



**Massachusetts Bay  
Transportation Authority**

# Track Improvement Program

## A New, Bold Way of Doing Business

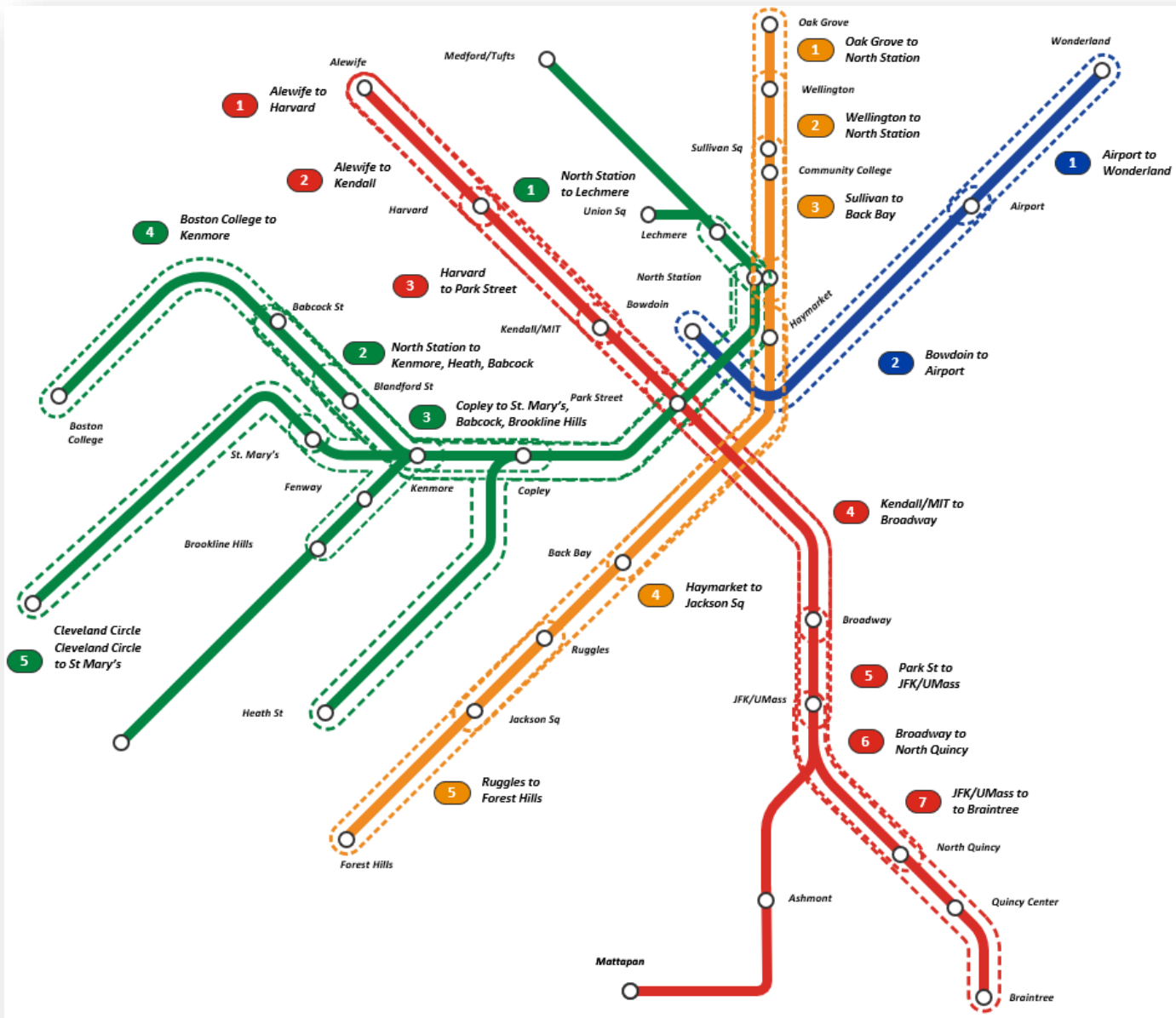
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Sam Zhou, MBTA Chief Engineer

December 19, 2024



# Track Improvement Program | A Bold Initiative Nears Completion



## MBTA's TRACK IMPROVEMENT PROGRAM

**OVER-DELIVERED ON SCOPE.**

**IMPROVED ALL 132 STATIONS.**

**METHOD – EMPLOYED PARTNERSHIP.**

**ACHIEVED COMMITTED SCHEDULE & RESULTS.**

*TIP parsed entire subway system into track segments to define a 14-month plan to fix the speed restrictions and upgrade track to a state of good repair.*

Building a better T.



