Low Floor System Improvement Program

Safety Certification Plan

for the

Blue Line Crossover and Signaling Project

Revision: 1
Date: 3/23/2011

Prepared for:
The San Diego Association of Governments (SANDAG)

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REVISION TRACKING

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Table of Contents

List of Exhibits

List of Tables

List of Acronyms

Acronym	Definition
CCR	California Code of Regulations
CFR	Code of Federal Regulations
RE	SANDAG Resident Engineer
CaMUTCD	California Manual on Traffic Control Devices
COC	Certificate of Conformance
CPUC	California Public Utilities Commission
FD	Final Design
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HTM	Hazard Tracking Matrix
LED	Light Emitting Diode
MMPI	Mobility Management and Project Implementation
MTS	Metropolitan Transit System, (System Operator)
PB	Parsons Brinckerhoff (consultant to SANDAG)
PE	Preliminary Engineering
PHA	Preliminary Hazard Analysis
PRE	Pacific Railway Enterprises, Inc (Design Consultant)
PSSC	Project Segment Safety Certificate
SANDAG	San Diego Association of Governments
SCP	Safety Certification Plan
SRC	Safety Review Committee

SECTION 1 INTRODUCTION

The Federal Transit Administration (FTA), under Code of Federal Regulations (CFR) 49, Part 659, requires each State to designate an agency to oversee the safety of rail fixed guide way systems. The California Public Utilities Commission (CPUC) has issued General Order (GO) 164-D to implement the provisions of 49 CFR 659 which requires a safety certification program to be in place for major projects. The safety certification program was developed for the CPUC, in accordance with CPUC requirements, and will be made available to other agencies, including the Federal Railroad Administration (FRA).

The scope of the Blue Line Crossover and Signaling project includes installation of new interlocked crossovers, interlocking existing electric crossovers, signal system revisions, reverse running grade crossings, fiber optic connections for the signal system, and new grade crossing mechanisms, crossing cases, LEDs and new relay cases. The project location is on the existing MTS Trolley line between the 12th and Imperial Transit Center and the San Ysidro Trolley Station. The new systems and equipment will be installed on the existing, operating trolley line with limited passenger service interruption throughout construction, installation and testing. To meet this requirement, the project has been divided into five distinct segments along the 15 mile alignment. Figure 1-1 shows the trolley line from the 12th and Imperial Transit Center to the San Ysidro Trolley Station and the five Segments, Segments A through E, along the existing alignment. Each segment will be safety certified as it is constructed and tested.

Exhibit 1-1: Blue Line Transit System by Segment

This Safety Certification Plan (SCP) applies to the Blue Line Crossover and Signaling Project, specifically the design, construction, testing, start-up, commissioning and support of trolley operations controlled by the new systems and equipment. The plan may be revised and expanded as the project progresses.

1.1 Purpose

The intent of the SCP is to identify the processes to verify and document that the design, construction, and installation of systems and equipment are in compliance with safety requirements; training, operations and maintenance manuals have been provided; rules and procedures are written; and operations personnel are trained in the rules and procedures. Additionally, it provides a framework for ensuring that appropriate safety related activities have been performed and documented to support each Certificate of Conformance issued.

1.2 Objectives

The SCP objectives are to verify by documentation prior to commencing trolley operations controlled by the new systems and equipment, that each of the following is accomplished for the certifiable elements.

- Identified, assessed, and resolved system safety hazards to acceptable levels for all conditions, associated with the completed project;
- Developed design criteria incorporating appropriate codes, regulations, guidelines, and standards to provide a basis for safety consideration in the design;
- Reviewed project specifications and drawings to verify conformance to design criteria with respect to safety;
- Determined the Crossover and Signaling System has been designed, built, inspected, and tested, in accordance with applicable codes, regulations, standards, design criteria, and specifications;
- Verified as-built drawings and plans properly identify new equipment and systems installed;
- Facilitated regulatory inspection of crossover and signaling system;
- Developed the necessary operating procedures, and rule book modifications prior to commencing trolley operations on new equipment and systems within a segment;
- Trained, qualified or certified San Diego Trolley, Inc. personnel who will operate and maintain the new equipment and systems.

1.3 Definition of Safety Certification

Safety Certification is the process of verifying compliance with a set of formal safety requirements. Specifically, certifiable elements need to be identified, verification activities need to be performed and documented, and Certificates of Conformance need to be signed and issued by responsible parties.

Contractual acceptance and safety certification are separate processes and actions. Contractual acceptance does not constitute safety certification, and safety certification need not imply acceptance with respect to contract performance.

1.4 Responsibility

The SANDAG Safety Manager is responsible for overseeing the activities of the Safety Certification Plan, and chairing the Safety Review Committee (SRC) defined in Section 3.1. A summary of the safety certification program responsibilities is shown in Table 1-1.

1.4.1 SANDAG Responsibility

SANDAG is responsible for certifying the safety of the Crossover and Signaling System design, construction, testing, delivery of operations and maintenance manuals – as specified in the construction contract documents; confirming rules and procedures are developed and implemented by MTS; and operations training is completed by MTS. In the performance of safety certification functions SANDAG will be assisted by the consultants identified in Table 1-1. The Project will be constructed, tested and safety certified in incremental segments. As each segment is certified, SANDAG will prepare a Project Segment Safety Certificate (PSSC), which will be maintained in the Crossover and Signaling System Safety Certification Verification Records and will be readily available for CPUC inspection.

1.4.2 CPUC Responsibility

The CPUC is responsible for review and approval of the Crossover and Signaling System Safety Certification Plan. In addition the CPUC is involved in reviewing the design, construction, testing and operational and maintenance readiness of the project. Besides reviewing and approving these documents, CPUC staff may inspect Crossover and Signaling System Safety Certification Verification Records and supporting documentation at all phases of the project.

