July 12, 1989

TO WHOM IT MAY CONCERN:

The Office of County Engineer is preparing standard details. The current list of details is printed below.

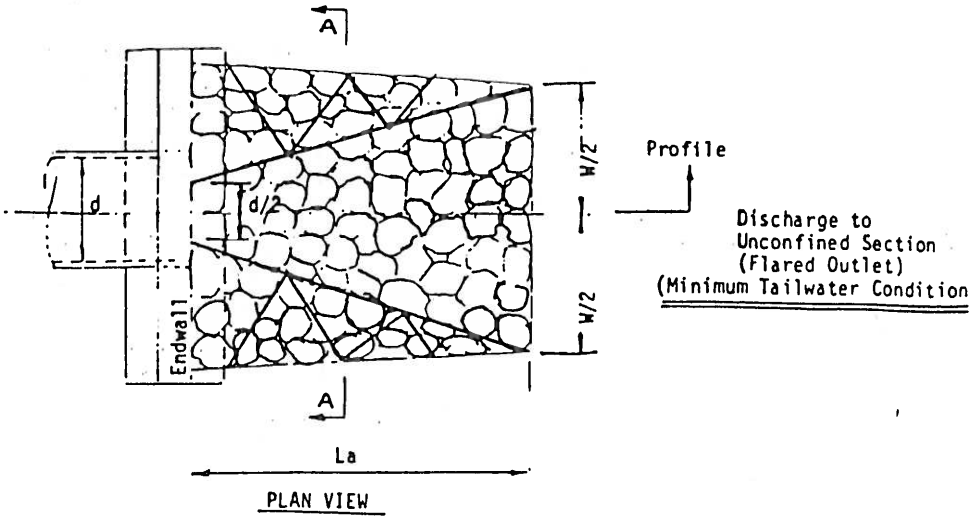
LIST OF STANDARD DETAILS

DETAIL NUMBER	TITLE	DATED	LAST UPDATED
OF-01	Riprap Outlet, SCS-I	April 12, 1989	
OF-02	Riprap Outlet, SCS-II	April 12, 1989	
OF-03	Riprap Outlet, SCS-III	April 12, 1989	
OF-04	Plunge Pool	April 12, 1989	
OF-05	Bank Protection of Streams	April 12, 1989	
OF-06	Cutoff Wall and paving	April 17, 1989	
M-11	Type A School Bus Shelter	March 15, 1989	1/25/95
M-21	Type A Street Sign	April 13, 1989	1/25/95
M-31	Mail Box Anchorage	April 17, 1989	
M-41	Street Tree Variety List	April 13, 1989	
M-42	Tree Planting Detail	April 13, 1989	
M-43	Tree Location Detail	April 17, 1989	
M-51	Landscape Specifications	August 8, 1990	
M-52	Screen Planting, Wide Buffer	August 8, 1990	
M-53	Screen Planting, Medium Buffer	August 8, 1990	
M-54	Screen Planting, Narrow Buffer	August 8, 1990	
R-03	Typical Cul-de-sac Designs	March 27, 1989	
R-04	Temporary Turnaround	March 14, 1989	
R-05	Road Surface Sections	July 27, 1989	
R-05A	Surface Section Selection	January 25, 1995	
R-05B	Road Surface Sections	January 25, 1995	
R-06	Surface Repair Methods	July 25, 1989	
R-11	Local Road Typical Section	March 14, 1989	11/24/92
R-12	Monumented Local Road	March 29, 1989	
R-13	Swale Section	March 29, 1989	
R-14	Accel/Decel Lane Section	April 2, 1990	
R-15	Accel/Decel Lane-Plan View	Under Development	
R-16	Shoulder Widening	Under Development	
R-17	Sheltered Left Turn Lane	Under Development	
R-21	Concrete Curb	March 28, 1989	
R-22	Concrete Curb & Gutter	March 28, 1989	
R-23	Asphalt Curb	March 28, 1989	
R-24	Wheelchair Sidewalk Ramp	March 29, 1989	
R-25	W-Beam Guardrail	July 18, 1989	
R-26	Low Service Level Guardrail	September 11, 1989	
R-31	Open Section Residential Driveway	March 29, 1989	1/25/95
R-32	Commercial Entrance	March 30, 1989	
R-41	Handicapped Parking	March 30, 1989	
R-42	Townhouse Parking	March 30, 1989	

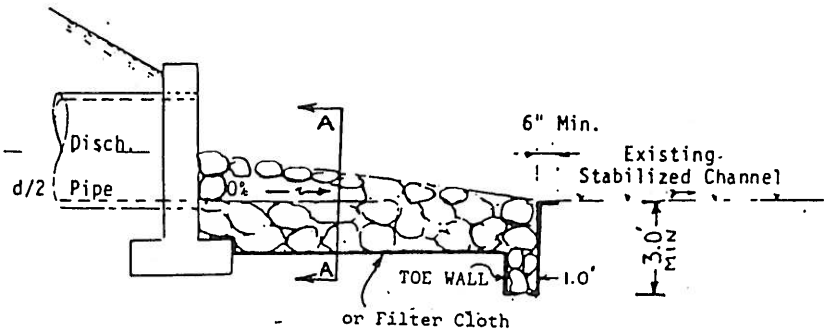
R-43	Handicapped Parking Sign & Marking	July 27, 1989
R-44A	End Islands in Parking Lots	November 27, 1989
R-44B	End Islands in Parking Lots	November 27, 1989
SC-01	List of Standard Symbols	March 10, 1989
SC-10	Stabilized Construction Entrance	March 10, 1989
SC-11	Silt Fence	March 10, 1989
SC-12	Straw Bale Dike	March 10, 1989
SC-13	Inlet Protection Detail	March 10, 1989
SC-14	Culvert Inlet Protection Device	March 31, 1989
SC-15	Brushlayer Slope Stabilization	December 28, 1989
SC-21	Earth Dike	March 10, 1989
SC-22	Temporary Swale	March 10, 1989
SC-23	Perimeter Dike/Swale	March 10, 1989
SC-24	Land grading	March 10, 1989
SC-31	Pipe Outlet Sediment Trap	March 10, 1989
SC-32	Grass Outlet Sediment Trap	March 10, 1989
SC-33	Storm Inlet Sediment Trap	March 10, 1989
SC-34	Swale Sediment Trap	March 10, 1989
SC-35	Stone Outlet Sediment Trap	March 10, 1989
SC-36	Riprap Outlet Sediment Trap	March 13, 1989
SC-37	Sediment Basin Dewatering Devices	March 10, 1989
SD-01	Storm Drain Symbols	March 16, 1989
SD-03	Pipe Bedding	March 31, 1989
SD-11	Drop Inlet, Type B	April 6, 1989
SD-12	Drop Inlet, Type C	April 6, 1989
SD-13	Curb Inlet, Type D	April 10, 1989
SD-14	Combination Inlet, Type F	April 10, 1989
SD-15	Trench Drain	April 4, 1989
SD-16	Stone Sump Cross Culvert Inlet System	January 12, 1990
SD-21	Type A Manhole (precast)	April 3, 1989
SD-22	Shallow Manhole	April 1, 1989
SD-23	Inlet Box and Manhole Steps	April 4, 1989
SD-24	Manhole Cover	April 4, 1989
SD-31	Pipe Culvert Headwall	April 10, 1989
SD-32	Pipe Culvert Wingwalls	April 10, 1989
SD-33	Metal End Sections for Pipes	April 5, 1989
SD-41	Riprap Ditches	April 12, 1989
SD-42	Concrete Ditches	April 12, 1989
SD-43	Curb Opening	March 16, 1989
SD-44	Curb and Gutter Opening	March 16, 1989
SD-45	Ditch Erosion Stop & Liner	April 6, 1989
SK-01	Concrete Sinkhole Plug	February 7, 1991
SK-02	Small Sinkhole Dike Plug	February 7, 1991
SK-03	Sinkhole Inlet Standpipe	February 7, 1991
SK-04	Sinkhole Protection Dike	February 7, 1991

List of Standard Details
Page Three

WM-03	Pipe Coupler for SWM Use	March 13, 1989	
WM-11	Road Culvert Control Structure	March 14, 1989	10/11/89
WM-12	Inlet Box Control Structure	March 16, 1989	1/26/95
WM-14	Orifice Trash Racks	March 16, 1989	
WM-15	Weir Trash Rack	March 15, 1989	1/26/95
WM-16	Concentric Trash Rack & Anti-Vortex Device	March 14, 1989	
WM-17	Anti-Seep Collar	March 14, 1989	
WM-18	Anti-Seep Collar (Concrete)	March 23, 1989	
WM-19	Riser Base Detail	March 14, 1989	
WM-20	Reinforced Emergency Spillway	December 28, 1989	
WM-21	Small Pipe Trash Rack	January 12, 1990	
WM-31	Check Dam Details	March 14, 1989	4/18/89
WM-32	Infiltrating Check Dam	November 20, 1989	
WM-33	Stone Filter Check Dam	January 27, 1995	
WM-51	Oil/Grit Separator	March 23, 1989	Removed
WM-52	Oil/Grit Separator Details	March 23, 1989	Removed
WM-53	Infiltration Trench	March 24, 1989	
WM-54	Observation Well	March 24, 1989	
WM-55	Wet Basin	June 23, 1989	
WM-56	Basin Landscape	June 23, 1989	
WM-57	Wetland Basin	July 12, 1989	
WM-59	USDA Textural Triangle	March 29, 1989	
WP-11	Dewatering Basin	August 17, 1989	
WP-12	In-Stream Stone Dike	August 17, 1989	
WP-21	Diversion Pipe with Access Road	August 17, 1989	
WP-22	Diversion Pipe	August 17, 1989	
WP-23	Sandbag/Stone Diversion	August 17, 1989	
WP-24	Fabric Channel Diversion	August 17, 1989	
WP-31	Bank Riprap	August 17, 1989	
WP-32	Bank Gabion	August 18, 1989	
WP-33	Bank Vegetation	August 18, 1989	
WP-34	Bank Repair Revetment Fences	January 9, 1990	
WP-41	Stream Boulders	August 18, 1989	
WP-42	Stream Vegetation	August 18, 1989	
WP-43	Stream Deflectors	August 18, 1989	
WP-44	Stream Weirs	August 18, 1989	
WP-45	Culvert Baffles	August 18, 1989	
WP-51	Utility Crossing	August 18, 1989	
WP-52	Ford Crossing	August 18, 1989	
WP-53	Depressed Culvert	August 18, 1989	
WP-61	Sequence for Culvert Installation	August 18, 1989	

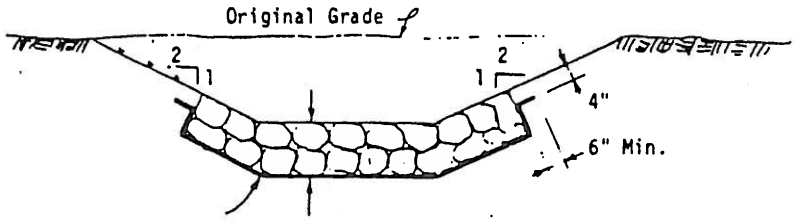


PLAN VIEW



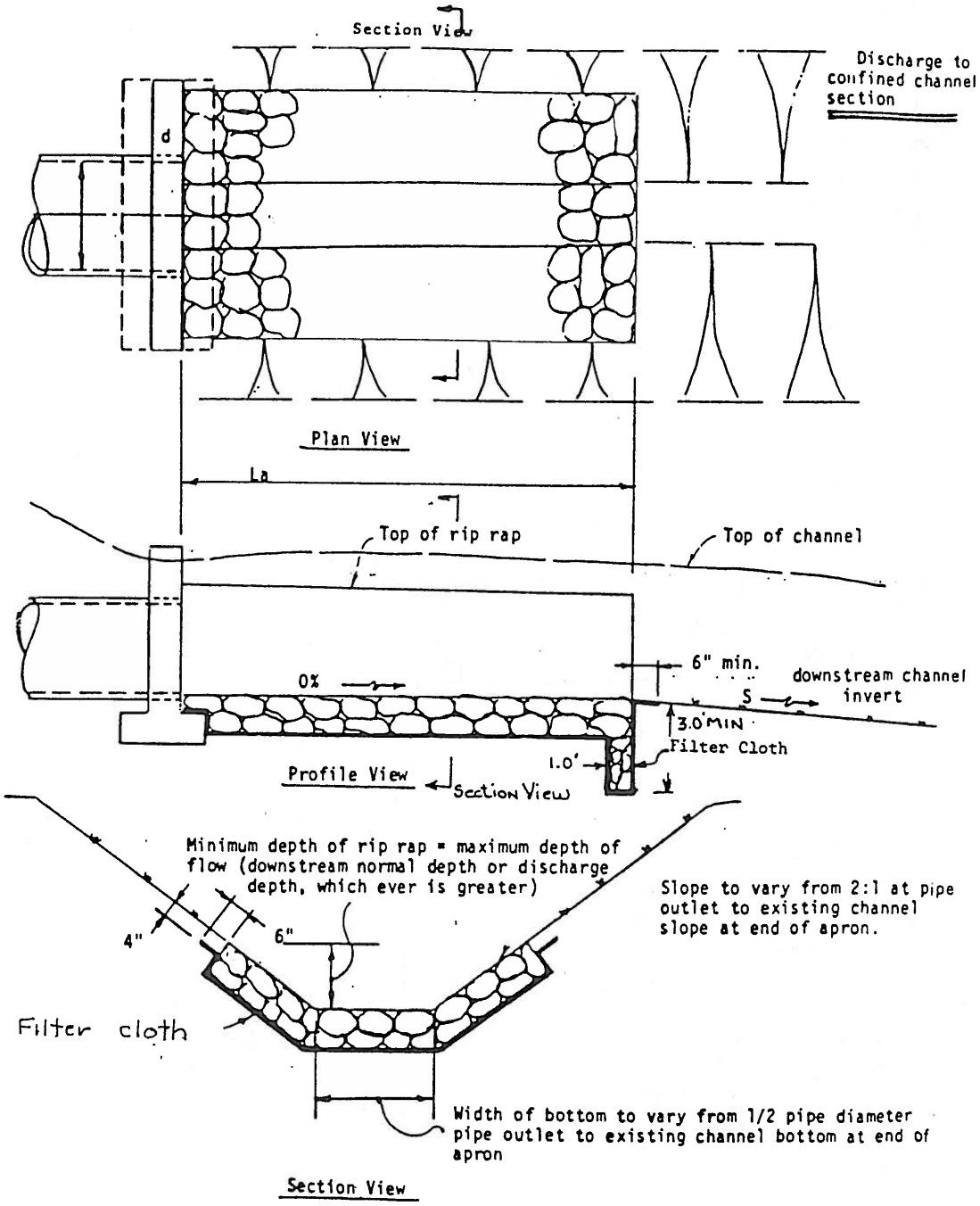
PROFILE VIEW

Rip rap to be embedded in proposed transition section

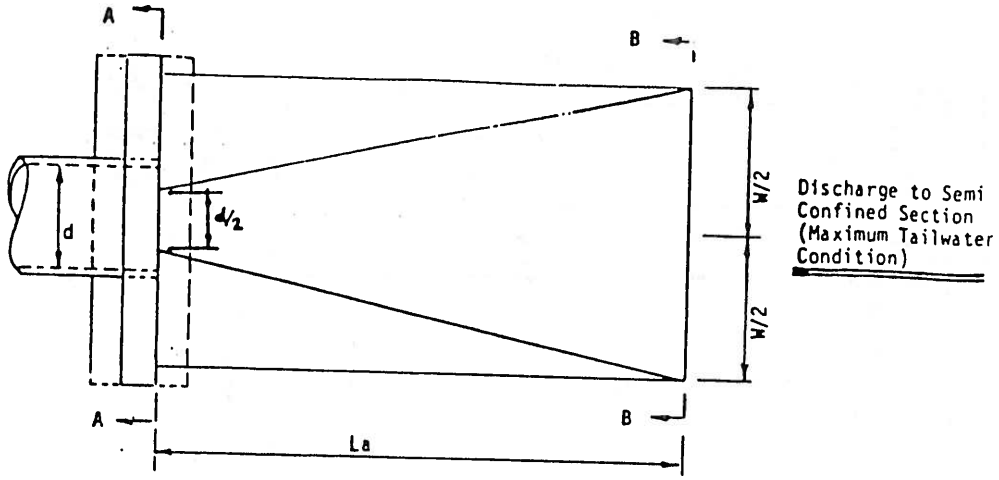


CROSS SECTION A-A

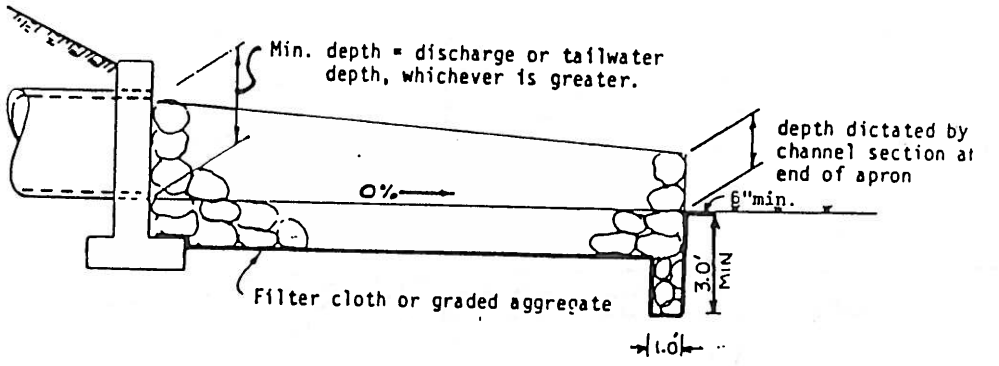
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 12, 1989 COUNTY ENGINEER	riprap outlet scs-I	REVISIONS:	DETAIL No. OF -01

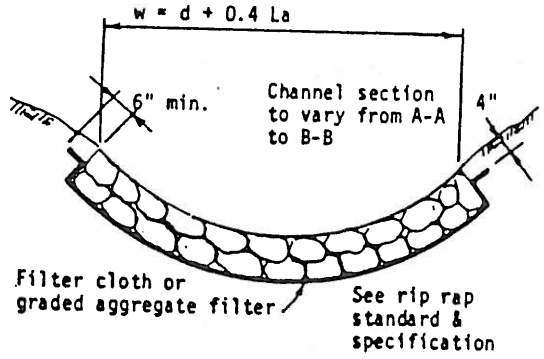


JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 12, 1989 COUNTY ENGINEER	riprap outlet scs - II	REVISIONS:	DETAIL No. OF -02

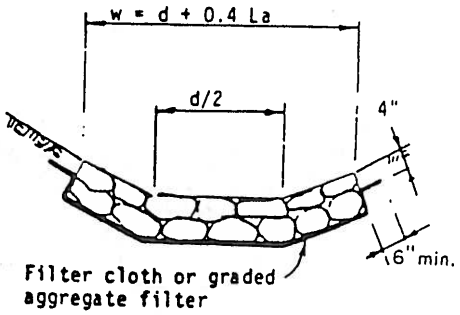


Discharge to Semi Confined Section (Maximum Tailwater Condition)



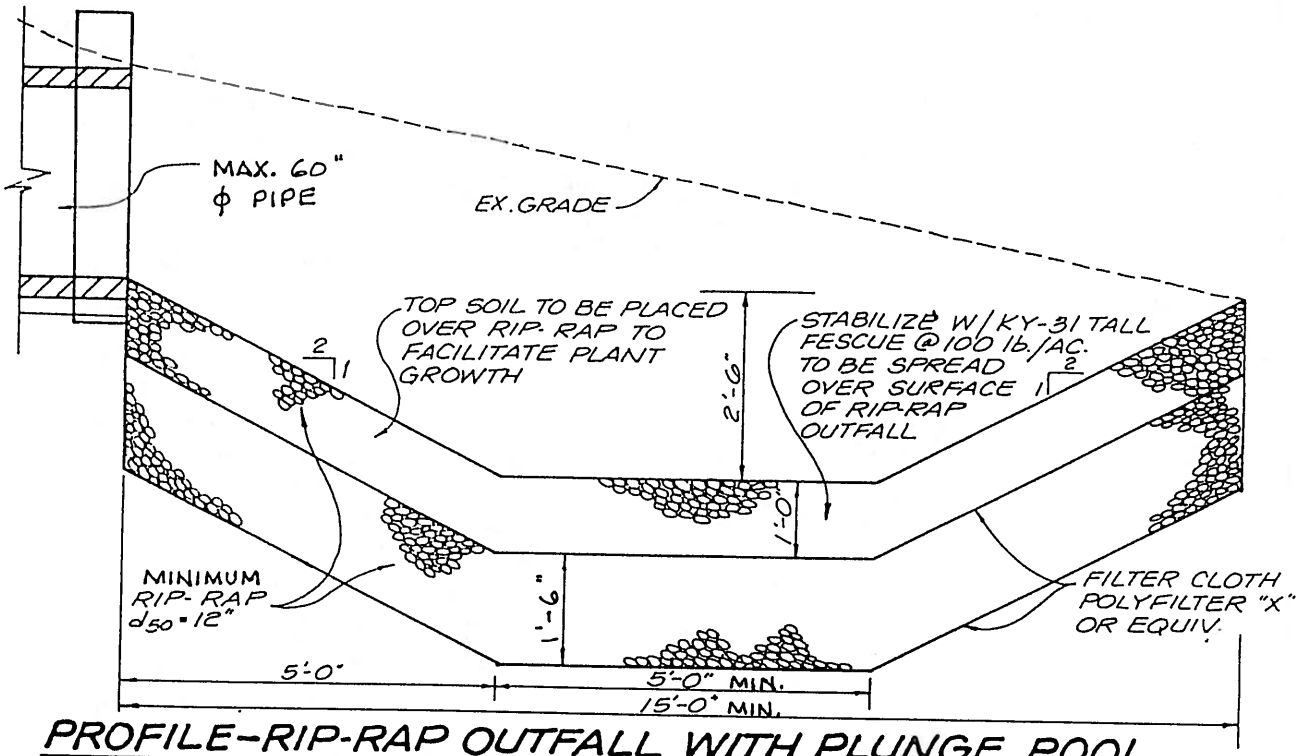


SECTION B-B



SECTION A-A

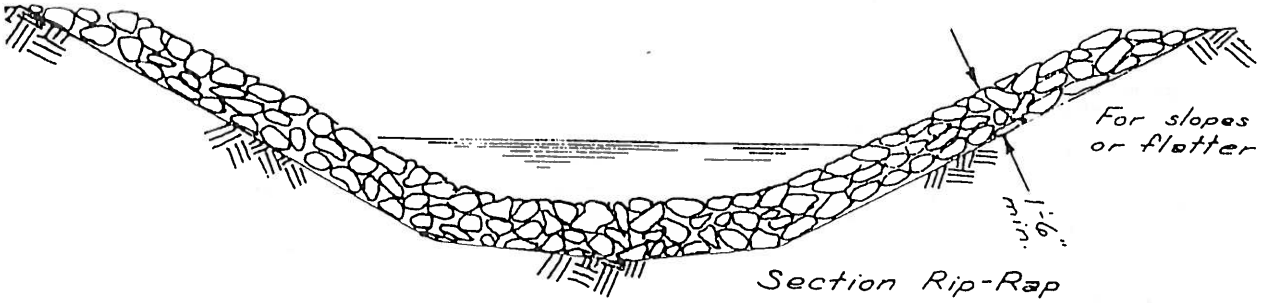
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 12, 1989 COUNTY ENGINEER	riprap outlet scs - III	REVISIONS:	DETAIL No. OF -03



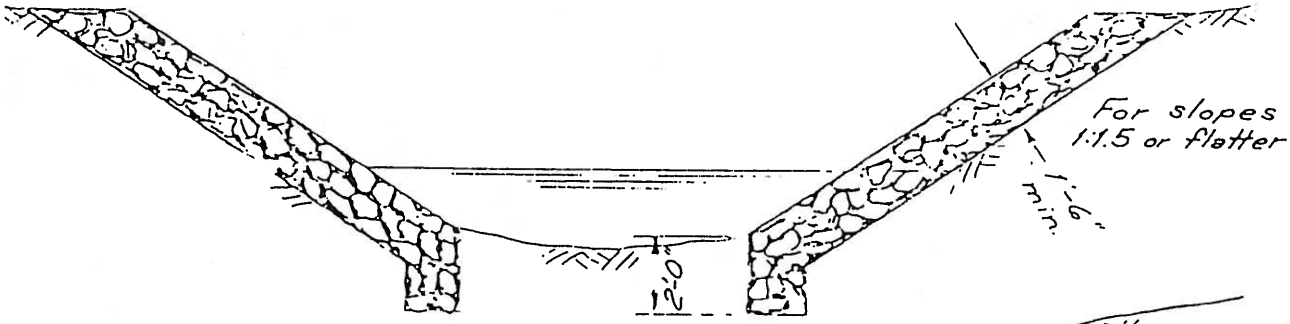
PROFILE-RIP-RAP OUTFALL WITH PLUNGE POOL

FOR USE WHERE REGULAR RIPRAP OUTLETS ARE NOT FEASIBLE.

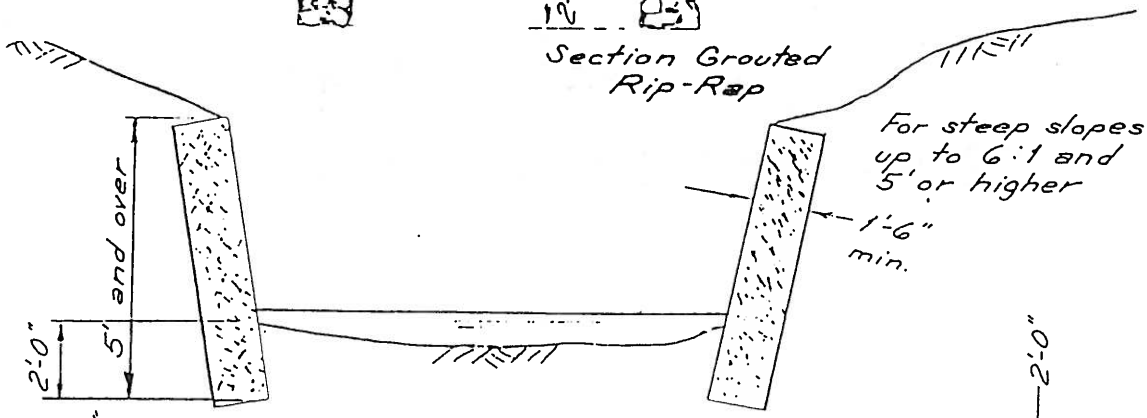
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 12, 1989 COUNTY ENGINEER	plunge pool	REVISIONS:	DETAIL No. OF -04



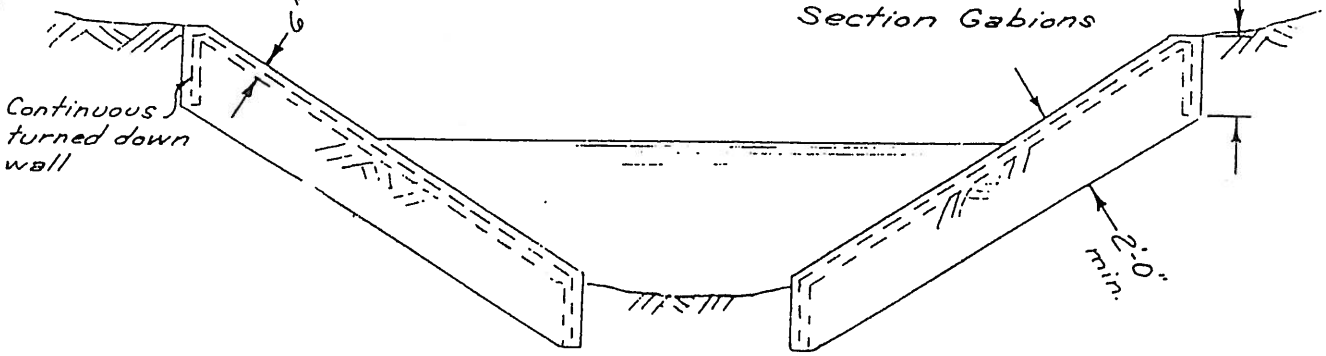
Section Rip-Rap



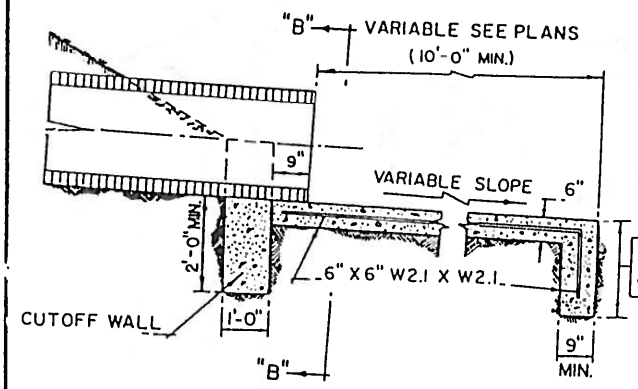
Section Grouted
Rip-Rap



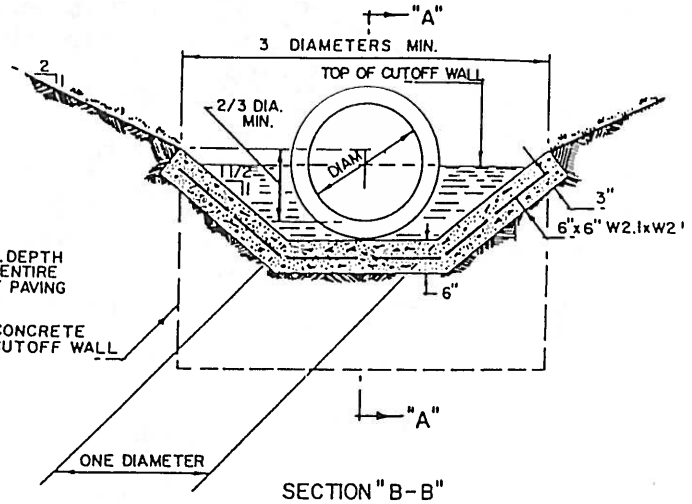
Section Gabions



JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 12, 1989 COUNTY ENGINEER	**bank protection of streams**	REVISIONS:	DETAIL No. OF -05



SECTION "A-A"

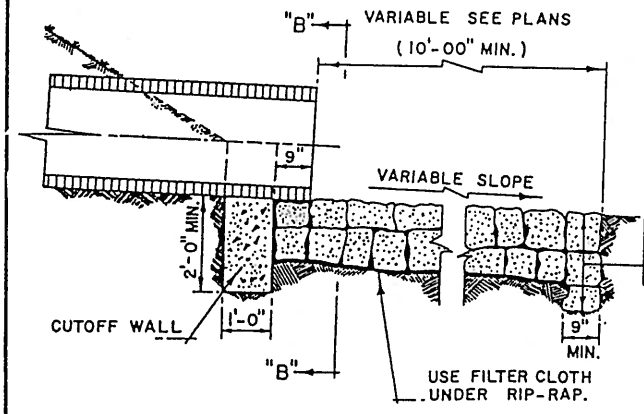


SECTION "B-B"

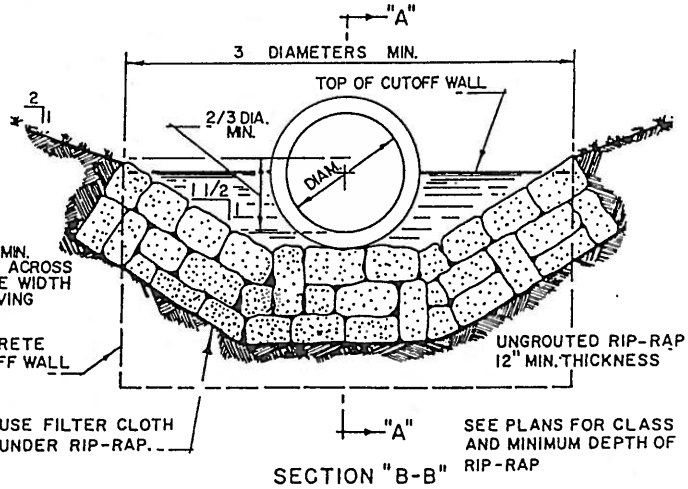
CUTOFF WALL AND CONC. PAVING

GENERAL NOTES

1. REFER TO MARYLAND STATE HIGHWAY ADMINISTRATION FOR MATERIALS AND METHODS OF CONSTRUCTION.
2. CHANNEL CROSS SECTION TO TRANSITION TO EXISTING DITCH AT END OF PAVING.
3. THIS STANDARD TO BE USED ONLY ON APPROVAL BY THE DEPT. OF TRANSPORTATION.
4. INSTALL FILTER CLOTH UNDER RIP-RAP.
5. f'c = 3500 p.s.i. at 28 DAYS.
6. WHEN CONCRETE PAVING IS USED, WIRE MESH SHALL BE EXTENDED DOWN INTO CUTOFF WALL AT LOWER END OF PAVING.



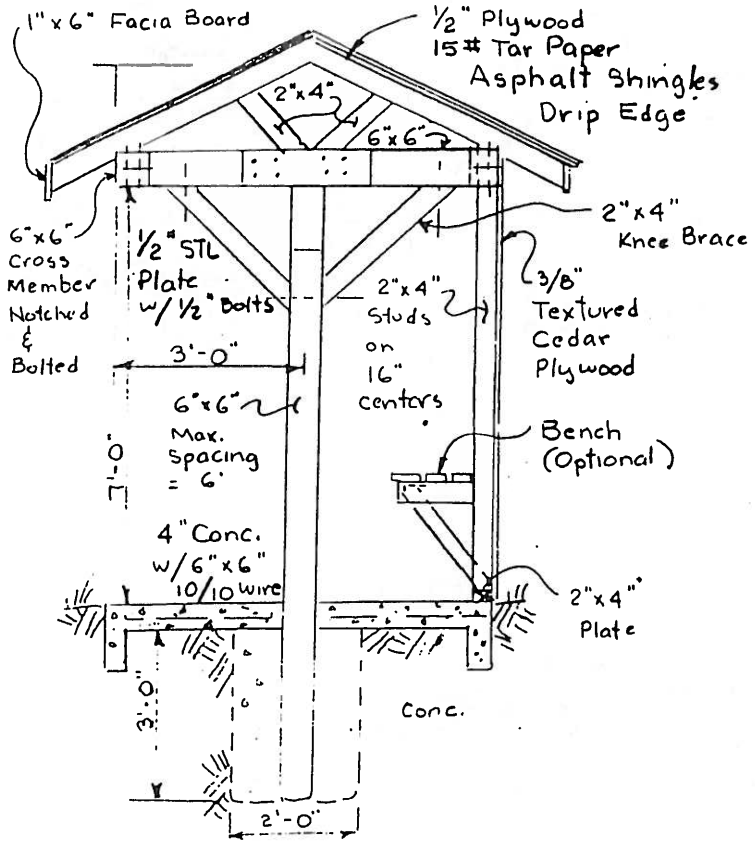
SECTION "A-A"



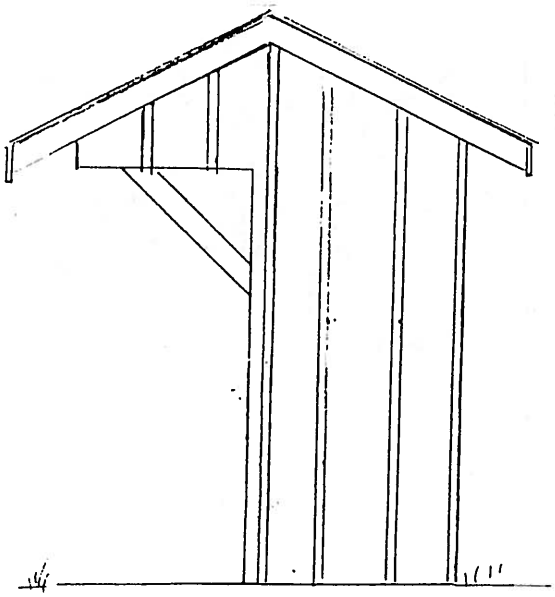
SECTION "B-B"

CUTOFF WALL AND RIPRAP PAVING

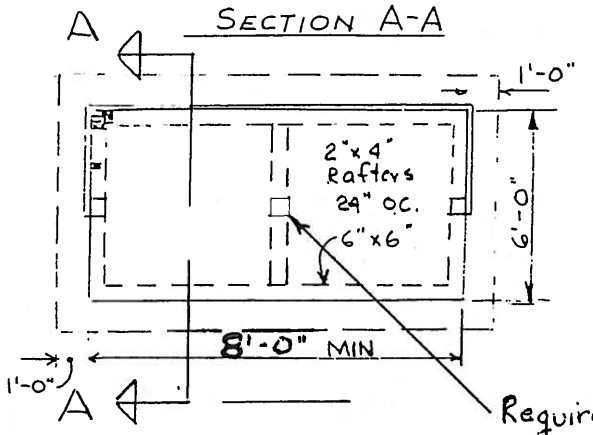
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 17, 1989 COUNTY ENGINEER	cutoff wall and paving	REVISIONS:	DETAIL No. OF -06

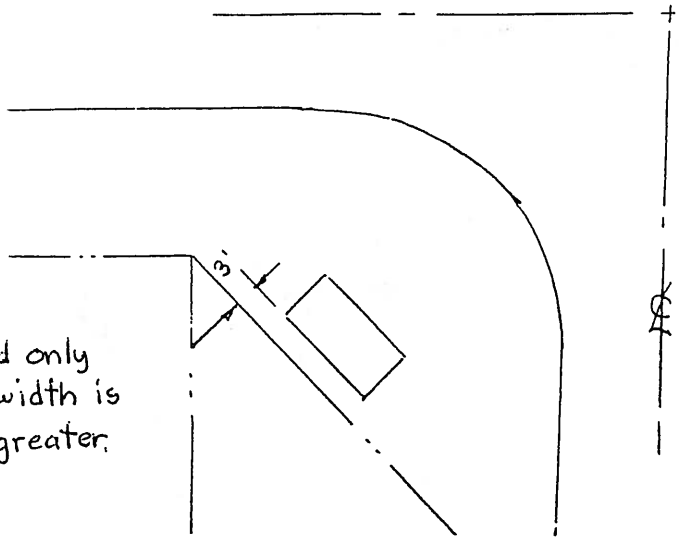


SECTION A-A



ELEVATION



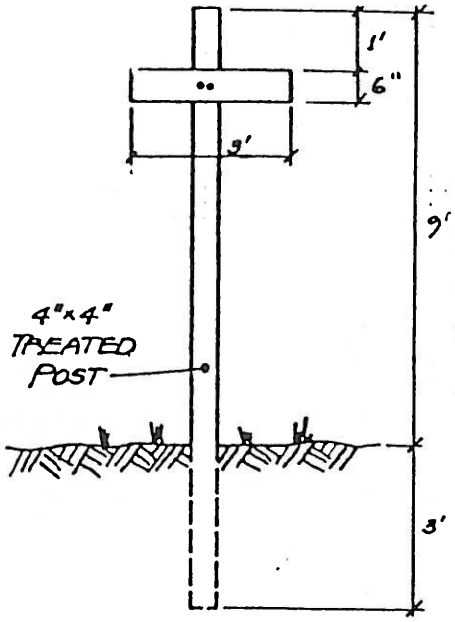


Required only where width is 12' or greater.

BUS SHELTER DETAIL (TYPICAL)

This is a minimum design.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 15, 1980 COUNTY ENGINEER	TYPE A SCHOOL BUS SHELTER	REVISIONS: 4/13/89 JL 1/25/95 JL	DETAIL No. M -11

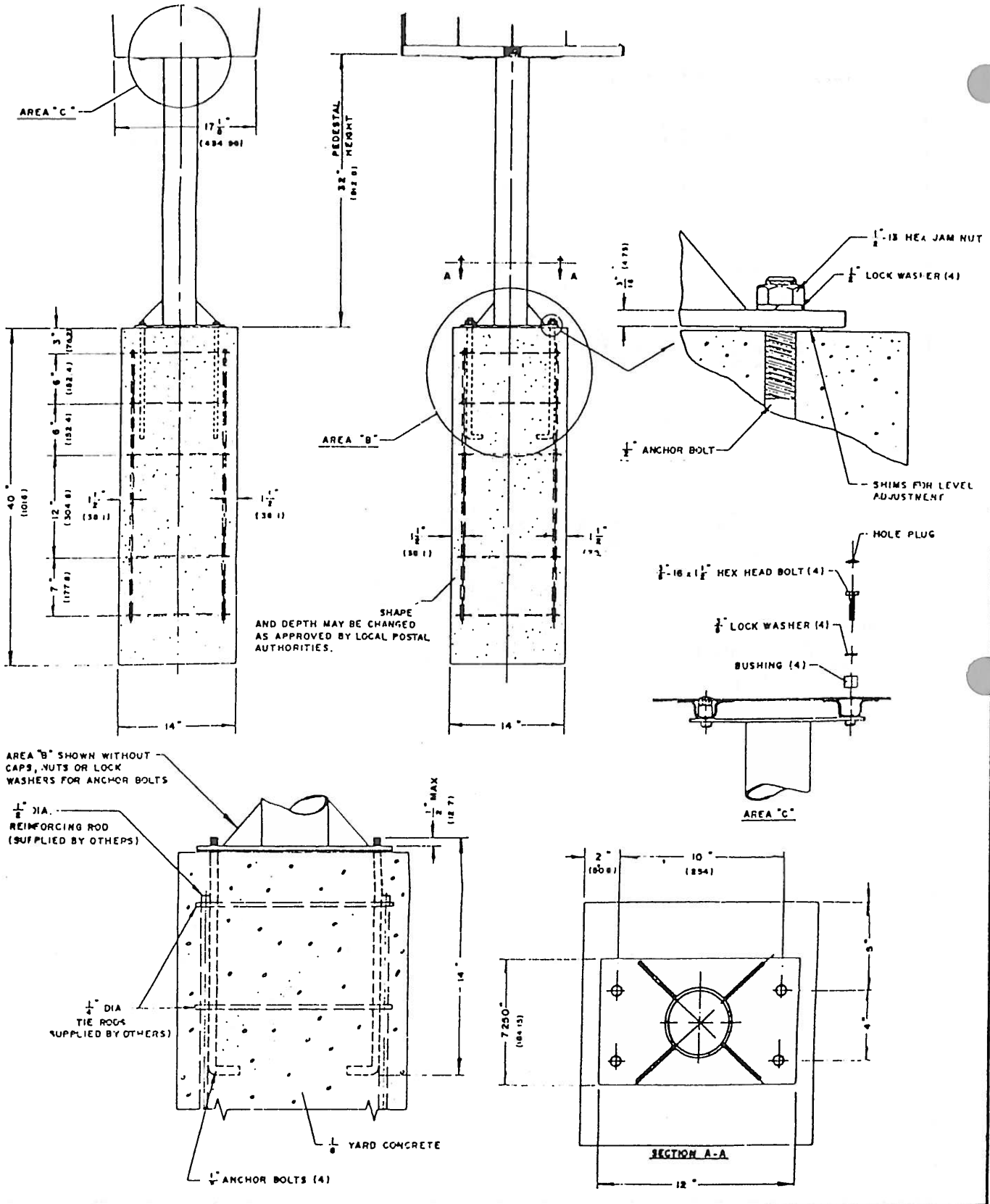


STREET SIGN DETAIL

NTS

This is the minimum required by the Subdivision Ordinance. For more extensive standards refer to the Manual on Uniform Traffic Control Devices and the Standards of the West Virginia Department of Transportation.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 13, 1989 COUNTY ENGINEER	type A street sign	REVISIONS: 1/25/95 JL	DETAIL No. M-21



JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 17, 1980 COUNTY ENGINEER	mail box anchorage	REVISIONS:	DETAIL No. M -31

MAJOR TREES:

Acceptable major trees shall be 8' to 10' tall and have minimum caliper of 1½" measured 6" above ground level. They shall be branch at a point approximately 60% of the total height of the tree above ground. Larger size trees are acceptable but must conform to American Standards for nursery stock.

Acer saccharum (Sugar Maple)
Carpinus betulus (European Hornbeam)
Cladrastis lutea (Yellowwood)
Fagus grandifolia (American Beech)
Fagus sylvatica (European Beech)
Ginkgo biloba (Male Grafted Ginkgo)
Fraxinus Pennsylvania Marshall (Marshall Seedless Ash)
Gleditsia triacanthos inermis (Thornless Honeylocust)
Quercus alba (White Oak)
Quercus borealis (Red Oak)
Quercus palustris (Pin Oak)
Quercus phellos (Willow Oak)
Tilia cordata (Little Leaf Linden)
Tilia tomentosa (Silver Linden)
Zelkova serrata (Village Green Zelkova)

MINOR TREES:

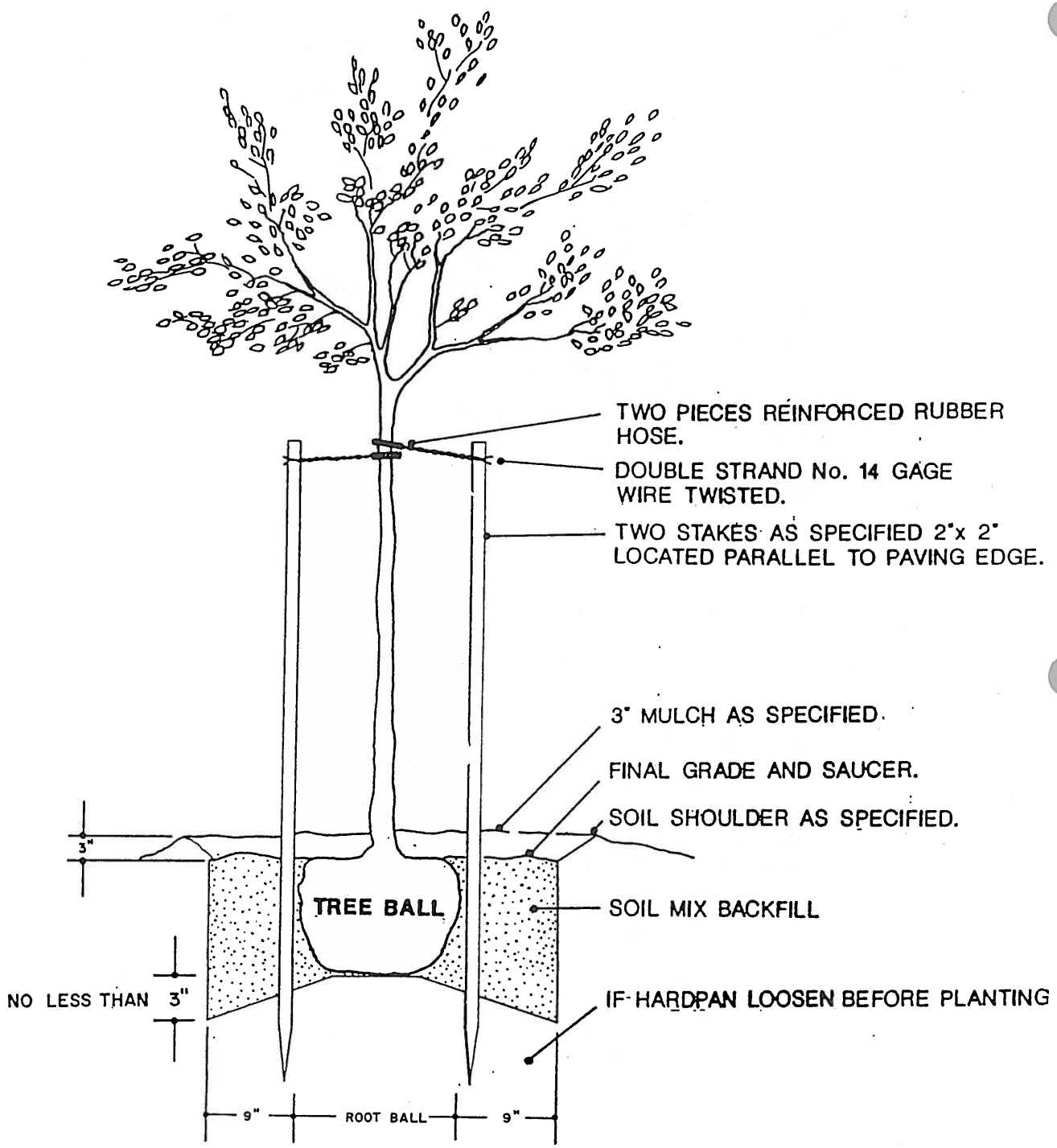
Acceptable minor trees shall be a minimum of 6' tall and have a minimum caliper of 3/4" measured at 6" above the ground. They shall be branched at a point approximately 60% of the total height of the tree above ground. Larger size trees are acceptable but must conform to American Standards for nursery stock.

