



WMSC Commissioner Brief: W-0164 – Improper Roadway Worker Protection – Orange Line – January 29, 2022

Prepared for Washington Metrorail Safety Commission meeting on May 24, 2022

Safety event summary:

A Metrorail retaining wall inspection crew traversed a “red hot spot” on the Orange Line without the required roadway worker protection necessary to assure their safety from oncoming trains.

The crew on the roadway was comprised of an inspector serving as the Roadway Worker In-Charge (RWIC), another Inspector, and an individual designated as the Watchman/Lookout. The crew had an Advanced Mobile Flagger (AMF) properly positioned at the station platform to inform Train Operators that a mobile work crew was walking toward their trains.

After completing one segment of the walk, the crew got permission from the Rail Operations Control Center (ROCC) to continue from Cheverly Station to Landover Station. This segment includes a “Blind Spot: Curve” from chain marker D2 457+00 to chain marker D2 473+00 in Metrorail’s Track Access Guide. This designation as a red hot spot means that crews are required to have foul time protection to traverse the area. Foul time protection is a form of protection where train traffic is stopped until the work crew has confirmed that they have reached a place of safety. Review of the roadway job safety briefing form for this work crew demonstrates that the crew had recorded and signed off on the incorrect hot spot information for this segment. The information recorded included the chain markers for the related hot spot on the opposite track. The crew had not fully completed the chain marker information, as the form listed only the chain marker numbers 480+00-468+00 and did not list the line and track identifier D1 that would have served as an additional indication (besides the order of the chain marker numbers being opposite the crew’s direction of travel) that the hot spot on the form was not correct. No member of the crew identified and communicated this issue.

This work crew did not request or receive foul time at any point in this segment. The crew also did not visually identify this hot spot while walking through it. The RWIC reported to the ROCC that they had safely reached Landover Station and were done with their inspections for the day. A few minutes later, the ROCC Radio Controller realized that the crew must have passed through the hot spot without requesting foul time, and reported the improper roadway worker protection event.

Data system playback shows that two trains passed the hot spot location during the time the crew was walking in this segment. The crew had sufficient time from receiving permission to enter the roadway to the time that the trains passed the hot spot to have reached the hot spot location. The RWIC reported in an interview that the crew was conducting their inspection while walking in the roadway. Neither train operator reported a near miss. The Watchman/Lookout and other members of the work crew also did not report any safety issues. There were no available Metrorail video or other systems that could confirm the location of the work crew when these trains passed them.

In an investigative interview, the RWIC stated that they were discussing inspection items with the other inspector and therefore forgot to request foul time. The RWIC stated that they were relaxed during the inspection due to the current reduced train frequencies.



Metrorail did not report this event within the required 2-hour notification window. This delay occurred even though the Mission Assurance Coordinator (MAC) in the Rail Operations Control Center who Metrorail has assigned primary responsibilities for this reporting was informed of the event within 30 minutes of the event being identified.

Probable Cause:

The probable cause of this event is a lack of effective physical characteristics training and territory familiarization for roadway workers, including familiarization with specific hot spots in the Track Access Guide. Contributing to this event was the lack of active, effective participation in job safety briefings by members of Metrorail work crews.

Corrective Actions:

Metrorail is developing a safety bulletin focused on the importance of each member of the work crew checking information on the job safety briefing form against their own RWP Quick Access Guide.

WMSC staff observations:

As part of the broad Roadway Worker Protection improvements Metrorail has committed to as a result of other investigation and oversight activities, Metrorail has stated it is revising its roadway job safety briefing form and process. The WMSC notes that this investigation suggests that in addition to the previously identified items, hot spot and similar chain marker locations should clearly be required to be noted with their track and line identifications (e.g., D2 123+00) rather than potentially allowing stand-alone numerical identifications (e.g., 123+00).

The track identification error also suggests deficiencies in Metrorail's physical characteristics training and system familiarization, which Metrorail does not conduct systematically. Metrorail is required to address this training for personnel such as train operators through a Corrective Action Plan (CAP) to address a finding from the Rail Operations Audit (final report April 2022). Metrorail should consider whether there are similar needs for other personnel.

