

Capital Program Update: FY21 Update through November 30, 2020

Joint Meeting of the MassDOT Board & Fiscal and Management Control Board

January 11, 2021

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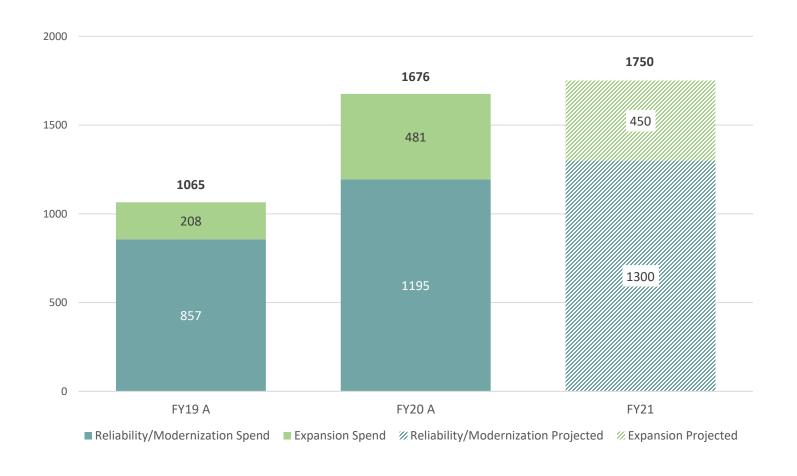
The MBTA continues to set aggressive Capital Key Performance Indicators (KPIs) for FY21

Key Performance Indicator	FY19 Actual	FY19 Target	FY20 Actual	FY20 Target	FY21 Actual (thru 11/30)	FY21 Target
Total Capital Investment	\$1.07B	\$1B	\$1.67B	\$1.4B	\$691M	\$1.75B
Reliability/Modernization Programs Capital Investment	\$857M	\$850M	\$1.19B	\$875M	\$484M	\$1.3B
Expansion Programs Capital Investment	\$208M	\$150M	\$481M	\$539M	\$207M	\$450M
Capital Construction Contracts Awarded	\$849M	\$650M	\$343M	\$850M	\$416M	\$628M
Vehicle Procurement Contracts Awarded	\$406M	>\$300M	\$397M	\$250M	\$81M	\$244M

^{*} Actuals through 11/30/2020.

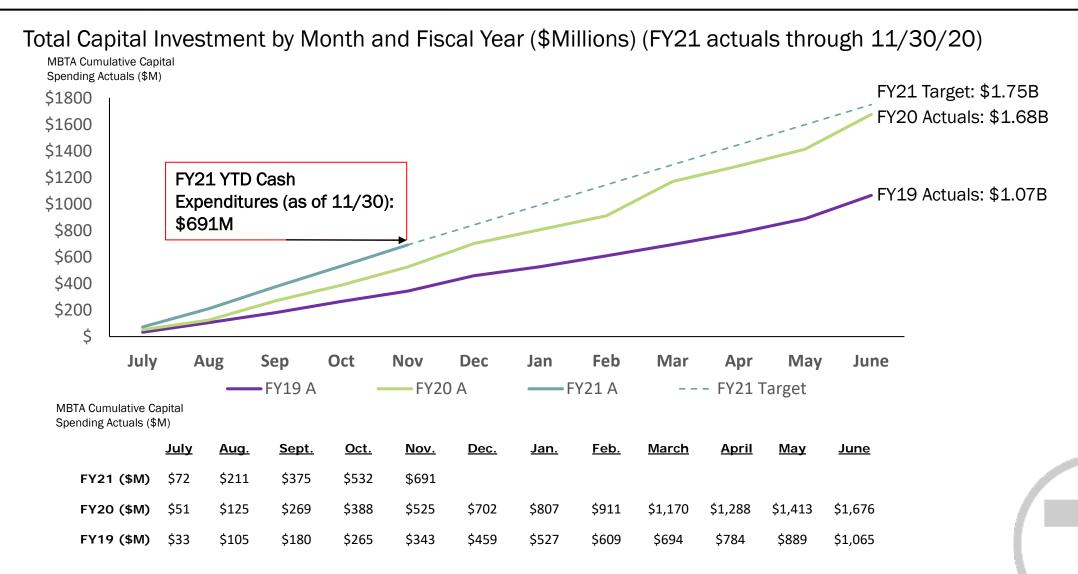
MBTA Capital Investment by Fiscal Year (\$ millions)

