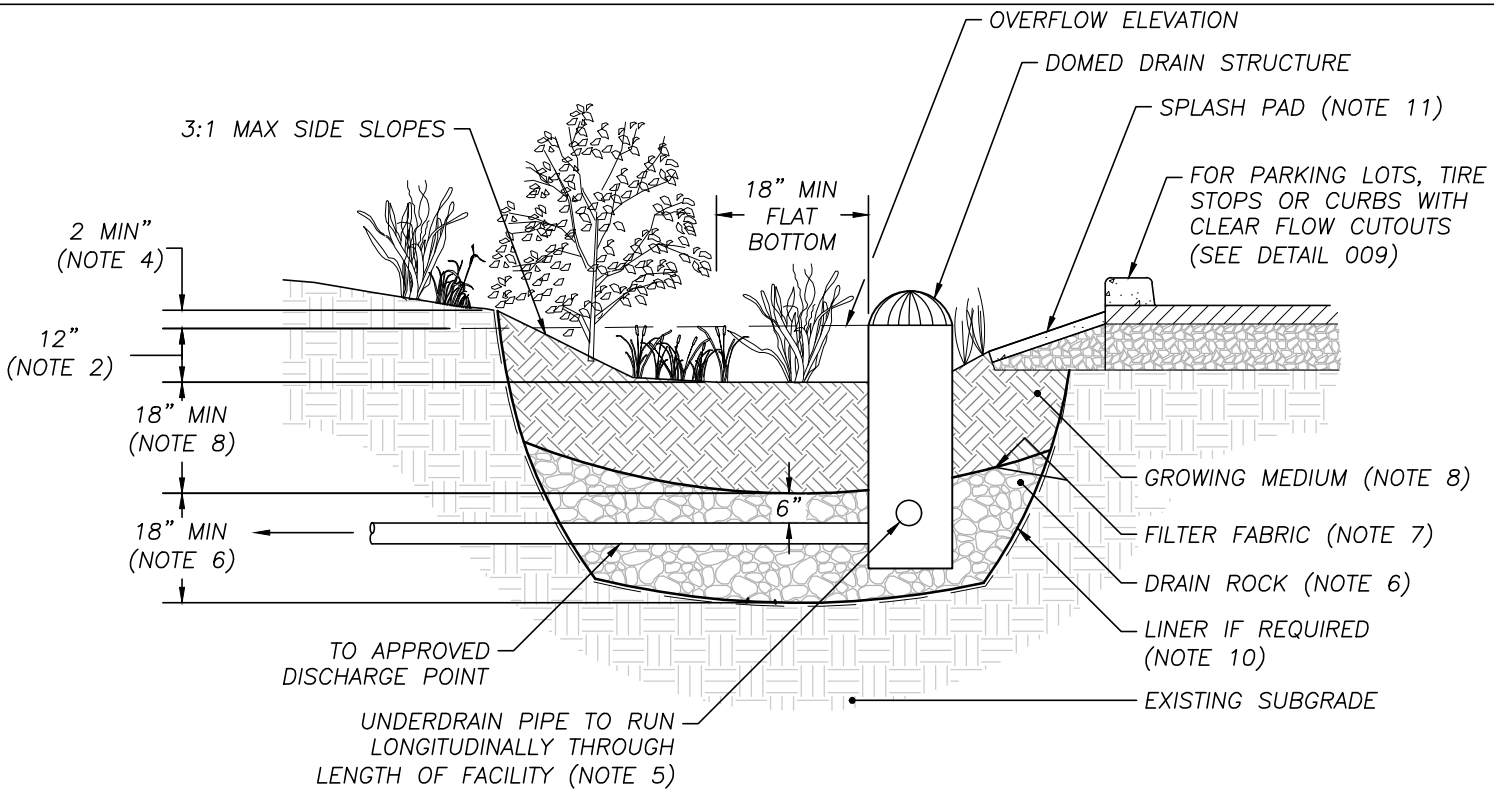
**Marion County**

## INFILTRATION PLANTER BOX

DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 00/00/0000	REVISION DATE: 00/00/0000	SCALE: N.T.S	SHEET: 002
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FILE: G:\ENGINEERING\PROJECTCENTRAL\PROJECTS\_NON-CIP\STORMWATERSTANDARDSUPDATE\CAD\DRAWING\STORMWATER\_STANDARD\_DETAILS.DWG PLOTTED: 2022/06/08 1:45 PM



