



Massachusetts Bay Transportation Authority

Red/Orange Line Transformation Program Update

Vehicle Procurement, Infrastructure Improvements,
Reliability & Modernization Improvements, and Signal Upgrades

Fiscal and Management Control Board

November 4, 2019

Michael Fitzgerald

Overview

This presentation updates the FMCB on the progress of the \$2.06 billion Red/Orange Line Transformation Program, which includes new Vehicle Procurement, Infrastructure Improvements, Reliability & Modernization Improvements, Power, and Signal Upgrades.

Under the direction of the Chief of Red/Orange Line Transformation, Michael Fitzgerald, this program supports the MBTA's goal to improve the level of service on the **Red Line to 3-minute headways** and on 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.



Program Budget

Red Line

Orange Line

Total \$2,058.18M

NEW VEHICLE PROCUREMENT PROGRAM

\$1,009.00M

INFRASTRUCTURE IMPROVEMENTS PROGRAM

\$470.36M

SIGNALS UPGRADE PROJECTS

\$350.95M

RELIABILITY & MODERNIZATION PROJECTS

\$227.87M



Red/Orange Line Vehicle Delivery, Testing, & Commissioning

Contract Management

Total Project Value: \$1,009,871,671

Expenditure to date: \$231,597,810

Carbuilder Percent Complete: 25%



- Replace Entire Red Line Fleet
- 34 additional cars
- Total: 252 vehicles



- Replace Entire Orange Line Fleet
- 32 additional cars
- Total: 152 vehicles



Training – Operations & Maintenance



All 210 Orange Line Operators have been trained and 92 Red Line Operators have been trained as of the week ending October 19th. All Orange Line repairers have undergone maintenance orientation.

58 repairers were recently trained on the Vehicle Monitoring System (VMS). The next repairer training will focus on the Auxiliary Power Inverter (API).



Red Line Vehicle Delivery, Testing, & Commissioning



The first Red Line Married Pair (#1900-01) was delivered to Cabot Yard on Wednesday, October 9.
The second Married Pair (#1902-03) was delivered on Thursday, October 17.

The project team is working to close all the open items that were identified at the First Article Inspection in Changchun and begin dynamic testing on the Red Line test track in Boston.



Production Vehicle Final Assembly – Springfield, MA



The Springfield facility expects to ship cars 1412 and 1413 to Wellington Carhouse later this month.

There are currently 28 vehicles at different stages of production and testing at the Springfield facility. Springfield is still working to implement Lean manufacturing to efficiently manage both the Red and Orange Lines as well as CRRC's contracts with SEPTA and LA Metro.



Construction: Infrastructure/Signals/Reliability & Modernization

Infrastructure/Signals/Reliability & Modernization Program

Total Project Value: \$973,026,614

Expenditure to date: \$213,481,215



- Wellington Yard Expansion (Tracks 33-38) – **Complete**
- Orange Line Test Track – **Complete**
- Wellington Maintenance Facility
- Wellington Yard Rebuild
- Red Line Test Track
- Cabot Yard & Maintenance Facility Improvements
- Signals Upgrade Projects