MBTA Capital Investment target for FY21 is an increase over last year and reflects continued investment in capital





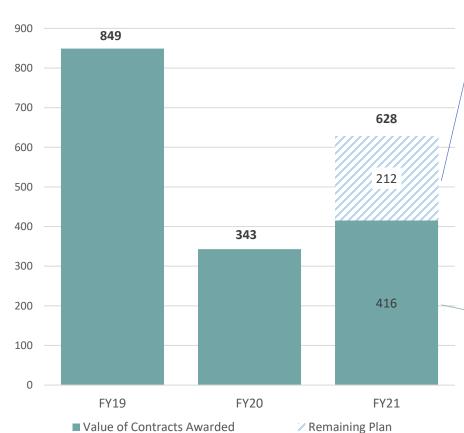
FY21 KPI: \$1.75B Total Capital Investment - YTD Total Spending vs. Previous Years. MBTA is on track to achieve the FY21 spend target



FY21 KPI: Award > \$628M in Capital Construction Contracts – \$416M Awarded to date

MBTA is on track to meet FY21 Target





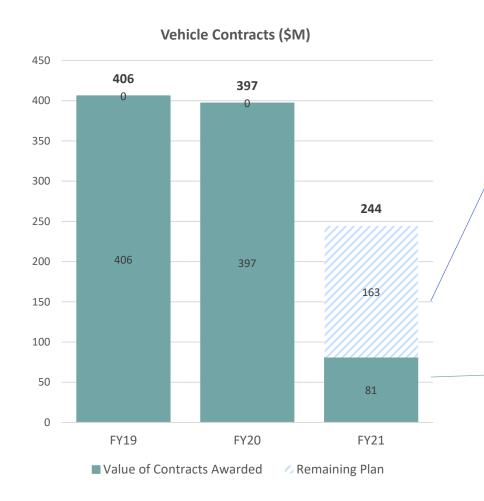
Anticipated Construction Contracts FY21				
Contract Description	Est. Value (M)			
Fiber optic Resiliency (CR)- (Design Build)	\$45			
Worcester Union Station	\$38			
Dorchester Ave. Bridge*	\$34			
Courthouse Station Leak Repairs	\$27			
East Cottage/Norfolk Street Bridge	\$14			
Courthouse Station Headhouse	\$15			
Rt. 128 Parking Garage Repairs	\$12			
On-Call Roofing - Transit Facilities	\$10			
Alewife Parking Garage Repairs- MEP- Life Safety	\$7			
On- Call Structures Repairs Systemwide	\$7			
Alewife Parking Garage Concrete Repairs	\$3			
Total	\$212			

^{*} CIP Change in process for Dorchester Ave. Bridge

Awarded Construction Contracts - through 11/30/20		
Contract Description	Contract Value (M)	
SCR- Middleboro Secondary NBML (New Bedford Main Line)	\$403	
On-Call Track and MOW (Commuter Rail)	\$11	
Aquarium Station Floodproofing Improvements	\$2	
Total	\$416	

FY21 KPI: Award \$244M in Vehicle Procurement Contracts - \$81M Awarded

The MBTA is on track to meet FY21 Target



Anticipated Vehicle Contracts FY21		
Contract Description	Est. Value (M)	
160 New 40-foot EEH Buses	\$135	
60 ConnDOT 40-foot Hybrid Bus Overhaul	\$25	
Professional Services for 160 New Buses	\$2	
Professional Services for 60 Bus Overhaul	\$1	
Total	\$163	

