

# I-91 Hartford BRIDGES PROJECT

Hartford IM 091-2(79)

Public Informational Meeting

April 7, 2015

Bugbee Senior Center

White River Junction, Vermont

Kristin Higgins, P.E. – VTrans Project Manager

Chris Barker, P.E. – VTrans Resident Engineer

Jeremy Mackling – PCL Civil Constructors Project Manager

Jill Barrett – Project Outreach Coordinator

# Meeting Outline

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- Hartford IM 091-2(79) Project Planning Overview
- Project Construction
- Traffic Management
- Construction Schedule
- Project Outreach Coordination
- Questions

# 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



**VA  
Hospital**

**Hotels**

**McDonalds**

# Existing Bridge Conditions

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- Suspended Span Construction
- Fracture Critical
- Maintenance Critical & Costly
- Project Programmed in 2012
- Construction April – October 2015

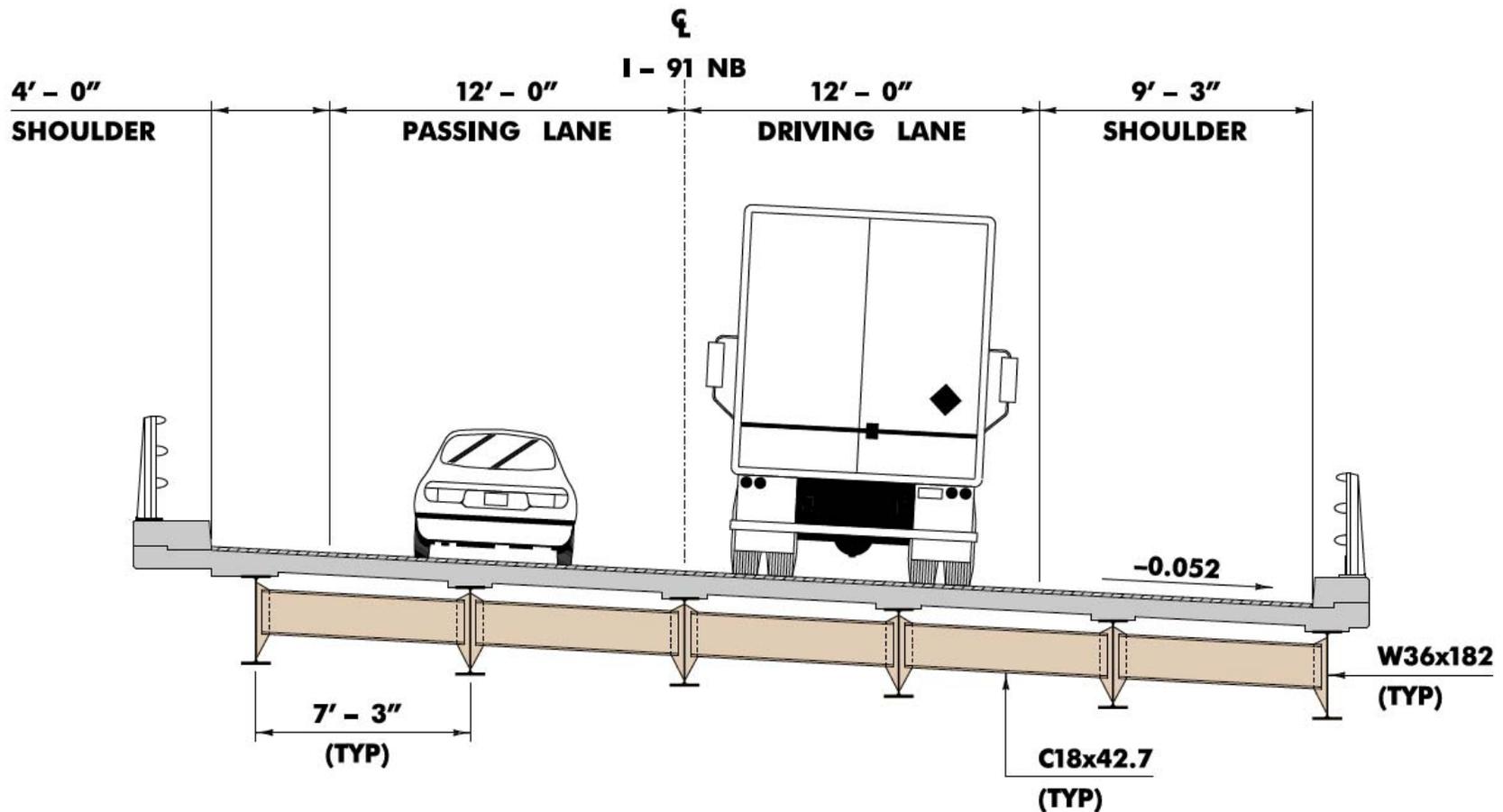


# New Bridge Features

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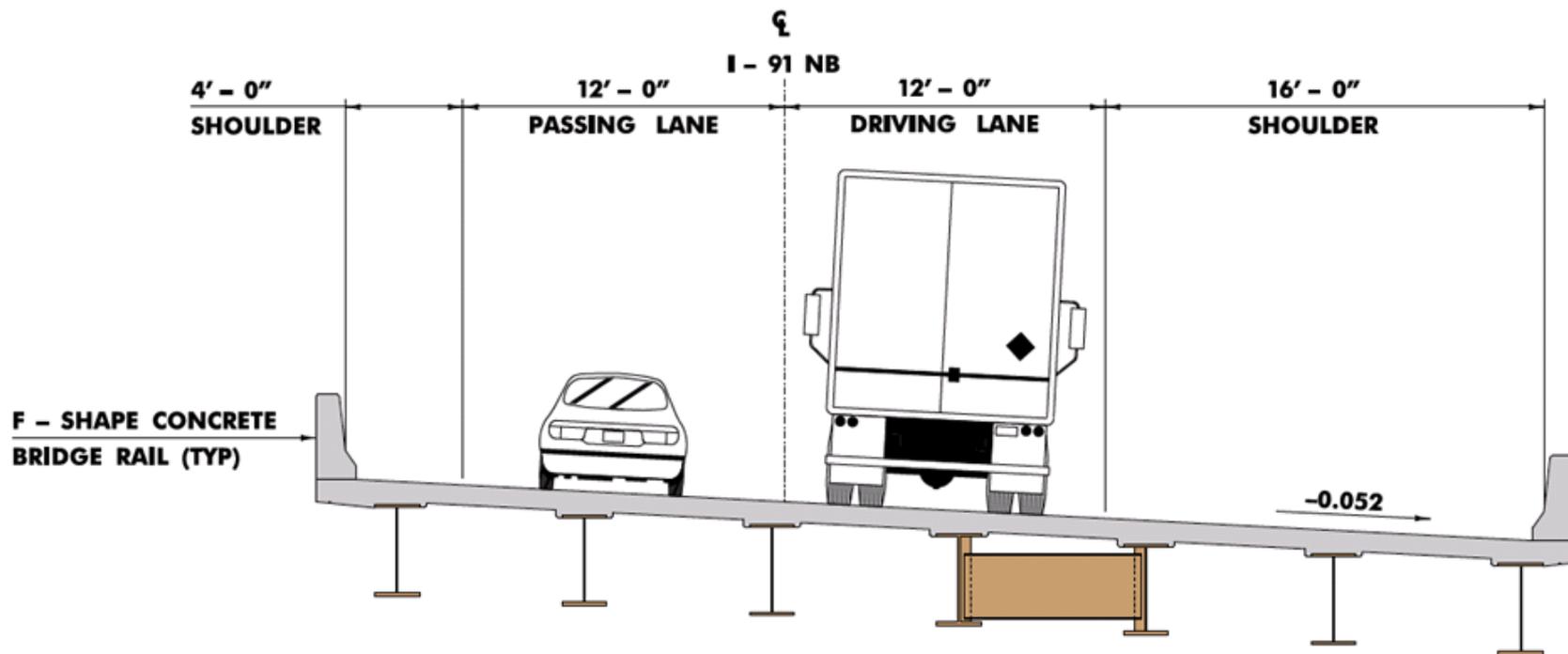
- Wider Bridges
  - Safer for the Traveling Public
  - Better for Maintenance

