

# I-91 Hartford

## BRIDGES PROJECT

Hartford IM 091-2(79)

Public Information Meeting  
May 20, 2014  
Bugbee Senior Center  
White River Junction, Vermont

## Introductions

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- Kristin Higgins, P.E., Project Manager (VTrans)
- Jennifer Fitch, P.E., Assistant Project Manager (VTrans)
- William Lammer, Project Design Engineer (VTrans)
- Jeremy Mackling, Construction Manager (PCL)
- Jill Barrett, Project Outreach Coordinator (FHI)

## Meeting Outline

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- Accelerated Bridge Program Overview
- Hartford IM 091-2(79) Project Planning Overview
- Project Planning Summary
- Project Construction
- Project Outreach Coordination
- Questions

## Accelerated Bridge Program (ABP)

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- Created in January 2012 – VTrans Structures Section
- Accelerated Project Delivery
  - 2 years from concept to construction
- Accelerated Bridge Construction (ABC)
- Prefabricated Bridge Elements and Systems
  - Delivered to and assembled on the project site
- Innovative Construction Techniques
  - Heavy lift or lateral slide
- Short Term Road Closures

## Accelerated Bridge Program Projects

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- 2013 – 12 project totaling just over \$11 M
  - 30% short duration road closures
- 2014 – 13 projects totaling just over \$23 M
  - 87% short duration road closures
- 2015 – 8 projects totaling just over \$15
  - 90% short duration road closures
- 2016+ - 6 projects under development
  - 100% short duration road closures

## Benefits of Accelerated Bridge Construction

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- Reduced Design and Construction Duration
- Reduced Road User Cost
- Safer for the workers and traveling public
- Eliminates need for temporary bridge construction or Interstate crossovers
- Reduced Impacts to:
  - Environmental resources
  - Utilities
  - Right-of-Way

# 1-91 Hartford Bridges Project Project Planning - Overview



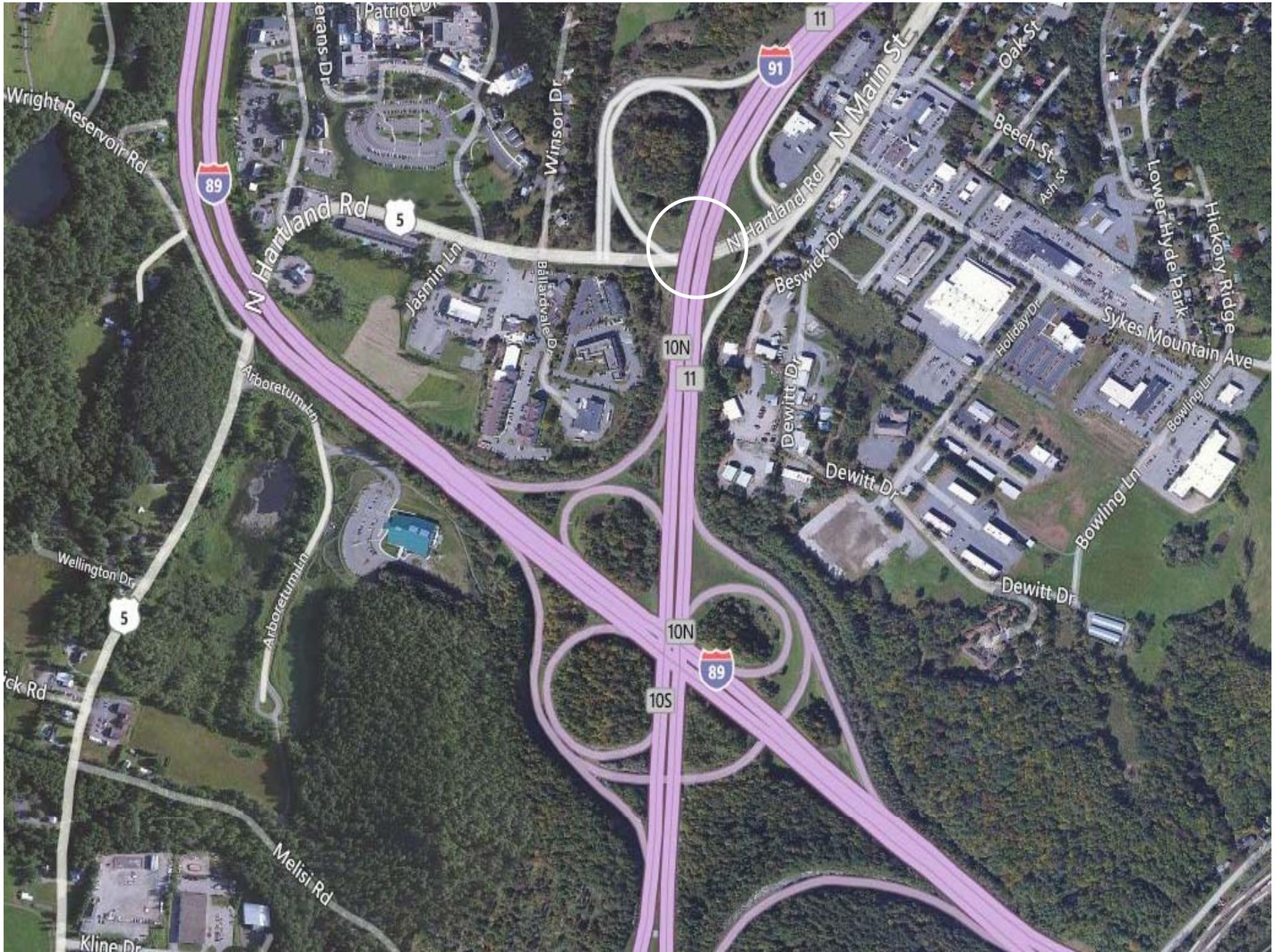
## Project Location

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- Located on Interstate 91 in Hartford, Vermont – WRJ
- MM 70 just north of Exit 11
- Less than 0.5 miles north of I-89/I-91 interchange
- Over US Route 5
- Located in a high traffic area

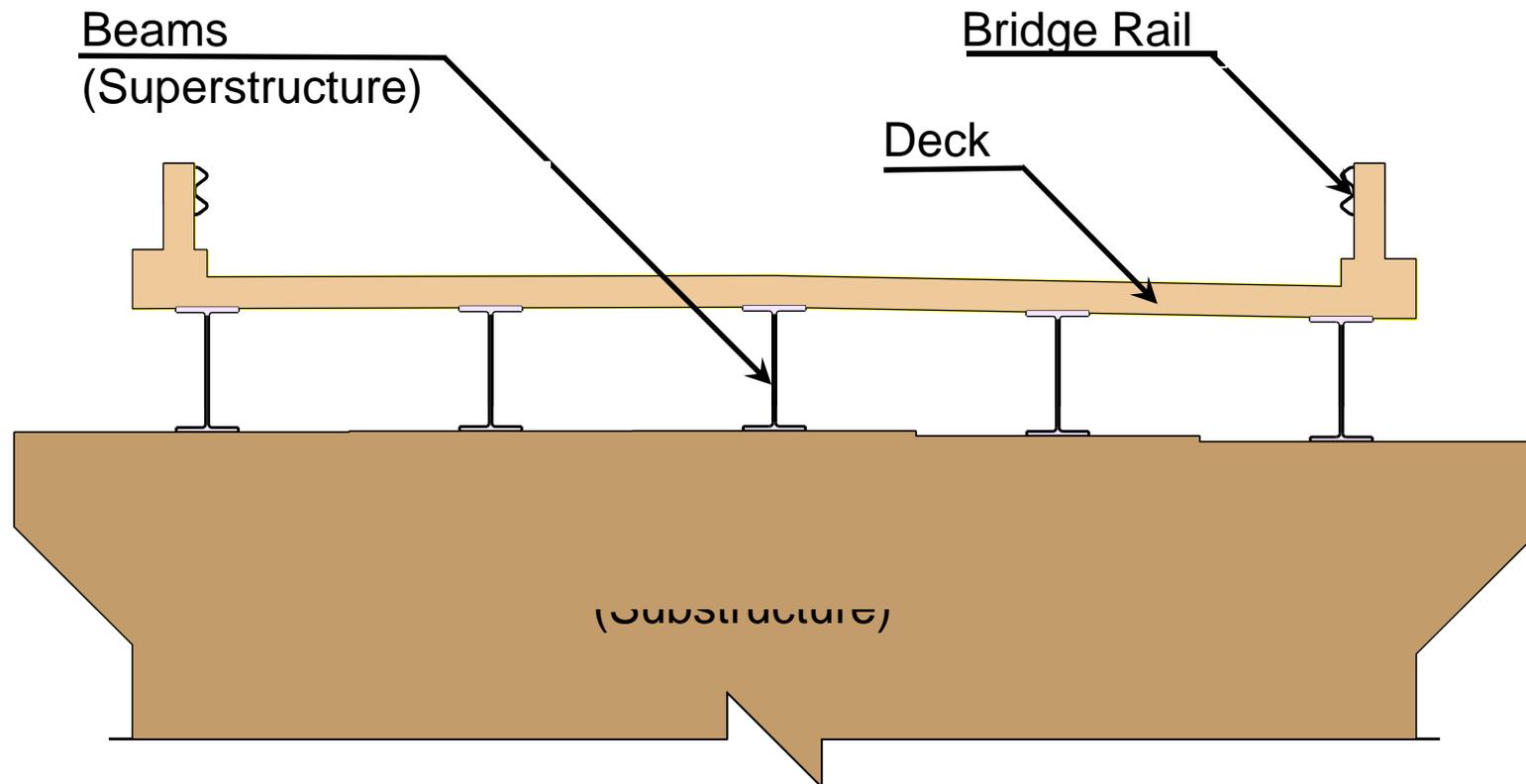


US 5 looking Southwest  
towards VA Cutoff Road



## Bridge Features - Definition

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Structure Span = Distance between supports (abutments)

## Existing Bridge Information

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- Bridges originally constructed in 1966
- 3 span structure
  - 50' – 100' – 50'
- Vertical Clearance over US Route 5 = 15' – 3"



## Existing Bridge Conditions

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- Suspended Span Construction
- Structure is Fracture Critical
- Maintenance Critical and Costly
- Both Bridges need to be Replaced
- Scheduled for 2015 Construction

