SAFETY AND SECURITY MANAGEMENT PLAN

LIGHT RAIL TRANSIT BUILD-OUT
PHASE II PROJECT

Prepared By:

AECOM

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Safety and Security Management Plan

Revision History

As of July 2009

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1.0 Commitment and Philosophy to Actively Sustain Safe and Secure Transit Operations

The Dallas Area Rapid Transit Authority (DART) is committed to providing a high quality, cost effective, safe, and secure Light Rail Transit (LRT) service. Safety and security are primary concerns that encompass all aspects of the planning, design, construction, and subsequent operation of the light rail system. Therefore, all of DART’s staff and consultants are charged with the responsibility of ensuring the safety and security of passengers, employees, and the general public, who come in contact with the system.

Toward fulfilling that responsibility, DART has developed a Safety and Security Management Plan (SSMP) for the LRT Build-Out Phase II Project. The plan addresses all activities that take place to assure an acceptable level of safety and security for the planning, design, acquisition, construction, installation, testing, and operation of the system.

Responsibility for the implementation of this plan is assigned to the appropriate departments as outlined in this plan. All DART employees and consultants are directed to comply with the provisions of this SSMP and to fully cooperate in achieving DART’s goals for a safe and secure light rail system.

Timothy H. McKay, P.E.

<table>
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<th>Senior Vice President</th>
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Gary C. Thomas, P.E.

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1.1 Purpose of the SSMP

This SSMP will guide integration of safety and security into each phase of DART's project development process. This will ensure that the design, construction, installation, and testing of all system elements identified as safety and security critical meet or exceed identified requirements by:

- Providing for verification of operational readiness to provide high quality, safe and secure transportation for DART passengers, employees, and members of the public when revenue service begins and,
- That design and construction decisions involving safety and security are logically evaluated and documented and that determinations regarding risk acceptance are clearly communicated and understood.

1.2 Scope of the SSMP

This SSMP applies to the Light Rail Project known as DART LRT Build-Out Phase II as defined in the Capital Improvement Program Management Plan (CIPMP) Section 1.1, Exhibit 1-4 and other project documents. This update to the SSMP is current as the projects complete the design phase and progress to the construction phase. The SSMP activities conducted during the preliminary phase of the project, as outlined in Section 2.1, are complete. This SSMP will address all remaining safety and security activities that may occur during construction, testing, start-up, and the transition to revenue service.

1.3 Goals of the SSMP

The goals of the SSMP are to ensure that the project will be safe and secure for passengers, employees, public safety personnel, and the general public prior to entering revenue service by:

- Development and maintenance of the LRT Build-Out Phase II Project SSMP;
- Development and maintenance of an LRT Build-Out Phase II Project Safety and Security Certification Plan (SSCP);
- Coordination of updates to the DART System Security and Emergency Preparedness Plan (SSEPP);
- Coordination of updates to the DART Operations System Safety Program Plan (SSPP) prior to revenue operations.

The following activities must occur to meet the goals of the SSMP. The occurrence of these activities will provide for effective management and ensure the safety and security of the project.
• Review of the SSMP annually, with updates made as appropriate, through DART’s Engineering Document Control Section;

• Review of the SSCP annually, with updates made as appropriate, through DART’s Engineering Document Control Section;

• Performance of special safety and security studies using contractor, Systems Integration Consultant (SIC) and SSEPP procedures, as required, during the construction, testing, and transition to revenue service phases of the project to provide acceptable safety and security risk assessments;

• Certify that the final design of each system element complies with established safety and security criteria using the DART Design Review Procedures and the SSCP.

• Issuance of a written certificate of compliance for each safety and security critical element certifying that it meets established safety and security requirements;

• Ensuring all contractors implement construction safety and security measures, as required, in the Construction Safety and Security Program For LRT Projects and contract documents;

• Verification that contract deliverables meet or exceed identified requirements and certification that the system, as constructed, meets established safety and security criteria using the Integrated Test Plan and SSCP;

• Verification of readiness for revenue operations through performance of Integrated Testing Readiness Drills; the coordination of SSEPP, SSPP, Standard Operating Procedures (SOP) updates, and of the review provided by the State Safety Oversight (SSO), and the issuance of a final Certificate of Compliance as outlined in the SSCP.

1.4 Definitions

The following definitions are provided to ensure a uniform understanding of terms as they apply to the SSMP:

Certificate of Compliance – A written statement, issued prior to revenue service and signed by the Safety and Security Certification Review Team (SSCRT) and Senior Vice President, Rail Program Development, attesting that a project element complies with specified system safety and security requirements.

Certification – The action of attesting that a particular element meets or exceeds all applicable safety and security requirements.
Construction Engineering Manager (CEM) – A Construction Engineering Manager is assigned to each DART project. A CEM oversees the efforts of the engineering, construction contractors, and construction management consultants assuring compliance with applicable contracts, the DART Resident Construction Manager’s Manual, Change Control Procedures, Quality Assurance Plan, and other applicable Agency documents.

Contracting Officer’s Representative (COR) – The representative designated by DART’s Contracting Officer as having contractual authority for a specific contract.

Crime Prevention Through Environmental Design (CPTED) – A method of crime prevention based on the design and use of the facility.

Design-Build (D-B) – A construction project delivery concept where the Contractor is provided a partially completed design. The Design-Builder will then complete the design in accordance with the client’s criteria and act as General Contractor completing the project.

Design Review – The formal review of a design for the purpose of identification and remedy of design deficiencies that would affect fitness-for-use and/or identification of potential improvements of operational, maintenance, safety, security, and economic issues.

Federal Railroad Administration (FRA) – Agency of the Federal Government that oversees railroad operations.

Federal Transit Administration (FTA) – Agency of the Federal Government that oversees public transportation.

Fire/Life Safety – The elimination, minimization, or control of hazards to patrons, employees, emergency service personnel, and the general public caused by fire, smoke, explosion, or resulting panic.

Fire/Life Safety Committee (FLSC) – Committee established by DART in 1992 to facilitate the interchange of information, make evaluations and recommendations and set requirements relative to DART’s Design Criteria and established Fire/Life Safety criteria for the purpose of minimizing fire and life safety hazards to patrons, employees, the general public, and property.

General Engineering Consultant (GEC) – Responsible for facilities design, engineering, Real Estate Support, and construction management.

Hazard – Any real or potential condition that can cause injury, illness, or death to personnel, damage to, or loss of equipment or property, or damage to the environment.
Light Rail Build-Out Phase II Project – The DART Light Rail Transit System expansion project, which includes:

- Phase II-A
  - Southeast Corridor
  - Northwest Corridor
  - Northwest Rail Operating Facility (NWROF)
  - Light Rail Vehicle (LRVs)
- Phase II-B
  - Irving Corridor
  - Rowlett Corridor

Occupational Safety – The elimination, minimization, or control of hazards to employees and emergency service personnel.

Operational Safety – The elimination, minimization, or control of hazards to patrons and the general public, and the protection of property and equipment from danger.

Project Control Consultant (PCC) – Responsible for cost control, schedule control, change control, estimating support, and value engineering.

Resident Construction Manager (RCM) – The person responsible for the administration of each fabrication or construction contract. The RCM may be the COR for specified contracts when designated by DART's contracting officer.

Revenue Service – The time when transit vehicles are available to the general public and there is an expectation of carrying passengers. These passengers either directly pay fares or are subsidized by public policy or contractual arrangement.

Safety – Freedom from harm resulting from unintentional acts or circumstances.

Safety and Security Certification Plan (SSCP) – A plan for verifying satisfactory compliance with a predetermined and approved set of formal safety and security requirements. Specifically, it involves issuing Certificates of Compliance that documents the system safety and security requirements of the LRT Build-Out Phase II Project have been achieved.
Safety and Security Certification Review Team (SSCRT) – The DART team charged with the task of certifying the design and construction of the Light Rail Build-Out Phase II Project is in compliance with established safety and security requirements.

Security – Freedom from danger resulting from intentional acts or circumstances.

State Safety Oversight Agency (SSO) – The agency designated by the state to implement FTA’s revised state oversight rule. For DART, this is the Texas Department of Transportation.

System – A composite, at any level of complexity, of personnel, procedures, materials, tools, equipment, facilities, and software. The elements of the composite entity are used together in the intended operational or support environment to perform a given task or achieve a specific purpose, support, or mission requirement.

Systems Design Consultant (SDC) – responsible for design specifications, and construction management of traction electrification, signals, communications, 100% corrosion control, and fare collection systems.

Systems Element Manager (SEM) – DART employee who supports the SDC and CEM in disciplines where he/she has expertise.

Systems Integration Consultant (SIC) – Consultant hired by DART who prepares the Operations and Maintenance Plan, Safety and Security Certification Plan, Integrated Test Plan, and manages integrated testing activities including start-up.

System Safety – The application of engineering and management principles, criteria, and techniques to achieve acceptable risk, within the constraints of operational effectiveness, time, and cost throughout all phases of the system life cycle.

System Safety Program Plan (SSPP) – A plan developed and maintained by DART Operations to identify hazards associated with DART’s transportation systems and to eliminate, minimize or control these hazards. This plan has been accepted by the SSO as complying with the 49 CFR Part 659 requirement for a separate System Safety Program Plan.

System Security – The application of operating, technical, and management techniques and principles to the security aspects of a system throughout its life to reduce threats and vulnerability to the most practical level through the most effective use of available resources. For the purpose of the SSMP, security includes only the segment of the project from the design phase to the start of revenue service.
System Security and Emergency Preparedness Plan (SSEPP) – A plan developed by DART Police and administered by the Manager of Emergency Preparedness. This plan has been accepted by the SSO as complying with the 49 CFR Part 659 requirement for a separate System Security Plan (SSP).

