INVITATION TO BID
FOR
FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations

City of Atlanta

Richard Mendoza
Commissioner
Department of Public Works

Adam L. Smith, Esq., CPPO, CPPB, CPPM,
CPP, CIPC, CISCC, CIGPM
Chief Procurement Officer
Department of Procurement

CITY OF ATLANTA

Kasim Reed
Mayor

SUITE 1900
55 TRINITY AVENUE, SW
ATLANTA, GA 30303
(404) 330-6204 Fax: (404) 658-7705
Internet Home Page: www.atlantaga.gov

DEPARTMENT OF PROCUREMENT
Adam L. Smith, Esq., CPPO, CPPB, CPPM, CPP, CIPC, CISCC, CIGPM
Chief Procurement Officer
asmith@atlantaga.gov

July 31, 2015

ATTENTION INTERESTED BIDDERS:

Your firm is hereby invited to submit to the City of Atlanta (the "**City**"), Department of Procurement (the "**DOP**"), a Bid for **FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations.** This solicitation will require the successful Bidder to furnish labor, tools and equipment required to provide emergency on-call repair and maintenance services for the Atlanta Streetcar Traction Power Substations.

A **Pre-Bid Conference** will be held on **Wednesday, August 12, 2015, at 11:00 A.M. EDT,** at 55 Trinity Avenue, S.W., Suite 1900 (1st Floor), City Hall South, Atlanta, Georgia 30303. The purpose of the Pre-Bid Conference is to provide Bidders with detailed information regarding the Procurement process and to address questions and concerns. There will be representatives from the Department of Public Works, Risk Management, Office of Contract Compliance and the Ethics Office available at the conference to discuss this project and to answer any questions.

The City will provide transportation for the **Site Visit** on **Wednesday, August 12, 2015, immediately following the Pre-Bid Conference**. Bus service will depart from the entrance of 55 Trinity Avenue, S.W, City Hall South Atlanta, Georgia 30303. Please be prompt so as not to delay the Site Visit. All interested Bidders are asked to attend the Site Visit via the City-provided transportation only, and to execute the Site Visit Release Form, attached to the solicitation. The purpose of the Site Visit is to provide Bidders with an opportunity for a visual inspection of the site. Attendance at the Pre-Bid Conference and Site Visit is **strongly** encouraged for each Bidder desiring to submit a bid. Bidders are asked to limit the number of its representatives for the Site Visit to **two (2) persons** to ensure everyone can be accommodated.

Bidders will be allowed to ask questions during the Pre-Bid Conference and Site Visit. However, please note that oral answers to questions during the Pre-Bid Conference and Site Visit are not authoritative. Authoritative responses to all written questions will be published and made available to all proponents in the form of an addendum. The deadline to submit questions in writing is **Tuesday, August 18, 2015, at 2:00 P.M. EDT.**

Your response to this Invitation to Bid ("**ITB**") must be received by designated staff of the Department of Procurement at 55 Trinity Avenue, S.W., Suite 1900 (1st Floor), City Hall South, Atlanta, Georgia 30303, **no later than 2:00 P.M. EDT, on Friday, August 28, 2015.**

****ABSOLUTELY NO BIDS WILL BE ACCEPTED AFTER 2:00 P.M. EDT****

Bids will be publicly opened and read at 2:01 P.M. EDT on the respective due date at 55 Trinity Avenue, S.W., Suite 1900 (1st Floor), City Hall South, Atlanta, Georgia 30303.

This Bid is being made available by electronic means. If accepted by such means, then the Bidder acknowledges and accepts full responsibility to insure that no changes are made to the Bid. In the event of conflict between a version of the Bid in the Bidder's possession and the version maintained by DOP, the version maintained by the DOP shall govern.

You are required to email and confirm receipt of your business name, contact person, address, phone number, fax number, email address and the project number to Lloyd A. Richardson, Contracting Officer, at larichardson@atlantaga.gov to be placed on the Plan Holders List. Failure to do so will prevent you from receiving any addenda that are issued and may deem you non-responsive.

The bid document may also be obtained from the Department of Procurement, Plan Room, 55 Trinity Avenue, S.W., Suite 1900 (1st Floor), City Hall South, Atlanta, Georgia 30303, at a cost of $100.00 per package, beginning on July 31, 2015. All purchased solicitation documents include a solicitation package; scope of work booklet and full size drawings (if applicable).

If you have any questions regarding this project, please contact Lloyd A. Richardson, Contracting Officer, at (404) 865-8504 or by email at larichardson@atlantaga.gov. Any questions regarding the procedure for purchasing a copy of the document or obtaining a copy of the Plan Holders List should be directed to the Plan Room at (404) 330-6204.

The City reserves the right to cancel any and all solicitations and to accept or reject, in whole or in part, any and all bids when it is for good cause and in the best interest of the City.

Thank you for your interest in doing business with the City.

Sincerely,

Adam L. Smith

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FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations

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PART I

PART I

Section 1 – Instructions to Bidders

INSTRUCTIONS TO BIDDERS

1. SOLICITATION/NOT AN OFFER

This solicitation does not constitute an offer by the City of Atlanta (the "**City**") to enter into an agreement and is not an offer that can be accepted by the Bidder to form an agreement. No language contained anywhere in this solicitation should be construed or interpreted to convey an offer to enter into agreement with the City. The terms of this solicitation are to be considered as a whole. However, no terms may be considered in whole or in part to constitute an offer to enter into an agreement with the City.

This solicitation is only an invitation for offers from interested Bidders and no offer shall bind the City.

This solicitation is an invitation for the Bidder to make an offer to the City in the form of a Bid. No offer made in response to the terms and conditions of this solicitation may include any terms and conditions which can bind the City to any contractual Agreement until such time as the Agreement has first been awarded by the City to the most responsible and responsive bidder whose bid meets the material requirements and criteria set forth in the solicitation and is accepted and fully executed and sealed by agents of the City designated on the signature page of the Agreement included in the solicitation. The term of your offer must conform to all applicable federal and local laws, including all ordinances of the City and all requirements of the solicitation.

YOUR OFFER IS A FIRM OFFER AND MAY NOT BE WITHDRAWN EXCEPT AS AUTHORIZED IN THE CODE OF ORDINANCES OF THE CITY OF ATLANTA.

Your response to this solicitation is a firm offer, which the City may accept or reject in whole or in part without any further action on your part. The acceptance of your offer by the City will form an Agreement, which is enforceable against you. **Your offer may not be withdrawn except under the terms and conditions specified in the Procurement and Real Estate Code of the City of Atlanta as codified in Part 5, Chapter 5 of the Code of Ordinances of the City of Atlanta or OCGA 36-91-52.**

2. RECEIPT AND OPENING OF BIDS

Sealed Bids for **FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations** will be received by designated staff of the Department of Procurement, Suite 1900, City Hall South, 55 Trinity Avenue, S.W., Atlanta, Georgia 30303, **no later than 2:00 P.M., EDT**, (as verified by the Bureau of National Standards), on **Friday**, **August 28, 2015**.

ABSOLUTELY NO BID WILL BE ACCEPTED AFTER 2:00 P.M. EDT

All Bids received by the time and date established above will be opened and publicly read.

3. PREPARATION OF BIDS

All Bids must be submitted on bid document forms supplied by the City and shall be subject to all requirements of the Agreement Documents. All Bids must be regular in every respect and no interlineations, excisions, or special conditions shall be made or included in the Bid by the Bidder.

Lump sum, unit price, and extensions of unit prices must be entered in the appropriate spaces provided on the Bid Schedule/Bid Form. Unit prices shall include an appropriate allocation of overhead and other indirect costs so that the summation of unit price extensions and lump sum items represents the total bid amount. In the case of any Bid item for which a fixed amount predetermined by the City has already been entered on the Bid Schedule, the amount so entered shall be conclusive of all Bidders as the price for such item, and shall not be revised unless the City directs a change in the Scope of Work affecting the item to which such amount relates.

The City may consider as irregular any conditional bid or any Bid on which there is an alteration of, or departure from, the Bid Schedule hereto attached and at its option may reject the same.

Erasures or other changes in the Bids must be explained or noted over the signature of the Bidder. Failure to do so shall render the Bidder as non-responsive and cause rejection of the Bid.

Failure to execute the Bid Schedule/Bid Form documents may render the Bidder as non-responsive and cause rejection of the Bid.

4. GEORGIA UTILITY CONTRACTOR'S LICENSE (NOT APPLICABLE)

The Bidder shall provide a Bidder's Georgia Utility Contractor's License Number on the outside of the Sealed Envelope. A utility Contractor's license number held by a Subcontractor or issued by another state does **NOT** fulfill this requirement in lieu of the Bidder's Georgia Utility Contractor's License. Failure to provide the Bidder's Georgia Utility Contractor License Number on the outside of the sealed envelope will result in a rejection of the Bid at the Opening. The Bidder is required to submit the certificate included in Exhibit G.

5. HOW TO SUBMIT BIDS

The Bid and required submittals, including the Bid Schedule, the Bid Documentation, the Bid Form, the acknowledgment of each Addendum, the Bid Bond Guarantee, the Power of Attorney for the attorney-in-fact signing the Bid Guarantee, the Affidavit, Office of Contract Compliance forms/certificates, and other documents as required in these Agreement documents may be photocopied for submission of Bids. **Submit (1) original and Five (5) copies of the Bid and required attachments.** In addition to the hard copy submittals, each Bidder shall submit two (2) digital versions of its Bid in Adobe Portable

Document Format (PDF) on Compact Discs (CDs). CD One (1) version should be a duplicate of the hard copy of the Bid with no deviations in order or layout of the hard copy Bid. CD Two (2) should be a redacted version of your hard copy Bid. Please refer to the Georgia Open Records Act (O.C.G.A. Section 50-18-72) for those items of documents that can be redacted.

The City assumes no liability for differences in information contained in a Bidder's printed Bid and that contained on the CDs. In the event of a discrepancy, the City will rely upon the information contained in the Bidder's printed material (Hard Copy). Each CD should be labeled with the Project Number, Project Name and the CD Number.

The complete package of Bid documents shall be enclosed in envelopes (outer and inner), both of which shall be sealed and clearly labeled with the project name and numbers, name of Bidder and date and time of bid opening in order to guard against premature opening of the Bid.

Bids must be addressed to:

Adam L. Smith, Esq., CPPO, CPPB, CPPM,
CPP, CIPC, CISCC, CIGPM
Chief Procurement Officer
Department of Procurement
55 Trinity Avenue, Suite 1900
Atlanta, GA 30303-0307

6. EXECUTION OF BIDDING DOCUMENTS

Bidders shall submit their Bids, together with the bid guarantee and all forms which the Bidder is required to sign, executed in the appropriate manner as set forth below:

a. If the Bidder is a corporation, all documents requiring execution by the Bidder shall be signed by the president or vice-president of the corporation, whose signature shall be attested by the secretary or assistant secretary of the corporation and the corporate seal affixed.

b. If the Bidder is an individual, he or she shall sign the documents and his or her signature shall be notarized by a notary public.

c. If the Bidder is an individual doing business under a trade name, all documents shall be signed by the Bidder whose signature shall be followed by either, "doing business as," or "trading as," followed by the trade name of the Bidder's business, and notarized by a notary public.

d. If the Bidder is a partnership, all forms shall be executed by placing the name of the partnership followed by "By: (the name of the partner executing)" followed by the word "Partner," and notarized by a notary public.

e. If the Bidder is a joint venture, each party to the joint venture shall execute the Bidding Documents in the manner set forth in items a, b, c, or d of this article of the Instructions to Bidders as appropriate for this type of organization.

If the Bidder is a Joint Venture, all other documents in the Bidding Documents shall be executed by one of the parties to the joint venture, as provided by Article 4 of the Joint Venture Statement, in the same manner as the executed said Joint Venture Statement.

7. FAILURE TO BID

Your failure to respond to this Invitation to Bid may result in the removal of your company from the City's Bid list.

8. ERRORS IN BIDS

Bidders and their authorized representatives are expected to fully familiarize themselves with the conditions, requirements, and Specifications before submitting Bid. Failure to do so will be at the Bidder's own risk. In case of error in extension or prices in the Bid, the unit prices(s) shall govern.

9. DISQUALIFICATION OF BIDDERS

Any of the following may be considered as sufficient for disqualification of a Bidder and the rejection of the Bid:

a. Submission of more than one Bid for the same work by an individual, firm, partnership or Corporation under the same or different name(s);

b. Evidence of collusion among Bidders;

c. Previous participation in collusive bidding on Work for the City;

d. Submission of an unbalanced Bid, in which the prices quoted for same items are out of proportion to the prices for other items;

e. Lack of competency of Bidder (the Agreement will be awarded only to a Bidder(s) rated as capable of performing the Work; the City may declare any Bidder ineligible at any time during the process of receiving Bids or awarding the Agreement where developments arise which, in the opinion, the City adversely affect the Bidder's responsibility; however, the Bidder will be given an opportunity by the City to present additional evidence before final action is taken;

f. Lack of responsibility as shown by past Work judged from the standpoint of workmanship and progress; financial irresponsibility, including but not limited to, leaving retainage in City account;

g. Uncompleted Work for which the Bidder is committed by Agreement, which in the judgment of the City, might hinder or prevent the prompt completion of Work under this Agreement if awarded to such Bidder; and

h. Being in arrears on any existing or prior contracts with the City or in litigation with the City thereon or having defaulted on a previous contract with the City.