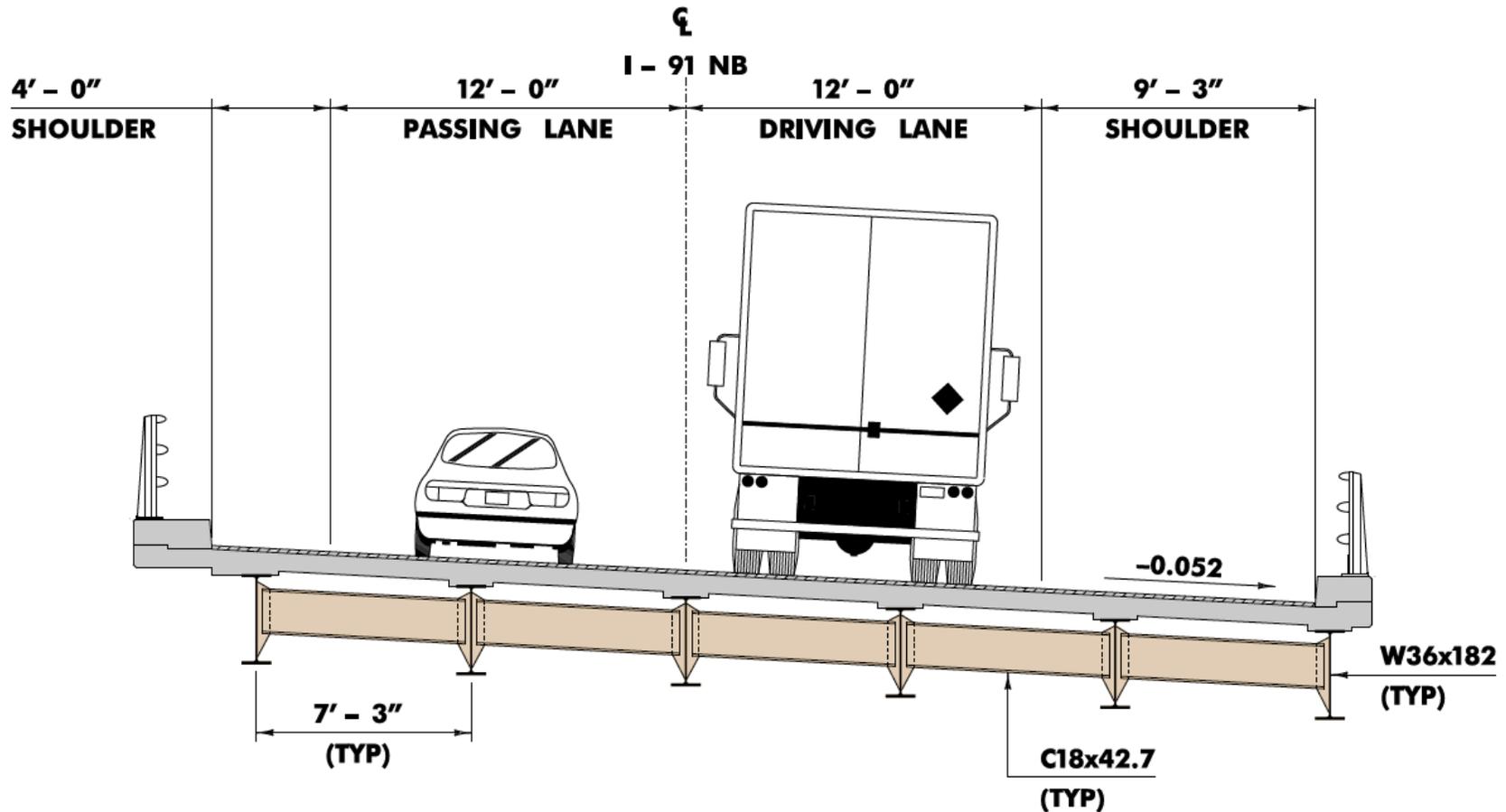


## New Bridge Features

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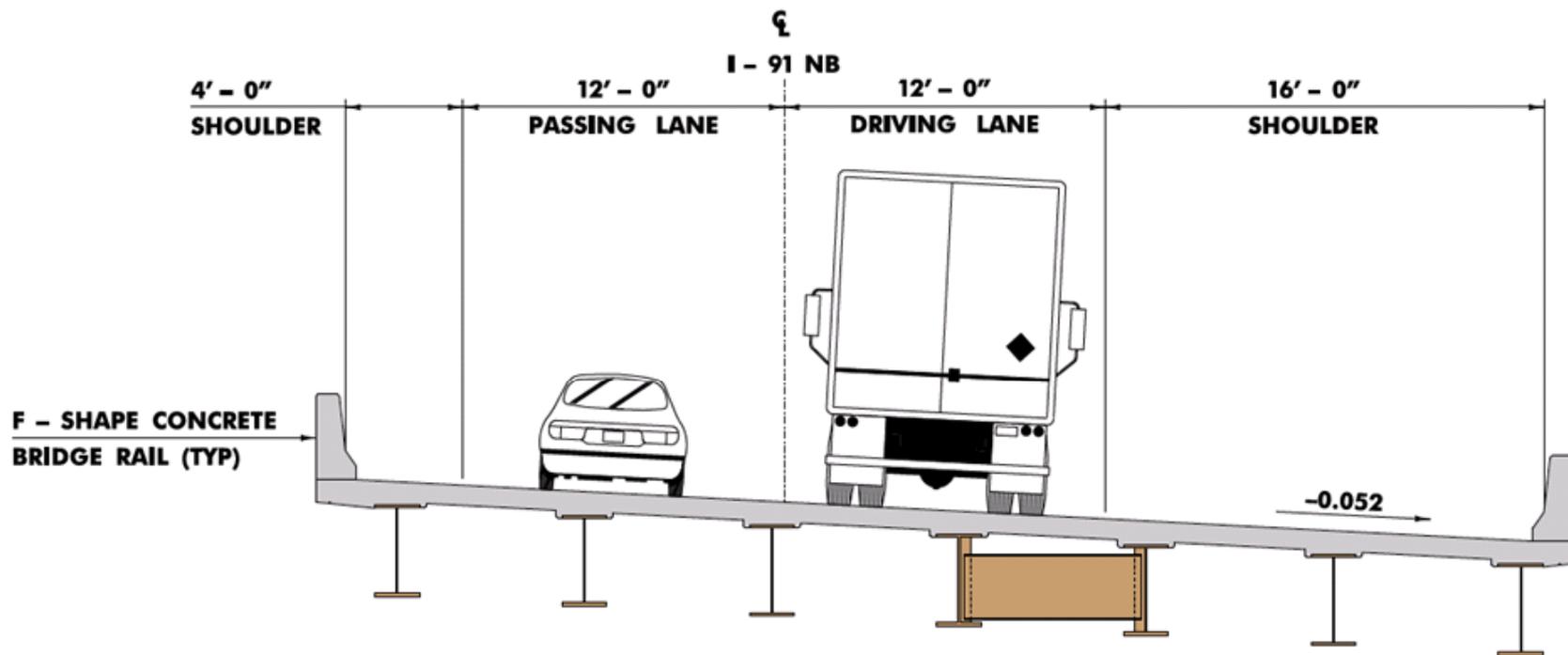
- Wider Bridges
  - Better for Maintenance
  - Safer for the Traveling Public
  - Easier for future reconfiguration of the interchange

# Existing Northbound Bridge Geometry



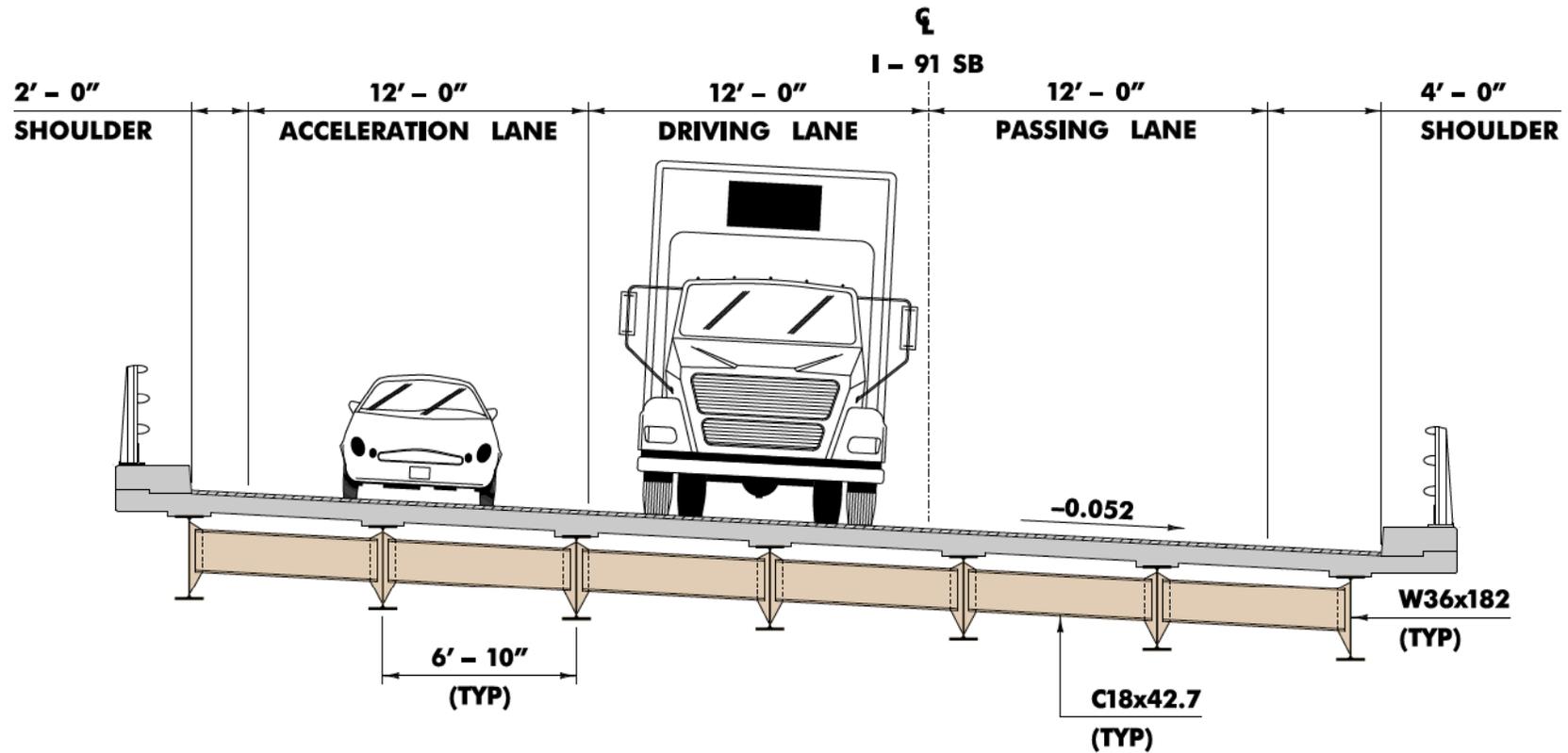
Bridge 43N = 37' - 3" Curb to Curb

# New Northbound Bridge Width



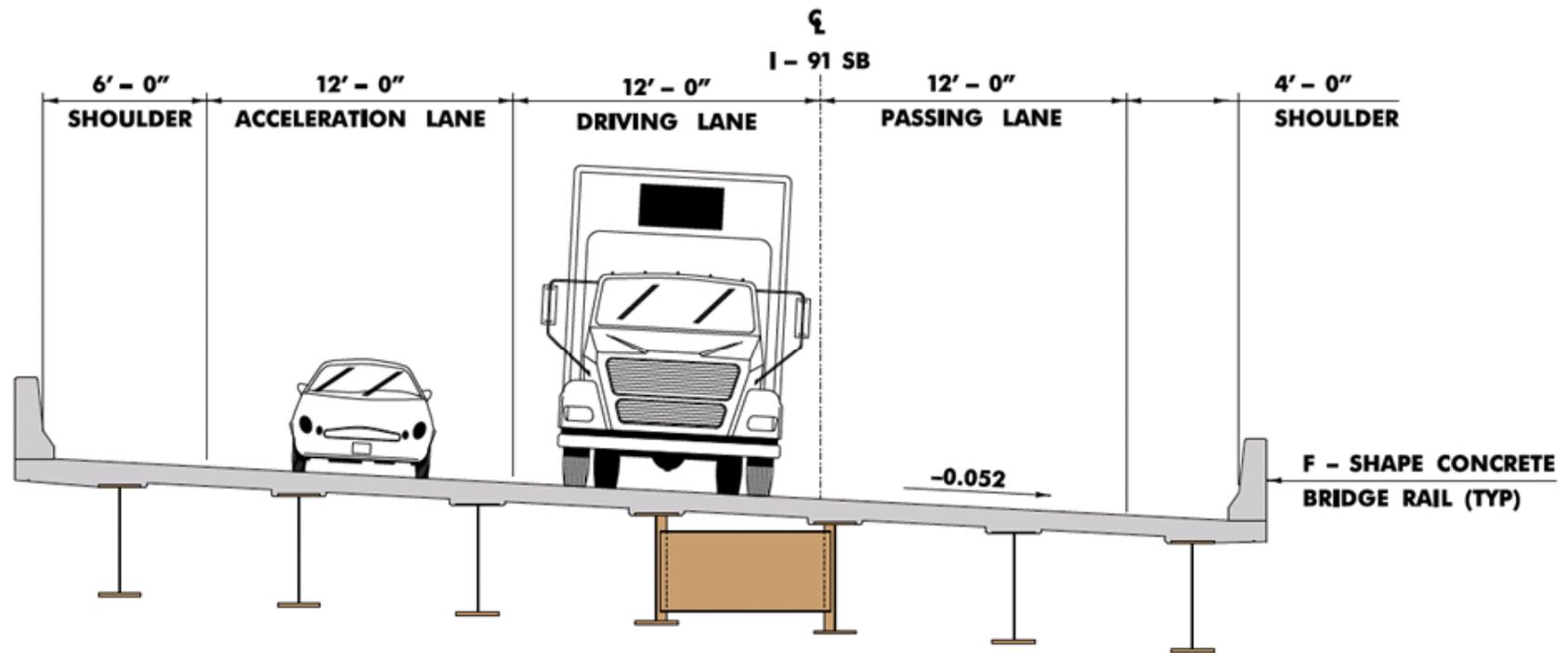
44'-0" Rail to Rail (Widened 6.75' to the East)