Table 1-1: Summary of Crossover and Signaling System and Equipment Safety Certification Program Primary Responsibilities

#	Safety Certification Tasks	Responsibility
1.	**Safety Certification Plan (SCP) for Crossover and Signaling**	
	Prepare Draft Safety Certification Plan (SCP)	PB
	Internal Review and Comment	SANDAG, MTS
	Incorporate Comments and Finalize for Submittal to CPUC	PB
	Send formal SCP to CPUC Staff for review & approval	PB
	CPUC Review and Comment	CPUC
	Respond to CPUC Comments	SANDAG, PB
	Formal Approval of SCP by Commission	CPUC
2.	**Perform Preliminary Hazard Analysis (PHA)**	
	Draft PHA and List Identified Hazards	PB
	Send Draft PHA to CPUC Staff for review & comments	SANDAG
	Respond to CPUC Comments	SANDAG, PB
	Response to Identified Hazards – Design	PRE
	Response to Identified Hazards - Training	MTS
	Response to Identified Hazards - Maintenance and Operations	MTS
	Verify PHA results have been integrated into design	PB
	Issue PHA Certificate	PB
3.	**Integrate Results of PHA into Design**	
	Modify Design to include results as needed	PRE
4.	**Develop Design Criteria Conformance Checklists**	
	Develop Checklist	PB
5.	**Conduct Independent Safety Audits**	
	Periodic Through Design	PB
	Periodic Through Construction	PB
6.	**Verify Design Criteria Conformance Checklists and Issue Certificates**	
	Complete the Checklist	PRE
	Review of content and reference checks	PB
	Issue Certificate	PB
7.	**Develop Construction Specification Conformance Checklists**	
	Develop Checklist - Based on Contract Specifications	PB
8.	**Develop Safety-Related Testing Conformance Checklists**	
	Develop Safety-Related Testing Conformance Checklists	PB

#	Safety Certification Tasks	Responsibility
9.	**Verify Specification Conformance Checklists**	
	Inspect/Monitor Contractor Compliance with Specifications	RE
	Complete Checklist	RE
	Review of content and reference checks	PB
	Issue Certificate	RE
10.	**Verify Safety-Related Testing Conformance Checklists**	
	Receive/Review/Confirm Adequacy of Contractor Provided Testing Data	RE
	Complete Checklist	RE
	Review of content and reference checks	PB
	Issue Certificate	RE
11.	**Verify as-built drawings and plans properly identify crossover and signal installed**	
	Monitor contractor development of as built drawings as construction progresses	RE
	Obtain hard copy and electronic as-built plans, provide a copy to Project Manager for Configuration Records	RE
	Issue Certificate	RE
12.	**Field verification and inspection of equipment installed**	
	Monitor installation and equipment inspection as work progresses	RE
	CPUC provided opportunity to inspect construction progress as work progresses	CPUC
13.	**CPUC inspection of crossover and signaling**	
	Required by GO164-D, 49 CFR Part 213, 49CFR Part 236. May not apply as all are existing crossings.	CPUC
14.	**Verify Operations & Maintenance Manuals Conformance**	
	Receive contractor provided manuals and route for review and approval	RE
	CPUC review and comment on Draft Operations & Maintenance Manuals	CPUC
	Review/Comment/Approval manuals routed by CM Team	MTS
	Issue Certificate	RE
15.	**Verify completion of Integrated Tests**	
	Monitor Testing and Receive contractor provided test reports	RE
	CPUC provided opportunity to witness performance of tests	CPUC
	Review/Oversight of Integrated Tests	SANDAG/MTS
	Issue Certificate	RE
16.	**Verify completion of Rules and Procedures**	
	Develop operating rules and procedures for new system	MTS

#	Safety Certification Tasks	Responsibility
	CPUC review and comment on Draft Operating Rules & Procedures for new system	CPUC
	Confirm final Rules and Procedures are implemented	PB
	Issue Certificate	PB
17.	**Verify completion of Operations Training**	
	Develop Operations Training Plan	MTS
	Conduct Training Sessions	MTS
	CPUC provided opportunity to witness operations training	CPUC
	Confirm completion of Training sessions	PB
	Issue Certificate	PB

1.5 Scope of Safety Certification Program

The Safety Certification Program scope encompasses safety certification of the Crossover and Signaling System and equipment, safety-related procedures, training programs, and hazard resolution activities for the project. The process can be categorized into distinct progress factors throughout the advancement of the project. Specifically, certification focuses on the following ten “Certifiable Factors”:

1. Design Criteria Conformance
2. Construction Specification Conformance
3. Safety-Related Integrated Testing Conformance
4. Hazard (Risk) Resolution Conformance
5. System Dynamic Test
6. Clearance Conformance
7. Configuration (As-built drawings) Conformance
8. Operations and Maintenance Manuals Conformance
9. Rules and Procedures Conformance
10. Training Conformance

The following five project components, referred to as the “Certifiable Elements”, have been defined for safety certification in each segment.

1. Switch Machines
2. Signals
3. Wayside Signal Controller

4. Grade Crossing Warning Systems
5. Track Circuits

Some or all of the ten certifiable factors will apply to the Crossover and Signaling System as a whole or to each segment individually and its certifiable elements as described in Table 1-2.

Certificates of Conformance required for the various components necessitate the performance of a variety of system safety activities. The activities may be performed either independently, or integrated with other tasks such as acceptance testing or quality control measures. Regardless of whether the activities are performed independently or integrated with others, adequate system safety activity records must be developed and maintained as evidentiary support for the Certificates of Conformance.

