

The Washington Metrorail Safety Commission



Safety Audit

of the Washington Metropolitan Area Transit Authority
Audit of Metrorail's Track, Structures, and Roadway Worker Protection Program – Part A – Track and Structures



Final Report:
February 26, 2026

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Prepared under the authority of the Washington Metrorail Safety Commission

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Executive Summary

The Washington Metrorail Safety Commission (WMSC) performed this audit of Washington Metropolitan Area Transit Authority (WMATA) Metrorail's Track and Structures through in-depth interviews, site visits, and document and data reviews conducted in June and July 2025, with additional follow-up and document reviews through August 2025. This audit also includes the WMSC's 2025 Audit of Metrorail's Roadway Worker Protection Program, which is documented as a separate Part B report.

The audit scope assessed Metrorail's track and structures including tunnels and ancillary rooms as well as structure-related capital projects. The track portion of the audit focused on maintenance including running rails, fasteners, ballast, ties, floating slab, grout pads, yard switches, equipment used to maintain track (but excluding roadway maintenance machines), and third rail. Third rail includes physical condition, gauge, insulators, and cover boards.

This audit identified six findings; four related to track and structures (this report) and two related to roadway worker protection (separate Part B report). There are no recommendations from this audit.

To meet the audit objectives, the WMSC reviewed operational practices, procedures, equipment, modifications, and associated training in relation to rules, procedures, regulations, and best practices. This included the assessment of both track and structure inspection, maintenance, engineering practices and procedures, and associated training for purposes of compliance with applicable plans, policies, regulations, and industry best practices.

This audit also focused on Metrorail corrective action plans including corrective action plans as a result of WMSC findings, WMATA-recommended corrective actions that are overseen by the WMSC, and other corrective actions previously closed by entities such as the National Transportation Safety Board and the Federal Transit Administration.

This audit identified six findings; four related to track and structures (this report) and two related to roadway worker protection (separate Part B report). There are no recommendations from this audit.

Track and Structures Findings

- ▶ **Finding #1:** Metrorail Track and Structures personnel reported performing welding tasks without proper respiratory protection.
- ▶ **Finding #2:** Metrorail personnel are not checking fire extinguishers for inspection dates prior to entering the roadway.
- ▶ **Finding #3:** Metrorail is conducting heat rides at speeds that make it difficult to identify potential heat-related defects and does not have a defined speed threshold for conducting these rides.
- ▶ **Finding #4:** Metrorail is not verifying its track measuring equipment for accuracy and does not follow manufacturer calibration recommendations for track measuring equipment.





Background and Scope

Background and Scope

The WMSC is also required to audit WMATA's Roadway Worker Protection (RWP) Program annually. (49 CFR section 671.25(c)). The WMSC combined these requirements for the present audit to efficiently satisfy both requirements.

The WMSC conducted this audit in accordance with the requirements of the WMSC Compact and 49 CFR Part 674, which require that the WMSC conduct a complete audit of WMATA's Public Transportation Agency Safety Plan (PTASP) within a three-year period. (WMSC Compact section 30(e), 49 CFR section 674.31.) To achieve this, the WMSC conducts audits on an ongoing basis over the three-year timeframe. The WMSC is also required to audit WMATA's Roadway Worker Protection (RWP) Program annually. (49 CFR section 671.25(c).) The WMSC combined these requirements for the present audit to efficiently satisfy both requirements.

The WMSC conducted the primary portion of this audit in June and July 2025 and received follow-up documentation through September 2025. As part of this audit, the WMSC conducted 36 interviews with personnel who work in WMATA's Track and Structures Department and Technical Training and Development. The interviews covered topics related to track, structures and Metrorail's Roadway Worker Protection Program.

The WMSC also conducted the following observation activities:

July 8, 2025

- Blue Line Shutdown Observation/Track Walk (Van Dorn Street Station to Alexandria Yard)

July 9, 2025

- RWP Level 2 Training Observation (Carmen Turner Facility)

July 10, 2025

- Contractor RWP Training & RWP Records Review (Carmen Turner Facility)

July 11, 2025

- RWP Training Records Review (Carmen Turner Facility)

July 16, 2025

- Blue Line Shutdown Observation (Franconia-Springfield Station)

July 18, 2025

- Yard Interlocking Inspection Observation (West Falls Church Yard)

July 22, 2025

- Bridge Inspection Observation (Silver Spring, Colesville Road)

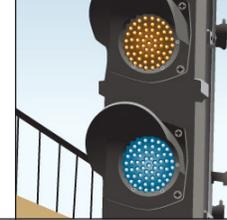
July 24, 2025

- RWP Level 4 Training Observation (Carmen Turner Facility)

The audit was based on the **WMATA's Public Transportation Agency Safety Plan (PTASP) effective December 31, 2024 (Rev. 5.0)**, Metrorail's procedures and documentation, and other associated requirements. The specific elements of the Public Transportation Agency Safety Plan covered in this audit are listed in Appendix D.

The next sections present a general description of Metrorail's Track and Structures, including a review of investigations and other oversight activities, review of previous corrective action plans required, and descriptions of the WMSC's findings and recommendations from this audit.





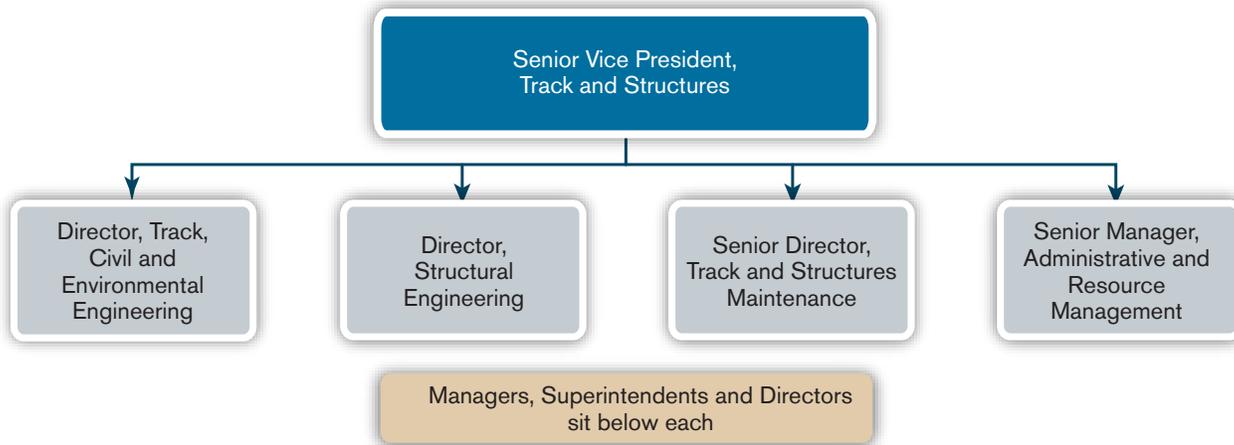
Audit Work

The WMSC received initial documents related to this audit from Metrorail on May 30, 2025, made subsequent document requests, and reviewed the documents provided by Metrorail throughout the course of this audit. The WMSC conducted an entrance conference on June 23, 2025 and conducted site visits and interviews with 36 Metrorail personnel in June and July 2025. The WMSC held an exit conference with Metrorail on August 19, 2025. Interviews included discussion of both Track and Structures and Roadway Worker Protection.

Lists of documents reviewed, site visit locations, and personnel interviewed for this audit are identically reproduced in the appendices of both Part A and Part B of this report.

The WMSC provided a draft of this report to Metrorail in December 2025, for technical review and incorporated any comments or technical corrections as appropriate. The WMSC appreciates the cooperation of Metrorail personnel throughout the interviews and observations conducted for this audit.

Metrorail’s Track And Structures – Current Organizational Structure



Metrorail Internal Safety Review and Associated Corrective and Preventive Actions – Track and Structures

Metrorail’s Quality Assurance, Internal Compliance & Oversight (Quality) last completed an Internal Safety Review of Track Maintenance and Inspection: Office of Track and Structure in 2021. **The report for that audit was issued on February 28, 2022.** The summary below provides each of the findings of that audit and the corresponding corrective actions taken to resolve those issues.

➤ **Internal Metrorail Finding QICO-TRMN-21-01:** *Enforce safety procedures in the MSRPH and SOPs to protect employees, passengers, and WMATA property. (Overall Risk – 1C)*

TRST maintenance personnel were loading removed sections of rail onto a flat car using a prime mover and a crane. The operator was controlling vehicle movement and operating the crane simultaneously, dividing his attention, while personnel were close to the moving

Metrorail reviewed rail loading activities to identify all possible hazards and mitigations and created a job hazard analysis.

vehicle. There was no dedicated Watchman/Lookout in place. At that time, WMATA's Cardinal Rule #3 stated "There shall be a dedicated Watchman/Lookout any time there is rail vehicle movement within any work zone."

Internal Metrorail iCAPA QICO-TRMN-22-01: Enforce developed safety procedures in the MSRPH and standard operating procedures to protect employees, passengers, and WMATA property.

To correct this, Metrorail reviewed rail loading activities to identify all possible hazards and mitigations and created a job hazard analysis. Training was then conducted on the analysis for all applicable employees to disseminate the information. A bulletin was also created to address communication standards between work crews.

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- **Internal Metrorail Finding QICO-TRMN-21-02:** *Consistent communication between the Equipment Operator and the Vehicle Flag Person while operating on track equipment supports a safe work environment. (Overall Risk – 2D)*

During a field assessment, QICO noted that throughout the shift, communication was not regularly maintained as required between equipment operators and flag persons. Horns were not sounded as required when approaching stations. This was addressed by iCAPA QICO-TRMN-22-02 outlined below.

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- **Internal Metrorail Finding QICO-TRMN-21-03:** *Enforce established work instructions and SOPs when performing routine maintenance and inspections to provide a safer work environment and support quality standards. (Overall Risk – 3C)*

During field assessments it was found that TRST personnel were not following procedures for anchor stud replacement by not allowing the proper cure time for adhesive epoxy before torquing anchor stud nuts, three fasteners installed were not properly shimmed after installation, and stud bolts were not marked as required. This was addressed by iCAPA QICO-TRMN-22-02 outlined below.

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- **Internal Metrorail Finding QICO-TRMN-21-05:** *Completing exception forms for Heat Ride inspections according to governing documentation provides traceability and verification of compliance.*

Quality reviewed the data recorded for Heat Ride Inspections for June 1 to September 21 and found 39 days where Heat Ride Inspections were completed; however, the National Weather Service had listed 45 days where the temperature reached above 90 degrees which triggers the requirement for the inspections. TRST has a procedure for exceptions; however, there were no exception forms completed for that period.

Internal Metrorail iCAPA QICO-TRMN-22-02: Enforce established work instructions and standard operating procedures when performing routine maintenance and inspections to provide a safety work environment and support quality standards.

Metrorail's corrective actions included adding additional quality checks for fastener bolt installation, fastener shim installation, and stud torque marking. They also reviewed ambient temperature data for May to September of 2022 to ensure heat rides and associated forms were in compliance.



The present audit did not identify any finding related to quality checks being conducted for track repair work; however, see Finding 3 of this report for a new heat ride-related issue.

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- **Internal Metrorail Finding QICO-TRMN-21-04:** *Utilizing a specific tool for a particular job activity reduces the risk of work-related injuries. (Overall Risk – 3C)*

During QICO's field assessments they found that TRST maintenance personnel were using tools and equipment outside of the intended purpose including using a ratcheting wrench to raise and lower a mechanical track jack. This was addressed by iCAPA QICO-TRMN-22-03 outlined below.

The present audit did not identify any finding related to intended tool usage.

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- **Internal Metrorail Finding QICO-TRMN-21-06:** *Performing regular tool and equipment inspections prior to work initiation demonstrates effective hazard mitigation and reduces the potential for injuries. (Overall Risk – 3D)*

Quality found that personnel were using poor-quality lifting cable to move equipment from the prime mover onto the tracks. The cables had no inspection information or weight limits listed, were frayed, damaged, rusting, and the safety clips on the lifting hooks attached to the cables were defective.

Internal Metrorail iCAPA QICO-TRMN-22-03: Assure the availability of the proper tools for specific jobs and routine inspections.

TRST maintenance management created a bulletin surrounding tools and equipment and distributed to all applicable personnel. Compliance checks were also put into place to verify proper tool usage.

The present audit did not identify any finding related to tools or usage, other than the fire extinguishers identified in Finding 1 of this report.

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- **Internal Metrorail Finding QICO-TRMN-21-07:** *Reviewing and updating governing documents within the required frequency optimizes applicability and incorporates changes in a timely manner. (Overall Risk – 4C)*

Internal Metrorail iCAPA QICO-TRMN-22-04: Revise and update TRST governing documents as per OAP-108-02.

TRST updated two procedures, SOP 108-03, Quality Assurance of Track Inspections, and SOP 208-14, Establishing and Maintaining Positive Communication between Equipment Operator and Flag Person of Class II Vehicles.

The present audit did not identify any finding related to track and structures governing documentation.

Metrorail completed an Internal Safety Review of Structures Maintenance and Inspection in 2022. **The final report for that audit was issued on August 4, 2022.** Metrorail cited 5 findings that required additional action which are covered below.



During QICO's field assessments they found that TRST maintenance personnel were using tools and equipment outside of the intended purpose including using a ratcheting wrench to raise and lower a mechanical track jack.



For the electrical safety gloves, the WMSC issued a finding on this as part of the Communication Systems Audit issued on December 4, 2025 that identified expired electrical safety gloves.

- **Metrorail Internal Finding QICO-STRC-22-01:** *Complying with job site safety requirements would improve worker safety on the roadway, providing standardized reporting, management, and mitigation processes for hazards observed while on the Roadway. (Overall Risk – 1D)*

As part of that internal safety review, Quality performed 8 field assessments that identified multiple RWP violations including not verifying RWP qualifications, not installing safety equipment (Warning Strobe and Alarm Device), not using electrical gloves and insulating mats where required and issues with incomplete Roadway Job Safety Briefing forms.

Internal Metrorail iCAPA QICO-STRC-22-01: Implement job site procedures and perform documented quality control to verify compliance.

To address this Track and Structures issued a memorandum to enforce compliance with its Rulebook, specifically on Roadway Worker Protection requirements. Personnel were required to review and acknowledge the requirements. For the electrical safety gloves, testing records were submitted showing compliance with Metrorail's requirements.

As part of the present audit, the WMSC noted discrepancies with roadway job safety briefings that were used as part of on-the-job training. The WMSC also has nine current CAPs open related to Roadway Worker Protection generally, which are detailed in the CAPs reviewed section of the Part B report.