# Existing Southbound Bridge Geometry



BR 43S = 42' - 0" Curb to Curb

# New Southbound Bridge Width



46'-0" Rail to Rail (Widened 4' to the West)

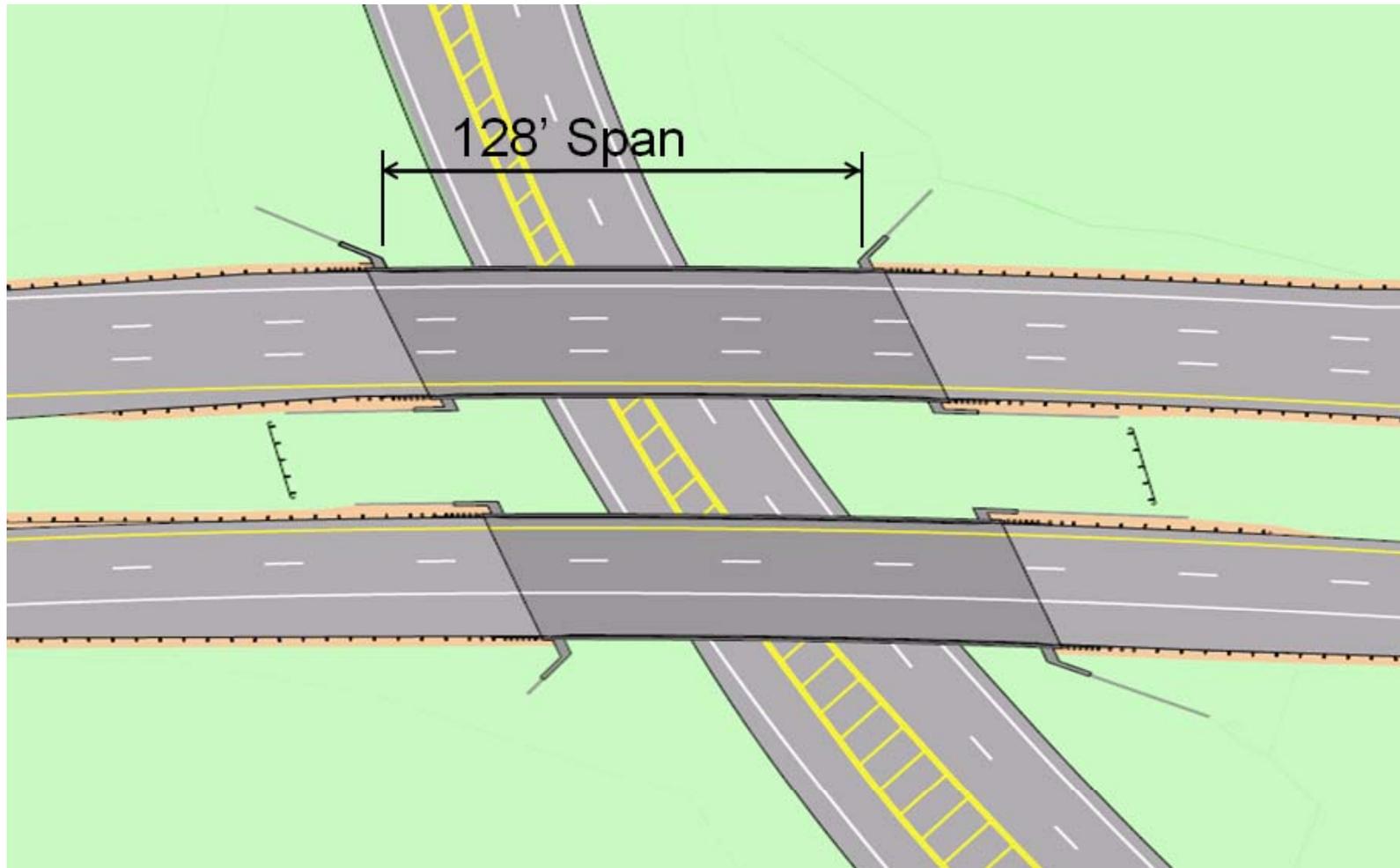
## New Bridge Features

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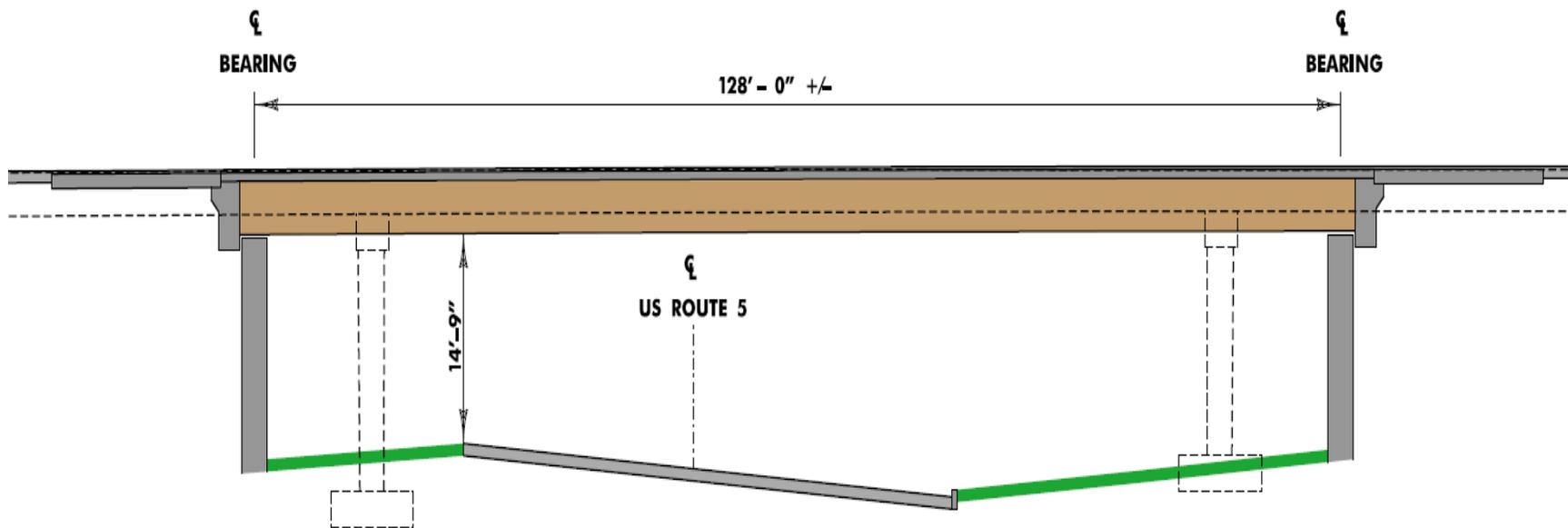
- Wider Bridges
  - Better for Maintenance
  - Safer for the Traveling Public
  - Easier for future reconfiguration of the interchange
- Single Span Structures (128')
  - Reduced Maintenance
- Standard Vertical Clearance over US Route 5

# New Bridge Layout

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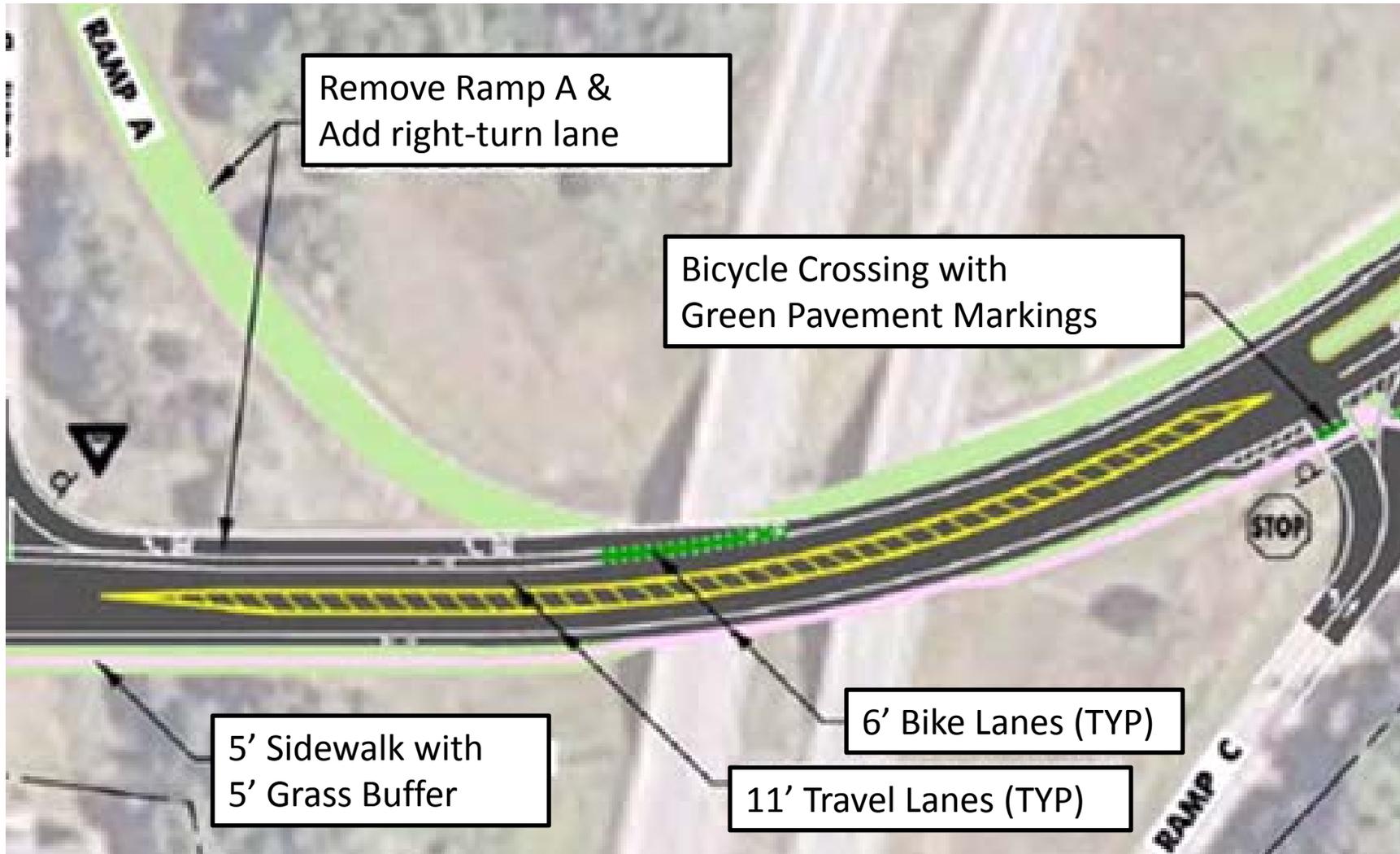
# New Bridge Profile



