RESOLUTION NO. 2018-25

APPROVING THE AUTHORITY'S 2018 RAIL SYSTEM SAFETY PROGRAM PLAN (RSSPP)

WHEREAS, the Board of Trustees has been granted the power and authority, pursuant to Chapter 306 of the Ohio Revised Code, to manage and conduct the affairs of the Greater Cleveland Regional Transit Authority (GCRTA); and

WHEREAS, the Authority's 2018 Rail System Safety Program Plan (RSSPP) will serve as the Authority's interim Rail Agency Safety Plan as required by the Federal Transit Administration; and

WHEREAS, under federal regulation, 49 CFR Part 674, the FTA has set forth requirements and guidelines for a state program standard; and

WHEREAS, as set forth in the regulation, the Authority governing board is required to review and approve each transit agency's annual rail safety plan; and

WHEREAS, in February 2018, the Rail System Safety Program Plan (RSSPP) was emailed to all members of the Board of Trustees; and

WHEREAS, on February 6, 2018, the Audit, Safety Compliance & Real Estate Committee considered the RSSPP and recommended approval to the full Board of Trustees.

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees of the Greater Cleveland Regional Transit Authority, Cuyahoga County, Ohio:

Section 1. That the Authority's 2018 Rail System Safety Program Plan (RSSPP), which is in the form of the attachment hereto, is approved, and the CEO, General Manager/Secretary-Treasurer is hereby authorized to submit the update to the Federal Transit Administration.

Section 2. That this resolution shall become effective immediately upon its adoption.

Attachment: 2018 Rail System Safety Program Plan (RSSPP)

Adopted: February 20, 2018

President

Attest:
CEO, General Manager/Secretary-Treasurer

The Greater Cleveland
Regional Transit Authority

RAIL SYSTEM SAFETY PROGRAM PLAN

ISSUED – JANUARY 2018

RAIL SSPP REVISIONS

EDITION	DATE DRAFTED	EXECUTIVE SAFETY COMMITTEE REVIEW	ODOT APPROVAL
1st Edition	1990	Combined Bus & Rail	
2nd Edition	1997	Separated Bus & Rail	
3rd Edition	2000	May 2000	August 2001
4th Edition	January 2004	January 2004	July 2004
5th Edition	January 2005	February 2005	March 2005
6th Edition	April 2006	April 2006	April 2006
7th Edition	July 2007	October 2007	December 2007
8th Edition	August 2008	December 2008	January 2009
9th Edition	September 2009	December 2009	December 2009
10th Edition	October 2010	January 2011	January 2011
11th Edition	November 2011	January 2012	March 2012
12th Edition	December 2012	January 2013	January 2013
13th Edition	December 2013	March 2014	January 2014
14th Edition	December 2014	December 2014	December 2014
15th Edition	December 2015	January 2016	February 2016
16th Edition	December 2017	January 2017	February 2017
17th Edition	December 2018	January 2018	February 2018

THINK SAFETY

RTA

WORK SAFELY

RAIL SYSTEM SAFETY PROGRAM PLAN (17th edition December 2017)

SIGN-OFFS

DOCUMENT RELEASE NOTICE
Control No.

RELEASE DATE:
February 1, 2018

DOCUMENT STATUS:

- ☐ NEW ITEM
- ☐ REVISED
- ☐ INSERTS
- ☐ CORRECTED

DESCRIPTION OF RSSPP: The Rail System Safety Program Plan (RSSPP) is a top-level guidance document that has been prepared for and approved by The Greater Cleveland Regional Transit Authority

APPROVALS

- ☑ DGM - Legal Affairs
- ☑ DGM - Operations
- ☑ DGM – Human Resources
- ☑ DGM- Engineering & Project Management
- ☑ Director of Security/Chief of Police
- ☐ District Director – Rail
- ☐ Director of Service Management

APPROVALS

- ☐ CEO/General Manager
- ☐ Director of Safety
- ☐ Director of Engineering & Project Development 1-17-18
- ☐ Acting Director of Fleet Management
- ☐ Director of Training and Employee Development
- ☑ Director of Service Quality

Ohio Rail Safety and Security Oversight Program
Ohio Department of Transportation

February 5, 2016

Mr. Joseph Calabrese
Chief Executive Officer
General Manager/Secretary-Treasurer
Greater Cleveland Regional Transit Authority (GCRTA)
1240 West Sixth Street
Cleveland, Ohio 44113

GCRTA 2015 Annual Report/Certification of Compliance

Dear Mr. Calabrese:

This letter confirms receipt of GCRTA's 2015 Rail Safety and Security Internal Audit Summary Reports (Received on 1/21/2016 and 1/29/2016). We acknowledge that these documents serve as your Annual Internal Safety and Security Review Report submittal. We confirm that these reports satisfy your annual reporting requirements and we approve the documents as submitted.

These Annual Certification letters also provide confirmation that GCRTA is in compliance with the safety and security program processes as described in the updates for 2016 of the Rail System Safety Program Plan (RSSPP) and System Security Plan (SSP).

Sincerely,

Brian Kummerer
ODOT SSO Program Manager

cc: Chuck Dyer and Dave Seech, ODOT
Sheryl King Benford, GCRTA General Counsel
Anthony Garofoli, GCRTA Internal Audit
Rich Czeck, GCRTA Director, Office of Safety
John P. Joyce, GCRTA Chief, Transit Police
Kevin Chandler, Donald Eldredge and Josh Gearhardt, Vital Assurance

DISTRIBUTION LIST

Name	Department
Joseph A. Calabrese	CEO, General Manager/Secretary-Treasurer
Linda Krecic	Media Relations Manager
Sheryl King Benford	Deputy GM - Legal Affairs
Richard Czeck	Director - Safety
Steven Peganoff	Manager - Safety
Kevin Case	Transportation Safety Specialist
Vickie Chapman	Transportation Safety Specialist
Cynthia Boyd	Safety Business Analyst
Carl Brown	Safety Awareness Coordinator
Anthony Garofoli	Executive Director - Internal Audit
Flounsay Caver,	Deputy GM - Operations
Nicholas Biggar	Acting District Director - Hayden
Oliver Draper	District Director - Paratransit
Catherine Eaton	District Director - Triskett
Sean Thompson	District Director - Rail
Teresa Muti	Manager - Power and Way Rail
Casey Blaze	Manager – Rail Equipment
Jack Barnett	Manager-Transportation
Bruce Hampton	Deputy GM - Human Resources
Joel Freilich	Director - Service Management
Anthony Richardson	Acting Director - Service Quality
Robert Mercer	Manager – Service Quality Rail
George Fields	Director – Training/Employee Development
Michael J. Schipper	Deputy GM - Engineering & PM
Daniel Dietrich	Acting Director - Fleet Management
Judy Lincoln	Director - Risk Management
John P. Joyce	Director - Security/Chief of Police
Joseph Shaffer	Director - E&PD
Raj Gautam	Deputy GM- Finance and Administration
Melinda D'angelo	Director - Procurement
Steve Bitto	Director-Marketing and Communications
Terry Boylan	Manager-Asset & Configuration Mgt.
Michael Lively	Manager-Intelligent Transportation Systems
Robert Prince	Manager-Rail Facilities

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY
RAIL SYSTEM SAFETY PROGRAM PLAN

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SECTION 1 POLICY STATEMENT

1.1 POLICY STATEMENT

January 2018

The Greater Cleveland Regional Transit Authority (GCRTA) was organized with the mission to provide safe, reliable, clean, and courteous Public Transportation. Safety is a primary concern that affects all levels of GCRTA activities including operations, maintenance, planning, design, construction, procurement, testing, and training for all modes of transportation. Therefore, all GCRTA personnel are charged with the responsibility of promoting the safety and security of passengers, employees, and the general public who come in contact with GCRTA transportation systems.

The safety and security of our customers and our employees is a core value of the GCRTA. All employees and contractors of the GCRTA are expected to conduct their duties in a safe manner that will prevent and minimize injuries and property damage throughout GCRTA's operations.

Each employee must operate safely; use equipment, tools and materials properly; and be familiar with work rules and procedures for his area of responsibility. Each employee shall take an active role in the identification and reporting of hazards. Supervisors shall actively participate in the assessment and resolution of hazards and shall fully cooperate with the safety staff to eliminate or control hazards in all areas of GCRTA transportation systems.

GCRTA Management will provide leadership in promoting safety throughout the organization. The CEO/General Manager and the executive staff will be continually and directly involved in formulating, reviewing and revising the Safety Policy and safety goals and objectives. GCRTA Management will provide the authority, support and resources to establish and maintain high safety standards in operations, maintenance and training throughout the GCRTA.

The Director of Safety is authorized and responsible for the implementation and administration of the Rail System Safety Program Plan. Every GCRTA employee and contractor shall comply with the provisions of the Rail System Safety Program Plan and shall fully cooperate with the safety staff in achieving GCRTA's safety goals and objectives.

Joseph A. Calabrese
CEO/General Manager

RTA SAFETY CULTURE

Our safety culture reflects the attitudes, beliefs, perceptions, and values that our employees share regarding safety issues. This collective culture determines RTA's commitment to and practice of safety principles. Our mission is clear: to provide safe, clean, reliable and courteous public transportation.

Our methods to improve our safety culture are: to collect the right kind of information, analyze and disseminate that information, learn from our mistakes, treat our employees fairly and with respect.

In short, RTA's safety culture is all of the following:

- **A training culture:** Employees are selected, trained and re-trained on safety principles, expected behaviors and the priority that is placed on safety for our employees, customers, and the general public.
- **A reporting culture:** Employees are encouraged to report safety issues in a confidential manner without fear of retribution.
- **An informed culture:** Leading indicators of safety performance are collected, analyzed, and disseminated.
- **A learning culture:** As a result of safety trends or incidents, processes and practices are changed and outstanding safety issues are resolved. Employees are trained to ensure competency in their disciplines.
- **A just culture:** Employees are held accountable for reckless or deliberate actions, but they are not unduly punished for unintentional errors.[1]

Greater Cleveland Regional Transit Authority (RTA) is comprised of fixed route bus, bus rapid transit, para-transit, heavy rail and light rail modes of transportation. Although each system has unique equipment, operating environments, and challenges, all can benefit from strengthening of our organizational safety culture.

RTA commits to continually improve our understanding of the role of human error in accidents and near-mishap scenarios. The improved knowledge is put to work by refining and strengthening operational and maintenance policies, practices, training and procedures to manage and mitigate safety risks.

RTA commits to senior leadership and front-line involvement, management accountability, and continual safety process improvements derived from data-driven risk assessments. RTA shows safety's priority at the Safety Committee of the Board of Trustees, the Executive Safety Committee, District Safety Councils, numerous safety recognition programs (such as, pins, patches, and plaques awarded for safe driving, district quarterly safety awards and annual awards banquet) and at Transit Stat report-outs. Safe, clean, reliable and courteous public transportation requires we commit ourselves to these actions.

I'm committed, I want you to join with me!

Joseph Calabrese, GM/CEO

12/31/15

[1] Reason, J. (1997). *Managing the Risks of Organizational Accidents*, Ashgate Publishing, Burlington, VT.

SECTION 2 OVERVIEW

2.1 AUTHORITY

The Rail System Safety Program Plan (RSSPP) is a top-level guidance document. The RSSPP was prepared for, and approved by, the Greater Cleveland Regional Transit Authority (GCRTA) CEO/General Manager and complies with the requirements of the Ohio Revised Code Section 5501.56, System Safety Program Standard and 49 CFR 674, State Safety Oversight. *The RSSPP will act as the interim Agency Safety Plan until publication of 49 CFR 673 Final Rule.*

The Board of Trustees is legally vested by Ohio State Statute with all the powers and authority granted to the GCRTA. The GCRTA was created in December 1974, pursuant to the Revised Code of the State of Ohio by ordinance of the Council of the City of Cleveland, and by resolution of the Board of County Commissioners of Cuyahoga County, and became operational in 1975. The GCRTA is an independent political subdivision of the State. It has its own taxing power, and is not dependent upon local funding from the Cuyahoga County, the City of Cleveland or any other political subdivision. The GCRTA's territorial boundaries are coextensive with the County, which is in the former Cleveland, Ohio Standard Metropolitan Statistical Area (SMSA).

The legislation and Memoranda establishing the GCRTA provide for a ten-member Board of Trustees, consisting of:

- Four members appointed by the Mayor of Cleveland, with the advice and consent of the City Council

- Three members elected by the Mayors and City Managers of municipal corporations other than Cleveland, and by Chairmen of the Boards of Trustees of townships located within the county

- Three members, at least one of which must be a resident of the City, appointed by the Cuyahoga County Commissioners

The Board of Trustees, in its policy-setting capacity has charged the CEO/General Manager with the responsibility and authority to formulate and implement a Safety Policy for the GCRTA

The GCRTA Safety Policy establishes the safety philosophy of the GCRTA, identifies the extent of commitment to safety, and designates and directs responsible individuals to carry out the RSSPP. The Safety Policy with the CEO/General Manager's enabling signature, provides the basis from which safety rules and applicable procedures are carried out and empowers the GCRTA Safety Department to develop, implement, administer and maintain a comprehensive, integrated, and coordinated Rail System Safety Program Plan, including auditing the GCRTA for compliance with the Plan.

2.2 PURPOSE

The Rail System Safety Program Plan establishes the GCRTA safety philosophy and provides the means for its implementation and administration throughout the operational life cycle of the GCRTA transportation systems. This Rail System Safety Program Plan is developed to achieve the following purposes:

- Establish a System Safety Program for the rail transit system
- Provide a medium through which the GCRTA can display its commitment to safety
- Provide a framework for the implementation of rail system safety policies and the achievement of rail system safety goals and objectives
- Satisfy Federal Transit Administration (FTA) and the Ohio Department of Transportation (ODOT) requirements, 49 CFR Part 674 and ORC Section 5501.56, respectively
- Meet accepted rail transit industry safety standards

Specifically, the RSSPP defines the relationship between System Safety activities and the rail transit operational systems and extensions through:

- Establishing hazard identification, assessment, prevention and control methods, and processes used to maximize the safety of passengers, employees, emergency response personnel, and the general public that come in contact with GCRTA rail transit system

- Specifying the provisions for achieving an optimum degree of safety within the constraints of operational effectiveness, time, and cost through the application of system safety management and engineering principles whereby hazards are identified and risk minimized throughout all phases of the system life cycle for the rail transit system

- Specifying provisions for the coordinated effort of all GCRTA divisions and departments under the guidance of the Safety Department to accomplish the following:

    - Protect and preserve property
    - Prevent and reduce the frequency of accidents, injuries and incidents
    - Control and minimize the effects of accidents and incidents
    - Maintain and improve the safe operation of GCRTA's Rail District operations
    - Provide for the occupational safety and health of GCRTA employees
    - Provide for a GCRTA internal safety audit program to identify, trace, and resolve safety program deficiencies

2.3 SCOPE

The scope of the RSSPP encompasses the management and technical system safety activities performed during the entire life cycle of the GCRTA rail transportation systems.

The scope of the RSSPP:

- Applies to all GCRTA Divisions, Districts and Departments involved in the delivery, planning, design, and construction of rail services
- Encompasses all activities, which involve planning, design, construction, procurement, testing, training, operations and maintenance of GCRTA rail operations
- Applies to new systems and to the existing operational systems. It addresses the areas of System Safety, Occupational Safety and Health, Construction Safety and Fire Protection.
- Charges each Division Deputy General Manager, Executive Director, Department Director, Manager and Supervisor with responsibility for the implementation and success of the System Safety Program, in their respective areas of responsibility.
- Requires coordination, integration, communication and cooperation among all managers, Divisions, Departments and line and staff organizations for implementation, internal review and enforcement of this Plan.
- Encompasses all fixed facilities, systems, revenue and non-revenue vehicles and employee activities, and applies to everyone in contact with GCRTA rail operations
- Includes interfaces with local, state and federal governmental bodies and citizen groups regarding safety

2.4 GOALS

The primary goal of the Rail System Safety Program is to plan, design, construct, test, and operate a transportation system that attains an optimum level of safety, meeting or exceeding the norm of other transit systems in the United States. This goal is reflected in the planning design, construction, operation, and maintenance phases. The System Safety Program Plan is directed toward achieving this goal within GCRTA overarching strategic goals and constraints.

2.5 OBJECTIVES

The objectives of the Rail System Safety Program are to develop, implement, and maintain a safety effort comprised of strategies and tactics to improve the safety performance of GCRTA Rail Operations by defining safety-related activities, management plans and controls, and a process for monitoring and assuring that:

- System Safety, Occupational Safety and Health, Construction Safety, and Fire Protection considerations are incorporated in facilities, equipment and processes.

- Hazards associated with GCRTA systems are identified, evaluated, and eliminated or minimized to obtain an acceptable level of safety.

- A safety philosophy is integrated within the GCRTA that emphasizes proactive and preventive measures, rather than reactive and corrective measures to eliminate unsafe conditions.

- System Safety, Occupational Safety and Health, Construction Safety and Fire Protection considerations are coordinated with other activities of the GCRTA.

- Safety provisions for GCRTA personnel meet or exceed those required by local, state and federal regulatory authorities.

- During all construction, the highest safety standards and practices for major public works projects are upheld, and the public is not exposed to unacceptable safety hazards.

- The operational systems meet all applicable safety-related codes and regulations promulgated by appropriate local, state and federal authorities and industry associations.

2.6 MANAGEMENT GOALS AND OBJECTIVES

The following management goals and objectives are aimed at achieving the highest level of safety possible:

- Eliminate or minimize the probability of accidents occurring during the performance of GCRTA activities in rail operations through proactive steps of safety tests and inspections; hazard identification, assessment, and resolution; safety training and certification; safety engineering; and implementation and enforcement of safety procedures

- Minimize the severity of all accidents through proactive steps of design (or redesign) by minimizing hazards through elimination when possible, incorporation of safety devices, warning devices, procedures and training

- Eliminate or minimize both the severity and probability of future accidents through the collection and analysis of safety data and investigation of all accidents/incidents in GCRTA transportation systems

- Identify, document and eliminate or control causes of accidents to GCRTA employees, passengers, and the general public and to property

- Develop and adhere to safety and operating rules and applicable procedures that encompass normal, abnormal (failure recovery) and emergency conditions for all GCRTA Rail Operations activities

- Maintain safe and effective operations and maintenance in all elements of GCRTA transportation systems, encompassing equipment, facilities, personnel, procedures, and the environment

- Maintain a working environment that meets or exceeds all government and industry occupational safety and health standards and practices

- Instill safety awareness throughout GCRTA rail operations by means of employee training, discipline, and incentive programs; public outreach; adequate precautions, visual and audible warning devices and signage to enhance employee and passenger safety

- Enhance effective response by GCRTA and local fire and rescue emergency response personnel to all GCRTA Rail Operations emergencies

The CEO/General Manager is vested with the primary responsibility for achieving the management goals and objectives. Deputy General Managers (DGM) are responsible for ensuring GCRTA safety policies are adhered to, developing safety performance goals, and for holding Department directors and managers accountable for the safety performance within their respective departments. Department directors and managers are directly accountable and responsible for safety performance within their functional area. This responsibility includes determining and implementing countermeasures required to counteract safety hazards and problems. Likewise, supervisors are accountable for the safety performance of all personnel and equipment under their supervision and for reporting all accidents and incidents to the Safety Department.

2.7 2018 MANAGEMENT, OPERATIONS AND SAFETY OBJECTIVES

Aggressively Support Safety Initiatives

- In partnership with Safety, continue efforts to instill a Safety Culture orientation within all Operations division organizational units.

- In partnership with Safety, continue to strengthen the District Safety Committees with emphasis on employee acknowledgement and understanding that a safe work environment begins with them. Employees must become actively involved in all safety awareness and improvement programs.

- Promote/Enforce a Near Mishap Reporting program that requires operators, supervisors and other RTA employees to report all incidents involving trains that could be considered a “near miss.”

- Maintain the Safety Training Observation Program for managers and supervisors.

- Aggressively enforce initiatives/rules designed to reduce on the job injuries (OJI).

- Ensure compliance with all State Rail Safety Oversight Agency regulations.

- Implement and Enforce the Inspection and Maintenance Manual and ensure all required rail personnel are Technically Competent.

- Complete implementation of all outstanding Rail Safety Audit recommendations that are funded in 2018.

- Continue to conduct rail safety ride checks in accordance with established procedures and frequencies.

- Encourage Operations Division personnel to recognize and nominate candidates for Champions of Safety Awards.

- Continue to support Safety in District facility evacuation drills and other Safety related programs/activities.

- Promote/encourage all employees to identify and report hazards and/or potential hazardous conditions in the workplace and operating environment without fear of reprisals. Remove/mitigate identified hazards.

- Work to formally adopt Safety Management Systems (SMS) as the accepted approach to transit safety.

Aggressively Support and Participate in TransitStat

- Continue work with OMB and Audit to openly and objectively define, measure, analyze and control our business environment to improve productivity and performance in all Operations Division organizational units.

- Focus in 2018 will be on continuous improvement.

Rail Infrastructure Rehabilitation

- Continue track/tie replacements.
- Continue signal improvements.
- Continue catenary system improvements.
- Continue to replace defective switch components.
- Continue replacement of insulated joints.
- Improve track drainage system wide where RTA owns jurisdiction.
- Continue vegetation control.

CITME/Ultramain System

- Ensure that Maintenance Plans for all equipment and support facilities and systems are developed and loaded in Ultramain.
- Ensure that all organizational units are effectively and productively utilizing the Ultramain system. Continue implementation of improvement identified through Internal Audit and Maintenance Planners (Equipment and Facilities) compliance audits of both equipment and facility maintenance functions.
- Continue utilizing preventative maintenance (PM) tracking reports to improve PM management and work scheduling.
- Ensure compliance with Configuration Management Objectives.

Rail Track/Wheel Rehabilitation Project

- Conduct annual track geometry profiling.
- Procure a consultant to update Rail-Wheel Interface Study.
- In collaboration with Rail and Engineering to develop outsource maintenance solutions for mid-size to small projects.

SECTION 3 MANAGEMENT STRUCTURE

3.1 OVERALL MANAGEMENT STRUCTURE

A Board of ten Trustees governs the Greater Cleveland Regional Transit Authority. Reporting to the Board of Trustees is the CEO/General Manager. The CEO/General Manager oversees the day-to-day operations with the assistance of the Deputy General Managers. The CEO/General Manager along with the Deputy General Managers and Executive Directors comprise the Executive Management Team (EMT).

Five Division Heads, serving as Deputy General Managers (DGMs), two Executive Directors, and a Director report directly to the CEO/General Manager.

The DGMs that report to the CEO/ General Manager head the following Divisions:

- Operations
- Engineering and Project Management
- Finance & Administration
- Human Resources
- Legal Affairs

The Executive Directors that report to the CEO/General Manager head the Office of External Affairs and the Office of Management and Budget.

The Director of Marketing and Communications also reports directly to the CEO/General Manager.

The Executive Director of Internal Audit reports to the GCRTA Board of Trustees.

The GCRTA Rail District Organization Chart shown in Appendix A depicts the top-level structure and reporting relationships of the GCRTA Rail District Organization. The following subsections provide a brief description of the divisions and key departments that have an impact on System Safety. A detailed description of safety-related responsibilities and tasks of GCRTA Departments is included in Section 5 - System Safety Tasks, and Safety-related Activities of Other Units in this Plan.

3.2 SAFETY DEPARTMENT ORGANIZATION

Appendix B depicts the current Safety Department Organization showing the Director of Safety reporting to the DGM for Legal Affairs/Chief Safety Officer. Supporting the Director of Safety are the Manager of Safety, two Transportation Safety Specialist II, one Transportation Safety Specialist I (vacant), one Safety Business Analyst, one part time Safety Awareness Coordinator, and one clerical staff.

3.2.1 DIRECTOR OF SAFETY

The Director of Safety is responsible for directing the operations within the Safety Department. The Director of Safety designs and implements initiatives to support safety guidelines and GCRTA operations. Responsibilities also include evaluating safety processes and issues at all levels, and formulating solutions to improve system safety effectiveness. The Director of Safety directs Safety personnel, directs the investigation of accidents and evaluates GCRTA facilities for compliance with federal, state and local safety standards. The Director oversees the implementation of the GCRTA Rail System Safety Program Plan, including the Safety and Security Certification Program. The Director of Safety promotes safety campaigns and safety award/incentive programs in an effort to reduce passenger, employee and vehicle accidents, injuries and illnesses. The Director of Safety Department facilitates the activities of the Executive Safety Committees. The Director also:

- Serves as the principal GCRTA liaison with the State Safety Oversight Agency of the Ohio Department of Transportation
- Strives to create a safety culture and coordinates safety activities of the Districts, department directors, and division managers to ensure implementation of safety activities throughout the GCRTA
- Participates in various safety committees including District Safety Committees and the Executive Safety Committee
- Analyzes and interprets statistical data concerning occupational illnesses, injuries and accidents to identify trends and recommend appropriate corrective actions
- Conducts studies to determine measures or programs needed to prevent/reduce workplace injuries and illnesses
- Conducts root cause analyses of incidents and collisions
- Develops recommendations from root cause analyses and tracks corrective actions to closure
- Participates in inspections and audits
- Participates in activities of related safety and transit professional organizations so as to keep abreast of safety program developments and benchmark against peer organizations
- Coordinates with other GCRTA Departments in order to integrate the safety component in equipment, facilities and processes
- Coordinates with the Training Department to implement safety training programs and to coordinate the incorporation of safety concepts and information in the Rail District training programs
- Works with Human Resources to assure that safety is encompassed in the hiring and recruitment practices of the GCRTA
- Monitors GCRTA compliance with federal, state and local environmental laws, OSHA and engineering standards and regulations
- Administration of the Safety and Security Certification Program

3.2.2 MANAGER OF SAFETY

The Manager of Safety is responsible for developing overall safety plans for the GCRTA, as well as specific procedures and manuals. The Manager of Safety is responsible for developing safety performance standards, auditing adherence to these standards, and providing the information learned to the appropriate members of management. In addition, the Manager of Safety is responsible for:

- Providing guidance and input on training matters of occupational safety, health and fire protection to all Rail District Departments
- Overseeing the hazardous materials
- Overseeing fire protection and occupational safety and health data with the Transportation Safety Specialists
- Overseeing fire protection audits throughout GCRTA departments for all GCRTA transportation systems, facilities, equipment, personnel and procedures
- Tracking status of safety critical open items
- Tracking corrective actions until closed

3.2.3 TRANSPORTATION SAFETY SPECIALISTS

The Transportation Safety Specialists are responsible for system safety functions for rail systems including, but not limited to:

- Design reviews and incorporation of safety requirements into rail system elements contract documents
- Implementation and enforcement of the RSSPP with Rail District Departments and other GCRTA Departments
- Occupational safety and health and fire safety inspections and audits for the Rail District Departments
- Fire prevention emergency drills for all GCRTA transportation systems
- Review of rail operations and maintenance reports for safety impact and hazard identification
- Incorporation of safety requirements into operating plans, procedures, and training for the rail system
- Guidance and input on rail safety matters in training programs for GCRTA departments
- Participation on safety committees and boards on the behalf of the Director of Safety
- Defining and proposing required safety policies, plans, rules and procedures for the rail system
- Maintenance of the Rail System Safety Program Plan
- Safety inspections and audits throughout GCRTA departments related to rail systems facilities, equipment, personnel and procedures
- Participation in department safety committee meetings for the rail system
- Routing safety data and identified hazards for review and analysis
- Investigation of rail system accidents
- Participation in rail emergency drills

3.2.4 SAFETY AWARENESS COORDINATOR

Coordinates all aspects of public outreach, employee awareness and GCRTA safety sponsored outings for bus, rail, paratransit and non-revenue vehicle operations. Performs GCRTA efficiency audits and field observations. Assists Operations and Marketing Departments in public outreach meetings and events. Distributes safety related brochures and information to general public through direct and indirect contact with the general public. Coordinates, conducts and documents building evacuation drills. Assists the Safety Department with miscellaneous duties upon assignment by the Manager and Director of Safety. Practices safety precautions and measures at all times. Promotes a safe and secure atmosphere, follows all safety and security rules and perform other related duties as assigned.

3.2.5 SAFETY BUSINESS ANALYST

Coordinates the OSHA Recordable information for all GCRTA. Serves as an advisor to local safety committees and supports executive safety committee meetings with safety information updates. Analyzes and interprets statistical data concerning occupational illnesses, injuries and accidents to identify trends and recommend appropriate corrective actions. Facilitates the tracking status of safety critical open items and corrective actions to closure. Coordinates Hazard Reporting, Performance Measures, Job Hazard Analysis, Toolbox Sessions, STOP observations and Analysis of Environmental Information. Performs audits throughout GCRTA departments related to rail system facilities, equipment, personnel and procedures. Performs Data Analysis for the Safety Department and assists with accidental data to develop recommendations for improvement.

3.3 SAFETY COMMITTEES

Safety committees within GCRTA consist of an Executive Safety Committee, the Rail Oversight Committee, and several District Safety Committees.

These groups are intended to bridge line and staff boundaries so that multi-departmental safety concerns may be dealt with effectively.

3.3.1 EXECUTIVE SAFETY COMMITTEE

The scope of the Executive Safety Committee encompasses the entire organization of the GCRTA. The Executive Safety Committee is responsible for formal reviews and disposition of safety concerns, which cannot be satisfactorily resolved by individual departments because of cost or authority reasons. The objective of the Executive Safety Committee is to provide a focal point to collect and analyze relevant information in order to resolve major safety concerns and to significantly improve the GCRTA safety performance record.

The Executive Safety Committee develops procedures necessary to formulate meaningful resolutions to unsafe conditions and safety concerns. At a minimum, the committee conducts meetings every month and at other times, as required, to address urgent system safety matters.

The Executive Safety Committee has the authority to request, as applicable, employees to provide information that could improve the safety of the system. The requests for employee participation in Committee meetings or investigations are conducted in accordance with approved GCRTA policies and procedures.

The Executive Safety Committee interfaces with all GCRTA departments. The Executive Safety Committee is provided with minutes, reports and other information pertaining to the Rail Oversight and the District Safety Committees' activities and with Safety Department analyses, reports, and data to support Executive Safety Committee activities.

The Deputy General Manager – Legal Affairs functions as the Chair of the Committee and the Director of Safety is designated as the Vice Chair of the Committee.

The Executive Safety Committee consists of the following members:

- Deputy General Manager – Legal Affairs – Chair
- Director of Safety – Vice Chair
- Safety Department Administrative Assistant
- Deputy General Manager – Operations
- Executive Director – Office of Management and Budget
- Manager of Safety
- Transportation Safety Specialists
- Safety Business Analyst
- Safety Awareness Coordinator
- Director - Engineering and Project Development
- Director - Fleet Management
- Director - Procurement
- Director - Risk Management
- Director - Security/Chief of Police
- Director - Service Management
- Director - Service Quality
- Director - HR
- District Director – Hayden
- District Director – Paratransit
- District Director – Rail
- Asst. Director – Rail District
- District Director – Triskett
- ATU – Local 268, President

The Committee and its members have the authority to designate other attendees as necessary to ensure that adequate representation is available for the conduct of meetings. Recommendations requiring CEO/General Manager or Board of Trustees involvement are subject to the normal review and approval process.

3.3.2 RAIL OVERSIGHT SAFETY COMMITTEE (ROSCO)

The Rail Oversight Safety Committee is a cross-functional team with the purpose of conducting an ongoing overview of all rail safety related matters, including procedural and Rulebook changes. Members of the committee include representatives from Safety, Engineering & Project Development, Rail District Departments, Service Quality, and Rail Training. Meetings are held when needed to identify and investigate problems and make recommendations.

3.3.3 RAIL DISTRICT SAFETY COMMITTEES

The Rail District Safety Committees include the Rail Equipment Facility Safety Committee, Rail Service Safety Committee and Rail Operations Safety Committee. Rail District employees, Transit Police, Rail Training, Rail Facilities Maintenance, Service Quality, Transit Police employees, GCRTA management, and the Rail Transportation Safety Specialist comprise the committees. The committees meet every month to present and discuss safety suggestions and concerns submitted by employees. Most suggestions and problems discussed are resolved by actions of the departments represented on the committee. Those safety matters that cannot be resolved at the committee level are submitted to the Executive Safety Committee for resolution.

The duties of safety committee chairs are to arrange for a meeting place, notify members of the meeting, develop an agenda with action register, take action on suggestions that are within the area of his authority, and forward unresolved matters to the Executive Safety Committee. The chair is also responsible for the administration and coordination of the Hazard Resolution Process for Hazard Reports submitted by employees in that location.

The Secretary prepares minutes, distributes minutes and posts on the GCRTA Intranet of the meetings to the committee members and to the Executive Safety Committee, and reports the status of recommendations, concerns, and suggestions.

Safety Committee members are responsible for:

- Attending all safety meetings
- Reporting unsafe conditions at any time
- Review Hazards and On the Job Injuries (OJI)
- Develop/Review Job Hazard Analysis (JHA)
- Review Emergency Plans and Conduct Evacuation Drills
- Conduct Safety Walks/Audits
- Develop Safety Improvement Topics/Teams
- Soliciting from others, rendering opinions, and acting on safety ideas and suggestions for the improvement of safety
- Providing leadership and example in performing work safely at all times
- Influencing others to work safely
- Promoting interest in contests, safety drives and incentive programs, etc.

3.4 SYSTEM DESCRIPTION

3.4.1 HISTORY

The Greater Cleveland Regional Transit Authority (GCRTA) is a publicly owned system created in 1975 by combining the Cleveland Transit System, the Shaker Heights Rapid Transit System, and five suburban bus lines into a coordinated countywide transit operating agency.

Pursuant to the Cuyahoga County voters' approval of a one-percent sales tax for the support of public transportation on July 22, 1975, the Greater Cleveland Regional Transit Authority became operational in 1975. The GCRTA combines the extensive bus network and heavy rail line of the former Cleveland Transit System, with light rail lines formerly belonging to the City of Shaker Heights. Contracts were made with five suburban bus systems effective October 5, 1975 and operating rights of other smaller carriers were bought out, with some systems being purchased outright. By early 1976 a fully coordinated regional transit system was achieved and in 2005 the final two city-operated transit systems were merged into the GCRTA. The GCRTA serves Cuyahoga County.

The GCRTA is governed by a board of ten trustees representing municipal jurisdictions in Cuyahoga County served by GCRTA transportation systems. The GCRTA is an independent, political subdivision of the State of Ohio and has its own taxing power.

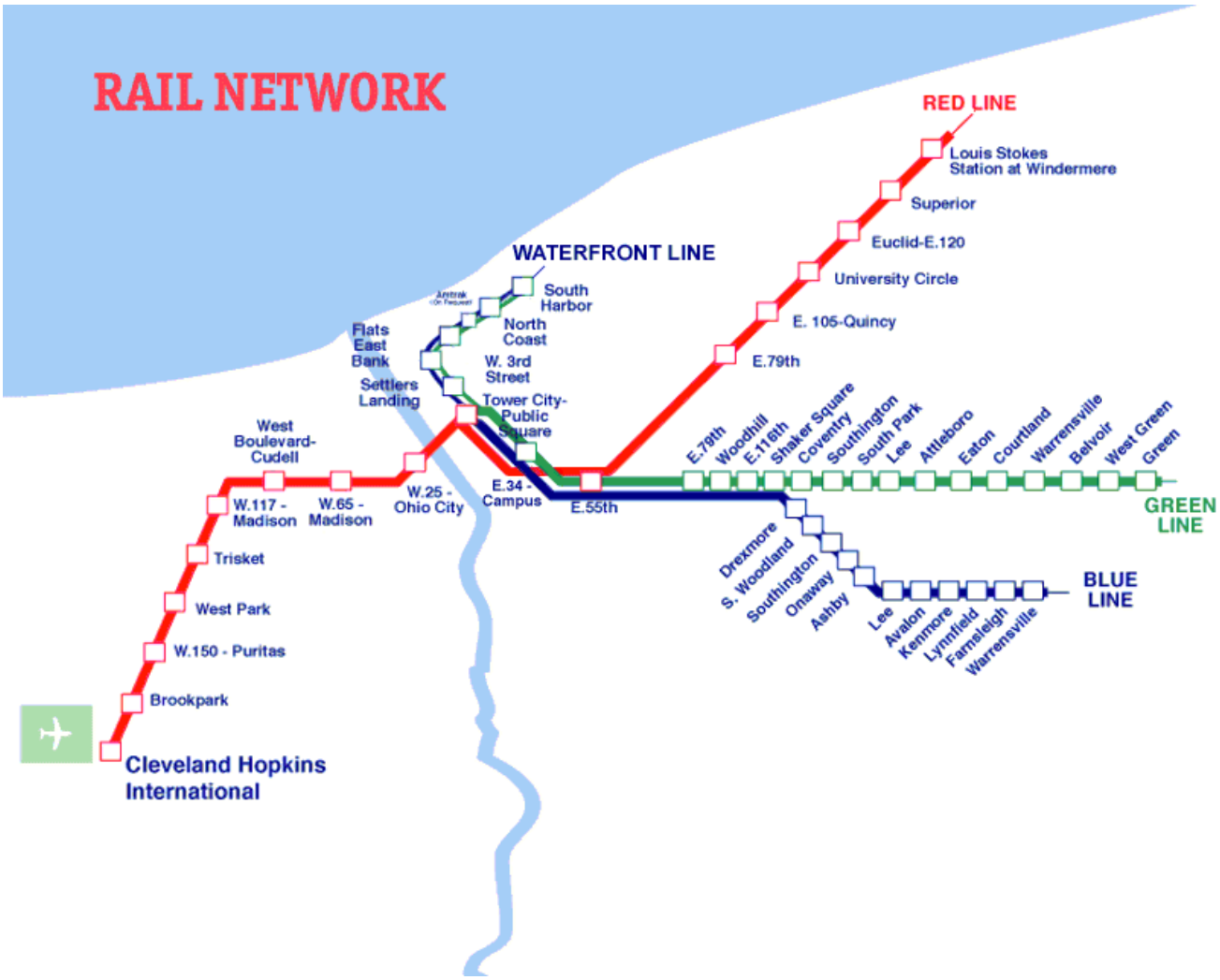
3.4.2 SCOPE OF SERVICE

3.4.2.1 GENERAL

GCRTA is a multi-mode transit system operating line-haul buses, a heavy rail line, a light rail line, a demand-responsive paratransit small-bus system for ADA eligible elderly and disabled persons, and a fleet of non-revenue vehicles.

Currently, the system consists of 61 bus routes, one heavy rail and two light rail transit lines, approximately 668 revenue vehicles, 2,301 employees and serves an average of more than 170,000 passengers per day. These figures include paratransit vehicles and employees providing specially designed services to meet the transportation needs of ADA eligible elderly and/or disabled passengers within pre-designated geographic Cuyahoga County areas. Additionally, the GCRTA operates a fleet of 220 non-revenue vehicles to support the transportation, maintenance, and administrative and logistic needs of GCRTA personnel throughout the GCRTA.

To move passengers safely and dependably the GCRTA employs over 822 bus operators, 118 paratransit operators, 97 full and part-time rail operators, 8 station attendants, 11 Control Center Supervisors, 38 Service Quality supervisors and managers, 138 Transit Police personnel, 47 facility maintenance personnel and janitorial staff, and 102 Power and Way employees. The fleet of 34 light rail vehicles and the fleet of 40 heavy rail cars logs more than 3.2 million miles per year, on 37 track route miles that is mostly at-grade. The GCRTA Engineering and Project Management Department fully maintains 59 bridges and has shared maintenance responsibility for 27 bridges. Both heavy and light rail systems use overhead wires delivering 600 volts for DC traction power.



3.4.2.2 RAIL SCOPE OF SERVICES

3.4.2.2.1 HEAVY RAIL (RED LINE)

The heavy rail Red Line consists of 18 high platform stations along a single route nineteen miles of double track in length, extending from the Cleveland Hopkins International Airport on the west and to Louis Stokes Station in East Cleveland on the east, generally alongside private railroad rights-of-way. In 2015 Red Line stop Little Italy RTS became operational while Euclid and E.120 RTS was closed. These trains operate above ground with the exception of the stations at Cleveland Hopkins International Airport, which is located within a 1,628 foot long tunnel, and Tower City station, which is enclosed, but not subterranean. A length of 2.8 miles between Tower City Station and Kinsman Interlocking uses the same tracks as the light rail lines described below, and is referred to as the Joint Area.

The active, revenue service rolling stock consists of 40 cars built by Tokyu Car Corporation. Heavy rail schedules require 24 cars during morning and afternoon rush hours. Rail service operates approximately 21 hours per day, 7 days per week, all year.

Heavy rail operations are supported by 97 Rail District Operators with 8 additional persons employed as station attendants. Part of the heavy rail line was opened in 1955, an extension added in 1958, and the last extension to Cleveland Hopkins Airport was completed in 1968.

3.4.2.2.2 LIGHT RAIL (BLUE/GREEN LINES)

The light rail system of GCRTA, formerly known as Shaker Rapid is a two-track line between Shaker Heights and the Lakefront Municipal Parking Lot (South Harbor). The system has a fully grade-separated route for six miles between downtown Cleveland and Shaker Square. The line has two branches east of Shaker Square in the landscaped median strips of Van Aken Boulevard (Blue Line) and Shaker Boulevard (Green Line). West of Tower City the line turns north through the Flats (Waterfront Line). The total line length is 15.3 miles of double track. The first 2.8 miles east of Tower City use the same tracks as the high-platform heavy rail line in the Joint Area.

Light rail schedules require 14 cars during morning rush and 14 cars during afternoon rush hours. Light rail service operates approximately 21 hours per day, 7 days per week, all year. The equipment consists of 34 cars manufactured by Breda Costruzioni Ferroviarie. 97 Rail Operators support light rail operations. The light rail system was built in stages with various combinations of street railway and inter-urban electric railway-type service from 1913 to 1930. The GCRTA completed total reconstruction of the line in 1981. The portion known as the Waterfront Line was completed in 1996.
The light rail lines from East 55th Street junctions to Green Road Station on Shaker Boulevard and Warrensville Center Road Station on Van Aken Boulevard are not interlocked. Warrensville/Van Aken has, however, a push button route selector to select the route. There is an electrically controlled interlocking at the East 75th Street junction. A signal, train stop and push button were installed and became operational in Nov. 2003 at East 79th Street Station to ensure Operators enter cab signal territory when traveling westbound. There is a push button route selector at the junction between the Blue and Green Lines at Shaker Square. The light rail line from Settlers Landing to South Harbor, Waterfront Line, does not have any interlocking machines or remote control systems.

3.4.3 RAIL PHYSICAL PLANT

3.4.3.1 RAIL FACILITIES AND EQUIPMENT

3.4.3.1.1 INTRODUCTION

The GCRTA operates two distinct types of rail transit systems, which make joint use of track on a segment of 2.8 miles, the only such combined operation in North America.

The first type is a high-platform heavy rail line. It runs mostly on the surface adjacent to main line railroads and has no street crossings at grade. Two short portions of this line are underground. This line is referred to as the heavy rail system or Red Line.

The second type of rail system at GCRTA is the light rail line with two branches with 34 low-platform stations. Approximately 40% of this system is fully grade-separated, with the majority being at-grade with crossing protection through traffic signal controls at intersection. This system is referred to as the light rail system or Blue and Green Lines. Both systems use overhead direct current electricity of 600 volts. In the Joint Area, rail cars of either type draw power from the same contact wire. The following information describes many features of both rail systems, with emphasis on their safety related aspects.

3.4.3.1.2 RAIL REVENUE EQUIPMENT DESCRIPTION

60 heavy rail cars built by Tokyu Car Corporation for the heavy rail were delivered in late 1984 and early 1985. The Tokyu cars weigh 85,000 pounds each, and are 75 feet – 10 inches long. Twenty of the cars are double-ended and seat 80 passengers and the 40 single-ended cars seat 84 passengers. All rail cars have three doors per side, and equipped with wheelchair tie-downs except for the rehabbed HRVs.

48 light rail cars built by Breda Costruzioni Ferroviarie were delivered in 1980 and 1981. The Breda cars weigh 103,000 pounds each, are 79 feet – 10 13/16 inches long and seat 84 passengers. These articulated cars are bi-directional with an operator cab at both ends. They have three doors per side.

3.4.3.1.3 RAIL FACILITIES DESCRIPTIONS

RAIL OPERATIONS BUILDING:

Located at 5400 Grand Avenue, Cleveland OH 44104 the Rail Operations Building is part of the three building 20 acre Rail Complex at East 55th Street and Grand Avenue. It is adjacent to the East 55th Street Rail Yard. The building includes: offices for Rail Transportation Headquarters and Transit Police Headquarters, and a report and break area for Rail Transportation staff. The second floor houses the main signal and communications room for the Rail Complex and houses the train signal control computers and systems, fiber optic connections and phone switch for the Rail Complex. All rail operators, station attendants, rail dispatchers and most Transit Police staff report to this facility. This building is a 24/7 location. Rail Transportation and 138 Transit Police staff are headquartered at this facility.

Service Quality Management's Integrated Communications Center (ICC) train Yard and Control Center Supervisors and the Rail District's Central Communications are located in the ICC on the first floor of the GCRTA Main Office Building at 1240 West 6th Street, Cleveland OH 44113-1331.

RAIL DISTRICT HEADQUARTERS AND CENTRAL RAIL MAINTENANCE FACILITY:

Located at 6200 Grand Avenue, Cleveland OH 44104 the Rail District Headquarters and Central Rail Maintenance Facility is part of the three building 20 acre Rail Complex at East 55th Street and Grand Avenue. It covers 156,000 square feet (3.6 acres) and is adjacent to the East 55th Street Rail Yard. The building includes: and Rail District Administration headquarters, administration offices for Rail Equipment staff and Rail Facilities Maintenance East staff, seven work areas where maintenance and some overhaul functions are performed, main Rail District Inventory location, reporting areas and break area for Rail District Rail Equipment Unit employees. The building also houses Human Resources' Training Department's Rail Equipment Training facility and staff. This building is a 24/7 location.

All products stocked in the Inventory area are entered into the CITME Ultramain System when received and distributed for use. The Inventory area is also the primary receiving area for all products shipped to the Rail District, whether or not carried by Inventory.

Preventative Maintenance (PM) programs for both types of rail vehicles are driven by the CITME Ultramain System for all systems and equipment requiring PMs. Standard Operating Procedures (SOPs) have been developed that set inspection frequencies that are programmed into the CITME Ultramain System. These SOPs are based on manufacturers' and established GCRTA and other industry standards. Maintenance inspections are performed in accordance with the established PM schedules with results entered into the CITME Ultramain System. PMs and other work are carried out by the respective Unit employees from the Rail Equipment Unit.

BROOKPARK SHOP:

Located at 18305 Brookpark Road, Cleveland OH 44142, adjacent to Brookpark Yard, near the west end of the Red Line. Brookpark Shop serves as a satellite Rail Shop when construction projects on the main line do not permit cars to return to the E.55th Rail Yard. The building serves two additional purposes. The headquarters for Rail Facilities Maintenance West is based at this location. Rail Equipment Training conducts hands on training.

RAIL SERVICE BUILDING:

Located at 6000 Grand Avenue, Cleveland OH 44104 the Rail Service Building is part of the three building 20 acre Rail Complex at East 55th Street and Grand Avenue. It is adjacent to the East 55th Street Rail Yard. The building includes: administration offices, workshops, inventory locations, Rail Training, Non-Revenue Vehicle Maintenance, reporting areas and break area for Rail District Power and Way Unit and Janitorial Units. The Service Building also has gasoline and diesel storage tanks and fueling facilities for off and on-track non-revenue vehicles. This building is a 24/7 location.

POWER AND WAY UNIT:

This unit is responsible for the operation and maintenance of the Authority's traction power distribution system including substations, fiber optic infrastructure (to points of connectivity), rail track infrastructure, rail signal infrastructure including all train control systems and all specialized rail non-revenue on and off-track equipment including hi-rail vehicles.

Preventative Maintenance (PM) programs for equipment and systems are driven by the CITME Ultramain System for all equipment and systems requiring PMs. Inspection frequencies are set through the CITME Ultramain System based on manufacturers' and established GCRTA and other regulatory standards. Maintenance inspections are performed in accordance with the established PM schedules with results entered into the CITME Ultramain System. PMs and other work are carried out by the respective Unit employees from the Traction Power, Track and/or Signals groups.

RAIL FACILITIES MAINTENANCE AND JANITORIAL UNIT:

This unit is responsible for the operation and maintenance of the Rail District's Red, Blue and Green Lines' rail stations, buildings, structures, elevators and escalators and grounds excluding the rail right of way, bridges, culverts and tunnels. The Facilities Manager is responsible for Rail Facilities Maintenance and Janitorial service.

Facilities Maintenance Preventative Maintenance (PM) programs are driven by the CITME Ultramain System for all systems and equipment requiring PMs. Inspection frequencies are set through the CITME Ultramain System based on manufacturers' and established GCRTA and regulatory standards. Maintenance inspections are performed in accordance with the established PM schedules with results entered into the CITME Ultramain System. PMs and other work are carried out by the respective Unit employees and/or contractors (such as occurs with elevating and escalating devices).

3.4.3.1.4 INTEGRATED COMMUNICATIONS CENTER DESCRIPTION

The Rail Control Center Supervisors at the Integrated Communication Center in the Main Office Building at 1240 W. 6th Street manage all train movements.

3.4.3.1.5 STATIONS – HEAVY RAIL

There are 18 high-platform stations. They are listed from west to east:

Hopkins Airport
Brookpark
W. 150 - Puritas
West Park
Triskett
West 117th - Madison
West Blvd - Cudell
West 65th - Lorain
West 25th - Ohio City
Tower City
East 34th
East 55th
East 79th
East 105th - Quincy
University Circle
Little Italy
Superior
Louis Stokes @ Windermere

3.4.3.1.6 STATIONS – LIGHT RAIL

The 34 low-platform stations are as follows, from west to east:

Main Line
*Tower City
*East 34th
*East 55th
*East 79th
*Woodhill
*East 116th
Shaker Square
* No at-grade street crossings at these stops.

Waterfront Line
*South Harbor
*North Coast
*West 3rd
Flats East Bank
Settlers Landing

Van Aken Branch (Blue Line)
Drexmore
South Woodland
Southington
Onaway
Ashby
Lee
Avalon
Kenmore
Lynnfield
Farnsleigh
Warrensville
* No at-grade street crossing at these stops.

Shaker Branch (Green Line)
Coventry
Southington
South Park
Lee
Attleboro
Eaton
Courtland
*Warrensville Center
*Belvoir
*West Green
Green

3.4.3.2 RAIL SYSTEM SAFETY – RELATED FEATURES

The rail systems at GCRTA contain many control and communications features, which are an integral part of safe operation. The major ones are as follows:

- Two-way radio communication with all trains
- Automatic Block System (ABS) signals from E. 79th to Shaker Square and a few isolated curves on the Green and Blue Lines
- Computerized Consolidated Train Dispatching System (CTDS) using cab signals on the Red Line and the light rail line from E. 79th to Settlers' Landing
- Automatic interlocking with CSX Railroad at West 3rd on the Waterfront Line
- Interlocking and dwarf signals on heavy rail
- Absolute block procedures throughout system
- Automatic overspeed control on heavy rail governed by cab signals
- Cab signal testing capability at entrance to main line from all yards
- Posted speed control circuits with Automatic Train Stop (ATS) on certain approaches
- Deadman control feature on all rail vehicles
- Rail crossing signals on the Waterfront portion of light rail with crossing gate protection at St. Clair Avenue and the Robert Lockwood Jr. Drive Crossing.
- Airport Tunnel Ventilation - Installation of 3 new supply/exhaust fans to operate in conjunction with 2 existing supply/exhaust fans under normal operating conditions or under one of three smoke/fire conditions. The control system was replaced with input from a tunnel-long Vesda Smoke Detection System initiating proper fan supply or exhaust function automatically depending on the fire location.

3.4.4 RAIL OPERATIONS

3.4.4.1 SCHEDULES

3.4.4.1.1 SCHEDULES – HEAVY RAIL

The Red Line (Heavy Rail) operates from 3:00AM to 1:30AM seven days per week. Trains operate every 10 minutes during the weekday rush hour periods. At all other times, trains operate every 15 minutes. Weekday rush hours require 24 train cars in service. Special event handling requires additional cars and occasional extended operating hours.

3.4.4.1.2 SCHEDULES – LIGHT RAIL

Blue and Green line (light rail) trains operate 4:00 a.m. until 12:00 a.m. seven days per week. Light Rail service extends to the Waterfront Line between 6:30 a.m. and 7:00 p.m. on weekdays, and between 9:00 a.m. and 7:00 p.m. weekends.

Single cars are used to provide regular service. Two car trains are used for special event service. Special event handling occasionally requires additional operating hours.

3.4.4.2 FARE COLLECTION

3.4.4.2.1 FARE COLLECTION – HEAVY RAIL

Passengers pay fares at stations using vending machines.

3.4.4.2.2 FARE COLLECTION – LIGHT RAIL

The fare system is pay-leave westbound and pay-enter eastbound. The majority of fares are collected off-train using vending machines at Tower City. At other stations, fares are collected on-train by the operator.

SECTION 4 SSPP REVIEW AND MODIFICATION

4.1 SSPP REVIEW

The GCRTA Rail System Safety Program Plan is reviewed at least annually, and updated as needed to reflect organizational, process and other safety program changes. The RSSPP is also updated on an as-required, event-driven basis.

4.2 SSPP CONTROL AND UPDATE PROCEDURE

The responsibility to review the Plan annually, assess its effectiveness, develop and propose changes, solicit internal and external reviews, implement and control the revisions and distribute the changes rests with the Director of Safety. The review and necessary revisions include, but are not limited to the following:

- New, extended, or upgraded service or routes
- New or retrofitted rolling stock or non-revenue vehicles and equipment.
- New or rehabilitated facilities
- New or revised emergency operating procedures
- Major organizational changes and reassignment of functional responsibilities
- Major changes in Safety Policies, goals and objectives
- Audit results
- ODOT on-site reviews
- Accident investigations
- Changing trends in accident/incident data
- Upon written notification from ODOT

The Director of Safety coordinates proposed revisions to the RSSPP with appropriate Department directors within the GCRTA. Members of the Executive Safety Committee participate in the review and concurrence with any significant revisions to the Plan.

The RSSPP document is maintained in electronic format and available to GCRTA personnel on the network file server.

4.3 RSSPP SUBMISSIONS TO ODOT

The process for annual revisions of the RSSPP are finalized and submitted to ODOT under the signature of the CEO/General Manager no later than January 31st of the following year. The RSSPP submission includes a summary that identifies and explains the changes, and the time frame for completion of the associated activities. In the event that no revision to the RSSPP is required, the CEO/General Manager notifies ODOT, in writing, that the annual review was performed and that no revision was needed.

In the event the RSSPP is modified as a result of an investigation, audit, or other circumstance, the CEO/General Manager submits the revised RSSPP, along with any changes to procedures, to ODOT for review and approval within 30 calendar days of the effective date of the change.

SECTION 5 SSPP IMPLEMENTATION REQUIREMENTS

5.1 RAIL SYSTEM SAFETY PROGRAM PLAN IMPLEMENTATION

The purpose of the Rail System Safety Program Plan is to assure that safety is an integral and continuous part of all rail related planning activities, specifications, designs, tests and operations of the GCRTA. The implementation and maintenance of this program requires the periodic and recurring development and revision of system safety program activities; system safety program audits and reviews; and the development of directives, guidelines and instructions for the implementation of specific system safety activities.

Nearly every Division within the GCRTA organization, including the office of the CEO/General Manager, Rail Operations, Legal Affairs, Engineering and Project Management, Finance and Administration, and Human Resources has a role in implementing the system safety program activities.

5.2 PROGRAM DIRECTION

The Director of Safety oversees the development and performance of the System Safety effort, periodically reviews and evaluates the effectiveness of the Program, and proposes System Safety policies and objectives for approval by the CEO/General Manager.

5.3 PROGRAM ADMINISTRATION

The Safety Department is responsible for the administration of the Rail System Safety Program Plan. This includes the conduct of specific system safety tasks and activities by Safety Department staff as well as overseeing and supporting safety activities that are performed by the rail departments.

5.4 SAFETY DEPARTMENT ACTIVITIES

The Safety Department collaborates with all GCRTA departments, and in particular with the Rail Operation Divisions to ensure adequate safety control measures are incorporated into daily and special operations and the Engineering and Project Management Division and with Fleet Planning and Engineering, as applicable, to ensure the application of System Safety principles and concepts in the design and development of capital improvements for the Rail District. The Safety Department is also responsible for revising the Rail System Safety Program Plan, as required, and for expanding the definition of task activities, responsibilities, and procedures within it.

The Safety Department conducts and directs its system safety activities in a constructive and supportive manner. The Safety Department coordinates the system safety activities of all departments so as to ensure that system-wide efforts are taken to resolve significant safety issues, and communicates with outside agencies on all safety-related issues.

The Safety Department is responsible for conducting comprehensive investigations of derailments, collisions, passenger and employee injuries/illnesses and fatalities, major fires, and other serious incidents that may occur in rail operations systems. The Department is also responsible for conducting formalized hazard assessments of all rail systems, facilities and equipment. The District safety committees assist the Safety Department in safety reviews and audits, processing Hazard Reporting Forms and in hazard identification throughout GCRTA rail operations.

The Safety Department is responsible for the development and implementation of a health and safety program to protect GCRTA employees in the work environment and passengers in the transit system's environment. This function is focused primarily on facilities, construction, maintenance, operating procedures, and the avoidance of hazards through compliance with instruction and regulations and the use of prescribed safety devices. Therefore it conducts activities that concentrate on passenger and employee protection efforts, personal safety attitudes, and accident/incident data collection and analysis.

The Safety Department is also responsible for minimizing hazards in the design and operation of the GCRTA rail operations systems. The Safety Department activities are focused on the identification and resolution of system safety hazards and on the inclusion of system safety requirements in the design and development of system elements such as facilities, rail cars, systems, equipment, procedures and training.

The following summarizes the general responsibilities of the GCRTA Safety Department:

- Assists with identification of hazards associated with the system.
- Evaluates identified hazards and design action to eliminate or minimize and control the hazards.
- Incorporates safety into system test, operation and maintenance procedures.
- Develops safety design criteria for incorporation into system design.
- Evaluates rail system operations for incorporation of adequate safety measures.
- Conducts hazard analyses of plans and specifications for new equipment and construction.
- Maintains system safety records in accordance with the Records Retention Schedule.
- Manages and implements the Rail System Safety Program Plan.
- Performs investigations of derailments, collisions, non-revenue vehicle collisions, passenger or employee injuries or fatalities, fires, major equipment damage, and other major incidents and accidents that occur.
- Conducts rail system safety audits.
- Monitors compliance with federal, state, and local safety codes and regulations and inspections.
- Promotes employee motor vehicle safety.
- Promotes accident prevention.
- Recommends safe and adequate tools, protective clothing, and equipment.
- Supports fire prevention and control and emergency preparedness.
- Inspects use of guardrails, warning alarms, signs, and machine guards in the work place.

- Monitors for adequate lighting and noise levels in the facilities.
- Publishes passenger and employee safety statistics.
- Inspects facility cleanliness and housekeeping practices.
- Maintains a system to monitor the license status for all rail regulations.
- Compiles and analyzes industrial accident information; design and implement programs to reduce incidence and severity of industrial accidents.
- Complies with provisions of State Oversight Program for Rail Fixed Guideway Systems administered by the Ohio Department of Transportation.
- Maintains electronic -files of Material Safety Data Sheets (MSDS) at the Safety Department Web Site on the GCRTA intranet.

Additionally, the Safety Department's day-to-day activities are an integral part of the GCRTA system safety program. The level of implementation and schedule may vary based on departmental constraints such as time, workload, staff, and budget. The Director of Safety manages the day-to-day implementation of these tasks.

- Coordinate safety-related activities to ensure that safety information is passed to all sections of the organization. Examples of information include collision and passenger accident data, occupational injury and illness loss data, safety committee meeting minutes, and safety inspection reports.
- Represent the GCRTA at professional safety meetings and seminars, and ensure that the information gained at these outside events is shared with other divisions of the GCRTA as appropriate.
- Conduct or participate in accident / incident investigations, in accordance with the GCRTA Administrative Procedure 002, Revenue Vehicle Accident Investigation.
- Exchange safety data with other transit systems.
- Review maintenance records to ensure that proper documentation is being recorded.
- Develop corrective actions and recommendations related to accidents, unacceptable hazardous conditions, and other safety issues uncovered through analyses and failure report data.
- Participate in training activities to ensure that safety elements are part of the curriculum, and that safety information is disseminated to all affected employees.
- Identify and assist in investigating and resolving hazards, including those related to maintenance, operation, and accident/incident investigation.
- Update the Rail System Safety Program Plan as required.
- Conduct safety inspections and perform system safety audits on a regular basis to monitor system-wide compliance with the Program Plan.
- Provide liaison with outside emergency response organizations and assist in such activities as familiarization training and emergency preparedness drills.
- Develop/update safety rules/ procedures and emergency preparedness plans in cooperation with other departments and outside agencies as appropriate.
- Assure awareness of and compliance with pertinent legislation, regulations, and standards.

- Evaluate new designs and proposed system modifications from a safety perspective.
- Define system safety requirements.
- Initiate and administer the Safety and Security Certification Plan
- Monitor the use of personal protective equipment by GCRTA personnel.
- Work with and oversee contractors to ensure that all GCRTA safety requirements are being adhered to.
- Develop and manage incentive and safety award programs for GCRTA employees.

5.5 PROGRAM SUPPORT

GCRTA Divisions and Departments support the Safety Department's implementation of the safety program by exhibiting a high degree of safety consciousness in the conduct of their operations. GCRTA personnel are responsible for reporting any observed unsafe conditions, which could affect GCRTA patrons, employees or property. Participation is expected in all safety efforts. Specific safety-related responsibilities of other GCRTA departments vary and are directly related to the primary function of each department. The safety-related activities of these GCRTA Divisions are described in the sections that follow.

5.6 SAFETY RELATED TASKS - GENERAL

This section describes the safety-related tasks of GCRTA Departments pertaining to rail other than Safety Department. The listing of safety-related tasks recognizes the fact that the functional responsibilities at the GCRTA are not always vertically assigned, but are distributed across departmental and divisional boundaries. The following are some examples:

- Engineering responsibilities among current GCRTA departments are assigned to various organizational elements:

  - Rolling stock design, engineering and specifications for all rail cars and other vehicles, including safety characteristics (flammability, smoke emission, braking, crash worthiness, doors) is the responsibility of the Fleet Planning and Engineering Section, Fleet Management Department.

  - Facilities design (egress, construction, fire prevention and protection) is the responsibility of the Engineering and Project Management Division, which reports directly to the Deputy General Manager – Engineering and Project Management.

  - The previous two engineering activities provide service to all modes of transportation, and they are not part of any transit mode-specific organization.

- Communication systems (radio) design is the responsibility of the Supervisor Electronic Repair, which is part of the Fleet Management Department. Administration of the radio system is the responsibility of the Manager of Operations Analysis, Research, and Systems in the Service Management Department. This function is provided on a GCRTA-wide basis for all modes of transportation including Rail, Bus, Paratransit, and Non-Revenue Operation.

- Other system element design and engineering responsibilities, such as for power, signal, and other wayside systems, are the responsibility of the Engineering and Project Management Division. Each of the engineering functions is required to evaluate proposed engineering changes for safety impact and coordinate with the Safety Department.

- Specification development is the responsibility of each department user.

- Specifications for the procurement of materials, including safety characteristics, are the responsibility of the department user, in coordination with the Procurement Department. The Safety Department is consulted on all hazardous materials procurement. The Procurement Department is part of the Finance and Administration Division.

- The Integrated Communication Center functions at GCRTA are located at the Main Office Building.

  - The Service Quality section is responsible for the control of all rail movements. The Rail Control Center Supervisors, located in the Integrated Communication Center, are responsible for all mainline and yard train movements, both in and out of service. Using available radio technology, and a signalized track system, the supervisors coordinate and monitor the movement of trains and verify schedule adherence. During scheduled track and power outages, the Control Center Supervisors employ single-track operations to coordinate the movement of trains. In an emergency or otherwise unplanned interruption of service, the Control Center Supervisors maintain scheduled service either directly through the signal system, which may include emergency single-track operations, or indirectly by coordinating the efforts of the train operator, field supervision and or other available personnel.

  - The radio control of non-revenue support vehicles operated by personnel from all modes of transportation throughout the GCRTA (for non-administrative vehicles, such as work equipment, signal trucks, etc.) is performed by the Central Communications Specialist who is part of Service Quality. This central control function is provided to GCRTA personnel outside the rail system, such as bus, paratransit, janitorial and facilities personnel. However, the control of non-revenue vehicles within the rail right of way is the responsibility of the Control Center Supervisor.

  - The Central Communications Specialist, located in the Integrated Communication Center is primarily responsible for management of the SCADA System. The Central Communications Specialist also handles trouble calls for overhead power, signals, substations, track and facilities and records train defect information received from the Rail Control Center Supervisor.

  The Central Communications Specialist processes and logs information into Ultramain regarding the above-listed unusual occurrences and trouble reports, and relays the

information to the appropriate department for follow-up. The Rail Dispatcher now serves as an emergency dispatcher, making emergency call outs of staff while Central Communications Specialist maintains the capacity to switch the power for the rail system "on" or "off" in emergency situations. Both functions are staffed 24 hours a day, seven days a week.

Integrated Communications Center operations include a system of redundant locations for which to safely maintain and continue control of rail operations. A backup ICC is located at the Woodhill Garage property. Additional redundancy to control rail operations exists for Control Center Supervisors to utilize a network of Local Control Panels (LCP) located in the Central Instrument Houses (CIH). The six Local Control Panels are located at Windermere RTS, E. 55th Rail Operations Building, Tower City RTS, W. 117th RTS, and Brookpark RTS.

- Certain maintenance functions and tasks are performed by individual departments on a GCRTA-wide basis, which cross boundaries among the modes of transportation:

  - The Rail Facilities Maintenance Department, part of the Rail District, performs the rail facilities maintenance and janitorial functions for stations, buildings, and building systems.

  - The Paratransit Equipment staff performs maintenance of all rubber-tired non-revenue vehicles, including administrative and non-administrative ones. The Track Department and Rail Equipment Department performs maintenance of steel-wheeled non-revenue rail equipment. Hi-rail vehicles, for example, are serviced by both the Power and Way Department and by Paratransit since they are rubber-tired.

  - Maintenance of radio equipment for all modes of transportation, including revenue and non-revenue vehicles, rail cars, buses, vans, etc., is overseen by the Supervisor of Electronic Repair, Fleet Management Department.

The foregoing illustrates that in identifying safety responsibilities and tasks for GCRTA organizations other than the Safety Department, the safety tasks are assigned to an individual department within one mode of transportation, but may be applied GCRTA-wide to other modes of transportation due to the unique existing functional responsibility assignments, interrelations and interfaces among the various units.

5.7 TRAINING DEPARTMENT TASKS

Training tasks include but are not limited to the following:

- Integrates safety requirements into training programs
- Provides feedback to various rail departments on procedures, rules, designs, and operating conditions as a result of training experiences.
- Helps validate safety training effectiveness to assure that training objectives have been met.
- Identifies training objectives and participates in safety drills and simulations.
- Designs and conducts new operator training/qualification and rail operator re-qualification training to ensure that all operators:
  - Are aware of hazards in the system

  - Are familiar with emergency procedures
  - Meet operating performance standards
- Reviews and updates training materials at least every three years to comply with operating policies and procedures and results of safety analysis.
- Contributes to information in operating and maintenance manuals and Emergency Operations Procedures (EOPs).
- Establishes selection standards for instructors that include safety performance and knowledge of safety policies and procedures.
- Establishes formal procedures for evaluating student understanding of safety rules and procedures as well as actual demonstration of correct techniques at an acceptable level of performance.
- Develops and maintains a short range and long-range training plan that identifies what programs will be provided and to how many personnel.
- Designs and conducts new and continuing staff training to ensure that all maintenance staff are:
  - Familiar with shop safety rules and procedures
  - Oriented to the location of safety equipment in their assigned facility
  - Aware of preventive maintenance and repair procedures
- Includes orientation on basic safety program to all new employees.
- Develops training resource materials for safety-related training for all rail employees.
- Assists with providing safety training for outside agencies and contractors.
- Includes special training for responding to the needs of elderly and disabled riders as part of training programs for all operating and support personnel.
- Designs and implements a basic defensive driving program required for all GCRTA employees who may be assigned to operate non-revenue equipment.
- Establishes procedures for safety certifications that include identifying who is authorized to do training and set proficiency standards.

Employees in the Training Department are also empowered to identify hazards in their work area and report them.

5.8 SERVICE MANAGEMENT DEPARTMENT/SCHEDULES TASKS

The Service Management Department is responsible for rail service scheduling (Scheduling Section) and service planning (Service Planning Section).

Employees in the Service Management Department are also empowered to identify hazards in their work area and report them.

5.9 INTELLIGENT TRANSPORTATION STSTEMS (ITS) TASKS

The ITS department was established January 1st, 2016 to meet the increasing need for software management. The Department goal is to standardize software management, enhance training create uniform job descriptions and establish a department that would acquire future/non-managed systems. Additional tasks include:

- Maintaining the radio system (towers, portables, base stations, Maestro consoles used in the ICC;)
- Maintains the Hastus software responsible for tracking Operator attendance and performance;

- Maintaining the TransitMaster System used to interface text messaging with Operators as well as the Incident Reporter platform used to log all incidents;
- Maintain the Ultramain System the repository for asset configuration and asset management;
- Maintaining the NICE recording system;
- Additional responsibilities include setting up new technology platforms, upgrading and updating software and license agreements with external providers, and providing training to users of the aforementioned tasks/systems.

5.10 PARATRANSIT SERVICE FACILITY / EQUIPMENT TASKS

The Paratransit Service Facility/Equipment Office provides maintenance services for the Rail District non-revenue vehicles. The tasks include:

- Specify emergency equipment to be carried on non-revenue vehicles and establishes a checklist procedure to assure compliance.
- Establishes and maintains a regular system of preventive maintenance inspections that is specific for each vehicle type, is based on a standard procedure manual, and is monitored and controlled to assure timely completion.
- Establishes and maintains a central record of rail non-revenue vehicles. Indicates vehicle location, and where responsibility is assigned for monitoring vehicle condition and maintaining preventive maintenance program.

Employees in the Paratransit Service Facility/Equipment Office are also empowered to identify hazards in their work area and report them.

5.11 MARKETING AND MEDIA RELATIONS TASKS

The Marketing and Media Relations Section coordinate news releases regarding safety, including accidents and incidents, with the Safety Department. Additional tasks include:

- Coordinates user education programs for regular and special need riders on how to use the transit system and safety features with the Safety Department and Rail District staff.
- Establishes standard public notification procedures about temporary service changes, new boarding locations, etc.
- Provides press releases and human-interest stories about positive safety events and incentive program recipients.

Employees in the Marketing and Media Relations Section are also empowered to identify hazards in their work area and report them.

5.12 HUMAN RESOURCES TASKS

The Human Resources Division is responsible for reviewing and updating hiring standards so as to assure that safety critical skills and qualifications are included in the selection process. Additionally, the Human Resources Division:

- Coordinates with Rail District staff to develop formal standards and procedures for the evaluation and certification of probationary employees
- Verifies previous employment record
- Verifies required licenses and certifications prior to hiring
- Ensures new hires receive safety training during the indoctrination program
- Establishes a regular system of employee performance evaluation that includes evaluation of compliance with safety rules and procedures
- Monitors the evaluation process to assure timeliness and inclusion of safety items
- Reviews and modifies position descriptions to reflect safety responsibilities and new functions as they occur
- Establishes a system for prioritizing the filling of vacant positions that, if not timely, may impact the safety of the rail transit system
- Establishes formal pass/fail standards for each employee classification

Employees in the Division are also empowered to identify hazards in their work area and report them.

5.13 CLAIMS TASKS

The Legal Department Claims Division compiles and maintains records of claims and related costs, and prepares and distributes regular management reports. It coordinates the accident data compilation process with the Safety Department and identifies hazards and reports them to the Safety Department. Employees in the Claims section are also empowered to identify hazards in their work area and report them.

5.14 LEGAL DEPARTMENT TASKS

The Legal Department monitors legislation and regulatory and case information in order to assure that GCRTA procedures are in compliance. It establishes guidelines for case action that targets removal of employees who jeopardize system safety. The Legal Department informs affected rail departments of safety issues that are identified in the course of case investigation. It informs staff of procedures required to document safety violations and uphold safety-related disciplinary actions.

Employees in the Legal Department are also empowered to identify hazards in their work area and report them.

5.15 CONTRACTS ADMINISTRATION TASKS

Contracts Administration reviews each proposed contract for safety implications, including whether safety performance standards should be specified. It assigns responsibility for monitoring the safety provisions of each contract to the contract administrator who, in turn, coordinates with the Safety Department. Contracts Administration verifies that contracts include provisions for federal, state and local regulatory compliance. Additionally, employees in Contracts Administration are empowered to identify hazards in their work area and report them.

5.16 TRANSIT POLICE TASKS

Transit police tasks include:

- Responsibility for access control and security through crime prevention strategies.
- Policing the system by maintaining order, arresting offenders and conducting criminal investigations.
- Establishing reporting systems for security and safety issues.
- Establishing, maintaining and implementing the System Security Plan.
- In concert with affected departments establishes, maintains and practices emergency procedures for rail accidents, intentional incidents and acts of nature that impact the safety and security of the GCRTA.

Employees in the Transit Police Department are empowered to identify hazards in their work area and report them.

5.17 PROCUREMENT TASKS

Establish and maintain a standard procedure for evaluation of all potentially hazardous materials. It includes safety performance standards on equipment specifications; establishes procedures that require Safety Department coordination for identification and purchase of safety critical/hazardous materials; and periodically reviews inventory requirements for defined safety-critical items (including personal protective equipment). Employees in Procurement are empowered to identify hazards in their work area and report them.

5.18 ENGINEERING AND PROJECT MANAGEMENT TASKS

Engineering and Project Management establishes design criteria delineated in the GCRTA Station Safety and Security Design Criteria that provides guidelines and standards for the design of key safety and security related requirements and/or systems for the GCRTA Rail Transit Station Reconstruction Projects and any other future station upgrades and/or new construction.

These design criteria include basic planning considerations specific to the project based on industry standards, codes, guidelines, Crime Prevention Through Environmental Design (CPTED) concepts, American with Disabilities Act (ADA) requirements, and safety and security best practices that are commonly utilized at other like transit agencies. In addition, some design criteria are derived from other station reconstruction projects lessons learned and safety/security recommendations derived from the Preliminary Hazard Analysis (PHAs) results and recorded security related issues with the GCRTA rail system that affect design. It also:

- Maintains as-built drawings and configuration management for systems, equipment, and facilities.
- Maintains track standard drawings.
- Reviews contracts to assure inclusion of safety design criteria.
- Establishes procedures for verification of system safety and construction safety requirements in contracts.
- Establishes procedures for construction/contract monitoring to assure compliance with safety requirements.
- Conducts construction inspections.
- Implementation, updating, enforcement and document control of the Rail Inspection and Maintenance Manual.

Employees in Engineering and Project Management are also empowered to identify hazards in their work area and report them.

5.19 LABOR & EMPLOYEE RELATIONS TASKS

Labor and Employee Relations negotiates labor contracts that identify management rights for assigning work, establishes work rules of acceptable performance standards, and provides a performance management system for recognizing, coaching, and formally disciplining employees. It establishes a process for developing management strategies for labor contract changes that address rail operating and employee safety issues and provides support for line staff in effectively enforcing safety rules and procedures. It provides assistance with conflict resolution techniques to resolve labor/management conflicts in a way that does not disrupt safe operating procedures. Employees in Labor & Employee Relations are also empowered to identify hazards in their work area and report them.

5.20 OCCUPATIONAL HEALTH TASKS

The Occupational Health Section, a section of Labor Relations and Employee Relations, administers the GCRTA Drug and Alcohol Programs and other health/medical related policies (i.e. FMLA, Employee Immunizations, Independent Medical Exams, EAP and Hearing Exams) and surveillance of employees.

5.21 EXECUTIVE STAFF TASKS

The Executive Staff is responsible for establishing policies and procedures for conducting accident investigations and documenting findings and results. It establishes formal policies for the usage of rail vehicles, accident reporting, responsibility for safe operation and compliance with operating procedures and preventive maintenance program. Furthermore, it establishes policy for an employee safety program, and assigns responsibility for program management to include:

- Safety awareness information
- Safety incentives with joint labor management design (Awards & Recognition Committee)
- Periodic evaluation

It establishes and assigns responsibility for managing a loss prevention program for the GCRTA by:

- Establishing policy for hazard identification, assign responsibility and establish procedures for program implementation.
- Assigning responsibilities for conducting safety analyses on new construction, engineering change proposals, and hazard analyses.
- Establishing safety goals and objectives for each department.

Executive Staff are empowered to identify hazards in their work area and report them.

5.22 SAFETY-RELATED TASKS OF RAIL OPERATIONS DEPARTMENTS

The following is a list of safety tasks of GCRTA Rail Operations Departments as they pertain to the safety of the rail system (Heavy and Light Rail).

5.22.1 RAIL DISTRICT OPERATIONS TASKS

Rail District Operations tasks include but are not limited to the following:

- Develop emergency operating procedures
- Develop procedures for abnormal and failure recovery conditions
- Define facilities, equipment and personnel required to support/enhance transit safety, such as; for example, the following
    - Public Address
    - Emergency telephone system
    - Fire detection, alarm and suppression system
    - Special fire suppression equipment (fire extinguisher, manual release of Sapphire) located where required throughout the rail transit system.
- Take steps to familiarize personnel with safety equipment, use and location
- Take steps to identify unsafe practices and procedures throughout the rail transit system
- Help investigate unsafe practices and procedures
- Help investigate accidents and injuries
- Help establish disciplinary actions for unsafe acts, practices and rule violations (incorporated as part of the union contract)
- Help establish safety-training requirements for various positions including but not limited to the following
    - Help establish safety-training requirements for Rail Operators and Yard Persons.
    - Help establish safety-training requirements for Station Attendants.
    - Help establish safety-training requirements for other Rail District Departmental personnel.
- Participate in drills and simulations to validate procedures and training.
- Establish requisite tests and inspections.
- Ensure that safety performance is a part of employee evaluation within the Rail District.

Rail District operations staff members are empowered to identify hazards in their work area and report them.

5.22.2 RAIL DISTRICT FACILITIES MAINTENANCE TASKS

Rail District Facilities Maintenance tasks include:

- Establish policies and procedures for daily/shift inspection of safety critical items.
- Establish preventive maintenance program for key equipment and facility components to assure employee safety and loss prevention.
- Establish policies and procedures for tagging defective equipment, and work-around procedures where appropriate.
- Help define support equipment, personnel and procedures for responding to an emergency and facility alarm situation.
- Help define safety-training requirements related to maintenance of facilities and mechanical equipment (HVAC, emergency ventilation, pumps, fire suppression, etc.).
- Take steps to identify unsafe practices and procedures throughout rail facilities.
- Help investigate unsafe practices and procedures.
- Establish disciplinary actions for unsafe acts, practices, or rule violations (part of union contract).
- Define safety critical elements and establish maintenance priorities for them.

Rail District Facilities Maintenance employees are empowered to identify hazards in their work area and report them.

5.22.3 POWER & WAY AND VEHICLE MAINTENANCE TASKS

Tasks include but are not limited to the following:

- Define support equipment, personnel and procedures for responding to emergencies
- Define support equipment, personnel and procedures for responding to abnormal or failure recovery conditions
- Take steps to identify unsafe practices and procedures throughout the rail system
- Help investigate unsafe practices and procedures
- Help investigate accidents and incidents
- Establish disciplinary actions for unsafe acts, practices, or rule violations, as defined by the Union contract
- Define safety critical elements and establish maintenance priorities for them
- Help establish safety-training requirements for critical maintenance activities including but not limited to the following
  - Rail Equipment staff help establish training requirements related to maintenance of rail cars
  - Track Maintenance staff help establish requirements related to maintenance of track, structures, and non-revenue rail equipment (work trains, locomotives)
  - Line, Power & Signal Maintenance staffs help establish safety training requirements related to maintenance of traction power distribution system and signal equipment
  - Rail Facilities Maintenance staff help establish safety-training requirements related to maintenance of facilities and mechanical equipment (HVAC, emergency ventilation, pumps, fire suppression, etc.).
- Participate in drills and simulations to validate procedures and training.
- Develop and verify that maintenance procedures are in place in all sections of the rail maintenance organization, including but not limited to, the Power and Way's Track Unit, Signal Unit, Traction Power Unit; and Rail Equipment Department.

- Ensure that safety performance is a part of employee evaluation for all Rail District staff.

Power & Way and Vehicle Maintenance employees are empowered to identify hazards in their work area and report them.

5.23 SERVICE QUALITY MANAGEMENT TASKS

The Service Quality Management Department is responsible for the management of all revenue and non-revenue train and on-track non-revenue rail movements; and coordination of train movements during emergencies. The Service Quality Supervisors are responsible for proficiency checks, field supervision, and assistance in rail, collision investigations and schedule adherence.

Service Quality Management employees are empowered to identify hazards in their work area and report them.

5.24 QUALITY ASSURANCE ACTIVITY TASKS

Quality assurance activity tasks within the various departments/sections of the rail system include but are not limited to the following:

- The Rail Oversight Safety Committee participates in auditing safety compliance in various areas/departments of the rail system including but not limited to the following:
  - Participate in safety compliance audits in the Rail Facilities Maintenance and Power and Way Departments
  - Participate in safety compliance audits in the Rail Facilities Maintenance and Power and Way Departments
  - Participate in safety compliance audits in the Rail Equipment Department
  - Participate in safety compliance audits in the Engineering and Project Management Division on rail capital improvement projects
  - Participate in safety compliance audits with the Rail Training staff relating to rail operations and maintenance training
  - Participate in safety compliance audits in the Procurement Department for rail systems procurement
  - Participate in safety compliance audits of contractors'/suppliers' on- and off-site activities on rail system projects
  - Participate in the hazard identification assessment and resolution process with the Safety Department
  - Monitor status of incident recommendations and audit recommendations from State Safety Oversight and internal activities
  - Implement corrective actions for such recommendations and monitor to completion.

5.25 TASK MATRIX

A summary of key tasks of the Safety Department is shown in a matrix form in Table 5-1. This figure depicts the shared responsibility and interfaces for Safety Department tasks between the Department and the various organizations throughout the GCRTA. The shared responsibility is expressed by identifying both the Safety Department and line organization as responsible for the task. This means that the line organization is equally responsible for active implementation of this task in their area of responsibility, in addition to the Safety Department's overall responsibility for the task on a GCRTA-wide basis. The interface relationship for line organizations means that the organization will respond, cooperate and participate in the execution of this task under the leadership role of the Safety Department.

Table 5-1 Safety Department Task Matrix

	Interfaces						Action	Frequency				
Safety Unit Tasks	**Trans**	**Serv**	**Equip**	**Maint**	**Train**	**Adm**		**Day**	**Mon**	**Qtr**	**Ann**	**Other**
Coordinate safety-related activities.	X	X	X	X	X	X	Min.	X	X			A/R[1]
Represent the GCRTA at professional safety meetings and seminars	X	X	X	X	X	X	Rpt.					A/R
Conduct or participate in accident and incident investigations.	X	X	X	X	X	X	Rpt./ Rec.					A/R
Exchange safety data with other transit systems.	X	X	X	X	X	X	Misc.					A/R
Review maintenance records		X	X	X		X	Rpt./ Rec.					A/R
Develop corrective actions and recommendations	X	X	X	X	X	X	Rpt./ Rec.					A/R
Participate in training activities	X	X	X	X	X		Tng. Matl.					A/R
Identify and assist in investigating and resolving hazards	X	X	X	X	X	X	Rpt./ Rec.	X				A/R
Update the Rail System Safety Program Plan	X	X	X	X	X	X					X	A/R
Conduct safety inspections and perform system safety audits	X	X	X	X	X	X	Rpt./ Rec.					A/R
Provide liaison with outside emergency response organizations	X	X	X	X	X				X	X	X	A/R
Develop/update safety rules/ procedures and emergency preparedness plans	X	X	X	X	X	X	Rec.				X	A/R
Assure awareness of and compliance with pertinent legislation, regulations, and standards	X	X	X	X	X	X	Rec.		X			A/R
Evaluate new designs and proposed system modifications	X	X	X	X	X	X	Rec.					A/R
Define system safety requirements.	X	X	X	X	X	X	Rec.					A/R
Monitor the use of personal protective equipment		X	X	X	X		Rec.					A/R
Work with and oversee contractors	X	X	X	X	X	X	Rec.					A/R
Develop and manage incentive and safety award programs	X	X	X	X	X	X			X			A/R

LEGEND: A/R = As Required; Rpt. = Report; Rec. = Recommend; Tng. Matl. = Training Material; Min. = Minimum

5.26 SAFETY MANAGEMENT PRINCIPLES

GCRTA holds safety as a core value and demonstrates that managing safety is critical to overall business performance. As a result, GCRTA has adopted a proactive and predictive approach to safety management that moves beyond traditional reactionary systems to address potential risk areas at their source.

GCRTA Safety Department is currently working to integrate the four pillars of SMS (Safety Management Policy, Safety Risk Management, Safety Assurance, and Safety Promotion) into all facets of Rail System Safety.

GCRTA incorporates the importance of senior leadership commitment, front-line involvement, management accountability, and continual safety process improvements derived from data-driven risk assessments. Management processes that ensure consistent planning for the management of risks are just one aspect of a holistic approach to safety. GCRTA firmly believes that true system safety requires the following:

- Committed leadership at all levels of the organization.
- A safety culture that values employee knowledge and expertise.
- Safety management systems that foster a deeper analysis of potential safety issues through data-driven performance management.

Appendix D depicts in detail GCRTA's Safety Management Principles.

SECTION 6 HAZARD MANAGEMENT

6.1 PROCESS

There are five basic functions involved in the Hazard Management Process:

- Understanding the physical system
- Identifying hazards
- Assessing hazards (Investigation, Evaluation, & Analysis)
- Resolving hazards (Elimination or Control)
- Coordination with ODOT regarding status of activities relating to Hazard Management.

Understanding the system requires documentation and observation of the environmental effects. Hazards, those conditions that may result in accidents, must be identified from history, the experience of others (accidents, incidents or safety concerns), and detailed analyses and assessments of existing or future conditions.

Once the severity and the probability of occurrence of hazards have been determined, the initial prioritization of their need for remedy can be established. The risks associated with a hazard are then classified and determined to be accepted, controlled, or identified for future resolution. A second step of prioritizing the corrective action based on the Cost of Eliminate or Control priority list is compiled. Efforts must continue to insure that the implementation of hazard controls do not create a new safety concern. In addition, continual monitoring of the total system is required to verify that the system (man, machine, and environment) is not being changed in undesired ways, and that accidents or incidents are not occurring in areas previously considered to be safe.

One of the major sources of guidance is statistical performance information regarding system safety indices. Typical are incidence rates, location, causes, contributory factors of accidents and incidents and cost of corrective action to eliminate or control hazards. This information is required to be made available to the Safety Department in order to establish priorities, allocate resources, and implement controls to prevent known hazards from escalating into serious accidents. The GCRTA's Safety Department is the forum through which safety action items are identified and resolutions developed.

6.2 METHODOLOGY

The GCRTA Safety Department SOP 8.1: Hazard Reporting and Management Procedure found on the GCRTA Intranet under the "Safety Tab" provides a systematic method of resolving hazards. It relies upon the judicious application of proven hazard identification methods and will provide GCRTA management with new hazard and risk visibility. Through close examination of the combination of hazards (man, machine, and environment) the control measures available and their associated costs, the total safety of the system can be improved. The following sections contain system considerations, hazard identification, assessment, tracking, resolution, and other system safety activities that must be understood for the orderly development of system safety tasks.

6.3 SYSTEM CONSIDERATIONS

The rail transit system, including revenue and non-revenue elements, is a composite of hardware (systems and equipment), fixed structures, operators and other personnel, software, procedures, and the environment. Any combinations of the above, when integrated, perform design and operational functions of the system. Each element of the system, such as: rolling stock, track, traction power, switches, signals; the non-revenue vehicles and their subsystems; and the environment, must be described in terms that identify performance expectations under normal, abnormal, and emergency conditions. This provides an understanding of the total system response over the span of possible system states.

Additional pertinent information regarding the specific system elements and element sub-systems within GCRTA rail operations and their ability to perform safely includes, but are not limited to, the following:

- Procurement specifications
- Design drawings
- Performance specifications
- Test reports
- Failure and malfunction analyses
- Degraded operational capabilities
- Interface definition and controls
- Toxicological properties
- Flammability information
- Reactivity information
- Energy content and forms
- Configuration definitions and change controls
- Operating rules and procedures
- Administrative policies and procedures
- Failure reports

This list implies a need for exhaustive definition and understanding of all system features and performance characteristics. Furthermore, extensive safety data sources and system information necessary to identify assess and resolve hazards must be available. This system information is provided by the responsible departments. Each GCRTA department, responsible for specific areas within Rail District operations, is required to provide the Safety Department with accurate, timely and complete safety data and system information including system changes.

6.4 HAZARD IDENTIFICATION

The definition of those conditions that have the potential for causing an accident or that can create an unsafe condition is the objective of the hazard identification function. Two basic strategies involve inductive and deductive processes.

The inductive process, sometimes called “bottom up” methodology, involves the analysis of system components and their failure states to identify the effects on the total system. Inductive analyses determine the conditions that would be created if a part of a subsystem fails to operate when required, operates when not required or operates improperly, etc. The Failure Mode and Effect Analysis (FMEA) is the primary example of the inductive type. The item to be analyzed is listed by its constituent major assemblies and then by its subassemblies and components. Each component is then studied to determine how it could malfunction, what would cause it to malfunction and the effect on the component or on higher-level subassemblies, assemblies and the entire item. Failure rates may then be determined and listed in order to establish the overall probability that the item will operate without a failure for a specific length of time and that the item will operate a certain length of time between failures.

The deductive process, or “top down” methodology, involves defining an undesired event, or hazard, and then deducing the combinations of conditions and acts necessary to produce that hazard. It involves determining what combinations of “and” and “or” conditions of normal and fault events must exist to produce the undesired event. Fault Tree Analysis (FTA) is representative of the deductive process.

The purpose of the FTA is to provide a concise and orderly description of the various combinations of possible occurrences within the system, which can result in an undesired event. This is the most rigorous of the hazard identification and analyses and should be reserved for the most complex systems. FTA aids in the identification of potential problem areas in complex systems.

The most effective of the inductive or deductive methods are used as appropriate to identify hazards in each case. Several other inductive methods used are the Preliminary Hazard Analysis (PHA), which identifies hazards based on failure modes and fault conditions of the known subsystems and components in the advanced stage of the design; System or Interface Hazard Analysis (SHA), which identifies hazards in interface areas between subsystems and systems; and the Operating and Support Hazard Analysis (O&SHA), which identifies hazards that may be induced by operators and maintainers of the system. All are matrix type analyses. Additional types of analyses, which may be used for hazard identification, include Software Hazard Analysis and Sneak Circuit Analysis.

6.5 SAFETY DATA SOURCES FOR HAZARD IDENTIFICATION

A broad range of internal and external safety data sources are utilized throughout the GCRTA transportation systems for hazard identification. Each department head and supervisory personnel is required to cooperate with the Safety Department in instituting a systematic plan with departmental procedures for the identification of potential hazards through review of internal and external safety data sources throughout the GCRTA Rail District.

Internal safety data sources for hazard identification include but are not limited to: Hazard Reporting Forms; Hazard Hotline; Hazard reporting e-mails; Hazard reporting in-person; Loss Prevention Audits conducted by GCRTA insurance carriers; Vehicle Defect Reports; Findings and suggestions of Incident Review Committee; Incident Investigations; accident/incident reports; safety analysis (when conducted); testing, inspections and audits (by the Safety Department and/or by others); QA/QC non-conformance reports; malfunction reports (for rolling stock, vehicles facilities, systems and equipment); preventive and/or corrective maintenance reports (as conducted by the Rail District quality assurance function of either Fleet Management or Project Support); Integrated Communication Center Control Center daily logs, Central Communications reports, yard tower, and passenger reports, corroborated by Rail District personnel reports.

External safety data sources, which may be reviewed for hazard identification, may include reports from other transit agencies, outside consultants, APTA, FTA, NTSB, and the FRA.

The safety data collected from internal and external safety data sources are routed to the Safety Department for evaluation of potential hazards. To effectively perform this, District safety committees function throughout the organization as coordinators for hazard resolution. The committees review all departmental safety data from internal and external sources and evaluate them for safety impact and process them to the Safety Department. All GCRTA personnel and all line departments have access and input into the hazard identification and reporting process. Formal channels and procedures for employee access to the hazard identification and reporting process is available through the Hazard Reporting Form and the local and Executive Safety Committees. Other hazard reporting channels are divisional supervisory chain of command.

6.6 AREAS FOR HAZARD IDENTIFICATION AND ANALYSIS

Safety analyses used for hazard identification encompass all areas within the GCRTA rail operations system including but not limited to the following:

- All existing elements of the rail operations system are continually reviewed as part of the GCRTA's on-going risk assessment process
- Safety analyses are conducted by consultants and contractors on new construction and procurement programs
- Safety analyses are conducted for Engineering Change Proposals (ECP's)
- Fixed facilities are inspected and analyzed for potential safety hazards
- Rail vehicles and non-revenue vehicles are inspected and analyzed for potential safety hazards
- Equipment and subsystems are inspected and analyzed for potential safety hazards
- Operating and maintenance procedures, including normal, abnormal and emergency procedures are reviewed and analyzed for potential safety hazards. The safety hazards include occupational and employee safety as well as system and passenger safety hazards that can be induced by GCRTA personnel through human error, acts of commission or omission of personnel proficiency is also evaluated against the procedures for possible human-induced safety hazards

- In evaluating potential safety hazards to passengers and employees as a result of various energy sources, the following energy sources are considered:
    - Kinetic energy
    - Potential energy
    - Mechanical
    - Electrical
    - Chemical
    - Thermal
    - Physical

Safety Department personnel as well as the local safety committees use internal and external safety data sources and the experiences of similar systems as appropriate inputs to aid in the total hazard identification process.

6.7 HAZARD REPORTING AND TRACKING

A Hazard Report Form is used by all GCRTA personnel to report potential hazards anywhere in the system including: facilities, equipment and operations (revenue and non-revenue).

6.7.1 NON-PUNITIVE HAZARD REPORTING POLICY

The Greater Cleveland Regional Transit Authority (GCRTA) is committed to the safest transit operation standards possible; as a result, GCRTA is committed to having uninhibited reporting of all incident and occurrences which may compromise the safe conduct of our operations. To this end, every employee is responsible for communicating any information that may affect the integrity of transit safety. Such communication must be completely free of any form of reprisal.

The Greater Cleveland Regional Transit Authority will not take disciplinary action against any employee who discloses an incident or occurrence involving safety. This policy shall not apply to information received by the Authority from a source other than the employee, or which involves an illegal act, or a deliberate or willful disregard of promulgated regulations or procedures.

6.7.2 HAZARD HOTLINE

In addition to the Non-Punitive Hazard Reporting Policy, GCRTA has a hazard hotline ((216)566-5111) as an alternative method of reporting hazards. The Hazard Hotline can be used by a GCRTA employee or by the general public to report any transit safety hazard.

6.7.3 HAZARD TRACKING SYSTEM

All items listed in **Section 6.5 SAFETY DATA SOURCES FOR HAZARD INDENTIFICATION** received by the Safety Department will be reviewed to determine if the item qualifies as a safety hazard in need of mitigation. A safety hazard is defined as a source of danger to our passengers or our employees. Those items that fall into this category will be listed within the Hazard Tracking System known as the **SMART Log.**

6.7.4 COORDINATION WITH ODOT

ODOT is kept informed of unacceptable hazardous conditions, within the current operating system, through the submission of Incident Reports. Incident Reports for unacceptable hazardous conditions contain the following details:

- How the hazard was recognized and reported
- A description of the hazard
- The methodology used in determining the unacceptable hazardous condition
- The initial risk assessment category
- Results of the investigation and the events that may affect the safety of customers, employees, and property and equipment within the GCRTA.
- Those actions immediately taken to temporarily control the unacceptable hazardous condition to an acceptable level

A Corrective Action Plan (CAP) is submitted to ODOT within 30 days, or longer at ODOT's discretion or if a 30-day status report is filed, for review and approval. The CAP details the permanent actions to control the hazard to an acceptable level and the final risk assessment category, including probability and severity, once the corrective action is in place. The status of all CAP's is included in the monthly report to ODOT and Unacceptable Hazardous Conditions are discussed at GCRTA/ODOT quarterly meetings along with all other open plans.

Additionally, the S.M.A.R.T. Log is maintained detailing the status of new and existing unacceptable hazardous conditions.

6.8 HAZARD RISK ASSESSMENT

A hazard risk (level of exposure) assessment is required to establish priorities for corrective action and resolution of identified hazards. Since the priority for system safety is eliminating hazards by design, a risk assessment, considering hazard severity only, will generally suffice during the early design phase to minimize hazards. When hazards are not eliminated during the early design phase, a risk assessment based upon the hazard probability, hazard severity, and the cost of corrective action is required to establish priorities for remedial action and resolution of identified hazards. The severity and probability classifications to be used are as currently adapted by the U.S. Department of Defense in MIL-STD-882C, the American Public Transportation Association and the Federal Transit Administration.

A comparative risk assessment process is utilized that is based on the principles, descriptions and definitions of MIL-STD-882C, but enhances the risk assessment and prioritization to include the cost of corrective action. The process codifies the hazard severity, hazard probability of occurrence and the cost of eliminating or controlling the hazard and rates each element using established hazard rating tables. The process then determines which hazards are unacceptable or undesirable based on their severity and probability of occurrence. The hazard severity, probability and cost combination for unacceptable and undesirable risk is then ranked on a Hazard Priority Rating Table whereby GCRTA Management can prioritize and allocate the resources available to eliminate or correct the unacceptable and undesirable hazards.

6.9 SEVERITY

Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel error, environmental conditions, design inadequacies, procedural deficiencies, system, subsystem or component failure or malfunction as follows:

1. Category I: Catastrophic
   - Death or system loss.

2. Category II: Critical
   - Severe injury, severe occupational illness, or major system damage.

3. Category III: Marginal
   - Minor injury, minor occupational illness, or minor system damage.

4. Category IV: Negligible
   - Less than minor injury, occupational illness, or system damage.

6.10 PROBABILITY

The probability that a hazard will occur during the planned life expectancy of the system can be described in potential occurrences per unit of time, events, population, items, or activity. Assigning a quantitative hazard probability to a potential design or procedural hazard may not be possible in all cases. A qualitative hazard probability may be derived from research, analysis, and evaluation of historical safety data from similar systems. Supporting rationale for assigning a hazard probability is documented in hazard analysis reports. The qualitative hazard probability ranking which is utilized by the GCRTA is shown in Table 6-1:

Descriptive Word	Level	Within Specific Individual Items	Within a Fleet or Inventory
Frequent	A	Likely to occur frequently	Continuously experienced
Probable	B	Will occur several times in life of an item	Will occur frequently
Occasional	C	Likely to occur sometime in life of an item	Will occur several times
Remote	D	Unlikely but possible to occur in life of an item	Unlikely, but can reasonably be expected to occur
Improbable	E	So unlikely, it can be assumed occurrence may not be experienced	Unlikely to occur, but possible

Table 6-1. Qualitative Hazard Probability Ranking

The assessment of probability of occurrence considers the actual size of fleet or inventory or items in the specific system under consideration, based on current system configuration. For example, the current fleet sizes of rail and non-revenue vehicles, or the entire inventory of switch machines or signals shall be considered when evaluating probability of occurrence of hazards in these populations. It also estimates the likelihood of injury to operating and maintenance personnel, passengers, and the public.

Additionally, frequency of human-induced fault conditions is estimated based on systematic review of task and procedure complexity, man-machine interfaces, employee proficiency, and historical data of human-induced error-rates in similar operations (for example: 1/1000 errors per transaction, for given tasks, etc.). The following two aspects of potential hazards are reviewed in human-induced fault conditions:

- The occupational health and safety hazard to the employee performing the task
- The system safety hazard that can be induced into the operational system as a result of employee act of omission or commission (for example: maintenance-induced hazard by leaving jumper-wires in vital circuitry of train control, rendering it non-failsafe).

6.11 ACCEPTANCE OF RISK

Hazard Risk Index (Criticality): Following their classification by severity and probability of occurrence, hazards will be given a general priority ranking so that GCRTA Management may further assess them for two distinct yet overlapping criteria:

a. Acceptability of the risk to management from a safety-criticality standpoint and determination of the appropriate hazard risk index ranking. This priority ranking of a hazard is called its criticality and is a function of both severity and probability of occurrence. Although criticality can be quantified by assigning numeric values to each severity category and probability level and combing them mathematically, hazard criticality will be determined qualitatively. The hazard criticality ratings for acceptability of risk by GCRTA management shall be classified in one of the following categories:

    - Unacceptable
    - Undesirable (GCRTA management decision required)
    - Acceptable with GCRTA Management review
    - Acceptable without review

b. Determination of corrective action priority rating for unacceptable and undesirable hazards by considering the cost of corrective action. It should be noted that the hazard rating for priority of corrective action needs to be performed only for identified hazards that have been categorized as unacceptable and undesirable in the initial hazard risk index ranking.

Hazard criticality acceptance criteria: The process and algorithm for acceptance of risk by GCRTA follows the accepted practice of risk assessment described in MIL-STD 882 E. Table 6-2 depicts the hazard risk assessment matrix utilized by the GCRTA safety personnel in evaluating acceptability of risk in identified hazards as illustrated on the page that follows:

Frequency of Occurrence	Hazard Categories			
	I Catastrophic	II Critical	III Marginal	IV Negligible
(A) Frequent	1A-UN	2A-UN	3A-UN	4A-AC/WR
(B) Probable	1B-UN	2B-UN	3B-UD	4B-AC/WR
(C) Occasional	1C-UD	2C-UD	3C-UD	4C-AC
(D) Remote	ID-UD	2D-UD	3D-AC/WR	4D-AC
(E) Improbable	IE-AC/WR	2E-AC/WR	3E-AC/WR	4E-AC

Legend:	Hazard Risk Index	Acceptance Criteria
	1A,1B, ,2A,2B,3A 1C,1D,2C,2D,3B,3C 1E,2E,3D,3E,4A,4B 4C,4D,4E	UN-Unacceptable UD-Undesirable (decision required) AC/WR-Acceptable with review AC-Acceptable without review

Table 6-2. Hazard Risk Assessment Matrix and Acceptance Criteria (Mil. Standard 882-E)

a. Hazards with combination of severity and probability of occurrence 1A, 1B, 2A, 2B and 3A are unacceptable and corrective action must be taken to eliminate or control them by reducing the severity and/or probability of hazard to an acceptable level. Priority rating for corrective action is developed among unacceptable hazards using the cost of corrective action as described herein.

b. Hazards with combination of severity and probability 1C, 1D, 2C, 2D, 3B and 3C are undesirable. GCRTA Management decision is required on the specific method of corrective action based on additional considerations such as the availability of acceptable alternatives measures ("workarounds"), on a permanent or temporary basis, to mitigate the attendant risk, etc. Undesirable hazards are generally slated for corrective action and are prioritized based on the cost of corrective action within that level of criticality, in accordance with the method described herein.

c. Hazards with combination of severity and probability 1E, 2E, 3D, 3E, 4A and 4B are acceptable with review by GCRTA management. GCRTA management may accept the risk associated with retaining the identified hazard in an "as-is" condition with no further corrective action. Alternatively, GCRTA management may prescribe periodic tests and inspections or other preventive measures, to insure on a continuing basis that the original severity and probability ratings are not invalidated over time by degradation of conditions in the subject item. Proper sign-off on the acceptance of the attendant risk is required. Hazards with combination of severity and probability 4C, 4D and 4E are acceptable without GCRTA Management review.

The Director or Manager of Safety facilitates the proper signs-off on acceptance of the risk. Review by GCRTA Management is accomplished at the forum of the Executive Safety Committee. At a minimum, the affected Operations, Maintenance, Safety, Training, Engineering Project Management and Transit Police members of the Executive Safety Committee must sign-off on hazard acceptance, as identified on the Criticality Matrix. The Director of Safety, in the role as vice-chair of the Executive Safety Committee, documents the resolution action and sign-off on the accepted risk. The Director of Safety keeps all records of the hazard identification, analysis, assessment, and the hazard risk acceptance process, in the Safety Department file.

6.12 HAZARD RESOLUTION

The best method of resolving potential system hazards is to eliminate them. However, this may be impossible or impractical at times. Determination of the method to be employed is made by conducting a thorough analysis of the system, considering the possible tradeoffs between various alternatives and the system safety requirements. The philosophy dictating these analyses should result in the resolution of alternatives. In general accordance with MIL-STD-882C practices, a number of different means can be employed to resolve identified hazards. These include design changes, the installation of controls and warning devices, and the implementation of special procedures. The order of preference for the means to be used in resolving hazards at the GCRTA are as follows:

a. Design for Minimum Hazard: Design, or redesign, refurbish and retrofit to eliminate (i.e., “design out”) the hazards through design selection. This may be accomplished through the use of fail-safe devices and principles in design, the incorporations of high-reliability systems and components and use of redundancy in hardware and software design.

b. Safety Devices: Hazards that cannot be eliminated or controlled through design selection shall be controlled to an acceptable level through the use of fixed, automatic, or other protective safety design features or devices. Examples of safety devices include interlock switches, protective enclosures, safety pin, etc. Care must be taken to ascertain that the operation of the safety device reduces the loss or risk and does not introduce an additional hazard. Safety devices also permit the system to continue to operate in a limited manner. Provisions are made for periodic functional checks or safety devices.

c. Warning Devices: When neither design nor safety devices can effectively eliminate nor controls an identified hazard, devices are used to detect the condition and to generate an adequate warning signal to correct the hazard or provide for personnel remedial action such as, for example, evacuation. Warning signals and their application are designed to minimize the probability of incorrect personnel reaction to the signals and shall be standardized within like types of systems.

d. Procedures and Training: Where it is impossible to eliminate or adequately control a hazard through design selection or use of safety and warning devices, procedures and training shall be used to control the hazard. Procedures may include the use of personal protective equipment. Precautionary notations shall be standardized as specified by the Safety Department. Safety critical tasks, duties and activities throughout the GCRTA, such as rail and bus operators’ duties, shall require certification of personnel proficiency.

SECTION 7 SAFETY AND SECURITY CERTIFICATION

7.1 SAFETY AND SECURITY CERTIFICATION

The Safety and Security Certification Plan (SSCP) ensures that any design or operating hazards/threats are identified, monitored, and properly controlled or mitigated, prior to the commencement of revenue service. The SSCP addresses all systems and equipment, which may reasonably be expected to pose hazards/threats to GCRTA customers, employees, contractors, emergency responders, and the general public. The plan identifies the technical and managerial tasks required during the design, supply, construction, and commissioning of any GCRTA project or equipment.

The SSCP ensures all safety critical systems and major capital projects that may impact passenger, employee, or public safety are operationally ready to enter safe and secure revenue service as further delineated in GCRTA's SSCP provided on the GCRTA Intranet under the "Safety Tab". Safety and security operational readiness is demonstrated through a safety and security certification program that is developed and implemented for each subsequent operating segment and phase.

The goals of SSCP are to verify that identified safety and security requirements have been met and to provide evidence that the new or rehabilitated equipment, systems and facilities are safe to use by passengers, employees, contractors, emergency responders, and the general public by:

- Verifying that appropriate codes, standards, and guidelines including the Feb.2017 GCRTA Safety and Security Design Criteria have been incorporated into the specifications.

- Ensuring that a thorough and complete system safety/security engineering process is followed throughout the acquisition process.

- Ensuring that all identified hazards/threats have been eliminated or controlled.

- Ensuring that normal and emergency hazard resolution methodologies have been implemented.

- Ensuring that all training required for the safe/secure operation of the new vehicles is complete.

The objectives of the Safety and Security Certification Program that support the above goals include:

- Identify specific safety and security requirements to ensure the most comprehensive specification possible to avoid inadvertent hazards/threats.

- Verify that all documentation identified as safety critical has been reviewed to ensure compliance with safety criteria.

- Facilities and equipment have been constructed, manufactured, inspected, installed, and tested, in accordance with safety and security requirements in the Design Criteria and contract documents.

- Assure that operations and maintenance manuals reflect appropriate procedures necessary for control of hazards and include appropriate warnings, hazards, and cautions required for safety critical operations.

- Training documents have been developed for the training of operating personnel, and emergency response personnel.

- Transportation and maintenance personnel have been properly trained and qualified regarding potentially hazardous operations.

- Emergency response agency personnel have been prepared to respond to emergency situations in or along the GCRTA transit system.

- Verify that testing associated with elimination of control of hazards has been completed.

- All security related issues have been addressed and resolved.

- Create a verification-tracking log to track all safety related closures that are not complete at the time of revenue operations.

An outline of the certification process is shown below. The process begins with system design and continues through the start of revenue operation.

- Identify those safety and security related elements to be certified

- Establish Safety & Security Design Criteria

- Prepare the Design Criteria Conformance Checklists

- Verify conformance with Design Criteria

- Prepare the Specification Conformance Checklists

- Verify conformance with Specifications
- Perform testing, training, and emergency response coordination

- Manage Integrated Testing

- Resolve all Open Items

- Perform Pre-Revenue Testing

- Approve completed checklists and issue Project Safety & Security Certificate

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

The GCRTA Safety and Security Certification programs are detailed in separate documents, which include project specific Design Criteria requirements. Security documents are sensitive and therefore are restricted.

SECTION 8 SYSTEM MODIFICATIONS

8.1 SYSTEM MODIFICATIONS

Any changes or modifications to GCRTA transportation systems are controlled to assure that safety is incorporated into the plans and designs of the modified system in accordance with the Safety Review Policy & Procedures AP-016 and Configuration Management Plan which are found on the GCRTA Intranet.

Modifications to the system may be proposed by any user or District department within the GCRTA, or may be initiated by GCRTA Management, including Safety. A coordinated process of safety review (design, plan and procedure review) is required prior to any changes and modifications to the GCRTA transportation system. This applies to all modifications, including but not limited to the following:

- New, extended, or upgraded service or routes
- New or retrofitted rolling stock, or non-revenue vehicles and equipment
- New or refurbished facilities
- New or revised emergency operating procedures
- Safety-related policies and procedures
- New or existing station, right of way, traction power, OCS, track, and signals

Safety reviews of system modifications, which involve design of new systems, facilities, and facilities equipment, are coordinated by the Director of Engineering and Project Development and at times the Rail District. Safety reviews of system modifications for major projects or equipment are designed and coordinated by Engineering and procured through the Procurement Department. Safety reviews of rolling stock, and other non-revenue vehicle changes are coordinated by the Fleet Planning and Engineering Section of the Fleet Management Department or the Rail District.

The criteria and methodology for safety review of new or modified systems and incorporating safety considerations into the design follow the requirements specified herein and in Section 6 of this Plan.

Safety assurance of new systems and equipment begin with the basic designs, and in the development of specifications to ensure that safety requirements and standards are incorporated. Safety reviews are held to ensure that proposed designs meet safety requirements. Consideration is given to such items as system interfaces, human factors, environmental conditions, isolation of energy sources, materials compatibility, use and long-term storage of critical material, emergency response capability, including emergency egress and rescue paths, fire sources and measures for protection, equipment layout, lighting requirements, and maintenance requirements. In these reviews maximum use is made of existing data, reliability analyses, and other applicable design analyses and information. Analyses or evaluations are conducted on test plans, procedures, and related test equipment; operational plans, procedures and related operational support equipment; demonstration and evaluation plans, procedures, and related support equipment; and on maintenance plans, procedures, and related maintenance equipment. Results of these analyses or evaluations are used to verify the required safety level or identify the necessary changes for incorporating into the safety provisions.

Testing is performed on critical components and assemblies as indicated in safety reviews to identify and eliminate potential hazards. The inherent safety of equipment and its impact on GCRTA rail operations systems are demonstrated during system test and demonstration efforts. A formal process of hazard identification, analysis and resolution is conducted during the safety review.

Safety reviews resulting in system, facility, operational, or equipment changes are tracked through the Configuration Management System, maintained by the Engineering and Project Management Division or Fleet Management, as applicable, to assure that design changes and modifications are appropriately documented, evaluated and that the change does not degrade safety and performance.

The proposed system modifications are coordinated by the Director of Engineering and Project Management, Procurement Department, Rail District, or Director of Fleet Management, as applicable, and reviewed by the affected GCRTA Departments and by the Safety Department.

The review cycle shall include but not be limited to the members of GCRTA's Executive Safety Committee, as applicable to their areas of responsibility, the scope and nature of proposed change, and the affected system elements (facilities, equipment, etc.). In all cases the review cycle for system modification include, at a minimum, the appropriate representative from the:

- Safety Department
- Rail District Departments
- Service Quality
- Engineering and Project Management Development, Procurement Department, and/or the Fleet Management Department
- Transit Police
- Training Department

External review of system modifications by outside agencies such as FTA, APTA, and ODOT, are coordinated by the Director of Safety, as required.

Comments from the internal and external review process are implemented or resolved prior to system modification and kept on file with disposition and supporting rationale. Unresolved comments and exceptions to proposed modifications of the system offered by the reviewers, are addressed by the Director of Project Development & Management, or the Director of Procurement or Director of Fleet Management, as applicable, and by the Director of Safety in the forum of the Executive Safety Committee. The committee shall conclusively resolve any outstanding exceptions and document the resolution action in its minutes.

Additionally, all major modifications to GCRTA rail operations systems require approval and sign-off by the CEO/General Manager.

Controlled copies of approved change, including a safety review or configuration control revision sheet, are distributed by the Director of Engineering and Project Management or the Rail District to all GCRTA drawing and plan-holders, identifying revision number, date and applicability to the appropriate mode of transportation.

SECTION 9 SAFETY DATA ACQUISITION

9.1 SAFETY AND SECURITY DATA ACQUISITION, ANALYSIS AND REPORTING

It is the task of the Safety Department and Risk Management to monitor the safety performance of GCRTA operations. Safety data is collected and analyzed to determine if safety performance meets the established safety goals and objectives. This data includes injuries to passengers, GCRTA personnel, public; potentially hazardous equipment failures; design inadequacies; rules and procedure violations; safety program audit deficiencies and collisions.

9.2 DATA ACQUISITION

Information regarding accidents, incidents, hazardous conditions, and safety program deficiencies is obtained from several different reporting mechanisms. These include, but are not limited to,

- RiskMaster Data Program
- Employee Occupational Injury Reports
- Accident/Incident Reports
- Accident Investigations
- Claims Reports
- Facility and Equipment Maintenance Reports
- Ultramain Reports
- Transit Police Reports
- Control Center Supervisor Logs
- Hazard Report Forms (Non-Punitive Hazard Reporting)
- Hazard Hotline
- Safety Walk/Audits
- Safety Representative on Site Days and System Awareness Events

9.3 DATA ANALYSIS AND TRACKING

Tracking of hazard–related data is used to identify trends. These trends are further analyzed and/or investigated by the Safety Department and the Rail District to determine causal factors. This is accomplished through interviews with personnel in the affected department(s) and analysis of related documentation. Identified hazards are submitted to the affected department(s) for corrective action, and may include corrective action recommendations.

9.4 REPORTS

GCRTA safety performance trend and analysis reports are provided to the Executive Safety Committee for review and discussion. All other GCRTA safety committees receive safety trend and analysis reports relative to the area of interest. The reports are the basis for determining achievement of the RSSPP safety goals and objectives and formulation of safety performance goals/objectives for the coming year. The safety trend and analysis reports are also the basis for the annual safety performance report to the Ohio Department of Transportation. The annual report includes collision data, passenger and employee injury data, injury data affecting the public, program audit findings and trends, and corrective action plans. The annual report also describes the strategies for achievement of the stated safety and security objectives.

SECTION 10 INCIDENT NOTIFICATION, INVESTIGATION, AND REPORTING

10.1 NOTIFICATION THRESHOLDS

10.1.1 ODOT NOTIFICATION

The Safety Department will immediately, (within 2 hours) notify ODOT by telephone, followed by a fax report, of any incident resulting in the following:

- A fatality at the scene; or where an individual is confirmed dead within thirty (30) days of a rail transit-related event
- A report of a serious injury to a person
- •A collision involving a rail transit vehicle:
  - A collision between a rail transit vehicle and another rail transit vehicle
  - A collision at a grade crossing
  - A collision with a person
  - A collision with an object
- 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.

Two definitions are needed for this set of criteria:

- **Serious Injury** means any injury which:
  - Requires hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received
  - Results in a fracture of any bone (except simple fractures of fingers, toes, or nose)
  - Causes severe hemorrhages, nerve, muscle, or tendon damage
  - Involves any internal organ
  - Involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.
- **Life Safety Reasons** – A situation, such as a fire, the presence of smoke or noxious fumes, a fuel leak, a vehicle fuel leak, an electrical hazard, a bomb threat, a suspicious item, or other hazard that constitutes a real or potential danger to any person. (from NTD Glossary)

Additionally as required by ODOT:

- **Near mishap collision** – This event type includes near train-on-train collisions or train-on-automobile/truck (or automobile/truck-on-train) (this does NOT include near train-on-pedestrian or bicyclist, but the RTAs are required to track these occurrences for risk monitoring). For GCRTA, this also is any time that two opposing trains are unexpectedly or uncontrolled with movement heading towards each other (e.g., block-on-block). This topic also includes non-revenue rail vehicles, on the main line, and in yard areas.
- **Near mishap collision with workers** out on the right of way (or in yards).. This category is intended to monitor work zones and significant issues related to the Right-of-way Worker Protection (RWP).
- **Evacuations of passengers to the right-of-way** – this definition includes any time that passengers are evacuated from trains for non-life-threatening reasons to the right-of-way/street level and not to a waiting train to pick them up at the scene of the

disabled/stopped train. This includes evacuation to a station for reasons other than rail equipment going out of service for maintenance.
- **Any significant pantograph and OCS problems** on the mainline or yards that cause an overhead line pull down, any pantograph entanglement, or multiple (more than three or four) pantographs being damaged.
- **Yard control and movement problems** – these are hard couples in the yard, switch problems into and out of the yard, and yard control problems. This includes revenue and non-revenue vehicles.
- **Selected significant hazardous conditions** – these are somewhat ad hoc in nature, so this topic will continue to be a discussion.

The Notification (Form) Required Content includes:

- Name and job title of person reporting.
- Incident type (fatality, injuries, property damage, evacuation, derailment or other)
- Location, time, and date.
- Number of fatalities.
- Number of injuries.
- Rail transit vehicle(s) involved (type, number).
- Type and number of other vehicle(s) involved;
- Property damage estimate.
- Whether NTSB reportable.
- Whether FRA reportable.
- Name of the primary GCRTA person conducting the investigation (name, title, phone and fax numbers, email address);
- Description of the incident.

10.1.2 NTSB NOTIFICATIONS

The Safety Department, with assistance from State Safety Oversight, will notify the NTSB within two hours, by telephone of any accident involving:
- Passenger or employee fatality (except suicide and exclude trespassers)
- Two or more passengers or crewmembers seriously injured or hospitalized
- Collision with another fixed guideway vehicle where deemed necessary
- Accident requiring emergency evacuation of passengers from the train.
- Fatality at a grade crossing

No later than four hours after an accident, any accident which results in:

- Damage of $150,000 or more for repairs to railroad and non-railroad property
- Accident damage of $25,000 or more to a passenger train and railroad and non-railroad property

10.1.3 TRANSIT POLICE NOTIFICATIONS

The Integrated Communications Center notifies Transit Police of any incident involving injury to a passenger or the public, of any collision at a grade crossing, and of any other emergency incident within 15 minutes of occurrence.

10.1.4 SAFETY DEPARTMENT NOTIFICATIONS

The Integrated Communications Center notifies the Safety Department of all injury and collision accidents in accordance with ODOT's State Safety Oversight Standard for accident reporting, and any other emergency incident within 15 minutes of occurrence.

10.2 ACCIDENT INVESTIGATION PROCESS

Service Quality initiates the notification to internal GCRTA employees for rail incidents. The level of investigation required is dependent on the seriousness of the event.

10.2.1 NON-SERIOUS INJURY AND DAMAGE INVESTIGATIONS

Accidents and incident that do not involve serious injury and/or damage usually require only an initial investigation by the Service Quality Rail Supervisor responding to the scene. The Supervisor at the scene:

- Commences an investigation
- Conducts interviews, as appropriate
- Gathers and collects the physical evidence
- Submits a report based on the information collected to the Safety Department and Claims Department.

10.2.2 SERIOUS ACCIDENTS/INCIDENTS

The Safety Department leads the accident investigation of all accidents/incidents reportable to ODOT and NTSB. However, personal injury and extent of damage are not the sole criteria. Any potentially unacceptable hazardous condition is investigated, as well. The Safety Department:

- Leads the on-site inspection of the accident/incident scene.
- Reviews reports written by involved personnel.
- Conducts interviews with involved personnel and witnesses.
- Reviews physical evidence.
- Performs system tests, if applicable.
- Coordinates accident reconstruction activities, if applicable.

- Conducts a root cause analysis with causal factors and recommendations in accordance with State Safety Oversight Standard Section 7.0, Investigations of Reportable Events.

A final report with findings, conclusions, and recommendations follows these investigations. The Safety Department submits details of its findings to the Executive Safety Committee. All information gathered is retained by the Safety Department in accordance with Retention Schedules.

10.3 REPORTING AND COORDINATION WITH ODOT

A monthly summary report is submitted to ODOT of all incidents, which meet the reporting criteria, within 15 days from the last day of the month covered. An annual report of GCRTA safety performance is submitted to ODOT each January 31st.

When the accident, incident, or condition involves post-accident inspections, examination, or testing, ODOT is notified so that it may participate in the investigation. A written report of significant accidents is sent to ODOT within 30 days of the event. Updates are sent until the investigation is complete. The report contains the following elements: identification of the most probable cause and other contributing factors, corrective action plan to prevent or mitigate recurrence, and a schedule of implementation, as appropriate.

ODOT may conduct a separate, independent investigation at its own discretion.

10.4 CORRECTIVE ACTION

10.4.1 SAFETY DEPARTMENT REVIEW

The Safety Department reviews all incident reports for potentially serious incidents or conditions. Additionally, when accident/incident reports and statistics show repetitive trends that result in an inability to meet or exceed the safety program goals and objectives, the Safety Department initiates an investigation to determine the causal factors. The Safety Department participates, with appropriate departments, to determine the required corrective actions.

10.4.2 ODOT REVIEW

GCRTA develops a Corrective Action Plan (CAP) for submission to ODOT when:

- Results from an accident/incident investigations in which identified causal factors are determined by GCRTA or ODOT as requiring corrective actions;
- Hazards or deficiencies identified from internal and external safety and security reviews performed by GCRTA or ODOT.

GCRTA Corrective Action Plans include:

- Identification of the hazard, deficiency, or root causes.
- The action(s) being taken by GCRTA to resolve or mitigate the hazard or deficiency
- An implementation schedule for the CAP
- The individual or department responsible for implementing the corrective action(s)
- Any other critical information deemed necessary by GCRTA or ODOT.

Each CAP is submitted to ODOT for review and approval, within thirty (30) calendar days, or as agree to by ODOT.

In the event that the NTSB conducts an investigation, GCRTA and ODOT will review the NTSB findings and recommendations to determine whether or not a CAP should be developed. GCRTA will develop a CAP if required either by the NTSB or ODOT. GCRTA will provide ODOT with the following information regarding the CAP:

- Alternative actions for implementing a CAP, if any
- Verification that the corrective action(s) has been implemented as described in CAP or that proposed alternative action(s) has been implemented
- ODOT concerning any alternative actions for implementing a CAP
- Monthly reports detailing the status of each corrective action(s) not completely implemented as detailed in the CAP

GCRTA will maintain a Corrective Action Monitoring Log and will provide ODOT with monthly corrective action implementation updates. GCRTA will provide written verification to ODOT when a corrective action has been fully implemented.

SECTION 11 EMERGENCY MANAGEMENT

11.1 EMERGENCY OPERATIONS PLAN

The GCRTA Emergency Operations Plan (EOP) describes GCRTA's process to ensure that fast, controlled and predictable responses can be made to various types of emergencies that may occur within the GCRTA system. The ability to respond quickly and in an organized manner is vital to the continuation of transit service during a special event, emergency, or during the recovery from a catastrophic incident, including but not limited to:

- Fire
- Flooding
- Hazardous material spill
- Medical emergency
- Severe weather
- Transit related accidents
- Acts of terrorism

The EOP also identifies how municipal and county agencies can both support, and obtain support from, GCRTA in addressing transit-specific and area-wide emergencies.

