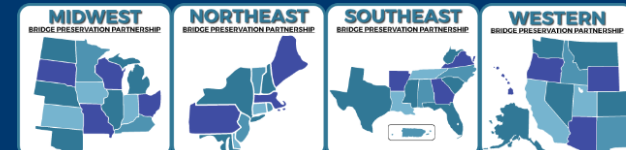


TxDOT In-House Bridge Repairs

Seth Cole, P.E.

Construction and Maintenance Branch Manager

TxDOT Bridge Division

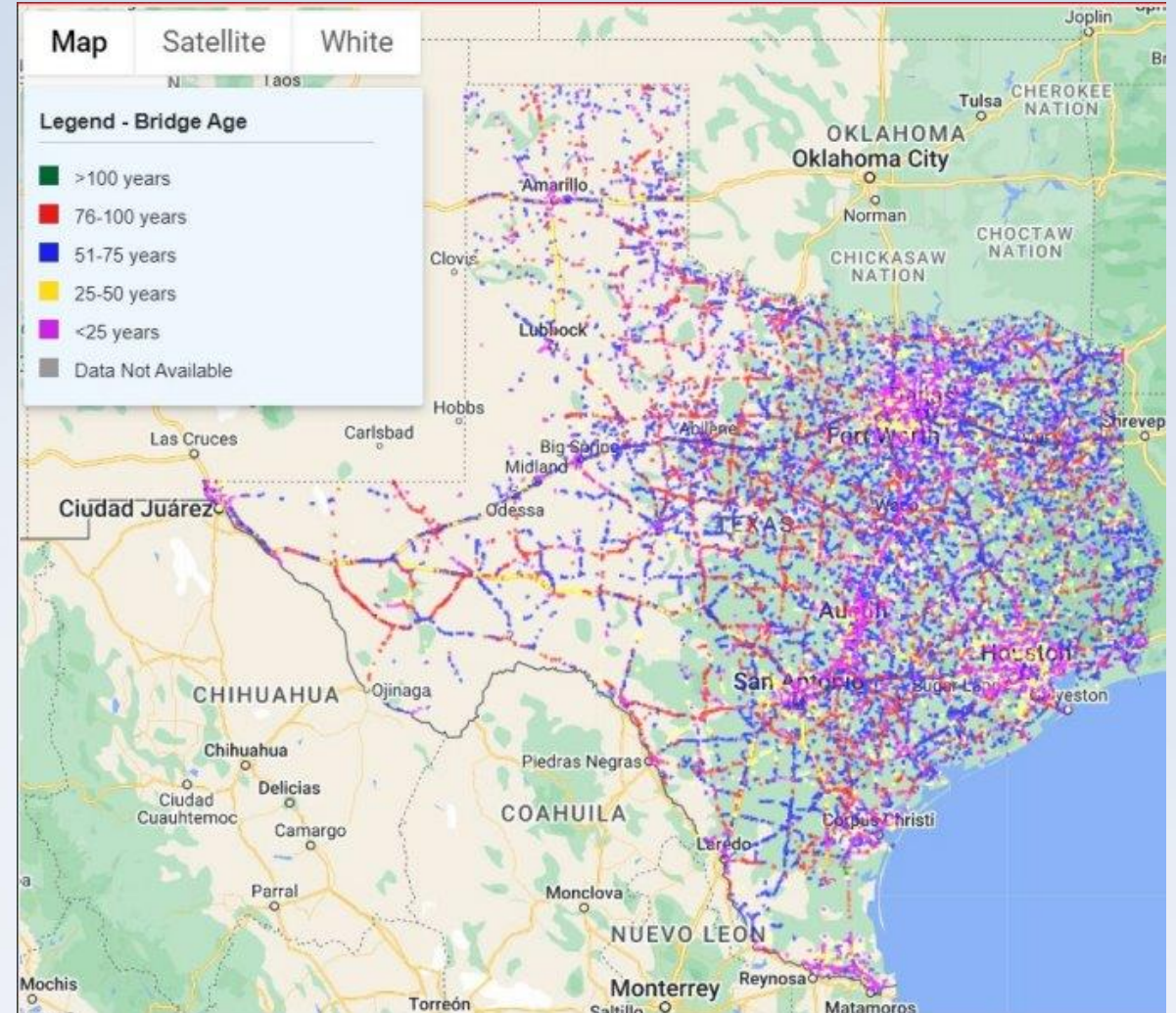


Agenda

- TxDOT Bridge Statistics, Districts, and Maintenance funding sources
- Highlights of In-House Bridge Work
- Statewide In-House Repair Training
- In-House Repairs Across Texas Photo Gallery

