

**Final Monitoring Report**  
**SafeTrack Program**  
**Washington Metropolitan Area Transit Authority**



Interlocking Rehabilitation at Twinbrook Station – August 2016

January 31, 2018

PMOC Contract Number: DTFT60-14-D-00011

Task Order Number: 006, Project Number: DC-27-5272, Work Order No. 03 OPs Referenced:  
01, 25

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Length of Time PMOC Lead Assigned to SafeTrack Program: 1 Year, 1 month

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## **EXECUTIVE SUMMARY**

### **A. INTRODUCTION**

This Final Monitoring Report documents management oversight of the SafeTrack Program performed by the Washington Metropolitan Area Transit Authority (WMATA). Oversight activities were performed by Project Management Oversight Contractor Hill International, Inc. for Region 3 of the Federal Transit Administration (FTA). Oversight was performed under Task Order No. 6 of Contract No. DTFT60-14-D-00011. During the Project, the PMOC coordinated its work with the FTA's WMATA Safety Oversight Office (FWSO). Oversight of field work and project management began in June 2016 and concludes with issuance of this report.

### **B. PROJECT HISTORY**

On August 6, 2015, at 5:20 a.m., a WMATA non-revenue rail transit train, traveling at approximately 15 mph, derailed on the Orange Line between Federal Triangle and Smithsonian Stations while executing a crossover move from Track 2 to Track 1. Five trucks (two per railcar) came off the rails. Because the train “fouled” both tracks, a significant disruption occurred (total shutdown and subsequent single tracking) on August 6<sup>th</sup> and 7<sup>th</sup>. An investigation by WMATA determined the root cause of the derailment was wide gauge. The wide gauge condition resulted from loose, skewed, and deteriorated fasteners. The wide gauge issue was identified during a Track Geometry Vehicle run on July 9, 2016, but repairs had not been effected prior to the derailment incident.

Three months after the Orange Line derailment on November 30, 2015, the WMATA Board of Directors appointed Paul J. Wiedefeld General Manager (GM) and Chief Executive Officer of WMATA. One of the new GM's priorities was to address the deteriorated condition of the railroad to improve reliability and safety. Following guidance from the General Manager, in February 2016, the Assistant General Manager Rail (AGM RAIL) developed the “Champion Program.” In support of the Champion Program, the General Superintendent of Track and Structures Department developed the “Track Quality Improvement Plan (TQIP).” The TQIP resulted in six objectives, number one of which, “Rehabilitation of Priority Areas” became SafeTrack. To accomplish the urgent work identified in the TQIP, RAIL created SafeTrack. RAIL staff developed three alternative schedules to address the priority areas identified in the TQIP, and decided the 12-month schedule would be the most aggressive program achievable. The development of the plan for SafeTrack involved numerous revisions and incorporated input from the FTA and other stakeholders. A draft SafeTrack Plan was released to the public on May 6, 2016, and revised and published again on May 19, 2016. SafeTrack started on June 4, 2016, and finished on June 25, 2017. Figure 1 below, developed by WMATA, summarizes the SafeTrack timeline for rehabilitation of 16 distinct areas across the Metrorail system.

### **C. PROJECT DESCRIPTION**

#### **1. The Plan**

‘The SafeTrack Program was a massive, comprehensive and holistic effort to address safety recommendations and rehabilitate the Metrorail system on an accelerated basis by expanding maintenance time on weeknights and weekends. Conducted between June 2016 and June 2017, it was the most aggressive track rehabilitation program in the Washington Metropolitan Area Transit Authority's (Metro's) history, which in the end, exceeded its goal of completing three years of track work in one year. Central to the program was a series of 16 extended track work events called “Safety

Surges” in which work was conducted 24 hours a day, 7 days a week for periods of one to six weeks.’<sup>1</sup> WMATA’s SafeTrack plan was to begin on June 4, 2016, and be completed by June 25, 2017.

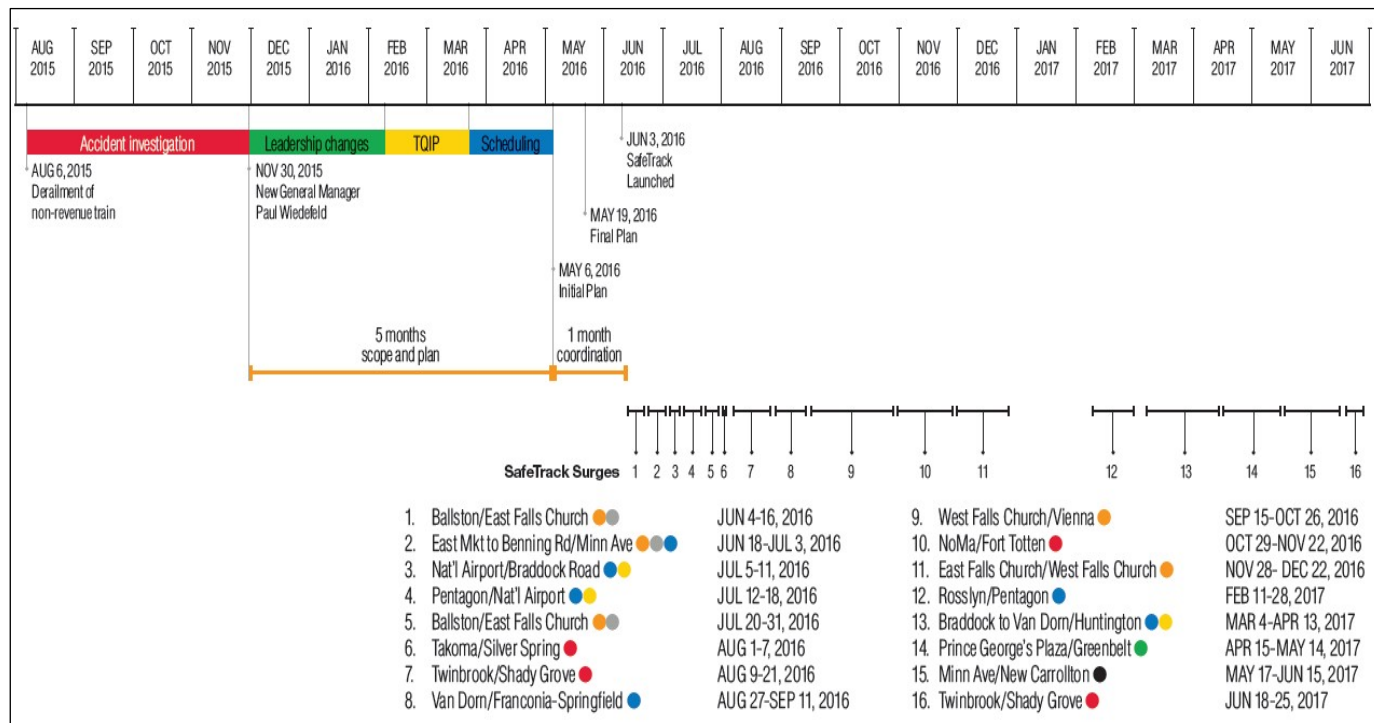


Figure 1: Timeline for SafeTrack Surges

SafeTrack had three objectives. The results are noted in bold.

1. Eliminate 95 percent of defective ties system wide. **ACHIEVED. Defective ties estimated at <2%**
2. Eliminate the backlog of track and structures work so that:
  - a. Less than 15,000 ties are defective or beyond their useful life. **ACHIEVED. Estimate of defective ties remaining is 4,000.**
  - b. Less than 28,000 fasteners are defective or beyond their useful life. **WMATA replaced 47,000 fasteners, 165% of a normal year, however WMATA is still evaluating ways to assess all the system’s fasteners as a whole (as an equivalent to tie scanning).**
3. Correct defects in all 16 surge areas to achieve the following:
  - a. There are no active yellow or red speed restrictions in the surge areas caused by track defects, as defined in WMATA’s Track Maintenance and Inspection Manual, TRST1000. **ACHIEVED.**
  - b. At least 75% of the cross-ties in any 40-foot segment of track are non-defective. **ACHIEVED.**

The SafeTrack Program identified 16 safety surges comprising 93 miles of track across the 230+ mile Metrorail system. Figure 2 below, prepared by WMATA, shows the surge and non-surge areas where SafeTrack crews refurbished the Metrorail roadway.

<sup>1</sup> Draft SafeTrack Project Report, October 2017, (WMATA’s Office of Maintenance OF Way Engineering) page 1.

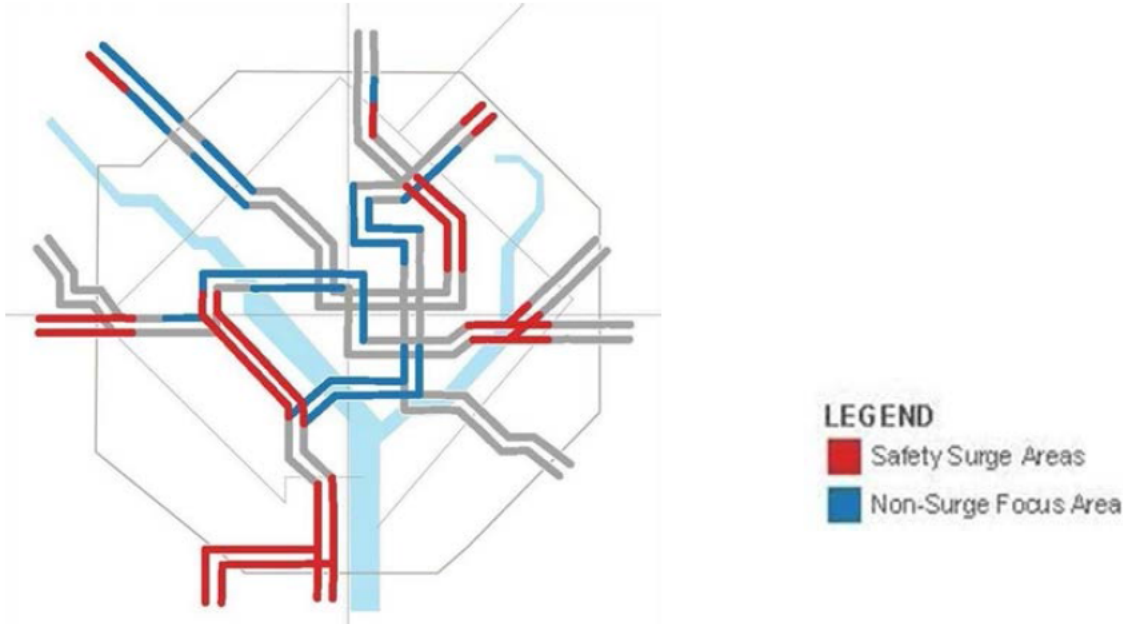


Figure 2: SafeTrack Surge and Non-surge Areas of the Metrorail System

**D. PROJECT STATUS**

Accomplishments

SafeTrack exceeded every one of its planned quantities of work. Table 1 compares work completed in typical years before SafeTrack with SafeTrack’s planned and actual work accomplished during surge and non-surge periods. See also Appendix F for a detailed list of accomplishments by category of work.

Final Quantities of Work Complete, Base Scope					
	Typical Year	SafeTrack Plan	Surge	Non-Surge	Total
Crossties (each)	15,000	47,500	63,398	0	63,398
Grout Pads (linear ft)	8,607	10,000	39,057	3,113	42,170
Fasteners (each)	28,780	36,160	30,667	8,720	39,387
Insulators (each)	7,860	11,999	15,196	57	15,253
Rail (linear ft)	66,412	0	47,701	15,574	63,275

Table 1: Comparison of Planned to actual SafeTrack work

**E. CORE ACCOUNTABILITY INFORMATION**

1. Budget & Funding

Table 1: Budget Summary

Final project budget	\$162,918,628
Amount expended:	\$162,918,628
Percent expended:	100%

Table 2: Summary of Funding

Federal Fiscal Year	Federal Funding		Local Funding	Total Funding
	Source	Amount	Amount	
FFY15 <sup>1</sup>	PRIIA	\$17,927,080	\$17,927,080	\$ 35,854,160
FFY16	PRIIA	\$20,140,011	\$20,140,011	\$ 40,280,022
FFY17	PRIIA	\$31,360,854	\$31,360,854	\$ 62,721,708
FFY17	§5307	\$ 5,005,753	\$ 1,251,438	\$ 6,257,191
FFY17	§5337	\$ 3,221,959	\$805,490	\$ 4,027,449
Subtotal		\$77,655,657	\$71,484,873	\$157,368,242
FFY17	Long-term Financing	—	\$ 13,233,621	\$ 13,233,621
FFY17	Local Jurisdictions	—	\$ 544,476	\$ 544,476
Total Program	—	\$77,655,657	\$85,262,970	\$162,918,628

## 2. Schedule

- Original SafeTrack Program completion date: June 30, 2017
- Actual completion date: June 25, 2017. Appendix H shows a summary program schedule.
- Project Duration: June 4, 2016, through June 25, 2017, 374 days, approximately 13 months
- Percent of time expended: 100%

## 3. Contingency

- All contingency has been dispersed to accommodate expenditures. No contingency remains.

## F. MAJOR PROBLEMS / ISSUES

### 1. Observed by the PMOC

- A formal Project Management Plan (PMP) was not developed prior to planning and execution of the SafeTrack program.
- WMATA either did not have or was not following a specification for replacement of grout pads and the testing of concrete used in those grout pads.
- WMATA does not have or was not using a specification on procedures for installation and testing of anchor bolts for rail fasteners.
- Coordination among various WMATA departments to share track rights started in 2015 as part of Corrective Action Plan R-3-23-a. The SafeTrack program drove WMATA to significantly improve this coordination and increase sharing.
- Although much attention was given to the use of personal protective equipment (PPE), enforcement was not as effective as it should have been, partly because there are different PPE usage requirements for different maintenance departments.

### 2. Observed by QICO<sup>2</sup>

- “Initial development of maintenance plans to accomplish the intent of the SafeTrack program did not include input from WMATA engineering until after establishment of the preliminary

<sup>2</sup> “Metrorail Engineering and Maintenance, Post-SafeTrack: Assessment of Next-Level Maintenance Requirements (16),” Internal Review 2017, (WMATA’s QICO), pages 47-49.

schedule.”

