
2016

TRIENNIAL SAFETY REVIEW OF THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (LACMTA)

RAIL TRANSIT SAFETY BRANCH
SAFETY AND ENFORCEMENT DIVISION
CALIFORNIA PUBLIC UTILITIES COMMISSION
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2016 TRIENNIAL SAFETY REVIEW OF THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (LACMTA)

ACKNOWLEDGEMENT

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1. EXECUTIVE SUMMARY

The California Public Utilities Commission's (Commission) Rail Transit Safety Branch staff (Staff) of the Safety and Enforcement Division (SED) conducted an on-site safety review of the Los Angeles County Metropolitan Transportation Authority's (LACMTA) system safety program in September 2016.

The on-site review was preceded by an opening conference with LACMTA personnel on September 19, 2016. Staff conducted the 2013 LACMTA on-site safety review from September 19 through October 21, 2016. The review focused on verifying LACMTA's effective implementation of its System Safety Program Plan (SSPP).

Staff held a post-review conference with LACMTA personnel on December 2, 2016, and provided LACMTA a synopsis of the preliminary review findings and recommendations for corrective actions.

The review results indicate that LACMTA has a comprehensive System Safety Program Plan (SSPP) and is effectively carrying out that plan. However, staff noted exceptions during the review which are described in the Findings and Recommendations section of applicable checklists. Staff issued 20 recommendations for corrective action from the 37 checklists.

The Introduction and Background Sections of this report are presented in Sections 2 and 3 respectively. The Background Section contains a description of the LACMTA rail system. Section 4 describes the review procedure and Section 5 provides the review findings and recommendations. The 2016 LACMTA Triennial Safety Review Acronyms List is found in Appendix A, Checklist Index in Appendix B, Recommendations List in Appendix C and review Checklists in Appendix D.

2. INTRODUCTION

The Commission General Order (GO) 164-D, *Rules and Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems*, and the Federal Transit Administration (FTA) Rule, Title 49 Code of Federal Regulations (CFR) Part 659, *Rail Fixed Guideway Systems: State Safety Oversight*, require the designated State Safety Oversight Agencies to perform a review of each rail transit agency's system safety program at a minimum of once every three years. The purpose of the triennial review is to verify compliance and evaluate the effectiveness of each rail transit agency's System Safety Program Plan (SSPP) and to assess the level of compliance with GO 164-D as well as other Commission and regulatory safety requirements. The previous on-site safety review of LACMTA was conducted by staff in September 2013.

On August 19, 2016, staff mailed a letter to the LACMTA Chief Executive Officer (CEO), advising that the Commission's safety review had been scheduled for September, 2016. The letter included 37 checklists that served as the basis for the review. Nine of the thirty seven checklists outlined physical inspections of track, signals, non-revenue vehicles, and revenue vehicles. The remaining 28 checklists focused on assessing the effective implementation of the LACMTA SSPP and verifying compliance through records reviews and interviews.

Staff conducted the on-site safety inspections and records reviews from September 19, 2016 – October 21, 2016. At the conclusion of each review activity staff provided LACMTA personnel with a verbal summary of the preliminary findings and discussed preliminary recommendations for corrective actions.

On December 2, 2016, staff conducted a post-review exit meeting with LACMTA management and personnel. Staff provided the attendees a synopsis of the non-compliant findings from the 37 checklists and discussed the need for corrective actions where applicable.

3. BACKGROUND

LACMTA is the transportation agency for Los Angeles County. LACMTA is governed by a 13-member Board of Directors comprised of: five Los Angeles County Supervisors, the Mayor of Los Angeles, three Los Angeles mayor-appointed members, four city council members representing the other 87 cities in Los Angeles County, and one non-voting member appointed by the Governor of California.

LACMTA Rail System Description

The LACMTA rail system consists of the Metro Blue, Red, Purple, Green, Expo and Gold lines. The Metro Gold Line Eastside Extension was opened in November 2009. The Mid-City Exposition Light Rail Line Phase One opened in April 2012. The Gold Line Foothill Extension and Expo Phase Two opened for revenue service March and May 2016, respectively. The Regional Connector, the Crenshaw Corridor and the Westside Extension are currently in the construction phase. LACMTA operates over 105 miles with 93 stations. The average ridership of the system was approximately 110,847,728 per year from fiscal year 2014 to 2016.

Metro Blue Line

The Metro Blue Line (MBL) is a light rail line that runs between downtown Los Angeles and downtown Long Beach and serves 22 stations over a 22-mile route. The Metro Blue Line connects to the Metro Green Line at Rosa Parks/Imperial station in Compton and connects to the Metro Red Line at 7th/Metro Station in downtown Los Angeles. Currently, LACMTA operates two-car and three-car trains on the line depending on the time of the day.

Metro Red Line¹

The Metro Red Line (MRL), a heavy rail subway, runs between Los Angeles Union Station and North Hollywood with 16 stations over its 17.4-mile route. The Metro Red Line connects to the Metro Blue and Mid-City Expo Line at 7th/Metro Station in downtown Los Angeles and connects to the Amtrak and Metrolink commuter rail, as well as the Gold Line, at Union Station. LACMTA operates four-car and six-car trains on the line, depending on the time of the day.

¹ In August 2006, LACMTA Board decided to name Metro Red Line branch running from Union Station to Wilshire/Western Station in Koreatown the Metro Purple Line. This branch line was originally envisioned to extend to City of Santa Monica through west Los Angeles and Beverly Hills. Until further decision is made, LACMTA will combine the Metro Purple Line's statistics (i.e. ridership, train miles, accident reporting, etc.) with the Metro Red Line.

Metro Green Line

The Metro Green Line (MGL) is a light rail line that runs east-west along the median of Glenn Anderson (a.k.a. Century) Freeway (I-105) through Los Angeles County between City of Norwalk and City of Redondo Beach. It has 14 stations over its 20-mile route. It connects to the Metro Blue Line at Imperial/Wilmington (Rosa Parks) Station in Compton. LACMTA operates two-car configuration on the line with the exception of one-car trains used during the evenings and weekend mornings.

Metro Gold Line (a.k.a. Pasadena Gold Line)

The Metro Gold Line is a light rail line that runs from Los Angeles Union Station to Pasadena Sierra Madre Villa Station. The Metro Gold Line revenue operation service started in July 2003. It has 13 stations over 14-mile route. It connects to the Metro Red Line at Union Station. LACMTA operates two-car trains on the line with the exception of one-car trains used during the evenings and weekend mornings.

Metro Gold Line Foothill Extension

The Metro Gold Line Foothill Extension project opened in March 2016. It is an eleven-mile, dual track light rail system with six new stations. The extension originates from the Sierra Madre Station, previously a terminal station of the Pasadena Gold Line, traveling eastbound through Arcadia, Monrovia, Duarte, Irwindale, downtown Azusa and terminating just north of Azusa Pacific University and Citrus College.

Metro Gold Line Eastside Extension

The Metro Gold Line East Side Extension project opened in November 2009. It is a six-mile, dual track light rail system with eight new stations and one station modification at Union Station. The system originates at Union Station in downtown Los Angeles, where it connects with Metro Gold Line and Metro Red Line, traveling east through East Los Angeles to Pomona and Atlantic Boulevards.

Metro Mid-City Expo Line Phase I

The Metro Mid-City Expo Line Phase I project opened in April 2012. It is an eight and a half-mile, dual track light rail system with twelve new stations and two stations shared with the Blue Line. Both the Mid-City Expo and Blue Line terminate at 7th/Metro where they connect to the Red and Purple Lines. The Mid-City Expo Line Phase I also shares the Pico Station with the Blue Line which serves the Staples Center and L.A. Live. The Mid-City Expo Line

Phase I serves USC, Exposition Park, the Mid-City communities, the Crenshaw District, and Culver City.

Metro Expo Line Phase II

The Metro Expo Line Phase II project opened in May 2016. It is a six point six (6.6) mile dual track extension of the Expo Mid-City Expo Phase I Line, which extends the existing eight mile system from downtown Los Angeles to Culver City westbound to Santa Monica. The system serves Culver City, West Los Angeles, and Santa Monica with seven new stations and travels along the old Pacific Electric Exposition right-of-way to 4th Street and Colorado Ave in downtown Santa Monica.

4. REVIEW PROCEDURE

SAFETY REVIEW PROCEDURE

Staff conducted the review in accordance with the Rail Transit Safety Section Procedure RTSS-4, *Procedure for Performing Triennial Safety Audits of Rail Transit Systems*. Staff developed thirty-seven (37) checklists to cover various aspects of system safety responsibilities based on Commission and FTA requirements, the LACMTA SSPP, safety related LACMTA documents, and general staff knowledge of the LACMTA transit system. The 37 checklists are included in Appendix D.

Each checklist identifies safety-related elements and characteristics reviewed or inspected by staff. The checklist reference criteria section is comprised of regulatory requirements, LACMTA rules and procedures, and other documents that establish the safety program requirements. The completed checklists include review findings and recommendations if the review findings indicate any non-compliance. The completed checklists may also include comments and suggestions to improve LACMTA's system safety program. The methods used to perform the review include:

- Discussions with LACMTA management
- Reviews of procedures and records
- Observations of operations and maintenance activities
- Interviews with rank and file employees
- Inspections and measurements of equipment and infrastructure

The review checklists concentrated on requirements that affect the safety of rail operations and are known or believed to be important in reducing safety hazards and preventing accidents.

5. FINDINGS AND RECOMMENDATIONS

The reviewers and inspectors conclude that LACMTA has a comprehensive SSPP and is effectively implementing the plan. Overall, the review results indicate that LACMTA is in general compliance with its SSPP.

However, Staff has identified areas where changes should be made to further improve system safety. Review findings identify the areas where changes should be made for further improvement. The review results are derived from activities observed, documents reviewed, issues discussed with management, and inspections. The review identifies 20 recommendations from the 37 checklists outlined below:

1. **Policy Statement and Authority for SSPP**

No findings of non-compliance; no recommendations

2. **Goals and Objectives**

No findings of non-compliance; no recommendations

3. **Overview of Management Structures**

No findings of non-compliance; no recommendations

4. **SSPP Control and Update Procedures**

No findings of non-compliance; no recommendations

5. **SSPP Implementation Activities and Responsibilities**

No findings of non-compliance; no recommendations

6. **Hazard Management Process**

No findings of non-compliance; no recommendations

7. **System Modification**

No findings of non-compliance; no recommendations

8. **Safety and Security Certification**

No findings of non-compliance; no recommendations

9. **Safety Data Collection and Analysis**

No findings of non-compliance; no recommendations

10. Accident/Incident Reporting and Investigation

No findings of non-compliance; no recommendations

11. Emergency Management Program

Finding

1. No dates or hardcopy documentation was available to show plans were reviewed per Metro policy.

Recommendation

1. LACMTA must review and/or revise Emergency Plans at intervals as required by LACMTA procedures.

12. Internal Safety Audits/Reviews

No findings of non-compliance; no recommendations

13. Rules Compliance

13-A. Observation and Enforcement - Transportation

Finding

1. Ride checks were improperly filled out. We verified July/August 2016 ride check forms, and about 25 out of 50 forms were improperly filled out (i.e. missing location on/off, Operator/Student name, Badge #).

Recommendation

1. LACMTA Management should properly complete and fill out the Ride Check Forms with accurate and correct information.

13-B. Operation Safety Compliance Program

No findings of non-compliance; no recommendations

13-C. Operator, Controller, and Maintenance Personnel Hours of Service

No findings of non-compliance; no recommendations

13-D. Contractor Safety Program

No findings of non-compliance; no recommendations

13-E. Operating Rules and Maintenance Procedures Manual and Operations Bulletins Revisions

Findings

1. Outdated/Inactive bulletins still posted.
2. Change in Procedure (Bulletin and/or Notice) was missing from the sign-for document folder.

Recommendations

1. LACMTA's bulletin boards should be regularly checked and updated.
2. Sign-For documents need to be in the folder that the TO has to sign.

13-F. Operations Control Center and SCADA

Findings

1. Paper IDS Monthly Preventative Maintenance sheets not fully completed.
2. Signature page for SCADA Systems Engineering and Maintenance manual not signed.

Recommendations

1. LACMTA Management should assure employees complete the SCADA Monthly Preventative Maintenance sheets per Metro procedure and LACMTA Line Managers should properly complete and fill out the Ride Check Forms with accurate and correct information.
2. LACMTA Management should sign and approve current SCADA Systems Engineering and Maintenance manual.

14. Facilities and Equipment Inspections

14-A/B. Non-Revenue Facilities and Wayside

Findings

1. Supervisor signatures were missing from Inspection Reports

Recommendations

1. LACMTA maintenance and facilities supervisors should sign all maintenance records to show that all maintenance is being properly managed.

14-C. Tunnels, Bridges, and Aerial Structures

No findings of non-compliance; no recommendations

14-D. G.O. 95 Right Of Way Compliance

Findings

- Numerous hard copies of maintenance records missing but was shown as closed in LACMTA M3 database.
- Maintenance plan needs to be updated according to the equipment used for each line. For example, when staff was auditing records for “DC Breakers and Controls” for the Green Line, staff was informed that the maintenance item does not pertain to the Line and Maintenance Plan needs to be updated to reflect current conditions, therefore staff reviewed a different item on the Green Line.
- There were several versions of the checklist found for the same maintenance item. During staff’s review of the maintenance records, staff observed different versions of the checklist used for the same item.
- Checklists were not completed before the work ticket was closed.

Recommendations

1. LACMTA should keep hard copies of maintenance records.
2. LACMTA should update the maintenance plans to reflect the systems equipment and conditions.
3. LACMTA maintenance personnel should completely fill out checklists before closing out work order.

14-E. Signal Communication, Train Control, Grade Crossing

Findings

1. No defects found on PM records for last 3 years but found repairs were made to system without proper documentation.
2. Test dates out of compliance with 4 year and 30 day testing intervals at

Vernon 41XRC and throughout all lines and locations, respectively.

Recommendations

1. LACMTA should fill out the PM inspection sheets to reflect the work/corrections made.
2. LACMTA should consistently comply with testing intervals per CFR 234 and 236.

14-F. Facilities and Equipment Inspections: Measurement and Testing Instrumentation

No findings of non-compliance; no recommendations

15. Maintenance Audits and Inspections

15-A. Blue, Gold Green and Red Line Rail Vehicle Inspections and Hy-Rail Equipment Inspections

Findings

1. 90 day Hy-Rail vehicle inspections were not completely filled and various defects were not documented.
2. 90 day Hy-Rail inspections did not consistently have employee and supervisor signature for review and approval.
3. Random 90 day Hy-Rail inspections missing.

Recommendations

1. LACMTA should completely and correctly fill out daily inspections for all Hy-Rail vehicles in service, document any defects found on inspections and not operate vehicles until these defects are corrected, have all required inspection documents, such as daily inspections, properly filled out with dates, employee signatures, items checked for safety, and supervisor's signature to verify inspections are being done.

15-B. Grade Crossing Safety Inspection - CPUC Signal Inspector

No findings of non-compliance; no recommendations

15-C. Grade Crossing Safety Inspection - CPUC Signal Inspector

Finding

1. Missing labels in switches and junction boxes.
2. Badly frayed or cut bonding wires at various switches.

3. Improper striping on gates.
4. Insecure covers on apparatus. (Covers or plates over electrical or mechanical devices)

Recommendation

1. LACMTA should tag all circuits per CFR 234.239.
2. LACMTA should replace cut or frayed bonding wires per CFR 234.233 and G.O. 143-B Section 10.09.
3. LACMTA should comply with MUTCD 8C.04 for gate striping.
4. LACMTA should secure covers on apparatus per CFR 234.211.

15-D. Switch, and Turnout Inspection - CPUC Track Inspector

Finding

1. Insecure Heel Blocks found at various switches. (In several cases, one of the four bolts of the heel block assembly, which secures the heel block to the rail, was not completely secure. However, the three other bolts were properly secured.)
2. Loose Connecting Switch Rods at various switches.

Recommendation

1. LACMTA should tighten insecure Heel Blocks per FRA 213.135.06. (See finding.)
2. LACMTA should tighten loose Connecting Switch Rods per FRA 213.133.06.

16. Training and Certification Programs

16-A. Train Operator, Controllers, and Line Supervisors

No findings of non-compliance; no recommendations

16-B. Maintenance Employees

No findings of non-compliance; no recommendations

17. Configuration Management and Control

No findings of non-compliance; no recommendations

18. Local, State, and Federal Requirements

No findings of non-compliance; no recommendations

19. Hazardous Materials Program

No findings of non-compliance; no recommendations

20. Drug and Alcohol Program

No findings of non-compliance; no recommendations

21. Procurement Process

No findings of non-compliance; no recommendations

22. CPUC G.O. 172 – Personal Electronic Device Prohibitions/In-Cab Cameras

No findings of non-compliance; no recommendations

23. CPUC G.O. 175 - Rules and Regulations Governing Roadway Worker Protection Provided by Rail Transit Agencies and Fixed Guideway Systems

Finding

1. LACMTA Rule 4392 – “Watchperson shall maintain communication with Control on the appropriate operations radio channel”, possibly does not meet the intent of G.O. 175 section 2.23.

Recommendation

1. LACMTA Rule 4392 should comply with the CPUC G.O. 175, Section 2.23 definition of a watchperson. (Watchperson cannot do anything other than look out for oncoming trains.)

APPENDICES

- A. Acronym List
- B. LACMTA 2016 Triennial Safety Review Checklist Index
- C. LACMTA 2016 Triennial Safety Review Recommendations List
- D. LACMTA 2016 Triennial Safety Review Checklists

APPENDIX A

Acronym List

Acronym	Definition	Acronym	Definition
APTA	American Public Transportation Association	MUTCD	Manual on Uniform Traffic Control Devices
BCB	Between Car Barriers	NBIS	NBIS National Bridge Inspection Standards
CAP	Corrective Action Plan	NFPA	National Fire Protection Association
CCR	California Code of Regulations	NTD	National Transit Database
CFR	Code of Federal Regulations	O&M	Operations & Maintenance
Commission/ CPUC	California Public Utilities Commission	OCS	Overhead Catenary System
CTC	Centralized Traffic Control	OSHA	Occupational Safety and Health Administration
DTSC	Department of Toxic Substances Control	PGL	Pasadena Gold Line
EPA	Environmental Protection Agency	PMI	Preventive Maintenance Inspection
ETS	Emergency Trip Station	P.O.	Purchase Order
FRA	Federal Railroad Administration	RFS	Rail Fleet Services
FTA	Federal Transit Administration	ROC	Rail Operations Control
GO	General Order	ROW	Right of Way
IIPP	Injury and Illness Prevention Program	SCADA	Supervisory Control and Data Acquisition
ISA	Internal Safety Audit	SHARP	Safety and Health Assessment Review Program
LACMTA	Los Angeles County Metropolitan Transportation Authority	SMRC	System Modification Review Committee
LSC	Local Safety Committee	SOP	Standard Operating Procedure
MBL	Metro Blue Line	SSPP	System Safety Program Plan
MGL	Metro Green Line	Staff	Consumer Protection and Safety Division personnel
MOU	Memorandum of Understanding	TSDF	Treatment, Storage, or Disposal Facility
MRL	Metro Red Line	TSE	Transit Systems Engineering
MSDS	Material Safety Data Sheet	UPS	Uninterruptible Power Supply

APPENDIX B

2016 LACMTA TRIENNIAL SAFETY REVIEW CHECKLIST INDEX

Checklist No.	Department	Element/Characteristics
1	Executive and Corporate Safety	Policy Statement and Authority for SSPP
2	Executive and Corporate Safety	Goals and Objectives
3	Corporate Safety	Overview of Management Structures
4	Corporate Safety	SSPP Control and Update Procedures
5	Corporate Safety	SSPP Implantation Activities and Responsibilities
6	Corporate Safety	Hazard Management Process
7	Configuration Management	System Modification
8	Corporate Safety	Safety and Security Certification
9	Corporate Safety	Safety Data Collection and Analysis
10	Corporate Safety	Accident/Incident Reporting and Investigations
11	Emergency Management	Emergency Management Program
12	Corporate Safety	Internal Safety Audits/Reviews
13-A	Rail Transportation	Rules Compliance: Observation and Enforcement Transportation
13-B	Rail Transportation	Rules Compliance: Operation Safety Compliance Program Review
13-C	Corporate Safety	Rules Compliance: Operator, Controller, and Maintenance Personnel Hours of Service
13-D	Rail Transportation	Rules Compliance: Contractor Safety Program
13-E	Rail Transportation	Rules Compliance: Operating Rules and Maintenance Procedures Manual and Operations Bulletin Revisions
13-F	Operations, Transit Systems Engineering	Rules Compliance: Operations Control Center and SCADA
14-A/B	Rail Facilities Maintenance	Facilities and Equipment Inspections: Non Revenue Facilities and Wayside
14-C	State of Good Repair	Facilities and Equipment Inspections: Tunnels, Bridges, and Aerial Structures
14-D	Wayside Systems	Facilities and Equipment Inspections: G.O. 95 Right of Way Compliance
14-E	Signal Department	Facilities and Equipment Inspections: Signal Communication, Train Control, Grade Crossing
14-F	Rail Fleet Services	Facilities and Equipment Inspections: Measurement and Testing Equipment Instrumentation
15-A	Wayside Systems	Maintenance Audits and Inspections: Blue, Gold, Green and Red Line Rail Vehicle Inspections and Hy-Rail Equipment

		Inspections
15-B	Wayside Systems	Maintenance Audits and Inspections: Overhead Catenary and Traction Power Substation Inspection
15-C	Wayside Systems, Track & Signal Department	Maintenance Audits and Inspections: Grad Crossing Safety Inspection
15-D	Wayside Systems, Track & Signal Department	Maintenance Audits and Inspections: Switch, and Turnout Inspection
16-A	Rail Transportation	Training and Certification Programs: Train Operators, Controllers, and Line Supervisors
16-B	Light/Heavy Rail Vehicle Maintenance Department	Training and Certification Programs: Maintenance Employees
16-C	Wayside Maintenance, Signal & Track Department	Training and Certification Programs: Maintenance Employees and Contractors
17	Configuration Management	Configuration Management and Control
18	Corporate Safety	Local, State, and Federal Requirements
19	Corporate Safety	Hazardous Materials Program
20	Human Resources	Drug and Alcohol Program
21	Procurement	Procurement Process
22	Corporate Safety, Rail Operations	CPUC G.O. 172: Personal Electronic Device Prohibitions/In-Cab Cameras
23	Corporate Safety, Track & Wayside Department	CPUC G.O. 175: Rules and Regulations Governing Roadway Worker Protection Provided by Rail Transit Agencies and Fixed Guideway Systems