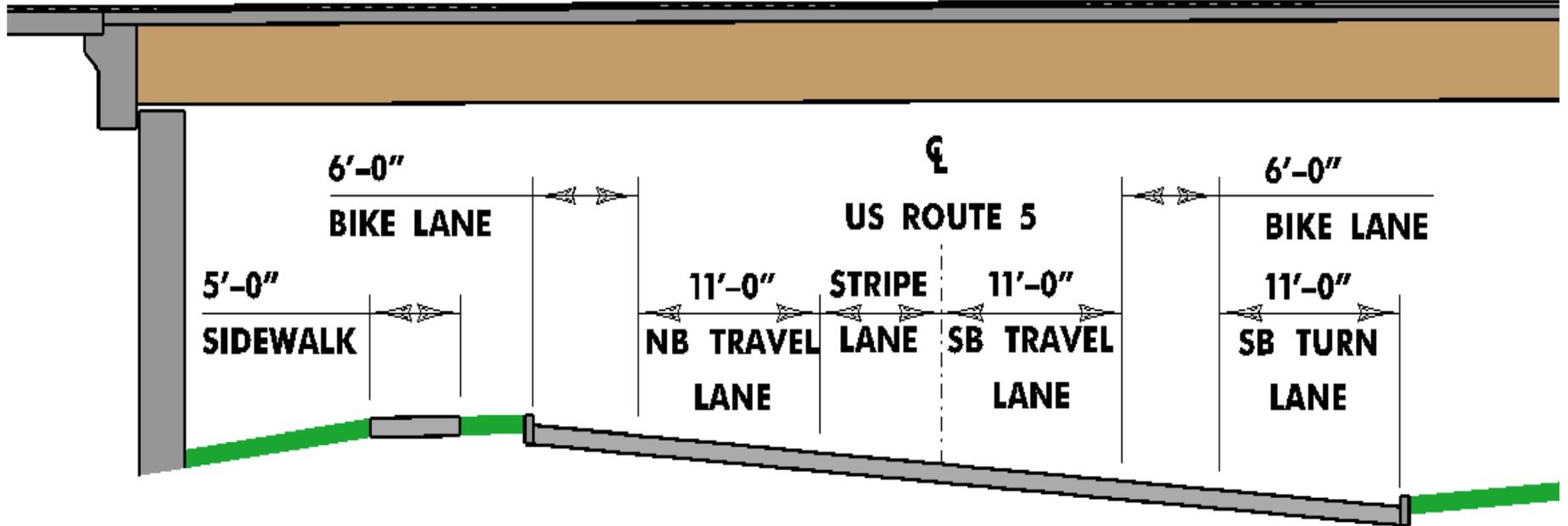
# I-91 Hartford Bridges Replacement Project & US Route 5 Improvements



# Future Town Plan – US Route 5



# Future Town Plan – US Route 5 Looking toward VA Cutoff Road



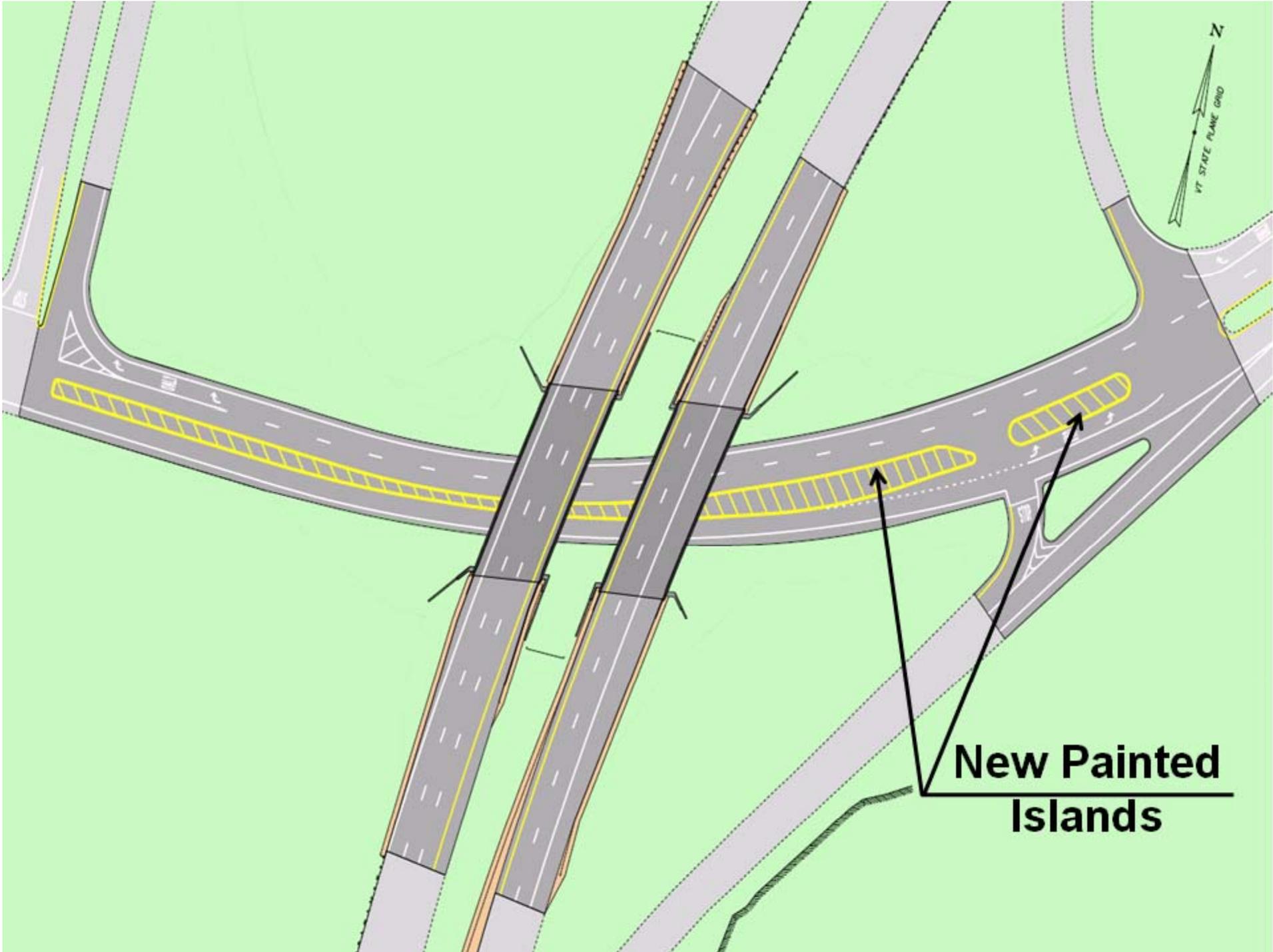
## US Route 5 Improvements

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- Removal of raised islands
  - Helps traffic control during construction
  - Easier for snow removal
  - Supports long term plan for bicycle and pedestrian access for US Route 5



**Remove Raised  
Islands**



**New Painted  
Islands**

## US Route 5 Improvements

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- Removal of raised islands
  - Helps traffic control during construction
  - Easier for future snow removal
  - Supports long term plan for bicycle and pedestrian access for US Route 5
- Removal of Southbound Ramp A
  - Staging Area for Contractor during construction
  - Safer ramp configuration – eliminates conflict points
  - Supports long term community planning for US Route 5 bike and pedestrian improvements