- b. “The track maintenance department was unable to efficiently and accurately develop the scope of work from the track defect data stored in WMATA’s enterprise maintenance management database (Maximo) due to ‘insufficient or out of date information.’ ”
- c. “Each maintenance department has a different method for using Maximo to plan and record maintenance activities.”
- d. “WMATA needs to develop a formal process for controlling changes in scope, schedule, and plan implementation of future maintenance initiatives to ensure impacts to critical activities are reviewed, approved, and shared with key stakeholders.”
- e. “WMATA lacks formal quality control measures for use in corrective maintenance and rehabilitation activities that ensure identification and remediation of deficiencies prior to returning assets to revenue service.”
- f. “WMATA needs to standardize the process for developing, using, and updating a risk register for maintenance and rehabilitation projects. The process should include identification of action owners, and due dates for implementation/resolution of the risk mitigation.”

## **G. LESSONS LEARNED**

WMATA learned a number of valuable lessons from its execution of the SafeTrack program. From the PMOC’s perspective, those lessons are:

1. Although WMATA knew that segments of track needed repair and rehabilitation, WMATA was not fully aware of the extent of the state of disrepair of the track. This lack of awareness resulted from incomplete records, lack of thorough analysis of existing Optram, Maximo, and Track Geometry Vehicle (TGV) generated condition data. Application of this lesson has resulted in WMATA’s revising its “Track Inspection Safety Standards, TRST-1000 Field Manual,” as well as, revision of procedures for recording and using data in Maximo, its Enterprise Asset Management System.
2. Concurrently, and as a result of an internal review (audit) of the SafeTrack program, QICO issued three Internal Corrective and Preventative Actions (iCAPAs). These three iCAPAs result from lessons learned on SafeTrack. They contain assigned action items with due dates that are being tracked by QICO. Appendix E contains the three iCAPAs.
3. When a major maintenance/rehabilitation project/program is planned, WMATA should begin the development of a PMP at the outset of the planning phase and target completion of the draft before procurement of design services begins. If no design is required, i.e., the project/program relies on existing maintenance procedures, begin development of the PMP when developing the scope of the project/program. The exercise of developing the PMP will assure that the project team has a well thought out plan for executing the project.
4. WMATA should approach a maintenance project to be accomplished using force account in the same manner it approaches a project that will be performed by a contractor. The project should have a well thought out scope, clearly defined, and be based on sound engineering analysis of existing conditions. There should be a project management team that includes designated staff to manage safety, quality, schedule, cost, risk, materials, and procurement. A realistic budget with appropriate contingency should be developed. There should be procedures and specifications for all elements in the scope of work; these are for not only the physical work, but also for assuring and documenting safety, quality, and project controls: schedule,

cost, reporting, and risk management. A risk register needs to be developed early in the planning phase of a project.

5. In addition to these lessons learned, the SafeTrack team has compiled lessons learned in Section 4 of a draft report dated October 4, 2017. Copies of this draft were prepared and are maintained by WMATA's Office of Maintenance of Way Engineering.
6. It is important to add here the SafeTrack Management Team's comments on avoiding another SafeTrack type project:<sup>3</sup>

In order to ensure the system does not require another emergency program of the scope or scale of SafeTrack, it is necessary to establish a robust capital program, one that is more aggressive than what was executed pre-SafeTrack, and implement preventive maintenance (PM) programs to extend the life of existing assets.

On June 25, 2017, at the start of Fiscal Year 2018, Metro officially ended the SafeTrack service hours and implemented a two-year service plan that added eight more non-passenger service hours each week compared to pre-SafeTrack. This time will be used to implement six new preventive maintenance programs, as briefed to the Metro Board. The recently created Maintenance of Way Engineering (MOWE) group will lead the development and monitoring of the PM programs, with TRST and TRPM retaining responsibility for the execution of the work, similar to SafeTrack.

Annual track access needs vary depending on the nature and volume of the work required that year, particularly for specific replacement projects and their physical constraints, such as the structural repairs to Rhode Island Avenue station or the replacement of an interlocking. Moving forward, Metro will aggressively plan and schedule the capital work based on:

- i. Fencing-off high passenger volume times, such as Cherry Blossom Festival.
- ii. Maximizing weekend work to take advantage of longer work windows and avoid disrupting peak commutes.
- iii. Reducing the number of track outages necessary by coordinating work within the same outage ("piggy-backing") where safe and efficient.
- iv. Limiting daytime work done during the week, including midday work (10 AM – 2 PM) and evening single tracking (8 PM).
- v. Planning strategic extended outages, where benefits gained in terms of efficiency or quality of the work warrant extended track time beyond a three- day weekend. These strategic extended outages will be executed based on the lessons learned from SafeTrack's Safety Surges.

MOWE has also created a new group within Metro called 'Work Planning' which will carry forward the lessons from SafeTrack to maximize the value of scheduled track work events through better planning, coordination and increased use of piggy- backing. This group will continue many of the routines established under SafeTrack, particularly the coordination meetings and email distributions (to be updated as staff changes) and implement new initiatives based on the SafeTrack experience, such as establishing a consolidated technical library for all ATC, power and track drawings, as well as a

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<sup>3</sup> Draft SafeTrack Project Report, October 2017, pages 55-56.



catalogue of approved work area maps and associated service patterns.

## MAIN REPORT

### A. PROJECT STATUS

1. Design – This project did not use formal design documents because the project scope was rehabilitation of the existing railroad track structure and wayside elements such as signals, signage, high- and low-voltage cables, and fence. Existing design standards served as the scope of work planned. However, it should be noted that WMATA’s QICO commented in its Internal Review Report on SafeTrack under the heading “Areas for Improvement: Planning & Execution,” “[i]nitial development of maintenance plans did not include input from engineering functions until after the preliminary schedule had been established.”<sup>4</sup>
2. Construction – SafeTrack was a maintenance and rehabilitation project rather than a construction project. The purpose of SafeTrack was to rehabilitate the Metrorail system’s track structure as well as wayside elements of the railroad. Work was performed by WMATA force account and a national contractor, G. W. Peoples, “that specializes in heavy and light railroad and transit construction-related activities, including track installation, rehabilitation, maintenance, repair and removal, as well as contact rail welding.”<sup>5</sup> WMATA and G. W. Peoples crews worked track by track or in super gangs performing the same tasks of replacing ties, regulating ballast, and welding rail.

Rather than describe in detail here how the SafeTrack program was planned and executed, the reader is referred to the following sections of the Project Management Plan (PMP), which is attached as Appendix K.

- 1.2 Program Development
- 1.3 Program Objectives
- 2.0 Program Organization (staffing)
- 3.0 SafeTrack Scope
- 6.0 Work Planning
- 7.0 Materials Management
- 8.0 Execution

3. Third Party Agreements and Coordination

— *Railroads* – SafeTrack work was conducted on Metro line segments that share property lines with freight and commuter railroads – CSX, VRE, Amtrak and MARC. The railroads have co-existed since Metro was built. Common corridors and access points exist on certain line segments where joint-use agreements or right-of-entry (ROE) agreements would be useful for all the railroad entities. SafeTrack was planned and implemented subject to a very compressed planning window and there was not enough time to accommodate the lead-times to secure ROE’s for site access. A ROE is in-place for Metro bridge inspections where they cross over CSX property (CSX808430). This did not serve SafeTrack work but was useful for associated Metro engineering groups concurrent with SafeTrack.

*Local Political Jurisdictions* – The SafeTrack team coordinated with the local jurisdictions

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<sup>4</sup> Metrorail Engineering and Maintenance, Post-SafeTrack: Assessment of Next-Level Maintenance Requirements (16), Finding F-STP-17-01, page 47.

<sup>5</sup> G.W. Peoples website (<https://www.gwpeoples.com/about-us/>) home page.

(Prince George’s and Montgomery Counties in Maryland, Arlington and Fairfax Counties in Virginia, and the District of Columbia) in accordance with Section 4.2 Government Relations

and Jurisdictional Coordination in its Project management Plan:<sup>6</sup>

Local jurisdictions will be consulted prior to the release of SafeTrack Surge schedules to provide advance notice of the work plans and any potential impacts outside the fence line (i.e., access and parking). In addition, the jurisdictions provide critical assistance in reducing the impact on commuters by providing supplemental bus service, traffic mitigation efforts, and other travel alternatives. The SafeTrack scope and schedule are ultimately driven by safety concerns in the Metrorail system, however input from the jurisdictions and the public is considered to mitigate unintended consequences of the work plan. All such coordination will be led by the Government Relations Department, with support from the SafeTrack team as requested.

The SafeTrack Project Report noted two lessons learned regarding coordination with local jurisdictions:<sup>7</sup>

- e. Local jurisdictions should be engaged early for long range planning of regional coordination and to amplify customer awareness of the program.
  - i. While SafeTrack fostered increased cross-jurisdictional coordination, the District [of Columbia] was not as engaged as the majority of surges were in Virginia and Maryland. This led to the District feeling less informed regarding planning and community engagement for Surge 15 [Orange Line, Minnesota Avenue Station to New Carrollton Station].
4. Environmental Mitigation Measures – During the course of the SafeTrack project, crews cleaned up trash along the right-of-way and unclogged drains in tunnels, on aerial structures, and in other right-of-way areas.
5. Project Management Oversight – As part of its responsibility to prudently use public funds, FTA performs project management oversight to ensure that major capital transit projects are executed professionally, efficiently, and in conformance with applicable statutes, regulations, guidance, and sound engineering and project management practices. FTA typically accomplishes this oversight through Project Management Oversight Contractors (PMOC).

FTA assigned a PMOC to oversee management of the SafeTrack program, after the June 13, 2016 approval of an additional \$20 million in safety-related Federal funding towards SafeTrack. This additional funding increased the budget to over \$100 million for the program, which met the criteria for a major capital project prompting the assignment of a PMOC. This oversight is separate and distinct, but complimentary to, the temporary, direct safety oversight of WMATA that FTA was performing and continues to perform through the FTA’s WMATA Safety Oversight (FWSO) office.

On June 23, 2016, the PMOC met with WMATA’s Assistant General Manager (AGM) RAIL to gain an initial understanding of the SafeTrack Program. Then, on July 12, 2016, the PMOC and FTA met the Director of SafeTrack for the first monthly SafeTrack oversight meeting. At that first meeting, the Director reviewed the scope for Surge 3 as well as its execution plan. Then, the PMOC reviewed the required contents of a PMP to be developed by and for the Project. The PMOC also

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<sup>6</sup> SafeTrack PMP, Revision 6, page 10.

<sup>7</sup> Draft SafeTrack Project Report, page 43.

emphasized that SafeTrack needs a coordinator in the field to coordinate field work of the various WMATA departments during each surge.

Over the 13-month period of SafeTrack, the PMOC met weekly and monthly with the SafeTrack management team reviewing progress and evaluating management effectiveness in controlling budget, schedule, safety, and quality. The PMOC drafted, coordinated with WMATA, and submitted to FTA monthly comprehensive reports of SafeTrack activity and accomplishments. FTA posted the 11 monthly reports on its website.

In addition to attending the monthly oversight meetings, the PMOC observed work firsthand during nine of the 16 surges:

- Surge 2 – Orange/Silver/Blue Line, Eastern Market to Benning Rd and Minnesota Ave.
- Surge 5 – Orange/Silver, Ballston to East Falls Church
- Surge 7 – Red Line, Shady Grove to Twinbrook
- Surge 10 – Red Line, NoMa-Gallaudet U to Fort Totten
- Surge 11 – Orange Silver Line, East falls Church to Vienna
- Surge 13 – Yellow/Blue Line, Braddock Road to Huntingdon/Van Dorn
- Surge 14 – Green Line, Greenbelt to College Park
- Surge 15 – Orange Line, Minnesota Ave to New Carrollton
- Surge 16 – Red Line, Twin Brook to Shady Grove

During these surge visits, the PMOC observed quality of track and structures work to include ballast, welded rail, gauge, grout pads, fasteners and studs, drains, power cables, wayside signs and signals, wayside cleanliness, safety activities. Also observed were control of persons entering and leaving work zones and use of personal protective equipment. All of the PMOC's observations were reported in weekly and monthly reports to FTA and discussed at the monthly oversight meetings. Safety issues were immediately reported to on-site supervisors. There were extensive discussions of construction of grout pads and installation of stud bolts for fasteners.

## **B. PROJECT MANAGEMENT PLAN AND SUB-PLANS**

When SafeTrack was conceived in early 2016, WMATA was not planning to develop a PMP; however, in mid-June 2016, FTA directed WMATA to develop a PMP for SafeTrack. WMATA began Surge 1 work on June 4, 2016. The PMOC conducted its first meeting with the Director of SafeTrack on July 12, 2016. At that meeting, the PMOC reviewed the required contents of the PMP to be developed by the SafeTrack team (the Team). The PMOC met with the Team on August 17, 2016, to review progress on development of the PMP. September 30, 2016, was set as the date for submission of the PMP to the PMOC for review, and the PMP was submitted on that date. The PMOC commented on revision zero and over the next few months, the Team and the PMOC exchanged PMP revisions and comments on those revisions. Seven months after the first submission, the Team submitted Revision 6 on April 21, 2017. FTA approved the PMP by letter dated April 24, 2017.

Development of a PMP is never an easy process. Even with a sample outline provided to a grantee, much effort collecting information on design, construction, and management control processes from numerous groups involved in the project takes time and typically requires several drafts to arrive at a final management plan. Drafting the SafeTrack PMP was no exception. Since SafeTrack was a maintenance project and not a construction project this created additional challenges to write a PMP. During the seven months it took to get an approved PMP, the director focused her Team on clearly and accurately recording the many processes to be employed to manage and execute the SafeTrack project. In some cases, processes needed to be developed and the Team did that. As for nearly all projects, the PMP development process is as, if not more, valuable than the finished product.

SafeTrack was no exception.

## C. PROJECT MANAGEMENT CAPACITY AND CAPABILITY

### 1. The Project Team

Recognizing the size and complexity of the SafeTrack project, in June 2016, the AGM RAIL hired an electrical engineer with an MBA, who had project and program management experience at an international design and construction firm, to direct the SafeTrack project. In late August to early September, the SafeTrack Director began adding staff to the SafeTrack management team. At the September 13, 2016, third monthly PMOC oversight meeting, the Director introduced her new staff and provided job responsibilities, as recorded in the PMP, for each position:<sup>8</sup>

#### **Director**

- Responsible for overall program execution
- Coordination with Directors and General Superintendents regarding support for SafeTrack and any concerns related to safety and quality
- Planning and coordination of surge support services (Bus, Customer outreach)
- External stakeholder management (in coordination with External Relations)

#### **Project Manager**

- Responsible for overall definition and management of work areas
- Establish safe work area configurations with Engineering, ROCC and SAFE and ensure appropriate documentation and execution of track rights.