APPENDIX C

2016 LACMTA TRIENNIAL SAFETY REVIEW RECOMMENDATIONS LIST

No.	Recommendation	Checklist No.
1	LACMTA must review and/or revise Emergency Plans at intervals as required by LACMTA procedures.	11
2	LACMTA Management should properly complete and fill out the Ride Check Forms with accurate and correct information.	13-A
3	LACMTA's bulletin boards should be regularly checked and updated.	13-E
4	Sign-For documents need to be in the folder that the TO has to sign.	13-E
5	LACMTA Management should assure employees, complete the SCADA Monthly Preventative Maintenance sheets per Metro procedure and LACMTA Line Managers should properly complete and fill out the Ride Check Forms with accurate and correct information.	13-F
6	LACMTA Management should sign and approve current SCADA Systems Engineering and Maintenance manual.	13-F
7	LACMTA maintenance and facilities supervisors should sign all maintenance records to show that all maintenance is being properly managed.	14-A/B
8	LACMTA should keep hard copies of maintenance records.	14-D
9	LACMTA should update the maintenance plans to reflect the systems equipment and conditions.	14-D
10	LACMTA maintenance personnel should completely fill out checklists before closing out work order.	14-D
11	LACMTA should fill out the PM inspection sheets to reflect the work/corrections made.	14-E
12	LACMTA should consistently comply with testing intervals per CFR 234 and 236.	14-E
13	LACMTA should completely and correctly fill out daily inspections for all HY-Rail vehicles in service, document any defects found on inspections and not operate vehicles until these defects are corrected, have all required inspection documents, such as daily inspections, properly filled out with dates, employee signatures, items checked for safety, and supervisor's	15-A

	signature to verify inspections are being done.	
14	LACMTA should tag all circuits per CFR 234.239.	15-C
15	LACMTA should replace cut or frayed bonding wires per CFR 234.233 and G.O. 143-B Section 10.09.	15-C
16	LACMTA should comply with MUTCD 8C.04 for gate striping.	15-C
17	LACMTA should secure covers on apparatus per CFR 234.211.	15-C
18	LACMTA should tighten insecure Heel Blocks per FRA 213.135.06. (In several cases, one of the four bolts of the heel block assembly, which secures the heel block to the rail, was not completely secure. However, the three other bolts were properly secured.)	15-D
19	LACMTA should tighten loose Connecting Switch Rods per FRA 213.133.06.	15-D
20	LACMTA Rule 4392 should comply with CPUC G.O. 175, Section 2.23's definition of a watchperson.	23

APPENDIX D

2016 LACMTA TRIENNIAL REVIEW CHECKLISTS

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	1	Subject	Policy Statement and Authority for System Safety Program Plan: Senior Management Involvement and Commitment to Safety
Date of Review	September 19, 2016	Departments	Executive
Reviewers/ Inspectors	Daren Gilbert, Steven Artus, Noel Takahara, Howard Huie, Ainsley Kung	Person(s) Contacted	Philip Washington – CEO Jim Gallagher – COO Bernard Jackson – Sr. Executive Officer, Rail Operations Gregory Kildare – Chief Risk, Safety & Asset Management Officer Alex Wiggins - Chief Systems Security & Law Enforcement Officer Vijay Khawani – Executive Officer, Corporate Safety Edward Boghossian – Interim Director Corporate Safety

REFERENCE CRITERIA

1. General Order 164-D
2. 49 CFR 659
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

**Policy Statement and Authority for System Safety Program Plan:
Senior Management Involvement and Commitment to Safety**

Interview LACMTA's Chief Executive Officer (CEO) and Chief Operating Officer (COO) to discuss:

1. Source, frequency, and depth of safety information provided to Senior

<p>Management, whether safety is included as a regular topic at LACMTA Senior Management meetings, and how safety information is communicated.</p> <ol style="list-style-type: none"> 2. Methods and incentives included in the management performance system to facilitate a system safety culture within the organization. 3. Formal meetings held and attended by LACMTA Senior Management to discuss safety performance, such as ongoing evaluation of goals and targets. 4. The CEO's and COO's awareness of high priority safety issues related to operations and capital projects. 5. The CEO's and COO's awareness of the status of all corrective actions generated by the System Safety Department through internal safety and security audits, the hazard management process, accident/incident investigations, or other channels. 6. The System Safety Department's reporting relationship to LACMTA's executive and senior management, and management's participation in safety activities. 7. Which individuals and departments are involved in making safety decisions and to what degree senior management is involved? 8. Scope of senior management involvement, coordination, and communication in developing SSPP revisions. 9. Is safety included as a regular topic at LACMTA's Board Meetings and whether LACMTA's CEO/COO provides updates and concerns? 10. The process for the periodic review of the resources devoted to safety by LACMTA CEO and LACMTA Executive Management Team. 11. The inclusion of safety responsibilities in job evaluations for managers, supervisors, and employees. 12. Does the CEO visit the Operations Control Center / Operations Department, Light Rail Vehicle Maintenance, Facilities Maintenance, and Wayside Maintenance and speak to rank and file employees to discuss their safety concerns? 	
RESULTS/COMMENTS	
<p><u>Activities:</u></p> <ol style="list-style-type: none"> 1. Metro CEO noted that safety, risk, and asset management take high priority and are the focal points of his vision statement. Senior leadership team meetings are held on a weekly basis. Key Performance Indicators (KPI) are used in these discussions to identify trends. Quarterly reports to the board are also a means of 	

distributing and reviewing safety information on a high level basis.

2. Metro CEO informed Staff of his efforts to initiate and expand on prior Metro incentive programs such as the annual employee awards program. Metro also mentioned a monthly awards program. Metro has issued an RFP to assess their incentive program on bus operations. It is expected to be a 12 month experiment that may develop into a system wide process including transit operations.
3. Periodic meetings held by Metro upper-management include the weekly Sr. Leadership team meetings, Monthly Rail Safety Steering meeting, Quarterly Safety Steering Committee meeting.
4. Issues regarding the Crenshaw project indicated a need to develop a more constant informed process of the project for upper management and the Board. Monthly reports on the Crenshaw project were issued in response, and as improvements have been made the Board accepted quarterly reports. In his first 3-4 weeks the Metro CEO placed Transit Asset Management (TAM) functions under the Safety and Risk department as opposed to the Operations department which promotes the assessment of TAM with a safety oriented perspective. Metro is moving towards a condition based rather than age based approach with regard to TAM, and Bridge and Tunnel assessment has been completed. Metro informed of a goal to set aside \$300 million in an internal funds account via revenue generation or cutbacks that could be used for TAM and other state of good repair items. Brief discussion was held regarding progress of the Blue Line Ped crossing improvement project.
5. Metro CEO and COO informed Staff that high priority safety issues are discussed during the periodic meetings and daily on an as needed basis. A recent example would be the current situation on the Gold Line along the 210 freeway in which barriers (standard k-rail) did not prevent ROW incursion of vehicles. Metro has initiated a study to assess the area to install stronger barriers that would be able to withstand impact from vehicles such as the tractor trailer that was involved in the most recent incident.
6. Metro Executive Director of Risk, Safety, and Asset Management (RSAM) reports directly to the CEO. The Executive Director of RSAM informed of a good working relationship with the COO on several safety related projects including assessments and improvement of active LRV fire suppression, LRV/HRV wrong door openings, red signal violations, tunnel ventilation, ped gates, etc.
7. Metro CEO wants all Metro employees to feel empowered and engaged in making safety decisions. Discussion on this topic included the safety related work at Metro being done by various departments such as Internal Audits and Communications. An example of this work, this recent year is the stick man

figure safety warning campaign which was considered to be effective and received a good amount of media exposure.

8. Metro informed Staff that department managers review relevant LACMTA SSPP sections for any needed revisions that relate to their department. Annual review for revisions as needed is required by GO-164D.
9. Safety is discussed during monthly Board meetings. Metro CEO notes that the Board is informed and will request for action as necessary. As examples, Metro CEO informed Staff that the Board asked him to review safety protocols on the Crenshaw project, and also to review if grade separation standards are being met on the Blue Line with the current traffic conditions.
10. Periodic review of resources devoted to safety is ongoing. Recent assessments have resulted in an increase of the Emergency Management department from 2 to 5 Full Time Equivalent (FTE). The Rail Safety team was increased by 3 FTE as well. Due to issues with the Crenshaw project field safety staff was also increased. In addition, Metro CEO mandated annual safety sustainment and refresher training for all revenue operators and expanded the program to include mechanical related departments.
11. The CEO Annual Plan, comprised of 8-10 items, has safety as a prominent piece.
12. The Sr. Leadership Team meetings are frequently held in the field at the various Metro divisions. Metro CEO holds “Rappin with Phil” sessions on the last Friday of every month from 8 a.m. – 12 p.m. This gives employees up to 15 minutes at a time to discuss a wide range of topics and issues related to Metro operations, etc. Metro CEO also informed Staff that he sent a memo to Sr. Leadership encouraging them to ride the Metro system.

Findings:

None.

Comments:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	2	Subject	System Safety Program Plan: Goals and Objectives
Date of Review	September 19, 2016	Department(s)	Executive
Reviewers/Inspectors	Daren Gilbert, Steven Artus, Noel Takahara, Howard Huie, Ainsley Kung	Person(s) Contacted	Philip Washington – CEO Jim Gallagher – COO Bernard Jackson – Sr. Executive Officer, Rail Operations Gregory Kildare – Chief Risk, Safety & Asset Management Officer Alex Wiggins - Chief Systems Security & Law Enforcement Officer Vijay Khawani – Executive Officer, Corporate Safety Edward Boghossian – Interim Director Corporate Safety

REFERENCE CRITERIA

1. General Order 164-D
2. 49 CFR 659
3. LACMTA System Safety Program Plan (SSPP), Rev 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

System Safety Program Plan: Goals and Objectives

Interview LACMTA Senior Management and review appropriate records to:

1. Determine whether LACMTA is making progress towards the ongoing goals and objectives identified in SSPP.
2. Obtain examples of how goals are evaluated (metrics and measures) and review documentation used to track LACMTA activities to meet the goals and objectives. For example, if LACMTA set a goal of reducing incidents by 10%, has this been achieved? How is this metric tracked and reported?

3. Determine how safety performance is reported to the Chief Executive Officer (CEO) and Chief Operating Officer (COO) or other senior management (i.e., monthly or annual safety reports, quarterly viewgraph presentations, etc.).
4. Make a determination regarding the adequacy of the safety information provided to the CEO. Is the CEO receiving sufficient information to ensure LACMTA is meeting its safety goals and objectives? Are rule violations and other key safety metrics being tracked and reported to the COO?
5. Determine whether the stated goals and objectives should be revised.
6. Determine whether management responsibilities are adequately identified for the goals and objectives.

RESULTS/COMMENTS

Activities:

1. The Metro SSPP states on the first page that all employees have an obligation to report hazard and near miss incidents to their management, and may do so without fear of reprisal. Brief discussion was held regarding the use of Metro Safe 7 forms, which is the hazard and near-miss reporting mechanism employees are encouraged to use to report unsafe conditions or hazards. Metro states that this program has been successful over the years. Reported Safe 7 hazards are discussed at each division's monthly Local Safety Committee meetings.
2. Operations and Corporate Safety meet on a monthly basis to review safety metrics (including employee injury reduction), rule violations, and collision trends. The elements are tracked via spreadsheets and distributed to employees. The monthly local safety committee meetings also review the incident trends and develop mitigations at a local level. Corporate Safety publishes a Metro Blue Line (MBL) quarterly report identifying accident trends. Metro is currently piloting roadway-embedded lights on the Pasadena Gold Line (PGL) at grade crossings to determine their effectiveness.
3. See CL#1. Monthly Operations and Corporate Safety Meetings. Quarterly Operations Safety and Steering Committee meetings, Weekly Sr. Leadership meetings, etc.
4. Reviewers do not note any exceptions.
5. Reviewers do not note any exceptions.
6. Reviewers do not note any exceptions.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	3	Subject	System Safety Program Plan: Overview of Management Structure
Date of Review	September 19, 2016	Department(s)	Risk, Safety, Asset Management
Reviewers/ Inspectors	Daren Gilbert, Steven Artus, Noel Takahara, Howard Huie, Ainsley Kung	Person(s) Contacted	Gregory Kildare – Chief Risk, Safety & Asset Management Officer Vijay Khawani – Executive Officer, Corporate Safety Leonid Buhkin – Deputy Executive Officer, Corporate Safety Edward Boghossian – Interim Director, Corporate Safety Abraham Miranda – System Safety Manager Frank Castellon – System Safety Specialist Robert Takushi – System Safety Specialist

REFERENCE CRITERIA

1. General Order 164-D
2. 49 CFR 659
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

System Safety Program Plan: Overview of Management Structure

Interview LACMTA Senior Management and review appropriate records to:

1. Discuss LACMTA's process for integrating safety into LACMTA operations and maintenance activities.
2. Identify any specific deficiencies in the safety program due to limitations in personnel or resources such as difficulties in maintaining schedules for SSPP

updates, completing Internal Safety and Security Audits, or performing Accident/Incident Investigations.

3. Review the Operations Fire Life Safety and Security Committee (FLSSC) and the Safety and Security Review Team (SSCRT) Meeting minutes from the past twelve months to verify meetings were held according to the requirements in SSPP Element 4.1 Committees.
4. Does the Safety Department have personnel resources allocated to support interdepartmental coordination on safety issues and concerns?
5. Have LACMTA's Safety Department's personnel and resources been cut or increased disproportionately with LACMTA's overall budget over the last three (3) years?

RESULTS/COMMENTS

Activities:

1. Discussion was held regarding Standard Operating Procedures and the goal of keeping them up to date with industry standards that may change over time.
2. Metro informs that they have increased their staffing levels in the safety department. Metro has added 4 internal safety investigators. For serious accidents Metro notes their employment of outside contractor assistance as needed.
3. Recently the Construction Safety and Engineering groups have been consolidated. Metro Director of Corporate Safety is in charge of Fire Life Safety and Security Committee (FLSSC) for projects and operations. Operations FLSSC occurs monthly, and project FLSSC meetings occur periodically and on an as needed basis. There are several ongoing projects (Crenshaw, Regional Connector, Westside Extension) and each project has a FLSSC. Major topics of interest for project FLSSC meetings include: ventilation issues, emergency walkway in tunnel crossovers, traction power, emergency communication, etc.
4. Metro notes that the Safety Department is well integrated with Operations and Project Management and that it is an important dynamic. The Safety Department is confident that they are appropriately included on all relevant requests for comments of draft documents. The Safety Department is confident that Operations Department involves them on relevant safety decisions such as SOP changes, etc.
5. The Safety Department does not have any concerns with the current staffing level. If the Measure M ballot passes, they will assess the need for additional staffing. The reviewers concur that LA Metro Safety is adequately staffed and notes the addition of 4 new staff recently.

Findings:

None.

Comments:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	4	Subject	System Safety Program Plan: Control and Update Procedure
Date of Review	September 19, 2016	Department(s)	Risk, Safety, Asset Management
Reviewers/ Inspectors	Daren Gilbert, Steven Artus, Noel Takahara, Howard Huie, Ainsley Kung	Person(s) Contacted	Gregory Kildare – Chief Risk, Safety & Asset Management Officer Vijay Khawani – Executive Officer, Corporate Safety Leonid Buhkin – Deputy Executive Officer, Corporate Safety Edward Boghossian – Interim Director, Corporate Safety Abraham Miranda – System Safety Manager Frank Castellon – System Safety Specialist Robert Takushi – System Safety Specialist
REFERENCE CRITERIA			
<ol style="list-style-type: none"> 1. General Order 164-D 2. 49 CFR 659 3. LACMTA Rail System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015 			
ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION			
<p>System Safety Program Plan: Control and Update Procedure</p> <p>Interview LACMTA System Safety Department and review appropriate records to:</p> <ol style="list-style-type: none"> 1. Verify the required annual SSPP review process is being implemented according to SSPP, Element 1.5 for the last 3 years. 2. Review responsibility for SSPP reviews and comments, and verify SSPP 			

reviews and changes are comprehensive in scope, within required timeframes, and are approved by the designated staff.

RESULTS/COMMENTS

Activities:

1. The Reviewers do not note any exceptions. Metro informs that the SSPP is routed to department heads and supervisors for annual review purposes.
2. The Reviewers do not note any exceptions. The Metro SSPP is revised as necessary on an annual basis and generally submitted to CPUC staff for review and approval around the November December time frame of the corresponding year.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	5	Subject	System Safety Program Plan: Implementation Activities and Responsibilities
Date of Review	September 19, 2016	Department(s)	Risk, Safety, Asset Management
Reviewers/ Inspectors	Daren Gilbert, Steven Artus, Noel Takahara, Howard Huie, Ainsley Kung	Person(s) Contacted	Gregory Kildare – Chief Risk, Safety & Asset Management Officer Vijay Khawani – Executive Officer, Corporate Safety Leonid Buhkin – Deputy Executive Officer, Corporate Safety Edward Boghossian – Interim Director, Corporate Safety Abraham Miranda – System Safety Manager Frank Castellon – System Safety Specialist Robert Takushi – System Safety Specialist

REFERENCE CRITERIA

1. General Order 164-D
2. 49 CFR 659
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

System Safety Program Plan: Implementation Activities and Responsibilities

Interview LACMTA System Safety Department and review appropriate records to:

1. Verify each manager, department, and contractor is charged with responsibility and accountability for SSPP implementation, enforcement, and effectiveness.
2. Identify any challenges each manager, department, and contractor has in

performing tasks relating to the SSPP or general safety.

3. Verify management accountability for the performance of safety-related activities, and, if serious or potentially serious deficiencies are found, expand the review to include additional and/or related activities.

RESULTS/COMMENTS

Activities:

1. SSPP Section 1.1 and 3.1 outlines department manager responsibilities.
2. The Safety Department enforces the SSPP at Metro and notes that they observe general compliance with the SSPP throughout the property. Exceptions can exist when employees are not familiar with the requirements due to infrequent applicability of the SSPP to their daily tasks. In the case of accident investigation and reporting there is strict adherence to the SSPP.
3. Discussion was held regarding efficiency testing and Line Reps/supervisors. Smartdrive video is being phased in for use throughout the system. Smartdrive video is multifunctional and records speed/odometer information (in real time) embedded into the forward facing in cab video. As an example of its utility, the speed of the LRV at impact can be seen when reviewing accident videos.

Findings:

None.

Comments:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	6	Subject	Hazard Management Process
Date of Review	September 26, 2016	Department(s)	Corporate Safety
Reviewers/ Inspectors	Claudia Lam	Person(s) Contacted	Collins Kalu – Sr. Manager, Industrial Hygiene & Safety Frank Castellon – System Safety Specialist
REFERENCE CRITERIA			
<ol style="list-style-type: none"> 1. General Order 164-D 2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015 3. LACMTA System-wide hazardous Material Emergency Response Plan, date May 2016 4. LACMTA Hazard Communications Program, Rev. 8, dated January 2014 			
ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION			
<p>Hazard Management Process</p> <p>Interview the appropriate LACMTA representative(s) in charge of the Hazard Management Process. Staff is to randomly select and review 5 appropriate records for each year from the past 3 years to determine if LACMTA has:</p> <ol style="list-style-type: none"> 1. Safe-5 Occupational Injury/Illness Investigation Report Forms and Inspection Reports are used to report hazards and if they're followed up by management and tracked unto its completion. 2. Safe-7 Report of Unsafe Condition or Hazard/Near Miss Forms are used by employees to report unsafe conditions and/or near misses, are followed up by the department manager as well as being discussed at the respective Local Safety Committee meetings (Blue, Green, Gold, Foothill, Expo and Red), and tracked unto its completion using a Safe 15 Form. 3. Safety Department maintains a mechanism to capture, track and codify hazards 			

based on their SSPP.

4. LACMTA has defined minimum thresholds for the notification and reporting of hazard(s) to the CPUC and has a specified process for reporting of hazard resolution activities to the CPUC (as required by items (e) and (f) in Section 6 of GO 164-D).
5. Corrective Action Plans (CAP) are developed to address identified hazards and the CAPs identifies the individual or department responsible for implementation and a schedule for completion.
6. Request examples of how the Safety Department followed the process, monitored other departments, and ensured identified hazards were reported to the Safety Department.
7. LACMTA Corporate Safety tracks all CAPs from Safe 7 and Safe 5 reports unto completion.

RESULTS/COMMENTS

Activities:

Staff interviewed LACMTA's System Safety Manager regarding the Hazard Management Process and reviewed documentation to determine the following:

1. The System Safety Manager reports SAFE-5 is not used for hazard reporting but any employee injuries automatically generate a SAFE-5 report. The System Safety Manager is responsible for reviewing the hazard and creates a CAP for tracking purpose.
2. LACMTA provided staff with several examples of hazards reported to their SAFE-7 Unsafe Condition or Hazard/Near Miss form. Employee/Contractors, maintenance, transportation, and wayside group use the SAFE-7 Form to report hazards, "near misses" incidents and/or any other safety issues. Each rail transit line has its own SAFE-15 Form, which tracks all the SAFE-7 hazards and all its associated information in that calendar year. The SAFE-7 and SAFE-15 Forms are reviewed and discussed at each rail transit line's Local Safety Hazard Committee Meetings. CPUC staff attends the meetings and receives agendas through email.
3. Corporate Safety's centralized matrix "Hazard Management Master Matrix" (Master Rail Matrix for all SAFE-7) is used to track the hazards and CAPs on a monthly basis with hazards assigned a priority ranking of #1-3. Staff found the matrix was missing the "Target Date of Completion" (though it is captured in SAFE-15, SAFE-15 is not used by Corporate Safety). Corporate Safety personnel revised the matrix adding the "Target Date of Completion" to the Hazard Management Master Matrix immediately.
4. LACMTA's SSPP has defined minimum thresholds for the notification and

- reporting of hazard(s) to the CPUC.
5. CAPs are developed for hazards and managers at each rail transit line are required to cover SAFE-7 and 15 and submit SAFE-15 to Corporate Safety for review to ensure CAPs are closed in a timely manner, and the mitigating measures implemented. SAFE-7 and SAFE-15 records are kept on-file for 5 years per OSHA requirement.
 6. Staff reviewed the Local Safety Committee Meetings minutes to verify Safety Department followed through the process, monitored other departments, and ensure identified hazards were reported to the Safety Department. CPUC representative attended the meetings on a regular basis.
 7. The Corporate Safety Managers use the centralized matrix "Hazard Management Master Matrix" (Master Rail Matrix for all SAFE-7 and SAFE-5) to track the hazards on a monthly basis.

