

CALVERT COUNTY, MARYLAND



CONSTRUCTION STANDARDS FOR ROADS, STREETS AND INCIDENTAL STRUCTURES



CALVERT COUNTY DEPARTMENT OF PUBLIC WORKS

150 Main Street, Suite 202
Prince Frederick, Maryland 20678
Terry P. Carlson, P.E., Director

2012 Edition

PREFACE

This book of “**Construction Standards**” was prepared by the Calvert County Department of Public Works to provide engineering personnel, contractors and developers with a catalog of standards for roads, streets and incidental structures constructed within the jurisdiction of Calvert County.

Any Standards previously issued by Calvert County Department of Public Works are hereby superseded as of this date.

All Engineers, Land Surveyors and Contractors involved with the construction of roads, streets and incidental structures constructed within the jurisdiction of Calvert County should become thoroughly familiar with the contents of this book. Our goal is uniform design and construction throughout Calvert County.

These regulations may be revised periodically to reflect changing regulations and technology.

Any obvious errors found or any comments that you may have regarding these standards are welcome and will be given due consideration. Comments may be submitted to:

Calvert County Department of Public Works
150 Main Street, Suite 202
Prince Frederick, Maryland 20678
Telephone: 410-535-2204 – 301-855-1243 Fax: 410-535-2129

Effective Date:

July 1, 2012

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FOR DEVELOPMENT OF PREVIOUSLY RECORDED RESIDENTIAL LOTS
(RECORDED PRIOR TO ADOPTION OF C.C.Z.O. - JULY 29, 1967)
RIGHT-OF-WAY WIDTH PER RECORDED PLAT

FARM AND FOREST DISTRICT ROADWAYS - 30'-0" (MIN.) RIGHT-OF-WAY UP TO 10 LOTS

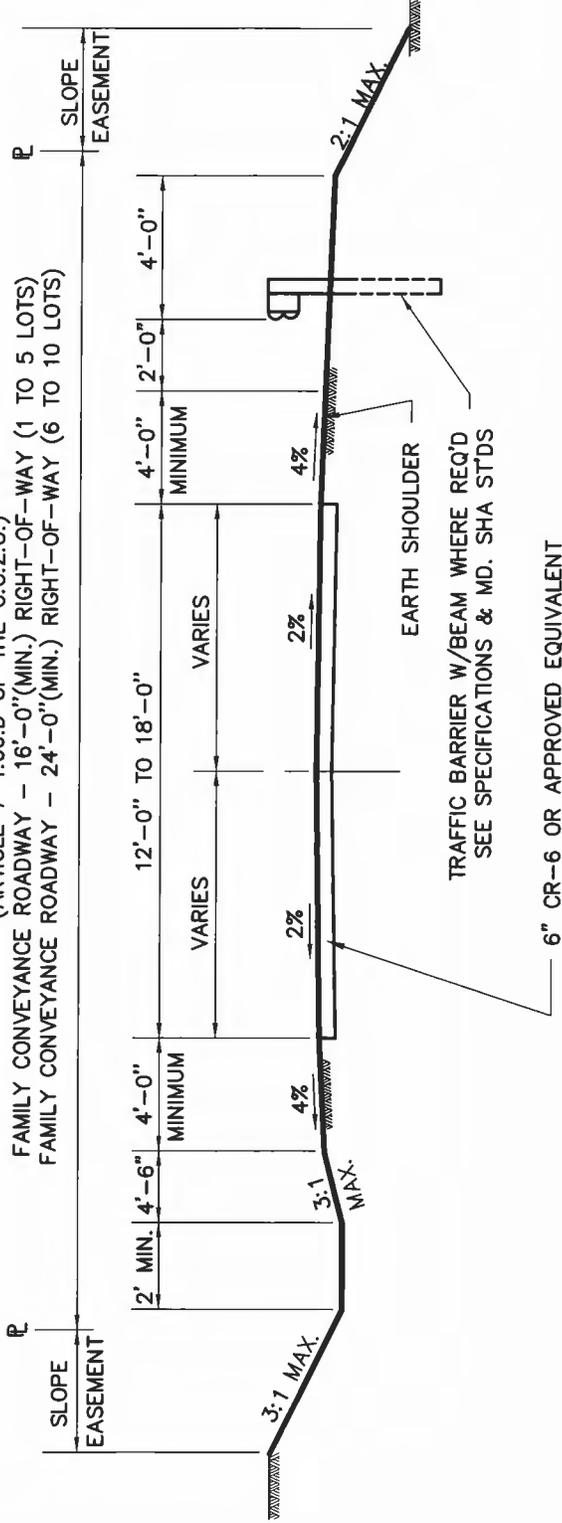
(ARTICLE 7-1.06.D OF THE C.C.Z.O.)

RURAL COMMUNITY DISTRICT ROADWAYS - 30'-0" (MIN.) RIGHT-OF-WAY UP TO 10 LOTS

(ARTICLE 7-1.06.D OF THE C.C.Z.O.)

FAMILY CONVEYANCE ROADWAY - 16'-0" (MIN.) RIGHT-OF-WAY (1 TO 5 LOTS)

FAMILY CONVEYANCE ROADWAY - 24'-0" (MIN.) RIGHT-OF-WAY (6 TO 10 LOTS)



TRAFFIC BARRIER W/BEAM WHERE REQ'D
SEE SPECIFICATIONS & MD. SHA STDS

6" CR-6 OR APPROVED EQUIVALENT

NOTE:

1. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

RIGHTS-OF-WAY RECORDED PRIOR TO THE
ADOPTION OF THE C.C.Z.O.

(JULY 29, 1967)

FARM AND FOREST DISTRICTS
RURAL COMMUNITY DISTRICTS
& FAMILY CONVEYANCE

NOT TO SCALE



STANDARD
NUMBER

RD-1A

STANDARD ROAD DETAILS

RESIDENTIAL / LOCAL ROADWAY

REVISED

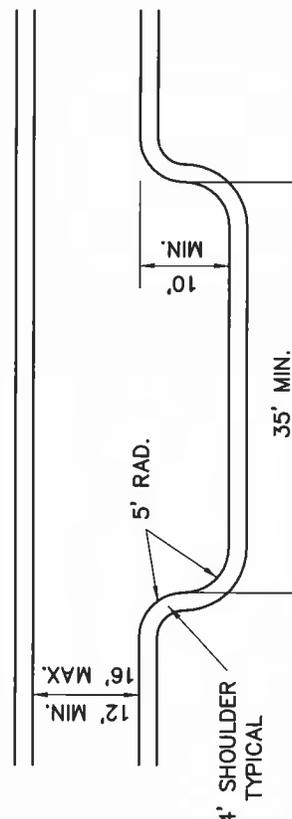
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APPROVED

Rory A. Carter DIRECTOR
DEPARTMENT OF
PUBLIC WORKS

JULY 1, 2012

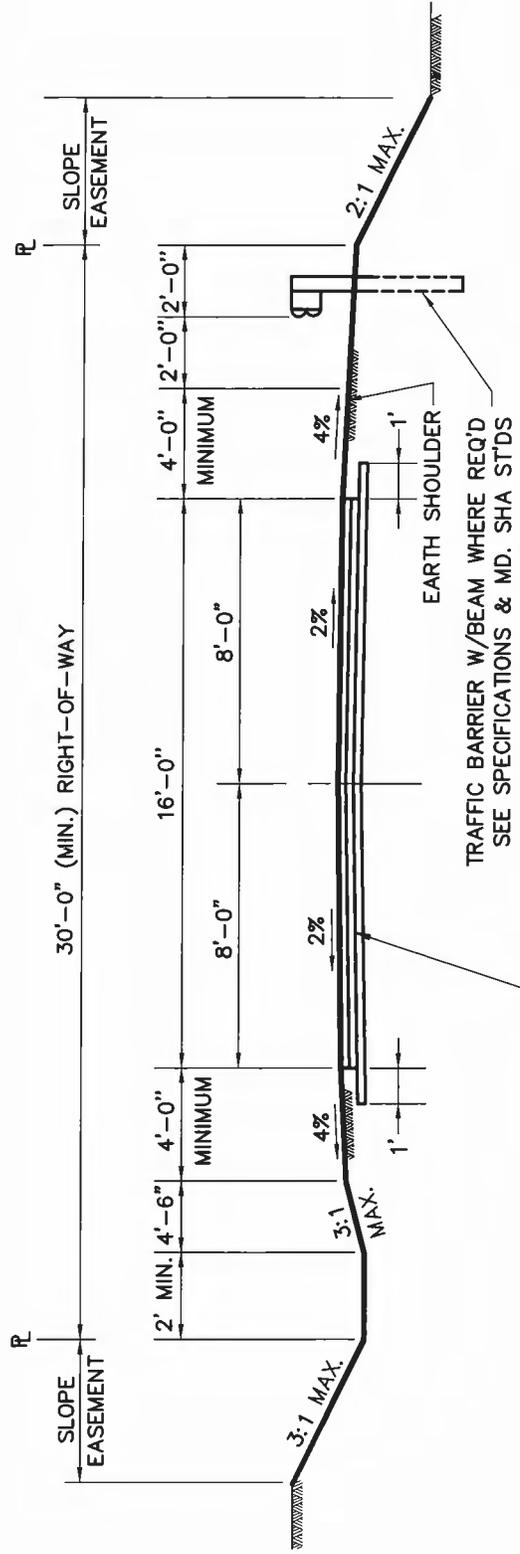
CALVERT
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MARYLAND



FAMILY CONVEYANCE
TURNOUT DETAIL



STANDARD NUMBER
RD-1B



1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
 2" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
 6" GRADED AGGREGATE BASE COURSE
 OR APPROVED EQUIVALENT

OR

6" OF CR-6, BANK RUN GRAVEL,
 OR AN APPROVED ALTERNATE MATERIAL

PRIVATE LANE

NOT TO SCALE

STANDARD ROAD DETAILS
RESIDENTIAL / LOCAL ROADWAY

NOTE:
 1. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

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CALVERT COUNTY MARYLAND



STANDARD NUMBER

RD-2

NOT TO SCALE

STANDARD ROAD DETAILS
RESIDENTIAL / LOCAL
ROADWAY - RURAL
(EXISTING RIGHT-OF-WAY)

REVISED

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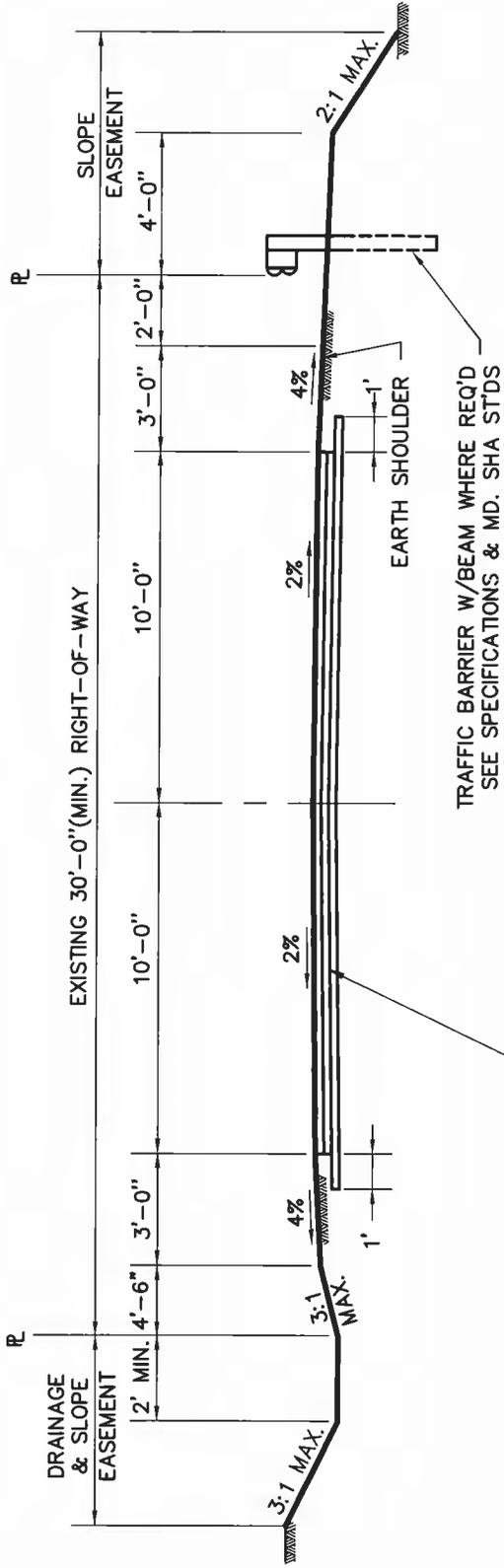
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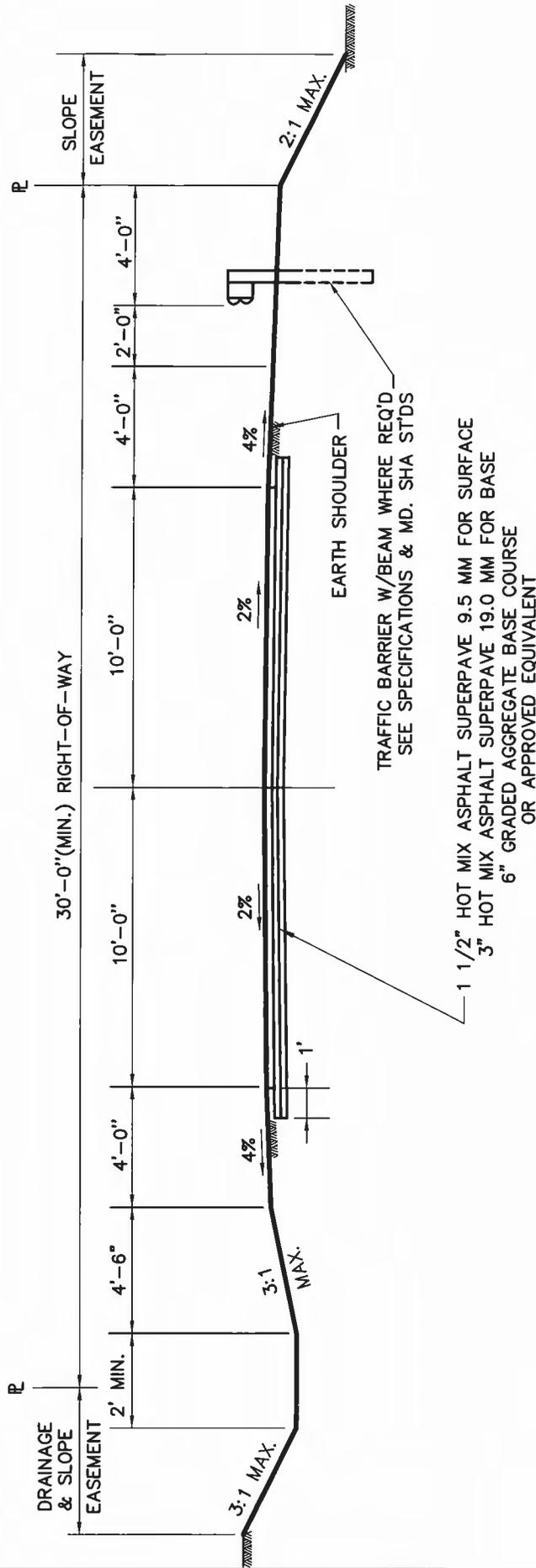
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MARYLAND



NOTE:

1. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.



NOTE:

1. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
 3" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
 6" GRADED AGGREGATE BASE COURSE
 OR APPROVED EQUIVALENT

TRAFFIC BARRIER W/BEAM WHERE REQ'D
 SEE SPECIFICATIONS & MD. SHA STDS

EARTH SHOULDER

NOT TO SCALE



STANDARD NUMBER

RD-3A

STANDARD ROAD DETAILS
 RESIDENTIAL / LOCAL
 ROADWAY - RURAL

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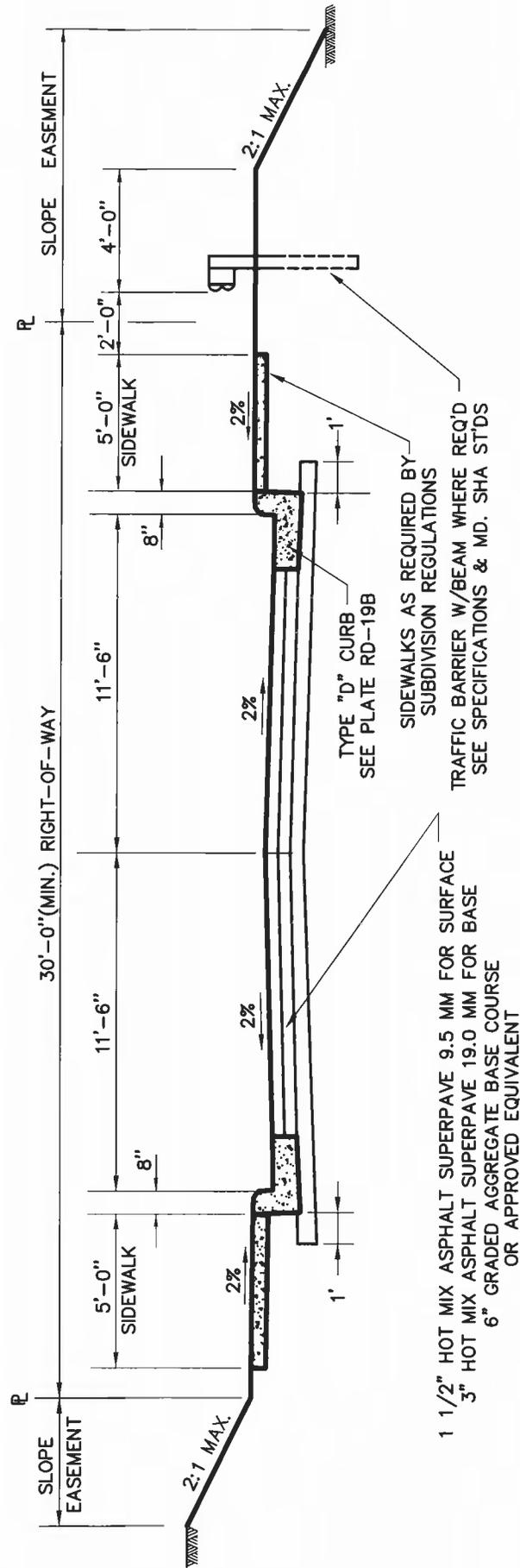
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STANDARD NUMBER

RD-3B



NOTE:

1. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

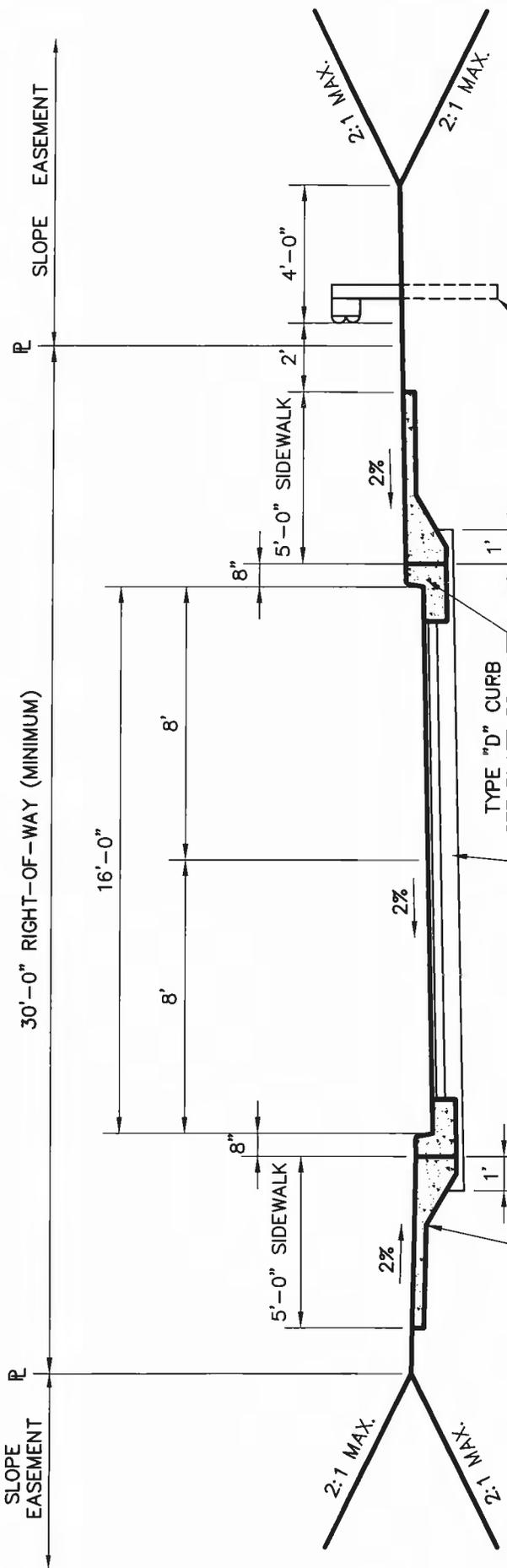
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STANDARD ROAD DETAILS
RESIDENTIAL / LOCAL
ROADWAY - URBAN

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SIDEWALKS AS REQUIRED BY SUBDIVISION REGULATIONS

- 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
- 3" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
- 6" GRADED AGGREGATE BASE COURSE OR APPROVED EQUIVALENT

TRAFFIC BARRIER W/BEAM WHERE REQ'D SEE SPECIFICATIONS & MD. SHA ST'DS

TYPE "D" CURB SEE PLATE RD-19B (TYPICAL)

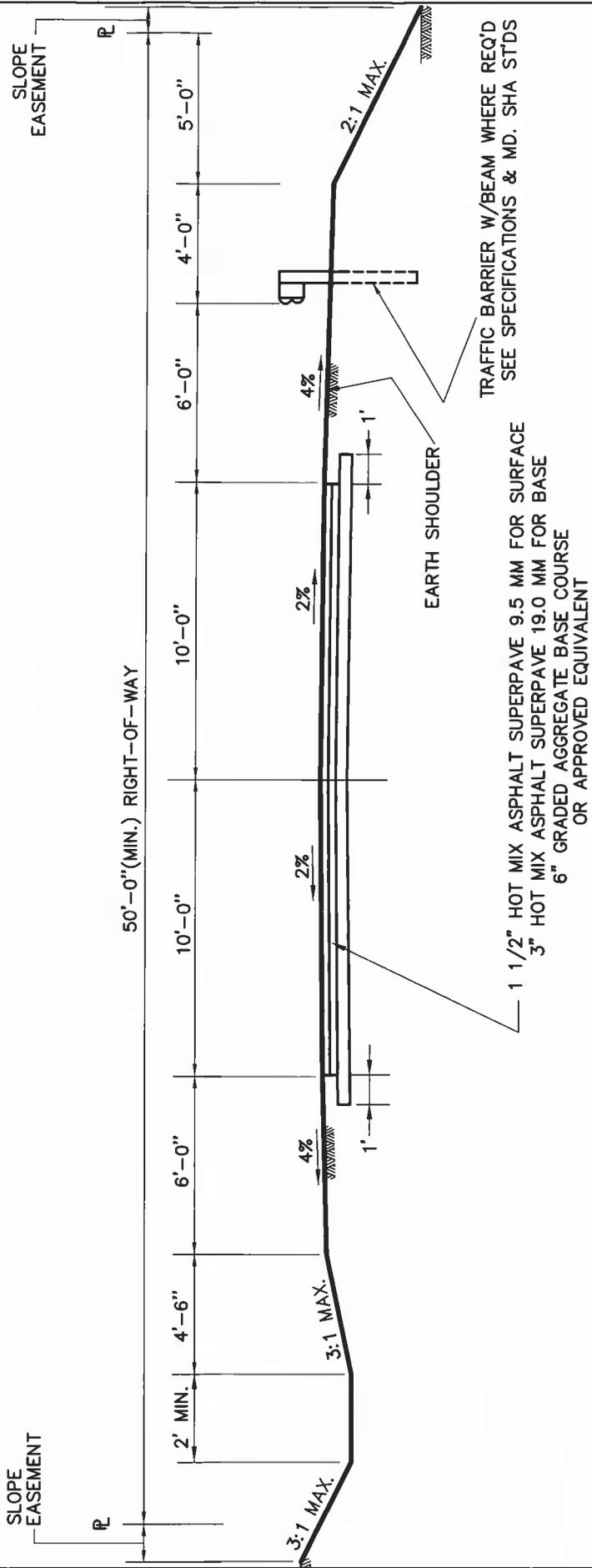
NOTE:

1. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.



NOT TO SCALE

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| CALVERT COUNTY MARYLAND | APPROVED  DIRECTOR DEPARTMENT OF PUBLIC WORKS JULY 1, 2012 | REVISED DATE _____ BY _____ | STANDARD ROAD DETAILS RESIDENTIAL / LOCAL ROADWAY - URBAN (PUBLIC - ONE-WAY) | STANDARD NUMBER RD-3C |
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NOTE:

1. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.



NOT TO SCALE

STANDARD NUMBER
RD-4A

STANDARD ROAD DETAILS
RESIDENTIAL / LOCAL
ROADWAY - RURAL

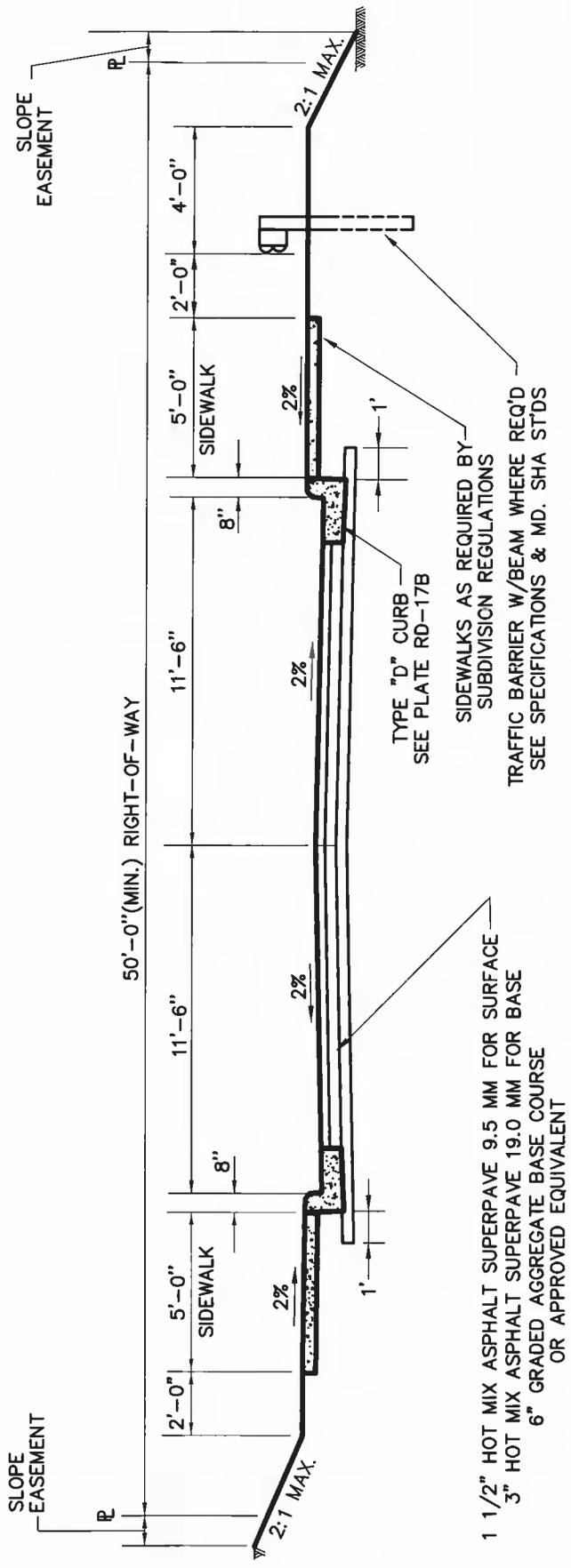
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DEPARTMENT OF
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JULY 1, 2012

CALVERT
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STANDARD NUMBER
RD-4B



- NOTE:
1. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING BASE PAVEMENT
 2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
 3" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
 6" GRADED AGGREGATE BASE COURSE
 OR APPROVED EQUIVALENT

TYPE "D" CURB
 SEE PLATE RD-17B

SIDEWALKS AS REQUIRED BY
 SUBDIVISION REGULATIONS
 TRAFFIC BARRIER W/B EAM WHERE REQ'D
 SEE SPECIFICATIONS & MD. SHA STDS

NOT TO SCALE

STANDARD ROAD DETAILS
 RESIDENTIAL / LOCAL
 ROADWAY - URBAN

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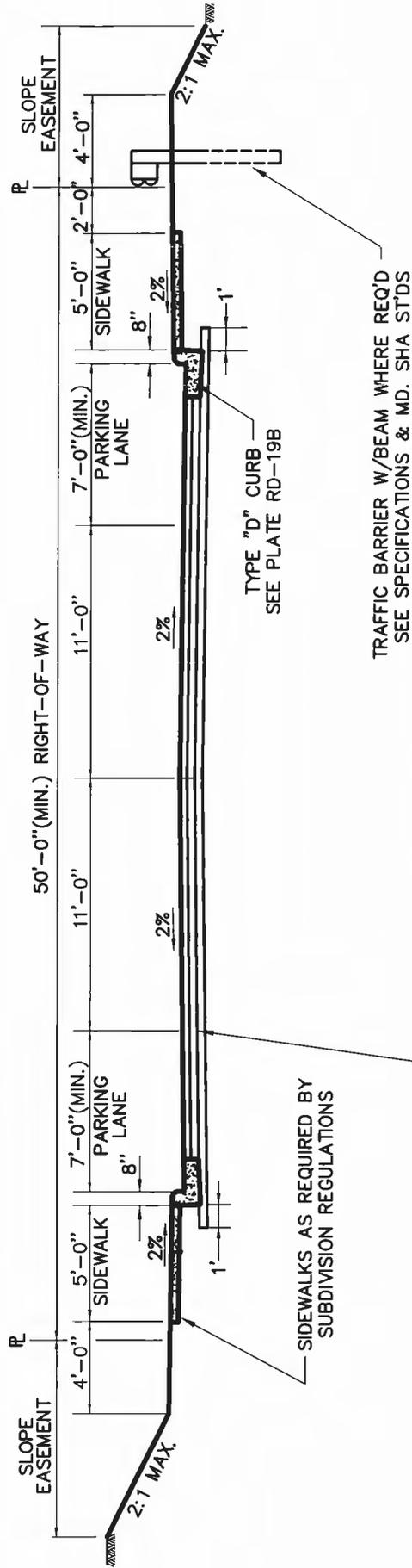
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STANDARD NUMBER

RD-4D



1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
 3" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
 6" GRADED AGGREGATE BASE COURSE
 OR APPROVED EQUIVALENT

NOTE:

1. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

NOT TO SCALE

STANDARD ROAD DETAILS
 RESIDENTIAL/LOCAL
 ROADWAY - URBAN
 W/ PARKING ON BOTH SIDES

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DATE BY

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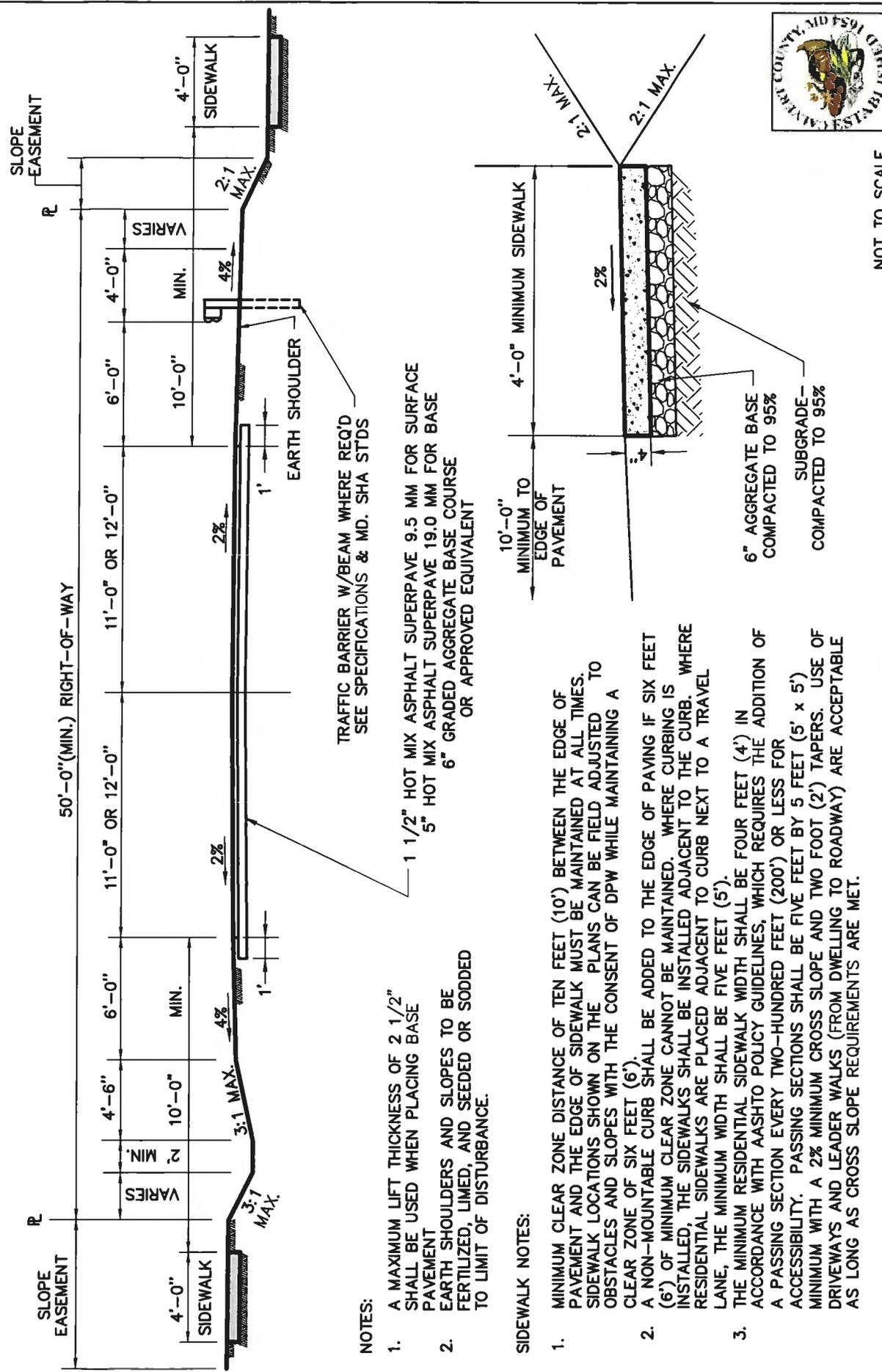
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STANDARD NUMBER

RD-5A



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STANDARD ROAD DETAILS
MINOR RESIDENTIAL
COLLECTOR ROADWAY - RURAL

NOTES:

1. A MAXIMUM LIFT THICKNESS OF 2 1/2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

TRAFFIC BARRIER W/BEAM WHERE REQ'D
SEE SPECIFICATIONS & MD. SHA STDS

1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
5" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
6" GRADED AGGREGATE BASE COURSE
OR APPROVED EQUIVALENT

SIDEWALK NOTES:

1. MINIMUM CLEAR ZONE DISTANCE OF TEN FEET (10') BETWEEN THE EDGE OF PAVEMENT AND THE EDGE OF SIDEWALK MUST BE MAINTAINED AT ALL TIMES. SIDEWALK LOCATIONS SHOWN ON THE PLANS CAN BE FIELD ADJUSTED TO OBSTACLES AND SLOPES WITH THE CONSENT OF DPW WHILE MAINTAINING A CLEAR ZONE OF SIX FEET (6').
2. A NON-MOUNTABLE CURB SHALL BE ADDED TO THE EDGE OF PAVING IF SIX FEET (6') OF MINIMUM CLEAR ZONE CANNOT BE MAINTAINED. WHERE CURBING IS INSTALLED, THE SIDEWALKS SHALL BE INSTALLED ADJACENT TO THE CURB. WHERE RESIDENTIAL SIDEWALKS ARE PLACED ADJACENT TO CURB NEXT TO A TRAVEL LANE, THE MINIMUM WIDTH SHALL BE FIVE FEET (5').
3. THE MINIMUM RESIDENTIAL SIDEWALK WIDTH SHALL BE FOUR FEET (4') IN ACCORDANCE WITH AASHTO POLICY GUIDELINES, WHICH REQUIRES THE ADDITION OF A PASSING SECTION EVERY TWO-HUNDRED FEET (200') OR LESS FOR ACCESSIBILITY. PASSING SECTIONS SHALL BE FIVE FEET BY 5 FEET (5' x 5') MINIMUM WITH A 2% MINIMUM CROSS SLOPE AND TWO FOOT (2') TAPERS. USE OF DRIVEWAYS AND LEADER WALKS (FROM DWELLING TO ROADWAY) ARE ACCEPTABLE AS LONG AS CROSS SLOPE REQUIREMENTS ARE MET.

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JULY 1, 2012

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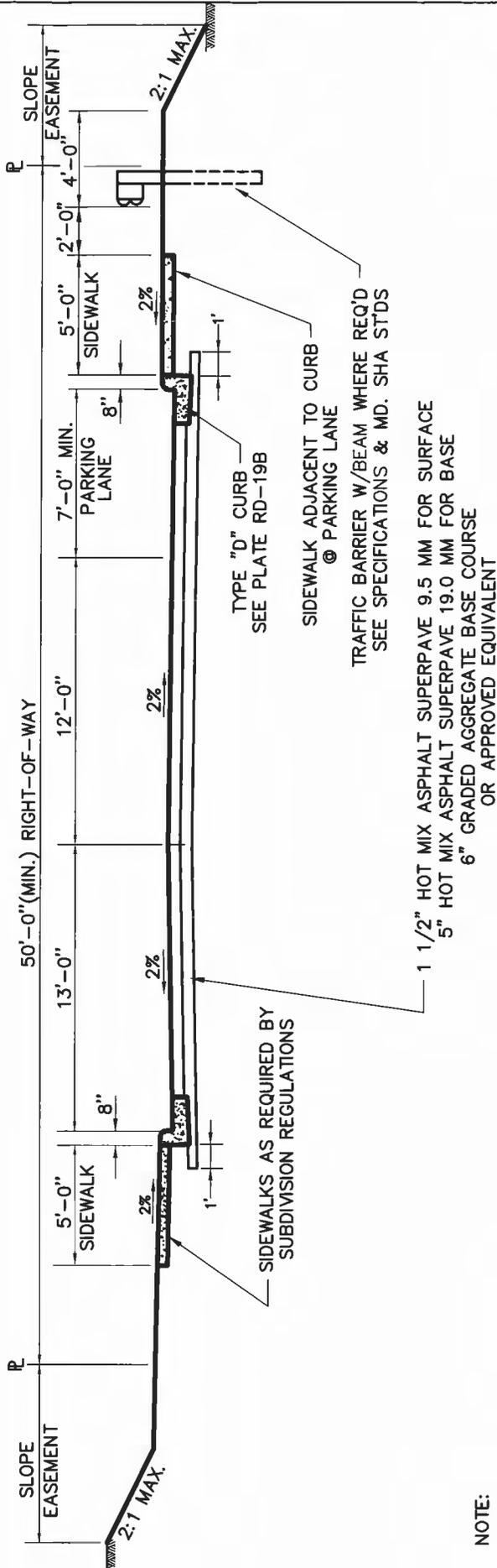


STANDARD NUMBER

RD-5C

NOT TO SCALE

STANDARD ROAD DETAILS
 MINOR RESIDENTIAL
 COLLECTOR ROADWAY - URBAN
 W/ PARKING ON ONE SIDE



NOTE:

1. A MAXIMUM LIFT THICKNESS OF 2 1/2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

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 JULY 1, 2012

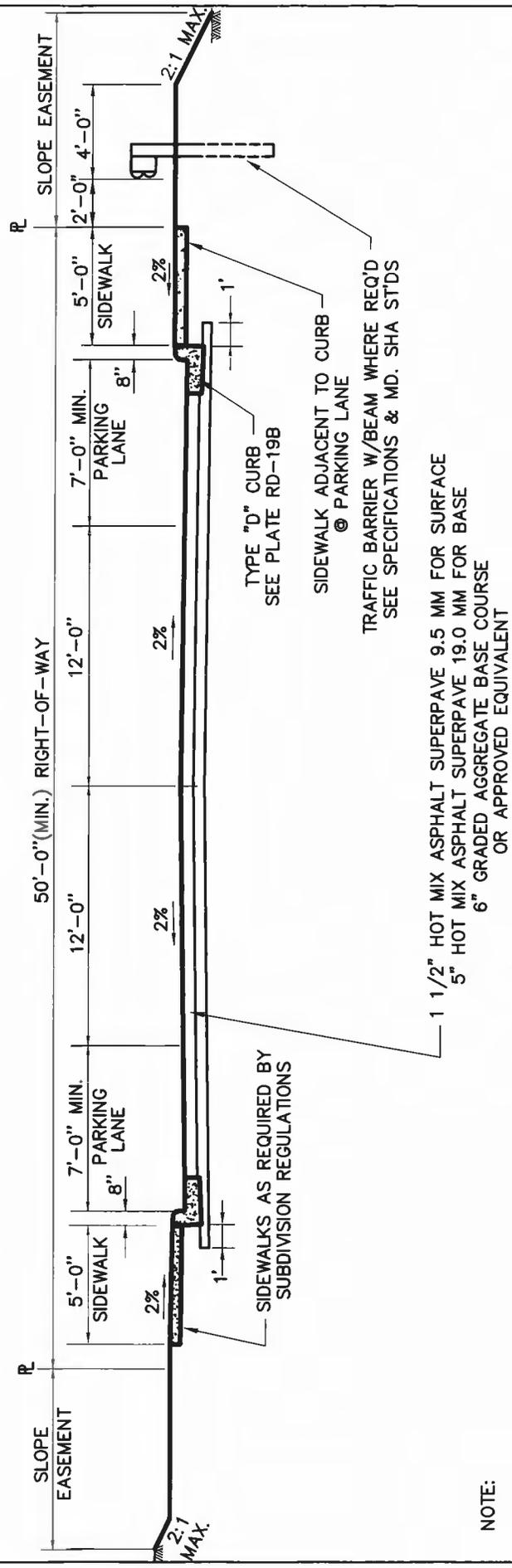
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STANDARD NUMBER
RD-50

NOT TO SCALE

STANDARD ROAD DETAILS
MINOR RESIDENTIAL
COLLECTOR ROADWAY - URBAN
W/ PARKING ON BOTH SIDE



NOTE:

1. A MAXIMUM LIFT THICKNESS OF 2 1/2" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
5" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
6" GRADED AGGREGATE BASE COURSE
OR APPROVED EQUIVALENT

TYPE "D" CURB
SEE PLATE RD-19B

SIDEWALK ADJACENT TO CURB
@ PARKING LANE

TRAFFIC BARRIER W/BEAM WHERE REQ'D
SEE SPECIFICATIONS & MD. SHA STDS

SIDEWALKS AS REQUIRED BY
SUBDIVISION REGULATIONS

| REVISED | |
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| DATE | BY |
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JULY 1, 2012

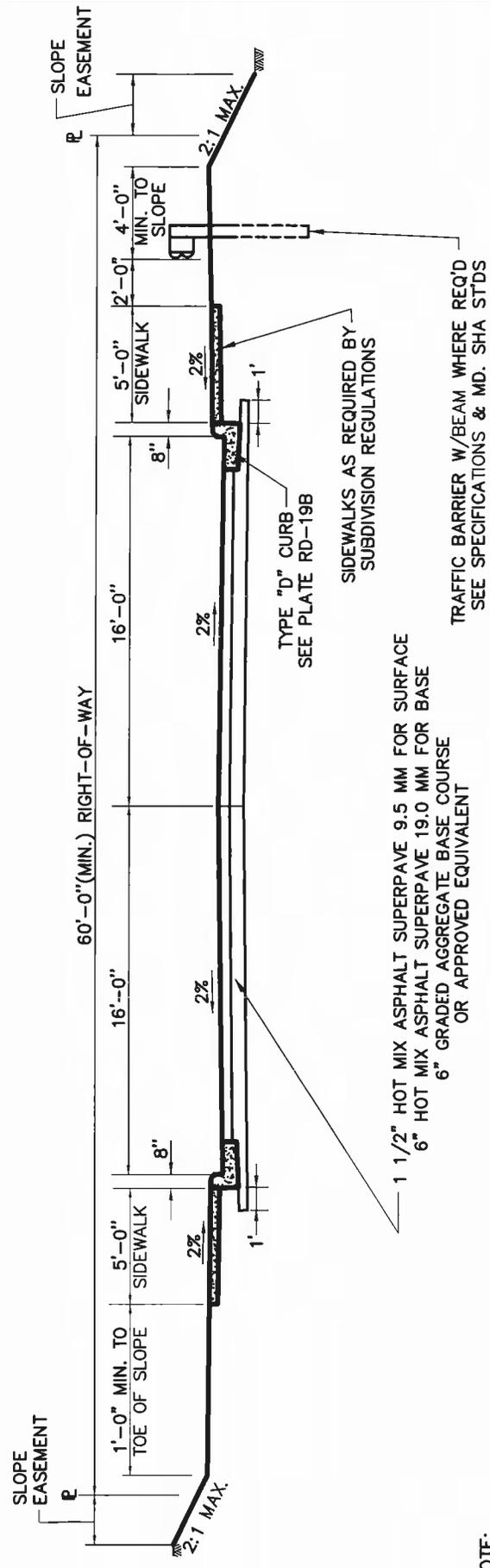
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STANDARD NUMBER
RD-6B

STANDARD ROAD DETAILS
RESIDENTIAL COLLECTOR
ROADWAY - URBAN

NOT TO SCALE



NOTE:

1. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
6" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
6" GRADED AGGREGATE BASE COURSE
OR APPROVED EQUIVALENT

TYPE "D" CURB
SEE PLATE RD-19B

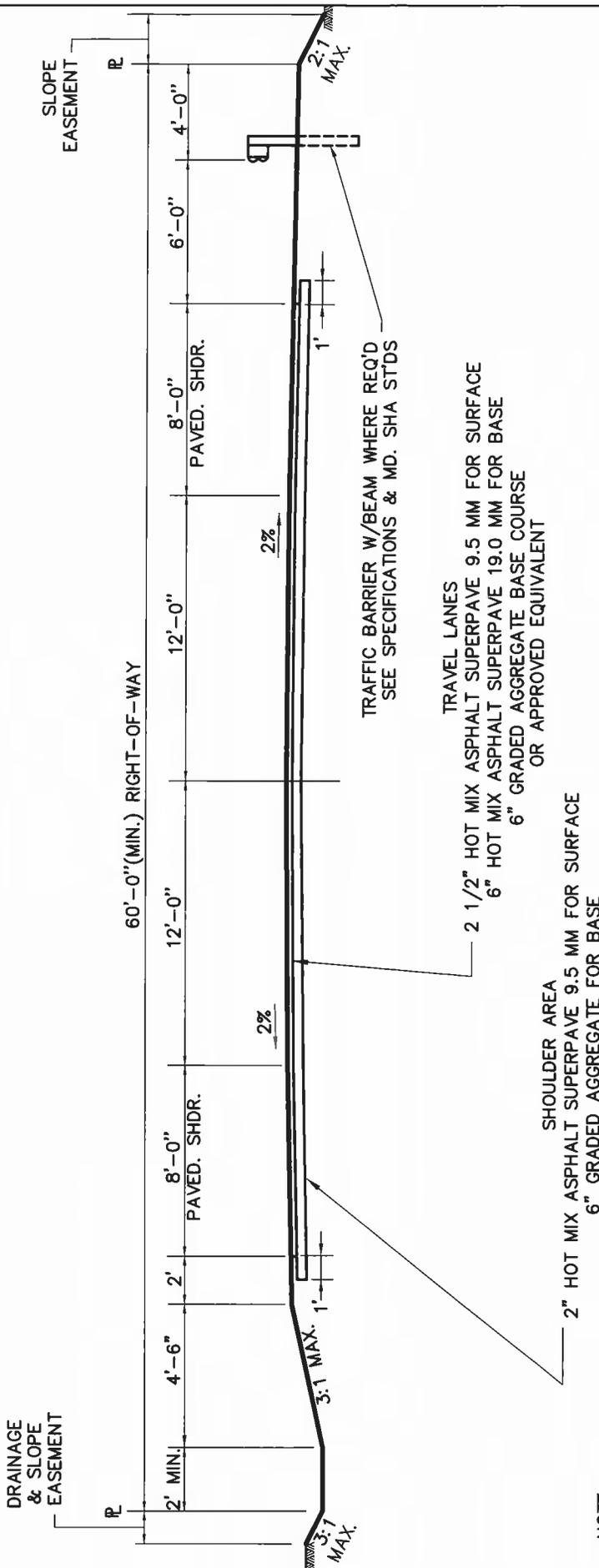
SIDEWALKS AS REQUIRED BY
SUBDIVISION REGULATIONS

TRAFFIC BARRIER W/BEAM WHERE REQ'D
SEE SPECIFICATIONS & MD. SHA STDS

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JULY 1, 2012

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COUNTY
MARYLAND



60'-0" (MIN.) RIGHT-OF-WAY

TRAFFIC BARRIER W/BEAM WHERE REQ'D
SEE SPECIFICATIONS & MD. SHA STDS

TRAVEL LANES

SHOULDER AREA

2 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
6" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
6" GRADED AGGREGATE BASE COURSE
OR APPROVED EQUIVALENT

2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
6" GRADED AGGREGATE FOR BASE

NOTE:

1. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.



NOT TO SCALE

STANDARD NUMBER
RD-7A

STANDARD ROAD DETAILS
MINOR COLLECTOR
ROADWAY - RURAL

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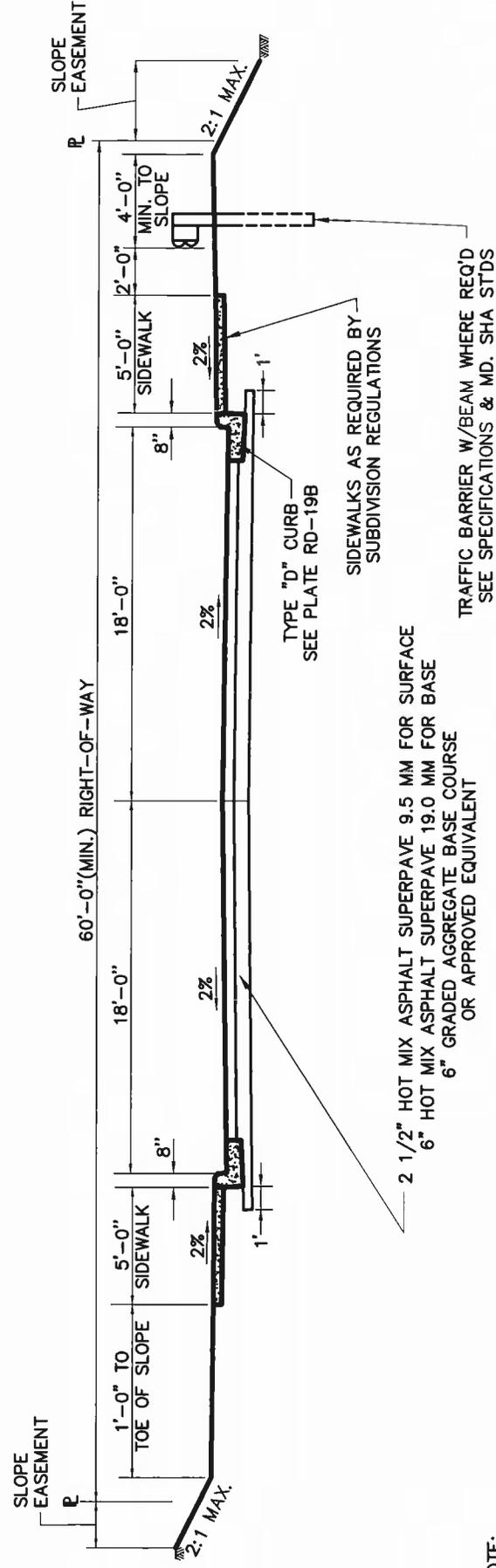


STANDARD NUMBER

RD-7B

STANDARD ROAD DETAILS
MINOR COLLECTOR
ROADWAY - URBAN

NOT TO SCALE



NOTE:

1. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

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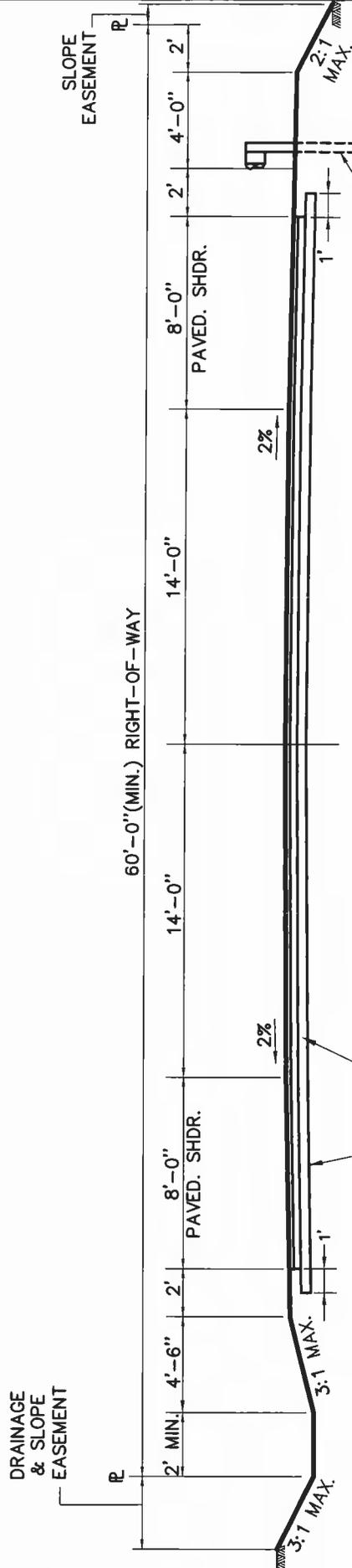


STANDARD NUMBER

RD-8A

STANDARD ROAD DETAILS
COMMERCIAL AND INDUSTRIAL
ROADWAY - RURAL

NOT TO SCALE



TRAFFIC BARRIER W/BEAM WHERE REQ'D
SEE SPECIFICATIONS & MD. SHA STDS

TRAVEL LANES & SHOULDER AREA
3 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE
6" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE
6" GRADED AGGREGATE BASE COURSE
OR APPROVED EQUIVALENT

NOTE:

1. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING THE SURFACE COURSE
3. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.