**GENERAL NOTES**

1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, AND DURING CONSTRUCTION. UNLESS REQUIRED BY SITE CONDITIONS, UNLINED RAIN GARDENS ARE PREFERRED TO MAXIMIZE ONSITE INFILTRATION.
2. DIMENSIONS:
  - DEPTH OF BASIN (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
  - FLAT BOTTOM WIDTH: 18" MINIMUM
  - SIDE SLOPES OF BASIN: 3:1 MAXIMUM
  - SLOPE OF RAIN GARDEN: 0.5% OR LESS
3. SETBACKS:
  - FILTRATION RAIN GARDEN MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES UNLESS APPROVED BY BUILDING OFFICIAL.
4. OVERFLOW:
  - OVERFLOW REQUIRED. INLET ELEVATION MUST ALLOW FOR 2" OF FREEBOARD, MINIMUM.
  - PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
  - SIZE OVERFLOW FOR THE 50-YEAR DESIGN STORM. IDENTIFY OVERFLOW ROUTE IN THE STORMWATER MANAGEMENT PLAN.
5. PIPING:
  - PERFORATED UNDERDRAIN PIPING: SHALL BE ABS SCH. 40, DUCTILE IRON, OR PVC SCH.40. MINIMUM DIAMETER IS 6".
6. DRAIN ROCK:
  - SIZE: 1 1/2" to 3/4"-0 WASHED
  - DEPTH: 18" MINIMUM
7. SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM SHALL BE WITH FILTER FABRIC.
8. GROWING MEDIUM:
  - DEPTH: 18" MINIMUM
  - FACILITY SURFACE AREA MAY BE REDUCED BY 20% WHEN GROWING MEDIA DEPTH IS INCREASED TO 30" OR MORE.
9. VEGETATION: FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX H.
10. WATERPROOF LINER (IF REQUIRED): SHALL BE 30 MIL PVC OR EQUIVALENT.
11. INSTALL SPLASH PAD TO TRANSITION FROM INLETS TO GROWING MEDIUM. SEE DETAIL 007.

MARION COUNTY DEPARTMENT OF PUBLIC WORKS



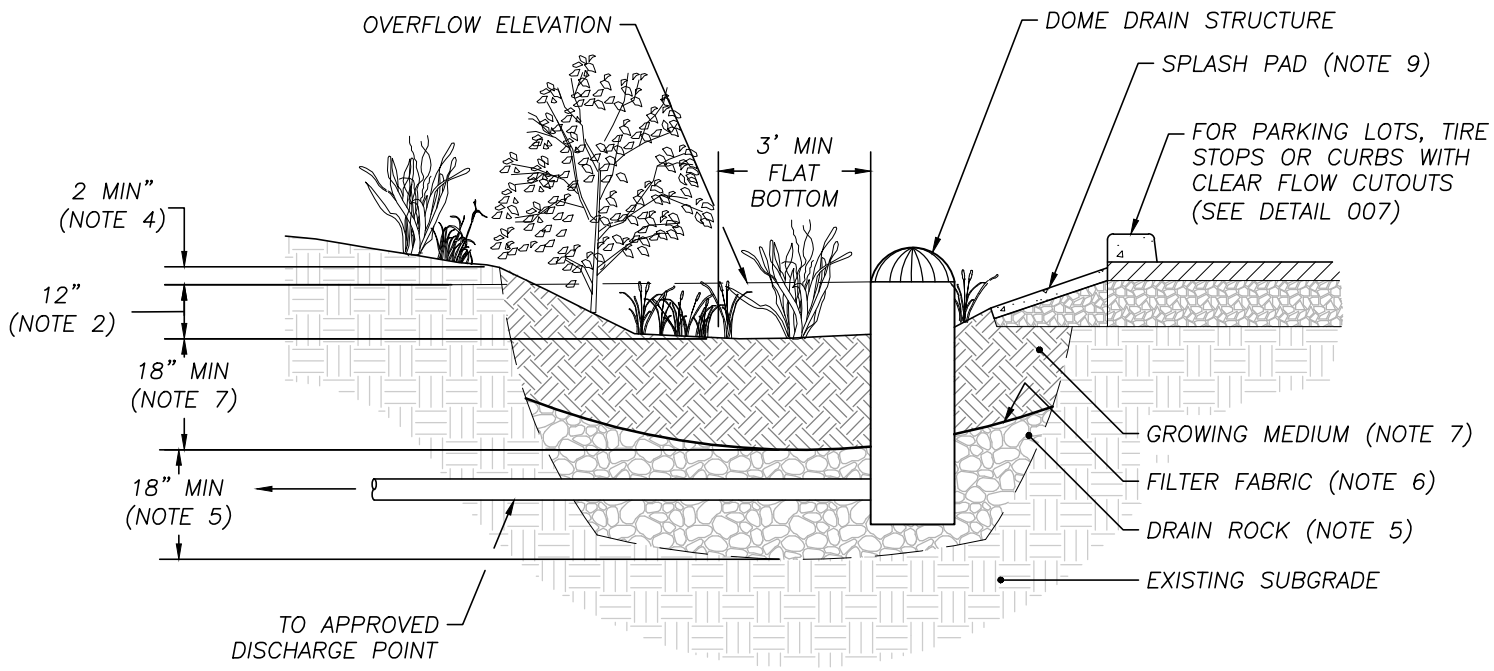
**TREATMENT RAIN GARDEN**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

