



Massachusetts Bay Transportation Authority

FY20 Capital Program Recap

Fiscal and Management Control Board

September 21, 2020

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The MBTA exceeded the majority of its capital Key Performance Indicators (KPIs) for FY20

Key Performance Indicator	FY18 Target	FY18 Actual	FY19 Target	FY19 Actual	FY20 Target	FY20 Actual*
Total Capital Investment	\$942M	\$875M	\$1B	\$1.065B	\$1.4B	\$1.676B
Reliability/Modernization Programs Capital Investment	\$795M	\$720M	\$850M	\$857M	\$875M	\$1.195B
Expansion Programs Capital Investment**	\$147M	\$155M	\$150M	\$208M	\$539M	\$481M
Capital Construction Contracts Awarded	\$450M	\$639M	>\$650M	\$849M	>\$850M	\$343M
Vehicle Procurement Contracts Awarded	New KPI in FY19	New KPI in FY19	>\$300M	\$406M	>\$250M	\$397M

*Capital Investment reflects spending on a cash-basis through June 30th, 2020.

** FY20 Expansion program consists primarily of South Coast Rail and GLX.

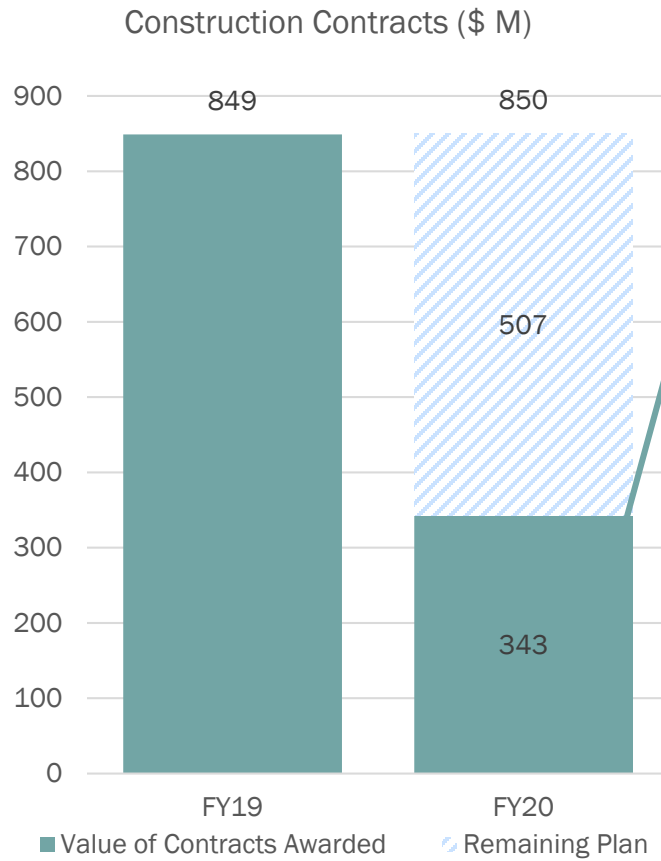
The Capital Program exceeded its FY 2020 goal of \$1.4 billion in total investment, an increase of 56% over last year's record setting total.

The spending goal for FY 2021 is \$1,750M, with \$1,300M in Reliability/Modernization and \$450M in Expansion.



FY20 KPI: Award > \$850M in Capital Construction Contracts – \$343M Awarded

Construction contracts awarded \$343 million in FY20; significant contract for South Coast Rail program awarded subsequent to year-end.



Awarded Construction Contracts – through 6/30/20	
Contract Description	Contract Value (M)
Oak Grove Station Accessibility Improvements	\$22
Natick Center Commuter Rail Station	\$36
Lechmere Viaduct	\$62
Robert Street Bridge	\$8
On-Call Track and MOW Green Line (GL) B & C Branches	\$18
SCR - Early Building Demolition of Properties on ROW	\$2
SCR-Fall River Secondary Commuter Rail - Berkley to Fall River	\$159
On-Call Track and MOW V GL E- Branch	\$18
Green Line B-Branch Station Consolidation	\$18
Total	\$343

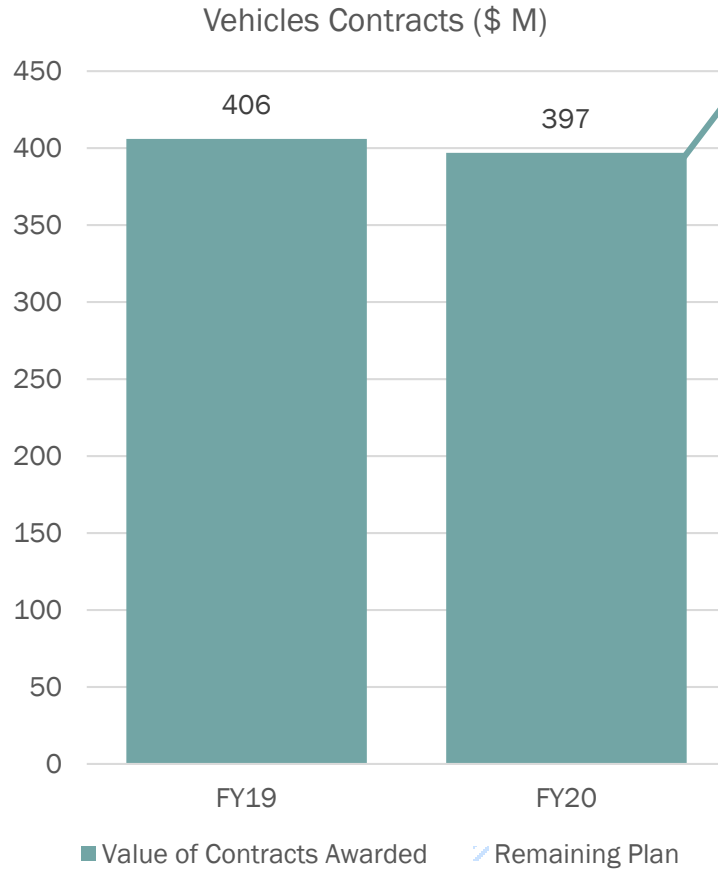


\$403M Middleborough Secondary and New Bedford Mainline contract for South Coast Rail program awarded subsequent to year-end.