Awarded Construction Contracts - through	h 11/30/20
Contract Description	Contract Value (M)
45 New 60-foot low floor EEH Buses	\$81
Total	\$81

Most 2020 construction projects underway, with many upcoming projects in design

Line	Snapshot of FY 21 Q1 Projects	Highlights
Green Line	 4 completed, 2 projects in construction, 7 in design Completed two (2) 28-day full access closures (E and B) in Boston & Brookline (17,500 feet of track) Focused on track renewal & infrastructure, to improve Reliability and Resilience 	B, C & E Track & IntersectionsFenway Portal, Lechmere
Red Line	 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 	Park St StationS. Shore GaragesAlewife Crossover
Orange Line	 2 projects completed, 6 underway 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 	Wellington Tracks 33-38Wellington Maintenance FacilitySullivan Canopies
Commuter Rail	 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 	PTC/ATCChelsea StationWorcester Triple Track
Bridge	 4 projects underway (including 6-bridge bundle), and 10 in design Replace end-of-life bridges, allow for increased load capacity & fewer upkeep costs 	Gloucester Draw BridgeRail Bridge Replacements (6)Robert Street Bridge
Ferry /	 2 projects completed, 3 underway or starting in 2020, and 3 in design Focus on repairing water-adjacent structures, and improving station accessibility 	Harbor Tunnel RepairsCourthouse Station
Bus	 3 projects completed, 6 being designed for construction in 2021 Focus on bus maintenance facility upgrades, including paving, roof repairs, overhead doors, and lighting Completed bus overhaul; continued delivery of 254 diesel-electric hybrid buses to replace aging diesel buses 	Bus Facility PavingGarage UpdatesDedicated Bus Lanes
SCR	 SCR – 3 projects completed, 4 projects are underway, and 2 projects are in design. Priority focus is on the mobilization \$56: construction work, utility work and real estate. 	 Fall River Secondary New Bedford Mainline Signal/Communication System
GLX	 Project is currently 60% complete; revenue service projected for end of 2021; Project is working to mitigate supply chain im stemming from COVID-19 Pandemic. \$1.4 billion of Program's \$2.3 billion budget has been expended/realized 	pacts • Light Rail Vehicles Delivery • Vehicle Maintenance Facility

Appendix



Projects by Program: Table of Contents

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Green Line Transformation: FY21 Q1 Snapshot

Period	Project Name	Description / Benefits	Completion Date
	C Branch Track & Intersection Upgrades	 Full-depth track reconstruction & intersection Improved experience for riders, cyclists, drivers 	July 2020
	E Branch Track & Intersection Upgrades	 Full-depth track reconstruction & signal upgrades Improve reliability, reduce risks of service 	Aug 2020
"Completed"	B Branch Track & Intersection Upgrades	 disruptions Full-depth track reconstruction & intersection upgrades Improve reliability, reduce risks of service disruptions 	Sep 2020
	Fenway Flood Portal	Install flood doors & gates at Fenway portalPrevent flooding of GL tunnel from Muddy River	Nov 2020
"Underway" In active	Lechmere Viaduct	 Rehabilitate bridge over 100 years old Improve safety by addressing structural repairs 	Fall 2021
construction	D Branch Track & Signal Upgrades	 Replace track, signal, & power along entire D Branch 	Fall 2021
		 Improve reliability, reduce risks of service disruptions 	

