



Appendix U
DC Streetcar (Draft) Safety Plan





District Department of Transportation

DC Streetcar
System Safety Program Plan

DRAFT



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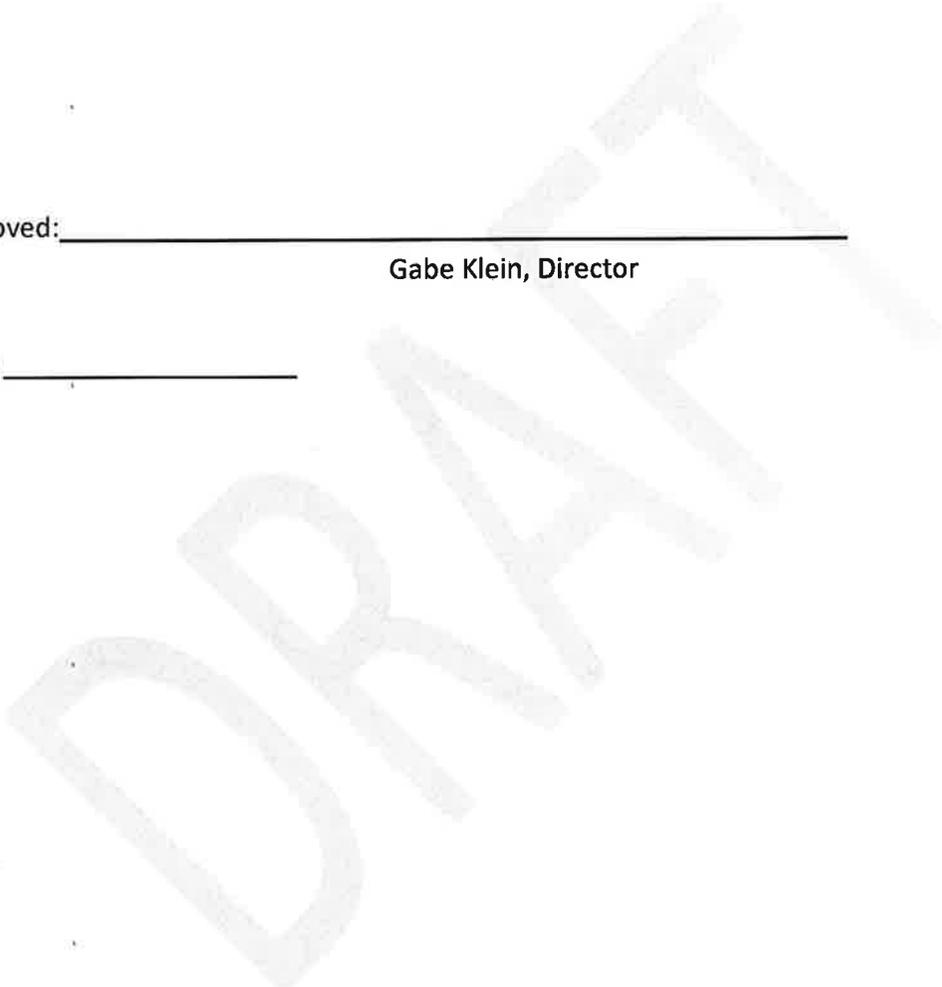
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Concurrences and Approval

This System Safety Program Plan is submitted, by the District of Columbia, Department of Transportation, for approval.

Approved: _____
Gabe Klein, Director

Date: _____



1. Introduction

1.1 Policy Statement

The reintroduction of streetcars to Washington DC is based on the desire of the District Department of Transportation (DDOT) to provide additional transit options for residents and visitors to the District as well as improve connectivity between existing neighborhoods while also encouraging economic development along car routes.

DDOT has been charged with the responsibility for planning, designing, constructing, maintaining and operating the proposed network and as such, assumes the task of developing and implementing a system safety program to ensure the highest practical level of safety for employees, customers, and others who shall come in contact with the system.

Under the guidelines set forth under 49 CFR Part 659, Rail Fixed Guideway Systems; State Safety Oversight, as well as all applicable federal, state and local laws and regulations, DDOT has created a System Safety Program Plan to comply with said guidelines as well as those created by the State Safety Oversight Agency (SSOA).

Specifically, the plan:

- States DC Streetcar's commitment and philosophy to actively sustain safe transit operations.
- Establishes and manages safety activities intended to serve as countermeasures in minimizing risk and loss of resources and maximize the safety of the public.
- Integrates the safety and security function throughout the DC Streetcar organizational structure.
- Defines organizational safety and security responsibilities.
- Provides for the documentation and verification of safety and security activities.

- Evaluates activities to assure continued development and advancement of safety activities.

Development and preparation of the SSPP in accordance with the:

- Federal Transit Administration (FTA) regulation; Rail Fixed Guideway Systems; State Safety Oversight, 49 CFR Part 659; and other federal and local jurisdictional guidelines.

1.2 Authority

The Chief Executive Officer for DC Streetcar is responsible for the development and implementation of policies and procedures to ensure the safety objectives of DC Streetcar are met.

In addition, the Federal Transit Administration, through the issuance of 49 CFR Part 659, Rail Fixed Guideway Systems: State Safety oversight, effective May 31, 2005, created a state-managed oversight program for rail transit safety and security.

1.2.1 Definition

System safety is defined as a coordinated effort between the District of Columbia and DC Streetcar (containing all divisions within) to apply operating, technical, and loss control management techniques and principles to conserve life and property, prevent and reduce accidents or incidents, and the effects which result; and to maintain a safe and healthy work environment.

1.2.2 Scope

The SSPP applies to all DC Streetcar operations and departments and to all activities that involve the design, operation, and maintenance of the DC Streetcar system, including system extensions. Each DC Streetcar department is charged with the responsibility for the implementation and success of the plan.

Because of the confidential nature of DC Streetcar security measures, the DC Streetcar System Security Plan is maintained separately from the SSPP (SOP #). The SSPP describes the policies, objectives, responsibilities and procedures in providing a

coordinated effort for the personal security of employees and customers of DC Streetcar.

1.3 Program Review and Updates

The SSPP is reviewed at least annually to ensure the plan remains current and effective. Line extensions, significant changes to the operational practices, or other events may be cause for a review at any time. The focus of the review is to:

- Evaluate current safety tasks and initiatives for appropriateness
- Refine and improve task descriptions and activities
- Identify new tasks and initiatives which may be required
- Define organizational responsibility for accomplishing safety-related tasks
- Incorporate organizational, operational, or legislative changes

The Manager of Operations and Safety is responsible for the SSPP review process. The review is conducted in consultation with departments affected by the SSPP.

Revisions are coordinated and led by the Manager of Operations and Safety acting under the authority of the Executive Director, and in close coordination with the Project Manager of DC Streetcar. Recommended revisions to the SSPP are submitted to the appropriate managers for concurrence. Revisions will be sent to the Agency Director of DDOT for approval.

Upon acceptance of a revised SSPP, the document will be sent to the State Safety Oversight Agency (SSOA) for final review and approval per _____.

2. Purpose, Goals and Objectives

2.1 Purpose

The purpose of the SSPP is to serve as a guideline in the establishment of technical and managerial safety strategies for the identification, assessment, prevention and control of hazards to transit customers, employees, the public and others who may come into contact with the system.

2.2 Goals

The goal of the SSPP is to serve as one of many tools used to ensure the safety of the streetcar system through its entire life cycle. Specifically, the SSPP shall be used to:

- Identify, reduce and/or eliminate potential hazards in the streetcar system as well as identify and eliminate any single point of failure within the system that may cause an unsafe condition.
- Promote the safe and effective operation and maintenance of all DC Streetcar property and equipment.
- Develop a working environment which meets or exceeds all government and industry occupational health and safety standards and practices.
- Promote effective management to integrated responses between DC Streetcar and the District's emergency services

2.3 Objectives

The primary objectives of the SSPP are to develop, implement, and maintain a safety effort comprised of strategies and tactics to improve safety and performance of DC Streetcar. These shall be accomplished through consistent evaluation of the safety program to monitor the progress on achieving the goals set forth earlier in the document.