Regardless, the job safety briefing included a noted hot spot requiring foul time and no member of the work crew raised a concern that they were completing their inspection without ever having requested and received foul time. Metrorail should consider additional training and communication, particularly given the RWIC's interview statement that members of the crew typically do not double check one another.



Washington Metro Area Transit Authority
Department of Safety (SAFE)
FINAL REPORT OF INVESTIGATION A&I – E22053

Date of Event:	01/25/2022
Type of Event:	Improper Roadway Worker Protection
Incident Time:	11:38 hours
Location:	Landover Station, Track 2
Time and How received by SAFE:	12:08 hours Mission Assurance Coordinator (MAC)
WMSC Notification Time:	13:43 hours
Responding Safety Officers:	WMATA SAFE: No WMSC: No Other: N/A
Rail Vehicle:	None
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Number	20220126#98071

Landover Station – Improper RWP

January 25, 2022
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Abbreviations and Acronyms

AIMS	Advanced Information Management System
AMF	Advanced Mobile Flagger
ARS	Audio Recording System
CAP	Corrective Action Plan
CCTV	Closed Circuit Television
CM	Chain Marker
FT	Foul Time
MAC	Mission Assurance Coordinator
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
RJSB	Roadway Job Safety Briefing
ROCC	Rail Operations Control Center
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
RWIC	Roadway Worker in Charge
RWP	Roadway Worker Protection
SAFE	Department of Safety
TRST	Office of Track and Structures
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

On Tuesday, January 25, 2022 at approximately 09:02 hours, an Office of Track and Structures (TRST) Roadway Worker in Charge (RWIC) contacted the Rail Operations Control Center (ROCC) to request permission to enter the roadway at Deanwood Station on Track 2 for the purpose of conducting a retaining wall inspection from Deanwood Station to Landover Station. It was a three-member mobile work crew (four members total) including the RWIC, a dedicated Watchman/Lookout, an Inspector, and an AMF. The RWIC informed the Radio Rail Traffic Controller (RTC) that they completed their Roadway Job Safety Briefing (RJSB), identified the red hot spots, and their Advanced Mobile Flagger (AMF) was stationed at Cheverly Station. The RWIC was granted permission to enter the roadway and completed their walk to Cheverly Station without any issues. Once the mobile crew safely arrived at Cheverly Station, the RWIC requested permission to continue the walk from Cheverly Station to Landover Station.

There is one red hot spot location between Cheverly and Landover stations. The Track Access Guide lists the area between Chain Markers (CM) D2 457+00 and 473+00 as a "Blind Spot: Curve." The mobile work crew completed their walk to Landover Station without requesting foul time (FT) at the listed red hot spot location. The Advanced Information Management System (AIMS) showed two trains passed the red hot spot location during the time the mobile crew were conducting their walk from Cheverly to Landover Station. No Near Miss events were reported.

At approximately 11:38 hours, the RWIC contacted the Radio RTC to inform them that the mobile crew was safely on the platform of Landover Station and were done for the day. The Radio RTC gave a 100% repeat back and gave the clearing time. Several minutes later, the Radio RTC observed that the RWIC never contacted them to request FT and attempted to contact the RWIC but was unsuccessful. The Radio RTC then contacted a TRST Supervisor to inform them of the situation. The RWIC was removed from service. There were no reported injuries as a result of this incident.

The probable cause of the Improper Roadway Worker Protection (RWP) event on January 25, 2022 was human factors error due to complacency. The RWIC failed to identify the correct red hot spot location during their RJSB before conducting the retaining wall inspection and then failed to request foul time protection at either area. In addition, no crew member raised a Good Faith Challenge at the RJSB or when traversing the roadway from Cheverly to Landover Station despite a red hot spot being noted on the RJSB form.