Green Line Transformation-Images of FY21 Q1 Work



E Branch 28-Day Closure South Huntington Section



D Branch Track & Signal Reservoir Yard

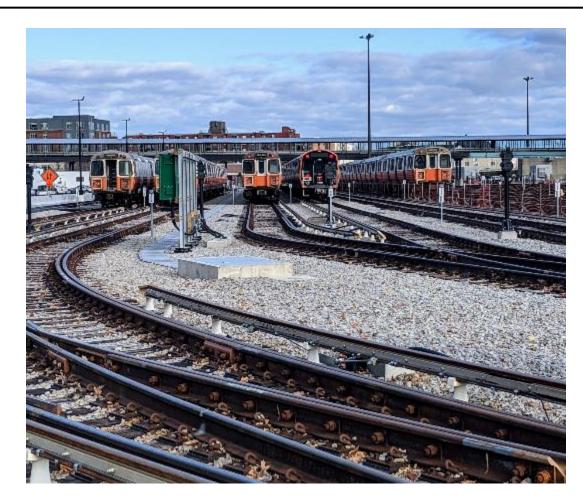


C Branch 28-Day Closure
Town of Brookline

Orange Line: FY21 Q1 Snapshot

Period	Project Name	Description / Benefits	Completion Date
"Completed"	Wellington Track 33-38	Build 4,685 ft of trackSupports new vehicle delivery & storage	October 2020
	Oak Grove Station Improvements	 Build/replace 4 elevators, stair repairs, & new lobby 	Sep 2021
	N. Station Wayfinding & Improvements	 Improve Accessibility, Reliability, and safety Stair repairs, floor patching, new signage & tactile Improve Accessibility and safety 	May 2021
	Causeway Duct bank Replacement	Replace two duct banks on Causeway StreetImprove reliability, safety, and customer	May 2021
"Underway" In active	Sullivan Station Canopy & Platform Repair	Repair deteriorated OL Station canopy and platform	May 2021
construction	Wellington Yard	 Improve reliability, safety, and customer experience Replace/build track and new crossovers Improve Reliability, supports new vehicle delivery 	Spring 2022
	Wellington Maintenance Facility	Install new equipment and power systemsImprove Reliability, supports new vehicle delivery	Spring 2022
	OL Traction Power Substation Upgrades	Upgrades power infrastructureSupports system Reliability	Winter 2024
	Orange Line Car Procurement	152 Orange Line cars to replace fleet	2023

Orange Line: Project Images of FY21 Q1 Work



Wellington Track 33-38



Wellington Maintenance Facility: Causeway Ductbank Track 11 Expansion



Red Line: FY21 Q1 Snapshot (I/II)

Period	Project Name	Description / Benefits	Completion Date
	Track Modernization (14-day surge)	 Replaced 2,400 ties, aligned 11,000 ft of rail, station concrete and elevator repairs Improve Reliability, safety, and customer experience 	Jun 2020
"Completed"	Alewife Accessibility Improvements	Replace 3 elevators, upgrade elect. & mech. systems	Sep 2020
	Columbia Junction Signal Bungalow Repair	 Improve Accessibility and customer experience 3 damaged bungalows and signal system repaired Emergency repairs completed within 3 months 	Oct 2020
	Alewife Garage Repair (current contract)	 Structural repairs, life safety upgrades Improve Reliability, safety, & customer experience 	Feb 2021
"Underway"	Harvard Busway Repair (Interim Opening)	 Tunnel repairs, replace roadway, signage, & life safety 	Dec 2020
In active construction	Red Line Car Procurement	 Improve Reliability, Accessibility, & customer exp. 252 New Red Line Cars to replace fleet 	2024
	Park St Station	New tactile edge, lighting, stair and floor repairs.Improve Accessibility,	Dec 2020

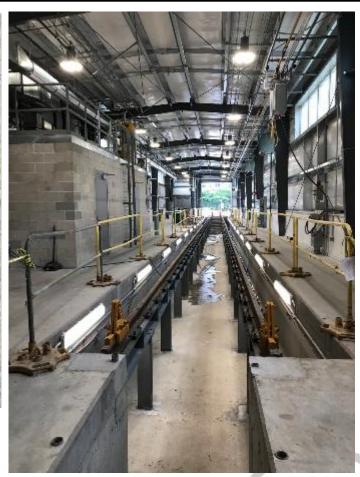
Red Line: FY21 Q1 Snapshot (II/II)

