TxDOT Bridge Design Manual – Nov 2021 Release

TxDOT Bridge Division

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Texas Department of Transportation

MEMO

December 16, 2021

To: Directors of Transportation Planning and Development

From: Michael D. Hyzak, P.E.
Bridge Design Section Director, Bridge Division

Subject: TxDOT Bridge Design Manual – LRFD and Related Updated Guidance

The TxDOT *Bridge Design Manual – LRFD* has been updated and is posted online here: http://onlinemanuals.txdot.gov/txdotmanuals/lrf/lrf.pdf. Please see the Manual Notice for information on the changes. In addition, the following companion guides have also released:

- A TxDOT *Bent (Pier) Protection Guide* has been created and is posted here: https://ftp.txdot.gov/pub/txdot-info/brg/design/bent-pier-protection-guide.pdf. This guide is mentioned in the 2021 *Bridge Design Manual – LRFD* and provides useful guidelines for addressing vehicular impact and redirection for bridge substructures.
- A new TxDOT *Structure Design – Corrosion Protection Guide* replaces previous online guidance and District-specific tabulated preferences, and is posted here: https://ftp.txdot.gov/pub/txdot-info/brg/design/corrosion-protection-guide.pdf. This guide provides the latest guidance on corrosion countermeasures for new bridge structures.

Three additional companion documents will soon release:

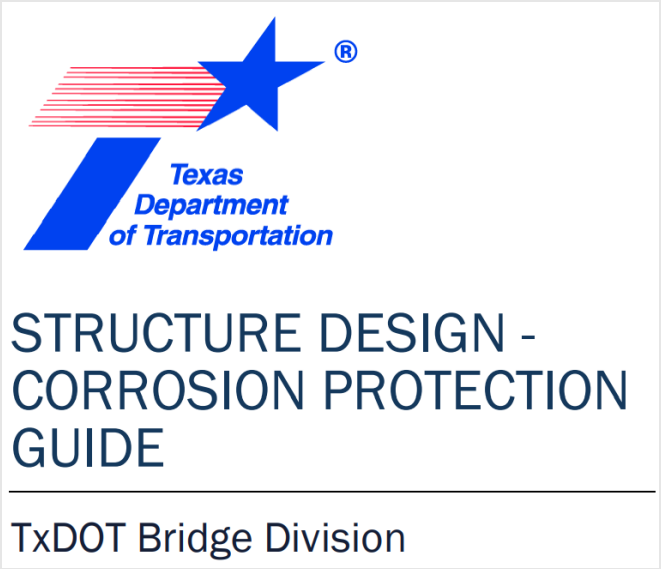
- A "New Bridge Load Rating Summary for Design Load", will soon post online (also as eForm 2731). This form is to be used in conjunction with the requirement for load rating new bridges per Chapter 5, Section 7 of the 2021 TxDOT *Bridge Design Manual - LRFD*. It is also attached in this email distribution.
- An updated TxDOT *Bridge Design Guide*
- An updated TxDOT *Bridge Detailing Guide*

These documents apply to any bridge designs that are presently at a 30% or earlier design phase. These documents also apply to Design-Build contracts not already executed. Usage for projects beyond these stages of development are at the discretion of the District Engineer. An upcoming webinar will describe these documents and any updates for TxDOT staff and consultant partners. For any questions related to these documents, please contact me at 512-416-2184 or michael.hyzak@txdot.gov.

CC: Federal Highway Administration
Bridge Design Consultants
District Design Engineers
District Bridge Engineers
District Bridge Coordinators
Bridge Division

December 16, 2021 Memo Information

- Discussed Related Document Releases:
  - Bent (Pier) Protection Guide (txdot.gov)
  - Structure Design - Corrosion Protection Guide (txdot.gov)



December 16, 2021 Memo Information

- Documents apply to any bridge designs that are:
  - presently at a 30% or earlier design phase
  - Design-Build contracts not already executed
  - Usage for projects beyond these stages of development are at the discretion of the District Engineer
- Most design contracts have this contractual verbiage:

1.1. Design Criteria. The Engineer shall prepare all work in accordance with the latest version of applicable State's procedures, specifications, manuals, guidelines, standard drawings, and standard specifications or previously approved special provisions and special specifications, which include: the *PS&E Preparation Manual*, *Bridge Design Manual – LRFD*, *Geotechnical Manual*, *Roadway Design Manual*, *Hydraulic Design Manual*, the *Texas Manual on Uniform Traffic Control Devices* (TMUTCD), *Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, (latest Edition)*, and other State approved manuals.

High Level Review of TxDOT BDM

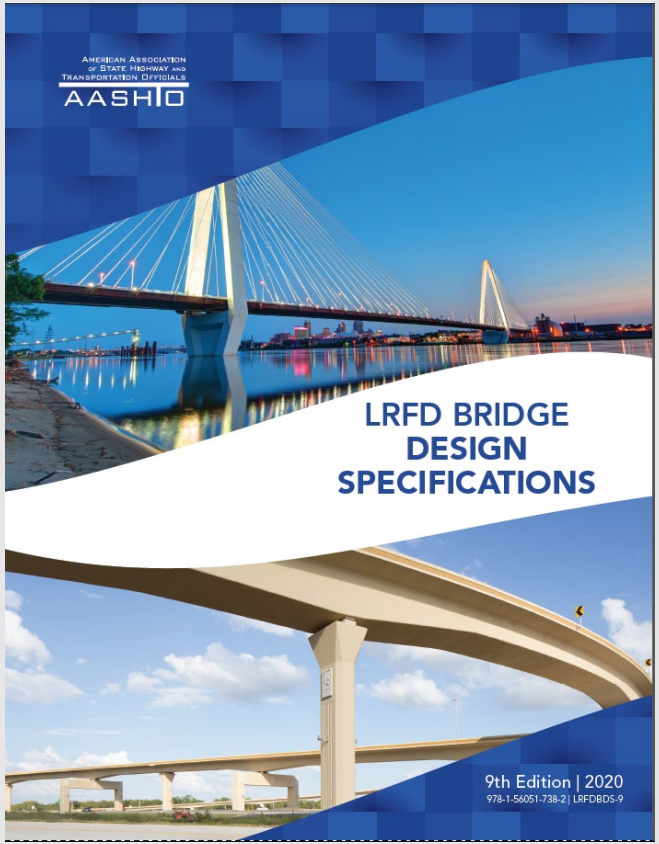
- Purpose
  - Documents policy on bridge design in Texas
  - Assists Texas bridge designers in applying provisions documented in the AASHTO LRFD Bridge Design Specifications, which apply unless noted otherwise
  - Provides some clarity on "…unless specified otherwise by the Owner" provisions
- We welcome questions and feedback