Table 1-2: Certifiable Factors and Scope

#	Certifiable Factor	Scope
1.	Design Criteria Conformance	This certifiable factor will apply to the design of the Crossover and Signaling System as a whole. One Certificate of Conformance will be issued for Design Criteria Conformance.
2.	Construction Specification Conformance	This certifiable factor certifies that new equipment was installed in conformance with construction plans and specifications. Shall apply to new equipment installed within each segment consisting of certifiable elements (described above) and other integrated elements as necessary by location. A separate Certificate of Conformance will be issued for each segment, for a total of five (5) certificates at the completion of the work.
3.	Safety-Related Integrated Testing Conformance	This certifiable factor will apply to individual tests specified for each integrated certifiable element by location. A separate Certificate of Conformance will be issued for each segment upon successful completion of all specified tests, for a total of five (5) certificates at the completion of the work.
4.	Hazard (Risk) Resolution Conformance	This certifiable factor will apply to system wide safety certification of the Crossover and Signaling System. One Certificate of Conformance will be issued for Hazard (Risk) Resolution Conformance.
5.	System Dynamic Test	This certifiable factor will apply to Dynamic Operational Test of the Crossover and Signaling System for each segment. A separate Certificate of Conformance will be issued for each segment after successful completion of the test. A total of five (5) certificates will be issued at the

#	Certifiable Factor	Scope
		completion of the work.
6.	Clearance Conformance	This certifiable factor certifies that new equipment was installed in conformance with the clearance requirements of General Order 26-D, 75-D, 118, 143-B, and the California Manual on Uniform Traffic Control Devices (CA MUTCD). A separate Certificate of Conformance will be issued for each segment, for a total of five (5) certificates at the completion of the work.
7.	Configuration (As-built drawings) Conformance	This certifiable factor will apply to configuration (as-built drawings) records of each integrated certifiable element by location. A separate Certificate of Conformance will be issued for each segment after verification of configuration (as-built drawings) conformance, for a total of five (5) certificates at the completion of the work.
8.	Operations and Maintenance Manuals Conformance	This certifiable factor will apply to system wide safety certification of the Crossover and Signaling System. One Certificate of Conformance will be issued for Operations and Maintenance Manuals Conformance.
9.	Rules and Procedures Conformance	This certifiable factor will apply to system wide safety certification of the Crossover and Signaling System. One Certificate of Conformance will be issued for Rules and Procedures Conformance.
10.	Training Conformance	This certifiable factor will apply to system wide safety certification of the Crossover and Signaling System related to operations training. Two Certificates of Conformance will be issued, one for operations training and one for maintenance training.

1.6 Safety Certification Plan Revisions

The SCP will be revised as necessary. Changes may be proposed by any department and submitted in writing to the SANDAG Safety Manager for review and consideration. The Safety Review Committee, defined in Section 3.1, will review and approve the changes to the Plan. The revised Plan will be submitted to CPUC for approval of proposed revisions, in accordance with General Order 164-D. The revised Plan will become effective when the revisions are approved by CPUC Staff.

1.7 Safety Certification Plan Exclusions

Safety of construction personnel is the responsibility of the contractors. This Plan does not address construction safety. The vehicle safety certification program is not included in this SCP and will be performed separately.

SECTION 2 CERTIFICATION PROCESS AND PROCEDURES

This section describes how the certification process will function and provides an overview of the process by describing the various steps in general terms.

2.1 Background

The Safety Certification Program consists of ten Certifiable Factors which apply to the safety certification of the Crossover and Signaling System.

- **Design Criteria Conformance**. The criteria conformance process is to verify that the final design incorporates the safety related criteria identified in the SANDAG design criteria documents.
- **Construction Specification Conformance**. The construction specification conformance process is to verify the new systems and equipment contain and/or were installed in accordance with the safety related requirements identified in the specifications and other contract documents, including approved changes since the final design.
- **Safety-Related Integrated Testing Conformance**. The safety-related integrated testing conformance process is to verify that specified tests are conducted to verify that sub-systems and equipment function safely and do not contain or create known hazards.
- **Hazard (Risk) Resolution Conformance**. A Preliminary Hazard analysis (PHA) will be performed in the preliminary engineering phase of the Crossover and Signaling System and will be submitted to the CPUC. As detailed in Section 4, the hazard resolution conformance process is to verify that all identified hazards have been satisfactorily tracked and resolved through a resolution process.
- **System Dynamic Test.** This test is performed to verify that the complete integrated signaling system functions safely as specified and does not contain or create known hazards. As described in Section 1, the Project will be constructed, tested and safety certified in incremental segments. Testing will be performed for each segment using actual vehicles to test the overall functioning and safety of the signaling and highway crossing warning systems and integration between the new and old signaling system, and between the segment under certification and the segments already certified.
- **Clearance Conformance.** This certifiable factor certifies that new equipment was installed in conformance with the clearance requirements of GO 26-D, 75-D, 118, 143-B, and CA MUTCD.

- **Configuration (As-built drawings) Conformance.** This certifiable factor will apply to configuration (as-built drawings) records of newly installed wayside signaling and grade crossing warning systems by location to reflect the installed final condition.
- **Operations and Maintenance Manuals Conformance**. The operations and maintenance manuals conformance is to verify that the required operations and maintenance manuals include appropriate safety warnings and instructions on safety features and emergency operations.
- **Rules and Procedures Conformance.** Rules and procedures conformance is to verify that there are written rules and procedures for normal and emergency operations.
- **Training Conformance**. The training conformance process is to verify that training has been administered, and training in normal and emergency procedures has been given to system operations and maintenance personnel.

At the completion of each segment, when all applicable Certificates of Conformance have been issued, a Project Segment Safety Certificate (PSSC) will be issued for the segment and will be filed in the Crossover and Signaling System Safety Certification Verification Records. The PSSC will permit trolley operations on this segment, controlled by the new equipment and systems. The Certificates of Conformance for operations and maintenance manuals, rules and procedures, and training to the Crossover and Signaling System will be compiled and issued prior to issuance of the first PSSC. The preparation and issuance of the final PSSC for the final segment will indicate the completion of the project. This process is illustrated in Exhibit 2-1.

