Standard	Page	Description and Comments
SWM-1	116.01	Stormwater Management Drainage Structure. Replaces Insertable Sheet ISD2216.
	116.02	
	116.03	
SWM-DR	116.04	Stormwater Management (SWM) Details. Replaces Insertable Sheet ISD2216A
	116.05	Stormwater Management (SWM) Details. Replaces Insertable Sheet ISD2209.
	116.06	

Section 200

Standard	Page	Description and Comments
CG-6	201.03	Combination 6" Curb & Gutter. Replaces Insertable Sheet A123.
CG-7	201.04	Combination 4" Curb & Gutter. Replaces Insertable Sheet A123.
MC-4	201.07	Asphalt Curb and Gutter & Asphalt Paving Under Guardrail. Replaces Insertable
	201.08	Sheet ISD2154A.
CG-9A	203.01	Standard Entrance Gutter with Flared Opening for use across Sidewalk. Replaces Insertable Sheet A76.
CG-9B	203.02	Standard Entrance Gutter for use with Unpaved Space Between Curb & Gutter. Replaces Insertable Sheet A79.
CG-9D	203.03	Standard Entrance Gutter. Replaces Insertable Sheet A78.
CG-11	203.04	Method of Treatment – Connection for Street Intersections and Commercial Entrances. Replaces Insertable Sheet A77.
CG-12A, 12B, 12C	203.05	Perpendicular, Parallel and Combined Curb Ramps (Access for Mobility Impairments). Replaces Insertable Sheet A59.
	203.06	
	203.07	
CG-13	203.08	Commercial Entrance (Heavy Truck Traffic). Replaces Insertable Sheet A108

Section 300

Standard	Page	Description and Comments
PR-5	301.13	9" Thick Continuously Reinforced Concrete Pavement – 14' Travel Lane. Replaces Insertable Sheet ISD2724.
	301.14	
	301.15	
PR-6	301.16	10" Thick Continuously Reinforced Concrete Pavement – 14' Travel Lane. Replaces Insertable Sheet ISD2623.
	301.17	
	301.18	
PR-7	301.19	11" Thick Continuously Reinforced Concrete Pavement – 14' Travel Lane. replaces Insertable Sheet ISD2761.
	301.20	
	301.21	
XJ-1	302.01	Bridge Approach Expansion Joint. Replaces Insertable Sheet A122.
	302.02	
RS-1	304.01	Rumble Strips (Asphalt Shoulders). Replaces Insertable Sheet ISD1722A.
RS-2	304.02	Rumble Strips (Concrete Shoulders). Replaces Insertable Sheet ISD1722.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, 23219-2000

CHARLES D. NOTTINGHAM
COMMISSIONER

J. T. MILLS
STATE LOCATION AND DESIGN ENGINEER

February 1, 2001

2001 Road and Bridge Standards
Volume I and Volume II

To: All Recipients of the 2001 Road and Bridge Standards

Attached is your copy of Volumes I and II of the 2001 edition of the Road and Bridge Standards. This edition is to be used on VDOT projects using Imperial units beginning with those on the February 2001 advertisement.

PLEASE NOTE THAT THIS 2001 EDITION OF THE ROAD AND BRIDGE STANDARDS DOES NOT REPLACE THE 1996 METRIC EDITION. The 1996 Metric Standards should be retained until we have completed the construction of all the projects that are in metric units. **DO NOT DISCARD THE 1996 METRIC STANDARDS.**

The following is a list of standards that have been changed since the printing of this edition. These sheets are attached and replace equivalent sheets in the shrink-wrapped packages.

Page	Standard	Title
114.06	EC-5	Temporary Silt Fence and Filter Barrier
114.09	EC-8	Dewatering Basin
201.07	MC-4	Asphalt Curb and Gutter & Asphalt Paving Under Guardrail
201.08	MC-4	Asphalt Curb and Gutter & Asphalt Paving Under Guardrail
203.05	CG-12A	Perpendicular Curb Ramp
203.06	CG-12B	Parallel Curb Ramp
203.07	CG-12C	Combined Curb Ramps
501.07	GR-3	Cable Guardrail
501.16	GR-SP	Guardrail Terminal Installation Site Preparation Requirements

The following is a list of insertable sheets which were supplements to the 1993 Standards that have been included in the 2001 edition. This will eliminate the need to insert the sheet(s) in projects using Imperial units beginning with the February 2001 advertisement.

Section 100

Standard	Page	Description and Comments
EW-12	101.32	Standard Endwall for Pipe Underdrain. Replaces Insertable Sheet A57.
B-3	103.12	Standard Precast Base Units. Replaces Insertable Sheet A111

please contact Bryant Lowery at (804) 786-9468 (e-mail at lowery_bl@vdot.state.va.us). Please contact Paul Kelley at (804) 786-2544 (e-mail at Kelley_pe@vdot.state.va.us) if you have any questions or comments.

Sincerely,

Jimmy T. Mills
State Location and Design Engineer

Standard	Page	Description and Comments
B-4	103.13	Corrugated Metal Tee Section. Replaces Insertable Sheet A112.
DI-10G, 10H, 10I	104.26	Concrete Median Barrier Drop Inlet (MB-7D). Replaces Insertable Sheet A99
	104.27	
DI-10J, 10K, 10L	104.28	Concrete Median Barrier Drop Inlet (MB-8A). Replaces Insertable Sheet A100.
	104.29	
DI-13	104.35	Shoulder Slot Inlet. Replaces Insertable Sheet ISD2154
	104.36	
PI-1	104.37	Method of Outlet Pipe Installation for DI-13 (Corrugated Metal Pipe). Replaces Insertable Sheet A73
DI-14A, 14B, 14C	104.38	Concrete Median Barrier Drop Inlet (Tall Wall). Replaces Insertable Sheet A101.
	104.39	
DI-14D, 14E, 14F	104.40	Concrete Median Barrier Drop Inlet (Tall Wall). Replaces Insertable Sheet A102.
	104.41	
PB-1	107.01	Pipe Bedding and Backfill – Method "A" for Circular, Elliptical and Pipe Arch. Replaces Insertable Sheets A86 and A120.
	107.02	
	107.03	
PC-1	107.05	Concrete Pipe Class Table for H-20 Live Load. Replaces Insertable Sheet A121
PP-1	107.22	Details for Backfilling Abandoned Culverts. Replaces Insertable Sheet ISD1821.
UD-1	108.01	Standard Groundwater Underdrain. Replaces Insertable Sheet A80
UD-2	108.02	Standard Underdrain for use with Raised Grass Median Strips. Replaces Insertable Sheet A80
UD-3	108.03	Standard Sidewalk Underdrain. Replaces Insertable Sheet A55.
CD-1	108.04	Standard combination Underdrain. Replaces Insertable Sheet A84
CD-2	108.05	
UD-4	108.06	Standard Pavement Edgedrain. Replaces Insertable Sheet A81.
	108.07	
UD-5	108.08	Prefabricated Geocomposite Retrofit Pavement Edgedrain. Replaces Insertable Sheet A82.
UD-7	108.09	Standard Retrofit Edgedrain. Replaces Insertable Sheet A83.
PG-7	109.05	Ditch Flume Connector. Replaces Insertable Sheet ISD564A.
TD-CL	113.01	Temporary Diversion Channel. Replaces Insertable Sheet A45.
EC-3	114.04	Soil Stabilization Mat – Slope Installation Type C. Replaces Insertable Sheet A107.
EC-4	114.05	Rock Check Dams Types I & II. Replaces Insertable Sheet ISD414_1.
EC-5	114.06	Temporary Silt fence and Filter Barrier. Replaces Insertable Sheet ISD414_2
EC-6	114.07	Drop Inlet Silt Trap (Types A and B). Replaces Insertable Sheet ISD414_3.
EC-7	114.08	Typical Sediment Trap. Replaces Insertable Sheet ISD414_3.
EC-8	114.09	Dewatering Basin. Replaces Insertable Sheet ISD414_3.
ESC-INS	115.01	Temporary Erosion & Siltation Control. Replaces Insertable Sheets ISD414_1 and ISD414_2.
	115.02	Temporary Erosion & Siltation Control. Replaces Insertable Sheet ISD414_1.
	115.03	Temporary Erosion & Siltation Control. Replaces Insertable Sheet ISD414_2.

Section 500

Standard	Page	Description and Comments
GR-2, 2A	501.04	Standard Blocked – Out W Beam Guardrail (Strong Post System). Replaces Insertable Sheet A87.
	501.05	
GR-3	501.06	Cable Guardrail. Replaces Insertable Sheet A133.
	501.07	
	501.08	
GR-6	501.09	Terminal Treatment for W Beam Guardrail. Replaces Insertable Sheet A132.
	501.10	
GR-7	501.11	Breakaway Cable Terminal – 4' Flare. Replaces Insertable Sheet A89.
	501.12	
	501.13	
GR-8, 8A, 8B, 8C	501.14	Standard W Beam guardrail (Weak Post System). Replaces Insertable Sheet A91.
	501.15	
GR-9	501.18	Alternate Breakaway Cable Terminal (No Flare). Replaces Insertable Sheet ISD2390.
GR-10	501.19	Guardrail at Low-Fill Culverts. Replaces Insertable Sheet A88.
	501.20	
BGR-01	501.22	Standard Box Culvert Guardrail. Replaces Texas T-6 Insertable Sheet.
	501.23	
	501.24	
GR-FOA-1	501.25	W Beam Guardrail – Fixed Object Attachment (Vertical Fixed Objects). Replaces Insertable Sheet A65.
	501.26	
GR-FOA-2	501.28	W Beam Guardrail – Fixed Object Attachment (Safety shape). Replaces Insertable Sheet A66.
	501.29	
GR-FOA-4	501.31	Blocked – Out W Beam Median barrier – Fixed Object Attachment. Replaces Insertable Sheet A67.
GR-INS	501.38	W Beam Guardrail Installation Criteria. Replaces Insertable Sheet A92.
	501.40	W Beam Guardrail and Median Barrier Installation Criteria. Replaces Insertable Sheet A93.
MB-3	501.41	Blocked – Out W Beam Median Barrier. Replaces Insertable Sheet A94.
MB-5	501.42	Standard W Beam Median Barrier (Weak Post System). Replaces Insertable Sheet A95.
	501.43	
MB-7D, 7E, 7F	501.44	Concrete Median Barrier. Replaces Insertable Sheet A98.
MB-7D PC	501.45	Precast Traffic Barrier Service Concrete. Replaces Insertable Sheet A103.
	501.46	
MB-8A	501.47	Concrete Median Barrier Type I, II, or III. Replaces Insertable Sheet ISD1954A.
	501.48	
MB-9A	501.49	Cast In Place and Precast Concrete Median Barrier 12' Terminal Section. Replaces Insertable Sheet ISD1676A.
MB-9A PC	501.50	
MB-10A	501.51	Traffic Barrier Service Concrete Parapet (Single Face). Replaces Insertable Sheet ISD1276A.
	501.52	

Standard	Page	Description and Comments
MB-11A	501.53	Traffic Barrier Service Concrete Parapet (Double Faced). Replaces Insertable Sheet ISD1165A.
	501.54	
MB-12A, B, C	501.55	Concrete Median Barrier (Tail Wall). Replaces Insertable Sheet A96.
	501.56	
MB-13	501.57	Concrete Median Barrier Type I, II, or III. Replaces Insertable Sheet A104.
	501.58	
MB-INS	501.59	Precast Concrete Median Barrier Positive Connection Option. Replaces Insertable Sheet A105.
	501.60	
	501.61	
	501.62	Butting Traffic Barrier Service to Single Face Parapet Service. Replaces Insertable Sheet ISD2063A.
	501.63	

Section 600

Standard	Page	Description and Comments
HR-1	601.05	Standard Handrail. Replaces Insertable Sheet A68.
LR-1	601.06	Minimum Design for Small Boat Launching Ramps at Public Landings. Replaces Insertable Sheet A85.
NG-1	605.01	Storage Facility for Nuclear Gauge. Replaces Insertable Sheet ISD2330.