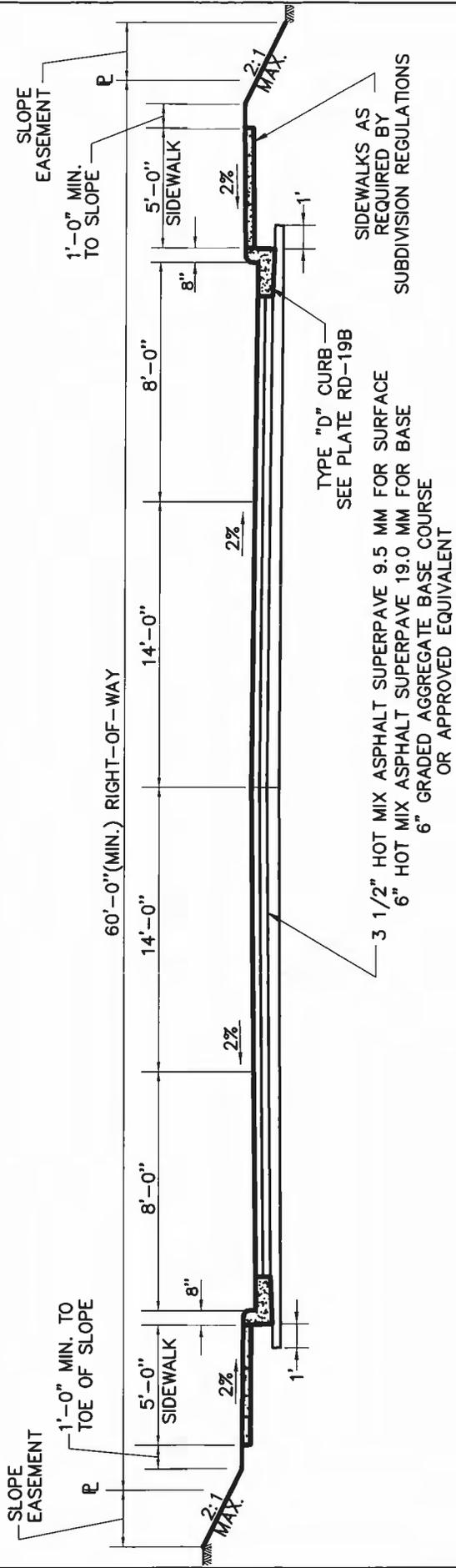
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NOTE:

1. A MAXIMUM LIFT THICKNESS OF 3" SHALL BE USED WHEN PLACING BASE PAVEMENT
2. A MAXIMUM LIFT THICKNESS OF 2" SHALL BE USED WHEN PLACING THE SURFACE COURSE
3. EARTH SHOULDERS AND SLOPES TO BE FERTILIZED, LIMED, AND SEEDED OR SODDED TO LIMIT OF DISTURBANCE.



NOT TO SCALE

STANDARD NUMBER
RD-8B

STANDARD ROAD DETAILS
**COMMERCIAL AND INDUSTRIAL
ROADWAY - URBAN**

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JULY 1, 2012

CALVERT
COUNTY
MARYLAND

SUMMARY OF ROAD CLASSIFICATION

| ROAD CLASSIFICATION | USE | PLATE | ROW WIDTH (MINIMUM) | PAVEMENT WIDTH | DESIGN SPEED | HORIZONTAL MINIMUM RADIUS | VERTICAL MAXIMUM GRADE | NUMBER OF LOTS / UNITS | DWELLING |
|-------------------------------------|---------|-------|---------------------|----------------------|--------------|---------------------------|------------------------|---|--|
| RESIDENTIAL/LOCAL ROADWAY | PRIVATE | RD-1A | 20' | 12'-20' | N/A | N/A | N/A | N/A | |
| RESIDENTIAL/LOCAL ROADWAY | PRIVATE | RD-1B | 30' | 16' | N/A | N/A | 10.0% | 5 LOTS | |
| RESIDENTIAL LOCAL ROADWAY | PRIVATE | RD-1C | 20' | VARIABLE | N/A | N/A | N/A | N/A | |
| RESIDENTIAL LOCAL ROADWAY | PUBLIC | RD-2 | 30' | 20' OPEN | 40 MPH | 300' | 10.0% | N/A | |
| RESIDENTIAL LOCAL ROADWAY | PUBLIC | RD-3A | 40' | 20' OPEN | 40 MPH | 300' | 10.0% | 6-10 NEWLY CREATED LOTS OR TBD DWELLING | SINGLE FAMILY |
| RESIDENTIAL LOCAL ROADWAY | PUBLIC | RD-3B | 40' | 22' C&G | 40 MPH | 300' | 10.0% | 6-10 NEWLY CREATED LOTS OR TBD DWELLING | SINGLE FAMILY |
| RESIDENTIAL LOCAL ROADWAY | PUBLIC | RD-4A | 50' | 20' OPEN | 40 MPH | 300' | 10.0% | 1-50 LOTS | SINGLE FAMILY |
| RESIDENTIAL LOCAL ROADWAY | PUBLIC | RD-4B | 50' | 23' C&G | 40 MPH | 300' | 10.0% | 1-50 LOTS | SINGLE FAMILY |
| RESIDENTIAL LOCAL ROADWAY | PUBLIC | RD-4C | 50' | 29' C&G | 40 MPH | 300' | 10.0% | 1-50 LOTS | SINGLE FAMILY |
| RESIDENTIAL/LOCAL ROADWAY | PUBLIC | RS-4D | 50' | 36' C7G | 40 MPH | 300' | 10.0% | 1-50 LOTS | SINGLE FAMILY |
| MINOR RESIDENTIAL COLLECTOR ROADWAY | PUBLIC | RD-5A | 50' | 22' OPEN 24' OPEN | 40 MPH | 300' | 10.0% | 51-100 LOTS 101-150 LOTS | SINGLE FAMILY |
| MINOR RESIDENTIAL COLLECTOR ROADWAY | PUBLIC | RD-5B | 50' | 30' C&G | 40 MPH | 300' | 10.0% | 51-150 LOTS 100-150 LOTS | SINGLE FAMILY TOWN HOUSE OR MULTI-FAMILY |



STANDARD NUMBER

RD-11

STANDARD ROAD DETAILS SUMMARY OF ROAD CLASSIFICATION

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| DATE | BY |
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 JULY 1, 2012

CALVERT COUNTY MARYLAND

SUMMARY OF ROAD CLASSIFICATION

| ROAD CLASSIFICATION | USE | PLATE | ROW WIDTH (MINIMUM) | PAVEMENT WIDTH | DESIGN SPEED | HORIZONTAL MINIMUM RADIUS | VERTICAL MAXIMUM GRADE | NUMBER OF LOTS / UNITS | DWELLING |
|-------------------------------------|---------|-------|----------------------------------|----------------------------|--------------|---------------------------|------------------------|-----------------------------|--|
| MINOR RESIDENTIAL COLLECTOR ROADWAY | PUBLIC | RD-5C | 50' | 31' C&G | 40 MPH | 300' | 10.0% | 51-150 LOTS 100-150 LOTS | SINGLE FAMILY TOWN HOUSE OR MULTI-FAMILY |
| MINOR RESIDENTIAL COLLECTOR ROADWAY | PUBLIC | RD-5D | 50' | 38' C&G | 40 MPH | 300' | 10.0% | 51-150 LOTS 100-150 LOTS | SINGLE FAMILY TOWN HOUSE OR MULTI-FAMILY |
| RESIDENTIAL COLLECTOR ROADWAY | PUBLIC | RD-6A | 60' | 24' OPEN | 40 MPH | USE AASHTO STANDARDS | 8.0% | > 150 LOTS | SINGLE FAMILY |
| RESIDENTIAL COLLECTOR ROADWAY | PUBLIC | RD-6B | 60' | 32' C&G | 40 MPH | USE AASHTO STANDARDS | 8.0% | > 150 LOTS | TOWNHOUSE OR MULTI-FAMILY |
| MINOR COLLECTOR ROADWAY | PUBLIC | RD-7A | 60' | 24' OPEN | 45 MPH | USE AASHTO STANDARDS | 8.0% | > 2,000 ADT | |
| MINOR COLLECTOR ROADWAY | PUBLIC | RD-7B | 60' | 36' C&G | 45 MPH | USE AASHTO STANDARDS | 8.0% | > 2,000 ADT | |
| COMMERCIAL AND INDUSTRIAL ROADWAY | PUBLIC | RD-8A | 60' | 28' OPEN | 40 MPH | USE AASHTO STANDARDS | 8.0% | N/A | |
| COMMERCIAL AND INDUSTRIAL ROADWAY | PUBLIC | RD-8B | 60' | 44' C&G | 40 MPH | USE AASHTO STANDARDS | 8.0% | N/A | |
| MAJOR COLLECTOR | PUBLIC | RD-9 | 64' OR 80' | 44' OR 58' WITH 14' MEDIAN | TBD | | | > 4,000 ADT | |
| TOWN CENTER BOULEVARD ROADWAY | PUBLIC | RD-10 | 83' | 44' WITH 16' MEDIAN | TBD | | | | |
| COMMON ACCESS DRIVEWAY | PRIVATE | RD-16 | 50' X 50' MIN. 75' X 75' MAX. | 18' OPEN | N/A | N/A | 10.0% | 3-5 LOTS | SINGLE FAMILY |



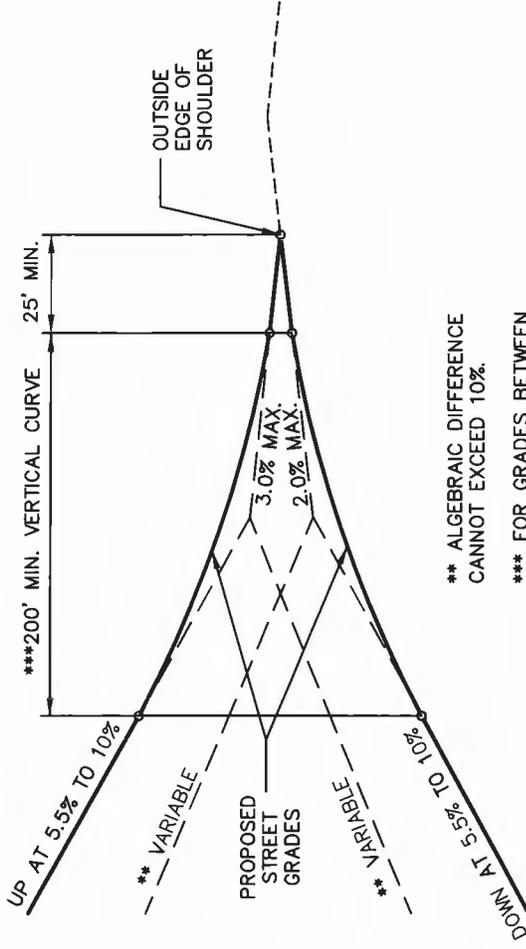
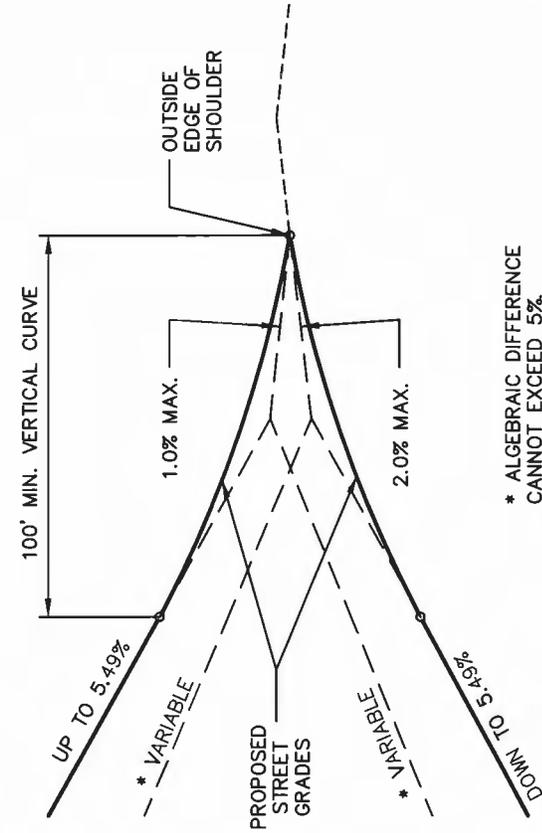
STANDARD NUMBER
RD-11A

STANDARD ROAD DETAILS
SUMMARY OF ROAD CLASSIFICATION

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CALVERT COUNTY MARYLAND



FOR GRADES LESS THAN 5.5%

FOR GRADES OF 5.5% TO 10%

NOT TO SCALE



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| CALVERT COUNTY MARYLAND | APPROVED  DIRECTOR | REVISED DATE _____ BY _____ | STANDARD ROAD DETAILS STANDARD LANDING REQUIREMENTS FOR LOCAL AND COLLECTOR ROADWAYS | STANDARD NUMBER RD-11B |
| | DEPARTMENT OF PUBLIC WORKS JULY 1, 2012 | | | |

MINIMUM PAVEMENT SECTIONS

| PLATE | SUBBASE | MSHA SECTION | BASE | MSHA SECTION | SURFACE | MSHA SECTION | SHOULDERS (AS SECTION ROADWAYS) | MSHA SECTION |
|-------|--------------------------|--------------|--------------------------------------|--------------|--|--------------|---------------------------------|--------------|
| RD-1A | | | | | 6" CR-6 OR APPROVED EQUAL | 901 | EARTH SHOULDERS | 601 |
| RD-1B | 6" GRADED AGGREGATE BASE | 901.01 | 2" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM OR 6" CR-6 OR APPROVED EQUAL | 904 504 901 | EARTH SHOULDERS | 601 |
| RD-1C | 6" GRADED AGGREGATE BASE | 901.01 | 2" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | EARTH SHOULDERS | 601 |
| RD-2 | 6" GRADED AGGREGATE BASE | 901.01 | 3" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | EARTH SHOULDERS | 601 |
| RD-3A | 6" GRADED AGGREGATE BASE | 901.01 | 3" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | EARTH SHOULDERS | 601 |
| RD-3B | 6" GRADED AGGREGATE BASE | 901.01 | 3" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 602 |
| RD-4A | 6" GRADED AGGREGATE BASE | 901.01 | 3" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | EARTH SHOULDERS | 601 |
| RD-4B | 6" GRADED AGGREGATE BASE | 901.01 | 3" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 602 |
| RD-4C | 6" GRADED AGGREGATE BASE | 901.01 | 3" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 602 |
| RD-4D | 6" GRADED AGGREGATE BASE | 901.01 | 3" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 602 |
| RD-5A | 6" GRADED AGGREGATE BASE | 901.01 | 5" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | EARTH SHOULDERS | 601 |
| RD-5B | 6" GRADED AGGREGATE BASE | 901.01 | 5" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 602 |
| RD-5C | 6" GRADED AGGREGATE BASE | 901.01 | 5" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 602 |
| RD-5D | 6" GRADED AGGREGATE BASE | 901.01 | 5" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 602 |



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| CALVERT COUNTY MARYLAND | APPROVED DIRECTOR DEPARTMENT OF PUBLIC WORKS | REVISED DATE _____ BY _____ | STANDARD ROAD DETAILS MINIMUM PAVEMENT SECTIONS | STANDARD NUMBER RD-12 |
| | JULY 1, 2012 | | | |

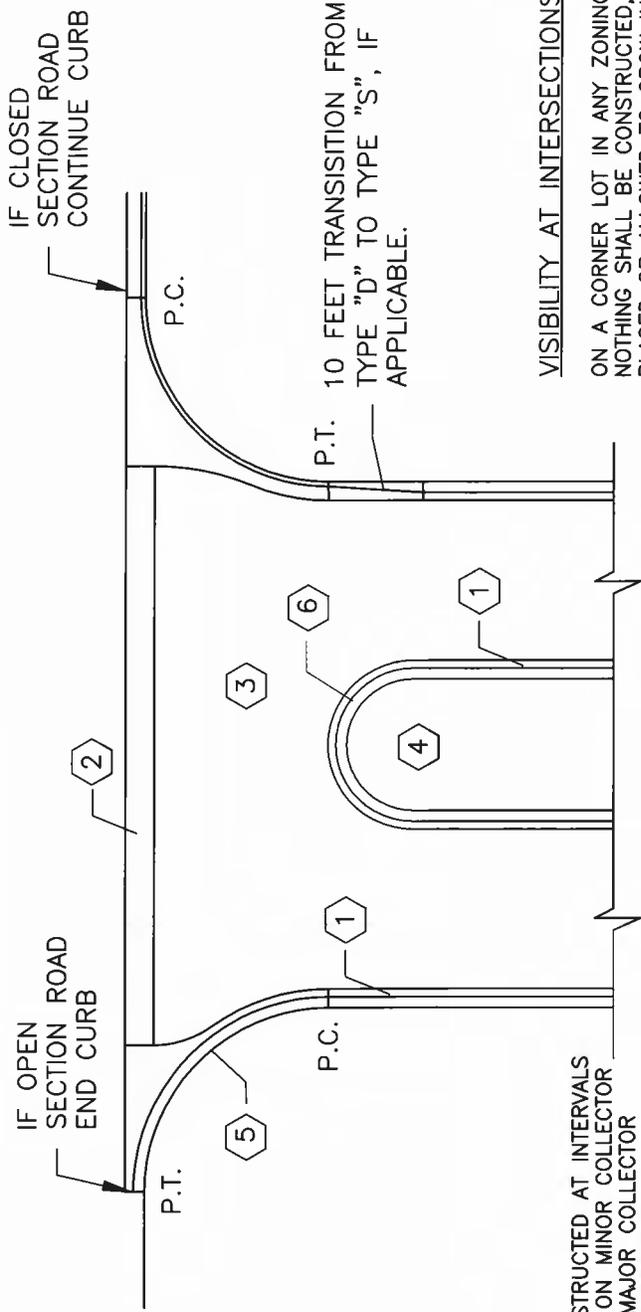
MINIMUM PAVEMENT SECTIONS

| PLATE | SUBBASE | MSHA SECTION | BASE | MSHA SECTION | SURFACE | MSHA SECTION | SHOULDERS (AS PROVIDED FOR OPEN SECTION ROADWAYS) | MSHA SECTION |
|-------|--------------------------|--------------|--------------------------------------|--------------|---|--------------|---|--------------|
| RD-6A | 6" GRADED AGGREGATE BASE | 901.01 | 6" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | EARTH SHOULDERS | 601 |
| RD-6B | 6" GRADED AGGREGATE BASE | 901.01 | 6" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/4" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 602 |
| RD-7A | 6" GRADED AGGREGATE BASE | 901.01 | 6" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 2 1/4" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | EARTH SHOULDERS | 601 |
| RD-7B | 6" GRADED AGGREGATE BASE | 901.01 | 6" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 2 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 602 |
| RD-8A | 6" GRADED AGGREGATE BASE | 901.01 | 6" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 3 1/4" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | 8' PAVED SHOULDER TO MATCH PAVEMENT SECTION | 504 |
| RD-8B | 6" GRADED AGGREGATE BASE | 901.01 | 6" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 3 1/2" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | CURB & GUTTER | 504 |
| RD-16 | 6" GRADED AGGREGATE BASE | 901.01 | 2" HOT MIX ASPHALT SUPERPAVE 12.5 MM | 904 504 | 1 1/4" HOT MIX ASPHALT SUPERPAVE 9.5 MM | 904 504 | EARTH SHOULDERS | 601 |

NOTE:
PAVEMENT SECTIONS FOR PLATES RD-9 AND RD-10 SHALL BE DESIGNED BY THE ENGINEERING PROFESSIONAL REPRESENTATIVE AND APPROVED BY THE DIRECTOR.



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| CALVERT COUNTY MARYLAND | APPROVED DIRECTOR | REVISED DATE _____ BY _____ | STANDARD ROAD DETAILS MINIMUM PAVEMENT SECTIONS | STANDARD NUMBER RD-12A |
| | DEPARTMENT OF PUBLIC WORKS JULY 1, 2012 | | | |



VISIBILITY AT INTERSECTIONS:

ON A CORNER LOT IN ANY ZONING DISTRICT, NOTHING SHALL BE CONSTRUCTED, ERECTED, PLACED OR ALLOWED TO GROW IN SUCH A MANNER AS TO OBSTRUCT VISION BETWEEN A HEIGHT OF TWO AND ONE HALF FEET (2 1/2') AND EIGHT FEET (8') IN HEIGHT ABOVE THE CENTER LINE GRADES OF THE INTERSECTING STREETS IN THE TRIANGULAR AREA FORMED BY EXTENDING THE STREET LINES (CURB LINES) OF SUCH CORNER LOTS TO A POINT OF INTERSECTION, THEN MEASURING BACK FROM THIS POINT OF INTERSECTION ALONG EACH STREET A DISTANCE OF TWENTY FIVE FEET (25') TO A POINT THEN CONNECTING THESE TWO POINTS WITH A BASE LINE TO FORM AN ISOSCELES TRIANGLE.

ENTRANCES SHALL BE CONSTRUCTED AT INTERVALS NOT TO EXCEED 125 FEET ON MINOR COLLECTOR ROADS AND 250 FEET ON MAJOR COLLECTOR ROADS. ENTRANCE WIDTH MAY VARY DUE TO STREET AND MEDIAN WIDTH.

MEDIAN NOT TO EXTEND BEYOND RETURNS STRUCTURES OR SIGNAGE WITHIN THE MEDIAN TO BE LOCATED BEYOND RADIUS AND BE BREAK AWAY DESIGN.

LANDSCAPING WITHIN RADIUS OF MEDIAN AND RETURNS TO BE LIMITED TO (2') TWO FEET IN HEIGHT AT MATURITY TO PROTECT VISIBILITY.

MAINTENANCE OF LANDSCAPING, STRUCTURES OR SIGNAGE IN THE MEDIAN IS THE RESPONSIBILITY OF THE HOMEOWNERS ASSOCIATION.

FOR CURB AND VALLEY GUTTER STANDARDS REFER TO CALVERT STANDARDS RD-19A/19B.

CENTER ISLAND @ ENTRANCE SHALL HAVE VERTICAL TYPE "D" CURB.

TIE IN TO EXISTING ROAD SHALL MAINTAIN POSITIVE DRAINAGE PATTERNS IN ALL STREETS. AN OVERLAY OF THE EXISTING ROAD MAY BE REQUIRED TO PROVIDE NECESSARY CROSS SECTION FOR DRAINAGE. PROVIDE CENTERLINE AND EDGE OF PAVEMENT SPOT ELEVATIONS FOR EXISTING ROAD AT MAXIMUM 10 FEET INTERVALS AT ENTRANCE AND FOR 100 FEET BEYOND LIMITS OF WORK.

NOT TO SCALE



STANDARD NUMBER

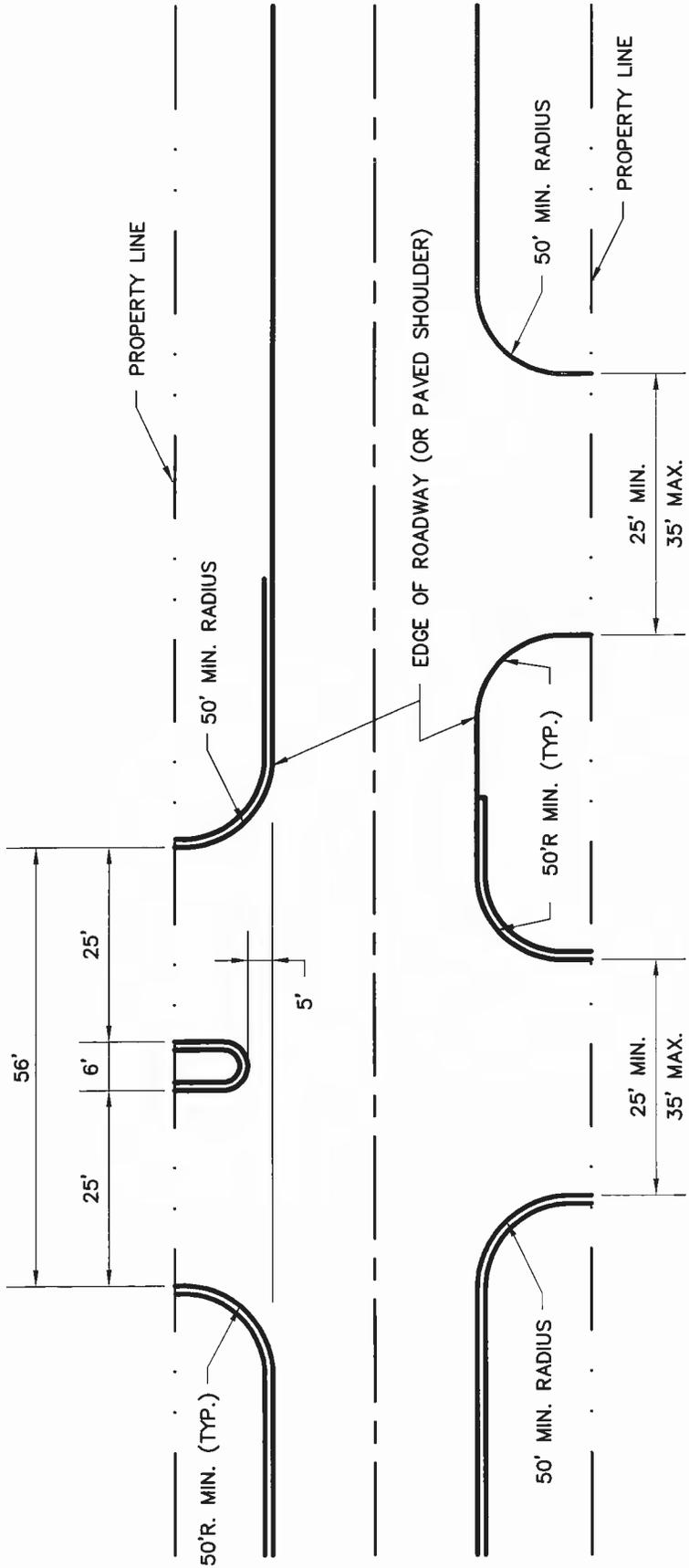
RD-13A

STANDARD ROAD DETAILS
STANDARD ENTRANCE
DETAIL

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JULY 1, 2012

CALVERT
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MARYLAND



SINGLE & CHANNELIZED COMMERCIAL ENTRANCES WITH ST'D CURB & GUTTER

SINGLE COMMERCIAL ENTRANCE W/O ST'D CURB & GUTTER

NOTES:

1. NO ENTRANCES WILL BE PERMITTED BETWEEN THE P.C. AND P.T. OF CURB RETURNS AT ANY INTERSECTION.
2. THE PAVEMENT SECTION SHALL BE THE SAME AS THE TYPICAL FOR THE ROADWAY TO WHICH THE ENTRANCE IS TO BE CONSTRUCTED.
3. MINIMUM RADIUS MAY VARY BASED ON PROPOSED USE. TO BE DESIGNED USING AASHTO STANDARDS.



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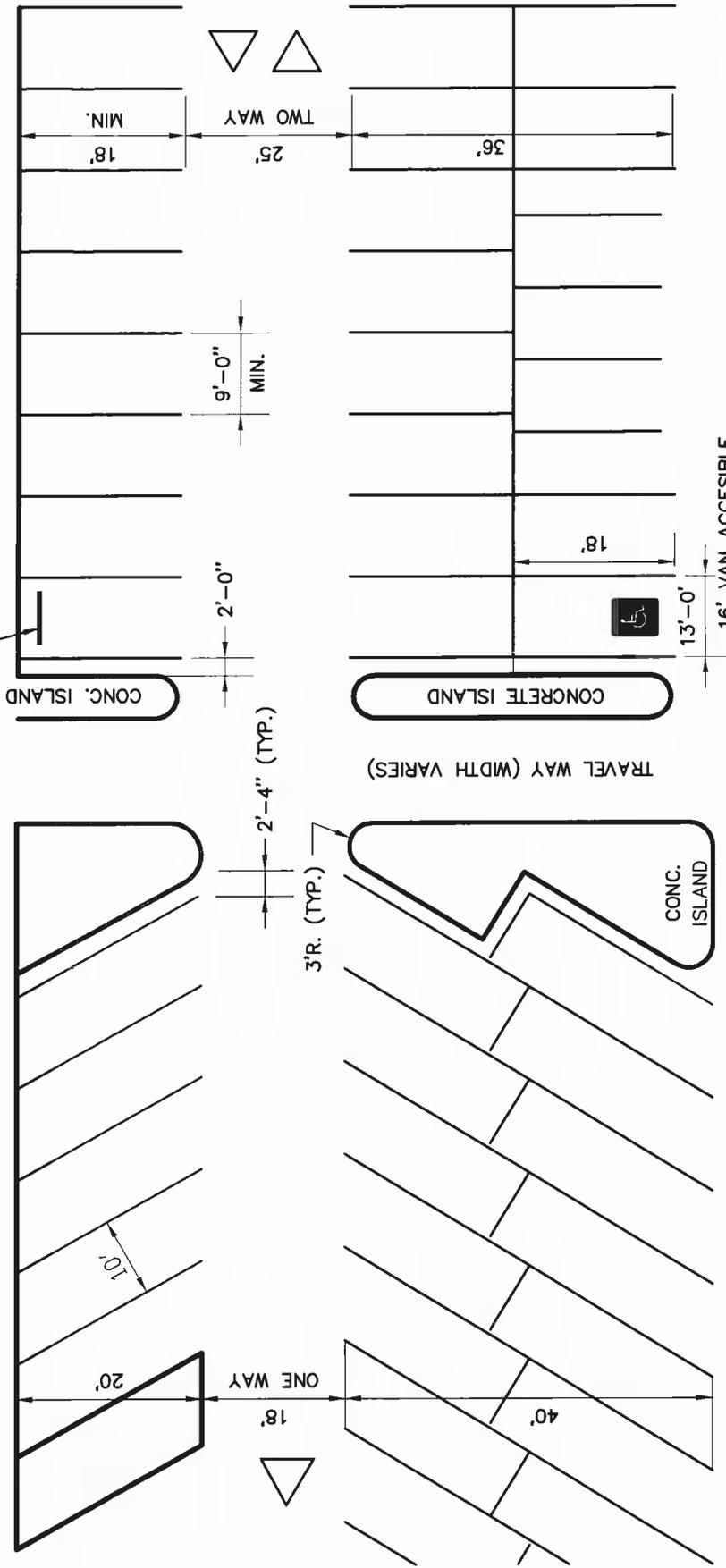
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 JULY 1, 2012

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STANDARD ROAD DETAILS
 SINGLE & CHANNELIZED COMMERCIAL ENTRANCES

STANDARD NUMBER
RD-13B

SEE NOTE 5



TYPICAL 60° PARKING

TYPICAL 90° PARKING

- NOTE:
1. OTHER PARKING ANGLES MAY BE APPROVED BY THE ENGINEER.
 2. A QUALIFIED GEOTECHNICAL ENGINEER SHALL DESIGN THE PAVEMENT SECTION BASED ON THE TESTING OF EXISTING SOILS.(MINIMUM RD-4 PAVEMENT SECTION).
 3. SIGNING AND MARKING FOR HANDICAP SPACES PER ADA STANDARDS.
 4. STRIPING & SIGNAGE IN ACCORDANCE WITH MUTCD STANDARDS.
 5. WHEEL STOPS WHERE REQUIRED ADJACENT TO BUILDINGS, WALLS, SIGNS, SLOPES ETC. (20' MINIMUM SPACE DEPTH WHERE WHEEL STOPS ARE REQUIRED)

NOT TO SCALE



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STANDARD ROAD DETAILS
 TYPICAL 60° & 90°
 OFF-STREET PARKING

STANDARD NUMBER

RD-14

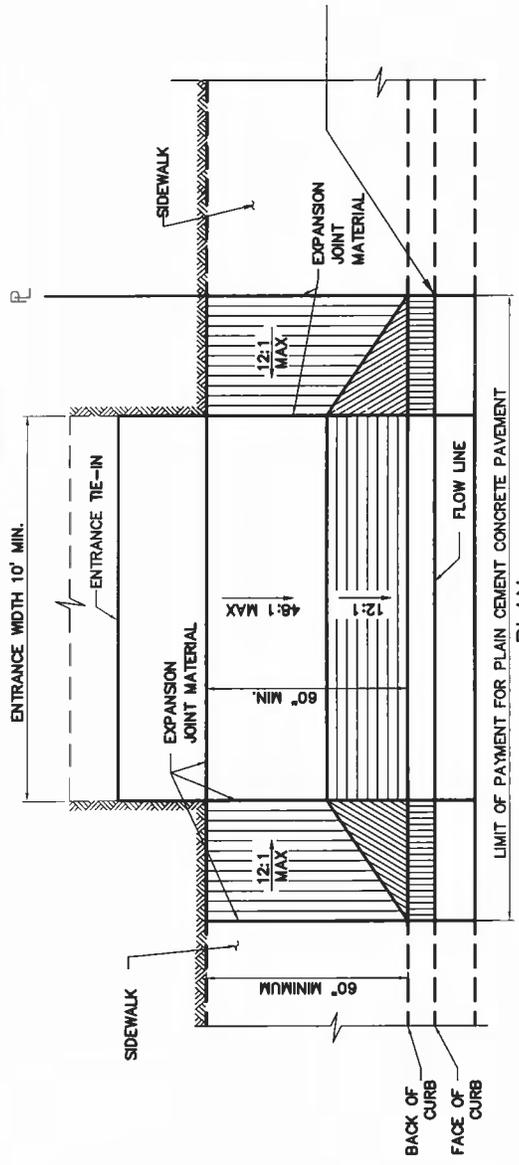


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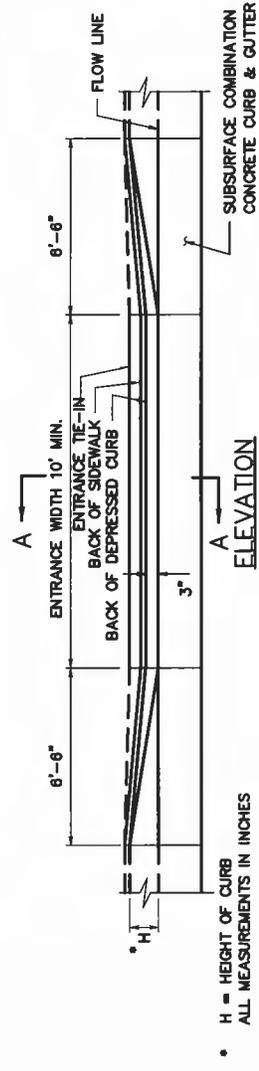
RD-15A

STANDARD ROAD DETAILS
TYPICAL DRIVEWAY ENTRANCE
CURB & GUTTER ROADWAY -
SIDEWALK ABUTTING CURB

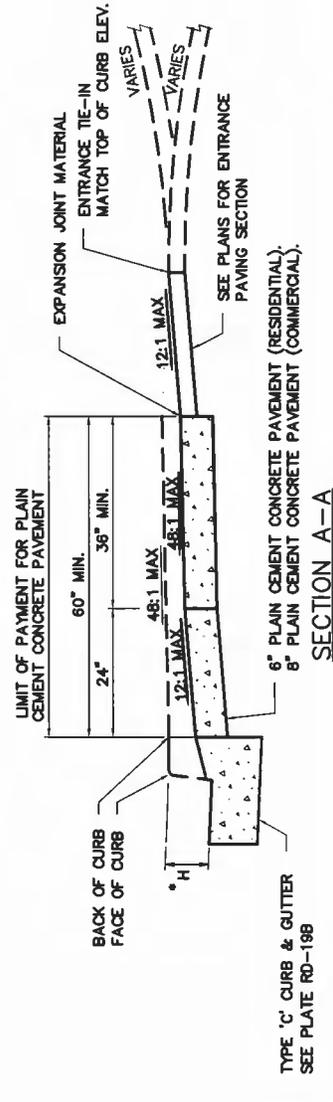
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PLAN



ELEVATION



SECTION A-A

END OF FLARE SHALL NOT EXTEND BEYOND THE PERPENDICULAR PROJECTION FROM THE EDGE OF PAVEMENT TO THE PROPERTY CORNER AT THE RIGHT-OF-WAY.

NOTES

1. FOR USE IN AREAS WHERE THERE IS SIDEWALK ADJACENT TO THE BACK OF CURB OR WHERE IT IS EXPECTED THAT SIDEWALK WILL BE ADDED IN THE FUTURE.
2. EXPANSION JOINT MATERIAL TO BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01. (CURRENT AS AMENDED)
3. SUBBASE 6" GAB

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JULY 1, 2012

CALVERT COUNTY MARYLAND



STANDARD NUMBER

RD-15B

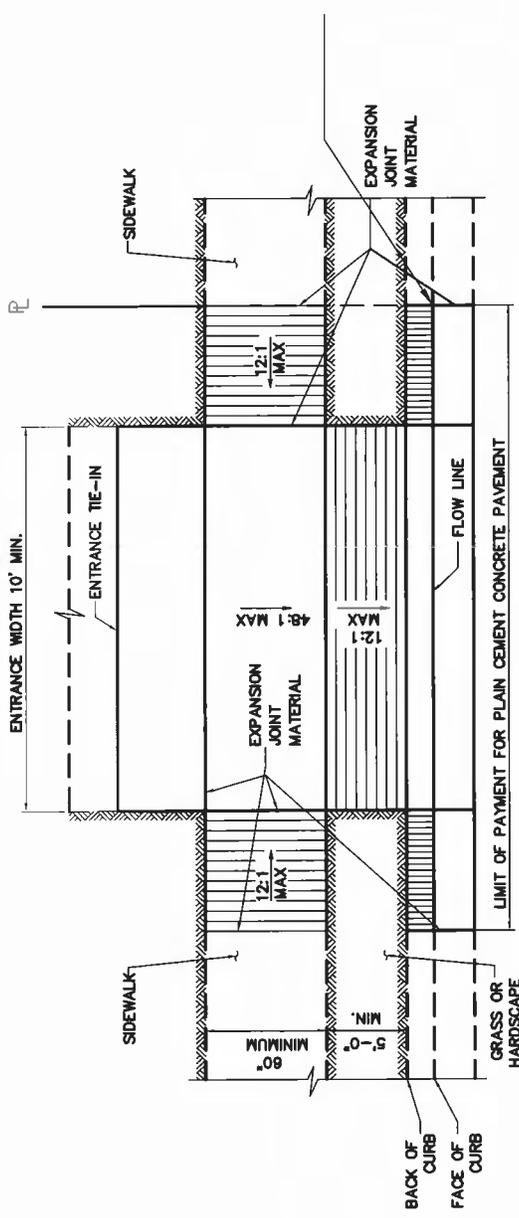
STANDARD ROAD DETAILS
 TYPICAL DRIVEWAY ENTRANCE
 CURB & GUTTER ROADWAY -
 SIDEWALK AWAY FROM CURB

NOT TO SCALE

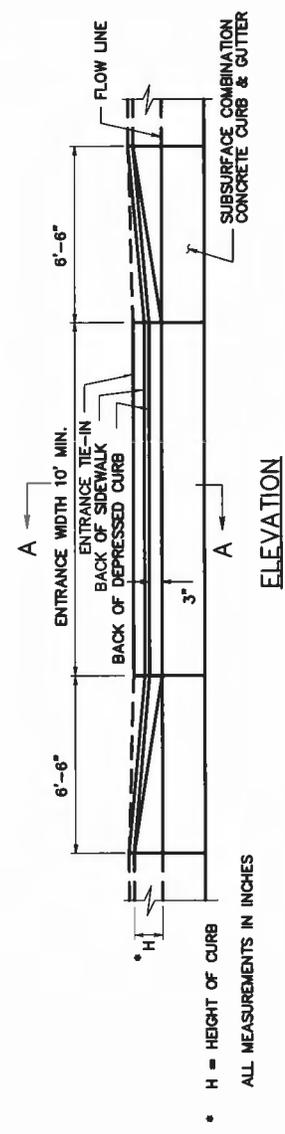
END OF FLARE SHALL NOT EXTEND BEYOND THE PERPENDICULAR PROJECTION FROM THE EDGE OF PAVEMENT TO THE PROPERTY CORNER AT THE RIGHT-OF-WAY.

NOTES

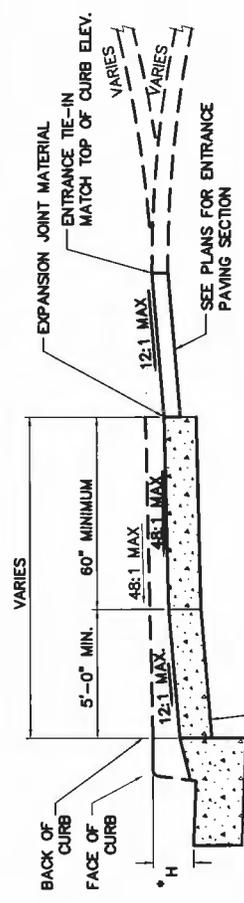
1. FOR USE IN AREAS WHERE THERE IS SIDEWALK SEPARATED FROM THE BACK OF CURB BY 24" OR MORE, OR WHERE IT IS EXPECTED THAT SIDEWALK WILL BE ADDED IN THE FUTURE.
2. EXPANSION JOINT MATERIAL TO BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01. (CURRENT AS AMENDED)
3. SUBBASE 6" GAB.



PLAN



ELEVATION



SECTION A-A

TYPE 'C' CURB & GUTTER
 SEE PLATE RD-19B

* H = HEIGHT OF CURB
 ALL MEASUREMENTS IN INCHES

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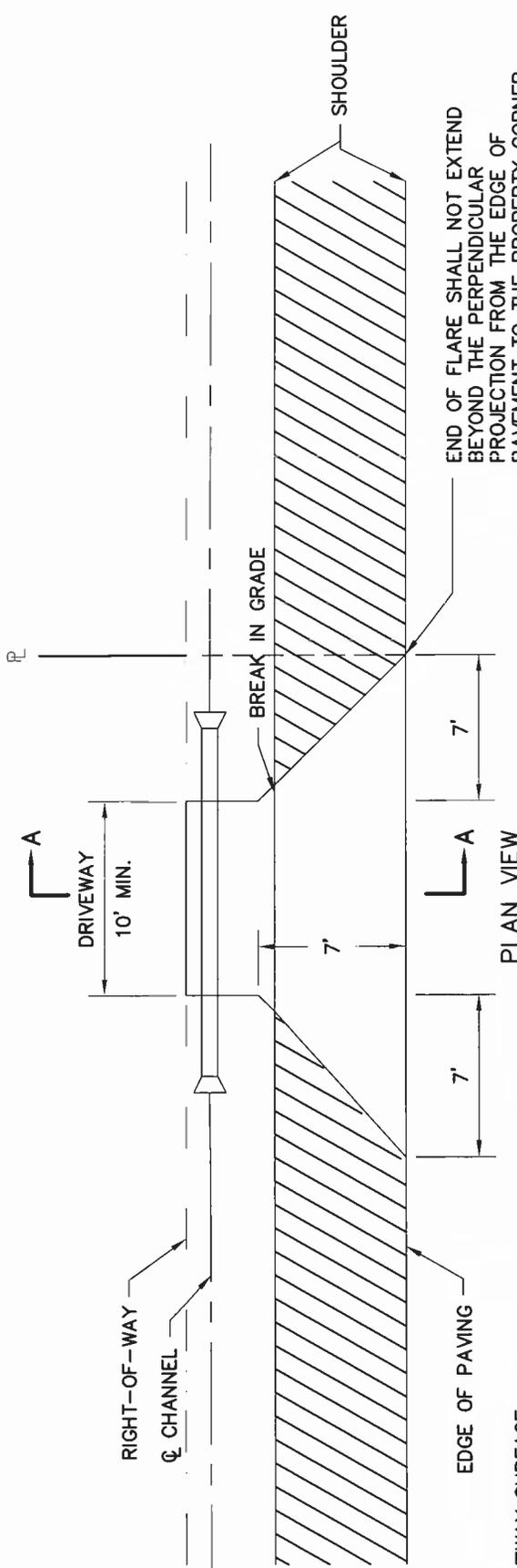
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CALVERT COUNTY MARYLAND
 JULY 1, 2012



STANDARD NUMBER

RD-15C



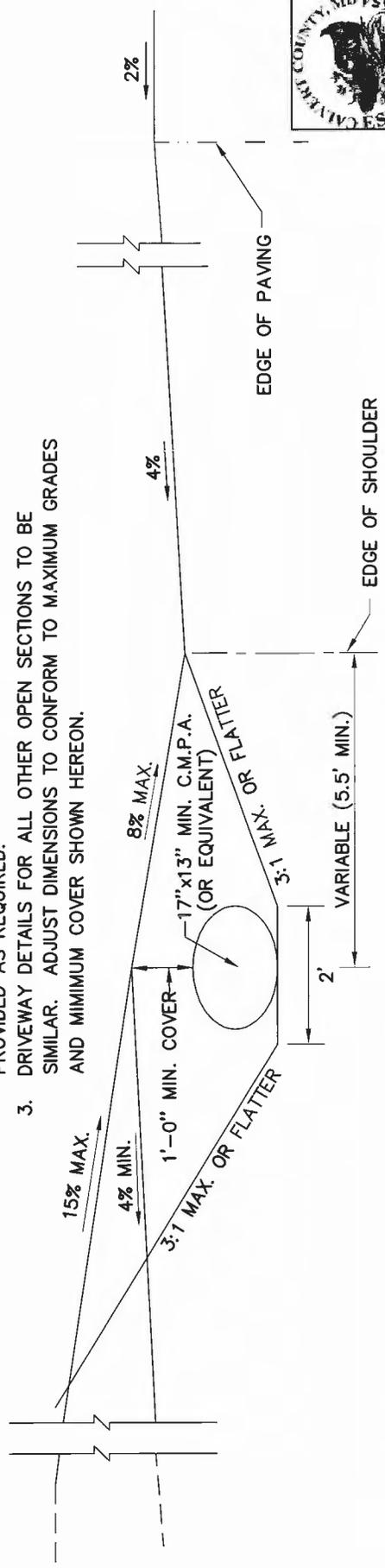
PLAN VIEW

DRIVEWAY SURFACE
4" (MIN.) CR-6 OR BETTER

END OF FLARE SHALL NOT EXTEND BEYOND THE PERPENDICULAR PROJECTION FROM THE EDGE OF PAVEMENT TO THE PROPERTY CORNER AT THE RIGHT-OF-WAY.

NOTES:

1. A MINIMUM OF 20 LIN. FT. OF C.M.P.A. (14 GAUGE MINIMUM) TO BE INSTALLED. (17"x13" MIN.) WITH END SECTIONS.
2. CHANNEL PROTECTION AND VELOCITY DISSIPATORS TO BE PROVIDED AS REQUIRED.
3. DRIVEWAY DETAILS FOR ALL OTHER OPEN SECTIONS TO BE SIMILAR. ADJUST DIMENSIONS TO CONFORM TO MAXIMUM GRADES AND MINIMUM COVER SHOWN HEREON.



SECTION A-A

NOT TO SCALE

STANDARD ROAD DETAILS
TYPICAL DRIVEWAY ENTRANCE
ROADWAYS WITHOUT
CURB & GUTTER

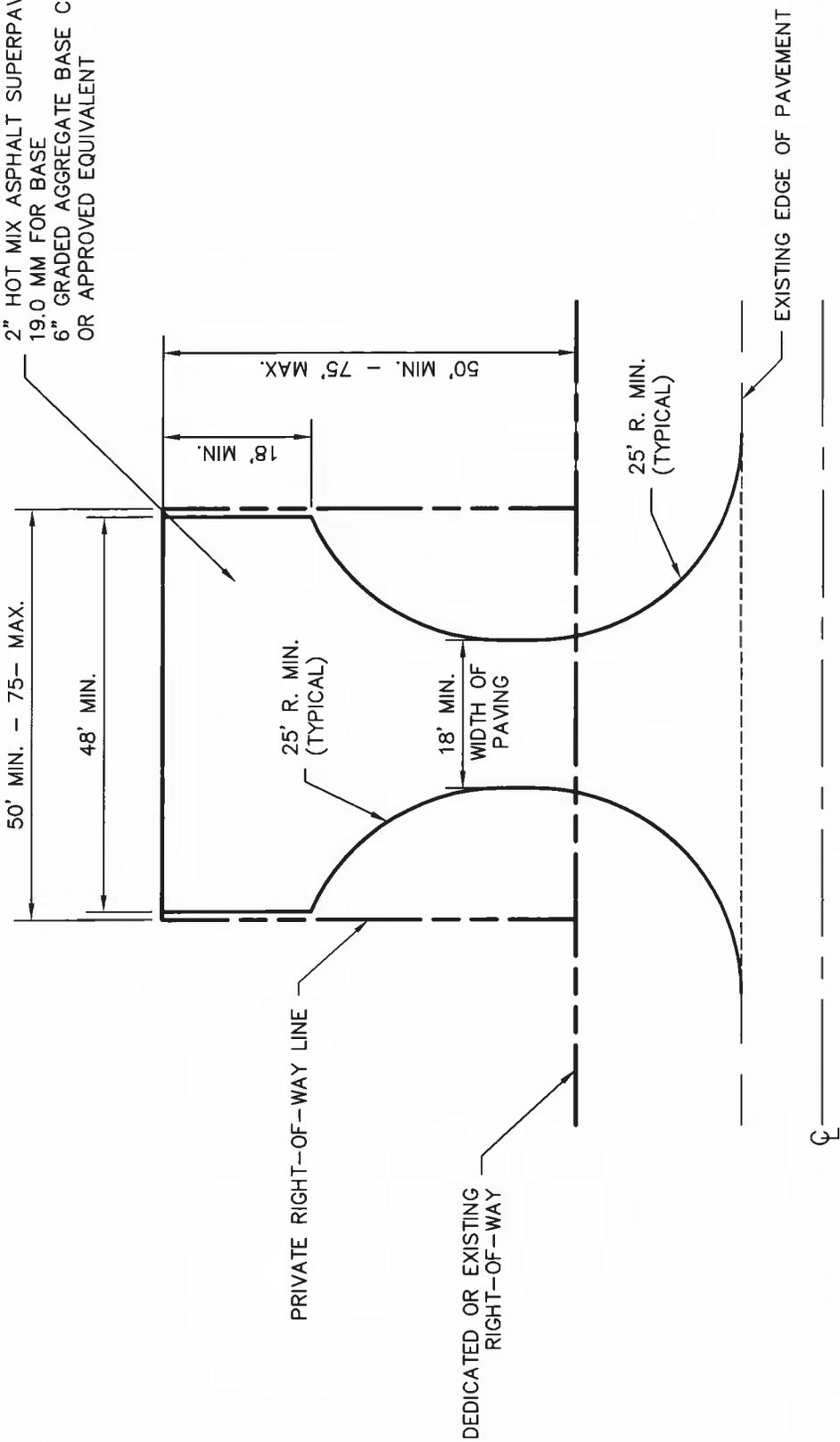
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- 1 1 1/2" HOT MIX ASPHALT SUPERPAVE
- 9.5 MM FOR SURFACE
- 2" HOT MIX ASPHALT SUPERPAVE
- 19.0 MM FOR BASE
- 6" GRADED AGGREGATE BASE COURSE
- OR APPROVED EQUIVALENT



- NOTE:
1. CONTINUATION OF THE DRIVEWAYS SERVING THESE LOTS SHALL BE EITHER PRIVATE LANE, COMMON DRIVEWAY EASEMENT OR SEPARATE INDIVIDUAL DRIVEWAYS.
 2. WHEN A COMMON ACCESS DRIVEWAY ACCESS A COLLECTOR ROADWAY, THE USE OF A MODIFIED TRANSITION LANE / DECELERATION LANE (RD-18A) SHALL BE USED.



STANDARD NUMBER
RD-16

STANDARD ROAD DETAILS
COMMON ACCESS DRIVEWAY
(PRIVATE)

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Levy P. Calver DIRECTOR
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NOT TO SCALE

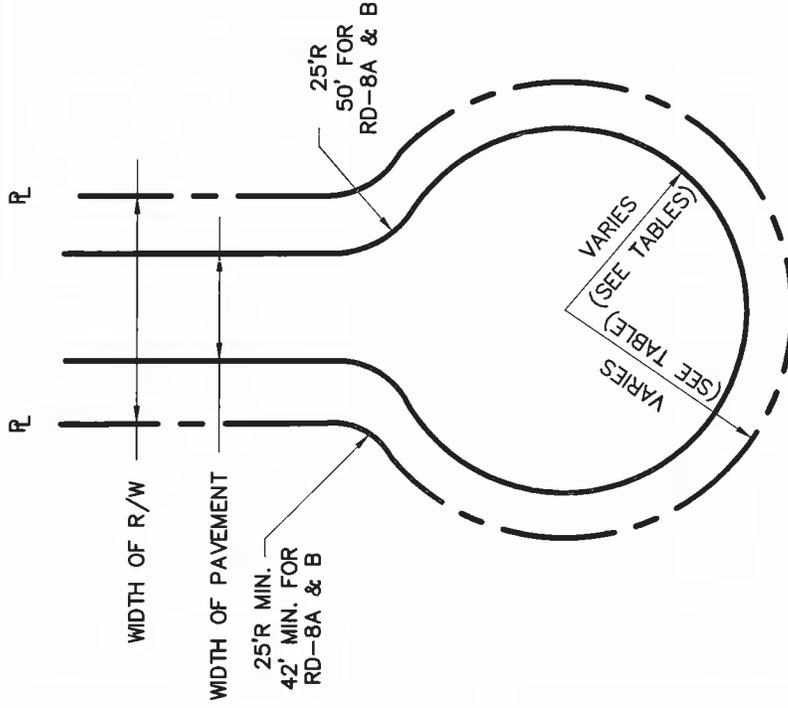
| ROAD RIGHT-OF-WAY | PAVEMENT WIDTH | PAVEMENT* RIGHT-OF-WAY | CUL-DE-SAC RIGHT-OF-WAY |
|----------------------|-------------------|---------------------------|----------------------------|
|----------------------|-------------------|---------------------------|----------------------------|

RURAL ROADS:

| | | | | |
|-------|--------|------------|-----|------------|
| RD-1A | TO 50' | 12' TO 18' | 47' | 56' TO 62' |
| RD-2A | 30' | 20' | 47' | 52' |
| RD-3A | 40' | 20' | 47' | 57' |
| RD-4A | 50' | 20' | 47' | 62' |
| RD-5A | 50' | 24' | 47' | 60' |
| RD-8A | 60' | 44' | 61' | 69' |

URBAN ROADS:

| | | | | |
|-------|-----|-----|-----|-----|
| RD-1B | 30' | 16' | 47' | 54' |
| RD-2B | 30' | 20' | 47' | 52' |
| RD-3B | 40' | 22' | 47' | 56' |
| RD-4B | 50' | 23' | 47' | 60' |
| RD-5B | 50' | 30' | 47' | 57' |
| RD-8B | 60' | 44' | 61' | 69' |



* 47' MINIMUM TURNING RADIUS FOR SCHOOL BUSES PER AASHTO
 NOTE: 1. STANDARD ROAD SECTIONS 4C, 4D, 5C AND 5D INCLUDE ON-STREET PARKING.
 NO ON-STREET PARKING TO BE DESIGNED ON CUL-DE-SACS.
 2. THE ENGINEERING DIVISION IS TO APPROVE DIMENSIONS WHEN RIGHT-OF-WAY IS DIFFERENT THAN 50' AND FOR OFFSET CUL-DE-SACS.

