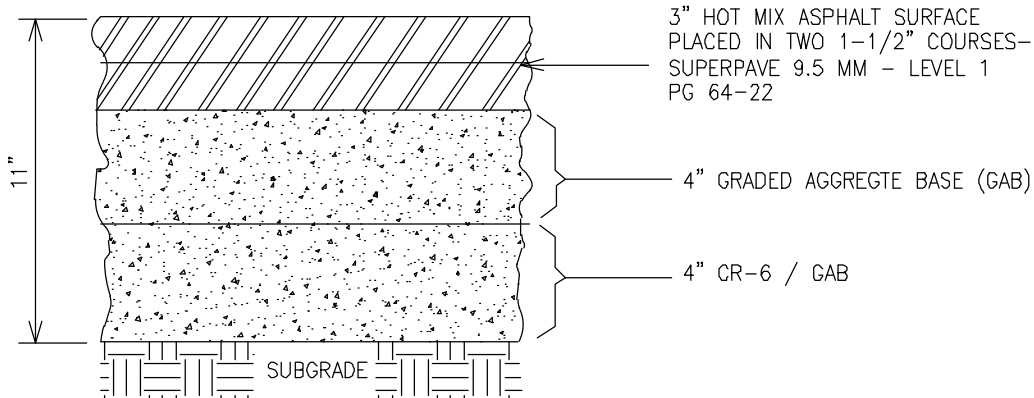


ROAD AND STREET STANDARD DETAIL INDEX

| PLATE NUMBER | TITLE | SIGNATURE DATE | SPEC REF# |
|--------------|--|----------------|---------------|
| R-1 | TYPICAL DEVELOPMENT PAVEMENT SECTION – PRIVATE ROADS | 09/28/2023 | 501, 504 |
| R-2A | TYPICAL SUBDIVISION PAVEMENT SECTION WIDTH \leq 30' CBR \geq 5 | 09/28/2023 | 501, 504 |
| R-2B | TYPICAL SUBDIVISION PAVEMENT SECTION WIDTH \leq 30' CBR \leq 5 | 09/28/2023 | 501, 504 |
| R-10 | 20' STREET ON 42' RIGHT-OF-WAY – PARKING BANNED | 09/28/2023 | ---- |
| R-11 | 22' STREET ON 44' RIGHT-OF-WAY – PARKING BANNED | 09/28/2023 | ---- |
| R-12 | 28' STREET ON 50' RIGHT-OF-WAY – PARKING ALLOWED (One Side) | 09/28/2023 | ---- |
| R-13 | 30' STREET ON 52' RIGHT-OF-WAY – PARKING ALLOWED (One Side) | 09/28/2023 | ---- |
| R-14 | CONCRETE ALLEYS | 09/28/2023 | 520 |
| R-14A | CONCRETE ALLEY DETAIL | 09/28/2023 | 520 |
| R-15 | TYPICAL DRIVEWAY ENTRANCE – NO CURB AND GUTTER ALONG ROAD | 09/28/2023 | 501, 504 |
| R-15A | TYPICAL DRIVEWAY ENTRANCE – APRON (SIDEWALK TO CURB DISTANCE VARIES) | 09/28/2023 | 520 |
| R-15B | TYPICAL DRIVEWAY ENTRANCE – (SIDEWALK ADJACENT TO CURB) | 09/28/2023 | 520 |
| R-17 | CONCRETE ALLEY JOINTS | 09/28/2023 | 520 |
| R-18 | ALLEY ENTRANCE | 09/28/2023 | 520 |
| R-19 | STANDARD 5 FOOT SIDEWALK | 09/28/2023 | 610 |
| R-20B | EXTRUDED CONCRETE (MOUNTABLE CURB) | 09/28/2023 | 609 |
| R-21 | CONCRETE COMBINATION (CURB AND GUTTER) | 09/28/2023 | 609 |
| R-22 | TYPICAL UNDERDRAIN (FOR PAVED STREETS) | 09/28/2023 | 306 |
| R-23 | CONCRETE VALLEY GUTTER (TRANSITION TO CURB AND GUTTER) | 09/28/2023 | 609, 307 |
| R-24 | CONCRETE CURB | 09/28/2023 | ---- |
| R-27 | TEMPORARY DEAD-END (BARRICADES) | 09/28/2023 | 612, 918 |
| R-28 | SERVICE STATION (ENTRANCE CHANNELIZATION) | 09/28/2023 | 520 |
| R-29 | SERVICE STATION ENTRANCE (CHANNELIZATION AT ROAD INTERSECTION) | 09/28/2023 | 520 |
| R-30 | PEDESTRIAN RAMP | 09/28/2023 | 520 |
| R-31 | CHANNELIZED COMMERCIAL ENTRANCE (AT ROAD INTERSECTION) | 09/28/2023 | 520 |
| R-32 | SINGLE COMMERCIAL ENTRANCE | 09/28/2023 | 520 |
| R-32A | RURAL COMMERCIAL ENTRANCE | 09/28/2023 | 501, 504, 303 |
| R-33 | VALLEY GUTTER (FOR 90° INTERSECTION) | 09/28/2023 | 520 |
| R-35 | MIN. SUBDIVISION REQUIREMENTS FOR ACCELERATION LANES (WIDENING TO PROPERTY LINES NOT REQUIRED) | 09/28/2023 | ---- |

| PLATE NUMBER | TITLE | SIGNATURE DATE | SPEC REF# |
|--------------|---|----------------|-----------|
| R-35A | MIN. SUBDIVISION REQUIREMENTS FOR ACCELERATION LANES (WIDENING TO PROPERTY LINES REQUIRED) | 09/28/2023 | ---- |
| R-36A | PEDESTRIAN RAMP FOR ACCELERATION LANES (MEDIAN AREA BETWEEN SIDEWALK AND CURB) | 09/28/2023 | ---- |
| R-36B | PEDESTRIAN RAMP ALTERNATE | 09/28/2023 | ---- |
| R-36C | DETECTABLE WARNINGS (FOR USE ON PEDESTRIAN RAMPS) | 09/28/2023 | ---- |
| R-36D | MEDIAN AND ISLAND (PEDESTRIAN PASSAGES) | 09/28/2023 | ---- |
| R-36E | PEDESTRIAN BUMP-OUT (PEDESTRIAN PASSAGES) | 09/28/2023 | ---- |
| R-37 | 7" VALLEY GUTTER (FOR PEDESTRIAN PARKING) | 09/28/2023 | 520 |
| R-38 | REPAVING TRENCH OPENINGS (FLEXABLE PAVING) | 09/28/2023 | 505 |
| R-39 | TYPICAL DETAIL (ADJUSTING UTILITY FRAME) | 09/28/2023 | 305, 508 |
| R-41 | PAVEMENT FAILURE REPAIRS | 09/28/2023 | 505 |
| R-42 | HOT MIX ASPHALT PAVING (CONCRETE PRACTICES) | 09/28/2023 | 504 |



NOTES :

GRADE AND ALIGNMENT TO CONFORM WITH BALTIMORE COUNTY MINIMUM DESIGN STANDARDS.

PAVING WIDTH TO CONFORM WITH PLATE R-S.

BALTIMORE COUNTY RESERVES THE RIGHT TO ENTER THE PROPERTY FOR THE PURPOSE OF TAKING "CORE BORINGS".

AFTER CONSTRUCTION, ROAD SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER REGISTERED IN MARYLAND THAT IT WAS BUILT IN ACCORDANCE WITH BALTIMORE COUNTY STANDARDS AND SPECIFICATIONS.



APPROVAL
D. Ingoshalder
DIRECTOR
Lisa K. Eisholtz
BUR. OF ENGINEERING/CONSTRUCTION
SEPTEMBER 28, 2023
DATE

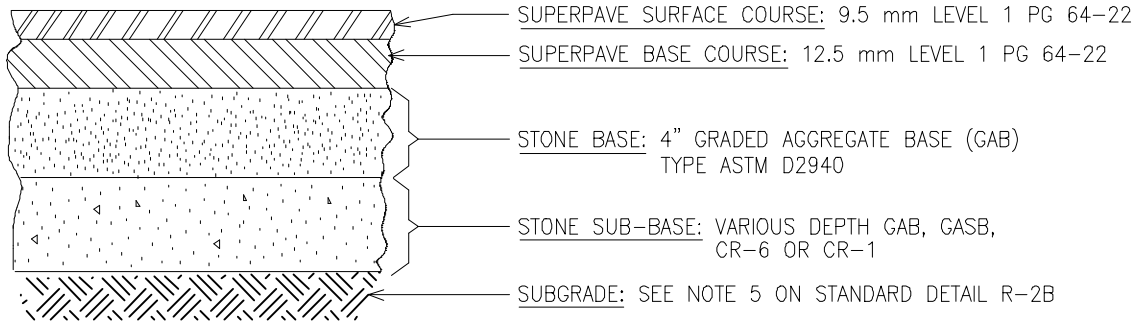
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROADS AND STREET DETAILS
TYPICAL DEVELOPMENT
PAVEMENT SECTION
PRIVATE ROADS

ISSUED: SEPTEMBER 2023

PLATE
R-1

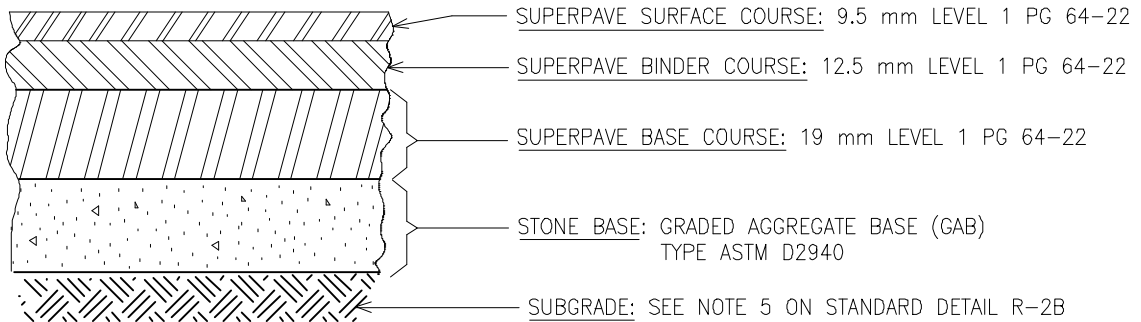
FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023

PAVING SECTION WITH STONE BASE



| SECTION | DESIGN CBR VALUE | COURSE THICKNESS, Inches | | |
|---------|------------------|--------------------------|-------------|-----------------------|
| | | Surface Course | Base Course | Stone Base & Sub-Base |
| A | 5 | 1.5" | 3.0" | 12.0" |
| B | 6 | 1.5" | 3.0" | 10.0" |
| C | 7 | 1.5" | 2.5" | 9.0" |
| D | 8 | 1.5" | 2.5" | 8.0" |
| E | ≥9 | 1.5" | 2.5" | 7.0" |

PAVING SECTION WITH 4" STONE BASE



| SECTION | DESIGN CBR VALUE | COURSE THICKNESS, Inches | | | |
|---------|------------------|--------------------------|---------------|-------------|------------|
| | | Surface Course | Binder Course | Base Course | Stone Base |
| A | 5 | 1.5" | 2.5" | 4"* | 4" |
| B | 6 | 1.5" | 2" | 4"* | 4" |
| C | 7 | 1.5" | 2" | 3" | 4" |
| D | 8 | 1.5" | 2" | 2.5" | 4" |
| E | ≥9 | 1.5" | 2" | 2" | 4" |

* 2 - 2" Lifts of 19 mm Superpave

REFER TO NOTES ON STANDARD DETAIL R-2B.



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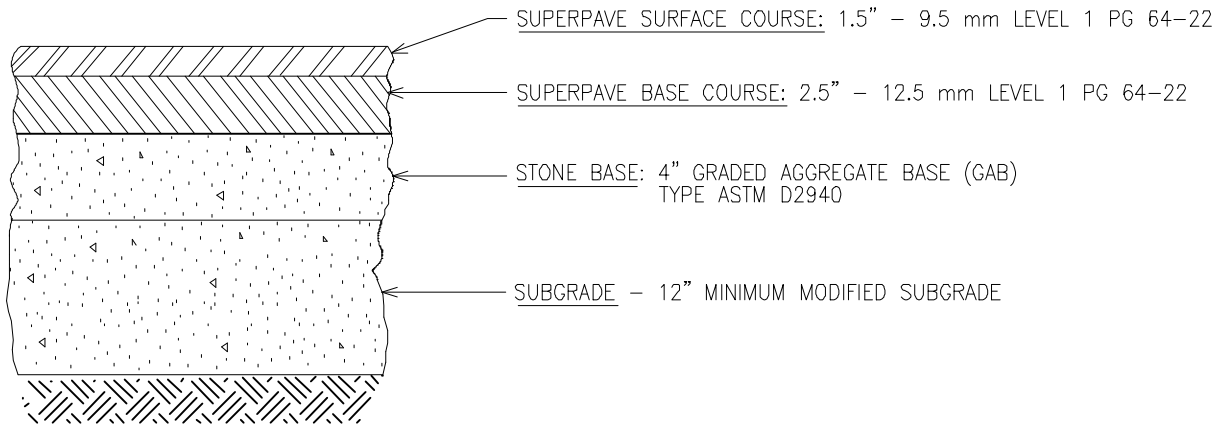
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROADS AND STREET DETAILS
TYPICAL SUBDIVISION
PAVEMENT SECTION WIDTH ≤ 30'
CBR ≥ 5

ISSUED: SEPTEMBER 2023

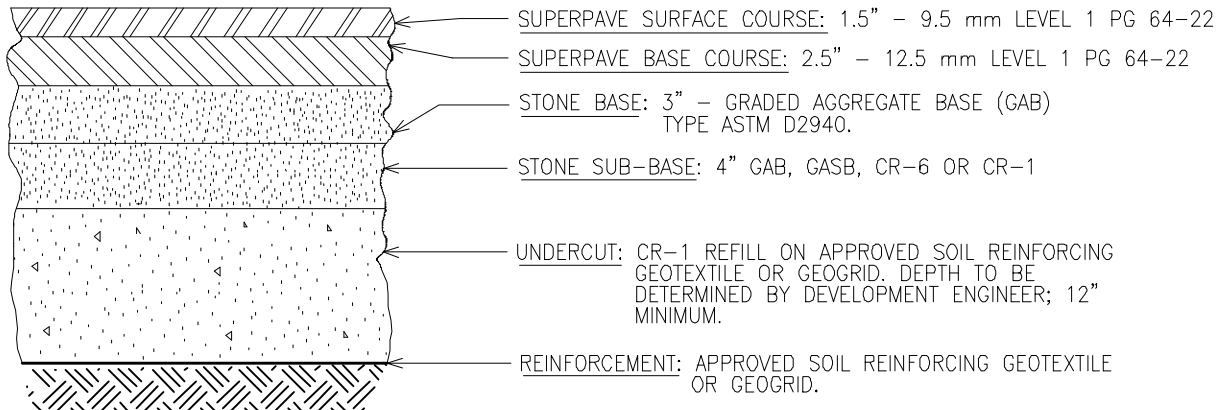
PLATE
R-2A

FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023

MODIFIED SUBGRADE WITH PORTLAND CEMENT OR LIME



UNDERCUT SUBGRADE



NOTES:

1. DEVELOPER IS RESPONSIBLE FOR CBR TESTING.
2. CBR'S WILL BE TAKEN EVERY 1,000 FEET (2 MINIMUM) AND FOR EVERY CHANGE IN SOIL COMPOSITION. CBR TESTING PER AASHTO T-193, LATEST EDITION.
3. THE LOWEST CBR VALUE WILL BE USED FOR ROAD SECTION DETERMINATION.
4. CBR LAB WORK AND RESULTS WILL BE SENT TO BALTIMORE COUNTY'S DIVISION OF CONSTRUCTION CONTRACTS ADMINISTRATION FOR REVIEW AND APPROVAL OF PAVING SECTION DURING THE REVIEW AND APPROVAL PROCESS PERFORMED BY BALTIMORE COUNTY'S DEPARTMENT OF PERMITS, APPROVALS AND INSPECTIONS.
5. SUBGRADES MUST BE STABLE AND APPROVED WITH PROOF ROLL BY BALTIMORE COUNTY INSPECTOR PRIOR TO PLACEMENT OF STONE BASE AND CURB & GUTTER POUR.
6. FOR SUBGRADES FAILING PROOF ROLL OR HAVING CBR'S LESS THAN 5 (FIVE), REFER TO MODIFIED AND/OR UNDERCUT SUBGRADE DETAILS ON THIS STANDARD DETAIL.
7. MODIFIED SUBGRADE MUST ATTAIN A MINIMUM CBR OF 20 (TWENTY).
8. UNDERDRAIN IS REQUIRED FOR ALL PAVING SECTIONS.

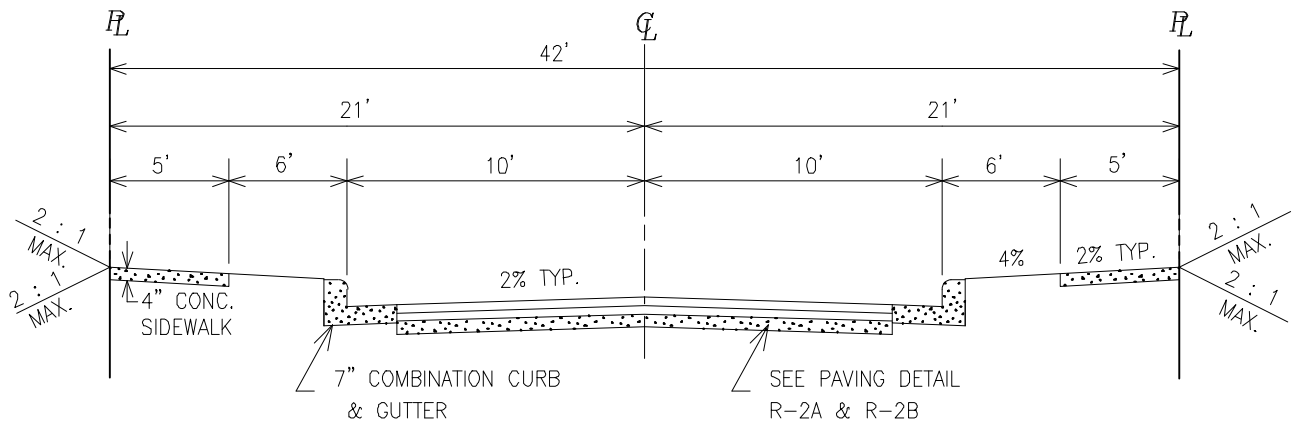


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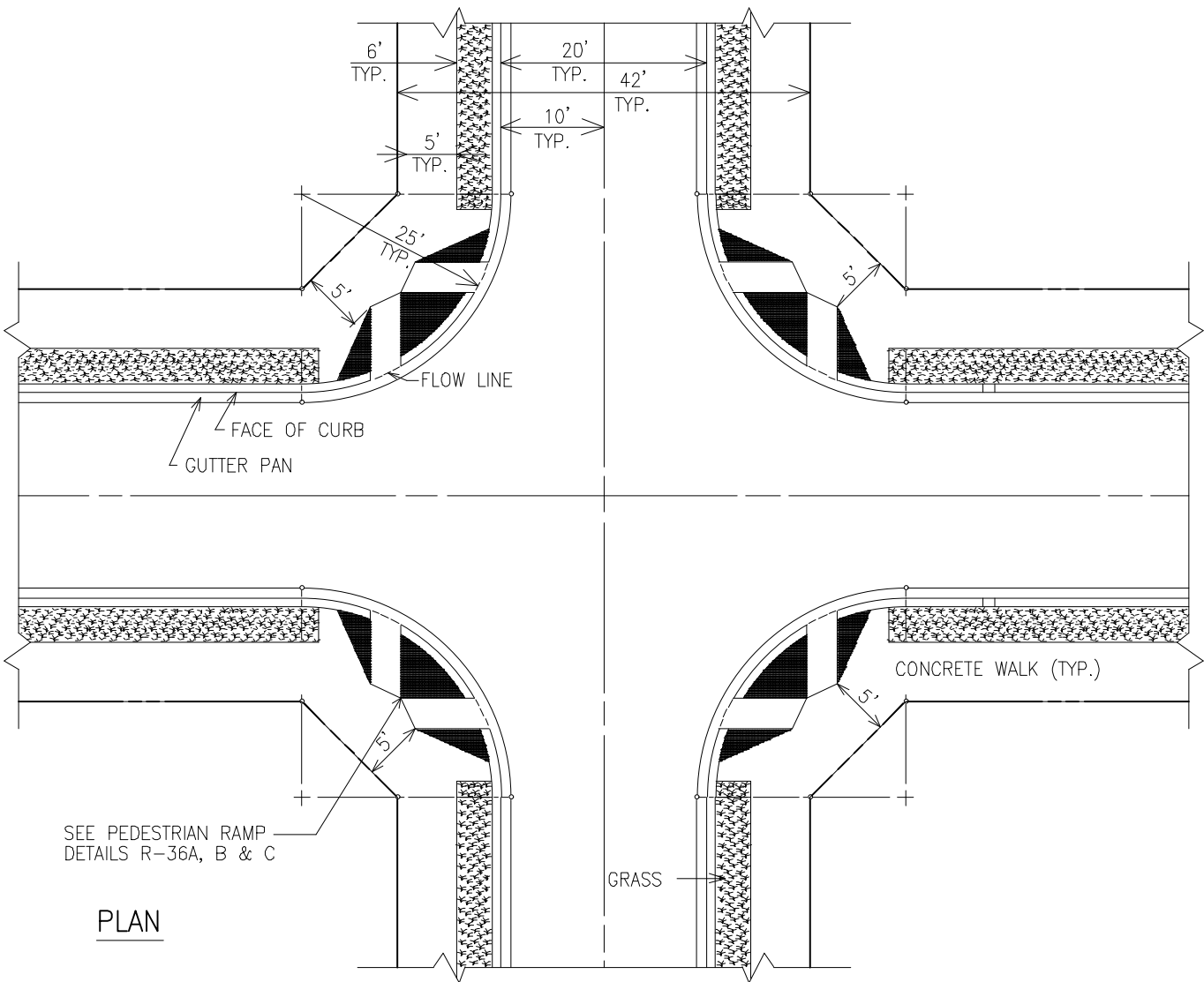
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROADS AND STREET DETAILS
TYPICAL SUBDIVISION
PAVEMENT SECTION WIDTH \leq 30'
CBR < 5