FY20 KPI: Award \$250M in Vehicle Procurement Contracts - \$397M Awarded

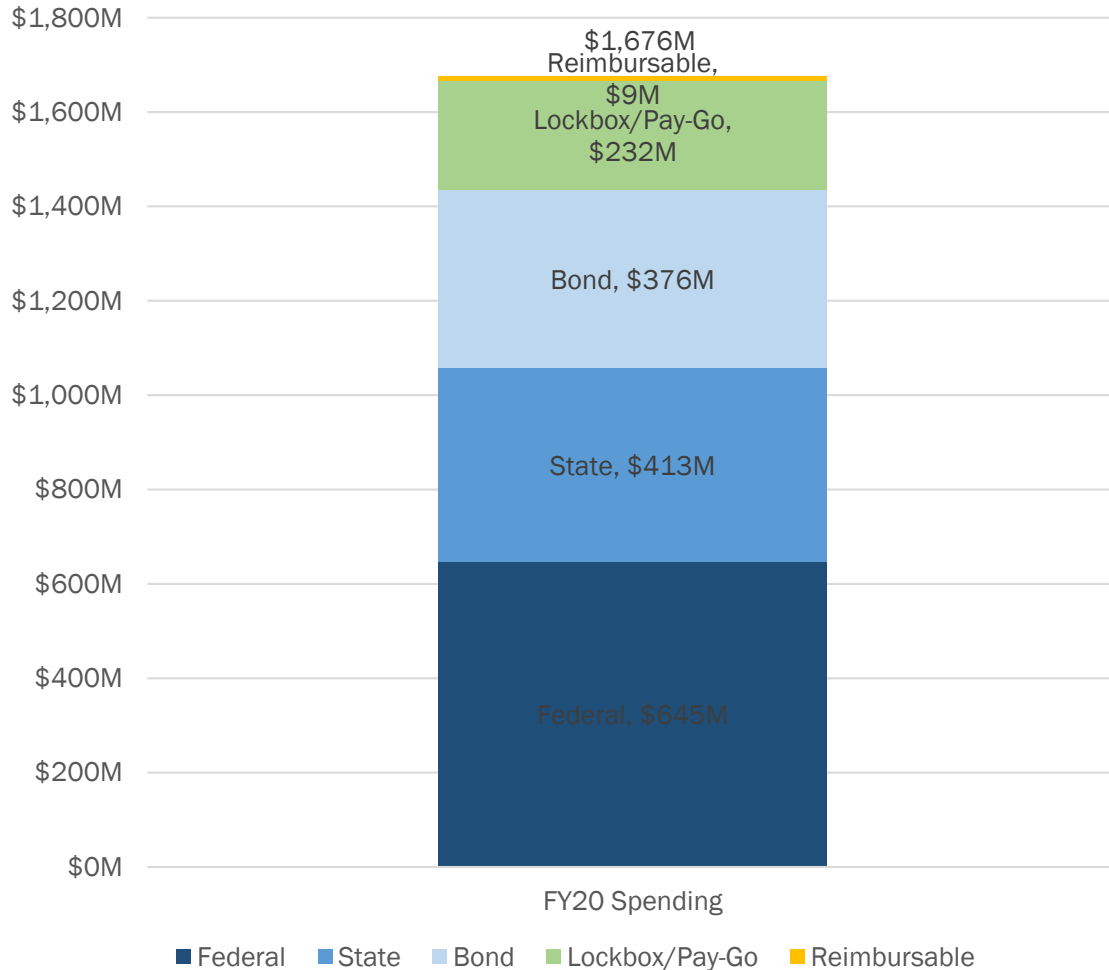
Vehicle contracts awarded YTD exceeded FY20 target.



Awarded Vehicle Contracts – Through 6/30/20	
Contract Description	Value (M)
Commuter Rail Bi-Level Coach Procurement	\$279
Engineering and Program Management Services for the Commuter Rail Bi-Level Coach Procurement	\$41
Overhaul of 25 New Flyer Sixty-Foot Hybrid Buses	\$17
Prof Services for Future Bus Overhauls	\$10
60-Bus Virginia State Contract Option	\$50
Total	\$397



FY 2020 Spending by Funding Source



Sources Highlights:

- **Federal** funds continue to be the single largest source of capital for the MBTA. FY20 spending is driven largely by investment in the GLX program and vehicle program.
- **State** funds include Bond Cap and Rail Enhancement Program special obligation bonds for GLX, Red Line/Orange Line improvements, South Coast Rail, and other projects
- **MBTA Bonds** support the 20% match for Federal projects, as well as MBTA-only funded projects. Bond includes taxable and tax-exempt debt and commercial paper.
- **Lockbox/Pay-Go** includes state assistance via bond cap and operating funds
- **Reimbursables** are costs that are 100% reimbursable by third parties.