3. System Description and Management Structure

3.1 History and Scope

The DC Streetcar system had its beginnings in the 1990's when the Washington Metropolitan Area Transit Authority (WMATA) developed the Transit Service Expansion Plan which proposed a series of streetcar and light-rail projects throughout the region. In the District, a series of routes were proposed and the DC Government proceeded to construct a demonstrator line in Anacostia. Initial groundbreaking took place in 2004 and construction began in 2006. The initial alignment was to use an abandoned railroad right-of-way adjacent to Firth Sterling Drive; however, circumstances dictated a change to placing the alignment in Firth Sterling. The current route begins at the Anacostia Metro Station on Howard Road and runs south along Firth Sterling with a stop at the Barry Farms housing development. The alignment continues running south to South Capitol Street, where it makes another stop at the Navy DIA. From there, the alignment continues south to the terminus at the Anacostia Maintenance Facility.

The following year, construction began on an east-west alignment along H Street and Benning Road, NE. The route begins at Oklahoma Avenue and runs west to terminate at Union Station.

When completed, the DC Streetcar network will consist of eight lines operating in all eight wards of the city along major corridors.

3.2 Physical characteristics

The DC Streetcar is designed to fit the scale and traffic patterns of the neighborhoods through which it travels. Streetcar vehicles run in mixed traffic and, except at platform stops, accommodate existing curbside parking and loading. The DC Streetcar operates seventeen (17) hours per day. The DC Streetcar is owned and operated by the District Department of Transportation.

Vehicles for the proposed network are conventional double-end tram vehicles from Inekon-Skoda and operate on a conventional overhead contact wire system. A unique characteristic of streetcar operation shall be the prohibition on overhead wires in certain parts of the city. The legislation regarding this prohibition has made it

necessary to find alternatives means of power collection through areas where views of the monumental core may be compromised.

DDOT has been working for the past few years with streetcar vehicle manufacturers to push for the development of a vehicle that can operate on both the overhead contact system for most of its running, but also run on an alternate power source in sensitive areas.

3.3 Operations and Maintenance

The Inekon vehicles are designed to be operated with one operator. Fare collection shall be done off the vehicles at station platform areas through the use of fare kiosks. The current construction of the Anacostia line and H/Benning Line requires the construction of two separate maintenance facilities, one to serve each line. The Anacostia maintenance facility is designed to accommodate three streetcars and provide only light maintenance and cleaning of the vehicles.

The H Street facility shall be housed in the western abutment of the H Street “Hopscotch” Bridge behind Union Station. This facility is designed to accommodate up to six vehicles. Operators, Electro-Mechanics and Superintendents are hired to provide operational support. _____ Managers oversee the entire operation.

3.4 Organizational Structure

Operation of the DC Streetcar is managed by a Chief Operating Officer. This position is responsible for assuring and providing for the safety of the public and DC Streetcar personnel in accordance with the SSPP. An organization chart is included to outline the management and staff structure along with a description of each position and the associated responsibilities.

- Chief Operating Officer – Responsible for overseeing all aspects of streetcar operation and maintenance. The COO shall be responsible for approving and implementing the system safety program.
- Rail Operations Manager – Responsible for managing the daily operation of the streetcar as well as overseeing the Streetcar Superintendents and Operators.

- Vehicle Maintenance Manager – The Maintenance Manager is responsible for ensuring proper procedures are developed and followed and that a preventive maintenance program is created.
- Safety and Security Manager –
- Facilities Manager –
- Maintenance of Way (MOW) Manager –
- Superintendents –

3.5 Safety Committee

A Safety Committee (SC) has been established to review and approve all proposed changes, modifications, or revisions to transportation and maintenance policies and procedures. The SC consists of the following: the Safety and Security Manager, Vehicle Maintenance Manager, Streetcar Superintendent and a Streetcar Operator. A representative of the DC SSOA is invited to attend meetings and receives copies of monthly meeting minutes. Committee members are responsible for the development and review of proposed changes to:

- Operating Rules
- Standard Operating Procedures
- Configuration Management
- Rail Operations training programs

Additionally, the DC Streetcar evaluates the effectiveness of the system safety programs and activities and its implementation through the review of safety audits, major incident or accident investigations, and safety related statistics to reduce the potential for recurrence of similar incidents and negative trends. The Safety Committee is responsible for accident findings. Changes or modifications to existing SOPs or rules are approved and distributed by the appropriate department manager to all affected

departments and/or employees. The Safety Committee is responsible for accident findings and implementing any corrective action plans.

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SAFETY TASKS/ACTIVITIES	Operations	Maintenance	Rail MOW	Vehicle Maintenance	Operations	Facilities	Capital Projects & Procurement	HR	Internal Audit	Support
Goals & Objectives	X	X	X	X	X	X	X		X	O
SSPP Control & Update	X									O
Hazard Management Process	X	X	X	X	X	X	X	X		O
System Modifications	X	X	X	X		X	X			O
Safety Certification	X	X	X	X	X	X	O			O
Safety Data Acquisition	X	X	X			X	X			O
Accident Notification, Investigations & Reporting	X	X	X	X	X	X			O	X
Emergency Management	X	X	X	X	X	X			O	X
ISAP	O	X	X	X	X	X			O	X
Rules Compliance	X	X	X	X	X	X				O
Facilities & Equipment Inspections	X	X	X	X		X				O

Maintenance Audits & Inspections		X	X	X		X						O
Training & Certification Program	X	X	X	X	X	X						O
Configuration Management	X	X	X	X								O
Employee & Contractor Safety	X	X	X	X	X	X	X					O
Hazardous Materials	X	X	X	X	X	X	X	X				O
Drug & Alcohol Program	O	X	X	X	X	X	X	X	X	X	X	X
Procurement		X	X			X	X	X				O

X = Primary Responsibility O = Oversight

4. SSPP Plan Review and Modification

4.1 Annual Assessment

The Chief Operating Officer has delegated the authority for the development, implementation, and management of the SSPP to the Safety and Security Manager who is responsible for the coordination of the DC Streetcar SSPP . The SSPP shall be evaluated and updated annually to:

- Account for new systems or changes that require significant changes to the DC Streetcar system or operation.
- Inform all persons and agencies of changes made to the policy in a timely manner.
- Support and coordinate DC Streetcar emergency management activities with emergency response agencies impacted by DC Streetcar operations
- Monitor and evaluate safety related programs and activities at each organizational level

4.2 Coordination with SSOA

In addition to annual updates, the SSOA requires that DC Streetcar identify changes that require modification of the SSPP on an ongoing basis. The Safety Department is responsible for incorporating any and all necessary changes in the SSPP. The Safety and Security Manager shall be responsible for submitting these changes to the SSOA for approval within a prescribed number of calendar days from the date of the change.

The SSOA may also request modification to the SSPP due to internal audit report results, on-site reviews and investigations, changing trends in accident/incident or security data. Upon receipt of a written request for modifications from the SSOA, DC Streetcar must submit a revised SSPP within 30 calendar days.

5. Implementation of SSPP

The SSPP provides the foundation for a continuing safety effort that begins with the acceptance of new facilities and equipment and continues into the operational phase. This section identifies and describes the overall safety requirements and activities directed toward achieving established safety goals and objectives identified in the SSPP.

5.1 Safety Related Activities

The Safety Department shall be responsible for conducting any and all activities necessary to effectively implement the safety program for the DC Streetcar. The Safety and Security Manager will be required to monitor and administer the operations, investigations, accident prevention, fire/life safety, emergency management, industrial safety, customer safety, public safety, safety training and construction safety oversight.

The Safety Department shall be responsible for conducting the necessary tasks and coordinate with other departments within DC Streetcar to administer an effective safety program. Some of the required tasks are:

- Performing accident/incident investigations
- Reviewing operating rules and procedures
- Conducting internal audits, inspections and investigations to monitor the effectiveness of the SSPP

5.2 Safety Responsibilities

All departments within DC Streetcar shall be responsible for ensuring that the tasks set forth in the SSPP are completed. Compliance with the SSPP requires each department manager to work with their respective staff and the Safety Department to ensure all requirements are met. The following table provides a detailed description of the safety-related tasks and which department shall be responsible for their completion.

