

CITY OF TANEYTOWN

Carroll County, Maryland

General Specifications for Street & Stormwater Management Facilities Construction

2025



PREPARED BY:

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CITY OF TANEYTOWN
CARROLL COUNTY, MARYLAND
GENERAL SPECIFICATIONS FOR STREET AND STORMWATER MANAGEMENT
FACILITIES CONSTRUCTION

All streets, sidewalks, curbs, driveways, street lighting, and storm drains to be constructed in the City of Taneytown and to be proposed for acceptance by the City shall be designed according to the latest edition of the Carroll County Department of Public Works, Bureau of Engineering's "Design Manual - Volume 1, Roads and Storm Drains" unless specified otherwise in the following document.

The construction specifications and the material specifications to be used for the installation of the items covered by this document shall be as outlined in the latest edition of the Maryland Department of Transportation State Highway Administration's (MDSHA) Standard Specifications for Construction and Materials.

The headings listed below refer to the respective chapters of the Carroll County Design Manual - Volume 1. The information presented is intended to modify or clarify the City of Taneytown's requirements for the construction of roads and storm drains where they differ from the County requirements.

In the event of a conflict between the Carroll County Design Manual and the City Charter or Code, specifically Chapter 173 (Subdivisions) and Chapter 181 (Site Plans), the City Code shall prevail.

The City of Taneytown reserves the right to modify these specifications as required for the betterment of the community.

Definition of Terms

Add the following terms:

City	-	City of Taneytown, Maryland.
City Engineer	-	The City of Taneytown's consulting engineer or his designated representative.
City Manager	-	City Manager of the City of Taneytown.
Council	-	Taneytown City Council.
Mayor	-	The Mayor of the City of Taneytown.
City Planning Commission	-	Planning Commission of the City of Taneytown.

CHAPTER 1 – INTRODUCTION AND GENERAL INFORMATION

All provisions of this chapter shall apply with the following changes or exceptions.

1.3 Waivers

Requests for waivers from the design standards must be submitted in writing to the City Manager. The request must indicate which provision of the standards are involved and the reason for the request. The requests will be reviewed by the City and a written response to the request will be issued by the City. A meeting to discuss the request for a waiver may be required by the City.

1.6 Applicability to the City of Taneytown

References made in the Design Manual to Carroll County and the various representatives and departments of the County shall be assumed to refer to the City of Taneytown and the corresponding representatives and departments of the City of Taneytown where such exists. Obvious references to Carroll County and its representatives shall be assumed to refer to those parties. Where possible conflicts or questions exist as to whether the City or the County is the responsible agent, the Taneytown City Manager shall have the authority to make the final determination.

CHAPTER 2 - DESIGN SPECIFICATIONS FOR ROADS

All provisions of this chapter shall apply with the following changes or exceptions:

2.1 Introduction

All references to Carroll County, the Department of Public Works, Bureau of Engineering and the Engineer shall refer to the City of Taneytown and its authorized agents.

2.2 Overview

These specifications shall apply to all roads in the City of Taneytown except (a) county roads, (b) state roads, and (c) roads maintained by the Federal Government.

2.3 Classification of Roads

All roads shall be classified by and at the sole discretion of the City of Taneytown. The developer shall be responsible to contact the City to obtain the classification of each proposed road for a project prior to preparation of preliminary plans. Refer to the Carroll County Functional Classification, dated January 2018, Exhibit No. 8 (as updated) for existing classifications.

2.4 Procedures

2.4.1 Construction Plans

Construction plans shall be filed with the City of Taneytown.

2.4.2 Public Works Agreements and Contribution of Funds

The construction estimate for bonding purposes must be: (a) a detailed estimate of the cost of completion of the required improvements submitted by the developer; and prepared by a professional engineer, licensed as such in the State of Maryland; and certified by such engineer to be a fair and reasonable estimate of the cost; or (b) a detailed contractor's estimate to perform the work required to install the specified improvements.

The estimate must be shown in sufficient detail to enable the City to monitor the progress of the construction covered by the estimate. Unit costs as well as total cost for each of the major components of the estimate must be shown.

2.4.3 Private Streets

All residential streets to remain private and not be dedicated to the City shall be built to the standards as defined in this manual for public streets.

2.7 Roadway Elements

2.7.1 Typical Sections

Typical sections for the various functional classifications shall be as follows:

Collector Road	Plate 17T
Service Drive or Alley	Plate 18T
Local Roadway	Plate 19TA
	Plate 19TB
Commercial/Industrial Road	Plate 22T-A
	Plate 22T-B

Table 2.08

CLASSIFICATION	PAVEMENT WIDTH (FT-IN)	ROW WIDTH (FT)	MIN DESIGN SPEED (MPH)	MIN CL RADIUS (FT)	ADT CRITERIA	PLATE NO.
Collector	38' - 8"	40' 0"	30	275	Over 1,000 ADT	17T
Local	26' - 0"	30' - 4"	20	275	Up to 1,000 ADT	19TA
	34' - 0"	38' - 4"				19TB
Service Drive and Alley	20' - 0"	20' - 0"	10	275	Up to 400 ADT	18T

Arterials shall be design according to the Maryland SHA Access Manual.

All road improvements shall be consistent with the current City of Taneytown Comprehensive Plan.

2.7.3 Sidewalks

Sidewalks are required along all road front property lines, shall be ADA-compliant, and shall conform to Plate 15T. Sidewalks will not be required along alleys or service drives. Sidewalks shall be constructed of S.H.A. No. 2 concrete and shall be five feet (5') wide by four inches (4") deep with a 4" crushed stone base, unless otherwise directed by the City, except that sidewalks at driveways shall be six inches (6") deep. Also unless specified otherwise by the City, a three foot (3') wide grass strip shall be placed between the curb and the sidewalk.

2.7.4 Side Slopes

The 3:1 ratio back slope shown on the road plates is the maximum allowed. Designers are encouraged to use flatter slopes where practical.

2.7.6 Guardrail

Wooden post and chain guardrail shall not be acceptable.

2.7.9 Median Islands, Lanes and Openings

Medians shall not be used in subdivisions within the City, except that medians are permitted only at subdivision entrances. Medians may not be used at intersections.

2.7.10 Road Markings

Road markings shall be the sole responsibility of the developer and shall not be performed by the City. All markings shall be in accordance with the Maryland Manual on Uniform Traffic Control Devices (MMUTC). The following markings shall be provided at all intersections:

- a. Stop bars
- b. Crosswalks
- c. Curb (No parking)

2.7.11 Handicap Ramps

Handicap ramps shall be installed at each intersection and as may be required for ADA compliance. Additional ramps may be required at the City's discretion. All ramps shall be in accordance with SHA standards.

2.7.12 Utility Locations

Installation of utilities within the City's rights-of-way or easements shall be at the discretion of the City. For most situations, utilities should be placed as shown on Plate 57T. Refer to the latest edition of the City of Taneytown Specification for Sanitary Sewer System Construction and Specification for Water System Construction for additional information. The developer/owner should discuss the location of utilities with the City prior to preparation of preliminary plans.

2.17.13 Intersection Design and Spacing

Site Plans and subdivisions with greater than 50 units shall include more than one means of connection to the existing roadway network. In no case shall the connection points be separated by less than 300' from each other.

2.7.16 Driveways

All driveway aprons must be six inch (6") deep concrete. Use-in-common driveways are not permitted. Each lot shall be served by its own driveway. Driveway aprons on open section roads shall be permitted on a case-by-case basis and shall conform to Plate 8 or 9.

2.7.17 Street, Driveway and Stop Signs

All street and traffic control signs and appropriate posts and hardware required for the installation of those signs shall be the sole responsibility of the developer. All signs shall be installed in compliance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD), Plate 56.

Installation of all street and traffic control signs shall be at the time as directed by the City, but in no case shall it be later than the issuance of the first Use & Occupancy Permit for the particular development or phase of development.

Stop signs shall be high intensity and be 24" on Local Streets and 30" on Collectors.

Street signs shall be high intensity and be 6" in height. They shall be provided on opposite corners of all intersections and may be installed above stop signs.

2.7.18 Dead-End Roads in Development Other Than Multi-Family

A. Permanent

All permanent dead-end streets must end in a circular turnaround.

B. Temporary

Where barricades are required, only timber barricades (Plate 46) may be used. All temporary dead-end streets must end in a "T" turnaround (Plate 28).

2.7.19 Cul-de-sacs

Cul-de-sacs may only be used within the City by special permission. Where permitted, cul-de-sacs shall not exceed 300 feet in length as measured from the flow line of the primary street to end of paving and must end in an eighty foot diameter circular turnaround in residential areas and one hundred feet in diameter in commercial and industrial areas. In no case may a cul-de-sac serve more than six lots.

References to Plates 28, 29, 31, and 32 are deleted.

Checklist for Preliminary and Contract Drawings - New Roads and Improvements to Existing Roads

Page 2-35 - Item I.A.13 Department of Public Works Bureau of Engineering approval block is not required.

Page 2-43 - Item III. Use-in-Common Driveways - Delete this section in its entirety.

CHAPTER 3 - CAPITAL PROJECTS

Delete this Chapter in its entirety.

CHAPTER 4 - CARROLL COUNTY FUNCTIONAL CLASSIFICATION CRITERIA AND ASSIGNMENT

There are no changes to this Chapter. The items covered by this chapter shall apply to the City of Taneytown. References to Carroll County shall be assumed to refer to the City of Taneytown.

CHAPTER 5 - TRAFFIC IMPACT STUDY GUIDELINES

There are no changes to this Chapter. The items covered by this chapter shall apply to the City of Taneytown. References to Carroll County shall be assumed to refer to the City of Taneytown.

The City of Taneytown reserves the right to require a traffic study at its sole discretion.

CHAPTER 6 - STORM DRAINAGE CRITERIA

The items covered by this chapter shall apply to design of storm drains in the City of Taneytown. References to Carroll County shall be assumed to refer to the City of Taneytown. All provisions of this chapter shall apply with the following changes or exceptions:

6.3.1-3 Time of Concentration

Sheet flow may not exceed 100 feet in length.

6.4.3-1 Inlet Types – On Grade

Inlets shall be Maryland SHA Standard Plate MD-374.51, Curb Opening on Grade type (COG) Square and Rectangular Inlets or Maryland SHA Standard Plate MD-374.21 (double) or MD-374.23 (single), WR Inlets.

6.4.3-2 Inlet Types – In Sump

Inlets shall be Maryland SHA Standard Plate MD-374.61, Curb Opening in Sump type (COS) Square and Rectangular Inlets or Maryland SHA Standard Plate MD-374.21 (double) or MD-374.23 (single), WR Inlets.

6.4.5 Cut-Ins

Cut-ins or field connections to existing storm drain without manholes are not permitted.

6.4.6-2 Corrugated Metal Pipe (CMP)

The use of CMP is not permitted.

6.4.11 Flood Plains

Floodplain management shall conform to the requirements of Chapter 114 of the City Code and the Carroll County Floodplain Manual.

6.3 Design Criteria

1. Runoff

4. 24 hour rainfall per Point Precipitation Frequency Estimates from NOAA Atlas 14, Westminster, MD (39.55N 76.9667 W)

1-year	2.5 inches
2-year	3.1 inches
5-year	3.9 inches
10-year	4.7 inches

25-year	5.8 inches
50-year	6.9 inches
100-year	8.0 inches

6.4.4. Manholes

1. All inlets and manholes shall be constructed of precast concrete.

CHAPTER 7 – GENERAL INFORMATION AND CRITERIA FOR ROAD CONSTRUCTION PROCEDURES

7.1 Introduction

This chapter shall apply to roadway construction and inspection procedures for Subdivisions and Site Plans in the City of Taneytown. All references to the County, Bureau of Engineering and Bureau of Road Operations shall be assumed to refer to the City of Taneytown. All provisions of this chapter shall apply with the following changes or exceptions:

7.2 Inspection Procedures and Notifications

The provisions of this section concerning notifications shall apply. However, the contractor must notify the City of Taneytown, not the Engineer, when the various inspections are to be made.

7.3 Inspection Costs

Inspection costs will be outlined in the Public Works Agreement between the City of Taneytown and the developer, or as otherwise required by the City of Taneytown.

7.5 Prequalification of Contractors

The City of Taneytown reserves the right to prequalify any contractor or subcontractor proposing to do any work related to construction of subdivision streets and the associated utilities or any street repair project required by the City. The City may require the contractor to submit any information the City deems necessary to thoroughly evaluate the contractor's ability to satisfactorily construct the required infrastructure. The City also reserves the right to prohibit any contractor from working on a project in the City, if it is determined that the contractor is not qualified in the City's opinion, to do the work.

7.8 Violations

Any person, Firm or Corporation violating any rules or regulations set forth herein shall be guilty of a misdemeanor and upon conviction thereof shall be fined a sum not to exceed twenty-five dollars (\$25.00) exclusive of costs. Likewise, any violation shall be the basis for disapproval of any road or other infrastructure proposed for acceptance by the City of Taneytown.

CHAPTER 8 - SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS

8.1 Introduction

With the exception of items noted in Chapter 8, "Specifications for Construction and Materials", of the Carroll County Design Manual and any items noted below, the City refers to the latest edition of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials for the construction of roadways, storm drains and related structures.

If any question arises concerning the interpretation of these specifications, the question must be resolved before commencing work so that failure to raise a question concerning any erroneous interpretation of the Specifications shall result in no loss to the City and shall be the sole responsibility of the Developer, the Developer's Engineer or the Contractor. Any questions regarding interpretation of the Specifications should be directed to the City of Taneytown.

8.1.2-4 Installation Procedures for Polyvinyl Chloride and Polyethylene Storm Drain Pipe

Backfilling of polyvinyl chloride and polyethylene storm drain pipe shall be as shown in Plate 47T.

8.1.2-5. Back Filling of Trenches for Utility Installations

Backfilling of utility trenches shall be as shown in Plate 47T.

8.2 Bituminous Roadways

Unless specified otherwise by the City of Taneytown, all bituminous roadways constructed in the City shall utilize the following:

6" Dense Graded Stabilized Aggregate (DGSA)

3" or 4" Base Course (as noted in the Plates) – Superpave 19.0 mm, PG 64-22, Level 2

1 ½" Surface Course – Superpave 12.5 mm, PG 76-22, 8PV, Level 2

Tack Coat - 0.05 to 0.10 gallons per square yard

Prior to the application of the tack coat, the surface shall be cleaned of all loose and foreign materials. The tack coat shall be uniformly applied to the surface by full circulation spray bars that are laterally adjustable and provide triple fanning and overlapping action so that the resulting coating shall be applied at the rate specified above or as otherwise directed by the City. Hand application of tack coat shall only be permitted for small patches and along the edges of manholes, valve boxes, etc., where applications by applicator vehicle will result in excessive overspray.

Pavement shall be placed only when the ambient air temperature is at least 50°F (10°C) and rising for surface courses, and at least 40°F (4°C) and rising for base courses. The base course

shall be clean and dry before paving begins. Asphalt pavement shall not be placed on frozen base. Hot asphalt mix temperature must be not less than 225°F (107°C) at the time of placement.

Prior to the application of the tack coat and the surface course, the base course shall be swept by power broom, supplemented by hand brooms if necessary. The City shall then be contacted to inspect the condition of the base course. The condition of the base course must be acceptable to the City prior to the application of the tack coat and surface course. Those portions of the base course not satisfactory, in the sole judgement of the City, shall be replaced prior to installation of the tack coat and surface course. The City may also require the excavation and replacement of any stone aggregate and/or other materials which are not found to be satisfactory in the sole judgement of the City. Excavation and/or replacement of base course, stone aggregate or other materials required by the City, does not relieve the Developer or Contractor of any other requirements or responsibilities required under Public Works Agreements, maintenance agreements, etc.

Manholes and valve boxes shall be adjusted to 1/4 to 1/2 inches below finished grade.

It is recommended that the Developer, Developer's Engineer and the Contractor refer to the latest edition of the "Maryland Department of Transportation State Highway Administration Standard Specifications of Construction and Materials" for further information concerning the materials noted above and the construction techniques which will be required in the City of Taneytown.

The use of other bituminous base and surface courses will require written approval from the City.

CHAPTER 9 - TREES AND LANDSCAPING

All landscaping shall be done in accordance with the Carroll County Landscape Manual and the provisions of this chapter. Landscaping approval in the City of Taneytown will be the responsibility of Carroll County.

CHAPTER 10 - STREET LIGHTING

10.1 General

The Owner/Developer shall provide and install a street lighting system at his sole expense. This system will be classified as a private system. Upon satisfactory completion, the City will accept the system and assume the responsibility for the energy cost and maintenance.

The street lighting system must be installed by a qualified, licensed electrician and conform to the latest edition of the National Electrical Code (NEC) and installed according to the plan approved by the City. No work will be permitted without a proper electrical permit issued by the Carroll County Permits Department.

10.2 Lights

Lights shall be 100 watt, LED, 240 Volt, Philips Hadco Model C2154 or approved equal. The maximum spacing between street lights shall be 140 feet and shall be located along property lines.

10.3 Post

The street light post shall be Philips Hadco Model CP2154C or approved equal.

10.4 Preliminary Plan

A street lighting layout shall be included on the preliminary plan. A photometric plan shall be included for all non-residential plans or when required by the City.

10.5 Installation

The street lighting system shall be installed between the curb and the sidewalk in the 3-foot wide grass strip. The raceway and the light bases shall be installed during the infrastructure installation. No Use & Occupancy Permit shall be issued before the raceway and the light bases have been installed. Light placement can be delayed until housing construction has been completed to the point that lighting is necessary. The decision as to when the street lights must be installed and made active is at the sole discretion of the City Manager or his authorized representative.

10.6 Photocell

Photocell shall be pedestal-mounted photocell with circuit override switch. One photocell shall be provided per electric meter. The number of meters and photocells shall be minimized to the degree feasible.

PLATES

The following plates are based on those found in the Carroll County Department of Public Works, Bureau of Engineering's Design Manual Volume 1, Roads and Storm Drains. Some of the plates contained in the County manual are not applicable to the City of Taneytown. These have been deleted from this set of specifications. Other plates provided in the County manual were revised or replaced to accommodate the requirements of the City. Those who have reason to use this specification should carefully study those items which have been modified. If there are any questions concerning these plates, the City should be consulted prior to using them as guidelines for any construction within the City of Taneytown. Questions concerning these plates or the interpretation of their meaning or applicability should be directed to the City of Taneytown.

PLATES

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<u>Plate Number</u>	<u>Standard</u>	
1T	HIERARCHY OF STREET SCHEMATIC	Revised
2T	STANDARD ROLL CURB	Revised
3T	8" STANDARD STRAIGHT CURB	Revised
4	MULTI-FAMILY DEVELOPMENT Modified Mountable Curb and Gutter	Deleted
5	MULTI-FAMILY DEVELOPMENT 6" Combination Curb and Gutter Parking Bay Location	Deleted
6T	ROLL CURB TRANSITION TO STORMWATER INLET	New
7	PAVING JOINT	Original
8	RESIDENTIAL DRIVEWAY APRON WITH SWALE	Deleted
9	RESIDENTIAL DRIVEWAY APRON SINGLE-USE WITH CULVERT	Deleted
10T	SINGLE DRIVEWAY APRONS WITH ROLL CURB	Revised
11	RESIDENTIAL DRIVEWAY APRON USIN-IN-COMMON WITH CULVERT	Deleted
12T	RESIDENTIAL DRIVEWAY WITH ROLL CURB	Revised
13	COMMERCIAL ENTRANCE WITH EXISTING MOUNTABLE CURB AND GUTTER	Deleted
14T	COMMERCIAL ENTRANCE WITH EXISTING 8" STRAIGHT CURB	Revised
15T	SIDEWALK RAMP	Revised
15-A	GUARDRAIL PLACEMENT	Original
16	SUBCOLLECTOR ROAD 22' OPEN SECTION	Deleted
17T	COLLECTOR ROAD 40' CLOSED SECTION	Revised
18T	LOCAL STREET 20' OPEN SECTION	Revised
19TA	LOCAL STREET 26' CLOSED SECTION – SINGLE SIDED PARKING	New
19TB	LOCAL STREET 34' CLOSED SECTION – DOUBLE SIDED PARKING	New
20	LOOP ROAD AND CUL-DE-SAC ROAD 18' OPEN SECTION	Deleted
21	LOOP ROAD AND CUL-DE-SAC ROAD 22' CLOSED SECTION	Deleted
22T-A	COMMERCIAL-INDUSTRIAL ROAD 40' - STRAIGHT CURB	Revised
22T-B	COMMERCIAL-INDUSTRIAL ROAD – ROLL CURB	New

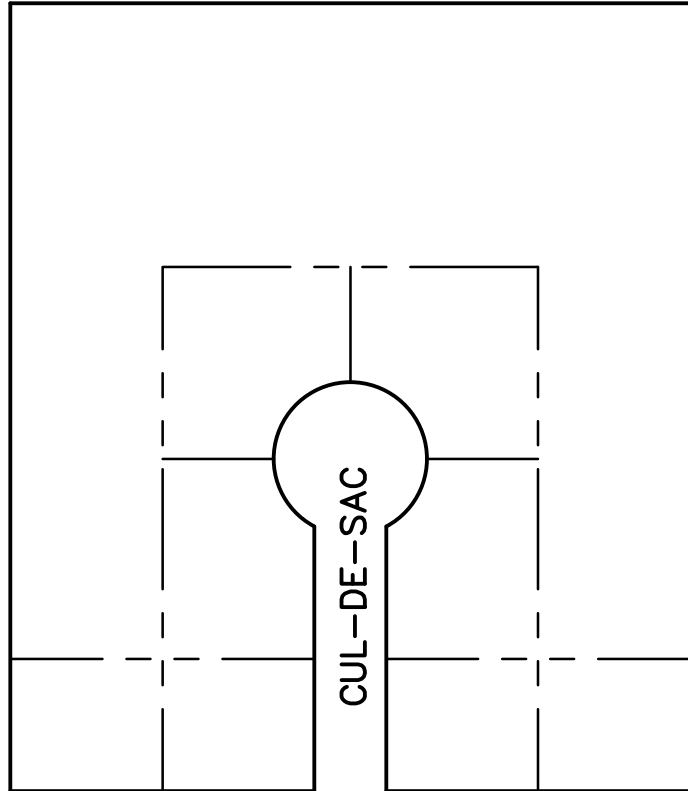
<u>Plate Number</u>	<u>Standard</u>	
23	URBAN LOCAL ROAD 30' CLOSED SECTION	Deleted
24	RURAL LOCAL ROAD 20' OPEN SECTION	Deleted
25	URBAN COLLECTOR ROAD 38' OPEN SECTION	Deleted
25-A	URBAN COLLECTOR ROAD 26' CLOSED SECTION	Deleted
26	RURAL COLLECTOR ROAD 22' OPEN SECTION	Deleted
27	MODIFIED SWALE DESIGN	Deleted
28	TEMPORARY "T" TURNAROUNDS	Original
29	PERMANENT "T" TURNAROUNDS	Deleted
30T	CUL-DE-SAC DETAILS STRAIGHT AND OFFSET	Revised
31	CUL-DE-SAC DETAILS OFFSET	Deleted
32	STRAIGHT AND OFFSET CUL-DE-SACS WITH ISLANDS	Deleted
33	MULTI-FAMILY DEVELOPMENT Typical Sections for Roads	Deleted
34	MULTI-FAMILY DEVELOPMENT Schematic Design for Cul-De-Sac	Deleted
35	MULTI-FAMILY DEVELOPMENT Schematic Design Standards for Courts	Deleted
36T	MULTI-FAMILY DEVELOPMENT Schematic Layouts for Parking Courts	Revised
37	INTERSECTION DETAIL	Deleted
38	TYPICAL BY-PASS LANE AT A "T" INTERSECTION	Original
39	CROWNED PAVEMENT REVOLVED ABOUT CENTERLINE	Original
40	SCHEMATIC SECTION FULL SUPERELEVATION	Original
41	MEDIAN OPENINGS	Deleted
42	GUARDRAIL REQUIREMENT CHART	Original
43T	SUBGRADE DRAINS FOR FLEXIBLE PAVING	Revised
44	STANDARD UNDERDRAINS	Original
45	BEAM TYPE BARRICADE	Original
46	TIMBER BARRICADE	Original
47T	METHOD OF CUTTING AND REPAIRING ROADWAYS	Revised
48	GUARDRAIL W/BEAM DETAILS	Original

<u>Plate Number</u>	<u>Standard</u>	
49	GUARDRAIL W/BEAM SPLICE JOINTS	Original
50	TRAFFIC BARRIER "W-BEAM" ANCHORAGE PLATE	Original
51	TRAFFIC BARRIER "W-BEAM" ANCHORAGE BRACKET	Original
52	TRAFFIC BARRIER "W-BEAM" ANCHORAGE CASTING	Original
53	GUARDRAIL W-BEAM TYPE I-END FLARE	Original
54	STANDARD "YEAR BUILT" NUMERALS	Original
55	WOODEN POST AND CHAIN GUARDRAIL	Deleted
56	STANDARD STREET NAME AND STOP SIGN	Original
57T	UTILITY LOCATIONS IN CLOSED SECTION ROADWAYS	Revised
58	UTILITY LOCATIONS IN OPEN SECTION ROADWAYS	Deleted
59	MODIFIED STANDARD YARD INLET	Original
60	MODIFIED "J" INLET	Original
61	"K" INLET	Original
62	STANDARD TYPE "K" INLET SINGLE GRATE	Original
63	STANDARD TYPE "K" INLET DOUBLE GRATE	Original
64	STANDARD NON-TRAFFIC GRATES FOR "J" & "K" INLETS	Original
65	STANDARD TYPE "S" INLET DOUBLE GRATE TANDEM	Original
67	SINGLE "WR" INLET	Original
68	PRECAST SINGLE "WR" INLET	Original
69	STANDARD "WR" INLET	Original
70	PRECAST "WR" COMBINATION INLET	Original
71	STANDARD "WR" INLET FRAME AND GRATE	Original
72	STANDARD "WR" INLET FRAME AND GRATE (SECTIONAL VIEW)	Original
73	CONCRETE SIDE DITCH	Original
74	STONE OUTFALL PROTECTION	Original
75	CUTOFF WALL AND PAVING	Deleted
76	5" CONCRETE ENERGY DISSIPATING GUTTER	Deleted
77	STANDARD END SUPPORT WALL ROUND PIPE	Original
78	STANDARD END SUPPORT WALL ARCH PIPE	Deleted
79	STANDARD TYPE "C" ENDWALL ROUND PIPE	Original

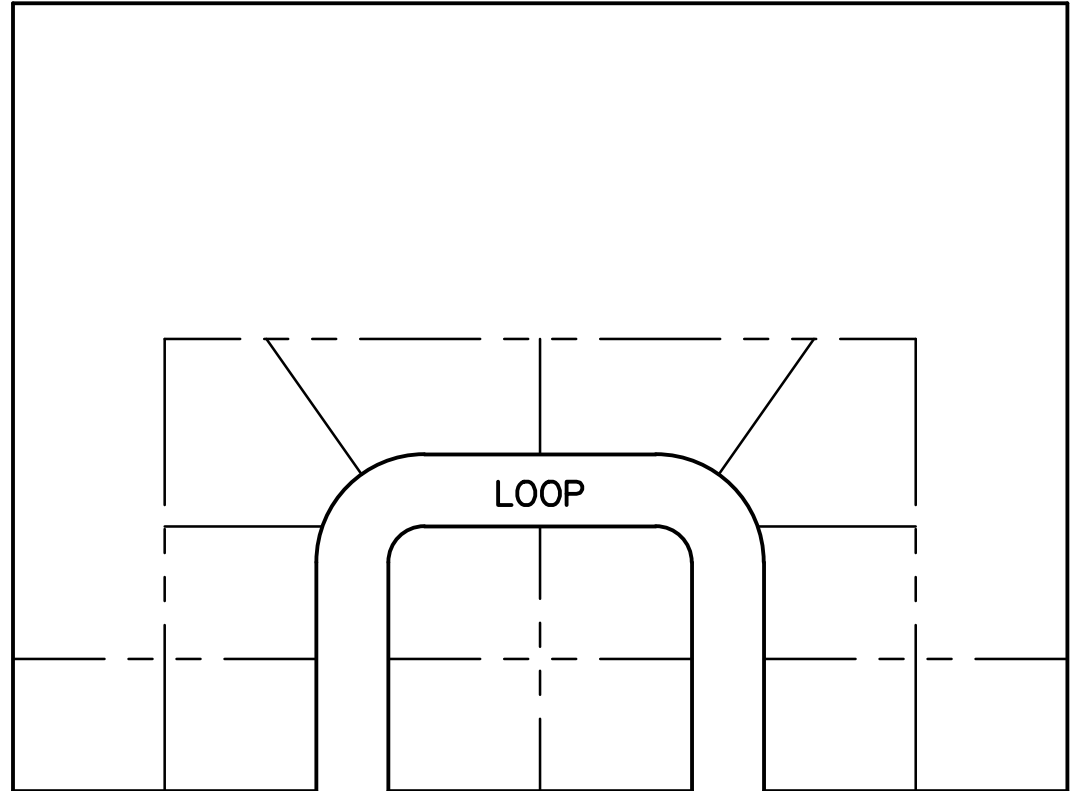
<u>Plate Number</u>	<u>Standard</u>	
80	STANDARD TYPE "C" ENDWALL ARCH PIPE	Original
81	STANDARD TYPE "E" ENDWALL ROUND PIPE	Original
82	STANDARD TYPE "E" ENDWALL ARCH PIPE	Original
83	"F" ENDWALL	Original
84	"G" ENDWALL	Original
85	STANDARD METAL END SECTION ROUND METAL PIPE	Original
86	STANDARD METAL END SECTION ARCH METAL PIPE	Original
87	STANDARD CONNECTIONS METAL END SECTIONS	Original
88	STANDARD MANHOLE COVER	Original
89	STANDARD METAL LADDER RUNGS MISCELLANEOUS STRUCTURES	Original
89-A	SHALLOW BRICK MANHOLE	Original
90	4'-0" BRICK MANHOLE FOR USE WITH 24" AND SMALLER	Original
91	5'-0" BRICK MANHOLE FOR USE WITH 24" THROUGH 36" PIPES	Original
92	BRICK MANHOLE FOR USE WITH 42" THROUGH 72" PIPES	Original
93	BRICK MANHOLE WITH OFFSET COVER FOR USE WITH 24" PIPES AND SMALLER	Original
94	48" DIAMETER PRECAST MANHOLE FOR PIPES 24" AND SMALLER	Original
95	60" DIAMETER PRECAST MANHOLE FOR 27" THROUGH 36" PIPES	Original
96	72" DIAMETER PRECAST MANHOLE FOR 42" AND 48" PIPES	Original
97	84" DIAMETER PRECAST MANHOLE FOR 54" AND 60" PIPES	Original
98	96" DIAMETER PRECAST MANHOLE FOR 72" PIPES	Original
99	120" DIAMETER PRECAST MANHOLE FOR 78" AND 84" PIPES	Original
100	FRAME ANCHORAGE FOR PRECAST MANHOLES	Original
101	PRECAST DRIP STONE LANDING DETAILS FOR 48" TO 120" DIAMETER MANHOLES	Original
102	PRECAST FLAT SLAB TOP FOR 120" DIAMETER PRECAST MANHOLE	Original
103	PRECAST COMBINATION FLAT TOP REDUCER AND DRIP STONE LANDING FOR 60" TO 72" DIAMETER MANHOLES	Original
104	PRECAST COMBINATION ECCENTRIC CONE REDUCER AND DRIP STONE LANDING FOR 60" AND 120" DIAMETER MANHOLES	Original

Plate Number	Standard	
105	FIELD CONNECTION	Original
106T	RESIDENTIAL SPEED TABLES	New
107T	STREET LIGHT POLE ASSEMBLY	New
107T-A	STREET LIGHT LUMINAIRE	New

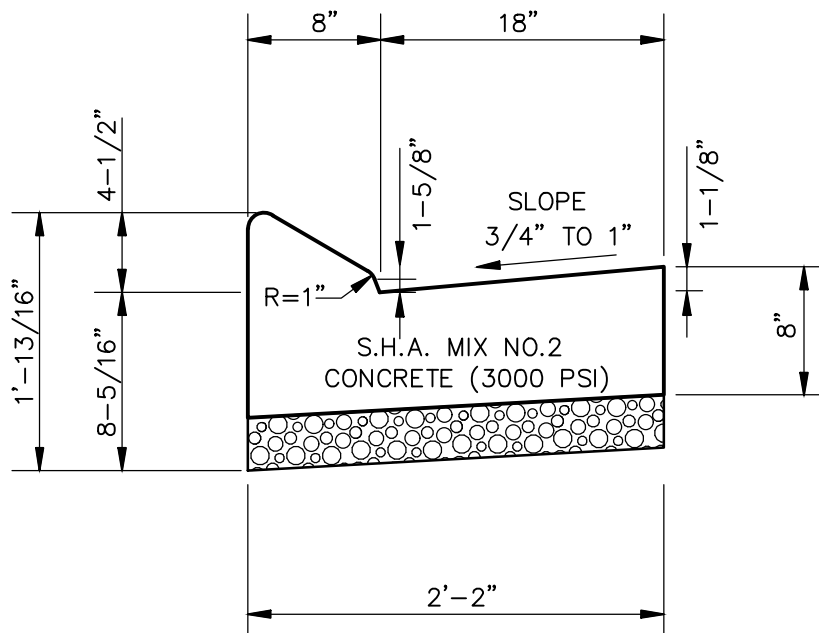
COLLECTOR

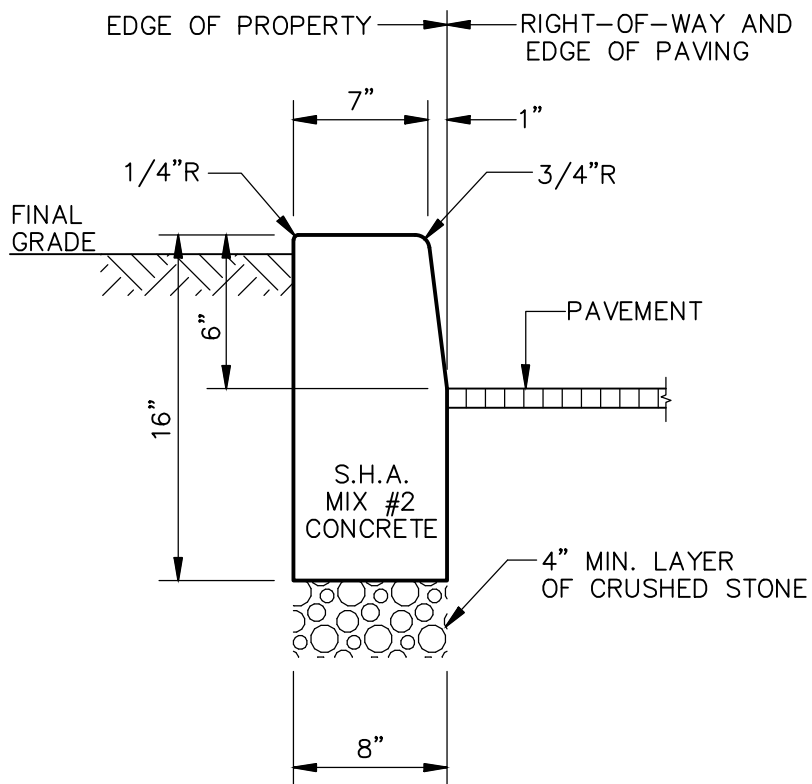


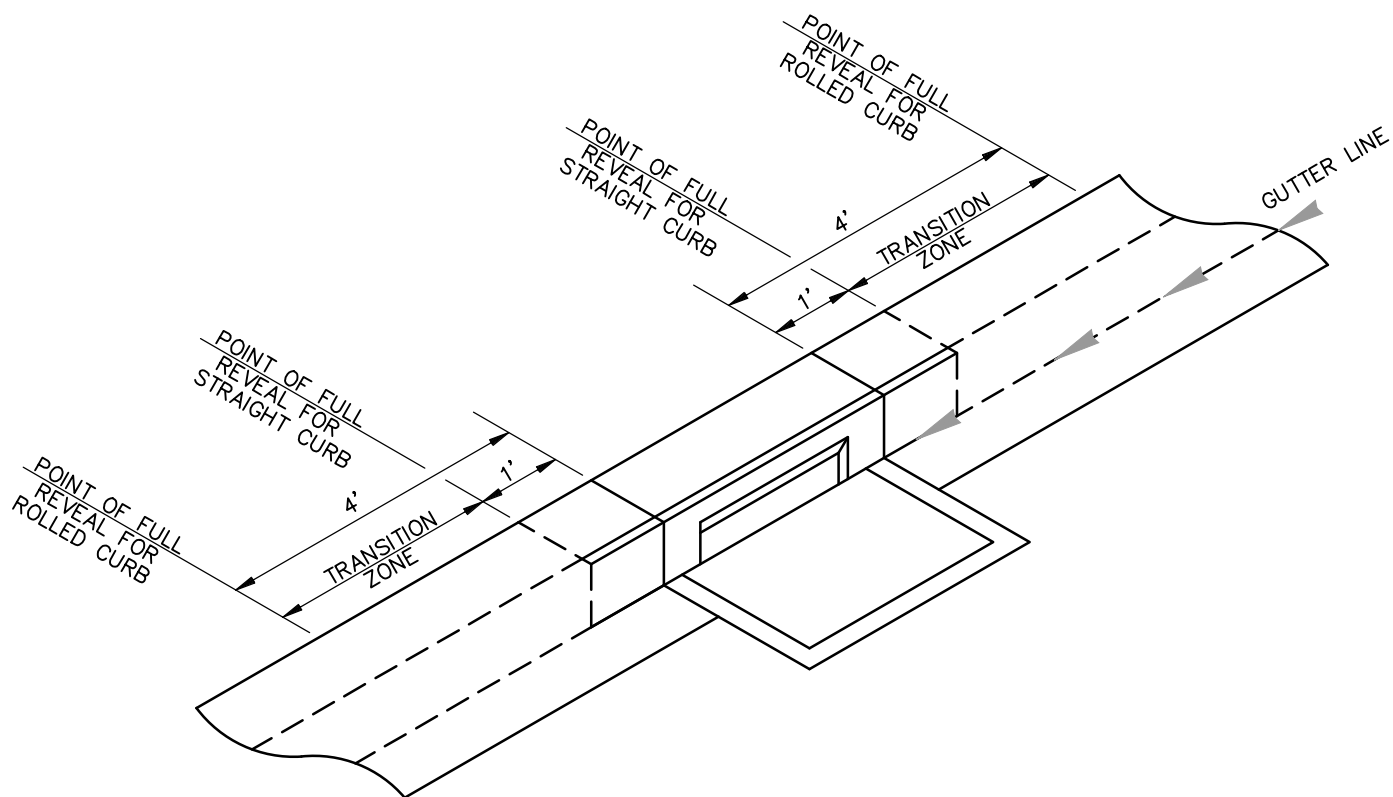
RESIDENTIAL

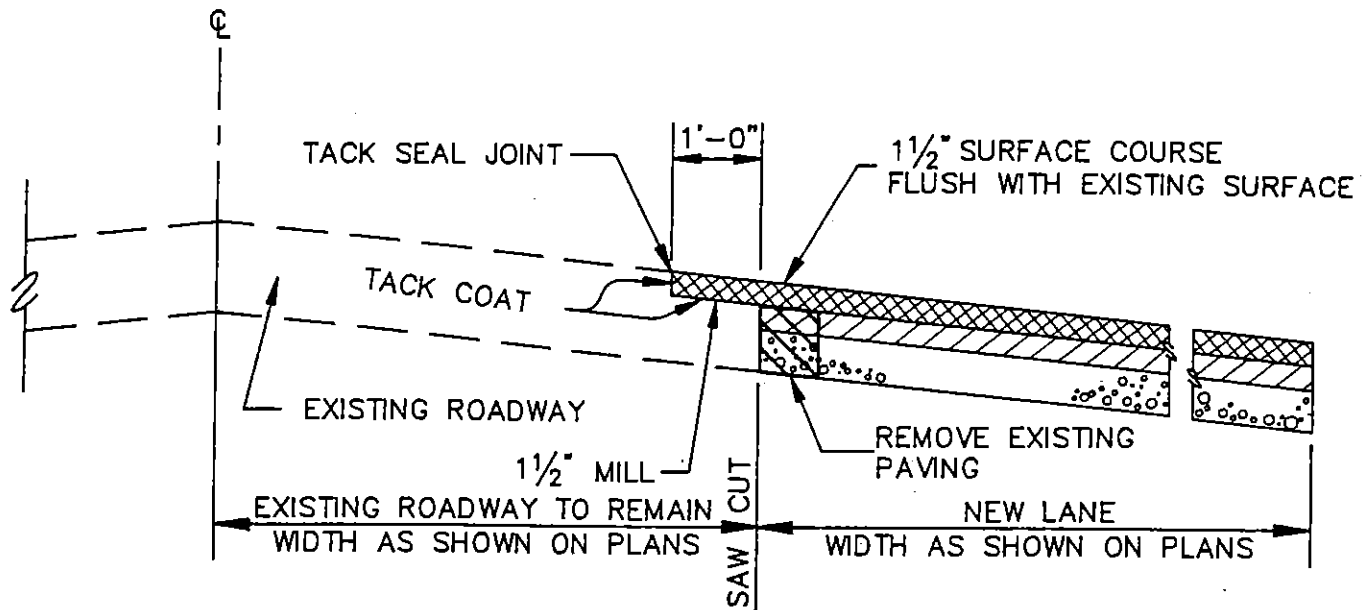


COLLECTOR









THIS METHOD OF JOINING SHALL BE USED WHERE A LANE IS BEING ADDED AND OVERLAY OF EXISTING ROAD IS NOT REQUIRED. CURBING OR SHOULDER SHALL BE SPECIFIED IN TYPICAL SECTION.

REVISED	
DATE	BY
PLATE	

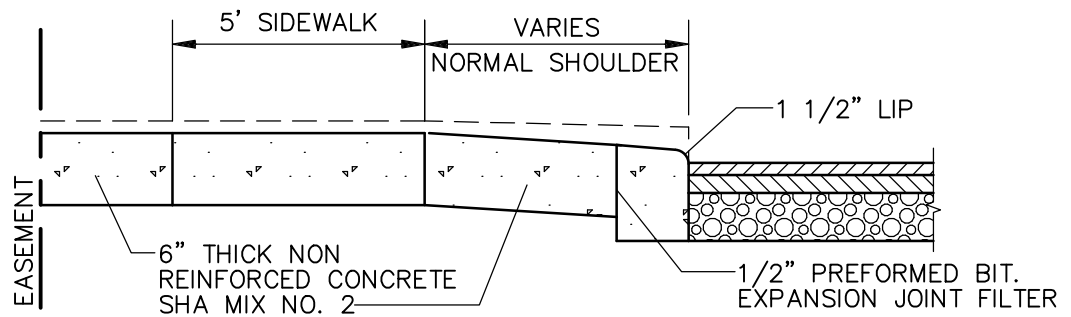
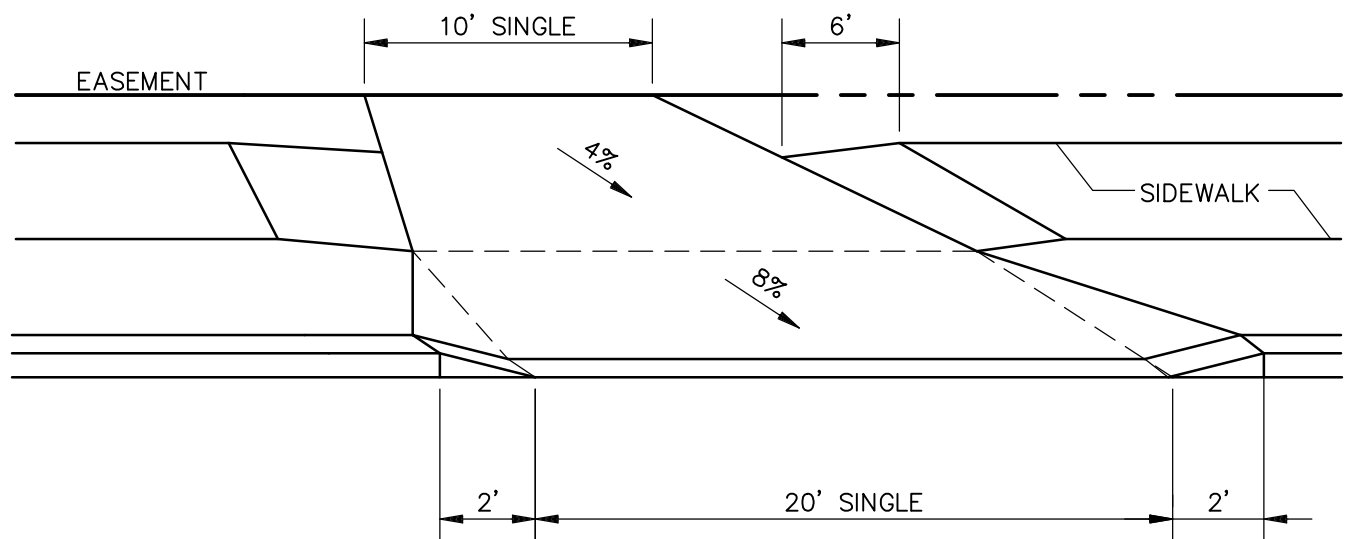
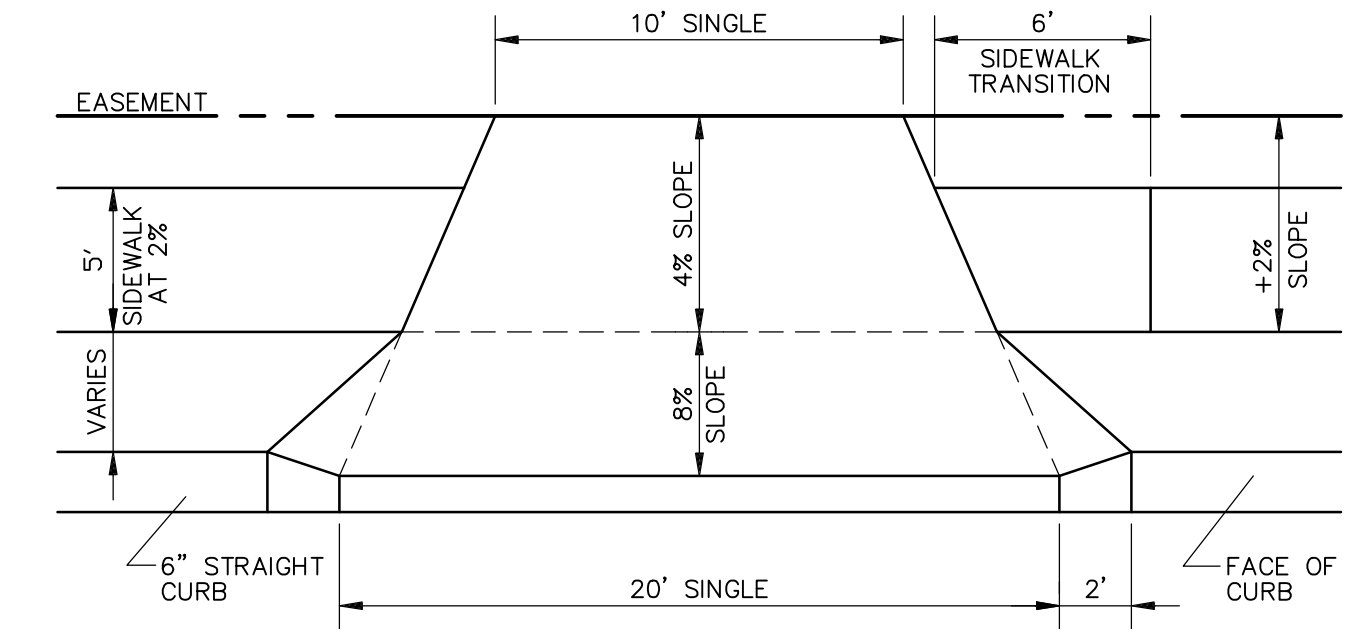
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Carroll County
DIRECTOR

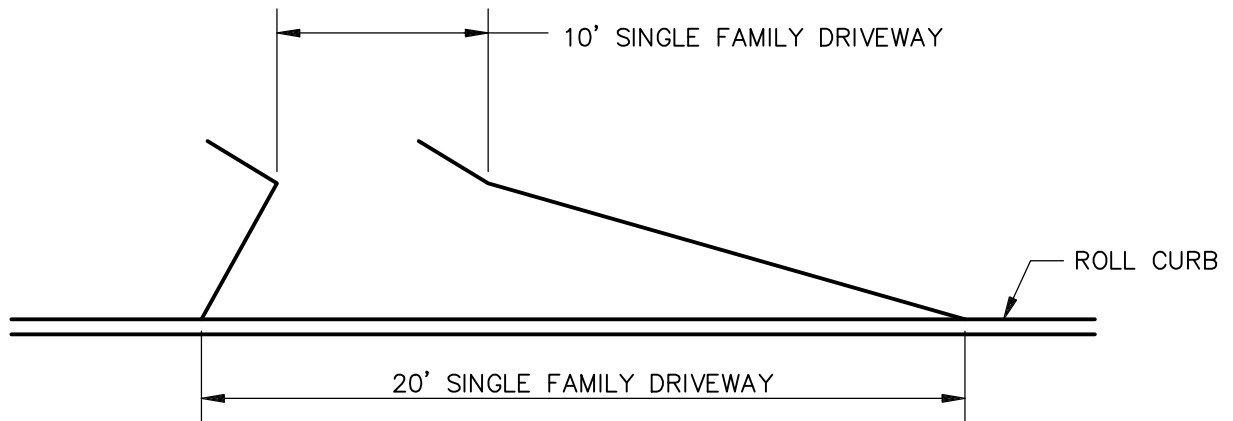
4-12-94
DATE

PAVING JOINT

7

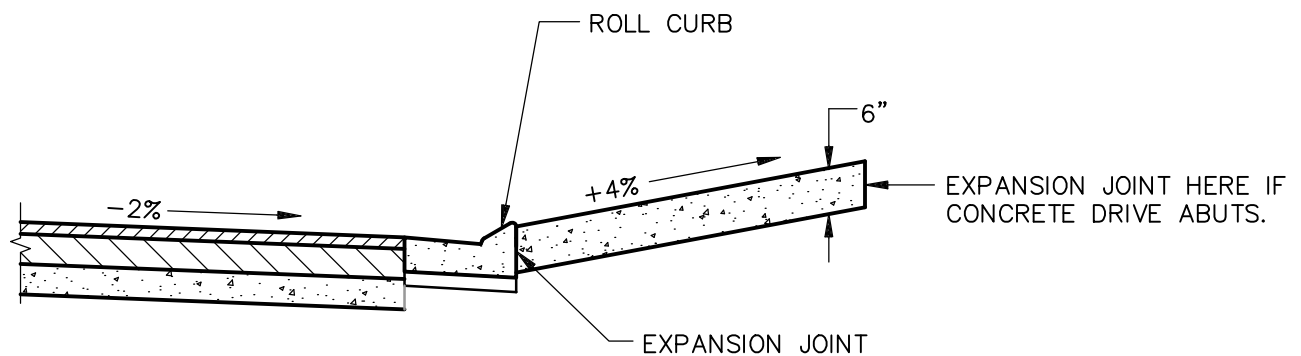


Not to Scale

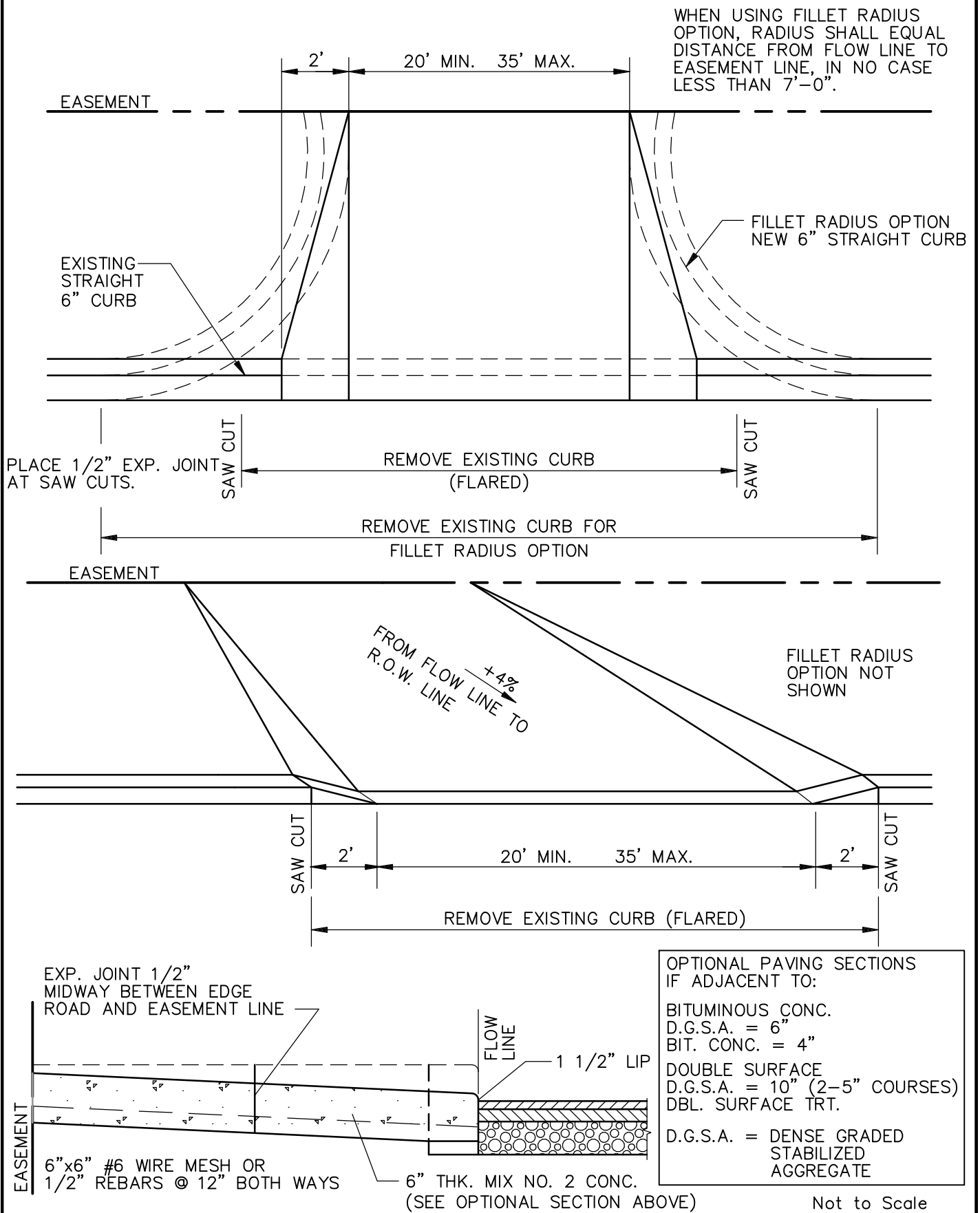


NOTE: SEE PLATES 8 AND 9 FOR
PAVING COURSES.

