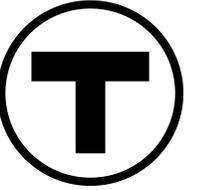


**Massachusetts Bay  
Transportation Authority**

## **Red Line/Orange Line Improvement Program Update**

Vehicle Procurement, Infrastructure Improvements,  
State of Good Repair Improvements and Signal Upgrades

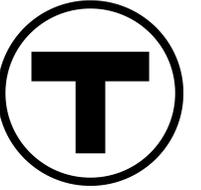
June 24, 2019



## Overview

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- The following summary provides an update to the FMCB on the progress of the \$1.98 billion Red Line/Orange Line Improvement Program, which includes new Vehicle Procurement, Infrastructure Improvements, State of Good Repair Improvements, and Signal Upgrades.
- This program supports the MBTA's goal to improve the level of service on the Red Line to 3 minute headways and the Orange Line to 4.5 minute headways. This would increase capacity by 50% on the Red Line and 40% on the Orange Line from scheduled headways.



# Red Line/Orange Line Improvement Program

Red Line

Orange Line

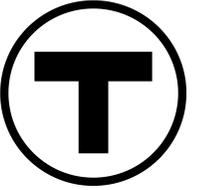
**Total: \$1,982.03M**

NEW VEHICLE PROCUREMENT PROGRAM \$1,009.00M

INFRASTRUCTURE IMPROVEMENTS PROGRAM \$470.36M

SIGNALS UPGRADE PROJECTS \$350.95M

STATE OF GOOD REPAIR PROJECTS \$151.72M



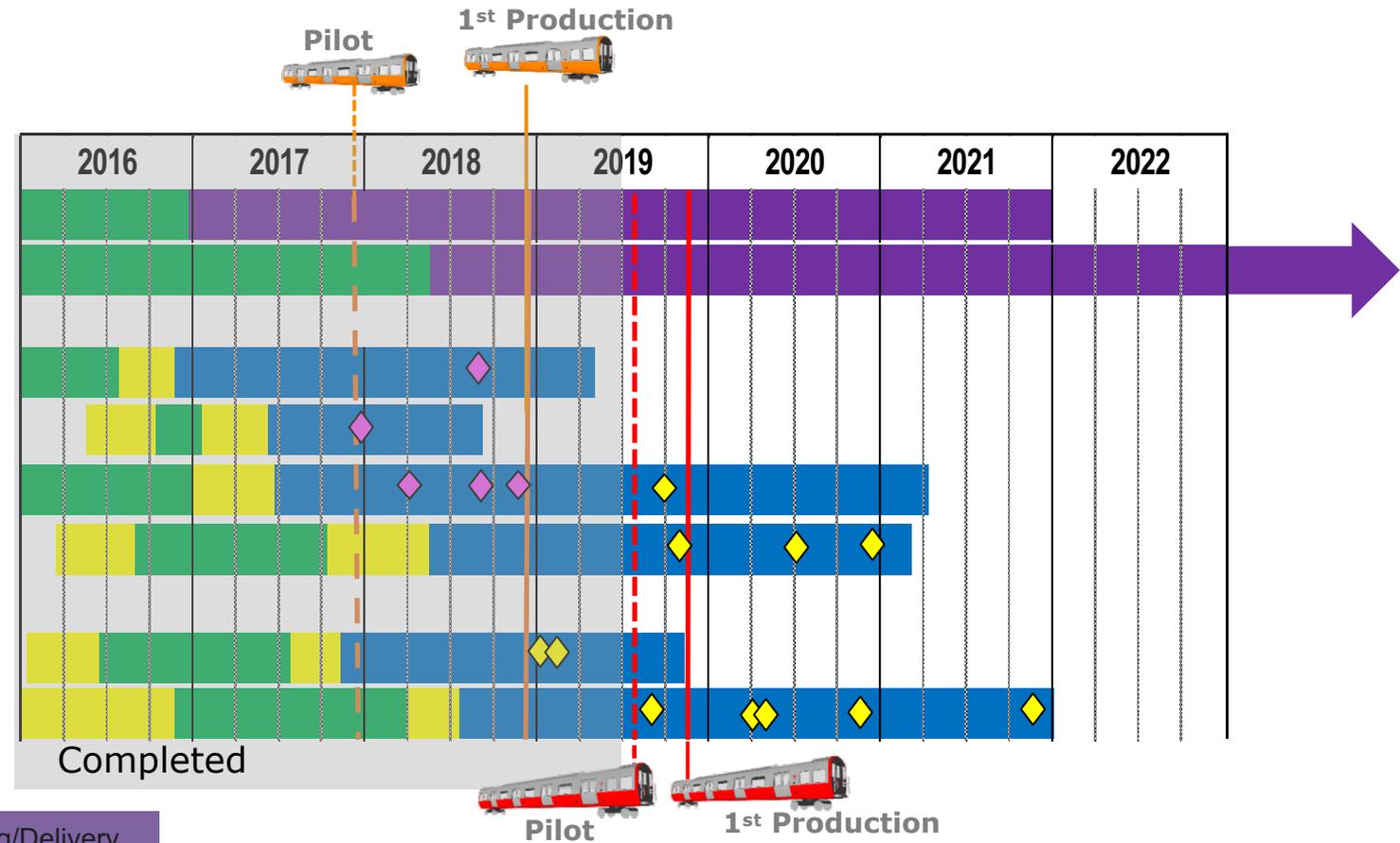
# Red Line/Orange Line - Schedule by Project