Incident Site

Landover Station, CM 457+00 – 473+00, Track 2

Purpose and Scope

Investigative Methods

- Site Assessment through document review.
- Formal Interviews – SAFE interviewed one (1) individual as part of this investigation, including the:
 - RWIC
- Informal Interviews – Collected through conversations with individuals during the investigation to provide background and supporting information.
- Documentation Review – A collection of relevant work history information and process documentation contained in Metro systems of record. These records include:
 - Employee Training Procedures & Records
 - Metro Safety Rules and Procedures handbook (MSRPH)
 - Roadway Worker Protection Quick Access Guide
 - National Oceanic and Atmospheric Administration (NOAA) data
- System Data Recording Review – A collection of information contained in Metro Data Recording Systems. This data includes:

- Audio Recording System (ARS) playback include OPS 2 Radio, MOC TRST - 12082, ROCC-ASST SUPT.- 12063
- Advanced Information Management System (AIMS)

Investigation

On Tuesday, January 25, 2022 at approximately 09:02 hours, a RWIC contacted the ROCC to request permission to enter the roadway at Deanwood Station for the purpose of conducting a retaining wall inspection from Deanwood Station to Landover Station, Track 2. It was a three-member mobile work crew (four members total) including the RWIC, a dedicated Watchman/Lookout, an Inspector, and an AMF. The RWIC informed the Radio RTC that they completed their RJSB, identified the red hot spots, and their AMF was stationed at Cheverly Station. The RWIC was granted permission to enter the roadway and the crew completed their walk to Cheverly Station without any issues. Once the mobile crew arrived at Cheverly Station, the RWIC requested permission to continue the inspection from Cheverly Station to Landover Station.

The RWIC continued their walk to Landover Station without requesting FT at a known red hot spot location. A review of the RJSB revealed that the RWIC noted an incorrect red hot spot location for the inspection area. The RWIC wrote, "D11- D12 blind spot curve 480+00-468+00' on the RJSB form. This red hot spot is located on Track 1. When traveling from Cheverly Station to Landover Station on Track 2, the actual blind spot curve is between CM 457+00 – 473+00. The AMF and Inspector both signed the RJSB form. AIMS playback showed two trains passed the red hot spot location during the time the mobile crew conducted their walk from Cheverly to Landover Station.

At approximately 11:38 hours, the RWIC contacted the Radio RTC to inform them that the mobile crew was safely on the platform of Landover Station and were done for the day. The Radio RTC gave a 100% repeat back and gave the clearing time. The Radio RTC then realized the RWIC never contacted them to request FT and attempted to contact the RWIC via radio but was unsuccessful. The Radio RTC contacted a TRST Supervisor to inform them of the situation. After speaking with the RWIC, the supervisor reported back to the ROCC Operations Manager that the RWIC admitted their error of walking through the red hot spot area without requesting FT. The RWIC was issued a RWP violation for failing to contact the ROCC to request FT to safely clear a known red hot spot location. The RWIC was removed from service. There were no reported injuries as a result of this incident.

Chronological Event Timeline

A review of ARS playback, i.e., phone and radio communications, revealed the following timeline:

Time	Description
09:02 hours	<u>RWIC</u> : Contacted the RTC to request permission to enter the roadway on Track 2 at Deanwood Station to walk from Deanwood Station to Cheverly Station. They were accompanied by two Inspectors and they were using AMF protection. The AMF was stationed at Cheverly Station platform 8-car marker, the safety briefing was conducted, and red hot spots identified. [Radio]
09:02 hours	<u>RTC</u> : Gave 100% repeat back and asked what their assignment was for the day. [Radio]
09:03 hours	<u>RWIC</u> : Responded that they were conducting a fence line inspection. [Radio]
09:03 hours	<u>RTC</u> : Gave 100% repeat back and instructed RWIC to go direct with the AMF to make sure they were in place. AMF confirmation was completed. [Radio]
09:04 hours	<u>RTC</u> : Granted RWIC permission to enter roadway. [Radio]
10:28 hours	<u>RWIC</u> : Contacted the RTC to inform them that they completed their fence inspection from Deanwood Station to Cheverly Station, Track 2. They requested to continue their fence inspection from Cheverly Station to Landover Station and their AMF was at Landover Station, 8-car marker, Track 2. [Radio]
10:28 hours	<u>RTC</u> : Asked the RWIC if they were going to New Carrollton Station or stopping at Landover Station? [Radio]
10:28 hours	<u>RWIC</u> : Informed the RTC that they were stopping at Landover Station. [Radio]
10:30 hours	<u>RTC</u> : Gave RWIC permission to "go direct" with their AMF. [Radio]
10:30 hours	<u>RWIC</u> : Contacted the AMF directly to make sure they were in place. The AMF confirmed they were in place. [Radio]
11:38 hours	<u>RWIC</u> : Contacted the RTC to inform them that all personnel and equipment were clear from Track 2 at Landover Station and they were done for the day. [Radio]
11:38 hours	<u>RTC</u> : Gave a 100% repeat back and asked if they were done for the day. [Radio]
11:38 hours	<u>RWIC</u> : Confirmed they were done for the day. [Radio]
11:41 hours	<u>RTC</u> : Contacted MOC desk to report that they needed to speak with the RWIC. [Phone]
12:00 hours	<u>MOC Desk</u> : Contacted TRST Supervisor to inform them that the ROCC was trying to contact the RWIC. [Phone]
12:04 hours	<u>RWIC</u> : Contacted the ROCC and spoke to the Assistant Operations Manager. The RWIC was informed that they never requested FT during their walk from Cheverly Station to Landover Station and they were being cited for an Improper RWP violation. [Phone]
12:07 hours	<u>Assistant Operations Manager</u> : Contacted a TRST Supervisor to inform them that the RWIC did not call to request FT and a RWP violation would be submitted. [Phone]
12:13 hours	<u>TRST Supervisor</u> : Spoke to ROCC Operations Manager to update them that they talked to the RWIC and they admitted they failed to request FT. The two discussed the next steps and ended the call. [Phone]

****Note:** Times above may vary from other system's timelines based on clock settings

Automated Information Management System (AIMS)



Figure 2: Shows the first train that passed the FT area after the RWIC requested permission to continue the fence inspection.

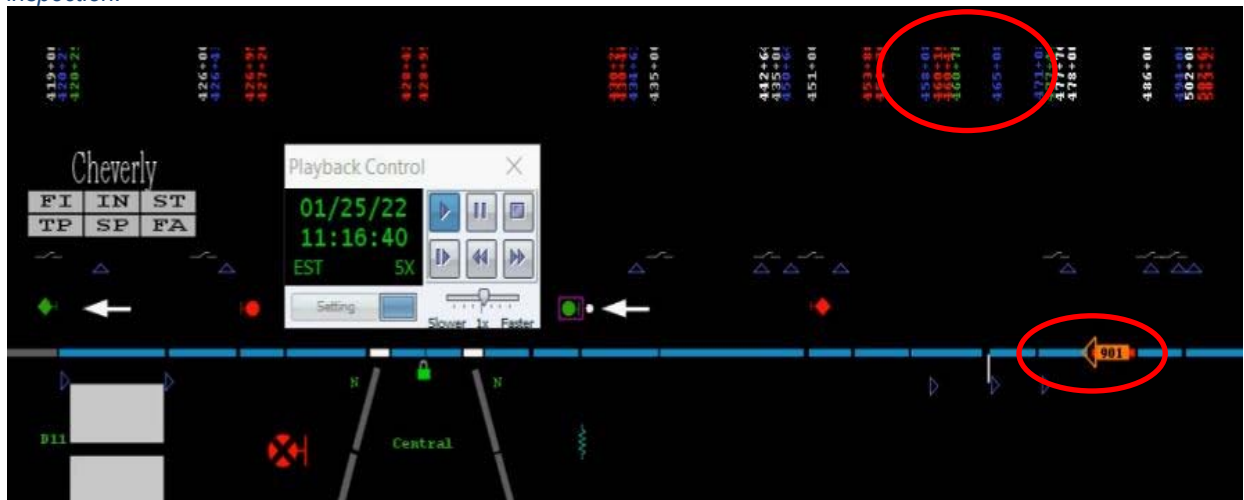


Figure 3: Shows the second train that passed the FT area after the RWIC requested permission to continue the fence inspection.