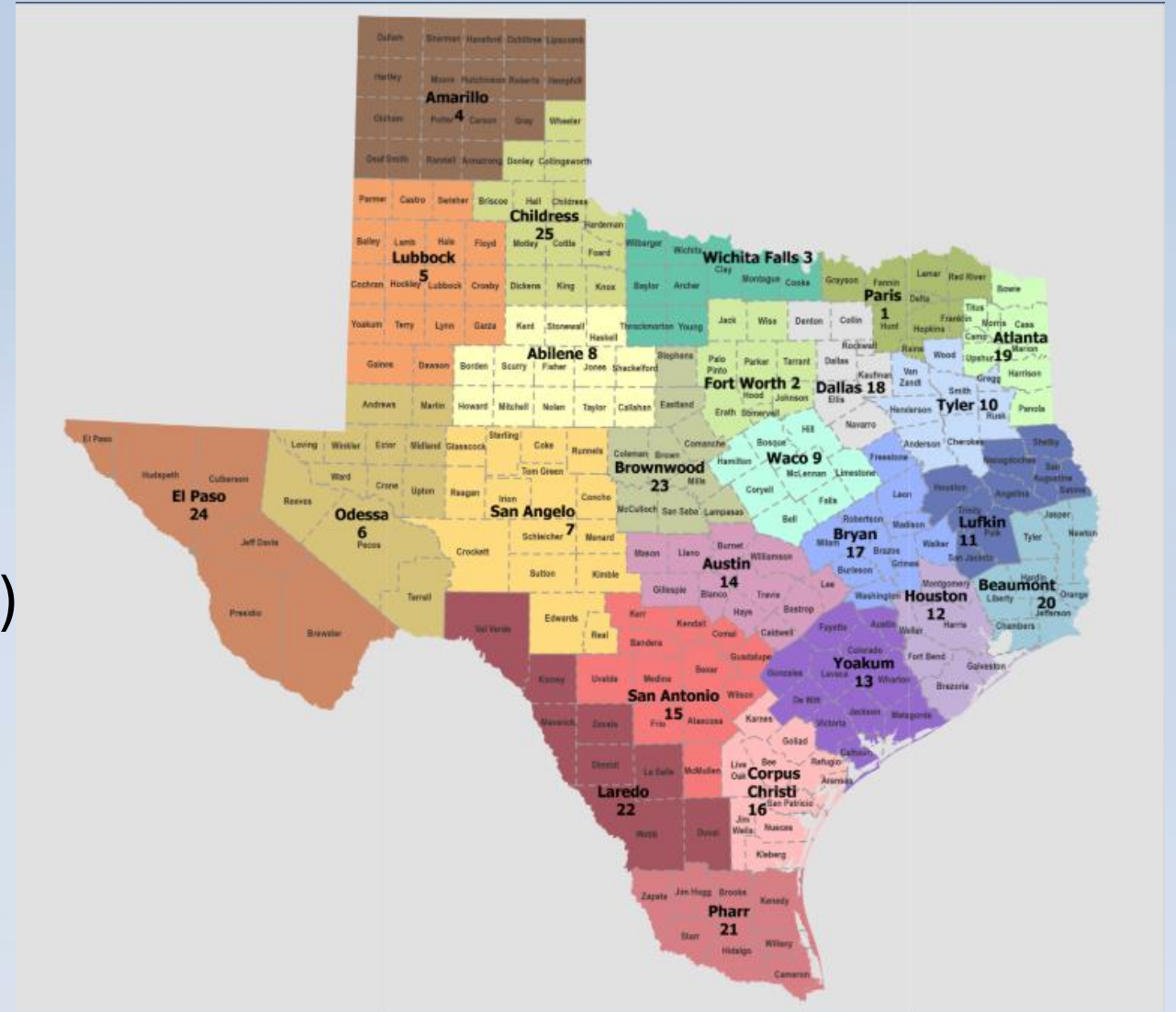
TxDOT Statistics

- +56,000 bridges
- Adding/replacing approximately 590 new bridges per year
- +/- 12,000 employees
- 31% maintenance employees