#### **Coordinator**

- Manage site logistics, including permits, parking and employee access to work zone
- Ensure resolution of issues raised by QICO, SAFE and FWSO

#### **Scheduler**

- Prepare schedules and planning tools to support the Offices in planning their work.
- Create and manage the SafeTrack project schedule, as well as the detailed execution plans (March Charts) for each surge.
- Conduct the daily progress calls and update the March Charts as needed.

#### **Business Analyst**

- Provide cost and budget analysis to develop budgets for each surge and overall SafeTrack program.
- Review and analyze cost data, and develop productivity and efficiency rates for TRST and other Offices gaining beneficial use of the surges for future planning purposes.
- Analyze cost expenditures to monitor cost performance and coordinate with OMBS to ensure sufficient funding
- Support materials and inventory planning for SafeTrack work.

#### **Reports Engineer**

- Provide engineering support for preparation of various reports and presentations, in support of the SafeTrack Director and Project. Create and manage the weekly and monthly SafeTrack progress reports, as well as additional reporting to facilitate coordination with other WMATA departments and stakeholders.

In addition to this dedicated team, the existing Track Access and Escort Services (TAES) group, will

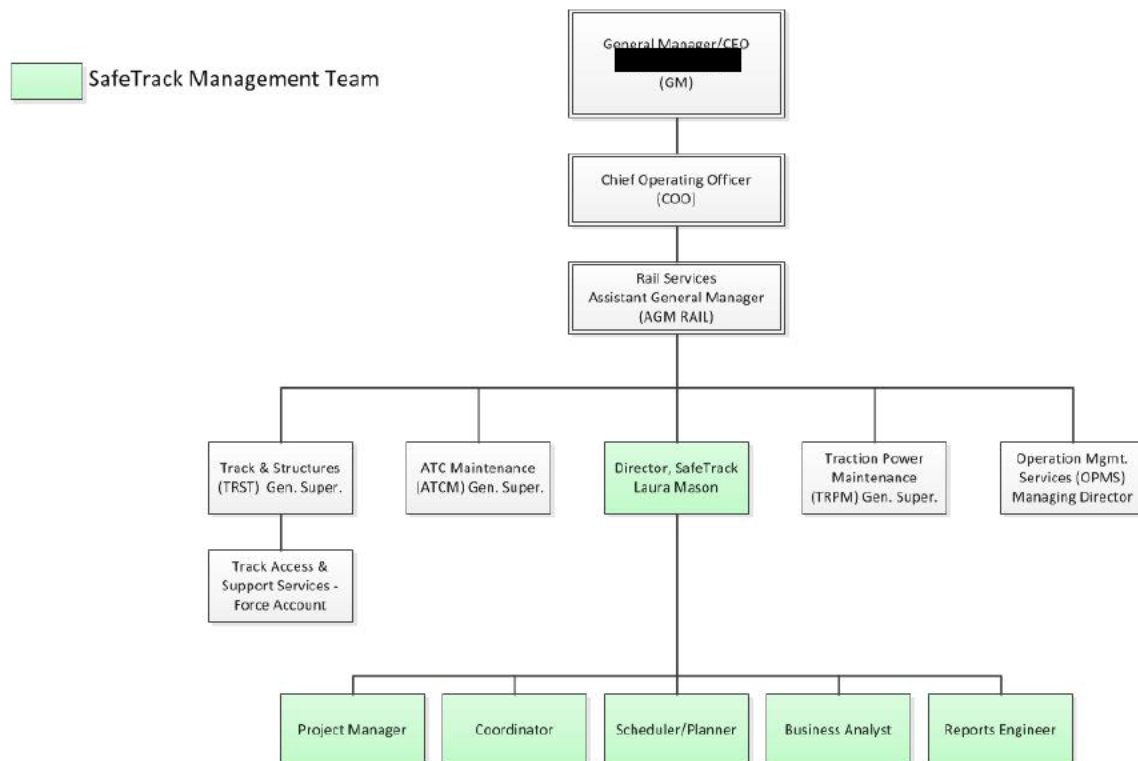
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<sup>8</sup> SafeTrack PMP, page 5.

mobilize Mobile Command Center (MCC) to act as the Roadway Worker in Charge (RWIC) for all surge events. TAES will continue to report to the Office of Track and Structures (TRST) but will dedicate TAES resources to the planning and coordination of the surges.

An organization chart depicting the SafeTrack management organization and how it fits into WMATA’s management structure is shown in Figure 3 below.

Figure 3: SafeTrack Management Team under the AGM RAIL



2. Comments on Project Management Capacity and Capability – WMATA provided two evaluations of the SafeTrack project management effort, one by the SafeTrack team and one by QICO. The PMOC’s comments follow the two from WMATA.

a. By the SafeTrack team<sup>9</sup>

Overall, the use of the dedicated team was a success, but the size of the team necessary for this scale of program was underestimated, particularly as it was set prior to the requirement for, and development of, an FTA-approved Project Management Plan (PMP). Furthermore, given the short timeline of the project, the ability to effectively add resources midstream was very limited. The team managed through the resource limitations by focusing first on coordination of work crews (the current surge, particularly closing it), second on planning for successful execution of the next surge (particularly the surge opening), and third on reporting on progress completed (the past surge). Lessons learned were:

- (1) Keep the face-to-face weekly Tuesday and Thursday coordination meetings.
- (2) Project management team should remain independent. A separate team that was not part of

<sup>9</sup> Draft SafeTrack Project Report, pages 19-20.

the Offices executing work was essential to effective work planning in order to negotiate and resolve track allocation conflicts, and establish a higher degree of community engagement.

- (3) Engage a second Metro person, the project manager at the start of the program. The project manager should have been added sooner than January 2017 as it would have enabled better, more focused technical coordination while also freeing up the SafeTrack Director to focus more on external coordination and planning. Use of consultant staff was successful due to faster mobilization time; however there are limits on what consultant staff can do, especially on-site.
- (4) For future projects of SafeTrack scale, in addition to the project manager there should be a field coordinator/project engineer who would enable better communication, both internally and externally. This position should have a Roadway Worker Protection (RWP) Level 4 training and access, and preferably the experience of a Superintendent or Assistant Superintendent.
- (5) Additional, temporary scheduling resources could have been engaged to develop the project management tools upfront. The 90-day look ahead schedule described in the PMP was largely skipped due to resource constraints for the SafeTrack Team, which impacted our ability to forecast material needs. In the future, steps should be taken to facilitate the generation of additional reports (e.g., entry of the estimated quantities into Primavera to forecast installation curves) as these reports would have helped the Office of Procurement to be aware of potential material shortages sooner.

b. By QICO<sup>10</sup>

- (1) Stakeholder Management – Management team successfully engaged and collaborated with internal stakeholders to continually improve the execution of each subsequent Surge.
- (2) Safety Management – The overall injury rate experienced under the emergency program was lower than other WMATA operations during the same period.
- (3) Quality Management – Management team introduced management tools to continually improve the planning and execution of Surges and documentation of work completed.
- (4) Scope Management – Formal processes are required to govern changes in scope and schedule for Metro’s future capital renewal activities. Although current maintenance control policies include requirements for quality control of preventative maintenance activities, there is little guidance for corrective maintenance or large-scale rehabilitation activities.
- (5) Risk Management – Due to a delay in creation, the risk register developed for the SafeTrack program was used to capture a series of issues (realized situations), as well as potential future risks (unrealized situations). This management tool should be used to capture potential risks to a program prior to initiation and [be] updated periodically through execution. The program’s risk register was missing important components such as the identification of action owners and due dates for the implementation/resolution on the action plans and due dates for the planned mitigation of the risk.

c. By the PMOC

The PMOC concurs with the observations of the SafeTrack team and QICO. For several years, the PMOC has observed WMATA in a mode of rebuilding its capital construction and

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<sup>10</sup> Internal Review 2017, Comprehensive Internal Review, Metrorail Engineering and Maintenance, pages 45 – 49 of 125; <https://www.wmata.com/initiatives/transparency/Internal-Reviews.cfm>

maintenance management capacity and capability; although improvements have occurred, WMATA recognizes the need for continual improvement. This situation (rebuilding but not there yet) was true for the SafeTrack program, and in spite of this, the small six-person team assembled to manage the \$163 million SafeTrack program did a remarkable job. The team did very well scheduling and coordinating work and support from multiple WMATA departments and third parties. The team's business analyst's efforts at projecting costs and presenting cost information were noteworthy and helpful; however, cost control is an area that WMATA needs to improve. In fairness, had WMATA developed a more detailed scope of work for each surge, and had WMATA more experience with the cost to support such a huge undertaking, cost engineers would have been better able to predict the final cost of SafeTrack. The original estimate was \$119 million and the final cost was \$163 million. The \$44 million dollar (37%) increase resulted from (1) a \$38 million growth in scope including additional surges and adjusting through lessons learned from single track to shut downs; and (2) \$6 million for additional materials required to support increased production and for unforeseen labor costs.

in additional costs and of surges and t and unforeseen labor costs. WMATA has an opportunity to use the experience and data it accumulated working on SafeTrack to better plan and estimate future work.

The PMOC also observed management/supervision of labor in the field. There were indicators that WMATA needs to improve its field management of maintenance activities. Supervisors tended to get too involved in specific tasks as opposed to supervising performance of the entire surge. There was no apparent hierarchy of command and control (management) for field activities. Another indicator was the frequent observation of workers not wearing required personal protective equipment (PPE). This is a management/supervision issue and an area where WMATA can improve. The Authority has resources that management/supervision could have marshalled to better control the use of PPE.

Despite the areas for improvement, WMATA deserves recognition for all that it accomplished during the SafeTrack program with very few accidents and lost time injuries.

#### **D. PROJECT COST**

WMATA's fiscal year (FY) budgets contain numerous Capital Improvement Programs (CIP) for which budgets are developed by WMATA staff and approved by the WMATA Board. Among those CIPs is CIP 0024 that funds work on track and related structures. When approved prior to July 1, 2015, the FY 2016 budget for CIP 0024 did not envision the SafeTrack program. As stated previously in this report, planning for SafeTrack began in the February-March 2016 time frame. The initial SafeTrack plan was published in mid-April 2016. Work began on Surge 1 June 4, 2016.

In its draft report on SafeTrack, the SafeTrack team described WMATA's approach to funding SafeTrack and the budgeting process:<sup>11</sup>

“Due to the emergency nature of work required for the SafeTrack Program, the GM/CEO and Office of Management and Budget Services (OMBS) committed to fund the program and its associated cost risk. With budget committed to the program, the SafeTrack team was charged with providing management to ensure fiscal responsibility and due diligence for controlling costs.

“The FY 2017 budget was initially set for standard operations before the need for an

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<sup>11</sup> Draft SafeTrack Project Report, October 2017, unpublished, pages 14 & 15.

emergency track maintenance program was identified. Initial estimates of the SafeTrack Program assumed that original funding levels were not sufficient to complete the program. It was acknowledged by OMBS<sup>12</sup> that additional funding would be required to complete the SafeTrack program. Cost risks of this emergency program were understood and accepted up front and communicated to Metro’s Board of Directors and FTA by the General Manager/Chief Executive Officer and OMBS. With the understanding that this program would require additional funding, no formal contingency dollars were allocated to the project, as is typical [for] capital projects.”

WMATA used several sources to fund SafeTrack. The amounts from these fund sources varied over time to meet the budget demands. Table 3 provides federal and local funding sources that supported SafeTrack.

Table 3: Funding sources for SafeTrack

Federal Fiscal Year (FFY)	Federal Funding		Local Funding	Total Funding
	Source	Amount	Amount	
FFY15	PRIIA <sup>13</sup>	\$17,927,080	\$17,927,080	\$ 35,854,160
FFY16	PRIIA	\$20,140,011	\$20,140,011	\$ 40,280,022
FFY17	PRIIA	\$31,360,854	\$31,360,854	\$ 62,721,708
FFY17	§5307 <sup>14</sup>	\$ 5,005,753	\$ 1,251,438	\$ 6,257,191
FFY17	§5337 <sup>15</sup>	\$ 3,221,959	\$805,490	\$ 4,027,449
Subtotal		\$77,655,657	\$71,484,873	\$149,140,530
FFY17	<i>Long-term Financing</i>	—	\$ 13,233,621	\$ 13,233,621
FFY17	<i>Local Jurisdictions</i>	—	\$ 544,476	\$ 544,476
<b>Total Program</b>	—	<b>\$77,655,657</b>	<b>\$85,262,970</b>	<b>\$162,918,627</b>

Because WMATA had no previous experience with such an extensive rail system maintenance project, and because the full scope of rehabilitation work was unknown prior to beginning SafeTrack, WMATA and the SafeTrack management team were challenged to develop a program budget. Again, the draft SafeTrack Project Report explains the budgeting process.<sup>16</sup>

“When creating the initial budget, incomplete track asset condition and insufficient track staff to inspect in advance made estimating work and forecasting costs challenging. Four months after the program had started, the SafeTrack team found success in interviewing each [maintenance department] office to review their budget process to understand assumptions and estimating methodologies. This was also an opportunity for the SafeTrack management team to review expectations and ask additional questions to review operational understanding. Through reviewing the budget forecasts with each office, the SafeTrack budget analyst was able to create the budget book attached in the PMP and reforecast based on documented assumptions that allowed for a lower margin of error in estimated versus actual costs. Due to the expedited nature of SafeTrack, the

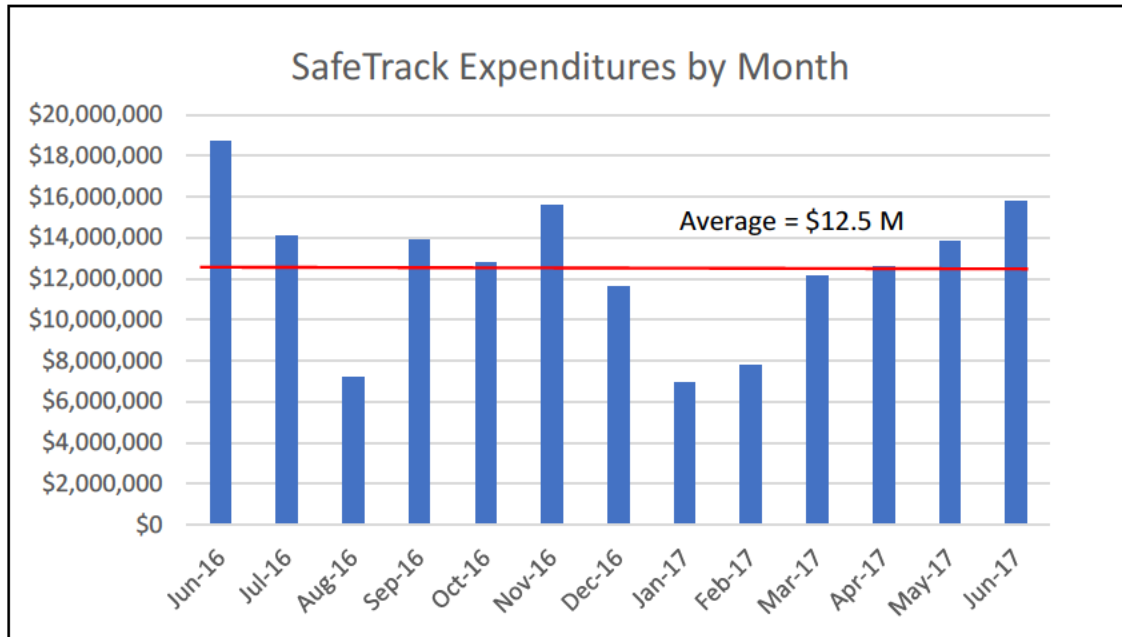
<sup>12</sup> WMATA’s Office of Management and Budget Services.  
<sup>13</sup> PRIIA - Passenger Rail Investment and Improvement Act of 2008.  
<sup>14</sup> §5307 – Urbanized Area Formula Funds.  
<sup>15</sup> §5337 – State of Good Repair Formula Funds.  
<sup>16</sup> Draft SafeTrack Project Report, page 15.



management team placed additional emphasis on reforecasting the individual offices’ [budgets] with variable costs for the additional surges. In order to have greater accuracy in forecasting costs, the team frequently engaged with some of the more variable offices where costs had the ability to fluctuate from surge to surge.”