Interview Findings

During the interview, the RWIC mentioned they completed a RJSB before starting the inspection. The RWIC mentioned employees are trustworthy of one another so they rarely see Good Faith Challenges. The RWIC stated they worked with the same mobile work crew before to complete similar inspections. The RWIC stated they used the RWP Quick Access Guide to identify the red hot spots for their inspection but admitted to writing the incorrect CMs. The RWIC wrote the CMs for the red hot spot, on Track 1, but they were conducting the inspection on Track 2. The RWIC mentioned on this day the mobile crew was walking in the roadway to conduct their inspection. The RWIC stated during inspections, Inspectors may ask questions and/or there may be a defect that they may have different opinions about, so they may have a discussion. The RWIC reported that this was the case on January 25, 2022 and they forgot to request FT. The RWIC stated due to the longer train headways they became relaxed during their inspection. The RWIC did not realize they failed to request FT until they were headed back to the office and received a call informing them the ROCC was trying to contact them.

Weather

On January 25, 2022, at the time of the incident, NOAA recorded the temperature as 48° F, with clear skies throughout the afternoon. Weather was not a contributing factor in this event (Weather source: NOAA) – Location: Washington, DC).

Human Factors

Fatigue

Signs and Symptoms of Fatigue

We evaluated conditions at the time of the incident to distinguish whether evidence of fatigue was present. No video of the involved person was available to ascertain whether evidence of fatigue was present. The RWIC reported feeling moderately alert at the time of the incident. The RWIC reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

We evaluated incident data for fatigue risk factors. No significant risk was identified. The incident time of day did not suggest an increased risk of fatigue-related impairment. The RWIC reported keeping a regular sleep schedule in the days leading up to the incident. The RWIC worked day shift in the days leading up to the incident. The RWIC was awake for 7.63 hours at the time of the incident. The RWIC reported six (6) hours of sleep in the 24 hours preceding the incident. The off-duty period was fifteen and a half hours (15.5) which provides an opportunity for 7-9 hours of sleep. This was a comparable amount of sleep for the employee's usual workday sleep durations. The RWIC reported no issues with sleep.

Post-Incident Toxicology Testing

WMATA's Drug and Alcohol Program determined that the RWIC was not in violation of the Drug and Alcohol Policy and Testing Program 7.7.3/6.

Findings

- The RWIC wrote the CMs for the red hot spot located on Track 1, but their inspection was on Track 2.
- All members of the work crew signed the RJSB. There were no Good Faith Challenges during the RJSB.
- Two trains passed the red hot spot location during the walk from Cheverly Station to Landover Station. No Near Miss events were reported.
- The RWIC reported being “relaxed” during the inspection because there were longer train headways.
- The RWIC reported being distracted from having a discussion with the Inspector about a question and/or defect.

Immediate Mitigation to Prevent Recurrence

- The RWIC was removed from service and taken for post-incident testing.

Probable Cause Statement

The probable cause of the Improper Roadway Worker Protection (RWP) event on January 25, 2022 was human factors error due to complacency. The RWIC failed to identify the correct red hot spot location during their RJSB before conducting the retaining wall inspection and then failed to request foul time protection at either area. In addition, no crew member raised a Good Faith Challenge at the RJSB or when traversing the roadway from Cheverly to Landover Station despite a red hot spot being noted on the RJSB form.

SAFE Recommendations/Corrective Actions

Corrective Action Code	Description	Responsible Party	Due Date
98071_SAFE CAPS_TRST_001	Develop and issue a safety bulletin to reiterate the importance of checking the information on the RJSB form against their own RWP Quick Access Guide (required of each member of the crew).	TRST SRC	6/1/2022

Appendices

Appendix A – Interview Summary

The below narrative summarizes the interview with SAFE and represents the statements made by the involved individual. As such, times and details may present a conflict with the data contained in systems of record and procedural documents.