For the electrical safety gloves, the WMSC issued a finding on this as part of the **Communication Systems Audit issued on December 4, 2025** that identified expired electrical safety gloves. Although that finding pertains to a different functional area, Metrorail is looking to implement a more-broadly applicable solution, to include Track and Structures.

- **Metrorail Internal Finding QICO-STRC-22-02:** *Adhering to inspection report requirements would promote continuity and accuracy while reducing waste and re-work. (Overall Risk - 3D)*

As part of the audit, QICO randomly sampled 12 inspection reports for compliance with its procedures and found that conditions which should have led to work orders, were not opened accordingly. Eight tunnel leak reports were reviewed and 5 of those reports contained errors surrounding categorization of leaks.

Internal Metrorail iCAPA QICO-STRC-22-02: Establish an effective quality control plan for inspection report review.

Track and Structures revised procedures to institute a quality control check on inspection reports to ensure compliance with its procedures.

The present audit did not identify any finding related to reporting of inspection-identified defects; however, one ongoing CAP, C-0222, continues to evaluate the process for water intrusion identification and mitigation.



- **Metrorail Internal Finding QICO-STRC-22-03:** *Utilizing the master repository for all project documents is critical in storing, organizing, tracing, and accessing inspection reports. (Overall Risk -3D)*

QICO sampled 28 inspection reports and found that 3 out of the 28 were missing from its repository. All 3 were related to the Silver Spring Transit Center (SSTC) and the proper template and associated forms were never created in its record keeping system, Assetwise.

Internal Metrorail iCAPA QICO-STRC-22-03: Perform quality control to verify inspection reports and required documentation are attached to work orders.

Track and Structures created a formal template to produce/house the reports AssetWise, for the Silver Spring Transit Center (SSTC).

The present audit did not identify any finding related to storing, organizing, tracing, and accessing inspection reports.

- **Metrorail Internal Finding QICO-STRC-22-04:** *Reviewing and updating governing documents within the required periodicity optimizes applicability, consistency, and incorporates changes in a timely manner. (Overall Risk – 3D)*

Track and Structures documents are required to be reviewed once every 2 years which is in alignment with Metrorail's Quality Management System Plan (QMSP). QICO found 3 documents which were past due for review.

Internal Metrorail iCAPA QICO-STRC-22-04: Review and update all governing documentation past due for review.

Track and Structures updated the 3 documents found out of compliance and trained personnel on the changes.

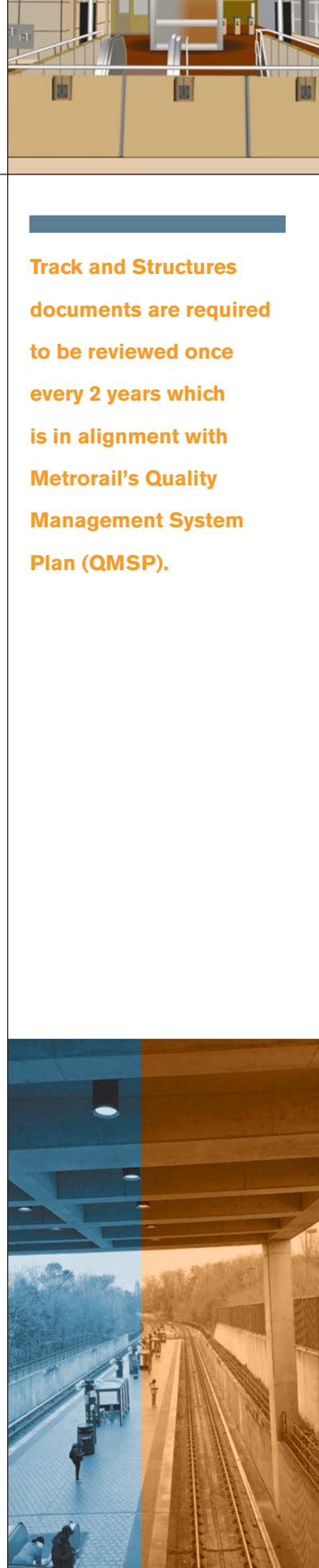
The present audit did not identify any finding related to document control.

- **Metrorail Internal Finding QICO-STRC-22-05:** *Maintaining compliance with current training requirements assists WMATA personnel in identifying hazards and areas of concern while working within the transit system and promotes increased knowledge levels. (Overall Risk – 4C)*

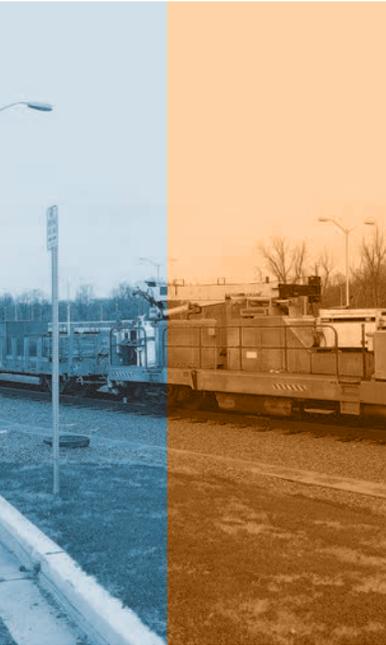
QICO found that of the classes required, Structures Inspection personnel had a compliance rate of 38.3% Structures maintenance personnel had a compliance rate of 35%. Areas such as fracture critical inspection of steel bridges and tunnel safety inspection had 0% compliance.

Internal Metrorail iCAPA QICO-STRC-22-05: Review training transcripts and create a training plan to fully train all STRC personnel.

The present audit did not identify any finding related to track and structures training. However, one finding of this audit relates to training records, specific to Roadway Worker Protection records. See Finding 1 of the Part B report.



Track and Structures documents are required to be reviewed once every 2 years which is in alignment with Metrorail's Quality Management System Plan (QMSP).



Assessment of Previous Track and Structures Corrective Action Plans

The WMSC is currently conducting its third triennial cycle of Metrorail. The WMSC has previously conducted audits of Track and Structures in each of the previous two cycles. The sections below will summarize those reports, the previously issued findings and related corrective action plans for each of them, along with a review of the current state of the actions taken to correct the findings and recommendations.

▶ WMSC's First Triennial Cycle (2019–2022)

During the WMSC's first triennial cycle of audits (2019–2022), the functional areas of Track and Structures were conducted as two separate audits.

- ▶ On February 13, 2020, the WMSC issued its **first audit report on Track Maintenance and Training**. This report included 16 findings and no recommendations.
- ▶ On January 25, 2021, the WMSC issued its **first audit report of Elevated Structures Inspection, Maintenance and Repair**. This report included 12 findings and 1 recommendation.

▶ WMSC's Second Triennial Cycle (2022–2025)

During the WMSC's second triennial cycle of audits (2022–2025), the functional areas of Track and Structures were conducted as two separate audits.

- ▶ On December 14, 2022, the WMSC issued its **second audit report on Track Maintenance and Training**. This report included 8 findings and 2 recommendations.
- ▶ On July 25, 2023, the WMSC issued its **second audit report on Metrorail's Structures Program**. This report included 2 findings and no recommendations.

Below is a summary of each finding or recommendation from prior audits, orders, or directives that relate to Track and Structures, along with the review and status of the associated corrective action plans developed by Metrorail to address them.

Previous Corrective Action Plans Related to Track and Structures

▶ C-0021 (Closed)

WMATA does not have a complete written set of current protocols governing maintenance practices for track and structures. (**2020 Audit of Track Maintenance and Training**, finding 1.)

To address this, Metrorail updated TRST-1000 to include all work instructions for track maintenance along with governing procedures for track inspections. The WMSC approved C-0021 for closure on January 8, 2021. The present audit did not identify any finding related to governing maintenance practices.

During the WMSC's second triennial cycle of audits (2022–2025), the functional areas of Track and Structures were conducted as two separate audits.



► **C-0022 (Closed)**

WMATA personnel responsible for conducting track maintenance activities follow no formal protocols to govern their repair and installation work. (**2020 Audit of Track Maintenance and Training**, finding 2.)

Metrorail updated its track maintenance procedures within TRST-1000 to include all work instructions for maintenance activities in accordance with Section 10.4 of the American Public Transportation Association (APTA) Standard RT-FS-S-002-02. Training was provided to personnel on the updates. The WMSC approved C-0022 for closure on June 8, 2021. The present audit did not identify any finding related to track maintenance standards.

► **C-0023 (Closed)**

In 2019 WMATA conducted heat-ride inspections on thirteen percent, or 11 of 85, days when the outside air temperature reached the point at which WMATA's protocols require such inspections be conducted. (**2020 Audit of Track Maintenance and Training**, finding 3.)

Metrorail developed protocols for conducting heat ride inspections and roles assigned to record and document actual ambient temperature every day of the late spring, summer, and early fall for purposes of heat ride inspections. The WMSC approved C-0023 for closure on March 10, 2021. See Finding 3 of this audit for a new issue that was identified relating to heat ride inspections.

► **C-0024 (Closed)**

WMATA has disseminated inconsistent instructions to TRST and other personnel on whether heat-ride inspections and monitoring begin at 90 degrees Fahrenheit or above 90 degrees Fahrenheit. (**2020 Audit of Track Maintenance and Training**, finding 4.)

TRST-1000 was revised to state that the heat ride inspections commence at 90 degrees Fahrenheit. The WMSC approved C-0024 for closure on September 2, 2020. Finding 3 of this audit for a new issue that was identified relating to heat ride inspections.

► **C-0025 (Closed)**

WMATA had no records to indicate that TRST personnel are refilling rail lubricators consistent with the TRST-1000. (**2020 Audit of Track Maintenance and Training**, finding 5.)

Metrorail developed a process for rail lubricators maintenance and inspection to include roles and responsibilities for refilling rail lubricators. The WMSC approved C-0025 for closure on November 24, 2021. This process is working as intended and listed in the positive practices section of this audit.

► **C-0026 (Closed)**

WMATA does not conduct annual culvert inspections as specified in Section 105.1 of the TRST-1000. (**2020 Audit of Track Maintenance and Training**, finding 6.)

Metrorail personnel worked to identify and submit culvert locations and the frequency of culvert inspections along with a process to inspect culverts. Field assessments were conducted and 32 culverts were identified requiring inspection. A schedule was created and submitted to inspect the culverts within a two-year cycle. The WMSC approved C-0026 for

Metrorail updated its track maintenance procedures within TRST-1000 to include all work instructions for maintenance activities in accordance with Section 10.4 of the American Public Transportation Association (APTA) Standard RTFS-S-002-02.

Metrorail had conflicting procedures within the Metrorail Safety Rules and Procedures Handbook and TRST-1000.

closure on July 27, 2023. During the present audit, the WMSC identified that a subset of culvert inspections were not conducted within the required two-year period. See this audit's Findings Resolved During Audit section for additional details.

▶ **C-0027 (Closed)**

WMATA does not have a weed spraying program consistent with industry standards. (**2020 Audit of Track Maintenance and Training**, finding 7.)

To address this finding, Metrorail entered into a contract to have weed spraying conducted. The WMSC approved C-0027 for closure on March 10, 2021. That contract was not executed and weed spraying was not conducted for a time. As a result, this issue subsequently arose again and led to the creation of CAP C-0232 (closed September 2024). The present audit did not identify any finding related to weed spraying.

▶ **C-0028 (Closed)**

WMATA has disseminated conflicting directions to TRST personnel about what procedures are appropriate for purposes of verifying speed restrictions. (**2020 Audit of Track Maintenance and Training**, finding 8.)

Metrorail had conflicting procedures within the Metrorail Safety Rules and Procedures Handbook and TRST-1000. The Metrorail Safety Rules and Procedures Handbook was updated accordingly. The WMSC approved C-0028 for closure on February 12, 2021. Today, the Metrorail Operating Rulebook and the TRST-1000 provide the rules and requirements in this area. The present audit did not identify any finding related to speed restrictions.

▶ **C-0029 (Closed)**

WMATA has not provided to all TRST personnel the documents that govern quality control activities. The documents that guide quality control activities are absent from the current version of the TRST-1000. (**2020 Audit of Track Maintenance and Training**, finding 9.)

Metrorail updated the list of forms in Section 102.11 of the TRST-1000 and reference the form locations in the manual. Personnel were provided with the forms to use in quality control activities. The WMSC approved C-0029 for closure on February 12, 2021. The present audit did not identify any finding related to track and structures quality control activities.

▶ **C-0030 (Closed)**

TRST inspectors use outdated versions of the Secondary Yard Inspection Form guiding storage track inspections. (**2020 Audit of Track Maintenance and Training**, finding 10.)

Metrorail created a document control procedure to define the creation, review, approval, access, storage, and revision of controlled documents. All current forms at the time were reviewed and revised to ensure that they met the requirements of that procedure. The WMSC approved C-0030 for closure on February 12, 2021. The present audit did not identify any finding related to outdated track and structures forms.

▶ **C-0031 (Closed)**

Quality control checks by TRST supervisors occur infrequently and inconsistently with TRST's protocols. (**2020 Audit of Track Maintenance and Training**, finding 11.)





Track and Structures created a procedure for its Supervisors and Managers Quality Control checks. The WMSC approved C-0031 for closure on November 24, 2021. The present audit did not identify any finding related to track and structures quality control checks.

▶ **C-0032 (Closed)**

WMATA uses equipment operators to perform track repairer duties without first providing such personnel with formal training. (**2020 Audit of Track Maintenance and Training**, finding 16.)

Metrorail developed computer-based training for all Track and Structures Equipment Operators to perform duties as a Track Laborer when not performing duties as an Equipment Operator. The WMSC approved C-0032 for closure on June 8, 2021. The present audit did not identify any finding related to this issue.

▶ **C-0033 (Closed)**

WMATA cannot verify that defects identified during track geometry vehicle inspections are repaired. (**2020 Audit of Track Maintenance and Training**, finding 13.)

Metrorail will create a new process in its linear asset management software, OPTRAM, to allow for the track geometry vehicle (TGV) defects to be processed as part of a Maximo work order, aligning the two systems. The WMSC approved C-0033 for closure on March 4, 2022. The present audit did not identify any finding related to TGV-identified defects.

▶ **C-0034 (Closed)**

TRST lacks job-specific training for newly hired or promoted supervisors. (**2020 Audit of Track Maintenance and Training**, finding 14.)

Metrorail developed a training program for new Track and Structures supervisors. The training plan includes the duties specific to TRST supervisors, including how to conduct and document quality control checks, use of Maximo to prioritize and plan work, and other mandatory training courses. The WMSC approved C-0034 for closure on August 30, 2021. The present audit did not identify any finding related to track and structures supervisors.

▶ **C-0071 (Closed)**

Metrorail departments involved in structures inspections and maintenance operate in unacceptable silos, which creates safety risks. (**2021 Audit of Elevated Structures**, finding 1.)