Threat and Vulnerability Analysis (TVA) – Systematic analysis performed to identify threats and vulnerabilities and make recommendations for their elimination or mitigation during revenue and non-revenue operation.

Vulnerability – Characteristics of passengers, employees, vehicles, and/or facilities that increase the probability of a security breach.

2.0 Integration of Safety and Security Into Project Development Process

This section of the SSMP describes the project approach to identify the safety and security activities leading to the integration of safety and security during design, construction, testing, and start-up phases of the project. Assignments of safety and security responsibilities are detailed in Section 3.0. This section includes a description of key safety and security tasks for each project phase and a safety and security activity matrix for the project.

2.1 Safety and Security Activities

The matrix on page 10 summarizes the key SSMP activities for the life of the project.

During the planning phase of each project, a preliminary Threat and Vulnerability Analysis (TVA) is conducted in conjunction with the DART Police. Rail Program Development participation included representatives of Facilities Engineering, Construction Management, Systems Engineering and Integration, SIC, SDC, and GEC. The results of each analysis are transmitted to DART Police for incorporation into a systemwide TVA.

Ongoing FLSC meetings and reviews of the design are being coordinated by the Manager, Rail System Safety.

Special Safety and Security Studies were developed by the SIC and reviewed by DART. Accepted recommendations have been incorporated into the contract documents for construction and the SSCRT Design Checklists for each element. Special Safety and Security Studies included CPTED analyses of areas of concern in conjunction with DART Police.

The SSO attends FTA quarterly meetings to stay abreast of the project.

The design of each systemwide element and fixed facility will be reviewed using the DART Design Review Procedure to identify hazards and to verify compliance with
required safety and security codes and standards. These activities ensure compliance with safety and security standards and include a multi-stage process providing review and sign-off.

The Design Review process for safety and security includes the following steps:

- SIC review of the design to verify that safety and security requirements have been incorporated.
- All assigned personnel review design for system safety issues/hazards and security vulnerabilities.
- DART Project Managers provide the final disposition for all design review comments.
- DART Police participate in the design review process on issues related to the SSEPP.
- Manager of Rail System Safety reviews Design Review comments and their disposition.

In accordance with the SSCP, Safety and Security Certification Review Team checklists for the design, and/or construction phase have been or will be drafted for the following Line Sections and operations facility:

- Phase II-A
  - Northwest-1B
  - Northwest-2
  - Northwest-3
  - Northwest-4
  - Southeast-1
  - Southeast-2
  - Northwest Rail Operating Facility (NWROF)

- Phase II-B
  - Irving-1
  - Irving-2
  - Irving-3
  - Rowlett-1

These checklists will be finalized at the end of the design and will be utilized by the SSCRT to certify the design. A detailed description of these line sections and the operations facility can be found in the Capital Improvement Program Management Plan.
(CIPMP), Section 2.3.2.4 – LRT Build-Out Phase II-A and Section 2.3.2.5 – LRT Build-Out Phase II-B.

As applicable, contractors will implement the construction safety and security requirements outlined in the Construction Safety and Security Program for LRT Projects, and in the contract documents. Compliance will be monitored by DART Construction Management.
2.2 Procedures and Resources

Preliminary Engineering Phase (Complete):

Safety and Security Design Criteria were established during the Starter System and were updated during the early stages of the Phase II design. These criteria are documented in the DART Design Criteria Manual, Volumes 1 and 2. The safety and security criteria are applicable to all aspects of design as follows: architectural concepts, specifications preparation, equipment selection, construction, and development of operating and maintenance procedures. System Security criteria are specifically addressed in Volume 2, Chapter 10 and System Safety in Volume 2, Chapter 12 of the DART Design Criteria Manual.

DART Design Criteria Manual includes detailed codes and standards references for systemwide elements and fixed facilities. The Design Criteria Manual is a controlled document that is subject to the DART's Design Review Procedure.

Final Design Phase (Ongoing):

The initial update of the SSMP occurred during the final design phase of the LRT Build-Out Phase II Project. Formal revision to the SSCP (Rev. 5) and the Construction Safety and Security Program for LRT Projects was completed to reflect this update.

Rail Program Development, in conjunction with the Finance Department, has developed a budget for this project. The budget includes expenses for safety and security. The Project Control Consultant reviews the budget on a periodic basis. DART Police also have line items in their budget for this phase of the Build-Out.

Construction Phase (Ongoing):

During this phase of the project, the SSMP and SSCP will be reviewed annually and updated as appropriate by the SIC.

Special safety and security studies are being conducted during this phase of the project to deal with identified hazards and vulnerabilities. All security studies will be conducted in conjunction with DART Police using SIC procedures. Development of system safety plans and analyses are included in the specifications for systems elements.

SSO coordination during this phase will include updates to the operating SSPP initiated by the Risk Management Division and SSEPP updates initiated by DART Police. SSO attendance at FTA quarterly meetings will keep the SSO informed as to the project status.

In accordance with the SSCP, Safety and Security Review Team Checklists for the Construction/Installation phase have been drafted for each element. Site inspections, observance of required contractor testing, and construction punch lists will be used to verify that the safety and security requirements have been met or exceeded.
Any open items not corrected before the testing and start-up phase will have mitigation controls put into place.

Additional construction safety and security activities are found in Section 8.0.

**Testing and Start-up Phase**

Safety and security elements incorporated in the design are tracked to completion during testing and start-up according to an approved Integrated Test Plan (ITP) and SSCP.

The integrated testing and safety and security certification process includes:

- Safety and security equipment testing;
- Procedures verification;
- Performance of Readiness Drills;
- Simulation of revenue service by Operations;
- Formal documentation and sign-off by the SSCRT and SSO prior to revenue operation;
- Issuance of a Certificate of Compliance for revenue service.

The Integrated Test Plan includes requirements that each integrated test conducted by the Start-Up Team be approved by DART prior to any testing.

As with the design phase, SSO coordination will be ongoing with FTA quarterly meetings. The Risk Management Division will complete updates to the operating SSPP and updates to the SSEPP will be completed by DART Police and approved by the SSO prior to revenue service.

**Document Control**

Access to security sensitive information, such as documents relating to critical systems and facilities, is controlled. Only those employees and consultants who have DART badges will have access to the areas where this information is filed. External access to these documents is restricted to those entities deemed to have a "need-to-know".

DART Police have a strict "need to know" policy relative to access to sensitive information such as response procedures to bomb threats, emergency preparedness programs, threat and vulnerability studies, etc.
2.3 Interface with Management

The organizational chart on page 30 identifies the lines of communication for safety and security to the construction management, rail program development, and DART's executive management. The Construction Safety Managers (CSM) are responsible for overseeing contractor compliance with construction safety and security requirements contained in the Construction Safety and Security Program for LRT Projects, and safety and security requirements in the contract documents.

The RCM is responsible for monitoring the contractor's application of safety and accident prevention procedures and policies for all activities and personnel working at the construction sites, including subcontractors, visitors, and material or equipment suppliers.

The RCM may request the assistance of the DART Construction Safety Managers. The RCM shall keep the CSM informed of all safety matters.

A detailed description of the responsibilities of the RCM are contained in the Resident Construction Managers Manual, Chapter 11.0 and in the Construction Safety and Security Program for LRT Projects, Section 1.3.4.

DART Police are available to consult with the contractor on security issues.
3.0 Assignment of Safety and Security Responsibilities

Managing the SSMP includes planning, assigning, directing, and controlling tasks and activities designed to meet safety and security goals. This section describes safety-and-security-related tasks and identifies the organizational responsibility for each. DART’s President/Executive Director, Gary Thomas, has overall responsibility for this Safety and Security Management Program.

Organization charts displayed on pages 30-32 show the reporting relationships between the organizational units within DART and the Rail Program Development.

3.1 Responsibility and Authority

This section describes the organization that has been established to perform the safety and security tasks identified in Section 2 of this SSMP.

3.1.1 Rail Program Development

The Senior Vice President, Rail Program Development, Timothy McKay, is responsible for program management of system expansion projects.

The activities included in the SSMP will be conducted, coordinated, and controlled as elements of the overall operational preparation for the light rail system. An organization chart for Rail Program Development is displayed on page 31. The safety-and-security-related responsibilities of the Senior Vice President, Rail Program Development, include the following:

- Allocation of staff time and resources, as necessary, to carry out the provisions of this plan;

- Delegation of responsibility for safety and security management to the DART Rail Program Development staff, as indicated in this plan;

- Review and approval of the compliance of the DART system with the SSMP at each stage of the Safety and Security Certification process;

- Monitoring the compliance with safety and security reporting on project status;

- Review and approval of final Safety and Security Certification Reports prior to the initiation of revenue service.

3.1.2 Responsibilities of Systems Engineering and Integration

Systems Engineering and Integration has the task of directing the preparation of the SSMP and assuring compliance to its standards. Primary responsibility for...
SSMP management rests with the Assistant Vice President (AVP), Systems Engineering and Integration, Evelio Hernandez; and further, to the Manager, Rail System Safety, Luke Chisenhall, and the Systems Integration Consultant (SIC). This group is also responsible for the overall design and the management of construction/installation of light rail vehicles, signals, traction electrification, communications, fare collection, and other various LRT-related systems.