10. REJECTION OF BIDS

Bids may be considered irregular and may be rejected if they show omissions, alterations of forms, addition not called for, conditions limitations, unauthorized alternate Bids or other irregularities of any kind. The City reserves the right to waive any informalities or irregularities of Bids.

11. FAILURE TO PERFORM

If for any reason the Contractor fails to perform any of the Work required by the Specifications, or if the Work performed is not as specified, the City reserves the absolute right to have such Work performed by other persons and deduct the cost thereof from the Bid price of the company under Agreement.

12. BID SCHEDULE (REQUIRED SUBMITTAL)

Unit prices shall include an appropriate allocation of overhead, other indirect costs and profits so that the summation of unit price extensions and lump sum items represents the total Bid amount. In the case of any Bid item for which a fixed amount predetermined by the City has already been entered on the Bid Schedule, the amount so entered shall be conclusive of all Bidders as the price for such item, and shall not be revised unless the City directs a change in the Scope of the Work affecting the item to which such amounts relates. Award will be based on the total fixed unit cost for all items aggregated.

13. BID GUARANTEE (REQUIRED SUBMITTAL)

Bidders are required to furnish a Bid Guarantee in the amount of five percent (5%) of the total Bid amount. Bidders offering alternative Bids shall provide a guaranty for the largest total Bid amount. At the option of the Bidder, the guaranty may be a certified check payable to the order of the City or a bid bond in the form attached. The bid bond shall be secured by a guaranty or a surety company listed in the latest issue of U.S. Treasury Circular 570. The amount of such bid bond shall be within the maximum amount specified for such company in Circular 570. No Bid shall be considered unless it is accompanied by the required guaranty. Bid Guarantee shall insure the execution of the Agreement and the furnishing of the performance and payment bonds and insurance by the successful Bidder as required by the Agreement Documents. The Bid Guarantee of the Bidders submitting the five (5) lowest total Bid amounts for the Agreement will be retained either until the successful Bidder has signed the Agreement and furnished performance and payment bonds and certificates of

insurance, or until the ninetieth (90th) calendar day after the Bid opening date, whichever is sooner. Other Bid Guarantees will be returned within ten (10) calendar days after the Bid opening date. Bid Guarantees being held pending the signing of the Agreement and furnishing other documents will be returned within three (3) calendar days thereafter. Each Bidder agrees that if it is awarded the Agreement and fails within the time stipulated to execute the Agreement and to furnish the other documents required, the City will retain the Bid Guarantee as liquidated damages and not as a penalty.

Attorneys-in-fact who sign bid bonds must file with the bond a certified and effectively dated copy of their power of attorney.

14. STATEMENT OF BIDDER'S QUALIFICATIONS (REQUIRED SUBMITTAL)

The statement of Bidder's Qualifications must be filled out completely, signed by the Bidder, and notarized.

The City shall have the right to require such additional information, as it deems necessary to evaluate the ability of the Bidder to successfully perform the Work.

The City reserves the right to reject any Bidder who does not satisfy the City as to his ability to successfully perform the Work, previous pre-qualification notwithstanding.

The cause for rejection shall include:

a. Non-compliance of the Bidder with the requirements of an equal employment opportunity in contracting program as may be prescribed by ordinance;

b. Non-compliance by the Bidder with the requirements of a minority and female business enterprise participation program as may be prescribed;

c. Inadequate quality, availability and adaptability of the supplies or services to the particular use required; or

d. Unacceptable number and scope of conditions attached to the Bid by the Bidder, if any.

15. AFFIDAVIT (REQUIRED SUBMITTAL)

Affidavits must be filled in completely, signed by the Bidder, and notarized. Violation of the statements set forth in this affidavit may be grounds for rejection of Bid, or termination of Agreement by the City, as appropriate, as well as other appropriate remedies as provided by local, state, and federal statutes.

16. EQUAL BUSINESS OPPORTUNITY PROGRAM (REQUIRED SUBMITTAL)

The Bidder shall complete the Equal Business Opportunity ("**EBO**") Program documents in accordance with the instructions included in Appendix A, Requirements of the Office of Contract Compliance and shall properly execute the documents.

A determination by the City that misstatements have been made by the Bidder in this document shall cause rejection of Bid or termination of Agreement, as appropriate and shall be grounds for other remedies available under City ordinances, and state or federal statutes.

17. AUTHORIZATION TO TRANSACT BUSINESS (REQUIRED SUBMITTAL)

Each Bidder must submit with its Bid documentation that demonstrates it is duly authorized to conduct business in the State of Georgia. If the Contractor is a corporation or corporations combined to form a joint venture, the corporation or members of the joint venture team, prior to Agreement execution, must submit documentary evidence from the Secretary of State that the corporation is in good standing and that the corporation is authorized to transact business in the State of Georgia.

18. BUSINESS NON-DISCRIMINATION POLICY

The City prefers to do business with firms or institutions that include representation of minorities and women at all levels.

19. EQUAL EMPLOYMENT OPPORTUNITY ("EEO") IN PURCHASING AND CONTRACTING

To be eligible for award of this Agreement, the Bidder(s) must certify and fully comply with the requirements, terms, and conditions of the section on EEO.

20. CONTRACT EMPLOYMENT REPORT

Upon award of an Agreement with the City, the successful Bidder must submit a Contract Employment Report ("**CER**") and supplemental information as required to comply with the paragraph, "Monitoring of EEO Policy, Requirements of the Office of Contract Compliance".

21. FIRST SOURCE JOBS POLICY EMPLOYMENT AGREEMENT (REQUIRED SUBMITTAL LOCATED IN APPENDIX A)

The Bidder shall acknowledge and implement the First Source Jobs Policy.

22. BID FORM; BID DATA; CHECKLIST (REQUIRED SUBMITTALS)

The Bidder must complete and execute these sections of the Bidding documents.

23. WAGE RATES OF CITY OF ATLANTA FUNDED CONSTRUCTION PROJECTS

Contractor is Responsible for all Federal and State government wage requirements.

24. PRE-BID INSPECTION

Prior to submission of a Bid, the Bidder shall have made a thorough examination of the Work Site. The Bidder shall become informed as to the nature of the proposed construction, the kind of facilities required to carry out the construction, labor conditions, and all other matters that may affect the cost and time of completion of the Work upon which it bids.

The Bidder shall make itself familiar with all of the Agreement documents and other instructions before submitting its Bid, in order that no misunderstanding shall exist in regard to the nature and character of the Work to be done. No allowance shall be made for any claims that the Bid is based on incomplete information as to the nature and character of the site or the Work involved.

The Contractor, by execution of the Agreement, shall in no way be relieved of any obligation under it due to its failure to receive or examine any form or legal instrument or to visit the site and acquaint itself with the conditions there existing, and the City shall be justified in rejecting any claims based on facts regarding that which the Contractor should have known as a result thereof.

25. ADDENDA AND INTERPRETATIONS

All questions by prospective Bidders as to the interpretations of the Bidding Documents must be submitted in writing to: Lloyd A. Richardson, Contracting Officer, City of Atlanta, Department of Procurement, 55 Trinity Avenue, S.W. Suite 1900, Atlanta, Georgia 30303, or faxed to (404) 865-8504 or emailed to LARichardson@atlantaga.gov, and must be received by **Tuesday, August 18, 2015 at 2:00 P.M. EDT**. Every interpretation made to a Bidder will be in the form of an addendum to the Bidding Documents, and when issued, will be on file in the Department of Procurement. In addition, all addenda will be mailed to each person holding Bidding Documents, but it shall be the Bidder's responsibility to make inquiry as to the addenda issued. All such addenda shall become part of the Agreement and all Bidders shall be bound by such addenda, whether or not received by the Bidders.

The City shall not be bound by any information, explanation, clarification, or any interpretation, oral or written, by whosoever made, that is not incorporated into an addendum to the Bidding Documents. No response shall be made to inquiries received later than **2:00 P.M. EDT on Tuesday, August 18, 2015**.

26. PROHIBITED CONTACTS

Any questions regarding this ITB should be submitted in writing to City's contact person, **Lloyd A. Richardson**, Contracting Officer, Department of Procurement, 55 Trinity Avenue, SW, Suite 1900, Atlanta, Georgia 30303-0307 or e-mail **larichardson@atlantaga.gov**. All Bidders and representatives of any Bidder are strictly prohibited from contacting any other City employees or any third-party representatives of City on any matter having to do with this ITB. All communications by any Bidder concerning this ITB must be made to the City's contact person, or any other City representatives designated by the Chief Procurement Officer in writing.

27. PRE-BID CONFERENCE

A Pre-bid Conference will be held on **Wednesday, August 12, 2015, at 11:00 A.M. EDT**, in Suite 1900, Department of Procurement**,** 55 Trinity Avenue, S.W., Atlanta, Georgia 30303. At that time, the general requirements of the project will be discussed. Any additional questions raised by Bidders will be discussed. A site tour is scheduled following the pre-bid conference on **Wednesday, August 12, 2015.** The site tour will consist of visiting the three (3) sub-power stations**.** It is **strongly** encouraged that all Bidders attend the Pre-bid Conference and site tour.

General requirements of the project will be discussed at the Pre-bid Conference. Also discussed will be questions regarding preparation and submission of Bids and general contractual requirements. Bidders will be allowed to ask questions. **Oral answers to questions during the Pre-bid Conference will not be authoritative**.

It should be emphasized that nothing stated or discussed during the course of this Conference or the Site Visit shall be considered to modify, alter or change the requirements of the Bidding Documents, unless it shall be subsequently incorporated into an addendum to the Bidding Documents.

28. TIME FOR RECEIVING BIDS

Sealed Bids for this project will be received by designated staff of the Department of Procurement, Suite 1900, City Hall South, 55 Trinity Avenue, S.W., Atlanta, GA 30303, no later than 2:00 P.M. EDT, (as verified by the Bureau of National Standards) on **Friday, August 28, 2015. ABSOLUTELY NO BIDS WILL BE RECEIVED AFTER 2:00 P.M. EDT ON THE RESPECTIVE DATE.** All Bids received by the time and date set forth will be opened publicly and read at **2:01 P.M. EDT** in the Department of Procurement Bid Conference Room, Suite 1900, at the aforementioned address.

Bids received prior to the advertised hour of opening will be kept secured and sealed. The contracting officer whose duty it is to open them will decide when the specified time has arrived, and no Bid received thereafter will be considered, except that when a Bid arrives by mail after the time fixed for opening, but before the reading of all other Bids is completed,

and it is shown to the satisfaction of the City that the non-arrival on time was due solely to delay in the mail for which the Bidder was not responsible, such Bid will be received and considered.

29. BID MODIFICATION AND WITHDRAWAL

Bids may be modified after they have been submitted, but only before the Bid opening date and time. Modifications must be signed by the Bidder and must be received by the City no later than the Bid opening time and date. Modifications should not reveal the total Bid amount, but should identify the addition and subtraction or other modification in a manner in which the prices will not be known by the City until the sealed Bid is opened.

Bids may be withdrawn after they have been submitted, but only before the Bid opening date and time. Withdrawn bids may be resubmitted, but only in the manner in which the Bid was originally submitted. Withdrawals must be signed as stipulated above for modification. Bids may not be withdrawn between the Bid opening time and one hundred and eighty (180) calendar days thereafter, except as may be agreed upon by a written agreement between the Bidder and the City.