Section 700

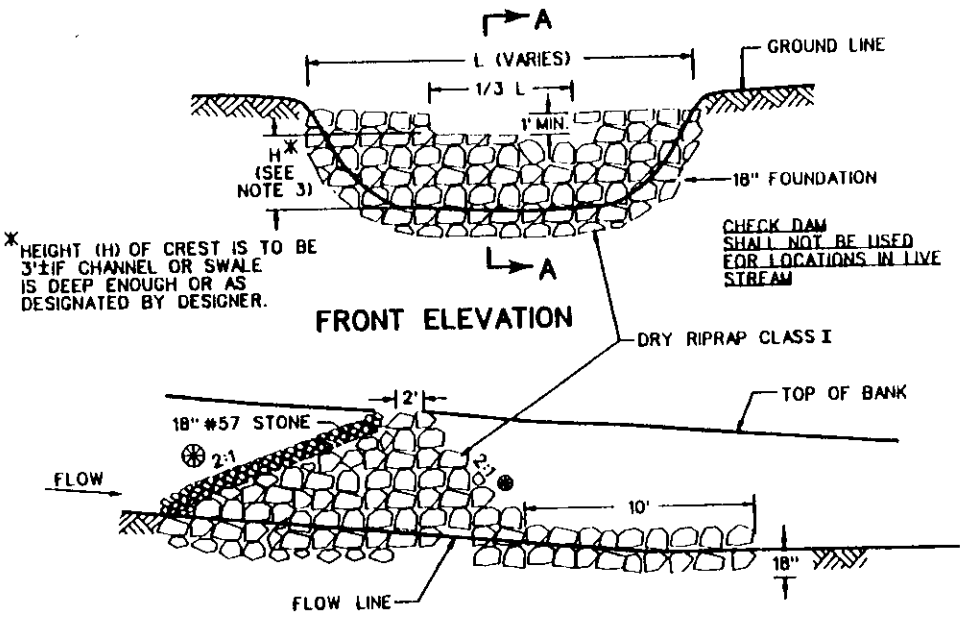
Standard	Page	Description and Comments
CS-3B	701.05	Typical Methods of Grading Side Slopes. Replaces Insertable Sheet A109.
CS-4C	701.09	Typical Methods of Grading Side Slopes. Replaces Insertable Sheet A110.

Section 1300

Standard	Page	Description and Comments
PM-3	1301.88	Typical Pavement Marking for Unsignalized Intersections. Replaces Insertable Sheet A-75-2
PM-4	1301.89	Typical Pavement Marking for Signalized Intersections. Replaces Insertable Sheet A-75-1
PM-6	1301.91	Typical Pavement Markings for Bicycle Lane. Replaces Insertable Sheet A-75-3
PM-7	1301.92	Typical Pavement Marking Railroad – Highway Crossing. Replaces Insertable Sheet A-75-3
CSI-1	1301.97	Details for Calculating Size of Wood Posts for Construction & Permanent Signs Installed at 7'-0" Minimum Mounting Heights on Ground Level, 1½:1 Slope, and 2:1 Slope. Replaces Insertable Sheet A126
	1301.98	
	1301.99	
	1301.100	
	1301.101	
PS1-1	1301.102	Details for Calculating Size of Wood Posts for Construction & Permanent Signs Installed at 5'-0" Minimum Mounting Heights on Ground Level, 1½:1 Slope, and 2:1 Slope. Replaces Insertable Sheet A125
	1301.103	
	1301.104	
	1301.105	
	1301.106	

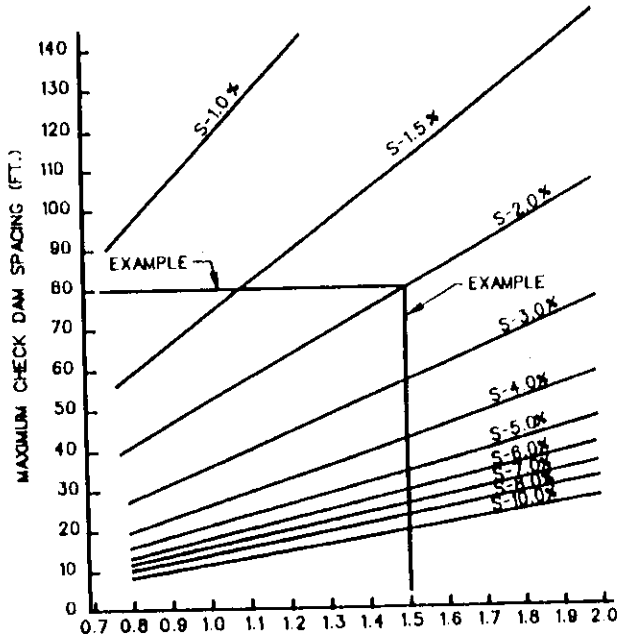
To request a detailed list of all revisions incorporated in this edition of the standards

TYPICAL DETAIL FOR ROCK CHECK DAM TYPE I



SECTION A-A

SUGGESTED ROCK CHECK DAM SPACING

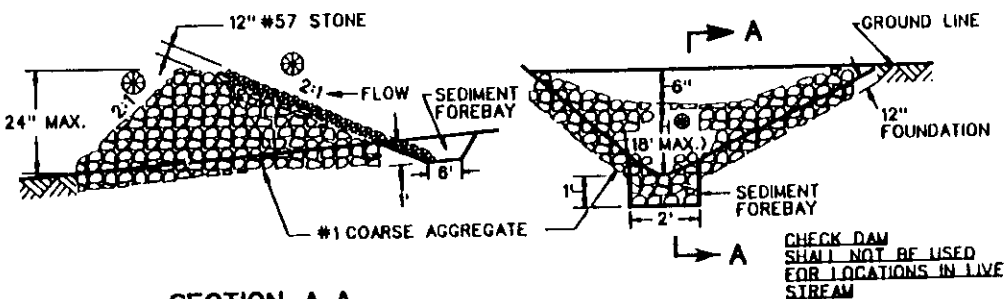


DESIGN OF STONE CHECK DAM SPACING

EXAMPLE :

HEIGHT OF STRUCTURE 1.5'
GRADE 2%
EXTEND PERPENDICULAR FROM 1.5' HEIGHT TO INTERSECT 2% GRADE
EXTEND 90° TO THE LEFT TO DETERMINE SPACING (78')

TYPICAL DETAIL FOR ROCK CHECK DAM TYPE II



SECTION A-A

FRONT ELEVATION

NOTES:

1. ROCK CHECK DAMS THAT ARE DESIGNATED ON THE PLANS AS A STORMWATER MANAGEMENT (SWM) ITEM ARE TO BE LEFT IN PLACE AS A PERMANENT INSTALLATION.
2. WHERE DRAINAGE AREAS EXCEED 1 ACRE OR DITCH GRADE EXCEEDS 3%, A TEMPORARY SEDIMENT FOREBAY SHALL BE INSTALLED WITH MINIMUM DIMENSIONS OF 12" DEPTH, 2' WIDTH AND 6' LENGTH.
3. IF CHECK DAMS IS LOCATED INSIDE CLEAR ZONE AND ADJACENT TO A TRAVELWAY, SLOPE FACING ON COMING TRAFFIC IS TO BE 6:1 AND MAXIMUM H IS TO BE 12".
4. ALTERNATIVE MATERIALS ON VDOT'S SPEL LIST MAY BE SUBSTITUTED AT NO ADDITIONAL COST TO THE DEPARTMENT.

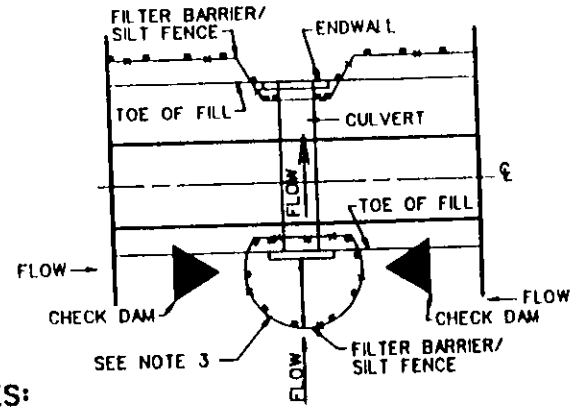
SPECIFICATION REFERENCE
107 303

ROCK CHECK DAMS TYPE I & II

VIRGINIA DEPARTMENT OF TRANSPORTATION

EC-5

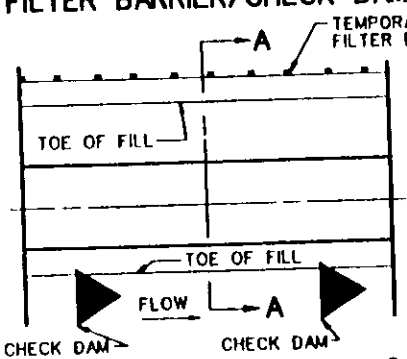
TYPICAL DETAIL FOR TEMPORARY FILTER BARRIER/SILT FENCE/CHECK DAM AT CULVERT



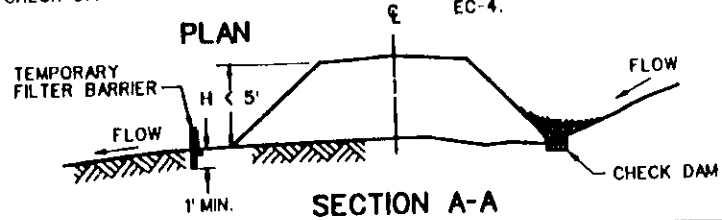
NOTES:

1. IF ANY PORTION OF FILL IS GREATER THAN 5', SILT FENCE IS REQUIRED. IF FILL HEIGHT IS LESS THAN 5', FILTER BARRIER IS REQUIRED.
2. ROCK CHECK DAM IS TO BE CONSTRUCTRD IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS, AND STANDARD EC-4.
3. DISTANCE IS 6' MINIMUM AND IS TO BE CONTAINED WITHIN RIGHT OF WAY OR EASEMENT.