Findings:

None.

Comments:

Corporate Safety's Hazard Management Master Matrix did not include a "Target Date of Completion, but is captured in the Safe 15 Forms. Corporate Safety updated the Hazard Management Master Matrix to include the target date of completion upon the conclusion of this checklist.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUTNY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	7	Subject	System Modification
Date of Review	September 21, 2016	Department(s)	Configuration Mangement
Reviewers/ Inspectors	Michael Warren	Person(s) Contacted	Julie Landsford – Manager, Configuration Management Edward Boghossian – Interim Director, Corporate Safety

REFERENCE CRITERIA

1. General Order 164-D
2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
3. LACMTA Policy ENG01, Engineering Design, Review, and Acceptance Rev. 3, dated October 23, 2011
4. LACMTA Procedure CF15 for non-capital projects Rev. 4, dated September 26, 2011
5. LACMTA Engineering procedures, DSGN0 – DSGN8
6. LACMTA Project Control procedures, PRCL0 – PRCL11

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

System Modification

Conduct interviews and review appropriate records to:

1. System Modification changes were reviewed and approved in accordance with the reference criteria.
2. Verify all relevant organizational entities and processes were involved in assessing at least two system modifications over the last three years prior to their placement in revenue service. Each Metro Department's role in this function is to:
 - Incorporate safety requirements into every proposed modification of Metro transit systems

- Meet the safety requirements established for all purchases of equipment and supplies including its storage, transfer use, record keeping, and disposal
 - Submit proposed system modifications to the Document Control Department
 - Carry out assigned system modification tasks
 - Evaluate proposed system and subsystem modifications from a safety perspective
3. Determine that all hazards identified with system expansions or modifications of any kind are resolved.

RESULTS/COMMENTS

Activities:

Staff interviewed LACMTA Corporate Safety and Document Control representatives in charge of System Modification Program and reviewed the following records and documentation.

1. Staff randomly selected three Configuration Change Requests (CCR) from the master spreadsheet and confirmed that they were initiated, reviewed, and approved in accordance with CF15.
 - a. CCR127(2/20/2014) – Removal of Existing Green Line Wayside Intrusion Detection System
 - b. CCR133(11/25/2014) – Pasadena Gold Line Cab Signal Modifications
 - c. CCR137(5/26/2016) – Install an Active “LOOK BOTH WAYS” sign on the #8 parallel to the tracks facing patrons using the pedestrian crosswalk.
2. LACMTA Document Control Department has a set distribution list for CCR review/comments to ensure all necessary departments have a chance for review. Staff verified review packages were sent and comments were addressed.
3. LACMTA Document Control Department has a CCR Log to track hazard resolution and configuration change status.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	8	Subject	Safety and Security Certification
Date of Review	September 23, 2016	Department(s)	Safety
Reviewers/ Inspectors	Michael Warren	Person(s) Contacted	Thomas Eng – Sr. Director, Safety Certification & Operations Management

REFERENCE CRITERIA

1. General Order 164-D
2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
3. LACMTA Safety and Security Certification Plan for the Foothill Extension Phase 2A Project
4. LACMTA Safety and Security Certification Plan for the Expo Line Phase 2 Project

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Safety and Security Certification

Interview the LACMTA representative(s) in charge of the Safety Certification Program and review the records of major projects to:

1. Select two new major rail capital projects and determine if Safety and Security Certification Plans (SSCP) has been submitted and approved by the Commission.
2. Determine if Metro has informed CPUC Staff of significant safety and security issues on the new major rail capital projects.
3. Determine whether all design and construction changes were properly coordinated and addressed in the safety and security certification process.
4. Determine whether all identified hazards have been eliminated or controlled as required under the Safety and Security Certification Plans.
5. Determine whether the certifiable elements in the Safety and Security Certified projects during the past three years were addressed for the Safety Certification

Verification Report and submitted to the CPUC as required by GO 164-D.

RESULTS/COMMENTS

Activities:

Staff interviewed LACMTA Corporate representative in charge of Safety Certification Program and reviewed the following records and documentation:

1. LACMTA has completed two major projects in the past three years and has submitted Safety and Security Certification Plans (SSCP) for Commission approval. Resolution ST-114 granted approval of the SSCP for the Metro Gold Line Foothill Extension Phase 2A Light Rail Transit Project and ST-135 granted approval of the SSCP for the Exposition Light Rail Transit Project Phase 2.
2. LACMTA invites CPUC Staff to all Safety and Security Review Committee (SSRC) and Fire/Life Safety and Security Committee (FLSSC) meetings. Upon reviewing meeting minutes, it is verified that assigned Staff is part of meeting distribution lists and regularly attends meetings.
3. Design and construction changes are presented to the FLSSC along with a reason and the FLSSC will vote to either allow or deny the request. These requests are made using a Request For Special Consideration (RFSC) form. Staff verified the following RFSC forms:
 - a. 1-0113-2012: Emergency Walkway thru I-10 Box Culvert
 - b. 3-0513-2014: UL 2196 1 Hour Fire Rated Cables
 - c. Foothill2A-01: Waiver request from Metro-Criteria section 2.4.1.4.
4. Identified hazards have been tracked until eliminated or adequately mitigated. All outstanding hazards upon project completion were submitted to Staff in the project's Safety Certification Verification Report (SCVR) along with a mitigation and Corrective Action Plan (CAP).
5. SCVRs for both projects contain completed and signed Certificates of Conformance for the system. Foothill Extension Phase 2A SCVR was submitted on February 12, 2016, to commence revenue operation on March 5, 2016, in accordance with GO 164-D. Expo 2 Extension SCVR was submitted April 15, 2016, to commence revenue operation on May 20, 2016, in accordance with GO 164-D.

Findings:

None.

Comments:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	9	Subject	Safety Data Collection and Analysis
Date of Review	September 26, 2016	Department(s)	Corporate Safety
Reviewers/ Inspectors	Claudia Lam	Person(s) Contacted	Abdul Zohbi - System Safety Manager

REFERENCE CRITERIA

1. General Order 164-D
2. LACMTA Rail System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Safety Data Collection and Analysis

Interview the LACMTA representative(s) responsible for safety data acquisition and analysis and review the safety data acquisition and analysis program requirements and Safety Data Analysis and Acquisition System (SDAAS) database to determine if:

1. The Corporate Safety Department reports identifying incident to the National Transportation Database (NTD) on all rail lines.
2. The Corporate Safety Department produced quarterly reports of accident statistics for the Metro Blue Line and the report summarizes the contributing factors, direction of travel of the train, and the location where every accident occurred.
3. The Corporate Safety Department reviews the accident statistics and determines types of mitigating measures in general and performs a trend analysis to identify causes of accidents that occurs on the MBL at far side stations and determines types of mitigating measures.
4. The Corporate Safety Department identifies accident trends and reports recommendations to LACMTA Rail Operations Management.

RESULTS/COMMENTS

Activities:

Staff interviewed LACMTA's System Safety Manager regarding the Safety Data Acquisition & Analysis program and reviewed relevant program documentation. Staff determined the following:

1. LACMTA's Rail Operations Safety (ROC) CPUC reportable Matrix captures data for all reportable accidents. Metro personnel use Trans 30 to enter accident data. Accident data is also entered in Rail TRAN-30, Rail TRANS 172A, and National Transportation Database (NTD). LACMTA's System Safety Manager demonstrated the data entry process for identifying incidents to the NTD website.
2. Corporate Safety Department analyzed the safety data collected and produced quarterly reports of accident statistics for the Metro Blue Line. For example, trend analysis from quarterly reports identified the major left turn collision at Flower and I10 and resulted in the installation of a left turn gate.
3. Corporate Safety Department reviewed the Blue Line (open in 1990) accident statistics from July 1, 1990 – June 30, 2016 for Train vehicle/train pedestrian. Statistics identified Vernon Station has the highest fatality rate (7 fatalities) with the Artesia Station as the second highest fatality rate (6 fatalities). Wilmington Station is scheduled for pedestrian swing gate installation to mitigate pedestrian accidents. LACMTA's plan to mitigate incidents on the Blue Line is to install pedestrian swing gates and pedestrian gates along the shared corridor on both Metro and Union Pacific sides from 20th Street to Spring Street (27 intersections). Project meetings are held often to monitor the progress of the installations, which are scheduled to finish by October 10, 2017. The Spring Street Station and Wardlow Station have been complete with functional swing gates and pedestrian gates.
4. The Corporate Safety Department Manager collects and analyzes the Blue Line quarterly report data. The Manager reviews the accident statistics on a regular basis, identifies any accident trends, and recommends corrective actions to LACMTA Rail Operations Upper Management.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	10	Subject	Accident/Incident Investigations
Date of Review	October 10, 2016	Department(s)	Safety
Reviewers/ Inspectors	Joey Bigornia	Person(s) Contacted	Edward Boghossian – Interim Director, Corporate Safety Zohbi Abdul – System Safety Manager

REFERENCE CRITERIA

1. General Order 164-D
2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
3. Code of Federal Regulations, CFR 49 Parts 659.33 Accident notification, 659.35 Investigations, and 659.37 Corrective action plans
4. LACMTA Accident Investigation Procedures, Rev. 7, dated 12/2014.

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Accident/Incident Investigations

Interview LACMTA responsible representative and randomly select at least four accidents involving an injury or fatality reportable to the CPUC during the past 24 months and determine if:

1. Each accident was reported to the CPUC as required and that the final report was submitted as required.
2. LACMTA reported the accidents to the CPUC within two hours as required by GO 164-D, Sections 7.1 & 7.2.
3. The immediately reportable incident notifications to CPUC staff contained all of the information required by GO 164-D, Section 7.3.
4. The accident was investigated in compliance with the requirements of GO 164-D, Section 8, and CPUC-approved accident investigation procedures.

5. Ensure that the final report identified:
 - Each item covered in the investigation.
 - The investigation findings of the most probable cause.
 - Underlying contributing causes.
 - A CAP to address the identified causes and that it minimized the incident from recurring.
 - A schedule for implementing the CAP, which has been completed or is being monitored on an on-going basis.

RESULTS/COMMENTS

Activities:

Staff interviewed the Director of Corporate Safety and System Safety Manager and determined the following: Corporate Safety has a database for capturing all accidents. The database identifies accidents by operating line and shows if the accident report was a long form or a 60-Day EZ form.

Staff randomly selected the following accidents to review to confirm they met the requirements from questions 1 – 5 from above:

2-21-2016 Washington and Olive (Blue Line) – illegal left turn incident @ 13:55, notification to CPUC @ 14:12. The Final Report (60-Day EZ) issued 3-2-16 (less than 30-days). Primary Cause was identified, recommendations: None.

4-30-2016: Long Beach and Fourth Street (Blue Line) – illegal left turn incident @ 12:34, notification to CPUC @ 13:03. The Final Report (60-Day EZ) issued 5-23-2016. Primary Cause was identified, recommendations: None.

9-28-2015: Artesia Station Pedestrian (Blue Line) – fatality incident @ 07:41, notification to CPUC @ 08:19. The Final Report was issued 6-3-2016. Interim Reports regarding status of open accident were issued via email from Corporate Safety to CPUC designated representative. The report remained open pending LACMTA's receipt of Los Angeles County Coroner's Toxicology Report dated 5-4-2016. The Final Report included a review of CCTV footage, Sheriff's Report witness statements, hours of service, etc. Primary cause, conclusions, contributing factors, coroner's reports were included.

1-30-2015: 24th Street and Long Beach (Blue Line) – fatality incident @ 06:15, notification to CPUC @ 06:35, Final Report 4-30-2015. Interim Reports regarding

status of open accident were issued via email from Corporate Safety to CPUC designated representative. The accident report remained open pending LACMTA's receipt of Los Angeles County Coroner's Report Toxicology Report dated 4-8-15. Final Report states CCTV footage did not function as intended and this is identified. The Final Report included a review of CCTV footage, Sheriff's Report witness statements, hours of service, etc. Primary cause, conclusions, contributing factors, coroner's reports were included.

7-9-2015: Third and Ford (Gold Line) – motorist ran red light incident @23:36, notification to CPUC @ 23:57. The Final Report (60-Day EZ) issued 7-14-2015.

2-22-2016: Exposition and Normandie (Expo Line) – illegal left turn incident @ 08:37, notification to CPUC @ 08:53. The Final Report (60-Day EZ) issued 3-2-2016.

A review of Corporate Safety accident database identified no open Corrective Action Plans.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	11	Subject	Emergency Management Program
Date of Review	September 20, 2016	Department(s)	Emergency Management
Reviewers/ Inspectors	Daniel Kwok, Rosa Muñoz	Person(s) Contacted	Abraham Miranda – System Safety Manager Edward Boghossian – Interim Director, Corporate Safety Rita Woodson - Director, Transportation Operations John Johnson – Service Operation Superintendent Stephen Lino - Director, Transportation Operations Michael Moore - Director, Transportation Operations Bernard Jackson – Sr. Executive Officer, Rail Operations Roman Alarcon - Director, Transportation Operations John Sanchez - Director, Transportation Operations Aldon Bordenave, Patricia Alexander - Service Operation Superintendent

REFERENCE CRITERIA

1. General Order 164-D
2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
3. LACMTA System Security Plan, Dated January 2013

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Emergency Management Program

Interview the LACMTA Emergency Preparedness and Homeland Security department, Operations, and Corporate Safety for the past three years to determine if:

1. Emergency Response Procedures are being periodically reviewed and revised.
2. LACMTA's emergency response planning addressed both safety and security related emergency events and performs at a minimum of one drill per year per line.
3. LACMTA regularly schedules meetings and emergency drills with emergency response agencies such as police and fire.
4. Emergency drills were critiqued and evaluated by participants and any corrective actions plans that entailed LACMTA, were recorded, scheduled, and tracked to completion in a timely manner.

RESULTS/COMMENTS

Activities:

1. Staff inquired if Emergency Response Procedures are being periodically reviewed and revised.
 - a. Background: Emergency Management Department (EMD) has recently expanded from one individual to a larger group with the first hire back in March 2016. The EMD is now responsible for emergency drills, in place of Rail Operations Department and Safety Department. EMD also coordinates requirements from Department of Homeland Security, OSHA and the Federal governmental agencies. Since EMD now reports to the Chief Risk, Safety and Assets, its importance and visibility is higher. More drills are planned and invitations for CPUC staff to participate will be forthcoming.
 - b. Each individual rail line has a procedure, including an Emergency Site Plan - each has been revised and reviewed.

Metro Line	Date of Last Rail SOP Revised	Emergency Sight Plan Revised
Expo Line	5/31/2013	No review date available
Blue Line	5/31/2013	No review date available
Gold Line	5/31/2013	No review date available

Green Line	5/31/2013	No review date available
Red/Purple Line	5/31/2013	No review date available

- c. Rail SOP
 - i. Last revised 2013
 - ii. In early 2016, rule book revision was started by Rail Rule Book Committee
 - iii. CPUC staff asked how these changes are being done by the Committee
 - 1. Issues or procedural conflicts require a change
 - 2. Rail bulletins/notices are incorporated
 - 3. Temporary SOPs at the end of the year becomes permanent
 - 4. After this process, the annual review becomes permanent
 - iv. Rule Book is required to be reviewed every 5 years
 - v. Task should be completed by the end of December of this year
 - vi. Each rule book is signed when they are issued to the operator
 - vii. SOPs are part of the rule book, and is reviewed every 5 years
- d. Division Site Plans
 - i. Prior, Division Site Plans reviewed every two years—now to be reviewed annually
 - ii. Last year of change of periodic review started in November 2015, since Emergency Management Division has more resources
 - iii. Work on revisions began in 2013, but was not completed. Work resumed in November 2015
 - iv. All site plan reviews/revisions are to be 60% completed at time of audit
 - v. Estimated by November 2016 all site plans should be completed
 - vi. Division Site Plans being standardized and integrated into Emergency Operations Plan
- 2. Staff inquired if LACMTA's emergency response planning addressed both safety and security related emergency events and performs at a minimum of one drill per year per line
 - a. Full Scale Exercises per Metro Line handouts were provided-these are mandated by United States Department of Homeland Security (DHS)

- i. 34 core components must be addressed in exercises
- ii. Table top includes stakeholders for the planning meetings for the full-scale exercises
- iii. Full Scale Exercise dates:

	2013	2014	2015	2016
Gold	15-Nov-13	27-Mar-14	10-Jul-15	
Blue/Expo	29-Sep-13	17-Apr-14	14-Nov-15	
Red/Purple	9-Jun-13	29-Jun-14	29-May-15	13-May-16
Green	4-Sep-13	2-Aug-14	30-Sep-15	14-Jul-16

- iv. Supervisors and individual rail directors provide ideas for exercises or from previous incidents like derailments, or active shooters and at times from local entities or other stakeholders
 - v. After the event, discussions are held for lessons learned from high level goals
 - vi. Involvement includes local law enforcement and/or fire departments
- b. Expo and Blue Lines were previously combined for drill purposes, but will now have separate drills in 2017 with completion of Expo Line to Santa Monica.
3. Staff inquired if LACMTA regularly schedules meetings and emergency drills with emergency response agencies such as local police and fire.
- a. The executive priority for this year focuses on active shooter and hostage situations
 - b. LACMTA started performing security oriented exercises in November 2013
 - c. Real live application for law enforcement who recently participated in an active shooter and hostage situation exercise.
Example Exercise: Chatsworth Metrolink Station gunmen on Friday, September 16, 2016
 - d. Each rail director will identify an exercise and appoint with the scene event coordinator to organize the drill

- e. Planning steps involve meeting with LACMTA executives, organize table top drill with participating parties, then perform full scale exercise
 - f. Eight weeks to plan, coordinate & conduct exercise
 - g. Exercises were conducted to certify both Expo and Gold Line extensions
 - h. Grading scale from 1-5 for each participant to determine performance of core components in exercise
 - i. Employees involved in the drill are used to “test” procedures to see how they were carried out and how effective the procedures were
 - j. Emergency Management unit expanded this year
 - k. CPUC staff commented that the wording should change in the SSPP to state that Emergency Management is the lead
4. Staff reviewed CAP Matrix from Emergency Drills for years 2016, 2015, 2014, and 2013. Draft report completed electronically then met with rail executives for review
- a. Tracked by matrix which is captured from the full exercise reports
 - i. One CAP Item open for 2016.
 - ii. Three CAP Items open for 2015 relating to radios.
 - iii. All other CAP items closed for years: 2014 and 2013.
 - b. Compiled and organized by year, and then review monthly by individual identified & updated for status
 - c. Example of some CAPs-“operator needs more training,” no date given for completion since part of regular, mandated department training, annually scheduled
 - d. A Bulletin might be sent out as part of a CAP

Findings:

1. Staff requested verification for review/revision dates of Emergency Sight Plans in a follow-up meeting in October. Follow-up communication from CPUC staff in January requested LACMTA provide review/revision dates for Emergency Site Plans to verify, at minimum, reviews have taken place. No dates or hardcopy documentation was available.

Comments:

1. Staff commented that the wording should change in the SSPP to state that Emergency Management Department is the lead for emergency drills instead of Operations.

Recommendations:

1. LACMTA must review and/or revise Emergency Plans at intervals as required by LACMTA procedures.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	12	Subject	Internal Safety Audits
Date of Review	September 21, 2016	Department(s)	Safety
Reviewers/ Inspectors	Daniel Kwok	Person(s) Contacted	Edward Boghossian – Interim Director, Corporate Safety

REFERENCE CRITERIA

1. General Order 164-D
2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
3. LACMTA Audit Schedule 2013-2015
4. 49 CFR (Code of Federal Regulations) 659.27

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Internal Safety Audits

Verify the LACMTA internal rail system safety audit (IRSSA) process is providing a method of measuring effectiveness of the SSPP in achieving its objectives by interviewing corporate safety staff and reviewing records. Determine if:

1. LACMTA has planned, scheduled, and performed annual internal safety audits for the last three years to evaluate compliance and measure the effectiveness of its system safety program plan.
2. LACMTA included and covered all the organizational elements described in the Internal Safety Audit Process section of the APTA Guidelines in the audit scope within 2013 to present and the 3-year period thereafter.
3. LACMTA documented IRSSA findings and recommendations in an annual report that covered the audits performed during each calendar year. The results have been distributed to the LACMTA Chief Executive Officer and department managers covered by the audit. LACMTA has submitted the annual report to

the Commission staff prior to the 15th of February each year.

4. The Corporate Safety Department has tracked the corrective action plans and all the responsible departments implemented their respective approved recommendations and action plans since 2013.
5. The Corporate Safety Department has developed Internal Safety Audit Plan and Schedule, for 2017, 2018 and 2019, in accordance with CFR 49, Part 659.27 requirements.

RESULTS/COMMENTS

Activities:

1. Staff has verified that LACMTA has planned, scheduled, and performed annual internal safety audits for the last three years. Staff reviewed IRSSA reports from years 2013, 2014, and 2015.
2. Staff has reviewed IRSSA reports from 2013, 2014, and 2015, and has verified LACMTA has reviewed all organizational elements (21 safety elements and 5 security elements) described in the Internal Safety Audit Process section of the APTA Guidelines.
3. Staff has verified that LACMTA has documented all findings and recommendations in their annual report to the CPUC. Staff has verified CEO has signed the cover letter of the annual report and LACMTA department managers are cc'd. LACMTA's annual report has been submitted to the CPUC prior to the February 15th deadline for years 2013, 2014, and 2015.