30. BID EVALUATION

a. Each Bid timely received and in the City's hands at the time set forth for the Bid opening shall constitute an offer to perform the Agreement on the terms and conditions thereof, in strict accordance with the Agreement documents, and all other requirements, all for the Bid total. For good cause and valuable consideration, the sufficiency of which is acknowledged by submittal of a Bid, each Bidder promises and agrees that its Bid shall be irrevocable for a period of ***one hundred eighty (180) calendar days*** after the Bid opening and will not be withdrawn or modified during that time. The City may accept any Bid by giving the Bidder Written Notice of acceptance during that time. If necessary, the period of time specified may be extended by written agreement between the City and the Bidder or Bidders concerned.

b. After the Bids have been opened and before any award is made, the City will evaluate the Bid process, the Bid total, the supplements to the Bid form, Bidder's experience, financial data, Local Preference Program, proposed Subcontractors and equipment manufacturers and other data relating to Bidders' responsibility and qualifications to perform the Agreement satisfactorily.

c. All extension of the unit prices shown and the subsequent addition of extended amounts may be verified by the City. In the event of a discrepancy between the unit price bid and the extension, the unit price will be deemed intended by the Bidder and the extension shall be adjusted. In the event of a discrepancy between the sum of the extended amounts and the bid total, the sum of the extended amounts shall govern.

d. Bidder may be required to submit, in writing, the addresses of any proposed Subcontractors or equipment manufacturers listed on the Bid, and to submit other material information

relative to proposed Subcontractors or Equipment manufacturers. The City reserves the right to disapprove any proposed Subcontractor or equipment manufacturers whose technical or financial ability or resources or whose experience are deemed inadequate.

e. The City reserves the right to reject any Bid where any bid price(s) appears to be unbalanced, and to reject any or all Bids, or parts thereof, if it determines, in its sole discretion, that such rejection is in the best interest of the City. Where only a single responsible and responsive Bid is received, the City may in its sole discretion, elect to conduct a price or cost analysis of the Bid. Such Bidder shall cooperate with such analysis and provide such supplemental information as may be required. The determination whether to enter into an Agreement with such sole Bidder shall be solely within the City's discretion and not dependent upon performance of a price or cost analysis.

f. Bids will be evaluated on the basis of determining the lowest Bid total of a Bidder, not including alternates, whose Bid is responsive to the Invitation to Bid and who is determined to be technically, financially and otherwise responsible to perform the Agreement satisfactorily, and to meet all other requirements of the Bidding Documents relating thereto. Any Bid may be rejected if it is determined by the City to be non-responsive, provided, however, that the City reserves the right to waive any irregularities or technicalities which it determines, within its sole discretion, to be minor in nature and in the interest of the public. Furthermore, any Bid may be rejected if it is determined by the City, in its sole discretion, that the bidder is not capable of performing the Agreement satisfactorily based upon review of its experience and technical and financial capabilities, or the failure of such bidder to provide information requested relating to such determination. Additionally, the City reserves the right to disqualify Bids, before and after the bid opening, upon evidence of collusion with intent to defraud or other illegal practices upon the part of any Bidder(s).

g. The City intends to award the Agreement at the earliest practicable date to the lowest responsive, responsible Bidder(s), provided that the Bid is within the funds available for the project. In addition, the City reserves the right to reject any and/or all Bids if it determines, in its sole discretion, that the public interest will be best served by doing so.

h. A Pre-award Conference may be conducted with the apparent low Bidder(s) to review general requirements of the Bidding Documents.

31. AWARD CRITERIA

Award will be made after evaluating the prices, responsiveness and responsibility of each Bidder.

a. The **responsiveness** of a Bidder is determined by the following:

1. A timely and effective delivery of all services, materials, documents, and/or other information required by the City;

2. The completeness of all material, documents and/or information required by the City; and

3. The notification of the City of methods, services, supplies and/or equipment that could reduce cost or increase quality.

b. The **responsibility** of a Bidder is determined by the following:

1. The ability, capacity and skill of the Bidder to perform the Agreement or provide the Work required;

2. The capability of the Bidder to perform the Agreement or provide the Work promptly, or within the time specified without delay or interference;

3. The character, integrity, reputation, judgment, experience and efficiency of the Bidders;

4. The quality of performance of previous contracts or work;

5. The previous existing compliance by the Bidder with laws and ordinances relating to the Agreement or Work;

6. The sufficiency of the financial resources and ability of the Bidder to perform Agreement or provide the Work;

7. The compliance of the Bidder with the requirements of Division II, Equal Employment Opportunity (EEO), and Division 12, Minority and Female Business Enterprises, of the City's Department of Procurement;

8. The quality, availability and adaptability of the supplies or contractual Work to the particular use required; and

9. The successful Bidder shall assume full responsibility for the conduct of his agents and/or employees during the time such agents or employees are on the premises for the purpose of performing the Work herein specified.

32. SURETY BONDS

Regarding submission of surety bonds prior to or subsequent to the Bid submission, the following requirements pertain:

a. Any surety bond submitted in accordance with the Bid or Agreement requirements must be issued by a corporate surety company satisfactory to the City and authorized to act as such in the State of Georgia;

b. Such bonds shall conform to the forms provided with the Bid Documents and be completed in accordance with the instructions thereon; and

c. In accordance with Georgia law, and upon award of the Agreement, separate performance and payment bonds shall be required of the successful Bidder, each in an amount not less than the total amount payable under the Agreement.

The performance bond shall remain in effect for one (1) year after final acceptance of the Work or the guaranty period under the Agreement, whichever is the larger.

The payment bond shall remain in effect for the period required under Georgia law for the payment bonds on public construction agreements. Reference is made to the bond forms and the Agreement Documents for additional particulars of the terms required in the bonds. In the case of any inconsistency between the Bond Forms and Georgia law, the law shall control. Finally, alterations, extension of the time allowed for performance, extra and additional Work, and other changes authorized under the Agreement may be made without notice to or consent of the surety or sureties.

33. POWER OF ATTORNEY

Attorneys-in-fact who sign agreement bonds must file with each bond a certified copy of their power of attorney with the appropriate effective date.

34. INSURANCE REQUIREMENTS

Bidders must provide a copy of a current certificate of insurance evidencing any existing commercial general liability policies issued for Bidder, if any. For purposes of this section, "Bidder" shall mean an individual, corporation or other corporate entity submitting a bid in connection with this solicitation, including each joint venture partner if Bidder is a joint venture.

The Contractor shall procure and maintain during the life of this Agreement, Workmen's Compensation, Public Liability, Property Damage, Automobile Liability insurance and any other insurance necessary to satisfy the requirements of the Agreement Documents.

35. LAWS AND REGULATIONS

The Bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Agreement throughout, to the extent that such requirements do not conflict with federal laws or regulations, and they will be deemed to be included in the Agreement the same as though therein written out in full.

Bidder's attention is directed to the following laws and regulations:

a. Wages under this Agreement must not be less than the minimum wage rates specified for Atlanta-funded projects as set forth in these documents;

b. Applicable provisions of the Occupational Safety and Health Act ("**OSHA**") must be observed during Work under this Agreement; and

c. Appendix A – Requirements of the Office of Contract Compliance.

36. AGREEMENT TERMS

The terms of this Agreement shall be for a period of one (1) year with the option to renew for four (4) additional one (1) year periods at the sole discretion of the City.

37. LIQUIDATED DAMAGES

The performance of the Work under Agreement within the specified time is essential to the City's economic interests. The attention of potential Bidders is directed to the provisions of the Agreement Documents, which establish the basis for liquidated damages to be paid to the City in the event that the Work is not completed on schedule**.**

38. EXECUTION OF AGREEMENT

Subsequent to the award and within five (5) days after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the City **seven (7) copies** of the City-Contractor Agreement as included in the Agreement Documents and provide performance and payment bonds and insurance certificates. The failure of the successful Bidder to execute the City-Contractor Agreement and to supply the required bonds within five (5) days after the prescribed forms are presented for signature, or within such extended period as the City may grant, based upon reasons determined sufficient by the City, shall constitute a default, and the Bidder shall forfeit the Bid Guarantee and the City may either award the Agreement to the next lowest responsive Bidder or re-advertise for Bids, and may proceed against the bid bond of the defaulted Bidder. If a more favorable Bid is received by re-advertising, the defaulting Bidder shall have no claim against the City for a refund.

39. PRE-CONSTRUCTION CONFERENCE

A pre-construction conference may be held with the successful Bidder(s) and all known Subcontractors at a time and place set by the City.

40. SUBSTITUTIONS

Whenever a material, article, or piece of equipment is identified on the Plans or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, etc., it is intended to establish a standard, and any material, article, or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable, provided the material, or

equipment so proposed is, in the opinion of the Engineer, of equal substance and function. It shall not be purchased or installed by the Contractor without the Engineer's written approval.

Whenever the design is based on a specific product of a particular manufacturer or manufacturers, the manufacturer(s) will be shown on the Drawings and/or listed in the Specifications. Any item other than those so designated shall be considered a substitution.

If the manufacturer is named in the Drawings and/or detailed specifications as an approved manufacturer, products of that manufacturer meeting all Specification requirements are acceptable.

Approval of any substitution will be made under the following provisions:

a. If the term "OR EQUAL" follows the names of approved manufacturers, then other manufacturers desiring approval may submit the product to the Engineer for approval during the bidding phase. The manufacturer should include the following items in this pre-submittal:

1. Descriptive literature, including information on materials used, minimum design standards features, manufacturing processes and facilities, and similar information, which will indicate experience and expertise in the manufacture of the product being evaluated;

2. Performance specifications applicable to the manufacturer's standard design, which indicate the level of performance to be expected from the product;

3. A complete set of submittal Drawings of similar equipment that has been completed and placed into operation;

4. A list of existing installations of equipment similar in type and size;

5. Evidence of technical ability of the manufacturer to design and manufacture Equipment and systems meeting project requirements. Evidence submitted shall include, at a minimum, descriptions of engineering and manufacturing staff capabilities;

6. Information required to satisfy specified experience requirements or a copy of the bond to be submitted in lieu of experience;

7. A complete description of field service capabilities, including the location of field service facilities which would serve the proposed facility and the number and qualifications of personnel working from that location;

8. A complete list of all requirements of the Drawings and Specifications with which the manufacturer cannot conform, including reasons why alternate features are considered equivalent; and

9. All other information necessary to fully evaluate the product for consideration.

b. This pre-submittal shall reach the Engineer no later than three (3) weeks prior to the Bid date. Manufacturers will be advised of approval or rejection in writing no later than fourteen (14) days prior to the Bid date. Rejected submittals may be supplemented with additional information and resubmitted no later than one (1) week prior to the bid date. Manufacturers making supplementary submittals will be advised of approval or rejection in writing no later than three (3) days prior to the bid date.

NOTE: Bids based on equipment, which has not received the approval of the Engineer, will render the Bidder as non-responsive and cause rejection of the Bid.

c. If the term "EQUAL TO" precedes the names of approved manufacturers in the Specifications, the Contractor may, after receiving the Notice to Proceed, submit Shop Drawings on the substitute product for the approval of the Engineer in accordance with General Condition 28**.**

Any Bidder intending to furnish substitute products is cautioned to verify that the item being furnished will perform the same functions and have the same capabilities as the item specified. The Bidder shall include in his bid the cost of accessory items, which may be required by the substitute product and any architectural, structural, mechanical, piping, electrical or other modifications required to accommodate the substitution.

Approval of the Engineer is dependent on his determination that the product offered is essentially equal in function, performance, quality of manufacture, ease of maintenance, reliability, service life and other criteria to that on which the design is based, and will require no major modifications to structures, electrical systems, control systems, or piping systems.

41. ILLEGAL IMMIGRATION REFORM AND ENFORCEMENT ACT

Each Bidder must complete and submit a Contractor's Affidavit attached hereto as Exhibit B; Illegal Immigration Reform and Enforcement Act Forms with its bid. This ITB is subject to the Illegal Immigration Reform and Enforcement Act of 2011 (the "ACT"). Pursuant to the Act, the Bidder must provide with its proposal proof of its registration with and continuing and future participation in the E-Verify Program established by the United States Department of Homeland Security. Under state law, the City cannot consider any proposal which does not include a complete Contractor's Affidavit. It is not the intent of this notice to provide detailed information or legal advice concerning the Illegal Immigration Reform and Enforcement Act. All bidders/proponents intending to do business with the City are responsible for independently apprising themselves and complying with the requirements of that law and its effect on City procurements and their participation in those procurements.

For additional information on the E-Verify program or to enroll in the program, go to: https://e-verify.uscis.gov/enroll.

42. MULTIPLE AWARDS

The City is soliciting multiple contracts for the maintenance and repair of sidewalks, curbs, driveway aprons & associated infrastructure. If you are the lowest bidder (whether as a joint venture partner or individual entity) for multiple solicitations, the City will only award the bidder one contract and will re-solicit the solicitation(s) where the bidder was the lowest but no award was made.

+ + + END OF INSTRUCTIONS TO BIDDERS + + +

SITE VISIT/TOUR RELEASE
FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations

Release and Waiver: Prospective Proponents **("Proponent")** agrees to accept and assume all risks arising directly or indirectly out of any visit or entry by Proponents or its Authorized Persons to the Atlanta Streetcar Vehicle Maintenance Facility and Traction Power Substations (hereinafter, called "**Facilities**"). Proponent agrees that the City of Atlanta (the "**City**") and its agents, employees and consultants shall have no duty of care to keep the Facilities sage for entry or use. Proponent agrees that the City does not, grant its permission, assume responsibility or incur liability for any injury, death, loss or damage to any person or property arising out of the activities of Proponent or its Authorized Persons on the Facilities, and Proponent hereby releases the City and its employees, consultants and other agents from any an all actions, causes of action, suits, claims, liabilities, losses, damages, judgments and executions of any kind arising after the date hereof that Proponent, its Authorized Agents, or their respective employees, representatives, affiliates and/or agents may have by reason of, arising out of, related to, or resulting from any visit, entry, inspection, study, test or other action by Proponent or its Authorized Persons.