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PLATE
R-2B



TYPICAL SECTION

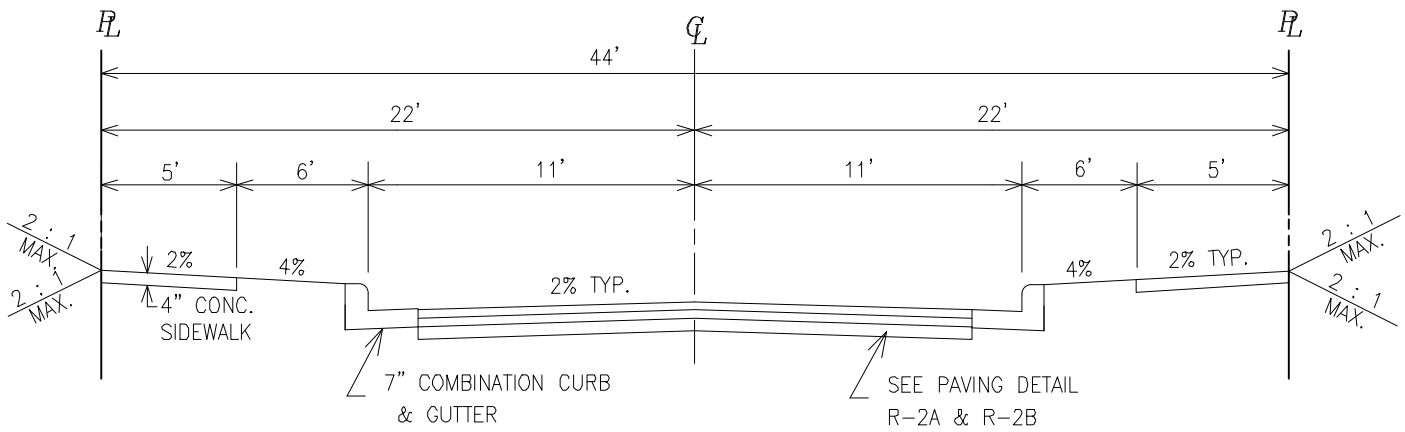


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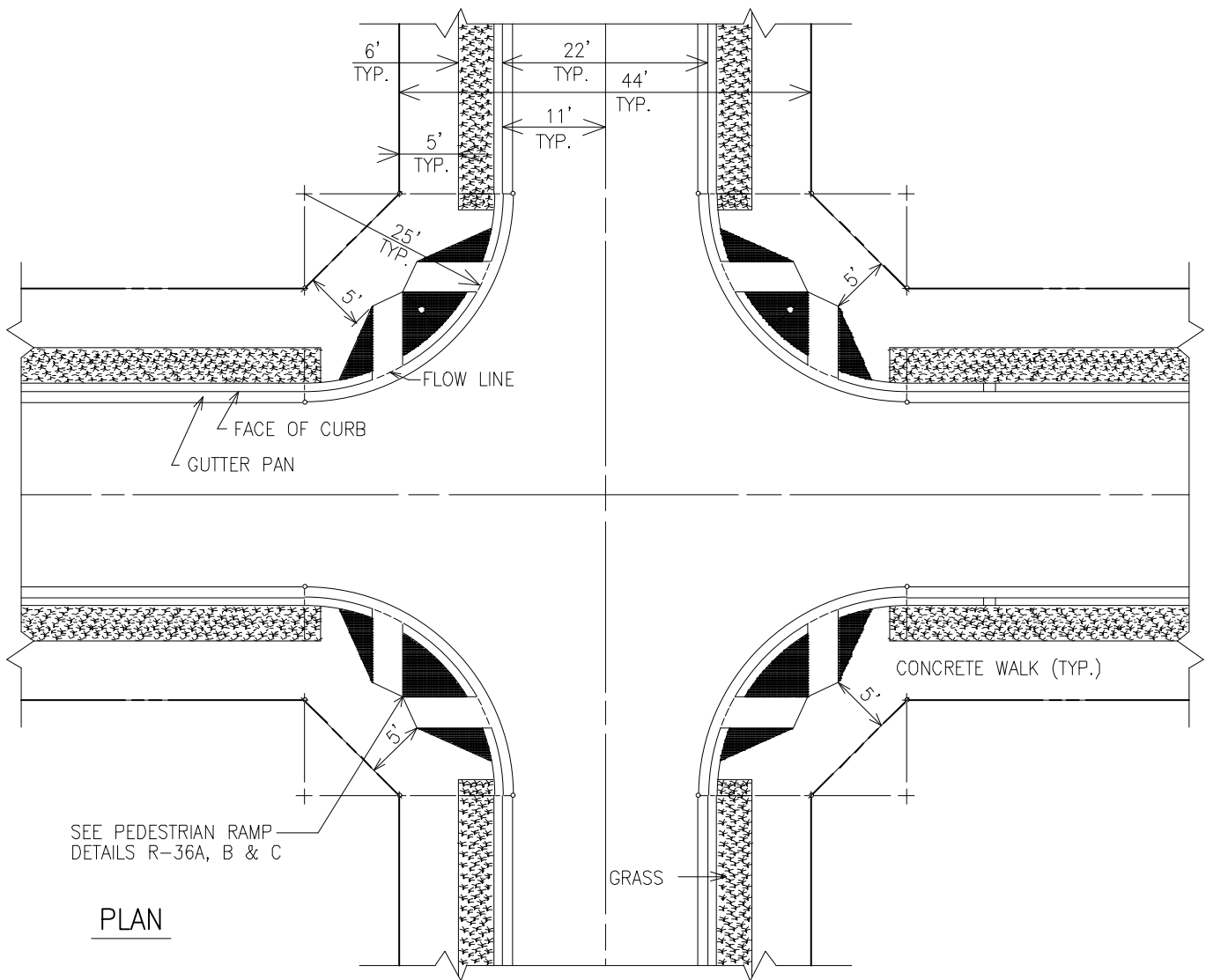
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROADS AND STREET DETAILS
 20' STREET ON 42' RIGHT-OF-WAY
 PARKING BANNED
 AVERAGE DAILY TRAFFIC = 0 TO 200

ISSUED: SEPTEMBER 2023
 PLATE
 R-10

FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023



TYPICAL SECTION



PLAN

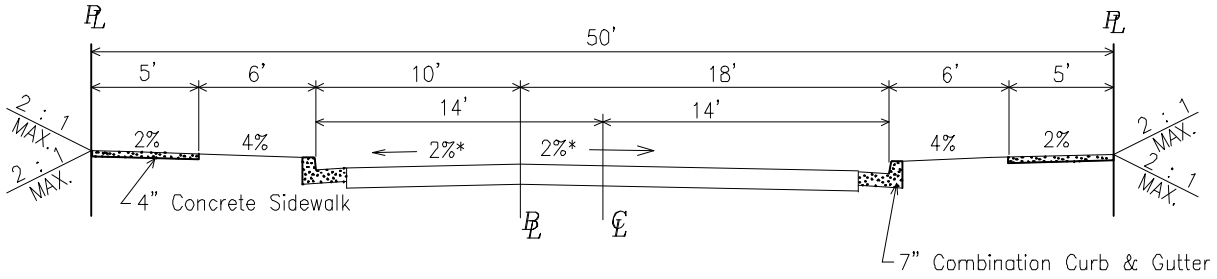


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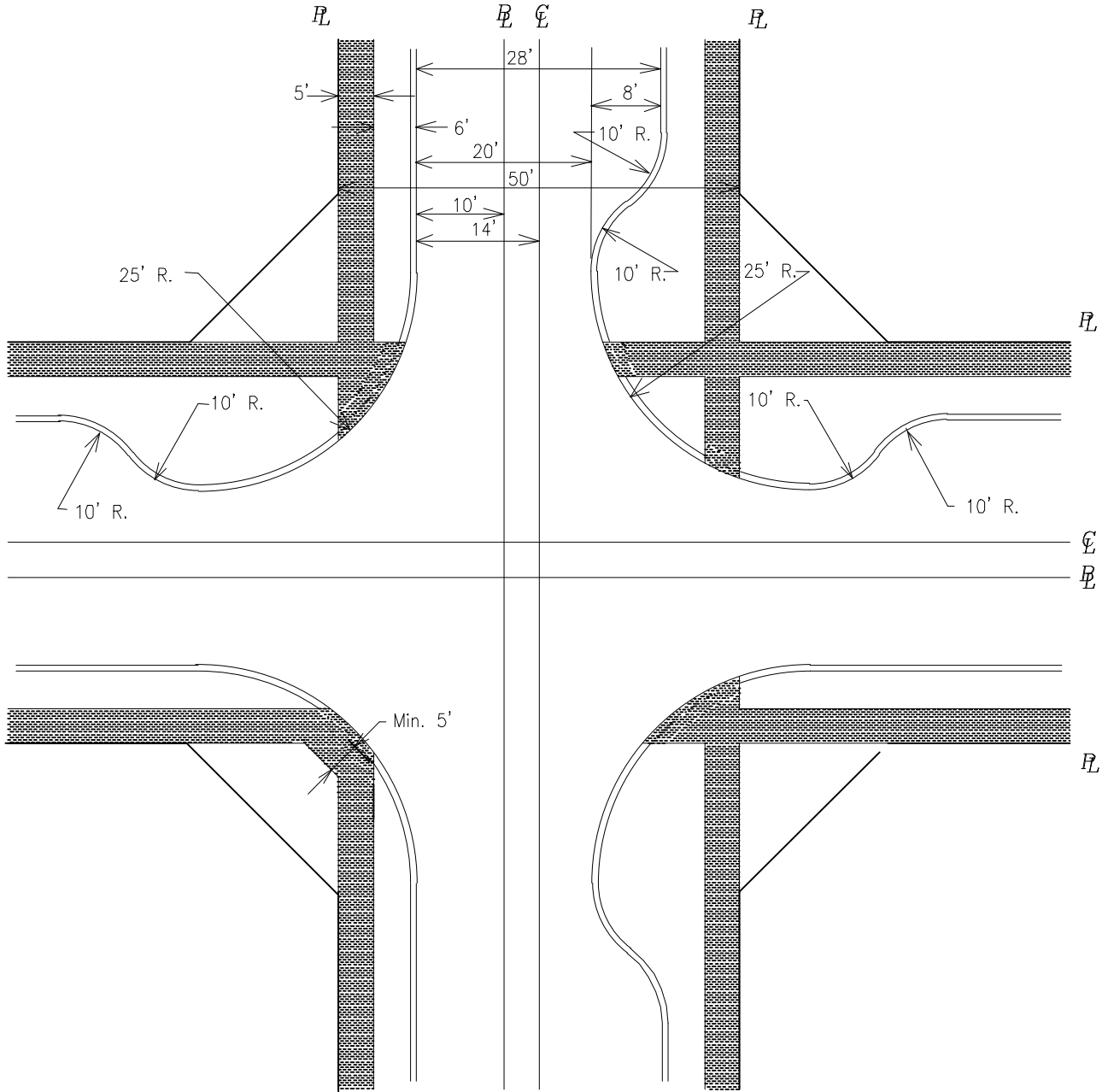
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROADS AND STREET DETAILS
 22' STREET ON 44' RIGHT-OF-WAY
 PARKING BANNED
 AVERAGE DAILY TRAFFIC = 200 TO 1000

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PLATE
 R-11



* 2% Slope from B

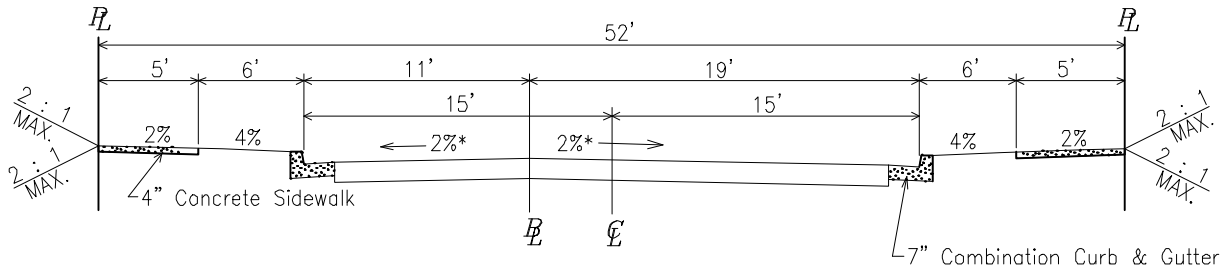


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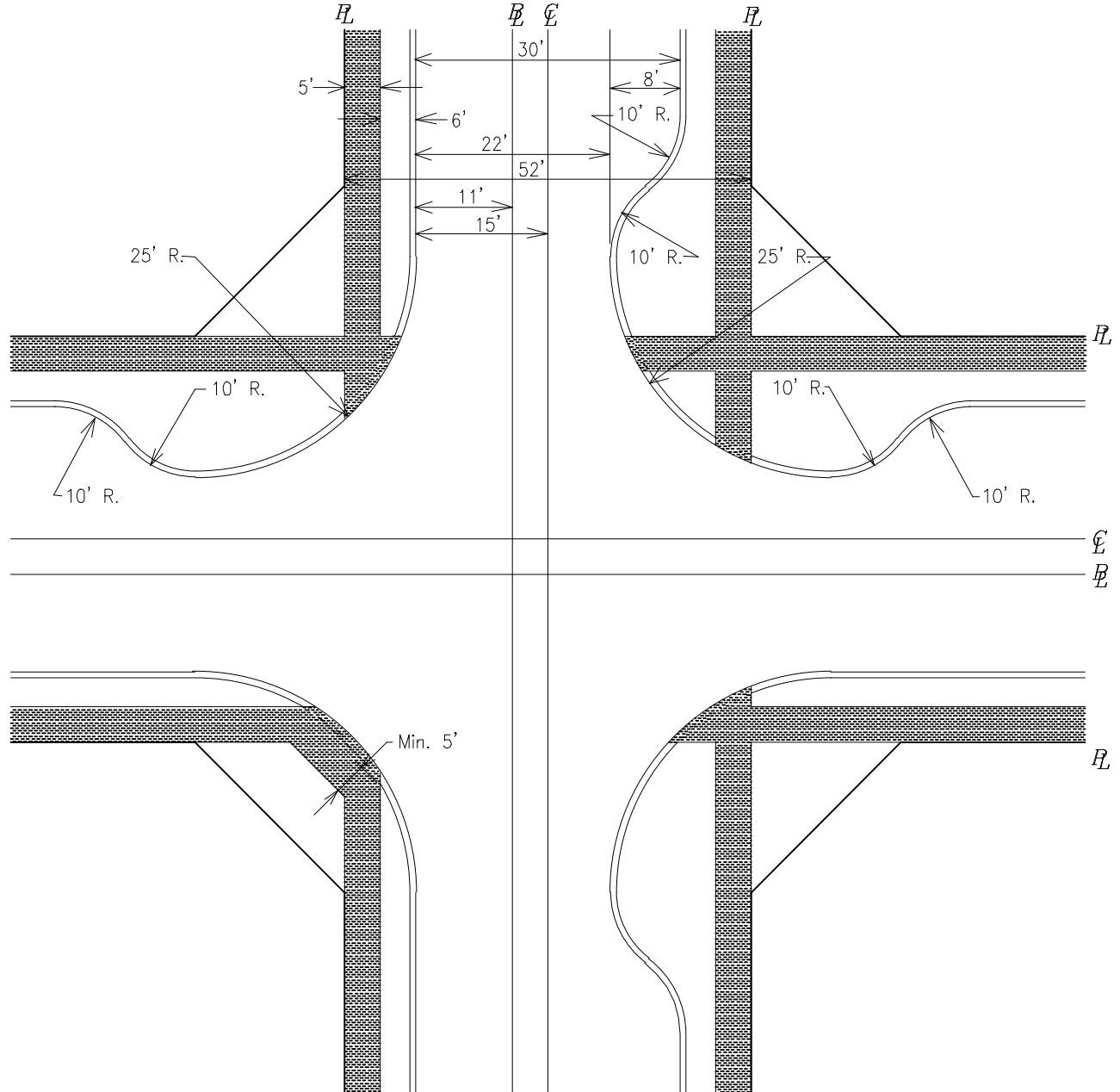
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROADS AND STREET DETAILS
 28' STREET ON 50' RIGHT-OF-WAY
 PARKING ALLOWED - ONE SIDE
 AVERAGE DAILY TRAFFIC < 200

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PLATE
 R-12



* 2% Slope from B



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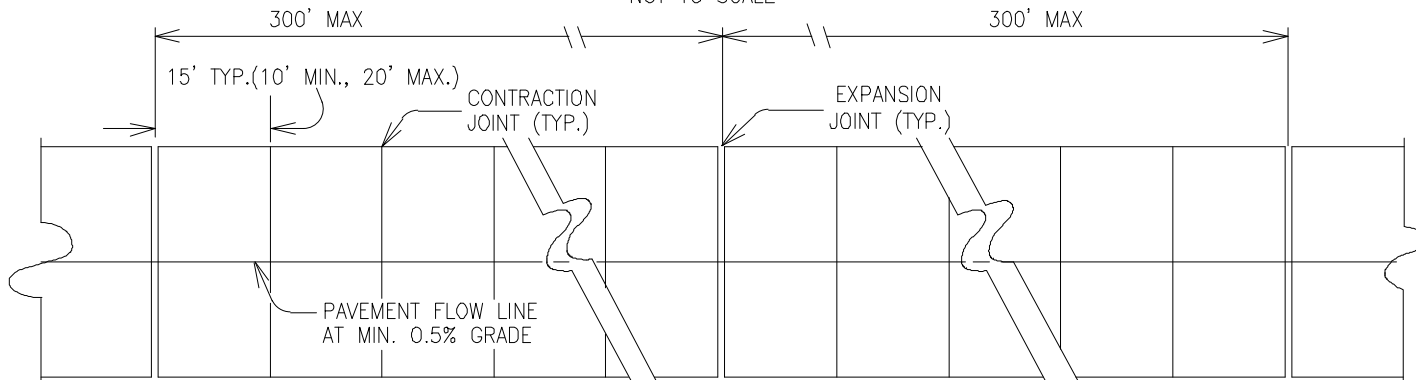
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROADS AND STREET DETAILS
 30' STREET ON 52' RIGHT-OF-WAY
 PARKING ALLOWED - ONE SIDE
 AVERAGE DAILY TRAFFIC 200 TO 1000

ISSUED: SEPTEMBER 2023

PLATE
 R-13

TYPICAL PAVING

NOT TO SCALE

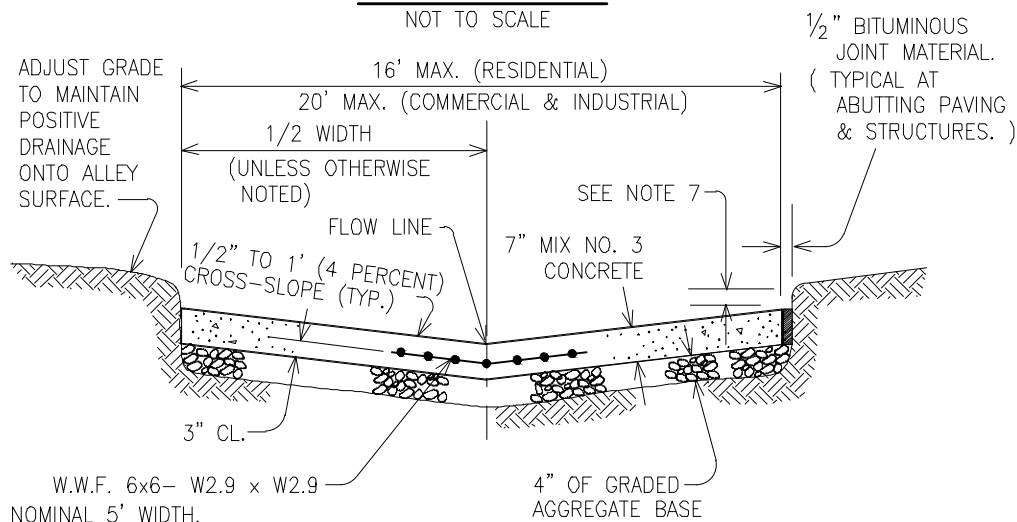


NOTES :

1. SUBGRADE SHALL BE APPROVED BY THE ENGINEER BEFORE STONE BASE COURSE IS PLACED.
2. EXPOSED CONCRETE EDGES, INCLUDING THOSE AT EXPANSION JOINTS, SHALL BE FINISHED TO A 1/4 " RADIUS.
3. ALL CONTRACTION JOINTS ARE SAWS WITHIN 24 HOURS. EVERY OTHER CONTRACTION JOINT MUST BE SAWS THE SAME DAY OF POUR.
4. REINFORCING WIRE MESH SHALL CONFORM TO AASHTO M55. CURING COMPOUND MUST BE WHITE PIGMENTED COMPOUND.
5. THE PAVEMENT'S FINISHED SURFACE TEXTURE SHALL BE A BROOMED FINISH. THE BROOM STROKES SHALL BE BROOMED FROM CENTERLINE OUT PERPENDICULAR TO THE ALLEY CENTERLINE AND SHALL EXTEND TO THE EDGES OF THE ALLEY.
6. REFER TO PLATES R-17 & R-18 FOR JOINT CONSTRUCTION DETAILS AND ALLEY ENTRANCE DETAILS.
7. 2" TYPICAL FOR FUTURE WEARING SURFACE (1" MAX. AT DRIVES).
8. LIMIT GROUND IRON BLAST FURNACE SLAG TO 35% MAX.

TYPICAL SECTION

NOT TO SCALE



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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROAD AND STREET DETAILS
CONCRETE ALLEYS

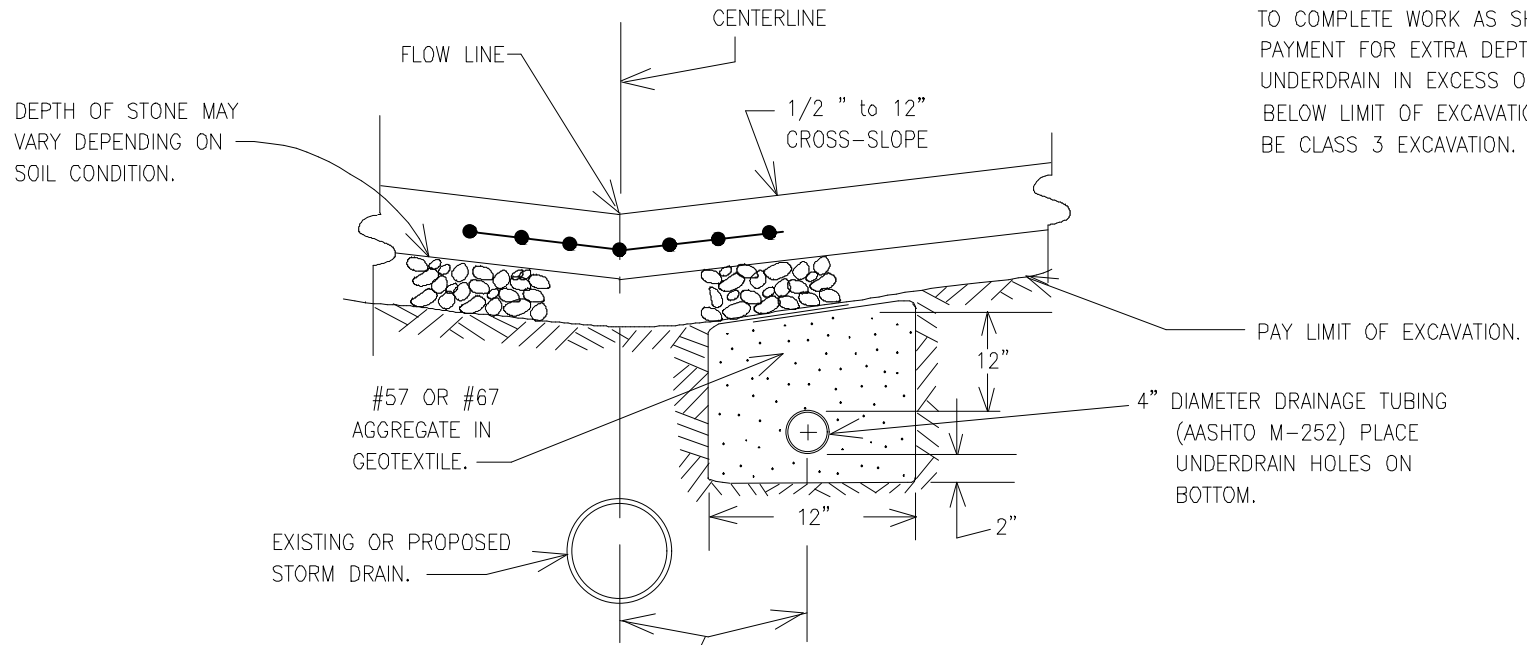
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PLATE
R-14

FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023

UNDERDRAIN DETAIL

NOT TO SCALE



PAYMENT PER L.F. OF UNDERDRAIN SHALL INCLUDE COSTS OF LABOR, EXCAVATION, BACKFILL, CONNECTION, EQUIPMENT & MATERIALS NECESSARY TO COMPLETE WORK AS SHOWN. PAYMENT FOR EXTRA DEPTH OF UNDERDRAIN IN EXCESS OF 12" BELOW LIMIT OF EXCAVATION TO BE CLASS 3 EXCAVATION.

NOTE :

A 4" UNDERDRAIN SHALL BE PLACED AT LOCATIONS AS DIRECTED BY THE ENGINEER OR AS SHOWN ON THE PLANS. UNDERDRAIN SHALL BE CONNECTED TO ALLEY INLET(S) AND BE MORTARED IN PLACE. MAINTAIN POSITIVE FLOW IN UNDERDRAIN. ENGINEER MAY DIRECT PLACEMENT OF UNDERDRAIN AT A GREATER DEPTH THAN SHOWN.

OFFSET= 0' IF NO STORM DRAIN AT CENTER LINE OF ALLEY.
 OFFSET= 2' IF EXISTING OR PROPOSED STORM DRAIN AT CENTERLINE OF ALLEY, AS SHOWN ON PLAN OR AS DIRECTED BY ENGINEER IN THE FIELD.