The safety and security responsibilities of the AVP, Systems Engineering and Integration, include the following:

- Allocation of staff time and resources as necessary to carry out the provisions of this plan;
- Delegation of day-to-day responsibility for safety and security management to the Manager of Rail System Safety as indicated in this plan;
- Monitoring compliance with reporting on project status, initiate corrective action to assure that activities are being conducted in accordance with this plan and in accordance with the start-up schedule;
- Initiation of special safety or security studies, as required, to ensure sufficient information exists on critical items to support the hazard analysis and resolution process;
- Review and approval of the SIC's Annual Work Plan and budget;
- Coordination of safety and security with other systems integration activities;
- Providing operations and risk management input to safety and security activities;
- Supporting the Fire/Life Safety Committee;
- Review and coordination of updates, as required, to the System Security and Emergency Preparedness Plan (SSEPP) with DART Police, and SSPP with Operations;
- Overseeing development and implementation of rules and procedures for the start-up process;
- Participating in design review and certification activities;
- Observation of Readiness Drills;
3.1.3 Responsibilities of the Manager of Rail System Safety

The responsibilities of the Manager, Rail System Safety, Luke Chisenhall, include the following:

- Chair and Coordination the Fire/Life Safety and SSCRT Committees
- Maintenance liaison with SSO;
- Primary responsibility for SSCP;
- Daily SSMP management;
- Reviewing and approval of hazard analysis;
- Review and approval of the forms and procedures to be used for the documentation of system safety requirements, verification reporting, and system safety certification;
- Review and approval compliance at each stage of the Safety and Security Certification process;
- Coordination and dissemination of safety and security information;
- Coordinate the documentation and follow-up on identified hazard resolution;
- Review other Safety and Security documents as required (SSEPP, SSCP, and SSPP);
- Assure compliance with reporting on project status;
- Initiating corrective action to assure that activities are being conducted in accordance with this plan and the requirements of the start-up schedule;
- Participating in design review and certification activities;
- Reviewing the updated SSMP.

3.1.4 Facilities Engineering Division

The AVP of Facilities Engineering, David Ehrlicher, oversees the activities of this group. The group is responsible for civil, track, mechanical, electrical, architectural, and landscape design of facilities, right of way, buildings,
structures, and track. Facilities Engineering is also responsible for the Art and Design Program.

The specific responsibilities of this group include the following:

- Supporting the Safety and Security Certification Plan including review of design and testing phase recommendations;
- Supporting the Fire/Life Safety Committee;
- Supporting the System Security and Emergency Preparedness Plan;
- Assigning responsibility for determination of safety and security requirements and verification of design compliance as indicated in this plan;
- Conducting special safety and security analysis as requested;
- Developing and implementing corrective action in response to System Safety and Security Open Items.
- Participating in design review and certification activities;

### 3.1.5 Construction Management Division

The AVP of Construction Management, Diane Gollhofer, oversees the activities of this group. The group is responsible for construction oversight and oversight of the construction management consultant services.

The specific responsibilities of this division include the following:

- Participating in design review and certification activities;
- Overseeing compliance with applicable contracts;
- Assisting in the abatement of identified hazards when corrective actions are warranted.
- Participation in integrated testing and start-up testing.

### 3.1.6 Quality Assurance/Construction Safety

The Director Quality Assurance/Construction Safety, Debra Hebisen, reports to the Senior Vice President, Rail Program Development. In addition to quality assurance, this group oversees contractor and consultant safety and security programs. Construction Safety Managers are responsible for overseeing
construction safety and security compliance in accordance with DART's Construction Safety and Security Program for LRT Projects and safety and security requirements contained in the contract documents.

The specific safety and security responsibilities of this division include the following:

- Overseeing compliance with applicable contracts;
- Updating and supporting the Construction Safety and Security Manual for LRT Projects;
- Conducting inspections of contractors to assure compliance with the Construction Safety and Security Manual for LRT Projects and contract documents;
- Initiating construction safety studies, when appropriate;
- Participation on the Fire/Life Safety Committee;
- Initiating security studies with the assistance of SIC and DART Police when appropriate;
- Assisting in the abatement of identified hazards when corrective actions are warranted.

3.1.7 Environmental Compliance

The AVP, Real Estate, Cleo Grounds, oversees the Environmental Compliance Section with responsibilities for the LRT Build-Out Phase II Project including:

- Identification of potentially hazardous material conditions along the LRT right-of-way;
- Developing remediation programs to address environmental regulated materials;
- Implementation of necessary remediation programs;
- Assurance that project activities are in compliance with environmental regulations;
Securing any required environmental permits not already obtained in design;

Performance of studies as required in the area of environmental compliance not already conducted during design.

Supporting the Safety and Security Certification Plan including review of design and testing phase recommendations;

### 3.1.8 Risk Management Division

The AVP of Risk Management, Robert Redding, oversees this group. The safety and security related responsibilities of the Risk Management Division include the following:

- Serving as DART’s primary contact with the SSO;
- Coordination of Safety Program Plan with Rail Program Development SSPP/SSMP;
- Development of risk management policies and procedures for the LRT Build-Out Phase II Project Start-Up service;
- Management of insurance requirements for the Capital Improvement Program;
- Participation in design review and certification activities;
- Assisting in the preparation and implementation of the Construction Safety and Security Program for LRT Projects;
- Management of Workers Compensation Programs;
- Supporting the Fire/Life Safety Committee;
- Supporting the System Security and Emergency Preparedness Plan;
- Participation in planning and conducting emergency drills;
- Coordination of annual and tri-annual audits with State Safety Oversight;
- Chairing the DART Safety Committee;
- Overseeing DART’s Rail and Bus Safety Committees.
3.1.9 Marketing and Communications Department

Sue Bauman, Vice President, oversees the Marketing and Communications Department. The safety and security related responsibilities of the Marketing and Communications Department include the following:

- Coordinate the preparation and provision of public education programs related to identified hazards.
- Provide public information on related activities such as emergency preparedness drills.
- Support the Fire/Life Safety Committee.

3.1.10 DART Police / Emergency Preparedness

The Chief of DART Police, James Spiller, supervises the Police Department. This group is responsible for the System Security and Emergency Preparedness Plan (SSEPP). Jill Shaw is the Manager of Emergency Preparedness.

The safety-and-security-related responsibilities include the following:

- Provision of security throughout the DART System; including threat and vulnerability management;
- Safety and security studies including CPTED analysis,
- Participation in emergency preparedness drills;
- Supporting the Fire/Life Safety Committee;
- Ongoing transit-related training at the DART Police Academy.

The Chief of DART Police is a member of the Safety and Security Certification Review Team.

3.1.11 All DART Departments

All departments are responsible for supporting the SSMP. The level of support varies depending upon the issues that are involved and the specific responsibilities of the affected department. General support responsibilities of these departments include the following:

- Follow-up on safety and security open items;
- Support of various certification tests;
• Support of the review and approval at each stage of the safety and security certification process.

3.1.12 Responsibilities of Outside Consultants/Contractors/Suppliers

The detailed design and construction of the system, the development of specifications for the system elements and fixed facilities, and testing of system components is accomplished by various organizations under contract to DART. Each of the firms’ contracts is handled or administered by one of the organizational divisions under the Senior Vice President, Rail Program Development. The assigned DART Project Manager is responsible for providing DART oversight of the contract, thereby assuring that consultant service contracts are consistent with provisions of this plan, and that the contracted organization complies with all of the policies and procedures described in this plan.

3.1.13 General Engineering Consultant

The General Engineering Consultant (GEC) for Phase II-A, ACT 21, provides services to DART which include the engineering and architectural design of proposed facilities elements, including preparation of preliminary, in-progress, pre-final, and final project drawings, technical specifications, project manuals, project construction cost estimates (including material quantity takeoffs), and construction contract documents for the elements as prescribed by DART. The GEC for Phase II-B is Track3. Phase II-B is being developed using the Design Build concept. Track3 will develop preliminary designs for the Phase II-B project and the Design Builder will prepare the final designs. These are subject to the “DART Design Review Procedure”. ACT 21 reports to the AVP of Construction, while Track3 reports to the AVP of Facilities Engineering.

The General Engineering Consultant (GEC) is responsible for the following:

• Performing the design of line sections from the preliminary level to Contract Document level;

• Performing the design of stations from the preliminary level to Contract Document level;

• Revising facility design criteria and standard/directive drawings;

• Supporting special safety and security studies as required;

• Reviewing applicable Threat and Vulnerability Analysis (TVA) and Preliminary Hazard Analysis (PHA) for each line section and operations facility and incorporate controlling measures;
• Supporting coordination with DART, governmental, private, and public agencies, DART’s Systems Design Consultant and Project Control Consultant and Systems Integration Consultant, and other design consultants or parties as directed by DART;

• Providing all necessary and related professional services, including construction management for facilities contracts, in connection with the work as specified by the contract documents;

• Ensuring that the final design has incorporated all applicable DART Design Criteria and is in compliance with all project requirements;

• Attending all design review and safety and security certification meetings to provide support and answer questions;

• Review and support of the Construction Safety and Security Program for LRT Projects;

• Conducting inspections of contractors to assure compliance with the Construction Safety and Security Program for LRT Projects;

• Support of the Fire/Life Safety Committee;

• Initiation of construction safety and security studies, as applicable.

3.1.14 Systems Design Consultant

The Systems Design Consultant (SDC), Dallas Systems Consultant, is responsible for preparing specifications for the procurement and installation of systems elements including traction electrification, signals, communications, corrosion control, and fare collection systems. The SDC also monitors installation and testing of these systems elements. The SDC reports to the AVP, Systems Engineering and Integration.

The SDC is responsible for assuring that the systems design is consistent with the safety and security design criteria, that the final design incorporates the corrective actions as identified in the hazard resolution process, defining and verifying that tests are conducted as required, and providing supporting documentation for inclusion on Safety and Security Certification forms.

3.1.15 Light Rail Vehicle Consultant

The Light Rail Vehicle Consultant, LTK Engineering Services, is responsible for preparing specifications for the construction and procurement of light rail vehicles and monitoring LRV manufacture, upgrade, assembly and testing. The Light Rail Vehicle (LRV) Consultant verifies that the design incorporates DART’s safety
and security criteria and that these criteria have been incorporated in function and designed in the vehicles during acceptance testing. The LRV Consultant reports to the AVP, Rail Program Support.

