What’s On the BRG Internet Webpage?

By: Alanna Bettis, P.E.
How to Get There

Method One: Start at TxDOT Internet Home Page

http://www.dot.state.tx.us/
How to Get There
How to Get There

Contractors and Consultants

- Consultant Information
- Contractor Information
- Cost Control Measures
- CAD Standard Plans
- Specifications
- Plans Online
- Bridge Information
- Demographic Data Analysis Tool
- Environmental Information
- Materials Information
- Resources
- Forms
How to Get There
How to Get There

Method Two:
Bridge Information

TXDOT provides assistance at the local and regional levels in all aspects of planning, design, construction and maintenance of bridges. The Department also develops policies for a safe and comprehensive state bridge system.

Note: The link to the Shop Drawings page has changed. Please update your bookmarks.

- Construction and Maintenance
  - Bridge Specifications
  - Shop Drawings
  - Bridge Expansion Joints
  - Proprietary Concrete Repair Materials
  - Curing Mats for Concrete Structures
  - Construction Tips
  - Welding Certifications

- Geotechnical Services
  - Geotechnical Field Testing
  - Retaining Wall Information
  - Soil and Bedrock Information
  - Geotechnical Design Examples

- Design
  - Bridge Standards
  - Superstructure Design Information
  - Substructure Design Information
  - Other Design Information
  - Steel Bridge Design Preferred Practices
  - LRFD Bridge Design FAQs

- Project Development
  - Railroad Information
  - Bridge Unit Cost Tables
  - Participation Waived/Equivalent-Match
  - Project Program (PWP/EMP)
  - Report on Texas Bridges

- Other
  - Webinars
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Shop Drawings

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  - 5197 Review Checklist
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- Pre-Construction Meeting Shop Drawing Submittal Forms
- Pre-Submit Material Checks
- Submittal Checklist
- Hardcopy Requirements
- Shop Plan Review Contacts
- Field-Change-Order-Related Revisions
- Using Adobe Acrobat for Shop Plan Reviews
- Review Tips
- Terminology

Electronic Submission of Shop Drawings
The Bridge Division accepts eligible, electronically submitted shop drawings for review and Bridge Division approval. Eligible shop drawings conform to requirements identified in the Guide to Electronic Shop Drawing Submittal. Ineligible submittals are returned unread. Note: We are currently studying the possibility of web-based submission of shop plans.

Items Reviewed by the Bridge Division
Submit to the Bridge Division only eligible documents; eligible documents are shop drawings that meet the following criteria:

- They have been designed by TxDOT's Bridge Division, by TxDOT districts if Bridge Division review has been requested by the district, or by a consultant if Bridge Division review has been requested by the district or if the consultant is under contract to the Bridge Division.
- They are for items identified by "1" - "5" in the Division Review Contact column of this table, or they are based on standard drawings dated before June 2004 for sealed expansion joints, armored joints, concrete piling, or concrete panels.

The TxDOT area engineer should communicate submittal requirements summarized in this table to the Contractor at or before the preconstruction meeting, based on who performed the structural design.

Research Project 5197 Implementation - Shop Plan Handling Exceptions
The Research Project 5197 Implementation page provides instruction on how to handle shop plan resubmittals and "modified" optional designs associated with the implementation of Research Project 5197 findings.

Optional (Alternate) Designs
As of September 10, 2009, per a Texas Board of Professional Engineers ruling:

- Any shop drawing sheet that contains structural design information that departs from contract plan design values must be sealed, signed and dated by an engineer registered in the state of Texas.
Shop Drawings

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Field Change Order
Related Revisions

Fabrication Branch reviewers use Plans Online as their primary source for contract plan reference.

Field Change Order details are not generally available on Plans Online by the time review submittals are being processed. As a result, the Design Engineer must do the following:

- Forward bridge component revision sheets to the Fabrication Branch to ensure timely and accurate reviews.
- Immediately forward to the shop plan reviewer any structural changes that the Engineer of Record wants incorporated in the fabrication item but which are not significant enough to warrant a change order.