Acer campestre (Hedge Maple)
Acer ginnala (Amur Maple)
Carpinus caroliniana (American Hornbeam)
Cercis canadensis (Redbud)
Cornus florida (White Flowering Dogwood)
Cornus florida rubra (Red Flowering Dogwood)
Cornus kousa (Kousa Dogwood)
Crataegus phaenopyrum (Washington Hawthorn)
Crataegus mouis (Downey Hawthorn)
Koelreuteria paniculata (Golden Rain-tree)
Ostrya virginiana (Ironwood)
Prunus serrulata 'Kwanzan' (Kwanzan Double Pink Flowering Cherry)
Prunus yodensis (Yoshino Cherry - White)
Pyrus calleryana (Callery Pear - Bradford Pear)
Sophora japonica (Chinese Scholartree)

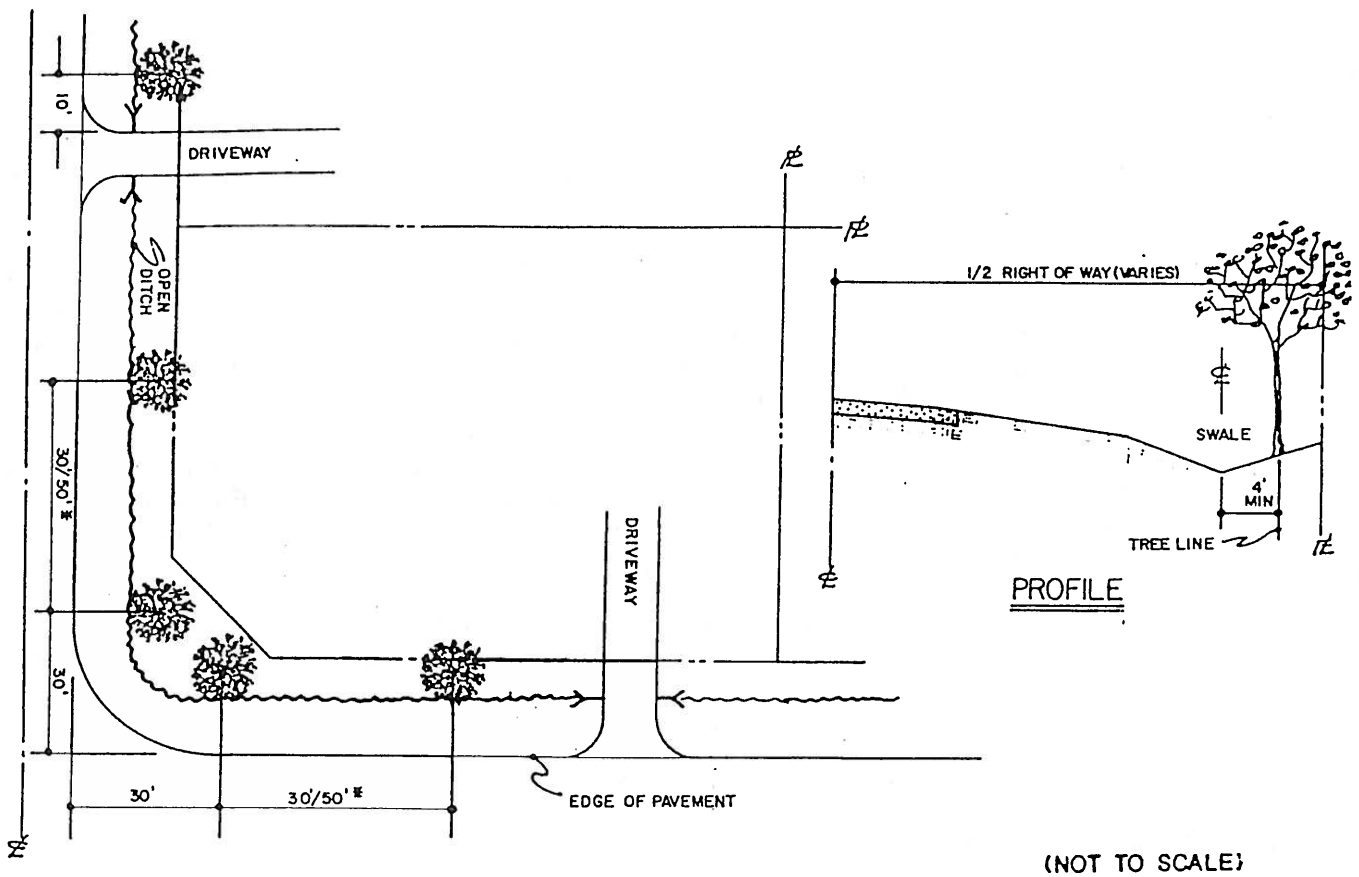
OTHER SPECIES:

Considered by request.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 13, 1989 COUNTY ENGINEER	**street tree variety list**	REVISIONS:	DETAIL No. M -41



JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 13, 1989 COUNTY ENGINEER	tree planting detail	REVISIONS:	DETAIL No. M -42



(NOT TO SCALE)

NOTES:

1. THE DIMENSIONS SHOWN HERE ARE TYPICAL AND MAY BE MODIFIED IN SPECIFIC SITUATIONS WITH APPROVAL OF THE COUNTY ENGINEER.
2. TREES ARE TO BE LOCATED WITH THE FOLLOWING MINIMUM CLEARANCES:
   a. 5' FROM WATER METER
   b. 5' FROM GAS BOX
   c. 5' FROM INLET OR MH
   d. 10' FROM FIRE HYDRANT
   e. 15' FROM STREET LIGHT
3. MINOR TREE SPACING 30'(±5') O.C. MIN. } *
4. MAJOR TREE SPACING 50'(±5') O.C. MIN. }
5. SHADE TREES TO BE 1 1/2" MINIMUM CALIPER 10' MINIMUM HEIGHT.
6. FLOWERING TREES TO BE 3/4" MINIMUM CALIPER 6' MINIMUM HEIGHT.
7. SPECIES TO BE AS APPROVED BY JEFFERSON COUNTY ENGINEER.
8. SEE DETAIL NO. M-42 FOR PLANTING DETAILS.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 17, 1989 / COUNTY ENGINEER	tree location detail	REVISIONS:	DETAIL No. M-43

LANDSCAPE SPECIFICATIONS

1. ALL SIZES AND SPECIES MENTIONED ARE TO BE IN ACCORDANCE WITH THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-1980, OR LATEST REVISION).

2. LANDSCAPE CONTRACTOR IS TO FOLLOW GUIDELINES SET FORTH IN THE LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREA (SECOND EDITION-1986). THESE GUIDELINES PRESENT METHODS FOR SOIL PREPARATION, ESTABLISHING TURF, AND INSTALLATION OF PLANT MATERIALS.

3. PLANTS AND MATERIALS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR UNDER GUIDELINES SET FORTH IN THE LANDSCAPE SPECIFICATION GUIDELINE FOR BALTIMORE AND WASHINGTON METROPOLITAN AREAS, SECTION 1.15.

4. OWNER RESERVES THE RIGHT TO COORDINATE IMPLEMENTATION, AND TO OVERSEE STANDARDS, PRACTICES AND INSTALLATION OF PROPOSED LANDSCAPE PLAN.

5. NO PLANTINGS SHALL BE LOCATED WITHIN FOUR FEET OF A FIRE HYDRANT OR SIAMESE CONNECTION.

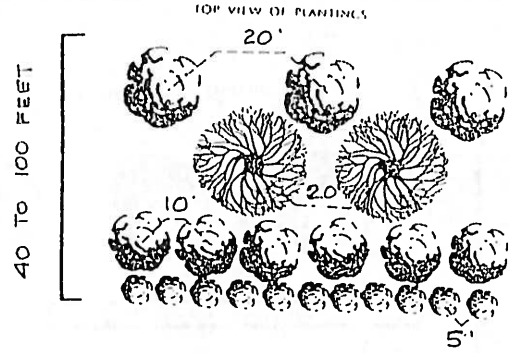
6. ALL PLANTS SIX FEET IN HEIGHT AND TALLER ARE TO BE STAKED PER STANDARDS DETAIL M-42.

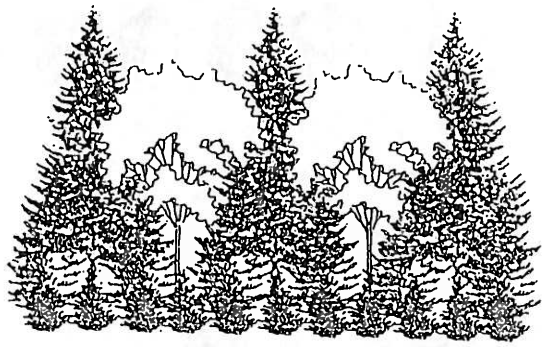
7. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL LANDSCAPING AND SCREENING, INCLUDING REPLACEMENT OF DEAD OR DYING MATERIALS, AND THE UPKEEP OF ANY BERM, WALLS, OR FENCES.

8. SEE STANDARD DETAILS M-41 AND M-43, RESPECTIVELY, FOR LISTS OF AND LOCATION DETAILS FOR STREET TREES.

9. SEE STANDARD DETAILS WM-56, WP-33 AND WP-42, RESPECTIVELY, FOR BASIN LANDSCAPING, BANK VEGETATION AND STREAM VEGETATION.

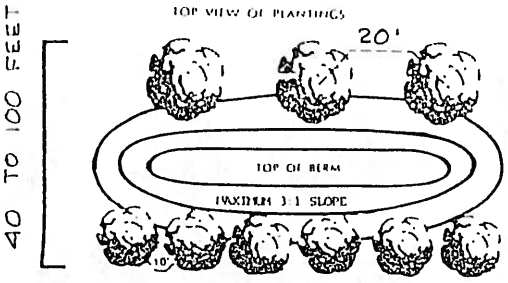
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: August 8, 1990 COUNTY ENGINEER	**Landscape Specifications**	REVISIONS:	DETAIL No. M -51

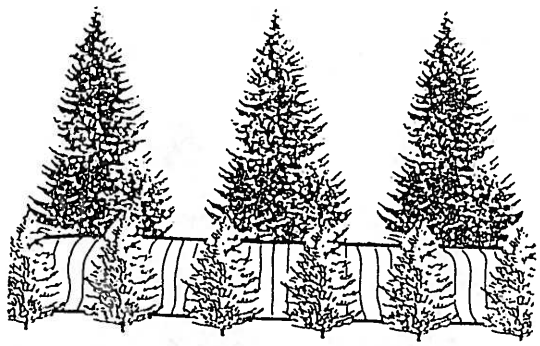




FRONT VIEW OF ULTIMATE GROWTH

OPTION A



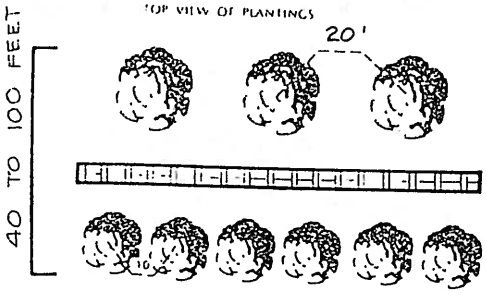


FRONT VIEW OF ULTIMATE GROWTH

OPTION B

OPTION A

Planting Description - one row of evergreen shrubs with a height of two (2) feet or more when planted, likely to reach a height of six (6) feet or more at maturity, planted every five (5) linear feet; one row of medium evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of twenty (20) feet or more at maturity, planted every ten (10) linear feet; one row of deciduous trees with a height of six (6) feet or more when planted, likely to reach a height of thirty (30) feet or more at maturity, planted every twenty (20) linear feet; one row of large evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of thirty (30) feet or more at maturity, planted every twenty (20) linear feet.

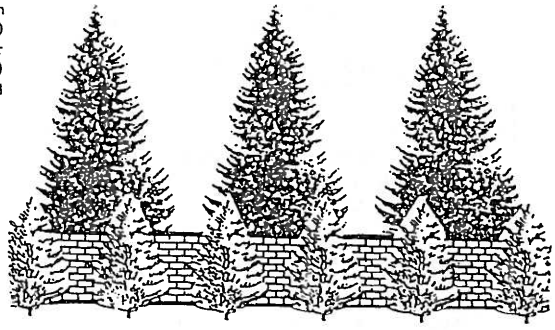


OPTION B

Planting Description - one row of medium evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of twenty (20) feet or more at maturity, planted every ten (10) linear feet; an earth berm six (6) feet in height with a 3 to 1 slope planted with grass or other ground cover that will prevent erosion; one row of large evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of thirty (30) feet or more at maturity, planted every twenty (20) linear feet.

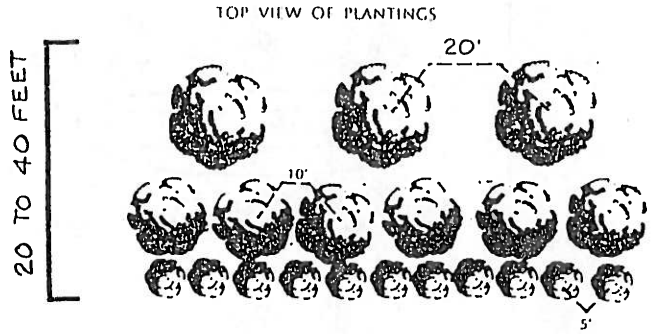
OPTION C

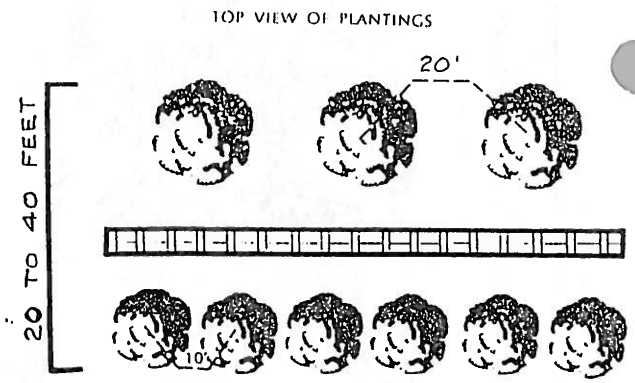
Planting Description - one row of medium evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of twenty (20) feet or more at maturity, planted every ten (10) linear feet; a solid board fence, masonry or brick wall with a height of six (6) feet; one row of large evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of thirty (30) feet or more at maturity, planted every twenty (20) linear feet.

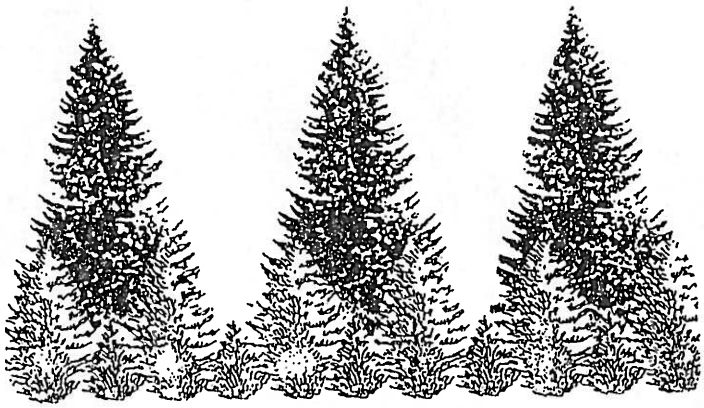


FRONT VIEW OF ULTIMATE GROWTH

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: August 8, 1990 COUNTY ENGINEER	screen planting wide buffer	REVISIONS:	DETAIL No. M -52

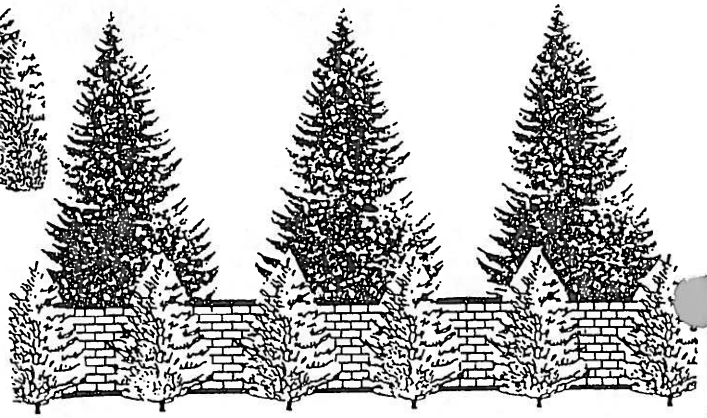






FRONT VIEW OF ULTIMATE GROWTH

OPTION D



FRONT VIEW OF ULTIMATE GROWTH

OPTION E

OPTION D

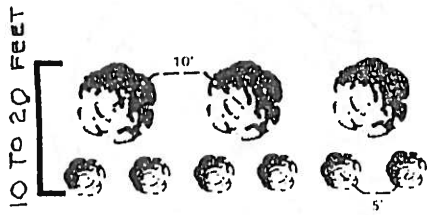
Planting Description - one row of evergreen shrubs with a height of two (2) feet or more when planted, likely to reach a height of six (6) feet or more at maturity, planted every five (5) linear feet; one row of medium evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of twenty (20) feet or more at maturity, planted every ten (10) linear feet; one row of large evergreen trees with a height of six (6) feet or more when planted. likely to reach a height of thirty (30) feet or more at maturity, planted every twenty (20) linear feet.

OPTION E

Planting Description - one row of medium evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of twenty (20) feet or more at maturity, planted every ten (10) linear feet; a solid board fence, masonry or brick wall with a height of six (6) feet; one row of large evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of thirty (30) feet or more at maturity, planted every twenty (20) linear feet.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: August 8, 1990 COUNTY ENGINEER	**screen planting medium buffer**	REVISIONS:	DETAIL No. M -53

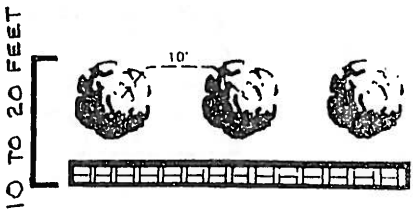
TOP VIEW OF PLANTINGS

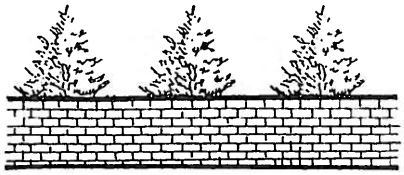


FRONT VIEW OF ULTIMATE GROWTH

OPTION F

TOP VIEW OF PLANTINGS





FRONT VIEW OF ULTIMATE GROWTH

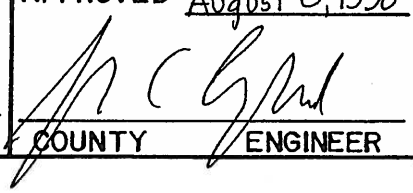
OPTION G

OPTION F

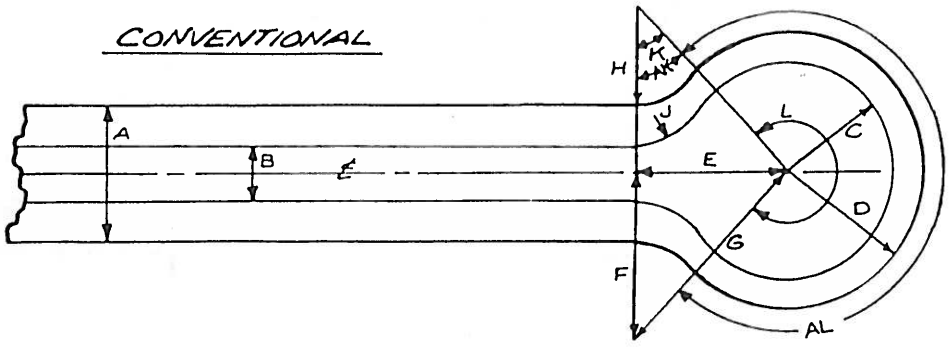
Planting Description - one row of evergreen shrubs with a height of two (2) feet or more when planted, likely to reach a height of six (6) feet or more at maturity, planted every five (5) linear feet; one row of medium evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of twenty (20) feet or more at maturity, planted every ten (10) linear feet.

OPTION G

Planting Description - one row of medium evergreen trees with a height of six (6) feet or more when planted, likely to reach a height of twenty (20) feet or more at maturity, planted every ten (10) linear feet; and a solid board fence, masonry or brick wall with a height of six (6) feet.

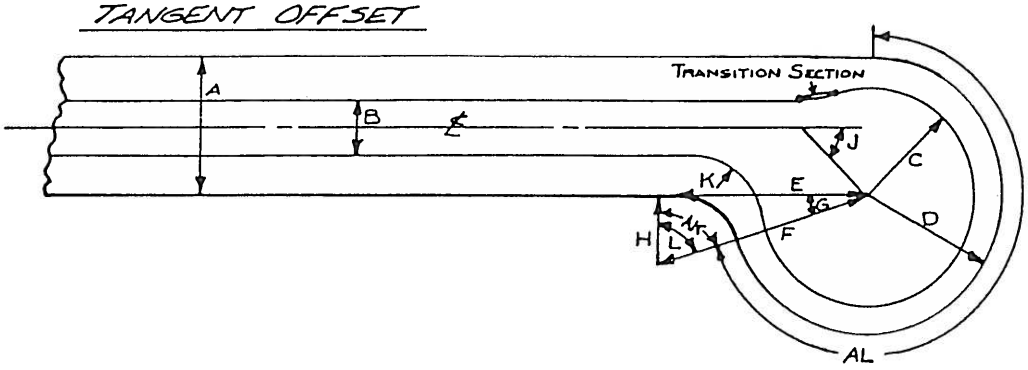
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: August 8, 1990  COUNTY ENGINEER	screen planting narrow buffer	REVISIONS:	DETAIL No. M -54

CONVENTIONAL



	AL	AK	A	B	C	D	E	F	G	H	J	K	L
Standard	241.187'	21.027'	50.0'	20.0'	40.0'	50.0'	55.93'	50.0'	75.0'	25.0'	25.0'	48°11'23"	276°22'46"
Extra-wide	292.545'	21.677'	60.0'	22.0'	50.0'	60.0'	64.81'	55.0'	85.0'	25.0'	25.0'	49°40'47"	279°21'34"

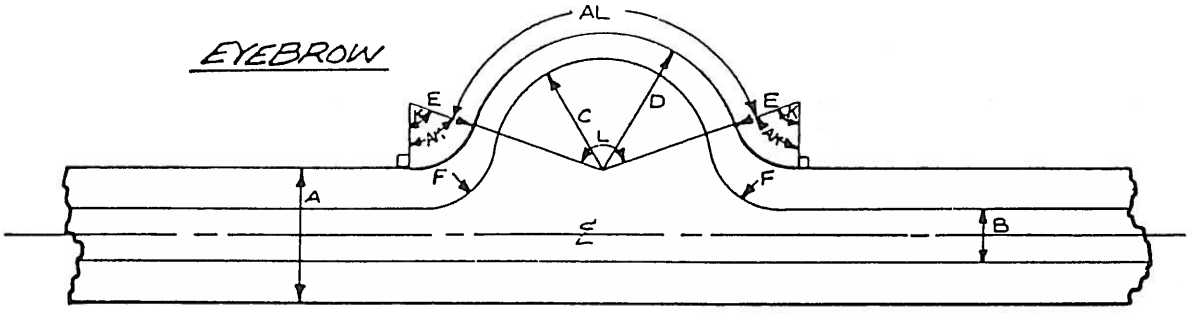
TANGENT OFFSET



	AK	AL	A	B	C	D	E	F	K	H	J	G	L
Standard	30.774'	218.623'	50.0'	20.0'	40.0'	50.0'	70.71'	75.0'	25.0'	25.0'	45°	19°28'16"	70°31'44"
Extra-wide	31.807'	264.831'	60.0'	22.0'	50.0'	50.0'	81.24'	85.0'	25.0'	25.0'	45°	17°06'17"	72°53'43"

The tangent offset cul-de-sac shown is typical but any angle of J can be used.

EYEBROW

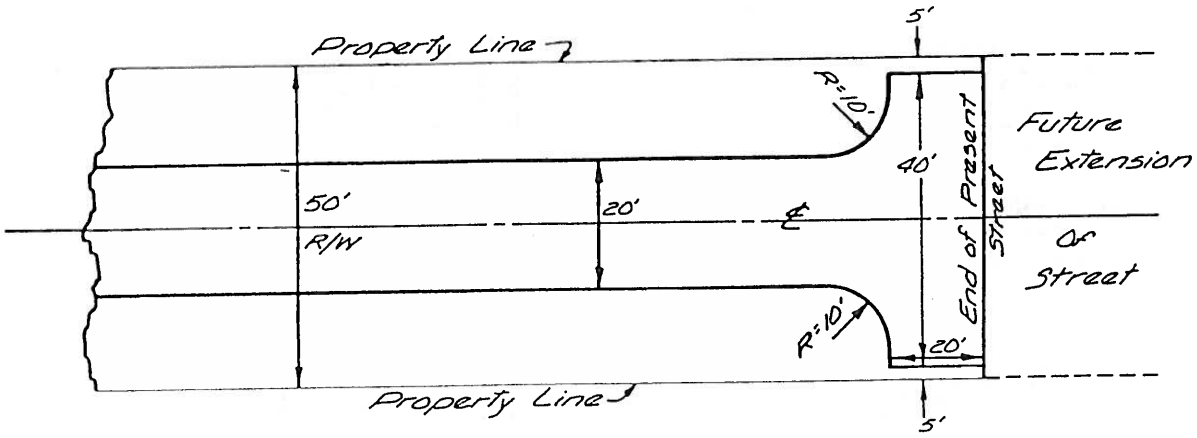


	AL	L	AK	K	A	B	C	D	E	F
Standard	123.096'	141°03'27"	30.774'	70°31'44"	50.0'	20.0'	40.0'	50.0'	25.0'	25.0'

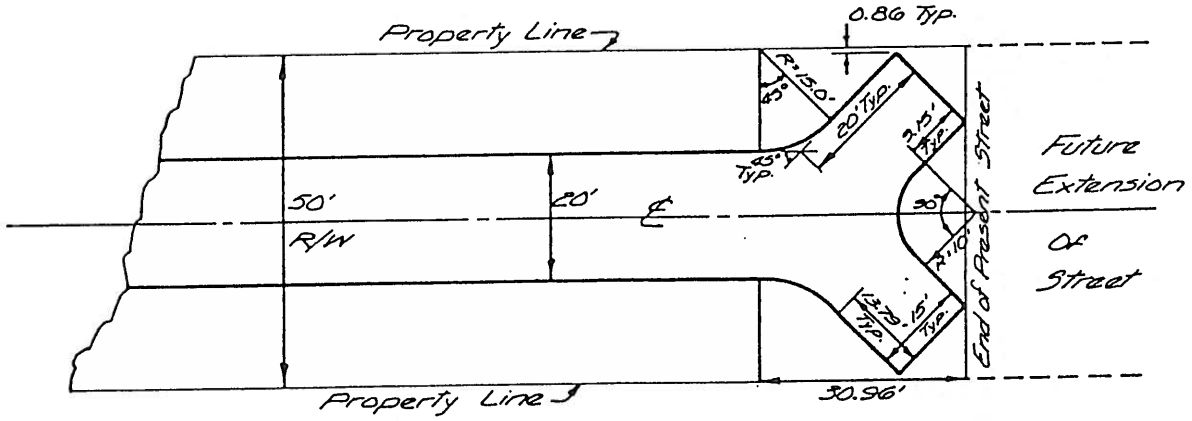
The Eyebrow cul-de-sac's use is to increase the amount of road frontages and can be used only on local roads.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 27, 1980 COUNTY ENGINEER	**TYPICAL CUL-DE-SAC DESIGNS**	REVISIONS: / DETAIL No. R-03

T- TURNAROUND



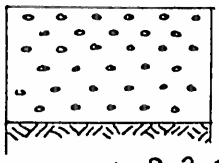
Y- TURNAROUND



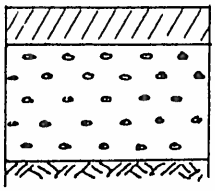
A "T" or "Y" Turnaround shall be used in lieu of a cul-de-sac only if the street is to be extended in the future.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 14, 1989 COUNTY ENGINEER	TEMPORARY TURNAROUND	REVISIONS:	DETAIL No. R -04

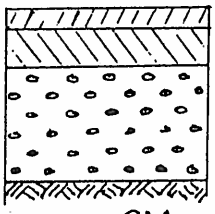
RESIDENTIAL



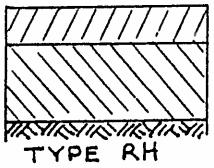
SECTION 8.2.a.17
TYPE RG
LIMITED LIGHT



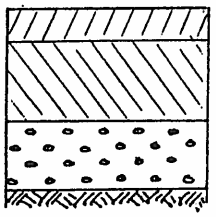
SECTION 8.2.a.18
TYPE RL
LIGHT



TYPE RM
MEDIUM

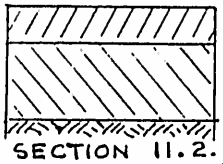


TYPE RH
HEAVY

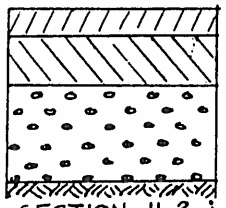


TYPE RX
EXTRA HEAVY

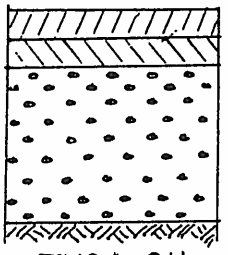
COMMERCIAL



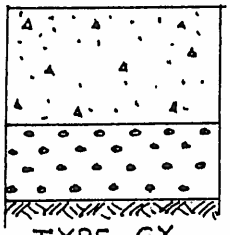
SECTION 11.2.j.1
TYPE CL
LIGHT



SECTION 11.2.j.1
TYPE CM
MEDIUM



TYPE CH
HEAVY



TYPE CX
EXTRA HEAVY

LEGEND

- ASPHALT SURFACE COURSE
- ASPHALT BASE COURSE
- 4000 PSI P.C. CONCRETE
- GRADED CRUSHED STONE AGGREGATE, 100% OF AASHTO T99C
- COMPACTED SUBGRADE 95% OF AASHTO T99C

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: July 27, 1980 COUNTY ENGINEER	ROAD SURFACE SECTIONS	REVISIONS:	DETAIL No. R - 05

SELECT ROAD PAVEMENT SECTIONS FROM DETAIL R-05B AS FOLLOWS:

1. Check Soils Survey to determine soils series of soil to be used in the subgrade.

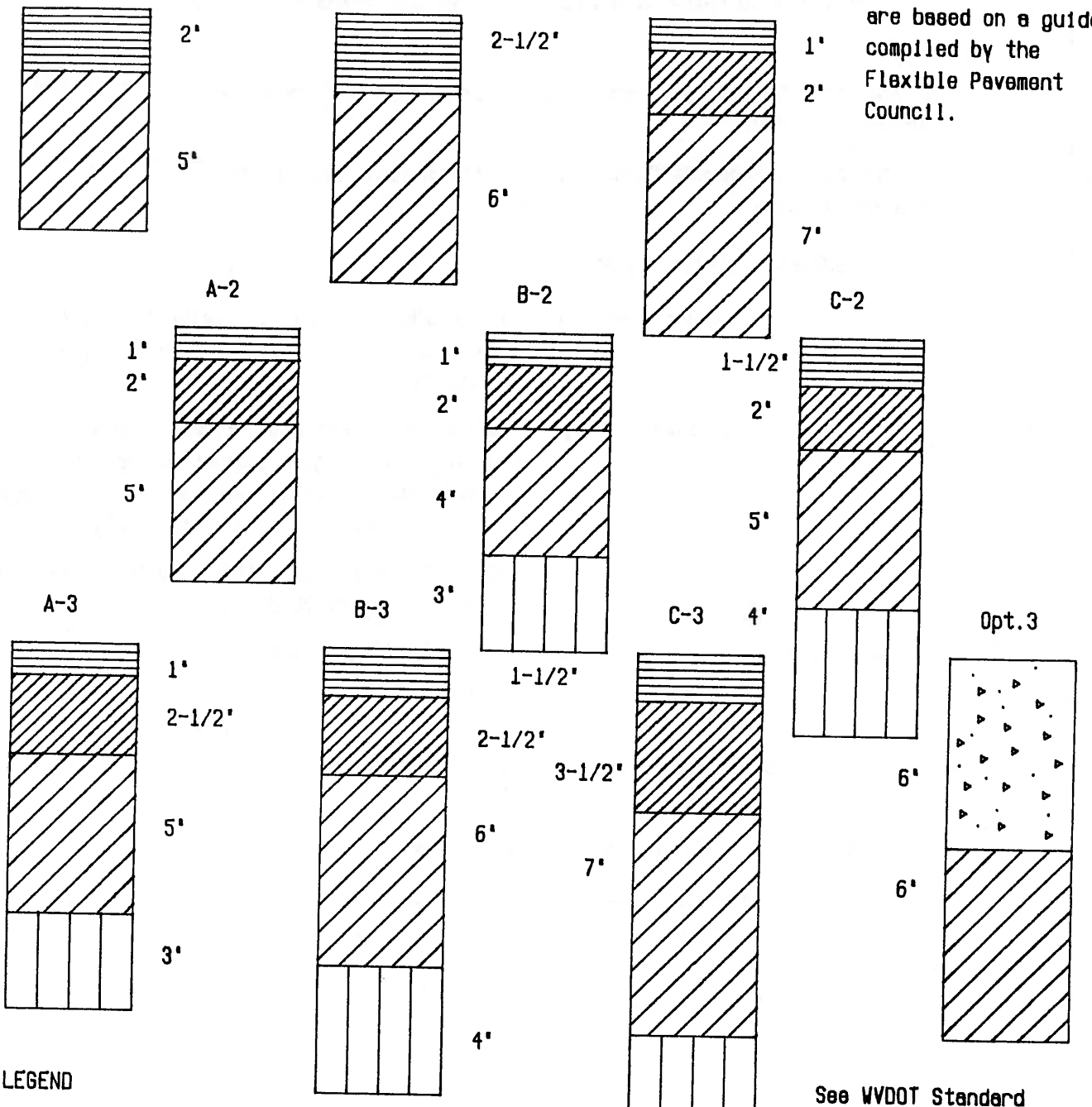
2. Determine the Subgrade Support Class of the soils series from the table below.

SUBGRADE SUPPORT CLASS	SOILS SERIES
A (good - excellent)	Berks and rock land and Weikert when Weikert when shale content is high (40% or greater retained on the No.4 screen).
B (medium)	Ashton,Berks,Blairton,Braddock,Dekalb, Edgemont,Huntington,Laidig,Landes,Lindside, Melvin.Monogahela,and Weikert, and Frakstown when shale content is medium to high.
C (poor)	Benevola,Chilhowie,Clifton,Duffield,Frankstown, Fedwick,Hagerstown,Opequon

3. Select the appropriate road section based on the proposed use of the pavement and the Subgrade Support Class.

USE	ROAD SECTION
Residential driveways and small parking lots with 50 stalls or less and no trucks	A-1,B-1,C-1
Subdivision roads and large parking lots	A-2,B-2,C-2
State road widening,industrial parking lots, and truck driveways	A-3,B-3,C-3

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: Jan. 25, 1995 COUNTY ENGINEER	SURFACE SECTION SELECTION	REVISIONS:	DETAIL NO. R -05A



NOTE: These sections are based on a guide compiled by the Flexible Pavement Council.

LEGEND

Bit.Conc Surface Course

Bit.Conc.Base

Stone subbase Sizes 1 to 357

Stone Base Sizes 4 to 57 or Classes 1,2,4,6 or 8

4000 psi P.C.Conc

See WVDOT Standard Specifications, Tables 703.4 and 704.6.2 for sizes and classes of stone.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: Jan. 25 1995 COUNTY ENGINEER	ROAD SURFACE SECTIONS	REVISIONS:	DETAIL NO. R-05B

The Flexible Pavements Council (FPC) has compiled a guide for selecting road pavement sections based on "subgrade support or soil condition" and intended traffic. Applying these guidelines to Jefferson County the following set of pavements sections would be recommended:

PAVEMENT SECTION TABLE

Use	Subgrade Support Class	Thickness and Size Range of Aggregate	Thickness Asphalt Base	Asphalt Surface	Total
Residential Driveways	A	5" of 1-1/2" minus base 1/	-	2"	7"
Small Parking Lots(50 stalls or less, no trucks)	B	6" of 1-1/2" minus base	-	2-1/2"	8-1/2"
	C	7" of 1-1/2" minus base	2"	1"	10"
Subdivision Roads and Large Parking Lots up to 500 stalls	A	5" of 1-1/2" minus base	2"	1"	8"
	B	4" of 1-1/2" minus base 2/ over 3" coarse aggregate	2"	1"	10"
	C	5" of 1-1/2" minus base over 4" coarse aggregate	2"	1-1/2"	12-1/2"
State Road Widening, Industrial Parking Lots and Truck Driveways	A	5" of 1-1/2" minus base over 3" coarse aggregate	2-1/2"	1"	11-12"
	B	6" of 1-1/2" minus base over 4" coarse aggregate	2-1/2"	1-1/2"	14"
	C	7" of 1-1/2" minus base over 5" coarse aggregate	3-1/2"	1-1/2"	17"

1/ Table 704.6,2, WVDOH Standard Specifications, Classes 1,2,4,6 or 8 or
Table 703.4 WVDOH Standard Specifications, Sizes 4 to 57

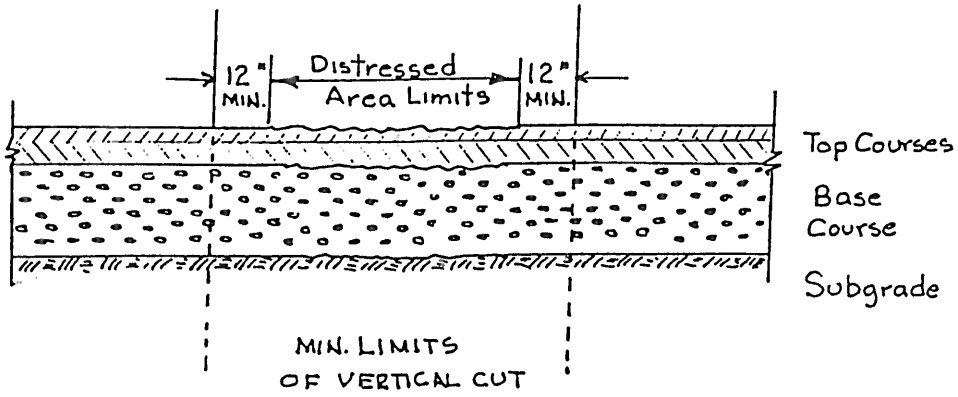
2/ Table 703.4, WVDOH Standard Specifications, Sizes 1 to 357

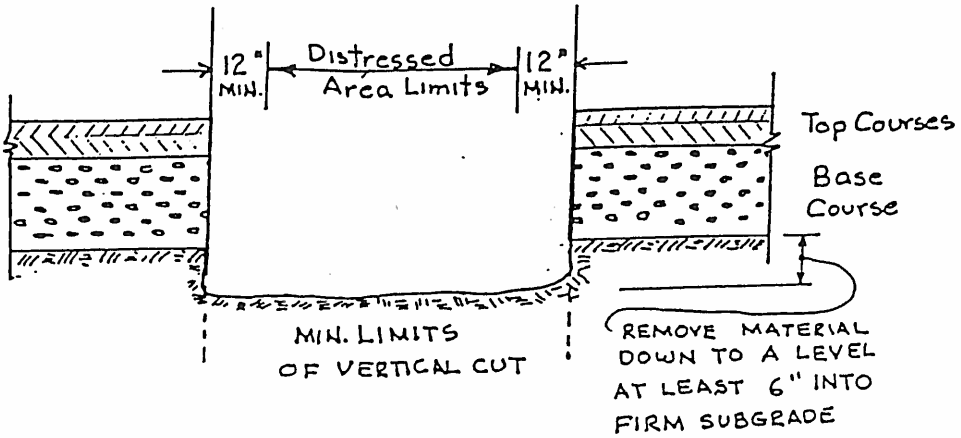
Subgrade Support Class (SSC) comprise the following soils series:

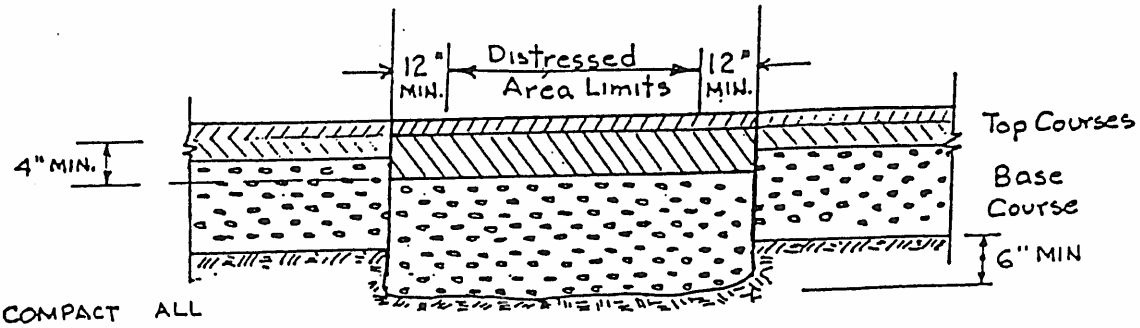
SSC "A" (Good-to-Excellent)--Berks and rock land and Weikert when Weikert's shale content is high (40% or greater ratained on No. 4 screen).

SSC "B" (Medium) --Ashton, Berks, Blairton, Braddock, Dekalt, Edgemont, Huntington, Laidig, Landes, Lindside, Melvin, Monongahela, and Weikert, and Frankstown when shale content is medium to high.

SSC "C" (Poor) --Benevola, Chilhowie, Clifton, Duffield, Frankstown, Fedwick, Hagerstown, Opequon

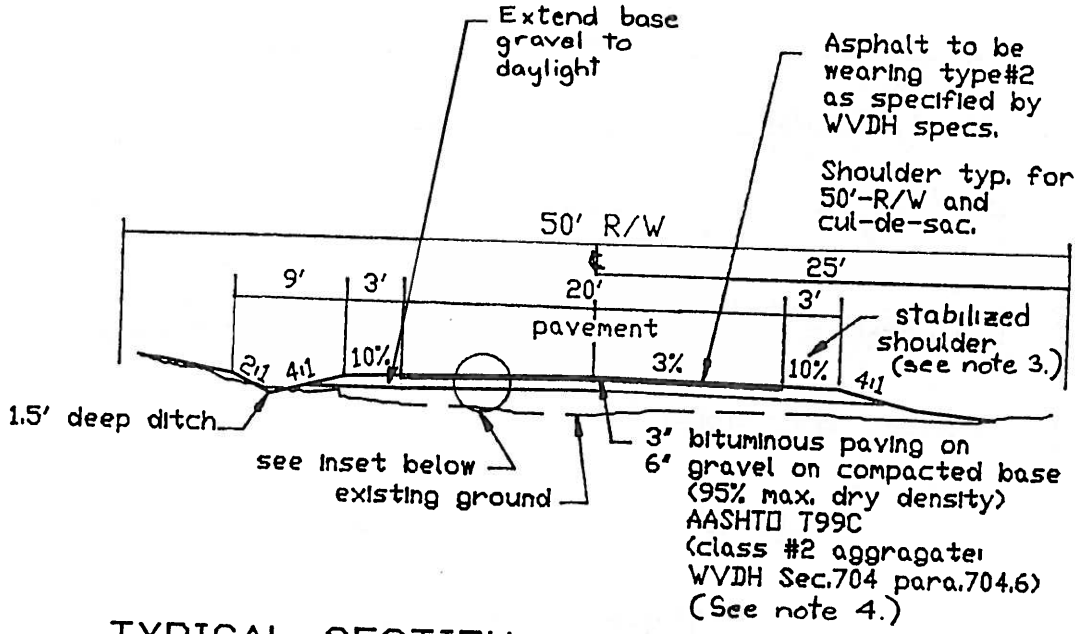






COMPACT ALL REPAIR MATERIALS TO 98% OF MAXIMUM DENSITY

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: July 25, 1989 COUNTY ENGINEER	SURFACE REPAIR METHODS	REVISIONS:	DETAIL No. R -06

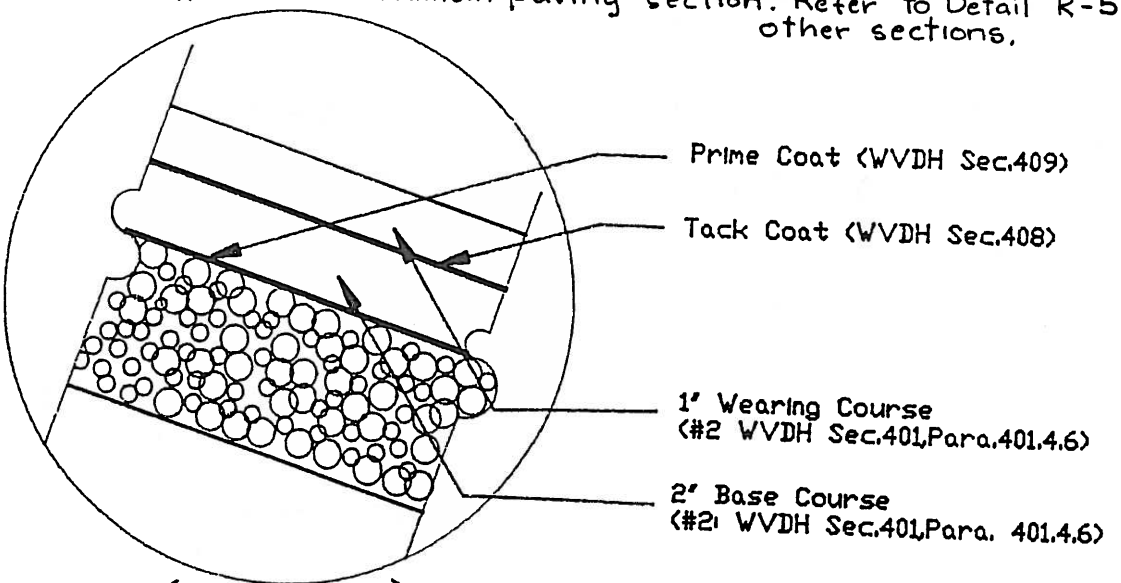


TYPICAL SECTION

Scale:1"=10'

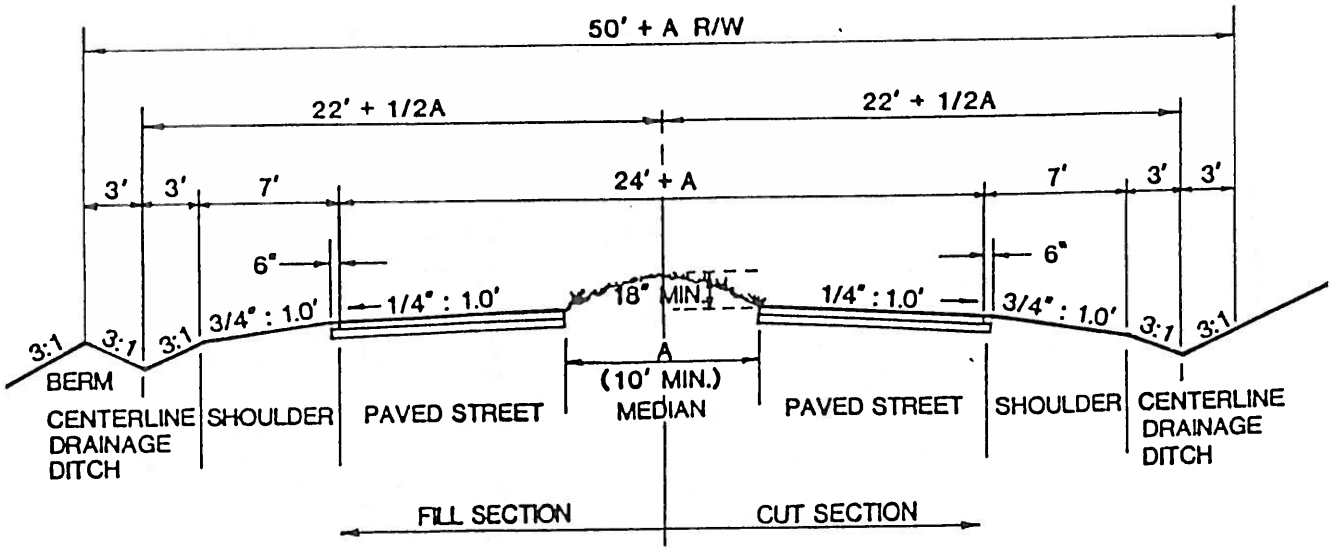
NOTES:

1. See Section 8.2.a.1 for roadway widths where subdivision is served by a single entrance.
2. See detail no. R-5 for other paving section options.
3. Shoulders may be stabilized with grass, gravel or asphalt. However, base gravel must extend to daylight to allow drainage.
4. This is minimum paving section. Refer to Detail R-5 for other sections.