PLAN



PROFILE

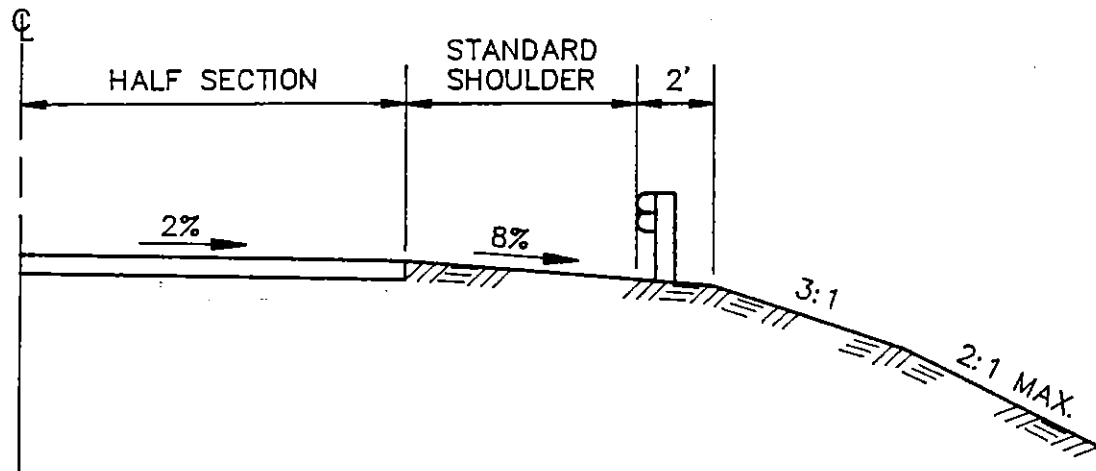




1. CONSTRUCT 1/4" CONTRACTION JOINTS AT 4'-0" INTERVALS.
2. CONSTRUCT 1/2" PREMOLDED EXPANSION JOINTS AT 100' INTERVALS AND AT DRIVEWAYS, SIDEWALKS, CURBS, POLES OR ANY OTHER PERMANENT STRUCTURE.
3. A MONOLITHIC CONCRETE FOOTER, 6" THICK, 6" DEEP, FULL WIDTH OF THE SIDEWALK SHALL BE CONSTRUCTED AT 50' INTERVALS, APPROXIMATELY HALFWAY BETWEEN EXPANSION JOINT ON GRADES OF 5% OR OVER.
4. SURFACE OF RAMP AND FLARES SHALL HAVE COARSE TACTILE WARNING TEXTURE DONE WITH BROOM OR AN EQUIVALENT NON-SKID FINISH AS APPROVED BY D.P.W.
5. THIS DETAIL PRESENTS PREFERRED METHOD OF SIDEWALK RAMP CONSTRUCTION. ANY ALTERATIONS TO THIS DESIGN MUST CONFORM TO A.D.A. REQUIREMENTS.



SIDEWALK RAMP TO
BE LOCATED AT
MID-POINT OF CURB
FILLET.



NOTES:

1. WHEN USING GUARDRAIL, HOLD SAME NORMAL SHOULDER SLOPE AND INCREASE AN ADDITIONAL 2' TO ALLOW FOR PLACEMENT AND BACKING.
2. SEE SECTION 2.7.6 OF THIS MANUAL FOR INFORMATION ON GUARDRAIL.

REVISED	
DATE	BY

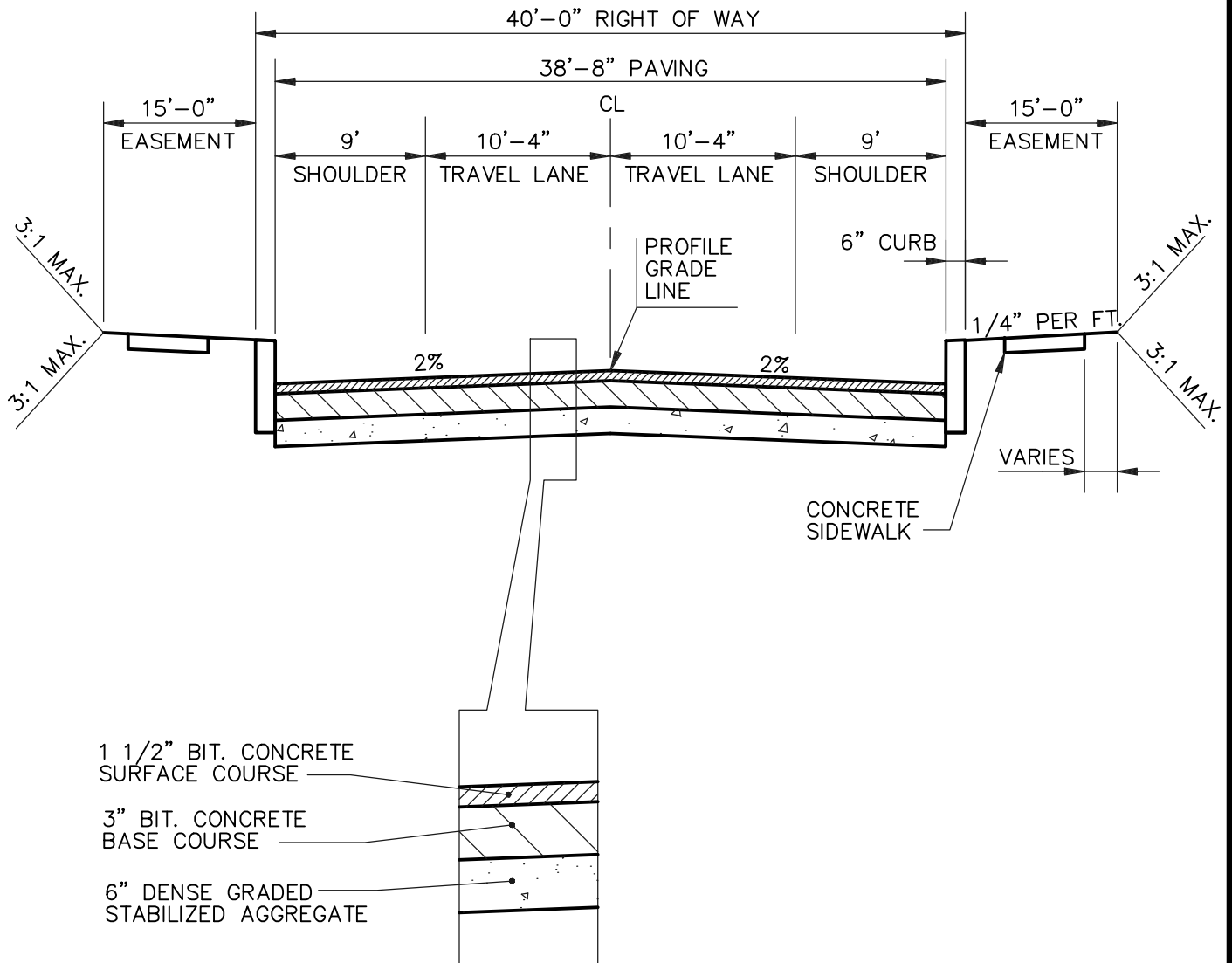
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

David K. ... 4-12-94
DIRECTOR DATE

GUARDRAIL PLACEMENT

PLATE

15-A



NOTE:

THIS TYPICAL SECTION SHALL BE USED IN THE FOLLOWING RESIDENTIAL ZONES WHEN A COLLECTOR ROAD IS REQUIRED:

R-20,000

R-10,000

R-7,500

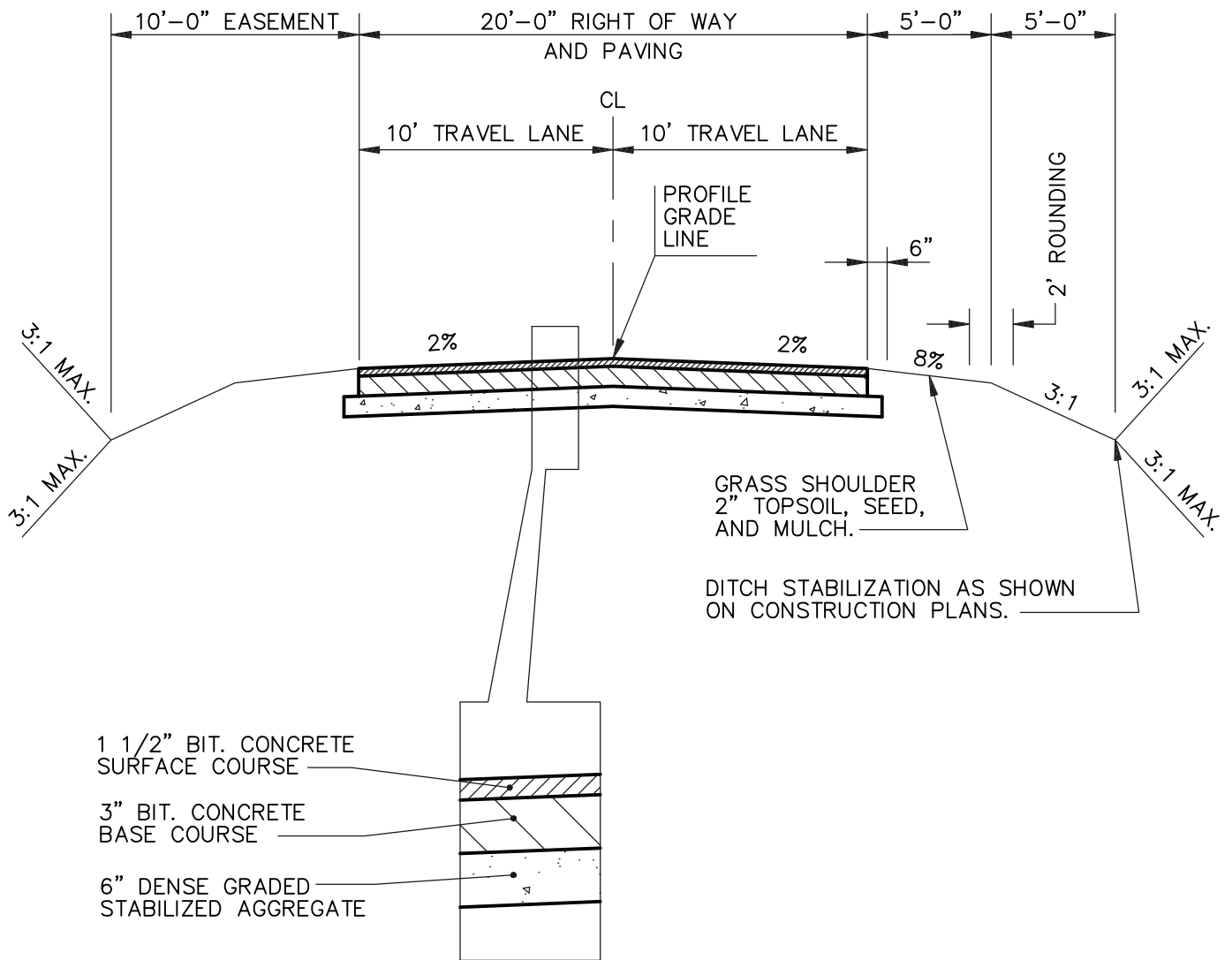
OVER 1000 ADT

**CDM
Smith**

CITY OF TANEYTOWN
CARROLL COUNTY, MARYLAND

SUBCOLLECTOR ROAD
40' CLOSED SECTION

Plate 17T



ALL DISTURBED AREAS WITHIN EASEMENT
LIMITS NEEDED FOR ROADWAY CONSTRUCTION
SHALL BE SODDED OR SEEDDED AND MULCHED
ON 2" OF TOPSOIL.

NOTE:

THIS TYPICAL SECTION SHALL BE USED IN THE FOLLOWING RESIDENTIAL ZONES WHEN A
COLLECTOR ROAD IS REQUIRED:

R-10,000

R-7,500

R-6,000

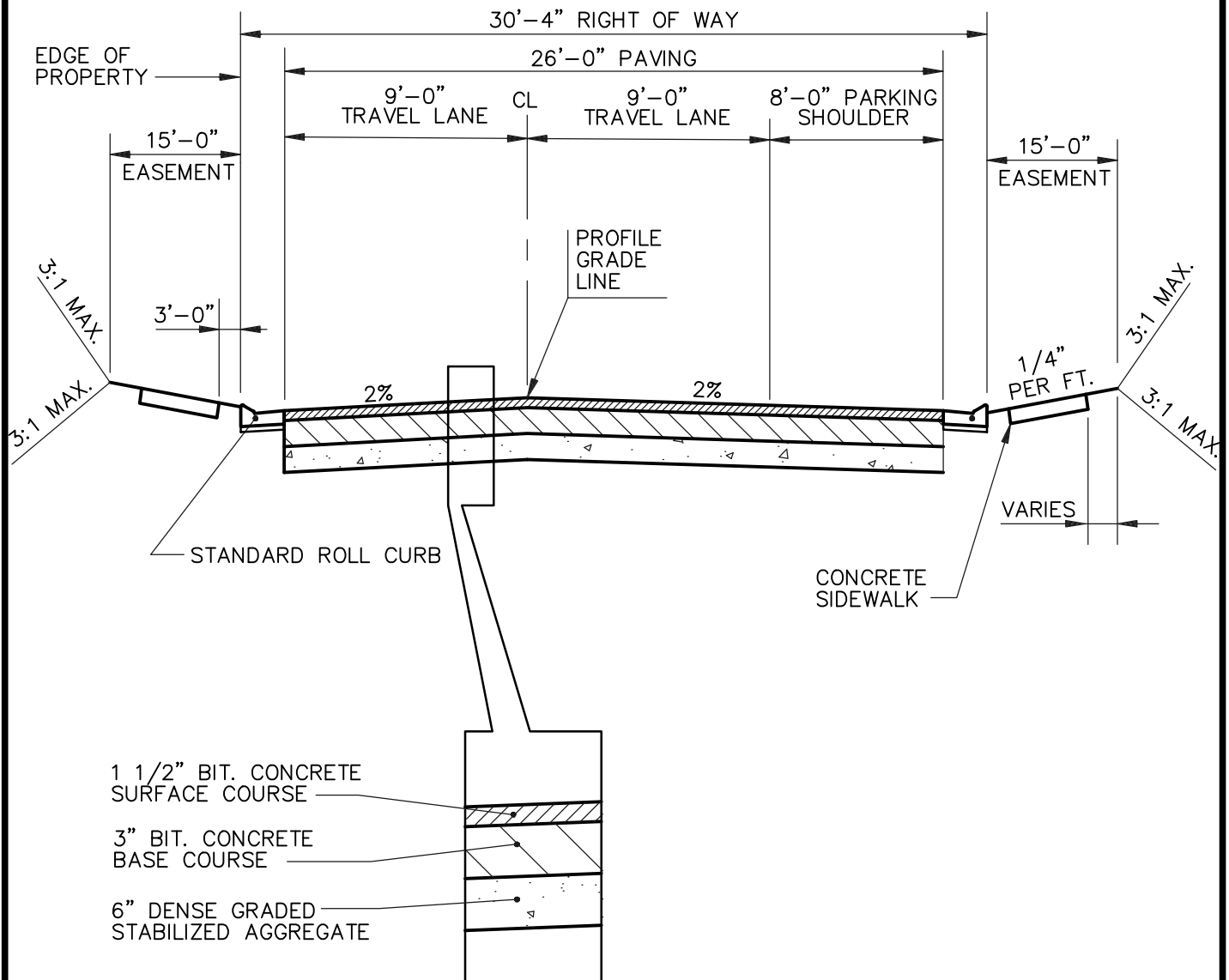
MAX. ADT = 1000

**CDM
Smith**

CITY OF TANEYTOWN
CARROLL COUNTY, MARYLAND

SERVICE DRIVE OR ALLEY
20' OPEN SECTION

Plate 18T



NOTE:

THIS TYPICAL SECTION SHALL BE USED IN THE FOLLOWING RESIDENTIAL ZONES WHEN A COLLECTOR ROAD IS REQUIRED:

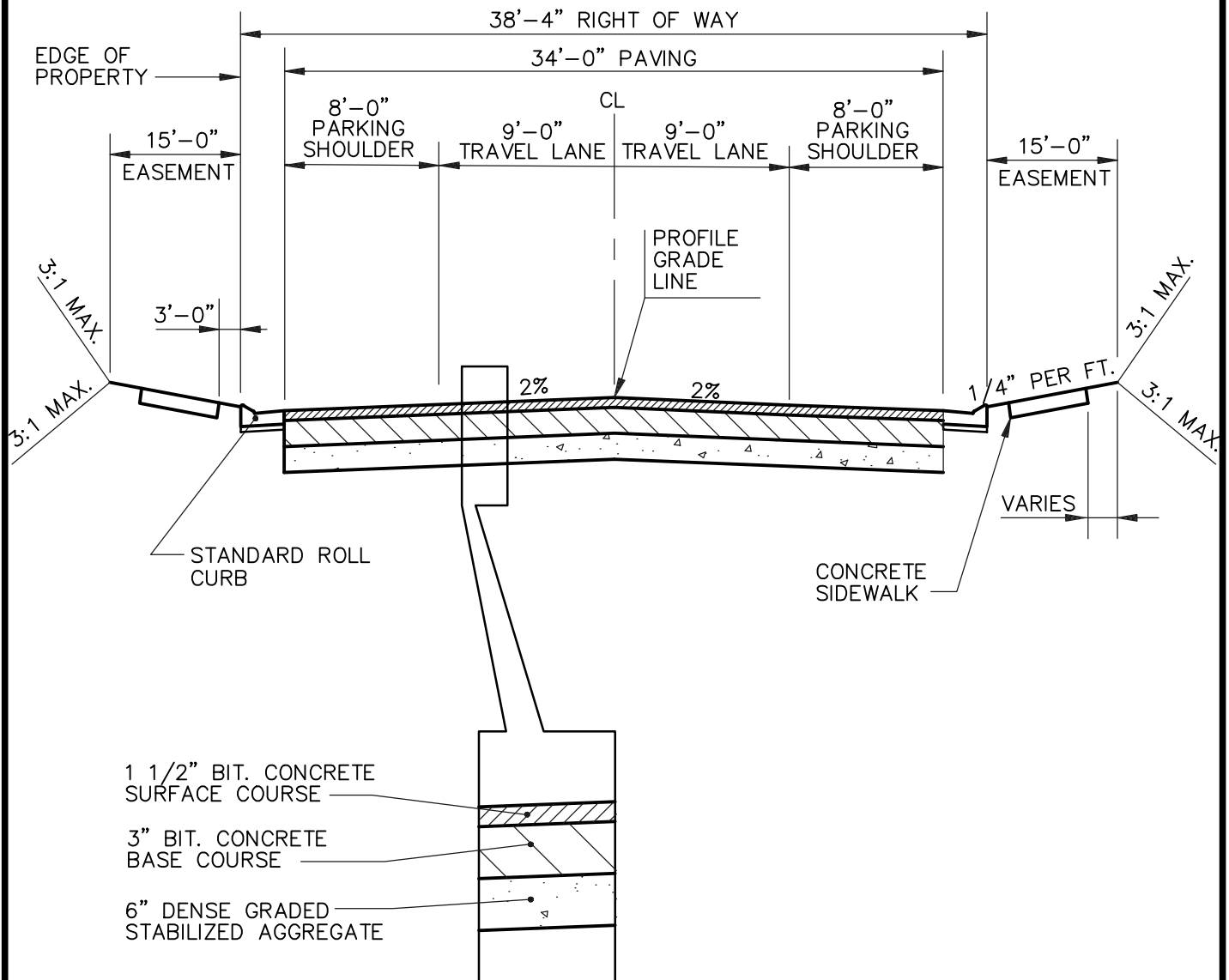
R-20,000
R-10,000
R-7,500
R-6,000

MAX. ADT = 1000

**CDM
Smith**

CITY OF TANEYTOWN
CARROLL COUNTY, MARYLAND
LOCAL STREET
26-FT CLOSED SECTION-
SINGLE SIDED PARKING

Plate 19TA



NOTE:

THIS TYPICAL SECTION SHALL BE USED IN THE FOLLOWING RESIDENTIAL ZONES WHEN A COLLECTOR ROAD IS REQUIRED:

R-20,000
R-10,000
R-7,500
R-6,000

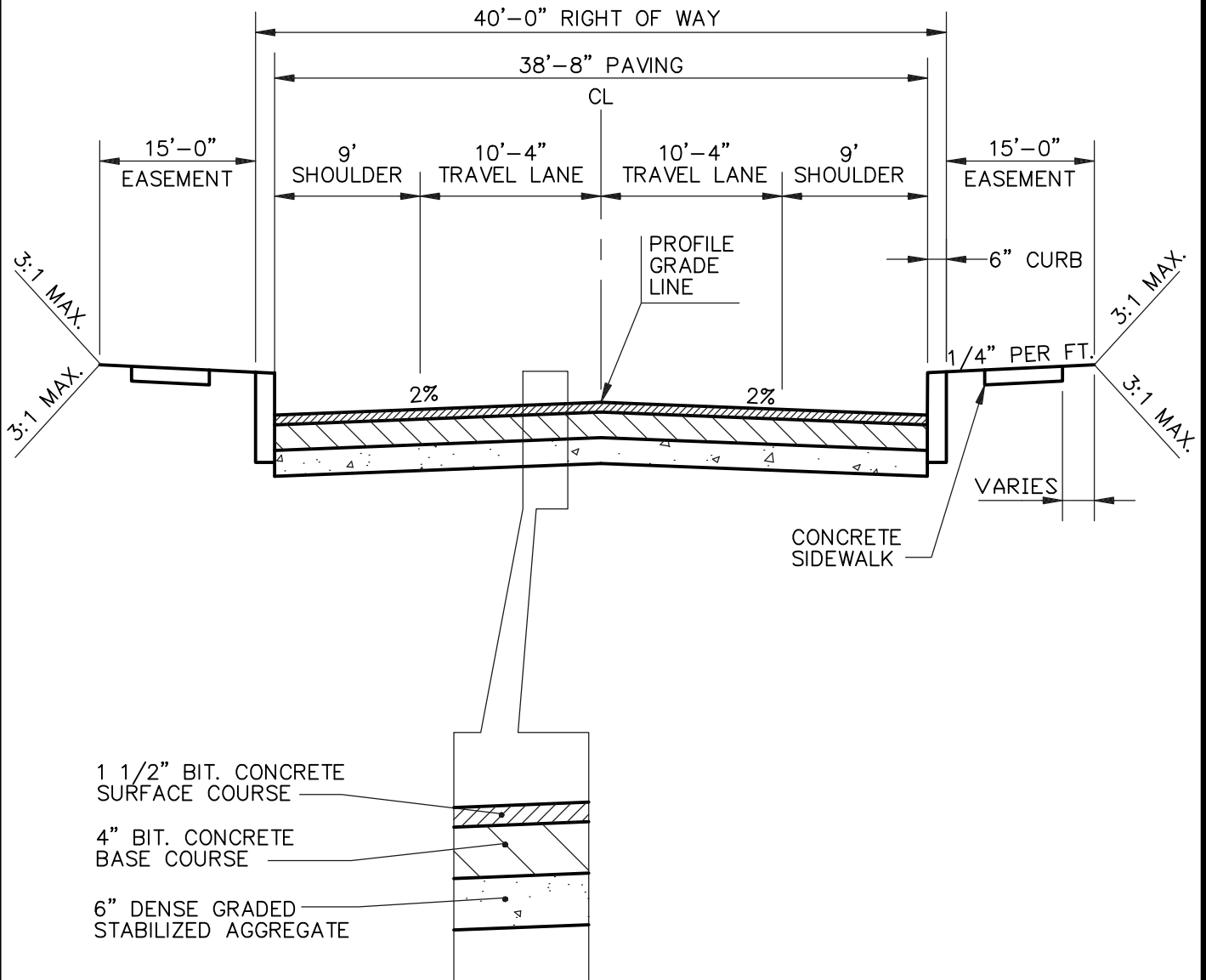
MAX. ADT = 1000

**CDM
Smith**

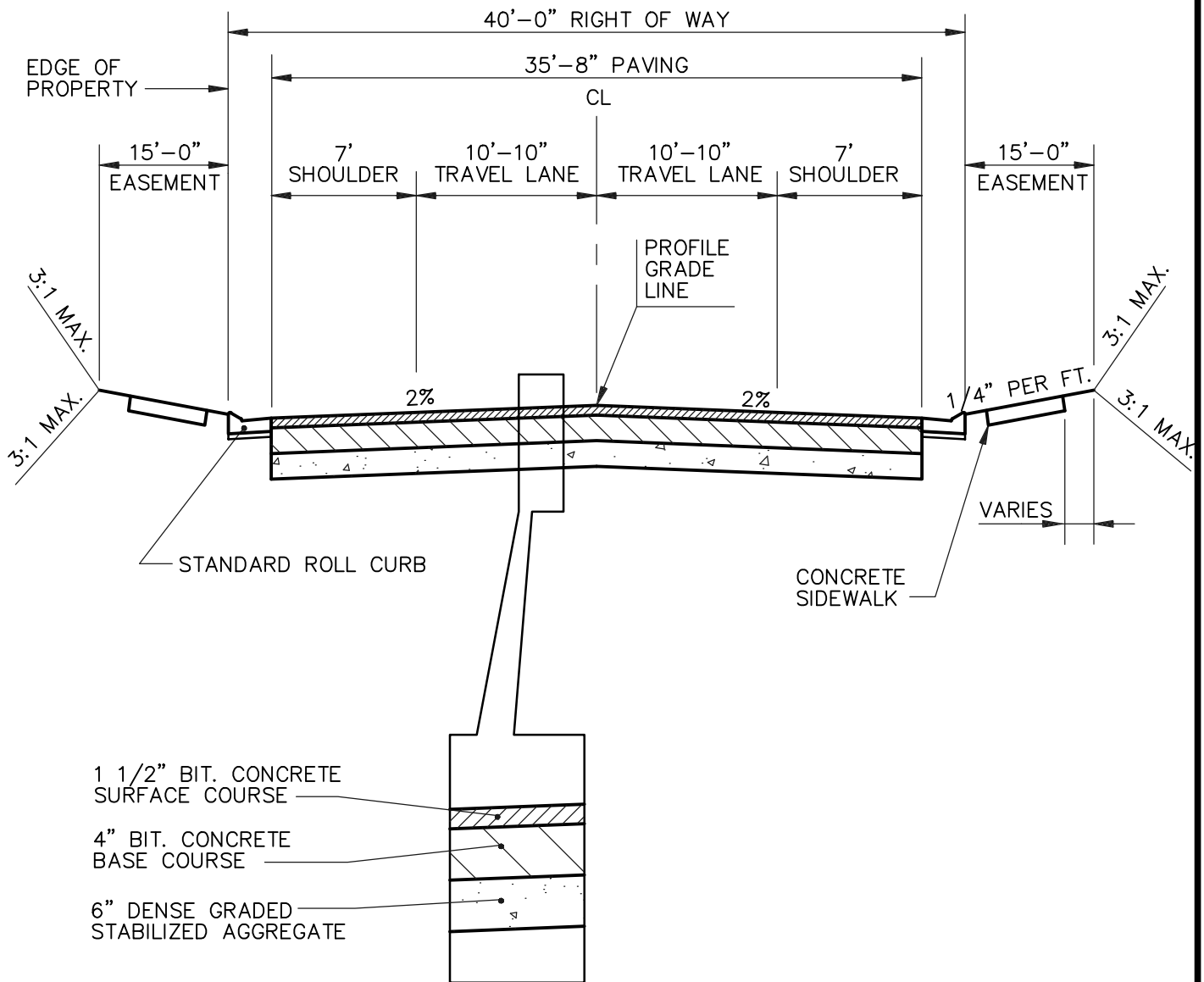
CITY OF TANEYTOWN
CARROLL COUNTY, MARYLAND

LOCAL STREET
34-FT CLOSED SECTION-
DOUBLE SIDED PARKING

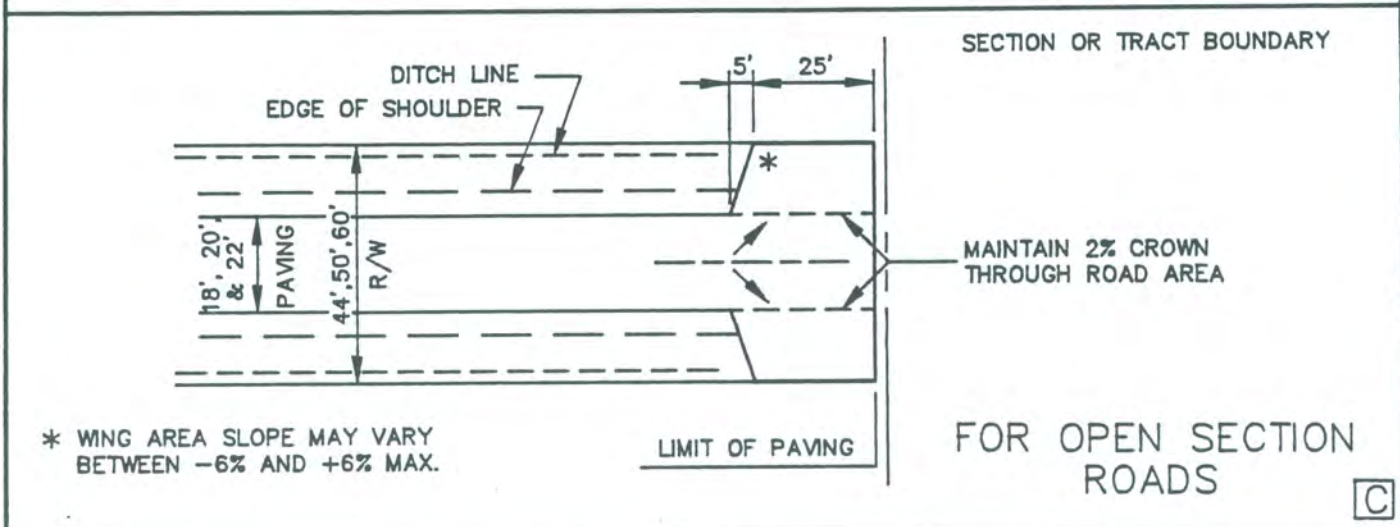
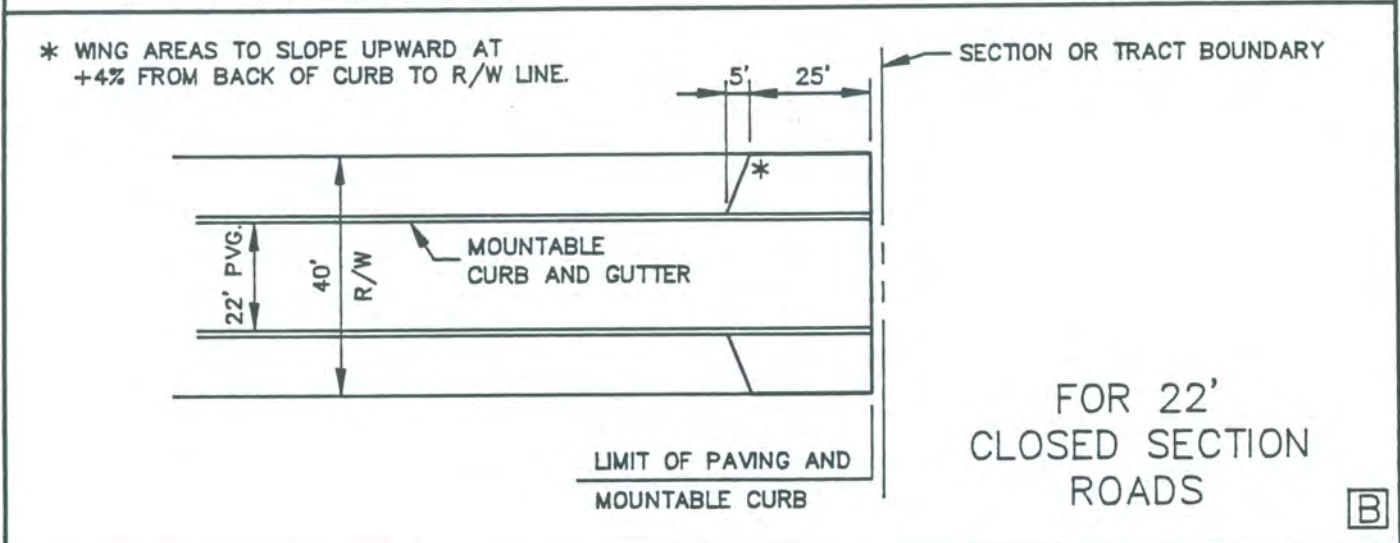
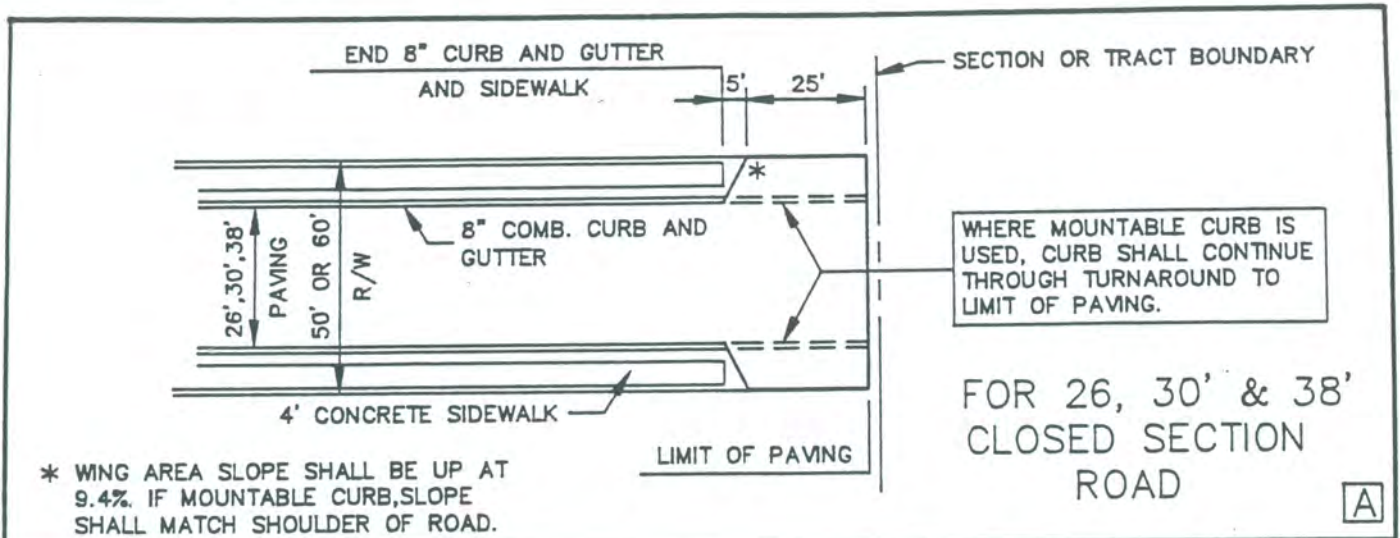
Plate 19TB



ALL DISTURBED AREAS WITHIN EASEMENT LIMITS NEEDED FOR ROADWAY CONSTRUCTION SHALL BE SODDED OR SEEDED AND MULCHED ON 2" OF TOPSOIL.



ALL DISTURBED AREAS WITHIN EASEMENT LIMITS NEEDED FOR ROADWAY CONSTRUCTION SHALL BE SODDED OR SEEDED AND MULCHED ON 2" OF TOPSOIL.



NOTE:
DRIVEWAY APRONS MAY NOT BE CONSTRUCTED IN "T" TURNAROUNDS.

REVISED	
DATE	BY

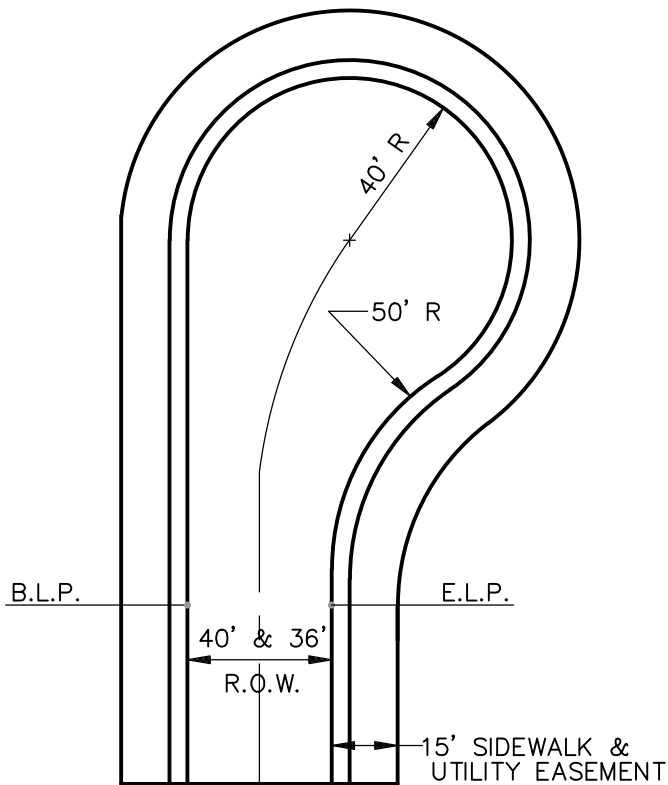
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Carroll County 4-12-94
DIRECTOR DATE

TEMPORARY
"T" TURNAROUNDS

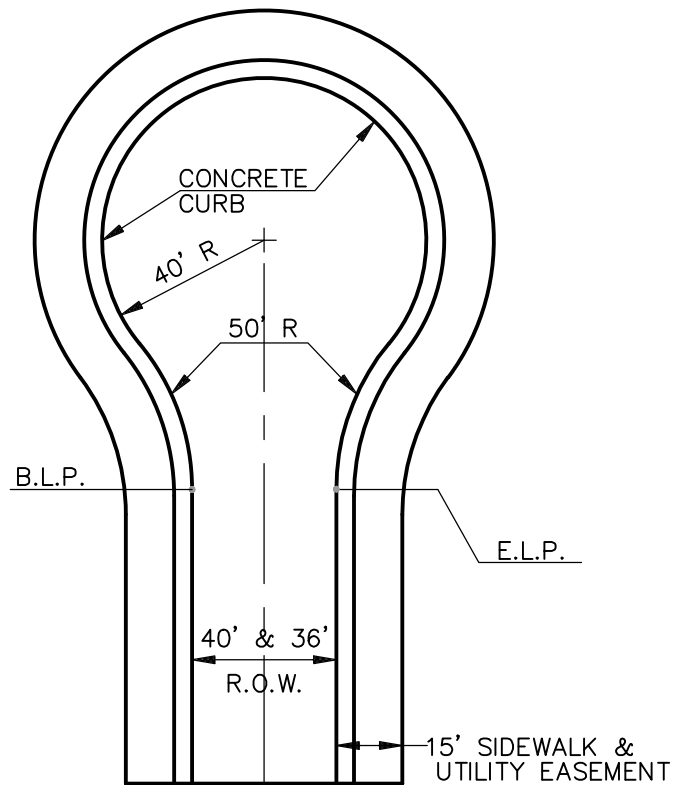
PLATE

28



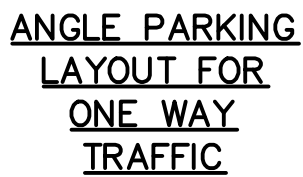
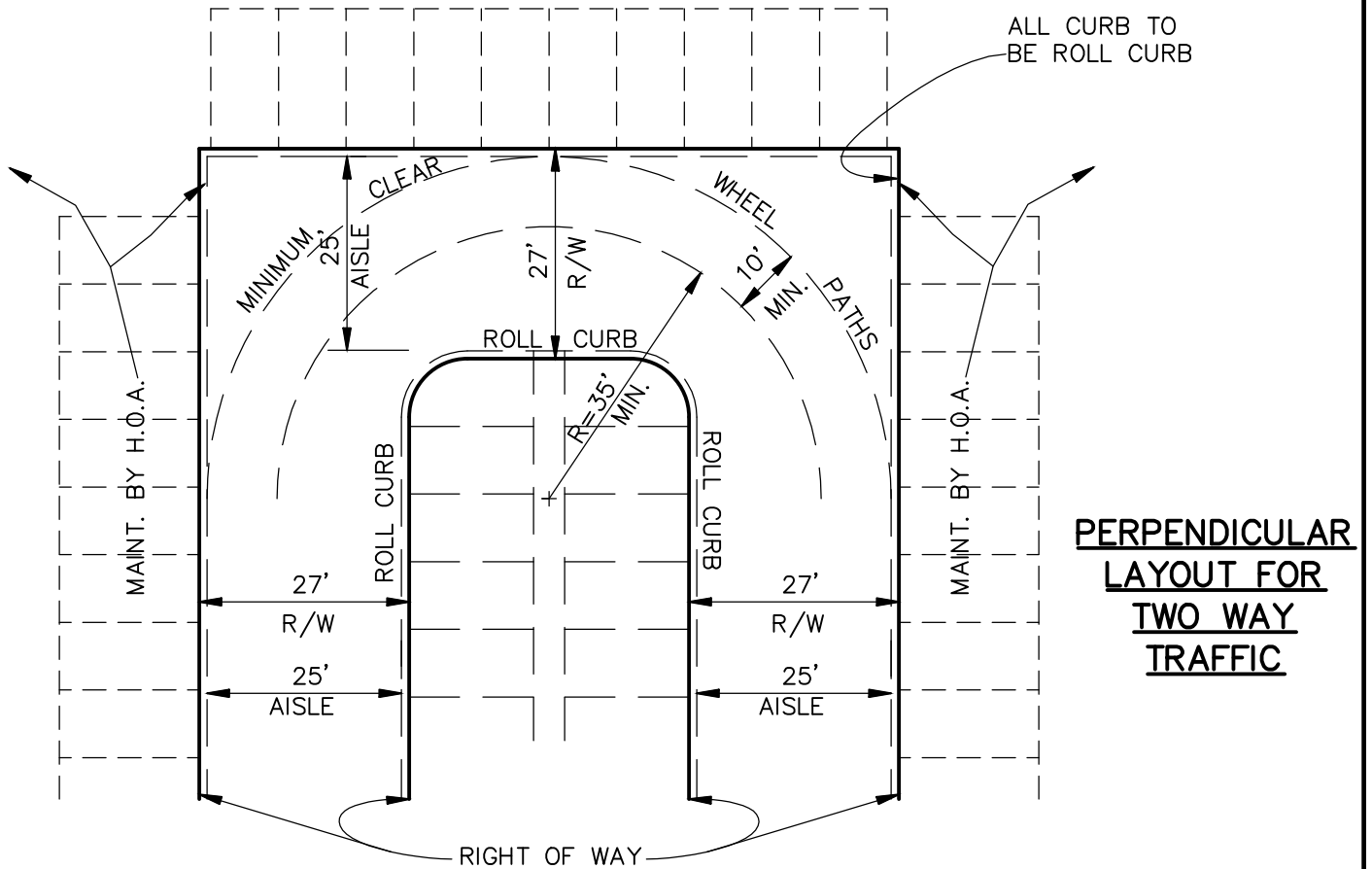
CUL-DE-SAC DETAIL
STRAIGHT

NOTE:
B.L.P. = BEGIN LINEAR PROFILE
E.L.P. = END LINEAR PROFILE



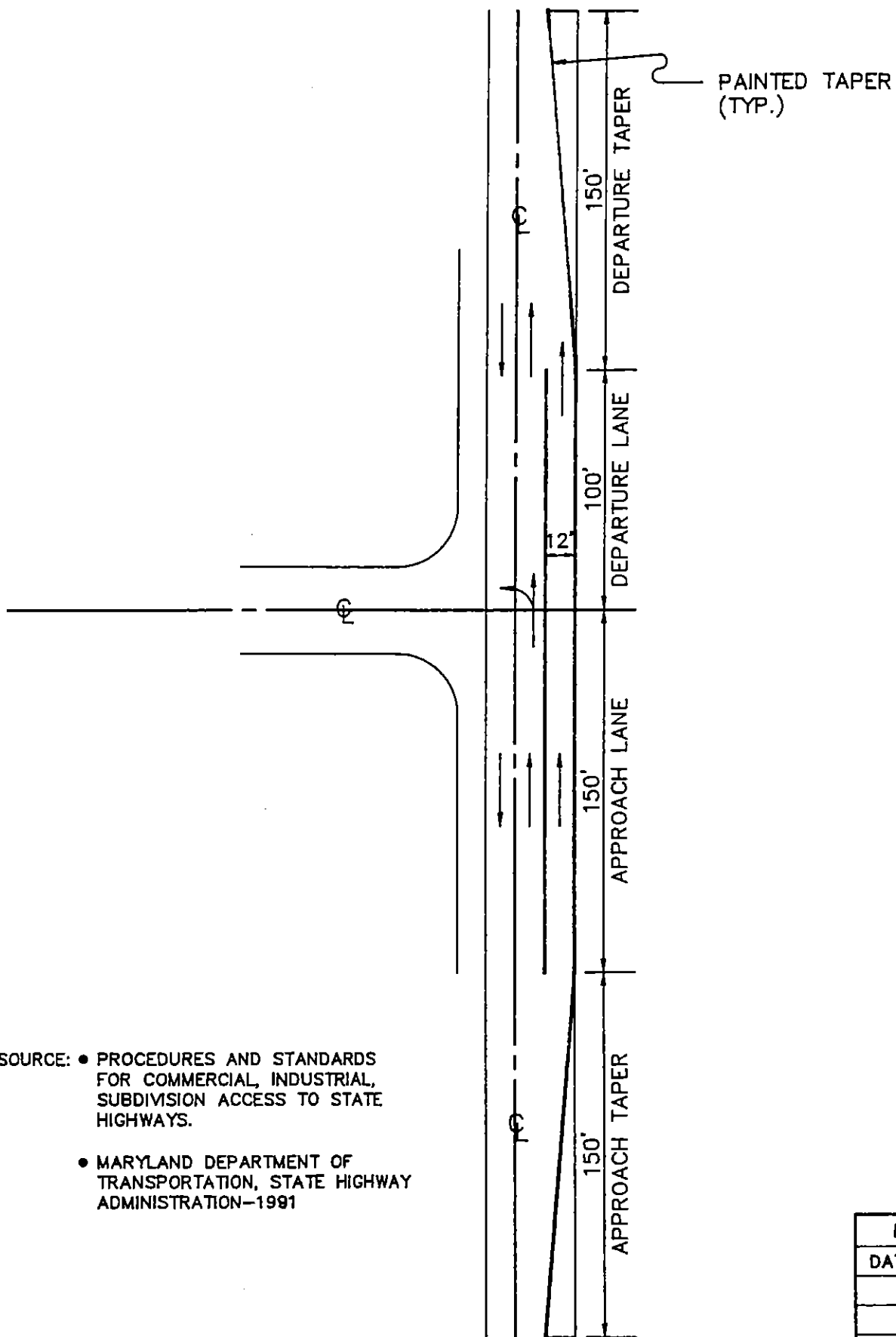
CUL-DE-SAC DETAIL
OFFSET

NOTE: 36' R.O.W. FOR RESIDENTIAL
AREAS. 40' R.O.W. FOR COMMERCIAL
AND INDUSTRIAL AREAS.