Send an email message to any of the Shop Plan Review Contacts containing the following information:

- District
- County
- Highway
- CSJ
- Project number
- Structure name
- Letting date
- Contractor and fabricator names
- Brief description of the changes
- List of the affected components
- Attach the .dgn, .pdf or .tif files of the revised sheets to the email

This information will be added to a shop plan database and will help improve review times by reducing submission cycles.

More Information

- Shop Plan Drawings
Shop Drawings

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Review Tips

Shop Drawings - Review Tips

This page contains a list of common mistakes to avoid. The items are listed in the order that they appear in the review process.

- Submittal Confirmation
- Markup Color
- Clouding
- 6197 Remain
- Custom Adobe Acrobat Tools Help
- Security
- Inspection Copy
- Distribution Recipients

Submittal Confirmation

The reviewer must email the fabricator or detailing office within 2 business days of receiving a new submittal, confirming receipt of a valid submittal. Failure to do so removes one aspect of the process designed to keep all parties informed of the whereabouts and status of submittals, and has led to project delays.

From: A
To: C
Subject: D

Dear Mr. Guerra,

We received an email from your address that did not have a review file attached or had an attachment of an incorrect type. Attachments must be .pdf or .pdf files to be received into the DSC_ShopPlanReview inbox and considered for review. In addition, the CSU did not match active project CSUs found in TCOOT databases, and you did not CC the Districts dedicated shop plan address.

Please re-submit your email with the correct review file attached, and the correct CSU in the subject line.
Verify your CSU at either of these web addresses:
http://www.tdol.gov/developers/contractors/consultantbalances_online.htm
http://www.tdol.gov/developers/contractors/consultantbalances_ongline.htm
Always include the Districts dedicated shop drawing address in the CC field. A list of these addresses can be found on this webpage:
http://www.dot.state.ca.us/tdol/developers/contractors/consultantbalances_ongline.htm

If your email is not intended to be a review submission, please address other correspondence to Mark Deiley at 512-410-2207 (mdeiley@dot.state.ca.us), Pat Coronado at 512-410-2555 (pcoronado@dot.state.ca.us), or Jeff Cohran at 512-410-2219 (jcohran@dot.state.ca.us).

Thank you,
Mr. Guerra.

This reply is to indicate that an email from your address has been received into the DSC_ShopPlanReview inbox, and that your submission will be added to the queue. Submissions with complete set of plans or Optional Design attachments will be handled in the order that they are received. Emails to this address without attachments in reply to review condition, will not be considered for review.

Attachments reviewed at 1 inch scale (for 11 x 17 sheets) or our word files. That are found to be eligible without improving, will be returned for re-submission without reviewing. Please adhere to TCOOT detailing practices for Bridge Division standard sheets for fonts sizes (1/16" inch height, line weights, etc.)

When the reviewers have completed this reply, your original email will be replied to, and replies will be sent. All recipients in submittal attachment.
Construction and Maintenance

- Bridge Specifications
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- Curing Mats for Concrete Structures
- Construction Tips
- Welding Certifications
# Bridge Expansion Joints

**Note:** The information on this page was updated April 2010.

## Approved Header Type Expansion Joint Systems

The following Header Type Bridge Joints with or without sealant are approved for use on TxDOT projects:

<table>
<thead>
<tr>
<th>Name</th>
<th>Manufacturer</th>
<th>Contact</th>
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</thead>
<tbody>
<tr>
<td>BASF WABOCRETE II</td>
<td>Mark Huff</td>
<td>Phone: (713) 392-4833</td>
</tr>
<tr>
<td>LymTal Iso-Flex 900</td>
<td>Bill Gudgeon &amp; Associates</td>
<td>Phone: (713) 859-6314</td>
</tr>
<tr>
<td>SSI-XUS</td>
<td>Richard Waters</td>
<td>Phone: (817) 731-7890</td>
</tr>
</tbody>
</table>

## Approved Asphalt Plug Joint Systems

The following Asphalitic Plug Expansion Joint Systems are approved for use on TxDOT projects:

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<thead>
<tr>
<th>Name</th>
<th>Manufacturer</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>FlexAble Bridge Joint System</td>
<td>Deery American Corporation</td>
<td>San Kearl</td>
</tr>
<tr>
<td></td>
<td>PO Box 4099</td>
<td>Phone: (800) 227-4059</td>
</tr>
<tr>
<td>Matrix 502 Asphalt Plug</td>
<td>D S. Brown Co.</td>
<td>Phone: (419) 257-3561</td>
</tr>
<tr>
<td></td>
<td>300 E. Cherry St.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>North Baltimore, OH 48872</td>
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</tr>
<tr>
<td>Thoma-Joint</td>
<td>THM</td>
<td>Keith Rainwater</td>
</tr>
<tr>
<td></td>
<td>930 KCK Way</td>
<td>Phone: (469) 523-0180</td>
</tr>
<tr>
<td></td>
<td>Cedar Hill, TX 75104</td>
<td>Fax: (469) 523-0181</td>
</tr>
<tr>
<td>Wabo-Expandex</td>
<td>BASF</td>
<td>Mark Huff</td>
</tr>
<tr>
<td></td>
<td>3011 Heatherpark Drive</td>
<td>Phone: (713) 392-4833</td>
</tr>
<tr>
<td></td>
<td>Kingwood, TX 77345</td>
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</tr>
</tbody>
</table>
Construction and Maintenance

- Bridge Specifications
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- Construction Tips
- Welding Certifications
# Construction Tips

## Construction and Materials Tips

The Construction Division publishes construction and materials articles and advisories regularly and on an as-needed basis.

- Bridge
- Contract Administration
- Asphalt & Chemical
- Flexible Pavements
- Materials & Pavements Administration
- Rigid Pavements
- Geotechnical, Soils and Aggregate
- Traffic Materials & Coatings
- Traffic
- Other

### Bridge

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<tr>
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<td>Fly Ash Supply (Condensed and Full-length)</td>
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<td>Guidelines for Handling Asbestos</td>
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<td>03/06</td>
<td>New Electronic Review of Shop Drawings</td>
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<td>Saw-cutting Grooves on Bridge Decks</td>
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<td>Contract Claim Procedure Amended</td>
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<td>09/07</td>
<td>The Disputes and Claims Analysis Process</td>
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<tr>
<td>12/06</td>
<td>Guide to Contract Change Orders</td>
<td></td>
</tr>
<tr>
<td>05/06</td>
<td>Guide to Contractor Overhead</td>
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<tr>
<td>12/07</td>
<td>Guide to Labor Burden</td>
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<td>04/11</td>
<td>Item 585 - Ride Quality of Pavement Surfaces</td>
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<td>07/07</td>
<td>Project Schedule Development Guide Using Critical Path Method</td>
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<td>10/06</td>
<td>Subcontractor Prompt Payment</td>
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<td>Water Sources for Construction Projects during Droughts</td>
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### Asphalt & Chemical

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<tr>
<td>11/05</td>
<td>Opening Stuck Valves on Asphalt Piping</td>
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</table>
Bridge Information

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Design

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Superstructure Design Information

This page provides guidance and recommendations on Load and Resistance Factor Design (LRFD) of specific bridge superstructure components.

- General Recommendations
- Deck Surface Texture Requirements
- Corrosion Protection Measures
- Concrete Deck Slabs on Stringers
- Concrete Deck Slabs on U Beams (U40 and U54)
- Prestressed Concrete I Beams and I Girders
- Prestressed Concrete U Beams (Types U40 and U54)
- Prestressed Slab Beams and Decked Slab Beams
- Prestressed Concrete Double-Tee Beams
- Prestressed Concrete Box Beams (B20, B28, B34, and B40)
- Design Resources
- Design Examples and Spreadsheets
Superstructure Design

- General Recommendations
- Deck Surface Texture Requirements
- Corrosion Protection Measures
- Concrete Deck Slabs on Stringers
- Concrete Deck Slabs on U Beams (U40 and U54)
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- Prestressed Concrete Double-Tee Beams
- Prestressed Concrete Box Beams (B20, B28, B34, and B40)
- Design Resources
- Design Examples and Spreadsheets
Corrosion Protection Measures

In areas of the state where de-icing agents are frequently used during winter storms, it is recommended that additional corrosion protection measures be incorporated into the bridge design and details.