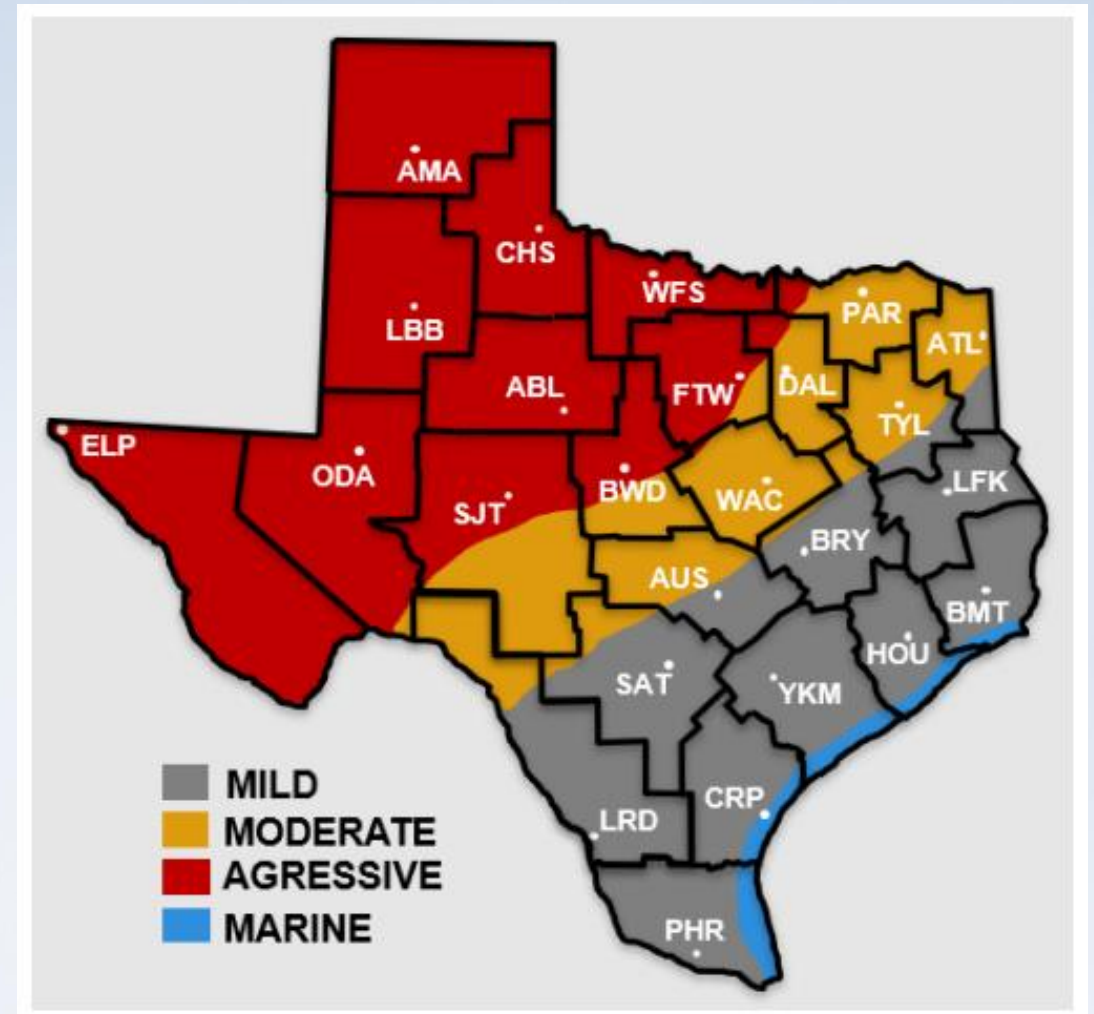
Our Districts

- 25 Districts
- Mixture of Urban, Rural and Metro settings
- Most Bridges – Houston (6,830)
- Least Bridges – Amarillo (841)