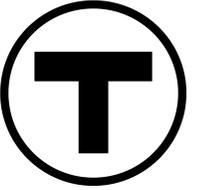
Vehicle Procurement Program	
OL Vehicles	
RL Vehicles	
Infrastructure Program – Orange Line	
Wellington Yard Expansion Tracks 33-38	
Orange Line Test Track	
Wellington Maintenance Facility	
Wellington Yard Rebuild	
Infrastructure Program – Red Line	
Red Line Test Track	
Cabot Maintenance Facility & Cabot Yard Improvements	

LEGEND



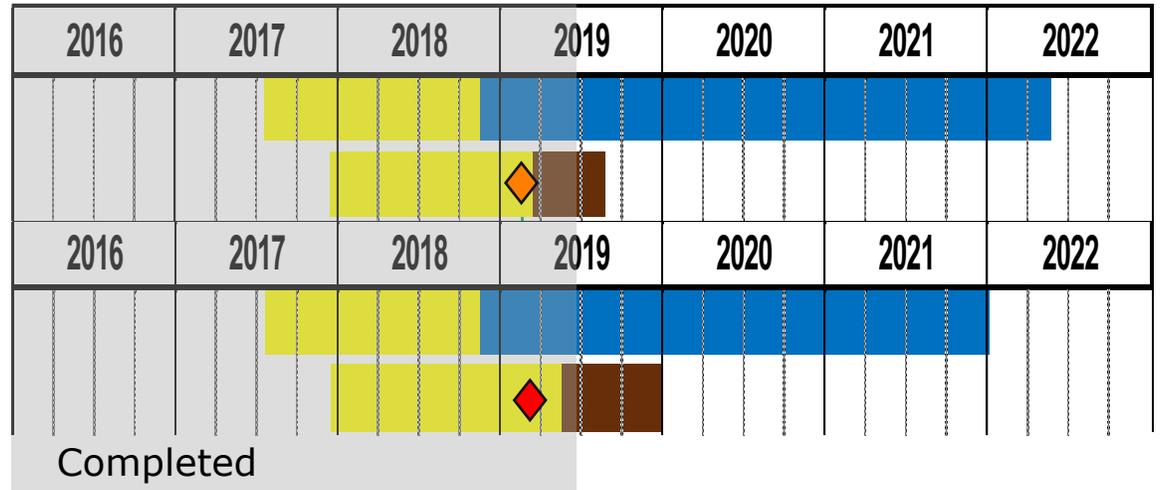
- ◆ Interim Milestone to Support Vehicle Delivery - Completed
- ◆ Interim Milestone to Support Vehicle Delivery





# Red Line/Orange Line Schedule – Signals Upgrades

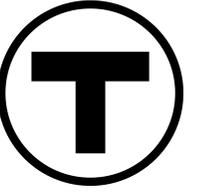
<b>Signal Upgrades Program - Orange Line</b>
<b>Mainline Signal Upgrades Project</b>
<b>Signal Enhancements</b>
<b>Signal Upgrades Program - Red Line</b>
<b>Mainline Signal Upgrades Project</b>
<b>Signal Enhancements</b>