NOTE:

1. CROSS-OVERS MUST BE PROVIDED AT 200' MAX. SPACING IN BOTH LAYOUTS.



SOURCE: • PROCEDURES AND STANDARDS
FOR COMMERCIAL, INDUSTRIAL,
SUBDIVISION ACCESS TO STATE
HIGHWAYS.

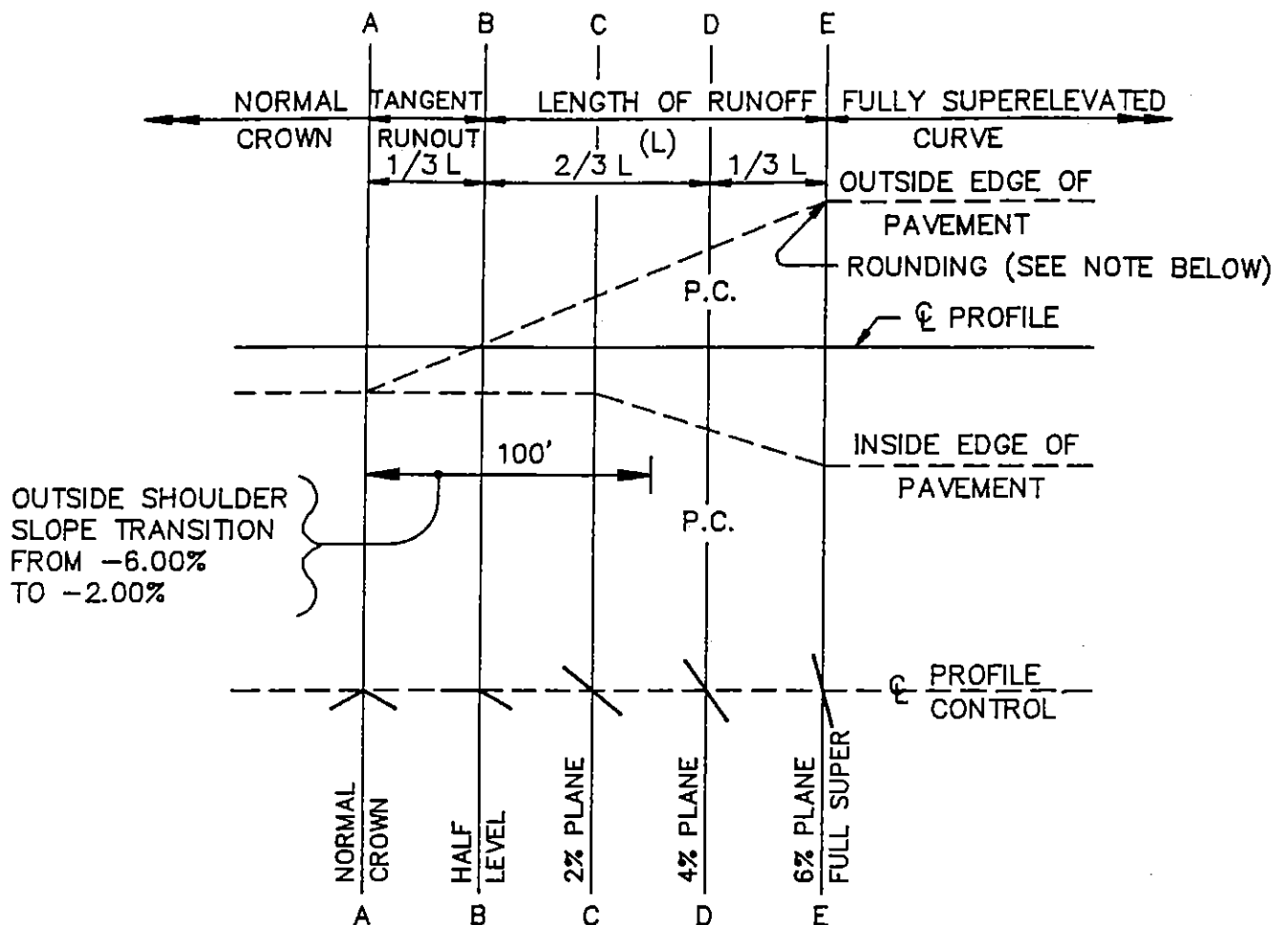
- MARYLAND DEPARTMENT OF
TRANSPORTATION, STATE HIGHWAY
ADMINISTRATION-1991

REVISED	
DATE	BY
PLATE	
38	

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Ed O'Connell 4-12-94
DIRECTOR DATE

TYPICAL BY-PASS LANE
AT A "T" INTERSECTION



NOTES:

1. ANGULAR BREAKS IN SECTION TO BE ROUNDED TO PROVIDE SMOOTH TRANSITIONS.
2. POINTS A, B, C, D, & E ARE TO BE STATIONED AND IDENTIFIED IN PLAN, PROFILE, AND TRANSITION DATA TABLE.
3. MAXIMUM RATE OF SUPERELEVATION (e) SHALL BE 0.06 FEET PER FOOT (6.00%).
4. SHOULDER ON HIGH SIDE TO SLOPE DOWNWARD AWAY FROM ROADWAY AT 2.00%.

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CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

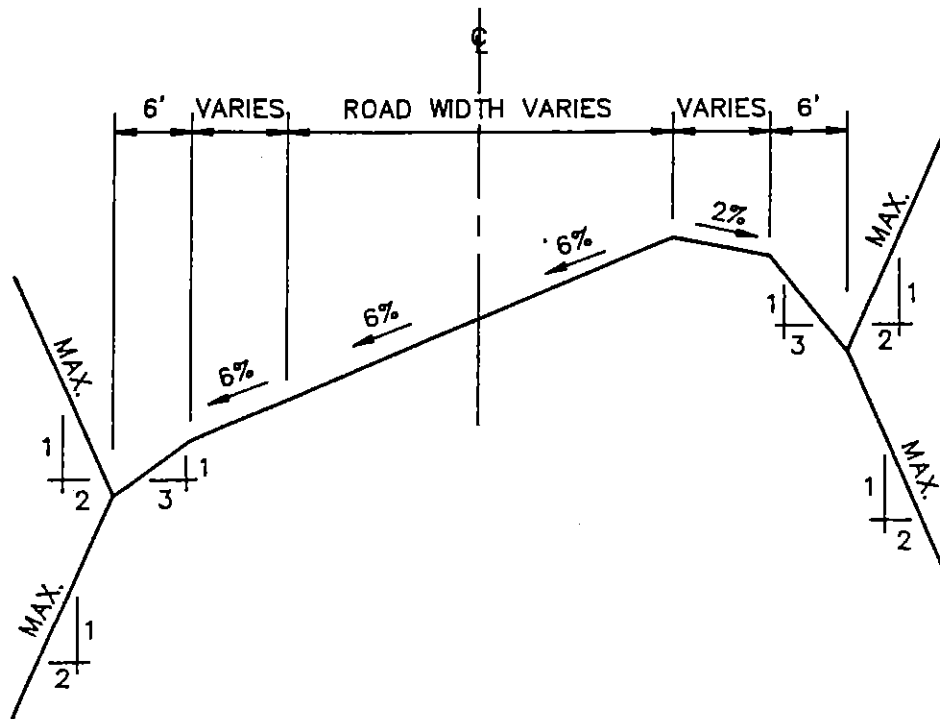
Carroll County 4-12-94
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CROWNED PAVEMENT

REVOLVED ABOUT CENTERLINE

PLATE

39



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DEPARTMENT OF PUBLIC WORKS

[Signature]

DIRECTOR

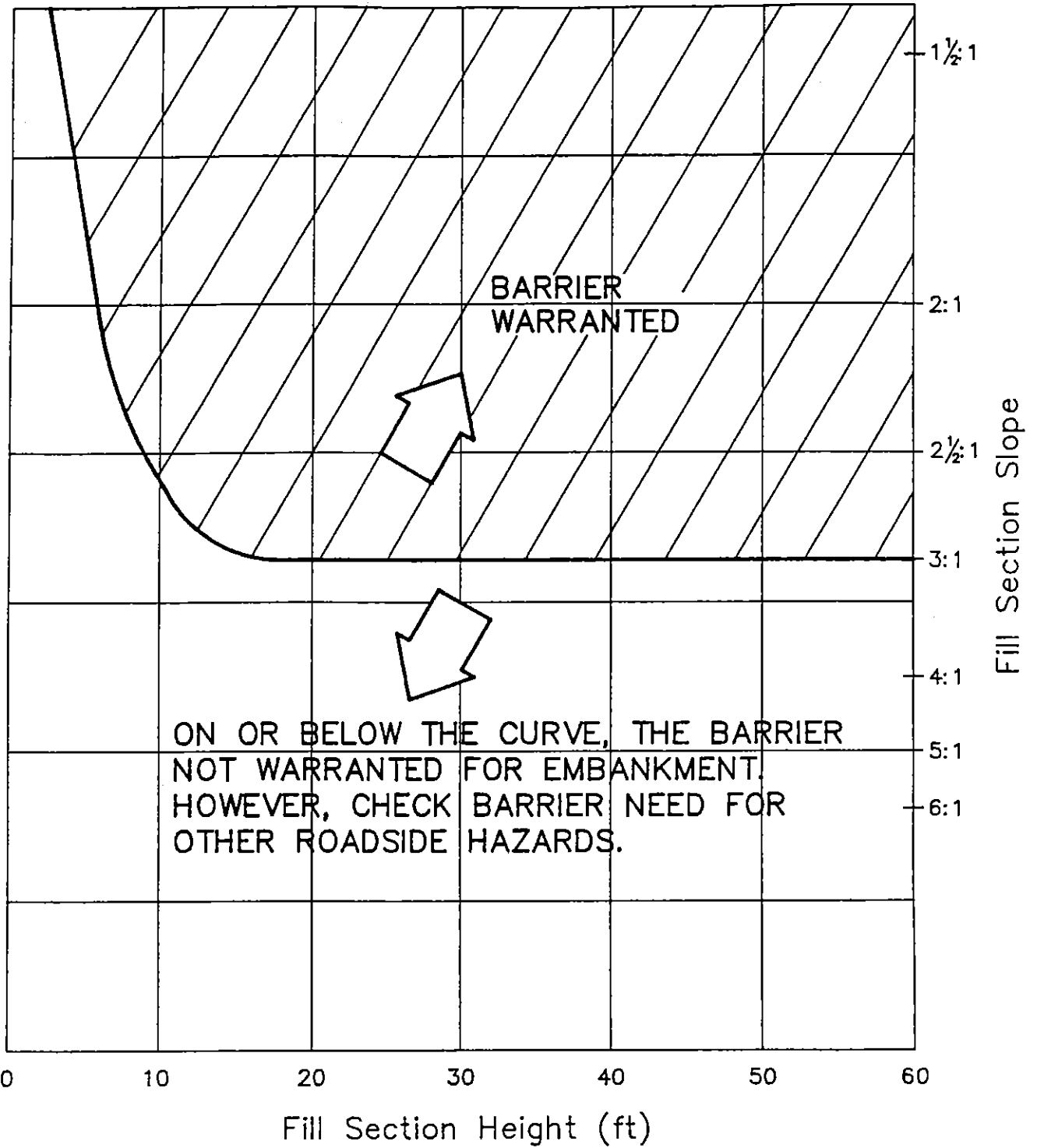
4-12-94

DATE

SCHEMATIC SECTION
FULL SUPERELEVATION

PLATE

40



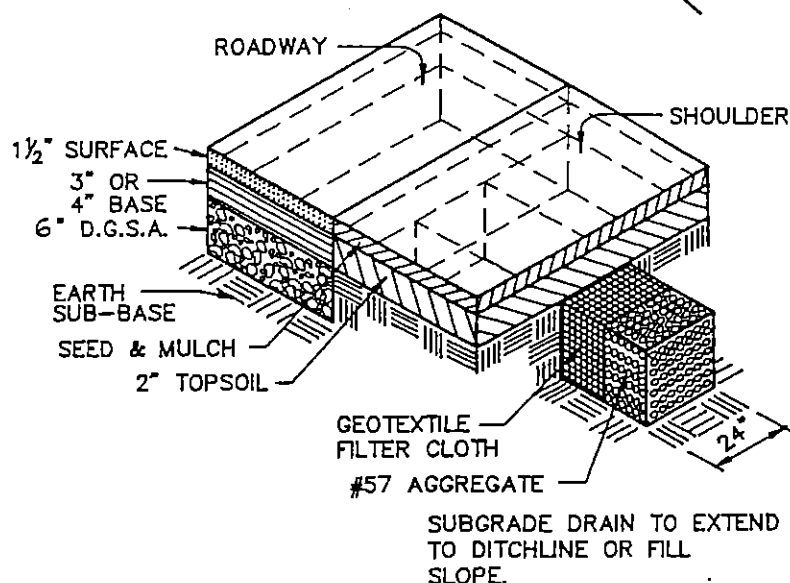
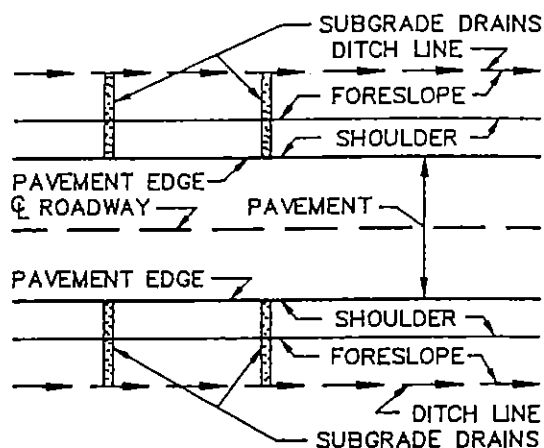
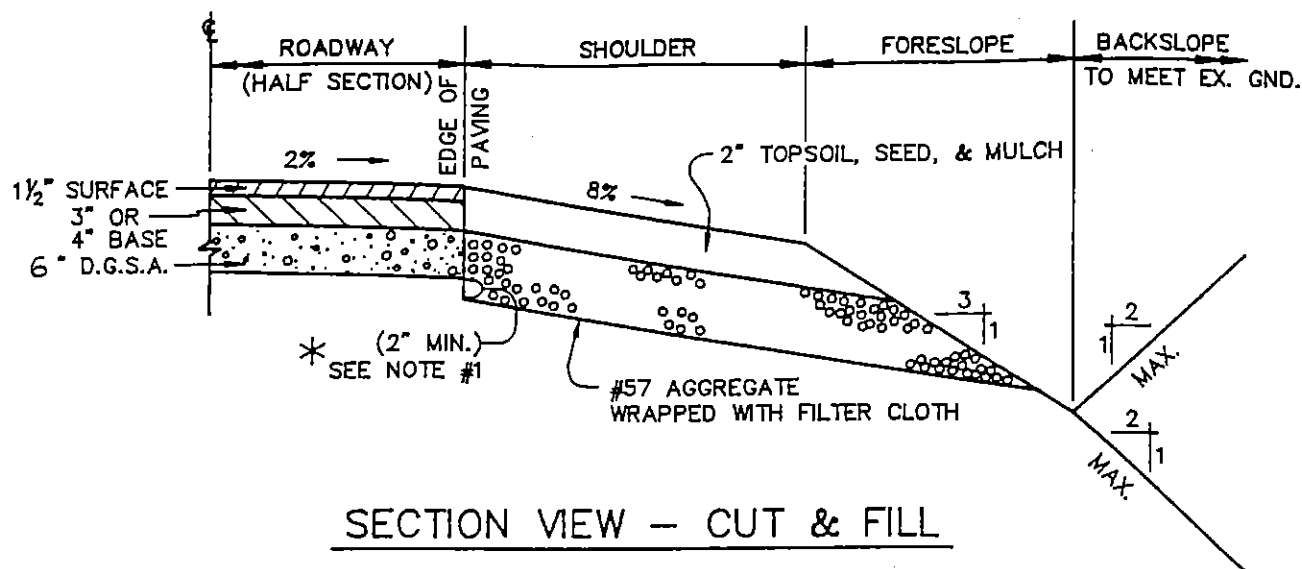
SOURCE: GUIDE FOR SELECTING, LOCATING, AND DESIGNING
TRAFFIC BARRIERS (AASHTO, 1977 EDITION)

REVISED	
DATE	BY
PLATE	
42	

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

David Kincaid 4-12-94
DIRECTOR DATE

GUARDRAIL REQUIREMENT
CHART



NOTES:

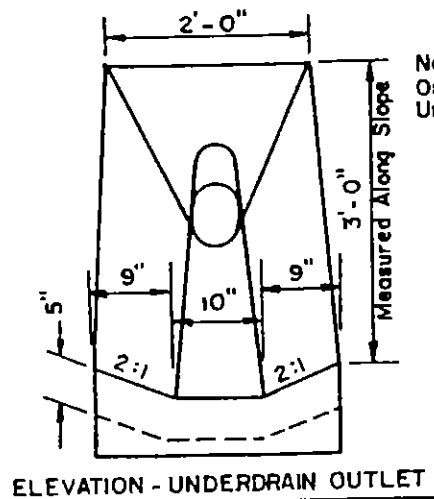
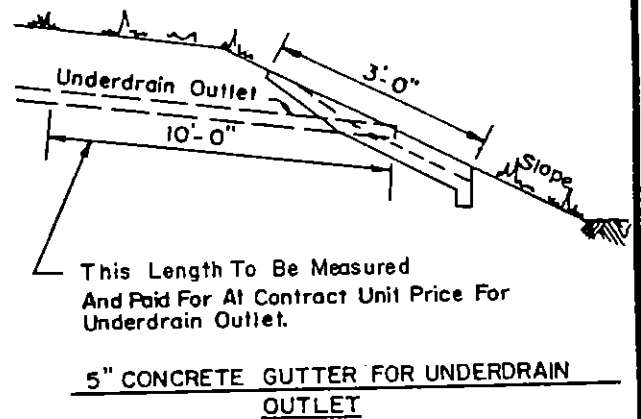
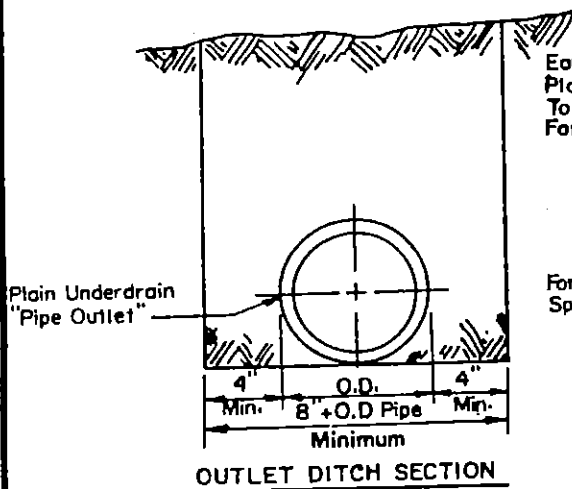
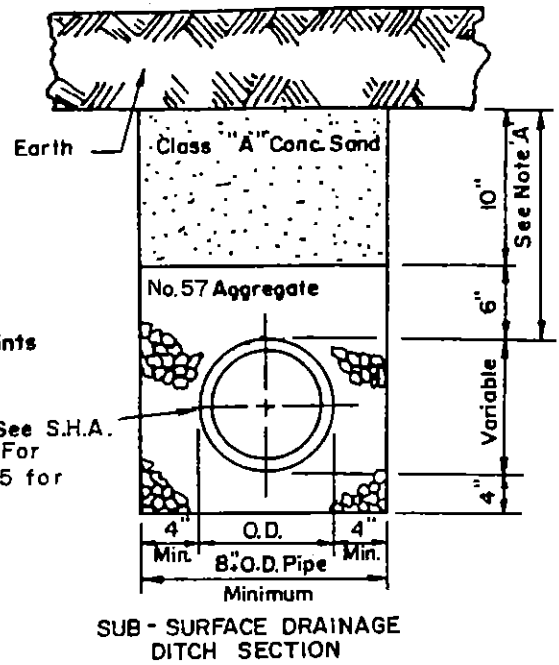
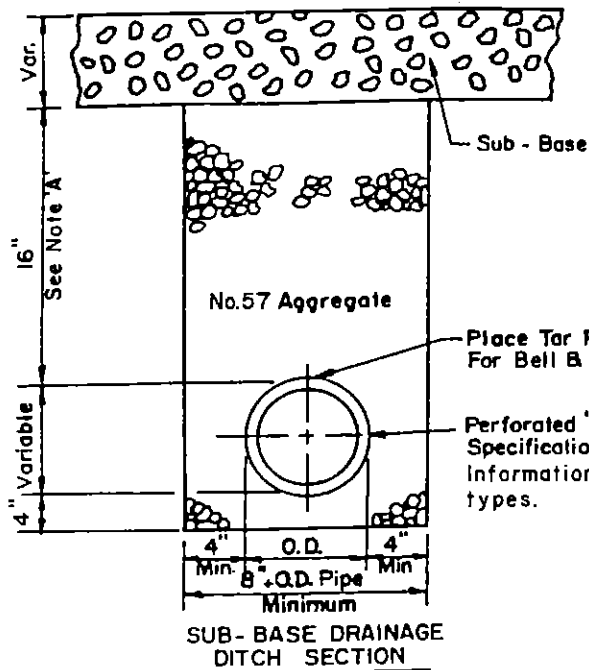
1. EXTEND DEPTH AS NECESSARY TO MEET DITCHLINE STABILIZATION.
2. DESIGN ENGINEER TO SHOW ACTUAL DIMENSIONS FOR ROADWAY, SHOULDER, AND FORESLOPE ON CONSTRUCTION DRAWINGS.
3. CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH SECTION 306; SUBSECTION 306.03.06 OF THE MARYLAND STATE HIGHWAY ADMINISTRATIONS OCTOBER, 1983 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.
4. IN NORMAL, CROWNED SECTIONS UNDERDRAINS TO BE PLACED IN SUMP AND AT 25 FOOT INTERVALS FOR 125 FEET UPGRADE FROM SUMP THEN AT 100 FOOT INTERVALS TO WITHIN 125 FEET OF HILL CREST.
5. IN SUPERELEVATED SECTIONS, UNDERDRAINS SHALL BE PLACED AS NOTED ABOVE BUT ON LOW SIDE ONLY AND SHALL EXTEND FROM HALF LEVEL SECTION AT BEGINNING OF CURVE TO HALF LEVEL SECTION AT END OF CURB.
6. FILTER CLOTH SHALL CONFORM TO S.H.A. CLASS "C" SPECIFICATION.

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DATE	BY

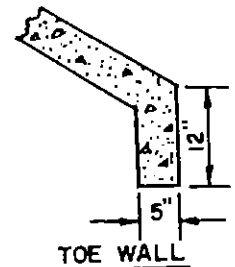
PLATE

**SUBGRADE DRAINS FOR
FLEXIBLE PAVING**

43T



*Note 'A': Where Underdrain Is Outletted Into An Inlet, Or Where Any Other Unusual Conditions Prevail, These Dimensions May Be Varied As Directed.



CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

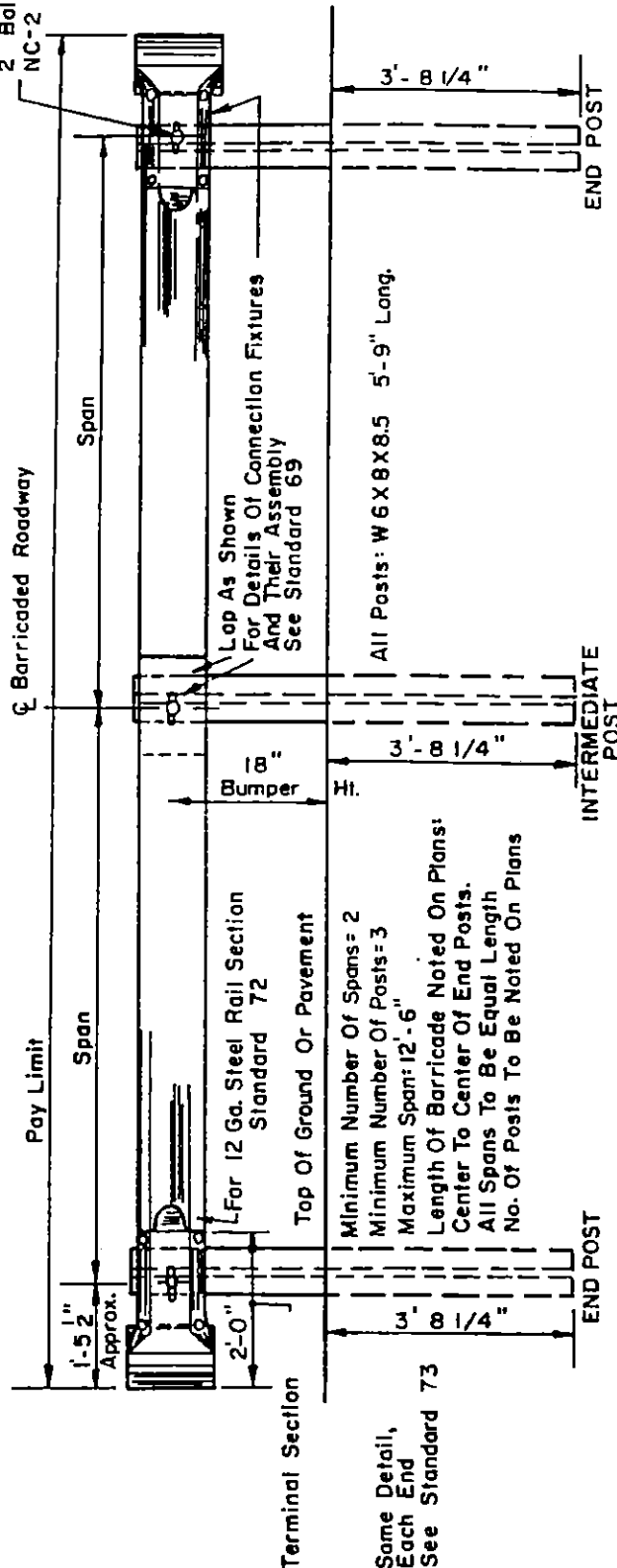
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STANDARD UNDERDRAINS

REVISED	
DATE	BY
PLATE	

44

2" Bolt, 5/8" ϕ - 11-NC-2 And Nut.



The Linear Foot Price Bid For "Beam Type Barricade" Shall Include The Furnishing And Installation, At Locations Noted On The Plans Or Where Directed By The Engineer, Of Steel Posts, Standard 12 Ga. "Steel Beam Guard Rail," 5/8"Diam. Post And Splicing Bolts, Terminal And Intermediate Splicing Sections, Galvanizing, The Cost Of All Excavation, Backfilling And Tamping Incidental To Setting The Posts, Or The Cost Of Driving The Posts, The Cost Of Removal Of Existing Pavement, Where Necessary, As Well As The Cost Of All Labor, Approved Tools And Equipment Incidental To Furnishing And Installing The Barricade.

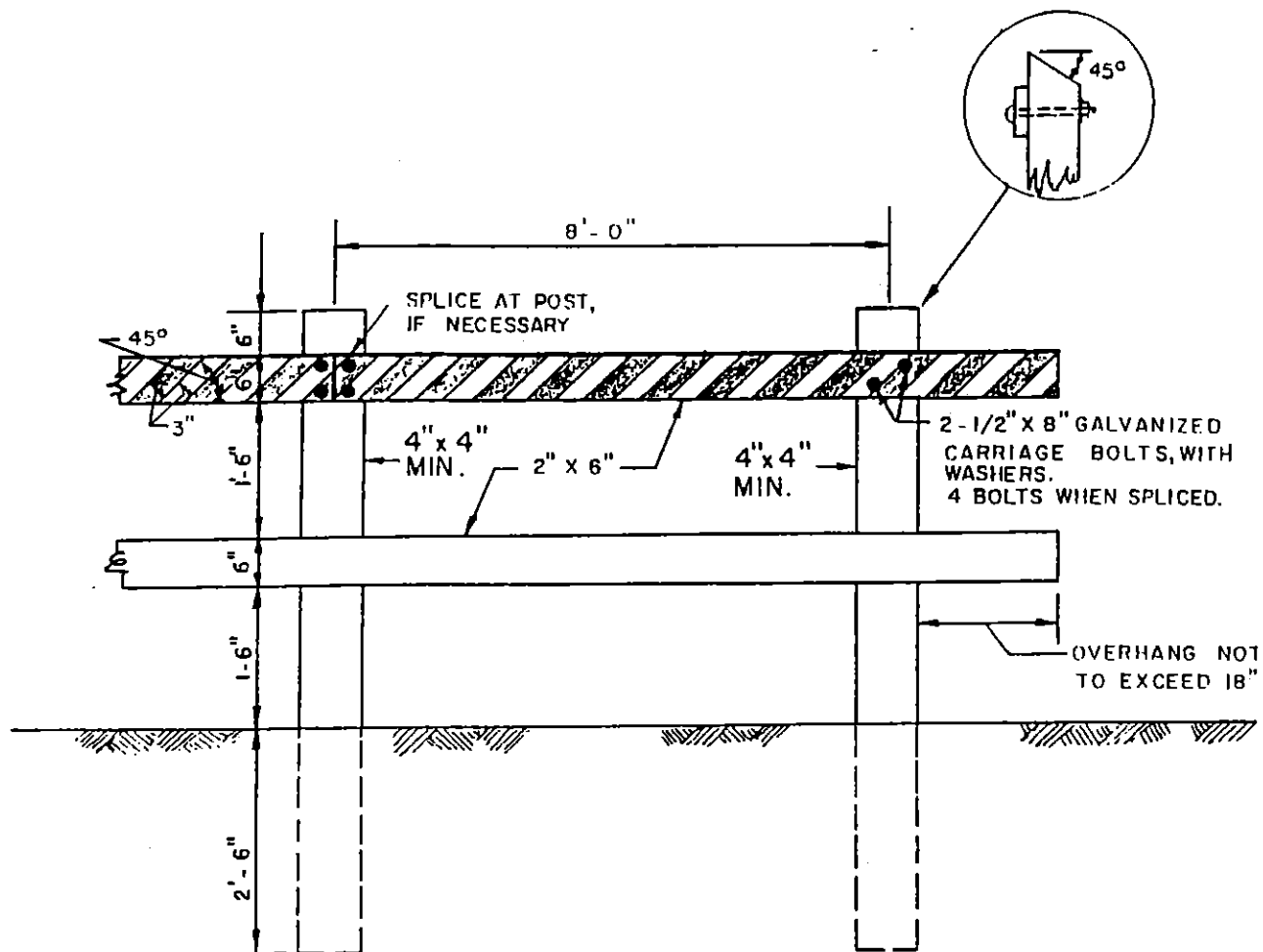
Note: For Material Specifications See Latest Specifications For Standard "Beam Type Guard Rail" Beams, Posts, And All Hardware To Be Galvanized As Required By The Specifications. Add Standard Type 7' Traffic Posts & Reflective Delineators In Back Of Barricade Height 4'-0".

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BEAM TYPE
BARRICADE

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DATE	BY
PLATE	
45	

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TYPICAL SECTION

NOTE:

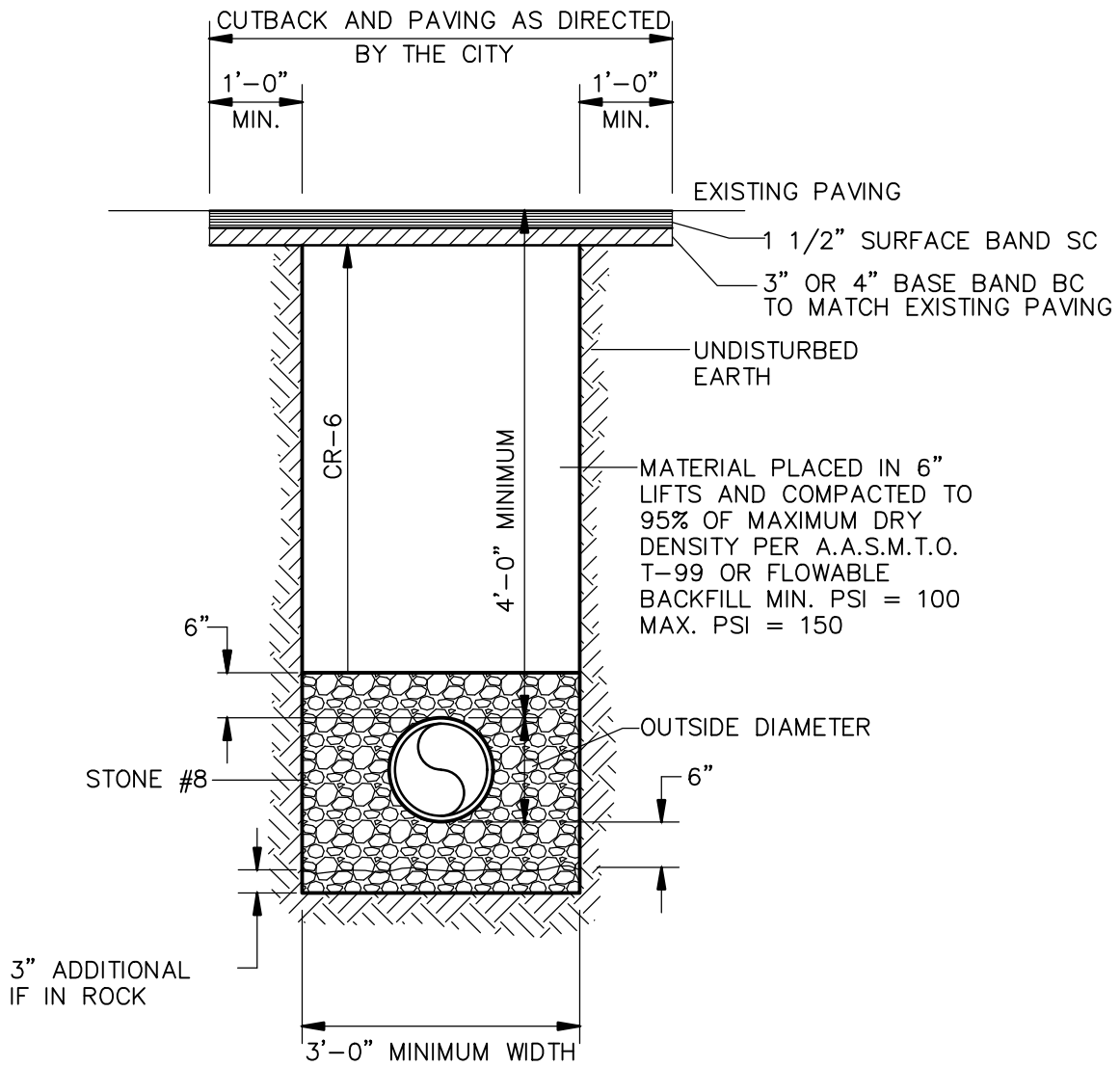
1. LUMBER TO BE OF PRESSURE TREATED GRADE.
2. THE UPRIGHTS AND CROSS PIECES SHALL BE PAINTED WHITE WITH TWO COATS OF APPROVED EXTERIOR PAINT.
3. THE TOP CROSS PIECE SHALL HAVE ORANGE STRIPES AS SHOWN.
4. CONSTRUCT TO FULL WIDTH OF RIGHT-OF-WAY OR AS DIRECTED.
5. THE STRIPING SHALL BE DIRECTED TOWARDS THE CENTER OF THE ROADWAY TO PRODUCE A CHEVRON EFFECT.

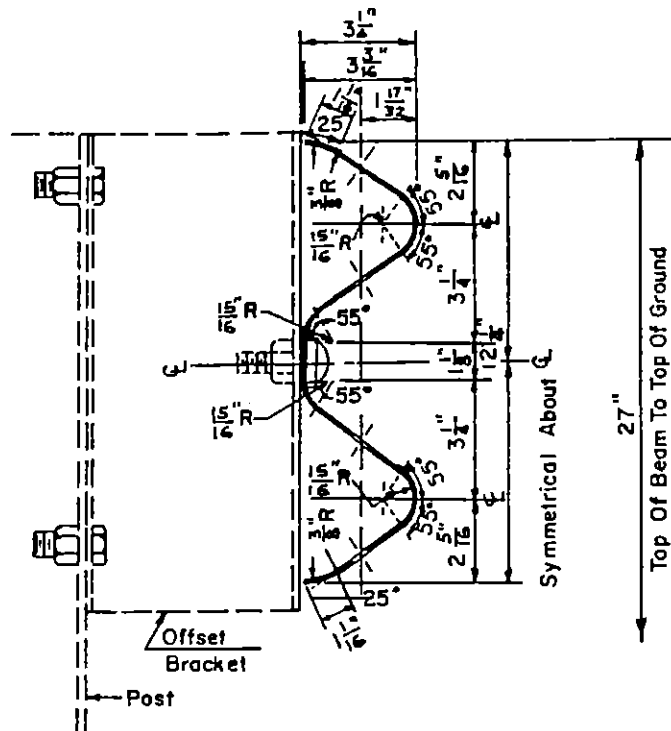
REVISED	
DATE	BY
PLATE	
46	

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

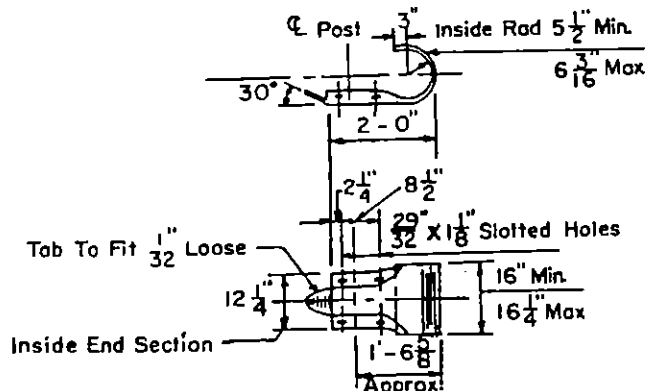
Carroll County 4-12-94
DIRECTOR DATE

TIMBER BARRICADE

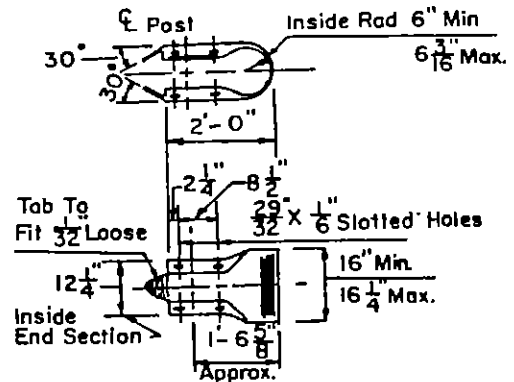




SECTION THRU RAIL ELEMENT MATERIAL: 12 GA. STEEL



GUARD RAIL- END SECTION
MATERIAL: 10 GA. STEEL



GUARD RAIL BARRIER- END SECTION
(For Rail On Both Sides Of Same Post)
MATERIAL: 10 GA. STEEL

General Notes:

1. All Dimensions Are Subject To MFG Tolerances.
2. Rail Elements Are Furnished Shop Curved, Concave Or Convex To Radial Between 20 Ft & 150 Ft.
3. The Steel For Rail Elements And Bolts Is Of A Quality To Develop Specification Values For Beam And Tensile Strengths.
4. For Materials, Material Processing And Assembly, See Latest Specifications.
5. For Offset Bracket Detail, See ST'D. 72.
6. Posts To Be W6X8.5, 5'-9" Long, Spaced At 6'-3" c/c.
7. Back-Up Plate (12" Length Of Beam) Centered On Offset Bracket Bolt. To Be Placed Where No Overlap Of Rail Splice Occurs.

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GUARD RAIL W/ BEAM
DETAILS

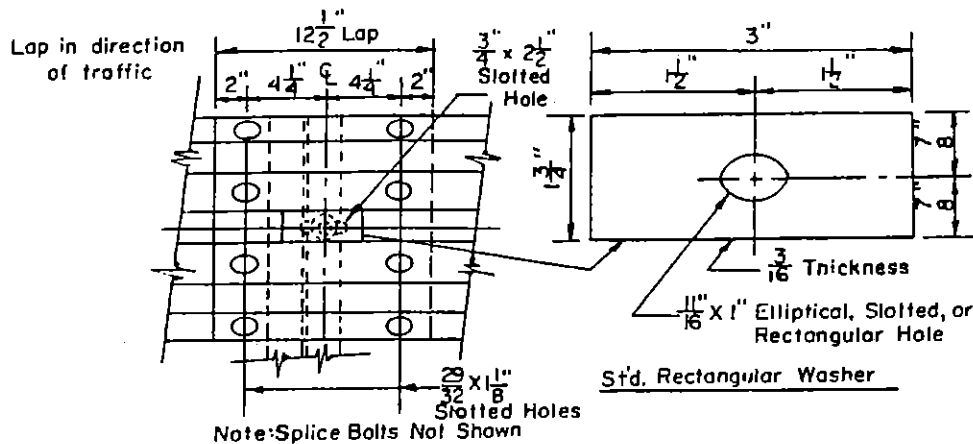
DIRECTOR

DATE

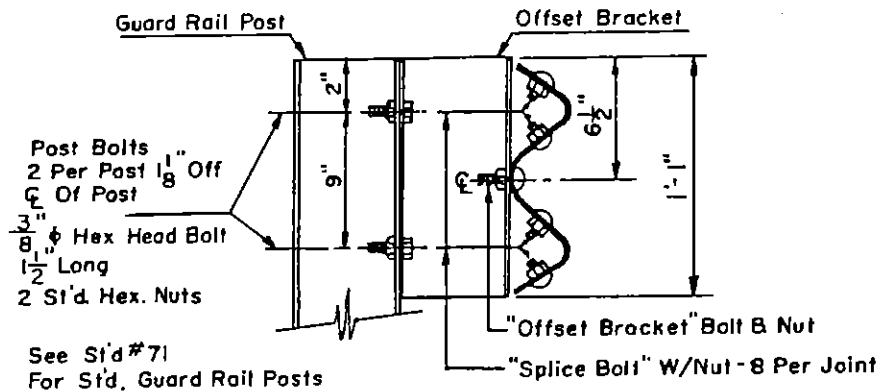
REVISED

PLATE

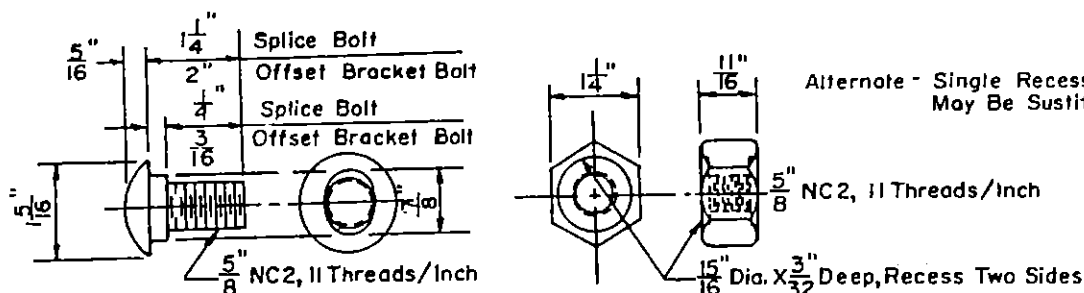
48



GUARD RAIL SPLICE



OFFSET BRACKET
6 W 8.5



"Splice Bolt" & "Offset Bracket Bolt"
8 Per Joint 1 Per Bracket
1 1/4" Long 2" Long

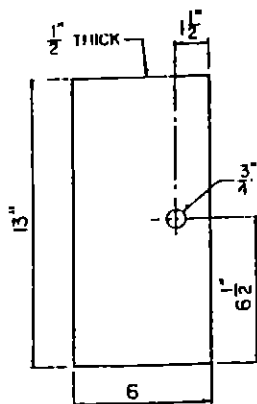
Nut
9 Per Splice

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DATE	BY
PLATE	
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CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Keith Kincaid 4-12-94
DIRECTOR DATE

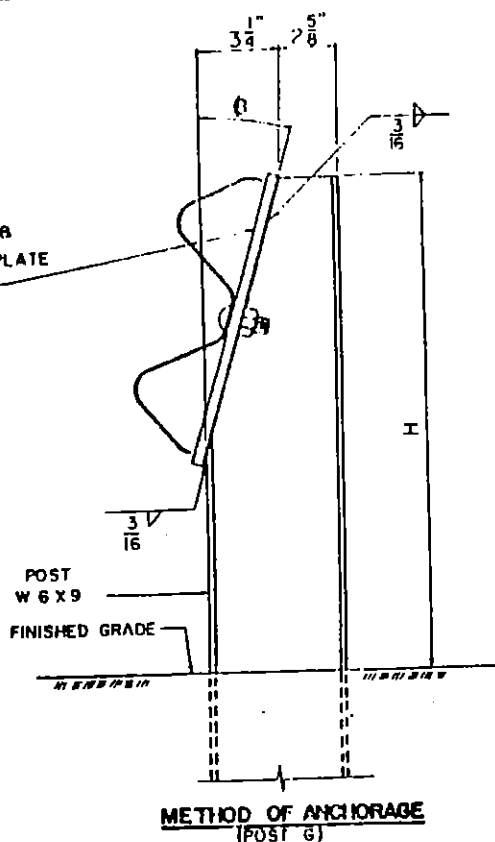
GUARD RAIL W/ BEAM
SPLICE JOINT



STEEL PLATE DETAIL

NOTE: ALL STEEL IS TO BE AASHTO DESIGNATION M-183 HOT DIPPED GALVANIZED AFTER FABRICATION TO AASHTO DESIGNATION M-111

I BEAM POST CUT ON INDICATED ANGLE θ
13" X 6" X $\frac{1}{2}$ " STEEL PLATE WELDED ON

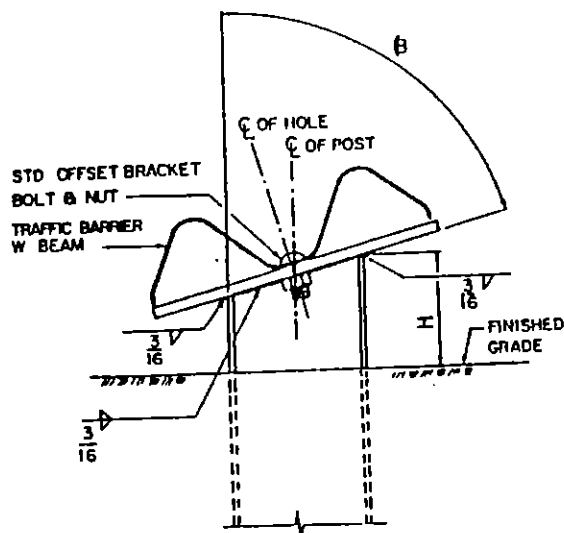


METHOD OF ANCHORAGE (POST G)

H = HEIGHT OF TOP OF BARRIER POST ABOVE FINISHED GRADE
 θ = ANGLE OF PITCH OF RAIL

POST	H	θ
A	2'-3"	0°
B	2'-3"	0°
C	2'-3"	0°
D	2'-3"	0°
E	2'-3"	0°
F	2'-3"	0°
G	2'-0 1/2"	15°
H	1'-8"	30°
I	1'-2 1/2"	45°
J	0'-9 1/2"	60°
K	0'-4 1/2"	75°
L	0'-0"	90°

NOTE: FOR METHOD OF ANCHORAGE AT POST L, SEE DETAILS ON STANDARD MD-660.31



TYPICAL METHOD OF ANCHORAGE (POSTS H, J & K)

NOTE: -USE OF ANCHORAGE PLATE IN PLACE OF OFFSET BRACKET BEGINS AT POST G WITH AN ANGLE OF 15°

ANCHORAGE PLATE TO BE USED WITH TYPE I-END FLARE

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Carroll County 4-12-94
DIRECTOR DATE

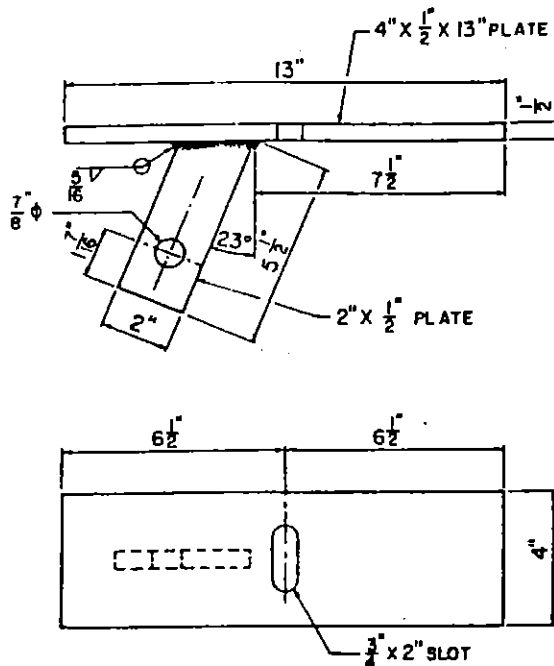
TRAFFIC BARRIER W BEAM
ANCHORAGE PLATE

REVISED

DATE BY

PLATE

50

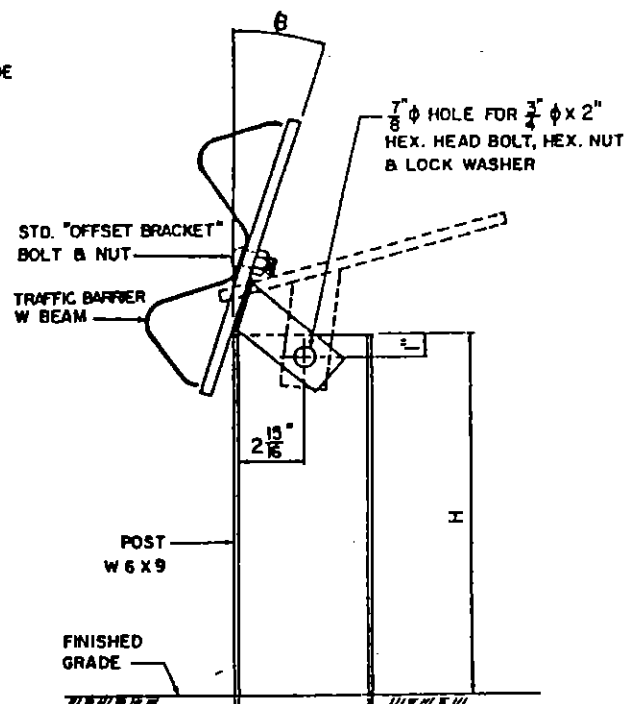


ALL STEEL TO BE AASHTO DESIGNATION M-103
HOT DIPPED GALVANIZED AFTER FABRICATION
TO AASHTO DESIGNATION M-111

H = HEIGHT OF TOP OF BARRIER POST ABOVE FINISHED GRADE
 θ = ANGLE OF PITCH OF RAIL

POST	H	θ
A	2'-3"	0°
B	2'-3"	0°
C	2'-3"	0°
D	2'-3"	0°
E	2'-3"	0°
F	2'-3"	0°
G	1'-1 3/4"	15°
H	0'-10 1/4"	30°
I	0'-7"	45°
J	0'-4 1/4"	60°
K	0'-1 1/4"	75°
L	0'-0"	90°

NOTE: FOR METHOD OF ANCHORAGE
AT POST L, SEE DETAILS
ON STANDARD.