High Level Review of Changes (in Manual Notice)

- High Level Summary of Significant Changes
  - Adopts AASHTO 9th Edition
  - Chapter 1 updates links to companion manuals and guides
  - Chapter 2 and 4 updates for the latest requirements for vehicle collision force and bent design for vehicle collision
  - Chapter 3 updates for strand debonding practice in pretensioned beams and splice girder design
  - Chapter 5, Section 6 incorporates the latest requirements for non-contact splices and interfaces between drilled shafts and non-circular columns
  - Chapter 5 added a section requiring load rating of all new designs
  - Chapter 6 updated delivery requirements for design notes

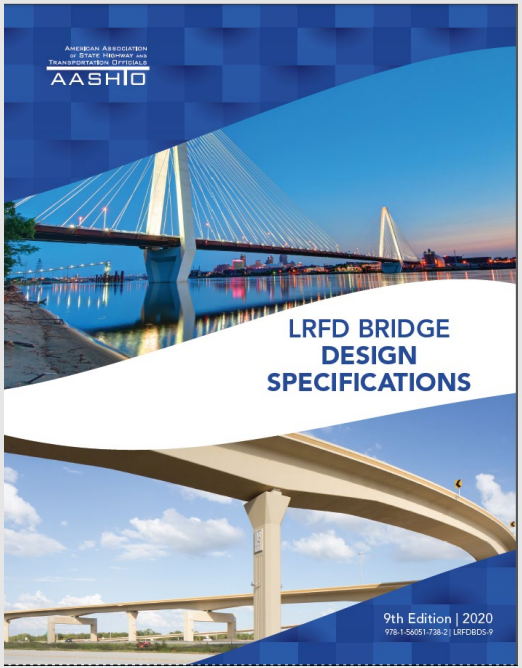
AASHTO 9th Edition: LRFD Bridge Design Specifications

- AASHTO 9th Edition – issued May 8, 2020
- Editions now update on a ~ 3 year cycle
  - 10th Edition will be delayed a year (2024 now)
  - No more interims for purchase/use
  - States receive agenda items for review and can implement sooner than incorporation in next edition (in our BDM)



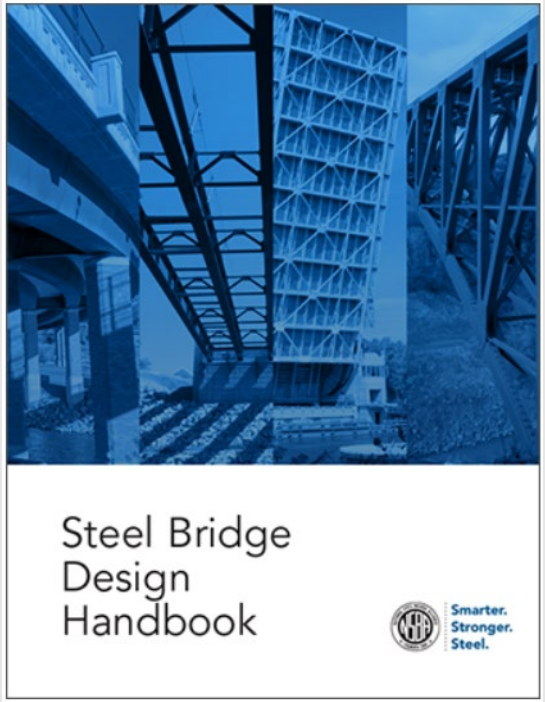
AASHTO 9th Edition: Substantive Changes per AASHTO

- Per AASHTO Website:
  - New design specifications for non-composite steel box-section members, which are often used as truss members, arch ribs and ties, rigid-frame members, columns, steel bent caps, edge girders, floor beams, and steel tower legs.
  - Updates to the simplified design provisions for bolted field splices, which include the LRFD-8 Errata issued in 2018.
  - Improvements to the post-buckling flange-stress reduction factor (represented by “Rb”) to account for the contribution of web longitudinal stiffeners to the overall flexural resistance of slender-web steel girders at the strength limit state.
  - Updates to the shear lag reduction factor and the specifications needed to determine the factored flexural resistance of tees and double angles to bring the design specifications into conformance with the latest AISC Specifications.
  - New design provisions for the determination of the factored shear resistance of concrete filled steel tubes or CFSTs.
  - Addition of a new fatigue classification for large inspection access manholes in the bottom flange of a steel tub girder, and hand holes placed throughout the length of built-up steel truss members to reduce dead load and aid with fabrication and inspection.



AASHTO 9th Edition

- Steel Bridge Design Handbook | American Institute of Steel Construction (aisc.org)
  - Was updated February 2022 and now covers 9th Edition of LRFD
- NSBA Presentations:
  - 10-22 Minnesota Steel Bridge Forum Presentation on Steel Changes in AASHTO 9th
  - Above has an update on 10th Edition items as well