Metrorail worked to develop a documented communication plan to include collaboration and communication needs. Additionally, monthly coordination meetings were set between the inspections and maintenance departments within Track and Structures. A Structures assets roles and responsibilities matrix was created to ensure that the design, installation, and maintenance of the Metrorail track and structures assets had clear responsibility. The WMSC approved C-0071 for closure on March 4, 2022. The present audit did not identify any finding related to structures inspections and maintenance coordination.

Metrorail will create a new process in its linear asset management software, OPTRAM, to allow for the track geometry vehicle (TGV) defects to be processed as part of a Maximo work order, aligning the two systems.

Metrorail now has load ratings for all of its bridges.



▶ **C-0072 (Closed)**

WMATA does not have load ratings for its bridges and aerial structures. (**2021 Audit of Elevated Structures**, finding 2.)

Metrorail evaluated and updated its existing process for inspecting and approving vehicles being introduced to the system for compliant weight on system structures. The evaluation will include existing vehicles (railcars and maintenance machines) in addition to future vehicles that will be introduced.

Metrorail then began a program to conduct load rating assessments for all bridges and elevated structures. This began in September 2021 and completed in May of 2025. Metrorail now has load ratings for all of its bridges, subsequently, the WMSC approved C-0072 for closure on July 7, 2025 while this audit was underway. The present audit did not identify any finding related to load ratings.

▶ **C-0073 (Closed)**

Metrorail has not clearly assigned responsibility for the Structural Inspection Manual and has not set a timeline for review of the manual. (**2021 Audit of Elevated Structures**, finding 3.)

Metrorail updated the Structural Inspection Manual to specify which department and job function are responsible for updating and reviewing the manual. The update will also indicate the frequency when the document will be updated. The WMSC approved C-0073 for closure on March 4, 2022. The present audit did not identify any finding related to document control or review during this audit.

▶ **C-0074 (Closed)**

A new Structural Inspection Manual was made effective without any associated training for the employees responsible for implementing it. (**2021 Audit of Elevated Structures**, finding 4.)

Metrorail created a training matrix identifying Structural Inspection personnel training requirements and training frequency and updated the Structural Inspection Training Program to ensure alignment with TRST's procedures and provides training and certification/recertification standards for Structural Inspector position. The WMSC approved C-0074 for closure on May 26, 2022. The present audit did not identify any finding related to the Structural Inspection Manual and its training.

▶ **C-0075 (Closed)**

Standard Operating Procedure 208-07 (dated March 2020) contains outdated and conflicting references. (**2021 Audit of Elevated Structures**, finding 5.)

Metrorail revised its Structural Inspection Manual and SOP 208-07 to eliminate the conflicts and outdated information. Staff were trained on the updates accordingly. The WMSC approved C-0075 for closure on May 26, 2022. The present audit did not identify any finding related to the Structural Inspection Manual and its training.

▶ **C-0076 (Closed)**

Metrorail does not have important structural steel inspection tools available that are listed in its Structural Inspection Manual. (**2021 Audit of Elevated Structures**, finding 6.)

Metrorail updated its Structural Inspection Manual (and SOP 208-07) to include structural steel inspection tools and key safety-related activities. Training for all applicable personnel based on the updates completed. The WMSC approved C-0076 for closure on September 15, 2022. The present audit did not identify any finding related to the Structural Inspection Manual and its training.

► **C-0077 (Closed)**

Metrorail does not have consistent requirements for refresher or additional training for structures inspection and maintenance teams. (**2021 Audit of Elevated Structures**, finding 7.)

Metrorail developed a triennial aerial work platform training curriculum. Metrorail also procured NHI (National Highway Institute) initial training, a one-time Fracture Critical training course, and triennial refresher trainings for current and future TRST Structural Inspectors. The WMSC approved C-0077 for closure on May 4, 2023. The present audit did not identify any finding related to the structural inspection training.

► **C-0078 (Closed)**

Structures inspection supervisors are not able to spend adequate time in the field, creating concerns about work quality and workload. (**2021 Audit of Elevated Structures**, finding 8.)

Metrorail conducted an assessment of the workload, job responsibilities, training and territory, work assignments and travel time for structures inspection supervisor, to determine whether any changes to work assignment strategies or additional positions are required to implement and sustain this increase in field time. Metrorail added additional personnel to alleviate workload. The WMSC approved C-0078 for closure on May 26, 2022. The present audit did not identify any finding related to structures inspection supervisor workload.

► **C-0079 (Closed)**

Department of Engineering and Architecture (ENGA) does not document its findings when inspectors call for an engineer to examine a potential problem in person or through review of and inspection report. (**2021 Audit of Elevated Structures**, finding 9.)

Metrorail provided access to its documents and records to the appropriate engineering and architecture personnel who participate in the review of inspection reports. Metrorail also developed a documented process for ENGA to upload any inspection reports performed by ENGA. Training was provided to all applicable personnel. The WMSC approved C-0079 for closure on March 4, 2022. Since this time, Engineering and Architecture has been reorganized into corresponding functional areas across WMATA. The present audit did not identify any finding related to structural inspections.

► **C-0080 (Closed)**

Metrorail inspection, repair and design data are spread across disparate systems in a way that makes certain work challenging, creating the risk that safety issues could be misidentified or slip through the cracks. (**2021 Audit of Elevated Structures**, finding 10.)



Metrorail updated its Structural Inspection Manual (and SOP 208-07) to include structural steel inspection tools and key safety-related activities.





Metrorail revised its Building Information Modeling standards. Metrorail was able to make connections between two of its internal systems, Maximo and Assetwise to help address inspection and repair tickets. Training was provided to applicable personnel on the updates. The WMSC approved C-0080 for closure on September 15, 2022. The present audit did not identify any finding related to inspection, repair or design data.

▶ **C-0081 (Closed)**

Metrorail does not review contractor credentials, qualifications or trainings before a contractor conducts an elevated structure inspection. (**2021 Audit of Elevated Structures**, finding 11.)

Metrorail assessed its contractor's credentials and qualifications and training for existing task orders at the time related to Structural work. For newly issued Task Orders, a process was put into place to require contractors/vendors to submit proof of credentials, qualifications and training for contractors when inspecting or repairing elevated structures. The WMSC approved C-0081 for closure on September 15, 2022. The present audit did not identify any finding related to structure inspection contractors.

▶ **C-0082 (Closed)**

Metrorail does not have a written procedure for spot checks of TRST structural inspections. (**2021 Audit of Elevated Structures**, finding 12.)

Metrorail created a new job description and hired a Structures Inspection & Maintenance Engineering Program Manager. The Program Manager's job was to direct independent structures inspections quality control engineering, for structures throughout the system. They were also responsible for creating the procedures and checklist for the spot checks of TRST structural inspections. The WMSC approved C-0082 for closure on February 12, 2021. The present audit did not identify any finding related to quality control spot checks.

▶ **C-0083 (Open)**

Ten Metrorail structures have steel rocker bearings, which created a seismic risk in the event of an earthquake other seismic events. (**2021 Audit of Elevated Structures**, recommendation 1.)

Metrorail created a project plan outlining the implementation of retrofit projects to replace the steel rocker bearings still in use. As of the release of this audit report, there are five remaining aerial structures in WMATA's Structural project which need to be retrofitted. A contract is planned to address and retrofit the steel rocker bearings. Metrorail is providing updates to the WMSC every 6 months on the progress of this project. C-0083 remains open and is expected to complete by September 14, 2029.

▶ **C-0225 (Closed)**

Metrorail's organizational structure prevents Metrorail from effectively ensuring that its track is maintained in a state of good repair as specified by Metrorail policies, procedures and standards. (**2022 Audit of Track Maintenance and Training**, finding 1.)

Metrorail issued a memorandum to enforce compliance with SOP 208-04 (TRST Track Inspection Procedures) and also updated its organizational chart and a description of each group's roles/responsibilities. Track and Structures implemented a formal process for

Metrorail was able to make connections between two of its internal systems, Maximo and Assetwise to help address inspection and repair tickets.



Ultrasonic Testing of welds that specifies who is responsible for carrying out this task, the process for ensuring this testing occurs, and the documentation and tracking of this process. The WMSC approved C-0225 for closure on April 4, 2025. The present audit did not identify any finding related to organizational structure or designated track and structure responsibilities.

▶ **C-0226 (Closed)**

Metrorail is not maintaining track infrastructure in rail yards in accordance with TRST-1000 requirements and related standards. This has introduced operational hazards. (**2022 Audit of Track Maintenance and Training**, finding 2.)

Metrorail revised its procedures related to monthly and quarterly yard inspections. The monthly inspections now represent “General” inspections of all tracks and switches and will be documented in each month. Metrorail has continued the process of submitting the inspections to the WMSC for review as part of CAP implementation verification. The WMSC approved this CAP for closure on January 6, 2026.

▶ **C-0227 (Closed)**

Metrorail is not meeting its training requirements and there are inconsistencies in on-the-job training documentation for TRST personnel. (**2022 Audit of Track Maintenance and Training**, finding 3.)

Metrorail developed a training calendar for Track & Structures to address upcoming training requirements for Track Maintenance & Inspection personnel. Metrorail updated the procedure on its Track Inspector Training Program to meet its training certification and recertification requirements to include on-the-job training requirements. The WMSC approved C-0227 for closure on June 26, 2024. The present audit did not identify any finding related to track and structures on-the-job training.

▶ **C-0228 (Closed)**

WMATA is not ensuring that personnel wear the proper personal protective equipment as required by its Hot Work Program Manual. (**2022 Audit of Track Maintenance and Training**, finding 4.)

Metrorail issued a memorandum to applicable personnel regarding adherence with Hot Work Program Manual Section on Personal Protective Equipment Requirements. Compliance Supervisors performed compliance checks identifying the proper Personal Protective Equipment use as required by the Hot Work Program Manual and also distributed quarterly safety communications regarding the importance and safety benefits of PPE. The WMSC approved C-0228 for closure on July 10, 2024. The present audit did not identify any finding related PPE usage.

▶ **C-0229 (Closed)**

Metrorail risks key maintenance work performed on rail lubricators coming to a halt due to insufficient succession planning and training for personnel responsible for ensuring they are properly maintained in accordance with its written procedures. (**2022 Audit of Track Maintenance and Training**, finding 5.)

Metrorail updated the procedure on its Track Inspector Training Program to meet its training certification and recertification requirements to include on-the-job training requirements.

This finding identified drums of resin stored at the Suitland Maintenance Control Yard, which were not being addressed. After the finding was issued, Metrorail removed those materials.



Metrorail analyzed the number of personnel necessary to properly maintain rail lubricators in accordance with its rail lubrication procedures. Metrorail developed and submitted a training and recertification curriculum for applicable personnel to maintain the system's lubricators. The WMSC approved C-0229 for closure on January 12, 2024. Personnel involved in rail lubrication were interviewed during this audit and are now able to keep on track with their maintenance based upon the improvements instituted by this CAP. The present audit did not identify any finding related to the rail lubricators.

▶ **C-0230 (Closed)**

Metrorail lacks the capability to complete required rail grinding activities across the system to ensure safe operations. (**2022 Audit of Track Maintenance and Training**, finding 6.)

Metrorail developed a schedule based on the additional support acquired to meet its requirements for rail grinding of the entire system. The WMSC approved C-0230 for closure on September 26, 2025. The present audit did not identify any finding related to rail grinding.

▶ **C-0231 (Closed)**

WMATA does not ensure excess hazardous materials are properly labeled, stored and disposed of. (**2022 Audit of Track Maintenance and Training**, finding 7.)

This finding identified drums of resin stored at the Suitland Maintenance Control Yard, which were not being addressed. After the finding was issued, Metrorail removed those materials. Additionally, Metrorail assessed the current material and waste storage, labeling, and disposal practices. The WMSC approved C-0231 for closure on February 12, 2021. The present audit did not identify any finding related to hazardous material labeling, storage, or disposal.

▶ **C-0232 (Closed)**

WMATA does not have a weed spraying program consistent with industry standards. (**2022 Audit of Track Maintenance and Training**, finding 8.)

Metrorail first attempted to contract out its weed spraying program but ultimately decided to assign responsibility for the program internally. Schedules were created and adhered to, to limit overgrowth of vegetation in the roadway. The WMSC approved C-0232 for closure on September 24, 2024. No issues were seen or noted during this audit related to the weed spraying program. The present audit did not identify any finding related to weed spraying.

▶ **C-0233 (Closed)**

Creating and implementing a planned, proactive, ongoing ballast renewal program would improve the condition of track infrastructure. (**2022 Audit of Track Maintenance and Training**, recommendation 1.)

Metrorail did not develop a CAP for this recommendation but instead completed a hazard analysis in line with the WMSC Program Standard. Metrorail noted that "With a "Remote" rating of probability and a "Marginal" or "Negligible" rating of severity this risk is indexed as needing a VP level of approval to continue that activity without inserting level-changing mitigations. The Department of Track and Structures has not seen evidence that the



current condition of the ballast is causing degradation of the infrastructure as evidenced by infrastructure availability. We therefore find that by continuing our current process of replacing ballast only when conditions indicate the need, we maintain an acceptable level of risk and we do not believe a corrective action would be appropriate at this time.” The WMSC approved this recommendation/C-0233 for closure on March 9, 2023. The present audit did not identify any finding related to ballast renewal.

▶ **C-0234 (Closed)**

Metrorail can ensure the safety of the system and quality of materials installed on the roadway by conducting lifecycle monitoring of reserve rail components stored in maintenance yards. (**2022 Audit of Track Maintenance and Training**, recommendation 2.)

Metrorail updated the Maintenance Control Program to include processes for obtaining parts from Maintenance Control Yards including processes for parts that are no longer useable are therefore not issued for installation. The WMSC approved C-0234 for closure on December 4, 2023. The present audit did not identify any finding related to lifecycle monitoring of reserve rail components.

▶ **C-0238 (Closed)**

Metrorail is not carrying out the safety risk management, safety assurance and safety promotion for the structures program required by Metrorail's Agency Safety Plan to ensure safe and effective structural engineering, maintenance, and operation. (**WMSC Audit of Structures Program, July 25, 2023**, finding 1.)

Metrorail developed a documented safety risk management process in alignment with Metrorail's overall Safety Management System, to ensure personnel properly identify, document, and mitigate hazards in accordance with WMATA's Public Transportation Agency Safety Plan (PTASP). Training was created and deployed to ensure that personnel know to identify and report hazards. The WMSC approved C-0238 for closure on February 12, 2021. Metrorail's current risk management dashboard was reviewed as part of the present audit with no findings identified.

▶ **C-0239 (Closed)**

Metrorail's Structures Maintenance and Inspections department has not formalized and documented its on-the-job training process for structural inspection. (**WMSC Audit of Structures Program, July 25, 2023**, finding 2.)

