

AASHTOWare BrDR Update

Todd Thompson, PE

AASHTOWare Bridge Design and Rating Task Force Chair

Agenda

- AASHTOWare Rebranding
- Task Force members - update
- BrDR vision, mission, and 5-year goals
- BrDR releases
- BrDR 7.3, 7.4, and 7.5 enhancements
- IFC 4.3 data exchange status
- Software technology related activities
- Cloud – Quality Attribute Workshop
- Upcoming Releases
- BrDR licensees

AASHTOWare Rebranding

- AASHTO Technical Services Program (TSP)
- 20 different TSPs
- Will be rolled out over next couple of years
- This presentation is using some of the new logos
- Some desktop icons are still being developed (Design Tools)

AASHTOWare Bridge

AASHTOWare™



BRIDGE

AASHTOWare Bridge Design and Rating



AASHTOWare Bridge Design



AASHTOWare Bridge Rating



AASHTOWare Bridge Design & Rating Icons

Br | D

Br | R

Br | D
R

Task Force members

Chair	Todd Thompson	South Dakota
Vice Chair	Mark Bucci	Louisiana
Member – BrD	Jeff Ruby	Kansas
Member – BrD	Scott Westerfield	Mississippi
Member – BrR	Jennifer Hart	Indiana
Member – BrR	Mike Johnson	Idaho
Member – BrR	Ruben Boehler	Illinois
Member – BrR	Vinacs Vinayagamoorthy	California
FHWA Liaison	Tom Saad	FHWA

TAGs

- Testing TAG
- Culvert TAG
- Design TAG
- Backlog TAG
- Reports TAG
- Analysis TAG
- New UI/Cloud TAG?

BrDR Vision and Mission

- Vision

To be the premier Bridge Design and Bridge Load Rating software solutions for the transportation community.