FY20 Spending Overview by CIP Program

CIP Program	FY20 Actual (in millions)
Green Line Extension	\$384
Revenue Vehicles	\$260
Red / Orange Line Improvements	\$164
Track, Signal and Power	\$132
Commuter Rail Safety and Resiliency	\$126
Green Line Transformation	\$117
Customer Experience and Technology Improvements	\$85
South Coast Rail	\$84
Stations	\$70
System Upgrades / Other	\$62
Bridge & Tunnel	\$57
Facilities	\$52
Other	\$83
<i>FY20 Total</i>	<i>1,676</i>



Capital Programs Overview: Most 2020 construction projects underway, with many upcoming projects in design

Line	Snapshot of 2020 Projects	Highlights
Green Line	<ul style="list-style-type: none"> 2 completed, 4 projects underway or starting construction, 2 in design Focused on track renewal & infrastructure, to improve Reliability and Resilience 	<ul style="list-style-type: none"> C & E Track & Intersections Lechmere Viaduct
Red Line	<ul style="list-style-type: none"> 3 projects completed, 10 underway, and 6 in design Focus on station Accessibility, with over 17 elevators in construction or design work, and improved station wayfinding. Track / yard work for new vehicles 	<ul style="list-style-type: none"> Park St Station S. Shore Garages Alewife Crossover
Orange Line	<ul style="list-style-type: none"> 1 project completed, 7 underway or starting in 2020, and 11 in design Focus on track and yard work, to support new vehicle deliveries Additional focus on stations, with several accessibility projects in design Orange Line vehicle delivery continued 	<ul style="list-style-type: none"> North Station Wellington Yard Back Bay Station
Commuter Rail	<ul style="list-style-type: none"> 1 project completed, 8 underway, and 6 in design Significant focus on critical signal projects, for ATC/PTC, South & North Stations Initiated procurement for 83 bi-level Commuter Rail coaches 	<ul style="list-style-type: none"> PTC/ATC Chelsea Station Worcester Triple Track
Bridge	<ul style="list-style-type: none"> 3 projects underway, and 8 in design (including 6-bridge bundle) Replace end-of-life bridges, allow for increased load capacity & fewer upkeep costs 	<ul style="list-style-type: none"> Merrimack River Bridge Bridge Bundle (6)
Blue / Silver / Ferry / System	<ul style="list-style-type: none"> 2 projects completed, 3 underway or starting in 2020, and 3 in design Focus on repairing water-adjacent structures, and improving station accessibility 	<ul style="list-style-type: none"> Harbor Tunnel Repairs Courthouse Station
Bus	<ul style="list-style-type: none"> 2 projects completed, 5 underway or starting in 2020 Focus on bus maintenance facility upgrades, including paving, roof repairs, and signage Completed bus overhaul; continued delivery of 254 diesel-electric hybrid buses to replace aging diesel buses 	<ul style="list-style-type: none"> Bus Facility Paving Leak & roof repairs Dedicated Bus Lanes
Expansion Programs	<ul style="list-style-type: none"> SCR issued first major construction package, Fall River Secondary. Advertised Middleborough Secondary/New Bedford Main Line contract. Purchase of bi-level coaches on-going. GLX just passed the first substantial milestone on the Project. Field work continues to advance and the Project remains on track for a December 2021 revenue service startup. 	<ul style="list-style-type: none"> SCR GLX

Safety

Capital projects continue to advance with additional precautions










- Safety remains the overarching guidance to advance capital work
 - Undertook a program-wide safety stand-down on March 30th 2020
- MBTA established a safety taskforce with CIM (Contracting Industry of Massachusetts)
- MBTA has responded to the COVID-19 safety concerns for both employees and contractors working on the front lines
- MBTA COVID-19 safety implementation measures have resulted in the majority of projects continuing under COVID-19 constraints
- Team continues to review and adjust work site guidance to enhance safety protocols in line with CDC protocols
- Three primary drivers of schedule impacts from COVID-19:
 - **Risk Mitigation:** Required site planning and PPE procurement to minimize risk (e.g. confined space)
 - **Operational Support:** Diverting MBTA staff to maintain service levels and support social distancing
 - **Resource Availability:** Intermittent contractor staff and supply chain constraints



Questions?



Appendix: Projects by Program: Table of Contents

	<i>Line</i>	<i>Page</i>
	Green Line	Slides 10 - 11
	Orange Line	Slides 12 - 13
	Red Line	Slides 14 - 16
	Commuter Rail	Slides 17 - 19
	Bridge	Slide 20-21
	Blue Line, Silver Line, Ferry & System-wide	Slides 22-23
	Bus	Slide 24-25
	South Coast Rail	Slides 26-28
	Green Line Extension	Slides 29-30



Capital Programs 2020 Snapshot: Green Line (I/II)

Period	Project Name	Description / Benefits	Completion Date
“Completed”	C Branch Track & Intersection Upgrades	<ul style="list-style-type: none"> • Full-depth track reconstruction & intersection • Improved experience for riders, cyclists, drivers 	July 2020
	E Branch Track & Intersection Upgrades	<ul style="list-style-type: none"> • Full-depth track reconstruction & signal upgrades • Improve reliability, reduce risks of service disruptions 	Aug 2020
“Underway” <i>In active construction</i>	Fenway Flood Portal	<ul style="list-style-type: none"> • Install flood doors & gates at Fenway portal • Prevent flooding of GL tunnel from Muddy River 	Fall 2020
	D Branch Track & Signal Upgrades	<ul style="list-style-type: none"> • Replace track, signal, & power along entire D Branch • Improve reliability, reduce risks of service disruptions 	Spring 2021
	Lechmere Viaduct	<ul style="list-style-type: none"> • Rehabilitate bridge over 100 years old • Improve safety by addressing structural repairs 	April 2021
	B Branch Track & Intersection Upgrades	<ul style="list-style-type: none"> • Full-depth track reconstruction & intersection upgrades • Improve reliability, reduce risks of service disruptions 	Aug 2021