The RWIC has been a WMATA employee for ten and a half (10.5) years with seven and a half (7.5) of those years as a Structural Evaluation Technician AA. The RWIC stated they felt moderately alert during their retaining wall inspection. The RWIC reported not having any issues with sleep and typically gets six (6) hours of sleep prior to their work shift. The RWIC is certified Roadway Worker Protection (RWP) Level 4 and must recertify in October 2022. The RWIC stated January 25, 2022 was a normal workday and their job assignment was to complete a retaining wall inspection. There were three (3) members of the mobile work crew, the RWIC, Inspector, and AMF. The RWIC stated they worked with the same mobile work crew before to complete similar inspections. The RWIC stated they completed a RJSB before they started the inspection. The RWIC stated they used the RWP Quick Access Guide to identify the red hot spot locations for their inspection. The RWIC admitted that they wrote down the CMs for Track 1, but their inspection was on Track 2. The RWIC mentioned they walked this area before, but it was a few years ago. The RWIC stated the retaining wall is usually within a few feet of the track but it also depends which track you are on. The RWIC mentioned on this day the mobile crew was walking in the roadway to conduct their inspection. The RWIC stated during inspections, Inspectors may ask questions and/or there may be a defect that they may have different opinions about, so they discuss during the inspection. The RWIC admitted this was the case on January 25, 2022 and they completely forgot to request FT. The RWIC did not realize they did not request FT until they received a call informing them that the ROCC was trying to contact them. They called the ROCC and were informed that they did not contact them to request FT to clear the red hot spot on Track 2. The RWIC stated due to the longer train headways they became relaxed during their inspection. The RWIC stated they could have used the mobile crew to remind them just in case they forgot. The RWIC stated most workers are trusting of one another so they typically do not double check.

Appendix B – Roadway Job Safety Briefing Form

Permanent Order # T-21-06

WMATA ROADWAY WORKER JOB SAFETY FORM

DATE: 1-25-22 TRACK TIME ON/OFF: 9:03, 11:38

RWIC NAME: [REDACTED] CALL #: [REDACTED] EMPLOYEE ID #: [REDACTED]

RWIC's CELL PHONE #: [REDACTED] RADIO OPS CHANNEL: 2

SAFETY RULE OF THE DAY:

WORK ASSIGNMENT: fence insp DIRECTION OF TRAFFIC: INBOUND ☐ OUTBOUND ☐

RAIL LINE: A B C D E F G J K L N TRACK #: 1 2 3 WORK LIMITS CM: lean wood to cherry to landover

PLACE OF SAFETY: fence line

TYPE OF PROTECTION(s): IT ☐ ETO AUTHORITY ☐ ETO LOCAL SIGNAL ☐ AMF ☒ FT ☐

REQUEST FROM ROCC: BLOCK CALLS ☐ CANCEL AUTOMATIC SIGNALS ☐ PROHIBIT EXITS ☐

RED HOT SPOT(s) TYPE/LOCATION ☒ RED HOT SPOT HAZARDS ☒ ETS/RADIO OUTAGE ☐

POWER OUTAGE: LOTO: _____ RED TAG: _____ SUPERVISORY: _____ NO POWER OUTAGE: ☒

RED TAG #: _____ RED TAG HOLDER: _____

WATCHMAN/LOOKOUT ASSIGNED: YES ☒ NO ☐ WATCHMAN/LOOKOUT NAME: [REDACTED]

WATCHMAN/LOOKOUT EQUIPPED WITH "W" WARNING DISC, AIR HORN AND WHISTLE, ("W" Warning Disc required for fixed Zones): ☐

FOUL TIME CAN BE REQUESTED IN ALL WORK ZONE CONFIGURATIONS

WATCHMAN/LOOKOUT MUST BE PROPERLY SPACED AND HAVE SUFFICIENT SIGHTING DISTANCE TO PROVIDE AMPLE WARNING

Advanced Mobile Flagger ASSIGNED: YES ☒ NO ☐ AMF CALL #: [REDACTED]

