Ohio's Historic Bridge Inventory Updated: Innovation and Technological Advances of the Groovy ‘60s

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Project Background

Previous Ohio historic bridge inventories

- **1st** – 1983: bridges built before 1941
- **2nd** – 1990: bridges built 1941-1950
- **3rd** – 2004: bridges built 1951-1960
Project Background

4th Historic Bridge Inventory

• Initiated in 2017
• Bridges built 1961-1975
National Register of Historic Places

- 50 years of age
- Areas of significance
  - History
  - Engineering/Design
Inventory Purpose

Inventories conducted to comply with:

• Programmatic Agreement among FHWA, ACHP, Ohio SHPO, & ODOT
• National Bridge & Tunnel Inventory & Inspection Standards
Current Inventory: 1961-1975

- Phase 1 – Historic Context Study
- Phase 2 – Evaluation of bridges for National Register eligibility
Historic Context

Themes

• Trends in bridge funding & legislation
• Bridge engineering, research & development
• Aesthetics
Context: Funding & Legislation - National

- 1966 - U.S. Department of Transportation established
- Environmental emphasis
- 1968 – National Bridge Inspection Standards
1960s
• Funding for state & local roads and bridges
• Expansion of Interstate System
1970s

• ODH becomes ODOT
• Upgrading Ohio Turnpike to Interstate standards
Structure types nationally – More than 156,000 bridges

- Steel stringer or multi-beam/girder: 40%
- Prestressed concrete stringer or multi-beam/girder: 16%
- Prestressed concrete box beam/girder: 8%
- Concrete box beam/girder: 5%
- Concrete slab: 7%
- Concrete tee beam: 5%
- Other: 19%

Based on recorded type of main span in NBI data.
Structure types in Ohio – Almost 9,000 bridges

- Steel beam/girder: 58%
- Concrete slab: 23%
- Prestressed concrete box beam: 14%
- Other: 5%
Comparison of four common structure types

- Steel stringer or multi-beam/girder: 40 U.S. Pool, 58 Ohio Pool
- Prestressed concrete stringer or multi-beam/girder: 16 U.S. Pool, 1 Ohio Pool
- Concrete slab: 7 U.S. Pool, 23 Ohio Pool
- Prestressed concrete box beam/girder: 8 U.S. Pool, 14 Ohio Pool
Steel multi-beam
Context: Engineering

Prestressed box beam
Concrete beam

Concrete slab
Context: Engineering

Thomas Edison Memorial Bridge
New Materials & Innovations – Weathering Steel

• Cor-Ten weathering steel
• Frederick-Garland Road Bridge 770 in Miami County
New Materials & Innovations – Aluminum

• Leawood Pedestrian Bridge, Leawood area of Columbus

• Aluminum through-arch pedestrian bridge, built 1969-70
New Materials & Innovations – Integral & Semi-integral Bridges
New Materials & Innovations – Cincinnati Skywalk System

- 1964- CBD Urban Design Plan
- First segment completed in 1975
Research & Development

- 1962 – Ohio State University research complex – ODH partnership
- 1965 – Ohio is first in US in federal-aid research & planning funds
- Partnership established the annual Ohio Highway Engineering Conference
- Research examples
Context: Aesthetics

“Welcome to Ohio”
steel arch - 1970

Bridge over Little Miami River - 1850 and 1972

Snow Road Bridge - 1968
Inventory: Next Step
Phase 2: Evaluation

- Program Comment for Common Post-1945 Concrete & Steel Bridges
- Eliminates review of common/standardized types
  - Steel multi-beam
  - Reinforced & prestressed-concrete slab
  - Reinforced & prestressed-concrete beam & girder
  - Culverts & reinforced-concrete boxes
Phase 2: Evaluation

• Identify common bridge types with exceptional significance
• Focus on uncommon types
  – Arch
  – Truss
• Streamlines the evaluation process
1961-1975 Historic Bridge Inventory

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