METHOD OF ANCHORAGE

(POSTS G, H, J & K)

NOTE: - USE OF ANCHORAGE BRACKET IN PLACE OF
OFFSET BRACKET BEGINS AT POST G
WITH AN ANGLE OF 15°

ANCHORAGE BRACKET TO BE USED WITH TYPE I - END FLARE

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TRAFFIC BARRIER W BEAM ANCHORAGE BRACKET

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DATE

BY

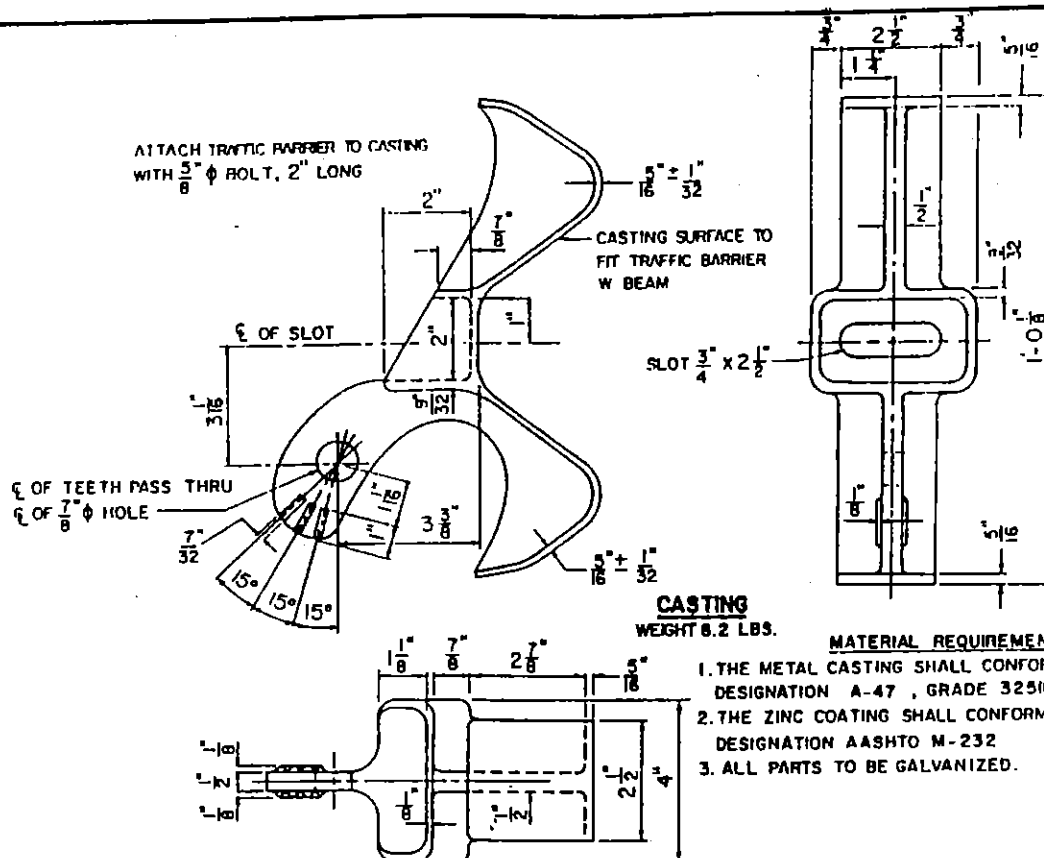
PLATE

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DIRECTOR

DATE

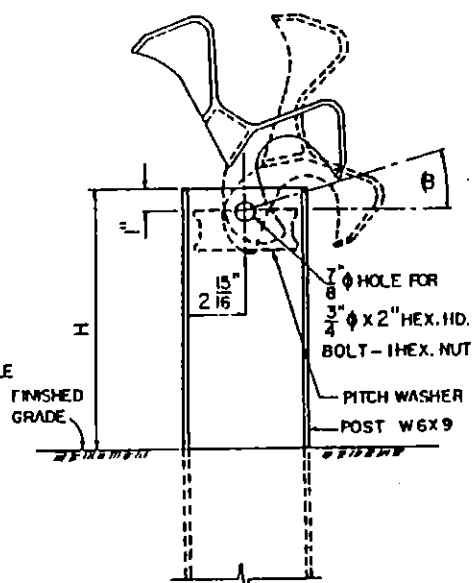
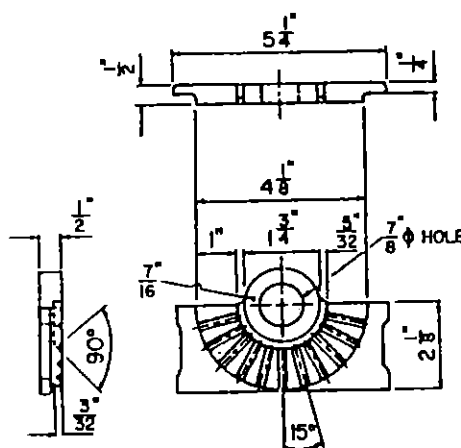
Carroll County 4-12-94



H = HEIGHT OF TOP OF BARRIER POST ABOVE FINISHED GRADE
 θ = ANGLE OF PITCH OF RAIL

POST	H	θ
A	2'-3"	0°
B	2'-3"	0°
C	2'-3"	0°
D	2'-3"	0°
E	2'-3"	0°
F	2'-3"	0°
G	1'-3"	15°
H	0'-11"	30°
I	0'-8"	45°
J	0'-4"	60°
K	0'-1"	75°
L	0'-0"	90°

NOTE: FOR METHOD OF ANCHORAGE AT POST L, SEE DETAILS ON STANDARD



ANCHORAGE CASTING TO BE USED WITH TYPE 1-END FLARE

CARROLL COUNTY, MARYLAND
 DEPARTMENT OF PUBLIC WORKS

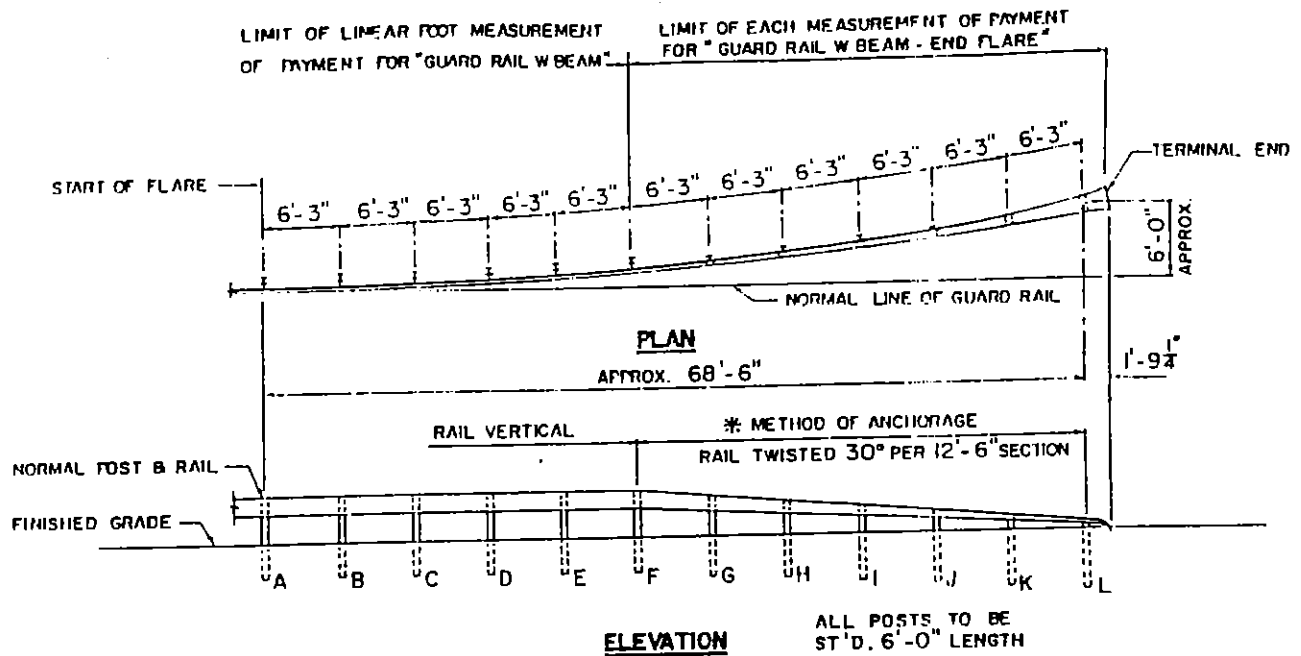
Concluded 4-12-94
 DIRECTOR DATE

TRAFFIC BARRIER W BEAM
 ANCHORAGE CASTING

REVISED

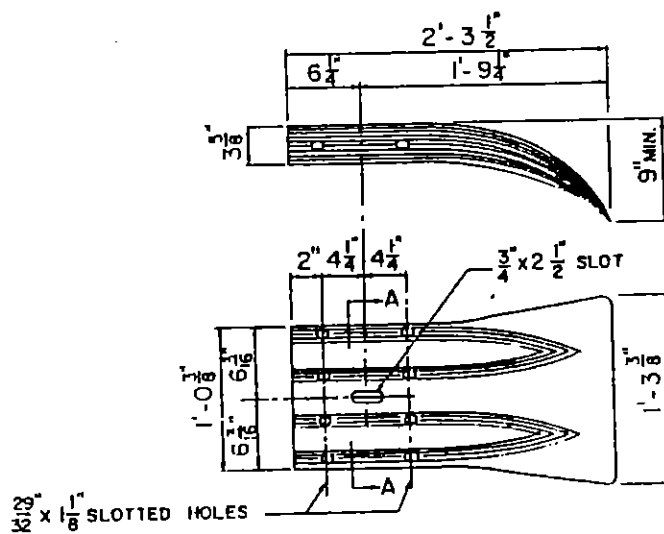
PLATE

52



* NOTE: USE OF GUARD RAIL W BEAM ANCHORAGE IN PLACE OF OFFSET BRACKET BEGINS AT POST G. THE CONTRACTOR HAS THE OPTION FOR THE METHOD OF GUARD RAIL W BEAM ANCHORAGE. FOR DETAILS OF OPTIONS SEE - ST'D. MD - 660.32 ANCHORAGE CASTING
ST'D. MD - 660.33 ANCHORAGE BRACKET
ST'D. MD - 660.34 ANCHORAGE PLATE

COST OF ANCHORAGE SELECTED SHALL BE INCLUDED IN THE PAYMENT FOR END FLARE AS INDICATED ABOVE.



NOTE: TYPE 1- END FLARE WILL BE USED WHERE THE SPACING OF CROSS-STREETS AND ENTRANCES PRECLUDE THE USE OF STANDARD MD-660.35 "TYPE 2- END FLARE."

SECTION A-A

TERMINAL END (10 9A.)

REVISED	
DATE	BY

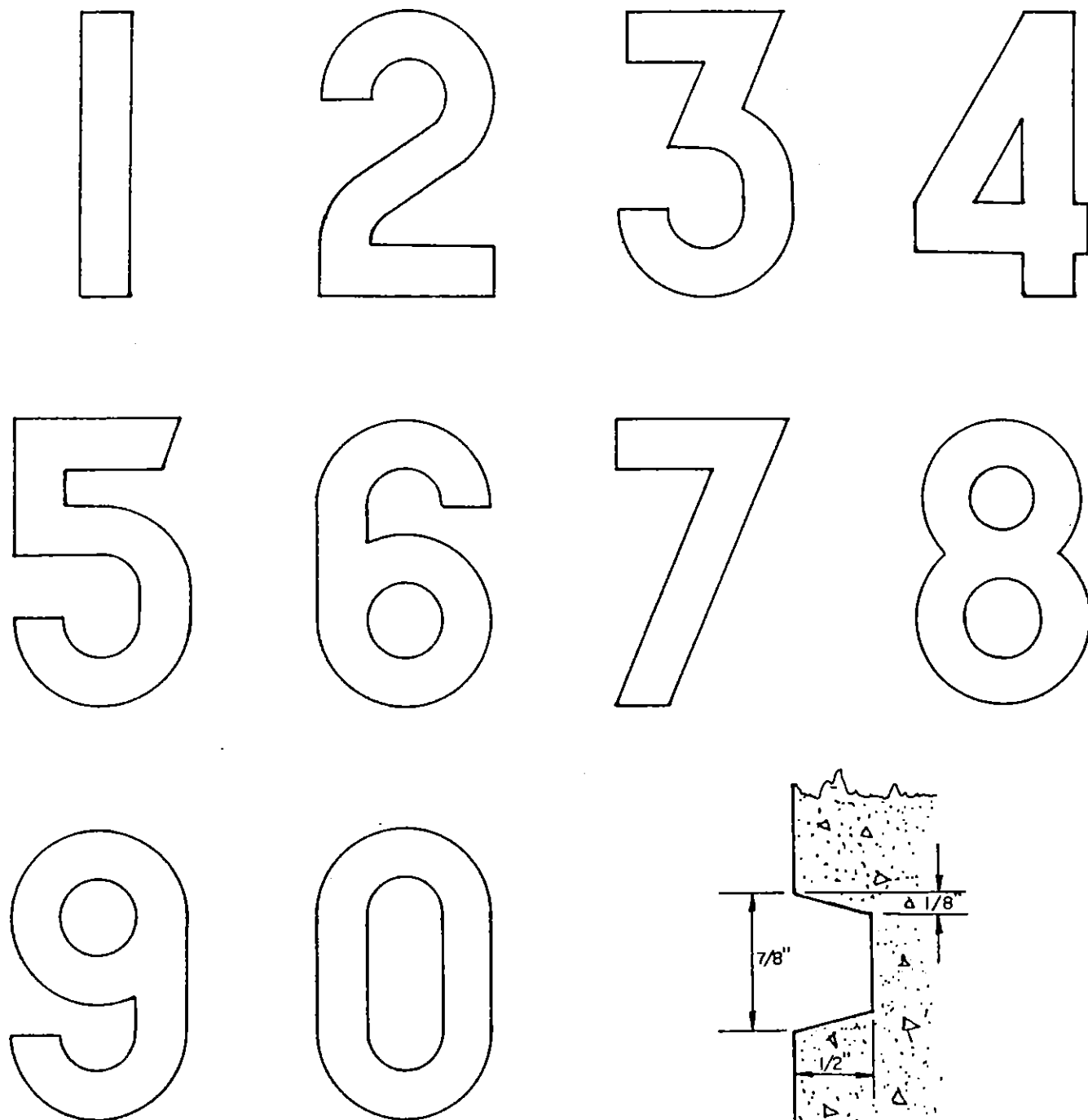
PLATE

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Carroll County 4-12-94
DIRECTOR DATE

GUARD RAIL WITH BEAM
TYPE 1- END FLARE

53

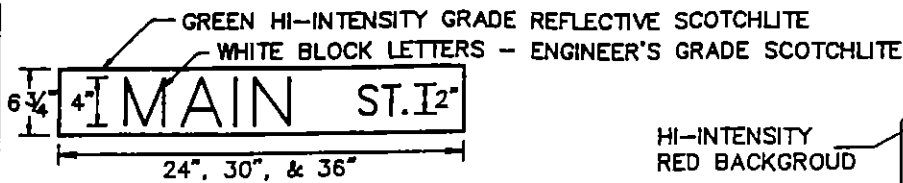


NOTE:

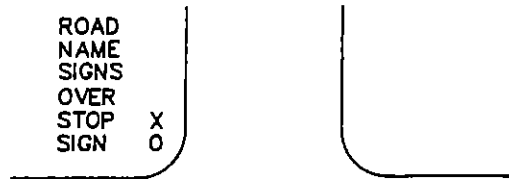
ALL NUMERALS TO BE 5" HIGH.

ALL NUMERALS TO BE 3" WIDE OVERALL EXCEPT "1" WHICH WILL BE 7/8" WIDE.

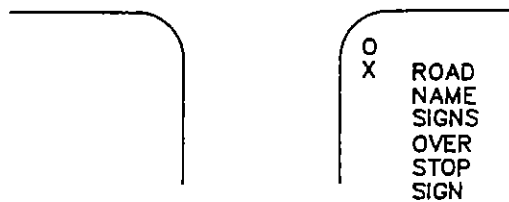
REVISED		CARROLL COUNTY DEPARTMENT OF PUBLIC WORKS	STANDARD "YEAR BUILT" NUMERALS	PLATE
DATE	BY			54
		<i>David Kinch</i> 4-12-94 DIRECTOR DATE		



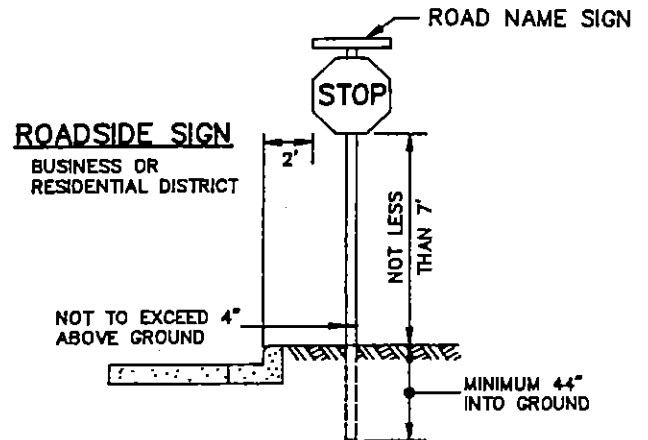
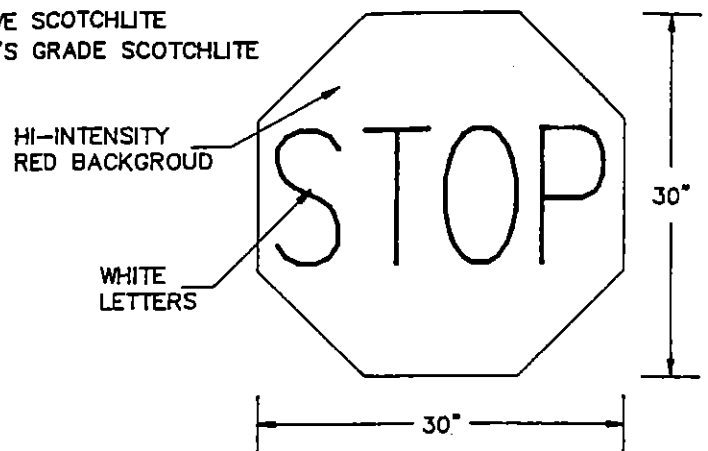
EXTRUDED ALUMINUM SIGN



THROUGH STREET



LOCATION PLAN



NOTES

STREET NAME SIGNS

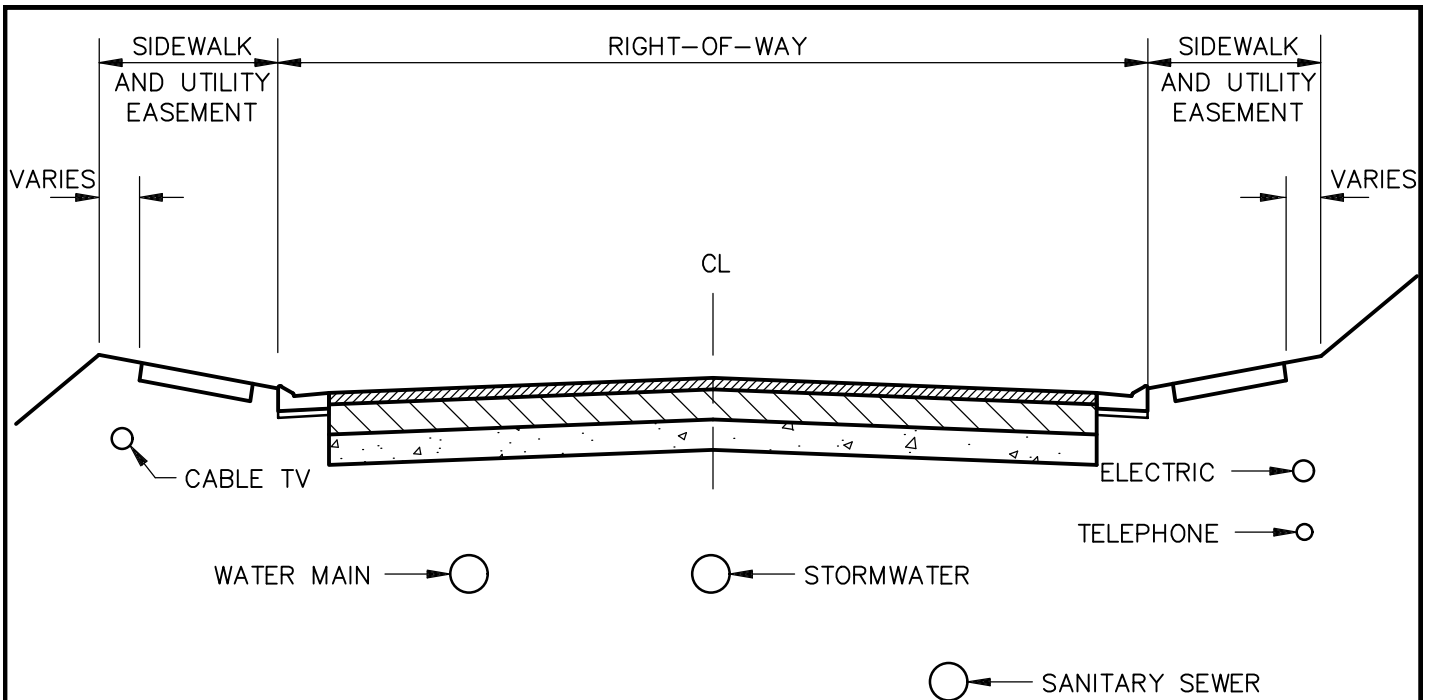
1. CONVENTIONAL ABBREVIATIONS ARE ACCEPTABLE EXCEPT FOR THE STREET NAME ITSELF.
2. STREET NAME SIGNS SHALL BE ERECTED WITH FACES PARALLEL TO THE STREETS THEY NAME.
3. IF A COUNTY ROAD SERVING A SUBDIVISION IS TO BE A NON-THRU ROAD (TERMINATED BY A PERMANENT CUL-DE-SAC OR "T-TURN-AROUND") ONLY ONE SIGN DESIGNATING THE NAME OF THE NON-THRU ROAD NEEDS TO BE ERECTED. IF THE COUNTY ROAD IS A THRU ROAD SERVING THE SUBDIVISION OR IS SCHEDULED TO ULTIMATELY BE A THRU ROAD (INTERSECTS A ROAD ON EACH END) BOTH THE NEW THRU ROAD AND THE ROADS IT INTERSECTS SHALL BE NAMED.
4. MOUNTING POST FOR STREET NAME SIGN IN RESIDENCE DISTRICT SHALL BE TWO PIECE, GREEN CHANNEL POST RATED AT 3 lbs. PER FOOT AND HEIGHTS SHALL CONFORM WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, PART 2". 4' SECTION TO BE DRIVEN AT LEAST 44" WITH THE SECOND SECTION 8' OR 10' BOLTED ABOVE GROUND. MAY BE ATTACHED TO TOP OF STOP SIGN POST.
5. MINIMUM SIZE FOR STOP SIGNS SHALL BE 30", AND HI-INTENSITY REFLECTION.
6. MOUNTING POSTS FOR STOP SIGNS SHALL BE GREEN CHANNEL POSTS RATED AT 3 lbs. PER FOOT, AND HEIGHTS SHALL CONFORM WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, PART 2". TWO PIECE, 4' SECTION DRIVEN INTO THE GROUND AT LEAST 44" AND SECOND SECTION 10' BOLTED TO THE FIRST ABOVE GROUND. STOP SIGNS MUST BE ATTACHED TO THE FLANGED SIDE OF POST.
7. USE-IN-COMMON DRIVEWAY NAME SIGNS SHALL BE ERECTED THE SAME AS FOR NON-THRU STREETS EXCEPT THAT THE LETTERS SHALL BE "BLACK", NON- REFLECTIVE SHEETING AND THE BACKGROUND SHALL BE "WHITE" HI-INTENSITY GRADE REFLECTIVE SHEETING.
8. SIGN MOUNTING POST TO BE INSTALLED 6'-12' FROM EDGE OF INTERSECTING ROADWAY AND 6'-12' FROM EDGE OF STREET OR USE-IN-COMMON DRIVE.

REVISED	
DATE	BY
PLATE	
56	

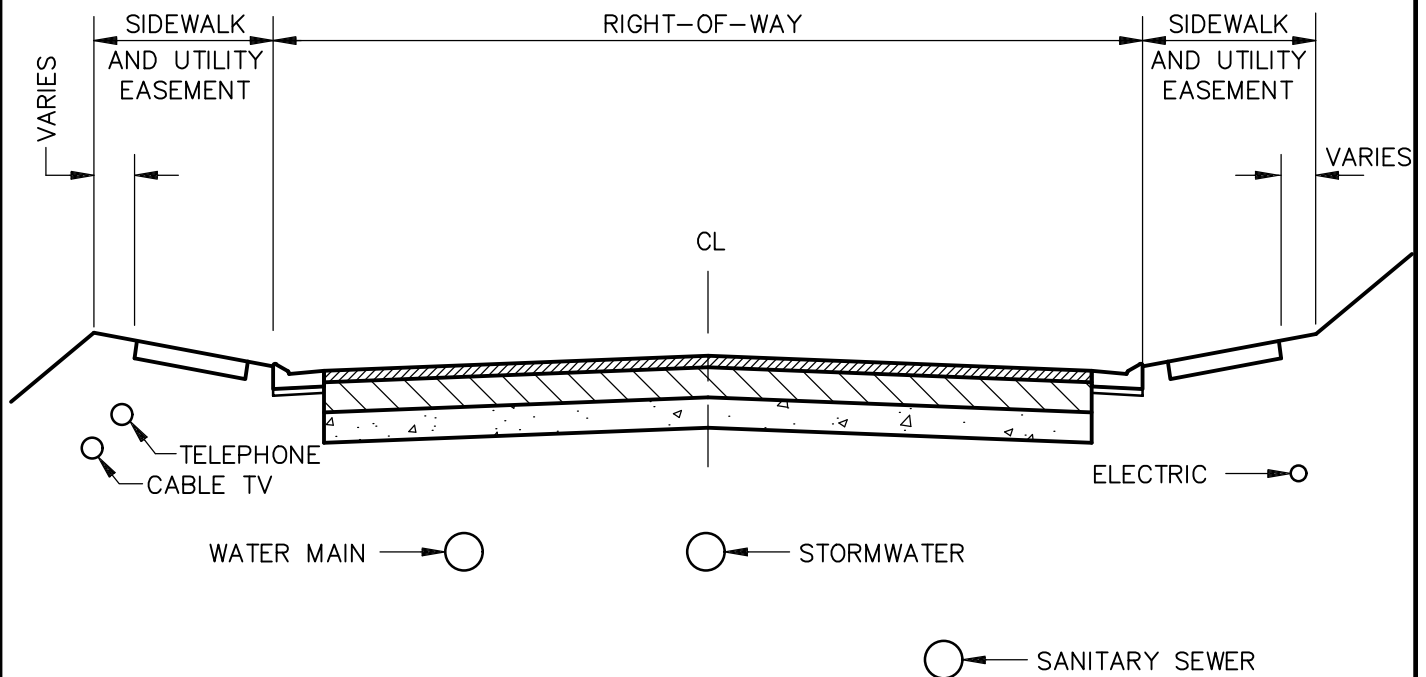
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

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DIRECTOR DATE

STANDARD STREET
NAME AND
STOP SIGNS



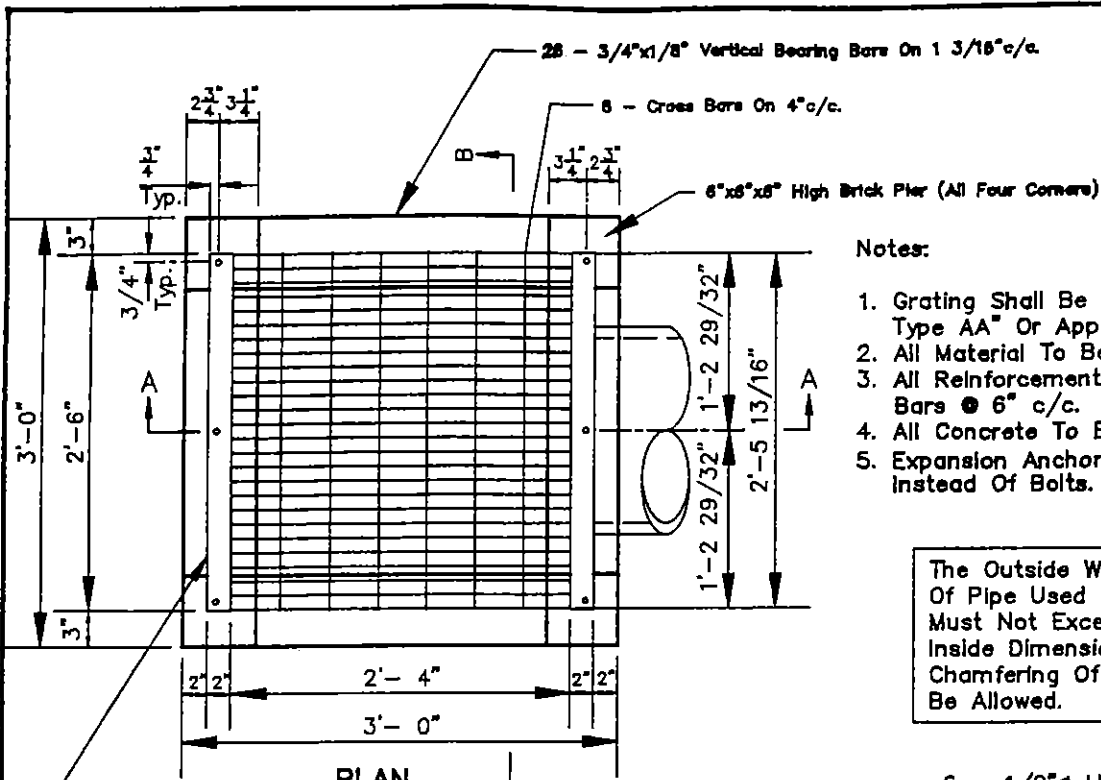
OPTION NO. 1



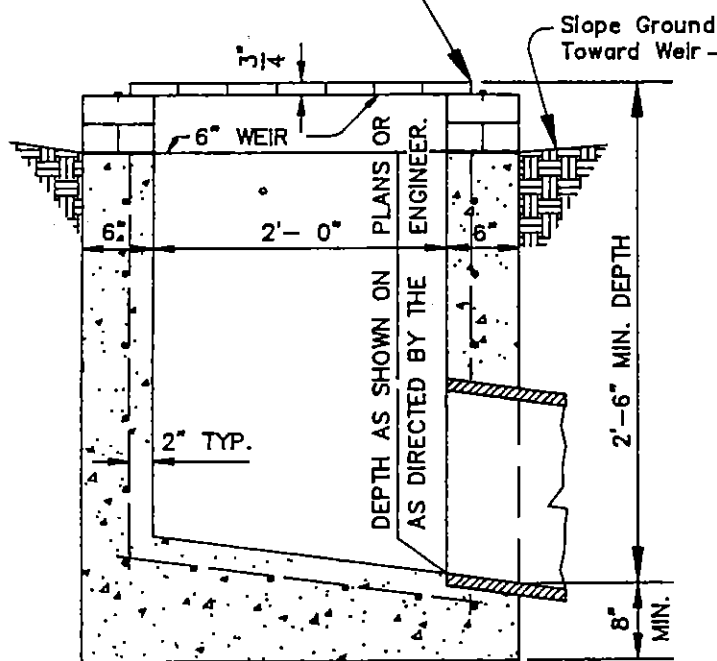
OPTION NO. 2

NOTES:

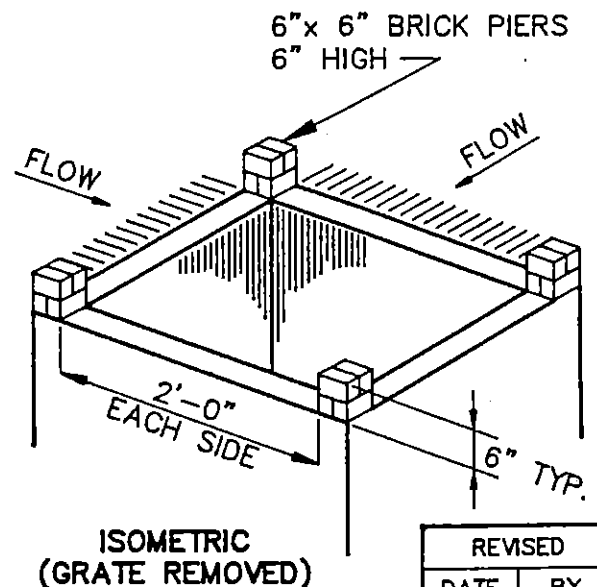
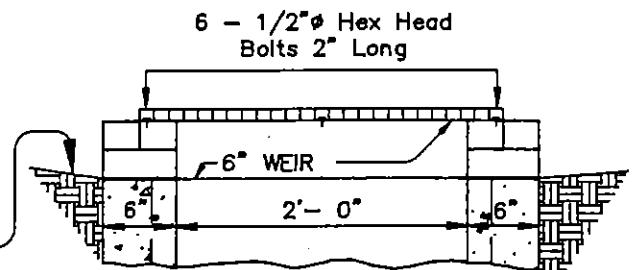
1. LOCATION FOR UTILITIES (NOT INSTALLED UNDER ROADWAY) SHALL BE LIMITED TO THE AREA BETWEEN THE OUTSIDE EDGE OF SIDEWALK AND THE OUTSIDE EDGE OF UTILITY EASEMENT.
2. DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION, TO BE CONSULTED PRIOR TO INSTALLATION OF ELECTRIC, TELEPHONE OR CABLE TV FACILITIES.
3. ELECTRIC AND TELEPHONE UTILITIES MAY BE PLACED IN SAME TRENCH AT THE OPTION OF THE POWER COMPANY AND THE C & P TELEPHONE COMPANY.
4. ELECTRIC: 0-600V 24" COVER, OVER 600V 36" COVER TELEPHONE: MAIN SERVICE 24" COVER RESIDENTIAL CONNECTION 11" COVER CABLE TV: 11" COVER



2 - 2"x1 1/4"x3/16"x2'-6"L (Centered On Grate)
Trim Vertical Leg Of Angle To 3/4" In Height
Weld Securely To Grating At Every 4th Bar
(Welded Areas To Be Touched Up With Zinc Rich Paint After Welding.)



Brick Piers To Be Parged With Concrete



REVISED	
DATE	BY

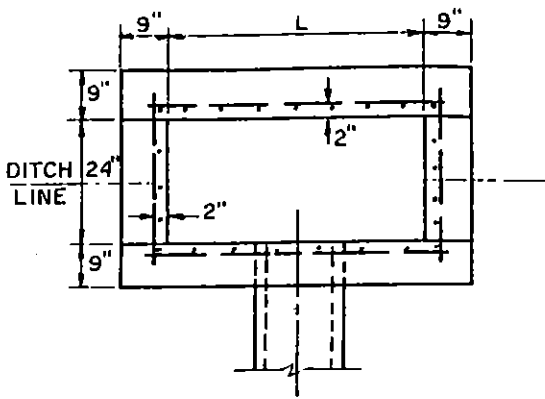
PLATE

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

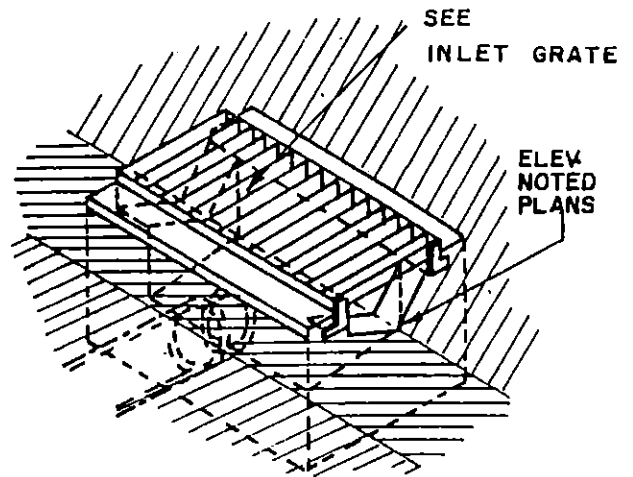
Carroll County 4-12-94
DIRECTOR DATE

MODIFIED
STANDARD YARD INLET

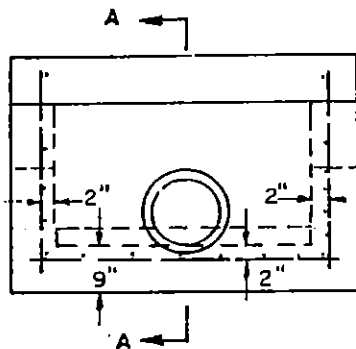
59



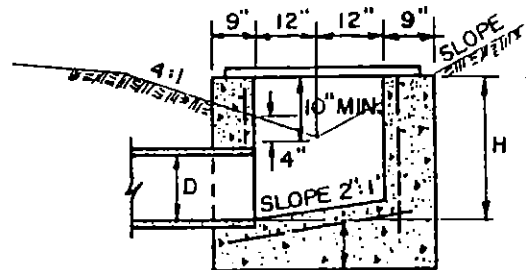
PLAN



ISOMETRIC VIEW



ELEVATION



SECTION A-A

GENERAL NOTES

STEEL: VERT 4 BARS, 6" C.C.
HOR. 4 BARS, 6" C.C.
BOT. 4 BARS, 6" C.C.

CONCRETE: SEE GENERAL

SPECIFICATIONS. HEIGHT OF FRONT & BACK WALLS MUST CONFORM TO GRADE OF ADJACENT ROAD SECTION.

BRICK MAY ONLY BE USED WITH CARROLL COUNTY DEPT. OF PUBLIC WORKS APPROVAL.

NOTE 1. DEPTH OF INLET SHALL BE INCREASED AS REQUIRED TO ACCOMMODATE PIPE GRADE AND NOTCH ELEVATION SHOWN ON THE PLAN.

REVISED	
DATE	BY

"J" SLOPE 2:1 OR FLATTER					
OPENING		DIMENSION		TYPE OF GRATE	
DIA D	AREA SQ FT	L	H		
12"	0.79	4'-0"	2'-4"	C	
15"	1.23	4'-0"	2'-7"	C	
16"	1.39	4'-0"	2'-8"	C	
18"	1.78	4'-0"	2'-10"	C	
21"	2.41	5'-0"	3'-2"	E	
24"	3.14	5'-0"	3'-5"	E	
27"	3.98	6'-0"	3'-8"	G	
30"	4.91	6'-0"	4'-0"	G	
33"	5.94	6'-0"	4'-3"	G	
36"	7.07	6'-0"	4'-6"	G	

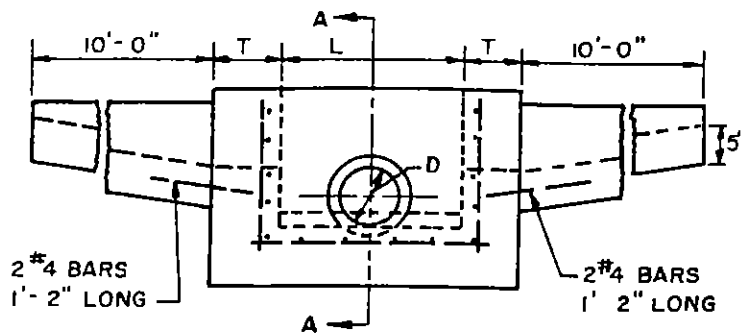
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Carroll County 4-12-94
DIRECTOR DATE

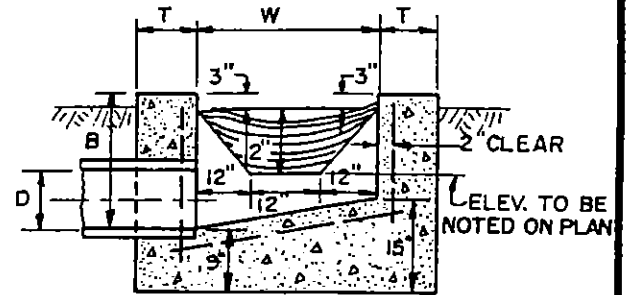
MODIFIED "J" INLET

PLATE

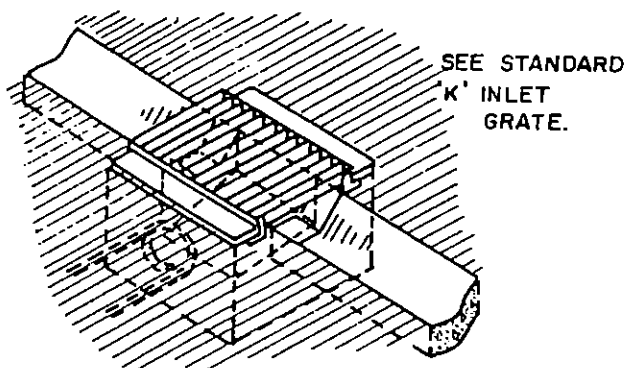
60



ELEVATION



SECTION A A



ISOMETRIC VIEW

"K"						
OPENING		DIMENSIONS				TYPE OF GRATE
DIAM. D	AREA SQ.FT.	L	W	MIN. B	T	
12"	0.79	3'-0"	3'-0"	2'-3"	9"	A
15"	1.23	3'-0"	3'-0"	2'-6"	9"	
18"	1.78	3'-0"	3'-0"	2'-9"	9"	
24"	3.14	3'-0"	3'-0"	3'-3"	12"	B
30"	4.91	3'-6"	3'-0"	3'-9"	12"	C
36"	7.07	4'-0"	3'-0"	4'-3"	12"	D
42"	9.62	4'-6"	3'-0"	4'-9"	12"	E
48"	12.57	5'-0"	3'-0"	5'-3"	12"	F

CONSTRUCT WITH REINFORCED CONCRETE. THIS INLET MAY ONLY BE USED WITH PRIOR APPROVAL FROM THE D.P.W.

GENERAL NOTES

STEEL #4 BARS 6" C.C. - VERTICAL
#4 BARS 6" C.C. - HORIZONTAL
#4 BARS 6" C.C. - BOTTOM

CONCRETE - S.H.A. MIX NO. 2

NOTES:

1. THE CONCRETE VALLEY GUTTER TO BE USED IN CONNECTION WITH THIS INLET, WILL BE WARPED FROM THE STANDARD SECTION TO MEET THE SECTION AT THE END OF THE INLET. THIS TRANSITION WILL TAKE PLACE WITHIN A DISTANCE OF TEN (10) FEET FROM THE INLET.
2. PIPE OUTLETS AND GUTTER APPROACHES CAN BE REVISED TO MEET EXISTING CONDITIONS.
3. DEPTH OF INLET SHALL BE INCREASED AS REQUIRED TO ACCOMMODATE PIPE GRADE AND NOTCH ELEVATION SHOWN ON THE PLAN.
4. THIS INLET SHALL NOT BE USED WITHOUT MODIFICATION FOR PIPES OVER 36" IN END OF INLET.
5. THROUGH INLETS SHALL HAVE BRICK CHANNELIZATION AS ON PLATE 90. SUCH INLETS NOT TO BE USED WITHOUT MODIFICATION FOR PIPES OVER 24".

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

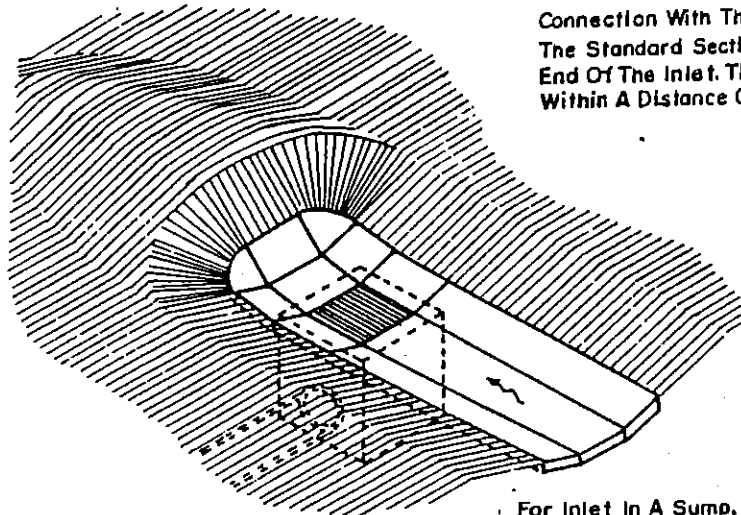
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DIRECTOR DATE

"K" INLET

PLATE

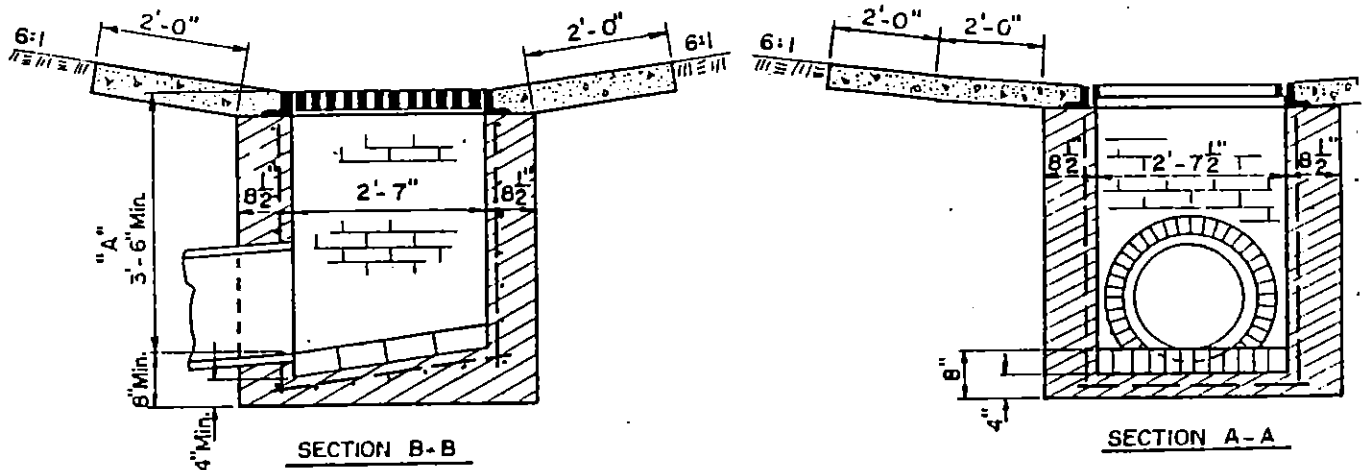
61

Note: The Concrete Median Ditch To Be Used In Connection With This Inlet, Will Be Warped From The Standard Section To Meet The Section At The End Of The Inlet. This Transition Will Take Place Within A Distance Of Ten (10) Feet From The Inlet.



