I-75 Over the Rouge River Deck Replacement
**The Facts**

- Originally opened in 1967, at a construction cost of $25 million
- 26 acres of concrete deck area
- 39 million pounds of structural steel
- 8,627 feet long (1.63 miles)

- More than 100,000 vehicles per day, 37 million vehicles per year
- Four 12-foot lanes, 5-foot inside shoulder and 9.5-foot outside shoulder in each direction
- River span has 100-foot clearance over the Rouge River (lowest crossing in the corridor)

**Largest bridge in Michigan!**

51st in the nation (by area)!

River piers bear on 50-foot diameter hollow caissons anchored to bedrock.
## Maintenance History - $65 Million Investment

<table>
<thead>
<tr>
<th>Year</th>
<th>Scope of Work</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>Latex overlay on southbound lanes</td>
<td>$2,534,250</td>
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<tr>
<td>1977</td>
<td>Latex overlay on northbound lanes, glare screen</td>
<td>$1,897,205</td>
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<tr>
<td>1981</td>
<td>Fencing and railing retrofit</td>
<td>$92,742</td>
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<tr>
<td>1989</td>
<td>Pin and hanger replacement, joint replacement, railing repairs and lighting replacement</td>
<td>$20,680,095</td>
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<td>1994</td>
<td>Emergency pier repair (37, 38, 39 and 40), external post tensioning</td>
<td>$3,493,526</td>
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<tr>
<td>1996</td>
<td>Emergency pier replacement</td>
<td>$2,399,198</td>
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<tr>
<td>1998</td>
<td>Emergency pier repair (38 and 39), external post tensioning</td>
<td>$1,153,722</td>
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<tr>
<td>2002</td>
<td>Modular joint replacement, shoulder overlay, deck patching</td>
<td>$6,581,000</td>
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<td>2003</td>
<td>Steel beam full paint</td>
<td>$15,745,197</td>
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<td>2007</td>
<td>Emergency pier cap repair (7 and 11)</td>
<td>$269,180</td>
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<tr>
<td>2008</td>
<td>Pier repair due to tanker crash</td>
<td>$623,010</td>
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<tr>
<td>2009</td>
<td>Pressure relief joints</td>
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<tr>
<td>2009</td>
<td>Partial paint to repair high-load hit</td>
<td>$587,474</td>
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<tr>
<td>2010</td>
<td>Substructure repair (42 piers), downspout replacement, railing repair, steel repairs</td>
<td>$7,496,891</td>
</tr>
</tbody>
</table>
I-75 over Rouge River and Fort Street

Existing Bridge Deck – Poor Condition

Major deck patching operations required in the past.
Past 40 years maintenance was performed (cost of $65M)

Past repairs had minor impact on traffic

Now bridge deck replacement is needed

Deck replacement has significant impact to traffic

Cost for deck replacement is $80M (2017-2018)

Total cost of rehabilitation = $145M

Extended service life of 50 years

A new structure cost could be more than $400M
Scope of Work

- Deck replacement, with some superstructure and substructure repairs
- Aesthetic treatments
- Two-year construction beginning in early spring 2017
- Accelerated construction schedule
- Alternative construction options
- Southbound I-75 traffic to be detoured for two years
Stakeholder Engagement Plan
**Traffic During Construction**

1. Get in, Get out, Stay out
2. Provide a consistent plan control
3. Separate construction workers from motorists
4. Accelerate construction
5. Provide contractor access
6. Provide contractor flexibility
I-75 over Rouge River and Fort Street

Traffic During Construction

STAGE 1 WORK AREA

SB TRAFFIC DETOURED

STAGE 1

NB I-75 TRAFFIC

62'-7" EXISTING SOUTH BOUND I-75
3'-10" EXIST

132'-5"

15'-1"
2' SHY

12'-0"
LANE

12'-0"
LANE

12'-0"
LANE

9'-6"
SHLDR

STAGE 2 WORK AREA

SB TRAFFIC DETOURED

STAGE 2

NB I-75 TRAFFIC

62'-7" EXISTING NORTH BOUND I-75

62'-7" EXISTING SOUTH BOUND I-75

62'-7" EXISTING NORTH BOUND I-75

132'-5"

132'-5"

3'-10" EXIST

3'-10" EXIST

9'-6"
12'-0"
12'-0"
12'-0"
2' SHY
15'-1"

SHLDR
LANE
LANE
LANE
LANE

* LANE MAY BE CLOSED AT NIGHT FOR CONTRACTOR ACCESS. PROVIDE 2' MINIMUM SHY DISTANCE BETWEEN TRAFFIC AND PLASTIC DRUM.
Southbound I-75 Traffic Detoured
I-75 OVER GODDARD ROAD BRIDGE REPLACEMENT
Existing Conditions/Concerns

- Existing 2,000-foot-long bridge that spans:
  - Goddard Road
  - Sexton-Kilfoil Drain
  - Abandoned CN Railroad
  - Poor soils
- Bridge is in poor condition
- Sight distance over bridge is substandard
- Existing shoulder widths are too narrow
- Future maintenance costs will be significant if bridge is not replaced
I-75 Bridge over Goddard/Sexton Kilfoil

**Scope of Work**

- Remove the existing 33 span structure
- Construct smaller bridges over
  - Goddard Road
  - Sexton–Kilfoil Drain
- Utilize proven technology (not available in 1960s) to reduce bridge length
  - Place lightweight fill on poor soils
  - Place mechanically stabilized earth retaining walls
- Use non-corrosive carbon fiber reinforcement as opposed to steel to extend the life of the SB bridge
I-75 Bridge over Goddard/Sexton Kilfoil

- 140’ long – single span bridge
- Ten 72” deep, carbon fiber composite cable (CFCC) prestressed beams
- Longest CFCC prestressed deployed by MDOT to date
  - CFCC is a non-corrosive option for prestressed concrete beams
  - Design verified using finite element modeling
Beam casting began on April 10

CFCC cables produced by Tokyo Rope Canton, Michigan plant
I-75 Bridge over Goddard/Sexton Kilfoil

– SB bridge to be built in 2017
I-75 Bridge over Goddard/Sexton Kilfoil

Benefits

- Low-maintenance structure
- Standard shoulder widths
- Greater sight distance over the bridge
- Reduces future maintenance costs
- Improved aesthetics
I-75 Bridge over Goddard/Sexton Kilfoil

New Profile Will Improve Sight Distance

Proposed Profile

Existing Bridge Profile

Goddard Street

MSE Wall Typical

Sexton-Kilfoil Drain

MDOT
Need for a Big Bridge is Obsolete

Abandoned railroad track allows for a smaller bridge

Proven lightweight fill can be placed over poor soils
I-75 Bridge over Goddard/Sexton Kilfoil

New Smaller Bridges = Reduced Maintenance Costs

Existing bridge will require extensive improvements

New smaller bridges will have lower maintenance costs
SB I-75 South of Goddard Installing Lightweight Fill
SB I-75 Rouge River Bridge Continuing Bridge Deck Removal
SB I-75 Fort Street Sawing and Slabbing Deck Demolition
SB I-75 Fort Street Bridge Demolition Continues
SB I-75 Rouge River Bridge Demolition Continues
SB I-75 At Sexton-Kilfoil Drain Pouring Sub-footing for South Abutment
I-75 Bridge over Goddard Road

For More Information or Comments
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Visit the I-75 project website at:
www.75rougeriver.com