CREATION DATE: 00/00/0000	REVISION DATE: 00/00/0000	SCALE: N.T.S	SHEET: 003
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**GENERAL NOTES**

1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. DIMENSIONS:
  - DEPTH OF BASIN (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
  - FLAT BOTTOM WIDTH: 3' MINIMUM
  - SIDE SLOPES OF BASIN: 3:1 MAXIMUM
  - SLOPE OF RAIN GARDEN: 0.5% OR LESS
3. SETBACKS:
  - INFILTRATION RAIN GARDEN MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES.
4. OVERFLOW:
  - SIZE OVERFLOW FOR THE 50-YEAR DESIGN STORM. IDENTIFY OVERFLOW ROUTE IN THE STORMWATER MANAGEMENT PLAN.
5. DRAIN ROCK:
  - SIZE: 1 1/2" TO 3/4"- WASHED
  - DEPTH: 18"
6. SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM SHALL BE WITH FILTER FABRIC.
7. GROWING MEDIUM:
  - DEPTH: 18" MINIMUM
8. VEGETATION: FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX H.
9. INSTALL SPLASH PAD TO TRANSITION FROM INLETS TO GROWING MEDIUM. SEE DETAIL 007

MARION COUNTY DEPARTMENT OF PUBLIC WORKS

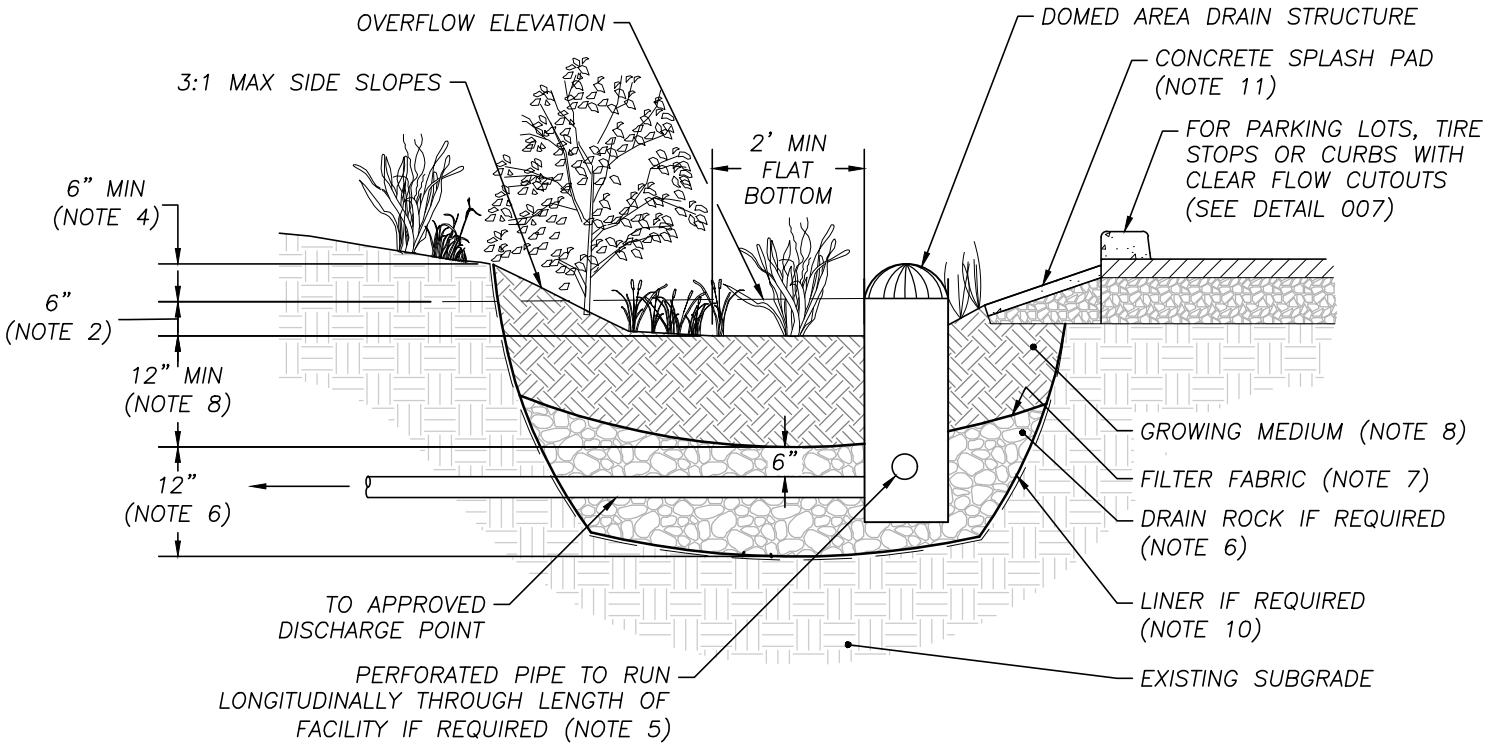


**INFILTRATION RAIN GARDEN**

REVISIONS		
DATE:	DESCRIPTION OF CHANGES:	BY:
	NONE	

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**GENERAL NOTES**

1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, AND DURING CONSTRUCTION. UNLESS REQUIRED BY SITE CONDITIONS, UNLINED SWALES ARE PREFERRED TO ALLOW MAXIMUM INFILTRATION.
2. DIMENSIONS:
  - DEPTH OF SWALE (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 6"