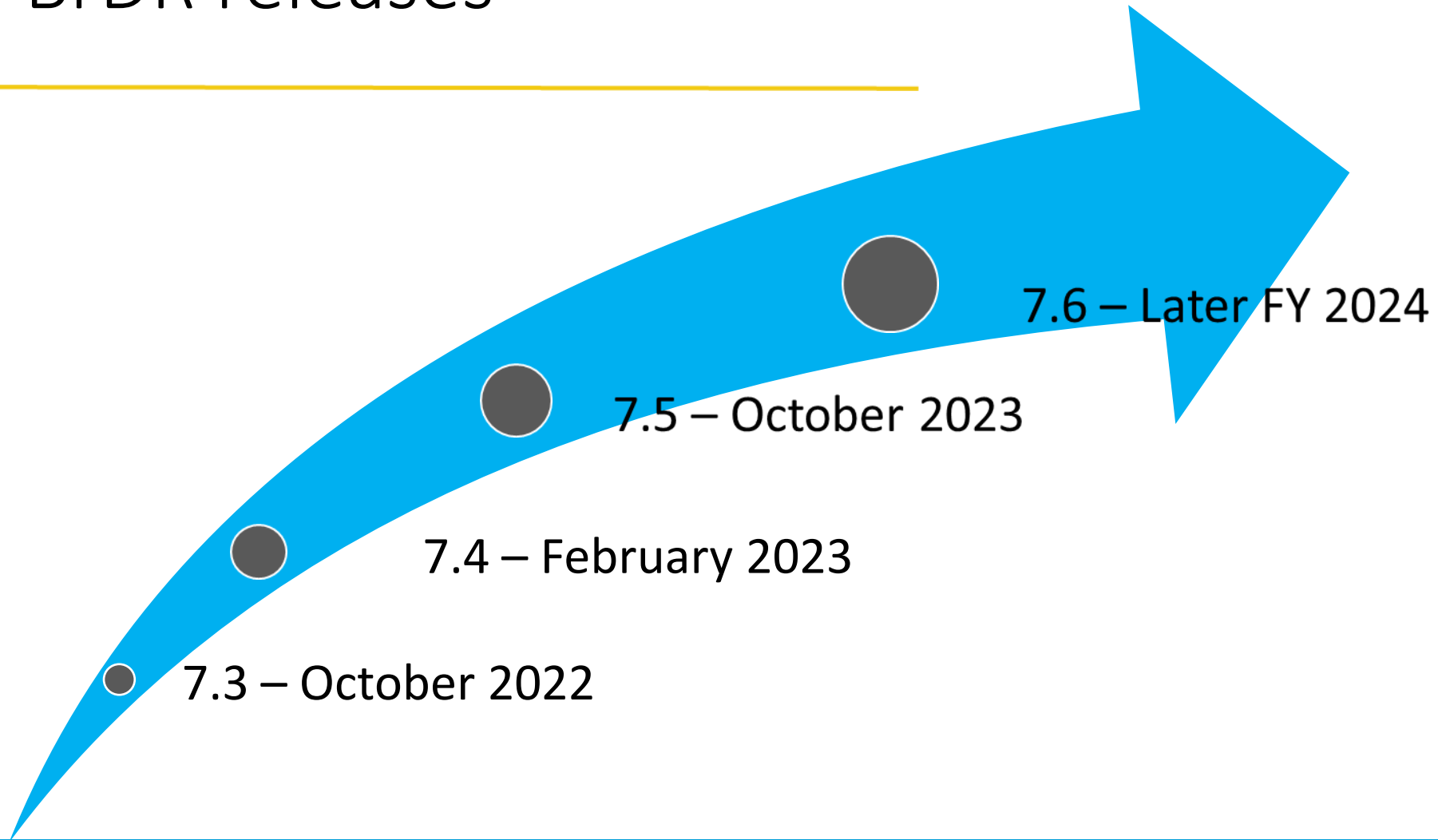
- Mission

To deliver a software solution through partnerships which enable transportation agencies to accomplish their mission.

BrDR 5-year goals

- Goal 1. Initiate development of a hybrid on-premise and cloud-based solution
- Goal 2. Refactor BrDR system's core foundation and analytical components
- Goal 3. Develop Task Force directed features and functionality
- Goal 4. Address user requested enhancements
- Goal 5. Proactive management and resolution of maintenance issues
- Goal 6. Address technical debt systematically and strategically
- Goal 7. Support AASHTO and AASHTOWare program initiatives
- Goal 8. Provide exceptional customer support to enhance customer success