**LEGEND**

Procurement	Design/Build
Procurement	MBTA Installation

- ◆ Start of Orange Line e-Vane Delivery
- ◆ Start of Red Line e-Vane Delivery



# New Vehicle Procurement Program

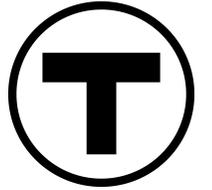
Total Project Value: \$1,009,871,671  
Expenditure to date: \$227,299,791  
Carbuilder Percent Complete: 25.2%



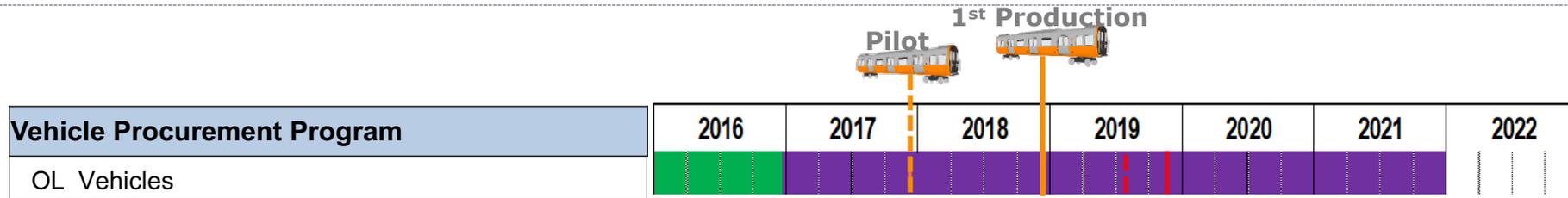
- Number of cars to be replaced: 218
- Number of new cars: 34
- Total number of cars: 252



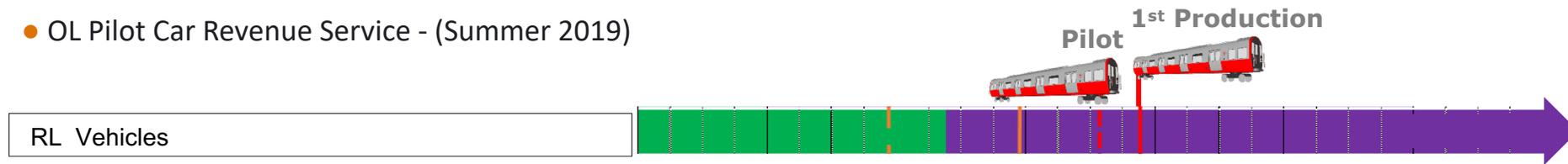
- Number of cars to be replaced: 120
- Number of new cars: 32
- Total number of cars: 152



# Vehicle Procurement Project Status – Current/Look Ahead



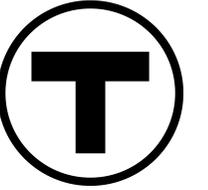
- OL Production Delivery from Springfield Facility Continuing - (started December 2018)
- OL Production Acceptance Testing Continuing - (started January 2019)
- OL Pilot Car Revenue Service - (Summer 2019)



- RL Complete Vehicle FAI (Changchun) – (Spring/Summer 2019)
- RL Delivery of Pilot Cars - (Summer 2019)
- RL Pilot Cars Acceptance Testing - (through Winter 2019)
- RL Pilot Car Revenue Service - (Spring 2020)

LEGEND



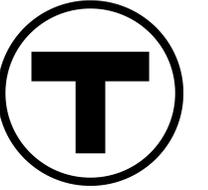


## Orange Line Vehicle Procurement Project Status

The Project Team has developed a “10-week Critical Path” in order to monitor the tasks that must be completed before the start of passenger service. Each task is assigned a responsible party and a deadline so project progress can easily be tracked.

The 10-week Critical Path is continually updated and reviewed weekly with multiple departments to ensure consistent progress is made and monitored appropriately.





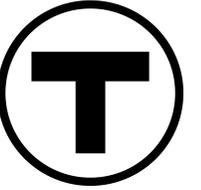
## Red Line Vehicle Procurement Project Status

An Environmental Climate Chamber has been designed to test the capabilities of the HVAC system under all potential ambient temperatures and humidity ranges to ensure its functionality is optimized for all four seasons.

The Red Line pilot cars have now completed this phase of testing.

