

TRANSPORTATION and TECHNOLOGY on the SEACOAST

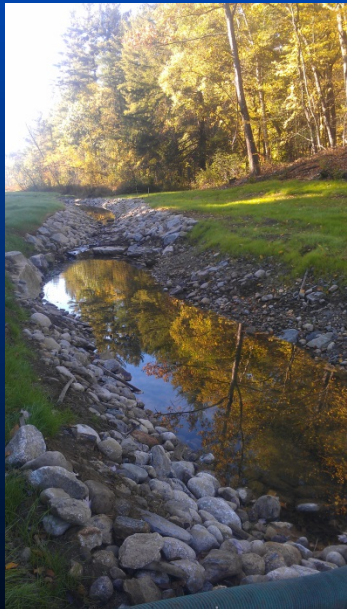
An Overview of the Spaulding Turnpike Newington-Dover Project

ITE/ASCE Joint Meeting

AT

University of New Hampshire

OCTOBER 29, 2015

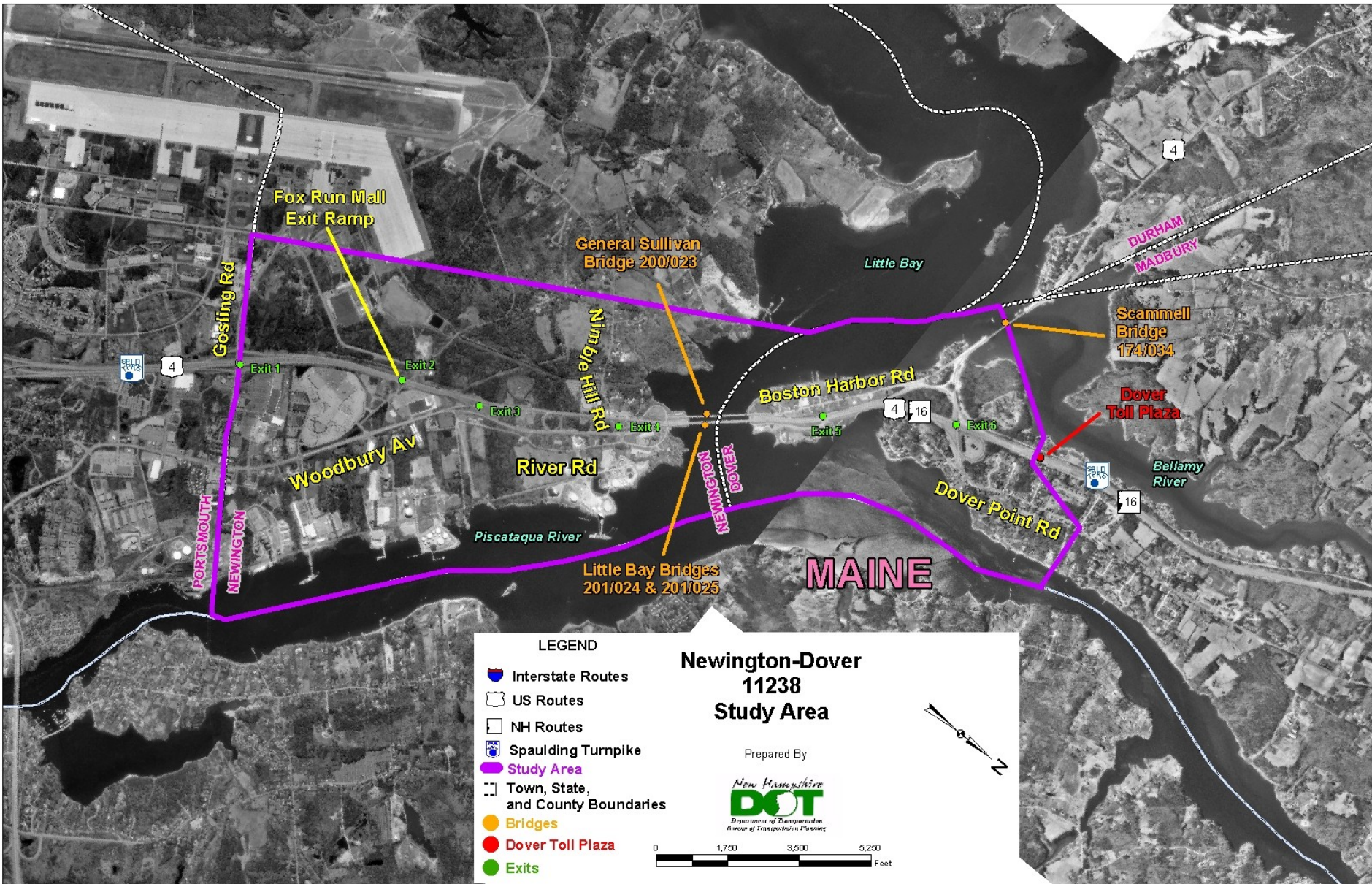


Meeting Agenda

- **Project Overview**
- **Status of Newington-Dover, 11238 Contracts**
 - **Contract L – New Little Bay Bridge SB**
 - **Contract M – Newington**
 - **Contract O – Little Bay Bridge NB Rehabilitation**
 - **Contract Q – Dover**
 - **Contract S – General Sullivan Bridge Rehabilitation**
- **Intelligent Transportation Systems (ITS)**



Project Area



Project Need



NEWINGTON-DOVER 11238



Post Construction

Pre-Construction

NEWINGTON
SOUTHERLY
RENDERING



NEWINGTON-DOVER 11238



Post Construction

Pre-Construction



DOVER
NORTHERLY
RENDERING

Little Bay Bridges Contracts L, O, & S

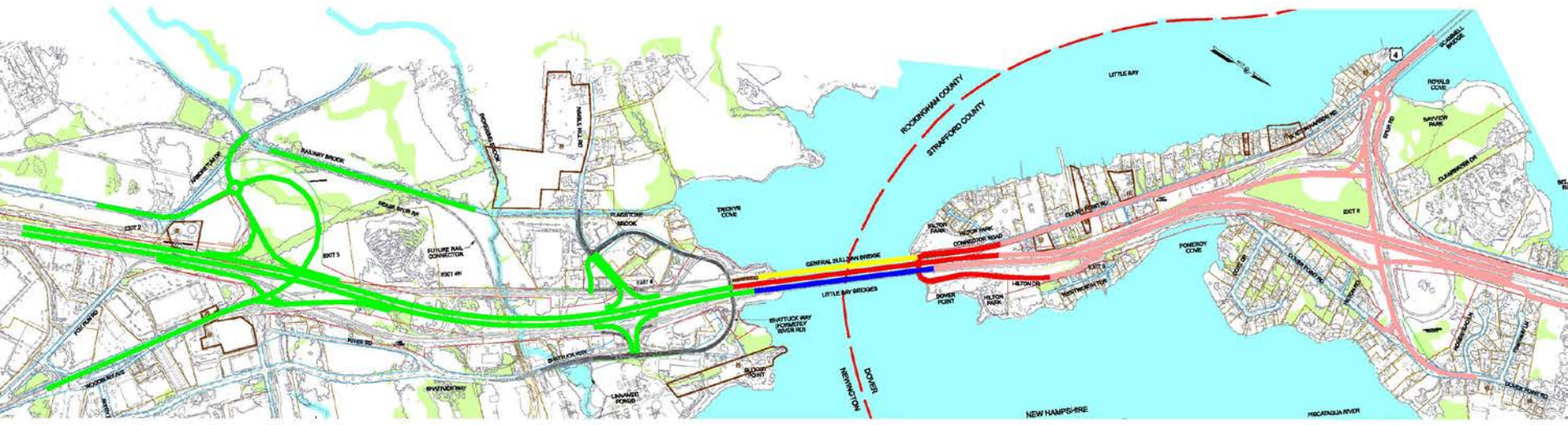


General
Sullivan Bridge
Rehabilitation
Contract S

Existing Little
Bay Bridges
Rehabilitation
Contract O

New Little Bay Bridge
Contract L

Current Contract Breakout & Schedule



	CONSTRUCTION SCHEDULE													
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
CONTRACT L	[Red bar]				\$57.5 M									
CONTRACT M			[Green bar]			\$49.9 M								
CONTRACT O					[Blue bar]			\$21.9 M*						
CONTRACT Q							[Pink bar]						\$46.4 M*	
CONTRACT S									[Yellow bar]				\$27.6 M*	
DOVER TOLL PLAZA												[Black bar]		\$13.0 M
NEWINGTON MAINTENANCE SHED										[Black bar]		\$6.0 M		