Indemnity: Notwithstanding any general liability or other insurance that may be maintained by Proponent, Proponent shall defend, indemnify and hold the City harmless (using counsel reasonably satisfactory to the City) from any and all actions, causes of action, suits, claims, liens, demands, liabilities, losses, costs, expenses (including, without limitation, reasonable attorneys' fees) and damages of any kind or nature that the City sustains or incurs by reason of or in connection with any visit, entry, inspection, study, test or other actions by Prospective Proponent or its Authorized Persons; provided, however, that the indemnity obligations of Proponent shall not apply to any liability of damages arising out of bodily injury to persons or damage to property caused by or resulting from the sole negligence or willful misconduct of the City and its agents or employees.

Confidential Information: Proponent recognizes that their employee and/or agent may be exposed to Confidential Information and that the City desires to prevent unauthorized disclosure of such information. Except as required by law or by a court of competent jurisdiction, each party agrees that it will not disclose any Confidential Information of the other party and further agrees to take appropriate action to prevent such disclosure by its employees or agents.

PROSPECTIVE PROPONENT:

Company Name: _____

Name: _____

Title: _____

Date: _____

Telephone Number: _____

E-mail Address: _____

Fax Number: _____

PART I

Section 2 – Required Submittals

REQUIRED SUBMITTAL FORMS

All Respondents, including, but not limited to, corporate entities, limited liability companies, joint ventures, or partnerships, that submit a Proposal or Bid in response to this solicitation must fill out all forms in their entirety, and all forms must be signed, notarized or sealed with the corporate seal (if applicable), as required per each form's instructions.

If Respondent intends to be named as a Prime Contractor(s) with the City, then Respondent must fill out all the forms listed in this solicitation document; otherwise, Respondent may be deemed non-responsive.

Required Submittal (FORM 1)

Illegal Immigration Reform and Enforcement Act Forms (Page 1 of 3)

INSTRUCTIONS TO BIDDERS:

All Bidders must comply with the Illegal Immigration Reform and Enforcement Act of 2011, O.G.G.A § 13-10-90, et seq. (IIREA). IIREA was formerly known as the Georgia Security and Immigration Compliance Act or GSICA. Bidders must familiarize themselves with IIREA and are solely responsible for ensuring compliance. Bidders must not rely on these instructions for that purpose. They are offered only as a convenience to assist Bidders in complying with the requirements of the City's procurement process and the terms of this ITB.

1. The attached Contractor Affidavit must be filled out COMPLETELY and submitted with the Bid prior to Bid due date.

2. The Contractor Affidavit must contain an active Federal Work Authorization Program (E-Verify) User ID Number and Date of Registration.

3. Where the business structure of a Bidder is such that Bidder is required to obtain an Employer Identification Number (EIN) from the Internal Revenue Service, Bidder must complete the Contractor Affidavit on behalf of, and provide a Federal Work Authorization User ID Number issued to, the Bidder itself. Where the business structure of a Bidder does not require it to obtain an EIN, each entity comprising Bidder must submit a separate Contractor Affidavit.

   Example 1, ABC, Inc. and XYZ, Inc. form and submit a Bid as Happy Day, LLC. Happy Day, LLC must enroll in the E-verify program and submit a single Contractor Affidavit in the name of Happy Day, LLC which includes the Federal Work Authorization User ID Number issued to Happy Day, LLC.

   Example 2, ABC, Inc. and XYZ, Inc. execute a joint venture agreement and submit a Bid under the name Happy Day, JV. If, based on the nature of the JV agreement, Happy Day, JV. is not required to obtain an Employer Identification Number from the IRS, the Bid submitted by Happy Day, JV must include both a Contractor Affidavit for ABC, Inc. and a Contractor Affidavit for XYZ, Inc.

4. All Contractor Affidavits must be executed by an authorized representative of the entity named in the Affidavit.

5. All Contractor Affidavits must be duly notarized.

6. All Contractor Affidavits must be submitted with the Bidder's Response to the ITB.

7. Subcontractor and sub-subcontractor affidavits are not required at the time of Bid submission, but will be required at contract execution or in accordance with the timelines set forth in IIREA.

Required Submittal (FORM 1)

Illegal Immigration Reform and Enforcement Act Forms (Page 2 of 3)

Contractor Affidavit under O.C.G.A. § 13-10-91(b)(1)

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of the City of Atlanta has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____ _____
Federal Work Authorization User Identification Number Date of Authorization

Name of Contractor: _____

Name of Project: **FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations**

Name of Public Employer: City of Atlanta

I hereby declare under penalty of perjury that the forgoing is true and correct.

Executed on _____, ____, 20__ in _____(city), _____(state)

_____
Signature of Authorized Officer or Agent

_____
Printed name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE
ME ON THIS THE ___, DAY OF _____, 20___

_____
NOTARY PUBLIC
My Commission Expires: _____

Required Submittal (FORM 1)

Illegal Immigration Reform and Enforcement Act Forms (Page 3 of 3)

Subcontractor Affidavit under O.C.G.A. § 13-10-91(b)(3)

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with (_____ (name of contractor)) on behalf of the City of Atlanta has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the subcontractor with the information required by O.C.G.A. § 13-10-
91(b). Additionally, the undersigned subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor to the contractor within five business days of receipt. If the undersigned subcontractor receives notice of receipt of an affidavit from any sub-subcontractor that has contracted with a sub-subcontractor to forward, within five business days of receipt, a copy of such notice to the contractor. Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____ _____
Federal Work Authorization User Identification Number Date of Authorization

Name of Subcontractor: _____

Name of Project: **FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations**

Name of Public Employer: City of Atlanta

I hereby declare under penalty of perjury that the forgoing is true and correct.

Executed on _____, ____, 20__ in _____(city), _____(state)

_____
Signature of Authorized Officer or Agent

_____
Printed name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE
ME ON THIS THE ___, DAY OF _____, 20____

_____

NOTARY PUBLIC
My Commission Expires: _____

Required Submittal (FORM 2)
Contractor Disclosure Form (Page 1 of 7)

DEFINITIONS FOR THE PURPOSES OF THIS DISCLOSURE AFFIDAVIT

"Affiliate"	Any legal entity that, directly or indirectly through one of more intermediate legal entities, controls, is controlled by or is under common control with the Respondent or a member of Respondent.
"Contractor"	Any person or entity having a contract with the city.
"Control"	The controlling entity: (i) possesses, directly or indirectly, the power to direct or cause the direction of the management and policies of the controlled entity, whether through the ownership of voting securities or by contract or otherwise; or (ii) has direct or indirect ownership in the aggregate of fifty one (51%) or more of any class of voting or equity interests in the controlled entity.
"Respondent"	Any individual or entity that submits a Bid in response to a solicitation. If the Respondent is an individual, then that individual must complete and sign this Disclosure Affidavit where indicated. If the Respondent is an entity, then an authorized representative of that entity must complete and sign this Disclosure Affidavit where indicated. **If the Respondent is a newly formed entity (formed within the last three years), then an authorized representative of that entity must complete and sign this Disclosure Affidavit where indicated, and each of the members or owners of the entity must also complete and sign separate Disclosure Affidavits where indicated.**

Instructions: Provide the following information for the entity or individual completing this Statement (the "Individual/Entity").

A. Basic Information:

1. Name of Individual/Entity responding to this solicitation:

2. Name of the authorized representative for the responding Entity:

B. Individual/Entity Information:

1. Principal Office Address:

2. Telephone and Facsimile Numbers:

3. E-Mail Address:

4. Name and title of Contact Person for the Individual/Entity:

5. Is the individual/Entity authorized to transact business in the state of Georgia?

☐ Yes **(Attach Certificate of Authority to transact business in Georgia from Georgia Secretary of State.)**

☐ No

C. Questionnaire

If you answer "YES" to any of the questions below, please indicate the name(s) of the person(s), the nature, and the status and/or outcome of the information, indictment, conviction, termination, claim or litigation, the name of the court and the file or reference number of the case, as applicable. Any such information should be provided on a separate page, attached to this form and submitted with your Bid.

1. Please describe the general development of the Respondent's business during the past ten (10) years, or such shorter period of time that the Respondent has been in business.

	YES	NO
2. Are there any lawsuits, administrative actions or litigation to which Respondent is currently a party or has been a party (either as a plaintiff or defendant) during the past ten (10) years based upon fraud, theft, breach of contract, misrepresentation, safety, wrongful death or other similar conduct?	☐	☐
3. If "yes" to question number 2, were any of the parties to the suit a bonding company, insurance company, an owner, or otherwise? If so, attach a sheet listing all parties and indicate the type of company involved.	☐	☐
4. Has the Respondent been charged with a criminal offense within the last ten (10) years?	☐	☐
5. Has the Respondent received any citations or notices of violation from any government agency in connection with any of Respondent's work during the past ten (10) years (including OSHA violations)? Describe any citation or notices of violation which Respondent received.	☐	☐

6. Please state whether any of the following events have occurred in the last ten (10) years with respect to the Respondent. If any answer is yes, explain fully the circumstances surrounding the subject matter of the affirmative answer:

	YES	NO
(a) Whether Respondent, or Affiliate currently or previously associated with Respondent, has ever filed a petition in bankruptcy, taken any actions with respect to insolvency, reorganization, receivership, moratorium or assignment for the benefit of creditors, or otherwise sought relief from creditors?	☐	☐
(b) Whether Respondent was subject of any order, judgment or decree not subsequently reversed, suspended or vacated by any court permanently enjoining Respondent from engaging in any type of business practice?	☐	☐
(c) Whether Respondent was the subject of any civil or criminal proceeding in which there was a final adjudication adverse to Respondent which directly arose from activities conducted by Respondent.	☐	☐

7. Has any employee, agent or representative of Respondent who is or will be directly involved in the project, in the last ten (10) years:

(a) directly or indirectly, had a business relationship with the City? **YES** ☐ **NO** ☐

(b) directly or indirectly, received revenues from the City? **YES** ☐ **NO** ☐

(c) directly or indirectly, received revenues from conducting business on City property or pursuant to any contract with the City? **YES** ☐ **NO** ☐

8. Whether any employee, agent, or representative of Respondent who is or will be directly involved in the project has or had within the last ten (10) years a direct or indirect business relationship with any elected or appointed City official or with any City employee? **YES** ☐ **NO** ☐

9. Whether Respondent has provided employment or compensation to any third party intermediary, agent, or lobbyist to directly or indirectly communicate with any City official or employee, or municipal official or employee in connection with any transaction or investment involving your firm and the City? **YES** ☐ **NO** ☐

10. Whether Respondent, or any agent, officer, director, or employee of your organization has solicited or made a contribution to any City official or member, or to the political party or political action committee within the previous five (5) years? **YES** ☐ **NO** ☐

11. Has the Respondent or any agent, officer, director, or employee been terminated, suspended, or debarred (for cause or otherwise) from any work being performed for the City or any other Federal, State or Local Government? **YES** ☐ **NO** ☐

12. Has the Respondent, member of Respondent's team or officer of any of them (with respect to any matter involving the business practice or activities of his or her employer been notified within the five (5) years preceding the date of this offer that any of them are the target of a criminal investigation, grand jury investigation, or civil enforcement proceeding? **YES** ☐ **NO** ☐

13. Please identify any Personal or Financial Relationships that may give rise to a conflict of interest as defined below *[Please be advised that you may be ineligible for award of contract if you have a personal or financial relationship that constitutes a conflict of interest that cannot be avoided]*:

(a) Personal relationships: executives, board members and partners in firms submitting offers must disclose familial relationships with employees, officers and elected officials of the City of Atlanta. Familial relationships shall include spouse, domestic partner registered under section 94-133, mother, father, sister, brother, and natural or adopted children of an official or employee. **YES** ☐ **NO** ☐

(b) Financial relationships: Respondent must disclose any interest held with a City employee or official, or family members of a City employee or official, which may yield, directly or indirectly, a monetary or other material benefit to the Respondent or the Respondent's family members. Please describe: **YES** ☐ **NO** ☐

_____

_____

_____

D. REPRESENTATIONS

Anti-Lobbying Provision. All respondents, including agents, employees, representatives, lobbyists, attorneys and proposed partner(s), subcontractor(s) or joint venturer(s), will refrain, under penalty of the respondent's disqualification, from direct or indirect contact for the purpose of influencing the selection or creating bias in the selection process with any person who may play a part in the selection process.