Design: Infrastructure/Signals/Reliability & Modernization

Infrastructure/Signals/Reliability & Modernization Program

Total Project Value: \$76,146,299

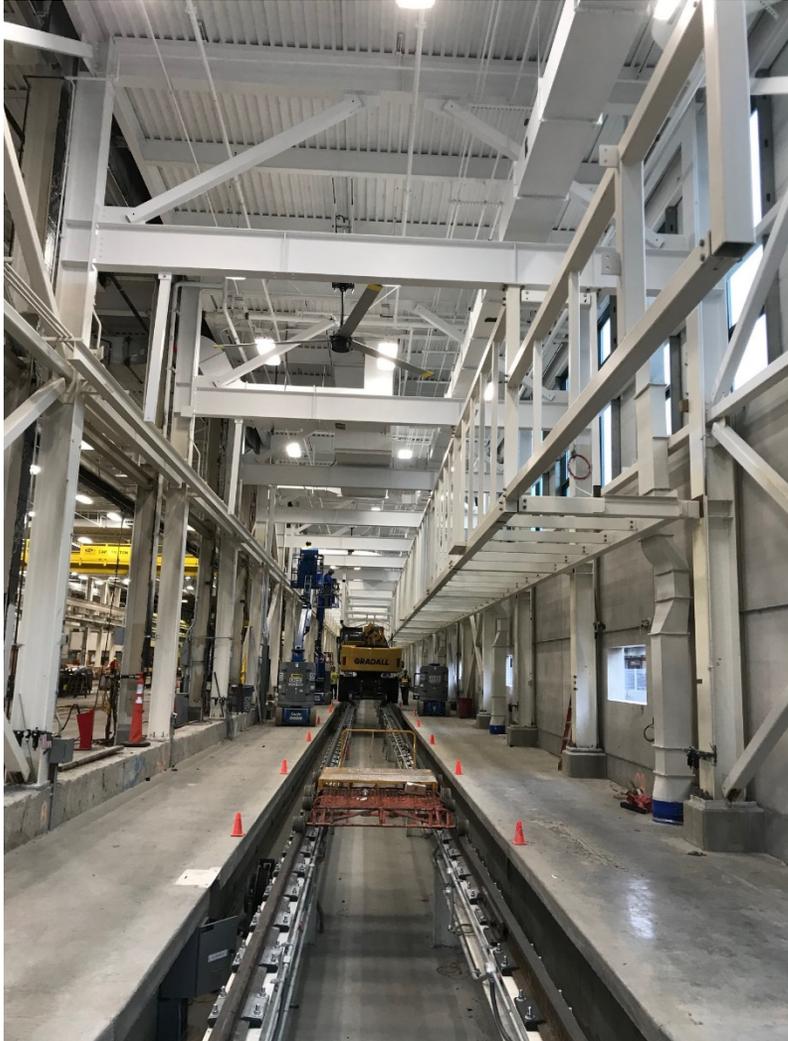
Expenditure to date: \$450,167



- Alewife Crossover Improvements
- Codman Yard Rebuild & Expansion



Orange Line Construction Projects: Wellington Maintenance Facility



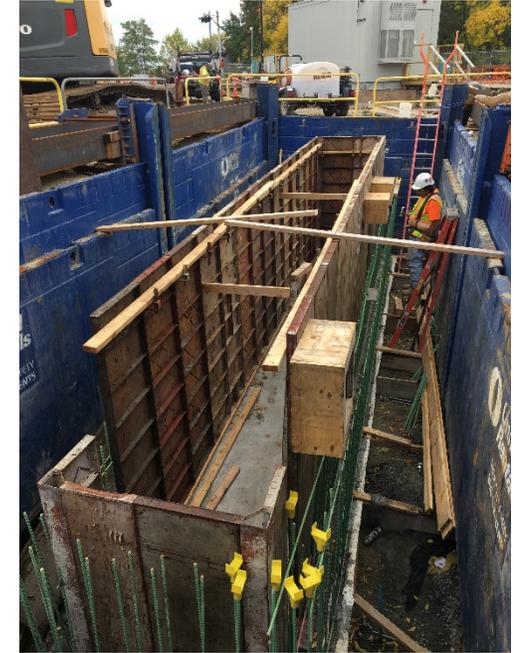
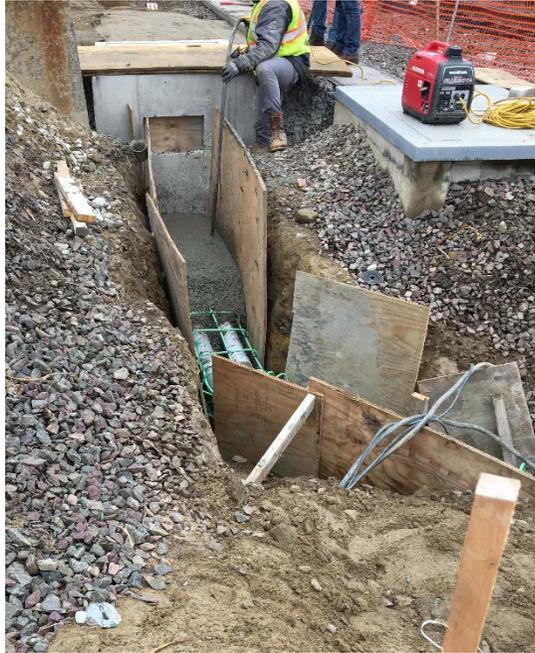
Continued work on the Track 11 bay building addition such as suspended catwalk structural steel, approach slabs, and door installation at the north end.

