

QUALITY ASSURANCE & QUALITY CONTROL

BRIDGE STRUCTURES

PROJECT I.D. 3614-00-05
TOWN OF BRADFORD, CREEK ROAD
(WSOR RAILROAD BRIDGE P-53-0101)
TOWN ROAD
ROCK COUNTY

STRUCTURE B-53-177

February 18, 2019

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Structure Survey Report

The Project Engineer shall consult with the Project Director for guidance and review of the selection and sizing of the proposed bridge structure. The follow criteria shall be the baseline for structure selection and sizing. The selected structure and sizing shall be approved by the Project Director.

The following criteria are used for the preparation of preliminary plans.

- 1. Selection of Structure Type.** Refer to Chapter 17, Superstructure-General, for a discussion of structure types.
- 2. Span Arrangements.** For stream crossings the desired minimum vertical clearance from high water to low steel is given in Chapter 8.0-Hydraulics. Span lengths for multiple span stream crossings are in most cases a matter of economics and the provision for an opening that adequately passes ice and debris. For structures over navigable streams, the vertical and horizontal clearance of the navigable span are determined by the U.S. Coast Guard after considering the interests of both highway and waterway transportation users.
- For most of the ordinary grade separation structures the requirements for horizontal clearance determine the span arrangements. Refer to Chapter 17.0-Superstructure-General for span length criteria.

3. Economics.

Economy is a primary consideration in determining the type of structure to be used. Refer to Chapter 5.0-Economics and Costs, for cost data.

At some stream crossings where the grade line permits considerable head room, investigate the economy of a concrete box culvert versus a bridge type structure.

When economy is not a factor, the box culvert is the preferred type from the

standpoint of maintain Show Design Specifications as: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS and provision of a facility without roadway width restrictions.

- 4. Aesthetics.** Recognition of aesthetics as an integral part of a structure is essential if bridges are to be designed in harmony with adjacent land use and development.

Refer to Chapter 4.0-Aesthetics.

The Structure type and sizing has been prepared by:

PATRICK BOUNDY

The Structure type and sizing have been reviewed and approved by:



Tom Romenesko, P.E.
Project Director

5. Hydraulic Consideration. Stream crossing structures are influenced by stream flow, drift, scour, channel conditions, ice, navigation, and conservation requirements. This information is submitted as part of the Structure Survey Report. Refer to Chapter 8 for Hydraulic considerations and Section 8.1.5 for Temporary Structure Criteria.

6. Geometrics of Design. The vertical and horizontal clearance roadway widths, design live loading, alignment, and other pertinent geometric requirements are given in Chapter 3.

7. Maintenance. All bridge types require structural maintenance during their service life. Maintenance of approaches, embankments, drainage, substructure, concrete deck, and minor facilities is the same for the various types of bridges. A minimum draining grade of 0.5% across the bridge is desirable to eliminate small ponds on the deck except for open railings where the cross slope is adequate.

Epoxy coated bar steel is required in all new decks and slabs.

Steel girders require periodic painting unless a type of weathering steel is used. Even this steel may require painting near the joints. It is more difficult to repaint steel girders that span busy highways.

Reinforced concrete box girders and voided slabs have a poor experience in Wisconsin. They should not be used on new structures.

Deck expansion joints have proved to be a source of maintenance problems. Bridges designed with a limited number of watertight expansion devices are recommended.

8. Construction. Occasionally a structure is proposed over an existing highway on which traffic must be maintained. If the roadway underneath carries high volumes of traffic, any obstruction such as falsework would be hazardous as well as placing undesirable vertical clearance restrictions on the traveled way. This is also true for structures over a railroad.

For structures over most high-volume roadways construction time, future maintenance requirements, and provision for future expansion of the roadway width, have considerable influence on the selection of the final product.

9. Foundations. Poor foundation conditions may influence the structure geometry. It may be more economical to use longer spans and fewer substructure units or a longer structure to avoid high approach fills.

Drawing Size

1 Sheets are

- Review of Quality Control by Project Director
Stating Checklist Items Conform to Project Plan.