ADVANCE MOBILE FLAGGER EQUIPPED WITH AMBER LANTERNS/E-FLARES, ORANGE FLAG, AIR HORN, WHISTLE, AND RADIO:

PIGGYBACK CREW LEADER CALL #(s): N PIGGYBACK WORKZONE CM(s): N

PIGGY BACK WORK ASSIGNMENT: N

OF CLASS 2 RAIL VEHICLE(s): N CLASS 2 RAIL VEHICLE(s) OPERATING IN THE WORK ZONE: N

ALL ROADWAY WORKERS MUST EXERCISE GOOD JUDGEMENT AND CONSIDER THE FOLLOWING POTENTIAL HAZARDS AND PROCEDURES BEFORE ENTERING THE ROADWAY:

WEATHER CONDITIONS <input checked="" type="checkbox"/>	TRIPPING HAZARDS / UNEVEN WALKING SURFACES <input checked="" type="checkbox"/>
TRACK GRADE AND VISIBILITY <input checked="" type="checkbox"/>	POOR LIGHTING / TUNNEL AND VENT SHAFT(S) <input checked="" type="checkbox"/>
HAZARDS ASSOCIATED WITH RAIL VEHICLE MOVEMENT <input checked="" type="checkbox"/>	TRAIN / CURVE SPEED(S) <input checked="" type="checkbox"/>
WORKSITE CONDITIONS AND ACTIVITIES <input checked="" type="checkbox"/>	ETS BOX(S) LOCATIONS <input checked="" type="checkbox"/>
EMERGENCY PROCEDURES <input checked="" type="checkbox"/>	EQUIPMENT AND TOOL SAFETY <input checked="" type="checkbox"/>
ADJACENT TRACK PROTECTION <input checked="" type="checkbox"/>	ROTATION AND RELIEF PROCEDURES <input checked="" type="checkbox"/>

WSAD CERTIFICATION DUE	WSAD SERIAL #/ASSET ID	WSAD CERTIFICATION DUE	WSAD SERIAL #/ASSET ID

Rev. 4.0 WMATA Roadway Job Safety Briefing Form, Date: March 2021
Permanent Order # T-21-06

Page 2 of 4

Figure 4: Roadway Job Safety Briefing Form completed by the RWIC (Page 1 of 2).

Incident Date: 1/25/22 Time: 11:38 hours
Final Report Rev. 1 – Improper RWP
E22053

Drafted By: SAFE 703: 03/18/2022
Reviewed By: SAFE 71: 03/24/2022
Approved By: SAFE 71: 03/25/2022

Figure 5: Roadway Job Safety Briefing Form completed by the RWIC noting blind spot curve between CM 480+00 to 468+00 (Page 2 of 2).

