
FHWA Bridge Program Initiatives - Bridge Design and Analysis

2015 RADBUG

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Regulation Update

- National Performance Management Measures (PM2)
- National Bridge Inspection Standards (NBIS)
- National Tunnel Inspection Standards (NTIS)

NBIS

- NPRM being finalized for Secretary's approval
 - Fall 2015 (tentative)
- Specifications for the National Bridge Inventory (SNBI)

NTIS

- Final Rule was published in July, 2015
 - Information webinars conducted
- Specifications for the National Tunnel Inventory (SNTI)
- Tunnel Operations, Maintenance, Inspection, and Evaluation Manual (TOMIE)
- NHI Tunnel Safety Inspection Training

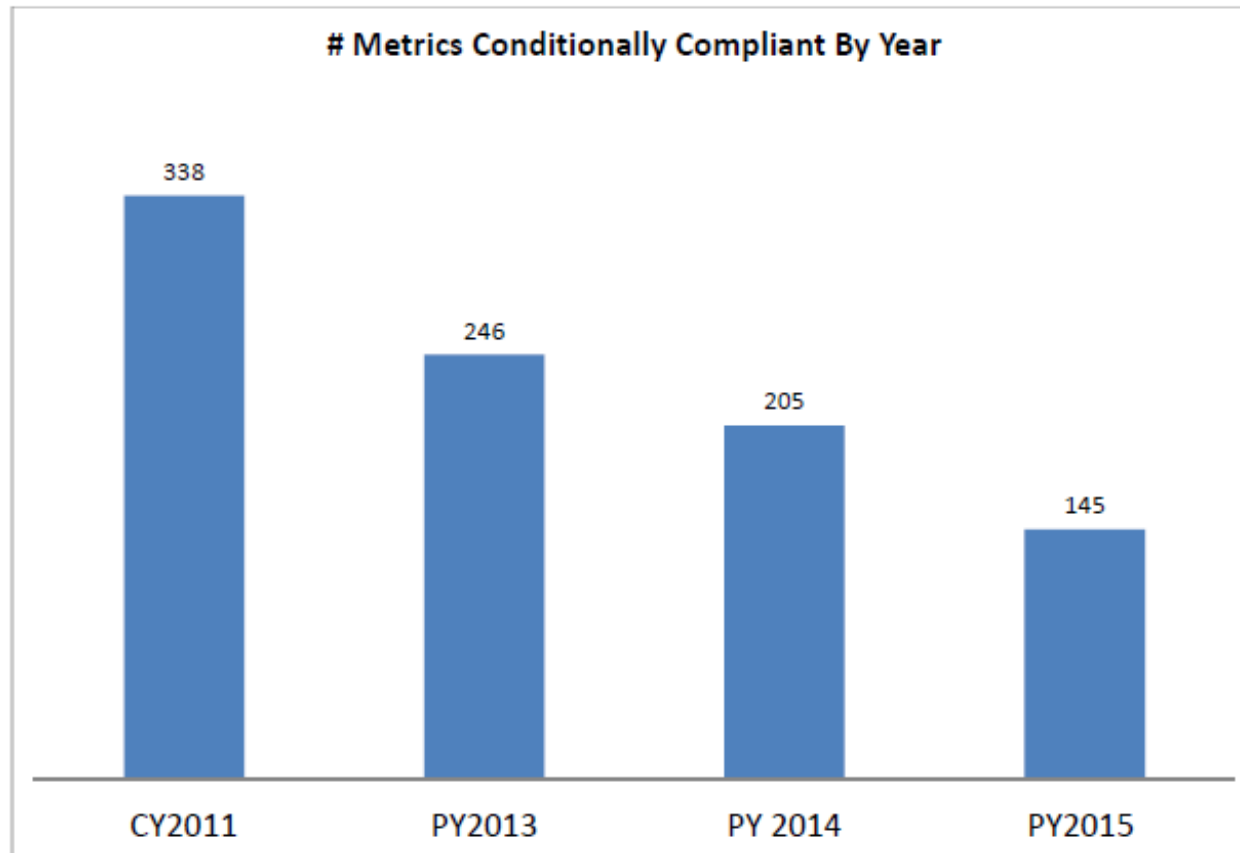
Tunnels

- Port of Miami – Recently completed
- East End Crossing Tunnel – Louisville
- Midtown Tunnel – Norfolk/Portsmouth
- Alaskan Way Viaduct Tunnel – Seattle
- I-70 Twin Tunnels – Idaho Springs, CO
- Capitol Crossing – Washington, DC
- Chesapeake Bay Bridge Tunnel, Eastern Shore, VA
- I-90 Tunnels – Seattle / Bellevue



