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WMSC Commissioner Brief: W-0142 – Improper Roadway Worker Protection – Near Court House, Rosslyn Stations – September 21, 2021

Prepared for Washington Metrorail Safety Commission meeting on January 25, 2022

Safety event summary:

Members of a Metrorail Low Voltage Electrical Maintenance (LVEM) crew was on the roadway approximately 3,500 feet beyond their working limits into an area where third rail power was energized while attempting to establish a work zone, and set up shunts in incorrect locations where third rail power was energized. Rail Controllers in the Rail Operations Control Center (ROCC) identified that shunts were placed outside of an authorized work area. The LVEM Roadway Worker In Charge (RWIC) did not immediately provide information to the ROCC when contacted regarding this unsafe situation, but did have the crew move the shunts. The first move of the shunts was from the Rosslyn Station platform to an area just outside Rosslyn Station that was also improper. The shunts were then moved back to the working limits near Court House Station.

When the RWIC spoke with the ROCC Assistant Operations Manager, the RWIC stated that the personnel assigned to set up shunts had put them in the incorrect location. The Assistant Operations Manager instructed the RWIC to have the crew clear the roadway.

The investigation identified that the roadway job safety briefing, which was conducted separately with different members of the crew, was not clear on work zone hazards and designated working limits.

The LVEM RWIC stated that they got two work assignments. One was the actual assignment in the General Orders and Track Rights System (GOTRS) to troubleshoot tunnel lighting. The RWIC described another assignment that was not documented to inspect tunnel lights between Rosslyn and Court House stations. The RWIC stated that they used a personal cell phone to communicate with members of the work crew who placed shunts in the area of Rosslyn Station.

Another member of the crew said that they initially understood their assignment as including the area from just outside Rosslyn Station to beyond Court House Station based on (incorrect) direction from the RWIC. That individual stated that they did not receive a picture or other information specifying the chain markers of the work zone, and stated that there was no formal job safety briefing despite the job safety briefing form being signed. Instead, the RWIC handed them the form and they signed it without further discussion.

In addition to the above, the investigation determined that a piggybacking work crew began work on a junction box even though the work zone was never established.

Interviews demonstrated that while the RWIC is normally part of this crew, they do not normally perform RWIC duties for the crew.

Probable Cause:

The probable cause of this event was a lack of supervisory oversight and inadequate communication.

Corrective Actions:

LVEM will ensure all employees working wayside have the details of the work locations specified in the General Orders and Track Rights System (GOTRS).

Metrorail conducted a safety stand down for all personnel with roadway worker protection qualifications.

Metrorail is rewriting its roadway worker protection rules and training programs, and is in the process of implementing other required corrective actions identified in other investigations, including revising roadway job safety briefing forms and processes.

Staff recommendation: Adopt final report.

Washington Metro Area Transit Authority
Department of Safety and Environmental Management (SAFE)

FINAL REPORT OF INVESTIGATION A&I E21460

Date of Event:	09/21/2021
Type of Event:	Improper Roadway Worker Protection
Incident Time:	01:31 hours
Location:	Rosslyn Station, Track 1 & 2
Time and How received by SAFE:	02:29 hours, SAFE IMO
WMSC Notification Time:	02:29 hours
Responding Safety Officers:	WMATA SAFE: No WMSC: No Other: N/A
Rail Vehicle:	N/A
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Incident Number:	20210921#95696

Rosslyn Station – Improper Roadway Worker Protection
September 21, 2021
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Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
COMR	Office of Radio Communications
FT	Foul Time
GOTRS	General Orders and Track Rights System
LVEM	Office of Low Voltage Electrical Maintenance
MSRPH	Metro Safety Rules Procedures Handbook
NVR	Network Video Recorder
OCC	Operations Control Center
OPMS	Operations Management Services
ROCC	Rail Operations Control Center
RTC	Rail Traffic Controller
RWIC	Roadway Worker in Charge
SMNT	Office of System Maintenance
SOP	Standard Operating Procedure
WMSC	Washington Metrorail Safety Commission

FINAL REPORT OF INVESTIGATION A&I E21460

Executive Summary

On Monday, September 21, 2021, at approximately 01:31 hours, personnel from the Office of Low Voltage Electrical Maintenance (LVEM), tasked with tunnel light troubleshooting at Court House station, with a work location between Chain Markers (CM)'s K1 and K2 180+00 to K1 and K2 220+00, exceeded their work limits during work zone setup. The Work Zone included a separate Piggyback Work Crew from LVEM. The crew installed shunts on an energized section of the third rail within Rosslyn Station platform limits and, after being corrected, installed shunts at CM K1 and K2 147+00, outside Rosslyn Station, which was outside of their protected limits.

Before the incident, the Roadway Worker In Charge (RWIC) filled out a Roadway Safety Job Briefing (RJSB) sheet that listed all hazards and working limits. However, not all crew members received the briefing at the same time. After completing the briefings and receiving signatures on the RJSB sheet, the RWIC requested Foul Time (FT) per the Metrorail Safety Rules and Procedures Handbook (MSRPH). Further review of System Data Recording determined that the Rail Operations Control Center (ROCC) Operations Control Center (OCC) Radio Rail Traffic Controller (RTC) granted the RWIC FT at approximately 00:44 hours to hot stick and confirm third rail power de-energized within the work limits at the CM's mentioned above.

At approximately 01:31 hours, Advanced Information Management System (AIMS) playback shows a shunt was placed in position on Track 1 on an energized section of track within Rosslyn Station platform limits, outside of the work crew's protected limits and a second shunt installed on Track 2 at approximately 01:32 hours. At approximately 01:35 hours, the OCC Radio RTC contacted an ATC work crew working at Foggy Bottom [one station before Rosslyn] to inquire whether they placed shunts at the Rosslyn end of the station. The ATC crew notified the OCC Radio RTC that they were at Foggy Bottom and not Rosslyn. The OCC Radio RTC then contacted the LVEM RWIC and inquired whether they began placing their shunts. The LVEM RWIC responded to the OCC Radio RTC and stated, "At the Rosslyn end." The OCC Radio RTC said, "Where exactly?" The LVEM RWIC responded to the OCC Radio RTC and stated, "give me five minutes, please." At approximately 01:39 hours, AIMS Playback shows shunts placed outside Court House Station near CM K1 and K2 215+09.

At approximately 01:42 hours, AIMS playback showed shunts were removed from Rosslyn Station platform limits on Track 1 and 2. Between approximately 01:45 hours and 01:51 hours, AIMS Playback shows a shunt placed outside Rosslyn Station near CM K1 147+50, on an energized section of Track 1. At approximately 01:51 hours, the LVEM RWIC contacted the OCC Radio RTC and said, "how do you copy my shunts?" The OCC Radio RTC instructed the LVEM RWIC to contact ROCC via a landline. During this communication, the LVEM RWIC notified the OCC Assistant Operations Manager (AOM) that they tasked two LVEM personnel to set up shunts on the Rosslyn end of their work location. They walked past the work limits and set up shunts at Rosslyn. The OCC AOM instructed the LVEM RWIC to clear personnel and equipment from the roadway.

At approximately 02:03 hours, the OCC AOM notified the LVEM Supervisor of the event and reported that LVEM personnel placed shunts outside their work location on an energized section

of track. The AOM informed the LVEM Supervisor they did not have authority to remove the employee from service and stated it is the department's responsibility.

At approximately 02:14 hours, the LVEM RWIC contacted ROCC, reported personnel and equipment clear, and third-rail power could be restored at their discretion. The Work Zone setup was not completed and no work was performed. LVEM removed the Work Crew from service for post-incident toxicology testing.

A review of the facts determined, the work crew failed to install shunts a minimum of 500 feet from their work limit CMs. The Work crew installed shunts at Rosslyn Station, which was outside their work limits, and without FT protection.