Period	Project Name	Description / Benefits	Completion Date
	Transformer Replacement	 Replace 9 electric transformers for RL Improve reliability, safety, and customer experience 	Dec 2021
	Quincy Adams Elevators	 Replace/build 4 elevators on station platform Improve Accessibility and Reliability 	Mar 2021
	Quincy Adams Garage Improvements	 Overhaul garage, extend lifespan by 40 years Improve Reliability, safety, and customer experience 	Sep 2021
Inderway" In active onstruction	Braintree Station Garage Improvements	Overhaul garage, add 2 elevators to make accessible	Oct 2021
	RL Test Track	 Improve Accessibility, Reliability, and safety Installation of new track, power, and third rail Allows testing of new vehicles, improve Resiliency 	Fall 2020
	Cabot Yard & Maintenance Facility	 Replace 29,000 ft of track and install new infrastructure 	Fall 2022
	RL Ductback Replacement	 Improve Reliability, Resiliency, and support new ॡॴॣॿॖढ़ॖ electrical power ductbanks at various locations 	May 2021
		Improve reliability, safety, and customer experience	

Red Line – Project Images of FY21 Q1 Work



RL Braintree Garage Improvement Project



Interior – Red Line Test Track, Vehicle Testing Facility

Elevator Work

Commuter Rail: FY21 Q1 Snapshot (I/II)

Period	Project Name	Description / Benefits	Completion Date
"Completed"	Pawtucket Layover Facility (fuel station)	 New & expanded locomotive fluid handling station Allows R.I. refueling, supports increased maintenance 	Jul 2020
	Chelsea Station Accessibility & Infrastructure Improvements	 New station next to SL3, improve grade crossings Improve Reliability, Accessibility, and safety 	Sep 2021
	North Station Terminal	 Upgrade & modernize communication / signals Improve Reliability, throughput, and Ops flexibility 	Dec 2022
"Undorwov"	South Station Terminal (Tower 1)	 Upgraded track, communication / signals Improve Resiliency, Reliability, throughput, Ops flexibility 	Fall 2026
"Underway" In active construction	Ruggles Station (CR)	 New side platform, with 5 new/replaced elevators Improve Accessibility and customer experience 	Jul 2021
	Natick Center Station	 New high-level platform and accessible routes to platforms Improved flood resiliency and operational flexibility 	May 2022
	Mansfield Station (Providence Line)	 Modernize station, repair platforms, and new signage 	Mar 2021
	Iron Horse Park (Billerica)	 Improve Accessibility and customer experience New RRO control center, provides redundancy Improve Safety & Resilience, and on-time 	Oct 2021

Commuter Rail: FY21 Q1 Snapshot (II/II)

Period	Project Name	Description / Benefits	Completion Date
	Positive Train Control	 Implement FRA-mandated system across rail network Improve Safety &Resiliency 	Dec 2020
"Underway" In active construction	North Side Automatic Train Control	 FRA certified in Jun 2020, 100% of system tire North install automatic train control signals of entire North Side Coffimuter rail network Improve capacity & operations performance, and meet FRA requirements for PTC 	Dec 2022
	Bi-Level Coach Procurement	 83 coaches to replace 67 oldest single level coaches +16 coaches to support South Coast Rail expansion 	Summer 2024

Commuter Rail - Project Images of FY21 Q1 Work







Ruggles Station Accessibility Improvements New Side Platform Canopy

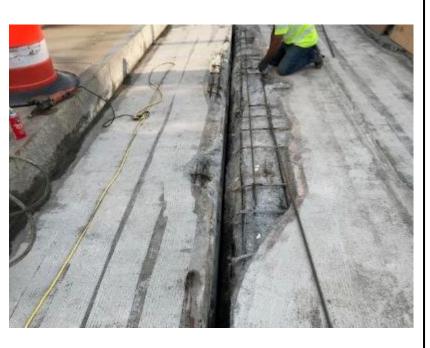
North Station Track and Signal Installation of 2 way conduits