NOT TO SCALE

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| STANDARD ROAD DETAILS CUL-DE-SAC | | | STANDARD ROAD NUMBER RD-17C | | |

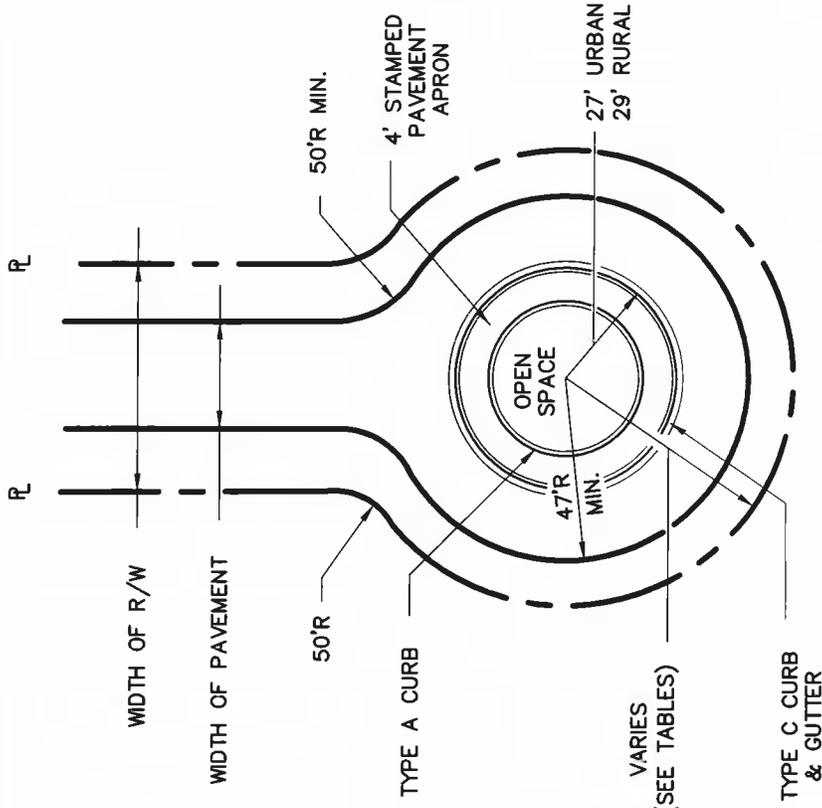
| ROAD RIGHT-OF-WAY | PAVEMENT WIDTH | PAVEMENT* | CUL-DE-SAC RIGHT-OF-WAY |
|-------------------|----------------|-----------|-------------------------|
|-------------------|----------------|-----------|-------------------------|

RURAL ROADS:

| | | | | |
|-------|--------|------------|-----|------------|
| RD-1A | TO 50' | 12' TO 18' | 18' | 63' TO 66' |
| RD-2A | 30' | 20' | 18' | 52' |
| RD-3A | 40' | 20' | 18' | 57' |
| RD-4A | 50' | 20' | 18' | 62' |
| RD-5A | 50' | 24' | 18' | 60' |
| RD-8A | 60' | 44' | 18' | 69' |

URBAN ROADS:

| | | | | |
|-------|-----|-----|-----|-----|
| RD-1B | 30' | 16' | 20' | 54' |
| RD-2B | 30' | 20' | 20' | 52' |
| RD-3B | 40' | 22' | 20' | 56' |
| RD-4B | 50' | 23' | 20' | 60' |
| RD-5B | 50' | 30' | 20' | 57' |
| RD-8B | 60' | 44' | 20' | 69' |



NOT TO SCALE

* 47' MINIMUM TURNING RADIUS FOR SCHOOL BUSES PER AASHTO

- NOTE:
- STANDARD ROAD SECTIONS 4C, 4D, 5C, AND 5D INCLUDE ON-STREET PARKING. NO ON-STREET PARKING SHALL BE DESIGNED ON THE CUL-DE-SAC.
 - THE ENGINEERING DIVISION IS TO APPROVE DIMENSIONS WHEN RIGHT-OF-WAY IS DIFFERENT THAN 50' AND FOR OFFSET CUL-DE-SACS.
 - LANDSCAPED ISLANDS WITHIN COUNTY RIGHTS-OF-WAY MUST BE DECEDED TO A HOMEOWNER'S ASSOCIATION. THE COUNTY WILL NOT BE RESPONSIBLE FOR THEIR MAINTENANCE. THE ENGINEERING DIVISION MUST APPROVE PLANTINGS WITHIN ISLANDS IN ORDER TO INSURE ADEQUATE SIGHT DISTANCE IS MAINTAINED.



STANDARD NUMBER
RD-17D

STANDARD ROAD DETAILS
LANDSCAPED CUL-DE-SAC

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JULY 1, 2012

CALVERT COUNTY MARYLAND

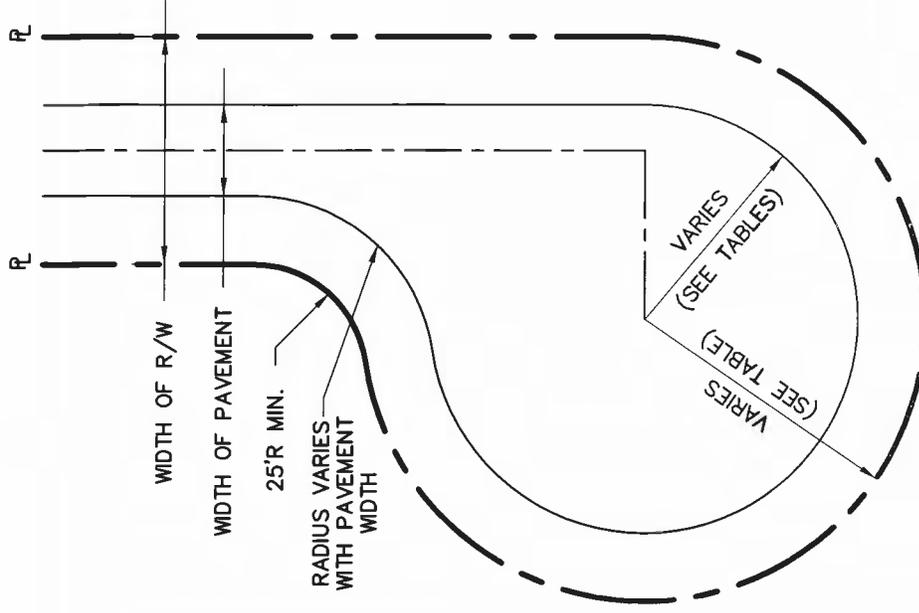
| ROAD RIGHT-OF-WAY | PAVEMENT WIDTH | CUL-DE-SAC PAVEMENT* RIGHT-OF-WAY |
|-------------------|----------------|-----------------------------------|
|-------------------|----------------|-----------------------------------|

RURAL ROADS:

| | | | | |
|-------|--------|------------|-----|------------|
| RD-1A | TO 50' | 12' TO 18' | 47' | 56' TO 62' |
| RD-2A | 30' | 20' | 47' | 52' |
| RD-3A | 40' | 20' | 47' | 57' |
| RD-4A | 50' | 20' | 47' | 62' |
| RD-5A | 50' | 24' | 47' | 60' |
| RD-8A | 60' | 44' | 61' | 69' |

URBAN ROADS:

| | | | | |
|-------|-----|-----|-----|-----|
| RD-1B | 30' | 16' | 47' | 54' |
| RD-2B | 30' | 20' | 47' | 52' |
| RD-3B | 40' | 22' | 47' | 56' |
| RD-4B | 50' | 23' | 47' | 60' |
| RD-5B | 50' | 30' | 47' | 57' |
| RD-8B | 60' | 44' | 61' | 69' |



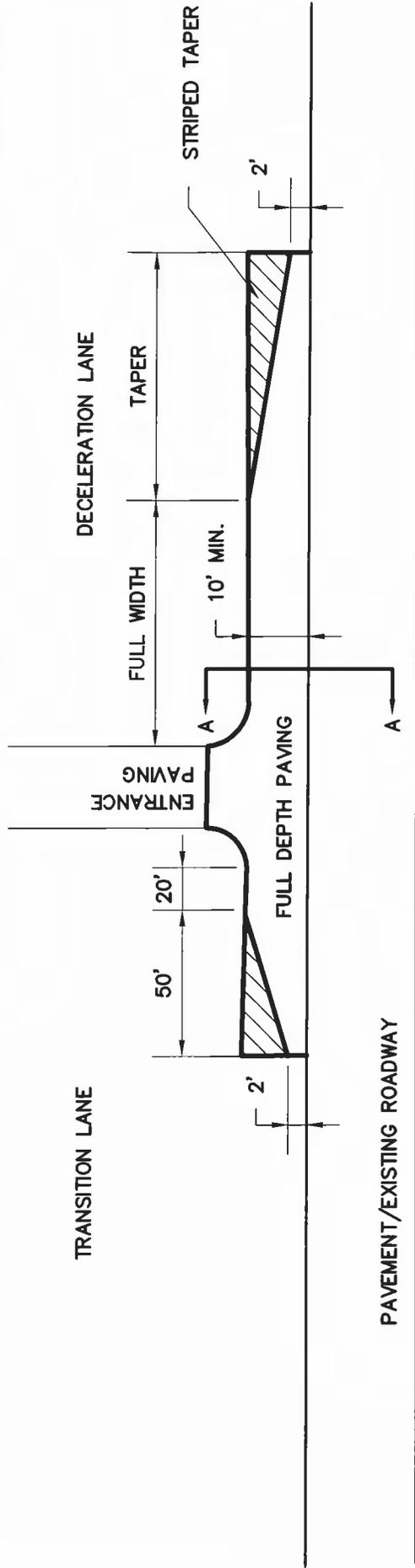
* 47' MINIMUM TURNING RADIUS FOR SCHOOL BUSES PER AASHTO
 NOTE: 1. STANDARD ROAD SECTIONS 4C, 4D, 5C AND 5D INCLUDE ON-STREET PARKING. NO ON-STREET PARKING TO BE DESIGNED ON CUL-DE-SACS.
 2. THE ENGINEERING DIVISION IS TO APPROVE DIMENSIONS WHEN RIGHT-OF-WAY IS DIFFERENT THAN 50' AND FOR OFFSET CUL-DE-SACS.

NOT TO SCALE

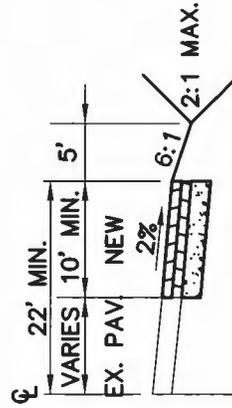
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| STANDARD ROAD DETAILS OFFSET CUL-DE-SAC | | | STANDARD ROAD NUMBER RD-17E | |

TRANSITION LANE

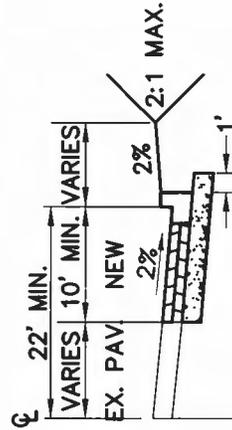
DECELERATION LANE



PAVEMENT/EXISTING ROADWAY



SECTION A-A - OPEN SECTION



SECTION A-A - CLOSED SECTION

DECELERATION LANE MINIMUMS

| POSTED SPEED (MPH) | FULL WIDTH | TAPER |
|--------------------|------------|-------|
| 30 | 130' | 150' |
| 35 | 170' | 150' |
| 40 | 235' | 150' |
| 45 | 300' | 150' |
| 50 | 380' | 150' |

NOTES:

- TRANSITION & DECELERATION LANES TO BE UTILIZED FOR CONNECTIONS TO COLLECTORS AND COMMERCIAL/INDUSTRIAL ROADWAYS OR AS REQUIRED BY SITE PLAN APPROVAL.
- THE PAVEMENT SECTION SHALL BE THE SAME AS THE TYPICAL PAVEMENT FOR THE CLASSIFICATION OF EXISTING COUNTY ROAD.
- THE ENGINEERING DIVISION MAY REVISE THE TYPICAL WHEN EXISTING CONDITIONS REQUIRE.
- PAVEMENT SHALL BE FULL WIDTH, 10' UP TO 12' THROUGH END OF PAINTED TAPER.
- PAVEMENT & STRIPING MARKINGS IN ACCORDANCE WITH MUTCD.

NOT TO SCALE



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STANDARD ROAD DETAILS
 TRANSITION LANE &
 DECELERATION LANES

STANDARD NUMBER

RD-18A



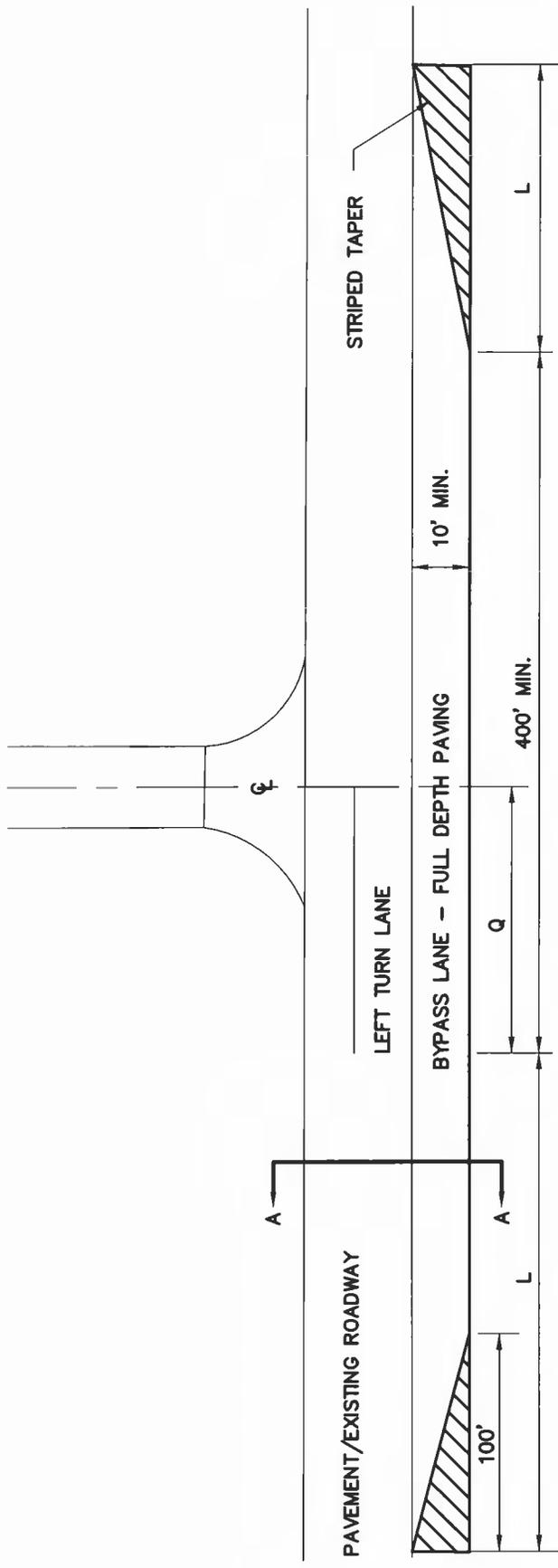
STANDARD NUMBER

RD-18B

STANDARD ROAD DETAILS

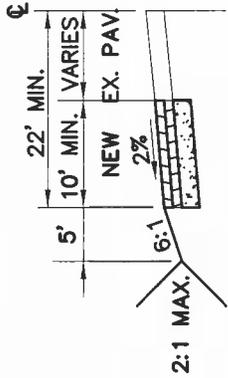
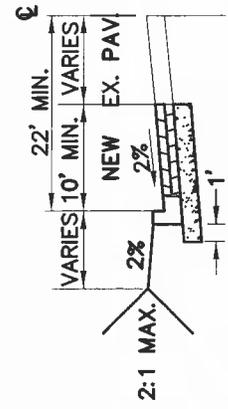
BY-PASS LANES

NOT TO SCALE



BYPASS LANE MINIMUMS

| POSTED SPEED (MPH) | L | Q |
|--------------------|------|-------------------------------------|
| 30 | 150' | QUEUE LENGTH BASED ON TRAFFIC DATA. |
| 35 | 205' | |
| 40 | 270' | |
| 45 | 338' | |
| 50 | 420' | |



SECTION A-A - OPEN SECTION SECTION A-A - CLOSED SECTION

NOTES:

1. THE PAVEMENT SECTION SHALL BE THE SAME AS THE TYPICAL PAVEMENT FOR THE CLASSIFICATION OF EXISTING COUNTY ROAD.
2. THE ENGINEERING DIVISION MAY REVISE THE TYPICAL WHEN EXISTING CONDITIONS REQUIRE.
3. PAVEMENT SHALL BE FULL WIDTH, 10' UP TO 12' THROUGH END OF PAINTED TAPER.
4. PAVEMENT & STRIPING MARKINGS IN ACCORDANCE WITH MUTCD.

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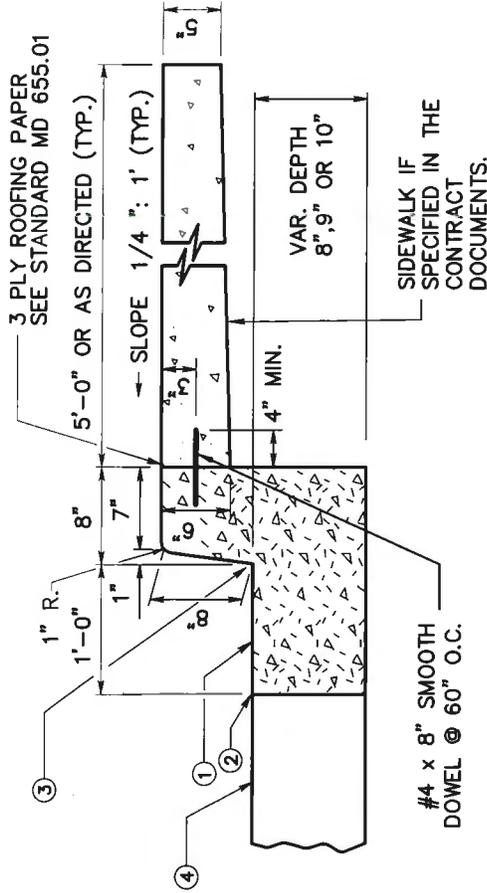
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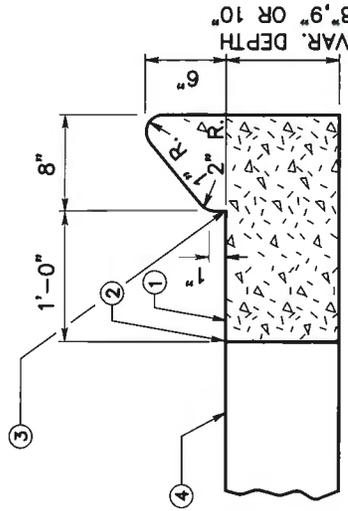
NOTES

MAXIMUM JOINT SPACING FOR CONCRETE CURB AND COMBINATION CURB & GUTTER IS 10'. SEE SPECIFICATION FOR LOCATIONS AND DESCRIPTION OF TREATMENT FOR THE TYPES OF JOINTS USED.

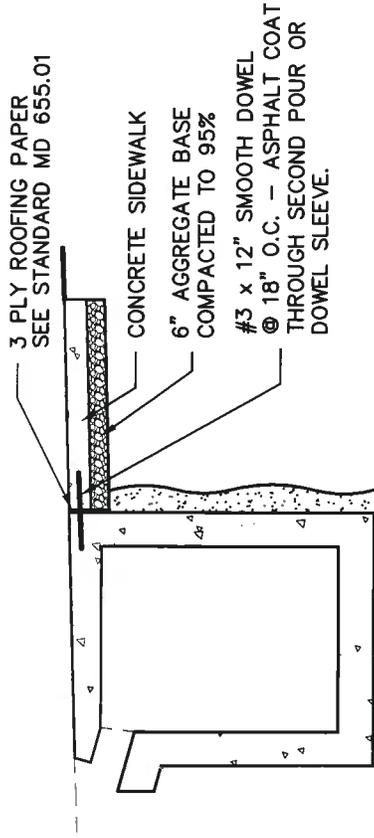
- ① SLOPE GUTTER PAN 1/2" PER FOOT TOWARD FLOW LINE ON ALL ROADWAYS INCLUDING SUPERELEVATED SECTIONS, EXCEPT INTERCHANGE RAMPS.
- ② ROADWAY PAVEMENT CONSTRUCTION JOINT
- ③ FLOW LINE
- ④ ROADWAY PAVEMENT SLOPE



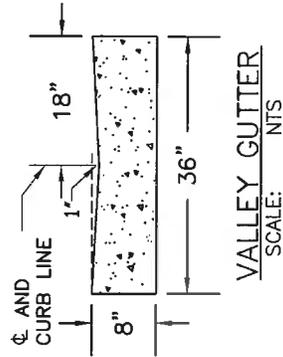
TYPE 'A'
COMBINATION CURB & GUTTER
DESIGN SPEED 30-40 MPH



TYPE 'B'
COMBINATION CURB & GUTTER
DESIGN SPEED 50 MPH



**CONCRETE SIDEWALK
ADJACENT TO CURB INLET**



NOT TO SCALE



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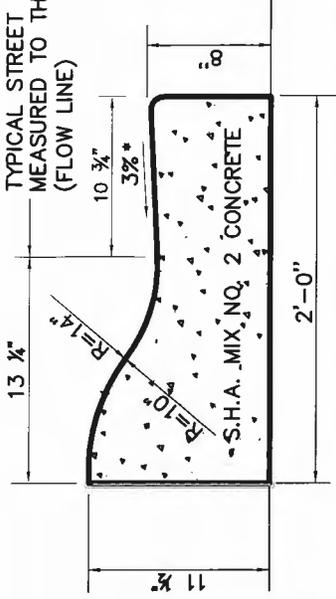
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STANDARD ROAD DETAILS
STANDARD CONCRETE CURB
& GUTTER - TYPE A, B AND
VALLEY GUTTER

STANDARD
NUMBER

RD-19A

PAVEMENT WIDTH INDICATED ON TYPICAL STREET SECTIONS TO BE MEASURED TO THIS POINT (FLOW LINE)



TYPE 'S'

MODIFIED COMBINATION CURB & GUTTER

NOTE: MODIFIED COMBINATION CURB & GUTTER TO BE USED ONLY ON CUL-DE-SAC AND LOCAL ROADS.

NOTES

MAXIMUM JOINT SPACING FOR CONCRETE CURB AND COMBINATION CURB & GUTTER IS 10'. SEE SPECIFICATION FOR LOCATIONS AND DESCRIPTION OF TREATMENT FOR THE TYPES OF JOINTS USED. TYPE 'C' OR 'D' COMBINATION CURB AND GUTTER SHALL BE USED FOR ALL APPLICABLE NEW CONSTRUCTION AND IN THOSE AREAS WHERE THE COMBINATION CURB AND GUTTER IS TO BE REPLACED IN KIND. TYPE 'S' MAY BE USED AS AN ALTERNATE FOR RD4 & RD5 WHEN APPROVED BY THE DIRECTOR.

- ① SLOPE GUTTER PAN 1/2" PER FOOT TOWARD FLOW LINE ON ALL ROADWAYS INCLUDING SUPER-ELEVATED SECTIONS, EXCEPT INTERCHANGE RAMPS.
- ② ROADWAY PAVEMENT CONSTRUCTION JOINT
- ③ FLOW LINE
- ④ ROADWAY PAVEMENT SLOPE

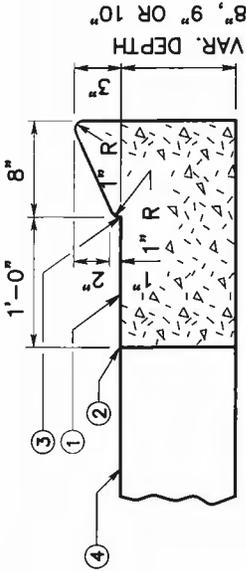
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STANDARD NUMBER

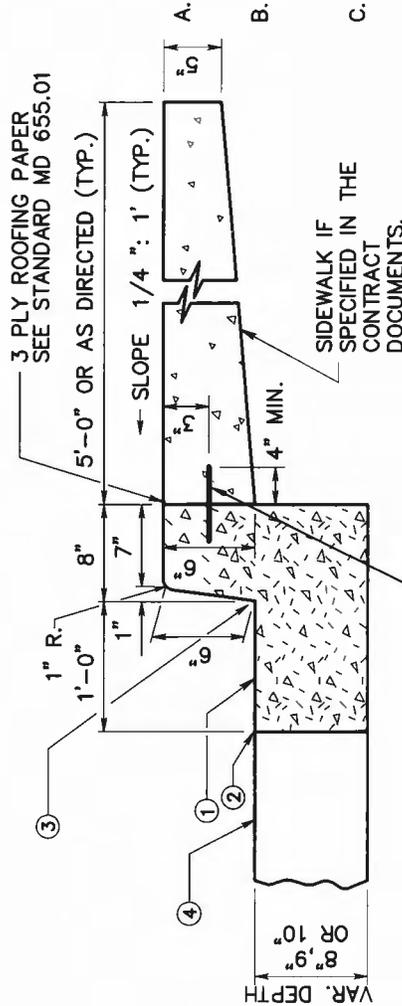
RD-19B

STANDARD ROAD DETAILS
STANDARD CONCRETE
CURB & GUTTER - TYPE C, D & S



TYPE 'C'

COMBINATION CURB & GUTTER TO BE USED FOR DESIGN SPEED 60 MPH AND ACROSS ENTRANCES



#4 x 8" SMOOTH DOWEL @ 60" O.C.

TYPE 'D'

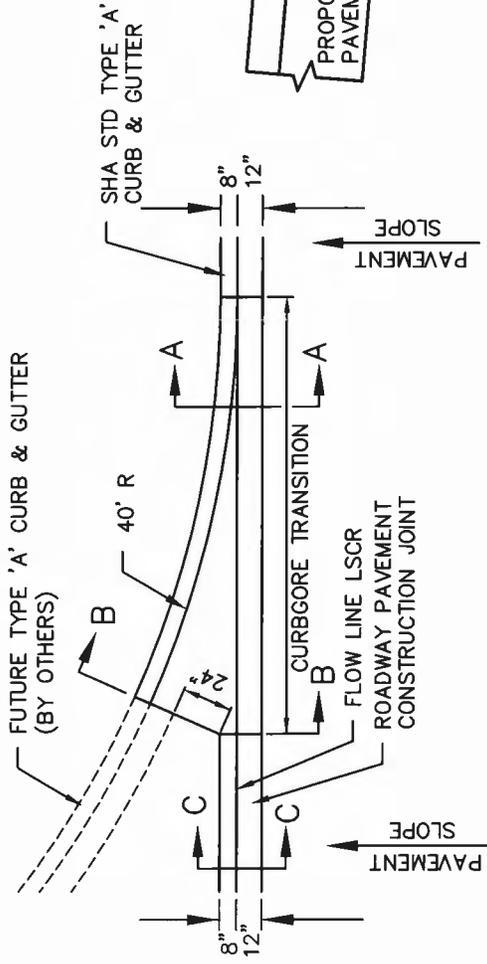
COMBINATION CURB & GUTTER TO BE USED ADJACENT TO PARKING LOCATIONS DESIGNED FOR PERSONS WITH DISABILITIES

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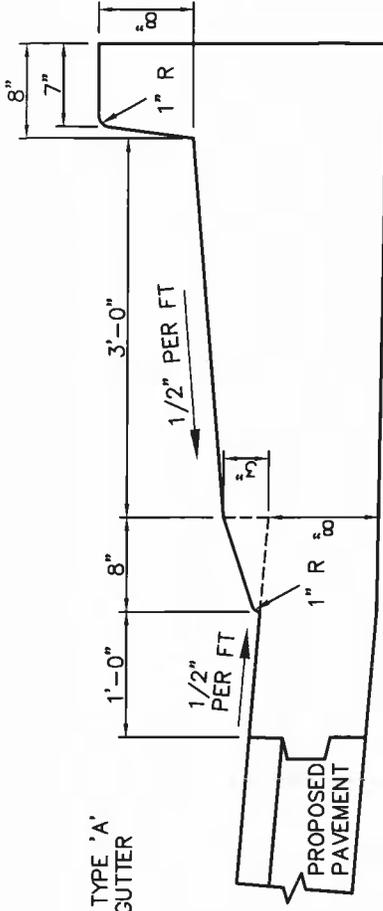
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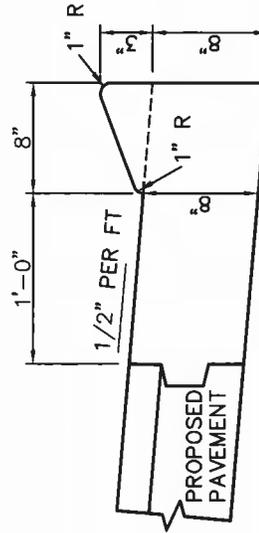
CALVERT COUNTY MARYLAND



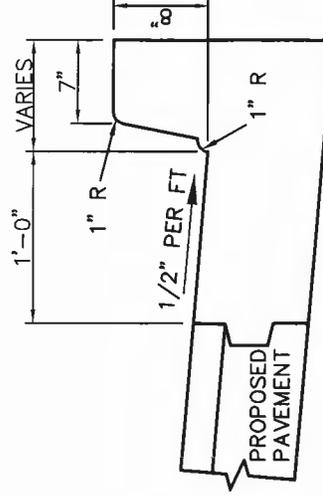
PLAN VIEW



SECTION B-B



SECTION C-C



SECTION A-A

NOT TO SCALE



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STANDARD ROAD DETAILS

CURB TRANSITION DETAILS

STANDARD NUMBER

RD-19C

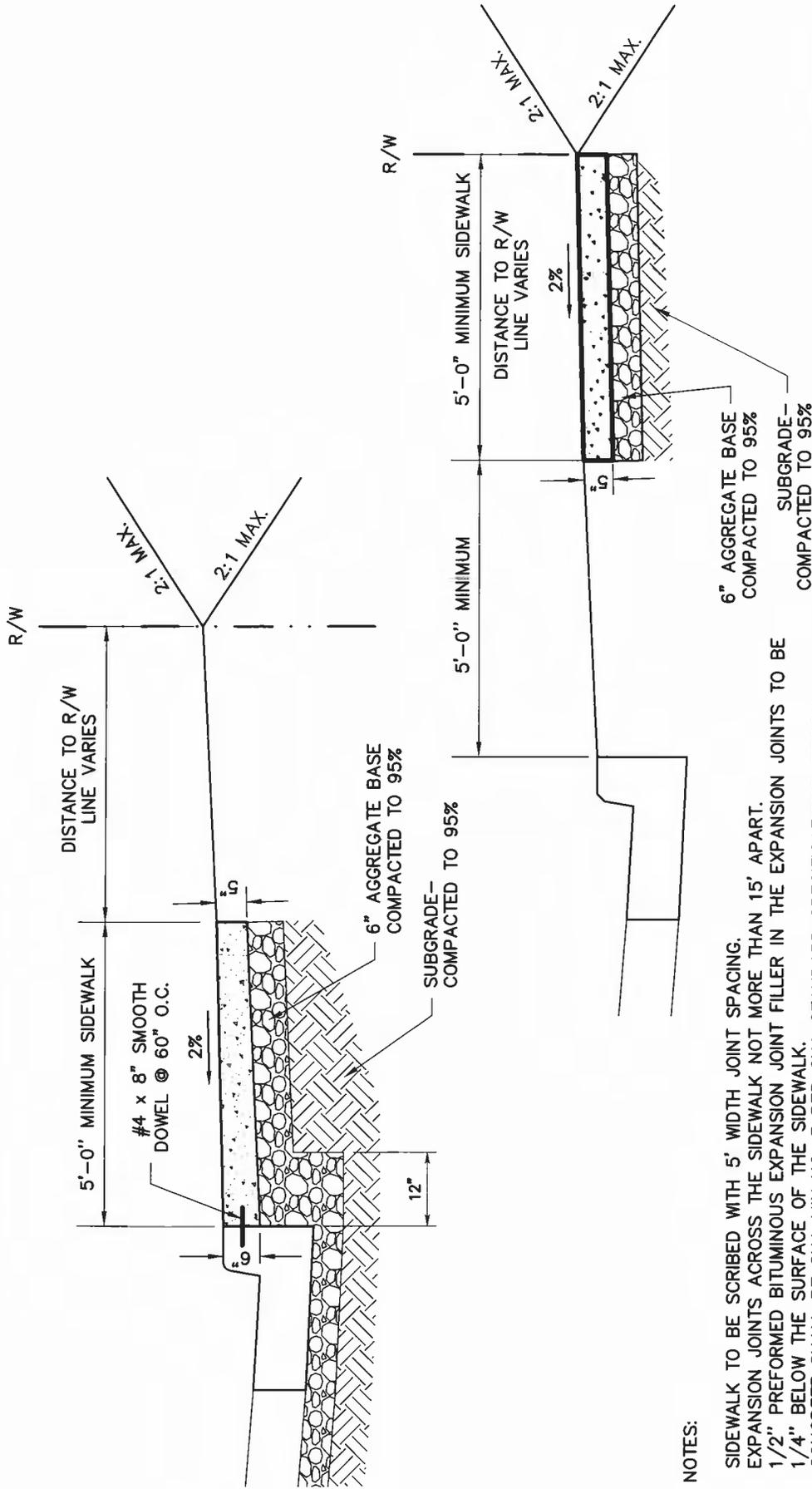


STANDARD NUMBER

RD-20A

STANDARD ROAD DETAILS
STANDARD CONCRETE
SIDEWALK

NOT TO SCALE



NOTES:

1. SIDEWALK TO BE SCRIBED WITH 5' WIDTH JOINT SPACING.
2. EXPANSION JOINTS ACROSS THE SIDEWALK NOT MORE THAN 15' APART.
3. 1/2" PREFORMED BITUMINOUS EXPANSION JOINT FILLER IN THE EXPANSION JOINTS TO BE 1/4" BELOW THE SURFACE OF THE SIDEWALK.
4. CONCRETE SHALL BE SHA MIX NO. 3 PER SHA STANDARD SPECIFICATIONS, BROOM FINISHED.
5. WHEN SIDEWALK ABUTS CURB, THE SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 3 PLY ROOFING PAPER BETWEEN THEM.
6. FOR RESIDENTIAL SIDEWALK REQUIREMENTS; REFER TO "STANDARD ROAD DETAILS, MINOR RESIDENTIAL COLLECTOR ROADWAY - RURAL" STANDARD NUMBER RD-5A FOR SIDEWALK LOCATIONS AND CONSTRUCTION DETAILS.
7. ALL SIDEWALKS SHALL BE INSTALLED TO COMPLY WITH ADA STANDARDS AND IN ACCORDANCE WITH AASHTO POLICY GUIDELINES.

REVISED

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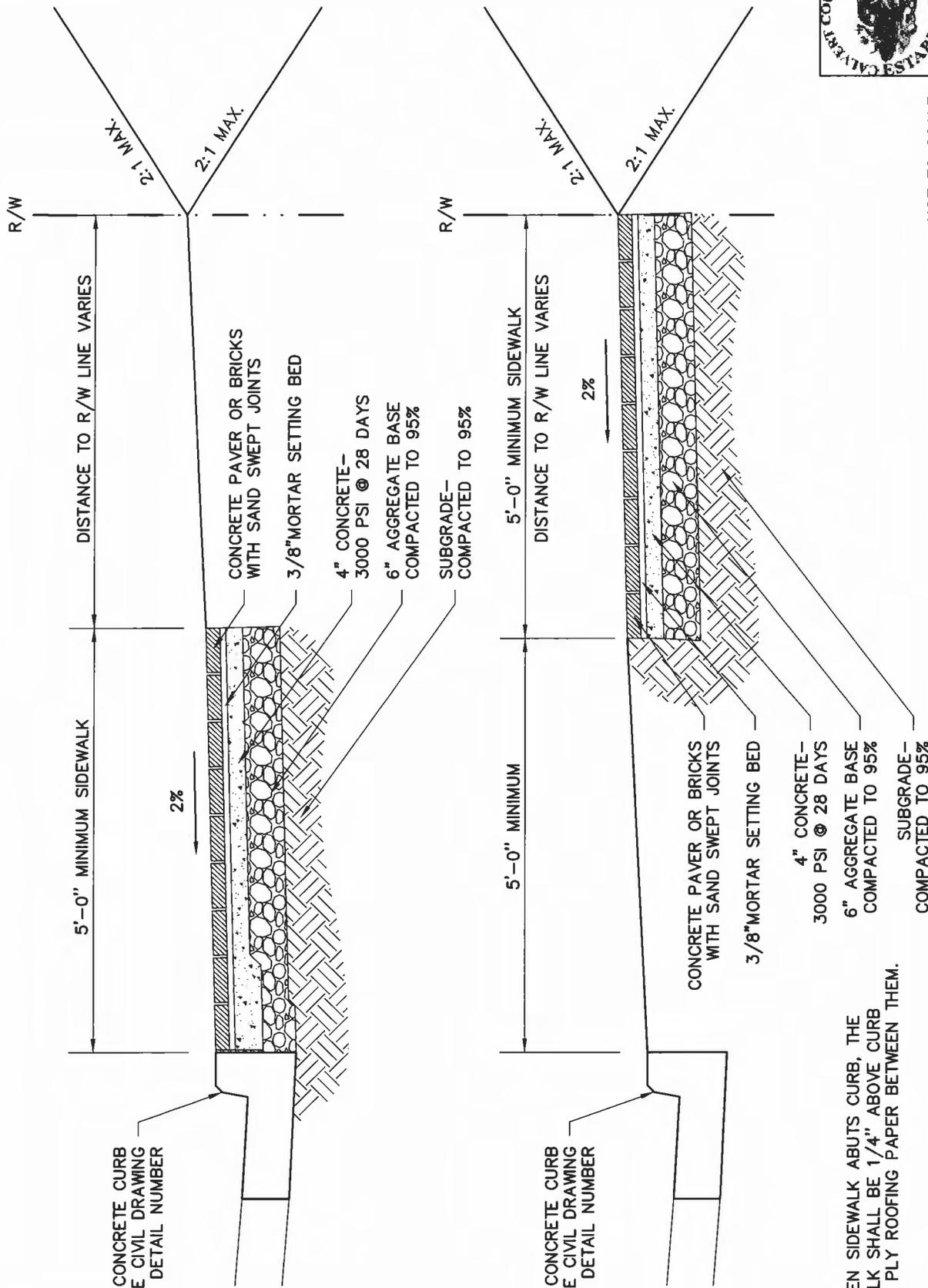


STANDARD NUMBER

RD-20B

STANDARD ROAD DETAILS
CONCRETE PAVER / BRICK
SIDEWALK

NOT TO SCALE



NOTES:
1. WHEN SIDEWALK ABUTS CURB, THE SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 3 PLY ROOFING PAPER BETWEEN THEM.

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DIRECTOR
DEPARTMENT OF
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JULY 1, 2012

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STANDARD NUMBER

RD-21

STANDARD ROAD DETAILS
ON-STREET PARKING
BUMP-OUT CONFIGURATIONS

NOT TO SCALE

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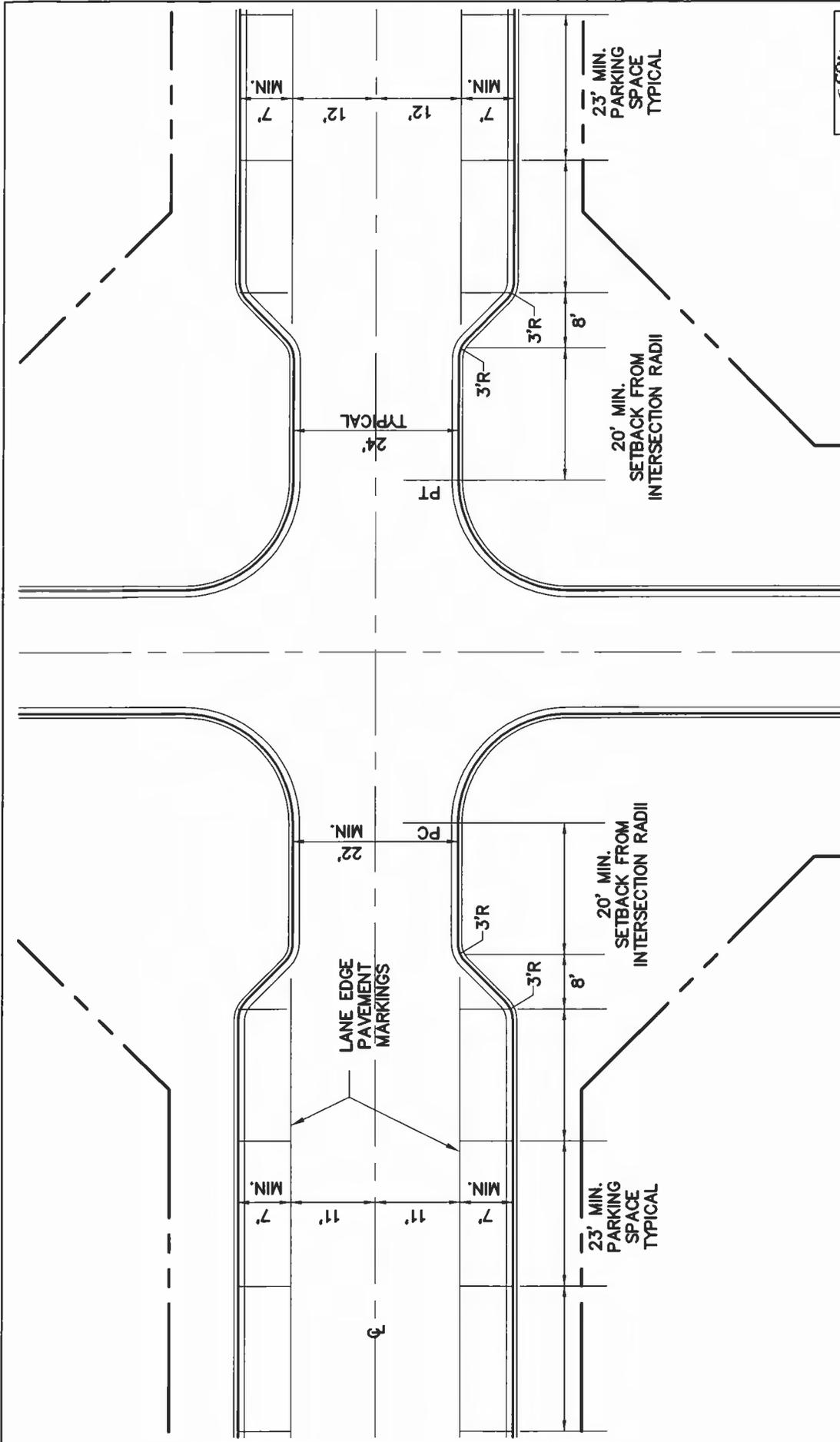
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GENERAL NOTES:

- (1) USE A 1% MINIMUM GUTTER GRADE.
- (2) MAINTAIN 3% CROSS SLOPE THROUGH PARKING BAY.



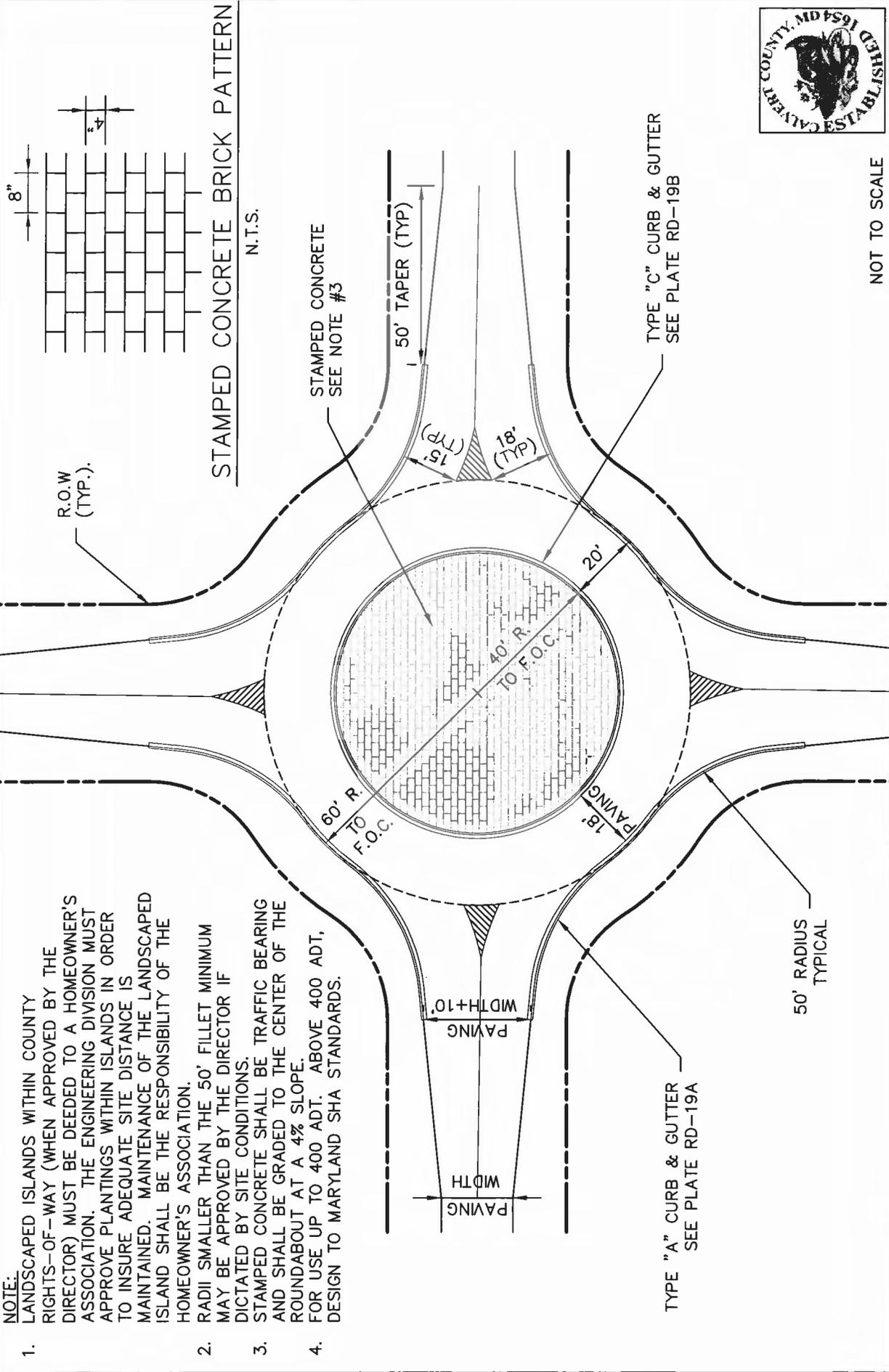


STANDARD NUMBER

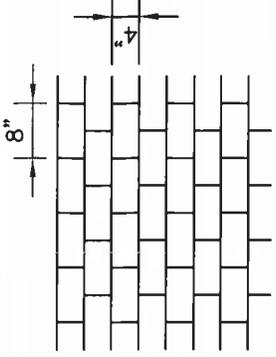
RD-22

STANDARD ROAD DETAILS
RURAL ROUNDABOUT
 (FOR INTERSECTIONS EXCEEDING
 2 PUBLIC/PRIVATE ROADWAYS)

NOT TO SCALE



- NOTE:**
1. LANDSCAPED ISLANDS WITHIN COUNTY RIGHTS-OF-WAY (WHEN APPROVED BY THE DIRECTOR) MUST BE DEEDED TO A HOMEOWNER'S ASSOCIATION. THE ENGINEERING DIVISION MUST APPROVE PLANTINGS WITHIN ISLANDS IN ORDER TO INSURE ADEQUATE SITE DISTANCE IS MAINTAINED. MAINTENANCE OF THE LANDSCAPED ISLAND SHALL BE THE RESPONSIBILITY OF THE HOMEOWNER'S ASSOCIATION.
 2. RADII SMALLER THAN THE 50' FILLET MINIMUM MAY BE APPROVED BY THE DIRECTOR IF DICTATED BY SITE CONDITIONS.
 3. STAMPED CONCRETE SHALL BE TRAFFIC BEARING AND SHALL BE GRADED TO THE CENTER OF THE ROUNDABOUT AT A 4% SLOPE.
 4. FOR USE UP TO 400 ADT. ABOVE 400 ADT, DESIGN TO MARYLAND SHA STANDARDS.



STAMPED CONCRETE BRICK PATTERN
 N.T.S.

STAMPED CONCRETE
 SEE NOTE #3

50' TAPER (TYP)

15' (TYP)

18' (TYP)

TYPE "C" CURB & GUTTER
 SEE PLATE RD-19B

TYPE "A" CURB & GUTTER
 SEE PLATE RD-19A

50' RADIUS
 TYPICAL

REVISED

DATE BY

APPROVED

[Signature] DIRECTOR
 DEPARTMENT OF
 PUBLIC WORKS

JULY 1, 2012

CALVERT
 COUNTY
 MARYLAND

SPECIFIC / GEOMETRIC DESIGN ELEMENTS

The approach roadway design elements include curb alignment, median width and transition, approach flare, crosswalk location, horizontal and vertical alignment of the approach lane, intersection and stopping sight distance calculations, approach speed, fastest path radii, and other assorted elements. Maximum/minimum standards include the following:

FASTEST PATH - SINGLE LANE

| RADIUS | *RADIUS MAX. | SPEED |
|----------------|--------------|--------|
| R1 ENTRY | 89'-99' | 15 MPH |
| R2 CIRCULATING | 99'-116' | 15 MPH |
| R3 EXIT | 152'-178' | 15 MPH |
| R4 LEFT TURN | 99'-116' | 15 MPH |
| R4 MINIMUM** | 18'-20' | 10 MPH |
| R5 RIGHT TURN | 152'-178' | 15 MPH |

* Range for super elevation rates from -4 to +4%.

** R4 has a minimum requirement to reduce rear end accidents caused by excessive speed differential.

Note: Radii are given as a range for various superelevation rates from 0% to 4%, positive for R1, R3, and R5, and negative for R2 and R4. Calculations for each specific segment and corresponding cross slope should follow AASHTO Geometric Design of Highway and Streets, 2001 or later.

Maximum Grade:
 (approach) 2% for 200' on minor or principal arterials
 4% for 100' on minor or major collectors
 4% for 50' on local streets

Approach Decision Sight Distance

| |
|-------------------------|
| 375' for 25 MPH or less |
| 450' for 30 MPH |
| 525' for 35 MPH |
| 600' for 40 MPH |
| 675' for 45 MPH |
| 750' for 50 MPH |

Note: Approach Decision Sight Distance, DSD, is the distance which a driver is aware of the change in alignment caused by specifically by the roundabout. If the desired DSD is not available due to topographic limitations, advance warning signs will be required. Vertical alignment must be checked as well as horizontal alignment for restrictions to DSD.

Minimum Approach Tangent
 (approach centerline to yield line)

| |
|--|
| 100' on all collectors, commercial and industrial roadways |
| 50' on local access |

Min. distance to nearest access
 (distance to splitter island)

100' on all collectors, commercial and industrial roadways
 30' on local access

Stopping sight distance (SSD) shall be addressed for each leg of the round-about. SSD for the approach and yield at the round-about are based on AASHTO standards for urban roadways, Section 9 of the 2001 or later geometric design manual, Case A for sight distance to the left, and Section 3, Ex 3-1 for SSD relating to pedestrians. Horizontal and vertical alignment must be checked.

Stopping Sight Distance

| |
|-----------------|
| 80' for 15 MPH |
| 115' for 20 MPH |
| 155' for 25 MPH |
| 200' for 30 MPH |
| 250' for 35 MPH |
| 305' for 40 MPH |
| 360' for 45 MPH |

SPLITTER ISLANDS

Splitter islands shall provide proper deflection of vehicular traffic for speed controls and pedestrian refuge areas. They are required on all urban round-about. They shall be a minimum of 50' long (measured from the outside of the circulator road) if there is a pedestrian crossing. Splitter islands where crosswalks are projected shall have a minimum 6'x6' pedestrian refuge. Crosswalks shall be 25' from the yield line. The curb face along the circulating roadway shall be offset for the traveled way a distance of 3' on the approach side next to the circulating roadway tapering to 1.5' at the intersection of the entry and the approach. Island nose radii shall be 1' minimum to 3' maximum.

SIGNING AND MARKING

Signing and marking shall conform to Manual on Uniform Traffic Control Devices (MUTCD) as modified by the latest recommended round-about signing standards.

LANDSCAPE DESIGN ELEMENTS

Landscaping within the splitter islands (if proposed) and the center island shall be hardscaped or contain low level vegetation with a maximum curb, island and landscaping, at maturity, of 30" above the roadway.



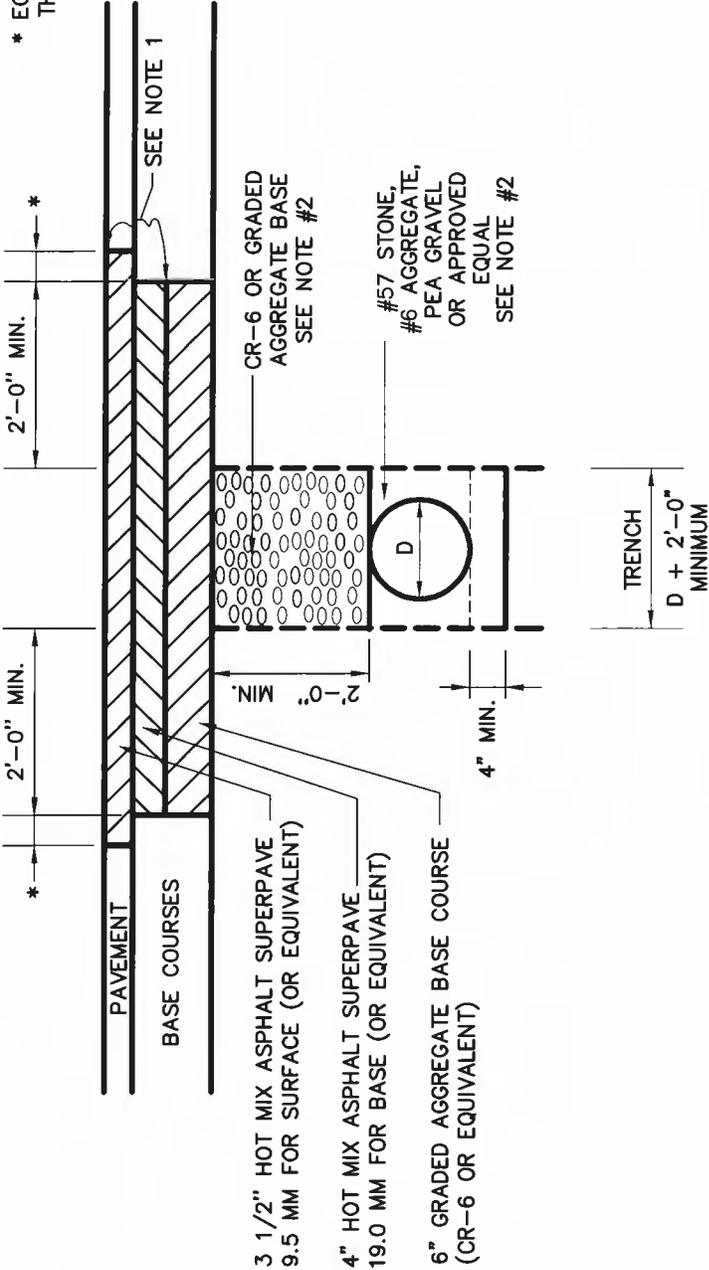
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|-------------------------|---|--|-----------------|----|
| CALVERT COUNTY MARYLAND | APPROVED  DIRECTOR DEPARTMENT OF PUBLIC WORKS | | REVISED DATE | BY |
| | | | | |
| | | | | |
| | | | | |

SPECIFIC / GEOMETRIC DESIGN ELEMENTS
URBAN
ROUNDABOUT

STANDARD NUMBER
RD-23A

JULY 1, 2012

* EQUAL TO THE PAVEMENT THICKNESS - 3" MIN.



NOTES.

1. A UTILITY CUT PERMIT SHALL BE OBTAINED FROM THE DEPARTMENT OF PUBLIC WORKS FOR EXCAVATION OF ANY TRENCHES WITHIN THE RIGHT-OF-WAY LINES OF ANY CALVERT COUNTY ROAD.
2. IN CERTAIN CONDITIONS VARIATIONS TO THE DEPTH OF ASPHALT WILL CHANGE DEPENDING ON THE ROAD SURFACE.
3. BACKFILL IN TRENCH SHALL BE #57 STONE, #6 AGGREGATE, PEA GRAVEL OR APPROVED EQUAL. THE REMAINING DEPTH OF THE TRENCH (MINIMUM 2') SHALL BE FILLED WITH CR-6 OR GRADED AGGREGATE BASE, COMPACTED IN 6" LAYERS BY TAMPING OR BY SOME OTHER APPROVED METHOD. WHENEVER SHEETING OR SHORING IS REQUIRED TO PREVENT CAVE-INS OR BELLING DUE TO THE DEPTH OF THE TRENCH OR TYPE OF MATERIAL ENCOUNTERED, THE SHEETING, WHEREVER FOUND NECESSARY, SHALL REMAIN IN PLACE BUT CUT OFF 1' BELOW THE BOTTOM OF THE REPLACED SURFACING.