Exhibit 2-1: Safety Certification Process

2.2 Certification Activities

The safety certification process is active throughout the life of the project. It is important to note that each subsystem and piece of equipment could have its own Design, Construction, and Testing phases, therefore all certification activities will not occur simultaneously. Within each phase, activities are identified to determine the safety related certification activities expected to be accomplished at each project milestone. For the Crossover and Signaling System, the following Project phases have been identified:

- ***PE*** – Preliminary Engineering
- ***FD*** – Final Design
- ***CN*** – Construction
- ***IT*** –Integrated Testing
- ***SD*** – System Dynamic Testing

A list of the basic activities and the desired milestone goals are presented in Table 2-1. Checks (√) indicate the start of an activity; arrows (⇒) indicate an ongoing activity. An (X) in the CPUC Review column indicates the CPUC has the opportunity to review any/all activities at any time.

2.3 Safety Certification Steps

In general terms, the safety certification process of the Crossover and Signaling System shall consist of five steps:

1. Create a list of certifiable elements
2. Define the conformance checklists
3. Verify compliance with the requirements
4. Audit the compliance with requirements
5. Document the review and approval process.

- **Step 1** – Create a list of Certifiable Elements. The first step of the process is to identify the certification requirements for each certifiable element within the Crossover and Signaling System. This is defined in Section 1.5.

- **Step 2** – Define the Conformance Checklists. The second step of the process involves the creation of various “Conformance Checklists" and starts by breaking down the Crossover and Signaling System into segments and certifiable elements and items to be tracked for compliance with safety requirements.

The safety requirements for each certifiable element are identified in the project design criteria. The purpose of the checklists is to provide a method to track and verify the compliance of each requirement. For example, the Construction Specification Conformance Checklists verify that safety required items have been constructed, tested and installed correctly in the field.

Table 2-1: Safety Certification Activities

#	Task (as applicable)	Project Phase					
		PE	FD	CN	IT	SD	CPUC Review
1.	Develop Safety Certification Plan	√	⇒	⇒	⇒		X
2.	Identify Certifiable Elements	√	⇒				X
3.	Specify Requirements of SCP into Contract Documents	√	⇒				X
4.	Implement Certification Tracking System	√	⇒	⇒	⇒	⇒	X
5.	Perform Preliminary Hazard Analysis and Resolve Related Issues	√	⇒				X
6.	Integrate Results of Hazard Analyses into Design	√	⇒				X
7.	Perform supplementary Hazard Analysis, if necessary		√	⇒	⇒	⇒	X
8.	Develop Design Criteria Conformance Checklists	√	⇒				X
9.	Conduct Independent Safety/Security Audits		√	⇒	⇒	⇒	X
10.	Verify Design Criteria Conformance Checklists and Issue Certificates		√	⇒			X
11.	Develop Construction Specification Conformance Checklists		√				X
12.	Complete General Order 33B and 88B applications.		√				X
13.	Develop Safety-Related Testing Conformance Checklists		√	⇒			X
14.	Verify Specification Conformance Checklists			√	⇒		X
15.	Verify Safety-Related Testing Conformance Checklists				√	⇒	X
16.	Verify Operations & Maintenance Manuals Conformance			√	⇒	⇒	X
17.	Complete Contractor Training			√	⇒		X
18.	Complete Rules and Procedures and Issue Certificates			√	⇒		X
19.	Complete Operations Training and Issue Certificates				√	⇒	X

#	Task (as applicable)	Project Phase					
		PE	FD	CN	IT	SD	CPUC Review
20.	Issue Crossover and Signaling Safety Certificates					√	X

The checklists form the backup documentation for the Certificates of Conformance. Each list, therefore, must be prepared and reviewed to ensure compliance with the goals of the SCP.

Regardless of the structure and scope of the various checklists, combined they need to identify the safety requirements for all certifiable elements covered in the Crossover and Signaling System Safety Certification Program.

- **Step 3** –Verify Compliance with the Requirements. This step consists of using the conformance checklists to conduct appropriate reviews to verify that the safety related requirements identified in Step 2 are incorporated into the final design and end products. Methods to accomplish this include: document reviews, contract deliverables, audits, inspections, and testing. As requirements are verified, the appropriate checklists are completed, and include documentation of the method of verification, the date, and the name of the individual performing the verification. The responsible party verifies and signs off on each line item in the checklist. When complete, the responsible party submits the checklists to the Safety Review Committee (SRC) for review and acceptance. The objectives and function of SRC are defined in Section 3.

- **Step 4** - Audit the Compliance with Requirements. Safety and security certification audits will be conducted for each phase of the Safety and Security Certification process. The audit process is described in Section 6.2 2.

- **Step 5** – Document the Review and Approval Process. Documentation is essential to provide evidence of the various reviews, analyses, tests, inspections, training, and hazard resolution activities performed to ensure the safety of the system. Once all the conformance checklists are executed, validated and reviewed, the responsible party must complete and sign the associated Certificate of Conformance, and submit it to the SRC for review and acceptance. Checklists shall be submitted to the CPUC staff upon request. Detailed documentation requirements for the issuance of certificates are further described in Section 5.

2.4 Filing System

A formal filing system shall be developed and maintained for the safety certification process to ensure that all Certificates of Conformance are accurately completed and

signed by the appropriate levels of authority, and that all certificates are adequately supported by checklists or other records that verify the work performed.

2.5 Reporting of Progress

Details of the progress reporting, including milestone and final certification reporting requirements, are described in Section 6.

SECTION 3 PROGRAM MANAGEMENT

3.1 Safety Review Committee (SRC)

The Safety Review Committee (SRC) is a "working group" established to provide general guidance and support to the safety certification effort and to address detailed safety issues associated with certification activities. The objective of the SRC is to assure the timely implementation of the SCP.