Certification of Independent Price Determination/Non-Collusion. Collusion and other anticompetitive practices among offerors are prohibited by city, state and federal laws. All Respondents shall identify a person having authority to sign for the Respondent who shall certify, in writing, as follows:

> "I certify that this Bid is made without prior understanding, agreement, or connection with any corporation, firm, or person submitting an bid or offer for the same supplies, labor, services, construction, materials or equipment to be furnished or professional or consultant services, and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of city, state and federal law and can result in fines, prison sentences, and civil damages awards. By signing this document, I agree to abide by all conditions of this solicitation and offer and certify that I am authorized to sign for this Respondent/Offeror."

Certify Satisfaction of all Underlying Obligations. (If Applicable) If a Contract is awarded through this solicitation, then such Contractor should know that before final payment is made to a Contractor by the City, the Contractor shall certify to the City in writing, in a form satisfactory to the City, that all subcontractors, materialmen suppliers and similar firms or persons involved in the City contract have been paid in full at the time of final payment to the Contractor by the City or will be paid in full utilizing the monies constituting final payment to the Contractor.

Confidentiality . Details of the Bids will not be discussed with other respondents during the selection process. Respondent should be aware, however, that all Bids and information submitted therein may become subject to public inspection following award of the contract. Each respondent should consider this possibility and, where trade secrets or other proprietary information may be involved, may choose to provide in lieu of such proprietary information, an explanation as to why such information is not provided in its Bid. However, the respondent may be required to submit such required information before further consideration.

Equal Employment Opportunity (EEO) Provision. All bidders will be required to comply with sections 2-1200 and 2-1414 of the City of Atlanta Code of Ordinances, as follows: During the performance of the agreement, the Contractor agrees as follows:

a. The Contractor shall not discriminate against any employee, or applicant for employment, because of race, color, creed, religion, sex, domestic relationship status, parental status, familial status, sexual orientation, national origin, gender identity, age, disability, or political affiliation. As used here, the words "shall not discriminate" shall mean and include without limitation the following:

Recruited, whether by advertising or other means; compensated, whether in the form of rates of pay, or other forms of compensation; selected for training, including apprenticeship; promoted; upgraded; demoted; downgraded; transferred; laid off; and terminated.

The Contractor agrees to and shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officers setting forth the provisions of the EEO clause.

b. The Contractor shall, in all solicitations or advertisements for employees, placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, creed, religion, sex, domestic relationship status, parental status, familial status, sexual orientation, national origin, gender identity, age, disability, or political affiliation.

c. The Contractor shall send to each labor union or representative of workers with which the Contractor may have a collective bargaining agreement or other contract or understanding a notice advising the labor union or workers' representative of the Contractor's commitments under the equal employment opportunity program of the City of Atlanta and under the Code of Ordinances and shall post copies of the notice in conspicuous places available to employees and applicants for employment. The Contractor shall register all workers in the skilled trades who are below the journeyman level with the U.S. Bureau of Apprenticeship and Training.

d. The Contractor shall furnish all information and reports required by the contract compliance officer pursuant to the Code of Ordinances, and shall permit access to the books, records, and accounts of the Contractor during normal business hours by the contract compliance officer for the purpose of investigation so as to ascertain compliance with the program.

e. The Contractor shall take such action with respect to any subcontractor as the city may direct as a means of enforcing the provisions of paragraphs (a) through (h) herein, including penalties and sanctions for noncompliance; provided, however, that in the event the Contractor becomes involved in or is threatened with litigation as a result of such direction by the city, the city will enter into such litigation as is necessary to protect the interest of the city and to effectuate the equal employment opportunity program of the city; and, in the case of contracts receiving federal assistance, the Contractor or the city may request the United States to enter into such litigation to protect the interests of the United States.

f. The Contractor and its subcontractors, if any, shall file compliance reports at reasonable times and intervals with the city in the form and to the extent prescribed by the contract compliance officer. Compliance reports filed at such times directed shall contain information as to employment practices, policies, programs and statistics of the Contractor and its subcontractors.

g. The Contractor shall include the provisions of paragraphs (a) through (h) of this equal employment opportunity clause in every subcontract or purchase order so that such provisions will be binding upon each subcontractor or vendor.

h. A finding, as hereinafter provided, that a refusal by the Contractor or subcontractor to comply with any portion of this program, as herein provided and described, may subject the offending party to any or all of the following penalties:

(1) Withholding from the Contractor in violation all future payments under the involved contract until it is determined that the Contractor or subcontractor is in compliance with the provisions of the contract;

(2) Refusal of all future bids for any contract with the City of Atlanta or any of its departments or divisions until such time as the Contractor or subcontractor demonstrates that there has been established and there shall be carried out all of the provisions of the program as provided in the Code of Ordinances;

(3) Cancellation of the public contract;

(4) In a case in which there is substantial or material violation of the compliance procedure herein set forth or as may be provided for by the contract, appropriate proceedings may be brought to enforce those provisions, including the enjoining, within applicable law, of Contractors, subcontractors or other organizations, individuals or groups who prevent or seek to prevent directly or indirectly compliance with the policy as herein provided.

Prohibition on Kickbacks or Gratuities/Non-Gratuity. The undersigned acknowledges the following prohibitions on kickbacks and gratuities:

a. It is unethical for any person to offer, give or agree to give any employee or former employee a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation or any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy or other particular matter pertaining to any program requirement or a contract or subcontract or to any solicitation or Bid therefor.

b. It is unethical for any employee or former employee to solicit, demand, accept or agree to accept from another person a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation or any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy or other particular matter pertaining to any program requirement or a contract or subcontract or to any solicitation or Bid therefor.

c. It is also unethical for any payment, gratuity or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime Contractor or higher tier subcontractor or any person associated therewith as an inducement for the award of a subcontract or order.

Declaration

Under penalty of perjury, I declare that I have examined this Disclosure Form and Questionnaire and all attachments to it, if applicable, and, to the best of my knowledge and belief all statements contained herein and in any attachments, if applicable, are true, correct and complete.

I certify that this offer is made without prior understanding, agreement, or connection with any corporation, firm, or person submitting an offer for the same supplies, services, construction, or professional or consultant services, and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of city, state and federal law and can result in fines, prison sentences, and civil damages awards. I agree to abide by all conditions of this solicitation and offer and certify that I am authorized to sign for this Respondent.

Sign here if you are an individual:

Printed Name:

Signature: _____

Date: _____

Subscribed and sworn to or affirmed by _____ (name) this ___ day of _____, 20__.

_____

Notary Public of _____(state)

My commission expires: _____

Sign here if you are an authorized representative of a responding entity or partnership:

Printed Name of Entity or Partnership: _____

Signature of authorized representative: _____

Title: _____

Date: _____, 20___

Subscribed and sworn to or affirmed by _____(name), as the _____(title) of _____(entity or partnership name) this _____day of _____, 20___.

_____

Notary Public of _____(state)

My commission expires: _____

Required Submittal (FORM 3)
Required Submittal *"Unless a Bidder Elects to Submit an Alternative Form of Payment"*

Bid Bond (Page 1 of 2)

KNOW ALL MEN BY THESE PRESENTS, THAT WE_____
_____
hereinafter called the PRINCIPAL, and _____
_____
hereinafter called the SURETY, a corporation chartered and existing under the laws of the State of _____, and duly authorized to transact Surety business in the State of Georgia, are held and firmly bound unto the City of Atlanta, Georgia, in the penal sum of either [i] _____ Dollars and Cents ($_____); or [ii] 5% of PRINCIPAL'S Bid amount for **PROJECT NUMBER FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations**, good and lawful money of the United States of America, to be paid upon demand of the City of Atlanta, Georgia, to which payment well and truly to be made we bind ourselves, our heirs, executors, administrators and assigns, jointly and severally and firmly by these presents.

WHEREAS the PRINCIPAL has submitted to the City of Atlanta, Georgia, for **PROJECT NUMBER FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations,** a Bid;

WHEREAS the PRINCIPAL desires to file this Bond in accordance with law, in lieu of a certified Bidder's check otherwise required to accompany this Bid;

NOW THEREFORE: The conditions of this obligation are such that if the Bid be accepted, the PRINCIPAL shall within ten (10) calendar days after receipt of written notification from the CITY of the award of the Contract execute a Contract in accordance with the Bid and upon the terms, conditions and prices set forth therein, in the form and manner required by the City of Atlanta, Georgia, and execute sufficient and satisfactory Performance and Payment Bonds payable to the City of Atlanta, Georgia, each in the amount of one hundred percent (100%) of the total Contract price in form and with security satisfactory to said City of Atlanta, Georgia, then this obligation to be void; otherwise, to be and remain in full force and virtue in law; and the SURETY shall upon failure of the PRINCIPAL to comply with any or all of the foregoing requirements within the time specified above immediately pay to the City of Atlanta, Georgia, upon demand the amount hereof in good and lawful money of the United States of America, not as a penalty but as liquidated damages.

In the event suit is brought upon this Bond by the CITY and judgment is recovered, the SURETY shall pay all costs incurred by the CITY in such suit, including attorney's fees to be fixed by the Court.

Required Submittal *"Unless a Bidder Elects to Submit an Alternative Form of Payment"*
(FORM 3)

Bid Bond (Page 2 of 2)

Enclosed is a Bid Bond in the approved form, in the amount ofeither: [i] _____ _____Dollars and Cents ($_____), being in the amount of 5% of the CONTRACT Sum; or [ii] 5% of PRINCIPAL'S Bid amount for **PROJECT NUMBER FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations**. The money payable on this bond shall be paid to the City of Atlanta, Georgia, for the failure of the Bidder to execute a CONTRACT within ten (10) days after receipt of the Contract form and at the same time furnish a Payment Bond and Performance Bond.

IN TESTIMONY THEREOF, the PRINCIPAL and SURETY have caused these presents to be duly signed and sealed this _____day of _____20__.

Corporate Bidder:
[Insert Corporate Name]

_____
By:_____
Name:_____
Title:_____

_____
Corporate Secretary/Assistant Secretary (Seal)

Non-Corporate Bidder:
[Insert Bidder Name]

_____
By:_____
Name:_____
Title:_____

_____
Notary Public (Seal)

My Commission Expires:_____

Surety:
Name:_____
By:_____
Name:_____
Title:_____

Required Submittal (FORM 4.1)
Certification of Insurance Ability Instructions:

Offerors **MUST** submit **a completed copy of this form executed by their insurance company**. Failure to submit completed form will result in the Offeror being deemed non-responsive.

I, _____ [*insert an individual's name*], on behalf of _____ [*insert insurance company full name*], a _____ [*insert type of entity LLC, LLP, corporation, etc.*](**"Insurer"**), hereby represent and certify each of the following to the City of Atlanta, a municipal corporation of the State of Georgia ("**City**") on this _____ day of _____, 20____ [*insert date*]:

(a) Insurer is licensed by the Insurance and Safety Fire Commissioner of the State of Georgia to transact insurance business in the State of Georgia;

(b) Insurer Surety has reviewed the Agreement attached to the solicitation for Project Number **FC-FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations** ("Project") and its corresponding **Appendix for Insurance Requirements;**

(c) Insurer certifies that if, as of the date written above, ("**Offeror**") was selected as the successful Offeror for the Project, Insurer would provide insurance to Offeror for this Project in accordance with the terms set forth in the corresponding **Appendix for Insurance Requirements**; and

PLEASE NOTE: If this Form 4.1 is executed by an Attorney-in-Fact, then Insurer must attach a copy of a duly executed Power-of-Attorney evidencing such authority in addition to correctly completing this Form 4.1. If Offeror is unable to provide City with insurance that comply with the terms of the corresponding Appendix for Insurance Requirements within ten (10) days of receiving notice of intent to award the Project from the City, the City may, in its sole discretion, retain Offeror's security submitted with its offer and/or disqualify Offeror from further consideration for the award of the Agreement.

By executing this certification, Insurer represents that all of the information provided by Insurer herein is true and correct as of the date set forth above.

Insurer: [*insert company name on line provided below*]

_____

By:_____ _____
Corporate Secretary/Assistant Secretary

Print Name:_____ (Seal)

Title:_____

Required Submittal (FORM 4.2)

Certification of Bonding Ability Instructions:

Offerors **MUST** submit **a completed copy of this form executed by their surety.** Failure to submit completed form from will result in the Offeror being deemed non-responsive.

I, _____ [*insert an individual's name*], on behalf of _____ [*insert surety company full name*], a _____ [*insert type of entity LLC, LLP, corporation, etc.*]("**Surety**"), hereby represent and certify each of the following to the City of Atlanta, a municipal corporation of the State of Georgia ("**City**") on this _____ day of _____, 20____ [*insert date*]:

(a) Surety is licensed by the Insurance and Safety Fire Commissioner of the State of Georgia to transact surety business in the State of Georgia;

(b) Surety has reviewed the Agreement attached to the solicitation for Project Number **FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations** ("Project") and its corresponding **Appendix for Insurance Requirements;**

(c) Surety certifies that if, as of the date written above, _____("**Offeror**") was selected as the successful Offeror for the Project, Surety would provide bonding to Offeror for this Project in accordance with the corresponding **Appendix for Insurance Requirements**; and

(d) **Surety only**: The Surety states that Offeror's uncommitted bonding capacity (not taking into account this Project) is approximately $ _____ (U.S.). Surety's statement set forth in this Section (d) does not represent a limitation of the bonding capacity of Offeror or that Offeror will have the bonding capacity noted above at the time of contract execution for this Project.