Metrorail developed a formalized for the On-the-Job Training of Structural Evaluation Technicians including curricula for the training, selection criteria and training for those serving as on-the-job training mentors, procedures to document and review on-the-job training and evaluations once the training is completed. The WMSC approved C-0239 for closure on May 27, 2025. The present audit did not identify any finding related to structures maintenance and inspection training.

Metrorail developed a documented safety risk management process in alignment with Metrorail's overall Safety Management System.



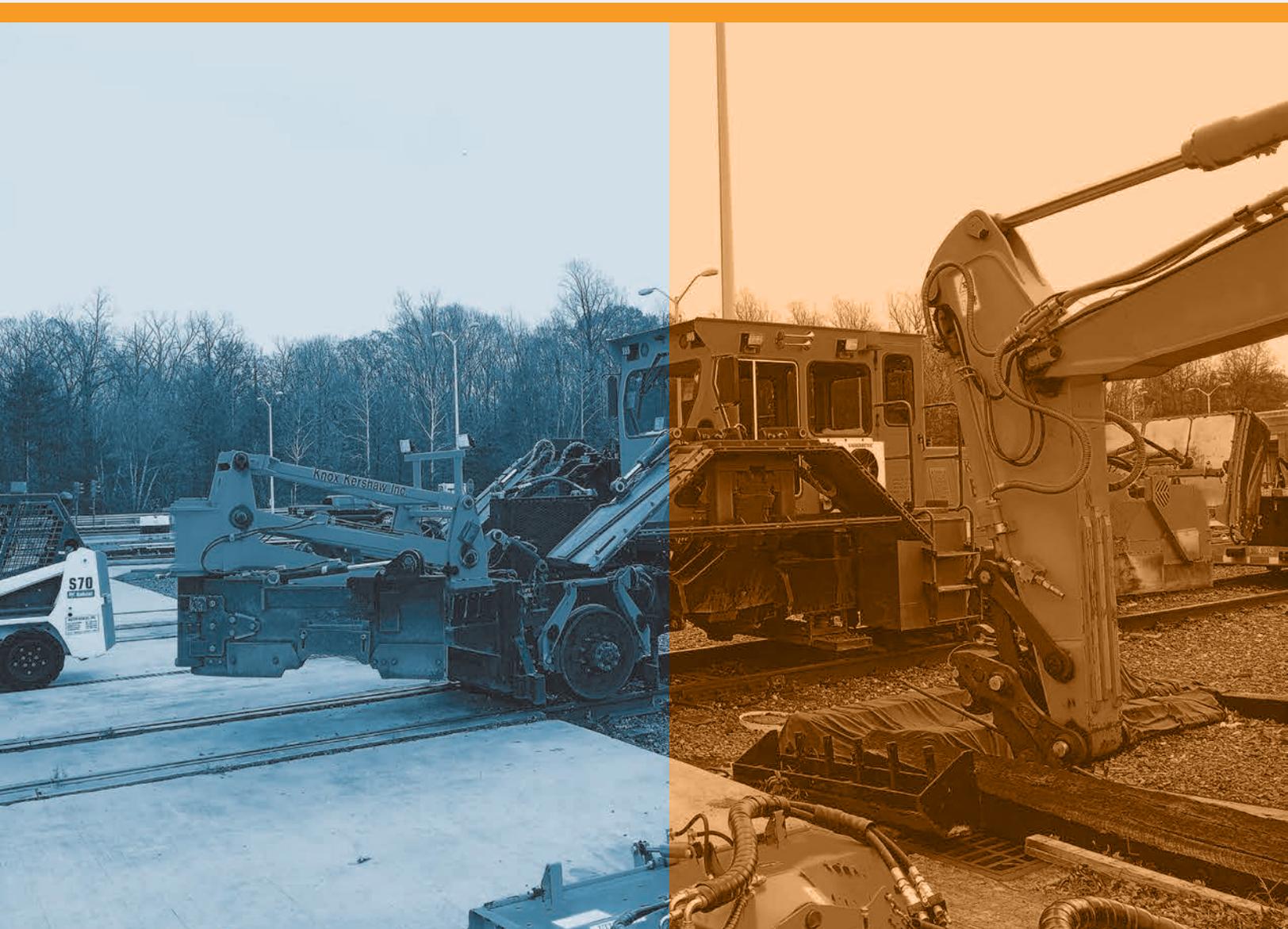
What the **WMSC** Found

What the **WMSC** Found

Positive Practices

This audit also identified several positive practices, or success stories, some of which came about as a direct result of the WMSC's oversight. The WMSC encourages Metrorail to continue these positive practices.

1. Track and Structures training personnel are using improved curriculum materials.
2. All bridge structural inspections were completed within the required 2-year period (TRST-1000).
3. Track and Structures now has adequate personnel addressing rail lubrication. (CAP C-0229)



Findings and Minimum Corrective Actions

Welding, by its nature, brings certain hazards for the workers who are conducting the welding, such as respiratory hazards.

This audit covered two distinct subject areas, Metrorail's Track and Structures as well as its overall Roadway Worker Protection Program, practices, and training for the entire agency. The findings detailed below pertain to Track and Structures.

► **Finding #1: Metrorail Track and Structures personnel reported performing welding tasks without proper respiratory protection.**

Metrorail's welding personnel serve an important maintenance role in both corrective and preventive maintenance activities. However, welding, by its nature, brings certain hazards for the workers who are conducting the welding, such as respiratory hazards. Metrorail has established a respiratory protection program and if implemented can reduce the respiratory hazard for workers by way of respiratory protection.

Requirement:

Metrorail's Manual Number: 4487-2-01/00, Respiratory Protection Program Manual (February 20, 2024) states:

5.7 Managers and Supervisors are responsible for:

5.7.1. Ensuring that the WMATA RPP [Respiratory Protection Program] is properly implemented within their designated areas. In addition to being knowledgeable about the program requirements for their own protection, Managers and Supervisors must also ensure that the program is understood and adhered to by the employees under their charge.

5.7.3. Ensuring that all employees under their supervision receive WMATA RPP training, fit testing, and medical evaluation prior to utilizing a respirator. Training and fit testing (for tight-fitting respirators) are required annually.

5.7.7. Enforcing the proper use of respiratory protection, when necessary.

5.8 Employees are responsible for:

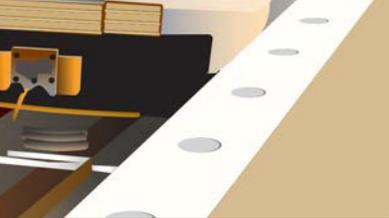
5.8.1. Properly using RPE [Respiratory Protection Equipment] when required to perform work, such as when required by a work instruction or standard operating procedure, or by an assessment of job hazards.

5.8.4. Informing their supervisor if their respirator no longer fits properly and request a replacement and new fit-test.

5.8.5. Informing their supervisor, the Department Safety Risk Coordinator, or the RPPA [Respiratory Protection Program Administrator] of any respiratory hazards that they feel are not adequately addressed in the workplace and of any other concerns that they have regarding this program.

Section 3.23 of the manual states "Occupational Exposure Limits are used to assess exposures as acceptable or unacceptable. WMATA will use the most stringent of the OSHA PEL [Permissible Exposure Limits] or ACGIH [American Conference of Governmental Industrial Hygienists] TLV [Threshold Limit Values] as the occupational exposure limit for a given contaminant/stressor."





The type of welding WMATA conducts includes manganese steel, which is identified by the U.S. Centers for Disease Control and Prevention (CDC) as a toxic substance that is known to cause health hazards.

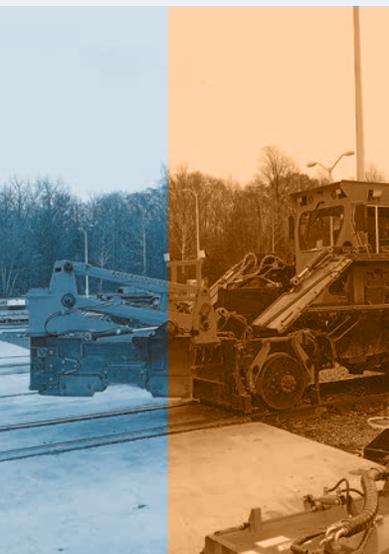
Nonconformance:

In three separate interviews for this audit, Metrorail welders indicated that they have not been provided with any type of personal respiratory protection. Two of the individual welders stated that they had been fit-tested sometime in the fall of 2024; however, at the time of the interviews for this audit in June 2025, neither received any sort of respiratory protection. Two of the welders stated that they had been fit-tested in accordance with Metrorail's Manual Number: 4487-2-01/00, Respiratory Protection Program Manual (February 20, 2024) section 5.7.3, which indicates that respiratory hazards were identified for these individuals/ job functions.

The type of welding WMATA conducts includes manganese steel, which is identified by the U.S. Centers for Disease Control and Prevention (CDC) as a toxic substance that is known to cause health hazards. The CDC **states** that "Manganese fumes are produced during metallurgical operations and several types of welding operations. The exposure can vary considerably depending on the amount of manganese in the welding wire, rods, flux and base metal. Confined space welding can significantly increase exposure to manganese fumes." and that "Numerous studies indicate that welders may be at increased risk of neurological and neurobehavioral health effects when exposed to metals such as lead, iron, and manganese. Carbon monoxide, heat, and stress can also contribute to neurological impairments in welders. Some studies indicate that welders exposed to low levels of manganese (<0.2 mg/m³) perform more poorly on tests of brain function and motor skills. These effects include changes in mood and short-term memory, altered reaction time, and reduced hand-eye coordination. Affected workers frequently show abnormal accumulations of manganese in the region of the brain known as the globus pallidus, which plays an important role in movement regulation."

In an article produced by **ScienceDirect**¹, it states that "High manganese steel, invented by Sir Robert Hadfield in 1882, is known for its remarkable mechanical properties. It contains 12–14 % manganese, which allows it to work-harden, increasing its hardness and strength as it deforms. This steel exhibits exceptional impact strength, ductility, and resistance to wear, making it ideal for heavy-duty applications like mining equipment and railway tracks. Its ability to absorb energy and withstand extreme conditions without fracturing enhances its durability and reliability in demanding environments. In the railway industry, high manganese steel is usually used to manufacture fixed frogs. Since this frog structure has harmful spaces and needs to constantly withstand the impact of trains, high manganese steel is a very suitable material to choose."

¹ *Research on the dynamic recrystallization mechanism of high manganese steel under severe wear conditions, J.P. Liu, S. Zhao, S.N. Ma, C. Chen, H.H. Ding, R.M. Ren, F.S. Liu, Available online 28 June 2025, Version of Record 12 July 2025.*



Periodically checking fire extinguishers increases the likelihood that extinguisher is available for use when needed.

◆ **Minimum Corrective Action:**

Metrorail must evaluate the work environment/conditions of its personnel conducting welding or grinding to evaluate the possible exposure versus the recommended exposure limits. Metrorail must then follow its SOP, 4487-2-01/00, to provide appropriate respiratory protection and/or exhaust ventilation to individuals that require it. Metrorail must establish a process to ensure individuals whose work requires this are receiving the necessary training and materials, and are routinely practicing appropriate respiratory protections in the execution of their work duties.

► **Finding #2: Metrorail personnel are not checking fire extinguishers for inspection dates prior to entering the roadway.**

Metrorail personnel enter the roadway to perform work that, by its nature, can cause triggering events such as welding, which may lead to a fire. Maintaining a working fire extinguisher is necessary to mitigate the fire risk posed by such work, as required by Metrorail's procedures. Periodically checking fire extinguishers increases the likelihood that extinguisher is available for use when needed.

Requirement:

Track and Structures' Class 2 Rail Vehicle Prior To Use Inspection Form, TRST-CMP-FRM-C2RVPUIC, (Revision 6.0, dated November 7, 2024) states the Operator or Flag Person must verify that "Fire extinguishers should be charged and secured. Sign the monthly inspection log (if not already signed)."

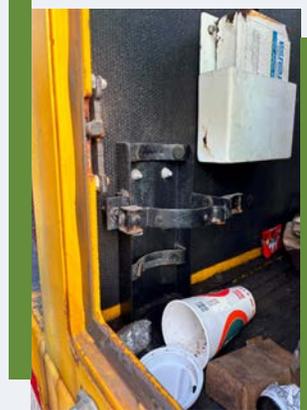
Metrorail's Roadway Job Safety Briefing Form includes a checkbox for "Tools and Equipment Inspected."

Metrorail Operation Rulebook (dated July 1, 2025) Section 1.19.4 states "All employees shall report all expired, empty, or used fire extinguishers in facilities to the Office of Plant Maintenance and all empty fire extinguishers in trains or stations to Rail Operations Control Center and Maintenance Operations Control respectively, for replacement immediately after their use." In section 18.17.11, it further states that "When welding or cutting, an appropriate, approved fire extinguisher shall be present at the job site and shall be kept in close proximity to the welder or cutter."

Nonconformance:

On July 16, 2025, WMSC personnel conducted an observation of track work being completed and found issues with four fire extinguishers deployed in the field. This included:

1. A prime mover missing its designated, onboard, fire extinguisher.
2. Fire extinguisher inspection records were not updated for three other fire extinguishers seen in the area.





Metrorail procedures require that personnel have access to working and inspected fire extinguishers when completing tasks on the roadway. Personnel are also required to check the fire extinguishers prior to performing work on the roadway as part of the Roadway Job Safety Briefing.

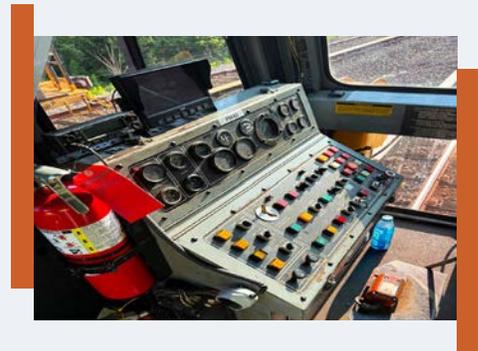
In the **WMSC’s 2022 Audit of Emergency Management and Fire and Life Safety Programs**, finding #13 found

that Metrorail was not regularly inspecting and maintaining current certification status of all fire extinguishers on the roadway. During the WMSC’s site visits for that audit, multiple extinguishers in tunnels were observed to be extremely dirty, indicating that they had not been maintained for an extended period. During that audit, Fire protection personnel stated that Track and Structures personnel are responsible for fire extinguishers on the roadway. Subsequent to that finding, CAP C-0174 was created to address the issue. Metrorail developed a documented process to include the tracking, inspection, testing and replacement, ensuring replacement of expired fire extinguishers. The document includes roles and responsibilities relating to the inspection and maintenance of fire extinguishers, to ensure consistency across Metrorail. Upon completion of the actionable items, the CAP was closed on April 3, 2024.