# Existing Northbound Bridge Geometry



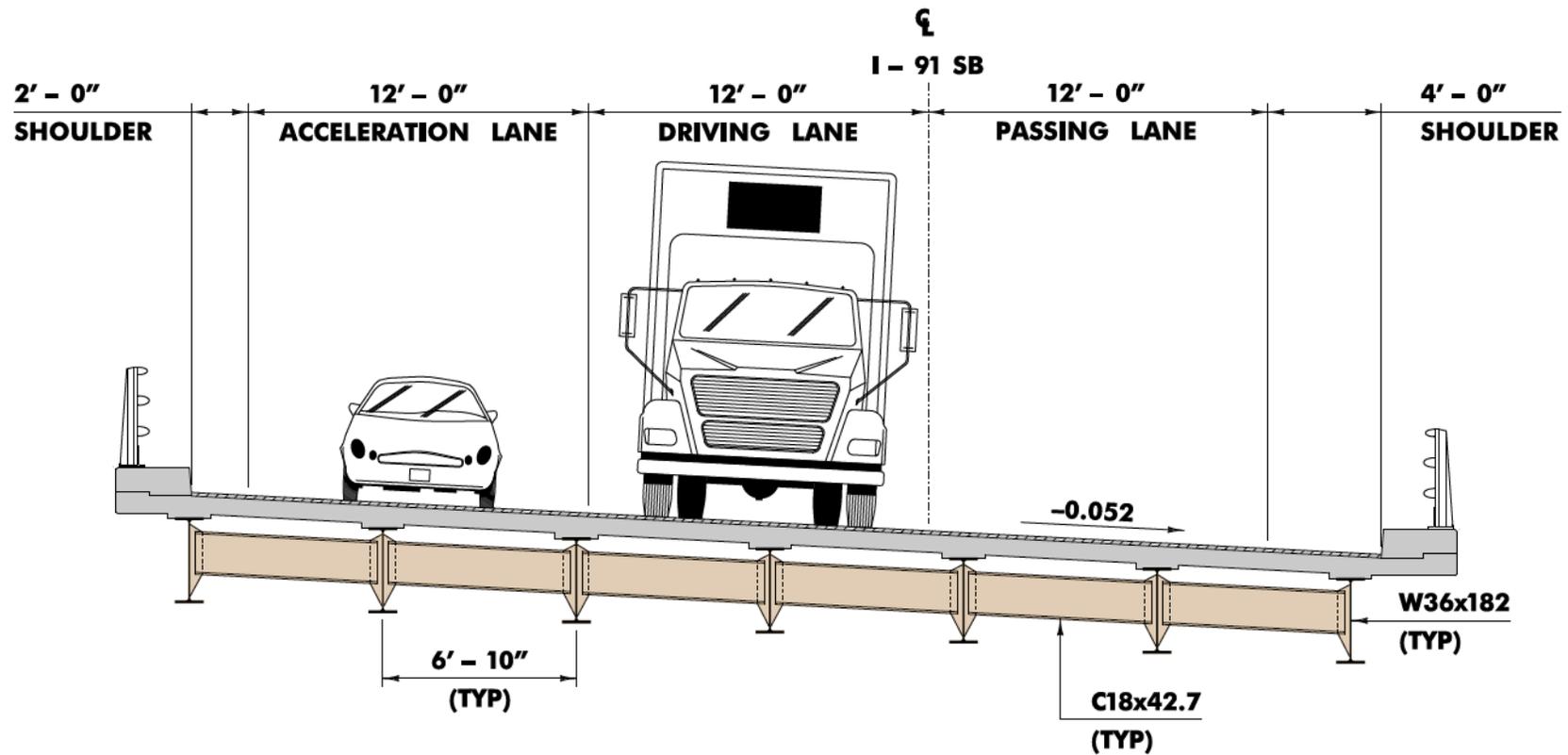
Bridge 43N = 37' - 3" Curb to Curb

# New Northbound Bridge Width



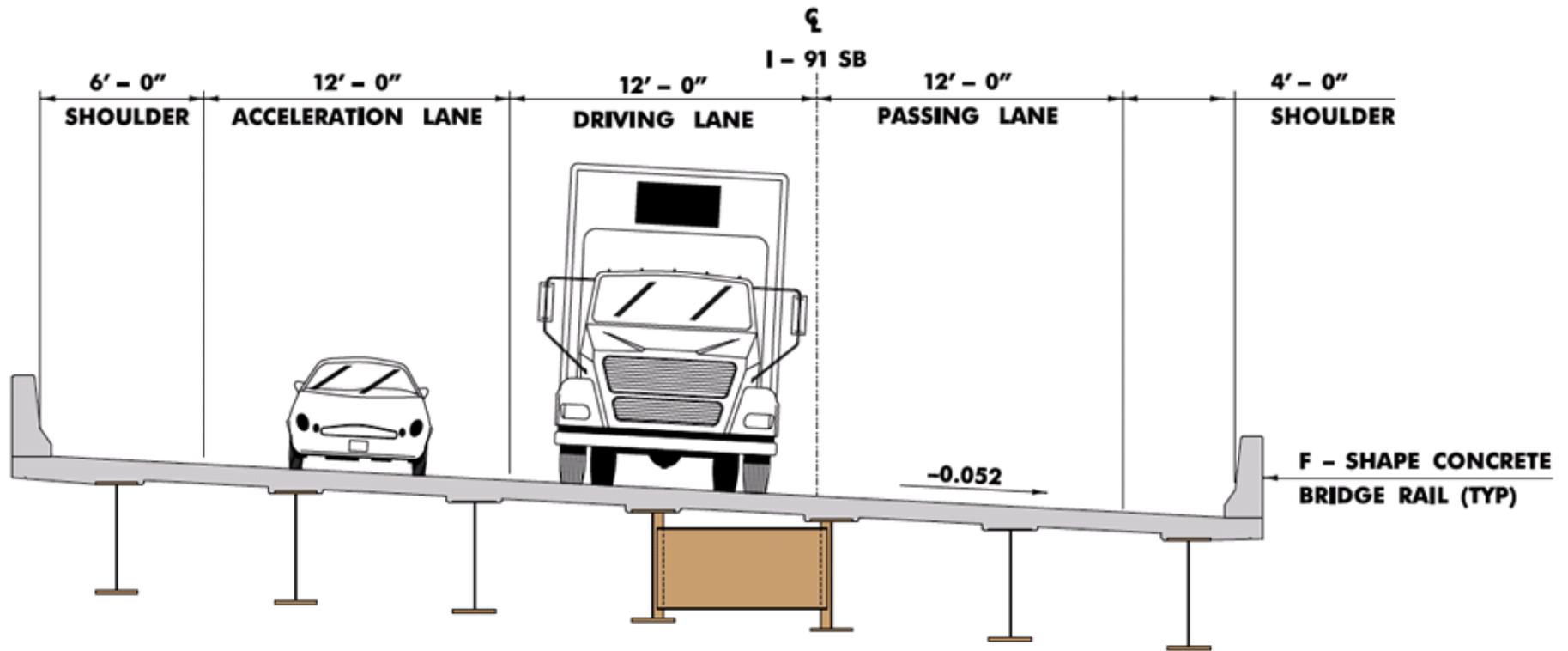
44'-0" Rail to Rail (Widened 6.75' to the East)

# 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)

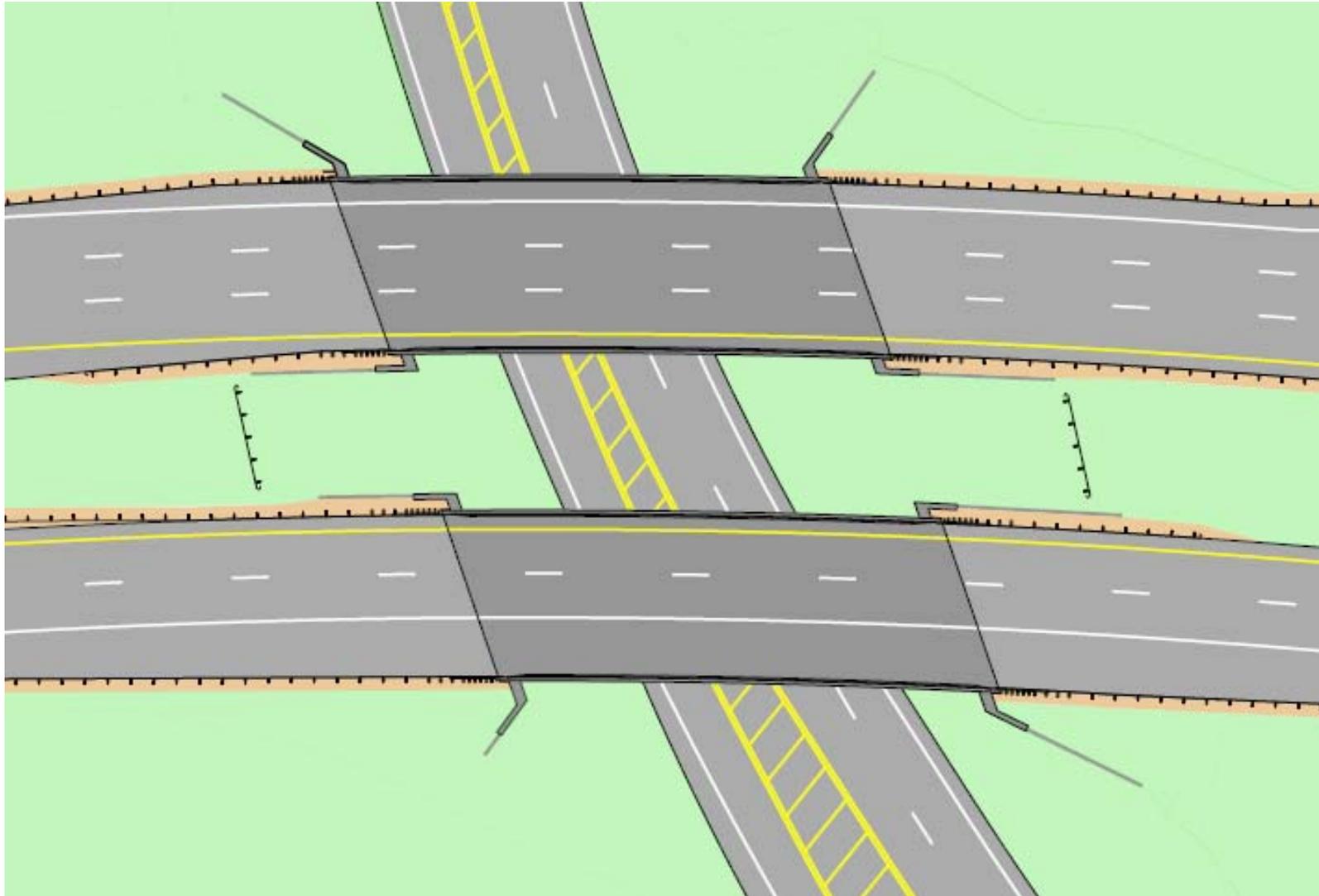
# New Bridge Features

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- Wider Bridges
  - Safer for the Traveling Public
  - Better for Maintenance
- Single Span Structures
  - Eliminate two piers
  - Reduced Maintenance

# New Bridge Layout

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# Route 5 Improvements

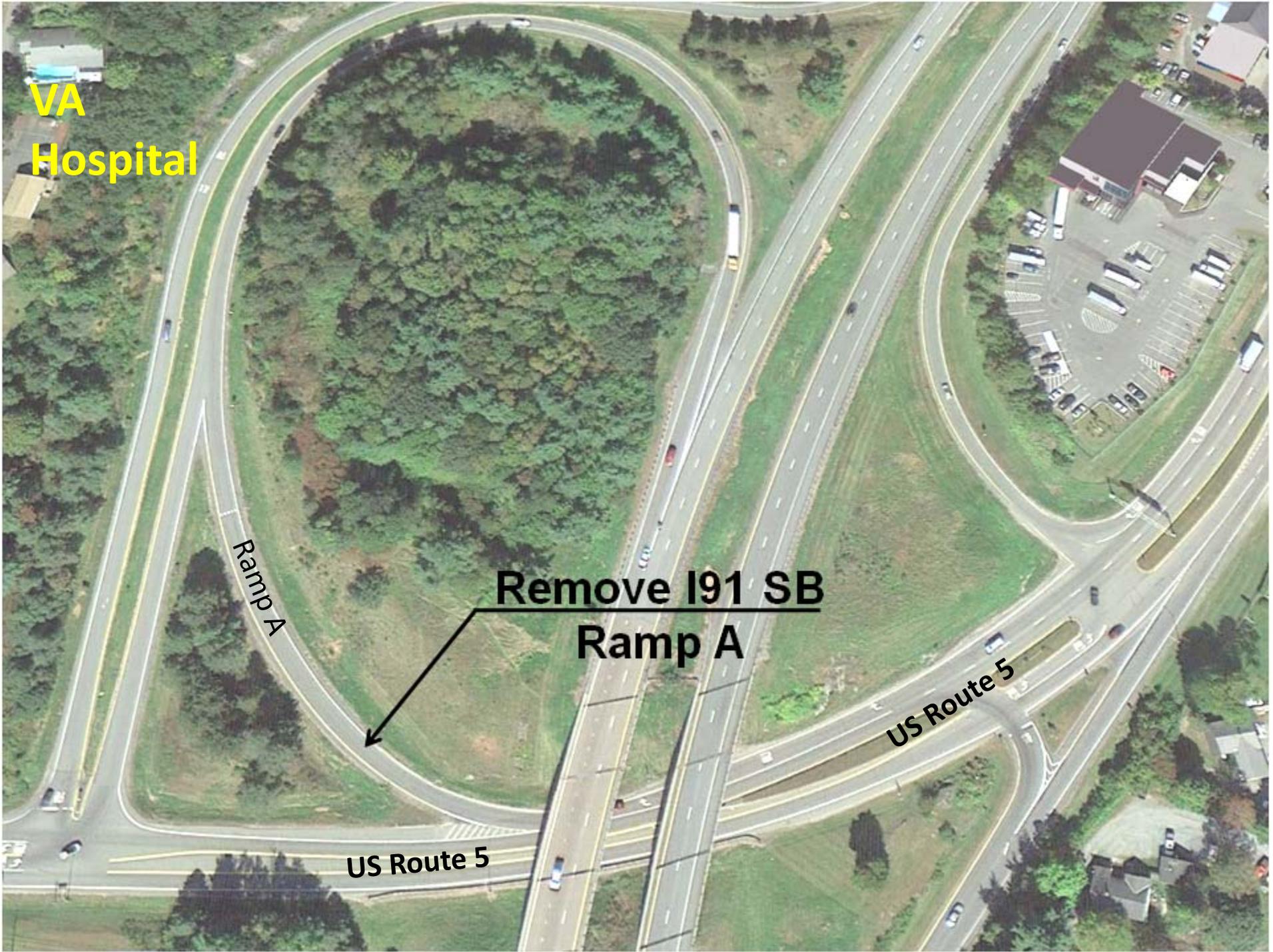


T. J. SAM

# Route 5 Improvements

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- Removal of Southbound Ramp A (“On” ramp from Route 5 South to I-91)



