2014 AASHTO Subcommittee on Bridges and Structures Annual Meeting

Technical Subcommittee T8 for Movable Bridges

Historic Bridge Evaluation
(Louisiana’s Historic Bridges)

By: Darrell Berry, PE, SE
June 23, 2014
Introduction and project team

- Sponsored by:
  - Louisiana Department of Transportation and Development (LADOTD)
  - Federal Highway Administration (FHWA)
- Historic Bridge Inventory Committee
  - LADOTD
  - FHWA
  - State Historic Preservation Office (SHPO)
- Consultant
  - Mead & Hunt with sub consultants
Overall project purpose

- Comply with federal historic preservation regulations
- Identify bridges eligible for listing in the National Register
- Identify bridges that are good candidates for future preservation
- Develop Programmatic Agreement (PA) to streamline project development
Historic context study
Organize and analyze bridges
Conduct field survey
Evaluate National Register eligibility
Identify bridges with preservation potential

Public involvement and consultation

2012
2013
2014
Historic bridges

Bridge Eligibility

150 Bridges

3%

4,579
TOTAL BRIDGES

97%

4,429 Bridges

Determined Eligible or Listed in National Register

Determined Not Eligible
Historic bridges

Bridge Types

150 TOTAL BRIDGES
28 Excluded

Concrete Arch
Concrete Slab, Beam & Girder
Concrete Rigid Frame
Culvert Pre-1946

Movable
Post-1945 Common Types
Steel Beam & Girder
Truss

Pony
Through

Bascule
Lift - Span & Span Tower
Lift Tower
Pontoon Swing
Swing - Cable Stayed
Swing - Pony Truss
Swing - Through Truss
Swing - Plate Girder
Identify Preservation Priority bridges

- Develop and apply methodology
- Categorize historic bridges
  - Preservation Priority: Commitment to maintain and rehabilitate
  - Preservation Candidate: Maintain when prudent and feasible
  - Non-Priority: Can remove and replace when needed
Preservation prioritization methodology overview
Condition score

- Comparative tool
- Indicator of preservation potential
- Isolates factors that typically determine whether preservation is prudent and feasible
- Sort condition scores (high to low)
Apply Additional Considerations

Condition Score ≥ 40, Apply Additional Considerations

Check if Bridge Can Meet These Considerations:

☐ 1. **Rehabilitation**: Good potential for rehabilitation that follows Secretary of the Interior’s Standards or rehabilitation not anticipated

☐ 2. **Geometrics**: Meets AASHTO low volume standards (where ADT ≤ 400) or Louisiana Minimum Design Guidelines (where ADT > 400) or satisfactory geometrics

☐ 3. **Load**: Within 90% (or better) of acceptable live load capacity

☐ 4. **Detour**: Acceptable detour for load posted bridge (< 10 miles)

☐ 5. **Navigation Control and Restrictions**: Navigation control required and clearances adequate (if applicable) and no restrictive factors
Additional Consideration 1 - Rehabilitation
Additional Consideration 1 - Rehabilitation
Additional Consideration 2 - Geometrics
Additional Consideration 3 - Load
Additional Consideration 4 - Detour
Additional Consideration 5 – Navigation Control and Restrictions
Additional Consideration 5 – Navigation Control and Restrictions
Additional Consideration 5 – Navigation Control and Restrictions
Best of type

Pontoon swing

Swing – cable stayed

Swing – plate girder

Swing – pony truss

Pony truss

Swing – through truss
Results summary

- 30 Bridges (25%)
- 33 Bridges (27%)
- 59 Bridges (48%)

122 Total Bridges

- Preservation Priority
- Preservation Candidate
- Non-Priority

Bridge Preservation
Preservation Priority
Bridge Examples
Preservation Priority

**Historic Bridge Pool By Type**

Calculate Condition Score (Scale = 0 to 93)

<table>
<thead>
<tr>
<th>NBI Item</th>
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<tbody>
<tr>
<td>51/29</td>
<td>Roadway Width Compared to Current ADT</td>
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<tr>
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<td>Approach Width Compared to Bridge Roadway Width</td>
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Condition Score ≥ 40, Apply Additional Considerations

Condition Score < 40, Bridge is Non-Priority

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**DETERMINE CATEGORY FOR EACH BRIDGE**

- **Preservation Priority**: Bridge Meets All Additional Considerations Numbers 1, 2, 3, 4 and 5 or "Best of Type"
- **Preservation Candidate**: Bridge Must Meet Additional Consideration Number 1, (May Meet Numbers 2, 3, 4 and/or 5)
- **Non-Priority**: Bridge with Low Condition Score OR Bridge Does Not Meet Additional Consideration No. 1
Preservation Priority