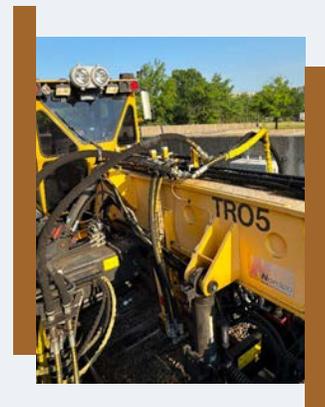


Subsequent to that, the **WMSC completed its 2025 Audit of Emergency Management and Life Safety**. Finding #3 of that audit stated

that “Metrorail fire and life safety inspections do not identify and resolve deficiencies with fire life safety equipment and assets within stations.” There were 8 instances of issues with fire extinguishers found during observations for that audit which included fire extinguishers not inspected or signed off, not properly stored, or not properly replaced after use.



A corrective action plan is currently underway to address Fire Life Safety Assets (fire extinguishers being just one such asset), C-0295B, which includes actionable items specific to Track and Structure, however, C-0295B is specific to stations and station inspections “Metrorail fire and life safety inspections do not identify and resolve deficiencies with fire life safety equipment and assets **within stations.**” Metrorail is addressing C-0295B as required; however, Metrorail must now ensure that portable fire extinguishers—and those employed on equipment in the field—are also included in any improvement process.



Metrorail is addressing C-0295B as required; however, Metrorail must now ensure that portable fire extinguishers—and those employed on equipment in the field—are also included in any improvement process.

When temperatures are expected to reach 90 degrees Fahrenheit, Metrorail track inspection personnel conduct what are known as “heat rides.”

◆ **Minimum Corrective Action:**

Metrorail must review all departmental procedures for inspections, preventive, and corrective maintenance related to fire life safety issues and ensure that inspections are identifying all such fire life safety issues. The inventory of life safety assets must be reviewed to ensure that all assets are properly captured. Metrorail must regularly communicate with front-line personnel to underscore the importance of identifying, reporting and addressing issues with life safety equipment. Metrorail must ensure the availability of properly inspected fire extinguishers.

► **Finding #3: Metrorail is conducting heat rides at speeds that make it difficult to identify potential heat-related defects and does not have a defined speed threshold for conducting these rides.**

In the summer months, steel rails are exposed to high heat and sun, which can cause the rails to heat up and expand and then potentially warp and buckle as a result. When temperatures are expected to reach 90 degrees Fahrenheit, Metrorail track inspection personnel conduct what are known as “heat rides.” These are conducted during revenue service, while riding on Class 1 railcars to visually check the tracks for obvious defects and take temperature measurements. In order for these inspections to effectively serve their safety purpose of identifying heat-related track defects, the inspection must be conducted at a speed that permits visual confirmation of defects.

Requirement:

Metrorail Standard Operating Procedure 208-06, Heat Ride Inspection Procedures (dated November 16, 2023) states “6.2.7 ROCC Supervisor and Train Operators shall allow Track Inspection personnel access to the operating cab for riding heat inspections. Track Inspection personnel will ride in the cab of the train and visually inspect the tracks for: Conditions per SOP 208-04: Track Inspection Procedure; and Possible heat-related defects, such as the formation of heat kinks.”

APTA standard APTA RT-FS-S-002-02, Rail Transit Track Inspection and Maintenance (dated April 17, 2017), states in section 3.1 “Tracks used by revenue trains shall be inspected weekly on foot, or by riding over the track in a vehicle at a speed that allows detection of noncompliance with these standards.”

Nonconformance:

Metrorail’s SOP 208-06, ‘Heat Ride Inspection Procedures’ states in the purpose that “This Standard Operating Procedure (SOP) describes the Washington Metropolitan Area Transit Authority’s (WMATA) Office of Track and Structures Maintenance’s program for the mitigation of risk associated with heat-related conditions on the roadway when ambient temperatures meet 90°F.” This SOP is only instituted when ambient conditions meet 90°F and are supplemental to Metrorail’s walking track inspections.” The WMSC interviewed personnel responsible for track inspections which included two track repairers and two members of the Track and Structures Emergency Response Team. During those interviews, two individuals assigned to conduct heat ride inspections stated that Metrorail was conducting them under Automatic Train Operations (ATO) and that the designated ATO speeds made it difficult to





Metrorail's track inspectors conduct regular inspections of track gauge throughout the system using analog gauges to take measurements and note any nonconformities which may need to be addressed.

identify rail defects. Metrorail instituted ATO on the Red Line on December 15, 2024, the Yellow and Green Lines on May 23, 2025 and the Blue, Orange, and Silver Lines on June 15, 2025, along with a concurrent return to design speeds which raised the speed at which trains normally operate. Speeds can now reach up to 70 MPH. There is a speed threshold where the heat ride inspection cannot be visually accomplished. Metrorail's SOP 208-06 does not provide that threshold.

Two samples were reviewed that occurred during the audit. The first was on July 27, 2025, Metrorail initiated Heat Rides as of 1:00 pm that day and the second was July 29, 2025, when Metrorail initiated Heat Rides as of 12:00 pm. WMSC staff monitored both Metrorail's radio traffic and Advanced Information Management (AIMs) systems to verify that the trains conducting heat rides were in fact in ATO.

◆ **Minimum Corrective Action:**

Metrorail must determine the allowable speed range that permits the identification of track defects while conducting heat rides. Metrorail must also consider whether track defects can be adequately identified during Automatic Train Operations (ATO) as ATO does not permit slowing the train at the moment a potential track defect is identified during a heat ride. Metrorail must revise heat ride procedures accordingly and adjust operations as necessary to allow for heat rides to be conducted within the identified speed range that permits the identification of track defects.

▶ **Finding #4: Metrorail is not verifying its track measuring equipment for accuracy and does not follow manufacturer calibration recommendations for track measuring equipment.**

Metrorail's track inspectors conduct regular inspections of track gauge throughout the system using analog gauges to take measurements and note any nonconformities which may need to be addressed. These inspections are necessary to ensure track conditions remain safe and; therefore, the equipment used for taking such measurements must be checked to ensure accuracy.

Requirement:

Metrorail SOP 208-05, Equipment Calibration Procedure (Version 2.0, dated January 10, 2025) states:

“6.1.2 The Material Control Section must maintain a master list of all Office-owned calibrated equipment as well as any equipment from either of the Engineering Offices that have elected to manage their calibration through Material Control.

6.1.3 The Material Control section reviews monthly reports pertaining to the Department's compliance with this SOP and notifies Area Superintendents/Program Managers when excessive equipment is out of calibration.





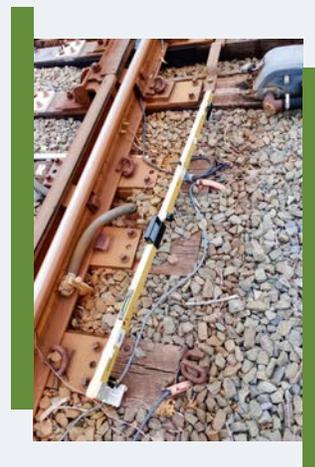
6.1.4 New equipment that requires calibration must be registered with the Material Control Section (or the designated person within the Engineering Offices) to ensure that there is an initial calibration, and that the equipment is properly scheduled for calibration with the correct organization (the Office of Car Maintenance, the Office of Systems Maintenance, or any other internal organization) depending on the item. If no internal calibration is available, then the Material Control Section must work with the owning Office/Area to identify a source for calibration activities for that particular piece of equipment.”

TRST-1000, Track Inspection & Safety Standards (Volume 1, Revision 2.0, dated January 2024) states:

“The Track Inspector shall ensure that the track gauge is calibrated and maintained to measure correct track gauge and cross level readings.”

Nonconformance:

As part of the WMSC’s initial document requests for this audit (dated April 30, 2025), the WMSC requested a list of “all equipment related to track and structures maintenance and infrastructure repair, which must include calibration date due and date of last calibration for those tools that require calibration.”



In response to that request, on May 30, 2025, Metrorail provided a list of torque machines and a list of warning strobes and alarm devices (WSADs) with pertinent calibration information and dates.

On July 17, 2025, the WMSC requested Metrorail to “provide requirements and records, for calibration or validation of track rail gauges and rail thermometers.” On July 25, 2025, Metrorail replied with three calibration certificates for Geismer branded track gauges and stated that the thermometers do not require calibration.



In addition to the Geismer gauges, Metrorail currently uses model RCA analog track gauges produced by Vogel & Plötscher GmbH & Co. KG, which are used to check track gauge and leveling, and have been in use on the system since at least 2016. Metrorail was unable to produce calibration certificates or validations for the Vogel & Plötscher GmbH & Co. KG gauges.

Vogel & Plötscher GmbH & Co. KG stated that “There is indeed a recommendation for calibration, it’s on a yearly basis;” however, Metrorail’s records indicate the devices have never been calibrated.

◆ **Minimum Corrective Action:**

Metrorail must review the various types of track measuring equipment and check each against manufacturer calibration or other maintenance recommendations to ensure accuracy and reliability of measurements and proper device functionality. Metrorail must develop procedures to ensure all such devices receive the required manufacturer calibration or maintenance recommendations.



Finding Resolved During the Audit

During this audit, the WMSC found that Metrorail was not completing culvert inspections as required by its procedures. Metrorail SOP 114-02, Structures Inspection Procedures (Revision 7.0, dated July 3, 2024), states in section 9.3:

“Structural Inspection frequency is detailed in the Structural Inspection Manual. Each type of Inspection is given a normal frequency, however upon written authorization from the Director of Structural Engineering, Inspection frequencies can be adjusted to meet the current condition of the asset. Some assets also require an In-depth Inspection per Section 6.5.3 of the SIM. In-depth Inspections are required every 72 months. The following table lists the standard Inspection frequency per the SIM (by asset). If there is a conflict between this table and the SIM, the SIM governs.”

Asset Type	Routine Inspection Frequency	In-Depth	SIM Reference
Bridges & Culverts	24 Months	Yes	Section 7/Section 6.5.3
Fracture Critical Inspections	24 Months	Yes	Section 7/Section 6.5.3
Tunnels	24 Months	Yes	Section 7/Section 6.5.3
Stations	36 Months	Some: see manual	Section 9/Section 6.5.3
Non-Public Facility Structures	36 Months	No	Section 10
Parking Structures	36 Months	No	Section 11

Table included in Clause 9.3 of Metrorail SOP 114-02

Metrorail’s procedure TRST-1000, Department of Track and Structures, Track And Structures Maintenance, Track Inspection & Safety Standards (Volume 1, Revision 2, Dated December 2023), Section 105.2 states:

“Culverts are inspected by track walkers and maintained routinely by TRST Maintenance to determine the degree of blockage, settlement, or separation of joints. Track Inspection personnel observing any irregular surface or alignment of track or pooled water on ballasted track, should conduct an initial inspection to determine if culverts are submerged or blocked by debris and report such conditions to TRST Maintenance for further investigation and repair.”

Finding 6 of the **2020 WMSC Audit of Track Maintenance and Training** identified that “WMATA does not conduct annual culvert inspections as specified in Section 105.1 of the TRST-1000.” The 2020 audit further stated “Culverts can be defined as an opening in or a conduit passing through an embankment, usually for the passage of water. These structures are prone to serious problems if not inspected and maintained on a regular basis. Quite often culvert deficiencies are only detected when track surface irregularities are encountered; yet these potential problems can be detected and corrected long before deterioration of the track surface

During this audit, it was found that Metrorail was not completing culvert inspections as required by its procedures.

Metrorail did not meet the 2-year cycle for completing all culverts (finishing approximately three months behind that requirement). However, Metrorail self-corrected this issue before it was identified by the WMSC and importantly, all culverts were inspected as required.

occurs. The TRST-1000 assigns the task of culvert inspections to track inspection personnel, specifies steps for the inspection, and requires an inspection report to be issued. As stated in the TRST-1000, "Culverts must be maintained to provide adequate opening through the roadway for passage of water under the track structure. Culverts must be kept free of obstructions as a guard against washouts and other damage to the roadbed."

Corrective action plan C-0026 was created to address this finding, which required Metrorail to "add culverts as an asset in Maximo and begin scheduling annual inspections as specified in Section 105.1 of the TRST-1000." As part of C-0026, Metrorail updated its list of culvert locations, updated its inspection manual to add a process for inspecting culverts, and created a culvert inspection schedule. After WMSC verification and additional information from Metrorail, the WMSC closed C-0026 on July 27, 2023.

In the initial request for this audit dated April 30, 2025, the WMSC requested "For the period April 1, 2023, through April 1, 2025, list all structural inspections scheduled; include the location and date each inspection was completed and its status." On May 30, 2025, a list was provided which included 32 different culverts to be inspected between April 1, 2023, and April 1, 2025; however, only 16 were completed in that timeframe. The 16 others are listed as "NOT STARTED/ INSPECTION DEFERRED" and were originally to be completed between October and December 2023.

This issue was presented to Metrorail as a preliminary finding during the August 19, 2025 audit exit conference. Subsequently, on September 10, 2025, Metrorail provided additional information and records stating that "The Office of Structural Engineering was officially assigned responsibility for 32 culverts in 2022. Site assessments were completed that year to document conditions, access, and inventory information, and those culverts were subsequently added to the preventive maintenance inspection schedule in late 2023. Between October–December 2023, 16 culverts were inspected. The remaining 16 could not be safely inspected due to small diameters or water-filled conditions. To address this, WMATA explored procuring specialized equipment but ultimately incorporated the work into the Bridge Inspection contract. That contract, delayed due to procurement issues, was awarded February 5, 2025. Under this contract, WSP inspected the remaining 16 culverts between May 19 and June 6, 2025. Draft reports were entered into AssetWise on July 16, 2025, and are currently undergoing Quality Control review. Moving forward, WSP is scheduled to inspect all 32 culverts again in 2027, which maintains compliance with the 24-month inspection cycle required by the Structural Inspection Manual." Metrorail provided the supporting documentation of the culvert inspection program including the contract, inspection schedule, and current inspection records for verification by the WMSC.

Metrorail did not meet the 2-year cycle for completing all culverts (finishing approximately three months behind that requirement). However, Metrorail self-corrected this issue before it was identified by the WMSC and importantly, all culverts were inspected as required. As this issue was properly addressed, including sufficient plans to address future inspection cycles, the WMSC will not issue a finding regarding the culvert inspections.