**VA  
Hospital**

*Ramp A*

**Remove I91 SB  
Ramp A**

**US Route 5**

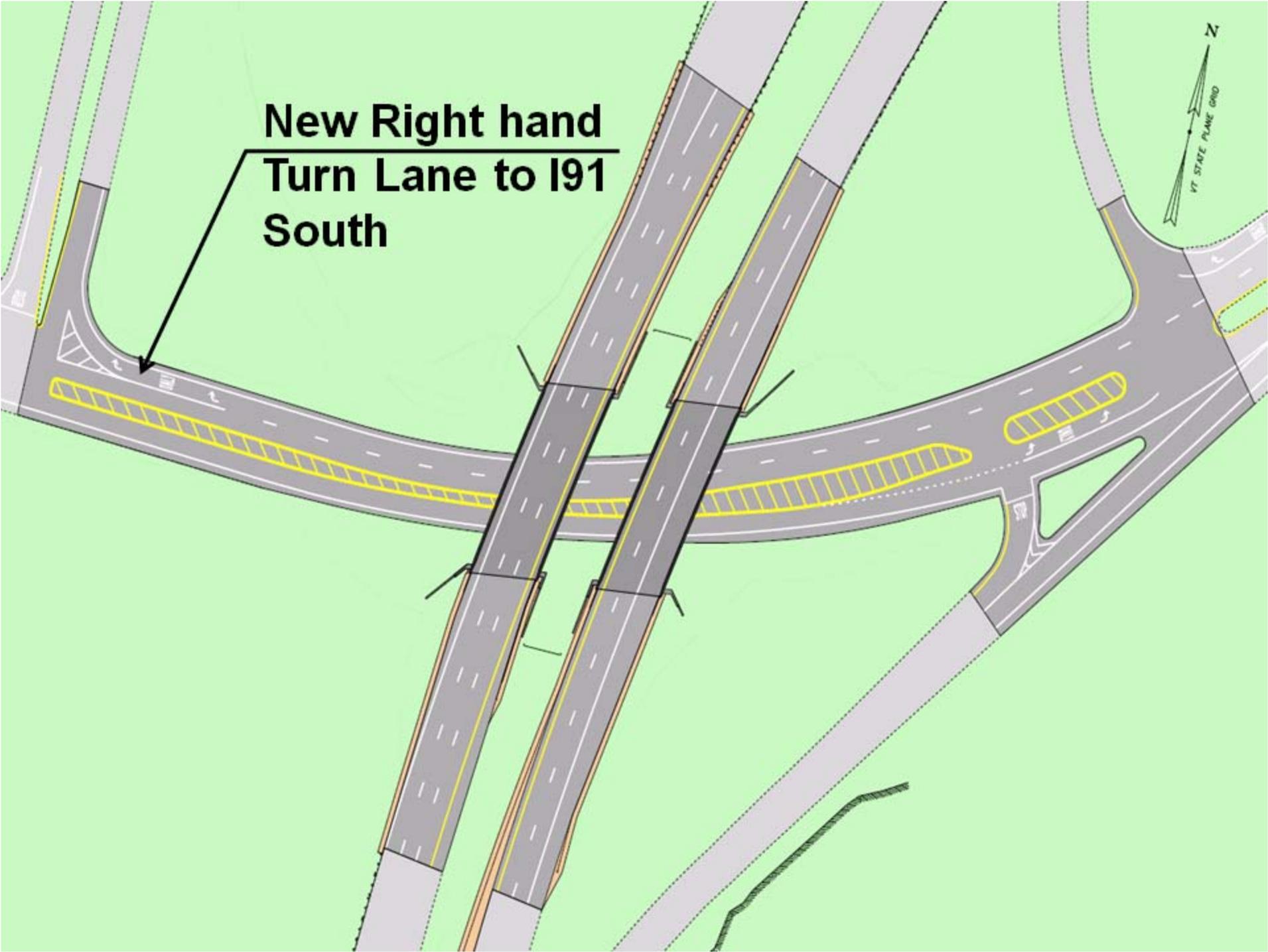
**US Route 5**

# Route 5 Improvements

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- Removal of Southbound Ramp A
- New right hand turn lane on Route 5 at I-91  
South on ramp

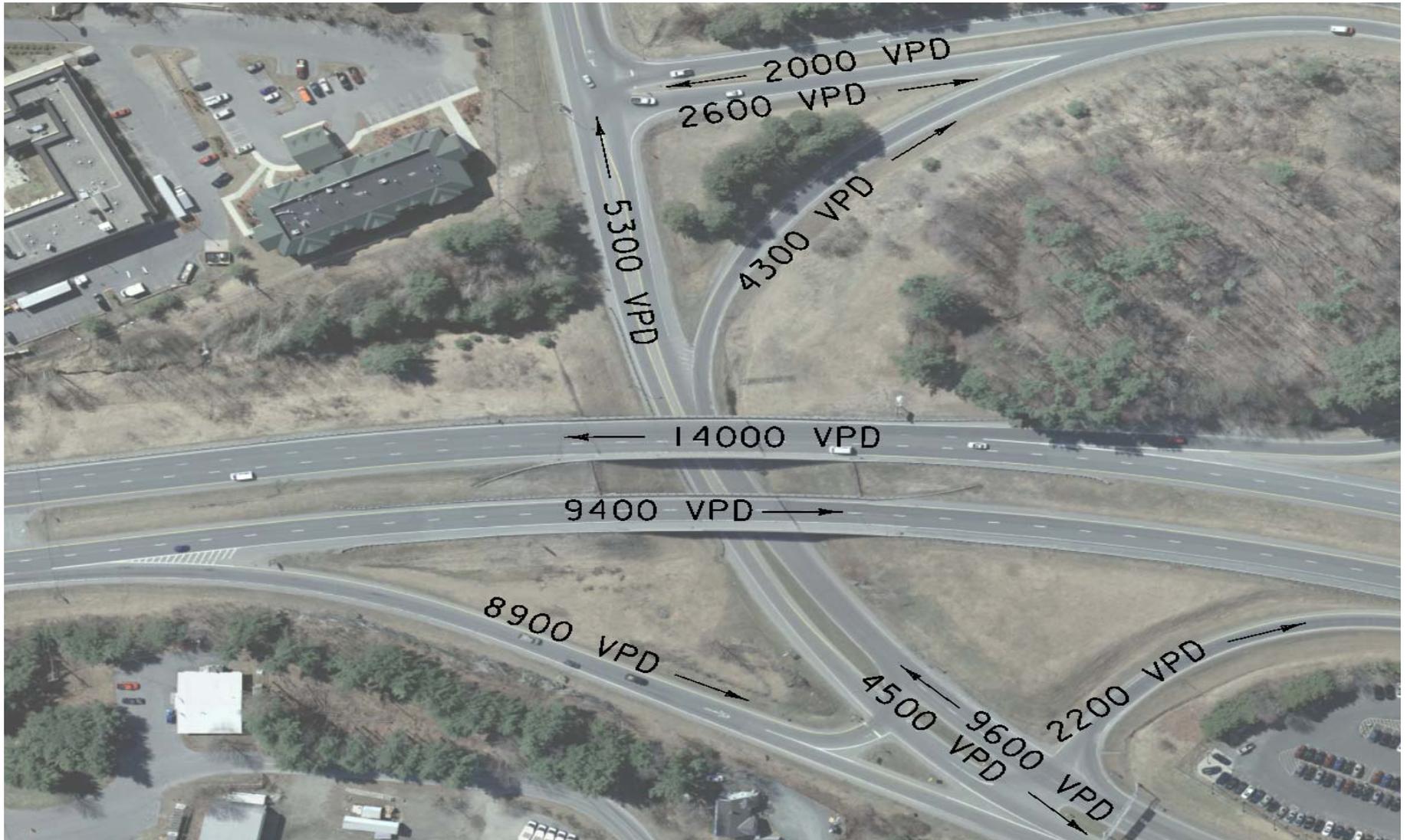
**New Right hand  
Turn Lane to I91  
South**