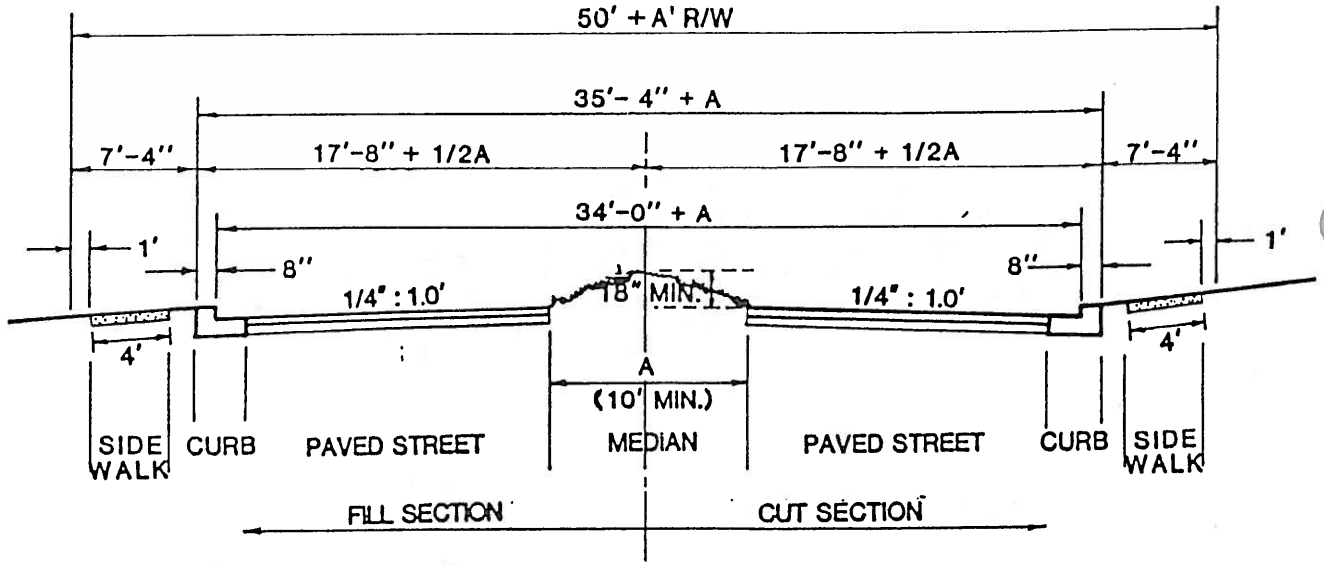


(See note 4.)

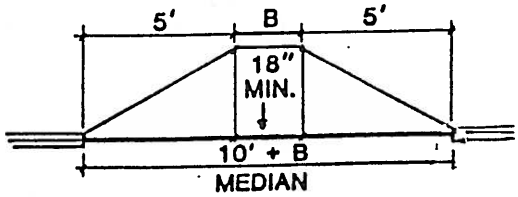
JEFFERSON COUNTY, WV	APPROVED: 3-14-89 County Engineer	LOCAL ROAD TYPICAL SECTION	REVISIONS: 1-11-90 2-22-91 10-23-92 11-24-92	DETAIL R-11



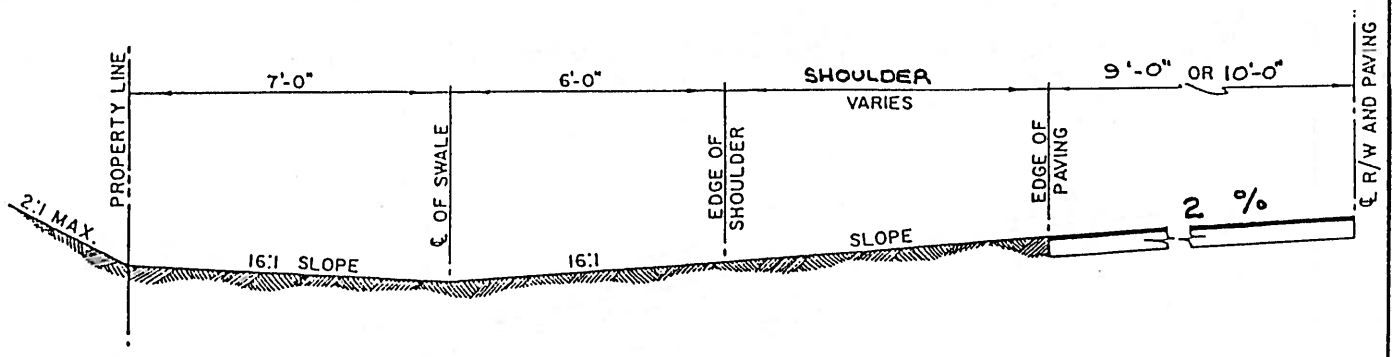
OPEN SECTION



CLOSED SECTION

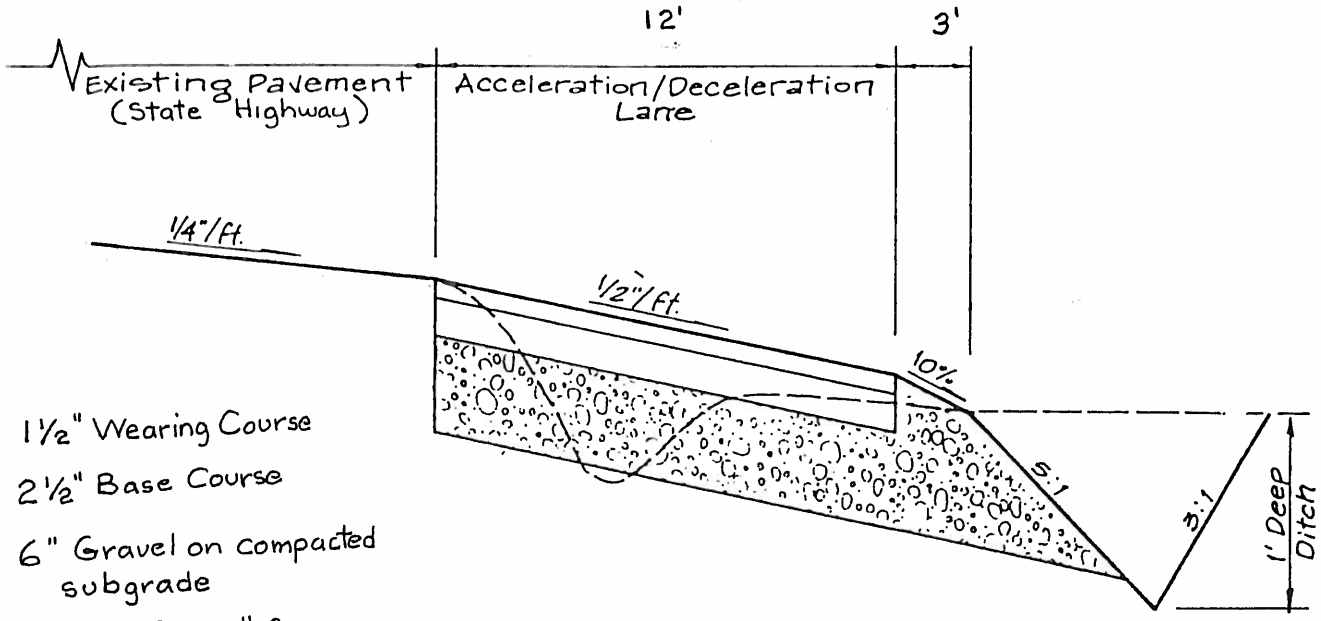


JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 29, 1989 COUNTY ENGINEER	MONUMENTED LOCAL ROAD	REVISIONS:	DETAIL No. R - 12



SWALE CAPACITY AT 4" DEPTH		
SLOPE (%)	Q MAX. (c.f.s)	VELOCITY (f.p.s.)
2.0	2.3	1.3
2.5	2.5	1.4
3.0	2.7	1.6
3.5	3.0	1.7
4.0	3.2	1.8
4.5	3.4	1.9
5.0	3.6	2.0
5.5	3.7	2.1
6.0	3.9	2.2
6.5	4.1	2.3
7.0	4.2	2.4
7.5	4.4	2.4
8.0	4.5	2.5
8.5	4.6	2.6
9.0	4.8	2.7
9.5	4.9	2.8
10.0	5.0	2.8

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 29, 1989 COUNTY ENGINEER	SWALE SECTION	REVISIONS:	DETAIL No. R - 13



1½" Wearing Course

2½" Base Course

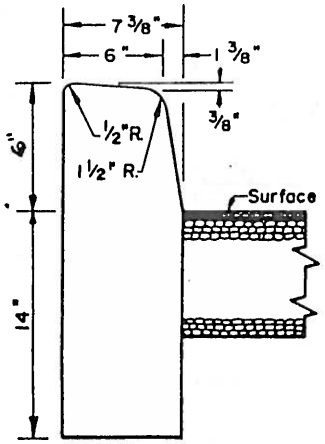
6" Gravel on compacted subgrade

Use Class # 2 aggregate : WVDOH Sec. 704, para. 704.6

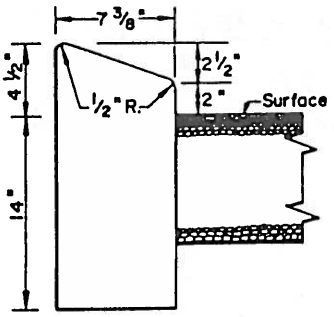
Minimum compaction to be 95% of maximum dry density per AASHTO T99C

Note: In the event the WVDOH requirements are more stringent the WVDOH requirements will control.

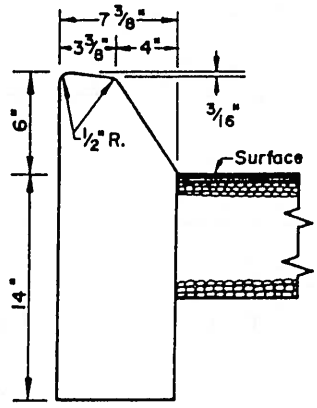
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 2, 1990 Jack C. Layfield COUNTY ENGINEER	**Accel/Decel Lane Section**	REVISIONS:	DETAIL No. R-14



PLAIN CONCRETE CURBING
TYPE I - BARRIER TYPE

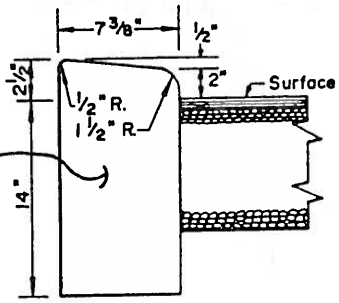


PLAIN CONCRETE CURBING
TYPE III - MOUNTABLE TYPE



PLAIN CONCRETE CURBING
TYPE II - SEMI-MOUNTABLE TYPE

3,000 psi
Concrete
(TYP)

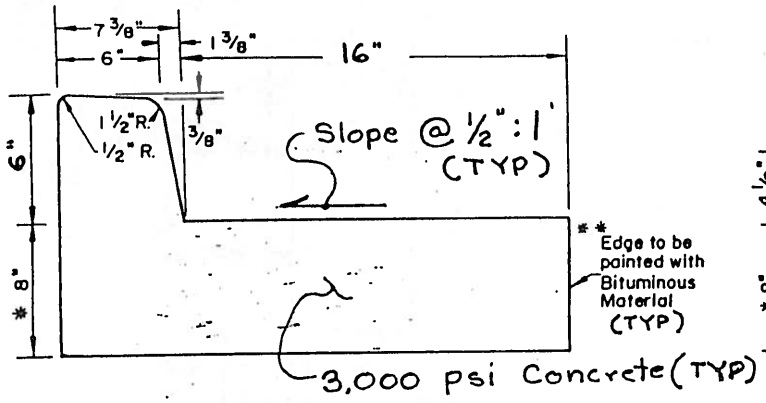


PLAIN CONCRETE CURBING
TYPE IV - DROP CURB

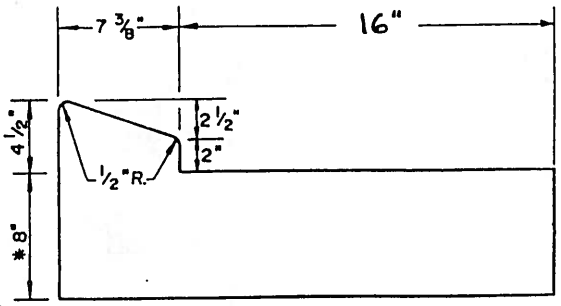
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 28, 1989 COUNTY ENGINEER	**CONCRETE CURB**	REVISIONS:	DETAIL No. R -21

* or thickness of pavement, when abutting concrete pavement.

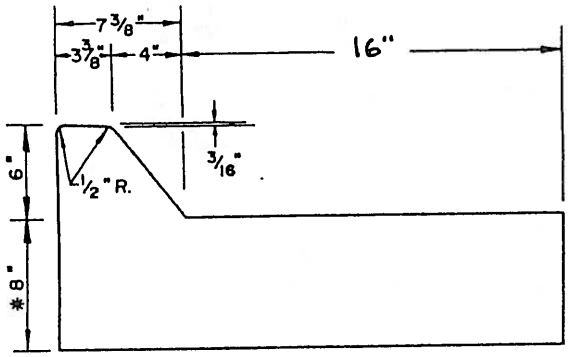
** Does not apply, when abutting concrete pavement. Instead a longitudinal joint with tie bars or tie bolt assemblies shall be constructed at this location.



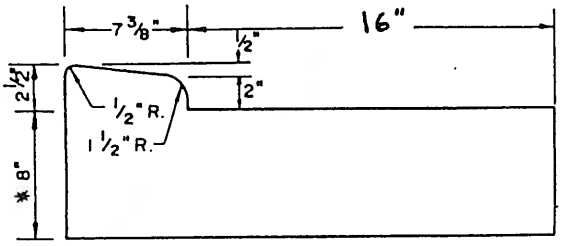
COMBINATION CONCRETE CURB AND GUTTER
TYPE I - BARRIER TYPE



COMBINATION CONCRETE CURB AND GUTTER
TYPE III - MOUNTABLE TYPE

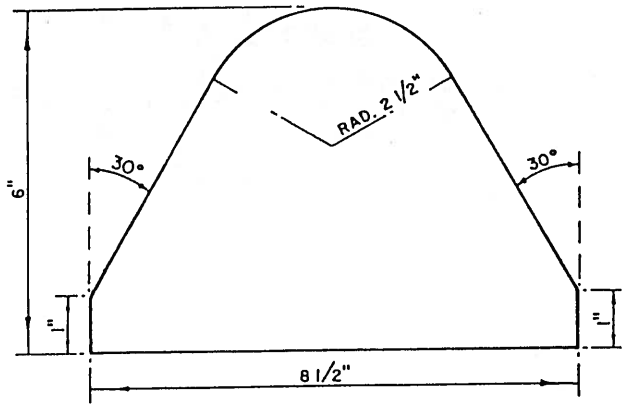


COMBINATION CONCRETE CURB AND GUTTER
TYPE II - SEMI-MOUNTABLE TYPE

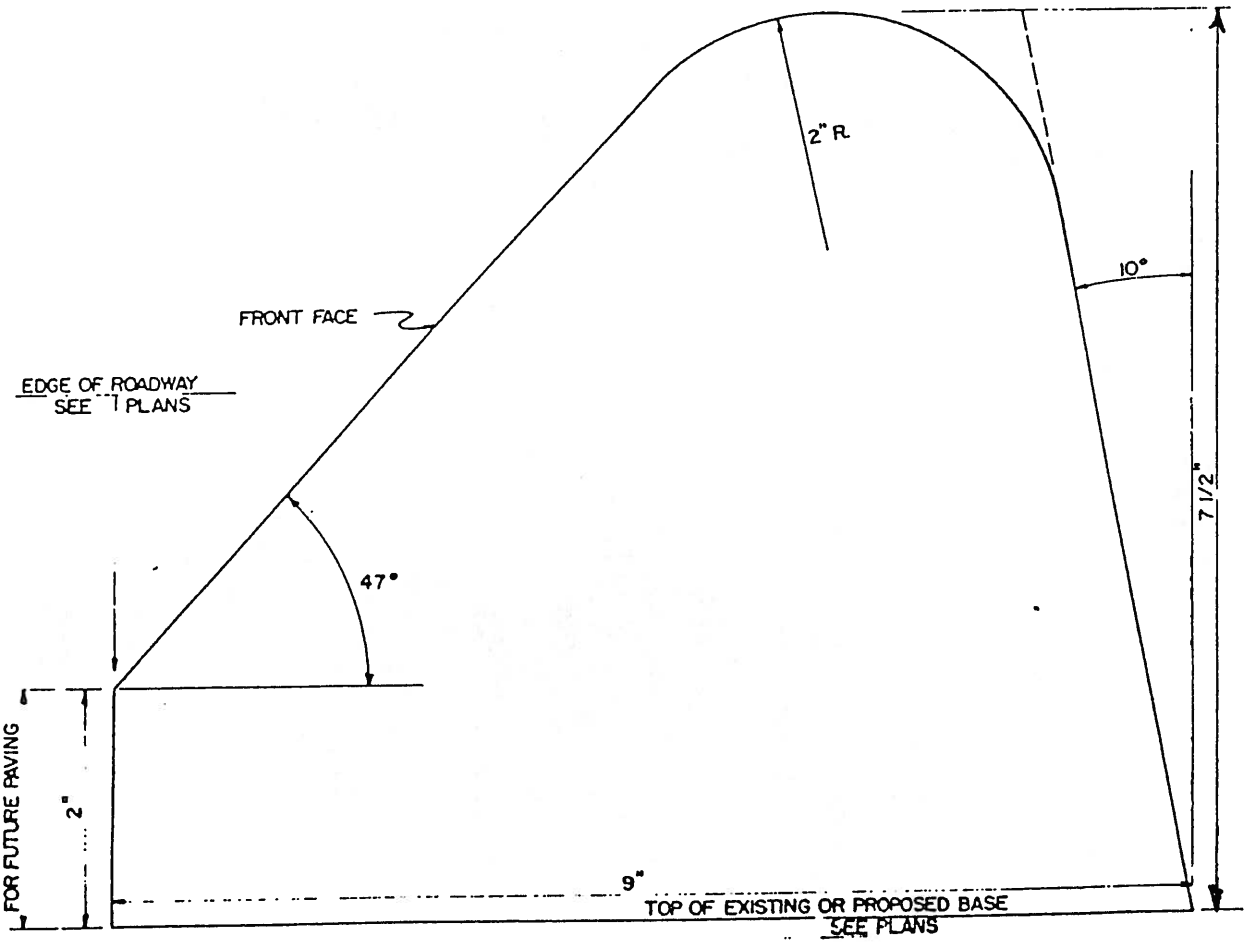


COMBINATION CONCRETE CURB AND GUTTER
TYPE IV - DROP CURB

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 20, 1980 COUNTY ENGINEER	**CONCRETE CURB AND GUTTER**	REVISIONS:	DETAIL No. R -22



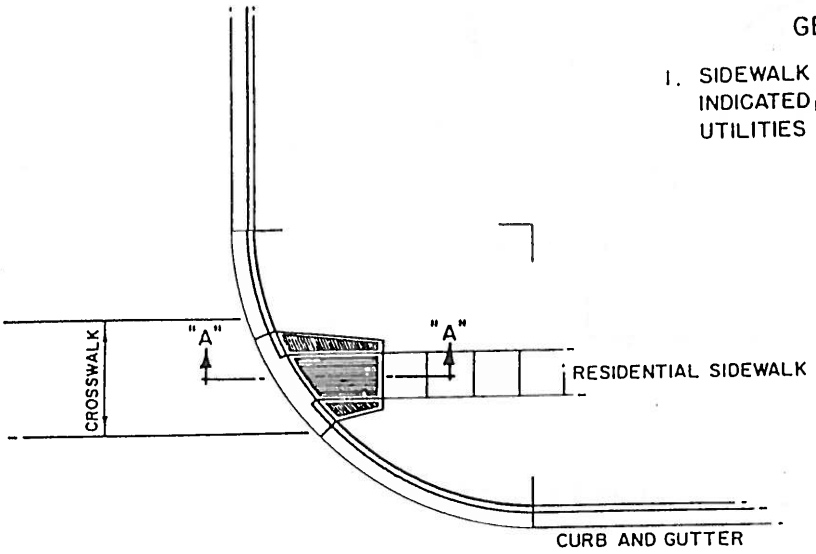
1. APPLY TACK COAT WHEN PLACED ON EXISTING PAVEMENT.
2. USE IN TEMPORARY SITUATIONS ONLY.



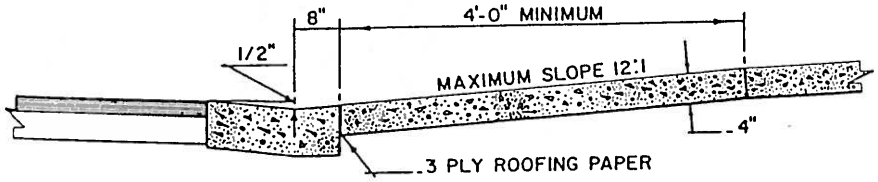
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 28, 1989 COUNTY ENGINEER	**ASPHALT CURB**	REVISIONS:	DETAIL No. R -23

GENERAL NOTES

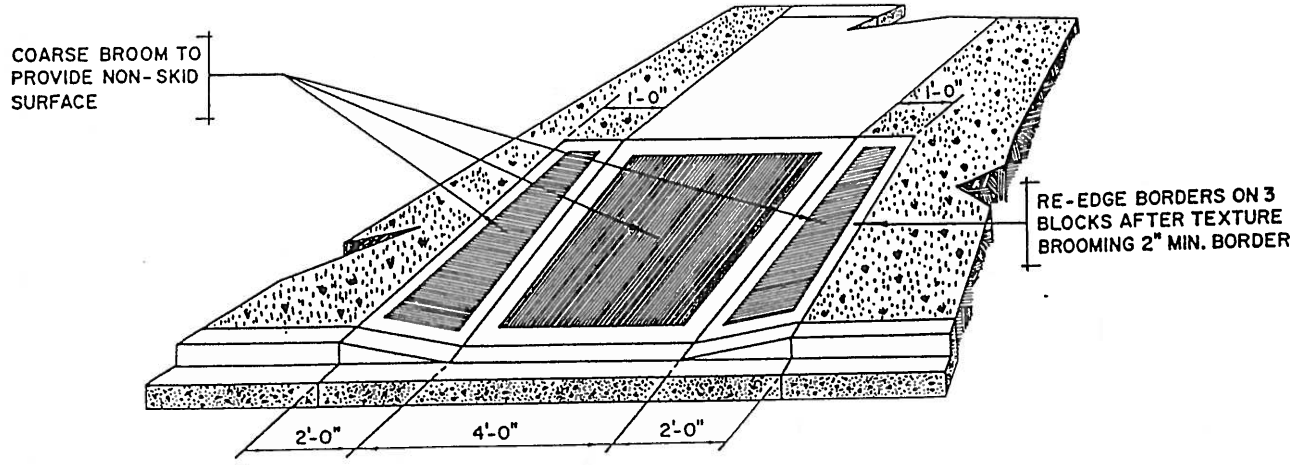
1. SIDEWALK RAMPS SHOULD BE LOCATED AS INDICATED, HOWEVER, EXISTING SURFACE UTILITIES MAY AFFECT PLACEMENT.



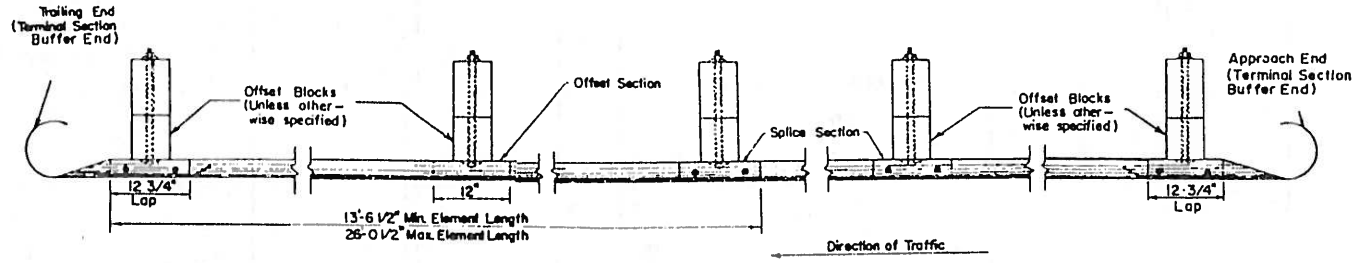
PLAN



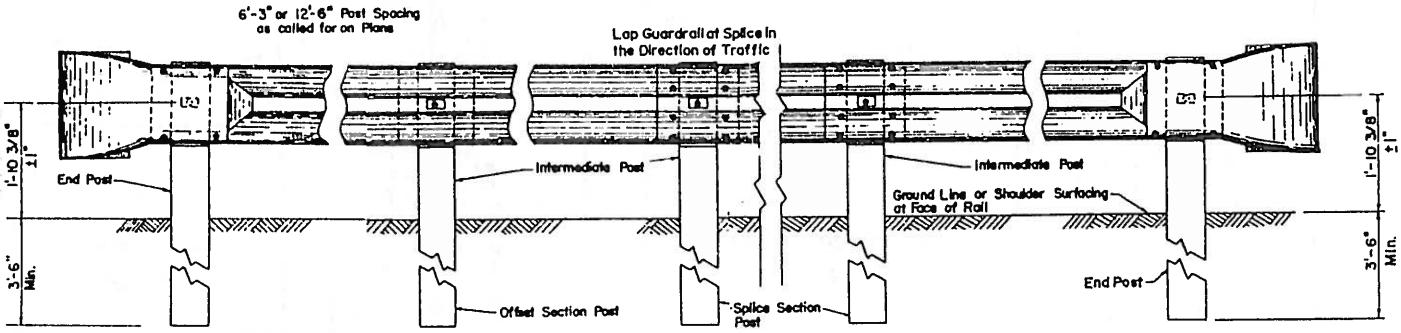
SECTION "A-A"



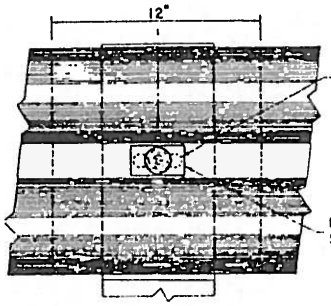
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 29, 1980 COUNTY ENGINEER	**WHEELCHAIR SIDEWALK RAMP**	REVISIONS:	DETAIL No. R -24



PLAN

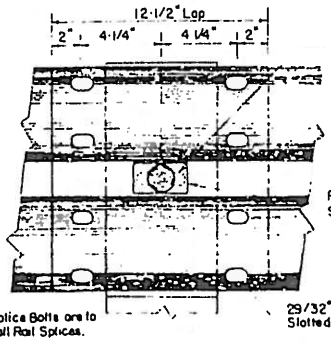


ELEVATION



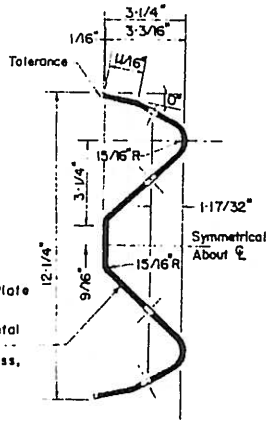
NOTE: Offset Section the same as Rail Element Section.

OFFSET SECTION

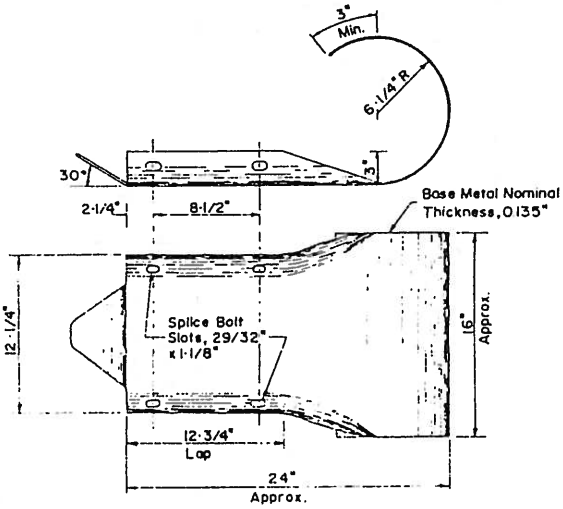


Eight (8) Splice Bolts are to be used at all Rail Splices.

RAIL SPLICE

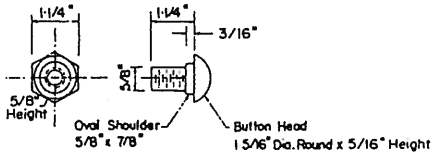


SECTION RAIL ELEMENT



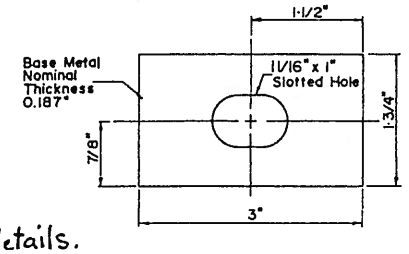
TERMINAL SECTION BUFFER END

(For Use Only on Unanchored Ends And on Special Trailing End Terminal)



NUT SPLICE BOLT

POST BOLT: Similar Except Length

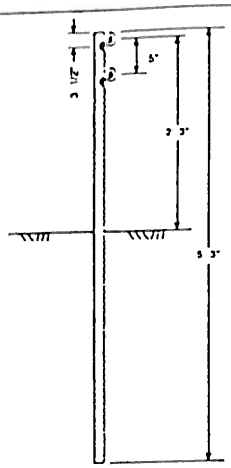


RECTANGULAR PLATE STEEL WASHER

Notes:

1. See WVDOH Standard Sheet G.R.1 for other details.
2. Anchored ends may be required per WVDOH standards.

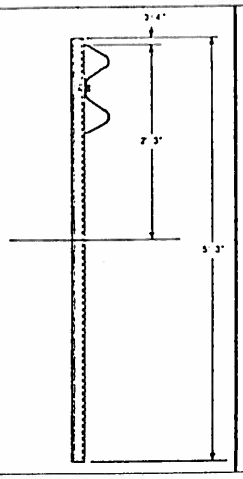
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: July 10, 1989 COUNTY ENGINEER	**W-BEAM GUARDRAIL**	REVISIONS:	DETAIL No. R-25



FRACTIONAL SERVICE LEVEL

OPTION A

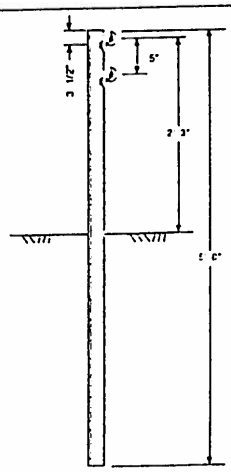
Beam:	2ea. 3/4 in cables
Post:	4 #/ft Steel Hat Section
Post Spacing:	16 ft - 0 in
Bolt:	5/16 in dia.



FRACTIONAL SERVICE LEVEL

OPTION C

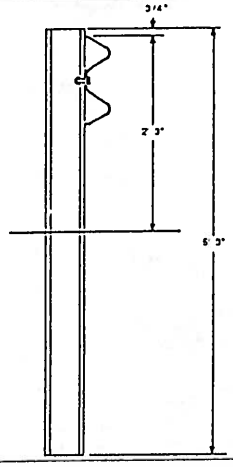
Beam:	12 ga. W-beam
Post:	4 #/ft Steel Hat Section
Post Spacing:	12 ft - 6 in
Bolt:	5/16 in dia.



FRACTIONAL SERVICE LEVEL

OPTION A (ALT)

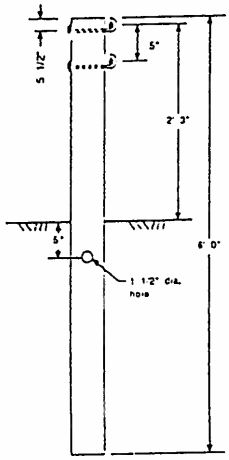
Beam:	2ea. 3/4 in cables
Post:	S3 X 5.7 Steel
Post Spacing:	16 ft - 0 in
Bolt:	5/16 in dia.



FRACTIONAL SERVICE LEVEL

OPTION C (ALT)

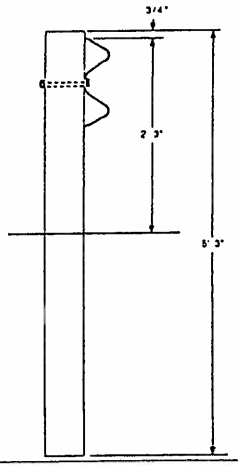
Beam:	12 ga. W-beam
Post:	S3 x 5.7
Post Spacing:	12 ft - 6 in
Bolt:	5/16 in dia.



FRACTIONAL SERVICE LEVEL

OPTION B

Beam:	2ea. 3/4 in cables
Post:	5 1/2 in dia. wood
Post Spacing:	16 ft - 0 in
Bolt:	5/16 in dia.



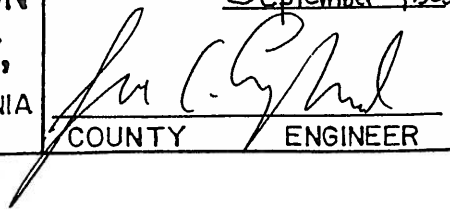
FRACTIONAL SERVICE LEVEL

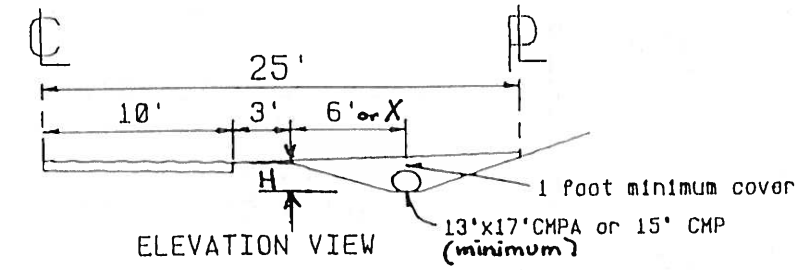
OPTION D

Beam:	12 ga. W-beam
Post:	5 1/2 in dia. wood
Post Spacing:	12 ft - 6 in
Bolt:	5/16 in dia.

These options may be used on low volume, low speed roads.

Source: National Cooperative Highway Research Program
Transportation Research Board

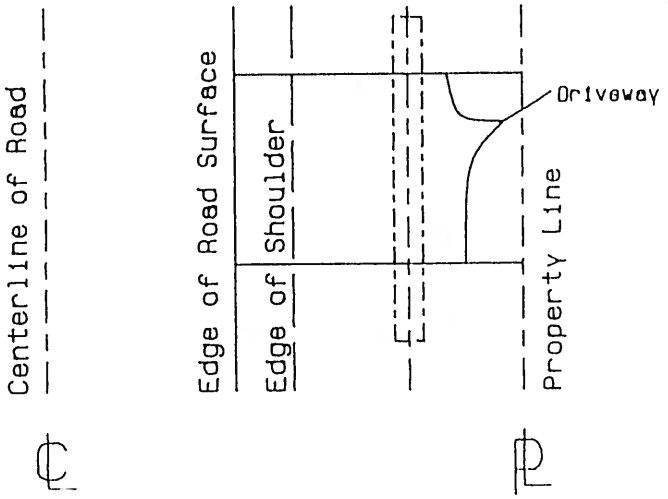
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: September 8, 1989  COUNTY ENGINEER	LOW SERVICE LEVEL GUARDRAIL	REVISIONS:	DETAIL No. R-26



ELEVATION VIEW

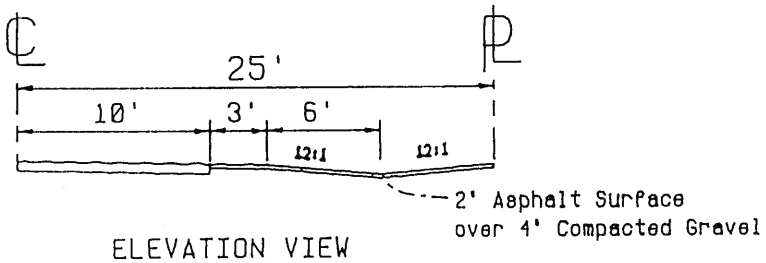
CULVERT SIZE	X *	H MIN.	Q MAX.
13" X 17"	6'	1.50'	4.5 C.F.S.
15" X 21"	6'	1.50'	7.0 C.F.S.
18" X 24"	7'	1.75'	10.0 C.F.S.

* Where the existing ditch line was established based on an old or no typical section, the distance should coincide with the actual ditch line.

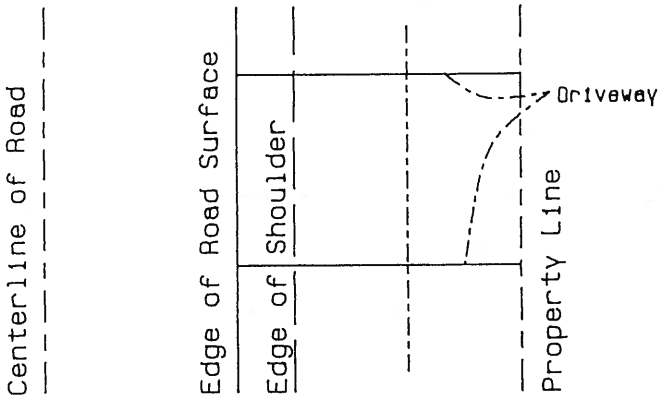


PLAN VIEW

DRIVEWAY CULVERT



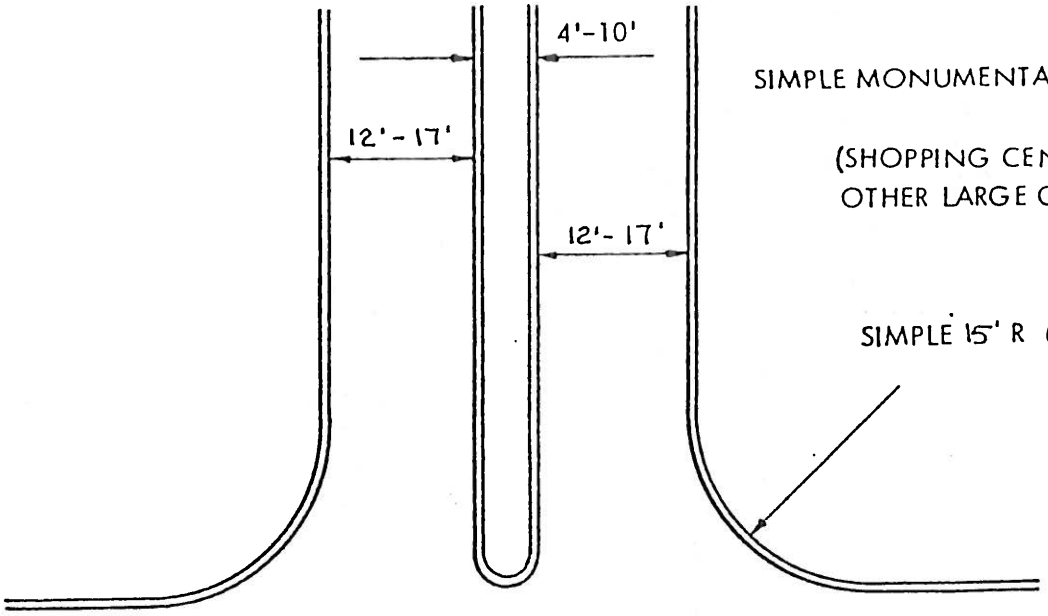
ELEVATION VIEW



PLAN VIEW

DRIVEWAY SWALE

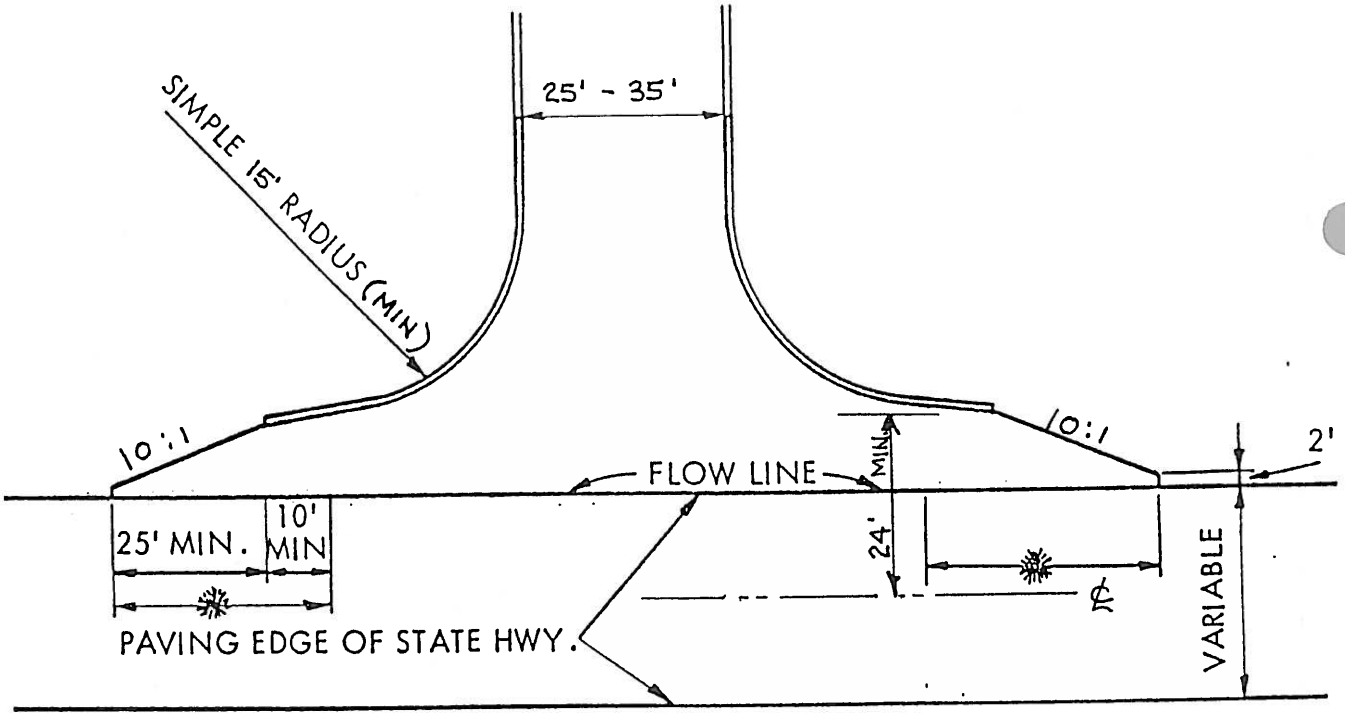
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 29, 1989 COUNTY ENGINEER	OPEN SECTION RESIDENTIAL DRIVEWAY	REVISIONS: December 6, 1990 Jan. 25, 1995	DETAIL No. R -31



SIMPLE MONUMENTAL ENTRANCE

(SHOPPING CENTER OR OTHER LARGE GENERATORS)

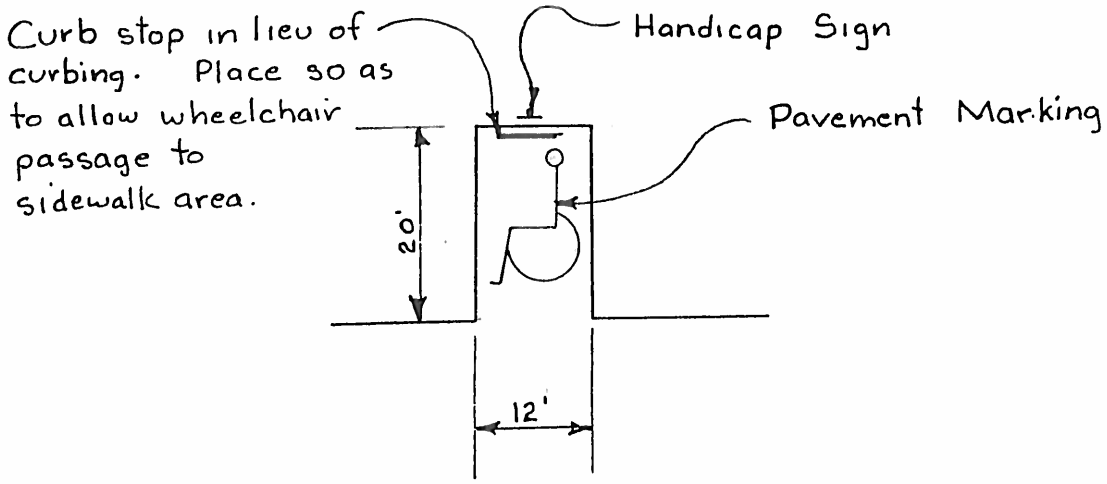
SIMPLE 15' R (MIN)



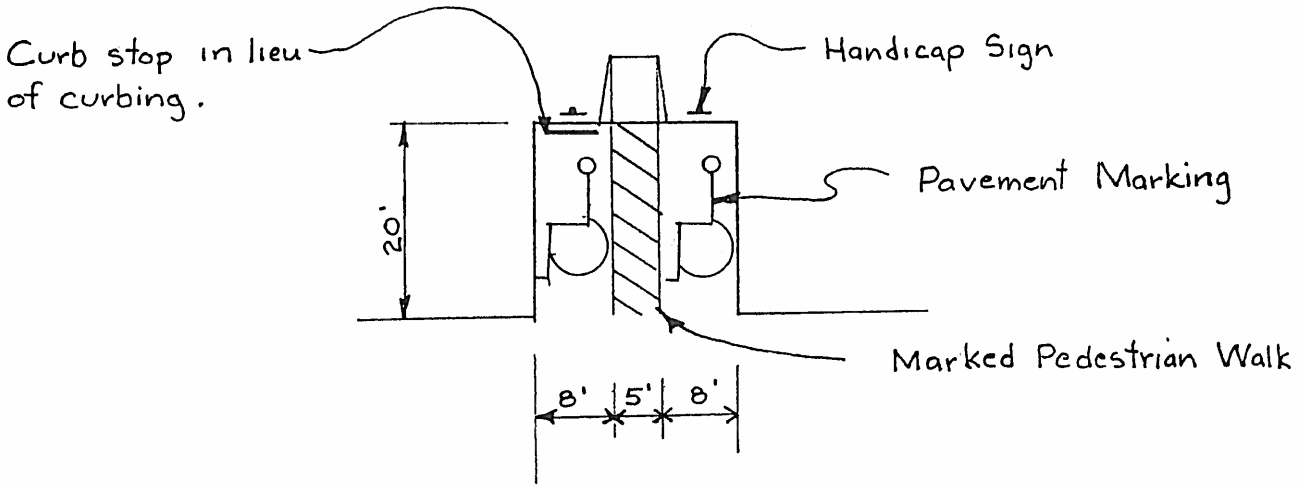
MINIMUM DESIGN STANDARDS

✱ ACTUAL LENGTH TO BE BASED ON DESIGN SPEED AND IN ACCORDANCE TO AASHTO STANDARDS FOR ACCELERATION AND DECELERATION LANES..

