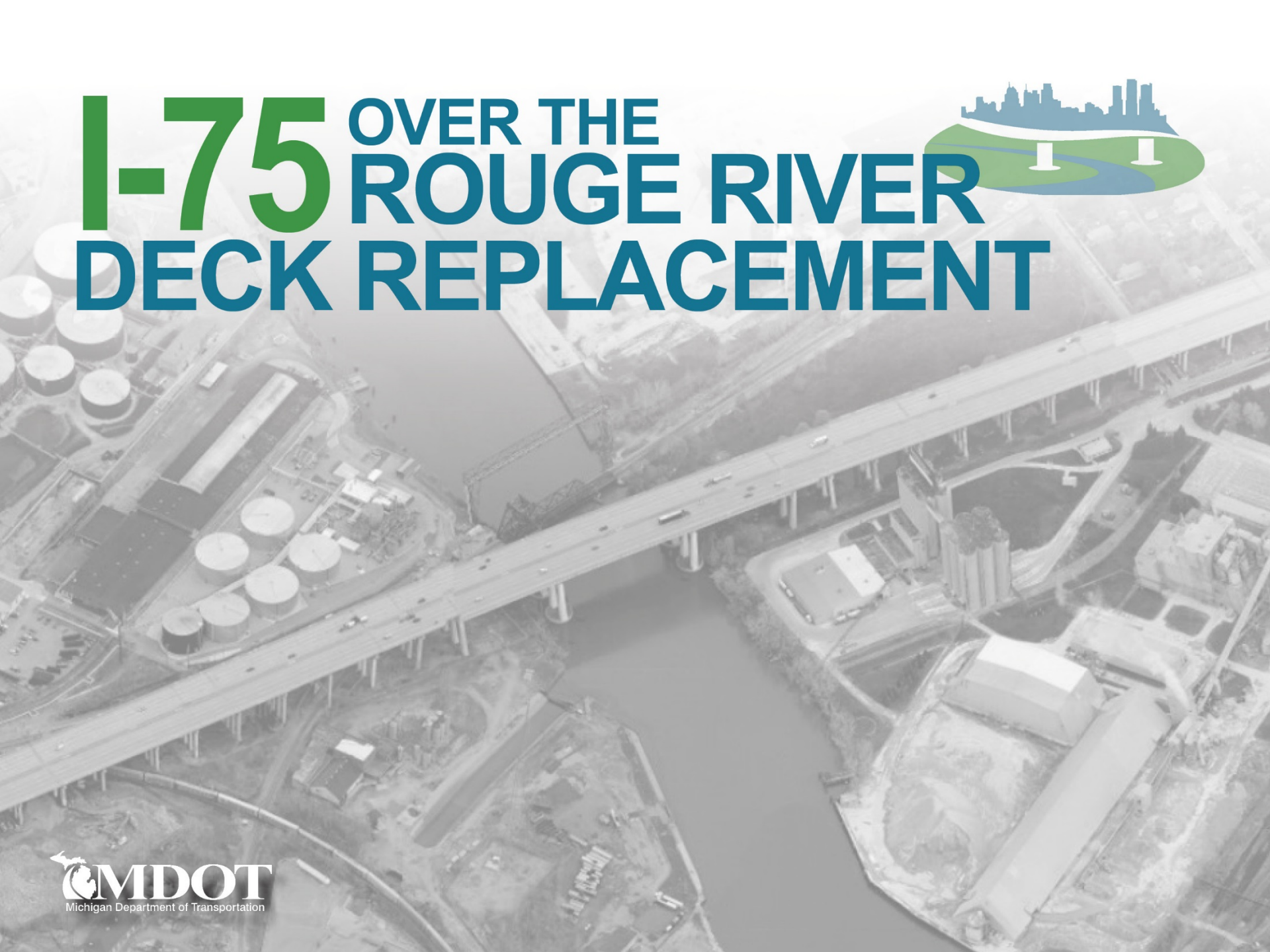
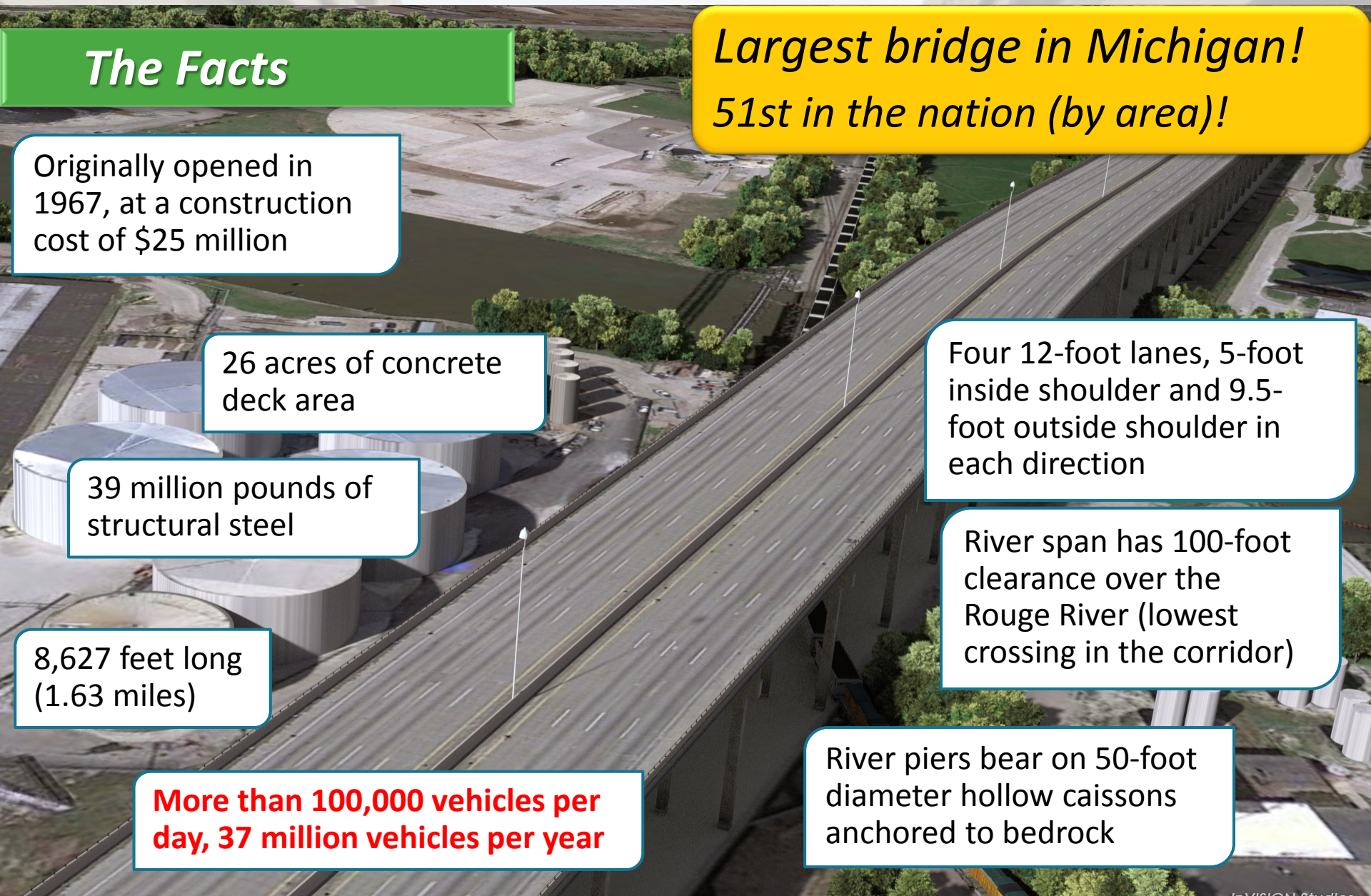
I-75 OVER THE ROUGE RIVER DECK REPLACEMENT