### 3.1.16 Systems Integration Consultant

The Systems Integration Consultant (SIC) is responsible for preparing the Safety and Security Management Plan, Safety and Security Certification Plan, Integrated Test Plan, Operations and Maintenance Plan, and the management of integrated testing including all start-up activities. Responsibilities also include review of all designs for safety and security.

Responsibilities include assuring that systems integration is consistent with the provisions of the SSMP and for providing documentation of Safety and Security Certification. The Project Manager of the SIC reports to the AVP, Systems Engineering and Integration. As of this update, the AVP Systems Engineering and Integration is the COR for the SIC contract providing DART oversight.

The specific safety and security responsibilities include the following:

- Maintaining liaison with the SSO;
- Reviewing, modifying and maintaining the SSMP following DART Design Review Procedures;
- Preparing Risk Analyses;
- Reviewing and modifying the Safety and Security Certification Plan following DART Design Review Procedures and support certification activities;
- Performing safety and security analysis, and CPTED studies as required using SIC Procedure 4.1 contained in the SIC Procedures Manual;
- Coordinating with DART Police on all security analysis and CPTED studies;
- Maintaining a list of safety and security open items and preparation of regular status reports on hazard resolution;
- Reviewing all DART design criteria, drawings, and specifications and provide comments as required following DART Design Review Procedures;
• Participating in planning, testing, and pre-revenue service simulations to ensure safety and security are incorporated;

• Participating in planning and conducting emergency drills;

• Reviewing and preparing updates to the DART Light Rail System Book of Operating Rules and Standard Operating Procedures to accommodate the LRT Build-Out Phase II Project as required;

• Preparing minutes, maintaining a list of action items and administrative support of the Fire/Life Safety Committee;

• Supporting the SSEPP updates, as required;

• Providing light rail safety training to contractors and DART employees.

3.1.17 Project Control Consultant

The Project Control Consultant is responsible for maintaining project schedules, cost control, change control, and value engineering. Responsibilities also include review of all LRT designs.

The Manager of Project Controls reports to the AVP Rail Program Support.

3.1.18 Contractors/Suppliers

All Contractors/Suppliers are responsible for conducting their activities in compliance with the provisions of the SSMP as required by contract documents. Contract specifications will identify additional safety and security requirements such as safety personnel, hazard analysis, etc. This includes:

• Providing documentation of safety and security related testing such as preliminary hazard analysis, failure mode and effect analysis, as specified in Specification Section 01047 - System Safety Program;

• Installing and maintaining security lighting, and security fences, as specified in Specification Section 01500 - Temporary Facilities and Services;

• Providing specialized employee training;

• Participation in integrated and start-up testing as required;

• Submission of documentation related to Safety and Security Certification.
3.2 Safety and Security Committees

3.2.1 Fire/Life Safety Committee

DART has established a Fire/Life Safety Committee (FLSC). The FLSC is coordinated by the Manager, Rail System Safety, Luke Chisenhall. The FLSC includes representatives of DART, emergency response agencies of Member Cities, and other personnel as needed. The FLSC includes the following:

**DART Staff**
Manager, Rail System Safety (Chairperson & Primary Point of Contact), Luke Chisenhall  
AVP, Systems Engineering and Integration, Evelio Hernandez  
AVP, Facilities Engineering, David Ehrlicher  
AVP, Construction Management, Diane Gollhofer  
Chief of DART Police, James Spiller  
Sr. Manager Safety, John Gault  
Manager Emergency Preparedness, Jill Shaw

**Emergency Response Agencies**
Dallas Police / Fire  
DFW Airport Police / Fire  
Farmers Branch Police / Fire  
Garland Police / Fire  
Carrollton Police / Fire  
Irving Police / Fire  
Rowlett Police / Fire

**Other Agencies**
Dallas Building Inspection Department  
DFW Airport Building Inspection Department  
Farmers Branch Building Inspection Department  
Garland Building Inspection Department  
Carrollton Building Inspection Department  
Irving Building Inspection Department  
Rowlett Building Inspection Department

**DART Consultants**
Systems Integration Consultant  
Project Controls Consultant - as needed  
General Engineering Consultants - as needed  
Systems Design Consultants - as needed  
Light Rail Vehicle Consultant - as needed  
Design Build Contractor
The purpose of the FLSC is to provide a forum for the discussion and coordination of requirements, procedures, and other aspects affecting the LRT System Safety and Security. The objectives of the FLSC include the following:

- Maintenance of communication channels, which allows for the establishment of rapport for the interchange of information between DART and other involved agencies;
- Developing coordinated, interactive support procedures for municipal agencies to allow for the safe, secure, and efficient operation of the DART LRT system;
- Discussion and coordination of design, construction, and operational issues affecting the LRT system;
- Reviewing emergency procedures for the DART LRT System to assure a safe and timely response to abnormal operating conditions;
- Supporting emergency preparedness drills prior to beginning revenue service, to test the emergency procedures, and to identify procedural deficiencies;
- Assistance in the preparation for Safety and Security Certification.

The FLSC meets on a periodic and scheduled basis. It will function throughout the entire LRT Build-Out Phase II Project from design to the start of operations. The main task of the committee will change from input to design issues in the early stages, to review of training materials and operating procedures at the start of revenue service.

3.2.2 Safety and Security Certification Review Team (SSCRT)

The SSCRT is comprised of the following DART representatives:

- Manager, Rail System Safety, Chair;
- AVP, Systems Engineering and Integration;
- AVP, Facilities Engineering;
- AVP, Construction Management;
- Director QA and Construction Safety;
- Chief, DART Police or Designee.
While not a member of the SSCRT, the Senior Vice President, Rail Program Development, shall be kept apprised of all SSCRT activities and will sign each Certificate of Compliance.

The SSCRT was created to independently review and approve the certification process and the results of this process. The SSCRT is responsible for assessing that the proper system requirements have been established, that safety and security reviews are performed at each stage of the project and that sufficient documentation supports the disposition and resolution of review comments as they pertain to safety and security.

The Manager, Rail System Safety serves as Chairperson of the SSCRT. The Systems Integration Consultant (SIC) provides the recording secretary and is responsible for issuing meeting announcements and minutes. The SIC’s Program Manager supports the SSCRT, which includes attendance at SSCRT meetings. Additional DART and consultant personnel, as required, provide information, assistance, support, and advice to the SSCRT when requested. The Chairperson is responsible for the preparation of all materials and logistics for the SSCRT meetings.

The SSCRT shall schedule meetings, as required, to support the certification process. It reviews documentation of compliance, assigns the responsibility for resolution, and is empowered to approve or disapprove any action including the issuance of a Certificate of Compliance. The SSCRT requires a two-thirds vote to approve any action including the issuance of a Certificate of Compliance.

### 3.3 Task Matrix

The matrices on the following pages summarize the key SSMP tasks and the responsible departments. They summarize the lead, support, and review and approval responsibilities for each of the key tasks. The responsibility is indicated as follows:

- **P** Primary responsibility for task completion. The single unit with lead task responsibility.
- **S** Support responsibility for task completion. One or more departments may support the department with lead responsibility.
- **RC** Review and Comment. Indicates a department responsible for review of items prepared by another unit.
- **RA** Review and Approve. Indicates the department responsible for formal review and approval. Several departments may be involved in the formal approval process.
# MASTER SAFETY RESPONSIBILITY MATRIX

## TASK/ACTIVITY

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## MASTER SECURITY RESPONSIBILITY MATRIX

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* Design and Construction phase of the Project
3.4
DART MANAGEMENT
ORGANIZATIONAL CHART

Board of Directors

General Counsel
Director Internal Audit
Director Board Support

President/Executive Director

Chief Of Staff
Media Relations

Exec Vice President/Chief of Operations

Exec Vice President/Administration

Sr. VP Chief
Finance Officer

VP Planning & Development
VP Finance
VP Chief of Police
VP Paratransit
VP Transportation
VP Maintenance
VP Human Resources
VP Procurement
VP Marketing Communication
VP CIO

AVP Econ Opp & Gov Rel
AVP Mobility Programs
AVP Treasurer
AVP Paratransit Operations
AVP Rail Operations
AVP Fleet Services
AVP Human Resources
AVP Procurement
AVP Marketing Advertising
AVP Information Systems
AVP Commuter Rail

AVP Compliance & Regulations
AVP Service Planning
AVP Paratransit Mgmt. Services
AVP Bus Operations
AVP Technical Services
AVP Risk Management
AVP Contracts
AVP External Affairs
AVP Rail Program Support

AVP Materials Management
AVP Ways, Structures & Amenities
AVP Operations Administration

AVP Operations Administration

AVP Operations Administration

AVP Rail Program Support

AVP Rail Program Support

AVP Rail Program Support

AVP Rail Program Support

AVP Rail Program Support

AVP Rail Program Support

AVP Rail Program Support
ADDITIONAL SAFETY AND SECURITY RESPONSIBILITIES ARE CONTAINED IN THE SSPP AND SSEPP.
4.0 Safety and Security Analysis

This section will cover the procedures used to identify safety hazards and security vulnerabilities, categorizes them as to their potential severity and probability of occurrence, analyze them for potential impact, and resolve them by various methods.

4.1 Approach to Safety and Security Analysis

The safety hazard and security vulnerability management process for the LRT Build-Out Phase II Project includes:

- Identification of hazards and vulnerabilities;
- Categorization as to their potential severity, probability of occurrence;
- Analyzation of their potential impacts;
- Reduction of the risk vulnerability to an acceptable level by designing for minimum risk, safety or security devices, warning devices, or procedures and training.

Management of safety hazards is the primary responsibility of Rail Program Development. Management of security vulnerabilities is the primary responsibility of DART Police. Previous Sections of the SSMP detail these responsibilities. The FTA publication *Hazard Analysis Guidelines for Transit Projects*, January 2000, is a key tool used to manage the safety hazard and security vulnerability process.