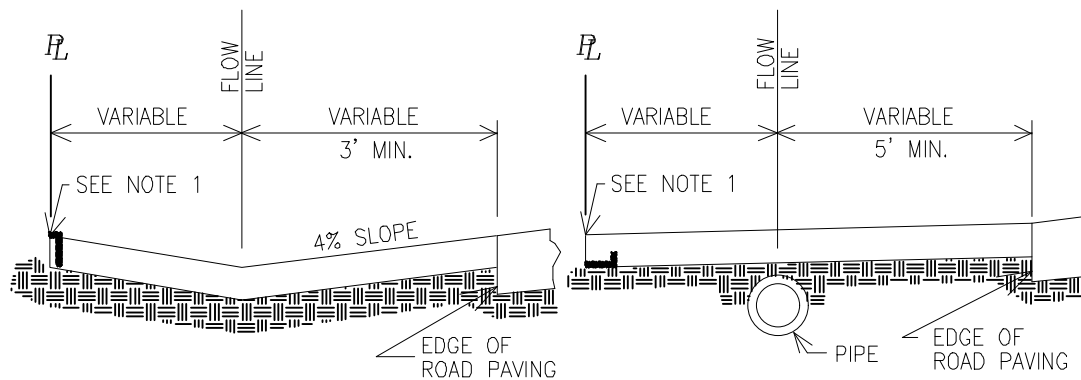
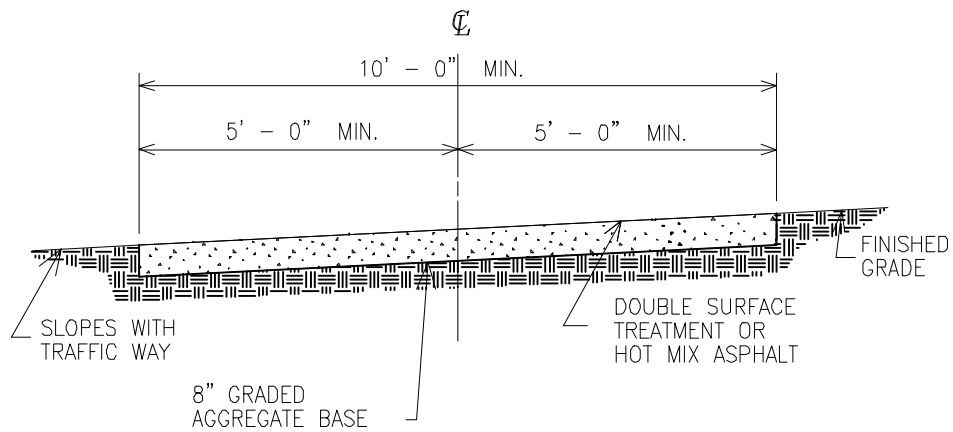
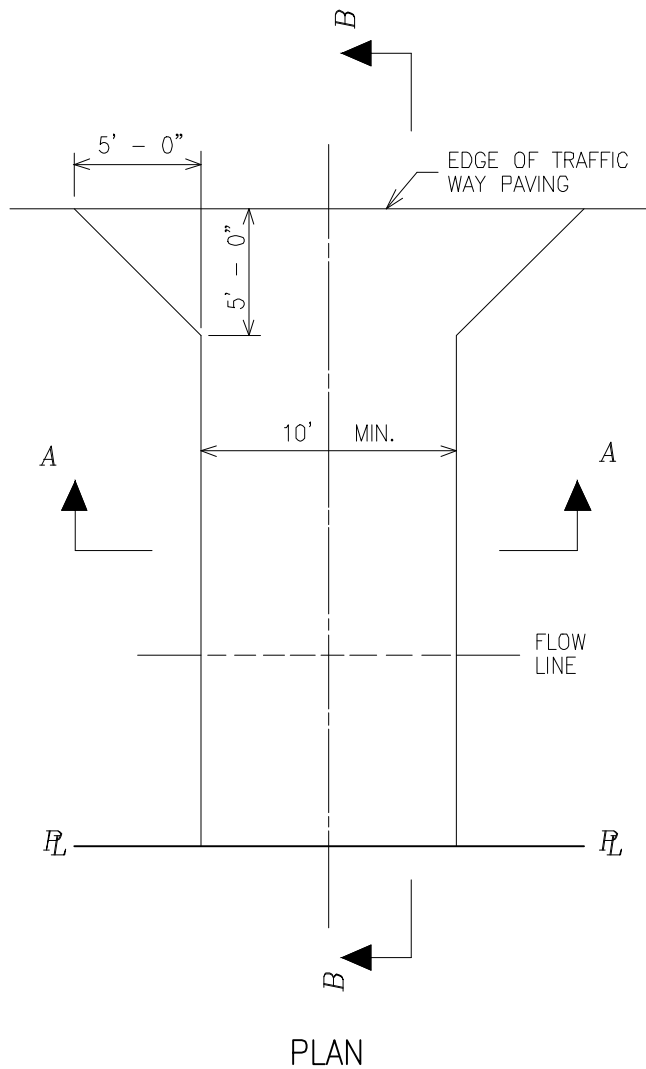
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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 CONCRETE ALLEY DETAIL

ISSUED: SEPTEMBER 2023

PLATE
R-14A

DATE: 08/28/2023
 FILE: HIGHWAYS_MASTER.DWG



NOTE 1: MATCH PROPOSED ROAD TYPICAL SECTION AT PROPERTY LINE. (SEE PLANS OR DESIGN MANUAL TYPICAL SECTION).



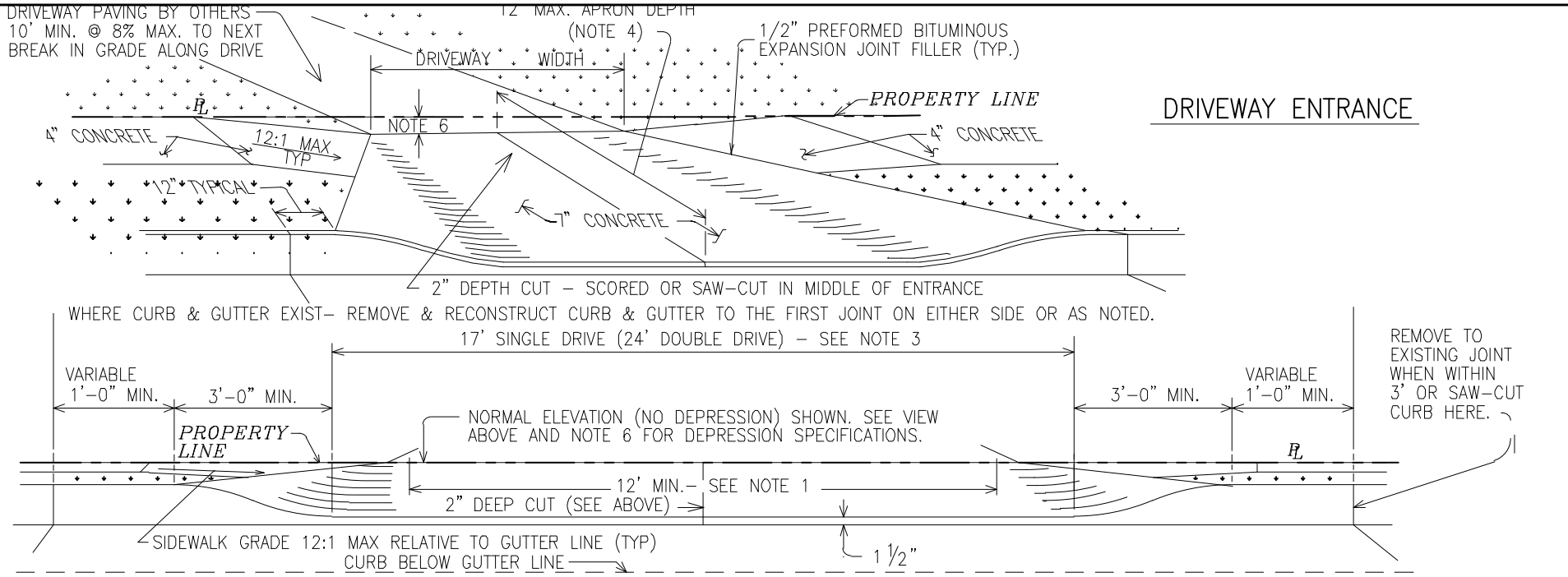
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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 TYPICAL DRIVEWAY ENTRANCE
 NO CURB AND GUTTER ALONG ROAD

ISSUED: SEPTEMBER 2023

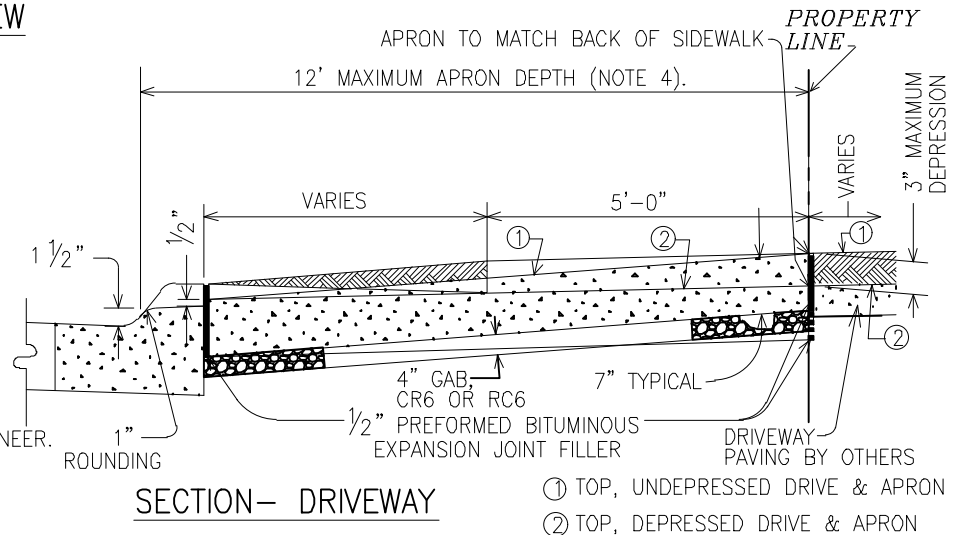
PLATE
 R-15

FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023



NOTES FRONT VIEW

1. DOUBLE WIDTH OF DRIVEWAY PERMITTED AT REAR EDGE OF SIDEWALK WHERE SIDE BY SIDE PARKING SPACES ARE REQUIRED BY ZONING REGULATIONS. DOUBLE WIDTH OF DRIVEWAY: 20' MIN. , 24' MAX. AT PROPERTY LINE.
2. WHERE SIDEWALKS ARE NOT REQUIRED THE DRIVEWAY APRONS CAN BE 11" HOT MIX ASPHALT PAVING SECTION IN ACCORDANCE WITH PLATE R-1. USE CONCRETE MIX #2 OR #6 AS SHOWN ON PLANS. LIMIT GROUND IRON BLAST FURNACE SLAG TO 25% MAXIMUM FOR MIX #2 CONCRETE.
3. DEPRESSED CURB WIDTH FOR SINGLE DRIVE WIDTH MAY BE REDUCED TO 14' ALONG LOCAL RESIDENTIAL STREETS WHERE CURB LANE ISN'T USED (OR TO BE USED) AS A TRAFFIC LANE.
4. WHERE BACK-OF-SIDEWALK TO FACE OF CURB IS MORE THAN 12', THE CONCRETE APRON SHALL MEET DRIVEWAY WIDTH AT FRONT EDGE OF SIDEWALK.
5. APRON SLOPE OUTSIDE OF THE SIDEWALK PATH MAY BE REDUCED TO 4% OR INCREASED TO 8% BASED ON GRADE BEYOND PROPERTY LINE WITH APPROVAL OF ENGINEER.
6. 3" MAXIMUM DEPRESSION TO BE USED WHEN GROUND SLOPES AWAY FROM R_L OR WHEN BACK OF SIDEWALK IS LESS THAN 8' FROM FACE OF CURB.
7. THE SIDEWALK PATH THROUGH THE APRON SHALL HAVE 2% CROSS SLOPE.

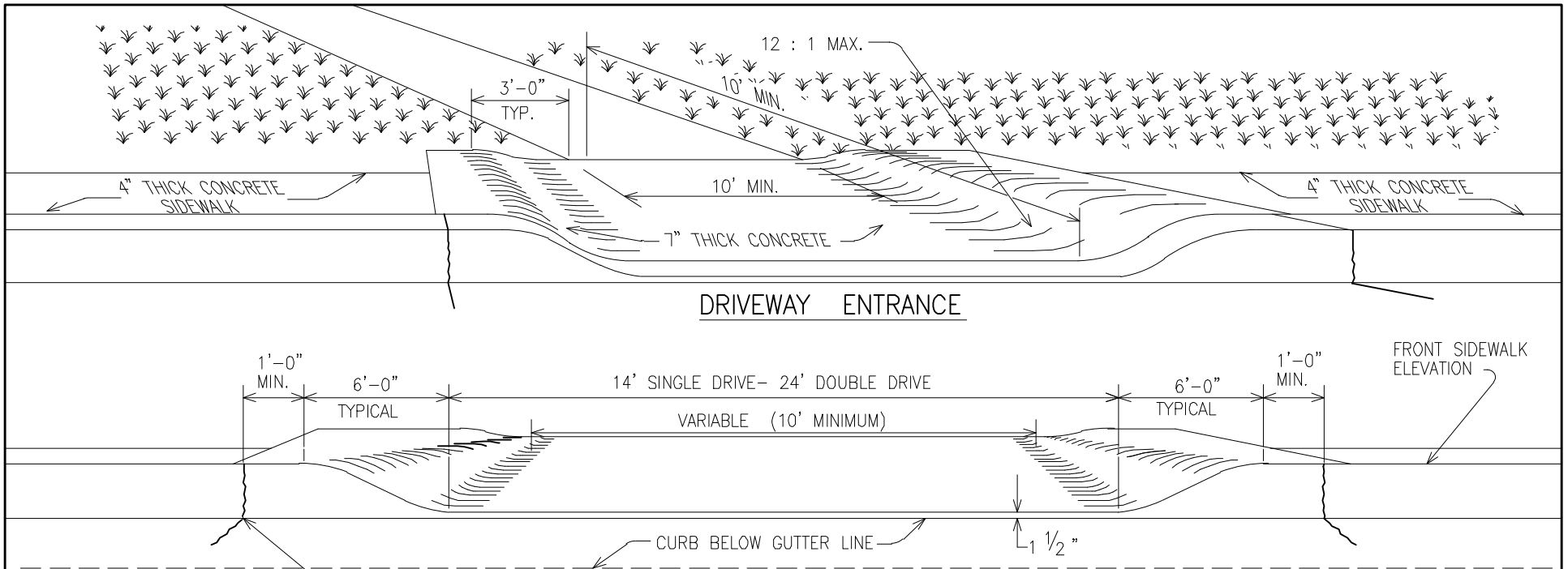


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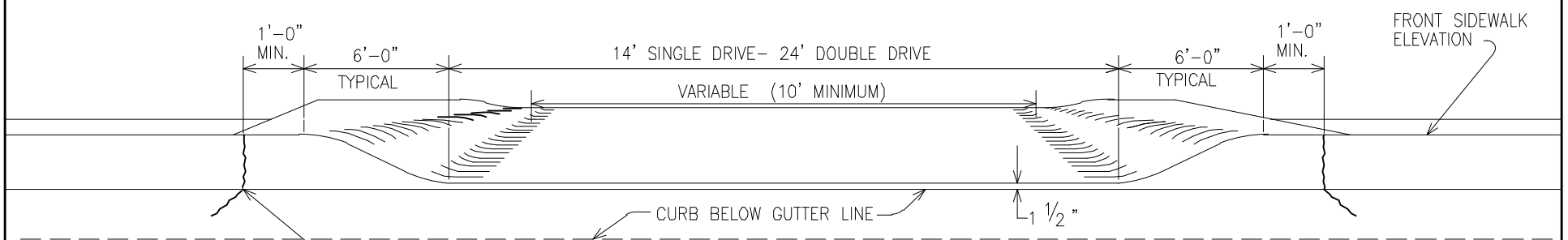
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ROAD AND STREET DETAILS
TYPICAL DRIVEWAY ENTRANCE APRON
SIDEWALK TO CURB DISTANCE VARIES

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PLATE
R-15A



DRIVEWAY ENTRANCE

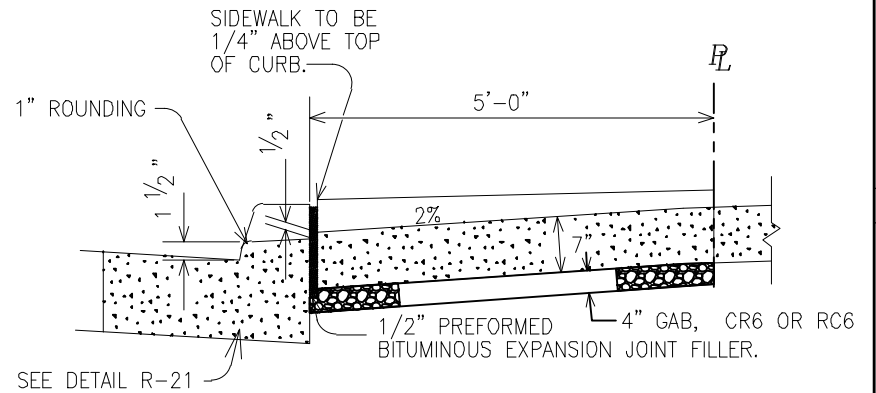


FRONT VIEW

REMOVE TO EXISTING JOINT WHEN WITHIN 3' OR BREAK CURB HERE.

NOTES:

1. CONCRETE TO BE MIX #2 OR MIX #6 AS SHOWN ON PLANS. LIMIT GROUND IRON BLAST FURNACE SLAG TO 25% MAXIMUM FOR MIX #2 CONCRETE.
2. WHERE SIDEWALKS ARE NOT REQUIRED, DRIVEWAY APRONS CAN BE AN 11" HOT MIX ASPHALT PAVING SECTION IN ACCORDANCE WITH PLATE R-1.
3. THE SIDEWALK PATH THROUGH THE APRON SHALL HAVE 2% CROSS SLOPE.



SECTION- DRIVEWAY



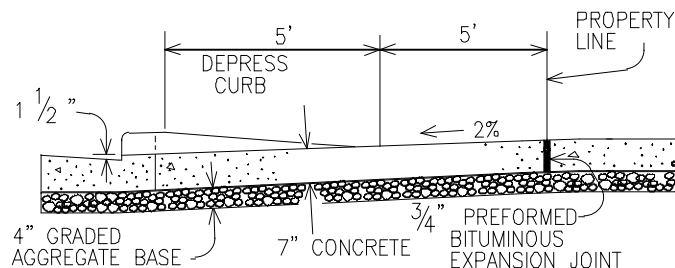
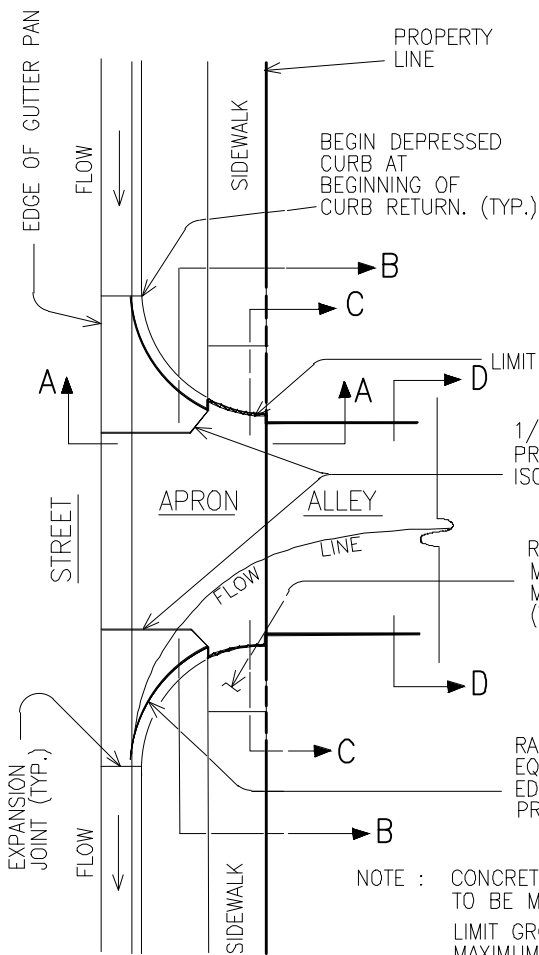
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 DATE

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 TYPICAL DRIVEWAY ENTRANCE
 SIDEWALK ADJACENT TO CURB

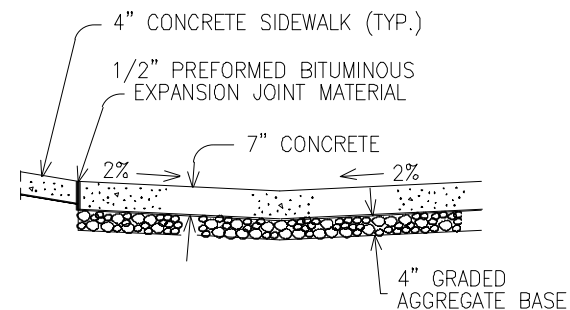
ISSUED: SEPTEMBER 2023

PLATE
R-15B

DATE: 08/28/2023
 FILE: HIGHWAYS_MASTER.DWG



SECTION A-A



SECTION C-C

LIMIT OF 7" PAVING.
1/2" PREFORMED BITUMINOUS ISOLATION JOINT.

SECTION D-D

SEE NORMAL ALLEY SECTION AS SHOWN ON STANDARD DETAIL R-14.

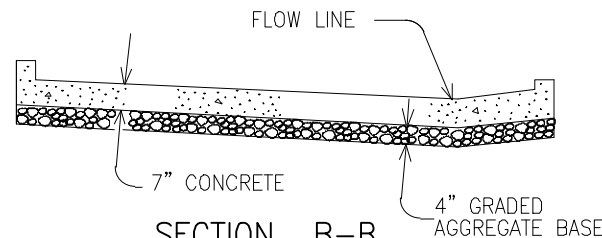
RAMP WALK
MAX. 8%
MIN. 4%
(TYPICAL)

RADIUS OF CURB RETURN
EQUALS DISTANCE BETWEEN
EDGE OF PAVEMENT &
PROPERTY LINE (MAX. 10')

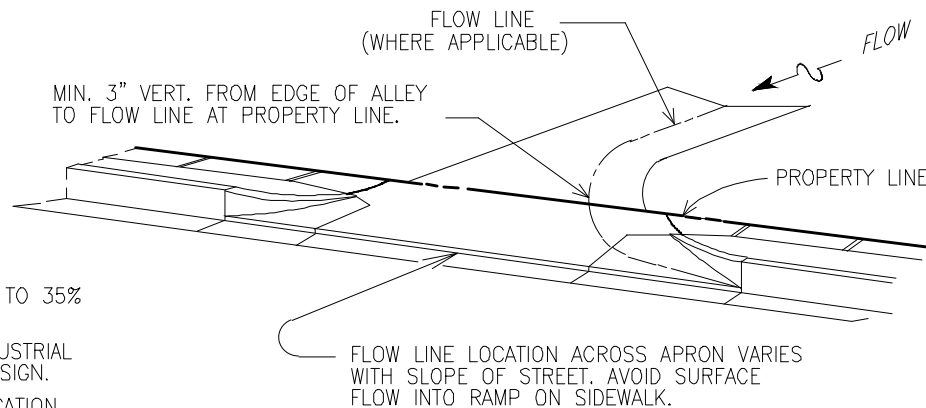
NOTE : CONCRETE FOR ALLEY APRON & CURB
TO BE MIX #3.
LIMIT GROUND IRON BLAST FURNACE SLAG TO 35%
MAXIMUM.

PAVING THICKNESS OF COMMERCIAL & INDUSTRIAL
ALLEYS SUBJECT TO SPECIFIC PROJECT DESIGN.

FOR REHABILITATION PROJECTS, MATCH LOCATION
OF SIDEWALK IN FIELD. SEE SPECIAL DETAILS
ON REHABILITATION PROJECTS.



SECTION B-B

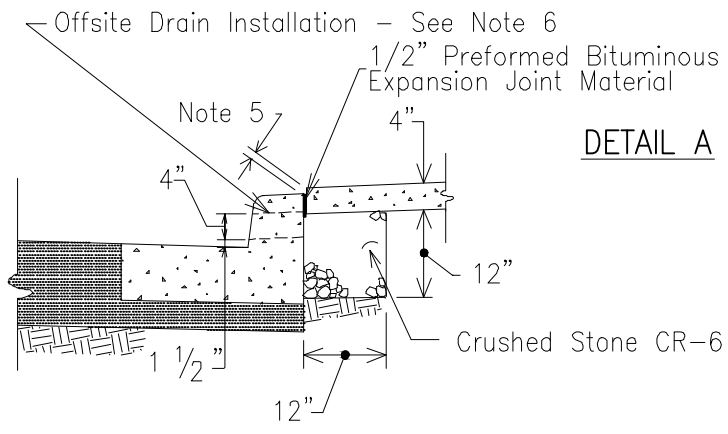


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SEPTEMBER 26, 2023
DATE

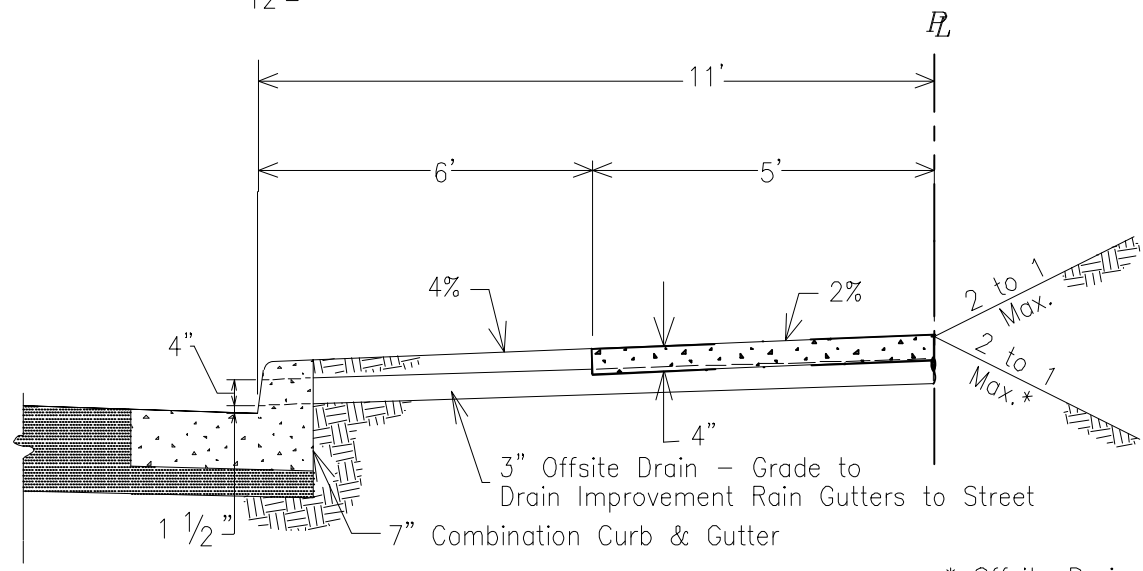
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROAD AND STREET DETAILS
ALLEY ENTRANCE

ISSUED: SEPTEMBER 2023

PLATE
R-18



DETAIL A



* Offsite Drain to Street not Used. (Improvements Drained Elsewhere)

NOTES

1. Sidewalk to be scribed in 5 foot squares.
2. Expansion joints across sidewalk shall be not more than 16 feet apart.
3. Top of 1/2" Preformed bituminous expansion joint material to be 1/4" below sidewalk surface.
4. Mix #2 Concrete with 25% or less Ground Iron Blast Furnace Slag to be used for sidewalks, unless otherwise specified on plans.
5. When sidewalk abuts curb, sidewalk shall be 1/4" above curb with 1/2" prefabricated bituminous expansion joint between curb & sidewalk & resting on a compacted crushed stone base. See Detail A this sheet.
6. Offsite drain to be 3" diameter Schedule 80 pvc to property line.
7. Obstructions in sidewalk area such as meter frames, utility poles, hydrants, etc. shall be isolated with a 1/4" thick bituminous isolation joint about their periphery or as shown on Detail R-17. Isolation joint shall extend through 4" sidewalk.