TASK	Safety	Vehicle Maintenance	Facilities	Rail Operations	MOW			
SSPP Review and Comment	√	√	√	√	√			
Hazard Management Process	√	√	√	√	√			
Acceptance Testing and Inspection	√	√	√	√	√			
Safety Data Acquisition	√	√	√	√	√			
Emergency, Preparedness, Planning	√	√	√	√	√			
Internal Safety Audit Process	√	√	√	√	√			
SOPs, Operating Rules, General Rules Compliance	√	√	√	√	√			
Facilities Inspections	√	√	√	√	√			
Equipment Inspections	√	√	√	√	√			
Safety, Operator, Maintenance	√	√	√	√	√			

and Technical Training								
Configuration Management	√	√	√	√	√			
OSHA Compliance	√	√	√	√	√			
Safety Committee	√	√	√	√	√			
Construction Safety	√	√	√	√	√			
Hazardous Materials	√	√	√	√	√			
Procurement Safety Requirements	√	√	√	√	√			
Procurement Specifications	√	√	√	√	√			

6. Hazard Management Program

System safety is the application of hazard management techniques to a system to achieve an optimum level of safety throughout all phases of the system’s life cycle. The methodology provides a systematic means of identifying, analyzing, assessing and resolving the cause(s) of accidents within the transit system as well as those outside the system that could impact the safety of the system. The application of hazard identification methods during a transit system’s life-cycle phases and to all system elements will permit the timely identification, elimination, minimization or control of hazards. The products of this methodology provide management with appropriate information relative to hazard probability and severity.

6.1 Hazard Identification

In general, hazards identified through formal project hazard assessments, operating system investigations or evaluations, which have resulted in, or have the potential to result in, serious injury, fatality, or system loss, are categorized through a formal classification system. The hazard categorization system is used to determine the acceptability of assuming a risk associated with a hazard, the necessity of implementing corrective measures to eliminate or reduce the hazard, or a combination of both. System safety, cost, schedule, probability of occurrence, mitigating factors, potential losses and impact on publicly perceived safety are considered in the analysis.

Hazard categorization involves classification of the hazard in terms of severity and probability. The United States Department of Defense document Standard Practice for System Safety, MIL-STD-882D, establishes system safety criteria guidelines for determining hazard severity and probability. DC Streetcar has adopted the Risk Assessment and Hazard Risk Index matrixes for use in the hazard categorization process. The evaluations are made by the Manager of Operations and Safety.

An objective of hazard identification activities is to define those conditions and faults that have the potential for causing an accident. Where reasonably feasible, all employees are charged with the responsibility of identifying and reporting conditions that have potential to cause accidents, injuries, or other losses.

The inductive process involves the analysis of both system components to identify failure modes and effects on the total system or a part thereof, and of personnel actions. Failure modes are identified as conditions such as: fails to open, fails to close, opens or closes when not required, fails to act, acts improperly or inadequately or at the wrong time, etc., or any combination thereof. A preliminary Hazard Analysis (PHA) is performed on each project to provide an early assessment of hazards associated with any proposed design change. Other analyses are performed as identified through the PHA.

It is the responsibility of all DC Streetcar employees to report hazardous conditions to their supervisor. Supervisors are responsible for documenting the information in an incident report or safety suggestion form. The completed documentation is sent to the Manager of Operations and Safety for review. Data is accumulated and used to identify actual and potentially hazardous conditions. Such conditions may include injuries, potentially hazardous equipment failures, and rules or procedures violations.

Hazards that are deemed by Operations to be an immediate threat to safety are immediately addressed and corrected by the on-duty Superintendent through an operations Train Order, Special Instruction, or assistance from law enforcement or any other entity deemed necessary to eliminate or mitigate the hazard.

6.2 Hazard Investigation, Evaluation and Analysis

Incident reports, accidents, illness/injury reports, daily operations summaries, audits, results from drills or exercises with emergency responders, and customer service inquiries are other methods of hazard identification. The Manager of Operations and Safety reviews these resources on a monthly basis. Corrective actions are taken either exclusively by the Manager of Operations and Safety, or are deferred to the safety committee for further review.

Formal hazard assessments are conducted commencing with the preliminary engineering phases of each new rail extension and on new rail transit systems equipment. Hazard assessments are conducted by the District of Columbia, DC Streetcar Operations and Maintenance Management, by designated or contracted project engineering groups and the DC Streetcar Safety Committee. The purpose of the assessments is to:

- Identify and evaluate the effects of hazardous conditions on personnel, equipment and the public
- Determine the severity and probability of occurrence of hazards
- Define and evaluate countermeasures to eliminate control of identified hazards
- Provide timely notification to design personnel responsible for resolving undesired hazards
- Document the safety concepts incorporated and used during design, and provide the basis for developing procedures to complement the design's

safety concepts, or to resolve the hazard if the design did not provide resolution.

6.3 Hazard Control and Elimination

6.4 Hazard Tracking

DC Streetcar accident/incident data provides insight as to what has happened in the past and what hazardous conditions should be reviewed and should be considered for mitigation.

6.4.1 Hazard Severity

The categories of hazards are as follows:

- Category I – Catastrophic

Operating conditions are such that human error, environment, design deficiencies, element, sub-system or component failure or procedural deficiencies may cause death or major system loss, thereby requiring immediate cessation of the unsafe activity or operation.

- Category II – Critical

Operating conditions are such that human error, environment, design deficiencies, element, sub-system or component failure or procedural deficiencies may cause severe injury or illness or major system damage thereby requiring immediate corrective action including immediate cessation of the unsafe activity or operation.

- Category III – Marginal

Operating conditions may cause minor injury or illness or minor system damage such that human error, environment, design deficiencies, sub-system or component failure or procedural deficiencies can be

counteracted or controlled without serious injury, illness or major system damage.

- Category IV – Negligible

Operating conditions are such that personnel error, environment, design deficiencies, sub-system or component failure or procedural deficiencies will result in no or less than minor illness, injury or system damage.

6.4.2 Hazard Probability

The probability that a hazard will occur during the planned life expectancy of the system element, sub-system or component can be described qualitatively, in potential occurrences per unit of time, events, population, items, or activity. A qualitative hazard probability may be derived from research, analysis, evaluation of safety data from the operating experience of DC Streetcar or historical safety data from similar systems. An example of a qualitative hazard probability ranking is found in the following:

DESCRIPTION	LEVEL	SPECIFIC INDIVIDUAL ITEM	SYSTEM
Frequent	A	Likely to occur frequently	Continuously experienced
Reasonably Probable	B	Will occur several times in life of an item	Will occur frequently
Occasional	C	Likely to occur sometime in life of an item	Will occur several times
Remote	D	Unlikely, but possible to occur in life of an item	Unlikely, but can reasonably be expected to occur

Improbable	E	So unlikely, it can be assumed occurrence may not be experienced	Unlikely to occur, but possible
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6.5 Reporting to the State Safety Oversight Agency

To ensure an ongoing role in the oversight of DC Streetcar’s hazard management process, DC Streetcar will establish a Hazard Tracking Log which reflects the consolidation of information in the hazard management process. The Hazard Tracking Log will contain all hazards identified through the various methods applied by DC Streetcar. The Hazard Tracking Log will be submitted monthly to DDOT’s designated point of contact. Quarterly, DC Streetcar will conduct a meeting with DDOT to review the Hazard Tracking Log and other activities associated with the hazard management process. DC Streetcar will submit a proposed date and location for the annual meeting, along with a proposed agenda.

HAZARD TRACKING LOG

No.	Description	Date Identified	Source	Assessment Results	Recommendations	Status
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- No. – Refers to the number assigned to the hazard by the RTA.
- Description – Refers to a brief narrative summary of the hazard – what it is; where it is located; what elements it is comprised of; etc.