# Project Challenges

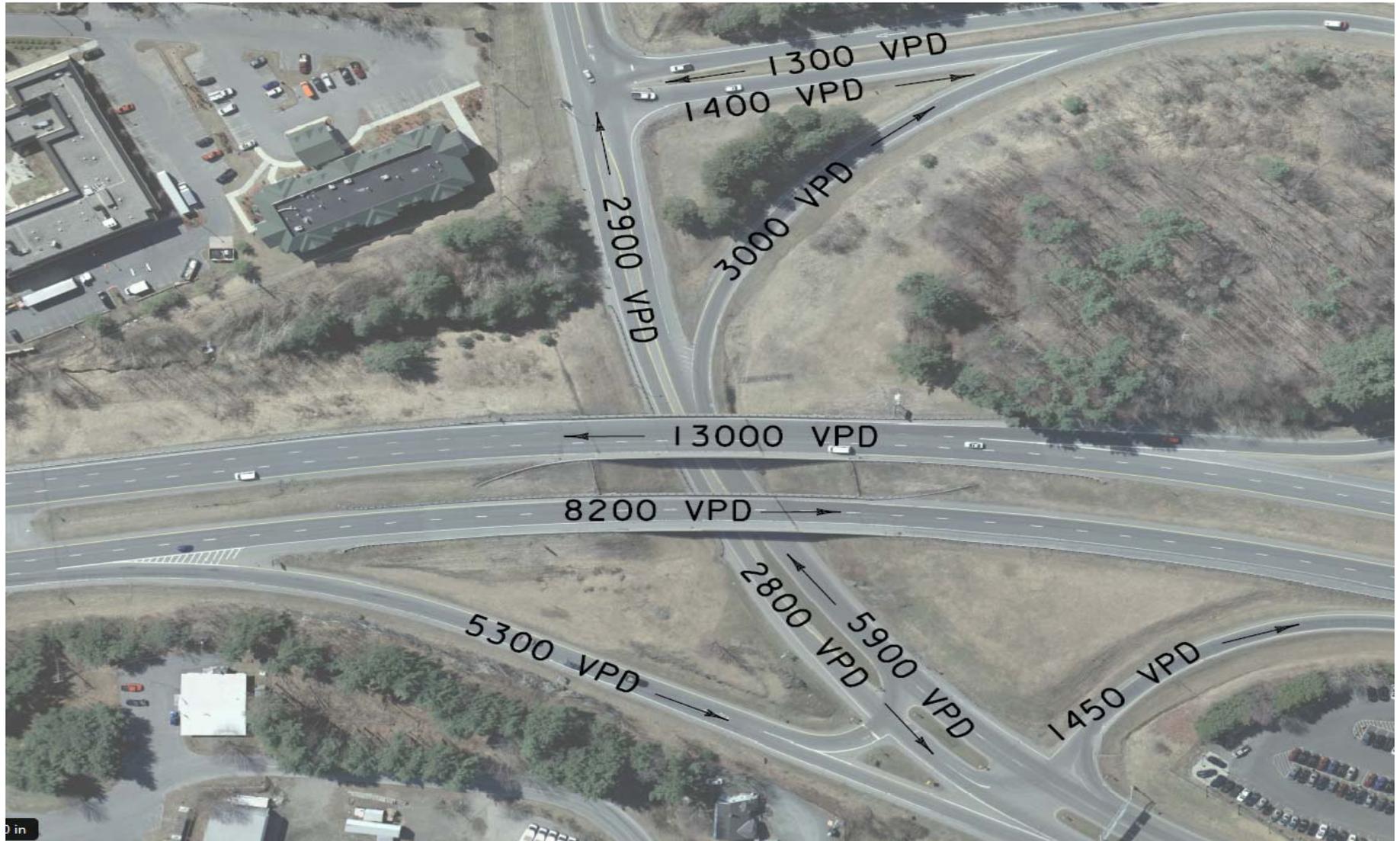


# Traffic Volume – During the Week



VPD = Vehicles Per Day

# Traffic Volume – Weekends



VPD = Vehicles Per Day

# Construction & Maintenance of Traffic

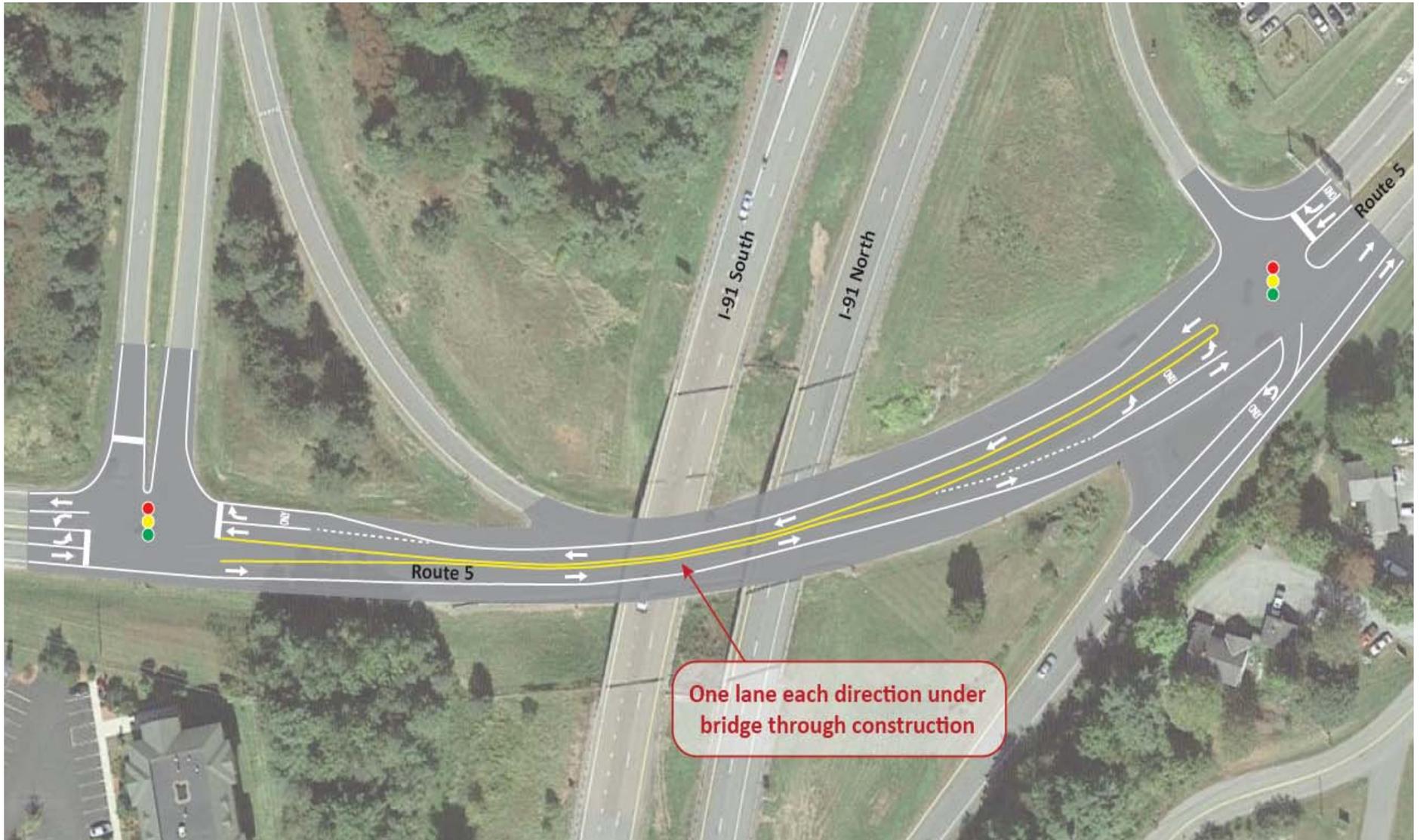


# Route 5 Traffic Control Through Project

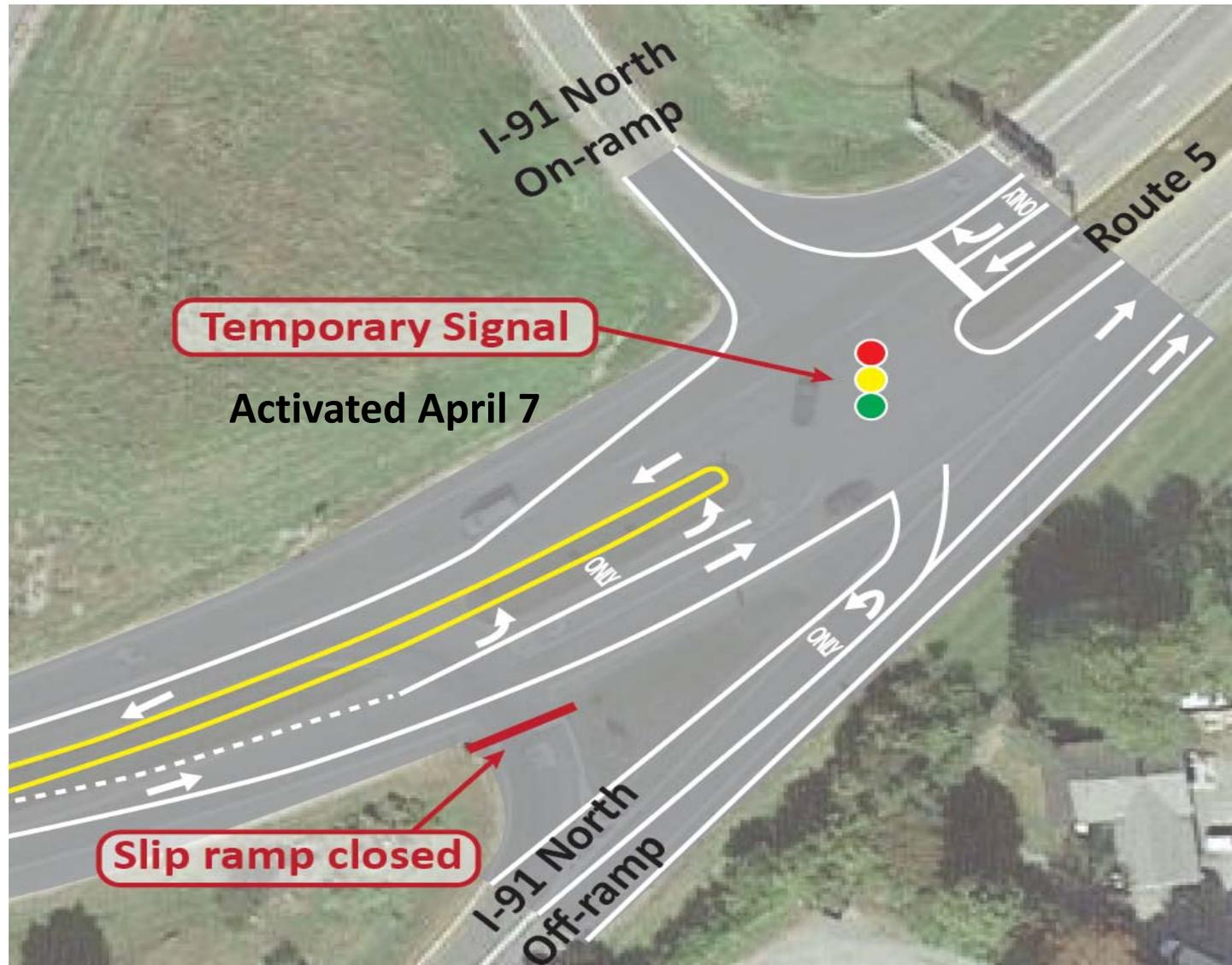
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- Traffic reduced to 2 lanes on Route 5 to provide construction access (Work In Progress)
  - Remove raised Island north of bridges
    - Island will be reconstructed at the end of the project
  - Transition two Lanes to one lane (Rt. 5 South)
    - Sykes Mountain Avenue to I-91 Northbound Ramp
  - Single Lane in both directions through project area
    - Room for Contractor to work on new bridge supports
  - Provide safe pedestrian passage through project area

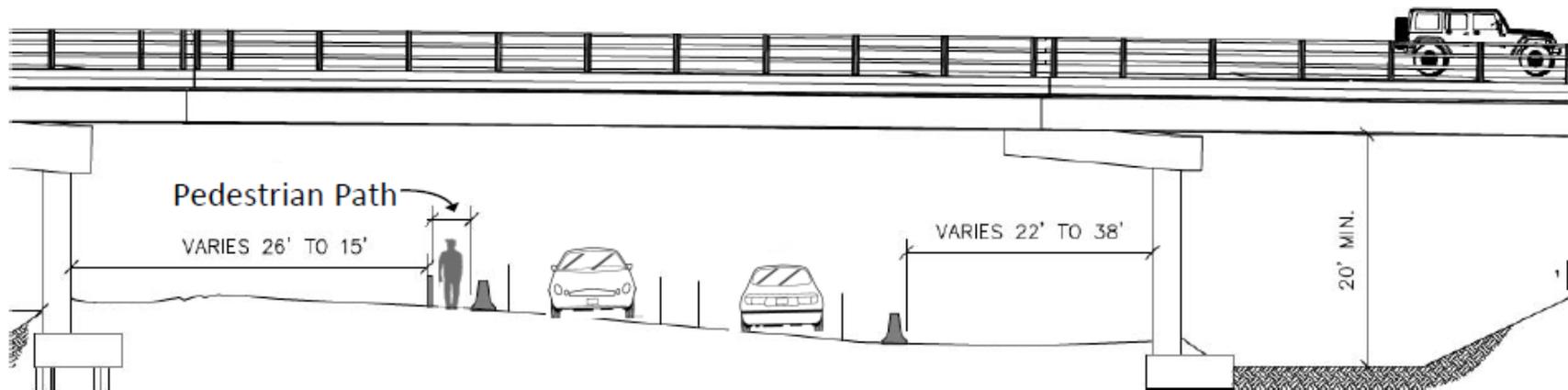
# Route 5 Traffic Control Plan (April – October)



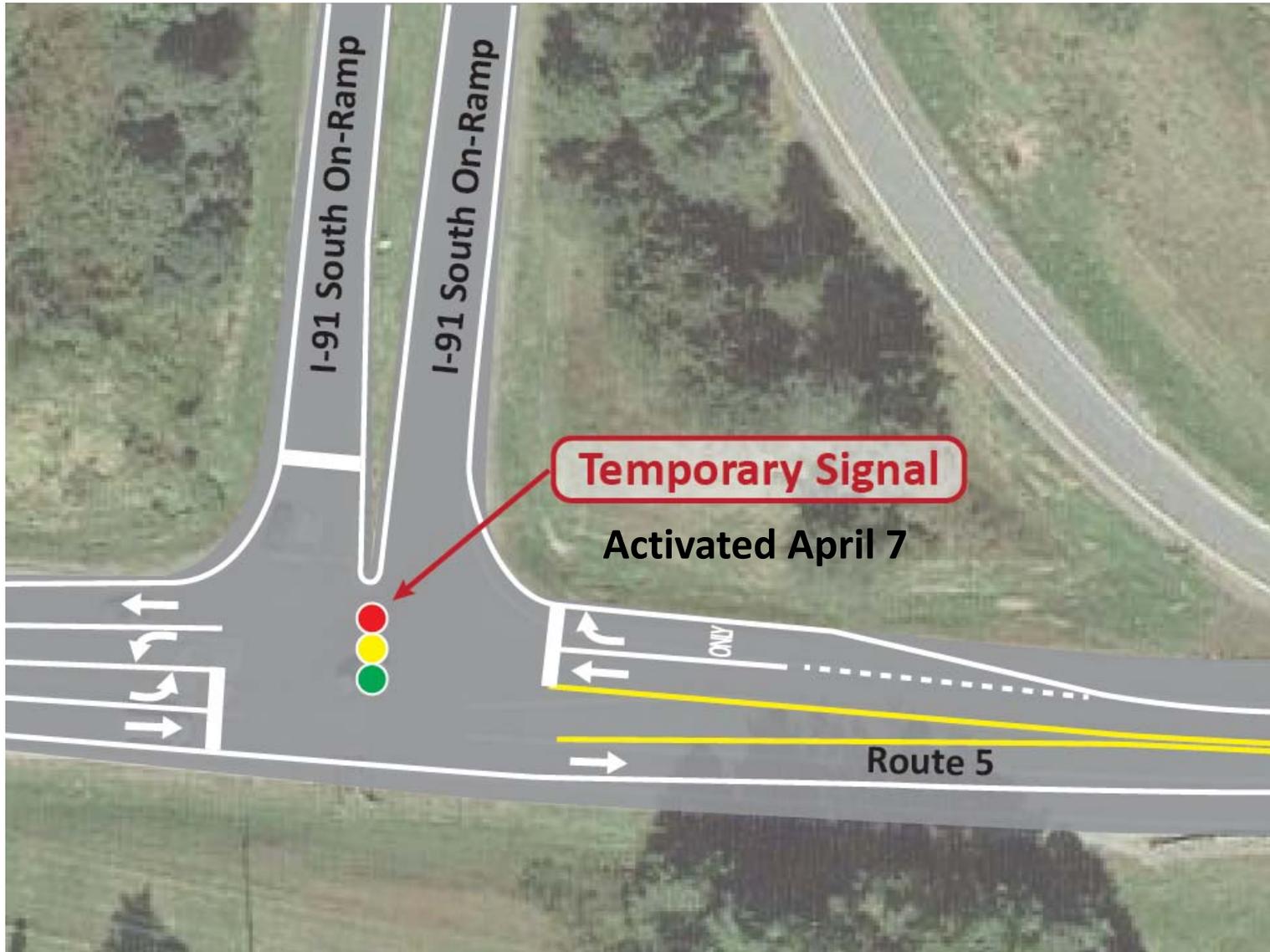
# I-91 NB Off Ramp/Route 5 Intersection



# Traffic & Pedestrian Passage Through Project



# I-91 SB Ramps/Route 5 Intersection



# Accelerated Bridge Construction

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- Slide-In Bridge Construction
- Construct new abutments (supports) under existing Bridges