WMATA reported expenditures on a monthly basis as of the end of each month. On average, WMATA expended \$12.5 million per month as shown in Figure 4.

Figure 4: SafeTrack monthly expenditure



## E. PROJECT SCHEDULE

SafeTrack was not a typical capital construction project; rather, it was a fast-paced maintenance and rehabilitation project. Accordingly, the management team did not use typical project controls methods for planning and scheduling. The TQIP along with detailed scopes of work developed by maintenance department supervisors were the planning tools. They established the surge locations, type (single track or shut down), and durations. “In practice, March Charting became the most useful and active scheduling tool to plan, schedule, and monitor the work. The program schedule was used to plan and track progress of pre-surge activities and manage effects on future surges. The 90-day look ahead schedule was not used.”<sup>17</sup> The 90-day look ahead schedule was suggested by the PMOC and included in the work planning section of the SafeTrack PMP. A sample March Chart is in Appendix G.

“The SafeTrack scheduler and team reviewed the scopes of work to finalize work zone maps and prioritize scope as needed in the weeks leading up to the surge. Not all work identified made it into the final work plan.”<sup>18</sup> The SafeTrack PMP describes the approach used to schedule the work.<sup>19</sup>

The original plan for SafeTrack envisioned 14 surges and the project ending in March 2017; however, WMATA modified the scope in December 2016. In that month’s report, the SafeTrack management

<sup>17</sup> Draft SafeTrack Project Report, §4.2, page 21.

<sup>18</sup> Draft SafeTrack Project Report, §4.2.1, page 21.

<sup>19</sup> SafeTrack PMP, Section 6, pages 11-13.

team reported, “[t]wo surges have been added to the program, in areas not previously identified on the TQIP: Minnesota to New Carrollton, planned for May/June [2017] and Twinbrook to Shady Grove, planned for June [2017]. SafeTrack is still planned to complete by June 30, 2017.”<sup>20</sup> An as-built bar-chart schedule of the entire SafeTrack program is in Appendix H.

## F. QUALITY ASSURANCE/QUALITY CONTROL

WMATA’s quality program for the SafeTrack project is characterized by two approaches:

- Split responsibility, and
- Multiple lines of defense

The **split responsibility approach** delegated responsibility for the quality of work to the office performing the work. “Offices performing the work” were the following:

- Track and Structures
- Automatic Train Control
- Material and Inventory
- Traction Power
- Information Technology-Network Communications Services

According to the SafeTrack PMP:<sup>21</sup>

[WMATA’s approach to quality] is tailored to fit the needs of the program which is to accelerate work performed without undermining the accountability of the Directors [of the Offices] responsible for the work. The SafeTrack quality program maintains the independence and accountability of each Office’s quality processes as much as possible. . . . SafeTrack follows all WMATA standards, which reference national standards, federal regulations, and state and local regulations. The maintenance groups [Offices] are responsible for developing the Quality Plan for each of their respective functional areas, under the direction of the General Superintendents.

The PMP explains the multiple lines of defense as follows.<sup>21</sup>

- Quality Control (QC) is the 1st Line of Defense: Maintenance Management performs quality control verification and validation tasks:
  - Monitor work Quality
  - Perform QC Inspection
  - Complete and Sign QC Records
  - Maintain Records
- Quality Assurance (QA) is the 2nd Line of Defense: QICO verifies the quality of the work and the effectiveness of the QC program through the following activities:
  - Pre Surge inspections and reporting
  - Random, periodic, and targeted inspections and reporting
  - Sample Inspections of QC’d work
  - Defect tracking log
  - Final walk through inspection and reporting
  - Close out report

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<sup>20</sup> SafeTrack Monthly Report to FTA PMOC – December 2016, page 3.

<sup>21</sup> SafeTrack PMP, §10, pages 27 & 28.

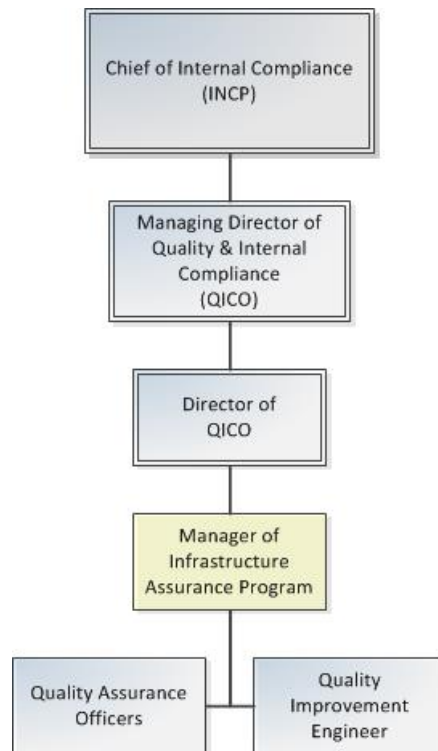
— Follow-up on Open Items

The PMP delegates responsibility for SafeTrack quality assurance to the Infrastructure Assurance Program Manager. This manager reports to the Director of QICO who reports to the Chief of Internal Compliance, a member of the General Manager’s Executive Team (Figure 5).<sup>22</sup>

“QICO performs the QA function for both WMATA and contractor work. The track work contractor is GW Peoples (GWP). WMATA’s contract with GWP has provisions for Quality Assurance Compliance that are standard in WMATA construction contracts. This includes requirements for contractor’s Quality Control measures and Quality Management Program. QICO’s QA oversight of work performed by GWP is the same as the oversight of work performed by WMATA forces.”

QICO performed two inspections of each surge area: a pre-surge inspection and a post-surge inspection. QICO used the pre-surge data it collected to guide its post-surge inspection to verify work was completed and deficiencies were corrected. All safety-related deficiencies were noted on a “punchlist” and had to be resolved prior to returning the surge area to revenue service. All non-safety-related deficiencies were noted on a “SafeTrack Open-Item List (STOIL).” QICO prioritized items on the STOIL and provided that list to the AGM Rail to manage their closeout. The AGM Rail updates QICO as STOIL items are closed, and then QICO verifies that the items are closed. As of the date of this report, QICO is continuing to monitor the closing of the STOIL. This process is mapped in a chart in Appendix I.

Figure 5: QICO Organization



The PMOC observed the work of the various maintenance departments while on 9 of the 16 surges. The quality issues the PMOC identified during its site walks were also captured by QICO in its quality assurance tracking log; however two quality issues the PMOC raised in November 2016 that generated much discussion by the PMOC with QICO and Maintenance of Way Engineering (MOWE) are still in the queue for resolution as of the date of this report. One is replacement of the grout pads and the other is installation of rail fastener anchor bolts through the grout pads into concrete substrate. Neither of these construction activities have specified test procedures to verify compliance with a standard.

In addition to its role of assuring quality of construction/maintenance work for SafeTrack, QICO performed an internal review of the SafeTrack management team’s compliance with WMATA procedures and the SafeTrack PMP in April of 2017. QICO published its report of that audit on WMATA’s website in November 2017. In that report, among QICO’s post-audit recommendations, was one related to quality of management. Specifically, “To improve the quality and execution of future maintenance initiatives, establish formal quality control measures for use in corrective maintenance and rehabilitation activities that ensure identification and remediation of deficiencies prior to returning assets to passenger service.”<sup>23</sup>

<sup>22</sup> SafeTrack PMP, §10.3, page 28.

<sup>23</sup> Washington Metropolitan Area Transit Authority, Internal Review 2017, Metrorail Engineering and Maintenance, Post-Safetrack: Assessment of Next-Level Maintenance Requirements (16), page 48 of 125.

QICO issued three Corrective Action Plans to MOWE:<sup>24</sup>

QICO-STP-17-01: To promote the effective execution of future maintenance initiatives, establish or revise policy to indicate the minimum requirements for program documentation (plan, scope, schedule, etc.) and control mechanisms (change management), including development and approval timelines. (QICO “estimates” completion of actionable items by July 30, 2018.)

QICO-STP-17-02: To improve the integrity of maintenance records, establish uniform requirements for the use of Maximo in the documentation of work activities, including applicable nomenclature and data fields for traceability. (QICO “estimates” completion of actionable items by May 7, 2018.)

QICO-STP-17-03: To improve the quality and execution of future maintenance initiatives, establish formal quality control measures for use in corrective maintenance and rehabilitation activities that ensure identification and remediation of deficiencies prior to returning assets to passenger service. (QICO “estimates” completion of actionable items by January 24, 2018.)

## G. SAFETY AND SECURITY

System and Personnel Safety and Security for SafeTrack were addressed by WMATA in several ways:

- Level 1 full-day training course for WMATA staff, consultants, and contractors entitled “Roadway Worker Protection Training.”
- WMATA’s
  - System Safety Program Plan (SSPP)
  - Safety and Security Management Plan (SSMP)
  - System Safety Certification Plan (SSCP)
  - Construction Safety and Environmental Manual (CSEM)
- Metrorail Safety Rules and Procedures Handbook
- WMATA contracts, which among other safety requirements, state, “Contractor personnel required to work on WMATA property must obtain a WMATA vendors badge and successfully complete the mandatory safety training which must be renewed yearly. To obtain a vendors badge a signed waiver to perform a background check will be required. Contractors who perform safety-sensitive functions shall be subject to compliance with a drug and alcohol testing program according to Federal guidelines published in FTA regulations (49 CFR Part 655).”

The SafeTrack PMP addresses safety in two areas: Section 2.4.2 addresses the responsibilities of the Department of Safety and Environmental Management (SAFE), and Section 9 entitled Safety, addresses responsibilities and activities of the SafeTrack team during the duration of the SafeTrack Program.

Public Outreach – As a part of its safety and security program, WMATA has developed an outreach program to keep the public apprised of the plans for each surge. As a part of that program, the WMATA public outreach team informed riders about the upcoming surges and the impact to their commute. Informational material was provided to explain safety risks, train delays, bus schedules, and

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<sup>24</sup> Internal Review 2017, pages 87 – 95.

contact information available to the riders. By informing riders, WMATA allayed their travel anxiety thereby mitigating or eliminating unintended safety incidents.

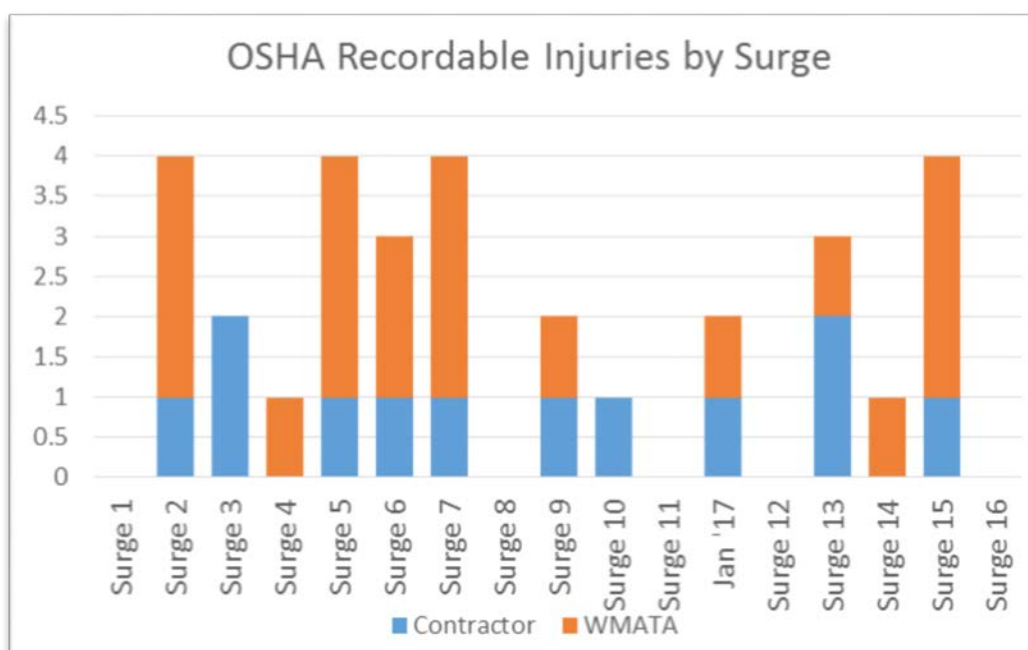
PPE Compliance – In addition to tracking recordable injuries, since September 2016, SafeTrack reported worker compliance with requirements for wearing personal protective equipment (PPE). In its last monthly report, SafeTrack reported 100% compliance in all areas except the use of hard hats and safety glasses, as Table 4 shows.