- **Date Identified** – Refers to the date the hazard was identified at the RTA.
- **Source** – Indicates the mechanism used to identify the hazard, i.e., operator report, near-miss, accident investigation, results of internal safety or security audit, rules compliance or training program, maintenance failure, facility or vehicle inspection, trend analysis, formal hazard analysis, etc.
- **Assessment Results** – Refers to the hazard severity and hazard frequency ratings initially assigned to hazard by the RTA.
- **Recommendations** – Refers to the actions recommended by the RTA to address the hazard and to bring it into a level of risk acceptable to management.
- **Status** – Refers to the status of the recommendations. Status may be designated as: not started, open, in progress, or closed.

During application of the hazard management process, for any hazard identified as an “unacceptable hazard condition” as defined in section 6.2 of this SSPP, the Manager of Operations and Safety will notify the state safety oversight agency designated point of contact within two hours, followed by an investigation report within twenty-four hours. Any corrective action plans developed as a result of the investigation will first be approved by the state safety oversight agency.

6.5.1 Scenario Development and Review

DC Streetcar operations management provides a starting point for identifying the types of undesirable events that can occur. Hazardous scenarios outline potential situations and equipment malfunctions which can produce undesirable events at DC Streetcar. The scenarios are intended to represent real-world events and are derived from anticipated, current, or past experiences and DC Streetcar. Operations management participates in design reviews with DDOT, or assigned project engineering groups, to mitigate the hazards identified from any developed scenarios.

6.5.2 Occupational Safety and Health Evaluations

The DC Streetcar Occupational Safety and Health Program is directed toward achieving a safe working environment for employees and minimizing the likelihood of accidents. The program emphasizes the recognition, evaluation, and control of hazards arising in and from the occupational environment. Systems, processes, and facilities are continually reviewed or inspected for hazards. This is accomplished through surveys, inspections, audits, safety committee reviews of injury report forms and customer service inquiries. Industrial hygiene surveys are conducted to evaluate the degree of employee exposure to chemicals and physical agents encountered in the workplace, as needed.

6.5.3 Hazard Risk Assessment

To determine what action to take to correct or to document acceptance of identified hazards, a system of determining the level of risk involved has been adopted. This risk assessment activity will be incorporated in formal System Safety Analyses. In turn, this will enable management to properly understand the amount of risk involved by accepting the hazard relative to what it will cost (schedule, dollars, operations, etc.) to reduce the hazard to an acceptable level.

The following matrix identifies the Risk Assessment Index based upon hazard category and probability and the criteria for defining further action based upon that index.

6.5.4 Risk Assessment Index

FREQUENCY OF OCCURRENCE	HAZARD CATEGORIES			
	I CATASTROPHIC	II CRITICAL	III MARGINAL	IV NEGLIGIBLE
(A) FREQUENT	1A	2A	3A	4A
(B) PROBABLE	1B	2B	3B	4B
(C) OCCASIONAL	1C	2C	3C	4C
(D) REMOTE	1D	2D	3D	4D

(E) IMPROBABLE	1E	2E	3E	4E
HAZARD RISK INDEX		CRITERIA BY INDEX		
1A, 1B, 1C, 2A, 2B, 3A		Unacceptable		
1D, 2C, 2D, 3B, 3C		Undesirable		
1E, 2E, 3D, 3E, 4A, 4B		Acceptable with review		
4C, 4D, 4E		Acceptable without review		

6.5.5 Risk Assessment and Analysis

The DC Streetcar Safety Committee is the principal body for assessing and resolving identified hazards within the DC Streetcar system. However, hazards related to capital projects – such as system, extensions, equipment procurements, and system upgrades – are reviewed by DDOT or the assigned project engineering group. If a formal assessment is conducted by the Safety Committee, the Risk Assessment Index is used to assist the decision making process in determining whether a hazard should be eliminated, controlled, or accepted in terms of severity and probability. This provides a basis for logical management decision making.

As hazards are identified, there is an order of precedence in the hazard control process. Various means are employed to reduce the risk to an acceptable level, including:

- (a) Elimination or minimization of the risk through design change. If possible, the hazard will be eliminated through design change. If an identified hazard cannot be eliminated, the hazard will be reduced to an acceptable level, as defined by the Risk Assessment Index, through design selection.
- (b) Incorporate Safety Devices – If identified hazards cannot be eliminated or their associated risk adequately reduced through design selection, that risk is reduced to an acceptable level through the use of fixed, automatic, or other protective safety design features or devices.

- (c) Provide Warning Devices – When neither design nor safety devices can effectively eliminate identified hazards or adequately reduce associated risk, warning devices are used to detect the condition and to produce a timely warning signal to alert personnel of a hazard. These warning systems are standardized within like types of systems to minimize the probability of incorrect personnel reaction to the signals.
- (d) Use of Administrative Controls – Where it is impractical to eliminate hazards through design selection or adequately reduce the associated risk with safety and warning devices, procedures and training are used. Tasks and activities that are determined to be critical require certification of personnel proficiency.
- (e) Use of Personal Protective Equipment – If the hazard cannot be eliminated or adequately controlled with administrative controls, personal protective equipment may be needed. Training on the proper use of equipment is required prior to employees being placed in a environment requiring such equipment.

6.6 Tracking

The Safety Committee is the principal body for tracking identified hazards within the DC Streetcar system to final resolution. The Manager of Operations and Safety maintains logs that detail resolution activities to date and the current status of the hazard – open or closed.

7. Safety Certification Process

As the operator of the streetcar line, DC Streetcar certifies that subsequent extensions and rail phases are operationally ready to enter safe revenue service. Therefore, a safety certification program is developed and implemented for subsequent operating segments and phases.

7.1 Goals and Objectives

The goals of the safety certification program are to verify that identified safety requirements have been met and to provide evidence that the new operational

segments/phases are safe to use for revenue service.

Accordingly, the objectives of the safety certification are to document that:

- Facilities and equipment have been constructed, manufactured, inspected, installed, and tested, in accordance with safety requirements in the design criteria and contract documents.
- Operations and maintenance procedures and rules have been developed and implemented to ensure safe operations.
- Training documents have been developed for the training of operating personnel, and emergency response personnel.
- Transportation and maintenance personnel have been trained and qualified/certified.
- Emergency response agency personnel have been prepared to respond to emergency situations in or along the DC Streetcar right-of-way.
- Safety related system integration tests have been conducted.

Each critical system element receives a written safety certificate. When all required system elements are certified, a system-wide safety certificate is issued along with a safety verification report. Final authority to approve certification of extensions for revenue service rests with DDOT.

- Formal certification by the Project Engineer, Design Engineer(s) and DDOT Inspectors that the project has been constructed in accordance with the contract plans and specifications. Specific safety related items are identified for final certification and are verified by site inspections and/or acceptance testing. Items are tracked by a conformance checklist with individual sign-off completion. See Appendix E. Checklist serves as a log of items.
- Throughout the design process, the streetcar project team conducts routine safety and hazard analysis of the alignment, including the following:

- Traffic conflicts are identified and mitigation strategies are developed and incorporated into the project design. These measures include special traffic phasing and other traffic control techniques.
- Pedestrian safety and the interface of the streetcar vehicle and pedestrians are carefully analyzed. This is particularly important where pedestrians board and exit the streetcar and to or from surrounding destinations. Planning of physical improvements (e.g., curb extensions at intersections) and controls are designed to reduce the risk to pedestrians. Plans are reviewed by the DDOT Safety Committee to gain insight into safe pedestrian circulation and interfaces with the streetcar.

7.2 Employee Safety Certification Program

Safety training is conducted on DC Streetcar equipment. Operating rules and standard operating procedures (SOPs) are issued to all DC Streetcar operating personnel. The Manager of Operations and Safety oversees the formulation of training programs, SOPs and rules.

7.3 Safety Training

Safety information on approved methods and procedures are used in manuals, handbooks, and other documentation developed for the training and certification of operators and maintenance personnel. Identification of protective devices and emergency equipment are included in the training documentation and instruction. In addition, safety posters and notices are used, as appropriate, to enhance awareness during all phases of system operations. Proficiency demonstrations and certifications are required of all operations and maintenance personnel. Safety concerns are incorporated in briefings given to personnel prior to their working with hardware or facilities.