District-specific requirements are available for review.
### District Specific Table

**RECOMMENDED CORROSION PROTECTION MEASURES**

For areas of the state where deicing agents are frequently used during winter storms. Refer to Corrosion Protection Measures on the TxDOT web site for additional information. Recommendations are for on-system structures. Off system structures will require case-by-case measures.

<table>
<thead>
<tr>
<th>District Name</th>
<th>HPC Bridge Slabs &amp; Rails</th>
<th>HPC Substructure</th>
<th>Epoxy Coated Reinfl. Bridge Slabs &amp; Rails</th>
<th>Epoxy Coated Reinfl. Substructure</th>
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<td>YKM</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
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</tbody>
</table>

Notes:
- **Y** indicates District-wide application of the specific recommendation.
- *Corrosion increased clear cover for substructure elements on a case-by-case basis at the discretion of the District.
- In addition, LDR requires epoxy waterproofing on bent caps, abutment caps, and abutment backseats located under bridge expansion joints.
- **Provide Class I instead of Class II concrete surface treatment for this District.**
- Uses for custom designs only. Do not apply when using the standard shoulder stay.
Corrosion Protection Measures

- In areas of the state where de-icing agents are frequently used during winter storms, it is recommended that additional corrosion protection measures be incorporated into the bridge design and details.

- District-specific requirements are available for review.
Corrosion Protection Measures

The most commonly used corrosion protection measures are:

- **High Performance Concrete (HPC)**

**Description:**

The permeability of HPC is significantly lower than that of ordinary concrete. Lower permeability concrete reduces the ability of chlorides to attack the reinforcing steel and cause corrosion.

The current statewide Special Provision to Item 421, Hydraulic Cement Concrete, covers the requirements for HPC.

**Action:**

The designer must indicate on the plans which elements require HPC. There are specific Bid Items for HPC.

- **1. Bridge Slabs & Rails** - When indicated, specify Class "S" (HPC) for bridge slabs and Class "C" (HPC) for all concrete bridge railing elements.
  - This includes all cast-in-place superstructure concrete such as concrete slab & girder (Pan formed) spans, cast-in-place slab spans, box culverts that require Class "S" concrete in the top slab, as well as slabs cast on top of box beams, slab beams, or double tees.
  - When using HPC in the bridge slab, also specify HPC in the bridge approach slab if present.
  - HPC in the Prestressed Concrete Panels (PCP's) used in bridge deck construction is not required.

- **2. Substructure** - When indicated, specify Class "C" (HPC) for all substructure elements.
  - Applies to all abutments, bent caps and columns regardless of their locations relative to bridge expansion joints.
  - The use of HPC in piling, drilled shafts or buried footings is not recommended.

- **3. Prestressed concrete beams** - The current statewide Special Provision to Item 424 requires concrete mixes that are effectively the same as HPC mixes in all precast concrete beams. Therefore, specifically requiring the use of HPC in precast concrete beams is not necessary.
Corrosion Protection Measures

### RECOMMENDED CORROSION PROTECTION MEASURES

For areas of the state where deicing agents are frequently used during winter storms. Refer to Corrosion Protection Measures on the TxDOT website for additional information. Recommendations are for on-system structures. Off-system structures will require case-by-case measures.

<table>
<thead>
<tr>
<th>District Name</th>
<th>HPC Bridge &amp; Rails</th>
<th>HPC Substructure</th>
<th>Epoxy Coated Bridge &amp; Rails</th>
<th>Epoxy Coated Substructure</th>
<th>&quot;In&quot; Increased clear cover for substructure</th>
<th>&quot;In&quot; Increased clear cover for bridge slabs</th>
<th>Class II (Penetrating) Concrete Surface Treatment</th>
<th>Wave Air Entrainment? (Bridge Slab &amp; Rails)</th>
<th>Wave Air Entrainment? (Sub-structure)</th>
<th>Corrosion Inhibiting Admixtures? (Proposed only)</th>
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<td>&quot;In&quot; Note A</td>
<td>Y</td>
<td>N</td>
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</table>

1. F
2. V
3. I
4. S
5. F
6. C

In areas addition required Special

In those overall conditions The more Corrosion Protection Measures are recommended:

- High
- Epoxy
- Incre
- Conc
- Air E
- Corro
- Limit
- Limit
- Crasi
- Other
Superstructure Design

- General Recommendations
- Deck Surface Texture Requirements
- Corrosion Protection Measures
- Concrete Deck Slabs on Stringers
- Concrete Deck Slabs on U Beams (U40 and U54)
- Prestressed Concrete I Beams and I Girders
- Prestressed Concrete U Beams (Types U40 and U54)
- Prestressed Slab Beams and Decked Slab Beams
- Prestressed Concrete Double-Tee Beams
- Prestressed Concrete Box Beams (B20, B28, B34, and B40)
- Design Resources
- Design Examples and Spreadsheets
Prestressed Concrete I-Beams and I-Girders

Materials

For recommended concrete strengths, see "Prestressed Concrete Design" information under the "General Recommendations" section above.

Structural Analysis

- You need not increase section properties of the beam to account for the transformed area of strands or mild steel.
- For the calculation of live load distribution factors, modular ratio, n, may conservatively be taken as 1.0.

Design Criteria - For grade separation structures, use the same beam depth for the full length of structure for economies of scale and aesthetic reasons. Stream crossing structures may have different types and sizes of beams for purposes of economy. Optimize beam spacing in each span. Maintaining a constant beam spacing for the full length of structure is not necessary. Selection of the proper type beam for a span is a matter of economics; calculate relative costs using current average bid prices for beams and slab.

- Recommended Span Lengths for I Beams
- Recommended Span Lengths for I Girders

Software

Use PGSuper for beam design. Refer to PGSuper Design Guide for further guidance. Alternatively, use this spreadsheet to calculate live load distribution factors and PSTRS14 for beam design.

Detailing

On the plans for each design, show optional design parameters for maximum top flange stress, bottom flange stress, and ultimate moment due to all design loads. The fabricator will retain the option to use other strand arrangements, including straight strand patterns, stress relieved strand, or 0.6-in. diameter strand, if design parameters are satisfied by the prestress and concrete strength selected.
Superstructure Design

- General Recommendations
- Deck Surface Texture Requirements
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Design Resources

For additional information on LRFD bridge design as implemented by TxDOT, consult the following resources:

- LRFD Bridge Design Manual
- Design Software Programs
- LRFD Frequently Asked Questions
Superstructure Design

- General Recommendations
- Deck Surface Texture Requirements
- Corrosion Protection Measures
- Concrete Deck Slabs on Stringers
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  - Design Examples and Spreadsheets
Design Examples

Concrete Deck Slabs on Stringers
Concrete Deck Slab on Stringers Design Example (Not working templates, PDF files presented in MathCAD format)

- Slab Design Example

Prestressed Concrete I Beams and I Girders

- Distribution Factor Spreadsheet
- Haunch Design Example

Prestressed Concrete U Beams

- Distribution Factor Spreadsheet

Prestressed Slab Beams, Decked Slab Beams and Double-Tee Beams

- Distribution Factor Spreadsheet

Prestressed Concrete I Beam and U Beam Research Study 0.4751

- Project Summary
- Vol. I - Parametric Study
- Vol. II - Design Example

Prestressed Concrete Box Beams
Distribution Factor Spreadsheet

Cast-in-Place Concrete Slab Spans
CIP Concrete Slab Span Design Example

Straight Plate Girders
Simple Span Plate Girder Design Example
Design

- Bridge Standards
- Superstructure Design Information
- Substructure Design Information
- Other Design Information
- Steel Bridge Design Preferred Practices
- LRFD Bridge Design FAQs
Substructure Design Information

This page provides guidance and recommendations on Load and Resistance Factor Design (LRFD) of specific bridge substructure components.