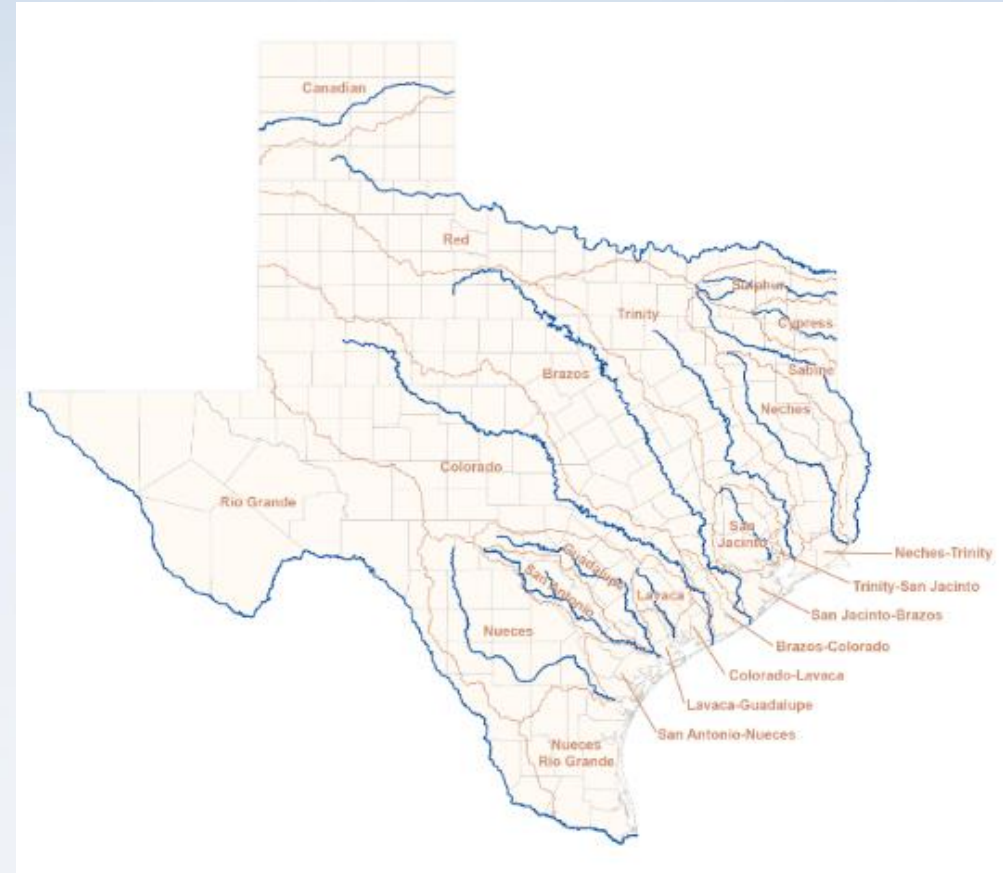
Our Climate

- Many different climates, sub-climates in Texas
- Deicing Salt Application
 - Northern and Panhandle districts have problems with corrosion due to de-icing salt usage



Our Climate

- Many different climates, sub-climates in Texas
- Deicing Salt Application
 - Northern and Panhandle districts have problems with corrosion due to de-icing salt usage
- Texas River Basins and soil types
 - Eastern districts tend to have scour problems



How Do We Maintain Our Large Inventory?

- Contracted Maintenance
 - Routine Maintenance Contract (RMC – District Funds)
 - Bridge Preventive Maintenance Program (BPM – Maintenance Division)
 - Bridge Maintenance and Improvement Program (BMIP – Bridge Division)
 - Emergency Maintenance Contract (EMC – Maintenance Division)
- In-House Maintenance
 - TxDOT District Bridge crews or Special Jobs crews

In-House Repair Highlights

- Wide range of in-house repair capabilities
 - Deck repairs
 - Cleaning/sealing joints
 - Concrete repairs
 - Fish plates
 - Complex steel repairs
 - Stone riprap
 - Pile encasements



Emergency Deck Repair – Wichita Falls District

- SL 11 @ US 287 SB
- Issue reported 6/2/2021, 3:30 pm
- Immediate lane closure
- Tools, equipment and personnel dispatched early next morning
- Repairs completed by 2:30 pm 6/3/2021
- Lanes opened 6/4/2021

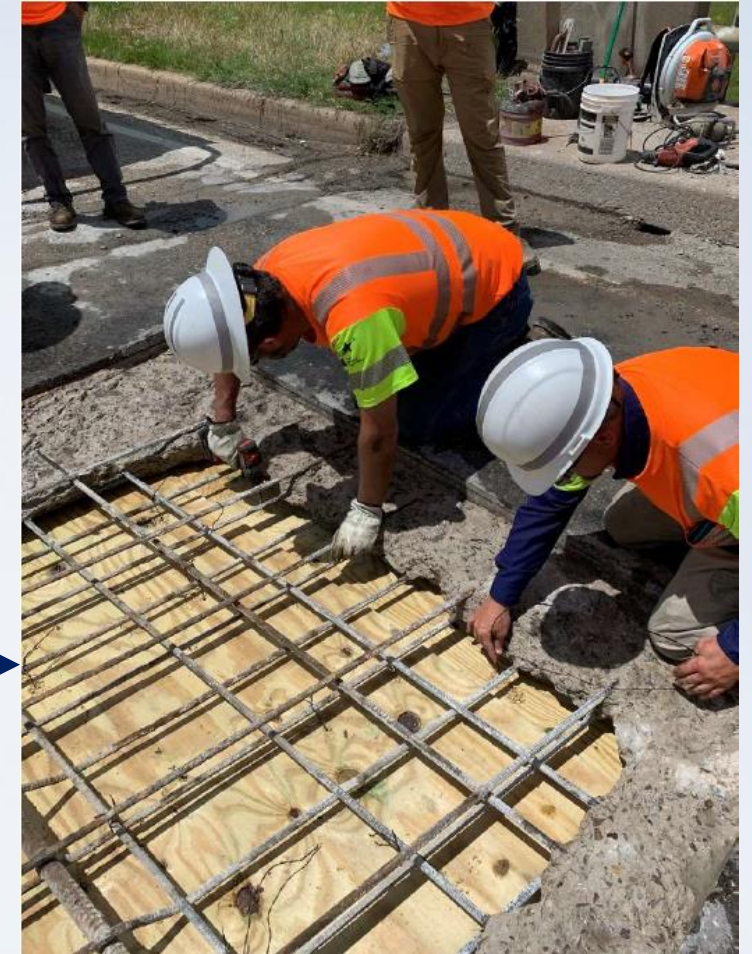


Emergency Deck Repair – Wichita Falls District



Removal of loose concrete and sawing perimeter to neat edges

Installing plywood formwork, securing to existing bars



Emergency Deck Repair – Wichita Falls District



Mixing repair material

Placing and finishing repair material



Truss Repairs – San Antonio District

- US 281A @ Atascosa River
- Built 1925
 - Single span, warren pony truss
- Advanced section loss in gusset plates and lower chord, prompting a reduction in load posting
- Replacement in 1-2 years
- Goal – avoid reduction in load posting until replacement