Table 4: Percentage of workers complying with PPE requirements

Personal Protective Equipment Compliance						
Date	Hard Hats	Footwear	Reflective Shirt	Safety Glasses	Working Radio	
2016	Sept	99%	100%	100%	89%	100%
	Oct	98%	100%	100%	96%	100%
	Nov	99%	100%	100%	98%	100%
	Dec	100%	100%	100%	100%	100%
2017	Jan	100%	100%	100%	100%	100%
	Feb	98%	96%	100%	96%	98%
	Mar	100%	100%	100%	94%	100%
	Apr	97%	100%	100%	90%	100%
	May	100%	100%	100%	100%	100%
	Jun	96%	100%	100%	100%	100%
<b>Average</b>	99%	100%	100%	96%	100%	

Occupational Safety and Health Administration (OSHA) Recordable Injuries – SafeTrack’s history of OSHA recordable injuries is depicted in Figure 6 on the next page. The chart shows that there were no recordable injuries during Surges 1, 8, 11, and 12.<sup>25</sup>

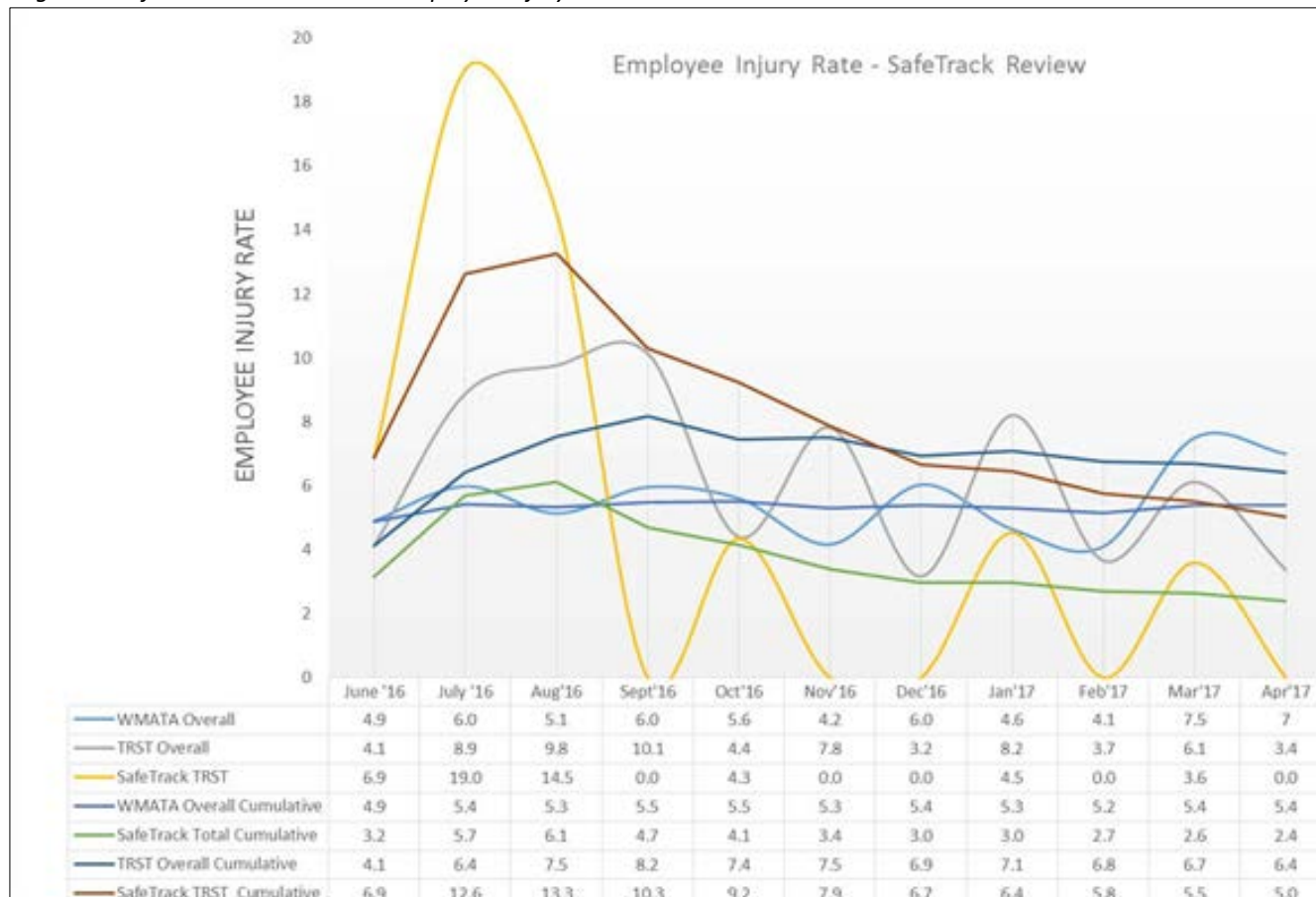
Figure 6: OSHA Recordable Injuries for SafeTrack



<sup>25</sup> SafeTrack June 2017 report (by WMATA), page 2.

The SafeTrack employee injury rate continued to improve over time as the green line in the Figure below shows. This improvement shows that WMATA’s attention to employee safety became more effective as the program progressed. On a monthly basis, WMATA plotted seven employee injury rates to assess how well it’s SafeTrack safety program was working. See Figure 7.

Figure 7: SafeTrack versus WMATA Employee Injury Rates



The PMOC concurs with WMATA’s description of SafeTrack’s safety program:<sup>26</sup>

“SafeTrack turned in a good safety record, trending to fewer injuries over time as the program moved forward, especially considering the difficult, arduous nature of the work and relentless schedule. Teamwork, worker commitment, safety training, safety briefings and diligent supervision were all contributing factors.

“The coordinated work plan centered on the safety aspects based on strict adherence to the Roadway Worker Protection (RWP) protocols with the Mobile Command Center (MCC) as the point of communication, safety briefers, provisions for access, and locations of nearest medical facility.

“SafeTrack involved long shiftwork during the day under conditions of high heat and humidity. SafeTrack supervisors and Track Allocation and Escort Support (TAES) support paid particular attention to making sure there was enough water, ice and Gatorade® available for workers. Rest periods were observed. Surge preparations

<sup>26</sup> Draft SafeTrack Project Report, page 31.

included planning for shelter at platforms, other shaded areas, and sanitation facilities (portable toilets and access to station bathrooms). During the winter, similar considerations were made for shelter from [winter] weather conditions.

“Management from each [maintenance] Office attributed the safety success to:

- Workers taking a teamwork approach toward labor intensive tasks.
- A genuine commitment by workers towards the safety and welfare of each other. They watched each other’s backs and spoke freely regarding safety concerns without fear of consequence.
- Workers practice what is preached...Safety first.”

In addition to reporting on safety, the PMOC’s monthly SafeTrack report contained an updated “Safety and Security Checklist” as required by the FTA’s Oversight Procedure (OP) 25. The checklist in Appendix J shows the version of each of the required safety-related plans in place during the SafeTrack Program.

## **H. AMERICANS WITH DISABILITIES ACT**

FTA Circular 4710.1, “Americans with Disabilities Act (ADA): Guidance” describes necessary actions for federal grant recipients to comply with the requirements of the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, as amended, U.S. DOT’s implementing regulations at 49 CFR Parts 27, 37, 38, and 39.

With regard to the SafeTrack program, the applicable portions of the Circular are the following:

- Section 3.4 Alteration of Transportation Facilities
- Chapter 6 Fixed Route Service

WMATA’s ADA responsibility involved making sure to the maximum extent feasible that persons with disabilities could access buses and different rail lines when used in place of rail passenger cars. The SafeTrack program’s efforts in this area included providing bi-lingual signage, clear pathways to railcars and buses, and provision of ADA compliant buses when used in bus bridges. During Surge 15, WMATA had to contract for bus service to meet the bus bridge demand for service. There were complaints that some of the bus-bridge buses did not meet ADA requirements. WMATA investigated this complaint and made changes to resolve the issue. There was no mention of SafeTrack creating situations where persons with disabilities could not access rail passenger cars during single tracking events.

## **I. BUY AMERICA**

49 CFR Part 661.5 provides the general requirements for all federally assisted procurements using funds authorized by 49 U.S.C. 5323(j), et.al. During the course of the project, the PMOC consistently had the SafeTrack management team confirm that all materials met Buy America Requirements, which they did. Although the SafeTrack PMP is silent on Buy America, Section 7 “Materials Management” makes reference to WMATA’s Procurement Procedures Manual, which contains a robust discussion of Buy America requirements. The PMP also notes the involvement of the Contract Administrator, an authorized representative of the Contracting Officer, who is trained to comply with, among other things, Buy America requirements. It was because of the procurement training and the involvement of the Contract Administrator in SafeTrack purchases, and the monthly discussions of meeting Buy America requirements that led the PMOC to have confidence that the SafeTrack program complied with the Buy America Act.

## J. PROJECT RISK

The SafeTrack management team was aware that there were a number of risks that, if realized, would negatively impact the success of SafeTrack. The team translated that awareness into the development of a risk register early in the SafeTrack program.<sup>27</sup> The risk register first appeared in Revision 1 of the PMP in December 2016. The initial register identified 35 risks, indicated the impact of each risk, and suggested a mitigation/response plan for each. After development of the risk register, the SafeTrack management team did not update the risk register over the course of the program. Furthermore, the risk register did not assign responsible parties for each of the risks and did not assign dates for mitigation or elimination of the risks. Proper risk management requires that the risk register be annotated and evaluated and updated regularly. From attendance at several SafeTrack team surge planning meetings, though, the PMOC observed risks and their mitigation being vigorously addressed.

Although the risk register was not annotated or updated, the PMP identified an active approach to risk management in Section 8.2, which the SafeTrack team followed.<sup>28</sup>

- At the program level, the key risks being managed are scope evolution/growth. However, any safety-critical work that is identified will be completed, regardless of impact to service, schedule or cost.
- Programmatic risk management is centered on ensuring a safe and efficient return to a state of good repair and ensuring timely communication of changes to all stakeholders;
- Risk mitigations are prioritized based on Safety, Quality, Service (ridership), schedule and finally cost;
- Most of the risk management and mitigation efforts are applied at the surge level, focused on the safety of the work operations, the efficiency of the crews and mitigating unplanned delays to passengers' service;
- The SafeTrack team continually re-evaluates surge work plans with respect to likelihood and consequences of unexpected events in order to make decisions about action to minimize impact to scope, cost, schedule and quality and elevate mitigation plans to the appropriate level of management.

## K. ACTION ITEMS

1. The first action item identified by the PMOC was development of the Project Management Plan. The need to prepare a PMP was identified in August 2016 and closed in April 2017.
2. WMATA needs to develop a specification for re-construction of grout pads. Based on the PMOC's observations in the field, this specification needs to address how to assure the proper cant or slope of the top surface of the grout pad into the center of the gauge. The specification also needs to address the need to consolidate the concrete to mitigate honeycombing. Lastly, the specification needs to stipulate the type and strength of concrete required and a requirement for testing properties of the concrete used. FTA and the PMOC are following progress on this item through ongoing oversight and quarterly meetings.
3. A corollary to number 2 above is the need for a written procedure for operation of WMATA's mobile mixer. This procedure should include how to regulate the amount of ingredients that go

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<sup>27</sup> SafeTrack Program Monthly Report submitted to FTA by the PMOC, October 24, 2016, page 11.

<sup>28</sup> SafeTrack PMP, Revision 6, April 21, 2017, pages 20- 21.



into the concrete mixer, cleaning the mixer, and frequency and procedure for calibrating the mixer. FTA and the PMOC are following progress on this item through ongoing oversight and quarterly meetings.

4. WMATA needs to develop a specification and corresponding procedure for materials and installation of stud bolts in concrete substrate to anchor rail fasteners. Materials include the steel bolts and the epoxy for cementing the bolts in the substrate. Installation includes testing the grip of the stud bolts after being set. The specification needs to address the desired test result range, as well as the need to assure the test device is properly calibrated. Finally, the specification needs to address recording and maintaining test records. FTA and the PMOC are following progress on this item through ongoing oversight and quarterly meetings.
5. WMATA should formally document its lessons learned from the SafeTrack Program. These lessons learned would inform revisions to existing and development of new procedures and practices for future large- and small-scale roadway maintenance and rehabilitation activities such as the planned rehabilitation of station platforms beginning in FY 2019.
6. It should be noted here that QICO also developed a list of action items to close out Internal Corrective and Preventative Actions (iCAPAs). (See Appendix E)

The following pages contain the appendices referenced in this report.