Work conducted in Zones 3A (Tracks 12-13 north) and Zone 3C/4 (Tracks 18-19) included: gas line installation to air curtains/unit heaters, infrared heater installation, new overhead door at T19 North, and fire alarm conduit & device installation. Work in Crew Quarters included demolition and CMU masonry and sprinkler work.

Railcar mover was delivered and training was conducted.



Orange Line Construction Projects: Wellington Yard Rebuild



Contractor started work in Zone C (Tracks 12 – 14), working on concrete work for the Circuit Breaker House foundation in the South Yard, ductbank work being performed, and site lighting is 99% operational.

10 turnouts have been received to date, and production and delivery are ongoing as per the schedule.



Red Line Construction Projects: Red Line Test Track



Building frame installation started and masonry blocks are almost complete on the Vehicle Testing Facility (VTF), Mobile Traction Power Substation training was performed at Yard 61, and team assisted with the delivery and unloading of 4 Pilot Cars.

Initial test run of the Test Track with an existing Red Line vehicle occurred on October 17.



Red Line Construction Projects: Cabot Yard & Maintenance Facility Improvements

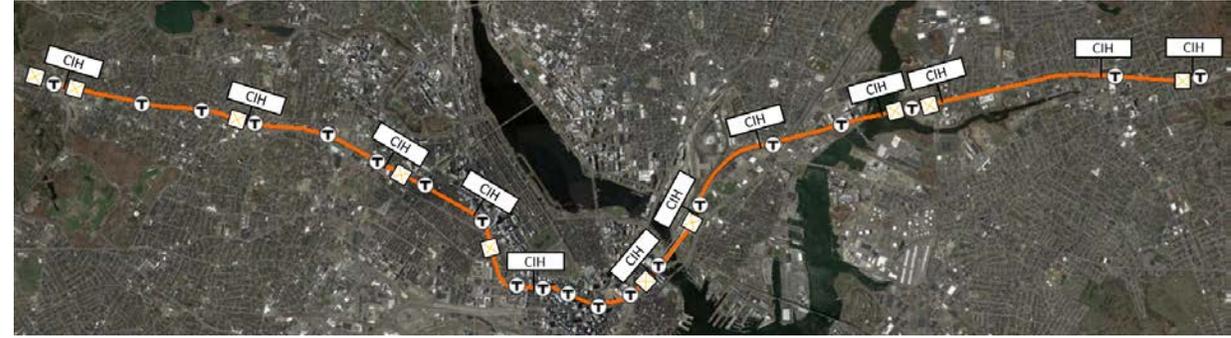
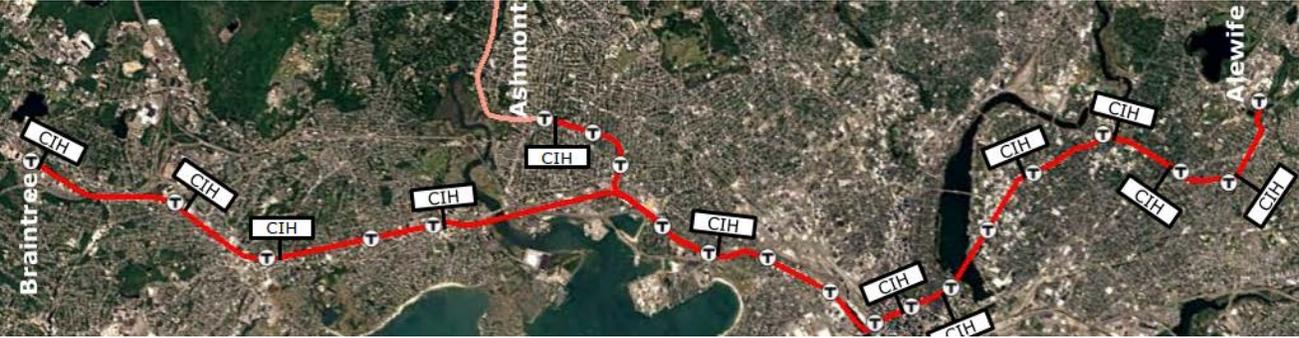


The contractor is currently working in Zones C & F of the maintenance facility and replacing track in Zone C in the yard. Two new 15-ton cranes were installed and the programming was completed for the alarm(s) and safety devices.