PLEASE NOTE: If this Form 4.2 is executed by an Attorney-in-Fact, then Surety must attach a copy of a duly executed Power-of-Attorney evidencing such authority in addition to correctly completing this Form 4.2. If Offeror is unable to provide City with bonds that comply with the terms of the corresponding Appendix for Insurance Requirements within ten (10) days of receiving notice of intent to award the Project from the City, the City may, in its sole discretion, retain Offeror's security submitted with its offer and/or disqualify Offeror from further consideration for the award of the Agreement.

By executing this certification, Surety represents that all of the information provided by Surety herein is true and correct as of the date set forth above.

Surety: [*insert company name on line provided below*]

_____

By:_____ _____
Corporate Secretary/Assistant Secretary

Print Name:_____ (Seal)

Title:_____

Required Submittal (FORM 5)

Acknowledgment of Addenda

Bidders should sign below and return this form with their Bid(s) to the Department of Procurement, 55 Trinity Avenue, City Hall South, Suite 1900, Atlanta, Georgia 30303, as acknowledgment of receipt of certain Addenda.

This is to acknowledge receipt of the following **Addenda** for **FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations:**

1. _____;
2. _____;
3. _____; and
4. _____.

Dated the _____day of _____, 20__.

Corporate Bidder: [Insert Corporate Name]	Non-Corporate Bidder: [Insert Bidder Name]
_____	_____
By:_____	By:_____
Print Name:_____	Print Name:_____
Title:_____	Title:_____
_____ Corporate Secretary/Assistant Secretary (Seal)	_____ Notary Public (Seal) My Commission Expires:_____

Required Submittal (FORM 6)

Bidder Contact Directory[1]

NAME	POSITION/TITLE	MAILING ADDRESS	OFFICE PHONE	CELL PHONE	EMAIL ADDRESS AND FAX NUMBER

[1] The purpose of the Bidder Contact Directory is to provide the City with a centralized, easily identified source of important contacts and other information regarding each of the business entities constituting a Bidder. This Bidder Contact Directory should include the names, positions/titles, firms, mailing addresses, phone and fax numbers and e-mail addresses for each of the following as it pertains to each of the firms in a Bidder's team:

1. At least two individuals, one primary the other(s) secondary, authorized to represent the firm for purposes of this ITB; and
2. Bidder Service Provider Key Personnel (as appropriate) listed in the Services Agreement included in this ITB at Part 5.

Required Submittal (FORM 7)

Reference List

Each Bidder must provide a list of at least three (3) references using the below-referenced format. The City is interested in reviewing references that are able to attest to a Bidder's performance ability and credibility in a particular industry or trade.

Bidder's Name: _____

Reference: Name
Address
City, State, Zip
Phone
Fax

Project Title: _____

Contact Person: _____
Direct Telephone: _____
Email Address: _____

Date(s) of Project: _____

Description of Services:

Total Amount of Contract Including Change Orders:

Bidder's Role and Responsibilities:

Current Completion Status:

_____

(Use the Same Format to Provide the Additional References)

Required Submittal (FORM 9)

Required Submittal Checklist

The following submittals shall be completed and submitted with each Bid see table below "Required Bid Submittal Check Sheet." Please verify that these submittals are in the envelope before it is sealed. *Disclaimer:* **It is each Bidders sole responsibility to ensure that their Bid to the City is inclusive of all required submittal documents outlined on the below-referenced checklist; as well as within other parts of the solicitation document.**

Submit one (1) Original Bid, signed and dated, and five (5) complete copies of the Original Bid including all required attachments.

In addition to the hard copy submissions, each Bidder shall submit two (2) digital versions of its Bid Submission in Adobe Portable Document Format ("PDF") on compact disk (CDs). CD One (1) version should be a duplicate of the hard copy of the Bid with no deviations in order or layout of the hard copy Bid. CD Two (2) version should be a redacted version of the hard copy Bid Submission. Please refer to the Georgia Open Records Acts (O.C.G.A. § 50-18-72) for information not subject to public disclosure.

The City assumes no liability for differences in information contained in the Bidder's printed Bid Submission and that contained on the CDs. In the event of a discrepancy, the City will rely upon the information contained in the Bidder's printed material (Hard Copy). Each CD should be labeled with the Project Number, Project Name, and the CD Number.

	Required Bid Submittal Check Sheet	Check (√)
1	**Part I** – Instruction to Bidders (Bid Guarantee Included)	( )
2	**Appendix A** - Office of Contract Compliance (Required Submittals Included)	( )
3	**Part I, Section 2** – All Required Submittal Forms (**if any of the required submittal documents are not submitted or incomplete within your Bid submittal package, your firm may be deemed non-responsive**). Required Submittals include but are not limited to: □ Form 1; Illegal Immigration Reform and Enforcement Act Forms □ Form 2; Contractor Disclosure Form □ Form 3; Bid Bond □ Form 4.1; Certification of Insurance Ability □ Form 4.2; Certification of Bonding Ability □ Form 5; Acknowledgment of Addenda □ Form 6; Bidder's Contact Directory □ Form 7; Reference List □ Form 8; Required Submittal Checklist □ Exhibit A.1; Compensation and Fee Schedule □ Authority to Transact Business in the State of Georgia □ Bidder's Qualifications – Experience Statement □ Bidder's Qualifications – Lower Tier Experience Statement □ Bidder's Qualifications – Work in Progress □ Bidder's Qualifications – Safety and Health History Form □ Bidder's Qualifications – Key Personnel □ Certification of Primary Participant □ Certification of Lower-Tier Participant Regarding □ Certification Regarding Lobbying □ Disclosure of Lobbying Activities □ Buy America Certifcation	( )
4	**Bidder's Official Company Name:** **Company Physical Address:**	
5	**President/Vice President/Owner Name:**_____ **Title:**_____ **Office Telephone Number:**_____ **Direct Cell Telephone Number:**_____ **Email Address:**_____	
6	**Primary Point-of-Contact Concerning ITB:**_____ **Title:**_____ **Office Telephone Number:**_____ **Direct Cell Telephone Number:**_____ **Email Address:**_____	

PART II

DRAFT MASTER SERVICES AGREEMENT

MASTER SERVICES AGREEMENT; CONTRACT NO. FC-_____

This Services Agreement ("Agreement") is entered into and effective as of _____ (the "Effective Date") between the City of Atlanta ("City") and the service provider ("Service Provider") set forth below.

Contract Name:	**Contract No. FC-**
Service Provider	**City of Atlanta**
Name:	**Using Agency:**
Address:	**Address:**
Phone:	**Phone:**
Fax:	**Fax:**
Authorized Representative:	**Authorized Representative:**

1. Background.

1.1 City desires to obtain from Service Provider the services ("Services") described generally on **Exhibit A** attached and further described on task orders (individually, a "Task Order" and, collectively, the "Task Orders") that may be executed and attached collectively as **Exhibit A.2** from time to time. Service Provider shall not provide any services except as specifically provided in a Task Order.

1.2 The total amount of payments by City under this Agreement shall not exceed $_____ during the first year in which this Agreement is effective. For each subsequent year that this Agreement is effective, City shall provide written notice to Service Provider of the amount of funding allocated to this Agreement for such calendar year (each annual maximum amount, including the funding for the first year, shall be the "Annual Maximum Payment Amount"). In addition, each Task Order shall specify a maximum payment amount (the "Task Order Maximum Payment Amount") applicable to the Services to be performed under such Task Order.

1.3 Task Orders under this Agreement may be issued by City without further legislative approval under Code Section 2-1111, if the legislation authorizing this Agreement provides for such issuance. In such circumstances, the Task Order may be executed by the City's Chief Procurement Officer, head of the affected Using Agency or other appropriate designee on behalf of City. City, at its sole discretion, may unilaterally issue Task Orders for services for which charges are established in this Agreement. Service Provider shall promptly proceed with the services set forth in any such Task Order. If City solicits a proposal from Service Provider for a Task Order, Service Provider shall submit its proposal with a Task Order containing all the necessary terms and executed by Service Provider. Task Orders may be issued or executed during the Term of this Agreement that contain a Service performance period that extends beyond the Term. No Task Order may be issued or executed under this Agreement subsequent to the expiration or termination of the Term.

1.4 City makes no representations or warranties about the quantity of Services that will be requested or Charges that will be paid under this Agreement. Any quantity of Services or amount of Charges set forth in this Agreement are estimates only.

2. Term.

2.1 Initial Term. The initial term of this Agreement will be ___years. This Agreement shall commence on the Effective Date and end on [_____]. The initial term of the Agreement and any renewal term(s) are collectively referred to as the "Term".

2.2 Renewal Terms. City shall have the right in its sole discretion to renew this Agreement for [___] additional one-year terms according to the following procedure:

2.2.1 If City desires to exercise an option to renew, it will submit legislation authorizing such renewal for consideration by City's Council and Mayor prior to the expiration of the prior Term. The legislation will establish that the date of such renewal will be the day immediately following the expiration day of the prior Term;

2.2.2 If such legislation is enacted, within ___ days of such enactment, City will notify Service Provider of such renewal, at which time Service Provider shall be bound to provide Services during such renewal Term, without the need for the Parties to execute any further documents evidencing such renewal, it being acknowledged by Service Provider that its initial execution of this Agreement is deemed its agreement to continue to provide Services during any renewal Term.

3. Interpretation.

3.1 All capitalized terms used in this Agreement shall have the meanings ascribed to them in the Contract Documents and on **Exhibit B** attached hereto.

3.2 If there is a conflict between any of the Contract Documents, precedence shall be given in the following order: [1]

1. Agreement
2. Exhibit A - General Scope of Services
3. Exhibit A.1 - Compensation
4. Exhibit A.2 - Task Orders
5. Exhibit B - Definitions
6. Exhibit D - City Security Policies
7. Exhibit E - Dispute Resolution Procedures
8. Appendix A - Office of Contract Compliance Requirements
9. Appendix B - Insurance and Bonding Requirements
10. Additional Contract Documents

[1] For purposes of this provision, authorized changes to an item in the order of precedence pursuant to a Change Document take precedence over the particular item changed.

4. Authorization. If applicable, this Agreement is authorized by legislation adopted by City which is attached as **Exhibit C**.

5. Services.

5.1 Description of Services. Service Provider agrees to provide to City the Services per this Agreement and each Task Order. Each Task Order will include the following: (a) a reference to this Agreement; (b) the Task Order Commencement Date and, if applicable, the period of time during which the Services will be provided; (c) a description of the Services to be provided; (d) the amounts payable and payment schedule for the Services; and (e) any additional provisions applicable to the Services. No Task Order will become effective until it has been executed by an authorized representative of Service Provider and City. If any services to be performed are not specifically included in a Task Order, but are reasonably necessary to accomplish the purpose of the Task Order, they will be deemed to be implied in the scope of the Services for that Task Order.

5.2 Resources. Unless otherwise expressly provided in this Agreement, all equipment, software, Facilities and Service Provider Personnel required for the proper performance of Services shall be furnished by and be under the control of Service Provider. Service Provider shall be responsible, at its sole cost, for procuring and using such resources in proper and qualified and high quality working and performing order.

5.3 Change Documents.

5.3.1 This section will govern changes to the Agreement or any Task Order issued under the Agreement, whether such changes involve an increase in the Annual Maximum Payment Amount or not. Changes in Services or other aspects of this Agreement shall be made by written document ("Change Document" or "Unilateral Change Document"). [2] All changes shall be implemented pursuant to this subsection (the "Change Document Procedures") and any Applicable Law.

5.3.2 Potential Change Documents that may be issued concerning this Agreement or any Task Order issued under this Agreement include, but are not limited to:

(a) Change Documents to the Agreement involving an increase to the Annual Maximum Payment Amount executed between City and Service Provider which may or may not require legislative approval under Code Section 2-1292;

(b) Change Documents to the Agreement or any Task Order issued under the Agreement involving no increase to the Annual Maximum Payment Amount, changes in the value of the Charges or changes in the terms or amounts

[2] Change Documents may assume numerous multiple forms and titles depending on the nature of the change involved (e.g. Change Order, Unilateral Change Order, Amendment, Contract Modification, Renewal, etc.).

of compensation under the Maximum Payment Amount or any Task Order Maximum Payment Amount executed between City and Service Provider pursuant to Code Section 2-1292(d); and

(c) Unilateral Change Documents to the Agreement or any Task Order issued under the Agreement issued by City pursuant to Code Section 2-1292(d) involving no increase to the Annual Maximum Payment Amount, changes in the value of the Charges or changes in the terms of amounts of compensation under the Maximum Payment Amount or any Task Order Maximum Payment Amount.