AASHTO 9th Edition: Substantive Changes for Concrete Structures

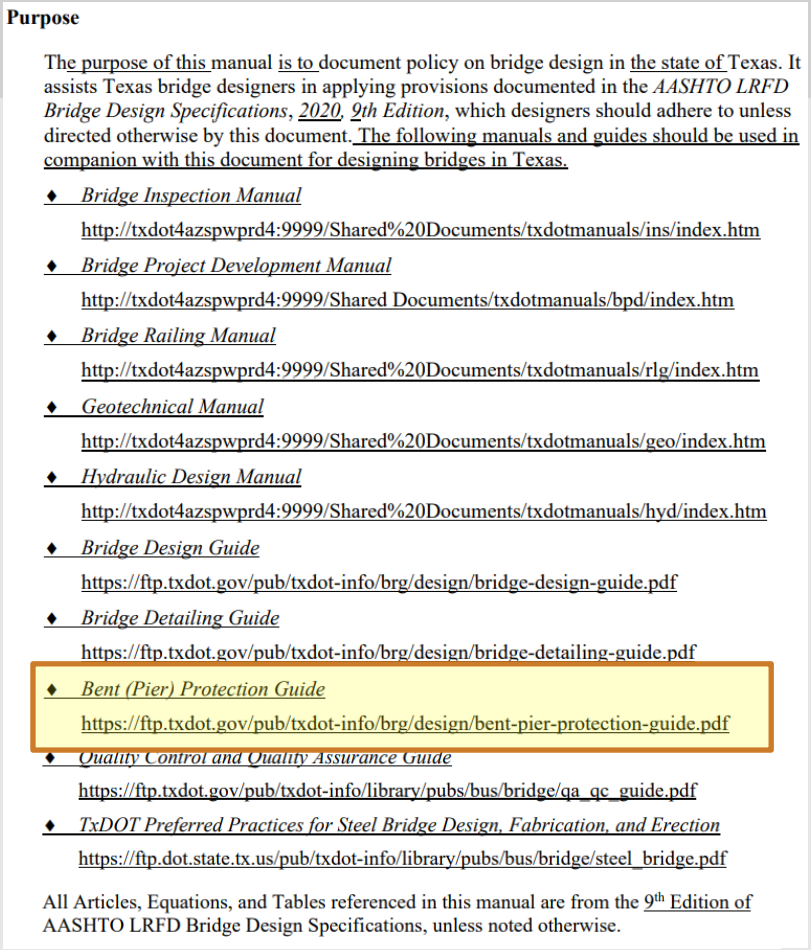
- Per ASPIRE Magazine Article AASHTO-LRFD.pdf (aspirebridge.com):
  - Strand Debonding Changes in Pretensioned Girders
    - Results of NCHRP 12-91
    - Taya will discuss in Chapter 3 discussion
  - Post-Tensioning Anchorage Hardware Requirements
    - Consistency with AASHTO LRFD Bridge Construction
    - Results of NCHRP Report 356
  - Detailing Ties in RC Columns
    - Spacing of laterally restrained longitudinal bars not to exceed 24” along perimeter
    - 40-year old issue in specifications
    - Covered in new TxDOT Bridge Detailing Guide

AASHTO 10th Edition Preview: Concrete

- Aspire Fall 2021 - Approved Working Agenda Items
  - Additional Detail: Aspire Winter 2022 - Deeper Dive on Select WAI Items
- Approved Items from July 2021 AASHTO COBS
  - WAI 133 Deflection and Camber Control
  - WAI 200 Tensile and Compressive Stress Limits and Reinforcement Design for Allowing Higher Tensile Stresses
  - WAI 202 Seismic Design Rule Clarification
  - WAI 203 Confinement Reinforcement: Spirals, Hoops, and Ties
  - WAI 204 Regions where Min Transverse Reinforcement is Required
  - WAI 206 STM vs Sectional Deign Near Supports
  - WAI 209 Continuity Design of Prestressed Concrete Beams
  - WAI 210 Post-Installed Anchors
  - WAI 212 Mechanical Coupler Use for A1035 Material
  - WAI 215: Struts Crossing Cold Joints
  - WAI 216A: Concrete Creep and Shrinkage

Chapter 1: About this Manual Updates

- Update links
- Adds Bent (Pier) Protection Guide
- References AASHTO LRFD 9th Edition



Purpose

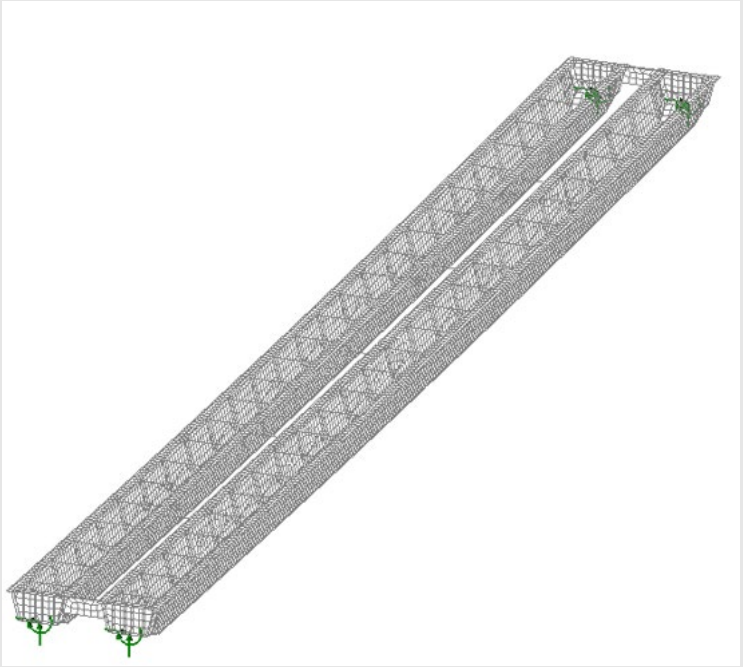
The purpose of this manual is to document policy on bridge design in the state of Texas. It assists Texas bridge designers in applying provisions documented in the *AASHTO LRFD Bridge Design Specifications*, *2020*, *9th Edition*, which designers should adhere to unless directed otherwise by this document. The following manuals and guides should be used in companion with this document for designing bridges in Texas.

- *Bridge Inspection Manual*
  http://txdot4azspwprd4:9999/Shared%20Documents/txdotmanuals/ins/index.htm
- *Bridge Project Development Manual*
  http://txdot4azspwprd4:9999/Shared Documents/txdotmanuals/bpd/index.htm
- *Bridge Railing Manual*
  http://txdot4azspwprd4:9999/Shared%20Documents/txdotmanuals/rlg/index.htm
- *Geotechnical Manual*
  http://txdot4azspwprd4:9999/Shared%20Documents/txdotmanuals/geo/index.htm
- *Hydraulic Design Manual*
  http://txdot4azspwprd4:9999/Shared%20Documents/txdotmanuals/hyd/index.htm
- *Bridge Design Guide*
  https://ftp.txdot.gov/pub/txdot-info/brg/design/bridge-design-guide.pdf
- *Bridge Detailing Guide*
  https://ftp.txdot.gov/pub/txdot-info/brg/design/bridge-detailing-guide.pdf
- *Bent (Pier) Protection Guide*
  https://ftp.txdot.gov/pub/txdot-info/brg/design/bent-pier-protection-guide.pdf
- *Quality Control and Quality Assurance Guide*
  https://ftp.txdot.gov/pub/txdot-info/library/pubs/bus/bridge/qa_qc_guide.pdf
- *TxDOT Preferred Practices for Steel Bridge Design, Fabrication, and Erection*
  https://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/steel_bridge.pdf