Ramp A

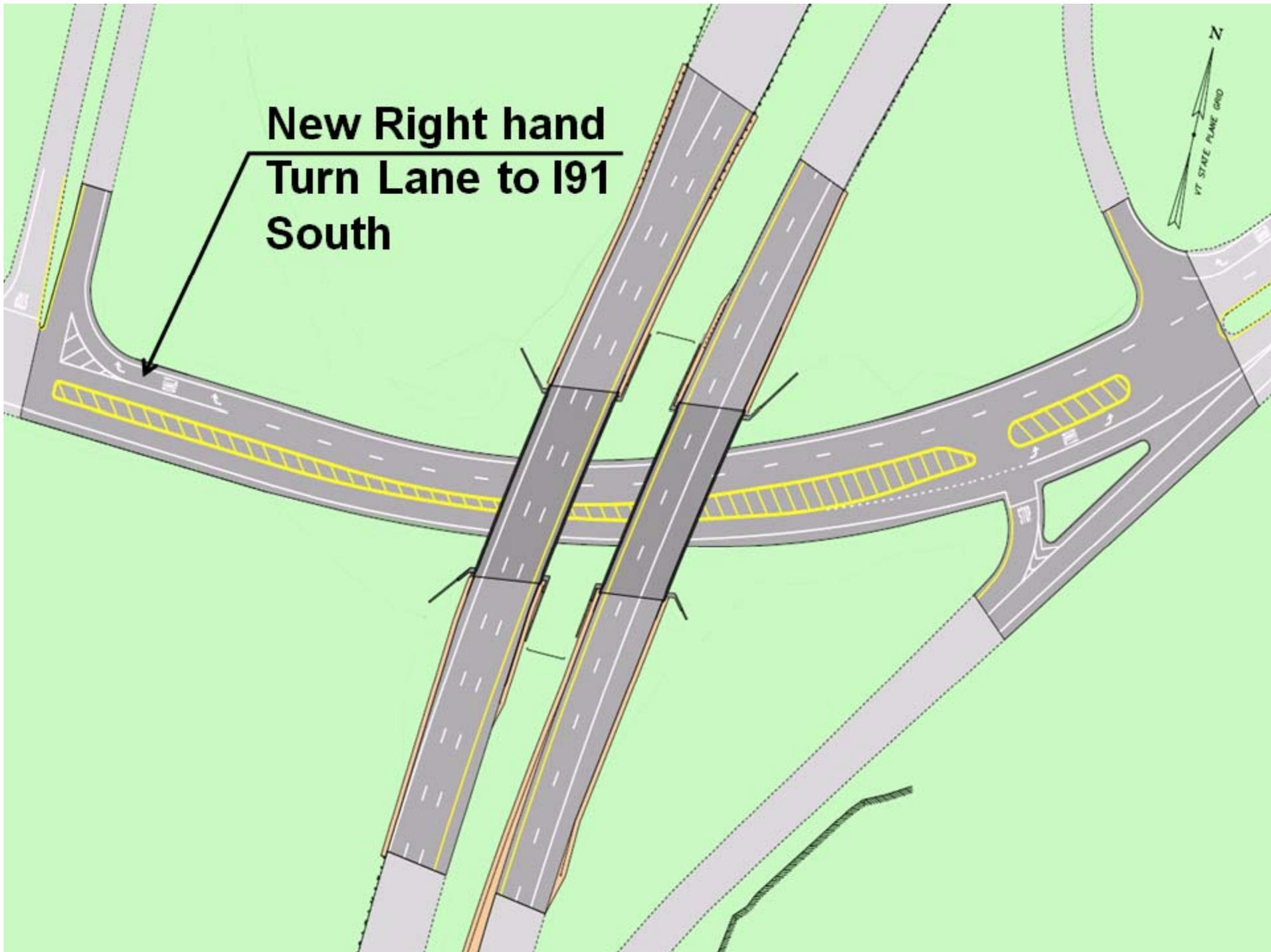
**Remove I91 SB  
Ramp A**

## US Route 5 Improvements

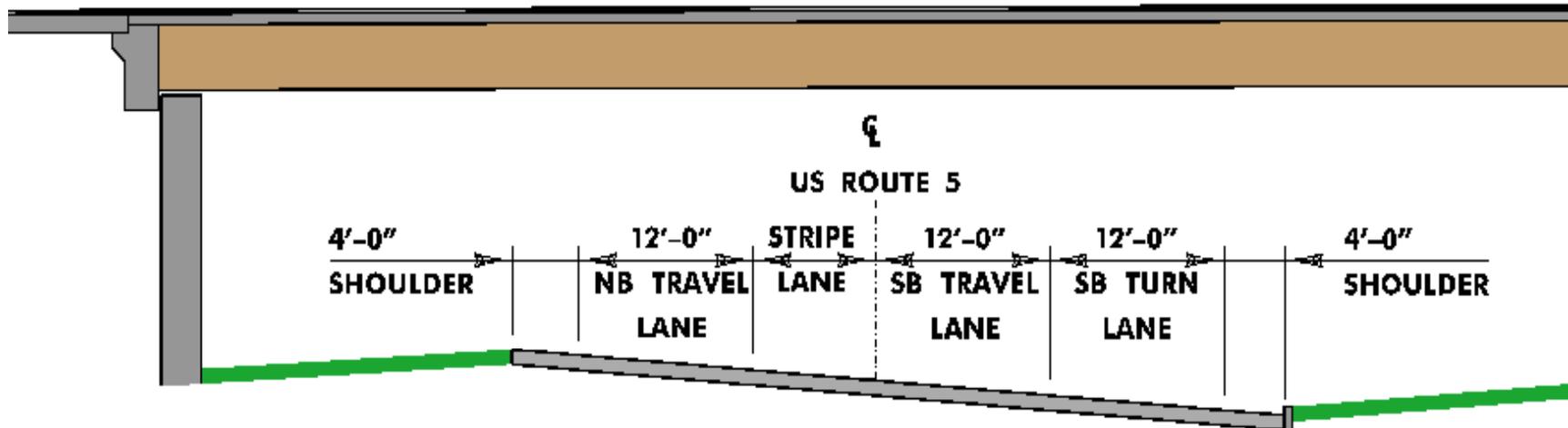
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- Removal of raised islands
  - Helps traffic control during construction
  - Easier for future snow removal
  - Supports long term plan for bicycle and pedestrian access for US Route 5
- Removal of Southbound Ramp A
  - Safer ramp configuration – eliminate conflict points
  - Supports long term plans for US Route 5
- Construction of right hand turn lane on US Route 5

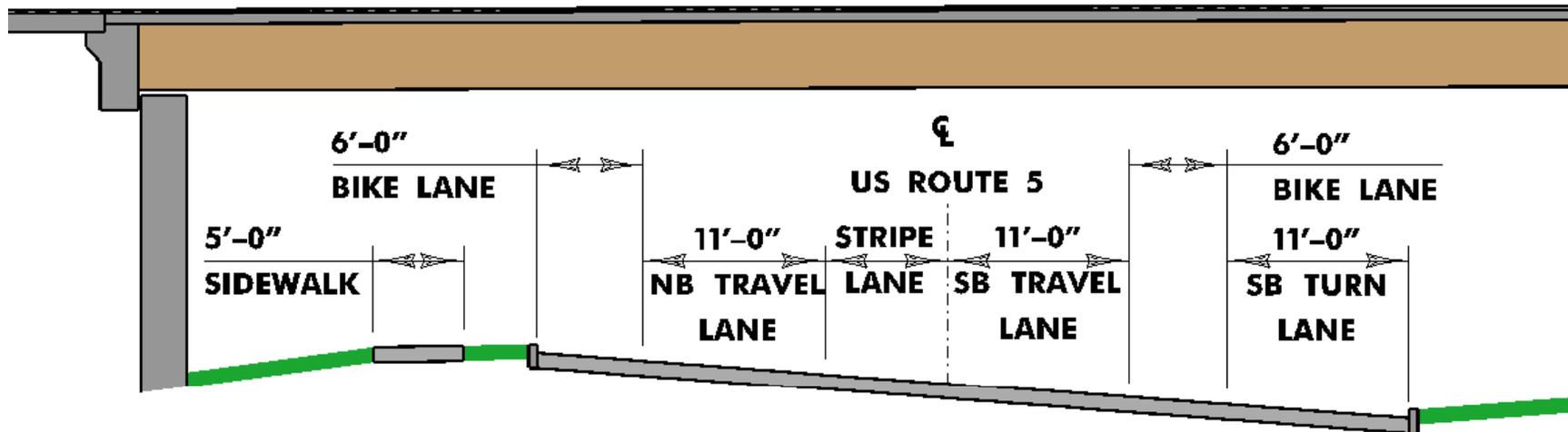
**New Right hand  
Turn Lane to I91  
South**



# US Route 5 – Following Construction



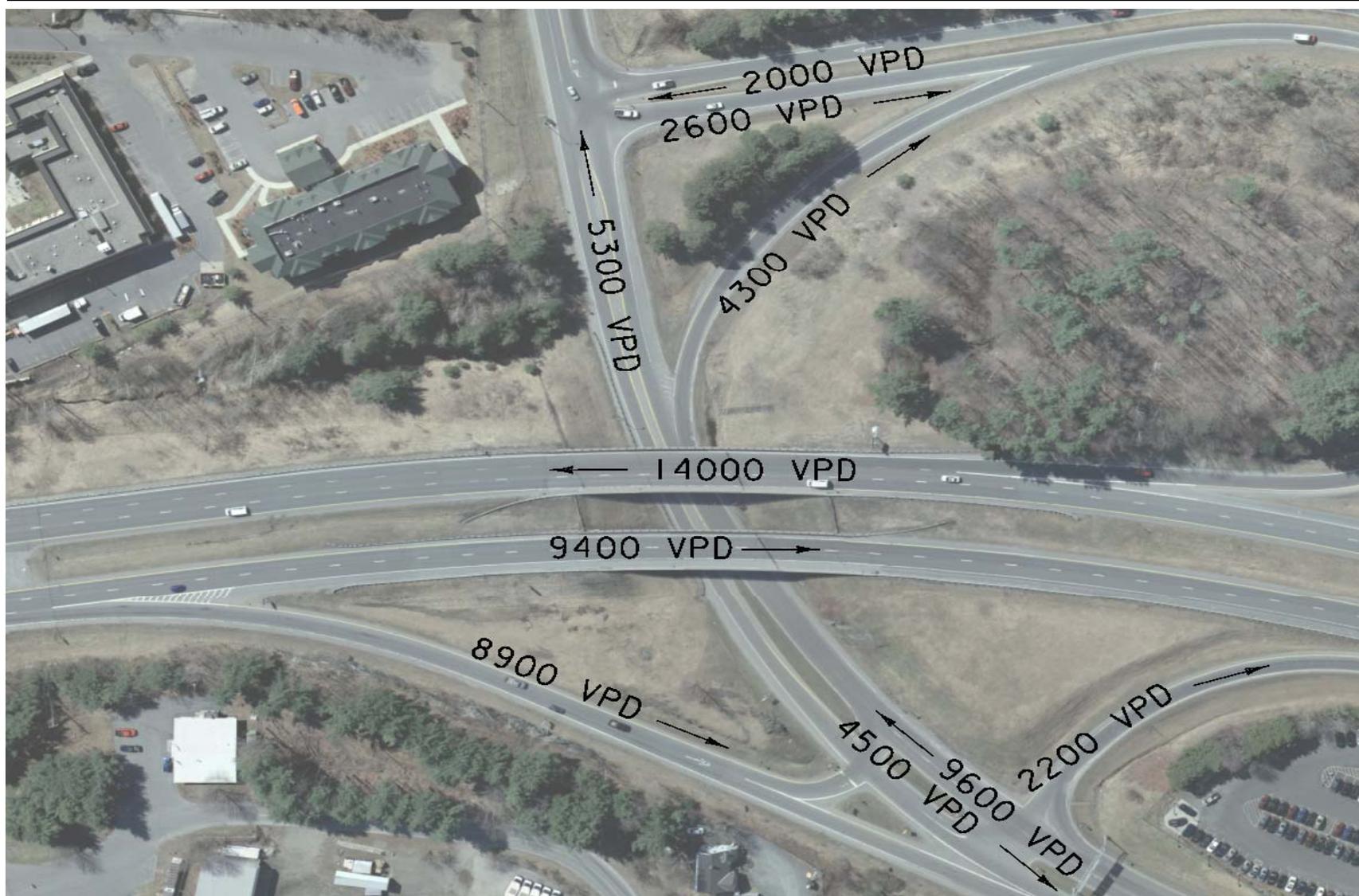
# US Route 5 – After Bike and Pedestrian Improvements