# Track Improvement Program | 2023-2024 Timeline

Original Schedule

Alternative Service Limits	Speed Restrictions	Modeled Time Savings (mins)	Diversion Duration (days)	2023		2024											
				NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A	Harvard to Central	✓ 1	1.7	Wknd													
B	JFK/UMass to Park St	✓ 6	2.7	EA/Wknd													
A	Oak Grove to North Station	✓ 2	1.9	EA/Wknd													
A	North Station to Kenmore, Heath, Babcock	✓ 10	4.3	9													
B	Riverside to Kenmore	20	9.2	10													
1	North Station to Lechmere	2	1.8	14													
2	North Station to Kenmore, Heath, Babcock	15	8.7	21													
3	Copley to St. Mary's, Babcock, Brookline Hills	9	4.2	18													
4	Boston College to Kenmore	7	1.7	10													
5	Cleveland Circle to St. Mary's	1	0.1	6													
1	Oak Grove to North Station	13	1.7	6													
2	Wellington to North Station	5	4.3	9													
3	Sullivan to Back Bay	6	2.3	10													
4	Haymarket to Jackson Sq	2	1.3	4													
5	Back Bay to Forest Hills	15	4.8	11													
1	Alewife to Harvard	9	6.5	9													
2	Alewife to Kendall	9	4.0	16													
3	Harvard to Park	3	0.8	6													
4	Kendall/MIT to Broadway	8	3.7	6													
5	Park to JFK/UMass	8	2.6	8													
6	Broadway to North Quincy	4	2.7	6													
7	JFK/UMass to Braintree	22	9.1	16													
1	Airport to Wonderland	12	5.3	12													
2	Bowdoin to Airport	2	0.7	Night Orders													

191 restrictions Lifted  
86.1 minutes saved  
207 days of work

# Track Improvement Program | 2023-2024 Timeline

Schedule Adjustments Mid-Plan  
Based on Lessons Learned

Alternative Service Limits	Speed Restrictions	Modeled Time Savings (mins)	Diversion Duration (days)	2023		2024											
				NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A	Harvard to Central	1	1.7	Wknd													
B	JFK/UMass to Park St	6	2.7	EA/Wknd													
A	Oak Grove to North Station	2	1.9	EA/Wknd													
A	North Station to Kenmore, Heath, Babcock	10	4.3	9													
B	Riverside to Kenmore	20	9.2	10													
1	North Station to Lechmere	2	1.8	14													
2	North Station to Kenmore, Heath, Babcock	15	8.7	21													
3	Copley to St. Mary's, Babcock, Brookline Hills	9	4.2	18													
4	Boston College to Kenmore	7	1.7	10													
5	Cleveland Circle to St. Mary's	1	0.1	6													
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3	Sullivan to Back Bay	6	2.3	10													
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1	Alewife to Harvard	9	6.5	9													
2	Alewife to Kendall	9	4.0	16													
3	Harvard to Park	3	0.8	6													
4	Kendall/MIT to Broadway	8	3.7	6													
5	Park to JFK/UMass	8	2.6	8													
6	Broadway to North Quincy	4	2.7	6													
7	JFK/UMass to Braintree	22	9.1	16													
1	Airport to Wonderland	12	5.3	12													
2	Bowdoin to Airport	2	0.7	Night Orders													

