Dyckman Avenue over Black River: A Movable Bridge Rehabilitation

South Haven, Michigan
Summary of Presentation

- Project Location
- History
- Condition Assessment
- Funding
- Design
- Construction
- Acknowledgements
- Questions
Location of South Haven, Michigan
Location of Dyckman Ave Bridge

Dyckman Avenue Bascule Bridge Rehabilitation 2014-15

March 23, 2016
History

- Four Movable Bridges at Dyckman Avenue crossing of the Black River
- First Bridge constructed in 1856
  - Construction cost was $1,120
  - Timber drawbridge
- Second Bridge constructed in 1877
  - Timber drawbridge
History

- Third Bridge constructed in 1890
- Steel through Truss Swing Bridge
- In service for 78 years
History

- Current Bridge constructed in 1967-68
- Designed by State Highway Department
- Cost of Construction was $782,157
- Double Bascule Span
- Hydraulic Cylinders as Prime Mover
General Plan of Structure

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Bascule Span Installation

History

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Condition Assessment

- Identify Scope of Rehabilitation Needs
- Review 1993 Repairs
- Work Started in 2007
- Efforts Continued through 2010
Concrete Deck

Condition Assessment

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Traffic Gate Operator

Condition Assessment
Bascule Span Sidewalk

Condition Assessment
Bascule Span Deck Grating

Condition Assessment

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Floor Beams

Condition Assessment
Main Cylinder

Condition Assessment
Brake Cylinder

Condition Assessment

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Position Sensor

Condition Assessment

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Tail Bearing

Condition Assessment
Hydraulic Power Unit

Condition Assessment
Hydraulic Controls

Condition Assessment

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Hydraulic Control Tubing

Condition Assessment

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Condition Assessment

- Concrete Deck Overlay
- Riveted Steel Grid Deck and Floor Beams
- Non-skid Steel Plate Sidewalks
- Submarine Cables
- Hydraulic Cylinders, Power Units, and Controls
- Scour Countermeasures
- Shimming and Balancing
Funding

- Local Bridge Program Application Submitted in 2009, 2010, and 2011
- Regional Bridge Council Commitment
- Movable Bridges considered Major Structures
- Selected for Funding in 2014 FY
Funding

- Total Construction Cost - $2,498,500
- Local Bridge Program - $1,573,200
- Small Urban Program - $375,000
- Local Funding - $550,300
- Engineering Fees - $607,500
Design Phase

- Great Lakes Engineering Group, LLC – Underwater Inspection/Scour Mitigation
- Hardesty & Hanover – Structural, Mechanical & Electrical Engineering
- City Staff – Traffic Control Plan
- Spicer Group – Construction Observation & Administration
Open Steel Grid Decking

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Design Phase

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Non-skid Steel Plate Sidewalks

Design Phase

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Construction Phase

- **2014-15 Winter Construction**
- **Construction started October 13, 2014**
- **Completion date of April 30, 2015**
- **Long Lead Time Items: Hydraulic Cylinders and Open Steel Grid Decking**
Deck Removals

Construction Phase

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New Floor Beams

Construction Phase

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Steel Curb Beam

Construction Phase

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Open Steel Deck Grid

Construction Phase

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Open Steel Grid Deck

Construction Phase
Non-skid Steel Plate Sidewalks

Construction Phase

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Submarine Cable

Construction Phase

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Submarine Cable

Construction Phase

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Hydraulic Power Unit

Construction Phase

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Hydraulic Control Valves

Construction Phase
Tail Lock Cylinder

Construction Phase

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Video of Opening

Construction Phase

Dyckman Avenue Bascule Bridge Rehabilitation 2014-15

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Acknowledgements

- MDOT Staff
- RBC and LBAB Volunteers
- Consultants
- Contractor (Anlaan Corporation)
- Citizens of South Haven
Questions