CONSTRUCTION OUTREACH



The screenshot shows a web browser window displaying the project website. The browser's address bar shows the URL <http://www.newington-dover.com/>. The website header features the New Hampshire Department of Transportation (DOT) logo and a navigation menu with categories: Air, Rail, Highway, Bike/Ped, and Public Transit. The main content area is titled "Welcome to Spaulding Turnpike Newington-Dover Project Website" and includes a large aerial photograph of the construction site. A sidebar on the left contains a list of navigation links such as Home, Project History, Project Information, Project Process, Details/Maps, Selected Alternatives, Schedule, Project Documents, Final Environmental Impact Statement, Roundabouts, Meetings, FAQs, Contact Us, Feedback/Mailing List, Newsletters/Fact Sheets, Construction Updates and Alerts, and Webpage Listing. Below the sidebar is the NH Recovery logo and a circular graphic with stars and gears. The main text area contains a paragraph about the project's history and a "Major Project Elements" section with a bulleted list of project details. A right-hand sidebar features a "Construction Updates and Traffic Alerts" section with a traffic cone icon and a "What's New..." section listing recent news items with dates and titles.

an official NEW HAMPSHIRE government website

New Hampshire DOT
Department of Transportation

Air Rail Highway Bike/Ped Public Transit

Welcome to Spaulding Turnpike Newington-Dover Project Website

From 2003 to 2008, the project team, advisory task force (ATF), and interested Seacoast stakeholders have evaluated a range of reasonable alternatives to identify a preferred alternative to improve long-term mobility and safety along the Spaulding Turnpike between Exit 1 and the Dover toll plaza, just north of Exit 6. The 3.5-mile stretch of the Turnpike in this area is characterized by closely spaced interchanges, substandard geometry and shoulder areas, and capacity constrained conditions during the weekday morning and evening commuter periods. Currently, the Turnpike carries in excess of 70,000 vehicles per day. Future travel demand projections (approximately 94,000 vehicles per day are forecasted in 2025) indicate that if the Turnpike is not improved, weekday traffic congestion will spread to additional hours of the morning and evening, and safety conditions will continue to deteriorate.

Following the completion of the Environmental Impact Statement (EIS), a successful Public Hearing and the Federal Highway Administration's issuance of the Record of Decision in October, 2008, the Selected Alternative was approved to advance into final design to be developed into contract plans. [Preliminary and Final design](#) of the [selected alternative](#) was initiated on December 18, 2008.

Major Project Elements:

- 4 lanes in each direction (3 general purpose and 1 auxiliary lane) between Exit 3 (Woodbury Avenue) and Exit 6 (U.S. Route 4/Dover Point Road)
- 3 lanes in each direction south of Exit 3 and north of Exit 6
- 5 interchanges consolidated or reconfigured – Exit 2 and 5 are eliminated with Exits 3, 4 and 6 providing full access in all directions
- Rehabilitation and widening of Little Bay Bridges to accommodate 4 lanes in each direction
- Future planning for an elevated rail connection from the Newington Branch Line into Pease Tradeport
- Rehabilitation of General Sullivan Bridge for pedestrian, bicycle, and recreational uses
- Park and ride facilities at Exit 9 in Dover, Exit 13 in Rochester, and along U.S. 4 in Lee

Construction Updates and Traffic Alerts

What's New...

NEW: [Northbound Traffic Shift onto New Little Bay Bridge - Major Traffic Impacts Anticipated on June 3 and 4](#) (posted May 26, 2015)

[Planned Northbound Lane Closure on Little Bay Bridge](#) - Pavement Repairs Scheduled (posted 04/03/2015)

[NIGHT WORK NEAR EXIT 4](#) - Lane closures for installation of overhead sign structure (posted 03/31/15)

[CLOSING OF EXIT 5 NORTHBOUND RAMPS](#) - Detour for several months to allow for construction work (posted 03/31/15)

[VIDEO: Unittil's Gas Line Directional Drill Video Beneath Little Bay](#)

PAST NEWS:

[2014 Updated Financial Plan](#) (posted 10/09/2014)

[October 8, 2014 Work Update](#)

[Tenants Association at Pease Presentation - April 9, 2014](#) (posted 04/09/14)

[January 2014 Work Update](#) (posted 1/14/14)

WEB SITE: www.newington-dover.com

Contract L (Completed)

New Little Bay Bridge





Contract L

Contract L - SB New Little Bay Bridge Construction

- Project completed by Cainbro Contractors of Maine at cost of \$54.1M
- Construction Initiated in 2010 Completed in Fall 2013
- Spaulding Turnpike Dover Approach Work
- Spaulding Turnpike Newington Roadway Approach
- Wentworth Terrace - Now Opened for Two-way Traffic
- Pedestrian & Bicycle Structure (Approach to GSB)

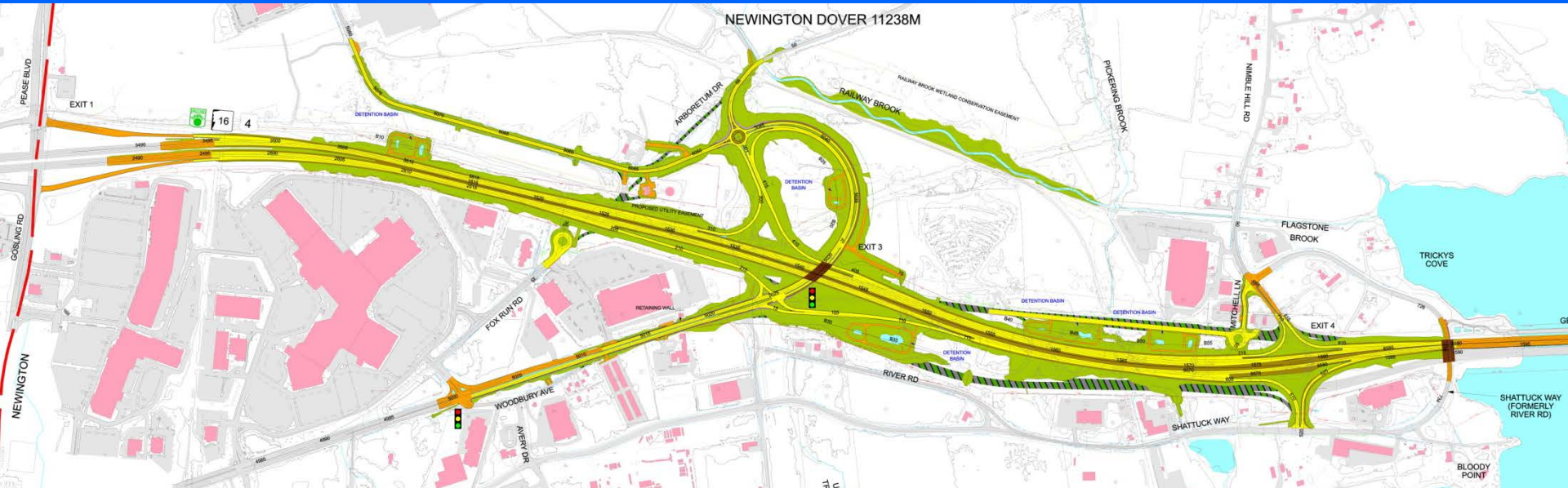
Construction – Contract L

Ped and Bikeway Access to GSB

- Pedestrian, Bicycle Access to GSB
- Wentworth Terrance/Hilton Park Access Under LBB's