8. System Modifications

Any modifications to the DC Streetcar system shall be addressed through a formal notification process to ensure that safety concerns are monitored. Each department manager is responsible for coordinating changes to existing systems and may utilize the Safety Committee to review proposed changes. The Safety office shall also be informed of any modifications affecting vehicles, right-of-way, signals, and switches. All changes

are reflected in a modification log for each system or subsystem. Modifications or changes will be disseminated through various means.

8.1 Tracking

Each department manager is responsible for ensuring that any hazards associated with system modifications of any kind are worked into the hazard management process. Any accepted risks associated with system changes will be tracked from the outset.

9. Safety Data Acquisition

9.1 Data Acquisition

Notification regarding accidents, incidents, hazardous conditions and DC Streetcar operations are obtained from several different reporting mechanisms. These include, but are not limited to: email notification from the OCC, accident/incident reports daily operations reports, employee occupational injury reports. Employees are also encouraged to bring any safety related issues to the attention of managers and supervisors.

Tracking of hazard related data is used to identify trends. These trends are further analyzed and/or investigated to determine causal factors. This is accomplished by interviews with personnel in the affected department(s) and analysis of pertinent documentation. Identified hazards are submitted with corrective action recommendations or request for corrective action development.

9.2 Roles and Responsibilities

The Safety Manager is responsible for monitoring the safety performance of DC Streetcar operations. Safety data is collected and analyzed to determine if safety performance meets established safety goals. This data includes injuries to passengers, DC Streetcar personnel, the public, potential hazardous equipment failures, unacceptable hazardous conditions, rules and procedures violations. A closed-loop reporting system for identifying and monitoring safety-related items has been established. To close out each incident, safety verification activities and results are reviewed and audited by the Manager of Operations and Safety.

All departments and offices responsible for safety activities provide written reports for

inclusion in risk management's liability tracking system.

10. Accident & Incident Reporting and Investigation

10.1 Overview

Investigations are performed in accordance with the State Safety Oversight Agency Program Standard and Procedures. Under Title 49 CFR Part 659, Rail Fixed Guideway Systems; State Safety Oversight, the SSOA is required to conduct investigations of those accidents and incidents reported to it as defined by the SSOA Program Standard and Procedures and of unacceptable hazardous conditions as defined by the SSOA Program Standard and Procedures. DC Streetcar investigates all reportable incidents and unacceptable hazards on behalf of the SSOA. The Safety Manager shall notify the SSOA prior to convening an investigation to investigate a fatality or accident resulting in serious injuries.

The Safety Office is responsible for performing investigations of accidents involving fatalities, serious injuries, multiple hospitalizations, major fires, and derailments. It is also responsible for evaluating accident and incident reports provided by all departments and provide the appropriate level of investigation and/or follow-up to ensure the appropriate corrective action is implemented.

The Safety Manager administers the policies, procedures, and responsibilities for accident reporting and investigation. There are three levels of investigation. The level of investigation required is dependent on the seriousness of the event.

10.1.1 Accident/Incident Investigation Procedures

All accidents and incidents are investigated and the hazard resolution process will be used to develop corrective action plans (CAPs)

10.1.2 Streetcar Accident Investigation Team

The Safety Department is responsible for investigating accidents that are serious in nature, however, personal injury and extent of damage are not the sole criteria. A potentially hazardous condition, or an incident, which has the potential for serious injury or damage will be investigated as well. The Safety Department shall coordinate with representatives from operations, maintenance and/or the Safety Committee, as appropriate.

In the event of an accident or incident, the Safety Department shall:

- Notify the Operations Control Center
- Notify all pertinent managers, supervisors and emergency personnel
- Notify the State Safety Oversight Agency
- Notify other external agencies (FTA, NTSB, OSHA)
- Conduct an on-site inspection of the accident/incident scene, if applicable
- Collect photographs of the scene
- Document observational information
- Collect eyewitness information
- Document vehicle and infrastructure factors and conditions
- Measure and diagram the scene
- Document all known casualties
- Conduct toxicological testing
- Collect and analyze off-site data
- Prepare reports and make recommendations or develop corrective action Plans (CAPs)

All information gathered is submitted to the Manager of Operations and Safety. A final report with findings, conclusions, and recommendations follows all investigations.

10.1.3 Manager of Operations and Safety Review

The Manager of Operations and Safety reviews all accident/incident reports for potentially serious incidents or conditions. Additionally, when accident/incident reports and statistics show repetitive trends that result in an inability to meet or exceed the safety goal and objective, the Manager of Operations and Safety initiates an investigation to determine the causal factors. The Manager of Operations and Safety participates with appropriate departments and the Safety Committee to determine and implement a corrective action plan.

10.2 Safety Oversight Reporting and Investigation

When the accident, incident or condition involves post-accident inspections, examination, or testing, DDOT is notified so that it may participate in the investigation.

DC Streetcar must submit a written report of accidents, incidents, hazardous conditions and security breaches to DDOT within 24 hours of the event. The report shall contain the following elements:

- Identification of the most probable cause and other contributing factors
- Corrective action plan to prevent or mitigate recurrence
- A schedule of implementation, as appropriate

DDOT may conduct a separate, independent investigation at its own discretion. DC Streetcar will cooperate with any investigation done by DDOT or the NTSB.

10.2.1 Reporting Criteria and Frequency

DC Streetcar will notify the SSOA within two hours for any incident involving a rail transit vehicle or an incident taking place on a rail transit-controlled property where one or more of the following occurs:

DC Streetcar must report all accidents to the SSOA that meet the requirements of the FTA Final Rule, Part 659.33. The FTA definition of an accident is:

- A fatality at the scene, or where an individual is confirmed dead within thirty days of a rail transit-related incident;
- Injuries requiring immediate medical attention away from the scene;
- Property or damage to rail transit vehicles, non-rail transit vehicles, other rail transit property or facilities and non-transit property that equals or exceeds \$25,000
- An evacuation due to life safety or security reasons
- A collision at a rail grade crossing
- A mainline derailment
- A collision with an individual on a rail right of way; or
- A collision between a rail transit vehicle and a second rail transit vehicle, or a rail transit non-revenue vehicle

The NTSB will be notified within two hours for any occurrence involving a passenger or employee fatality, two or more injuries to employees or passengers requiring admission to a hospital, an evacuation on the mainline, or a fatality at a rail grade crossing. The NTSB will be notified within four hours for any occurrence that totals or exceeds \$25,000.

A preliminary report of the incident will be sent to DDOT within 24 hours. A complete written report of the incident will be submitted to DDOT within 45 days of the occurrence. If the investigation has not been completed, bi-weekly written interim reports, outlining progress to date, will be submitted.

An annual report of the DC Streetcar safety performance will be submitted to DDOT. The report is submitted in a format, as determined by DDOT. DC Streetcar will update the SSPP as DDOT reporting procedures and regulatory requirements change.

10.3 Reporting

DC Streetcar shall prepare an incident or hazardous condition investigation report, identifying the most probable cause and any contributing causes of the accident or unacceptable hazardous condition. The accident investigation process, including the draft final report, must be completed within 30 calendar days. If the accident investigation process is more than 30 calendar days, DC Streetcar must submit an interim report of its progress as well as its adjusted schedule for expected completion date.

10.3.1 Data Acquisition

Information regarding accidents, incidents, hazardous conditions and DC Streetcar operations are obtained from several different reporting mechanisms. These include, but are not limited to: accident/injury reports, incident reports, daily operations summaries, accident/incident database, employee/occupational injury reports, and customer service inquiries.

Monthly, the Manager of Operations and Safety will review the data to identify trends or recurring accidents or incidents. These items are brought to the Safety Committee for further evaluation, review and conclusion.

10.3.2 Data Analysis

Tracking of hazard-related data is used to identify trends. These trends are further analyzed and/or investigated to determine causal factors. This is accomplished by interviews with personnel in the affected department(s) and analysis of pertinent documentation. Identified hazards are submitted monthly to DDOT and are represented in the Hazard Tracking Log.