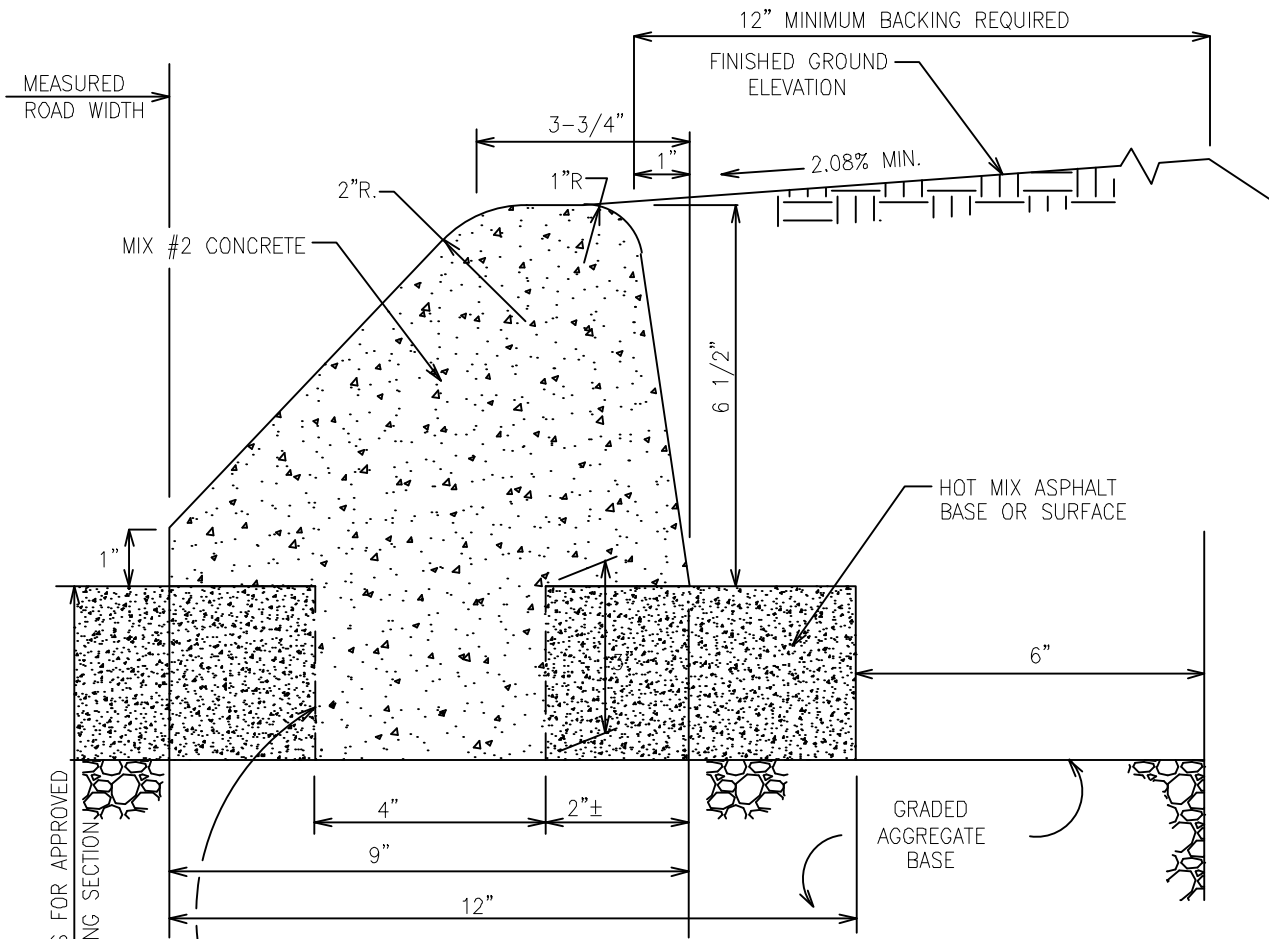
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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 STANDARD 5 FOOT SIDEWALK

ISSUED: SEPTEMBER 2023

PLATE
R-19

FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023



SEE PLANS FOR APPROVED PAVING SECTION

A 4" x 4" x 3" CONCRETE KEY WAY SPACED 4' ON CENTER WILL BE REQUIRED TO ANCHOR CURB TO PAVING SECTION. PLACE EXPANSION JOINTS EVERY 50 FEET, AT P.C.'S & P.T.'S OF ALL CURVES AND 5' FROM INLET HEADPIECES. TRANSITION CURB SECTION TO MATCH HEADPIECE WITHIN THIS 5' DISTANCE.

NOTE: FORMER STANDARD R-20A SHOWING HOT MIX ASPHALT MOUNTABLE CURB HAS BEEN ELIMINATED.



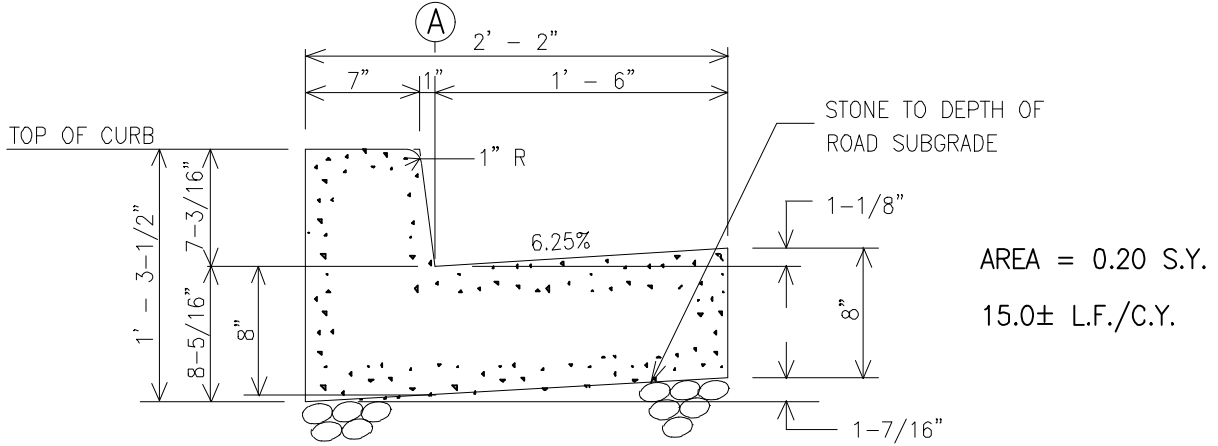
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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 EXTRUDED CONCRETE
 MOUNTABLE CURB

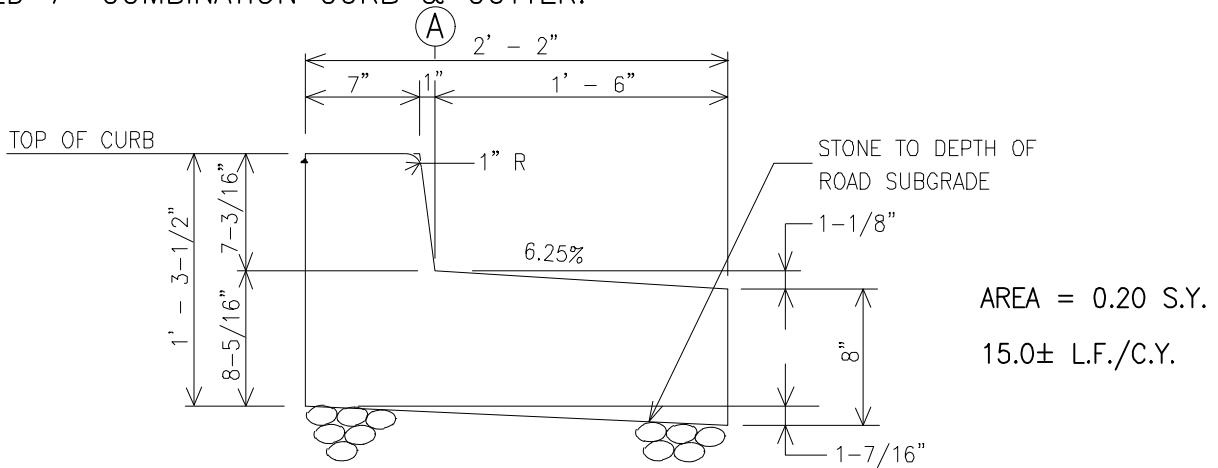
ISSUED: SEPTEMBER 2023
 PLATE
 R-20B

FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023

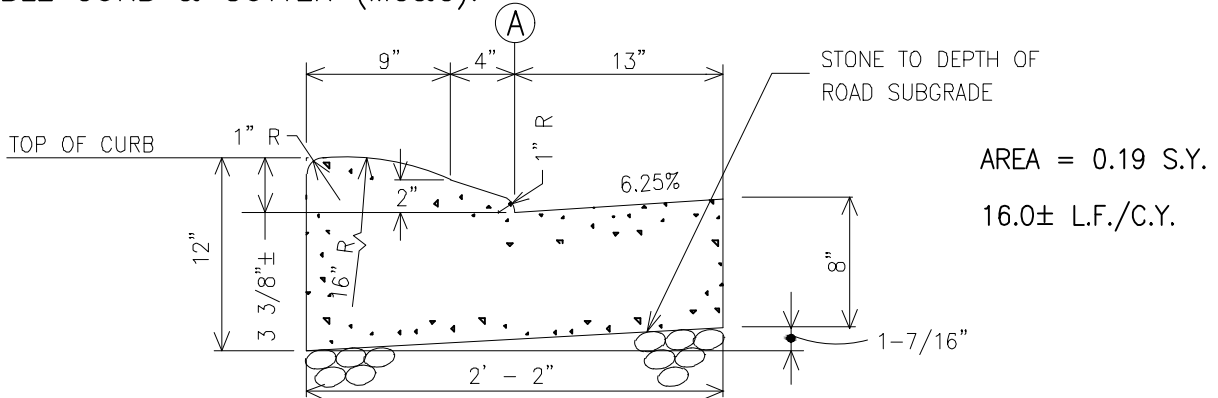
STANDARD 7" COMBINATION CURB & GUTTER:



REVERSED 7" COMBINATION CURB & GUTTER:



MOUNTABLE CURB & GUTTER (MC&G):



NOTES:

1. TRANSITION MC&G TO STANDARD 7" COMBINATION CURB & GUTTER OR TO STANDARD COMBINATION INLET CURB PIECE THROUGH 4 LINEAR FEET. VARY INLET HEADPIECE TOP ELEVATION AS REQUIRED TO MAINTAIN FLOW LINE.
2. MIX #2 CONCRETE WITH 25% OR LESS GROUND IRON BLAST FURNACE SLAG UNLESS OTHERWISE SPECIFIED ON PLANS.
3. MC&G SHALL NOT BE USED WHERE SIDEWALK ABUTS THE CURB.

(A) FACE OF CURB & FACE OF INLET CURB PIECE



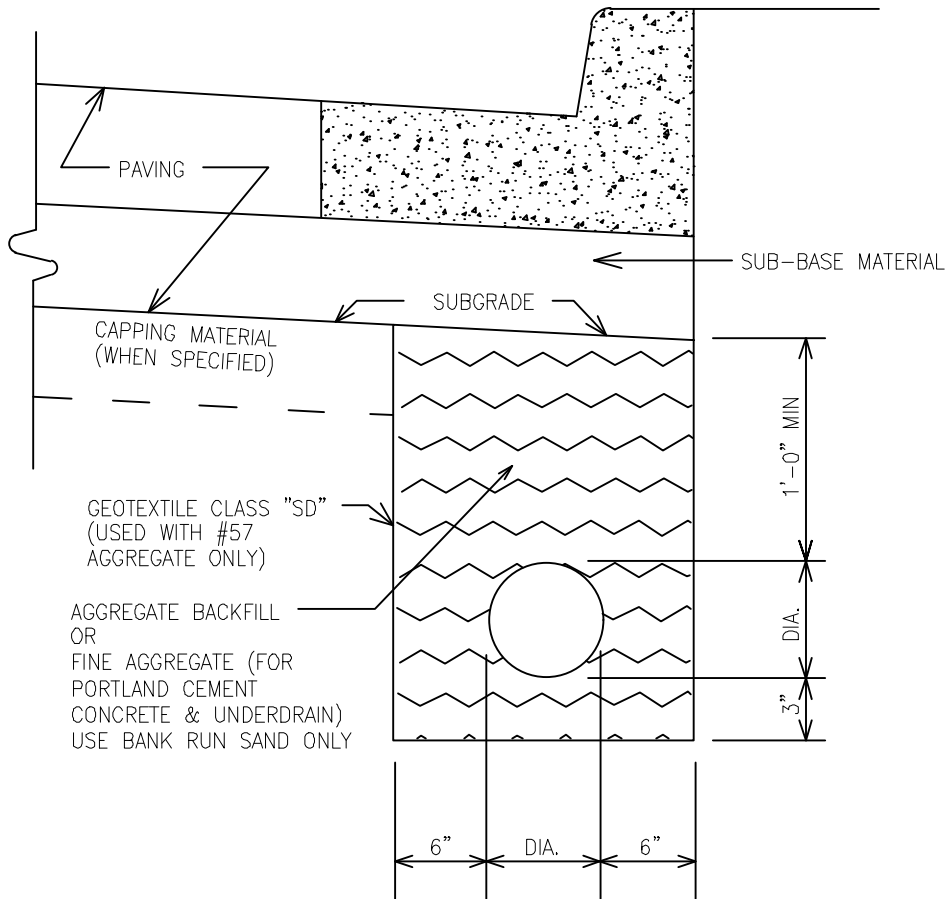
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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 CONCRETE COMBINATION
 CURB AND GUTTER

ISSUED: SEPTEMBER 2023

PLATE
 R-21

DATE: 08/28/2023
 FILE: HIGHWAYS_MASTER.DWG



1. AGGREGATE BACKFILL SHALL BE FINE AGGREGATE (FOR PORTLAND CEMENT CONCRETE AND UNDERDRAIN) OR NO. 57 AGGREGATE, COMPLETELY WRAPPED WITHIN FILTER FABRIC (GEOTEXTILE CLASS "SD").
2. MINIMUM GRADE OF UNDERDRAIN SHALL BE 0.5%.
3. "STANDARD DEPTH" UNDERDRAIN SHALL BE ONE FOOT FROM TOP OF PIPE TO SUB-GRADE.
4. THE CROWN OF UNDERDRAIN PIPE SHALL BE AT, OR LOWER THAN THE LOWER LIMIT OF CAPPING MATERIAL WHEN SPECIFIED.

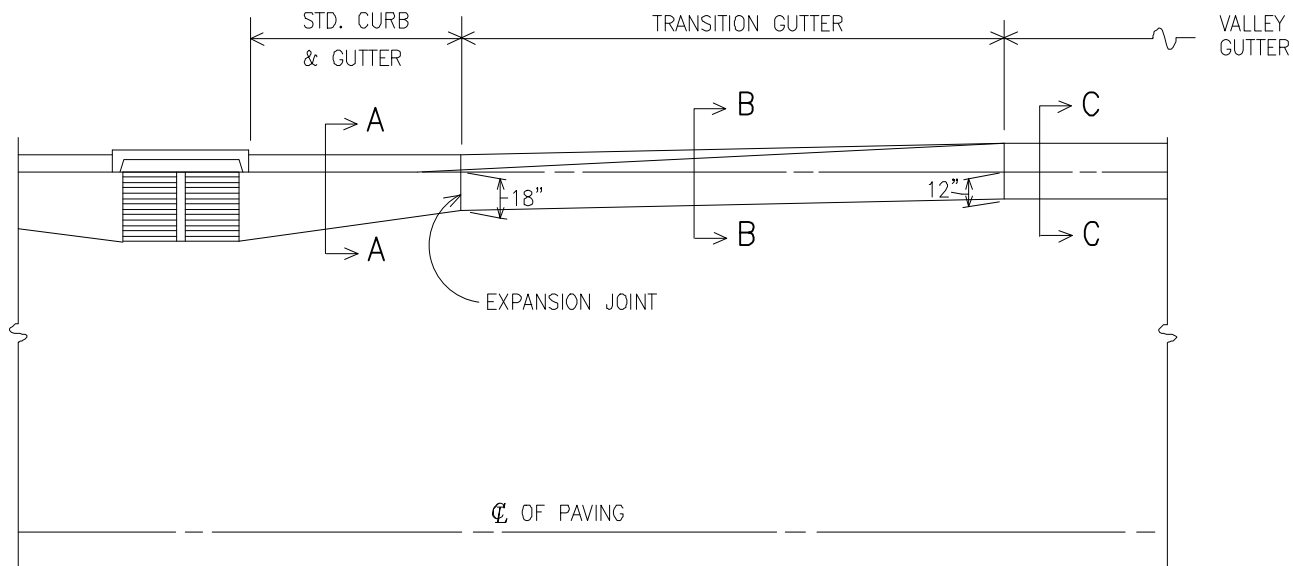


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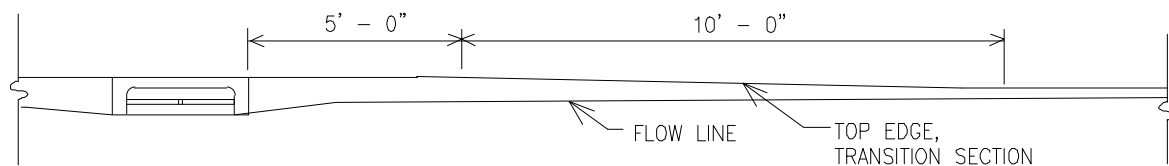
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 TYPICAL UNDERDRAIN
 FOR PAVED STREETS

ISSUED: SEPTEMBER 2023

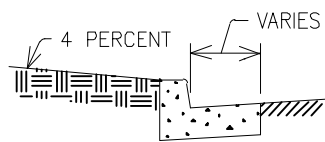
PLATE
 R-22



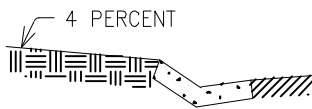
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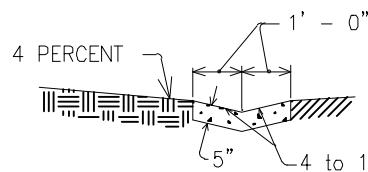
ELEVATION



SECTION A - A



SECTION B - B



SECTION C - C

NOTES

1. WHEN TYPE "S" INLETS ARE USED, AN ADDITIONAL FILLET WILL BE REQUIRED TO TIE WITH EDGE OF GRATE.
2. SECTION B - B IS VARIABLE.
3. USE MIX #2 OR MIX #6 CONCRETE. LIMIT GROUND IRON BLAST FURNACE SLAG TO 25% MAXIMUM FOR MIX #2 CONCRETE.



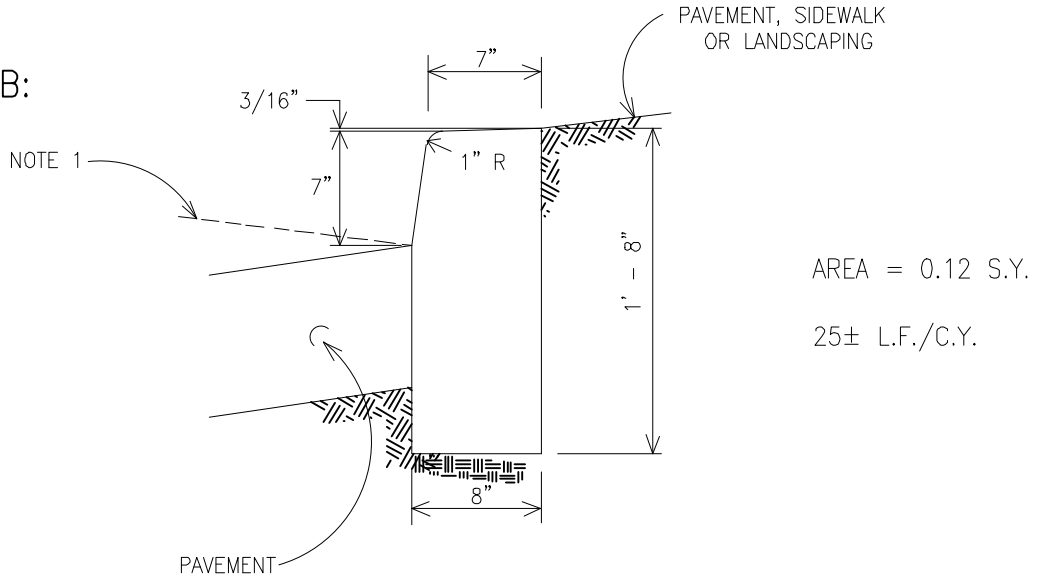
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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
CONCRETE VALLEY GUTTER
 TRANSITION TO CURB AND GUTTER

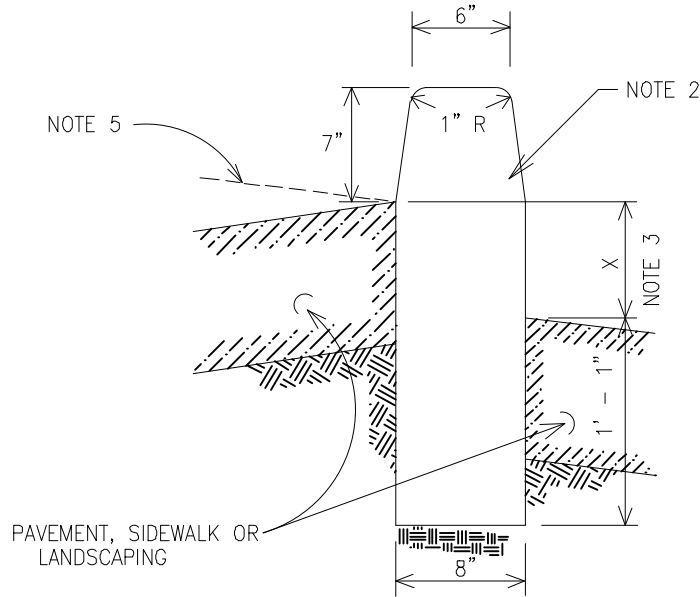
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PLATE
R-23

TYPE A CURB:



TYPE A-1 BARRIER:



NOTES:

1. CURB & GUTTER TO BE USED WHERE STORM WATER WILL COLLECT AT FACE OF CURB EXCEPT AS DIRECTED BY THE ENGINEER.
2. MIX #2 OR MIX #6 CONCRETE AS DIRECTED ON PLANS.
3. SPECIAL DESIGN AS RETAINING WALL WHERE THIS DIMENSION EXCEEDS 18 INCHES. THIS BARRIER IS FOR USE ONLY IN OFF-STREET AREAS WHERE VEHICLE SPEEDS ARE MINIMAL.
4. MdSHA TYPE A CURB (MD620.02) TO BE USED WITHIN MdSHA RIGHT OF WAY.
5. WHERE GRADING IS TOWARD WALL, PROVIDE UNDERDRAINAGE & STONE BACKFILL ALONG WALL PER DETAIL D-1.00 WITH SUITABLE OUTFALL. TENAX TENDRAIN® OR EQUIVALENT MAY BE USED IN THIS APPLICATION.