The following sections describe each of the steps in the safety hazard and security vulnerability resolution process.

4.2 Hazard/Vulnerability Identification

Hazards exist in many forms. They include physical hazards associated with an element of the facility or equipment design, chemical hazards, human error, or procedural hazards, such as an operating procedure that allows actions that could cause an accident or injury. Anyone involved with the project may identify a hazard.

Tools utilized during the life of the project to identify hazards include:

- *Hazard Analysis Guidelines for Transit Projects*;
- DART LRT Starter System Preliminary Hazard Analysis;
- DART LRT Build-Out Phase I Hazard Analysis;
- *DART Design Criteria*;
- Technical Specifications and Design Drawings;
- Special Safety and Security Studies;
- CPTED Analysis;
- Operating experience from the existing system;
- Design Team experience;
- Results of Contractor and Integrated Testing.
During the preliminary engineering phase of the project, techniques used by Rail Program Development, Facilities Engineering, Construction Management, Systems Engineering and Integration, SIC, SDC, and the GEC to identify hazards and security vulnerabilities in the LRT Build-Out Phase II Project includes the tools outlined in the following sections;

4.2.1 Preliminary Hazard Analysis

The first analytical process that is used to identify hazards is commonly described as a Preliminary Hazard Analysis (PHA). The PHA process includes identifying the hazards by identifying failures and conditions which can occur in each subsystem and at the points of the interface between subsystems. The analysis includes the relationship between the major subsystems (vehicle, signals, traction electrification, facilities, communications) and the operating environment.

The focus of the PHA process is to identify hazards and security vulnerabilities early in the design process so that their resolution can occur simultaneously with systems design. DART has an extensive database of PHAs developed during the Starter System and Phase I. PHAs were also conducted on Phase II-A and Phase II-B when situations were encountered that had not been dealt with previously.

4.2.2 Operating Hazard Analysis

The second analysis method is the performance of an Operating Hazard Analysis (OHA). This analysis method identifies hazards associated with the operation and maintenance of the system, subsystem, and equipment. This tool is used to identify hazards that are expected to arise during normal system operations, and reasonably expected misuse of the system during operating and maintenance activities. The focus of the OHA is to identify and develop corrective action for all critical and catastrophic hazards that could affect the safety and security of the operating system. Resolution of hazards results in a design change, provision of safety, security, and warning devices or procedural controls as discussed in Section 4.3. DART has conducted a number of OHAs based on the Starter System and Phase I.

4.2.3 Failure Mode and Effect Analysis

Failure Mode and Effect Analysis (FMEA) is a disciplined approach used to identify possible failures of a product or service and then to determine the possible frequency of such a failure and the impact the failure could have on the system. FMEA is primarily used to analyze the result of a single point failure.

4.2.4 Procedures and Processes

The procedure and process for PHA, OHA, and FMEA are contained in the FTA publication *Hazard Analysis Guidelines for Transit Projects*. The SIC will conduct PHA, OHA, and FMEA as required during the life of the project. During system construction,
contractors are required to conduct similar studies by Contract Specification Section 01047 - System Safety Program.

4.2.5 Special Safety and Security Analyses

Special safety and security analyses are conducted as required to develop alternatives for hazard resolution, determine safety testing, and evaluate the results of actions taken. SIC Procedures Manual, Procedure 5.1, is used to conduct these analyses. Special security and CPTED analyses will be accomplished in coordination with DART Police. Special safety and security analyses were conducted during the construction of the Starter System, Phase I, and during the design of Phase II. These include CPTED, TVA, and other requested analysis.

4.3 Hazards and Vulnerabilities Categorization

A structured process is used to assess the risk of each identified hazard and security exposure, including both severity and probability of occurrence. The classification of hazards and vulnerabilities by severity and probability is done in accordance with the provisions of MIL-STD-882: DART Design Criteria Manual, Volume 2, Chapter 12 Systems Safety; and The FTA Publication *Hazard Analysis Guidelines for Transit Projects*. All identified hazards and security vulnerabilities are categorized following the procedures in MIL-STD-882 and the SSEPP. The DART Operations SSPP, Section 5, explains how MIL-STD-822 is used to evaluate hazards and to prioritize hazards for resolution.

4.4 Hazards and Vulnerabilities Resolution

After the hazards and vulnerabilities are evaluated and categorized, a plan is developed for elimination or minimization of the exposures. This plan is based on an assessment of the risk associated with the unmitigated occurrence of each hazard/vulnerability. There are four categories used to classify hazards/vulnerabilities:

A Unacceptable:

For the most serious hazards, controlling measures will be developed.

B Undesirable:

If the hazard is less serious it will be evaluated for corrective action and a decision will be made about correction or acceptance of the hazard.

C Acceptable with review:

The hazard resolution is closed based on an evaluation of the final risk, the re-evaluation of the frequency, and the severity after the corrective action is included.
D Acceptable without review:

The least serious hazards are accepted as identified and no corrective action is required.

Identified hazards are mitigated or reduced through the hazard reduction order of precedence:

**Design for Minimum Risk.** Design, redesign, or retrofit to eliminate (i.e., design out) the hazards through design selection. If an identified hazard cannot be eliminated, designs should be altered such that they are reduced in severity and/or probability of occurrence to an acceptable level. This may be accomplished, for example, through use of fail-safe devices and principles in design, the incorporation of high-reliability systems and components, and the use of redundancy in hardware and software design.

**Safety Device.** Hazards that cannot be eliminated through design or controlled through design selection will be controlled to an acceptable level through the use of fixed, automatic, or other protective safety features or devices. Examples of safety devices include interlock switches, protective enclosures, and safety pins. 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 will also permit the system to continue to operate in a limited manner. Provisions will be made for periodic functional checks of safety devices.

**Warning Devices.** When neither design nor safety devices can effectively eliminate or control an identified hazard, devices will be used to detect the condition and generate an adequate warning signal to alert personnel to correct the hazard or provide for remedial action. Warning signals and their application will be designed to minimize the probability of incorrect personnel reaction to the signals and will be standardized within like types of systems.

**Procedures and Training.** Procedures and training will be used to control the hazard where it is not possible to eliminate, or adequately control a hazard through design selection, or use of safety and warning devices. Special operating procedures can be implemented to reduce the probability of a hazardous event or a training program can be conducted. The level of training required will be based on the complexity of the task and the minimum trainee qualifications contained in the training requirements specified for the subject element. Procedures may include the use of personal protective equipment. Precautionary notations in manuals will be standardized. Safety critical tasks, duties, and activities related to the system element/subsystem will require certification of personnel proficiency.

However, without specific written approval, no warning, caution, or other form of written advisory will be used as the only risk reduction method for Category I and II hazards. Hazard categories are covered in the DART Operations SSPP, Section 5.
4.5 Security Threat and Vulnerability Management Process

During the preliminary engineering phase of the project a preliminary threat and vulnerability analysis (TVA) was conducted in conjunction with the DART Police. Rail Program Development participation included representatives of the Facilities Engineering, Construction Management, Systems Engineering and Integration, SIC, SDC, and the GEC. The results of the analysis were transmitted to DART Police for incorporation into a systemwide TVA.

During the design phase of the project, FLSC meetings have been conducted with Member City police departments to review the alignment, facilities, and systems for identification, classification, and resolution of security vulnerabilities.

DART Police, when developing the SSEPP, completed a thorough analysis of threats and vulnerabilities throughout the system. This analysis is an ongoing process controlled by DART Police. The design review process, as outlined in Section 2.0, will provide additional updates through project planning, design, and into construction.

Requirements for contractor security are contained in the Contract Documents. Contractors are required to develop their own security means and measures, while still maintaining full responsibility for security of their work site. If assistance with security vulnerability management is needed, Construction Management, in conjunction with DART Police, will provide support.

During the Start-Up and Testing Phase, DART Police participate in agency-wide Start-Up Management Meetings, Integrated Testing, Readiness Drills, and pre-revenue Operations. SSEPP updates will be completed at this time and will include resolution of identified threats and vulnerabilities, and approval of the SSO.

4.6 Hazard Management Process

During the planning phase of the project preliminary hazard analyses were conducted using the techniques outlined in Section 4.1 and in the DART Design Criteria Manual, Volume 2, Chapter 12.1.4. Rail Program Development participation included representatives of the Facilities Engineering, Construction Management, Systems Engineering and Integration, SIC, SDC, and the GEC.

During the design phase of the project, FLSC meetings were conducted with Member Cities to review the alignment, facilities, and systems for identification, classification, and resolution of hazards.

DART's Design Review Procedure is one method for reviewers to identify hazards and bring them to the attention of the design team for resolution.

Identified concerns are resolved using one of the methods identified in Section 4.3 and DART Design Criteria Manual, Volume 2, Chapter 12.1.4.
5.0 Development of Safety and Security Design Criteria

This section describes the procedures for identifying safety and security codes, standards and other requirements that have been incorporated into the DART Design Criteria.

5.1 Codes and Standards

Safety and security requirements are consistent with current transit industry practices for modern LRT systems. These requirements are formally identified by several means including:

- DART Design Criteria Manual;
- Codes and regulations as specified in the DART Design Criteria Manual;
- Nationally recognized safety standards (i.e., OSHA, ANSI, NFPA);
- Hazard and vulnerability analyses;
- Special analyses and studies addressing specific issues associated with a particular element;
- Industry practice.

The safety and security requirements emphasize areas such as fire protection, electrical safety and grounding, clearances, pedestrian/traffic interface, and other critical safety and security areas. The applicable requirements of NFPA 130, Standard for Fixed Guideway Transit and Passenger Systems are incorporated into the LRT Build-Out Phase II Project.