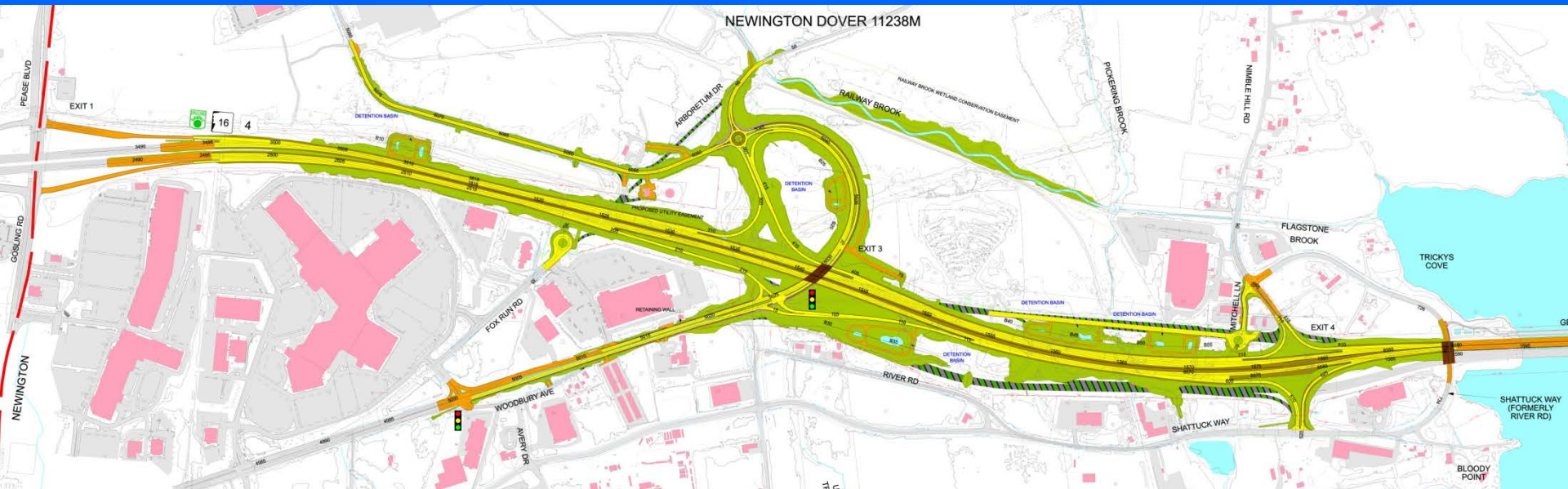
Contract M



Contract M Construction (Ongoing)

- Contractor: A. J. Coleman
- Construction Cost: \$48.7M
- Construction Duration: 2012 – 2016

Contract M (continued)



- **Constructs Four Lanes NB & SB along Turnpike within Median of Existing Facility (Minimal ROW Impacts)**
- **Eliminates Exit 2**
- **Provides a Full Service Interchange at Exit 3 and Reconstructs Woodbury Avenue with Additional Access into Pease Development Authority**
- **Reconstruction of Exit 4**
- **Railway Brook Restoration**

Construction – Contract M



Exit 3 NB On Ramp



Exit 3 SB



Woodbury Avenue Bridge – looking NB

Construction – Contract M

Railroad Brook Restoration

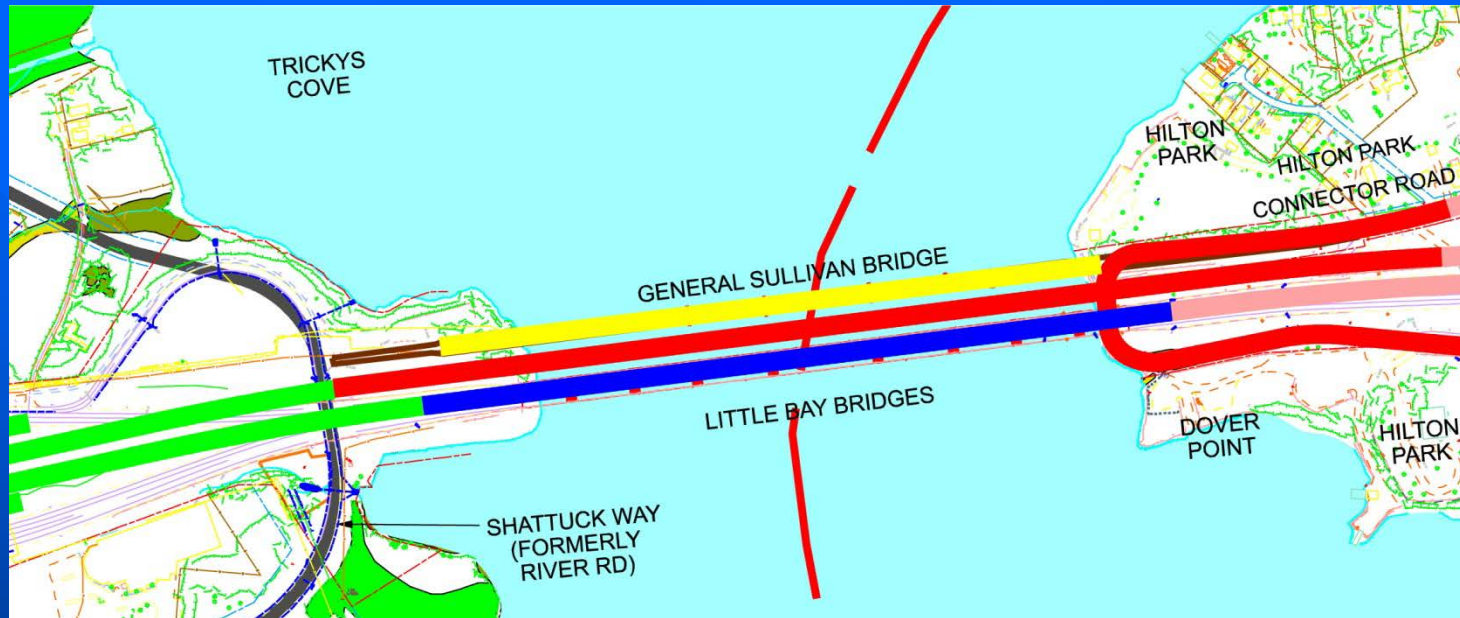
- Initiated in Summer 2014
- Completed in Summer 2015
- Cost: \$1.0M



