
Design Memorandum

To: Bridge Program
From: Rich Myers, PE, Assistant Bridge Program Manager - Design
cc: Jeff Folsom, PE, Assistant Director of Project Development
Date: August 6, 2026
Subject: Design-Build Projects

The following provisions apply only to projects using the Design-Build contracting method and project delivery process:

General

- Where Department specific guidance is absent, the Designer shall default to the most recent version of all applicable American Association of State Highway and Transportation Officials (AASHTO) documents.
- Engineering Instructions supersede the Bridge Design Guide (BDG).
- For substructure locations where an integral abutment is proposed, the maximum movement rating is 2 inches through the entire design temperature range. Analysis to determine the point of zero movement shall consider, at a minimum, the elastic behavior of the substructures, the elastic behavior of the bearings, the behavior of expansion bearing sliding surfaces over the service life of the bridge, and horizontal earth forces. The length contributing to the movement rating at a substructure location shall be the distance along the superstructure from the point of zero movement to the substructure location. Design-Builders are responsible for designing and building a durable, low maintenance bridge and shall consider the applicable pavement and settlement warranties.
- For structures with two fully integral abutments, bearings at additional substructure locations may be fixed or expansion. For structures with one fully integral abutment, at least one other substructure location shall have fixed bearings.
- Permanent timber substructure, superstructure, bearing, and deck elements are not allowed.
- Nonconformance Reports shall identify the issue, how/why work does not conform, how reoccurrence will be prevented, and propose a corrective action.

Plan Development and Impacts

- Plans shall show all impacts, temporary and permanent. Temporary impacts include, but are not limited to, cofferdams, Special Detour toes of slope, all types of construction access work, temporary utility moves, and any other non-permanent work. Permanent impacts include, but are not limited to, all grade changes, all drainage work, and clearing limits lines.
- ROW acquisition avoidance and minimization efforts shall be implemented when possible.
- Where property and/or environmental impacts are critical, the Designer may reduce the berm offset to 2 feet instead of 3 feet behind the face of guardrail, as shown in the Standard Details.

Maintenance of Traffic

- Staged construction utilizing a yield/stop condition is not allowed.
- The use of anchored temporary barrier systems on new bridge decks is not allowed.
- Temporary concrete barrier applications shall be designed with consideration of barrier deflection as specified in the BDG.

Geotechnical and Foundations

- Spread footings on soil are not allowed. All substructures shall be pile supported or cast in place concrete on bedrock. MSE or other wall types are an acceptable grading solution around abutments and along approaches as dictated by project requirements, however, substructures shall not be supported on fill behind retaining walls of any type.
- Pile bents shall not be used in the following scenarios:
 - Bridges spanning rivers known to have severe ice conditions including the St. John, Allagash, Aroostook, Penobscot, Kennebec, and Androscoggin.
 - Bridges spanning the Piscataqua, Kennebec, and Penobscot Rivers and coastal bridges with commercial vessel traffic according to local Harbor Masters.
 - At least one inspection report for the existing bridge documents accumulation of debris and detrimental effects from that accumulation.
- Pile supported substructures shall have a minimum of 4 piles. The maximum pile spacing in any direction is 12 feet.
- Liquefaction potential shall be assessed.

Geometry

- Substructure locations and span lengths shall consider the locations of hazards underneath the bridge (such as river channels or roadway lanes) and possible changes in the site conditions (such as erosion, lateral migration, or roadway widening).
- The Designer shall consider the need for adequate access for maintenance and inspection of utilities. A minimum horizontal clear distance of 12 inches from any point on the main load carrying members and substructure units shall be maintained from any utility. In addition, a minimum 2 foot clearance shall be provided on at least one side of any utility located between beams to allow access for future maintenance activities.
- The approach slab seat shall be 2'-9" below finished grade.

Design

- Independent Design Checks are required.
- The load modifiers relating to ductility, redundancy, and operational importance shall be taken as 1.0 or greater.
- The construction live load used for constructability checks may be selected by the Design-Builder, but shall be noted on the Plans.
- Live Load Surcharge provisions shall be applied in accordance with AASHTO.

Superstructure

- Stay in place formwork of any type is not allowed.
- For bridges with a concrete wearing surface, a methyl methacrylate sealer shall be applied to the finished wearing surface in the following cases:
 - multi-span bridge decks
 - bridge decks with construction joints
- Diaphragms and cross frames should be located within 5 feet of each point of dead load contraflexure on multiple span continuous structures where multiple deck placements are proposed. Design-Build teams may select diaphragm and cross frame types and locations with consideration of their intended placement sequence.
- Section properties for composite flexural members may account for the reinforcing steel in the deck.
- Utility conduits will not be allowed in the sidewalk or any load-carrying portion of the structure.

Concrete

- Deck design using the empirical method is not allowed.
- PCINE Deck Beams and box beams are not allowed.
- NEXT beams shall not be used for skews greater than 30 degrees.
- Adjacent slab bridges shall not be used for skews greater than 45 degrees.
- Prestressed concrete design 28-day compressive strengths greater than 10 ksi are not allowed. The Design-Builder shall coordinate their proposed project with the applicable fabricators. Release strengths shall be determined in conjunction with the design compressive strength.
- Precast concrete shall contain calcium nitrite at a rate of at least 3 gallons per cubic yard.
- All prestressed strands shall be encased in stirrups.
- Section properties shall be determined in accordance with AASHTO except that the composite section properties may be computed assuming a haunch dimension of up to 1 inch.
- Precast concrete slab bridges shall have a structural cast in place concrete slab on top with a minimum thickness of 6 inches and two mats of reinforcing steel.
- Leveling slabs and transverse post-tensioning are not allowed.

