



South Carolina
Department of Transportation

August 28, 2002

INSTRUCTIONAL BULLETIN NO. 2002-4

SUBJECT: Drainage for Bridge Ends

EFFECTIVE DATE: September 3, 2002

SUPERSEDES: Instructional Bulletin No. 99-9 "Bridge End Curb and Flume – Updated"
Instructional Bulletin No. 98-8 "Bridge End Curb and Flume – Updated"
Instructional Bulletin No. 96-12 "Bridge End Curb and Flume"

RE: None

The designer will use "Concrete Transition Curb and Flume at Bridge Ends" with a paved shoulder area on all bridge ends, except where "Bridge Concrete Curb and Gutter with Flume" is provided in the bridge plans (See attached). "Bridge Concrete Curb and Gutter with Flumes" will be used on the left and right side at the low end of the bridge when the grade is $\geq 1\%$ at the low end of the bridge.

"Concrete Transition Curb and Flume" will be placed on all bridge ends where the bridge plans do not show the "Bridge Concrete Curb and Gutter with Flumes." On the high side of superelevated sections, only the concrete transition curbs and paved shoulder areas will be constructed. The flume and riprap will not be placed on the high side of superelevated sections.

When the bridge end drainage is provided by Road Design, use Standard Drawing No. 721-1 to determine the pay items and quantities needed. Be aware of the two types of bridge ends, with and without a bridge approach slab. In addition, three linear feet of 9" x 15" concrete curb for each corner of the bridge using the concrete transition curb should be placed in the inclusions to be used as determined by the engineer.

The Bridge Design Engineer requests for us to be aware of the following:

Section C2.6.6.1 of the AASHTO LRFD Bridge Design Specifications states that: "A longitudinal gradient on bridges should be maintained. Zero gradients and sag vertical curves should be avoided."

Where possible, please avoid zero gradients and sag vertical curves on all future bridge projects that are in the planning stage for both LRFD and LFD designed bridges. Any zero gradients and/or sag vertical curves should be brought to the attention of the appropriate Assistant Bridge Design Engineer.

Approved: 
E. S. Eaggle
Road Design Engineer

ESE:ksg

Attachment

cc:
Mark C. Lester, Prog. Dev. West
Rocque Kneece, Prog. Dev. East
John Walsh, Director of CRM Operations
CRM East

CRM West
Al Barwick, CRM Manager
Jim Frick, Contract Document Facilitator





South Carolina
Department of Transportation

BDF

DM0299

FEBRUARY 19, 1999

MEMORANDUM TO GROUP LEADERS & CONSULTANTS

SUBJECT: Bridge End Drainage Details

This memorandum replaces the previous Design Memorandums DM0488 and DM0189 dated October 17, 1988 and February 22, 1989 respectively.

Bridge Design has received reports of erosion problems at bridge ends and ends of approach slabs on bridges without deck drains. The field engineers have requested that the concrete curb and gutter with flume be detailed, in the bridge plans, for these projects. The concrete curb and gutter with flume should be detailed on bridges that have no bridge deck drains regardless of the slope coming off the bridge.

Bridges with bridge deck drains and a slope coming off the bridge less than 1% can continue to use the road department's standard concrete curb and gutter. Bridges with bridge deck drains and a slope coming off the bridge more than 1%, should be detailed in the bridge plans, with the concrete curb and gutter with flume.

The attached drawings "BCGFLUME" and "BCGFLUMEA" detailing the concrete curb and gutter at the end of approach slab, with or without asphalt approaches, should be revised as necessary to fit each project.

The attached drawing "BCGFLUME1" detailing the concrete curb and gutter at the end of bridge, with or without asphalt approaches, should be revised as necessary to fit each project.

All of the above drawings can be found in the Bridge Standards File under the file name BCGFLUME.STD.