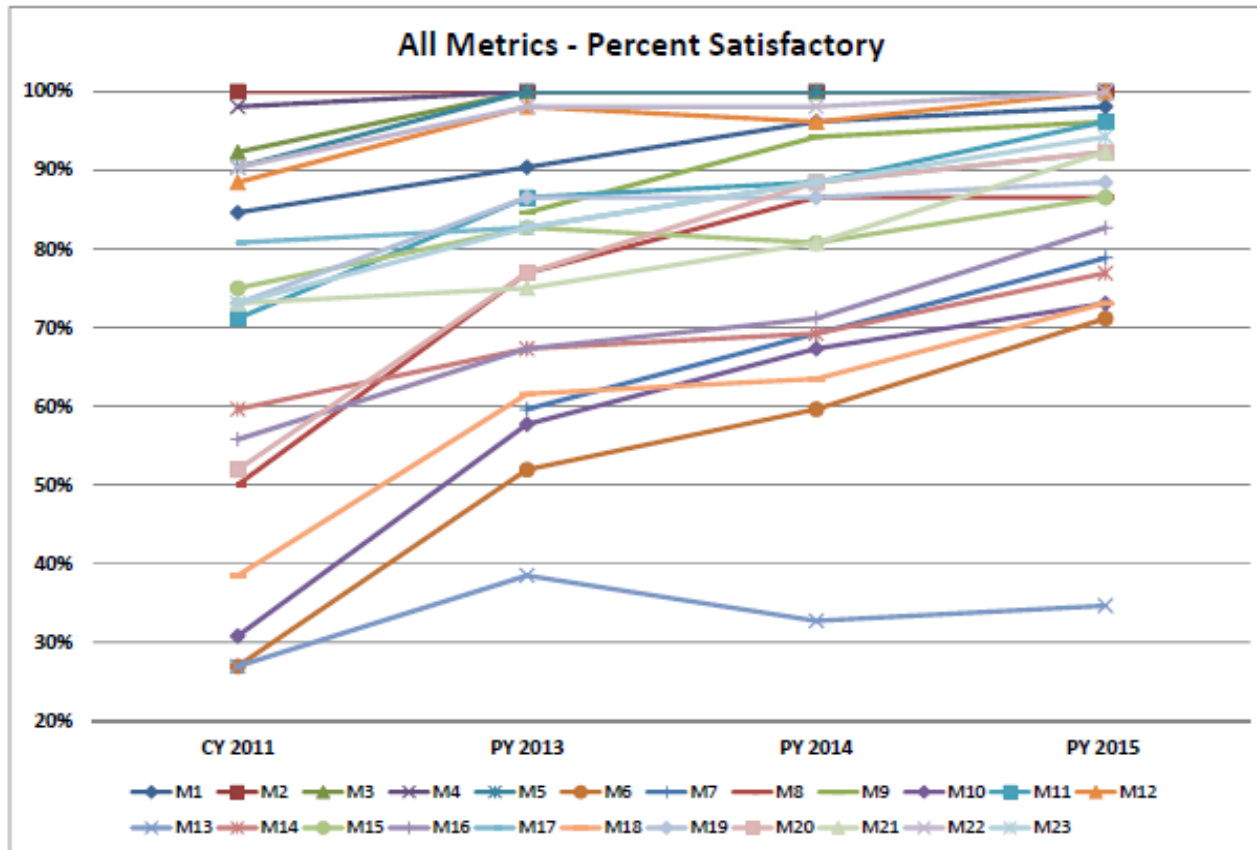
NBI Oversight Program: 23 Metrics

Preliminary Metric Results of PY 2015 NBIS Program Review



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OIG and PMIT Findings

- **OIG Bridge Safety Phase II**
 - February 18, 2015
- **PMIT Load Posting Enforcement**
 - November 6, 2014
- **PMIT Oversight of the National Bridge Inspection Program**
 - February 24, 2015