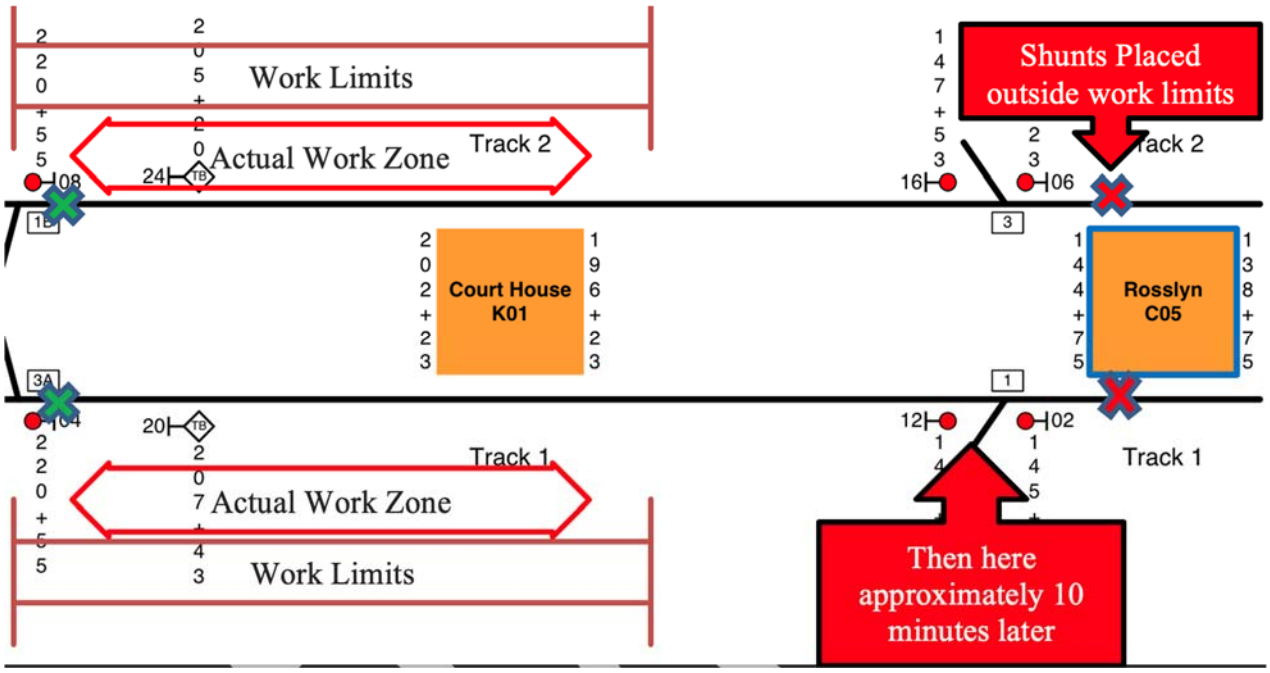
The probable cause of this Improper RWP Protection violation at Rosslyn Station on September 21, 2021, was inadequate oversight of the LVEM RWIC. Contributing factors to the incident were an inadequate RJSB, which included incomplete instructions to the personnel tasked with setting up safety equipment at the Rosslyn Station end of the Work Zone, and work location familiarity.

Incident Site

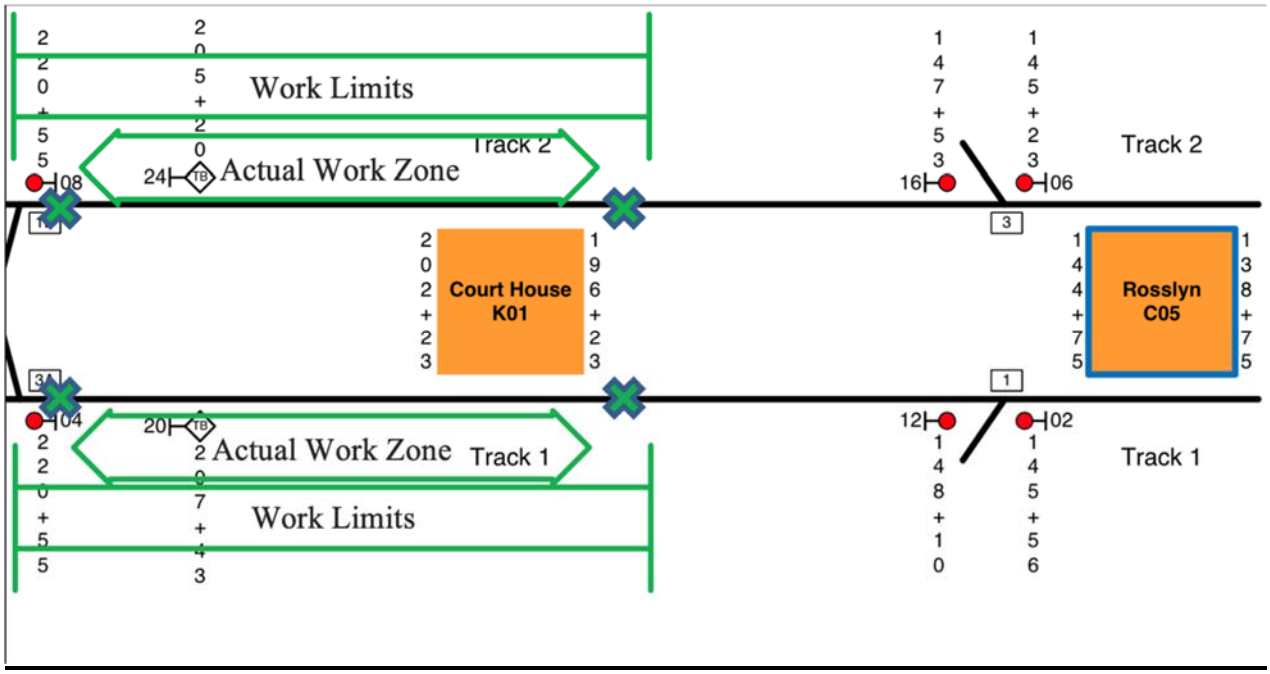
Rosslyn Station, Track 2

Work Limits: CM K1 and K2 180+00 to 220+00
Work Zone: CM K1 and K2 185+00 to 215+00

Field Sketch/Schematics



*Improper RWP setup -- *Not to scale*



*Proper RWP setup -- *Not to scale*

Purpose and Scope

The purpose of this incident investigation and candid self-evaluation is to collect and analyze available facts, determine the probable cause(s) of the incident, identify contributing factors, and make recommendations to prevent a recurrence.

Investigation Process and Methods

Upon receiving the notification of an Improper RWP Protection at the Rosslyn Station on September 21, 2021, SAFE launched an investigation into this event. SAFE team members worked with relevant Washington Metropolitan Area Transit Authority (WMATA) subject matter experts to review the incident's facts and data.

Investigation Methods

The investigative methodologies included the following:

Formal Interviews – SAFE conduct two interviews and collected one written statement as part of this investigation. Interviews included persons present at, during, and after the incident, those directly involved in the response process, and managers responsible for the process.

- . The interviews and written statements included:
  - LVEM RWIC
  - LVEM 1
  - LVEM 2 - Written Statement

- Informal Interviews – Collected through conversations with individuals during the investigation to provide background and supporting information.
  - LVEM Superintendent
  - LVEM Shift Supervisor

- Documentation Review – A collection of relevant work history information and process documentation contained in Metro systems of record. These records include:
    - Training Procedures & Records
    - Certification
    - The 30-Day work histories review
    - Metrorail Safety Rules and Procedures Handbook (MSRPH)
    - National Oceanic and Atmospheric Administration (NOAA)
    - The Office of Low Voltage Electrical Maintenance (LVEM)
    - Departmental Incident Investigation Report
    - Incident/Accident Measurement System
    - Rail Operation Control Summaries

- System Data Recording Review – A collection of information in Metro Data Recording Systems. This data includes:
    - Audio Recording System (ARS) playback [Radio, Phone, and Ambient]
    - General Orders and Track Rights System (GOTRS)

Investigation

On Monday, September 21, 2021, at approximately 01:31 hours, LVEM personnel tasked with tunnel light troubleshooting at Court House station, with a work location between CMs K1 and K2 180+00 to K1 and K2 220+00, exceeded their work limits and set up shunts on an energized section of track within the Rosslyn Station platform limits and again at CM K1 and K2 147+00, outside Rosslyn Station without FT Protection.

Based on a review of the MSRPH, written statements and personnel interviews, the RWIC did not conduct an appropriate RJSB, identifying all work zone hazards and designated work limits before the incident. The RWIC requested FT per the MSRPH, however the personnel designated to install shunts and safety equipment exceeded the foul time area by entering the roadway at Rosslyn Station. System Data Recording identified that the ROCC OCC Radio RTC granted the RWIC FT at approximately 00:44 hours to hot stick the work limits.

At approximately 01:31 hours, AIMS playback shows a shunt was placed in position on Track 1 on an energized section within Rosslyn Station platform limits, outside of the work crew's work limits and FT area.

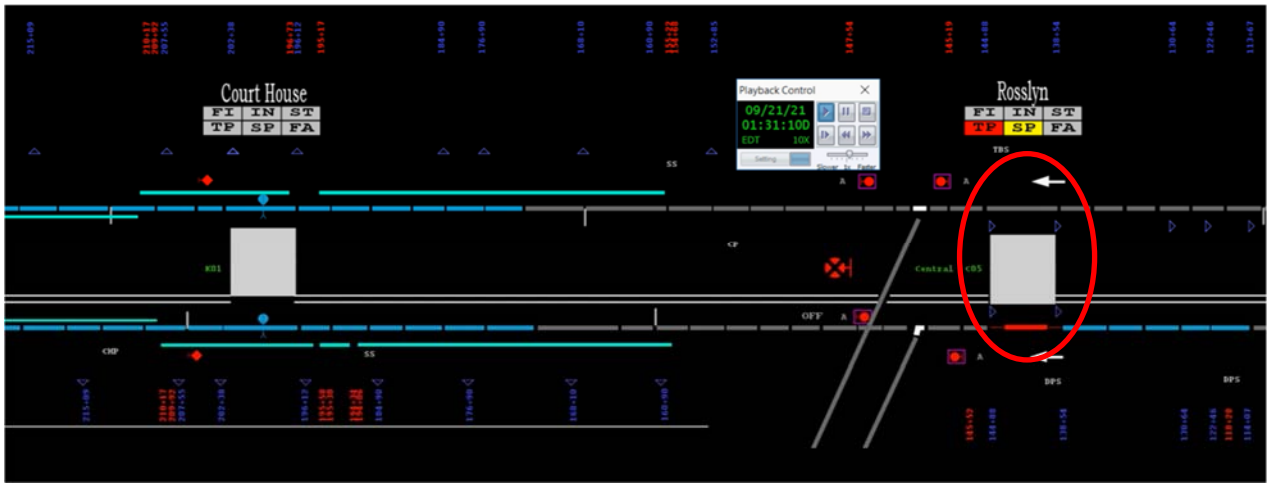


Figure 1 - AIMS Playback shows the first shunt placed outside work limits at Rosslyn Station on track 1.