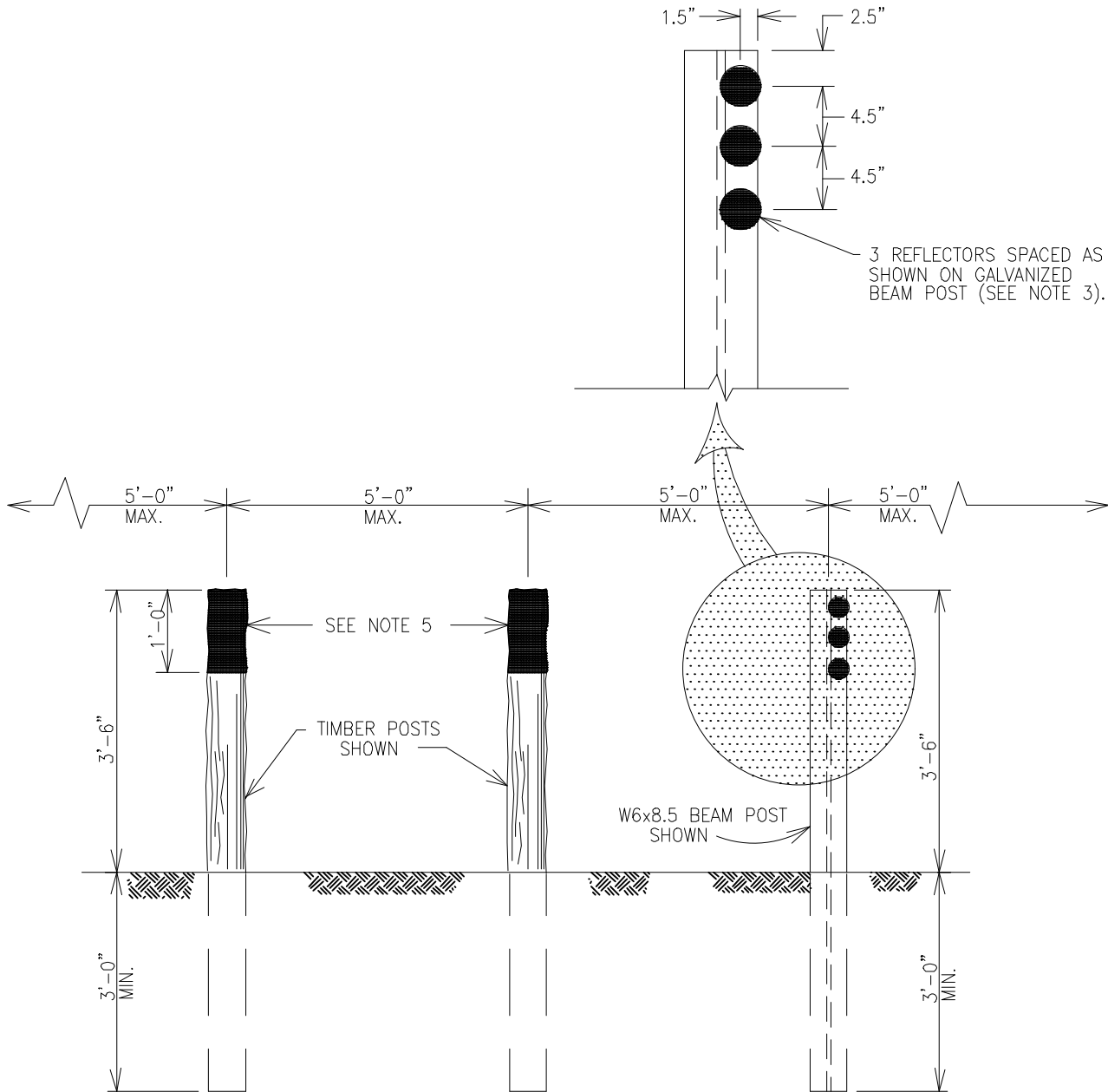


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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 CONCRETE CURB

ISSUED: SEPTEMBER 2023

PLATE
 R-24



NOTES:

1. TIMBER POSTS SHALL BE PRESSURE-TREATED (AASHTO M-133) 7" MINIMUM DIAMETER, OR
2. WF BEAMS SHALL BE USED AS ALTERNATE IF SPECIFIED OR IF SELECTED BY THE CONTRACTOR. USE A 6'-6" LONG HOT-DIP GALVANIZED (ASTM A-123) W6x8.5 BEAM AS ALTERNATE.
3. REFLECTORS SHALL BE CENTER-MOUNT ACRYLIC REFLECTORS IN AN ALUMINUM HOUSING; RED #310 MICRO-FLEX OR APPROVED EQUIVALENT.
4. TIMBER POSTS AND ALTERNATE BEAM POSTS SHALL NOT BE USED ON THE SAME SITE.
5. PLACE EITHER REFLECTOR BUTTONS OR APPLY TRAFFIC PAINT GLASS BEADS TO THE TOP 12 INCHES OF WOODEN POSTS.
6. REFLECTORS SHALL BE INSTALLED USING TAMPER-RESISTANT HARDWARE.



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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 TEMPORARY DEAD-END
 BARRICADES

ISSUED: SEPTEMBER 2023

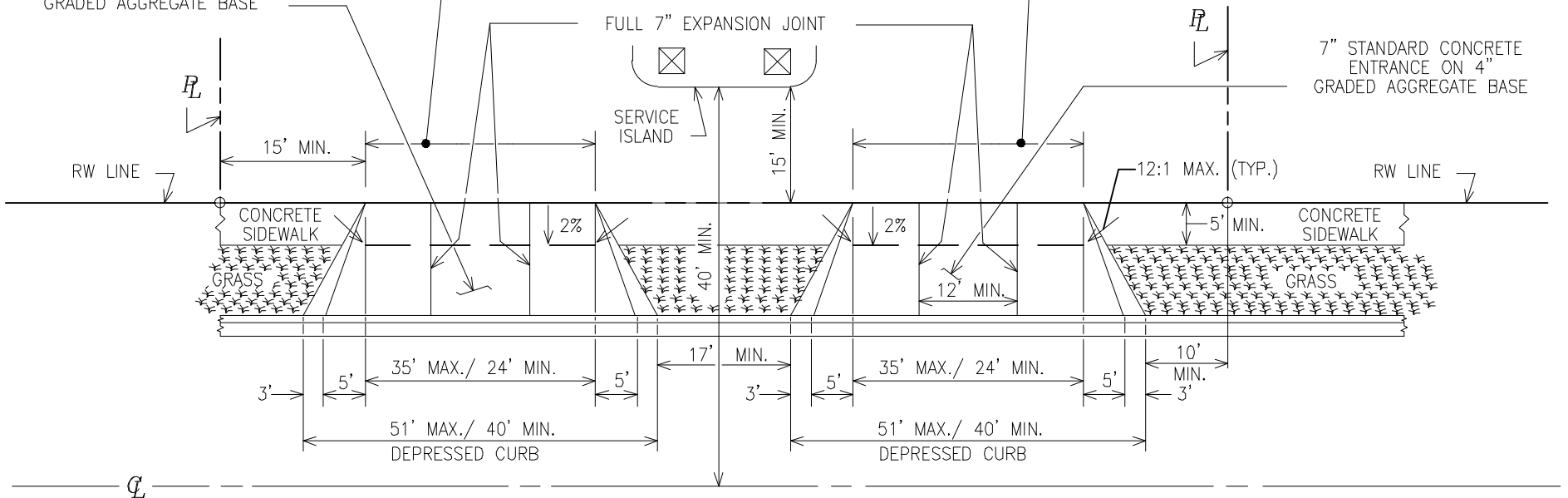
PLATE
 R-27

7" STANDARD CONCRETE
ENTRANCE ON 4"
GRADED AGGREGATE BASE

SET 3" LOWER THAN NORMAL
FINISHED ELEVATION AT BACK OF WALK.

FULL 7" EXPANSION JOINT

7" STANDARD CONCRETE
ENTRANCE ON 4"
GRADED AGGREGATE BASE



SERVICE STATION ENTRANCE STANDARD

1. SKEWED ENTRANCES WILL BE PERMITTED ONLY ON DIVIDED HIGHWAYS.
2. NO ENTRANCES WILL BE PERMITTED BETWEEN P.C. AND P.T. OF CURB RETURN AT ANY INTERSECTION.
3. ALL PERMANENT SIGN AND LIGHT FIXTURES SHALL BE OUTSIDE THE COUNTY RIGHT OF WAY.
4. WHERE THE DISTANCE FROM THE FACE OF CURB TO THE PROPERTY LINE IS LESS THAN 10' SLOPE FINISHED GRADE OF ENTRANCE PAVING AT 8% MAXIMUM FOR A MINIMUM OF 10 FT.
5. PLACE 1/2" PREFORMED BITUMINOUS EXPANSION JOINT MATERIAL ALONG REAR OF DEPRESSED CURB AT EDGE OF 7" STANDARD CONCRETE ENTRANCE. CONSTRUCT DEPRESSED CURB WITH 1-1/2" LIP AT GUTTER.
6. CONCRETE TO BE MIX NO. 3 OR MIX NO. 6 AS DIRECTED BY THE ENGINEER. LIMIT GROUND IRON BLAST FURNACE SLAG CONTENT TO 35% MAXIMUM WHEN MIX #3 IS USED.
7. ONLY ONE ENTRANCE ALLOWED WHEN FRONTAGE IS LESS THAN 108 FT. , MINIMUM FRONTAGE IS 90 FT.
8. WHERE CURB & GUTTER EXIST, REMOVE COMPLETELY TO THE FIRST CONSTRUCTION JOINT EACH SIDE OF THE PROPOSED ENTRANCE. USE EXISTING EDGE OF ROAD FOR GRADE GUIDANCE AS DIRECTED. JOINT WHERE GUTTER MEETS PAVEMENT TO BE FINISHED WITH A STANDARD EDGING TOOL.
9. THE SIDEWALK PATH THROUGH THE APRON SHALL HAVE 2% CROSS SLOPE.

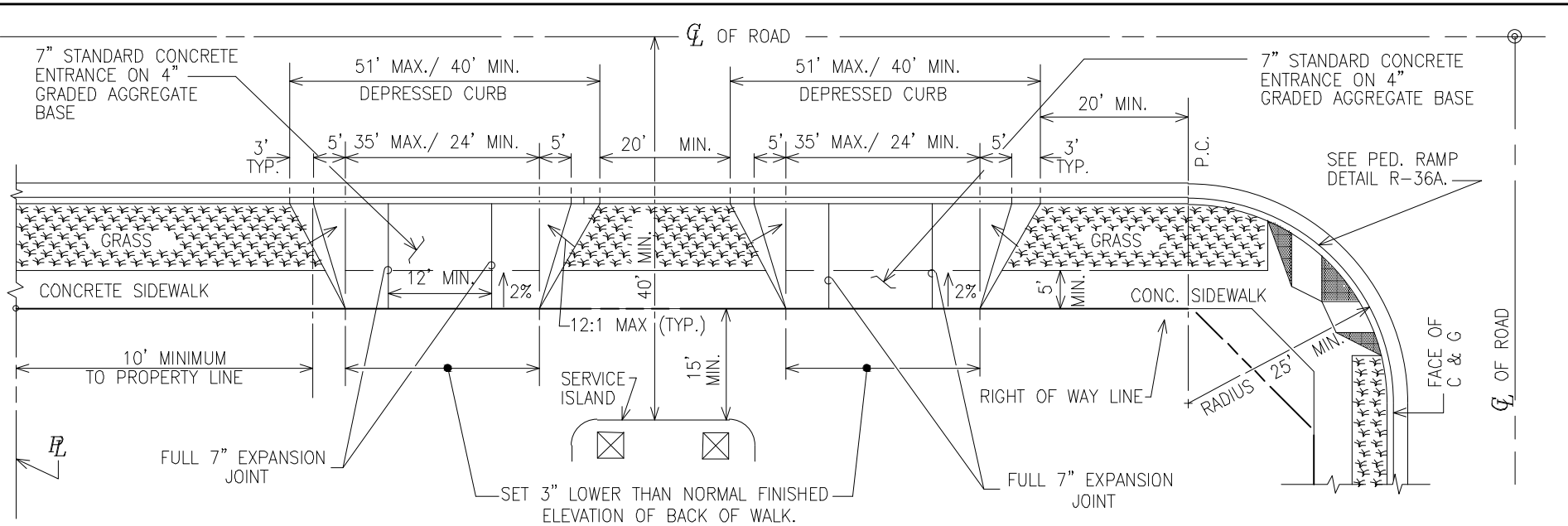


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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROAD AND STREET DETAILS
SERVICE STATION
ENTRANCE CHANNELIZATION

ISSUED: SEPTEMBER 2023

PLATE
R-28



NOTES :

1. SKEWED ENTRANCES WILL BE PERMITTED ONLY ON DIVIDED HIGHWAYS.
2. NO ENTRANCES WILL BE PERMITTED BETWEEN P.C. AND P.T. OF CURB RETURN AT ANY INTERSECTION.
3. AT AN INTERSECTION OF TRAFFIC WAYS, OTHER THAN ALLEYS, THE CUTBACK OF THE PROPERTY LINE NORMALLY SHALL BE A CHORD CONNECTING THE POINTS ON THE PROPERTY LINE DIRECTLY OPPOSITE THE P.C. AND P.T. OF CURB RETURNS OR EDGE OF PAVEMENT RETURN 10' MINIMUM. ALL PERMANENT SIGNS AND LIGHT FIXTURES SHALL BE OUTSIDE OF THE COUNTY RIGHT OF WAY.
4. PLACE 1/2" PREFORMED BITUMINOUS EXPANSION JOINT MATERIAL ALONG REAR OF DEPRESSED CURB AT EDGE OF 7" STANDARD CONCRETE ENTRANCE. CONSTRUCT DEPRESSED CURB WITH 1-1/2" LIP AT GUTTER.
5. CONCRETE TO BE MIX NO. 3 OR MIX NO. 6 AS DIRECTED BY THE ENGINEER. LIMIT GROUND IRON BLAST FURNACE SLAG CONTENT TO 35% MAXIMUM WHEN MIX #3 IS USED.
6. ONLY ONE ENTRANCE ALLOWED WHEN FRONTAGE IS LESS THAN 108 FT., MINIMUM FRONTAGE IS 90 FT.
7. WHERE CURB AND GUTTER EXIST REMOVE COMPLETELY TO THE FIRST CONSTRUCTION JOINT EACH SIDE OF THE PROPOSED ENTRANCE. USE EXISTING EDGE OF ROAD FOR GRADE GUIDANCE AS DIRECTED. JOINT WHERE GUTTER MEETS PAVEMENT TO BE FINISHED WITH A STANDARD EDGING TOOL.
8. WHERE THE DISTANCE FROM THE FACE OF CURB TO THE PROPERTY LINE IS LESS THAN 10 FT. SLOPE FINISHED GRADE OF ENTRANCE PAVING AT 8% MAXIMUM FOR A MINIMUM OF 10 FT. TO NEXT BREAK IN GRADE.
9. THE SIDEWALK PATH THROUGH THE APRON SHALL HAVE 2% CROSS SLOPE.

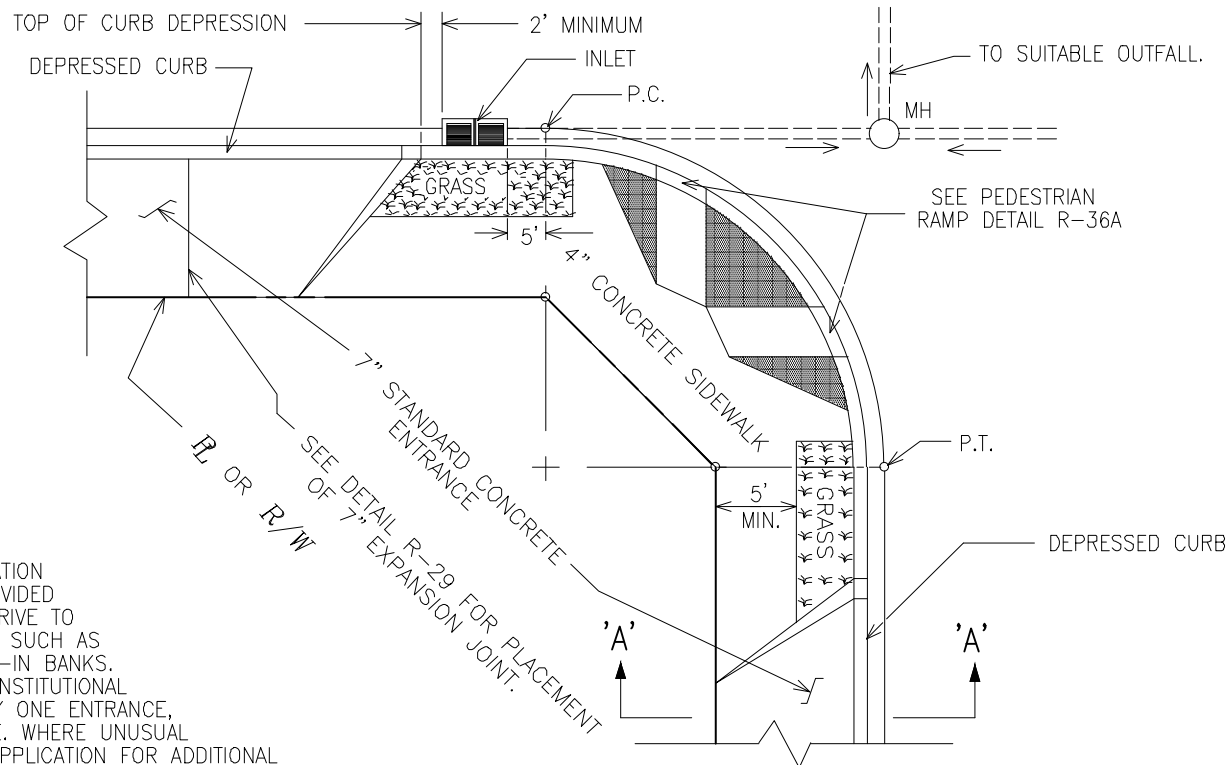


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 ROAD AND STREET DETAILS
 SERVICE STATION ENTRANCE
 CHANNELIZATION AT ROAD INTERSECTION

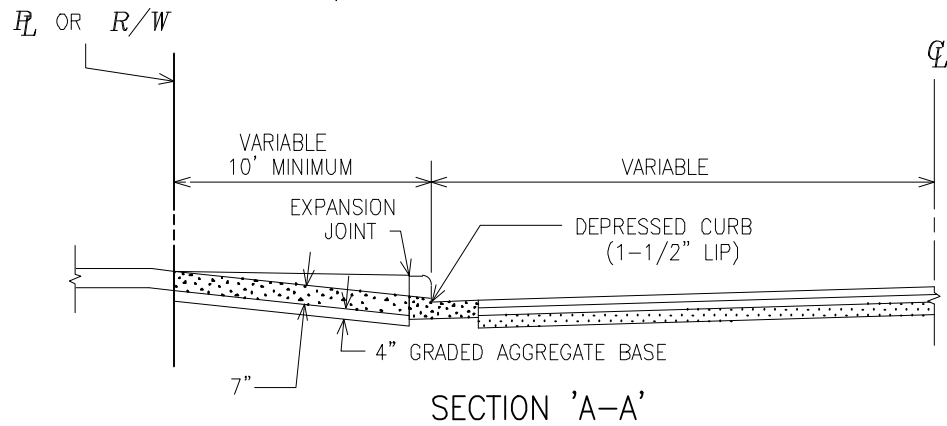
ISSUED: SEPTEMBER 2023

PLATE
 R-29



NOTES :

1. COMMERCIAL SITE CHANNELIZATION WITH TWO ENTRANCES IS PROVIDED WHERE AUTOMOBILES MUST DRIVE TO FIXED OBJECTS FOR SERVICE, SUCH AS SERVICE STATIONS AND DRIVE-IN BANKS. ALL OTHER COMMERCIAL OR INSTITUTIONAL SITES WILL BE ALLOWED ONLY ONE ENTRANCE, OR A MONUMENTAL ENTRANCE. WHERE UNUSUAL TRAFFIC PROBLEMS OCCUR, APPLICATION FOR ADDITIONAL ENTRANCES MAY BE MADE TO THE DIRECTOR OF PUBLIC WORKS, WITH CONSIDERATION OF REQUEST BASED ON STATED NEED AND THE EFFECTS ON PUBLIC SAFETY AND WELFARE. IN ANY INSTANCE, ENTRANCE ARRANGEMENT SHALL BE SUBJECT TO THE APPROVAL OF THE BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS.
2. WHERE THE COMMERCIAL SITE IS ADJACENT TO A STATE ROAD, THE COUNTY AND THE STATE STANDARDS SHALL APPLY.
3. CONCRETE TO BE MIX NO. 3 OR MIX NO. 6 AS DIRECTED BY THE ENGINEER. LIMIT GROUND IRON BLAST FURNACE SLAG CONTENT TO 35% MAXIMUM WHEN MIX #3 IS USED.
4. THE SIDEWALK PATH THROUGH THE APRON SHALL HAVE 2% CROSS SLOPE.

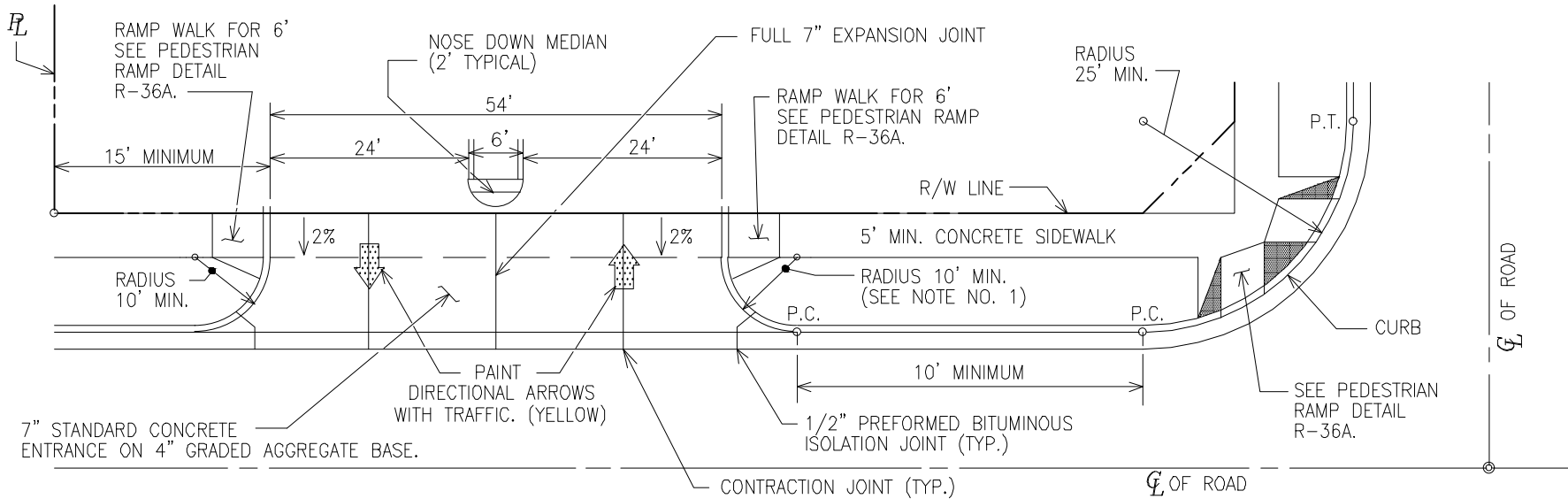


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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 PEDESTRIAN RAMP

ISSUED: SEPTEMBER 2023

PLATE
 R-30



NOTES :

- WHERE 10 FT. MINIMUM RADIUS IS SHOWN, THE MAXIMUM RADIUS SHALL BE EQUAL TO THE DISTANCE FROM THE CURB TO THE PROPERTY LINE, EXCEPT WHERE BALTIMORE COUNTY POLICY ALLOWS LARGER RADII.
- SKWEDED ENTRANCES WILL BE PERMITTED ONLY ON DIVIDED HIGHWAYS.
- NO ENTRANCES WILL BE PERMITTED BETWEEN P.C. AND P.T. OF CURB RETURN AT ANY INTERSECTION.
- AT AN INTERSECTION OF TRAFFIC WAYS, OTHER THAN ALLEYS, THE CUTBACK OF THE PROPERTY LINE NORMALLY SHALL BE A CHORD CONNECTING THE POINTS ON THE PROPERTY LINE DIRECTLY OPPOSITE THE P.C. AND P.T. OF CURB RETURNS OR EDGE OF PAVEMENT RETURN.
- ALL PERMANENT SIGNS AND LIGHT FIXTURES SHALL BE OUTSIDE OF THE COUNTY RIGHT OF WAY, (10 FT. MIN. TANGENT DISTANCE).
- CURB FACE AT PROPERTY LINE SHALL HAVE STANDARD 7-3/16" REVEAL TO MATCH CURB FACE OF 6 FT. MEDIAN.
- CONCRETE TO BE MIX NO. 3 OR MIX NO. 6 AS DIRECTED BY THE ENGINEER AND PLACED ON A 4" GRADED AGGREGATE BASE. LIMIT GROUND IRON BLAST FURNACE SLAG CONTENT TO 35% MAXIMUM WHEN MIX #3 IS USED.
- WHERE CURB AND GUTTER EXIST REMOVE COMPLETELY TO THE FIRST CONSTRUCTION JOINT EACH SIDE OF THE PROPERTY ENTRANCE. USE EXISTING EDGE OF ROAD FOR GRADE GUIDANCE AS DIRECTED. JOINT WHERE GUTTER MEETS PAVEMENT TO BE FINISHED WITH A STANDARD EDGING TOOL.
- CONSTRUCT ENTRANCE WITH 1-1/2" LIP ABOVE GUTTER ALONG FACE OF CURB LINE EXTENDED ACROSS ENTRANCE.
- THE SIDEWALK PATH THROUGH THE APRON SHALL HAVE 2% CROSS SLOPE.

