



Bridge Condition Surveys

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Construction and Maintenance



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“Modification of bridge projects funded by any category may occur only after an analysis of the following:”

- An appraisal of the structural adequacy and condition of the existing structure
- An economic study of replacement versus modification
- A study of the method and handling of traffic during construction

Appraisal of Structural Adequacy

- Load rate existing structure
 - Load rating spreadsheet handles most structure types
 - BAR7 (Bridge Analysis and Rating) for most other structure types
 - Other (we find Risa to work well)
- Minimum HS24 Operating Rating
 - Always Rate Superstructure
 - Rate Substructure if have reason to (distress or non-typical design)
 - Rate Deck in unique situations

Culvert Condition Survey

- Review NBI Reports
 - Load rate only if condition show overstressed condition
 - Decide whether or not field inspection required based on review
- Email (internal) to Indicate Adequacy to Widen
 - Email from PE to Project Development
 - Summarize reported condition
 - Make recommendations for rehabilitation
 - District personnel will need to determine quantities for repair items
- Simple report (external) to Indicate Adequacy to Widen
 - Method of assessment
 - Recommendations

- Inspect Bridge
 - Review NBI Reports at a Minimum
 - Visit Site
- Prepare Report
 - Detail condition of components
 - Make recommendation of suitability for widening/rehabilitation
 - Make recommendations for rehabilitation if applicable
 - Provide cost estimate for rehabilitation if applicable

- NBI Folder Review - AssetWise
- Determine Access Needs
 - Snooper?
 - Boat?
 - GoPro Camera with 20' Extension Pole
 - Traffic Control (For deck inspection and access needs)
- Type of Inspection
 - Predominantly Visual
 - Hammer Sounding (usually limited)
 - Concrete Sampling (if chlorides suspected-CST/M&P))
 - Paint Samples (prefer for CST/M&P or Consultant to take sample)

Points of Inspection

- Overall Condition (Big Picture)
- Channel/Scour
- Abutments
- Interior Bents
- Superstructure
- Deck
- Approach Slab
- Joints
- Railing (Type, Height, Condition)
- Drains
- Utilities
- Environmental (ie. Nesting Swallows)

Points of Inspection

- Overall Condition (Big Picture)
 - Settlement
 - Alignment
 - Any Structure Modification



Points of Inspection

■ Abutments

- Bridge Squeeze (Bkwl Rotation, Wingwall Cracking)
- Embankment Settlement
- Bearings
- Riprap
- Retaining Walls



Points of Inspection

■ Interior Bents

- Stress Cracks Cap
- Spalls/Delaminations (chloride testing?) (over estimate quantity)
- Transverse Column Cracking (Bridge Squeeze)



Points of Inspection

▪ Superstructure

- Girder Condition
- Bearing Condition
 - Early Elastomeric Pad Design
 - Deteriorated Pads
- Paint Condition
 - Repaint?
 - Consider Environment
 - Aesthetics
 - Zone paint?
 - Spot paint?



Points of Inspection

- Deck
 - Cracking (map/intersecting)
 - Discoloration/Staining/Efflorescence
 - Surface Condition/Spalling/Delamination
 - Asphalt Overlay Thickness and Condition



Points of Inspection

■ Approach Slab

- Is one present?
- Condition
- Joint at bridge
- Joint at end – Is concrete pavement present



Points of Inspection

■ Joints

- Type
- Condition – Listen from below (banging sound)
- Seals – Visual and look for staining
- Debris – Note presence of debris



Points of Inspection

- **Railing**

- Type – Was it retrofitted?
- Height
- Transition
- Condition
- Damaged

Other Issues of Interest

- **Railroad Tracks**
 - Location
 - Embankments
- **Utilities**
 - Type
 - Location
- **Environmental**
 - Nesting Swallows
 - Human Presence
- **Time of Inspection and weather conditions**

- **Load Rating**
- **Description of Structure**
- **Findings**
 - Assessment of condition of each component
 - Applicable quantity estimates for repair
- **Recommendations**
- **Cost estimate for rehabilitation**

Rehabilitation Cost Estimate

LIST NO.	ITEM	DESCRIPTION	QTY	UNIT	COST/UNIT	COST
1	0446 6028	SPOT CLEAN & PAINT EXIST STR (SPL PROT SYS)	LS	1	\$150,000	\$150,000
2	0496 2013	REMOVE STR (BRIDGE SLAB)	1	EA	\$60,000	\$60,000
3	0422 2001	REINF CONC SLAB	4,370	SF	\$25	\$109,250
4	0450 6004	RAIL (TY T221)	280	LF	\$100.00	\$28,000
5	0499 6001	ADJUST STEEL SHOES	8	EA	\$5,000	\$40,000
6		Bridge Widening, 16' wide and 140' long	2,240	SF	\$100	\$222,400

TOTAL ESTIMATED COST FOR BRIDGE REHABILITATION AND WIDENING: \$609,650

Not including Traffic Control, Mobilization, and Other Incidentals

Request Bridge Division perform Condition Survey

TxDOT

- Submit request for condition survey to Project Management Engineer
- Please allow minimum 4 months to complete
- Provide someone to accompany BRG Staff
- Provide traffic control for deck inspection and potential snoopier truck access

Consultants

- Discuss during procurement about work authorization for bridge condition survey.



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Safety: Mission
ZERO

Questions



Safety Never Stops!