Appendix C – Roadway Worker Protection Track Access Guide

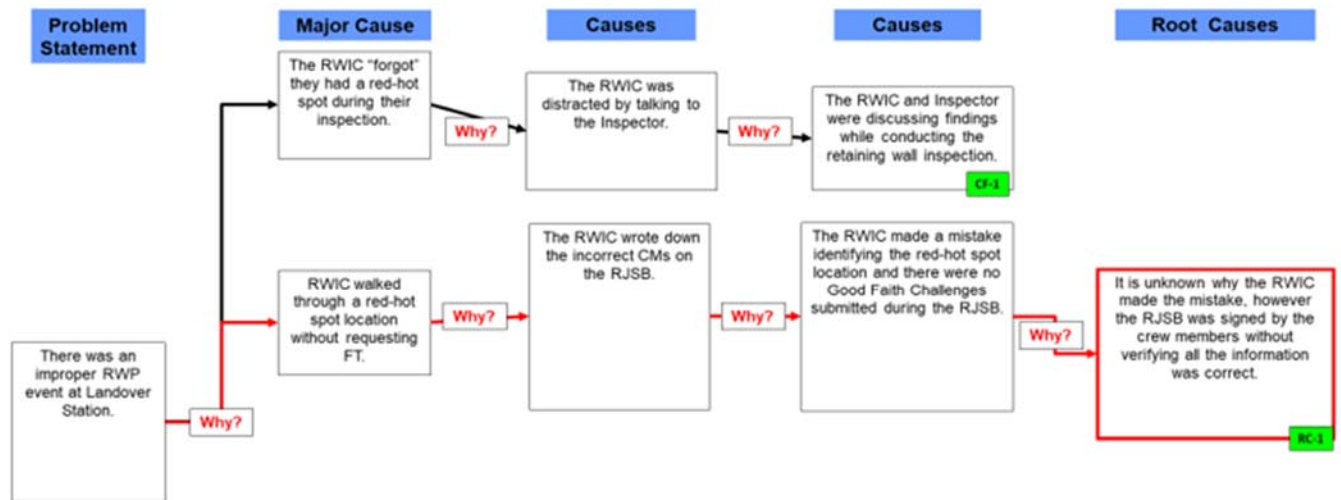
D Line Track 1					
D Line Track 1	Station	Station	Chain Marker	Chain Marker	Notes
New Carrollton Station	D-13	D-13	599+00	593+00	
Clear View: Interlocking	D-12	D-13	593+00	588+00	
Clear View	D-12	D-13	588+00	583+00	
Clear View: Curve	D-12	D-13	583+00	578+00	
Clear View	D-12	D-13	578+00	566+00	
Blind Spot: Aerial	D-12	D-13	566+00	555+00	
Clear View	D-12	D-13	555+00	523+00	
Landover Station	D-12	D-12	523+00	517+00	
Restricted View: Curve	D-11	D-12	517+00	502+00	
Clear View	D-11	D-12	502+00	480+00	
Blind Spot: Curve	D-11	D-12	480+00	468+00	
Restricted View: Curve	D-11	D-12	468+00	443+00	
Clear View	D-11	D-12	443+00	431+00	
Clear View: Interlocking	D-11	D-12	431+00	426+00	
Cheverly Station	D-11	D-11	426+00	420+00	

Figure 6: Track Access Guide showing red hot spot on Track 1 between Cheverly and Landover Station. These chain markers align with RWIC's notation on the RJSB despite performing inspection on Track 2.

D Line Track 2					
Stadium-Armory Station	D-08	D-08	205+00	211+00	Note 9
Restricted View: Curve	D-09	D-08	211+00	225+00	Note 9
Clear View	D-09	D-08	225+00	236+00	Note 9
Clear View: Portal	D-09	D-08	236+00	236+00	Note 9
Restricted View: Aerial/Curve	D-09	D-08	236+00	267+00	Note 9
Clear View	D-09	D-08	267+00	279+00	Note 9
Restricted View	D-09	D-08	279+00	284+00	Note 9
Clear View	D-09	D-08	284+00	302+00	Note 9
Blind Spot: Curve	D-09	D-08	302+00	306+00	Note 9
Clear View	D-09	D-08	306+00	316+00	Note 9
Minnesota Avenue Station	D-09	D-09	316+00	322+00	Note 9
Clear View	D-10	D-09	322+00	362+00	
Deanwood Station	D-10	D-10	362+00	368+00	
Restricted View: Curve	D-11	D-10	368+00	390+00	
Clear View	D-11	D-10	390+00	399+00	
Restricted View: Curve	D-11	D-10	399+00	420+00	
Cheverly Station	D-11	D-11	420+00	426+00	
Clear View: Interlocking	D-12	D-11	426+00	431+00	
Clear View	D-12	D-11	431+00	443+00	
Restricted View: Curve	D-12	D-11	443+00	457+00	
Blind Spot: Curve	D-12	D-11	457+00	473+00	
Clear View	D-12	D-11	473+00	497+00	
Restricted View: Curve	D-12	D-11	497+00	517+00	
Landover Station	D-12	D-12	517+00	523+00	

Figure 7: Track Access Guide showing red hot spot on Track 2 between Cheverly and Landover stations. This is the correct section that should have been notated on the RJSB.

Appendix D - Root Cause Analysis



Root Cause Analysis

