



**MBTA OCCR**

# **Tie Replacement Project**

**MBTA Contract #RRO-008V**





## Project Limits

### ■ OLD COLONY LINES

- Main Line (4.1 miles)
  - Middleborough Line (25.1 miles)
  - Plymouth Line (26.0 miles)
  - Kingston Branch (1.7 miles)
- 56.8 Miles of Tie Replacement





## Project Description

- Emergency maintenance project to replace failing concrete ties with new timber ties





# Construction in 19 Communities

- Boston
- Quincy
- Braintree
- Randolph
- Holbrook
- Avon
- Brockton
- West Bridgewater
- East Bridgewater
- Bridgewater
- Middleborough
- Lakeville
- Weymouth
- Abington
- Whitman
- Hanson
- Halifax
- Kingston
- Plymouth





## Why is the project urgently needed?

- Failure of Existing Concrete Ties
  - Operational impacts (speed restrictions, schedule adjustments)
  - Failure rate outpaces tie maintenance program
  - Eminent failure of all concrete ties expected





## Concrete Tie Failure



- Manufacturer Design Error
- Inadequate steel reinforcing
- Lateral Failure



## Concrete Tie Failure



- All ties expected to fail
- Amtrak experienced same failures on N.E.C.



## Concrete Tie Failure







# Temporary Repairs





# Timeline

**Fall 1997:** OCCR lines open for revenue service

**Spring 2007:** Tie failures observed

**Winter 2007/8:** Failure rate increases

**Spring 2008:** Meet with manufacturer Rocla ; Amtrak experiences same issue

**Fall 2008:** Failure rate appears stable

**Winter 2008/9:** Rapid increase in failures resulting in operations impacts

**Spring 2009:** Independent Test Lab determines insufficient steel reinforcing is the cause

**Fall 2009:** Speed restrictions posted

**Winter 2010:** Preparing Bid Documents and procuring wood ties

Continued negotiations with tie manufacturer





## Tie Replacement Program

- 187,000 new timber ties
- 15,000 cubic yards of ballast
- 56.8 miles of track requiring new ties
- 56 grade crossings
- 19 communities





## Construction Process

- Traditional tie gang to change out ties individually
  - 2 to 3 tie gangs (25 to 30 workers per gang)
  - Up to 5,000 ties per week
  - Up to 5 grade crossings per week
- Work trains to move material
- Surface and alignment of tracks
- Inspections prior to revenue service





## Service Shutdowns

- **Weekdays: 9 AM to 4 PM (non-peak service)**
  - Middleborough Line – 8 non-peak trains affected
  - Plymouth Line – 7 non-peak trains affected
  - Construction on one line at a time
- **Weekends: Saturday & Sunday shutdown**
  - Branch Lines constructed one at a time
  - Limited weekend shutdowns for Main Line construction; shutdown Middleborough, Plymouth & Greenbush Lines
- Night Construction for most grade crossings



## Substitute Transportation –Bus

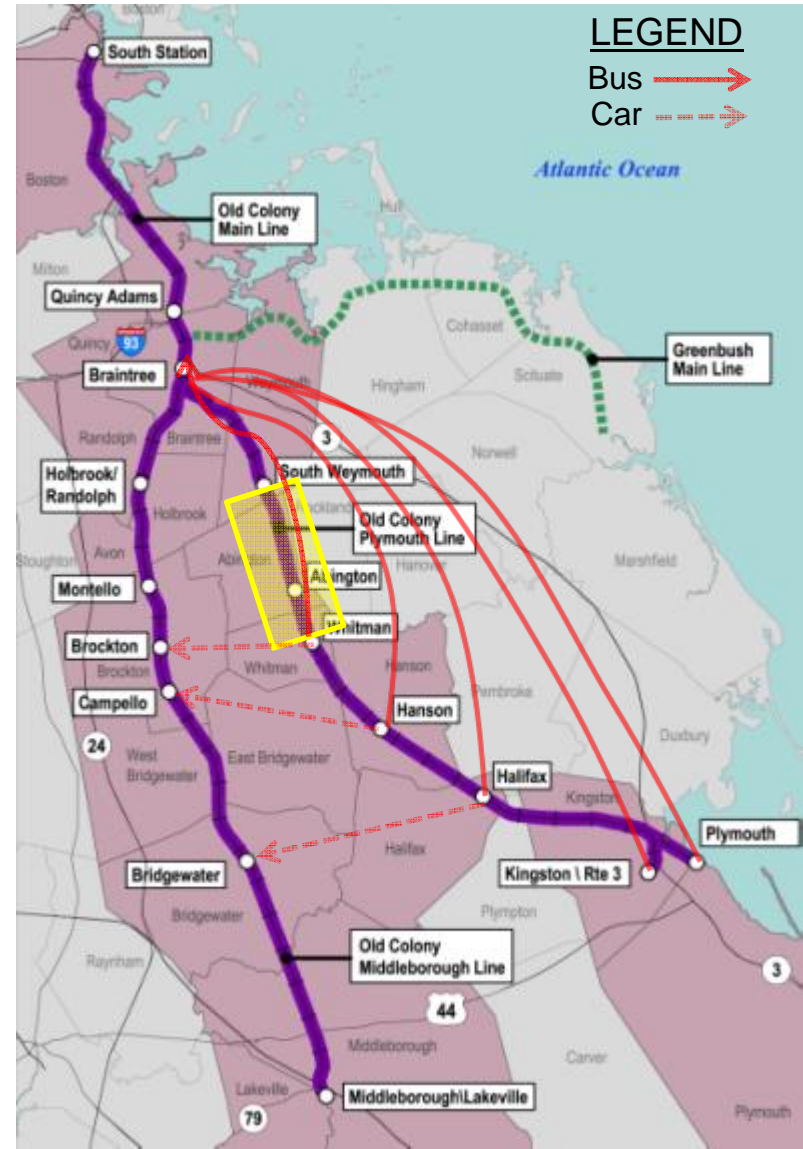
- **Weekdays: 9 AM to 4 PM**
  - 10-20 boardings per station per train
  - Bus service from affected stations to Braintree Red Line Station
  - Buses will be ADA accessible
- **Weekends: Saturday & Sunday**
  - No substitute service provided