TYPICAL DETAIL FOR TEMPORARY FILTER BARRIER/CHECK DAM AT TOE OF FILL



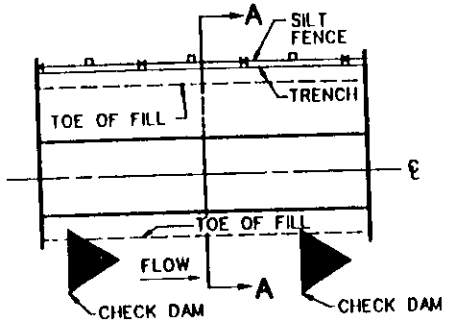
PLAN

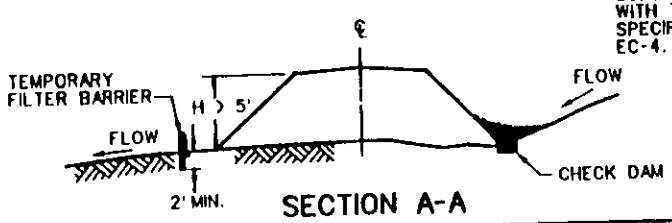


SECTION A-A

NOTE:
ROCK CHECK DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS, AND STANDARD EC-4.

TYPICAL DETAIL FOR TEMPORARY SILT FENCE/CHECK DAM AT TOE OF FILL

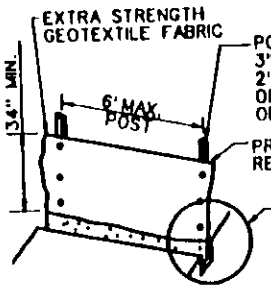




SECTION A-A

NOTE:
ROCK CHECK DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS, AND STANDARD EC-4.

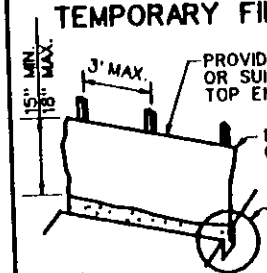
TEMPORARY SILT FENCE



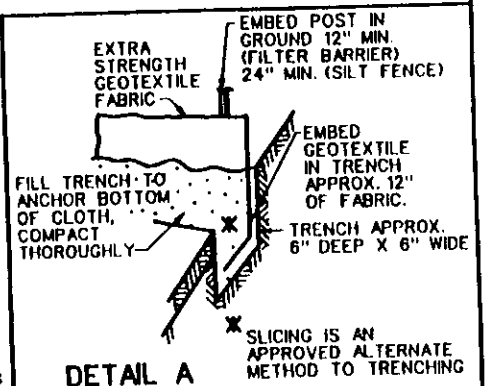
POSTS SHALL BE A NOMINAL 2½" X 2½" OR A 3" DIA. NO. 2 SOUTHERN PINE, A NOMINAL 2" X 2" OAK, OR STEEL HAVING A MIN. WEIGHT OF 1.25 LBS. PER LINEAR FOOT AND A MIN. LENGTH OF 5' FOR TEMPORARY SILT FENCES.

PROVIDE 1" TUCK OR SUITABLY REINFORCED TOP END SECTION.

TEMPORARY FILTER BARRIER



NOTE:
SUPPORTS FOR TEMPORARY FILTER BARRIERS SHALL BE A NOMINAL 1" X 2" OR A 1½" DIA. NO. 2 SOUTHERN PINE OR OAK, OR STEEL HAVING A MIN. WEIGHT OF 1.00 LBS. PER LINEAR FOOT.



DETAIL A

TEMPORARY SILT FENCE AND FILTER BARRIER

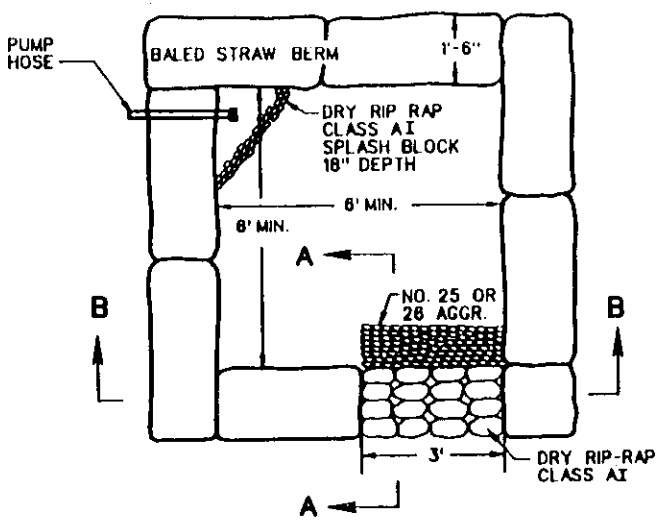
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

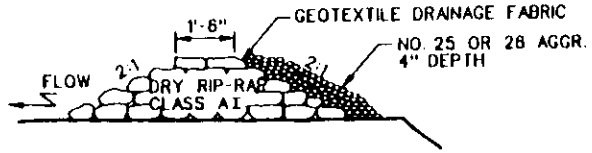
107
242
303

114.06

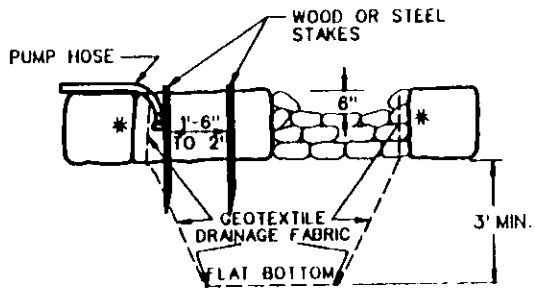
TYPICAL DEWATERING BASIN



PLAN



SECTION A-A



SECTION B-B

* GEOTEXTILE DRAINAGE FABRIC TO COVER INSIDE FACE OF BALED STRAW BERM

NOTES:

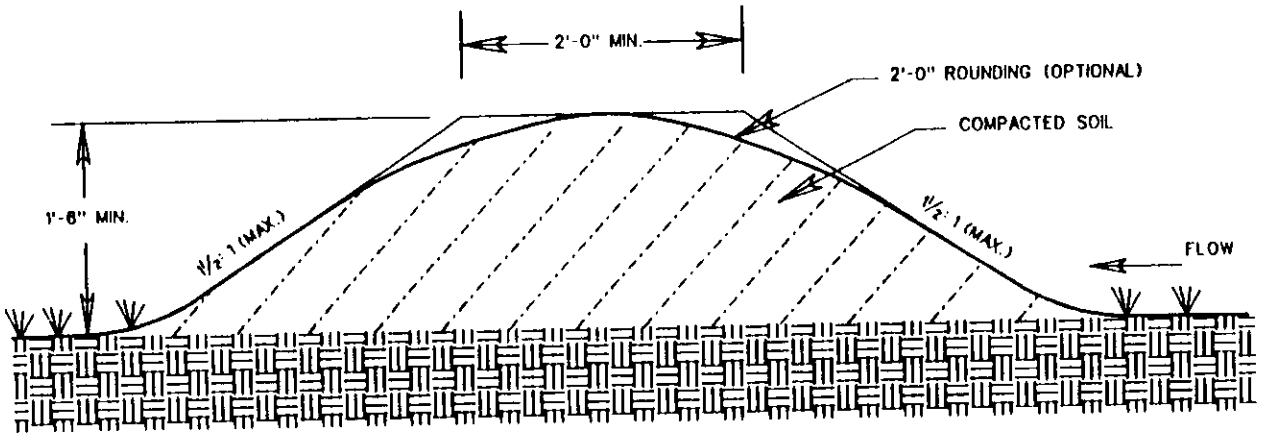
1. DEWATERING BASIN SIZE SHALL BE DETERMINED BY THE FORMULA 16 X GAL./MIN. OF PUMP ÷ CU. FT. OF STORAGE CAPACITY.
2. THIS WORK SHALL CONSIST OF THE CONSTRUCTION OF A DEWATERING BASIN FOR THE PURPOSE OF RECEIVING SEDIMENT-LADENED WATER PUMPED FROM A CONSTRUCTION SITE TO ALLOW FOR FILTRATION BEFORE IT REENTERS THE WATERWAY. PUMPING INTO THESE BASINS SHALL CEASE WHEN THE FLOW FROM THE BASIN BECOMES SEDIMENT-LADENED.
3. SURFACE WATER FLOW SHALL BE DIVERTED AROUND THIS DEVICE.
4. THE OUTFALL FROM THE BASIN(S) SHALL HAVE A STABILIZED CONVEYANCE TO RECEIVING WATERS.
5. ONCE THE DEWATERING BASIN BECOMES FILLED TO HALF OF THE EXCAVATED DEPTH, ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED DISPOSAL AREA OUTSIDE OF THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED ON THE PLANS.
6. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE ENGINEER APPROVES THEIR REMOVAL. GROUND CONTOURS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION UNLESS SPECIFICALLY APPROVED OTHERWISE BY THE ENGINEER.
7. SYNTHETIC PRODUCTS APPROVED BY VDOT'S NEW PRODUCTS COMMITTEE AS A SUBSTITUTE MAY BE USED IN LIEU OF THIS DESIGN. HOWEVER, VDOT WILL ONLY COMPENSATE THE CONTRACTOR UP TO THE BID PRICE PER EACH AT EACH SITE.

SPECIFICATION REFERENCE
107 303

DEWATERING BASIN

VIRGINIA DEPARTMENT OF TRANSPORTATION

EC-9



TEMPORARY DIVERSION DIKE

NOTE:

1. THE CHANNEL CREATED BEHIND THE DIKE SHALL HAVE A POSTIVE GRADE TO A STABILIZED OUTLET. THE CHANNEL SHALL BE STABILIZED, AS NECESSARY, TO PREVENT EROSION.
2. TEMPORARY DIVERSION DIKE WILL BE MEASURED AND PAID FOR IN ACCORDANCE WITH SECTION 303 OF THE SPECIFICATIONS.