  - LONGITUDINAL SLOPE OF SWALE: NO LESS THAN 0.3% AND NO MORE THAN 6.0%. INSTALL CHECK DAM IF OVER 4.0%. SEE NOTE 12.
  - FLAT BOTTOM WIDTH: 2' MINIMUM
  - SIDE SLOPES OF SWALE: 3:1 MAXIMUM
3. SETBACKS:
  - FILTRATION SWALES MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES UNLESS APPROVED BY BUILDING OFFICIAL.
4. OVERFLOW:
  - INLET ELEVATION MUST ALLOW FOR 6" OF FREEBOARD, MINIMUM.
  - PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
  - SIZE OVERFLOW FOR THE 50-YEAR DESIGN STORM. IDENTIFY OVERFLOW ROUTE IN THE STORMWATER MANAGEMENT PLAN.
5. PIPING:
  - PERFORATED UNDERDRAIN PIPING: SHALL BE ABS SCH. 40, DUCTILE IRON, OR PVC SCH.40. MINIMUM DIAMETER IS 6". PVC NOT ALLOWED ABOVE GROUND.
  - OVERFLOW PIPING: SHALL BE ABS SCH. 40, DUCTILE IRON, OR PVC SCH. 40 AND SHALL NOT BE PERFORATED. MINIMUM DIAMETER IS 6". PVC NOT ALLOWED ABOVE GROUND.
6. DRAIN ROCK (IF REQUIRED):
  - SIZE: 1 1/2" - 3/4" WASHED
  - DEPTH: 12"
7. SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM SHALL BE WITH FILTER FABRIC.
8. GROWING MEDIUM:
  - 12" MINIMUM
9. VEGETATION: FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX H.
10. WATERPROOF LINER (IF REQUIRED): SHALL BE 30 MIL PVC OR EQUIVALENT.
11. INSTALL SPLASH PAD TO TRANSITION FROM INLETS TO GROWING MEDIUM. SEE DETAIL 007
12. CHECK DAMS: SHALL BE REQUIRED FOR OVER 4% SLOPE, SHALL BE SPACED AT A MAXIMUM 2-FOOT ELEVATION INTERVALS. MAINTAIN 4 - 10 INCH DEEP ROCK CHECK DAMS AT DESIGN INTERVALS. INTERMEDIATE FLOW SPREADERS SHALL BE INSTALLED AT A MINIMUM 50-FT INTERVALS.

