GLTPS | GREEN LINE TRAIN PROTECTION SYSTEM

A CAPITAL TRANSFORMATION PROJECT

July 2023 Review and Lookahead

The **Green Line Train Protection System (GLTPS)** combines vehicle and wayside equipment that work together to avoid train-on-train collisions, enforce speed limits, and add red light signal protection. The project has four overlapping phases which are all currently underway

- **Phase 1 Equipment Design** integrates new technology into MBTA legacy systems.
- **Phase 2 Vehicle Installation** of camera, radar, and radio equipment into light rail vehicles with some activity already underway at the Innerbelt Vehicle Maintenance Facility.
- **Phase 3 Wayside Installation** is currently on hold and will resume later this year to align with the MBTA construction schedule.
- **Phase 4 Operational Integration** where MBTA personnel will receive information and training on GLTPS and plans are developed for system cutover.

Mounting plates during stud press

GLTPS by the Numbers

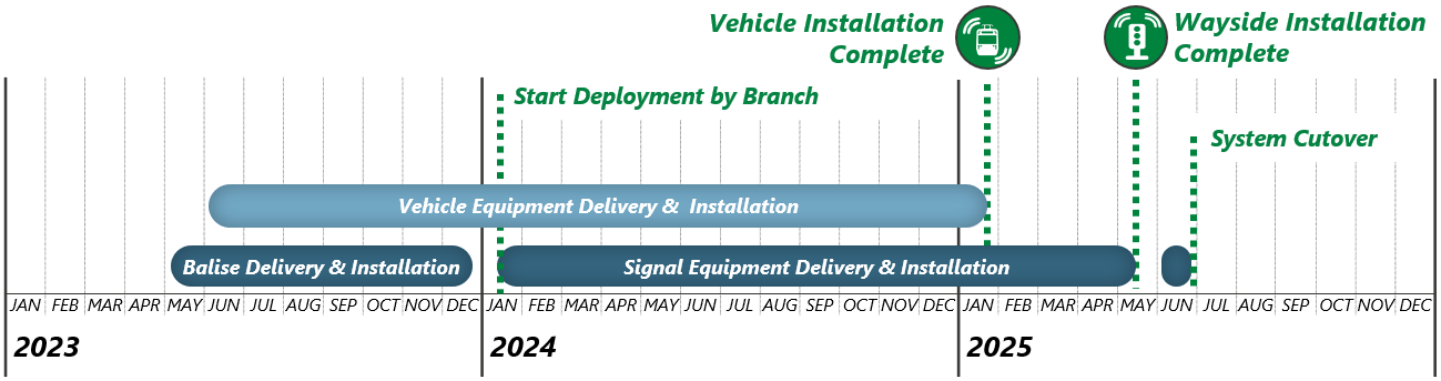
0% | 10% | 20% | 30% | **40%** | 50% | 60% | 70% | 80% | 90% | 100%

PHASE 1	PHASE 2	PHASE 3	PHASE 4
75% Complete	**13% Complete**	**21% Complete**	**11% Complete**
Equipment Design & Validation	*Vehicle Installation*	*Wayside Installation*	*Operational Integration*

Did you know...

Dual channel speed sensors are common in rail applications. GLTPS utilizes two of these types of sensors which work independently of each other and are mounted on opposite trailer truck axles. The actual speed is determined by monitoring the teeth on a cogged wheel to produce a right-angle current. A present tooth equals a high current and a gap equals a low current. The information of the current is calculated by an equation of teeth being counted and the wheel diameter inputs, producing the driven speed of the vehicle and also distance traveled.

Type 7 dual channel speed sensor



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This Past Month

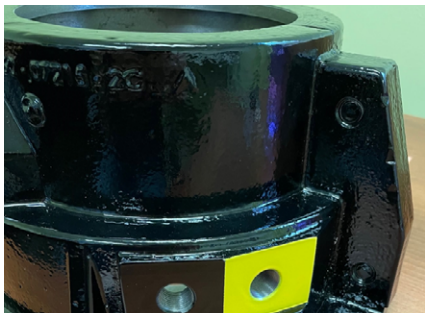
Equipment Design & Validation

- **First Article Inspections (FAIs) will continue into August at Transitair in Hornell, NY.** As part of first article inspections and also routine inspections, dye-penetrant testing is performed to ensure metal fabricated enclosures do not exhibit surface defects after welding. Surfaces are cleaned, sprayed, and then inspected to identify discrepancies before continuing into paint and finish the assembly process.

Radar senor/radio antenna assembly inspection activities

Vehicle Installation

- **The available for service 3700 series vehicles are being cycled through the Innerbelt VMF** with 13 of those 16 vehicles having incremental modifications to accommodate GLTPS installation. Of the entire 3600 and 3700 series fleets, 60 of the 103 vehicles now have modified speed sensor housings installed as part of the advanced installation.
- **In normal operation of the GLTPS system, the additional speed sensors** will relay the current vehicle speed to monitoring units which then send the speed to a speed comparator. Enforced speed is then compared with the current speed and when an overspeed occurs, a sequence of indicators is given to the Operator which can lead to automatic braking.



Type 7 modified speed sensor housing

Operational Integration

- **The System Integrator's video production personnel** are progressing the Operational Training Video. The film crew rode a dedicated train multiple days in late June following the developed 'storyboard' and are developing the video accordingly. An Operational video and a Maintenance video are required per the contract.

Rendering of Type 9 Train in Operational Training Video

Lookahead For Next Month

Continue working closely with the Systems Integrator on mitigation strategies to ensure the safe and rapid implementation of safety features and operationalize them as soon as possible

Equipment Design & Validation

- Perform component, assembly, and vehicle kit first article inspections (FAIs)
- Continue Type 8 equipment prototyping at Transitair in Hornell, NY

Wayside Installation

- Receive additional balises to support speed enforcement directive
- Complete dynamic envelope testing at specified tunnel locations

Vehicle Installation

- Begin final installation of equipment and harnesses on Pilot 3708
- Continue advanced installation including speed sensor housings on Type 7 vehicles

Operational Integration

- Video production company to further develop video in advance of training
- Receive and review draft Operations and Maintenance Manuals

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