MINIMUM HYDRAULIC
DESIGN REQUIREMENTS
(For Drainage Areas > 1000 Acres

CODE*	ROUTE FUNCTIONAL CLASSIFICATION	TYPE	DESIGN FREQUENCY (FOR THE APPROACH ROADWAYS)**	DESIGN FREQUENCY (FOR THE STRUCTURE OPENING)
06	Minor Arterial	Rural	50	50
07	Major Collector	Rural	25	50
08	Minor Collector	Rural	None	25
09	Local	Rural	None	25
12	Principal Arterial-Other Freeways or Expressways	Urban	100	100
14	Other Principal Arterial	Urban	50	50
16	Minor Arterial	Urban	50	50
17	Collector	Urban	25	50
19	Local	Urban	None	25

* The Route Functional Classification Code is indicated by item # 26 in the Structural Inventory & Appraisal Report.

** Use this column only for projects utilizing STP funds. The following example of usage is given for an Urban Collector: For the 25-year flood, the approach roadways shall be improved to avoid being inundated. For the 50-year frequency, the structure length will cause no more than 1 ft. (0.3m) of backwater when considering the conveyance of the structure and the conveyance from the possible roadway overtopping. The 50-year frequency would be shown as the design frequency on the drawings.

The design frequency shown in the fifth column shall be used for the hydraulic design of the structure opening. Overtopping of the approach roadways may be found to occur during the design frequency for the structure; however, this allowed overtopping (of the approach roadways only) is to be incorporated into the hydraulic analysis when determining the backwater produced for the design frequency. The minimum hydraulic design requirements are that the maximum backwater will not exceed 1.0 foot for the discharge due to the design frequency shown in the fifth column above. In addition, backwater due to floods more recurrent than the design flood shall not cause an upstream water surface elevation any higher than allowed for the design frequency flood. Note that if the Local Agency is a participant in the National Flood Insurance Program, FEMA requirements may control the design – requiring more restrictive backwater limitations. (See discussion in Section VIII as well as Figure VIII-8).

For projects utilizing HBRRP funds, participation will be limited to a minimum amount of roadway construction, which will provide adequate touchdown from the bridge ends to the existing roadway.

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The LPA may, through MoDOT approval of a design variance request at the programming approval stage, establish a minimum hydraulic capacity for their structures other than that indicated above.