Date Submitted:
11/22/2013
12/18/2014
12/18/2015

4. Staff reviewed CAP items on IRSSA and corresponding CAP tracking matrix used.
 - a. 2013: No CAPs
 - b. 2014: Matrix tracked 9 items. All items closed
 - c. 2015: Matrix tracked 4 items. 2 items open, 2 items closed
5. Staff has verified the Corporate Safety Department has developed an Internal

Safety Audit Plan and Schedule for 2017, 2018, and 2019.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	13-A	Subject	Rules Compliance: Observation and Enforcement - Transportation
Date of Review	September 26, 2016	Department(s)	Rail Transportation
Reviewers/ Inspectors	Debra Dziadzio, Ainsley Kung	Person(s) Contacted	Linda Leone - Director, Rail Transportation Abraham Miranda – Systems Safety Manager

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
4. LACMTA Rail Rule Book, Revised: May 1, 2013

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Rules Compliance: Observation and Enforcement - Transportation

Conduct the necessary interviews and review appropriate records prepared during the last three years to:

1. Verify LACMTA performs check rides and other formal observations of operations (eg. train operators) and maintenance employees based on their performance during unannounced observations to determine their compliance with safety rules, procedures, and/or practices as specified in the SSPP.
2. Verify corrective actions plans (CAP) were implemented and tracked to closure for rule violations found during efficiency tests of operating and maintenance personnel.

RESULTS/COMMENTS

Activities:

1. Staff verified LACMTA performs check rides and other formal observations of operations (eg. train operators) and maintenance employees based on their performance during unannounced observations to determine their compliance with safety rules, procedures, and/or practices as specified in the SSPP. Every supervisor is required to perform at least one check ride/week; every manager is required to perform one check ride/month. The results of the efficiency tests are discussed during the LSC Meetings.
 - Each Division keeps its own maintenance records and has its own Rail Fleet Maintenance Manager.
 - Minimum # of Efficiency Testing specified in SSPP, however, they perform more than minimum based on previous month's accidents/incidents.
 - SSPP was last updated December 2015 and includes the two rail expansions. Per the new Organization Chart, the Safety Department is now under Risk, Safety, and Asset Management.
 - SSPP Section 4.8 "Rules Development and Compliance" states "Each month the rail transportation instructors issue two rule compliance tests based on the rulebook that must be completed by each Division Manager".
2. Staff verified corrective actions plans (CAP) were implemented and tracked to closure for rule violations found during efficiency tests of operating and maintenance personnel.

Findings:

1. Ride checks were improperly filled out. We verified July/August 2016 ride check forms, and about 25 out of 50 forms were improperly filled out (i.e. missing location on/off, Operator/Student name, Badge #).

Comments:

None.

Recommendations:

1. LACMTA should properly complete and fill out the Ride Check forms with accurate and correct information.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	13-B	Subject	Rules Compliance Operation Safety Compliance Program Inspection – CPUC Operating Inspector
Date of Review	September 27, 2016	Department(s)	Rail Transportation
Reviewers/ Inspectors	Debra Dziadzio, Ainsley Kung	Person(s) Contacted	Linda Leone - Director, Rail Transportation Abraham Miranda – System Safety Manager

REFERENCE CRITERIA

1. General Order 164 Series
2. General Order 143-B
3. LACMTA System Safety Program Plan SSPP), Rev. 12, dated December 12, 2015
4. Metro Rail System Book of Operating Rules and Procedures, dated May 1, 2013

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

**Rules Compliance: Operation Safety Compliance Program Review – CPUC
Operating Inspector**

Interview LACMTA's representative(s) responsible for Operations Safety, observe/inspect operations, and review documentation as necessary to determine whether or not:

1. Maintenance of Way - Wayside Workers
 - a. At Rail Operations Control Center, observe access authority provisions and procedures for LACMTA wayside workers to determine whether or not they are following LACMTA's Rules
 - b. Interview at least two LACMTA Wayside workers to evaluate their knowledge and understanding of LACMTA's Operating Rules and

<p>Procedures for mainline operations</p> <ol style="list-style-type: none"> c. Ensure the two Wayside workers interviewed have adequate PPE, the PPE has not expired, and that at least one person on the crew has an active ProTran. <p>2. Revenue Operations – Train Operators</p> <ol style="list-style-type: none"> a. Perform an inspection of two or more departing LACMTA train operators operating revenue vehicles to determine if they have all of the required safety items. b. Observe at least one or two coupling procedures to determine whether or not they follow operating rules and procedures c. Interview at least two LACMTA train operators to evaluate their knowledge and understanding of LACMTA’s Operating Rules and Procedures for mainline operations <p>3. Rail Operations Control Center (ROC) – Controllers</p> <ol style="list-style-type: none"> a. Applicable reports, logs or records are properly prepared, maintained, and available upon request for review b. Duties are performed in accordance with LACMTA’s Standard Operating Procedures, Bulletins, General Notices, and Special instructions. c. ROC Controllers are knowledgeable in dealing and coordinating with other agencies during incidents, accidents, and emergency response situations. 	
RESULTS/COMMENTS	
<p><u>Activities:</u></p> <ol style="list-style-type: none"> 1. Staff performed an inspection, randomly selecting two departing LACMTA train operators (T.O.) operating revenue vehicles, to determine if they have all of the required safety items. <ul style="list-style-type: none"> • T.O. #16503 (from Union Station to East L.A.) and #30048 (from East L.A. to Azusa) • Reviewed Operating Clearance dated 9/27/16, Rule Book (rev date 5/1/13 Rule 2002), ID Card, Medical Card, Training/Certification card, required Keys (Rule 2097), working watch (Rule 2016), working flashlight (Rule 2111 b). Staff did not observe any unauthorized activities (Rule 2090), T.O.’s wore Safety Vest (Rule 2111 e). • Staff observed compliance to GO 172, LA Metro Operating Rule 2110 (a). 	

2. Staff was advised by T.O. (and observed) at La Verne Ave that the train must encroached into pedestrian walkway before getting a bar signal.
3. Staff noticed T.O. did not remove sunglasses inside the Colorado Box (Rule 2031)
4. For #3 Rail Operations Control Center (ROC) – Controllers in above ELEMENTS/CHARACTERISTICS AND METHOD OF VERIFICATION, see Safety Checklist 13-F.

Findings:

None.

Comments:

1. Neither TO knew the Operating/Safety Rule of the Week. Although it's not stated in the Operating Rules book that the TO's must know the Rule of the Week, the fact that both TO's didn't know the rule insinuates that the TO's didn't read the entire Operating Clearance.

Recommendation:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	13-C	Subject	Rules Compliance: Operator, Controller, and Maintenance Personnel Hours of Service
Date of Review	September 28, 2016	Department(s)	Safety
Reviewers/ Inspectors	Debra Dziadzio, Ainsley Kung	Person(s) Contacted	Edward Boghossian – Interim Director, Corporate Safety Vijay Khawani – Executive Officer, Corporate Safety

REFERENCE CRITERIA

1. General Order 164 Series
2. General Order 143-B, Section 12.04 Hours of Service – Safety Sensitive Employees
3. LACMTA System Safety Program Plan SSPP, Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Rules Compliance: Operator, Controller, and Maintenance Personnel Hours of Service

Select at least 10% safety-sensitive employees at random from each of the following classifications:

- Controller
- Train Operator
- Track Inspector
- Signals Inspector
- LRV Maintainer
- Flag person/Look-out
- Supervisors

Inspect the employees' time cards for a three-month period during the past 18 months

to determine whether:

1. Shifts were in compliance with the requirements for safety-sensitive employees not remain on duty for more than 12 consecutive hours, or for more than 12 hours in any 16 hour period.

Each initial on-duty status was preceded by eight consecutive hours of off-duty status.

RESULTS/COMMENTS

Activities:

1. Staff inspected the employees' time cards for a three-month period during the past 18 months to determine whether shifts were in compliance with the requirements for safety-sensitive employees. Per CPUC General Order 143-B, Section 12, Safety-Sensitive employees may not remain on duty for more than 12 consecutive hours, or for more than 12 hours in any 16 hour period.

Findings:

1. Three employees (LRV Maintainers) had over 12 hours in one shift. After investigation, it was determined that the employees worked through their lunch break. Rather than being off the clock for 30 mins, they charged 12 hours and 30 mins for the day. A memo from LRV Maintenance was issued instructing workers to take their lunches. If they choose to work through lunch, timekeeping will still deduct 30 minutes. Additionally, when an employee works past 12 hours, the Supervisor must document the emergency and a copy of the document goes into the employee file.

LRV Maintainers Hours of Service (HOS):

ID 27312 -12 hours 30 mins on 12/17/2015

ID 19676 - 12 hours 30 mins on 10/23/2015, 12/11/2015, and 12/17/2015

ID 80755 – 12 hours 30 mins on 12/15/15, 12/30/15.

Comments:

1. The HOS violation has been rectified by LACMTA, however, Staff wanted to mention this finding.

Recommendation:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	13-D	Subject	Rules Compliance: Contractor Safety Program
Date of Review	September 28, 2016	Department(s)	Rail Transportation
Reviewers/ Inspectors	Debra Dziadzio, Ainsley Kung	Person(s) Contacted	Edward Boghossian – Interim Director, Corporate Safety Linda Leone - Director, Rail Transportation Michael Alexander – Manager, Transportation Operations

REFERENCE CRITERIA

1. General Order 164-D
2. 49 CFR Part 214
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Rules Compliance: Contractor Safety Program

Interview the LACMTA representatives in charge of the Contractor Safety Program and review LACMTA's internal safety audit requirements, audit reports and other records to determine if:

1. LACMTA's procedures and practices clearly identify, for the contractors and LACMTA managers, that LACMTA is in charge and that its contractors and their employees must comply with all established safety rules and procedures
2. All contractors, performing work near any active Metro rail lines, provided Metro specific safety training classes conducted by Rail Operations;
3. LACMTA procedures establish the range of activities for its monitoring and enforcement of contractor's and contractor employee's compliance with the safety requirements by regular unscheduled and unannounced compliance

checks as well as by scheduled periodic audits and inspections of the construction sites and;

4. LACMTA's monitoring and enforcement activities are properly recorded, distributed, and filed;
5. Rail Operations Control (ROC) approved the contractors' work, on or near all rail lines before the work begins;
6. All contractors followed LACMTA's requirements of Track Allocation/Work Permit process.

RESULTS/COMMENTS

Activities:

Staff interviewed LACMTA representatives in charge of the Contractor Safety Program and reviewed LACMTA's internal safety audit requirements, audit reports and other records. Staff reviewed the Track Allocation/Work Permit process, Track Allocation Request Forms, Track Allocation Schedule, and determined that:

1. LACMTA's procedures and practices clearly identify, for the contractors and LACMTA managers, that LACMTA is in charge and its contractors and their employees must comply with all established safety rules and procedures
2. All contractors, performing work near any active Metro rail lines, are provided Metro specific safety training classes conducted by Rail Operations;
3. LACMTA procedures establish the range of activities for its monitoring and enforcement of contractor's and contractor employee's compliance with the safety requirements by regular unscheduled and unannounced compliance checks as well as by scheduled periodic audits and inspections of the construction sites and;
4. LACMTA's monitoring and enforcement activities are properly recorded, distributed, and filed
5. Rail Operations Control (ROC) approved the contractors' work, on or near all rail lines before the work begins;
6. All contractors followed LACMTA's requirements of Track Allocation/Work Permit process.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	13-E	Subject	Rules Compliance: Operating Rules and Maintenance Procedures Manual and Operations Bulletin Revisions
Date of Review	October 12, 2016	Department(s)	Rail Transportation
Reviewers/ Inspectors	Debra Dziadzio, Ainsley Kung	Person(s) Contacted	Linda Leone - Director, Rail Transportation Robert Takushi – System Safety Specialist

REFERENCE CRITERIA

1. General Order 164-D
2. 49 CFR Part 214
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
4. Metro Rail System Book of Operating Rules and Procedures, dated May 1, 2013

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Rules Compliance: Operating Rules and Maintenance Procedures Manual and Operations Bulletin Revisions

Interview LACMTA representative responsible for operations rules and procedures, maintenance procedures, and review necessary documentation to determine whether:

1. The Standard Operating Procedures, the Maintenance Procedures and all active Operating Bulletins are reviewed, revised systematically and distributed to the relevant personnel. Discuss the process used to review and update rules and procedures.
2. The results of each review of the Standard Operating Procedures, the Maintenance Procedures and Operating Bulletins are documented in a memorandum to file, providing a summary of the results and the appropriate manager's determination whether revisions are needed.

3. All Operating Bulletins were approved by the Operations Superintendent with concurrence of affected departments if applicable.
4. Operating Bulletins were issued to personnel in a timely manner.
5. An employee record of all Operating Bulletins issued, and received
6. Active Operating Bulletins are posted in specified locations, and inactive bulletins are removed in a timely manner.
7. CPUC Staff received all new operating rules and bulletins during the past 12 months, and issuance was tracked.
8. Does LACMTA Corporate Safety Department meet and discuss safety-related impacts to rules changes and bulletins?
9. Does the Safety Department representative receive reports from the LACMTA's operations and maintenance departments regarding the performance of rules checks, assessments, and testing?

RESULTS/COMMENTS

Activities:

Staff interviewed LACMTA representative responsible for operations rules and procedures, maintenance procedures, and reviewed documentation.

1. The Standard Operating Procedures, the Maintenance Procedures and all active Operating Bulletins are reviewed, revised systematically and distributed to the relevant personnel. Policies and procedures are reviewed every 3 years (GEN 5 dated 12/2/15). Staff reviewed SOP 00 that identifies the OPS Superintendent as having final approval for all changes in policies and procedures.
2. Staff reviewed both soft and hard copies of matrix for Rule Book changes, and issuance of Operating Bulletins and determined that the results of each review of the Standard Operating Procedures, the Maintenance Procedures and Operating Bulletins are documented in a memorandum to file, providing a summary of the results and the appropriate manager's determination whether revisions are needed.
3. All Operating Bulletins were approved by the Operations Superintendent with concurrence of affected departments if applicable.
4. Operating Bulletins were issued to personnel in a timely manner. Bulletins are in a file folder that the Train Operators must sign for when having their face-to-face Fitness for Duty inspection with Yard Foreman. The same process is at the ROC for the Rail Controllers.
5. See above #4. Employees are required to sign for bulletins or notices. A sign-in sheet is stapled to the file folder that contains the new information/operating procedure.
6. Active Operating Bulletins are posted in specified locations.

7. CPUC Staff received all new operating rules and bulletins during the past 12 months, and issuance was tracked.
8. Staff interviewed LACMTA Safety Department and determined that the Safety Department is involved with discussions pertaining to safety-related impacts to rules changes and bulletins.
9. Safety Department representatives receive reports from the LACMTA's operations and maintenance departments regarding the performance of rules checks, assessments, and testing.

Findings:

1. Staff found outdated/inactive bulletins still posted at Red Line Yard Tower.
2. The change in procedure (Bulletin and/or Notice) was missing from the sign-for document folder at Expo 2 Santa Monica Yard Control.

Comments:

None.

Recommendations:

1. Bulletin boards should be checked and updated.
2. Sign-for documents need to be in the folder that the T.O. has to sign.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY**

Checklist No.	13-F	Subject	Rules Compliance: Operations Control Center & SCADA
Date of Review	October 10, 2016	Department(s)	Rail Operations, Transit Systems Engineering
Reviewers/ Inspectors	Debra Dziadzio, Daniel Kwok, Howard Huie	Person(s) Contacted	Robert Casanon – Service Operations Superintendent Linda Leone - Director, Rail Transportation Charles Weisman – Sr. Engineer, Transit Systems Engineering Maggie Chen – Software Engineer

REFERENCE CRITERIA

1. General Order 164-D
2. 49 CFR Part 214
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
4. LACMTA SCADA System Engineering Preventative Maintenance Plan, version 5.1A
5. LACMTA SCADA System Engineering Daily Checklist Procedures Manual
6. Metro Red Line SCADA/CTC Replacement Technical Provision – Contract No. OP39603035
7. ROC Controller SOP/CSOP

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Rules Compliance: Operations Central Control & SCADA

Interview LACMTA representatives responsible for operations rules and procedures and review necessary documentation to determine whether:

1. The ROC Manual is reviewed and revised, as necessary, on an as needed basis.
2. Revisions to the ROC Manual are made either through Operating

Bulletins, or other written documents signed by the appropriate Department Managers.

3. Review Unusual Occurrence Logs and verify if properly maintained.
4. Perform review records to determine whether SCADA has been maintained as required, and that all preventative and corrective maintenance practices comply with the applicable reference criteria.
5. Review SCADA reports/logs related to intrusion alarms, false presence, and others associated with SCADA monitoring.

RESULTS/COMMENTS

Activities:

Staff interviewed LACMTA representatives responsible for operations rules and procedures and review necessary documentation to determine whether:

1. The ROC Manual is reviewed and revised, as necessary, on an as needed basis. Staff met with LACMTA Personnel and reviewed LACMTA SOP-00 regarding ROC Manual being reviewed and revised as necessary. Staff learned that revisions to the ROC Manual are made through Operating Bulletins and authorized/signed by LACMTA Service Operations Superintendent, Rail Operations.
2. Revisions to the ROC Manual are made either through Operating Bulletins, or other written documents signed by the appropriate Department Managers. Staff reviewed Metro Rail Controller Standard Operating Procedures, dated 5/31/13. Staff confirmed that an ROC Manual is at each of the Controller's area, reviewed the Checklists of Actions for the Controllers in any given situation, reviewed work authorization request forms, examined Notices Sign-for folders for training, information, rail transportation instructions notices. Staff observed a Controller being advised via radio that a train (car) had a failed UPS and Controller went to where the SOP book was located and found the procedure in CSOP-21. Heard/observed audio communication on the Red Line: M3 – notification for an out of service elevator.
3. Staff review Unusual Occurrence Logs and verify if properly maintained. Staff reviewed the Unusual Occurrence Logs which were properly maintained. Reviewed Rail Ops Bulletins, SOP #21, Little Tokyo Occupancy Signal #2016-15, Safety Awareness Oct 16 – Signal Awareness, Operating Bulletins were in chronological order.
4. Staff randomly selected and reviewed records to determine whether

SCADA has been maintained as required, and that all preventative and corrective maintenance practices comply with the applicable reference criteria.

Staff interviewed LACMTA SCADA Systems Engineering staff and have found the following:

Daily checklists are performed for each item twice a day (AM and PM) and archived weekly, per procedure of SCADA Systems Engineering Daily Checklist Procedures Manual (rev. 1.5), Section 3. Staff noted the signature page does not have signatures of Project Engineer and Supervising Engineer for latest revision of SCADA Systems Engineering and Maintenance procedures manual. Staff randomly checked the following date for review:

ID:	Date:
10796	9/24/2016

5. Metro Supervising Engineer noted to Staff that if any daily check does not pass inspection or if there was a noteworthy occurrence, then a report log is generated and saved on Sharepoint (O&M log). Sharepoint is also used to track any maintenance problems and noteworthy occurrences.

Staff reviewed the following occurrence logs:

6. 10/3/2016: Compressor short cycle was found. No incident number was assigned. M3 is used to track internal repairs but Sharepoint is used to track all SCADA repairs. This record was not referenced to a M3 incident number.
7. 10/8/2016: Track Damper 31 didn't open; was resolved but will be reopened due to inconsistency.
8. Staff inquired regarding the frequency of when SCADA Systems Engineering performs backups of their system. SCADA Systems Engineering states that AirInc has a contract to do the all the system updates and latest builds. SCADA Systems Engineering staff does not perform a system backups, AirInc will build servers as needed for LACMTA.

Staff reviewed Key Performance Index (KPI) reports for monthly inspections from January 2015 – June 2015, which are submitted to LACMTA management, . February 2014 check was wasn't met due to IT7 approval order. Anytime a system does not meet goal of 100% pass, SCADA System Engineering is required to state why goal was not met.

9. Staff reviewed the monthly Preventative Maintenance (PM) hardcopies for the following systems:

- a. AIM-LRSS: OK
- b. TRACS: OK
- c. IDS: Monthly PM hardcopy form was not completed and signed for several months in 2015 and 2016.

Staff randomly selected and reviewed the following IDS records to verify inspection was performed:

IDS #:	Date Performed:
5,224,447	2/11/2015
5,624,474	12/10/2015

It was noted to Staff that the process for using paper to verify PM inspections is being phased out since all checks are also done digitally.

10. Staff reviewed SCADA reports/logs related to intrusion alarms, false presence, and others associated with SCADA monitoring. Staff reviewed Daily Alarm Profile Reports. Each LACMTA manager is distributed a list of categorized alarms relevant to the department for that particular day. From this report, the managers will look into the high occurring incidents to try to resolve them. The Supervising Engineer will look at the anomalies and see if there are any serious incidents that need to be immediately followed up on and resolved. LACMTA has created a team at the executive level to ensure that the alarms are being addressed and trending towards less alarms over time.

Staff reviewed Occurring Alarm Report, a snapshot of alarms that at a given point, for 10/7/2016 at 2:00 p.m. Occurring Alarm Reports usually generated around 3 PM – 4 PM in the afternoon, and sent out shortly after.

Findings:

1. Paper IDS Monthly Preventative Maintenance sheets not fully completed.
2. Signature page for SCADA Systems Engineering and Maintenance manual not signed.

Comments:

1. There is no documentation that requires the frequency of review/revision. In theory, a manual could have a revision/effective date of 5 years prior and small changes in operations or procedures may not be current in the manual. Staff suggests that verbiage be put into the SOP stating frequency of the ROC Manual review (ie. Once/yr, once every two years, etc).

