



GENERAL NOTES:

- RIPRAP OUTLET PROTECTION SHOULD BE USED TO REDUCE A DRAINAGE STRUCTURE'S DISCHARGE VELOCITY. RIPRAP OUTLET PROTECTION IS SHOWN FOR GEORGIA STANDARD 120. THIS IS INSTALLED SIMILARLY FOR OTHER DRAINAGE OUTLET STRUCTURES.
- RIPRAP OUTLET PROTECTION SHALL BE DESIGNED IN ACCORDANCE WITH THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA. THE DESIGNER SHALL PROVIDE THE FOLLOWING: THE PIPE DIAMETER (Do), FLOW RATE OF DESIGN STORM (Q), VELOCITY (V), TAILWATER CONDITION (TW), APRON LENGTH (Ld), APRON WIDTH AT DRAINAGE STRUCTURE (W1), APRON WIDTH DOWNSTREAM (W2), AVERAGE STONE DIAMETER (d50), INSTALLATION DEPTH (D), AND TYPE OF RIPRAP (W) QUANTITY.
THE MINIMUM DESIGN FOR RIPRAP OUTLET PROTECTION SHALL BE THE 25-YEAR STORM EVENT, BUT LARGER STORMS ARE RECOMMENDED.
- THE APRON WIDTHS SHALL BE THE SAME WHEN THE DRAINAGE STRUCTURE DISCHARGES PERPENDICULAR INTO A WELL-DEFINED CHANNEL. THE LENGTH SHALL EXTEND ACROSS THE CHANNEL AND UP TO THE TOP OF THE CHANNEL BACKSLOPE OR 1-FOOT ABOVE THE NORMAL DEPTH OF THE CHANNEL'S DESIGN STORM (WHICHEVER IS LESS). THE DESIGNER SHALL PROVIDE THE DEPTH OF PROTECTION (Dp) IF THE APRON DOES NOT EXTEND TO THE TOP OF THE BACKSLOPE.
- IF THE OUTLET HYDRAULICS REQUIRE A d50 < 0.70 FEET, TYPE-3 RIPRAP MAY BE USED.
IF THE OUTLET HYDRAULICS REQUIRE A d50 < 1.20 FEET, TYPE-1 RIPRAP SHOULD BE USED.
IF THE OUTLET HYDRAULICS REQUIRE A d50 > 1.20 FEET, THE DESIGNER SHALL DESIGN AND PROVIDE A SPECIAL DETAIL FOR APPROPRIATE OUTLET PROTECTION.
- PLASTIC FILTER FABRIC IS REQUIRED UNDERNEATH RIPRAP APRON.
PAYMENT FOR RIPRAP SHALL BE MEASURED IN SQUARE YARDS FOR SPECIFIED INSTALLATION DEPTH. PAYMENT FOR PLASTIC FILTER FABRIC SHALL BE MEASURED IN SQUARE YARDS CONSISTENT WITH RIPRAP QUANTITY AND PAID FOR SEPARATELY.

- Do = PIPE DIAMETER
- Q = DESIGN STORM FLOW RATE
- V = DESIGN STORM VELOCITY
- TW = TAILWATER CONDITION/DESIGN STORM NORMAL DEPTH
- Ld = APRON LENGTH
- W1 = APRON WIDTH UPSTREAM
- W2 = APRON WIDTH DOWNSTREAM
- d50 = AVERAGE STONE DIAMETER
- D = INSTALLATION DEPTH
- Dp = DEPTH OF PROTECTION

RIPRAP TYPE	REQUIRED d50 (FT)	MIN. DEPTH "D" (IN)
1	≤ 1.20	36
3	≤ 0.67	18

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA	
CONSTRUCTION DETAILS	
RIPRAP OUTLET PROTECTION (SHEET 1 OF 2)	
NO SCALE	4-22-2016
DESIGNED: JLE DRAWN: JLE TRACED: JLE CHECKED: JLE	NUMBER D-55A

REVISION DATES

NO.	DATE	DESCRIPTION

EROSION CONTROL CONSTRUCTION DETAILS
SR 18 BRIDGE REPLACEMENT @ LONG CANE CREEK
TROUP COUNTY

CHECKED: _____	DATE: _____	DRAWING No. _____
BACKCHECKED: _____	DATE: _____	56-0010
CORRECTED: _____	DATE: _____	
VERIFIED: _____	DATE: _____	