Change Documents that do not involve an increase in the Annual Maximum Payment Amount will be executed pursuant to Code Section 2-1292(d) either bilaterally or unilaterally by the City.

5.3.3 City may propose a change in the Services or other aspects of this Agreement by delivering written notice to Service Provider describing the requested change ("Change Request"). Within ten (10) days of receipt of City's Change Request, Service Provider shall evaluate it and submit a written response ("Proposed Change Document"). A Change Request which involves the reduction of Services shall be effective upon written notice to Service Provider.

5.3.4 Service Provider may, without receiving any Change Request, on its own submit a Proposed Change Document describing its own proposed requested change to the Agreement or any Task Order issued under the Agreement.

5.3.5 Each Proposed Change Document shall include the applicable schedule for implementing the proposed change, any applicable changes to the Charges (either increased or decreased) and all other information applicable to the proposed change. Each Proposed Change Document shall constitute an offer by Service Provider and shall be irrevocable for a period of sixty (60) days. City shall review and may provide Service Provider with comments regarding a Proposed Change Document, and Service Provider shall respond to such comments, if any. A Proposed Change Document from Service Provider will become effective only when executed by an authorized representative of City.

5.3.6 City may propose any changes to the Agreement, including, but not limited to, changes that it contends do not involve an increase to the Annual Maximum Payment Amount, and Service Provider shall, in good faith, evaluate such proposed Change Request. If City and Service Provider are able to reach agreement on such Change Request, each will execute a Change Document concerning such Change Request pursuant to Code Section 2-1292(d). Nothing in this Agreement shall, in the event of disagreement between City and Service Provider concerning a proposed Change Request, or otherwise, prohibit City from issuing a Unilateral Change Document to Service Provider, pursuant to Code Section 2-1292(d), and City and Service Provider agree to resolve their dispute pursuant to the Dispute Resolution Procedures set forth in **Exhibit E**. During the pendency of such dispute, Service Provider shall continue to perform the Services, as changed by such Unilateral Change Document.

5.4 Suspension of Services. City may, by written notice to Service Provider, suspend at any time the performance of any or all of the Services to be performed under this Agreement.

Upon receipt of a suspension notice, Service Provider must, unless the notice requires otherwise, (a) immediately discontinue suspended Services on the date and to the extent specified in the notice; (b) place no further orders or subcontracts for materials, services or facilities with respect to suspended Services, other than to the extent required in the notice; and (c) take any other reasonable steps to minimize costs associated with the suspension.

6. Service Provider's Obligations.

6.1 Service Provider Personnel. Service Provider shall be responsible, at its own cost, for all recruiting, hiring, training, educating and orienting of all Service Provider Personnel, all of whom shall be fully qualified and shall be authorized under Applicable Law to perform the Services.

6.2 Service Provider Authorized Representative. Service Provider designates the Service Provider Authorized Representative named on page 1 of this Agreement ("Service Provider Authorized Representative") and, such Person shall: (a) be a project executive and employee within Service Provider's organization, with the information, authority and resources available to properly coordinate Service Provider's responsibilities under this Agreement; (b) serve as primary interface and the single-point of communication for the provision of Services by Service Provider; (c) have day-to-day responsibility and authority to address issues relating to the Services; and (d) devote adequate time and efforts to managing and coordinating the Services.

6.3 Qualifications. Upon City's reasonable request, Service Provider will make available to City all relevant records of the education, training, experience, qualifications, work history and performance of Service Provider Personnel.

6.4 Removal of Personnel Assigned to City Contract. Within a reasonable period, but not later that seven (7) days after Service Provider's receipt of notice from City that the continued assignment to the City Contract of any Service Provider Personnel is not in the best interests of City, Service Provider shall remove such Service Provider Personnel from City's contract. Service Provider will not be required to terminate the employment of such individual. Service Provider will assume all costs associated with the replacement of any Service Provider Personnel. In addition, Service Provider agrees to remove from City's Contract any Service Provider Personnel who has engaged in willful misconduct or has committed a material breach of this Agreement immediately after Service Provider becomes aware of such misconduct or breach.

6.5 Subcontracting. Unless specifically authorized in this Agreement or an applicable Task Order, Service Provider will not enter into any agreement with nor delegate any Services to any Third Party without the prior written approval of City, which City may withhold in its sole discretion. If Service Provider subcontracts any of the Services, Service Provider shall: (i) be responsible for the performance of Services by the subcontractors; (ii) remain City's sole point of contact for the Services; and (iii) be responsible for the payment of any subcontractors.

6.6 Key Service Provider Personnel and Key Subcontractors.

6.6.1 The following Persons are identified by Service Provider as Key Service Provider Personnel under this Agreement:

(a) _____;

(b) _____; and

(c) _____.

6.6.2 The following Persons are identified by Service Provider as Key Subcontractors under this Agreement:

(a) _____;

(b) _____; and

(c) _____.

6.6.3 Service Provider shall not transfer, reassign or replace any Service Provider Key Personnel or Key Subcontractor, except as a result of retirement, voluntary resignation, involuntary termination for cause in Service Provider's sole discretion, illness, disability or death, during the term of this Agreement without prior written approval from City.

6.7 Conflicts of Interest. Service Provider shall immediately notify City in writing, specifically disclosing any and all potential or actual conflicts of interests, which arise or may arise during the execution of its work in the fulfillment of the requirements of the Agreement. City shall make a written determination as to whether a conflict of interest actually exists and the actions to be taken to resolve the conflict of interest.

6.8 Commercial Activities. Neither Service Provider nor any Service Provider Personnel shall establish any commercial activity, issue concessions, or permits of any kind to third Parties for establishing any activities on City property.

7. City's Authorized Representative.

7.1 City designates the City Authorized Representative named on page 1 of this Agreement (the "City Authorized Representative") who shall: (a) serve as primary interface and the single-point of communication for the provision of Services; (b) have day-to-day responsibility to address issues relating to this Agreement; and (c) to the extent provided under the Code, have the authority to execute any additional documents or changes on behalf of City.

7.2 City's Right to Review and Reject. Any Service or other document or item to be submitted or prepared by Service Provider hereunder shall be subject to the review of the City Authorized Representative. The City Authorized Representative may disapprove, if in the City Authorized Representative's sole opinion the Service, document or item is not in accordance with the requirements of this Agreement or sound professional service principles, or is impractical, uneconomical or unsuited in any way for the purposes for which the Service, document or item is intended. If any of the said items or any portion thereof are so disapproved,

Service Provider shall revise the items until they meet the approval of the City Authorized Representative. However, Service Provider shall not be compensated under any provision of this Agreement for repeated performance of such disapproved items.

8. Payment Procedures.

8.1 General. City will not be obligated to pay Service Provider any amount in addition to the Charges set forth in an applicable Task Order for Service Provider's provision of the Services. Service Provider Personnel hourly rates, reimbursable expenses and other compensable items under this Agreement and issued Task Orders are set forth on **Exhibit A.1** Compensation.

8.2 Invoices. Service Provider shall prepare and submit to City invoices for payment of all Charges in accordance with the applicable Task Order. Each invoice shall be in such detail and in such format as City may reasonably require. To the extent not set forth in a Task Order, Service Provider shall invoice City monthly for Services rendered.

8.3 Taxes. The Charges are inclusive of all taxes, levies, duties and assessments ("Taxes") of every nature due in connection with Service Provider's performance of the Services. Service Provider is responsible for payment of such Taxes to the appropriate governmental authority. If Service Provider is refunded any Tax payments made relating to the Services, Service Provider shall remit the amount of such refund to City within forty-five (45) days of receipt of the refund.

8.4 Maximum Amount. City shall not be obligated to pay any amount in excess of the Annual Maximum Payment Amount for all Services under all Task Orders, nor shall City be obligated to pay any amount in excess of a Task Order Maximum Payment Amount.

8.5 Payment. City shall endeavor to pay all undisputed Charges within thirty (30) days of the date of the receipt by City of a properly rendered and delivered invoice. Notwithstanding the forgoing, unless otherwise provided in the Task Order, all undisputed Charges on an invoice properly rendered and delivered shall be payable within forty-five (45) days of the date of receipt by City.

8.6 Disputed Charges. If City in good faith disputes any portion of an invoice, City may withhold such disputed amount and notify Service Provider in writing of the basis for any dispute within thirty (30) days of the later of: (a) receipt of the invoice; or (b) discovery of the basis for any such dispute. City and Service Provider agree to use all reasonable commercial efforts to resolve any disputed amount in any invoice within thirty (30) days of the date City notifies Service Provider of the disputed amount.

8.7 No Acceptance of Nonconforming Work. No payment of any invoice or any partial or entire use of the Services by City constitutes acceptance of any Services.

8.8 Payment of Other Persons. Prior to the issuance of final payment from City, Service Provider shall certify to City in writing, in a form satisfactory to City, that all subcontractors, materialmen, suppliers and similar firms or persons engaged by Service Provider

in connection with this Agreement have been paid in full or will be paid in full utilizing the monies constituting final payment to Service Provider.

9. Service Provider Representations and Warranties. As of the Effective Date and continuing throughout the Term and any subsequent Task Order performance period, Service Provider warrants to City that:

9.1 Authority. Service Provider is duly incorporated or formed, validly existing and is in good standing under the laws of the state in which it is incorporated or formed, and is in good standing in each other jurisdiction where the failure to be in good standing would have a material adverse affect on its business or its ability to perform its obligations under this Agreement. Service Provider has all necessary power and authority to enter into and perform its obligations under this Agreement, and the execution and delivery of this Agreement and the consummation of the transactions contemplated by this Agreement have been duly authorized by all necessary actions on its part. This Agreement constitutes a legal, valid and binding obligation of Service Provider, enforceable against it in accordance with its terms. No action, suit or proceeding in which Service Provider is a party that may restrain or question this Agreement or the provision of Services by Service Provider is pending or threatened.

9.2 Standards. The Services will be performed in a workmanlike manner in accordance with the standards imposed by Applicable Law and the practices and standards used in well managed operations performing services similar to the Services.

9.3 Conformity. The development, creation, delivery, provision, implementation, testing, maintenance and support of all Services shall conform in all material respects to the description of such Services in the Contract Documents, including the relevant Task Order.

9.4 Materials and Equipment. Any equipment or materials provided by Service Provider shall be new, of clear title, not subject to any lien or encumbrance, of the most suitable grade of their respective kinds for their intended uses, shall be free of any defect in design or workmanship and shall be of merchantable quality and fit for the purposes for which they are intended.

10. Compliance with Laws.

10.1 General. Service Provider and its subcontractors will perform the Services in compliance with all Applicable Laws

10.2 City's Socio-Economic Programs. Service Provider shall comply with Appendix A and any applicable City socio-economic programs, including, but not limited to, City's EBO and EEO Programs, and requirements set forth in the Code in the performance of the Services.

10.3 Consents, Licenses and Permits. Service Provider will be responsible for, and the Charges shall include the cost of, obtaining, maintaining and complying with, and paying all fees and taxes associated with, all applicable licenses, authorizations, consents, approvals and permits required of Service Provider in performing Services and complying with this Agreement.

11. Confidential Information.

11.1 General. Each Party agrees to preserve as strictly confidential all Confidential Information of the other Party for two (2) years following the expiration or termination of this Agreement; provided, however, that each Party's obligations for the other Party's Confidential Information that constitutes trade secrets pursuant to Applicable Laws will continue for so long as such Confidential Information continues to constitute a trade secret under Applicable Law. Any Confidential Information that may be deemed Sensitive Security Information by the Department of Homeland Security or any other similar Confidential Information related to security will be considered trade secrets. Upon request by City, Service Provider will return any trade secrets to City. Each Party agrees to hold the Confidential Information of the other in trust and confidence and will not disclose it to any Person, or use it (directly or indirectly) for its own benefit or the benefit of any other Person other than in the performance of its obligations under this Agreement.

11.2 Disclosure of Confidential Information or Information Other Party Deems to be Confidential Information. Each Party will be entitled to disclose any Confidential Information if compelled to do so pursuant to: (i) a subpoena; (ii) judicial or administrative order; or (iii) any other requirement imposed upon it by Applicable Law. Prior to making such a disclosure, to the extent allowed pursuant to Applicable Law, each Party shall provide the other with thirty six (36) hours prior notice by facsimile of its intent to disclose, describing the content of the information to be disclosed and providing a copy of the pleading, instrument, document, communication or other written item compelling disclosure or, if not in writing, a detailed description of the nature of the communication compelling disclosure with the name, address, phone number and facsimile number of the Person requesting disclosure. Should the non-disclosing Party contest the disclosure, it must: a) seek a protective order preventing such disclosure; or b) intervene in such action compelling disclosure, as appropriate. This Section shall be applicable to information that one Party deems to be Confidential Information but the other Party does not.