Next Steps

Metrorail is required to propose corrective action plans to address each finding no later than 30 days after the issuance of this report. (Program Standard Rev. 8.0, Section 9.C.3.a.) Each proposed corrective action plan must include several elements, including but not limited to, specific and achievable planned actions to remediate the deficiency, the person responsible for implementation, and the estimated date of completion. (Section 9.C.2.) Each proposed corrective action plan must be approved by the WMSC prior to Metrorail's implementation.



Appendices

Appendices A and B

Appendix A: Personnel Interviewed

TRACK AND STRUCTURES

- Assistant Superintendent
- Director of Structural Engineering
- Maintenance Manager
- Manager, CAPs & Compliance
- Manager, Investigations
- Manager, Track Geometry Vehicle
- Senior Capital Program Manager
- Senior Director, TRST Maintenance
- Senior Vice President, TRST
- Structural Evaluation Technician A (2)
- Superintendent, Emergency Response Team

- Superintendent, Yard
- Supervisor (5)
- Supervisor, Emergency Response Team
- Track & Structures Mechanic AA (2)
- Track Geometry Vehicle Specialist (3)
- Track Repairer AA (2)
- Welder AA (3)

TECHNICAL TRAINING & DEVELOPMENT

- Manager, Technical Skills Training
- Roadway Worker Protection Instructor (3)
- Senior Director, Technical Training & Development
- Technical Skills Training Instructor (2)

Appendix B: Site Visits

◆ July 8, 2025

- Blue Line Shutdown Observation/ Track Walk (Van Dorn Station to Alexandria Yard)

◆ July 9, 2025

- RWP Level 2 Training Observation (Carmen Turner Facility)

◆ July 10, 2025

- Contractor RWP Training & RWP Records Review (Carmen Turner Facility)

◆ July 11, 2025

- RWP Training Records Review (Carmen Turner Facility)

◆ July 16, 2025

- Blue Line Shutdown Observation (Franconia-Springfield Station)

◆ July 18, 2025

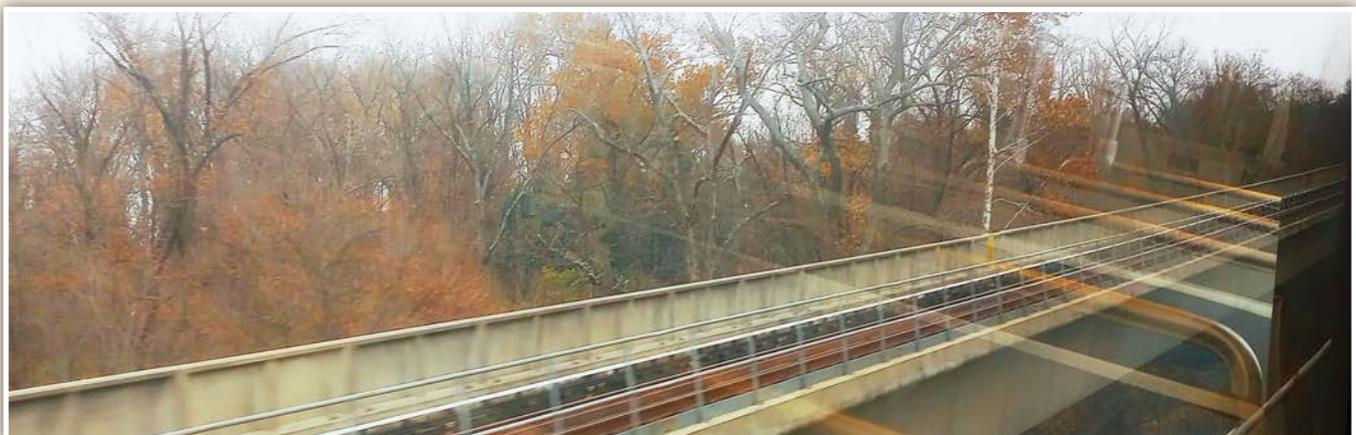
- Yard Interlocking Inspection Observation (West Falls Church Yard)

◆ July 22, 2025

- Bridge Inspection Observation (Silver Spring – Colesville Road)

◆ July 24, 2025

- RWP Level 4 Training Observation (Carmen Turner Facility)



Appendix C

Appendix C: Documents Reviewed

ORGANIZATIONAL CHARTS AND DEPARTMENT RESPONSIBILITIES:

- Roadway Worker Protection Instructor Organization Chart (05/12/2025)
- Safety Department Operating Practices Organization Chart (05/19/2025)
- Structures Training Responsibility List (no date)
- Technical Training Department Employee List (no date)
- Technical Training Department Organizational Chart (05/19/2025)
- Technical Training Department Roles and Responsibilities (no date)
- Track and Structures Department Employee List (05/01/2025)
- Track and Structures Department Organizational Chart (05/19/2025)
- Track and Structures Department Roles and Responsibilities (no date)
- Track Training Responsibility List (no date)

PROCEDURES/POLICIES/MANUALS/FORMS:

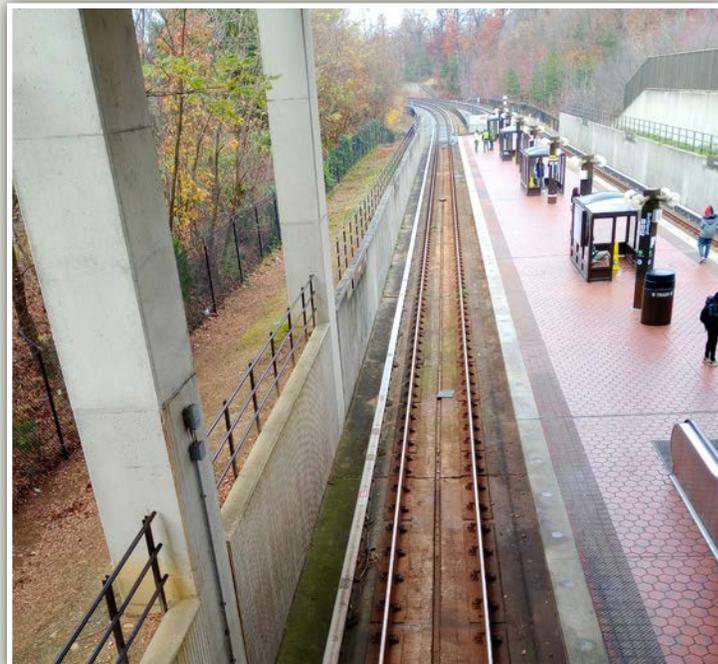
- Advanced Tie Plate Inserter 944593 Operator's Manual (11/2022)
- Aspen Aerials Bridge Access Unit Operating Instructions (05/23/2018)
- APTA Rail Transit Fixed Structures Inspection and Maintenance Standard (10/06/2016)
- Delcer/Flat Car DI-40 Operator Guide (10/2022)
- Dual Clip Applicator 944585 Operator's Manual (08/2022)
- FM-M-01, Hot Work Program Manual (04/2021)
- Geismar Hydraulic Rail Bender Operation and Maintenance Instructions (no date)
- Geismar Loader KGT-4RS Use and Maintenance Handbook (02/2010)
- Harsco Track Technologies Utility Track Vehicle-Aerial Lift Operation and Maintenance Manual (09/2003)
- Hydraulic Tamper Operator's Manual (07/2006)

- INFR-TRST-TE-WITK-708, TGV Defect Review (08/01/2024)
- KTC2000 Tie Crane Operations/Parts Manual (10/18/2016)
- Memorandum on Policy, Guide, and Procedures to Roadway/Wayside Worker Protection from PFAC (06/06/2025)
- Metro 4x4 Operation Manual (07/24/2014)
- Metro Integrated Command and Communications (MICC) Annual Observation Form (12/16/2024)
- Metrorail Operating Rulebook (10/1/2024)
- MMU-1000 Operation and Technical Manual (no date)
- Model 181+1 Swingloader Operation Manual (9/22/2021)
- Model 44-2 Rotary Scarifier Operation and Maintenance Manual (08/30/2012)
- P/I 10.3/8, Electronic Device Policy (12/20/2023)
- PO-25-01, Third Rail Electrical Safety Rules (07/01/2025)
- PO-25-07, Automatic Train Control (04/13/2025)
- PO-25-08, Single Track Operations (04/13/2025)
- PO-25-10, Advanced Mobile Flagging (04/13/2025)
- R210W-9 Operator and Maintenance Training (04/01/2010)
- RWP Classroom Compliance Check (04/15/2025)
- RWP Folder Checklist (04/07/2025)
- RWP Instructor Track Audit Information Form (12/16/2024)



**PROCEDURES/POLICIES/MANUALS/FORMS:
(CONTINUED)**

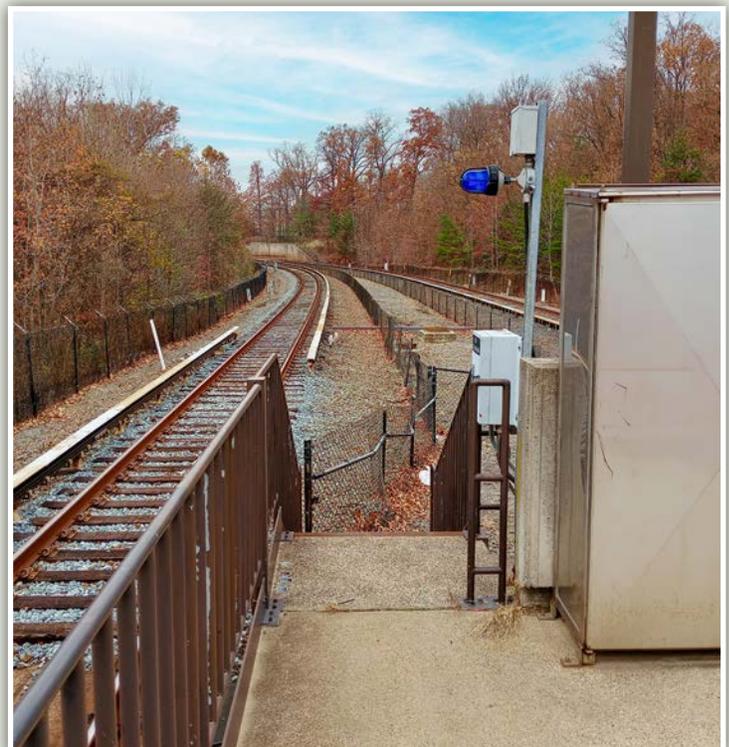
- RWP Student Track Safety Equipment Familiarization Sheet (04/07/2025)
- SARE-05-0007, Roadway Worker Protection Training SOP (04/18/2025)
- SARE-05-0016, Continuity of Operations Plan (COOP) (12/05/2024)
- SE-WI-41, Reinforced Concrete Repair (07/25/2024)
- SE-WI-42, Track Bed Cleaning (07/23/2024)
- SE-WI-43, Replacement of Grout Pads – Bottom-Up Construction (02/20/2025)
- SE-WI-44, Typical Leak Repair (06/25/2024)
- SOP 108-02, Document Control Procedure (06/07/2023)
- SOP 114-01, Track Geometry Vehicle Operations (03/22/2024)
- SOP 114-02, Structures Inspection Procedures (07/01/2024)
- SOP 121-00, Vehicle and Track Working Group Information Sharing (01/16/2024)
- SOP 121-01, Track Asset Condition Data Management (01/25/2024)
- SOP 121-05, Track Geometry Vehicle Data Management (05/15/2024)
- SOP-121-10, Document Control (03/22/2024)
- SOP 121-11, Rail Grinding Procedure (03/20/2024)
- SOP 121-13, Tamping and Surfacing Needs, Analysis, and Planning (03/19/2024)
- SOP 121-14, VERSE and Destressing Program (01/18/2024)
- SOP 208-03, Ultrasonic Testing of Rail Field Welds (07/20/2023)
- SOP 208-04, Track Inspection Procedures (03/07/2025)
- SOP 208-05, Equipment Calibration Procedure (01/10/2025)
- SOP 208-06, Heat Ride Inspection Procedures (11/16/2023)
- SOP 208-09, Rail Lubricator Preventive Maintenance (PMI) and Inspection Procedure (11/14/2023)



- SOP 208-15, Office of Track and Structures Maintenance Quality Control Procedures (08/23/2024)
- SOP 208-18, Track Bed Cleaning Preventive Maintenance (PM) Procedure (08/09/2024)
- SOP 208-19, Quality Control of Track Inspections (03/07/2025)
- SOP 208-20, Controls of Contracting Procedure (02/14/2025)
- SOP 208-21, Station Track Bed Cleaning Procedure (02/03/2025)
- SOP 208-23, Safety Risk Management Procedure (03/20/2024)
- SOP 2710-3-01/02, Contractor Roadway Worker Protection Training (02/12/2024)
- SOP 4800-03-01/00, Rail Safety Standards Committee Operations (07/01/2022)
- Speed Swing 441-D/445 Operator's Manual (no date)
- STM Switch Tamping Machine Operation and Service Manual (05/2014)
- String-Line Kit Instruction Manual (no date)
- Track and Structures Maintenance Bulletins (09/2016 to 04/2025)
- Track Geometry Vehicle EM-100U Operator's Manual (3/26/2013)

**PROCEDURES/POLICIES/MANUALS/FORMS:
(CONTINUED)**

- Track Stabilizer Dual Cab with Tunnel Scanner Operations and Maintenance Manual (03/2006)
- TRPM-SOP06-00, TRPM Equipment Calibration Process (05/20/2022)
- TRST-1000 Volume 1, Track Inspection and Safety Standards (05/2024)
- TRST 1000, Volume 2, Track Maintenance Standards (01/2025)
- TRST-2000, Maintenance Control Plan (06/28/2023)
- TRST-SMI-SIM, Structural Inspection Manual (09/27/2021)
- TRST-TMI-AMLPL, Asset Management Lifecycle Plan (01/31/2023)
- Utility Track Vehicle 354C Operation and Service Manual (12/2013)
- Utility Track Vehicle Drain Cleaner Operation and Service Manual (03/2023)
- Vacall Operator and Safety Manual (11/20/2009)
- VM170-W Operation Manual (no date)
- WITK-700.3.1, CWR Rail Installation on Direct Fixation and Ballasted Track (02/06/2025)
- WITK-700.4.3, Destressing of Existing CWR (07/29/2024)
- WITK-700.4.5, Destressing Pull-Aparts or In-Track rail Break Gaps-Thermite Welds (07/29/2024)
- WITK-700.4.8, Vertical Restraining Rail Replacement (12/16/2024)
- WITK-700.5.1, Thermite Welding of Running Rail (10/17/2024)
- WITK-701.1, Torque Studs and Clip Bolts on Direct Fixation Track (07/29/2024)
- WITK-701.2, Stud Replacement Core Drilling and Setting of New Anchor Studs on Direct Fixation Track (12/12/2024)
- WITK-701.3.2, New Anchor Stud Locations Rock Drilling on Direct Fixation Track (12/12/2024)
- WITK-702.2, Spot Wood Crosstie Renewal (03/10/2025)
- WITK-702.3, Handling of Concrete Ties (10/11/2024)
- WITK-702.4, Repairing of Concrete Ties (09/23/2024)
- WITK-701.4.1, Fastener Replacement on Direct Fixation Track-Anchor Studs or Concrete Inserts (10/01/2024)
- WITK-703.1, Replacement/Installation of Third Rail Coverboards and Brackets (02/14/2025)
- WITK-703.2, Mounting and Dismounting of Hi-Rail Vehicles (11/20/2024)
- WITK-703.4, Replacement of Contact Rail Insulators DF (Fiberglass) (09/09/2024)
- WITK-703.6, Cadweld 150 lb. Contact Rail Splices on Direct Fixation Track or Wood Ties (07/29/2024)
- WITK-703.7, Spot Contact Rail Replacement (07/29/2024)
- WITK-703.8, Temporary and Final Repairs of 150 lb. Contact Rail Breaks (07/29/2024)
- WITK-703.9, Replacement/Installation of Contact Rail End Approach (07/31/2024)
- WITK-704.2.1, Stock Rail Installation on Ballasted Track (09/23/2024)
- WITK-704.3, Complete Turnout Replacement/Installation on Ballast (10/03/2024)