Green Line – Project Images



Reservoir Rail



E Branch



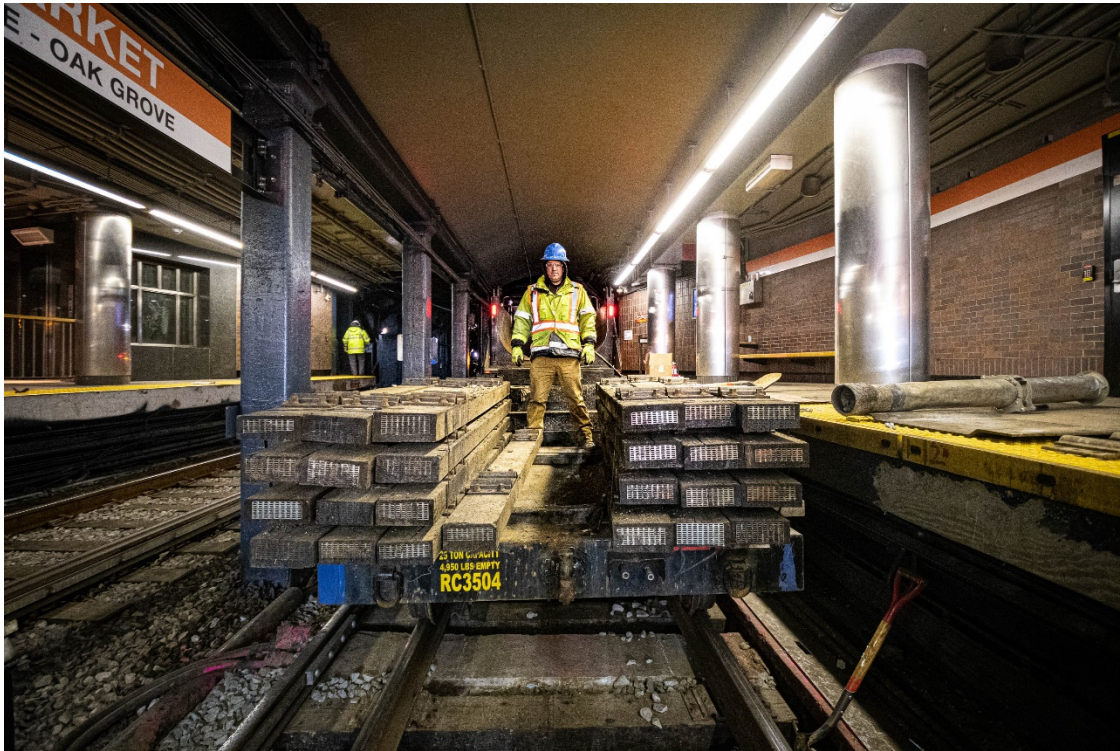
C Branch Intersection Upgrade



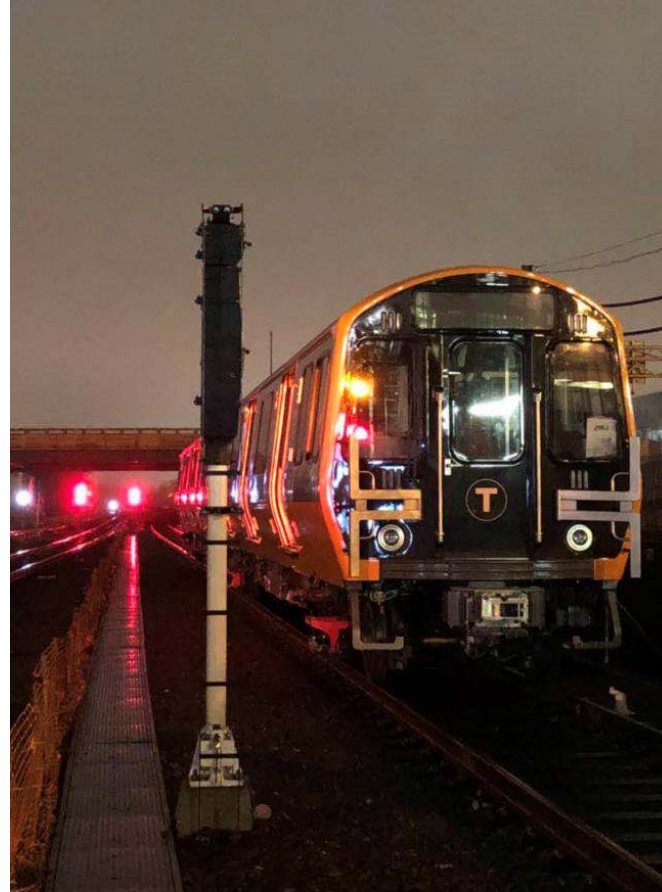
Capital Programs 2020 Snapshot: Orange Line (I/II)

