South Carolina
Department of Transportation

January 5, 2006

# INSTRUCTIONAL BULLETIN NO. 2006-1

**SUBJECT:** Hydrology Data (Revised)
**EFFECTIVE DATE:** January 6, 2006
**SUPERSEDES:** Hydrology Data Sheets found in SCDOT "Requirements for Hydraulic Design Studies" and Instructional Bulletin 2003-9
**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. An example profile sheet is attached.

The Hydraulic Engineering Section provides 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 types of 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).

The cells named "HDATBR", "HDATPC", "HDATBC" for the hydrology data required for bridges, pipe and box culverts, and large box culverts, respectively, have been revised. The cells can be found in the cell library. A cell should be placed on the plans in the profile area as follows:

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

**Old cells on plans that will be let after March 2006 are to be replaced with the new cell.**

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.
Charles Smoak, Hydraulic Engineer
Al Barwick, CRM Manager

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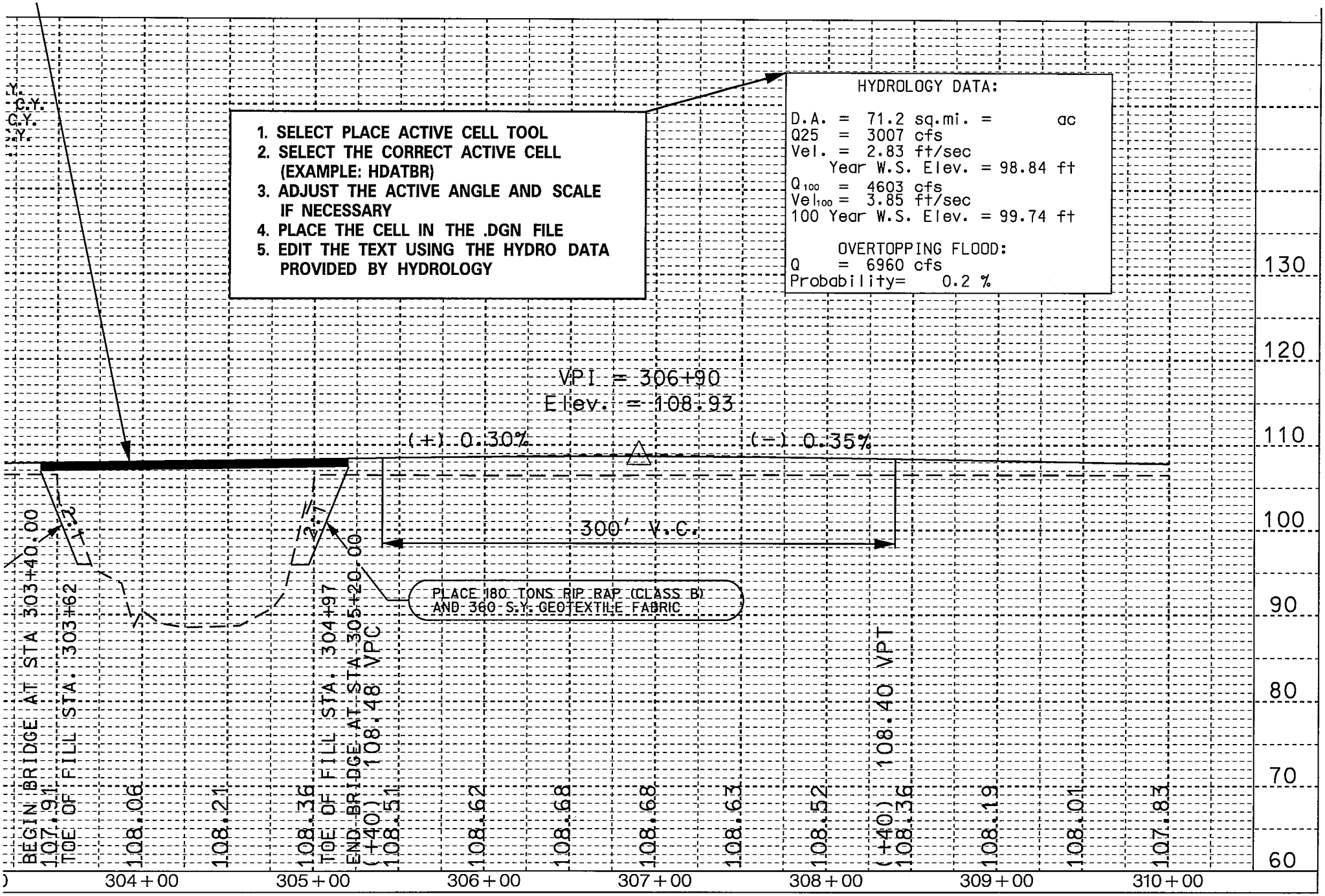
1. SELECT PLACE ACTIVE CELL TOOL
2. SELECT THE CORRECT ACTIVE CELL (EXAMPLE: HDATBR)
3. ADJUST THE ACTIVE ANGLE AND SCALE IF NECESSARY
4. PLACE THE CELL IN THE .DGN FILE
5. EDIT THE TEXT USING THE HYDRO DATA PROVIDED BY HYDROLOGY
HYDROLOGY DATA:
D.A. = 71.2 sq.mi. = ac
Q25 = 3007 cfs
Vel. = 2.83 ft/sec
Year W.S. Elev. = 98.84 ft
Q100 = 4603 cfs
Vel100 = 3.85 ft/sec
100 Year W.S. Elev. = 99.74 ft
OVERTOPPING FLOOD:
Q = 6960 cfs
Probability= 0.2 %
VPI = 306+90
Elev. = 108.93
(+) 0.30%
(-) 0.35%
300' V.C.
PLACE 180 TONS RIP RAP (CLASS B) AND 360 S.Y. GEOTEXTILE FABRIC
BEGIN BRIDGE AT STA 303+40.00
107.91
TOE OF FILL STA. 303+62
108.06
108.21
TOE OF FILL STA. 304+97
108.36
END BRIDGE AT STA 305+20.00
(+40) 108.48 VPC
108.51
108.62
108.68
108.68
108.63
108.52
(+40) 108.40 VPT
108.36
108.19
108.01
107.83
304+00
305+00
306+00
307+00
308+00
309+00
310+00
130
120
110
100
90
80
70
60