BEFORE

AFTER

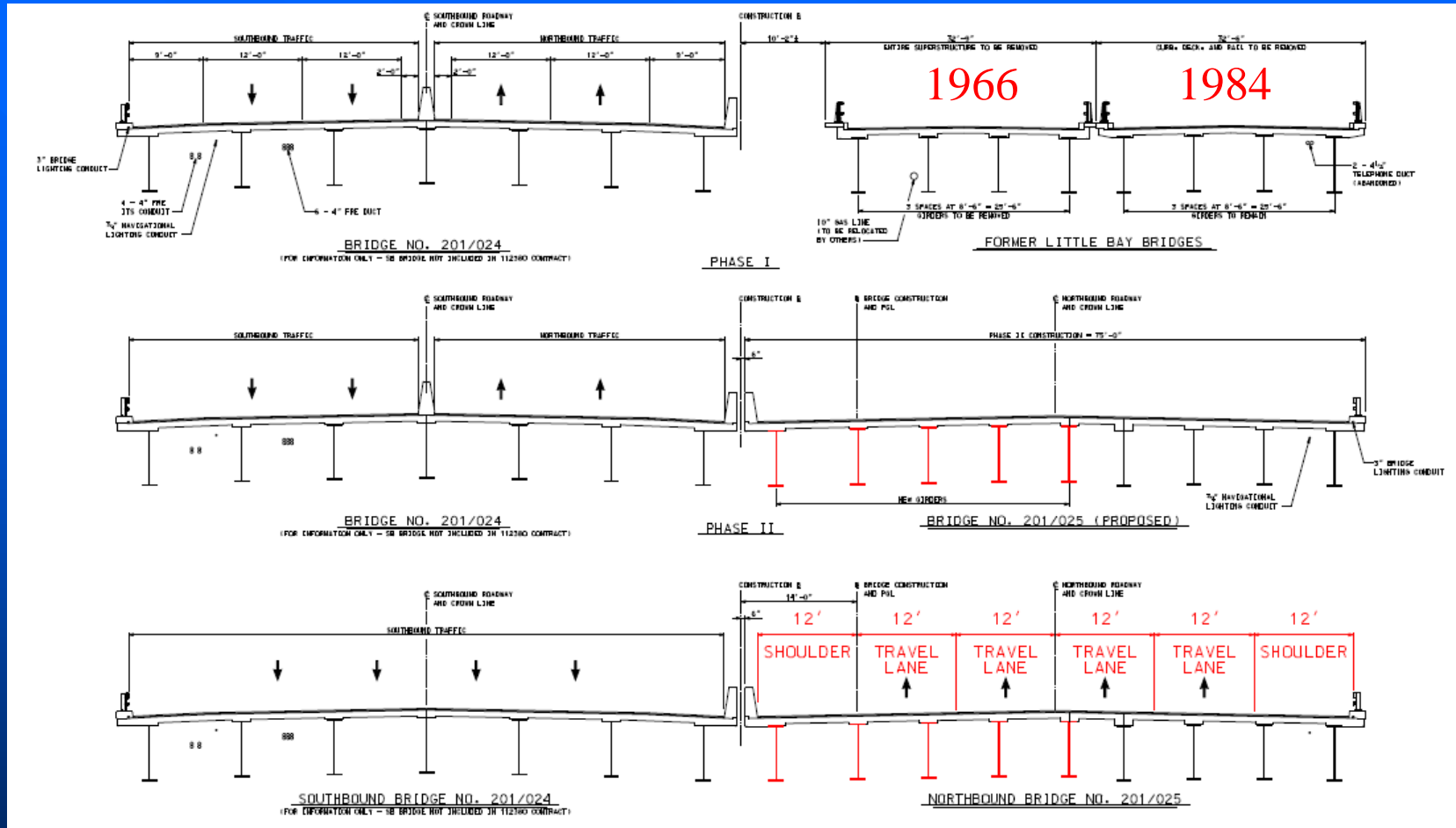
Construction - Contract O



Contract O – Existing Little Bay Bridges Rehabilitation

- Opened Bids on October 23, 2014 (\$20.4M)
- Contractor: R. S. Audley, Inc.
- Construction Duration: 2015 – 2017
- Concurrent Construction with Contracts M and Q

Construction – Contract O



- Older Structural Steel Members being Replaced to Meet Current Standards
- Utilize 1984 Superstructure as Work Platform to Replace 1966 Beams & Deck
- Utilize New Beams & Concrete Deck as Work Platform to Replace 1984 Deck
- Reconstruct Wentworth Terrace Retaining Wall Beneath Bridge

Contract Q



Contract Q - Dover

- Advertising Date: June 2016
- Construction: 2016 - 2020
- Completes and Opens All Spaulding Turnpike Improvements
- Concurrent Construction with Contracts O and S

Contract Q (continued)



- Provides a Full Service Interchange at Exit 6
- Eliminates Exit 5
- Introduces 2 Signalized Intersections for Exit 6 Ramps
- Roundabout Replaces Signalized Intersection at Boston Harbor Rd.
- Constructs 4 Sections of Soundwall – North and South of Exit 6 and Dover Toll Plaza

Contract Q – Boston Harbor Rd.

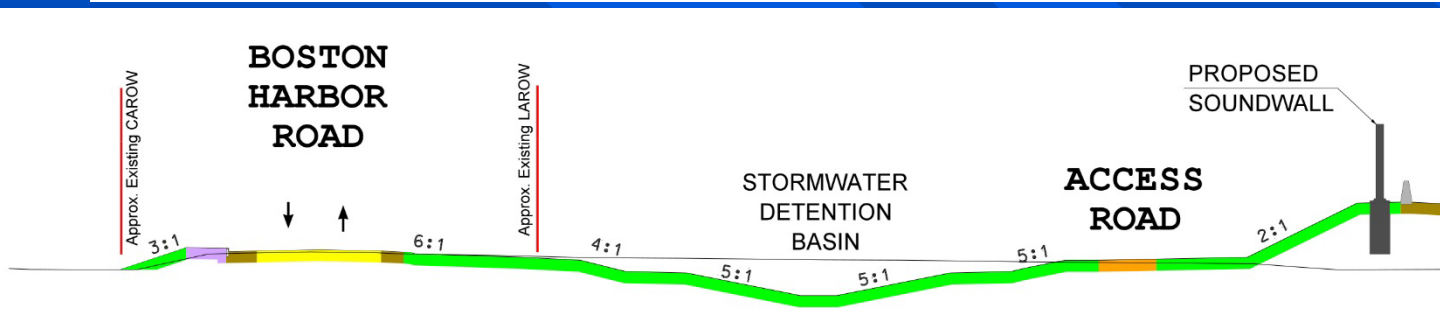
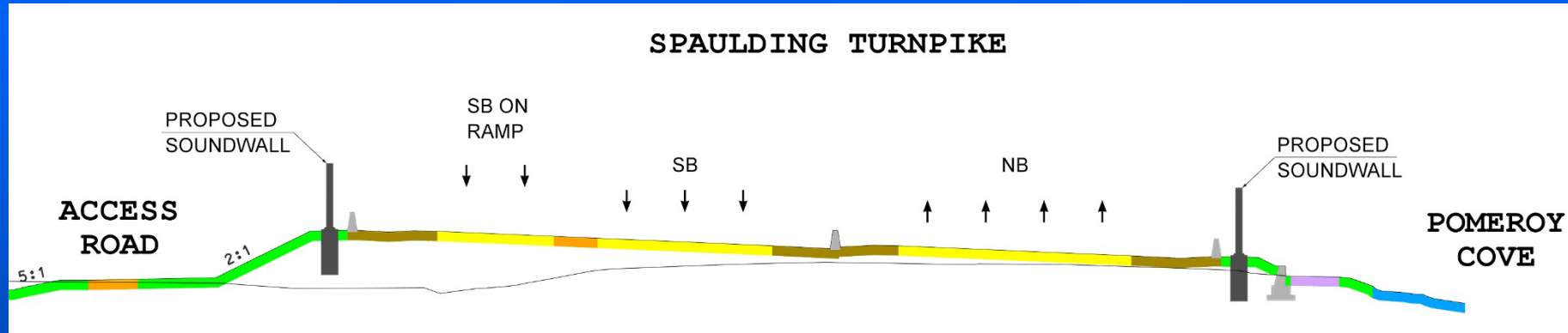
- Roundabout Replaces Signalized Intersection at Boston Harbor Rd.
- Two-Lane Hybrid Roundabout
- Pedestrian Hybrid Beacon Signal West of Roundabout
- Roundabout Website Link:

<http://www.nh.gov/dot/org/projectdevelopment/highwaydesign/roundabouts/index.htm>