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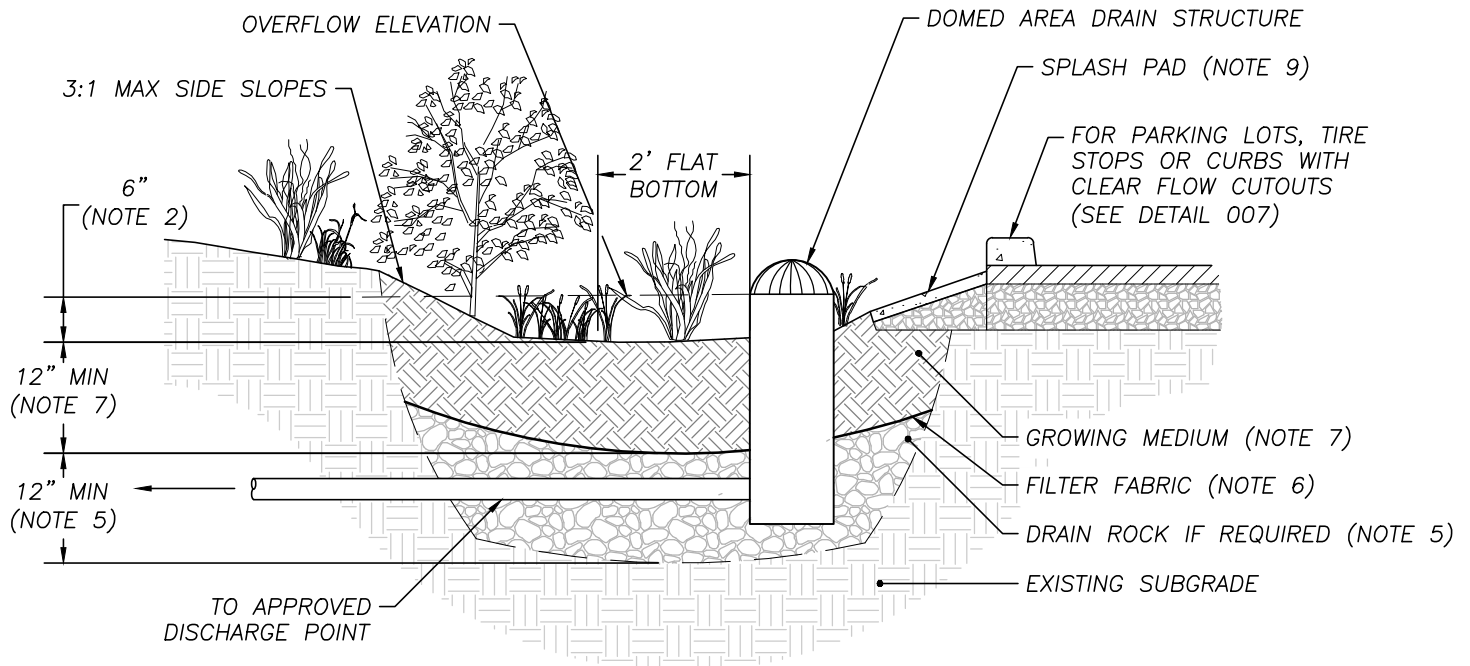
**TREATMENT BIOFILTRATION SWALE**

CREATION DATE:	REVISION DATE:	SCALE:	SHEET:
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**GENERAL NOTES**

1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. DIMENSIONS:
  - DEPTH OF SWALE (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 6"
  - LONGITUDINAL SLOPE OF SWALE: 0.5% TO 6.0%
  - FLAT BOTTOM WIDTH: 2'
  - SIDE SLOPES OF SWALE: 3:1 MAXIMUM
3. SETBACKS:
  - INFILTRATION VEGETATED SWALES MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES.
4. OVERFLOW:
  - SIZE OVERFLOW FOR THE 50-YEAR DESIGN STORM. IDENTIFY OVERFLOW ROUTE IN THE STORMWATER MANAGEMENT PLAN.
5. DRAIN ROCK (IF REQUIRED):
  - SIZE: 1 1/2" - 3/4" - WASHED
  - DEPTH: 12"
6. SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM SHALL BE WITH FILTER FABRIC.
7. GROWING MEDIUM:
  - 12" MINIMUM
8. VEGETATION: FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX H.
9. SPLASH PAD TO TRANSITION FROM INLETS TO GROWING MEDIUM. SEE DETAIL 007
10. CHECK DAMS: REQUIRED FOR OVER 4% SLOPE, SHALL BE SPACED AT A MAXIMUM 2-FOOT ELEVATION INTERVALS. MAINTAIN 4 - 10 INCH DEEP ROCK CHECK DAMS AT DESIGN INTERVALS. INTERMEDIATE FLOW SPREADERS SHALL BE INSTALLED AT A MINIMUM 50-FOOT INTERVALS.