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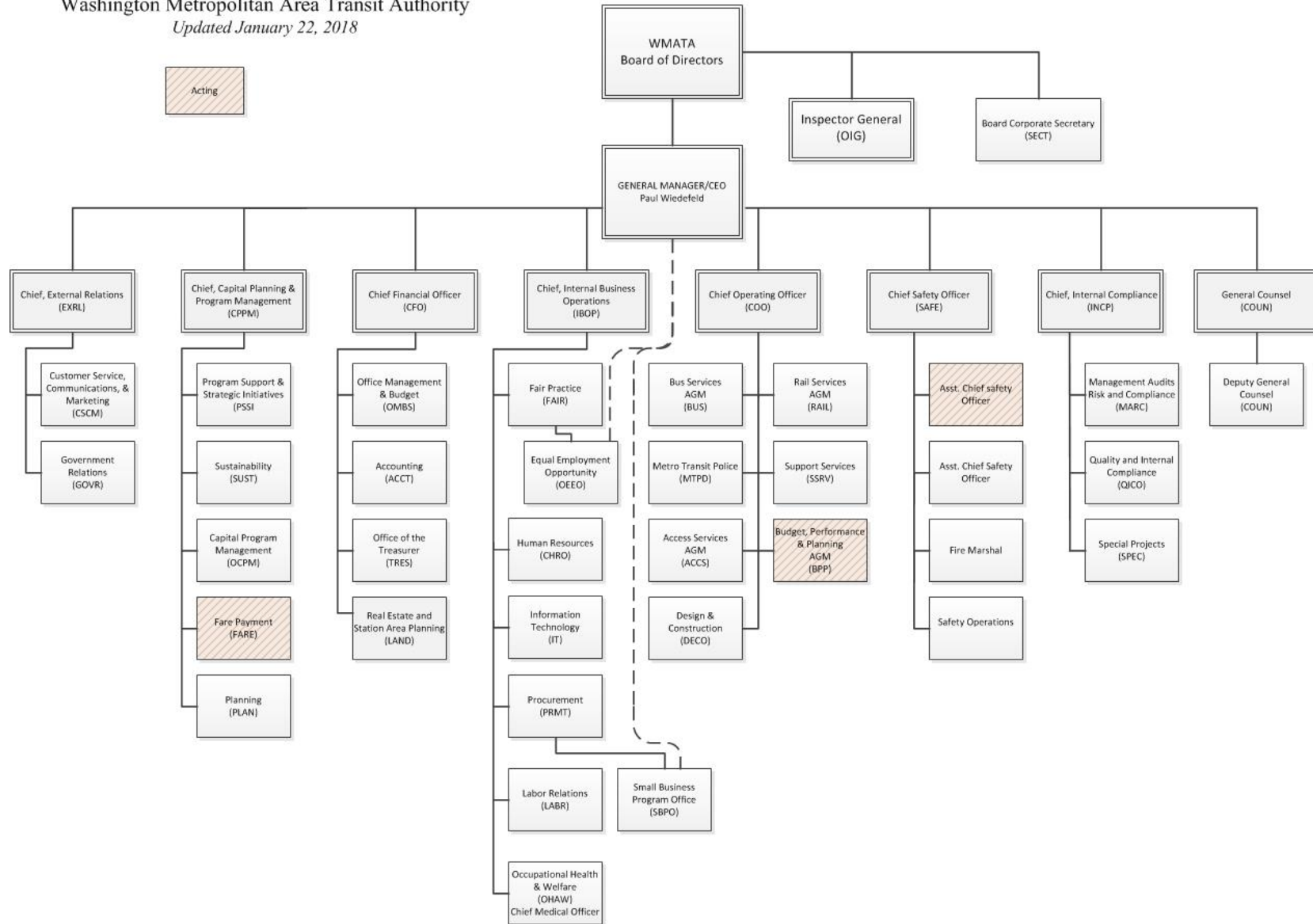
## APPENDIX A – LIST OF ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
AGM	Assistant General Manager
APM	Assistant Project Manager
ARRA	American Recovery and Reinvestment Act
ATC	Automatic Train Control
ATO	Automatic Train Operation
CIP	Capital Improvement Program
COUN	WMATA’s Office of General Counsel CPM Critical Path Method (Schedule)
CSEM	Construction safety and Environmental Manual
CSX	The name of a Class 1 Freight Railroad D-B Design-Builder
DOT	U.S. Department of Transportation
ENSS	WMATA Engineering Support Services
ETS	Emergency Trip Station
FA	Force Account
FTA	Federal Transit Administration
FWSO	FTA’s WMATA Safety Oversight Office
FY	Fiscal Year (WMATA’S FY begins July 1 of each year)
FFY	Federal Fiscal Year (begins October 1 each year)
IDW	Intrusion, detection, and warning
MARC	Maryland Area Regional Commuter Railroad
Maximo	WMATA’s Enterprise Asset Management System
MCC	Mobile Command Center
MOWE	Maintenance of Way Engineering (a WMATA Office)
OMBS	WMATA’s Office of Management and Budget Services
OP	FTA Oversight Procedure
PLNT	Office of Plant Maintenance
PM	Project Manager
PMOC	Project Management Oversight Consultant PMP
PMP	Project Management Plan
PPE	Personal Protective Equipment
PRMT	WMATA’s Office of Procurement
QA	Quality Assurance
QAP	Quality Assurance Plan
QC	Quality Control
QICO	WMATA’s Department of Quality and Internal Compliance Operations
ROCC	Rail Operations Control Center
ROE	Right of Entry
RWIC	Roadway Worker in Charge
RWP	Roadway Worker Protection
SSCP	System Safety Certification Plan
SSMP	Safety and Security Management Plan
SSPP	System Safety Program Plan
STOIL	SafeTrack Open Item List

TAES	Track Access and Escort Services
TASS	Track Access Support Services
TQIP	Track Quality Improvement Program
TRST	WMATA's Department of Track and Structures
TRPM	WMATA's Department of Traction Power Maintenance
TSSM	Track and Structures – System Maintenance
USC	United States Code
VRE	Virginia Railway Express
WMATA	Washington Metropolitan Area Transit Authority

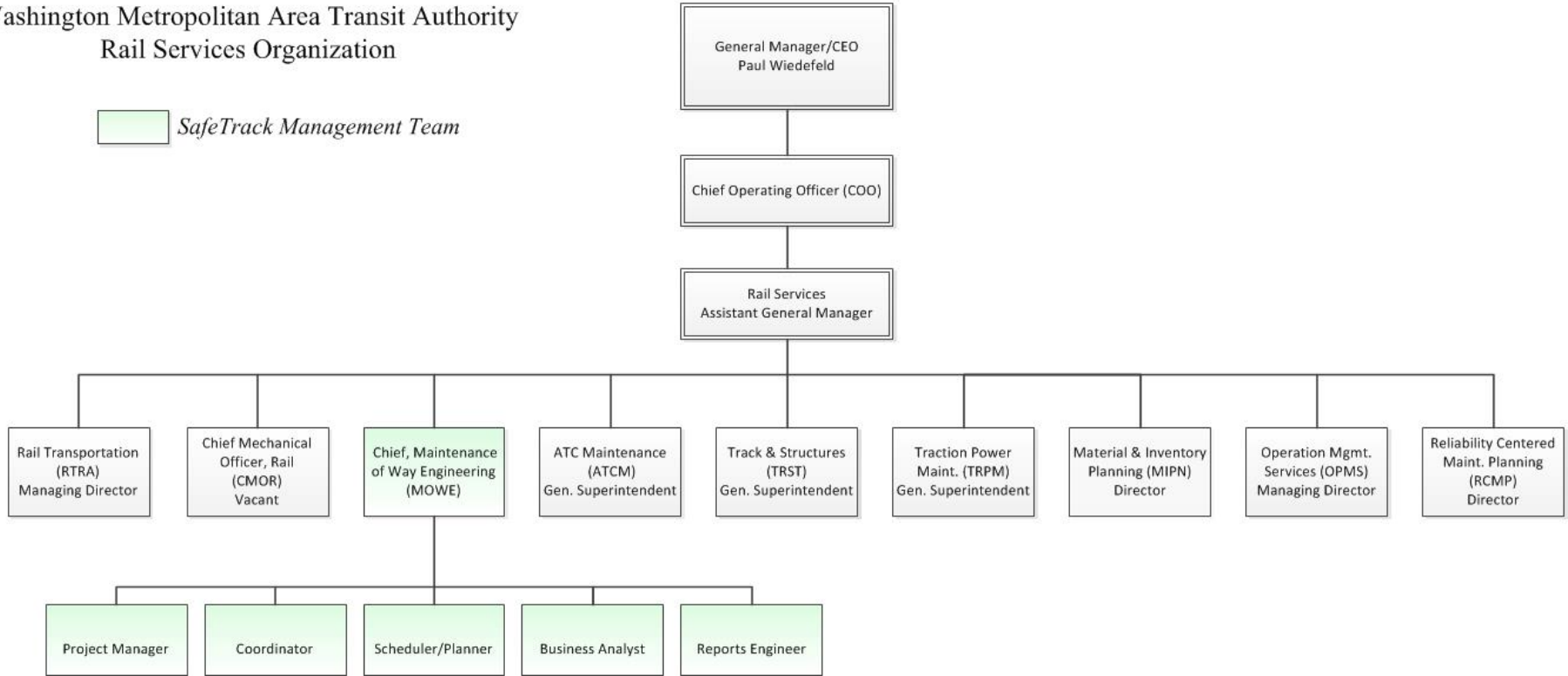
**APPENDIX B – ORGANIZATION CHARTS & DESCRIPTION**

Washington Metropolitan Area Transit Authority  
 Updated January 22, 2018

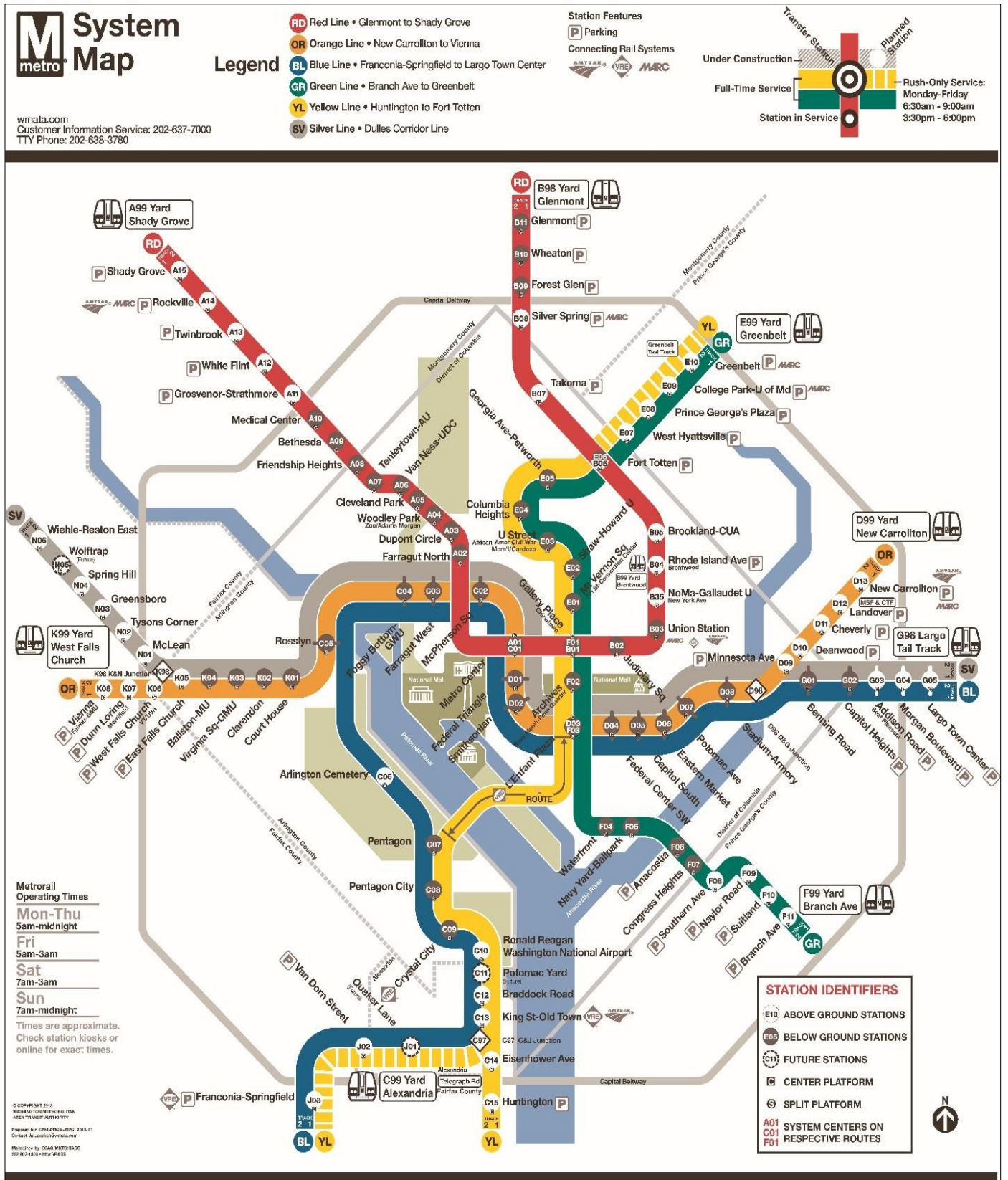


Washington Metropolitan Area Transit Authority  
Rail Services Organization

 SafeTrack Management Team



APPENDIX C – WMATA’s RAIL TRANSIT SYSTEM



## APPENDIX D – SAFETRACK SURGE STATISTICS SUMMARY

SURGE No.	FROM – TO	TYPE	DAYS SURGING	APPROXIMATE TOTAL MILES		OVERALL % COMPLETE
				TRK 1	TRK 2	
1	East Falls Church to Ballston	Single Tracking	13	2.4	0	100%
2	Eastern Market & Minnesota Ave to Benning Road	Total Shutdown	16	2.0	2.0	100%
3	Natl. Airport to Braddock Rd.	Total Shutdown	7	0.7	0.7	97%
4	Pentagon City to Natl. Airport	Total Shutdown	7	1.3	1.3	100%
5	East Falls Church to Ballston	Single Tracking	12	0	2.4	108%
6	Single Spring to Takoma	Single Tracking	7	1.1	0	105%
7	Shady Grove to Twin Brook	Single Tracking & Wknd Shutdown	12	4.4	0	95%
8	Franconia-Springfield to Van Dorn Street	Single Tracking	17	3.7	3.7	140%
9	West Falls Church to Vienna	Single Tracking Wknd Shutdowns	42	5.2	5.2	111%
10	NoMa Gallaudet U to Fort Totten	Total Shutdown	29	1.3	1.3	133%
11	East Falls Church to West falls Church	Single Tracking	23	1.5	1.5	115%
Non-surge period	Red Line Van Ness-UDC to Grosvenor-Strathmore	Single Tracking	31	2.1	2.1	Note 2
	Orange/Blue/Silver Line from Rosslyn to Eastern Market	Single Tracking & Shutdown	31	0.9	0.9	Note 2
12	Blue Line - Rosslyn to Pentagon	Total Shutdown	18	2.4	2.4	121%
13	Yellow/Blue Line Braddock Rd to Huntington & Van Dorn	Single Tracking	40	5.3	5.3	117%
14	Green Line Greenbelt to College Park	Total Shutdown	30	4.4	4.4	120%
15	Orange Line Minnesota Ave to New Carrollton	Total Shutdown	31	6.0	6.0	104%
16	Red Line Shady Grove to Twinbrook	Total Shutdown	9	0	4.4	100%
	Totals to Date		375 <sup>3</sup>	44.7	43.6	110% (Note 1)

Note 1: Average percentage of the 16 surges on which WMATA has reported.


Note 2: Non-surge period overall percent complete was not reported.

Note 3: SafeTrack took 387 calendar days to accomplish 375 days of actual work on the roadway (surging).