Recommendations:

1. LACMTA Management should assure employees complete the SCADA Monthly Preventative Maintenance sheets per Metro procedure and LACMTA Line Managers should properly complete and fill out the Ride Check Forms with accurate and correct information.
2. LACMTA Management should sign and approve current SCADA Systems Engineering and Maintenance manual.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	14-A/B	Subject	Facilities and Equipment Inspections: Stations and Emergency Equipment
Date of Review	October 11, 2016	Department(s)	Facilities Maintenance
Reviewers/ Inspectors	Adam Freeman, James Matus, John Madriaga	Person(s) Contacted	Chris Limon – Sr. Manager, Facilities Maintenance Eladio Salas - Manager, Wayside Systems Edward Boghossian – Interim Director, Corporate Safety Abraham Miranda – Systems Safety Manager

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
4. National Fire Protection Association (NFPA) 130

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Facilities and Equipment Inspections: Stations and Emergency Equipment

Select Inspection Reports of the following equipment for 7th Street/Metro Center Station, 2 Gold Line Stations, 2 Green Line Stations, 2 East Side Extension Stations, 4 Expo Line Stations, 2 Foothill Extension Stations and 3 Red Line Stations prepared during the past 3 years:

- Station Maintenance
- Fire Extinguishers
- Tunnel Inspections

- Emergency Hatches
- Standpipes and associated pumps
- Fire Sprinkler System
- Undercar Deluge System
- Gas Monitoring
- Emergency Management Panels
- The LRV and heavy rail lifting jacks (jacks that lift the entire car) at the Red, Blue, Expo, Gold, and Green Maintenance Yards have been checked and serviced per OEM recommendations.

And determine if:

1. The items were inspected and tested at the specified frequency as required by the reference criteria.
2. The required inspections and tests were properly documented.
3. Noted defects were corrected in a timely manner and tracked unto completion.

RESULTS/COMMENTS

Activities:

Staff reviewed maintenance inspection records for Seventh Street/Metro Center Station, Gold Line Station, Green Line Station, East Side Extension Station, Expo Line Stations, Foothill Extension Stations & Red Line Stations. The maintenance records reviewed included some of the following facilities & equipment:

- Track/Portable Hoist
- Wheel Truing Machine
- Stations/Tunnel Inspections
- Hatches
- Fire Extinguishers and Sprinkler System
- Deluge System
- Lifting Jacks

Staff reviewed maintenance records which included the following maintenance intervals: daily, weekly, monthly, quarterly, annually and 5 year PM inspections, all defects found are being repaired and documented through work orders and followed up by Supervisors.

Staff interviewed LACMTA Facilities & Maintenance Supervisors and Managers to ensure employees are receiving adequate training and updated on all new maintenance

procedures and policies pertaining to their duties.

Based on the records and documentation reviewed and interviews conducted by Staff, LACMTA is properly maintaining Facilities & Equipment. All equipment and facilities are being serviced and maintained at required intervals.

Findings:

1. Several maintenance inspection records that were reviewed did not include supervisor's signature showing that the work has been completed and approved.

Recommendations:

1. LACMTA maintenance and facilities supervisors should sign all maintenance records they review to show the maintenance is being properly managed, completed, and approved.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	14-C	Subject	Facilities and Equipment Inspections: Tunnels, Bridges, and Aerial Structures
Date of Review	October 11, 2016	Department(s)	State of Good Repair
Reviewers/ Inspectors	John Madriaga, Howard Huie	Person(s) Contacted	Denise Longley – Deputy Executive Director, Enterprise Transit Asset Management Stephen Toms – Project Manager, Transit Asset Management Craig Remley – Senior Engineer Edward Boghossian – Interim Director, Corporate Safety

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Facilities and Equipment Inspections: Tunnels, Bridges, and Aerial Structures

Interview LACMTA representatives and review appropriate records to determine whether:

1. Structures inspections were performed.
2. Inspections were properly documented and noted, and discrepancies were corrected in a timely manner.
3. Potential hazards found during inspections were tracked until resolution.
4. The Safety Committee and Safety Department are aware of all safety hazards identified from Facilities and Equipment Inspection.

RESULTS/COMMENTS

Activities:

1. LACMTA's Asset Management has a matrix of "Structure Assets", which includes bridges, tunnels, cut and cover, aerial guideways, cross passages, pump rooms, station platforms, subway stations, and elevated structures. The matrix also includes the location, category, sub-category, element, sub-element, service and segment, life cycle start date, last assessment date, report number, facility over/under, and type of facility. The life cycle start date shows the date the asset went into revenue service/ ROD. The last assessment date shows the date which the inspection was assess. The report number associates the report number associated with the assessment. Currently Metro does not have a set schedule/inspection cycle to when each structure is to be inspected but is anticipating that one will be developed within the next two years.
2. LACMTA provided Staff with the following reports to review:

Gold Line – Union Station/Chinatown Flyover (Report No. GD-001), Inspection Date: August 24, 2015 – Report Date: July 31, 2016 - PE stamped and signed (Civil PE No. C032639). Table of Contents: Location Plan, Structure Description, Inspection Summary and Conclusion, Recommendations, Field Inspection Report, Inspection Photos, Appendix A (NBIS Rating System, Highway and Tail Transit Tunnel Inspection Manual (2005) General Condition Codes, Corrective Action Plan), Attachments (last inspection reports – not available at time of review).

Red Line – North Hollywood Station (Report No. R-039), Inspection Date: July 22 & 23, 2014 and Nov 17 & 18, 2015 – Report Date: September 7, 2016 – PE stamped and signed (Structural PE No. S 2516). Table of Contents: Location Plan, Structure Description, Inspection Summary and Conclusions, Recommendations, Field Report, Inspection Photos, Appendix A (Defect and Photo Locations), Appendix B (Rating Standards and Corrective Action Plan).
3. Neither the Red Line nor Gold Line reports show any critical codes, which show severe defects that needed immediate repairs. The Gold Line report only showed superficial defects which needed to be addressed or monitored during routine maintenance. The Red Line report showed 7 priority defects, which required cleaning efflorescence and staining, stop leak, patch and repair. Repairs to the defects are tracked to completion in the Facilities Maintenance Trouble Call Center and Metro's M3 database.
4. The Safety Department is in constant direct contact with the State of Good Repairs. The Chief Risk, Safety & Assets Manager holds weekly staff meetings,

which includes the Risk Group, Corporate Safety, Construction Safety, and State of Good Repair & Assets to discuss current and future priorities. Corporate Safety is represented by the Executive Office of Corporate Safety and the Director of Corporate Safety. Weekly safety meetings are held every Thursday afternoon at 2:30 – 3:30 p.m.

Findings:

None.

Comments:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	14-D	Subject	Facilities and Equipment Inspections: G.O. 95 Right-of-Way Compliance
Date of Review	September 23, 2016, October 14, 2016, October 21, 2016, October 25, 2016	Department(s)	Wayside
Reviewers/ Inspectors	Bill Lay, Howard Huie	Person(s) Contacted	Robert Takushi – System Safety Specialist Winston Dixon – Manager, Wayside Systems

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
4. LACMTA Quarterly Substation Inspection, Quarterly Substation Inspection Procedure

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Facilities and Equipment Inspections: G.O. 95 Right-of-Way Compliance

Review a randomly selected sample of completed traction power inspection, maintenance, and test records, since January 2013 for the following:

- Overhead Catenary System (OCS) – Blue, Green, Expo and Gold Lines
- Uninterruptible Power Supply (UPS) – All Lines
- Emergency vent fans – Blue, Gold, Expo and Red Lines
- Emergency trip station (ETS) – All Lines
- Electric power substations – All Lines

And determine if:

1. Inspections were performed according to specified frequency as required by the reference criteria
2. The required inspections were properly documented
3. All noted defects were corrected in a timely manner

RESULTS/COMMENTS

Activities:

Staff reviewed the following LACMTA traction power facilities and equipment in accordance to Wayside Systems maintenance plan:

1. Overhead Catenary System (OCS) – Blue, Green, Expo and Gold Lines

Per Los Angeles County Metropolitan Transportation Authority Traction and Power Maintenance Plan, OCS are inspected once annually on Mainline and Yard locations and “As Needed” for the Pantographs.

Blue Line:

Work Order #	Date of Inspections	Location	Findings	Comments
4210749	03/02/14-03/18/14	Willow Pocket to Main Yard	No Findings	None
4412810	02/02/15	Maple to Venice	No Findings	None
4923302	02/15/16	Washington Station to 7 th /Metro	Chipped Insulator	Repaired on spot

Green Line:

	Work Order #	Date of Inspections	Location	Findings	Comments	
	4249694 & 4249695	09/21/14-09/25/14	Paramount to Lynwood	-Twisted messenger wire (Pole 5466) -Broken messenger wire saddle and missing down guy wire cover (Pole 5462) -Missing down guy wire cover (Pole 5445) -Missing down guy wire cover (Pole 5439) -Nobo insulator change and 50 feet of contact wire to be replaced (Pole 5423) -Lightning arrester wire disconnected (both tracks – Pole 5515)	Repaired during inspection	

4749200 & 474201	04/03/15	Paramount to Long Beach Blvd	No findings	None
5352394 & 5352395	07/03/16- 07/07/16	Lynwood Interlock to Wilmington Interlock	-Strut insulators in work zone need to be replaced -Messenger wire insulator and Contact wire insulators/cl amps need to be replaced	Assumed replaced during inspection

Expo Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4502889	06/11/14	22 nd to 30 th Street	No Findings	None
4502895	04/21/15	Catalina to Degnan	No Findings	None
5226492	01/14/16	La Cienaga Interlocking	-Wear and Tear on Equipment	None

Gold Line:

Work Order #	Date of Inspection	Location	Findings	Comments
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4331509	05/08/14	Union Station North to Union Station South	No Findings	None
5349302	05/11/15	Indiana to Del Mar	No Findings	None
5928431	08/16/16	Union Station North to Baker	-Damaged Strut Insulator -Contact Wire Insulation chipped or broken	Resolved on the spot during inspection

2. Uninterruptible Power Supply (UPS) – All Lines

Per Los Angeles County Metropolitan Transportation Authority Traction and Power Maintenance Plan, UPS for Passenger Station Lighting are inspected “annually”, Tunnel Lighting are inspected “As Needed”, and Passenger Station UPS are inspected every six months

Red Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4739416	08/09/14	Civic Center UPS 1S	No findings	None
5103533	04/13/15	Hollywood / Highland 1E	Missing record	Could not locate records
5311363	06/14/15	Hollywood / Highland 1E	No findings	None

5554196	07/03/16	Hollywood / Vine	Missing record	Could not locate records
5554200	03/26/16	Hollywood / Vine	No findings	None

Expo Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4847321	08/16/14	23 rd UPS	No findings	None
5295401	10/17/15	Crenshaw	No findings	None
5709815	07/16/16	Jefferson	No Findings	None

Blue Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4588576	03/03/14	103 rd	Missing records	Could not locate records
4331488	01/08/14	103 rd	Missing records	Could not locate records
4751334	07/01/14	103 rd	Missing records	Could not locate records
4876856	08/04/14	5 th S	No findings	None
4977357	04/07/15	5 th S	Missing records	Could not locate records
5009335	12/15/15	Grand S	Missing records	Could not locate

				records
5150272	05/15/15	Imperial	No findings	None
5601579	06/08/16	Florence N	Missing records	Could not locate records
5856891	07/04/16	Florence N	-repairs needed -battery bad -checklist not filled out completely	-Will be replaced by March 2017.

Green Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4660590	05/14/14	Crenshaw UPS W	Missing records	Could not locate records
4853313	09/09/14	Crenshaw UPS W	-checklist not filled out completely	-will reinforce with staff
5440256	10/10/15	El Segundo UPS W	No findings	None
5526839	06/02/16	Hawthorne UPS E	-checklist not filled out completely	-will reinforce with staff

Gold Line:

Work Order	Date of	Location	Findings	Comments
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#	Inspection			
4493414	06/22/14	Chinatown UPS	Missing records	Could not locate records
4995013	11/20/14	Del Mar UPS	Missing records	Could not locate records
4588641	06/19/14	Del Mar UPS	-checklist not filled out completely	-will reinforce with staff
4668583	06/26/14	East Portal UPS	-checklist not filled out completely	-will reinforce with staff
5028100	02/07/15	Mariachi Plaza	-checklist not filled out completely	-will reinforce with staff
5768907	09/09/16	Soto UPS 1E	Missing records	Could not locate records
5657861	03/31/16	Soto UPS 1E	No findings	None

3. Emergency Vent Fans

Per Los Angeles County Metropolitan Transportation Authority Traction and Power Maintenance Plan, and Tunnel Ventilation are inspected every six months.

Red Line:

Work Order #	Date of Inspection	Location	Findings	Comments
7832927	11/01/14	7 th / Metro	No findings	None

5373801	12/10/15	Universal City	No findings	None
5579870	05/01/16	Hollywood / Highland	No findings	None

Gold Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4907033	08/22/14-09/10/14	Colorado Box	No findings	None
5328538	08/19/15-08/20/15	Colorado Box	No findings	None
Missing on checklist	06/23/16	Colorado Box	No findings	None

Expo Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4721802	07/10/14-07/11-14	Jefferson Box	No Findings	None
4939876	03/19/15-03/21/15	Jefferson Box	No Findings	None
Missing on checklist	06/16/16	Jefferson Box	No findings	None

4. Emergency Trip Station (ETS)

Per Los Angeles County Metropolitan Transportation Authority Traction and Power Maintenance Plan, Emergency Trip Station (ETS) are inspected annually.

Blue Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4331511	05/01/13-05/01/14	Whole Line	No Findings	None
4375287	09/27/15	Whole Line	No Findings	None
5336675	2016	Whole Line	Ongoing	None

Gold Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4210746	10/4/14	Whole Line	No Findings	None
4709483	04/02/15	Whole Line	No Findings	None
5371670	2016	Whole Line	Ongoing	None

Red Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4626463	03/08/15 (2014 yr)	Whole Line	No Findings	None
5346921	2015	Whole Line	Ongoing	None
5617794	2016	Whole Line	Not Started Yet	None

Green Line:

Work Order #	Date of Inspection	Location	Findings	Comments
5257530	Capital project to replace all ETS system on whole line. Currently underway and in progress.			

Expo Line:

Work Order #	Date of Inspection	Location	Findings	Comments
4504622, 4504811, 4504833, 4504837	2014	Whole Line	No Findings	None
4923911,492 3908, 4923909, 4923910, 4923911, 5047731	2015	Whole Line	No Findings	None
5814041	2016	Whole Line	In progress	None

5. Electric Power Substations

Per Los Angeles County Metropolitan Transportation Authority Traction and Power Maintenance Plan, Electric power substations are inspected every six months for batteries and chargers and 24 months for everything else.

Red Line:

Work Order #	Date of Inspection	Location	Findings	Comments
3732673	01/28/15	Civic Center – High Voltage Withdrawable AC breakers and Controls	No findings	None

3732679	01/21/15	Civic Center – Rectifier Transformer	No Findings	None
3732671 & 3732672 & 3732673	01/29/15	Civic Center – High Voltage AC Load Break Switches and Controls	No Findings	None

Blue Line:

Work Order #	Date of Inspection	Location	Findings	Comments
5055458	12/23/14	Artesia – Breaker and Front of Cubicles	No Findings	None
3599847	03/19/14	Artesia – Auxiliary Transformer	No findings	None
5055464	12/03/14	Artesia – Potential Transformer	No Findings	None

Green Line:

Work Order #	Date of Inspection	Location	Findings	Comments
5169256	08/01/15	Norwalk – Substation Batteries and Chargers	No Findings on existing records, but missing next 6 months	Could not locate next 6 months maintenance records

			period record	
5484968	06/01/16	Norwalk – Substation Batteries and Chargers	No Findings	None
3919309	07/01/14	Norwalk – Auxiliary Transformer	No Findings	None
3919344	07/01/14	Norwalk – Rectifier Transformer	No Findings	None

Gold Line:

Work Order #	Date of Inspection	Location	Findings	Comments
3878384	06/14/14	Monterey – High Voltage	No Findings	None
3878394	06/15/14	Monterey – Rectifier Transformer	No Findings	None
3878370	06/15/14	Monterey – Auxiliary Transformer	No Findings	None

Expo Line:

Work Order #	Date of Inspection	Location	Findings	Comments
5168471	05/01/16	37 th – Auxiliary	No Findings	None

		Transformer		
5168471	05/01/16	37 th – Rectifier Transformer	No Findings	None
5168471	05/01/16	37 th – Rectifier	No Findings	None

Findings:

Staff reviewed Maintenance, Test, and Inspection records for years 2014 to 2016 for G.O 95 Right of Way Compliance. Staff reviewed maintenance records for five traction power related items on Los Angeles County Metropolitan Transportation Authority (LACMTA) Fixed Guideway System according to LACMTA's "Traction Power Maintenance Plan" for the following:

- Overhead Catenary System (OCS);
- Uninterruptible Power Supply (UPS);
- Emergency Ventilation Fans;
- Emergency Trip Stations; and
- Electric Power Substations.

Staff's found the following during the review of maintenance records:

- Numerous hard copies of maintenance records were missing but were shown as closed in LACMTA's M3 database. As shown above in the tables, missing records were noted;
- Numerous maintenance records were not filled out completely but was shown as closed on LACMTA M3 database;
- Maintenance plan needs to be updated according to the equipment used for each rail line. For example, when Staff was reviewing records for "DC Breakers and Controls" for the Green Line, Staff was informed that the maintenance item does not pertain to the Green Line and Maintenance Plan needs to be updated to reflect current conditions, therefore staff reviewed a different item on the Green Line;
- There were several versions of the checklist found for the same maintenance item. During Staff's review of the maintenance records, Staff found Metro Wayside personnel using different versions of the checklist for the same task.

Comments:

1. LACMTA Wayside personnel should keep maintenance records centralized for easier access. Staff found a number of missing maintenance records during review. Staff found it was difficult and extremely time consuming conducting audit of hard copy maintenance records.
2. LACMTA should consistently use the same checklist for the same work task. Staff found several different versions of the same checklist used during the same year used by different groups for the same work task.

Recommendations:

1. LACMTA should update all maintenance plans to reflect the current conditions and needs of each rail line.
2. LACMTA should keep hard copies of all maintenance records for required amount of time set by Metro policy.
3. LACMTA personnel should completely fill out each checklist before closing out the work order.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	14-E	Subject	Facilities and Equipment Inspections: Signal Communication, Train Control, Grade Crossing
Date of Review	October 13, 2016	Department(s)	Signal Department
Reviewers/ Inspectors	Shane Roberson	Person(s) Contacted	Ricardo Moran – Director, Wayside Systems

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. General Order 75-D
4. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
5. Code of Federal Regulations CFR 49, Part 234, Grade Crossing Signal System Safety
6. Manual Uniform Traffic Control Devices (MUTCD), Signage Requirements

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Facilities and Equipment Inspections: Signal Communication, Grade Crossing
Interview LACMTA's representative responsible for Wayside Maintenance, and randomly select Preventative Maintenance (PM) records from the past 3 years and determine whether:

1. LACMTA's Track & Turnout and Grade Crossing Maintenance:
 - a. Perform detailed inspections of the mainline switches and at-least six (6) grade crossings (two grade crossings per operating line) components to determine whether or not they are in compliance with the applicable reference criteria.
 - b. All required PM activities were properly documented and corrected in a timely manner.
 - c. Defects and non-compliances noted on inspection report forms were

tracked from recommendation, Corrective Action Plan, and implementation.

2. Vital Relays Preventative Maintenance:

- a. Review the records of preventive maintenance, scheduled and unscheduled maintenance activities for vital relays to determine if inspections were performed at the required frequencies as specified in the reference criteria.
- b. All required PM activities were properly documented and corrected in a timely manner.

RESULTS/COMMENTS

Activities:

- i. Staff performed a detailed inspection of 30 day PM records for:
 1. Figueroa
 2. 61st.
 3. 60th
 4. Vernon
 5. 55th
 6. 45th
- ii. Staff performed a detailed inspection of relay records for:
 1. Red line
 2. Blue line
 3. Green line
 4. Gold line

Note: Staff records inspections include interlocks, at grade crossings, and train control.

Findings:

2. Staff found test dates (randomly missed) and out of compliance with 30 day testing intervals throughout all lines and locations as required by CRF 234. Staff noted no defects or repairs made by Metro staff during 30 day PM inspection within the last 3 years of inspection of any crossings. Staff interviewed Metro personnel with regards to making notes regarding field corrections within the paperwork of each PM and found that it is common practice to make repairs without noting them in the PM records.

3. Staff found test dates out of compliance with 4 year testing intervals at Vernon 41XRC.

No other exceptions were noted.

Comments:

None.

Recommendations:

1. LACMTA should fill out the PM inspection sheets to reflect the work/corrections made.
2. LACMTA should consistently comply with testing intervals per CFR 234 and 236.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	14-F	Subject	Facilities and Equipment Inspections: Measurement and Testing Instrumentation
Date of Review	October 12 th & 13 th 2016	Department(s)	Rail Fleet Services
Reviewers/ Inspectors	James Matus	Person(s) Contacted	Abraham Miranda – System Safety Manager Michael Ornelas – Sr. Director Rail Vehicle Maintenance

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
4. NTSB Safety Advisory R13-1 and R13-2, Use of Jumpers

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Facilities and Equipment Inspections: Measurement and Testing Instrumentation

Interview responsible LACMTA representatives from each department, review appropriate records, and inspect no fewer than eight measuring or testing instruments to determine whether:

1. The selected gauges, micrometers, calipers, torque wrenches, multi-meters, etc. are properly inventoried, stored, distributed for use, calibrated at prescribed intervals, and marked, tagged, or otherwise identified to show current calibration status.
2. The next scheduled testing/calibration due date is shown on each instrument.
3. Tools and instruments requiring calibration are addressed in an appropriate procedure(s).

RESULTS/COMMENTS

Activities:

Staff randomly selected tools requiring calibration from maintenance departments. Tools selected included calipers, torque wrenches, wheel gauges, pressure gauges, micrometers and fluke meters. Staff inspected all tools for proper tool identification and calibration status with last calibration dates and upcoming calibration due dates. Staff inspected tools for proper legible tags. Staff identified company contracted with LACMTA for tool calibration. Staff verified certifications for tools provided by contractor. Staff verified LACMTA's ability to randomly select tools from master list and provide tool location and certification for calibrations. Staff also verified master tool list that documented tools in-service and tools out-of-service.