Truss Repairs – San Antonio District



6/28/23, 9:27 AM
+28.749237, -98.305163
149° SE

Truss Repairs – San Antonio District



Truss Repairs – San Antonio District

- Collaborative effort between Bridge Division and San Antonio District
- Bridge Division assisted with site visit, data collection, measurements, and possible repair details



Truss Repairs – San Antonio District

- San Antonio District Bridge Crew performed repairs



Truss Repairs – San Antonio District



Steel Cap Retrofit – Childress District

- SH 70 @ Quitaque River
- Built 1965
 - CIP “Pan girder” bridge
- Advanced section loss in primary cap reinforcing, prompting a load posting
- Replacement in 3-4 years
- Goal – avoid load posting until replacement

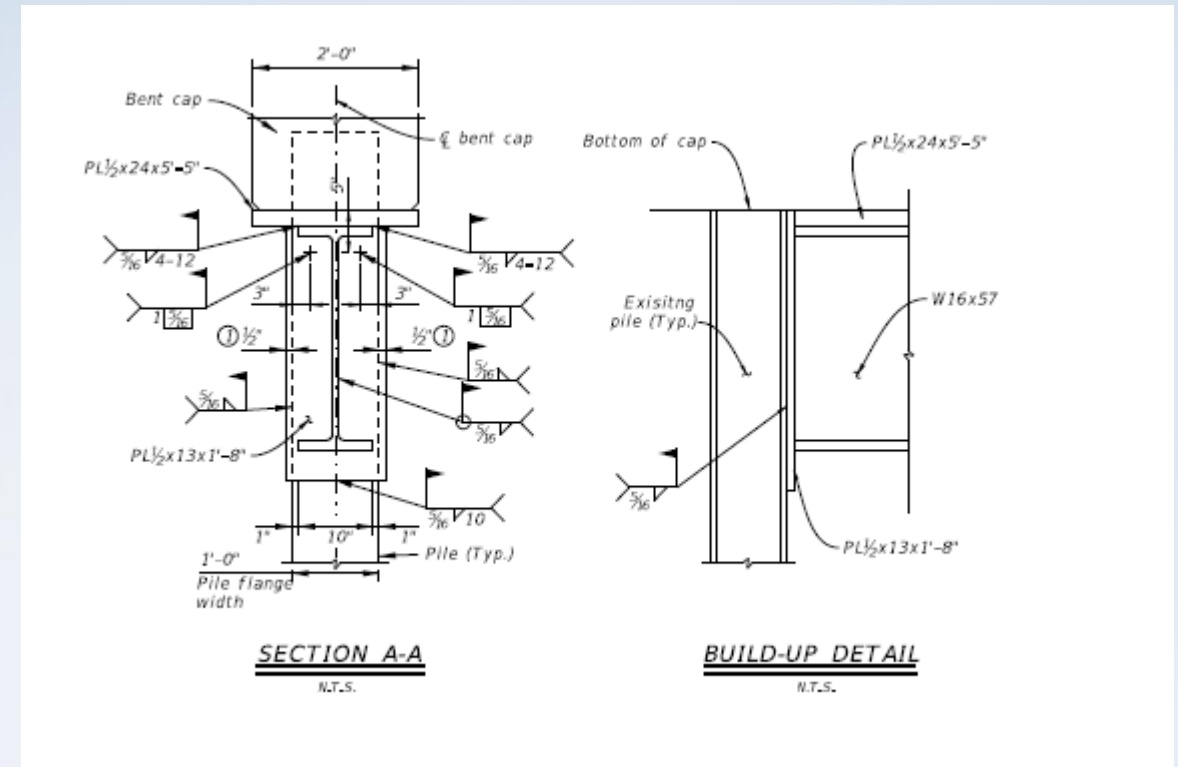
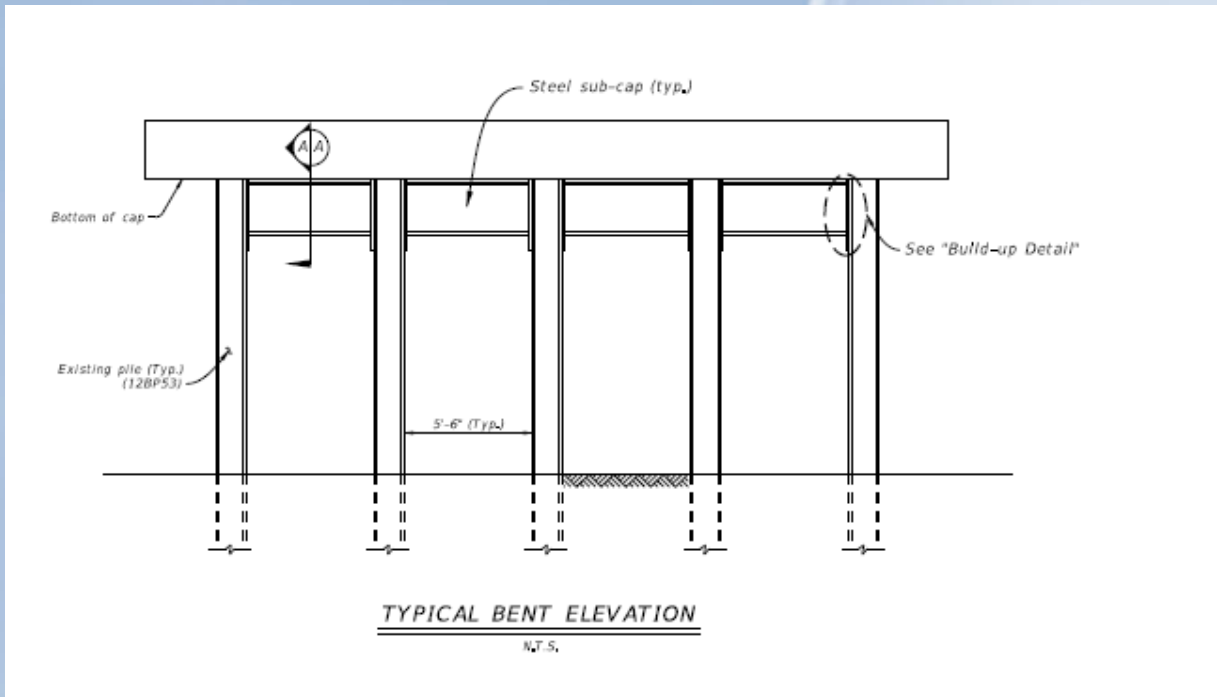