ISOMETRIC VIEW

For Inlet In A Sump, See Gutter Details As Shown In The Isometric View On Plate No. 63



1. INLET TO BE CONSTRUCTED OF REINFORCED CONCRETE. SIZE, TYPE AND 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.
3. GRATE STANDARD SHA 379.02
4. "BRICK FOR MASONRY," TO COMPLY WITH THE LATEST SPECIFICATIONS. REINFORCEMENT: NO. 4 ϕ DEFORMED BARS AT 6" c/c 2" COVER.
5. 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.
6. INVERT MAY BE PLAIN CONCRETE OR 4" BRICK LAID ON EDGE. INVERT TO SLOPE DOWN TOWARD OUTLET AT THE RATE OF TWO (2) INCHES PER FOOT, OR AS DIRECTED.
7. BRICK FOR CONSTRUCTION OF INLET MAY BE USED IF AUTHORIZED BY DEPT. OF PUBLIC WORKS.

REVISED	
DATE	BY

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

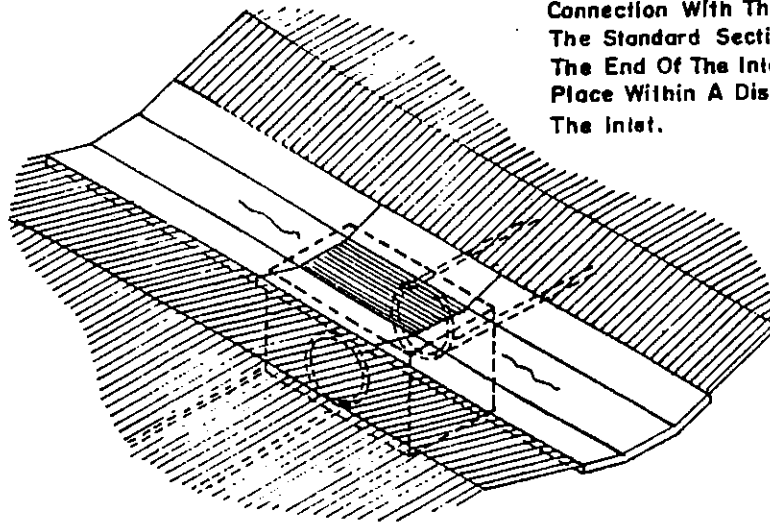
K. J. C. [Signature] 4-12-94
DIRECTOR DATE

STANDARD TYPE K INLET
SINGLE GRATE

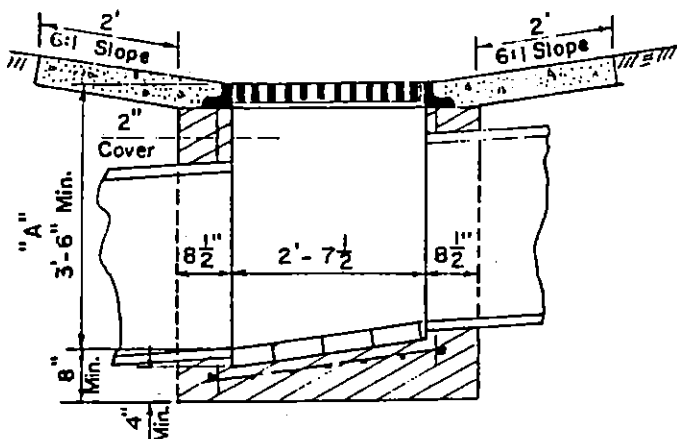
PLATE

62

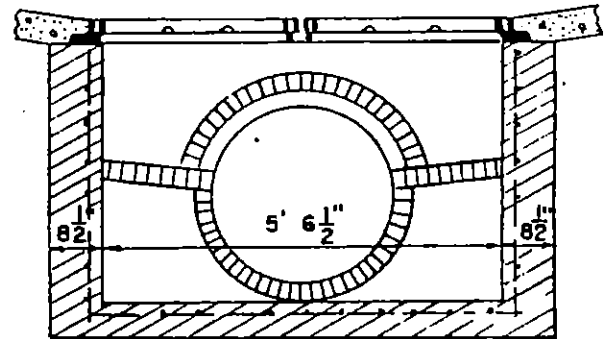
NOTE: The Concrete Median Ditch To Be Used In Connection With This Inlet, Will Be Warped From The Standard Section To Meet The Section At The End Of The Inlet. This Transition Will Take Place Within A Distance Of Ten (10) Feet From The Inlet.



ISOMETRIC VIEW



SECTION B-B



SECTION A-A

GENERAL NOTES

1. Inlet Shall Be Constructed Of S.H.A. Mix No. 2 Reinforced Concrete. Size And Type And Direction Of Inlet Construction 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 Latest Specifications.
3. "Brick For Masonry," To Comply With The Latest S.H.A. Specifications. Reinforcement: No. 4 $\emptyset$ Deformed Bars At 6" o/c, 2" Cover.
4. Reinforcement Required On Outside, As Well As On Inside Walls Below 7'-0". When "A" Is Greater Than 7'-0". Spacing Same As For Inside Of Wall.
5. Invert May Be Plain Concrete Or 4" Brick Laid On Edge Invert Of Slope. Down Toward Outlet At The Rate Of Two (2) Inches Per Foot Or As Directed.
6. Brick for Construction Of Inlet May Only Be Used If Authorized By Dept. Of Public Works.
7. Grate to be SHA Standard 379.05.

REVISED	
DATE	BY

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Handwritten signature 4-12-94

DIRECTOR

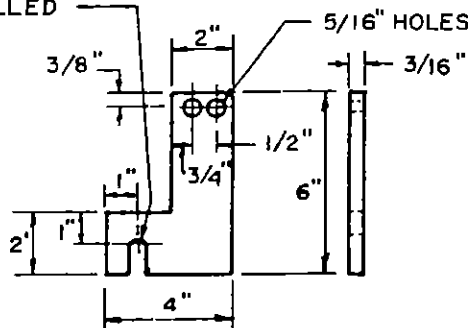
DATE

STANDARD TYPE K INLET
DOUBLE GRATE TANDEM

PLATE

63

9/16" SLOTTED HOLE TO RECEIVE 1/2"x4" MACHINE BOLT (GALV.) IMBEDDED 3" IN CONC. WALL. NUT TO BE PLACED ON END OF BOLT AFTER GRATE IS INSTALLED



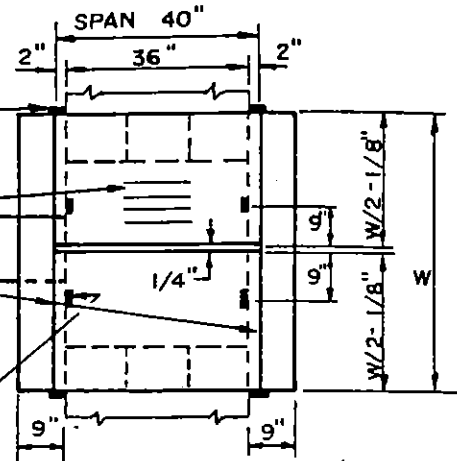
END STRAP DETAIL

4 ANGULAR STEEL STRAPS BOLTED TO OUTSIDE BARS OF GRATING PRIOR TO SHIPPING.

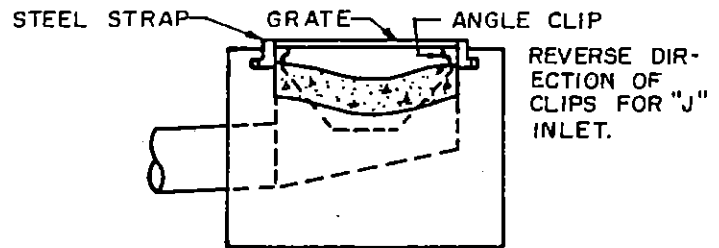
LONGITUDINAL DIRECTION OF GRATING

END OR BINDING BARS

4 ANGLE CLIPS $\angle$ 2"x2"x 3/16"x 2 1/2" WELDED TO BOTTOM OF GRATING.

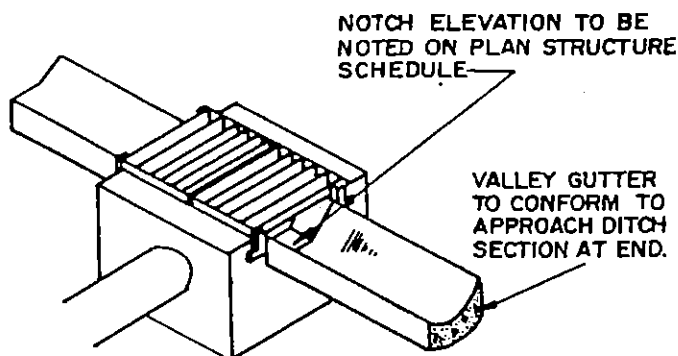


PLAN



END ELEVATION

ALL MATERIAL TO BE HOT DIPPED GALVANIZED AFTER FABRICATION



ISOMETRIC VIEW

GRATINGS ARE SUBJECT TO APPROVAL FOR EACH JOB. ANY TYPE OF SUBSTANTIAL TRANSVERSE BARS MAY BE USED WHICH WILL SUPPORT A MINIMUM UNIFORM LOAD OF 150 LBS/SQ.FT. THE TRANSVERSE BARS SHALL BE HELD RIGID BY SPACER BARS. MAXIMUM BAR SPACING SHALL BE 3"

			PIPE SIZE	
			K INLET	J INLET
54" WIDE	GRATE A	40" SPAN	12" - 18"	
60" WIDE	GRATE B	40" SPAN	21" & 24"	
66" WIDE	GRATE C	40" SPAN	27" & 30"	12" - 18"
72" WIDE	GRATE D	40" SPAN	33" & 36"	
78" WIDE	GRATE E	40" SPAN	42"	21" & 24"
84" WIDE	GRATE F	40" SPAN	48"	
90" WIDE	GRATE G	40" SPAN		27" - 36"

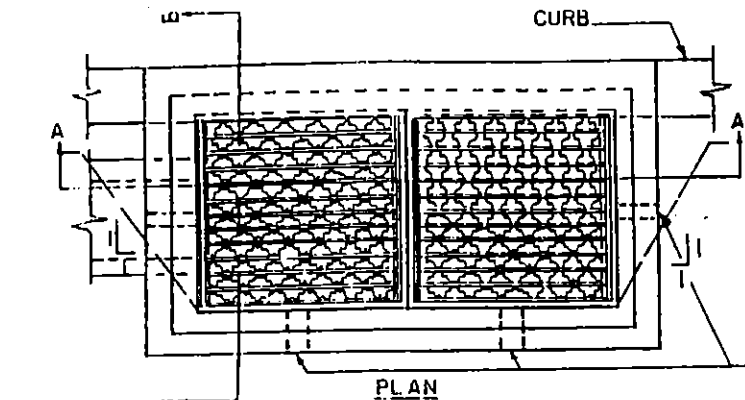
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Keith Stinson 4-12-94
DIRECTOR DATE

STANDARD NON-TRAFFIC
GRATES FOR "J" & "K"
INLETS

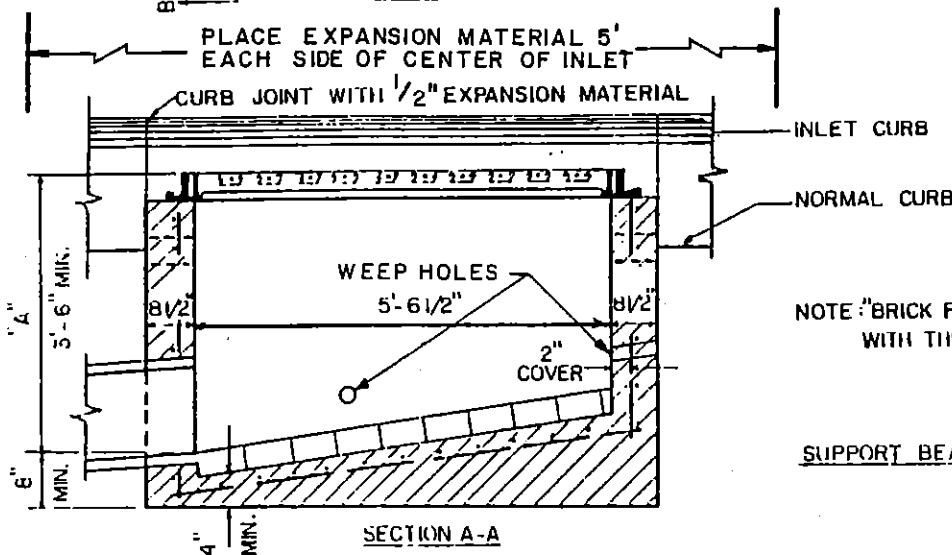
PLATE

64



INVERT MAY BE PLAIN CONCRETE OR 4" BRICK LAID ON EDGE. INVERT TO SLOPE DOWN TOWARD OUTLET AT THE RATE OF 2" PER FOOT, OR AS DIRECTED.

LEAVE 4"x4" OPENING FOR SUBGRADE DRAINAGE, IF DIRECTED.



NOTE "BRICK FOR MASONRY" TO COMPLY WITH THE LATEST SPECIFICATIONS.

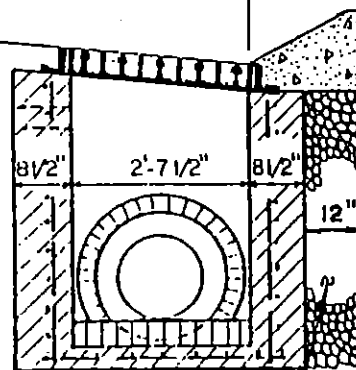
SUPPORT BEAM IS NOT TO BE USED

GENERAL NOTES

1. INLET SHALL BE CONSTRUCTED OF REINFORCED CONCRETE. SIZE, TYPE, AND DIRECTION OF INLET 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 LATEST 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 1/2" EXPANSION MATERIAL OF SAME TYPE APPROVED FOR PAVEMENT (SEE SECTION A-A).
5. THE ENTIRE INLET EXCAVATION TO BE BACK FILLED WITH CLEAN COMPACTED NO. 57 STONE AGGREGATE COMPLETELY TO SUBGRADE.
6. WEEP HOLES TO BE COVERED WITH STAINLESS STEEL OR GALVANIZED WIRE MESH.
7. FOOTERS CAN BE 4" MIN. CONCRETE BUILT TO ALLOW FOR A 4" BRICK INVERT OR ALL CONCRETE
8. FLARE CURB GUTTER AT INLET AT 1:1 MEET FRONT OF FRAME. SEE 'PLAN' VIEW.
9. BRICK FOR CONSTRUCTION OF INLET MAY ONLY BE USED IF AUTHORIZED BY DEPT. OF PUBLIC WORKS.

NORMAL CURB LINE

REINFORCEMENT:
"4 (1/2") DEFORMED BARS
AT 6" C. TO C. 2" COVER.



SECTION B-B

WEEP HOLES
LEAVE 2" X 2" OPENING
6" ABOVE R. MINIMUM 2
REQUIRED.

NO. 57
AGGREGATE
ALL SIDES

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

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DIRECTOR DATE

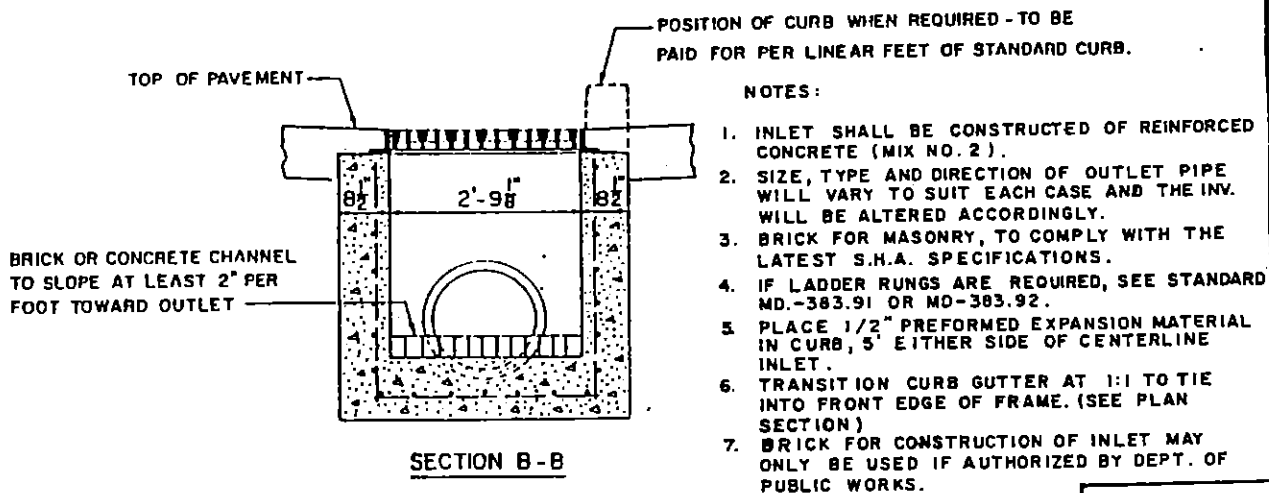
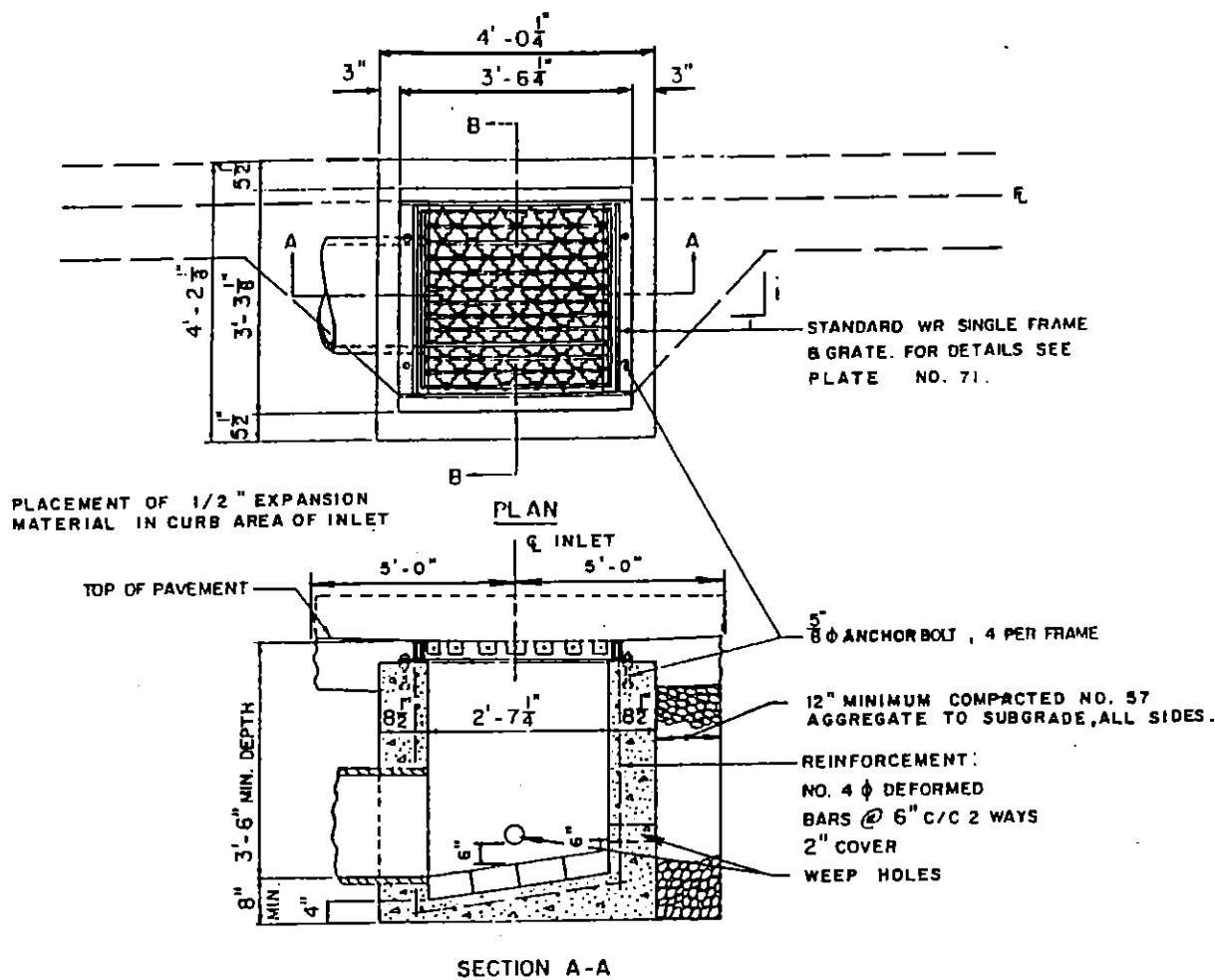
STANDARD TYPE S INLET
DOUBLE GRATE TANDEM

REVISED

DATE	BY

PLATE

65



REVISED	
DATE	BY

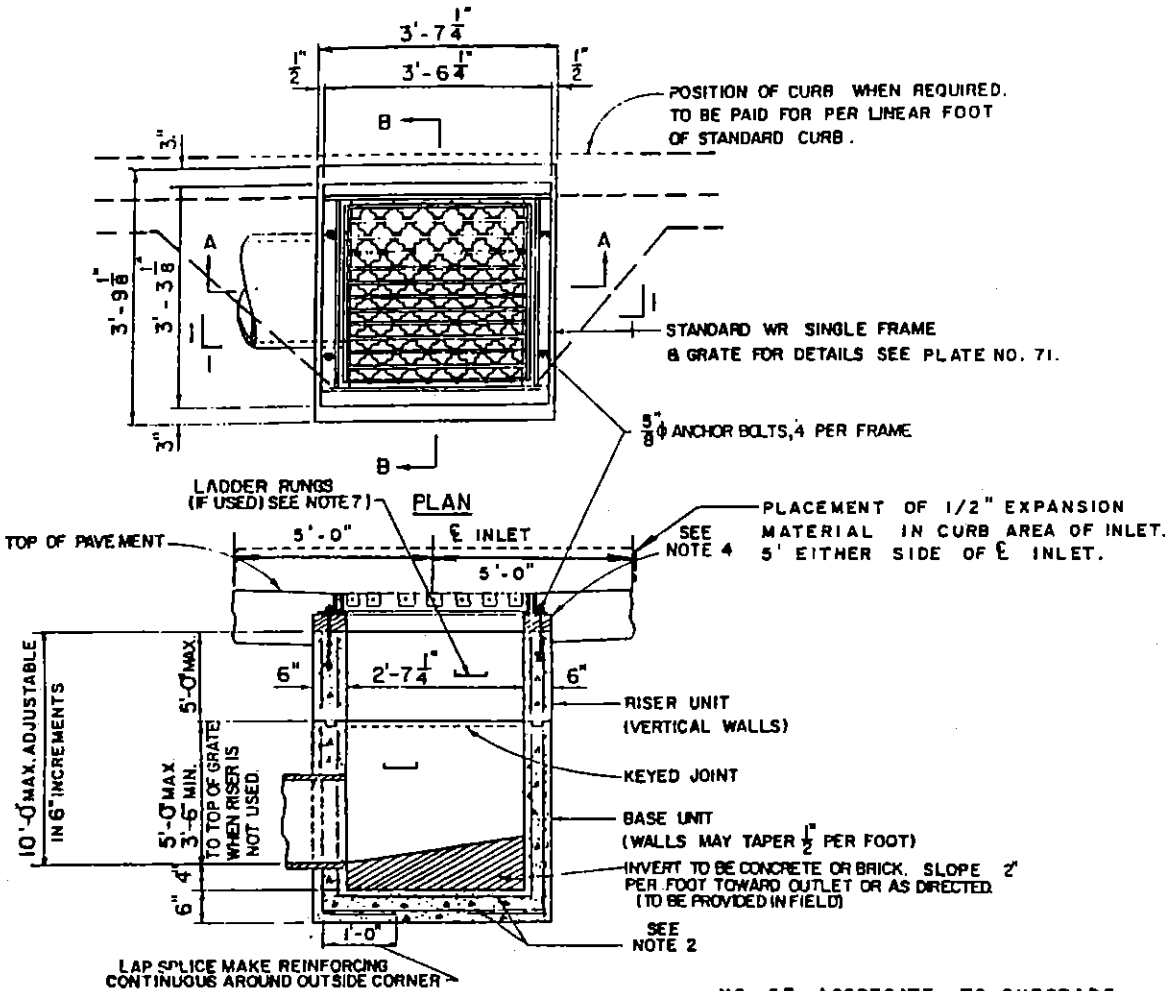
PLATE

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

SINGLE WR INLET

Kandis 4-12-94
DIRECTOR DATE

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GENERAL NOTES

1. CONCRETE TO BE MIX NO. 6 (4500PSI).
2. REINFORCING-2 LAYERS OF 4X4-W40 X W40 WELDED WIRE FABRIC.
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 AS DIRECTED BY THE ENGINEER OR AS NOTED ON THE CONSTRUCTION PLANS.
7. LADDER RUNGS SHALL BE IN ACCORDANCE WITH STANDARD MD-383.71, AND MD-383.92 OR AS DIRECTED BY THE ENGINEER.
8. MINIMUM DEPTH PAYMENT PER EACH INLET INCLUDES DEPTHS UP TO 3'-6". VERTICAL DEPTH PAYMENT PER LINEAR FOOT FOR DEPTHS IN EXCESS OF 3'-6".
9. MINIMUM OF 2 WEEP HOLES 2" MIN. DIAMETER PLACED 6" ABOVE INVERT PER BASE UNIT. COVER OUTSIDE WITH STAINLESS STEEL OR GALVANIZED WIRE MESH.
10. EXPANSION PLACED IN CURB AS DETAILED IN SECTION A-A.

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PLATE

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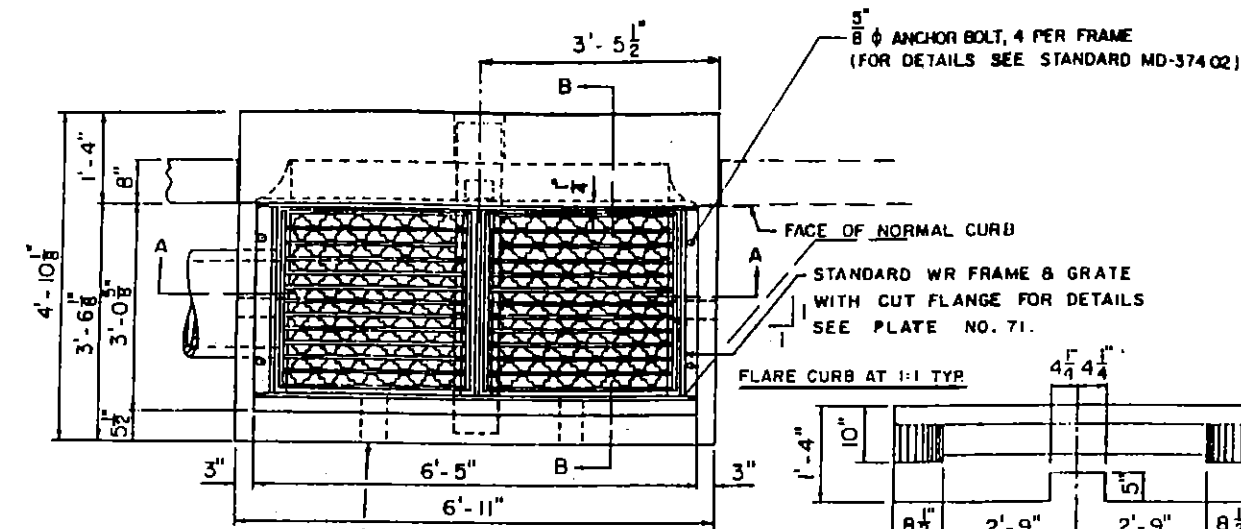
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

DIRECTOR

DATE

PRECAST
SINGLE WR INLET

W. Stinchfield 4-12-94

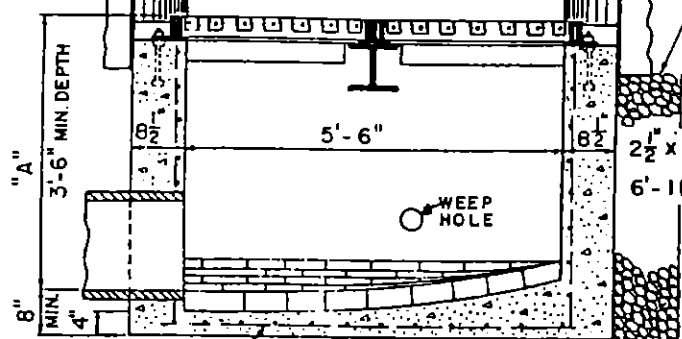


LEAVE 4"x4" OPENINGS FOR
SUBGRADE DRAINAGE IF DIRECTED

TOP OF CURB

PLAN

CURB JOINT WITH 1/2" EXPANSION MATERIAL



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

SECTION A-A

W8 x 31 (GALVANIZED)
SUPPORT BEAM 4'-6 1/8" LONG
FOR DETAILS SEE STD. MD-374.03
FOR METHOD OF ANCHORING
SUPPORT BEAM IF INLET IS
CONSTRUCTED OF BRICK
SEE STD. MD-374.05
(FOR INLET REPAIR ONLY)

SPECIAL PRECAST CURB
(SEE DETAIL B-B)

NORMAL PAVEMENT
SLOPE

BEARING

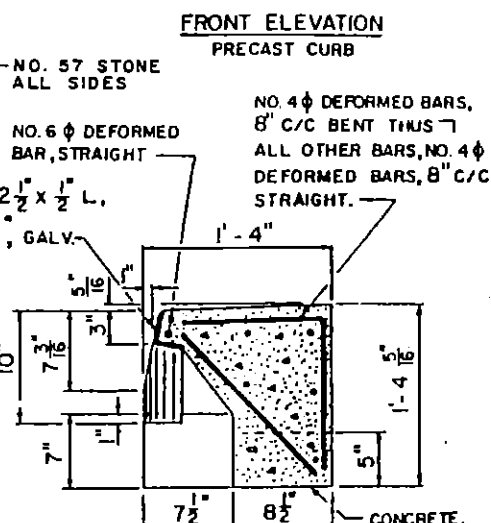
8 1/2"

3'-5 1/8"

WEEP HOLES

BRICK OR CONCRETE CHANNEL
TO SLOPE AT LEAST 2" PER
FOOT TOWARD OUTLET

SECTION B-B



DETAIL B-B
PRECAST CURB

NOTES:

1. INLET SHALL BE CONSTRUCTED OF REINFORCED CONCRETE MIX NO. 2. SIZE, TYPE, AND DIRECTION OF INLET CONNECTION WILL VARY TO SUIT CONDITIONS. SEE S.H.A. SPECIFICATION FOR INLETS.
2. 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 WALL.
3. BRICK FOR MASONRY TO COMPLY WITH THE S.H.A. SPECIFICATIONS.
4. FOR UNDEPRESSED INLETS, USE NORMAL PAVEMENT SLOPE.
5. LADDER RUNGS ARE REQUIRED SEE STANDARD MD-383.91 OR MD-383.92.
6. BRICK FOR CONSTRUCTION OF INLET MAY ONLY BE USED IF AUTHORIZED BY DEPARTMENT OF PUBLIC WORKS.
7. A 6" PERFORATED CIRCULAR PIPE, FOR EROSION AND SEDIMENT CONTROL, SHALL BE PLACED IN THE INLET WALL AT ALL INLET SEDIMENT TRAPS AS SHOWN ON THE PLANS.
8. MINIMUM OF 2 WEEP HOLES TO BE CAST IN BASE UNIT 6" ABOVE FLOW LINE - PVC MAY BE USED (2" MIN. DIAMETER) - COVER OUTSIDE WITH STAINLESS STEEL OR GALVANIZED WIRE CLOTH.

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DEPARTMENT OF PUBLIC WORKS

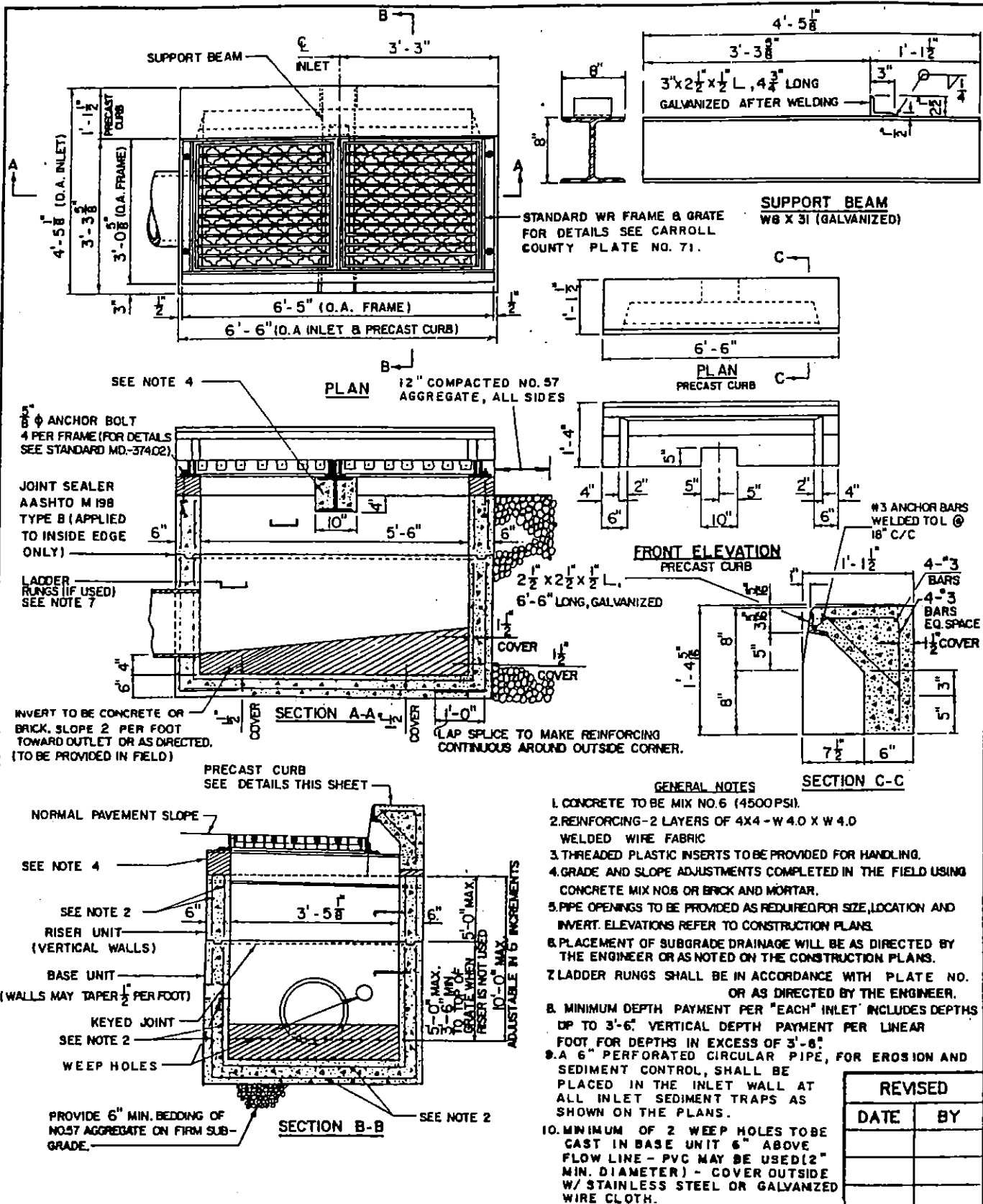
STANDARD WR INLET

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DATE

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DEPARTMENT OF PUBLIC WORKS

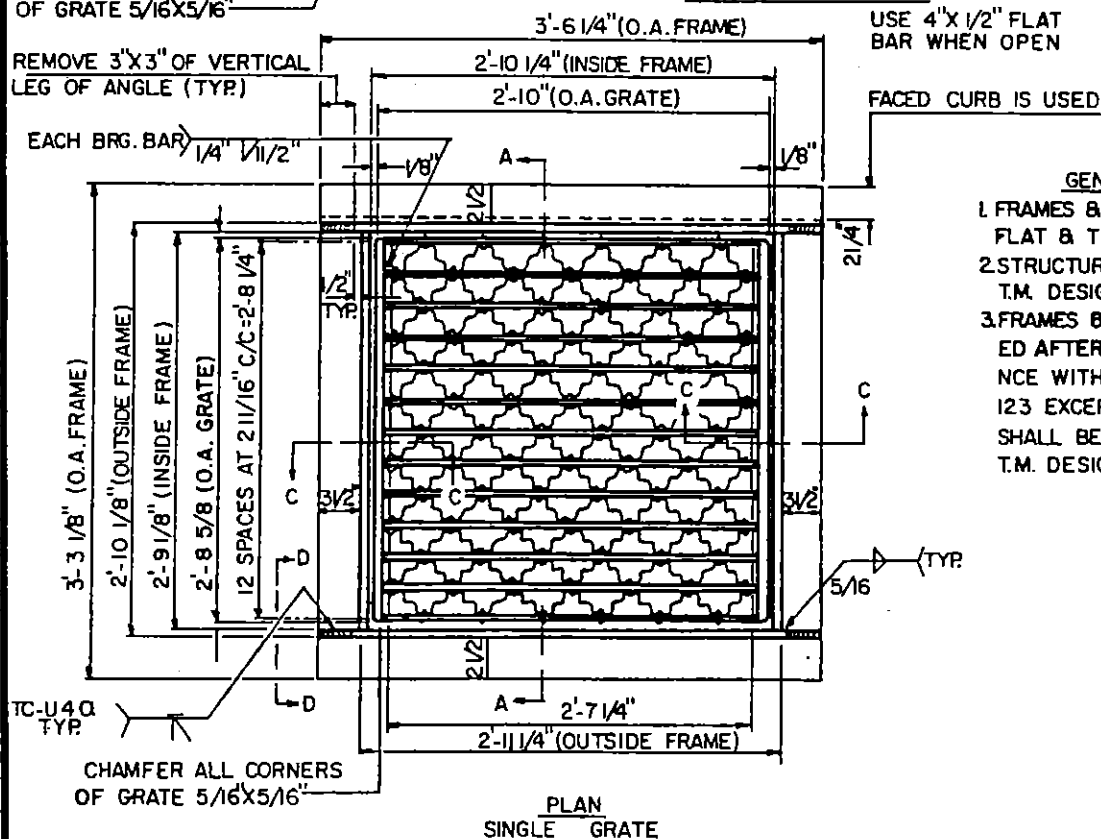
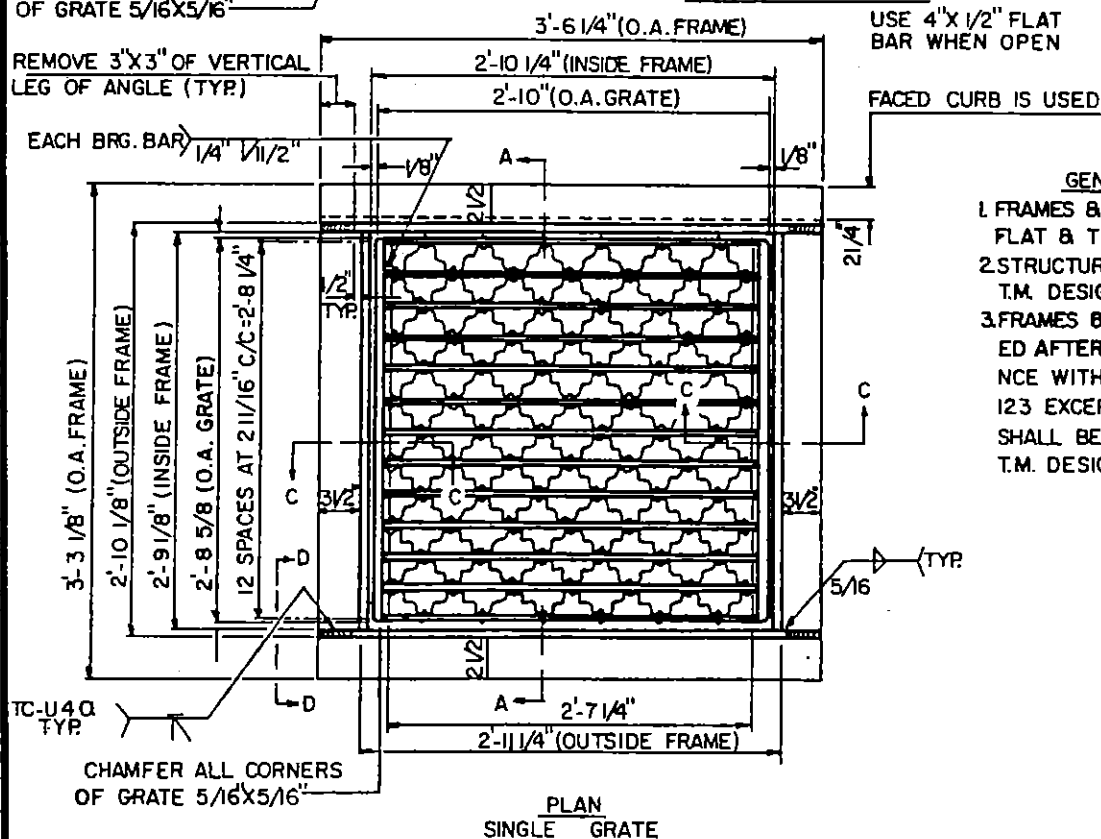
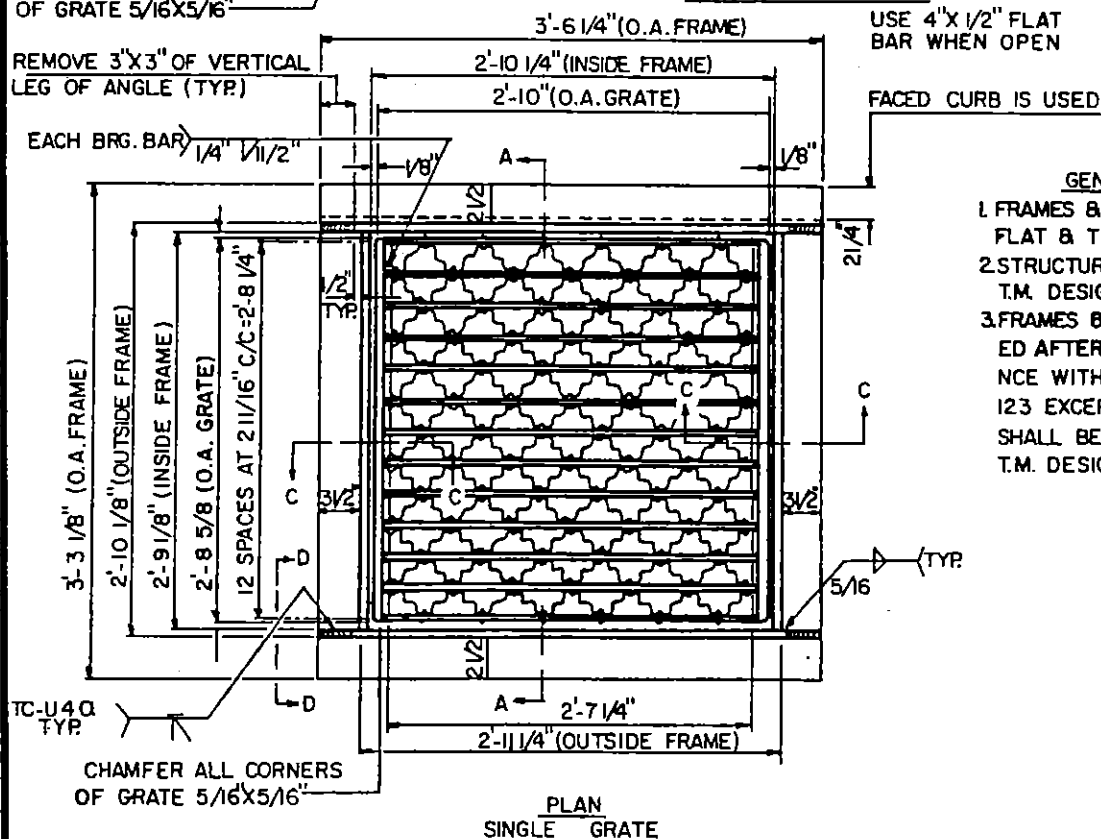
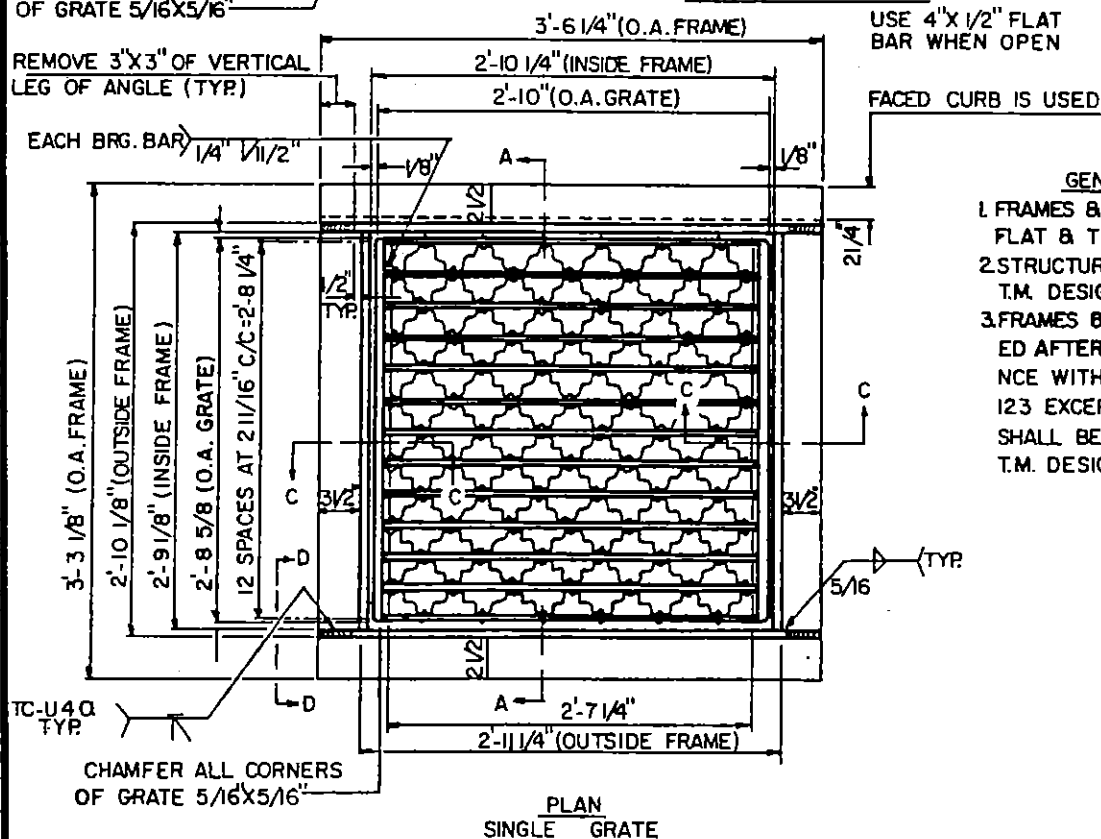
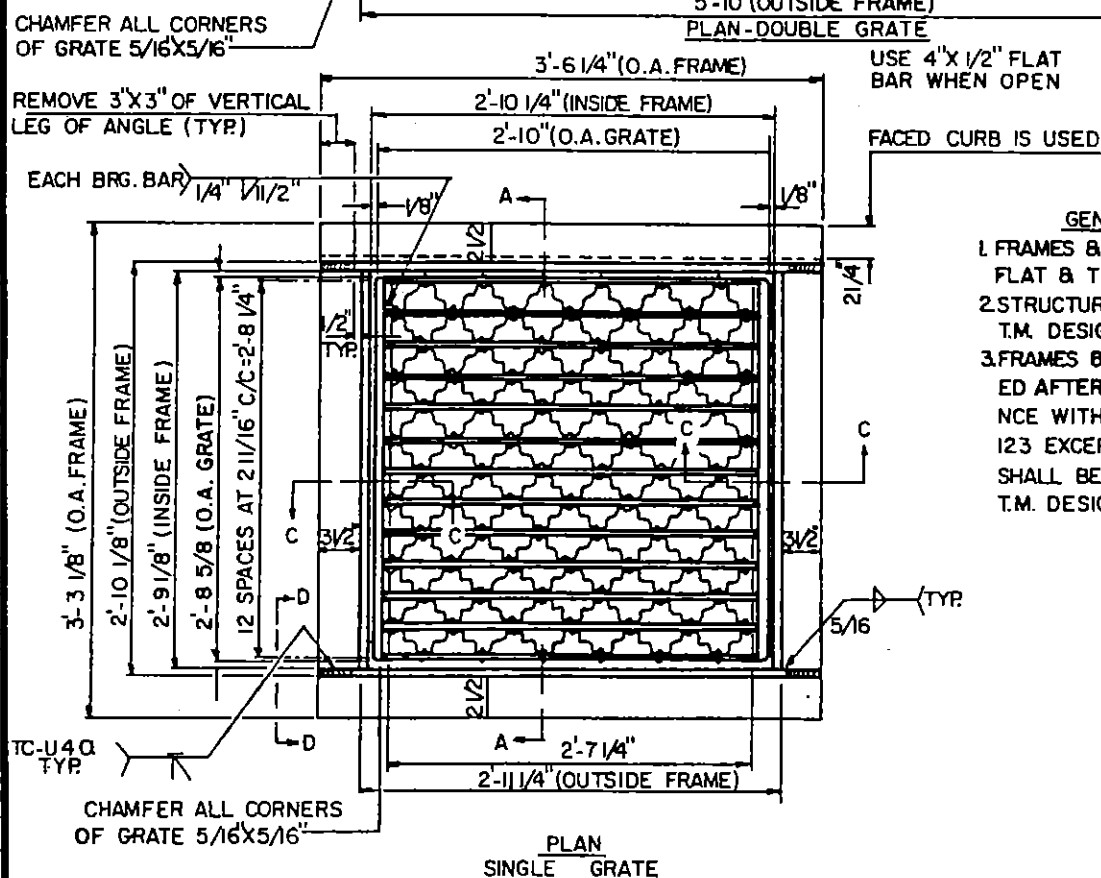
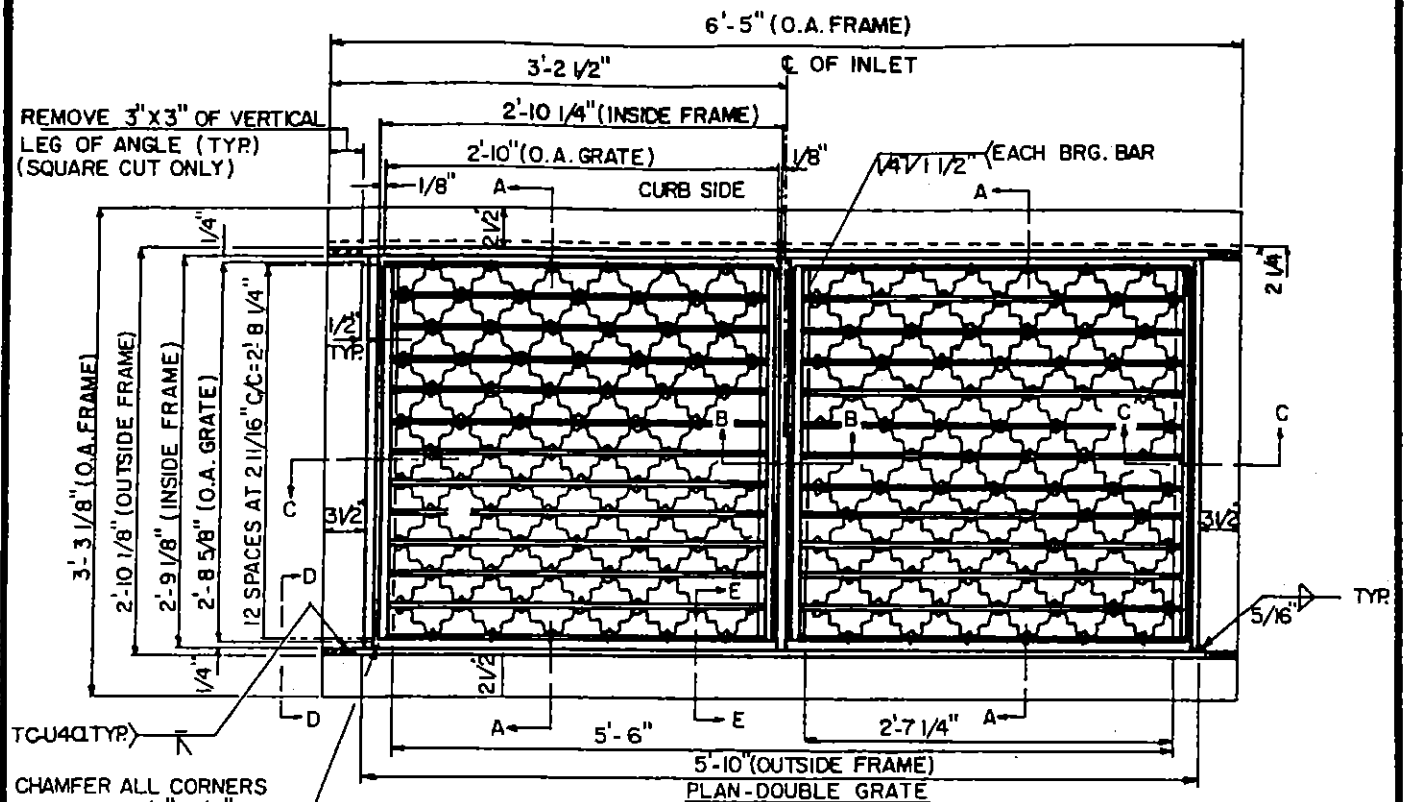
PRECAST WR COMBINATION INLET

DIRECTOR

DATE

PLATE

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- GENERAL NOTES
1. FRAMES & GRATES TO BE SQUARE
FLAT & TRUE.
 2. STRUCTURAL STEEL SHALL BE A.S.-
T.M. DESIGNATION A-36.
 3. FRAMES & GRATES TO BE GALVANIZ-
ED AFTER FABRICATION IN ACCORDA-
NCE WITH A.S.T.M. DESIGNATION A-
123 EXCEPT FOR ADHERENCE WHICH
SHALL BE IN ACCORDANCE WITH A.S.-
T.M. DESIGNATION A-153.

