

**Title: Hwy 813 over Athabasca River (BF 09905) – Use of Modular Deck Joint**

Memorandum (or Approval) Date: February 16, 2016

Design Exception Request Date: September 9, 2014

Region: North Central

Approval Status: Approved

| Project Location |                 |       |         |       |               |
|------------------|-----------------|-------|---------|-------|---------------|
| Highway          | Control Section | At km | From km | To km | Existing AADT |
| 813              | 02              | 1.29  |         |       | 2420          |

| Project Type (Mark all that apply with an X) |                   |             |                 |                   |
|--|-------------------|-------------|-----------------|-------------------|
| Functional Planning:                         | New Construction: | X           | Reconstruction: | Paving/Surfacing: |
| Bridge:                                      | X                 | Operations: | Geotechnical:   | Environmental:    |
| Shoulder Widening:                           | Detailed Design:  | Other:      |                 |                   |

| Summary   |
|---|
| <p>Alberta Transportation's Bridge Structure Design Criteria does not permit the use of modular expansion joints because they have a history of deteriorating faster and requiring more maintenance than other standard deck joint designs approved for use by the department. An exception for the use of a modular deck joint has been requested in this case to accommodate large ground movements at the East end of the bridge that significantly exceed the movement capacity of standard deck joint designs.</p> |

| Rationale for Approval/Rejection   |
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| <ul style="list-style-type: none"> <li>• Modern modular joint designs include measures to slow deterioration and to mitigate against some maintenance issues. The specifications for this project will include these measures.</li> <li>• Other available alternatives (large finger joints) can cause safety concerns for bicycles and motorcycles.</li> <li>• Other available alternatives (large finger joints) cannot tolerate the anticipated in-plan rotation of the abutment caused by ground movements. Modular joints are capable of accommodating some in-plan rotations.</li> </ul> |

| Additional Information   |
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| <p>The east bank of the Athabasca River at BF 09055 forms part of a large scale, slow moving land slide that has the potential to produce movements of up to two meters over the lifespan of the bridge. The exact quantity and direction of the ground movements are difficult to predict. The proposed modular joint would be able to accommodate up to 800 mm of movement, and additional measures would be incorporated into the design that will allow the joint to be 'reset' once the movement capacity is used up.</p> |

Key Words

Modular deck joint, modular expansion joint

Photograph/Diagram

Plan and sections of proposed modular joint:

