

**LOOP TROLLEY TRANSPORTATION DEVELOPMENT DISTRICT
BOARD OF DIRECTORS MEETING**

**August 3, 2022, at 4:30 p.m.
via online conference call**

MEETING INFORMATION

The meeting will be open to the public.

Zoom Meeting Link:

<https://us02web.zoom.us/j/86414832608?pwd=bmoxUVZzZ2RuMERGRm9mV2FmeG0wZz09>

Meeting ID: 86414832608

Passcode: 787791

Phone: +13126266799,,86414832608# US (Chicago)

AGENDA

- I. Welcome
- II. Call to Order
- III. Consideration of Resolution 2022-007 Adopting a public transportation agency safety plan and authorizing other actions as necessary to effectuate the same
- IV. Other business*
- V. Adjournment

*Closed Session, if necessary, to discuss, legal actions and/or any confidential or privileged communications with the District's attorneys pursuant to Section 610.021(1), the lease, purchase or sale of real estate where public knowledge of the transaction might adversely affect the consideration to be paid therefore pursuant to Section 610.021(2), employee matters pursuant to Section 610.021(3), specifications for competitive bidding pursuant to Section 610.021(11), sealed bids and documents related to a negotiated contract until a contract is executed pursuant to Section 610.021(12), or records protected from disclosure by law pursuant to Section 610.021(14), all such sections being sections of the Revised Statutes of Missouri, as amended.

**A RESOLUTION OF THE BOARD OF DIRECTORS OF
THE LOOP TROLLEY TRANSPORTATION
DEVELOPMENT DISTRICT ADOPTING A PUBLIC
TRANSPORTATION AGENCY SAFETY PLAN AND
AUTHORIZING OTHER ACTIONS AS NECESSARY TO
EFFECTUATE THE SAME**

WHEREAS, the Loop Trolley Transportation Development District (the “District”) is a transportation development district formed under the Missouri Transportation Development District Act, Section 238.200 to 238.280 of the Revised Statutes of Missouri, as amended (the “TDD Act”);

WHEREAS, the District was formed to undertake the Transportation Project (as described in Exhibit D of that certain Declaratory Judgment, Decree and Order Organizing a Transportation Development District and Approving a Funding Method by the Circuit Court of the County of St. Louis, Missouri in Cause No. 07CC-003451, Division 20 dated July 16, 2008 and below);

WHEREAS, the District is required to develop and adopt a Public Transportation Agency Safety Plan, a draft of which is attached hereto as Exhibit A (the “Plan”) in accordance with 49 U.S.C. 5329 and 49 CFR Part 673;

WHEREAS, the District desires to adopt the Plan attached hereto as Exhibit A for the Transportation Project;

WHEREAS, at a meeting of the Board, convened at 4:30 p.m., on August 3rd, 2022, by online conference call, at which was present a quorum of the directors, the Board took the action further described herein.

**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF
THE LOOP TROLLEY TRANSPORTATION DEVELOPMENT DISTRICT AS
FOLLOWS:**

1. The Board hereby approves and adopts the Plan attached hereto as Exhibit A.
2. The Board hereby authorizes the Chair to execute the Plan and to execute any and all other documents, instruments, certifications, or other agreements which he/she deems necessary to perform the District’s obligations under the Plan.
3. All actions heretofore taken by the officers, agent, and employees of the District related to the transactions contemplated by this Resolution are hereby ratified and confirmed.
4. The portions of this Resolution shall be severable. In the event that any portion of this Resolution is found by a court of competent jurisdiction to be invalid, the remaining portions of this Resolution are valid, unless the court finds the valid portions of this Resolution are so essential and inseparably connected with and dependent upon the void portion that it cannot be presumed that the Board would have enacted the valid portions without the invalid ones, or unless the court finds that the valid portions standing alone

are incomplete and are incapable of being executed in accordance with the legislative intent.

5. The Chair is hereby authorized and directed to execute this Resolution for and on behalf of and as the act and deed of the District and that the Secretary of the District is hereby authorized and directed to attest to this Resolution.
6. The Chair is hereby authorized and directed to take such further action and execute such other documents, certificates, and instruments as may be necessary or desirable to carry out and comply with the intent of this Resolution.
7. This Resolution shall be in full force and effect immediately from and after its adoption as provided by law.

[SIGNATURE PAGE TO FOLLOW.]

ADOPTED this 3rdth day of August, 2022.

**LOOP TROLLEY TRANSPORTATION
DEVELOPMENT DISTRICT**

Mayor Tishaura Jones, Chair

ATTEST:

County Executive Sam Page, Secretary

EXHIBIT A

Public Transportation Agency Safety Plan

(see attached)



Public Transportation Agency Safety Plan

For

The Loop Trolley Transportation Development District And
Bi-State Development Agency

2022

**5875 Delmar Blvd.
St. Louis, MO 63112
(314) 514.4199**

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Record of Revisions

Revision #	Revision Date	Comments
01	7/2022	First Draft

Plan Approvals & Concurrences

Craig Heller
Accountable Executive
Loop Trolley Transportation Development District (TDD)

Date

Charles Stewart
Executive Director
Metro Transit

Date

Andrew Ghiassi
Chief Safety Officer
Bi-State Development (BSD)

Date

Front Line Safety Committee

7/15/2022

Date

Loop Trolley Transportation Development District (LTTDD)

Date

Policy Statement

The management of safety is one of our core business functions. Loop Trolley System (LTS) is committed to developing, implementing, maintaining, and constantly improving processes to ensure that all our transit service-delivery activities take place under a balanced allocation of organizational resources, aimed at achieving the highest level of safety performance objectives and meeting established standards. All levels of management and all employees are responsible for the delivery of this highest level of safety performance.

LTS's commitment is to:

- Support the management of safety by providing appropriate resources resulting in a culture that fosters safe practices, encourages effective employee safety reporting and communication, and actively manages safety with the same attention to results as other LTS management systems.
- Integrate the management of safety among the primary responsibilities of all officers, directors, and employees.
- Define clearly for all staff, officers, directors, and employees alike, their responsibilities for LTS's safety performance and the performance of our safety manager system (SMS).
- Implement hazard identification and analysis activities, safety risk evaluation activities, and an employee safety reporting program as fundamental sources for safety data, in order to eliminate or mitigate the safety risk of the consequences of hazards resulting from LTS operations or activities to a point which is consistent with our acceptable level of safety performance.
- Ensure that no action will be taken against any employee who discloses a safety concern through the employee safety reporting program (unless disclosure indicates, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or willful disregard of regulations or procedures has occurred).
- Comply with, and whenever possible exceed, federal and state legislative and regulatory requirements and standards.
- Ensure that sufficient skilled and trained people are available to implement safety management processes.
- Provide all staff with adequate and appropriate safety-related information and training; ensure they are competent in safety management matters; and allocate to employees only tasks commensurate with employee skills.
- Establish and measure our safety performance objectives against realistic and data-driven safety performance indicators and safety performance targets consistent with the National Public Transportation Safety Plan.
- Continually improve LTS's safety performance through management processes that ensure appropriate safety management action is taken and is effective.
- Ensure externally supplied systems and services to support LTS operations are delivered meeting our safety performance standards.

Craig Heller
Accountable Executive
Loop Trolley Transportation Development District (LTTDD)

Date

Safety Plan

General

The LTS has established a Public Transportation Agency Safety Plan (PTASP) that meets or exceeds the General Requirements of both the aforementioned requirements and guidelines, including the following required elements:

- The PTASP, and subsequent updates, will be signed by the LTTDD District Administrator who is the *Accountable Executive*, and approved by the LTTDD Board of Directors.
- The PTASP documents the processes and activities related to SMS implementation.
- The PTASP includes performance targets based on the safety performance criteria established under the National Public Transportation Safety Plan (“NSP”) and the SSOA Program Standard.
- The LTS will establish a process and timeline for conducting an annual review and update of the PTASP.
- The PTASP includes reference to an Emergency Preparedness Program Plan (“EPPP”) and procedures that address the assignment of employee responsibilities during an emergency; and coordination with Federal, State, and Local officials and departments with roles and responsibilities for emergency preparedness and response in the LTS operating area.

Certification of Compliance

The SSOA will review and approve the PTASP developed by the LTS, per 49 CFR 674.9(c) and 49 CFR 673, as identified in the Program Standard.

Safety Management System

The LTS herein established and implements an SMS that is scaled appropriately to the size, scope and complexity of the system, and includes the following four (4) components:

1. Safety Management Policy
2. Safety Risk Management
3. Safety Assurance
4. Safety Promotion

Responsibilities

Accountable Executive:

The LTS has identified the LTTDD District Administrator as the Accountable Executive. In this role, the District

Administrator is accountable for ensuring that the LTS SMS is effectively implemented throughout the system; and ensuing action is taken, as necessary, to address substandard performance of same. The District Administrator may delegate specific responsibilities, but ultimately, accountability for the LTS' safety performance cannot be delegated and always rests with the Accountable Executive.

Chief Safety Officer:

The Accountable Executive has identified Bi-State's Chief Safety Officer as the Chief Safety Officer for the Loop Trolley. This position and role has a direct line of reporting to the Accountable Executive. In this role, the CSO has the authority and responsibility for day-to-day implementation and operations of the LTS safety management system. Due to the safety-critical nature of this position, the CSO may not serve in other operational or maintenance capacities.

Within the Safety Management System framework, the CSO has the following responsibilities:

- Drafts SMS policies and procedures;
- Implements and operationalizes the SMS;
- Identifying, Assessing and Mitigating safety concerns/risks, and monitoring both safety performance and documentation processes;
- Communicates directly with the Accountable Executive and transportation agency leadership on SMS implementation needs; and
- Recommend technical and staffing resources, as practical, to support effective SMS implementation

BSD Management & Staff:

BSD has identified members of its full and part-time staff –to implement and operate the LTS SMS.

Safety Risk Management

Safety Risk Management Process

The LTS has developed and implemented a Safety Risk Management process for its system, comprised of the following activities:

1. Identification of safety hazards;
2. Analysis of safety hazards;
3. Safety risk evaluation; and
4. Safety risk mitigation

Safety Hazard Identification and Analysis

The LTS has established a process for hazard identification and analysis (see *Chapter 5 – Hazard Investigation & Analysis*).

Safety Risk Evaluation and Mitigation

The LTS has established the Safety & Security Committee (SSC) as the lead group in evaluating and prioritizing day-to-day safety risks associated with the potential and consequences of safety hazards. Safety risks are evaluated in terms of likelihood and severity, using an industry-accepted risk management matrix, and take into account mitigations already in place to reduce the likelihood or severity of the potential consequence(s) analyzed. (see Chapter 6)

Safety Assurance

Safety Performance Monitoring and Measurement

The LTS has established activities (described in Chapter 7) to:

1. Monitor the system for compliance with, and sufficiency of, the LTS procedures for operations and maintenance;
2. Monitor LTS operations to identify hazards not identified through the Safety Risk Management process;
3. Monitor LTS operations to identify any safety risk mitigation that may be ineffective, inappropriate, not implemented as originally intended, or requiring corrective actions due to new federal, state, local or industry regulations.
4. Investigate safety events to identify causal factors; and
5. Monitor information to account for reporting through external/internal safety reporting programs.

Management of Change

The LTS has established a process for identifying and assessing changes that may introduce new hazards or impacts on the system's safety performance. If the LTS determines that a change may impact its safety performance, the SSC will discuss and evaluate proposed changes through its Safety Risk Management process.

Continuous Improvement

The LTS has established a process to assess its safety performance (see Chapter 10 – Continuous Improvement). If in this process, the LTS identifies any deficiencies as part of its safety performance assessment, then the LTS will develop and carry out, under the authority of the District Administrator, a plan to address the identified safety deficiencies.

Safety Promotion

Safety Communications

The LTS fosters open communication regarding safety between all levels of the agency (see Chapter 11 – Safety Communications). This starts with fully communicating the safety policy and safety processes to all employees, utilizing a variety of tools and materials, such as Training, Memorandums, General Notices, and signage. Employees are required and encouraged to report hazards, take responsibility for safety in their tasks and work areas, educate themselves on safety and with formal training, and attend safety briefings, trainings and events when available and possible.

All levels of the LTS are required, through formal and informal communications, to ensure that safety information is disseminated. The PTASP sets forth these requirements to support the LTS SMS.

Competencies and Training

The LTS has established a safety training program for all agency employees and contractors directly responsible for, or held to adherence to, the management of safety, inclusive of refresher training as necessary.

Safety Plan Documentation and Recordkeeping

Safety Plan Documentation

The LTS strives to maintain documents that set forth and support the PTASP, including those related to the implementation of LTS' SMS, and results from SMS processes and activities. The LTS maintains documents that are included in whole or by reference, that describe the programs, policies, and procedures that the LTS uses to carry out its PTASP.

As identified in 49 CFR Part 673, the LTS will make documentation available to the FTA, SSOA and other industry or non-industry entities, as appropriate.

Safety Plan Records

In addition to any documents or records required elsewhere by 49 CFR Part 673, the LTS maintains records, for a period of three years, the following:

- Safety risk mitigations discussed and implemented through its SSC;
- Results of LTS performance assessments and inspections;
- Employee safety training taken for purposes of understanding and implementing the PTASP, the SMS, and/or day-to-day safety duties and responsibilities as assigned

PART I - SAFETY MANAGEMENT POLICY

Chapter 1: Safety Policy Statement

1.1 General Safety Policy

It is the policy of the LTS to provide a safe and reliable heritage trolley transportation service for the general public, to provide safe and healthy working conditions for LTS employees and contractors, and to comply with applicable occupational and environmental laws and regulations.

Operational and safety training, accident investigation, Standard Operating Procedures (SOPs), and scheduled audit and inspection programs are examples of such tools utilized for the LTS, and are documented/referenced in this PTASP. The purpose of the PTASP, among others, is to recognize and correct unsafe acts and conditions, to promote safety awareness, and to assist in the prevention of injuries and illness.

Every LTS employee, and any outside contractor performing work for or on the LTS, has a duty to adhere to the PTASP, and is encouraged to support the identification of, and subsequent mitigated efforts for, system hazards. Employees will work in a safe manner, promote safety awareness through their own actions and interactions, and actively assist in accident prevention.

The LTTDD District Administrator accepts overall responsibility for safety. Management staff for LOOP TROLLEY are responsible and accountable for the implementation of the PTASP in each role's respective area of responsibility.

All LTS employees must carry out their assigned duties in a safe and efficient manner. The Safety & Security Committee (SSC) is responsible for taking a proactive approach to identifying and correcting hazards to ensure a practical degree of safety for LTS employees and passengers. As Accountable Executive, the LTTDD District Administrator has the primary responsibility for coordinating implementation of the PTASP and monitoring compliance.

The signatures of the LTTDD District Administrator included in the Safety Policy Statement attest to the fact that this plan is understood, accepted and approved; and that management is committed to implementing SMS through the PTASP, and in achieving its safety goals and objectives.

1.2 Safety Management Policy

Furthermore, the LTS is committed to comprehensive safety planning and, as an operator of a heritage trolley transportation system operating in the State of Missouri, compliance with 49 CFR Part 673 and the Program Standard.

The LTS has adopted the principles and methods of Safety Management Systems (SMS) as the basis for enacting and enhancing its safety program. All rules, regulations, policies, guidance, best practices, and technical assistance

administered will, to the extent practical for the system type, follow the principles and methods of SMS.

1.3 Communication

The LTS safety policy statement will be communicated throughout the organization through:

- SMS Training for all employees;
- Communications to LTS employees from the Accountable Executive;
- New hire trainings;
- Safety briefings; and
- General bulletins or signage.

The PTASP will be available at all times to all employees by request. It will be maintained in an accessible electronic file and in hard copy form.

1.4 Authority

The LTTDD, a political subdivision of the State of Missouri organized under the Missouri Transportation Development District Act, Section 238.200 et seq. RSMo, is the owner and manager of the LTS. The LTTDD is governed by a Board of Directors that consists of the presiding officers of the following organizations:

- City of St. Louis, Missouri
- St. Louis County, Missouri
- University City, Missouri
- CB5421/5975 Transportation Development District
- Bi-State Development Agency

The LTTDD has entered into an Operating & Maintenance agreement with the Bi-State Development Agency.

1.4.1 Federal

Statutory mandates in the Moving Ahead for Progress in the 21st Century Act (Pub. L. 112–141; July 6, 2012) (MAP–21), reauthorized by the Fixing America’s Surface Transportation Act (Pub. L. 114–94; December 4, 2015) and codified at 49 U.S.C. 5329(d), are in place to strengthen the safety of public transportation systems that receive Federal financial assistance under Chapter 53. This legislation defines requirements for the adoption of Safety Management Systems (SMS) principles and methods; the development, certification, and update of Public Transportation Agency Safety Plans; and the coordination of Public Transportation Agency Safety Plan elements with other FTA programs and proposed rules, as specified in 49 U.S.C. 5329.

In Section 20021 of MAP–21, Congress directed the FTA to establish a comprehensive Public Transportation Safety

Program, one element of which is the requirement for Public Transportation Agency Safety Plans. Pursuant to 49 U.S.C. 5329(d), FTA must issue a final rule requiring operators of public transportation systems that receive financial assistance under Chapter 53 to develop and certify Public Transportation Agency Safety Plans.

1.4.2 State Safety Oversight Program

The Missouri State Safety Oversight (SSOA) is the designated State Safety Oversight (SSO) agency for fixed guideway safety oversight for the Loop Trolley System.

The Loop Trolley is covered under the authority of the SSOA program and must develop and implement a compliant Safety Plan, Security Plan, and Emergency Preparedness Plan that comply with the SSO Program Standard.

1.5 Objectives and Performance Targets

The LTS has established Safety Objectives, performance targets and performance measures in compliance with the National Public Transportation Safety Plan. (*see Part III - Safety Assurance*)

1.6 Scope

It is the mission of the LTS to establish meaningful and achievable goals for its system safety program. The primary purpose of the PTASP is to set out the department tasks within the organizational structure that will fulfill the mandate to provide a safe and secure transit system, and is intended to cover all current and future LTS operations, services and project. In order to implement its safety policies, goals and objectives, this PTASP:

- Addresses all LTS departments and contractors;
- Applies to all activities which involve planning, design, construction, procurement, installation and testing of equipment or facilities, operations, maintenance, support activities, and the environment in which the heritage trolley transportation system operates;
- Charges each board office, board member, administrator, director, supervisor, and employee with the responsibility for PTASP implementation and success;
- Requires coordination, integration, communication, and cooperation from each board officer, board member, administrator, director, supervisor, and employee;
- Encompasses all system operations including facilities, equipment, vehicles, and employee activities, and applies to all who come in contact with the system;
- Establishes appropriate safety performance measures to ensure continuous safety improvement;
- Accommodates federal and state safety assessments, inspections, investigations, audits, examinations and testing; and
- Fosters a positive safety culture.

1.7 Purpose

The LTS has adopted the practices and methods of SMS as described in the NSP. The purpose of this PTASP is to implement the SMS program and introduce safety processes where they are necessary to achieve assurance. The PTASP is reviewed annually to ensure all systems, equipment, facilities, plans, procedures, manuals, and training programs are in compliance with established safety requirements.

Specifically, the PTASP:

- Established the safety program on a system-wide basis;
- Provides a framework for implementing the LTS' safety management system, policy, goals and objectives;
- Identifies the responsibilities of each LTS department relative to achieving safety goals and objectives;
- Provides a mechanism whereby the LTS can demonstrate its commitment to safety, foster a positive safety culture and meet safety performance goals;
- Provides requirements that, as appropriate, contractors and suppliers meet LTS safety requirements prior to commencing work and/or while working on the system;
- Satisfies federal, state and local requirements;
- Ensures that the system meets or exceeds accepted safety standards for its industry;
 - Facilitates FTA and SSOA safety inspections, reporting, corrective actions, and general and special directives and requirements; and
- Implements NSP performance criteria, state of good repair, vehicle safety standards, meet training criteria and all other safety management requirements and goals.

1.8 Employee Safety Reporting Program

The LTS encourages employees to self-assess in their day-to-day departmental activities to identify and potential safety hazards and recommend corrections to the SSC. Where possible, these requests will be reviewed through the LTS' established safety risk management process. In the event an employee or contractor would rather address safety risks and/or hazardous conditions outside the established SSC risk management structure, they can report their safety concerns to the Safety Department. All employees are protected from retaliation from their peers and/or supervisors due to reporting safety conditions.

Examples of items that can be reported include:

- Hazards/Potential Hazards
- Safety issues and concerns
- Accidents and incidents

- Possible physical and/or procedural changes
- Close calls and near misses

Safety Reporting is protected when:

- Reporting safety hazards or potential hazards
- Making suggestions for possible physical and/or procedural changes
- Reporting other employees' unsafe behavior
- Fatigue that presents an unacceptable hazardous condition
- Self-reporting of a close call or near miss

Safety Reporting is not protected for the following:

- Willful safety violations
- Reckless and neglectful acts
- Actions resulting in an accident or incident
- Criminal activities
- Alcohol or drug use
- Making a false report
- Being observed violating LTS safety rules by supervisor

There are a variety of methods to report safety issues. One method is to use the Safety Hotline at 314-982-1638. A report can also be made using the email address: Safety@metrostlouis.org. Employees can also notify a Safety Representative in person. All employees can have the option of remaining anonymous. An alternate method is to utilize the SMS training cards provided to all employees. The card summarizes employee reporting options and provides a QR code for employee hazard reporting via smartphone.

Reported safety items will be recorded and tracked in the ESRI computer database system.

The Safety Department will investigate each item reported, and report the findings to the person who originally filed the issue if the person requested to be contacted. The safety concerns reported will then be made available for all employees to see and the results of the investigations in the Safety Promotion process described in Part 4.

Also, all employees will be required to receive SMS awareness training. This training has been developed by the Safety Department and is available electronically here:

<https://elearning.easygenerator.com/cb088ccb-cf51-4e63-8e01-63d4af846f3d/>

Chapter 2: Safety Accountability and Responsibility

2.1 Management Structure

The Loop Trolley has established the necessary authorities, accountabilities, and responsibilities for the management of safety amongst the following individuals in Metro, as they relate to the development and management of Metro SMS:

2.1.1 Accountable Executive:

Loop Trolley has identified the District Administrator as the Accountable Executive. The District Administrator is accountable for ensuring that the agency's SMS is effectively implemented throughout the Trolley system; and ensuring action is taken, as necessary, to address substandard performance in Loop Trolley's SMS. The District Administrator may delegate specific responsibilities, but the ultimate accountability for Loop Trolley's safety performance cannot be delegated and always rests with the District Administrator.

2.1.2 Chief Safety Officer (CSO):

The Accountable Executive has designated the GM of Safety for Bi-State Development as the Chief Safety Officer (CSO). This position serves as the SMS Executive with authority and responsibility for day-to-day implementation and operation of Loop Trolley's SMS. The CSO holds a direct line of reporting to the Accountable Executive.

2.1.3 Loop Trolley leadership and executive management:

Loop Trolley has also identified other members of its leadership and executive management who have authorities or responsibilities for day-to-day implementation and operation of SMS.

2.2 System Overview and History

2.2.1 Loop Trolley Transportation Development District

The LTTDD was formed to undertake the Transportation Project, including the financing, installation and construction of a trolley car and track system to run east-west along Delmar Boulevard between Kingsland Avenue in the City of University City and DeBaliviere Avenue in the City of St. Louis, and north-south along DeBaliviere Avenue between Delmar Boulevard and Lindell Boulevard in the City of St. Louis and within the boundaries of the District.

2.2.2 Bi-State Development

In 2022, Bi-State Development entered into a contract with the LTTDD to operate and maintain the Loop Trolley System (LTS).

2.2.3 Loop Trolley Operations

2.2.3.1 Alignment, General

The details of the alignment, beginning at its western terminus in University City, are as follows:

- A station with tail track is located on the north side of Delmar Boulevard just west of Kingsland Avenue, with an eastbound track crossover through Kingsland Avenue intersection to double track configuration.
- A pair of tracks has been embedded in the east and westbound traffic lanes of Delmar Boulevard east of Kingsland Avenue to just west of the old Wabash Station (above the MetroLink Delmar light rail station).
- A single track, accommodating east and west bound trolleys, runs in a central median on Delmar Boulevard from east of the old Wabash Station to the DeBaliviere Avenue intersection. A passing track is installed in the exclusive trolley area in the median just east of Goodfellow Avenue.
- A single track, accommodating north and southbound trolleys, runs in a dedicated track-way along the eastern side of the DeBaliviere right-of-way). The three traffic lanes on DeBaliviere are to the west of that alignment and a greenway (St. Vincent's) separates the track from the traffic lanes. This segment extends between Delmar Boulevard (north end) and immediately south of Forest Park Parkway (south end). A bicycle path and pedestrian sidewalk are located on the east side of the track.

The trolley ROW crosses over two existing bridges. One is on DeBaliviere (over the MetroLink ROW) and the other is on Delmar Boulevard at the Old Wabash Station (also over the MetroLink ROW).

2.2.3.2 Heritage Trolleys

The LTS has in possession a total of three (3) heritage trolleys that have had significant upgrades and refurbishing. One (1) of these trolleys is from the Seattle Waterfront line and is classified as a Melbourne W2 style car. The other two (2) cars are replica Gomaco Council Crest cars, manufactured in 1991, that were acquired from Tri-Met in Portland. Each of these cars has been modified to operate as a bi-directional trolley on a double track configuration. All three (3) cars will be ADA compliant. The LTS also has two additional W-2 cars that will remain in storage.

2.2.3.2 Maintenance and Storage Facility (MSF)

An historic structure, located at 5875-5891 Delmar Boulevard, St. Louis, MO, has been renovated and is used for the trolley maintenance and storage facility (MSF). The structure is on the National Register of Historic Buildings and was a vacant masonry one- and two-story former high school (later a car dealership) with an unfinished partial basement. The building was originally constructed in 1911, with an addition added in 1951. The first floor measures about 27,000 square feet and the partial second story is about 14,000 square feet. Operations and support functions are located within the MSF along with a traction power substation that provides motive power to the main line and the yard. The MSF has two tracks leading in from the yard and can accommodate up to three trolleys on its storage track. There are also two inspection pits.

2.2.3.4 Traction Power Sub-station (TPSS)

The trolley system uses one traction power substation located within the MSF that distributes electricity to the overhead

contact wires in order to power the trolleys. The substation electrical supply equipment receives high voltage three-phase alternating current (AC) power from Ameren UE 4160 VAC switchgear to the transformer with an output of 480 volts to the substation. The substation converts the AC power to 600 VDC nominal line voltages, which are capable of delivering in excess of 1,000 Amps.

The electrical power distribution system is constructed using catenary or trolley wire. Power is distributed through the pantograph located on top of the trolley. The wire is not insulated and should be considered live at all times. The overhead power distribution system is continuous. When power is removed, the entire system is de-energized.

2.2.3.5 Station Stops

The Loop Trolley System has ten (10) station stops. There are four (4) basic configurations:

- Greenway stations – these are the three (3) stations situated between the Greenway that parallels DeBaliviere Boulevard and the northbound lane of DeBaliviere
- Side stations – the stations in the Loop area where there are a double set of tracks and separate platforms for east and westbound passengers
- Center stations – the stations in the median of Delmar Boulevard between Des Peres and DeBaliviere
- Terminal stations – these are single platform stops at each terminal end of the alignment (one at Kingsland and the other at the Missouri History Museum)

Three (3) of the stations are located in University City, while the other seven (7) are in the City of St. Louis. The Missouri History Museum/Forest Park stop is unique in that it is shorter than the other stations.

2.2.3.6 Radio System

Loop Trolley staff – including the on-duty Dispatcher, Operators, Maintenance person(s), Superintendent of Operations have access to a protected, all-call radio system to support standard operational direction and emergency communication.

2.3 State of Good Repair (“SGR”) & Transit Asset Management

One of the significant requirements of MAP-21 is that each transit agency develop a Transit Asset Management Plan (“TAMP”).

2.3.1 Administration

It is the responsibility of LTS board officers, board members, administrators, directors, managers and supervisors to

ensure safety throughout the system. Safety responsibilities and tasks are described throughout this section.

2.3.2 District Administrator

The LTTDD Board has selected a part time District Administrator to act as its Accountable Executive who is ultimately responsible for risk management, asset management, and safety assurance. The District Administrator oversees the Operating & Maintenance Agreement with the Loop Trolley and acts as the LTTDD Board liaison to the FTA, the SSOA, and other regulatory agencies.

2.3.3 Bi-State General Manager of Safety

The Accountable Executive has Bi-State's GM of Safety as the Chief Safety Officer over the Loop Trolley. The GM of Safety has the authority and responsibility for the day-to-day implementation and operation of SMS.

The Safety Department is further staffed by a Safety Director and safety auditors who carry out safety activities and report to the General Manager.

2.3.4 Superintendent of Operations

The Superintendent of Operations oversees the development of policies and directives for operation of the Loop Trolley system. The position reports to the Bi-State General Manager of MetroLink. Specific functions include, but are not limited to:

- Managing trolley operations and staff; responsible for all aspects of trolley operations, including delivery of trolley service.
- Establishing and monitoring controls to evaluate operating performance.
- Ensuring compliance with all applicable policies, rules, regulations, and laws.
- Ensuring interaction and appropriate reporting to federal, state, and local funding and oversight entities.
- Performing special projects assigned by the General Manager of MetroLink.

2.3.5 Assistant Superintendent of Loop Trolley Maintenance

The Assistant Superintendent of Loop Trolley Maintenance is responsible for maintenance. This position reports directly to Bi-State's Superintendent of LRV Maintenance. Specific functions include, but are not limited to:

- Maintaining warranties, operations document control, and maintenance quality assurance functions;
- LTS inspections, testing and maintenance in accordance with applicable standards and guidelines of Trolley vehicles.

2.3.6 Sr. Dir. Maintenance of Way

The Sr. Dir. Maintenance of Way ensures the LTS right-of-way and structures are maintained safely and efficiently. This position reports to the Asst. Exec. Dir. Transit Assets.

These include, but not limited, items such as:

- Rail;
- Traction Power;
- Signals;
- Maintenance of Way Engineering.

2.3.7 Sr. Dir. Bus & Rail Facility Maintenance & Support Services

The Sr. Dir. Bus & Rail Facility Maintenance & Support Services ensures facilities are properly maintained and serviced.

This position reports to the Asst. Exec. Dir. Transit Assets.

2.4 Safety and Security Committees

At various points in its design, construction, start-up and operations, the LTS has established committees with specific safety responsibilities, including the review and approval of safety critical documents, tests and other materials, assessment of system safety, review of accidents, events or incidents, and hazard mitigation/resolution.

2.4.1 Safety and Security Committee (“SSC”)

The LTS has established a Safety & Security Committee. This committee meets once per month to review and discuss issues related to safety and security. One of the primary purposes of the SSC is to monitor the implementation of the LTS safety and security goals and objectives and develop corrective actions if these are not being achieved.

This committee will also meet:

- To review accidents;
- To review and resolve hazards;
- To review and approve system modifications;
- To plan internal audits;
- To review configuration management issues

2.4.2 Joint Labor Management Health and Safety Committee

On November 15, 2021, the Infrastructure Investment and Jobs Act was signed into law requiring a joint labor/safety committee. This Committee will be formed by the regulatory deadline of July 31, 2022. At this time, the workers are not represented by a Labor Union. If that occurs in the future, this Committee will be amended to comply with the Committee requirements for workers represented by a Labor Union.

In accordance with the law, this committee will consist of:

- An equal number of frontline employee representatives and management representatives

- Frontline employees

The duties of the Committee:

- Approve the Safety Plan before final Board approval
- Identify and recommend risk-based mitigations or strategies necessary to reduce the likelihood and severity of consequences identified through BSD's safety risk assessment
- Identify mitigations or strategies that may be ineffective, inappropriate, or were not implemented as intended
- Identify safety deficiencies for purposes of continuous improvement
- Establish risk reduction performance targets using a 3-year rolling average of the data submitted to the National Transit Database (NTD) once the FTA updates the National Public Transportation Safety Plan

Chapter 3: Integration with Public Safety & Emergency Management

3.1 Public Safety

Public Safety program for the Loop Trolley functions under the direction of the BSD General Manager of Security and Emergency Management. Roles and responsibilities of the program are described in the System Security Plan (SSP) for the Loop Trolley.

3.1.1 Emergency Management

The Emergency Management program is a function of the Public Safety Department under the direction of the BSD General Manager of Security and Emergency Management. Roles and responsibilities of the program are described in the Emergency Preparedness Program Plan (EPPP) for the Loop Trolley.

Chapter 4: SMS Documentation & Records

4.1 Safety Plan Management

The Safety Management program operates under a principle of continuous improvement. In order to ensure continuous improvement, the PTASP must be reviewed annually and revised as needed to reflect changes in Loop Trolley organizational structure, procedures, equipment, facilities and operating environment, including (but not limited to):

- Policy changes (mission, goals, objectives);
- Organizational changes;
- Changes to rules and regulations;
- Changes in operating procedures;
- Elimination of equipment or addition of new equipment; and
- Elimination of a facility or addition/acquisition of a new facility

Changes in safety policy, goals or objectives require the approval of the Executive Director. Changes in policy, organization, rules, regulations, or operations necessitating PTASP adjustments are accomplished within the schedule established below.

4.2 SSOA Requirements

4.2.1 Submittal Procedure

Per the SSOA Program Standards Manual, the LTS is required to assess its PTASP annually. LTS must submit proposed Safety Plan changes to the SSOA annually for review and approval, including a summary identifying and explaining proposed changes. The specific due dates for the Safety Plan are contained in the State Safety Oversight Program Standards Manual for Oversight of Loop Trolley (Program Standard).

LTS must also submit to the SSOA any Safety Plan revisions made between annual updates. Such submissions are made prior to the time the revision is to be implemented. The SSOA reviews, and approves as appropriate, such revisions.

4.2.2 Review and Approval Procedure

SSOA reviews any revised PTASP to ensure it is in compliance with the SSOA Program Standard. Following submission of the draft final PTASP, SSOA completes its review within 30 calendar days of receipt of the plan, or notifies the LTS if additional time is needed to complete the review. Should the PTASP comply with the Program Standard, SSOA issues a written approval of the plan and requests that the LTS send a final copy of the PTASP with appropriate approval signatures and endorsements as needed. The SSOA-approved PTASP is considered in effect until another such plan is submitted and approved in accordance with the requirements set forth in the Program Standard.

If SSOA determines the submitted PTASP does not meet the published standards of the Program Standard

– as corroborated via the MODOT PTASP Review Checklist – it will send a written notice, along with a description of what changes or additions are necessary to gain approval. The written notice will typically include a completed checklist as well as narrative information. LTS will have **30 calendar days** from receipt of the written notice to make such changes, unless otherwise specified in SSOA’s correspondence. If the LTS objects to any changes or additions, it may submit written correspondence noting such, along with suggested alternatives, as necessary, and may meet, at either party’s recommendation, to clarify any deficiencies or issues.

4.2.3 Internal Safety Plan Review and Approval Process

The Executive Director will instruct the Safety Department to initiate the annual review and revision of the PTASP by October 31st of each year, and ensure the necessary activities take place. From that date the LTS will have approximately 90 days to perform the review and updates, providing a completed draft final version to SSOA on or before February 1st.

After receipt, review, and approval are completed, the LTS has the responsibility to incorporate any required changes into the overall PTASP. The revised plans are then submitted to SSOA for review and approval. Following approval from SSOA, a final version will be circulated for final approval by the LTSSSC, and the LTTDD Board of Directors. A full and final version, with all appropriate approval signatures and endorsements, will be prepared and forwarded to SSOA. A revision cover sheet is included with the distribution of each revision. The revision cover sheet includes the revision number, date, and notations of modified or added content. If no revisions are deemed necessary, a dated revision cover sheet is distributed verifying that no revisions are needed.

4.3 Training Records

Employee safety training is logged and maintained in a Learning Management System (LMS).

The Office of Safety provides supervisors, at their request, access to records to ensure employee compliance.

Each department is responsible for ensuring their respective team members have completed the prescribed training.

These departments are responsible for ensuring that training records are entered into the Learning Management System (LMS). Using the LMS, these departments track training on a monthly basis. When recurring training is required, the Department Heads notify the employee and the employee’s supervisor. Any anomalies are also noted and brought to the attention of the heads of Operations Training, Maintenance Training, Human Resources, and the CSO.

Contractor training records are maintained by the department providing the contractor training.

Records of safety-related training are maintained in accordance with the requirements of 49 CFR 673.31.

PART II – SAFETY RISK MANAGEMENT

The Loop Trolley has developed and implemented a Safety Risk Management process for all elements of its public transportation system. The Safety Risk Management process is comprised of the following activities:

- Identification of safety hazards,
- Analysis of safety hazards,
- Safety risk evaluation, and
- Safety risk mitigation.

Safety Hazard Identification and Analysis

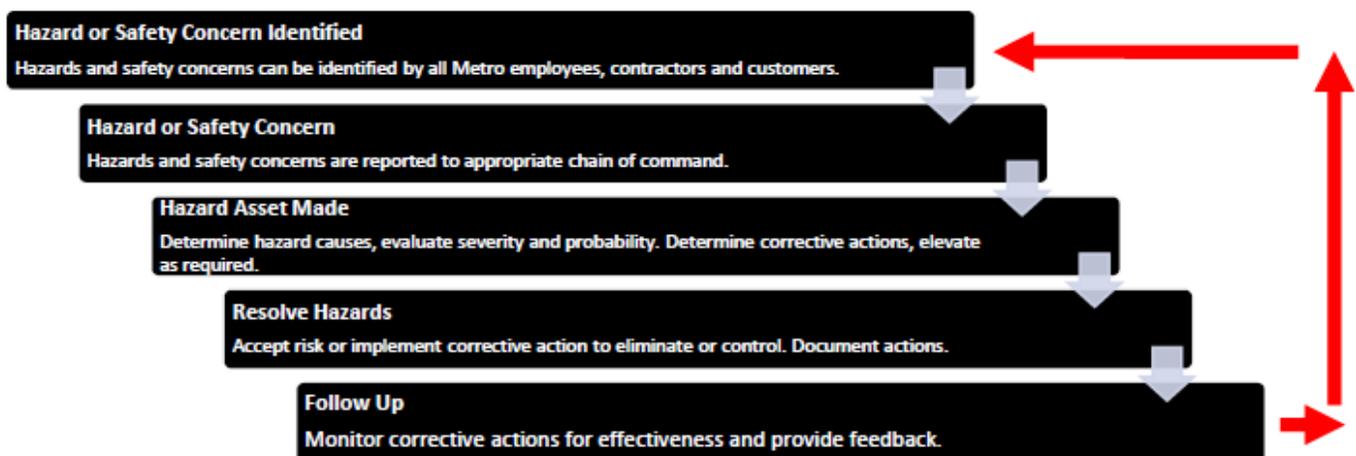
The Loop Trolley has established a process for hazard identification and analysis. LTS includes, as a source for hazard identification and analysis, data, and information provided by the SSOA and the FTA. (Chapter 5)

Safety Risk Evaluation and Mitigation

The Loop Trolley has established activities to evaluate and prioritize the safety risk associated with the potential consequences of safety hazards. Safety risks are evaluated in terms of probability and severity and take into account mitigations already in place to reduce the probability or severity of the potential consequence(s) analyzed. LTS has established criteria for the development of safety risk mitigations that are necessary based on the results of the agency's safety risk evaluation. (Chapter 6)

Hazard Management Process

Chapters 5 and 6 together describe the Hazard Management Process but the figure below summarizes the process.



Chapter 5: Hazard Identification & Analysis

Hazard identification and resolution is the core element of the Safety Plan, requiring timely correction of unsafe conditions, ideally, anticipated and reconciled before serious accident, injury, or damage occurs. The methodology employed for the formal process of hazard identification and resolution at Loop Trolley is based on U.S. Department of Defense Military Standard (MIL-STD-882E) Standard Practice for System Safety.

All Loop Trolley management, staff, contractors, and suppliers are required to implement hazard management and safety and system assurance throughout the design, construction, testing, and operational phases of the LTS's projects. Hazards which cannot be eliminated in the design phase are to be controlled by safety devices, warning devices, training, and/or written procedures to prevent hazards.

Hazard identification and resolution is a safety process managed by the Safety Department, with assistance from the SSC.

5.1 Hazard Identification

Hazard identification activities define conditions and failures that have the potential for causing an accident. It is the responsibility of all LTS employees to identify and report hazards in accordance with the processes described in the Safety Plan. While identifying every hazard is virtually impossible, the implementation of the hazard identification procedures can greatly increase LTS's ability to identify and thereby eliminate hazards or reduce risk to an acceptable level. The Safety Department conducts periodic inspections of facilities and equipment to identify hazards on a proactive basis. It also reviews incident reports, injury and illness reports, and worker's compensation databases. In the investigation of serious accidents, *ad hoc* safety committees are assembled utilizing various disciplines as committee members to develop a consensus determination of hazard severity and causal factors. When required, contractors and manufacturers may provide outside assistance to the committee. Independent reviews may be obtained as to ensure objectivity.

Departmental managers are responsible for ensuring their employees report hazards to the Safety Department for review and analysis. Ultimately, these same managers are responsible for their respective department's compliance with their role in the SRM process described in this Part.

Formal Approach – The Safety Department, with support from the SSC, will determine those hazards for which formal analysis [i.e. Preliminary Hazard Analysis (PHA), or Operating Hazard Analysis (OHA)] is prepared. Further details are provided below in Hazard Evaluation and Analysis.

To address hazards results from system modifications, operational and other changes, safety analysis included in design and procurement contracts will provide for:

- Identification of potential/existing hazards;

- Assessment of the severity and probability of occurrence of each potential hazard;
- Timely awareness of hazards for those who must resolve them;
- Ability to track and control hazards; and
- Formal Safety and Security Certification where applicable.

Methods of Identification – Hazard identification is derived from the day-to-day operations and maintenance activities of the system. These activities can include the certification of new construction, the review of system modifications, structure inspection activities, equipment modifications, design reviews, testing, analysis, and maintenance inspections. Finally, hazards are often identified as a result of accidents, safety audits, peer reviews, customer complaints, and triennial audits. A summary of sources for hazard identification is as follows:

- Maintenance Audits & Inspections
- Facility & Equipment Inspections
- Training & Certification Programs
- Accident & Injury Investigations
- Contractor, Patron, & Employee Reports
- Safety Data Acquisition & Analysis
- Operating Rules & Procedures
- Near Miss Reporting Program
- System Replacements & Updates
- New Systems & Rolling Stock
- SSO Three Year Reviews
- Internal Safety & Security Audits
- Information and data provided by the FTA
- Information and data provided by the SSOA
- Emergency Drills & Exercises

5.2 Hazard Investigation, Evaluation/Classification, and Analysis

5.2.1 LTS Safety Reportable Hazards

Hazards identified by an employee can be reported through the Employee Safety Reporting Program. Employees are trained on hazard reporting through the company-wide SMS training.

Investigation findings are documented and provided to the General Manager Safety, who will provide support for the department and monitor mitigations / corrective actions through full resolution. These hazards will be included on the hazard/mitigation log for completion and monitoring.

The Employee Reporting Program is another option for employees to report hazards directly to the safety department. These hazards/concerns are tracked in an ESRI computer database.

5.2.2 SSOA Reportable Hazards

In accordance with the SSOA Program Standard requirements, if the LTS determines that the final risk assessment of a hazard is identified as “unacceptable risk or high risk” using the criteria and assessment process specified in this PTASP, the LTS will notify the SSOA within 24 hours or by 5:00pm on the next regular working day following the determination of the unsafe condition as “unacceptable risk or high risk’.

The LTS investigates hazards reported to the SSOA as “unacceptable risk or high risk” in accordance with the provisions of the PTASP and maintains a file of all hazards reported to SSOA. The LTS will submit to SSOA electronically its initial investigation report of an “unacceptable risk or high risk” hazard with fourteen (14) calendar days of the hazard being identified. Status reports of hazards are shared with SSOA on a monthly basis by way of its SSC, and tracked through the Corrective Action Plan log.

Upon completing its investigation of an “unacceptable risk or high risk” hazard, the LTS prepares and submits to SSOA for review and approval a final report that includes a description of activities, findings, causal factors, hazard analysis, and a corresponding CAP item as appropriate.

Chapter 6: Safety Risk Evaluation

6.1 Hazard Evaluation and Analysis

The next step in the hazard management process involves classification of each hazard in terms of severity and probability of occurrence in order to determine the risk with which it is associated. This, in turn, provides the basis for determining possible mitigation strategies and allows the LTS to prioritize the hazards. The risk assessment criteria are adapted from the American Public Transportation Association (APTA) Guidelines, MIL-STD-882E¹, and from the FRA Collision Hazard Analysis Guide². The classification process is described in the following sections. It should be noted that the categories that follow are uniquely developed for the LTS and do not necessarily follow any prescribed regimen.

A formal hazard analysis will be conducted on hazards identified in activities such as listed below:

- Accident & Injury Investigations
- Contractor, Patron, & Employee Reports
- Safety Data Acquisition & Analysis
- Operating Rules & Procedures
- System Replacements & Updates
- New Systems & Rolling Stock
- SSO Three Year Reviews
- Internal Safety & Security Audits
- Safety Meeting Discussion Points & Action Items
- Facility Inspections
- Revenue Vehicle Inspections
- Transit Asset Management
- Safety Committees and Working Groups
- External Regulatory Agencies (e.g. FTA & MoDOT)
- Employee Safety/Hazard Reporting
- Training & Certification Programs

Maintenance items, such as vehicle and facility inspections will not receive formal hazard ratings and will be entered and tracked in BSD's EAM system. The EAM system will track and document the maintenance defect items from discovery to repair. A formal hazard analysis can be conducted on maintenance items where trends are discovered.

All items that receive a formal hazard analysis is currently listed on a hazard log excel sheet in addition to the Unacceptable/Undesirable Hazards log which is transmitted to the SSO on a quarterly basis. As of 2022, the Safety Department is developing an all-encompassing hazard log using an ESRI database that will list all hazards which receive a formal hazard rating. Real-time access to the database will then be shared with the SSO.

6.2 Hazard Severity

Hazard Severity is a subjective measure of the most likely credible mishap resulting from personnel error, environmental conditions, design inadequacies, and/or procedural deficiencies for systems, subsystems, or component failure or malfunction.

¹ MIL-STD 882E (11 May 2012) is the Department of Defense document that describes its Standard Practice for System Safety and was widely accepted by the rail transit industry as a best practice in the area of hazard management

² Collision Hazard Analysis Guide: Commuter & Intercity Passenger Rail Service; Office of Safety, Federal Railroad Administration, Wash. DC. (Oct. 2007)

Hazard Severity Table

Category	Technical Definitional	Human Cost	Property Cost	Other Impacts
Catastrophic	Could result in death, permanent disability or complete system loss could result from incident cause by hazard.	Death to 2 or more; permanent disability to multiple persons.	Loss will exceed \$1M	Irreversible environmental damage.
Critical	Could result in multiple severe injuries, disability, or major system loss will result from incident cause by hazard.	Hospitalization of 3 or more persons; single fatality.	Loss between \$500K and \$1M	System interruption greater than 24 hours.
Marginal	Conditions are such that injuries to 2 or more persons and/or severe damage to system and components.	Immediate medical care (EMS) away from scene for 2 or more persons.	Loss between \$10K and \$500K	System interruption less than 24 hours.
Negligible	Minor injury or damage.	Injury or occupational illness not resulting in a lost work day.	Damage less than \$10,000	Minimal environmental impact.

6.3 Hazard Probability

LTS describes the probability that a hazard may occur in potential occurrences per unit of time, events, items or activity. LTS derives qualitative hazard probability from research, analysis, and evaluation of safety data from the operating experience of LTS and/or other similar transit authorities. When available, the use of appropriate and representative quantitative data that defines frequency or rate of occurrence for the hazard, is generally preferable to qualitative analysis. Due to the unique nature of hazards, the quantitative analysis for each hazard may differ. A qualitative hazard probability ranking for LTS is as follows:

Hazard Probability Levels			
	Description	Quantitative	Fleet/System
Frequent	Likely to occur frequently	1 time out of 10 or more during a 12 month period of time	Continuously experienced
Probable	Will occur several times	1 time out of 100 during a 12 month period of time	Occurs frequently
Occasional	Likely to occur some time	1 time out of 1000 during a 12 month period of time	Will occur several times multiple locations
Remote	Possible to occur	1 time out of 100,000 during a 12 month period of time	Could occur once or twice
Improbable	Unlikely but possible to occur	1 time out of 1,000,000 in a 12 month period	Very unlikely but could occur once within lifetime of a fleet or system
Eliminated	So unlikely, we assume the occurrence may not be experienced.	Will not occur	This category applies to hazards that have been eliminated by design

6.4 Hazard Control and Elimination (Resolution)

The objectives of a Hazard Resolution process are:

- To identify areas where hazard resolution may require a change in the system design or development of special procedures;
- To verify that hazards involving interfaces between two or more systems have been resolved;
- To verify that the resolution of a hazard in one system does not create a new hazard in another system; and
- To verify that required analysis is provided in a timely manner and identify where delinquent analysis is delaying hazard resolution.

Hazard resolution is not synonymous with hazard elimination. In the Loop Trolley’s operating environment, as in the real world, some hazards may be impossible to eliminate, and it may be highly impractical to eliminate others. Thus, hazard resolution involves the reduction of risk to the lowest practical level. This is accomplished in a variety of ways, from re-design to warnings or administrative controls.

This is 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 is incorporated in formal system safety analyses. In turn, this will enable management to properly understand the amount of risk involved relative to what it will impact (schedule, dollars, operations, etc.) to reduce the hazard to an acceptable level.

Before implementation of any corrective action, Metro has established a hazard severity category (1 through 4 and a probability ranking (A through F) which are combined to form a numerical value called a Risk Index, reflecting both severity and probability of occurrence for each identified hazard. LTS assigns a Risk Index to a hazard before implementation of any corrective action. The range of possible Risk Indices is shown in the following matrix.

Frequency of Occurrence	1	2	3	4
	Catastrophic	Critical	Marginal	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
(F) Eliminated	N/A	N/A	N/A	N/A

6.5 Hazard Assessment

The LTS applies risk assessment criteria to the identified hazards based on their estimated severity and probability of occurrence to determine acceptance of the risk or the need for corrective action to further reduce the risk. The risk

assessment and acceptance criteria assist LTS management in understanding the amount of risk involved by accepting the hazard relative to the costs (schedule, dollars, operations, etc.) to reduce the hazard to an acceptable level. The following table identifies the hazard acceptance criteria

HAZARD ACCEPTANCE CRITERIA				
	Hazard Risk Index	Decision Authority	Special Conditions	Responsible Party
	1A, 1B, 2A, 2B, 3A	Unacceptable	Requires immediate resolution and review, notification to SSO with 24 hours, concurrence from the CSO and SSC	CSO & SSC
	1C, 1D, 2C, 2D, 3B, 3C	Undesirable	Requires review and approval of mitigation plan(s), or Accept risk from the SSC	CSO
	1E, 2E, 3D, 3E, 4A, 4B	Acceptable with Review	Mitigate risk to as low as reasonably practical or accept risk via the SSC	CSO
	4C, 4D, 4E	Acceptable	Risk is acceptable as is without further mitigation	CSO

6.6 Hazard Resolution Precedence

Management will take appropriate actions to reduce the risk associated with the identified hazard to the lowest level that is practical. The methods utilized for eliminating or controlling hazards are listed in their order of precedence, as follows:

- **Design for Minimum Risk:** In other words, incorporate features in the initial design to eliminate hazards. If an identified hazard cannot be eliminated, then the associated risk can be reduced to an acceptable level through design.
- **Incorporate Safety Devices:** If identified hazards cannot be eliminated or their associated risk adequately reduced through design, that risk shall be reduced to an acceptable level through the use of fixed, automatic or other protective safety-designed features or devices. Provisions shall be made for periodic functional checks of safety devices.
- **Provide Adequate Warning Devices:** When neither design nor safety devices can effectively eliminate identified hazards or adequately reduce associated risk, devices shall be used to detect the condition and to produce an adequate warning signal to alert personnel of the hazard. Warning signals and their application shall be designed to minimize the probability of incorrect personnel reaction to the signals, and shall be standardized within like types of systems. A public awareness program should be considered to alert the general public and passengers.
- **Develop Procedures and Training:** Where it is impractical to eliminate hazards through design selection or adequately reduce the associated risk with safety and warning devices, procedures and training shall be used.

Procedures may include the use of personal protective equipment. Precautionary notations shall be standardized. Tasks and activities judged critical might require certification of personnel proficiency.

- Reduce, Replace, Remove, or Do Not Operate – If there is no practical way to reduce the hazard, replacement, removal, or non-operation is indicated.
- Accept (with or without varying levels of review)– If a hazard will result in less than minor, illness, injury, or system damage, no further action is necessary.

6.7 Procurement/Contractor Requirements

The LTS' procurement of safety-critical systems, processes or products requires that responding contractors or vendors participate in hazard management in accordance with the above list of precedence. Specifications include the requirement for all contractors and vendors who provide systems, subsystems, or equipment that may affect passenger/employee safety or safe operations to adhere to the PTASP. The contractor's safety plan and supporting documentation must be approved by the SSC. An approved contractor plan must, at minimum, define objectives, tasks, procedures, schedules, and data submittal for the safety activities that will be performed.

6.8 Hazard Tracking/Monitoring

Loop Trolley tracks and analyzes all events/hazards through the use of the ESRI system and a Tableau database. The data is searchable and includes a variety of elements beyond hazards to include day-to-day operational activities.

- Hazard ID#
- Description of Hazard
- Reported by
- Location (if applicable)
- Source
- Probability Level
- Hazard Classification rating
- Location (if applicable)
- SSO Report Date
- Mitigations
- Status

6.9 Hazard Management Documentation and Communication

All departments are responsible to appropriately document the following information on hazards in their respective areas, including:

- How the hazard was recognized and reported;
- A description of the hazard and the immediate corrective action(s) taken;
- An Initial Risk Assessment, based on the probability and severity of the hazards if nothing was done and using the risk assessment matrix;
- Results of the investigation, including the circumstances, events and probable cause(s) leading up to the hazard;
- A Final Risk Assessment, based on the likelihood of the hazard to occur and its likely severity when the proposed corrective action or resolution is in place.

The Safety Department will request such documentation monthly to review and monitor safety risk management activities. Through independent investigation or SSC process, the Safety Department will ensure any deficiencies or failures are immediately documented, and corrective actions prescribed.

If the initial hazard rating is deemed “unacceptable risk or high risk”, the CSO is required to notify the SSOA within 24 hours or by 5:00pm of the next standard business day. For all lower hazards, documentation can be addressed in the monthly SSC meeting and added, as necessary, to the CAP log.

Chapter 7: Accident & Incident Investigations

7.1 Accident & Incident Notification

All accidents & incidents (events) involving Loop Trolley personnel or property must be reported to Dispatch. Safety SOPs 600.01 through 600.04 provide guidance as to levels for notification & response. Any Loop Trolley employee involved in, or witnessing, an accident or incident, shall immediately notify dispatch. In turn, the Dispatcher shall notify the appropriate supervisory and emergency response personnel in accordance with the notification protocol. Internal notifications shall be made as soon as practical.

7.2 Accident Investigation

The Safety Department has the overall responsibility for accident investigations as defined by the accident investigation procedure in SOP 600.01. The On-Duty Dispatcher is first on the scene and initially investigates accidents. Depending on the severity of the accident, the Safety On-call Representative may also participate in the investigation. In the case of an accident defined as a Level 2 or higher, a Safety On-call Representative is notified and will respond to the scene. The Safety Representative will assume the lead investigation role. All formal safety investigations are confidential and include the following steps, as appropriate:

- On-site inspection of the scene;
- Review of statements written by involved persons;
- Interviews with involved persons and witnesses;
- Review of laboratory reports of post-incident substance abuse testing;
- Review of the following physical evidence:
 - System log data
 - Communication tapes
 - Trolley, track, equipment maintenance and inspection reports
 - Dispatch documentation
 - CCTV Tapes
 - On-scene measurements
- Perform system tests;
- Preserve evidence;
- Coordinate incident reconstruction activities; and
- Prepare report for management and the SSO.

The SSOA has approved the Loop Trolley investigative process.

7.3 Regulatory & Management Reporting

The Safety Department identifies and coordinates all reports to outside agencies as required.

7.3.1 State Safety Oversight Agency

FTA Reportable Events are reported to MoDOT in accordance with 49 CFR Part 674 and the ProgramStandards Manual.

The following FTA Reportable Events require notification to the SSOA [and the FTA] within two (2)hours:

- A loss of life (occurring at the scene or within 30 days following the event);
- A report of a serious injury to a person (serious injury in accordance with the definition in the Glossaryof this document; the notification is based on information available to the RFGS at the time);
- A collision involving a rail transit vehicle;
- A runaway train;
- An evacuation for life safety reasons;
- Any derailment of a rail transit vehicle, at any location, at any time, whatever the cause.

The SSOA Program Manager is notified by cell number (573-418-0500) followed immediately by a callto the MoDOT 24-hour emergency phone number (573-751-4291).

The following information is included in the initial notification to the SSOA Program Manager:

- Name and Job Title of person reporting and name of RFGS
- Event Type (fatality, injuries, property damage, evacuation, derailment or other)
- Location, Time, Date
- Number of Fatalities
- Number of Injuries (individuals requiring immediate medical treatment away from the scene)
- Rail transit vehicle(s) involved (including route, vehicle number, direction of travel)
- Other vehicle(s) involved (type, number)
- Property damage estimate
- NTSB reportable
- RFGS primary person (i.e., Chief Investigator) conducting the investigation (name, title, phonenumber, email address)
- Brief description of the event
- Brief description of investigation activities completed or anticipated in the short term
- Preliminary probable cause, if applicable

Loop Trolley investigations for the SSO Agency will follow the format outlined in **Annex A** - adopted from APTA **Standard for Rail Transit Accident/Incident Investigation**; RT-SOP-002-02; Revision 2 (March 31, 2012). The above referenced SOPs

include templates for investigation reports that include causal and contributing factors, as well as procedural guidance on hazard analysis and risk mitigation via corrective actions. Each LTS investigation report will be forwarded to MoDOT within 30 calendar days following the completion of the investigation. Thereafter, the LTS will provide monthly status reports to MoDOT until such time as all matters related to that investigation are closed and approved by MoDOT.

Upon completing the accident investigation, the Loop Trolley will prepare and submit to MoDOT a draft final report that includes a description of activities, findings, identified causal factors, CAP(s) and hazard analysis, as applicable.

Accident reports developed and prepared for the SSOA are reviewed, approved and adopted by the SSOA. The SSOA may request that causal factors or hazards identified during the investigation be addressed or corrected by the LTS, and added to the CAP log.

At times, the SSOA may conduct and/or develop its own independent investigations, following notification of the LTS, which may include, but is not limited to: assessing LTS operating rules and procedures, conducting follow-up interviews, analyzing employee records including post-event drug/alcohol tests, and vehicle/equipment inspections. During the course of, or following, an investigation, the SSOA may develop formal CAPs that require correction or mitigation by the LTS.

At the conclusion of an SSOA investigation, SSOA will transmit a complete investigation report within 45 days following the completion of its investigation. If the LTS does not concur with the SSOA's final investigation report, it may submit – within 15 days of its receipt – a written dissent for inclusion as an attachment (or appendix) to that final report.

7.3.2 National Transportation Safety Board (NTSB)

The Loop Trolley notifies the NTSB within 24 hours when there is a rail accident³ resulting in:

1. A passenger or employee fatality or serious injury to two or more crewmembers or passengers requiring admission to a hospital;
2. The emergency evacuation of a passenger train;
3. A fatality at a grade crossing;
4. Damage (based on a preliminary gross estimate) of \$150,000 or more for repairs, or the current replacement cost, to railroad and non-railroad property; or
5. Damage of \$25,000 or more to a passenger train and railroad and non-railroad property

Title 49 CFR. Part 840 stipulates that the operator of a railroad⁴ shall notify the NTSB by telephoning the National

³ [53 FR 49152, Dec. 6, 1988]: Title 49 C.F.R. PART 840—RULES PERTAINING TO NOTIFICATION OF RAILROAD ACCIDENTS

⁴ (a) *Railroad* means any system of surface **transportation of persons or property over rails**. It includes, but is not limited to, line-haul freight and passenger-carrying railroads, and **rapid transit**, commuter, scenic, subway, and elevated railways.

Response Center at telephone 800–424–0201 at the earliest practicable time after the occurrence of any one conditions listed above. The SSOA is notified anytime a report is made to the NTSB.

7.3.3 Federal Transit Administration

Title 49 CFR Part 674 requires the state to include notification to the FTA in its program standard. Accordingly, all FTA reportable events are also reported to the FTA within the 2-hour window.

These events are reported to the FTA through the U. S. Department of Transportation Crisis ManagementCenter (CMC) by email (the recommended method) or by phone:

CMC email: TOC-01@dot.gov

CMC Phone: (202) 366-1863

(Send an email copy of FTA notification to the SSOA Program Manager)

The FTA has published guidance on accident (event) reporting in the form of a Quick Reference Checklist and a 2-Hour Notification Guide.

7.3.4 National Transit Database

The LTS also reports annually as a Reduced Reporter to the National Transit Database (“NTD”).

The NTD is the means by which the FTA collects and uniform asset, safety and security data for transportation systems. For an incident to be reportable to the NTD, it must involve a transit vehicle or occur on transit property and meet certain criteria. Reporting requirements categorize incidents as major or minor based on thresholds described in the NTD Reporting Manual.

The FTA NTD Reporting Manual mentions the importance of distinguishing between safety incidents and crimes, injuries, or deaths resulting from robbery, assaults, trespassing, arsons, and other crimes and misdemeanors not considered safety items. Such incidents are reported separately.

7.4 Missouri Division of Workers’ Compensation

Employee injuries must be reported to the Missouri Division of Workers’ Compensation within 30 days after receiving notice.

PART III – SAFETY ASSURANCE

Chapter 8: Safety Performance Monitoring and Measurement

The LTS has established activities to monitor its system for compliance with its procedures and maintenance and exercise activities that evaluate the effectiveness of any corrective actions/mitigations for existing deficiencies.

A robust accident/investigation program has been established for safety events to determine causal factors.

In addition, information shared through the Employee Safety Reporting Program is included in the Safety Assurance program at Loop Trolley for investigating, monitoring, and analysis.

8.1 Safety Data Acquisition

8.1.1 Safety Data Acquisition and Analysis

It is the task of the Safety Department to monitor safety performance of LTS operations. Selected data will be accumulated and analyzed, and includes injuries, potentially hazardous equipment failures, structural defects, and rules and procedures violations. This information will be shared quarterly with the SSRC. The data is used in the tracking of hazard-related data to identify safety-related trends. These trends are further analyzed or investigated with the assistance of the affected department to pinpoint the specific area of concern. This is accomplished by interviews with personnel in the affected department(s) and analysis of pertinent documentation.

Identified hazards are submitted to the manager of the department responsible for implementation of the necessary corrective action. Also included in the submittal are any recommendations for corrective action or a request for development of corrective actions.

8.1.2 Data Analysis

Safety data is collected, documented and analyzed from numerous sources by all LTS departments. These sources include, but are not limited to, the following:

- Accident reports
- External Agency reports and publications
- City Official concerns
- Claims reports
- Daily Operations Reports
- Maintenance Reports
- Employee Concerns

- Employee Occupational Injury Reports
- FTA Bulletins and Safety Advisories
- Homeland Security Alerts
- Insurance Inspection Reports
- Internal Audit Reports
- SSOA/FTA Reviews
- Passenger concerns and Customer complaints
- Inspections, Assessments and Observations
- Safety meetings
- Special Occurrence Reports
- Public Safety reports, concerns and investigations
- Social Media posts
- Customer Service Information
- System Reliability
- Rule Compliance Checks

Safety data collection also involves obtaining technical information, data and reports for use in systems development of program elements. Sources for such data include, but are not limited to, the following:

- American National Standards Institute (ANSI)
- American Public Transportation Association (APTA)
- American Society for Testing and Materials (ASTM)
- Department of Homeland Security (DHS)
- Environmental Protection Agency (EPA)
- Federal Transit Administration (FTA)
- State Safety Oversight Agency (SSOA)
- Missouri Statutes
- Safety Data Sheets (SDS)
- National Fire Protection Association (NFPA)
- National Transportation Institute (NTI)
- Occupational Safety and Health Administration (OSHA)
- Transportation Security Administration (TSA)
- National Transit Database (NTD)

8.1.3 Data Analysis and Access

Used as part of the hazard management process, data collection and analysis are used to identify hazards before they cause accidents by such techniques as trend analysis.

The LTS collects and tracks safety-related data to identify causal factors and undesirable trends, including those related to hazards. Investigations may include interviews, testing and analysis of related documentation. Identified hazards are tracked and findings requiring corrective action are vetted through the SSC for review, assessment, concurrence and discussion of further appropriate and practical mitigations.

8.1.4 National Public Transportation Safety Plan Safety Performance Measures

The LTS has set targets based on the safety performance criteria established under the National Transportation Safety Plan (“NSP”). FTA’s NSP describes the required safety performance areas public transportation agencies must measure, as outlined below. These performance measures focus on existing data delivered to the NTD.

Each year, the LTS will set performance goals in each area. The goals for each year can be found in Appendix A – National Public Transportation Safety Plan Safety Performance Measures

National Public Transportation Safety Plan Safety Performance Measures			
System Reliability	Safety Events	Fatalities	Injuries
The mean distance between mechanical failures by mode.	The number and rate per total vehicle revenue miles by mode.	The number and rate total vehicle revenue miles by mode.	The number and rate per vehicle revenue miles by mode.

8.1.5 Coordination with East-West Gateway Council of Governments (EWGW) and the State

As a component of 49 CFR Part 673, the LTS will be required to coordinate its performance targets, as required by the National Transportation Safety Plan, with the local Metropolitan Planning Organization (MPO) and the State. These entities are represented by the EWGW and MoDOT.

During the draft stages of the PTASP each year, the LTS will communicate its proposed performance targets to EWGW. The Accountable Executive, or their designee, will communicate this to EWGW by electronic means and/or an actual meeting. At that time, the EWGW will have the opportunity to review such safety targets and performance goals, including the process by which they are created and monitored, and, to the maximum extent practical, recommend updates to same. This will be accomplished each year before the draft PTASP is transmitted to SSOA.

The annual draft PTASP submittal to the SSOA will serve as the requirement of LTS communicating its proposed performance targets with the State. At either party’s request, safety performance measures may be communicated and coordinated through established SSOA meetings and/or site visits.

8.2 Safety Performance Measures

8.2.1 Performance Indicators

Loop Trolley uses a variety of performance indicators to measure its compliance with, and the sufficiency of, its procedures for operations and maintenance. As described in Chapter 6, Loop Trolley uses information obtained from Loop Trolley Daily Operating Report to track and trend Loop Trolley events and hazards. This information is tracked and trended on a monthly and quarterly basis.

Loop Trolley will also use Leading and Lagging Performance Indicators when briefing senior management. The SSC is given performance data on these indicators at least quarterly and sooner if the need arises. A report is generated from this information and shared with the SSOA.

If a negative trend is present, the trend will be analyzed and mitigation measures discussed. If appropriate, a hazard rating will be assigned and tracked on the hazard/mitigation table. This will allow the hazard and mitigation efforts to be analyzed for effectiveness on a regular basis.

While listing all of the performance data here would be exhaustive, a summarized list is found in Appendix B – Performance Indicators.

8.3 Operating and Maintenance Rules and Procedures

Operational and maintenance rules and procedures are contained in the Standard Operating Procedures (SOPs), Rule Book, and Operations and Maintenance Manuals. The Facility Maintenance Plan addresses procedures and process for facilities activities, and is supplemented by manufacturer manuals. These manuals cover tool/equipment-specific rules and procedures for the safe operation and repair of individual facility assets. Additionally, the LTS utilizes an Employee Handbook and Drug & Alcohol Policy Plan in its system operations. All findings of non-compliance with rules are evaluated by the Chief Safety Officer, and where appropriate, are managed through Loop Trolley's hazard management process.

8.3.1 Rules Compliance

The data obtained from rules compliance reviews is an important part of the LTS SMS process. These rules cover both operational and maintenance types. Data from rule checks are kept in physical form and catalogued in electronic form. Safety securely maintains these record and will review same on at least a quarterly basis for identification of hazards and trends. Hazards and trends discovered are run through the risk mitigation process to generate CAP log items where appropriate.

Monthly safety meetings, via the SSC, may also be used to discuss the effectiveness of supervision relating to the implementation of operating and maintenance rules. If the data, and discussion, reflects an ineffectiveness or a breakdown in process, a different direction may be warranted, including revising existing or creating new operations and maintenance rules.

8.3.2 Loop Trolley Rules and Procedures

Bi-State Development, as the contracted operator and maintainer of the LTS, has prepared and implemented both a Rulebook and Standard Operating Procedures (SOPs).

8.3.3 Operating and Maintenance Rules

Loop Trolley Rulebook – This manual consists of those rules and procedures applicable to LTS employees. Department managers, as required or as needed, may recommend revisions via the SSC. A schedule of reviews has been established whereby system and operational changes are approved prior to implementation. Such changes may include operational rules and procedures, general orders and notices. A new rulebook is published at least every three years.

8.3.3.1 General Orders

General orders are issued to modify a current operating rule or procedure, or to address an urgent operating requirement. General Orders may be implemented as new rules in future Rulebook versions, as necessary.

8.3.3.2 Notices

Notices may be issued to all LTS employees or to specific departmental employees providing information which may address a temporary need, support work functions, or provide general safety information.

8.3.4 Maintenance Personnel

The Assistant Superintendent of Loop Trolley Maintenance enforces rules and procedures by observing and monitoring employee performance in all aspects of LTS maintenance. Areas of observation include, but are not limited to, the following:

- General safety;
- Proper use of tools, equipment and machinery;
- Proper use of personal protective equipment (PPE);
- Fire safety; and
- Quality Assurance inspections and audits of procedures

Preventative maintenance activities are continuously monitored by the Asst. Supt. Loop Trolley Maint. Inspection tasks are periodically updated to reflect system needs, and to enhance operational efficiency and safety.

8.3.5 Maintenance-of-Way (LTS and Contractors)

The LTS has established rules and procedures which govern safe maintenance activities along the operating right-of-way. These rules also will apply to LTS contractors and other contractors that may perform maintenance or construction activities on, under, above or near the right-of-way. Before any contractor work along the right-of-way is authorized a work permit must be obtained. Before work commences, an LTS representative will brief the lead crewmember on

applicable safety measures, and may, as needed, require the lead crewmember or crewmembers to receive Track Access Training.

Periodic site visits and communications will occur to ensure the work is being performed safely and as outlined in the work permit.

8.4 Facilities and Equipment Inspections

Loop Trolley has established and maintains a list of RFGS facilities, physical equipment, and rolling stock subject to inspections and tests for safety critical elements. Several departments perform or monitor safety-related tests and inspections of facilities, equipment, and rolling stock. The Transit Asset Management Plan provides a listing of all Loop Trolley facilities, equipment, and rolling stock.

8.4.1 Yard and Shop Inspections

The Safety Department inspects the MLRFGS operating and maintenance facilities on an annual basis to ensure the safety of employees and guests and to ensure compliance with applicable safety regulations.

The Safety Department participates with the Rail Facility Maintenance Department and the Trolley Maintenance Department to identify and document compliance with local, state, and federal regulations regarding environmental pollution issues related to air, water, soil contamination, and provides assistance to control hazards.

A safety inspection of each facility is completed annually and includes a review of the following:

- Reporting findings and recommendations resulting from safety tests and inspections to SSC;
- Performing follow-up inspections to determine compliance with findings and recommendations;
- Evaluating the effectiveness of safety tests and inspections;
- Portable fire extinguishers;
- Fire detection and alarm systems;
- Building construction and maintenance;
- Building facility equipment (i.e. HVAC, electrical, etc.)
- Means of egress and security (access control
- General housekeeping and storage practices;
- Employee awareness of emergency procedures

All inspections are documented and include the following information:

- Date of inspection;
- Listing of items observed;
- Description of observed deficiencies;

- Lists of applicable regulations, SOPs, etc.;
- Suggestions to improve the safety of the facility; and
- Name of inspector

The inspector(s) ensures that personal protective equipment is available at all times; eyewashes and fireextinguishers are operational; and general facility defects are noted and corrected as practical. Serious deficiencies (i.e. life-threatening) are corrected immediately. If a serious deficiency cannot be corrected immediately, it is given priority in the CAP log and preventative measures are taken to mitigate the hazard.

Inspections are conducted to ensure compliance with local, state and federal environmental regulations. Where inspections bring to light deficiencies in systems or equipment, employees follow the hazard management process. Conformance with this process provides timely resolution of possible hazards alongwith proper reporting of deficiencies within components of the system.

If an inspection report identifies safety and health defects found during the inspection, the Safety Department is responsible for correcting any hazards related to facilities and the equipment therein, andalso prepare a CAP log item identifying the schedule by which time corrections will be completed.

A follow-up inspection and report is made approximately 45 days after the initial inspection. Facilityinspections and audits are tracked by the Maintenance of Way Department.

8.4.2 Stations Inspections

The Maintenance Department has the primary responsibility for inspections of stations. A visual inspection is performed on each operating day, and an on-foot inspection is performed monthly. All maintenance and operational personnel are tasked with reporting station hazards or defects as noticed.

8.4.3 Rolling Stock Inspections

The Maintenance Department has the primary responsibility for regular inspection and maintenance of theLTS rolling stock. The inspection program includes safety inspections on operating days, mileage/hours- based preventative maintenance inspections and a future overhaul program. The operating day inspectionsinclude visual or hands-on inspection of the following:

- Oil & Fluids
- Brakes
- Pantograph
- Lightning Arrestor
- Circuit Breakers
- Air Compressor

- Trucks
- Motors

All maintenance inspection records are maintained by the Assistant Superintendent of Loop Trolley Maintenance for a period of at least three years.

Scheduled trolley maintenance follows the recommendations of the Trolley Rehabilitation contractor. The scheduled maintenance plan can be found in the Trolley Vehicle Maintenance Plan.

On operating days, the Trolley Operator conducts a daily pre-departure inspection on each Trolley prior to passenger service. These items include:

- Fire protection equipment;
- Emergency communications equipment (PA, Radio)
- Brakes, door operations, horns, bells
- Headlamps, RR lamp, and indicator lamps
- ADA Lifts
- Interior Lighting
- Interior Compartments

Copies of the daily pre-departure inspection forms are retained by the Operations Department for a period of at least two years.

8.4.4 Fire Detection & Suppression Equipment Inspections

The Safety Department is responsible for the inspection of fire protection equipment while the Maintenance Department is responsible for the maintenance. Inspection items include the following:

- Portable fire extinguishers are inspected monthly by LTS and service annually by a contractor.
- Smoke detectors are inspected monthly by LTS.

8.4.5 Maintenance Audits & Inspections

Safety critical systems, such as substations, OCS, structures, track, and trolley vehicles are inspected and tested and/or serviced on a scheduled, periodic basis. Inspections are done using checklists for each audit. When a system component is found in a failed or out of tolerance condition and in such a manner that would present a significant hazard, applicable operations will be restricted to maintain safely until an appropriate corrective action has been implemented. Hazards found during audits are also provided to the Safety Department for investigation, reporting, and tracking as required by SSOA regulations. Equipment found in a failed or out of tolerance condition is recorded and tracked by the Maintenance Department, and cannot be closed out until repairs are completed.

The Safety Department performs internal safety audits of maintenance activities for safety critical systems. These audits focus on adherence to schedule, application of standards and procedures, and record keeping. All safety critical hazards discovered during audits or inspections are tracked for correction.

8.5 Rail Systems Maintenance (MOW)

8.5.1 Signal System

The LTS utilizes a simple signal system consisting of a trolley-mounted (and maintenance vehicle-mounted) emitter, and receivers mounted on traffic arms at specific street crossings on the alignment. Inspection of the signal system occurs each day of operations during the maintenance vehicle system sweep, to ensure pole-mounted receivers are performing as expected.

8.5.2 Traction Power & OCS Inspections and Maintenance

The Maintenance of Way employees have the overall responsibility for inspection and maintenance of the OCS and TPSS inspection. Components of the quarterly and annual inspections are performed by Metro Traction Power Division, per agreement.

Inspections of the Traction Power and OCS systems will occur as follows:

- TPSS – Visual and equipment readings – weekly
- TPSS – Breakers and batteries – quarterly
- TPSS – Transformers, switchgear, rectifier, breakers – annually
- OCS – Mainline visual – each operating day
- OCS – Section insulators, air break & overlap, fixed tension, lightning arresters, yard inspections, DC No-load switch, Yard door bridge & DC switch (shop/yard) – quarterly
- OCS – Hands-on hardware and support elements, OCS wire gauge -- annual
- Hot sticks and auxiliary PPE/Equipment – annual

8.6 Right-of-Way Inspections and Maintenance

8.6.1 Track Inspection and Maintenance

The Maintenance of Way Department is responsible for the inspection and maintenance of LTS track components, consisting of: roadbed, rail, fasteners, switches, and special trackwork, as well as various other components of the public and semi-exclusive LTS ROW. A number of practices regarding the frequency of inspection and the content of tests have been adopted from APTA's Manual for Standards and Recommended Practices for Rail Transit Systems. Such practices have been adopted as suitable for the LTS due to similarities of equipment in certain applications. Components of the monthly and annual inspections are performed by Metro Track Division, per agreement. Inspection of the Track system will occur as follows:

- Alignment check (riding or walking) – each operating day
- Track Inspection (riding visual) – each operating day
- Mainline Switches – monthly
- Yard Track & Yard Switches – monthly
- Switch Maintenance – annually
- Bumping Post – annually
- Ultrasonic Testing (mainline and special track work) – annually
- Geometry Testing – as needed
- Special inspections (derailment, damaged track, post-earthquake, flooded track) – as needed

8.7 Facility Inspections & Maintenance

The Rail Facility Maintenance Department is responsible for the inspection and maintenance of LTS facilities, consisting of the MSF and station stops. Inspection of the Track system will occur as follows:

- MSF Compressor – monthly
- MSF Crane Hoist – monthly
- MSF Mobile Lift – monthly
- MSF Fire Protection – monthly
- MSF HVAC – semi-annually
- MSF Overhead Door – annually
- Station Stop Site Conditions (riding) – each operating day
- Station Stop walking surfaces and tactile strips – monthly

8.8 Transit Asset Management/State of Good Repair

The LTS will address the requirements of 49 CFR Parts 625 and 630, Transit Asset Management (TAM) and State of Good Repair (SGR), through the LTS Transit Asset Management Plan (TAMP), which includes TAM and SGR performance measures. For both Safety Management and Transit Asset Management, the following flow-through process is utilized:

1. Inventory asset data
2. Analyze asset risks and performance against established targets
3. Develop framework for prioritizing asset needs to deliver performance targets
4. Develop processes to keep asset, risk and performance data up to date in real time
5. Develop processes to optimize these analyses and processes

8.9 Hazardous Materials Program

The LTS has a written procedure pertaining to the use, storage and procurement of Hazardous Materials (SOP 600.13 – Hazardous Materials/MSDS). Loop Trolley adheres to OSHA's Hazard Communication Standard (29 CFR 1910.1200). This standard requires that chemical manufacturers, distributors, and importers develop material safety data sheets (SDSs) for each product in compliance with the United Nations Globally Harmonized Systems of Classification and Labeling of Chemicals (GHS). The standard requires employers make the SDS available to all employees who may work with a potentially hazardous chemical.

Loop Trolley meets this requirement by providing an on-line, computer based SDS database. The master list of chemicals can be found at the following web site: <https://chemmanagement.ehs.com/9/ebinder>

8.10 Federal, State and Local Requirements

8.10.1 Federal Regulations

Although the LTS is not specifically subject to OSHA requirements, it does use OSHA guidelines in establishing a baseline for its safety program. LTS “safety sensitive” employees are subject to all of the DOT/FTA drug & alcohol requirements discussed further in the LTS Drug & Alcohol Policy Plan. LTS wmodify policies, plans and procedures accordingly, resultant of development and rulemaking associated with MAP-21.

8.10.2 State Regulations

The LTS is subject to SSOA regulations promulgated by the State of Missouri.

8.10.3 Local Regulations

The LTS adheres to local regulations impacting all or portions of the system, including (but not limited to) environmental regulations, fire protection, building codes, and agreements with the City of St. Louis and the City of University City.

8.11 Drug and Alcohol Program

Loop Trolley and Bi-State Development are committed to complying with the Drug Free Workplace Act and preserving the highest possible safety standards both in the quality of its services and the safety of its passengers, employees, the general public and property. In support of this commitment and its commitment to a drug-free workplace, the BSD Board of Commissioners has adopted a policy to prohibit the illegal or inappropriate use, possession, manufacture, or distribution of drugs and alcohol by BSD employees. LTS employees and employees of contractors holding safety-sensitive positions (covered employee) are subject to drug and alcohol testing in accordance with federal and state regulations. The implementation of BSD’s policies, as well as the requirements of federal and state regulations, is the responsibility of the management.

The Board Policies and associated Drug & Alcohol Program address the following:

- Prohibited substances

- Prohibited conduct
- Test classifications
 - Pre-employment
 - Post-accident
 - Random
 - Reasonable Suspicion
 - Return to Duty
 - Follow Up
 - Probably Cause
- Testing Protocols
- Prescriptions and Medication
- Consequences

Additionally, the Drug and Alcohol Policy Plan provides managers and employees with additional material such as Drug and Alcohol contact, Definitions and Acronyms, and detailed instructions. For special circumstances, such as ‘shy bladder’ or ‘shy lung’, the Plan provides details about employee notification in the event of a confirmed positive test, and contains a detailed list of LTS safety-sensitive job classifications. The Plan also provides employees with descriptions of the consequences of substance abuse as well as a directory of substance abuse professionals who can provide counseling.

In addition, employees are required to report any health or medical condition that may impair his or her ability to perform the assigned duties to Superintendent. This rule specifically includes the use of over-the-counter and prescription medicine.

As part of DAPP familiarization training, employees are given information about the LTS-sponsored Employee Assistance Program (“EAP”), a confidential counseling program from which all employees can obtain professional help in treating chemical dependency and substance abuse.

8.12 Procurement Process

The Safety Department reviews all procurement specifications, designs, equipment or systems that may affect the safety of employees and passengers.

8.12.1 Pre-Procurement Reviews

The review is performed to ensure the incorporation of safety requirements in contract documents, and to assess compliance with the safety requirements through the testing and/or inspection of the facility, equipment, or system. Safety aspects of bid documents and specifications include the following:

- Safety requirements for construction or installation

- Tracking and verifying compliance with safety & security requirements in design reviews
- Testing and certification for installations and interfaces
- Maintaining configuration control
- Periodic safety evaluations and audits
- Incorporation of “fail-safe” principles where failure could cause a catastrophic event
- Safety devices, parts and materials that eliminate or mitigate most identified safety hazards

For contracts that exceed \$25,000, the LTTDD District Administrator participates in a pre-procurement review with the project manager to identify any unusual or unique safety issues that might be associated with the procurement. For major construction or major upgrades, the LTS Safety & Security Certification procedures are incorporated throughout the procurement process.

Chapter 9: Management of Change

9.1 Managing Safety in System Modifications

9.1.1 System Modification

Any safety-critical change or modification to LTS equipment or the system is controlled to assure hazards are appropriately identified and controlled in the plans and designs of the modified equipment or system. This chapter discusses the LTS process for identifying and assessing changes that may introduce new hazards or that may have an impact on performance.

9.1.2 System Modification Review & Approval

Any safety-critical change or modification to LTS equipment or system is controlled to assure that hazards are appropriately identified and controlled in the plans and designs of the modified equipment or system.

This section describes the processes to ensure safety concerns are addressed in modifications to existing systems, vehicles, equipment, and procedures do not require formal safety certification but which may have an impact on safety. These processes and approvals support and ensure a high level of system safety for passengers, employees, and the general public.

The configuration of the LTS system are those civil systems and subsystems that define the engineering and physical basis of the safety-critical operating and maintenance practice. The initial baseline configuration for the system consist of the design criteria, “as-built” engineering documents such as operating and maintenance practices (including applicable training and qualification requirements). These documents establish the basis for the preparation of the design, construction, and operations and maintenance parameters. Various processes, as described below, have been established to ensure safety review, analysis and approval, where appropriate, of changes to the fleet, facility, and system as a whole, which may have a safety impact.

Any proposed changes described in this section with a safety impact is subject to the risk management process. Hazards discovered in the system modification process will follow the risk management process, and be undertaken by the SSC.

In general, all LTS management roles participate in the development, implementation and management of capital projects and operation projects. The LTS may contract or request additional engineering and technical support in an effort to assure appropriate review and analysis, and ensure safety.

In the life of an active project cycle, the LTS maintains an active role throughout. Once a project concept has been developed and approved, with funding identified, a Request for Proposals (including a Scope of Work) is prepared as needed. Following review and approval of the RFP by the ED the LTS activates phases which may include design, procurement, construction, testing, and permitting. The Safety Department actively participates in all phases to ensure

safety-critical items are identified, accounted for, and addressed during all phases. This may include design reviews and progress meetings throughout the project's life cycle, as well as site visits and safety audits.

9.1.3 Design Reviews

Through the SSC, design reviews are performed for all major system procurement such as new vehicles, facility construction or modifications to established design criteria and standards. Reviews are performed to evaluate progress and technical adequacy of the design and to identify any necessary interface functional and physical compatibilities.

Design reviews include:

- Conceptual design reviews
- Preliminary design reviews
- Final design review
- Prototype review
- First article or initial product conformance reviews

A design review might, for example, consider compatibility with existing safety features, design and procedures of existing LTS equipment. The reviews address such factors and interfaces as:

- Human factors
- Environmental parameters
- Emergency responses
- Fire sources and protection
- Equipment layout and maintainability
- Operations and maintenance requirements

9.2 Configuration Management

This section describes the requirements and methods used to ensure configuration management control. It includes the following:

- The authority to make changes;
- The process for making changes; and
- The notification and assurances to all affected departments regarding control of the LTS design baseline.

The purpose of this section is to ensure that modification to individual subsystems or fleet and inventory-wide changes are recorded on as-built drawings and addressed in training courses, maintenance manuals, and procedures, as applicable.

Configuration items for the LTS system are those civil/subsystems which define the engineering and physical basis of the

system, and safety-critical operating and maintenance practices. The initial baseline configuration consists of the original system design (design criteria, standard drawings, and standard specifications) and the project documents associated with the original system.

This section of the PTASP addressed those aspects of these items that are safety-critical. The “baseline” consists of those items whose changes may affect system safety or the physical transportation system.

Included in this category are physical component of the facility, system and vehicles, and operational documents such as Rules and SOPs.

Any proposed change described in this section with a safety impact is subject to the risk management process. Hazards discovered in the Configuration Management process follow the risk management processes as undertaken by the SSC.

9.2.1 Baseline Configuration

9.2.1.1 Design Criteria, Standard Drawings, and Standard Specifications

LTS design criteria and standard drawings/specifications were used for the trolley construction process, and define the principal design requirements in sufficient detail to permit the definition and allocation of requirements to the systems and assemblies that comprise the system. Project documentation includes any exceptions allowed from the design criteria and ‘As-Built’ drawings that reflect changes made to the standard specification drawings as original to the project. Changes that have an impact on a safety-critical system, subsystem, or operating practice requires review by the SSC. Therefore, it is important that this information be included on any Configuration Change Request. If it is unclear whether or not the change impacts safety-critical systems, the SSC will err on the side of caution, and consider it safety-critical change. For the purpose of determining impacts to safety-critical systems, cost or schedule implications are not considered.