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PLATE	
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**CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS**

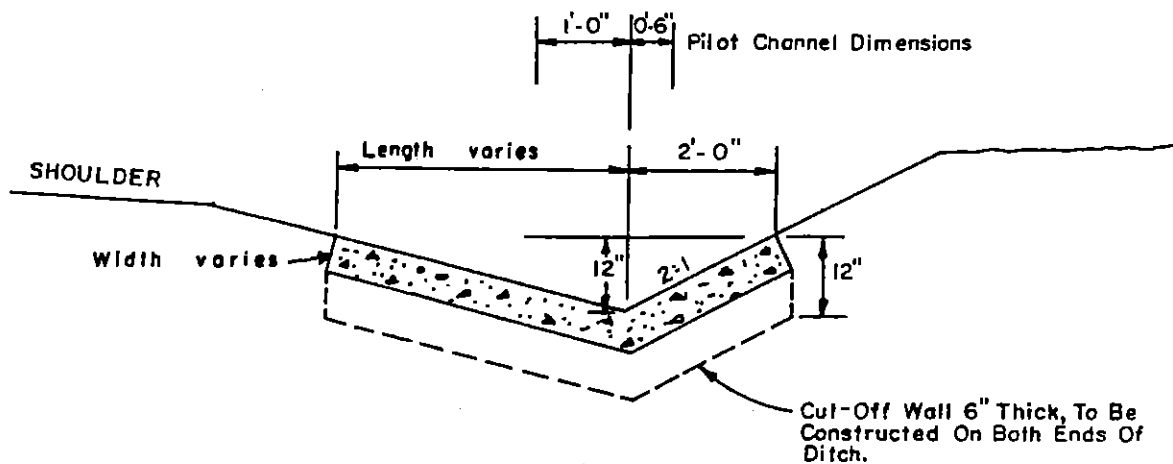
DEPARTMENT OF PUBLIC WORKS

STANDARD WR INLET
FRAME AND GRATE

FRAME AND GRATE

PLATE

71



Notes:

1. Mix No. 2 Concrete.
2. Expansion Joints (1/2" Non-Extruding) 100' Maximum.
3. Contraction Joints At 10' C.C.
4. 1/4" Radius On Top Edge Of Concrete.
5. Check Walls, 6" Thick And 6" Deep, To Be Constructed To The Full Width Of The Concrete Ditch At 50' Intervals, Approximately Halfway Between Expansion Joints On Grades Of 5% Or More.

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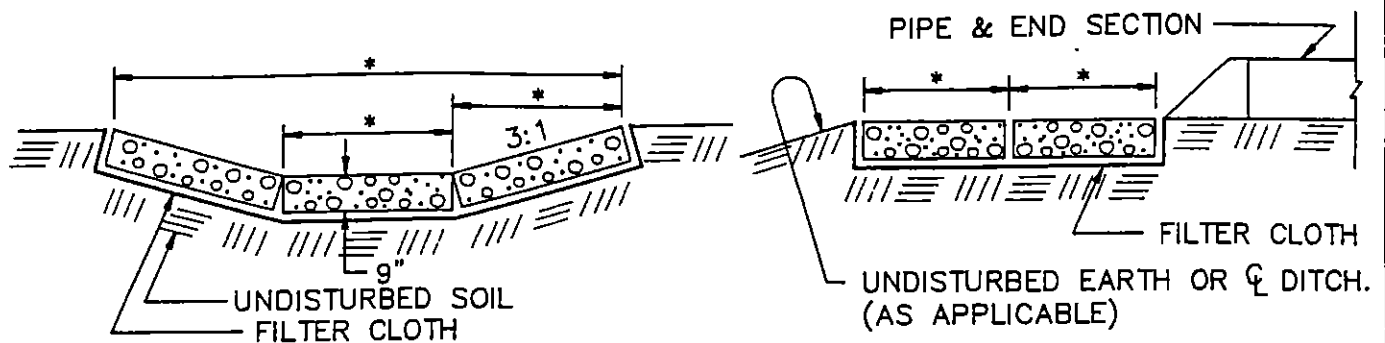
CONCRETE SIDE
DITCH

PLATE

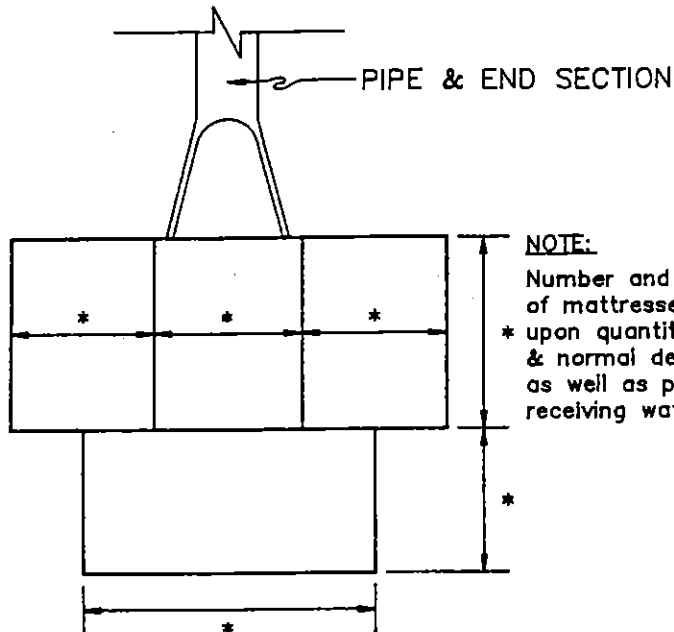
73

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SAMPLE DETAIL -- OUTFALL PROTECTION



* ACTUAL DIMENSIONS SHALL BE SHOWN



NOTE:

Number and placement of mattresses dependent upon quantity, velocities, & normal depth of flows as well as pipe size and receiving watercourse.

GENERAL NOTES:

1. ALL MATTRESSES MUST BE PVC COATED.
2. ALL MATTRESSES SHALL BE PLACED ON FILTER CLOTH.
3. EACH INSTALLATION SHALL SHOW A LAYOUT DIAGRAM GIVING SIZE AND LOCATION OF EACH BASKET.
4. STONE SHALL BE 4"-6"(NOM.)
5. MATERIALS AND SPECIFICATIONS NOT COVERED ABOVE SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

LENGTH	WIDTH	No. of THICKNESS	No. of CELLS	AREA SQUARE YARDS	CAPACITY CUBIC YARDS
9'	6'	9"	3	6	1.5
12'	6'	9"	4	8	2

SPECIFICATIONS PVC COATED

Mesh opening	Hex. nom. $2\frac{1}{2}$ " x $3\frac{1}{4}$ "
Wire for netting	0.0866" nom. diam. plus nom. 0.02165" PVC
Wire for selvages	0.1062" nom. diam. plus nom. 0.02165" PVC
Wire for binding	0.0866" nom. diam. plus nom. 0.02165" PVC
Zinc coating	0.70 ozs. per sq.ft. plus nom. 0.02165" PVC

Minimum thickness of PVC coating shall be not less than 0.015".

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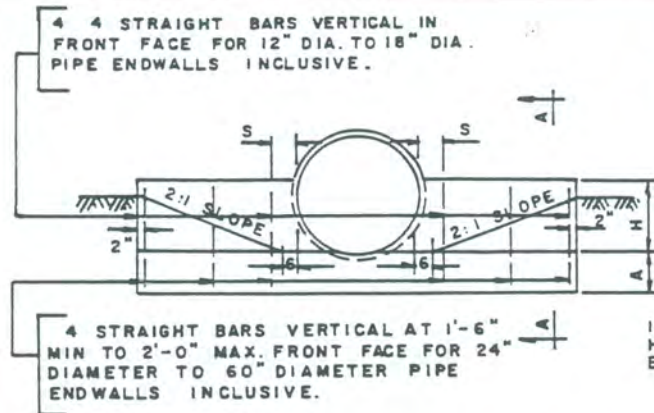
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DEPARTMENT OF PUBLIC WORKS

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STONE OUTFALL PROTECTION

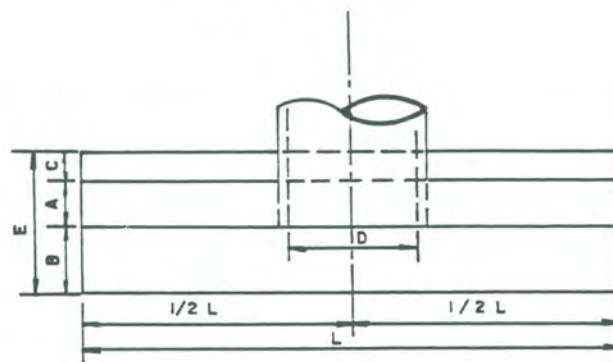
PLATE

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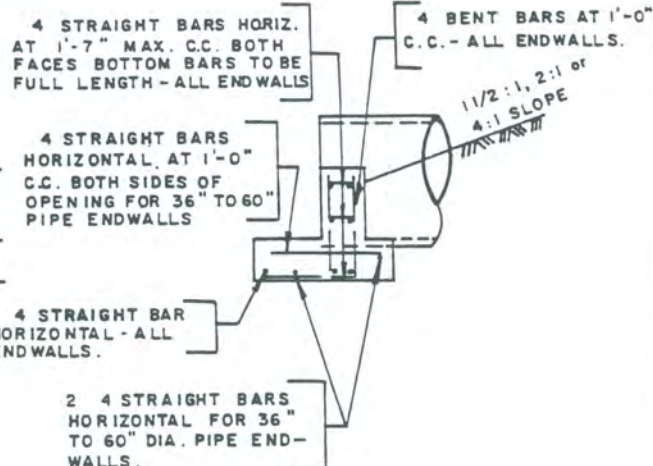


"S" DISTANCES FROM INSIDE SURFACE OF PIPE TO VERTICAL BARS IN FRONT AND REAR FACE
 4" FOR 12" DIA. TO 18" DIA. PIPES INCL.
 6" FOR 24" DIA. TO 36" DIA. PIPES INCL.
 8" FOR 42" DIA. TO 60" DIA. PIPES INCL.

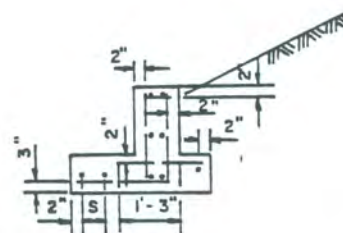
ELEVATION



PLAN



SECTION A-A



DISPOSITION OF BARS
DETAIL

Openings -		Dimensions						Volume	Steel
D	Area	A	B	C	E	H	L	Conc.	
Inches	Sq. Ft.							C.Y.	Lbs.
12	0.79	9"	6"	6"	1'-9"	0'-10"	4'-0"	0.27	19
15	1.23	9"	6"	6"	1'-9"	1'-0"	4'-9"	0.34	23
18	1.78	9"	6"	6"	1'-9"	1'-3"	5'-6"	0.41	29
24	3.14	9"	14"	6"	2'-5"	1'-6"	7'-0"	0.69	38
30	4.91	9"	14"	6"	2'-5"	1'-9"	8'-6"	0.88	58
36	7.07	12"	16"	10"	3'-2"	2'-0"	10'-0"	1.74	90
42	9.62	12"	16"	10"	3'-2"	2'-3"	11'-6"	2.07	99
48	12.57	12"	16"	10"	3'-2"	2'-6"	13'-0"	2.43	119
54	15.90	12"	20"	12"	3'-8"	2'-9"	14'-6"	3.08	132
60	19.64	12"	20"	12"	3'-8"	3'-0"	16'-0"	3.50	158

Quantities in Table to be used for Estimating Only

General Notes

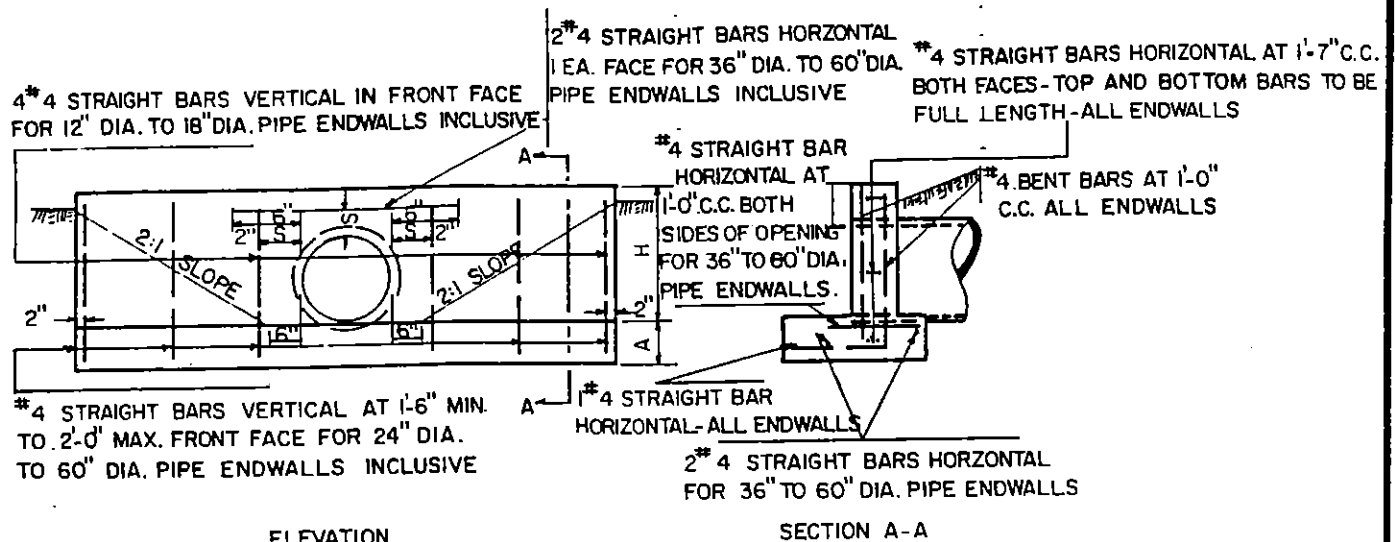
- Concrete : See Specifications
- Reinforcing : Deformed steel bars $\pm$ 4 bars ($\frac{1}{2}$ " ϕ)
- Chamfer : All exposed edges 1x1 or as directed

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PLATE	
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CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

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STANDARD END SUPPORT
WALL ROUND PIPE

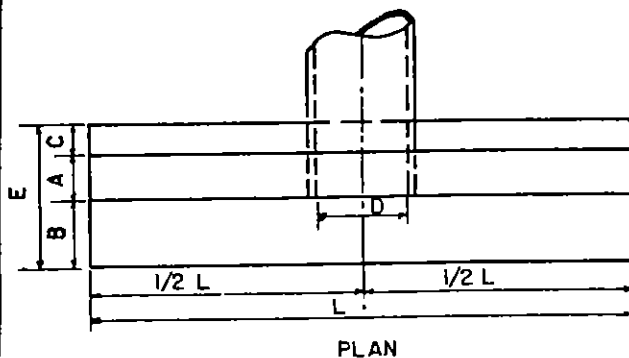


"S" DISTANCES FROM INSIDE SURFACE OF PIPE TO VERTICAL BARS IN FRONT AND FACE.

4" FOR 12" DIA. TO 18" DIA. PIPES INCL.

6" FOR 24" DIA. TO 36" DIA. PIPES INCL.

8" FOR 42" DIA TO 60" DIA. PIPES INCL.



GENERAL NOTES

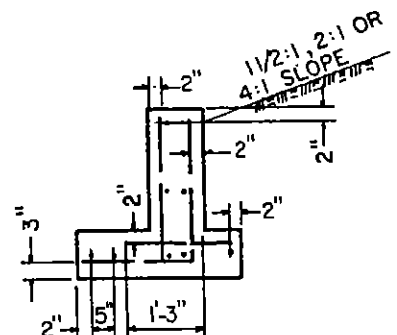
CONCRETE : SEE SPECIFICATIONS

REINFORCING : DEFORMED STEEL BARS-#4 BARS (1/2" ϕ)

CHAMFER : ALL EXPOSED EDGES 1"X1" OR AS DIRECTED.

OPENINGS D INCHES	AREA SQ. FT.	DIMENSIONS							VOL. CONC. C.Y.	STEEL LBS.
		A	B	C	E	F	H	L		
12	0.79	9"	6"	6"	1'-9"	9"	1'-9"	6'-6"	0.61	38
15	1.23	9"	6"	6"	1'-9"	9"	2'-0"	7'-9"	0.78	55
18	1.78	9"	6"	6"	1'-9"	9"	2'-3"	9'-0"	0.95	62
24	3.14	9"	14"	6"	2'-5"	9"	2'-9"	11'-6"	1.56	91
30	4.91	9"	14"	6"	2'-5"	12"	3'-6"	14'-2"	2.19	136
36	7.07	12"	16"	10"	3'-2"	12"	4'-0"	16'-8"	4.18	222
42	9.62	12"	16"	10"	3'-2"	12"	4'-6"	19'-2"	5.13	265
48	12.57	12"	16"	10"	3'-2"	12"	5'-0"	21'-8"	6.12	326
54	15.90	12"	20"	12"	3'-8"	12"	5'-6"	24'-2"	7.68	384
60	19.64	12"	20"	12"	3'-8"	12"	6'-0"	26'-8"	8.86	428

QUANTITIES IN TABLE TO BE USED FOR ESTIMATING ONLY



CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

STANDARD TYPE 'C'
ENDWALL ROUND PIPE

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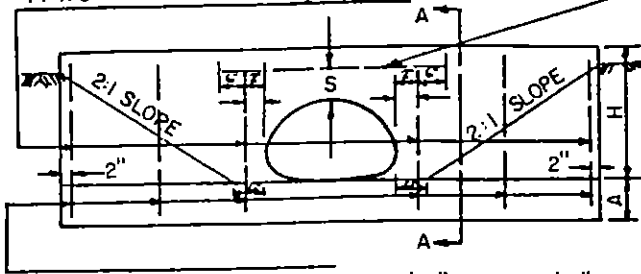
PLATE

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4#4 STRAIGHT BARS VERTICAL IN FRONT FACE FOR 14"X9" TO 29"X18" PIPE ENDWALLS INCLUSIVE

2#4 STRAIGHT BARS HORIZONTAL, 1 EACH FACE FOR 50"X31" TO 72"X44" PIPE ENDWALLS INCLUSIVE



4 STRAIGHT BARS VERTICAL AT 1'-6" MIN. TO 2'-0" MAX. FROM FACE FOR 36"X22" TO 72"X44" PIPE ENDWALLS INCLUSIVE

ELEVATION

"S" DISTANCES

4" FOR 14"X9" TO 22"X13" INCL.
6" FOR 29"X18" TO 43"X27" INCL.
8" FOR 50"X31" TO 72"X44" INCL.

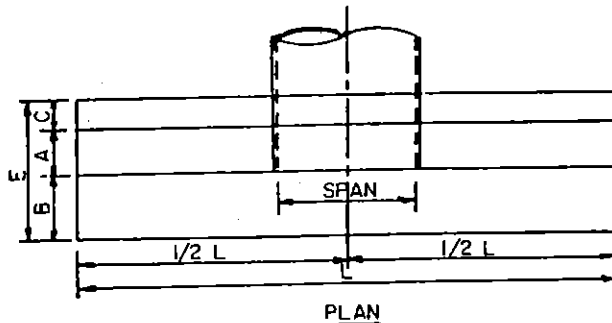
4 STRAIGHT BAR HORIZONTAL AT 1'-0" C.C. BOTH SIDES OF OPENING FOR 50"X31" TO 72"X44" PIPE ENDWALLS INCLUSIVE

1#4 STRAIGHT BAR HORIZONTAL ALL BARS

2#4 STRAIGHT BARS HORIZONTAL FOR 50"X31" TO 72"X44" PIPE ENDWALLS, INCL.

SECTION A-A

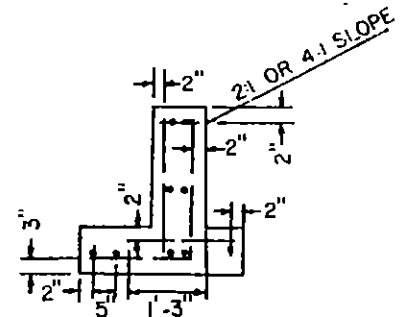
4 BENT BARS AT 1'-0" C.C. ALL ENDWALLS



PLAN

QUANTITIES FOR ESTIMATING PURPOSES ONLY

OPENING		DIMENSIONS							QUANTITIES	
D	AREA	A	B	C	E	F	H	L	CONC.	STEEL
INCHES	SQ. FT.								C.Y.	LBS.
17X13	1.23	9"	6"	6"	1'-9"	6"	1'-9"	6'-3"	0.54	38
21X15	1.77	9"	6"	6"	1'-9"	11"	2'-2"	9'-6"	0.98	56
24X18	2.40	9"	6"	6"	1'-9"	8"	2'-2"	9'-6"	0.96	55
28X20	3.14	9"	6"	6"	1'-9"	9"	2'-4"	9'-6"	0.96	55
35X24	4.91	9"	14"	6"	2'-5"	14"	3'-2"	13'-8"	1.98	96
42X29	7.07	9"	14"	6"	2'-5"	9"	3'-2"	13'-8"	1.92	95
49X33	9.62	12"	16"	10"	3'-2"	14"	3'-11"	17'-11"	4.34	186
57X38	12.57	12"	16"	10"	3'-2"	10"	4'-0"	17'-11"	4.73	186
64X43	15.90	12"	20"	12"	3'-8"	13"	4'-8"	21'-9"	6.27	243
71X47	19.64	12"	20"	12"	3'-8"	10"	4'-9"	21'-9"	6.05	243



DISPOSITION OF BARS-DETAILS

GENERAL NOTES

CONCRETE: SEE SPECIFICATIONS
REINFORCING: DEFORMED STEEL BARS: 4 BARS, (1/2" ϕ)
CHAMFER: ALL EXPOSED EDGES 1"X1" OR AS DIRECTED.

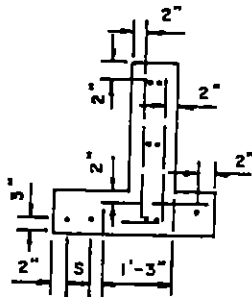
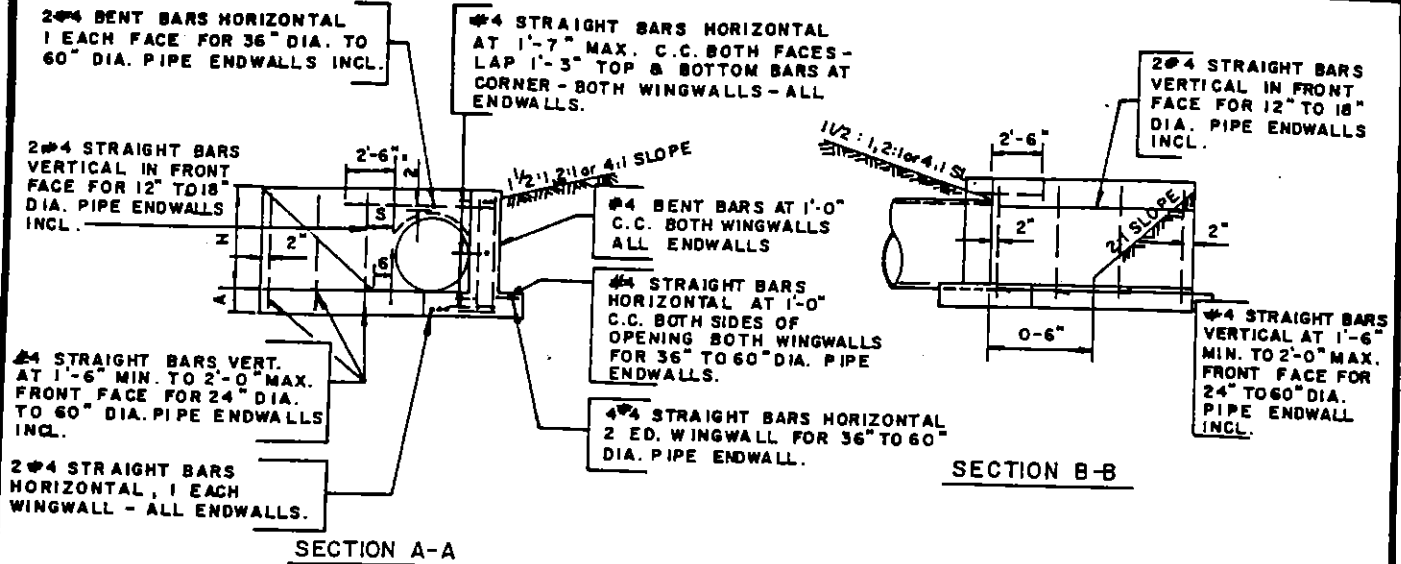
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DEPARTMENT OF PUBLIC WORKS

Carroll County 4-12-94
DIRECTOR DATE

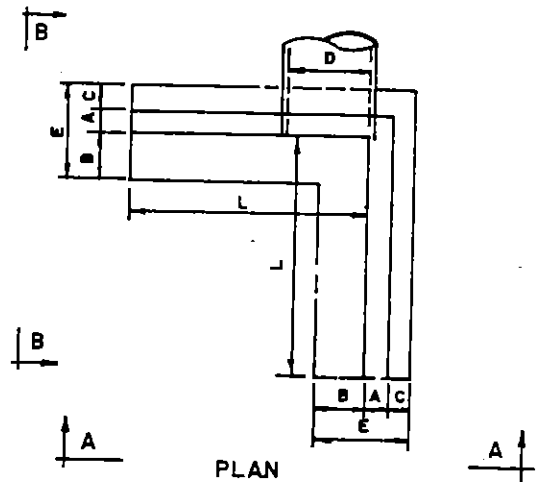
STANDARD TYPE C
ENDWALL ARCH PIPE

PLATE

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DISPOSITION OF BARS DETAILS



Openings		Dimensions						Volume	Steel
D	Area	A	B	C	E	H	L	Conc.	Lbs.
inches	Sq. Ft.							C.Y.	
12	0.79	9	6	6	1-9	1-9	3-6	0.73	56
15	1.23	9	6	6	1-9	2-0	4-3	0.93	77
18	1.78	9	6	6	1-9	2-3	5-0	1.14	89
24	3.14	9	14	6	2-5	2-9	6-6	1.8	124
30	4.91	9	14	6	2-5	3-6	8-0	2.6	160
36	7.07	12	16	10	3-2	4-0	9-6	5.0	287
42	9.62	12	16	10	3-2	4-6	11-0	6.2	333
48	12.57	12	16	10	3-2	5-0	12-6	7.4	387
54	15.90	12	20	12	3-8	5-6	14-0	9.2	458
60	19.64	12	20	12	3-8	6-0	15-6	10.7	519

Quantities in Table to be used for Estimating Only

S Distances from inside surface of pipe to vertical bars in front and rear face
 4" for 12" Dia to 18" Dia pipes incl.
 6" for 24" Dia to 36" Dia pipes incl.
 8" for 42" Dia to 60" Dia pipes incl.

GENERAL NOTES

Concrete : See specifications.
 Reinforcing : Deformed steel bars - 4 bars ($\frac{1}{2}\phi$)
 Chamfer : All exposed edges 1x1 or as directed.

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CARROLL COUNTY, MARYLAND
 DEPARTMENT OF PUBLIC WORKS

STANDARD TYPE E ENDWALL
 ROUND PIPE

Carroll County 4-12-94
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2#4 BENT BARS, HORIZONTAL
1 EACH FACE FOR 50" X 31" TO
72" X 44" ENDWALLS, INCL.

#4 STRAIGHT BARS HORIZONTAL AT
1'-7" MAX. C.C. BOTH FACES - LAP 1'-3"
TOP & BOTTOM BARS AT CORNER - BOTH
WINGWALLS - ALL ENDWALLS.

2#4 STRAIGHT BARS
VERTICAL IN
FRONT FACE FOR
14" X 9" TO
29" X 18" ENDWALLS
INCL.

2:1 or 4:1 SLOPE

#4 BENT BARS AT 1'-0"
C.C. BOTH WINGWALLS ALL
ENDWALLS

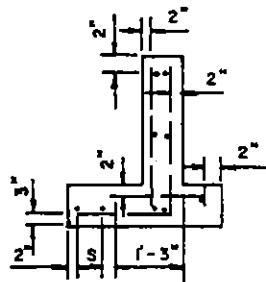
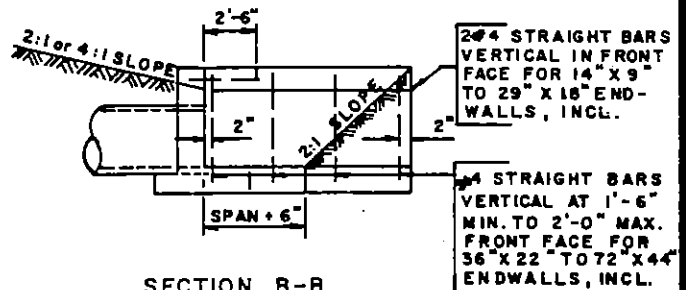
#4 STRAIGHT BARS HORIZONTAL AT
1'-0" C.C. BOTH SIDES OF OPENING FOR
BOTH WINGWALLS FOR 50" X 31" TO
72" X 44" ENDWALLS INCL.

#4 STRAIGHT BARS VERTICAL
AT 1'-6" MIN. TO 2'-0" MAX.
FRONT FACE FOR 36" X 22"
TO 72" X 44" ENDWALLS, INCL.

2#4 STRAIGHT BARS
HORIZONTAL, 1 EACH
WINGWALL - ALL ENDWALL

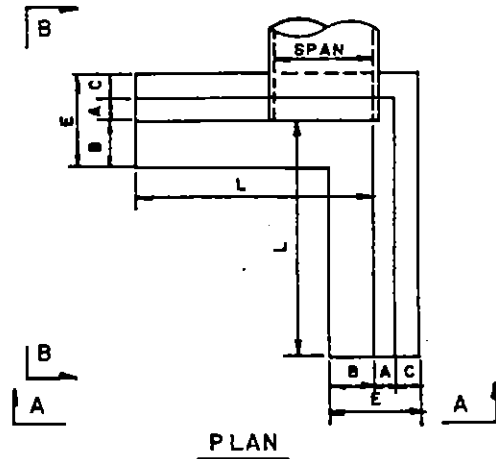
4#4 STRAIGHT BARS HORIZONTAL,
2 EACH WINGWALL FOR 50" X 31"
TO 72" X 44" ENDWALLS INCL.

SECTION A-A



GENERAL NOTES

Concrete : See Specifications
Reinforcing : Deformed steel bars 4 bars (1/2" o)
Chamfer : All exposed edges 1" X 1"



QUANTITIES FOR ESTIMATING PURPOSES

OPENING D INCHES S X R	AREA S.F.	DIMENSIONS							QUANTITIES	
		A	B	C	E	F	H	L	CONC. CY.	STEEL LBS.
17x13	1.23	9"	6"	6"	1'-9"	6"	1'-9"	6'-3"	0.54	38
21x15	1.77	9"	6"	6"	1'-9"	11"	2'-2"	9'-6"	0.98	56
24x18	2.40	9"	6"	6"	1'-9"	8"	2'-2"	9'-6"	0.96	55
28x20	3.14	9"	6"	6"	1'-9"	9"	2'-4"	9'-6"	0.96	55
35x24	4.91	9"	14"	6"	2'-5"	14"	3'-2"	8'-8"	1.98	96
42x29	7.07	9"	14"	6"	2'-5"	9"	3'-2"	13'-8"	1.92	95
49x33	9.62	12"	16"	10"	3'-2"	14"	3'-11"	17'-11"	4.34	186
57x38	12.57	12"	16"	10"	3'-2"	10"	4'-0"	17'-11"	4.73	186
64x43	15.90	12"	20"	12"	3'-8"	13"	4'-8"	21'-9"	6.27	243
71x47	19.64	12"	20"	12"	3'-8"	10"	4'-9"	21'-9"	6.05	243

"S" DISTANCES

4" for 14" X 9" to 22" X 13" incl.
6" for 29" X 18" to 43" X 27" incl.
8" for 50" X 31" to 72" X 44" incl.

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DATE	BY

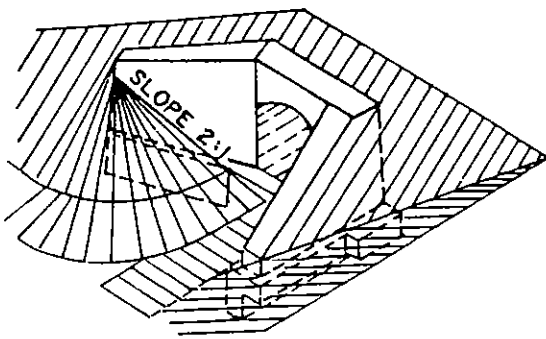
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DEPARTMENT OF PUBLIC WORKS

STANDARD TYPE E
ENDWALL ARCH PIPE

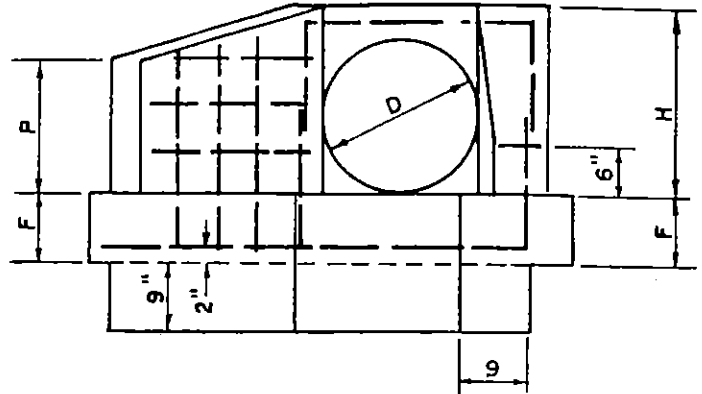
Carroll County 4-12-94
DIRECTOR DATE

PLATE

82



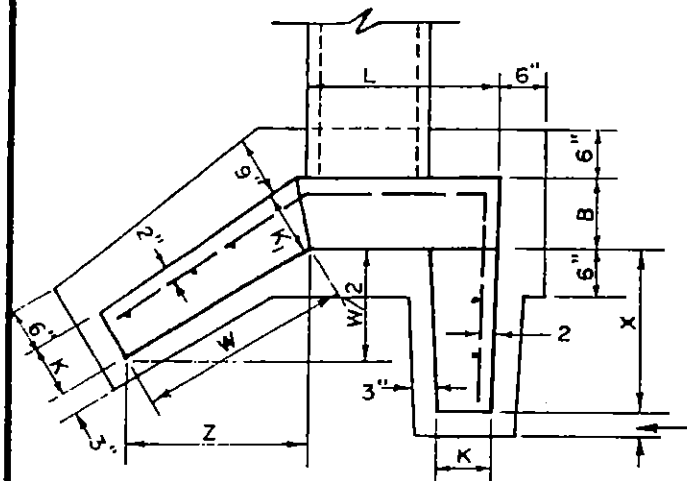
ISOMETRIC VIEW



ELEVATION

STEEL IN WINGS

VERT. 3/4" Φ BARS 12" C.C.
HOR. 1/2" Φ BARS 12" C.C.
HOOKED ON ONE END



PLAN

1 1/2 : 1 SLOPE = 9"
2 : 1 SLOPE = 12"
4 : 1 SLOPE = 24"

CONCRETE, MIX No. 2 (AIR-ENTRAINED)
REINFORCEMENT, DEFORMED STEEL BARS.
CHAMFER ALL EXPOSED EDGES 1" x 1"
OR AS DIRECTED.

SLOPE 1 1/2 : 1											
OPENING		DIMENSIONS FOR CONCRETE									
PIPE DIA.	AREA	ENDWALLS				WINGS					
		L	B	F	H	W	X	Z	K	K	P
12"	0.79	1'-9"	9"	9"	1'-8"	2'-0"	1'-3"	1'-9"	9"	7"	1'-4"
15"	1.23	2'-0"	9"	9"	2'-0"	2'-4"	1'-9"	2'-0"	9"	7"	1'-5"
16"	1.39	2'-1"	9"	9"	2'-0"	2'-4"	1'-9"	2'-0"	9"	7"	1'-5"
18"	1.78	2'-3"	9"	9"	2'-3"	2'-8"	2'-1"	2'-4"	9"	8"	1'-6"
24"	3.14	3'-0"	12"	9"	2'-11"	3'-6"	2'-11"	3'-0"	12"	11"	2'-1"
30"	4.91	3'-6"	12"	9"	3'-6"	4'-4"	3'-9"	3'-9"	12"	11"	2'-4"
36"	7.07	4'-0"	12"	9"	4'-0"	5'-0"	4'-6"	4'-4"	12"	11"	2'-7"
42"	9.62	4'-6"	12"	9"	4'-7"	5'-9"	5'-4"	5'-0"	12"	11"	2'-1"
48"	12.57	5'-0"	12"	9"	5'-1"	6'-4"	6'-2"	5'-6"	12"	11"	3'-3"

SLOPE 2 : 1											
OPENING		DIMENSIONS FOR CONCRETE									
PIPE DIA.	AREA	ENDWALLS				WINGS					
		L	B	F	H	W	X	Z	K	K	P
12"	0.79	1'-9"	9"	9"	1'-7"	2'-3"	1'-10"	2'-0"	9"	7"	1'-3"
15"	1.23	2'-0"	9"	9"	1'-11"	2'-6"	2'-6"	2'-2"	9"	8"	1'-5"
16"	1.39	2'-1"	9"	9"	1'-11"	2'-7"	2'-6"	2'-3"	9"	8"	1'-5"
18"	1.78	2'-3"	9"	9"	2'-2"	3'-0"	3'-0"	2'-7"	9"	8"	1'-7"
24"	3.14	3'-0"	12"	9"	2'-9"	4'-0"	4'-0"	3'-5"	12"	11"	2'-1"
30"	4.91	3'-6"	12"	9"	3'-4"	4'-8"	5'-2"	4'-1"	12"	11"	2'-6"
36"	7.07	4'-0"	12"	9"	3'-10"	5'-4"	6'-2"	4'-7"	12"	11"	2'-10"
42"	9.62	4'-6"	12"	9"	4'-5"	6'-4"	7'-4"	5'-6"	12"	11"	3'-2"
48"	12.57	5'-0"	12"	9"	4'-11"	7'-0"	8'-4"	6'-1"	12"	11"	3'-6"

SLOPE 4 : 1											
OPENING		DIMENSIONS FOR CONCRETE									
PIPE DIA.	AREA	ENDWALLS				WINGS					
		L	B	F	H	W	X	Z	K	K	P
12"	0.79	1'-9"	9"	9"	1'-5"	2'-6"	3'-8"	2'-2"	9"	8"	1'-3"
15"	1.23	2'-0"	9"	9"	1'-9"	3'-0"	5'-0"	2'-7"	9"	8"	1'-5"
16"	1.39	2'-1"	9"	9"	1'-9"	3'-0"	5'-0"	2'-7"	9"	8"	1'-5"
18"	1.78	2'-3"	9"	9"	2'-0"	3'-6"	6'-0"	3'-0"	9"	8"	1'-7"
24"	3.14	3'-0"	12"	9"	2'-6"	4'-6"	8'-0"	3'-11"	12"	11"	2'-2"
30"	4.91	3'-6"	12"	9"	3'-1"	5'-6"	10'-4"	4'-9"	12"	11"	2'-7"
36"	7.07	4'-0"	12"	9"	3'-7"	6'-6"	12'-4"	5'-8"	12"	11"	3'-0"
42"	9.62	4'-6"	12"	9"	4'-2"	7'-6"	14'-8"	6'-6"	12"	11"	3'-5"
48"	12.57	5'-0"	12"	9"	4'-8"	8'-3"	16'-8"	7'-2"	12"	11"	3'-10"

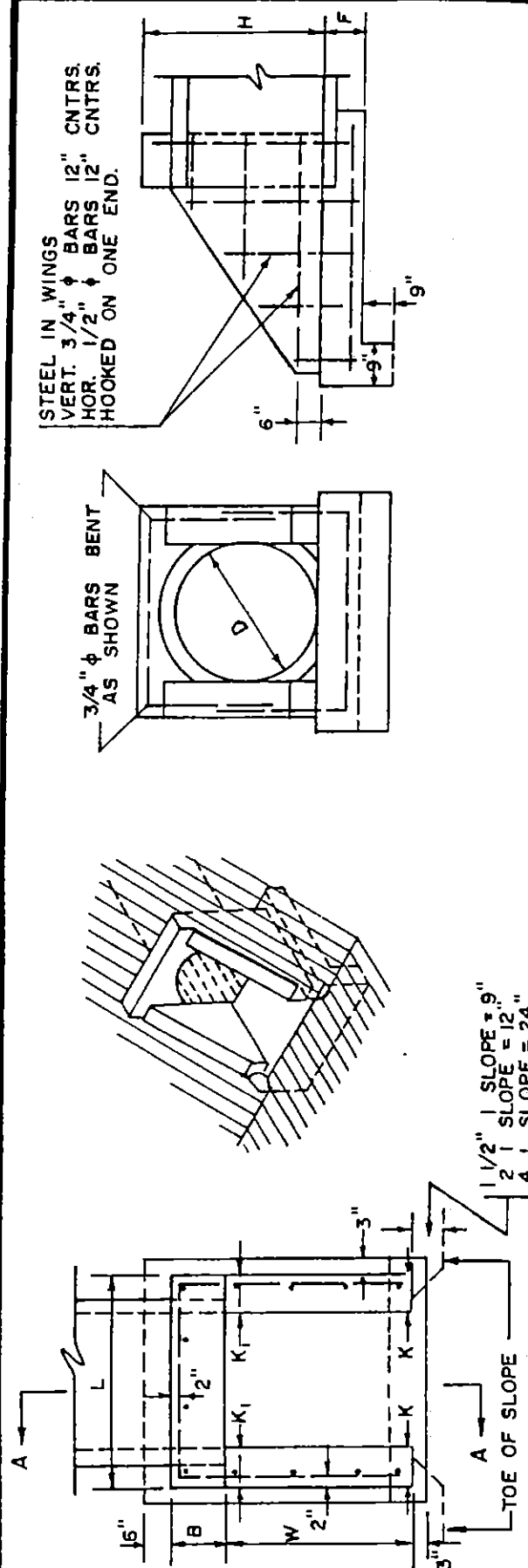
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PLATE

"F" ENDWALL

83

Carroll County 4-12-94
DIRECTOR DATE



SECTION A-A

ELEVATION

ISOMETRIC VIEW

PLAN

CONCRETE, MIX No. 2 (AIR-ENTRAINED)
 REINFORCEMENT, DEFORMED STEEL BARS
 CHAMFER ALL EXPOSED EDGES 1" x 1" AS DIRECTED.

SLOPE 1 1/2 : 1										SLOPE 2 : 1									
OPENING					DIMENSIONS FOR CONCRETE					OPENING					DIMENSIONS FOR CONCRETE				
					ENDWALLS										ENDWALLS				
					WINGS										WINGS				
D	SQFT	L	B	F	H	W	K	K		D	SQFT	L	B	F	H	W	K	K	
12"	0.79	2'-0"	9"	9"	1'-8"	1'-0"	6"	6"		12"	0.79	2'-0"	9"	9"	1'-7"	1'-4"	6"	6"	
15"	1.23	2'-3"	9"	9"	2'-0"	1'-5"	6"	6"		15"	1.23	2'-3"	9"	9"	1'-11"	1'-11"	6"	6"	
16"	1.39	2'-4"	9"	9"	2'-0"	1'-6"	6"	6"		16"	1.39	2'-4"	9"	9"	1'-11"	2'-0"	6"	6"	
18"	1.78	2'-6"	9"	9"	2'-3"	1'-10"	6"	6"		18"	1.78	2'-6"	9"	9"	2'-2"	2'-6"	6"	6"	
24"	3.14	3'-6"	12"	9"	2'-11"	2'-8"	9"	9"		24"	3.14	3'-6"	12"	9"	2'-9"	3'-6"	9"	9"	
30"	4.91	4'-0"	12"	9"	3'-6"	3'-6"	9"	9"		30"	4.91	4'-0"	12"	9"	3'-4"	4'-7"	9"	9"	
36"	7.07	4'-6"	12"	9"	4'-0"	4'-3"	9"	9"		36"	7.07	4'-6"	12"	9"	3'-10"	5'-8"	9"	9"	
42"	9.62	5'-6"	12"	9"	4'-7"	5'-1"	9"	12"		42"	9.62	5'-6"	12"	9"	4'-5"	6'-9"	9"	12"	
48"	12.57	6'-0"	12"	9"	5'-1"	5'-1"	9"	12"		48"	12.57	6'-0"	12"	9"	4'-11"	7'-10"	9"	12"	

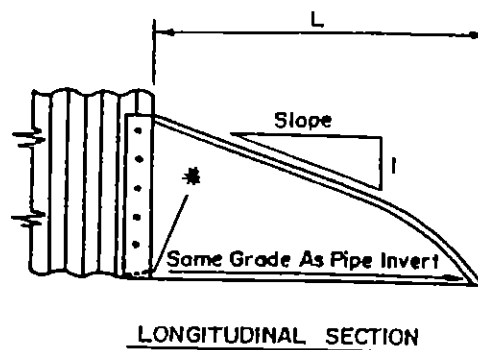
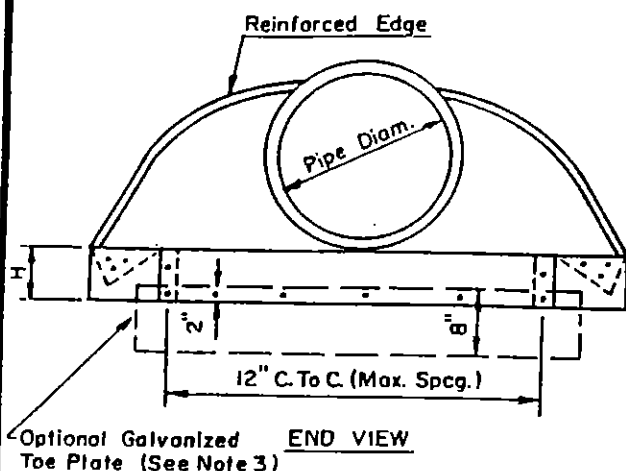
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"G" ENDWALL

PLATE

84



* Invert Elevation To Be At The Pipe End Of The Standard End Section. Elevations To Be Noted On Construction Plans.