- General Recommendations
- Abutments
- Rectangular Reinforced Concrete Caps
- Inverted Tee Reinforced Concrete Caps
- Columns for Multicolumn Bents
- Columns for Single-Column Bents
- Design Resources
- Design Examples and Spreadsheets
Substructure Design

- General Recommendations
- Abutments
- Rectangular Reinforced Concrete Caps
- Inverted Tee Reinforced Concrete Caps
- Columns for Multicolumn Bents
- Columns for Single-Column Bents
- Design Resources
- Design Examples and Spreadsheets
Substructure Design

Inverted Tee Reinforced Concrete Caps
- Design Example (Not working templates. PDF files presented in MathCAD format)

Rectangular Reinforced Concrete Caps
- Design Example (Not working templates. PDF files presented in MathCAD format)

Column for Single Column Bent
- Design Example (Not working templates. PDF files presented in MathCAD format)

Two Shaft Footing
- Design Example Using Strut-and-Tie Method (Not working templates. PDF files presented in MathCAD format)

Spreadsheets
- Shear Design

Foundation Loads
- Abutment Pile Loads Calculation
Design

- Bridge Standards
- Superstructure Design Information
- Substructure Design Information
- Other Design Information
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- LRFD Bridge Design FAQs
Bridge Information

TxDOT provides assistance at the local and regional levels in all aspects of planning, design, construction and maintenance of bridges. The Department also develops policies for a safe and comprehensive state bridge system.

Note: The link to the Shop Drawings page has changed. Please update your bookmarks.

Construction and Maintenance
- Bridge Specifications
- Shop Drawings
- Bridge Expansion Joints
- Proprietary Concrete Repair Materials
- Curing Mats for Concrete Structures
- Construction Tips
- Welding Certifications

Geotechnical Services
- Geotechnical Field Testing
- Retaining Wall Information
- Soil and Bedrock Information
- Geotechnical Design Examples

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- Report on Texas Bridges

Other
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Geotechnical Services

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- Retaining Wall Information
- Soil and Bedrock Information
- Geotechnical Design Examples
### Geotechnical Resources

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<th>Title</th>
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<td>Approved Concrete Block Retaining Wall Systems</td>
<td>HTML</td>
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<td>01/06</td>
<td>Approved MSE Panel Systems</td>
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<tr>
<td>05/06</td>
<td>Drilled Shaft Design Examples</td>
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<td></td>
<td>Loss of Backfill in Mechanically Stabilized Earth</td>
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<td>05/06</td>
<td>Mechanically Stabilized Earth (MSE) Wall Design Example</td>
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<td>Piling Design Examples</td>
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<td>01/04</td>
<td>Proprietary Retaining Wall System Review</td>
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<td>Spread-Footing Wall Design Example</td>
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<td>05/06</td>
<td>Tied-Back Wall Design Examples</td>
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</table>
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Project Development

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- Report on Texas Bridges
# Railroad Information

## Bridge: Railroad Information

Below is a listing of links to documents containing railroad-related bridge information from TxDOT.

### Union Pacific BNSF Guidelines

<table>
<thead>
<tr>
<th>Title</th>
<th>Format</th>
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</thead>
<tbody>
<tr>
<td>Guidelines (Annotated by TxDOT)</td>
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<tr>
<td>Comments</td>
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</table>

### Railroad Requirements for TxDOT Construction (Plan Sheets)

<table>
<thead>
<tr>
<th>Title</th>
<th>PDF</th>
<th>DGN</th>
</tr>
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<tbody>
<tr>
<td>Instruction Sheet</td>
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<tr>
<td>Bridge</td>
<td></td>
<td>DGN</td>
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<tr>
<td>Non-Bridge</td>
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<td>DGN</td>
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</table>

### Procedures for Railroad Grade Separation Projects that Remove an Active Warning Device

<table>
<thead>
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<tbody>
<tr>
<td>Procedures</td>
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<tr>
<td>Theoretical Structure</td>
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<td>Railroad 5 Percent Cost Estimate</td>
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### Other

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<tbody>
<tr>
<td>Railroad Grade Separations Exhibit “A” Preparation Guide</td>
<td></td>
</tr>
<tr>
<td>Union Pacific Railroad Checklist for Overhead Structures</td>
<td></td>
</tr>
</tbody>
</table>

### More Information

- Rail
- Bridge Information
Project Development

- Railroad Information
- Bridge Unit Cost Tables
- Participation-Waived/Equivalent-Match Project Program (PWP/EMP)
- Report on Texas Bridges
The table below contains the fiscal year project costs for bridges.