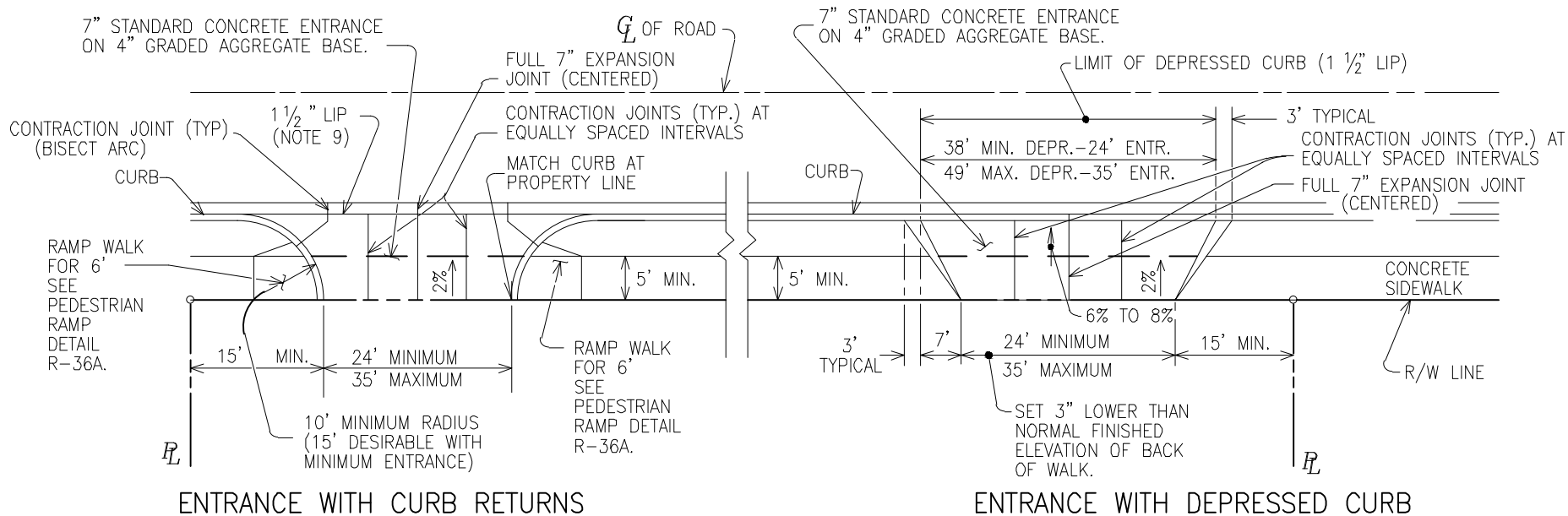


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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 CHANNELIZED COMMERCIAL ENTRANCE
 AT ROAD INTERSECTION

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PLATE
 R-31



ENTRANCE WITH CURB RETURNS

ENTRANCE WITH DEPRESSED CURB

NOTES :

- WHERE 10 FT. MINIMUM RADIUS IS SHOWN, THE MAXIMUM RADIUS SHALL BE EQUAL TO THE DISTANCE FROM THE CURB TO THE PROPERTY LINE, EXCEPT WHERE BALTIMORE COUNTY POLICY ALLOWS LARGER RADII.
- SKWEDED ENTRANCES WILL BE PERMITTED ONLY ON DIVIDED HIGHWAYS.
- NO ENTRANCES WILL BE PERMITTED BETWEEN P.C. AND P.T. OF CURB RETURN AT ANY INTERSECTION.
- WHERE THE DISTANCE FROM THE FACE OF CURB TO THE PROPERTY LINE IS LESS THAN 10 FT., SLOPE FINISHED GRADE OF ENTRANCE PAVING AT 8% MAXIMUM FOR A MINIMUM OF 10 FT. TO NEXT BREAK IN GRADE.
- ALL PERMANENT SIGNS AND LIGHT FIXTURES SHALL BE OUTSIDE OF THE COUNTY RIGHT OF WAY.
- PLACE 1/2" PREFORMED BITUMINOUS EXPANSION JOINT MATERIAL ALONG REAR OF DEPRESSED CURB AT EDGE OF 7" STANDARD CONCRETE ENTRANCE. CONSTRUCT DEPRESSED CURB WITH 1-1/2" LIP AT GUTTER.
- CONCRETE TO BE MIX NO. 3 OR MIX NO. 6 AS DIRECTED BY THE ENGINEER AND PLACED ON A 4" GRADED AGGREGATE BASE. LIMIT GROUND IRON BLAST FURNACE SLAG CONTENT TO 35% MAXIMUM WHEN MIX NO. 3 IS USED.
- WHERE CURB AND GUTTER EXIST REMOVE COMPLETELY TO THE FIRST EXISTING CONSTRUCTION JOINT EACH SIDE OF THE PROPERTY ENTRANCE. USE EXISTING EDGE OF ROAD FOR GRADE GUIDANCE AS DIRECTED. JOINT WHERE GUTTER MEETS PAVEMENT TO BE FINISHED WITH A STANDARD EDGING TOOL.
- ENTRANCE WITH CURB RETURNS SHALL BE CONSTRUCTED WITH 1-1/2" LIP ABOVE GUTTER ALONG FACE OF CURB LINE EXTENDED ACROSS ENTRANCE. CURB FACE AT PROPERTY LINE SHALL HAVE STANDARD 7-3/16" REVEAL.
- THE SIDEWALK PATH THROUGH THE APRON SHALL HAVE 2% CROSS SLOPE.



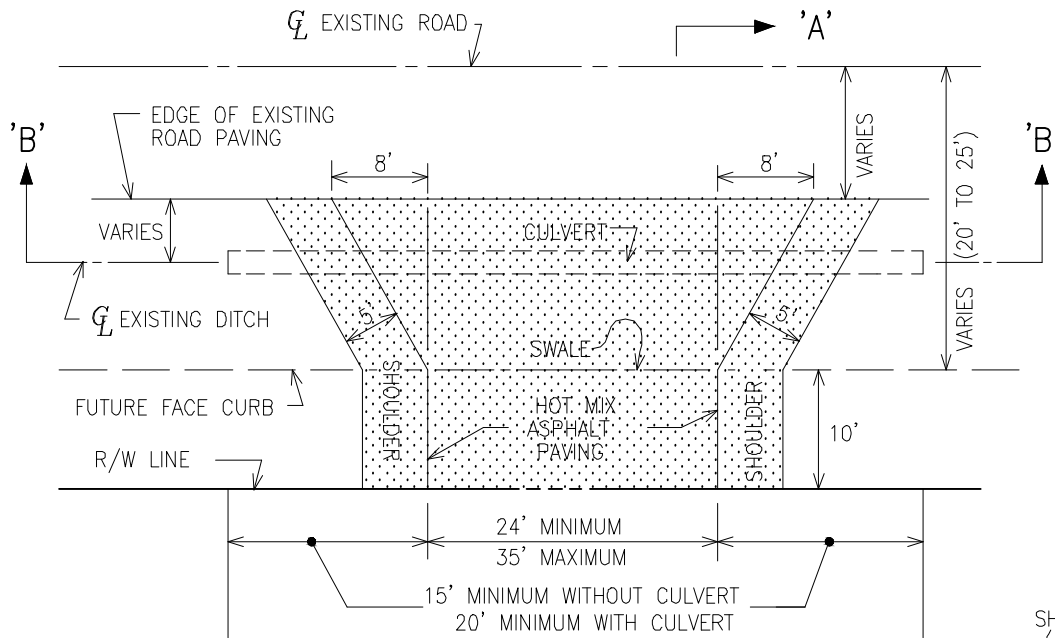
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 ROAD AND STREET DETAILS
 SINGLE COMMERCIAL ENTRANCE

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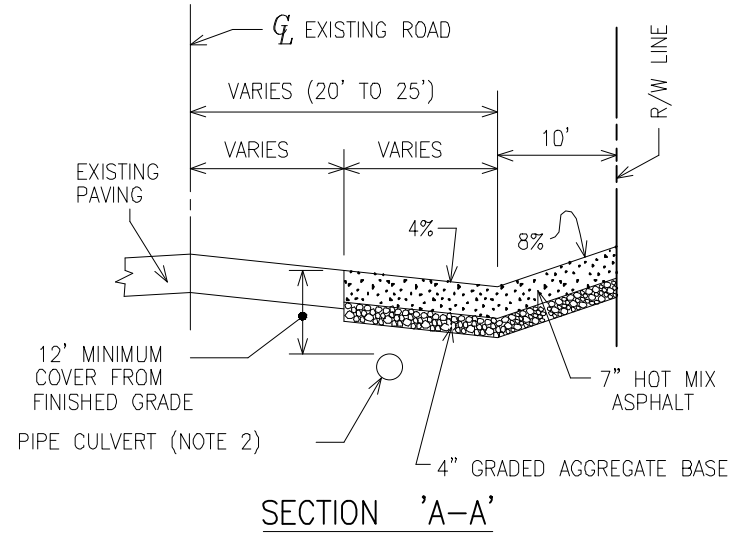
PLATE
R-32

DATE: 08/28/2023 FILE: HIGHWAYS_MASTER.DWG

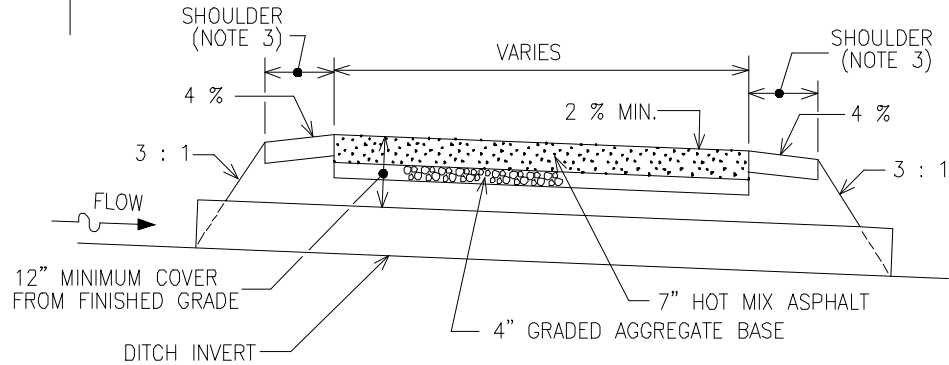


NOTES :

1. PROVIDE WIDENING OF EXISTING ROAD RIGHT OF WAY AS NECESSARY TO ACCOMMODATE FUTURE 40 FT. CURB ON 60 FT. RIGHT OF WAY OR 50 FT. CURB ON 70 FT. RIGHT OF WAY AS DIRECTED BY THE ENGINEER.
2. PROVIDE PIPE CULVERT IF INVERT OF EXISTING DITCH IS LOWER THAN SWALE ACROSS ENTRANCE. (SEE SECTION 'A-A')
3. THE 5 FT. SHOULDERS SHALL BE STABILIZED EQUIVALENT TO ADJACENT SURFACE. USE SAME MATERIAL AS EXISTING ROAD SHOULDER.



SECTION 'A-A'



SECTION 'B-B'

MINIMUM 12" BCCMP - TYPE A - 14 GAGE MINIMUM OR EQUIVALENT. ACTUAL SIZE TO BE DETERMINED BY HYDRAULIC REQUIREMENTS. SET ON LINE OF EXISTING DITCH. LENGTH SET TO FIT TOE OF 3 : 1 SLOPE EACH END. TYPE AND SIZE OF PIPE SUBJECT TO APPROVAL OF DIRECTOR OF PUBLIC WORKS.

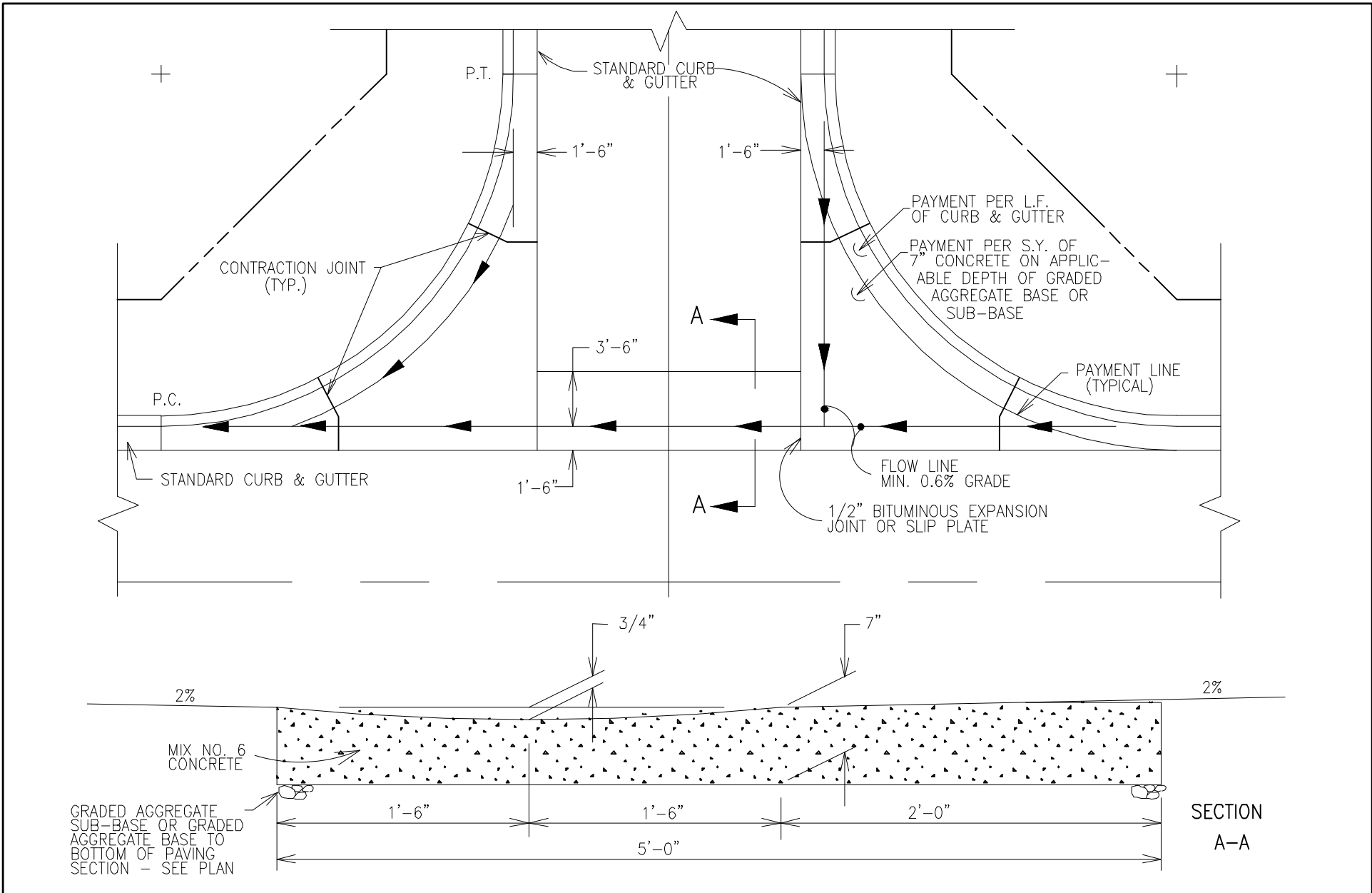



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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 RURAL COMMERCIAL ENTRANCE

ISSUED: SEPTEMBER 2023

PLATE
 R-32A

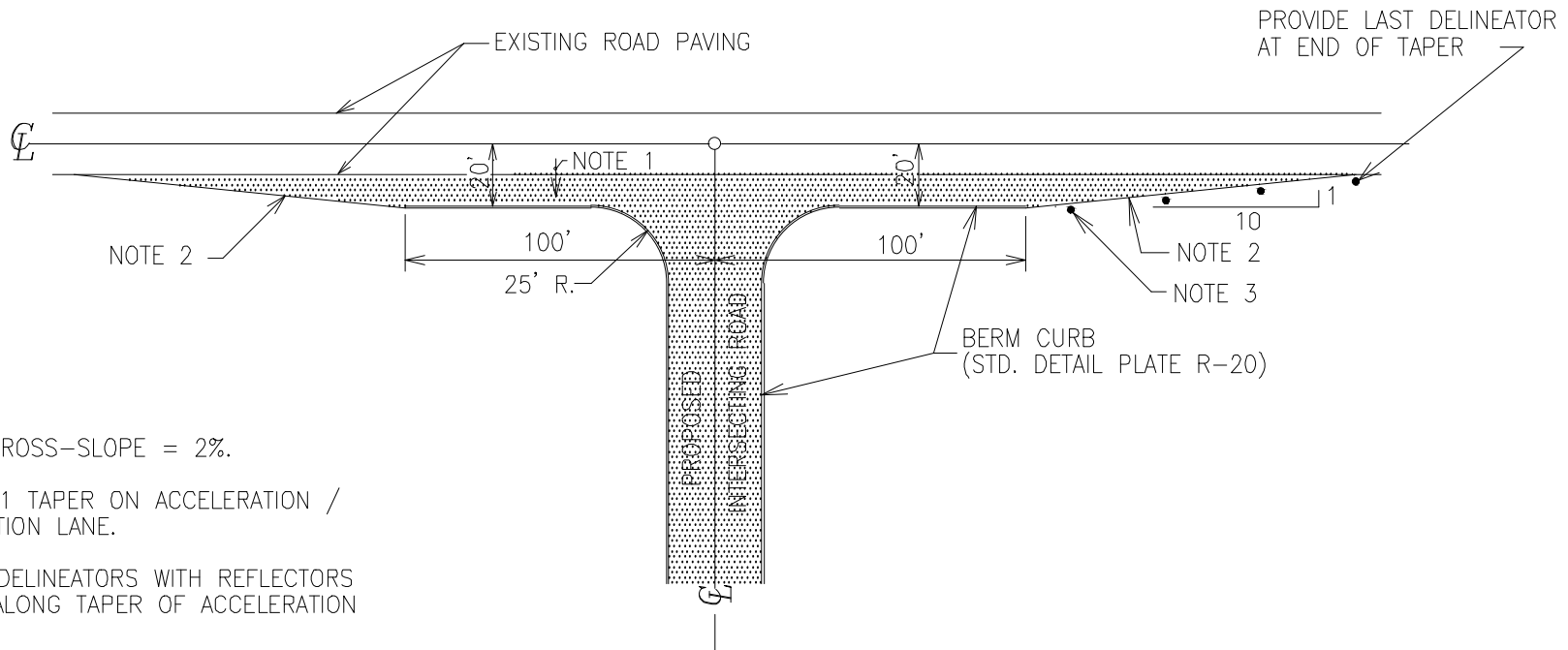



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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
**VALLEY GUTTER
 FOR 90° INTERSECTION**

ISSUED: SEPTEMBER 2023
 PLATE
R-33

FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023



NOTES:

1. AVERAGE CROSS-SLOPE = 2%.
2. USE 10 : 1 TAPER ON ACCELERATION / DECELERATION LANE.
3. USE STD. DELINEATORS WITH REFLECTORS 30' o/c ALONG TAPER OF ACCELERATION LANE.
4. VARIATIONS ARE ALLOWED AT THE DISCRETION OF THE DIRECTOR OF PUBLIC WORKS.

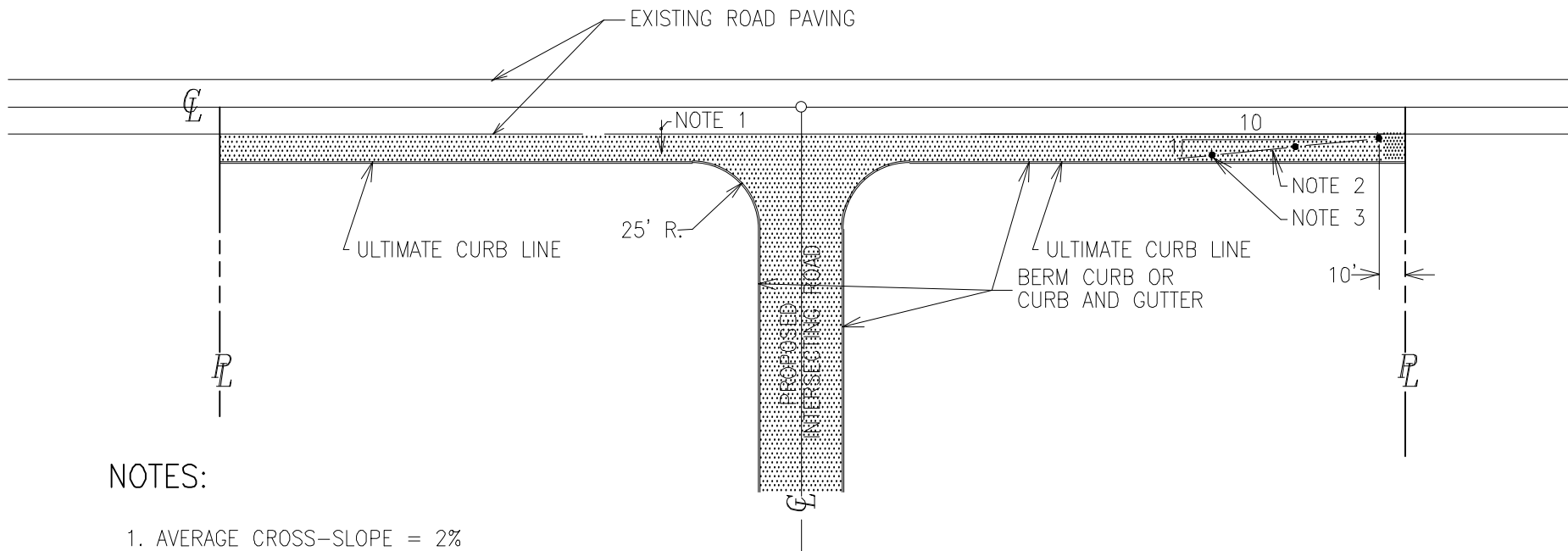


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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
**MINIMUM SUBDIVISION REQUIREMENTS
 FOR ACCELERATION LANES**
 WIDENING TO PROPERTY LINES NOT REQUIRED

ISSUED: SEPTEMBER 2023

PLATE
R-35



NOTES:

1. AVERAGE CROSS-SLOPE = 2%
2. USE 10 : 1 TAPER FOR ACCELERATION LANE DELINEATORS.
3. USE STD. FLEX POST DELINEATORS, WITH REFLECTORS, AT 30' o/c. USE ADHESIVE BASE DELINEATORS FOR PLACEMENT ON PAVEMENT, AT 30' o/c.
4. VARIATIONS ARE ALLOWED AT THE DISCRETION OF THE DIRECTOR OF PUBLIC WORKS.