BrDR releases

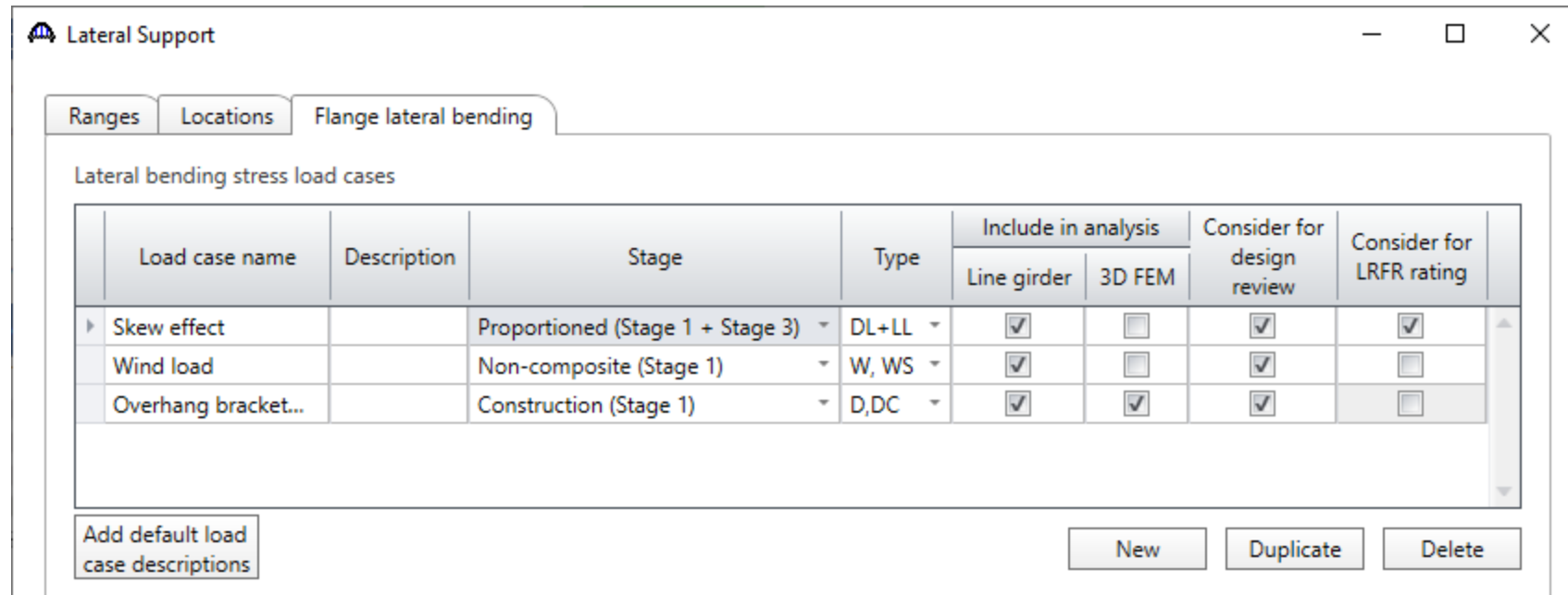


BrDR 7.3 release – in October 2022

- Major new features and enhancements
 - New AASHTO Timber Engine for ASR and LRFR
 - Sawn and glulam timber beams, and sawn timber deck
 - New AASHTO Metal Culvert Engine for LFR and LRFR
 - Metal pipe, pipe arch, arch, and structural plate pipe structures
 - Long-span structural plate pipe structures
 - Structural plate box structures
- AASHTO Manual for Bridge Evaluation updates (3rd Edition, 2022 Interim Revisions)

BrDR 7.4 release – in February 2023

- Ability to specify flange lateral bending stresses at diaphragm locations for the design and rating of steel multi-girder bridges



BrDR 7.4 release – in February 2023

- BrM Web Service Integration – Ability to select the BrM bridge data fields to synchronize with BrDR