Contract Q

Spaulding Turnpike

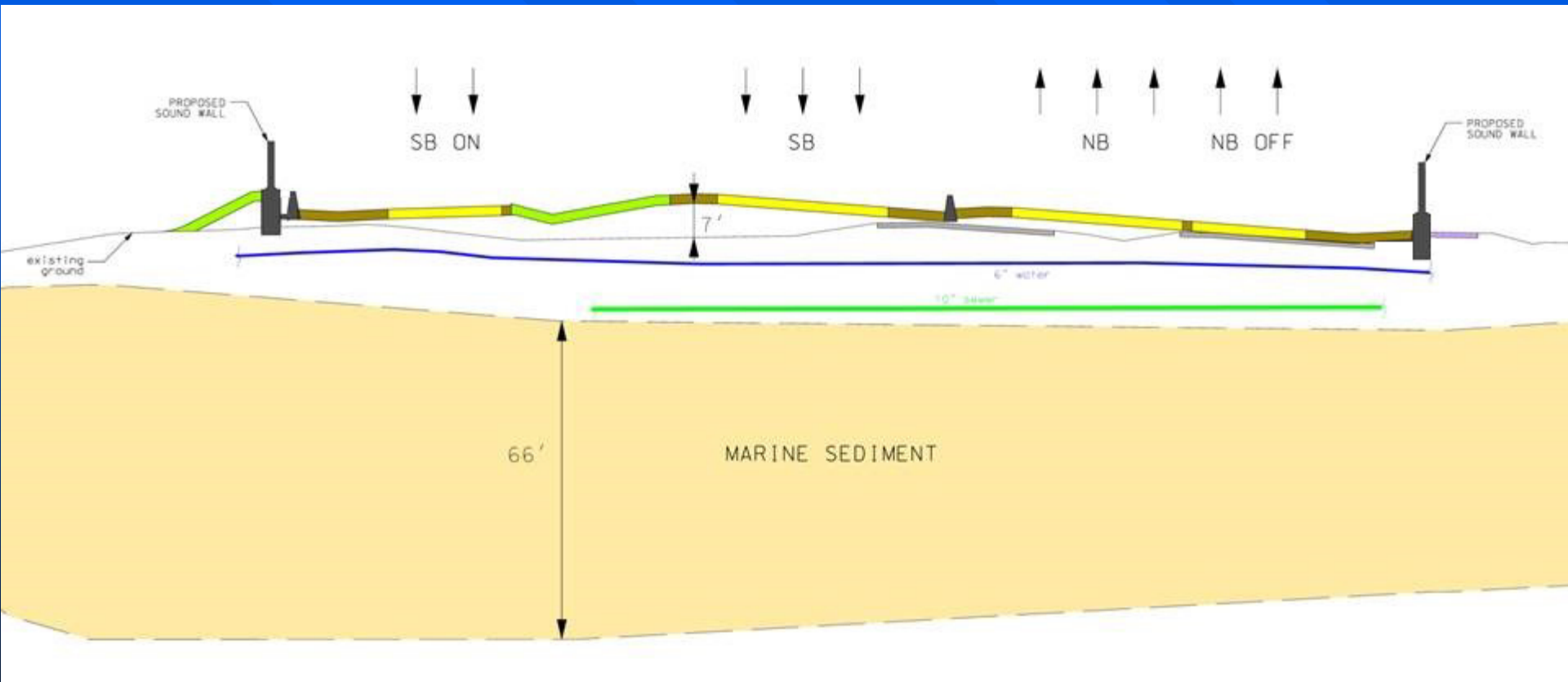


- Turnpike Raised 2' – 10'
- Stormwater Detention Basins
- Boston Harbor Road Rehabilitation
- Soundwalls along NB and SB