A list of safety-critical systems and/or subsystems include the following:

- Systems and Facilities – Signals, Right-of-Way, Structures, Communications, Rolling Stock, Yard & Shop, Electrification, Fare Vending Equipment, Station Stops, Track, Integrated Tests and Procedures
- Policies, Procedures & Training – System Safety & Security, Configuration Management Plan, LTS Rulebook, Emergency Familiarization, Safety SOPs, Training & Certification, Fire-Life- Safety, Security SOPs, Public Awareness
- Integrated Testing – System Integration Test Plan

9.2.1.2 Engineering Drawings and Associates Specifications

Engineering drawings and specifications were developed during the design phase of the LTS system and consist of the following types:

- Civil Systems (facility architect-engineer drawings and specifications) – These documents are the drawings and specifications required to define, develop, procure, construct, fabricate, and install the basic facilities.
- Rail Systems, Equipment Drawings and Specifications – These documents are the drawings and specifications required to define, develop, procure, construct, fabricate, install, and test the specific configuration items or elements that, when integrated, make up the systems installed.

9.2.1.3 Operations and Maintenance Requirements

Operation and maintenance requirements and specifications consist of the safety-critical operating practices at the time the LTS was certified as revenue-ready. This is primarily expressed in the Operating & Maintenance Plan. Safety-critical operating practices include unusual dispatching patterns (i.e. temporary speed restrictions, single-tracking, etc.), operational rules pertaining to signal aspects, and requirements for training/certification of trolley vehicle operators. Non-safety-critical operational items such as trolley vehicle schedules are excluded from this documentation.

9.2.2 Configuration Changes – Approval & Control

Configuration changes are approved by the SSC, the process of which is detailed in an SOP (SOP 100.07 Configuration & Change Management), and applies to all safety-critical system elements, inclusive of trolley vehicles.

Roles & Responsibilities – The following roles and responsibilities have been established in relation to configuration change processes:

Safety:

- Review and identify potential safety hazards with any proposed change.
- Identify hazard severity and system risk resulting from single point and common cause failures.
- Participate in the Configuration Management Meetings⁵ to review progress and address any relative safety issues.

Engineering:

- Control the Configuration Management baseline
- Design Criteria
- Standard Specs & Drawings
- Document Control

Rail Systems:

⁵ For our purposes the Configuration Management Meeting is the same as a Safety & Security Committee meeting. Configuration issues may be discussed at any regular meeting. The SSC process is discussed in Section 3

- Controls all system integration issues

Trolley Operations:

- Update changes to rules, procedures and any other item relating to safety and security.

9.3 Safety & Security Certification Program

The SSC acts as the safety and security body during normal operations. This group will also decide what projects receive formal safety and security efforts and to what extent. For large rail projects (generally over \$100 million) a separate committee may be convened. The SSC or other project specific committee, is responsible for safety review, compliance assessment, making recommendations to LTC and LTC Management regarding safety and security certification process and certifying that system extensions and other system enhancements are safe and secure for revenue service.

Chapter 10: Continuous Improvement

The LTS defines continuous improvement as: a process by which the transportation agency examines safety performance to identify safety deficiencies and carry out a plan to address the identified safety deficiencies. Many areas of the PTASP have already addressed the components of this section.

10.1 Safety Department Activities Required to Implement Safety Management Program

- To achieve continuous improvement in safety as outlined in this document, the LTS performs the following safety risk management, safety assurance and safety promotion activities through the Safety Department to support other departments in meeting their obligations under safety management systems:
- Conducts FTA- and SSOA-mandated internal safety audits;
- Conducts inspections of the facility (MSF);
- Performs investigations of major accidents involving employees/equipment;
- Conducts investigations of safety complaints, concerns and reports;
- Prepares reports of significant events;
- Participates on safety committees (SSC) and performs follow-up to safety committee issues and approvals;
- Trains maintenance employees on industrial/occupational safety requirements;
- Liaisons with local, state, and federal responders and agencies concerning emergency response to events involving public transportation;
- Supports the development, review and revision of safety-related SOPs in conjunction with managers of the Operations and Maintenance departments; and develops, reviews and revises SOPs for safety department functions;
- Participates on all committees or working groups for construction projects;
- Conducts safety briefings and inspections during construction projects;
- Periodically monitor system operations to identify and address procedural and rule compliance
- Assist LTS management with safety issues;
- Participates in the Safety & Security Certification process for all capital projects;
- Reviews and comments on any changes to safety elements within the LTS system;
- Reviews safety data and trends provided by departments, and provides feedback to ensure departmental compliance with SMS data requirements;
- Participates in development and implementation of system emergency drills;
- Facilitates LTS safety briefings on at least a monthly basis;
- Participates in formal meetings with the AE as appropriate, on safety issues;

- Provides full support and coordination on SMS implementation system-wide;
- Ensures continuous safety improvement through support activities for all departments; and
- Provides oversight activities for internal SMS assessments by each department.

10.2 Corrective Action Plans (CAPs) / Internal Safety Audit Process

10.2.1 Scope and Authority

All LTS departments and contractors are subject to annual audits. The Internal Audit Department has the authority and responsibility to conduct or oversee regular internal audits and shall provide a formal report of Findings/Observations to the SSOA annually to ensure effective corrective action is taken to resolve deficiencies.

Auditors shall be independent from the first line of supervision responsible for the activity being audited.

10.2.2 Internal Safety Audits

Internal Safety audits are conducted the by the BSD Internal Audits Department. Specifics of the process are documented in the Internal Audits Plan.

10.2.3 CAP Process

CAPs can be developed resulting from a variety of situations or hazards. Examples which could result in a formal CAP following Program Standard guidelines include: Unacceptable/Undesirable hazard rated items, or as otherwise directed or recommended by the Accountable Executive, CSO, the Safety Department, SSC, SSOA or FTA. Outside of a directive from the SSOA or FTA, the Safety Department will facilitate the development of the CAP. Once a CAP has been generated, the CAP is submitted to SSOA in accordance with its Program Standards Manual. Any internal disputes on CAP development/content will be first brought to the Accountable Executive and/or the SSC for resolution.

All CAPs following the SSOA Programs Standard process will be documented and maintained in a CAP tracking log. The Safety Department will maintain documentation and updates to the log and communicate updates to the SSOA at least monthly. Internal meetings to discuss CAP progress or the effectiveness of the mitigations are generally done departmentally. Meetings to discuss or approve CAPs can occur on an as-needed basis, outside of the standard monthly schedule.

For any CAP, the SSC will include, at minimum, the following information:

- Identified hazard or deficiency;
- Hazard rating;
- Process, plan, or mechanism to resolve hazard or deficiency;
- LTS personnel responsible for implementing corrective actions;
- Anticipated completion dates for implementation; and

- Other critical information (i.e. interim progress updates)

All immediate or emergency CAP actions will be implemented in concurrence with the SSOA Program Standards Manual section on “Immediate or Emergency CAPs”. An example of a situation that would involve immediate action could involve an Unacceptable Hazard or other situations that could involve immediate harm or danger to the system or transportation agency if quick correction action(s) is not taken. If such a case were to arise, the Chief Safety Officer or the Accountable Executive would make the decision for emergency action. The CSO would ensure the Program Standards procedures are followed, to include notification to the SSOA in writing by 5:00pm on the business day following its decision to take corrective action.

In an effort to minimize, control, correct, or eliminate identified hazards and risks for which a CAP has been created, the LTS will utilize a variety of processes and tools, as applicable, which may include: training or re-training, physical signage, physical changes to the system (inclusive of configuration changes), new rules and/or procedures, and periodic inspections.

PART IV – SAFETY PROMOTION

Chapter 11: Safety Communication

The LTS will communicate safety and safety performance information throughout the transportation agency, conveying information on hazards and safety risks relevant to employees' roles and responsibilities, and informs employees of safety actions taken in response to reports submitted.

The LTS understands its safety management systems are dependent upon an ongoing management commitment to communication. One of management's most important responsibilities under SMS is to encourage and motivate others to want to communicate openly, authentically and without concern for reprisal.

11.1 Employee Safety Reporting Systems

All employees have the responsibility to report any adverse safety conditions, events or acts; any observed or foreseeable hazards; and any safety concerns.

Employees may report via the following methods:

- Reporting directly (in person) to the immediate supervisor
- Reporting directly to the facility superintendent
- Reporting directly to a Safety staff member
- Reporting directly to the CSO or AE
- Email Safety@metroslouis.org
- Report to the Safety Hotline number: 314-982-1638

Employees have the option of reporting anonymously at any time. Employees who do not report anonymously will receive feedback from the immediate supervisor or safety representative to which their report was filed.

Any person receiving a report of a hazard will immediately notify their supervisor.

All reports will be documented and investigated in a timely fashion. Unacceptable and undesirable hazards will be addressed immediately, either through mitigation or elimination in the department wherein the hazard(s) exist, or through the SSC CAPs creation process.

Supervisors in each department are responsible to ensure that all reported hazards are properly documented, investigated and reported back as appropriate.

11.2 Safety Dashboard

The Safety Dashboard (Dashboard) is a cloud-based program used by Loop Trolley to accomplish Safety Communication. The Dashboard will be accessible through any device that can access the internet. Device examples include but are not limited to: computers, phones, tablets etc. Loop Trolley employees and contractors will have access to the Dashboard at the discretion of the Safety Department.

11.2.1 Safety Performance

The Dashboard will display safety performance indicators Loop Trolley establishes. These indicators will include the four (4) required Safety Performance Indicators as set forth by the National Public Transportation Safety Plan. These categories will measure: Fatalities per one hundred thousand miles, Injuries per one hundred thousand miles, and Safety Events per one hundred thousand miles, and System Reliability. More information can be found on Safety Performance Indicators in Part 1. In addition, any additional safety performance indicators established by Loop Trolley will also be communicated through the Dashboard.

11.2.2 Hazards

The Hazard Log will be posted and regularly updated on the Dashboard. In addition, any other relevant hazards or trends will be posted on the Dashboard for employee/contractor access. Hazards reported through the Employee Reporting Program will be posted on the website and any safety actions taken as the result of investigations. The Employee Safety Reporting Program contact points will be listed in the Dashboard as well.

11.3 Safety Initiatives

Any current or future safety initiatives will be posted on the Dashboard. Safety initiative examples include: rail safety week, radar speed checks, emergency exercises, etc.

11.3.1 Safety Posters

Safety posters will be used in common areas at Loop Trolley facilities to communicate many of the safety items the Dashboard covers. Posters will communicate safety to employees and contractors who do not have access to an electronic means to access the Dashboard. Posters will also assist in communicating the Employee Safety Reporting Program.

Chapter 12 – Competencies and Training

12.1 Training Program

In accordance with the FTA, LTS' training program provides thorough, relevant, and ongoing education and training for all employees to ensure that assigned duties are completed safely and effectively. The LTS requires all employees to be properly trained to perform their jobs safely. The minimum requirements for Operators and Dispatchers are listed as such:

12.1.1 Dispatchers

The training program for Dispatchers is focused on the LTS Rulebook and SOPs, as well as specific administrative and technical responsibilities of these roles. If a Dispatcher seeks training as in-service backup, they are required to complete the entire Trolley Operator training course. If a Dispatcher will not act as backup, he/she will complete only the first two weeks of the Trolley Operator training course.

12.1.2 Operators

The LTS has implemented and maintains a training program for all new Trolley Operators. This program consists of classroom instruction (including the LTS Rulebook and SOPs) and supervised yard/mainline operations. Successful completion of the course requires test scores of 85% or higher, with the exception of the signals and switch test, which requires a 100% score to pass. The LTS also requires annual Trolley Operator refresher training.

Return-to-work refresher training must occur whenever an employee is out for a period equal to or greater than 90 days. This training will require the Operator returning to complete one full week of training.

12.1.3 Health Safety Training

Health Safety addresses the chemical, physical or biological factors in the working environment that can have negative impacts on the short or long-term health of Metro employees and the general public. All employees are required to complete two in house trainings that address health safety: Hazard Communication Training and Blood Borne Pathogen Training.

12.1.4 Hazard Communication Training

The curriculum for the Hazard Communication Training meets the OSHA standards set under 29 CFR 1910.1200(h). This consists of familiarization to potential physical and health hazards from chemical exposure, understanding the Globally Harmonized System of chemical classification, and how to access the database of Metro's chemical inventory.

<https://elearning.easygenerator.com/a2e7f851-dfe7-487f-bd4f-28508c898ee2/>

12.1.5 Blood Borne Pathogen Training

The curriculum for the Blood Borne Pathogen training follows the guidelines set by the Center for Disease Control and Prevention for exposure to infectious diseases. This consists of awareness to the most common blood borne and respiratory viruses and mitigation practices to prevent exposure and infection

<https://elearning.easygenerator.com/e82c2d39-262f-463a-9715-38adae6cec6b>

12.1.6 Public Transportation Safety Certification Training Program (PTSCP)

Currently, BSD requires the following to successfully complete and retain the PTSCP certification for rail:

- General Manager Safety
- Director of Safety
- Safety Auditors

APPENDICES

Appendix A: National Public Transportation Safety Plan Safety Performance Measures

The following Safety Performance measures have been established by LTS for calendar year 2022:

Fatalities:

- 0 per 100 miles (total number of reportable fatalities and rate per total vehicle revenue miles by mode)

Injuries:

- 8 Total (0.5 per 100 miles (total number of reportable²⁷ injuries and rate per total vehicle miles by mode)

Safety Events:

- 4 Total (.027 per 100 miles) (total number of reportable events and rate per total vehicle miles by mode)

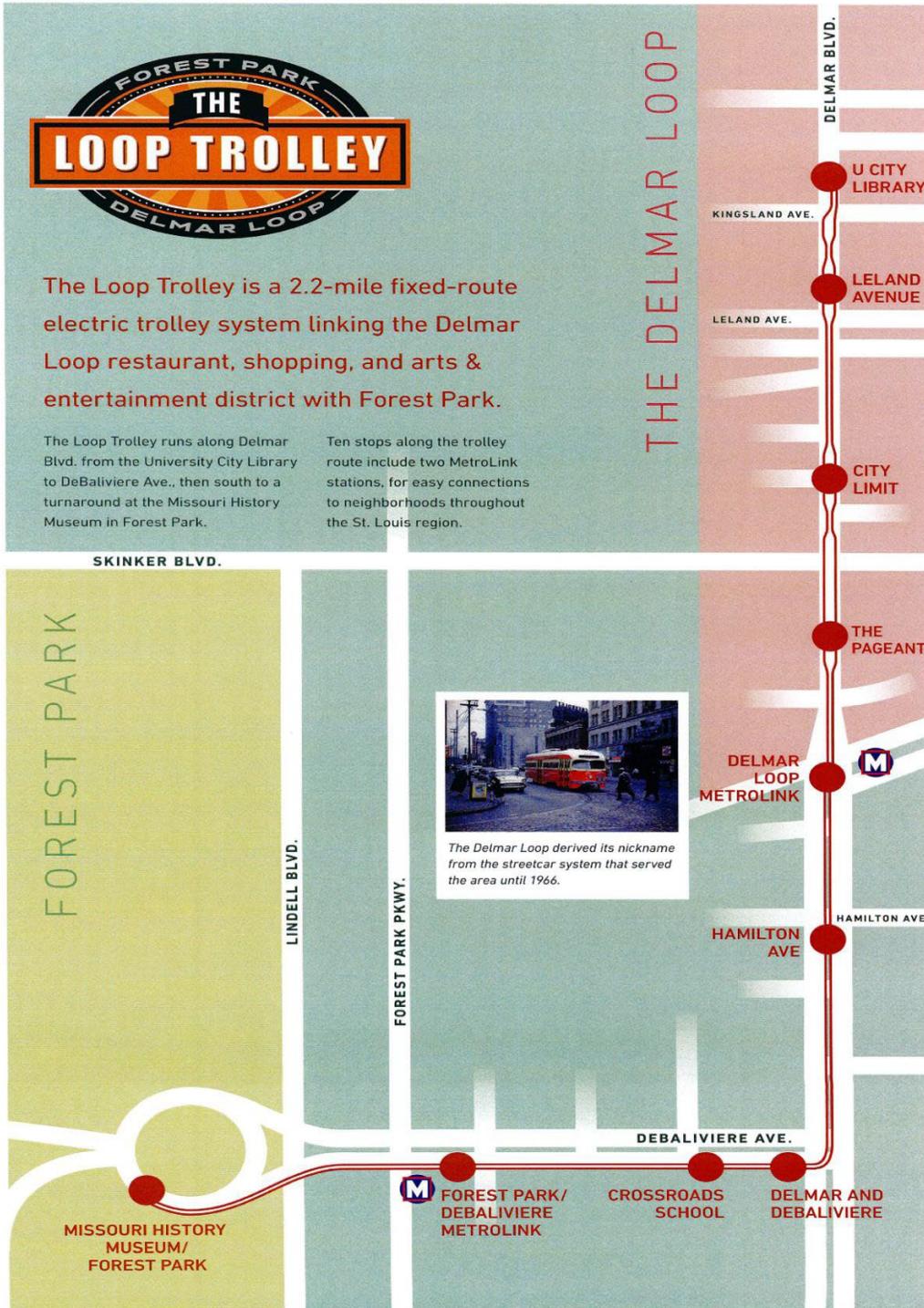
System Reliability:

- 2 breakdowns per month

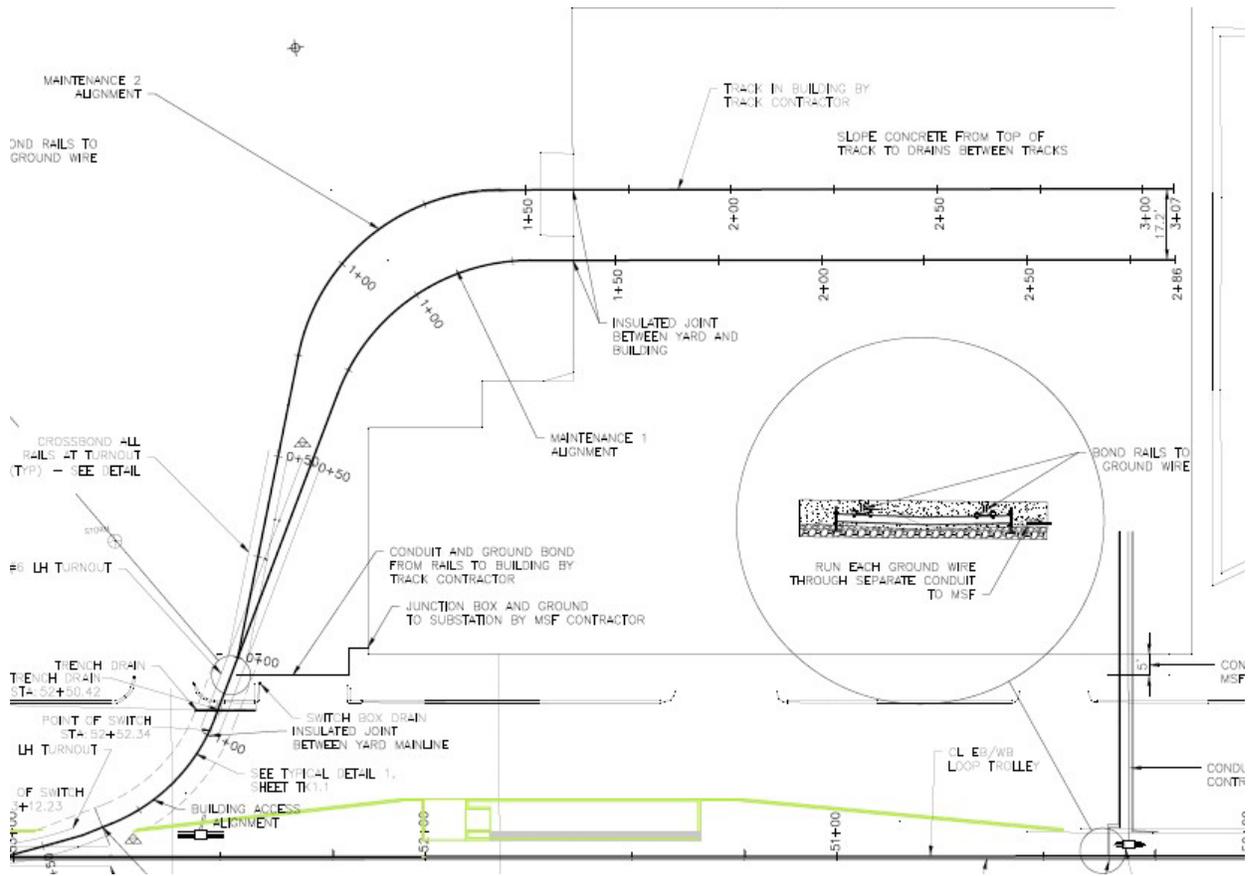
Appendix B: Performance Measures

LTS Safety Performance Measures
Rail: Reportable Accidents
Rail: Yellow Bar Signal Overruns
Rail: Trailed Switches
Rail: Platform Overruns
Rail: Wrong Side Doors
Rail: Work Zone Violations
Rail: Trespassers-locations and frequency
Rail: Near Miss Events-locations and frequency
Rail: Hours of Service Violations
Vehicle Maintenance: Vehicle Inspections
Training: Track Access Training
Training: Safety Training
Safety: Active Safety Campaigns
Safety: Non Vehicular Employee Injuries
Safety: Vehicular Employee Injuries

Appendix C: LTS Alignment



Appendix D: LTS Yard & Shop Model



Appendix E: LTS System Elements – Station Configurations

Station Name	Street Addresses	City	State	Zip Code	Station Configuration			
					At Grade	Below Grade	Elevated	Subsurface
University City Library	6701 Delmar Blvd.	University City	MO	62201	X			
Leland Ave. EB	6630 Delmar Blvd.	University City	MO	62201	X			
Leland Ave. WB	6605 Delmar Blvd.	University City	MO	63102	X			
Limit Ave. EB	6308 Delmar Blvd.	University City	MO	63102	X			
Limit Ave. WB	6261 Delmar Blvd.	University City	MO	63102	X			
The Pageant EB	6144 Delmar Blvd.	St. Louis	MO	63102	X			
The Pageant WB	6161 Delmar Blvd.	St. Louis	MO	63103	X			
Delmar Loop MetroLink	6005 Delmar Blvd.	St. Louis	MO	63103	X			
Hamilton	5875 Delmar Blvd.	St. Louis	MO	63110	X			
Delmar & DeBaliviere	540 DeBaliviere Ave.	St. Louis	MO	63110	X			
Crossroads College Prep	500 DeBaliviere Ave.	St. Louis	MO	63110	X			
Forest Park-DeBaliviere MetroLink	282 DeBaliviere Ave.	St. Louis	MO	63112	X			
Missouri History Museum-Forest Park	DeBaliviere Circle Drive	St. Louis	MO	63112	X			

Appendix F: LTS System Elements - Bridge Locations

The LTS crosses over two (2) bridges, under which the MetroLink tunnels/operates, as follows: DeBaliviere Bridge (Latitude 38.6479, Longitude -90.2853) Delmar Bridge (Latitude 38.6548, Longitude -90.2940)

Appendix G: LTS System Elements – Power Substations

The LTS has one (1) Traction Power Substation located at the MSF, 5875 Delmar Blvd.)

Appendix H: LTS System Elements – Signal Locations

Intersection
Delmar Blvd & Kingsland Ave
Delmar Blvd & Melville Ave
Delmar Blvd & Leland Ave
Delmar Blvd & Westgate Ave
Delmar Blvd & Skinker Blvd
Delmar Blvd & Rosedale Ave
Delmar Blvd & Des Peres Ave
Delmar Blvd & Hamilton Ave
Delmar Blvd & Trolley Ped Signal
Delmar Blvd & Goodfellow Blvd
Delmar Blvd & DeBaliviere Ave
DeBaliviere Ave & Waterman Blvd
DeBaliviere Ave & Pershing Ave
DeBaliviere Ave & Forest Park Pkwy
DeBaliviere Ave & Lindell Blvd (SB Trolley)
DeBaliviere Ave & Lindell Blvd (NB Trolley)

Appendix I: LTS Policies & Procedures Applicable to the LTS and the PTASP/SSP²⁸

- LTS Fire-Life-Safety Plan
- LTS Emergency Familiarization Plan
- LTS Safety & Security Certification Plan
- LTS Council Crest Trolley Vehicle Maintenance Manual
- LTS Emergency Preparedness Program Plan
- LTS Standard Operating Procedures
- LTS Rulebook
- LTS Facilities Maintenance Plan
- LTS Station Stop Maintenance Plan
- LTS TPSS-OCS Maintenance Plan
- LTS Track-ROW Maintenance Plan
- LTS As-Builts and Schematics

²⁸ Some documents are purposely listed without reference to edition date or revision number. This is an intentional omission since many documents change dates and revisions on different frequency cycles and at different times than this Plan.

Appendix J: Abbreviations and Acronyms

Term	Definition
AASHTO	American Association Of State Highway & Transportation Engineers
AC	Alternating Current
ADA	Americans with Disabilities Act
ANPRM	Advanced Notice of Proposed Rulemaking
APTA	American Public Transportation Association
AREMA	American Railway Engineering and Maintenance of Way Association
CAP	Corrective Action Plan
CBRNE	Chemical, Biological, Radiological, Nuclear, Or Explosive
CCTV	Closed-Circuit Television
CFR	Code of Federal Regulations
CIL	Certifiable Items List
CMP	Configuration Management Plan
DAPM	Drug and Alcohol Program Manager
DC	Direct Current
DHS	Department Of Homeland Security
DNR	Department Of Natural Resources
DOO	Director of Operations
DOT	Department of Transportation
EAP	Employee Assistance Program
ED	Executive Director
EMA	Emergency Management Agency
EOC	Emergency Operations Center
EOPs	Emergency Operating Procedures
EPA	The Environmental Protection Agency
EPPP	Emergency Preparedness Program Plan
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLSC	Fire/Life Safety Committee
FOIA	Freedom Of Information Act, 5 U.S.C. Section 552
FRA	Federal Railroad Administration
FSE	Full-scale Exercise
FTA	Federal Transit Administration, An Agency Within The U.S. Department Of Transportation
HAZMAT	Hazardous Materials

Term	Definition
HSEEP	Homeland Security Exercise & Evaluation
HSPD	Homeland Security Presidential Directive
HVAC	Heating Ventilation And Air Conditioning
IC	Incident Commander
ICS	Incident Command System
IED	Improvised Explosive Device
IHA	Interface Hazard Analysis
ISAP	Internal Safety (or Security) Audit Process
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
KV	Kilo-Volt
LTS	Loop Trolley System
LTTDD	The Loop Trolley Transit Development District
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
Metro	The brand name of Bi-State Development Agency's transit operations
MFS	Maintenance and Storage Facility
MoDOT	Missouri Department Of Transportation
MOU	Memorandum Of Understanding
MPH	Miles Per Hour
MPHPS	Miles Per Hour Per Second (Acceleration/Deceleration)
MSDS	Material Safety Data Sheet
NCHRP	National Cooperative Highway Research Program
NEC	National Electrical Code
NFPA	National Fire Protection Agency
NIMS	National Incident Management System
NIPP	National Infrastructure Protection Plan
NTD	National Transit Database
NTI	National Transit Institute
NTSB	National Transportation Safety Board
OCS	Overhead Contact System (Catenary)
ODP	Office Of Domestic Preparedness (Recently changed - See G & T)
OHA	Operating Hazard Analysis
OPS	Operations
PA	Public Address
PAT	Passenger Assistance Telephone
PHA	Preliminary Hazard Analysis
POC	Point Of Contact
PPE	Personal Protective Equipment

Term	Definition
PTASP	Public Transportation Agency Safety Plan
RAP	Rail Activation Plan
ROW	Right Of Way
RTSS	Regional Transit Security Strategy
Rule	A law or order authoritatively governing conduct or action
SAF	Risk Management & Safety
SAP	Substance Abuse Program
SBD	Safe Breaking Distance
SEC	Security
SGR	State of Good Repair
SHA	System (Interface) Hazard Analysis
SMS	Safety Management System
SOP	Standard Operating Procedures
SSO	State Safety Oversight
SSOA	State Safety Oversight Agency
SSP	System Security Plan
SSC	Safety and Security Committee
STARRS	St. Louis Area Regional Response System
TAM	Transit Asset Management
TCRP	Transportation Cooperative Research Program
TRA	Transportation Research Associates
TRB	Transportation Research Board
TSA	Transportation Security Administration
TSO	Office of Transit Safety and Oversight (FTA)
TSGP	Transit Security Grant Program
UASI	Urban Area Security Initiative
UC	Unified Command
USDOT	United States Department Of Transportation
VDC	Volt Direct Current

Appendix K: Glossary

Term	Definition
Absolute Block	A block that must not be occupied by more than one rail vehicle.
Accident [49 CFR Part 674]	<p>Referred to as “FTA-Reportable Event.” An event that involves any of the following:</p> <ol style="list-style-type: none"> 1. A loss of life occurring at the scene or within 30 days following the event; 2. A report of a serious injury to a person; 3. A collision involving a rail transit vehicle; 4. A runaway train; 5. An evacuation for life safety reasons; or 6. Any derailment of a rail transit vehicle, at any location, at any time, whatever the cause.
Accountable Executive	A single, identifiable person who has ultimate responsibility for carrying out the Public Transportation Agency Safety Plan of a public transportation agency; responsibility for carrying out the agency's Transit Asset Management Plan; and control or direction over the human and capital resources needed to develop and maintain both the agency's Public Transportation Agency Safety Plan, in accordance with 49 U.S.C. 5329(d) , and the agency's Transit Asset Management Plan in accordance with 49 U.S.C. 5326 .
Alignment	The horizontal and vertical location or roadway as described by curves and tangents defining its position with respect to the surrounding area.
Anomaly	Deviation from nominal performance which does not cause a significant effect on system performance but does warrant investigation and / or repair.
Aspect	The combination of color and position of a fixed signal, light or lights which provides an indication to the Trolley Operator
Audit	Formal or official examination or review of procedures and verification of Compliance
Authorized Speed	The maximum allowed speed for a section of track
Blue Flag	A portable and clearly distinguishable blue light, flag or marker placed on or near each end of a trolley vehicle to protect it from being moved, energized, or coupled to another trolley vehicle.
Brake, Dynamic	A braking mode that uses traction motors, operating in reverse (as generators) to provide a controlled braking effort.
Brake, Friction	A braking system which applies stopping forces by the use of the brake discs. The brakes are applied by spring action and released by compressed air.
Brake, Full Service	Friction and dynamic braking used by the Operator to slow and /or stop the trolley.
Brake, Maximum	Maximum braking is attained through the use of controlled combination of dynamic, friction and track brakes, in addition to the use of sand placed between the rail and wheels.
Bumping Post	A structure at the end of track(s) placed to prevent trolley vehicles from running off the track
Center Platform	Platform located between two operating tracks where both edges are used for passenger boarding and alighting.

Term	Definition
Checked Redundancy	A characteristic of a system which ensures that the probability of any malfunction is controlled to produce a risk comparable to fail safe.
Chief Safety Officer	An adequately trained individual who has responsibility for safety and reports directly to a transit agency's chief executive officer, general manager, president, or equivalent officer. A Chief Safety Officer may not serve in other operational or maintenance capacities, unless the Chief Safety Officer is employed by a transit agency that is a small public transportation provider as defined in this part, or a public transportation provider that does not operate a rail fixed guideway public transportation system.
Code	A document containing mandatory (shall) requirements on "where or when" an action or feature should be implemented. It may be adopted as law (see "standard")
Collision	A collision is a vehicle or vessel accident in which there is an impact of a [rail] transit vehicle with another vehicle or object, such as (but not limited to) another transit vehicle, a non-transit vehicle, a person, an animal, an object, or a rail vehicle.
Contractor	A person or organization that provides a service for a recipient, sub recipient, employer, or operator consistent with a specific understanding or arrangement. The understanding can be a written contract or an informal arrangement that reflects an ongoing relationship between the parties.
Corrective Action Plan	A plan developed by a Rail Transit Agency that describes the actions the Rail Transit Agency will take to minimize, control, correct, or eliminate risks and hazards, and the schedule for taking those actions. Either a State Safety Oversight Agency or FTA may require a Rail Transit Agency to develop and carry out a corrective action plan.
Corrective Action Plan	A plan that describes the actions it will take to minimize, control, correct, or eliminate hazards, and the schedule for implementing those actions
Critical Defect	A defect that judgment and experience indicate could result in hazardous or unsafe conditions for individuals using or maintaining the product or could result in failure in accomplishment of the ultimate objective.
Critical Function List	A listing of those functions whose failure would cause system degradation below an acceptable level.
Criticality	Assignment of relative importance to hardware or systems.
Crossover	A track structure allowing a train to move from one track to another
Deadman Braking	A retrievable, full-service brake application which occurs upon the release of the deadpan foot-pedal or hand button, or upon depression of the deadman foot-pedal past the second detent.
Deductive Analysis	Analysis of a specific undesired event to determine possible causes of that event (Top down approach "What can cause a specific event to occur?") See Fault Tree Analysis.
Degradation	falling from an initial level to a lower level in quality or performance
Derailleur	A device used to cause a derailment of rail equipment prior to entry into an unauthorized area
Derailment	A non-collision event that occurs when a trolley vehicle unintentionally comes off its rail, causing it to no longer be properly guided on the railway
Design Safety	Safety achieved by the integration of system design characteristics to prevent or minimize the probability to operate in an unsafe manner.
Diverge	A change in trolley movement from one track to another over switches set in a reverse position.

Term	Definition
Double Track	Two Main tracks - one of which operates trains in the normal westbound direction, identified as westbound track #1; the other in the normal eastbound direction, identified as eastbound track #2.
Dwell Time	The time a trolley in revenue service spends alighting and discharging passengers at a stop, including opening & closing doors
Emergency	A situation that is life threatening to passengers, employees, or other interested citizens; or that causes damage to any transit vehicle or facility; or results in the significant loss of services & reduces the ability of the system to fulfill its mission;
Emergency Stop	The stopping of a trolley by an emergency application (mushroom) which, after initiated, cannot be released until the train is stopped.
Employee Station	A place where only employees and other authorized personnel may board and alight trolley vehicles
Equivalent Authority	An entity that carries out duties similar to that of a Board of Directors, for a recipient or subrecipient of FTA funds under 49 U.S.C. Chapter 53, including sufficient authority to review and approve a Start Printed Page 34466recipient or subrecipient's Public Transportation Agency Safety Plan.
Evacuation	Organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas, and their reception and care in safe areas.
Event [49 CFR Part 674]	Any Accident, Incident or Occurrence.
Facing Movement	The movement of a trolley over a switch with points facing toward the oncoming movement.
Fail-Safe Design	A design principle in which each of the elements which make up a system is analyzed to determine the potential consequence of failure of the element, alone or in combination with any or all other elements of the system, to ensure that a failure or a combination of failures will not result in an unsafe condition.
Fail-Safe Safety	A characteristic of a system and its elements, the object of which is to ensure that any fault or malfunction will not result in an unsafe condition
Failure Analysis	The logical and systematic examination of a system to identify and analyze the probability, causes, & consequences of potential and real failure.
Failure Management	Decisions, policies, & planning which identify and eliminate or control potential failures and implement corrective or control procedures following real failures.
Failure Mechanism	The process which results in a part or equipment failure
Failure Mode	The description of the manner in which a failure occurs, and the operating condition of the equipment at the time of the failure
Fatality	A transit-caused death, including suicides, that occurs within 30 days of the transit incident.
Fault Tree Analysis	A deductive analysis procedure which graphically presents undesired events to determine possible causes of that event
Fire Life Safety Committee	Designated personnel from the local authorities, and representatives from the transit agency, who are assigned to resolve issues related to Fire-Life Safety, and others as necessary to handle technical and complex design and / or operational issues.
Fixed Signal	A signal at a fixed location that affects the movement of a trolley.
Flag	A device used for relaying hand signals or to indicate conditions on the mainline, ROW or in the yard. Flags may be made of cloth or lights.