The SRC is comprised of project representatives of SANDAG, MTS, and the Design Consultant and is chaired by the SANDAG Safety Manager. The SANDAG Safety Manager will identify representation to SRC on an as needed basis. The organizational chart below highlights the type of roles to be represented on the SRC.

Exhibit 3-1: Safety Review Committee Organizational Chart

The SRC reviews compliance with stated safety requirements for certifiable elements, and recommends to the Chair acceptance of conformance documents following satisfactory verification. Section 5.2 refers to exceptions to contract specifications. Status reports on safety certification are provided to the SRC at its meetings to review progress.

The SRC may perform audit and inspection activities of project functions to review safety compliance. For example, the SRC representatives may witness system tests to verify that test procedures are followed correctly, and that test results are acceptable.

On the Crossover and Signaling System Project, the SRC will perform the following project-specific functions:

- Review and approve conformance checklists for implementation on the Crossover and Signaling System Project
- Participate in safety audits
- Review records, and may conduct site inspections for safety related items
- Review and approve submitted Certificates of Conformance
- Monitor and audit overall implementation of the Safety Certification Program
- Review Preliminary Hazard Analysis for adherence to safety standards
- Review and approve issue of Project Segment Safety Certificate.

In accordance with General Order 164-D, the safety certification process for rail projects must involve the staff of the CPUC from the beginning of Conceptual Engineering. Therefore, a member of the CPUC staff may serve as an ex-officio member of the SRC.

SECTION 4 HAZARD MANAGEMENT

This section describes the hazard analysis process as it applies to the Crossover and Signaling System Safety Certification Plan. Within the Certification Program, the term "hazard" is defined to include identified or perceived hazards that may occur over the system's lifecycle. As part of the Crossover and Signaling System Safety Certification Program the responsible parties will identify, analyze, and resolve hazards throughout the course of the Certification Program. The hazard management process is intended to verify that known hazards have been satisfactorily identified, tracked, and resolved through a formal resolution process.

The goal of the hazard analysis is to provide adequate information so that SANDAG can certify that the Crossover and Signaling System will provide an acceptable level of safety upon its completion.

4.1 Hazard Identification

Defining the physical and functional characteristics of the Crossover and Signaling System creates the foundation of the hazard identification process. These characteristics are presented in terms of the major elements that make up the system such as personnel, facilities, systems, equipment, procedures, the public, and the environment. The perceived hazards will be identified using several techniques including:

- Historical hazard or accident data
- Operational experience and lessons learned
- Identification of credible hazard
- Checklists of potential hazards
- Input from the SANDAG staff and engineering/construction consultants
- Other methods as appropriate.

4.2 Hazard Analysis

Hazard Analysis is a risk assessment of the safety of the Crossover and Signaling System with regard to known hazards. The purpose of hazard analysis is to assess the severity and probability of the mishap risk associated with each identified hazard. Severity and probability generally are determined based on qualitative rather than quantitative analysis. The results and conclusions of the analyses of identified hazards, assessed in terms of severity or consequence and the probability of occurrence will be presented in accordance with FTA Hazard Analysis Guidelines. A Preliminary Hazard analysis (PHA) will be performed in the preliminary engineering phase, based on the following definitions of Hazard Severity and the Probability of Occurrence will be used to develop the PHA. The PHA will be submitted to the CPUC.

4.2.1 Hazard Severity

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

- Category I: Catastrophic: Death, system loss or severe environmental damage.
- Category II: Critical: Severe injury, severe occupational illness, major system, or environmental damage.
- Category III: Marginal: Minor injury, minor occupational illness, minor system, or environmental damage.
- Category IV: Negligible: Less than minor injury, occupational illness, or less than system or environmental damage.

4.2.2 Frequency of Occurrence

The assessment of the hazard also includes a probability of occurrence. A qualitative hazard probability can be derived from research, analysis, and evaluation of historical safety data from similar systems. The frequency of occurrence is assigned by level, A to E, for hazards and are listed in Table 4-1 below.

Table 4-1: Frequency of Occurrence Definitions

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

4.3 Hazard Resolution

Hazard resolution is the process whereby hazards are identified, eliminated, mitigated or accepted. Risk assessment estimates will be used to determine whether individual system or subsystem hazards are to be eliminated, mitigated, or accepted. Individual hazards will be documented, discussed, and resolved with emphasis on the following mitigation methods:

- Design to eliminate hazards

- Eliminate the system/subsystem component
- Incorporate safety devices
- Utilize warning devices
- Implement special procedures and training
- Accept the hazard.

To classify the assessment, hazards identified in formal hazard analysis will receive a classification based on Table 4-2. Unacceptable and undesirable hazards shall be mitigated to an acceptable level by one or more of the above-mentioned methods.

Table 4-2: Crossover and Signaling System Risk Assessment Matrix

Event Frequency	Event Severity			
	I Catastrophic	II Critical	III Marginal	IV Negligible
A – Frequent	Unacceptable	Unacceptable	Unacceptable	Acceptable /WR
B – Reasonably Probable	Unacceptable	Unacceptable	Undesirable	Acceptable /WR
C - Occasional	Unacceptable	Undesirable	Undesirable	Acceptable
D – Remote	Undesirable	Undesirable	Acceptable /WR	Acceptable
E – Improbable	Acceptable /WR	Acceptable /WR	Acceptable /WR	Acceptable

WR = with review by SANDAG

The Risk Assessment Matrix is used to categorize hazards as acceptable, acceptable with certain conditions applied, undesirable and unacceptable. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel error, environmental conditions, design inadequacies, procedural deficiencies, system, subsystem or component failure, or malfunction.