11.2 EMERGENCY PLANNING

GCRTA's service area lies within Cuyahoga County, including the City of Cleveland and towns and villages in the surrounding suburban communities. As such, GCRTA's primary regional emergency response planning relationship is with Cuyahoga County. The Cuyahoga County, Division of Emergency Services coordinates day-to-day emergency planning and response activities with GCRTA. GCRTA also works with the City of Cleveland, Department of Public Safety (DPS). While the City of Cleveland maintains its own response capabilities and protocols, and its own Emergency Operations Plan, the city also coordinates with Cuyahoga County regarding emergency management planning and response.

The Safety Department is principally responsible for the coordination of fire protection and life safety with fire departments and other emergency service agencies to provide for effective interaction between GCRTA and the agencies. Liaison with law enforcement agencies is the responsibility of the GCRTA Chief of Police.

11.3 EMERGENCY PROCEDURES

Abnormal and emergency conditions may develop which interfere with efficient passenger movement. An emergency may involve fire, smoke, derailment, collision, power failure, structural damage, a disabled train or other circumstances.

Procedures have been developed and incorporated into the Rail Operations Rule Book, ICC Procedures, and other documents for the safety of passengers during an emergency event. Evacuations due to incidents that may expose passengers to hazardous conditions are coordinated through the Control Center Supervisor and designated supervisor on the scene.

11.4 INCIDENT MANAGEMENT

GCRTA management of an emergency event or incident is based on the principles of the Incident Command System (ICS). Using the ICS allows emergency response agencies to communicate with Service Quality Supervisors and/or the Integrated Communications Center. The structure of the ICS is as simple as a single Service Quality Supervisor responding to an incident, to the activation of an Incident Command Center. In each case, a Service Quality Supervisor acts as the GCRTA on-site Incident Commander(IC) when assistance from an emergency response agency, or the Safety Department is not required. Once on scene the GCRTA Safety Department has the ability to assume Incident Command if Safety deems necessary. All GCRTA employees responding to the scene report to the on-site designated Incident Commander so that all participants and their expected actions can be coordinated. When an incident requires response from fire departments, emergency medical services, police, and other emergency services, the GCRTA IC becomes the liaison between GCRTA and the emergency response agency IC. The GCRTA IC coordinates closely with the representatives from the outside agencies to help ~~to~~ ensure the safety of customers, GCRTA and emergency response personnel, and the general public; and to make certain that the appropriate GCRTA resources are available at the incident scene.

The Integrated Communications Center (ICC) serves as the central management center for all bus and rail incidents. The ICC is staffed 24 hours a day, seven (7) days a week. The ICC is responsible for:

- Implementing the appropriate response plan when acting as incident commander
- Requesting assistance from outside emergency response agencies for fire, medical, police, and evacuation emergencies.
- Notify Transit Police, Safety Department, appropriate GCRTA management personnel and, external agencies, as appropriate
- Dispatching Service Quality Supervisors and Service Department Personnel to the scene and other designated locations, as required
- Communicating and controlling all bus and train movements, and adjusting service schedules, as required
- Activating the appropriate emergency systems, such as power removal
- Coordinating requests for additional GCRTA resources, i.e. equipment and personnel
- If the Safety Department reports their intention to respond to the scene, the Safety Department representative may assume incident command upon arrival. Prior to the arrival of the Safety Department representative, the Control Center Supervisor shall take steps to preserve the scene.
- Preserve the scene to ensure involved GCRTA employees, vehicles, train cars, busses, any involved RTA and non-RTA property remain at the scene and not be moved or any aspect of the equipment or car be altered, unless to prevent injury or if instructed by emergency response agencies.

11.5 EMERGENCY MANAGEMENT PROGRAM ACTIVITIES

The GCRTA Emergency Management Plan details GCRTA's emergency planning, preparedness, and response capabilities. The Director of Safety and the Chief of Police lead the periodic review of the Emergency Plan and emergency procedures with all affected GCRTA departments and external agencies, as appropriate, and as required as a result of evaluations of drills and actual incidents. Any proposed revisions are coordinated through the configuration management process, and are approved by the Executive Safety Committee.

11.6 EMERGENCY DRILLS AND EXERCISE

Periodic emergency preparedness drills are planned and conducted to ensure the:

- Adequacy of emergency plans and procedures.
- Readiness of GCRTA personnel to perform under emergency conditions.
- Effective coordination between GCRTA and emergency response agencies.

The drill schedule is coordinated between Transit Police, Service Quality, Rail District, and the Safety Department.

Drills and exercises are divided into two distinct categories in accordance with GCRTA Progressive Exercise Program Plan:

- Discussion-based exercises include seminars, workshops, tabletops and games. These types of exercises typically focus on existing plans, policies, mutual aid agreements, and procedures. Thus, they are effective tools for familiarizing agencies and personnel with current or expected response capabilities. They may also provide forum for developing new plans and procedures. These types of exercises tend to focus on policy-oriented issues. In conducting discussion-based exercises, facilitators and/or presenters usually lead the discussions, helping to keep participants on track and ensure that objectives are met.
- Operations-based exercises include drills, functional exercises, and full-scale exercises. These types of exercises are used to validate the plans, policies, agreements, and procedures solidified in discussion-based exercises. Operations-based exercises can clarify roles and responsibilities, identify gaps in resources needed to implement plans and procedures, and improve individual and team performances. Common characteristics include actual response, mobilization of equipment and resources, and commitment of personnel, usually over an extended period of time. These exercises may involve single and multiple agencies and jurisdictions.

Drills are evaluated against the objective established for the drill/exercise. All drills are followed by after-action reports to document lessons learned and actions needed to improve GCRTA emergency response capabilities. For drills led by eternal GCRTA partners, an after-action review will be conducted to focus on GCRTA safety centric parts. The report of the findings is provided to the Executive Safety Committee. Action items are tracked by the Safety Department to completion.

The GCRTA Rail Exercise Program is further delineated in the Progressive Exercise Program Plan to train the Service Quality Operational Staff and the Rail District Operational Staff in a series of table top exercises, functional exercises and full scale exercises. These exercises are designed to simulate actual emergency situations and provide the means to assess the participant's responses to each situation in accordance with currently established rules, procedures and departmental directives.

The GCRTA Rail Exercise Program provides participants with guidance concerning procedures and responsibilities for exercise control, simulation, and support. It explains the exercise concept, establishes the basis for control and simulation of the exercise, and establishes and defines the communications, logistics, and administrative structure needed to support control and simulation during the exercise.

11.7 TRAINING

All GCRTA transportation and maintenance personnel undergo emergency response training to ensure they have a full understanding of their role and responsibility during an emergency incident. The level of training is based on their anticipated role during the incident. At a minimum, training is provided on the emergency plans and procedures that the employee may be required to implement, and on any specialized equipment.

Training to familiarize fire, rescue, and other emergency service personnel with special transit system requirements is coordinated through and conducted by the Safety Department with assistance from Transit Police and the Transportation and Maintenance Departments, as appropriate. This includes initial hands-on training regarding rail lines, rail vehicles, or facilities that present unique hazards. Additionally, familiarize tours are held of new transit facilities. Refresher training is coordinated with the various agencies to ensure they remain knowledgeable in the unique hazards that transit operations present, including but not limited to accessing the rights-of-way, grade crossings protocol for agencies running at code red, and traction power.

11.8 COORDINATION WITH EXTERNAL EMERGENCY AGENCIES

The Safety Department serves as the liaison between GCRTA and fire jurisdictions and emergency response agencies. Transit Police serves as the liaison with law enforcement agencies. The Safety Department and/or Transit Police periodically bring together local and state fire jurisdictions, local emergency response agencies, law enforcement, and GCRTA Service Quality and Operations Departments when design changes to facilities, equipment, and infrastructure may affect fire/life safety; to debrief major incidents that involve emergency response agencies; and to plan emergency response drills and exercises. Outcomes include recommendations for revisions to emergency preparedness response plans, policies, and procedures; operating procedures that affect emergency response; and changes to training plans and training programs pertaining to emergency response and personnel.

SECTION 12 INTERNAL SAFETY AUDIT PROGRAM

12.1 INTERNAL SAFETY AUDIT PROGRAM

Verification of compliance with the Rail System Safety Program Plan requirements are accomplished through reviews, tests, analyses, reports, inspections, audits, investigations and drills. Audits are primarily of the GCRTA Service Quality Management and Rail District Transportation and Maintenance departments' functions. However, all GCRTA departments with system safety program responsibilities, including applicable contractors, are subject to planned and periodic reviews by the Safety Department.

12.2 AUDIT RESPONSIBILITY

The Director of Safety has the responsibility for the implementation and oversight of the safety audits while keeping in mind the independent nature of the audit process. The Director of Safety selects the Audit Team and Leader proficient in the areas being audited, ensuring that the audit team does not include staff from the functions and/or units being audited.

12.3 AUDIT PROCESS

The Director of Safety is responsible for developing and distributing standard procedures to be followed during the conduct of safety reviews and audits, and assures that all audits are conducted in a cooperative and professional manner. The procedures include a process for resolving problems or disagreements with findings.

The reviewed department is informed in advance of the audit/review and is provided with information regarding the planned system safety review/audit. Findings are communicated to the audited department to ensure expeditious corrective action. Critical deficiencies are communicated to the department head immediately or at an exit interview.

12.4 AUDIT CHECKLIST

Auditing teams utilize checklists in their audit. The checklists reflect the items and areas and the department being audited. The audited department is given opportunities to provide support documentation of the requirement on the checklist to the auditors. Auditors may choose a day to do spot checks of individual records, such as maintenance records or personnel qualification records.

12.5 AUDIT REPORTS AND CORRECTIVE ACTION

All audits are fully documented and reported. Upon the completion of each review and audit, the Safety Department issues a report of the results that identifies areas of deficiency, provides recommendations and identifies corrective actions. Corrective actions and schedule for implementation are reviewed and approved by the Director of Safety and are tracked until completed by the Safety Department. Copies of the report are distributed to the audited department, CEO/General Manager and to the affected members of the Executive Safety Committee.

12.6 ORGANIZATIONAL FUNCTIONS AUDITED

The following organizational functional areas are included in the audit process:

- System Safety Policy*
- Goals and Objectives for System Safety Program*
- Management Structure*
- System Safety Program Plan Control and Update Procedures*
- Safety Activities Performed by Safety Function* and by Other Departments
- Hazard Management Process
- System Modification Review/Approval Process
- Safety Certification
- Safety Data Acquisition and Analysis
- Accident/Incident Notification, Investigation, and Reporting
- Emergency Management Program
- Internal Safety Audit Program*
- Rules and Procedures Development, Maintenance, and Compliance
- Facilities and Equipment Safety Inspections
- Maintenance Audits and Inspections
- Training and Qualification Program
- Configuration Management
- Employee and Contractor Safety Program
- Hazardous Materials Programs
- Drug and Alcohol Abuse Programs
- Procurement

* Audited other than by Safety Department

12.7 AUDIT SCHEDULE

Each audit area is reviewed at least once every three years, with approximately one-third of the functional areas audited each year. An audit schedule is prepared annually, with specific audit dates communicated to ODOT when established. At least 30 days advance notice of the planned audit is communicated to ODOT.

The purpose of the audit is to conduct audits/reviews of safety-related activities in all GCRTA departments and to report findings to the involved department, CEO/General Manager, and to the Executive Safety Committee, to ensure that effective corrective action is taken to resolve deficiencies.

Table 12-1: 2018 – 2020 Internal Rail Safety Audit Schedule

Safety and Security Internal Audit Elements

RTA's Three-Year Rail Internal Audit Cycle 2018 - 2020

2018 Internal Rail Safety Audits

SSO Standard Elements	SSO Standard/ SSPP number	Topic	Check lists Due	Target Date	Responsibility
Facilities and Equipment Inspections	14	Rail System Safety Inspections- Rail Stations	6/1/18	9/1/18	VC
Maintenance Audits and Inspections	15	Rail Bridge Inspection Program	6/1/18	9/1/18	KC
Employee and Contractor Certification	16	Service Quality Rail and Control Center Supervisor Training	TBD	12/1/18	IA
Compliance With Safety Requirements	18	Required New Rail Employee Safety Training	6/1/18	9/1/18	CB
Hazardous Materials Program	19	TBD	8/1/18	10/1/18	SP
Procurement	21	Rail Vehicle Parts	TBD	12/1/18	IA
Customer Safety	Not a separate section	Rail Safety Public Outreach	9/1/18	12/1/18	RC

***Note: Years 2019 and 2020 audits will be determined based on Organizational safety data.**

12.8 ODOT AUDIT REPORTS

GCRTA prepares and submits an annual report to ODOT no later than January 31 of each year, for the prior calendar. The report documents the internal safety and security review activities; the status of compliance with the internal review schedule; activities performed; and subsequent findings, recommendation and CAPs developed to address review findings.

The annual report is transmitted to ODOT under the signature of the CEO/General Manager, affirming that the GCRTA is in compliance with its Rail System Safety Program Plan and the System Security Plan (SSP). If the internal audits should find areas of non-compliance with the RSSPP or SSP, the transmittal letter will indicate those corrective actions taken to reach compliance.

SECTION 13 RULES AND PROCEDURES REVIEW

13.1 SAFETY RELATED OPERATIONS AND MAINTENANCE DOCUMENTS

The GCRTA Rail Operations Rule Book, Standard Operating Procedures, Integrated Communications Center Procedures, Emergency Operating Procedures, and Rail Operating Orders all govern rail operations procedures during normal and abnormal conditions and are considered safety-critical documents. Additionally, the GCRTA Maintenance Standard Operating Procedures govern maintenance practices (Inspection and Maintenance Manual). All of these documents are subject to configuration management and formal document control procedures.

13.1.1 RULE BOOK

The Rail Operations Rule Book is reviewed and analyzed to ensure it provides for the safe operation of the rail system in normal and emergency conditions, and to ensure compliance with appropriate governing bodies. Revisions to the Rule Book are done by the Rail District Director, or designee, through the issuance of Rail Operating Orders (ROO) that add, delete or otherwise amend a rule in the Rule Book. The ROOs go through Configuration Management before implementation. All Rail Operating Orders are then reviewed at years end for consideration and permanent adoption into the following year's revision and publication of the Rail Operations Rule Book.

13.2 PROFICIENCY TESTING

13.2.1 RAIL OPERATORS

The Rail Operational Safety Checks Program serves as the foundation for observing, correcting, and documenting safety related behaviors and activities. It is also used to re-enforce positive safety behaviors. Service Quality Supervisors and Rail Training Instructors are responsible for conducting periodic field and on-board rail operations safety checks. Supervisors and Training Instructors travel along the rail right of way and/or board trains to observe and evaluate adherence to rules, policies and procedures, verbal or written instructions such as Rail Operating Orders, and speed limit compliance. Rail Operator safety checks are recorded on the "Supervisor Rail Safety Ride Check" and "Supervisor Rail/Check forms. Service Quality Supervisors and Training Instructors are authorized to take appropriate and immediate actions if indicated by the situation. Each Rail Operator receives an annual operations safety check.

In addition to the field and on-board observational checks, Control Center Supervisors set signals to red aspects in order to observe an operator's compliance with rules according to the Rail Operations Rule Book. These tests are conducted at least once by each Control Center Supervisor on each of their shifts.

The results of the field/on-board operational safety checks activity are forwarded to the Rail Transportation Manager and Training Manager for review and follow-up for appropriate action.

13.2.2 CONTROL CENTER AND SERVICE QUALITY SUPERVISORS

In additional to operator efficiency testing, Control Center Supervisors and Service Quality Supervisors undergo proficiency testing of rules and procedures on a quarterly basis to ensure Control Center supervisors are retaining information and training provided for taking appropriate actions to restore and adjust service. Testing will include emergency procedures and notifications, single track operation in cab and non-cab signal areas, dealing with accidents or incidents, managing track problems (debris, gap in switch, water, snow, fire, break or kink in rail) and other issues pertaining to movement of rail equipment and trains. Tests are written examinations up to twenty five questions and field simulations that reference the Train Control Standard Operating Procedure manual, Rail Operating Orders and bulletins, the Consolidated Train Dispatching System (CTDS) manual, and Rail Operating Rulebook.

Control Center Supervisors are required to conduct at least one red signal efficiency test on each of their shifts. Similarly, Service Quality Supervisors are required to conduct at least two rail safety ride checks, field observations and field simulations, per week. Supervisor performance is monitored to ensure the requirements are met.

13.2.3 POWER AND WAY AND FACILITIES MAINTENANCE

Power and Way, Facilities Maintenance, and Service Quality Rail Managers and Supervisors observe Facilities Maintenance, Power and Way, and contractors' worksites through proficiency tests such as flagging, de-energization and other Safety critical components to ensure compliance with rules, procedures, and work permits. These supervisors advise ICC that flags or flagging arrangements need to be altered, Rail Operating Orders need to be amended or cancelled, or that work needs to be suspended. All rail operations/worksite observations are documented on the respective Supervisor's report form.

13.3 PROFICIENCY TEST RECORDS AND TREND ANALYSIS

Records of Rail Operator, Power and Way, and Facilities Maintenance proficiency tests are kept by the Service Quality, Rail District Management, Engineering and Project Management and Training departments, as appropriate.

The results of Proficiency Testing serve as a data source in the Hazard Management Process. Trend analyses of all operational safety check activities are performed in order to determine revisions to needed to training and safety program activities and other areas requiring improvement. The analyses are submitted quarterly to the Executive Safety Committee for review. The analyses are also submitted as part of the annual report to ODOT.

SECTION 14 FACILITIES AND EQUIPMENT INSPECTIONS

14.1 RAIL SYSTEM SAFETY INSPECTIONS

An essential element of the Rail System Safety Program is regular inspection of all rail system elements that can affect safe operation. Major elements in the rail system that directly affect safety are: vehicles, right of way, overhead power distribution, signal system, and rail stations and facilities. Preventive maintenance activities on wayside equipment and other safety critical equipment are performed in accordance with manufacturers' recommended practice and the APTA Manual of Standards and Recommended Practices for Rail Transit Systems and are documented. Checklists are used in conducting inspections of facilities and equipment.

14.2 RAIL EQUIPMENT

All heavy rail cars are inspected once every 30 days (± 3 days) and light rail cars are inspected once every 30 days (± 3 days) Inspection schedules, findings and corrective actions are logged in Ultramain.

Periodically rail cars are serviced outside of the interval period to most efficiently utilize resources and ensure safety. These inspections includes pantographs, lights, deadman control, console horns, wheels, motors, brake system, shock absorbers, springs, couplers, windows, battery, doors, floors, steps and body. This information is also logged in Ultramain.

14.3 TRACK

The GCRTA adopted its own internal standards for maintaining track. GCRTA qualified track inspectors and track maintainers inspect light and heavy rail track for defects. This inspection includes rail, roadbed, spikes and other rail fastening systems, bolts, ties, welded and insulated joints, and switches. Inspections and maintenance are reported through CITME Ultramain.

Rail Management has developed comprehensive policies and procedures to address all aspects of track management including preventive and corrective maintenance. Track preventive maintenance inspections are uniform with respect to terminology, locations, and conditions. Corrective maintenance items are tracked to completion and reconciled to a preventive maintenance work order. Minimum and maximum measurement ranges are defined in the CITME Ultramain system. Inspection results are quantified and documented for tracking purposes and follow-up activity. Inspection of the entire line is conducted monthly. To ensure safety a standard operating procedure establishes priorities for track deficiencies and timing of corrective action.

Regular track surfacing and lining is performed using a tamper to assure a safe, smooth roadbed and fixed guideway interaction.

System, Device, or Component	Action	Frequency of Action	Reference
TRACK INSPECTION	INSPECTION - WALKING OR RIDING	WEEKLY	GCRTA I&M Manual
SWITCHES INCLUDING FROGS AND GUARD RAIL	INSPECTION	WEEKLY/MONTHLY	GCRTA I&M Manual
TRACK GEOMETRY	INSPECTION	ANNUAL	GCRTA I&M Manual
CWR	INSPECTION	ANNUAL	GCRTA I&M Manual
GRADE CROSSING	INSPECTION	WEEKLY	GCRTA I&M Manual
TIES	INSPECTION	WEEKLY/MONTHLY	GCRTA I&M Manual
TIE PLATES	INSPECTION	WEEKLY/MONTHLY	GCRTA I&M Manual
RAIL FASTENERS	INSPECTION	WEEKLY	GCRTA I&M Manual
TRACK SURFACE	INSPECTION	WEEKLY	GCRTA I&M Manual
TRACK GAUGE	INSPECTION	WEEKLY	GCRTA I&M Manual
TRACK ALIGNMENT	INSPECTION	WEEKLY	GCRTA I&M Manual
BALLAST	INSPECTION	WEEKLY	GCRTA I&M Manual
RAIL JOINTS	INSPECTION	WEEKLY	GCRTA I&M Manual
SPECIAL INSPECTION POST-FIRE, FLOOD, SEISMIC ACTIVITY, SEVERE STORMS & DERAILMENTS	INSPECTION	IMMEDIATELY AFTER EVENT	GCRTA I&M Manual
MAINLINE SWITCHES	INSPECTION	MONTHLY	GCRTA I&M Manual
YARD SWITCHES-HAND THROW ONLY	INSPECTION	QUARTERLY	GCRTA I&M Manual
VEGETATION	INSPECTION	WEEKLY	GCRTA I&M Manual
BASE AND SUB-BASE	INSPECTION	WEEKLY	GCRTA I&M Manual
SLIP JOINTS	INSPECTION	WEEKLY	GCRTA I&M Manual
ROAD BED	INSPECTION	WEEKLY	GCRTA I&M Manual
RAIL WEAR	INSPECTION	WEEKLY	GCRTA I&M Manual

14.4 SIGNALS

Signal Maintainers visually check wayside signals daily. They note and report all defects in Ultramain for immediate repair or other corrective action. In addition to this safety check, all signal defects when reported by rail operators are checked and repaired promptly, with information logged in Ultramain.

System, Device, or Component	Action	Frequency of Action	Reference
ELECTRIC SWITCH MACHINE	INSPECTION	MONTHLY	APTA
ELECTRIC SWITCH MACHINE	MAINTENANCE	QUARTERLY	APTA
WAYSIDE SIGNAL	INSPECTION & MAINTENANCE	QUARTERLY	APTA
SNOW MELTING EQUIPMENT	INSPECTION & MAINTENANCE	ANNUAL	APTA
AC POWER SYSTEMS	INSPECTION & MAINTENANCE	QUARTERLY - MONTHLY AT GRADE CROSSING	APTA
DC POWER SYSTEMS	INSPECTION & MAINTENANCE	QUARTERLY - MONTHLY AT GRADE CROSSING	APTA
SIGNAL EQUIPMENT ROOM	INSPECTION & MAINTENANCE	QUARTERLY - MONTHLY AT GRADE CROSSING	APTA
AC GROUND DETECTION	INSPECTION & MAINTENANCE	QUARTERLY - MONTHLY AT GRADE CROSSING	APTA
DC GROUND DETECTION	INSPECTION & MAINTENANCE	QUARTERLY - MONTHLY AT GRADE CROSSING	APTA
GRADE CROSSING EQUIPMENT	INSPECTION	MONTHLY	APTA
GRADE CROSSING EQUIPMENT	MAINTENANCE	QUARTERLY	APTA
AC VANE RELAY	INSPECTION	EVERY TWO YEARS	APTA
DC VITAL RELAY	INSPECTION	EVERY FOUR YEARS	APTA
SIGNAL EQUIPMENT ROOM GROUNDS	INSPECTION & MAINTENANCE	QUARTERLY - MONTHLY AT GRADE CROSSING	APTA
SWITCH MACHINE OBSTRUCTION	INSPECTION	MONTHLY	APTA
LOCAL CONTROL PANEL	INSPECTION & MAINTENANCE	QUARTERLY	APTA
ELECTRIC TRAIN STOP	INSPECTION & MAINTENANCE	MONTHLY	APTA
CABLE PLANT TESTING	INSPECTION	EVERY 10 YEARS	APTA
APPROACH LOCKING	INSPECTION	ANNUAL	APTA
TIME LOCKING	INSPECTION	ANNUAL	APTA
ROUTE LOCKING	INSPECTION	ANNUAL	APTA
TRAFFIC LOCKING	INSPECTION	ANNUAL	APTA
HAND OPERATED SWITCH MACHINE	INSPECTION	MONTHLY	APTA
AUDIO FREQUENCY TRACK CIRCUIT	INSPECTION & MAINTENANCE	BI-ANNUAL - MONTHLY AT GRADE CROSSING	APTA
POWER FREQUENCY TRACK CIRCUIT	INSPECTION & MAINTENANCE	BI-ANNUAL - MONTHLY AT GRADE CROSSING	APTA
IMPEDANCE BOND	INSPECTION & MAINTENANCE	BI-ANNUAL - MONTHLY AT GRADE CROSSING	APTA
INDUCTIVE LOOP	INSPECTION & MAINTENANCE	BI-ANNUAL - QUARTERLY FOR CAB TEST LOOPS AND CUT- IN LOOPS	APTA
DERAIL	INSPECTION	MONTHLY	APTA
DERAIL	MAINTENANCE	QUARTERLY	APTA
YARD/BLOCK LIGHTS	INSPECTION	BI-ANNUAL	

14.5 TRACTION POWER

An inspection of the overhead is conducted weekly by riding in the front end of a revenue train and by walking the line annually. Traction Power personnel inspect and maintain electrical distribution from the substation to the overhead system. Overhead contact wires, catenary wires, rail support structures, and fasteners on both heavy rail and light rail systems are checked visually once a year by Traction Power personnel both visually and hands-on. They are checked for wire wear, broken or loose hangers, broken insulators, dislodged feeder taps, and obvious misalignment.

