



South Carolina
Department of Transportation

September 9, 2003

INSTRUCTIONAL BULLETIN NO. 2003-9

SUBJECT: Hydrology Data

EFFECTIVE DATE: September 12, 2003

SUPERSEDES: Hydrology Data Sheets found in SCDOT "Requirements for Hydraulic Design Studies"

RE: Highway Design Manual (Edition 2003) Section 35.5

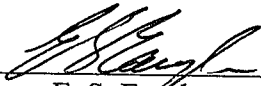
Hydrology data is required to be placed on the profile sheet in the plans for certain drainage facilities on all projects using federal funds. This hydrology data is to be shown in detail for all box culverts, bridges and pipe culverts 48" or larger.

The Hydraulic Engineering Section is providing data sheets to Road Design and Bridge Design. The data below the heading "HYDROLOGY DATA" should be placed in the profile area of the plan sheet. Please see the attached illustration. There are three data sheets, which are attached: one for bridge, one for all box culverts and pipe culverts 48" and larger, and one for box culverts wider than 20' (usually multi-barrel culverts).

To ensure that the correct information is placed for these drainage structures as discussed above, cells have been created named "HDATBR", "HDATPC", "HDATBC" for the hydrology data required for bridges, pipe and box culverts, and large box culverts, respectively. The cells can be found in the cell library. It should be placed on the plans in the profile area as follows:

1. Place cell
2. Drop cell status
3. Edit text using hydrology data supplied by Hydraulic Engineering
4. Modify rectangle to ensure that text fits rectangle, if needed

Approved: _____


E. S. Eargle
Road Design Engineer

ESE:afg

Attachments

cc:

Mark C. Lester, Prog. Dev. West
Rocque Kneece, Prog. Dev. East
Douglas McClure, Bridge Design Engr.
Clem Watson, Director of CRM Operations

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

EXC. = 6 C.Y.
 BOR. = 1306 C.Y.
 SUBTOT. = 1312 C.Y.
 LESS BOR. = 1306 C.Y.
 TOT. = 6 C.Y.

EMB. = 1009 C.Y.
 30% = 303 C.Y.
 SUBTOT. = 1312 C.Y.
 LESS BOR. = 1306 C.Y.
 TOT. = 6 C.Y.

- 1) PLACE CELL
- 2) DROP CELL STATUS
- 3) EDIT TEXT USING HYDRO DATA
- 4) MODIFY RECTANGLE IF NEEDED

HYDROLOGY DATA:

D.A. = 5.413 sq. mi. = 3464.32 ac.
 Q50 = 1188.14 cfs
 Vel. = 3.99 ft/sec
 50 Year H.W. Elev. = 23 ft.
 Q100 = 1373.61 cfs
 Vel. = 4.29 ft/sec
 100 Year H.W. Elev. = 23 ft.
 NOTE: Data from Bridge Section
 OVERTOPPING FLOOD:
 Q = 3900 cfs
 Probability = less than 0.2%

400' V.C.

(---) 3.99%
 (---) 0.50%

VPI = 107+00.00
 Elev. = 546.00

TOE OF FILL
 STA. 109+44.24

PLACE 265 TONS OF RIPRAP (CLASS "B")
 AT BRIDGE ENDS.
 PLACE 530 S.Y. GEOTEXTILE FABRIC.

REMOVE EXISTING EMBANKME
 TO ORIGINAL GROUND LINE
 EST. EXC. = 20 C.Y.

Hydrology Data for Bridge

Date: _____

Memorandum to: Road Design Squad Leader _____

From: Hydraulic Design Engineer _____

Subject: Hydrology Data for Bridge Over _____

Rd./Rte.: _____ County: _____ Const. Pin: _____

Bridge Length: _____ Ft.; Bridge Roadway Width: _____ Ft.

Beg. Station: _____ End Station: _____ Skew Angle: _____

Bridge Span Configuration: _____

Minimum F. G. Elev.: _____ Minimum Low Steel: _____ Based on: _____

End Fill Slope: _____

Riprap Req'd: Yes _____ No _____; To Elevation: _____

Comments: _____

HIGH WATER DATA:

____ Year H. W. Elev. = _____ including _____ Ft. Backwater

100 Year H. W. Elev. = _____ including _____ Ft. Backwater

Highwater Elevation = _____

Highwater Elevation = _____

HYDROLOGY DATA:

D. A. = _____ sq. mi. = _____ ac.

Q = _____ cfs

Vel. = _____ ft/sec

____ Year H.W. Elev = _____ ft.

Q₁₀₀ = _____ cfs

Vel = _____ ft/sec

100 Year H.W. Elev = _____ ft.

NOTE: Data from Bridge Section

OVERTOPPING FLOOD:

Q = _____ cfs

Probability = _____

Hydraulic Design Engineer

cc: Bridge Design Squad Leader _____

Program Manager _____

Hydrology Data for Pipe Culverts(>48" and Box Culverts)

Memorandum to: Road Design Squad Leader _____

From: Hydraulic Design Engineer _____

Subject: Hydrology Data for Culvert Over _____
Rd./Rte.: _____ County: _____ Const. Pin: _____

Box Dimension: Span _____ ft. Rise _____ ft.

Pipe Diameter: _____ ft.

No. Barrels: _____ Material Type: _____

Skew Angle: _____ Centerline Sta.: _____

Inlet Invert Elev.: _____ Outlet Invert Elev.: _____

Channel Change Req'd: Yes _____ No _____

Riprap Req'd: Yes _____ No _____

Comments: _____

HYDROLOGY DATA:

D. A. = _____ sq. mi. = _____ ac.

Q = _____ cfs

Vel. = _____ ft/sec

____ Year Headwater Elev = _____ ft.

Q₁₀₀ = _____ cfs

Vel = _____ ft/sec

100 Year Headwater Elev = _____ ft.

Hydraulic Design Engineer

cc: Structural Design Coordinator _____

Hydrology Data for Bridge Size Culvert (>20' Wide)

Memorandum to: Road Design Squad Leader _____

From: Hydraulic Design Engineer _____

Subject: Hydrology Data for Bridge Size Culvert Over _____

Rd/Rte.: _____ County: _____ Const. Pin: _____

No. Barrels: _____ Size: Span _____ ft.; Rise _____ ft.

Material Type: _____

Skew Angle: _____ Centerline Sta.: _____

Inlet Invert Elev.: _____ Outlet Invert Elev.: _____

Channel Change Req'd: Yes _____ No _____

Riprap Req'd: Yes _____ No _____

Comments: _____

HYDROLOGY DATA:

D. A. = _____ sq. mi. = _____ ac.

Q = _____ cfs

Vel. = _____ ft/sec

___ Year Headwater Elev = _____ ft.

Including _____ ft. Headwater

Q₁₀₀ = _____ cfs

Vel = _____ ft/sec

100 Year Headwater Elev = _____ ft.

Including _____ ft. Headwater

OVERTOPPING FLOOD:

Q = _____ cfs

Probability = _____

Hydraulic Design Engineer

cc: Structural Design Coordinator