## APPENDIX E – INTERNAL CORRECTIVE AND PREVENTATIVE ACTIONS

### Corrective Action Plan QICO-STP-17-01

	The Washington Metropolitan Area Transit Authority (WMATA) Corrective Action Plan (CAP)	QICO-STP-17-01
<b>CORRECTIVE ACTION PLAN</b>		
<b>Purpose and Scope</b>		
On October 6, 2017 QICO issued a comprehensive Report from an internal review of Metrorail's Post-SafeTrack: Assessment of Next-Level Maintenance Requirements. This Corrective Action Plan (CAP) has been developed to address the following findings and required action per QICO-STP-17-01.		
QICO Finding	QICO Recommendation	
F-STP-17-01: There was no specific requirement to develop a complete scope or plan prior to the launch of the emergency SafeTrack program.	<ul style="list-style-type: none"> <li>- To improve the planning and execution of future maintenance initiatives, establish policy requiring the development of plans and scopes prior to execution of work. This policy should establish the minimum required elements for maintenance program plans to ensure consistency in implementation.</li> </ul>	
F-STP-17-03: Formal processes are required to govern changes in scope and schedule for Metro's future capital renewal activities.	<ul style="list-style-type: none"> <li>- To improve control of changes in scope, schedule and implementation of future maintenance initiatives, define clear requirements for change management processes that ensure all impacts to critical areas are reviewed, approved and shared with key project stakeholders.</li> </ul>	
F-STP-17-05: Identification and classification of program risks (i.e. program delays, material deficiencies, weather, etc.) is essential to effective management and execution of future capital renewal activities.	<ul style="list-style-type: none"> <li>- To reduce the impact of future program risks, establish a risk management structure to ensure risks and opportunities are identified and analyzed, resulting in response development and continuous monitoring.</li> </ul>	
Required Action		
QICO-STP-17-01: To promote the effective execution of future maintenance initiatives, establish or revise policy to indicate the minimum requirements for program documentation (plan, scope, schedule, etc.) and control mechanisms (change management), including development and approval timelines.		
Risk Rating: Elevated <span style="color: orange;">■</span>		

### Corrective Action Plan QICO-STP-17-02

	The Washington Metropolitan Area Transit Authority (WMATA) Corrective Action Plan (CAP)	QICO-STP-17-02
<b>CORRECTIVE ACTION PLAN</b>		
<b>Purpose and Scope</b>		
On October 6, 2017 QICO issued a comprehensive Report from an internal review of Metrorail's Post-SafeTrack: Assessment of Next-Level Maintenance Requirements. This Corrective Action Plan (CAP) has been developed to address the following findings and required action per QICO-STP-17-02.		
QICO Finding	QICO Recommendation	
F-STP-17-02: Consistent practices for data capture are necessary to ensure traceability of work completed during future routine maintenance and capital renewal activities.	<ul style="list-style-type: none"> <li>- To improve the integrity of maintenance records, establish uniform requirements for the use of Maximo in the documentation of work activities, including applicable nomenclature and data fields for traceability.</li> </ul>	
Required Action		
QICO-STP-17-02: To improve the integrity of maintenance records, establish uniform requirements for the use of Maximo in the documentation of work activities, including applicable nomenclature and data fields for traceability.		
Risk Rating: Low <span style="color: green;">■</span>		

**Corrective Action Plan QICO-STP-17-03**

<b>M</b> metro	The Washington Metropolitan Area Transit Authority (WMATA)	QICO-STP-17-03
	Corrective Action Plan (CAP)	

CORRECTIVE ACTION PLAN	
Purpose and Scope	
On October 6, 2017 QICO issued a comprehensive Report from an internal review of Metrorail's Post-SafeTrack: Assessment of Next-Level Maintenance Requirements. This Corrective Action Plan (CAP) has been developed to address the following findings and required action per QICO-STP-17-02.	
QICO Finding	QICO Recommendation
F-STP-17-04: Quality control measures are necessary to consistently identify and correct material deficiencies future routine maintenance and capital renewal activities.	- To improve the quality and execution of future maintenance initiatives, establish formal quality control measures for use in corrective maintenance and rehabilitation activities that ensure identification and remediation of deficiencies prior to returning assets to passenger service.
Required Action	
QICO-STP-17-03: To improve the quality and execution of future maintenance initiatives, establish formal quality control measures for use in corrective maintenance and rehabilitation activities that ensure identification and remediation of deficiencies prior to returning assets to passenger service.	
Risk Rating: Medium <span style="color: yellow;">■</span>	

**APPENDIX F – SAFETRACK PROGRAM –COMPLETED WORK SUMMARY**

Surge No.	Miles in Length <sup>1</sup>	Crosstie Renewal (each)	Insulator Renewal (each)	Fasteners Replaced (each)	Stringer Rail Renewal (feet)	Joints Welded (each)	Grout Pad Renewal (feet)	Tunnel Light Repair (each)	Power Cables Replaced (each)	Third Rail Cover Board (feet)	IDW Boxes (each)	Signal Conversion to LED (each)	Track Bed Cleaning (feet)	Emergency Trip Station Repair (each)
1	2.4	1,856	541	2,214	3,184	16		17	54	410	208	0	3,150	0
2	4.0	533	235	2,116	1,745	22	2,005	140	183	642	0	12	3,160	13
3	1.4	1,327	233	1,062	78	6	800	355	20	170	0	0	0	19
4	2.6	81	31	2,463	2,730	26	959	178	54	310	0	0	3,200	0
5	2.4	1,405	121	2,369	4,680	24	0	242	79	820	0	0	5,110	0
6	1.1	1,311	496	0	312	14	0	0	20	1,280	0	0	8,129	0
7	4.4	3,572	1,120	0	0	6	0	0	72	2,000	62	12	1,692	0
8	7.4	7,102	353	0	0	27	0	0	52	230	500	16	16,180	0
9	10.4	7,159	402	0	4,758	97	0	0	225	8,490	1,090	16	30,021	0
10	2.6	2,028	795	1,245	1,738	105	5,737	0	38	4,910	405	15	38,354	0
11	3.0	1,937	213	0	15,795	50	0	0	106	3,450	366	0	0	0
Note 2	4.2	0	0	3,261	12,129	42	0	212	0	0	0	0	0	0
Note 3	1.8	0	49	4,954	1,560	47	3,113	218	Note 4	32	0	5	0	12
12	4.8	695	900	5,631	5,265	51	7,877	436	35	0	0	4	0	29
13	10.5	5,646	1,799	4,619	1,393	0	12,800	30	67	5,090	12	26	0	24
14	8.8	9,569	2,864	5,704	3,078	221	0	0	160	6,440	0	8	0	0
15	12.0	15,713	2,403	3,244	2,867	0	8,879	0	149	1,250	600	10	0	0
16	4.4	3,464	2,690	0	78	29	0	0	149	6,610	11	0	0	0
<b>Totals</b>	<b>88.2</b>	<b>63,398</b>	<b>15,245</b>	<b>38,882</b>	<b>61,390</b>	<b>783</b>	<b>42,170</b>	<b>1,828</b>	<b>1,463</b>	<b>42,134</b>	<b>3,254</b>	<b>124</b>	<b>108,996</b>	<b>97</b>

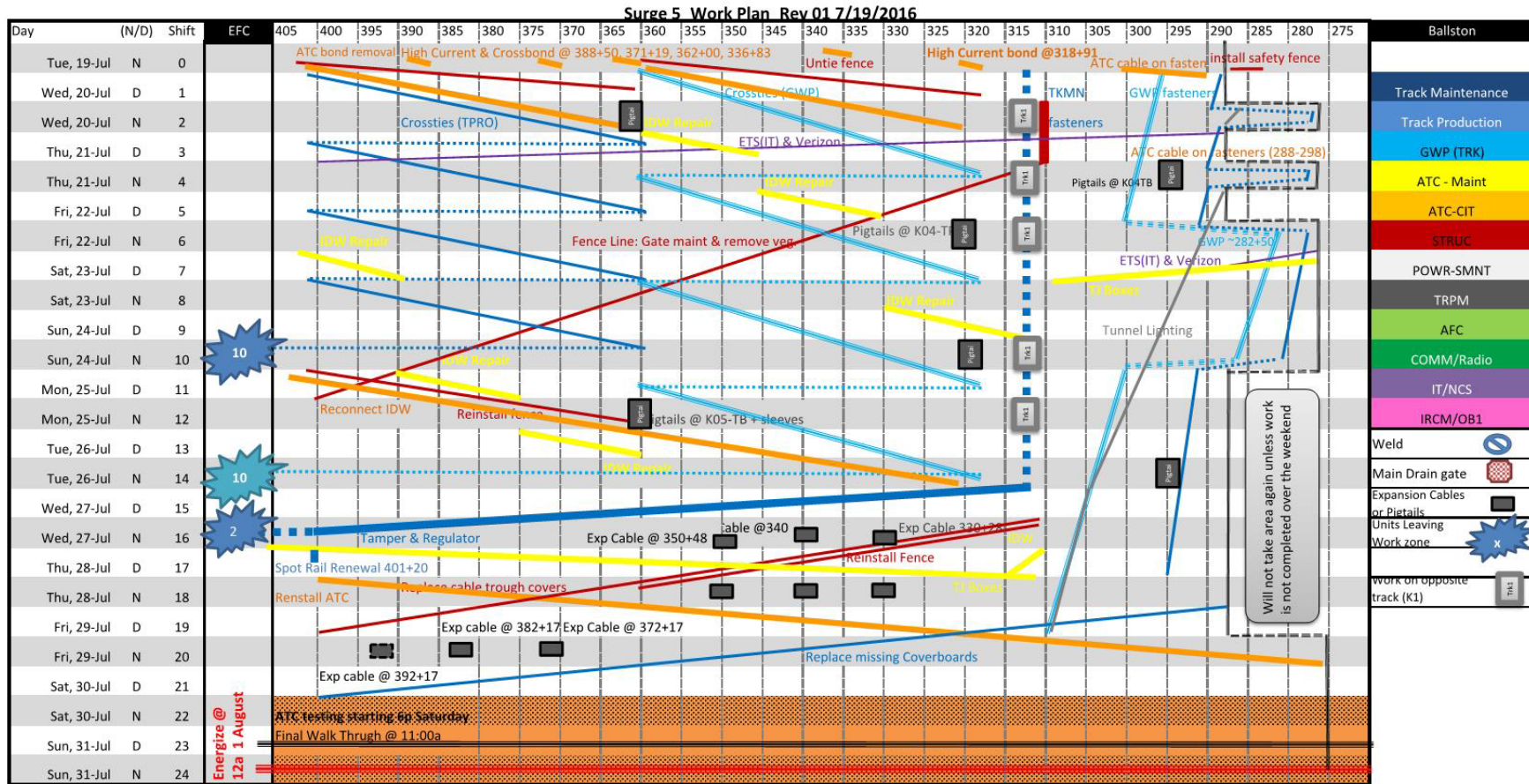
Note 1: Miles are computed by adding length of track 1 and track 2 rehabilitated during the surge.

Note 2: Non-surge work on the A Line reported in WMATA's January SafeTrack report, page 9.

Note 3: Non-surge work on the C & D Lines reported in WMATA's January SafeTrack report, page 9.

Note 4: WMATA reported 1,060 feet of cable replaced in lieu of the number of cables replaced.

APPENDIX G – MARCH CHART



**How to Read the March Chart:**

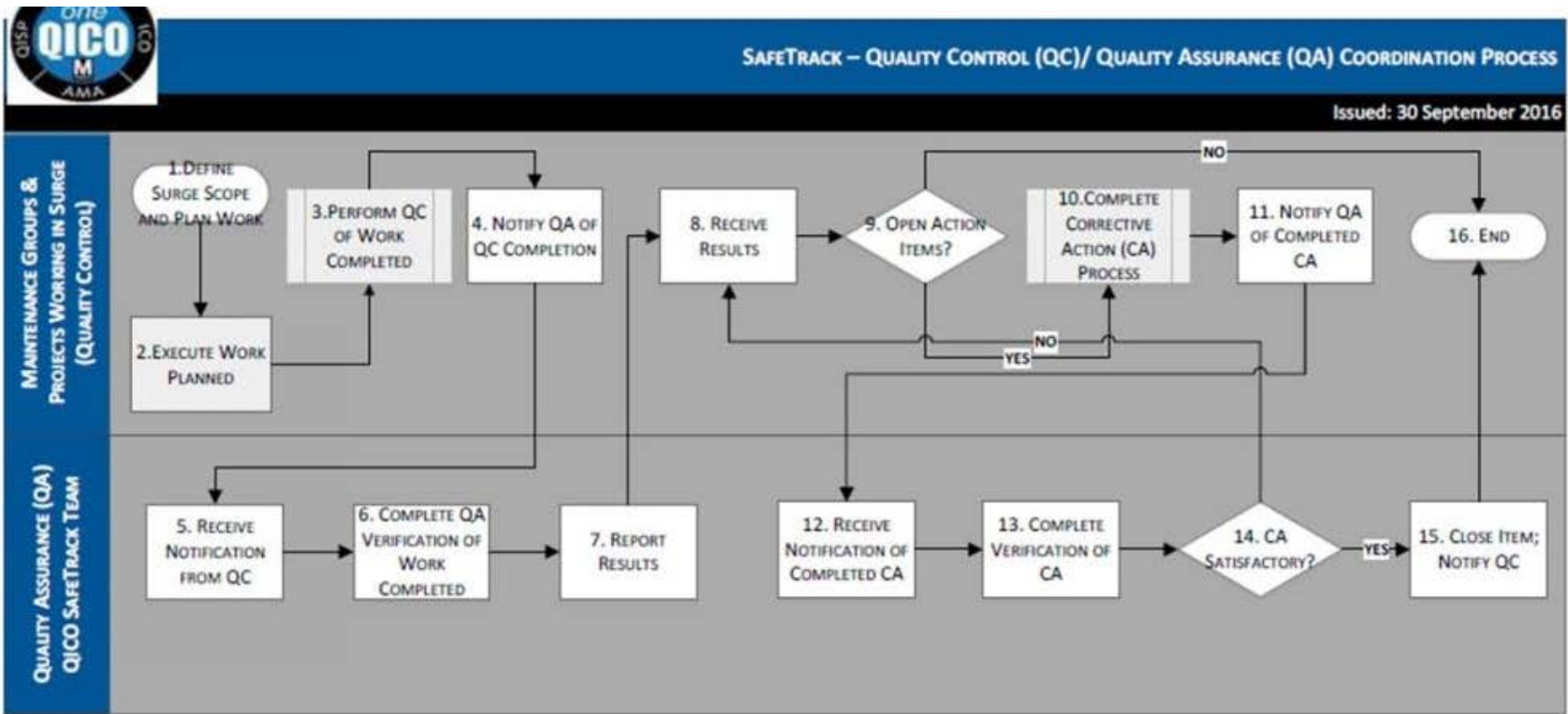
- 1) The chain markers are written across the top; each vertical line is 500 ft
- 2) The days and shifts are listed on the left side; each row is a 12-hour shift
- 3) Each color representing a different group working within the surge; see right side for color codes
- 4) A line is a work group that moves along the alignment as they work, for example a crosstie crew might start at 402+00 and then work towards 360+00.
- 5) A dotted line means equipment is moving but not actively working through the area
- 6) A block is a work group that stays in one place while working, for example Traction power working on replacing pigtails at a tiebreaker station
- 7) A block with a dotted outline is extra work that we may be able to complete, if we have enough time, or alternative work areas, if the originally planned area isn't available. This is mostly for Traction Power and ATC.
- 8) The last 36 hours are shaded orange for ATC testing. Others need to clear the track except for clean-up and inspection activities