Staff found all tools in lock up areas and tool room areas to be within calibration dates. All tools inspected had correct tool identification tags, tool calibration dates, and the next calibration due dates. All tools randomly selected were found on the tool master list. All tools randomly selected were verified with calibration certifications from the contracted company Micro Quality. LACMTA is keeping up to date records on calibration and instrumentation testing with its tools. Staff also verified out-of-service tool list that documented tools that can no longer be used.

Findings:

None.

Comments:

LACMTA should keep the ongoing documentation as it is currently doing with tool calibration and instrument testing at all yards.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY**

Checklist No.	15-A	Subject	Maintenance Audits and Inspections – Blue, Gold Green and Red Line Rail Vehicle Inspections and Hy-Rail Equipment Inspections - CPUC Equipment Inspector
Date of Review	October 12 th , 13 th , 19 th , & 20 th 2016	Department(s)	Wayside Systems
Reviewers/ Inspectors	James Matus, John Madriaga	Person(s) Contacted	Abraham Miranda – System Safety Manager Michael Ornelas – Sr. Director Rail Vehicle Maintenance

REFERENCE CRITERIA

1. General Order 143-B
2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
3. LACMTA Breda A650 Base and Option Car Preventative Maintenance Inspections
4. LACMTA Siemens P2000 Preventative Maintenance Inspections, Revision 5, dated March 2011
5. LACMTA Nippon Sharyo P865 and P2020 Preventative Maintenance Inspections, Revision 6, dated October 22, 2012
6. LACMTA AnsaldoBreda P2550 Preventative Maintenance Inspections, Revision 1, dated February 2011
7. LACMTA KinkiSharyo P3010 Running Maintenance & Service Manual, Final Draft, dated October 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Maintenance Audits and Inspections – Blue, Gold Green and Red Line Rail Vehicle Inspections and Hy-Rail Equipment Inspections - CPUC Equipment

Inspector

1. Randomly select at least 3 – P3010 LRVs, 3 - P865 LRVs, 3 - P2000 LRVs (From Blue and/or Expo), 3 - P2550 LRVs, 3 – Breda A650 Heavy Rail and 3 – P2000 LRVs (From Green) in the maintenance shop and perform detailed inspections to determine if LACMTA properly and adequately maintains the vehicles.
 - a. The vehicles were inspected during the preventative maintenance per applicable reference criteria;
 - b. The records were properly documented and any defects found were corrected in a timely manner.
2. Randomly select three Hy-Rail maintenance vehicles in the non-revenue equipment maintenance shop to perform detailed inspections and review the completed preventative maintenance records for each car selected and to determine i:
 - a. The vehicles were inspected during the preventative maintenance per applicable reference criteria;
 - b. The records were properly documented and any defects found were corrected in a timely manner.

RESULTS/COMMENTSActivities:

Staff visited LACMTA's maintenance yards to inspect their procedures from a 3 year period to adequately maintain light rail vehicles, heavy rail vehicles, and Hy-Rail vehicles properly and at the correct intervals. Staff randomly selected rail vehicles from the Red line maintenance, Green line maintenance, Blue line maintenance, and Gold line maintenance. Staff also inspected maintenance procedures for Hy-Rail vehicles at the Vernon, Wayside, Blue, and Monrovia yards.

Preventative maintenance programs are ongoing, continuous, and correctly documented at LACMTA maintenance yard facilities. Preventative maintenance programs are prescribed at manufactures recommendations on kilometer intervals. Staff verified that employee's identification was able to be tracked to which employee was performing all maintenance duties. Employees performing duties consistently signed inspection sheets with either initial or employee number. Inspection documentation process allows for employees to document any defects they find in their inspections of rail vehicles. Once defects are found it is documented by employee performing the inspection with a work order to the specific defect. Once a work order is applied, employees fix and repair defects and then close out work order that was

applied which is consistent at all yards. Work orders applied to defects have been closed out which is a consistent way to track defects. Staff randomly selected work orders applied to inspections for verification of closure. Preventative maintenance programs follow a similar pattern of 7.5K, 22.5K, 45K, and 90K which does vary at different yards. Preventative maintenance documents each individual P.M. with a work order, equipment code, status of P.M., what kilometer P.M. is being done, and completion date. Hard copies of P.M. records are either scanned or imputed in the computer for tracking and organization purposes. Maintenance supervisors are signing off inspections and inspections are being complete in a timely manner.

Staff visually inspected rail vehicles to verify that they are being properly maintained. Vehicles are consistently being maintained. Upon inspection at Blue line maintenance staff identified brake rotors and fire extinguishers that were in need to be changed. Blue line maintenance agreed and applied work orders to these specific defects to repair. All inspections are done under blue flag and lock out protection.

Findings:

Hy-Rail vehicles were inspected for the proper maintenance including 90 day B.I.T program, 90 day Hy-Rail inspection, and daily inspections. Staff found maintenance defects on a few Hy-Rail vehicles that should have been identified and corrected before vehicles were used. Staff located 90 day B.I.T. documentation for vehicles and also 90 day Hy-Rail inspections. Staff acknowledged to LACMTA that not all 90 day Hy-Rail inspections were present and should be in one file or location for easy verification and review. Staff verified that 90 day Hy-rail inspections were done. Staff reviewed daily inspections of Hy-Rail vehicles and found that they needed to be filled out correctly and completely with supervisors signing off with dates.

Comments:

None.

Recommendation:

1. LACMTA should completely and correctly fill out daily inspections for all Hy-Rail vehicles in service, document any defects found on inspections and not operate vehicles until these defects are corrected, have all required inspection documents, such as daily inspections, properly filled out with dates, employee signatures, items checked for safety, and supervisor's signature to verify inspections are being done.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY**

Checklist No.	15-B	Subject	Maintenance Audits and Inspections: Overhead Catenary Inspection – CPUC GO 95
Date of Review	September 23, 2016	Department(s)	Wayside Systems
Reviewers/ Inspectors	Bill Lay, Richard Kyo, Howard Huie	Person(s) Contacted	Robert John Takushi – System Safety Specialist

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. General Order 95
4. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Maintenance Audits and Inspections: Overhead Catenary Inspection – CPUC GO 95

Randomly select at least four areas, minimum 2 crossings and 2 areas on ROW, of each overhead catenary system from each of the following lines:

1. Blue Line
2. Expo Line
3. Green Line
4. Gold Line

Visually inspect each area to see if:

1. OCS line meets GO 95 compliance
2. Metal fences on ROW are grounded

RESULTS/COMMENTS

Activities:

Staff inspected the following locations on September 23, 2016:

Blue Line: Staff checked the vertical and horizontal clearance of the Overhead Catenary System (OCS), insulators and grounding wire of the metal fences on the Right of Way (ROW) at the following three locations listed below and did not find any exceptions of noncompliance in regards to General Order (GO) 95.

- 200 feet North of 24th Street on ROW;
- 500 feet South of 92nd on ROW; and
- Wilmington crossing.

Staff also inspected the Vernon Crossing on LACMTA Blue Line for OCS, insulators and grounding wire for the metal fences. In respect to the OCS clearances and insulators conditions, staff did not find any exceptions to noncompliance to GO 95. As for the grounding wire for the metal fences, staff was able to locate the grounding wire for two of the four metal fences at the location. Since this crossing was near a station, staff was able to locate the grounding wire on the two outer most metal fences but was unable to locate the two metal fences around the pathway leading to the station platform. Staff addressed this finding with LACMTA staff and was informed the grounding wire would have been designed to be grounded with the station platform.

Green Line: Staff checked the vertical and horizontal clearance of the Overhead Catenary System (OCS), insulators and grounding wire of the fence lines at the following four locations listed below and did not find any exceptions of noncompliance in regards to General Order (GO) 95.

- Wilmington Station (east side of the platform);
- Wilmington Station (west side of platform);
- Norwalk Station (east side of the platform); and
- Norwalk Station (west side of the platform).

Expo Line: Staff checked the vertical and horizontal clearance of the Overhead Catenary System (OCS), insulators and grounding wire of the fence lines at the following four locations listed below and did not find any exceptions of noncompliance in regards to General Order (GO) 95.

- Trousdale Parkway crossing;
- Expo/USC station on ROW;
- Watt Way crossing; and
- 50 feet north of Watt Way crossing on ROW.

Gold Line: Staff checked the vertical and horizontal clearance of the Overhead Catenary System (OCS), insulators and grounding wire of the fence lines at the following four locations listed below and did not find any exceptions of noncompliance in regards to General Order (GO) 95.

- 3rd Street/ Indiana crossing;
- Indiana Station (North side of platform on ROW);
- Utah St crossing; and
- Pico / Aliso Station (North side of the platform).

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	15-C	Subject	Maintenance Audits and Inspections –Grade Crossing Safety Inspection-CPUC Signal Inspector
Date of Review	September 8, 14, 15, & October 13, 2016	Departments	Wayside, Track & Signal Department
Reviewers/ Inspectors	Shane Roberson, John Madriaga, Howard Huie	Persons Contacted	Metro Personnel – See below

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 75-D, Equipment and Signage Requirements
3. Code of Federal Regulations CFR 49, Part 234, 236 Grade Crossing Signal System Safety
4. Manual Uniform Traffic Control Devices (MUTCD), Signage Requirements
5. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Maintenance Audits and Inspections - Signal and Grade Crossing Safety Inspection-CPUC Signal Inspector

1. Signal System Inspection
 - a. Randomly select at least one section for each line and perform detailed inspections of the signal system and components to determine whether or not they it was inspected at the required frequency interval.
 - b. Defects noted were corrected in a timely manner.
2. Grade Crossing Maintenance
 - a. Randomly select at least six grade crossings of the mainline and perform detailed inspections of the grade crossing equipment to determine whether or

<p>not they were inspected at the required frequency interval.</p> <p>b. Defects noted were corrected in a timely manner.</p>
RESULTS/COMMENTS
<p><u>Activities:</u></p> <p>1. Signal Inspection:</p> <p>a. Staff performed a 30 day PM on switch #5 on AL Red Line and Switch #7B on central track Red Line.</p> <p>b. Staff performed a visual inspection of Switch's 1A, 1B, 3A on AL Red Line.</p> <p>CPUC and Metro Staff present for redline inspection</p> <ul style="list-style-type: none"> • BJ Takushi - Corporate Safety • Lawrence Lee - Signal Inspector • Brian J. Bergquist - Signal Inspector • Juan Nopegu - Signal Inspector • Shane Roberson- CPUC Signal and Train Control Inspector <p>c. Staff performed a 30 day PM inspection of Switches #7, #5, #3B, #3A, #1A, #1B on the Green Line.</p> <p>d. Staff performed a 30 day PM inspection of Switches #12A, #12B, #21A, #21B on the Blue Line.</p> <p>CPUC staff and Metro present for inspection at Green Line and Blue Line.</p> <ul style="list-style-type: none"> • BJ Takushi – Corporate Safety • Kieth Kenderson – Signal Inspector • Felix Mindoca – Signal Inspector • Cliff Nieves – Signal Inspector • Ricardo Moran – Director Wayside Systems Signal • Howard Huie – CPUC Utilities Engineer • Shane Roberson – CPUC Signal and Train Control Inspector • John Madriaga – CPUC Track Inspector <p>e. Staff performed a detailed inspection of Switches 3A, 3B on the Gold Line.</p> <p>2. Grade Crossing Maintenance:</p>

- a. Staff performed a 30 day PM inspection of Figueroa crossing CPUC #84P-8.22 on Gold Line.
- b. Staff performed a 30 day PM inspection of 61st crossing CPUC #84P-5.19 on Gold Line.
- c. Staff performed a 30 day PM inspection of 60th crossing CPUC #84P-5.08 on Gold Line.
- d. Staff performed a 30 day PM inspection of 45th crossing CPUC #084P-03.50 Gold Line
- e. Staff performed a 30 day PM inspection of Vernon crossing CPUC #84L-4.20 Blue Line
- f. Staff performed a 30 day PM inspection of 55th crossing CPUC #84L-5.00 Blue Line

CPUC staff and Metro present for inspection of Gold and Blue Line.

- BJ Takushi – Corporate Safety
- Keith Kenderson – Signal Inspector
- Patrick Taylor – Signal Inspector
- Ricardo Moran – Director Wayside Systems Signal
- Abdul Zohbi – Corporate Safety
- Howard Huie – CPUC Utilities Engineer
- Shane Roberson – CPUC Signal and Train Control Inspector

Findings:

1. Signal Inspection
 - a. Switch 7B out of adjustment. Metro personnel made necessary adjustment/tested during inspection. Tests results were found to be acceptable.
 - b. None.
 - c. Staff noted a bonding wire missing from both points at Switch 1A. Metro personnel installed new bonds that night.
 - d. Metro personnel adjusted switch #12B and #21A during inspection. Tested results were found to be acceptable. Staff noted missing labels in switches #21A, #21B and junction boxes.
 - e. Switches #3A, and #3B Gold Line
 - i. Staff noted Bonding wires on #3A and #3B at the heal blocks are

badly frayed and need to be repaired per CFR 234.233 and CPUC G.O. 143 Section 10.09.

- ii. Staff noted Metro management using cell phone the right of way to take pictures, which is prohibited per CPUC G.O. 172.

2. Grade Crossing Maintenance

1. Figueroa Street

- a. Staff noted graffiti in two track sign facing east bound traffic. Graffiti to be removed per CFR 234.245.
- b. Staff noted low voltage at eastbound traffic cantilever lighting. Voltage was not in limits of CFR 234.221. Metro personnel adjusted the voltage on site and the test results were in acceptable limits.
- c. Staff noted inconsistency in gate striping. Striping should be consistent for all gates per MUTCD 8C.04 and MUTCD 1A.06.

2. 61st Street

- a. Staff noted improper striping on North bound west side PED Gate per MUTCD 8C.04.
- b. Staff noted improperly secured mast junction cover on North bound west side PED gate per CFR 234.211.
- c. Staff noted north bound east side PED gate not horizontal per MUTCD 8C.04.
- d. Staff noted North West gate low voltage at lights. Metro personnel adjusted voltage on site during the inspection. Test results were within acceptable limits per CFR 234.221.

3. 60th Street, no exceptions noted.

4. 45th Street

- a. North West gate light out. Metro crew replaced during the inspection.
- b. West gate had low voltage. Metro crew adjusted during the inspection.
- c. Gate junction base has exposed loose spare wires with eyelets. Metro crew landed side wires during the inspection.

5. Vernon Street

- a. South gate junction cover missing securement bolt. Bolt to be replaced per FRA 234.211
- b. South gate 4 track signage damaged. Sign to be replaced or fixed per FRA 234.245

6. 55th Street

- a. Staff noted conduit in signal case not sealed where wires enter into the case.
7. Staff noted Metro has not installed emergency notification signage on Gold Line. Metro stated that signage has been ordered. Notification sign to be replaced per MUTCD 8B.18.

Comments:

1. LACMTA should remove graffiti on signs per CFR 234.245

Recommendation:

1. LACMTA should tag all circuits per CFR 234.239
2. LACMTA should replace cut or frayed bonding wires per CFR 234.233 and G.O. 143-B Section 10.09
3. LACMTA should comply with MUTCD 8C.04 for gate striping.
4. LACMTA should secure covers on apparatus per CFR 234.11.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	15-D	Subject	Maintenance Audits and Inspections: Track, Switch, and Turnout Inspection - CPUC Track Inspector
Date of Review	September 8, 14, 15, & October 13, 2016	Department(s)	Wayside, Track & Signal Department
Reviewers/ Inspectors	John Madriaga, Shane Roberson, Howard Huie	Person(s) Contacted	See Checklist 15-C

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. Code of Federal Regulations CFR 49, Part 213, Track Safety Standards
4. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
5. LACMTA Rail Wayside Systems – Track Preventative Maintenance Plan, Rev 7, dated December 1, 2014

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Maintenance Audits and Inspections: Track, Switch, and Turnout Inspection - CPUC Track Inspector

1. Randomly select at least three sections of the mainline track, three switches, two crossovers, and one turnout on the mainline.
2. Perform visual and dimensional inspection/measurements to determine whether or not:
 - a. LACMTA inspections were performed at the required frequencies during the past 12-month cycles.
 - b. all track components are in compliance with the applicable reference criteria
 - c. Defects found were properly documented and corrective in a timely manner

RESULTS/COMMENTS
<p><u>Activities:</u></p> <p>9/8/16 Staff inspected the following Red Line Switches and Interlocks:</p> <p><u>North Hollywood Trail Track</u></p> <ul style="list-style-type: none">• Switch # 5 Shoulder bolts need to be tightened• Switch # 7B Center Track Shoulder bolts need to be tightened <p><u>North Hollywood East Diamond</u></p> <p>No findings</p> <p><u>North Hollywood East</u></p> <ul style="list-style-type: none">• Switch 1A No findings• Switch 3A Shoulder bolts need to be tightened• AL Tangent Track from North Hollywood Station to Universal City Station No findings <p><u>Universal City</u></p> <ul style="list-style-type: none">• Switch 1A No findings• Universal Diamond No findings• Switch 1B Hose rubbing near crosswalk for Emergency Walkway• Switch 3A No findings

9/14/16 Staff inspected the following Green Line Switches and Interlocks:

Norwalk/Artesia Station Tail Track

- Switch 7B
Shoulder bolts need to be tightened
- Norwalk West Diamond Interlock
No findings
- Switch 5B
Shoulder bolts need to be tightened
- Switch 7A
Shoulder bolts need to be tightened
- Switch 5A
Shoulder bolts need to be tightened

Norwalk Station West

- Switch 3B
No findings
- Frog Norwalk West Switch 3B
No findings
- Switch 3A
No findings
- Frog Norwalk West Switch 3A
No findings
- Switch 1A
No findings
- Frog Norwalk West Switch 1A
No findings
- Frog Norwalk West Switch 1B
No findings
- Switch 1B
Missing 500 MCM Bonding Wire – Metro crew replaced bonding wire later that night and emailed Staff the work order # 5980782 to show completion.

9/15/16 Staff inspected the following Blue Line Switches and Interlocks:

Washington Interlock

- Switch 12A
No findings
- Washington Interlock Frog Switch 12A
No findings
- Washington Interlock Frog Switch 12B
No findings
- Switch 21A
No findings
- Washington Interlock Frog Switch 21A
No findings
- Washington Interlock Frog Switch 21B
No findings
- Switch 21B
No findings

10/13/2016 Staff inspected the following Gold Line Switches and Interlocks:

Sierra Madre Interlock

- Switch 3B
Loose connecting switch rods and ground cable (tripping hazard)
- Switch 3A
Loose connecting switch rods
- G.O. 172 - LACMTA employee using cell phone to take pictures of defects on rail.
- G.O. 175 – Contractor’s watchman/lookout talking to CPUC staff while crew is retrieving trash from track.
- G.O. 118 – Uneven walkways at switches.

Findings:

1. Staff found insecure Heel Blocks at various switches. (In several cases, one of the four bolts of the heel block assembly, which secures the heel block to the rail, was not completely secure. However, the three other bolts were properly secured.)
2. Staff found loose connecting switch rods at various switches.

Comments:

1. Staff noted that a LACMTA Signal Inspector used a cell phone to take pictures of rail defects on an active track while on inspection with CPUC Staff. LACMTA management was notified and employee has been sent to RWP retraining. LACMTA Signal Management also sent an email informing all signal personnel that no cell phones are allowed on the ROW per G.O. 175.
2. Staff noted that LACMTA's Contractor's Watchman/Lookout was easily distracted when approached by CPUC Staff. LACMTA notified the Contractor and had the crew retrained in Roadway Worker Protection (RWP) that the watchman/lookout's sole duty is to watch for oncoming trains and cannot talk to anyone while performing their duties.

Recommendation:

1. LACMTA should tighten insecure Heel Blocks per FRA 213.135.06.
2. LACMTA should tighten connecting switch rods per FRA 213.133.06.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	16-A	Subject	Training and Certification Programs: Train Operators, Controllers, and Line Supervisors
Date of Review	September 27, 2016	Department(s)	Rail Transportation
Reviewers/ Inspectors	Michael Warren	Person(s) Contacted	Linda Leone – Director, Rail Transportation

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Training and Certification Programs: Train Operators, Controllers, and Supervisors

1. Select between two (2) and five (5) employees at random in each of the following classifications:
 - Train Operators
 - Controllers
 - Supervisors
2. Review training, certification, and recertification records of the selected employees related to Road Way Protection, Personal Equipment Device, and other specific job required training to determine whether:
3. All employees successfully completed initial training programs, and any discrepancies were addressed and resolved.
4. All employees have been recertified at the required frequency and are

<p>currently certified to perform their duties.</p> <ol style="list-style-type: none"> 5. Verify that a process for maintaining and accessing employee training records is in place. 6. Verify categories of safety-related work requiring training and certification have been identified. 7. Verify employee and contractor job classifications requiring initial and refresher training and certification have been identified. 8. Verify LACMTA has a process is in place to assess compliance with its training and certification requirements. 9. Verify corrective actions taken to discipline employees and contractors for failure to follow established procedures after training and certification are established and consistent. 10. Verify that contractor training requirements are specified in contract documents.