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 30, 1989 COUNTY ENGINEER	COMMERCIAL ENTRANCE	REVISIONS:	DETAIL No. R-32

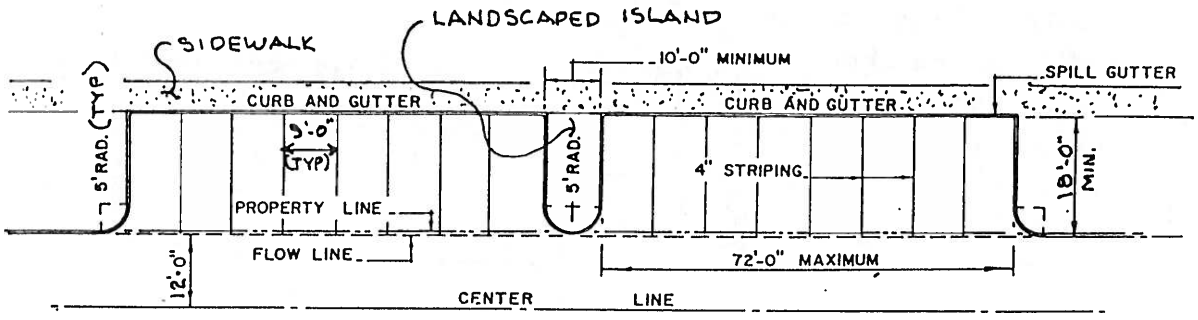


SINGLE SPACE

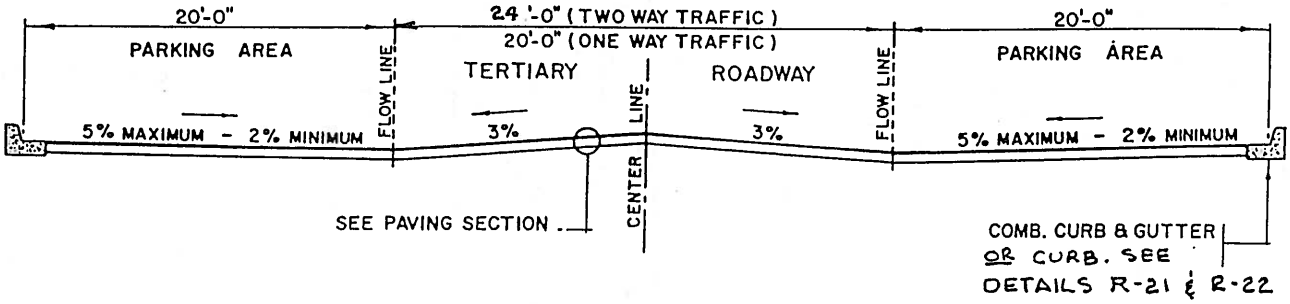


MULTIPLE SPACE

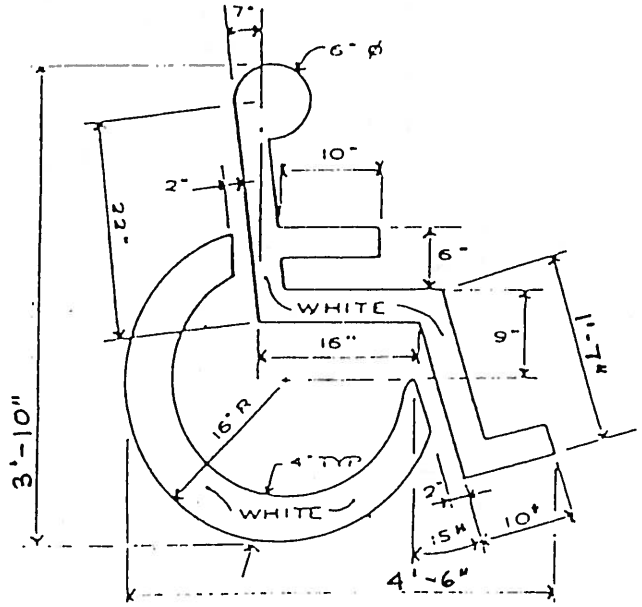
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 30, 1990 COUNTY ENGINEER	HANDICAPPED PARKING	REVISIONS:	DETAIL No. R -41



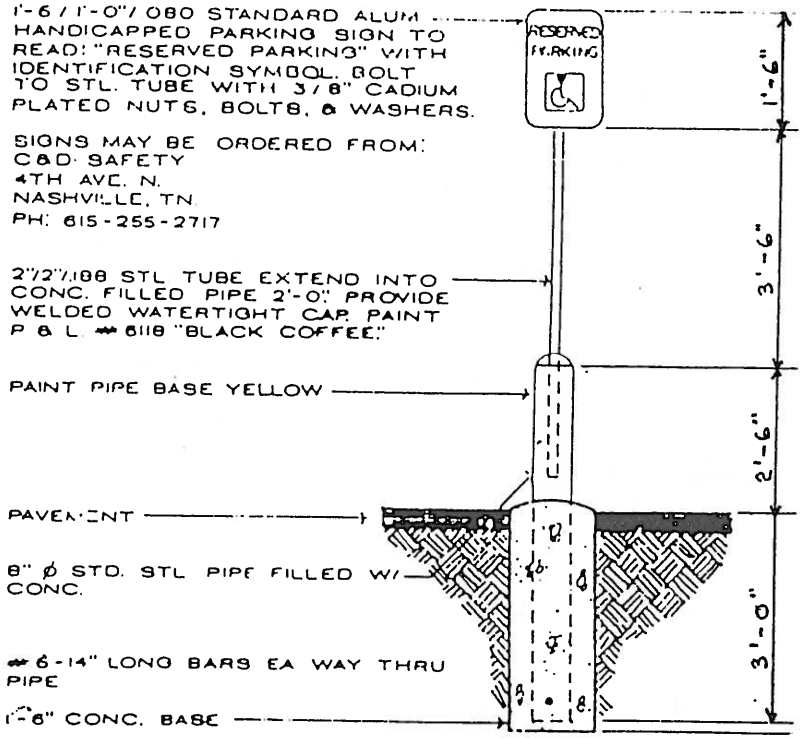
PLAN VIEW



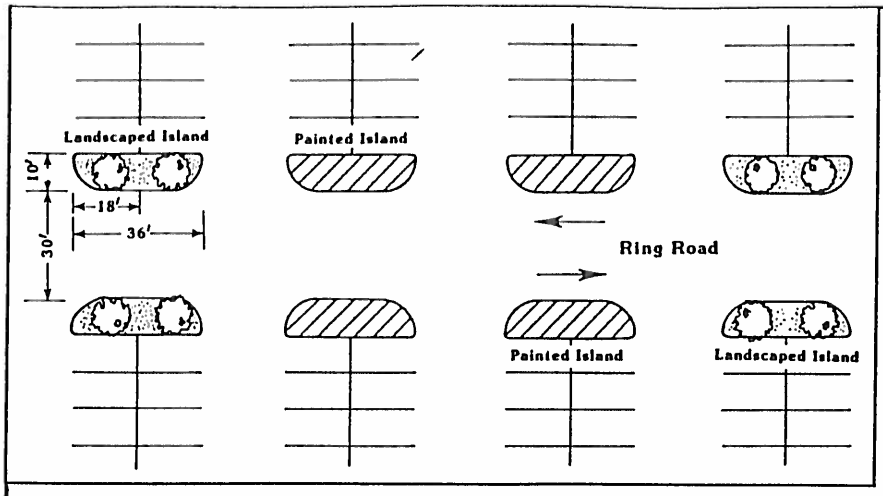
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 30, 1989 COUNTY ENGINEER	TOWNHOUSE PARKING	REVISIONS:	DETAIL No. R-42



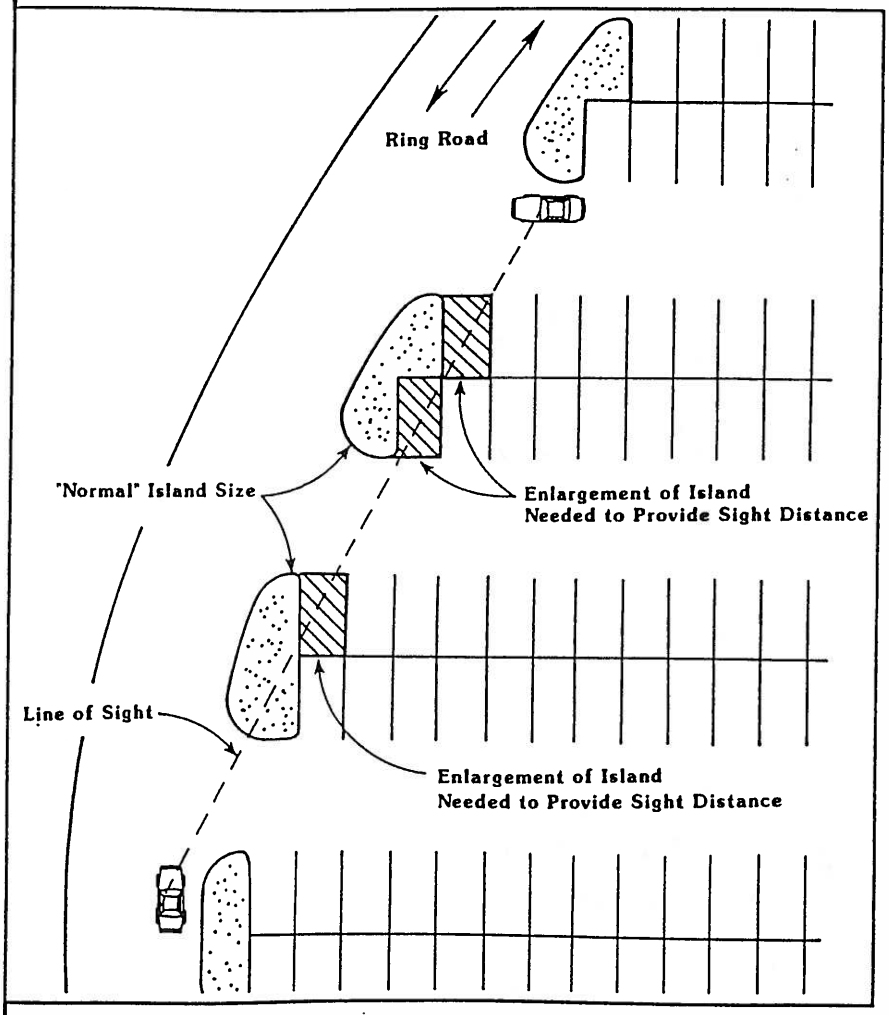
HANDICAPPED PARKING SPACE SYMBOL



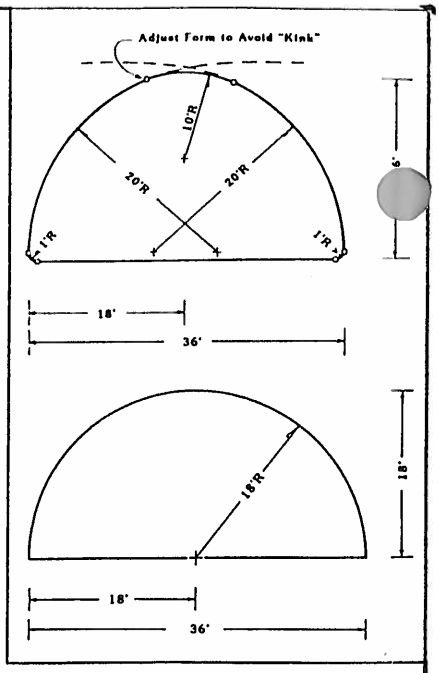
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: July 27, 1989 COUNTY ENGINEER	**HANDICAPPED PARKING SIGN AND MARKING**	REVISIONS:	DETAIL No. R - 43



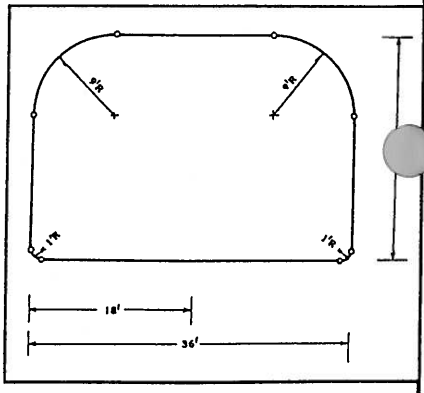
Landscaped end islands used for roadway delineation.



A schematic representation of the sight distance problem on a ring road with a horizontal curve.



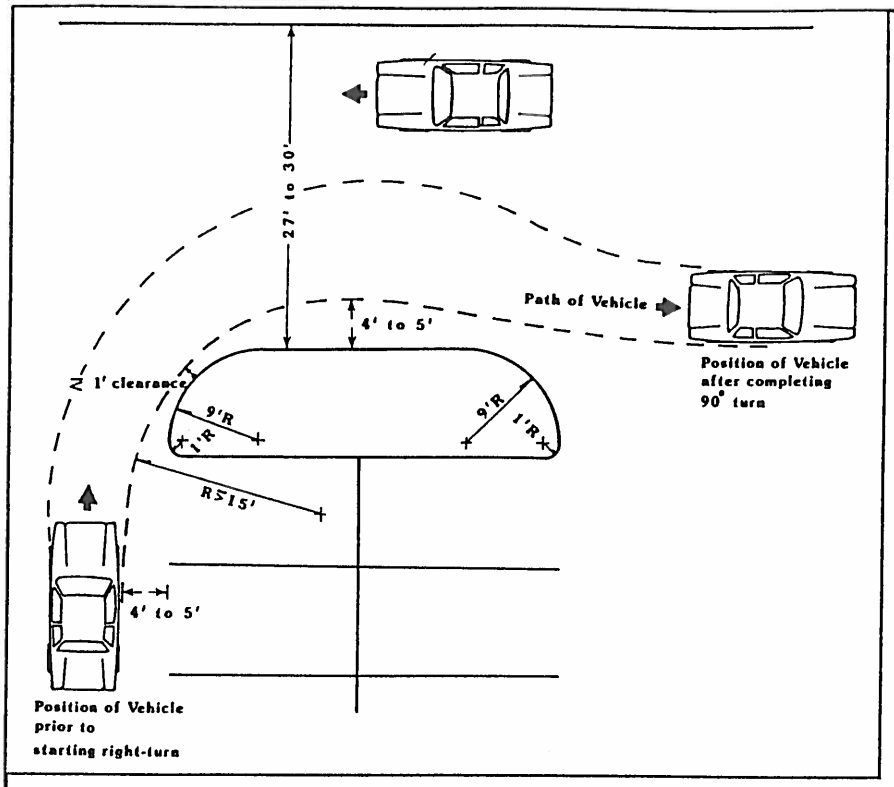
End island dimensions for 18-foot parking stalls: suggested compound curb radii design (*top*), and simple curb radius design (*bottom*).



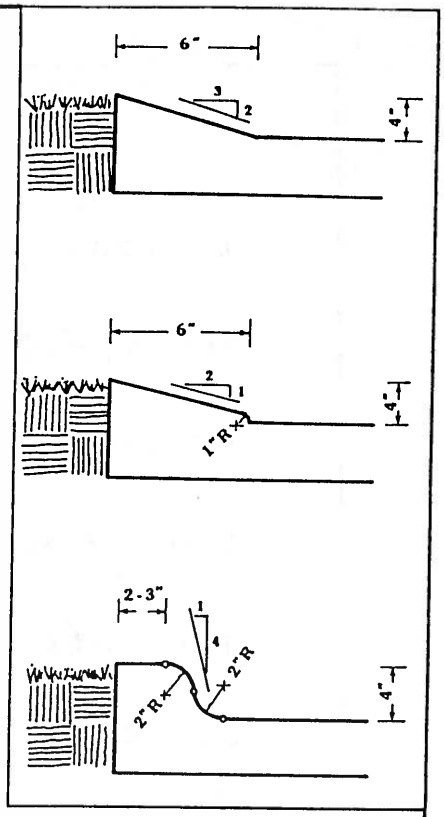
Dimensions of an extra wide end island with traditional radii.

Source: Stover, V. G. and Koepke, Frank J. "End Islands as an Element of Site Design", ITE Journal, Nov, 1989

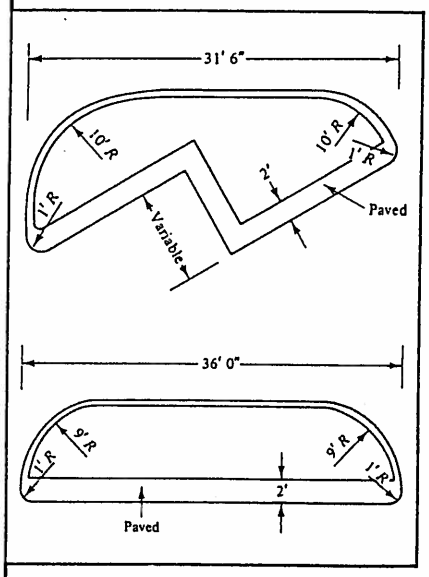
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: Nov. 27, 1989 COUNTY ENGINEER	end islands in parking lots	REVISIONS:	DETAIL No. R-44A



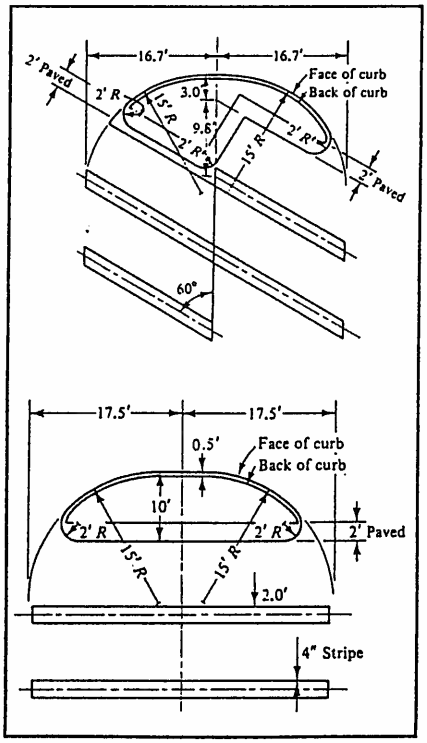
Vehicle trajectory when curb radius is less than the minimum turn radius of the vehicle.



Suggested curb designs for end islands.



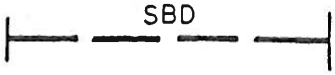
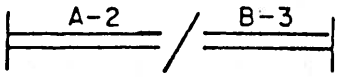
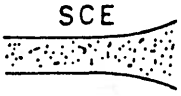
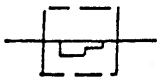
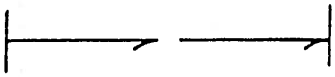
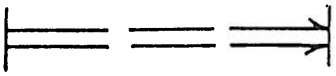
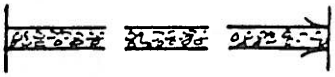
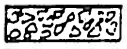
Dimensions for typical end islands for 60-degree parking (*top*) and 90-degree parking (*bottom*).[1]

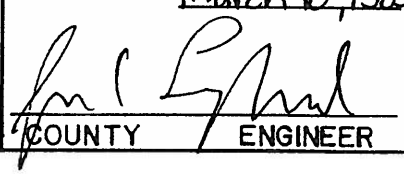


Dimensions for modified end islands to increase curb radius for 60-degree parking (*top*) and 90-degree parking (*bottom*).[1]

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: Nov. 27, 1989 COUNTY ENGINEER	end islands in parking lots	REVISIONS:	DETAIL No. R -44B

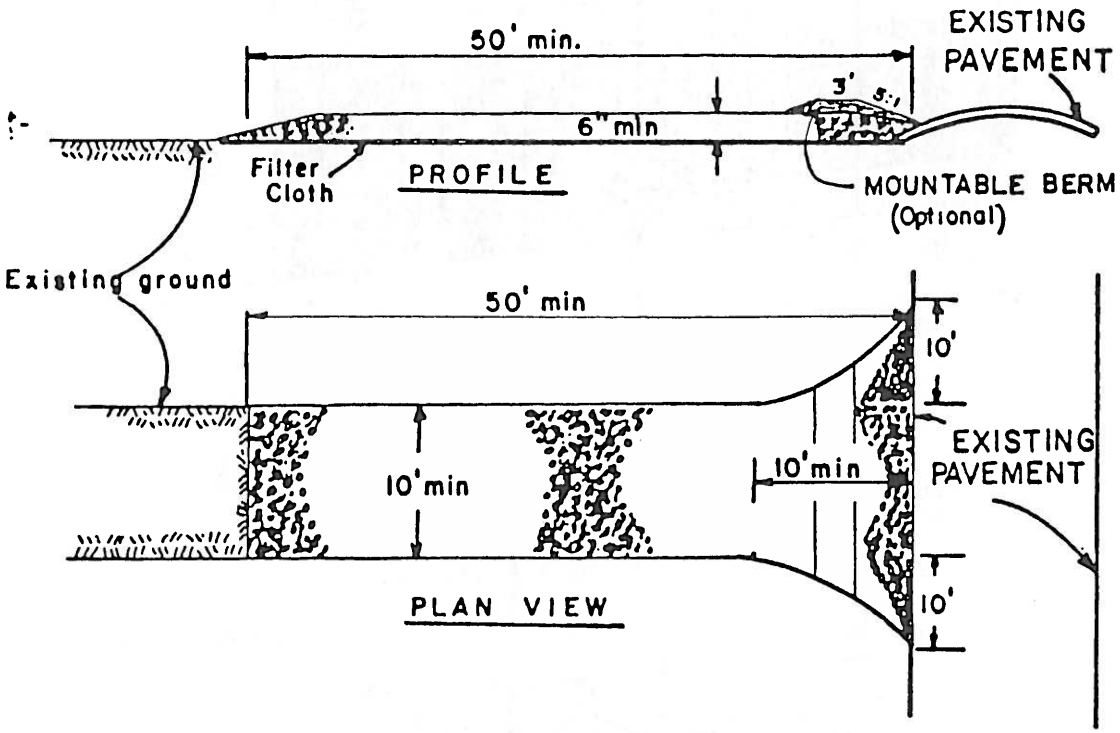
LIST OF STANDARD SYMBOLS

Earth Dike	
Straw Bale Dike	
Silt Fence	
Temporary Swale	
Stabilized Construction Entrance	
Grade Stabilization Structure	GSS-2 PSD-12
Pipe Slope Drain	GSS-3 PSD-12
Perimeter Dike/Swale	
Inlet Protection	
Diversion	
Grassed Waterway	
Lined Waterway	
Rock Outlet Protection	
Subsurface Drain	

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989  COUNTY ENGINEER	LIST OF STANDARD SYMBOLS	REVISIONS:	DETAIL No. SC-01

STABILIZED CONSTRUCTION ENTRANCE
not to scale

STANDARD SYMBOL SCE

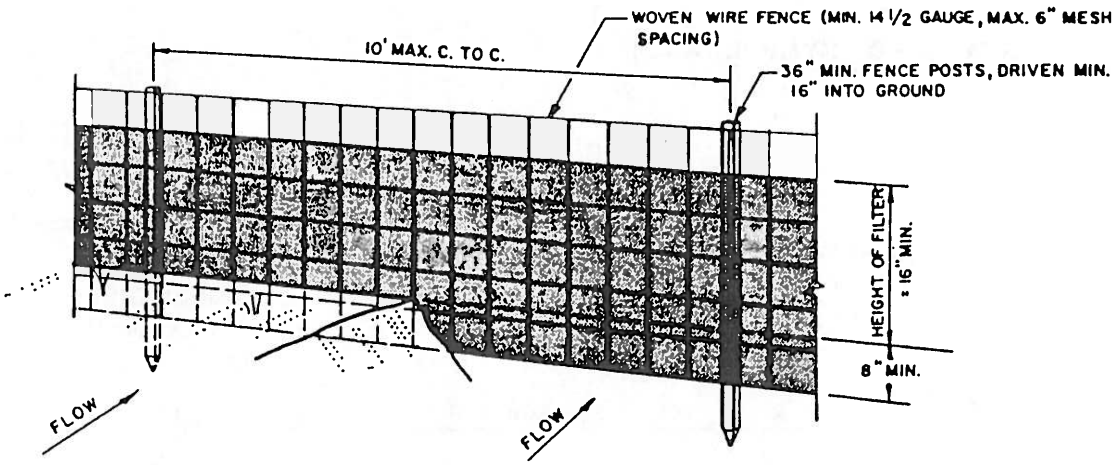


CONSTRUCTION SPECIFICATIONS

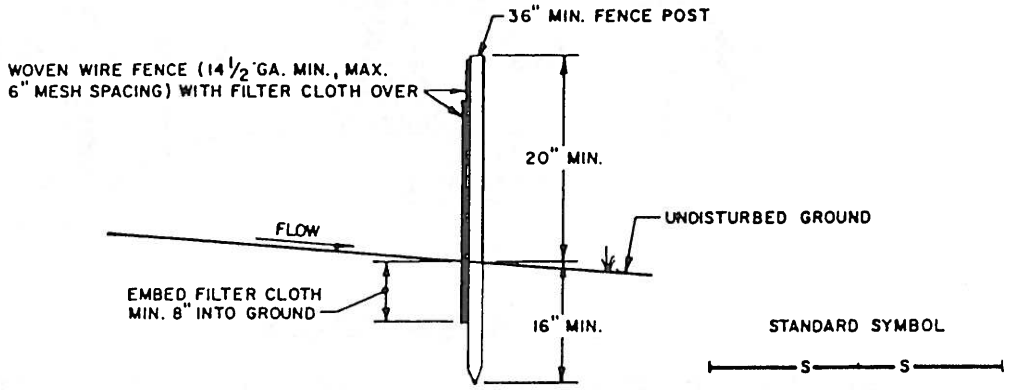
1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Filter Cloth - Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	STABILIZED CONSTRUCTION ENTRANCE	REVISIONS:	DETAIL No. SC-10

SILT FENCE



PERSPECTIVE VIEW



SECTION

CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD.

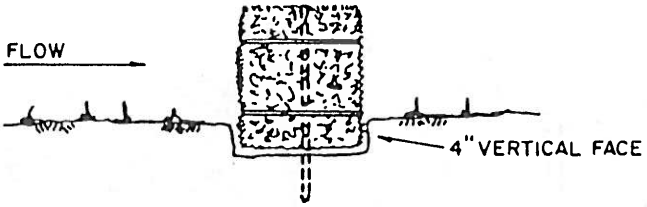
FENCE: WOVEN WIRE, 14 Ga., 6" Max. MESH OPENING.

FILTER CLOTH: FILTER X, MIRAFI 100X, STABI-LINKA T140N OR APPROVED EQUAL.

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	SILT FENCE	REVISIONS	DETAIL No. SC-11

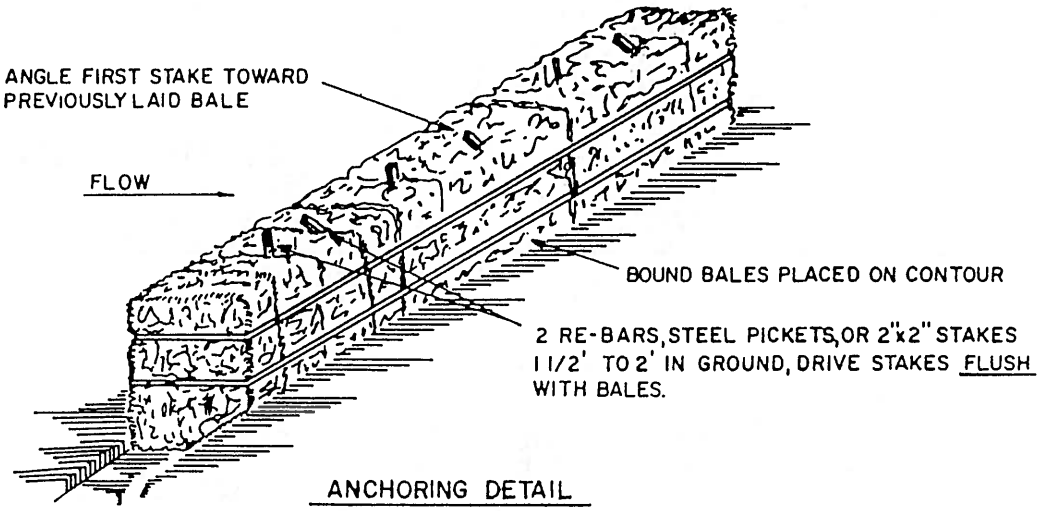
STRAW BALE DIKE



BEDDING DETAIL

STANDARD SYMBOL

SBD



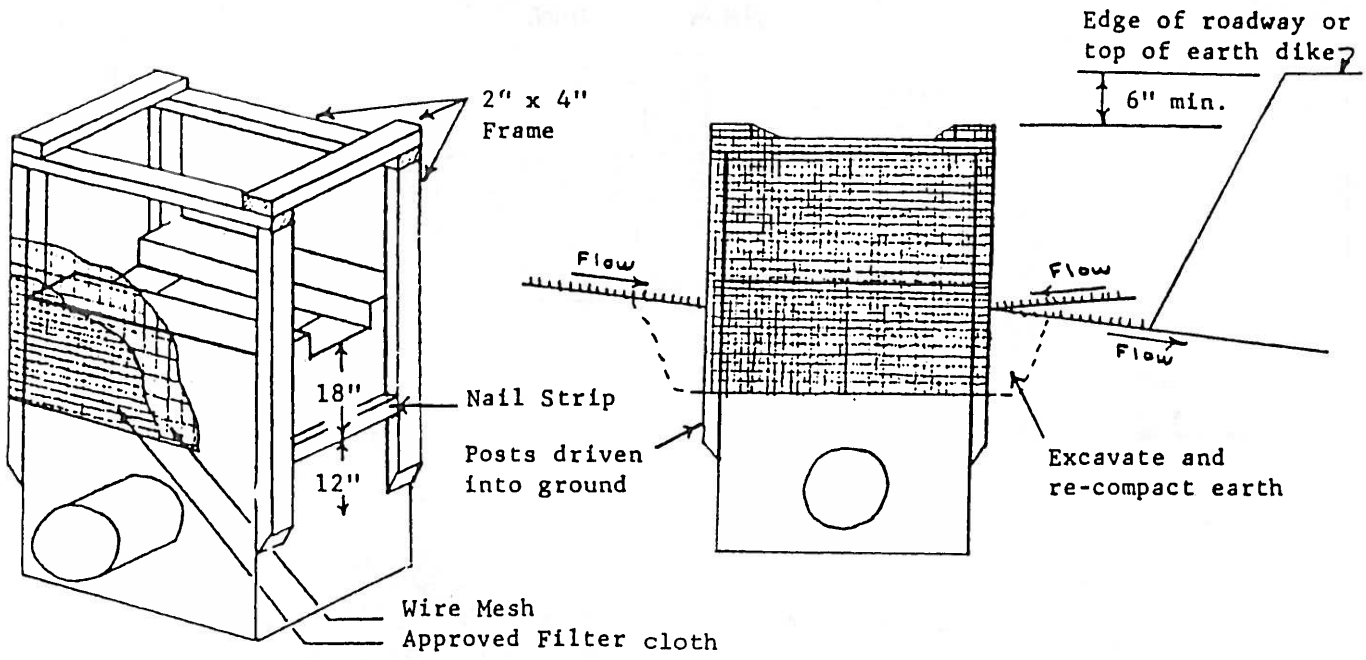
ANCHORING DETAIL

CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

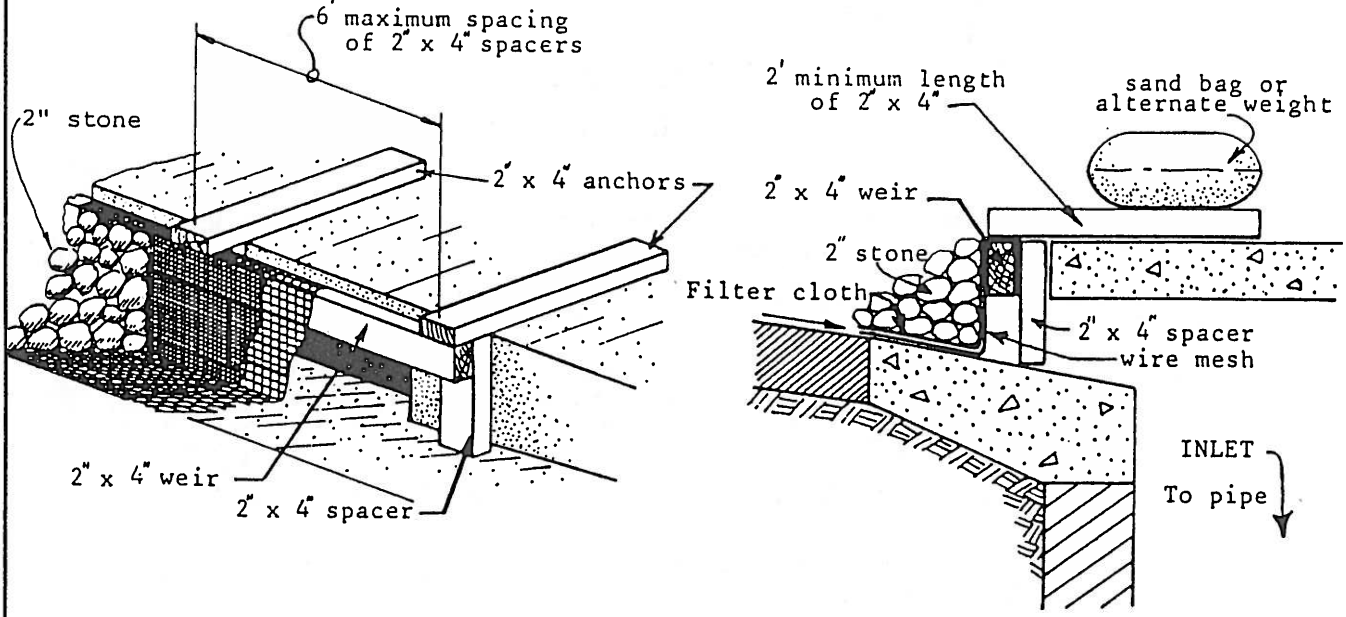
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	STRAW BALE DIKE	REVISIONS:	DETAIL No. SC-12

SWALE INLET PROTECTION DETAIL



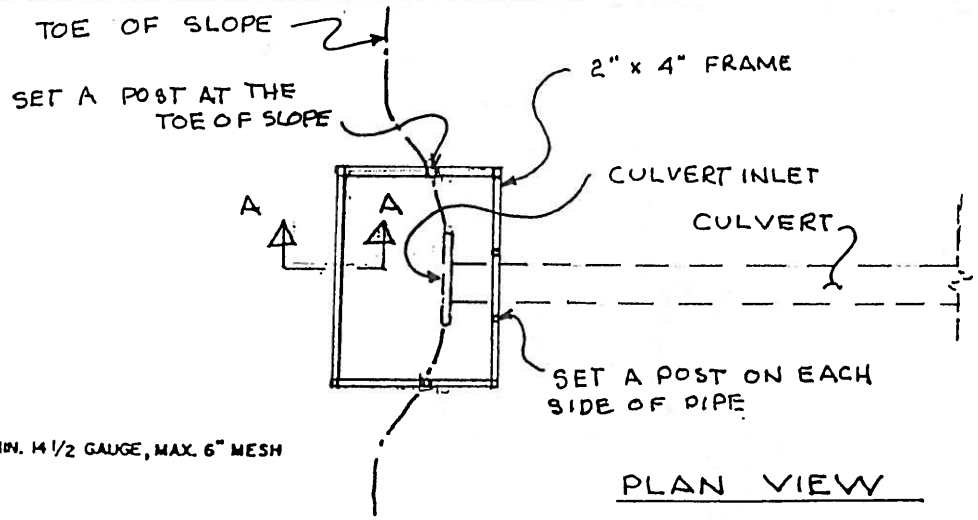
STANDARD SYMBOL

CURB INLET PROTECTION DETAIL

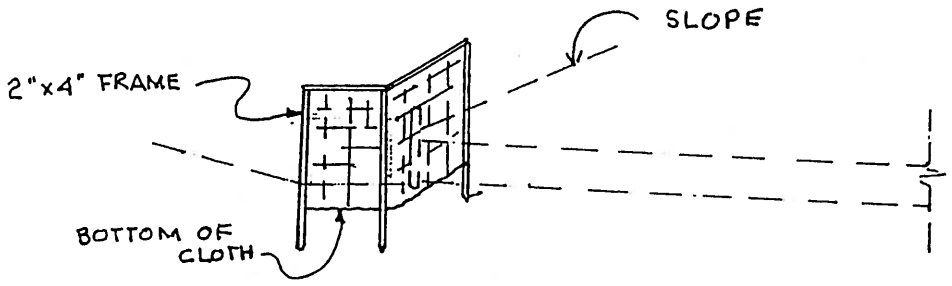


STANDARD SYMBOL

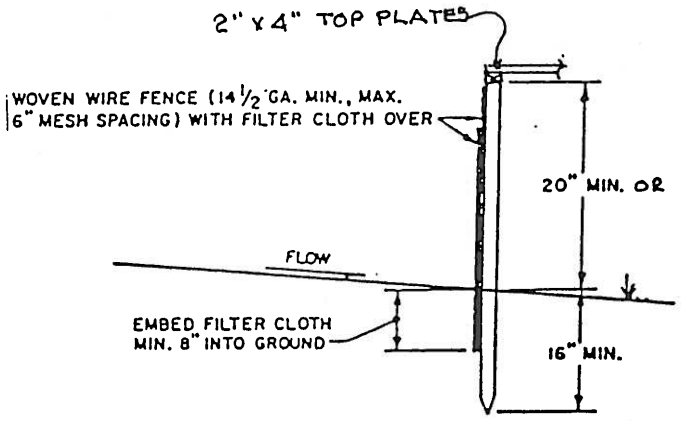
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1980 COUNTY ENGINEER	INLET PROTECTION DETAIL	REVISIONS:	DETAIL No. SC -13



PLAN VIEW



ELEVATION VIEW



SECTION A-A

POSTS: 2" x 4"

FENCE: WOVEN WIRE, 14 Ga., 6" Max. MESH OPENING.

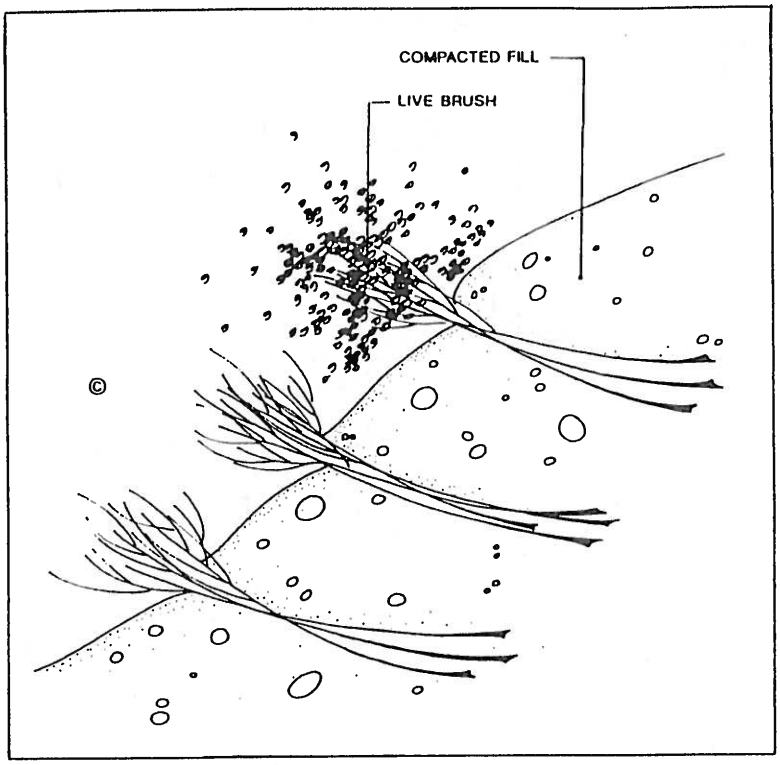
FILTER CLOTH: FILTER X, MIRAFI 100X, STABI-LINKA T140N OR APPROVED EQUAL.

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

CONSTRUCTION NOTES

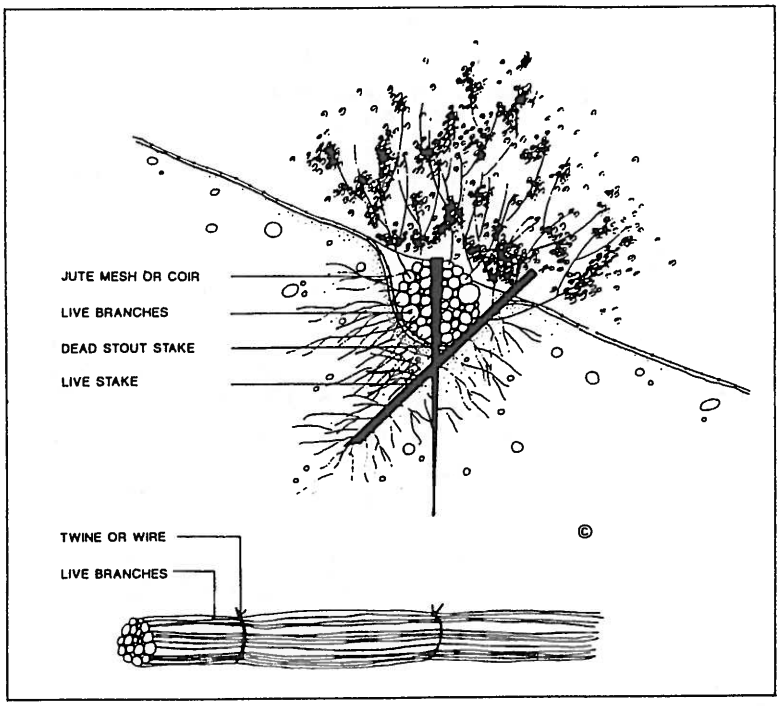
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN BULGES DEVELOP.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 31, 1980 COUNTY ENGINEER	**CULVERT INLET PROTECTION DEVICE**	REVISIONS:	DETAIL No. SC -14



Schematic representation of a brushlayer fill installation.

Live fascine with jute or coir. Rooted/leafed condition of the living plant material is not representative at time of installation.

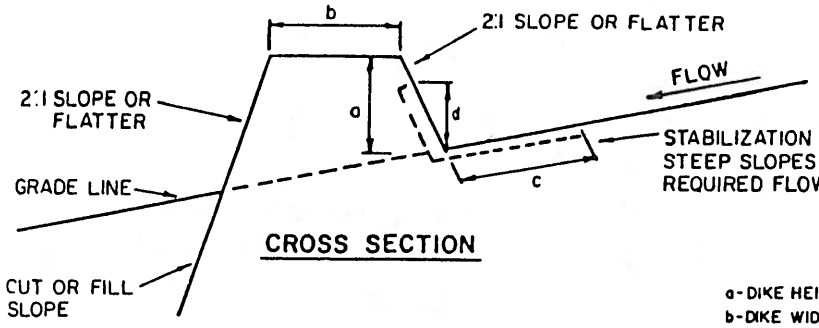


Source: Public Works, Dec. 1989

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: 12-28-89 COUNTY ENGINEER	brushlayer slope stabilization	REVISIONS:	DETAIL No. SC -15

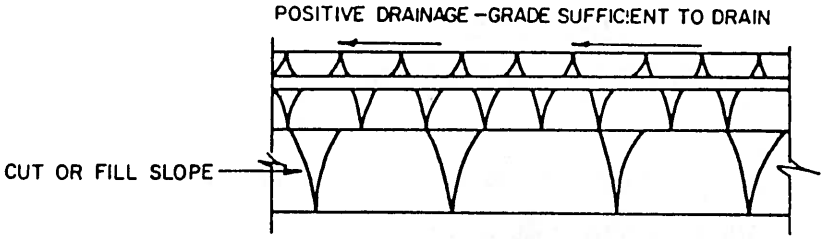
EARTH DIKE

not to scale



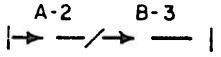
CROSS SECTION

	DIKE A (5 ac. or less)	DIKE B (5-10 ac.)
a-DIKE HEIGHT	18"	36"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	8"	15"



STANDARD SYMBOL

A-2 B-3



CONSTRUCTION SPECIFICATIONS

1. ALL DIKES SHALL BE COMPACTED BY EARTH-MOVING EQUIPMENT.
2. ALL DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED SAFE OUTLET.
5. EARTH DIKES SHALL HAVE AN OUTLET THAT FUNCTIONS WITH A MINIMUM OF EROSION. RUNOFF SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE SUCH AS A SEDIMENT TRAP OR SEDIMENT BASIN WHERE EITHER THE DIKE CHANNEL OR THE DRAINAGE AREA ABOVE THE DIKE ARE NOT ADEQUATELY STABILIZED.
6. STABILIZATION SHALL BE: (A) IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR SEED AND STRAW MULCH OR STRAW MULCH IF NOT IN SEEDING SEASON, (B) FLOW CHANNEL AS PER THE CHART BELOW.