# Substitute Transportation Example-Plymouth

## Customer Options

- Take bus from affected station to Braintree
- Drive to nearest open rail station, i.e. South Weymouth Station
- Drive to Middleborough Line Station, i.e. Bridgewater, Campello, or Brockton Stations



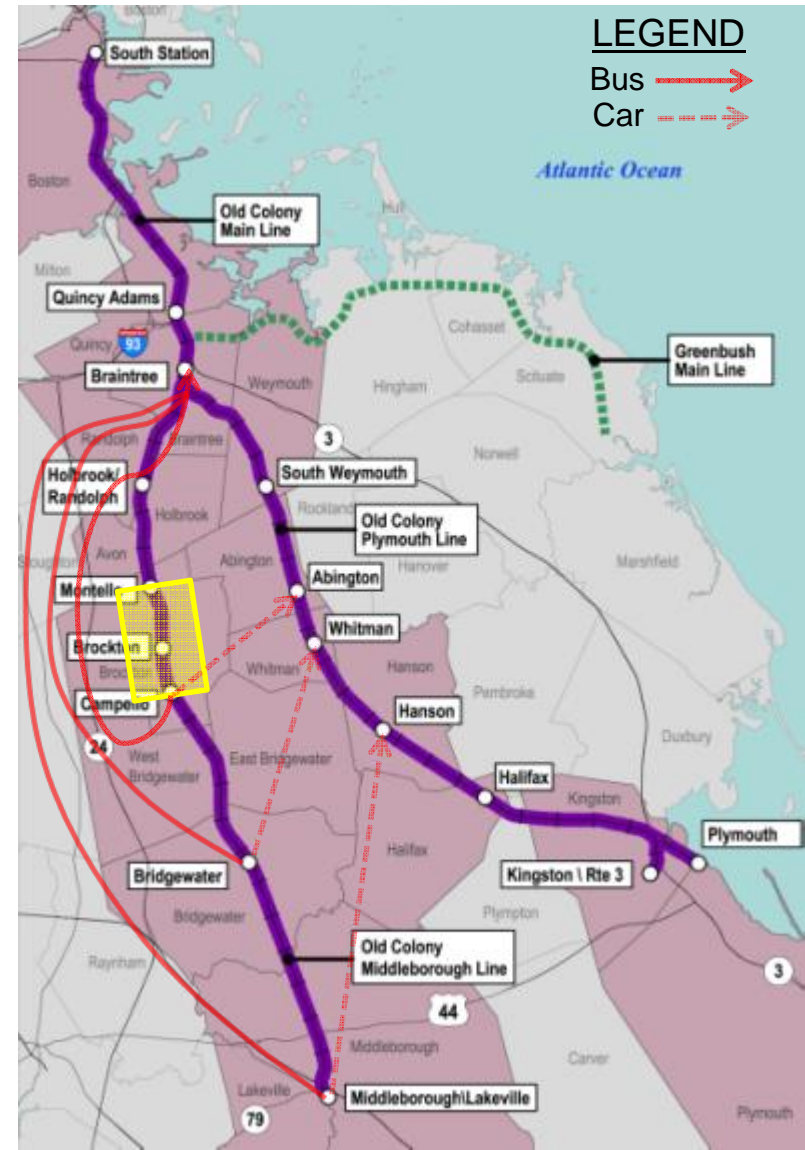




# Substitute Transportation Example-Middleborough

## ■ Customer Options

- Take bus from affected station to Braintree
- Drive to nearest open rail station, i.e. Montello Station
- Drive to Plymouth Line Station, i.e. Abington, Whitman, or Hanson Stations





## Project Outreach

### ■ Design Phase

- Town/City coordination
  - Traffic Management Plans
  - Conservation Commissions

### ■ Construction

- Hotline Number
- MBTA Alerts
- Legislative Progress Reports
- Website updates
- Flyers
- Newspaper notices
- Bulletin information



## Construction Cost

- Approx. \$90 million
  - \$35 million for materials
  - \$38 million for construction
  - \$7 million for Force Account Work
  - \$4 million for engineering fees and inspection
  - \$6 million contingency