10.3.3 Reports

Streetcar safety performance reports are submitted to DDOT on a monthly and annual basis. The report contains injury data regarding passenger, DC Streetcar personnel, and customer/public accidents and incidents. The report is the basis for the formulation of safety performance goals and objectives for the coming year. The report outlines the strategies for the achievement of the stated safety objectives.

11. Emergency Management Program

Annually, the Manager of Operations and Safety, or designee, will coordinate, conduct or participate in safety/security related drills and exercises with DDOT, Department of Homeland Security, DC Fire and EMS, Metropolitan Police and other agencies. The purpose of DC Streetcar participation is to ensure that all potential emergency responders are familiar with DC Streetcar equipment and property. Participation may include hands-on-training, demonstrations, video demonstrations, handouts, or any other media. Minimally, emergency responder training will include basics of streetcar vehicle and system electrification, familiarization with streetcar operations and routing, and emergency entry methods into streetcar vehicles.

The Safety Department will implement new findings from emergency drills and exercises and will ensure that appropriate and timely employee training occurs as necessary. Furthermore, to ensure that DC Streetcar personnel are trained to perform satisfactorily during emergency conditions, annual recertification will incorporate discussion and refresher training regarding procedures, practices, actions and responsibilities during emergency situations.

Training for employees and local public safety organizations, along with more extensive discussion is contained in the SEPP. This document is classified as Sensitive Security Information (SSI).

12. Internal Safety Review Process

12.1 Internal Safety Audits

The purpose of internal system safety audits is to inform management if programs and activities are meeting planned and published requirements. Audits are authorized by DC Streetcar management to verify program compliance with requirements and policy. Elements of the SSPP will be reviewed over a three year period. DDOT will be notified and presented with the review checklist thirty days prior to each review. The annual report must be submitted to DDOT each year. The System Safety Program Manager must certify compliance of the DC Streetcar system with its SSPP each year or define the areas of non-compliance with an appropriate corrective action plan.

System safety audits are conducted by an approved designee. The Safety Manager is responsible for the direction of the audits.

12.2 Audit Process

12.2.1 Audit Cycle/Audit Schedule

Over a three year period, all 21 elements of the SSPP must be audited at least once. DC Streetcar shall develop an internal safety audit schedule to submit to the SSOA, indicating when the 21 elements will be audited. The SSOA shall review and revise the schedule to meet the SSOA Program Standard requirements. The SSOA shall receive 30 days advance notice of when an internal safety audit will be performed. The SSOA reserves the right to audit and approve DC Streetcar's internal safety and security as conducted.

As part of the audit process, both announced and unannounced audits are performed. Announced audits are scheduled so as to have minimum disruption of activities. Unannounced, spot check audits are performed as part of the audit process.

12.2.2 Audit Checklist

The department managers shall coordinate with the Safety Manager to prepare the necessary checklists. The checklists reflect the items and areas of the department being audited. The audited department/unit is given the opportunity to provide support documentation to the auditors to "close" the items on the checklist. Confidential documentation, unless approved by the Project Manager are not part of the audit.

12.2.3 Documentation

All audits are fully documented. A draft report is submitted to the responsible department/unit for review and comment. The auditing team will then submit a final report along with the checklist, to the manager of Operations and Safety. The Manager will submit a final audit report to appropriate DC Streetcar management and DDOT.

12.2.4 Corrective Action

Audit reports include a summary of open items, problem areas and required corrective actions, if any. A corrective action plan is developed by the audited department/unit

with concurrence from the Manager of Operations and Safety. All corrective actions are placed on an open items list and tracked to resolution by the Manager of Operations and Safety.

12.2.5 Organizational Functions

Organizational functions included in the audit process are:

- Facility Inspections
- Equipment Inspections
- Maintenance Audits/Inspections
- Rules/Procedure Review
- Training and Certification Review Audit
- Emergency Response Planning Coordination and Training
- System Modification Review and Approval Process Safety Data Acquisition/Analysis
- Interdepartmental/Interagency Coordination
- Configuration Management
- Occupational Safety and Health
- Environmental Protection Program
- Hazardous Materials/Environmental Safety Program
- Drug and Alcohol Abuse Program
- Contractor Safety Coordination
- Construction Safety
- Procurement
- Others as required by Manager

13. Rules Compliance

13.1. General

All DC Streetcar Managers and Superintendents are responsible for the prevention of accidents, identification of hazards, and resolution of such hazards. Reports of all accidents, incidents, deficiencies and defects will be maintained by the Manager of the appropriate department.

13.2 Responsibilities

The Manager of Operations and Safety and the manager of Maintenance are assigned the responsibility for safe operation of streetcar vehicles on the streetcar system.

Responsibilities include:

- Preparation and implementation of safe operating policies, plans, rules and procedures that are contained in the Streetcar Operating Manual and Rule Book (SOMRB) and observance of memorandum that address system changes.
- Required policies, plans, rules and procedures for safe operation and maintenance are developed by DC Streetcar. The SOMRB will be reviewed annually with review and modification dated accordingly. The SOMRB may be revised to reflect changes in operating conditions. Revised SOPs or rules will be distributed to all employees that each employee must sign upon receipt.
- Personnel are annually re-trained, tested and certified in the proper performance of all safety-related rules and procedures that cover their specific job function. This applies to both normal and emergency conditions.
- DC Streetcar follows the DC Circulator Policy and Procedures on Hours of Service limitations. The Hours of Service limitations are as follows:
 - The number of hours during a twenty-four hour service day period provides for minimum of seven consecutive hours off duty.
 - That the number of hours worked during a seven day period does not exceed seventy hours.
 - That the number of consecutive days worked does not exceed thirteen days.
- Employees are provided copies of safety and emergency rules, procedures and policies that affect them.
- Monitoring adherence to safety-related operating and maintenance policies, plans, rules and procedures through periodic in-service evaluations using the "Observation Report Form" by DC Streetcar Supervisor or a Manager. All

deficiencies are reported, in written form, to the Safety Manager for review, re-instruction, or re-training.

- When necessary, performance coaching or re-instructional training for Managers is performed by the Safety Manager, or designee. Superintendents are expected to comply with all DC Streetcar rules and standard operating procedures, and enforcement thereof, as they apply to the management of streetcar service and the management of personnel. Additionally, Superintendent skills are assessed annually form participation in the DC Streetcar Re-certification Program.
- Personnel, whose safety record requires follow-up, additional training or discipline, including discharge, are identified through maintenance of records, which indicate safety violations of rules and procedures. A safety/rule violation log is maintained by the Manager of Operations and Safety; the log chronicles safety/rule violations for each month.
- The Maintenance Manager has developed a preventive maintenance schedule, for each system hardware element, which is designed to maintain system safety. Reported deficiencies and defects in equipment and facilities are corrected and monitored to assure satisfactory resolution. Only equipment known to be free of safety-related defects is placed into service.
- Monitor the safety/rule violation log to identify trends which may require a re-evaluation of a certain procedure or practice.

14. Facilities and Equipment Inspections

The DC Streetcar Maintenance Division must be effective to assure that all systems, equipment and facilities operate as required, or in the event of failure or degradation of functionality, that operational safety is not compromised. This aspect of maintenance directly pertains to the safety of DC Streetcar customers, emergency response agencies, the general public, and employees and subcontractors of DC Streetcar.

14.1 Facility Inspections

All DC Streetcar operating and maintenance facilities undergo a complete inspection by the Manager of Maintenance at least once a year to ensure the safety and health of

employees. Individual maintenance shops within the maintenance facilities are inspected on a monthly basis. Inspection reports are issued which list the hazards and the safety and health problems found during the inspection. Follow-up inspections and reports are completed within 30 days.

14.2 Equipment Classifications Roles and Responsibilities

Implementation of maintenance activities is under the direction of the Manager of Maintenance. All streetcar equipment is maintained into three different classes:

- Vehicles
- Maintenance of Way (to include OCS)
- Substations

Below is a list of what equipment is maintained, how it is maintained, and who maintains it. All reports and tracking is coordinated and subject to review and approval of the Manager of Maintenance.