Term	Definition
Flagging Protection	A procedure used to protect work crews, personnel and equipment from trolley and vehicular movements and any other obstructing activities.
Flag person	A Qualified Employee assigned to protect work crews, personnel and equipment working on or near the tracks to ensure the safe passage of trolleys or vehicular traffic.
Frog	A track structure used at the intersection of two running rails to provide support for wheels and passageways for flanges, thus permitting wheels on either rail to cross the other.
FTA	The Federal Transit Administration, an operating administration within the United States Department of Transportation.
G & T	The Office Of Grants And Training Is The Department Within DSL That Assists States, Regional, Local And Tribal Entities To Prevent, Deter And Respond To Acts Of Terrorism; formerly ODP
General Order	An order issued in writing by the Director of Operations which affects the movement of trolleys. A General Order may supplement the Rule Book and has the force of a Rule governing train operations.
Grade Crossing	A vehicular or pedestrian crossing over the track at the top-of-rail level.
Guideway	That portion of the transit line included with right-of-way fences, outside lines of curbs or shoulders, underground tunnels, cut or fill slopes, ditches, and other elements.
Hand Signal	A signal given by the motion or position of a person's hand, arm, flag, or light.
Hazard	Any real or potential condition that can cause injury, illness, or death; damage to or loss of the facilities, equipment, rolling stock, or infrastructure of a public transportation system; or damage to the environment.
Hazard Matrix	A quantitative measure, combining the numerical probability of occurrence with a hazard severity
Hazard Resolution	The analysis and subsequent actions taken to reduce, to the lowest level practical, the risk associated with an identified hazard.
Incident	An event that involves any of the following: a personal injury that is not a serious injury; one or more injuries requiring medical transport; or damage to facilities, equipment, rolling stock, or infrastructure that disrupts the operations of a transit agency.
Individual	A passenger, employee, contractor, or other rail transit facility worker, pedestrian, trespasser, or any person on rail transit-controlled property
Injury	Any physical damage or harm to a person requiring medical attention necessitating transport to a medical facility by ambulance or police vehicle for medical treatment
Investigation	The process of determining the causal and contributing factors of an accident, incident, or hazard, for the purpose of preventing recurrence and mitigating risk.
Line	The right-of-way and facilities over which trolley routes operate.
Lock-Out/Tag-Out	A safety warning method, described by an SOP, used to indicate the traction power substations or other electrical equipment have been de-energized (turned off) for maintenance, repair, or other reasons. Locked out equipment (marked with a lock-out tag) must not be re-energized or turned on, unless properly authorized as defined in the applicable SOP.

Term	Definition
Mainline	Tracks designated for revenue service extending from yard interlocking) to terminal station's) and governed by the authority of the Controller, signal indication or a combination thereof.
Maintenance	All actions necessary for retaining an item in or restoring it to an operable condition
Malfunction	Any anomaly or failure wherein the system, subsystem, or component fails to function as intended
Management Loss Control	An element of the system safety and security management function that evaluates the effects of potential hazards / threats considering acceptance, control, or elimination with respect to the expenditure of available resources.
Maximum Authorized Speed	The highest speed at which trolley vehicles are permitted to operate, subject to safety, civil, operating environment, and other operational considerations that may warrant a further reduction in speed (e.g.: grade crossings, curves, and signals).
Mean Distance Between Failures (MDBF)	The average distance in miles that a trolley vehicle travels before failure of a vital component force removal of the vehicle from service.
National Incident Management System	A Set Of Policies, Rules, Protocols And Common Language That Are To Be Used Nationwide To Plan For, Prepare, Manage & Respond To Critical Incidents
National Public Transportation Safety Plan	The plan to improve the safety of all public transportation systems that receive Federal financial assistance under 49 U.S.C. Chapter 53.
Normal Speed	Maximum authorized speed.
Occurrence [49 CFR Part 674]	An Event without any personal injury in which any damage to facilities, equipment, rolling stock, or infrastructure does not disrupt the operations of a transit agency.
Operating Clearance	A clearance issued daily to each Trolley Operator providing permission to operate on the mainline, subject to the instructions of the Controller and signal indication. A current Operating Clearance must be in the possession of all trains or track cars operating on the mainline or anyone assigned flag person duties.
Operating Right-Of-Way	The area within twenty (20) feet of the centerline of any track on the mainline or yard.
Operational Hazard Analysis (OHA)	Identifies and evaluates hazards resulting from the implementation of operations or tasks performed by persons, considering: operation, test, maintenance, repair, transportation, handling, emplacement or removal of the system
Operational Phase	The post constructing phase where designed project function is achieved and maintenance requirements begin
Operator	That person having direct and immediate control of the movement of a trolley
Operator of a Public Transportation System	A provider of public transportation as defined under 49 U.S.C. 5302 (14)
Oversight Agency	The entity designated by the state to implement 49 CFR Part 659 (MoDOT in MO)
Pantograph	A device affixed to the top of a trolley used to conduct electric power from overhead contact wire.

Term	Definition
Passenger	A person who is on board, boarding, or alighting from a rail transit vehicle for the purpose of travel
Passenger Operations	The period of time when any aspect of LTS's operations are initiated to with the intent to carry passengers
Passenger Service	The transportation of fare paying passengers
Passenger Station	A location where passengers aboard/alight trolleys.
Performance Criteria	Categories of measures indicating the level of safe performance within a transit agency
Performance Measure	An expression based on a quantifiable indicator of performance or condition that is used to establish targets and to assess progress toward meeting the established targets.
Performance Target	A quantifiable level of performance or condition, expressed as a value for the measure, to be achieved within a time period required by the Federal Transit Administration (FTA).
Person	A passenger, employee, contractor, pedestrian, trespasser, or any individual on the property of a rail fixed guideway public transportation system.
Program Standard	A written document developed and adopted by the oversight agencies (MoDOT) that describes the policies, objectives, responsibilities, and procedures used to provide rail transit agency safety and security oversight
Public Transportation Agency Safety Plan	The documented comprehensive agency safety plan for a transit agency that is required by 49 U.S.C. 5329 and 49 CFR Part 673
Qualified Employee	An employee who is properly trained and certified, and possesses the necessary licenses on his/her person required for his/her duties.
Rail Fixed Guideway Public Transportation System	Any fixed guideway system that uses rail, is operated for public transportation, is within the jurisdiction of a State, and is not subject to the jurisdiction of the Federal Railroad Administration, or any such system in engineering or construction. Rail fixed guideway public transportation systems include but are not limited to rapid rail, heavy rail, light rail, monorail, trolley, inclined plane, funicular, and automated guideway.
Rail Transit Agency	Any entity that provides services on a rail fixed guideway public transportation system
Revenue service vehicle	A vehicle used to transport passengers, including a bus, van, car, railcar, locomotive, trolley car, trolley bus, ferry boat, or a vehicle used on a fixed guideway or inclined plane.
Right-Of-Way (ROW)	Land, property, and interests therein where the trolleys operate
Risk	The composite of predicted severity and likelihood of the potential effect of a hazard.
Risk mitigation	A method or methods to eliminate or reduce the effects of hazards.
Root Cause	The underlying reason for the occurrence of a problem; The real cause or origin of an accident or injury
Root Cause Analysis	A technique used to identify the conditions that initiate the occurrence of an undesired activity or state; to find the "root cause"; the process of evaluating, assigning, and measuring root causes.

Term	Definition
Safety	A reasonable degree of freedom from those conditions that can cause injury or death to personnel; damage to or loss of equipment or property; and freedom from danger [Also, in 49 CFR Part 659; Freedom from harm resulting from unintentional acts or circumstances
Safety Assurance	Processes within a transit agency’s Safety Management System that functions to ensure the implementation and effectiveness of safety risk mitigation, and to ensure that the transit agency meets or exceeds its safety objectives through the collection, analysis, and assessment of information.
Safety Certification	An element of the System Safety Program that documents the functional working of the System Safety Program, and provides a documented database from which to validate the active processes necessary to produce a safe system, ready for revenue service. Used on new systems, facilities and extensions to operational properties.
Safety Check List	A designation placed on a system, subsystem, element, component, device, or function denoting that satisfactory operation of such is mandatory to assurance of patron, personnel, equipment or facility safety. Such a designation dictates incorporation of special safety design features
Safety Critical	A designation placed on a system, subsystem, element, component, device, or function denoting that satisfactory operation of such is mandatory to assurance of patron, personnel, equipment or facility safety. Such a designation dictates incorporation of special safety design features
Safety Devices	Protective devices which do not alter the fundamental nature of a hazard but which do control the extent of the hazard in some manner
Safety Management Policy	A transit agency’s documented commitment to safety, which defines the transit agency’s safety objectives and the accountabilities and responsibilities of its employees in regard to safety.
Safety Management System (SMS)	The formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of a transit agency’s safety risk mitigation. SMS includes systematic procedures, practices, and policies for managing risks and hazards
Safety Management System (SMS) Executive	A Chief Safety Officer or an equivalent.
Safety Performance Target	A Performance Target related to safety management activities.
Safety Promotion	A combination of training and communication of safety information to support SMS as applied to the transit agency’s public transportation system
Safety Risk	The assessed probability and severity of the potential consequence(s) of a hazard, using as reference the worst foreseeable, but credible, outcome.
Safety Risk Assessment	The formal activity whereby a transit agency determines Safety Risk Management priorities by establishing the significance or value of its safety risks.
Safety Risk Management	A process within a transit agency’s Safety Management System for identifying hazards and analyzing, assessing, and mitigating safety risk.
Safety Stop	A brake test that must be made within 10 feet after a change in consist has been made, before operating a trolley that has been idle for more than one hour and prior to departing the yard, to ensure the brakes are operating properly.

Term	Definition
Safety Verification	An activity of safety certification that assures a specific procedure has been followed or that specifications have been met
Security	Freedom from harm resulting from intentional acts or circumstances
Serious Injury	Any injury which: (1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received; (2) Results in a fracture of any bone (except simple fractures of fingers, toes, or noses); (3) Causes severe hemorrhages, nerve, muscle, or tendon damage; (4) Involves any internal organ; or (5) Involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.
Side Platform	Platform where only one edge is used for passenger boarding and alighting
Signal	A method or device capable of changing in aspect and conveying visual and /or audible information affecting the movement of a trolley, track car, or other, on-track equipment.
Signal Aspect	An illuminated trolley signal display
Small Public Transportation Provider	A recipient or subrecipient of Federal financial assistance under 49 U.S.C. 5307 that has one hundred (100) or fewer vehicles in peak revenue service and does not operate a rail fixed guideway public transportation system.
Standard	A document or drawing containing mandatory (shall) requirements on "how" an action or feature should be implemented. It may be adopted as law (see code)
State	A State of the United States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, Guam, American Samoa, and the Virgin Islands.
State of Good Repair	The condition in which a capital asset is able to operate at a full level of performance.
Substantial Damage (NTD 2018 Safety and Security Policy Manual)	Per NTD, damage to any involved vehicles, facilities, equipment, rolling stock, or infrastructure that (a) disrupts the operations of the rail transit agency, and (b) adversely affects the structural strength, performance, or operating characteristics of the vehicle, facility, equipment, rolling stock, or infrastructure, requires towing, rescue, on-site maintenance, or immediate removal prior to safe operation.
Substation	A power supply station along the right-of-way that converts high voltage AC to the 860 VDC supplied to the overhead catenary for vehicle propulsion
Subsystem	An element of a system that in itself may constitute a system
Subsystem Hazard Analysis (SSHA)	An analysis applied to some element of the system to identify hazards associated with component failures
Switch Indicator	A device on the switch stand or spindle indicating alignment of a hand-throw switch.
Switch Lock	A lock used to secure a switch handle, electric switch lock, route selector box, etc.
Switch Position	The switch alignment allowing for straight or diverging moves.

Term	Definition
Switch Stand	A device by which a switch is thrown and locked in position.
System	A composite of people (employees, passengers, others) property (facilities and equipment), environment (physical, social, institutional), and procedures (standard operating, emergency operating, and training) which are integrated to perform a specific operational function in a specific environment
System Hazard Analysis	Inductive and deductive procedures in which hazards are identified and analyzed
System Safety	The application of management, engineering principles and techniques to achieve the optimum degree of safety within the constraints of operational effectiveness, time and cost, throughout all phases of the transit system life cycles, by identifying hazards and reducing associated risks
System Safety Analysis	Inductive and deductive procedures in which hazards are identified and analyzed
System Safety Engineering	The application of scientific and engineering principles, criteria, and techniques to identify, eliminate or control system hazards
System Safety Management	An element of management that establishes system safety program requirements and ensures the planning, implementation and accomplishment of tasks and activities to achieve system safety
System Safety Program Plan	A document developed by the rail transit agency describing its safety policies, objectives, responsibilities, & procedures
System Security	The application of operating, technical, and management techniques and principles to the security aspects of a system throughout its life to reduce threats and vulnerabilities to the most practical level through the most effective use of available resources
System Security Plan	A document developed by the rail transit agency describing its security policies, objectives, responsibilities, & procedures
State Safety Oversight Agency	An agency established by a State that meets the requirements and performs the functions specified by 49 U.S.C. 5329(e) and the regulations set forth in 49 CFR part 674 .
Temporary Speed Restriction	A section of track within defined limits through which rail vehicles must operate at a speed indicated on the Operating Clearance, speed sign, or instructions from OCC. This restriction may include work crews operating under Flag Protection.
Temporary Speed Restriction Sign	A sign placed adjacent to the track to indicate the entrance to or exit from a temporary speed restriction.
Test Limits	A section of track designated by the authority of the Dispatcher which allows for system or trolley testing.
Track	The parallel rails of a trolley system
Traction Power Contact Wire	An overhead electrical conductor which provides power to the through direct contact with the pantograph.
Traction Power Off	To turn off electrical power (de-energize) to the catenary, messenger wire, and supporting catenary equipment. This process must be field verified and ground applied by a qualified employee.
Traction Power On	To turn on electrical power (energize) to the catenary, messenger wire, and supporting catenary equipment at which time all devices connected to it must be considered energized and live.
Traction Power System	The substations, feeder cable, contact, messenger, dropper and hanger wires, switch gear, and other equipment interfacing with public utilities or

Term	Definition
	other power sources to provide power for the movement of trolleys and operation of their auxiliary systems.
Traction Power/Catenary	A system of electrified overhead wires in which the contact wire is supported from one or more longitudinal messengers either directly by hangers or by hangers in combination with auxiliary conductors or clamps.
Trailing Movement	The movement of a trolley over a switch whose points face in the direction the trolley is moving.
Transit Agency	An operator of a public transportation system
Transit Asset Management Plan	the strategic and systematic practice of procuring, operating, inspecting, maintaining, rehabilitating, and replacing transit capital assets to manage their performance, risks, and costs over their life cycles, for the purpose of providing safe, cost-effective, and reliable public transportation, as required by 49 U.S.C. 5326 and 49 CFR part 625 .
Turn back	The changing of the direction of a trolley.
Unacceptable Hazardous Condition	A hazardous condition determined to be an unacceptable hazardous condition using the Hazard Resolution Matrix
Unsafe Condition Or Act	Any condition or act that endangers life or property
Warning Devices	Sensors that monitor or detect conditions and provide visible and / or audible alerting signals as desired for selected events.
Wayside	The items that are on or about the track area including tracks, ballast, signals, catenary poles, and other structures or equipment immediately adjacent to the right-of-way
Wheel Stop	A device affixed to the rail at the end of track(s) to prevent rail vehicles from running off the track.
Yard Tracks	Tracks at the Maintenance & Storage Facility used to store, repair, and trolleys or rail mounted equipment.

Appendix L: Reference Documents and Citations

- 49 CFR Part 40 - Procedures for Transportation Workplace Drug and Alcohol Testing Programs
- 49 CFR Part 655 - Prevention of alcohol misuse and prohibited drug use in transit operations
- 49 CFR Part 659 - Rail fixed Guideway systems; State safety oversight
- 49 CFR Part 673 – Public Transportation Agency Safety Plan final rule
- 49 CFR Part 674 - State Safety Oversight
- The Drug Testing Workplace Act of 1988 (Public Law 100-690; Title 41, Chapter 10)
- U.S. Department of Transportation, Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), Millennium Edition
- The Public Transportation System Security and Emergency Preparedness Planning Guide(January 2003); Report Number DOT-FTA-MA-26-5019--03-01; Federal TransportationAdministration; Washington DC
- LTS System Security Plan (SSP)
- Title 7 -DEPARTMENT OF TRANSPORTATION Division 265 - Multimodal Division Chapter9 - Rail Fixed Guideway Systems
- State Safety & Security Oversight Program Standards Manual for Overseeing the Kansas City Streetcar and the Loop Trolley System
- MIL – STD-882E; 11 March 2012; Dept. of Defense; (Standard Practice for System Safety)
- Hazard Management Program Requirements Clarification Letter; Sept. 6, 2007; Office of Safetyand Security; Federal Transit Administration
- Collision Hazard Analysis Guide: Commuter and Intercity Passenger Rail Service; October 2007; Office of Safety; Federal Railroad Administration; Washington D.C.

Appendix M: Organizational Charts