Steel Cap Retrofit – Childress District

- Considered Vertical/Overhead Concrete Repairs with CFRP
 - Estimated at over 1,000 SF
 - Many previous VOH repairs
 - Cost
 - CFRP strengthening system
 - Large quantity of concrete repairs
 - Time
 - Quicker to do in-house



Steel Cap Retrofit – Childress District



Steel Cap Retrofit – Childress District

- Collaborative effort between Bridge Division and Childress District
- Bridge Division designed repairs
- Childress district performed the work

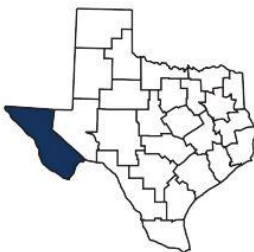
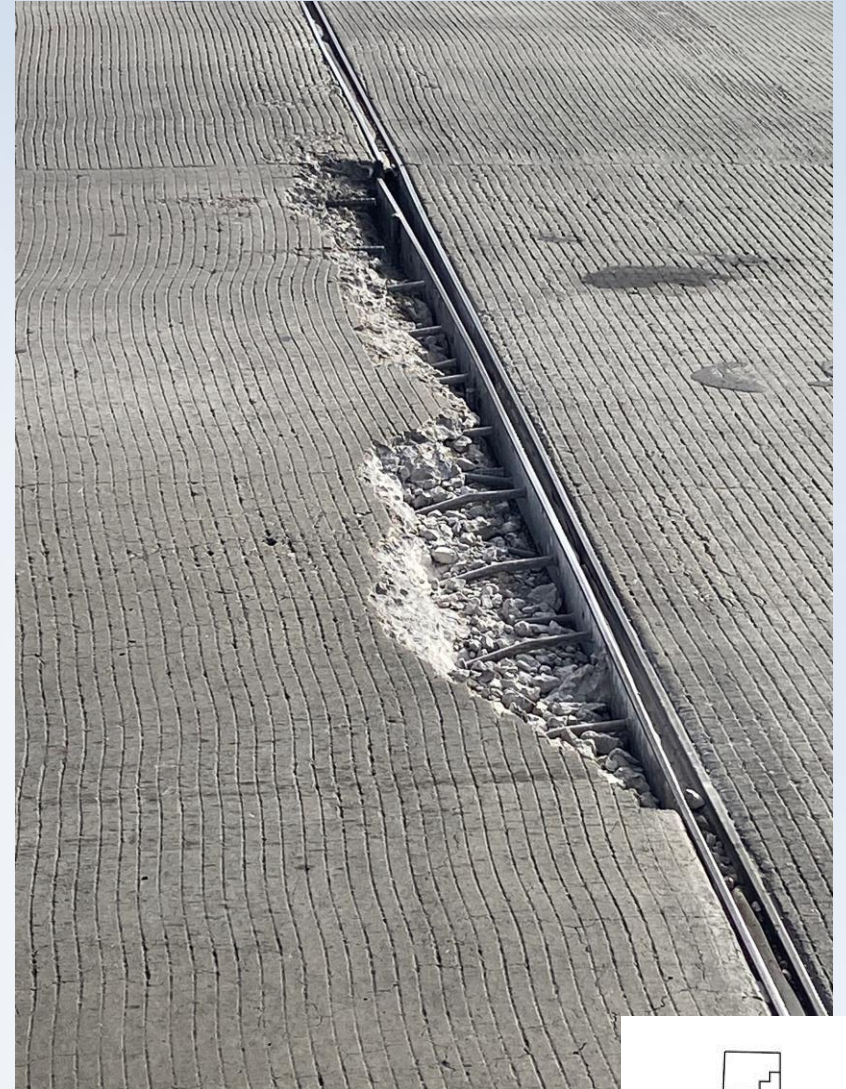