Preparations are underway for future installation of gas line and power ductbank.



Signals Upgrade Construction Projects



Intermediate System Design is ongoing and expected to be completed by the end of 2019.

Survey work of signal assets on the Red and Orange Line is occurring during weekend diversions this fall to support the DB Entity's safe braking study.



Red Line Design Projects: Alewife Crossover Improvements



This project involves the removal and replacement of the existing crossover with a larger crossover to increase allowable speeds to support the 2025 targeted 3-minute headway goal.

Design is progressing towards 75% completion. Value Engineering workshop held on October 17 & October 18. Long Lead Procurement package will be ready for advertisement later this fall.



Red Line Design Projects: Codman Yard Rebuild & Expansion



With the increase in fleet size for the Red Line and the 2025 targeted 3-minute headway goal, additional storage capacity is critical to support the MBTA's future daily operations. Codman Yard has been identified as an additional storage location for the Red Line, in particular the Ashmont Branch.

Design contract was awarded on October 21.



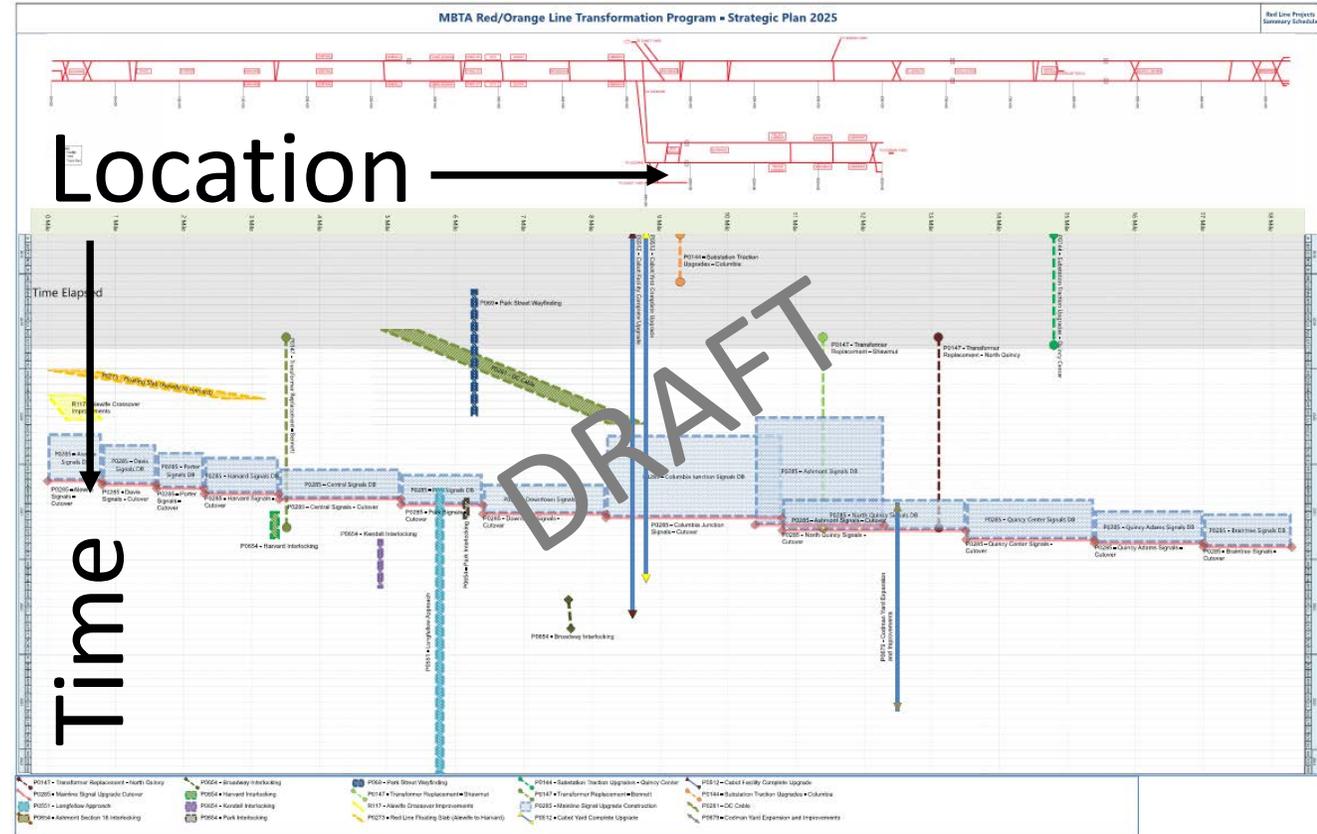
2025 Task Force

- **Work Underway:**

- Preparation of service outcome milestones through 2025
- Development of all activities required to achieve milestones
 - Capital projects
 - Fleet delivery and decommissioning
 - Operations
 - Business practices and procedures
- Timeline and location assessment for all projects required for 2025 and beyond