Period	Project Name	Description / Benefits	Completion Date
“Completed”	North Station Trackwork	<ul style="list-style-type: none"> • 1,040 ft of track completed and stair treads repaired • Improve Reliability, safety, and customer experience 	Feb 2020
	Oak Grove Station Improvements	<ul style="list-style-type: none"> • Build/replace 4 elevators, stair repairs, & new lobby • Improve Accessibility, Reliability, and safety 	Sep 2021
“Underway” <i>In active construction</i>	N. Station Wayfinding & Improvements	<ul style="list-style-type: none"> • Stair repairs, floor patching, new signage & tactile • Improve Accessibility and safety 	Nov 2020
	Wellington Track 33-38	<ul style="list-style-type: none"> • Build 4,685 ft of track • Supports new vehicle delivery & storage 	Fall 2020
	Wellington Yard	<ul style="list-style-type: none"> • Replace/build track and new crossovers • Improve Reliability, supports new vehicle delivery 	Spring 2022
	Wellington Facility	<ul style="list-style-type: none"> • Install new equipment and power systems • Improve Reliability, supports new vehicle delivery 	Spring 2022
	OL Traction Power Substation Upgrades	<ul style="list-style-type: none"> • Upgrades power infrastructure • Supports system Reliability 	Winter 2024
	Orange Line Car Procurement	<ul style="list-style-type: none"> • 152 Orange Line cars to replace fleet 	2023

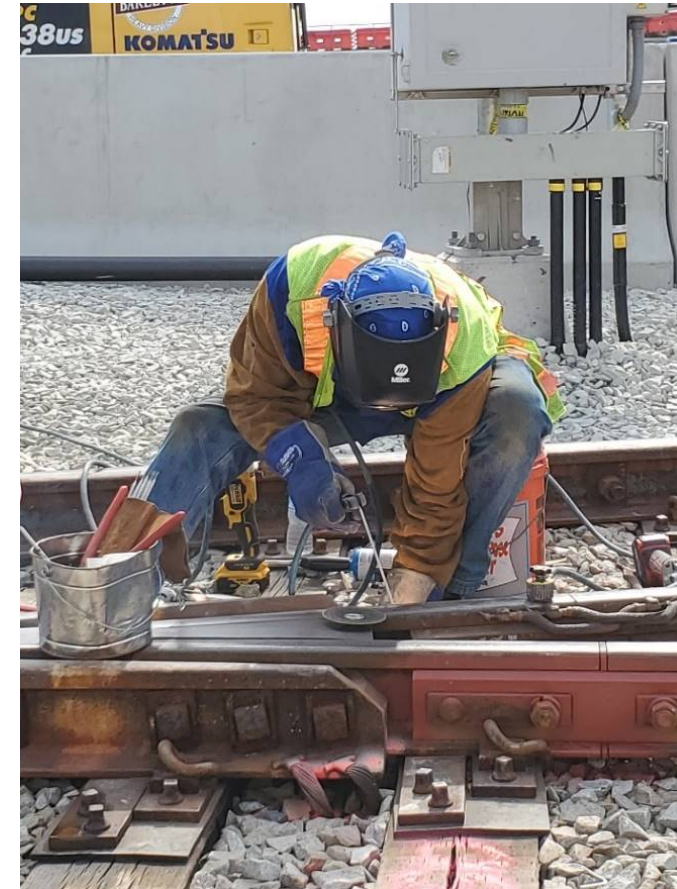
Orange Line – Project Images of FY20 Accomplishments



Haymarket Tie Replacement



New Orange Line Car



Wellington Yard Rebuild:
Welding Jumpers



Capital Programs 2020 Snapshot: Red Line (I/II)

Period	Project Name	Description / Benefits	Completion Date
“Completed”	Central Square Elevator	<ul style="list-style-type: none"> Replaced elevator, power and life safety upgrades Improved Accessibility, Reliability, and safety 	Apr 2020
	Track Modernization (14-day surge)	<ul style="list-style-type: none"> Replaced 2,400 ties, aligned 11,000 ft of rail, station concrete and elevator repairs Improve Reliability, safety, and customer experience 	Jun 2020
	Caddigan Yard Improvements	<ul style="list-style-type: none"> Improvements to walkways, drainage repairs Improve employee safety and Resiliency 	Jun 2020
	Columbia Junction Signal Bungalow Repair	<ul style="list-style-type: none"> 3 damaged bungalows and signal system repaired Emergency repairs completed within 3 months 	Oct 2020
“Underway” <i>In active construction</i>	Alewife Garage Repair <i>(current contract)</i>	<ul style="list-style-type: none"> Structural repairs, life safety upgrades Improve Reliability, safety, & customer experience 	Oct 2020
	Alewife Accessibility Improvements	<ul style="list-style-type: none"> Replace 3 elevators, upgrade elect. & mech. systems Improve Accessibility and customer experience 	Sep 2020
	Harvard Busway Repair	<ul style="list-style-type: none"> Tunnel repairs, replace roadway, signage, & life safety Improve Reliability, Accessibility, & customer exp. 	Dec 2020
	Red Line Car Procurement	<ul style="list-style-type: none"> 252 New Red Line Cars to replace fleet 	2024