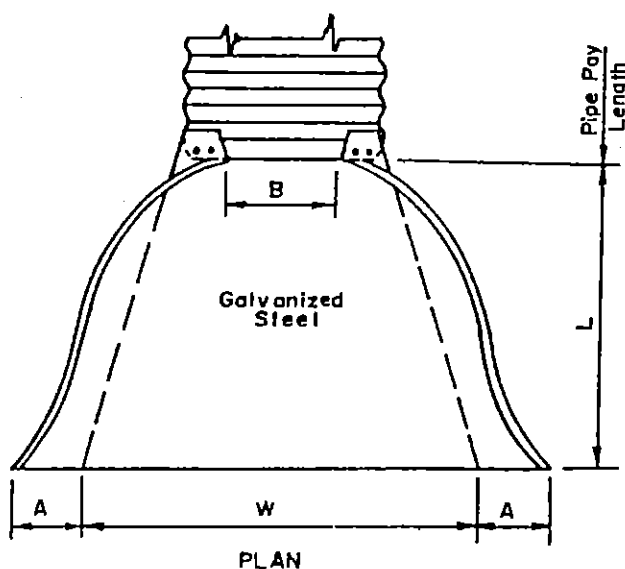


TABLE OF DIMENSIONS								
Pipe Diam	Ga.	A 1"±	B Max.	H 1"±	L 1 1/2"±	W 2"±	Approx Slope	Body
12"	16	6"	6"	6"	21"	24"	2 1/2	1 Pc.
15"	16	7"	8"	6"	26"	30"	2 1/2	1 Pc.
18"	16	8"	10"	6"	31"	36"	2 1/2	1 Pc.
21"	16	9"	12"	6"	36"	42"	2 1/2	1 Pc.
24"	16	10"	13"	6"	41"	48"	2 1/2	1 Pc.
30"	14	12"	16"	8"	51"	60"	2 1/2	1 Pc.
36"	14	14"	19"	9"	60"	72"	2 1/2	2 Pc.
42"	12	16"	22"	11"	69"	84"	2 1/2	2 Pc.
48"	12	18"	27"	12"	78"	90"	2 1/4	2 Pc.
54"	12	18"	30"	12"	84"	102"	2	2 Pc.
60"	12	18"	33"	12"	87"	114"	1 3/4	3 Pc.
66"	12	18"	36"	12"	87"	120"	1 1/2	3 Pc.
72"	12	18"	39"	12"	87"	126"	1 1/3	3 Pc.
78"	12	18"	42"	12"	87"	132"	1 1/4	3 Pc.
84"	12	18"	45"	12"	87"	138"	1 1/6	3 Pc.

Notes:

1. All 3 Piece Bodies To Have 12 Ga. Sides And 10 Ga. Center Panels. Width Of Center Panels To Be Greater Than 20% Of The Pipe Periphery. Multiple Panel Bodies To Have Lap Seams Which Are To Be Tightly Joined By $\frac{3}{8}$ " ϕ Galvanized Rivets Or Bolts.
2. For 60" Thru 84" Sizes, Reinforced Edges To Be Supplemented With Galvanized Stiffener Angles. The Angles Will Be 2" X 2" X $\frac{1}{4}$ " For 60" Thru 72" Diameter And 2 1/2" X 2 1/2" X $\frac{1}{4}$ " For 78" And 84" Diameter. The Angles To Be Attached By $\frac{3}{8}$ " ϕ Galvanized Nuts And Bolts.
3. Toe Plate Shall Be Used When Specified On The Plans. Cost Of Toe Plate To Be Included In Bid Price Per Each Of Metal End Section.
4. Type 3 Connection Includes One Foot Of Pipe Length For 42" Thru 84" Diameter As A Connector Section. The Connector Section Will Be Attached To The End Section By Galvanized Rivets Or Bolts. See Plate No. 87

5. Where End Section is To Be Applied To A Structural Plate Pipe, The End Section Shall Be Orderd Without The One Foot Of Pipe Length As Stipulated In Note 4, Instead, Drill Holes And Field Bolt The End Section Directly To The Structural Plate Pipe.

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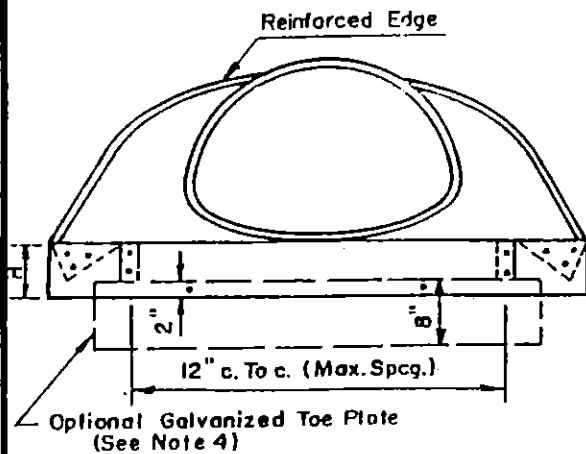
STANDARD METAL END SECTION
ROUND METAL PIPE

REVISED

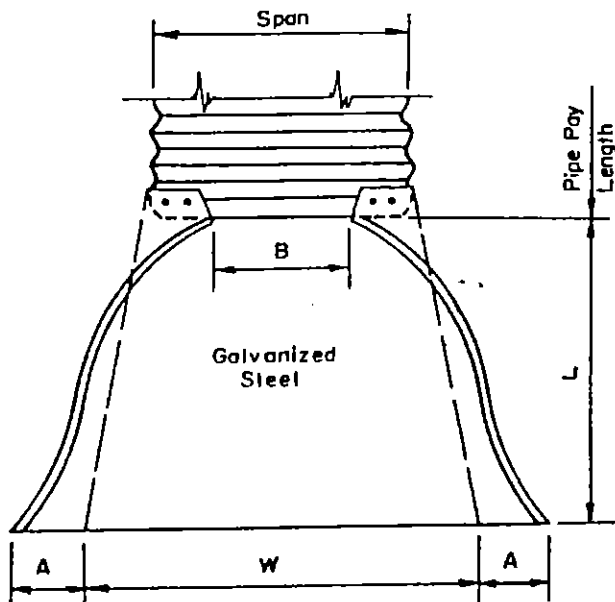
DATE BY

PLATE

85



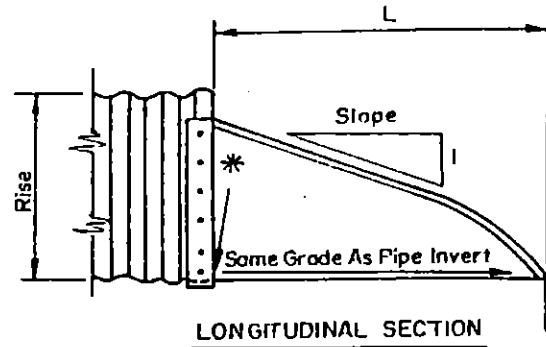
END VIEW



PLAN

Notes:

1. All 3 Piece Bodies To Have 12 Ga. Sides And 10 Ga. Center Panels. Width Of Center Panels To Be Greater Than 20% Of The Pipe Periphery. Multiple Panel Bodies To Have Lap Seams Which Are To Be Tightly Joined By $\frac{3}{8}$ " ϕ Galvanized Rivets Or Bolts.
2. For The 79" X 49" And 85" X 54" Sizes, Reinforced Edge To Be Supplemented By 2" X 2" X $\frac{1}{4}$ " Galvanized Angles. The Angles To Be Attached By $\frac{3}{8}$ " ϕ Galvanized Nuts And Bolts.
3. Angle Reinforcement Will Be Placed Under The Center Panel Seams On The 79" X 49" And 85" X 54" Sizes.
4. Toe Plate Shall Be Used When Specified On The Plans. Cost Of Toe Plate To Be Included In Bid Price Per Each Of Metal End Section.



LONGITUDINAL SECTION

* Invert Elevation To Be At The Pipe End Of The Standard End Section. Elevations To Be Noted On Construction Plans.

DIMENSIONS									
PIPE ARCH DIMENSIONS		GA.	A 1" $\pm$	B MAX.	H 1" $\pm$	L 1 1/2" $\pm$	W 2" $\pm$	APPROX. SLOPE	UNIT
SPAN	RISE								
17"	13"	16	7"	9"	6"	19"	30"	2 1/2	1 PC.
21"	15"	16	7"	10"	6"	23"	36"	2 1/2	1 PC.
24"	18"	16	8"	12"	6"	28"	42"	2 1/2	1 PC.
28"	20"	16	9"	14"	6"	32"	48"	2 1/2	1 PC.
35"	24"	14	10"	16"	6"	39"	60"	2 1/2	1 PC.
42"	29"	14	12"	18"	8"	46"	75"	2 1/2	1 PC.
49"	33"	12	13"	21"	9"	53"	85"	2 1/2	2 PC.
57"	38"	12	18"	26"	12"	63"	90"	2 1/2	2 OR 3 PC.
64"	43"	12	18"	30"	12"	70"	102"	2 1/4	2 OR 3 PC.
71"	47"	12	18"	33"	12"	77"	114"	2 1/4	3 PC.
77"	52"	12	18"	36"	12"	77"	126"	2	3 PC.
83"	57"	12	18"	39"	12"	77"	138"	2	3 PC.

5. Type 3 Connection Includes One Foot Of Pipe Length For 65" X 40" Thru 85" X 54" Diameter As A Connector Section. The Connector Section Will Be Attached To The End Section By Galvanized Rivets Or Bolts.

6. Where End Section is To Be Applied To A Structural Plate Arch Pipe, The End Section Shall Be Ordered Without The One Foot Of Pipe Length As Stipulated In Note 5, Instead Drill Holes And Field Bolt The End Section Directly To The Structural Plate Arch Pipe.

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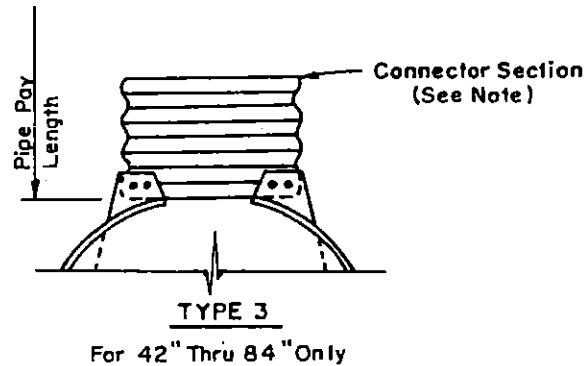
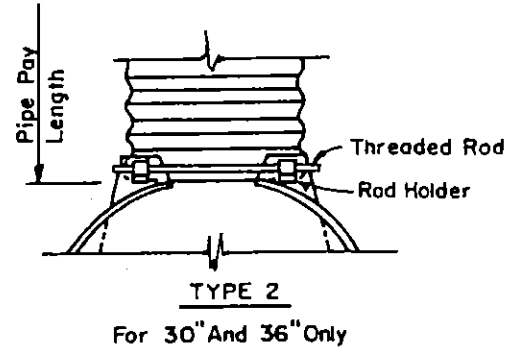
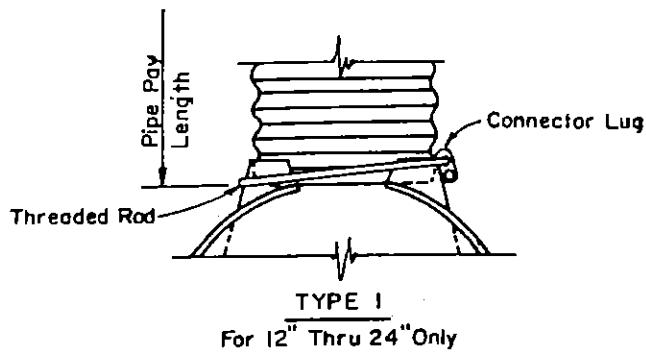
STANDARD METAL END
SECTION ARCH METAL PIPE

REVISED

DATE BY

PLATE

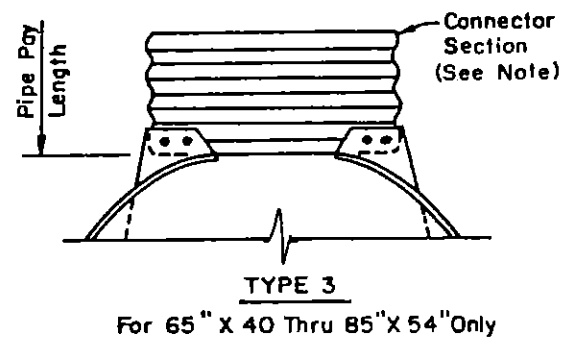
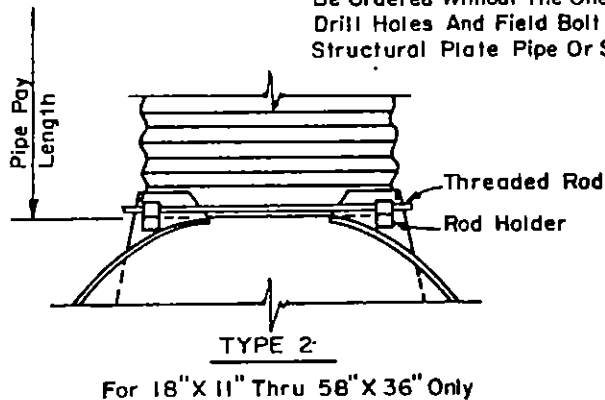
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CONNECTIONS FOR ROUND PIPE

Notes:

- A. Type 3 Connection Includes One Foot Of The Pipe Length For 65" X 40" Thru 85" X 54" Sizes As A Connector Section. The Connector Section Will Be Attached To The End Section By Galvanized Rivets Or Bolts.
- B. Where End Section Is To Be Applied To A Structural Plate Pipe Or Structural Plate Arch Pipe The End Section Shall Be Ordered Without The One Foot Of Pipe Length. Instead, Drill Holes And Field Bolt The End Section Directly To The Structural Plate Pipe Or Structural Plate Arch Pipe.



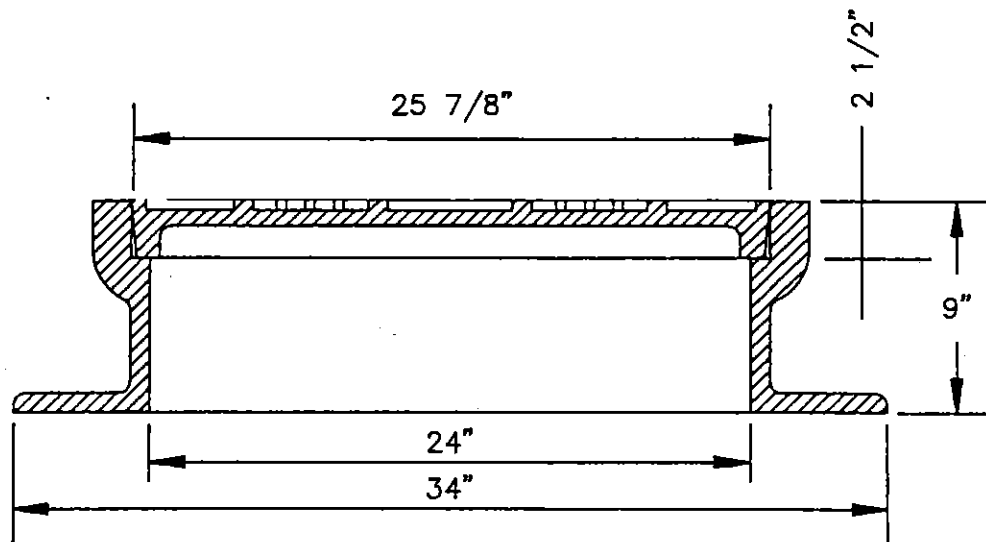
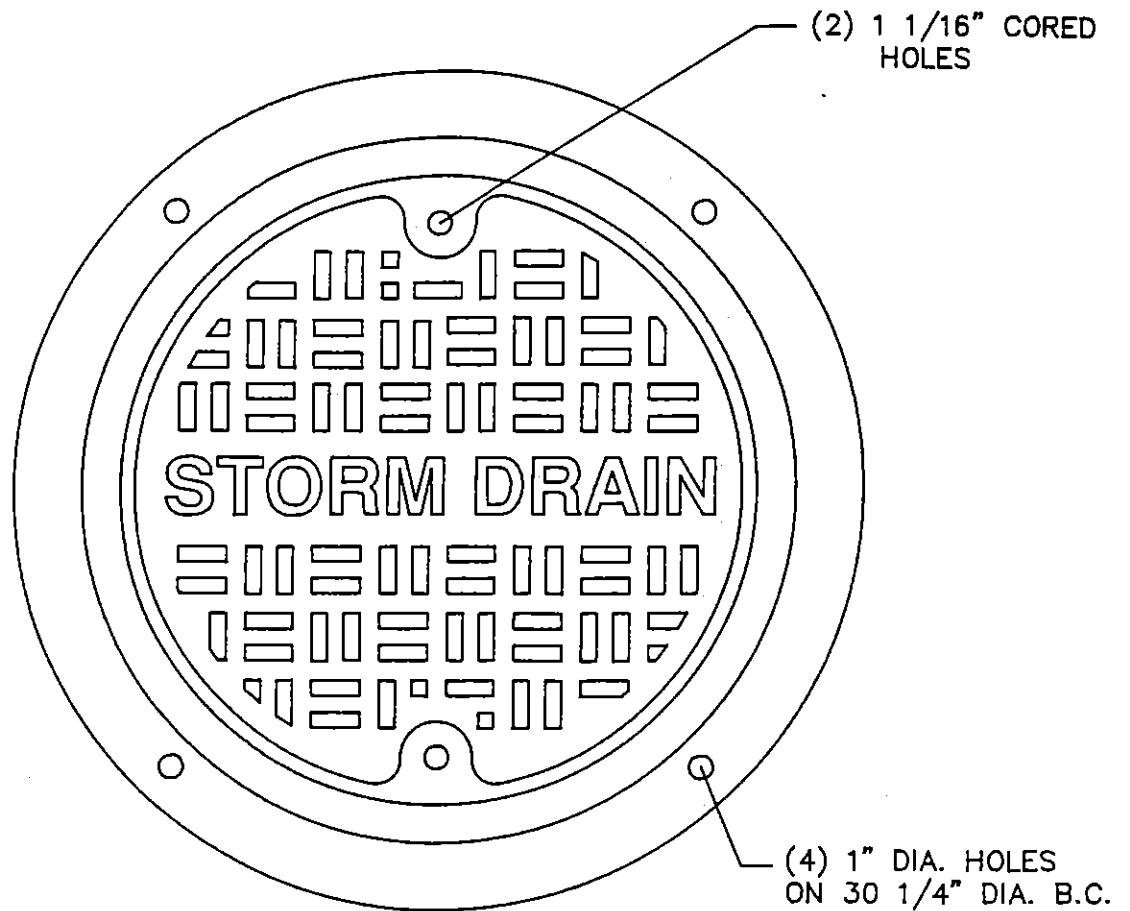
CONNECTIONS FOR ARCH PIPE

REVISED	
DATE	BY
PLATE	
87	

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STANDARD CONNECTIONS
METAL END SECTIONS



REVISED	
DATE	BY

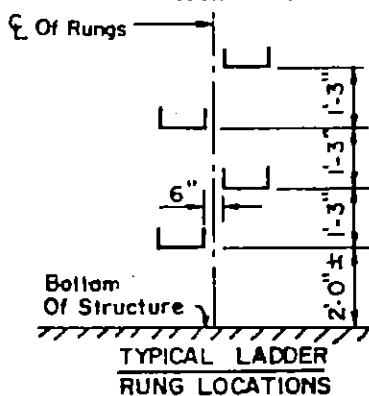
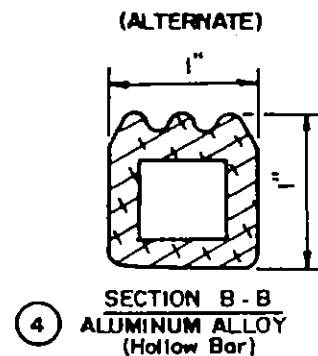
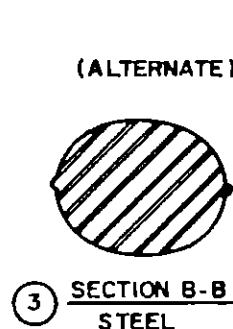
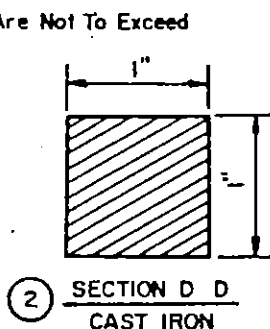
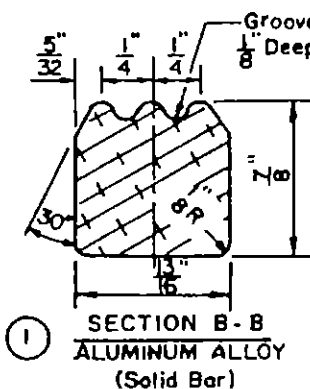
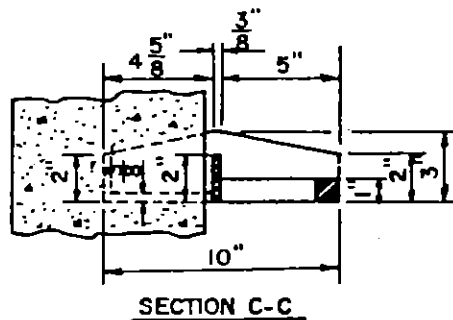
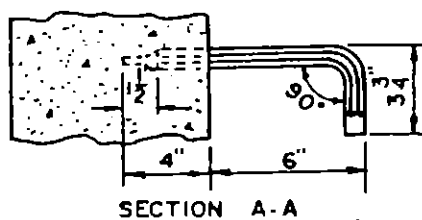
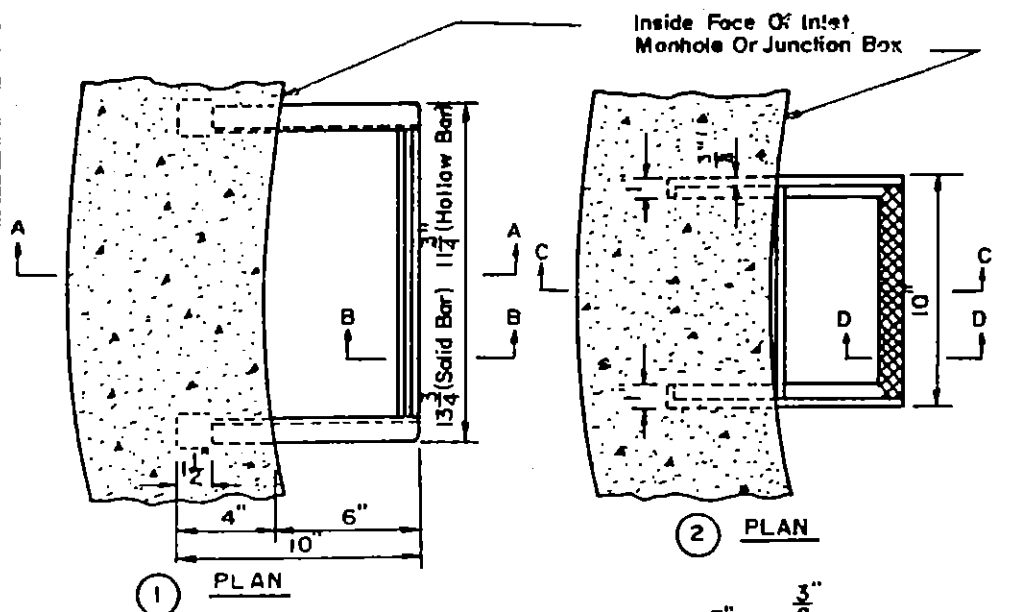
PLATE

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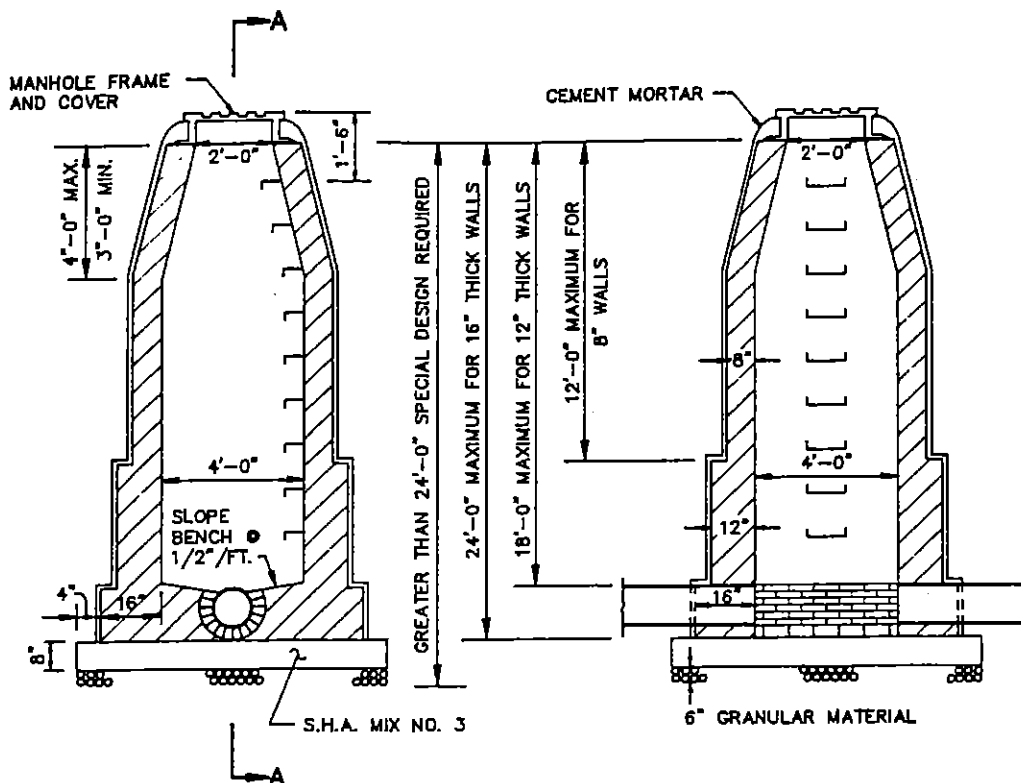
STANDARD MANHOLE COVER

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Note: 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 Accomodate 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. Designation 48 Class 30 B.
- 3 Steel - Shall Conform To A.S.T.M. Designation A-615 Grade 40, Galvanized After Fabrication As Per A.S.T.M. Designation A-153
- 4 Aluminum Alloy - Shall Conform To A.S.T.M. Designation B221 Alloy 6061-T6. That Portion Embedded In The Structure Shall Be Coated With Zinc Chromate Or Approved Equivalent Coating.



ELEVATION
NO SCALE

SECTION A-A
NO SCALE

GENERAL NOTES APPLICABLE TO ALL BRICK MANHOLES

- MANHOLE BASE SHALL BE 8-INCH CAST IN PLACE CONCRETE SLAB, MIX NO. 3 AIR ENTRAINED. ALL OTHER SLABS SHALL BE MIX NO. 3 AIR ENTRAINED.
- MANHOLE BASE SHALL BE BEDDED ON 6-INCH GRANULAR MATERIAL ON FIRM SUBGRADE.
- EXCAVATION BELOW PIPES SHALL BE BACKFILLED WITH GRANULAR MATERIAL 1/3 OF WAY TO TOP OF PIPE.
- CONNECTION BETWEEN MANHOLE WALL AND PIPE SHALL BE NON-SHRINK GROUT.
- MANHOLE STEPS SHALL BE AS SPECIFIED ON DETAIL
- MANHOLE COVER SHALL BE AS SHOWN ON DETAIL
- PIPE JOINTS SHALL BE PROVIDED WITHIN 2' MAX. FROM OUTSIDE OF MANHOLE WALL
- MANHOLE CHANNELS SHALL BE FORMED TO PROVIDE A SMOOTH TRANSITION BETWEEN PIPES. EXTEND BENCH TO FULL HEIGHT OF PIPE OPENING.
- MANHOLE WALL THICKNESS SHALL BE AS SHOWN BELOW:

DEPTH BELOW MANHOLE COVER	WALL THICKNESS
TO 12'-0"	8"
12'-1" TO 18'-0"	12"
18'-1" TO 24'-0"	16"
GREATER THAN 24'-0"	SPECIAL DESIGN

REVISED	
DATE	BY

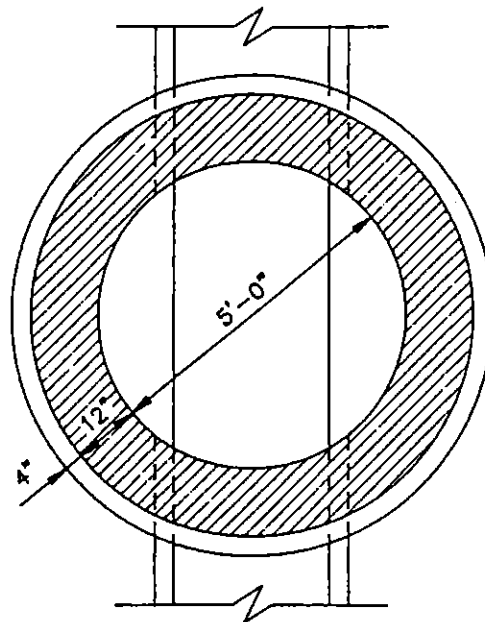
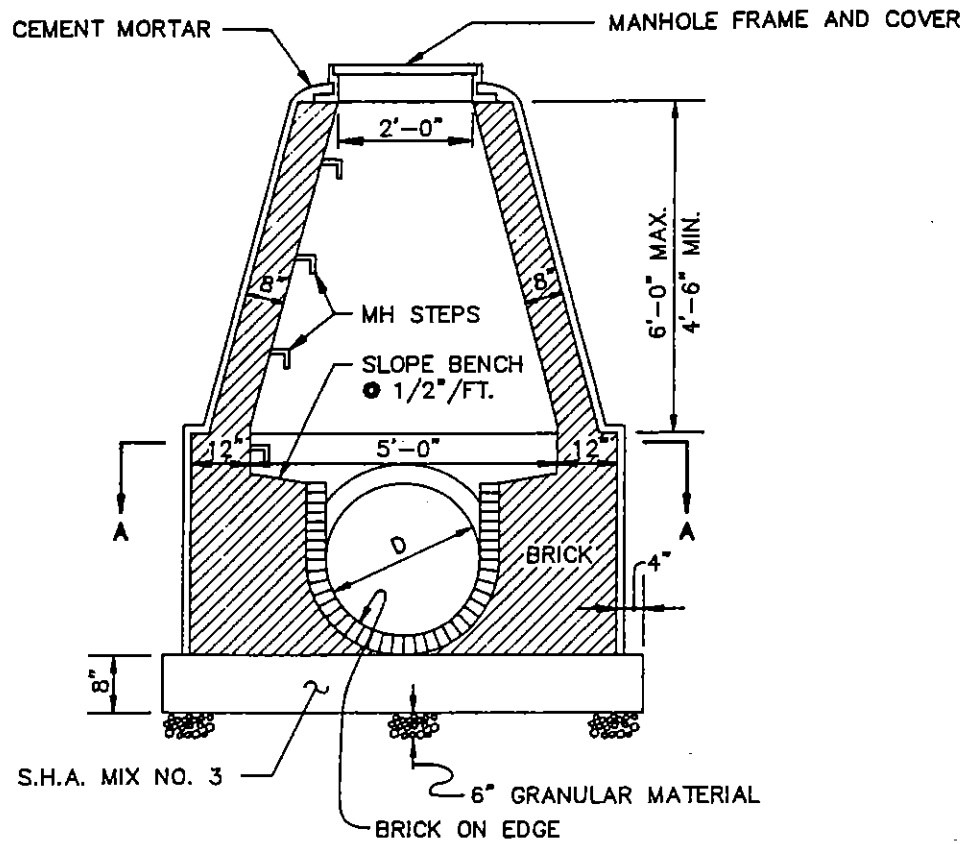
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Carroll County 4-12-94
DIRECTOR DATE

4'-0" BRICK MANHOLE
FOR USE WITH PIPES
24" AND SMALLER

PLATE

90



SECTION A-A

REVISED	
DATE	BY

PLATE

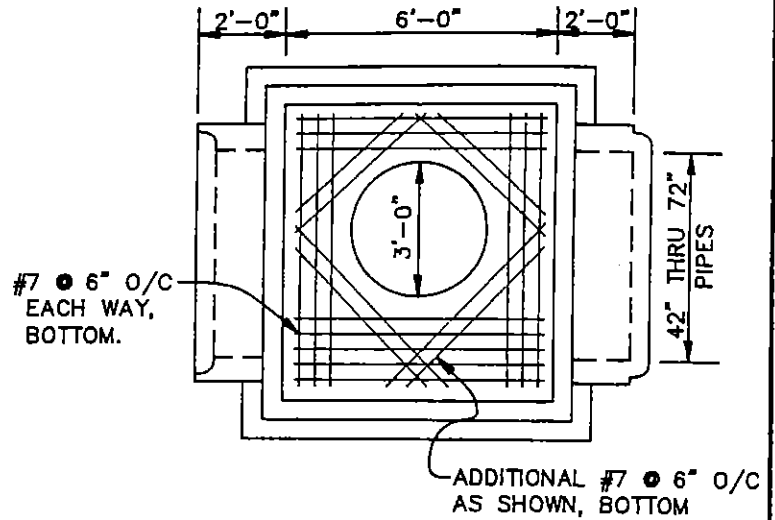
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

[Signature] 4-12-94
DIRECTOR DATE

5'-0" BRICK MANHOLE FOR
USE WITH 27" TO 36" PIPE

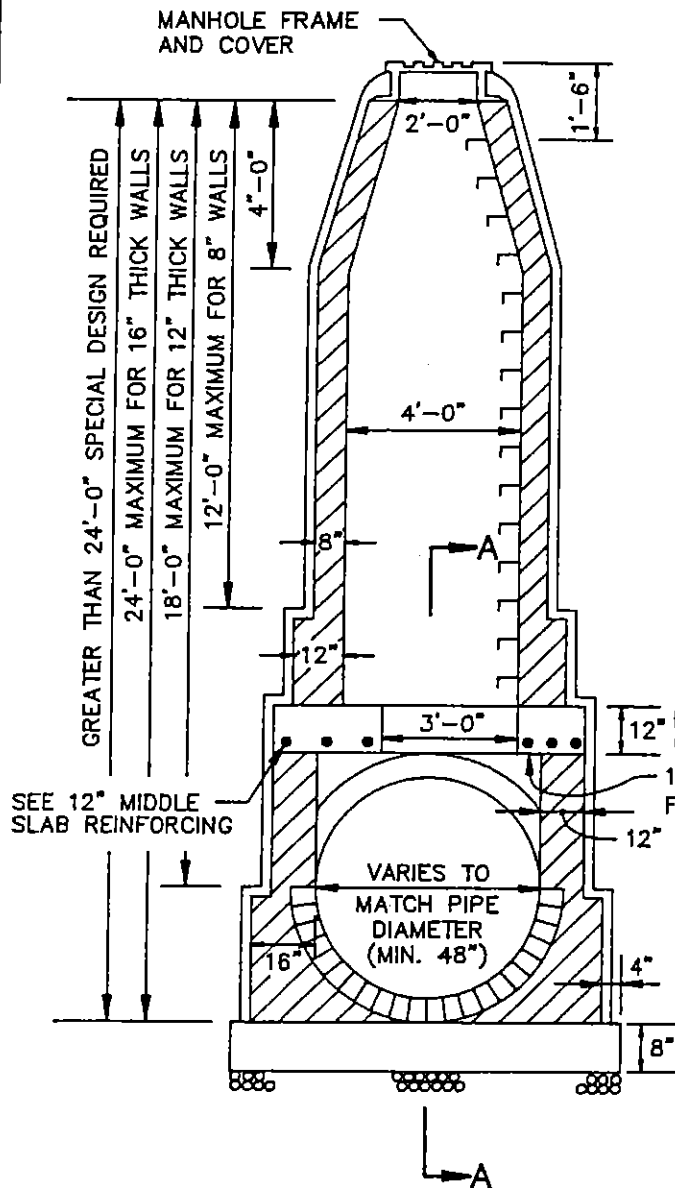
91

SEE GENERAL NOTES APPLICABLE
TO ALL BRICK MANHOLES ON
DETAIL

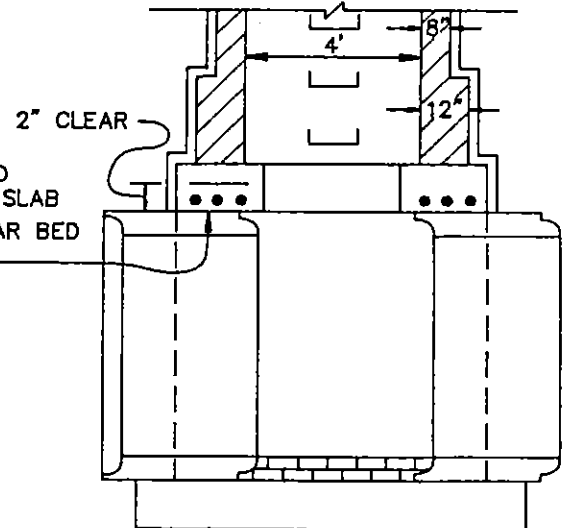


PLAN

12-INCH MIDDLE SLAB REINFORCING
MIDDLE SLAB SHALL BE A 12" PRECAST
CONCRETE SLAB, MIX NO.3, AIR ENTRAINED.



ELEVATION



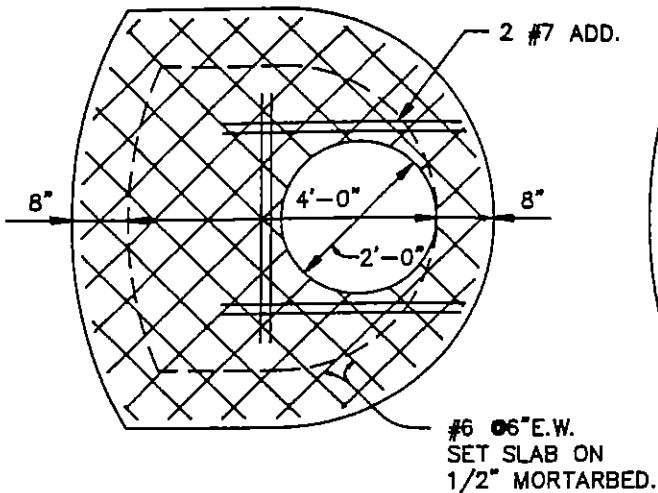
SECTION A-A

REVISED	
DATE	BY
PLATE	
92	

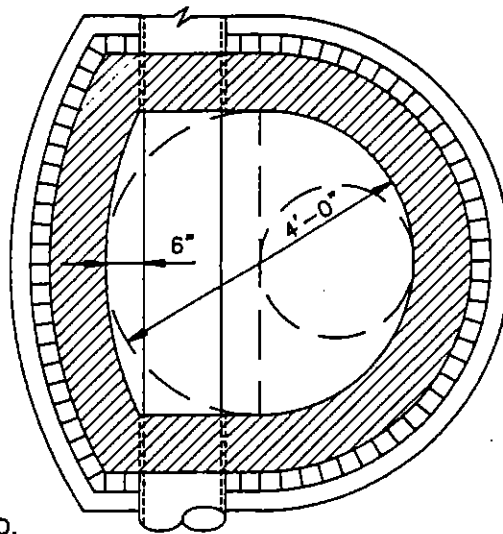
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

David C. ... 4-12-94
DIRECTOR DATE

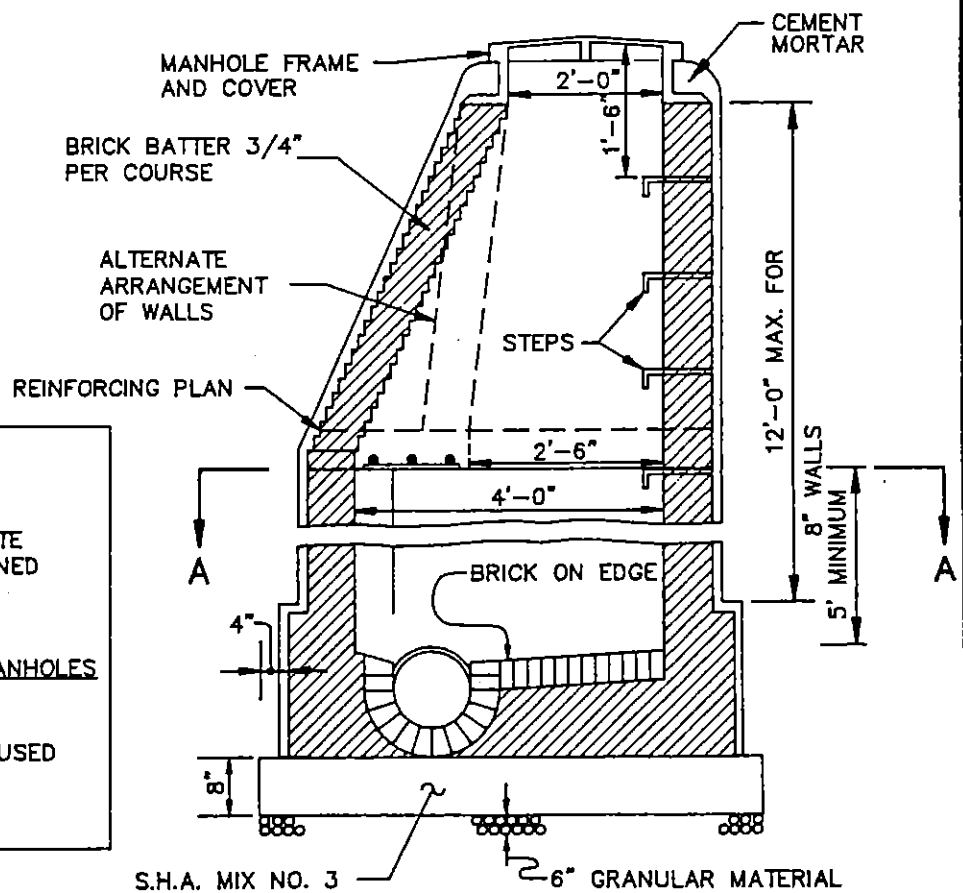
BRICK MANHOLE FOR USE
WITH 42" THRU 72" PIPES



**SLAB REINFORCING
PLAN**



SECTION A-A



NOTES

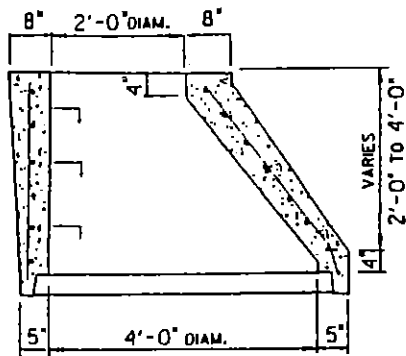
1. IF USED, MIDDLE SLAB SHALL BE 8-INCH PRECAST CONCRETE SLAB, MIX NO. 3, AIR ENTRAINED CONCRETE.
2. SEE GENERAL NOTES APPLICABLE TO ALL BRICK MANHOLES ON DETAIL
3. MIDDLE SLAB SHALL NOT BE USED WITH LESS THAN 5 FEET TO TOP OF PIPE.

REVISED	
DATE	BY
PLATE	
93	

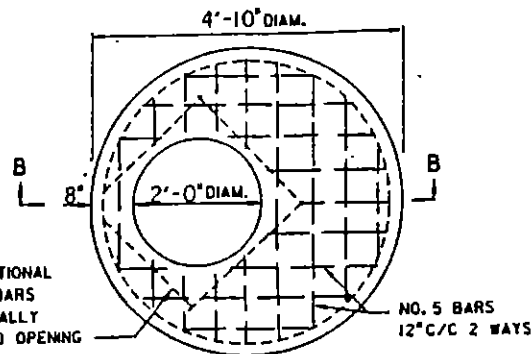
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

W. St. Clair 4-12-94
DIRECTOR DATE

BRICK MANHOLE WITH OFFSET
COVER FOR USE WITH
24" PIPES AND SMALLER



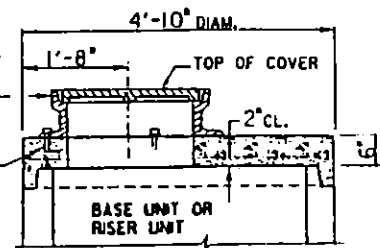
ALTERNATE ECCENTRIC
CONE UNIT



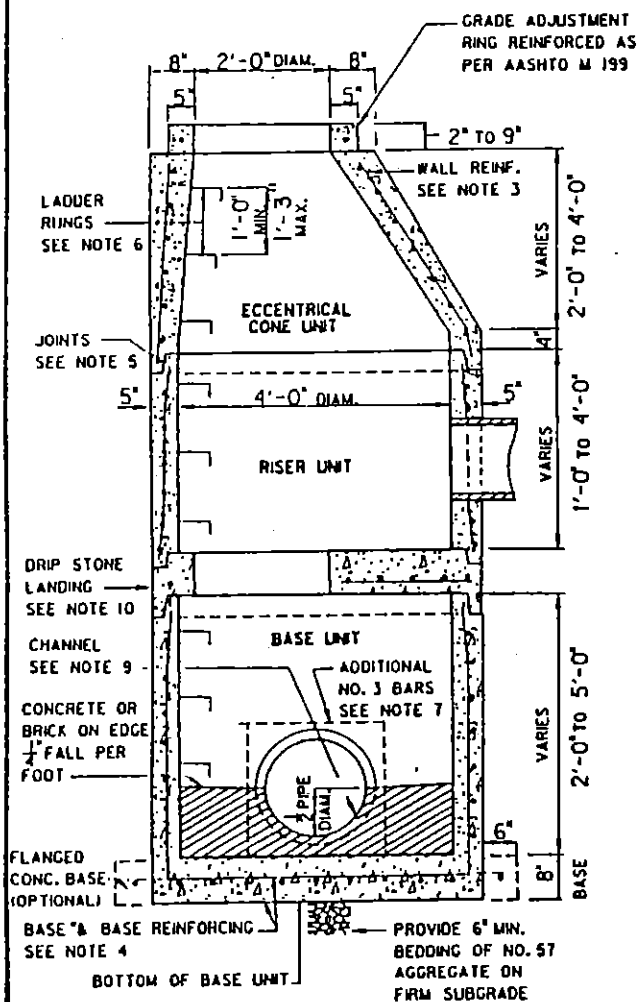
FLAT SLAB TOP
(SHOWN WITHOUT FRAME & COVER)

STANDARD TYPE A MANHOLE
FRAME & COVER SEE STD.

FRAME ANCHORAGE
SEE STD.



SECTION B-B



SECTION VIEW
(SHOWN WITHOUT FRAME & COVER)

NOTES:

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE UNITS, RISER UNITS AND ECCENTRIC CONE UNITS SHALL BE REINFORCEMENT BASE OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.12 IN.²/FT. FOR THE 48" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A 82. 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 IN.²/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 USING (WHERE APPLICABLE) 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" MAXIMUM C/C. RUNG TYPES SHALL BE IN ACCORDANCE WITH CARROLL COUNTY STANDARDS. 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 PLATE 101 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.