FLOW CHANNEL STABILIZATION

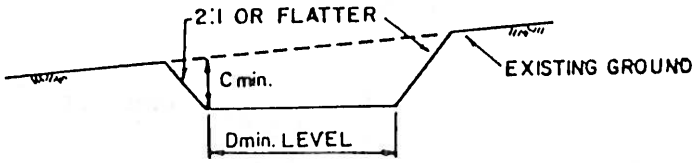
TYPE OF TREATMENT	CHANNEL GRADE	DIKE A	DIKE B
1	.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED USING JUTE, OR EXCELSIOR; SOD; 2" STONE
3	5.1-8.0%	SEED WITH JUTE, OR SOD; 2" STONE	LINED RIP-RAP 4-8"
4.	8.1-20%	LINED RIP-RAP 4-8"	ENGINEERING DESIGN

A. STONE TO BE 2 INCH STONE, OR RECYCLED CONCRETE EQUIVALENT, IN A LAYER AT LEAST 3 INCHES IN THICKNESS AND BE PRESSED INTO THE SOIL WITH CONSTRUCTION EQUIPMENT.
B. RIP-RAP TO BE 4-8 INCHES IN A LAYER AT LEAST 8 INCHES THICKNESS AND PRESSED INTO THE SOIL.
C. APPROVED EQUIVALENTS CAN BE SUBSTITUTED FOR ANY OF THE ABOVE MATERIALS.

7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

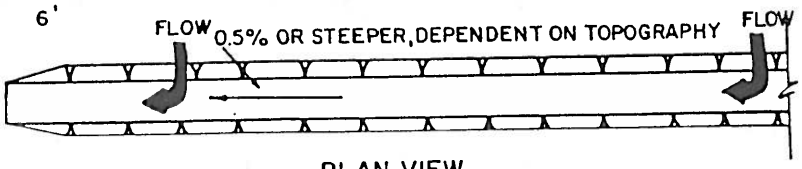
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1980 COUNTY ENGINEER	EARTH DIKE	REVISIONS:	DETAIL No. SC -21

TEMPORARY SWALE



CROSS SECTION

	SWALE A	SWALE B
C	1'	1'
D	4'	6'



OUTLET AS REQUIRED
SEE ITEM 8 BELOW

PLAN VIEW

STANDARD SYMBOL
A-2 B-3

CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY SWALES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED ON CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE SWALE.
8. STABILIZATION SHALL BE AS PER THE CHART BELOW:

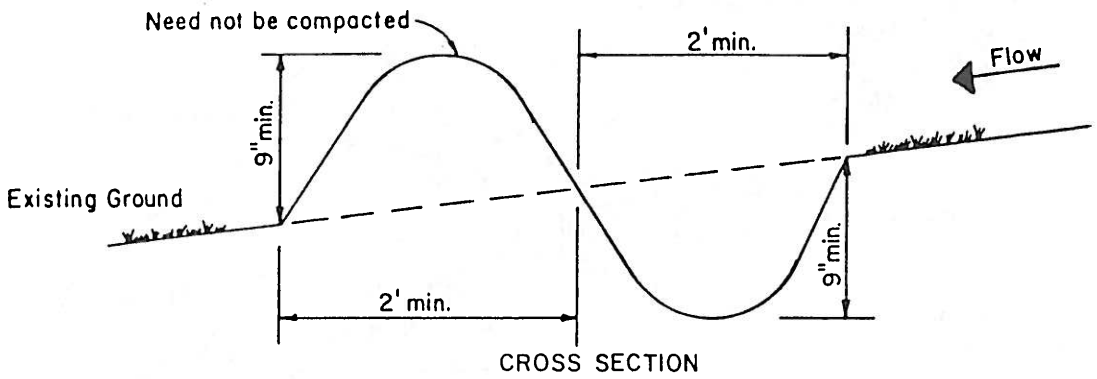
FLOW CHANNEL STABILIZATION

TYPE OF TREATMENT	CHANNEL GRADE	A (5 AC OR LESS)	B (5 AC - 10 AC)
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED USING JUTE OR EXCELSIOR
3	5.1-8.0%	SEED WITH JUTE OR EXCELSIOR; SOD	LINED RIP-RAP 4-8" RECYCLED CONCRETE EQUIVALENT
4	8.1-20%	LINED 4-8" RIP-RAP	ENGINEERED DESIGN

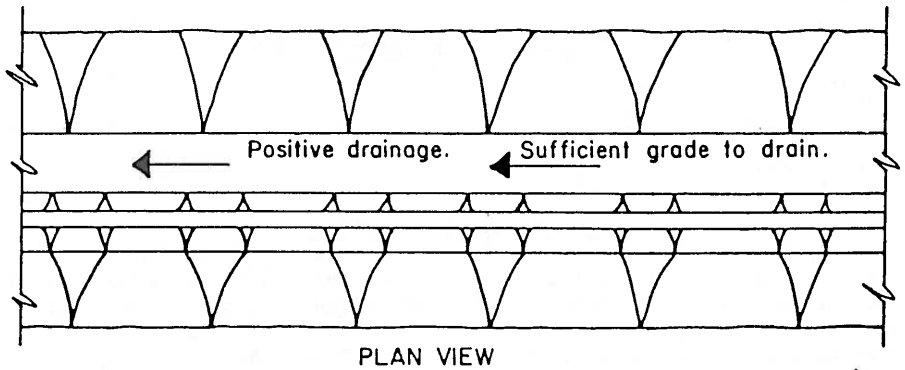
9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	TEMPORARY SWALE	REVISIONS:	DETAIL No. SC-22

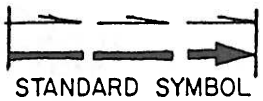
PERIMETER DIKE/SWALE
not to scale



CROSS SECTION



PLAN VIEW



STANDARD SYMBOL

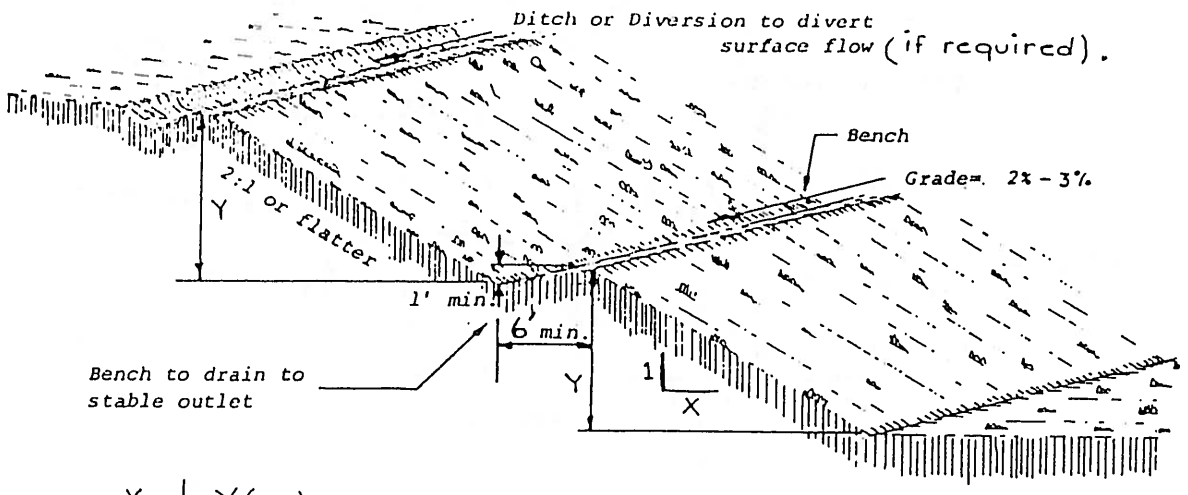
CONSTRUCTION SPECIFICATIONS

1. ALL PERIMETER DIKE/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTRUBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSION VELOCITY.
4. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED IN THE STANDARD.
5. STABILIZATION OF THE AREA DISTURBED BY THE DIKE AND SWALE SHALL BE DONE IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SEED AND STRAW MULCH, AND SHALL BE DONE WITHIN 10 DAYS.
6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

Max. Drainage Area Limit: 2 Acres

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1980 COUNTY ENGINEER	PERIMETER DIKE/SWALE	REVISIONS:	DETAIL No. SC -23

LANDGRADING



X	Y (MAX)
2	20'
3	30'
4	40'

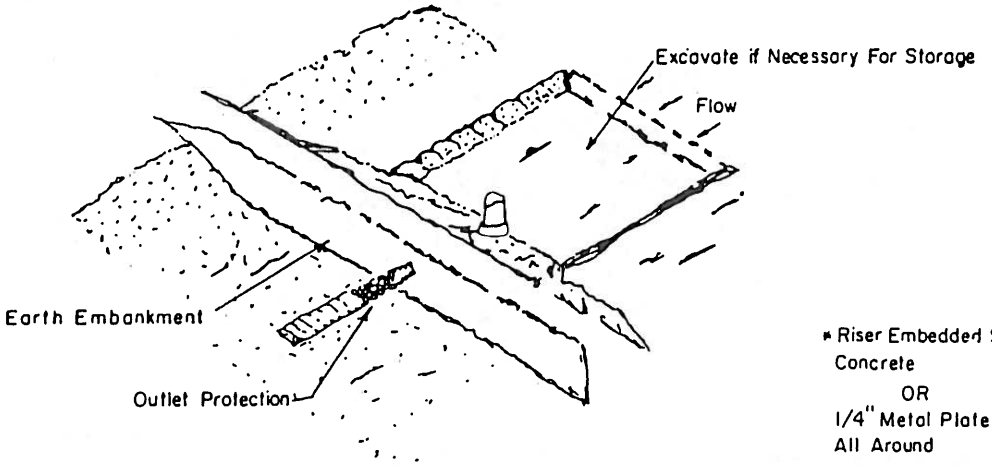
SLOPE DETAIL (WITH BENCH)

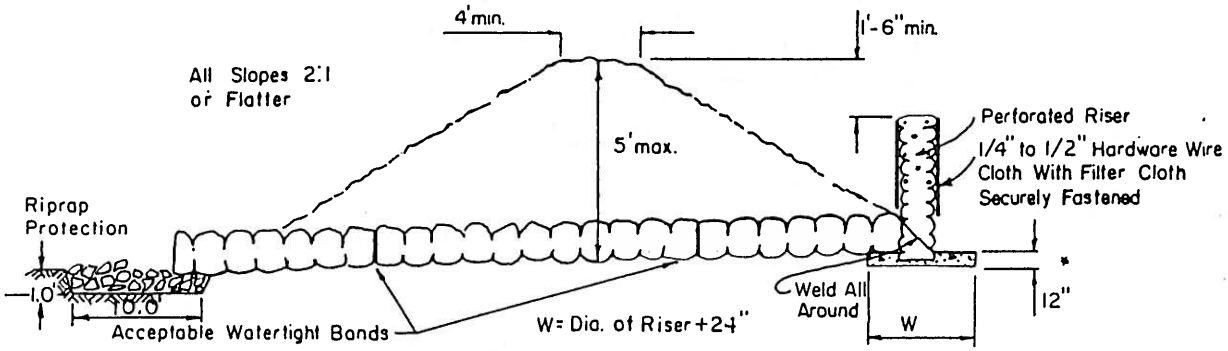
Construction Specifications

1. All graded or disturbed areas including slopes shall be protected during clearing and construction in accordance with the approved sediment control plan until they are permanently stabilized.
2. All sediment control practices and measures shall be constructed, applied and maintained in accordance with the approved sediment control plan and the "Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas".
3. Topsoil required for the establishment of vegetation shall be stockpiled in amount necessary to complete finished grading of all exposed areas.
4. Areas to be filled shall be cleared, grubbed and stripped of topsoil to remove trees, vegetation, roots or other objectionable material.
5. Areas which are to be topsoiled shall be scarified to a minimum depth of three inches prior to placement of topsoil.
6. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc., shall be compacted in accordance with local requirements or codes.
7. All fill to be placed and compacted in layers not to exceed 8 inches in thickness.
8. Except for approved landfills, fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills.
9. Frozen materials or soft, mucky or highly compressible materials shall not be incorporated into fills.
10. Fill shall not be placed on a frozen foundation.
11. All benches shall be kept free of sediment during all phases of development.
12. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specifications for Subsurface Drain or other approved method.
13. All graded areas shall be permanently stabilized immediately following finished grading.
14. Stockpiles, borrow areas and spoil areas shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	LANDGRADING	REVISIONS:	DETAIL No. SC -24

PIPE OUTLET SEDIMENT TRAP ST-1





EMBANKMENT SECTION THRU RISER

SIZES OF PIPE NEEDED

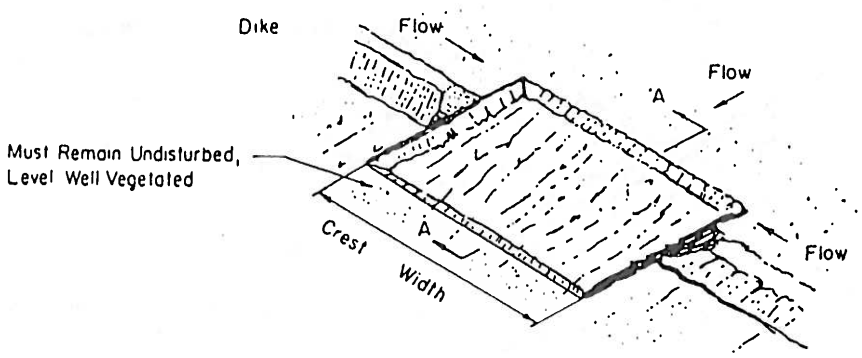
Barrel Diameter _____

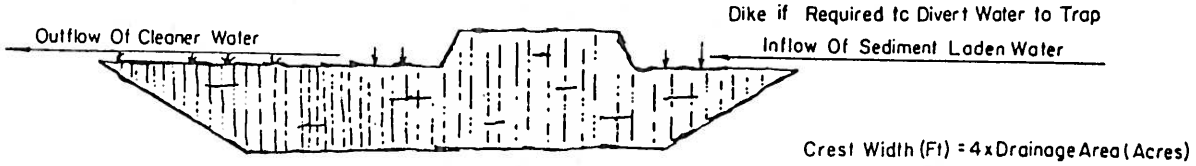
Riser Diameter _____

Max. Drainage Area: 5 Acres

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1980 COUNTY ENGINEER	PIPE OUTLET SEDIMENT TRAP	REVISIONS:	DETAIL No. SC -31

GRASS OUTLET SEDIMENT TRAP ST-II





SECTION A-A

EXCAVATED GRASS OUTLET SEDIMENT TRAP

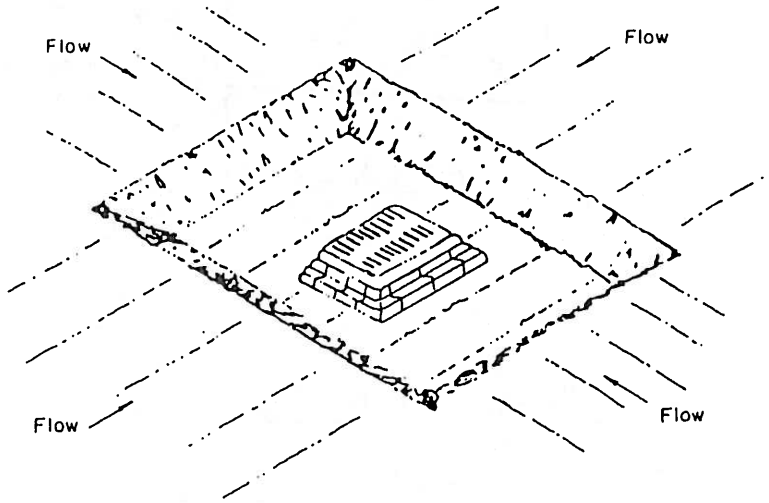
CONSTRUCTION SPECIFICATION FOR ST-II

1. Volume of sediment storage shall be 1800 cubic feet per acre of contributory drainage area.
2. Minimum crest width shall be 4 X Drainage Area.
3. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
4. The structure shall be inspected after each rain and repairs made as needed.
5. Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.
6. The sediment trap shall be removed and area stabilized when the remaining drainage area has been properly stabilized.
7. All cut slopes shall be 1:1 or flatter.

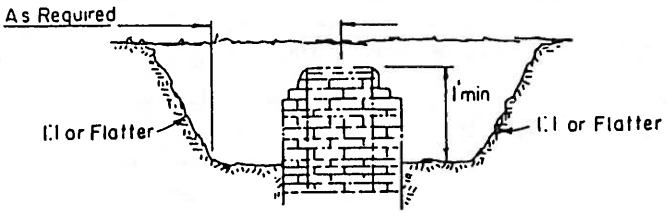
Maximum Drainage Area: 5 Acres

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1980 COUNTY ENGINEER	GRASS OUTLET SEDIMENT TRAP	REVISIONS:	DETAIL No. SC -32

STORM INLET SEDIMENT TRAP ST-III



YARD DRAIN



CROSS SECTION

CONSTRUCTION SPECIFICATION FOR ST-III

1. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

2. The volume of sediment storage shall be 1800 cubic feet per acre of contributory drainage.

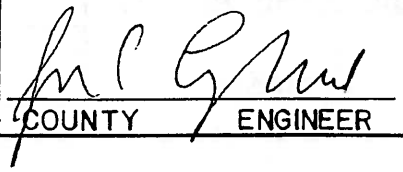
3. The structure shall be inspected after each rain and repairs made as needed.

4. Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.

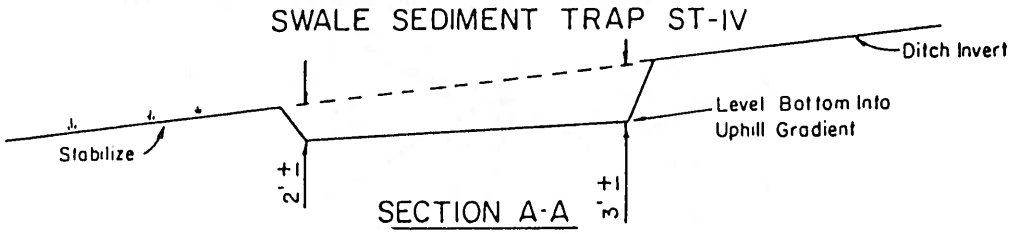
5. The sediment trap shall be removed and the area stabilized when the constructed drainage area has been properly stabilized.

6. All cut slopes shall be 1:1 or flatter.

Maximum Drainage Area: 3 Acres

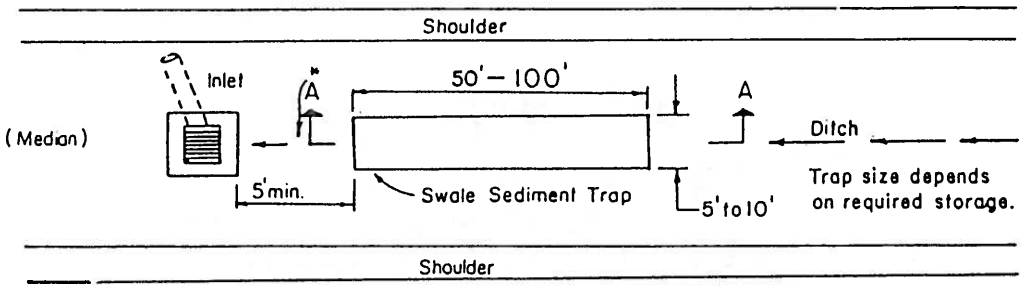
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989  COUNTY ENGINEER	STORM INLET SEDIMENT TRAP	REVISIONS:	DETAIL No. SC -33

SWALE SEDIMENT TRAP ST-IV



SECTION A-A

SWALE SEDIMENT TRAP



* To Remain Stabilized Or Covered With A 6" Lining Of 2" Stone

CONSTRUCTION SPECIFICATION FOR ST-IV

1. The swale sediment trap shall be constructed in accordance with the dimensions provided on the design drawings or sized to provide the minimum storage necessary 1800 cubic feet of storage for each acre of drainage area.

2. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

3. The structure shall be inspected after each rain and repairs made as needed.

4. Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.

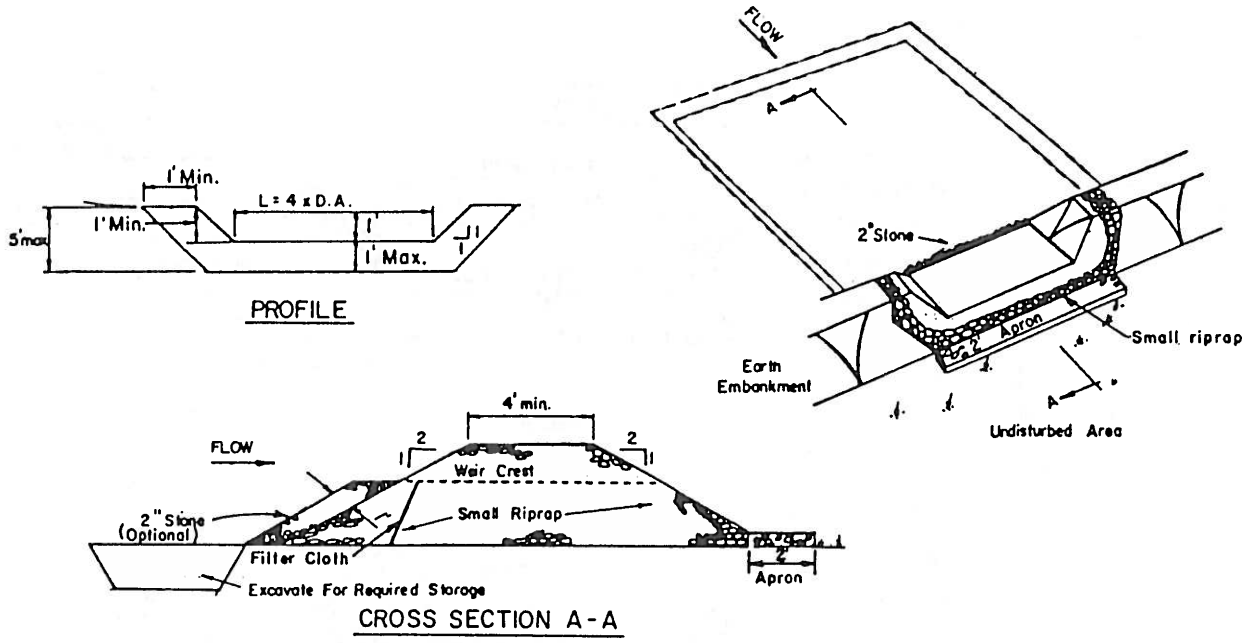
5. The sediment trap shall be removed and area stabilized when the contributory drainage area has been properly stabilized.

6. The swale sediment trap will be properly backfilled and the swale or ditch reconstructed.

Maximum Drainage Area: 2 Acres

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	SWALE SEDIMENT TRAP	REVISIONS:	DETAIL No. SC -34

STONE OUTLET SEDIMENT TRAP V



OPTION: A one foot layer of 2" stone may be placed on the upstream side of the riprap in place of the embedded filter cloth.

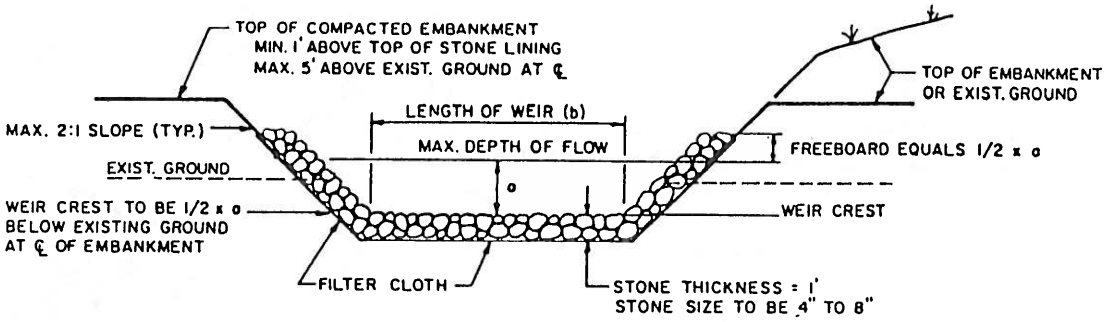
CONSTRUCTION SPECIFICATIONS FOR ST-V

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. All cut and fill slopes shall be 2:1 or flatter.
4. The stone used in the outlet shall be small riprap 4"-8" along with a 1' thickness of 2" aggregate placed on the up-grade side on the small riprap OR embedded filter cloth in the riprap.
5. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap.
6. The structure shall be inspected after each rain and repairs made as needed.
7. Construction operations shall be carried out in such a manner than erosion and water pollution is minimized.
8. The structure shall be removed and the area stabilized when the drainage area has been properly stabilized.

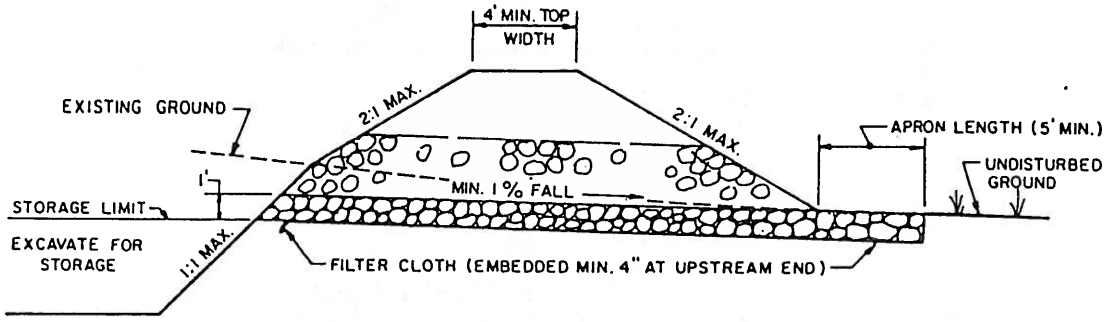
Maximum Drainage Area: 5 Acres

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 10, 1989 COUNTY ENGINEER	STONE OUTLET SEDIMENT TRAP	REVISIONS:	DETAIL No. SC-35

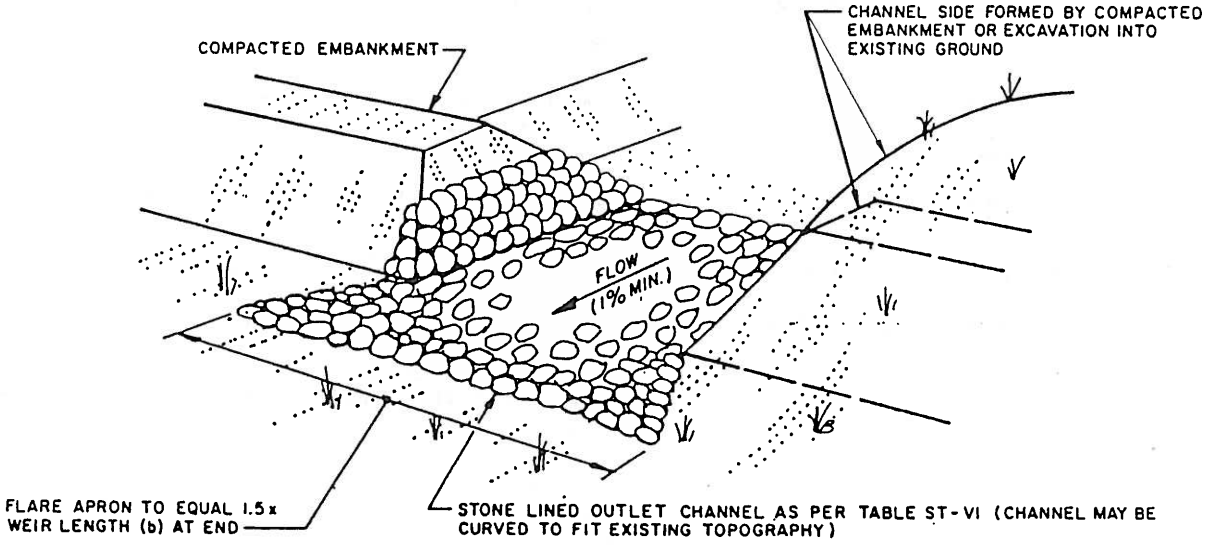
RIPRAP OUTLET SEDIMENT TRAP ST-VI



PROFILE



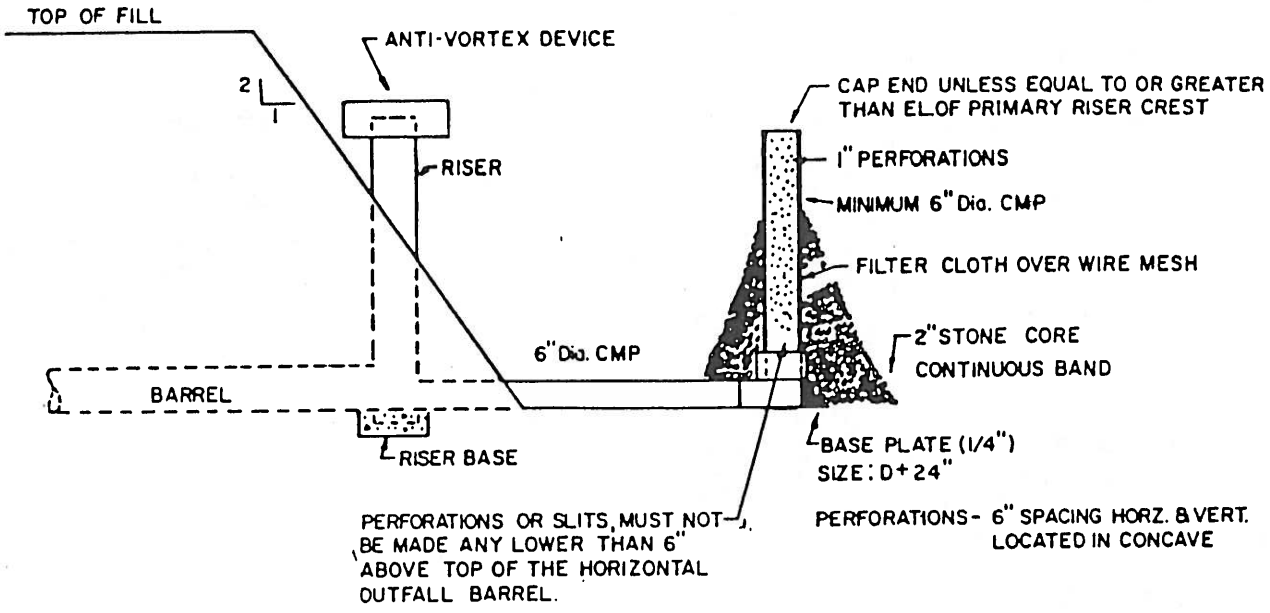
CROSS SECTION



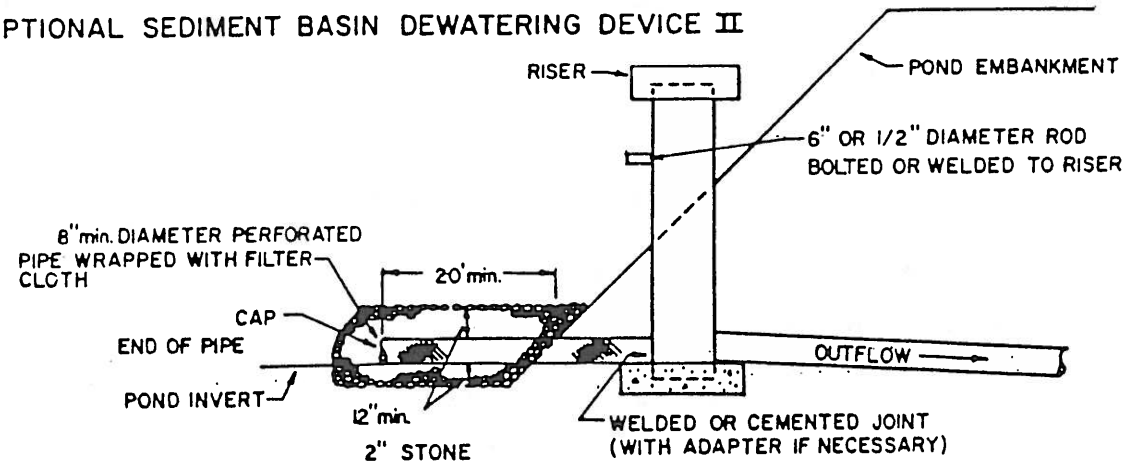
PERSPECTIVE VIEW

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 13, 1980 COUNTY ENGINEER	RIPRAP OUTLET SEDIMENT TRAP	REVISIONS:	DETAIL No. SC-36

OPTIONAL SEDIMENT BASIN DEWATERING DEVICE I
WITH 6" PERFORATED RISER



OPTIONAL SEDIMENT BASIN DEWATERING DEVICE II

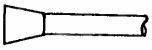


JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 22, 1980 COUNTY ENGINEER	SEDIMENT BASIN DEWATERING DEVICES	REVISIONS:	DETAIL No. SC -37

LIST OF STANDARD S.D. SYMBOLS

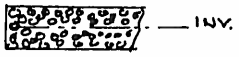
Endwall or Cutoff Wall

Flared End Section

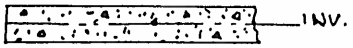


Storm Drain Pipe

Riprap

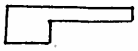


Concrete Channel



Drop Inlets

Curb Inlets



Shallow Manhole
(Rectangular)

Regular Manhole

Structure Call-Outs

Endwall

Manhole

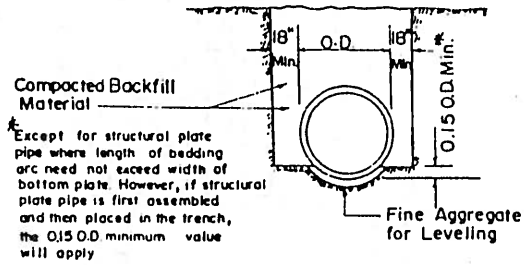
Inlet

Numbered from low end of storm drain line

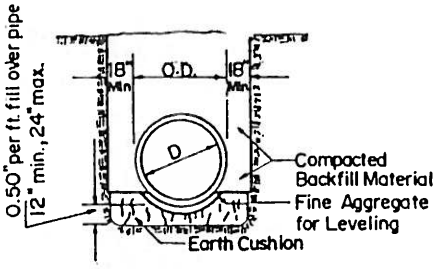
Ditch Invert

Arrow indicates direction of flow

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 16, 1989 COUNTY ENGINEER	STORM DRAIN SYMBOLS	REVISIONS:	DETAIL No. SD -01



Class B Bedding

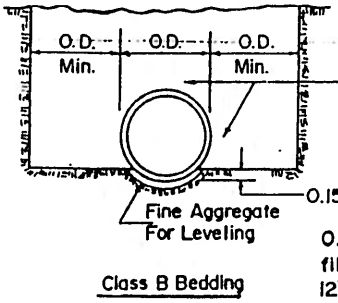


Class B Bedding
On Rock Foundation

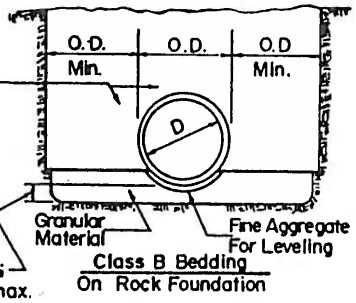
TYPICAL PIPE BEDDING

(Trench shown is for 18" thru 54" pipe)

For pipe without corrugations a one inch layer of fine aggregate for leveling will normally be adequate to achieve a uniform bearing surface. For corrugated pipe, layers shall be 1" minimum for 1/2" depth corrugations, 2" minimum for 1" depth corrugations, and 3" minimum for 2" or 2 1/2" depth corrugations.

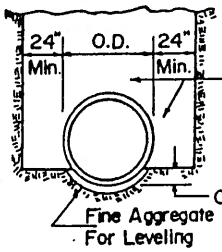


Class B Bedding

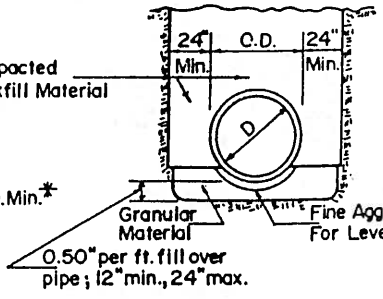


Class B Bedding
On Rock Foundation

(Trench shown is for 60" thru 108" flexible pipe in soil cut sections)



Class B Bedding

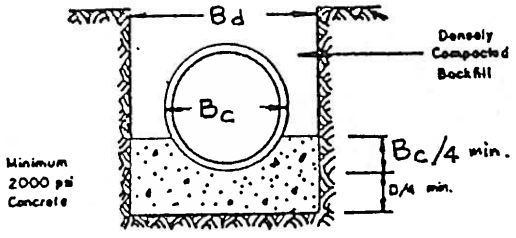


Class B Bedding
On Rock Foundation

TYPICAL PIPE BEDDING

(Trench shown is for 60" thru 108" rigid pipe in soil cut sections)

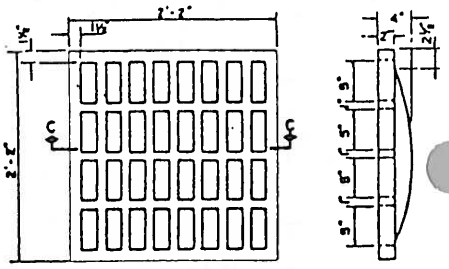
CLASS A
Concrete Cradle
Load Factor = 3.0



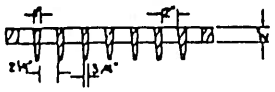
Note: $B_d = 2B_c$ or $B_c + 3$ ft
Whichever is narrower

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 31, 1989 COUNTY ENGINEER	PIPE BEDDING	REVISIONS:	DETAIL No. SD -03

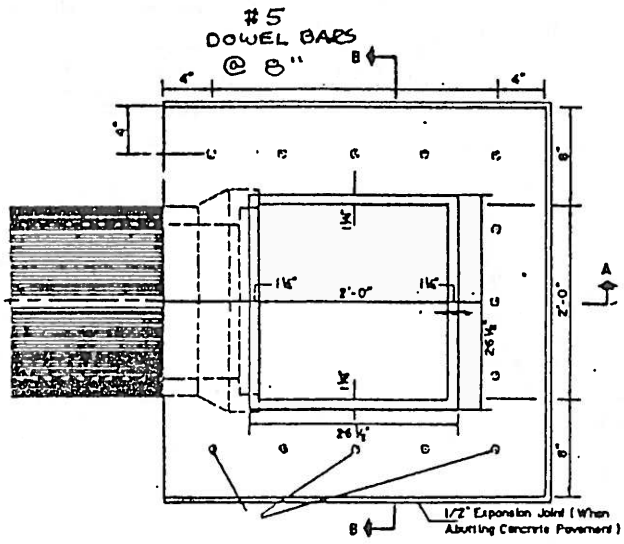
BICYCLE AND PEDESTRIAN
SAFETY GRATE
(Type 1 Grate)



PLAN

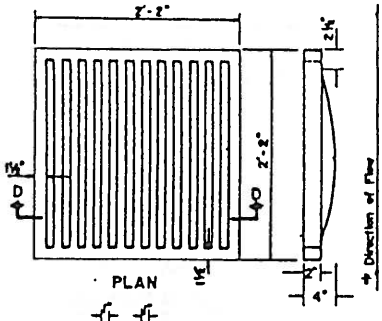


SECTION C-C



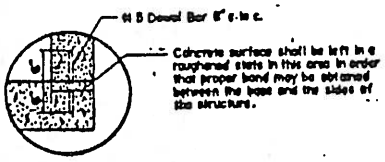
#5 Dowel Bars, 12" Long

PLAN

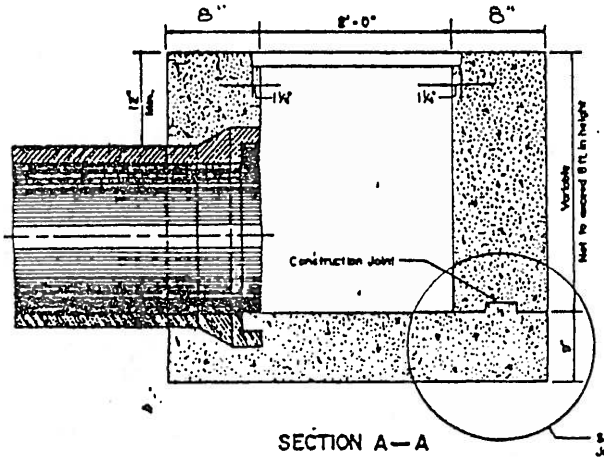


SECTION D-D

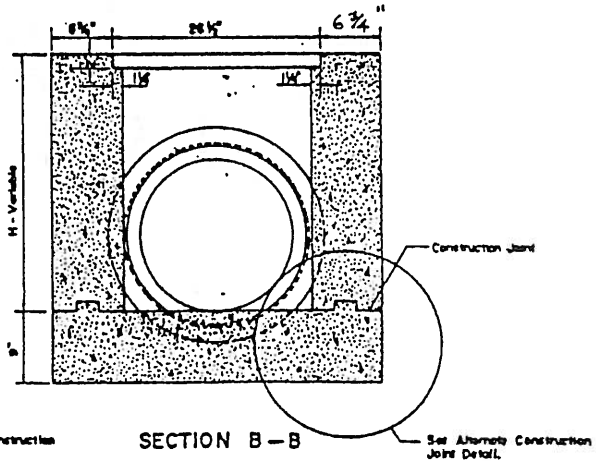
RURAL OR EXPRESSWAY GRATE
(Type 2 Grate)



ALTERNATE CONSTRUCTION JOINT DETAIL

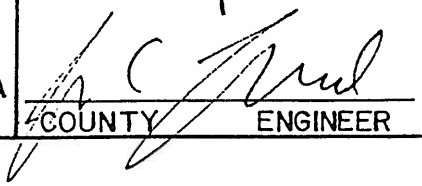


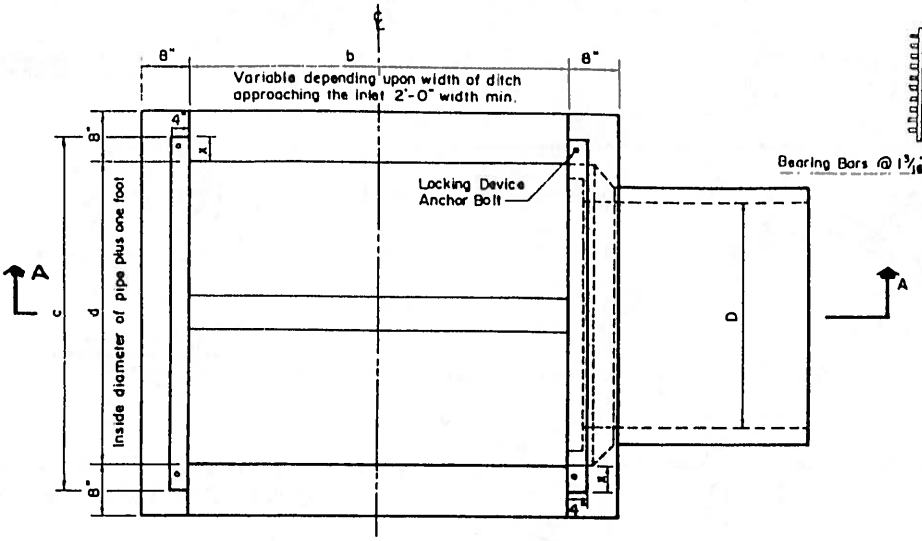
SECTION A—A



SECTION B—B

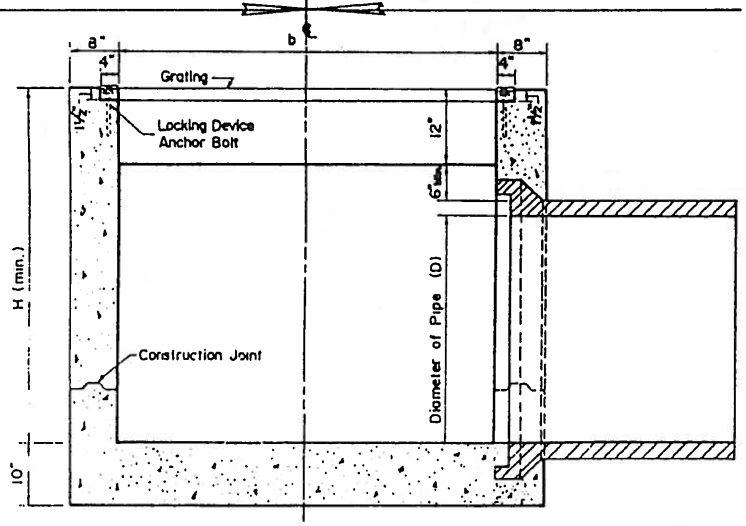
See WVDOH M.S.1-C

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 6, 1989  COUNTY ENGINEER	DROP INLET TYPE B	REVISIONS:	DETAIL No. SD -11

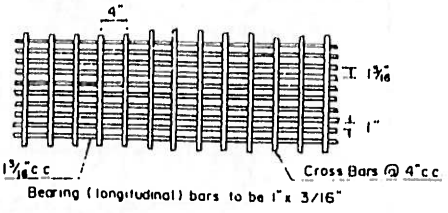


PLAN

Distance from ℄ as shown on Plan and Profile sheets is in reference to this ℄ of inlet, unless otherwise specified.