Engineering Challenges

Cross Section

Just North of Pomeroy Cove



Settlement Platform Constructed under Contract M



Initial Construction Phase

- Exit 6 Test Embankment Area
- Settlement Testing
- UNH Study

Settlement Platform

Embankment Area

- Installation of Sand Drains



Settlement
Monitors

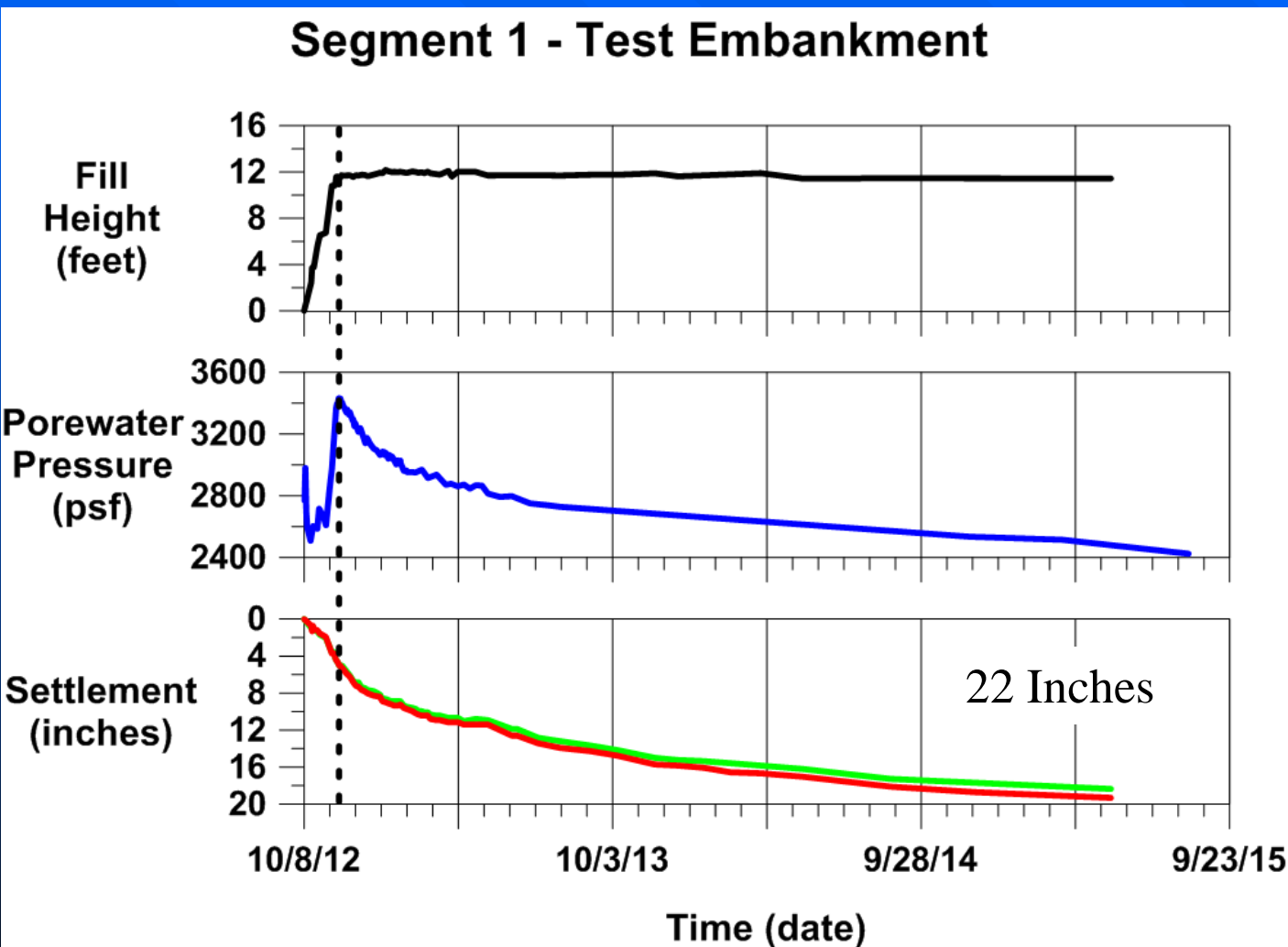


Sand Wick Drains



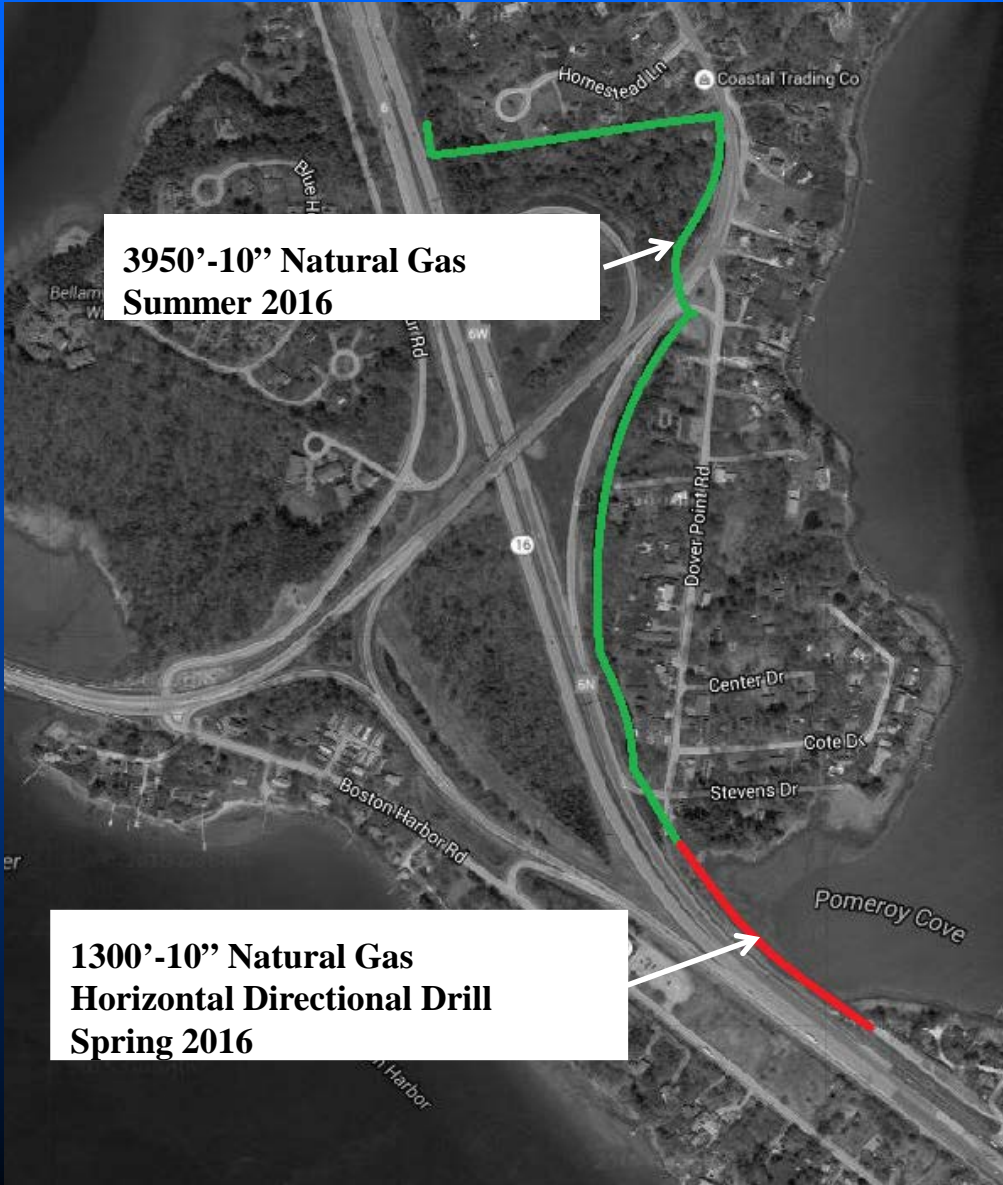
Contract Q

Soft Soil Settlement Predictions



- Have seen over 22 inches of settlement
- Anticipate settlement periods of a minimum 45 days to be included in each construction phase

Unitil Gas Line Improvements

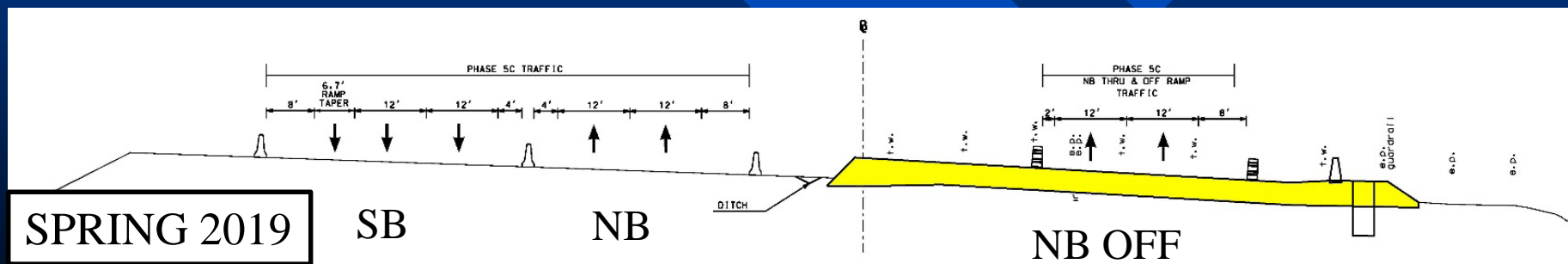
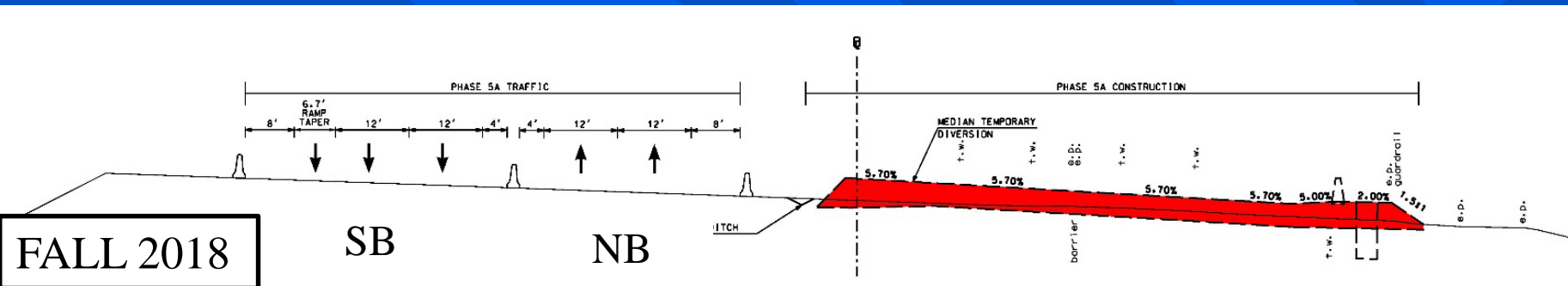
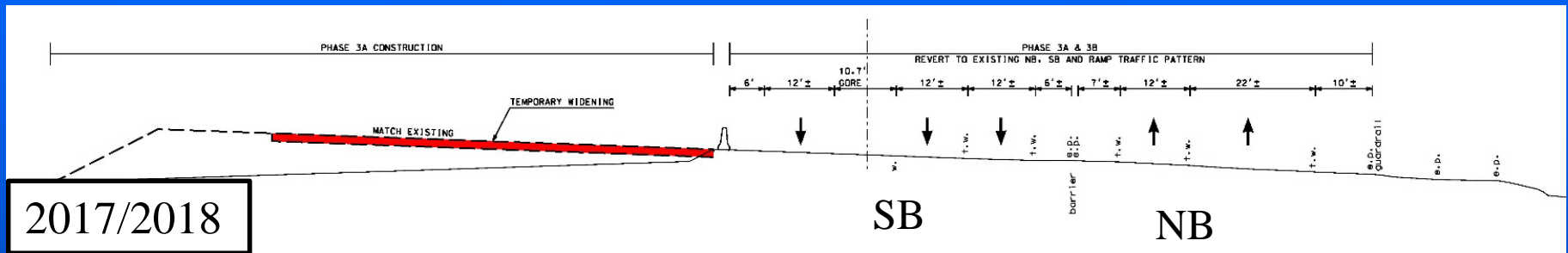


**3950'-10" Natural Gas
Summer 2016**

**1300'-10" Natural Gas
Horizontal Directional Drill
Spring 2016**

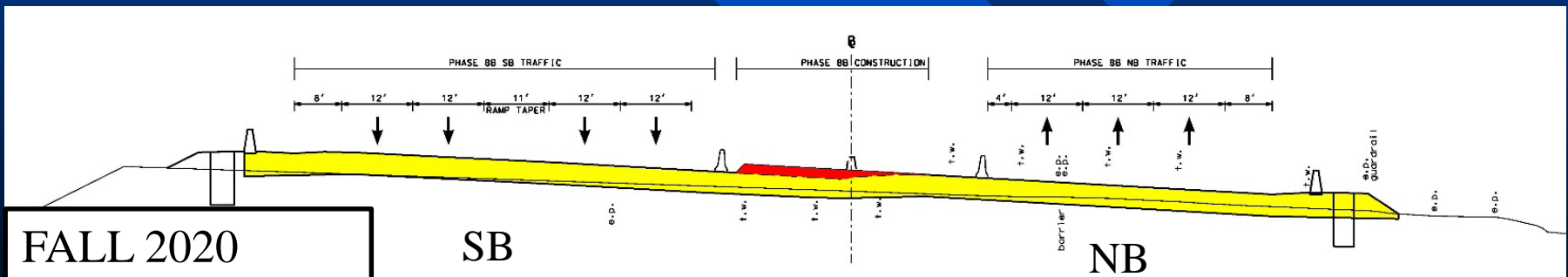
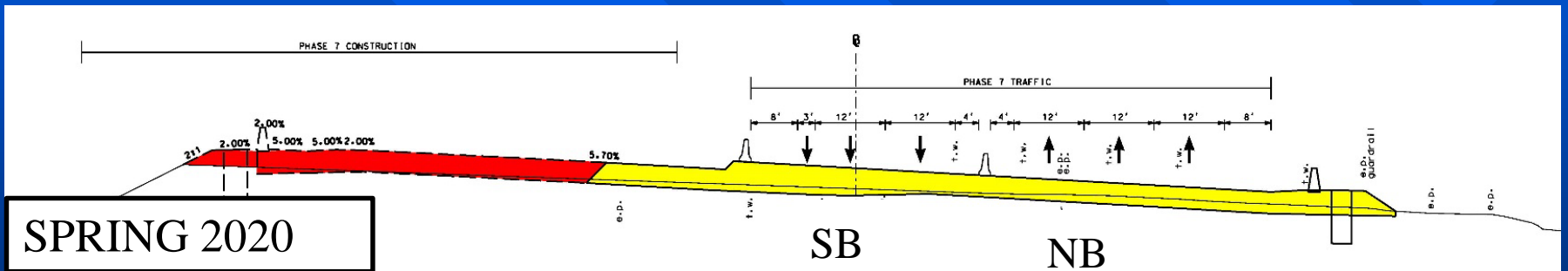
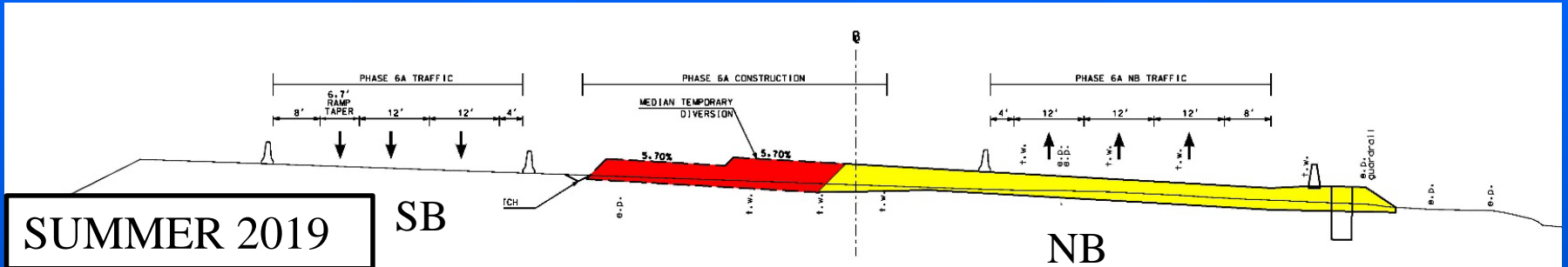
Contract Q