MSHA STD. NO. MD 578.01 MAY BE USED IN LIEU OF THIS DETAIL.

NOT TO SCALE



CALVERT COUNTY MARYLAND

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 DEPARTMENT OF
 PUBLIC WORKS

JULY 1, 2012

REVISED

DATE

BY

STANDARD ROAD DETAILS

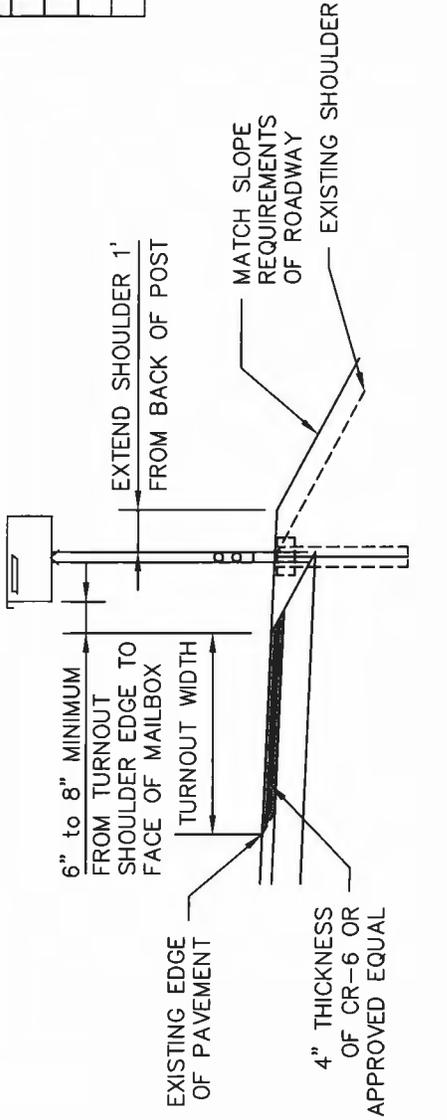
UTILITY CUTS

STANDARD NUMBER

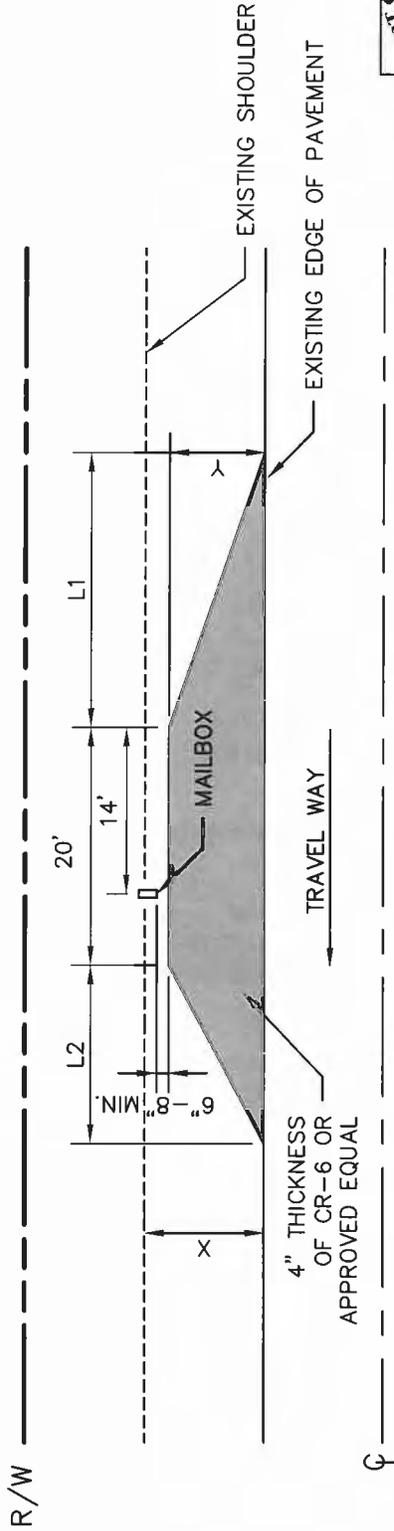
RD-24

DIMENSIONS

| | | | | |
|-----------------------|-----|-----|-----|----|
| "X" WIDTH OF SHOULDER | 8' | 6' | 5' | 4' |
| "Y" WIDTH OF TURNOUT | 6' | 4' | 3' | 2' |
| "L1" | 23' | 15' | 11' | 8' |
| "L2" | 15' | 10' | 8' | 5' |



- NOTE:**
1. BALLAST REQUIREMENTS OF MAILBOX TURNOUTS SHALL BE THAT OF THE ADJACENT ROADWAY.
 2. REFER TO THE UNITED STATES POST OFFICE STANDARDS AND THE CALVERT COUNTY ROAD ORDINANCE FOR MAILBOX INSTALLATION REQUIREMENTS.



NOT TO SCALE

STANDARD NUMBER

RD-25

STANDARD ROAD DETAILS

MAILBOX TURNOUT DETAIL

| | | |
|----------|------|----|
| REVISION | DATE | BY |
| | | |
| | | |
| | | |

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 DIRECTOR
 DEPARTMENT OF PUBLIC WORKS
 JULY 1, 2012

CALVERT COUNTY MARYLAND

| RUNOFF FACTORS | | | |
|-----------------------------------|-----------|---------------------|------------|
| C FACTORS | FLAT > 2% | AVERAGE < 2% - > 7% | STEEP < 7% |
| Roofs | 0.90 | .090 | 0.90 |
| Roads: Concrete | 0.90 | 0.90 | 0.90 |
| Roads: Bituminous | 0.85 | 0.85 | 0.85 |
| Roads: Gravel | 0.85 | 0.85 | 0.85 |
| Sparse Vegetation: Sandy Soils | 0.15 | 0.30 | 0.45 |
| Sparse Vegetation: Gravelly Soils | 0.25 | 0.43 | 0.60 |
| Sparse Vegetation: Clay Soils | 0.30 | 0.50 | 0.70 |
| Lawns: Sandy Soils | 0.10 | 0.20 | 0.30 |
| Lawns: Gravelly Soils | 0.15 | 0.25 | 0.35 |
| Lawns: Clay Soils | 0.20 | 0.30 | 0.40 |
| Dense Vegetation: Sandy Soils | 0.07 | 0.14 | 0.20 |
| Dense Vegetation: Gravelly Soils | 0.11 | 0.20 | 0.27 |
| Dense Vegetation: Clay Soils | 0.15 | 0.25 | 0.35 |
| Woods: Sandy Soils | 0.05 | 0.10 | 0.15 |
| Woods: Gravelly Soils | 0.07 | 0.12 | 0.15 |
| Woods: Clay Soils | 0.10 | 0.15 | 0.20 |

| MAXIMUM TIME OF CONCENTRATION | |
|-------------------------------|---------|
| LOT SIZE | MINUTES |
| 6,000 SF | 10 |
| 10,000 SF | 12 |
| 40,000 SF | 15 |

| RUNOFF FACTORS | | | | |
|---|-----------|---------------------|------------|-----------|
| C FACTORS | FLAT > 2% | AVERAGE < 2% - > 7% | STEEP < 7% | |
| TYPE OF DEVELOPMENT | | | | |
| Commercial | 0.85 | 0.85 | ---- | ---- |
| Industrial | 0.60-0.85 | 0.60-0.85 | ---- | ---- |
| Garden Type Apartments, Schools, Churches & Similar Land Uses | 0.60 | 0.60 | 0.70 | 0.70 |
| Semi-Detached Residential (Townhouses) | 0.45 | 0.45 | 0.55 | 0.55 |
| Detached Residential 5,000 to 7,000 S.F. Lots | 0.40 | 0.40 | 0.50 | 0.50 |
| Quarter Acre Lots | 0.38 | 0.38 | 0.48 | 0.48 |
| Half Acre Lots | 0.35 | 0.35 | 0.45 | 0.45 |
| Parks and Flood Plain | 0.12-0.25 | 0.12-0.25 | 0.20-0.35 | 0.20-0.35 |
| One Acre Lots | 0.27 | 0.27 | 0.44 | 0.44 |
| Two Acre Lots | 0.24 | 0.24 | 0.42 | 0.42 |

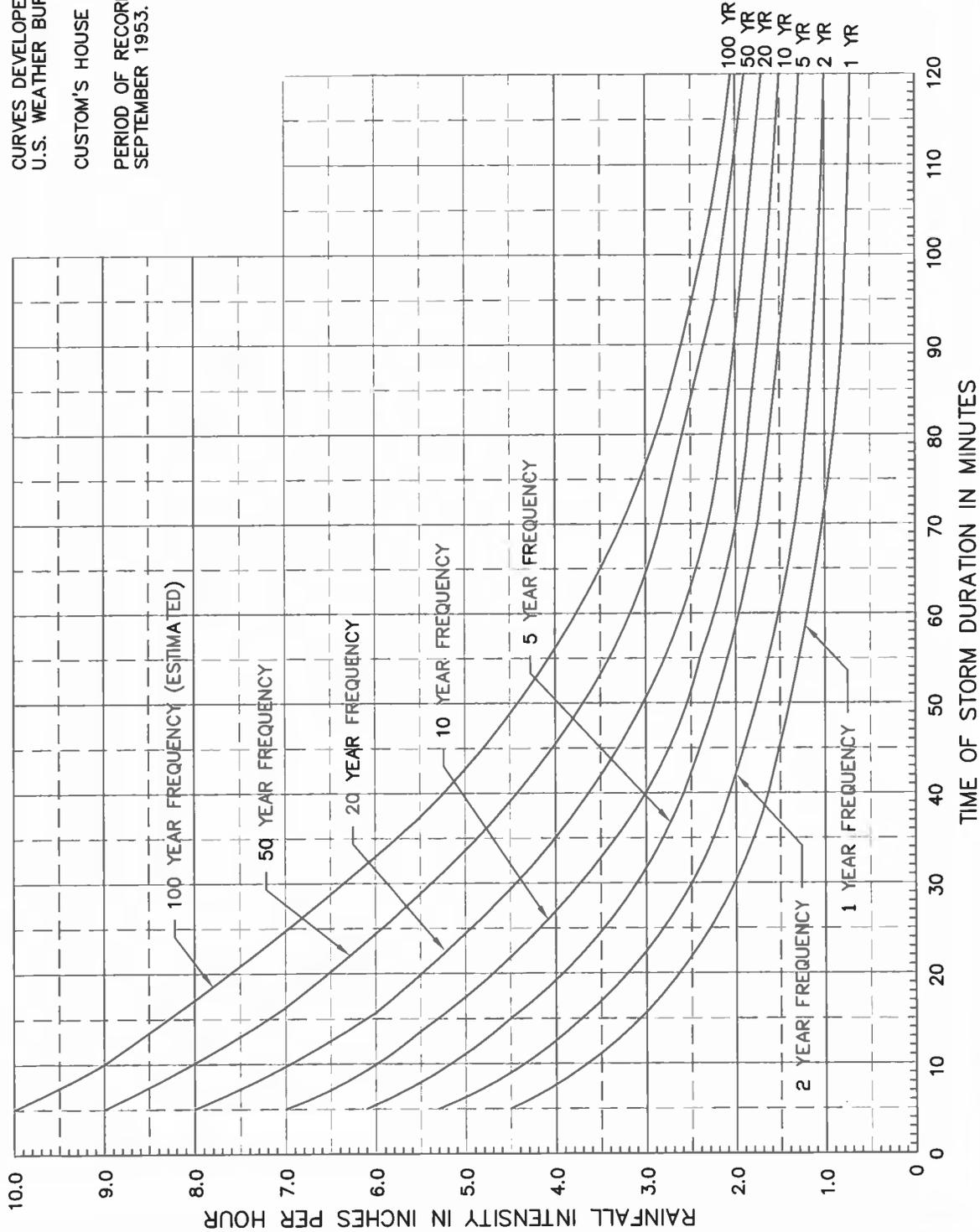
CALVERT COUNTY RAINFALL TABLE
(IN INCHES FOR DIFFERENT STORM FREQUENCY EVENTS)

| YEAR | INCHES PER 24 HOUR PERIOD |
|--------|---------------------------|
| 1 YR | 2.8 |
| 2 YR | 3.4 |
| 5 YR | 4.4 |
| 10 YR | 5.3 |
| 25 YR | 6.1 |
| 50 YR | 6.7 |
| 100 YR | 7.6 |



| | | | |
|----------------------------|--------------------------------|--------|---|
| CALVERT COUNTY MARYLAND | APPROVED | REVISD | STANDARD DRAINAGE DETAILS |
| | <i>[Signature]</i> DIRECTOR | DATE | RUNOFF FACTORS, RAINFALL |
| DEPARTMENT OF PUBLIC WORKS | JULY 1, 2012 | | TABLE AND MAXIMUM TIME OF CONCENTRATION |
| | | | SD-1 |

CURVES DEVELOPED FROM RECORDS OF THE
 U.S. WEATHER BUREAU.
 CUSTOM'S HOUSE GAGE, BALTIMORE, MD.
 PERIOD OF RECORD JANUARY 1903 TO
 SEPTEMBER 1953.



STANDARD
 NUMBER

SD-2

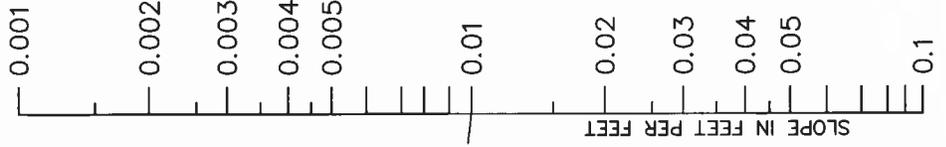
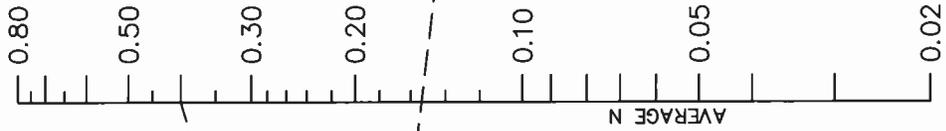
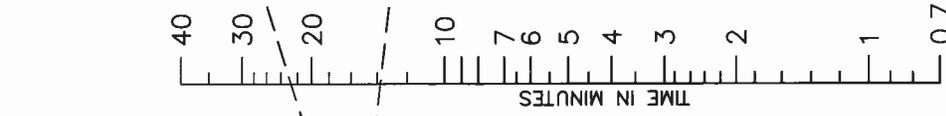
STANDARD DRAINAGE DETAILS
 RAINFALL INTENSITY CHART

| REVISED | |
|---------|----|
| DATE | BY |
| | |
| | |
| | |

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 JULY 1, 2012

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EXAMPLE:

L = 100 FT.
N = 0.40
S = 1%

READ: t = 13.6 min.

TURNING LINE

TYPE OF SURFACE

- SMOOTH IMPERVIOUS SURFACE _____
- SMOOTH BARE PACKED SOIL _____
- POOR GRASS, CULTIVATED ROW CROPS _____
- OR MODERATELY ROUGH BARE SURFACE _____
- PASTURE OR AVERAGE GRASS _____
- DECIDUOUS TIMBERLAND _____
- CONIFER TIMBERLAND, DECIDUOUS TIMBERLAND _____
- WITH DEEP FOREST LITTER OR DENSE GRASS _____

VALUE OF N

- 0.02
- 0.10
- 0.20
- 0.40
- 0.60
- 0.80

SOURCE: ARTICLE BY W.S. KERBY
MARCH 1959 ISSUE
CIVIL ENGINEERING
RD-401



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JULY 1, 2012

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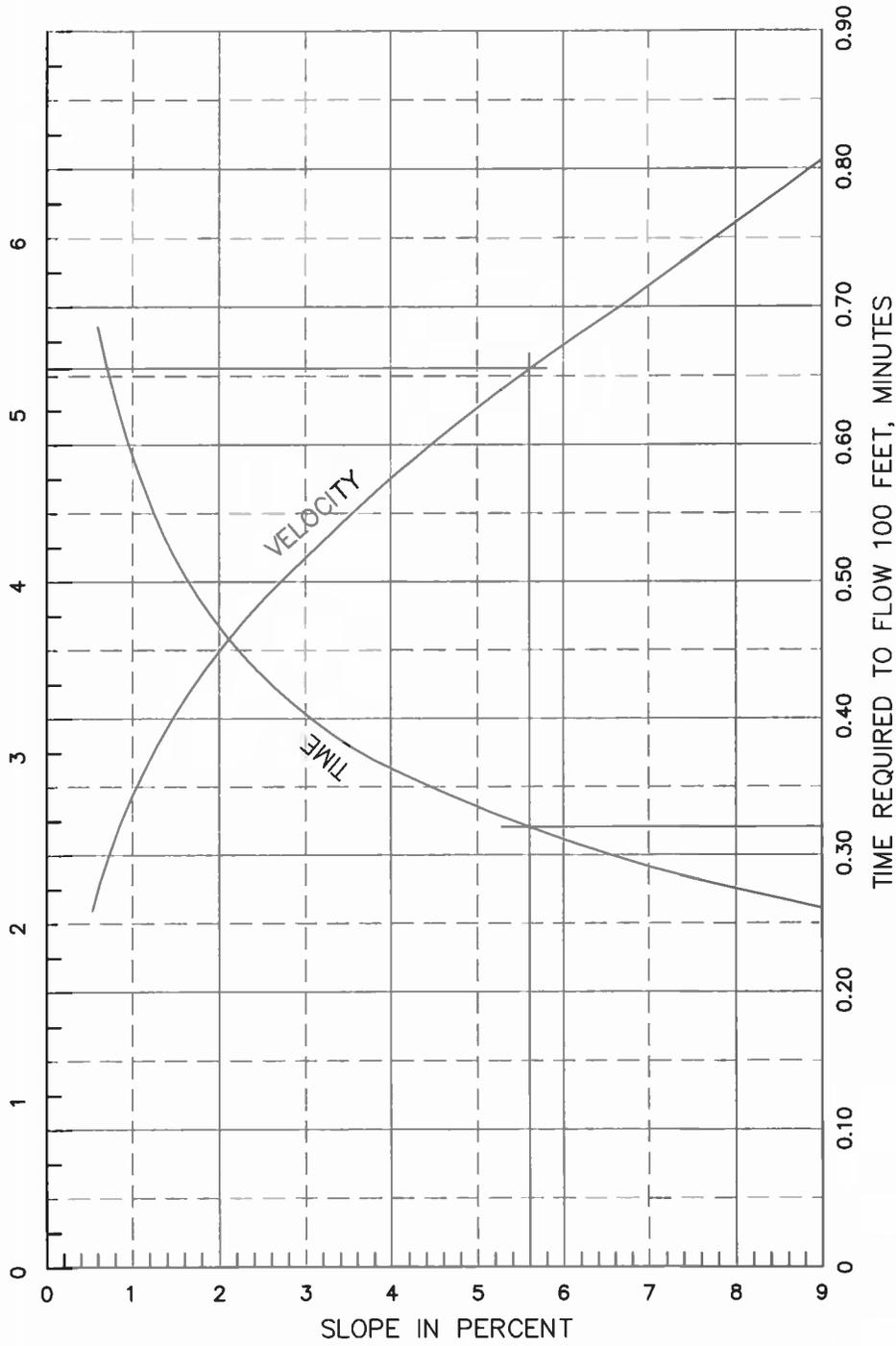
STANDARD DRAINAGE DETAILS

OVERLAND SHEET FLOW CHART

STANDARD NUMBER

SD-3

AVERAGE VELOCITY OF FLOW (FEET PER SECOND)
FROM WHERE FLOW ENTERS GUTTER TO POINT WHERE FLOW ENTERS INLET



EXAMPLE: GIVEN: SLOPE = 5.6% DISTANCE (BEGINNING OF GUTTER FLOW TO INLET) = 305'
DETERMINE AVERAGE VELOCITY AND TIME OF GUTTER FLOW

SOLUTION: AVERAGE VELOCITY = 5.22 FPS TIME = 3.05 x 0.32 = 0.98 MINUTES



STANDARD NUMBER

SD-4

STANDARD DRAINAGE DETAILS
GUTTER FLOW VELOCITY
AND TIME

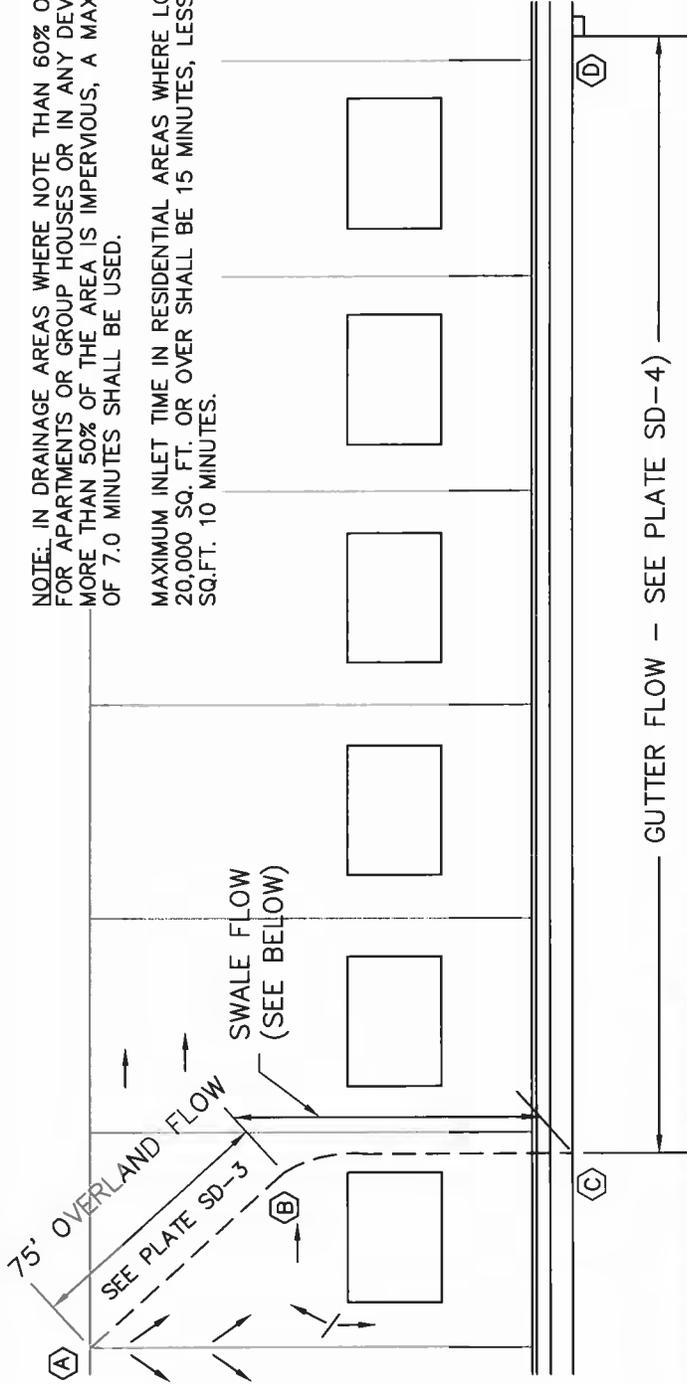
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NOTE: IN DRAINAGE AREAS WHERE NOTE THAN 60% OF LAND USAGE IS FOR APARTMENTS OR GROUP HOUSES OR IN ANY DEVELOPMENT WHERE MORE THAN 50% OF THE AREA IS IMPERVIOUS, A MAXIMUM INLET TIME OF 7.0 MINUTES SHALL BE USED.

MAXIMUM INLET TIME IN RESIDENTIAL AREAS WHERE LOT SIZES ARE 20,000 SQ. FT. OR OVER SHALL BE 15 MINUTES, LESS THAN 20,000 SQ.FT. 10 MINUTES.



| VELOCITY OF SWALE FLOW IN FEET PER SECOND ^ | | |
|---|------------|-------------|
| SLOPE OF LAWN | CLAY LAWNS | SANDY LAWNS |
| 0.5 | 0.5 | 0.3 |
| 1.0 | 0.6 | 0.4 |
| 2.0 | 0.8 | 0.6 |
| 3.0 | 1.0 | 0.8 |
| 4.0 | 1.2 | 1.0 |
| 5.0 | 1.3 | 1.1 |
| 6.0 | 1.4 | 1.2 |
| 8.0 | 1.6 | 1.4 |

SOLUTION

| | SLOPE | DISTANCE | VELOCITY | TIME |
|--------|-------|----------|--------------|-------------|
| A TO B | 2.0% | 75' | * 0.8 F.P.S. | 11.8 MIN. * |
| B TO C | 2.0% | 70' | 5.2 F.P.S. | 1.5 MIN. ^ |
| C TO D | 4.0% | 305' | | 1.0 MIN. x |

TOTAL TIME: 14.3 MINUTES USE 10 MINUTE INLET TIME (SEE NOTE ABOVE)

- * FROM OVERLAND FLOW TIME CHART (PLATE SD-3)
- ^ FROM VELOCITY OF SWALE FLOW (PLATE SD-5)
- x FROM GUTTER FLOW CHART (SD-4)

NOTE: VELOCITY OF SWALE FLOW CHART APPLIES ONLY TO GRADING PLAN SHOWN (APPROX. 0.1 C.F.S IN SWALE). FOR OTHER GRADING PLAN OR FOR SWALES CARRYING MORE THAN 0.1 C.F.S., DIFFERENT VELOCITIES SHALL BE USED.



STANDARD NUMBER

SD-5

STANDARD DRAINAGE DETAILS
INLET TIME SOLUTION

| REVISED | |
|---------|----|
| DATE | BY |
| | |
| | |
| | |
| | |

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JULY 1, 2012

CALVERT COUNTY MARYLAND

**FACTORS FOR COMPUTATION OF LOSSES WITHIN
STORM DRAINAGE STRUCTURES**

| STRUCTURE CONDITION | LOSS COEFFICIENTS (Kb) |
|---|------------------------|
| 1 Inlet on straight run | 0.50 |
| 2 Manhole on straight run | 0.15 |
| 3 Manhole on straight run | |
| 90 degrees | 1.50 |
| 60 degrees | 1.25 |
| 45 degrees | 1.10 |
| 22½ degrees | 0.70 |
| 4 Bends with manholes | |
| 90 degrees | 1.00 |
| 60 degrees | 0.85 |
| 45 degrees | 0.75 |
| 22½ degrees | 0.45 |
| 5 Bends with radius equal to 2½ pipe diameter | |
| 90 degrees | 0.25 |
| 60 degrees | 0.20 |
| 45 degrees | 0.18 |
| 22½ degrees | 0.11 |

MANNING'S FORMULA - VALUE OF "n"

| CHANNELS AND CONDUITS TYPE | VALUE OF "n" |
|--|-----------------|
| PVC | .010 |
| Corrugated Polyethylene | .018 |
| Corrugated Polyethylene (Smooth Interior) | .013 |
| Concrete Pipe | .013 |
| Concrete Gutters and Channels | .015 |
| Bituminous Concrete Surfacing with Concrete Curb | .016 |
| C.M.P., plain | .024 |
| Ditches, earth | .025 |
| Ditches, seed and mulch | .030 |
| Ditches, sod | .30 |
| Ditches, soil stabilization matting | .040 |
| Ditches, grassed with flow greater than 6" | .040 |
| Ditches, grassed with flow less than 6" | .060 |
| Natural Stream Channels | .035 ----- .150 |
| Rip Rap, UngROUTed | .035 |



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JULY 1, 2012

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STANDARD DRAINAGE DETAILS
LOSS COEFFICIENTS (Kb) FOR STORM
DRAIN STRUCTURES and MANNING'S
FORMULA VALUE OF "n"

STANDARD
NUMBER

SD-6

LIMITING VELOCITIES

| DITCH DESIGN | DESIGN VELOCITIES |
|----------------------------|-------------------|
| SEED AND MULCH | < 2.5 F.P.S. |
| SOLID SODDING | < 4.0 F.P.S. |
| SOIL STABILIZATION | < 4.5 F.P.S. |
| DUMPED OR PLACED RIP RAP | NO MAXIMUM* |
| CONCRETE OR MACADAM PAVING | NO MAXIMUM* |

* COMPUTATION SUBMITTED FOR LENGTH, SIZE AND/OR BEDDING REQUIRED, WILL BE CONSIDERED ON AN INDIVIDUAL BASIS AND WILL NOT BE RESTRICTED TO ANY STANDARD METHOD, HOWEVER, NATURAL RESOURCE CONSERVATION DISTRICT CHARTS FOR LENGTH OF PROTECTION ARE ACCEPTABLE.

LIMITING VELOCITIES

| EXISTING DITCHES | DESIGN VELOCITIES |
|---|-------------------|
| EARTH WITHOUT VEGETATION | 1 - 3 F.P.S. |
| GRAINS, STIFF STEMMED GRASSES | 2 - 3 F.P.S. |
| BUNCH GRASSES | 2 - 4 F.P.S. |
| STIFF CLAY AND GRAVEL | 5 F.P.S. |
| FINE GRAVEL | 5 F.P.S. |
| MEADOW TYPE GRASSES, SHORT PLIANT BLADES | 5 F.P.S. |
| WELL ESTABLISHED GRASSES, SHORT PLIANT BLADES (SHINGLED CHANNELS) | 6 F.P.S. |
| COURSE GRAVEL (SHINGLED CHANNELS) | 6 - 8 F.P.S. |
| SHALE AND ROCK | NO MAXIMUM |



CALVERT COUNTY MARYLAND

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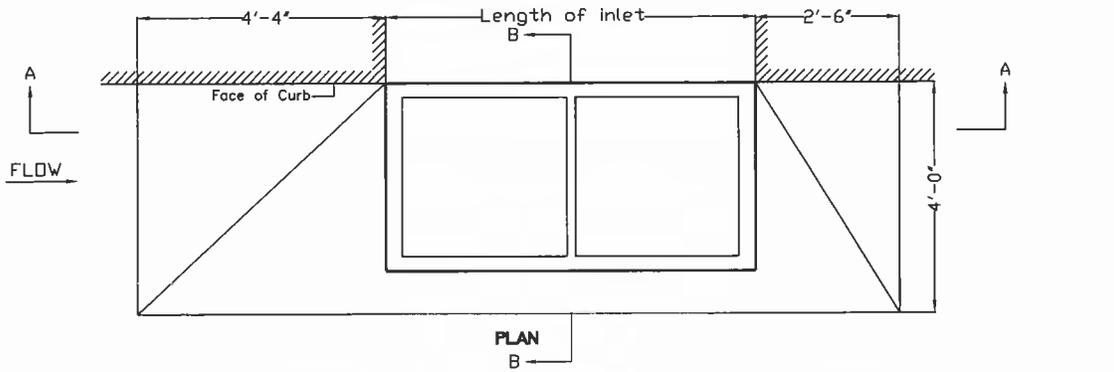
 DIRECTOR
 DEPARTMENT OF PUBLIC WORKS
 JULY 1, 2012

| REVISED | DATE | BY |
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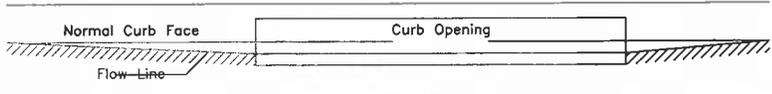
STANDARD DRAINAGE DETAILS
 LIMITING VELOCITIES FOR
 DITCHES

STANDARD NUMBER

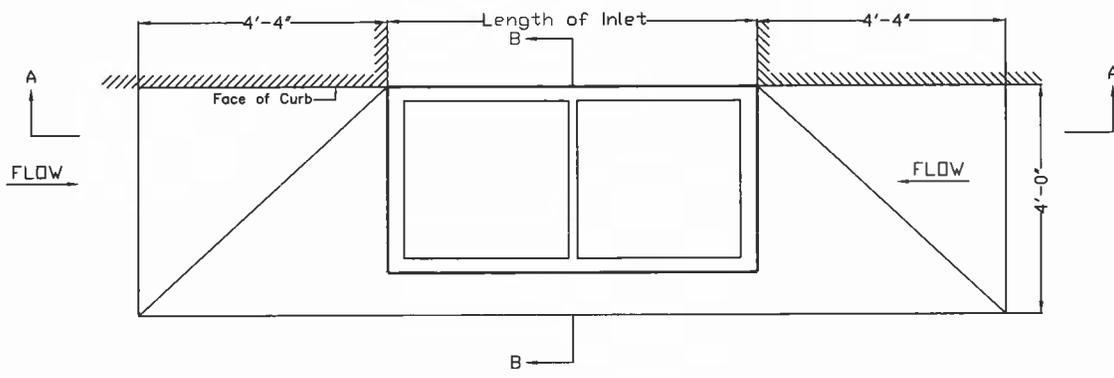
SD--7



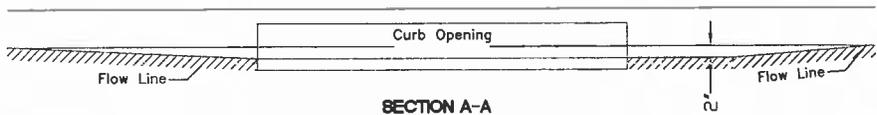
Intercept (on grade)



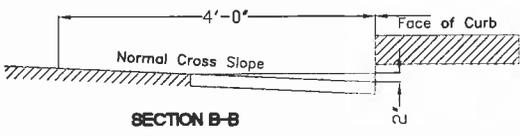
SECTION A-A



In Sump



SECTION A-A



SECTION B-B

Transition of curb face and cross slope at depressed inlets

APPROVAL

Cory A. Carter
 DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
 DATE

CALVERT COUNTY, MD
 DEPARTMENT OF PUBLIC WORKS

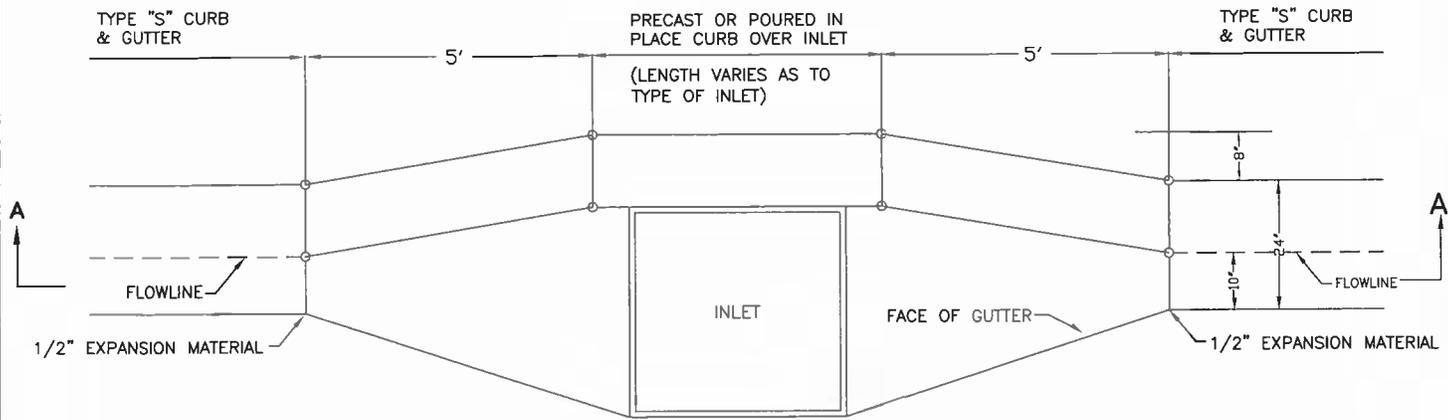
METHOD OF DEPRESSING CURB
 AT INLETS



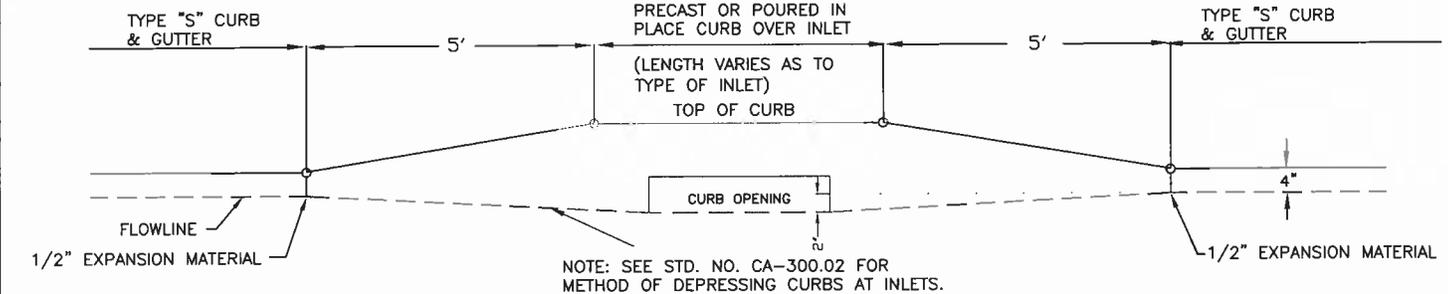
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SCALE: NTS
 DRAWN BY: JFK
 2011_0209

STANDARD NO. CA-300.02



PLAN



SECTION A - A

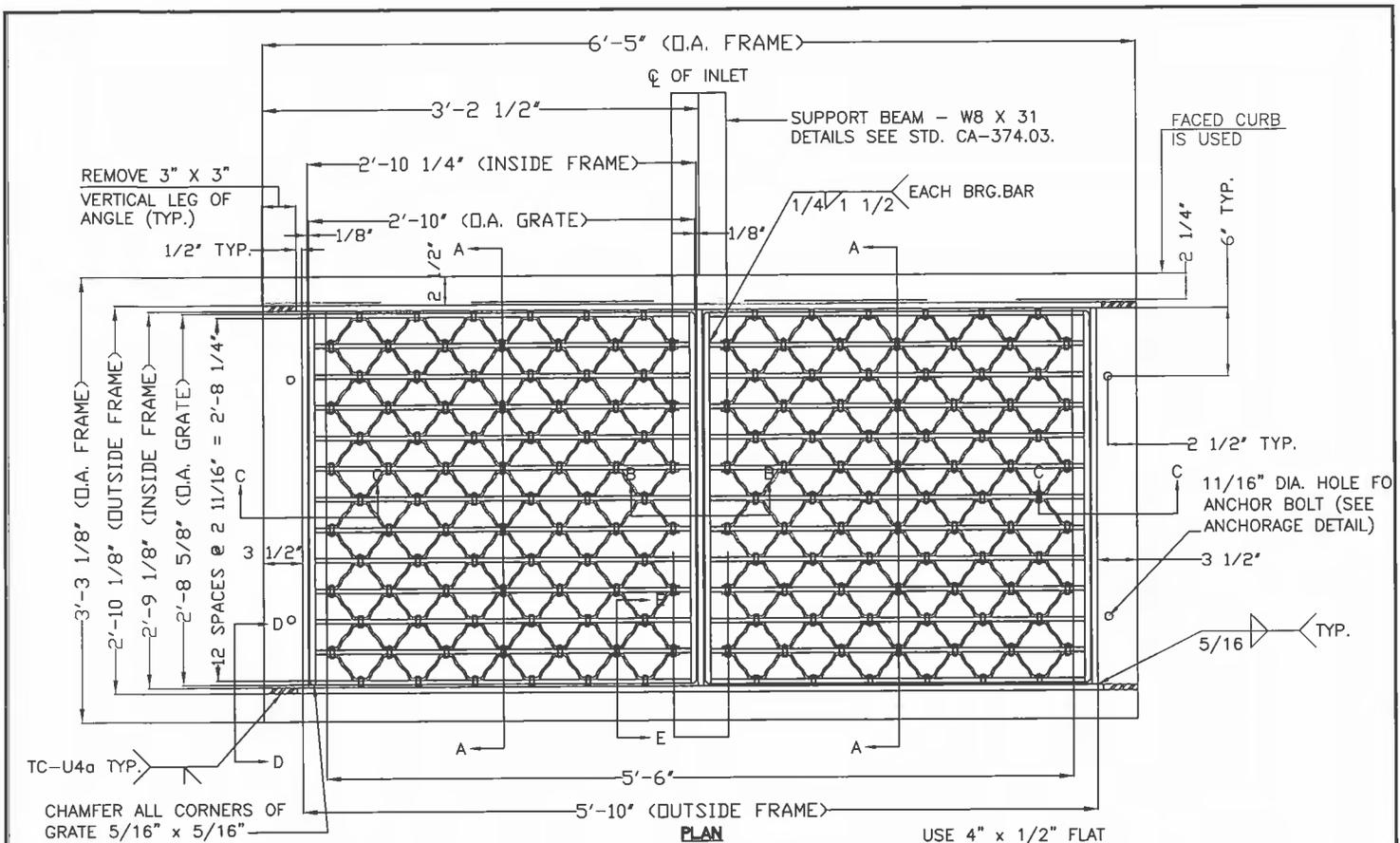
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| APPROVAL | | JULY 1, 2012 | |
| <i>[Signature]</i> | | DATE | |
| DIRECTOR DEPARTMENT OF PUBLIC WORKS | | | |
| REVISED | | SCALE: NTS | |
| | | DRAWN BY: JFK | |
| | | 2011_0209 | |

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

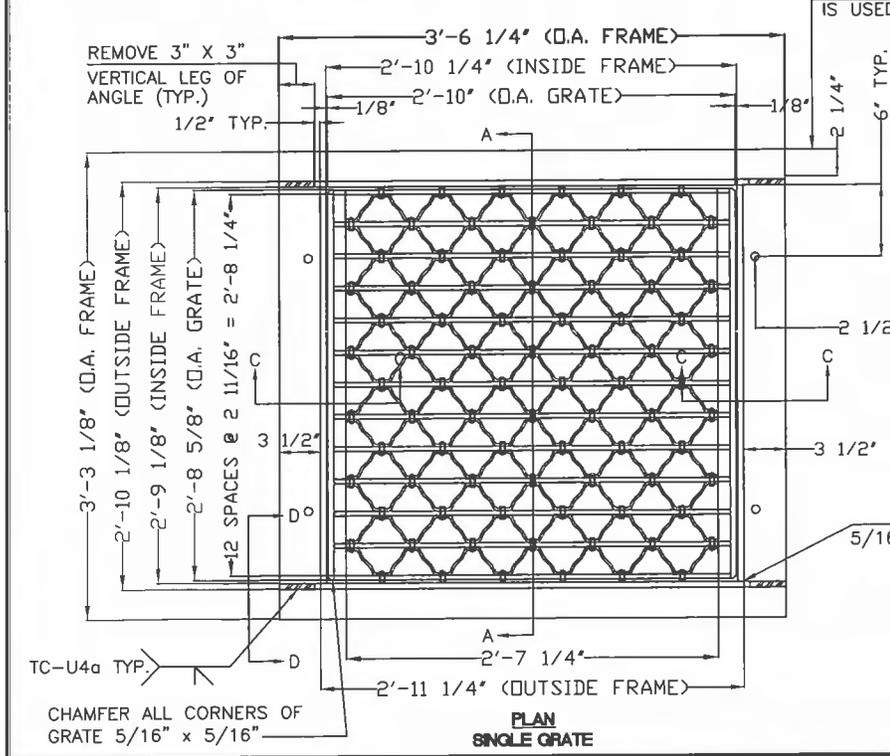
 METHOD OF CURB & GUTTER
 TRANSITION AT INLET CURBS

 STANDARD NO. CA-300.03





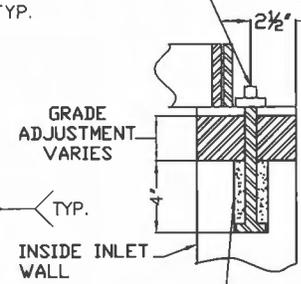
PLAN DOUBLE GRATE USE 4" x 1/2" FLAT BAR WHEN OPEN



PLAN SINGLE GRATE

- GENERAL NOTES**
1. FRAMES & GRATES TO BE SQUARE, FLAT & TRUE.
 2. STRUCTURAL STEEL SHALL BE A.S.T.M. A-36.
 3. FRAMES & GRATES TO BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH A.S.T.M. A-123.
 4. SEE LATEST S.H.A. SPECIFICATIONS.

GALVANIZED 5/8" Ø ANCHOR BOLT WITH DOUBLE NUT FOR ADJUSTING FRAME TO GRADE (4 BOLTS PER FRAME LENGTH TO BE DETERMINED IN FIELD.)



FRAME ANCHORAGE DETAIL

DRILL, SET, AND GROUT IN FIELD AS DIRECTED BY THE ENGINEER.

APPROVAL

[Signature]
 DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
 DATE

REVISIONS

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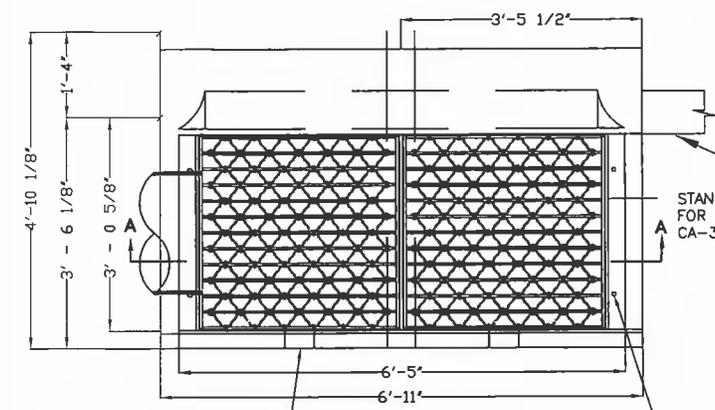
SCALE: 3/4" = 1'
 OR AS NOTED

DRAWN BY: JFK
 2011_0209

CALVERT COUNTY, MD
 DEPARTMENT OF PUBLIC WORKS

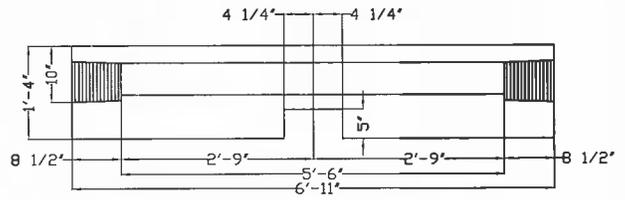
STANDARD WR INLET
 FRAME & GRATE

STANDARD NO. CA-374.02

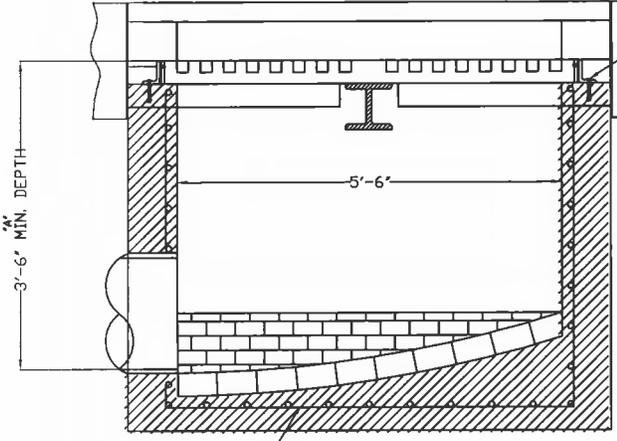


PLAN
CURB JOINT WITH 1/4" EXPANSION MATERIAL.
LEAVE 4" X 4" OPENINGS FOR SUBGRADE DRAINAGE IF DIRECTED.

FACE OF NORMAL CURB
STANDARD WR FRAME & GRATE.
FOR DETAILS SEE STANDARD
CA-374.02 & CA-374.03.



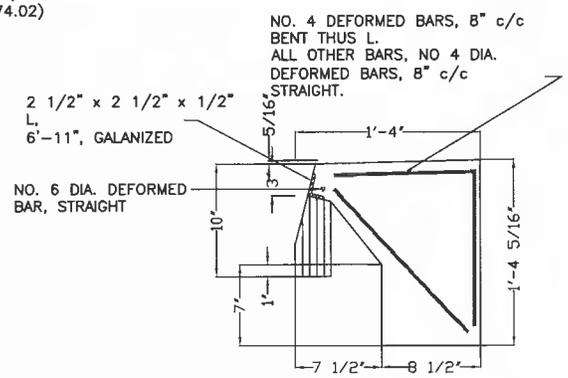
FRONT ELEVATION
PRECAST CURB



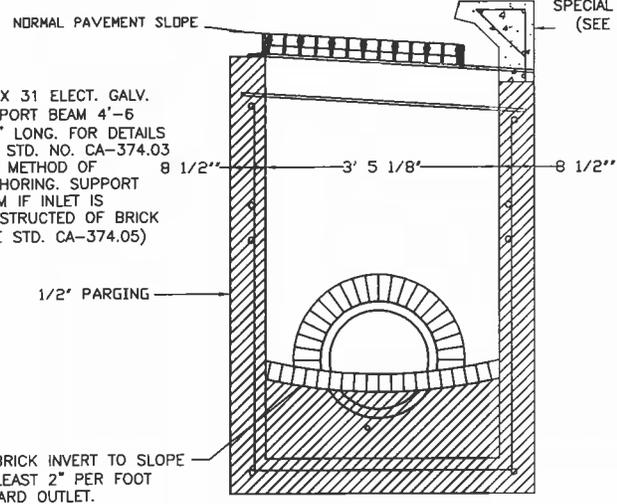
SECTION A-A

REINFORCEMENT: NO. 4 DIA. DEFORMED BARS @ 6" C/C 2 WAYS.

5/8" DIA. ANCHOR BOLT, 4 PER FRAME (FOR DETAILS, SEE STD. CA-374.02)



DETAIL B-B
PRECAST CURB



SECTION B-B

SPECIAL PRECAST CURB (SEE DETAIL B-B)

WB X 31 ELECT. GALV. SUPPORT BEAM 4'-6 1/8" LONG. FOR DETAILS SEE STD. NO. CA-374.03 FOR METHOD OF ANCHORING. SUPPORT BEAM IF INLET IS CONSTRUCTED OF BRICK (SEE STD. CA-374.05)

NOTES:

1. INLET MAY BE CONSTRUCTED OF REINFORCED CONCRETE (MIX NO. 2) OR BRICK.
2. SIZE, TYPE, & DIRECTION OF INLET CONNECTION WILL VARY TO SUIT CONDITIONS.
3. TOP 4" OF WALLS MAY BE BRICK MASONRY. ADDITIONAL BRICK MAY BE USED TO BRING THE GRATE TO GRADE IF REQUIRED. SEE S.H.A. SPECIFICATIONS FOR INLETS.
4. REINFORCEMENT REQUIRED ON THE OUTSIDE, AS WELL AS ON THE INSIDE, OF WALLS BELOW 7'-0" WHEN "A" IS GREATER THAN 7'-0". SPACING, SAME AS FOR INSIDE OF WALL.
5. PLACE - EXPANSION MATERIAL OF SAME TYPE APPROVED FOR PAVEMENT BETWEEN THE FRAME & ABUTTING RIGID PAVEMENT, & BETWEEN ENDS OF INLET CURB & NORMAL CURB.
6. "BRICK FOR MASONRY", TO COMPLY WITH S.H.A. SPECIFICATIONS.
7. FOR UNDEPRESSED INLETS, USE NORMAL PAVEMENT SLOPE. FOR DEPRESSED INLETS, SEE CALVERT COUNTY STD. CA-300.02.
8. SEE STANDARD CA-383.91 FOR METAL LADDER RUNGS.

APPROVAL
Derry M. Calver
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

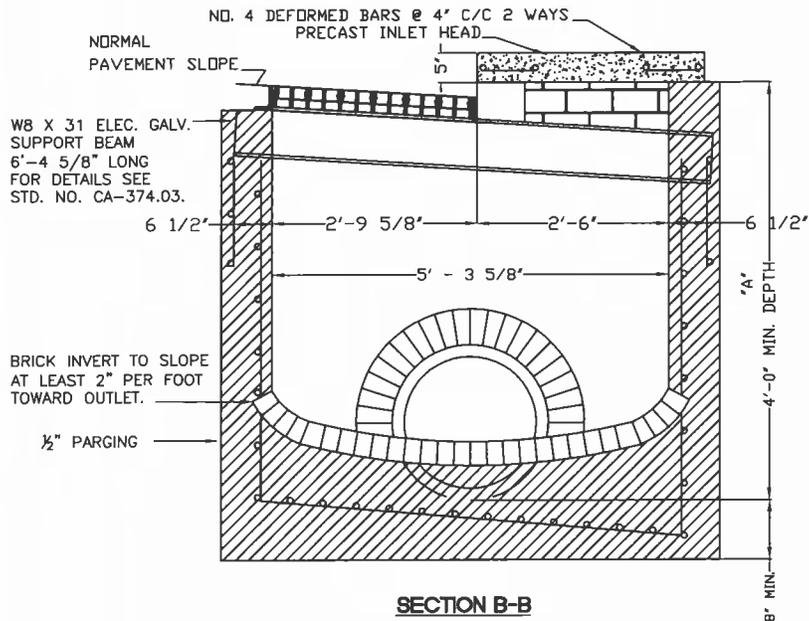
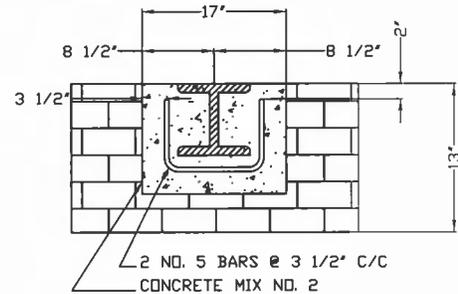
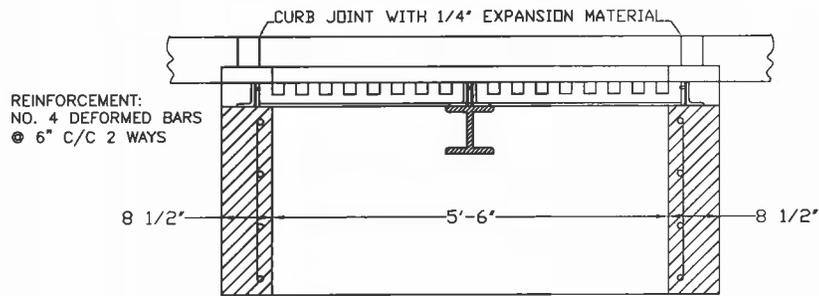
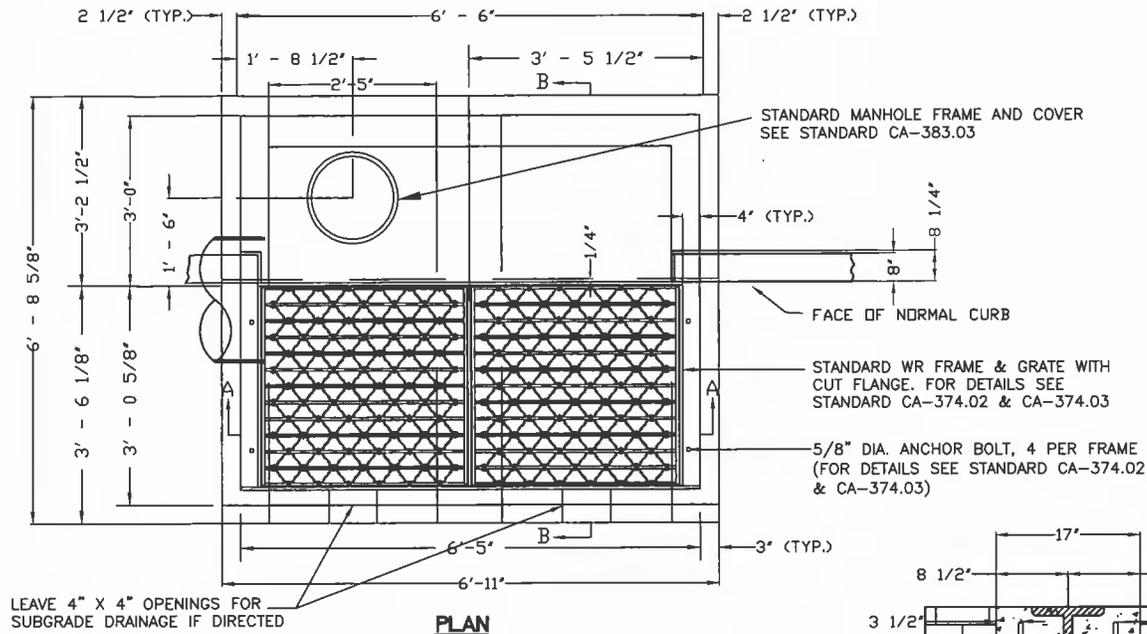
CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS



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SCALE: NTS
DRAWN BY: JFK
2011_0209

STANDARD WR INLET
STANDARD NO. CA-374.04



NOTES

1. INLET MAY BE CONSTRUCTED OF REINFORCED CONCRETE (MIX NO. 2) OR BRICK. SIZE, TYPE & DIRECTION OF INLET CONNECTION WILL VARY TO SUIT CONDITIONS.
2. TOP 4" OF WALLS MAY BE BRICK MASONRY. ADDITIONAL BRICK MAY BE USED TO BRING THE GRATE TO GRADE IF REQUIRED. SEE S.H.A. SPECIFICATIONS FOR INLETS.
3. REINFORCEMENT REQUIRED ON OUTSIDE, AS WELL AS ON INSIDE OF WALLS BELOW 7'-0" WHEN "A" IS GREATER THAN 7'-0" SPACING, SAME AS FOR INSIDE OF WALL.
4. PLACE 1/4" EXPANSION MATERIAL OF SAME TYPE APPROVED FOR PAVEMENT BETWEEN ENDS OF INLET CURB & NORMAL CURB.
5. "BRICK FOR MASONRY" TO COMPLY WITH THE CALVERT COUNTY SPECIFICATIONS FOR UNDEPRESSED INLETS, USE NORMAL PAVEMENT SLOPE. FOR DEPRESSED INLETS, SEE CALVERT CO. STD. NO. CA-300.02.
6. METAL LADDER RUNGS SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER (SEE STANDARD NO. CA-383.91).