# New Bridge Supports

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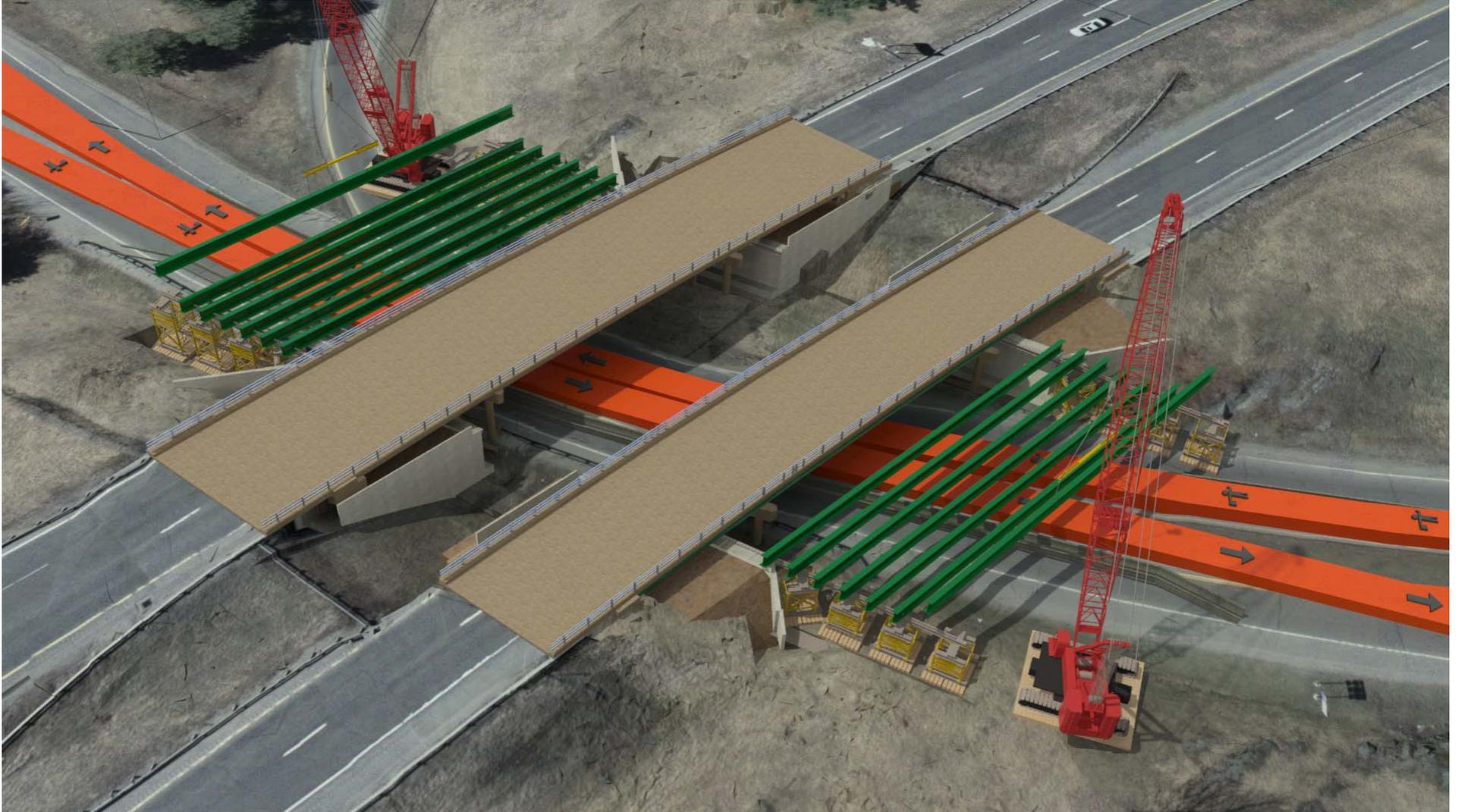
# Accelerated Bridge Construction

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- Slide-In Bridge Construction
- Construct new abutments (supports) under existing Bridges
- Construct the new Bridges on temporary supports next to the Existing Structures

# Setting Beams on Temporary Supports

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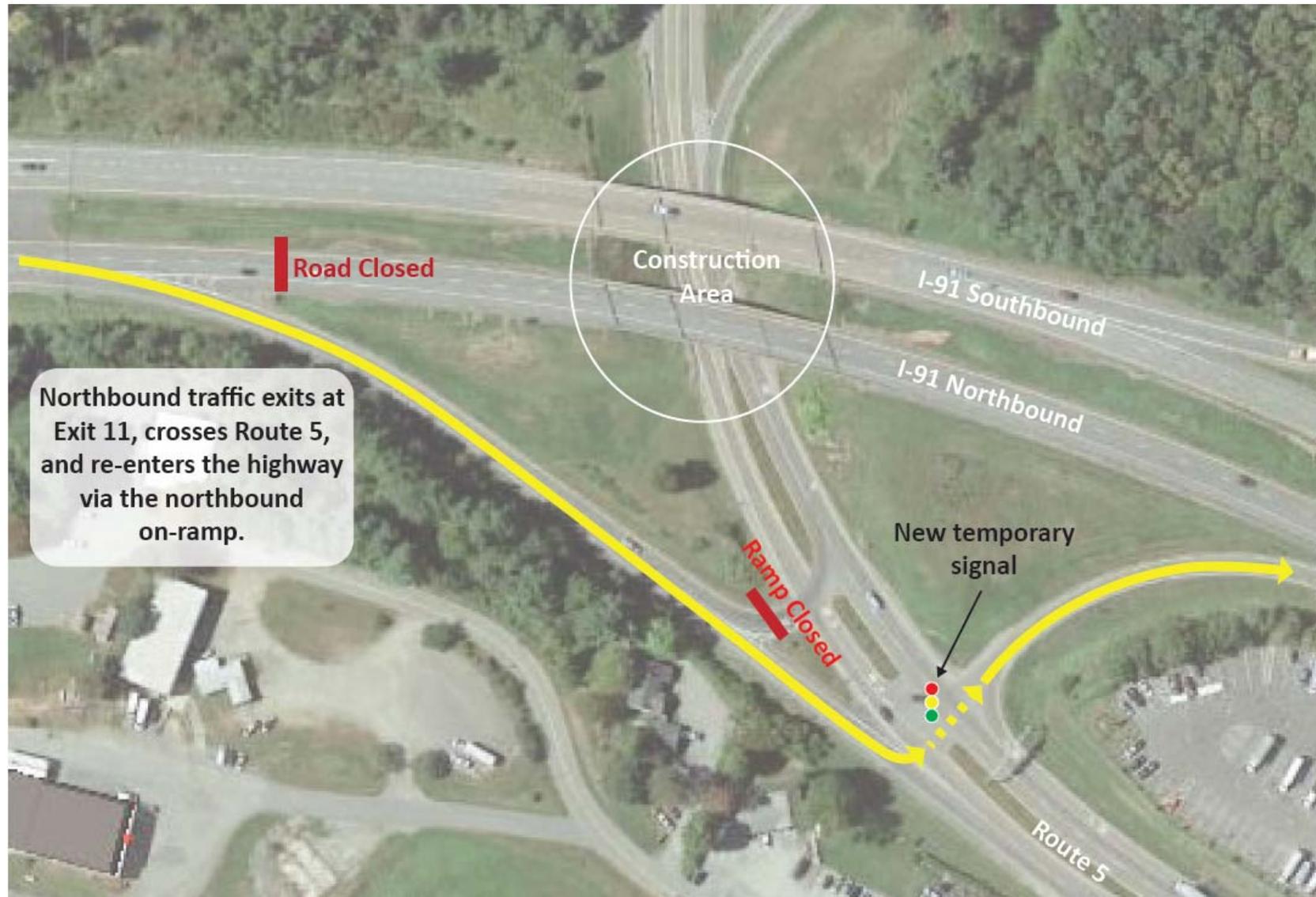


# Accelerated Bridge Construction

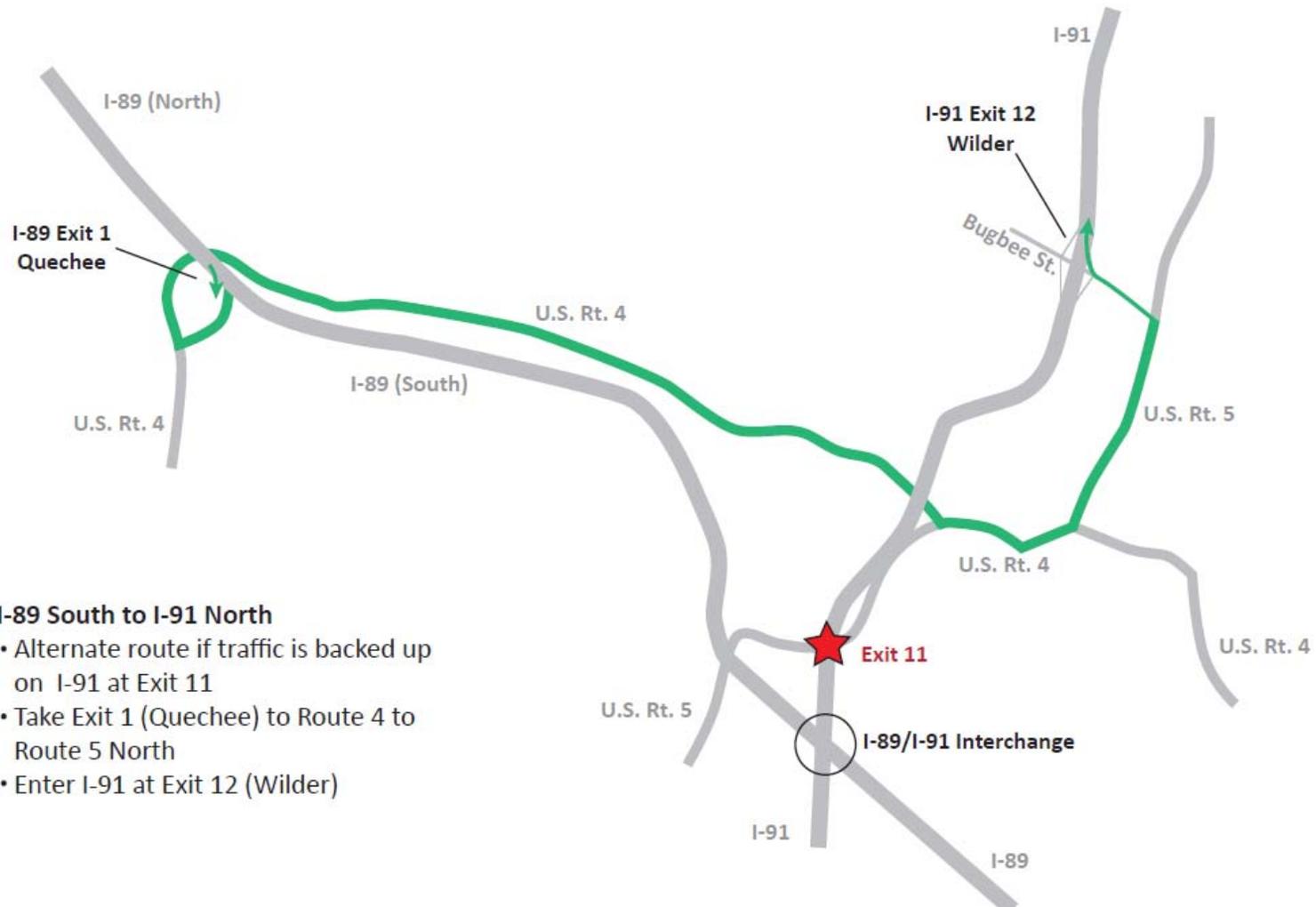
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- Slide-In Bridge Construction
- Construct new abutments (supports) under existing Bridges
- Construct the new Bridges on temporary supports next to the Existing Structures
- **Activate I-91 NB Detour (Close Bridge Friday evening 6:00 PM)**