- **Next Steps:**

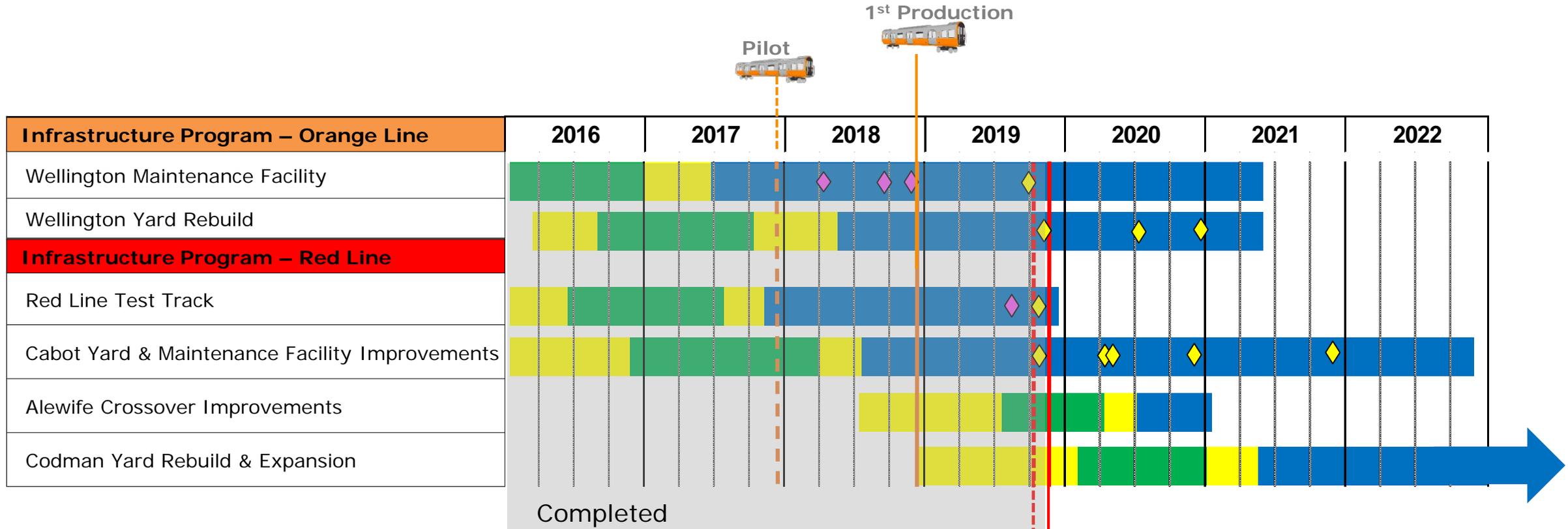
- Refine master list of RL/OL actions and projects through 2025
- Identify Capital and Operating cost estimates
- Presentation to MBTA