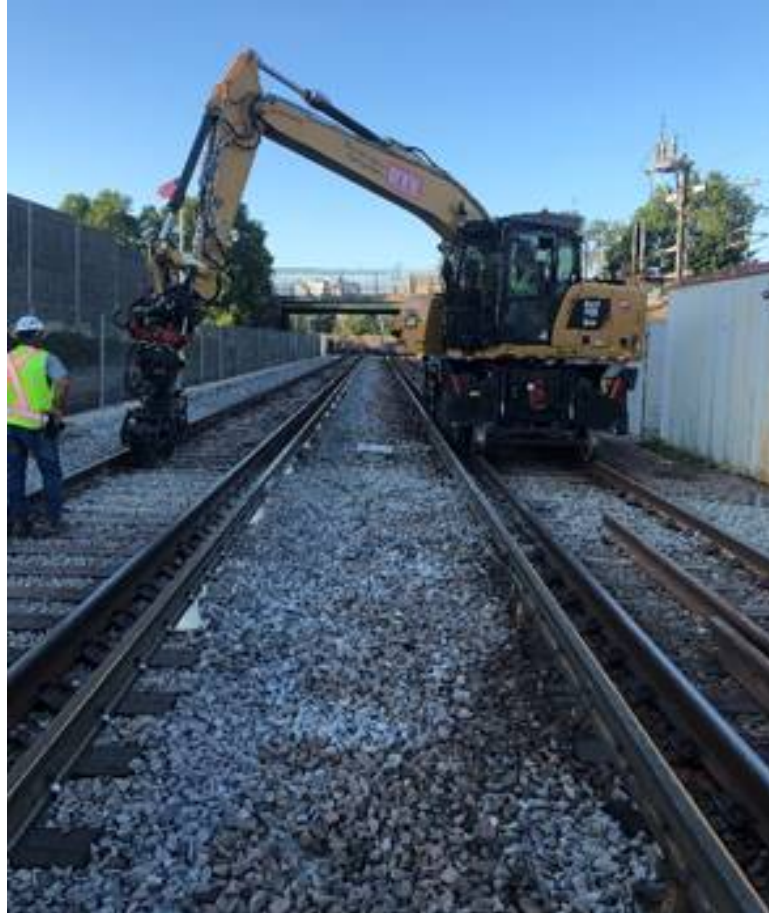
Capital Programs 2020 Snapshot: Red Line (II/II)

Period	Project Name	Description / Benefits	Completion Date
<p>“Underway” <i>In active construction</i></p>	Park St Station	<ul style="list-style-type: none"> • New tactile edge, lighting, stair and floor repairs. • Improve Accessibility, 	Dec 2020
	Quincy Adams Elevators	<ul style="list-style-type: none"> • Replace/build 4 elevators on station platform • Improve Accessibility and Reliability 	Mar 2021
	Quincy Adams Garage Improvements	<ul style="list-style-type: none"> • Overhaul garage, extend lifespan by 40 years • Improve Reliability, safety, and customer experience 	Sep 2021
	Braintree Station Garage Improvements	<ul style="list-style-type: none"> • Overhaul garage, add 2 elevators to make accessible • Improve Accessibility, Reliability, and safety 	Oct 2021
	RL Test Track	<ul style="list-style-type: none"> • Installation of new track, power, and third rail • Allows testing of new vehicles, improve Resiliency 	Fall 2020
	Cabot Yard & Maintenance Facility	<ul style="list-style-type: none"> • Replace 29,000 ft of track and install new infrastructure • Improve Reliability, Resiliency, and support new vehicles 	Fall 2022

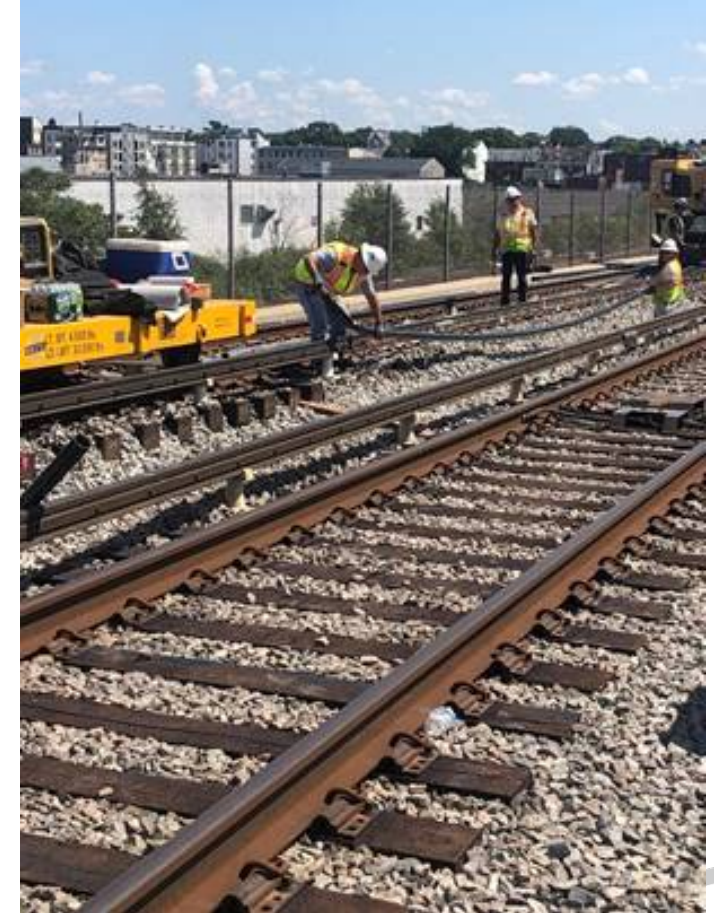
Red Line – Project Images of FY20 Accomplishments