At 01:32 hours, AIMS Playback showed the second shunt placed at Rosslyn Station.

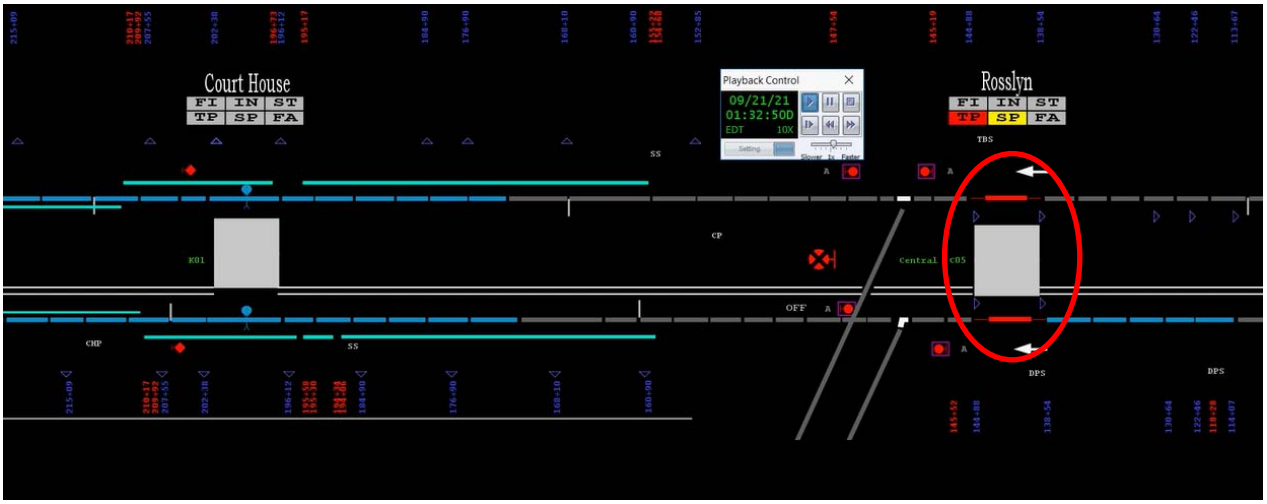


Figure 2 - AIMS Playback shows the second shunt placed outside work limits at Rosslyn Station on track 2.

At approximately 01:35 hours, the OCC Radio RTC contacted an ATC work crew working at Foggy Bottom [one station before Rosslyn] to inquire whether they placed shunts at the Rosslyn end of the station. The ATC crew notified the OCC Radio RTC that they were at Foggy Bottom and not Rosslyn.

At approximately 01:36 hours, the OCC Radio RTC contacted the LVEM RWIC and inquired whether they began placing their shunts. The LVEM RWIC responded to the OCC Radio RTC and stated, “At the Rosslyn end.” The OCC Radio RTC said, “Where exactly?” The LVEM RWIC responded to the OCC Radio RTC and stated, “give me five minutes, please.” At approximately 01:39 hours, AIMS Playback shows shunts placed outside Court House Station near CM K1 and K2 215+09.

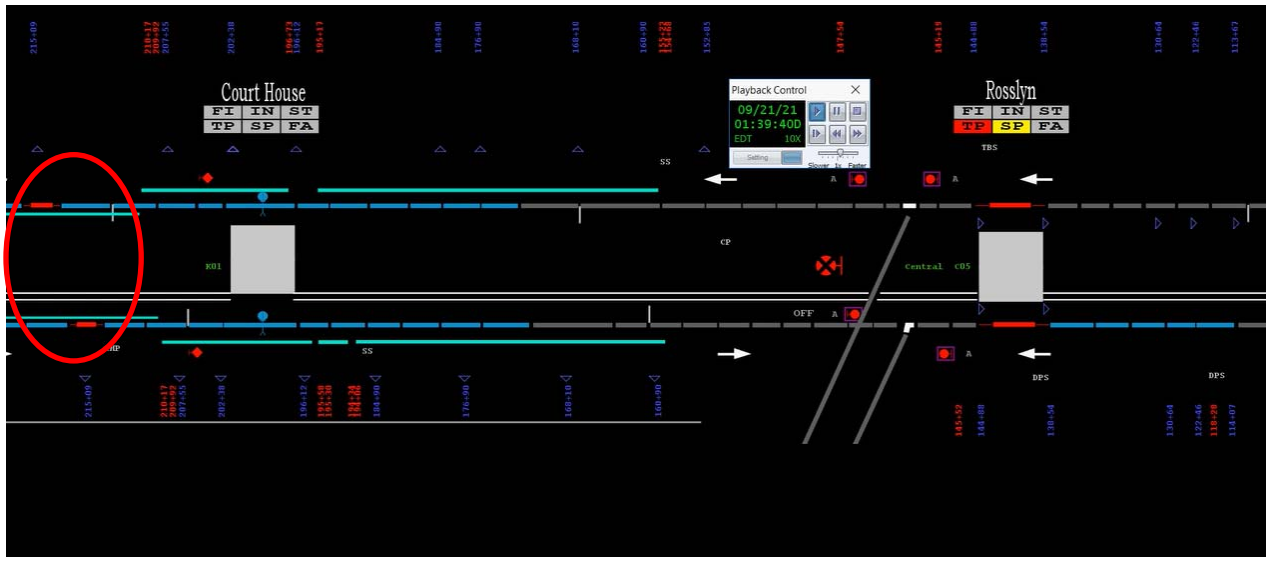


Figure 3 - AIMS Playback shows shunts installed on Court House end near CM K1, K2 - 215+09.

At approximately 01:42 hours, AIMS playback showed shunts were removed from Rosslyn Station platform limits on Track 1 and 2.

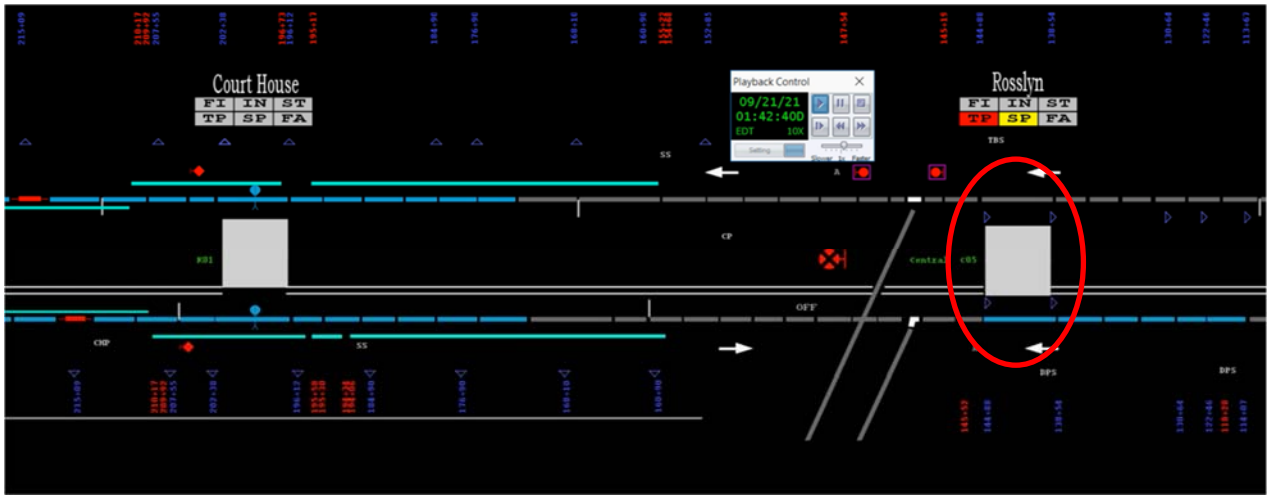


Figure 4 - AIMS Playback shows shunts removed from Rosslyn Station.

Between 01:45 hours and 01:51 hours, AIMS Playback shows shunt placed outside Rosslyn Station near CM K1 147+50, which is not in compliance with MSRPH ETO authority Step 6, which states, "*Install shunts with two (2) red lanterns or e-flares a minimum of 500 feet outside of each end of the work zone and confirm shunt locations with ROCC."* The location of this shunt was also outside of the Protected Working Limits of the Work Zone.

Figure 5 - AIMS Playback shows the first shunt placed near Chain Marker K1 147+54.

Figure 6 - AIMS Playback shows the second Shunt placed near Chain Marker K2 147+54.

At approximately 01:51 hours, the LVEM RWIC contacted the OCC Radio RTC and said, how do you copy my shunts?" The OCC Radio RTC instructed the LVEM RWIC to contact ROCC via a landline. During this communication, the LVEM RWIC notified the OCC AOM that they tasked two LVEM personnel to set up shunts on the Rosslyn end of their work location. They walked beyond the work limits and set up shunts at Rosslyn. The OCC AOM instructed the LVEM RWIC to clear personnel and equipment from the roadway.

At approximately 02:03 hours, the OCC AOM notified the LVEM Supervisor of the event and reported that LVEM personnel placed shunts outside their work location. The OCC AOM informed the LVEM Supervisor they did not have authority to remove the employee from service and stated it is the department's responsibility. At approximately 02:04 hours, LVEM personnel removed shunts from both locations, as shown below.

