



# FTA SSO Training Workshop

## MBTA Green Line Track Assessment



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## OVERVIEW

1. Introduction
  - Type 8 Breda Car History
  - Series of Mainline Derailments
2. The Assessment
  - The Scope of the Assessment
3. The Outcome
4. Next Steps



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## INTRODUCTION



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## TYPE 8 BREDA CAR HISTORY

- Characteristics:
  - Wheel/Rail Interface
  - Center Truck Design
- In 2000, after a series of derailments, the Type 8 fleet was removed from revenue service.
- Between 2003 and 2008, following DPU approval, extensive testing, and the MBTA's implementation of Type 8 CAPs the fleet was reintroduced into revenue service.





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## RECENT SERIES OF MAINLINE DERAILMENTS

In 2015, there were three (3) Type 8 Car derailments that occurred within a short time frame:

1. July 7, 2015 at Sutherland Station (Colborne Rd & Commonwealth Ave);
2. July 12, 2015 at Longwood Station;
3. August 17, 2015 at BU Central (Commonwealth Ave);



The DPU 's review of the derailment investigations identified deficiencies associated with track infrastructure as one of the causal factors.

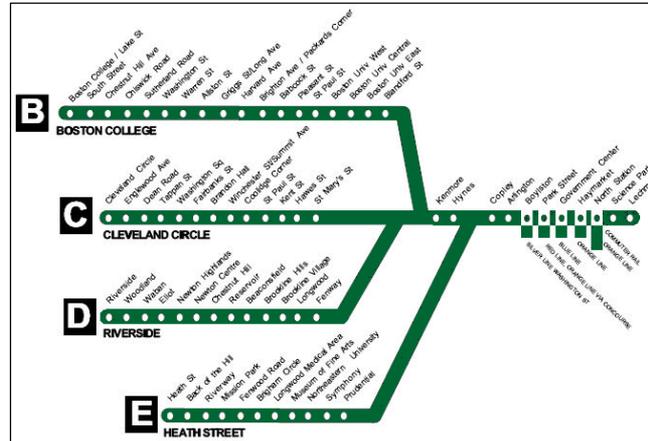


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## Request for Responses (RFR)

In October 2016, DPU issued an RFR, *Assessment of Massachusetts Bay Transportation Authority's Green Line Light Rail Track System*.

By December 1, 2016, the DPU secured the services of a qualified contractor for an assessment of the track system.





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## THE ASSESSMENT



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## THE SCOPE OF THE ASSESSMENT

The assessment specifically outlined a review of the following:

- A. Evaluate current condition of the track structure
- B. Review Track Department records, procedures, and maintenance management processes
- C. Review Track Department (MOW) Training Program
- D. Evaluate MBTA's ability to maintain the track structure to an "Acceptable Level"
- E. Determine if MBTA Green Line track system is maintained to Standards



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## **A. Evaluation of the current condition of track structure**

- MBTA Green Line is in need of an aggressive maintenance program
- Track is in need of significant rehabilitation
- Track Department faces many unique challenges due to:
  - Age
  - Design
  - Renewal needs of track structure
- Performing track maintenance issues:
  - Track time
  - Access issues
  - Staging location issues, etc.



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## **A. Evaluation of the current condition of track structure (continued)**

The system needs renewal of its track infrastructure including:

- Subgrade stabilization in mud spot areas,
- Ballast renewal in many areas especially in areas near stations and crossings,
- Crossing renewal,
- Tie renewal,
- Turnout renewal and modernization,
- Track (Rail) renewal and standardization,
- Platform interface with track structure,
- Vegetation Control.



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## **B. The review of Track Department records, procedures, and maintenance management processes**

Review of records and practices found that maintenance practices are relying on a rather loose sub-division management structure which leads to:

- Non-uniform document management,
- Non-uniform maintenance practices,
- Non-uniform compliant maintenance practices,
- High levels of inefficiency in work execution.



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### **C. Review of Track Department (MOW) Training Program**

During the initial assessment, the Assessment Team found that the Green Line did not have a Training Program; the MBTA had previously self-identified this issue and was working towards creating a training program for Track (MOW).

It is critical that all personnel should be properly trained and retrained at regular intervals. There was no on-going training, or any refresher training for Supervisors, repairers, welders, operators, or laborers.

Management philosophy and a maintenance management plan needs to be fully defined and personnel should be trained in their roles so as to properly execute the maintenance plan.



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## D. Evaluation of MBTA's ability to maintain the track structure to an "Acceptable Level"

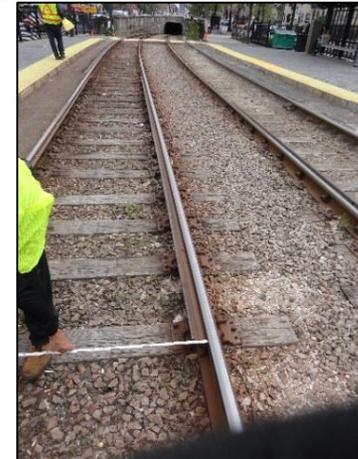
MBTA staff is making considerable progress in an effort to up-grade the track system and to maintain the system to at least a restricted operational level however, resources are stretched to the limit.



Alignment Issue on Special Trackwork Near Fixed Roadway



Severely Contaminated Ballasted Area with Vegetation



Mismatched Types of Rail, Tee Rail then small section of Girder Rail



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### **E. Is the MBTA Green Line track system being maintained to Standards?**

- MBTA Track Standards
- 220 CMR 151.11 and 151.12
- Industry Recommended Practices

The MBTA is facing many unique challenges to maintain the system to its own standards and the DPU's track standards.

These standards do not fully address the criticality of some issues on the system and do not meet current FTA, APTA or industry recommended practices.



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## Inspection Programs

## THE OUTCOME



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- The system is simply overdue for renewal, and maintenance requirements far exceed capabilities of existing MBTA resources.
- Many of the components within the Green Line track system are well beyond their normal useful lifecycles and require replacement.
- Of the many recommendations offered by the Assessment Team, the DPU and MBTA have identified existing CAPs which address specific issues. One new CAP was developed as a result of the assessment specific to vegetation control.
- The MBTA has self-identified the need for infrastructure improvement and has already begun to implement programs such as; Grade Crossing Repairs, CWR Work, Grinding and tie renewal to improve the overall “state” of the infrastructure.



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## NEXT STEPS



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- With work efforts supplemented by private contractors, below is a listing of improvements that have been completed in the last 15 months:
  - Replacement of over 25,000 Ln. Ft. of Rail
  - Replacement of more than 2,200 Ties.
  - Replacement of more than 945 Tie Plates
  - Grinding and Gauge Face Angle Correction on over 104,000 Ln. Ft. of Rail.
  - Repair of 16 Grade Crossings.
- E&M Department is in the process of introducing a linear Asset Management Program and current maintenance leadership has implemented process management and document control reforms.
- The MBTA has hired a Manager of Training who is presently evaluating training efforts and working with MBTA, MOW Managers to determine training needs.
- The MBTA and DPU continue to meet on a regular basis for Derailment Committee meetings, and Monthly/Quarterly MBTA/DPU meetings on the efforts to improve the track system.



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# QUESTIONS?