Steel Bridge Technical Activities

- NHI Engineering for Stability in Bridge Construction (3½ day course now available)
- LRFD Superstructure Design Course update (complete)
- Bridge Information Modeling (BrIM) Standards (ongoing)
- Cooperative Agreement with Lehigh (ongoing)
 - Manual for Refined Analysis of Bridges
 - Tubular Member Design for Bridges
 - Reliability in Special Bridge Systems
 - Strengthening of Bridge Members
 - Orthotropic deck testing

Steel Bridge Technical Activities

- Steel Bridge Design Handbook update (12/15)
- NHI Fatigue and Fracture Course (late 2016)
- Design Specs for Non-composite Box Sections (late 2017)

Concrete Bridge Technical Activities

- Post-Tensioning Guidance & Training
 - PT Installation and Grouting Manual (E-doc on HIBS)
 - PT Installation and Grouting WBT (Available through NHI)
 - PT Bridge Inspection Module – NHI Bridge Safety Inspection Refresher Course (Available - NHI)
 - PT Box Girder Design Manual (Final Draft under Review)
 - Advanced PT Design Guidance (electrically isolated PT, replaceable grouted external PT)
 - Designing PT Systems to Accommodate NDE
 - Literature search complete & electrically isolated PT testing just starting

Concrete Bridge Technical Activities

- Advanced Precast Element Design Guidance & Training
 - Awarded to AASHTO w/ subcontract to PCI as primary developer (August 2014)
 - PCC Girder Design WBT (8 hrs)
 - Full-Depth Precast Deck Panel WBT (4 hrs)
 - PCC Girder Stability WBT (4 hrs)
 - Bridge Geometry Guidance – Layout, Fabrication and Erection Considerations
 - Curved U-Beam Design Guidance & Criteria

FHWA/NHI Bridge Design and Analysis Courses (www.nhi.fhwa.dot.gov)

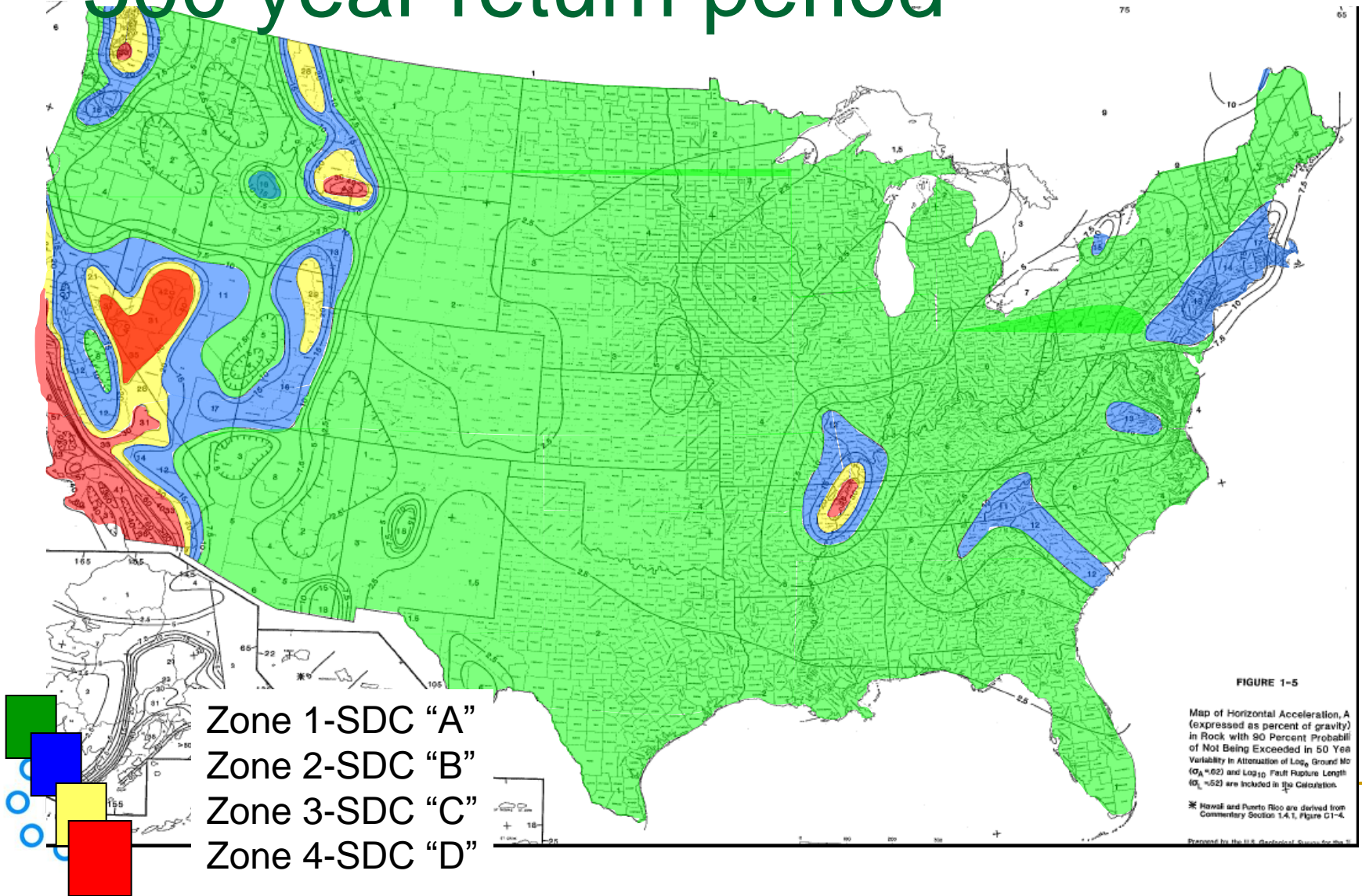
- NHI Course 130081: LRFD for Bridge Superstructures (4 day)
- NHI Course 130092: LRFR for Highway Bridges (4 day)
- NHI Course 130093: LRFD Seismic Analysis and Design of Bridges (4 ½ day)
- NHI Course 130094: LRFD Seismic Analysis and Design of Tunnels, Walls and other Geotechnical Features (4 day)
- NHI Course 130095: LRFD Design and Analysis of Skewed and Horizontally Curved Steel Bridges (2 ½ or 4 ½ days)