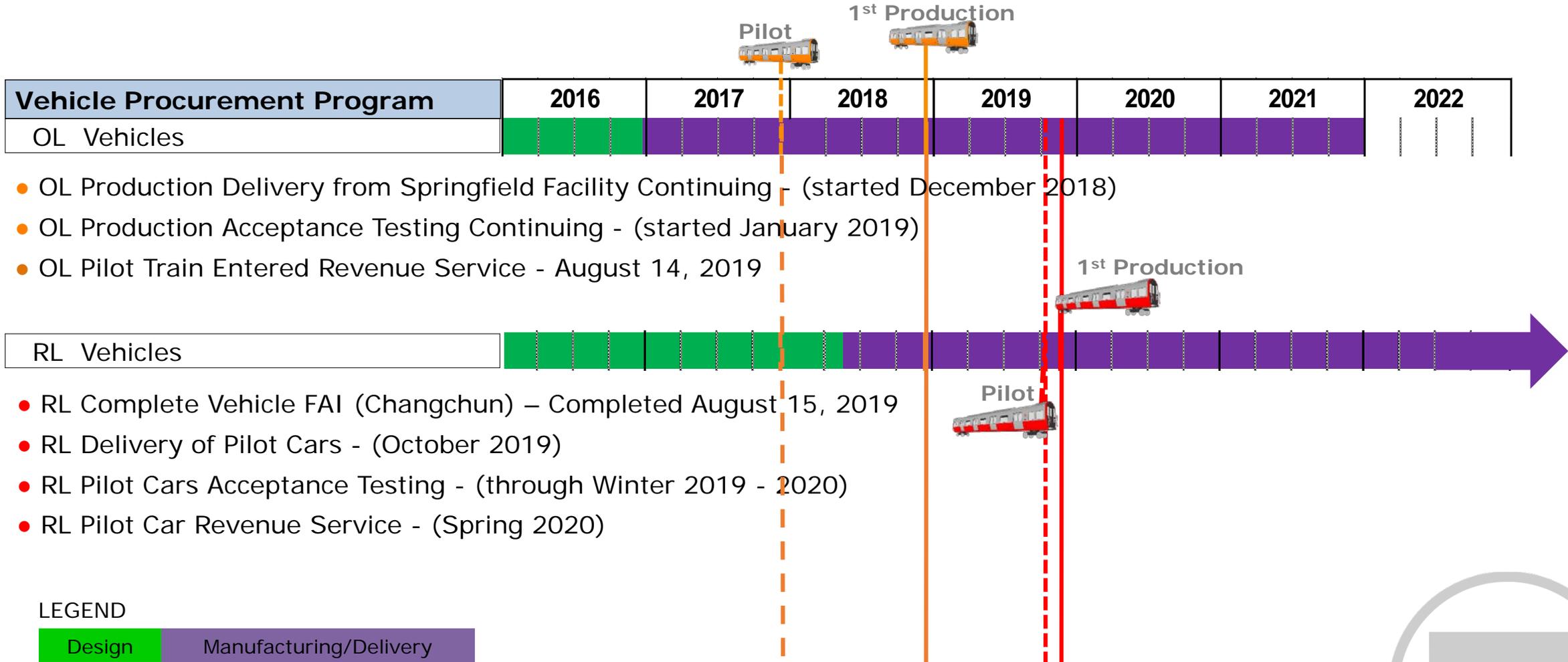
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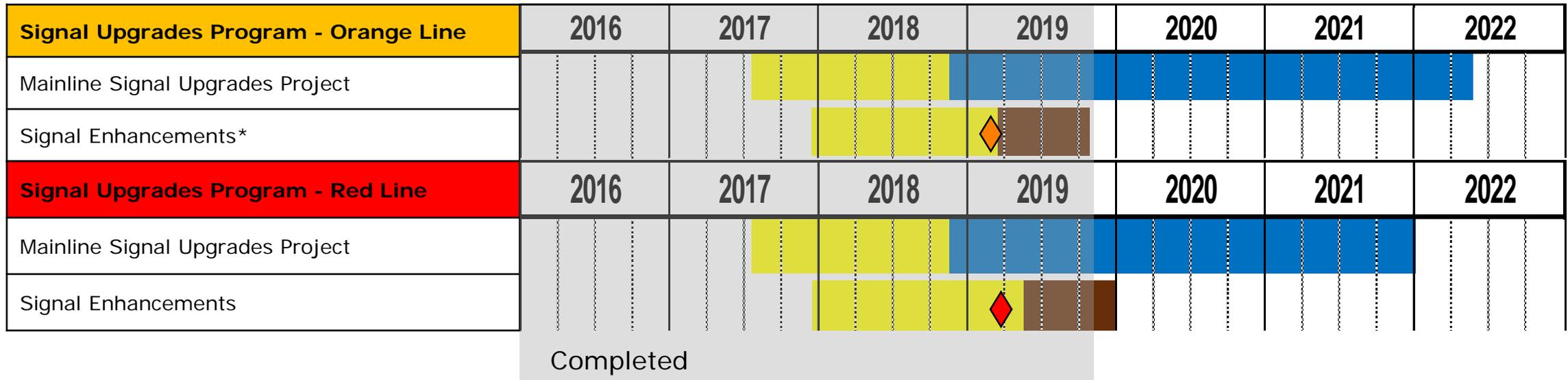
Red/Orange Line: Schedule by Project



Vehicle Procurement Project Status: Current/Look Ahead



Red/Orange Line Schedule: Signals Upgrades



LEGEND

- Procurement
- Design/Build
- Start of Orange Line e-Vane Delivery
- MBTA Installation
- Start of Red Line e-Vane Delivery

* All of the Orange Line relays required for the new vehicles were installed and tested.