4.4 Hazard Tracking

This process will include documentation of hazard resolution activities through the use of a hazard tracking system. The tracking system will record identified hazards, and track/record resolution through the use of one or more of the mitigation methods listed in Section 4.3 above. The effectiveness of the mitigation will be scrutinized to determine that no new hazards have been introduced. All identified Hazards are tracked through to resolution. As each hazard is eliminated or controlled to an acceptable level, the responsible party updates the hazard open items list. The update must include a description of the measures taken to resolve the hazard.

4.5 Certification

When all hazards have been satisfactorily resolved, engineering or construction management contractors must complete and sign the Hazard Resolution Certificate of Conformance and submit the certificate to SANDAG for acceptance. The acceptance of the Certificate of Conformance is subject to review and approval by the SRC.

SECTION 5 CERTIFICATES OF CONFORMANCE

Throughout the project as conformance checklists are finalized, the responsible party is required to complete, sign, and submit respective Certificates of Conformance to appropriate parties identified in this Safety Certification Plan for review and acceptance.

5.1 Issuance

Upon receipt of each completed Certificate of Conformance, the entity responsible for acceptance will review the conformance checklists and other relevant backup documents as necessary to verify that the documentation is completed properly. Relevant backup documents will depend on the nature of each Certificate of Conformance, but may include evidence of document reviews, submittal of contract deliverables, and resolution of identified hazards, inspection reports, and test records. Acceptance of each certificate, in part, will be based on the successful completion of the review and, if necessary, an independent audit by the SRC.

5.2 Exceptions

Exceptions, if any, must be noted on each applicable certificate and tracked through resolution. Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced.

Exceptions will be tracked using a Safety Certification Open Items List. The SRC will monitor and track open items until resolution.

5.3 Format of Certificates of Conformance

Exhibits 5-1 through 5-11 show the sample format of the various Certificates of Conformance.

5.3.1 Project Segment Safety Certificate

In order to complete the safety certification process for each segment, the SRC reviews and approves issue of the Project Segment Safety Certificate, prepared by the SANDAG Project Manager, for sign-off by the responsible personnel. This document indicates that the Safety Certification Process for that particular project segment is complete and permits trolley operations within the particular segment to be controlled by the new equipment. The format of the Certificate is shown in Exhibit 5-12.

Exhibit 5-1: Design Criteria Conformance Certificate

CROSSOVER AND SIGNALING SYSTEM
DESIGN CRITERIA CONFORMANCE
Certifiable Factor No. 1

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: ALL SEGMENTS

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. The design contract documents incorporate safety criteria applicable to the Crossover and Signaling System.
2. The design contract documents for the Crossover and Signaling System incorporate applicable codes, and regulatory requirements.
3. Previous safety related design review comments for this Contract have been satisfactorily resolved.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____
Verified (Signature and Date)
Project Manager, Design Consultant to SANDAG

_____
Concurred (Signature and Date)
SANDAG Safety Manager

_____
Accepted (Signature and Date)
SANDAG Project Manager

Exhibit 5-2: Construction Specification Conformance Certificate

CROSSOVER AND SIGNALING SYSTEM
CONSTRUCTION SPECIFICATION CONFORMANCE
Certifiable Factor No. 2

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: **A** **B** **C** **D** **E**
(Circle One)

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. The completed work within this segment has been constructed/installed in accordance with the final construction specification documents and change notices/change order, except as noted below, and
2. Changes made after acceptance of the final design meet applicable code and regulatory requirements.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____
Verified (Signature and Date)
SANDAG Resident Engineer

_____ _____
Concurred (Signature and Date) Accepted (Signature and Date)
SANDAG Safety Manager SANDAG Project Manager

Exhibit 5-3: Safety-Related Integrated Testing Conformance Certificate

CROSSOVER AND SIGNALING SYSTEM
SAFETY-RELATED INTEGRATED TESTING CONFORMANCE
Certifiable Factor No. 3

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: A B C D E
(Circle One)

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. All safety-related tests have been performed with satisfactory results, and the systems and sub-systems function safely as specified.
2. The testing / inspections did not disclose any noncompliance with code and regulatory requirements applicable to the certifiable elements.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____
Verified (Signature and Date)
SANDAG Resident Engineer

_____
Concurred (Signature and Date)
SANDAG Safety Manager

_____
Accepted (Signature and Date)
SANDAG Project Manager

Exhibit 5-4: Hazard (Risk) Resolution Conformance Certification

CROSSOVER AND SIGNALING SYSTEM
HAZARD (RISK) RESOLUTION CONFORMANCE
Certifiable Factor No. 4

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: ALL SEGMENTS

In accordance with the requirements of the Crossover and Signaling System Project Safety Certification Plan, I certify, to the best of my knowledge, that:

1. All Hazards identified as unacceptable or undesirable in accordance with Crossover and Signaling System Project Risk Assessment Matrix have been tracked and resolved (e.g., identified hazards have been either eliminated or controlled to an acceptable level.)

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____
Verified (Signature and Date)
Project Manager, Design Consultant to SANDAG

_____
Concurred (Signature and Date)
SANDAG Safety Manager

_____
Accepted (Signature and Date)
SANDAG Project Manager

Exhibit 5-5: System Dynamic Testing Conformance Certificate

CROSSOVER AND SIGNALING SYSTEM
SYSTEM DYNAMIC TESTING CONFORMANCE
Certifiable Factor No. 5

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: A B C D E
(Circle One)

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. System Dynamic tests have been performed with satisfactory results, and the segments new systems and sub-systems function with existing systems safely, as specified.
2. The testing / inspections did not disclose any noncompliance with code and regulatory requirements applicable to the certifiable elements.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____
Verified (Signature and Date)
SANDAG Resident Engineer

_____
Accepted (Signature and Date)
SANDAG Project Manager

_____
Concurred (Signature and Date)
SANDAG Safety Manager

_____
Accepted (Signature and Date)
MTS Chief Operating Officer – Rail Division

Exhibit 5-6: Clearance Conformance Certificate

CROSSOVER AND SIGNALING SYSTEM
CLEARANCE CONFORMANCE
Certifiable Factor No. 6

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: A B C D E
(Circle One)