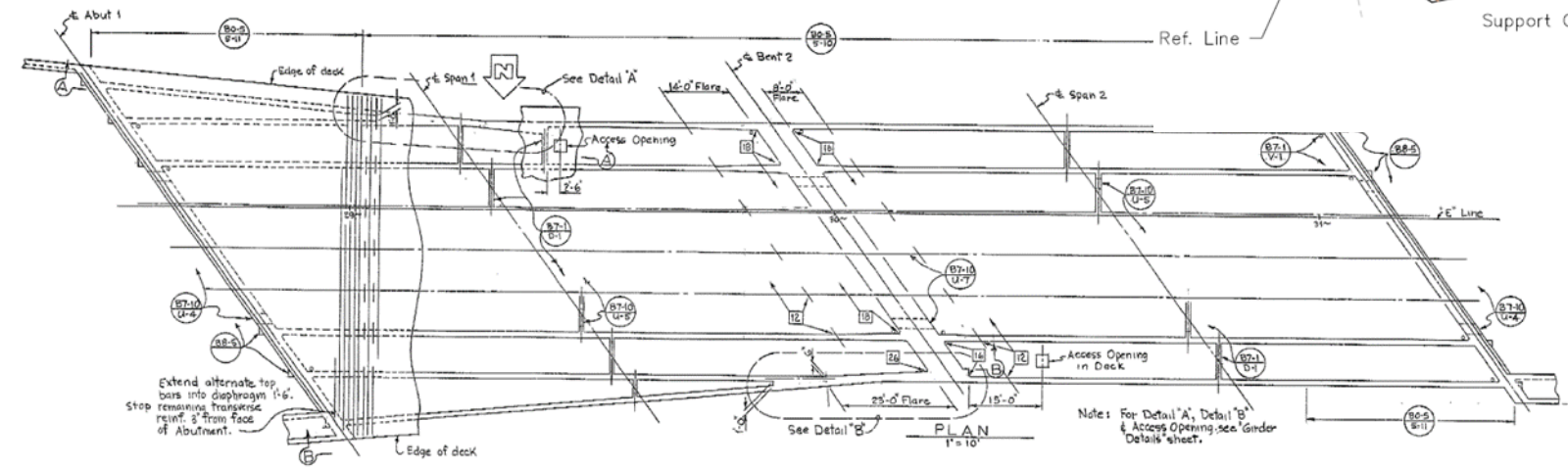
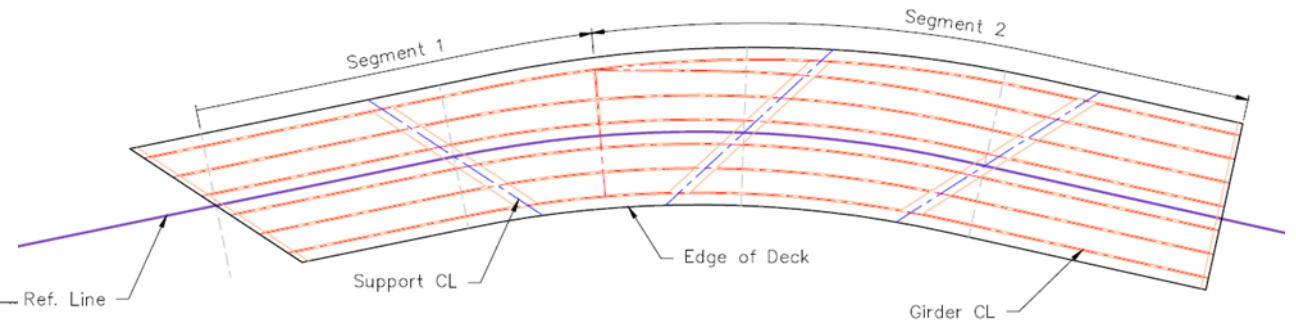
BrM Sync Settings

Sync

BrDR Bridge Field	Sync enabled	Override enabled	BrM Bridge Table	BrM Bridge Column
Bridge ID	<input checked="" type="checkbox"/>	<input type="checkbox"/>	bridge	bridge_id
NBI Structure ID	<input checked="" type="checkbox"/>	<input type="checkbox"/>	bridge	struct_num
Name	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	userbrdg	bridge_gd
Description	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	userway	on_under
Location	<input checked="" type="checkbox"/>	<input type="checkbox"/>	bridge	location
Facility carried	<input checked="" type="checkbox"/>	<input type="checkbox"/>	bridge	facility
Feat. intersected	<input checked="" type="checkbox"/>	<input type="checkbox"/>	bridge	featint
Year built	<input checked="" type="checkbox"/>	<input type="checkbox"/>	bridge	yearbuilt
Length	<input checked="" type="checkbox"/>	<input type="checkbox"/>	bridge	length
Route number	<input checked="" type="checkbox"/>	<input type="checkbox"/>	roadway	routenum
Mi. post	<input checked="" type="checkbox"/>	<input type="checkbox"/>	roadway	kmpost
Longitude	<input checked="" type="checkbox"/>	<input type="checkbox"/>	bridge	precise_lon
Latitude	<input checked="" type="checkbox"/>	<input type="checkbox"/>	bridge	precise_lat
Truck PCT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	roadway	truckpct