Tamping, tree removal, other work during GL-003

Shift leverages weekend; minimizes commuter impact

# Track Improvement Program | 2023-2024 Timeline

The Last Diversion - On Target to Complete Dec. 20

Alternative Service Limits	Speed Restrictions Act/Adj/Orig	Time Savings Actual/Modeled	Diversion Duration Act/Adj/Orig	2023		2024															
				NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				
A	Harvard to Central	✓ 1/1	1.7/1.7	Wknd																	
B	JFK/UMass to Park St	✓ 6/6	4.7/1.9	EA/Wknd																	
A	Oak Grove to North Station	✓ 2/2	1.0/2.7	EA/Wknd																	
A	North Station to Kenmore, Heath, Babcock	✓ 12/10	2.0/4.3	9/9																	
B	Riverside to Kenmore	✓ 22/20	3.7/9.2	10/10																	
1	Medford/Union to Park St.	2	1.8	/14/14																	
2	North Station to Kenmore, Heath, Babcock	✓ 16/15	2.0/8.7	23/23/21																	
3	Copley to St. Mary's, Babcock, Brookline Hills	✓ 10/9	0/4.2	18/18/18																	
4	Boston College to Babcock	✓ 8/8/7	~1*/1.7	10/10/10																	
5	Cleveland Circle to St. Mary's	✓ 1/1	0/0.1	0/0/6																	
1	Oak Grove to North Station	✓ 9/9/13	2.7/1.7	7//7/6																	
2	Wellington to North Station	✓ 6/5	4.0/4.3	9/9/8																	
3	Wellington to Back Bay	✓ 9/6	3.3/2.3	10/10/10																	
4	North Station to Jackson Sq	✓ 7/2	2.2/1.3	4/4/4																	
5	Back Bay to Forest Hills	✓ 20/19/15	9/4.8	13/13/11																	
1	Alewife to Harvard	✓ 8/9	8.4/6.5	9/9/9																	
2	Alewife to Kendall	✓ 9/9/7	4.8/4.0	16/16/16																	
3	Harvard to Park	✓ 2/2/3	0.8	7/7/6																	
4	Kendall/MIT to JFK/UMass	✓ 6/5/8	4.0/3.7	8/7/6																	
5	Park to JFK/UMass	✓ 11/8	10.2/2.6	9/9/8																	
6	Broadway to North Quincy	✓ 5/2/4	2.0/2.7	6/6/6																	
7	JFK/UMass to Braintree	✓ 37/36/22	29.5/9.1	24/24/16																	
1	Airport to Wonderland	✓ 16/12	4.0/3.1	14/14/12																	
2	Bowdoin to Orient Heights	✓ 3/2	0/0.7	Early Access																	
				191 original restrictions to address	83.9 RT min	/217/207 days of work	Timeline adjustments prioritized leveraging weekends to minimize impact to weekday commuters														

\*GL time savings may be impacted by surface traffic, signals, etc.

Tamping, tree removal, other work during GL-003

Shift leverages weekend; minimizes commuter impact

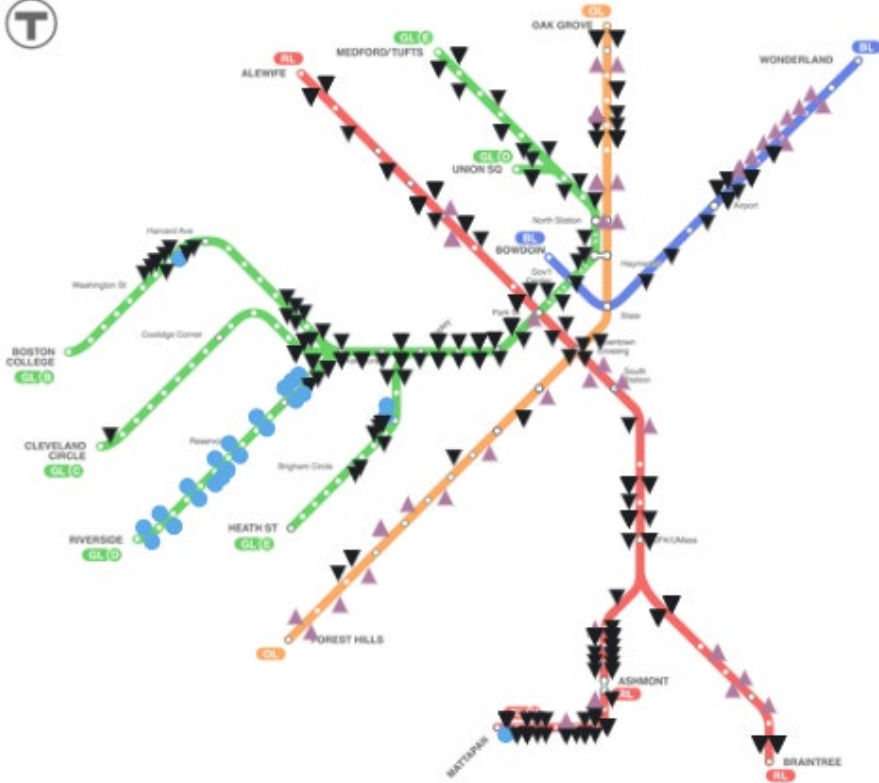
Extended for work to ultimately increase operating line speeds.