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. Conformance to clearances on the identified segment has been verified to comply with all relevant regulations.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____
Verified (Signature and Date)
SANDAG Resident Engineer

_____
Concurred (Signature and Date)
SANDAG Safety Manager

_____
Accepted (Signature and Date)
SANDAG Project Manager

Exhibit 5-7: Configuration (As-built drawings) Conformance Certificate

CROSSOVER AND SIGNALING SYSTEM
CONFIGURATION (AS-BUILT DRAWINGS) CONFORMANCE
Certifiable Factor No. 7

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: **A** **B** **C** **D** **E**
(Circle One)

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. The as-built drawings have been verified and they accurately reflect the installation of the certifiable elements.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____
Verified (Signature and Date)
SANDAG Resident Engineer

_____
Concurred (Signature and Date)
SANDAG Safety Manager

_____
Accepted (Signature and Date)
SANDAG Project Manager

Exhibit 5-8: Operations and Maintenance Manuals Conformance

CROSSOVER AND SIGNALING SYSTEM
OPERATIONS AND MAINTENANCE MANUALS CONFORMANCE
Certifiable Factor No. 8

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: ALL SEGMENTS

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. Operations and Maintenance manuals have been delivered in accordance with contract requirements.
2. The Operations and Maintenance Manuals are adequate and appropriate for the intended application, and contain instructions on safety features for normal and emergency operations.
3. All known elements and issues regarding Operations and Maintenance Manuals – which impact safety – have been resolved.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____	_____
Verified (Signature and Date)	Accepted (Signature and Date)
SANDAG Resident Engineer	MTS Maintenance of Way Manager
_____	_____
Concurred (Signature and Date)	Accepted (Signature and Date)
SANDAG Safety Manager	MTS Chief Operating Officer – Rail Division

Exhibit 5-9: Rules and Procedures Conformance Certificate

CROSSOVER AND SIGNALING SYSTEM
RULES AND PROCEDURES CONFORMANCE
Certifiable Factor No. 9

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: ALL SEGMENTS

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. Operations, Maintenance, and Emergency plans, rules, procedures, and manuals have been reviewed and updated as necessary.
2. The plans, rules, procedures, and manuals are adequate and appropriate for the intended application, and contain instructions on safety features for normal and emergency operations.
3. All known elements and issues regarding plans, rules, procedures, and manuals – which impact safety – have been resolved.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____	_____
Verified (Signature and Date)	Concurred (Signature and Date)
MTS Operations Manager	SANDAG Project Manager
_____	_____
Concurred (Signature and Date)	Accepted (Signature and Date)
SANDAG Safety Manager	MTS Chief Operating Officer – Rail Division

Exhibit 5-10: Operations Training Conformance Certificate

CROSSOVER AND SIGNALING SYSTEM
TRAINING CONFORMANCE - OPERATIONS
Certifiable Factor No. 10a

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: ALL SEGMENTS

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. Adequate Training has been performed with appropriate MTS Operations staff, and contains instructions on safety features for normal and emergency operations.
2. All known elements and issues concerning operations training – which impact safety have been satisfactorily resolved.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____	_____
Verified (Signature and Date)	Concurred (Signature and Date)
MTS Operations Manager	SANDAG Project Manager
_____	_____
Concurred (Signature and Date)	Accepted (Signature and Date)
SANDAG Safety Manager	MTS Chief Operating Officer – Rail Division

Exhibit 5-11: Maintenance Training Conformance Certificate

CROSSOVER AND SIGNALING SYSTEM
TRAINING CONFORMANCE - MAINTENANCE
Certifiable Factor No. 10b

Certificate of Conformance

Contract: Crossover and Signaling System

Segment: ALL SEGMENTS

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. Adequate Training has been performed with appropriate MTS Maintenance staff, and contains instructions on safety features for normal and emergency operations.
2. All known elements and issues concerning maintenance training – which impact safety have been satisfactorily resolved.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

_____	_____
Verified (Signature and Date)	Concurred (Signature and Date)
MTS Maintenance of Way Manager	SANDAG Project Manager
_____	_____
Concurred (Signature and Date)	Accepted (Signature and Date)
SANDAG Safety Manager	MTS Chief Operating Officer – Rail Division

Exhibit 5-12: Project Segment Safety Certificate

SANDAG CROSSOVER AND SIGNALING SYSTEM

Project Segment Safety Certificate

Contract: Crossover and Signaling System

Segment: A B C D E
(Circle One)

In accordance with the requirements of the Crossover and Signaling System Safety Certification Plan, I certify, to the best of my knowledge, that:

1. All safety certification activities identified in the Safety Certification Plan and deemed appropriate for this Project Segment have been completed and there are no unresolved items outstanding.
2. All safety-related tests were successfully completed, verified and accepted, and the results are available for inspection.
3. No unacceptable hazards to persons and property are known to exist, and SANDAG is not aware of any safety hazard that would prevent the Crossover and Signaling System for this segment from being utilized in trolley operations controlled by the new systems and equipment.

Exceptions --- (Each exception and associated restrictions/workarounds must be explained. Restrictions/workarounds must be adequate so that the level of safety is not reduced. Use additional sheets if necessary.)

Verified (Signature and Date) SANDAG Resident Engineer	Accepted (Signature and Date) MTS Chief Operating Officer – Rail Division
Concurred (Signature and Date) SANDAG Safety Manager	Accepted (Signature and Date) SANDAG Director - Mobility Management and Project Implementation

SECTION 6 REPORTING REQUIREMENTS AND CERTIFICATION DOCUMENTATION

6.1 Periodic Reports

Periodic Safety Certification Status reports will be generated and distributed to key project stakeholders to inform them of the status of the Safety Certification Program. SANDAG will develop and distribute periodic progress reports of the Crossover and Signaling System Certification Program that contain the following information:

- Certificates completed during the period
- Audit activities during the period
- Problems encountered during the period
- Outstanding issues to be resolved
- Progress on resolving problems
- Overall certification milestone progress to date
- Planned activities for next period.

