Red Line/Orange Line Improvement Program Update

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

May 20, 2019
OVERVIEW

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

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 and Orange Line Improvement Program Update

## Red Line/Orange Line - Schedule by Project

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### 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

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**LEGEND**
- Manufacturing/Delivery
- Design
- Procurement
- Construction

- Interim Milestone to Support Vehicle Delivery - Completed
- Interim Milestone to Support Vehicle Delivery
Red Line/Orange Line Schedule – Signals Upgrades

**Signal Upgrades Program - Orange Line**
- Mainline Signal Upgrades Project
- Signal Enhancements

**Signal Upgrades Program - Red Line**
- Mainline Signal Upgrades Project
- Signal Enhancements

Completed

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<th>Year</th>
<th>2016</th>
<th>2017</th>
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**LEGEND**
- Procurement
- Design/Build
- MBTA Installation

- Start of Orange Line e-Vane Delivery
- Start of Red Line e-Vane Delivery
New Vehicle Procurement Program

- Replace 218 Red Line cars
- 34 new cars
- Total = 252 vehicles

- Replace 120 Orange Line cars
- 32 new cars
- Total = 152 vehicles

New Vehicle Procurement Program
Total Project Value: $1,009,871,671
Expenditure to date: $225,412,964
Carbuilder Percent Complete: 25.2%
## Vehicle Procurement Project Status – Current/Look Ahead

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

### LEGEND
- Design
- Manufacturing/Delivery

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Draft for Discussion & Policy Purposes Only
Orange Line car shells are continuing to be produced in CRRC’s facility in Changchun, China. The welded car bodies are water tested prior to shipment to Springfield, Massachusetts for final assembly.

Water testing is performed in three phases:
1) Welded Car Body Test
2) Side and End Window Test (prior to interior insulation installation)
3) Final Completed Car Test

CRRC Changchun is currently in the process of fabricating the underframe of production car #65.
Pilot car testing (including Climate Chamber testing) is ongoing in Changchun. The Climate Chamber tests the capabilities of the HVAC system at all potential ambient temperatures and humidity ranges to ensure the system will function correctly all year.

Production of Red Line car shells is ongoing. The car shells will soon begin shipment to Springfield for final assembly and testing.
The Springfield final assembly facility is completing modifications on Married Pair 7 to bring it to the latest configuration before shipment to the Wellington car house.

Springfield recently shipped Married Pair 6 to Wellington car house, where testing is ongoing. The Project Team expects a full six-car consist of Springfield-produced cars to be fully tested when we enter passenger service this summer.
Orange Line Projects: Wellington Yard Expansion Tracks 33 to 38

**JF White**
Construction NTP: 12/05/16
Construction Substantial Completion:
  - Contractual: 01/04/19
  - Projected: 05/07/19 *
Construction Budget: $17,977,777
Construction Expenditures to Date: $13,296,402
Construction Percent Complete: 89%
* Extended due to additional disposal of site material.

Tracks 33-38 North Side – at start of construction

Tracks 33-38 North Side – and now
Red Line and Orange Line Improvement Program Update

Orange Line Projects: Orange Line Test Track

**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%

Before Construction

And Now

New Train On Test Track

Test Track
Orange Line Projects: Wellington Maintenance Facility

**Barletta Heavy Division**
Construction NTP: 06/30/17
Construction Substantial Completion:
  - Contractual: 08/04/20
  - Projected: 10/22/20*
Construction Budget: $72,582,000
Construction Expenditures to Date: $36,224,866
Construction Percent Complete: 56%
* Adjusted to account for scope added to the contract.

- **Utility Work in Zone 3C**
- **New Tile in Men’s Locker Room – Crew Quarters**
- **Track 11 Building Expansion Steel Installed for Track Beam**
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: $2,871,027
Construction Percent Complete: 9%

Orange Line Projects: Wellington Yard Rebuild

Performing Test Pits

Installing Electrical Conduits

Receiving Materials
Red Line Projects: Red Line Test Track

**Barletta Heavy Division**

Construction NTP: 11/17/17

Construction Substantial Completion:
  - Contractual: 04/07/19
  - Projected: 08/22/19*

Construction Budget: $21,269,000

Construction Expenditures to Date: $8,998,128

Construction Percent Complete: 59%

* Working with Contractor to mitigate delay
Red Line and Orange Line Improvement Program Update

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: $9,021,203
Construction Percent Complete: 6%

Contractor Pre-plating Track

Contractor Verifying Track Gage
Signals Upgrade Projects Status

**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

**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:** $162,552

**Progress:**
- Ongoing project meetings with RL/OL Team.
- Over-the-Shoulder reviews for package 1 of the Preliminary design are ongoing.
- Continue development of the preliminary design.
Preparation for Signals Upgrades – Chinatown Bungalow
State of Good Repair Projects Status – Bridge Strengthening

### Status

**Bridge Repairs**
- **Red Line**
  - Substantial Completion – 07/31/19
  - 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) (IN CONSTRUCTION)
    - Adams Street-M-01-002 (85J) (IN CONSTRUCTION)