Construction Milestones



Contract Q

Construction Milestones



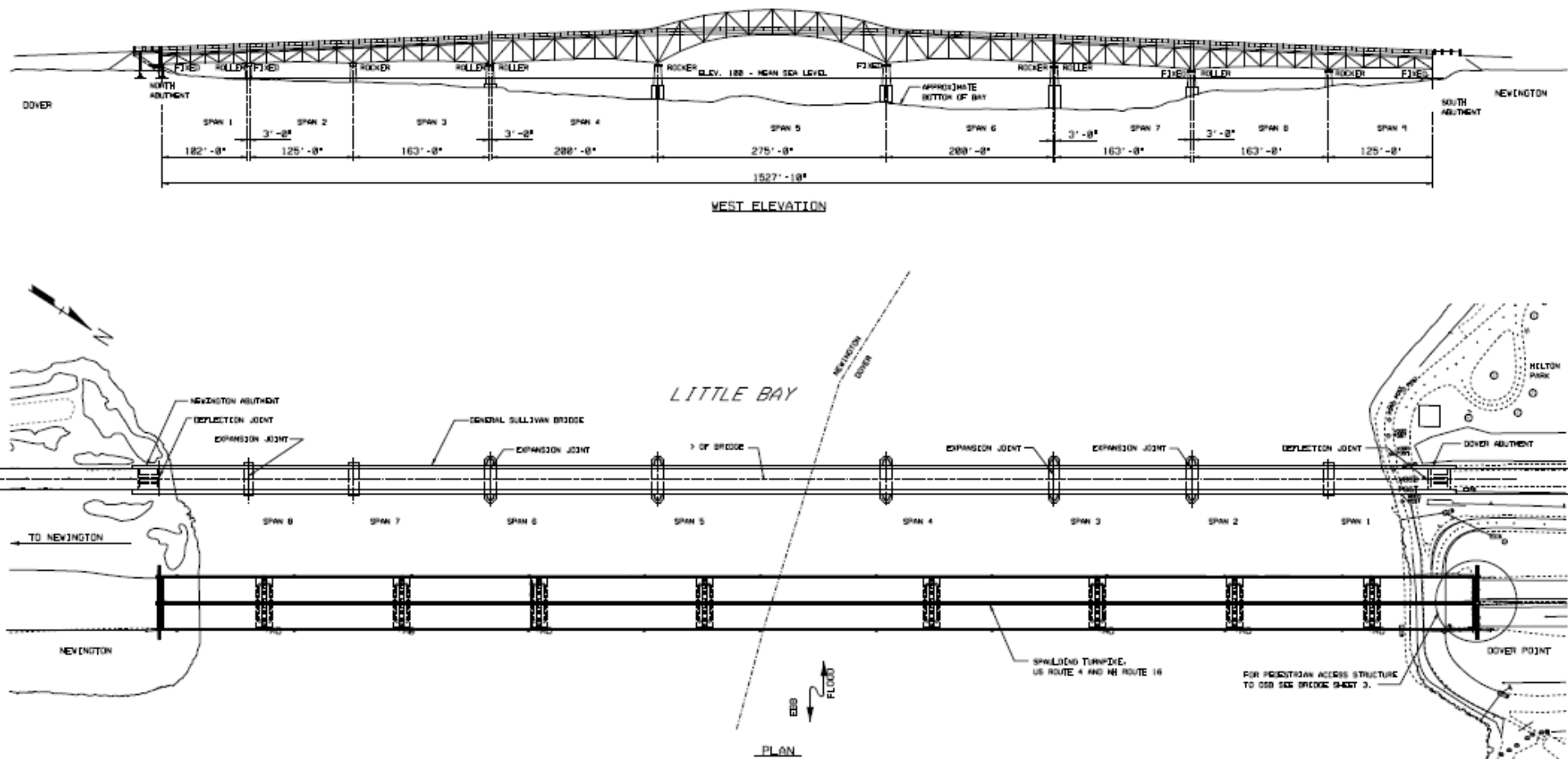
Contract S



Contract S – General Sullivan Bridge Rehabilitation

- Tentative Advertising Date: Summer 2019
- Tentative Construction: 2019 – 2022
- Concurrent Construction with Contract Q

Contract S - General Sullivan Bridge



- Rehabilitates Existing 9-Span (1527 ft.) General Sullivan Bridge for Pedestrian and Bicycle Use

General Sullivan Bridge - Work To Date



- First Detailed Inspection Completed in 2009
- Underwater Inspection Completed in 2011
- New Dover Approach Bridge Constructed in 2013 (Contract L)
- Dover Abutment Rehabilitated 2013 (Contract L)
- In-Depth, Hands-On Inspection Completed in May 2014
- Capacity Load Rating Completed September 2014



General Sullivan Bridge – Preliminary Results from 2014 Inspection



- Deterioration Continues - Worse than 5 Years Ago
- Deck Concrete Significantly Spalled on Underside
- Outside Stringers **Critically** Deteriorated
- Interior Three Stringers in Fair to Good Condition
- Floor Beams Fair to Poor
- Span 7 (previously fenced) Span - Truss Limited Capacity
- Lattice Trusses for All Other Spans Fair to Poor

General Sullivan Bridge - Overview



General Sullivan Bridge - Next Steps

- Detailed Structural Analysis/Evaluation Continues
- Evaluate Environmental Commitments (Historic Preservation) – Fall 2015
- Assess Rehabilitation/Replacement Options - Winter 2015-2016
- Develop Rehabilitation or Replacement Plans – 2016-2017
- Follow-up Inspection in 2016



Intelligent Transportation Systems

Transportation Systems Management and Operations

Accidents

Construction

Weather

Recurring

DELAY



Crashes

Improved Situational Awareness for Incident Response through the use of CCTV & DMS



Construction

CCTV work to improve traveler information when there are lane shifts, traffic pattern changes and long queues



Weather Related Incidents are the most common types of events that involve situational response



Road and Weather ITS Systems are used to improve response to Weather Related Incidents



NHDOT-Canterbury I-93 (Show station on map)

Station Overview | Graph | Camera History | History Table

Current conditions 02/04/2015 15:12

- Air Temperature: 31.8 °F
- Dew Point Temperature: 20.1 °F
- Visibility: 1.1 mi
- Level of grip: 0.82
- Surface State: dry
- Surface Temperature: 28.8 °F

Wind 02/04/2015 15:12

90°
2.7 mph

Roadside camera 02/04/2015 15:12

NHDOT-Canterbury I-93 (Show station on map)

