

5.5 Requirements for specific bridge types 2
5.5.7 Rigid frame and integral abutment types 2

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Add the following:

Design and analysis shall follow published design criteria from a recognized source applicable to the type of jointless bridge under consideration.

The designer shall provide details regarding construction constraints, sequencing of work etc. on the Plans. The details for the interface between approach pavement and approach slabs shall be compatible with anticipated movements.

Commentary: *Several examples exist of Ministry bridges with inadequate consideration of the expected thermal movements at the approach pavement and approach slab interface which have led to premature deterioration of the pavement and loss of roadway fill under the approach slab irrespective of whether the approach slab is buried. Consideration of the use of additional control joints and sleeper slab type systems may be warranted for longer integral abutment type bridges.*

Some recognized design guides are:

- BA 42/96 including Amendment No. 1 dated May 2003, Design Manual for Roads and Bridges, ISBN 115524606 [www.tso.co.uk].
- *Integral Bridges: A Fundamental Approach to the Time-Temperature Loading Problem*, George England, David Bush & Neil Tsang, ISBN 0-7277-2845-8.
- England, G.L., Tsang, N.C.M., *Towards the Design of Soil Loading for Integral Bridges- Experimental Solution*, Imperial College London, 2001
- NJDOT Design Manual for Bridges and Structures, Section 15 – Integral Abutment Bridges.
- Ontario Ministry of Transportation, Structural Office Report #SO-96-01, Integral Abutment Bridges
- Ontario Ministry of Transportation, Bridge Office Report #BO-99-03, Semi-Integral Abutment Bridges
- Ontario Ministry of Transportation, Structural Office Report #SO-99-04, Performance of Integral Abutment Bridges
- *The 2005 – FHWA Conference: Integral Abutment and Jointless Bridges (IAJB 2005)*. 2005. U.S. Department of Transportation, Federal Highway Administration, Washington, DC.

Experience in North America with jointless superstructures of limited backwall height using integral pile-supported end-diaphragms, or semi-integral abutment designs has demonstrated that superstructures of this type may be designed longer than the 60 m limit in BA 42/96, provided that the effects described therein are properly accounted for.