Natick Center Station
Accessibility Improvements
Clearing and Excavation for
Ramps 1 and 2

Bridge: FY21 Q1 Snapshot

Period	Project Name	Description / Benefits	Completion Date
"Completed"	Dorchester Avenue Bridge Repairs	 Improve load carrying capacity to carry buses Improve Reliability and eliminate load restriction 	Sep 2020
	Robert St Bridge Replacement	 Replace structurally deficient bridge on Needham line 	Aug 2021
"Underway"	Merrimack River Bridge	 Improve Reliability and asset conditions Design & installation of scour protection Provide 500-year flood protection 	Mar 2021
In active construction	Gloucester Drawbridge	 Replacement of 110-year-old moveable structure Improve Reliability and eliminate speed 	Fall 2022
	Rail Bridge Replacements	 restrictions Design & replace six bridges on Framingham, Haverhill, Newburyport/Rockport & Lowell Lines Improve Reliability and asset conditions 	Jun 2022

Bridge – Project Images of FY21 Q1 Work



Dorchester Ave. Bridge Repairs

Typical Concrete Box Beam Repairs.

Removal of deteriorated concrete shown above.



Phase 3 Concrete Deck Overlay Rebar installation is shown with completed deck overlay from Phases 1 and 2 to each side., Aug. 16, 2020.

Dorchester Ave. Bridge Repairs



Proof Load Test, Dorchester Ave. Bridge
Repairs competed on Aug. 28, 2020. Load
test performed to provide load rating values
for the bridge.

Blue Line, Silver Line, Ferry & System-wide: FY21 Q1 Snapshot

_	Period	Project Name	Description / Benefits	Completion Date
	"Completed"	Bowdoin-Airport Station Improvements	 Tactile strip, faregate overhaul, light renewal Improved Accessibility, Reliability, and safety 	May 2020
	"Underway"	Aquarium-Maverick Tunnel Improvements	 Replaced 4,514 ft of track, performed leak repairs Improve Reliability, safety, and customer experience 	Nov 2020
	"Underway"	Parking & Paving	 Replace 3 lots at Wellington (complete), W. Natick (complete), and Orient Heights 	Dec 2020



Blue/Silver Line - Project Images of FY21 Q1 Work



Blue Line - Airport Rail



Courthouse Rendering



Blue Line Cable Removal



Bus Program: FY21 Q1 Snapshot

Period	Project Name / Scope	Description / Benefits C	completion Date
"Completed"	Busway/Bus Facility Paving	 New paving at Ruggles Station Mill and Pave Cabot and Quincy Bus Garages Decreased maintenance, improved safety & cust. Exp. 	Oct- Nov 2020
	Bus Overhaul	 Overhaul 155 of the 2008/09 40' bus fleet Improved reliability / maintainability / availability 	Fall 2020
	Bus Lane Improvements	Dedicated bus lane	Dec 2020
	New Bus Procurement	 Delivery of 254 Enhanced Electric Hybrid 40' buses 	Winter
"Underway"	Rapid Response Bus Lane, Columbus Ave	 Replacement of aging unreliable diesel buses Construct center running bus lane along the Columbus Avenu Improve reliability, safety, accessibility, and customer 	2020 ^e June 2021
In active construction	Rapid Response Bus Lane, Various Locations	 experience Construct 15 miles of bus lanes in multiple municipalities Improve reliability, safety, accessibility, and customer experier 	Summer 2021
	New Bus Procurement	 Delivery of 254 Enhanced Electric Hybrid 40' buses 	Summer
	Bus Stop Accessibility Improvements	 Replacement of aging unreliable diesel buses Construct accessible and safe bus stops at high priority locations 	2022 Summer 2022
		 Improve reliability, safety, accessibility, and customer experier 	ice