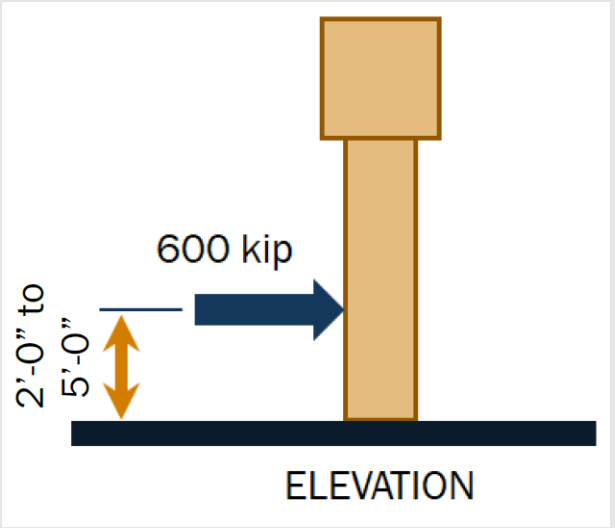
All Articles, Equations, and Tables referenced in this manual are from the 9th Edition of AASHTO LRFD Bridge Design Specifications, unless noted otherwise.

Chapter 2: Load and Resistance Factor Design Updates

- Section 1: Limit States
  - Clarify items added for System Redundancy Evaluation for Steel Twin Tub Girders
    - Redundancy Factor
    - Extreme Event III



- Section 2: Loads
  - Vehicular Collision
    - Incorporate the finding of *NCHRP Project 12-90: Guidelines for Shielding Bridge Piers* (https://www.nap.edu/catalog/25313/) without ignoring the findings of *TxDOT Project 9-4973: Guidelines for Designing Bridge Piers and Abutments for Vehicle Collisions* (https://tti.tamu.edu/documents/9-4973-1.pdf & https://tti.tamu.edu/documents/9-4973-2.zip).
    - Allowing AF_{HPB} or AF_{BC} to be used.
    - Updated the barriers for protection based on behavior of the rail and truck from MASH tests.
    - Adopted the new load locations from AASHTO LRFD.



Source: TxDOT Bent (Pier) Protection Guide

Chapter 2: Load and Resistance Factor Design Updates

- Section 2: Loads
  - Temperature Gradient
    - Clarify on which superstructure types we ignore TG.

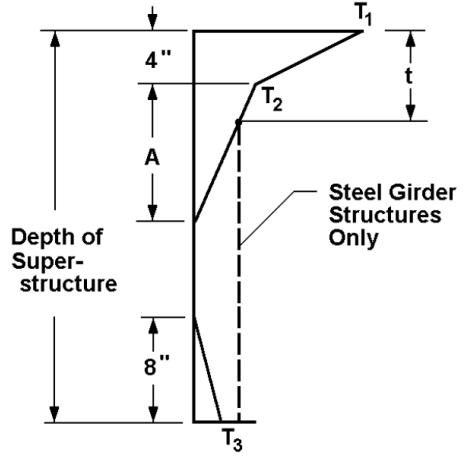
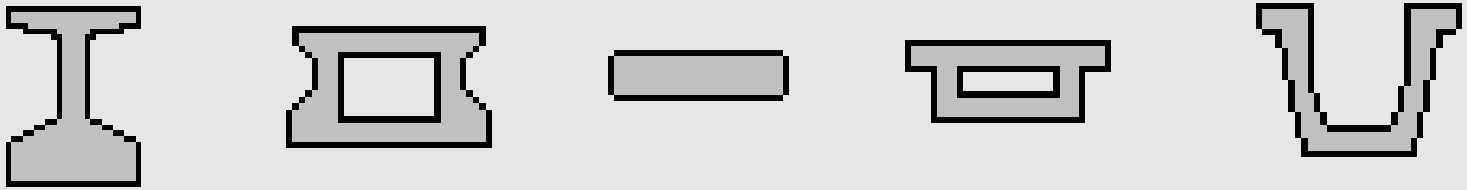


Figure 3.12.3-2—Positive Vertical Temperature Gradient in Concrete and Steel Superstructures

Source: AASHTO LRFD Bridge Design Specification

- Sections 3 thru 9: Pretensioned Beams
  - Exceptions in writing allowed to minimum and maximum concrete strengths
  - Use gross section properties
  - Restriction on mixing debonded and draped strands in a beam



Chapter 3: Superstructure Design Updates

- Sections 3 thru 9: Pretensioned Beams
  - Debonding requirements
  - Incorporated findings from NCHRP 12-91 Strand Debonding for Pretensioned Girders (Report 849)

Where a portion or portions of a pretensioning strand are not bonded and where tension exists in the precompressed tensile zone, the development length, measured from the end of the debonded zone, shall be determined using Eq. 5.11.4.2-1 with a value of $\kappa = 2.0$.

The number of partially debonded strands should not exceed 25 percent of the total number of strands.

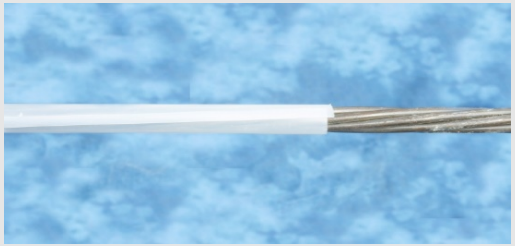
The number of debonded strands in any horizontal row shall not exceed 40 percent of the strands in that row.

The length of debonding of any strand shall be such that all limit states are satisfied with consideration of the total developed resistance at any section being investigated. Not more than 40 percent of the debonded strands, or four strands, whichever is greater, shall have the debonding terminated at any section.

Debonded strands shall be symmetrically distributed about the centerline of the member. Debonded lengths of pairs of strands that are symmetrically positioned about the centerline of the member shall be equal.

Exterior strands in each horizontal row shall be fully bonded.

8th Edition



http://www.prestresssupply.com/products/strand-sheathing/

Straight pretensioned strands may be debonded at the ends of beams subject to the following restrictions:

A. The number of strands debonded per row shall not exceed 45 percent of the strands provided in that row, unless otherwise approved by the Owner.

B. Debonding shall not be terminated for more than six strands in any given section. When a total of ten or fewer strands are debonded, debonding shall not be terminated for more than four strands in any given section.

C. Longitudinal spacing of debonding termination locations shall be at least $60d_b$ apart.

D. Debonded strands shall be symmetrically distributed about the vertical centerline of the cross section of the member. Debonding shall be terminated symmetrically at the same longitudinal location.