The first two Red Line carshells intended for final assembly in Springfield, MA will be shipped to the US this summer so outfitting can begin.



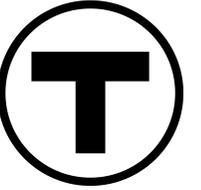


## Production Vehicle Final Assembly – Springfield MA

Married Pair 7 was prepared for shipping from the Springfield final assembly facility. The cars arrived in Wellington last week.

The MBTA project management team is part of a working group consisting of MBTA, SEPTA, and LACMTA. The group recently met in Springfield to review the production sequence when all three projects are simultaneously underway.





# Orange Line Projects: Wellington Yard Expansion Tracks 33 to 38

## **JF White**

Construction NTP: 12/05/16

Construction Substantial Completion:

Contractual: 01/04/19

Actual: 05/07/19\*

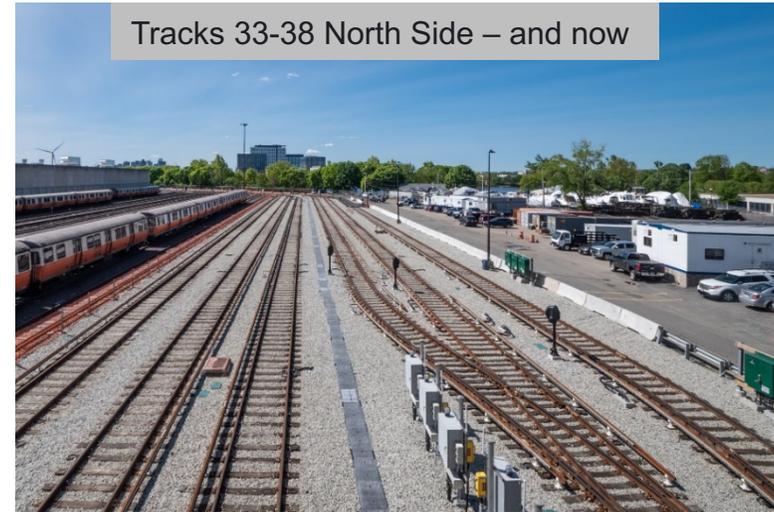
Construction Budget: \$19,582,195\*\*

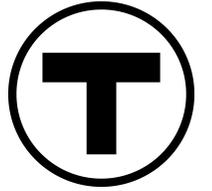
Construction Expenditures to Date: \$13,296,402

Construction Percent Complete: 90%

\*Extended due to additional disposal of site material.

\*\*Revised due to change order.





# Orange Line Projects: Orange Line Test Track



Before Construction

## **LM Heavy**

Construction NTP: 06/20/17

Construction Substantial Completion: 08/29/18

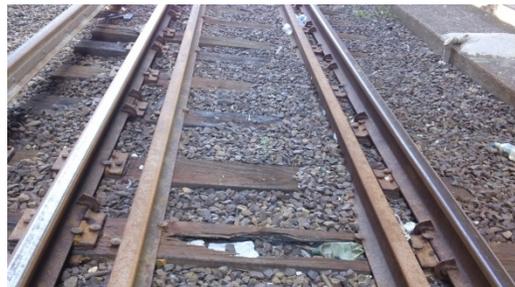
Contractual: 09/11/18

Actual: 08/29/18

Construction Budget: \$5,867,000

Construction Expenditures to Date: \$3,939,146

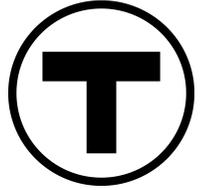
Construction Percent Complete: 99%



New Train On Test Track

Test Track

And Now



# Orange Line Projects: Wellington Maintenance Facility

## **Barletta Heavy Division**

Construction NTP: 06/30/17

Construction Substantial Completion:

Contractual: 08/04/20

Projected: Spring 2021\*

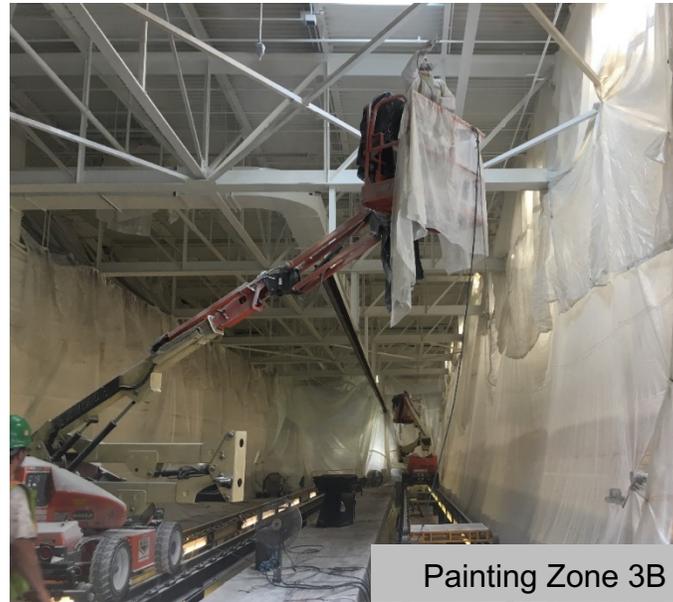
Construction Budget: \$76,282,000\*\*

Construction Expenditures to Date:  
\$37,597,855

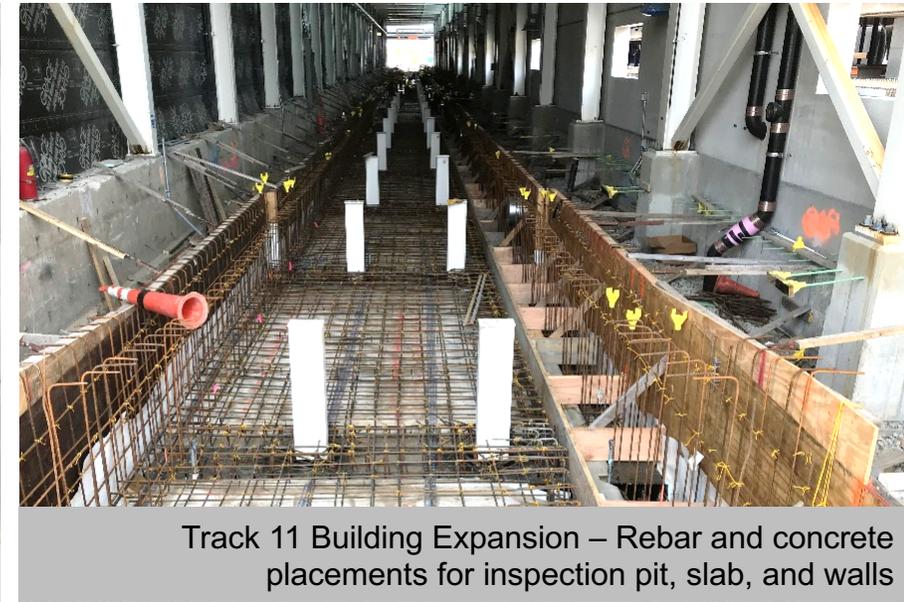
Construction Percent Complete: 56%

\*Adjusted to account for scope added to the contract. Reviewing efforts to mitigate delay.

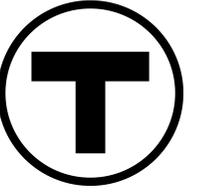
\*\*Revised due to account for new scope.



Painting Zone 3B



Track 11 Building Expansion – Rebar and concrete placements for inspection pit, slab, and walls



# Orange Line Projects: Wellington Yard Rebuild

## **Barletta Heavy Division**

Construction NTP: 05/31/18

Construction Substantial Completion:

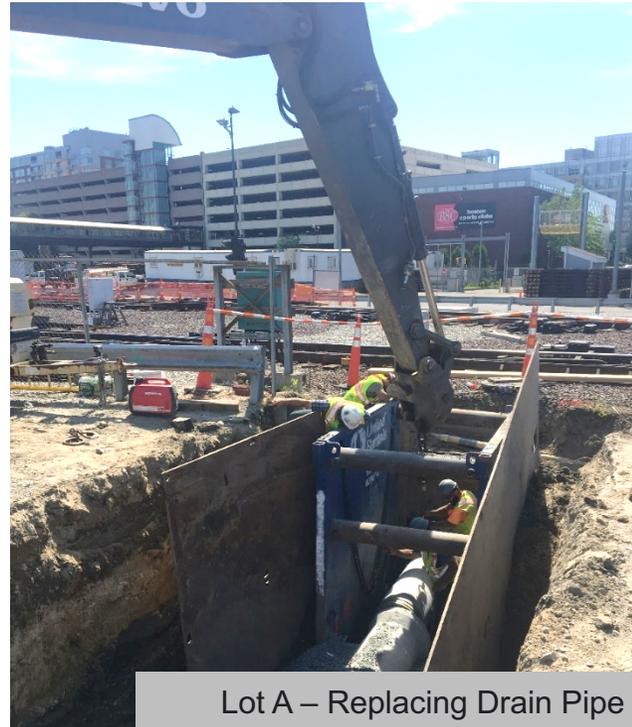
Contractual: 03/07/21

Projected: 03/07/21

Construction Budget: \$102,663,000

Construction Expenditures to Date: \$8,427,967

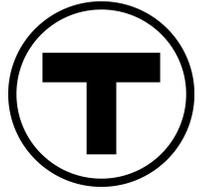
Construction Percent Complete: 11%



Lot A – Replacing Drain Pipe



Relocation of existing signal & comms. cables for new CBH and CIH



# Red Line Projects: Red Line Test Track

## **Barletta Heavy Division**

Construction NTP: 11/17/17

Construction Substantial Completion:

Contractual: 04/07/19

Projected: Fall 2019\*

Construction Budget: \$21,269,000

Construction Expenditures to Date: \$10,579,881

Construction Percent Complete: 61%

\* Reviewing efforts to mitigate delay.



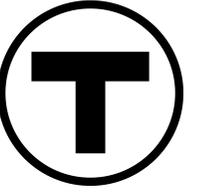
Paved Delivery Track



Yard 61 – VTF & Yard 61



Inside VTF – Mock Rail



# Red Line Projects: Cabot Yard & Maintenance Facility Improvements

## **LM Heavy/Lane Construction**

Construction NTP: 08/02/18

Construction Substantial Completion:

Contractual: 01/04/22

Projected: 01/04/22

Construction Budget: \$213,817,000

Construction Expenditures to Date: \$9,740,952

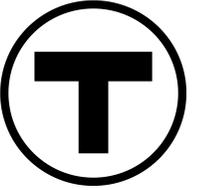
Construction Percent Complete: 6%



Installing New Rail between Boston Street and Southhampton Street – Zone C



Thermite Welding Track



# Signals Upgrade Projects Status

Construction NTP: 11/30/18  
Contract Substantial Completion: 5/25/22  
Substantial Completion RL – 01/04/22  
Substantial Completion OL – 05/25/22  
Construction Budget: \$217,677,000  
Construction Expenditures to Date: \$5,770,608

**Progress:**

- Ongoing project meetings with RL/OL Team.
- Over-the-Shoulder reviews of multiple Preliminary design packages are ongoing.
- Multiple workshops with the Major Equipment supplier are ongoing.
- Finalized the Safety & Security certifications planning document.
- Continue development and review of the preliminary design.

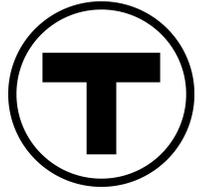
**Red Line**

- RL Signaling and Train Control System Upgrade
- RL Columbia Junction Phase II

**Orange Line**

- OL Signaling and Train Control System Upgrade
- OL South West Corridor Wayside Signal Replacement





# State of Good Repair Projects Status – Bridge Strengthening

<u>Status</u>
<b>Bridge Repairs</b>
RL Substantial Completion – 04/15/19
OL Substantial Completion – 07/15/19
<b>Longfellow Approach – Interim Repairs</b>
Substantial Completion – 08/31/19

## Red Line

Bridge Repairs
• Granite Spur-B-21-069 (A23) <b>(COMPLETE)</b>
• Conley St.-B-16-136 (A38) <b>(COMPLETE)</b>
• Fields Corner Busway-B-16-418 (A3N) <b>(COMPLETE)</b>
• Victory Rd -B-16-134 (A36) <b>(COMPLETE)</b>
• Geneva Ave-B-16-142 (A3D) <b>(COMPLETE)</b>
• Longfellow Approach - Interim Repairs <b>(IN CONSTRUCTION)</b>

## Orange Line

Bridge Repairs
• Charles Street-M-01-003 (85) <b>(IN CONSTRUCTION)</b>
• Adams Street-M-01-002 (85J) <b>(IN CONSTRUCTION)</b>