Today Dec 19

# Track Improvement Plan | Restriction Free Milestones

## SUBWAY SYSTEM

Sep 23, 2023



## MATTAPAN RED LINE

Oct 29, 2023



## BLUE LINE

May 1, 2024



## ORANGE LINE

Nov 1, 2024



## RED LINE

Nov 25, 2024



## GREEN LINE

Dec 21, 2024





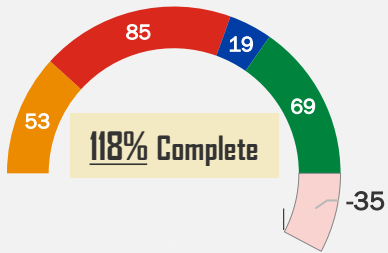


# Track Improvement Program | Program Metrics

## Speed Restrictions



226 lifted, 35 more than orig. scope

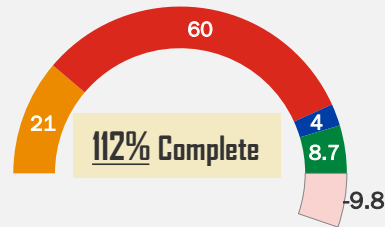


Originally Projected  
191\* Speed Restrictions

## Travel Time Improvement



93.7 min returned, 9.8 more than orig. scope

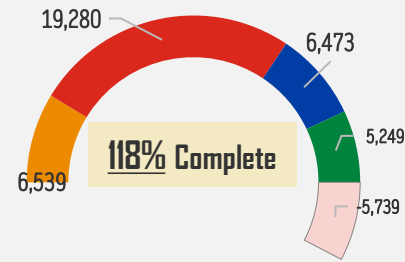


Refined Model  
84 min

## Ties Replaced



37,541 replaced, 5,739 more than orig. scope

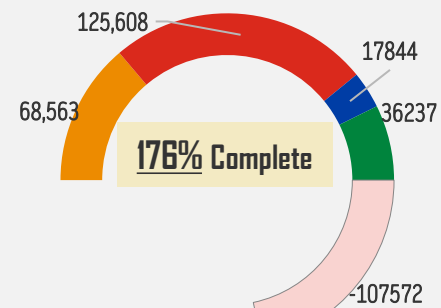


Originally Projected  
31,802 Ties for Replacement,  
incl SGR

## Feet of Rail Replaced



248,252 replaced, 107,572 more than orig. scope

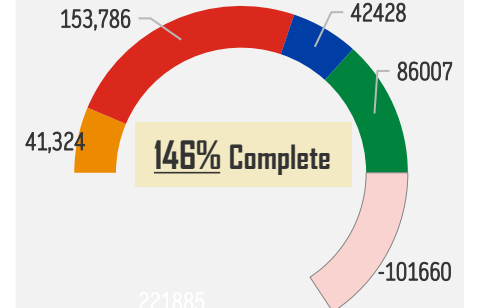


Originally Projected  
140,680 ft for Replacement

## Feet of Tamping



323,545 tamped, 101,660 more than orig. scope



Originally Projected  
221,885 ft to Tamp

Track Improvement Program Projections as of Nov. 6, 2023.  
Data date: Dec.10, 2024

■ Orange Line 
 ■ Red Line 
 ■ Blue Line 
 ■ Green Line 
 ■ Beyond Scope



# Track Improvement Program | *Service Improvements*



## WEEKDAY SCHEDULED TRIPS

↑ 53%

## WAIT TIME/HEADWAYS

↓ 31%

*December 2024 vs.  
December 2023*



↑ 36%

↓ 15%



↑ 18%

↓ 21%



↑ 12%

*Reduced unplanned disruptions  
Dropped trips 9.4%, Oct '23  
Dropped trips 3.7%, Oct '24*



# Track Improvement Program | Leveraging Diversions & Resources

**Partnering for result; safety; productivity, efficiency**



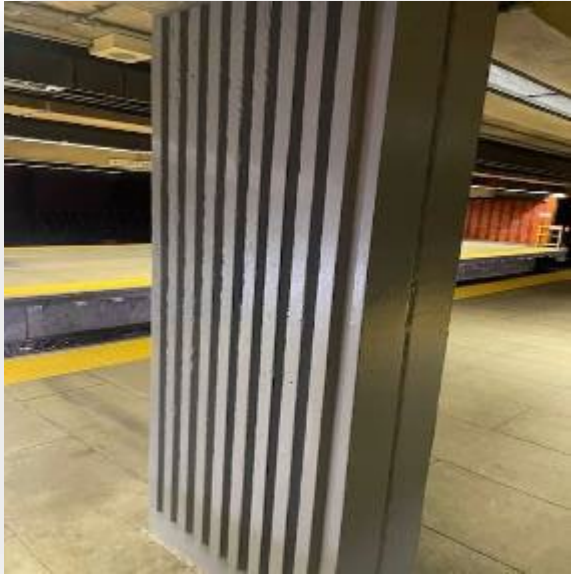
# Track Improvement Program | Station SOGR