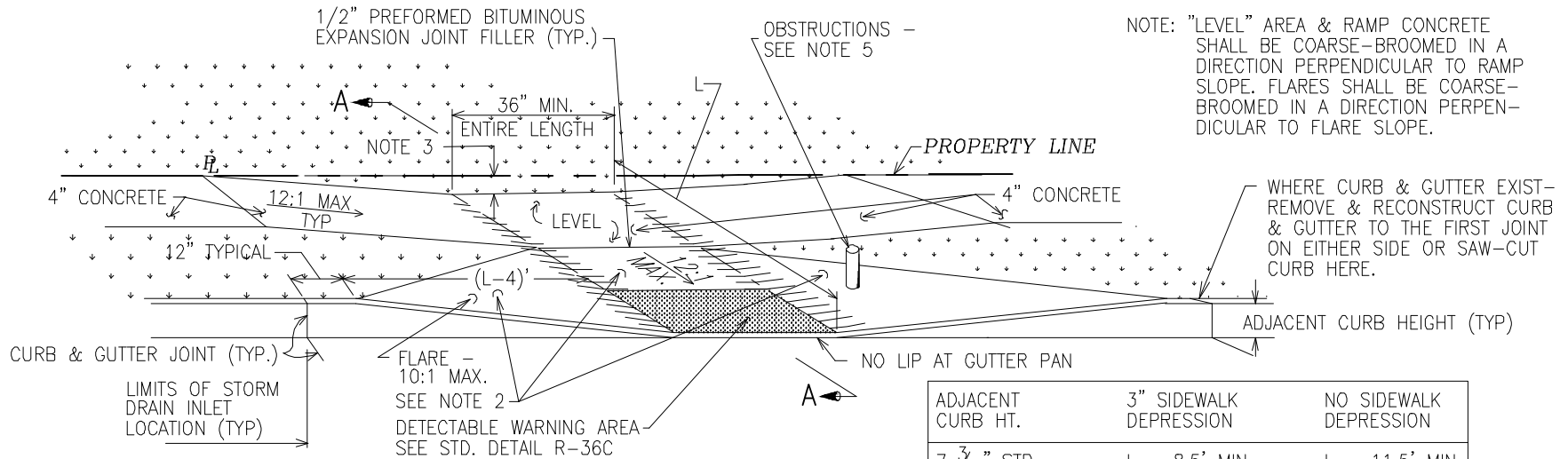


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 SEPTEMBER 28, 2023
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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 MINIMUM SUBDIVISION REQUIREMENTS
 FOR ACCELERATION LANES
 WIDENING TO PROPERTY LINES REQUIRED

ISSUED: SEPTEMBER 2023

PLATE
 R-35A



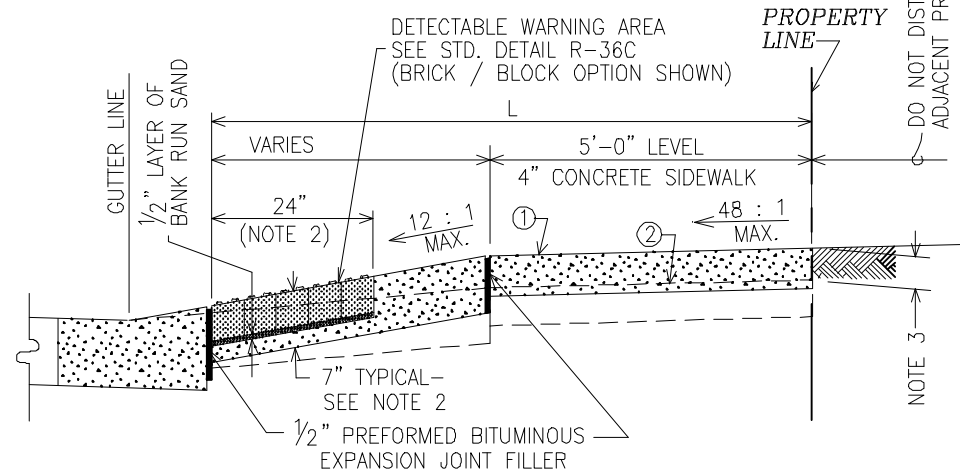
NOTE: "LEVEL" AREA & RAMP CONCRETE SHALL BE COARSE-BROOMED IN A DIRECTION PERPENDICULAR TO RAMP SLOPE. FLARES SHALL BE COARSE-BROOMED IN A DIRECTION PERPENDICULAR TO FLARE SLOPE.

WHERE CURB & GUTTER EXIST - REMOVE & RECONSTRUCT CURB & GUTTER TO THE FIRST JOINT ON EITHER SIDE OR SAW-CUT CURB HERE.

| ADJACENT CURB HT. | 3" SIDEWALK DEPRESSION | NO SIDEWALK DEPRESSION |
|---------------------------------------|------------------------|------------------------|
| 7 ³ / ₁₆ " STD. | L = 8.5' MIN. | L = 11.5' MIN. |
| 8" MdSHA | L = 9' MIN. | L = 12' MIN. |
| OTHER (NOTE 6) | FORMULA "A" | FORMULA "B" |

NOTES

- AREAS LABELED "LEVEL" SHALL HAVE A GRADE OF 48:1 MAX. FOR PURPOSES OF DRAINAGE.
- WHERE DETECTABLE WARNING AREA IS TO BE CONSTRUCTED OF BRICK OR BLOCK, RAMP AND FLARES SHALL BE OF 7" CONCRETE, WITH BRICK OR BLOCK INSET FLUSH WITH SURROUNDING CONCRETE. USE BANK RUN SAND TO LEVEL BRICKS/BLOCKS. WHERE DETECTABLE WARNING AREA WILL BE ENTIRELY CONCRETE, 7" CONCRETE SHALL BE USED.
- A SIDEWALK DEPRESSION OF UP TO 3" MAXIMUM TO BE USED AS DIRECTED ON PLANS OR BY THE ENGINEER.
- RAMPS MAY BE CONSTRUCTED ALONG TANGENT OR RETURN SECTIONS OF CONCRETE CURB AS NOTED ON PLANS.
- OBSTRUCTIONS TO BE RELOCATED IF WITHIN RAMP OR SIDEWALK AREA. OBSTRUCTION MAY REMAIN IN FLARE WHERE 36" MINIMUM CLEAR WIDTH EXISTS ALONG BOTH SIDEWALK & RAMP AREA. PLACE 1/4" BITUMINOUS EXPANSION JOINT MATERIAL DIRECTLY AROUND OBSTRUCTIONS LESS THAN 3" IN DIAMETER. CONSTRUCT ISOLATION JOINTS PER STD. DETAIL R-17 FOR LARGER OBSTRUCTIONS.
- FORMULA A: $L \text{ (IN FT)} = 5 + (\text{HT. CURB IN INCHES} - 3)$
 FORMULA B: $L \text{ (IN FT)} = 5 + (\text{HT. CURB IN INCHES})$
 IF ADJACENT CURB HEIGHTS ARE DIFFERENT ON EACH SIDE OF RAMP, ADJUST FLARE LENGTHS AS REQ'D TO MAINTAIN SLOPES SHOWN ON THIS DETAIL.
- THE SIDEWALK PATH THROUGH THE APRON SHALL HAVE 2% CROSS SLOPE.
- PERPENDICULAR CURB RAMPS ARE PREFERRED OVER DIAGONAL RAMPS TO DIRECT USERS TO THE CROSSWALK INSTEAD OF THE CENTER OF THE INTERSECTION.



SECTION A-A

- ① TOP, UNDEPRESSED SIDEWALK
- ② TOP, DEPRESSED SIDEWALK

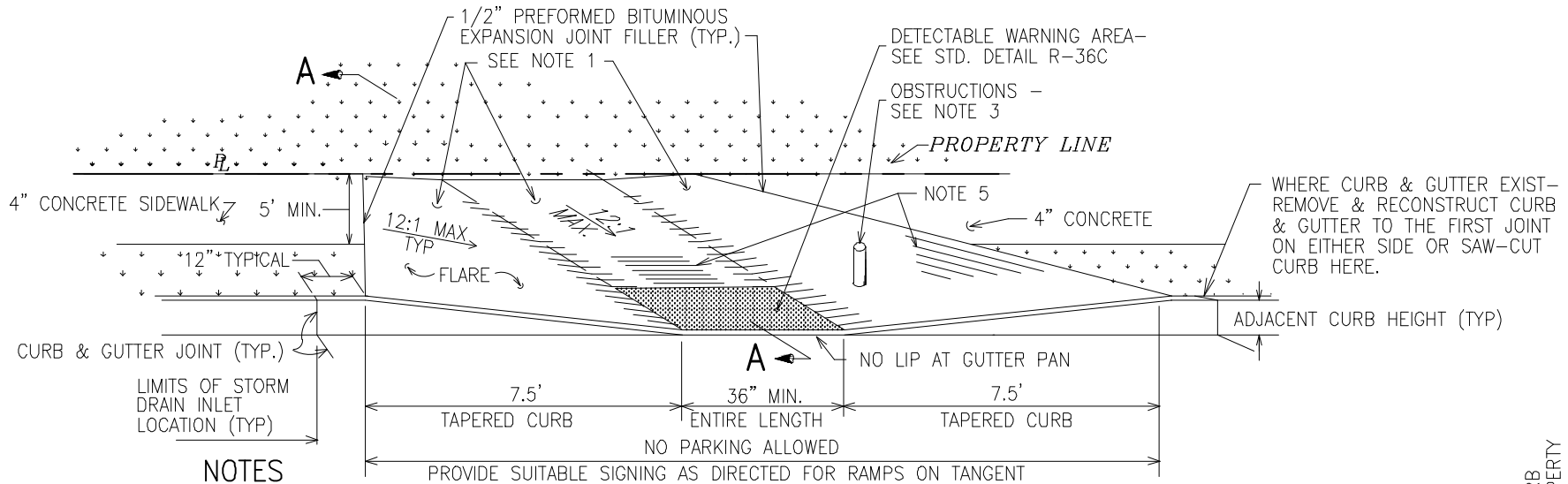


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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
**PEDESTRIAN RAMP
 FOR ACCELERATION LANES
 MEDIAN AREA BETWEEN SIDEWALK AND CURB**

ISSUED: SEPTEMBER 2023

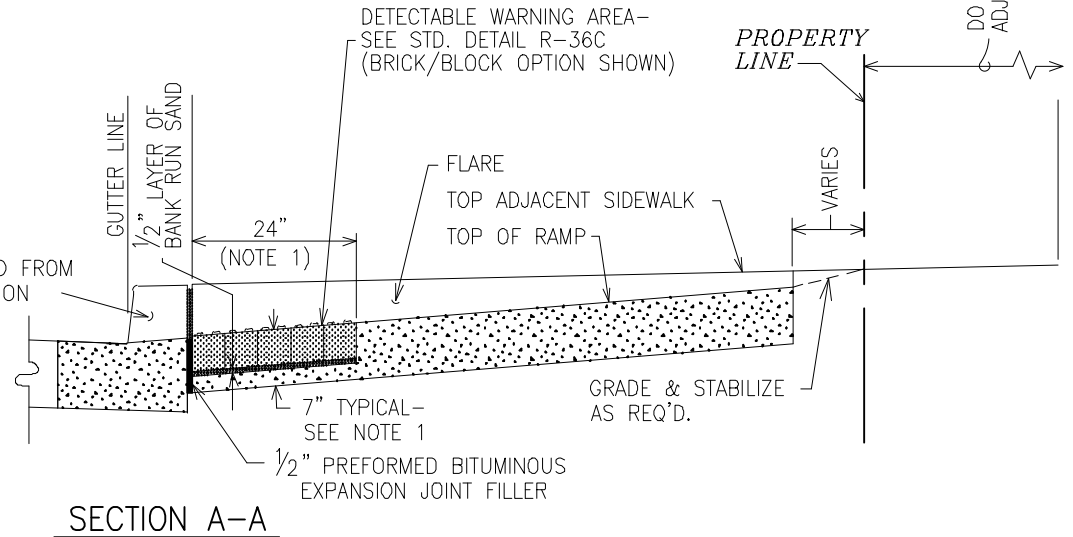
PLATE
R-36A



NOTES

1. WHERE DETECTABLE WARNING AREA IS TO BE CONSTRUCTED OF BRICK OR BLOCK, RAMP AND FLARES SHALL BE OF 7" CONCRETE, WITH BRICK OR BLOCK INSET FLUSH WITH SURROUNDING CONCRETE. USE BANK RUN SAND TO LEVEL BRICKS/BLOCKS. WHERE DETECTABLE WARNING AREA WILL BE ENTIRELY CONCRETE, 7" CONCRETE SHALL BE USED.
2. RAMPS MAY BE CONSTRUCTED ALONG TANGENT OR RETURN SECTIONS OF CONCRETE CURB AS NOTED ON PLANS.
3. OBSTRUCTIONS TO BE RELOCATED IF WITHIN RAMP OR SIDEWALK AREA. OBSTRUCTION MAY REMAIN IN FLARE WHERE 36" MINIMUM CLEAR WIDTH EXISTS ALONG BOTH SIDEWALK & RAMP AREA. PLACE 1/4" BITUMINOUS EXPANSION JOINT MATERIAL DIRECTLY AROUND OBSTRUCTIONS LESS THAN 3" IN DIAMETER. CONSTRUCT ISOLATION JOINTS PER STD. DETAIL R-17 FOR LARGER OBSTRUCTIONS.
4. CONCRETE PORTIONS OF RAMPS & FLARES SHALL BE COARSE-BROOMED IN A DIRECTION PERPENDICULAR TO SLOPE OF RAMP OR FLARE. SEE PLAN VIEW.
5. THE SIDEWALK PATH THROUGH THE APRON SHALL HAVE 2% CROSS SLOPE.
6. PREPENDICULAR CURB RAMPS ARE PREFERRED OVER DIAGONAL RAMPS TO DIRECT USERS TO THE CROSSWALK INSTEAD OF THE CENTER OF THE INTERSECTION.

PROVIDE SUITABLE SIGNING AS DIRECTED FOR RAMPS ON TANGENT



SECTION A-A



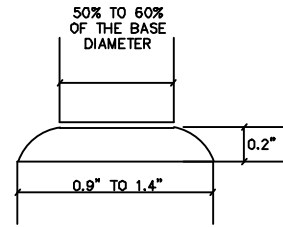
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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 PEDESTRIAN RAMP
 ALTERNATE

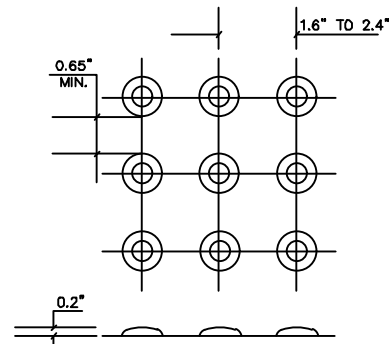
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PLATE
R-36B

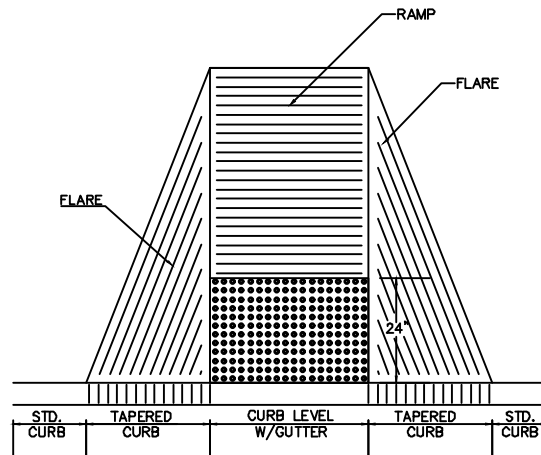
1. A DETECTABLE WARNING IS A STANDARDIZED SURFACE FEATURE BUILT IN OR APPLIED TO WALKING SURFACES (OR OTHER ELEMENTS) TO WARN VISUALLY IMPAIRED PEOPLE OF HAZARDS ON A CIRCULATION PATH.
2. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH NOMINAL DIMENSIONS AS SHOWN AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-DARK OR DARK-LIGHT, THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE INTEGRAL WITH THE WALKING SURFACE.
3. DETECTABLE WARNING AREAS SHALL EXTEND 24" BACK FROM THE REAR OF CURB WITHIN THE RAMP ITSELF. THEY SHALL NOT BE USED ELSEWHERE ON A PEDESTRIAN RAMP.
4. DETECTABLE WARNINGS SHALL BE IN ACCORDANCE WITH BALTIMORE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS SECTION 619, OR AS INSTRUCTED BY ENGINEER.
5. COMMERCIAL PRODUCTS MAY VARY IN SPACING, DIMENSION AND CONFIGURATION OF DOMES. CERTIFICATION OF COMPLIANCE WITH CURRENT ADAAG (AMERICANS WITH DISABILITIES ACT) ACCESSIBILITY GUIDELINE REQUIREMENTS SHALL BE REQUIRED OF ALL PRODUCTS BEFORE INSTALLATION.
6. MANUFACTURED PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.



**PROFILE VIEW
SINGLE
TRUNCATED DOME**



**SQUARE PATTERN
PARALLEL ALIGNMENT
(PREFERRED)**



**LOCATION OF
DETECTABLE WARNINGS**

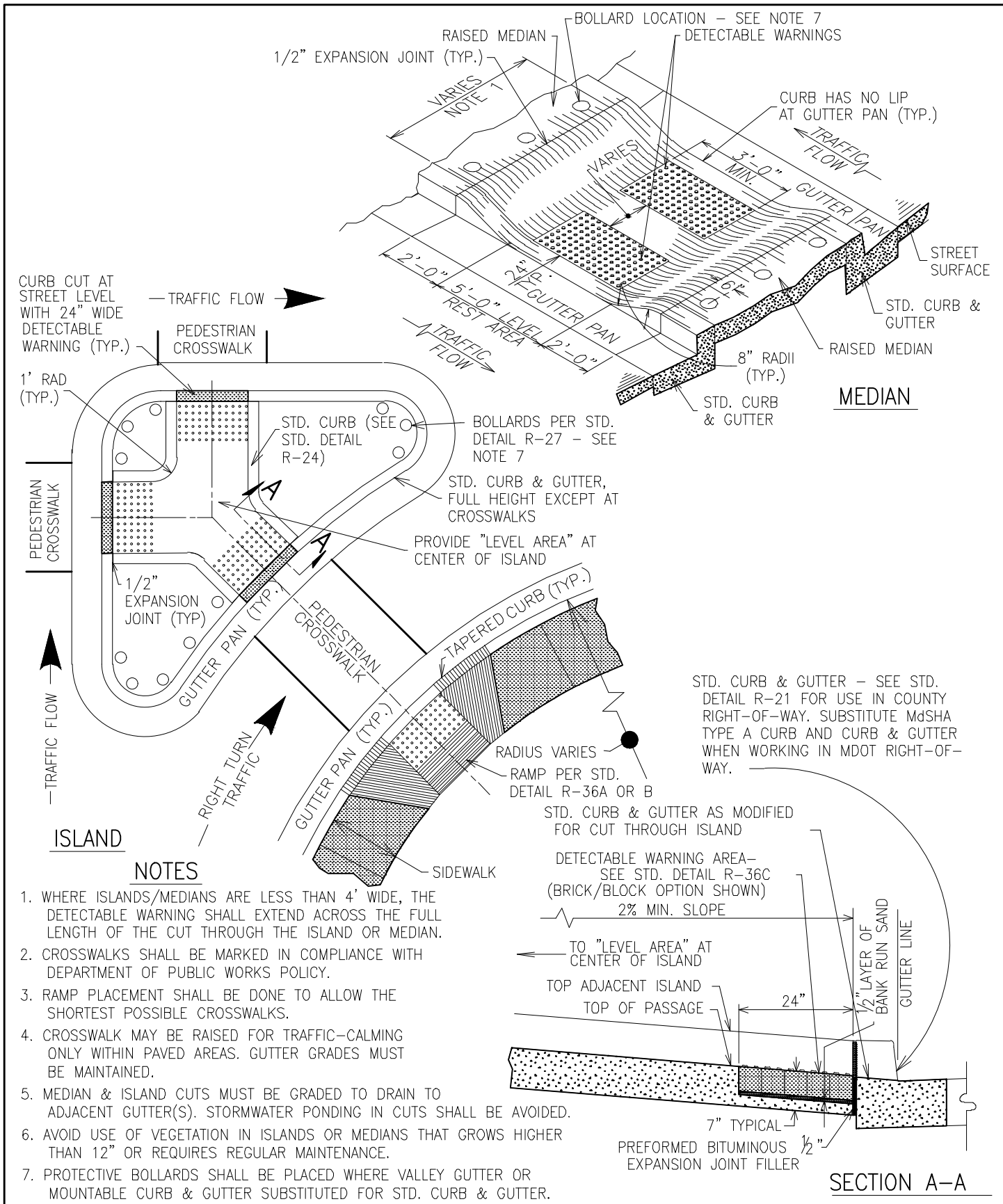


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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROAD AND STREET DETAILS
DETECTABLE WARNINGS
FOR USE ON PEDESTRIAN RAMPS

ISSUED: SEPTEMBER 2023

PLATE
R-36C



CURB CUT AT STREET LEVEL WITH 24" WIDE DETECTABLE WARNING (TYP.)

PEDESTRIAN CROSSWALK

1' RAD (TYP.)

PEDESTRIAN CROSSWALK

1/2" EXPANSION JOINT (TYP.)

STD. CURB (SEE STD. DETAIL R-24)

BOLLARDS PER STD. DETAIL R-27 - SEE NOTE 7

STD. CURB & GUTTER, FULL HEIGHT EXCEPT AT CROSSWALKS

PROVIDE "LEVEL AREA" AT CENTER OF ISLAND

PEDESTRIAN CROSSWALK

GUTTER PAN (TYP.)

TAPERED CURB (TYP.)

RADIUS VARIES

RAMP PER STD. DETAIL R-36A OR B

STD. CURB & GUTTER AS MODIFIED FOR CUT THROUGH ISLAND

DETECTABLE WARNING AREA - SEE STD. DETAIL R-36C (BRICK/BLOCK OPTION SHOWN)

2% MIN. SLOPE

TO "LEVEL AREA" AT CENTER OF ISLAND

TOP ADJACENT ISLAND

TOP OF PASSAGE

1/2" LAYER OF BANK RUN SAND

GUTTER LINE

7" TYPICAL
PREFORMED BITUMINOUS EXPANSION JOINT FILLER

STD. CURB & GUTTER - SEE STD. DETAIL R-21 FOR USE IN COUNTY RIGHT-OF-WAY. SUBSTITUTE MdSHA TYPE A CURB AND CURB & GUTTER WHEN WORKING IN MDOT RIGHT-OF-WAY.

SECTION A-A

NOTES

1. WHERE ISLANDS/MEDIANS ARE LESS THAN 4' WIDE, THE DETECTABLE WARNING SHALL EXTEND ACROSS THE FULL LENGTH OF THE CUT THROUGH THE ISLAND OR MEDIAN.
2. CROSSWALKS SHALL BE MARKED IN COMPLIANCE WITH DEPARTMENT OF PUBLIC WORKS POLICY.
3. RAMP PLACEMENT SHALL BE DONE TO ALLOW THE SHORTEST POSSIBLE CROSSWALKS.
4. CROSSWALK MAY BE RAISED FOR TRAFFIC-CALMING ONLY WITHIN PAVED AREAS. GUTTER GRADES MUST BE MAINTAINED.
5. MEDIAN & ISLAND CUTS MUST BE GRADED TO DRAIN TO ADJACENT GUTTER(S). STORMWATER PONDING IN CUTS SHALL BE AVOIDED.
6. AVOID USE OF VEGETATION IN ISLANDS OR MEDIANS THAT GROWS HIGHER THAN 12" OR REQUIRES REGULAR MAINTENANCE.
7. PROTECTIVE BOLLARDS SHALL BE PLACED WHERE VALLEY GUTTER OR MOUNTABLE CURB & GUTTER SUBSTITUTED FOR STD. CURB & GUTTER.