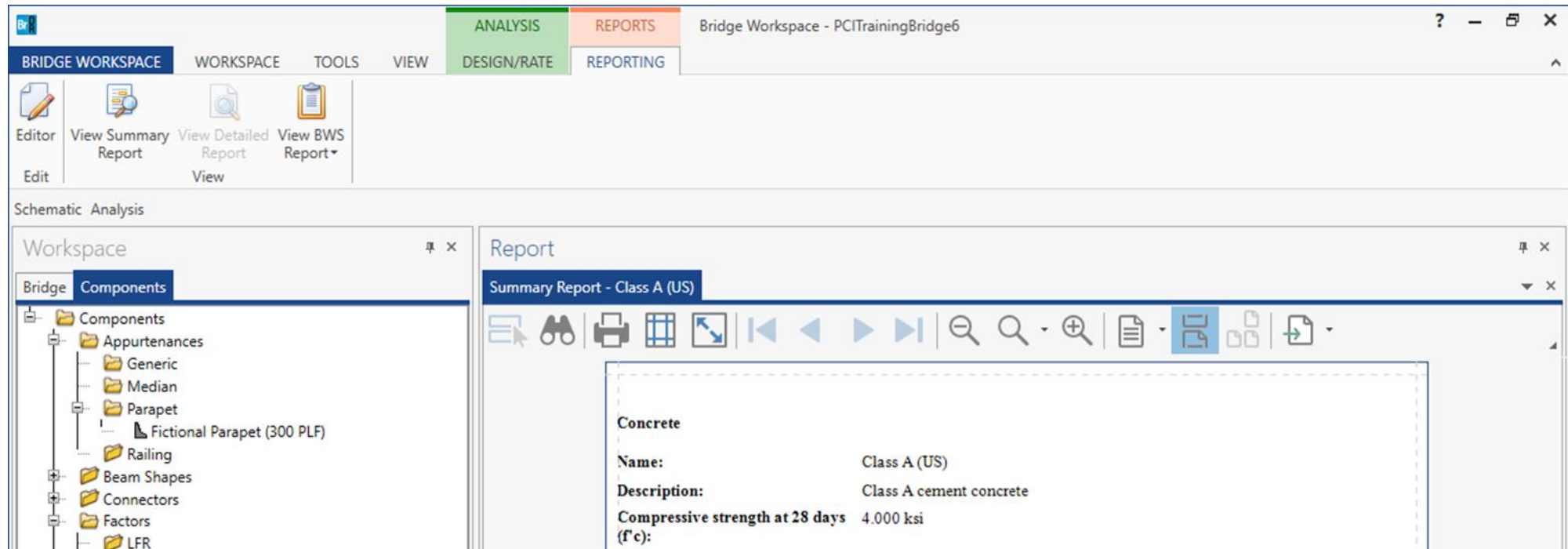
BrDR 7.5 release – in October 2023

- Advanced concrete multi-cell box superstructure LFR and LRFR
 - Curved MCB
 - MCB with complex geometry and configuration



BrDR 7.5 release – in October 2023

- Next Generation of Report Tool Phase 1
 - New reporting framework and report editor



BrDR 7.5 release – in October 2023

- AASHTO Manual for Bridge Evaluation updates (3rd Edition, 2023 Interim Revisions)
 - MBE 6A.5.8 – Changes to concrete shear load rating
 - Concrete Iterative Shear Rating Control Option
 - Modify MCFT Strain and Size Effect Control Option
 - Expanded load cases for concrete shear evaluation

BrDR 7.5 release – in October 2023

- Improvements to existing features and functionality
 - Consistent Rating Method Naming with MBE
 - Support Copy and Paste Functionality for All UI Grids
 - Enhance License Mechanism and Cryptographically Secure Bridge Data
 - BrDR Database Maintenance and Usability Improvements
 - BrDR WiX Installer Phase 2
 - Analysis Results Comparison Tool Usability Improvements
 - Update and refresh online training tutorials with up-to-date BrDR 7.5 information