Vertical Lift - 1964

Recall No. 009460

Vermillion Parish

Facility Carried: LA0014BY

Facility Crossed: Vermillion River/ Abbeville
Preservation Priority

✓ Consideration 1 - Rehabilitation

✓ Consideration 2 - Geometrics

✓ Consideration 3 - Load

✓ Consideration 4 - Detour

✓ Consideration 5 - Navigation Control and Restrictions
Preservation Priority

Concrete Arch – 1936

Recall No. 102237

Orleans Parish

Facility Carried: Local Road

Facility Crossed: City Park Lagoon
Preservation Priority

✓ Consideration 1 - Rehabilitation
✓ Consideration 2 - Geometrics
✓ Consideration 3 - Load
✓ Consideration 4 - Detour
✓ Consideration 5 - Navigation
  Control and Restrictions
Preservation Priority
– Best of Type
Pony truss swing – 1959
Recall No. 033700
Cameron Parish
Facility Carried: LA0082
Facility Crossed: Mermentau R./G. Chenier
Preservation Priority – Best of Type

✓ Consideration 1 - Rehabilitation
Consideration 2 - Geometrics
Consideration 3 - Load
✓ Consideration 4 - Detour
✓ Consideration 5 - Navigation Control and Restrictions
Preservation Candidate
Bridge Examples
Historic Bridge Pool By Type

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Determine Category for Each Bridge

**Preservation Priority:** Bridge Meets All Additional Considerations Numbers 1, 2, 3, 4 and 5 or "Best of Type"

**Preservation Candidate:** Bridge Must Meet Additional Consideration Number 1, (May Meet Numbers 2, 3, 4 and/or 5)

**Non-Priority:** Bridge with Low Condition Score OR Bridge Does Not Meet Additional Consideration No. 1
Preservation Candidate

Steel plate girder, double-leaf bascule - 1940

Recall No. 005800

Iberia Parish

Facility Carried: LA0086

Facility Crossed: Bayou Teche
Preservation Candidate

✓ Consideration 1 - Rehabilitation
✓ Consideration 2 - Geometrics
✓ Consideration 3 - Load
✓ Consideration 4 - Detour

Consideration 5 - Navigation Control and Restrictions
Preservation Candidate

Through truss – 1952

Recall No. 012548

Bossier Parish

Facility Carried:
LA0002

Facility Crossed:
Red River – Miller’s Bluff
Preservation Candidate

✓ Consideration 1 - Rehabilitation

Consideration 2 - Geometrics

✓ Consideration 3 - Load

✓ Consideration 4 - Detour

✓ Consideration 5 - Navigation Control and Restrictions
Preservation Candidate

Concrete girder – 1921

Recall No. 800106

Avoyelles Parish

Facility Carried: Cardinal Loop Road

Facility Crossed: Choctaw Bayou
Preservation Candidate

✓ Consideration 1 - Rehabilitation

✓ Consideration 2 - Geometrics

Consideration 3 - Load

✓ Consideration 4 - Detour

✓ Consideration 5 - Navigation Control and Restrictions
Non-Priority Bridge Examples
Non-Priority

### Preservation Priority
Bridge Meets All Additional Considerations Numbers 1, 2, 3, 4 and 5 or “Best of Type”

### Preservation Candidate
Bridge Must Meet Additional Consideration Number 1, (May Meet Numbers 2, 3, 4 and/or 5)

### Non-Priority
Bridge with Low Condition Score or Bridge Does Not Meet Additional Consideration No. 1

#### Historic Bridge Pool By Type

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#### Determine Category for Each Bridge
Non-Priority

Swing Plate Girder – 1935

Recall No. 002830

St. Charles Parish

Facility Carried: LA0631

Facility Crossed: Bayou Des Allemands
Consideration 1 - Rehabilitation
Consideration 2 - Geometrics
Consideration 3 - Load

✓ Consideration 4 - Detour

Consideration 5 - Navigation Control and Restrictions
Non-Priority

Concrete Rigid Frame - 1923

Recall No. 054920

Pointe Coupee Parish

Facility Carried: LA0010

Facility Crossed: Bayou Morris
Non-Priority

- Consideration 1 - Rehabilitation

✓ Consideration 2 - Geometrics

✓ Consideration 3 - Load

Consideration 4 - Detour

✓ Consideration 5 - Navigation Control and Restrictions
Next steps
Develop Programmatic Agreement
Publication

- Highlight themes from context
- Historic bridge biographies
- Targets popular audience
- Available for download and printing from project website
Questions or Comments?

Email: Darrell.berry@meadhunt.com