<table>
<thead>
<tr>
<th>Title</th>
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<tbody>
<tr>
<td>2010 Bridge Unit Costs</td>
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</tr>
<tr>
<td>2009 Bridge Unit Costs</td>
<td><img src="download" alt="Download" /></td>
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</table>
## Bridge Unit Cost Tables

### FY 2010 Average % Breakdown of Overall Project Costs for Bridges

<table>
<thead>
<tr>
<th>System</th>
<th>Structure %</th>
<th>Mobilization %</th>
<th>Removal %</th>
<th>Approach, etc. %</th>
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<tbody>
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<td>Off-System Bridges</td>
<td>65.0%</td>
<td>8.4%</td>
<td>3.5%</td>
<td>23.1%</td>
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<tr>
<td>Off-System Culverts</td>
<td>54.8%</td>
<td>7.2%</td>
<td>3.6%</td>
<td>34.3%</td>
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<tr>
<td>On-System Bridges</td>
<td>58.2%</td>
<td>8.0%</td>
<td>4.4%</td>
<td>29.2%</td>
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<tr>
<td>On-System Culverts</td>
<td>52.1%</td>
<td>10.0%</td>
<td>2.9%</td>
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### FY 2010 Average Unit Cost

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<thead>
<tr>
<th>System</th>
<th>Structure Type</th>
<th>Number Bridges</th>
<th>Deck Area (sq.ft.)</th>
<th>Low Bid Structure Cost*</th>
<th>Average Unit Cost** ($/sq.ft.)</th>
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</thead>
<tbody>
<tr>
<td>Off Culvert</td>
<td>Culverts</td>
<td>41</td>
<td>87,450</td>
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<td>2</td>
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<td>2,111,527</td>
<td>77.80</td>
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<td>Girder Prestressed Decked Slab Beam (GPDSB)</td>
<td>4</td>
<td>8,450</td>
<td>393,825</td>
<td>105.78</td>
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<td>Off Span</td>
<td>Girder Prestressed &quot;T&quot; Beam (GT)</td>
<td>19</td>
<td>65,170</td>
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<td>Girder Prestressed &quot;T&quot; Beam &quot;Texas Shape&quot; (GPTX)</td>
<td>1</td>
<td>28,800</td>
<td>1,114,371</td>
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<td>Prestressed Concrete Slab Beam (PCSB)</td>
<td>59</td>
<td>365,860</td>
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<td>Off Span</td>
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<td>38,896</td>
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<td>Girder Prestressed &quot;T&quot; Beam (GP-T)</td>
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<td>Concrete Girder Pan Form (CG-PN)</td>
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<td>On Span</td>
<td>Girder Steel Trapezoidal (GS-TR)</td>
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<td>On Span</td>
<td>Structural Steel Truss (STRTR)</td>
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<td>On Span Totals</td>
<td>On Span Totals</td>
<td>257</td>
<td>6,200,384</td>
<td>328,459,477</td>
<td>52.97</td>
</tr>
</tbody>
</table>
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<tbody>
<tr>
<td>2008 Report on Texas Bridges</td>
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<tr>
<td>2006 Report on Texas Bridges</td>
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<td>2004 Report on Texas Bridges</td>
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<td>2003 Report on Texas Bridges</td>
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<td>2002 Report on Texas Bridges</td>
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# Report on Texas Bridges

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<td>Structurally Deficient Bridges</td>
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<td>Functionally Obsolete Bridges</td>
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<td>Off-system Bridge Projects Authorized to Be Awarded Contracts</td>
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<td>Contracts Awarded in FY 2008 for On-System Bridge Projects</td>
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<td>On-system Bridge Maintenance Projects Awarded in FY 2008</td>
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<td>Summary of FY 2008 Funds Spent on On-system Bridges</td>
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On- and Off-system Bridges. Texas has 50,572 bridges at the time of the writing of this report. This constitutes approximately 1/12th of the nation’s entire inventory of bridges and approximately 80% more bridges than any other state. The following figure shows the number of on- and off-system bridges in Texas.