MDOT
Michigan Department of Transportation

I-75 over Rouge River and Fort Street



The Facts

Largest bridge in Michigan!

51st in the nation (by area)!

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)

River piers bear on 50-foot diameter hollow caissons anchored to bedrock

I-75 over Rouge River and Fort Street

Maintenance History - $65 Million Investment

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

I-75 over Rouge River and Fort Street

Existing Bridge Deck – Poor Condition

Major deck patching operations required in the past

I-75 over Rouge River and Fort Street

Bridge Management Reduces Overall Cost

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

I-75 over Rouge River and Fort Street

Scope of Work

Deck replacement, with some superstructure and substructure repairs

Aesthetic treatments

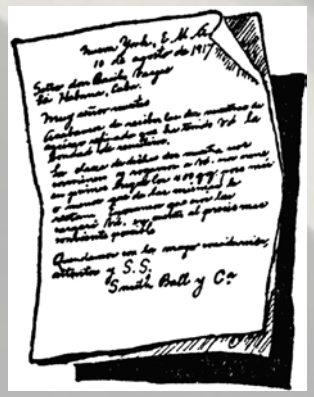
Two-year construction beginning in early spring 2017

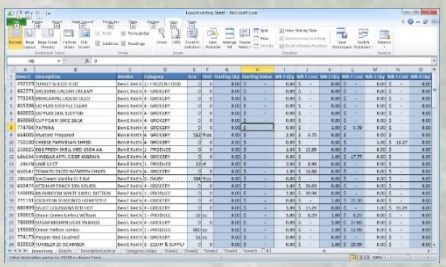
Accelerated construction schedule

Alternative construction options

Southbound I-75 traffic to be detoured for two years

Stakeholder Engagement Plan





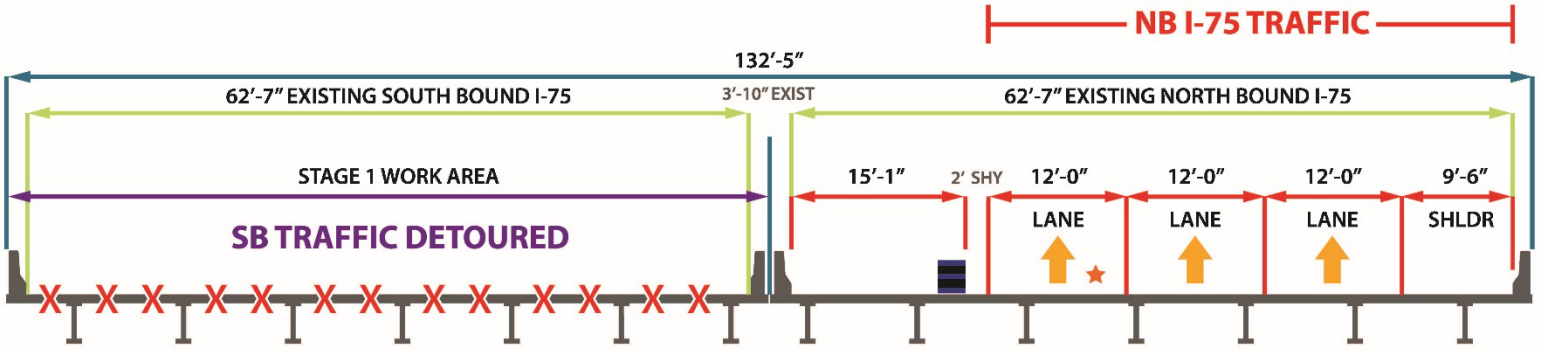
I-75 over Rouge River and Fort Street

Traffic During Construction

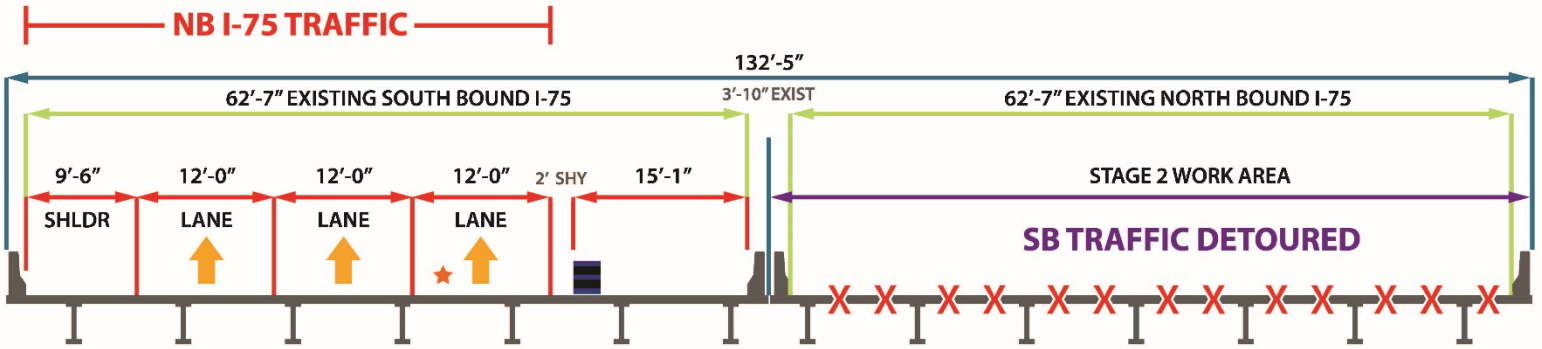
1. Get in, Get out, Stay out
2. Provide a consistent plan control
3. Separate construction workers from motorists
4. Accelerate construction
5. Provide contractor access
6. Provide contractor flexibility