APPROVAL

Rory A. Calver

DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012

DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

STANDARD WRM INLET

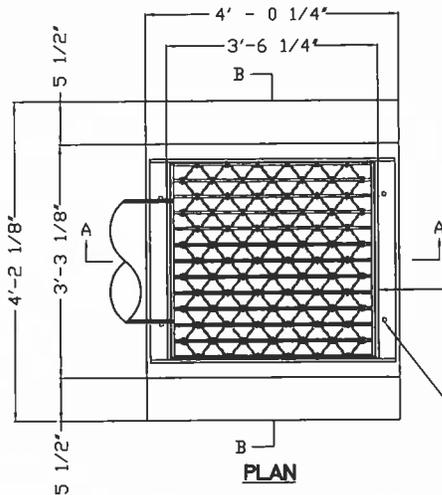
STANDARD NO. CA-374.05



REVISED

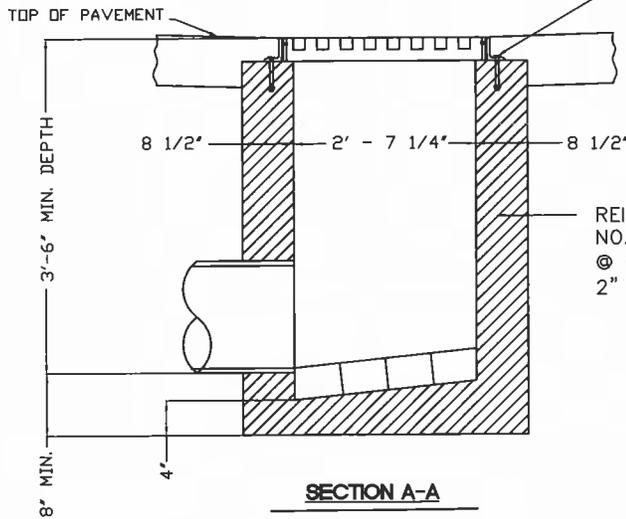
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OR AS NOTED

DRAWN BY: JFK
2011_0209

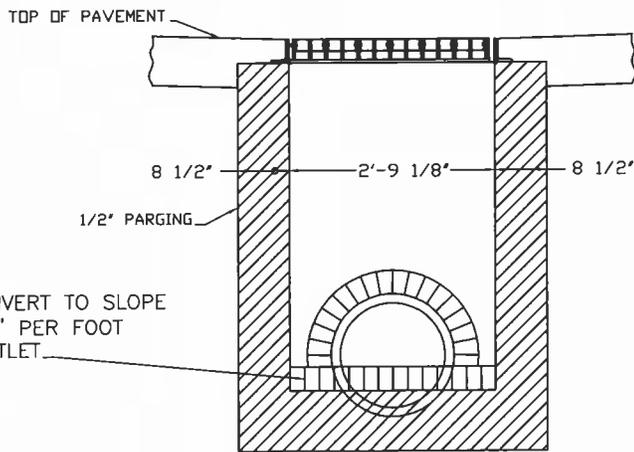


STANDARD WR SINGLE FRAME & GRATE. FOR DETAILS SEE STD'S CA-374.02 & CA-374.03

5/8" ANCHOR BOLT, 4 PER FRAME (FOR DETAILS SEE STANDARD CA-374.02)



REINFORCEMENT:
NO. 4 DEFORMED BARS
@ 6" C/C 2 WAYS
2" COVER



4" BRICK INVERT TO SLOPE AT LEAST 2" PER FOOT TOWARD OUTLET

NOTE:

1. CONCRETE (MIX NO. 2) WILL BE SUBSTITUTED FOR BRICK WHEN DIRECTED BY THE ENGINEER.
2. SIZE, TYPE AND DIRECTION OF OUTLET PIPE WILL VARY TO SUIT EACH CASE AND THE INVERT WILL BE ALTERED ACCORDINGLY.
3. "BRICK FOR MASONRY", TO COMPLY WITH THE LATEST S.H.A. SPECIFICATIONS.
4. SEE STANDARD CA-383.91 FOR METAL LADDER RUNGS.

APPROVAL

Perry A. Carlson
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
SINGLE WR INLET
(WITHOUT CURB)

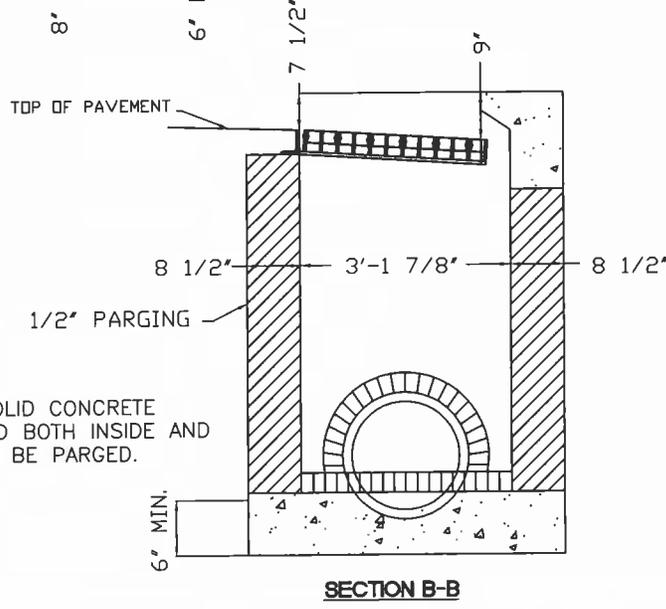
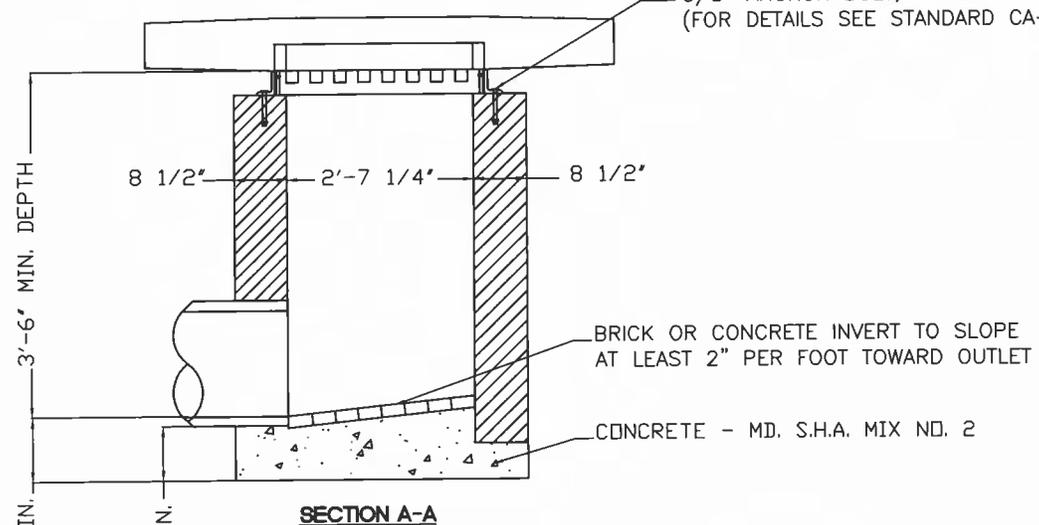
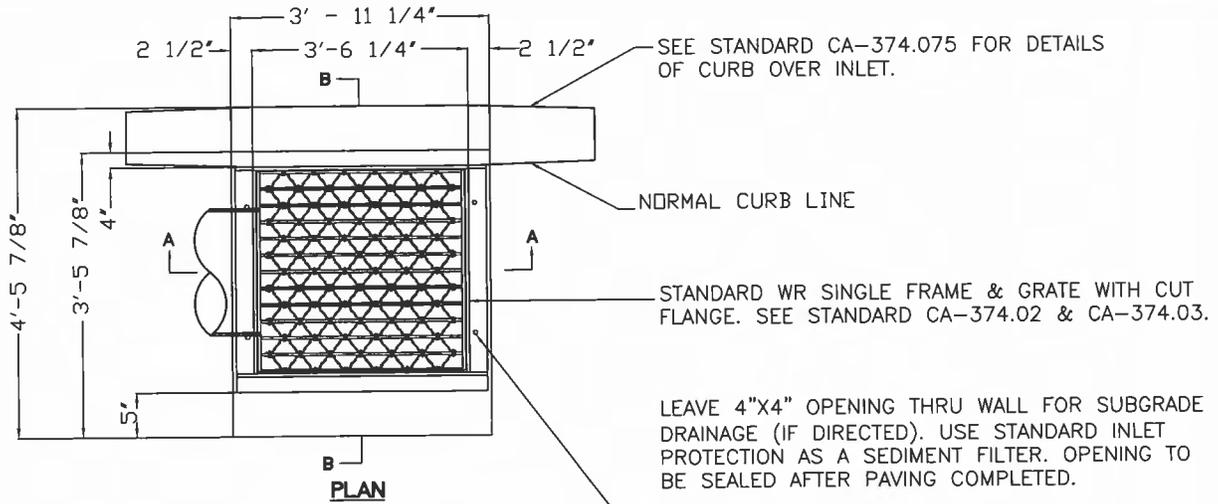


REVISED

SCALE: 3/8" = 1'

DRAWN BY: JFK
2011_0209

STANDARD NO. CA-374.06



- NOTE:
1. INLET MAY BE CONSTRUCTED OF BRICK OR SOLID CONCRETE BLOCK. (BLOCKS 4"X8"X16" ONLY).
 2. SIZE, TYPE & DIRECTION OF PIPE CONNECTION WILL VARY TO SUIT CONDITIONS.
 3. TOP OF WALLS MAY BE BRICK MASONRY TO BRING THE GRATE TO GRADE AS REQUIRED.
 4. INLET WALL THICKNESS TO BE A MINIMUM OF 8" TO AN INLET DEPTH OF 8', OVER 8' OF DEPTH WALL THICKNESS TO BE 12".
 5. SEE STANDARD NO. CA-300.02 FOR METHOD OF DEPRESSING PAVEMENT AT INLET.
 6. LADDER RUNGS SHALL BE PLACED IN ACCORDANCE WITH STANDARD NO. CA-383.91.

NOTE: IF SOLID CONCRETE BLOCK USED BOTH INSIDE AND OUTSIDE TO BE PARGED.

APPROVAL

Perry J. Cochran

DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012

DATE

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| REVISED | SCALE: NTS |
| | DRAWN BY: JFK |
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ESTABLISHED 1684

CALVERT COUNTY, MD

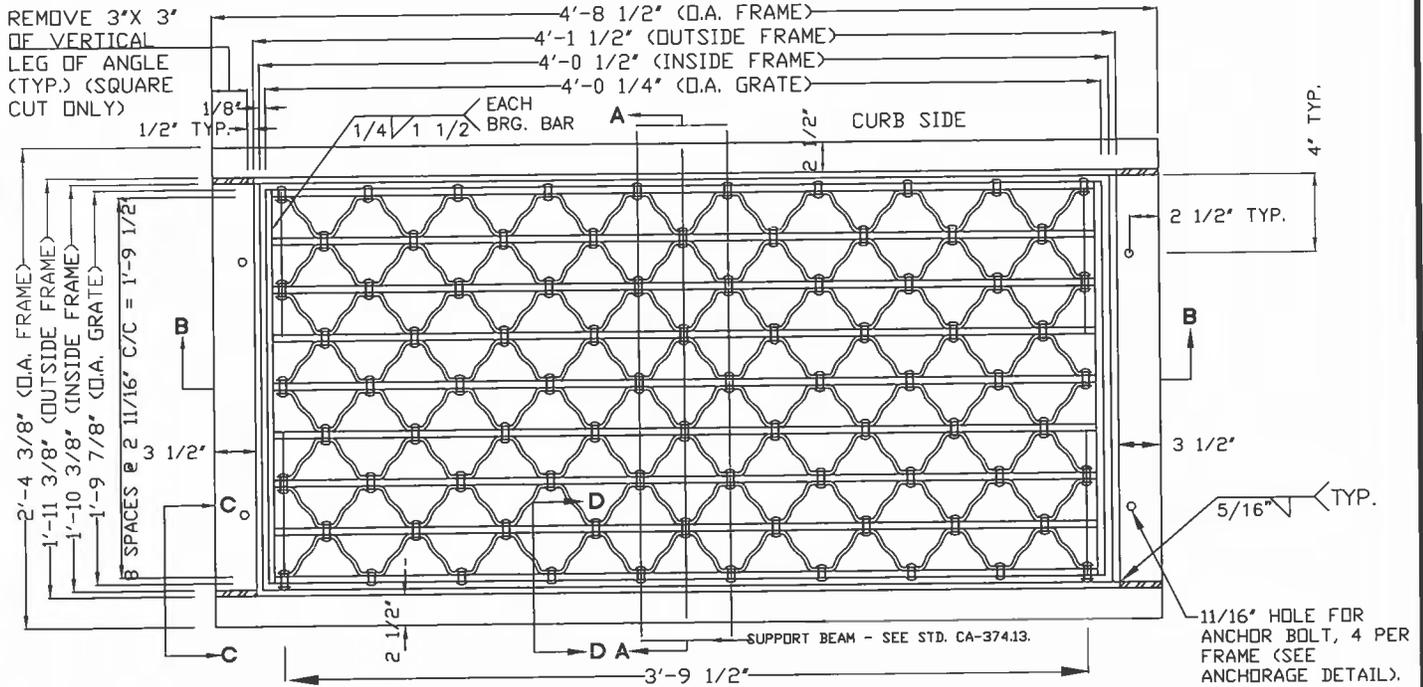
DEPARTMENT OF PUBLIC WORKS

SINGLE WR INLET

(WITH CURB)

STANDARD NO. CA-374.07

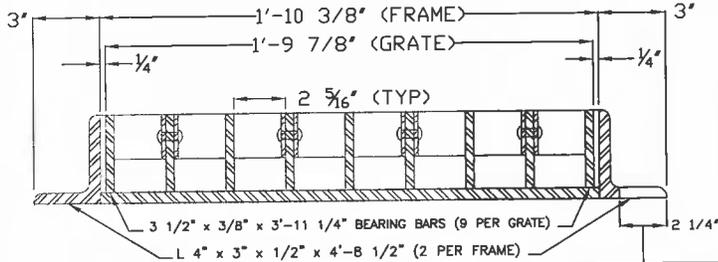
REMOVE 3" X 3"
OF VERTICAL
LEG OF ANGLE
(TYP.) (SQUARE
CUT ONLY)



PLAN

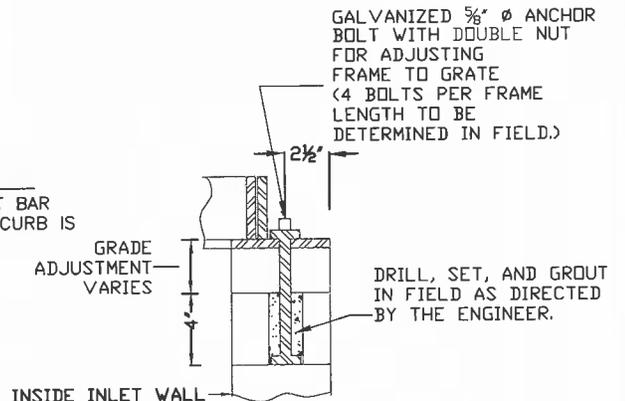
GENERAL NOTES:

1. FRAME & GRATES TO BE SQUARE, FLAT & TRUE.
2. STRUCTURAL STEEL SHALL BE A.S.T.M. A-36.
3. FRAMES & GRATES TO BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH A.S.T.M. A-123.
4. SEE LATEST S.H.A. SPECIFICATIONS.

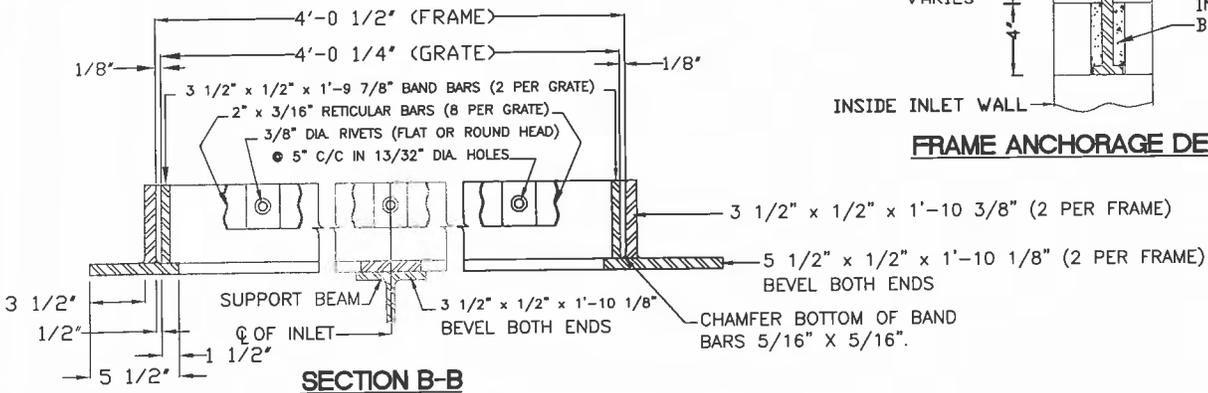


SECTION A-A

USE 4" x 1/2" FLAT BAR
WHEN OPEN FACED CURB IS
USED.



FRAME ANCHORAGE DETAIL



SECTION B-B

APPROVAL

Perry Carter
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

STANDARD NR INLET
FRAME & GRATES

STANDARD NO. CA-374.12

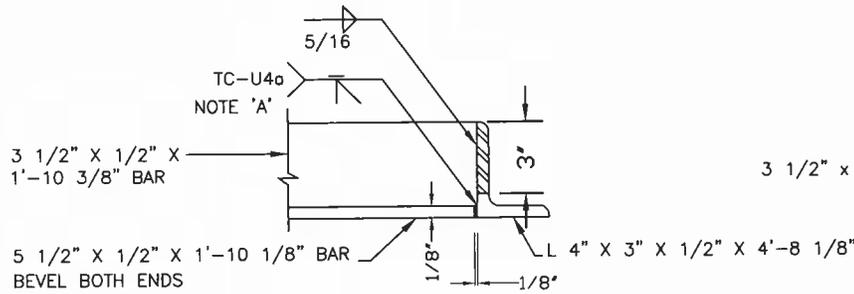


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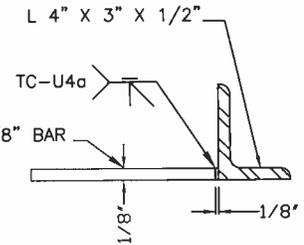
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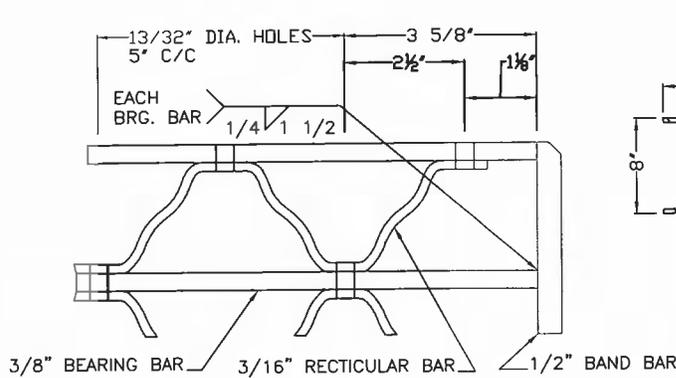
NOTE 'A'-WELD 5 1/2" X 1/2" BAR TO 4"X3"X1/2" L
BEFORE WELDING 3 1/2" X 1/2" BAR



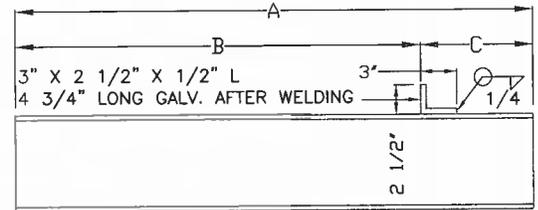
SECTION C-C



SECTION D-D
(GRATE NOT SHOWN)



GRATING DETAIL



SUPPORT BEAM
WB X 31 ELEC. GALV.

| INLET TYPE | DIMENSIONS | | |
|------------|------------|-----------|-----------|
| | A | B | C |
| NR | 3'-7 3/8" | 2'-5 5/8" | 1'-1 3/4" |
| NRM | 5'-5 7/8" | 2'-5 5/8" | 3'-0 1/4" |

APPROVAL

[Signature]
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

STANDARD NR INLET
FRAME & GRATE

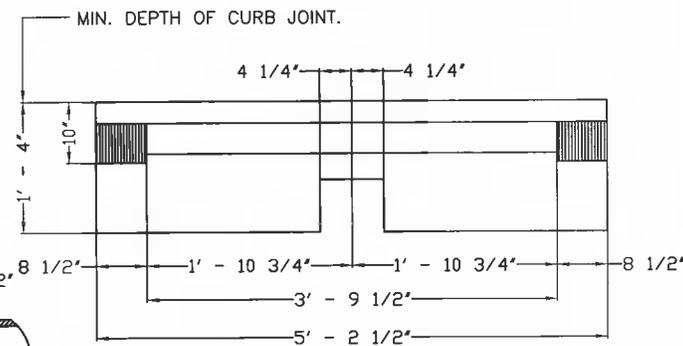
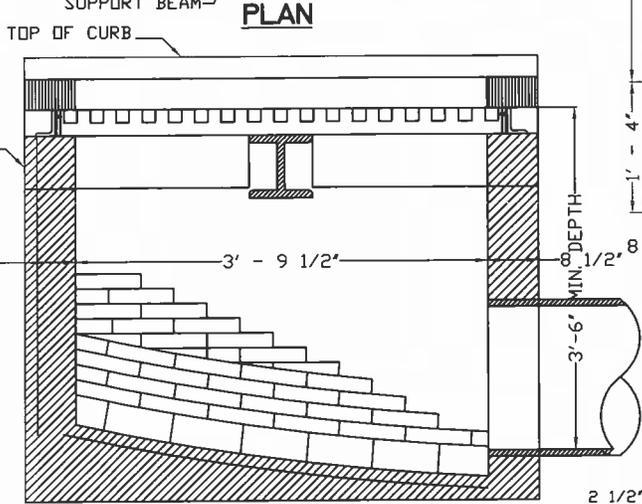
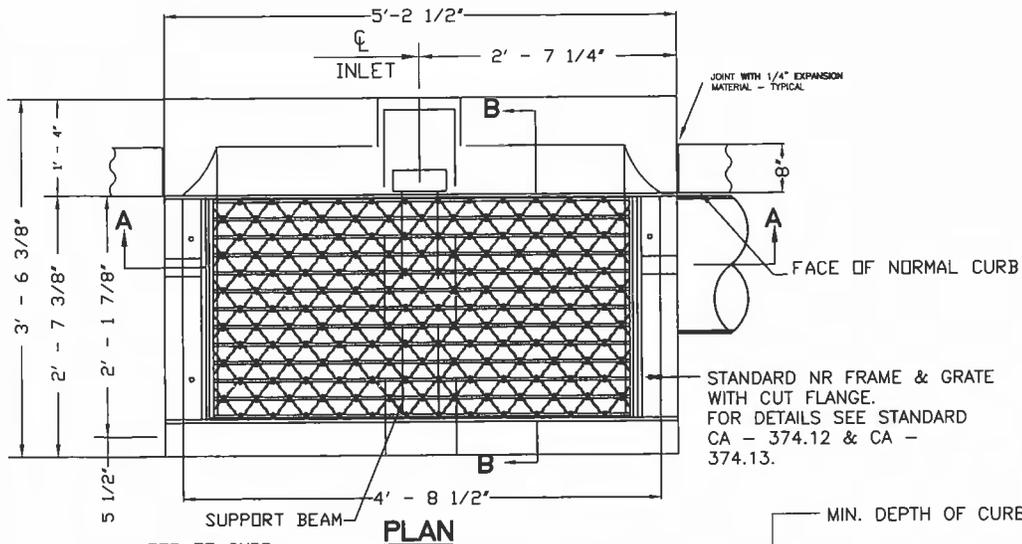
STANDARD NO. CA-374.13



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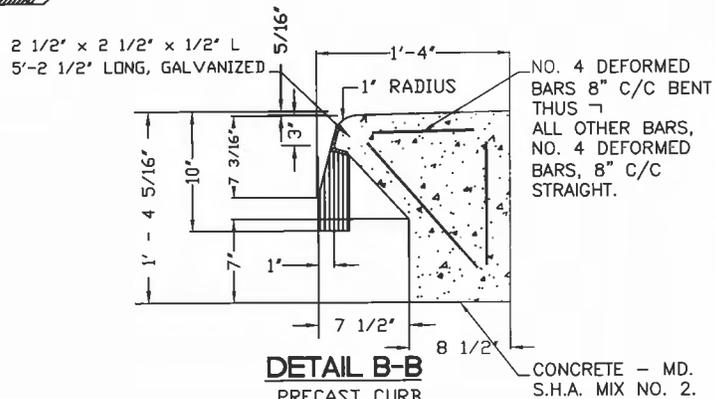
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DRAWN BY: JFK
2011_0209



FRONT ELEVATION
PRECAST CURB

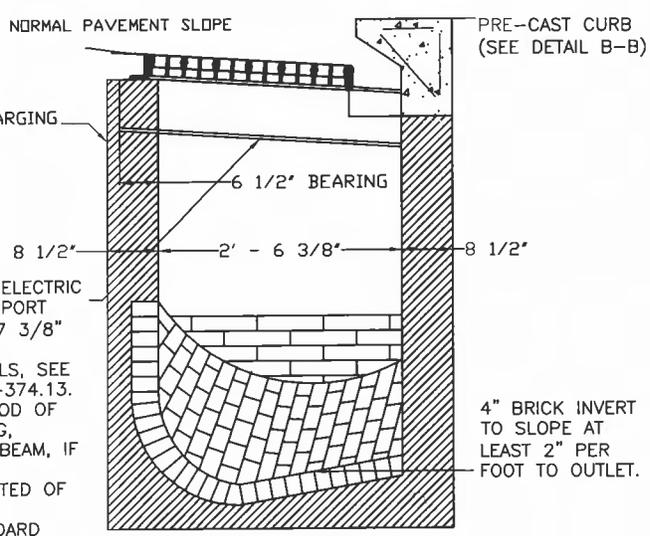
SECTION A-A



DETAIL B-B
PRECAST CURB

GENERAL NOTES

1. CONCRETE (MIX NO. 2) WILL BE SUBSTITUTED FOR BRICK WHEN DIRECTED BY THE ENGINEER.
2. SIZE, TYPE AND DIRECTION OF OUTLET PIPE WILL VARY TO SUIT EACH CASE AND THE INVERT WILL BE ALTERED ACCORDINGLY.
3. "BRICK FOR MASONRY", TO COMPLY WITH THE LATEST S.H.A. SPECIFICATIONS.
4. SEE STANDARD NO. CA-383.91 FOR METAL LADDER RUNGS.



SECTION B-B

WB X 31 ELECTRIC GALV. SUPPORT BEAM 3'-7 3/8" LONG. FOR DETAILS, SEE STD. CA -374.13. FOR METHOD OF ANCHORING, SUPPORT BEAM, IF INLET IS CONSTRUCTED OF BRICK. SEE STANDARD CA-374.05.

APPROVAL

Cory J. Clark
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

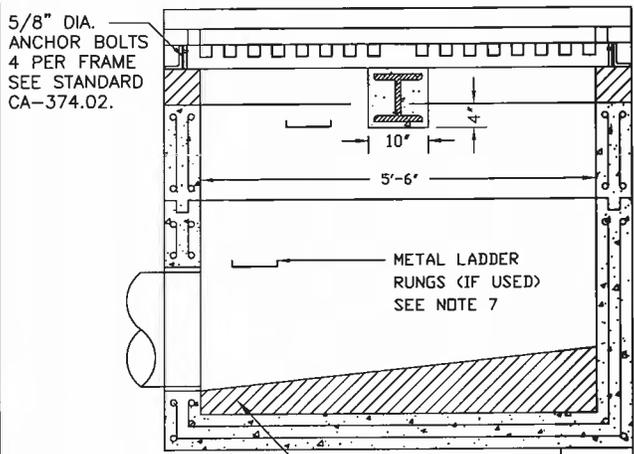
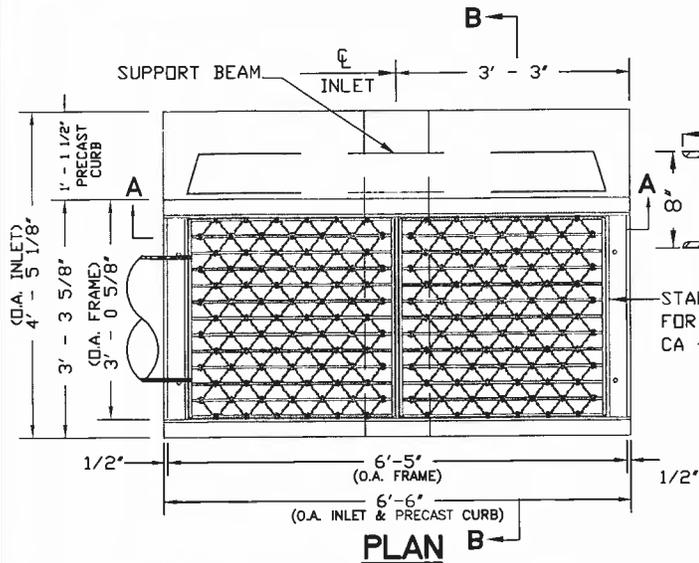
STANDARD NR INLET



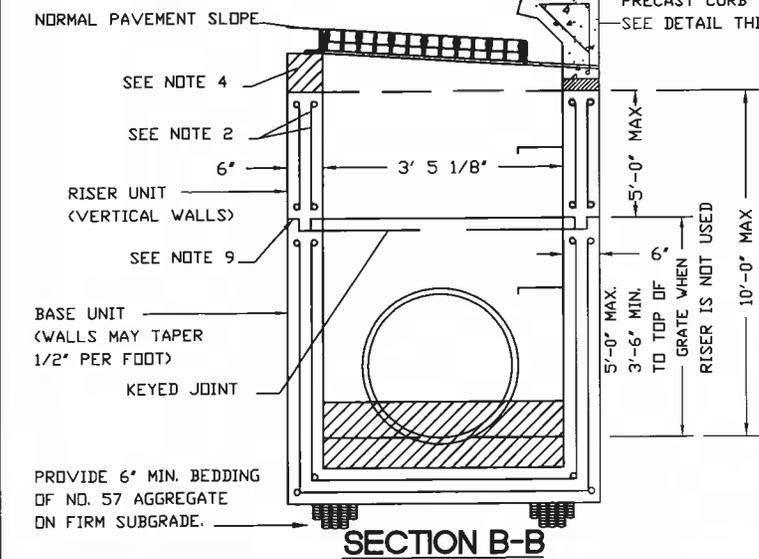
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2011_0209

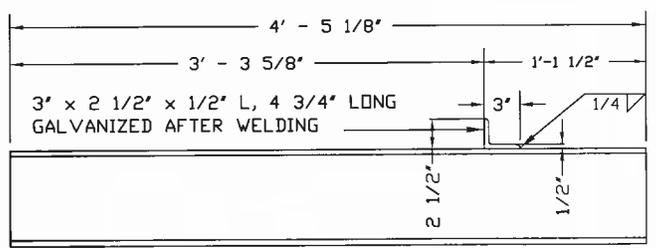
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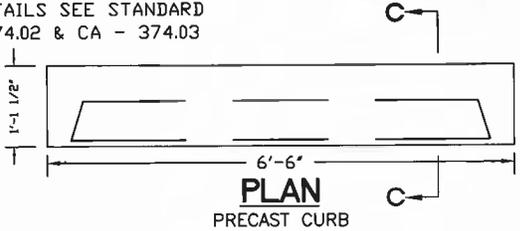
SECTION A-A
 INVERT TO BE CONCRETE OR BRICK, SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED (TO BE PROVIDED IN THE FIELD)
 NORMAL PAVEMENT SLOPE



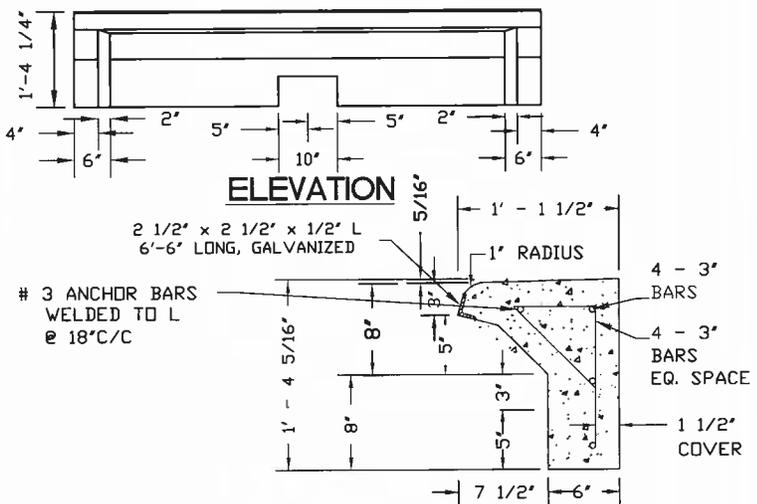
SECTION B-B
 PROVIDE 6" MIN. BEDDING OF NO. 57 AGGREGATE ON FIRM SUBGRADE.
 SEE NOTE 4
 SEE NOTE 2
 RISER UNIT (VERTICAL WALLS)
 SEE NOTE 9
 BASE UNIT (WALLS MAY TAPER 1/2" PER FOOT)
 KEYED JOINT



SUPPORT BEAM
 W8 31 (GALVANIZED)



PLAN
 PRECAST CURB



SECTION C-C

GENERAL NOTES

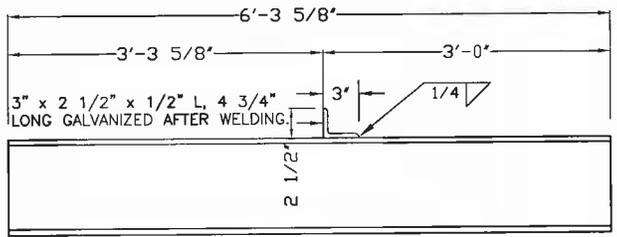
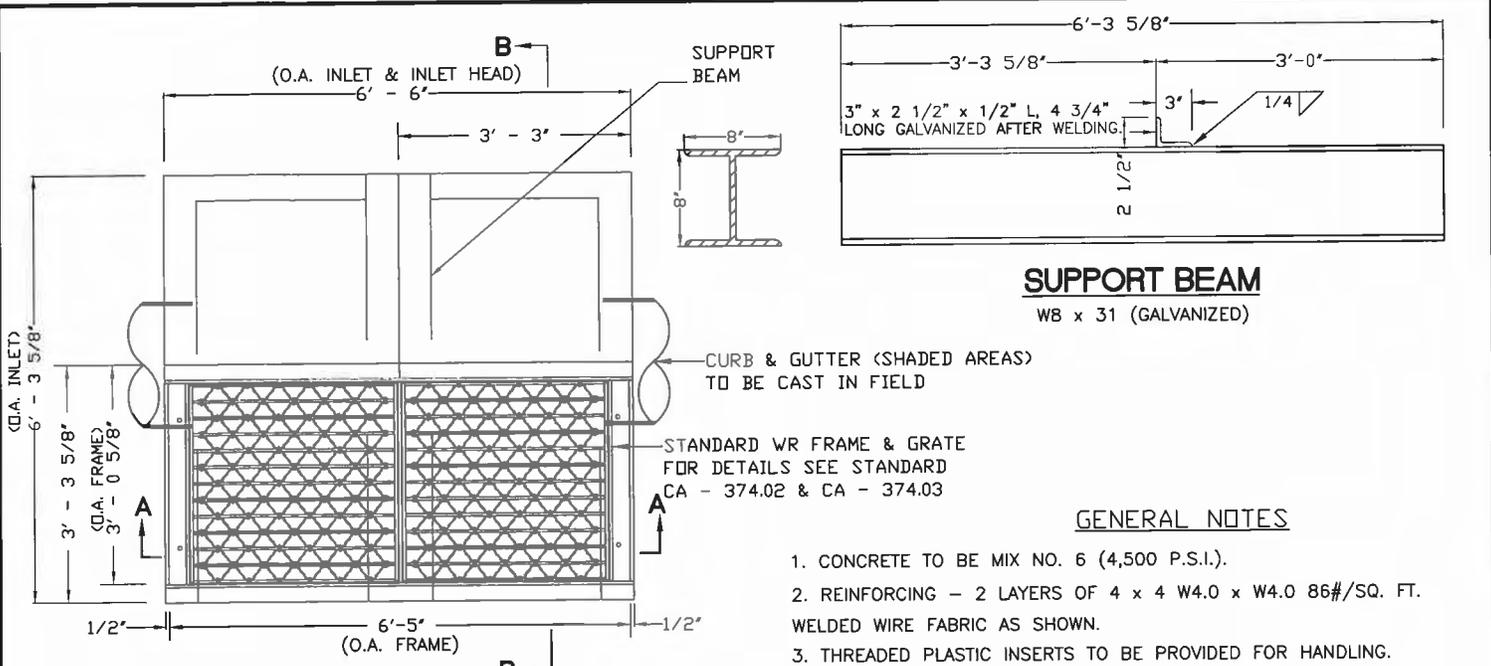
1. CONCRETE TO BE MIX NO. 6 (4,500 P.S.I.).
2. REINFORCING - 2 LAYERS OF 4 x 4 W4.0 x W4.0 86#/SQ. FT. WELDED WIRE FABRIC AS SHOWN. 1 1/2" OF COVER IS TO BE PROVIDED OVER REINFORCING WIRE.
3. THREADED PLASTIC INSERTS TO BE PROVIDED FOR HANDLING.
4. GRADE AND SLOPE ADJUSTMENTS COMPLETED IN THE FIELD USING CONCRETE MIX NO. 6 OR BRICK AND MORTAR.
5. PIPE OPENINGS TO BE PROVIDED AS REQUIRED. FOR SIZE, LOCATION, AND INVERT ELEVATIONS, REFER TO CONSTRUCTION PLANS.
6. PLACEMENT OF SUBGRADE DRAINAGE WILL BE DIRECTED BY THE ENGINEER OR AS NOTED ON THE CONSTRUCTION PLANS.
7. LADDER RUNGS SHALL BE IN ACCORDANCE WITH STANDARD CA-383.91.
8. SEE STANDARD CA-300.02 FOR METHOD OF DEPRESSING PAVEMENT AT INLET.
9. JOINT SEALER (AASHTO M198, TYPE B) TO BE APPLIED TO THE INSIDE EDGE ONLY.

APPROVAL

 DIRECTOR - DEPARTMENT OF PUBLIC WORKS
 JULY 1, 2012
 DATE

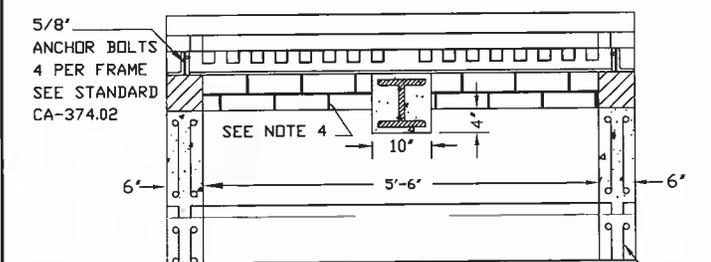
CALVERT COUNTY, MD
 DEPARTMENT OF PUBLIC WORKS
 PRECAST STANDARD WR INLET
 STANDARD NO. CA-374.21

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| | REVISED | SCALE: NTS |
| | | DRAWN BY: JFK 2011_0209 |



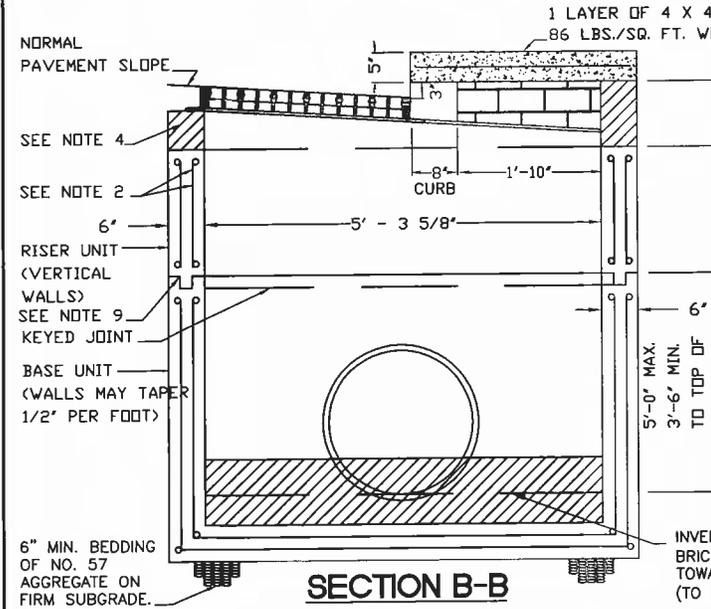
SUPPORT BEAM
WB x 31 (GALVANIZED)

PLAN



SECTION A-A

METAL LADDER RUNGS
(IF USED) SEE NOTE 7



SECTION B-B

- GENERAL NOTES**
1. CONCRETE TO BE MIX NO. 6 (4,500 P.S.I.).
 2. REINFORCING - 2 LAYERS OF 4 x 4 W4.0 x W4.0 86#/SQ. FT. WELDED WIRE FABRIC AS SHOWN.
 3. THREADED PLASTIC INSERTS TO BE PROVIDED FOR HANDLING.
 4. GRADE AND SLOPE ADJUSTMENTS COMPLETED IN THE FIELD USING CONCRETE MIX NO. 6 OR BRICK AND MORTAR.
 5. PIPE OPENINGS TO BE PROVIDED AS REQUIRED. FOR SIZE, LOCATION, AND INVERT ELEVATIONS, REFER TO CONSTRUCTION PLANS.
 6. PLACEMENT OF SUBGRADE DRAINAGE WILL BE DIRECTED BY THE ENGINEER OR AS NOTED ON THE CONSTRUCTION PLANS.
 7. LADDER RUNGS SHALL BE IN ACCORDANCE WITH STANDARD CA-383.91.
 8. SEE STANDARD CA-300.02 FOR METHOD OF DEPRESSING PAVEMENT AT INLET.
 9. JOINT SEALER (AASHTO M198, TYPE B) TO BE APPLIED TO THE INSIDE EDGE ONLY.

THIS PORTION OF INLET SHALL BE PROVIDED IN THE FIELD AND SHALL BE CONSTRUCTED OF BRICK MASONRY OR REINFORCED CONCRETE MIX NO. 6 "BRICK FOR MASONRY", TO COMPLY WITH LATEST S.H.A. SPECIFICATIONS.

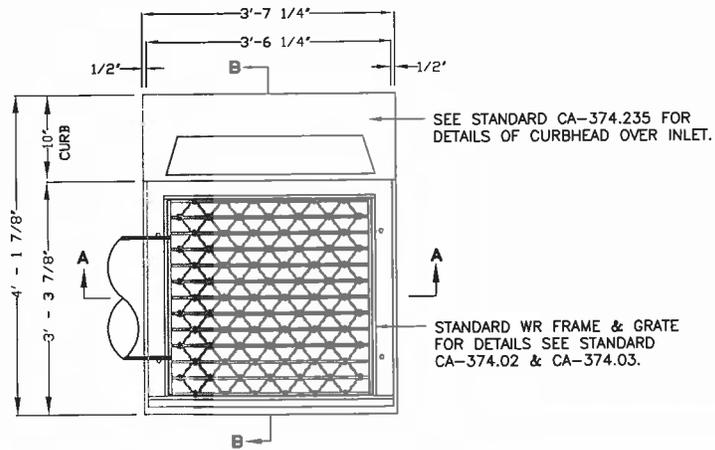
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DIRECTOR DEPARTMENT OF PUBLIC WORKS

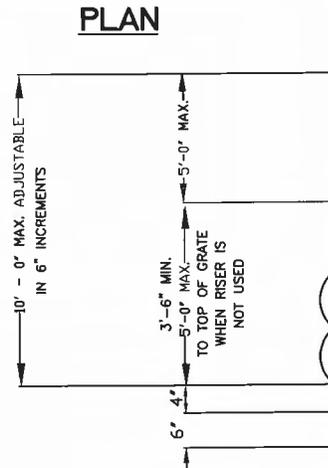
JULY 1, 2012
DATE

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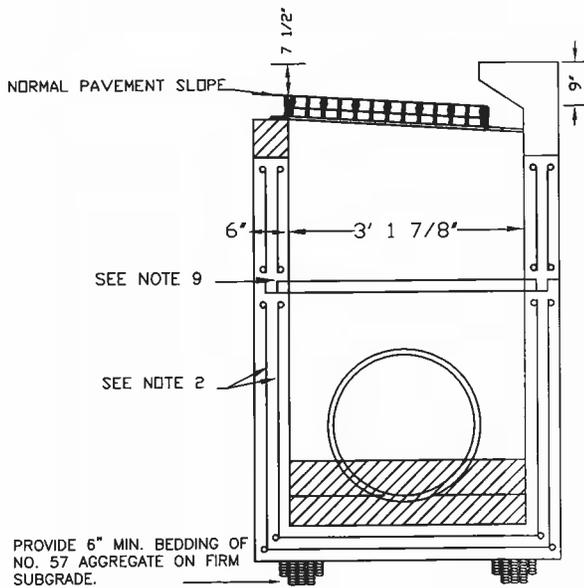
CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
PRECAST STANDARD WRM INLET
STANDARD NO. CA-374.22



METAL LADDER RUNG (IF USED) SEE NOTE 7



SECTION A-A



SECTION B-B

GENERAL NOTES

1. CONCRETE TO BE MIX NO. 6 (4,500 P.S.I.).
2. REINFORCING - 2 LAYERS OF 4 x 4 W4.0 x W4.0 86#/SQ. FT. WELDED WIRE FABRIC AS SHOWN. 1 1/2" COVER TO BE PROVIDED OVER REINFORCEMENT.
3. THREADED PLASTIC INSERTS TO BE PROVIDED FOR HANDLING.
4. GRADE AND SLOPE ADJUSTMENTS COMPLETED IN THE FIELD USING CONCRETE MIX NO. 6 OR BRICK AND MORTAR.
5. PIPE OPENINGS TO BE PROVIDED AS REQUIRED. FOR SIZE, LOCATION, AND INVERT ELEVATIONS, REFER TO CONSTRUCTION PLANS.
6. PLACEMENT OF SUBGRADE DRAINAGE WILL BE DIRECTED BY THE ENGINEER OR AS NOTED ON THE CONSTRUCTION PLANS.
7. LADDER RUNGS SHALL BE IN ACCORDANCE WITH STANDARD CA-383.91.
8. SEE STANDARD CA-300.02 FOR METHOD OF DEPRESSING PAVEMENT AT INLET.
9. JOINT SEALER (AASHTO M198, TYPE B) TO BE APPLIED TO THE INSIDE EDGE ONLY.

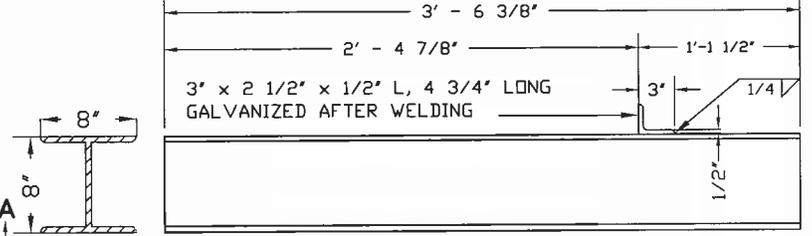
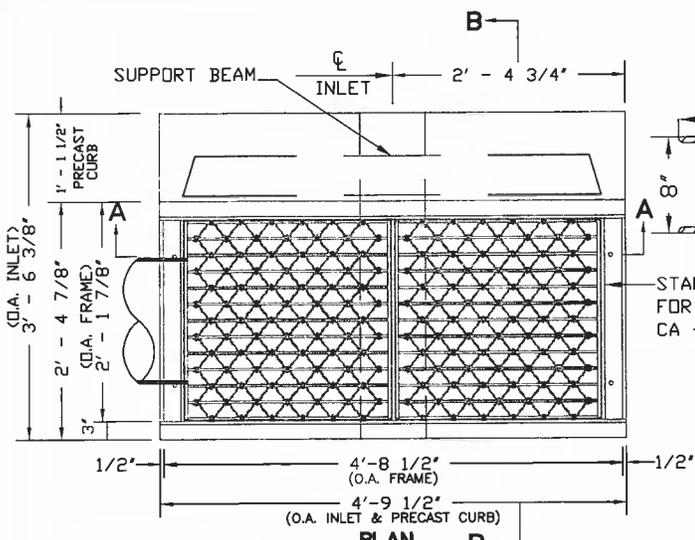
APPROVAL

 DIRECTOR - DEPARTMENT OF PUBLIC WORKS
 JULY 1, 2012
 DATE

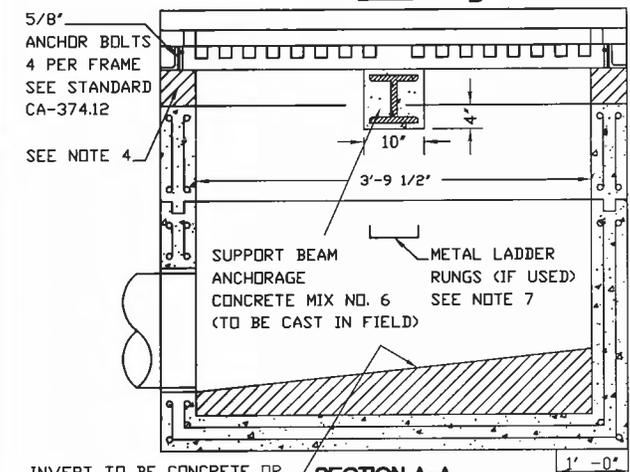
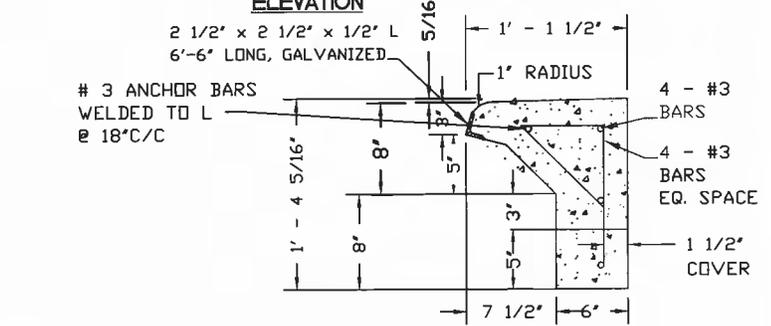
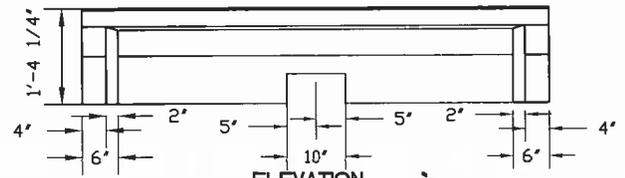
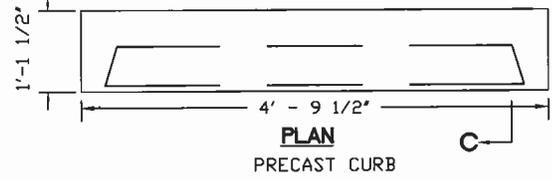


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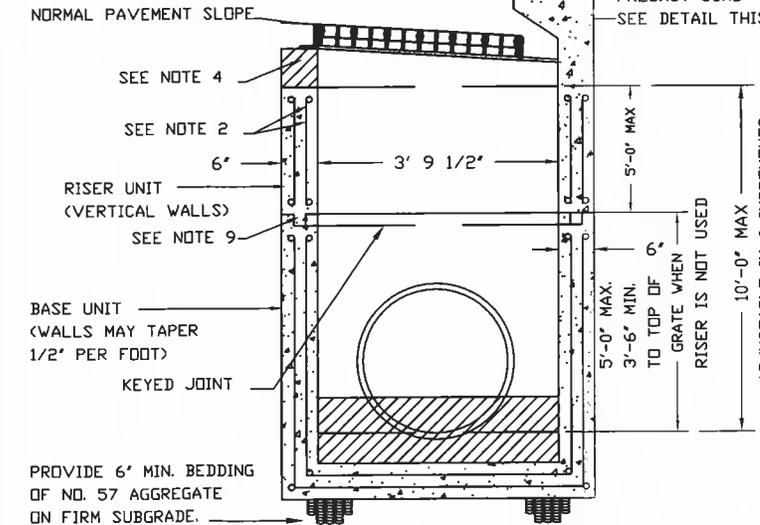
CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
PRECAST SINGLE WR INLET
(WITH CURB)
 STANDARD NO. CA-374.23



SUPPORT BEAM
W8 X 31 (GALVANIZED)
FOR DETAILS SEE STANDARD CA - 374.12 & CA - 374.13



SECTION A-A
INVERT TO BE CONCRETE OR BRICK, SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED (TO BE PROVIDED IN THE FIELD)
NORMAL PAVEMENT SLOPE



SECTION B-B
PROVIDE 6' MIN. BEDDING OF NO. 57 AGGREGATE ON FIRM SUBGRADE.