FHWA Resource Center Seismic Design and Retrofit Seminar

Introduction to AASHTO LRFD Seismic Design
Specifications, Guide Specifications,
and FHWA Seismic Retrofit Manual for
Low to Moderate Seismic Regions (1 ½ days)

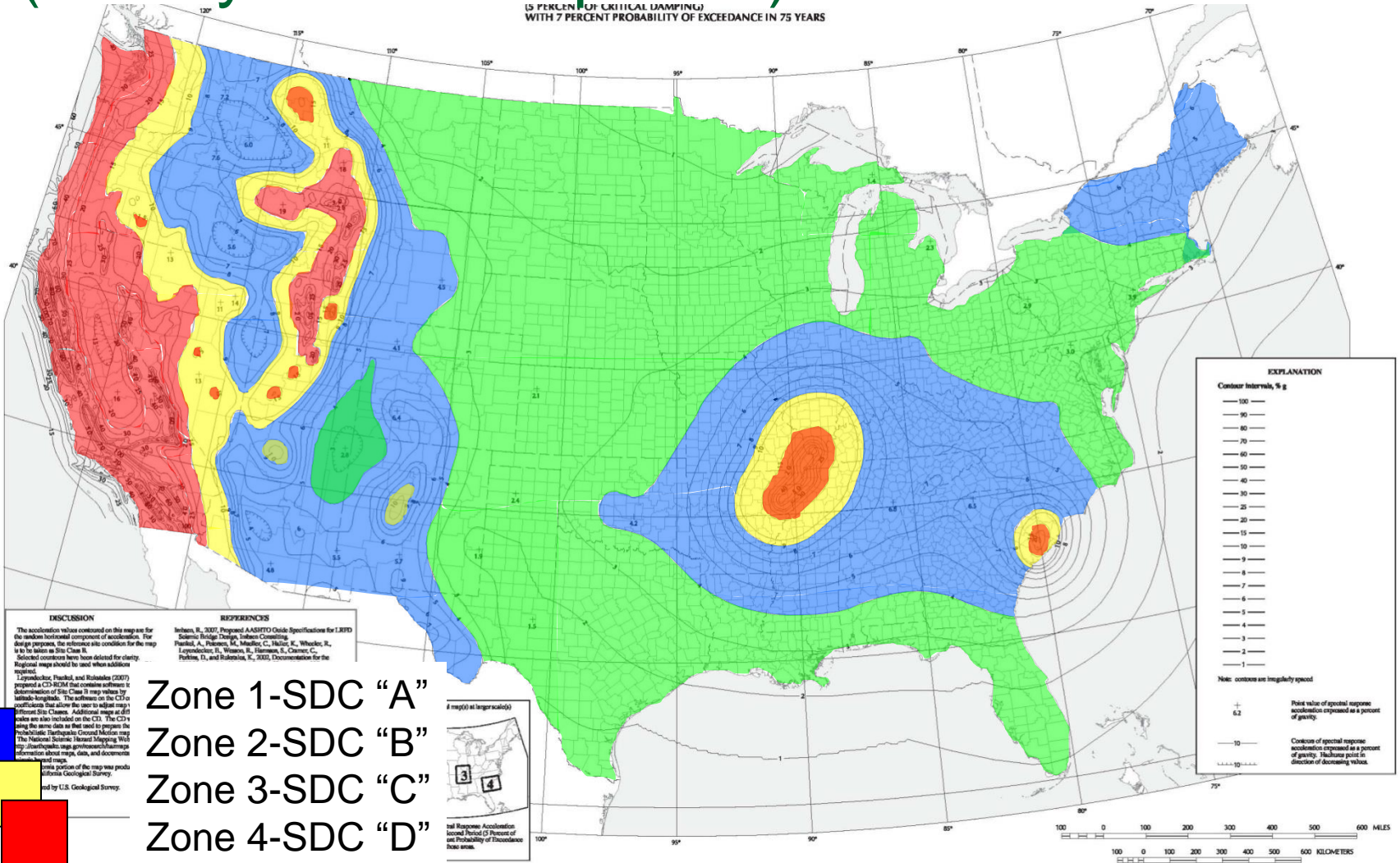
Contact Tom Saad, FHWA, to
schedule this seminar

2007 specifications (1988 maps) 500 year return period



LRFD & Guide Specs (1000 year return period)