In 2008 rail management prepared and published a standard operating procedure to address substation management including preventive and corrective maintenance. Substations are assigned maintenance requirements according to APTA standards. Preventive maintenance inspections are uniform with respect to terminology, locations, and conditions. Within CITME Ultramain, defined maintenance requirements are equipped with automatic triggers which initiate work orders for tasks due. Inspection parameters have been established in order to gauge deviations from allowable readings and measurements according to OEM and APTA requirements. Corrective actions are tracked to ensure completion. Results of all Traction Power inspections and corrective actions are recorded in CITME Ultramain.

System, Device, or Component	Action	Frequency of Action	Reference
AC52 BREAKER (VACUUM BOTTLE)	MAINTENANCE:	YEARLY	GCRTA-CITME
DISCONNECT SWITCH	MAINTENANCE:	YEARLY	GCRTA-CITME
DC FEEDER BREAKER (Draw Out Truck Mounted)	MAINTENANCE:	YEARLY	GCRTA-CITME
SCADAMASTER-730	INSPECTION	BI-ANNUAL	GCRTA-CITME
FIBER OPTICS	INSPECTION	ANNUAL	GCRTA-CITME
EXHAUST FAN & INTAKE FAN	INSPECTION	ANNUAL	GCRTA-CITME
SUBSTATION HEATERS	INSPECTION	ANNUAL	GCRTA-CITME
SUBSTATION AC UNIT HEATERS	INSPECTION	ANNUAL	GCRTA-CITME
SUBSTATION REMOTE TERMINAL UNIT CABINET	INSPECTION	ANNUAL	GCRTA-CITME
OVERHEAD WAYSIDE DISCONNECT	INSPECTION	ANNUAL	GCRTA-CITME
NOBO SECTION INSULATOR (Fiber Board Style)	INSPECTION	ANNUAL	GCRTA-CITME
NOBO STYLE: _____Visually Inspect Fiberboard Insert for carbon and burning. _____Visually Inspect Brass ends for excessive burning. _____Visually Inspect all associated hardware for defects.	INSPECTION	SEMI-ANNUAL	GCRTA-CITME
MANHOLES	INSPECTION	SEMI-ANNUAL	GCRTA-CITME
TOWER CITY - OVERHEAD AERIAL	INSPECTION	ANNUAL	GCRTA-CITME
YARD AERIAL	INSPECTION	ANNUAL	GCRTA-CITME
WATERFRONT WEIGHTS	INSPECTION	SEMI - ANNUAL	GCRTA-CITME
OVERHEAD VISUAL	INSPECTION	WEEKLY	GCRTA-CITME
CABLES - 600VDC TO 1500VDC	MEGGER	FIVE YEARS	GCRTA-CITME
WAYSIDE DISCONNECTS-VISUAL AND MECHANICAL	INSPECTION	SEMI - ANNUAL	GCRTA-CITME
ELECTRICAL TESTS:	INSPECTION		GCRTA-CITME
A) PERFORM RESISTANCE MEASUREMENTS ON BOLTED CONNECTIONS WITH A LOW-RESISTANCE OHMMETER CAPABLE OF READING 2 MICROHMS OR WITH PARALLEL CABLES USE A CLAMP-ON AMMETER TO VERIFY NEARLY EQUAL CURRENTS ON ALL CABLES.	MEGGER	ANNUAL	GCRTA-CITME
B) PERFORM AN INSULATION RESISTANCE TEST WITH A MEGOHMMETER USING A VOLTAGE NO GREATER THAN THE CABLE INSULATION RATING WHEN THE INTEGRITY OF A CABLE IS SUSPECT. WHERE THERE IS MORE THAN ONE CABLE IN PARALLEL, TEST EACH INDIVIDUAL CABLE.	MEGGER	ANNUAL	GCRTA-CITME

14.6 FACILITIES

Inspection and maintenance of facilities and related equipment is performed in accordance with manufacturers' manuals, codes, standards and established procedures. Rail stations and facilities are inspected nightly by Transit Police for safety hazards and to assure the security of them.

14.7 TRACKING OF DEFICIENCIES

Deficiencies noted during inspections are logged in Ultramain and submitted for repair or corrective action to applicable managers. The Safety Department receives copies of all deficiency reports for tracking through the Hazard Management process. The adequacies of control measures for safety critical equipment and systems are evaluated to ensure the proper corrective actions are in place to control potentially hazardous conditions to passengers, employees, and the general public.

SECTION 15 MAINTENANCE AUDIT AND INSPECTIONS

15.1 MAINTENANCE AUDIT AND INSPECTION PROGRAM

For operations on the GCRTA system, inspection and maintenance must be effective to assure that all revenue and non- revenue vehicles, wayside systems, and equipment operate as required, or in the event of failure or degradation of functionality, that operational safety is not compromised. This aspect of inspection and maintenance directly pertains to the safety of GCRTA customers, emergency response agencies, the general public, and employees and subcontractors of GCRTA.

Implementation of inspection and maintenance activities is under the direction of the Facilities Maintenance for fixed plant equipment, stations and buildings; the Power and Way Department's Signal Department for the signal system, Track Department for track and non-revenue off and on-track heavy equipment, Traction Power for overhead contact system; substations and fiber optic communications; and the Rail Equipment Department for heavy and light rail cars, certain non-revenue vehicles, and other support equipment. These departments closely coordinate their actions with Rail Transportation and Safety Departments.

Bridges are inspected and maintained by the Engineering and Project Management Department.

Inspection and maintenance of all vehicles, equipment, and wayside systems are performed in accordance with manufacturers' manuals, codes, standards and established procedures using written checklists. The goal is to maintain a level of readiness that ensures safe, efficient and reliable transit service. Preventive maintenance activities on heavy and light rail cars, vehicles, wayside equipment, and other safety critical equipment are performed in accordance with manufacturers' recommended practice and are documented.

The maintenance departments use the Ultramain database system to track scheduled inspection and maintenance of vehicles and equipment. An active log is maintained of all in-service failures. Although such failures may not necessarily lead to an incident or accident, all "in service" failures are documented for review and for determination of the causal factors. Corrective action of "in service" failures are coordinated with the various rail operations departments and the Safety Department, as appropriate.

Safety critical equipment that does not meet established requirements is removed from service and/or tagged or locked-out. Vehicles or equipment involved in accidents are inspected by qualified personnel prior to being placed back into service.

SECTION 16 EMPLOYEE AND CONTRACTOR TRAINING AND CERTIFICATION

16.1 RAIL OPERATOR TRAINING

Rail Operator Training is a 60-day program (approximately 11 weeks) with an additional week of Instructor follow-up with the students after they have received Operator Certification and been entered into revenue service.

New Operator Training consists of:

Rail Orientation; Customer Service & ADA Sensitivity; Fare Structure & Collection Procedures; Defensive Operating; Schedules; Documentation & Form Completion; Rail Operations Rule Book; Policies & Procedures; Radio Communication Protocol; LRV & HRV Operation; Signals (Cab & Wayside), Switches; Flagging Procedures; Single Tracking; Territory Familiarization; Yard Operation; and Mainline Operation.

Operator Certification requires:

80% passing score on the Rail Operations Rule Book Examination; 80% passing score on all General Knowledge Examinations; and successful demonstration of ability with assigned Rail Training Instructors.

Operator Biennial Re-Certification requires:

80% passing score on the Rail Operations Rule Book Examination; 80% passing score on all General Knowledge Examinations; and successful demonstration of ability with assigned Rail Training Instructors.

Operator Re-Instruction is conducted:

After a significant change to the Rail Operations Rule Book or functionality of the operating system; Post Incident or Accident; Upon request of the Rail District Director or Manager; or as result of a cardinal rule violation.

16.2 SERVICE QUALITY RAIL AND CONTROL CENTER SUPERVISOR TRAINING

Service Quality Rail Supervisors receive training from the Rail Operator curriculum, on-the-job training in:

Incident Command & Emergency Response; Rail Accident/Incident Investigation; Efficiency Testing; Track Allocation; and On-Track Safety.

Control Center Supervisors receive training from the Rail Operator curriculum, on-the-job training in:

Train Control; SCADA; CTDS; Central Communications; Radio System; Transit Master; Train Control SOPs; Emergency Response Management; Track Allocation; System Recovery Methods; Accident / Incident Investigation. Rail Rule Book.

Rail and Control Center Supervisors Certification:

80% passing score on the Rule Book Examination; 80% passing score on all General Knowledge Examinations; and successful demonstration of ability with assigned Rail Training Instructors.

Rail and Control Center Re-Certification:

70% passing score on the Rail Operations Rule Book Examination; 70% passing score on all General Knowledge Examinations; and successful demonstration of ability with assigned Rail Training Instructors.

The certification period is noted as follows:
70%-79% Six (6) month certification
80%-89% One (1) year certification
90%-100% Two (2) year certification

Rail and Control Center Supervisor Reinstruction is conducted:

After a significant change to the Rail Operations Rule Book or functionality of the operating system; Post Incident; upon request of the Service Quality Director or Manager; or as result of a cardinal rule violation.

16.3 RAIL EQUIPMENT UNIT PERSONNEL TRAINING

Maintenance requirements, methods and procedures for rail equipment and systems are described in manufacturers' manuals, maintenance procedures, and other documentation are used in the on-the-job training of rail maintenance personnel. Safety instruction is conducted by the Rail Training Department. Rail Equipment personnel who are required to operate heavy and light cars, hi-rail equipment, heavy equipment, or specialized vehicles/equipment/apparatus receive instruction on the equipment's operating procedures and on their proper and safe operation.

Rail Equipment Unit Personnel Certification:

80% passing score on the Rail Operations Rule Book Examination; 80% passing score on all General Knowledge Examinations; and successful demonstration of ability with assigned Rail Training Instructors.

Recertification of Rail Equipment Unit Personnel:

80% passing score on the Rail Operations Rule Book Examination; 80% passing score on all General Knowledge Examinations; and successful demonstration of ability with assigned Rail Training Instructors.

70% passing score on any Apprenticeship related examinations set by the Joint Apprenticeship Committee (JAC).

Rail Equipment Unit Personnel Re-Instruction is conducted:

After a significant change to the Rail Operations Rule Book or functionality of the operating system; Post Incident or Accident; Upon request of the Rail District Director or Manager; or as result of a cardinal rule violation. Supervisor Toolbox discussions are also used to instruct employees on new procedures and issued ROOs.

16.4 POWER AND WAY UNIT AND FACILITIES MAINTENANCE UNIT TRAINING

Power and Way Unit and Facilities Maintenance Unit requirements, methods and procedures are described in manuals, manufacturers' handbooks, maintenance procedures, and other documentation, and are used in the on-the-job training of Power and Way staff. Safety instruction is conducted by the Rail Training Department.

Power and Way and Facilities Maintenance staffs who are required to operate high rail equipment, heavy equipment, or other specialized vehicles/equipment/apparatus receive instruction on the operating procedures and in their proper and safe operation.

Power and Way Unit & Facilities Personnel Certification:

80% passing score on the Rail Operations Rule Book Examination; 80% passing score on all General Knowledge Examinations; and successful demonstration of ability with assigned Rail Training Instructors.

Biennial Power and Way Unit & Facilities Personnel Re-Certification:

80% passing score on the Rail Operations Rule Book Examination; 80% passing score on all General Knowledge Examinations; and successful demonstration of ability with assigned Rail Training Instructors.

Power and Way Unit & Facilities Personnel Re-Instruction is conducted:

After a significant change to the Rail Operations Rule Book or functionality of the operating system; Post Incident or Accident; Upon request of the Rail District Director or Manager; or as result of a cardinal rule violation. Supervisor Toolbox discussions are also used to instruct employees on new procedures and issued ROOs.

16.5 CONTRACTOR TRAINING

Contractor personnel who are authorized to work in the right-of-way under live rail traffic are required to attend an on-track GCRTA safety & flagging course consisting of applicable:

Rail Operating Rule Book rules; Right of Way Worker Protection Program Training with or without flagging depending on request and Rail SOPs.

16.6 OTHER PERSONNEL

The Rail Training Instructors also provide safety training for other GCRTA Rail Operations and other associated staff including, initial training in a job, new equipment/procedures, and refresher training.

16.7 TRAINING RECORDS

The Rail Training Department maintains records of training activities and certifications for:

Rail District Employees; Service Quality Employees; Contractor personnel; and other trained personnel.

In addition the Rail District Transportation, Service Quality Management, Engineering and Project Management, and other Departments maintain records for their respective employees and contractors

16.8 COMPLIANCE WITH TRAINING AND CERTIFICATION REQUIREMENTS

The Safety Department conducts audits of all training and certification requirements. A detailed description of the auditing process is found is Section 12.

SECTION 17 CONFIGURATION MANAGEMENT

17.1 CONFIGURATION MANAGEMENT

Refer to the Configuration Management SOP on the GCRTA Intranet. Configuration Management Procedures are a set of practices and procedures of identifying all components and their relationship in a dynamic and continually evolving system for the purpose of maintaining integrity, traceability and control over change throughout the cradle to grave lifecycle of the component. These practices will ensure that appropriate personnel have been provided accurate reference documentation for maintaining components and any modifications to components are properly and systematically documented. A change in configuration refers to a modification that may result in the physical and/or operational features of any asset.

Key components of the Configuration Management Procedures:

- A clear definition of the initial state of equipment upon receipt and any changes that fall with the scope of the Configuration Management Program.
- A set of procedures for submittal and documentation of changes to assets.
- A method to protect internal and external customers from potential hazard that could be created by changes without configuration control.
- Quick retrieval of documents from a central location.
- Availability to review changes in configuration for any and all providers of asset maintenance.
- A method to review and capture information before a change in configuration is performed.
- A method to update as-built drawings.

Configuration Management (CM) provides the principles, practices and procedures to accurately establish and control safety critical documents and asset generation, maintenance and repair, modification, upgrade, and disposal. An asset in the GCRTA environment is identified, but not limited to revenue and non-revenue producing rolling stock, static construction (buildings, systems, components) needed for housing and repair of rolling equipment, structures dedicated to carrying out GCRTA revenue service, consumer control, revenue generation, personnel and passenger comfort, electrical power infrastructure and right-of-way devices necessary for rail service.

Safety critical documents include, but are not limited to, standard operating procedures, emergency operating procedures, safety and operating rules, training materials, drawings, and engineering reference information. These documents are subject to review or revision as a result of:

- Repeated service failures as indicated on the service log.
- Incidents or Accidents.
- Major Service changes, excluding routine schedule adjustments.
- Line extensions.

- Accumulation of Special Instructions or notices, which warrant revision to a “parent” document.

- Proposed design changes to facilities, equipment, or vehicles

The prime objective of CM emphasizes safety, related to the design, construction, maintenance, repair, modification, upgrade and disposal of any part of the GCRTA system and its assets. CM provides a means of constructing new assets while maintaining requirements for quality and safety. CM ensures that operations, maintenance, repairs, and modifications of equipment are intrinsically safe as related to the equipment itself, the personnel using it and the environment.

Any new device that becomes an asset of the GCRTA falls under the guidelines of CM. Existing assets will also take advantage of CM procedures and practices to control changes to the assets. An effective and in-place tool to assist in this process is the Computer Integrated Transit Maintenance Environment (CITME) that has been installed due to its ability to assist, archive and control configuration changes to the assets of GCRTA. The software used to operate the CITME system is known as Ultramain.

The Configuration Management Committee (CMC) is the controlling body of personnel representing Fleet Management, Safety, Service Management, Bus Equipment, Rail Equipment, Paratransit Equipment, Rail Power and Way, Facilities Maintenance, and Engineering and Project Management. The CMC will oversee the CM charter and review of modifications. Attached to Fleet Planning and Engineering, are two Configuration Management Engineers who are assigned specific tasks related to the aspects of maintaining CITME CM for GCRTA.

An additional result of the Configuration Management process is that any task or requirement that a contractor must perform is included in the contract specifications to ensure that changes to the design of equipment and facilities, after design reviews, are adequately documented and approved. The configuration management process uses baseline management to ensure that the technical baseline is defined and controlled throughout the contractual phase, and that the end products satisfy the technical and operational requirements derived from the system needs. Selected documentation, such as record drawings, manuals, procedures, and other documents, are formally designated and approved as part of the technical baseline and are initially under the control of the Engineering and Project Management Department. Upon completion of each project, all operation and maintenance related documents are turned over to the affected Rail District departments.

Any asset has 3 distinct phases:

- Procurement

- Operation

- Disposal

All initialization, operation and disposal to Authority assets will follow the Configuration Management Procedures to ensure:

- New Authority assets arrive in a quality status that is documented and prearranged.
- A careful in-depth review and approval occur before changes are made.
- All modifications are properly interfaced with the assets through Ultramain using the imaging module.
- All modifications are properly documented and available to all personnel supporting maintenance and repair.
- Proper disposal of the asset meets the Authority's requirements and the reorder of that asset's maintenance is subject to GCRTA's Records Management Policy found in the Administrative Policies Manual.

Configuration Control procedures are audited by the Safety Department to assure that changes to facilities, hardware, and operating and support systems are not made without the review of the new configuration by all departments affected by the proposed change, and to ensure that the modified system meets all approved safety requirements.

SECTION 18 COMPLIANCE WITH LOCAL, STATE, AND FEDERAL SAFETY REQUIREMENTS

18.1 SAFETY PROGRAM FOR EMPLOYEES AND CONTRACTORS

GCRTA is committed to the safety and health of its employees and contractors who work within the GCRTA transit system. GCRTA has developed an Occupational Safety and Health Program and Construction Safety Program in conformance with applicable local, state, and federal regulations. The programs emphasize the recognition, evaluation, and control of hazards arising from the occupational and construction project environments.

18.2 OCCUPATIONAL SAFETY AND HEALTH PROGRAM

The Occupational Safety and Health Program is directed toward achieving a safe working environment for employees and minimizing the likelihood of occupational related injuries and illnesses. The Program is based on, and complies with applicable Federal, State, and Local safety codes and regulations, including Ohio OSHA. Procedures have been established for the control of operating hazards, including but not limited to chemicals, noise, cut and abrasion injuries, and strain and sprain injuries. On-the-job training of GCRTA employees is emphasized to recognize hazards and to promote occupational safety and health practices. Attention is given to the need for, and proper use of, personal protective equipment and clothing as required by the work being performed. Routine comprehensive industrial hygiene surveys and industrial safety inspections are conducted by the Safety Department to ensure that health and safety hazards in the workplace are identified and controlled.

18.3 CONSTRUCTION SAFETY PROGRAM

Construction Safety is administered in accordance with contract specifications, and applicable Federal (OSHA), State and Local safety requirements. GCRTA Rules and Procedures are included in each construction contract. Compliance with these rules and procedures is required of all contractors performing work on the operating system. Contractors are required to comply with all applicable OSHA standards for the safety of their own employees as well as to safeguard GCRTA employees, contractors, passengers and the public.

Engineering and Project Management approves the contractor's safety program plan and supporting documentation, with the concurrence of the Safety Department. Particular emphasis is placed on work that may affect GCRTA operations, passengers, facilities, and personnel. All contractors working in the GCRTA rail rights of way, or interfacing with GCRTA Rail Operations are required to attend safety training. This training covers track access, right of way flagging, and operating procedures. Audits of the contractors are conducted to assure compliance with Federal and State Law, and the GCRTA requirements.

18.4 OCCUPATIONAL SAFETY AND HEALTH COMPLIANCE VERIFICATION

The Safety Department is responsible for monitoring and ensuring compliance with all applicable federal, state, and local codes. It is the responsibility of each director, manager, and supervisor of each department to maintain a safe and healthful work environment for all employees assigned to activities under their direction.

Verification of compliance is accomplished through the use of reviews, inspections, and analysis of injury/illness reports. Additional data is provided by the Risk Master Database, which is maintained by the Risk Management Department. The results from inspections are logged into the Safety Department database system to assure that the status of each required action is always available and that corrective follow-up actions are tracked.

Disciplinary procedures have been established by each department for those that repeatedly fail to comply with applicable GCRTA occupational safety and health program requirements. Examples of employee actions that are subject to disciplinary action are failure to use/wear required personal protective equipment; failure to follow rules, procedures and policies; failure to follow proper chemical handling procedures; and the unauthorized modification of safety equipment and devices.

18.5 CONSTRUCTION SAFETY VERIFICATION

Construction safety is the responsibility of each respective contractor. The GCRTA audits compliance with the construction program requirements through reviews of contract documents and specifications, testing, and inspections of on-site work activities. The Safety Department periodically monitors compliance with the construction safety requirements.

18.6 ENVIRONMENTAL PROTECTION

As the owner and operator of many diverse facilities it is the responsibility of GCRTA to minimize and control the generation of hazardous waste and pollutants to protect the environment. All division and department heads are responsible for ensuring that all rail facilities under their direction are in compliance with all applicable environmental regulations. The Safety Department conducts environmental protection inspections at all facilities that generate hazardous waste material to audit compliance with applicable regulations.

18.7 FIRE PROTECTION

Fire protection testing is coordinated by Central Facilities. Life safety requirements for the Rail District are coordinated by the Safety Department and Engineering and Project Management. Fire protection testing results and conformance with the life safety requirements are reviewed by the Safety Department. Compliance with fire protection requirements is audited through emergency drills, inspections, incident investigations and periodic testing of fire protection and fire suppression systems. Training activities are monitored for content and accomplishment.

SECTION 19 HAZARDOUS MATERIALS PROGRAM

19.1 HAZARDOUS MATERIALS PROGRAM

GCRTA's objective is to provide the safest product available and minimize the risks associate with hazardous materials. Accordingly, GCRTA has established a comprehensive program for the control of hazardous materials used, including the disposal of waste materials, in accordance with Ohio OSHA and environmental requirements. The GCRTA Hazard Communication Program details the process for purchasing, receiving, and using hazardous materials at GCRTA. Such information is provided in the Safety Department's Hazard Communication SOP, Hazard Communication Compliance Assessment, and Material Safety Data Sheets SOP. The Safety Department approves Safety Data Sheets (SDS) (Globally Harmonized System) for all chemicals and other potentially hazardous materials that are being considered for purchase and use. Follow-up is conducted on the field use of approved products to ensure safe/proper handling methods are utilized. Additionally, all employees who may use hazardous materials receive training on the safe use and disposal of the products. Follow-up is conducted on the field use of approved products to ensure safe/proper handling methods are utilized. An electronic database of MSDS is maintained on-line for all affected personnel.

A training plan for the Rail Equipment Facility was written to ensure that employees are familiar with proper hazardous waste handling and emergency procedures according to Administrative Procedure 49 and the Spill Prevention, Countermeasure and Control Plan. The CITME Ultramain system is used to schedule and document the performance and completion of the weekly hazardous waste inspection.

SECTION 20 DRUG AND ALCOHOL ABUSE PROGRAM

20.1 DRUG AND ALCOHOL POLICY

Maintenance of a Drug and Alcohol free workplace is essential to the safety, reliability, and efficiency of GCRTA operations. The abuse of legal drugs, the misuse of alcohol, and/or the use of illegal drugs by safety-sensitive personnel poses a serious risk of harm to the health and safety of the public, to other employees, and themselves. In accordance with the Federal Transit Administration (FTA) regulations pertaining to drug and alcohol testing of safety sensitive transportation employees, GCRTA has developed and implemented a Substance Abuse Program, Administrative Policy and Procedure. Administration of the program is through Occupational Health Section.

The program provides for training of supervisors in the signs and symptoms of substance abuse; job post offer testing of employees prior to placement in safety-sensitive positions; post-accident testing of safety-sensitive employees, reasonable suspicion testing of safety-sensitive employees, random testing in accordance with FTA regulations; post-accident, drug and alcohol testing; biennial testing of operators; record-keeping of test results, and an employee drug information program, Employee Assistance Program. The purpose of the Substance Abuse Policy/Program is to assure employee fitness for duty and to protect GCRTA employees, customers, and the public from risks posed by the illegal use of drugs, abuse of legal drugs and the misuse of alcohol. The policy sets forth GCRTA's drug and alcohol abuse program and the testing and reporting guidelines for safety-sensitive employees as required by those regulations. It also outlines the consequences of the illegal use of drugs and misuse of alcohol.

SECTION 21 PROCUREMENT

21.1 PROCUREMENTS

Procurement of new systems such as facilities, equipment, rail cars, and non-revenue vehicles or the modification of existing systems include safety requirements in specifications, design reviews, testing, configuration control and periodic safety evaluations. These procurements include consultation with the Safety Department to ensure basic system safety principles. Requires for procurements are outlined in the sections that follow.