SECTION C-C

GENERAL NOTES

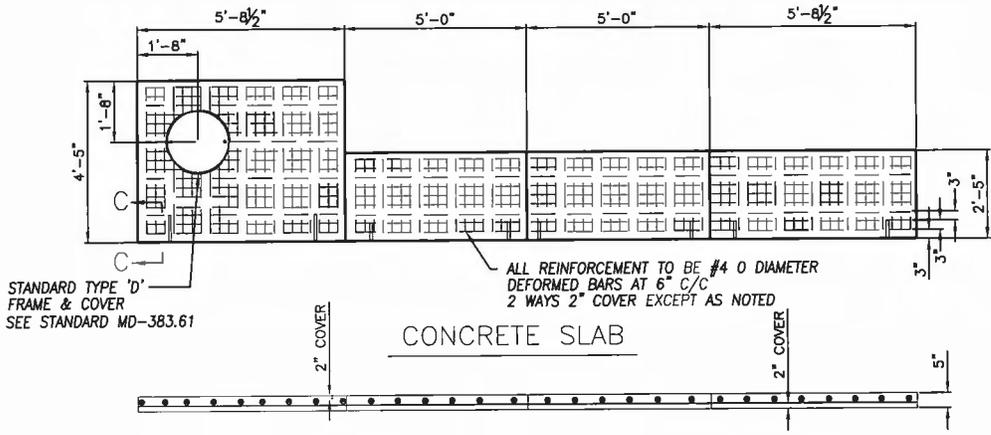
1. CONCRETE TO BE MIX NO. 6 (4,500 P.S.I.).
2. REINFORCING - 2 LAYERS OF 4 x 4 W4.0 x W4.0 86#/SQ. FT. WELDED WIRE FABRIC AS SHOWN. 1 1/2" OF COVER IS TO BE PROVIDED OVER REINFORCING WIRE.
3. THREADED PLASTIC INSERTS TO BE PROVIDED FOR HANDLING.
4. GRADE AND SLOPE ADJUSTMENTS COMPLETED IN THE FIELD USING CONCRETE MIX NO. 6 OR BRICK AND MORTAR.
5. PIPE OPENINGS TO BE PROVIDED AS REQUIRED. FOR SIZE, LOCATION, AND INVERT ELEVATIONS, REFER TO CONSTRUCTION PLANS.
6. PLACEMENT OF SUBGRADE DRAINAGE WILL BE DIRECTED BY THE ENGINEER OR AS NOTED ON THE CONSTRUCTION PLANS.
7. LADDER RUNGS SHALL BE IN ACCORDANCE WITH STANDARD CA-383.91.
8. SEE STANDARD CA-300.02 FOR METHOD OF DEPRESSING PAVEMENT AT INLET.
9. JOINT SEALER (AASHTO M198, TYPE B) TO BE APPLIED TO THE INSIDE EDGE ONLY.

APPROVAL
Cary P. Carter
DIRECTOR - DEPARTMENT OF PUBLIC WORKS
JULY 1, 2012
DATE

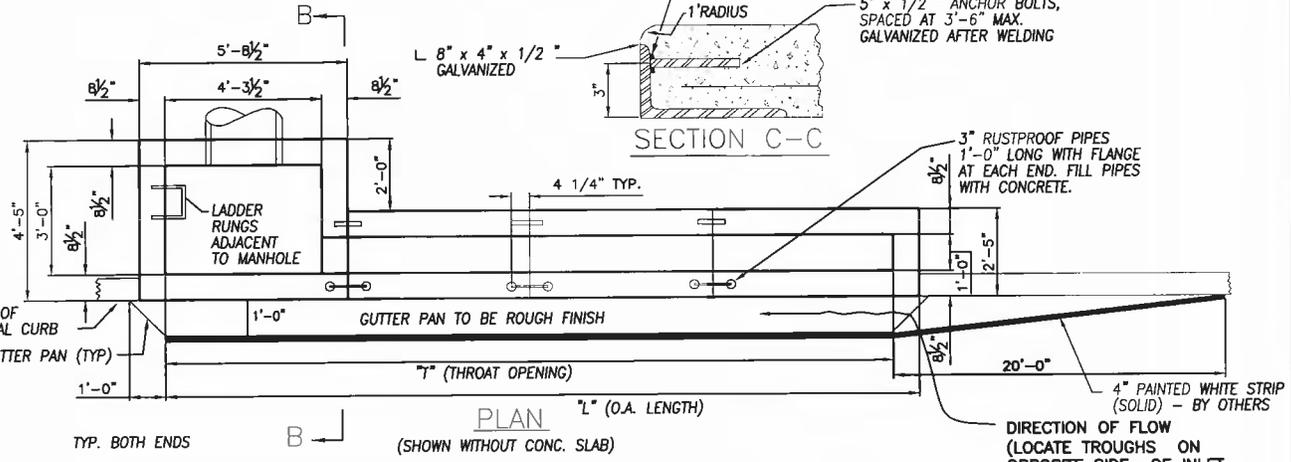
CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
PRECAST STANDARD NR INLET

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STANDARD NO. CA-374.24



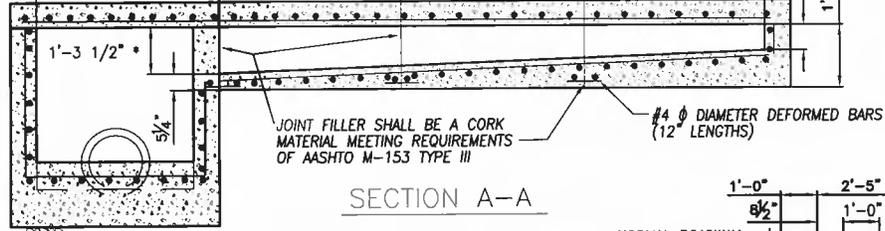
CONCRETE SLAB



SECTION C-C

PLAN (SHOWN WITHOUT CONC. SLAB)

NOTE:
INLET DEPTH MUST BE INCREASED WHEN PIPES LARGER THEN 18" ARE USED UNDER THE TROUGH SECTIONS.



SECTION A-A

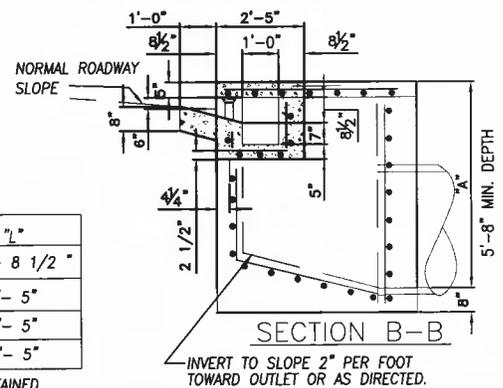
PROVIDE 6" MIN. GRANULAR BEDDING ON FIRM SUBGRADE

THIS STANDARD TO BE USED WITH TYPE A CURB ONLY

NOTE:
CURB OPENING SHOULD NOT ENCRoACH ON CROSSWALK AREAS. INLETS SHALL BE CONSTRUCTED OF REINFORCED CONCRETE (MIX NO.2). SIZE, TYPE & DIRECTION OF INLET CONNECTION WILL VARY TO SUIT CONDITIONS. REINFORCEMENT REQUIRED ON OUTSIDE, AS WELL AS ON INSIDE OF WALLS WHEN "A" IS GREATER THAN 7'-0". SPACING, SAME AS FOR INSIDE OF WALL. PLACE EXPANSION MATERIAL (SAME TYPE APPROVED FOR PAVEMENT) AS INDICATED. LADDER RUNGS SHALL BE IN ACCORDANCE WITH STD. MD-383.91 AND MD-383.92 OR AS DIRECTED BY THE ENGINEER. ANGLES & ANCHOR BOLTS TO BE GALVANIZED IN ACCORDANCE WITH ASTM A-123, AFTER WELDING.

| INLET | "T" | "L" |
|---------|-------------|-------------|
| COG- 5 | 4'- 3 1/2 " | 5'- 8 1/2 " |
| COG- 10 | 10'- 0" | 11'- 5" |
| COG- 15 | 15'- 0" | 16'- 5" |
| COG- 20 | 20'- 0" | 21'- 5" |

* THIS DIMENSION TO BE MAINTAINED FOR ALL STANDARD COG INLETS



SECTION B-B

APPROVAL
Cary A. Carter
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

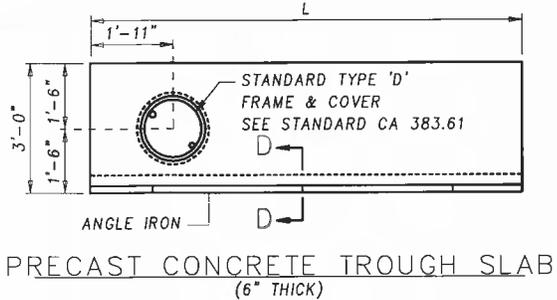
STANDARD COG INLET
5', 10', 15' AND 20'

STANDARD NO. CA-374.31

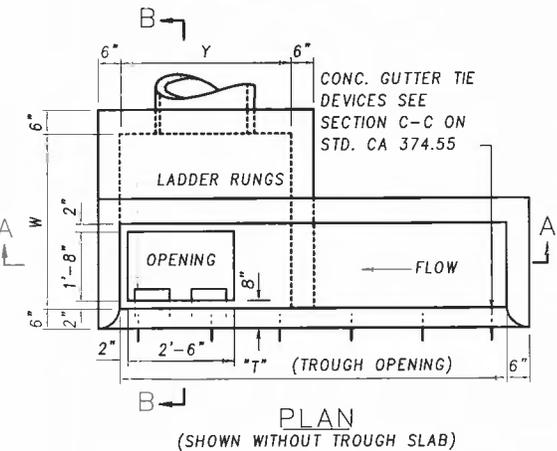


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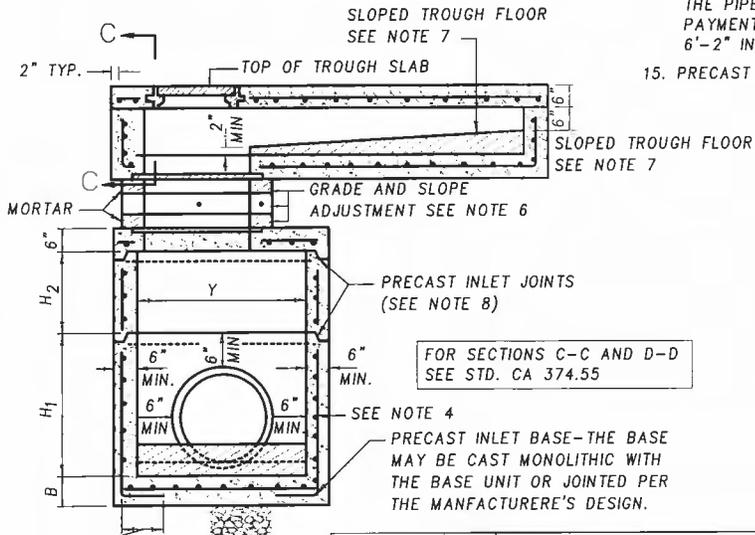
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PRECAST CONCRETE TROUGH SLAB
(6" THICK)



PLAN
(SHOWN WITHOUT TROUGH SLAB)



LAP SPLICE REINFORCEMENT
1'-0" (TYP.) AROUND
OUTSIDECORNERS AS SHOWN.
(MONOLITHIC BASE ONLY)

SECTION A-A
(SHOWN AS PRECAST)

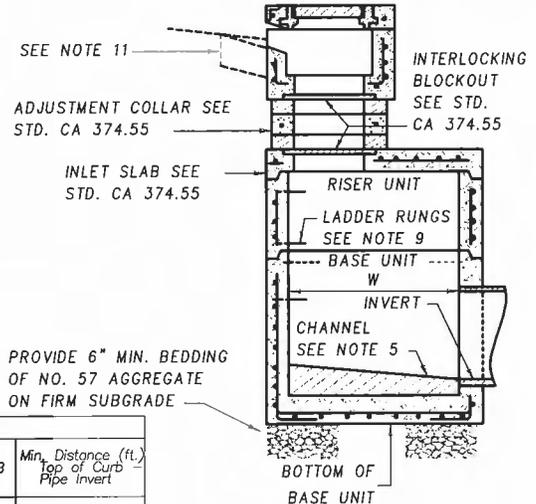
FOR SECTIONS C-C AND D-D
SEE STD. CA 374.55

SEE NOTE 4
PRECAST INLET BASE-THE BASE
MAY BE CAST MONOLITHIC WITH
THE BASE UNIT OR JOINED PER
THE MANUFACTURERE'S DESIGN.

| PIPE SIZE MIN. TO MAX. | PRECAST DIMENSIONS | | | | | | Min. Distance (ft.) Top of Curb Pipe Invert |
|---------------------------|--------------------|--------|-------|------------------------|-------------------------|----|---|
| | W | Alt. W | Y | H ₁ BASE | H ₂ RISER | B | |
| 12" | 4'-0" | | 4'-0" | 2' to 10' | 1' to 5' | 6" | 3.84 |
| 15" - 24" | 4'-0" | | 4'-0" | 3' to 10' | 1' to 5' | 6" | 4.11-4.92 |
| 27" - 33" | 4'-0" | | 4'-0" | 4' to 10' | 1' to 5' | 6" | 5.19-5.73 |
| 36" | 4'-0" | | 4'-0" | 5' to 10' | 1' to 5' | 6" | 6.00 |
| 42" | 4'-0" | 6'-0" | 6'-0" | 5' to 10' | 1' to 5' | 6" | 6.55 |
| 48" - 54" | 4'-0" | 6'-0" | 6'-0" | 6' to 10' | 1' to 5' | 6" | 7.09-7.63 |
| 60" | 4'-0" | | 6'-0" | 7' to 10' | 1' to 5' | 6" | 8.17 |
| 66" - 72" | 6'-0" | | 8'-0" | 8' to 10' | 1' to 5' | 8" | 8.71-9.25 |
| 78" - 84" | 6'-0" | | 8'-0" | 9' to 10' | 1' to 5' | 8" | 9.80-10.34 |

NOTES

- THIS STANDARD TO BE USED WITH TYPE A COMBINATION CURB AND GUTTER ONLY..
- CURB OPENINGS SHALL NOT ENCR OACH ON CROSSWALK AREAS.
- CONCRETE SHALL BE MIX NO.6 (4500 PSI) FOR PRECAST UNITS AND MIX NO.3 (3500 PSI) FOR STRUCTURES CAST IN PLACE.
- INLET MAY BE PRECAST OR CAST IN PLACE. REINFORCEMENT SHALL BE NO.4 BARS PLACED IN THE CENTER OF INLET WALLS AT 6" C/C 2 WAYS OR 2 LAYERS OF 4x4-W4.0xW4.0 WELDED WIRE FABRIC WITH 1/2" COVER.
- A CONCRETE OR BRICK CHANNEL WHICH SLOPES AT LEAST 2 IN./FT TOWARD THE OUTLET SHALL BE PROVIDED IN THE FIELD.
- GRADE AND SLOPE ADJUSTMENTS SHALL BE COMPLETED IN THE FIELD USING PRECAST ADJUSTMENT COLLAR AND MORTAR.
- SLOPED TROUGH FLOOR TO BE CAST IN THE FIELD AND USED ONLY WHEN ROAD GRADE IS 1.5% OR LESS. WHEN SLOPED TROUGH FLOOR IS USED, ROUGHEN PRECAST TROUGH FLOOR.
- PRECAST INLET JOINTS- THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT USING THE MANUFACTURER'S RECOMMENDED ASTM OR AASHTO APPROVED SEALANT.
- LADDER RUNGS SHALL BE PLACED IN VERTICAL ALIGNMENT AT 1'-3" C/C. RUNG TYPE SHALL BE IN ACCORDANCE WITH STANDARDS CA 383.91 OR CA 383.92. RUNGS ARE INCIDENTAL TO THE COST OF THE INLET.
- ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123. SEE STD. CA 374.55 & CA 374.64.
- SEE STANDARD CA 374.65 FOR DEPRESSED GUTTER PAN.
- SEE STANDARD CA 374.64 FOR ALTERNATE PRECAST COG TROUGH.
- PAY MEASUREMENTS FOR CAST IN PLACE UNIT SHALL BE THE SAME AS THE PRECAST UNIT. REFER TO NOTE 14. ALL OTHER DIMENSIONS SHOWN FOR PRECAST SHALL APPLY TO CAST IN PLACE.
- MINIMUM DEPTH PAYMENT PER EACH SHALL BE 6'-2" MEASURED FROM THE PIPE INVERT TO THE TOP OF THE TROUGH SLAB. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 6'-2" INCLUDING ALL APPURTENANCES.
- PRECAST BASE UNIT WALLS MAY TAPER PER MANUFACTURER'S DESIGN.



SECTION B-B
(SHOWN AS PRECAST)

| INLET TYPE | T | L |
|------------|---------|---------|
| COG - 5 | 5'- 0" | 6'- 0" |
| COG - 10 | 10'- 0" | 11'- 0" |
| COG - 15 | 15'- 0" | 16'- 0" |
| COG - 20 | 20'- 0" | 21'- 0" |

APPROVAL
Cory Stalder
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE



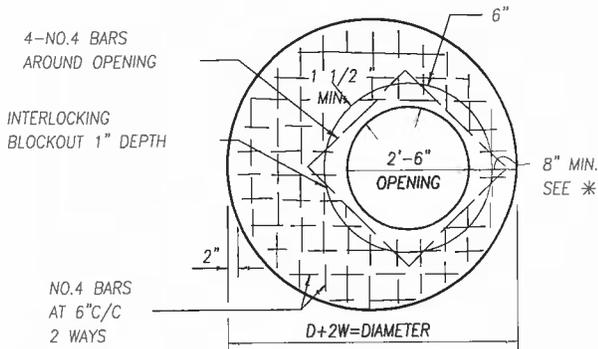
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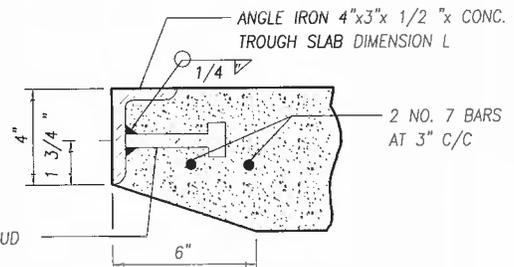
CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

PRECAST OR CAST IN PLACE
SQUARE AND RECTANGULAR COG INLETS
5', 10', 15' AND 20'

STANDARD NO. CA-374.51



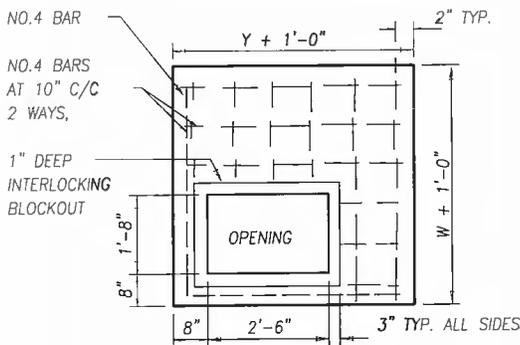
4" x 1/2" SHEAR STUD CONNECTORS AT 3'-6" C/C MAX GALV. AFTER WELDING



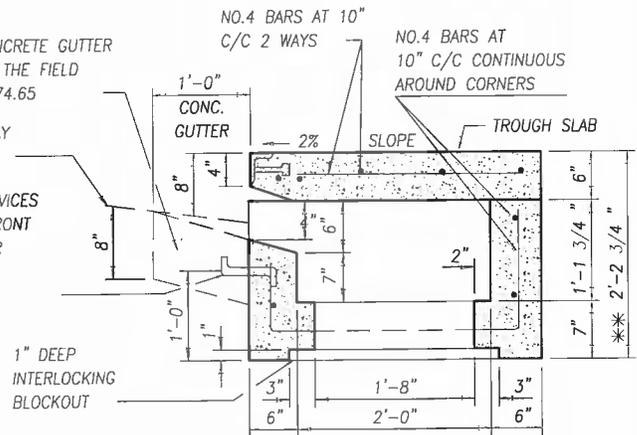
PRECAST CONCRETE INLET SLAB FOR CIRCULAR COG INLETS

SECTION D-D
SEE STDS. CA 374.51 OR CA 374.62

* THIS DIMENSION FOR THE 96" AND THE 108" DIAMETER INLETS SHALL BE THE SAME AS THE WALL THICKNESS SEE STD. CA 374.62



DEPRESSED CONCRETE GUTTER TO BE CAST IN THE FIELD SEE STD. CA 374.65
NORMAL ROADWAY CROSS SLOPE
1/2" x 6" TIE DEVICES 20" C/C CAST IN FRONT FACE OF TROUGH OR PLASTIC INSERT TO RECEIVE NO.4 REBAR

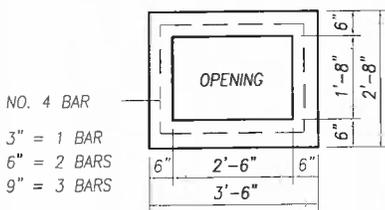


PRECAST CONCRETE INLET SLAB FOR SQUARE & RECTANGULAR COG INLETS

SECTION C-C
SEE STDS. CA 374.51 OR CA 374.62

(6" THICK)
SEE STD. CA 374.51

** HEIGHT OF THE BACK WALL IS 3/4" HIGHER THAN THE FRONT WALL DUE TO 2% SLOPE ON THE TOP TROUGH SLAB.



DETAILS FOR COG & COS INLETS ARE SHOWN ON THE FOLLOWING STANDARDS

- CA 374.51 PRECAST OR CAST IN PLACE SQUARE & RECTANGULAR COG INLETS 5', 10', 15', & 20'
- CA 374.62 PRECAST CIRCULAR COG INLETS 5', 10', 15', & 20'
- CA 374.64 ALTERNATE PRECAST TROUGHS FOR COG AND COS INLETS
- CA 374.65 DEPRESSED GUTTER PAN FOR COG & COS INLETS

PRECAST CONCRETE ADJUSTMENT COLLAR FOR SQUARE, RECTANGULAR AND CIRCULAR INLETS

(CAST IN 3", 6", & 9" THICKNESS)
SEE STD. CA 374.51

NOTES

- CONCRETE SHALL BE MIX NO.6 (4500 PSI).
- ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123.

APPROVAL

Perry Carlson
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

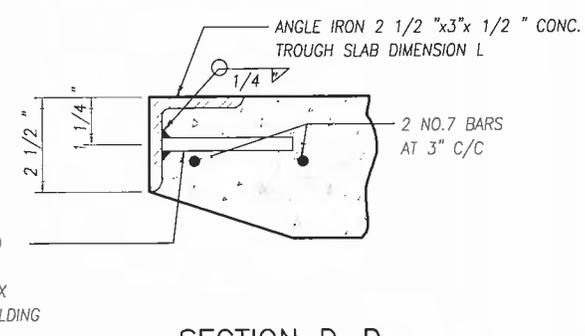
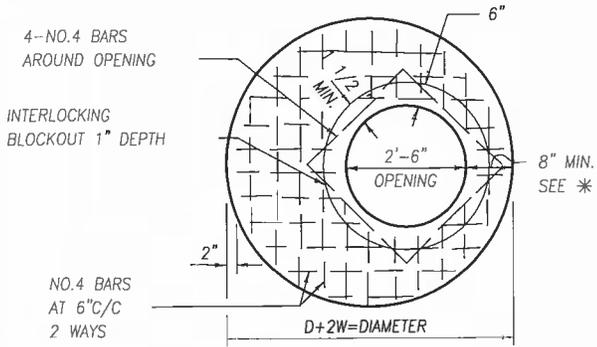
PRECAST CONCRETE
INLET SLABS AND ADJUSTMENT COLLARS
FOR COG INLETS

STANDARD NO. CA-374.55



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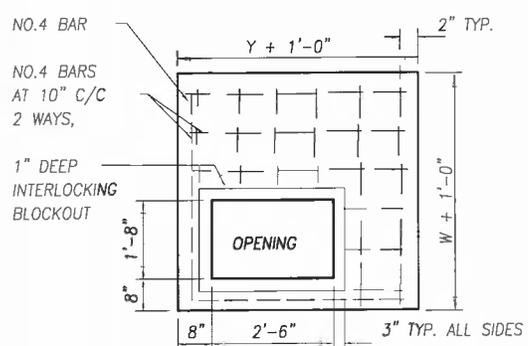


PRECAST CONCRETE INLET SLAB FOR CIRCULAR COG INLETS

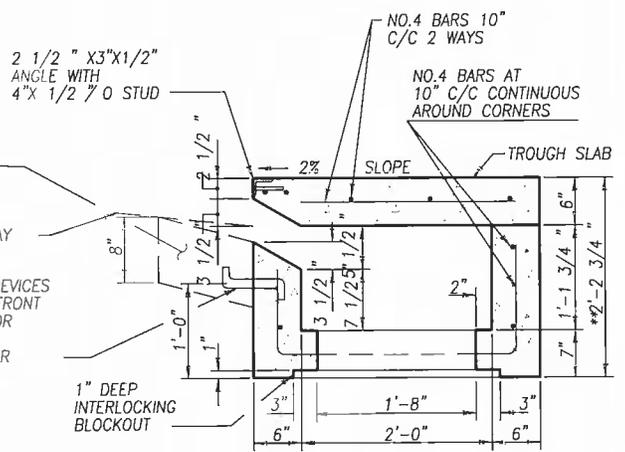
SECTION D-D

SEE STDS. CA 374.51 OR CA 374.62

* THIS DIMENSION FOR THE 96" AND THE 108" DIAMETER INLETS SHALL BE THE SAME AS THE WALL THICKNESS SEE STD. CA 374.62



DEPRESSED CONCRETE GUTTER TO BE CAST IN THE FIELD SEE STD. CA 374.65



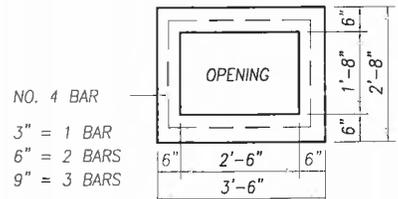
PRECAST CONCRETE INLET SLAB FOR SQUARE & RECTANGULAR COG INLETS

SECTION C-C

SEE STDS. CA 374.51 OR CA 374.62

(6" THICK)
SEE STD. CA 374.51

* * HEIGHT OF THE BACK WALL IS 3/4" HIGHER THAN THE FRONT WALL DUE TO 2% SLOPE ON THE TOP TROUGH SLAB.



DETAILS FOR COG INLETS ARE SHOWN ON THE FOLLOWING STANDARDS

- CA 374.51 PRECAST OR CAST IN PLACE SQUARE & RECTANGULAR COG INLETS 5', 10', 15', & 20'
- CA 374.62 PRECAST OR CAST IN PLACE CIRCULAR COG INLETS 5', 10', 15', & 20'
- CA 374.64 ALTERNATE PRECAST TROUGHS FOR COG INLETS
- CA 374.65 DEPRESSED CONCRETE GUTTER PAN FOR COG INLETS

PRECAST CONCRETE ADJUSTMENT COLLAR FOR SQUARE, RECTANGULAR AND CIRCULAR INLETS

(CAST IN 3", 6", & 9" THICKNESS)
SEE STD. CA 374.51

NOTES

- CONCRETE SHALL BE MIX NO.6 (4500 PSI).
- ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123.

APPROVAL
[Signature]
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
PRECAST CONCRETE
INLET SLABS AND ADJUSTMENT COLLARS FOR
COG INLETS TO ACCOMMODATE 6" CURB



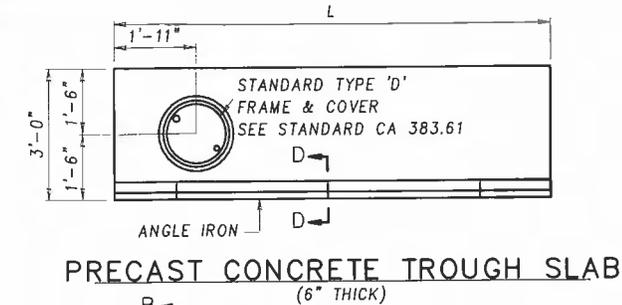
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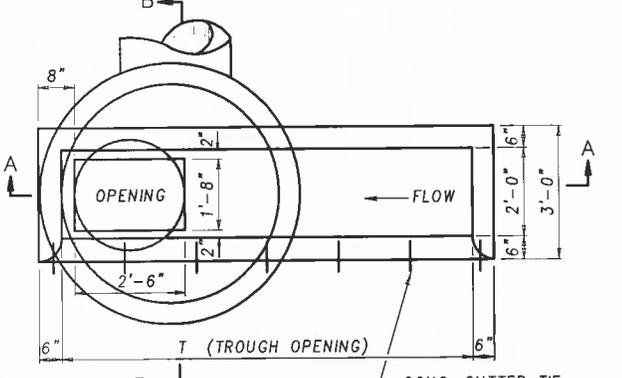
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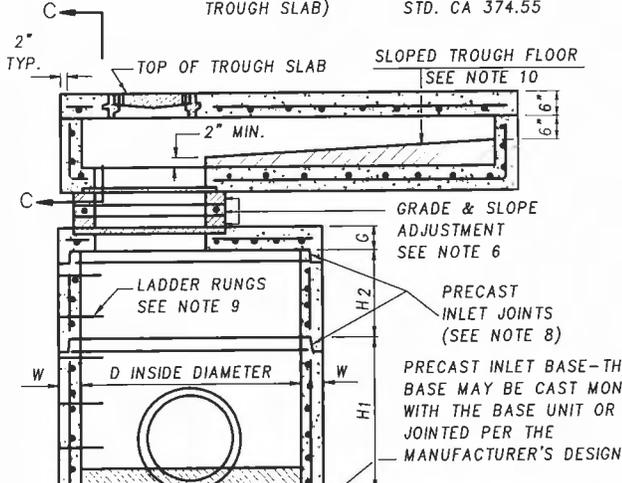
1. THIS STANDARD TO BE USED WITH TYPE A COMBINATION CURB AND GUTTER ONLY.
2. CURB OPENINGS SHALL NOT ENCR OACH ON CROSSWALK AREAS.
3. CONCRETE SHALL BE MIX. NO.6(4500 PSI) FOR PRECAST UNITS AND CONCRETE MIX NO.3(3500 PSI) FOR CAST IN PLACE UNITS.
4. INLET MAY BE PRECAST OR CAST IN PLACE. REINFORCEMENT SHALL BE EITHER WELDED WIRE FABRIC OR REINFORCING BARS AND SHALL CONFORM TO THE AREAS GIVEN UNDER R IN THE CHART ON THIS SHEET.
5. ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123. SEE STDS. CA 374.55 & 374.64.
6. GRADE AND SLOPE ADJUSTMENTS SHALL BE COMPLETED IN THE FIELD USING PRECAST ADJUSTMENT COLLAR AND MORTAR.
7. A CONCRETE OR BRICK CHANNEL WHICH SLOPES AT LEAST 2 IN./FT. TOWARD OUTLET SHALL BE PROVIDED IN THE FIELD.
8. PRECAST INLET JOINTS—THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT USING THE MANUFACTURERS RECOMMENDED ASTM OR AASHTO APPROVED SEALANT.
9. LADDER RUNGS SHALL BE PLACED IN VERTICAL ALIGNMENT AT 1'-3" C/C. RUNGS SHALL BE IN ACCORDANCE WITH STANDARDS CA 383.91 OR CA 383.92. RUNGS ARE INCIDENTAL TO THE COST OF THE INLET.
10. SLOPED TROUGH FLOOR TO BE CONSTRUCTED IN THE FIELD USING BRICK OR CONCRETE AND USED ONLY WHEN ROAD GRADE IS 1.5% OR LESS. WHEN SLOPED TROUGH FLOOR IS USED, ROUGHEN PRECAST TROUGH FLOOR.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 6'-2" MEASURED FROM THE PIPE INVERT TO THE TOP OF THE TROUGH SLAB. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 6'-2" INCLUDING ALL APPURTENANCES.
12. INLET SLAB NOT REQUIRED FOR 36" DIAMETER INLET. TROUGH SITS DIRECTLY ON TOP OF THE CIRCULAR UNIT. MORTAR AREA BETWEEN THE OUTSIDE WALLS OF THE TROUGH AND THE UNIT WALL.
13. SEE STD. CA 374.64 FOR ALTERNATE PRECAST COG TROUGHS AND STD. CA 374.65 FOR DEPRESSED GUTTER PAN DETAILS.
14. BASE UNIT WALLS MAY TAPER PER MANUFACTURER'S DESIGN.



PRECAST CONCRETE TROUGH SLAB
(6" THICK)



PLAN
(SHOWN WITHOUT TROUGH SLAB)

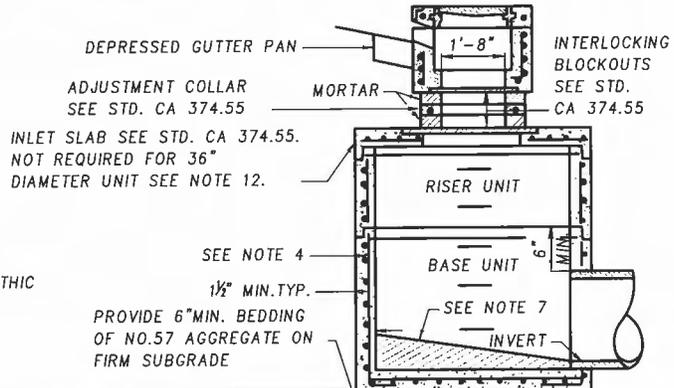


SECTION A-A
(SHOWN PRECAST)

FOR SECTIONS C-C AND D-D SEE STD CA 374.55

| INLET TYPE | T | L |
|------------|--------|--------|
| COG-5 | 5'-0" | 6'-0" |
| COG-10 | 10'-0" | 11'-0" |
| COG-15 | 15'-0" | 16'-0" |
| COG-20 | 20'-0" | 21'-0" |

| PIPE SIZE MN TO MAX | CIRCULAR BASE AND RISER UNIT DIMENSIONS | | | | | INLET SLAB | R-REIN. SQ. IN. PER FOOT | Min. Distance, ft. Top of Curb - Pipe Invert |
|------------------------|---|----------------------|--------|----|------|------------|--------------------------|--|
| | H ₁ BASE | H ₂ RISER | W MIN. | B | D | | | |
| 12" | 2' TO 4' | 1' TO 4' | 4" | 6" | 36" | NOT REQ. | .09 | 3.84 |
| 15" TO 24" | 3' TO 5' | 1' TO 5' | 5" | 6" | 48" | 8" | .12 | 4.11-4.92 |
| 27" TO 33" | 3' TO 6' | 1' TO 6' | 6" | 6" | 60" | 8" | .15 | 5.19-5.73 |
| 36" | 5' TO 6' | 1' TO 6' | 6" | 6" | 60" | 8" | .15 | 6.00 |
| 42" | 5' TO 7' | 1' TO 7' | 7" | 6" | 72" | 8" | .18 | 6.55 |
| 48" | 6' TO 7' | 1' TO 7' | 7" | 6" | 72" | 8" | .18 | 7.09 |
| 54" | 6' TO 8' | 1' TO 8' | 8" | 8" | 84" | 8" | .21 | 7.63 |
| 60" | 7' TO 8' | 1' TO 8' | 8" | 8" | 84" | 8" | .21 | 8.17 |
| 66" TO 72" | 8' TO 9' | 1' TO 8' | 9" | 8" | 96" | 8" | .24 | 8.71-9.25 |
| 78" TO 84" | 9' TO 10' | 1' TO 8' | 10" | 8" | 120" | 8" | .27 | 9.80-10.34 |



SECTION B-B
(SHOWN PRECAST)

LAP SPLICE REINFORCEMENT 1'-0" (TYP.) AROUND OUTSIDE CORNERS AS SHOWN (MONOLITHIC BASE ONLY).

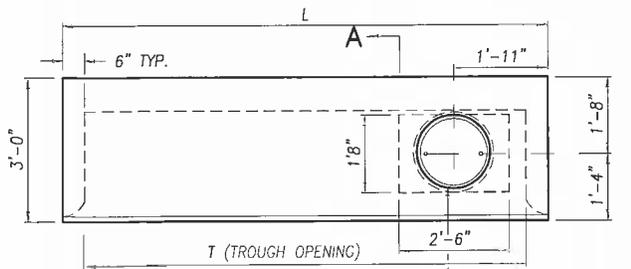
APPROVAL
[Signature]
DIRECTOR — DEPARTMENT OF PUBLIC WORKS
JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
PRECAST OR CAST IN PLACE
CIRCULAR COG INLETS
5', 10', 15' AND 20'
STANDARD NO. CA-374.62

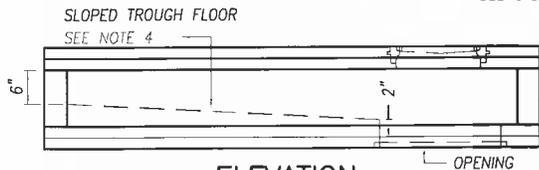


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SCALE: NTS
DRAWN BY: JFK
2011_0209



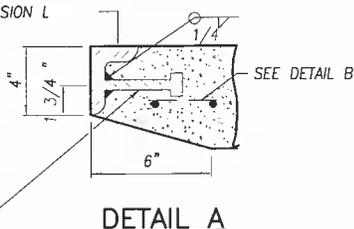
PLAN
STANDARD TYPE 'D'
FRAME & COVER
SEE STD. CA 383.61



ELEVATION
ALTERNATE COG TROUGH
(TROUGH FRONT NOT SHOWN)

ANGLE IRON 4"x3"x 1/2" CONC.
TROUGH DIMENSION L

4"x 1/2" SHEAR STUD
CONNECTORS AT 3'-6"
C/C MAX. GALVANIZE
AFTER WELDING

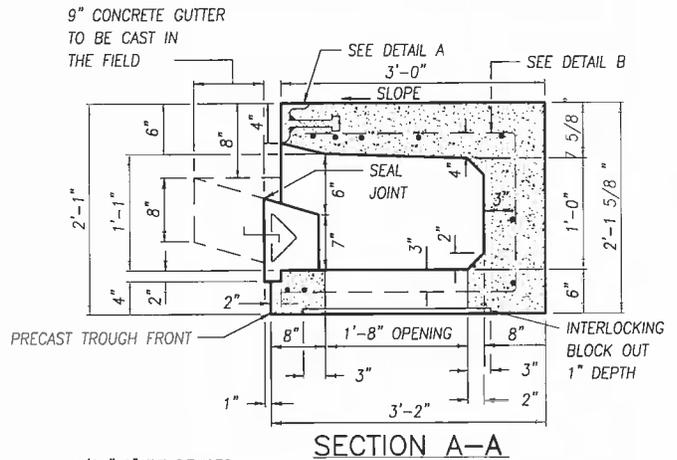


DETAIL A

NOTES

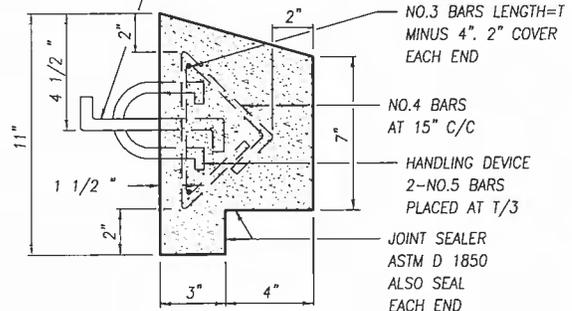
1. CONCRETE TO BE MIX NO.6 (4500 PSI).
2. ASTM A 185 GRADE 65 STEEL.
3. THESE TROUGHS MAY BE USED AS ALTERNATES FOR THOSE SHOWN ON STANDARDS CA 374.51 AND CA 374.62.
4. SLOPED TROUGH FLOOR TO BE CONSTRUCTED IN THE FIELD USING BRICK OR CONCRETE AND USED ONLY WHEN ROAD GRADE IS 1.5% OR LESS. WHEN SLOPED TROUGH FLOOR IS USED, ROUGHEN THE PRECAST TROUGH FLOOR.
5. ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123.
6. WHEN USING THESE TROUGHS THE MINIMUM DEPTH PER EACH SHALL BE THE DEPTH SPECIFIED FOR THE RESPECTIVE INLET.

| INLET TYPE | T | L |
|------------|--------|--------|
| COG-5 | 5'-0" | 6'-0" |
| COG-10 | 10'-0" | 11'-0" |
| COG-15 | 15'-0" | 16'-0" |
| COG-20 | 20'-0" | 21'-0" |

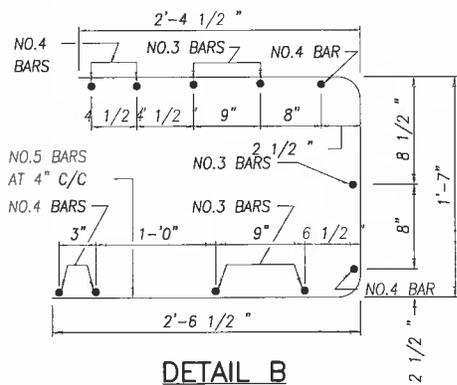


SECTION A-A

1/2" x6" TIE DEVICES
AT 20" C/C



PRECAST TROUGH FRONT
(TYPICAL COG LENGTH=T)



DETAIL B

APPROVAL

[Signature]
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

ALTERNATE PRECAST TROUGHS
FOR COG INLETS

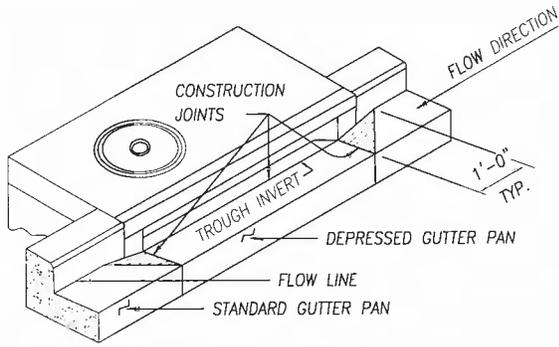
STANDARD NO. CA-374.64



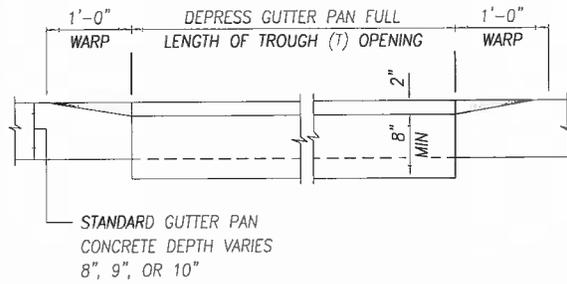
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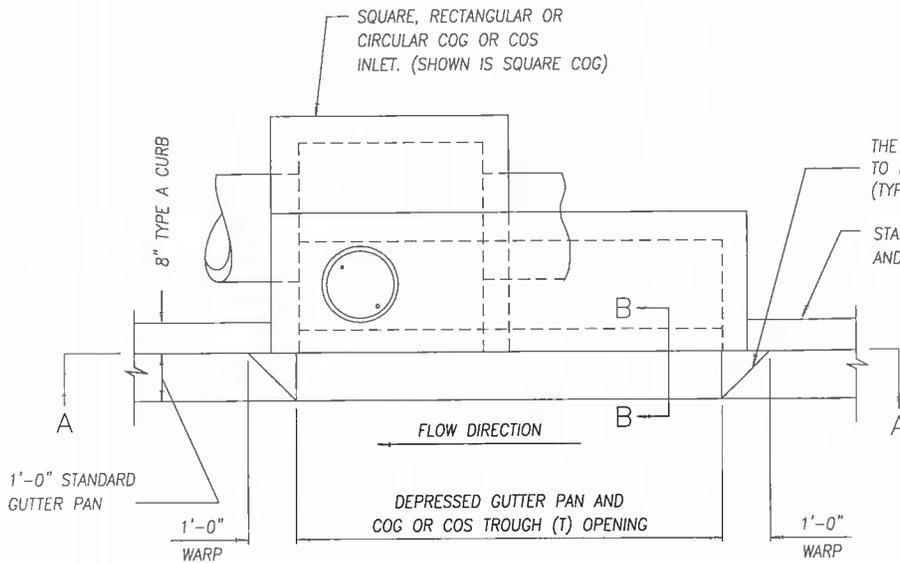
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2011_0209



ISOMETRIC



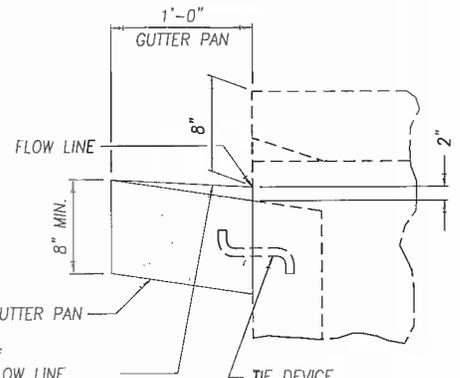
SECTION A-A
(SHOWN LOOKING TOWARD ROADWAY)



PLAN

THE STANDARD GUTTER PAN SHALL BE WARPED TO MATCH DEPRESSED GUTTER PAN CROSS SLOPE. (TYPICAL BOTH ENDS.)

STANDARD TYPE A COMBINATION CURB AND GUTTER - SEE STANDARD RD-19A



SECTION B-B

STANDARD GUTTER PAN SLOPE = 1/2" PER FOOT TOWARDS FLOW LINE.

TIE DEVICE
SEE STANDARD CA 374.55
AND STANDARD CA 374.64

DETAILS FOR COG AND COS INLETS ARE SHOWN ON THE FOLLOWING STANDARDS

- CA 374.51 PRECAST OR CAST IN PLACE SQUARE AND RECTANGULAR COG INLETS 5', 10', 15', & 20'
- CA 374.55 PRECAST CONCRETE TROUGH INLET SLABS AND ADJUSTMENT COLLAR FOR COG AND COS INLETS
- CA 374.62 PRECAST CIRCULAR COG INLETS 5', 10', 15', & 20'
- CA 374.64 ALTERNATE PRECAST TROUGHS FOR COG INLETS

NOTES

1. COST OF DEPRESSED CONCRETE GUTTER PAN IS INCIDENTAL TO THE COST OF THE INLET.
2. STANDARD TYPE A COMBINATION CURB AND GUTTER PAID FOR SEPARATELY.

APPROVAL

[Signature]
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

DEPRESSED CONCRETE GUTTER PAN
FOR COG INLETS

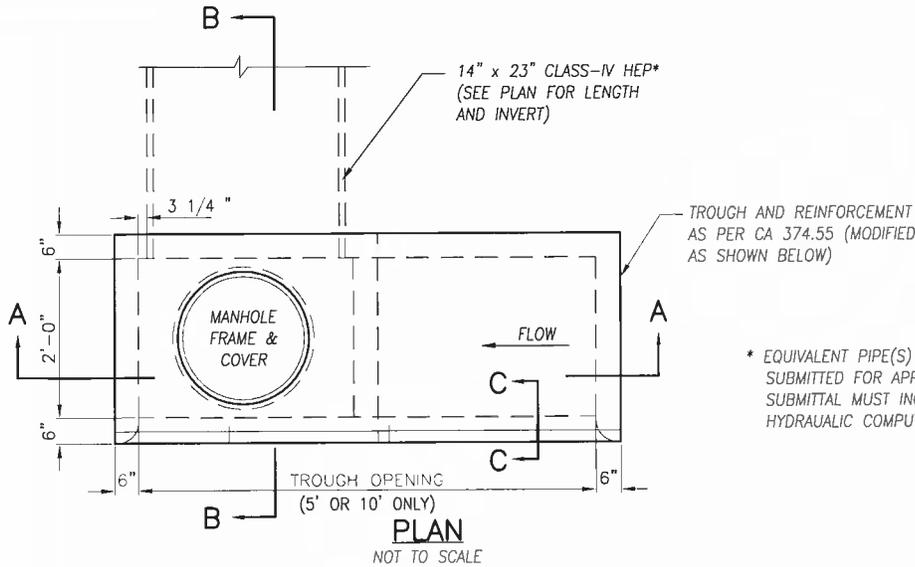
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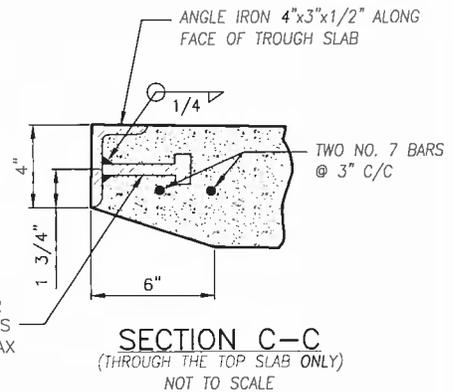
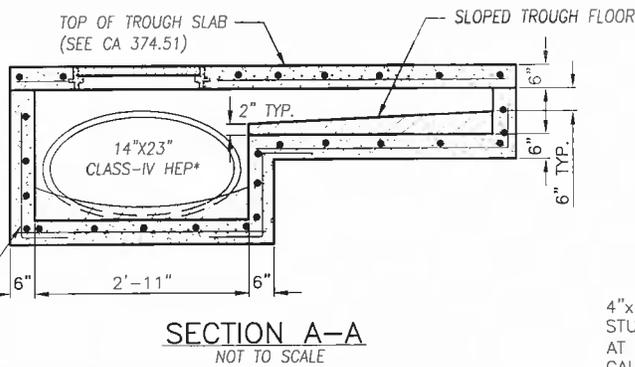
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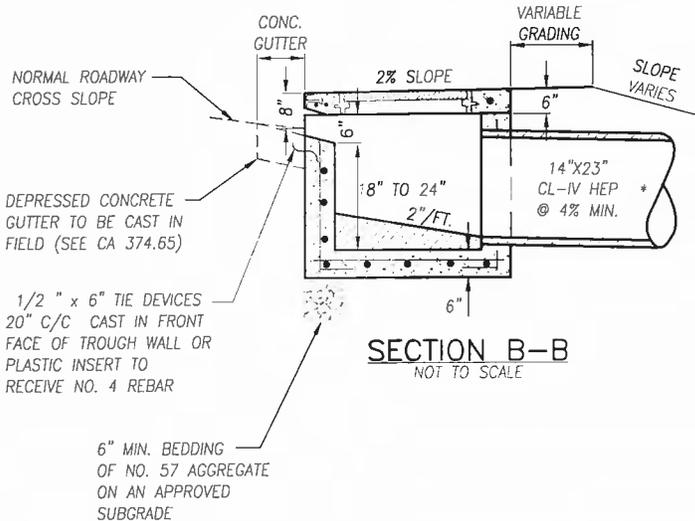


* EQUIVALENT PIPE(S) MAY BE SUBMITTED FOR APPROVAL. SUBMITTAL MUST INCLUDE HYDRAULIC COMPUTATIONS.



LAP SPLICE REINFORCEMENT
1'-0" (TYP) AROUND
CORNERS AS SHOWN

4" x 1/2" SHEAR
STUD CONNECTORS
AT 3'-6" C/C MAX
GALVANIZE AFTER
WELDING



NOTES

1. SLOPED TROUGH FLOOR TO BE CAST IN THE FIELD AND USED ONLY WHEN ROAD GRADE IS 1.5% OR LESS. WHEN SLOPED TROUGH FLOOR IS USED, ROUGHEN PRECAST TROUGH FLOOR.
2. CONCRETE SHALL BE MIX NO. 6.
3. REINFORCEMENT SHALL BE NO. 4 BARS PLACED IN THE CENTER OF INLET WALLS AT 6" C/C TWO WAYS OR TWO LAYERS OF 4x4-W4.0xW4.0 WELDED WIRE FABRIC WITH 1 1/2" COVER.
4. FOR MANHOLE FRAME AND COVER SEE CA 383.61.
5. MINIMUM DEPTH PAYMENT SHALL BE 3'-6" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE TROUGH SLAB. VERTICAL DEPTH PAYMENT IN EXCESS OF 3'-6" IS NOT PERMITTED, USE OTHER STANDARDS IF ADDITIONAL VERTICAL DEPTH IS REQUIRED.
6. PIPE TO BE PAID FOR SEPARATELY

APPROVAL

[Signature]
DIRECTOR DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

PRECAST OR CAST IN PLACE
SHALLOW COG INLET
5' OR 10' TROUGH OPENING

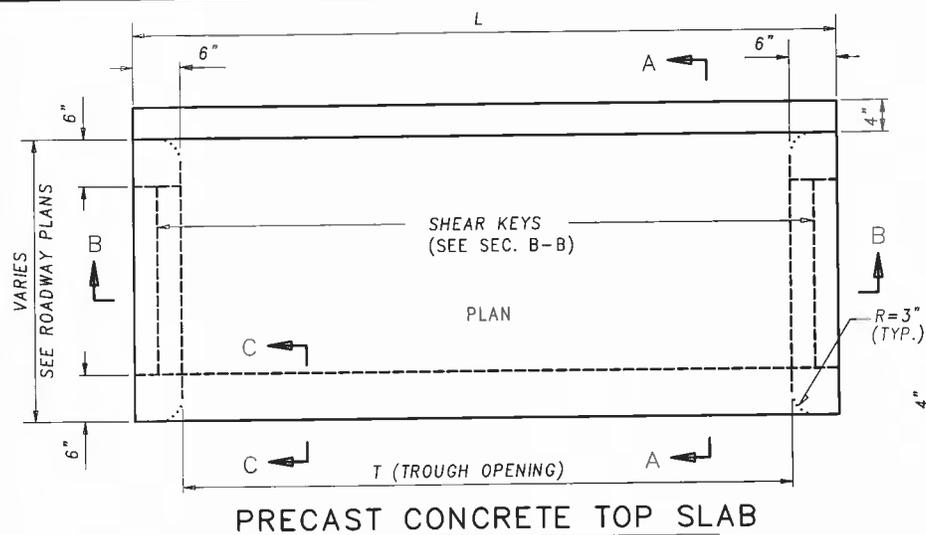
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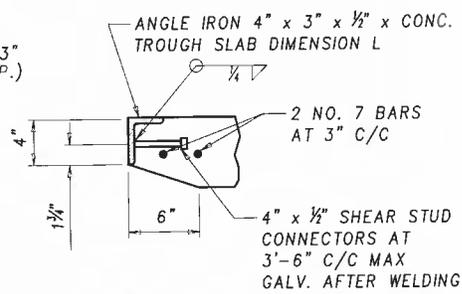
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DRAWN BY: JFK
2011_0209

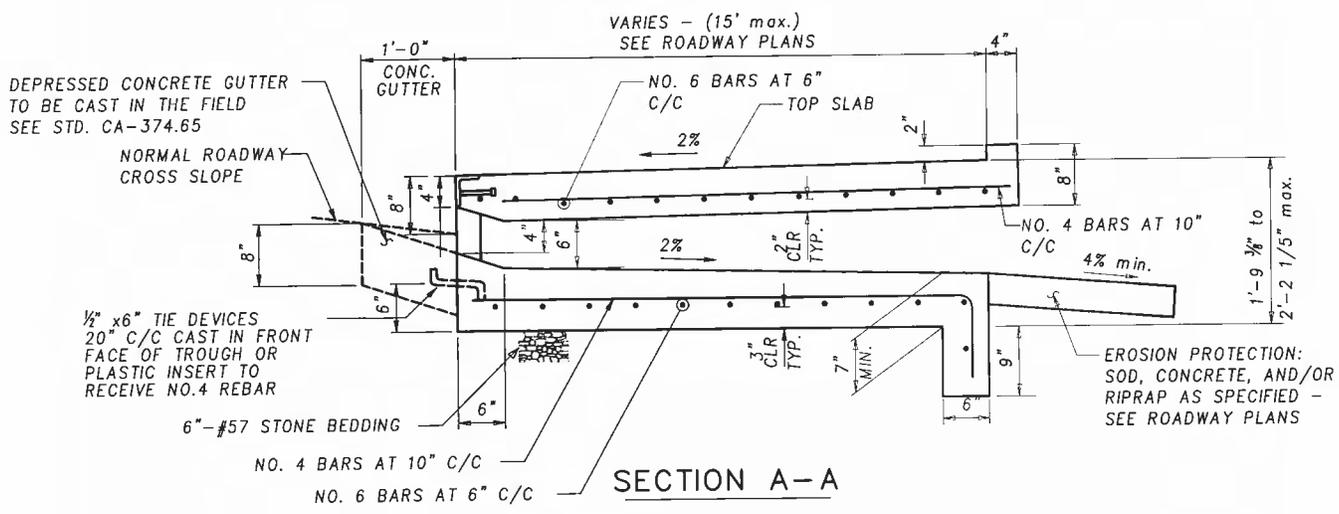
| SLAB TYPE | L | T |
|-----------|--------|--------|
| I | 6'-0" | 5'-0" |
| II | 11'-0" | 10'-0" |



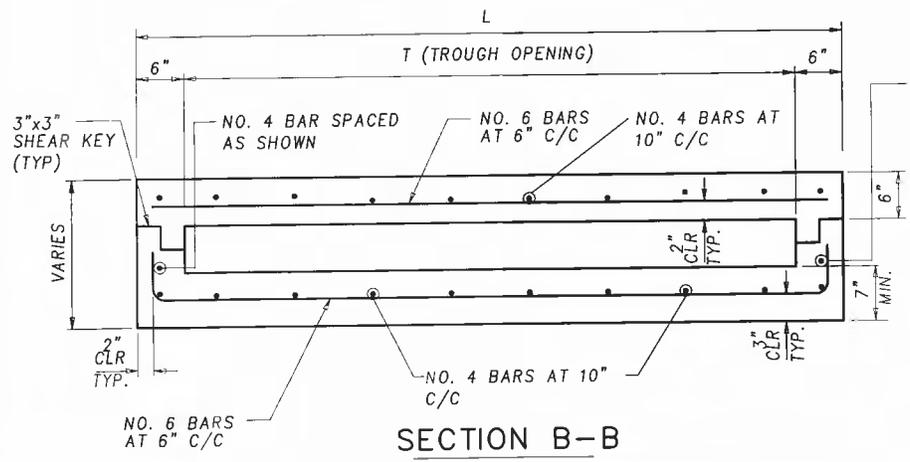
PRECAST CONCRETE TOP SLAB



NOTE: FOR 6" CURB, SEE NOTE 4 BELOW.
SECTION C-C



SECTION A-A



SECTION B-B

- NOTES:**
1. CONCRETE SHALL BE MIX # 6 (4500 PSI).
 2. REINFORCEMENT STEEL SHALL MEET THE REQUIREMENTS OF ASTM A615, GRADE 60.
 3. ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123.
 4. FOR 6" CURB, REFER TO CA 374.55-01, SECTIONS C-C AND D-D.
 5. EROSION PROTECTION TO BE PAID FOR SEPARATELY.