E. Alternate bonded and debonded strand locations both horizontally and vertically.

F. Where a portion or portions of a pretensioning strand are debonded and where service tension exists in the precompressed tensile zone, the development lengths, measured from the end of the debonded zone, shall be determined using Eq. 5.9.4.3.2-1 with a value of $\kappa = 2.0$.

G. For simple span precast, pretensioned girders, debonding length from the beam end should be limited to 20 percent of the span length or one half the span length minus the development length, whichever is less.

H. For simple span precast girders made continuous using positive moment connections, the interaction between debonding and restraint moments from time-dependent effects (such as creep, shrinkage and temperature variations) shall be considered. For additional guidance refer to Article 5.12.3.3.

I. For single-web flanged sections (I-beams, bulb-tees, and inverted-tees):
   - Bond all strands within the horizontal limits of the web when the total number of debonded strands exceeds 25 percent.
   - Bond all strands within the horizontal limits of the web when the bottom flange to web width ratio, b_f/b_w, exceeds 4.
   - Bond the outer-most strands in all rows located within the full-width section of the flange.
   - Position debonded strands furthest from the vertical centerline.

J. For multi-web sections having bottom flanges (voided slab, box beams and U-beams):
   - Uniformly distribute debonded strands between webs.
   - Strands shall be bonded within 1.0 times the web width projection.
   - Bond the outer-most strands within the section.

K. For all other sections:
   - Debond uniformly across the width of the section.
   - Bond the outer-most strands located within the section, stem, or web.

9th Edition

- Section 16: Spliced Girders
  - Can be pretensioned and post-tensioned
    - Updated for consistency with pretensioned simple span beams
  - Expanded direction on diaphragms
  - Removed requirements that are include in AASTHO LRFD Bridge Design Specification
  - Limited jacking stress of post-tensioning to 0.77 fpu
  - Allowance for post-tensioning after the deck is poured, if a viable redecking strategy is provided.

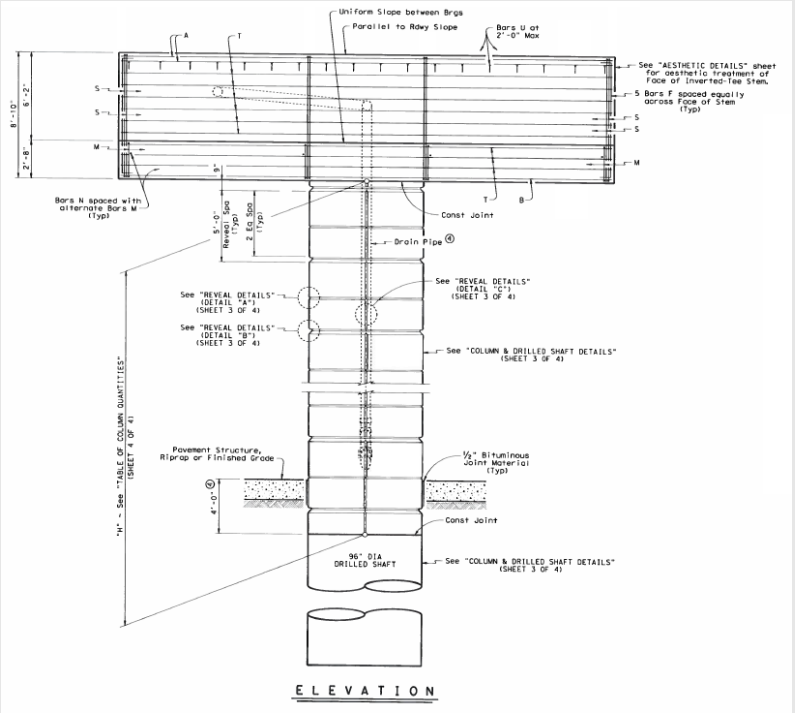
Chapter 3: Superstructure Design Updates

- Sections 13 and 14: Steel beam/girders
  - Possible erection sequence
  - Expanded discussion on deck placement, dead load deflection, and camber.

- Section 15: Segmental
  - Use the FIB Model Code for Concrete Structures (CEB 2010), or the CEB/FIP Model Code for Concrete Structures (CEB 1990) for creep and shrinkage

Chapter 4: Substructure Design Updates

- Section 1: Foundations
  - Lateral analysis of mono-shafts.
  - Environmental exposure.



Source: Bridge Division Details

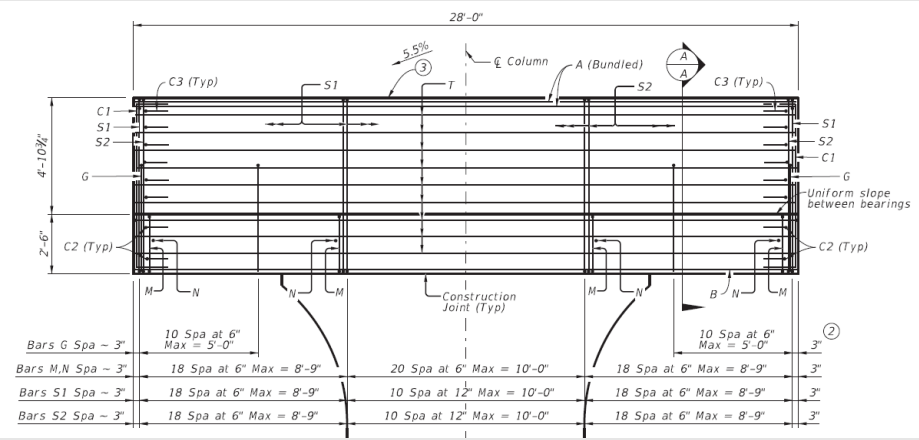
Chapter 4: Substructure Design Updates

- Sections 2-7: Abutments, Caps, and Columns
  - Make BDM internally consistent:
    - Allow steel $f_y \geq 60$ ksi on Abutments.
    - Limit reinforcing stress at Service I to 0.6 f_y on Inverted Tee caps.
  - Explicitly allow concrete strengths ≥ 3.6 ksi.
  - Relocated the non-contact lap spliced to Chapter 5.
  - We adopted the need to provide a load path for the vehicle collision load; from *NCHRP Project 12-90 - Report 892* (https://www.nap.edu/catalog/25313/).
  - Tightened the minimum reinforcement requirements.
  - Added a tensile limit for prestressed columns.