I-75 over Rouge River and Fort Street

Traffic During Construction



STAGE 1



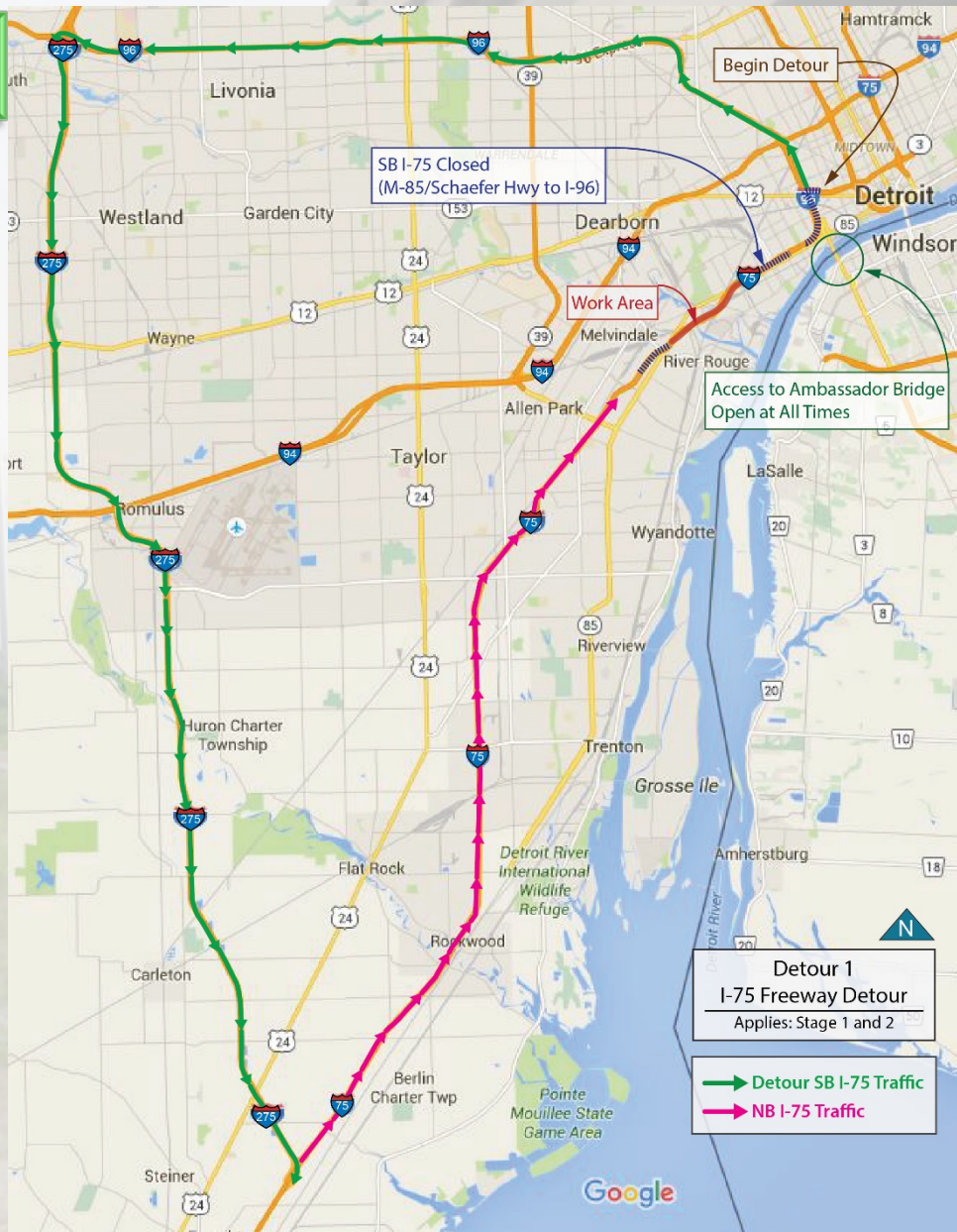
STAGE 2

★ LANE MAY BE CLOSED AT NIGHT FOR CONTRACTOR ACCESS. PROVIDE 2′ MINIMUM SHY DISTANCE BETWEEN TRAFFIC AND PLASTIC DRUM

I-75 over Rouge River and Fort Street

Traffic During Construction

Southbound I-75
Traffic Detoured



I-75 OVER GODDARD ROAD BRIDGE REPLACEMENT

MDOT

I-75 Bridge over Goddard/Sexton Kilfoil

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