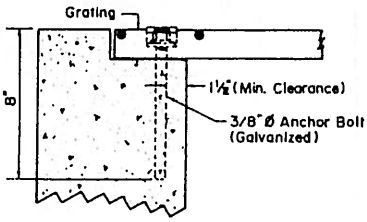
SECTION A-A



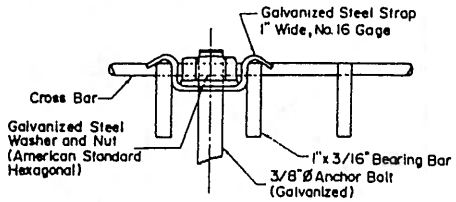
DETAIL OF GRATING

GRATING WIDTHS	
D	No. of sections & width
18"	1 @ 2'-11 3/16"
24"	2 @ 1'-9 7/16"
30"	2 @ 1'-11 15/16"
36"	2 @ 2'-3 1/2"
42"	2 @ 2'-5 7/8"
48"	2 @ 2'-9 1/16"

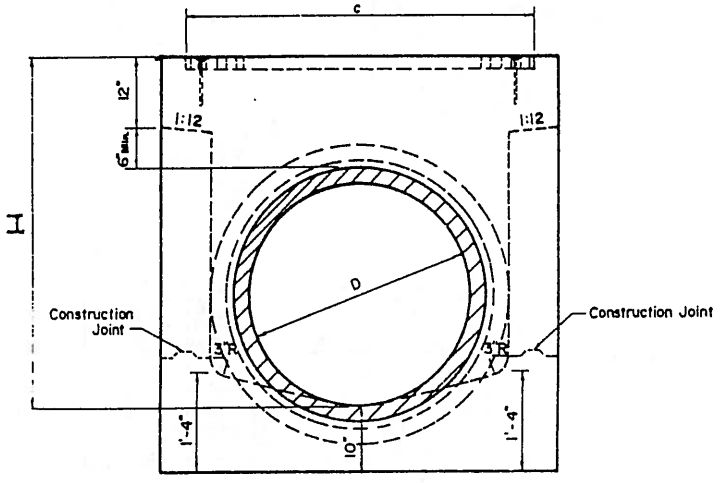
Length of Grating equals b + 6"



DETAIL OF LOCKING DEVICE



LOCKING DEVICE ASSEMBLY



FRONT ELEVATION

TABLE FOR TYPE C INLETS						
Dimensions and Quantities						
Size of Pipe (D)	a	b	x	c	H (min.)	B Conc. C.Y.
18"	2'-6"		3 1/2"	3'-1"	3'-2 1/2"	1.13
24"	3'-0"	From min. of 2'-0"	4"	3'-8"	3'-9"	1.31
30"	3'-6"	up to 5'-0" or width	3 1/2"	4'-1"	4'-3 1/2"	1.62
36"	4'-0"	of approaching	4"	4'-8"	4'-10"	1.88
42"	4'-6"	ditch.	3 1/2"	5'-1"	5'-4 1/2"	2.20
48"	5'-0"		4"	5'-8"	5'-11"	2.44

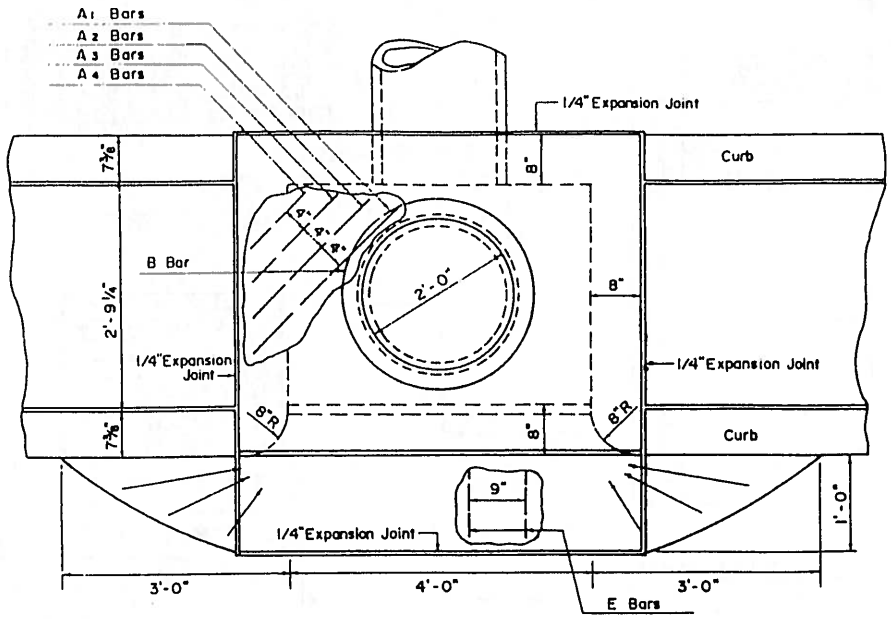
TABLE NOTES:

Class B Concrete in above table is for estimating work only.

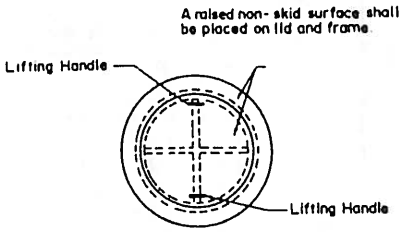
Amount of Class B Concrete in inlets as shown in table is computed for a minimum ditch width of 2'-0".

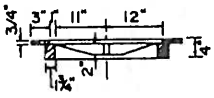
See WVDOH M.S. 2-A

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 6, 1989 COUNTY ENGINEER	DITCH INLET TYPE C	REVISIONS: / DETAIL No. SD -12

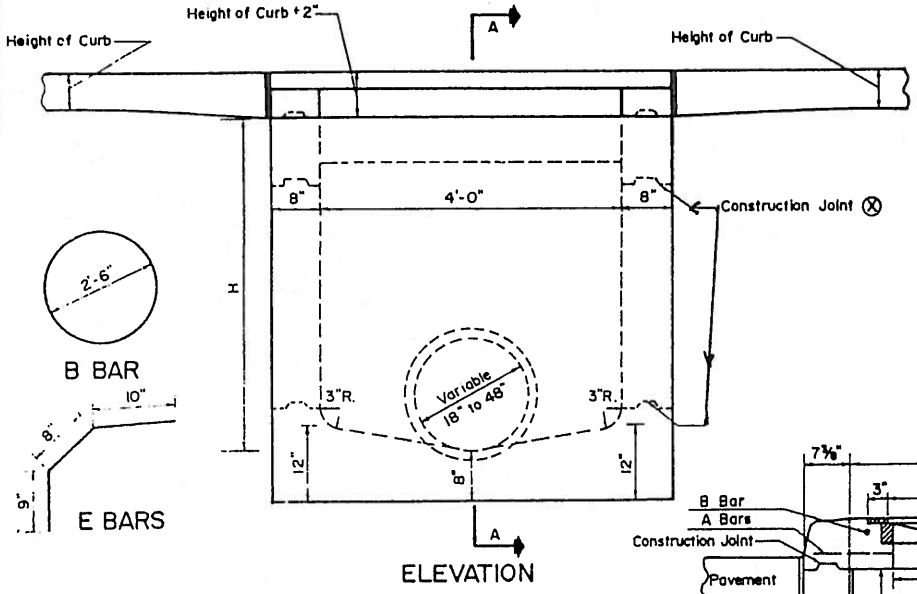


PLAN

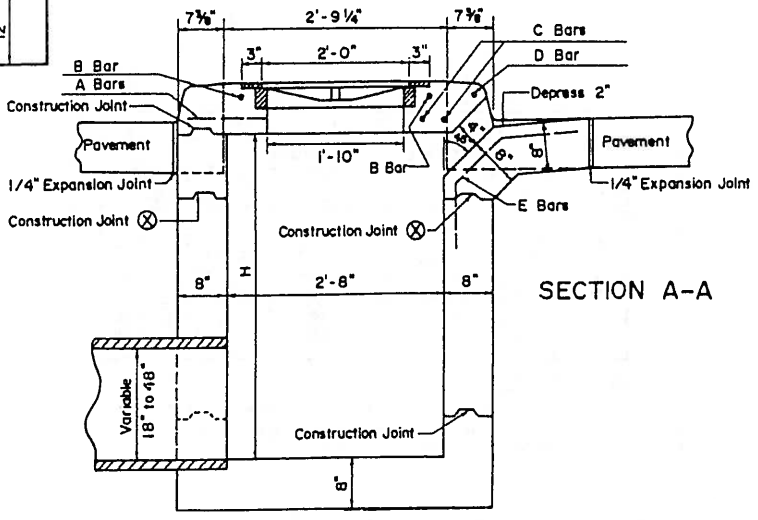




DETAIL OF FRAME AND COVER CASTING (RING TYPE)



ELEVATION



SECTION A-A

BILL OF STEEL				
Mark	Size Bar	No.	Length	Weight
A1	#5	2	3'-11"	8
A2	#5	2	3'-3"	7
A3	#5	2	2'-7"	5
A4	#5	2	1'-11"	6
B	#5	1	8'-0"	8
C	#8	2	5'-0"	27
D	#5	1	5'-0"	5
E	#5	6	2'-3"	14
			Total	80

INLET DEPTH	
Pipe Dia	H
18"	3'-0"
24"	3'-6"
30"	4'-0"
36"	4'-6"
42"	5'-0"
48"	5'-6"

JEFFERSON COUNTY, WEST VIRGINIA

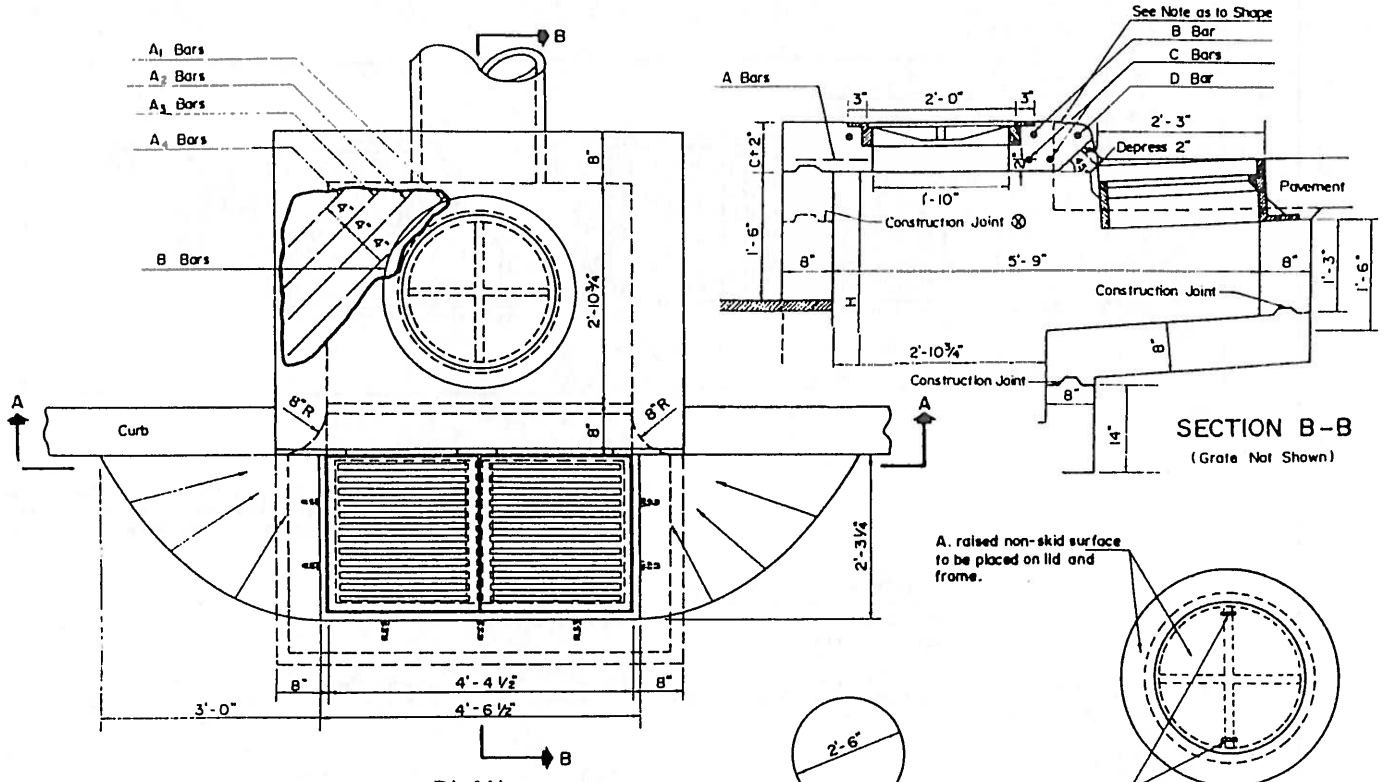
APPROVED: April 10, 1989

COUNTY ENGINEER

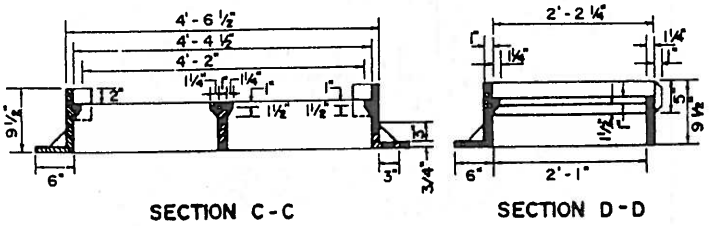
CURB INLET TYPE D

REVISIONS:

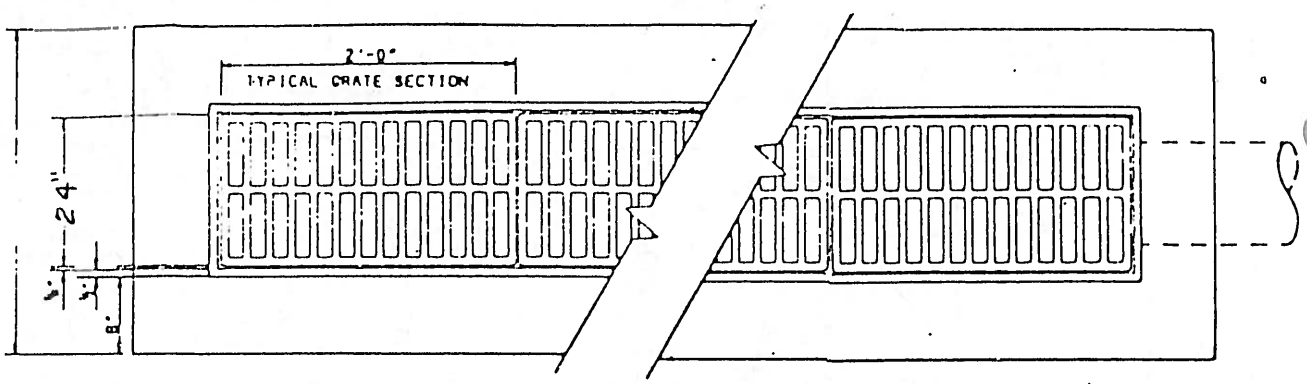
DETAIL No. SD -13



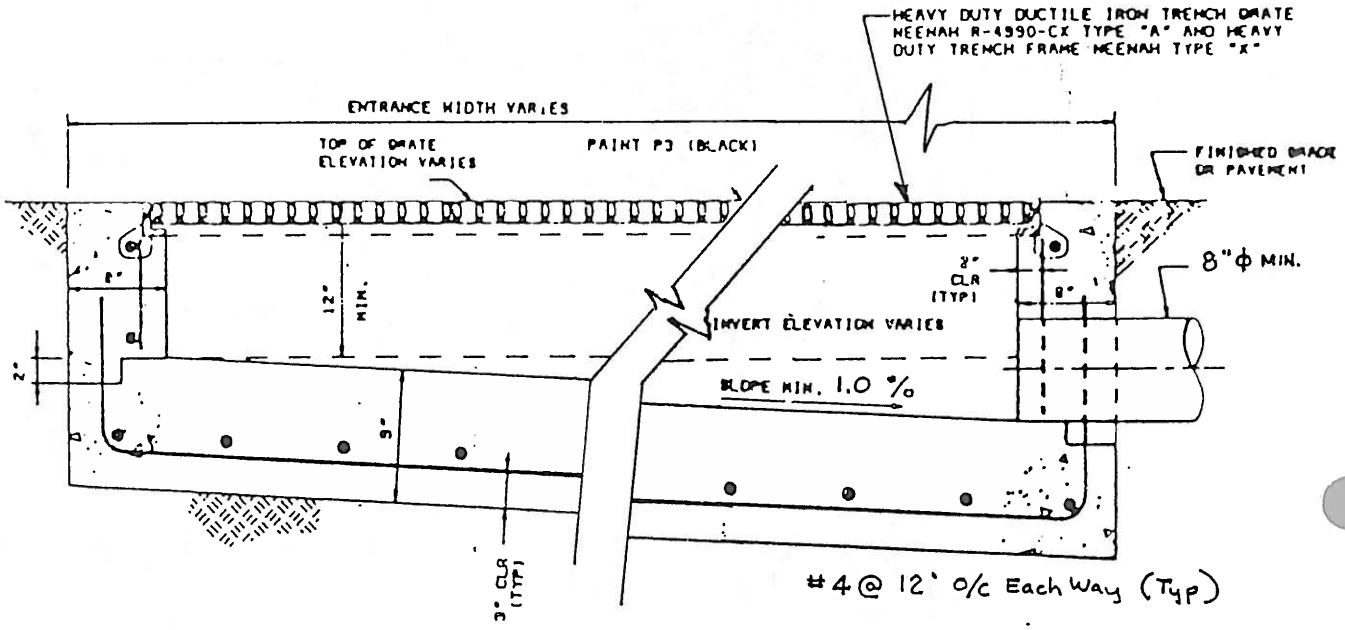
BILL OF STEEL					
Mark	Size Bar	No.	Length	Weight	Type
A_1	#5	2	3'-11"	8	Straight
A_2	#5	2	3'-3"	7	Straight
A_3	#5	2	2'-7"	5	Straight
A_4	#5	2	1'-11"	6	Straight
B	#5	1	8'-0"	8	Bent
C	#8	2	5'-0"	27	Straight
D	#5	1	5'-0"	5	Straight
			Total	66	

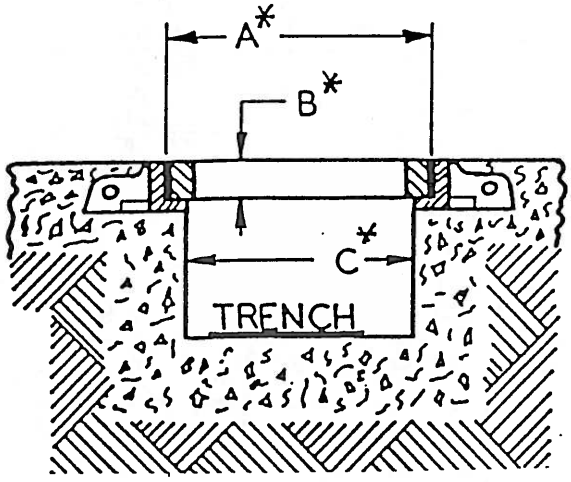


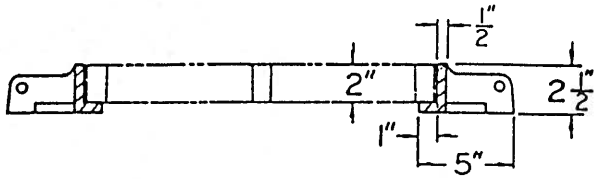
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 10, 1989 COUNTY ENGINEER	COMBINATION INLET, TYPE F	REVISIONS:	DETAIL No. SD -14



PLAN





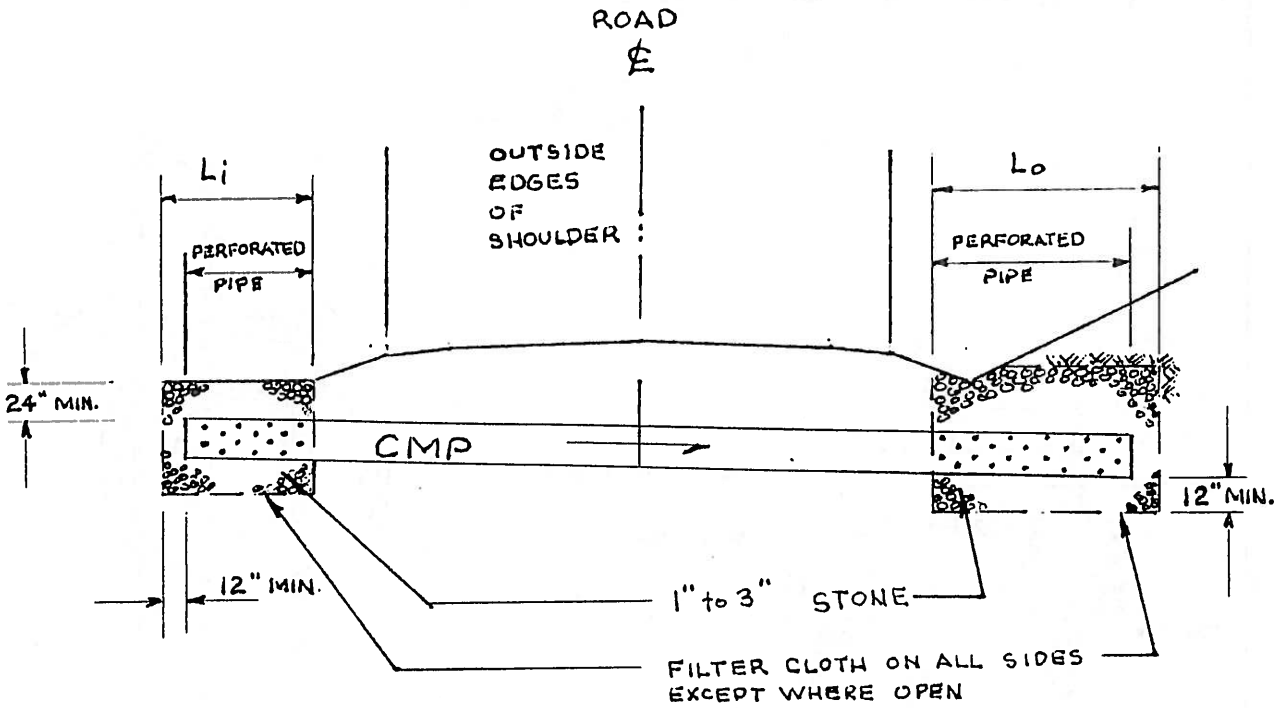


Standard Frame Section

Material - Cast Iron ASTM A-48
Class 30

* Check Manufacturers Specifications

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 4, 1989 / COUNTY ENGINEER	TRENCH DRAIN	REVISIONS:	DETAIL No. SD - 15

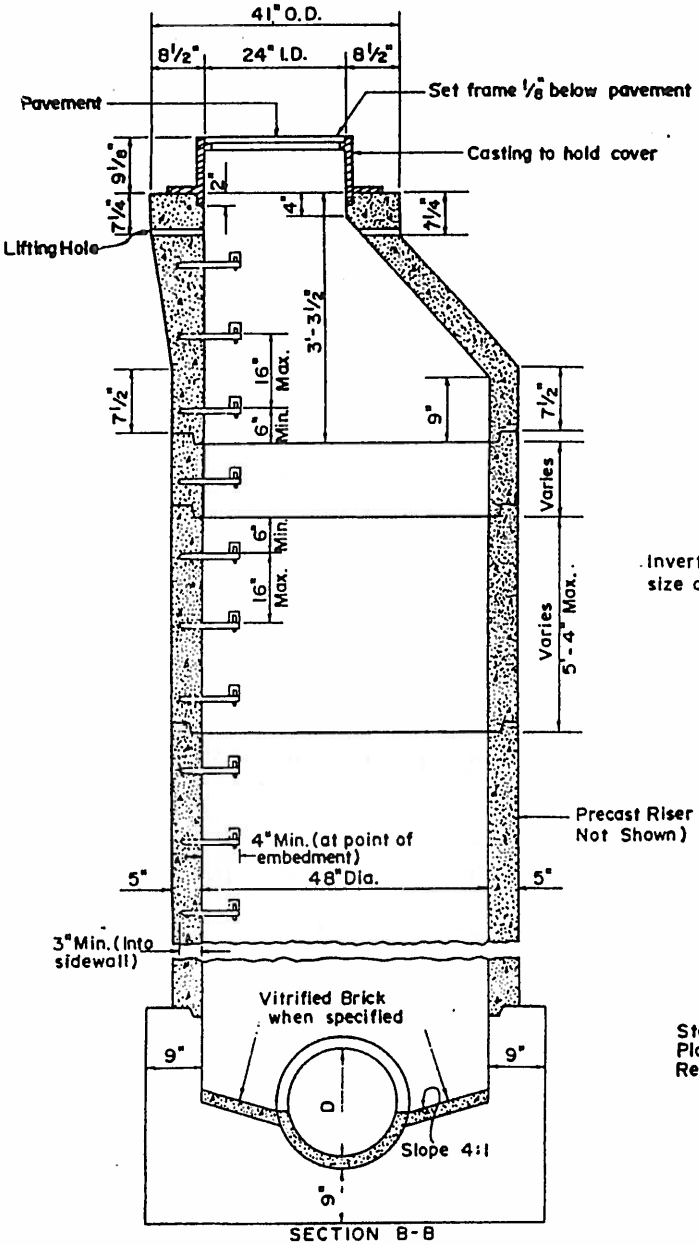


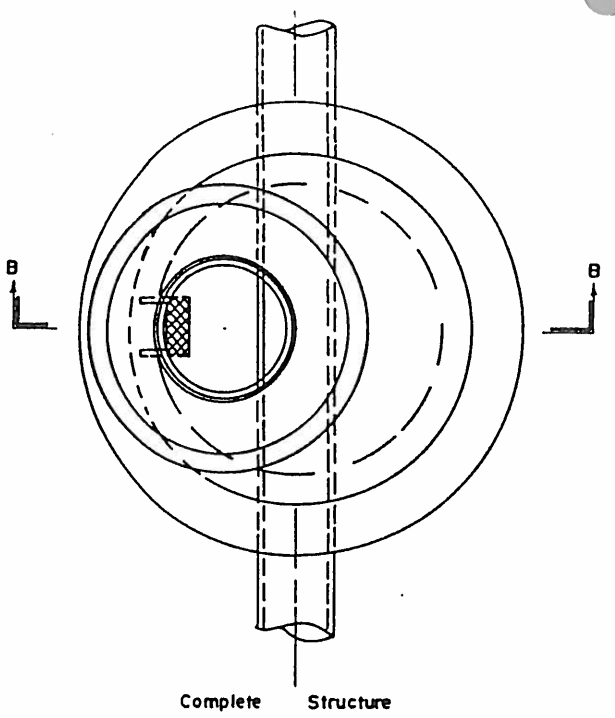
NOTES

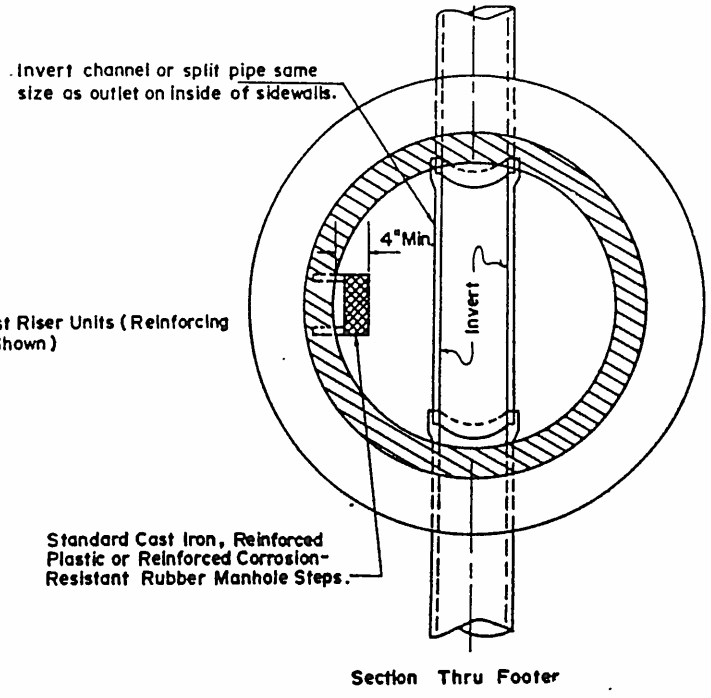
1. THIS TECHNIQUE MUST BE APPROVED BY THE COUNTY ENGINEER ON A PROJECT-BY-PROJECT BASIS.
2. THIS TECHNIQUE IS TO BE USED ONLY WHEN IT IS NOT POSSIBLE TO EXTEND PIPE ENDS TO DAYLIGHT.
3. AREA OF PERFORATIONS AT EACH END TO BE AS FOLLOWS:
   a. Inlet end = 1.5 times x-section area of pipe
   b. Outlet end = 1.0 times x-section area of pipe
4. PERFORATIONS MAY BE AS FOLLOWS:
   a. 1" diameter holes at 4" apart both ways
   b. 1" x 4" slots staggered at 6" apart both ways
5. DIMENSIONS Li AND Lo TO BE DETERMINED BASED ON PERFORATION REQUIREMENTS AND SPECIFIED CLEARANCES.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: January 12, 1990 M. C. G. Jr. COUNTY ENGINEER	**stone sump cross culvert inlet system**	REVISIONS:	DETAIL No. SD -16

See WVDOH Standard Detail M.S. 3-B.

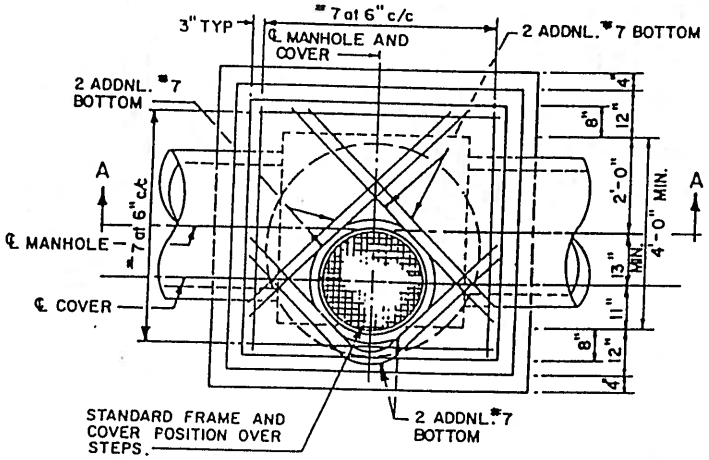






PLAN VIEWS

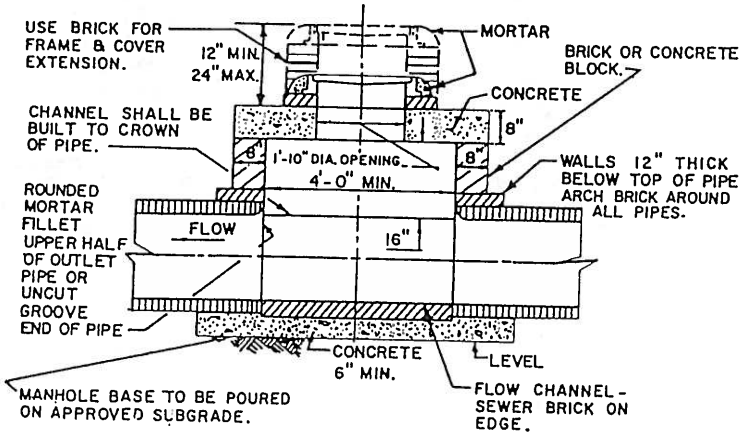
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 3, 1989 COUNTY ENGINEER	TYPE A MANHOLE (Precast)	REVISIONS:	DETAIL No. SD -21



PROVIDE STEPS WHEN DEPTH EXCEEDS 4 FEET

PLAN

NOTE: MANHOLE FRAME AND COVER TO BE LOCATED OVER STEPS. SEE PLANS FOR TOP ELEVATION.

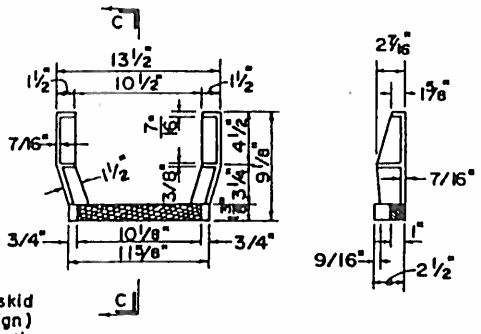


SECTION A-A

GENERAL NOTES A & B

1. USE SOLID MASONRY (BRICK OR CONCRETE BLOCK) OR POURED CONCRETE FOR WALLS.
2. PARGE OUTSIDE WALLS.
3. MORTAR SHALL CONFORM TO ASTM SPECIFICATION C270 TYPES M OR S.
4. REFER TO WEST VIRGINIA DEPARTMENT OF HIGHWAYS FOR MATERIALS AND METHODS OF CONSTRUCTION.
5. FOR PIPES LARGER THAN 30" PROVIDE STEPS IN CHANNELS OF STRUCTURES.
6. f'c = 3,500 P.S.I. at 28 DAYS.

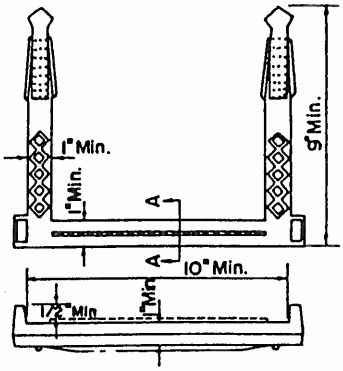
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 1, 1989 COUNTY ENGINEER	SHALLOW MANHOLE	REVISIONS:	DETAIL No. SD -22



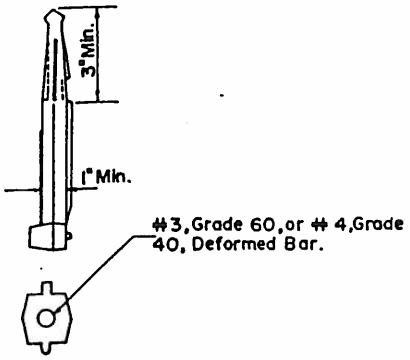
Top of step to be non-skid surface (rough diamond design) raised 1/8" above metal elevations shown.

PLAN

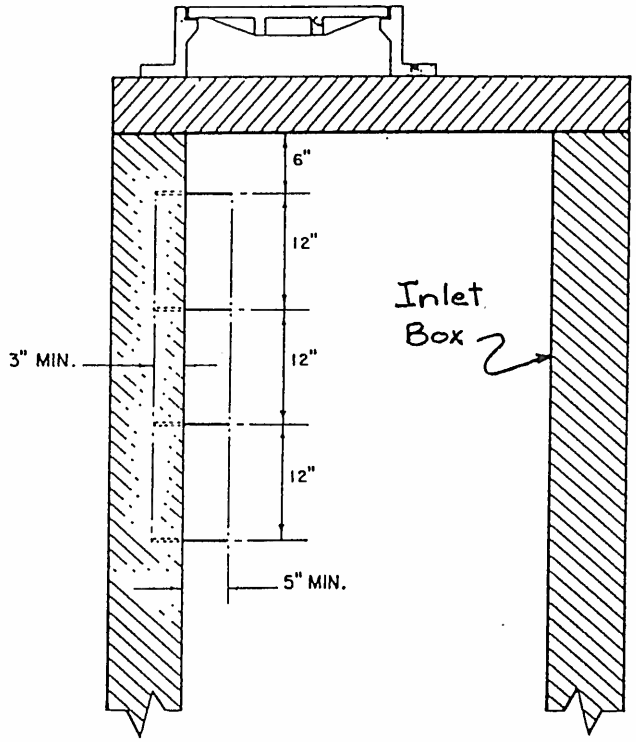
SECTION C-C



CAST IRON STEP
FOR MANHOLES



SECTION A-A
(Enlarged)



Reinforced Plastic and Reinforced Corrosion – Resistant Rubber Manhole Steps. (Details and dimensions may slightly vary among manufacturers' designs.)

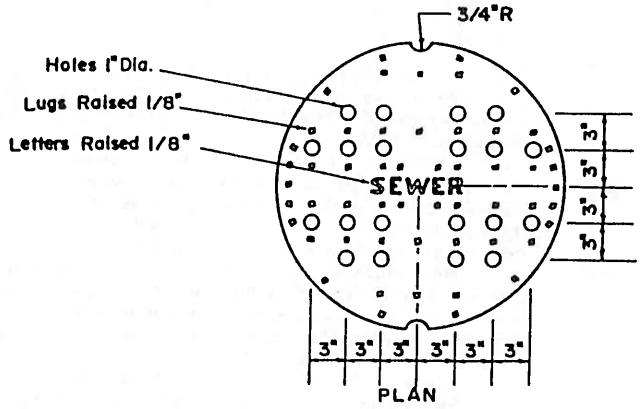
FOR MANHOLES

GENERAL NOTES FOR INLET STEPS*

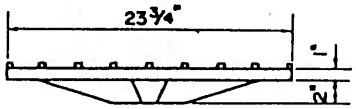
1. STEPS ARE TO BE MADE OF : (1) CAST IRON, 1 INCH SQUARE (2) 3/8" STEEL ROD EMBEDDED IN POLYPROPYLENE PLASTIC, OR (3) ALUMINUM ALLOY, 7/8" BY 13/16", WITH A MINIMUM EMBEDMENT OF 3", A MINIMUM PROJECTION OF 5", AND A MINIMUM WIDTH OF 10".
2. STEPS SHALL BE PLACED IN VERTICAL ALIGNMENT, 12" APART, AND SHALL ALIGN WITH THE COVER OPENING.
3. STEPS NOT REQUIRED IN STRUCTURES LESS THAN 4'0" DEEP.

* Applies to Inlet Boxes, O/G Separators and SWM Control Structurs

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 4, 1989 / COUNTY ENGINEER	INLET BOX & MANHOLE STEPS	REVISIONS:	DETAIL No. SD -23

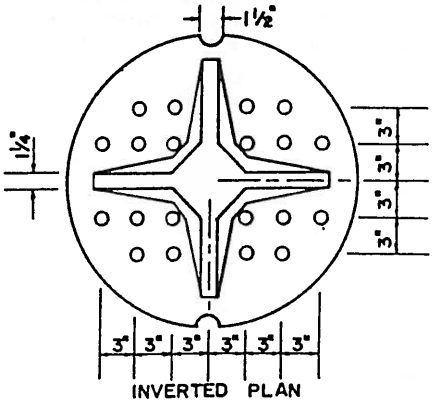


PLAN

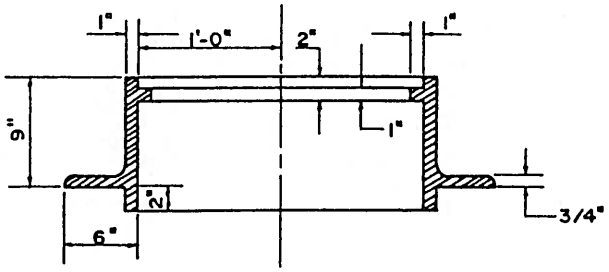


ELEVATION

MANHOLE COVER



INVERTED PLAN



SECTION
Manhole Frame Casting

The tapered top section shall be manufactured and meet the same requirements as the manhole's sidewalls, but shall conform to the dimensions detailed herein.

Lifting holes in the tapered top section and the circumferential notches in the manhole cover are for handling purposes only.

Castings are to be of the design shown and are to be of Gray-Iron meeting the requirements of 709.10 of the Specifications (WVDOH)

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 4, 1989 / COUNTY ENGINEER	MANHOLE COVER	REVISIONS:	DETAIL No. SD - 24

NOTES

All concrete shall be Class "B" Concrete.

All exposed edges shall have a 3/4" x 45° chamfer. Chamfer on vertical edges shall be continued a minimum of one foot below finished ground line.

When headwalls are placed on the inlet end of corrugated metal pipe or skewed concrete pipe, a bevel shall be used at the inlet opening. The end of the pipe shall be set in from the face of the wall, as shown on the "Bevel Detail", and the bevel constructed from the end of the pipe to the face of the wall.

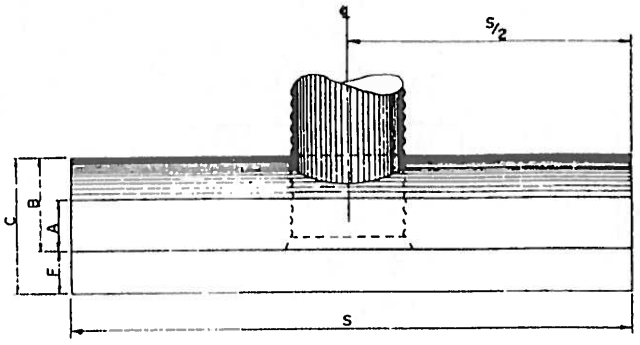
When headwalls are placed on the inlet end of concrete pipe, the "bell" or "groove" of the pipe shall be placed in the wall in lieu of the bevel, except when the pipe is to be cut for placing in skewed headwalls. The inside of the "bell" or "groove" shall be filled with concrete up to the flow line.

Bevels are not required on outlet headwalls.

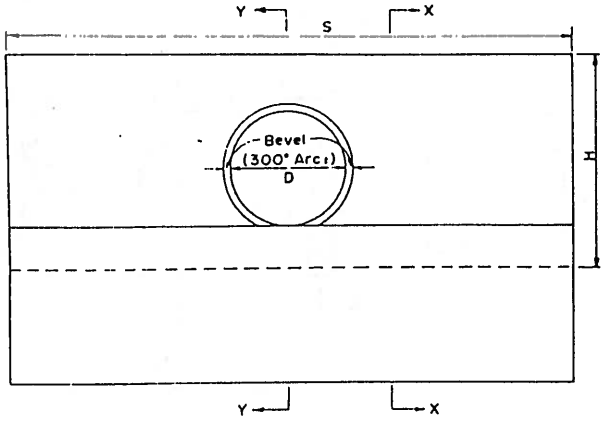
Reinforcing fabric shall conform to the requirements of 709.3 and 709.4 of the Specifications.

Reinforcing fabric, as detailed herein, shall be used in all walls of all headwall structures. The covering for the fabric shall be two inches, measured from the surface of the concrete to the face of the wire, unless otherwise specified. The fabric shall be cut as necessary to accommodate the pipe opening in the wall and may be otherwise cut or field bent to fit the structure.

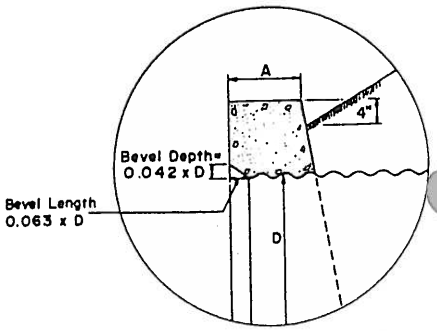
Keyed or doweled type construction joints, acceptable to the Engineer, may be used during construction.



PLAN VIEW



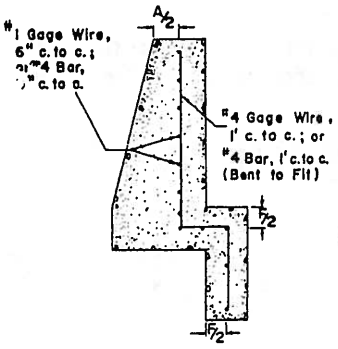
ELEVATION



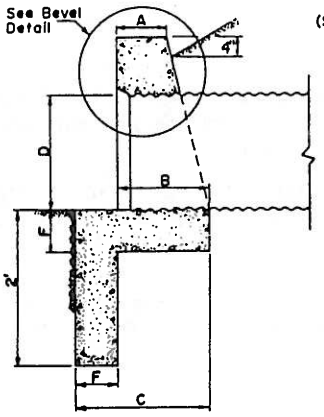
BEVEL DETAIL
(Section Thru Center Of Pipe)

DIMENSIONS	DIAMETER OF PIPE				
	12"	15"	18"	24"	30"
A	0'-6"	0'-8"	0'-9"	0'-11"	1'-0"
B	0'-11"	1'-2"	1'-4"	1'-8"	1'-10"
C	1'-5"	1'-9"	2'-0"	2'-5"	2'-8"
D	1'-0"	1'-3"	1'-6"	2'-0"	2'-6"
F	0'-6"	0'-7"	0'-8"	0'-9"	0'-10"
H	2'-3"	2'-10"	3'-2"	3'-9"	4'-4"
S	5'-0"	6'-3"	7'-5"	10'-0"	12'-6"
QUANTITIES					
CU. YDS. CLASS B CONCRETE					
RCP	046	082	122	220	335
CMP	047	085	127	229	348

BEVEL DIMENSIONS	DIAMETER OF PIPE				
	12"	15"	18"	24"	30"
Depth	1/2"	3/4"	3/4"	1"	1 1/4"
Length	3/4"	1"	1 1/4"	1 1/2"	2"

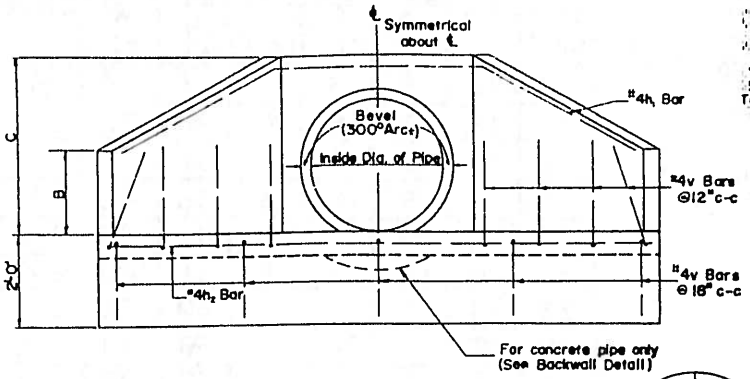


SECTION X-X
(Showing Reinforcing Details)

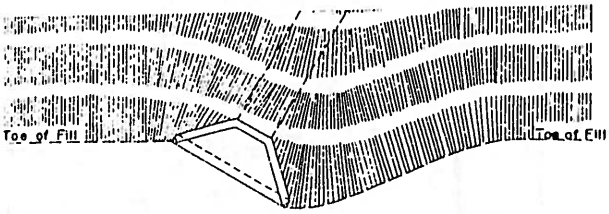


SECTION Y-Y

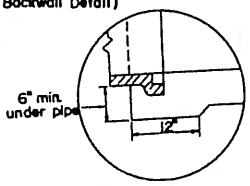
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 10, 1989 COUNTY ENGINEER	PIPE CULVERT HEADWALL	REVISIONS: / DETAIL No. SD -31



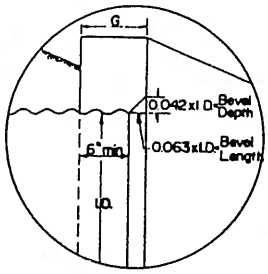
ELEVATION



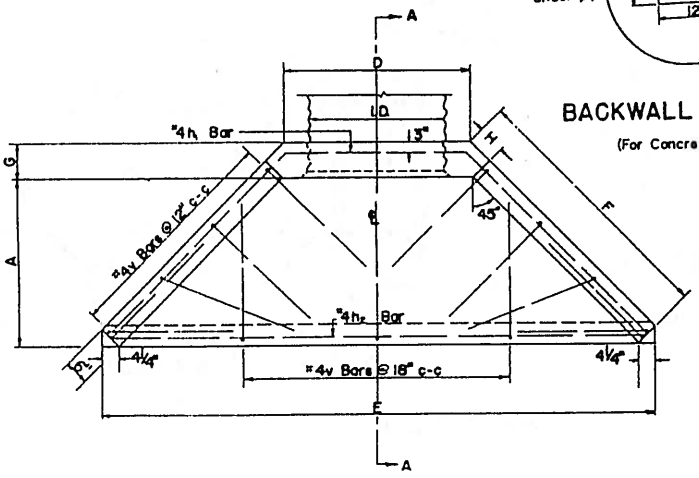
CONSTRUCTION DETAIL - SKEWED PIPE



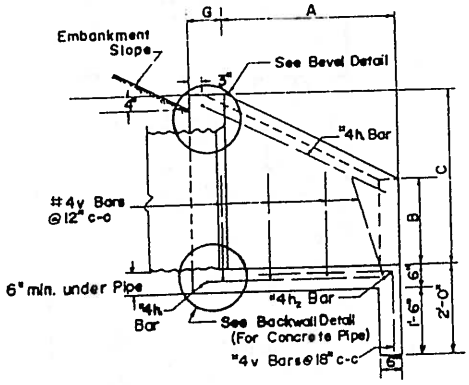
BACKWALL DETAIL
(For Concrete Pipe)



BEVEL DETAIL



PLAN VIEW

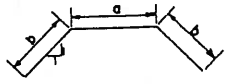


SECTION A-A

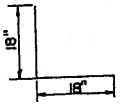
Inside Dia. of Pipe	Slope of Fill	DIMENSIONS A	B	C	D	E	F	G	H	REINFORCEMENT Mark	Size	No. of Bars	LENGTH a	b	Total	Type	QUANTITIES Conc. (R.C.P.) C.Y.	Conc. (C.M.P.) C.Y.	Steel Lbs.
15"	2:1	*2'-0"	0'-10"	1'-11"	2'-0"	6'-7½"	3'-3¼"	0'-8"	0'-3⅜"	h	#4	2	1'-10"	3'-2½"	6'-3"	Bent	0.61	0.62	41.2
		†2'-2"						0'-6"	0'-2½"	h2	#4	1			6'-1"	St			
		Bevel Depth = ¾" Length = 1"								v	#4	13			3'-0"	Bent			
18"	2:1	*2'-0"	1'-1"	2'-2"	2'-3"	6'-10½"	3'-3¼"	0'-8"	0'-5⅜"	h	#4	2	2'-1"	3'-2½"	8'-6"	Bent	0.67	0.69	41.8
		†2'-2"						0'-6"	0'-2½"	h2	#4	1			6'-4"	St			
		Bevel Depth = ¾" Length = 1¼"								v	#4	13			3'-0"	Bent			
24"	2:1	*2'-8"	1'-4"	2'-9"	2'-11"	8'-10½"	4'-2½"	0'-8"	0'-5⅜"	h	#4	2	2'-9"	4'-1½"	11'-0"	Bent	1.01	1.02	52.4
		†2'-10"						0'-6"	0'-2½"	h2	#4	1			8'-4"	St			
		Bevel Depth = 1" Length = 1½"								v	#4	16			3'-0"	Bent			
30"	2:1	*3'-5"	1'-7"	3'-3"	3'-5"	10'-4½"	4'-11"	0'-9"	0'-6¾"	h	#4	2	3'-3"	4'-10½"	13'-0"	Bent	1.32	1.37	58.1
		†3'-4"						0'-6"	0'-2½"	h2	#4	1			9'-10"	St			
		Bevel Depth = 1¼" Length = 2"								v	#4	17			3'-0"	Bent			
36"	2:1	*3'-9"	1'-10"	3'-10"	4'-1"	12'-4½"	5'-10½"	0'-9"	0'-6¾"	h	#4	2	3'-11"	5'-9½"	15'-6"	Bent	1.79	1.86	70.8
		†4'-0"						0'-6"	0'-2½"	h2	#4	1			11'-10"	St			
		Bevel Depth = 1½" Length = 2¼"								v	#4	21			3'-0"	Bent			

* Dimensions for inlet wingwalls on corrugated metal pipe (to accommodate the bevel).
† Dimensions for inlet wingwalls on concrete pipe and all outlet wingwalls.