# I-91 Northbound Detour



# I-89 South heading for I-91 North



## I-89 South to I-91 North

- Alternate route if traffic is backed up on I-91 at Exit 11
- Take Exit 1 (Quechee) to Route 4 to Route 5 North
- Enter I-91 at Exit 12 (Wilder)

# Accelerated Bridge Construction

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- Slide-In Bridge Construction
- Construct new abutments (supports) under existing Bridges
- Construct the new Bridges on temporary supports next to the Existing Structures
- Activate I-91 NB Detour (Close Bridge Friday evening 6:00 PM)
- **Demolish Bridge**
  - Pedestrian Walkway closed during I-91 weekend closure

# Bridge Removal

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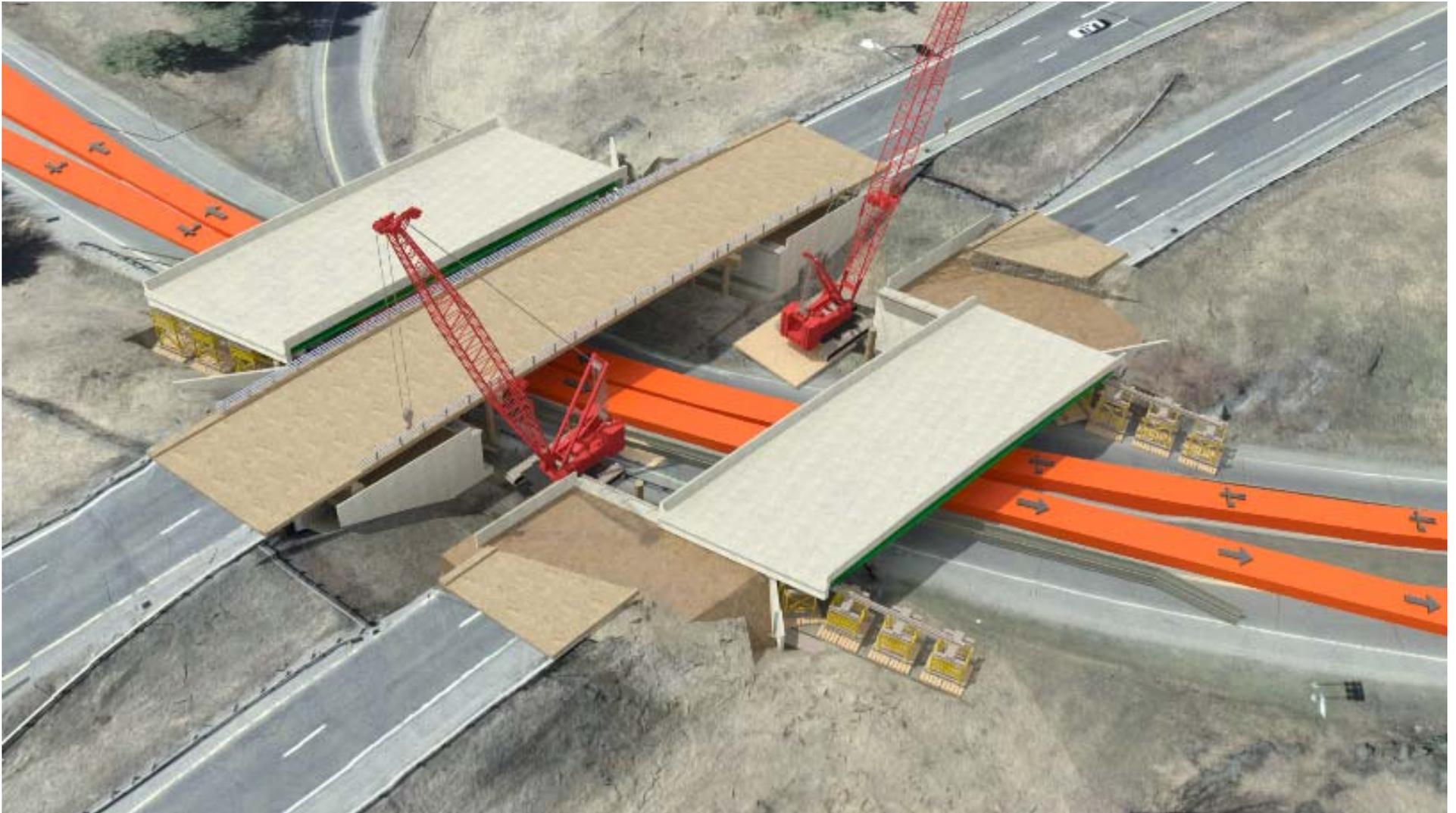
# Accelerated Bridge Construction

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- Slide-In Bridge Construction
- Construct new abutments (supports) under existing Bridges
- Construct the new Bridges on temporary supports next to the Existing Structures
- Activate I-91 Detour (Close Bridge Friday evening 6:00 PM)
- Demolish Bridge
  - Pedestrian Walkway closed during I-91 weekend closure
- **Slide new Bridge into place**

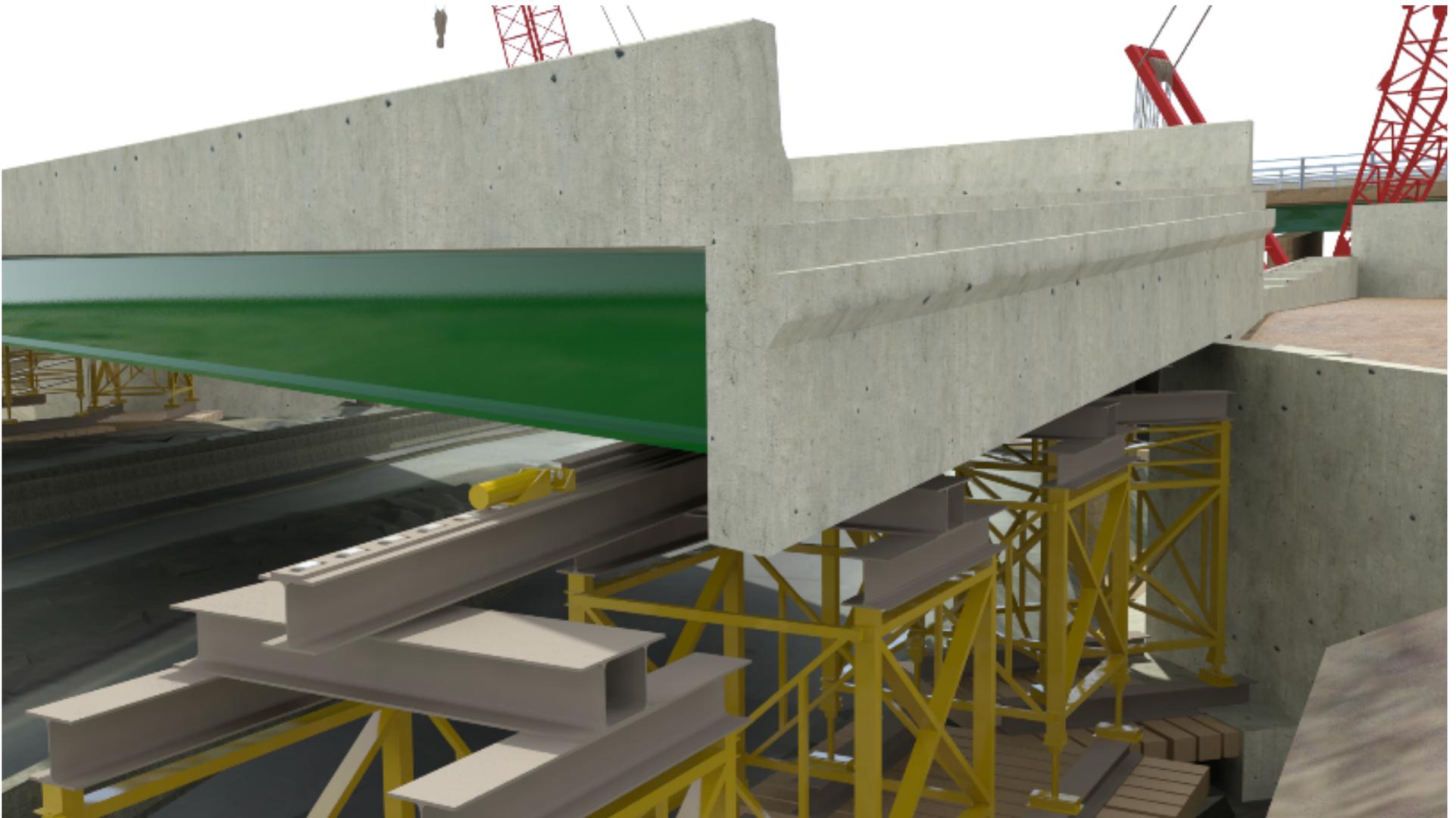
# Slide-In Bridge Construction

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# Moving Bridge into Place

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# Accelerated Bridge Construction

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- Slide-In Bridge Construction
- Construct new abutments (supports) under existing Bridges
- Construct the new Bridges on temporary supports next to the Existing Structures
- Activate I-91 Detour (Close Bridge Friday evening 6:00 PM)
- Demolish Bridge
- Slide new Bridge into place
  
- Complete approaches to bridge
- Open Bridge
- Route 5 under bridges open to traffic but with delays during critical activities (demolition and bridge slide)

# Approach and Roadway Work

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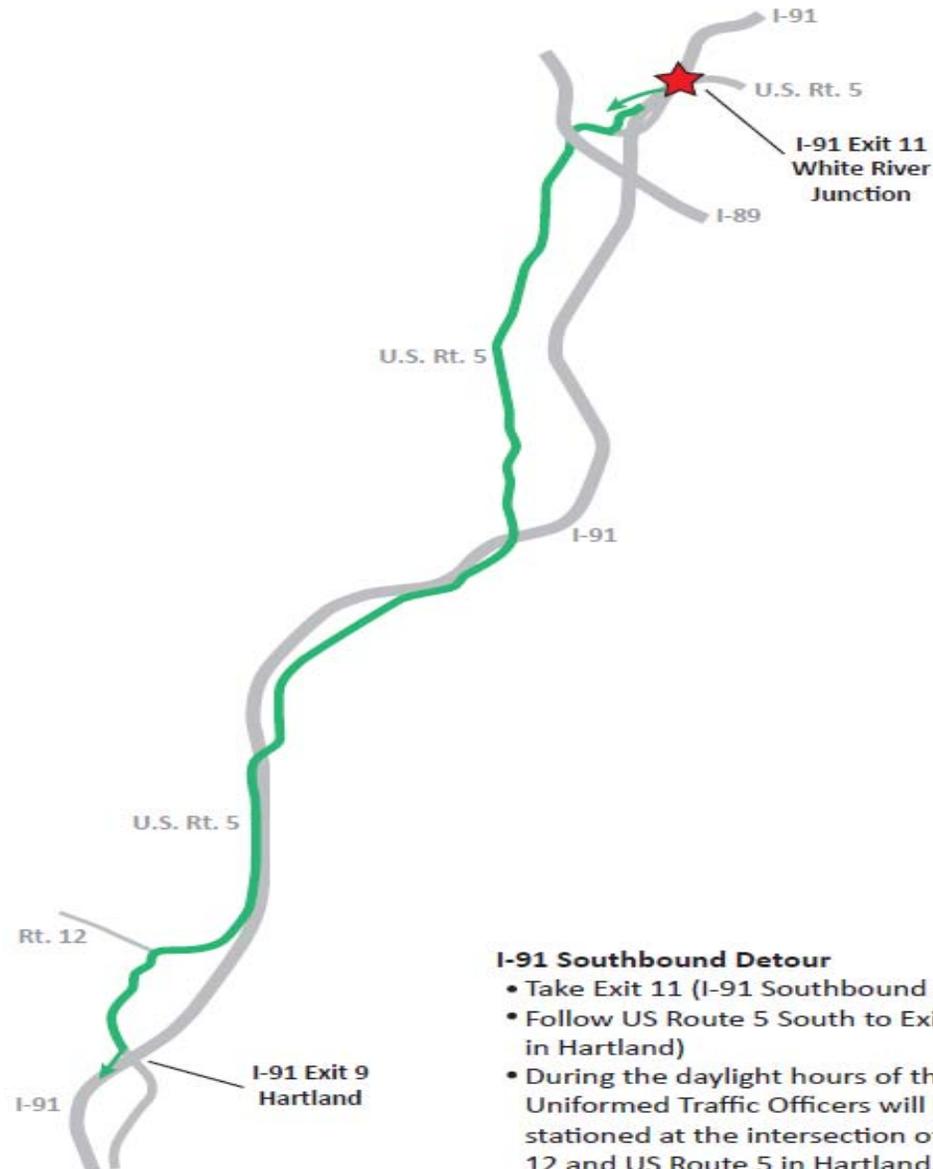