Figure 7 - AIMS Playback showing Shunts removed from the roadway at both locations

At approximately 02:14 hours, the LVEM RWIC reported personnel and equipment clear, and third-rail power could be restored at ROCC's discretion. The Work Zone setup was not completed and no work was performed. LVEM removed the work crew from service for post-incident toxicology

testing. OCC removed blue blocks and human forms from the AIMS display at approximately 02:24 hours.

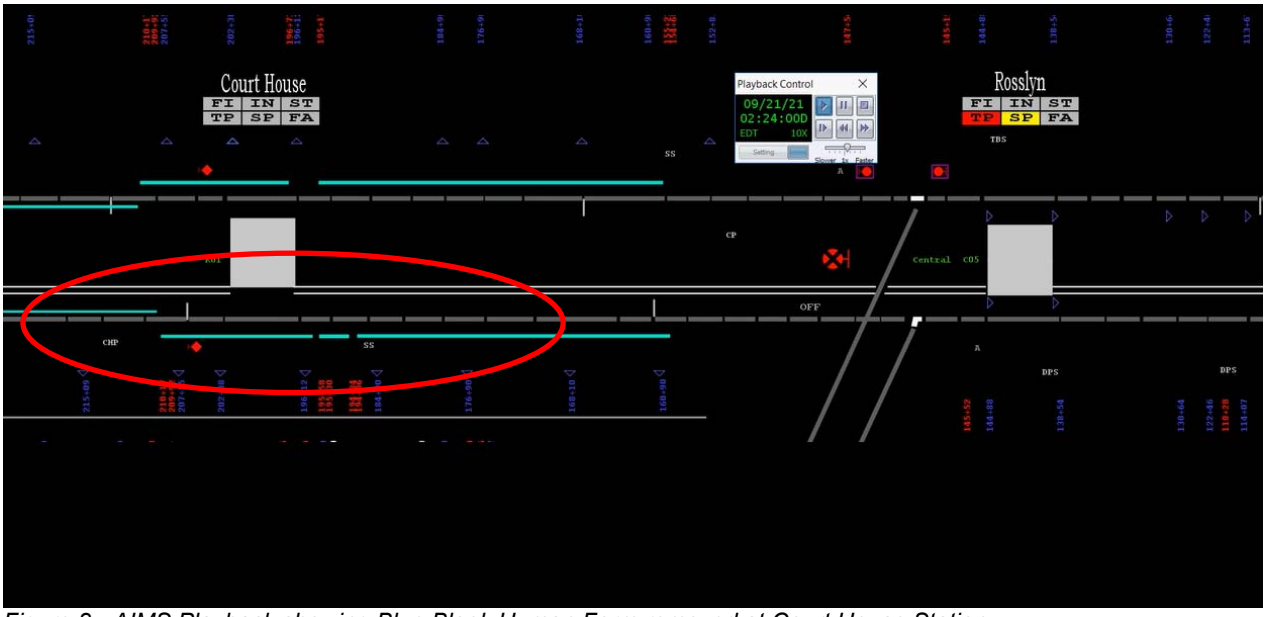


Figure 8 - AIMS Playback showing Blue Blook Human Form removed at Court House Station

The LVEM RWIC was not in compliance with the MSRPH quick Access guide step six of ETO Authority,

Step 6: "*the work zone should be set up as follows: "Install shunts with two (2) red lanterns or e-flares a minimum of 500 feet outside of each end of the work zone and confirm shunt locations with ROCC."*

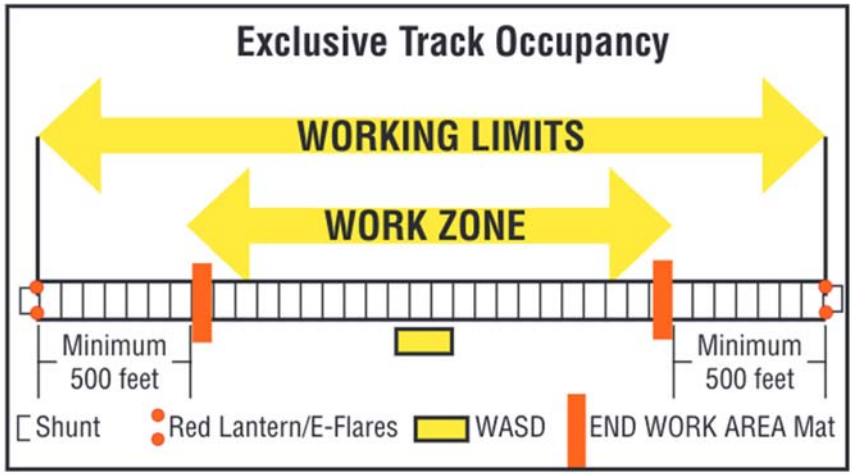


Figure 9 - Proper RWP Setup for ETO.

Chronological Event Timeline

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

Time	Description
00:42 hours	• LVEM RWIC: Contacted the Radio RTC and requested permission under Supervisory Outage using ETO protection from K1-180+00 to K1-220+00 for tunnel light troubleshooting. • Radio RTC: Confirmed CM's provided and requested the LVEM standby. [Radio Ops 2]
00:44 hours	• Radio RTC: "Tie-Breakers are commanded open in your work location track 1 and 2 at Court House. Charlie Zero Five Zero Six Signal Red over." • LVEM RWIC: "Charlie Zero Five Zero Six Signal Red." • Radio RTC: "Affirm. Kilo Zero Two Zero Two Signal Red over." • LVEM RWIC:" Kilo Zero Two Zero Two Signal Red." • Radio RTC: "Affirm, prohibit exits, and blue block human form is established. You have permission to hot stick and confirm third rail power is de-energized. FT granted at 0044 hours over." • LVEM RWIC: "Blue block human form in place for my protection. I have permission to enter the roadway, hot stick, and confirm verifying my CM's." • Radio RTC: "Affirm, Central's out." [Radio Ops 2]
01:27 hours	• LVEM RIWC: "Central at this time, I have hot sticked and confirmed third rail power is de-energized Track 1 Kilo 194+00 Kilo 195+00 Kilo 220+00 Track 2 195+00 Kilo 220+00. How do you copy?" • Radio RTC: Kilo 1 and 2 194, 195 220 + 00 over? • LVEM RWIC: Affirmative." • Radio RTC: "Affirm permission to set your shunts, and central will verify over." • LVEM RWIC: Confirmed Transmission. [Radio Ops 2]
01:31 hours	• AIMS playback shows that a shunt was placed on Track 1 on an energized section within Rosslyn Station platform limits.
01:32 hours	• AIMS playback shows that a shunt was placed on Track 2 on an energized section within Rosslyn Station platform limits.
01:35 hours	• Radio RTC: Contacted ATC personnel to determine if they deployed shunts at Rosslyn Station, Track 1 and 2. • ATC: Stated they were at Foggy Bottom and not Rosslyn • Radio RTC: Confirmed and stated, "I understand that, but we are showing shunts at Rosslyn Track 1 and 2 over." [Radio Ops 2]
01:36 hours	• Radio RTC: Contacted LVEM personnel and requested if they started placing their first set of shunts. • LVEM RWIC: "At the Rosslyn end." • Radio RTC: Where exactly? Can you give us a set of CM's?" • LVEM: "Give me five minutes, please." [Radio Ops 2]

Time	Description
01:39 hours	• AIMS Playback shows shunt placed outside Court House Station near CM K1 - 215+09 Track 1 and 2.
01:42 hours	• AIMS playback shunts are removed from Rosslyn Station platform limits on Track 1 and 2.
01:45 hours	• AIMS Playback shows shunt placed outside Rosslyn Station near CM K1 -147+50 on an energized section of Track 1.
01:51 hours	• AIMS Playback shows shunt placed outside Rosslyn Station near CM K2- 147+50 on an energized section of Track 2.
01:51 hours	• LVEM RWIC: Contacted Radio RTC and stated, “at this time, how do you copy my shunts?” • Radio RTC: Requested LVEM RWIC to give them a landline. [Radio Ops 2]
01:52 hours	Radio RTC: Notified Assistant Operations Manager Rail Ops 2 LVEM RWIC still had shunts outside their work location. [Phone]
01:57 hours	• Assistant Operations Manager Rail Ops 2: “Did you contact the guy?” • LVEM RWIC: They stated they contacted the responsible worker and notified the RWIC that the shunts were placed outside of their work location. The RWIC then stated, instructions were given to the employee to remove the shunts and meet them at the Court House Station platform. • Rail Ops 2: Instructed LVEM to clear up the work location. • LVEM RWIC: Acknowledged. [Phone]
02:01 hours	• Buttons RTC: Notified Rail Ops 2 that LVEM was instructed to clear their work location to Court House Station and notify ROCC when the crew is clear. [Phone]
02:03 hours	• Assistant Operations Manager Rail Ops 2: Contacted LVEM Supervisor and notified them that LVEM personnel placed shunts outside their work location on an energized third rail. The Assistant Operations Manager informed LVEM Supervisor that they did not remove the employee from service and stated it is the department's responsibility. [Phone]
02:04 hours	• AIMS Playback shows shunts removed from energized, and de-energized sections on Track 1 and 2 on the Court House and Rosslyn Station ends.
02:13 hours	• LVEM RWIC: Contacted the Radio RTC and stated, “all personnel and equipment are clear of the roadway, and you may restore third rail power at your discretion.” • Radio RTC: “Affirm, all personnel and equipment are clear of the roadway tracks revenue ready central is able to restore third rail power at our discretion. I have you relinquishing your FT at 02:14 hours.” • LVEM RWIC: “Relinquishing FT at 02:14 hours. • Radio RTC: The Radio RTC confirmed transmission and instructed the LVEM RWIC to contact central.” • LVEM RWIC: Asked the Radio RTC if another employee could inherit their rights and enter the roadway. • Radio RTC: “Give them a landline.” [Radio Ops 2]

Time	Description
02:29 hours	• ROCC Ops Manager: Contacted ROIC and notified them of an RWP Violation at Court House Station; three people were involved. [Phone]

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

Office of Low Voltage Electrical Maintenance (LVEM)

Adopted from LVEM Incident Report

On Monday September 21, 2021, at approximately 2:00 am, ROCC reported to SAFE that an RWP violation occurred involving LVEM personnel at Court House Station (K01). According to the initial report, LVEM personnel were given permission to set up track between chain markers K183+00 – K199+25; however, the crew set the shunts on Track #1 and 2 Chain Markers C139+00. ROCC immediately asked work crew to clear the roadway and their supervisor was notified.

