Washington State Department of Transportation
Bridge and Structures Office

Design Memorandum

TO: All Design Section Staff
FROM: Bijan Khaleghi
DATE: February 20, 2017
SUBJECT: BDM Chapters 8 and 15 Modifications - Culverts

This memorandum cleans up some conflicting language in Bridge Design Manual Chapters 8 and 15 for culverts.

The third paragraph of Section 8.3.8 is revised to read:

For motor vehicle fire protection, a standard has been produced by the National Fire Protection Association, NFPA 502 – *Standard for Road Tunnels, Bridges, and Other Limited Access Highways*. This document shall be used for all WSDOT tunnels. NFPA 502 – *Standard for Road Tunnels, Bridges, and Other Limited Access Highways*, uses tunnel length to dictate minimum fire protection requirements.

The second paragraph of Section 15.8.H is revised to read:

For motor vehicle fire protection, a standard has been produced by the National Fire Protection Association, NFPA 502 – *Standard for Road Tunnels, Bridges, and Other Limited Access Highways*. This document shall be used for all WSDOT tunnels. NFPA 502 – *Standard for Road Tunnels, Bridges, and Other Limited Access Highways*, uses tunnel length to dictate minimum fire protection requirements

Section 15.8.3 is revised to read:

Precast reinforced concrete three sided structures shall be designed and constructed in accordance with Standard Specifications Section 7-02.3(6). Refer to Section 8.3.5 for additional design criteria specific to precast reinforced concrete three sided structure

Section 15.8.3B. is revised to read:

WSDOT Designed Standard Culverts WSDOT Bridge and Structures Office has developed culvert standards for the Precast Reinforced Concrete Split Box Culvert (PRCSBC) and Precast Reinforced Concrete Three-Sided Structures (PRCTSS) with span lengths from 20’ to 60’. See Section 8.4 for the list of Bridge Standard Drawings for Buried Structures containing the geometry table, typical sections and general details. See Appendices 8.3-B1 to 8.3-B3 for the Design Criteria used

Section 8.3.2 is revised to read:

WSDOT Designed Standard Culverts WSDOT Bridge and Structures Office has developed culvert standards for the Precast Reinforced Concrete Split Box Culvert (PRCSBC) and Precast Reinforced Concrete Three-Sided Structures (PRCTSS) with span lengths from 20’ to 60’. See Section 8.4 for the list of Bridge Standard Drawings for Buried Structures containing the geometry table, typical sections and general details. See Appendices 8.3-B1 to 8.3-B3 for the Design Criteria used. The Design Criteria is a template only, should be modified for each project per site conditions, design requirements, and jurisdiction.

The first paragraph of Section 8.3.4 is revised to read:

Box culverts are four-sided rigid frame structures and are either made from cast-in place (CIP) reinforced concrete or precast concrete. See Appendices 8.3-B1 to B3 for design criteria specific to concrete four sided split box culverts.

The second paragraph of Section 8.3.4 is deleted

The first paragraph of Section 8.3.5 is revised to read:

Structures Precast reinforced concrete three-sided frame structures are chorded arch, arch, or elliptical structures. These systems require a CIP concrete or precast footing and walls. See Appendix 8.3-B1 to B3 for design criteria specific to three-sided precast concrete culverts.

Section 8.3.7 is deleted.

See attachments for Appendices 8.3-B1, 8.3-B2, and 8.3-B3:

Appendix 8.3-B1: Precast Split Box Buried Structure Design Criteria
Appendix 8.3-B2: 3-Sided Precast Buried Structures Design Criteria
Appendix 8.3-B3: Soil Interaction Analysis for Culvert Structures precast Split Box Buried Structure


Appendix 8.3-B1.pdf


Appendix 8.3-B2.pdf


Appendix 8.3-B3.pdf

If you have any questions regarding this policy memorandum, please contact Rich Zeldenrust zeldenr@wsdot.wa.gov at 360-705-7196, Lou Tran TranLuo@wsdot.wa.gov at 360-705-7195, Scott.Sargent@wsdot.wa.gov at 360-705-7753 or Bijan.Khaleghi@wsdot.wa.gov at 360-705-7181.

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