REVISED

DATE BY

PLATE

94

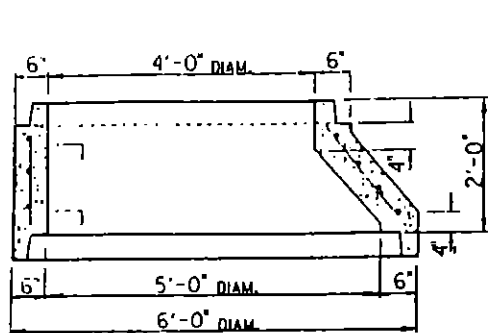
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

48" DIAMETER PRECAST
MANHOLE FOR
PIPES 24" AND SMALLER

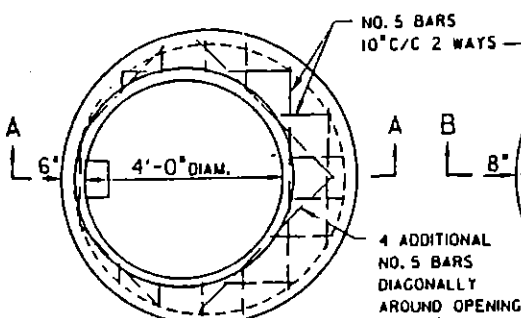
DIRECTOR

DATE

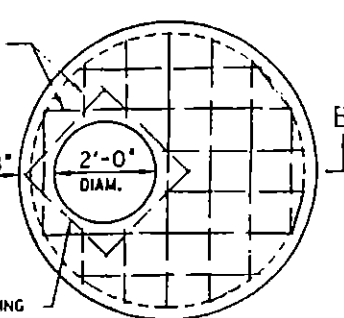
4-12-94



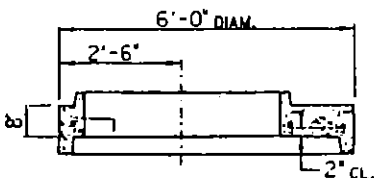
ECCENTRIC CONE REDUCER
(ALTERNATE FOR FLATTOP REDUCER)



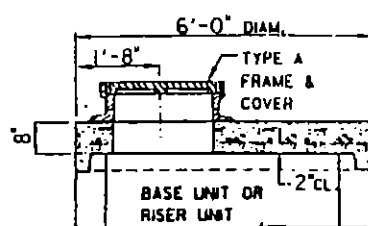
FLATTOP REDUCER



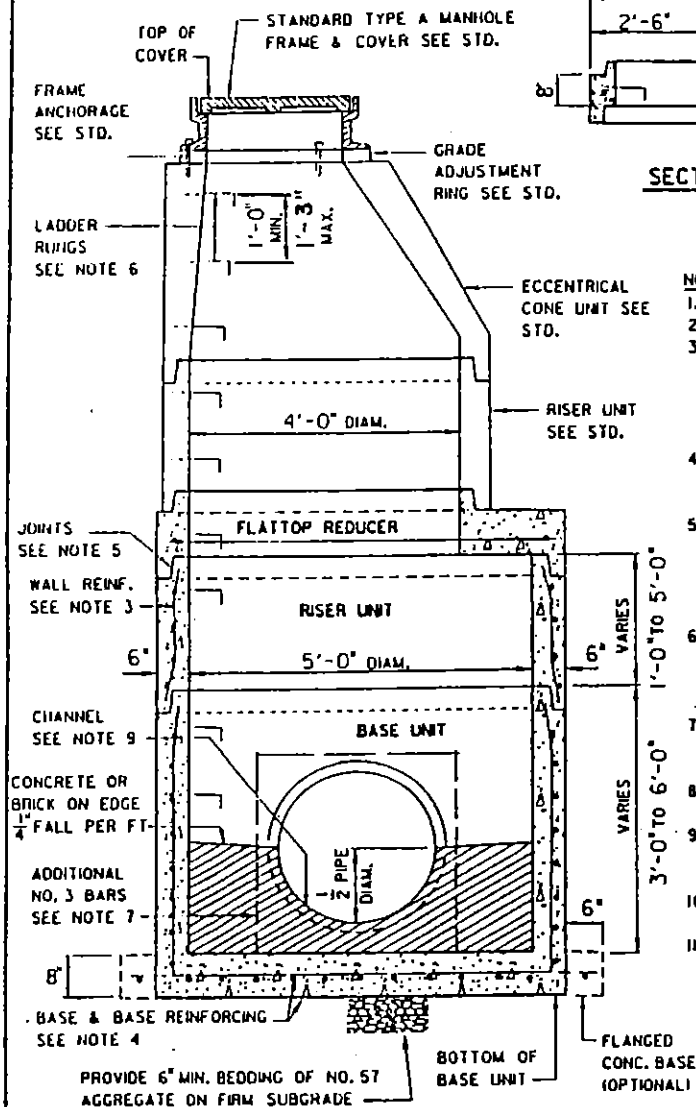
FLAT SLAB TOP
(SHOWN WITHOUT FRAME & COVER)



SECTION A-A



SECTION B-B



SECTION VIEW

NOTES:

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
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 0.15 IN.²/FT FOR THE 60" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 195 AND A 82. REINFORCEMENT BARS SHALL MEET ASTM A 615, GRADE 60.
4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.17 IN.²/FT. THE BASE SHALL 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 USING (WHERE APPLICABLE) MORTAR, RUBBER O-RING GASKETS MEETING ASTM C361 AND C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-3" MAXIMUM C/C. RUNG TYPES SHALL BE IN ACCORDANCE WITH CARROLL COUNTY STANDARDS. 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 PLATE 101 FOR DETAILS.
11. 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.

REVISED

DATE BY

PLATE

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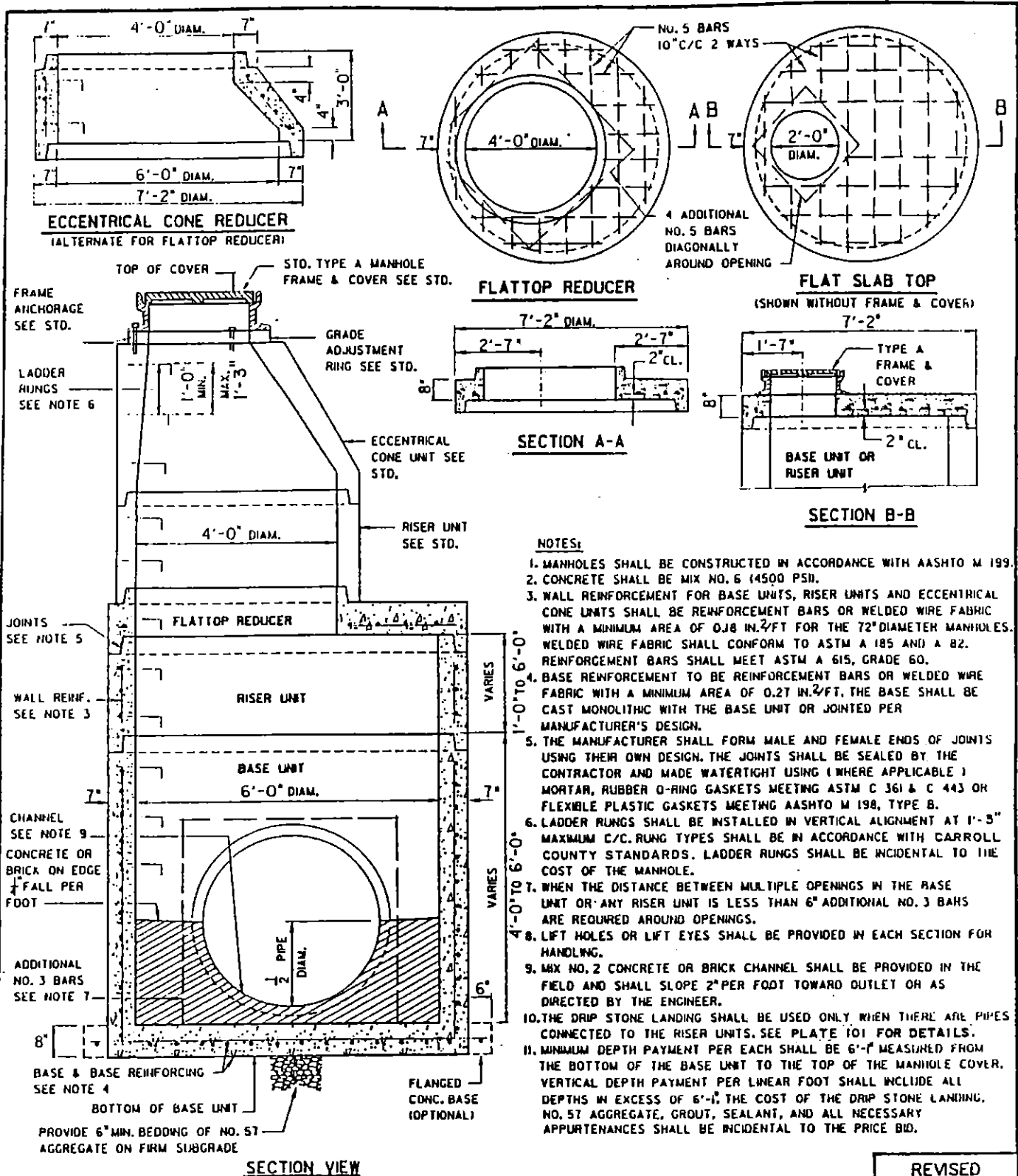
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

60" DIAMETER PRECAST
MANHOLE FOR 27" TO
36" PIPES

DIRECTOR

DATE

4-12-94



REVISED	
DATE	BY
PLATE	
96	

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

72" DIAMETER PRECAST
MANHOLE FOR 42" AND
48" PIPES

DIRECTOR

DATE

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STANDARD TYPE A MANHOLE
FRAME & COVER SEE STD.

TOP OF COVER
GRADE
ADJUSTMENT
RING SEE STD.

FRAME
ANCHORAGE
SEE STD.

LADDER
RUNGS
SEE NOTE 6

ECCENTRIC
CONE UNIT SEE
STD. MD-384.01

RISER UNIT
SEE STD.

4'-0" DIAM.

JOINTS
SEE NOTE 5

FLATTOP REDUCER

WALL REINF.
SEE NOTE 3

RISER UNIT

CHANNEL
SEE NOTE 9
CONCRETE OR
BRICK ON EDGE
1/4" FALL PER
FOOT

ADDITIONAL
NO. 3 BARS
SEE NOTE 7

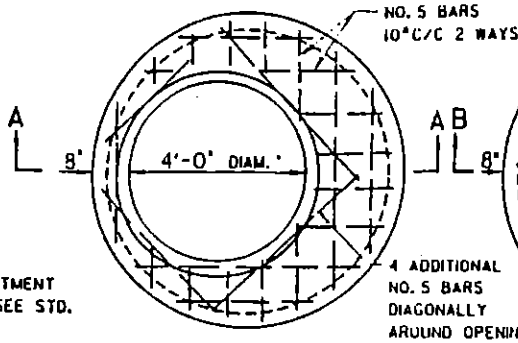
BASE & BASE REINFORCING
SEE NOTE 4

PROVIDE 6" MIN. BEDDING OF NO. 57
AGGREGATE ON FIRM SUBGRADE

BOTTOM OF
BASE UNIT

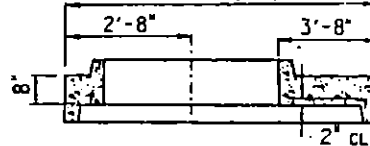
FLANGED
CONC. BASE
(OPTIONAL)

SECTION VIEW

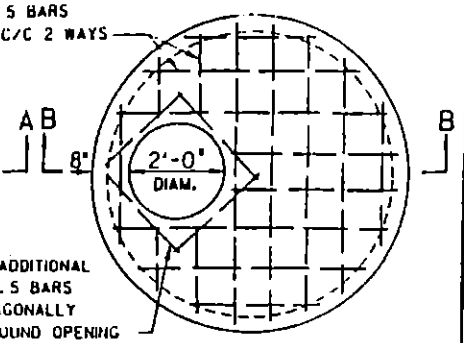


FLATTOP REDUCER

8'-4" DIAM.

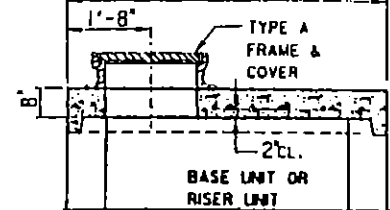


SECTION A-A



FLAT SLAB TOP

(SHOWN WITHOUT FRAME & COVER)
8'-4" DIAM.



SECTION B-B

NOTES:

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. WALL REINFORCEMENT FOR BASE UNITS AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.21 IN.²/FT FOR THE 84" DIAMETER MANHOLES. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 AND A 82. REINFORCEMENT BARS SHALL MEET ASTM A 615 GRADE 60.
4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.27 IN.²/FT. THE BASE SHALL 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 USING (WHERE APPLICABLE) MORTAR, RUBBER O-RING GASKETS MEETING ASTM C 361 AND C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-3" MAXIMUM C/C. RUNG TYPES SHALL BE IN ACCORDANCE WITH CARROLL COUNTY STANDARDS. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MULTIPLE PIPE 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 STANDARDS 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.

REVISED

PLATE

97

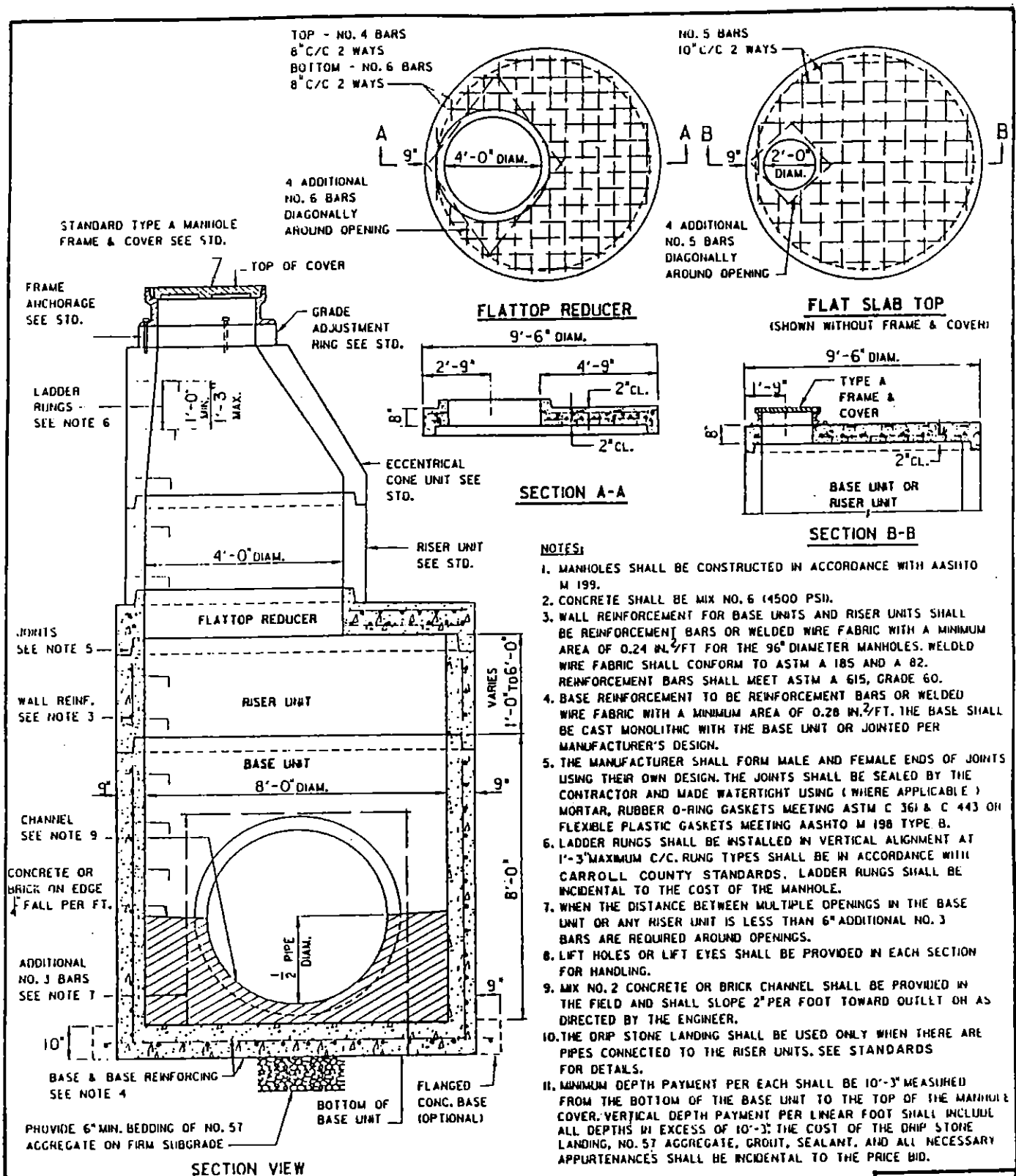
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

84" DIAMETER PRECAST
MANHOLE FOR 54" AND
60" PIPES

DIRECTOR

DATE

Carroll County 4-12-94



CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

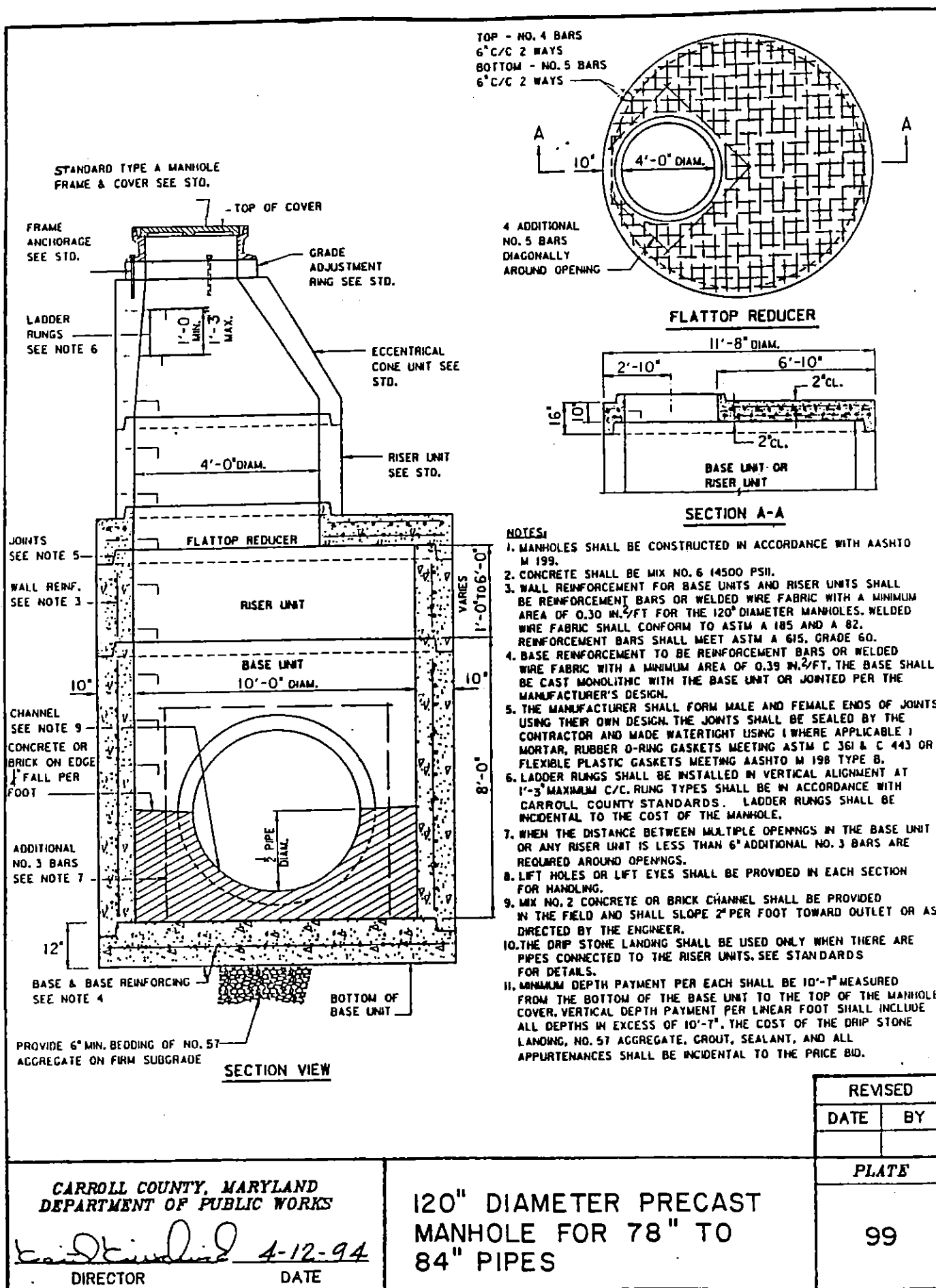
Handwritten signature 4-12-94
DIRECTOR DATE

96" DIAMETER PRECAST
MANHOLE FOR 72" PIPES

REVISED

PLATE

98



REVISED	
DATE	BY
PLATE	
99	

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

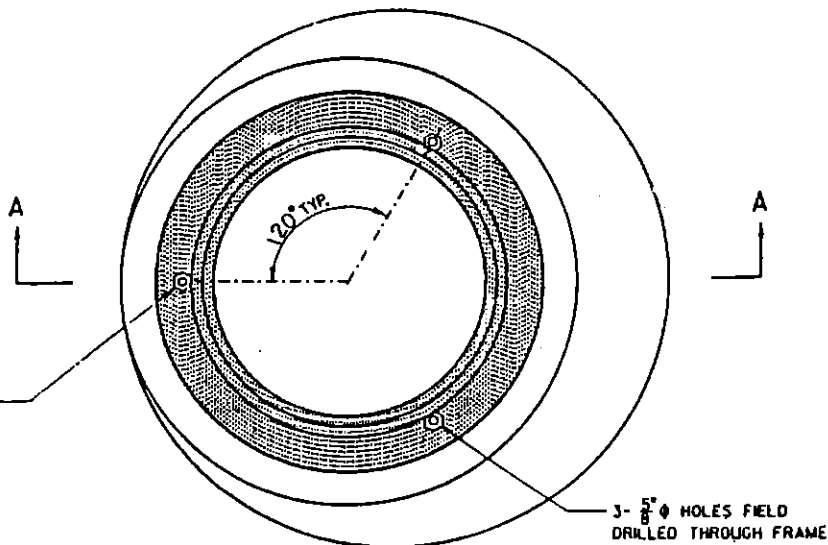
120" DIAMETER PRECAST
MANHOLE FOR 78" TO
84" PIPES

DIRECTOR

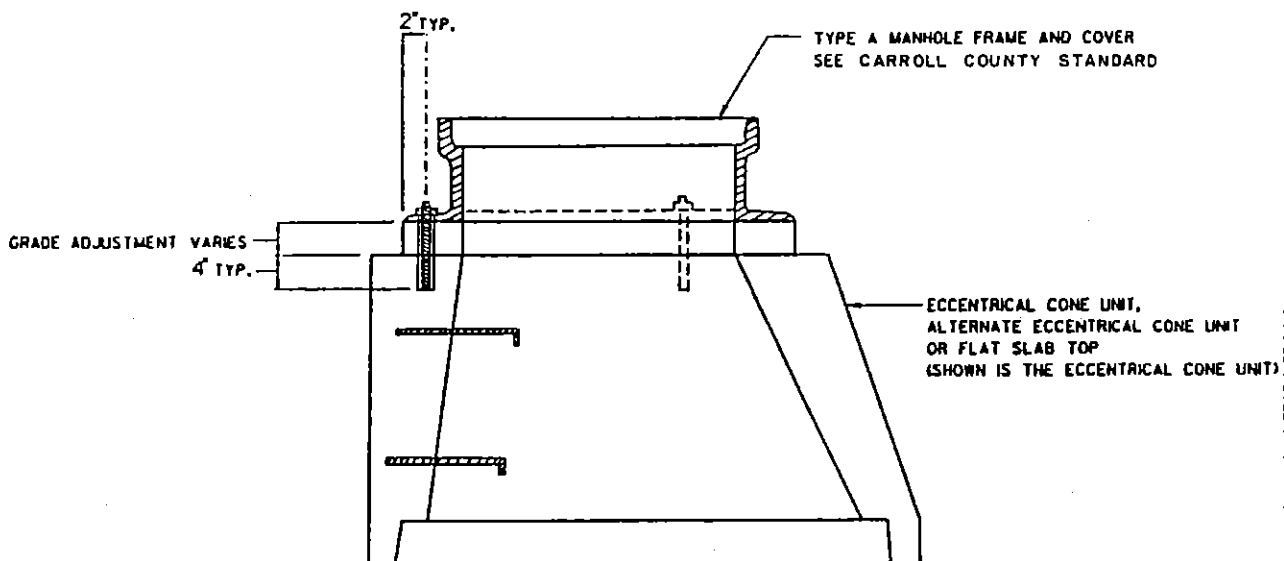
DATE

4-12-94

3- $\frac{1}{2}$ " ϕ HEX HEAD BOLTS
WITH THREADED INSERTS
OR
3- $\frac{1}{2}$ " ϕ THREADED STUDS
WITH HEX HEAD NUTS.
STUDS TO BE GROUTED
IN PLACE OR ANCHORED
WITH A CONCRETE COMPATIBLE
CHEMICAL ADHESIVE.



PLAN



SECTION A-A

REVISED	
DATE	BY

PLATE

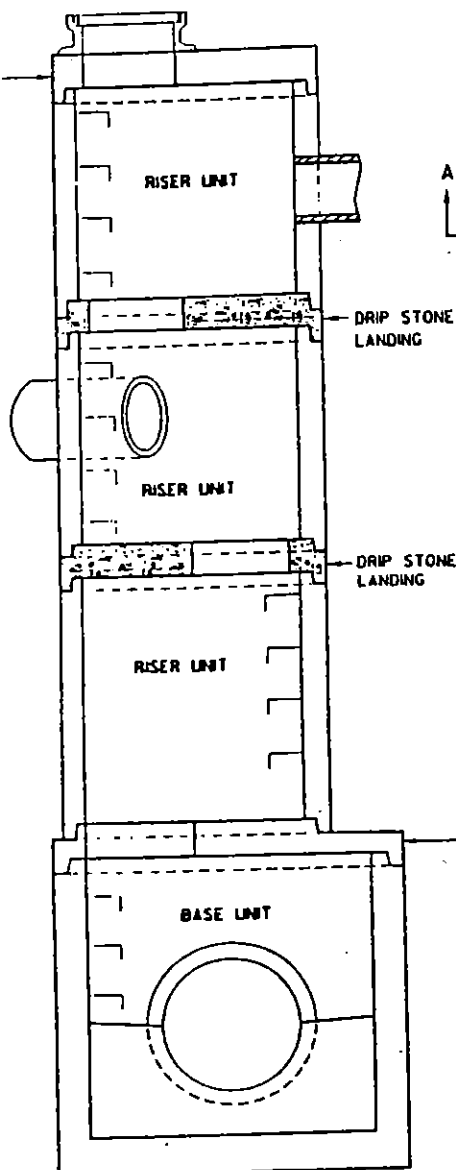
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CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

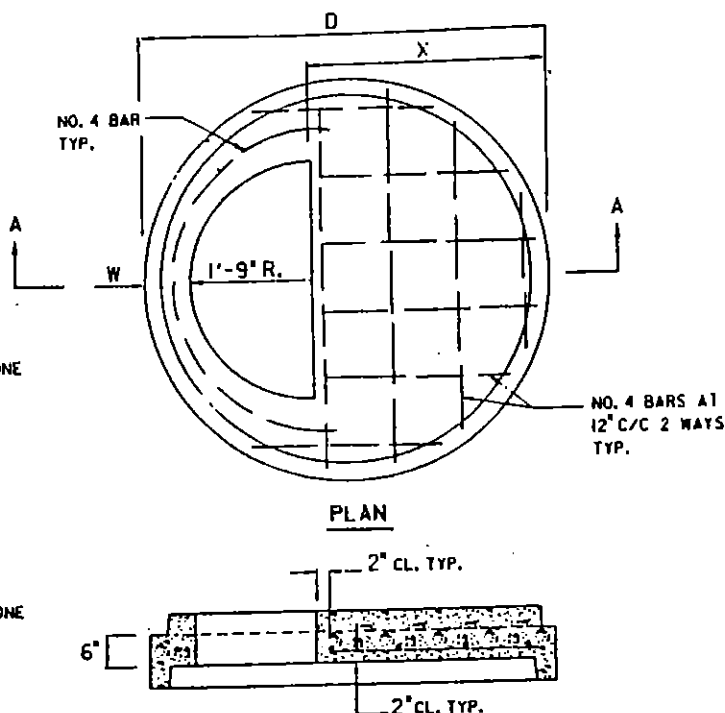
W. St. ... 4-12-94
DIRECTOR DATE

FRAME ANCHORAGE FOR
PRECAST MANHOLES

FLAT SLAB TOP
(OR ECCENTRIC
CONE UNIT)



METHOD OF PLACING DRIP STONE LANDINGS



SECTION A-A
DRIP STONE LANDING

SEE C. CO. STD. FOR PRECAST COMBINATION FLATTOP REDUCER AND DRIP STONE LANDING FOR 60" TO 120" DIAMETER MANHOLES AND STANDARD 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"

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 OF THE MANHOLE.

REVISED	
DATE	BY

PLATE

101

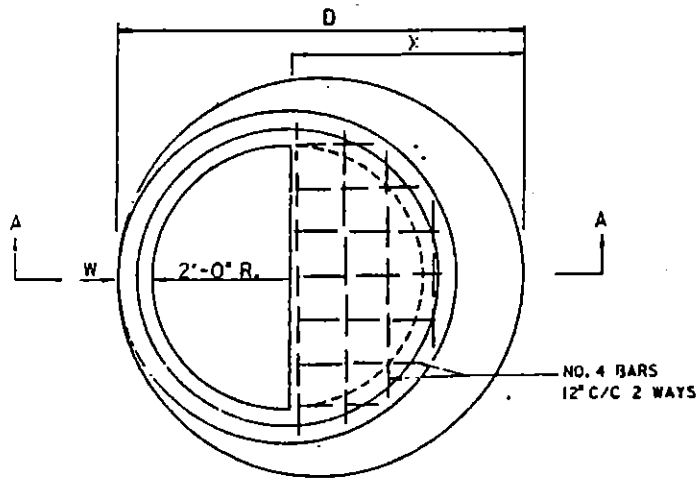
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Carroll County 4-12-94
DIRECTOR DATE

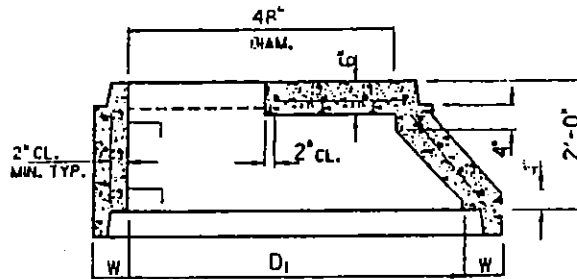
PRECAST DRIP STONE
LANDING DETAILS FOR 48"
TO 120" DIAMETER
MANHOLES.



102



PLAN



SECTION A-A

PRECAST MANHOLE DIAMETER	DIMENSIONS			
	D	D ₁	W	X
60"	6'-0"	5'-0"	6"	3'-6"
72"	7'-2"	6'-0"	7"	4'-7"

NOTES:

1. THE COMBINATION ECCENTRIC CONE REDUCER AND DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE CARROLL COUNTY PLATE No. 101 FOR PLACEMENT.
2. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
3. REINFORCEMENT SHALL BE REINFORCING BARS OR WELDED WIRE FABRIC WITH A MINIMUM AREA OF 0.15 IN.²/FT FOR THE 60" DIAMETER CONE UNIT AND 0.18 IN.²/FT FOR THE 72" DIAMETER CONE UNIT.
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 COMBINATION ECCENTRIC CONE REDUCER AND DRIP STONE LANDING IS INCIDENTAL TO THE COST OF THE MANHOLE.

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DATE	BY

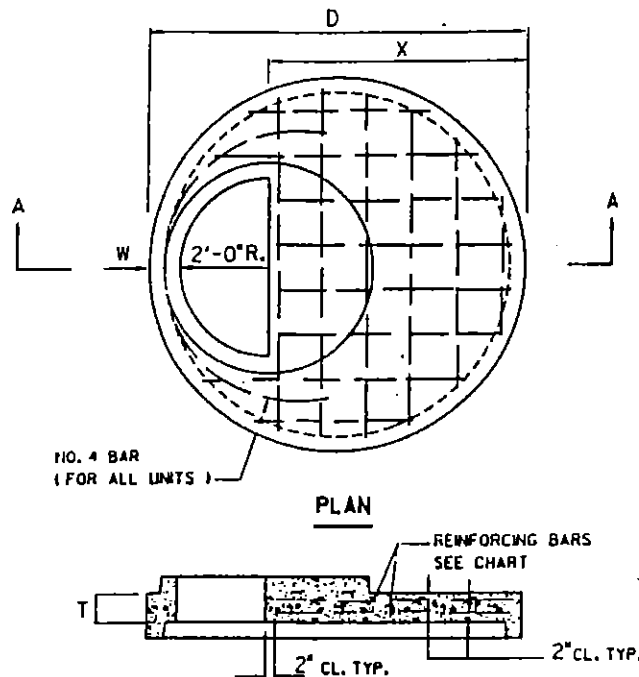
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

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DIRECTOR DATE

PRECAST COMBINATION
FLAT TOP REDUCER AND DRIP
STONE LANDING FOR 60" TO
72" DIAMETER MANHOLES

PLATE

103



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	NO. 5 AT 10" C/C
72"	7'-2"	6"	7"	4'-7"	N/A	NO. 5 AT 10" C/C
84"	8'-4"	7"	8"	5'-8"	N/A	NO. 5 AT 10" C/C
96"	9'-6"	8"	9"	6'-9"	NO. 4 AT 8" C/C	NO. 6 AT 8" C/C
120"	11'-8"	9"	10"	8'-10"	NO. 4 AT 6" C/C	NO. 5 AT 6" C/C

NOTES:

1. THE COMBINATION FLATTOP REDUCER DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE SEE CARROLL COUNTY PLATE No. 101 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 COMBINATION FLATTOP REDUCER AND DRIP STONE LANDING IS INCIDENTAL TO THE COST OF THE MANHOLE.

REVISED	
DATE	BY

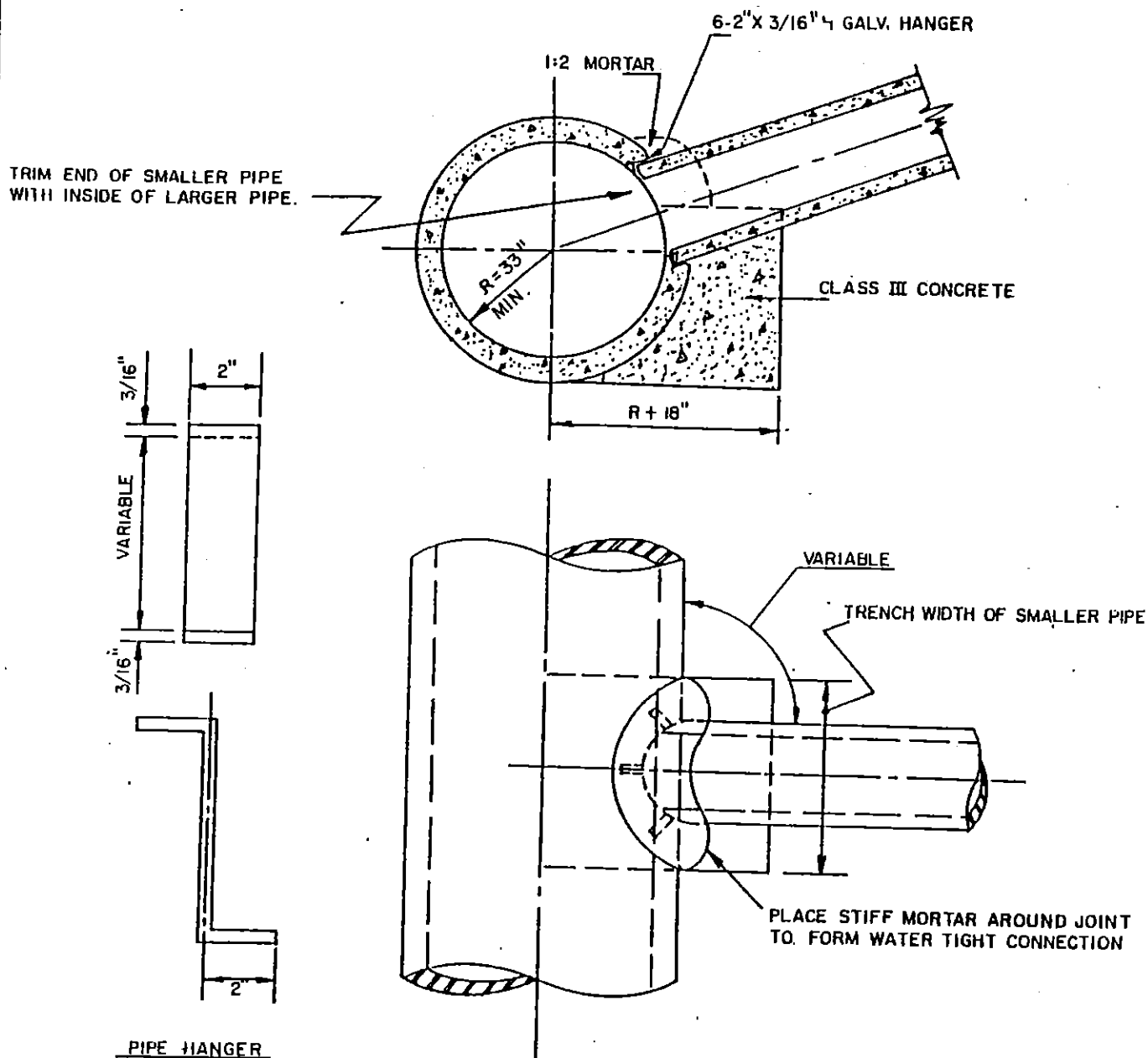
CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Carroll County 4-12-94
DIRECTOR DATE

PRECAST COMBINATION
ECCENTRIC CONE REDUCER
AND DRIP STONE LANDING
FOR 60" & 120" DIA. MANHOLES

PLATE

104



NOTES:

1. MINIMUM INSIDE DIAMETER OF LARGER PIPE = 33"
2. MINIMUM RATIO OF SMALLER PIPE DIAMETER TO LARGER PIPE DIAMETER = 0.45
3. ONLY ONE FIELD CONNECTION PERMITTED IN A SINGLE LENGTH OF LARGER PIPE.
4. SEE SECTION 6.4.5 OF THE "STORM DRAINAGE CRITERIA" (IN THIS MANUAL) FOR DIRECTIVES IN USING THIS METHOD.

REVISED	
DATE	BY

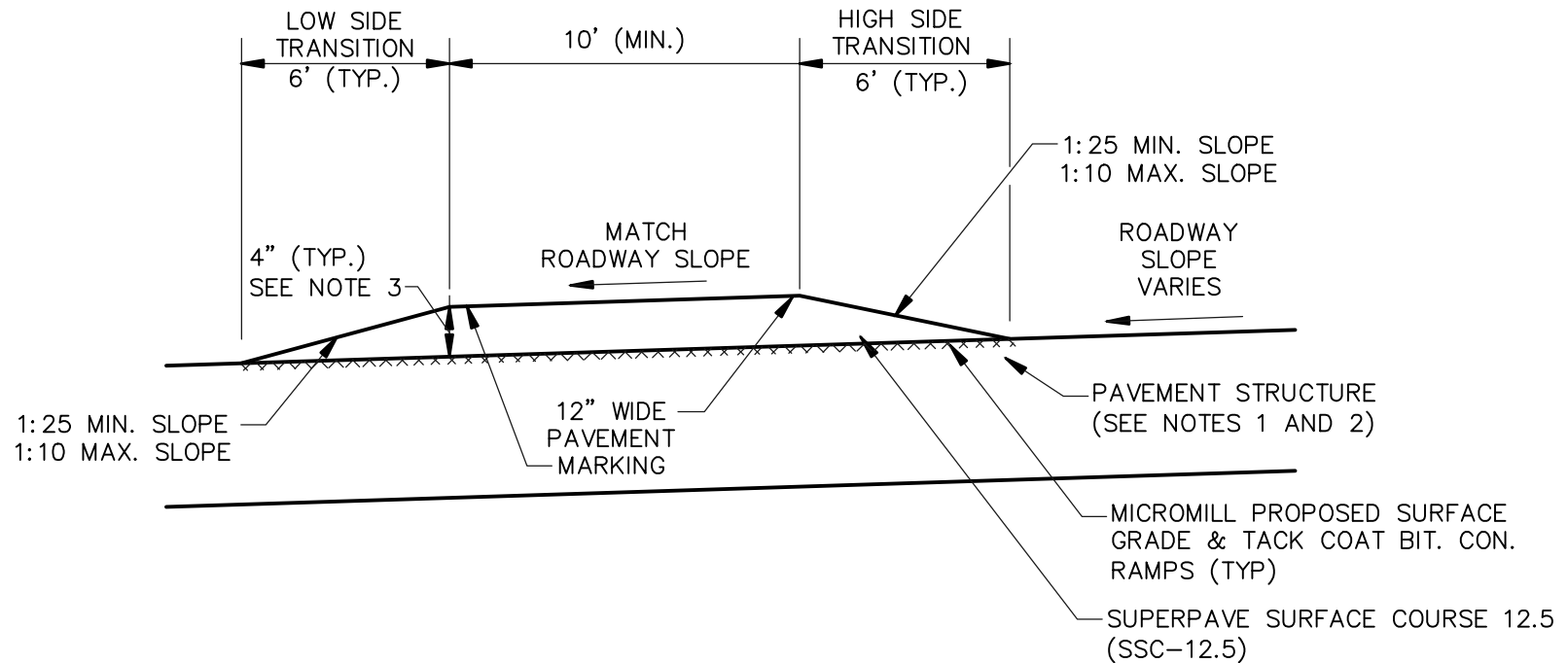
PLATE

105

CARROLL COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

Carroll County 4-12-94
DIRECTOR DATE

FIELD CONNECTION



NOTES:

1. NEW CONSTRUCTION: REFER TO FULL DEPTH CONSTRUCTION TYPICAL SECTIONS FOR ROADWAY PAVEMENT STRUCTURE.
2. ROADWAY RETRO FIT: EXISTING PAVEMENT CONDITIONS SHALL BE ASSESSED BY THE CITY, WHERE PAVEMENT IS FOUND TO BE IN POOR CONDITION, FULL MILL AND OVERLAY MAY BE REQUIRED FOR INSTALLATION OF THE SPEED TABLE TO ENSURE PROPER BONDING OF ASPHALT.
3. SPEED TABLE AT PEDESTRIAN CROSSING: MATCH EXISTING CURB HEIGHT, 6" (TYP).

Ordering Guide

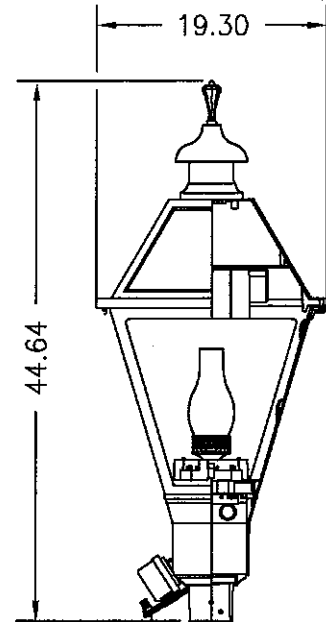
C2154: LUMINAIRE
CP2154C: POLE ASSEMBLY

Color:
Black

POLE ASSEMBLY:
5" ROUND STRAIGHT FLAT FLUTED
ALUMINUM W/ 3" O.D. TENON,
0.188"-0.267" WALL THICKNESS,
CAST ALUMINUM BASE W/ ACCESS
DOOR

BASE TEMPLATE:
#T01000863

Luminaire
Detail
Scale 1:16



COLOR:
X BLACK
_ WHITE
_ VERDE
_ BRONZE
_ GREEN

OPTICS:
X TYPE III CUTOFF
_ TYPE V CUTOFF
_ TYPE III OPTICAL RIB
_ TYPE V OPTICAL RIB

PHOTO CONTROL:
_ BUTTON EYE
X TWIST-LOCK RECEPTACLE
_ NONE

SOCKET:
X MEDIUM
_ MOGUL
_ INDUCTION

WATTAGE:
_ 70W HPS
_ 100W HPS
_ 150W HPS
_ 250W HPS
_ 70W MH
X 100W MH
_ 150W MH
_ 250W MH
_ 55W INDUCTION
_ 85W INDUCTION

VOLTAGE:
_ 120V
_ 208V
X 240V
_ 277V
_ 347V

PRODUCT APPROVALS

HADCO

SDK

CUSTOMER

CONFIDENTIAL:

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**PHILIPS
HADCO**

100 Craftway Drive
Littlestown, Pa 17340
Phone 800-331-4185
Fax 717-359-9289
www.philips.com

JOB NAME:

City of Taneytown

DRAWN BY:

H. Kuhn

SCALE:

1:20

DATE:

02/15/18

DRAWING NUMBER:

C2154-DWG06

REP:

DePorter, Dominick

REV: B

PCN: 18-002

BY: SMK

DATE: 02/16/18

PLATE 107T

14.25

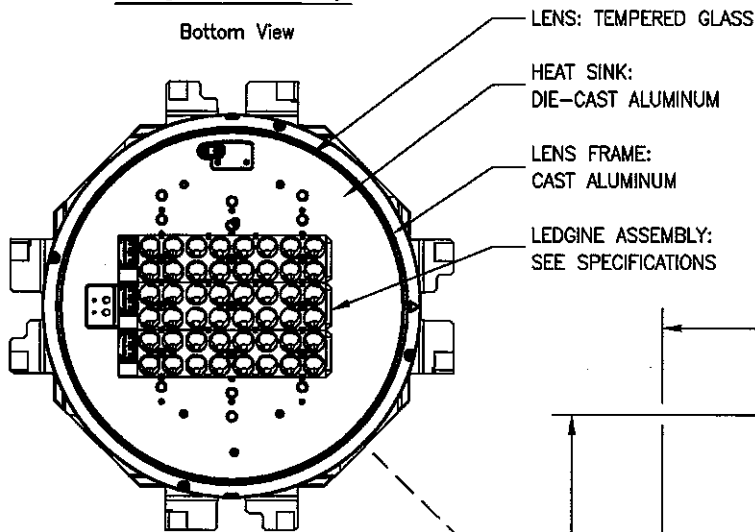
43.77

12'

15'-10 3/4"

LEDgine Assembly

Bottom View



Color:
Black

Ordering Guide

C2154C: LUMINAIRE
Modifications: FAWS switch.

LEDgine Specifications:

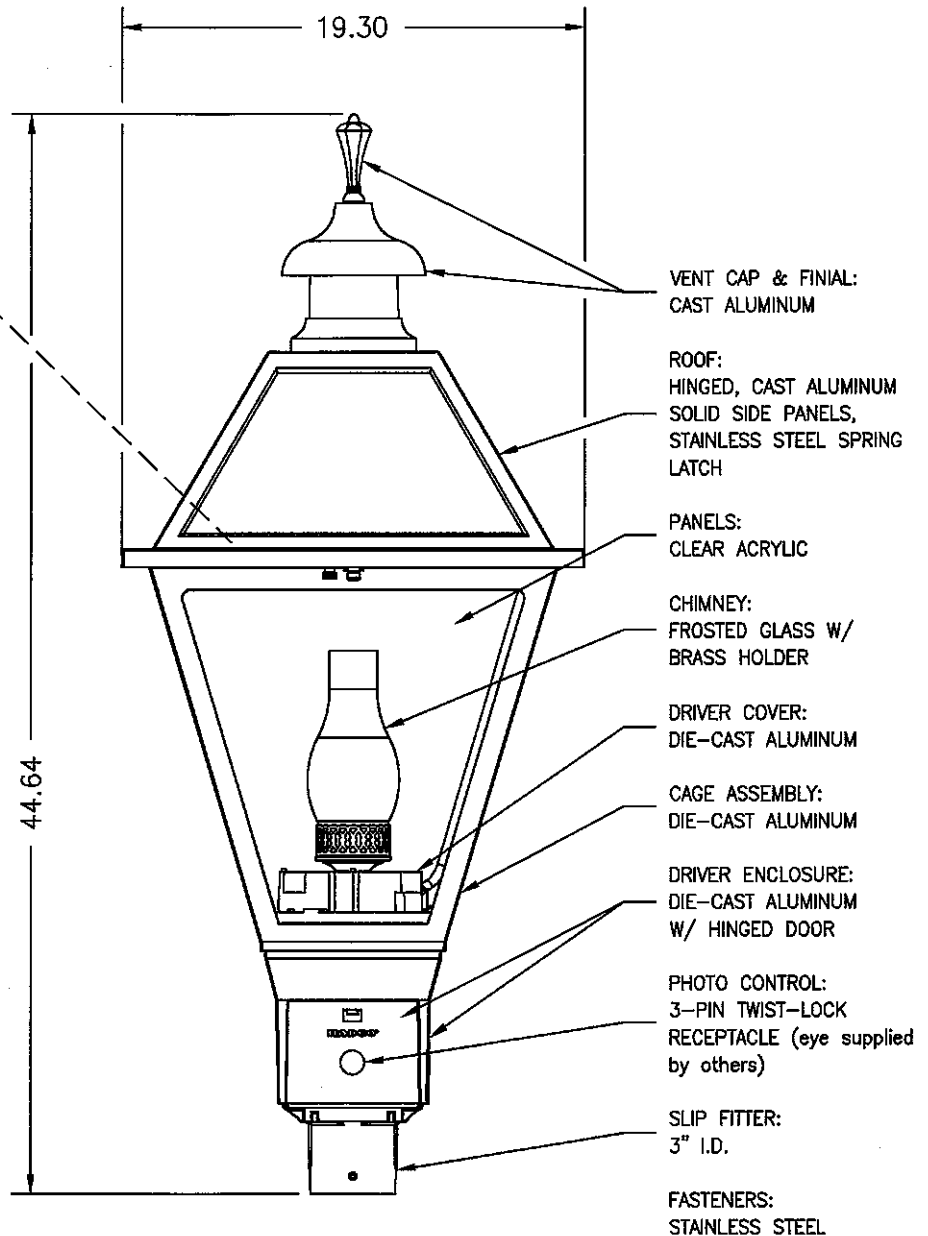
- 48, 4000K (neutral) LEDs, typical 75 Color Rendering Index (CRI), >100,000 hours of operational life (at 25°C ambient temperature & 70% lumen maintenance), injection molded Type 3 optical plates, IP66 rated optical system.
- Integral Advance Xitanium LED driver, class 1, IP66 rated, 530mA, IntelliVolt 120-277 VAC, 50-60 Hz, RoHS compliant, field replaceable 10kV/10kA surge suppression.
- Delivered lumens: 7396, Wattage: 79W.
- Field Adjustable Wattage Switch (FAWS) (see below for settings).

FAWS POSITION	LUMENS	SYSTEM WATTAGE
1	2293	22
2	3920	40
3	4586	46
4	5177	53
5	5769	59
6	6139	64
7	6582	69
8	6804	72
9	7100	75
10	7396	79

Factory set to position 10

Luminaire Certifications:

- UL8750 & UL1598 compliant, ETL & cETL listed to U.S. & Canadian safety standards for wet locations, manufactured to ISO 9001:2008 standards.



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PRODUCT APPROVALS

HADCO	SDK
CUSTOMER	

100 Craftway Drive
Littlestown, Pa 17340
Phone 800-937-5483
Fax 717-359-0618
www.signify.com

HADCO

JOB NAME:

City of Tanytown, MD

SCALE:	DATE:	DRAWN BY:	DRAWING NUMBER:
1:8	02/03/20	SMK	C2154-DWG08
REP:	REV:	PCN:	DATE:
DePorter, Dominick	B	20-002	02/20/20
	BY: SMK		

PLATE 107T-A