This incident was immediately placed under investigation by the department. As part of the investigation the work crew was taken for post incident testing, witness statements were collected, and interviews were conducted by the department and SAFE.

Findings:

1. Based on the statements collected from employees involved, and departmental interviews of the employees, it has been determined that the employees involved are in violation of RWP rules and procedures of not properly setting up the protected work areas and work zones while on the right of way and Section 1.1 of the MSRPH.

2. Work crew did not have proper documentation outlining the proper placements of shunts and safety mats on the right of way.

Section 1.1: "*All employees of WMATA, regardless of rank or title, shall be knowledgeable of the rules set forth in this manual that apply to the actions that they take, as well as rules and procedures contained in documents pertaining to their specific work assignments. The Roadway Worker in Charge (RWIC) and/or Escort shall be responsible for ensuring WMATA contractors and visitors abide by the rules set forth in this manual as it pertains to specific work assignments."*

Mitigation:

To mitigate this violation, LVEM will coordinate a Safety Stand Down for situational awareness of having proper documentation and ensuring that all employees working wayside will be provided with the GOTRS summary displaying the details of the work location, and chain markers."

The Office of System Maintenance (SMNT), Office of Radio Communications (COMR)

COMR conducted a comprehensive Radio operational test between Court House and Rosslyn Stations. COMR reported no trouble found.

Applicable Rules and Procedures

ETO *RWP Work Zone Setup*

Step 2: “Request ROCC to cancel automatic signals, block calls, and prohibit exits on any interlocking of any configuration contained within the work limits.”

Step 6: “Install shunts with two (2) red lanterns or e-flares a minimum of 500 feet outside of each end of the work zone and confirm shunt locations with ROCC.”

Interview Findings

Based on the investigation launched into the Court House Station Improper RWP Protection event, SAFE conducted two interviews via Microsoft Teams, including the investigation team and WMSC. These interviews were conducted over three days after the event and identified the following key findings associated with this event, as follows:

LVEM RWIC

SAFE asked the LVEM RWIC to describe the events surrounding September 21, 2021. The LVEM RWIC said, *“I filled out the paperwork for the RJSB and went over it with everyone; I went upstairs first.” They signed it; I took a picture of the CM’s and sent it to a pair of gentlemen from our crew that I asked to set up at the Rosslyn end of the track because one of the assignments I received for the night was tunnel light inspection from Rosslyn to Court House. The other work assignment was troubleshooting, more so on the Court House end, and everyone else would be working down on that end. The first two would walk down after setting up the work location to do the tunnel light inspection.”*

The RWIC admitted the use of a non-WMATA issued phone to communicate with LVEM personnel on the Rosslyn end. The RWIC reported there were no radio communication issues. The RWIC said they did not confirm the location of the CM’s for proper placement after receiving notification of improper placement from ROCC. The RWIC said this crew typically works together. The RWIC reported they communicated with the Radio RTC the first time and was asked why they placed shunts on the Charlie line, and the RWIC stated they were adjusting the shunts to the K-Line. The RWIC stated that the Radio RTC allowed them to reposition their shunts.

The RWIC stated they normally do not use cell phones to communicate with their personnel on the roadway. They normally do the majority of their communication before entering the roadway. The RWIC stated they believed they communicated the placement of the shunts at the briefing. The RWIC stated they sent a picture of the K-Line to one member in the group responsible for setting up the Rosslyn end via phone of the shunt placement location after the briefing. The RWIC stated they were going to verify the work zone was set up properly once they received notification of the work zone not being correctly set up the first time. The RWIC stated, to prevent an incident in the future, they would set the shunts up in their work location instead of delegating the task.

LVEM 1

SAFE asked LVEM 1 to describe the events surrounding September 21, 2021. The LVEM RWIC said they drove to the Rosslyn location per instruction from the LVEM RWIC. The RWIC said, *“I am sending you down to Rosslyn to set shunts.”* The LVEM said they only saw the sign-in sheet of the safety briefing. The LVEM noted, “*the confusion part was we thought we had the whole tunnel. We knew it was the K tunnel, but in order to get to the tunnel, you had to go C-Line. That was the confusion on our part the first time. We were trying to cover the whole tunnel. There are times we do not go out on track because the crew does not talk to each other. The LVEM stated they did not receive a picture of CMs. The briefing was not conducted on the platform, and a formal*

briefing was not performed." The RWIC LVEM said*, "just sign this. Even if it hurts me in the long run, I'd rather be honest about it."*

The LVEM stated, to prevent an incident in the future, "*they improve the lack of communication."*

In the LVEM 1 written statement, they admitted the first placement of shunts at Rosslyn Station was their fault." This information was not relayed as such during the interview.

LVEM 2 – Written Statement

"When we got to Court House Station, we were told to go to Rosslyn Station to setup Track. I admit I setup on the C-Line my fault. After realized told RWIC we were 3700 to 4000 feet away at Chain Marker 148+00 we need to be at CM 185+00."

Immediate Mitigation to Prevent Recurrence

- LVEM are planning a safety standdown to discuss the events surrounding the Improper RWP Protection.
- All RWP-qualified personnel were required to attend WMATA RWP Safety Stand Down, scheduled to begin October 12, 2021.

Findings

- RWIC failed to adequately communicate the working limits to LVEM 1.
- RWIC failed to hold an adequate Roadway Job Safety Briefing.
- LVEM 1 entered the roadway outside of the established Protected Working Limits and installed shunts on unprotected roadway.
- Piggyback crew reportedly began work prior to the completion of the work zone setup.

Weather

At the time of the incident, National Oceanic and Atmospheric Administration (NOAA) recorded the temperature as 64°F with an overcast. This incident occurred in an underground station. SAFE has concluded that weather was not a contributing factor in this incident (Weather source: NOAA – Location: Washington, DC.)

Human Factors

Fatigue

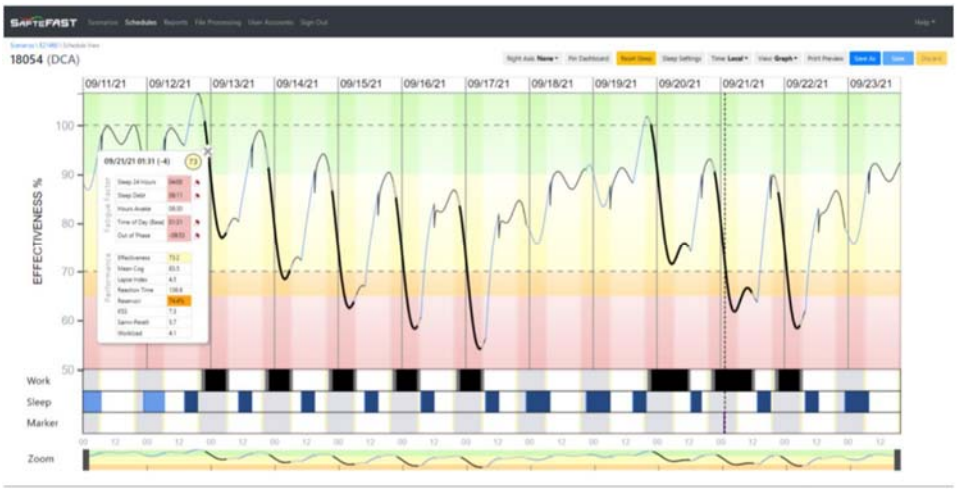
Evidence of Fatigue – LVEM RWIC

Conditions at the time of the incident were evaluated to distinguish whether evidence of fatigue was present. Video of the person involved was not available to ascertain whether evidence of fatigue was present. The RWIC reported feeling Fully Alert at the time of the incident. The Employee reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk – LVEM RWIC

Data was evaluated for fatigue risk factors. Risk factors for fatigue were identified. The incident time of day (1:31 hours) suggests an increased risk of fatigue-related impairment. The employee worked night shifts (22:00 – 06:00) in the days leading up to the incident, including a 14-hour overnight shift (21:56 – 12:00) on the day preceding the incident. Based on the employee's reported bed and wake times the day before the incident, the employee slept a total of 4 hours in the sleep period preceding the incident and was awake for 8.5 hours at the time of the incident. The off-duty period preceding the incident was 9.9 hours long, which provided the opportunity for 7-9 hours of sleep. The employee reported usual workday sleep durations of 5 hours and no issues with sleep.