MDOT

I-75 Bridge over Goddard/Sexton Kilfoil

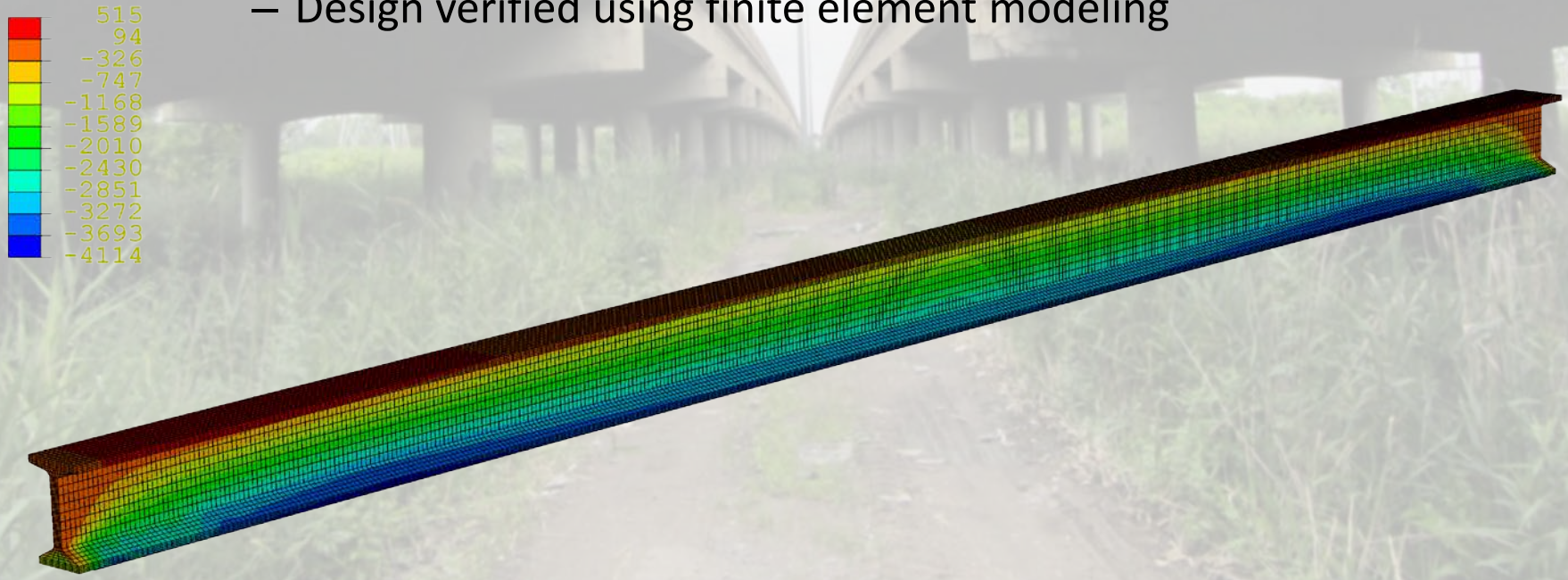
Scope of Work

- 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

MDOT

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

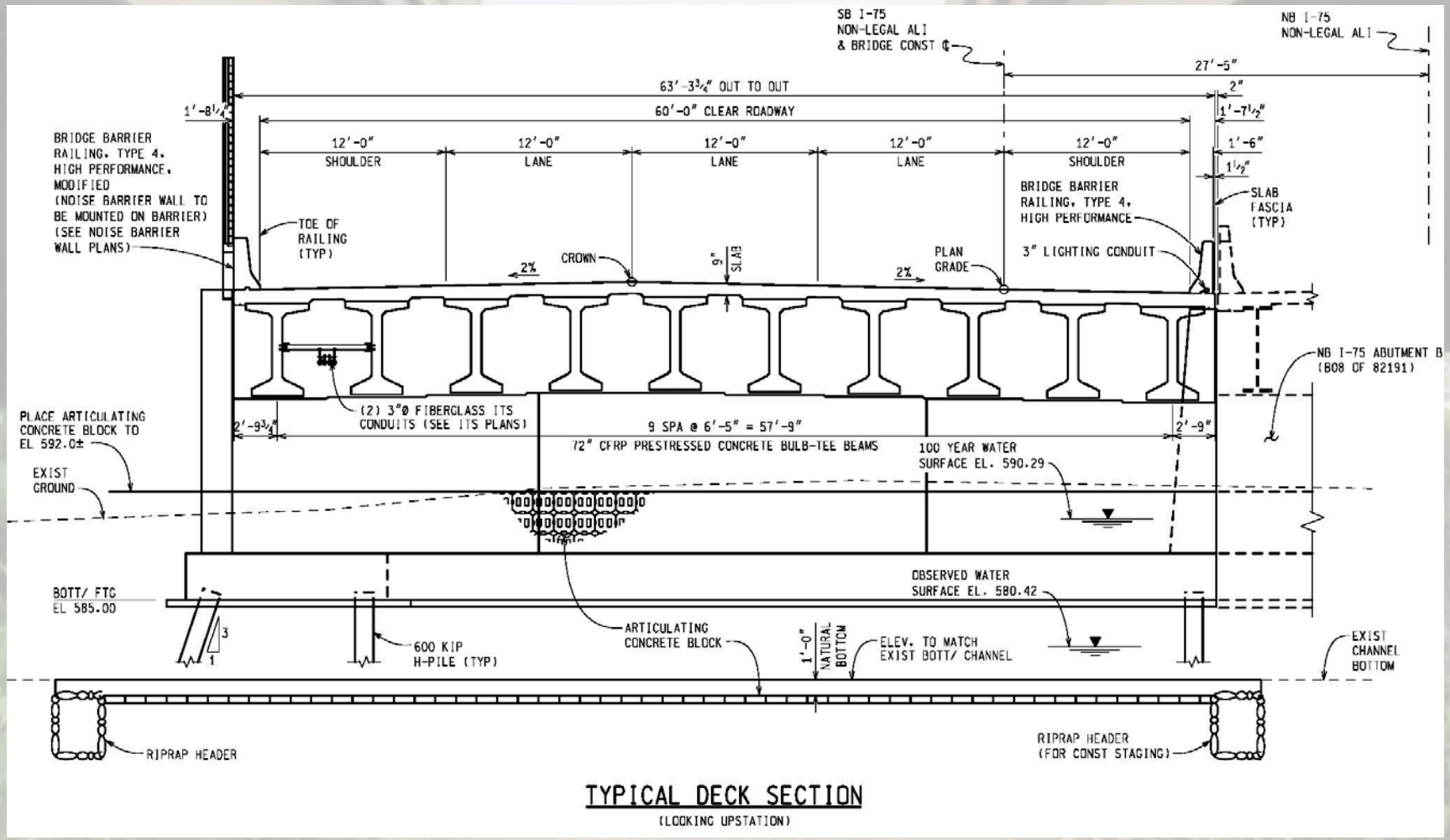


I-75 Bridge over Goddard/Sexton Kilfoil

- 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



TYPICAL DECK SECTION

(LOOKING UPSTATION)

I-75 Bridge over Goddard/Sexton Kilfoil