Steel Cap Retrofit – Childress District



Joint Repair – El Paso District

- IH 10 WB @ Geronimo
- Built 1990
 - Prestressed Conc. Box Beams
- Major spall in deck and loose armor plate
- Emergency Repair – week before Christmas!



Joint Repair – El Paso District



- Repairs performed at night using partial freeway closure

Joint Repair – El Paso District



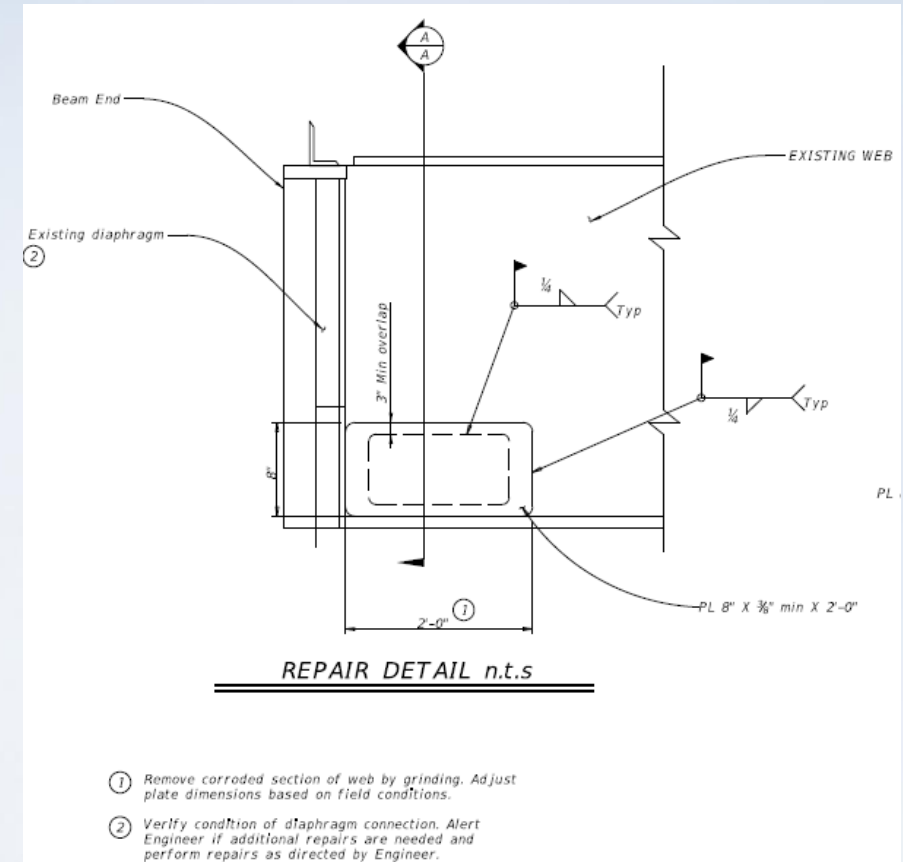
Steel Web Repair – Wichita Falls District

- IH 35 @ Red River
- Built 1957
 - Steelplate girder bridge
 - 48” webs
- Inspection – Oklahoma
- Maintenance - TX
- Advanced section loss at beam end prompting critical finding



Steel Web Repair – Wichita Falls District

- Collaborative effort between Bridge Division and Wichita Falls District
- Bridge Division designed repairs
- Wichita Falls district performed the work (in-house certified welder)
- Bridge Division provided snooper for access



Steel Web Repair – Wichita Falls District



In-House Repair Training

- Increased focus on addressing follow-up actions in-house
- TxDOT Bridge Division provides training to districts
- Primarily related to concrete repair, but other topics have been included



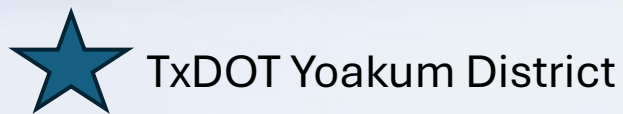
In-House Repair Training

- Classroom portion
 - Bridge Terminology
 - The Good, The Bad, and The Ugly
 - Review of TxDOT Concrete Repair Manual
 - Discussion on planning work
 - Finding pre-approved materials



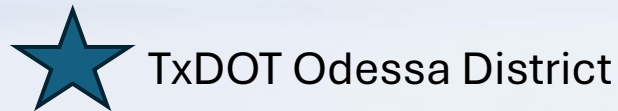
In-House Repair Training

- Field portion
 - Demonstrations at maintenance offices
 - Ask district to select one or more bridges nearby to use to demonstrate repair techniques
 - Occasionally includes demos from suppliers too