A biomathematical fatigue modelling application (SAFTE-FAST WebSFC) was used to further evaluate fatigue risk factors that may have been present in the RWIC's schedule. The analysis was based on the RWIC's work schedule, bed, and wake times from the day before the incident and reported habitual sleep durations. Estimated performance effectiveness at the time of the incident was 73.2%. Specifically, the analysis identified short sleep duration in the last 24 hours, the circadian effects of night work, and sleep debt (inferring accumulated sleep loss of more than 8 hours) as factors contributing to an increased risk of fatigue at the time of the incident.



Modeling analysis output shows estimated performance effectiveness during the incident work shift (top), and for the week leading up to the work shift (bottom) based on the employee work and reported sleep schedule. Estimates were based on the RWIC's work schedule, bed, and wake times from the day before the incident, and reported habitual sleep durations (5 hours a day). Bold portions of the modeled curve show work (in black) and sleep times (in blue). Effectiveness is shown on the vertical axis, with colored fields in the chart background signifying ranges of effectiveness scores including high effectiveness (>90%) in green and low effectiveness (<65%) in red. Time is shown on the horizontal axis. Markers for work and sleep times are shown in the lanes above the time of day on the horizontal axis.

Evidence of Fatigue – LVEM 1

Conditions were evaluated at the time of the incident to distinguish whether evidence of fatigue was present. The available data indicated no sign of fatigue. No video data was available of the incident to review behaviors suggesting fatigue. The employee reported feeling fully alert at the time of the incident, and the employee reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk – LVEM 1

Incident data was evaluated for fatigue risk factors. Risk factors for fatigue were identified. The incident time of day (1:31 hours) suggests an increased risk of fatigue-related impairment. The employee worked overnight shifts (22:00 – 6:00) in the week leading up to the incident. The employee worked an overtime shift of 12 hours (22:00-10:00) the day preceding the incident. The employee's bed and wake times on the day preceding the incident could not be confirmed; therefore, the employee's total number of sleep hours in the sleep period preceding the incident and hours awake at the time of the incident could not be determined. The employee however reported habitual workday sleep durations of 8 hours. The off-duty period preceding the incident was 16 hours long, which provided the opportunity for 7-9 hours of sleep. The employee reported no issues with sleep.

Post-Incident Toxicology Testing

WMATA's Drug and Alcohol Program determined that the LVEM RWIC and Crew did not violate the Drug and Alcohol Policy and Testing Program 7.7.3/6.

Work History

LVEM RWIC

- The LVEM RWIC had one safety violation within the past three years.

LVEM 1

- No relevant history to report.

LVEM 2

- No relevant history to report.

Probable Cause

The probable cause of this Improper RWP Protection violation at Rosslyn Station on September 21, 2021, was inadequate oversight of the LVEM RWIC. Contributing factors to the incident were an inadequate RJSB, which included incomplete instructions to the personnel tasked with setting up safety equipment at the Rosslyn Station end of the Work Zone, and work location familiarity.

Recommendations/Corrective Actions

The following are the recommendations and corrective actions identified as a result of this investigation. These recommendations and corrective actions are tracked using WMATA's Safety Measurement System Incidents/Accidents (SMS I/A) Module and are verified by SAFE upon completion. The responsible department is identified in the corrective action code, and the respective departmental Safety Risk Coordinator (SRC) will manage the mitigation. Refer to the SMS I/A module for additional information.

Corrective Action Code	Description	Responsible Party	Due Date
95696_ SAFECAPS_ LVEM_001	(RC-1, CF-1) LVEM shall conduct a Safety stand down to facilitate proper work location setup.	LVEM SRC	Completed

Corrective Action Code	Description	Responsible Party	Due Date
95696_ SAFECAPS_ LVEM_002	(RC-1, CF-1) LVEM personnel shall complete WMATA RWP Safety Stand Down reviewing common RWP violations and recent events.	LVEM SRC	Completed

Appendices

Appendix A – Interview Summaries

LVEM RWIC

WMATA employee with seven years of experience and seniority as an LVEM technician. During their tenure, the LVEM RWIC has worked at various locations such as Greenbelt, Good Luck Road, and Carmen Turner Facility locations. The RWIC has been Level 4 RWP-certified for four years. THE LVEM RWIC was last certified on 10/06/2020.

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.

SAFE asked the LVEM RWIC to describe the events surrounding September 21, 2021. The LVEM RWIC said, *"After receiving paperwork from the supervisor, we gathered all the material for the night. Drove to the station, I filled out the paperwork for the RJSB and went over it with everyone; I went upstairs first." They signed it; I took a picture of the CM's and sent it to a pair of gentlemen from our crew that I asked to set up at the Rosslyn end of the track because one of the assignments I received for the night was tunnel light inspection from Rosslyn to Court House. The other work assignment was troubleshooting, more so on the Court House end, and everyone else would be working down on that end. The first two would walk down after setting up the work location to do the tunnel light inspection.*

I saw we had piggybackers and went over the RJSB with them as well. They signed it and relayed the information to their crew. I called onto central, waited to hear my name, and called back; I received permission to enter the roadway under FT and confirm CM's. After that, I received permission to set the shunts and verify with central. I relayed this information to the two gentlemen at Rosslyn that they were okay to set the shunts. I started to walk towards the Court House end to set the shunts. I received a call from central asking the location of the shunts on the Rosslyn end. I asked for approximately five minutes to find out and would get back to them. I called one of the gentlemen and asked where they placed the shunts. They told me they were on the Charlie Line. I asked how is that when I sent you a picture of the CM's that is not correct, the CM's end on the K-Line. They said they would adjust and get back to me, give them some time. I relayed that information to central that I was adjusting the shunts and would verify after completion. I set the shunts on the K-Line at the Court House end.

I called back to get an update on the placement of the shunts on the other end of the work area. They had not reached the destination yet; they said give them some time. I said, all right, give me a call when you're set so I can call it in. I waited. I got the call that shunts were set on that end. I called central and let them know my shunts were set and ready to verify. Central asked me to confirm the placement of the shunts again. I did that on my end and asked for time again to verify the CM at the other end. It was at that point that I was told to landline central. I was transferred to

a supervisor who let me know that the shunts on the other end were set improperly again. Immediately after that, I was told they were wrong and to clear track. So that's when I told everybody on the other end to clear track and the gentlemen on the Court House to clear track as well. I informed the piggybackers that the shunts were improperly placed on the other end.

I asked the two gentlemen from our Low Voltage Crew after we cleared the roadway as to what happened. They had the CM's and area where the shunts were to be placed, and I could not get a straight answer. The supervisor arrived and escorted us down for post-incident toxicology testing.

The RWIC admitted the use of a non-WMATA issued phone to communicate with LVEM personnel on the Rosslyn end. The RWIC reported there were no radio communication issues. The RWIC said they did not confirm the location of the CM's for proper placement after receiving notification of improper placement from ROCC. The RWIC said this crew typically works together. The RWIC reported they communicated with the Radio RTC the first time and was asked why they placed shunts on the Charlie line, and the RWIC stated they were adjusting the shunts to the K-Line. The RWIC stated that the Radio RTC allowed them to reposition their shunts.

The RWIC stated they normally do not use cell phones to communicate with their personnel on the roadway. They normally do the majority of their communication before entering the roadway. The RWIC stated they believed they communicated the placement of the shunts at the briefing. The RWIC stated they sent a picture of the K-Line to one member in the group responsible for setting up the Rosslyn end via phone of the shunt placement location after the briefing. The RWIC stated they were going to verify the work zone was set up properly once they received notification of the work zone not correctly set up the first time. The RWIC stated, to prevent an incident in the future, they would set their shunts up in their work location.

LVEM 1

WMATA employee with ten years of experience and seniority as an LVEM employee. The LVEM has worked at various locations, such as Greenbelt and West Falls Church. The LVEM was last certified in RWP on October 26, 2020.

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.

SAFE asked LVEM 1 to describe the events surrounding September 21, 2021. The LVEM RWIC said, "*we had our meeting before we go out and do the job. Our supervisor told us we were going out to K01. We had a box repair we had to do there and a tunnel light inspection. Upon getting to our destination at K01, we waited for central to call the RWIC and let us know we can have the track. The RWIC came over, knocked on the window, we were sitting in the truck, handed me the RJSB, and written notes on the form about the hospital and other things like that. It was not a formal safety briefing; we did sign it; looking back, we should not have signed it because it was not a proper safety briefing. At that point, the LVEM RWIC told us to wait until they hot stick and confirmed, then set up the track at Rosslyn Station.*

The LVEM RWIC later told us the next night after we discussed what happened. The LVEM RWIC stated they thought they had the whole track, the whole tunnel. When we went to set up the track at C05, we thought we had it all the way to C05. Well, the track merges K-Line to C-Line; we thought we had all the way to the station; it felt like mass confusion. We set up shunts the first time; the LVEM RWIC called us; the RWIC said, where did you guys set up? They said no, K-Line. I said OKAY, that's a lot of FT just to get to the K-Line. We will go look and see what the CM is.