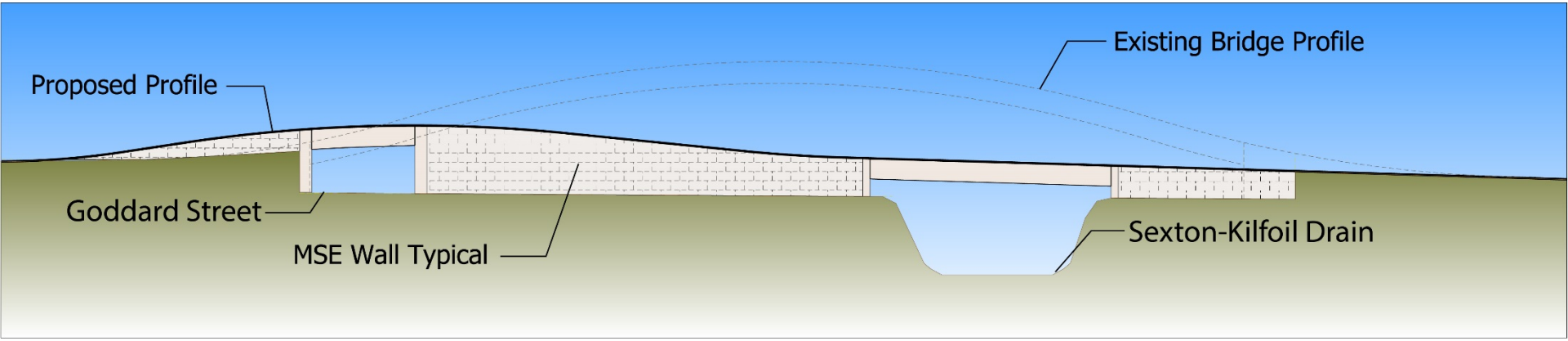
Benefits

- Low-maintenance structure
- Standard shoulder widths
- Greater sight distance over the bridge
- Reduces future maintenance costs
- Improved aesthetics

MDOT

I-75 Bridge over Goddard/Sexton Kilfoil

New Profile Will Improve Sight Distance



MDOT

I-75 Bridge over Goddard/Sexton Kilfoil

Need for a Big Bridge is Obsolete

Abandoned railroad track allows for a smaller bridge

Proven lightweight fill can be placed over poor soils

MDOT

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

MDOT

SB I-75 South of Goddard Installing Lightweight Fill

SB I-75 North of Rouge River Installing False Decking Utilizing MOOG Platform

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 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

Contact the
Taylor Transportation Service Center at:

313-375-2400

mdot-75rougeriver@michigan.gov

Visit the I-75 project website at:

www.75rougeriver.com

MDOT