# Bridge Construction

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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

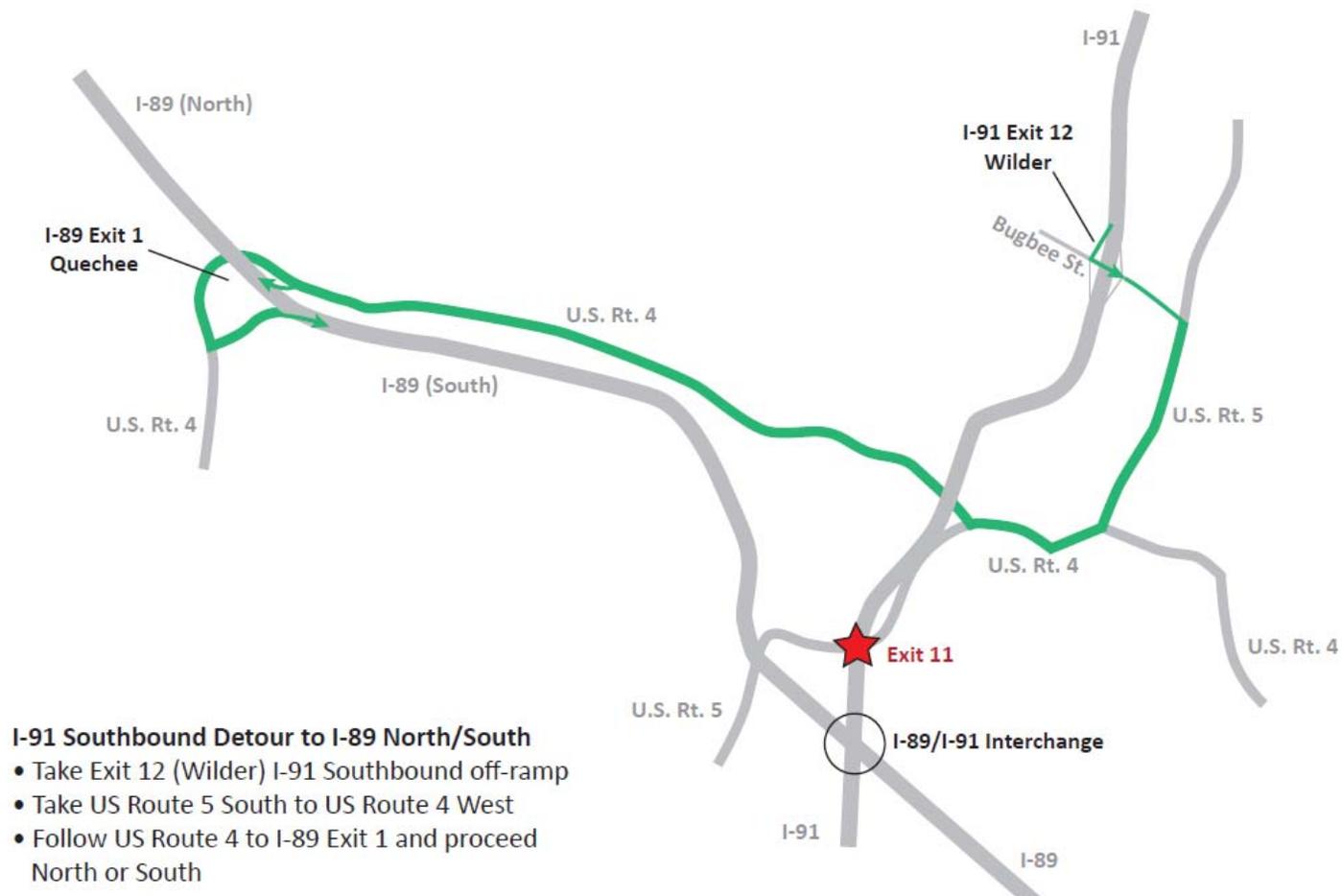
# I-91 Southbound Detour



## I-91 Southbound Detour

- 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.

# I-91 Southbound Detour to I-89 N/S



# Final Condition

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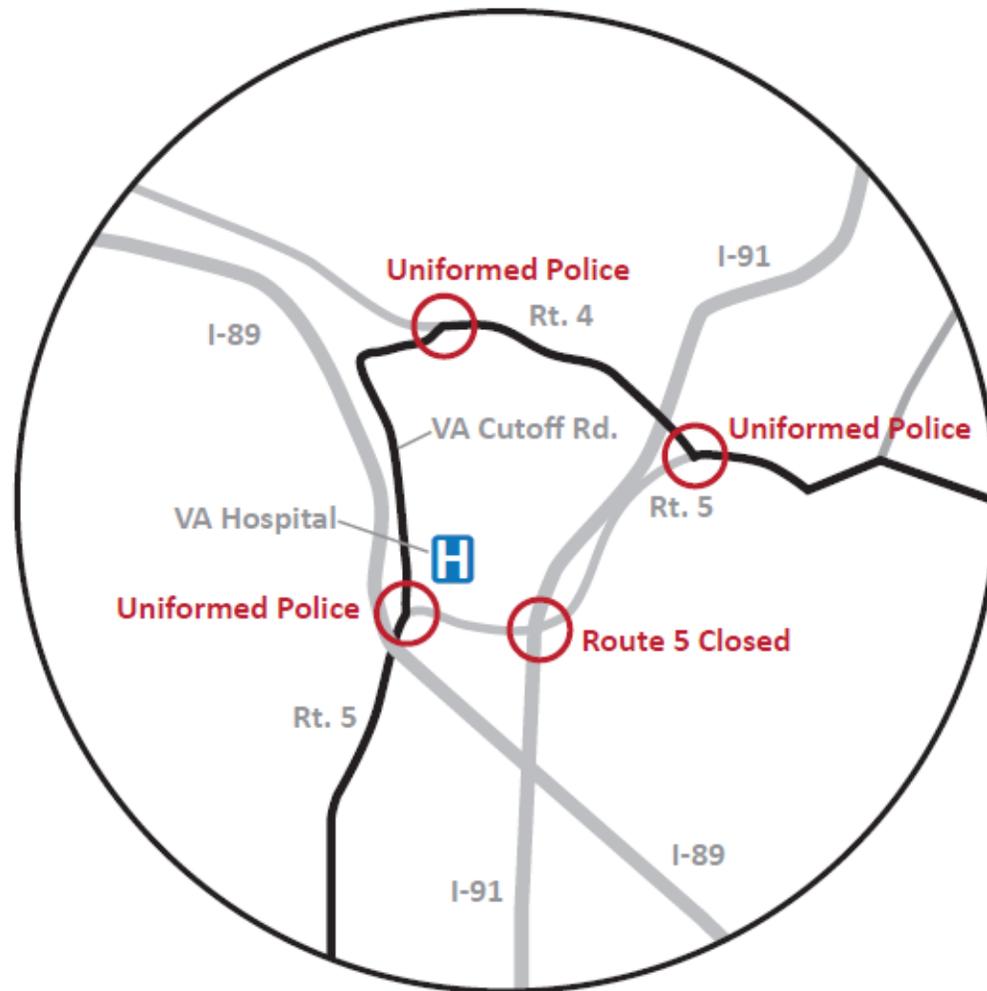
# “What if” Scenarios for Traffic Planning:

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- What if something happens at the bridge site and Route 5 is forced to close?
  - Traffic will be rerouted around the bridges using uniformed traffic officers.
    - 5 South will use US 4 to VA cutoff road
    - 5 North will use VA Cutoff Road to US 4

# “What if” Scenarios for Traffic Planning:

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# “What if” Scenarios for Traffic Planning:

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- What if something happens at the bridge site and Route 5 is forced to close?
  - Traffic will be rerouted around the bridges using uniformed traffic officers.
    - 5 south will use US 4 to VA cutoff road
    - 5 North will use VA Cutoff Road to US 4
- What if a vehicle breaks down or there is an accident in the North bound detour?
  - Tow truck will be stationed in the median of I-91 to clear any mishap that occurs during the closure weekend

# Maintenance of Traffic Summary

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- Maintain traffic through construction site on US5
- Reduce Traffic to 2 lanes along Route 5
- Construct protected pedestrian walkway
- Use VA Cutoff road in case of unexpected emergency
- Use Message boards on highway to divert traffic away from Exit 11
- Limit Traffic Delays

# Maintenance of Traffic Summary

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- Limit Traffic Delays:
  - Two way traffic always during peak hours
    - 6:00 AM – 9:00 AM
    - 3:00 PM – 6:00 PM
  - Delays not to exceed 10 minutes per VTrans Specification
    - 9:00 AM – 3:00 PM
    - 6:00 PM – 9:00 PM
  - Delays exceeding 10 minutes but not to exceed 20 minutes
    - 9:00 PM – 6:00 AM

# Bridge Construction Summary:

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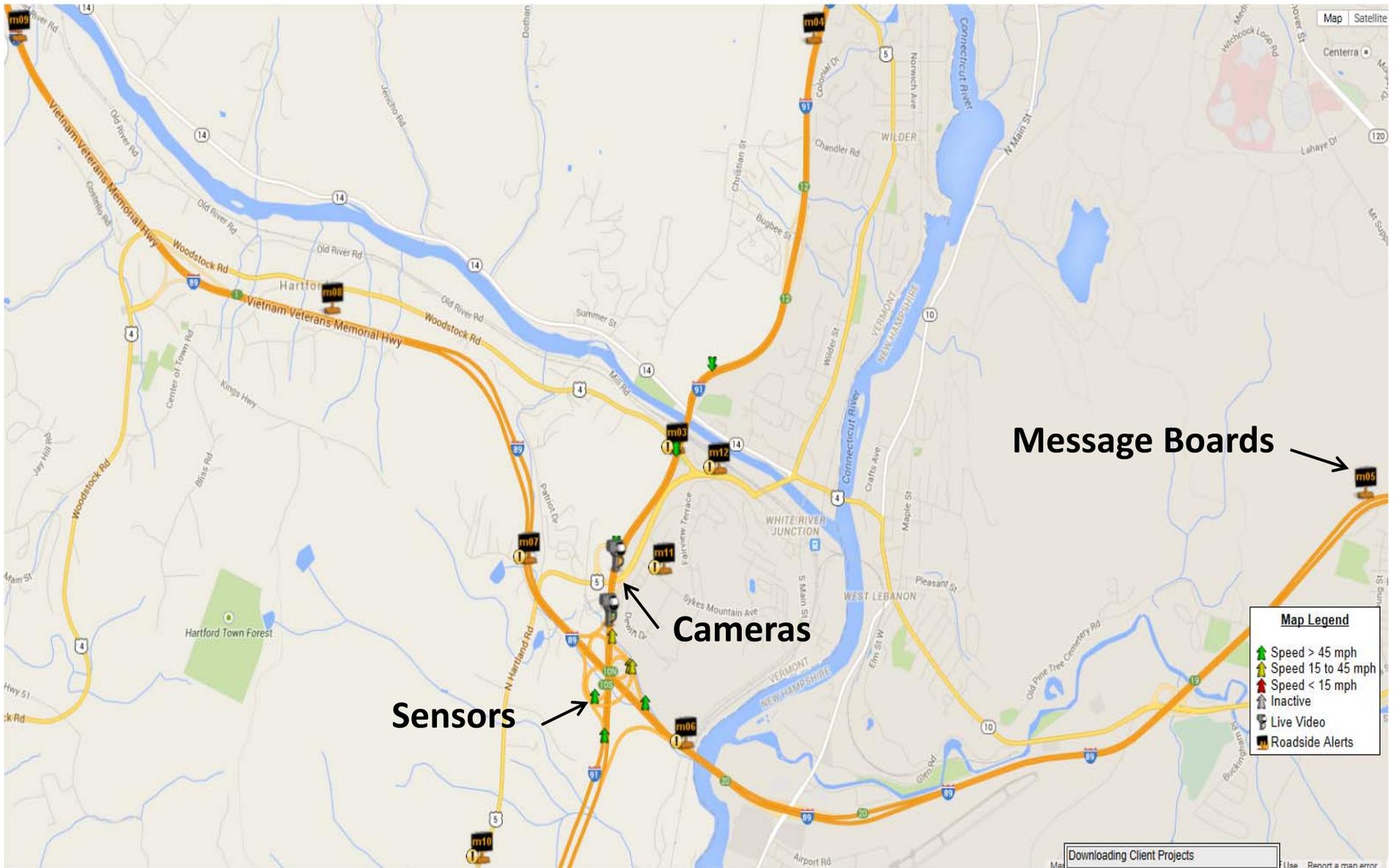
- Accelerated Bridge Construction Technology
- Slide-In Bridge Construction
- Both bridges replaced in one construction season
- Construct new abutments under existing bridges
- Construct new superstructures next to the existing bridges
- Close I-91 at bridges for one weekend for each bridge (Friday evening to Monday morning)
- Slide bridges into place
- Complete approach work on I-91
- Open I-91
- Restore Route 5