BrDR 7.5 release – in October 2023

- AASHTO Analysis Engine Maintenance tasks
 - BSSD-1581 Add Net Area Deduction for Truss LRFR
 - BSSD-1606 and 1707 Truss Member and Gusset Plate Adjacent Vehicle Analysis
 - BSSD-1617 Provide Std and LRFD Inputs for Modulus of Rupture
 - BSSD-1622 Use Concurrent Moments in C_b Calculation
 - BSSD-1880 Provide Input for Maximum Aggregate Size
 - BSSD-1940 Improve 3D Mesh Generation to Limit Small Elements
 - BSSD-2370, 2708, and 2738 Truss Gusset Plate Shear Analysis Improvements
 - BSSD-3333 Consider Variable Axle Spacing for LRFR Permit Loads

BrDR 7.5 release – in October 2023

- Top voted RADBUG enhancements that fit into the work plan
 - BSSD-1585 Modeling and Analysis with Square Rebars
 - BSSD-1824 Allow LFR of Curved Steel Spans Greater Than 300 feet
 - BSSD-3109 Improve Culvert Design Tool Final Iteration Reporting
 - BSSD-3223 Improve Load Rating Tool Precomputed Data Window
 - BSSD-3552 Concrete LRFR Moment Redistribution
 - Some of the larger enhancements will be added to a future work plan

IFC 4.3 data exchange status

- Bridge superstructure data exchange implemented in BrDR 7.2
- Bridge substructure data exchange currently under planning
- Closely following TPF-5(372) Bridge design to construction MVD and Unit test suite development
 - Participated TPF-5(372) Unit test suite kickoff meeting on April 27, 2023
 - Participating the Unit test suite rollout and looking forward to eventually complete the certification

RIPi technology related activities

- BrDR cloud platform architecture design, planning, and prototyping
 - Architecture Drivers Elicitation Workshop in July 2023
 - Preliminary phased approach
 - Phase 1 – Data in the cloud (Short Term)
 - Phase 2 – Analysis in the cloud (Medium Term)
 - Phase 3 – Modeling in the cloud (Long Term)
- Bridge specifications checking upgrade planning
 - Process articles for analysis points in parallel – resolve interdependence
 - Customize specification articles and enhance reporting
- 3D analysis performance improvements planning
- .NET 6/8 upgrade planning

Other technology related activities

- AASHTOWare Data Integration Framework pilot interfaces
 - Completed ADIF onboarding weekly meetings started in April 2023
 - Now named AASHTOWare Open API
- AASHTO/NSBA TG 13 Software Validation Initiative
 - Provided comments to the Software validation survey questions
 - Participated TG 13 meeting on February 8, April 5, and June 28, 2023
- Expand BrDR third-party development framework and environment

Upcoming Release 7.6/7.7

- Caveat – all under planning currently
- Trying to meet the Mission, Vision and 5 year strategic goals