Station Overview | Graph | Camera History | History Table

Level of grip - I-93 NB, Travel Lane | Air Temperature - Atmospheric site | Dew Point Temperature - Atmospheric site

Previous 24h observations for NHDOT-I-93
02/03/2015 15:19 - 02/04/2015 15:19

Timestamp	Surface Temperature (°F) I-93 NB Travel Lane	Surface State I-93 NB Travel Lane	Level of grip I-93 NB Travel Lane	Water layer (in) I-93 NB Travel Lane	Snow layer (water equivalent) (in) I-93 NB Travel Lane	Concentration (g/l) I-93 NB Travel Lane	Sub Surface Temp (°F) I-93 NB Travel Lane
02/04/2015 15:15	30.6	dry	0.82	0.00	0.00	0.0	15.8
02/04/2015 15:10	30.6	dry	0.82	0.00	0.00	0.0	15.8
02/04/2015 15:05	30.6	dry	0.82	0.00	0.00	0.0	15.8
02/04/2015 15:00	30.6	dry	0.82	0.00	0.00	0.0	15.8
02/04/2015 14:55	30.6	dry	0.82	0.00	0.00	0.0	15.6
02/04/2015 14:50	31.1	dry	0.82	0.00	0.00	0.0	15.6
02/04/2015 14:45	30.9	dry	0.82	0.00	0.00	0.0	15.6
02/04/2015 14:40	30.9	dry	0.82	0.00	0.00	0.0	15.4
02/04/2015 14:35	30.9	dry	0.82	0.00	0.00	0.0	15.6
02/04/2015 14:30	30.9	dry	0.82	0.00	0.00	0.0	15.4
02/04/2015 14:25	30.9	dry	0.82	0.00	0.00	0.0	15.4
02/04/2015 14:20	30.6	dry	0.82	0.00	0.00	0.0	15.2
02/04/2015 14:15	30.2	dry	0.82	0.00	0.00	0.0	15.2
02/04/2015 14:10	29.8	dry	0.82	0.00	0.00	0.0	15.2
02/04/2015 14:05	30.0	dry	0.82	0.00	0.00	0.0	15.2
02/04/2015 14:00	30.0	dry	0.82	0.00	0.00	0.0	15.0
02/04/2015 13:55	30.2	dry	0.82	0.00	0.00	0.0	15.2
02/04/2015 13:50	30.2	dry	0.82	0.00	0.00	0.0	15.2
02/04/2015 13:45	30.4	dry	0.82	0.00	0.00	0.0	14.0
02/04/2015 13:40	30.9	dry	0.82	0.00	0.00	0.0	16.9
02/04/2015 13:35	30.6	dry	0.82	0.00	0.00	0.0	15.0
02/04/2015 13:30	30.6	dry	0.82	0.00	0.00	0.0	16.9
02/04/2015 13:25	30.0	dry	0.82	0.00	0.00	0.0	16.9

Travel Times will provide traveler info in areas of Recurring Congestion



WorkZone ITS provides temporary traveler information during construction

The screenshot displays the WorkZone ITS interface, which includes a central map of Manchester, Rhode Island, and several data panels. The map shows the Merrimack River and surrounding streets, with various traffic indicators and sensor locations marked.

C01 device view

- C01 Live Video: I-293 SB traffic, mile 5.2 02/24/2015 11:56:24 AM
- C01 Reports
- C01 Info

004 device view

- Q04 Data
- Q04 Reports
- Q04 Info

Current Sensor Data

Speed	
S Lanes Average Speed:	15.3
Lane # 1	50
Lane # 2	13

Volume	
S Lanes Total Volume:	16
Lane # 1	11
Lane # 2	15

M05 device view

- M05 Message
- M05 Reports
- M05 Info

Current Message

Override Message

- Remove page
- Display Time: 3 (secs)
- Add New Text Page

Map Legend

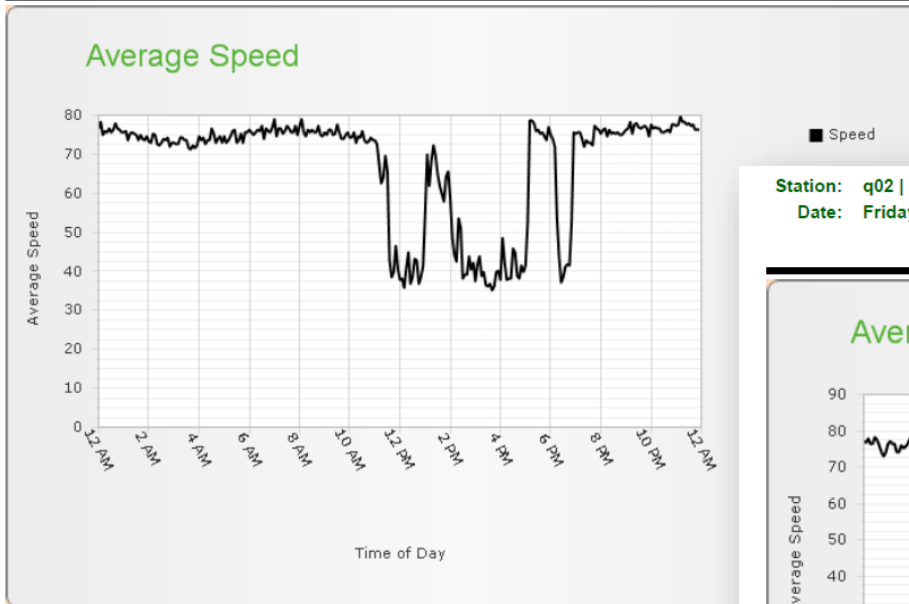
- Speed > 45 mph
- Speed 15 to 45 mph
- Speed < 15 mph
- Inactive
- Live Video
- Roadside Alerts

WorkZone ITS Data can provide situation awareness as project phases are complete.

Station: q02 | 1 | I-93 NB | 00.60 | N | 000033

Date: Friday, Jul 31, 2015 Interval Size: 5 Minute

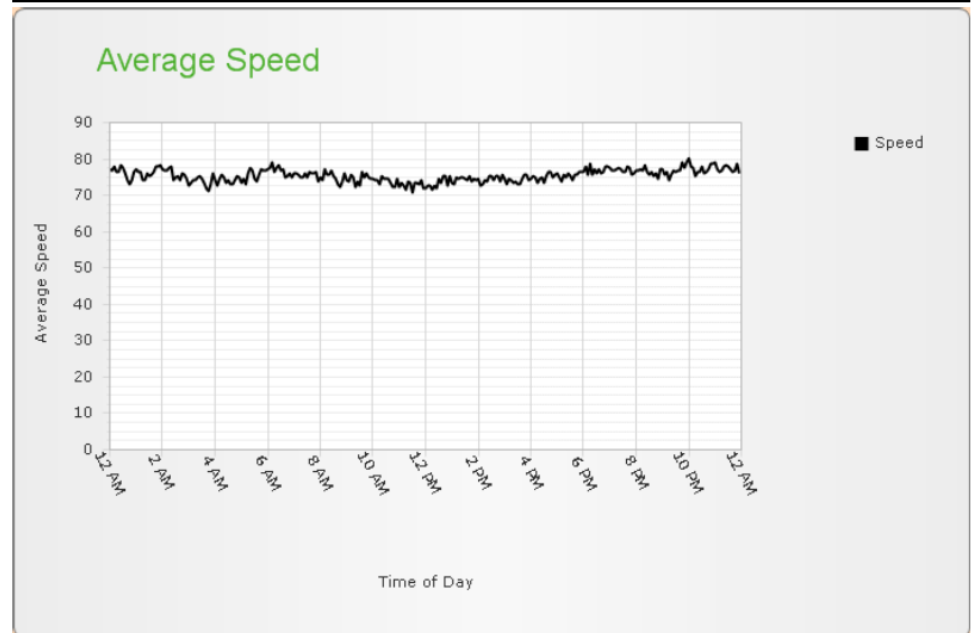
Average Speed



Station: q02 | 1 | I-93 NB | 00.60 | N | 000033

Date: Friday, Aug 07, 2015 Interval Size: 5 Minute

Average Speed



Contact Information

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<http://www.Newington-dover.com/>



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THANK YOU

Questions/Comments