**Highlights & Priority Work for : Surge 5**

- A) Work limit at the low end (K04/Ballston) changes. The mat moves from CM 290+50 back to CM 276+93 from 10p-4a weeknights and weekends. The purpose of the change is to enable fastener work at the station platform. This work will be a priority for the first 2 nights and the first weekend with the goal of not needing to change the limits in the second week of the surge
- B) Crossties are being replaced through ballasted area: CM 402-319; they will have 2 crews, from from 402-360 and the other 360-319. Due to the heat and other issues, it will take 4 passes through the area to complete the work, making it difficult for other groups to get into this area before shift 16: Wednesday 7/27 Night Shift.
- C) Traction Power has work planned on **Track 1** for Wednesday, Thursday, Friday, Sunday and Monday nights, to repair the negative return cable damaged in Surge 1. This is shown with the silver boxes. No other work is planned on Track 1 except for a prime mover to take old ties out of the work zone each night. Track and TRPM will coordinated directly each night to control the movement of the unit into and out of the Track 1 work area
- D) Fastener replacements are also planned for CM 290-310. Two crews will be used to split up this work and both move to the station area over the weekend and then return to CM 290-310 to finish.
- E) Traction Power will be jumping around to complete pigtails at 3 locations (K04 TB, K04 TP, and K05 TB) in the first week of the surge. After the cross-tie work is complete and the tamper and regulator have run through, TRPM will focus on 5 sets of expansion cables



APPENDIX I – SAFETRACK QA/QC COORDINATION PROCESS



**QC REQUIREMENTS**

- Maintenance Groups are responsible for performing Quality Control (QC) and ensuring it is performed in accordance with WMATA procedures and requirements, including having senior personnel conduct QC inspections as part of the work process.
- Quality Control (QC) is the responsibility of the maintenance group performing the work.
- Managers and Supervisors of Maintenance groups shall review the Quality Assurance Summary Report to identify issues, address issues and provide written responses to QA.
- Managers and Supervisors of maintenance groups will work with QICO to plan the timing of QA sampling inspections.
- Managers and Supervisors of maintenance groups will notify QICO when QC checks are complete.
- Managers and Supervisors of maintenance groups will create a punch-list for any corrective actions and/or issues that need to be resolved.

**QA REQUIREMENTS**

- Quality and Internal Compliance (QICO) is responsible for performing Quality Assurance (QA) and serves as the independent verification of the entire work process, including spot checks to confirm the quality of the work performed.
- QICO will perform QA sampling inspections of ~20 – 25% of a designated SafeTrack Surge area.
- QICO will produce daily observation reports (Quality Assurance Summary Report) that provide feedback for the work teams, to help drive the focus on quality and safety.
- QICO will perform QA as soon as practical after the work maintenance group has completed QC checks.
- QICO will perform QA sampling inspections during the outage (where possible), provided that the QC check is completed by the assigned maintenance group and there is sufficient time prior to the pre-revenue testing process.
- QICO may inspect areas not inspected during the surge within the next 48 hours so that any issues found can be added to the punch-list for the work teams and lessons learned can be carried forward in to the next outage.

## APPENDIX J – SAFETY AND SECURITY CHECKLIST

Updated 2/09/17

Project Overview		Systemwide Infrastructure Rehabilitation Program (SIRP)	
Project Mode	Rail and Bus		
Project Phase	Design and Construction		
Project Delivery Method	Design/Build, Design-Bid-Build, and Job Order Contract		
Project Plans	Version	Review By FTA	Status
Safety and Security Management Plan (SSMP)	Rev 7	Complete	The FTA approved Revision 7 of the SSMP on April 11, 2014
Safety and Security Certification Plan (SSCPP)	Rev 3 March 2015	N/A	TOC does not approve this document.
System Safety Program Plan (SSPP)	Jan 2013	N/A	Approved by TOC on April 25, 2014
Security and Emergency Preparedness Plan (SEPP)	2016	N/A	This is a Security Sensitive Information (SSI) Doc.
Construction Safety and Security Plan (CSSP)	March 15, 2013	N/A	“Construction Safety and Environmental Manual” is scheduled for revision in 2017.

Area of Focus	Y/N	Notes/Status
<b>Safety and Security Authority</b>		
Is the Project Sponsor subject to 49 CFR Part 659 State Safety Oversight Requirements?	Y	Tri-State Oversight Committee (TOC)
Has the State designated an oversight agency as per Part 659.9?	Y	Tri-State Oversight Committee (TOC)
Has the oversight agency reviewed and approved the Project Sponsor’s SSPP as per 659.17?	Y	TOC Letter dated April 25, 2014 approves WMATA’s 2014 SSPP
Has the oversight agency reviewed and approved the Project Sponsor’s Security Plan or SEPP as per Part 659.21?	Y	TOC Letter dated September 3, 2014 approves WMATA’s 2014 SEPP
Did the oversight agency participate in the last Quarterly Program Review Meeting?	Y	The TOC <u>did not attend</u> the QPRM held on November 18, 2014.
Has the Project Sponsor submitted its safety certification plan to the oversight agency?	Y	The SSCP of March 20, 2012, was accepted by TOC on April 2012.
<b>Safety and Security Authority</b>		
Has the Project Sponsor implemented security directives issued by the Department Homeland Security, Transportation Security Administration?	Y	Section 11 of SSMP

SSMP Monitoring	Y/N	Notes/Status
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?	Y	NOTE: All data in this section is based on SIRP SSMP Revision 7 (submitted November 22, 2013 for approval), and OP22 “SSMP Adherence Review” conducted in February 2013.
Project Sponsor reviews the SSMP and related project plans to determine if updates are necessary?	Y	Revision 7 dated February 4, 2014 was approved by the FTA on April 11, 2014.
Does the Project Sponsor implement a process through which the Designated Function (DF) for Safety and DF for Security are integrated into the overall project management team? Please specify.	Y	The IRPG Director is responsible for overall administration of the SSMP. The IRPG Project Managers, SAFE, and the Metro Transit Police Department support the IRPG Director, as required, through committees and specific activities.
Does the Project Sponsor maintain a regularly scheduled report on the status of safety and security activities?	Y	Yes. Safety certification and other related activities are incorporated into the contract CDRLs and the CILs developed by the contractors for the SIRP, and can be tracked through the project management software used for the specific SIRP activities. The status of the safety certification is also integrated into the processes for requesting temporary use notices and substantial completion inspections, and into the site-specific work plans.
Has the Project Sponsor established staffing requirements, procedures and authority for safety and security activities throughout all project phases?	Y	Procedures have been established and authorities conferred. Resources are proposed and approved annually.
Does the Project Sponsor update the safety and security responsibility matrix/organizational chart as necessary?	Y	Section 3 of November 2013 SSMP, Rev 7 has the updated matrix (page 31) and organizational charts.
Has the Project Sponsor allocated sufficient resources to oversee or carry out safety and security activities?	Y	Current resource allocation allows work to be done but delays are incurred. PMOC recommends consideration of additional SIRP staffing requests for escorts, RWIC and SSWP review support in the next proposed budgeting cycle.
Area of Focus	Y/N	Notes/Status



<p>Has the Project Sponsor developed hazard and vulnerability analysis techniques, including specific types of analysis to be performed during different project phases?</p>	<p>Y</p>	<p>Procedures are available but hazard and vulnerability analysis is required in less than one percent of project activity due to SIRP reliance on conformance with existing design criteria and technical specifications.</p>
<p>Does the Project Sponsor implement regularly scheduled meetings to track resolution of any identified hazards and/or vulnerabilities?</p>	<p>Y</p>	<p>Limited activity in this area but FTA PMOC did review the one major instance where additional analysis was required (Union Station Traction Power Substation DC Breaker Replacement) and it was performed as specified in WMATA plans.</p>
<p>Does the Project Sponsor monitor the progress of safety and security activities throughout all project phases? Please describe briefly.</p>	<p>Y</p>	<p>Safety and security activities are incorporated into CDRLs for the project, and required safety certification activities must be completed prior to requesting a Temporary Use Notice (TUN) and a Substantial Completion Inspection (SCI). Safety critical tests and required equipment are also included on the SSWPs.</p>
<p>Does the Project Sponsor ensure the conduct of preliminary hazard and vulnerability analyses? Please specify analyses conducted.</p>	<p>Y</p>	<p>Yes only when required, PMOC reviewed the one major instance so far where this has occurred.</p>
<p>Has the Project Sponsor ensured the development of safety design criteria?</p>	<p>Y</p>	<p>Incorporated into WMATA Design Criteria used in bid contracts and provided to design build contractors.</p>
<p>Has the Project Sponsor ensured the development of security design criteria?</p>	<p>Y</p>	<p>Incorporated into WMATA Design Criteria used in bid contracts and provided to design build contractors.</p>
<p>Has the Project Sponsor ensured conformance with safety and security requirements in design?</p>	<p>Y</p>	<p>Contracts incorporate critical items lists (CILs) that specify safety and security requirements. Very few activities for rehab work require new technical specifications, which are mostly conversions from WMATA standard specifications. WMATA Engineering reviews for compliance with WMATA's design criteria.</p>
<p>Has the Project Sponsor verified conformance with safety and security requirements in equipment and materials procurement?</p>	<p>Y</p>	<p>Safety and security requirements are incorporated into contract requirements and monitored through the CIL and CDRLs.</p>

Area of Focus	Y/N	Notes/Status
Has the Project Sponsor verified construction specification conformance?	Y	IRPG tracks the construction specification process through testing requirements addressed in SCI Reports. Final Close Out will not be granted or Safety Certification will not be issued unless all reports are received. In addition, for day-to-day activities, the contractor and IRPG use a daily Safety Certification Approval Form that details the portion of the work within the Site Specific Work Plan that requires safety certification.
Has the Project Sponsor identified safety and security critical tests to be performed prior to passenger operations?	Y	All test requirements are included in the contract specifications and listed on the CIL. Contractors are required to conduct specified tests and provide documentation. Test requirements also are identified on SSWPs.
Has the Project Sponsor verified conformance with safety and security requirements during testing, inspection and start-up phases?	Y	Contractor is required to develop test procedures for each test list on the CIL. Those test procedures are reviewed and approved by WMATA Engineering. Contractors conduct tests and the project team will witness the tests. Testing requirements are tracked thru to Substantial Completion Inspection (SCI) Report. Final Close Out will not be granted or Safety Certification will not be issued unless all reports are received.
Does the Project Sponsor evaluate change orders, design waivers, or test variances for potential hazards and /or vulnerabilities?	Y	Given the nature of the SIRP, these occurrences are rare but procedures are in place to address them.
Has the Project Sponsor ensured the performance of safety and security analyses for proposed work-arounds?	N/A	This situation has not come up for the SIRP, but the standard SSCPP procedures would be applied.
Has the Project Sponsor demonstrated through meetings or other methods, the integration of safety and security in the following: • Activation Plan and Procedures • Integrated Test Plan and Procedures • Operations and Maintenance Plan • Emergency Operations Plan?	N/A	Given the nature of the SIRP, these activities are not performed as they would be for a New Starts project. Stations, track, and equipment rooms are placed back into revenue service each day based on daily inspection and sign-off performed in the SSWP.
Has the Project Sponsor issued final safety and security certification?	Y	Rehabilitation projects involving systems receive daily certification for return to service.
Has the Project Sponsor issued the final safety and security verification report?	N	Project is treated like repair to major systems; daily certification for return to service is provided; no single report is issued.

Construction Safety	Y/N	Notes/Status		
Does the Project Sponsor have a documented/implemented Contractor Safety Program with which it expects contractors to comply?	Y	WMATA Construction Safety and Environmental Manual (CSEM) referenced in SSMP and P. 86 of PMP.		
Do the Project Sponsor's contractor(s) have a documented company-wide safety and security program plan?	Y	Yes. Each contractor is required to develop a safety and security plan.		
Do the Project Sponsor's contractor(s) have a site-specific safety and security program plan?	Y	Yes.		
Provide the Project Sponsor's OSHA statistics compared to the national average for the same type of work.	To be updated in Dec. 2017	Contract	WMATA Recordable Rate	National Average
		Orange/Blue 1 Clark Const.	N/A	
		Yard 1/ PCCI	0	
		Andrews Fed/Hensel Phelps		
		Cinder Bed Rd/Turner Const.	TBD	
		700 MHz Radio/Motorola	TBD	
If the comparison is not favorable, what actions are being taken by the Project Sponsor to improve its safety record?	TBD	Orange/Blue 1		
		Yard 1/ PCCI		
		Andrews Fed/Hensel Phelps		
		Cinder Bed Rd/Turner Const.		
		700 MHz Radio/Motorola		
Does the Project Sponsor conduct site audits of the contractor's performance versus required safety/security procedures?	Y	Yes. WMATA SAFE and QICO perform these audits.		

Federal Railroad Administration	Y/N	Notes/Status
If shared track: has Project Sponsor submitted its waiver request application to FRA? (Please identify specific regulations for which waivers are being requested)	N/A	No shared track, Heavy rail transit project, No FRA involvement
If shared corridor: has Project Sponsor specified specific measures to address shared corridor safety concerns?	N/A	
Is the Collision Hazard Analysis underway?	N/A	
Other FRA required Hazard Analysis – Fencing, etc.?	N/A	
Does the project have Quiet Zones?	N/A	
Does FRA attend the Quarterly Review Meetings?	N/A	

**APPENDIX K – PROJECT MANAGEMENT PLAN**

See separate document in portable document format (pdf) titled, “2017 Project Management Plan, SafeTrack, Revision 6, (4-21-17)