PROCEDURES/POLICIES/MANUALS/FORMS: (CONTINUED)

- WITK-704.4, Complete Turnout Replacement/Installation on Direct Fixation (10/11/2024)
- WITK-704.5, Guidelines and Procedures for Repairing Worn RBM Frogs (01/09/2024)
- WITK-704.6, Frog Replacement/Installation Ballast (Standard Joints) (09/23/2024)
- WITK-704.7 Replacement/Installation Switch Point Rail Ballasted Track (09/23/2024)
- WITK-704.8, Switch Point and Stock Rail Installation on Ballast Track (10/17/2024)
- WITK-705.1, Spot Line and Surface Ballast (12/12/2024)
- WITK-705.3, Line Surface and Ballast Regulating (07/31/2024)
- WITK-705.4, Correction of Ballast Mud Spot Conditions Ballasted Track (12/18/2024)
- WITK-707.1, Emergency Guarded Rail Replacement Ballasted Track (09/24/2024)
- WITK-707.2, Emergency Guard Rail Replacement Direct Fixation Track (12/18/2024)
- WITK-707.3, Sliding Derail Replacement Ballast Track (09/27/2024)
- WITK-707.4, Sliding/Hinged Derail Replacement Direct Fixation Track (07/30/2024)
- WITK-708.1, Thermal Data Review (01/02/2025)
- WITK-709, Track Parts Review Process (01/02/2025)
- WMATA 181TC Operators Manual (no date)
- WMATA Personal Protective Equipment Guide (01/09/2023)
- WMATA UTV Bridge Crane Manual (02/2023)
- WMATA UTV Drain Cleaner Instructor Manual (no date)
- Zim-Mixer Operation and Service Manual (no date)

TRAINING:

- Advanced Mobile Flagger Exercises 1 - 6 (no date)
- Advanced Track Repair Training Exam (no date)
- Basic Rigging Course Quiz (12/2022)
- Basic Rigging Training Instructor Guide (no date)



- Bridge Inspector's Reference Manual (12/2012)
- Contractor Roadway Worker Protection Schedule (2020 to 2025)
- Corrosion Training Presentation (no date)
- Employee RWP Training Status (01/2022 to 03/2023)
- Employee Training Master Tracker (no date)
- Equipment Operator Recertification Rosters (04/2025)
- Initial Track Inspections Training Lesson Plan (no date)
- Initial Track Inspector Training Module 6 Agenda (no date)
- Initial Track Repair Course Instructor Guide (no date)
- Initial Track Repair Course Lesson Plan (no date)
- Initial Track Repair Course Student Guide (08/2023)
- Initial Track Repair Course Syllabus (04/2022)
- Initial Track Repair Course Training Presentation (01/2024)
- Instructor Trainee/T-3 Candidate Evaluation Checklists (11/2024 to 03/2025)
- Introduction to Non-Destructive Testing Lesson Plan (no date)
- Introduction to Non-Destructive Testing Training Presentation (11/2020)
- Introduction to Poured Joint Seal Replacement Training Student Guide (07/15/2021)

TRAINING: (CONTINUED)

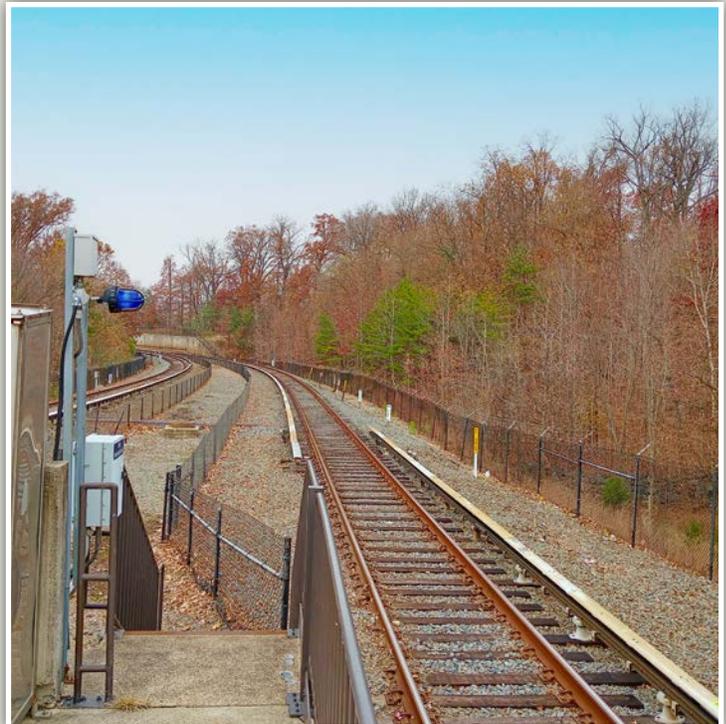
- Introduction to Structural Evaluation Technician Course Syllabus (01/2024)
- Introduction to Structural Evaluation Technician Training Lesson Plan (01/2024)
- Introduction to Structural Evaluation Technician Training Student Guide (08/2020)
- Introduction to Structural Evaluation Technician Training Presentation (01/2024)
- Introduction to Track Charts Class Lesson Plan (no date)
- Introduction to Track Charts Presentation (10/2024)
- Introduction to Track Charts Training Syllabus (no date)
- Module 1-1: General Information Training Materials (no date)
- Module 1-2: Track Inspector Responsibilities Training Materials (no date)
- Module 1-3: Track Terminology Training Materials (no date)
- Module 1-4: Inspection Training Materials (no date)
- Module 1-4a: Inspections General Guidance Training Materials (no date)



- Module 1-4b: Track Inspectors Tools Training Materials (no date)
- Module 1-5: Speed Restrictions Training Materials (no date)
- Module 1-6: Where Inspections are Conducted Training Materials (no date)
- Module 1-7: Types of Inspections Training Materials (no date)
- Module 1-8: Track Inspection Checklist Training Materials (no date)
- Module 1-9: Basic Track Training Materials (no date)
- Module 1-10: Vehicle Track Interaction Training Materials (no date)
- Module 1-11: Special Trackwork Training Materials (no date)
- Module 1-12: Module 1 Review Training Materials (no date)
- Module 2-1: Track Geometry General Training Materials (no date)
- Module 2-2: Inspection Techniques Training Materials (no date)
- Module 2-3a: Track Geometry Parameters Training Materials (no date)
- Module 2-3b: Track Geometry Parameters Surface Training Materials (no date)
- Module 2-3c: Geometry Parameters Alignment Training Materials (no date)
- Module 2-4: Module 2 Review Training Materials (no date)
- Module 3-1: Turnouts General Training Materials (no date)
- Module 3-2: Switch Inspection Standards Training Materials (no date)
- Module 3-3: Frog Inspections Training Materials (no date)
- Module 3-4: Module 3 Review Training Materials (no date)
- Module 4-1: Rail Inspection Training Materials (no date)
- Module 4-2: Rail Manufacturing Training Materials (no date)
- Module 4-3: Rail Identification Training Materials (no date)
- Module 4-4: Rail Defect Development Training Materials (no date)
- Module 4-5: Rail Defects Training Materials (no date)

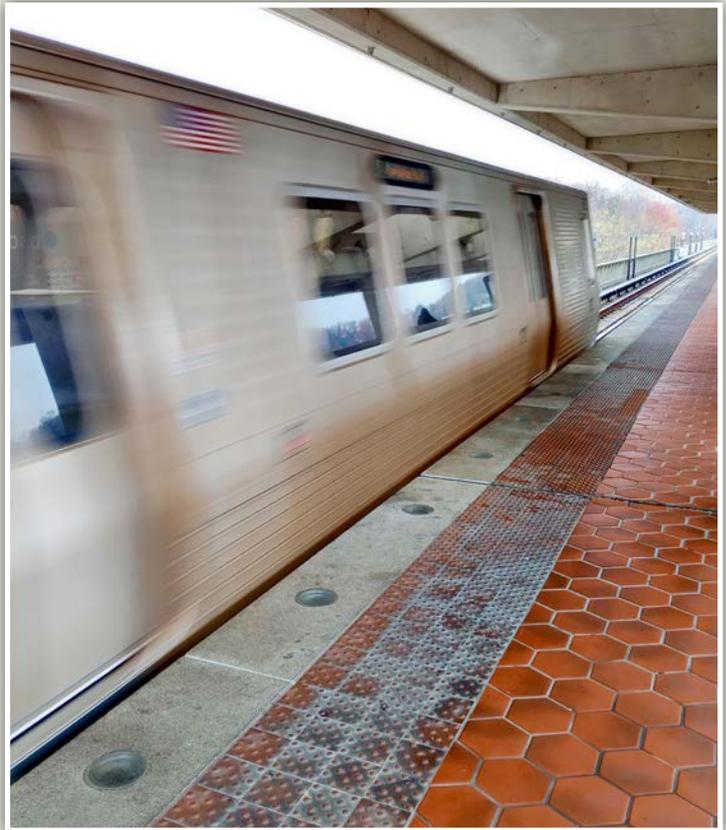
TRAINING: (CONTINUED)

- Module 4-6: Rail Wear Training Materials (no date)
- Module 4-7: Restraining Rail and Emergency Guard Rails Training Materials (no date)
- Module 4-8: Rail Joints Training Materials (no date)
- Module 4-9: Heat Countermeasures Program Training Materials (no date)
- Module 4-10: Module 4 Review Training Materials (no date)
- Module 5-1: Crossties, Fasteners, Anchors, Roadbed, Ballast, and Drainage Training Materials (no date)
- Module 5-2: Grout Pads Training Materials (no date)
- Module 5-3: Rail Fastening System Training Materials (no date)
- Module 5-4: Ballast Training Materials (no date)
- Module 5-5: Drainage Training Materials (no date)
- Module 5-6: Track Appliances Training Materials (no date)
- Module 5-7: Contact Rail Training Materials (no date)
- Module 5-8: Right of Way Training Materials (no date)
- Module 5-9: Module 5 Review Training Materials (no date)
- OPMS Training Course Syllabus (03/2021)
- Rail Defects, Rail Joints, Third Rail Workshop (no date)
- Replacement/Installation of Contact Rail End Approach Training Presentation (01/2024)
- Required Training for TRST Training Instructors List (no date)
- Rigger's Capacity Card (no date)
- Rigging Lesson Plan (no date)
- Rigging Practical Check Sheet (no date)
- Rigging Student Manual (no date)
- Rigging Training Presentation (03/2017)
- Roadway Worker in Charge Facilitator Guide (04/13/2025)
- Roadway Worker in Charge Student Guide (04/13/2025)
- Roadway Worker Protection Level 1 & 2 Training Facilitator Workbook (04/13/2025)
- Roadway Worker Protection Level 1 & 2 Training Student Workbook (04/13/2025)
- Roadway Worker Protection Level 1 Training Syllabus and Lesson Plan (04/13/2025)
- Roadway Worker Protection Training Level 1 & 2 Restricted Access and Limited Access Day 1 Presentation (04/13/2025)
- Roadway Worker Protection Training Level 2 Requalification Limited Access Presentation (04/13/2025)
- Roadway Worker Protection Training Level 2 Limited Access Day 2 Presentation (no date)
- Roadway Worker Protection Training Level 2 Syllabus and Lesson Plan (04/13/2025)
- Roadway Worker Protection Training Level 4 Requalification Syllabus and Lesson Plan (04/13/2025)
- Roadway Worker Protection Training Level 4 Roadway Worker in Charge (RWIC) Initial Training Presentation (04/13/2025)
- Roadway Worker Protection Level 4 Assessment 1 (5/21/2025)
- Roadway Worker Protection Level 4 Assessment 2 (5/21/2025)
- Roadway Worker Protection Level 4 CBT Script (no date)
- Roadway Worker Protection Level 4 Course Overview (04/13/2025)



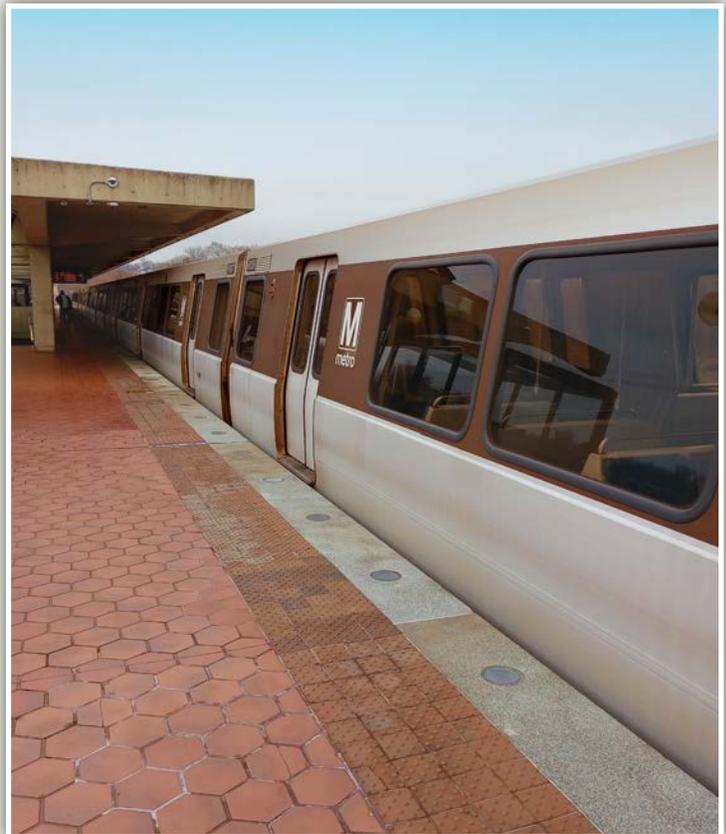
TRAINING: (CONTINUED)