Reliability & Modernization Projects Status: Bridge Strengthening

Status
Bridge Repairs
 RL Substantial Completion – 04/15/19
 OL Substantial Completion – 07/01/19
Longfellow Approach – Interim Repairs
 Substantial Completion – 12/31/19
 Material Fabrication Percent Complete: 100%
 Construction Percent Complete: 25%

Red Line

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

Orange Line

Bridge Repairs
• Charles Street-M-01-003 (85) (COMPLETE)
• Adams Street-M-01-002 (85J) (COMPLETE)



Orange Line Construction 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**

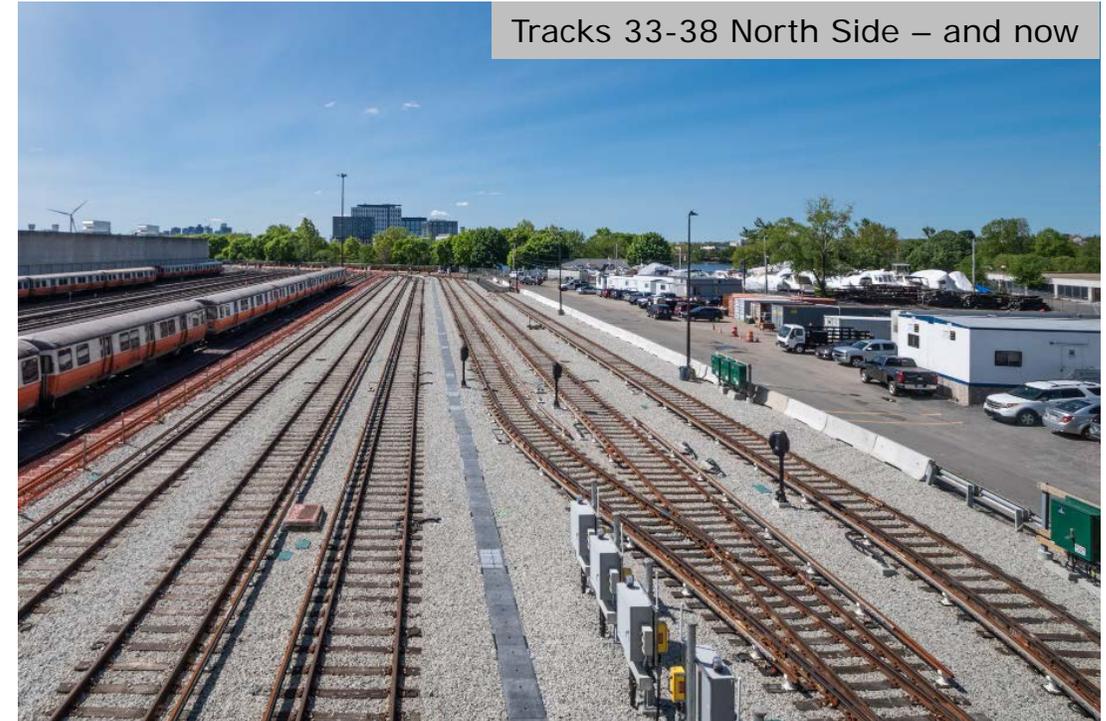
Construction Expenditures to Date: \$16,894,641

Construction Percent Complete: 95%

* Extended due to additional disposal of site material.

** Revised due to change order.

Tracks 33-38 North Side – start of construction



Project Completed Successfully



Orange Line Construction Projects: Orange Line Test Track

LM Heavy

Construction NTP: 06/20/17

Construction Substantial Completion:

Contractual: 09/11/18

Actual: 08/29/18

Construction Budget: \$5,867,000

Construction Expenditures to Date: \$4,155,673

Construction Percent Complete: 99%

Before Construction



Project Completed Successfully