21.2 NEW SYSTEMS

Verification of compliance with safety requirements contained in the specifications is accomplished by using coordinated reviews of contractual documentation, system design reviews, assessment of contractor-supplied safety analyses review of test procedures and results. During this verification effort, adherence to configuration control and other appropriate management procedures are also assessed.

21.3 NEW OR MODIFIED SYSTEMS USER REQUIREMENTS

It is the responsibility of the department drafting the specifications for the equipment, system or facility to assure that safety requirements are included in procurement specifications. Consideration is given to the following:

- Compatibility with the safety features, design, and procedures of existing GCRTA systems.
- Initial staff training for new systems.
- Avoidance, elimination, or reduction of identified safety hazards by design change, safety devices, and parts or materials selection.
- Location of equipment components so that access by personnel during operation, maintenance, repair, or adjustment activities do not require exposure to hazards, e.g., electrical shocks, burns, sharp edges or points, and dangerous or toxic materials.
- Design to minimize severe damage to equipment or injury to personnel in the event of an accident.
- Avoidance of undue exposure to physiological stresses, which might cause errors leading to an accident.
- Provision of suitable warning and caution notes in instruction for operation, assembly, maintenance, and repair, and distinctive markings for personnel protection on hazardous components, equipment, and facilities.

21.4 NEW OR MODIFIED SYSTEMS SPECIFICATIONS

Basic safety and user requirements are included in procurement specifications and coordinated with appropriate departments. As new facility, system, or equipment specifications are proposed, responding contractors are required to resolve hazards in accordance with the GCRTA established order of precedence:

- Design for Minimum Hazard. The major effort during the design phase of a contract shall be to select appropriate safety design features (e.g., fail-safe and redundancy).
- Safety Devices. Hazards, which cannot be eliminated through design, shall be reduced to an acceptable level through the use of appropriate safety devices.
- Warning Devices. Where it is not possible to preclude the existence or occurrence of a hazard, devices shall be employed for the timely detection of the condition and the generation of an adequate warning signal.
- Special Procedure. Wherever it is not possible to reduce the magnitude of an existing or potential hazard through design, or the use of safety and warning devices, the development of special procedures to control the hazard shall be required.

Specification include the requirement that contractors who provide systems, subsystems, or equipment that affect safe movement of rail vehicles or passenger/employee safety, establish and maintain a safety program in accordance with a GCRTA approved safety program plan which defines objectives, tasks, procedures, schedules, and data submittals for the safety activities that will be performed by the contractor. The contractor's safety program plan and supporting documentation is approved by the Engineering and Project Management representative subject to review by the Safety Department.

21.5 NEW OR MODIFIED SYSTEMS SAFETY DESIGN REVIEWS

Safety design reviews are an integral part of all acquisition processes for GCRTA rail facilities, systems and equipment. Safety design reviews are conducted to assess the compliance of facility or equipment design with safety requirements in specifications and to ensure that the safety of existing rail equipment is not degraded by the addition of new facilities or equipment. Safety reviews are normally carried out as an integral part of GCRTA's engineering design reviews coordinated by Engineering and Project Management.

21.6 NEW OR MODIFIED SYSTEMS ACCEPTANCE TESTING AND INSPECTION

Acceptance testing and inspections are included in procedures that assess compliance with the safety requirements of the procurement specification. The GCRTA project manager of the Engineering and Project Management Division verifies and certifies to the Safety Department that the system and facility documents facility system compliance with the specified safety requirements for the issuance of the Final Certification Report.

21.7 NEW SYSTEMS OR THE MODIFICATION OF EXISTING SYSTEMS

System Safety is the application of operations, technical, engineering and management techniques and principles to the safety aspects of a system, throughout its life, to reduce hazards to the lowest practical level through the most effective use of available resources. In order to achieve that end, AP-016 Safety Review Policy and Procedures requires safety reviews shall be conducted to ensure that the introduction of new systems or the modification of existing systems meet safety requirements and standards.

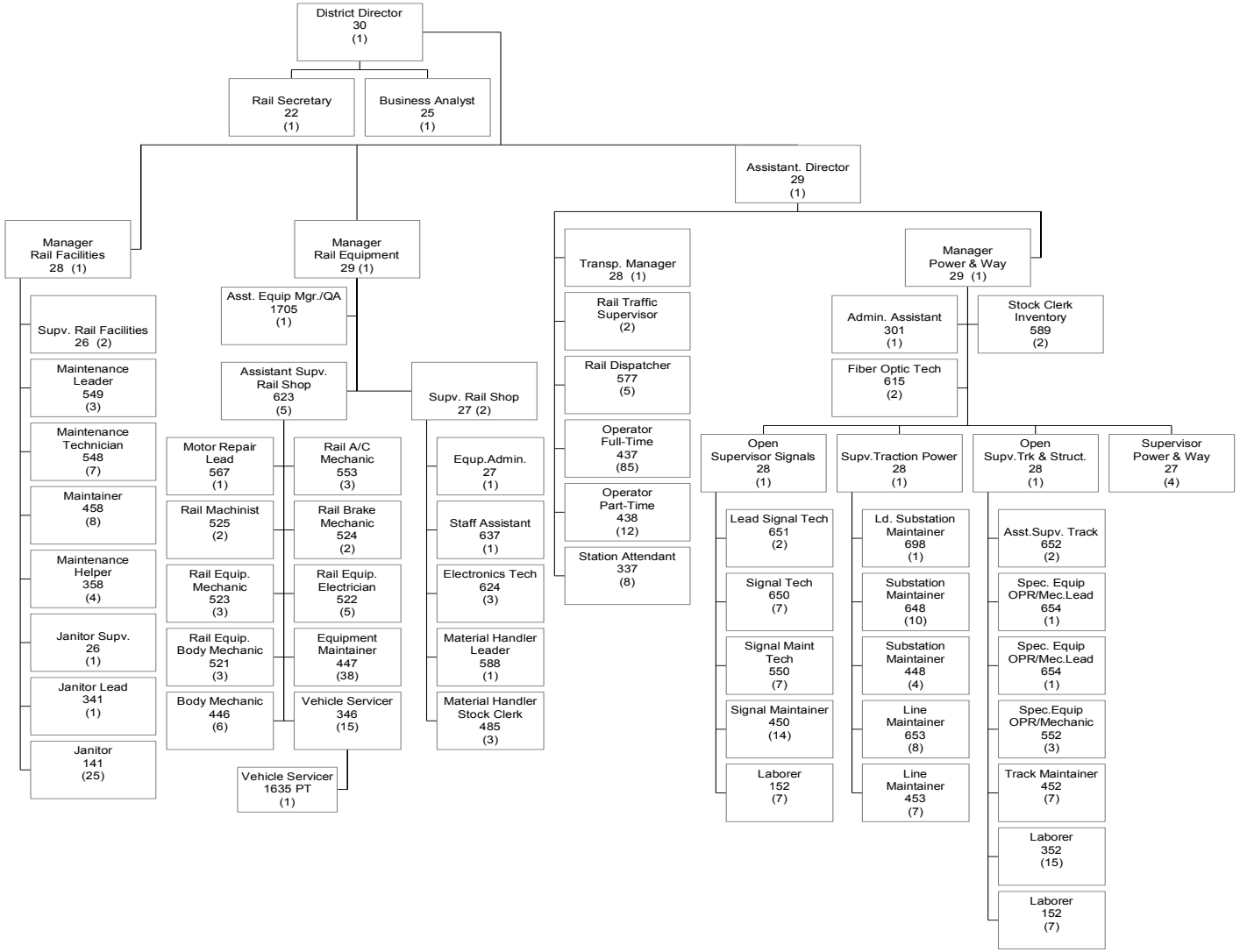
- Any changes or modification to existing systems shall be accomplished in a controlled manner that assures that safety is incorporated into the plans and designs of the modified system. A system is defined as: a composite of people, procedures, and equipment that are integrated to perform a specific operational task or function with a specific environment.
    - The review and approval process shall encompass the vehicles or equipment that are modified, changed, or altered in such a manner that would affect the safe operation of the vehicle or equipment.
    - The review and approval process shall encompass the redesign of existing facilities and structures, any modification made to existing facilities and structures, and the general improvement of Authority property under the direction of facilities maintenance personnel.
- The construction of new facilities or the procurement of new vehicles and equipment that require specifications shall include safety requirements and standards.

APPENDICES

APPENDIX A

RAIL DISTRICT ORGANIZATIONAL STRUCTURE

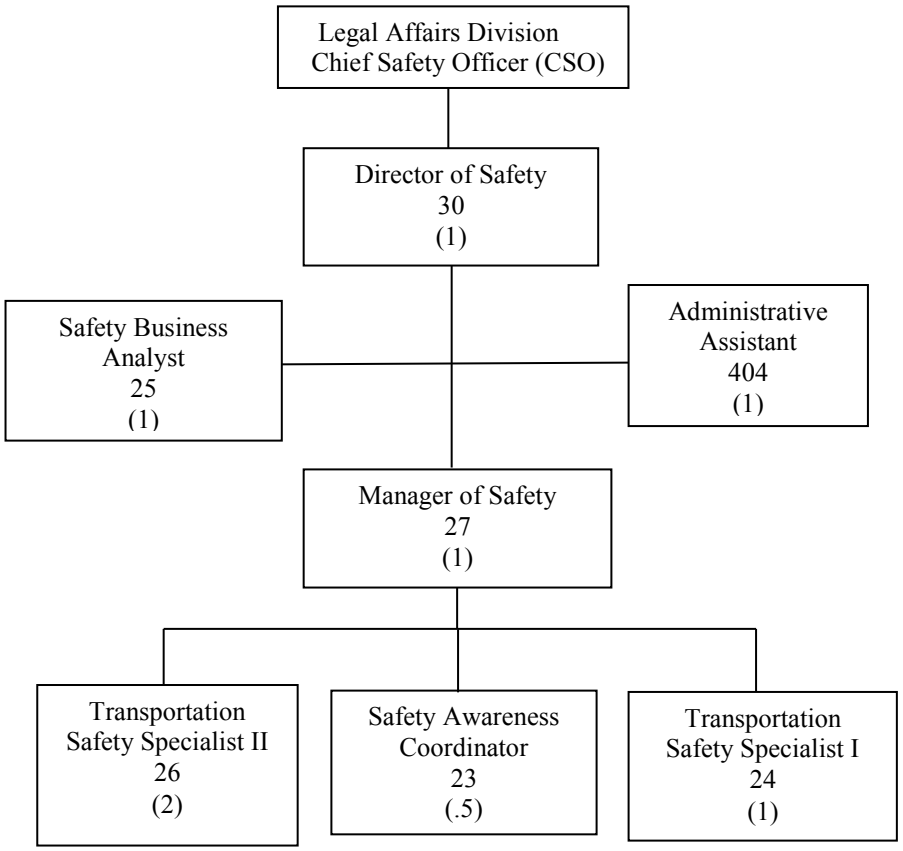
RAIL DISTRICT ORGANIZATIONAL STRUCTURE



APPENDIX B

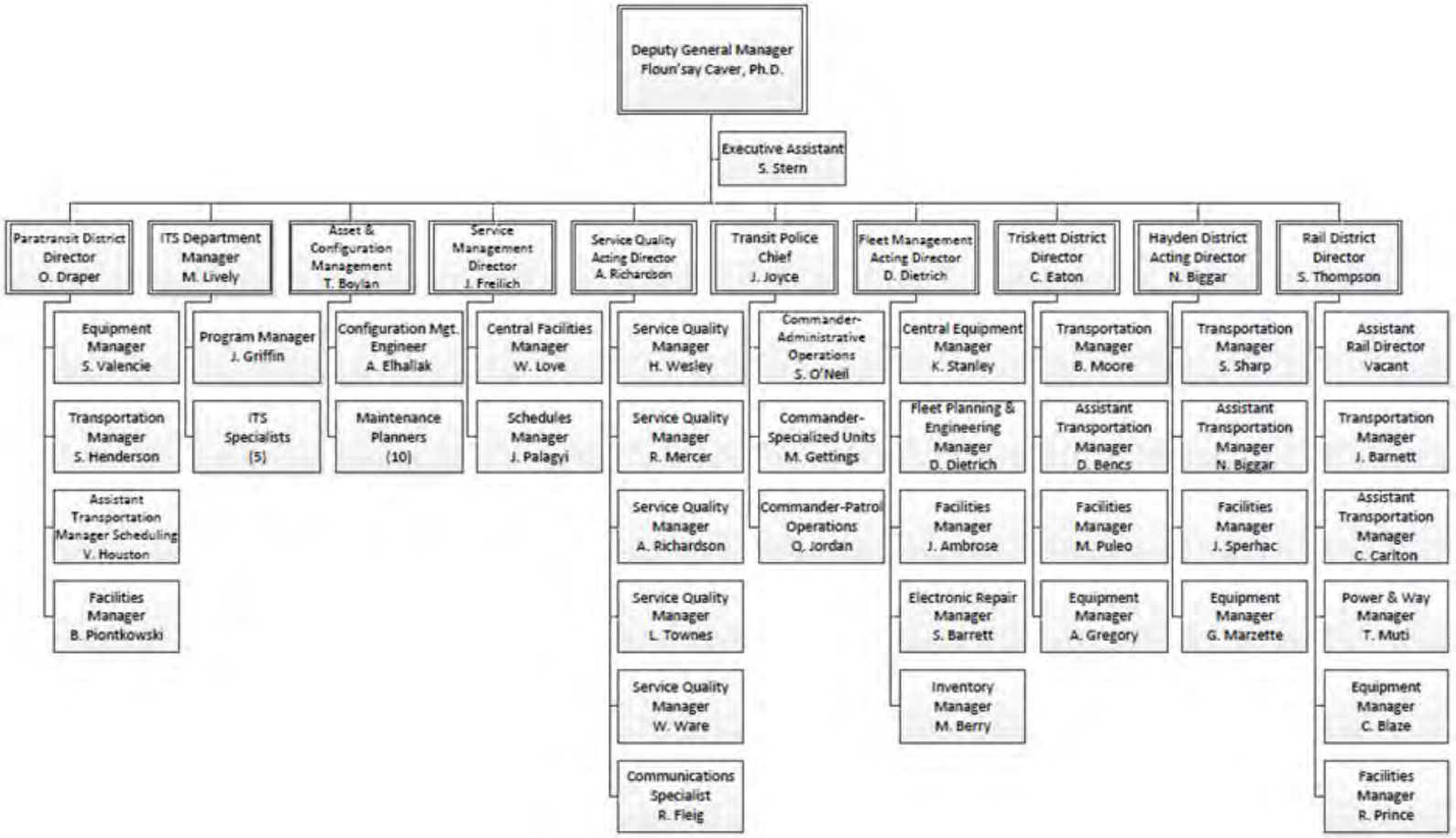
SAFETY DEPARTMENT

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY
SAFETY DEPARTMENT STRUCTURE



APPENDIX C
OPERATIONS DIVISION

The Greater Cleveland Regional Transit Authority
Table of Organization
Operations Division
January 5, 2018



APPENDIX D
SAFETY MANAGEMENT PRINCIPLES

SAFETY MANAGEMENT PRINCIPLES

GCRTA holds safety as a core value and see managing safety as critical to overall business performance. As a result, GCRTA has adopted a proactive and predictive approach to risk management that moves beyond traditional reactionary systems to address potential risk areas at their source.

GCRTA is working to integrate the four pillars of SMS, (Safety Management Policy, Safety Risk Management, Safety Assurance, and Safety Promotion) into all facets of Rail System Safety.

GCRTA incorporates the importance of senior leadership commitment, front-line involvement, management accountability, and continual safety process improvements derived from data-driven risk assessments. Management processes that ensure consistent planning for and management of risks are just one aspect of a holistic approach to safety. GCRTA firmly believes that true system safety requires the following:

- Committed leadership at all levels of the organization.
- A safety culture that values employee knowledge and expertise.
- Safety management systems that foster a deeper analysis of potential safety issues through data-driven performance management.

SAFETY IS A CORE VALUE

GCRTA considers safety as a core value, not simply a priority, and permeates the operations and attitudes of the entire organization. Safety risks are recognized as a risk to business performance. The General Manager (GM), the executive team and labor leadership demonstrate commitment through active involvement to ensure safety throughout GCRTA.

- **Practices**
  - The strategic value of safety is explicitly incorporated in GCRTA's mission, values, and vision. The strategic plan includes GCRTA's safety goal and objectives that are integrated with our other strategic goals.
  - GCRTA encourages and empowers prompt resolution of safety issues through leadership by employees at all levels of the agency.
  - GCRTA Safety Department tracks all reported Safety Hazards and Recommendations which receive ongoing Executive Safety Committee review.
  - GCRTA along with the District Safety Committees are actively engaged in the oversight of safety-critical priorities and takes appropriate action to mitigate hazards.

CLEAR ROLES, RESPONSIBILITIES, AND ACCOUNTABILITY

These safety roles and responsibilities are clearly documented, understood and practiced throughout GCRTA. As a result, individuals not only understand their own responsibilities but also how their individual activities may affect the safety

and performance of other employees and GCRTA as a whole. Each level of GCRTA is responsible and accountable for safety.

- **Practices**
  - The General Manager is viewed as the chief safety officer. All employees are assigned safety roles and responsibilities. Safety requirements are built into every job description.
  - The Director of Safety is a member of the executive team reporting to the General Manager and has equal footing with other executives. As part of the executive team, the Director of Safety ensures that safety is fully integrated and managed as an everyday part of the business objective.
  - Each supervisor is accountable for safety, and his/her safety performance measures and safety elements are included in performance appraisals. Leadership recognizes the importance that supervisors play in an organization's safety performance by supporting and empowering supervisors to identify safety issues and encourage and enforce safe behavior.
  - Clear responsibilities establish a hierarchy of operating rules and procedures to guide the performance of safety-critical tasks under normal, abnormal, and emergency conditions.

EFFECTIVE COMMUNICATION

Clear and honest communication is a hallmark of GCRTA's safety culture. Information concerning safety issues is conveyed clearly and consistently so that employees throughout the agency understand and act on the real risks associated with safety issues.

- **Practices**
  - Regular communication (i.e. safety committees) exist for sharing safety information throughout the agency in order to promote effective reviews and continual safety improvement.
  - Mandatory training and meetings (i.e. toolbox sessions) are held regarding important safety issues.
  - GCRTA has documented procedures (i.e. Safety Hazard Log) for ensuring that pertinent safety information is communicated to and from employees and other interested parties.
  - Employees are involved in the development and review of policies and procedures to management risks as members of a safety committee or safety improvement team.

SAFETY MANAGEMENT SYSTEM APPROACH

GCRTA utilizes the Safety Management System Approach to manage safety risks across the agency by including the following components:

- Management Strategies
- Policies
- Plans
- Structures and Systems

- Risk Analysis and Decision-Making Processes
- Documentation and Reporting Requirements
- Training and Personnel Policies
- Audits and Reviews

The utilization of these components, GCRTA has developed a cross-organizational system designed to facilitate the integration of safety as a core value into all appropriate business processes and decisions. This approach leads to the proactive control of safety risks through the continual improvement of management processes.

DATA-DRIVEN PERFORMANCE MANAGEMENT

GCRTA has set performance measures and utilizes findings from independent audits, near miss reporting and behavior base safety approaches (i.e. STOP Program) are used to improve the responsiveness of the agency to safety risks by adjusting process, policies, strategies and investments. With this approach, GCRTA is able to predict and proactively address potential safety issues, undesired events are prevented before they can impact operational safety.

- **Practices**
  - GCRTA's leading indicators of safety performance, safety culture and accident precursors are defined, measured and monitored.
  - GCRTA's employees understand the value of collecting and reporting data to support risk analysis, address unsafe conditions and prevent accidents.
  - GCRTA collects reliable data on operational performance, safety, maintenance, near misses and training. Systems are in place to analyze trends, track and report data and guide decisions. Variations from expected outcomes are reviewed to understand where the agency is failing and what corrective action is necessary to restore performance.
  - GCRTA utilizes industry standards to assist in the development of performance measures to fulfill strategic safety goals. The performance measures are used to continually encourage all levels of the agency to reduce the risk to the agency.
  - GCRTA uses performance measure to evaluate the effects of new programs and processes on safety.

RISK MANAGEMENT

GCRTA safety management system includes ongoing processes and policies to detect, measure and diagnose the source of risk at a programmatic level. Risk is perceived independent of immediate consequences so that any unsafe act or condition, near miss or accident is seen as evidence of risk and a symptom of a possible failure of the management system.

- **Practices**
  - GCRTA's hazard analysis process (i.e. Job Hazard Analysis) is in place for identifying safety issues and concerns, including those associated with human factors and changes to operations or equipment. Data is analyzed to provide possible policy, process or equipment modification to eliminate or mitigate hazards.

- The Hazard Reporting System (i.e. Non-Punitive Hazard Reporting Policy) at GCRTA allows employees to report important close calls/near misses and unsafe conditions without retribution.

COMPETENCY MANAGEMENT SYSTEM

GCRTA has developed a set of requirements on the knowledge, skills and experience needed to work effectively, efficiently and safely for all positions at the agency. Sufficient resources are allocated to support recruitment, selections, training and continued development activities that are focused on meeting GCRTA's safety objectives. Appropriate safety training is provided to all employees.

- **Practices**
- Safety competency criteria are defined and required of maintenance and operation positions, and training certification is established.
- Safety issues can often be recognized through a fresh perspective or change to the daily routine. GCRTA uses retraining, intensive reviews, audits and investigations to focus awareness on potential hazards.

SAFETY CULTURE

GCRTA's safety values, goals and objectives instill and reinforce a safety culture among employees and that safety culture ensures the effective implementation of the policies, principles and practices set forth by the management system. These values, goals and objectives facilitate the proactive identification, analysis and mitigation of risk by encouraging employees to provide essential safety-related information without fear of blame or retribution (i.e. Non-Punitive Hazard Reporting Policy).

- **Practices**
- GCRTA fosters a culture in which employees feel safe to question assumptions and report problems or failures candidly.
- Employees are encouraged to understand and communicate any potential weaknesses in our system along with ideas on how to manage or correct them.

SAFETY AWARENESS AND RESPONSIVENESS

All GCRTA's employees are encouraged to be continually alert to the unexpected and sensitive to the fact that in uncertain situations any decision or action may be subject to false assumptions. When near-misses or residual risks are noticed, they are reported. GCRTA does not view near-misses as proof that the system has effective safeguards, they are viewed as symptomatic of areas in need of more attention. Near-misses are viewed as evidence of systems that should be improved to reduce potential harm to employees and customers.

- **Practices**
- GCRTA's climate allows employees to be continually mindful of risks. They have a heightened concern about stability, routinization, and lack of challenge and variety, which can predispose the agency to sink into complacency, leading to carelessness.

- GCRTA envision undesired outcomes through job hazard analysis and system reviews so we can expand the precautions we will take.
- GCRTA has an anonymous, non-punitive hazard reporting system in place for near-misses or close calls.

EMPLOYEE INVOLVEMENT

GCRTA's managers and supervisors are willing to listen and respond to the insights of employees with the best understanding of how processes work in practice and the degree and potential effect of safety risks. GCRTA's safety culture enables the agency to reconfigure itself quickly in the face of continual operations when certain risks occur, often shifting from the conventional hierarchical mode to a flatter mode.

- **Practices**
- GCRTA encourages collaboration between labor and management to improve organizational safety.
- Safety activities and decision-making activities are given to people who are best placed to carry them out.
- Employees are encouraged to proactively develop safety practices and implement pilot programs to continuously improve their areas of work. The resulting data and improved practices are shared across the agency (i.e. Executive Safety Committee).
- GCRTA has created an environment that encourages input from a variety of people on the agency's ways of doing business (i.e. District Safety Committees).
- Training standards are developed jointly with labor leadership.

SAFETY MANAGEMENT MATURITY

GCRTA recognizes that principles and effective practices do not happen without sustained systemic change. GCRTA will continue to progress along the safety management maturity continuum:

- **Reactive Response:** Agencies at this level have safety processes that are undocumented and in a state of dynamic change, tending to be driven in an ad hoc, uncontrolled, and reactive manner by users or events. This provides a chaotic, unstable, and unsafe environment.
- **Regulatory Compliance:** Agencies at this level have safety processes that are repeatable, possibly with consistent results. However, adherence to safety program discipline is due more to demands from outside the agency than being an inherent part of the culture.
- **Hazard Analysis Program:** Agencies at this level have defined and documented safety policies and processes that are subject to some degree of improvement over time. Standard processed for hazard analysis are in place and used to establish consistency of safety performance across the agency. Time and resources are increasingly set aside to review and correct safety issues as a priority to the agency's performance.
- **Management Accountability Systems:** Agencies at this level manage all hazards using a risk-based approach. In particular, agencies can identify ways to

adjust and adapt processes without measurable losses of operation performance or deviations from operational and maintenance requirements. Safety Process Capability is established form this level on. Safety performance and accountability is monitored at all levels of the agency.

- **Safety Culture in Action:** Agencies at this level focus on continually improving safety performance by involving the entire agency and integrating safety as a core value and strategic business driver.

  GCRTA will continue to increase safety commitment and leadership across the agency, increase the sophistication of safety processes integrated directly into operations and maintenance processes and increase the trust and involvement of the employees to solve critical safety issues.