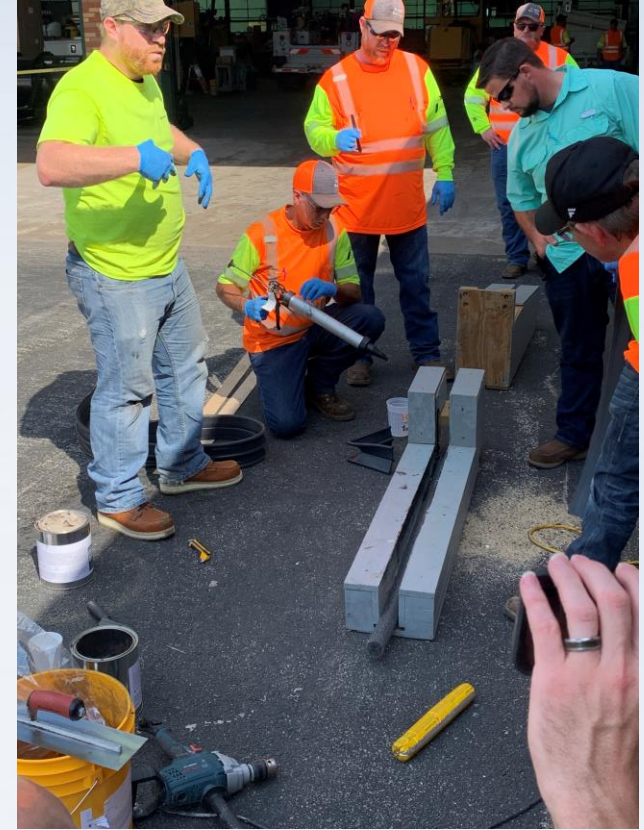



In-House Repair Training

- Field portion
 - Demonstrations at maintenance offices
 - Ask district to select one or more bridges nearby to use to demonstrate repair techniques
 - Occasionally includes demos from suppliers too



In-House Repair Training




 TxDOT Tyler District



In-House Repair Training



 TxDOT Amarillo District



In-House Repairs Across Texas



★ TxDOT Austin District



★ TxDOT Lubbock District



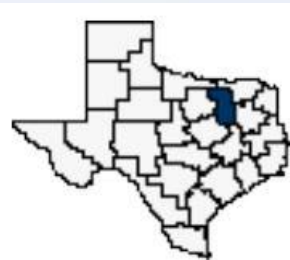


 TxDOT Brownwood District





★ TxDOT Dallas District





☉ 349°N (T) ☉ 30°26'17"N, 96°3'45"W ±9ft ▲ 195ft



★ TxDOT Bryan District

★ TxDOT Waco District





☀ 74°E (T) ● 31.918091°, -94.903404° ±13ft ▲ 279ft



Brought in 1500 CY dirt and 345 CY
24" rock under East side of River
FM1662 Rusk County
Rusk County

Angelina River 102010166904008
Nov 10 2022, 8:40:43 AM

★ TxDOT Tyler District



★ TxDOT Paris District





★ TxDOT Corpus Christi District





 TxDOT Fort Worth District

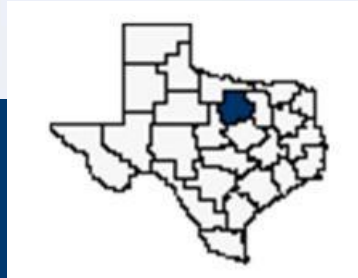




PHOTO 1 Recommended Maintenance Needs
Description 21-109-0039-18-282 VIEW 8 - TYPICAL CLOGGED DRAIN INLET AT APPROACHES ALONG SOUTH SHOULDER

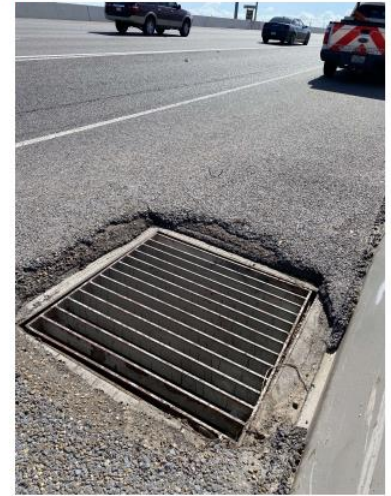



PHOTO 1
Description Remove debris from drain inlets along south shoulder at approaches and check for proper drainage.

★ TxDOT Houston District

★ TxDOT Pharr District






 TxDOT San Angelo District






 TxDOT Beaumont District





 TxDOT Abilene District



Seth Cole, P.E.

Construction and Maintenance Branch Manager

TxDOT - Bridge Division

Seth.cole@txdot.gov

(512)539-7280