RESULTS/COMMENTS

<p><u>Activities:</u></p> <p>Staff interviewed LACMTA Training Department representative in charge of Transportation Training Program and reviewed the following records and documentation:</p> <ol style="list-style-type: none"> 1. Staff reviewed the following: <ul style="list-style-type: none"> • Blue Line Operators <ul style="list-style-type: none"> ○ ID # 10213 <ul style="list-style-type: none"> ▪ 10/16/2014 Recertification ▪ 10/16/2015 Recertification ▪ P3010 3/13/2016 for Expo ○ ID # 28872 <ul style="list-style-type: none"> ▪ 2/13/2016 Recertification ▪ 3/27/2015 Recertification ▪ 4/11/2014, records not originally in database and supplied by email on 9/30/2016 ▪ 3/16/2016, P3010 training for Expo cross-training • Gold Line Operators <ul style="list-style-type: none"> ○ ID # 12895 <ul style="list-style-type: none"> ▪ 4/16/2016 Recertification ▪ 4/30/2015 Recertification ▪ Out disability from 11/06/13 – 4/20/2015

- 1/21/2016, P3010 training
- ID # 75962
 - 1/28/2016 Recertification
 - 2/27/2015, New hire
 - 12/20/2015, P3010 training
- Expo Line Operators
 - ID # 75355
 - 11/20/2015 Recertification
 - 12/6/2014 Recertification
 - 1/6/2014 Recertification
 - 1/20/2016, P3010 training
 - ID # 82092
 - 9/23/2016 Recertification
 - 11/6/2015, New hire
 - 3/18/2016, P3010 training
- Red Line Operators
 - ID # 22939
 - 10/22/2015 Recertification
 - 10/25/2014 Recertification
 - ID # 28481
 - 1/24/2016 Recertification
 - 2/18/2015 Recertification
 - 2/22/2014 Recertification
- Green Line Operators
 - ID # 18471
 - 2/13/2016 Recertification
 - 2/28/2015 Recertification
 - 3/8/2014 Recertification
 - ID # 28728
 - 6/15/2016 Recertification
 - 6/29/2015 Recertification
 - 7/1/2014 Recertification
- Controller

- ID # 25947
 - 3/4/2016 Recertification
 - 3/4/2015, New controller
 - 12/6/2014, Operator
 - ID # 75188
 - 8/7/2016 Recertification
 - 2/8/2016, New Controller
 - 9/18/2015, Blue/Expo Ops
 - 8/21/205, New Red Ops for Control
 - Supervisor
 - ID # 28327
 - 11/12/2015 Recertification
 - 12/6/2014 Recertification
 - ID # 14760
 - 5/28/2016 Recertification
 - 6/29/2015 Recertification
 - 7/26/2014 Recertification
2. See #1. The Rail Transportation Instruction Training Matrix shows what instruction is involved with new and refresher training, along with duration of course and required frequency. Recertification training is on a 365 day calendar.
 3. See #1.
 4. See #1. All LACMTA employees reviewed have received their required recertification(s) at proper intervals.
 5. LACMTA uses an online database to maintain transportation employee training records. In addition, each line has a division trainer that tracks certifications and does training for that line. Division trainer maintains paper tests for the line division and files move with employees. When employee parts with Metro, Records Department receives their file.
 6. The Rail Transportation Instruction Training Matrix identifies positions require initial and recertification training.
 7. See #6.
 8. The Training Department performs efficiency testing to assess compliance with training in the form of ride checks and random video observations.
 9. See checklist 13-E.
 10. LACMTA's Track Allocation/Work Permit Process requires contractors and

anyone else that wishes to do work on Metro Rail Property or that could potentially foul the envelope of a train must receive prior approval from the Rail Operations Control Department of Metro. Safety and Wayside Worker Protection Training is a part of this process.

Findings:

None.

Comments:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	16-B	Subject	Training and Certification Programs: Maintenance Employees
Date of Review	October 11 & 12, 2016	Department(s)	Light/Heavy Rail Vehicle Maintenance Department
Reviewers/ Inspectors	Joey Bigornia Howard Huie	Person(s) Contacted	Arnold Huntley – Equipment Maintenance Instruction Manager Gary Dewater – Senior Instructor Robert Takushi – System Safety Specialist Frank Castellon – System Safety Specialist

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Training and Certification Programs: Maintenance Employees

Select at least three (3) employees from the Light/Heavy Rail Vehicle Maintainers classifications.

1. Review the training and certification records for the last three years to determine whether or not:
 - a. The employee has received the required training to perform his/her duties
 - b. The employee qualifications are on file.
 - c. The employee has been re-certified at the required frequency (eg. forklift training, yard certification, fire extinguisher, blue flag protection, etc.)
2. Verify that LACMTA has a process in place to assess compliance with its training and certification requirements.
3. Verify corrective actions have been implemented and tracked to closure for to

discipline employees and contractors who failed to follow established procedures.

RESULTS/COMMENTS

Activities:

Staff interviewed LACMTA's Equipment Maintenance Instruction Manager, Rail Fleet Services and LACMTA's Sr. Instructor, Rail Equipment Maintenance Rail Fleet Services Maintenance Administration and found the following:

1. LACMTA's Metro Rail Fleet Services Instruction has an established curriculum called Rail Vehicle Course Descriptions which identifies all model rail vehicles in revenue service at LACMTA's rail lines. The program identifies the courses, describes the module, and duration for the rail vehicle maintenance worker qualifications for the specific model rail vehicle. Staff requested the following employees and reviewed their qualification training records for model rail vehicle, Wayside Worker Program (WWP), forklift training, blue flag training, etc. Rail vehicle maintenance staff does not operate rail vehicles on the mainline or yard but only within the maintenance shop. If required to respond to the mainline for a disabled rail vehicle with maintenance issues, the rail vehicle maintainer rides either a Hi-rail or appropriate vehicle to the scene but will not operate a train on the mainline.

Blue Line:

<u>Employee ID</u>	<u>Status</u>
27885	Ok
80165	Ok
24306	Ok

Exposition Line:

The employees at this location have received mainline course instruction, WWP, safety awareness training, etc. internally from LACMTA. The Kinkisharyo (KI) cars which will be used on this line are currently under manufacturer warranty. Some employees received previous initial training on other rail vehicles (eg. A865/P2020) and then transferred to this location.

<u>Employee ID</u>	<u>Status</u>
86560	Ok
87401	Ok
87816	Ok

Gold Line:

<u>Employee ID</u>	<u>Status</u>
78044	Ok
78262	Ok
81378	Ok

Green Line:

<u>Employee ID</u>	<u>Status</u>
76182	Ok
22613	Ok
23885	Ok

Red Line:

<u>Employee ID</u>	<u>Status</u>
24476	Ok
27301	Ok
74763	Ok

Staff reviewed the Rail Fleet Services Rulebook and Standard Operating Procedure Section 20, Blue Signal Protection for Workmen (effective date July 2016). The Blue Signal Protection for Workmen SOP was recently revised in 2016 and training is currently being implemented at each rail yard accordingly. Staff reviewed the following blue flag protection training sign-in sheets as shown:

Gold Line – 7/26/16

Red Line - 9/29/16

Green Line – 8/9/16,

Blue Line – 8/16/16, 8/17/16

No exceptions were noted.

2. LACMTA rail vehicle mechanics receive initial and internal training from LACMTA instructors. For new vehicle procurement, the Contractors provide vehicle maintenance and training at that time. LACMTA is responsible for rail vehicle maintenance after the manufacturer formally turns over vehicle maintenance requirements.
3. Staff found no corrective actions were necessary to LACMTA rail vehicle employees and contractors who failed to follow established procedures.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	16-C	Subject	Training and Certification Programs: Maintenance Employees and Contractors
Date of Review	September 27, 2016 October 11, 2016	Department(s)	Wayside Maintenance, Signal & Track Department
Reviewers/ Inspectors	Joey Bigornia Howard Huie	Person(s) Contacted	<p>Paul Squires – Director, Wayside Systems Wilfredo Villalpando – Track Instructor Edward Boghossian – Interim Director, Corporate Safety</p> <p>-----</p> <p>Ricardo Moran – Director, Wayside Systems Kevin Smith – Senior Equipment Maintenance Instructor Michael Trevino – Senior Rail Equipment Maintenance Instructor Wayside Systems Robert Takushi – System Safety Specialist</p> <p>-----</p> <p>Winston Dixon - Manager of Wayside Systems Cesar Vaca - Rail Equipment Maintenance Instructor Robert Takushi – System Safety Specialist</p>
REFERENCE CRITERIA			
1. General Order 164-D 2. General Order 143-B 3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015			
ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION			

Training and Certification Programs: Maintenance Employees and Contractors

Select at least three (3) employees in each of the following classifications:

- Signal Maintainers
 - Overhead Catenary/Substation
 - Track Maintainers
1. Review the training and certification records for the last three years to determine whether or not:
 - a. The employee has received the required training to perform his/her duties
 - b. The employee qualifications are on-file
 - c. The employee has been re-certified at the required frequency (eg. Track – forklift, welding, hi-rail, RWP training, etc.)
 2. Verify that LACMTA has a process in place to assess compliance with its training and certification requirements.
 3. Verify corrective actions to discipline employees and contractors for failure to follow established procedures after training and certification are established and consistent.

RESULTS/COMMENTS

Activities:

TRACK:

Staff interviewed LACMTA's Director of Track and the Track Instructor and determined the Track Department has an established curriculum which identifies the necessary training for a track inspector. Staff requested training records dated 2013-2016 for employees and reviewed their track qualification training records for Wayside Worker Program (WWP), forklift training, blue flag training, Hi-Rail, etc. Staff found the following:

<u>Employee ID</u>	<u>Results</u>
20395	Ok.
87137	Ok
79404	Ok.

*All training and recertification records were current and up to date. No exceptions were noted.

The Track Department does not use contractors to perform maintenance

inspections. Track inspectors are recertified every 2-years per 49CFR Part 213 requirements. A maintainer can request refresher training which is performed in-house if necessary for performing a task.

SIGNAL:

Staff interviewed LACMTA's Director of Signal, Senior Equipment Maintenance Instructor, and Senior Rail Equipment Maintenance Instructor Wayside Systems and determined Signal Department has an established curriculum for the 30-week apprenticeship program which identifies the necessary training for a rail signal inspector. Staff requested training records dated 2013-2016 for employees and reviewed their track qualification training records for Wayside Worker Program (WWP), blue flag training, Hi-Rail, etc. and found the following

<u>Employee ID</u>	<u>Results</u>
15566 (Qualified of light rail system)	Ok
24291 (Qualified of light rail system)	Ok
22061 (Qualified of light rail system)	Ok.

*All training and recertification records were current and up to date. No exceptions were noted. The Signal Department does not use contractors to perform maintenance inspections. A maintainer can request refresher training which is performed in-house if necessary for performing a task.

OVERHEAD CATENARY/SUBSTATION

Staff interviewed the LACMTA's Director of Wayside and the Rail Equipment Maintenance Instructor Wayside System Traction Power and determined the Wayside Department has an established curriculum which identifies the necessary training for a wayside inspector.

Staff requested overhead catenary/substation maintainer training records dated 2013- 2016 and found the following

<u>Employee ID</u>	<u>Results</u>
87070 (Qualified for Heavy Rail)	Ok
87487 (Qualified for Heavy Rail)	Ok

*All training and recertification records were current and up to date. No exceptions were noted. The Overhead catenary/substation Department does not

use contractors to perform maintenance inspections. A maintainer can request refresher training which is performed in-house if necessary for performing a task.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	17	Subject	Configuration Management and Control
Date of Review	September 21, 2016	Department(s)	Configuration Management
Reviewers/ Inspectors	Michael Warren	Person(s) Contacted	Julie Landsford – Manager, Configuration Management Edward Boghossian – Interim Director, Corporate Safety
REFERENCE CRITERIA			
<ol style="list-style-type: none"> General Order 164-D LACMTA System Safety Program Plan (SSPP), Rev 12, dated December 12, 2015 LACMTA Policy ENG01, Engineering Design, Review, and Acceptance Rev. 3, dated October 23, 2011 LACMTA Procedure CF15 for non-capital projects Rev. 4, dated September 26, 2011 			
ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION			
<p>Configuration Management</p> <p>Select two capital projects and three non-capital projects, by randomly selecting Configuration Change Request Forms that were submitted and approved during the past three years, and examine the applicable documentation to determine if:</p> <ol style="list-style-type: none"> System Modification/Configuration Changes were reviewed and approved in accordance with the reference criteria, There exists a coordination process that ensures all organizational entities have an opportunity to review preliminary design and acceptance of final design, Any hazards identified with system expansions or modifications of any kind are resolved. 			
RESULTS/COMMENTS			

Activities:

Staff interviewed LACMTA Corporate Safety and Document Control representatives in charge of Configuration Management and reviewed the following records and documentation:

- Metro Gold Line Foothill Extension Phase 2A Light Rail Transit Project
 - Metro Exposition Light Rail Transit Project Phase 2
 - Configuration Change Request 127 – 2/20/16
 - Configuration Change Request 133 – 11/25/16
 - Configuration Change Request 137 – 5/26/16
-
1. System Modifications/Configuration Changes were distributed for review and approved as required.
 2. Document Control distributes the design packages to a required distribution list. There is a 30-day comment period for capitol project design review for the departments. Incorporated changes are redistributed.
 3. Engineering/Document Control tracks comments/potential hazards that are identified. The Originator of the document is responsible to ensure all comments/potential hazards have been adequately incorporated/mitigated.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	18	Subject	Local, State, and Federal Requirements: Employee Safety Program
Date of Review	October 10, 2016	Department(s)	Safety
Reviewers/ Inspectors	Joey Bigornia	Person(s) Contacted	Edward Boghossian – Interim Director, Corporate Safety

REFERENCE CRITERIA

1. General Order 164-D
2. General Order 143-B
3. 49 CFR 659
4. LACMTA System Safety Program Plan (SSPP), Rev.12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Local, State, and Federal Requirements: Employee Safety Program

Interview Metro Corporate Safety Staff to determine if:

1. An appropriate form has been developed and employees are aware how to report safety hazards and near misses in the work place.
2. Procedures exist for investigating occupational injuries and illnesses and for correcting unsafe or unhealthy conditions in a timely manner.
3. The program includes occupational health and safety training for employees.
4. Corporate Safety ensures that the Injury and Illness Prevention Program is being implemented.

RESULTS/COMMENTS

Activities:

Staff interviewed the Director of Corporate Safety and determined the following:

1. LACMTA has the Safe 7 Form used for reporting Un-Safe Conditions or Hazards (See CL#6).
2. LACMTA's Procedure for investigating occupational injuries and illnesses, and for correcting unsafe or unhealthy conditions is the Safe 5 Form in the Injury Illness Prevention Program (IIPP).
3. LACMTA's database Transit Safe captures all incidents which are reported. Transit Safe populates the fields required for the Safe 5 Form. The incident investigation program provides training on form usage/completion.
4. Title 8, subtitle 29 requires the IIPP. If an OSHA inspector visits LACMTA, they will request the current IIPP copy and the OSHA 300 log. OSHA 300 log is a federal mandated requirement to maintain a copy of all federally required reported incidents. The log captures the injuries and these are shared with LACMTA staff. Safe 15-Form is used for tracking all corrective actions to implementation and closure.

No exceptions were noted.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	19	Subject	Hazardous Materials Programs
Date of Review	September 20, 2016	Department(s)	Safety
Reviewers/Inspectors	Claudia Lam	Person(s) Contacted	Collins Kalu – Senior Manager Industrial Hygiene and Safety
REFERENCE CRITERIA			
<ol style="list-style-type: none"> 1. General Order 164-D 2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015 3. LACMTA System-wide hazardous Material Emergency Response Plan, date May 2016 4. LACMTA Hazard Communications Program, Rev. 8, dated January 2014 			
ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION			
<p>Hazardous Materials Programs</p> <ol style="list-style-type: none"> 1. Select at random six LACMTA employees responsible for handling hazardous materials and verify that they have received specific training for reporting requirements, product release or spill, and the response and cleanup of spill incidents. 2. Verify that hazardous materials discharge/spill reports for incidents that occurred during the past year have been prepared and filed. 3. Verify all Safety Data Sheets (SDS) are available to all personnel who handle hazardous materials and on file with the Corporate Safety Department. 4. Verify that a procedures for response to hazardous material spills, clean up, and disposal exists. 			
RESULTS/COMMENTS			

Activities:

Staff interviewed LACMTA's Senior Manager, Industrial Hygiene and Safety regarding the Hazardous Materials Program and reviewed relevant program documentation. Staff determined the following:

1. As of 2015, LACMTA's contractor TRC Solutions no longer provides training, Cumming is the current contractor performs this task. The annual training approximately 40-45 minutes for each section covers Universal Waste, Hazard Waste, and Hazard Communication. At the end of each training class, all trainees are given a ten question final exam. All employees' training record are stored electronically. Cumming started in late 2015 and all 2014 records are kept separated in TRC Solution's file. Metro is in the process of centralizing the records in the Human Resources (HR) database.

Staff randomly selected six employees from Division 20 (Redline yard), Division 11 (Blue Line Yard), Division 21 (Gold Line Yard), Division 22 (Green Line Yard) and Division 24 (Monrovia Foothill yard). Division 21 was transferred to Division 24 (Monrovia Foothill extension), therefore 2015 training wasn't performed. HR has electronically database system that alerts the supervisor when employees require the annual training.

2. LACMTA identifies the incidents by labels: T (Trauma), M (Material Spill), or H (Hazard). Staff reviewed 2013-2016 records and found only one reported hazardous spill. Staff reviewed Trauma randomly selected staff files and the following reports for review:

Incident #: QA060515-025M

Incident #: QA112415-046M

Incident #: QA013114-010T

Incident #: QA081316-047T

No exceptions were noted.

3. As of March 2012, the former Material Safety Data Sheets (MSDS) program has been replaced by the new program, Safety Data Sheet (SDS). Data from MSDS

has been transferred to MDS and all divisions have access to SDS. Data is available from 1990 when Metro Blue Line began revenue service. The Industrial Hygiene Manager has access to discontinued/disapproved products and LACMTA keeps track of all the products (discontinued products) in case of future lawsuits. Employees are allowed to only use approved products.

4. The system wide Hazardous Material Emergency Response Plan is required by the OSHA Industrial Hygiene and Environment Program. In addition, Staff reviewed and verified that LACMTA has a system wide Hazardous Materials Emergency Response Plan for all hazardous spills reporting.

Findings:

None.

Comments:

None.

Recommendations:

None.

2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

Checklist No.	20	Subject	Drug and Alcohol Program
Date of Review	September 30, 2016	Department(s)	Human Resources
Reviewers/ Inspectors	Daniel Kwok, Ainsley Kung	Person(s) Contacted	Mary McDonald – Medical Standard & Compliance Administrator Gabriela Hernandez – Human Resources Analyst

REFERENCE CRITERIA

1. General Order 164-D
2. GO 143-B
3. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
4. 49 CFR Part 655
5. 49 CFR Part 40
6. LACMTA Drug and Alcohol Policy, Dated August 4, 2011

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Drug and Alcohol Program

Interview LACMTA representatives and review appropriate records prepared in the past 3 years to:

1. Verify the number of employees in safety-sensitive positions who tested non-negative or refused to take the test was reported accurately.
2. Verify the Substance Abuse Program meets current FTA requirements.
3. Verify LACMTA has a policy for managing the use of over-the-counter drugs.
4. Select at least two safety-sensitive employees who tested positive for drugs or alcohol in the past 3 years and determine whether:
 - a. The employee was evaluated and released to duty by a Substance Abuse Professional (SAP);
 - b. The employee was administered a return-to-duty test with verified

- negative results;
- c. Follow-up testing was performed as directed by the SAP according to required follow-up testing frequencies in the reference documents after the employee returned to duty.
 - d. Employees who retested positive are disciplined.
5. Determine if LACMTA has ever undergone a federal or state audit of its drug and alcohol program?

RESULTS/COMMENTS

Activities:

1. Staff reviewed and verified seven employees in safety sensitive positions who tested non-negative and/or refused to take a drug and alcohol test over a 3 year period. These records were reflected in the spreadsheet kept by LACMTA's Human resources Department. Of the seven who tested non-negative, two underwent the Substance Abuse Program (SAP) program.
2. The Drug and Alcohol Program Manager provided Staff with a FTA Drug and Alcohol Compliance Audit Report from April 24, 2015, showing the FTA has reviewed and has found LACMTA's Human Resources: Drug and Alcohol Free Work Environment (HR 46) to be in compliance with FTA's requirements.
3. Staff has verified that LACMTA has a policy, Human resources: Fitness for Duty (HR 29), for use of over-the-counter medication (Section 1.4). Employees must use valid medication under their own name, and any medication which impairs mental/motor/judgment ability must be reported using a Medication Reporting Form, to be filled out by the Health Care Provider.
4. Staff reviewed records for two safety- sensitive employees retained by LACMTA and have determined the following:

Employees Reviewed:
27411
13307

- a. Staff has reviewed personnel records and has verified the employee has been evaluated by a Substance Abuse Professional. LACMTA utilizes contracted clinics and doctors to perform the evaluations.
- b. Staff has verified employees reviewed were administered a return-to-duty

(RTD) test; both employees test results were verified to be negative.

- c. Follow-up testing for the employees reviewed after returning to duty was currently underway at the time of this audit. The progress for the follow-up testing is as follows:

Job Title	SAP Release Date	Required Tests	Tests Completed to Date
Maint. Specialist	12/8/2015	11	10
Service Attendant	3/7/2016	11	9

HR 46 procedure indicates the SAP dictates the number/frequency/duration of follow-up tests for a minimum of 12 months. Current progress of testing is in line with their program criteria.

- d. HR reports there have been no employees who have retested positive for drugs and/or alcohol.
5. See Number 2 above.

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	21	Subject	Procurement Process
Date of Review	September 30, 2016	Department(s)	Procurement
Reviewers/ Inspectors	Daniel Kwok, Rosa Muñoz	Person(s) Contacted	Vijay Khawani – Executive Officer, Corporate Safety Glenn Siaumau – Sr. Manager, Rail Fleet Services Warrantee/QA Don Mendoza – Deputy Executive Officer, Logistics Al Mitchell - Director, Contract Administration Michael Ornelas – Sr. Director, Rail Vehicle Maintenance Collins Kalu – Sr. Manager, Industrial Hygiene & Safety Kent Fagernes – Inventory Control Supervisor, Bob Spadafora – Sr. Executive Officer, Rail Fleet Services

REFERENCE CRITERIA

1. General Order 164-D
2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015
3. LACMTA Acquisition Policy and Procedure Manual, ACQ-1, dated July 16, 2010
4. LACMTA Acquisition Policy and Procedure Manual, ACQ-2, dated July 16, 2010

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

Procurement Process

Through interviews and review of procedures and records for the last three years, determine if:

1. The Procurement Department has in place procedures that are monitored and enforced to preclude the introduction into the transit environment of unauthorized hazardous materials and supplies, as well as defective or deficient equipment,
2. The Procurement Department ensures that contractors meet requirements related to safety,
3. Deviations from procurement control are brought to the attention of the general management and to the Corporate Safety department.