Red Line Test Track: VTF Concrete Placement at South Apron



Cabot Yard & Maintenance Facility: Tamping



Cabot Yard & Maintenance Facility: Installing Heater Conduits



Capital Programs 2020 Snapshot: Commuter Rail (I/II)

Period	Project Name	Description / Benefits	Completion Date
“Completed”	Pawtucket Layover Facility (fuel station)	<ul style="list-style-type: none"> New & expanded locomotive fluid handling station Allows R.I. refueling, supports increased maintenance 	Jul 2020
“Underway” <i>In active construction</i>	Chelsea Station Accessibility & Infrastructure Improvements	<ul style="list-style-type: none"> New station next to SL3, improve grade crossings Improve Reliability, Accessibility, and safety 	Fall 2021
	North Station Terminal	<ul style="list-style-type: none"> Upgrade & modernize communication / signals Improve Reliability, throughput, and Ops flexibility 	Mar 2022
	South Station Terminal (Tower 1)	<ul style="list-style-type: none"> Upgraded track, communication / signals Improve Resiliency, Reliability, throughput, Ops flexibility 	Sep 2024
	Ruggles Station (CR)	<ul style="list-style-type: none"> New side platform, with 4 new/replaced elevators Improve Accessibility and customer experience 	Feb 2021
	Natick Center Station	<ul style="list-style-type: none"> New high-level platform and two new elevators Improve Accessibility and customer experience 	Aug 2022
	Mansfield Station (Providence Line)	<ul style="list-style-type: none"> Modernize station, repair platforms, and new signage Improve Accessibility and customer experience 	Mar 2021
	Iron Horse Park (Billerica)	<ul style="list-style-type: none"> New RRO control center, provides redundancy Improve Safety & Resilience, and on-time performance 	Jun 2021

Capital Programs 2020 Snapshot: Commuter Rail (II/II)

Period	Project Name	Description / Benefits	Completion Date
<p>“Underway” <i>In active construction</i></p>	<p>Positive Train Control</p>	<ul style="list-style-type: none"> • Implement FRA-mandated system across rail network • Improve Safety & Resiliency • FRA certified in Jun 2020, 100% of system complete 	<p>Dec 2020</p>
	<p>North Side Automatic Train Control</p>	<ul style="list-style-type: none"> • Install automatic train control signals on entire North Side commuter rail network • Improve capacity & operations performance, and meet FRA requirements for PTC 	<p>Dec 2022</p>
	<p>Bi-Level Coach Procurement</p>	<ul style="list-style-type: none"> • 83 coaches to replace 67 oldest single level coaches • +16 coaches to support South Coast Rail expansion 	<p>Summer 2024</p>

Commuter Line - Project Images of FY20 Accomplishments



Lowell Line – Billerica Cable



Lowell Line Cable



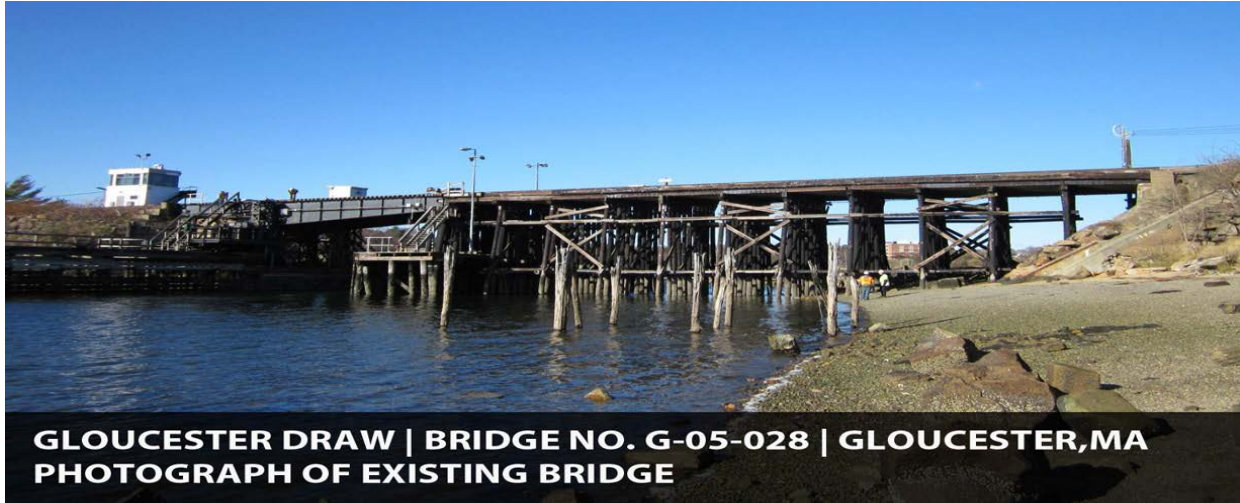
Lowell Line Cable



Capital Programs 2020 Snapshot: Bridge

Period	Project Name	Description / Benefits	Completion Date
“Completed”	<i>n/a</i>		
“Underway” <i>In active construction</i>	Robert St Bridge Replacement	<ul style="list-style-type: none"> • Replace structurally deficient bridge on Needham line • Improve Reliability and asset conditions 	Aug 2021
	Merrimack River Bridge	<ul style="list-style-type: none"> • Design & installation of scour protection • Provide 500-year flood protection 	Nov 2020
	Gloucester Drawbridge	<ul style="list-style-type: none"> • Replacement of 110-year-old moveable structure • Improve Reliability and eliminate speed restrictions 	Fall 2022
	Rail Bridge Replacements	<ul style="list-style-type: none"> • Design & replace six bridges on Framingham, Haverhill, Newburyport/Rockport & Lowell Lines • Improve Reliability and asset conditions 	Jun 2022