The elevation view is preferably placed below the plan view. If the structure is not skewed the substructure units are to be a straight projection from the plan view. If skewed, the elevation is a view normal to substructure units. The view shows the following basic information:

- Date: 3/10/19

DESIGNER CHECKER ENGINEER OF RECORD

Review of Quality Control by Project Director
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Date: _____

The cross-section view need only be a half section if symmetrical about a reference line, otherwise it is a full section taken normal to reference line. Use a scale of ($1'' = 4'$) whenever possible. A view of a typical pier is shown as a part of the cross-section. The view shows the following general information:

- 1 a Slab thickness, curb height and width, type of railing.
- 2 Horizontal dimensions tied into a reference line or centerline of roadway.
- 3 Steel beam or girder spacing with beam/girder depth.
- 4 For prestressed girders approximate position of exterior girders.
- 5 Direction and amount of crown or superelevation.
- 6 Point referred to on profile grade.
- 7 Type of pier with size and number of columns proposed.
- 8 For solid, hammerhead or other type pier approximate size to scale.
- 9 If length of concrete pier cap between outer pier columns exceeds approximately 60 feet, provide an opening in the cross girder for temperature changes and concrete shrinkage, or design the pier cap for temperature and shrinkage to eliminate the opening.
- 10 Dimension minimum depth of bottom of footings below ditch or finished ground line or if railroad crossing below top of rail.
- 11 Location for public and private utilities to be carried in the superstructure. Label owner's name of utilities.
- 12 Location of lighting on the deck or under the deck if any.

1 Profile grade line across structure showing tangent grades and length of vertical curve. Station and elevation of P.C., P.I., P.T., and centerline of all substructure units. Profile grade line of highway beneath structure if highway separation or of top rail if railroad separation. Stations along top of rail are to be tied into actual stationing as established by railroad company.

- 2 Channel change section if applicable. Approximate stream bed elevation at low point.
- 3 Any other view or detail which may influence the bridge type, length or clearance.
- 4 List design data including:

- Concrete Superstructure
- Concrete Substructure
- Bar Steel Reinforcement
- Structural Steel
- Prestressed Concrete
- Prestressing Steel

Foundations

- Soil Bearing Pressure
- Pile Type and Capacity (see bridge manual 6.3.2.1)
- Factored Resistance Note

Design Loading: HL-93
Inventory Rating Factor: RF = XXX
Operating Rating Factor: RF = XXX
Wisconsin Standard Permit Vehicle (Wis-SPV)
(See bridge manual Chapter 45 – Bridge Rating (45.8.2) for additional information)

100 Year Discharge
Stream Velocity
100 Year Highwater Elevation
Q2 & Q2 Elevation (Based on new structure opening)
Waterway Area
Drainage Area
Scour Critical

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TB	RBM	TB
TB	RBM	TB
TB	RBM	TB
TB	RBM	TB
TB	RBM	TB
N/A	N/A	N/A
N/A	N/A	N/A
JJA	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Date: _____

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[illegible]

Overlapping Flood OR (Overlapping N/A for Floods > the 100 Year Flood)

- Overlapping Frequency
- Overlapping Elevation
- Overlapping Discharge

5 Show traffic data. Give traffic count, data and highway for each highway on grade separation or interchange structure.

6 Approved Abbreviations- see bridge manual Table 6.3-1

7 Utilities

In urban areas, public and private utilities generally have their facilities such as sewers, water cables, pipes, ducts, etc., underground, or at river crossings, in the streambed.

If these facilities cannot be relocated, they may interfere with the most economical span arrangement. The preferred location of light poles is at the abutments or piers.

Overhead power lines may cause construction problems or maintenance inspection problems. Verify if they exist and notify Utilities & Access Management Unit (Bureau of Tech.

Services) to have them removed.

It is the general policy to not place utilities on the structure. The Utilities & Access

Management Unit approves all utility applications and determines whether utilities are placed on the structures or can be accommodated some other way. Refer all requests to them. Also

see Chapter 18 of the FDM and Chapter 4 of "WisDOT Guide to Utility Coordination".

DESIGNER
CHECKER
ENGINEER OF
RECORD

N/A	N/A	N/A
✓	N/A	✓
✓	N/A	✓
✓	RBH	✓
✓	RBH	✓
✓	RBH	✓


Date: 3/18/19

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Stating Checklist Items Conform to Project Plan.