The GEC, SDC, and SIC were tasked during the preliminary phase of the project to update the DART Design Criteria Manual. The updates were based on the Lessons Learned Program from prior phases, including the results of hazard and vulnerability analyses. The updates followed the DART Design Review Process, were approved by DART, and posted on a Rail Program Development website for use by the Systems and Facilities designers.

5.2 Design Reviews

The design of each system element and fixed facility is reviewed to identify hazards and to verify compliance with required safety and security codes and standards. Section 7 of this SSMP explains how the DART Design Criteria, codes and standards will be used by the Safety and Security Certification Review Team to certify the design and then the completed element.

This review may identify hazards/security concerns that are not addressed by current standards and specifications. The DART Lessons Learned database is maintained to
document how these items were handled. This data will be incorporated into future Design Criteria Manual updates and system elements and fixed facility designs.

This corrective action may require:

- Specifications be changed;
- Standards be referenced in the design specifications;
- Designs be modified;
- Operating procedures be modified.

During the final design process, the Design Change Control Board and a DART Design Change Control Procedure govern changes. The Senior Vice President, Rail Program Development, chairs the Design Change Control Board and its members include all DART Rail Program Development AVPs and the DART Quality Assurance Director. This formalized procedure provides a process for assuring that a change does not compromise safety, security, or adversely impact DART LRT Operations.

5.3 Approach to Specifications

Each contract includes a copy of the standard specifications, a matrix outlining if the specification applies to the contract, and if the specification has been modified from its standard form. The need for modified specifications would be identified by the final designers and reviewed and approved by the DART Project Manager for the element. Modified specifications would be reviewed with the contract package following the DART Design Review Process.

Procedures used to identify that specifications meet the Design Criteria include: design coordination meetings led by the DART Project Manager, Design Reports submitted by the final designers that include compliance checklists and descriptive text, and the SSCRT checklists developed for each certifiable element as part of the SSCP.

5.4 Technical Baseline

Specifications, directives, and standard drawings were originally developed for the Starter System and Build-Out Phase I and were updated during the preliminary design phase of the LRT Build-Out Phase II Project. The updates followed the DART Design Review Process, were approved by DART, and distributed to the design teams for incorporation into the contract documents provided to the contractors.

5.5 Deviations and Changes

The design of each fixed facility and system element is reviewed to identify hazards and to verify compliance with required safety and security criteria, codes, and standards. In
the event a deviation to the design criteria is required, the design team processes a formal “Design Criteria Exception." An analysis of why the exception is being taken is performed and a formal review and sign-off is required by the designer, DART Project Manager, and the DART AVP overseeing the design.
6.0 Process for Ensuring Qualified Operations and Maintenance Personnel

6.1 Operations and Maintenance Personnel Requirements

Operation and maintenance personnel qualifications and core competencies by job classification were developed during the Starter System and Phase I Build-Out and are being updated for Phase II.

The Systems Integration Consultant maintains the Operation and Maintenance Plan (OMP) and the Operations and Maintenance Cost Model Hiring Plan. Staffing estimates for the DART LRT System are discussed in Section 5 of the OMP. The Operations and Maintenance Cost Model Hiring Plan provides yearly estimates of the additional staffing and operational costs resulting from the Build-Out Phase II Project. These projections are made through the end of FY 2017.

The development of staffing requirements and job/position descriptions, qualifications, etc. is the responsibility of each department in conjunction with the Human Resources Department.

6.2 Plans, Rules, and Procedures

DART currently has a number of plans, rules, procedures, and programs covering safety and security. These will be updated prior to the start of revenue service on each segment of the LRT Build-Out Phase II Project. These will include:

- System Safety Program Plan
- System Security and Emergency Preparedness Plan
- Light Rail System – Book of Operating Rules
- DART Light Rail Standard Operating Procedures

6.3 Training Program

Safety and security training is covered in Section 16.0 of the System Safety Program Plan (SSPP). A copy of this section follows:

16.0 Training Certification Review/Audit

16.1 Safety Training – Safety training is, to the extent practical, integrated into all training, Agency-wide. Safety components of any policy, procedure or guidelines are incorporated into the training curriculum as a matter of course. The training records are maintained in the department conducting the training. Where necessary, however, safety specific training is conducted either by Safety Section personnel or by trained instructors.
within the department conducting the training. Additionally, safety training is conducted for outside agencies, such as city fire and police departments and for contractors performing work for the Agency. Safety specific training includes the following:

16.1.1 Rail Safety Awareness Training – This training is required for all employees and contractors associated with the light rail division. Rail Safety maintains a permanent record of all such training. All DART employees and contractors that potentially will work on or near the rail right-of-way or yard are required to successfully complete the 2 hour safety awareness training conducted by the DART Rail Safety subsection. The attendance of this class is mandated before working on or near the DART rail line. It is a one-time requirement.

16.1.2 Fire Department Training – Advanced rail safety training is provided when requested to member city fire department personnel. Permanent training records are maintained by the Rail Safety subsection.

16.1.3 DART Police Training – Advanced right of way training is provided to all DART Police new-hires. DART Police and Safety maintain permanent records of the training.

16.1.4 Operation Lifesaver – This course is nationally recognized as a means of reducing the number of collisions between rubber tired vehicles and trespassers with rail vehicles. It is taught periodically to DART employees as well as to the general public by DART Safety personnel and other trained DART employees.

16.1.5 Quarterly Safety Training – Mandatory quarterly safety training meetings are conducted by Safety personnel on various safety related topics for both bus and rail to Transportation and Maintenance personnel. Training is scheduled for October, January, April and July each year. The Safety Section determines the topics covered and writes the curriculum, based on current events and recurrent training required by law or training spawned by changes in safety related laws, regulations, guidelines, DART policy, SOPs, and work instructions. Permanent records of the training are maintained in the Safety Office. Collision Avoidance – A course taught by the Transportation Training Section to employees who have had a preventable accident or have otherwise been identified as being high risk operators. The Transportation Training Section maintains the permanent records of these classes.

16.1.6 Defensive Driving – This National Safety Council sponsored course is instructed by qualified personnel in both the Safety and Transportation Training Sections. Records are maintained in the Transportation Training Section. This course is also offered periodically to DART employees at large by the Transportation Training Section.
16.1.7 Environmental and Health Training – This training includes instruction required for compliance with EPA and OSHA (voluntary) guidelines and regulations. It includes training on topics such as the lead and asbestos programs, hazardous material communication, spill response and other environmental issues. The training is accomplished jointly by the Safety Section and DART’s Environmental Compliance Section personnel. Records are maintained in the Safety Section.

16.2 Overview – DART safety training is performed overall operating disciplines. For the most part, safety training is integrated into the task specific training associated with each departmental discipline by the training units of the department. General safety training is performed by the Safety Section on stand-alone topics. Additionally, contractors to DART are required to receive safety orientation instruction pertinent to their involvement with the agency, especially as it relates to the light rail system right-of-way.

16.3 Employee Safety – Employee training is detailed in Chapter 5 of this document (SSPP).

16.4 Contractor Safety – All contractor employees performing construction activities shall attend formalized construction safety training/orientation prior to entering jobsite. Bi-Lingual training programs integrate statutory requirements i.e., OSHA and FRA, Authority requirements and regional (industry) best practices and methodologies. Each employer maintains documentation and provides to Authority upon demand. Periodic on-site audits coupled with on-site visits verify training accomplishment, employee participation and course content. Detailed requirements for contractor personnel are addressed in DART’s formal Construction Safety and Security Program, which is incorporated into all construction contracts as Exhibit “M.”

16.5 Record Keeping – Record keeping processes are described in Chapter 5 of this document (SSPP).

16.6 Compliance with Training Requirements – Elements of the training process are periodically audited by the Safety Section and are a regular component of the annual rail audit. Training syllabuses and records are requested and reviewed to ensure that the elements of training are consistent with governmental and DART policies, procedures, regulations, standard operating procedures and work instructions as identified and detailed in Chapter 12 of this document (SSPP).

16.7 Rail Operator Training – Rail Operators are required to be DART certified to operate the LRVs. Each operator must successfully complete an 8-week comprehensive in-house training program. Each operator must attend and pass recertification via an in-house training class annually.

16.8 LRV Train Controllers – TCC controllers are required to complete and pass the aforementioned DART LRV operator certification program. Each controller must also complete and pass a 13-week controller class for the
controller certification program. Each controller must recertify annually by way of a 3-day recertification class.

16.9 The Maintenance Training Department provides training to the maintenance sections of DART. All maintenance employees are required to successfully complete training according to established career plans. The career plans are tailored specifically to each discipline within the maintenance department in order to promote expertise and efficiency in equipment maintenance as well as safety for DART employees, our customers, and the general public. Some examples of career plans are: LRV Mechanic, Communication Technician, Traction Power Maintainer and Signal Maintainer. All career plans require a specific number of core classes to be completed during the employee’s first six months of employment. These classes are required and an employee who does not complete the required training is subject to discharge. In addition, employees are required to attend other classes to improve skills and knowledge within their discipline in order to receive pay upgrades. Refresher courses are required for some classes at periodic intervals.

6.4 Emergency Preparedness

The Integrated Test Plan includes a number of simulated emergencies or drills to be conducted, in some cases, with the emergency response agencies of member cities. These include simulated automobile collisions, fires, passenger injuries and train collisions. The Test Plan will outline in detail how each drill will be conducted and evaluated upon completion of the drill.