- Roadway Worker Protection Level 4 On the Job (OJT) Checklist (03/01/2024)
- Roadway Worker Protection Training Course Evaluation (04/07/2025)
- Roadway Worker Protection Training Level 1 Test (04/13/2025)
- Roadway Worker Protection Training Level 4 Roadway Worker in Charge (RWIC) Requalification Training Presentation (04/13/2025)
- RWP Cardinal Rules CBT (05/21/2025)
- RWP Cardinal Rules CBT Assessment (no date)
- RWP Certification Tracker (05/01/2025)
- RWP Classroom Compliance Check (04/15/2025)
- RWP Folder Checklist (04/07/2025)
- RWP Initial Level 4 OJT Training Records (11/2024 to 04/2025)
- RWP Instructor Feedback Forms (11/2024 to 04/2025)
- RWP Instructor Track Audit Information Form (12/16/2024)
- RWP June/July 2025 Class Schedule (06/18/2025)
- RWP Level 1 and 2 Cardinal Rules Test Version A (04/13/2025)
- RWP Level 1 CBT Script (no date)
- RWP Level 2 CBT Script (no date)
- RWP Level 2 General Knowledge Assessment (no date)
- RWP Level 2 and 4 Training Records (11/2024 to 4/2025)
- RWP Level 4 Initial Training Practical Student Scenario AMF #1 through #4 (no date)
- RWP Level 4 Initial Training Practical Student Scenario ETO #1 through #5 (no date)
- RWP Level 4 Initial Training Practical Student Scenario IT #1 through #4 (no date)
- RWP Level 4 Initial Training Roadway Worker in Charge Practical Exercise Evaluation Form (04/07/2025)
- RWP Level 4 OJT Checklists (11/2024 to 04/2025)
- RWP Re-Test Form (no date)
- RWP Student Track Safety Equipment Familiarization Sheet (04/07/2025)
- RWP Track Audit Information Forms (03/2024)
- Safety Inspection of In-Service Bridges Course Outline (no date)
- STRC Fence Repair Training Presentation (10/2021)
- String-Line and Combination Gauge Course Lesson Plan (no date)
- String-Line (Speedliner) and Combination Gauge Class Student Guide (05/2020)
- String-Line (Speedliner) and Combination Gauge Class Training Presentation (05/2020)
- Structural Evaluation Technician Familiarization Lesson Plan (no date)
- Structural Evaluation Technician Final Exam (no date)
- Structural Inspection Manual (12/05/2019)
- Switch Rods Adjustment and Installation Training Presentation (01/06/2020)
- Thermit Welding Golden Rules Worksheet (no date)
- Third Rail Gauging Course Syllabus (no date)
- Third Rail Gauging Lesson Plan (04/2024)



TRAINING: (CONTINUED)

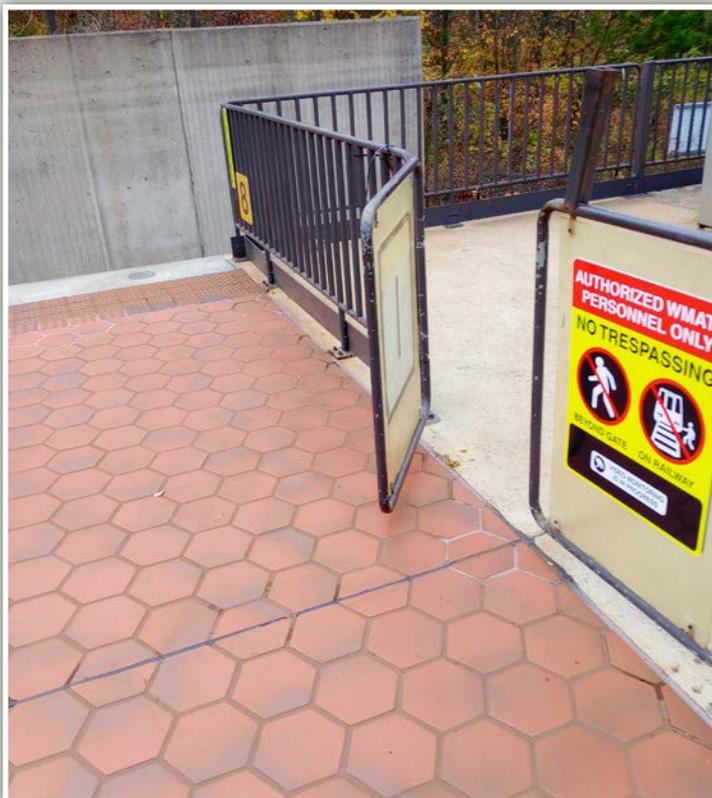
- Tie Removal, Rail Drill, and Rail Saw Practical Evaluation Sheet (04/2022)
- Track and Structure Workshop Worksheet (no date)
- Track Inspection String-Line Evaluation Form (no date)
- Track Inspections Recertification Syllabus and Lesson Plan (no date)
- Track Inspections Recertification Training Presentation (01/20/2024)
- Track Laborer Course Syllabus (no date)
- Track Laborer Course Training Presentation (08/2023)
- Track Laborer Refresher Lesson Plan (no date)
- Track Repair Exam (04/2022)
- Track String-line and Combination Gage Course Syllabus (no date)
- Track Supervisor and Track Inspector String-Line Practical (no date)
- Training Dismissal Form (no date)
- TRST 1000 Volume 3, Supplemental Track Concepts Manual (05/18/2022)
- TRST Training Matrix (no date)
- VERSE Condition Product Information Sheet (no date)
- VERSE Method of Stress Free Temperature (SFT) Measurement Guide (no date)
- Vortok VERSE Kit Operation Training Presentation (2017)
- Vortok VERSE Training Syllabus (no date)
- Vortok VERSE User Guide (2017)
- Welder Training Certificates (10/2024 to 11/2024)
- Welding Procedures Guide (no date)
- Welding Training Presentation (no date)
- WMATA Contractor Roadway Worker Protection Fundamental Rules Test Version 1 (Spanish) (10/07/2024)
- WMATA Contractor Roadway Worker Protection Fundamental Rules Test Version 2 (Spanish) (10/07/2024)
- WMATA Contractor Roadway Worker Protection General Information Test Version 1 (Spanish) (10/07/2024)
- WMATA Contractor Roadway Worker Protection General Information Test Version 2 (Spanish) (10/08/2024)



- WMATA Contractor Roadway Worker Protection Training General Knowledge Test Version 1 (10/07/2024)
- WMATA Contractor Roadway Worker Protection Training General Knowledge Test Version 2 (10/08/2024)
- WMATA Contractor Roadway Worker Protection Participant Guide (no date)
- WMATA Contractor Roadway Worker Protection Participant Guide (Spanish) (no date)
- WMATA Contractor Roadway Worker Protection Training Cardinal Rules Test - Version 1 (10/07/2024)
- WMATA Contractor Roadway Worker Protection Training Cardinal Rules Test - Version 2 (10/07/2024)
- WMATA Contractor Roadway Worker Protection Training Facilitator Guide (no date)
- WMATA Contractor Roadway Worker Protection Training Presentation (no date)
- WMATA Contractor Roadway Worker Protection Training Presentation (Spanish) (no date)
- WMATA Schematic Layout of Yard Lead Tracks and Adjoining Sections (no date)

INSPECTION AND MAINTENANCE:

- Alexandria Track Maintenance Division Track Rights Schedule (06/2025 to 07/2025)
- Electrical Gloves Inventory Tracker (04/2025)
- GOTRS Track Rights Requests (06/2025)
- Inspector's Daily Reports (02/2025 to 03/2025)
- Memorandum on Equipment Calibration Report Forms from PFAC (06/06/2025)
- Metro Integrated Command and Communications Center (MICC) Annual Observation Forms (11/2024 to 04/2025)
- Open Defect Tracker (04/30/2025)
- Power Glove Inventory Tracker (04/2025)
- Power Matcon Equipment Calibration Tracker (06/2025)
- Quality Assurance Field Review Checklist (04/2023 to 03/2025)
- Quality Assurance Report Review Checklists (11/2023 to 04/2025)
- Quality Control Checks Tracker (04/2024 to 04/2025)
- RBIR/STRC WSAD Monthly Tracker (02/2025 to 03/2025)



- Recurring Geometry Defect List (04/30/2025)
- Structural Inspections Schedule and Status Tracker (04/2023 to 04/2025)
- Third Rail WSAD Calibration Tracker (no date)
- Torque Machine Calibration Tracker (no date)
- Track and Structures Reliability Trend Performance Analysis (01/2023 to 04/2025)
- Track Maintenance and Infrastructure Quality Control Check Forms (09/2024 to 11/2024)
- TRST Preventive Maintenance List (05/07/2025)
- TRST Scheduled Training (06/2025 to 07/2025)
- TRST Work Order Tracker (05/07/2025)
- WMATA Tunnel Conditions (no date)
- WSAD Calibration Forecasts (01/2025 to 03/2025)
- WSAD Calibration Report (05/30/2025)

INTERNAL REVIEWS:

- Internal Safety Review, Structures Maintenance and Inspection (08/04/2022)
- Internal Safety Review, Track Maintenance and Inspections: Office for Track and Structure (02/28/2022)
- Internal Safety Review, Work Planning and Maintenance Improvements (02/07/2024)
- Overview of Internal Corrective and Preventive Actions (05/16/2025)
- QICO-I-ETS-23-02, Internal Corrective and Preventive Action (no date)
- QICO-I-ETS-23-03, Internal Corrective and Preventive Action (no date)
- QICO-I-WPMI-24-01, Internal Corrective and Preventive Action (no date)
- QICO-I-WPMI-24-02, Internal Corrective and Preventive Action (no date)
- QICO-I-WPMI-24-03, Internal Corrective and Preventive Action (no date)
- QICO-I-WPMI-24-04, Internal Corrective and Preventive Action (no date)
- QICO-OPMS-21-01, Internal Corrective and Preventive Action (no date)

INTERNAL REVIEWS: (CONTINUED)

- QICO-RCTR-25-01, Internal Corrective and Preventive Action (no date)
- QICO-TRMN-22-01, Internal Corrective and Preventive Action (no date)
- QICO-TRMN-22-02, Internal Corrective and Preventive Action (no date)
- QICO-TRMN-22-03, Internal Corrective and Preventive Action (no date)
- QICO-TRMN-22-04, Internal Corrective and Preventive Action (no date)
- QICO-STRC-22-01, Internal Corrective and Preventive Action (no date)
- QICO-STRC-22-02, Internal Corrective and Preventive Action (no date)
- QICO-STRC-22-03, Internal Corrective and Preventive Action (no date)
- QICO-STRC-22-04, Internal Corrective and Preventive Action (no date)
- QICO-STRC-22-05, Internal Corrective and Preventive Action (no date)

MEETINGS:

- Track and Structure Department Safety Committee (DSC) Meeting Agenda and Minutes (03/2024 to 04/2025)
- Structural Evaluation Technician Schedule Planning Meeting Notes (10/03/2019)

CAPITAL PLANNING:

- Capital Project Status Tracker (04/17/2025)

OTHER DOCUMENTS:

- Memorandum on Good Faith Challenge Forms (05/14/2025)
- Memorandum on Roadway/Wayside Protection Hazard Log from PFAC (06/06/2025)
- Potomac Construction Lift Plan (10/2024)
- Reported Exceptions List (01/2023 to 04/2025)
- Structures Maintenance Department Contracts (07/08/2025)
- Track Pollution Control Project Scope (no date)
- TRST Audit Interview Schedule (06/18/2025)
- TRST Metro Hazard Report (05/28/2025)
- WMATA Roadway Job Safety Briefing Forms (02/2025 to 03/2025)



Appendix D

Appendix D: PTSAP Elements

1. General Requirements

- a. Transit Agency Information
- d. Safety Performance Targets (including Safety Performance Target Setting Methodology and Timeline, Safety Performance Targets, and System Reliability Targets)
- f. Development and Implementation of a Safety Management System (SMS)

2. Safety Management Policy

- a. Safety Management Policy Statement
- b. Employee Safety Reporting Program
- c. Communication of the Safety Management Policy
- d. Necessary Authorities, Accountabilities, and Responsibilities (including Accountable Executive, SMS Executive, Agency Leadership and Executive Management, Key Staff, and Safety Committees)

3. Safety Risk Management

- a. Safety Risk Management (SRM) Process (including Safety Hazard Identification, Safety Risk Assessment, and Safety Risk Mitigation)
- b. Ongoing Management of Safety Risk (including Occupational Safety and Health Risk Management, Operational Safety Risk Management, Safety Certification, and Environmental Risk Management)

4. Safety Assurance

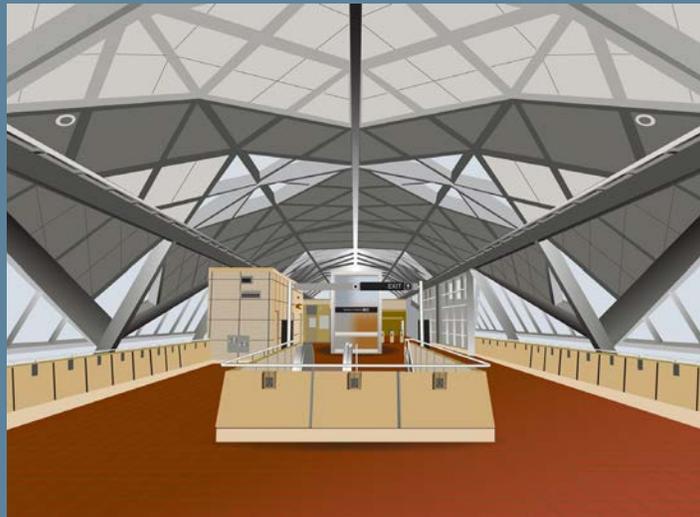
- a. Safety Performance Monitoring and Measurement (including Monitoring Operations and Maintenance Procedures, Monitoring of Operational Risk Mitigations, Safety Investigations, Information Monitoring, and Emergency Risk Management)
- b. Management of Change
- c. Continuous Improvement
- d. Corrective Action Plans

5. Safety Promotion

- a. Competencies and Training (including Employee Safety Training, Safety Rules and Procedures Training, Contractor Safety, Training Recordkeeping, Compliance with Training Requirements, and SMS-specific Training Requirements)
- b. Safety Communication (including Direct Staff Communication, Hazard and Safety Risk Information, and Employee Safety Reporting Program Engagement)

6. Documentation





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