(5 PERCENT OF CRITICAL DAMPING)
WITH 7 PERCENT PROBABILITY OF EXCEEDANCE IN 75 YEARS

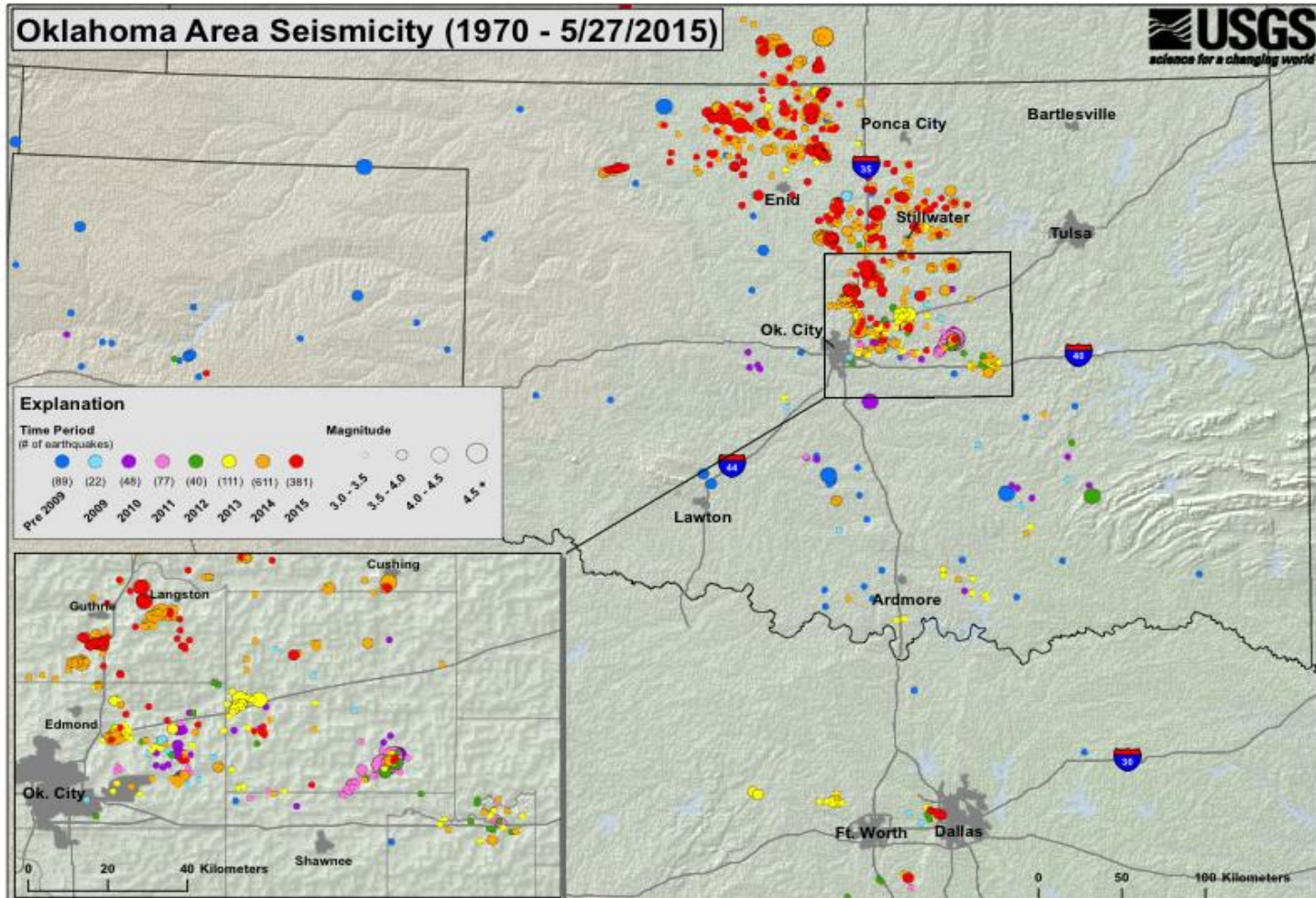


- Zone 1-SDC "A"
- Zone 2-SDC "B"
- Zone 3-SDC "C"
- Zone 4-SDC "D"