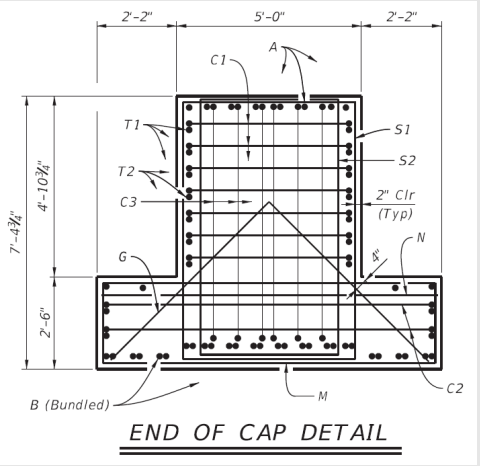
Source: Bridge Division

Chapter 4: Substructure Design Updates

- Section 5: Inverted Tees
  - Limit aggregate size when needed.
  - Ledge and Hanger calculations use $f_y \leq 60$ ksi.



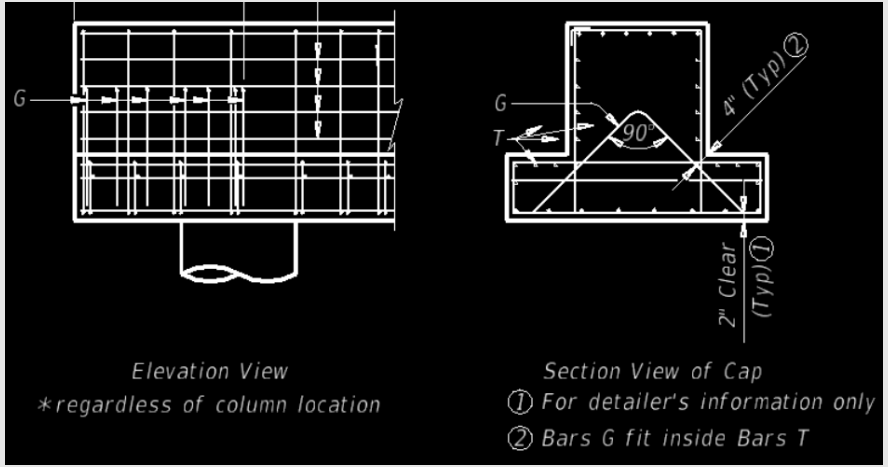
Source: Bridge Division Details



Source: Bridge Division Details

Chapter 4: Substructure Design Updates

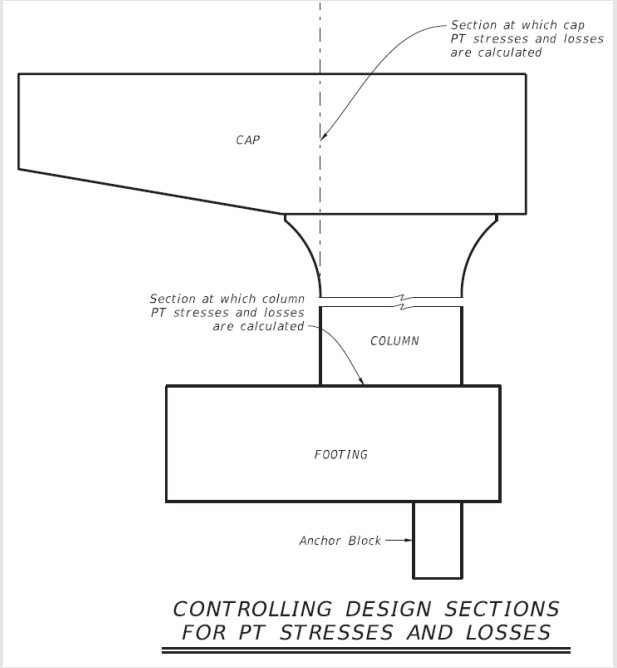
- Section 5: Inverted Tees
  - Diagonal end bars, Bars G.
    - #6 bars at 6-in. spa for 5 ft. at end of ledge.
    - Placed such that it is developed at the point it intersects the crack at the ledge-stem interface.
    - More information in Bridge Design Guide and Bridge Detailing Guide



Source: Bridge Division Details

- **Project 0-6905**
  - *Investigation of Performance of Skewed Reinforcing in Inverted-T Bridge Caps*
  - https://library.ctr.utexas.edu/hostedpdfs/uh/0-6905-R1.pdf

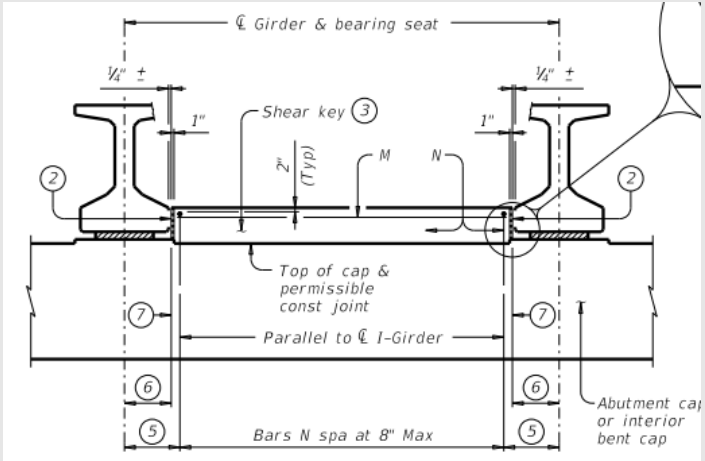
- Section 8: Post-Tensioned Bent Caps
  - Limit the jacking stress to ≤ 0.77 f_{pu}.
  - Show critical locations and provide initial PS stress and long-term losses at these locations.
  - Be explicit in the required construction sequence.



Source: Bridge Division Details

Chapter 4: Substructure Design Updates

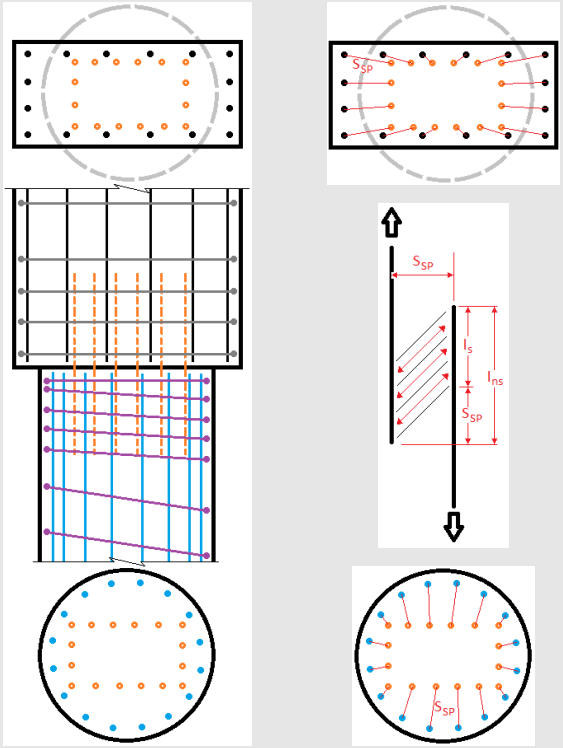
- Section 9: Lateral Restraint of Superstructures
  - Clarified freeboard is measured from the 100-year flood.
  - Allow the designer flexibility in choosing the location of the shear key.