APPROVAL

Rory A. Carlson
DIRECTOR DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

REVISED

SCALE: NTS

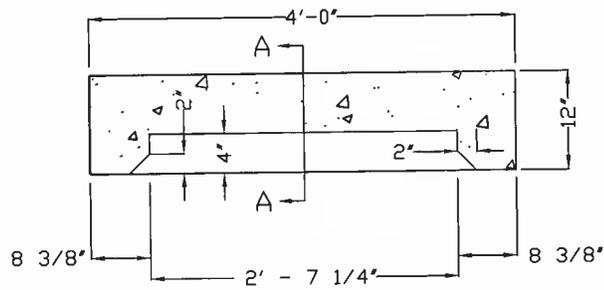
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2011_0209

CALVERT COUNTY, MD
ESTABLISHED 1654

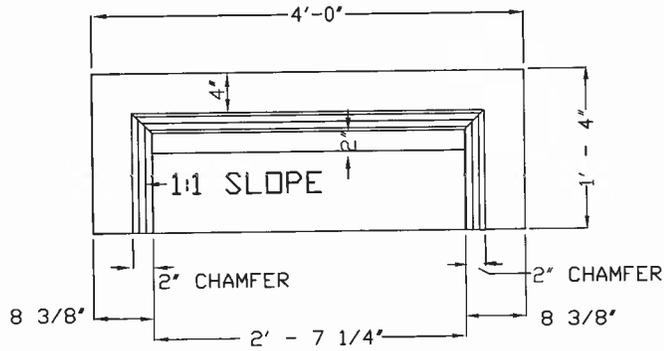
CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

PRECAST OR CAST IN PLACE
COG OPENING FOR 8" CURB
5' OR 10' ONLY

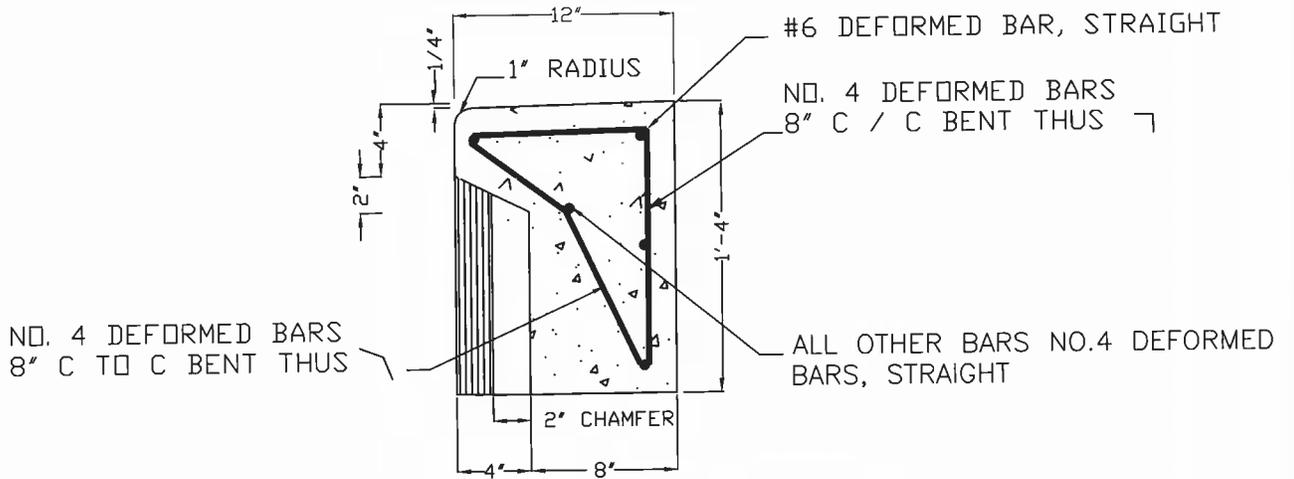
STANDARD NO. CA-374.68



PLAN



FRONT ELEVATION



DETAIL 'A' - 'A'

NOTE:
CONCRETE = MD. S.H.A. MIX NO. 2
FINISH = GRANOLITHIC

APPROVAL

Levy M. Carter

JULY 1, 2012

DIRECTOR - DEPARTMENT OF PUBLIC WORKS

DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
SINGLE WR INLET
CURB HEAD

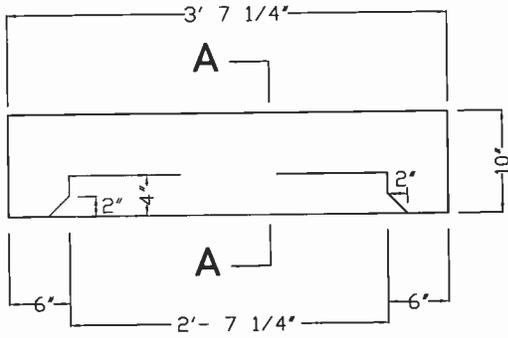
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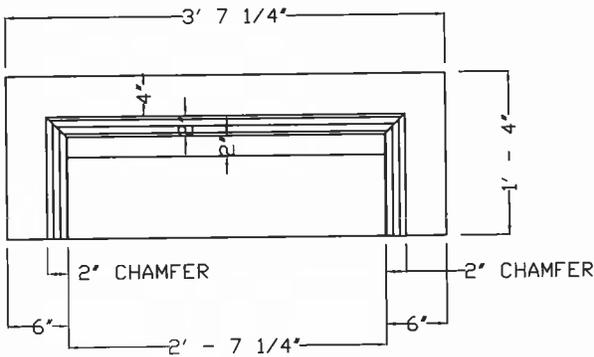
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SCALE: NTS

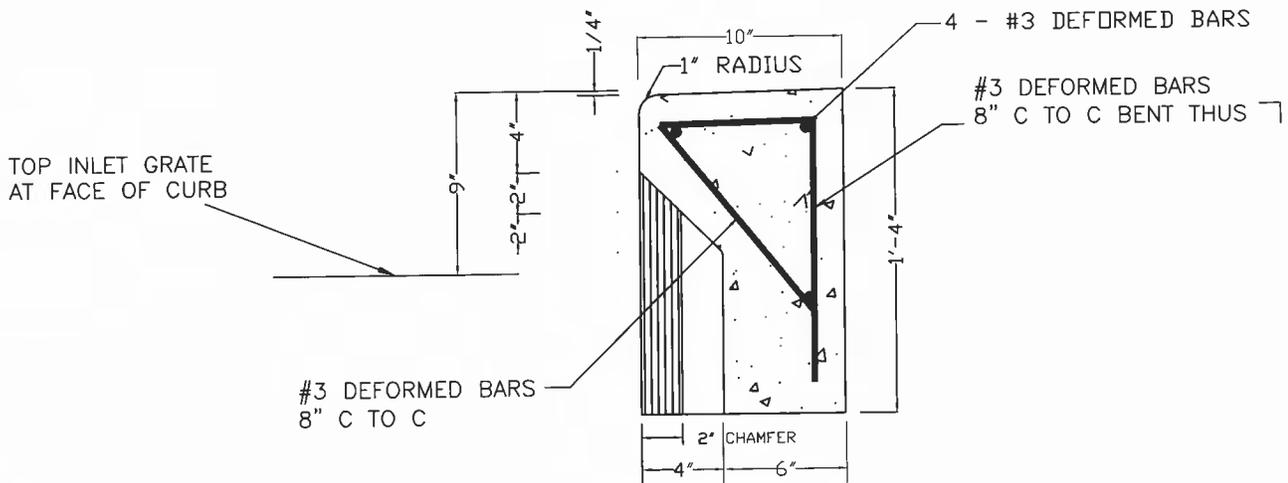
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PLAN



FRONT ELEVATION



DETAIL A - A

NOTE:
 CONCRETE = MD. S.H.A. MIX NO. 6 (4500 P.S.I.)
 FINISH = GRANDLITHIC

APPROVAL
Perry Markin
 DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
 DATE

CALVERT COUNTY, MD
 DEPARTMENT OF PUBLIC WORKS
 PRECAST SINGLE WR INLET
 CURB HEAD

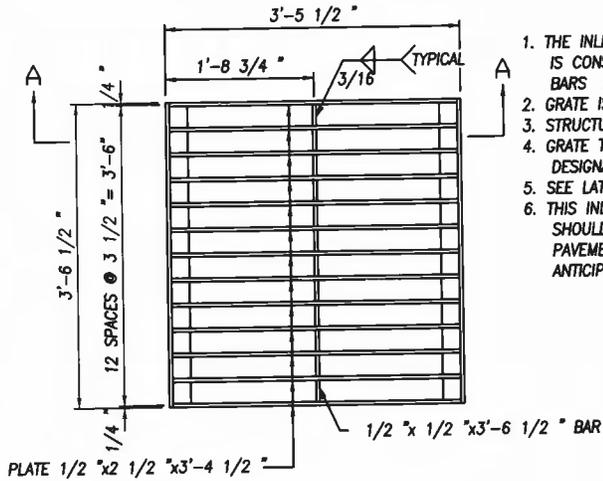


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| REVISED | SCALE: NTS |
| | DRAWN BY: JFK |
| | 2011_0209 |

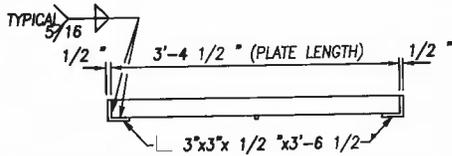
STANDARD NO. CA-374.235

GENERAL NOTES

1. THE INLET IS TO BE CONSTRUCTED OF CONCRETE MIX NO.2 OR BRICK. IF INLET IS CONSTRUCTED OF CONCRETE THE REINFORCEMENT IS TO BE NO.4 DEFORMED BARS AT 6" C/C, 2" COVER.
2. GRATE IS TO BE OF STEEL CONSTRUCTION & SHALL BE SQUARE, FLAT & TRUE.
3. STRUCTURAL STEEL SHALL BE A.S.T.M. DESIGNATION A-36.
4. GRATE TO BE GALV. AFTER FABRICATION IN ACCORDANCE WITH A.S.T.M. DESIGNATION A-123.
5. SEE LATEST S.H.A. SPECIFICATIONS.
6. THIS INLET IS TO BE USED IN MEDIAN DITCHES AND ANY DITCH BEYOND THE SHOULDER AREA. THIS INLET IS NOT TO BE USED IN ROADWAY OR SHOULDER PAVEMENT AREAS OR AREAS WHERE BICYCLE OR MOTORCYCLE TRAFFIC IS ANTICIPATED.

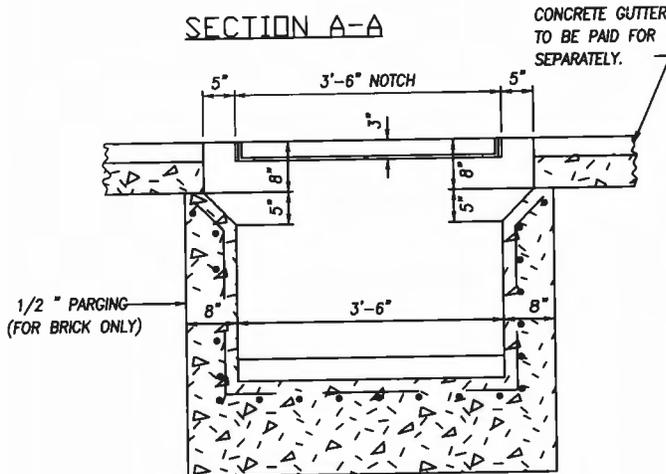


PLAN

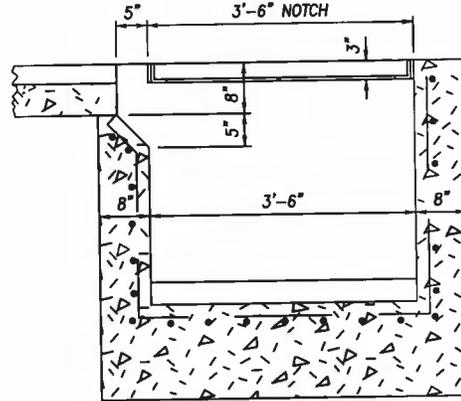


SECTION A-A

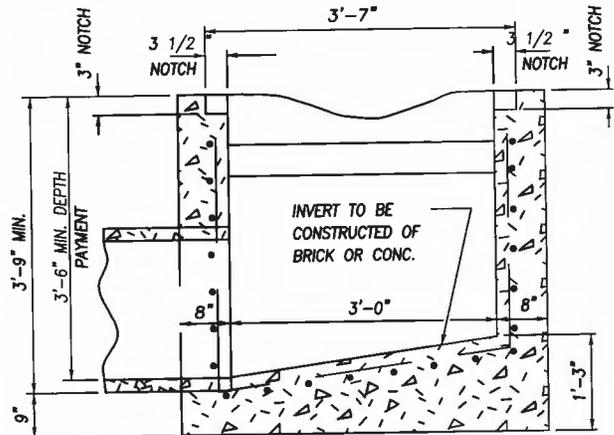
NOTE: GRATE TO BE AS SHOWN OR FURNISH APPROVED EQUIVALENT.



SECTION B-B DOUBLE OPENING

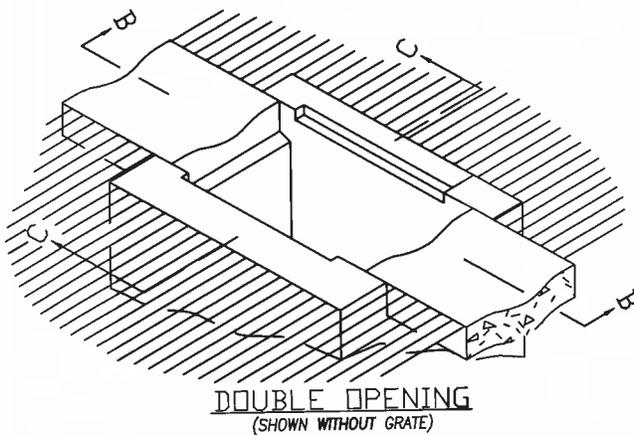


SECTION B-B SINGLE OPENING

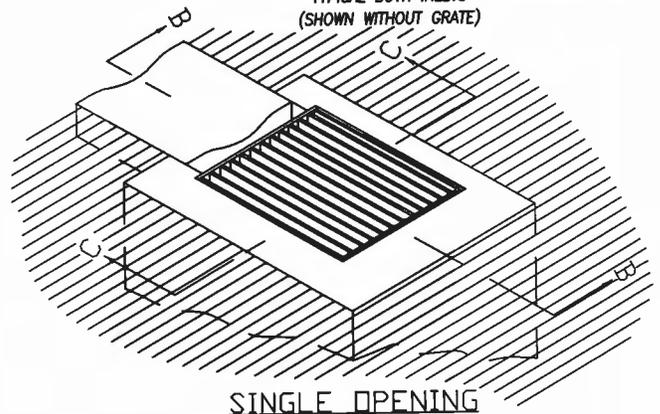


SECTION C-C

TYPICAL BOTH INLETS (SHOWN WITHOUT GRATE)



DOUBLE OPENING
(SHOWN WITHOUT GRATE)



SINGLE OPENING

APPROVAL
Rory M. Cohen
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE



| | |
|---------|---------------|
| REVISED | SCALE: NTS |
| | DRAWN BY: JFK |
| | 2011_0209 |

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
STANDARD SINGLE OR DOUBLE OPENING
TYPE K INLET OPEN - END GRATE

STANDARD NO. CA-378.05

CAST IRON FRAME & COVER
(SEE STANDARD CA-383.03)

2'-0"

3/4' PARGING

INLET CONNECTION

BRICK

MANHOLE WALL THICKNESS
8' TO DEPTH OF 12'-0"
12 1/2' BELOW DEPTH OF 12'-0"
(EXCLUSIVE OF PARGING)

LADDER RUNGS

FOR LADDER RUNG
DETAILS
SEE STANDARD NO.
CA-383.91

1'-3"

12"

4'-0" DIAMETER

2'-0"

12 1/2'

BRICK ON EDGE 1/4"
FALL PER FOOT

BRICK BENCH
& CHANNEL

MIN. 12 1/2'

7'-0" FOR MANHOLES MORE THAN 12' DEEP
5'-0" FOR MANHOLES LESS THAN 12' DEEP

FOUNDATION
(MD. S. H. A. MIX NO. 2)

APPROVAL

[Signature]

JULY 1, 2012
DATE

DIRECTOR - DEPARTMENT OF PUBLIC WORKS

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
STANDARD STORMWATER MANHOLE

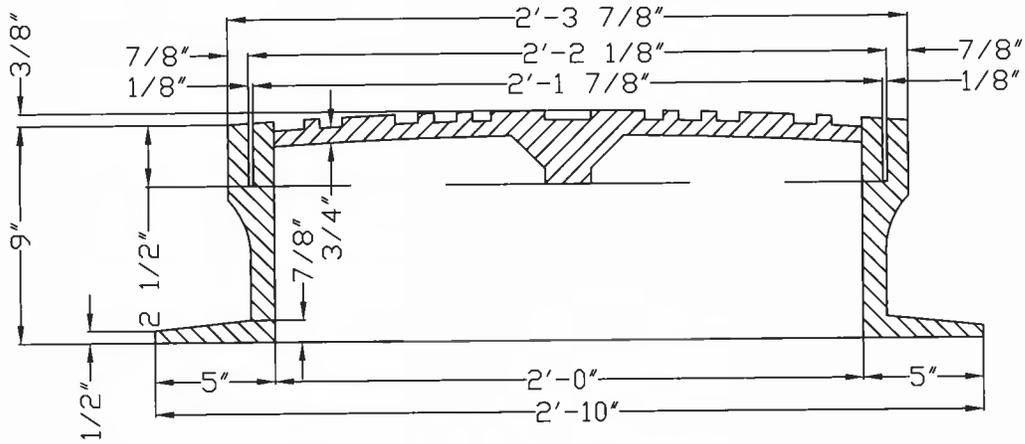


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SCALE: NTS
DRAWN BY: JFK
2011_0209

STANDARD NO. CA-383.02

NOTE: FRAME AND COVER TO BE OF CAST IRON AND TO WEIGH APPROXIMATELY 250 LBS. & 190 LBS. RESPECTIVELY.



SECTION A-A



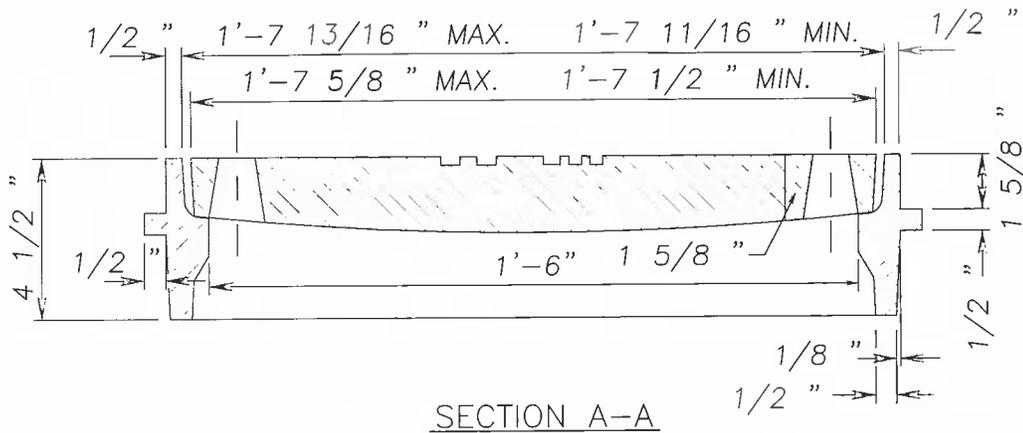
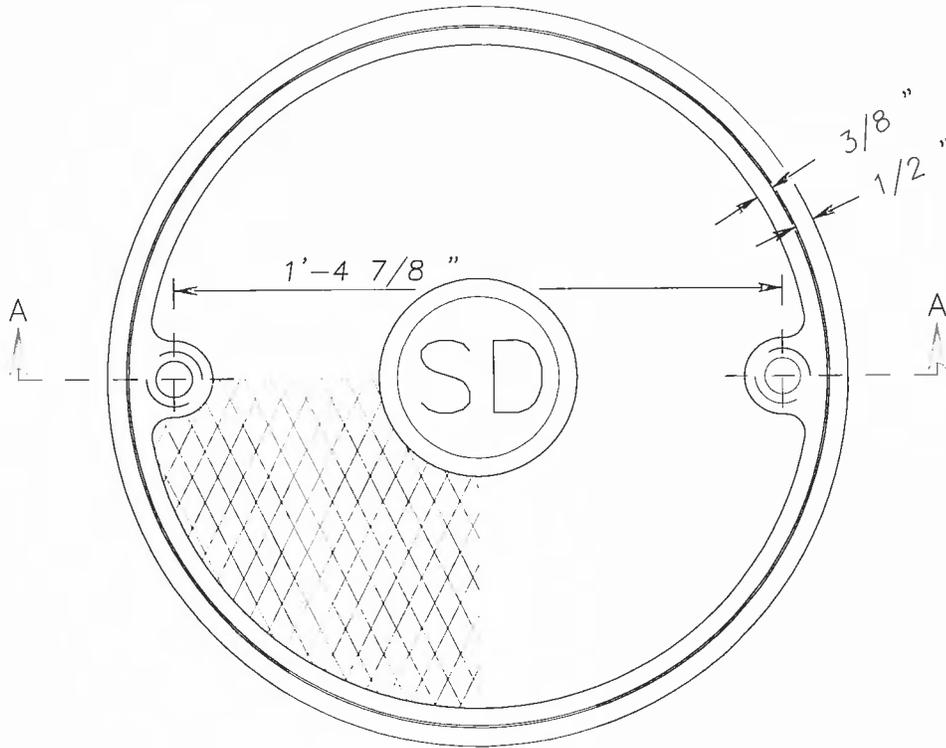
PLAN

MATERIAL - CAST IRON (A.S.T.M. A 48, CLASS 30 B)

| | | | |
|---------------------------------------|------------|---------------|--|
| APPROVAL | | JULY 1, 2012 | |
| <i>Cory A. Culson</i> | | DATE | |
| DIRECTOR - DEPARTMENT OF PUBLIC WORKS | | | |
| REVISED | SCALE: NTS | DRAWN BY: JFK | |
| | | 2011_0209 | |



CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
 STANDARD STORMWATER MANHOLE
 FRAME AND COVER
 STANDARD NO. CA-383.03



MATERIAL - CAST IRON
 APPROX. WEIGHT OF FRAME 66 LBS.
 APPROX. WEIGHT OF COVER 107 LBS.

APPROVAL

Perry P. Carlson

JULY 1, 2012

DIRECTOR - DEPARTMENT OF PUBLIC WORKS

DATE

CALVERT COUNTY, MD
 DEPARTMENT OF PUBLIC WORKS

STANDARD MANHOLE
 TYPE D FRAME AND COVER

STANDARD NO. CA-383.61

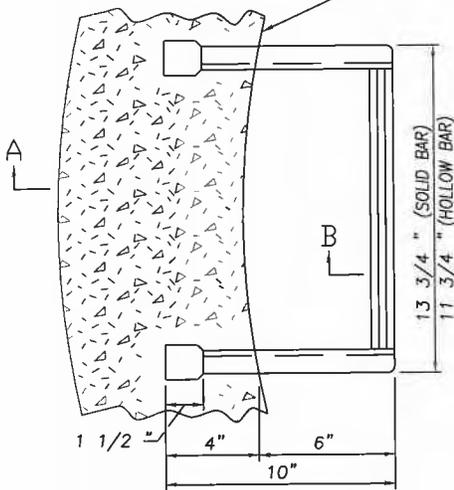


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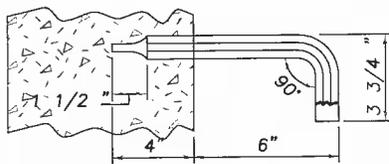
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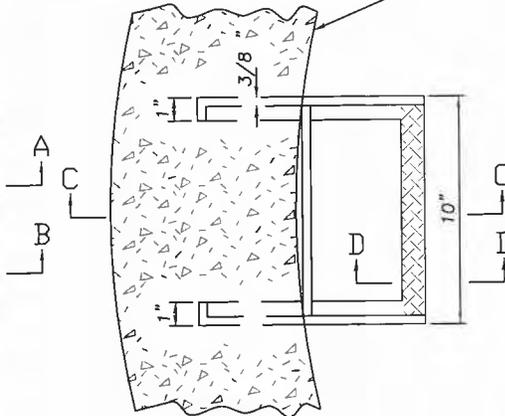
INSIDE FACE OF INLET,
MANHOLE OR JUNCTION BOX.



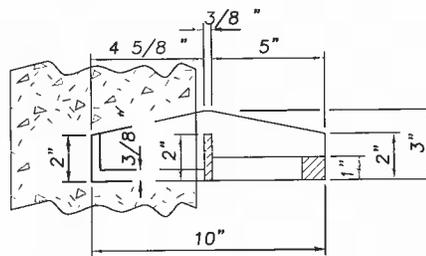
① PLAN



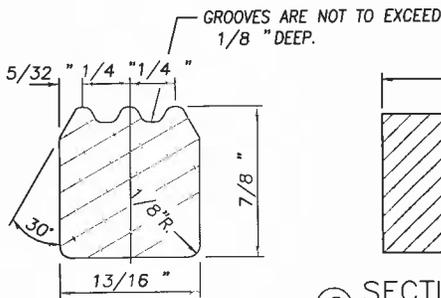
SECTION A-A



② PLAN

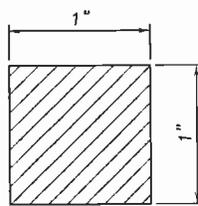


SECTION C-C

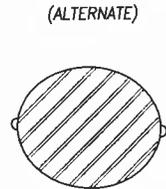


① SECTION B-B
ALUMINUM ALLOY
(SOLID BAR)

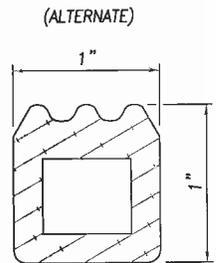
GROOVES ARE NOT TO EXCEED
1/8" DEEP.



② SECTION D-D
CAST IRON



③ SECTION B-B
EPOXY COATED STEEL

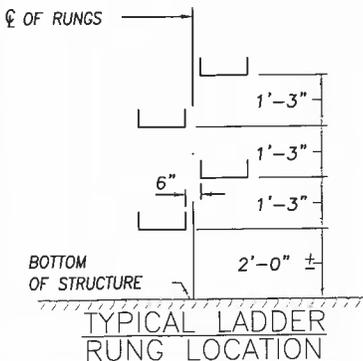


④ SECTION B-B
ALUMINUM ALLOY
(HOLLOW BAR)

NOTES

METAL LADDER RUNGS ARE TO BE USED IN INLETS, MANHOLES, AND JUNCTION BOXES OVER THREE FEET IN DEPTH OR AS DIRECTED BY THE ENGINEER, USED EITHER WITH BRICK OR CONCRETE CONSTRUCTION. (WHERE BRICK CONSTRUCTION IS EMPLOYED, THE MORTAR JOINTS SHALL BE ADJUSTED TO ACCOMMODATE LADDER RUNGS.) METAL LADDER RUNGS MAY BE COMPRISED OF ONE OF THE FOLLOWING.

- ① ALUMINUM ALLOY- SHALL CONFORM TO A.S.T.M. DESIGNATION B 221 ALLOY 6061-T6. THAT PORTION EMBEDDED IN THE STRUCTURE SHALL BE COATED WITH ZINC CHROMATE OR APPROVED EQUIVALENT COATING.
- ② CAST IRON- SHALL CONFORM TO A.S.T.M. A- 48 CLASS 30 B.
- ③ EPOXY COATED STEEL- SHALL CONFORM TO A.S.T.M. DESIGNATION A-615 GRADE 40.
- ④ ALUMINUM ALLOY- SHALL CONFORM TO A.S.T.M. DESIGNATION B 221 ALLOY 6061-T6. THAT PORTION EMBEDDED IN THE STRUCTURE SHALL BE COATED WITH ZINC CHROMATE OR APPROVED EQUIVALENT COATING.



TYPICAL LADDER
RUNG LOCATION

APPROVAL

Carmichael
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

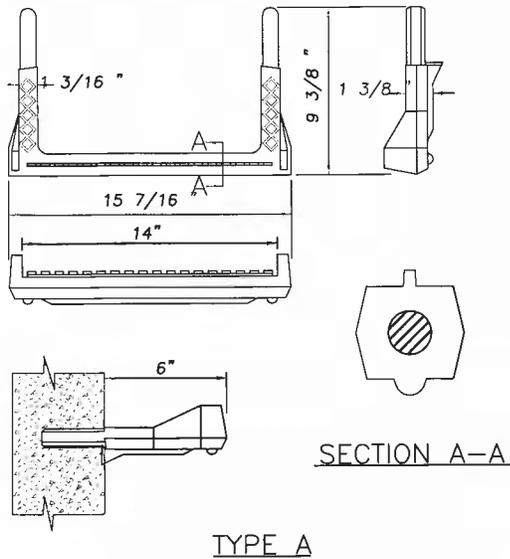
STANDARD METAL LADDER RUNGS

STANDARD NO. CA-383.91

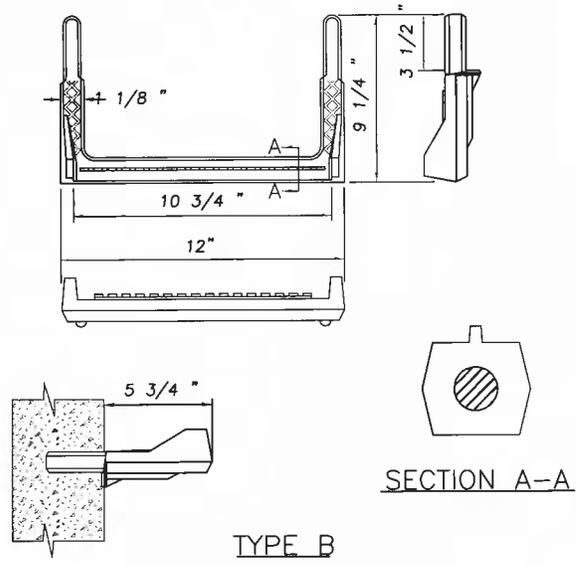


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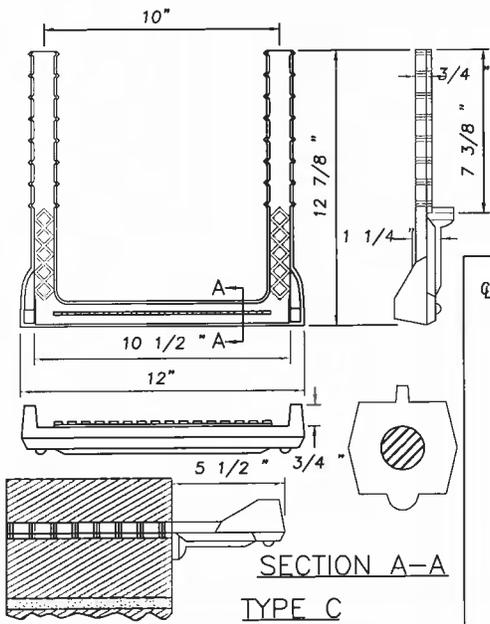
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DRAWN BY: JFK
2011_0209



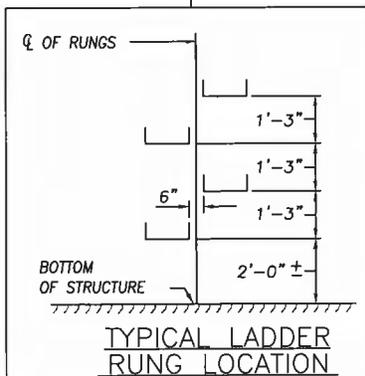
TYPE A



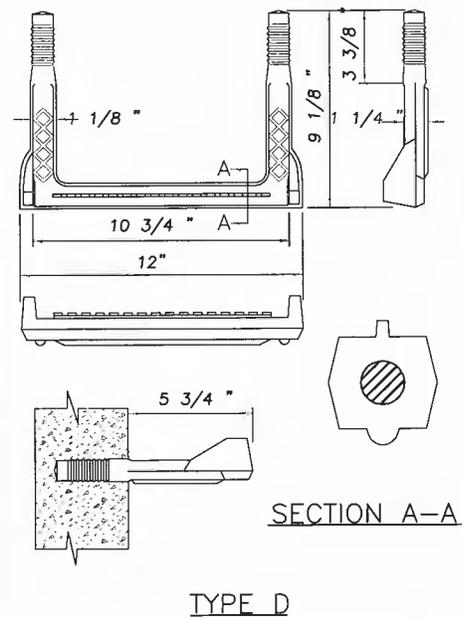
TYPE B



TYPE C



TYPICAL LADDER RUNG LOCATION



TYPE D

NOTES

1. TYPES A & B ARE TO BE DRIVEN INTO RECEPTACLES THAT ARE CAST INTO THE WALL.
2. TYPE C IS FOR BRICK AND BLOCK INSTALLATIONS.
3. TYPE D IS PRESS FITTED INTO PREFORMED CONCRETE HOLES.
4. LADDER RUNGS ARE TO BE USED IN INLETS, MANHOLES, AND JUNCTION BOXES OVER THREE FEET IN DEPTH OR AS DIRECTED BY THE ENGINEER, USED EITHER WITH BRICK OR CONCRETE CONSTRUCTION. (WHERE BRICK CONSTRUCTION IS EMPLOYED, THE MORTAR JOINTS SHALL BE ADJUSTED TO ACCOMMODATE LADDER RUNGS.)
5. COPOLYMER POLYPROPYLENE ENCAPSULATED 1/2 IN. DIA. STEEL REINFORCEMENT BAR. STEEL SHALL CONFORM TO ASTM 615 GRADE 60. COPOLYMER POLYPROPYLENE SHALL BE CERTIFIED BY THE MANUFACTURER TO CONFORM TO ASTM D 4101 AND HAVE A MINIMUM EXPOSED SECTION THICKNESS OF 1/8 IN.
6. SECTION A-A SHOWS 1/2" DIA. STEEL REINFORCEMENT BAR.
7. INSTALLATION SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS.

APPROVAL

[Signature]
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

COPOLYMER POLYPROPYLENE STEEL
ENCAPSULATED LADDER RUNGS
MISCELLANEOUS STRUCTURES

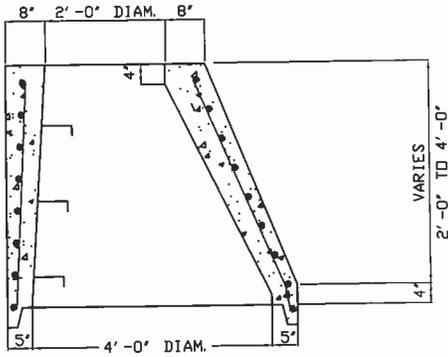
STANDARD NO. CA-383.92



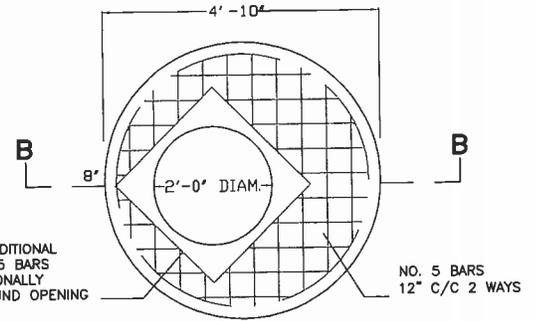
REVISED

SCALE: NTS

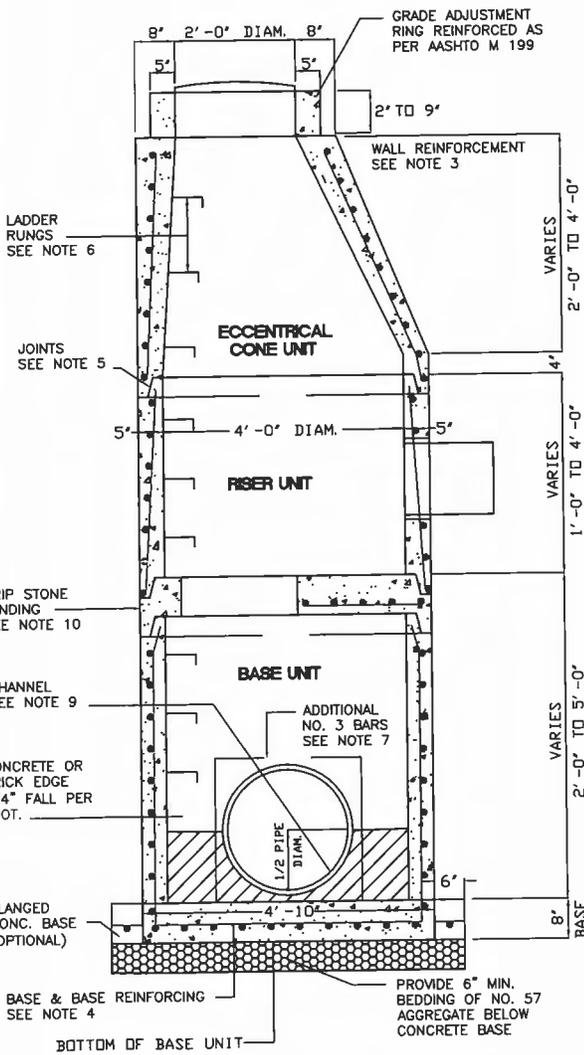
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2011_0209



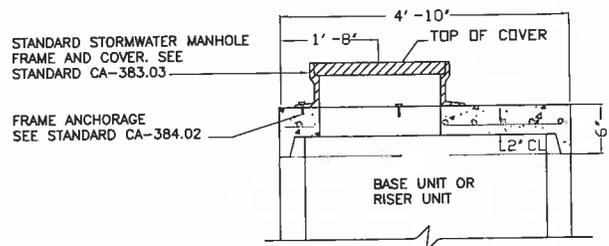
ALTERNATE ECCENTRIC CONE UNIT



FLAT SLAB TOP
(SHOWN WITHOUT FRAME AND COVER)



SECTION VIEW
(SHOWN WITHOUT FRAME AND COVER)



SECTION B-B

NOTES

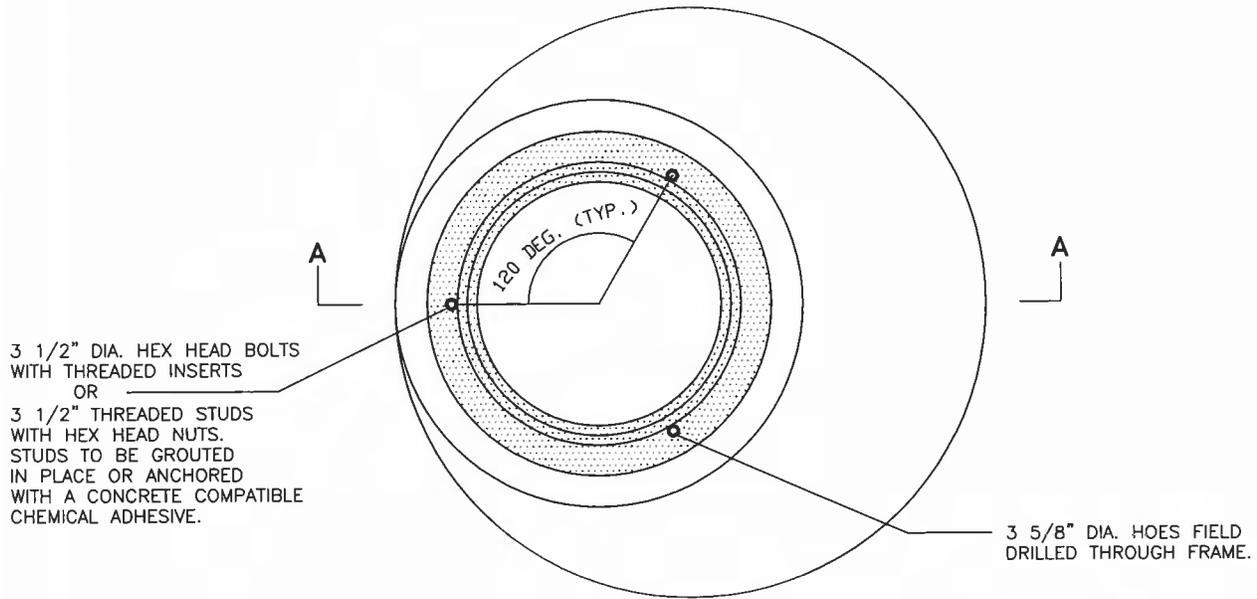
1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M1999.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE UNITS, RISER UNITS, AND ECCENTRIC CONE UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.12 SQ. IN./FT. FOR THE 48" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A82 REINFORCEMENT BARS SHALL MEET ASTM A 615, GRADE 60.
4. BASE REINFORCEMENT SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.14 SQ. IN./FT. THE BASE MAY BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT. MORTAR, RUBBER O-RING GASKETS MEETING ASTM C 361 & C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-3" C/C RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARD CA-383.91. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MULTIPLE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THAN 6", ADDITIONAL NO. 3 BARS ARE REQUIRED AROUND OPENINGS.
8. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
9. MIX NO. 2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STANDARD CA-384.13 FOR DETAILS.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 3'-11" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 3'-11". THE COST OF THE DRIP STONE LANDING, NO. 57 AGGREGATE, GROUT, SEALANT, AND ALL NECESSARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.

APPROVAL

 DIRECTOR - DEPARTMENT OF PUBLIC WORKS
 JULY 1, 2012
 DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
48 IN. DIAMETER PRECAST MANHOLE
FOR 12 IN. TO 24 IN. PIPES
STANDARD NO. CA-384.01

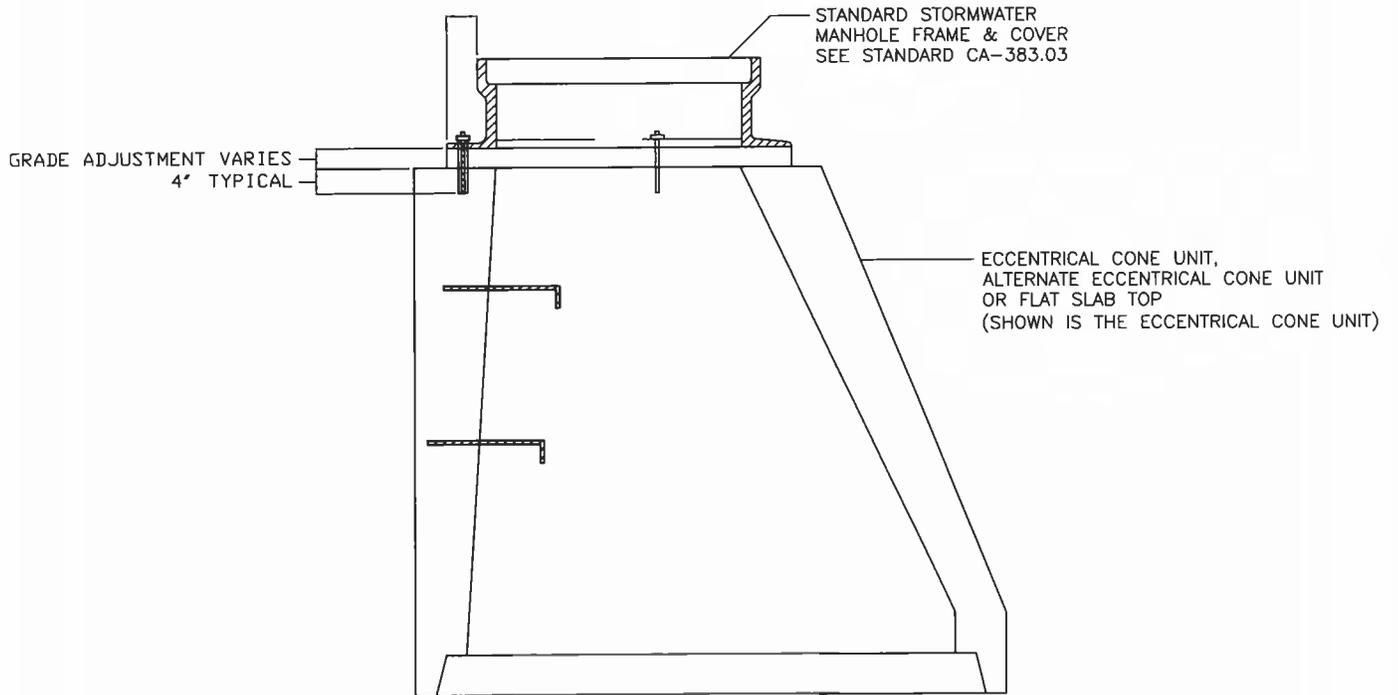
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|  | REVISED | SCALE: NTS |
| | | DRAWN BY: JFK 2011_0209 |



3 1/2" DIA. HEX HEAD BOLTS WITH THREADED INSERTS OR
3 1/2" THREADED STUDS WITH HEX HEAD NUTS. STUDS TO BE GROUDED IN PLACE OR ANCHORED WITH A CONCRETE COMPATIBLE CHEMICAL ADHESIVE.

3 5/8" DIA. HOES FIELD DRILLED THROUGH FRAME.

PLAN



STANDARD STORMWATER MANHOLE FRAME & COVER SEE STANDARD CA-383.03

GRADE ADJUSTMENT VARIES 4" TYPICAL

ECCENTRIC CONE UNIT, ALTERNATE ECCENTRIC CONE UNIT OR FLAT SLAB TOP (SHOWN IS THE ECCENTRIC CONE UNIT)

SECTION A-A

APPROVAL

Cory A. Carlson
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

FRAME ANCHORAGE FOR
PRECAST MANHOLES

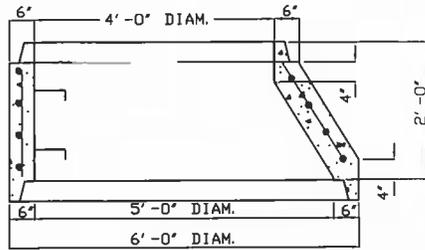
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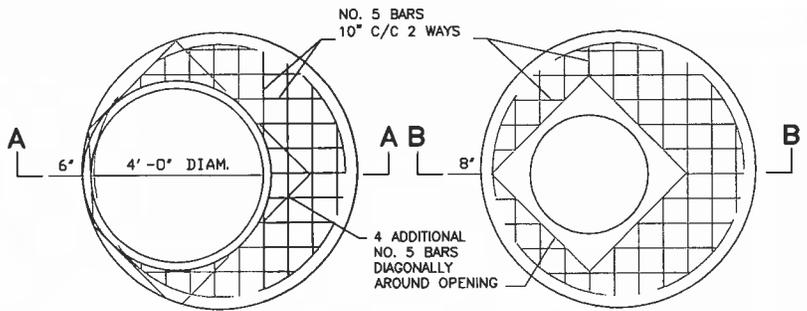
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SCALE: NTS

DRAWN BY: JFK
2011_0209

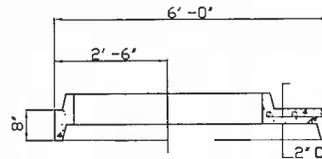


ECCENTRIC CONE REDUCER
(ALTERNATE FOR FLATTOP REDUCER)

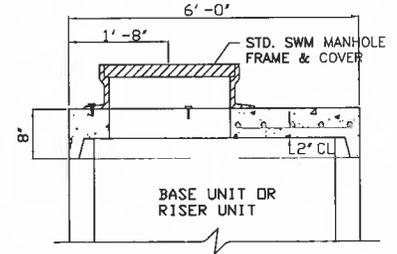


FLATTOP REDUCER

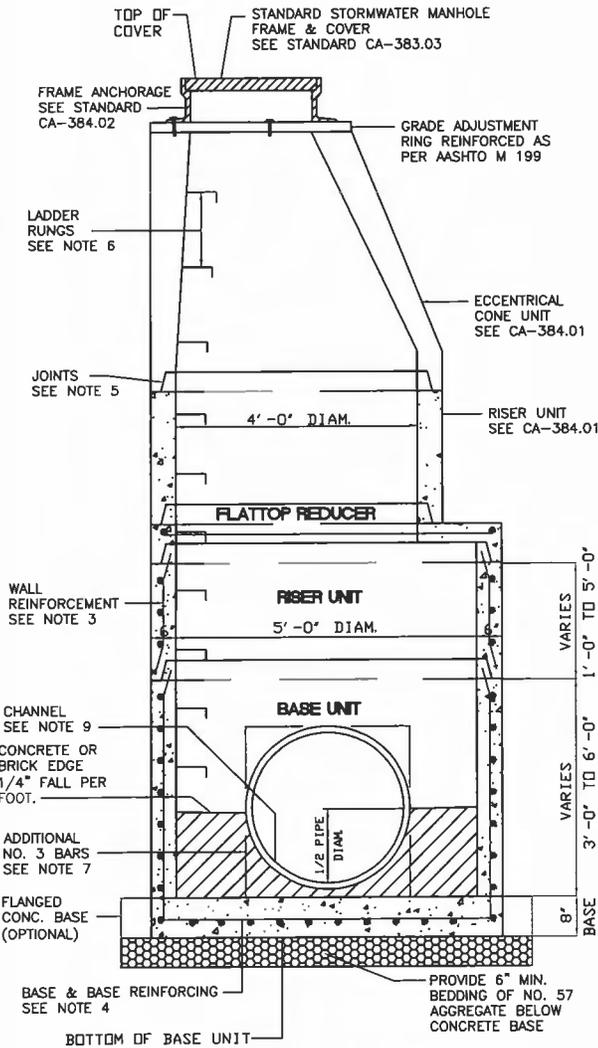
FLAT SLAB TOP
(SHOWN WITHOUT FRAME AND COVER)



SECTION A-A



SECTION B-B



SECTION VIEW
(SHOWN WITHOUT FRAME AND COVER)

NOTES

- MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M1999.
- CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
- WALL REINFORCEMENT FOR BASE UNITS, RISER UNITS, AND ECCENTRIC CONE UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.12 SQ. IN./FT. FOR THE 48" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A82 REINFORCEMENT BARS SHALL MEET ASTM A 615, GRADE 60.
- BASE REINFORCEMENT SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.14 SQ. IN./FT. THE BASE MAY BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
- THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT. MORTAR, RUBBER O-RING GASKETS MEETING ASTM C 361 & C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
- LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-3" C/C RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARD CA-383.91. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
- WHEN THE DISTANCE BETWEEN MULTIPLE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THAN 6", ADDITIONAL NO. 3 BARS ARE REQUIRED AROUND OPENINGS.
- LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
- MIX NO. 2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
- THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STANDARD CA-384.13 FOR DETAILS.
- MINIMUM DEPTH PAYMENT PER EACH SHALL BE 5'-1" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 5'-1". THE COST OF THE DRIP STONE LANDING, NO. 57 AGGREGATE, GROUT, SEALANT, AND ALL NECESSARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.