6.2 Additional Safety Certification Documents

6.2.1 Conformance Checklists

As described in Section 2, Conformance Checklists are developed to list the safety requirements of the project as they apply to the certifiable elements and certifiable factors they are supporting. A sample design criteria conformance checklist format is shown in Exhibit 6-1 and the construction conformance checklist format is shown in Exhibit 6-2.

6.2.2 Safety and Security Certification Audits

The SANDAG Safety Manager will establish an audit team. The audit team will be responsible for performing periodic audits of each portion of the safety and security certification documentation. The audit team will review the backup documentation for the safety and security certifiable elements and will generate a written report. The report will be submitted to the Safety Review Committee for review and approval. A sample audit form is shown in Exhibit 6-3. The audit form will be used in conjunction with the Design Criteria Conformance Checklist (Exhibit 6-1) and the Construction Specification Conformance Checklist (Exhibit 6-2). The requirements to be audited will be selected from the checklists and the results/finding will be reported on the audit form (Exhibit 6-3).

Exhibit 6-1: Sample Design Criteria Conformance Checklist

SANDAG BLUE LINE REHABILITATION PROJECT
DESIGN CRITERIA CONFORMANCE CHECKLIST

CERTIFIABLE ELEMENT:	**DATE:**	
SUB-ELEMENT:	**PREPARED BY:**	**VERIFIED BY:**
CONTRACT NO.:	**REVISION:**	

REQ. I.D.	REQUIREMENT	CRITERIA VERIFICATION			VERIFICATION DOCUMENT REFERENCE
		Status	Initial	Date	

DEFINITIONS:

1. **CERTIFIABLE ELEMENT:** Refers to the portion of the contract to be certified, i.e.; train control, LRV, etc.
2. **SUB-ELEMENT:** Refers to a part of a certifiable element for which safety requirements have been developed.
3. **CONTRACT NO:** Specifies the contract number(s) assigned to the certifiable element.
4. **PREPARED BY:** Individual preparing the checklist and the organization represented by that individual.
5. **VERIFIED BY:** Individual verifying the checklist.
6. **REVISION:** The current revision number of the specific checklist.
7. **REQ. I.D.:** Contains consecutive identification numbers for each safety requirement.
8. **REQUIREMENT:** Identifies or references the criteria requirements. Also includes, where applicable, the source, code, or standard which forms the basis of the design criteria.
9. **CRITERIA VERIFICATION:** Initials/name of the design engineer or other person who verified that the requirement has been incorporated in the contract documents, the status of the item, and the date. NOTE: For all partially compliant and non-compliant indications, additional information must be provided in the "Verification Document Reference" column. The status will be indicated by the following symbols.
   C = Compliance; N = Noncompliance; P = Partial Compliance
10. **VERIFICATION DOCUMENT REFERENCE:** Identifies the specification section, drawing number, or file/location within the agency's document control system and/or contracts where the safety (or security) requirement has been incorporated.

Exhibit 6-2: Sample Construction Specification Conformance Checklist

SANDAG BLUE LINE REHABILITATION PROJECT

CONSTRUCTION SPECIFICATION CONFORMANCE CHECKLIST

PROJECT SEGMENT:				**DATE:**				
CERTIFIABLE ELEMENT:				**PREPARED BY:**		**VERIFIED BY:**		
CONTRACT NO.:				**REVISION:**				
Item No.	**SAFETY REQUIREMENT**	**Specification Reference**		**EVIDENCE**				
		Section Page.	**Paragraph**	**Verification Responsibility**	**Verification Document Reference**	**Status**	**Verified**	
							By	**Date**
1.								
2.								
3.								
4.								
5.								

DEFINITIONS:

1. **PROJECT SEGMENT:** Refers to the portion of the project segment to be certified.
2. **CERTIFIABLE ELEMENT:** Refers to certifiable element for which safety requirements have been developed.
3. **CONTRACT NO:** Specifies the contract number(s) assigned to the certifiable element.
4. **PREPARED BY:** Individual preparing the checklist and the organization represented by that individual.
5. **VERIFIED BY:** Individual verifying the checklist.
6. **REVISION:** The current revision number of the specific checklist.
7. **REQ. I.D.:** Contains consecutive identification numbers for each safety requirement.
8. **REQUIREMENT:** Identifies or references the specifications requirements.
9. **SPECIFICATION REFERENCE:** Specification section and page number from where safety requirement is taken.
10. **VERIFICATION RESPONSIBILITY:** Department/Organizations responsible for verifying the safety requirement.
11. **VERIFICATION DOCUMENT REFERENCE:** Document reference providing evidence of compliance with specified safety requirement.
12. **STATUS:** the status of the item. NOTE: For all partially compliant and non-compliant indications, additional information must be provided in the “Verification Document Reference” column. The status will be indicated by the following symbols.
    C = Compliance; N = Noncompliance; P = Partial Compliance

VERIFIED: Initials/name of the person who verified that the requirement has been incorporated in the manufactured/installed system/equipment

Exhibit 6-3: Sample Safety and Security Certification Audit Form

SANDAG BLUE LINE REHABILITATION PROJECT

SAFETY AND SECURITY CERTIFICATION AUDIT FORM

Certifiable Element:	Date of Audit:	Person Contacted:
Department/Organization:	Auditor:	
Criteria/Specification Requirement:		
Method of Verification		
Documentation		
Observation		
Findings/Remarks		
Findings	Remarks	
1. Meets Requirements		
2. Needs Improvements		
3. Unable to Audit		
Description of Corrective Action		
Implementation Schedule		