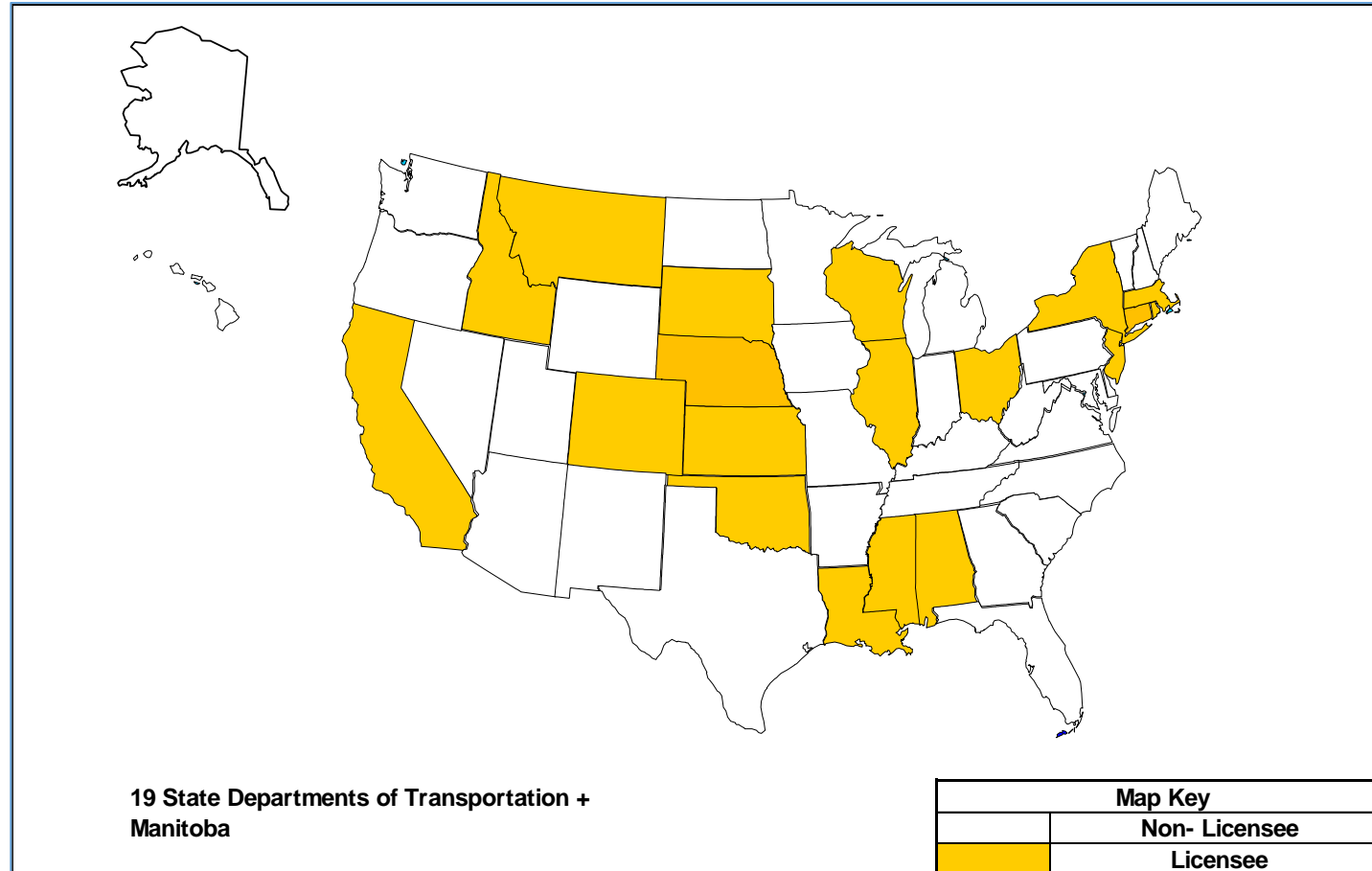
Upcoming Release 7.6/7.7

- Migrate from .NET Framework to .NET 6/8
- RADBUG enhancements voted in 2022
- Analysis Results Comparison Tool Phase 2.0
- BSSD-1855 Substructure Reinforced Concrete Pier Cap LRFR Estimate
- Report Tool Phase 2
- Bigger bucket of maintenance issues - Catch up and maintain control of the list of maintenance issues