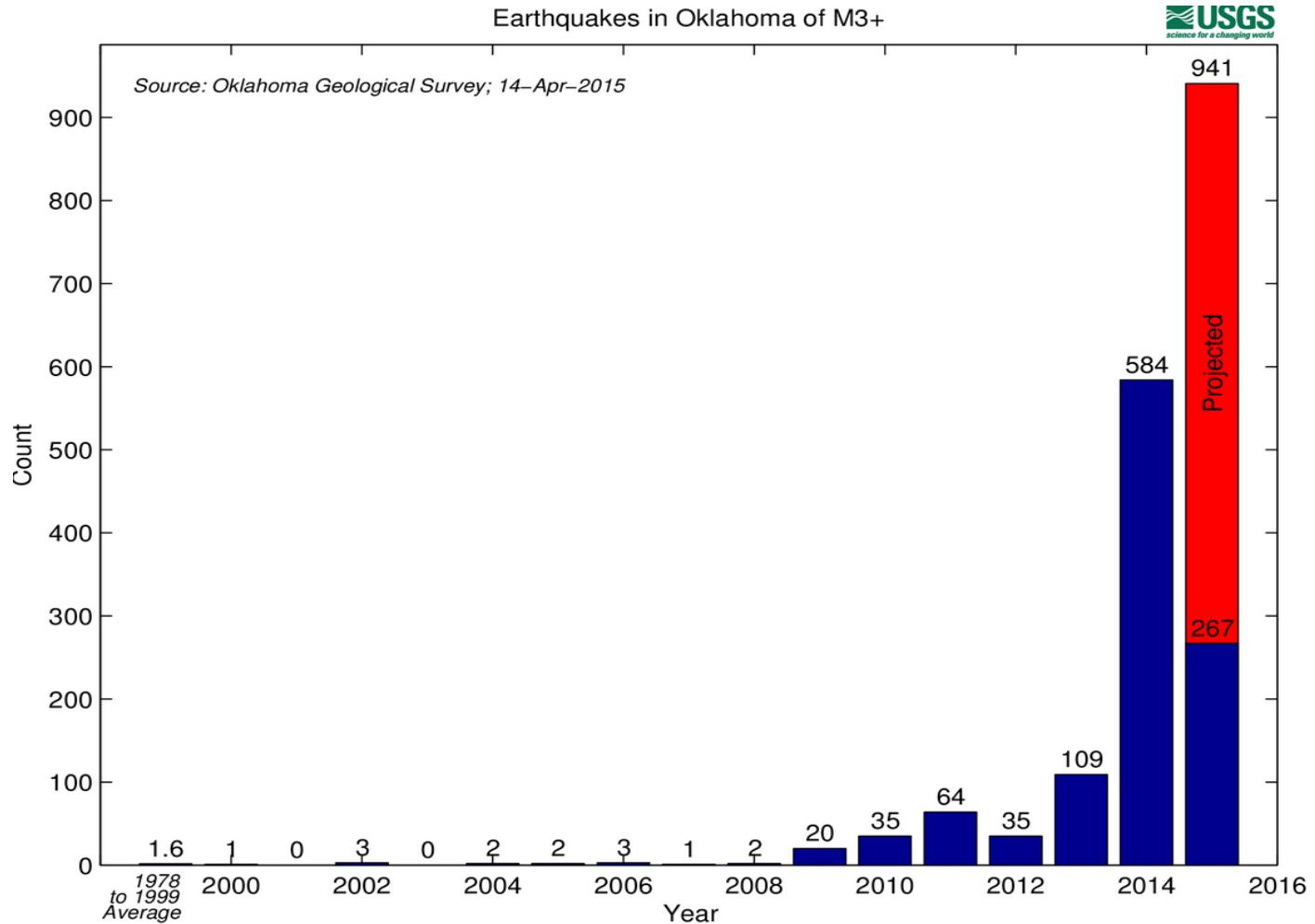
SITE CLASS "E"

Recent Seismic Activity

Seismicity Map - 1970 to May 27, 2015



Future Seismic Activity





FHWA LRFR Implementation Webinar Series

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To further support State's efforts in meeting the NBIS's requirements in load rating and FHWA's initiative of implementing the LRFR method, a series of webinars have been planned to provide continued awareness for local, regional, and State transportation agencies.

No. 13: Bridge Load Rating for Overweight Load Permitting (10/20/2014)

No. 14: Bridge Load Rating for Overweight Load Permitting - State's Practice (1) (12/18/2014)

No. 15: Bridge Load Rating for Overweight Load Permitting - State's Practice (2) (03/25/2015)

No. 16: Bridge Load Rating for Overweight Load Permitting - State's Practice (3) (05/19/2015)

Recordings are available at
<https://www.fhwa.dot.gov/bridge/loadrating/>

Southeast States Load Rating Program Peer Exchange – Sept. 1-3, 2015, Atlanta, GA

- AL, FL, GA, KY, LA, MS, NC, SC, and TN
- Discussion Topic Priorities
 - Staffing needs
 - Deterioration in load rating analysis
 - Types of posting signs
 - Re-rating triggers
 - Rating of concrete box culverts
 - Automation for rating and permitting
 - Software requirements/3D needs
 - Responsibility for local bridge ratings and postings
 - LRFR vs. LFR
 - Metric 13 and 14

SHRP 2

- Building bridges more quickly – [Innovative bridge designs for rapid renewal](#)
- Building on the proper foundation – [GeoTechTools.org](#)
- Using Specifications that deliver the right project – [Performance specifications for rapid renewal](#)
- Designing for longer-lasting bridges – [Service life design for bridges](#)
- Generating new LRFD Specifications
- Inspecting concrete bridge decks with greater accuracy
- New portable technologies to map and inspect tunnel linings

LTBPP – The Bridge Portal

- Contact your State's LTBP Coordinator to evaluate the Bridge Portal
- Data and analysis infrastructure to manage, organize and utilize bridge data
- Integrate LTBP data with other data such as NBI, weather and traffic
- Provides a single source of data for bridge researchers, owners and other stakeholders

QUESTIONS

23 Metrics

Preliminary Metric Results of PY 2015 NBIS Program Review