Count of On- and Off-System Texas Bridges as of September 2008 (50,572 Total)

- Off-System
  - 17,454 Bridges
  - (35% of Total)

- On-System
  - 33,118 Bridges
  - (65% of Total)
Bridge Information

TxDOT provides assistance at the local and regional levels in all aspects of planning, design, construction and maintenance of bridges. The Department also develops policies for a safe and comprehensive state bridge system.

Note: The link to the Shop Drawings page has changed. Please update your bookmarks.

Construction and Maintenance
- Bridge Specifications
- Shop Drawings
- Bridge Expansion Joints
- Proprietary Concrete Repair Materials
- Curing Mats for Concrete Structures
- Construction Tips
- Welding Certifications

Design
- Bridge Standards
- Superstructure Design Information
- Substructure Design Information
- Other Design Information
- Steel Bridge Design Preferred Practices
- LRFD Bridge Design FAQs

Geotechnical Services
- Geotechnical Field Testing
- Retaining Wall Information
- Soil and Bedrock Information
- Geotechnical Design Examples

Project Development
- Railroad Information
- Bridge Unit Cost Tables
- Participation-Waived/Equivalent-Match
- Project Program (PWP/EMP)
- Report on Texas Bridges

Other
- Webinars
Other

- Webinars
# Webinar Presentations

## Bridge Presentations Webinar

**Feb. 25, 2011**

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>9 a.m.</td>
<td>Opening Remarks</td>
<td>Amy Eskridge, P.E., BRG</td>
<td></td>
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<tr>
<td>9:05 a.m.</td>
<td>Remediation of Bridge Scour using Jet Grouting</td>
<td>Sean Yoon, P.E., BRG-Geotechnical</td>
<td></td>
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<tr>
<td>9:30 a.m.</td>
<td>Fatigue Repair of the I-345 Bridges</td>
<td>Yuan Zhao, P.E., BRG-Design</td>
<td></td>
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<tr>
<td>10:00 a.m.</td>
<td>Using Precast Panels at Ends of Spans</td>
<td>Jamie Griffin, P.E., BRG-Design</td>
<td></td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>Corrosion Protection Measures for Bridges</td>
<td>Lloyd Wolf, P.E., BRG-Design</td>
<td></td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>Accessing Bridge information through PonTex</td>
<td>Alan Kowalk, P.E., BRG-Field Operations</td>
<td></td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Use of PGSuper by TxDOT</td>
<td>Tanya Retzer, P.E., BRG-Design</td>
<td></td>
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</table>

**Aug. 20, 2010**

<table>
<thead>
<tr>
<th>Time</th>
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<th>Presenter</th>
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<tr>
<td>9 a.m.</td>
<td>Opening Remarks: Does This Count Toward PDHs?</td>
<td>Amy Eskridge, P.E., BRG</td>
<td></td>
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<tr>
<td>9:05 a.m.</td>
<td>Excavations for Multi-Shaft Footings</td>
<td>Marcus Galvan, P.E., BRG-Geotechnical</td>
<td></td>
</tr>
<tr>
<td>9:25 a.m.</td>
<td>Actions to Address Bridges with Unknown Foundations for Scour</td>
<td>John Delphia, P.E., BRG-Geotechnical</td>
<td></td>
</tr>
<tr>
<td>9:50 a.m.</td>
<td>Margaret Hunt Hill Bridge</td>
<td>Heather Gilmer, P.E., CST-Materials and Pavements</td>
<td></td>
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<tr>
<td>10:20 a.m.</td>
<td>Lateral Vibration of a TxDOT Pedestrian Bridge (Video)</td>
<td>Dean Van Landuyt, P.E., BRG-Design</td>
<td></td>
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<tr>
<td>10:40 a.m.</td>
<td>Specification Changes and Their Effect on Plan Details</td>
<td>Brian Merrill, P.E., BRG-Construction</td>
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<tr>
<td>11:05 a.m.</td>
<td>PonTex Update</td>
<td>Tom Yarbrough, P.E., BRG-Bridge Management</td>
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<tr>
<td>11:30 a.m.</td>
<td>P6 for Bridge Projects</td>
<td>Michelle Veale, P.E., BRG-Project Development</td>
<td></td>
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</tbody>
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Questions?

I am bored.