TEMPORARY DIVERSION DIKE

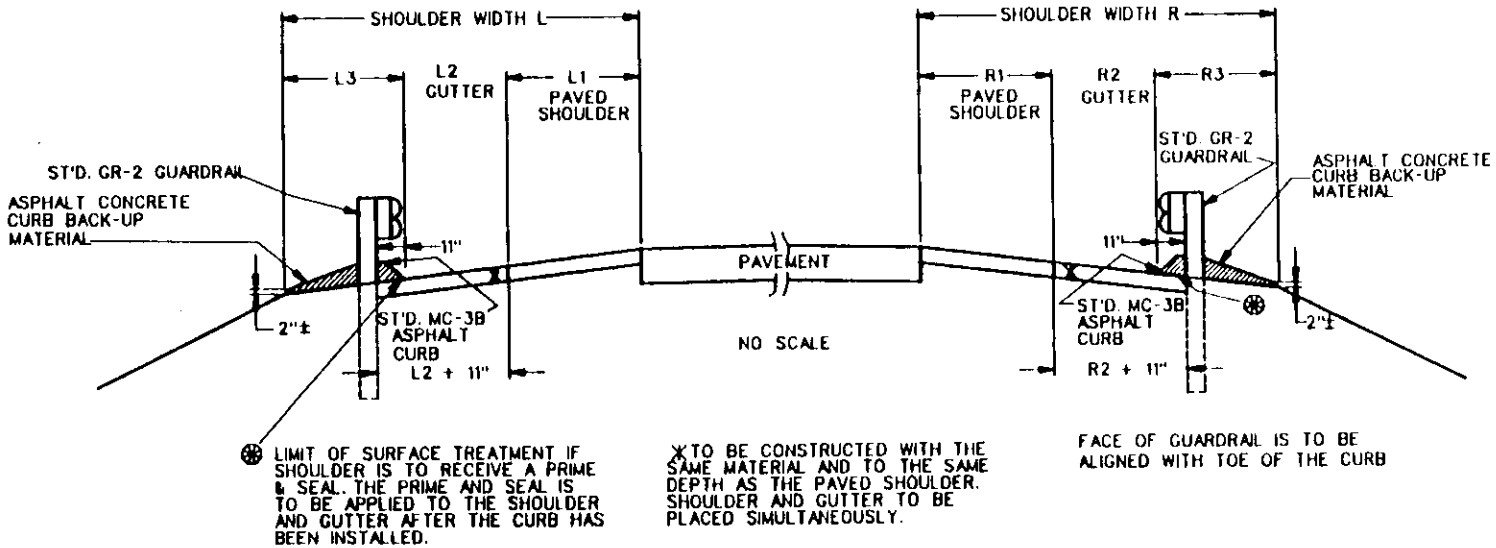
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
303

114.10

LEFT OF TRAFFIC			
SHOULDER WIDTH L	L1	L2	L3
15'	10'	2'	3'
15'	4'	8'	3'
15'	3'	9'	3'
13'	3'	7'	3'
12'	10'	—	2'
11'	3'	5'	3'
8'	4'	2'	2'
8'	3'	3'	2'

RIGHT OF TRAFFIC			
SHOULDER WIDTH R	R1	R2	R3
15'	10'	2'	3'
15'	6'	6'	3'
13'	8'	2'	3'
11'	6'	2'	3'
9'	8'	—	3'



ST'D. GR-2 & MC-3B (11") ASPHALT CURB INSTALLATION

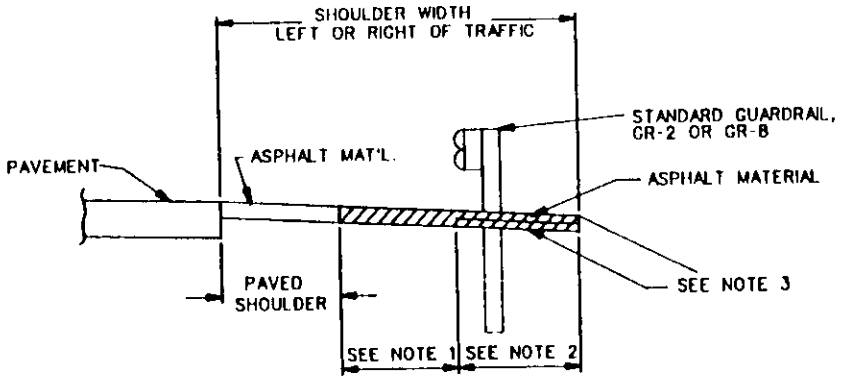
SPECIFICATION REFERENCE

105
502

ASPHALT CURB AND GUTTER & ASPHALT PAVING UNDER GUARDRAIL

VIRGINIA DEPARTMENT OF TRANSPORTATION

MC-4



ASPHALT PAVING UNDER GUARDRAIL

(FOR USE WHERE ASPHALT CURB IS NOT REQUIRED)

NOTES:

1. TO BE CONSTRUCTED WITH THE SAME MATERIAL AND TO THE SAME DEPTH AS THE PAVED SHOULDER.

2. TO BE CONSTRUCTED WITH THE SAME ASPHALT MATERIALS AS THE PAVED SHOULDER TO THE FOLLOWING DEPTHS:

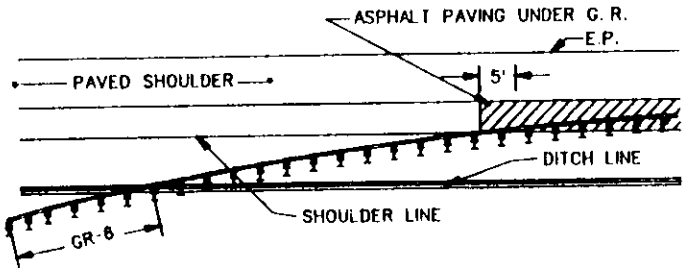
   ALLOWABLE DEPTHS OF ASPHALT MATERIAL

IM-19.01A OR IM-19.0D	2" MIN.
BM-25.0	3" MIN.
BM-37.5	4" MIN.

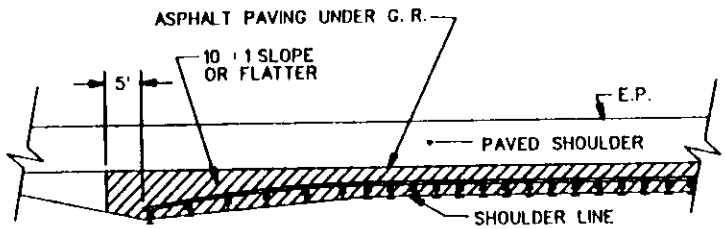
3. DEPTH OF ASPHALT MATERIAL MAY BE EXTENDED AT THE CONTRACTOR'S OPTION TO COINCIDE WITH THE BOTTOM OF THE PAVED SHOULDER COURSE AT NO INCREASE IN THE QUANTITY OF ASPHALT MATERIAL COMPUTED USING THE ABOVE SPECIFIED DEPTH.

   ADDITIONAL 5 FEET ASPHALT PAVING BEYOND POINT WHERE GUARDRAIL CROSSES SHOULDER LINE.

   FOR ADDITIONAL DESIGN AND PLACEMENT INFORMATION SEE SHEET 1 OF 2.



GR-6 TERMINAL



GR-7 & GR-9 TERMINALS

METHODS FOR BEGINNING & ENDING ASPHALT PAVING UNDER GUARDRAIL AND GUARDRAIL INSTALLATION SITE PREPARATION REQUIREMENTS FOR GR-7 AND GR-9. SEE STANDARD GR-SP FOR SPECIFIC SITE PREPARATION REQUIREMENTS.

SHEET 2 OF 2

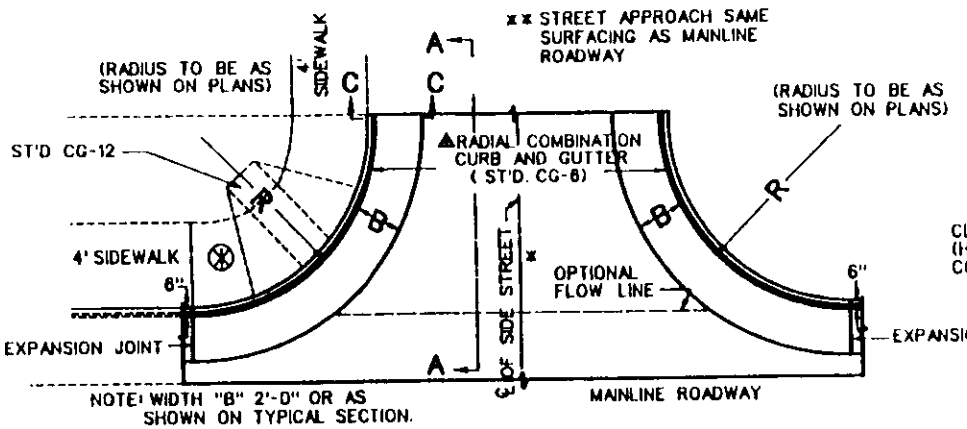
ASPHALT CURB AND GUTTER & ASPHALT PAVING UNDER GUARDRAIL

VIRGINIA DEPARTMENT OF TRANSPORTATION

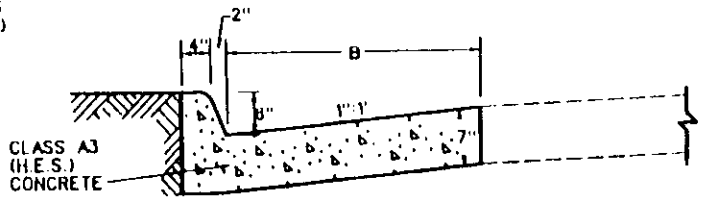
SPECIFICATION REFERENCE

105
502

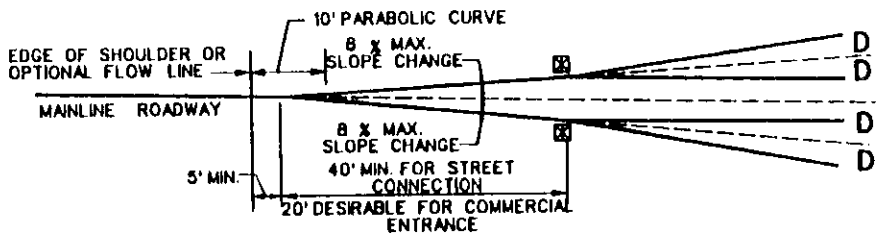
201.08



PLAN VIEW



SECTION C-C



SECTION A - A

GUIDELINES FOR GRADE CHANGE D

ENTRANCE VOLUME	DESIRABLE	MAXIMUM
HIGH (MORE THAN 1500 VPD)	0 %	3 %
MEDIUM (500-1500 VPD)	≤ 3 %	6 %
LOW (LESS THAN 500 VPD)	≤ 6 %	8 %

⊠ CONSTRUCT GRADE CHANGES WITH A PARABOLIC CURVE.

⊛ WHEN THE ENTRANCE RADII CANNOT ACCOMMODATE THE TURNING REQUIREMENTS OF ANTICIPATED HEAVY TRUCK TRAFFIC, THE DEPTH FOR SIDEWALK & CURB RAMPS WITHIN THE LIMITS OF THE RADII SHOULD BE INCREASED TO 7".

WHEN ST'D. CG-11 IS USED FOR ENTRANCES BUILT IN CONJUNCTION WITH VDOT PROJECTS, PLEASE NOTE THE FOLLOWING:

** MAINLINE PAVEMENT SHALL BE CONSTRUCTED TO THE R/W LINE (EXCEPT ANY SUBGRADE STABILIZATION REQUIRED FOR MAINLINE PAVEMENT WHICH CAN BE OMITTED IN THE ENTRANCE.)

▲ RADIAL CURB OR COMBINATION CURB AND GUTTER SHALL NOT BE CONSTRUCTED BEYOND THE R/W LINE EXCEPT FOR REPLACEMENT PURPOSES.

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.

SEE STANDARD CG-12 FOR CURB RAMP DESIGN TO BE USED WITH THIS STANDARD.