Randy R. Cannon, P.E.
Bridge Design Engineer

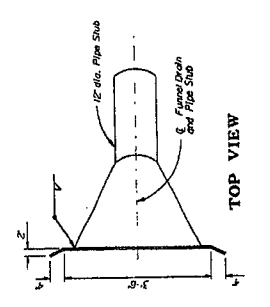
Attachments:
cc: Assistant Bridge Design Engineers
File: PC/REL



MARK	NO.	REMARKS	DIMENSION		LENGTH	TOTAL SHEETS	
			IN.	FR.			
A130	6	4'-0"	3'-0"	4'-0"	5'-0"	17	
A132	5	5'-0"	5'-0"	5'-0"	5'-0"		
A133	1	13'-2"	13'-2"	13'-2"	13'-2"		
A134	9	0'-0"	0'-0"	0'-0"	0'-0"		
A135	6	0'-0"	0'-0"	0'-0"	0'-0"		
A136	6	2'-0"	2'-0"	2'-0"	2'-0"		
QUANTITIES							17 L.F.
ONE CURB & GUTTER 22' C.L.							
ONE CURB & GUTTER 22' C.L.							17 L.F.
ONE CURB & GUTTER 22' C.L.							
QUANTITIES						17 L.F.	
ONE CURB & GUTTER 22' C.L.							

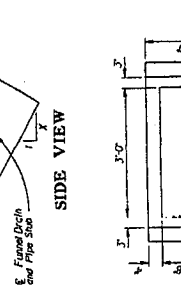
① Includes 5 lbs for A1304 and 18 lbs for A1305. All no additional expense to the Department. Reinforcement may be substituted for one bridge and drainage.

METAL FUNNEL DETAILS



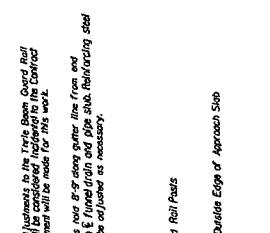
① Metal Funnel Drain shall include the spillway, funnel drain and pipe stub. Spillway and funnel drain shall be fabricated from 1/2" thick steel (See Note ①) or 0.075" min. thick aluminum (See Note ②).
 ② All costs for materials, equipment and labor necessary for fabricating and installing the metal funnel, including the pipe stub, shall be included in the unit price bid for Curb and Gutter with Flumes.

SECTION E-E



Notes:
 For location of bridge and drainage see Bridge Plan and Profile.
 All costs of materials, equipment, and labor necessary for installing the required number and size of flumes for such shall be included in the unit price bid for Curb and Gutter with Flumes.
 All costs for materials, equipment and labor necessary for fabricating and installing the metal funnel, including the pipe stub, shall be included in the unit price bid for Curb and Gutter with Flumes.

EXPANSION JOINT

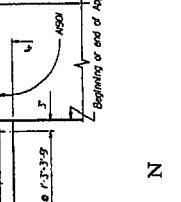


Notes:
 ① Any necessary adjustments to the 1/2" dia. Curved Rail Pipe shall be made for this work.
 ② For skewed bridges use 8" along center line from end of approach slab to funnel drain and pipe stub. Reinforcing steel and concrete shall be designed as necessary.

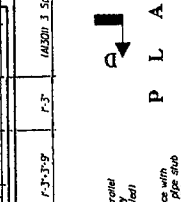
SECTION A-A



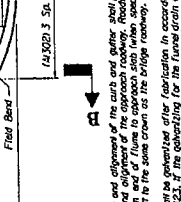
SECTION B-B



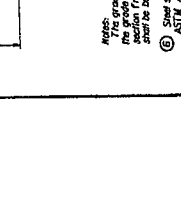
SECTION C-C



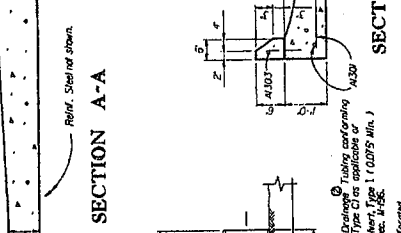
SECTION D-D



SECTION E-E



PLAN



Notes:
 ① 12 dia. Curved Rail Pipe or 12 dia. Curved Aluminum Alloy Gutter, Type 1 (0.075 Min.) conforming to the current AASHTO Spec. H-35.
 ② Pipe or Tubing shall not be performed.

REV.	DATE	BY	CHKD.	DESCRIPTION
REV. 1	08/13/99	JK	JK	REVISED
REV. 2	08/13/99	JK	JK	REVISED
REV. 3	08/13/99	JK		