We went and looked at the CM, and it was at 148+00. The correct track rights were at 185+00 or approximately. I know it was almost 4,000 feet away from where we needed to be. I felt like I was ignored, I am not sure if they hung up or lost phone connection, but at that point, I had no instruction on what to do. Now I set the shunts down; again, I am not blaming them for everything, it was many mistakes made, and I would like to learn from this experience as well.

The shunts were set again, and I guess central called them and said they were set but not in the right place. Mind you; we still thought that we had the whole tunnel. When the LVEM RWIC called us back, they said no 185+00 is the thing, and I said that's almost 4,000 feet from where we are. The supervisor at the beginning of the shift said we were all going to K01. I guess the supervisor had already known we did not need to go to C05 [Rosslyn]. I do know; no fire maps were looked at to get locations or general ideas. Generally, we have one guy that usually does the majority of the RWIC responsibilities. They always pull up a map and get a better perspective of where we need to enter the roadway and not to set shunts. That was not done. Later, we got back. I said did you look at the fire map or anything? I said, usually [Person] looks at the fire map before they send us to places, so we are sure where we need to set up; it's like a double-check. Their response to me was that I am not [Person].

I really felt there was a lack of communication on telling us exactly where to go. I do not think they knew exactly where we suppose to set the shunts and knew after telling us to set up shunts at Rosslyn, we basically had to extend it to the C-Line because the C-Line branches off and the K-Line runs into the C-Line and branches off from there. So, in order to cover the whole tunnel, which the LVEM RWIC admitted that they thought we had the entire tunnel. We were under the assumption that it was a part of our track. I will take some responsibility for it, but I don't think it was totally our fault. It was a severe lack of communication, and I do not think it was expressed to us the exact CM's or totally known by the RWIC where we were supposed to set up.

I would like to add that when we were going down to take our post-incident toxicology testing. The person that drove us down was another person on the track at the time said, their shunts were down. As soon as they set shunts down, they began to work on a junction box. Basically, that tells me they were working under FT before we even set our shunts down. I felt as though the RWIC was not performing their job accordingly, and I was told they began work immediately after placing their shunts down."

Interview follow-up questions revealed, LVEM 1 drove to the Rosslyn location per instruction from the LVEM RWIC. The RWIC said, *"I am sending you down to Rosslyn to set shunts."* The LVEM said they only saw the sign-in sheet of the safety briefing. The LVEM noted, "*the confusion part was we thought we had the whole tunnel. We knew it was the K tunnel, but in order to get to the tunnel, you had to go C-Line. That was the confusion on our part the first time. We were trying to cover the whole tunnel. There are times we do not go out on track because the crew does not talk to each other. The LVEM stated they did not receive a picture of CM's. The briefing was not conducted on the platform, and a formal briefing was not performed."* The RWIC LVEM said, *"just sign this. Even if it hurts me in the long run, I'd rather be honest about it."*

The LVEM stated, to prevent an incident in the future, "*they improve the lack of communication."*

LVEM 2 – Written Statement

"When we got to Court House Station, we were told to go to Rosslyn Station to setup Track. I admit I setup on the C-Line my fault. After realized told RWIC we were 3700 to 4000 feet away at Chain Marker 148+00 we need to be at CM 185+00."

Appendix B – Roadway Job Safety Briefing

WMATA ROADWAY JOB SAFETY BRIEFING FORM

DATE: 9/21/21 TRACK TIME ON/OFF: _____ / _____

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

RWIC's CELL PH[redacted] RADIO OPS CHANNEL: _____

SAFETY RULE OF THE DAY: RWP Cardinal Rule # 3

WORK ASSIGNMENT: Troubleshoot tunnel light DIRECTION OF TRAFFIC: INBOUND [X] OUTBOUND [X]

RAIL LINE: A B C D E F G J (K) L N TRACK #: 1 X 2 X 3 ___ WORK LIMITS CM: K180+00 - K220+00

PLACE OF SAFETY: Platform or Safety walk

TYPE OF PROTECTION(s): IT [ ] ETO AUTHORITY [X] ETO LOCAL SIGNAL [ ] AMF [ ] FT [ ]

REQUEST FROM ROCC: BLOCK CALLS [X] CANCEL AUTOMATIC SIGNALS [X] PROHIBIT EXITS [X]

RED HOT SPOT(s) TYPE/LOCATION [ ] RED HOT SPOT HAZARDS [ ] ETS/RADIO OUTAGE [ ]

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

RED TAG #: _____ RED TAG HOLDER: _____

WATCHMAN/LOOKOUT ASSIGNED: YES [ ] NO [X] WATCHMAN/LOOKOUT NAME(s): _____

WATCHMAN/LOOKOUT EQUIPPED WITH "W' DISC, AIR HORN AND WHISTLE, **("W" Warning Disc required for fixed work 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 [X] AMF CALL #: _____

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

PIGGYBACK CREW LEADER CALL #(s): [redacted] PIGGYBACK WORKZONE CM(s): K183+25 - K199+25

PIGGY BACK WORK ASSIGNMENT: Monitoring equipment install

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

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

WEATHER CONDITIONS	[ ]	TRIPPING HAZARDS / UNEVEN WALKING SURFACES	[ ]
TRACK GRADE AND VISIBILITY	[ ]	POOR LIGHTING / TUNNEL AND VENT SHAFT(S)	[ ]
HAZARDS ASSOCIATED WITH RAIL VEHICLE MOVEMENT	[ ]	TRAIN / CURVE SPEED(s)	[ ]
WORK SITE CONDITIONS AND ACTIVITIES	[ ]	ETS BOX(s) LOCATIONS	[ ]
EMERGENCY PROCEDURES	[ ]	EQUIPMENT AND TOOL SAFETY	[ ]
ADJACENT TRACK PROTECTION	[ ]	ROTATION AND RELIEF PROCEDURES	[ ]

WSAD CERTIFICATION DUE	SERICAL #/ASSET ID	WSAD CERTIFICATION DUE	SERIAL #/ASSET ID
04-29-22	T0001HKN	10-27-21	T0000GWR

Rev. 4.0 WMATA Roadway Job Safety Briefing Form, Date: March 2021

Attachment 1 – RJSB sheet page 1 of 2

WMATA ROADWAY JOB SAFETY BRIEFING FORM

INSPECT PPE: ☐ Electrical Safety Gloves Date:_____ N/A ☐ INSPECT RWP STICKER: ☐

INSULATED MAT: N/A ☐ BLUE ☐ RED ☐ GREEN ☐ ORANGE ☐ YELLOW ☐ MAT EXP DATE: _____

ROADWAY WORKER ACKNOWLEDGEMENT

I understand and agree with all aspects of the Roadway Job Safety Briefing I just received. I feel I am adequately protected from any train movement or roadway hazards.

I understand I have a responsibility to conduct myself in a safe manner at all times.

ROADWAY WORKERS HAVE THE RIGHT AND RESPONSIBILITY TO INITIATE A GOOD FAITH CHALLENGE WHEN NECESSARY

Roadway Worker Signature	Employee/ Contractor ID#	Crew Leader's Signature/ ID #		Radio Call ID	Radio Certification Date	Serial #/ Asset ID
[redacted]						
		[redacted]				

GOOD FAITH CHALLENGE INFORMATION

EMPLOYEE(s) NAME_____ EMPLOYEE(s) #_____ DATE/TIME_____

RWP ISSUE(s) _____ SSUED RESOLVED: Yes_____ No_____

RWIC Comments: Virginia Hospital Center, Track # 1 R.V. Curve 180+00 - 196+00 C.V. Interlocking 220+00-223+00 Track #2 220+00-202+00, R.V. Curve 196+00-184+00 C.V. slight curve

RWIC SIGNATURE: [redacted] DATE/TIME: 9/21/21

RELIEVING RWIC SIGNATURE: DATE/TIME:

Rev. 4.0 WMATA Roadway Job Safety Briefing Form, Date: March 2021

Attachment 1 – RJSB sheet page 2 of 2

Appendix C – GOTRS

GOTRS - GENERAL ORDERS & TRACK RIGHTS SYSTEM
Track Rights Request

Request Summary

Request Number:	202120301902	**Track Access:**	True
Dates Requested:	09/21/2021 00:30 to: 09/21/2021 04:00	**Clear In Ten:**	False
Request Status:	Closed	**Equipment on Track:**	0
Requestor:	[redacted]	**Allow Piggybacks:**	True
Requestor Organization:	SMNT/PWR	**In Piggyback:**	Yes, Senior
Switch Order:		**Power Outage:**	Supervisory
Lock Out / Tag Out:		**Additional AC:**	
Request Title:	K01 TUNNEL LIGHT CIRCUIT REPAIR		

Location, Work Type and Description

Location:	Mainline
Non-Wayside Location Type:	
Request Type:	Regular
Charge Job Number:	
Contract Number:	
Maximo Work Order:	
Request Group:	No
Location Description:	
Request Description:	TROUBLESHOOT TUNNEL LIGHT CIRCUIT
Work Type:	Tunnel Re lamp
Meeting Location:	
PB Meeting Location:	
Tools and Equipment:	LADDERS , HAND TOOLS
Equipment on Track:	

	Track 1			Track 2	
Actual Work Area:	K185+00	K215+00	**Actual Work Area:**	K185+00	K215+00
Protected Work Area:	K180+00	K220+00	**Protected Work Area:**	K180+00	K220+00

Hot Stick Info. Third Rail Gaps:

From	To	Track ID
K155+75	K194+06	1
K194+34	K195+30	1
K195+58	K220+52	1
K155+22	K195+17	2
K195+73	K220+39	2

Date & Time

As of 09/21/2021 11:30
1 of 4

Attachment 1 – GOTRS Senior Rights Page 1 of 4

GOTRS - GENERAL ORDERS & TRACK RIGHTS SYSTEM
Track Rights Request

Request Summary

Request Number:	202120301902	**Track Access:**	True
Dates Requested:	09/21/2021 00:30 to: 09/21/2021 04:00	**Clear In Ten:**	False
Request Status:	Closed	**Equipment on Track:**	0
Requestor:	[redacted]	**Allow Piggybacks:**	True
Requestor Organization:	SMNT/PWR	**In Piggyback:**	Yes, Senior
Switch Order:		**Power Outage:**	Supervisory
Lock Out / Tag Out:		**Additional AC:**	
Request Title:	K01 TUNNEL LIGHT CIRCUIT REPAIR		

Start: 09/21/2021 00:30 **End:** 09/21/2021 04:00

Contacts

Entered by

[redacted].com

Work: [redacted]

Cell: [redacted] **Home:**

Requestor

[redacted].com

Work: [redacted]

Cell: [redacted] **Home:**

WMATA Manager

[redacted]m

Work: [redacted]

Cell: [redacted] **Home:**

Emergency Contact

[redacted].com

Work: [redacted]

Cell: [redacted] **Home:**

Support

SUPPORT GROUP	Crew Size
SMNT/PWR	2

ESCORT GROUP	Crew Size
SMNT/PWR	2

Request Change History

Date	Event
08/31/2021 15:30	Request was replicated from Request 202120301901.
08/31/2021 15:33	Request was edited. Field(s) changed: Power Outage, Location. Power Outage: RedTag to Supervisory. Location: Track 1 Actual: K202+00 K212+00 Protected: K195+58 K220+52, Track 2 Actual: K202+00 K215+39 Protected: K195+73 K220+39 to Track 1 Actual: K185+00 K215+00 Protected: K180+00 K220+00, Track 2 Actual: K185+00 K215+00 Protected: K180+00 K220+00.
09/07/2021 15:39	Request status was changed to Approved
09/21/2021 02:17	Work Prep was completed.

As of 09/21/2021 11:30
2 of 4

Attachment 1 – GOTRS Senior Rights Page 2 of 4

GOTRS - GENERAL ORDERS & TRACK RIGHTS SYSTEM
Track Rights Request

Request Summary

Request Number:	202120301902	**Track Access:**	True
Dates Requested:	09/21/2021 00:30 to: 09/21/2021 04:00	**Clear In Ten:**	False
Request Status:	Closed	**Equipment on Track:**	0
Requestor:	[redacted]	**Allow Piggybacks:**	True
Requestor Organization:	SMNT/PWR	**In Piggyback:**	Yes, Senior
Switch Order:		**Power Outage:**	Supervisory
Lock Out / Tag Out:		**Additional AC:**	
Request Title:	K01 TUNNEL LIGHT CIRCUIT REPAIR		

Request Change History

Date	Event
09/21/2021 04:42	Request status was changed to Opened
09/21/2021 06:40	OCC Controller Comment was updated.
09/21/2021 07:58	Request status was changed to Closed

Request Group

Request Number	Description

Piggyback

Request Number	Order	Inherits Rights	Request Status	Piggyback Status	Track	Protected Area Start	Protected Area End
202120301902 K01 TUNNEL LIGHT CIRCUIT REPAIR	SR	N/A	Closed	Agreed	2	K180+00	K220+00
202120301902 K01 TUNNEL LIGHT CIRCUIT REPAIR	SR	N/A	Closed	Agreed	1	K180+00	K220+00
202123803200 JDAC K01 252026 Monitoring Instrument Installation	JR-0	Yes	Closed	Agreed	1	K183+25	K199+25
202123803200 JDAC K01 252026 Monitoring Instrument Installation	JR-0	Yes	Closed	Agreed	2	K183+25	K199+25

Piggyback History

Date	User	Event
09/01/2021 20:06	[redacted]e	Piggyback with Junior Request 202123803200 was formed. Cause: Piggyback invitation was received.

Red Tag information

Red Tag #:	Request is not Red Tag.

As of 09/21/2021 11:30
3 of 4

Attachment 1 – GOTRS Senior Rights Page 3 of 4

GOTRS - GENERAL ORDERS & TRACK RIGHTS SYSTEM
Track Rights Request

Request Summary

Request Number:	202120301902	**Track Access:**	True
Dates Requested:	09/21/2021 00:30 to: 09/21/2021 04:00	**Clear In Ten:**	False
Request Status:	Closed	**Equipment on Track:**	0
Requestor:	[redacted]	**Allow Piggybacks:**	True
Requestor Organization:	SMNT/PWR	**In Piggyback:**	Yes, Senior
Switch Order:		**Power Outage:**	Supervisory
Lock Out / Tag Out:		**Additional AC:**	
Request Title:	K01 TUNNEL LIGHT CIRCUIT REPAIR		

Close-Out Summary

Final Status:	Closed
Request To Begin Work:	09/21/2021 00:42
Request to De-Energize:	09/21/2021 00:44
De-Energization Completed; RWIC notified:	09/21/2021 00:44
Hot Stick:	09/21/2021 01:28

From	To	Track ID	Waive(?)	Unit #	Chain Marker	Entered By	Date
K155+75	K194+06	1		1774	K194+00	Ashley Adams	09/21/2021 01:28
K155+22	K195+17	2		1774	K194+00	Ashley Adams	09/21/2021 01:28
K194+34	K195+30	1		1774	K195+00	Ashley Adams	09/21/2021 01:28
K195+73	K220+39	2		1774	K220+00	Ashley Adams	09/21/2021 01:28
K195+58	K220+52	1		1774	K220+00	Ashley Adams	09/21/2021 01:28

Permission Given To Setup Work Site:	09/21/2021 01:28
Start Work:	step not done
Work Site Cleared by Requestor:	09/21/2021 02:40
Work Stopped by OCC:	09/21/2021 06:40
Reason:	Poor radio communications
OCC Comments:	Cleared at 0214
OCC Assistant Superintendent Comments:	
Requestor Comments:	

OCC Delays

As of 09/21/2021 11:30
4 of 4

Attachment 1 – GOTRS Senior Rights Page 4of 4

Appendix D – LVEM Investigation Memorandum

Washington
Metropolitan Area
Transit Authority

M E M O R A N D U M

SUBJECT: Roadway Worker Protection (RWP) Violation

DATE: September 22, 2021

FROM: SMNT – [redacted], Assistant Superintendent

TO: SMNT – [redacted], Superintendent

On Monday September 21, 2021, at approximately 2:00 am, ROCC reported to SAFE that an RWP violation occurred involving LVEM personnel at Court House Station (K01). According to the initial report, LVEM personnel were given permission to set up track between chain markers K183+00 – K199+25, however the crew set the shunts on TRK1/2 chain marker C139+00. ROCC immediately asked work crew to clear the roadway and their supervisor was notified.

This incident was immediately placed under investigation by the department. As part of the investigation the work crew was taken for post incident testing, witness statements were collected, and interviews were conducted by the department and SAFE.

Findings:
1. Base on the statements collected from employees involved, and departmental interviews of the employees, it has been determined that the employees involved are in violation of RWP rules and procedures of not properly setting up the protected work areas and work zones while on the right of way and Section 1.1 of the MSRPH.

2. Work crew did not have proper documentation outlining the proper placements of shunts and safety mats on the right of way.

Section 1.1: All employees of WMATA, regardless of rank or title, shall be knowledgeable of the rules set forth in this manual that apply to the actions that they take, as well as rules and procedures contained in documents pertaining to their specific work assignments. The Roadway Worker in Charge (RWIC) and/or Escort shall be responsible for ensuring WMATA contractors and visitors abide by the rules set forth in this manual as it pertains to specific work assignments.

Mitigation:
To mitigate this violation, LVEM will coordinate a Safety Stand Down for situational awareness of having proper documentation and ensuring that all employees working wayside will be provided with the GOTRS summary displaying the details of the work location, and chain markers.

Attachment 1 – LVEM RWP Violation Investigation Memorandum page 1 of 1.

Appendix E – LVEM Corrective Action Memorandum

Washington
Metropolitan Area
Transit Authority

M E M O R A N D U M

SUBJECT: Roadway Worker Protection (RWP) Violation

DATE: September 23, 2021

FROM: SMNT – [redacted] Assistant Superintendent

TO: [redacted] (Superintendent)

Re: Corrective Action Plan

The following corrective action plan for incident 2021092#95696, on September 21, 2021 at 2am, for improper shunt placement at C05 Rosslyn Station.

Effective upon this notice, all LVEM employees that are participating in track set up of work protected areas are required to have a copy of the GOTRS rights summary, which entails work location, chain markers, and track details. Each employee will have a clear understanding of their duties and responsibilities as instructed from the RWIC.

A safety stand down will be conducted to facilitate this inform which will be completed by October 8, 2021. Sign-in sheets will be provided too safe.

Thank you,

Cc: [redacted]

Attachment 1 – LVEM RWP Violation Corrective Action Memorandum page 1 of 1.

Appendix F – Root Cause Analysis