* PLANS ARE TO INDICATE WHEN CONSTRUCTION OF A FLOW LINE IS REQUIRED TO PROVIDE POSITIVE DRAINAGE ACROSS THE ENTRANCE.

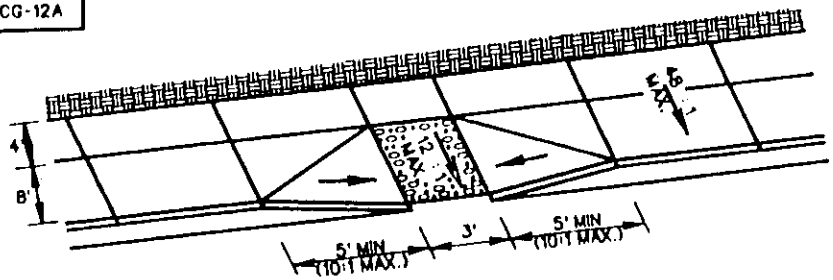
OPTIONAL FLOWLINE MAY REQUIRE WARPING OF A PORTION OF GUTTER TO PRECLUDE PONDING OF WATER.

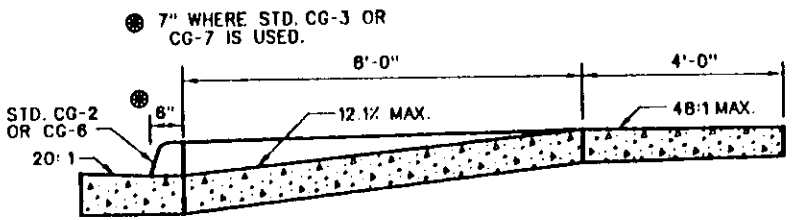
SPECIFICATION REFERENCE
502

METHOD OF TREATMENT- CONNECTION FOR STREET INTERSECTIONS AND COMMERCIAL ENTRANCES

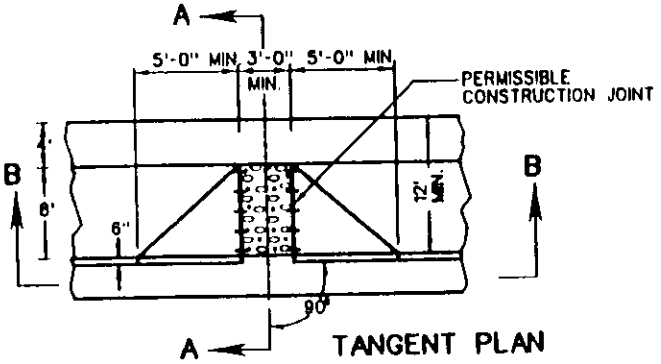
VIRGINIA DEPARTMENT OF TRANSPORTATION

CG-12A

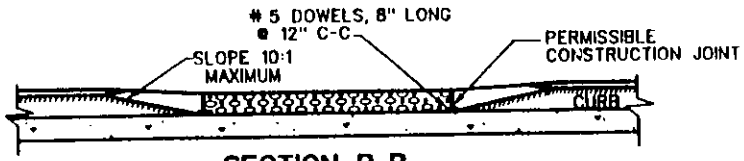




SECTION A-A



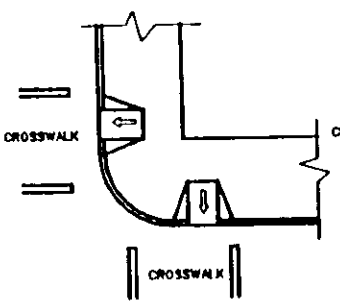
TANGENT PLAN



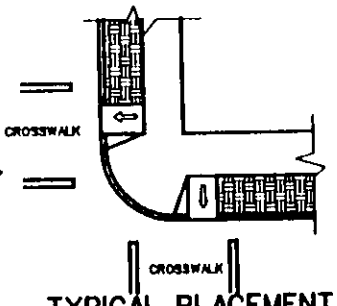
SECTION B-B

LIMITS OF EXPOSED AGGREGATE SIDEWALK

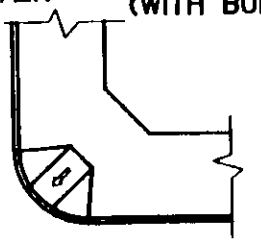
ACCESSIBLE ROUTE IS DEFINED AS A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PERSONS WITH MOBILITY IMPAIRMENTS.



TYPICAL PLACEMENT AT INTERSECTION WITHIN CROSSWALK



TYPICAL PLACEMENT AT INTERSECTION WITHIN CROSSWALK (WITH BUFFER STRIP)



DIAGONAL VARIATION

NOTES :

THIS DESIGN TO BE USED FOR CONSTRUCTION THAT INCORPORATES WIDER SIDEWALK. LANDING (48" WIDE) REQUIRED AT TOP OF CURB RAMP. MINIMUM CURB RAMP LENGTH 8 FT. FOR NEW CONSTRUCTION, 6 FT. FOR ALTERATIONS.

CURB RAMP FLOOR TO BE CLASS A-3 CONCRETE (CLASS A-4 IF PRECAST) WITH SLIP RESISTANT INTEGRAL DETECTABLE WARNING SURFACE COVERING THE ENTIRE WIDTH OF THE RAMP FLOOR (RAMP FLOOR MAY BE PRECAST OR CAST IN PLACE). THE DETECTABLE WARNING SHALL BE PROVIDED BY AN EXPOSED AGGREGATE FINISH. RAMP SHALL NOT EXCEED A MAXIMUM SLOPE OF 12:1.

SLOPING SIDES OF CURB RAMP MAY BE POURED MONOLITHICALLY WITH RAMP FLOOR OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.

IF RAMP FLOOR IS PRECAST, HOLES MUST BE PROVIDED FOR DOWEL BARS SO THAT ADJOINING FLARED SIDES CAN BE CAST IN PLACE AFTER PLACEMENT OF PRECAST RAMP FLOOR. PRECAST CONCRETE SHALL BE CLASS A-4.

REQUIRED BARS ARE TO BE NO. 5 X 8" PLACED 1' CENTER TO CENTER ALONG BOTH SIDES OF THE RAMP FLOOR, MID-DEPTH OF RAMP FLOOR. MINIMUM CONCRETE COVER 1½".

CURB RAMPS WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICES FOR HYDRAULIC CEMENT CONCRETE SIDEWALK AND EXPOSED AGGREGATE SIDEWALK, COMPLETE-IN-PLACE.

CURB/CURB AND GUTTER SLOPE TRANSITIONS ADJACENT TO TO CURB RAMPS ARE INCLUDED IN PAYMENT FOR CURB/CURB AND GUTTER.

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB AND CONFIGURATION.

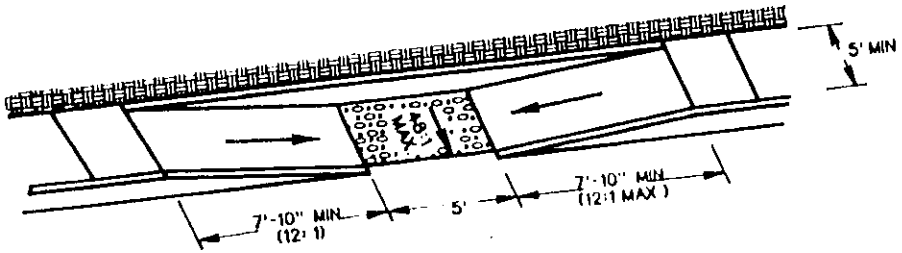
CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THEY ARE TO BE PROVIDED AT INTERSECTIONS WHEREVER AN ACCESSABLE ROUTE ▩ WITHIN THE RIGHT OF WAY OF A HIGHWAY FACILITY CROSSES A CURB REGARDLESS OF WHETHER SIDEWALK IS EXISTING, PROPOSED, OR NONEXISTENT. THEY MUST BE LOCATED WITHIN PEDESTRIAN CROSSWALKS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER, AND SHOULD NOT BE LOCATED BEHIND VEHICLE STOP LINES. EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. WILL ALSO AFFECT PLACEMENT.

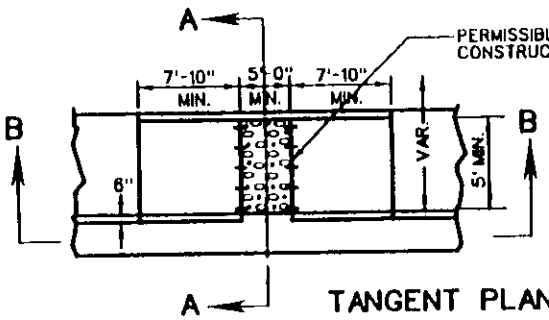
PERPENDICULAR CURB RAMP (ACCESS FOR MOBILITY IMPAIRMENTS)

VIRGINIA DEPARTMENT OF TRANSPORTATION

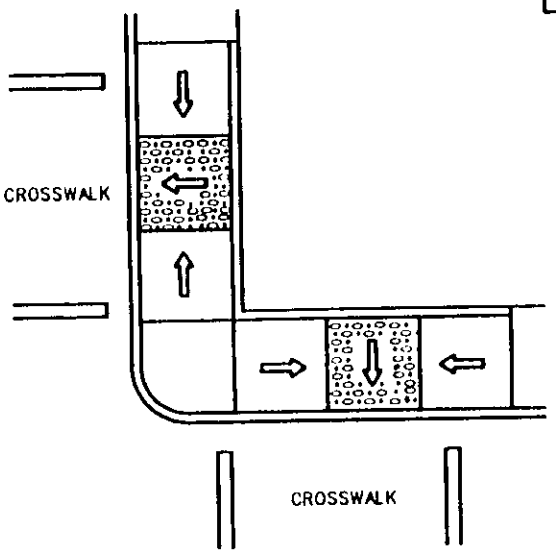
SPECIFICATION REFERENCE
105 502

203.05



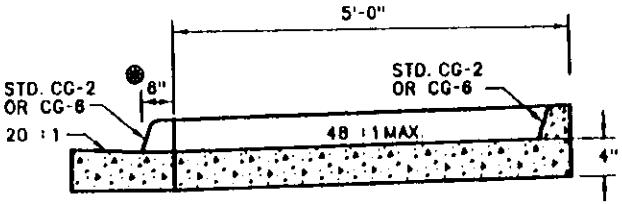


TANGENT PLAN

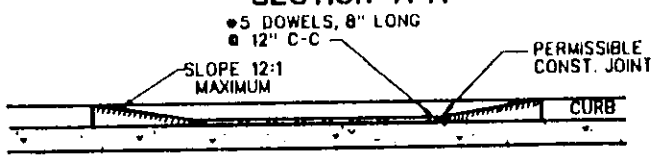


TYPICAL PLACEMENT AT INTERSECTION WITHIN CROSSWALK

● 7" WHERE STD. CG-3 CG-7 IS USED.



SECTION A-A



SECTION B-B

LIMITS OF EXPOSED AGGREGATE SIDEWALK

ACCESSIBLE ROUTE IS DEFINED AS A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PERSONS WITH MOBILITY IMPAIRMENTS.