Bus – Project Images of FY21 Q1 Work



Cabot Yard



Columbus Rendering



BHA Rendering

South Coast Rail: FY21 Q1 Snapshot

Period	Project Name	Description / Benefits	Completion Date
"Completed"	Culverts	Reconstruction of 46 culvertsConstruction of 5 wetland replication areas	June 2020
	4 Bridge	 Cotley River Bridges reconstructed and restored to double track Cedar Swamp and Fall Brook Bridges constructed using accelerated bridge construction techniques 	Nov 2020
	Early Action Demolition	Demolition of 12 structures at 10 sites	Oct 2020
	Special Trackwork	 57 turnout to replace existing turnouts and yards 	April 2021
"Underway" In active construction	Fall River Secondary (FRS)	 Construct 2 stations and 1 layover facility Reconstruct 12 miles of track Reconstruct 8 bridges Upgrade 10 grade crossings 	Oct 2022
	Middleborough Secondary/New Bedford Main Line (MNB)/Systems	 Construct 4 stations and 1 layover facility Reconstruct 24 miles of track Upgrade 18 grade crossings Installation of Signal and PTC system 	Aug 2023

South Coast Rail - Project Images of FY21 Q1 Work



Culvert in Freetown



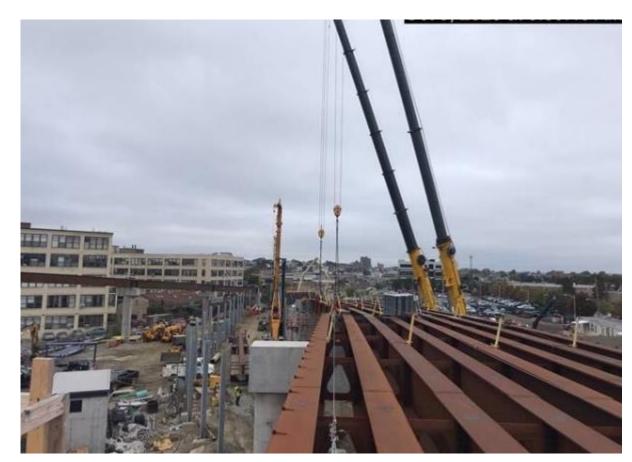
Weaver's Cove Layover Facility Site, Fall River

Demolition of Church Street, New Bedford

GLX - FY 21 Q1 Update

Period	Project Name	Description / Benefits	Completion Date
"Completed"	Final commuter rail track shift	 Final relocation of commuter rail track opened all work fronts for future Green Line infrastructure (stations, track alignment, substations, etc.) 	May 2020
	Washington Street Bridge reconstruction	Complete reconstruction of Washington Street RR bridge completed 3 months ahead of schedule	May 2020
	Broadway Street Bridge reconstruction	Complete reconstruction required to widen rail corridor for GLX and existing Commuter Tracks	June 2020
	Viaduct Steel Structure	 Represent final structural steel installation for GLX alignment (both Union Sq and Medford Branches) 	October 2020
	Track installation throughout project limits	 Represents shift from heavy civil work (drainage, retaining walls) to rail systems construction 	May 2021
"Underway" In active construction	Medford and School Street Bridge extensions	Both bridges are being modified to allow Green Line tracks to proceed inbound	May 2021
	Station construction at all 7 GLX stations	 Stations at varying degrees of completion with Lechmere and Union Square being furthest 	August 2021
	Vehicle Maintenance Facility	 Prespondation Building and Vehicle Maintence Building to be enclosed by year's end. 	May 2021

GLX- Project Images of FY21 Q1 Work



Final steel structure for GLX viaduct being installed (Oct 2020).



Project's Multi-Purpose Machine® delivering railbed material to the narrow corridor (Jan 2020).