All concrete shall be Class B Concrete.
Reinforcing steel shall be new billet steel and shall conform to the requirements of 709.1 of the Specifications.



#4h Bars



#4v Bars

DETAIL OF BENT BARS

See WVDOH C.W. 2-C

JEFFERSON COUNTY, WEST VIRGINIA

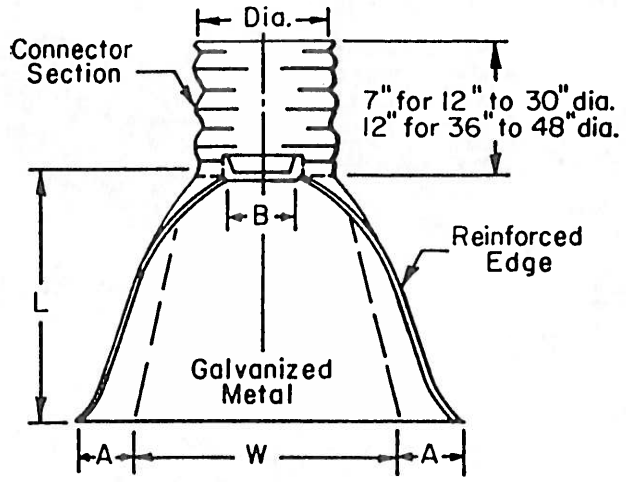
APPROVED: April 10, 1989

COUNTY ENGINEER

PIPE CULVERT WINGWALLS

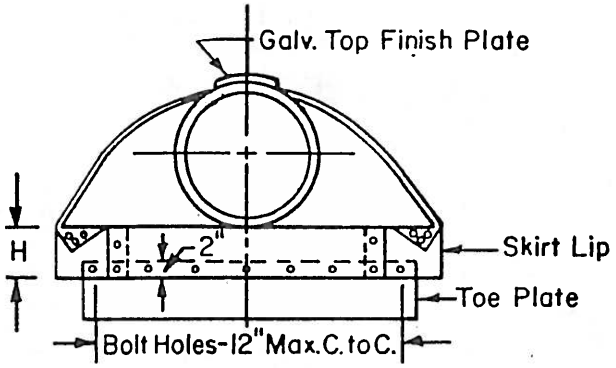
REVISIONS:

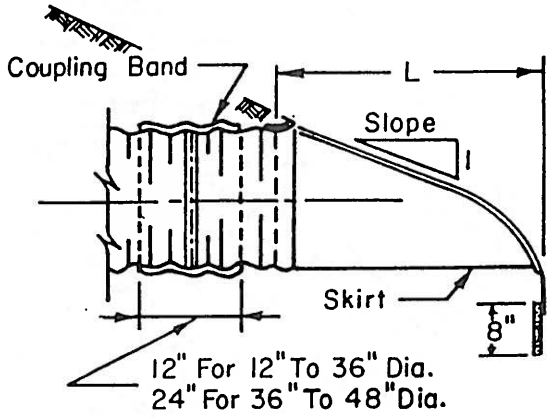
DETAIL No. SD -32



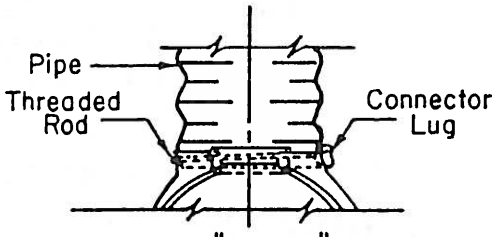
Pipe Dia. (in.)*	GA.	DIMENSIONS (IN.) A (±1")	B (Max.)	H (±1")	L (±1½")	W (±2")	Approx. Slope
12	16	6	6	6	21	24	2-½
15	16	7	8	6	26	30	2-½
18	16	8	10	6	31	36	2-½
21	16	9	12	6	36	42	2-½
24	16	10	13	6	41	48	2-½
30	14	12	16	8	51	60	2-½
36	14	14	19	9	60	72	2-½
42	12	16	22	11	69	84	2-½
48	12	18	27	12	78	90	2-¼

* Circle Appropriate Size

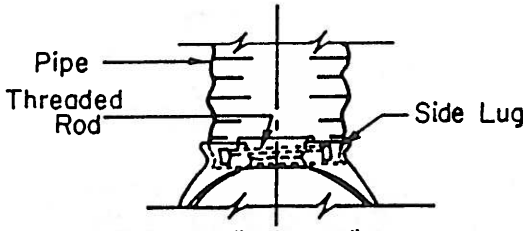




ALTERNATE CONNECTIONS



For 12" To 24" Only

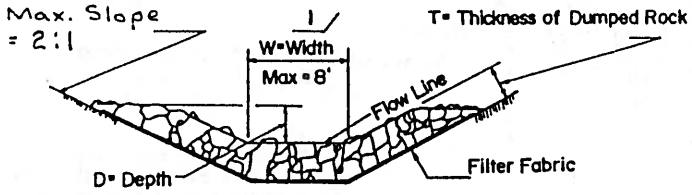


For 30" And 36" Only

NOTE:

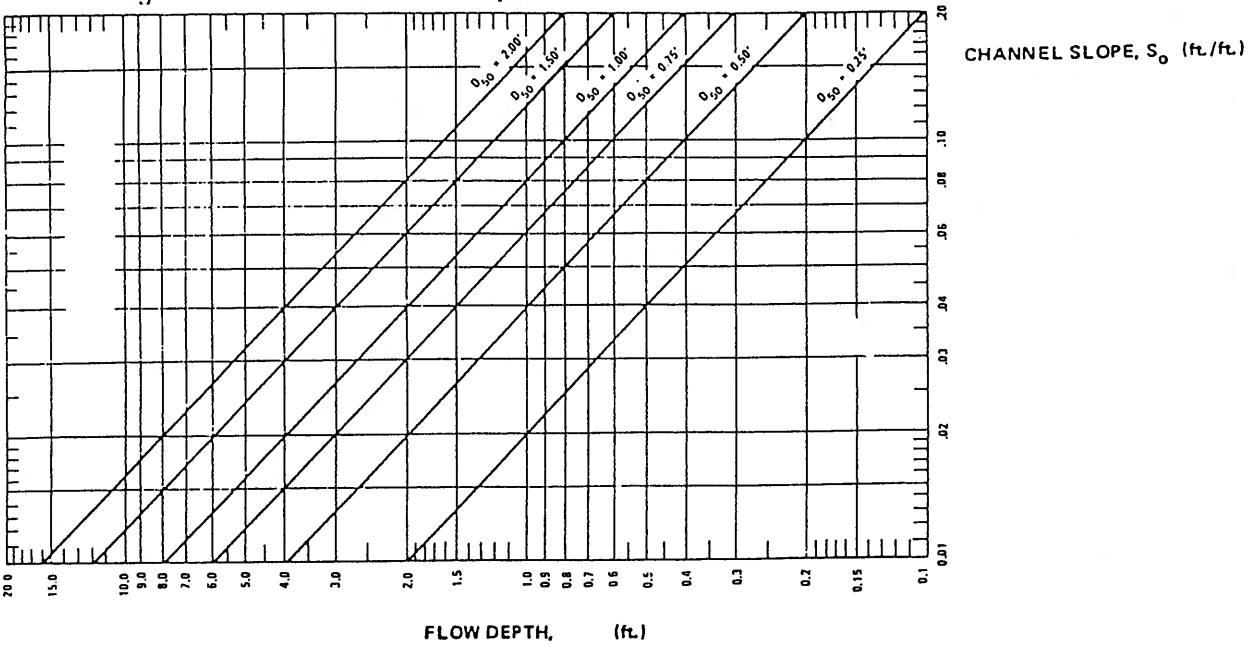
1. Toe plate to be punched to match holes in skirt lip. ⅜" Galvanized bolts to be furnished. Length of toe plate to be W + 10" for 12" to 30" dia. pipe and W + 22" for 36" to 48" dia. pipe.
2. Skirt section for 12" to 30" dia. pipe to be made in one piece; skirt section for 36" to 48" dia. pipe may be made from two sheets joined by riveting or bolting on center line with ⅜" dia fasteners.
3. Connector section, toe plate and skirt to be of same gage metal; each to be Galv. and coated with a tar base paint.
4. For description, materials and construction methods, see specifications.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 5, 1989 COUNTY ENGINEER	METAL END SECTION FOR PIPES	REVISIONS:	DETAIL No. SD -33



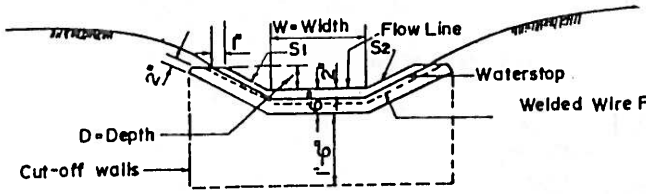
NOTES

1. V-ditch (W=0) is permitted.
2. Depth to be determined using ten (10) year storm, Mannings equation and 0.5 foot free board.
3. Thickness (T) to equal 2.25 times d_{50}.
4. d_{50} to be determined from Soil Conservation Service charts or WVDOH Drainage Manual, Chart 5-4 (below).
5. Stone is to be embedded in filter fabric, Polyfilter X or equal.

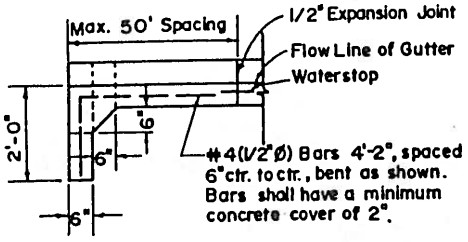


JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 12, 1985 COUNTY ENGINEER	RIPRAP DITCHES	REVISIONS:	DETAIL No. SD -41

See WVDOH M.S. 7-A



Concrete gutter types, depths and widths shall be specified on the plans and shall conform with the table below. Only one concrete gutter type and depth shall be used in each individual run of gutter.



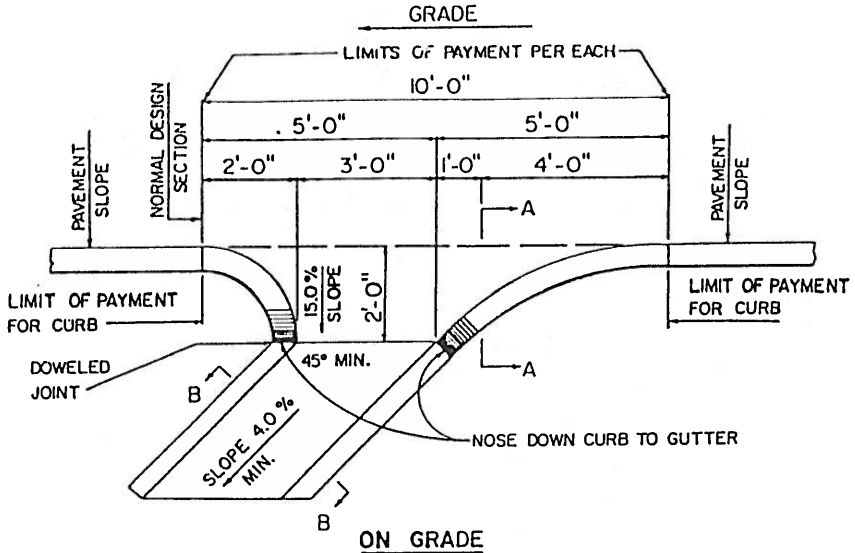
CUT - OFF WALL

STANDARD CONCRETE GUTTER TYPES

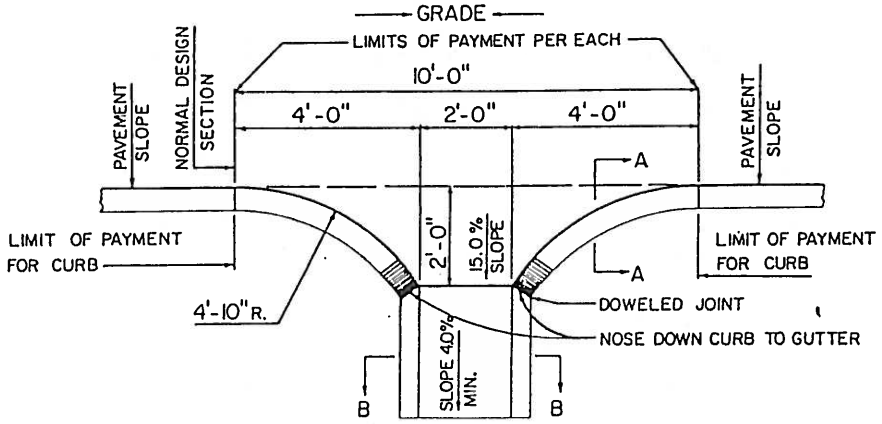
Gutter Type	Gutter Side Slopes S1 *	Gutter Side Slopes S2	Gutter Depths and Widths
1	2:1	2:1	Gutter depths shall be specified in 6-inch increments. Gutter widths shall be in 1-foot increments for widths of two to six feet and in 2-foot increments for widths of over six feet. A change in width shall be transitioned at the rate of 1' in 10' each side.
2	4:1	2:1	
3	4:1	1½:1	
4	6:1	2:1	
5	6:1	1½:1	
6	5:1	5:1	

*Shall be inside gutter slope for roadside ditches, unless otherwise specified.

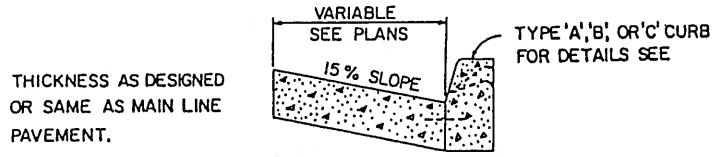
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 12, 1989 COUNTY ENGINEER	CONCRETE DITCHES	REVISIONS:	DETAIL No. SD -42



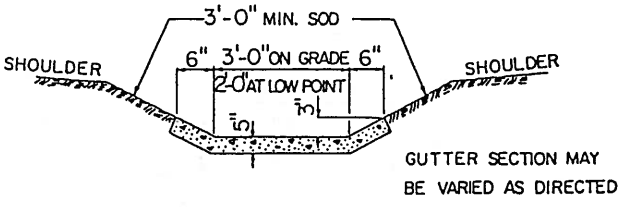
ON GRADE



AT LOW GRADE

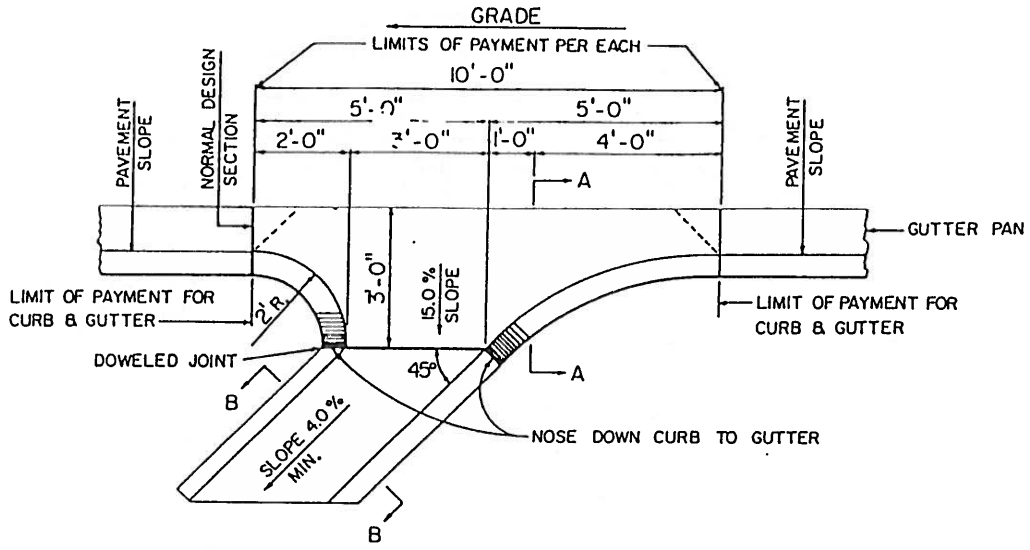


SECTION A-A

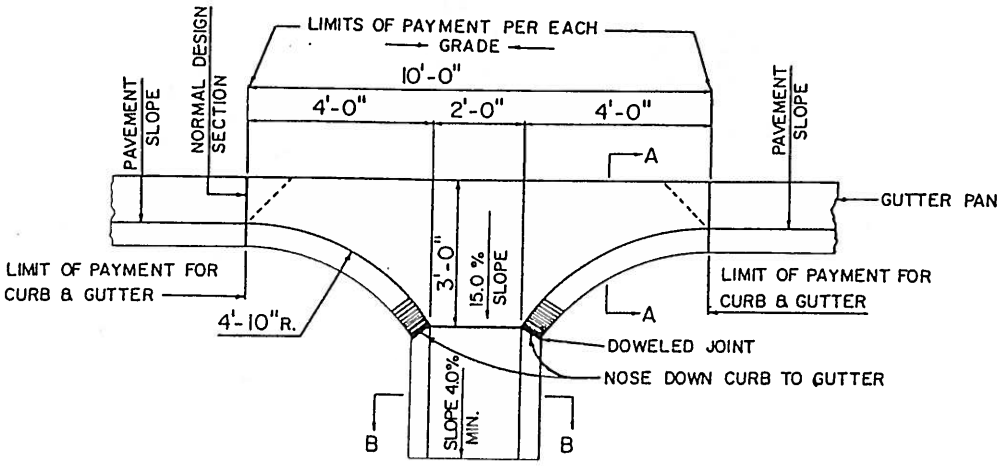


SECTION B-B

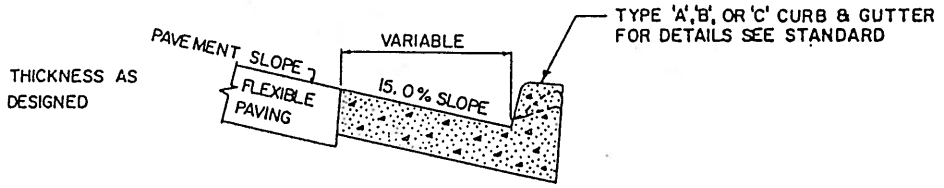
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 16, 1982 COUNTY ENGINEER	**CURB OPENING**	REVISIONS:	DETAIL No. **SD -43**



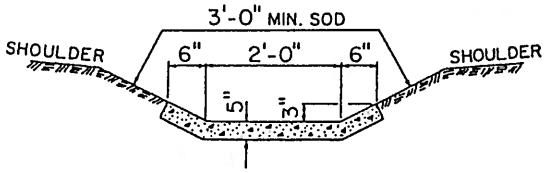
ON GRADE



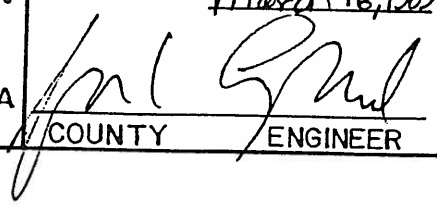
AT LOW POINT

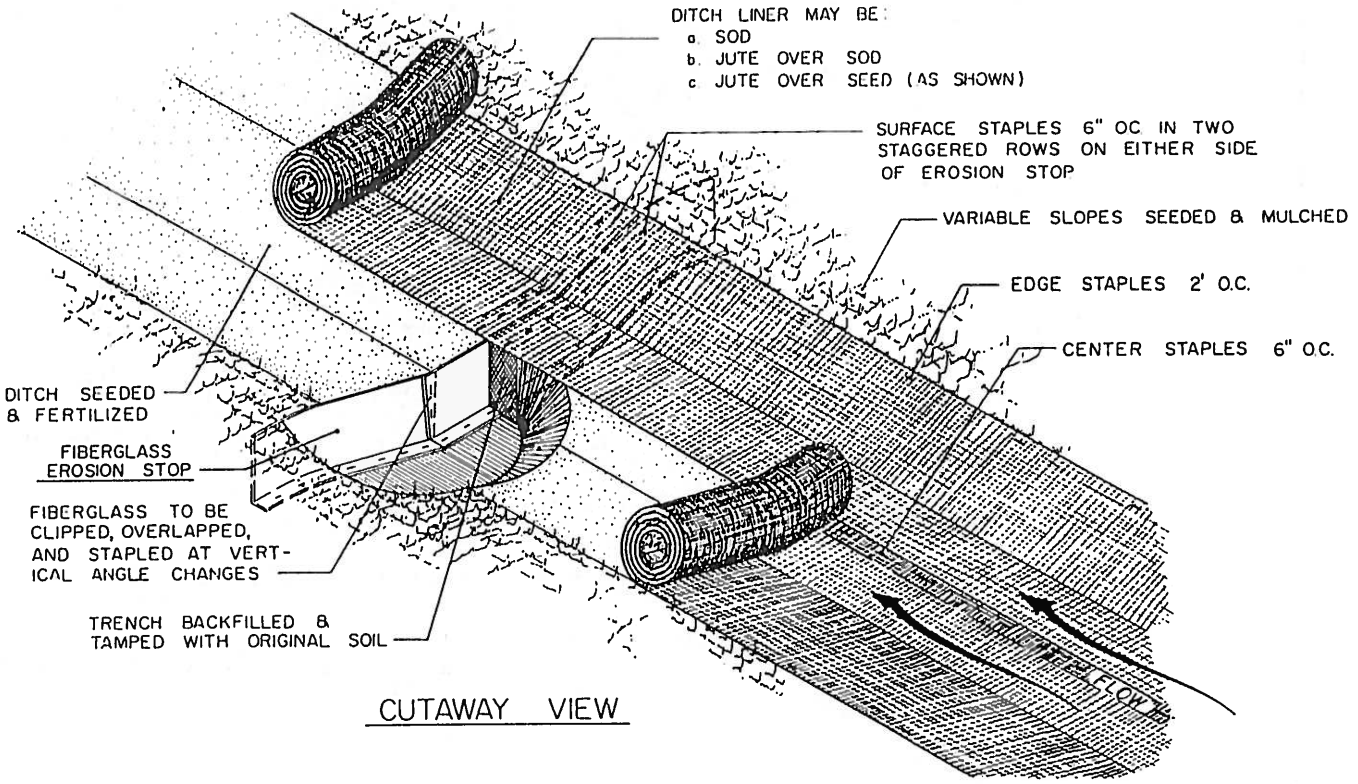


SECTION A-A

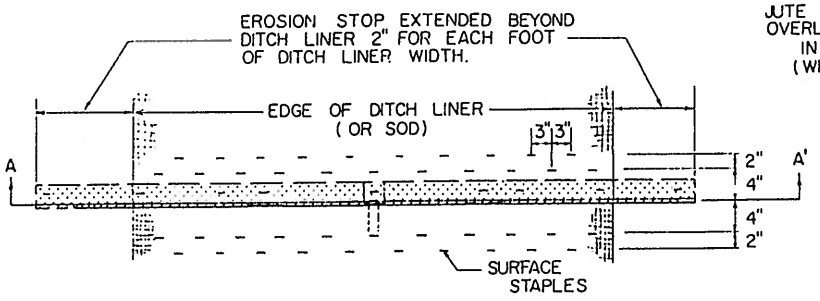


SECTION B-B

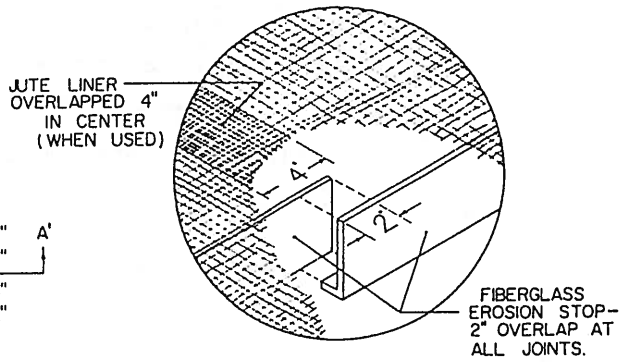
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 16, 1989  COUNTY ENGINEER	CURB & GUTTER OPENING	REVISIONS:	DETAIL No. SD -44



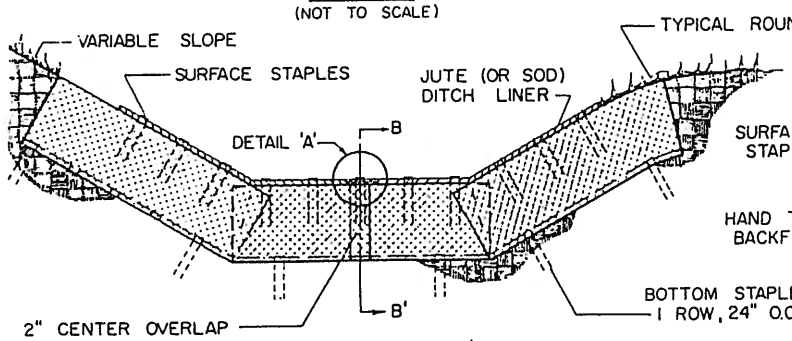
CUTAWAY VIEW



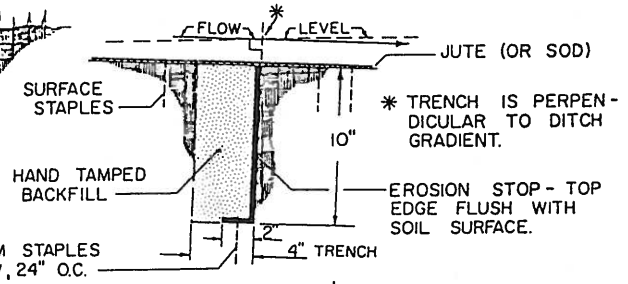
PLAN
(NOT TO SCALE)



DETAIL A

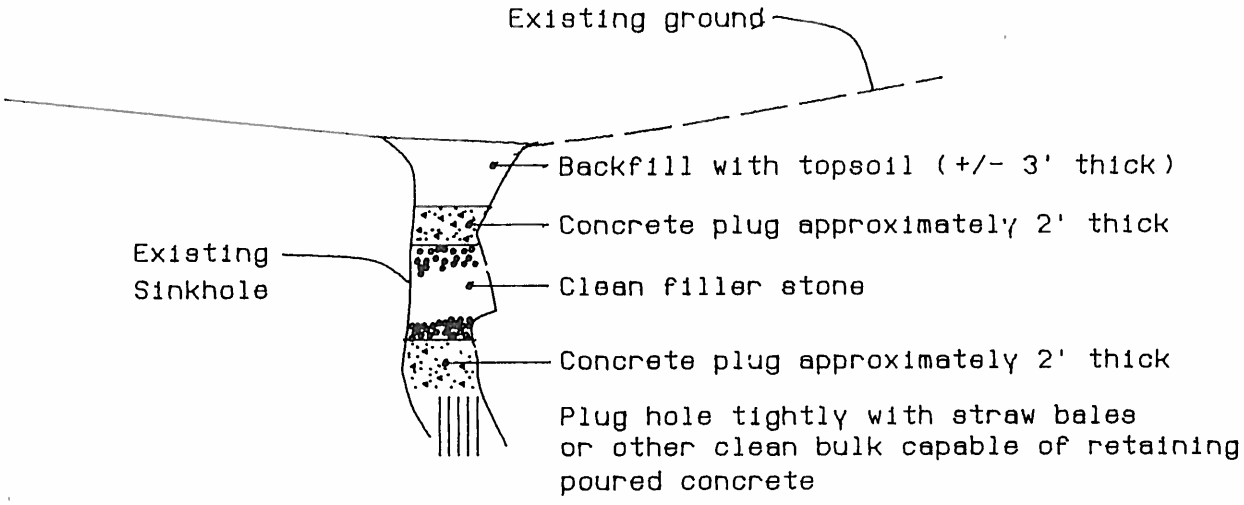


SECTION A-A'
(NOT TO SCALE)



SECTION B-B'
(NOT TO SCALE)

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: April 6, 1982 COUNTY ENGINEER	DITCH EROSION STOP & LINER	REVISIONS:	DETAIL No. SD -45

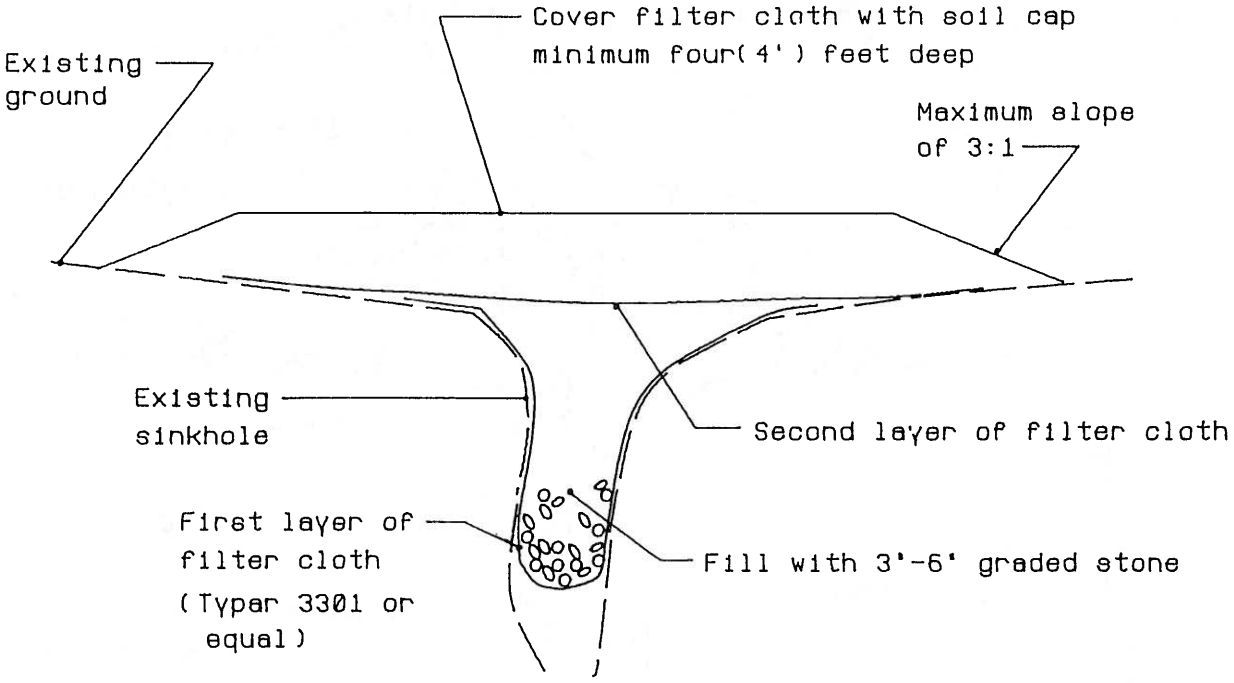


NOTES:

1. Concrete slump not to exceed 2-3".
2. Use of this solution should be limited to small sinkholes(approximately 3' wide)

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: February 7, 1991 COUNTY ENGINEER	CONCRETE SINKHOLE PLUG	REVISIONS:	DETAIL NO. SK-01

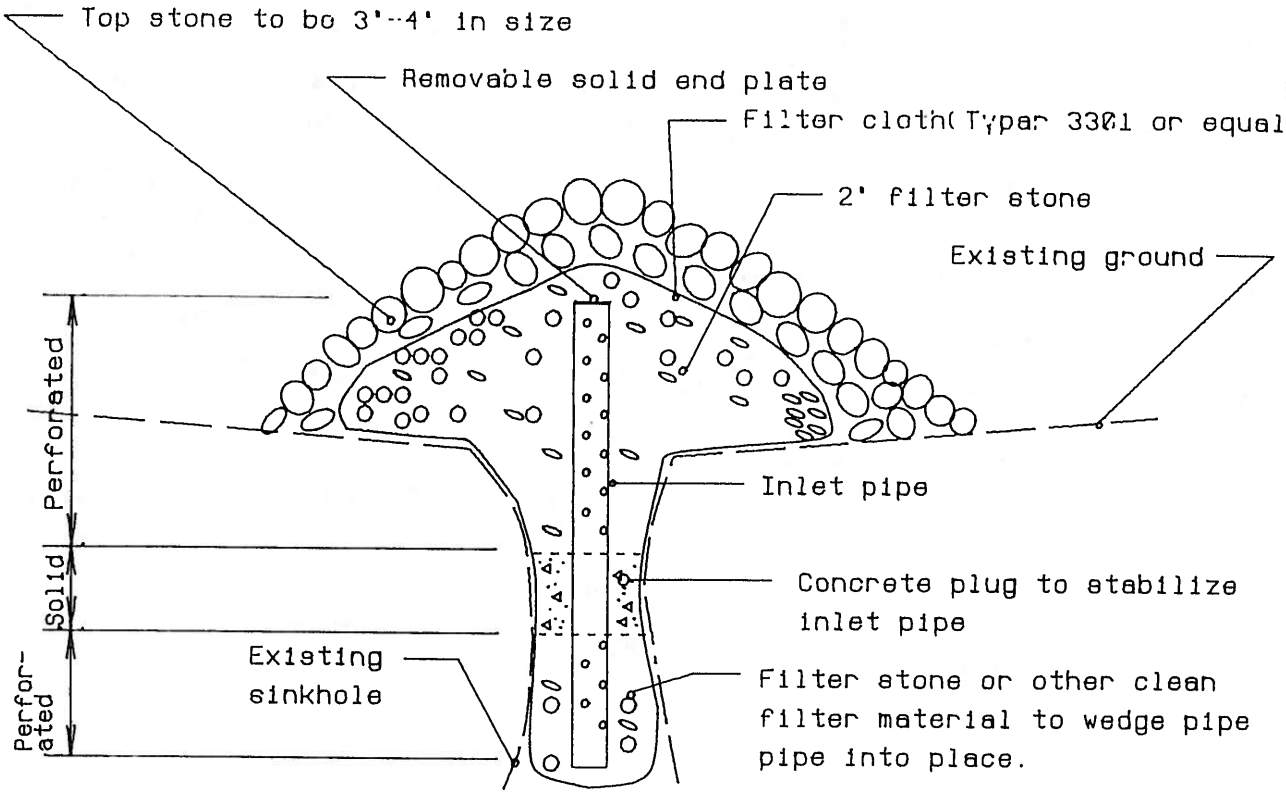
Seed soil cap in permanent grasses



NOTES:

1. For use in capping sinkholes up to four(4') in width.
   (Not for structural purposes)
2. Not for use in very impervious soils. If excessive ponding
   occurs it may be necessary to install a standpipe or other
   infiltration device.

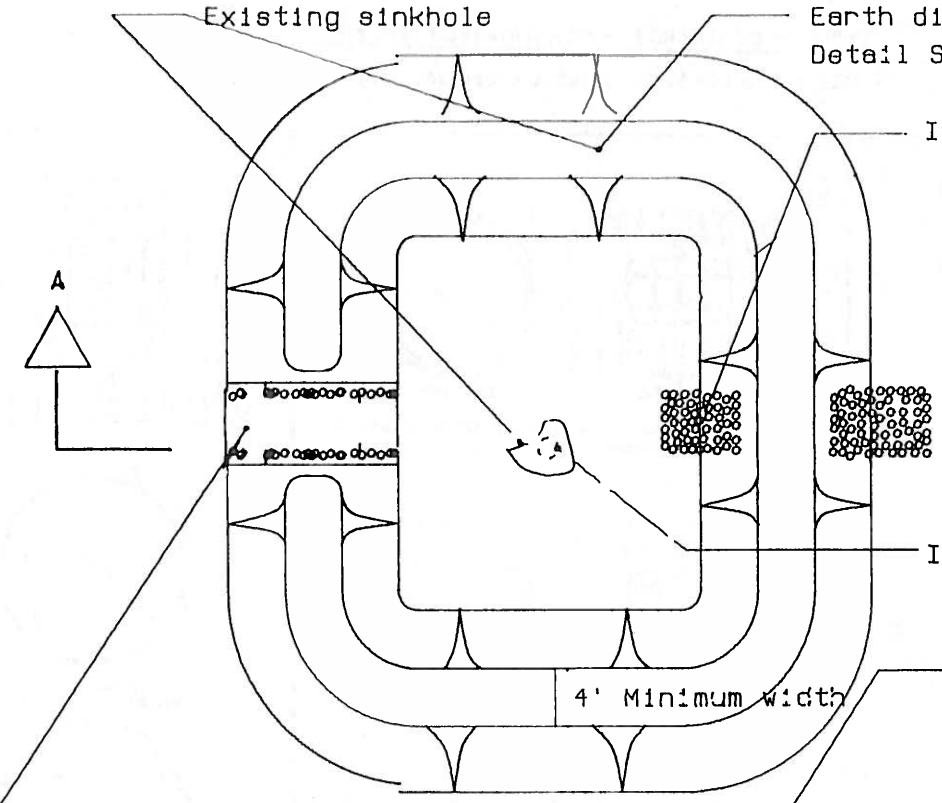
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: February 7, 1991 COUNTY ENGINEER	SMALL SINKHOLE DIKE PLUG	REVISIONS:	DETAIL NO. SK-02



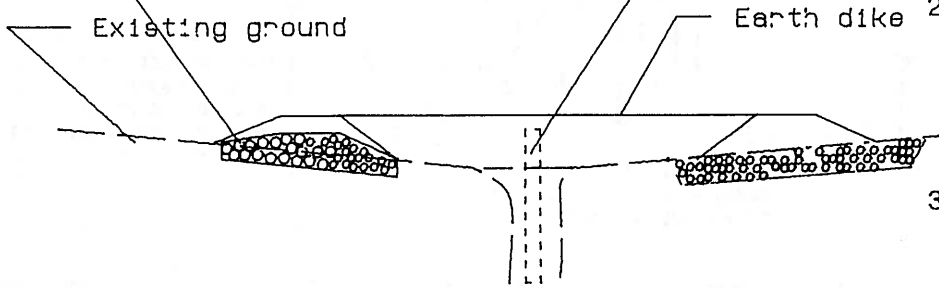
NOTES:

1. Concrete to be 3000 psi strength.
2. Inlet pipe to be minimum 8" diameter.
3. Inlet pipe to be coated CMP, schedule 40 PVC or equal.
4. Debris to be removed from mouth of the sinkhole prior to installation.
5. All stone to be graded to size and free of fines.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: February 7, 1994 COUNTY ENGINEER	SINKHOLE INLET STANDPIPE	REVISIONS:	DETAIL NO. SK-03



PLAN VIEW



ELEVATION VIEW A-A

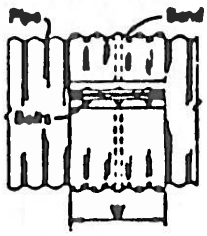
NOTES:

1. Inlet filter pipe may be used where sinkhole is a hazard yet there is a need to allow runoff to enter hole.
2. Options #1 and #3 may be used to prevent flooding behind the dike or as a water quality device
3. Dimensions and sizes should be based on hydrologic analysis and engineered design.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: February 7, 1991 COUNTY ENGINEER	SINKHOLE PROTECTION DIKE	REVISIONS:	DETAIL NO. SK-04

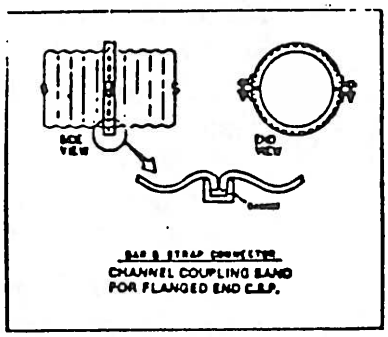
TYPES OF COUPLERS FOR CORRUGATED STEEL PIPE

(All connector bands require neoprene gaskets)

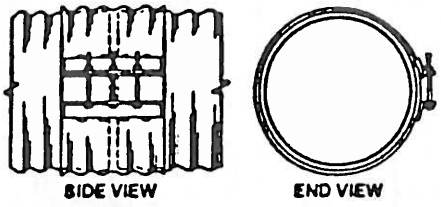


END VIEW

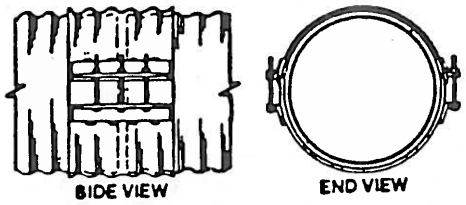
ANNULAR COUPLING BAND



BAR & STRAP CONNECTOR
CHANNEL COUPLING BAND FOR FLANGED END C.S.P.

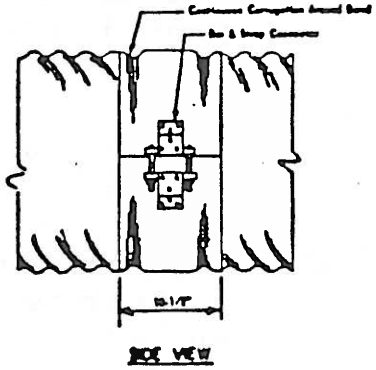


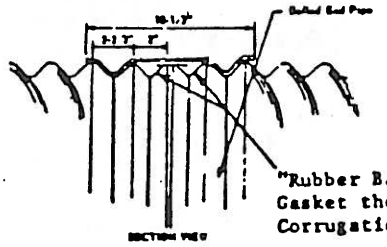
One piece lap-type coupling for annular or helical pipe—12" and 24" widths



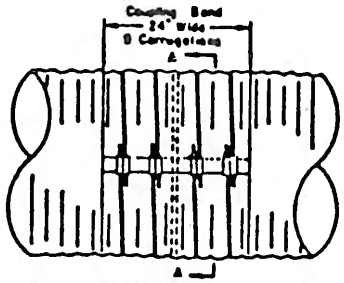
Two piece lap-type coupling for annular or helical pipe—12" and 24" widths

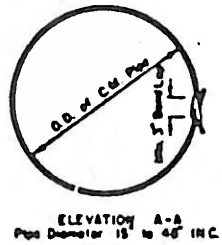
STANDARD LAP-TYPE COUPLING BANDS FOR ANNULAR C.S.P. OR HELICAL C.S.P.



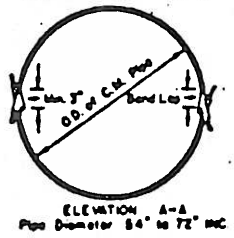


HUGGER TYPE COUPLING BAND FOR REFORMED END H.C.S.P. OR ANNULAR C.S.P.





ELEVATION A-A
Pipe Diameter 15" to 48" INC.

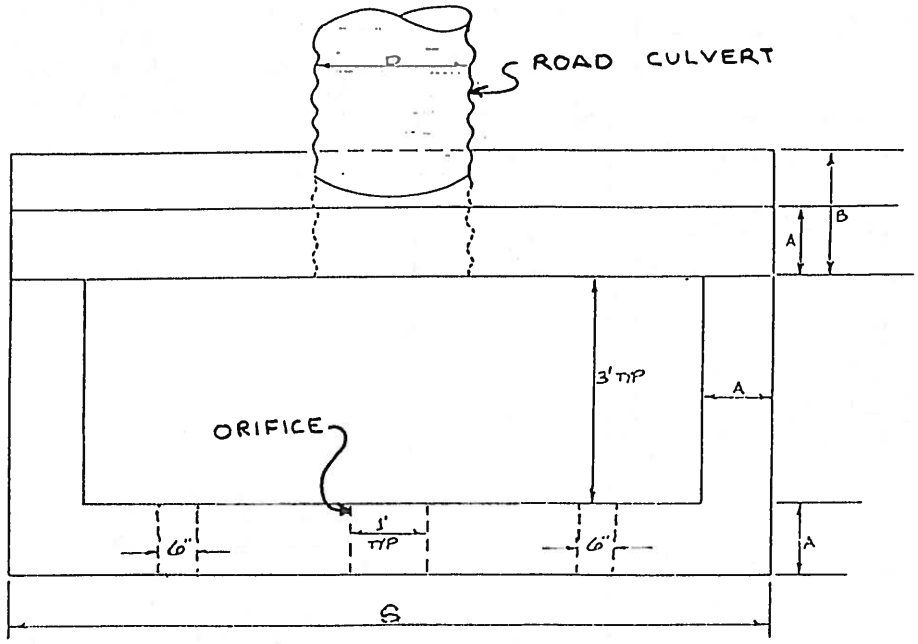


ELEVATION A-A
Pipe Diameter 54" to 72" INC.

ROD AND LUG TYPE

UNDER NO CIRCUMSTANCE, WILL THE DIMPLE (UNIVERSAL) CONNECTOR BAND BE ACCEPTABLE FOR USE IN ANY SEDIMENT CONTROL OR STORM-WATER MANAGEMENT STRUCTURE.