14.2.1 Vehicles

Streetcar vehicles are maintained at a minimum in accordance with manufacturer recommendations, or at a higher level. A majority of the maintenance is time driven based maintenance. Maintenance is tracked and coordinated through time schedules, which are maintained by the Manager of Maintenance or the Assistant Manager of Maintenance. All maintenance is scheduled through work orders and completed within a twenty-percent requirement of the schedule maintenance activity. All records are currently maintained in a manual database under completed maintenance for each vehicle. All hard copies are kept in independent books for each vehicle for two years. All work completed for each vehicle is tracked through assigned repair order numbers for all repairs, or designated maintenance inspection intervals. The Assistant Manager of Maintenance is responsible for all documentation control.

Streetcar maintenance schedules follow a progressive preventive maintenance cycle starting with the lowest mileage (routine inspection) through mid level and major inspections. All streetcar inspections cover the streetcar equipment progressing at higher levels for each inspection. Once the highest level of inspection is reached, the cycle starts again. In conjunction with the inspection cycle, mid-level and major

overhauls are scheduled. These are time-based overhauls and rebuilds of major equipment per the manufacturer requirements.

The maintenance criteria described above is strictly followed. If a streetcar is at the mileage or time requirement and the scheduled maintenance is not complete, the vehicle must be removed from service until the required maintenance is complete. No vehicles are allowed to carry passengers in service with and safety critical faults. These faults include but are not limited to, braking, propulsion, bridgeplate doors or any other equipment that is critical to the safe operations of the vehicles and to the public. All defects are tracked in the defect tracking log, which is reviewed daily by either the Maintenance Manager or Assistant Manager of Maintenance. Those block items are left open until the defect is corrected; at which time that line entry will be closed. Electronic and paper copies of defect write-ups and completed work orders will be kept on-site for three years.

14.2.2 Repair Order Ticket

Streetcar Superintendents enter all reported defects from operators at the time of occurrence into the defect tracking log. Once entered, a repair order ticket with number is generated by the Superintendent. The repair item remains open until repaired. Once repaired, the line item is closed indicating: date, time and who performed the repairs. This list is by calendar year with any items left open carried into the following year's defect tracking log. An Operation Readiness Inspection (ORI) is completed after every repair is completed to the streetcar. The ORI is signed by the on-duty Superintendent or Manager prior to release for service.

14.2.3 Maintenance of Way/Overhead Contact System

Streetcar maintenance of way is completed by DDOT. All maintenance of way is performed in accordance with current DDOT maintenance standards. These inspections follow: weekly, monthly and quarterly inspections per FTA and APTA guidelines. All maintenance is reported on MMIS (Maintenance Management Inspection System) and submitted to the Portland Streetcar Maintenance Manager. All open defects are recorded in the DC Streetcar open defect tracking sheets. All MMIS reports are submitted monthly and kept on file at DC Streetcar.

14.2.4 Sub-Stations

Maintenance is conducted on a weekly, monthly, semi-annual and annual schedule in accordance with the manufacturer recommendations and APTA guidelines. This maintenance and repairs are performed by DDOT's electrical division and coordinated by the DC Streetcar maintenance Manager. All maintenance and repairs are recorded on inspection forms and submitted to the Streetcar Maintenance Manager for review. The Streetcar Maintenance Manager tracks all open defects on an open defect-tracking sheet. The Maintenance Manager maintains all records at the streetcar office.

Safety critical equipment that does not meet established requirements is removed from service. Defects reports by operators to superintendents are recorded in the defect tracking log. Vehicles or equipment that is involved in an accident are inspected by qualified personnel prior to it being placed back into service.

14.2.5 Maintenance Management Plan

The maintenance management plan is the master control document which describes all processes, procedures and requirements relating to streetcar vehicles and physical infrastructure. The document is maintained by the DC Streetcar Maintenance Manager.

15. Training and Certification Program

Safety training is conducted on DC Streetcar equipment. Operating rules and standard operating procedures (SOPs) are issued to all DC Streetcar operating personnel. The Manager of Operations and Safety oversees the formulation of training programs and records, SOPs and rules and maintains all records, which are kept at the DC Streetcar Maintenance Facility.

15.1 Operations Personnel Training

All streetcar operators have successfully completed DC Streetcar's Training Program and are qualified as Streetcar Operators.

All new Streetcar Operators are given the Streetcar Operator Training Course. This course covers Standard Operating Procedures and Operator Rules that govern the

streetcar alignment and operation. Operators are issued manuals for all types of streetcar vehicles.

New Streetcar Operators are also evaluated by established operators using an Observation Report Form. New Operators must meet criteria satisfactorily or will receive additional training. The Streetcar Superintendent, on a separate occasion prior to certification, will determine whether the Operator demonstrates safe control of the streetcar or needs additional training. Each Operator is certified with both written and practical testing to validate operational readiness.

15.1.1 Annual Re-certification

Annually, each Operator is given a refresher course on the rules and procedures and will re-certify with written and practical testing. The Re-certification consists of a quiz, a checklist, a test, and demonstration of troubleshooting techniques. Any person who fails the annual examination is given special training.

15.2 Extensions and Major Modifications

Updated training materials will be developed under coordination by the Manager of Operations and Safety, the Maintenance Manager and Streetcar Superintendents prior to the opening of any new rail extension or major modification to the existing streetcar line. Operations personnel will be certified by either written or practical testing.

15.3 Operator Compliance

DC Streetcar Operators are subject to periodic in-service evaluations by Streetcar Superintendents who monitor their compliance to rules and procedures outlined in the Rule Book and SOP manual. The Superintendent completes an Observation Report Form after completion of the in-service evaluation and will review the information in the report with the Operator. Operators observed violating any rules or procedures are subject to progressive discipline, as outlined in the Standard Operating Procedures manual. The Manager of Safety and Operations maintains a Rule Violation Log that chronicles violations each month. The Manager of Safety and Operations administers all disciplinary actions, re-training,

15.4 Maintenance Personnel Training

Maintenance requirements, methods and procedures of DC Streetcar equipment and systems described in manuals, handbooks and other documentation developed for the training and certification of maintenance personnel. Use of personal protective equipment (PPE), emergency equipment, and safety instruction are included within the training program.

Maintenance personnel who are required to operate streetcars, hi-rail equipment, heavy equipment, or other specialized vehicles/equipment/apparatus are certified by both written and practical testing in order to document the employee's knowledge of safety and operating procedures and skill in the proper and safe operation and procedures. Annually, each employee will re-certify in the proper and safe use of the equipment/vehicles with written and practical testing. Each person who fails the annual examination is given special training.

15.5 Emergency Response Personnel Training

Training to familiarize fire, rescue, and other emergency service personnel with special transit system requirements is coordinated through and conducted by the Manager of Operations and Safety.

Emergency preparedness and response drills are planned and conducted with emergency services and DC Streetcar personnel to: (a) ensure the adequacy of emergency plans and procedures (b) ensure readiness of DC Streetcar personnel to perform under emergency conditions and (c) effectively coordinate between DC Streetcar and emergency response agencies. These exercises and drills are coordinated through the Manager of Operations and Safety and include potentially affected operations personnel.

15.6 Contractor Training

Construction safety and project management is privately contracted in accordance with District of Columbia procedures. Contractors must first seek approval, in writing, from the Manager of Operations and Safety and the Maintenance Manager to perform work on or near DC Streetcar property and infrastructure.

Contractors will contact the DC Streetcar office to apply for a DC Streetcar Access Permit. The request is forwarded to the Manager of Operations and Safety and the Maintenance Manager for review. Contractor requests must be submitted, at minimum,

one week in advance of scheduled work. Once approved, the Manager of Operations and Safety and the Maintenance Manager will provide a Streetcar Alignment Access Permit to the requesting party. The Access Permit details the work to be performed, the time the work will be performed and contact information for the on-site contractor Supervisor. DC Streetcar Superintendents will receive a copy of the access permit.

The Manager of Operations and Safety and the Maintenance Manager must ensure that the requesting party abides by the safety requirements established by DC Streetcar. Requirements include, but are not limited to: reflective safety vests, proper hand signaling to Streetcar Operators, and understanding of inherent dangers of the live and hot overhead catenary electrical system.