# 1-91 Hartford Bridges Project Project Challenges



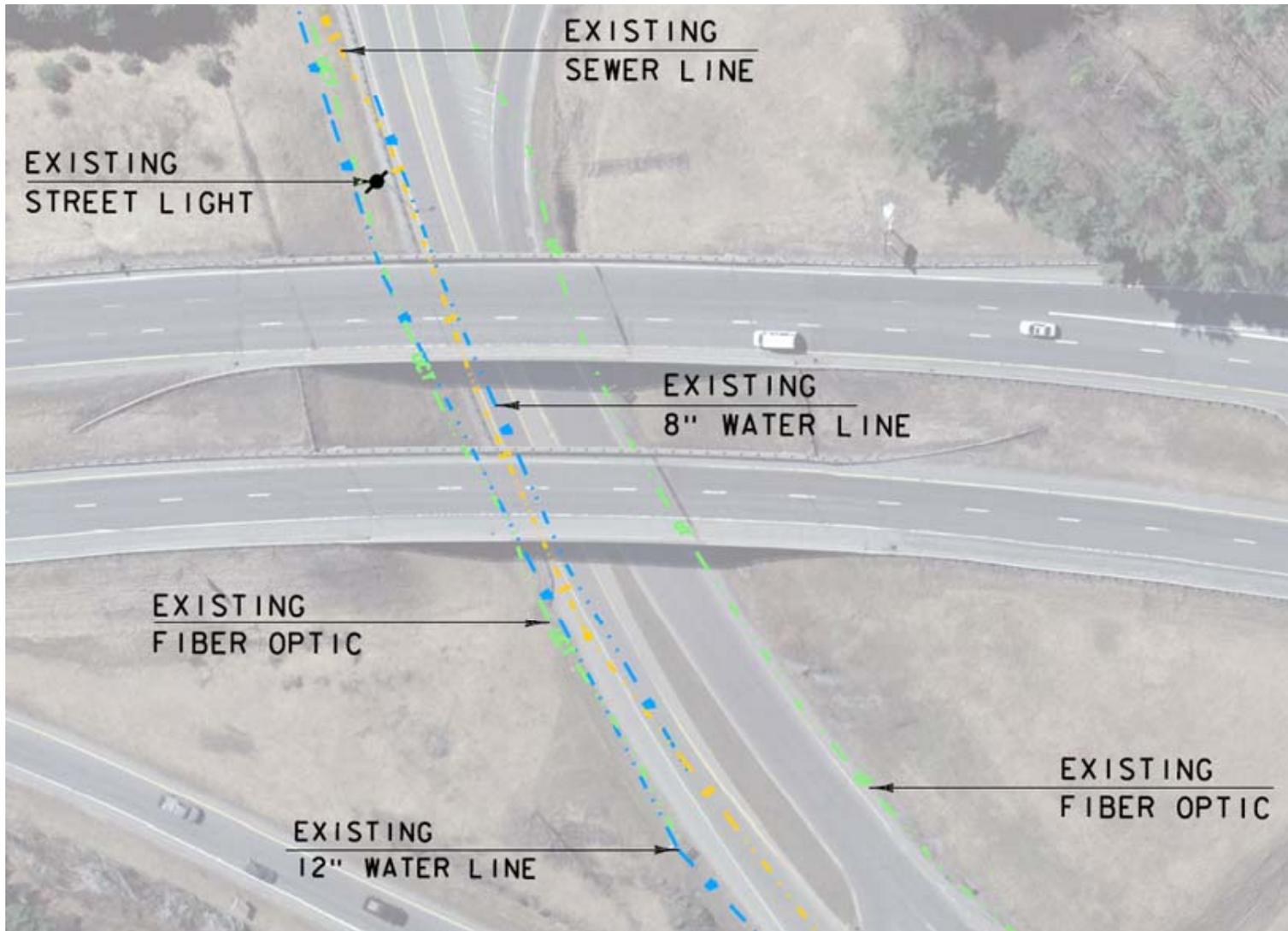
# Traffic Volume – During the Week



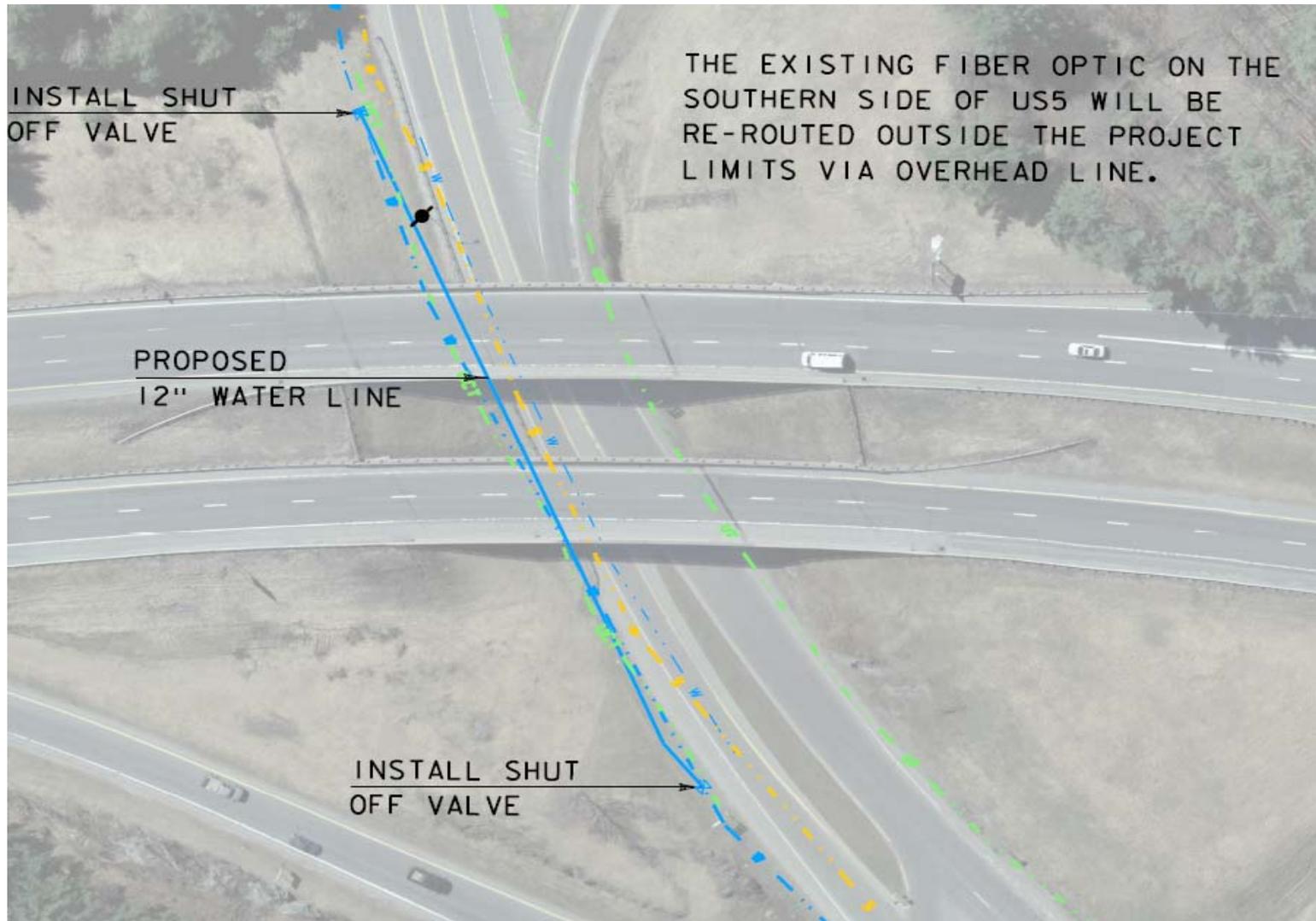
# Traffic Volume – Weekends



# Existing Underground Utilities



# Underground Utility Relocation



## Project Planning Summary

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- Wider Bridges on Interstate 91
- Single Span Bridges Over US Route 5
- Project Improvements to US Route 5
  - Removal of raised islands
  - Pavement marking application to direct traffic
  - Removal of I-91 Southbound Ramp A
  - Construction of a right hand turn lane on US Route 5
  - All modifications to US Route 5 will support future town plans for bike and pedestrian improvements

# I-91 Hartford Bridges Construction



## Using Lateral Slide Technology

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- Construct the new Bridges on temporary supports next to the Existing Structures
- Construct new abutments (supports) under existing Bridges
- Close Bridge and Demolish
- Slide new Bridge into place
- Open Bridge
- Required significant planning and coordination
- ***Results in a reduced traffic impact to the traveling public***
- ***Improves safety for motorists and workers***

## Bridge Construction

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- Implement US Route 5 Traffic Control Plan
- Construct new abutments behind existing piers

## US Route 5 Traffic Control Plan

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- Traffic reduced to 2 lanes on US Route 5
  - Transition two lanes on US Route 5 south to one lane from Sykes Mountain Avenue to 1-91 Northbound Ramp
  - Single Lane in either direction through the project area to provide room for contractor to build new structures
  - Provide pedestrian safe passage through project area

**Eliminate lane  
During construction**

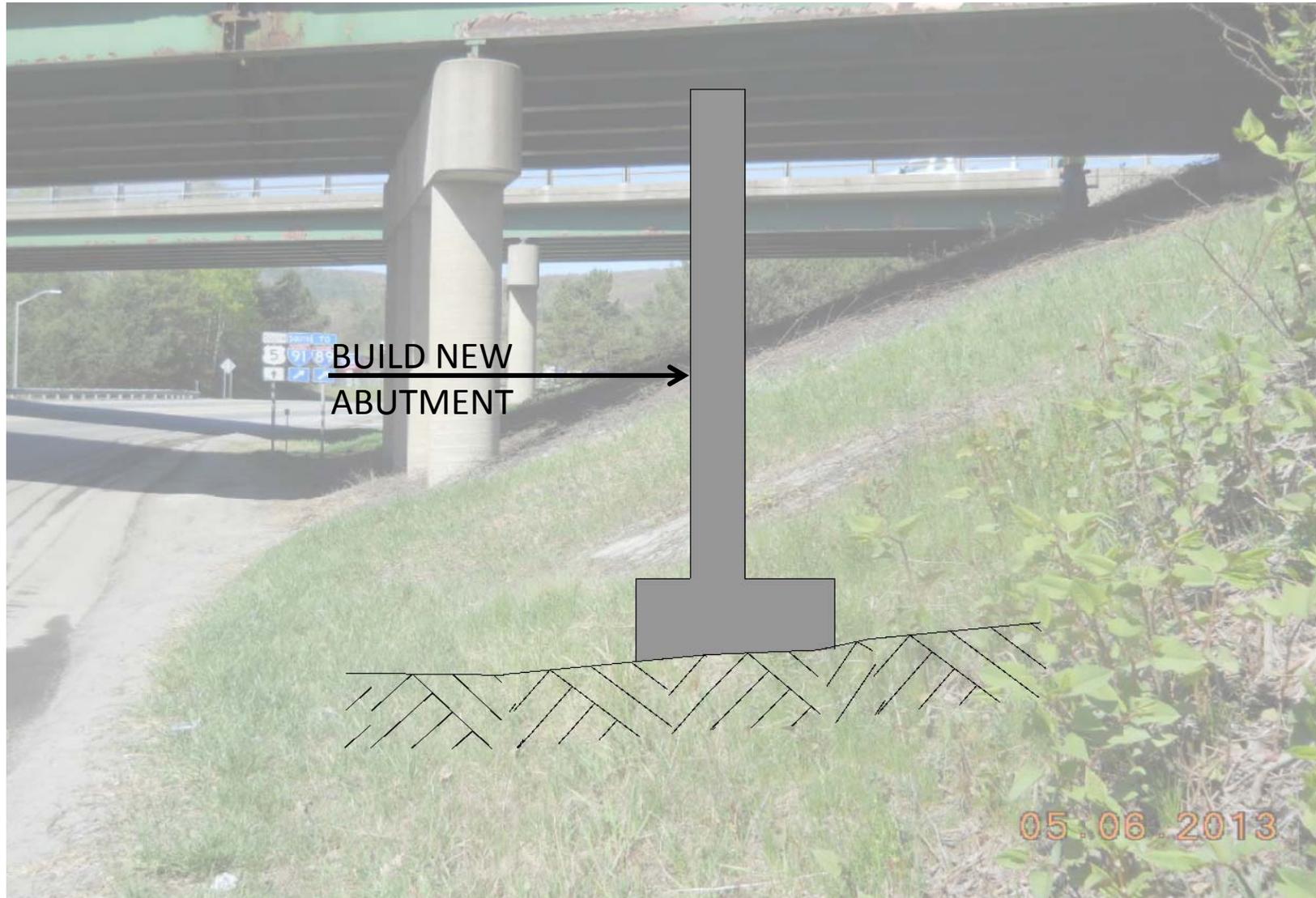


# US Route 5 Traffic Control Plan

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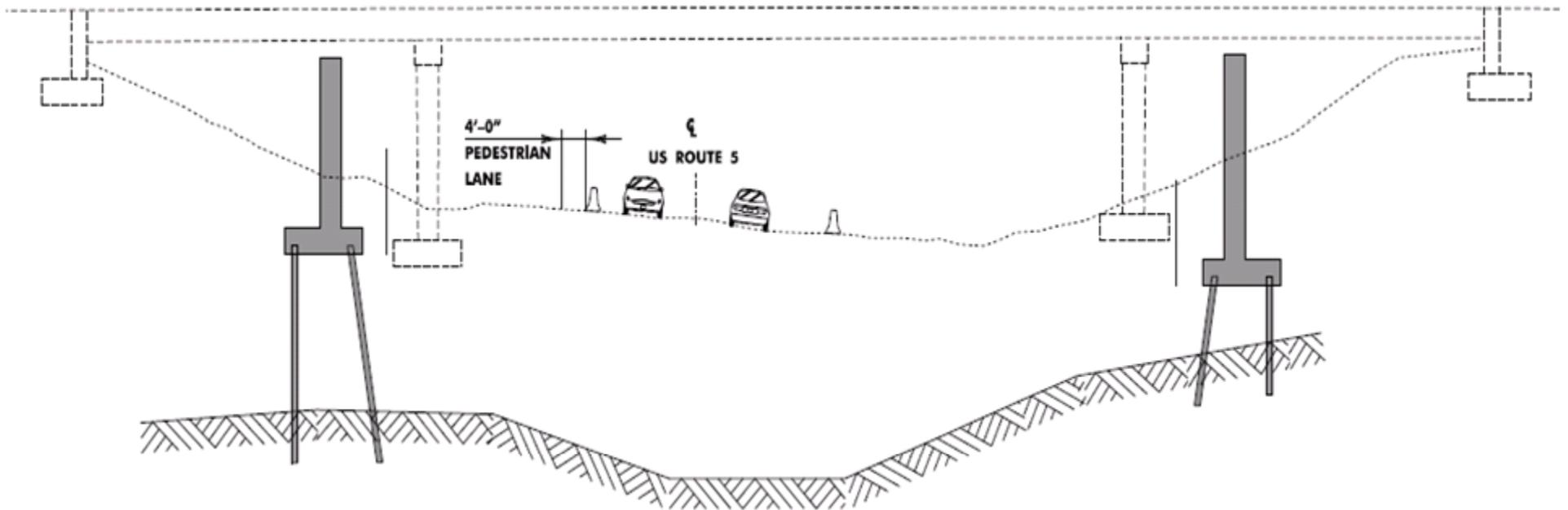