Steel

- Composite structural steel section properties may be computed assuming a haunch dimension of up to 1 inch.
- Use of higher strength bridge steel in homogenous and hybrid sections is allowed.
- All load carrying structural steel shall be metallized or galvanized on all grade separation bridges, all coastal bridges, and bridges not meeting the freeboard requirements in the FHWA Technical Advisory (1989). Painted structural steel use is only allowed on rehabilitations where existing painted structural steel will remain. All other applications shall utilize weathering steel.
- Galvanized structural steel elements may be double dipped.
- A beam stress diagram shall be included on the Plans of all continuous steel structures.
- Use slip coefficients as defined in the latest version of AASHTO LRFD.

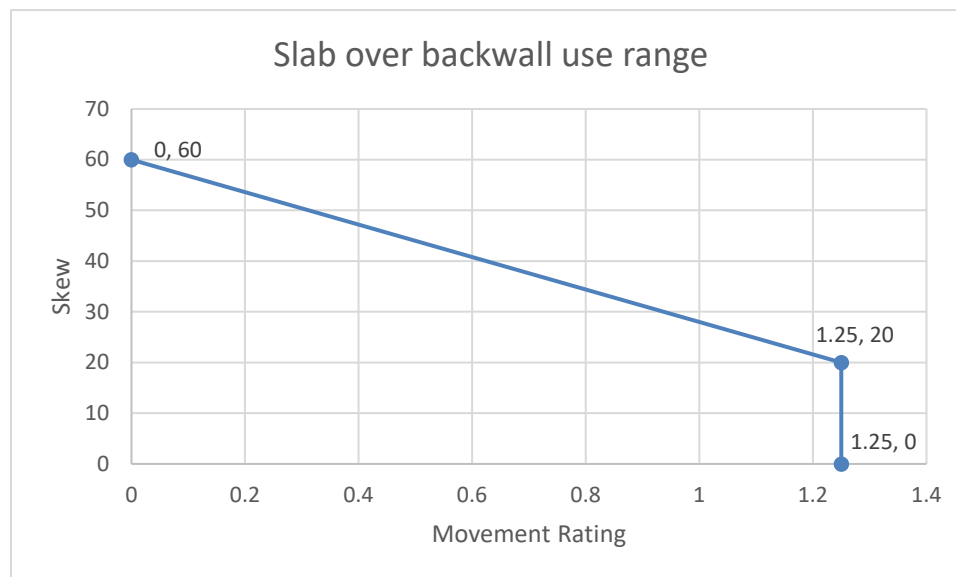


Bearings

- The reuse of steel rocker bearings or the use of pot, spherical, or uplift bearings is not allowed.
- For single span structures, the fixed bearing line shall be at the lower end of the bridge. For multi-span bridges, 50% or less of the total design movement is required at the lower end of the bridge.

Joints

- The following joint types are allowed: integral, slab-over backwall, semi-integral (ATC), gland seal, finger joints with a continuous trough, and modular joints. Some of the preceding joint types may not be allowed based on movement rating and foundation considerations on a substructure location specific basis. Proposed bridges may have different joint types at each substructure location.
- Slab over backwall may be used at substructure locations where the movement rating would be bounded by the graph below. Locations falling below and left of the line, including on the line, may use slab over backwall details. The minimum slab thickness for slab over backwall is 12 inches.



- Semi-integral bridge detailing shall be submitted as an ATC.
- Troughs shall have a minimum slope of 10%.
- Modular joints are allowed for locations with movement ratings greater than or equal to 4 inches and less than or equal to 10 inches.

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- Asphaltic Plug Joints (APJs) are considered a pavement preservation detail. Joint details (e.g. integral, semi-integral) can be proposed with and without APJs. APJs shall only be used when the following conditions are met:
 - The bridge carries Highway Corridor Priority 1-3.
 - Substructure location design movement rating is greater than 1.25 inches.
 - Not located within the Stopping Sight Distance of any intersection traffic control devices (e.g. traffic signals, stop signs)
 - APJs are strongly discouraged on bridges with concrete wearing surfaces but may be considered if the other criteria are met and the design movement rating is significantly greater than the threshold above.

Drainage

- Bridge drains shall be FRP drains with a vertical, straight downspout ending 1 foot below the bottom flange of the nearest beam. Additional downspout length or piping is not allowed.
- Bridge drains shall not be located over roadways from edge of pavement to edge of pavement, over railroad tracks, and within 10 feet of the face of an underlying substructure.
- The area below bridge drain downspouts shall be designed to prevent localized erosion. Changes to bridge drain locations shall be carried through the drainage design of the lower roadway on grade separation bridge projects.
- Approach roadways shall be designed to handle runoff from the bridge, such as incorporating stone ditch protection downspouts after long curb runs.
- Bridge drains are not allowed in travel lanes.
- The flooded width for all drainage design shall not extend into the travel way, and for NHS roadways, shall be at least 1 foot less than the shoulder width.