Bridge - Project Images of FY20 Accomplishments



Gloucester Draw – Single Track Operation

Capital Programs 2020 Snapshot: Blue Line, Silver Line, Ferry & System-wide

Period	Project Name	Description / Benefits	Completion Date
“Completed”	Bowdoin-Airport Station Improvements	<ul style="list-style-type: none"> • Tactile strip, faregate overhaul, light renewal • Improved Accessibility, Reliability, and safety 	May 2020
“Completed”	Busway Paving	<ul style="list-style-type: none"> • New paving at Silver Line Way • Decreased maintenance, improved safety & cust. Exp. 	Jun 2020
“Underway”	Aquarium-Maverick Tunnel Improvements	<ul style="list-style-type: none"> • Replaced 4,514 ft of track, performed leak repairs • Improve Reliability, safety, and customer experience 	Nov 2020
“Underway”	Parking & Paving	<ul style="list-style-type: none"> • Replace 3 lots at Wellington (complete), W. Natick (complete), and Orient Heights 	Dec 2020

Legend:

Blue

Silver

Ferry

System-wide

Blue Line – Project Images



Blue Line – Airport Rail



Blue Line Cable Removal



Blue Line: State Street Asbestos Removal



Capital Programs 2020 Snapshot: Bus

Period	Project Name / Scope	Description / Benefits	Completion Date
“Completed”	Busway/Bus Facility Paving	<ul style="list-style-type: none"> • New paving at Malden Ctr. & Forest Hills Stations • Reclaim and Pave Fellsway Bus Garage • Decreased maintenance, improved safety & cust. Exp. 	Apr-Aug 2020
	Leak Repairs	<ul style="list-style-type: none"> • Crack injection at Haymarket Busway path of travel • Improved reliability and customer experience 	May 2020
	Winthrop Bus Sign Installation	<ul style="list-style-type: none"> • Replace and update bus stop signage • Improve accessibility and customer experience 	Jul 2020
	Bus Overhaul	<ul style="list-style-type: none"> • Overhaul 155 of the 2008/09 40’ bus fleet • Improved reliability / maintainability / availability 	Fall 2020
“Underway” <i>In active construction</i>	Bus Lane Improvements	<ul style="list-style-type: none"> • Dedicated bus lane 	Dec 2020
	New Bus Procurement	<ul style="list-style-type: none"> • Delivery of 254 Enhanced Electric Hybrid 40’ buses • Replacement of aging unreliable diesel buses 	Winter 2020

Bus – Project Images of FY20 Accomplishments



Craigie Drawbridge



New 40' diesel-electric hybrid bus



South Coast Rail Construction Accomplishments

- **First major construction package**, Fall River Secondary issued NTP in August.
 - Advertised Middleborough Secondary and New Bedford Main Line contract, with bids opening in August 2020.
 - Three contract packages on schedule for summer and fall completions: 46 culvert contract; four bridges and demolition of nine structures.
 - Track material procurement and purchase of bi-level coaches is ongoing.
 - Design Phase work includes: Traffic mitigation – design completion 2021; Design for the New Bedford Pedestrian Bridge – design completion 2021 and start of full-build design in FY 2021.
 - SCR Team welcomes new staff and consultants.
 - Bi-Level Coach Procurement - 83 coaches to replace 67 oldest single level coaches, +16 coaches to support South Coast Rail expansion, Completion date- Summer 2024
-



South Coast Rail Construction Accomplishments

Early Action Culverts

- Substantial completion
- MassDOT Contract: 106341 – JF White (\$19.1M)
- Substantial Completion – June 2020
 - 46 Culverts

Early Action 4 Bridges

- Work ongoing
- MassDOT Contract: 609200 - JF White (\$26.1M)
- Substantial Completion – September 2020
 - Berkley – Cedar Swamp River, Cotley River North & Cotley River South Bridges
 - Freetown - Fall Brook Bridge

Early Action Demolition

- Work Ongoing
- K78CN02 – DW White (\$1.7M)
- Substantial Completion – November 2020
 - Demolition of nine structures



South Coast Rail - Project Images of FY20 Accomplishments



New Bedford Station



Capital Programs 2020 Snapshot: GLX

- The Project just passed the first major milestone on 8/31/2020. MBTA continues to review the documentation for formal acceptance of the milestone completion.
- Field work continues to progress in all locations:
 - Significant progress is being made on the Vehicle Maintenance Facility and Transportation Operations Building, this milestone is approximately 120 days away.
 - In late May, the original Lechmere Station was closed and demolished along with the old viaduct to make way for the new station and viaduct, construction in this area is progressing.
 - In late May Broadway Bridge was opened to traffic in an interim condition. Since that time, the remaining bridge work has been completed and the bridge is open with minor punch list work remaining.
 - Work continues on retaining walls, MassDOT bridges, drainage, viaducts, community path, and the stations.
- The Project continues to work through the impacts of the COVID 19 pandemic. The Project has had challenges but those are being monitored by the contract and MBTA very closely. Issues are being resolved as quickly as possible to minimize impacts.
- Green Line Car Procurement: 24 type 9 Green Line cars, Fleet size increase to support new service expansion – Completion Fall 2020



GLX– Project Images of FY20 Accomplishments



Steel being removed from old Lechmere viaduct structure.



Reinforcing steel in VMF floor.