# Bridge Construction – New Abutments



# Bridge Construction – New Abutments

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## Bridge Construction – Abutment Construction



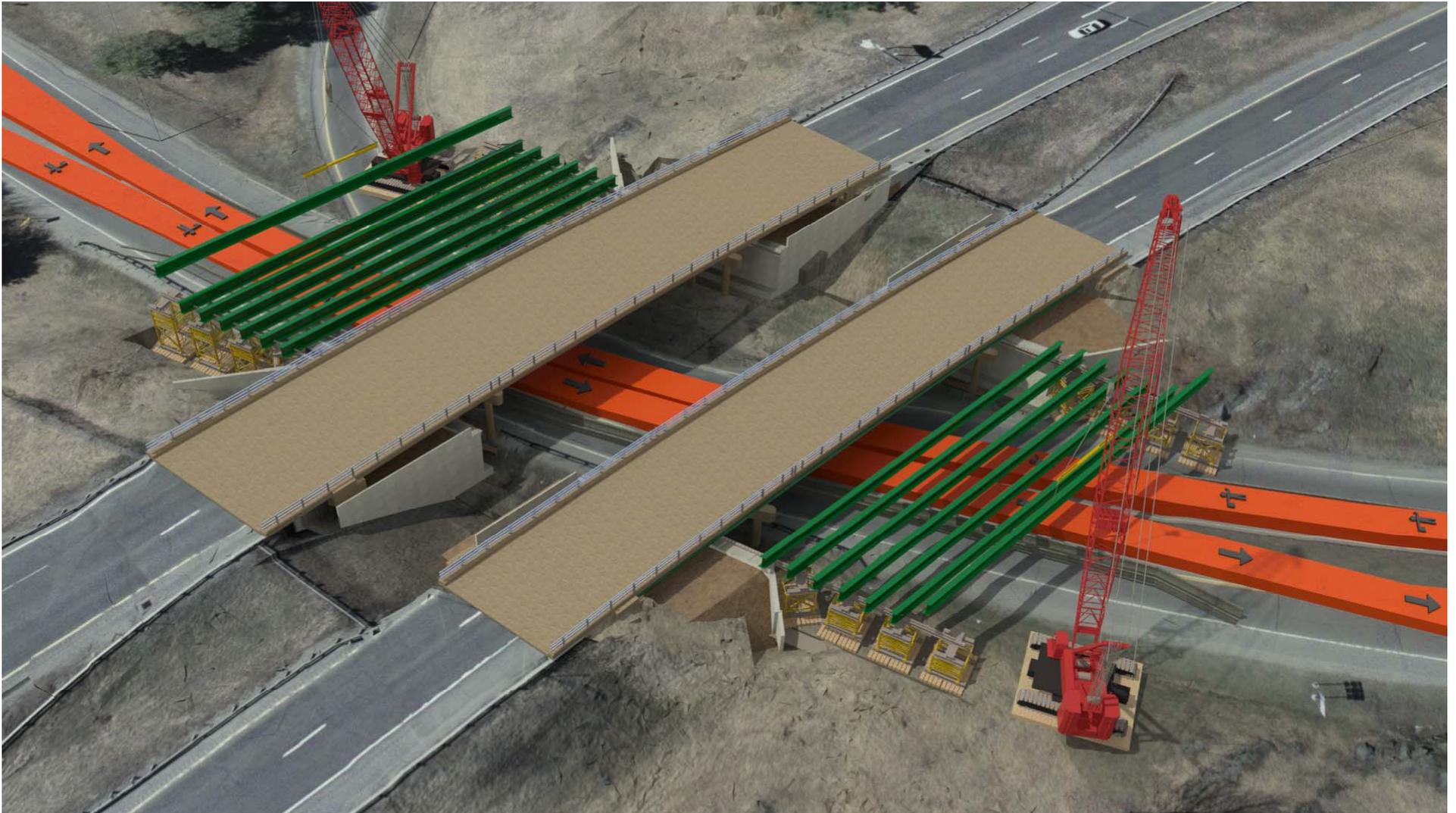
## Bridge Construction

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- Implement US Route 5 Traffic Control Plan
- Construct new abutments behind existing piers
- Construct new bridges on temporary supports next to existing bridges

## Bridge Construction – Construction of New Superstructures

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## Bridge Construction – Construction Area for Northbound Superstructure

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Looking North



Looking South

## Bridge Construction – Construction Area for Southbound Superstructure

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Looking North



Looking South

## Bridge Construction

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- Implement US Route 5 Traffic Control Plan
- Construct new abutments behind existing piers
- Construct new bridges on temporary supports next to existing bridges
- Close I-91 Northbound Friday Evening at 6pm
- Divert I-91 Northbound Traffic – Off at Exit 11 then right back on at Exit 11

# Bridge Construction – I-91 Northbound Detour

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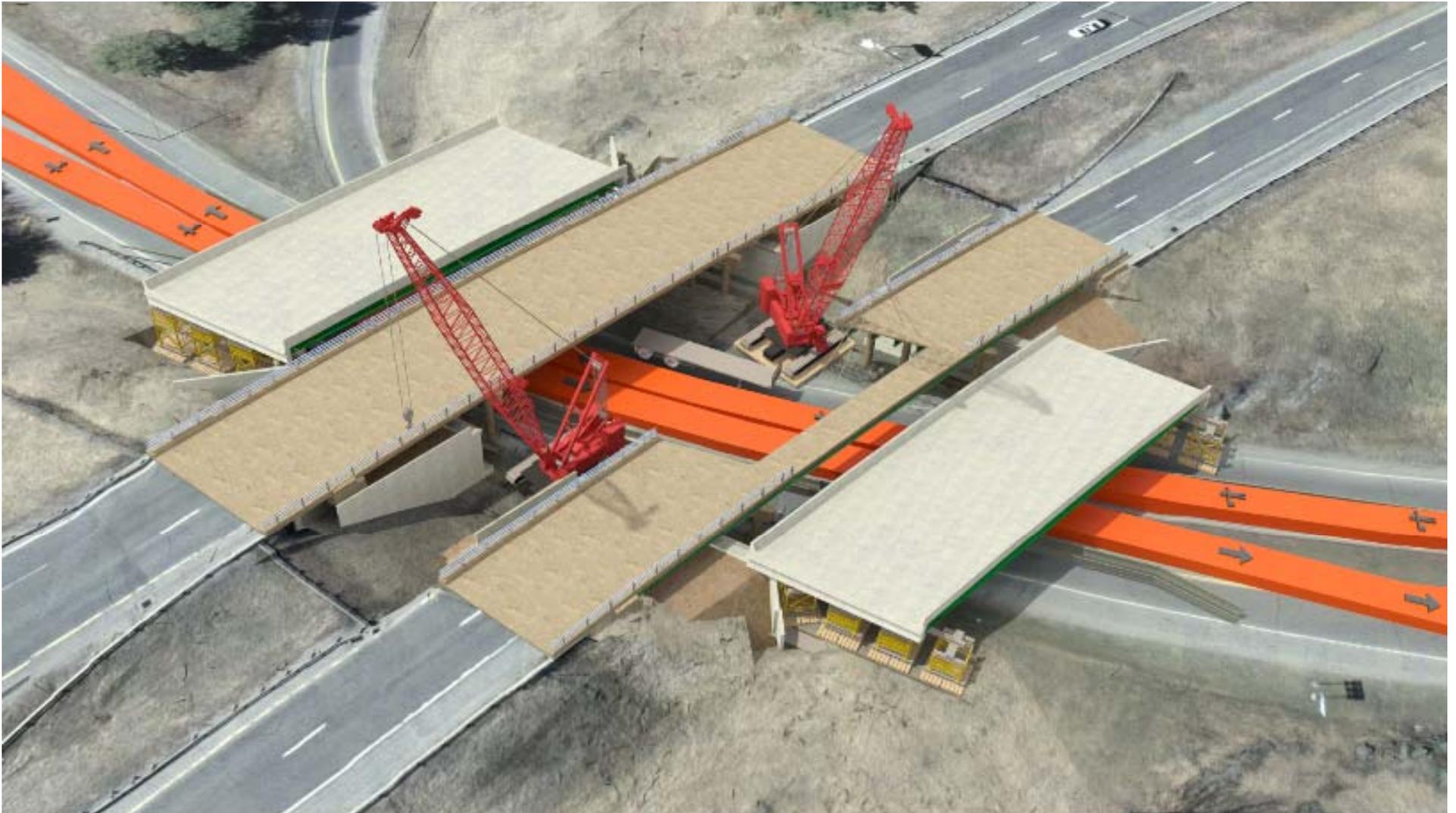
## Bridge Construction

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- Implement US Route 5 Traffic Control Plan
- Construct new abutments behind existing piers
- Construct new bridges on temporary supports next to existing bridges
- Close I-91 Northbound Friday Evening
- Divert I-91 Northbound Traffic – Off then On
- **Remove Existing I-91 Northbound Bridge**

# Bridge Construction – Bridge Removal

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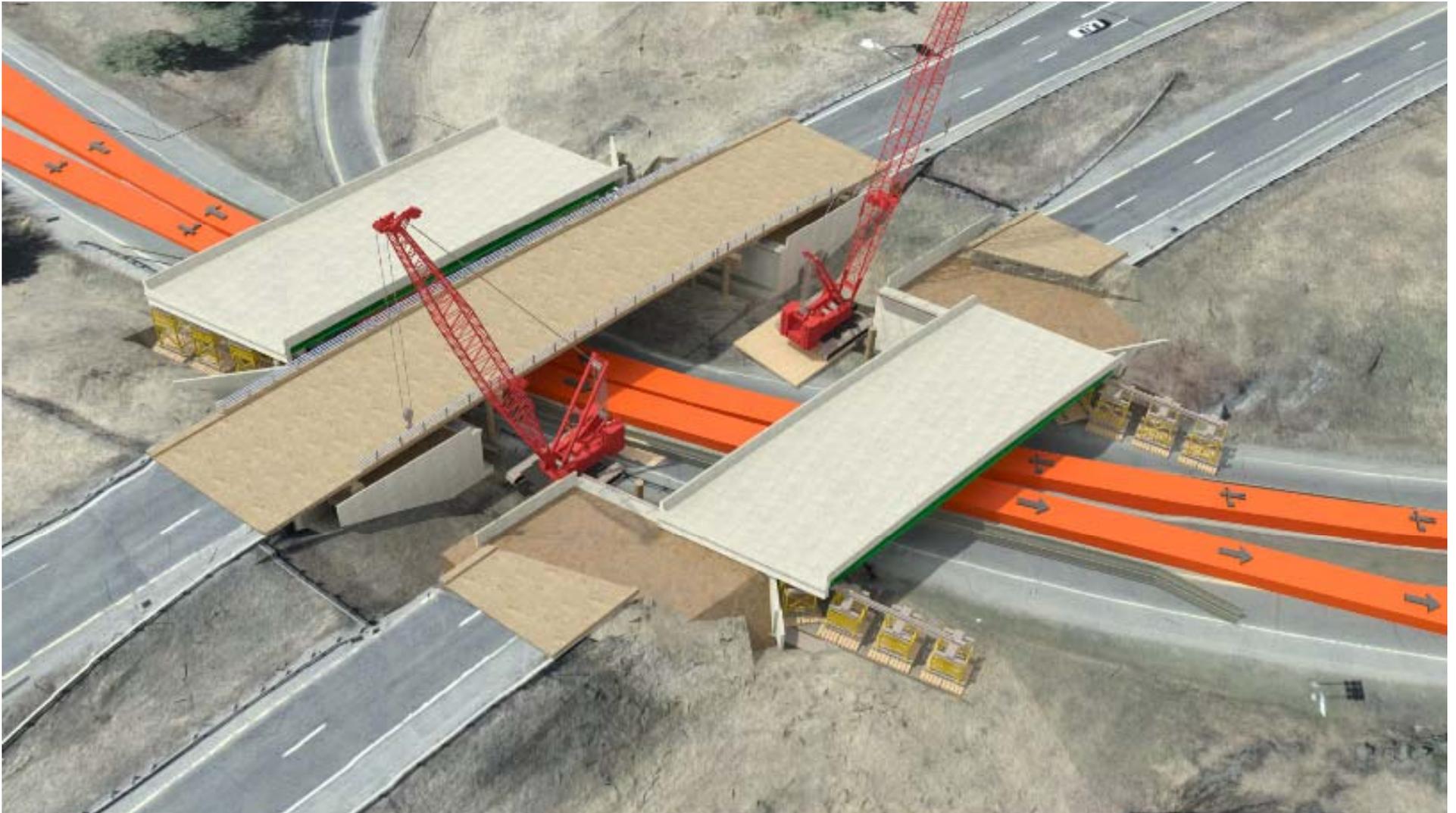