Entrance Restored





# Track Improvement Program | Station Brightening



*Columns, Doors, Walls and Stair Risers*



# Track Improvement Program | Station Cleaning

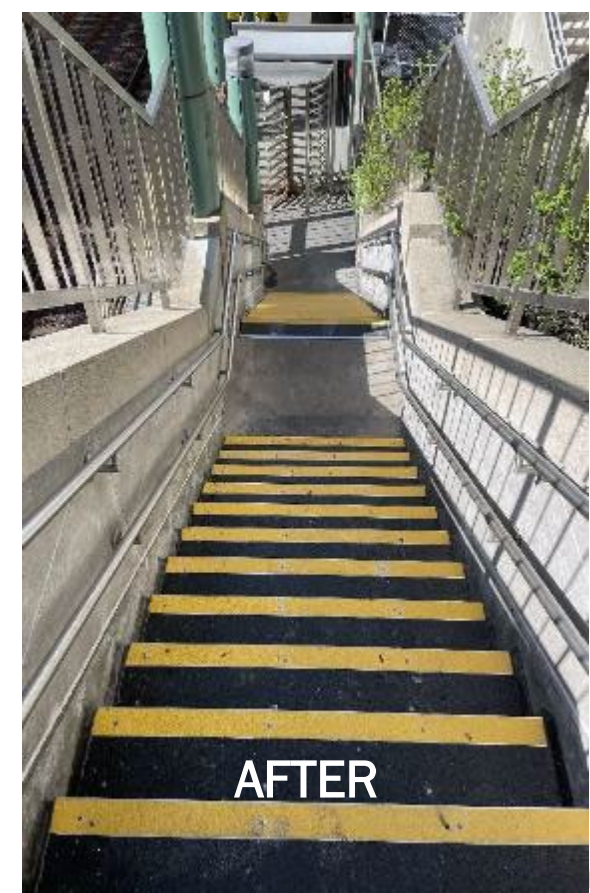
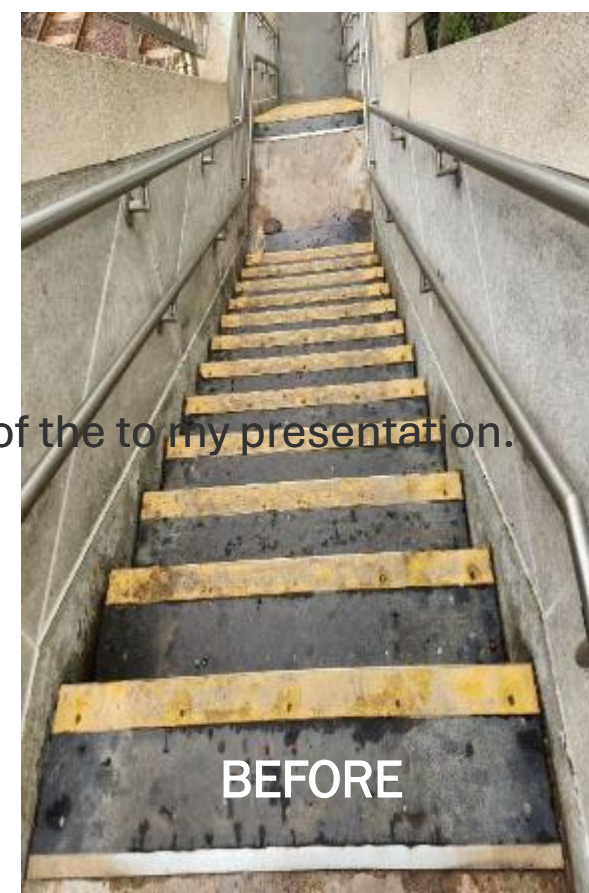




# Track Improvement Program | Station Repairs



I would like to add a few photos of the to my presentation.