Source: IGSK Standard

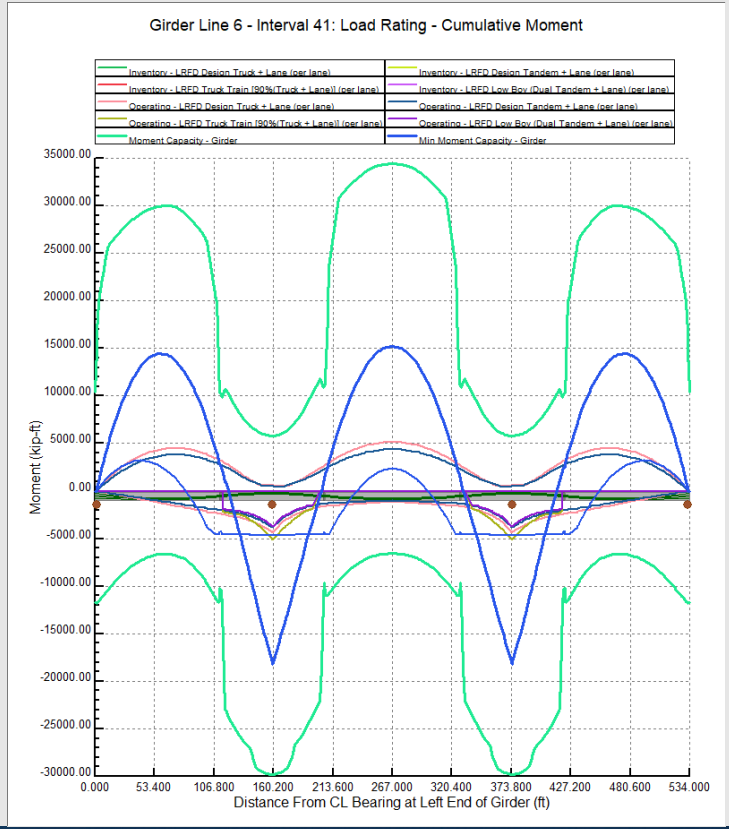
Chapter 5: Other Designs Updates

- *New* Section 6: Non-Contact Lap Splices
  - Recommendations from *TxDOT Project 0-6914: Non-contact Splices at Drilled Shaft to Bridge Column Interface* (https://library.ctr.utexas.edu/hostedpdfs/uh/0-6914-3.pdf).
  - Use λ_{rc} = 1 to prevent splitting failure.
  - Increase provided splice length by distance between spliced bars.
  - Added non-circular sections.



Chapter 5: Other Designs Updates

- *New* Section 7: Load Rating New Bridges
  - Requires load rating in design to satisfy Metric #13 of FHWA's Metrics for the Oversight of the NBIP
  - This has already been occurring in the design-build environment for several years, though requirements might be a little different
  - AASHTO Manual for Bridge Evaluation
    - LRFR Chapter 6 Part A
    - HL93 Basis ONLY (no SHV, no EV, etc)
    - Modified form of MBE Table 6A.4.2.2-1
    - Condition/system factor of 1.0



Chapter 5: Other Designs Updates

- *New* Section 7: Load Rating New Bridges
  - What to load rate?
    - Prestressed beams and girders for service flexure, ultimate flexure, and ultimate shear
    - Steel girders for service flexure, ultimate flexure, and ultimate shear
      - FC girder systems require a fatigue load rating
    - Post-tensioned concrete superstructures for service flexure, ultimate flexure, and ultimate shear
    - Reinforced concrete superstructures for ultimate flexure and ultimate shear

Chapter 5: Other Designs Updates

Table 5-1: TxDOT Limit States and Load Factors for Load Rating New Designs (Replaces MBE Table 6A.4.2.2-1)

Bridge Type	Limit State	Dead Load (1)		Design Live Load	
				Inventory	Operating
		γDC	γDW	γLL	γLL
Prestressed Concrete	Strength I	1.25	1.50	1.75	1.35
	Service III	1.00	1.00	0.80	N/A
Structural Steel	Strength I	1.25	1.50	1.75	1.35
	Service II	1.00	1.00	1.30	1.00
	Fatigue (2)	0.00	0.00	0.80	N/A
Reinforced Concrete (3)	Strength I	1.25	1.50	1.75	1.35
Post Tensioned Concrete (4)	Strength I	1.25 max, 0.9 min	1.50 max, 0.65 min	1.75	1.35
	Service I (5)	1.00	1.00	1.00	N/A
	Service III	1.00	1.00	0.80	N/A

(1) For most new structures, no dead load for wearing surface is employed in design and accounting for added future wearing surface is not required. Also, note that the entire concrete deck thickness is to be included in the DC load effects and the resisting capacity (include panels, no sacrificial thickness assumed).
(2) Only evaluate the fatigue limit state for fracture critical structures.
(3) Superstructure (eg. non-standard reinforced concrete slab or slab and girder (pan form spans)) and substructure (interior bent caps). Do not load rate bridge decks supported by girders, except where noted.
(4) Include the effects of creep, shrinkage, secondary effects (due to prestress/post-tensioning), uniform temperatu change, and temperature gradient as indicated in Table 2.
(5) Applies to post-tensioned straddle bents and transverse analysis of post-tensioned concrete bridge decks.