# Project Construction Schedule

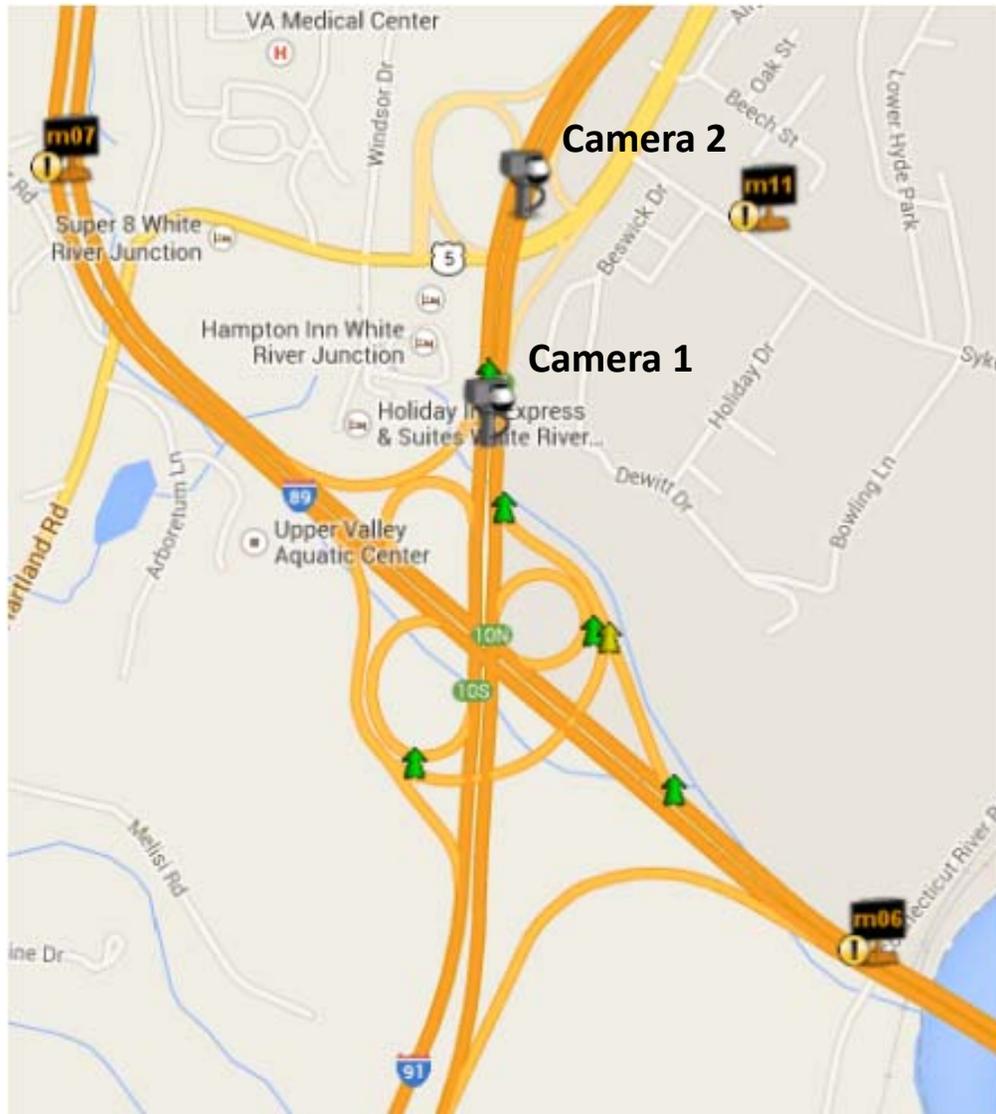
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- Begin Construction – March 23, 2015
- Install Smart Workzone (Complete)
  - Sensors, cameras and message boards used to collect data and alert travelers
    - 11 Sensors
    - 2 Cameras
    - 12 Message Boards

# Smart Work Zone



# Smart Work Zone

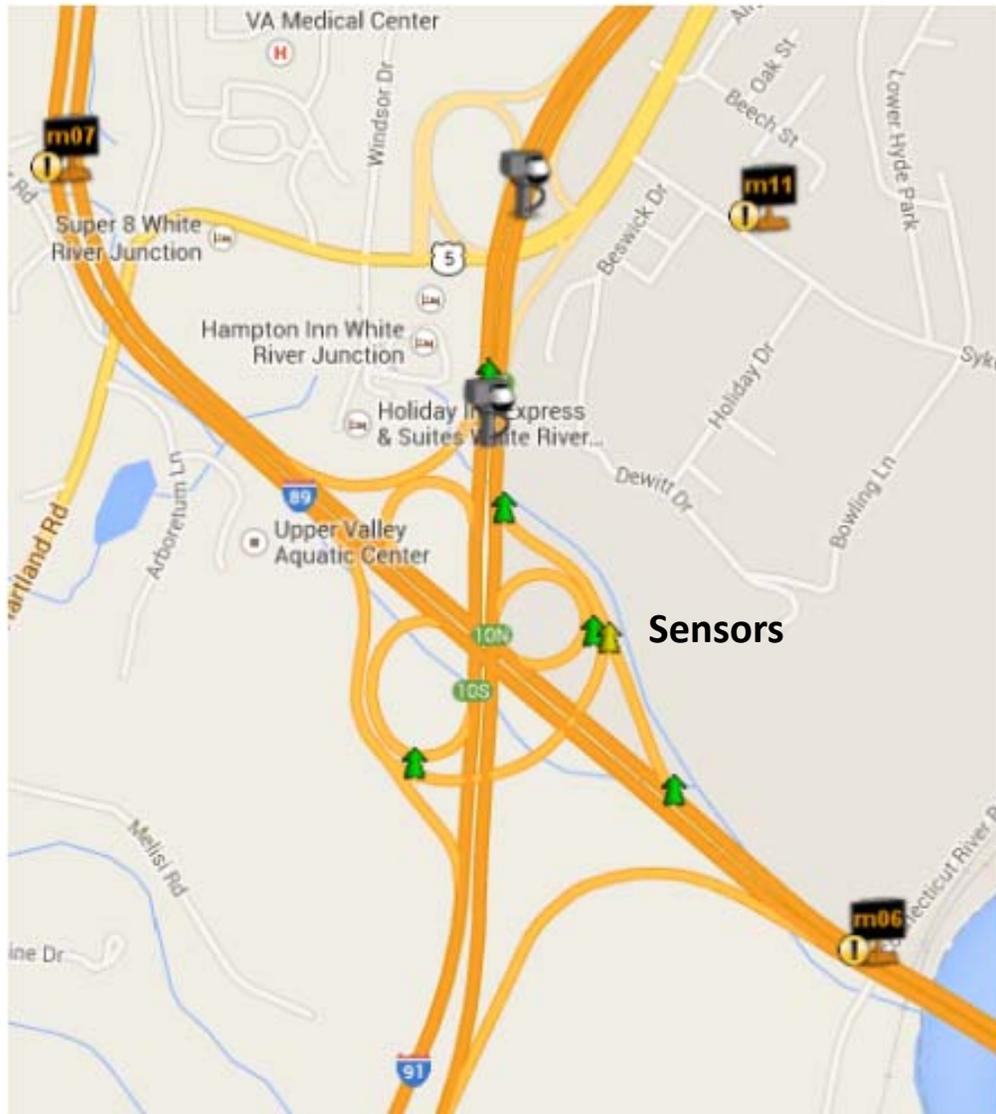


**Camera at NB to US 5 off ramp**



**Camera at I-89 to I-91 NB on ramp**

# Smart Work Zone



Current Sensor Data	
[Redacted]	
<b>Speed</b>	
S Lanes Average Speed: 59.7	
Lane # 1	59.8
Lane # 2	59.6
<b>Volume</b>	
S Lanes Total Volume: 9	
Lane # 1	3
Lane # 2	6
<b>Density</b>	
S Lanes Average Density: 2.3	
Lane # 1	1.2
Lane # 2	3.5

USE I-89  
EXIT 1  
WOODSTCK

FOR ALT  
ROUTE  
TO I-91N

# Project Construction Schedule

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- Install traffic signals & reconfigure US 5
  - Complete April 7
  - I-91N Exit 11 into WRJ
    - Right/Straight may proceed after stop
- Excavate under existing Bridges for new foundations
  - April 8 – April 24
- Install piles for new foundations under existing bridges
  - April 13 – April 30
- Build new abutments under existing bridges
  - April 30 – June 28

# Project Construction Schedule

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- Erect temporary support towers for new bridges next to existing bridges
  - Starting on May 11
    - Northbound bridge first
    - Southbound bridge one week later
- Construct the new bridges on the temporary supports
  - Starting June 8 – July 31
    - Night Time work Necessary to set Girders, place concrete panels, form overhangs, pour concrete etc.
    - Check website for updates or sign up for email alerts so you can plan your evening travel.
    - Longer delays expected between 9:00 pm and 6:00 am

# Project Construction Schedule - Closures

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- Prepare for first slide (Northbound Bridge)
  - Lane closures and night work on I-91 NB starting on August 18
    - Remove existing pavement
    - Start the structure demolition on August 20
- Close I-91 Northbound - Friday August 21 at 6:00 pm
  - Complete bridge demolition (Friday Night)
  - Slide Bridge into place (Saturday Morning)
  - Backfill to finish grade
  - Set Approach Slabs
  - Pave I-91 approaches
- Open I-91 Northbound - Monday August 24 at 6:00 am

# Project Construction Schedule - Closures

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- Prepare for second slide (Southbound Bridge)
  - Lane closures and night work on I-91 SB starting on August 25
    - Remove existing pavement
    - Start the structure demolition on August 27
- Close I-91 Southbound - Friday August 28 at 6:00 pm
  - Complete bridge demolition (Friday Night)
  - Slide Bridge into place (Saturday Morning)
  - Backfill to finish grade
  - Set Approach Slabs
  - Pave I-91 approaches
- Open I-91 Southbound - Monday August 31 at 6:00 am

## Post Closure Construction September - October

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- Remove old bridge pier columns
- Remove temporary support towers
- Remove southbound slip lane and seed
- Restore City Water line
- Repave US 5 within project limits
- Place final pavement markings on US 5 including new right hand turn lane
- Restore US 5 medians
- Remove Traffic signals
- Restore staging areas
- Project Complete October 30, 2015

# Public Outreach Coordination

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- Project Web Address

[www.i91wrj.vtransprojects.vermont.gov](http://www.i91wrj.vtransprojects.vermont.gov)

- Public Outreach Coordinator

Jill Barrett

802-272-1248

[jbarrett@fhiplan.com](mailto:jbarrett@fhiplan.com)

# Project Key Personnel

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- VTrans - Resident Engineer  
Chris Barker  
802-281-6499  
[chris.barker@state.vt.us](mailto:chris.barker@state.vt.us)
- VTrans - Project Manager  
Kristin Higgins  
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- PCL Civil Constructors, INC - Project Manager  
Jeremy Mackling  
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Ron Gibbens  
802-281-6689