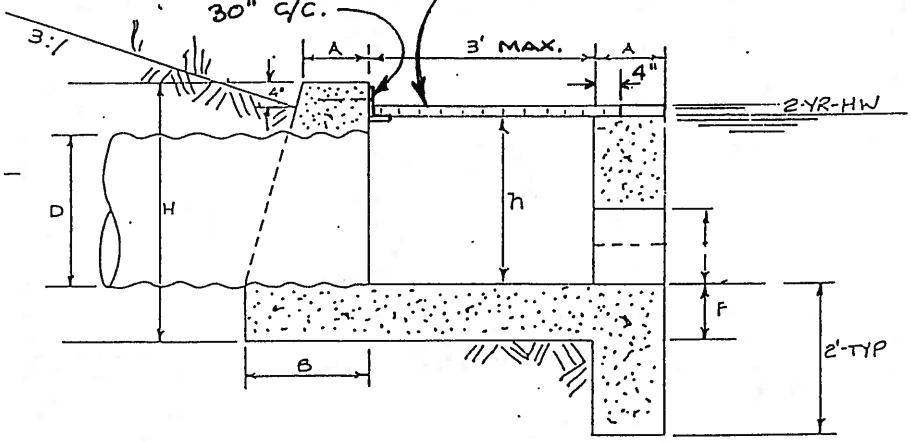
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 13, 1989 / COUNTY ENGINEER	PIPE COUPLER FOR SWM USE	REVISIONS:	DETAIL No. WM -03



PLAN

5" x 2½" x ½" Steel Angle Attached with ½"ϕ anchor bolts @ 30" c/c.

GRATING PER JEFFERSON COUNTY STD. DETAIL SD-12



PROFILE @ ℄

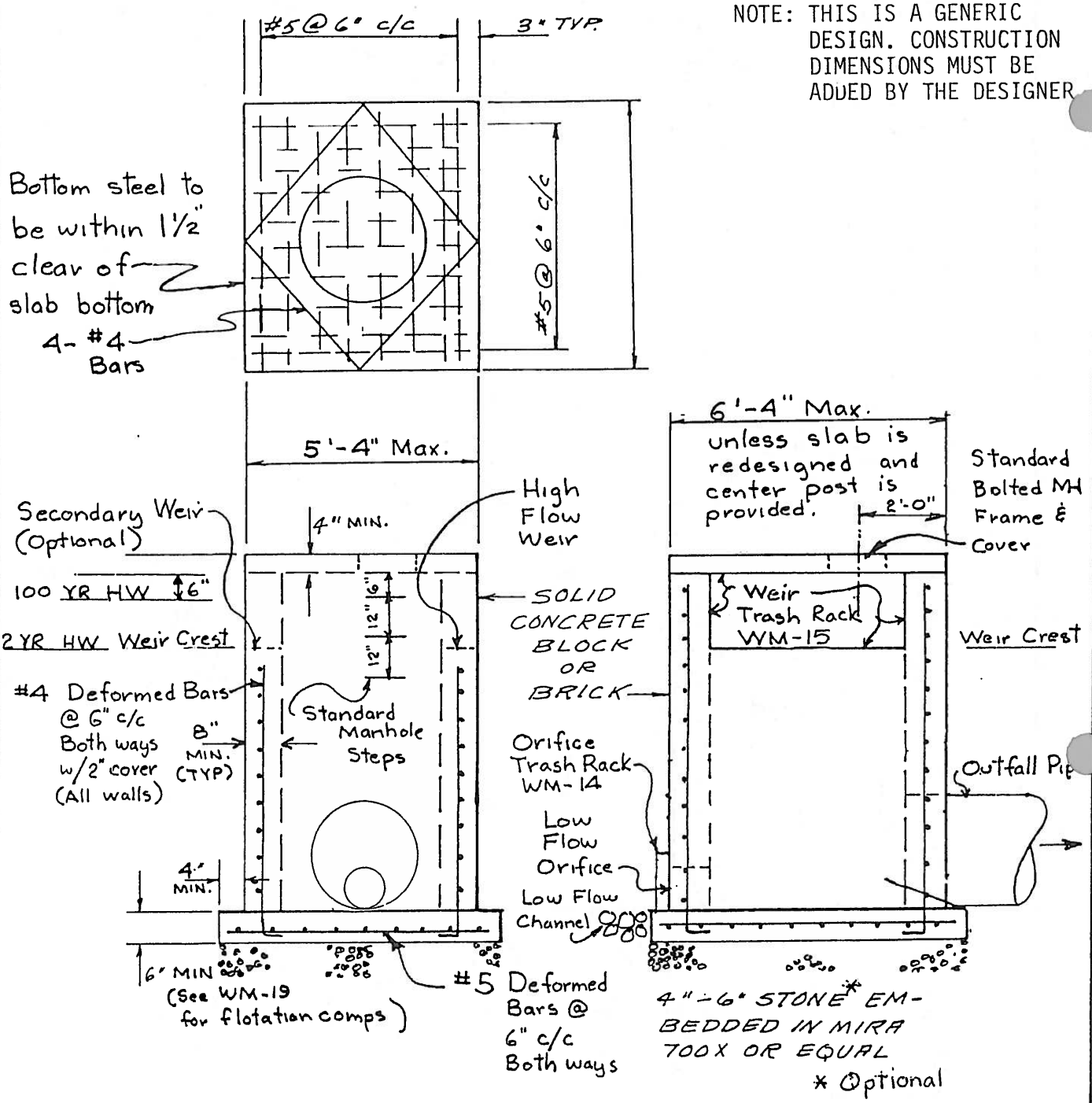
DIMENSIONS

D =
A = 8" Min.
B =
F =
S =
H =
h =

FOR USE WHERE:
1. h < 5 feet
2. Slopes in backwater area not > 4:1

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 13, 1989 COUNTY ENGINEER	ROAD CULVERT CONTROL STRUCTURE	REVISIONS: 10/10/89	DETAIL No. WM - 11

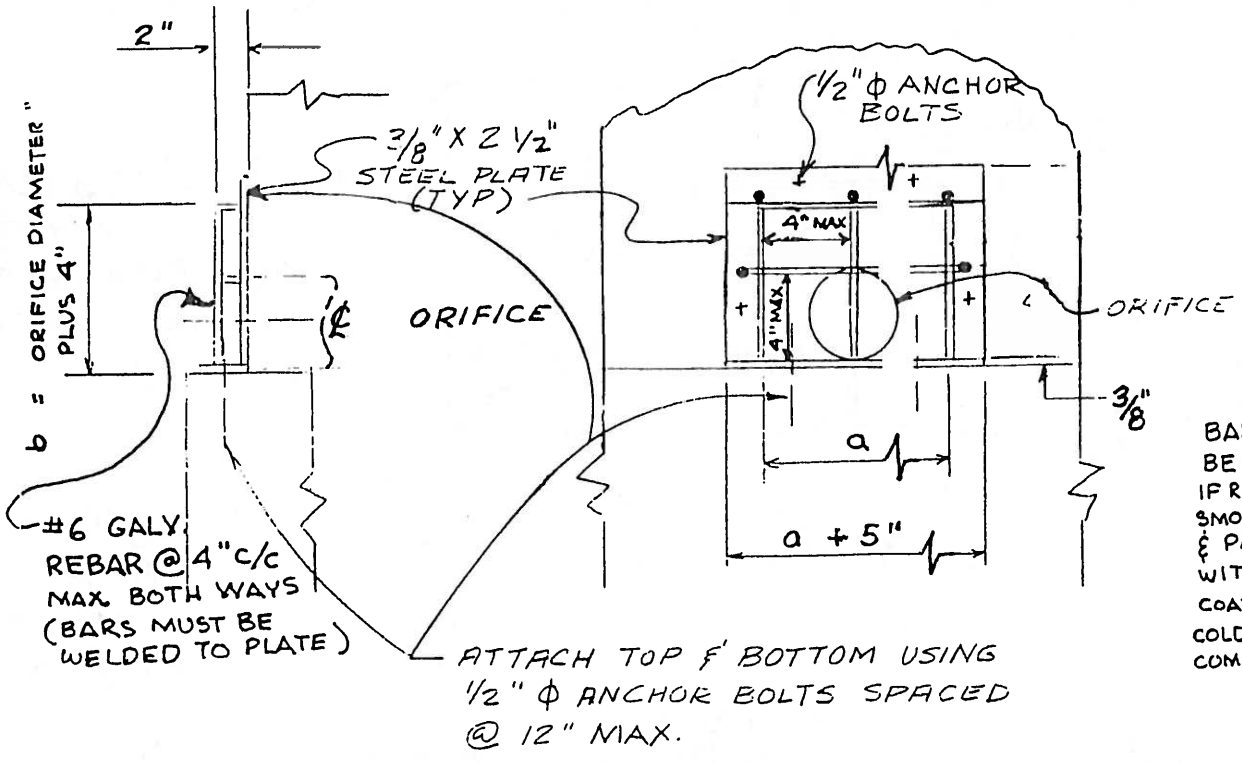
NOTE: THIS IS A GENERIC DESIGN. CONSTRUCTION DIMENSIONS MUST BE ADDED BY THE DESIGNER



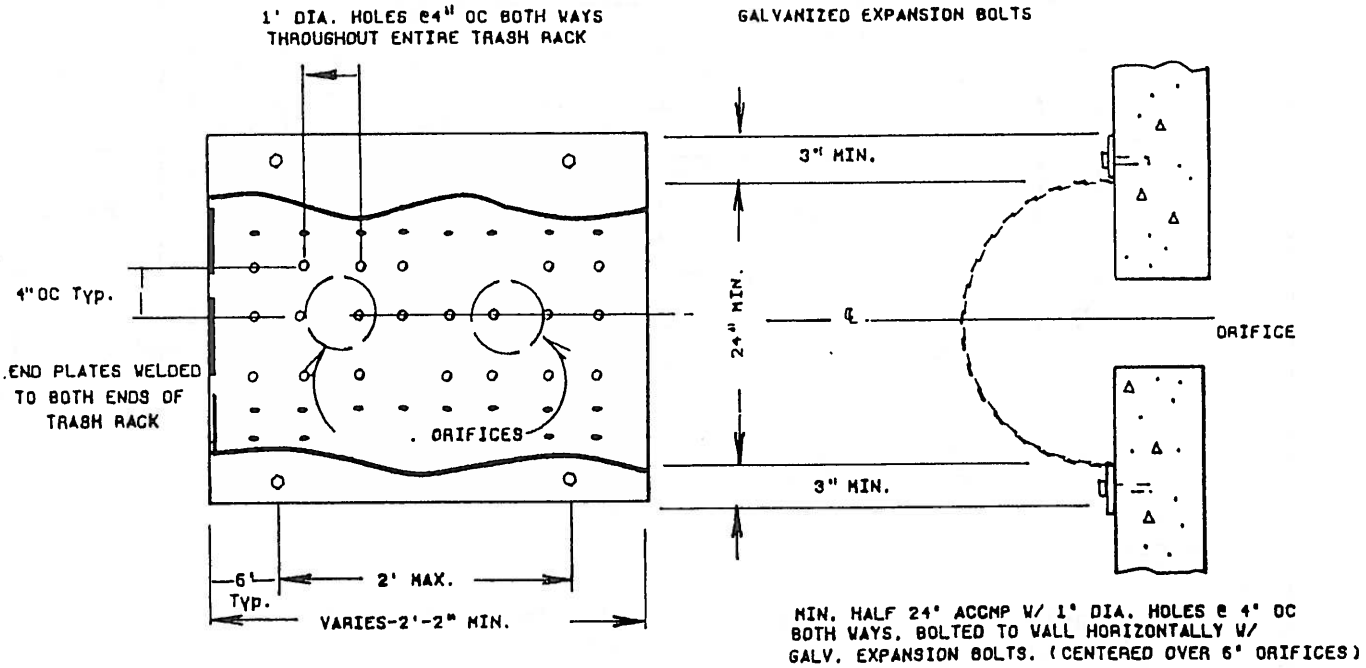
Notes

1. Locate weir(s) away from the side facing the downstream embankment.
2. f'_c for concrete to equal 3,500 psi or greater @ 28 days.
3. All reinforcing steel to be ASTM A615, Grade 60.
4. With aluminum or aluminized pipe, the embedded section must be painted with zinc chromate or equivalent.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 16, 1989 COUNTY ENGINEER	**INLET BOX CONTROL STRUCTURE**	REVISIONS: 1/26/95	DETAIL No. WM -12

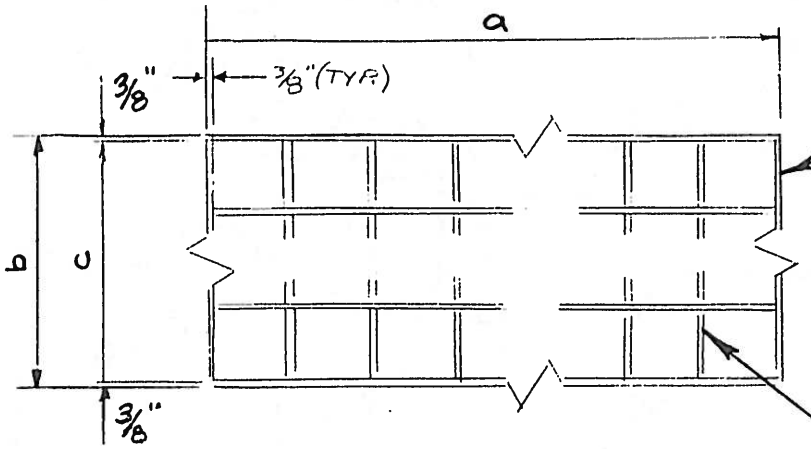


BAR TYPE



PERFORATED PLATE TYPE

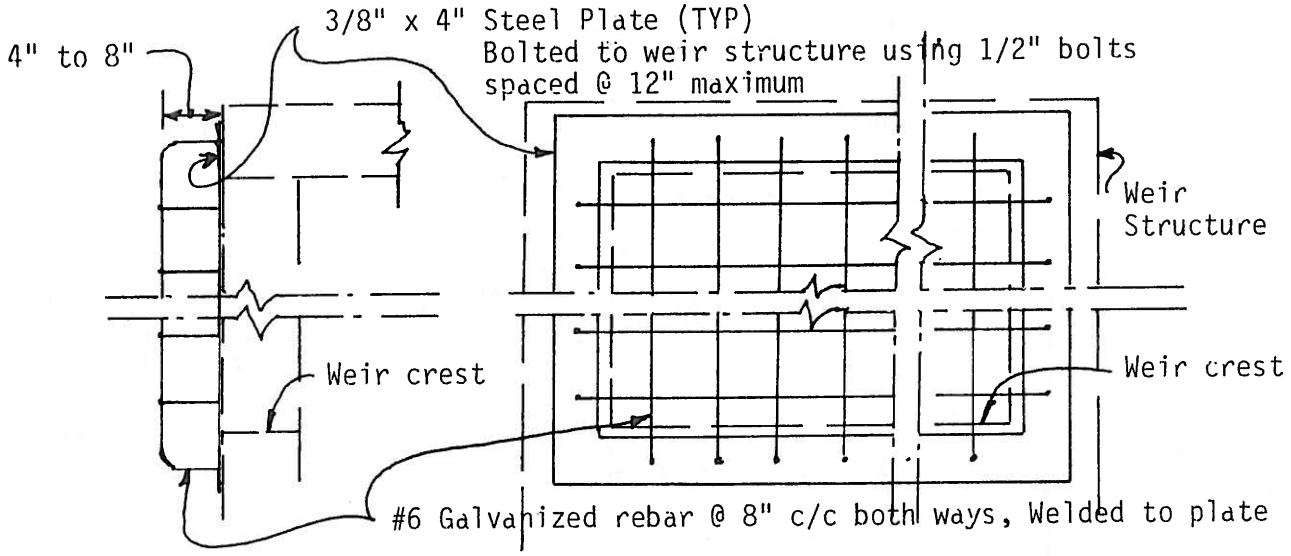
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 16, 1989 COUNTY ENGINEER	ORIFICE TRASH RACKS	REVISIONS:	DETAIL No. WM -14



3/8" x 2½" STEEL PLATE (TYP.) Attach to Weir Structure Top & Bottom using ½" Anchor Bolts spaced @ 12" max.

#6 GALVANIZED REBAR @ 8" c/c both ways (Bars must be welded to plate)

IN-WEIR DESIGN



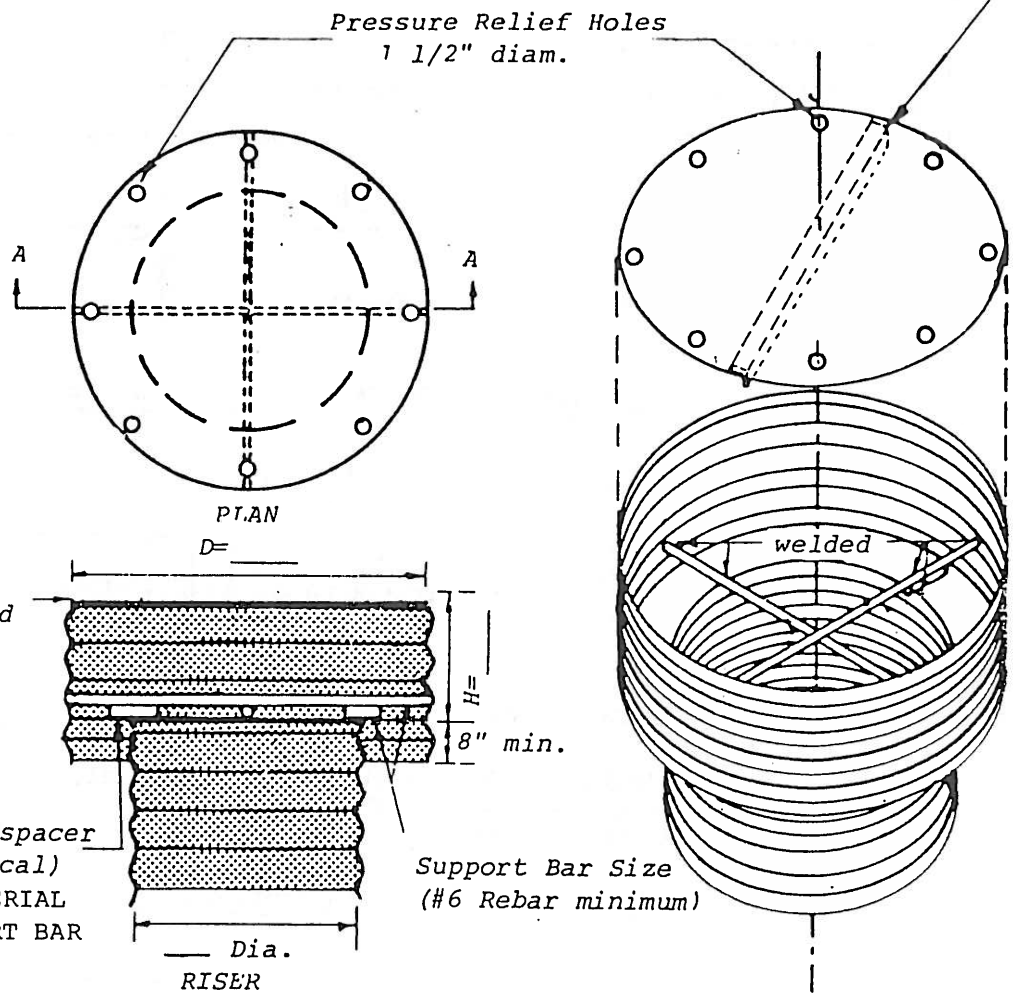
SIDE MOUNT DESIGN

NOTES:

1. Bar spacings not to exceed 8" c/c. All other diminsions and sizes are minimums and need to cheched by the designer for each application.
2. For weir structure details, see Standard Detail WM-12.
3. Rack must be hot dipped, if rebar or smooth bar, and painted with two(2) coats ZRC cold galvanizing compound.

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 15, 1989 COUNTY ENGINEER	WEIR TRASH RACK	REVISIONS: 1/26/95	DETAIL No. WM -15

Top stiffener (if required) is ____x___x____ angle welded to top and oriented perpendicular to corrugations.



SECTION A-A

ISOMETRIC

Top is ____ gage corrugated metal or 1/8" steel plate. Pressure relief holes may be ommitted, if ends of corrugations are left fully open when corrugated top is welded to cylinder.

Cylinder is ____ gage corrugated metal pipe or fabricated from 1/8" steel plate.

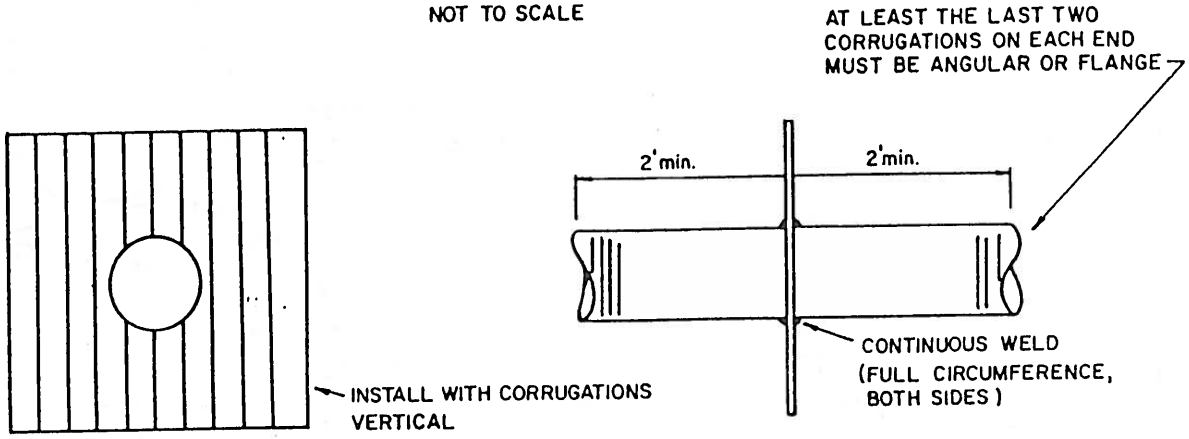
Notes:

1) The cylinder must be firmly fastened to the top of the riser.
2) Support bars are welded to the top of the riser or attached by straps bolted to top of riser.

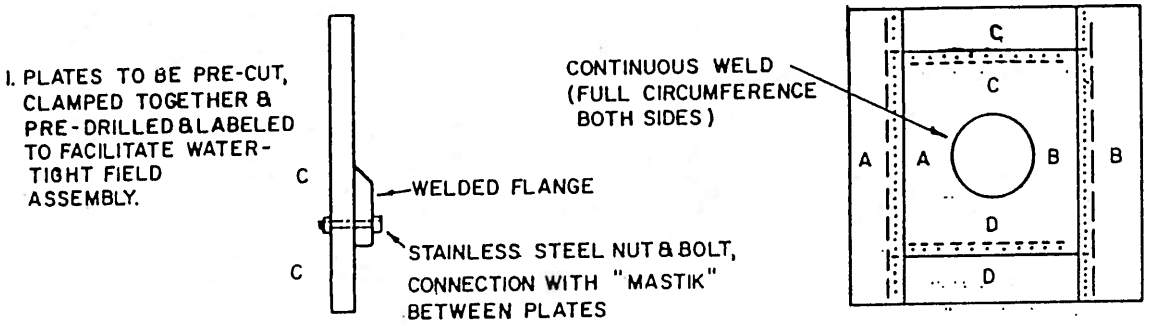
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 14, 1980 COUNTY ENGINEER	CONCENTRIC TRASH RACK & ANTI-VORTEX DEVICE	REVISIONS:	DETAIL No. WM -16

TYPICAL ANTI-SEEP COLLARS

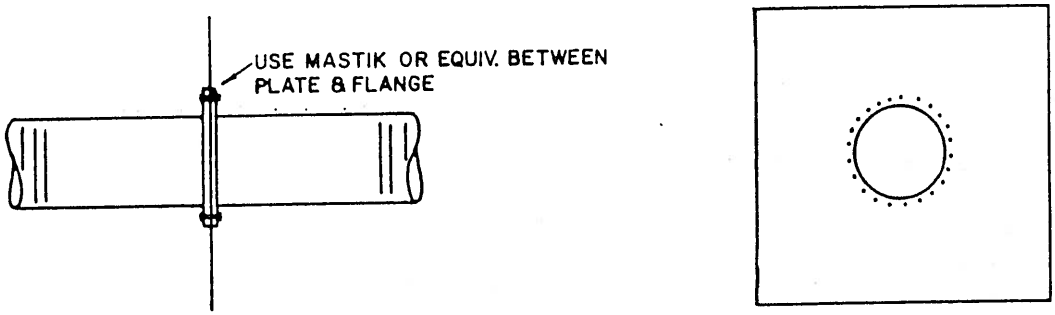
NOT TO SCALE



COLLAR WELDED IN PLACE ON BARREL SECTION



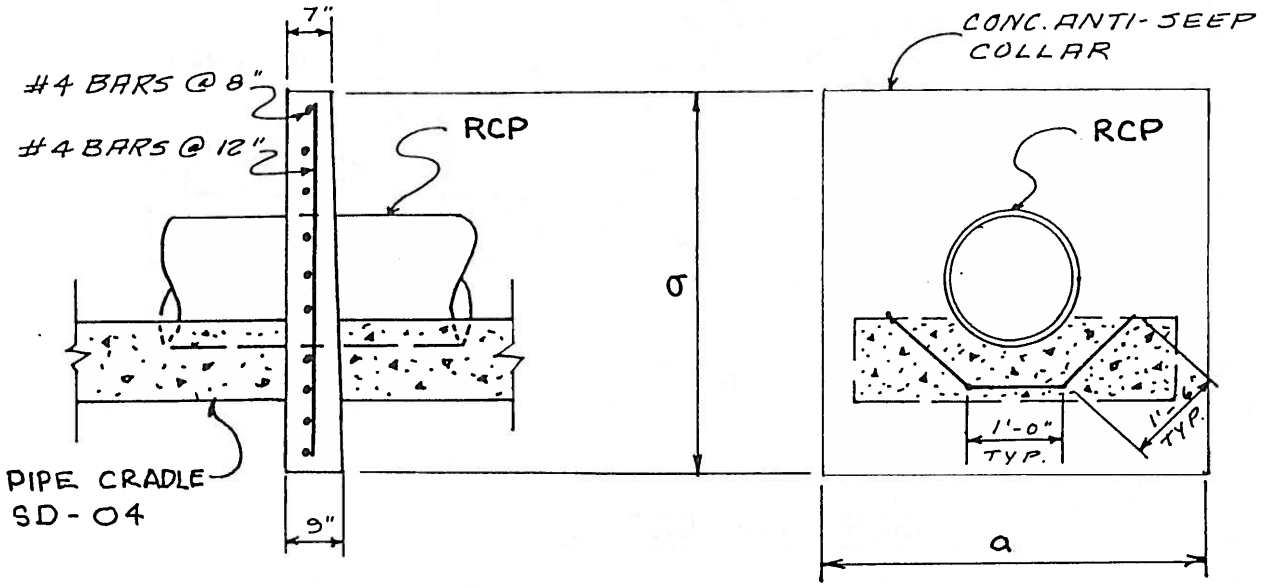
MULTI-PIECE COLLAR FOR LARGE PIPES



COLLAR FOR FLANGE JOINT PIPE

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 14, 1989 COUNTY ENGINEER	ANTI-SEEP COLLAR (METAL)	REVISIONS:	DETAIL No. WM -17

CONSTRUCT ANTI-SEEP COLLAR WITH RCP PIPE STUBS BEFORE CONSTRUCTING PIPE OR PIPE CRADLE.
CONCRETE TO HAVE fc = 4000 psi.



CONCRETE ANTI-SEEP COLLAR
N.T.S.

COMPUTATIONS FOR SIZING COLLAR

$$Ls = y(z+4)\left(1 + \frac{\text{pipe slope}}{0.25 - \text{pipe slope}}\right)$$

$$Lc = 0.15\,(Ls)$$

$$\text{Collar size in feet} = \frac{Lc}{\#\text{ of collars}} + \frac{\text{Pipe diameter}"}{12"/1'}$$

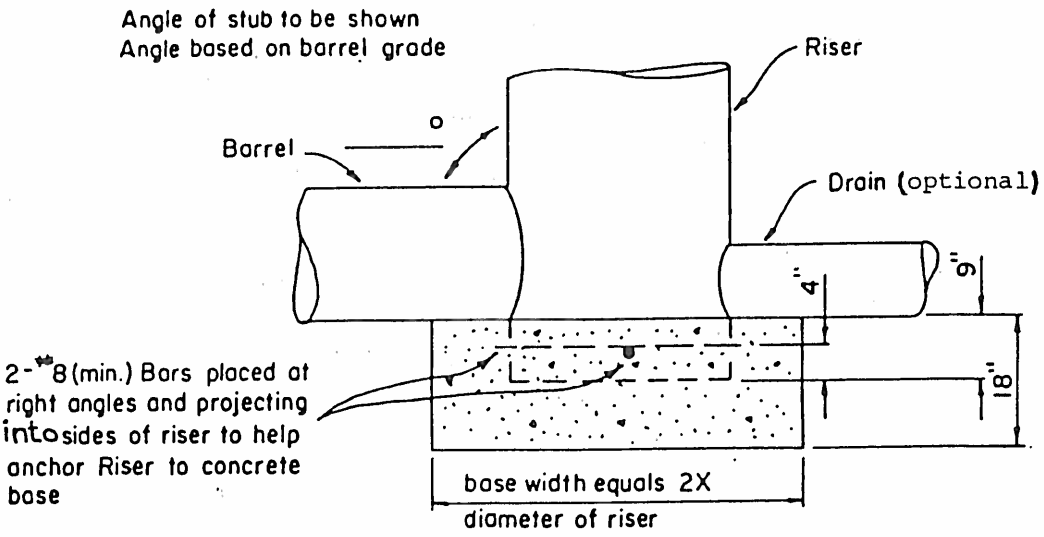
where:

y = distance from bottom of basin to crest of riser

z = slope ratio of upstream slope of embankment (z:1)

pipe slope is expressed as feet per foot

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 23, 1982 COUNTY ENGINEER	ANTI-SEEP COLLAR (concrete)	REVISIONS:	DETAIL No. WM -18



RISER BASE DETAIL

NOTES:

1. The concrete base shall be poured in such a manner to insure that the concrete fills the bottom of the riser to the invert of the outlet pipe to prevent the riser from breaking away from the base.
2. With aluminum or aluminized pipe, the embedded section must be painted with zinc chromate or equivalent.
3. Riser base may be sized as computed using floatation with a factor of safety of 1.2.

FLOTATION COMPUTATION METHOD

V_{IR} = Volume inside riser ; U_F = Uplift Force = $V_{IR}(62.4)$

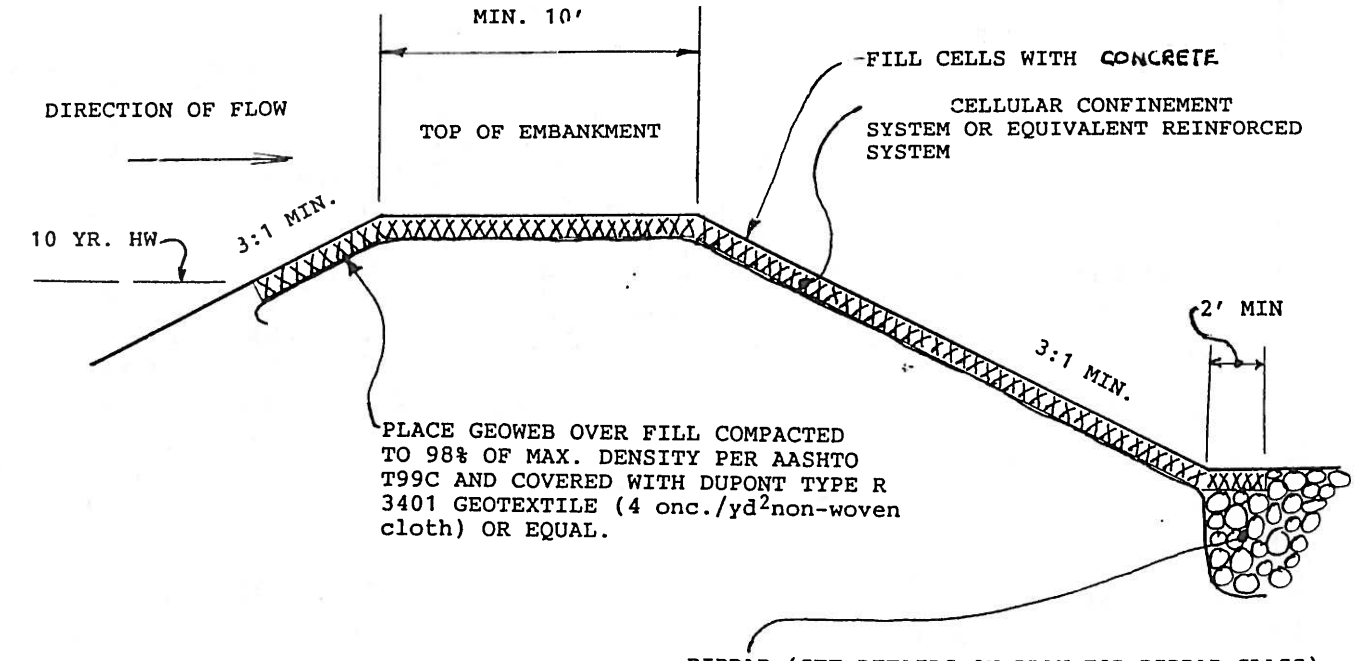
Req'd Weight to oppose flotation = $1.2\ (U_F)$

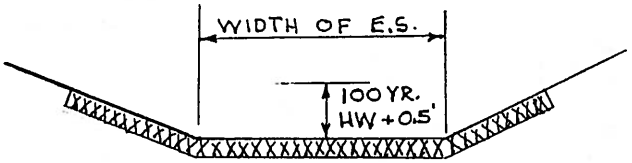
W_B = Weight of Base = $V_b\ (150 - 62.4)$

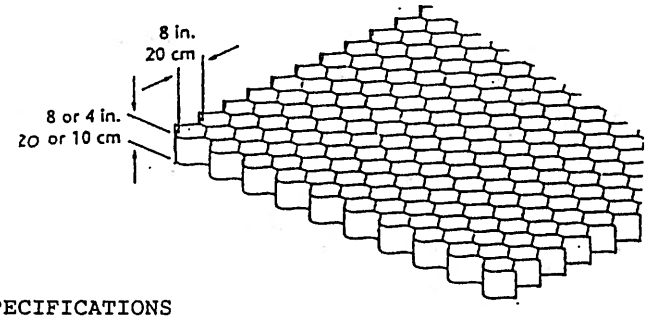
where : V_b is trial volume of base

Units are pounds and feet

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 14, 1989 COUNTY ENGINEER	RISER BASE DETAIL	REVISIONS:	DETAIL No. WM -19





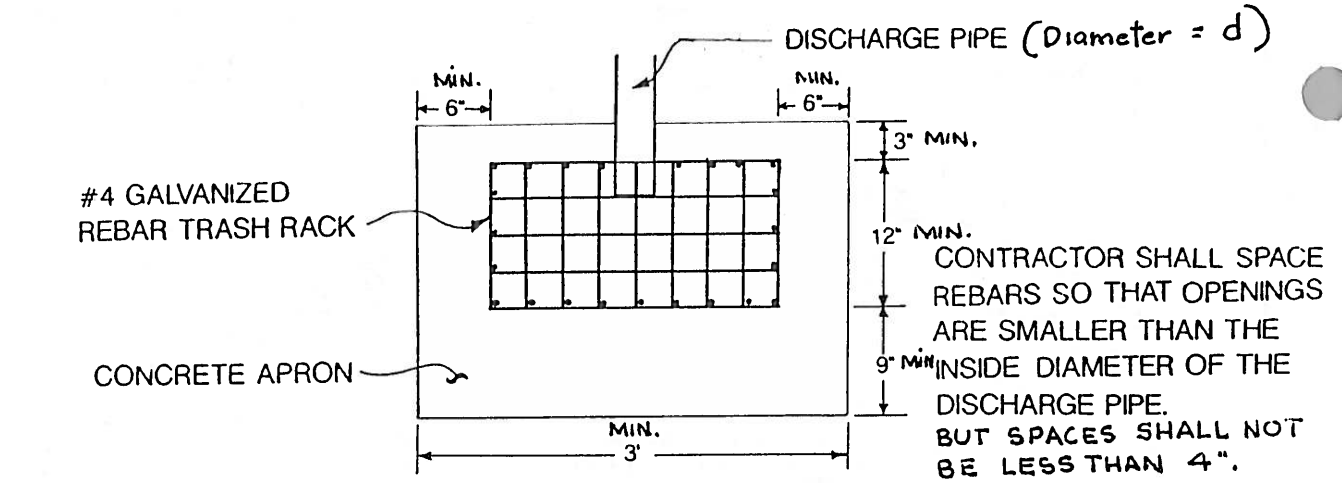


NOTE: TO BE USED ONLY WHEN
a) site does not allow practical installation of an emergency spillway in cut
b) approval by the County Engineer

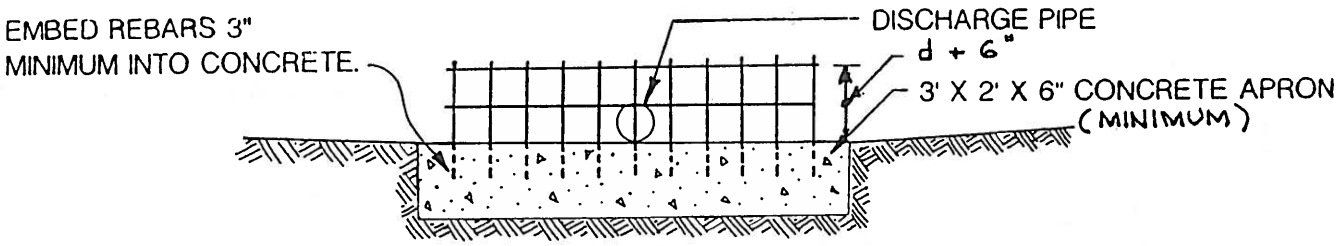
SPECIFICATIONS

1.	Panel Thickness (Nominal)	0.045 + .002 in.
2.	Cell Area	41 $in.^2$
3.	Cell Seam Node Pitch	13 in.
4.	Welds/Seam	7 or 3, for 8 in. or 4 in.
5.	Seams Tensile Peel Strength	450 lbs. or 225 lbs.
6.	Installation Temperature Range	-16°F to +110°F
7.	Polymer Material	High Density Polyethylene
8.	Carbon Black Content	2%
9.	Chemical Resistance	Superior

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: 12-28-89 COUNTY ENGINEER	**reinforced emergency spillway**	REVISIONS:	DETAIL No. WM -20



PLAN VIEW

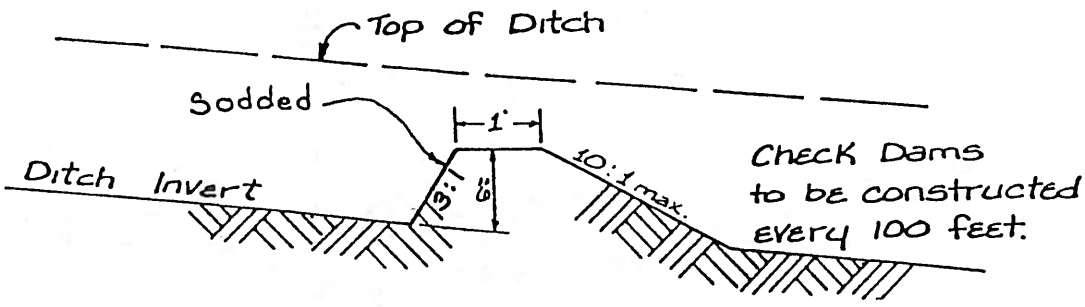


ELEVATION VIEW

1. REBARS ARE TO BE TACK-WELDED AT ALL INTERSECTIONS.
2. TRASH RACK MUST BE HOT-DIPPED IF REBAR OR SMOOTH BAR AND PAINTED WITH TWO (2) COATS ZRC COLD GALVANIZING COMPOUND.

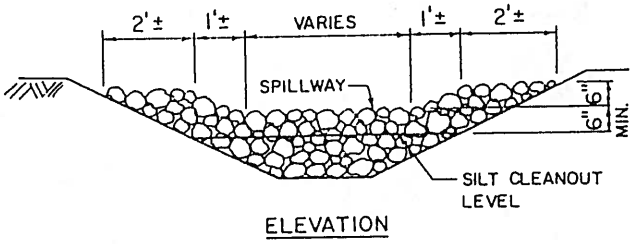
JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: January 12, 1990 COUNTY ENGINEER	small pipe trash rack	REVISIONS:	DETAIL No. WM -21

TYPE A



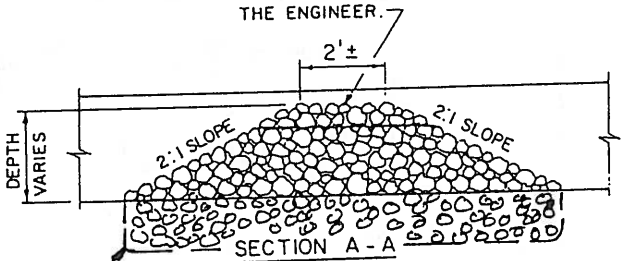
CHECK DAM DETAIL
N.T.S.

TYPE B



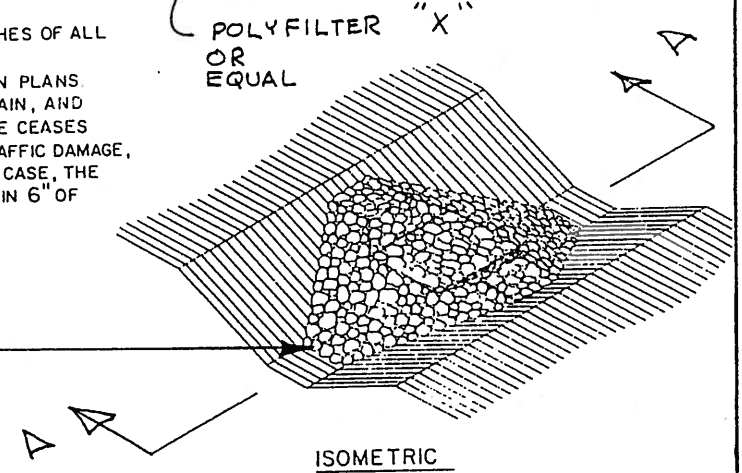
ELEVATION

TOP ELEVATION OF OUTLET STRUCTURE TO BE SET IN FIELD AS DIRECTED BY THE ENGINEER.



SECTION A-A

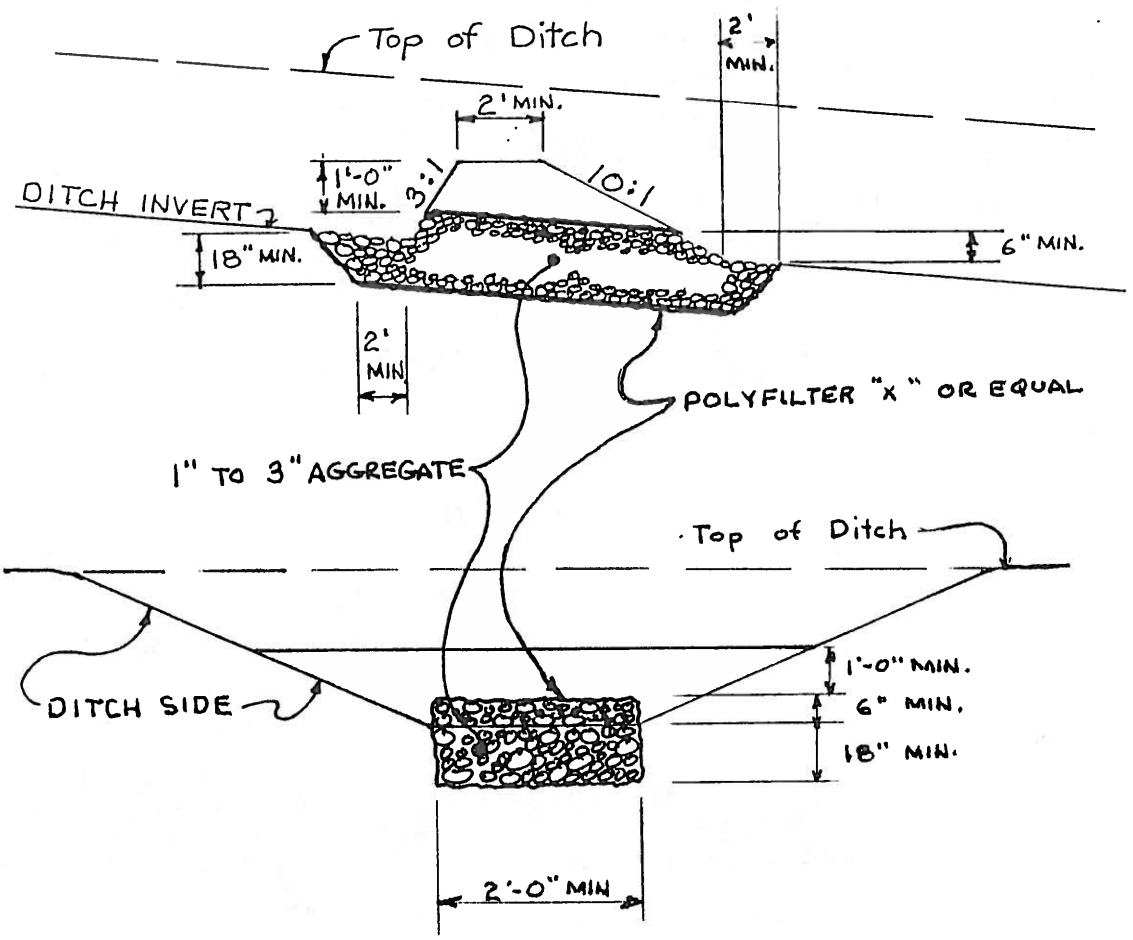
1. INTENDED FOR USE IN EXISTING, PROPOSED AND TEMPORARY DITCHES OF ALL TYPES AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
2. FOR LOCATIONS OF OUTLET STRUCTURES REFER TO CONSTRUCTION PLANS.
3. THE OUTLET STRUCTURES SHALL BE INSPECTED AFTER EACH RAIN, AND THE STONE SHALL BE REPLACED WHEN THE OUTLET STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, SILT ACCUMULATION AMONG THE STONE, ETC. HOWEVER, IN ANY CASE, THE SILT SHALL BE CLEANED OUT WHEN IT ACCUMULATES TO WITHIN 6" OF THE CREST OF THE SPILLWAY.



ISOMETRIC

PLAN VIEW SYMBOL TSOS

JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: March 14, 1989 COUNTY ENGINEER	CHECK DAM DETAILS	REVISIONS: 4/18/89 JR	DETAIL No. WM - 31



JEFFERSON COUNTY, WEST VIRGINIA	APPROVED: November 20, 1989 COUNTY ENGINEER	INFILTRATING CHECK DAM	REVISIONS:	DETAIL No. WM -32