Table 2: Additional Loads and Load Factors for Post-Tensioned Concrete (6)

Limit State	CR, SH	PS	TU (7)	TG
Strength I	1.25 max, 0.9 min (8)	1.0	0.5	N/A
Service I	1.0	1.0	1.0	N/A
Service III	1.0	1.0	1.0	0.50

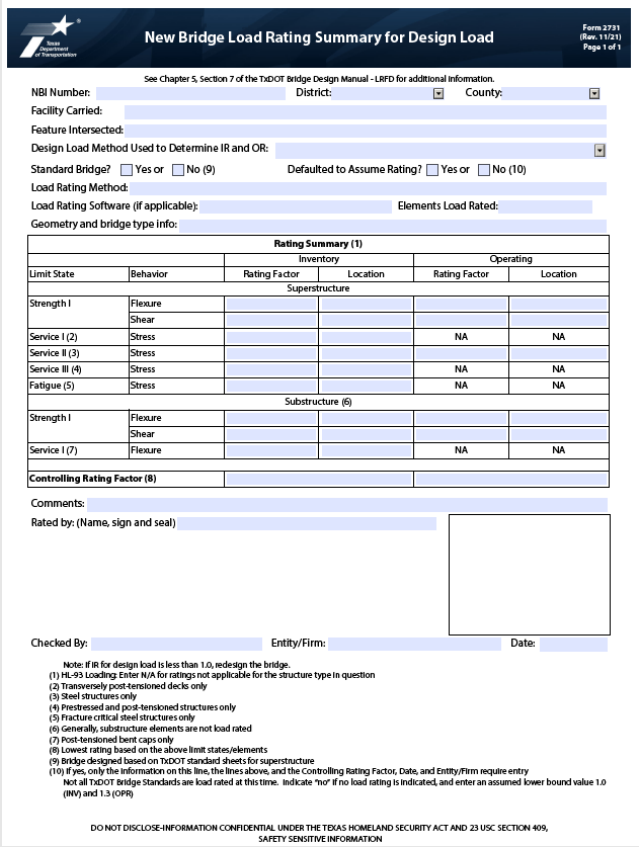
(6) Adapted from AASHTO LRFD Table 3.4.1-1 and Table 3.4.1-3.
(7) Only applicable in framed structures.
(8) Applies to segmental superstructures. For non-segmental superstructures use 1.0.

Chapter 5: Other Designs Updates

- *New* Section 7: Load Rating New Bridges
  - What not to load rate, unless specifically needed based on request of TxDOT or where substructure may control
    - Reinforced concrete bent caps
    - Reinforced inverted tee bent caps
    - Post-tensioned bent caps
    - Steel bent caps
  - Contact us for guidance on unique structures or elements not addressed
  - For widenings, only the widened unless requested otherwise (note widening criteria)
  - Do not load rate bridge decks with exceptions of transverse PT of segmental box girders and bridge decks with girder spa > 12 ft

Chapter 5: Other Designs Updates

- *New* Section 7: Load Rating New Bridges
  - Standard Bridges
    - Many standards have them tabulated with recent releases
    - No supporting calcs required
    - If none provided, indicate 1.0/1.3
  - Indication on Bridge Layout (see Bridge Det Guide)
  - Load Rating Form
    - eForm 2731
    - Link to Load Rating Form for New Bridges



New Bridge Load Rating Summary for Design Load

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See Chapter 5, Section 7 of the TxDOT Bridge Design Manual - LRFD for additional information.

NBI Number: District: County:

Facility Carried:

Feature Intersected:

Design Load Method Used to Determine IR and OR:

Standard Bridge? Yes or No (9) Defaulted to Assume Rating? Yes or No (10)

Load Rating Method:

Load Rating Software (if applicable): Elements Load Rated:

Geometry and bridge type info:

Rating Summary (1)					
		Inventory		Operating	
Limit State	Behavior	Rating Factor	Location	Rating Factor	Location
Superstructure					
Strength I	Flexure				
	Shear				
Service I (2)	Stress			NA	NA
Service II (3)	Stress				
Service III (4)	Stress			NA	NA
Fatigue (5)	Stress			NA	NA
Substructure (6)					
Strength I	Flexure				
	Shear				
Service I (7)	Flexure			NA	NA
Controlling Rating Factor (8)					

Comments:

Rated by: (Name, sign and seal)

Checked By: Entity/Firm: Date:

Note: If IR for design load is less than 1.0, redesign the bridge.
(1) HL-93 Loading: Enter N/A for ratings not applicable for the structure type in question
(2) Transversely post-tensioned decks only
(3) Steel structures only
(4) Prestressed and post-tensioned structures only
(5) Fracture critical steel structures only
(6) Generally, substructure elements are not load rated
(7) Post-tensioned bent caps only
(8) Lowest rating based on the above limit states/elements
(9) Bridge designed based on TxDOT standard sheets for superstructure
(10) If yes, only the information on this line, the lines above, and the Controlling Rating Factor, Date, and Entity/Firm require entry
Not all TxDOT Bridge Standards are load rated at this time. Indicate "no" if no load rating is indicated, and enter an assumed lower bound value 1.0 (INV) and 1.3 (OPR)

DO NOT DISCLOSE-INFORMATION CONFIDENTIAL UNDER THE TEXAS HOMELAND SECURITY ACT AND 23 USC SECTION 409, SAFETY SENSITIVE INFORMATION

- Section 2: Procedures for Archiving Bridge Notes

Naming Convention

Name the file using the following naming convention:

- Design notes: DD-CCC-CCCC-SS-SSS_DN_YYYY-MM
  - DD = 2 digit District ID
  - CCC = 3 digit County ID
  - CCCC = 4 digit Control
  - SS = 2 digit Section
  - SSS = 3 digit Structure Number
  - YYYY-MM being the year and month the PDF file is submitted
  - ex. 12-345-6789-0a-bcd_DN_2015-01
- Change Orders: DD-CCC-CCCC-SS-SSS_DN_CO_YYYY-MM
  - DD = 2 digit District ID
  - CCC = 3 digit County ID
  - CCCC = 4 digit Control
  - SS = 2 digit Section
  - SSS = 3 digit Structure Number
  - YYYY-MM being the year and month the PDF file is submitted
  - ex. 12-345-6789-0a-bcd_CO_2015-01

Delivering the File

Prior to sending the file, notify the file recipient via email that they will be receiving an electronic submittal containing design notes.

Deliver the PDF file using Box.com or an alternate secure file sharing service. Treat design notes as confidential documents and do not transmit through non-encrypted means.

If the PDF is created by a Consultant designer, the Consultant sends the PDF bridge design notes to the TxDOT contract manager or the District Bridge Engineer. If the PDF is created by TxDOT staff, the PDF bridge notes should be sent to the District Bridge Engineer.

The District Bridge Engineer is responsible for transferring the files into TxDOT's bridge inspection database management system, where they will become part of the permanent bridge file.

Questions?

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