RESULTS/COMMENTS

Activities:

CPUC staff scheduled and conducted an interview with key LACMTA personnel responsible for the procurement process, on September 30, 2016.

- 1) LACMTA utilizes "Acquisition and Policy and Procedure Manual" Chapter 6, Section 6 for chemical procurements. LACMTA has in place a "Chemical Committee" made up from individuals from Procurement, Corporate Safety, Engineering, Inventory Control, Quality Control, and Environmental. According to Acquisition Procedure Manual, Chapter 6, these individuals include representatives from the User Department/Project Managers, Risk Management, and the Inventory Management Division. The Chemical Committee meets quarterly and reviews the chemical procurements process, and in effect, functions as a "Quality Circle". All chemicals must be approved by the Chemical Committee before it is approved for purchase.

LACMTA utilizes "Acquisition and Policy Procedure Manual" Chapter 19 for material procurements and quality assurance. The Procurement Department has two sets of procedures, one for regular items and the second for special projects.

LACMTA describes their equipment procurement process as the following:

- a. Rail Fleet Services (RFS) or Engineering makes request
- b. If necessary, revise engineering plans to fit product
- c. RFS Quality Control and Engineering inspect the sample equipment and verifies it meets the specifications and it functions as stated, then it is installation and performance tested
- d. Documentation is produced, including Test Bulletin(s) (sample was provided by email on October 11, 2016)
- e. Once the test component is on the LRV, it is tracked to ensure specification

compliance

- f. Part of the process includes the review of equipment supplier on approved vendor list, then the procurement is okayed by RFS Department management
 - g. The equipment request is sent to the Procurement Department to be ordered.
 - h. It was noted that Test Bulletins can include equipment for repairs and testing of equipment as part of the vetting process. An example of a Test Bulletin of the P2020 for the Blue Line was provided at the meeting.
- 2) The Procurement Department ensures that all contractors meet requirements related to safety by:

When contractors are hired, they typically bring their own chemical materials— this is a requirement stated in their contract, and that their MSDS sheets are reviewed by Corporate Safety. Contractors can either perform work in-house or at their own facility. If they are working at a LACMTA facility, then contractors must follow all Metro rules and procedures, including needing safety certification training. The Procurement Department is the administrator of contracts, if there are any disputes then contractor must go through contract administration

CPUC staff inquired: if part is defective then what steps does the Procurement Department take to ensure it does not cause a safety concern.

 - a) RFS removes the part, quarantine it, and notify other relevant departments. Then meetings are held between RFS, Quality Assurance, and Engineering to determine if the procurement item is already in place and the warranty is reviewed for applicability. An inspection is made by RFS on 10-20% of items, and a determination is made whether to pull all stock from the storeroom if it meets defect threshold requirement. If it does, then the parts are sent back to vendor as part of warranty. 10% is the set percentage for most re-inspections, unless it is an electronic device then 100% of the devices are examined.
 - i) RFS Quality Control personnel are well-trained to inspect against certain wear criteria
 - ii) Root Cause is sought if a part fails
- 3) LACMTA states deviations do not happen from the Procurement Department control. Supplier does on occasion deliver to the wrong location, but the shipment is rejected after inspection (item does not match serial number, damaged, etc.)
 - a) Example used: “Ground return units on hubs failure”
 - i) Testing ensues
 - ii) Test bulletin is sent out to designated stakeholders

- iii) Purchase a whole new part
 - iv) Notice of defect is sent— Corporate Safety is notified
 - v) Process to procure new part
 - vi) After new part is 'accepted' and in operation and in service, Director of Management and Directors of all divisions are sent notices
 - vii) Quality Assurance inspects parts in existing fleet
 - viii) Monthly Report of fleet failures are sent to Metro Board
 - (1) Statistics and goals are listed in "Key Performance Indicators"
 - ix) Note any trends
 - x) Corrective action with vendor after 10%
- RFS noted: many safety features on train including the train will not run unless all systems function properly
- b) Example of chemical deviation, part does not meet Air Quality Management District (AQMD) requirement suggested by Corporate Safety
 - i) Volatile Organic Chemical (VOC) threshold does not meet AQMD standards
 - ii) Send out bulletin division wide
 - iii) Then look for new material to meet requirements
 - c) Example of expired material
 - i) Green material is the goal
 - ii) Less material in inventory/stock
 - iii) Goal of reduction in material
 - iv) Track material usually disposed by chemical department, sent to proper parties to remove inventory
- 4) CPUC staff inquired as to where does procurement fit in the Metro organization and its role with respect to the SSPP. Staff noted several roles in the SSPP was performed by Corporate Safety or RFS, and not specifically managed by the Procurement Department as stated in Section 14.5. An Org Chart was sent by email a chart was provided on October 11, 2016.

Comments:

None.

Findings:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	22	Subject	CPUC GO 172 – Personal Electronic Device Prohibitions/In-cab Cameras
Date of Review	October 10, 2016	Department(s)	Safety, Rail Operations
Reviewers/ Inspectors	Varouj Jinbachian, Howard Huie	Person(s) Contacted	Robert Takushi – System Safety Specialist Abraham Miranda – System Safety Manager Linda Leone – Director, Rail Transportation John Johnson – Service Operations Superintendent Michael Alexander – Manager, Transportation Operations

REFERENCE CRITERIA

1. GO 172
2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

CPUC General Order (GO) 172 - Personal Electronic Device Prohibitions/In-cab Cameras Compliance

Interview LACMTA System Safety Department representatives and review appropriate documentation to determine the following:

1. Verify that in-cab cameras are installed on all required vehicles.
2. Verify that in-cab camera recordings are being reviewed in response to reportable accidents and incidents.

3. Verify that a zero-tolerance policy for personal electronic device usage is in-place, and that employees who violate this policy are being properly disciplined by LACMTA.
4. Verify that LACMTA is conducting periodic operational evaluations and inspections for potential GO 172 violations, and that the records of these activities are being properly retained and documented.
5. Ask LACMTA to describe the functionality of their inward-facing cameras:
 - a) Which types of vehicles are fitted with cameras, and any exemptions currently in place for any of the RTA vehicles?
 - b) LACMTA's program of inspection of in-cab camera systems for failures or any that are not functioning properly.
 - c) Determine whether cameras conduct continuous recordings that cover at least eight (8) continuous days of operation.

RESULTS/COMMENTS

Activities:

1. Corporate Safety sent Staff an email with an attached matrix on February 13, 2015 informing Staff that Metro has finished installation and testing of all LRV and HRV vehicles with in-cab cameras and is G.O. 172 compliant.
 During Staff's record review of Metro's random in-cab camera review, Staff noted that there were no in-cab camera reviews from the new P3010 vehicles. Metro had noted that the videos were not yet accessible to Metro as Kinkisharyo techs were the only ones who could access the videos from the P3010 fleet. However in a phone conference with Corporate Safety on October 18, 2016, Kinkisharyo will train five (5) Metro Rail Fleet Service techs on October 21, 2016, in downloading the videos from the P3010s and will no longer rely on Kinkisharyo's techs for video retrieval.
2. Corporate Safety and Staff views all in-cab and forward facing videos as well as other pertinent available car video when performing accident investigations. Only when the videos are not available due to corruption of the hard drive or other software and/or hardware failures that prevent the availability of the video, reportable accident videos are always viewed by Staff. Metro will only keep videos of something interesting happening that may require the video to be

reviewed or kept as evidence for a later date. Staff randomly selected and viewed the following videos from reportable accidents and random operator evaluations:

- 4/9/15 MBL – Train vs. Ped at Wilmington & Willowbrook.
- 5/29/15 MGL - Train Operator was reading a newspaper then looking at his PED. Operator was removed for service.
- 11/3/15 MBL Train vs. Ped.
- 7/29/16 PGL – Train vs. Ped at 1st bridge, at 22:08 hours.
- 3/18/15 MRL – Train vs. Ped at Hollywood & Vine Station

3. Metro's policy for PED violation per Rule 2110, Section 2 is as follows:

- First violation 30 day suspension, unless very egregious (Metro management can ramp the violation up, not down. For example, did the person willfully violate the PED rule?)
- Second violation results in termination of employment.

Metro reported that less than five (5) people have been disciplined in 2015. Of the employees disciplined, one resigned from LACMTA, and the remaining four were suspended for 30-days without pay. Staff reviewed a copy of the agreement everyone has to sign to acknowledge PED requirements.

4. LACMTA started to review in-cab cameras in the last quarter of 2015 as the cameras weren't functioning as intended. Metro commented that some cameras didn't capture the images during the night hours and only recorded a dark screen while some cameras did the opposite where during day hours the recordings only projected a white screen. Once all the cameras were properly adjusted and/or fixed, Metro Operations Managers and Corporate Safety reviewed in-cab camera video for all reportable accidents as well as reviewing 10% of the rail transit vehicle operator population per quarter per G.O. 172, Section 4.6. Operations Managers randomly view 10% of the operators per line, and watch 5 minutes of 375 operators.

5. Metro's in-cab cameras are:

- a. All of Metro's LRV and HRV vehicles are fitted with in-cab and forward facing cameras as required by G.O. 172. As of February 13, 2015, Metro is fully G.O. 172 Section 4 compliant.
- b. Rail Fleet Services (RFS) perform a daily inspection on the video system before the car is sent out for revenue service. The RFS technician performs a self-test and looks at error indicators on the DVR, which is a general indication that the power is on, there are no basic faults, and the system is ready. Most basic faults indicate the removable hard drive is malfunctioning and needs to be replaced. The RFS technician will swap the old for a new and rerun the self-test. If the video and/or audio is/are not working, the RFS technician doesn't have a way of knowing until video is pulled from that specific unit. If/when the unit has problems, the unit is pulled and sent off to Metro's Rail Communications (Rail Comm) department where it is serviced then sent back to RFS to be reinstalled.
- c. The video system overwrites itself every 8 days however some may be different depending on the circumstances: car has been taken from the lead or lag position and put in the middle of a train consist, car taken out of service, car is in the shop for repairs, etc. Per Metro's GO172 Video and Audio in Cab and DVR Replacement Program, Section 2.2.3, "Raid 1 configuration consisting of a minimum of 750 Megabytes of hard drive storage per user/field-removable hard-drives. Solid State drives may be supplied and offered as an option, but the solid state hard drives shall be able to store at a minimum 16 channels of video (4 CIF or better) and 16 channels of audio for a minimum period of two (2) weeks."

Findings:

None.

Comments:

None.

Recommendations:

None.

**2016 CPUC SYSTEM SAFETY REVIEW CHECKLIST FOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION
AUTHORITY**

Checklist No.	23	Subject	CPUC GO 175 – Rules and Regulations Governing Roadway Worker Protection Provided by Rail Transit Agencies and Fixed Guideway Systems
Date of Review	October 10, 2016	Department(s)	Safety, Track, Wayside
Reviewers/ Inspectors	Joey Bigornia, Varouj Jinbachian	Person(s) Contacted	Edward Boghossian – Interim Director, Corporate Safety Paul Squires – Director, Wayside Systems Mark McKendrick – Rail Track Supervisor Larry Trantham – Manager, Wayside Systems

REFERENCE CRITERIA

1. GO 175-A
2. LACMTA System Safety Program Plan (SSPP), Rev. 12, dated December 12, 2015

ELEMENT/CHARACTERISTICS AND METHOD OF VERIFICATION

CPUC General Order (GO) 175 Rules and Regulations Governing Roadway Worker Protection Provided by Rail Transit Agencies and Fixed Guideway Systems

Interview LACMTA's System Safety Department representatives and review appropriate documentation to determine the following:

Part 1: General Topics

1. Ask LACMTA to describe their program(s) aimed at ensuring roadway worker

protection is in accordance with G.O. 175-A

2. Verify that the LACMTA has created a separate dedicated manual excerpting all necessary roadway worker safety procedures and rules from its rule book(s), and that this manual is freely available to its roadway workers when they are performing job functions.
3. Verify that the LACMTA's compliance testing program includes Roadway Worker Protection (RWP) rules, and that these rules are tested to assess the degree of compliance, as well as changed when necessary to enhance compliance. Determine if these are included in the manual described in question 2.
4. Determine whether LACMTA uses flag protection to provide roadway worker safety, and if so, determine whether it has established written flag protection procedures. Determine if these are included in the manual described in question 2.
5. Review the LACMTA's safety equipment requirements for their staff. Verify that all employees who access the track zone are required to wear high visibility clothing (safety vests or jumpsuits).
6. Verify that LACMTA requires anyone with access to the track zone (by request, easement, or other form of permission) to either complete the required RWP training, or be escorted by a RWP-trained employee.

Part 2: Job Safety Briefings

1. Verify, by collecting sign-in sheets, that LACMTA requires the employee in charge (EIC) of each roadway work site to provide a safety briefing prior to commencement of work within the right-of-way. Verify that the briefings are required to include the following aspects, when applicable:
 - a) The general work plan
 - b) The hazards involved, and the means by which safety will be provided. Considerations must include presence of roadway maintenance vehicles, adjacent tracks, and any need to widen track zone

- c) Personal protective equipment requirements
 - d) Identification and location of key personnel, such as the watchperson and EIC.
 - e) Flag use and placement
 - f) A predetermined “place of safety,” where workers can move to within 15 seconds before rail vehicles moving at maximum speed authorized on that track can pass their previous location on the track. Considerations such as visibility, noise interference, and time required to get to the place of safety must be discussed.
 - g) The means of communication amongst roadway workers to be used
 - h) Acknowledgement that each employee understands the rules to be used
 - i) If a watchperson is used, they and all other employees must receive a review of their duties – specifically, to provide a warning in compliance with the aforementioned 15-second rule, and to refrain from performing or assisting in any other type of work.
2. Verify that it is LACMTA’s practice to conduct follow-up safety briefings, in cases where the crew or scope of work changes after initial safety briefing.
 3. Verify that it is LACMTA’s practice to conduct safety briefings through a discussion between the roadway worker and employee providing authorization to enter the roadway, which includes the protection to be used, in cases of an individual roadway worker moving from one location to another, or performing a minor task.

Part 3: Roadway Worker Protection Training

1. Verify that LACMTA has adopted a Roadway Protection (RWP) training program aimed at educating workers about the hazards of working along the right-of-way, as well as the methods to safely work on the right-of-way.
 - a) Request that LACMTA describe their RWP training program.

- b) Ensure that the training program includes classroom training
 - c) Ensure that the training program includes experience in a representative field-setting.
 - d) Ensure that the training program covers LACMTA's rules and procedures.
2. Ensure that no employees whose duties are those of a rail worker are required to perform work without training.
- a) Request a list of job types/classifications of the utility's employees which are required to attend RWP training.
 - b) Request that LACMTA provide roll call sheets or any other documentation verifying the attendance of staff at RWP training/re-training sessions, for the time period of three years ago to the present.
 - c) Select several employees at random, preferably with different job classifications, and confirm their attendance a RWP training course at intervals of 24 months, or more frequently.
 - d) Verify that records of training are retained by the RTA for at least 3 years.
3. Ensure that the RWP training courses entail checks or tests to ensure the ability to comply with RWP instructions given by persons performing or responsible for on-track safety and RWP functions.
- a) Ask for details regarding completion certificates and the extent of testing (if any) required to receive them.
 - b) For the random employees selected in section 2(c), request copies of completion certificates for each training session completed.
4. Does the RWP training courses provide an opportunity for trainees to raise and discuss issues regarding the effectiveness of the program.

Part 4: Near-Miss Reporting Programs and Record Keeping

1. Request that LACMTA describe, its program for reporting and recording near-misses regarding roadway worker protections

2. Verify that LACMTA retains near-miss records for a period of 3-years or more, and that they are available to CPUC staff on demand
3. Verify that LACMTA's near-miss program includes:
 - a) A policy statement supporting the near-miss program signed by the CEO
 - b) A process to encourage and allow roadway workers to report near-misses
 - c) Methods to store, easily access, and track near-misses and corrective actions
 - d) Analysis to identify primary and contributory causal factors, and implementation of corrective actions
4. Verify that LACMTA periodically reviews the effectiveness of its near-miss program, and adjusts it in response to changes in industry practices

Part 5: Compliance with Minimum Controls / Limitations Prescribed in G.O. 175

1. When performing the following types of work, at track other than that at its yard(s) and end-of-line storage track, verify that LACMTA always utilizes the specific minimum controls and limitations outlined in Sections 6.1 through 6.3 of General Order 175:
 - a) Moving from one location to another – Requirements described in Section 6.1
 - b) Performing minor tasks – Requirements described in Section 6.2
 - c) Performing visual inspections, maintenance, and repairs. Using hand tools, machines, or equipment. All other roadway worker / crew activities not covered in Sections 6.1 and 6.2 – Requirements described in Section 6.3
2. Verify that LACMTA complies with its yard and end-of-line storage track RWP.

RESULTS/COMMENTS

Activities:

Staff interview LACMTA Track Superintendent, etc. and found the following:

Part 1: General Topics

1. LACMTA's Roadway Worker Program (RWP) has been revised through several iterations, and is constantly revising their rules. LACMTA's RWP program requires training, mainline access forms, includes all the safety briefing requirements, whether using a 15-second rule and/or ProTran. ProTran is used every day and on almost every task on the right of way. When requesting track allocation, they describe the level of protection and have a look out with a 15-second rule. They need to fill out an operating clearance that describes what other operations are going on that track. The right to challenge is included in the RWP training, and job briefing.
2. LACMTA's dedicated manual is the Wayside Worker Pocket Guide dated June 2014.
3. Corporate Safety and Track Division performs efficiency and compliance tests to assess RWP compliance.
4. LACMTA requires flag protection and described in the RWP.
5. LACMTA's RWP and training program requires high visibility clothing (safety vests or jumpsuits) prior to accessing the mainline.
6. LACMTA's training, contract language, and Efficiency & Compliance Audit requires anyone with access to the track zone (by request, easement, or other form of permission) to complete the required RWP training, or be escorted by a RWP-trained employee.

Part 2: Job Safety Briefings

1. Sections (a-f) are all included in track allocation and reinforced during the job briefing. The Operations Department requires a Code 1 verbal acknowledgement before the train operator (T/O) enters the track zone and the T/O is required to repeat to Operations Control Center the instructions.
2. Safety briefings are required for any work and employees sign the second safety briefing form. If a new crew comes in, a new safety briefing is performed with a new EIC. If a new member joins the crew, the controller will give them a job briefing and the new member signs the briefing.
3. The RWP requires Safety Briefings.

Part 3: Roadway Worker Protection Training

Section 1:

- a. The RWP training program consists of Standard Operating Procedures number 11 and 55. A test is administered to employees once they finish the RWP course, and refresher training occurs every two years, or when new rules are adopted. Refresher training is administered if there is an incident requiring corrective action for the employees involved in the incident. Contractors must attend the RWP. Corporate Safety has provided Commission Staff with a copy of LACMTA's training PowerPoint.
- b. The RWP training program includes classroom training.
- c. The RWP training program includes field setting experience.
- d. The RWP training program covers LACMTA's rules and procedures.

Section 2.

- a. Anyone who enters the LACMTA's right-of-way (ROW) is required to attend RWP training. It's not selected by job classification, it's by job function. Rail Fleet Services is also required to participate.
- b. See Checklist No. 16-C which verified the RWP training rosters.
- c. See (b) above.
- d. Training records are kept a minimum of 5 years, and are sent to Document Control for filing. Every Wayside Department has their own RWP instructor and those instructors send reminders to Metro personnel when they are due to be retrained. LACMTA is developing a training database that will generate reports of when training is due within 90 days, which notifies the managers. Managers are responsible to instruct their staff to take the training. An additional notification report will go to Corporate Safety identifying employees who are due for training. See Checklist 16-C.

Section 3:

- a. See Checklist Nos. 16-C which reviewed RWP completion certificates.
- b. See (a) above.
- c. RWP training courses provide opportunity for trainees to raise and discuss issues regarding the effectiveness of the program.

Part 4: Near-Miss Reporting Programs and Record Keeping

1. LACMTA uses the Safe 7 Form for any safety concerns, issues and near misses. See Checklist No 6.
2. LACMTA keeps all Safe 7 for 3 years. Management has to respond to each form within a reasonable time frame. All the Safe 7 Forms are reviewed by the supervisors and managers and at the Local Safety Committee meetings monthly (CPUC participate). They are summarized on Safe 15 Forms as CAPs. Corporate Safety Manager reviews the Safe 15 Forms. Corporate Safety reports there hasn't been any Safe 7 Forms generated for GO 175 violations.
3.
 - a. The SSPP includes a policy statement signed by LACMTA's Chief Executive Officer.
 - b. Previously discussed in part (a) above.
 - c. The Safe 15 Form is used for storing, accessing, and tracking near-misses and corrective actions.
 - d. The Local Safety Committee meeting is used to identify primary and contributory causal factors, and implementation of corrective actions. LACMTA reports there hasn't been any reported.
4. LACMTA periodically reviews the effectiveness of its near-miss program on a monthly basis as part of its hazard management program.

Part 5: Compliance with Minimum Controls / Limitations Prescribed in G.O. 175

1. (a-c) LACMTA utilizes all requirements of GO175 Sections 6.1 - 6.3.
2. The Yard Controller controls all yard movement within the maintenance yard limits. The yard uses flags and/or lookout(s) in lieu of Protran. Protran can't be used in the yard because the alerts will be going off all the time. Trains in close proximity of Protran will create multiple "false positives".

Findings:

1. LACMTA Rule 4392 - "Watchperson shall maintain communication with Control on the appropriate operations radio channel", possibly does not meet the intent of G.O. 175 section 2.23.

Comments:

None.

Recommendations:

1. LACMTA Rule 4392 should comply with CPUC G.O. 175, Section 2.23's definition of a watchperson. (Watchperson cannot do anything other than look out for oncoming trains.)