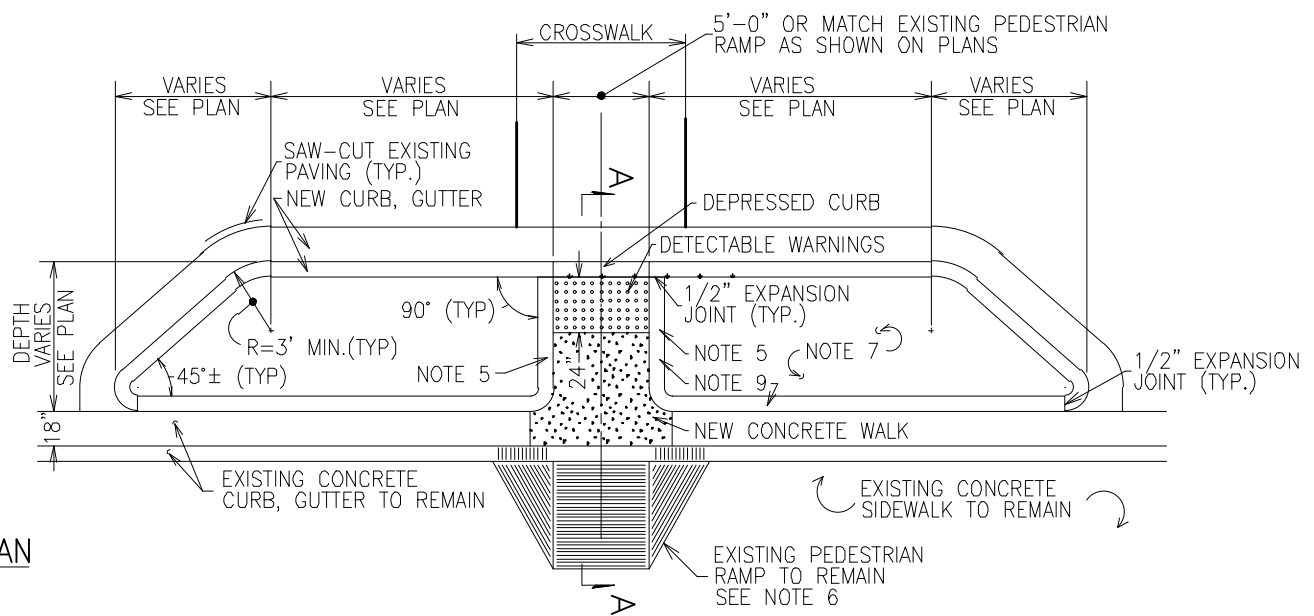


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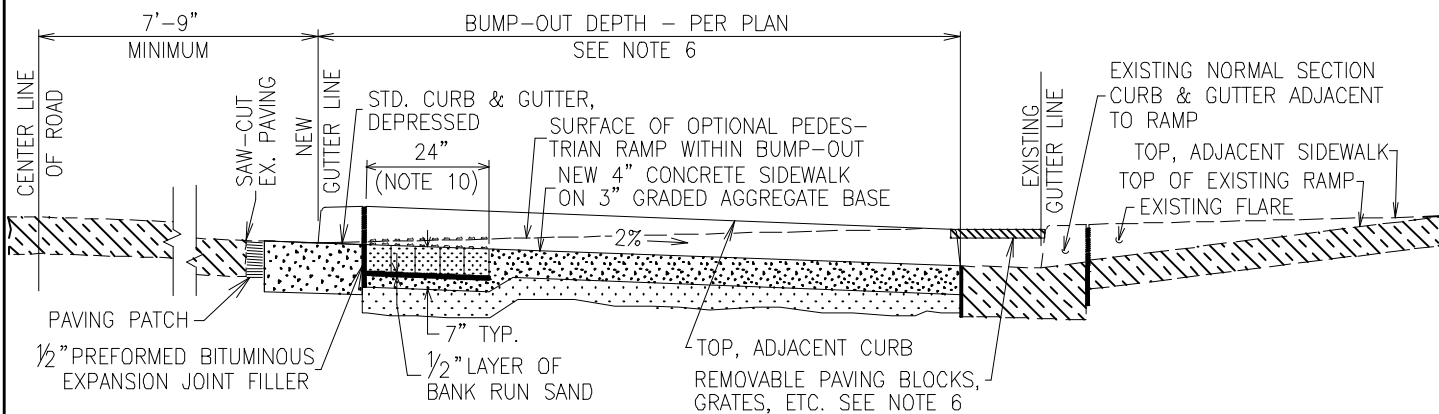
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 MEDIAN AND ISLAND
 PEDESTRIAN PASSAGES

ISSUED: SEPTEMBER 2023
 PLATE
 R-36D

DATE: 08/28/2023 FILE: HIGHWAYS_MASTER.DWG



PLAN



SECTION A-A

NOTES

1. ALL CURB RADII ARE 1'-0" EXCEPT AS OTHERWISE NOTED.
2. CROSSWALKS SHALL BE MARKED IN COMPLIANCE WITH DEPARTMENT OF PUBLIC WORKS POLICY. CROSSWALK SHALL BE CENTERED ON CENTER OF PEDESTRIAN RAMP.
3. ALIGN & PLACE RAMP TO PROVIDE THE SHORTEST POSSIBLE CROSSWALK LENGTH.
4. STORM WATER FLOW IN EXISTING GUTTERS SHALL BE MAINTAINED, OR AN APPROPRIATELY SIZED INLET DEVICE SHALL BE PLACED UPSTREAM. EXISTING GUTTER MAY BE MODIFIED OR ELIMINATED ONLY WITH APPROVAL OF STORM DRAIN DESIGN, BUREAU OF ENGINEERING & CONSTRUCTION.
5. CURB TO BE PARALLEL TO CENTER LINE OF EXISTING PEDESTRIAN RAMP.
6. IF THERE IS NO EXISTING PEDESTRIAN RAMP, A RAMP MAY BE CONSTRUCTED WITHIN THE BUMP-OUT, RATHER THAN WITHIN THE EXISTING SIDEWALK AREA. IN THIS CASE, DEPTH IS 7'-3" MINIMUM, AND GUTTER MUST BE SPANNED ALONG ENTIRE LENGTH OF BUMP-OUT WITH REMOVABLE PAVING BLOCKS, GRATES OR ANOTHER EQUIVALENT STRUCTURE. SUPPORTS FOR THESE GUTTER COVERS SHALL BE IN ACCORDANCE WITH PLANS.
7. CONCRETE PAVERS OR VEGETATION MAY BE PLACED WITHIN RAISED AREAS OF BUMP-OUT. VEGETATION USED SHALL BE LOW MAINTENANCE AND SHALL BE LIMITED TO A HEIGHT OF 12 INCHES OR LESS.
8. PROTECTIVE BOLLARDS, WARNING SIGNS AND REFLECTORS SHALL BE INSTALLED IN ACCORDANCE WITH PLANS APPROVED BY THE BUREAU OF TRAFFIC ENGINEERING.
9. USE TYPE A CURB (SEE STD. DETAIL R-24) ALONG EDGE OF EXISTING GUTTER AND NEXT TO NEW CONCRETE WALK.
10. DETECTABLE WARNING AREA-SEE STANDARD DETAIL R-36C.



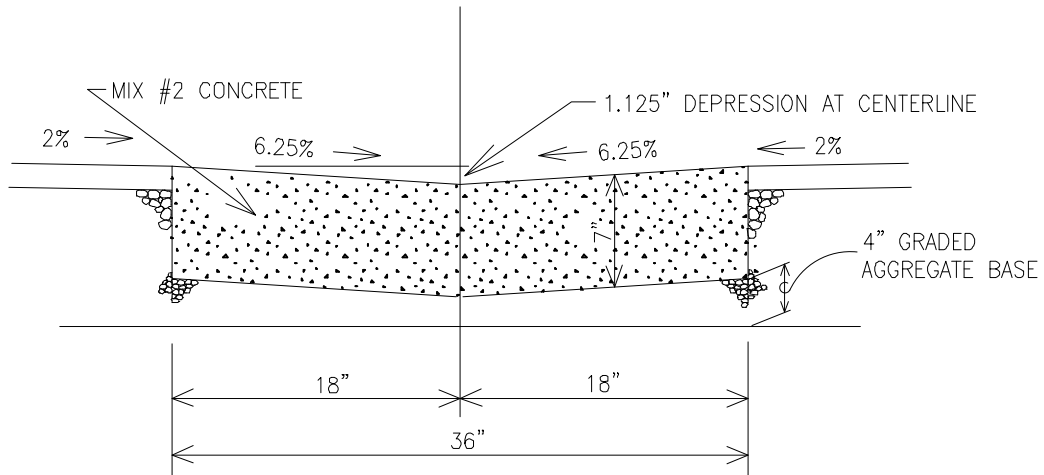
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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 PEDESTRIAN BUMP-OUT
 PEDESTRIAN PASSAGES

ISSUED: SEPTEMBER 2023

PLATE
 R-36E

FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023



NOTES

1. LIMIT GROUND IRON BLAST FURNACE SLAG CONTENT TO 25% MAXIMUM IN MIX #2 CONCRETE.

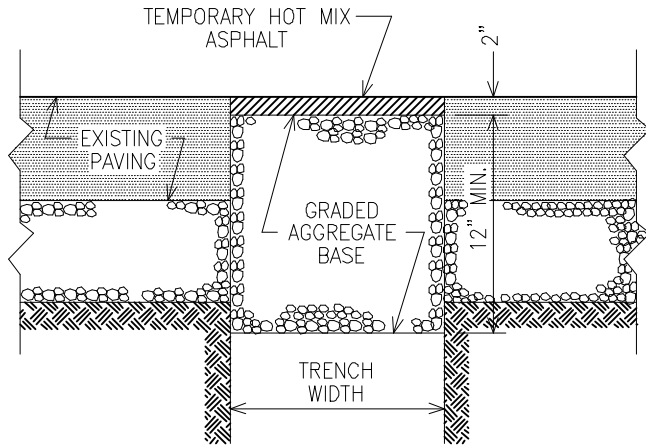


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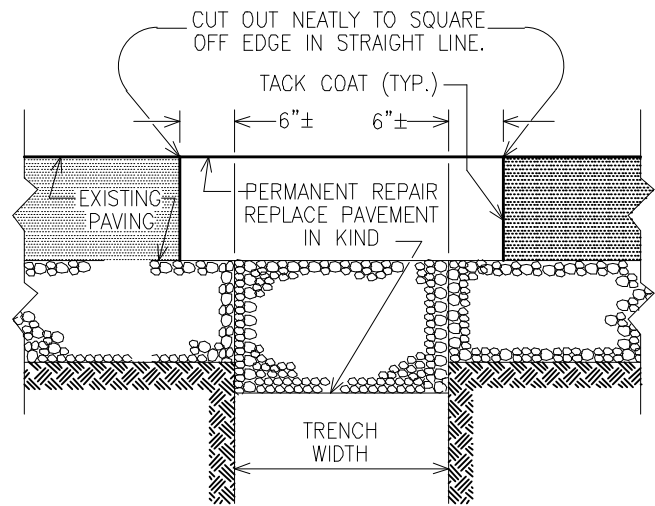
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 7" VALLEY GUTTER
 FOR PEDESTRIAN PARKING

ISSUED: SEPTEMBER 2023

PLATE
R-37



STAGE I – TEMPORARY



STAGE II – PERMANENT

1. CLEAN THOROUGHLY BEFORE PAVING.
 2. DEPTH OF PERMANENT REPAIR TO MATCH DEPTH OF EXISTING PAVING*. HOT MIX ASPHALT BASE TO BE PLACED IN COURSES NOT TO EXCEED 2.5". SURFACE COURSE SHALL BE 1-1/2".
- * NOT TO EXCEED 6"

NOTES :

1. REPLACE PAVING MATERIALS IN KIND AT SAME RELATIVE ELEVATION (PERMANENT).
2. MINIMUM ALLOWABLE SECTION = 3" HOT MIX ASPHALT / 11" GRADED AGGREGATE BASE.
3. PORTLAND CEMENT CONCRETE BASE AND SOIL CEMENT BASE MAY BE REPLACED WITH HOT MIX ASPHALT OF THE SAME DEPTH.
4. HOT MIX ASPHALT MAY BE USED IN PLACE OF PENETRATION MACADAM.
5. GRADED AGGREGATE BASE MAY BE USED IN PLACE OF WATER BOUND MACADAM.
6. EXISTING PAVING SECTIONS THAT ARE GREATER THAN 4" MUST BE PERMANENTLY REPAIRED WITH HMA BASE OF 12.5mm LEVEL I AND SURFACE WITH 1.5" of 9.5mm LEVEL 1 HMA.
7. STAGE II SHALL START 90 DAYS AFTER COMPLETION OF STAGE I.
8. TIME CHARGES IF IN SUSPENSION WILL RESUME 90 DAYS AFTER COMPLETION OF STAGE I.
9. TRENCH WIDTHS AND PAVEMENTS TO BE PER PLATES G-6 AND G-7.
10. FOR S.H.A. ROADS, TRENCH REPAIRS ARE TO CONFORM TO S.H.A. PERMIT REQUIREMENTS.
11. TACK COAT EDGES BETWEEN EXISTING BOUND PAVING AND HOT MIX ASPHALT PERMANENT REPAIR.
12. TEMPORARY HOT MIX ASPHALT SHALL BE 9.5mm (LEVEL 1) (PG 64-22).
13. WHEN PAVING SECTION IS LESS THAN 4", PERMANENT HOT MIX ASPHALT SHALL BE 9.5mm (LEVEL 1) (PG 64-22).

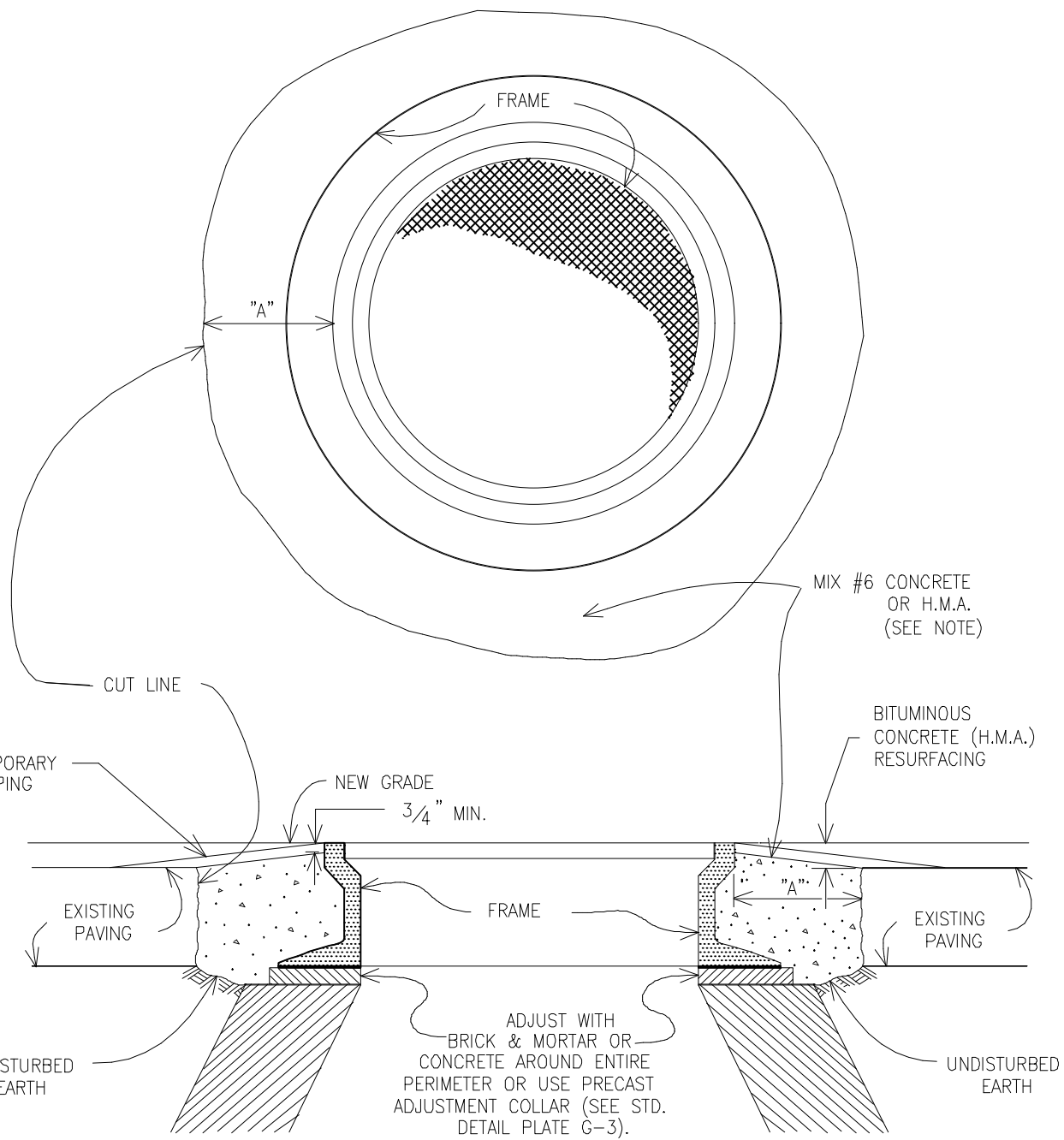


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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
 ROAD AND STREET DETAILS
 REPAVING TRENCH OPENINGS
 FLEXIBLE PAVING

ISSUED: SEPTEMBER 2023

PLATE
 R-38



MIX #6 CONCRETE OR H.M.A. (SEE NOTE)

BITUMINOUS CONCRETE (H.M.A.) RESURFACING

TEMPORARY RAMPING

NEW GRADE 3/4" MIN.

EXISTING PAVING

FRAME

EXISTING PAVING

UNDISTURBED EARTH

UNDISTURBED EARTH

ADJUST WITH BRICK & MORTAR OR CONCRETE AROUND ENTIRE PERIMETER OR USE PRECAST ADJUSTMENT COLLAR (SEE STD. DETAIL PLATE C-3).

NOTES:

- 3" MAX. LIFTS OF HOT MIX ASPHALT (H.M.A.) BASE COURSE MIX MAY BE USED IN PLACE OF MIX #6 CONCRETE.
- MIX #6 CONCRETE MUST REMAIN UNDISTURBED FOR 24 HOURS FOLLOWING PLACEMENT.
- DIMENSION "A" IS 9" MIN. FOR MIX #6 CONCRETE; 24" MIN. FOR HOT MIX ASPHALT (H.M.A.)
- IF AREA IS OPEN TO TRAFFIC BEFORE RESURFACING IS INSTALLED, THE CONTRACTOR MUST PROVIDE TEMPORARY RAMPING. MAXIMUM SLOPE = 1 INCH PER FOOT.



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 ROAD AND STREET DETAILS
 TYPICAL DETAIL
 ADJUSTING UTILITY FRAME

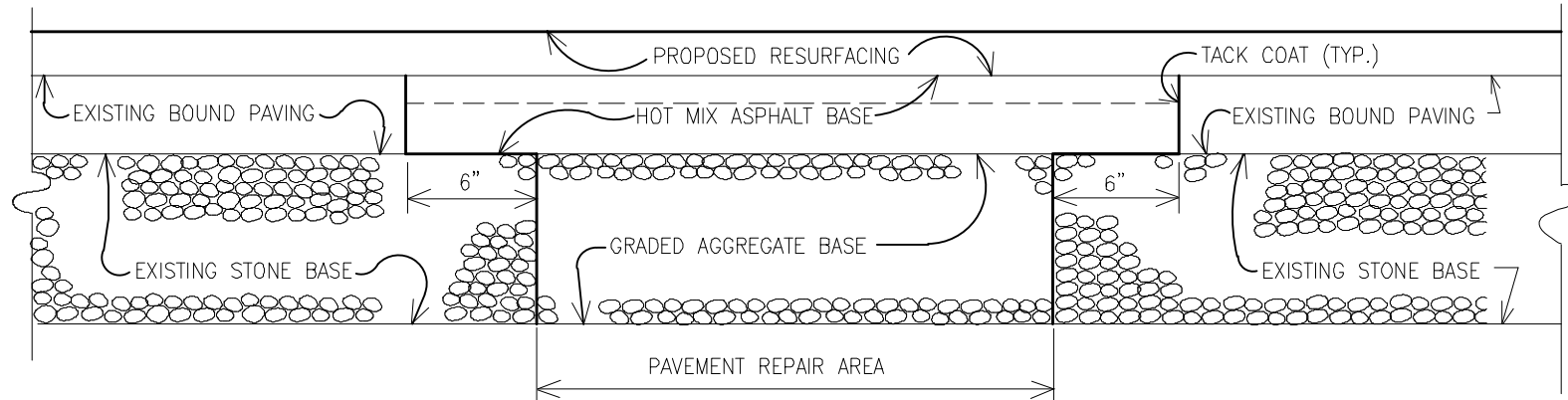
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PLATE
R-39

FILE: HIGHWAYS_MASTER.DWG DATE: 08/28/2023

REPAIR OF PAVEMENT FAILURE AREAS

NOT TO SCALE



GENERAL NOTES

1. CUT OUT REPAIR AREA NEATLY TO SQUARE OFF EDGE IN STRAIGHT LINE. CLEAN THOROUGHLY BEFORE PAVING.
2. REPLACE PAVING MATERIALS IN KIND AT SAME RELATIVE ELEVATION.
 - a.) PORTLAND CEMENT CONCRETE BASE AND SOIL CEMENT BASE MAY BE REPLACED WITH HOT MIX ASPHALT OF THE SAME DEPTH.
 - b.) HOT MIX ASPHALT MAY BE USED IN PLACE OF PENETRATION MACADAM.
 - c.) GRADED AGGREGATE BASE MAY BE USED IN PLACE OF WATERBOUND MACADAM.
3. MINIMUM ALLOWABLE PAVING REPAIR SECTION: 3" HOT MIX ASPHALT SURFACE, 8" GRADED AGGREGATE BASE. HOWEVER, IF THE ENGINEER DETERMINES THAT NO FAILURE HAS OCCURRED IN EXISTING STONE BASE ONLY THE BITUMINOUS BOUND SECTION WILL BE REPLACED.
4. HOT MIX ASPHALT BASE TO BE PLACED IN A MINIMUM OF 2 COURSES. THE TOP COURSE IS TO BE NO GREATER THAN 1.5" WITH NO COURSE TO EXCEED 4" THICKNESS.
5. TACK COAT EDGES BETWEEN EXISTING BOUND PAVING AND HOT MIX ASPHALT BASE.



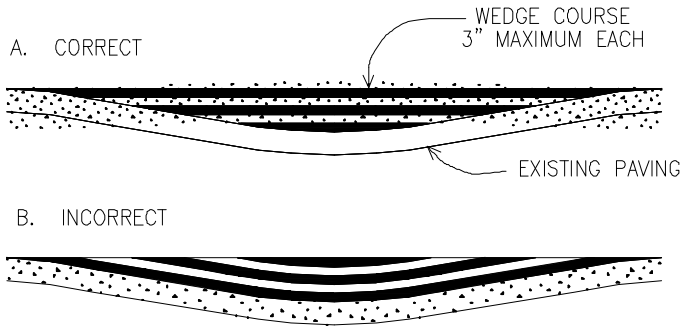
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 ROAD AND STREET DETAILS
 PAVEMENT FAILURE REPAIRS

ISSUED: SEPTEMBER 2023

PLATE
 R-41

LEVELING WEDGES

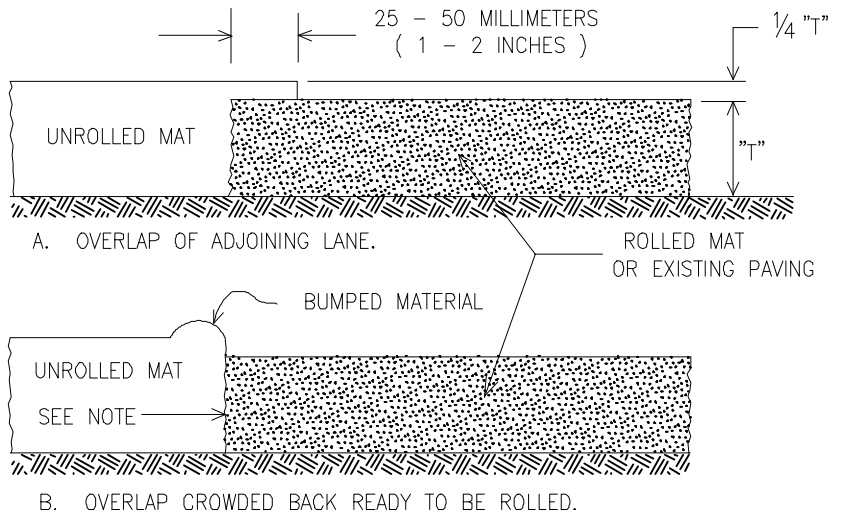


PREPARING LONGITUDINAL JOINTS

NOTE :

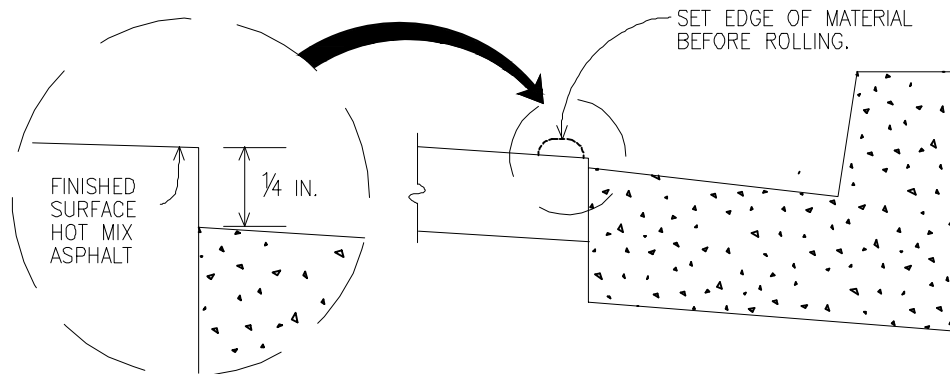
RECURT EDGE IF DIRTY,
UNRAVELED OR ROLLED DOWN
OR IF JOINT LINE IS NOT
STRAIGHT.

TACK VERTICAL EDGE OF EXISTING
PAVING OR ROLLED MAT IF IT IS
NOT HOT.

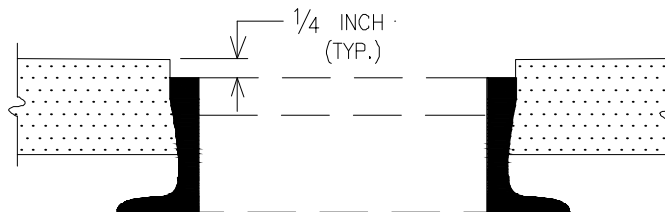


PAVING EDGES

AT GUTTER PAN
NORMAL CURB AND
GUTTER
(WET GUTTER)



AT MANHOLE FRAMES
AND FRAMES OF GRATES.



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DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROAD AND STREET DETAILS
HOT MIX ASPHALT PAVING
CONSTRUCTION PRACTICES

ISSUED: SEPTEMBER 2023

PLATE
R-42