APPROVAL

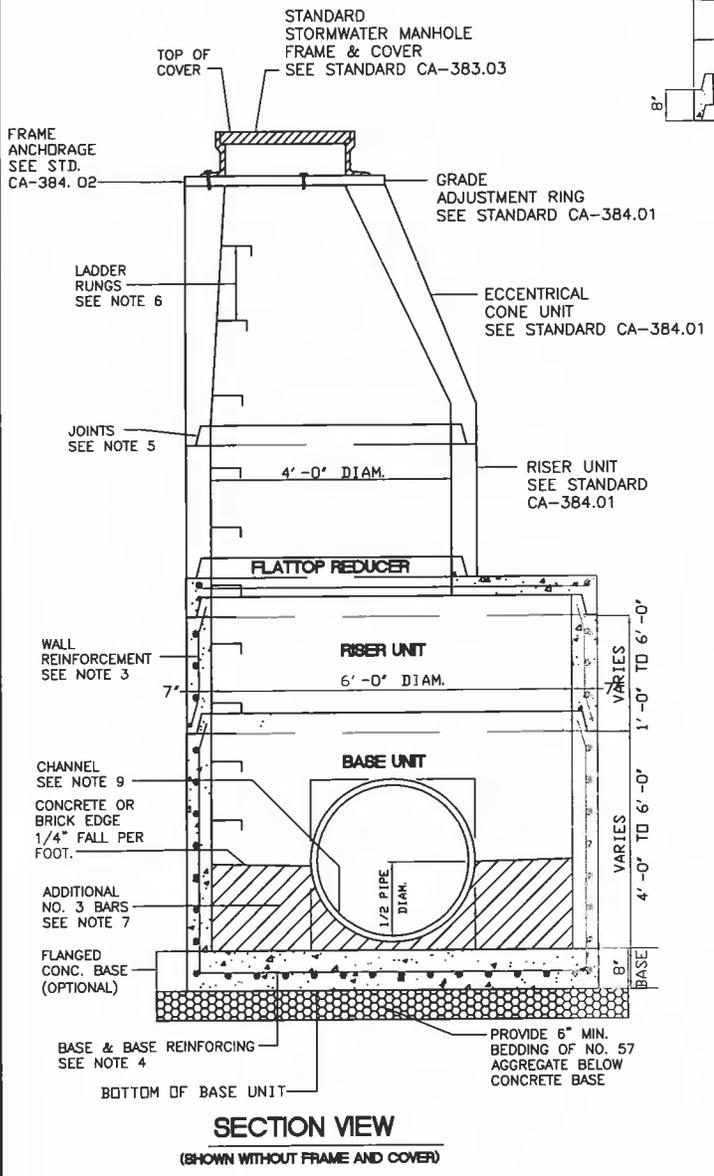
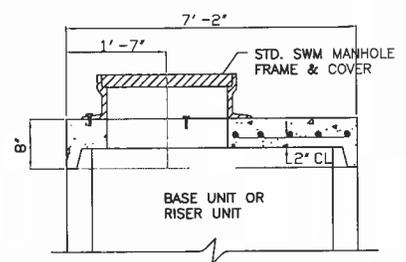
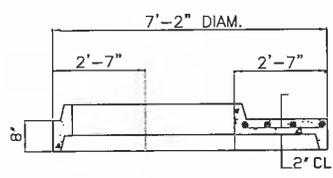
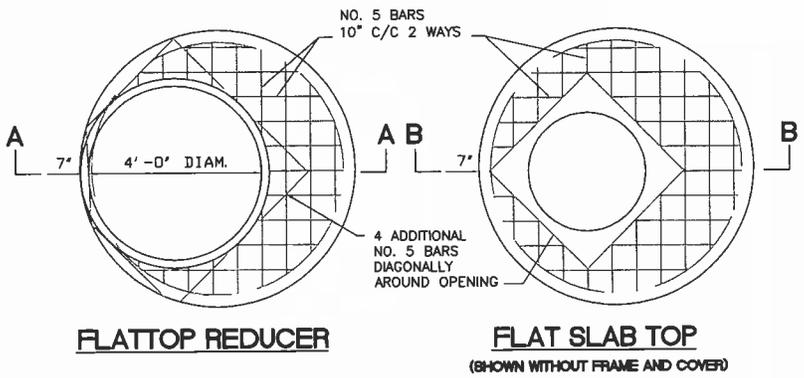
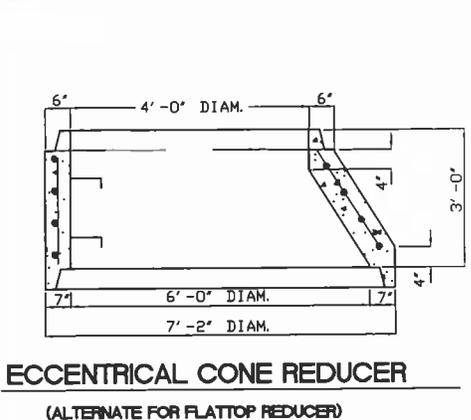
[Signature]
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
60 IN. DIAMETER PRECAST MANHOLE
FOR 27 IN. TO 36 IN. PIPES
STANDARD NO. CA-384.03



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| REVISED | SCALE: NTS |
| | DRAWN BY: JFK |
| | 2011_0209 |



NOTES

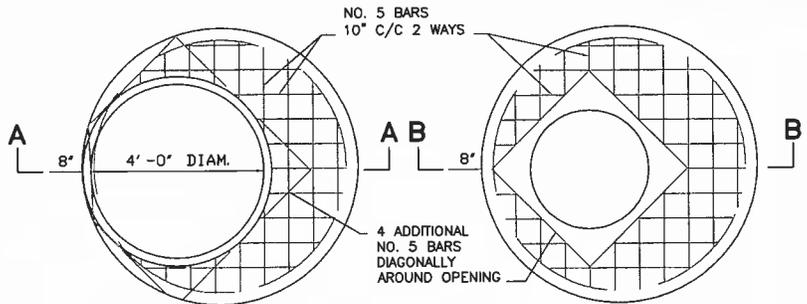
1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M1999.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE UNITS, RISER UNITS, AND ECCENTRIC CONE UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.18 SQ. IN./FT. FOR THE 72" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A82 REINFORCEMENT BARS SHALL MEET ASTM A 615, GRADE 60.
4. BASE REINFORCEMENT SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.27 SQ. IN./FT. THE BASE MAY BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT. MORTAR, RUBBER O-RING GASKETS MEETING ASTM C 361 & C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-3" C/C RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARD CA-383.91. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MULTIPLE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THAN 6", ADDITIONAL NO. 3 BARS ARE REQUIRED AROUND OPENINGS.
8. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
9. MIX NO. 2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STANDARD CA-384.13 FOR DETAILS.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 6'-1" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 6'-1". THE COST OF THE DRIP STONE LANDING, NO. 57 AGGREGATE, GROUT, SEALANT, AND ALL NECESSARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.

APPROVAL

 DIRECTOR - DEPARTMENT OF PUBLIC WORKS
 JULY 1, 2012
 DATE

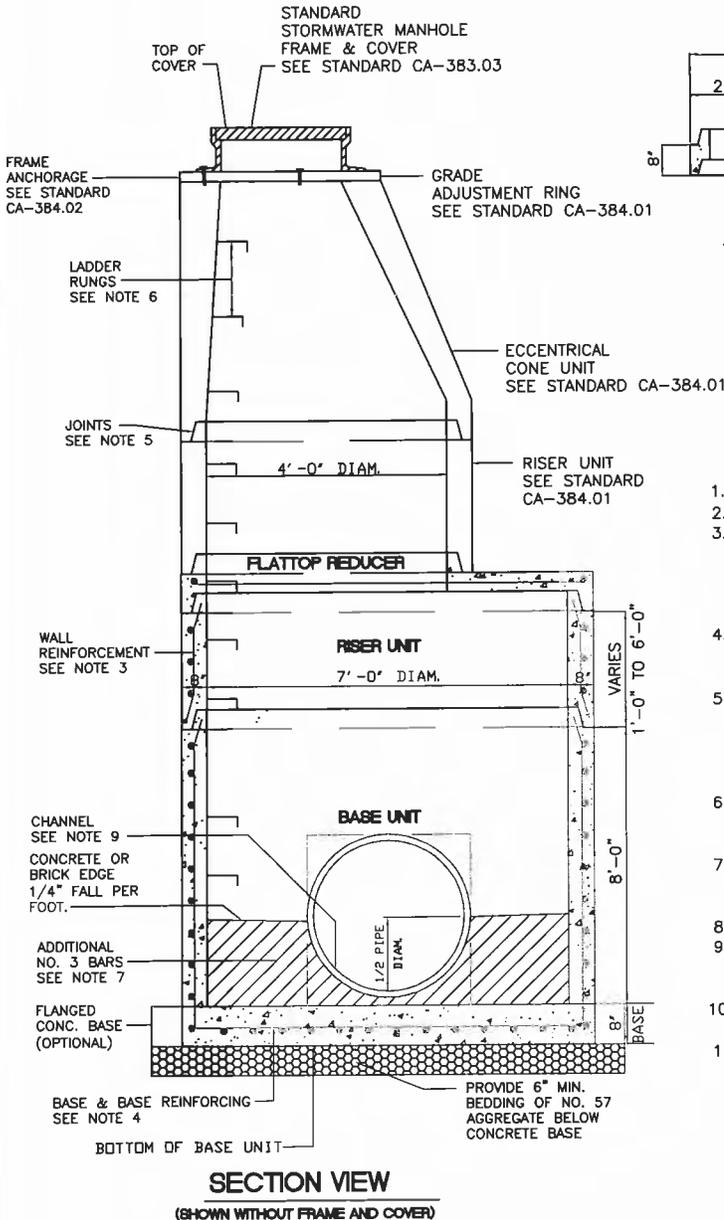
CALVERT COUNTY, MD
 DEPARTMENT OF PUBLIC WORKS
 72 IN. DIAMETER PRECAST MANHOLE
 FOR 42 IN. TO 48 IN. PIPES
 STANDARD NO. CA-384.05

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| | | DRAWN BY: JFK |
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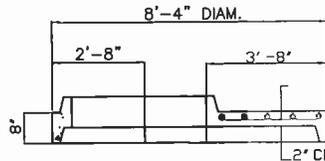


FLATTOP REDUCER

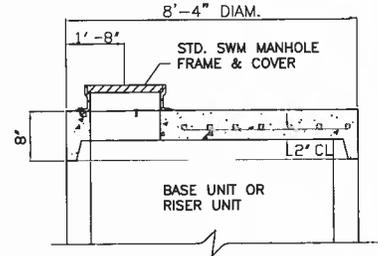
FLAT SLAB TOP
(SHOWN WITHOUT FRAME AND COVER)



SECTION VIEW
(SHOWN WITHOUT FRAME AND COVER)



SECTION A-A



SECTION B-B

NOTES

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M1999.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE UNITS, RISER UNITS, AND ECCENTRICAL CONE UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.21 SQ. IN./FT. FOR THE 84" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A82 REINFORCEMENT BARS SHALL MEET ASTM A 615, GRADE 60.
4. BASE REINFORCEMENT SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.27 SQ. IN./FT. THE BASE MAY BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT. MORTAR, RUBBER O-RING GASKETS MEETING ASTM C 361 & C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-3" C/C RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARD CA-383.91. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MULTIPLE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THAN 6", ADDITIONAL NO. 3 BARS ARE REQUIRED AROUND OPENINGS.
8. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
9. MIX NO. 2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STANDARD CA-384.13 FOR DETAILS.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 10'-1" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 10'-1". THE COST OF THE DRIP STONE LANDING, NO. 57 AGGREGATE, GROUT, SEALANT, AND ALL NECESSARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.

APPROVAL

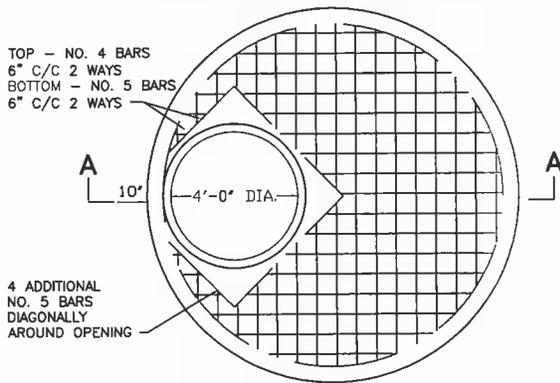
Carly Carlson
DIRECTOR — DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

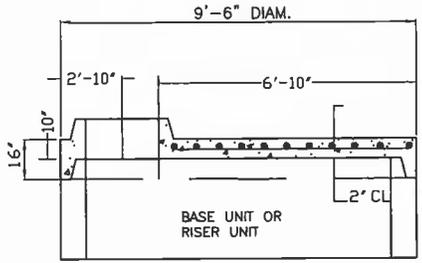
CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
84 IN. DIAMETER PRECAST MANHOLE
FOR 54 IN. TO 60 IN. PIPES
STANDARD NO. CA-384.07



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| REVISED | SCALE: NTS |
| | DRAWN BY: JFK |
| | 2011_0209 |



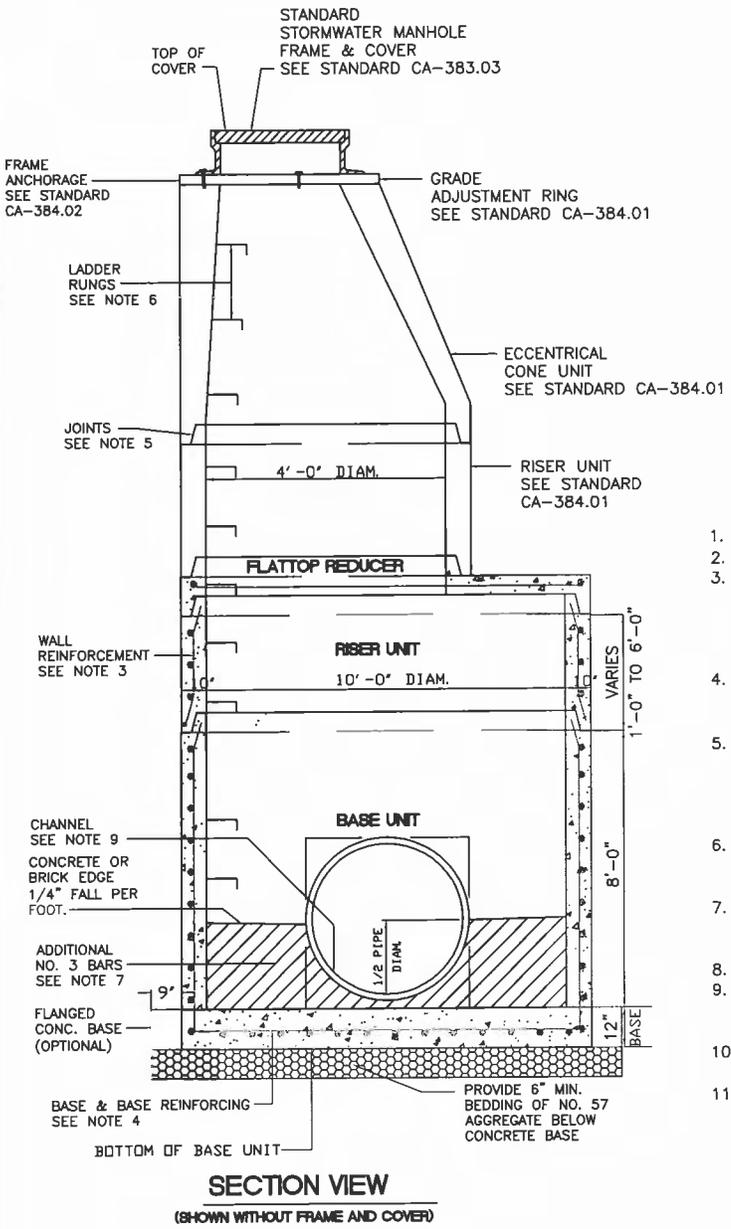
FLATTOP REDUCER



SECTION A-A

NOTES

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M1999.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE UNITS, RISER UNITS, AND ECCENTRICAL CONE UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.30 SQ. IN./FT. FOR THE 120" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A82 REINFORCEMENT BARS SHALL MEET ASTM A 615, GRADE 60.
4. BASE REINFORCEMENT SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.39 SQ. IN./FT. THE BASE MAY BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURER'S DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT. MORTAR, RUBBER O-RING GASKETS MEETING ASTM C 361 & C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-3" C/C RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARD CA-383.91. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MULTIPLE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THAN 6", ADDITIONAL NO. 3 BARS ARE REQUIRED AROUND OPENINGS.
8. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
9. MIX NO. 2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STANDARD CA-384.13 FOR DETAILS.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 10'-7" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 10'-7". THE COST OF THE DRIP STONE LANDING, NO. 57 AGGREGATE, GROUT, SEALANT, AND ALL NECESSARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.



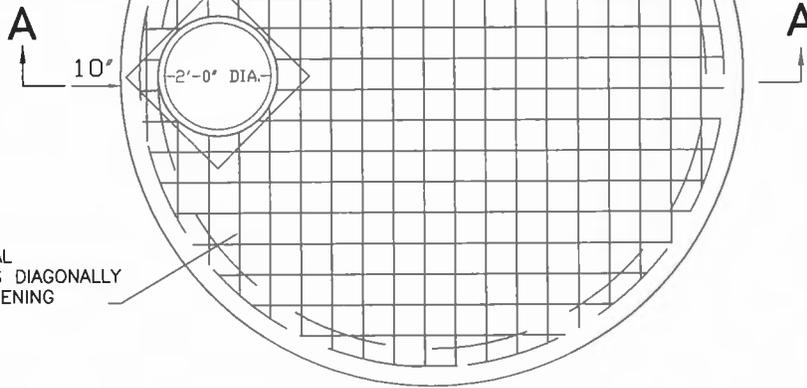
SECTION VIEW
(SHOWN WITHOUT FRAME AND COVER)

APPROVAL *[Signature]* JULY 1, 2012
 DIRECTOR - DEPARTMENT OF PUBLIC WORKS DATE

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|  | REVISED | SCALE: NTS |
| | | DRAWN BY: JFK 2011_0209 |

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
120 IN. DIAMETER PRECAST MANHOLE
FOR 78 IN. TO 84 IN. PIPES
STANDARD NO. CA-384.11

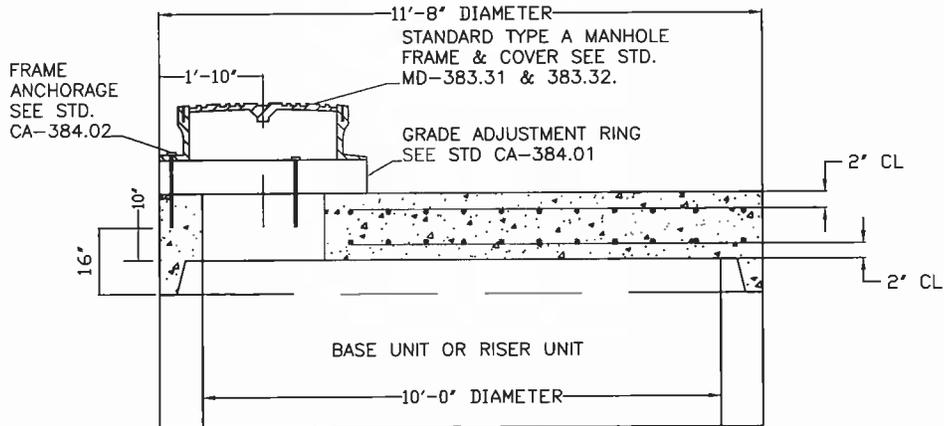
TOP - NO. 4 BARS
 6" C/C 2 WAYS
 BOTTOM - NO. 5 BARS
 6" C/C 2 WAYS



4 ADDITIONAL
 NO. 5 BARS DIAGONALLY
 AROUND OPENING

PLAN

(FRAME AND COVER NOT SHOWN)



SECTION A-A

NOTES

1. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
2. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN.
3. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
4. THE COST OF THE PRECAST FLAT SLAB TOP IS INCIDENTAL TO THE COST OF THE 120" PRECAST MANHOLE.
5. FOR USE WITH THE 120" DIAMETER PRECAST MANHOLE. SEE STD. CA-384.11.

APPROVAL

[Signature]
 DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
 DATE

**CALVERT COUNTY, MD
 DEPARTMENT OF PUBLIC WORKS**

**PRECAST FLAT SLAB TOP FOR
 120" DIAMETER PRECAST MANHOLE
 STANDARD NO. CA-384.12**

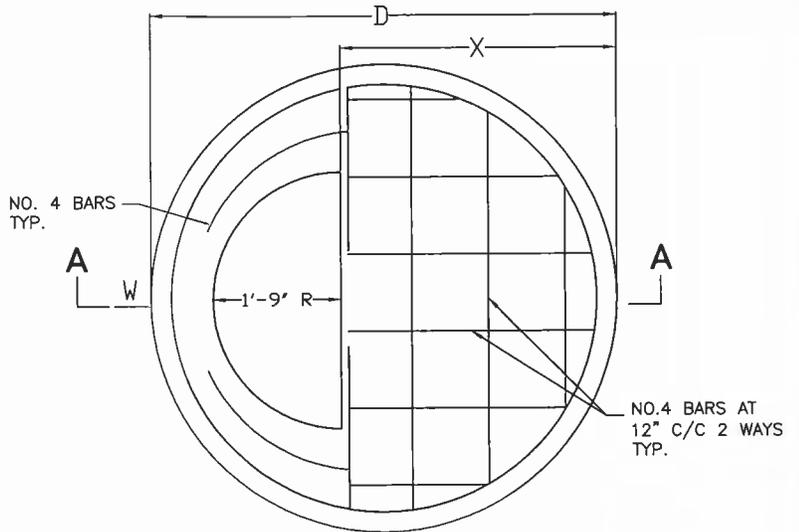
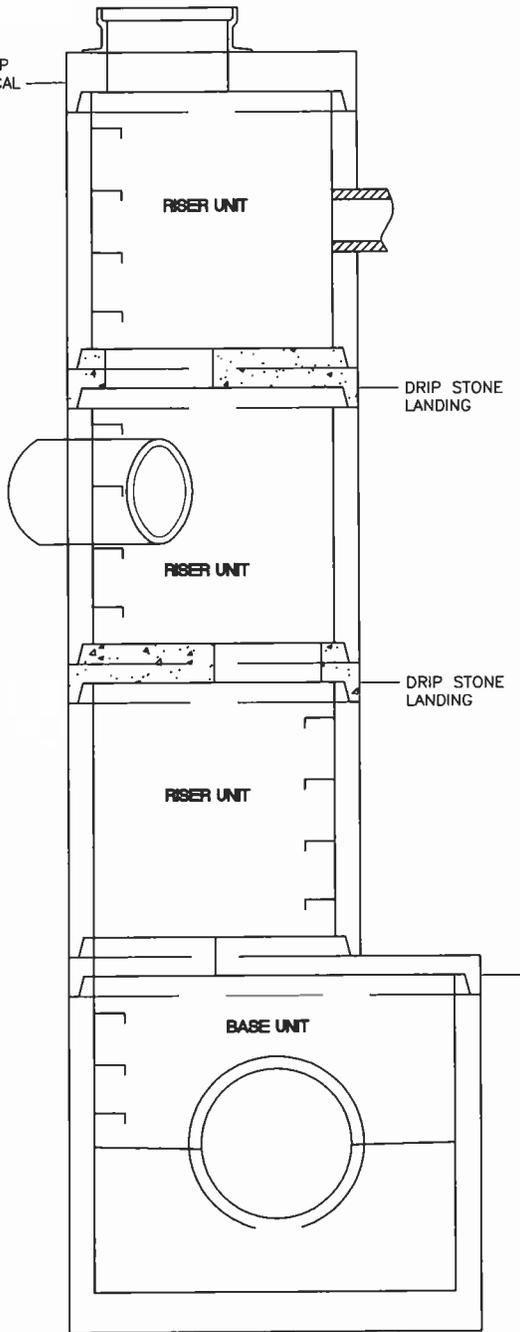


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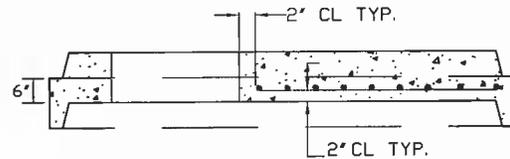
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DRAWN BY: JFK
 2011_0209

FLAT SLAB TOP
OR ECCENTRIC
CONE UNIT



PLAN



**SECTION A-A
DRIP STONE LANDING**

SEE STD. MD-384.15 FOR PRECAST COMBINATION FLATTOP REDUCER AND DRIP STONE LANDING FOR 60" TO 120" DIAMETER MANHOLES AND STD. MD-384.17 FOR PRECAST COMBINATION ECCENTRIC CONE REDUCER AND DRIP STONE LANDING FOR 60" AND 72" DIAMETER MANHOLES. OTHERWISE USE 48" DIAMETER DRIP STONE LANDING ON THIS SHEET.

| PRECAST MANHOLE DIAMETER | DRIP STONE DIMENSIONS | | |
|--------------------------------|-----------------------|-----|--------|
| | D | W | X |
| 48" | 4'-10" | 8" | 2'-5" |
| 60" | 6-0" | 8" | 3'-7" |
| 72" | 7'-2" | 8" | 4'-9" |
| 84" | 8'-4" | 8" | 5'-11" |
| 96" | 9'-6" | 9" | 7'-0" |
| 120" | 11'-8" | 10" | 9'-1" |

METHOD OF PLACING DRIP STONE LANDINGS

NOTES

1. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. REINFORCEMENT SHALL MEET ASTM A 615 GRADE 60.
4. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN.
5. LIFT EYES SHALL BE PROVIDED FOR HANDLING.
6. COST FOR THE DRIP STONE LANDING IS INCIDENTAL TO THE COST FOR THE MANHOLE.

APPROVAL

Perry Carlson
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE



REVISED

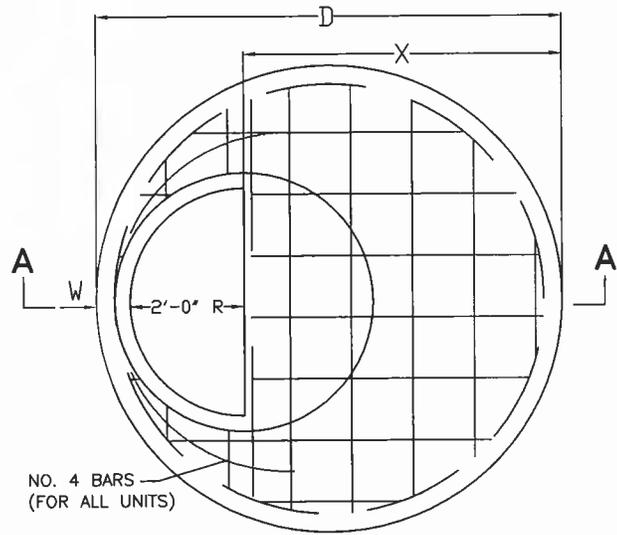
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**CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS**

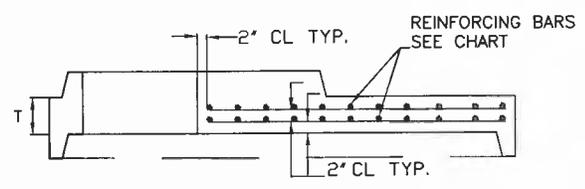
**PRECAST DRIP STONE LANDING DETAILS
FOR 48 IN. TO 120 IN. DIAMETER MANHOLES**

STANDARD NO. CA-384.13



NO. 4 BARS
(FOR ALL UNITS)

PLAN

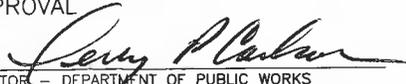


SECTION A-A

| PRECAST MANHOLE DIAMETER | DIMENSIONS | | | | REINFORCING BARS PLACED 2 WAYS | |
|--------------------------|------------|----|-----|--------|--------------------------------|--------------|
| | D | T | W | X | TOP LAYER | BOTTOM LAYER |
| 60" | 6'-0" | 5" | 6" | 3'-6" | N/A | N/A |
| 72" | 7'-2" | 6" | 7" | 7'-2" | N/A | N/A |
| 84" | 8'-4" | 7" | 8" | 8'-4" | N/A | N/A |
| 96" | 9'-6" | 8" | 9" | 9'-6" | N/A | N/A |
| 120" | 11'-8" | 9" | 10" | 11'-8" | N/A | N/A |

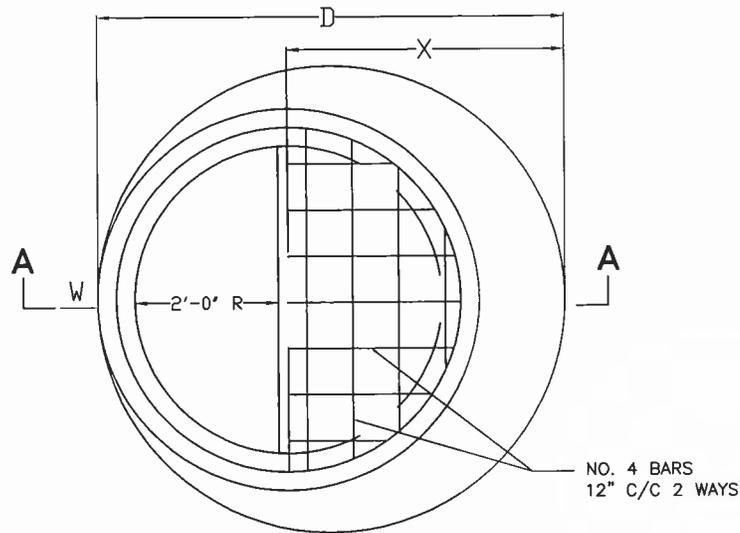
NOTES

1. THE COMBINATION FLATTOP REDUCER DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STANDARD CA-384.13 FOR PLACEMENT.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. REINFORCEMENT SHALL MEET ASTM A 615 GRADE 60.
4. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN.
5. LIFT EYES SHALL BE PROVIDED FOR HANDLING.
6. COST FOR THE DRIP STONE LANDING IS INCIDENTAL TO THE COST OF THE MANHOLE.

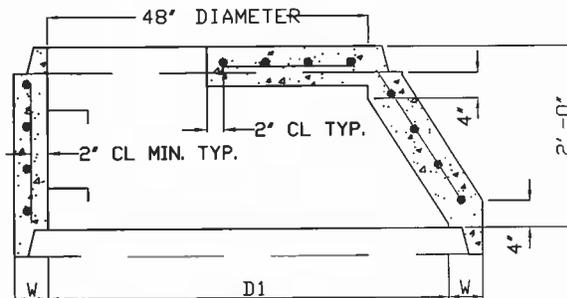
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|  | | JULY 1, 2012 |
| DIRECTOR - DEPARTMENT OF PUBLIC WORKS | | DATE |
| REVISED | | SCALE: NTS |
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| | | 2011_0209 |

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
PRECAST COMBINATION FLATTOP
REDUCER AND DRIP STONE LANDING
FOR 60 IN. TO 120 IN. DIAMETER MANHOLES
STANDARD NO. CA-384.15





PLAN



SECTION A-A

| PRECAST MANHOLE DIAMETER | DIMENSIONS | | | |
|--------------------------|------------|------|----|-------|
| | D | D1 | W | X |
| 60" | 6-0" | 5-0" | 6" | 3'-6" |
| 72" | 7'-2" | 6-0" | 7" | 4'-7" |

NOTES

1. THE COMBINATION ECCENTRICAL CONE UNIT AND DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STANDARD CA-384.13 FOR PLACEMENT.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. REINFORCEMENT SHALL MEET ASTM A 615 GRADE 60.
4. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN.
5. LIFT EYES SHALL BE PROVIDED FOR HANDLING.
6. COST FOR THE DRIP STONE LANDING IS INCIDENTAL TO THE COST FO THE MANHOLE.

APPROVAL

[Signature]
 DIRECTOR — DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
 DATE

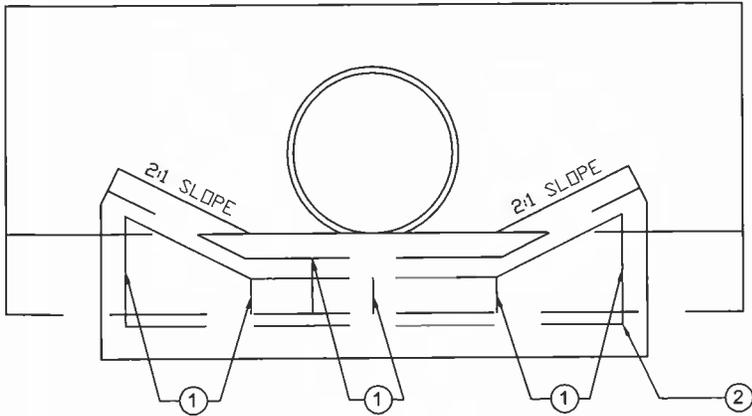
CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
PRECAST COMBINATION ECCENTRICAL CONE
REDUCER AND DRIP STONE LANDING
FOR 60 IN. TO 72 IN. DIAMETER MANHOLES
STANDARD NO. CA-384.17



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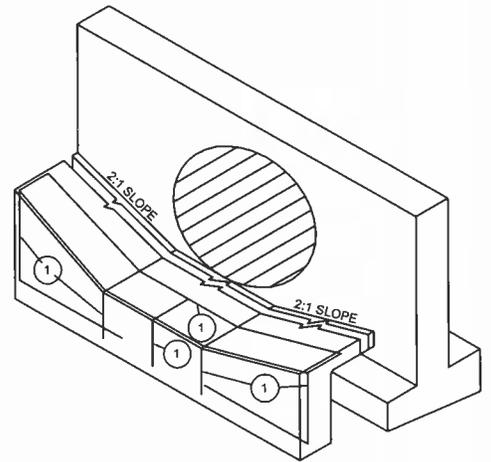
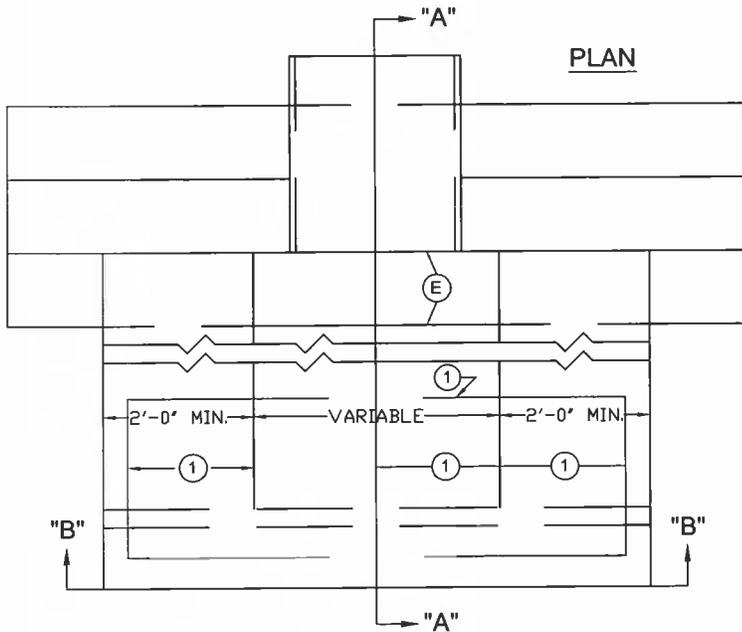
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ELEVATION "B-B"



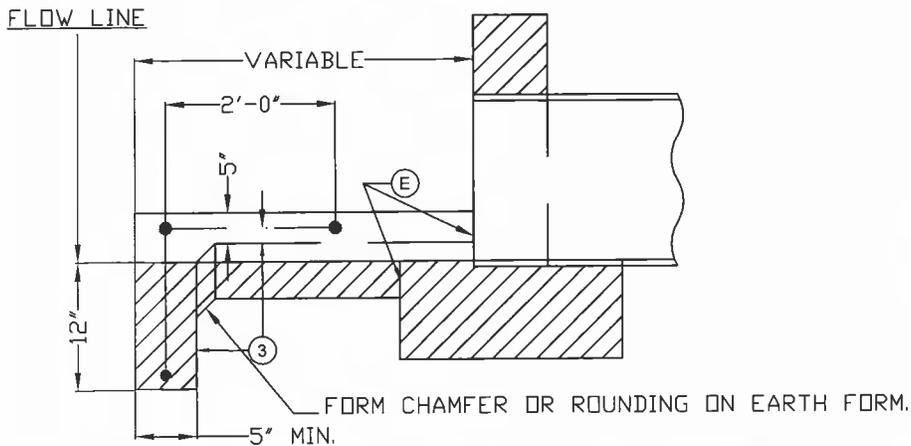
NOTE: COST OF TOE WALL TO BE INCIDENTAL TO SQUARE YARDS OF 5" CONCRETE GUTTER.

PLAN



ISOMETRIC VIEW

SECTION "A-A"



REINFORCEMENT DATA
ALL BARS TO BE NO. 3

- (1) BENT BARS
- (2) STRAIGHT BAR.
- (3) COVER TO BE 1/2" THICKNESS OF CONC. MIN. COVER ON ENDS.
- (E) EXPANSION MATERIAL.

APPROVAL

Cory Carlson
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

TOE WALL DETAIL - 5" CONCRETE GUTTER

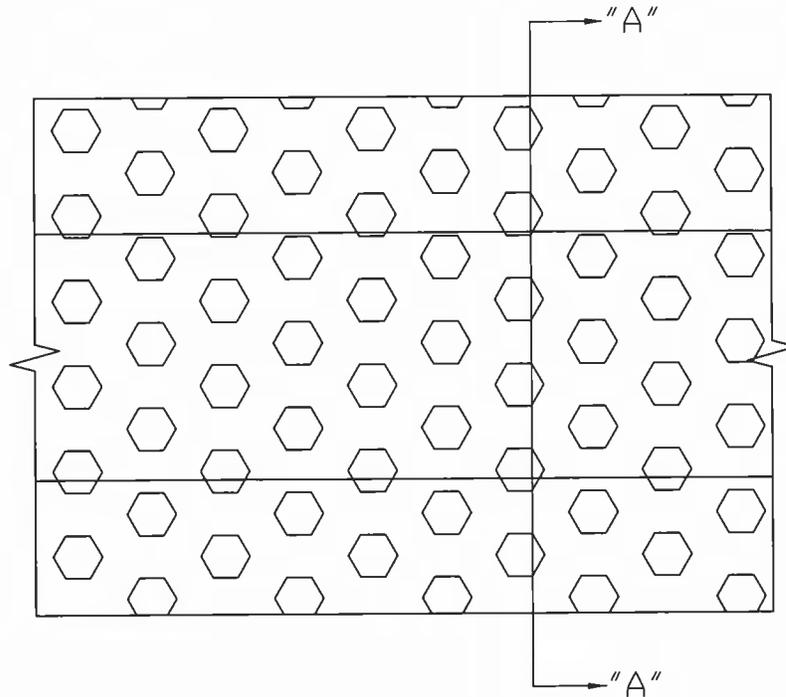
STANDARD NO. CA-389.02



REVISED

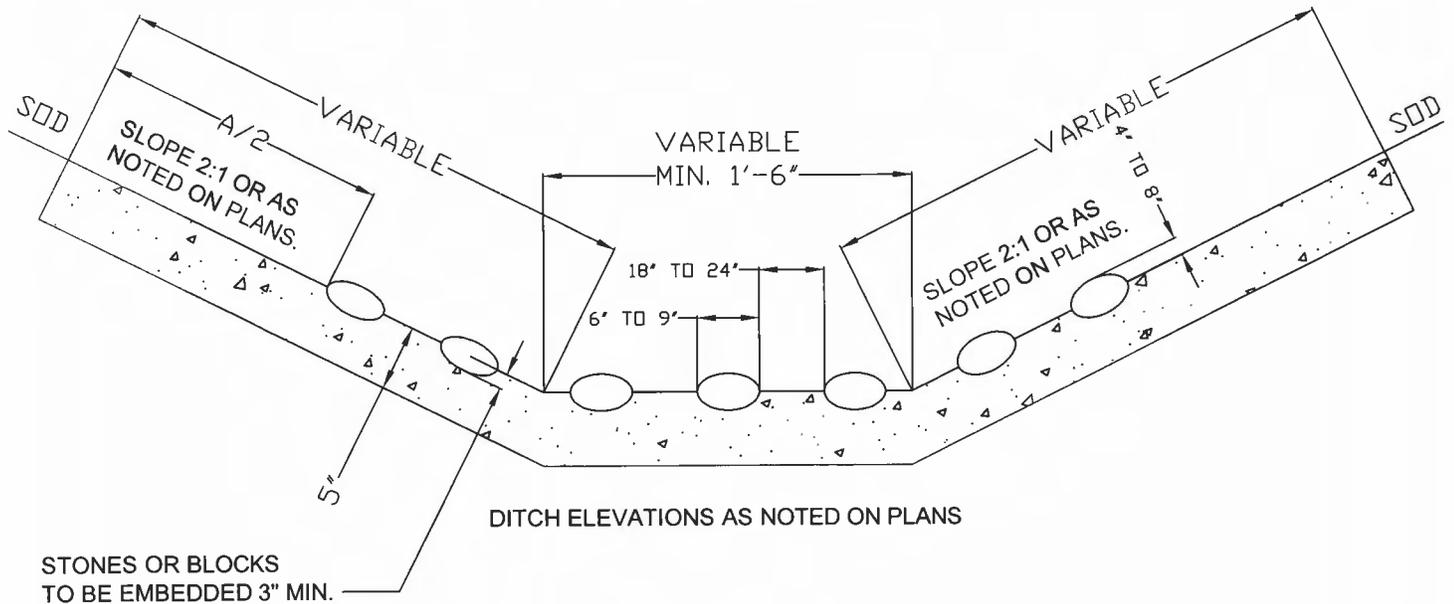
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PLAN

NOTE: ROW OF STONES (AS SHOWN BELOW) OR PRECAST CONCRETE BLOCKS (4"X8"X8") SHALL BE 18" APART, STAGGER ALTERNATE ROWS.



SECTION A-A

APPROVAL

Perry Anderson
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

**CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS**

5" CONCRETE ENERGY DISSIPATING GUTTER

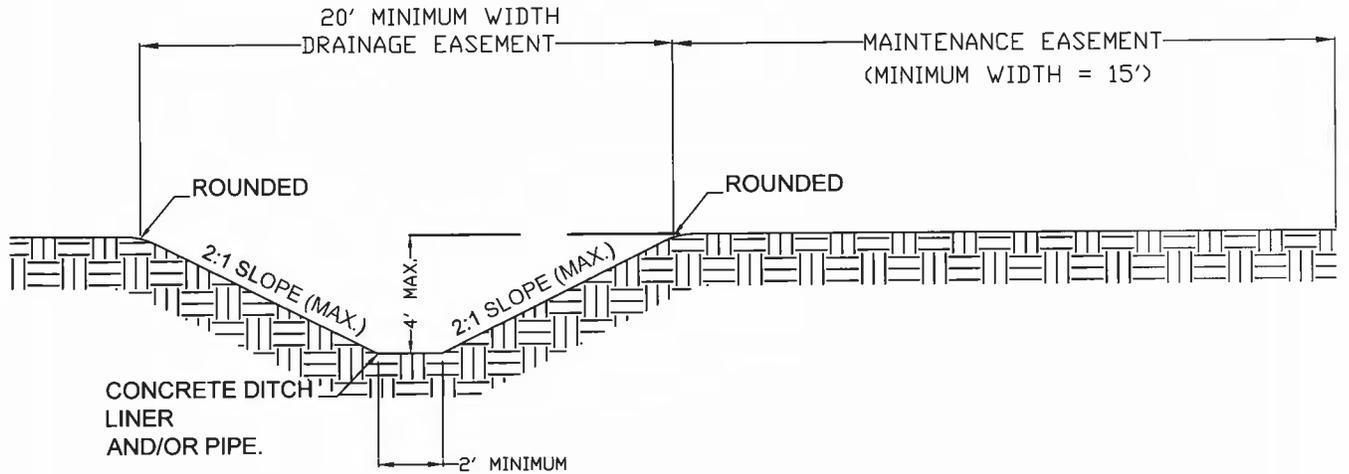


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SCALE: NTS

DRAWN BY: JFK
2011_0209

STANDARD NO. CA-389.11



TYPICAL NON-ROADSIDE DITCH
(NOT TO SCALE)

GENERAL NOTES

1. A GRADING PERMIT MUST BE OBTAINED BEFORE ANY CLEARING AND/OR DITCHING IS PERMITTED.
2. DITCH ELEVATIONS AND GRADIENT SHALL BE NOTED ON PLANS AND/OR PROFILES. MINIMUM GRADIENT ON ALL DITCHES SHALL BE 1.0 %. ALL DITCHES INCLUDING OUTLET DITCHES MUST HAVE ADEQUATE CAPACITY TO CONTAIN DESIGN FLOWS.
5. ALL DITCHES WHICH EXCEED 4 FEET IN DEPTH SHALL BE PIPED. THE PIPE DESIGN MUST BE APPROVED BY CALVERT COUNTY DEPARTMENT OF PUBLIC WORKS.
6. ALL SLOPES TO BE SEEDED AND MULCHED.
7. WITHIN THE AREA DESIGNATED AS "DRAINAGE AND MAINTENANCE EASEMENT", OBJECTS (SUCH AS TREES, SHRUBS, STRUCTURES, FENCES, SIDEWALKS, PAVED DRIVEWAYS, AND/OR UTILITIES) WHICH MAY ACT AS AN OBSTRUCTION TO THE INTENDED USE AND/OR MAINTENANCE OF THIS EASEMENT, SHALL NOT BE PERMITTED.

APPROVAL

Steve Carlson
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

DRAINAGE DITCHES

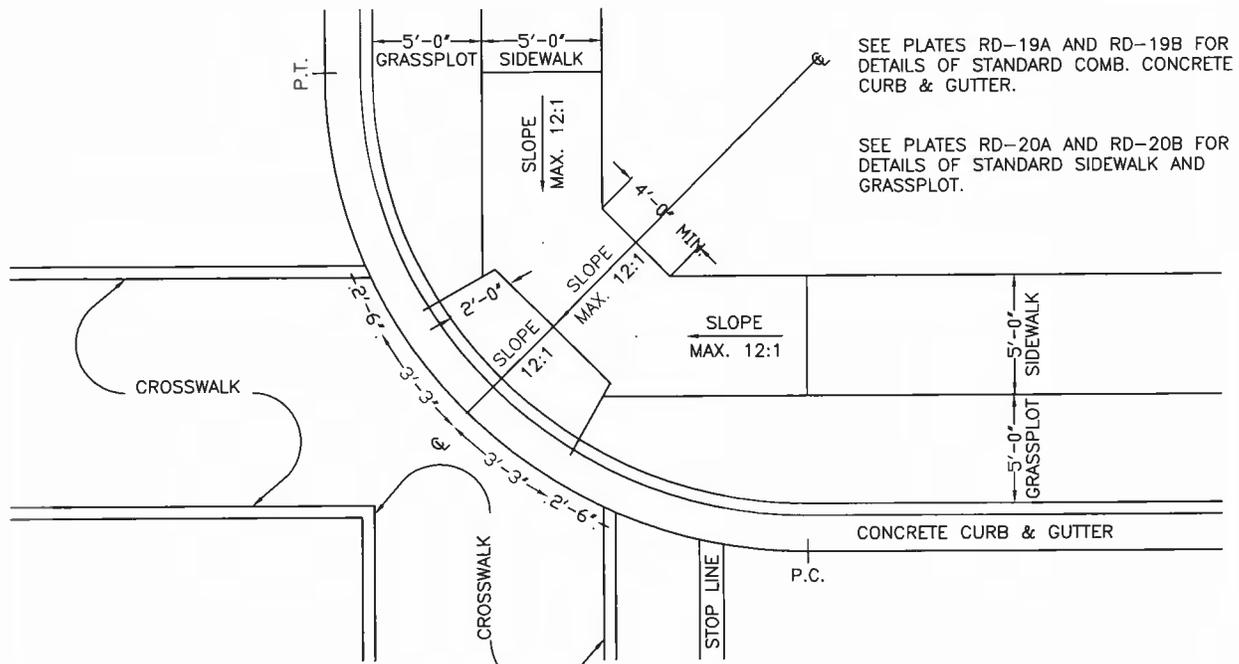


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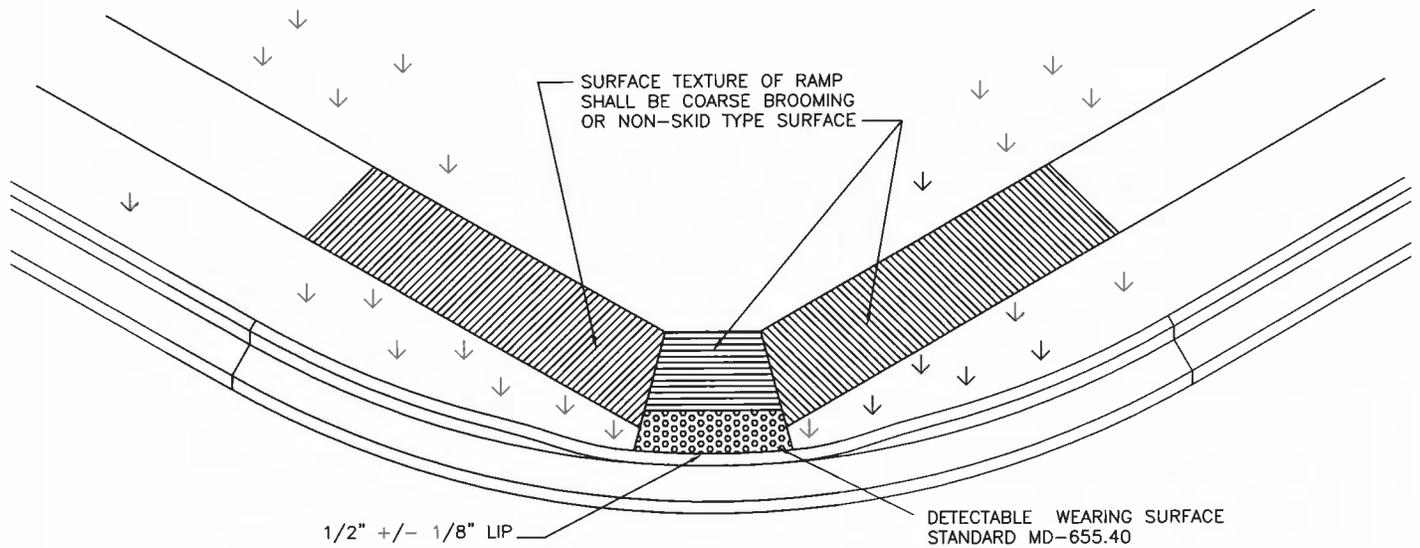
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2011_0209

STANDARD NO. CA-390.01



PLAN VIEW



ISOMETRIC VIEW

APPROVAL

Cory A. Colson
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012

DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

SIDEWALK RAMPS
FOR THE HANDICAPPED
TYPE "A"

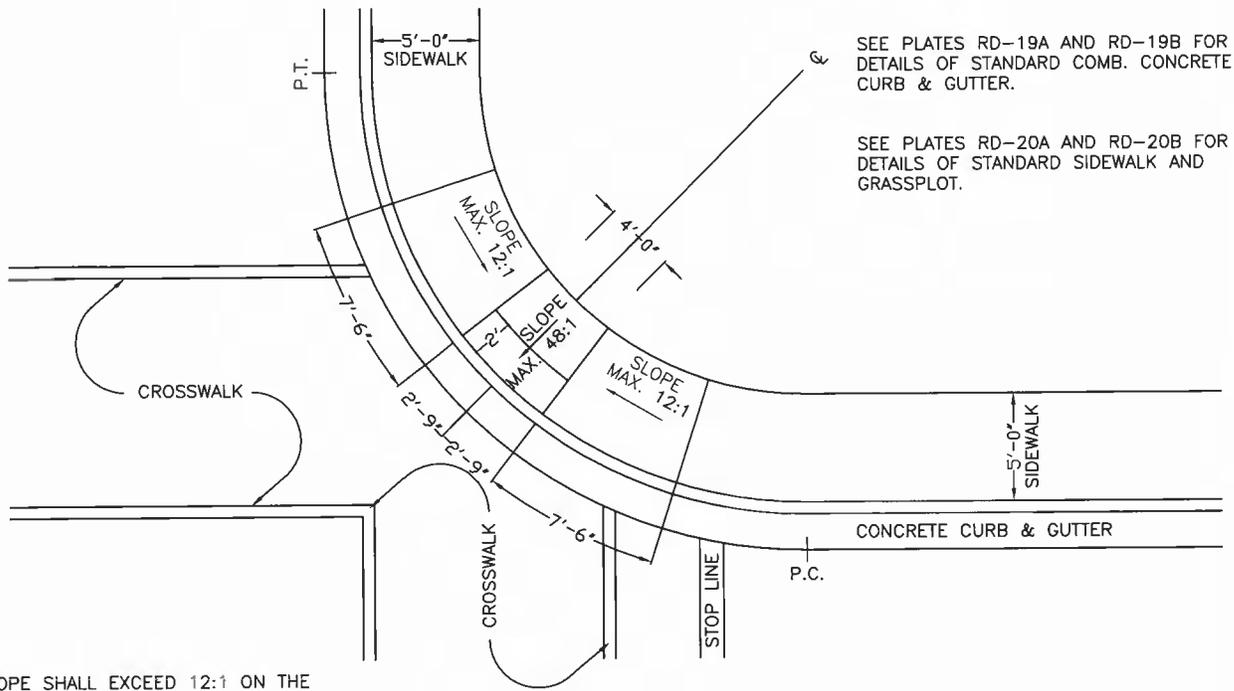
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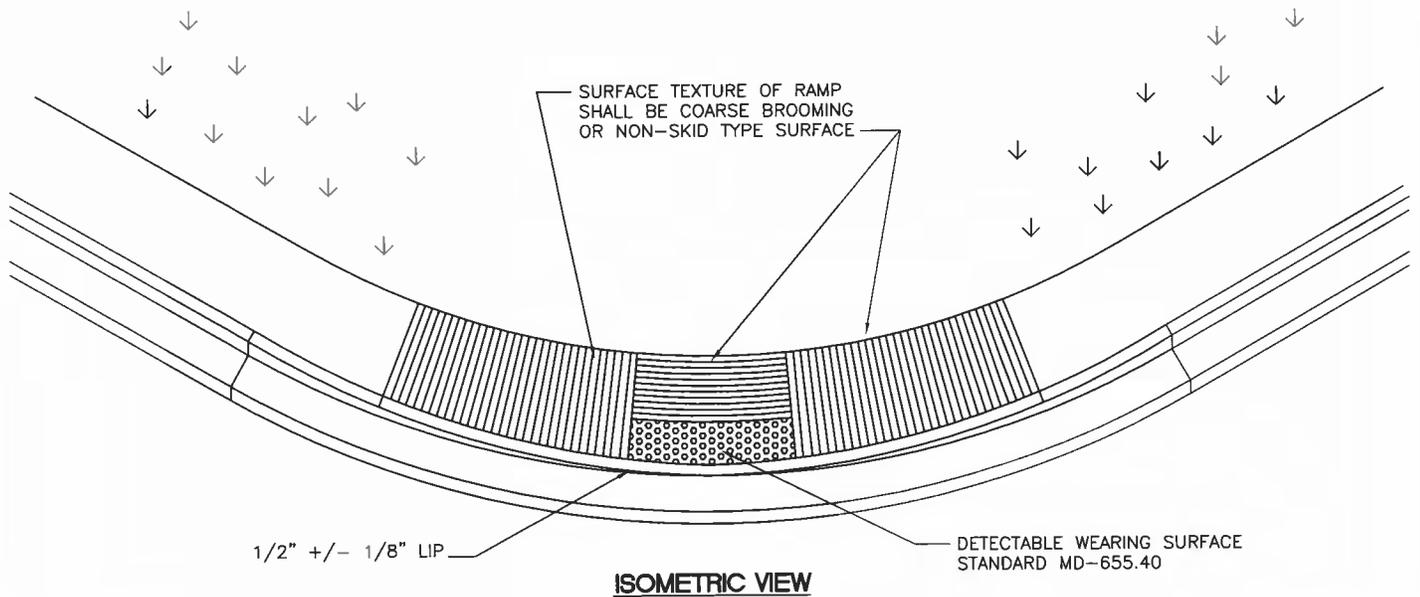


SEE PLATES RD-19A AND RD-19B FOR DETAILS OF STANDARD COMB. CONCRETE CURB & GUTTER.

SEE PLATES RD-20A AND RD-20B FOR DETAILS OF STANDARD SIDEWALK AND GRASSPLOT.

NO SLOPE SHALL EXCEED 12:1 ON THE RAMP OR SIDEWALK.

PLAN VIEW



ISOMETRIC VIEW

APPROVAL

Perry J. Calver
DIRECTOR - DEPARTMENT OF PUBLIC WORKS

JULY 1, 2012
DATE

CALVERT COUNTY, MD
DEPARTMENT OF PUBLIC WORKS

SIDEWALK RAMPS
FOR THE HANDICAPPED
TYPE "B"

STANDARD NO. CA-650.11



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