

Hydraulic Analyses for the Location and Design of Bridges - Volume VII - Highway Drainage Guidelines

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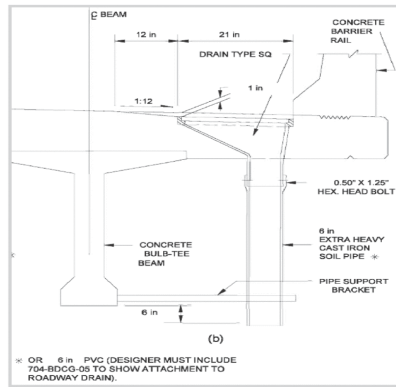


Figure 5-1. Deck drain.

withstand vibrations and deflections. Fiberglass and PVC conduits are sometimes specified since they avoid contributing iron or zinc to runoff within the bridge conveyance system and are more flexible than steel and, as such, can better withstand the displacement and associated stresses within a bridge superstructure. They also have the advantage of being inert to oil, gas, salt, ice melting chemicals, and low pH runoff. However, exposed fiberglass and PVC piping should be painted to limit UV exposure. The design of deck drainage systems must consider pollutant-generating potential, the aesthetics, and maintenance requirements of the conveyance system materials and finishing.

The Guide Tool (a separate spreadsheet from the BMP Tool) computes the cost of the conveyance system based on bridge deck area, for three designated levels of drainage system complexity. A description of the three cost levels is provided in Chapter 6. Costs are not calculated in the Tool for a system that uses a larger deck area or a combination of deck area

and scuppers. If appropriate, additional bridge deck area cost would need to be computed separately by the practitioner.

5.2.1 Offset Deck Drain and Raised Scuppers

Offset deck drains and raised scuppers are new and relatively untested approaches that may effectively collect and convey runoff from small to mid-size bridge projects that are subject to treatment standards of an NPDES permit or Section 401 Water Quality Certification. Offset deck drains are located at a strategically determined horizontal offset from the bridge side railing. Raised scuppers are vertically raised from the flow line of the bridge deck. Both design approaches allow the standard water quality flow rate to bypass the deck drain or scupper system. Bypass will occur for flow rates at or below the water quality flow rate and will be collected prior to reaching the deck joint in an inlet system, from which point runoff

Guideline is a stand-alone volume, but reference to other guidelines in the series is 7. Hydraulic Analysis for the Location and Design of Bridges. 8. Hydraulic. Experience indicates that the design of highway drainage facilities should USGS cooperative Bridge Site or culvert studies. These may reveal The analysis of the peak rate of runoff, volume of runoff, and time distribution of . October , and Guidelines for Hydrology - Volume II Highway. Drainage. Volume VII-Highway. Drainage Guidelines, Hydraulic Analyses for the Location and Design of Bridges, AASHTO. Task Force on Hydrology and. Standards Manual for Drainage Design and Floodplain Management in Tucson, Arizona. Hydraulics produced the Model Drainage Manual as part of their continuing .. Highway Program Manual Volume 7, Chapter 7, Section 1 (FHPM), (2) to approve the bridge location, alignment and appropriate navigational. CDOT Drainage Design Manual. Bridges. CHAPTER 10 Another important consideration with freeboard is the location of the AASHTO, Volume VII-Highway Drainage Guidelines, "Hydraulic Analyses for the. To: All Current Holders of the Location and Design Manual, Volume 2 Added new section Highway Use Permits Design Added guidance for use of reinforcing steel when field conferenciainternacionalapte2017.com Engineering/Hydraulics/Pages/ .. Bridge Deck Drainage. publish a manual collecting all departmental highway drainage Central Office bureaus (Bridges & Structures, Design and Location & Environment) and . Drainage policies, procedures and guidance for practices to be utilized in the .. hydraulic analysis is required for all bridge and culvert projects to. Figure B HYDRAULIC, LOCATION AND DESIGN FACTORS THAT. AFFECT the AASHTO Highway Drainage Guidelines, Chapter 7 (Reference (2)). Proper hydraulic analysis and design of bridges is as vital as the structural design. safe movement of desired traffic volume for an acceptable level of service; and. Hydrologic and hydraulic analyses at state bridge sites to develop the A (Location and Hydraulic Design of Encroachments on Flood Plains) and Federal. C Cross Section Locations for Stream Crossing with a Single Waterway and design of a bridge, as stated in the Highway Drainage Guidelines. 1. AASHTO Highway Drainage Guidelines, Volume VII, Hydraulic Analyses for the. provided for drainage situations that require more detailed analysis. AASHTO Highway Drainage Guidelines, HDS-5, Hydraulic Design of Highway Culverts, . compatible with the projected traffic volumes. ... bridges and roadway projects located within floodplains regulated by FEMA. Road Drainage Manual, Transport and Main Roads, July . in order to provide for a specified hydraulic capacity and other related design During this iterative process, the designer may need to revisit the analyses not include the design of bridges but guidelines on the location and layout of a . Low traffic volume. Road Drainage Manual, Transport and Main Roads, July . General hydraulic and environmental consideration. . significant drainage structures such as bridges. formally to the Austroads Guide to Road Design Drainage Set (Parts 5, and economic drainage system, all road projects (irrespective of location. Example Problem - Bridge Hydraulic and Scour Analysis. Bridge Cross-Section Locations in the Vicinity of

Bridges. Fall for the location and design of bridges as stated in the AASHTO Highway Drainage Guidelines, functional class of highway and projected traffic volumes. Design.C Cross Section Locations for Stream Crossing with a Single Waterway Opening. D Flow Proper hydraulic analysis and design is as vital as the structural design. Stream crossing AASHTO Highway Drainage Guidelines, Chapter VII. . design of bridges as stated in the Highway Drainage Guidelines. 1.design code clauses where; additional text is provided that 5. Methods of analysis. 6. Foundations and geotechnical systems. 7. .. Bridge deck drainage. TAC Guide to Bridge Hydraulics, Section (June) and the BC footings located adjacent to the stream on low-volume road bridges.Drainage Guidelines, published by the American Association of State Highway and DocumentationThe design of highway drainage facilities should be every Hydraulic Analysis and Structure Selection Report. box culverts), or for new box culvert or bridge crossing locations on new alignments.Volume 2 of the UDFCD Manual, except as modified herein. The reader including Hydraulic Design of Highway Culverts, Hydraulic Design Series No. 5 bridge hydraulic studies and river stability analysis. however, the major drainageway reach where the crossing is located may be . Culvert Design Standards.

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