6.5 Public Awareness

Chapter 15 of the Capital Improvement Program Management Plan identifies and describes the strategies; processes and actions used by DART for interaction with the general public and other external stakeholders. The Community Affairs Office is responsible for planning and facilitating public meetings, directing and implementing education programs, community outreach and special projects.
7.0 Safety and Security Verification Process (Including Final Safety and Security Certification)

7.1 Design Criteria Verification Process

The DART Design Review Procedures describe in detail the procedures used to verify that the design conforms to the DART Design Criteria including safety and security criteria and requirements for contractor testing. This procedure calls for the design and specifications to be reviewed and comments to be made where there appear to be variances from DART Design Criteria or errors/omissions. The comments are then dispositioned by the designer. DART’s Design Review Procedures (Section 3.5 Contested Disposition Process) outlines procedures for a reviewer to appeal the designer’s decision thru channels to more senior levels up to and including the Senior Vice President, Rail Program Development.

The designer and DART Project Manager conduct a formal sign-off of each design package that attests to its completion prior to distribution for design review.

In addition, the SSCRT checklists developed for each certifiable element and the SSCRT certifies the design in accordance with the established SSCP.

7.2 Construction Specification Conformance Process

Procedures used to verify adherence to contract specifications for safety and security include:

- Regular, weekly construction meetings between the contractor and DART are included in the contract requirements. These owners meetings include discussions on contract change orders, non-conformances, and contractor safety and security issues. Minutes of the meetings are used to track issues;

- As required by contract specifications, submittals are developed by the contractor, submitted to the RCM and reviewed by the designers of record for adherence to plans and specifications. Submittal specifications require the contractor identify any deviation to the specifications. Submittals include contract specification required testing plans and the completed test reports verifying the system as constructed or installed meets the specifications;

- A DART Change Control Procedure has been established and is administered through an online database. The procedure tracks each change, and documents the basis / justification and the change's impact to the project. The procedure includes documented approvals from DART;

- Quality assurance carried out as part of the DART Quality Assurance Program (QAP) and the contractor’s quality control procedures are also part of the
verification that the contract specifications have been implemented. This includes documentation of non-conformances.

During the construction process, the SSCRT checklists used to certify the design will be used to verify that the safety and / or security component has been incorporated into the project. During this period, items can be deleted if it is determined that they no longer apply, or additional items may be added, if it is determined there are safety or security risks that were not previously identified. The checklists are updated throughout the construction phase, reviewed by the SSCRT, and used as a basis for final certification.

7.3 Testing/Inspection Verification

A comprehensive systems testing and inspection program is conducted to ensure that the system will operate as designed. DART’s successful Phase I Build-Out Integrated Test Plan and Integrated Test Plan, Build-Out Phase II and Other Capital Projects will be used as a guide for developing the final Integrated Test Plan for Phase II-A and Phase II-B. The verification of the safety and security elements is included as part of the testing / inspection program. The safety and security verification is intended to:

- Verify that sufficient safety and security performance standards have been achieved to allow the initiation of revenue service.
- Provide documentation verifying that tests were planned and conducted in accordance with the safety and security criteria.

This step of the overall safety and security certification process includes several different kinds of tests. These tests are conducted in a sequential order to assure that minimally acceptable safety and security standards can be provided at each stage. They include:

- Contractor tests
- Integration tests
- Pre-Revenue Tests
- Emergency response test and drills

The Integrated Test Plan describes the testing process, including the relationship with safety and security. Participants in the integrated test process include not only contractor support personnel but also DART Operations personnel from Rail Transportation, Ways, Structures and Amenities, Rail Safety, and DART Police.

Results of the integrated testing are produced and reviewed by SIC and reviewed and approved by DART.
7.4 Hazard and Vulnerability Resolution Verification

During the preliminary engineering phase of the project a preliminary hazard and vulnerability analysis was conducted in conjunction with the DART Police. Rail Program Development participation included representatives of the Facilities Engineering, Construction Management, Systems Engineering and Integration, SIC, SDC, and the GEC. The results of the analysis were transmitted to DART Police for incorporation into a systemwide TVA.

During the design phase of the project, FLSC meetings were conducted with member city police departments to review the alignment, facilities, and systems for identification, classification, and resolution of security vulnerabilities and hazards.

DART Police, when developing the SSEPP, completed a thorough analysis of threats and vulnerabilities throughout the system. This analysis is an ongoing process controlled by DART Police. The design review process, as outlined in Section 2.0, will provide additional updates through the project planning, and design phases, and into the construction phase.

Requirements for contractor security are contained in the Contract Documents. Contractors are required to develop their own security means and measures, while still maintaining full responsibility for security of their work site. If assistance with security vulnerability management is needed, Construction Management, in conjunction with DART Police, will provide support.

During the Start-Up and Testing Phase, DART Police participate in agency-wide Start-Up Management Meetings, Integrated Testing, Readiness Drills, and pre-revenue Operations. SSEPP updates will be completed at this time and will include resolution of identified threats and vulnerabilities, and approval by the SSO.

During the planning phase of the project preliminary hazard analyses were conducted using the techniques outlined in Section 4.1 and in the DART Design Criteria Manual, Volume 2, Chapter 12.1.4. Rail Program Development participation included representatives of the Facilities Engineering, Construction Management, Systems Engineering and Integration, SIC, SDC, and the GEC.

DART's Design Review Procedure is one method for reviewers to identify hazards and bring them to the attention of the design team for resolution.

Identified concerns are resolved using one of the methods identified in Section 4.3 and DART Design Criteria Manual, Volume 2, Chapter 12.1.4.
7.5 Operational Readiness Verification

The Integrated Test Plan includes a Readiness Drill component for each appropriate fixed facility or system element. The Readiness Drill is conducted in the final phase of start-up operation to verify operational readiness of the fixed facility, system element, rules, procedures, and training. These drills typically include an emergency response component coordinated through the FLSC.

Operations and Maintenance Plans developed during the design phase, and fine-tuned during the construction phase, are used as a basis of SOP and rulebook changes or updates by Operations. Operational readiness reviews will include SSO review and approval for entering revenue service.

7.6 Certification Requirements

7.6.1 Certification

Certification is the process of verifying satisfactory compliance with a set of formal safety and security requirements. Specifically, it involves issuing Certificates of Compliance that formally document that the safety and security requirements of the LRT Build-Out Phase II Project have been achieved.

The DART Safety and Security Certification Program LRT Build-Out Phase II Project (SSCP) addresses safety and security as the project progresses from planning, to design, through construction, installation, testing / inspection, and finally revenue service.

7.6.2 Line Sections and Facility Identified

Certifiable line sections and facility are identified for the project and include:

- Phase II-A
  - Northwest-1B
  - Northwest-2
  - Northwest-3
  - Northwest-4
  - Southeast-1
  - Southeast-2
  - Northwest Rail Operating Facility (NWROF)

- Phase II-B
  - Irving-1
  - Irving-2
  - Irving-3
  - Rowlett-1
The safety and security requirements for each element have been identified referencing DART’s Design Criteria or other applicable standards and where the element is located in the design package.

Compliance with the safety and security requirements will be followed from planning through completion of the project.

The Safety and Security Certification Plan (SSCP) is the procedure for verifying satisfactory compliance with a predetermined and approved set of formal safety and security requirements. DART’s Manager, Rail System Safety, has primary responsibility for the SSCP and is the Chair of the Safety and Security Certification Review Team (SSCRT). He will review and approve the forms and procedures to be used for the documentation of system safety and security requirements, verification reporting, and system safety certification.

When it is documented that all of the safety and security requirements have been complied with, the element will be submitted to the SSCRT. The SSCRT will then issue a Certificate of Compliance for that element.

When all elements have been signed off, the SSCRT will issue a certificate of compliance certifying that the system is safe and secure for revenue service. If one or more elements are lacking certification then the SSCRT has the option of issuing a Certificate of Compliance with restrictions.
8.0 Construction Safety and Security Management Activities

8.1 DART’s Construction Safety and Security Program


This manual has been established to:

- Prevent injuries to contractor personnel and/or property damage;
- Achieve greater efficiency; and
- Reduce direct and indirect costs.

DART’s Construction Safety Managers, Manager Rail System Safety, and Systems Integration Consultant have reviewed the design and analyzed the project locations to determine if the design or locations would present any unusual safety or security exposures that would require special attention. Based on the initial review, no additional analysis is recommended at this time.

8.1.1 Project Construction Safety and Security Planning

Construction contractors are required to submit a project-specific Contractor’s Safety and Security Plan. The Plan is reviewed and must be approved by DART’s Construction Safety Managers. Requirements for contractor safety plans are defined in the contract between DART and the contractor and DART’s Construction Safety and Security Program for LRT Projects. Requirements for contractor security are contained in the specifications and in the contract (Risk of Loss). Contractors are required to develop their own security means and measures, while still maintaining full responsibility for their work.

To be approved, the Contractor’s Safety and Security Plan must include a site layout drawing showing access roads, fire lanes, first aid stations, alarm systems, hazardous materials storage locations, and fencing and security lighting. The contractor’s plan must also include provisions for medical service, safety inspection policies, safety training and equipment training, housekeeping requirements, emergency response information, traffic control, and fire protection measures. The plan must also address specific safety issues such as excavations, scaffolding, ladders, cranes, and work on aerial facilities. In order to develop a project-specific safety plan that thoroughly addresses a project’s safety issues, each DART construction contractor must perform a detailed project-specific Hazard Analysis.

In addition to the Contractor’s Safety Plan, the contractor must identify a full-time safety representative for the project. DART’s Construction Safety Managers
review all nominees. A recommendation to approve or disapprove the nominee is made to the DART RCM/COR prior to the start of construction. If necessary, additional input is obtained from DART’s insurance carriers before a decision is made to approve/disapprove the safety person.

8.1.2 Construction Safety and Security Requirements

Basic construction safety and security requirements are defined in the contract documents. Construction work must comply with all local, State, and Federal safety laws and regulations; including OSHA, FRA, and FTA requirements. The DART Construction Safety and Security Program for LRT Projects defines specific requirements including those for Hazard Communications Program, Fire Prevention Plan, and Traffic Control Plan, work in trenches and excavations, cranes, motor vehicle operations, and hazardous materials.