NOTES :

THIS DESIGN INCOROPORATES A RAMP. FLOOR AT BOTTOM OF TWO SLOPING SIDES WITH 60" X 60" MINIMUM DIMENISIONS. PLACEMENT OF DRAINAGE STRUCTURES IS CRITICAL.

CURB RAMP FLOOR TO BE CLASS A-3 CONCRETE (CLASS A-4 IF PRECAST) WITH SLIP RESISTANT INTEGRAL DETECTABLE WARNING SURFACE COVERING THE ENTIRE WIDTH OF THE RAMP FLOOR (RAMP FLOOR MAY BE PRECAST OR CAST IN PLACE). THE DETECTABLE WARNING SHALL BE PROVIDED BY AN EXPOSED AGGREGATE FINISH. RAMP SHALL NOT EXCEED A MAXIMUM SLOPE OF 12:1.

SLOPING SIDES OF CURB RAMP MAY BE POURED MONOLITHICALLY WITH RAMP FLOOR OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.

IF RAMP FLOOR IS PRECAST, HOLES MUST BE PROVIDED FOR DOWEL BARS SO THAT ADJOINING FLARED SIDES CAN BE CAST IN PLACE AFTER PLACEMENT OF PRECAST RAMP FLOOR. PRECAST CONCRETE SHALL BE CLASS A-4.

REQUIRED BARS ARE TO BE NO. 5 X 8" PLACED 1' CENTER TO CENTER ALONG BOTH SIDES OF THE RAMP FLOOR, MID-DEPTH OF RAMP FLOOR. MINIMUM CONCRETE COVER 1½".

CURB RAMPS WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICES FOR HYDRAULIC CEMENT CONCRETE SIDEWALK AND EXPOSED AGGREGATE SIDEWALK, COMPLETE-IN-PLACE.

CURB/CURB AND GUTTER SLOPE TRANSITIONS ADJACENT TO TO CURB RAMPS ARE INCLUDED IN PAYMENT FOR CURB/CURB AND GUTTER.

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB AND CONFIGURATION.

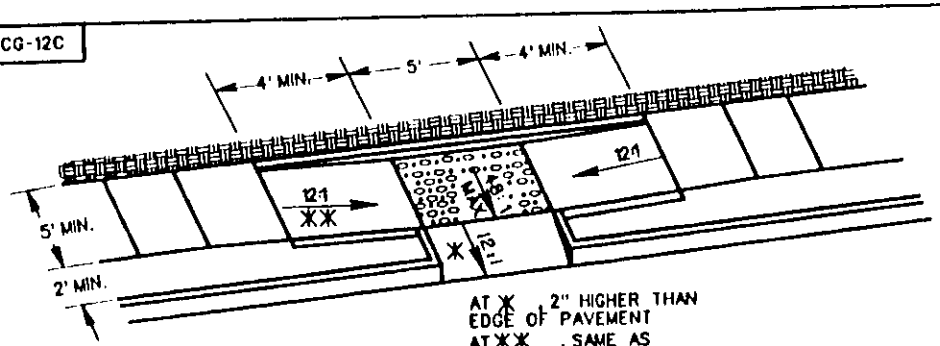
CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THEY ARE TO BE PROVIDED AT INTERSECTIONS WHEREVER AN ACCESSABLE ROUTE ▣ WITHIN THE RIGHT OF WAY OF A HIGHWAY FACILITY CROSSES A CURB REGARDLESS OF WHETHER SIDEWALK IS EXISTING, PROPOSED, OR NONEXISTENT. THEY MUST BE LOCATED WITHIN PEDESTRIAN CROSSWALKS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER, AND SHOULD NOT BE LOCATED BEHIND VEHICLE STOP LINES. EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. WILL ALSO AFFECT PLACEMENT.

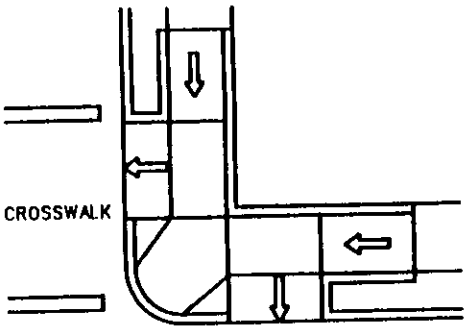
SPECIFICATION REFERENCE
105 502

PARALLEL CURB RAMP (ACCESS FOR MOBILITY IMPAIRMENTS)

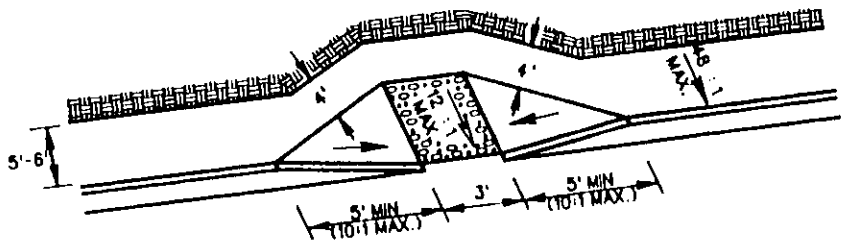
VIRGINIA DEPARTMENT OF TRANSPORTATION

CG-12C

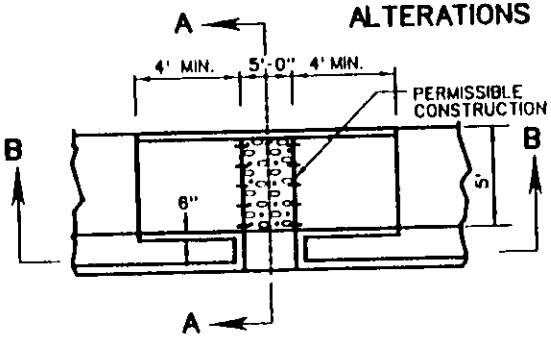




TYPICAL PLACEMENT AT INTERSECTION WITH BUFFER STRIP

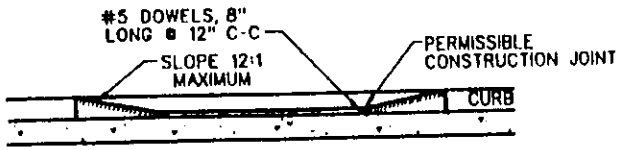


ALTERATIONS



TANGENT PLAN

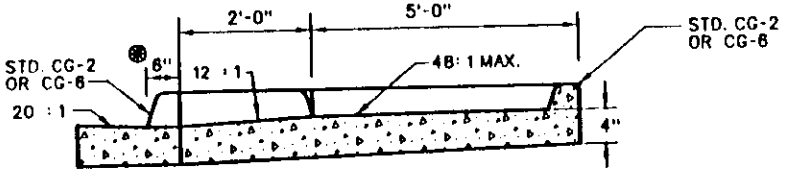
LIMITS OF EXPOSED AGGREGATE SIDEWALK



SECTION B-B

▦ ACCESSIBLE ROUTE IS DEFINED AS A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PERSONS WITH MOBILITY IMPAIRMENTS.

⊛ 7" WHERE STD. CG-3 CG-7 IS USED.



SECTION A-A

NOTES :

1. THIS COMBINED (PARALLEL & PERPENDICULAR) DESIGN FOR ALTERATIONS CAN BE USED WITH ADJOINING BUFFER STRIP. LANDING AT BOTTOM OF TWO SLOPING SIDES WITH 60" X 60" MIN. DIMENSIONS. THE SHORT PERPENDICULAR RUN TO THE STREET CAN BE PROTECTED BY A LANDSCAPED SETBACK OR CONNECTED TO THE SIDEWALK WITH A WARPED SURFACE.
2. CURB RAMP FLOOR TO BE CLASS A-3 CONCRETE (CLASS A-4 IF PRECAST) WITH SLIP RESISTANT INTEGRAL DETECTABLE WARNING SURFACE COVERING THE ENTIRE WIDTH OF THE RAMP FLOOR (RAMP FLOOR MAY BE PRECAST OR CAST IN PLACE). THE DETECTABLE WARNING SHALL BE PROVIDED BY AN EXPOSED AGGREGATE FINISH. RAMP SHALL NOT EXCEED A MAXIMUM SLOPE OF 12:1.
3. SLOPING SIDES OF CURB RAMP MAY BE POURED MONOLITHICALLY WITH RAMP FLOOR OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.
4. IF RAMP FLOOR IS PRECAST, HOLES MUST BE PROVIDED FOR DOWEL BARS SO THAT ADJOINING FLARED SIDES CAN BE CAST IN PLACE AFTER PLACEMENT OF PRECAST RAMP FLOOR. PRECAST CONCRETE SHALL BE CLASS A-4. REQUIRED BARS ARE TO BE NO. 5 X 8" PLACED 1' CENTER TO CENTER ALONG BOTH SIDES OF THE RAMP FLOOR, MID-DEPTH OF RAMP FLOOR. MINIMUM CONCRETE COVER 1½".
5. CURB RAMPS WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICES FOR HYDRAULIC CEMENT CONCRETE SIDEWALK AND EXPOSED AGGREGATE SIDEWALK, COMPLETE-IN-PLACE.
6. CURB/CURB AND GUTTER SLOPE TRANSITIONS ADJACENT TO TO CURB RAMPS ARE INCLUDED IN PAYMENT FOR CURB/CURB AND GUTTER.
7. WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB AND CONFIGURATION.
8. CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THEY ARE TO BE PROVIDED AT INTERSECTIONS WHEREVER AN ACCESSABLE ROUTE ▦ WITHIN THE RIGHT OF WAY OF A HIGHWAY FACILITY CROSSES A CURB REGARDLESS OF WHETHER SIDEWALK IS EXISTING, PROPOSED, OR NONEXISTENT. THEY MUST BE LOCATED WITHIN PEDESTRIAN CROSSWALKS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER, AND SHOULD NOT BE LOCATED BEHIND VEHICLE STOP LINES. EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. WILL ALSO AFFECT PLACEMENT.