## Bridge Construction

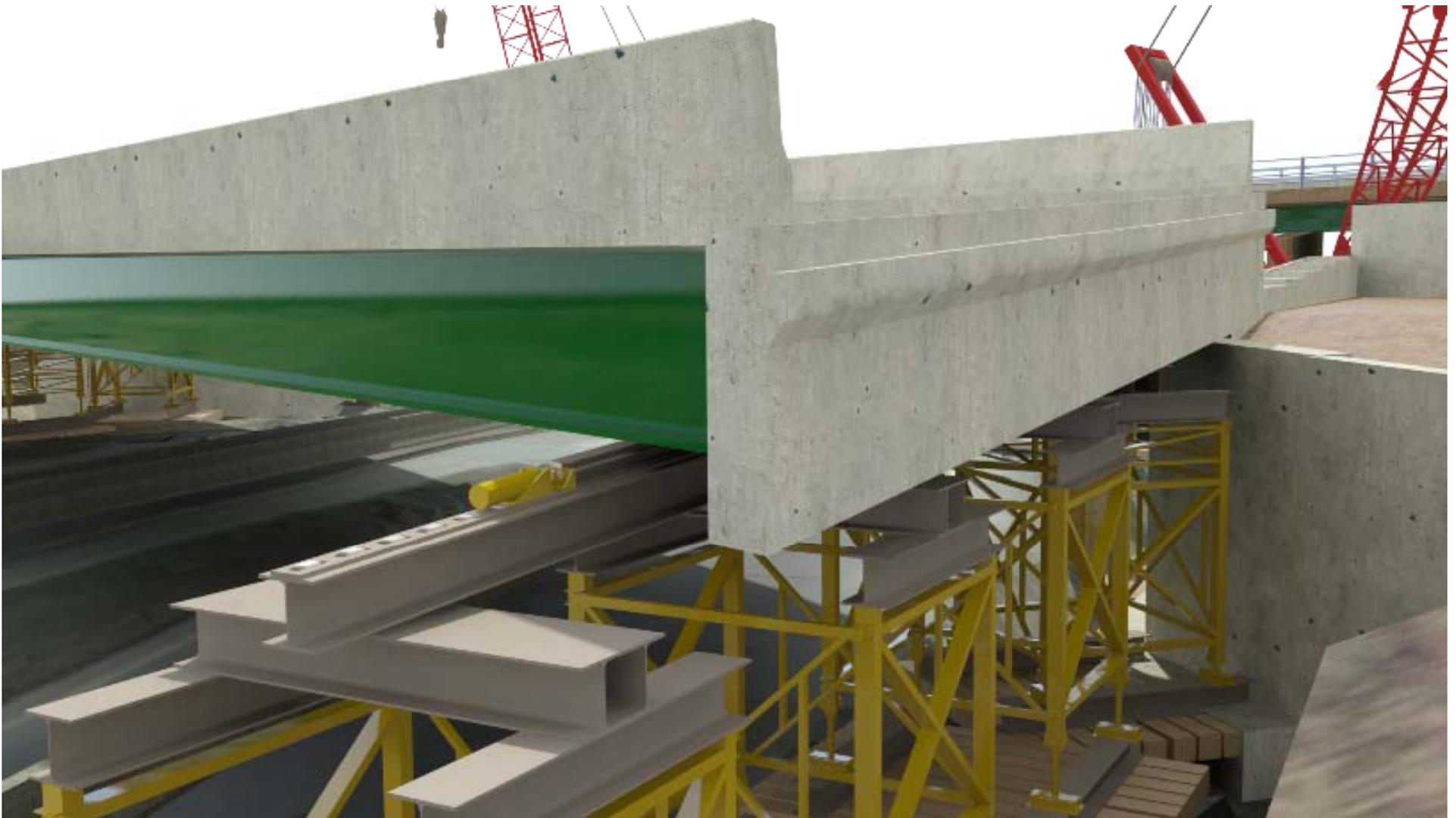
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- Implement US Route 5 Traffic Control Plan
- Construct new abutments behind existing piers
- Construct new bridges on temporary supports next to existing bridges
- Close I-91 Northbound Friday Evening
- Divert I-91 Northbound Traffic – Off then On
- Remove Existing I-91 Northbound Bridge
- Slide New Structure into place
- Complete approach work
- Open Bridge – Monday Morning at 6 AM

## Bridge Construction – Lateral Slide



## Bridge Construction – Lateral Slide



# Bridge Construction – Approach and Roadway Work



## Bridge Construction

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- Repeat process for Southbound Bridge Replacement
- Southbound Bridge will be replaced on a separate weekend (one weekend closure for each structure)
- Different traffic control plan

## Bridge Construction – I-91 Southbound Detour

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- Take Exit 11 I-91 Southbound off-ramp
- Follow US Route 5 South to Exit 9 I-91 in Hartland.
- During the daylight hours of the closure, Uniformed Traffic Officers will be stationed at the intersection of VT Route 12 and US Route 5 in Hartland.

## Bridge Construction – I-91 Southbound Detour to I-89 N/S

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- Take Exit 12 I-91 Southbound off-ramp
- Take US Route 5 South to US Route 4 West.
- Follow US Route 4 to I-89 Exit 1 and proceed North or South.

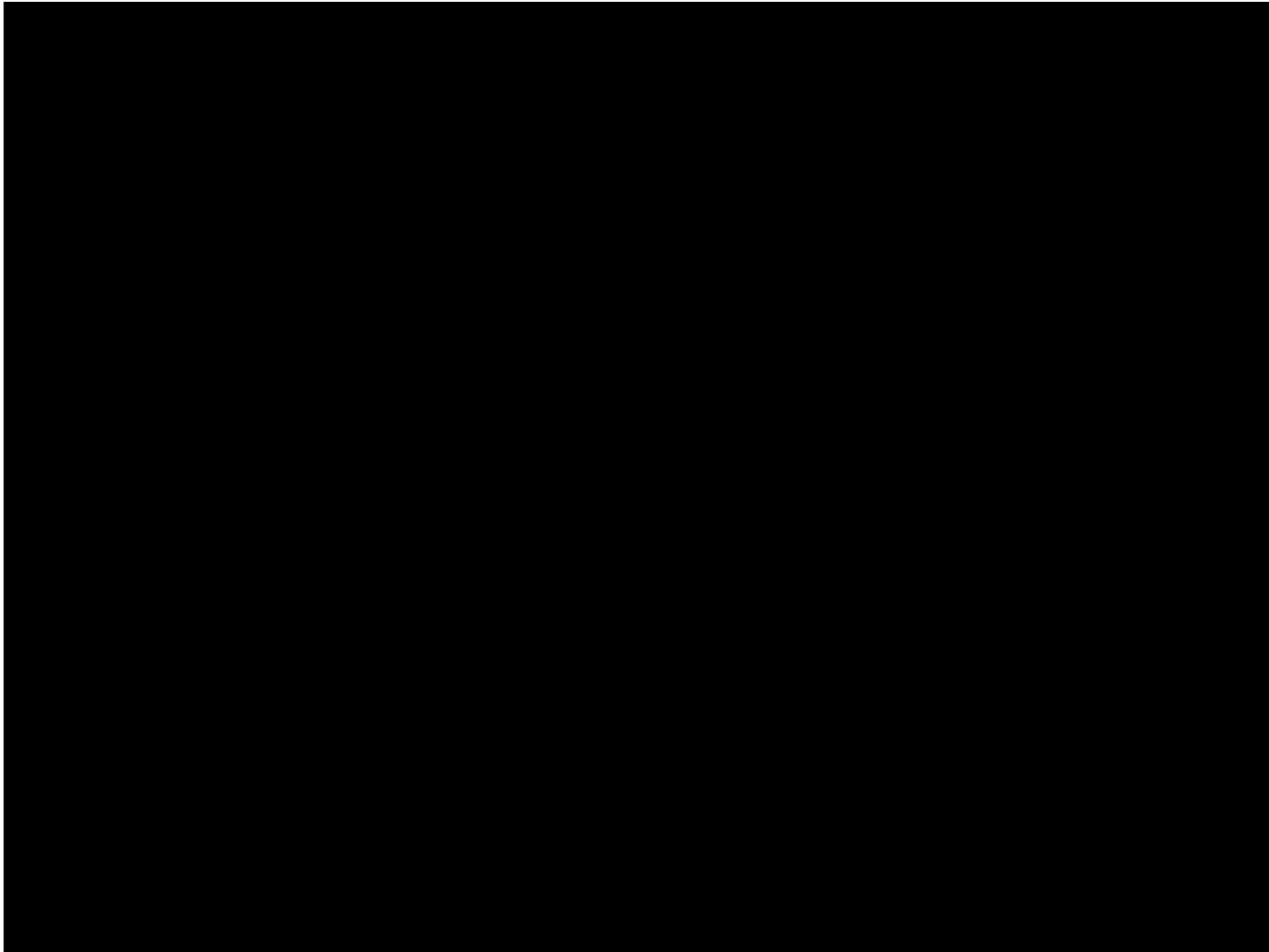
# Bridge Construction – Final Condition

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# Construction Sequence Movie

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## Bridge Construction Summary

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- Reduce Traffic to 2 lanes along US Route 5
- Construct New Abutments Under Existing Bridges
- Construction New Superstructures next to the Existing Bridges
- Close I-91 at Bridges for one weekend for each Bridge (Closure from Friday Evening to Monday Morning)
- Laterally slide bridges into place
- Complete approach work
- Open I-91
- Restore US Route 5

## Project Schedule

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- Preliminary Plan – May 28, 2014
- Environmental Permits – July 30, 2014
- Final Design – December 1, 2014
- Begin Construction – March / April 15, 2015
- Bridge Closures – August / September 2015
- End Construction – October 15, 2015

## Project Outreach Coordination

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- Active and Accessible Communication
  - Public Outreach Coordinator – Jill Barrett
  - Public meetings
  - Press releases
  - Fact sheets
  - Facebook, Twitter
  - Website
  - E-Alerts
- *Sign Up for the Project Contact List Tonight!!!*





# For more information:

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<http://vtransengineering.vermont.gov/sections/structures>

~ Other Useful Links, Guidelines & Information ~

2013 [Structures ER Projects](#) PDF

2008 [Integral Abutment Bridge Design Guidelines](#) PDF

2010 [Structures Design Manual](#) PDF

2013 [Structures Plan Generation Manual](#) PDF

[Structures Design Tools](#)

[Structures Engineering Instructions](#)

2013 [Structures Annual Report](#) PDF

[Structures Project Presentations Page](#)

2012 [Structures QC Program](#) PDF

[Assistance for Local Bridges "Orange Book"](#) PDF

[Vermont Historic Bridge Program 1998](#)

[Structures Consultant Sharepoint Site](#)

[Structures Contractor Sharepoint Site](#)

[Accelerated Bridge Program Website](#)

# I-91 Hartford Bridges Project Questions?