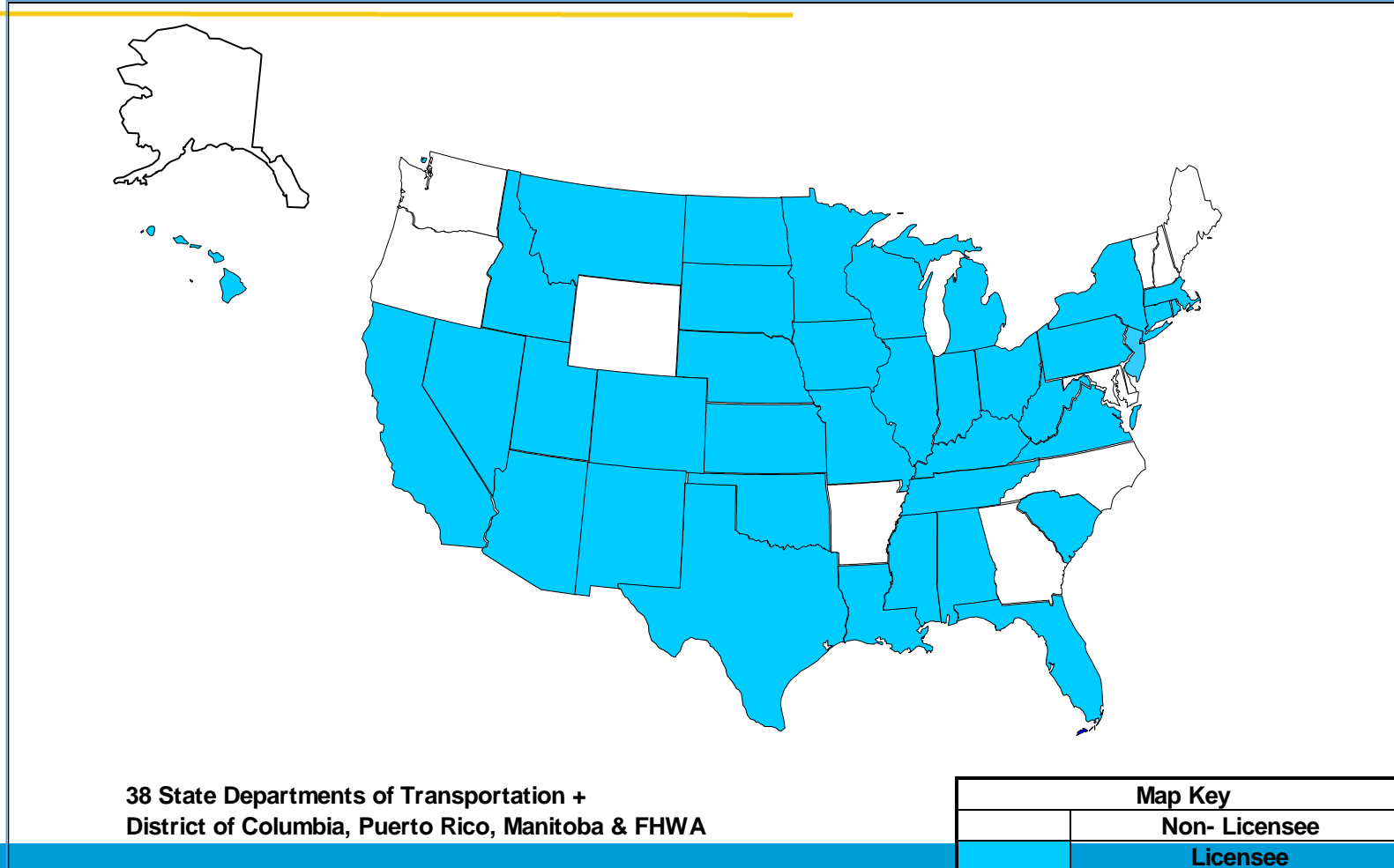
Upcoming Release 7.6/7.7

- LRFD Bridge Design Specifications, 10th Edition (2021 and 2022 updates)
- LRFD Bridge Design Specifications, 10th Edition (2023 updates)
- 2023 MBE Specifications updates
- Analysis API 2.0
- Results API
- AASHTO FE Engine non-linear formulation of soil-culvert interaction

Bridge Design licensees



Bridge Rating licensees



A blue-tinted photograph of a long bridge over a body of water. In the foreground, there are large, dark rocks. A person is visible in a kayak on the water. The sky is overcast with some clouds. The word "Questions?" is written in white, bold, sans-serif font in the center of the image.

Questions?

A blue-tinted photograph of a long bridge over a body of water. In the foreground, there is a rocky shoreline. A small boat is visible on the water in the middle ground. The sky is overcast with some clouds. The text "Thank you!" is overlaid in the center in a white, bold, sans-serif font.

Thank you!