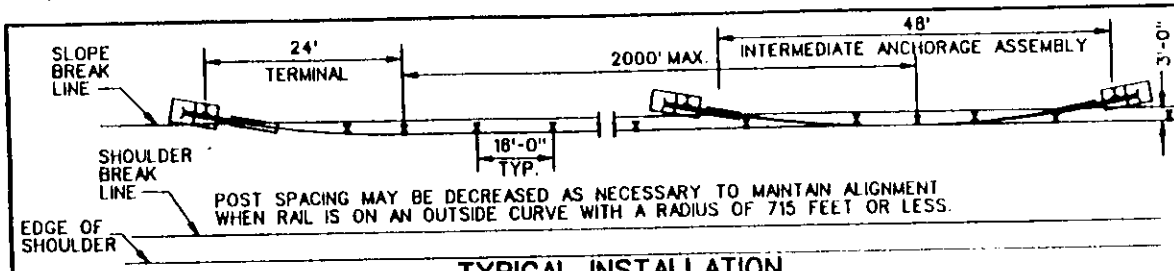
COMBINED (PARALLEL & PERPENDICULAR) CURB RAMP (ACCESS FOR MOBILITY IMPAIRMENTS)

VIRGINIA DEPARTMENT OF TRANSPORTATION

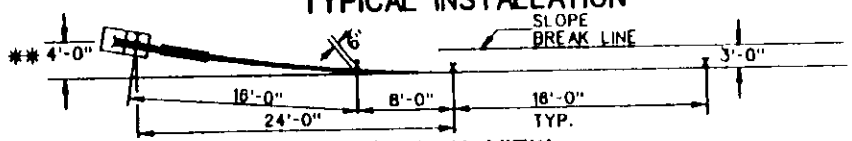
SPECIFICATION REFERENCE
105 502

203.07

GR-3

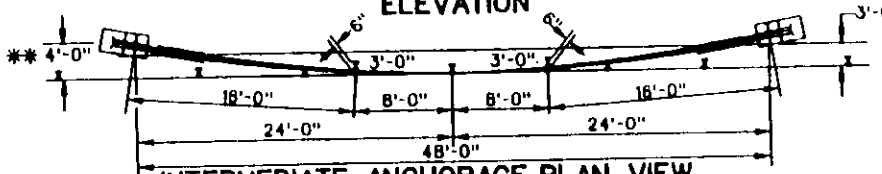


TYPICAL INSTALLATION

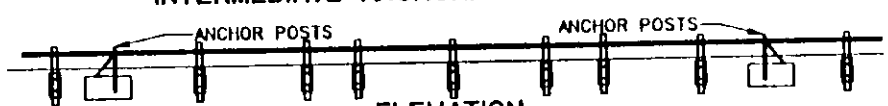


GUARDRAIL TERMINAL PLAN VIEW

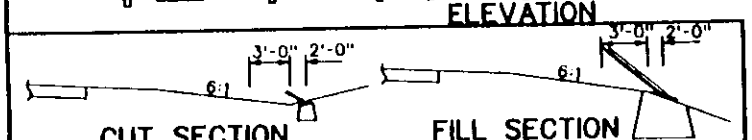
ELEVATION



INTERMEDIATE ANCHORAGE PLAN VIEW



ELEVATION



CUT SECTION FILL SECTION

NOTES:

FOR ARRANGEMENTS OF SPRING CABLE END ASSEMBLIES (COMPENSATING DEVICES) AND TURNBUCKE CABLE END ASSEMBLIES, THE FOLLOWING CRITERIA SHALL APPLY:

LENGTH OF CABLE RUNS:
-TO 500'-USE COMPENSATING DEVICE ON EACH END OF EACH INDIVIDUAL CABLE.

-OVER 500' TO 2000'-USE COMPENSATING DEVICE ON EACH END OF EACH INDIVIDUAL CABLE.

-OVER 2000'-START NEW STRETCH BY INTERLACING AT LAST PARALLEL POST. SEE TYP. INSTALLATION.

FITTINGS: ALL FITTINGS SHALL BE SO DESIGNED AND BE OF SUCH SECTION AS TO DEVELOP THE FULL STRENGTH OF A SINGLE CABLE OR CABLE ASSEMBLIES, AS THE CASE MAY BE.

SINGLE CABLE ANCHOR ASSEMBLY-
MIN. TENSILE STRENGTH.....25,000 LBS.
THREE CABLE ANCHOR ASSEMBLY-
MIN. TENSILE STRENGTH.....100,000 LBS.

ALL FITTINGS SHALL BE HOT DIPPED GALVANIZED.

THE DYNAMIC DEFLECTION FOR STANDARD GR-3 IS 11 FEET

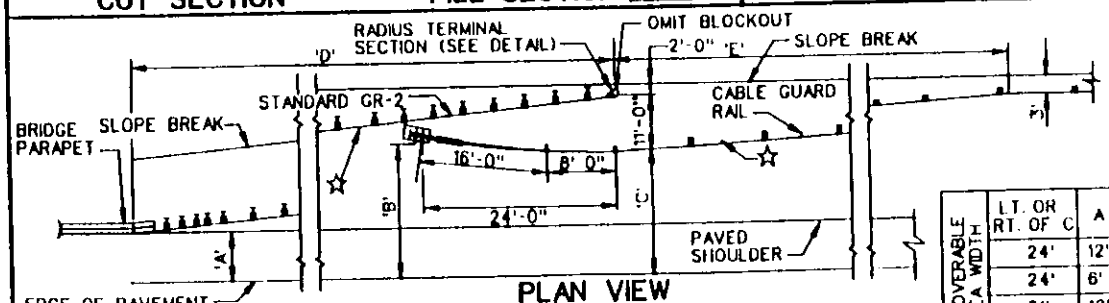
⊛ THE GUARDRAIL AND MEDIAN BARRIER COMPONENTS DEPICTED A.R.T.B.A. TECHNICAL BULLETIN NUMBER 2888 MAY BE SUBSTITUTED IF INTERCHANGEABLE WITH THE STANDARDS FOR GUARDRAIL (GR) OR MEDIAN BARRIER (MB) AND APPROVED BY THE ENGINEER.

FOR ROCK INSTALLATION, 8"X24"X1/4" PLATE SHALL BE ELIMINATED. DRILL OR EXCAVATE HOLE FOR POST AND BACKFILL WITH CRUSHER RUN AGGREGATE TO LEVEL OF ROCK.

5/16" ANSI B18.2.2 HEX. BACKING NUT OR APPROVED SHOULDER MUST EQUAL BEARING AREA OF 5/16" STANDARD NUT.

* THE GUARDRAIL AND MEDIAN BARRIER COMPONENTS DEPICTED IN AASHTO AGC-A.R.T.B.A. "A GUIDE TO STANDARIZED HIGHWAY BARRIER HARDWARE" MAY BE SUBSTITUTED IF INTERCHANGEABLE WITH THE STANDARDS FOR GUARDRAIL (GR) OR MEDIAN BARRIER (MB) AND APPROVED BY THE ENGINEER.

** WHEN BURYING GR-3 CABLE GUARDRAIL IN THE BACKSLOPE, THE CONCRETE ANCHOR ASSEMBLY MUST BE PLACED AT A HEIGHT ON THE BACKSLOPE TO MAINTAIN THE 27" MIN./28" MAX. CABLE HEIGHT AT THE ANCHORAGE.



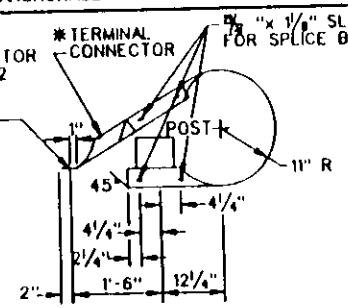
PLAN VIEW

☆ USE 15:1 FLARES ON BOTH TYPES OF RAIL FOR DESIGN SPEED OF 70 MPH OR 13:1 FOR DESIGN SPEED OF 60 MPH OR LESS.

RECOVERABLE AREA WIDTH	LT. OR RT. OF C	A	B	C	70 MPH D.S D	70 MPH D.S E
	24'	12'	27'	26'	375'	150'
	24'	6'	27'	26'	465'	150'
	21'	12'	24'	23'	330'	150'
	21'	6'	24'	23'	420'	150'