DC Streetcar may require contractors to attend safety certification classes prior to approval and issuance of a DC Streetcar Access Permit. This requirement depends on the work request. Safety certification classes are sponsored by the DC Streetcar Safety Department. The Manager of Operations and Safety will make arrangements for contractors to attend such classes and receive certification prior to the approval and issuance of an Access Permit, when necessary.

16. Configuration Management

Configuration management requirements are included in all contracts to assure that changes to the design of equipment and facilities, after design reviews, are adequately documented and approved. The configuration management process uses baseline management to ensure that the technical baseline is defined and controlled throughout the maintenance and operation phase, and that the end products satisfy the technical and operational requirement derived from the system needs. Selected documentation, such as as-built drawings, manuals, procedures and other documents, is formally designated and approved as part of the technical baseline and initially under the control of the Maintenance Contractor. Upon completion of each rail extension or phase, all documents related to the segment/phase are turned over Manager of Maintenance for control and maintenance.

The Streetcar Construction Plan includes a detailed Quality Control (QC) and Quality Assurance (QA) Program. The QC plan is to be prepared by the Contractor and submitted approval and monitored by the City's Lead Inspector, Streetcar Project Engineer, Engineer Contract Manager or other design/field staff as required.

Quality control testing and inspections shall be carried out by the Contractor in accordance with the approved Quality Control Plan. The City's Lead Inspector, Project Engineer, and other inspectors shall also inspect the work to assure conformance with the project's plans and specifications. The Lead Inspector shall also order/perform independent testing as necessary to verify compliance with any procedure or test result.

Non-conformance notifications shall be issued as necessary to document and monitor any failing tests, subsequent re-testing and final resolution of the issue. Quality Control audits shall be conducted at the direction of the Project Director, but no less frequently than once each year during construction.

The Quality Assurance Program will apply to all design and construction activities relative to the development of the DC Streetcar Project. DC Streetcar staff, consultants, contractors and suppliers will conform to the applicable quality assurance program requirements.

Upon project completion, the design team provides a full set of as-built drawings documenting in great detail the physical improvements constructed for the project. These as-built drawings and a full set of project submittals (materials, manuals, etc.) are provided to Operations and Maintenance for review and use.

Additions, modifications, or deletion to Rail Operations Standard Operating Procedures (SOP), and to the existing configuration of presently operating rail system fixed facilities, rail rolling stock, and equipment directly related to operation of rail rolling stock, are approved by the Maintenance Manager. These reviews are established to ensure that system and operational changes are approved prior to implementation, and that drawings, manuals, and other related documents, including training programs, are updated to reflect these changes which are also reflected in the Maintenance Management Plan.

Upon the approval of any system or operations change, the Manager of Operations and Safety, or designee, will create a Special Instruction or create and/or revise current Standard Operating Procedures to advise affected employees. Superintendents will distribute, individually to each employee, the new control document, ensuring that each employee understands the operational change as it applies to their job. Each employee is required to sign for their copy and place the updated material into their SOP book.

17. Compliance with Local, State and Federal Safety Requirements

DC Streetcar ensures a safe and healthy work environment through adherence to all applicable federal OSHA standards and local codes. The Manager of Operations and Safety and the Maintenance Manager ensures that employees in their respective divisions are aware of job related hazards through training, posters and notices located in affected areas. Employees will receive appropriate training when new materials, chemicals, or potentially hazardous materials are brought into their working environment.

The Manager of Operations and Safety, in conjunction with the Safety Committee, evaluates and creates solutions to ensure that employees are educated to potential hazards in their working environment. Procedures and practices employed to minimize exposure to workplace conditions that may jeopardize their safety and health are periodically reviewed and updated.

The project management consulting firm ensures that specific procedures are in place to ensure worker protection and safety for all contractors working on, or interfacing with DC Streetcar operations. The project construction specifications require submittal of a worker safety plan. Included in the plan are specific procedures for working around the active streetcar system. The streetcar operations team has set procedures to allow for access to work areas where new construction will take place in close proximity to existing rail systems. The contractor also, is required to provide appropriately trained staff to working around rail systems.

18. Hazardous Materials Program

The Occupational Safety and Health program is directed towards achieving a safe working environment for employees and minimizing the likelihood of accidents. The program emphasizes the recognition, evaluation, and control of hazards arising in and from the occupational environment.

18.1 Industrial Hygiene Surveys

Industrial hygiene surveys are conducted by the Maintenance Manager to evaluate the degree of employee exposure to chemical and physical agents encountered in the workplace. The survey results are utilized to determine the necessary corrective action, including implementation of engineering and administration controls and/or the required use of personal protective equipment. Industrial hygiene surveys are

performed initially on a hazard priority basis to identify and eliminate exposure that exceeds the Threshold Limit Value (TLV). Industrial hygiene surveys will be conducted periodically, thereafter, to monitor the effectiveness of controls and as conditions change.

18.2 Facilities Inspections

All DC Streetcar operating and maintenance facilities undergo a complete inspection by the Maintenance Manager at least once a year to ensure the safety and health of employees. Individual maintenance shops within the maintenance facilities are inspected on a monthly basis. Inspection reports are issued which list the hazards and the safety and health problems found during the inspection. Follow-up inspections and reports are completed within 30 days.

18.3 Hazardous Material Control

Material Safety Data Sheets (MSDS) for all chemicals and other hazardous materials that are being considered for purchase and use are reviewed by the Maintenance Manager for approval. The user furnishes the manufacturer's MSDS for hazardous products and information on the planned use and application methods. Follow-up is conducted on the field use of approved products to ensure safe/proper handling methods are utilized.

18.4 Personal Protective Equipment

All personnel protective equipment to be used by DC Streetcar personnel is reviewed and approved by the Maintenance Manager in accordance with respiratory, hearing conservation, or other applicable safety standards.

The Maintenance Manager provides training to employees in basic, safe work practices and hazard identification. Employees exposed to chemicals and/or overexposed to physical agents receive training in industrial hygiene principles, use and care of personal protective equipment and hazards and safe handling methods of chemicals.

19. Drug and Alcohol Program

All drug and alcohol testing for DC Streetcar employees classified as "safety sensitive" are covered by the DC Government's Drug and Alcohol Policy

19.1 Decision Tree

The Drug Testing Decision Tree Form is used by DC Streetcar supervisory personnel to make drug-testing determinations following all accidents involving DC Streetcar employees. The completed form will be sent to the DC Streetcar Drug and Alcohol Test Program Administrator.

19.2 Compliance

FTA drug testing regulations require that all supervisors must undergo a minimum of sixty minutes of training on the signs and symptoms of drug use before they are qualified to make reasonable suspicion determination. A similar provision in the FTA alcohol testing regulation requires supervisors to undergo an additional sixty minutes of training on the signs and symptoms of alcohol use. The Manager of Operations and Safety will ensure supervisory staff meet these minimum qualifications and will provide or arrange for refresher training when requested.

20. Procurement

20.1 Responsibilities

DDOT will appoint a Project Engineer for new vehicle contracts and is responsible for all matters relating to this contract, except changes to the contract involving scope, cost or time. Such changes shall be made with the approval of the Project Engineer, but must be executed by DDOT. The Maintenance Manager is also responsible for coordinating the effort to assure that all specifications to new streetcar vehicles, equipment, and parts meet the technical specifications and provisions outlined in the document "Vehicle Technical Specifications".

New streetcar vehicles and equipment must meet the specifications set forth in the "Vehicle Technical Specifications". New vehicles and components are subject to qualification and conformance testing to demonstrate the unit to be delivered operates within the specified limits and is in compliance with design requirements.

20.1.1 Parts

Configuration changes, modifications, or parts changes to any vehicle system must be approved by the Maintenance Manager. The Safety Committee and DDOT review

modifications to original specifications. DC Streetcar only purchases parts that meet the original technical specifications; however, the Maintenance Manager has the authority to approve the purchase parts manufactured by a non-OEM supplier. A change and modification log is maintained by the Maintenance Manager.

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