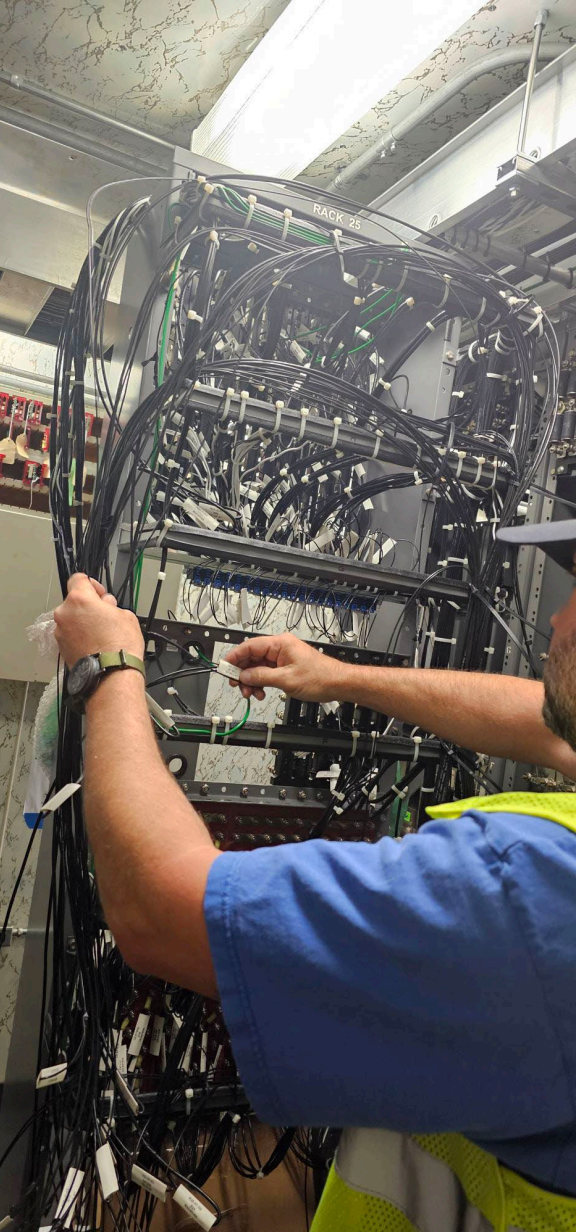


# Track Improvement Program | Drainage and Leaking Repairs





# Track Improvement Program | RL/OL Signal Modernization





# Track Improvement Program | GLTPS Anchor Installations



# Track Improvement Program | *Lessons Learned*

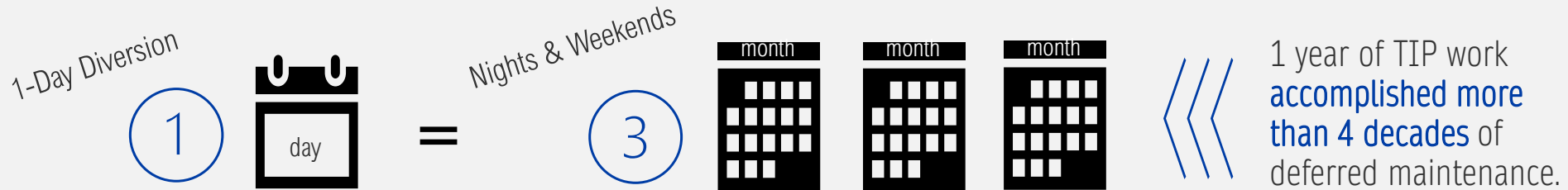
Team  
Collaboration

A strong Operations and Capital **joint team** is the secret ingredient for the success.



Efficient Work  
Scheduling

**Closing a section** of the transit system is the most efficient way to get the job done.



Maximizing  
Resources

Combining efforts of multiple contractors and MBTA workforce **partnered around the clock** to maximize productivity.



Leadership

Senior Leadership always at the site, **making decision on the spot.**

On-Site Oversight

Contractor QC and Safety Representatives on site ensure adherence to standards and work safety.





# Track Improvement Program | *What Riders are Saying*

Successful MBTA General Manager Eng should get a statue in South Station, wearing medieval robes and astride a leaping cod.

Absolutely wild MBTA progress over the last year! I'm not used to this.

“ I was going home to Central from MGH and was kind of on autopilot. Over the last few years my brain has grown accustomed to how long it takes to get from one station to another with the slow zones, so when I raised my head at what my brain insisted was the appropriate interval of time only to hear "Entering Harvard Square" I was massively confused. Confused, but pleased. Guess I'm going to have to pay closer attention over the next week or two to recalibrate. 🤯

”



# Thank You

**Building a better T.**