* FOR DETAILS OF TERMINAL CONNECTOR SEE SHEET 501.02

DRILL 1/4" DIA. HOLE IN CENTER



RADIUS TERMINAL SECTION DETAIL

METHOD OF TRANSITION FROM CABLE GUARDRAIL TO W-BEAM GUARDRAIL AT BRIDGE APPROACHES

SHEET 1 OF 3

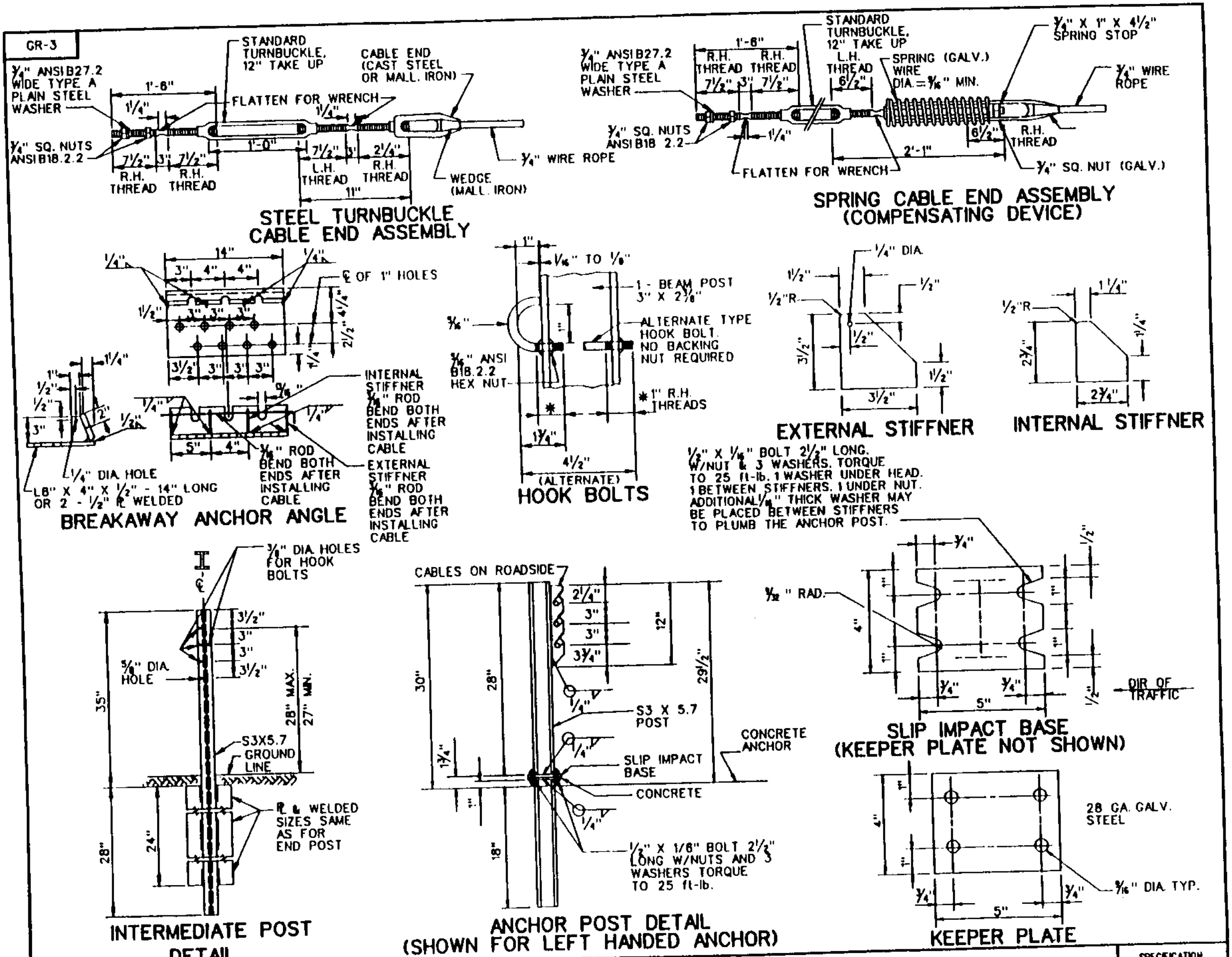
SPECIFICATION REFERENCE
221
505

CABLE GUARDRAIL

VIRGINIA DEPARTMENT OF TRANSPORTATION

501.08

GR-3



SHEET 2 OF 3

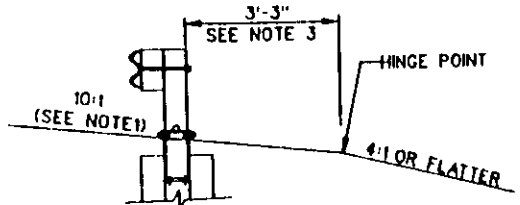
CABLE GUARDRAIL

VIRGINIA DEPARTMENT OF TRANSPORTATION

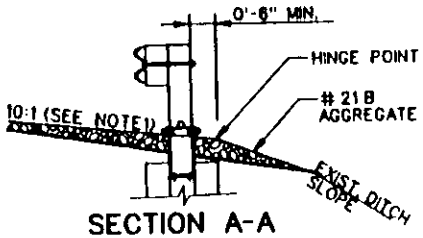
SPECIFICATION REFERENCE
221 505

501.07

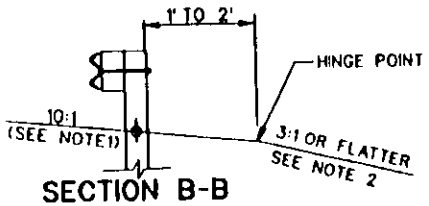
GR-SP



SECTION A-A



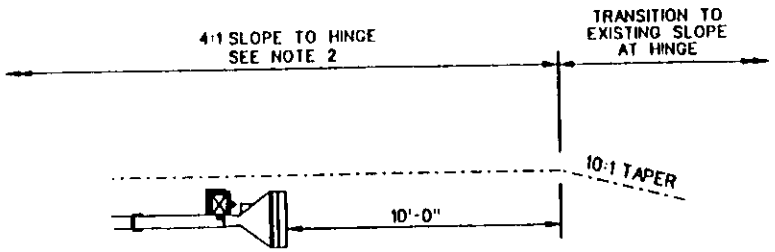
SECTION A-A
3R WORK ONLY
(SEE NOTE 4)



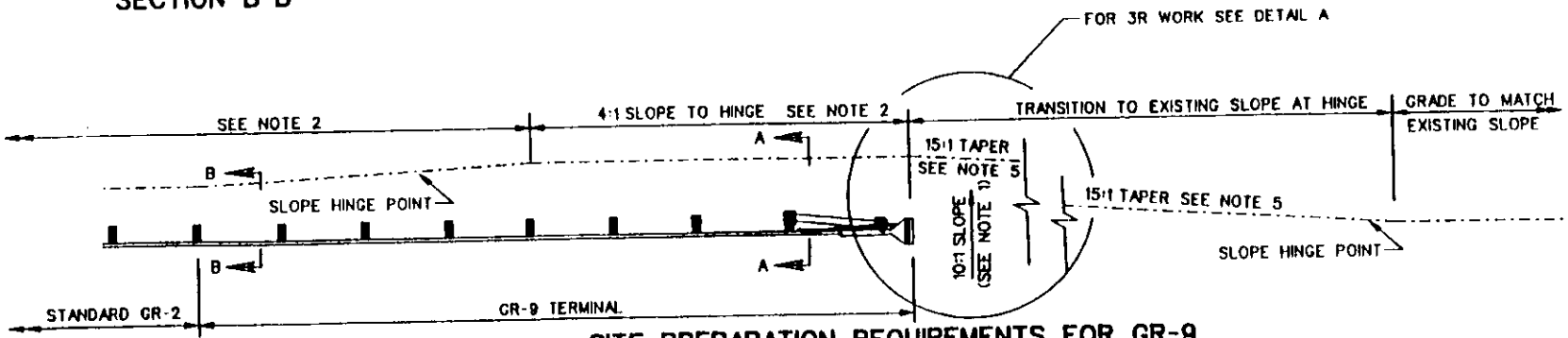
SECTION B-B

NOTES:

1. THE CROSS SLOPE OF THE GRADE APPROACHING THE GUARDRAIL TERMINAL, AND ADJACENT TO FOR ITS FULL LENGTH, MUST BE 10:1. IF THE EXISTING GRADE IS FLAT OR IS A POSITIVE SLOPE DUE TO THE SUPERELEVATION OF THE ROADWAY PAVEMENT, THE MINIMUM OFFSET FROM BEHIND THE POST TO THE HINGE POINT, AS SHOWN, IS REQUIRED.
2. THE AREA IMMEDIATELY BEHIND AND BEYOND THE TERMINAL SHOULD BE TRAVERSABLE AND FREE FROM FIXED OBJECTS. IF A CLEAR RUN OUT IS NOT ATTAINABLE THIS AREA SHOULD AT LEAST BE SIMILAR IN CHARACTER TO THE UPSTREAM UNSHIELDED ROADSIDE AREAS.
3. FOR NEW CONSTRUCTION AND RECONSTRUCTION THE 10:1 SLOPE GRADING MUST EXTEND A MINIMUM OF 3'-3" BEHIND THE END POST.
4. FOR 3R WORK, THE GRADING SHOULD BE AS CLOSE TO RECONSTRUCTION WORK AS POSSIBLE WITH A MINIMUM OF 10:1 SLOPE EXTENDED 6" BEYOND THE POST. FROM THE HINGE POINT, TIE THE 10:1 SLOPE INTO THE EXISTING DITCH SLOPE TO COVER THE FOUNDATION TUBES AND SOIL PLATES WITHOUT EXTENDING THIS SLOPE BEYOND THE DITCH BOTTOM. USE # 21B AGGREGATE, OR OTHER SUITABLE MATERTIAL AS APPROVED BY THE ENGINEER, AT ROADWAY SHOULDERS.
5. THE TAPER FOR NEW CONSTRUCTION WILL BE 15:1. FOR 3R WORK THE MINIMUM ALLOWABLE TAPER IS 10:1.
6. FOR PROPRIETARY GUARDRAIL TERMINALS THE MANUFACTURE'S SITE PREPARATION REQUIREMENTS TAKE PRECEDENCE OVER THIS STANDARD.



DETAIL A
3R WORK ONLY



SITE PREPARATION REQUIREMENTS FOR GR-9

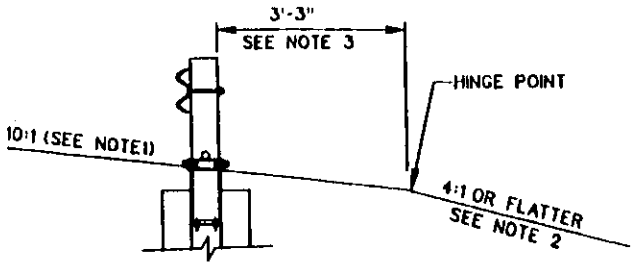
SHEET 2 OF 2

GUARDRAIL TERMINAL INSTALLATION SITE PREPARATION REQUIREMENTS FOR GR-9

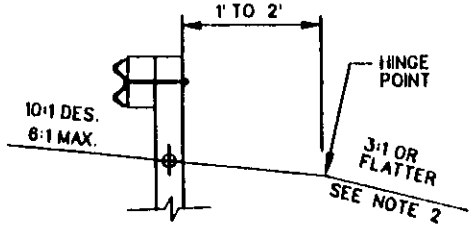
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

501.17



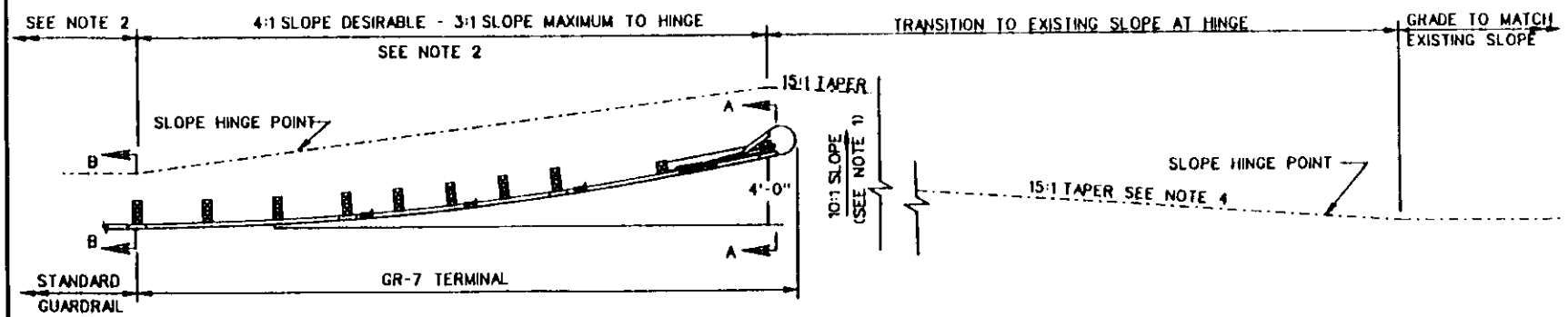
SECTION A-A



SECTION B-B

NOTES:

1. DESIRABLY, THE CROSS SLOPE OF THE GRADE APPROACHING THE GUARDRAIL TERMINAL, AND ADJACENT TO FOR ITS FULL LENGTH, MUST BE 10:1. IF THE EXISTING GRADE IS FLAT OR IS A POSITIVE SLOPE DUE TO THE SUPERELEVATION OF THE ROADWAY PAVEMENT, THE MINIMUM OFFSET FROM BEHIND THE POST TO THE HINGE POINT, AS SHOWN, IS REQUIRED.
2. THE AREA IMMEDIATELY BEHIND AND BEYOND THE TERMINAL SHOULD BE TRAVERSABLE AND FREE FROM FIXED OBJECTS. IF A CLEAR RUN OUT IS NOT ATTAINABLE THIS AREA SHOULD AT LEAST BE SIMILAR IN CHARACTER TO THE UPSTREAM UNSHIELDED ROADSIDE AREAS.
3. FOR NEW CONSTRUCTION AND RECONSTRUCTION THE 10:1 SLOPE GRADING MUST EXTEND A MINIMUM OF 3'-3" BEHIND THE END POST.
4. FOR PROPRIETARY GUARDRAIL TERMINALS THE MANUFACTURE'S SITE PREPARATION REQUIREMENTS TAKE PRECEDENCE OVER THIS STANDARD.



SPECIFICATION REFERENCE

GUARDRAIL TERMINAL INSTALLATION SITE PREPARATION REQUIREMENTS FOR GR-7

VIRGINIA DEPARTMENT OF TRANSPORTATION

501.18