Work on an active DART rail right-of-way is governed by the LRT Book of Operating Rules and Standard Operating Procedures. Access to an active revenue right-of-way must receive prior approval from DART’s Operations Department through track allocation meetings. Contractor personnel working on active LRT right-of-way must receive appropriate prior training in safety for LRT test or revenue operations, and must display identification on the worksite indicating that this training has been received. Contractors are required to assign a full-time safety manager/supervisor to each project. This position is responsible for the contractor’s safety and security activities and cannot report to the job superintendent. Access to a test section of track or right-of-way must receive prior approval from Rail Program Development’s Systems Engineering and Integration.

8.2 Drug-Free Workplace Program

Each construction contractor is responsible for establishing a drug-free workplace program, which applies to all safety-sensitive personnel. The program incorporates mandatory testing for drug and alcohol use. All personnel participating in a construction project must complete a 10-Panel Non-DOT drug/alcohol test within (10) days prior to beginning work on a DART construction site. Tests are provided thereafter on a continuing, random basis or as required due to an accident or suspension for drug/alcohol use.

8.3 Security

Several features are in place to maximize security for the public and DART employees. This includes security measures during construction and assurance that security issues are addressed during design. The SSEPP is managed by DART Police and contains the process to disposition any threats and vulnerabilities identified during the life cycle of the system.
8.3.1 Security Responsibilities

The DART Police Department is responsible for security functions at DART. Their efforts are closely coordinated with local law enforcement agencies. During construction projects, contractors are responsible for security at their worksites. Construction security issues will be reviewed during the regularly scheduled progress meetings as required by the DART Construction Safety and Security Program for LRT Projects. Major security issues or problems are referred to DART Police or local law enforcement agencies, as required, in conjunction with Construction Management needs.
9.0 Implementation Schedule for Meeting State Safety Oversight (SSO)

The Transit System Safety Manager, Public Transportation Division, Texas Department of Transportation, provides SSO for DART.

49 CFR 659: Rail Fixed Guideway Systems: State Safety Oversight as published in the April 29, 2005 Federal Register is currently being implemented, and DART has submitted for SSO review a revised SSPP and SSEPP. The SSO has also submitted its oversight plans for FTA review. This SSMP will be updated based on SSO adopted policies and procedures when they become available.

9.1 State Safety Oversight

SSO is the responsibility of the Transit System Safety Manager, Public Transportation Division, Texas Department of Transportation.

- SSO has submitted a revised state oversight plan to the FTA.
- SSO is involved in the design process through the Project Management Oversight Contractor (PMOC)/FTA quarterly meetings.
- SSO has reviewed and approved the SSPP.
- SSO has reviewed and approved the DART SSEPP.
- SSO reviews Operations SSPP every three years and will also review and approve an updated SSEPP and SSPP for the project prior to commencement of revenue operations. This procedure is described in detail in the SSPP, Section 5.3.1.2.

9.2 Coordination with SSO

DART will annually review safety and security programs and procedures (SSO requirement). DART will submit modified plans or procedures to the SSO for review and approval. After the plans and/or procedures are approved, the SSO will issue a formal letter of approval to DART. Prior to the start of revenue service, modified plans will be submitted to the SSO to obtain their concurrence for the start of revenue service.

Plans will be revised to incorporate new SSO requirements and any requirements for the LRT Build-Out Phase II Project operation and submitted to TxDOT for approval. A target of 60-90 days has been set to respond to the SSO after receipt of comments or updated standards.
9.3 Safety and Security Reviews

Safety and security reviews will be performed periodically by the SSO, DART Risk Management, and DART Police Emergency Preparedness Manager.

- DART to notify SSO thirty days before the review.
- SSO may attend these reviews.
- Risk Management conducts annual Safety Plan Audit.
- Annual SSEPP audit conducted by DART Police Emergency Preparedness Manager.
- Submit any plan modification to SSO for review and approval.
- SSO will conduct an on-site review of the SSPP and the SSEPP every three years.
10.0 Waiver Application to Federal Railroad Administration (FRA) for Transit Operations Along Shared Corridor, or Shared Track with the General Railroad System

DART is currently following the “Joint Statement of Agency Policy Concerning Shared Use of the Tracks of the General Railroad System by Conventional Railroads and Light Rail Transit Systems” (65 Federal Register 42525, July 10, 2000) with regard to its existing and future shared corridor operations.

10.1 Shared Corridor Operation

10.1.1 Existing Operations

Approximately four miles of semi-exclusive shared corridor with the Dallas, Garland, and Northeastern Railroad Inc. (DGNO) is in operation. This corridor’s limited connection consists of seven shared highway-rail grade crossings. Through a Memorandum of Understanding (MOU) between DART and DGNO, dated October 12, 2002, both parties have formalized their points of understanding for operation of the corridor.

10.1.2 Phase II Operations

DART’s Phase II expansion of the Northwest and Southeast corridors will include semi-exclusive shared corridor operations with limited connections consisting of shared highway-rail crossings.

An MOU dated August 12, 2005 has been executed between DART, Regional Rail Right-of-Way Company, and DGNO to formalize the points of understanding for the Phase II corridor operation.

10.2 Waiver Petitions

On December 15, 2004, DART petitioned the Federal Railroad Administration for a waiver of compliance from the provisions of the Federal Railroad Locomotive Safety Standards, 49 CFR Part 229.125 – Headlights and Auxiliary Lights, and 49 CFR Part 234.105 – Activation Failure. On May 2, 2005, the FRA granted the relief sought for a five-year period. DART plans to file a written request for extension with the FRA no less than six months before the waiver expiration date of May 2, 2010. This activity is identified and tracked in the LRT Build-Out Phase II Project schedule.
11.0 Department of Homeland Security (DHS) Coordination

11.1 Activities

There have been two security directives from the Transportation Security Administration applicable to DART. DART is in compliance with both directives.

DHS grants have been received for improving security at the Service and Inspection facility (S&I). These projects include:

- Razor wire addition and fence replacement;
- Fence intrusion detection system with a guard pager;
- Surveillance cameras;
- Barrier gate-automated entrance security gate;
- Additional card readers for access control.

These projects for the S&I were completed in June 2008.

Additional grant money has been provided to install Closed Circuit Television (CCTV) Systems in existing rail stations.

11.2 Coordination Process

DHS grants are coordinated by the Texas Governor's Office. The Manager of Emergency Preparedness, Jill Shaw, is DART's contact with the DHS and the Texas Governor’s Office for DHS related activities.
REFERENCES

• DART Safety and Security Program Plan – Rail Program Development, Revision 8

• DART System Safety Program Plan - Operations

• DART Safety and Security Certification Plan, Revision 5

• DART Construction Safety and Security Program for LRT Projects, Revision 10

• DART Capital Improvement Program Management Plan – Chapter 9, Safety and Security, Revision 13

• FRA Waiver (FRA-2004-20000)

• DART Quality Assurance Program, Revision 7

• AECOM SIC Integrated Test Plan, Revision 4

• AECOM SIC Procedure Manual

• DART System Security and Emergency Preparedness Plan

• Substantial Completion Use and Possession Prior to Completion (Beneficial Occupancy Conditional Acceptance), Final Acceptance and Transfer Coordination Procedure, Revision 2

• DART Design Review Procedures, Revision 6

• DART Operations and Maintenance Plan, Revision 11
# APPENDIX A
## ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
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<tr>
<td>APTA</td>
<td>American Public Transit Association</td>
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<tr>
<td>AVP</td>
<td>Assistant Vice President</td>
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<tr>
<td>CCTV</td>
<td>Closed Circuit Television</td>
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<tr>
<td>CEM</td>
<td>Construction Engineering Manager</td>
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<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
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<tr>
<td>COR</td>
<td>Contracting Officer’s Representative</td>
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<tr>
<td>CPTED</td>
<td>Crime Prevention Through Environmental Design</td>
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<tr>
<td>CSM</td>
<td>Construction Safety Manager</td>
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<td>DART</td>
<td>Dallas Area Rapid Transit</td>
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<td>DGNO</td>
<td>Dallas, Garland, and Northeastern Railroad, Inc.</td>
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<td>DHS</td>
<td>Department of Homeland Security</td>
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<td>DOT</td>
<td>Department of Transportation</td>
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<td>FLSC</td>
<td>Fire/Life Safety Committee</td>
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<td>FMEA</td>
<td>Failure Mode and Effect Analysis</td>
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<td>Federal Railroad Administration</td>
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<td>Light Rail Vehicle</td>
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<td>Abbreviation</td>
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<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
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<td>National Fire Protection Association</td>
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<td>Operating Hazard Analysis</td>
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<td>Occupational Safety and Health Act</td>
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APPENDIX B
SAFETY AND SECURITY CODES AND STANDARDS

• National Fire Protection Association

• National Fire Protection Association 130, *Standard for Fixed Guideway Transit and Passenger Rail Systems*

• International Building Code (IBC)

• Building Codes of the DART Member Cities

• International Fire Code (IFC)

• Fire Codes of the DART Member Cities

• Vernon’s Texas Statutes and Codes Annotated

• Occupational Safety and Health Act. 29 CFR 1910 & 1926

• Texas Manual on Uniform Traffic Control Devices

• NTSB-RSS-71-1 Special Study of Rail Rapid Transit Systems

• NTSB-RSS-73-1 Safety Methodology in Rail Rapid Transit System

• APTA, Moving People Safely, Third Edition

• MIL STD 882, System Safety Program Requirements

• NESC – National Electric Safety Code

• North Central Texas Council of Governments – Standard Specification, for Public Works Construction

• FTA Handbook For Safety and Security Certification

• Joint Statement of Agency Policy…. (65 Federal Register 42525, July 10, 2000)

• 49 CFR Transportation