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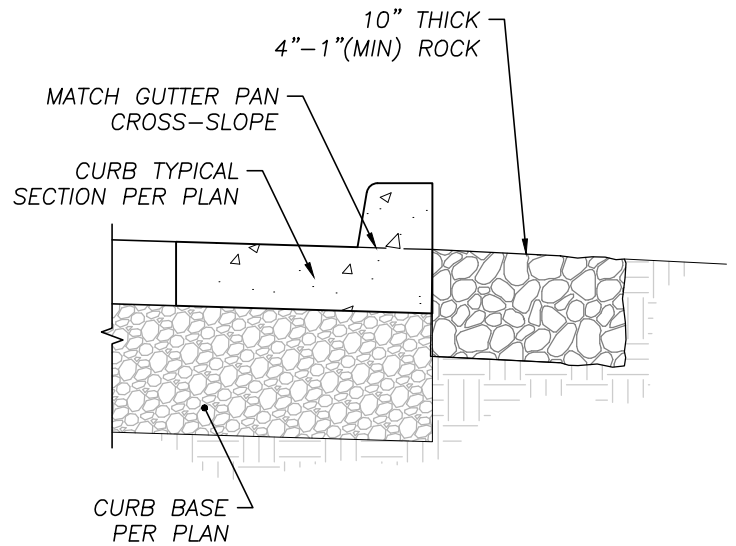
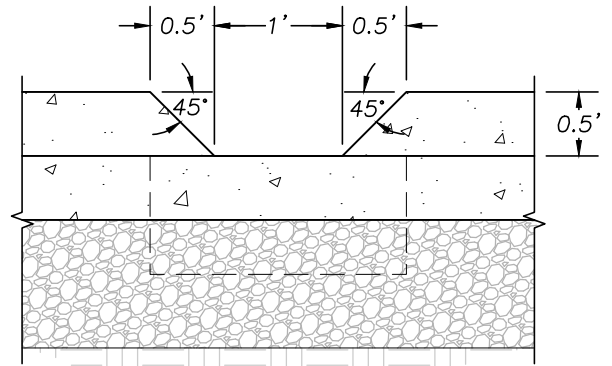
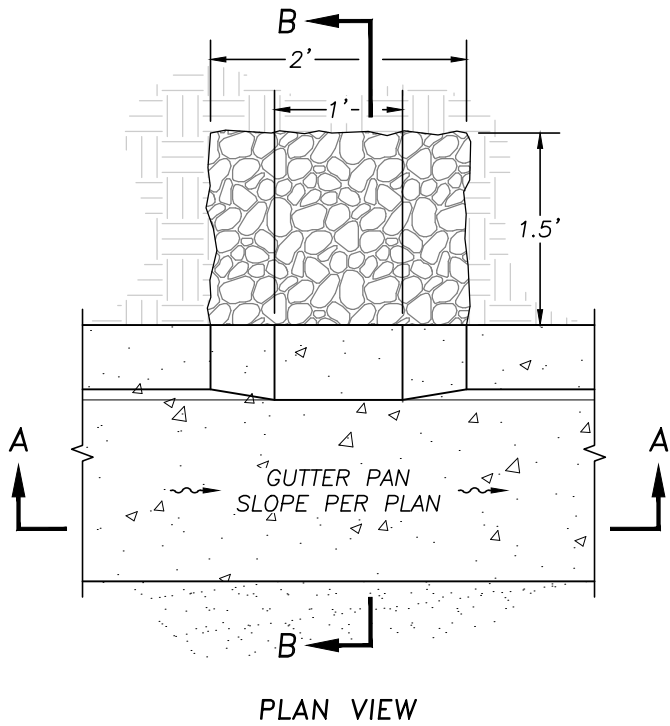


**INFILTRATION  
BIOFILTRATION SWALE**

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MARION COUNTY DEPARTMENT OF PUBLIC WORKS



# CURB CUT OPENING

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