REV. 11/2005

Date: _____

**Memorandum to: Road Design Group Coordinator** _____
**Bridge Design Squad/Team Leader** _____

**From:** Hydraulic Design Squad/Engineer _____

**Subject:** Hydrology Data for Bridge Over _____

County: _____ Rd/Rte.: _____ Const. Pin: _____
Structure No.: _____
Bridge Length: _____ ft. Bridge Roadway Width: _____ ft.
Beg. Station: _____ End Station: _____ Skew Angle: _____ °
Bridge Span Configuration: _____
Bridge Span Type: _____

Min. F. G. Elev.: _____ ft. Min. Low Steel: _____ ft.
End Fill Slope: _____ Riprap Req'd: Yes _____ To Elevation: _____ ft.
No _____
Comments: _____
_____
_____
_____

Historical Highwater Elev. = _____

Maximum Backwater Elevation Upstream of the Bridge
____Year H. W. Elev. = _____ including _____ ft. Backwater
100 Year H. W. Elev. = _____ including _____ ft. Backwater

HYDROLOGY DATA:
D. A. = _____ sq. mi. = _____ ac.
$Q_{\_\_}$ = _____ cfs
Vel. = _____ ft/sec
____ Year W.S. Elev = _____ ft.
$Q_{100}$ = _____ cfs
$Vel._{100}$ = _____ ft/sec
100 Year W.S. Elev = _____ ft.

OVERTOPPING FLOOD:
Q = _____ cfs
Probability = _____

cc: Program Manager _____
Environmental Engineer Still

REV. 11/2005

Date: _____

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

**Memorandum to Road Design Group Coordinator:** _____

**From:** Hydraulic Design Squad/Engineer _____

**Subject:** Hydrology Data for Culvert Over _____

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

Pipe Diameter: _____ ft.
Box Dimension: Span: _____ ft. Rise: _____ ft.
Extension: Right: _____ ft. Left: _____ ft.
Estimated Length: _____ ft.
No. Barrels: _____ Material Type: _____

Skew Angle: _____ ° Centerline Station: _____
Inlet Invert Elev.: _____ ft. Outlet Invert Elev.: _____ ft.
Riprap Req'd (In Addition to Typical): Yes _____
No _____

Comments: _____
_____
_____
_____

HYDROLOGY DATA:

D. A. = _____ sq. mi. = _____ ac.
Q__ = _____ cfs
Vel. = _____ ft/sec
_____ Year Headwater Elev = _____ ft.
$Q_{100}$ = _____ cfs
Vel $_{100}$ = _____ ft/sec
100 Year Headwater Elev = _____ ft.

cc: Roadway Structures Coordinator Cross

REV. 11/2005

Date: _____

## Hydrology Data for Bridge Size Culverts (= or >20' Wide)

**Memorandum to Road Design Group Coordinator:** _____

**From:** Hydraulic Design Squad/Engineer _____

**Subject:** Hydrology Data for Culvert Over _____

County: _____ Rd/Rte.: _____ Const. Pin: _____
Structure No.: _____

Box Dimension: Span: _____ ft. Rise: _____ ft.
Extension: Right: _____ ft. Left: _____ ft.
Estimated Length: _____ ft.
No. Barrels: _____ Material Type: _____

Skew Angle: _____ ° Centerline Station: _____
Inlet Invert Elev.: _____ ft. Outlet Invert Elev.: _____ ft.
Riprap Req'd (In Addition to Typical): Yes _____
No _____

Comments: _____
_____
_____
_____

HYDROLOGY DATA:

D. A. = _____ sq. mi. = _____ ac.
Q__ = _____ cfs
Vel. = _____ ft/sec
____ Year Headwater Elev = _____ ft.
Including _____ ft. Backwater
$Q_{100}$ = _____ cfs
$Vel_{100}$ = _____ ft/sec
100 Year Headwater Elev = _____ ft.
Including _____ ft. Backwater

OVERTOPPING FLOOD:

Q = _____ cfs
Probability = _____

cc: Roadway Structures Coordinator Cross
Environmental Engineer Still