12. Work Product.

12.1 Except as otherwise expressly provided in this Agreement, all reports, information, data, specifications, computer programs, technical reports, operating manuals and similar work or other documents, all deliverables, and other work product prepared or authored by Provider or any of its contractors exclusively for the City under this Agreement, and all intellectual property rights associated with the foregoing items (collectively, the "Work Product") shall be and remain the sole and exclusive property of the City. Any of Provider's or its contractors' works of authorship comprised within the Work Product (whether created alone or in concert with City or Third Party) shall be deemed to be "works made for hire" and made in the course of services rendered and, whether pursuant to the provisions of Section 101 of the U.S. Copyright Act or other Applicable Law, such Work Product shall belong exclusively to City. Provider and its contractors grant the City a non-exclusive, perpetual, worldwide, fully paid up, royalty-free license to all Work Product not exclusively developed for City under this Agreement.

12.2 If any of the Work Product is determined not to be a work made for hire, Service Provider assigns to City, worldwide and in perpetuity, all rights, including proprietary rights,

copyrights, and related rights, and all extensions and renewals of those rights, in the Work Product. If Service Provider has any rights to the Work Product that cannot be assigned to City, Service Provider unconditionally and irrevocably waives the enforcement of such rights and irrevocably grants to City during the term of such rights an exclusive, irrevocable, perpetual, transferable, worldwide, fully paid and royalty-free license, with rights to sublicense through multiple levels of sublicensees, to reproduce, make, have made, create derivate works of, distribute, publicly perform and publicly display by all means, now known or later developed, such rights.

12.3 City shall have the sole and exclusive right to apply for, obtain, register, hold and renew, in its own name or for its own benefit, all patents, copyrights, applications and registrations, renewals and continuations and all other appropriate protection.

12.4 To the extent exclusive title or complete and exclusive ownership rights in any Work Product created by Service Provider Personnel may not originally vest in City by operation of Applicable Law, Service Provider shall immediately upon request, unconditionally and irrevocably assign, transfer and convey to City all rights, title and interest in the Work Product.

12.5 Without any additional cost to City, Service Provider Personnel shall promptly give City all reasonable assistance and execute all documents City may reasonably request to enable City to perfect, preserve, enforce, register and record its rights in all Work Product. Service Provider irrevocably designates City as Service Provider's agent and attorney-in-fact to execute, deliver and file, if necessary, any documents necessary to give effect to the provisions of this Section and to take all actions necessary, in Service Provider's name, with the same force and effect as if performed by Service Provider.

13. Audit and Inspection Rights.

13.1 General.

13.1.1 Service Provider will provide to City, and any Person designated by City, access to Service Provider Personnel and to Service Provider owned Facilities for the purpose of performing audits and inspections of Service Provider, Service Provider Personnel and/or any of the relevant information relating to the Services and this Agreement. Such audits, inspections and access may be conducted to: (a) verify the accuracy of Charges and invoices; (b) examine Service Provider's performance of the Services; (c) monitor compliance with the terms of this Agreement; and (d) any other matters reasonably requested by City. Service Provider shall provide full cooperation to City and its designated Persons in connection with audit functions and examinations by regulatory authorities.

13.1.2 All audits and inspections will be conducted during normal business hours (except with respect to Services that are performed during off-hours).

13.1.3 Service Provider shall promptly respond to and rectify the deficiencies identified in and implement changes suggested by any audit or inspection report.

13.1.4 If any audit or inspection of Charges or Services reveals that City has overpaid any amounts to Service Provider, Service Provider shall promptly refund such

overpayment and Service Provider shall also pay to City interest on the overpayment amount at the rate of one-half percent (0.5%) per month (or such maximum rate permissible by Applicable Law, if lower) from the date the overpayment was made until the date the overpayment is refunded to City by Service Provider.

13.2 Records Retention. Until the later of: (a) six (6) years after expiration or termination of this Agreement; (b) the date that all pending matters relating to this Agreement (*e.g.*, disputes) are closed or resolved by the Parties; or (c) the date such retention is no longer required to meet City's records retention policy or any record retention policy imposed by Applicable Law, if more stringent than City's policy, Service Provider will maintain and provide access upon request to the records, data, documents and other information required to fully and completely enable City to enforce its audit rights under this Agreement.

14. Indemnification by Service Provider.

14.1 General Indemnity. Service Provider shall indemnify and hold City, its agencies and its and their respective officers, directors, employees, advisors, and agents, successors and permitted assigns, harmless from any losses, liabilities, damages, demands and claims, and all related costs (including reasonable legal fees and costs of investigation, litigation, settlement, judgment, interest and penalties) arising from claims or actions based upon:

(a) Service Provider's or Service Provider Personnel's performance, non-performance or breach of this Agreement;

(b) compensation or benefits of any kind, by or on behalf of Service Provider Personnel, or any subcontractor, claiming an employment or other relationship with Service Provider or such subcontractor (or claiming that this Agreement creates an inherent, statutory or implied employment relationship with City or arising in any other manner out of this Agreement or the provision of Services by such Service Provider Personnel or subcontractor);

(c) any actual, alleged, threatened or potential violation of any Applicable Laws by Service Provider or Service Provider Personnel, to the extent such claim is based on the act or omission of Service Provider or Service Provider Personnel, excluding acts or omissions by or at the direction of City;

(d) death of or injury to any individual caused, in whole or in part, by the tortious conduct of Service Provider or any Person acting for, in the name of, at the direction or supervision of or on behalf of Service Provider; and

(e) damage to, or loss or destruction of, any real or tangible personal property caused, in whole or in part, by the tortious conduct of Service Provider or any Person acting for, in the name of, at the direction or supervision of or on behalf of Service Provider.

14.2 Intellectual Property Indemnification by Service Provider. Service Provider shall indemnify and hold City Indemnitees, harmless from and against any losses, liabilities, damages, demands and claims, and all related costs (including reasonable legal fees and costs of

investigation, litigation, settlement, judgment, interest and penalties) arising from claims or actions based upon any of the materials and methodologies used by Service Provider (or any Service Provider agent, contractor, subcontractor or representative), or City's use thereof (or access or other rights thereto) in connection with the Services infringes or misappropriates the Intellectual Property Rights of a Third Party. If any materials or methodologies provided by Service Provider hereunder is held to constitute, or in Service Provider's reasonable judgment is likely to constitute, an infringement or misappropriation, Service Provider will in addition to its indemnity obligations, at its expense and option, and after consultation with City regarding City's preference in such event, either: (A) procure the right for City Indemnitees to continue using such materials or methodologies; (B) replace such materials or methodologies with a non-infringing equivalent, provided that such replacement does not result in a degradation of the functionality, performance or quality of the Services; (C) modify such materials or methodologies, or have such materials or methodologies modified, to make them non-infringing, provided that such modification does not result in a degradation of the functionality, performance or quality of the materials or methodologies; or (D) create a feasible workaround that would not have any adverse impact on City.

15. Limitation of Liability.

15.1 General. THE MAXIMUM AGGREGATE LIABILITY OF CITY HEREUNDER IS LIMITED TO THE TOTAL OF ALL CHARGES ACTUALLY PAID DURING THE CURRENT YEAR UNDER THE AGREEMENT. EXCEPT FOR PROVIDER'S INDEMNITY OBLIGATIONS SET FORTH IN THE **SECTION ENTITLED "INDEMNIFICATION BY SERVICE PROVIDER"** AND WILLFUL MISCONDUCT OR GROSS NEGLIGENCE BY PROVIDER, NEITHER PARTY SHALL BE LIABLE FOR ANY INDIRECT, CONSEQUENTIAL, OR PUNITIVE DAMAGES (OR ANY COMPARABLE CATEGORY OR FORM OF SUCH DAMAGES, HOWSOEVER CHARACTERIZED IN ANY JURISDICTION), ARISING OUT OF OR RESULTING FROM THE PERFORMANCE OR NONPERFORMANCE OF ITS OBLIGATIONS UNDER THIS AGREEMENT, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY, PRODUCTS LIABILITY OR OTHERWISE, AND EVEN IF FORESEEABLE OR IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

15.2 Exceptions to Limitations. The limitations set forth in the immediate subsection shall not apply to: (a) personal injury, wrongful death or tangible property damage; or (b) any claim involving a violation of any Applicable Law concerning homeland security, terrorist activity or security sensitive information, regardless of the manner in which such damages are characterized.

16. Insurance and Bonding Requirements. Service Provider shall comply with the insurance and bonding requirements set forth on **Appendix B**.

17. Force Majeure. Neither Party will be liable for default or delay in the performance of its obligations under this Agreement to the extent such default or delay is caused by a Force Majeure Event. Upon the occurrence of a Force Majeure Event, the non-performing Party will be excused from performance or observance of affected obligations for as long as: (a) the Force

Majeure Event continues; and (b) the Party continues to attempt to recommence performance or observance to the extent commercially reasonable without delay. If any Force Majeure Event continues for thirty (30) consecutive days, City may, at its option during such continuation, terminate this Agreement, in whole or in part, without penalty or further obligation or liability of City.

18. Termination.

18.1 Termination by City for Cause. City may at its option, by giving written notice to Service Provider, terminate this Agreement or any Task Order:

(a) for a material breach of the Contract Documents by Service Provider that is not cured by Service Provider within seven (7) days of the date on which City provides written notice of such breach;

(b) immediately for a material breach of the Contract Documents by Service Provider that is not reasonably curable within seven (7) days;

(c) immediately upon written notice for numerous breaches of the Contract Documents by Service Provider that collectively constitute a material breach or reasonable grounds for insecurity concerning Service Provider's performance; or

(d) immediately for engaging in behavior that is dishonest, fraudulent or constitutes a conflict of interest with Service Provider's obligations under this Agreement or is in violation of any City Ethics Ordinances.

18.2 Re-procurement Costs. In addition to all other rights and remedies City may have, if this Agreement is terminated by City pursuant to the above subsection entitled **"Termination by City for Cause"**, Service Provider will be liable for all costs in excess of the Charges for all terminated Services reasonably and necessarily incurred by City in the completion of the Services, including the cost of administration of any agreement awarded to other Persons for completion. If City improperly terminates this Agreement for cause, the termination for cause will be considered a termination for convenience in accordance with the provisions of the **Section entitled "Termination by City for Convenience"**.

18.3 Termination by City for Insolvency. City may terminate this Agreement immediately by delivering written notice of such termination to Service Provider if Service Provider: (a) becomes insolvent, as that term may be defined under Applicable Law, or is unable to meet its debts as they mature; (b) files a voluntary petition in bankruptcy or seeks reorganization or to effect a plan or other arrangement with creditors; (c) is adjudicated bankrupt or makes an assignment for the benefit of its creditors generally; (d) fails to deny or contest the material allegations of an involuntary petition filed against it pursuant to any Applicable Law relating to bankruptcy, arrangement or reorganization, which is not dismissed within sixty (60) days; or (e) applies for or consents to the appointment of any receiver for all or any portion of its property.

18.4 Termination by City for Convenience. At any time during the Term of this Agreement or any issued Task Order, City may terminate this Agreement or the Task Order for

convenience upon fourteen (14) days written notice of such termination. Upon a termination for convenience, Service Provider waives any claims for damages, including loss of anticipated profits. As Service Provider's sole remedy and City's sole liability, City will pay Charges for the Services properly performed prior to the notice of termination, plus all reasonable costs for Services performed after the termination, as specified in such notice, and reasonable administrative costs of settling and paying claims arising out of the termination of Services under purchase orders or subcontracts except to the extent any products under such purchase orders or subcontracts can be used by Service Provider in its business within the thirty (30) days following termination. If requested, Service Provider shall substantiate such costs with proof satisfactory to City.

18.5 Termination for Lack of Appropriations. If, during any year of this Agreement, legislation establishing an Annual Maximum Payment Amount for the following year is not enacted, this Agreement will terminate in its entirety on the last day of the Term for which an Annual Maximum Payment Amount has been legislatively authorized; provided, however, that Task Orders funded out of a previously legislatively authorized Annual Maximum Payment Amount may continue beyond such termination date.

18.6 Effect of Termination. Unless otherwise provided herein, termination of this Agreement, in whole or in part and for any reason, shall not affect: (a) any liabilities or obligations of either Party arising before such termination or out of the events causing such termination; or (b) any remedies to which a Party may be entitled under this Agreement, at law or in equity. Upon termination of this Agreement, Service Provider shall immediately: (i) discontinue Services on the date and to the extent specified in the notice and place no further purchase orders or subcontracts to the extent that they relate to the performance of the terminated Services; (ii) inventory, maintain and turn over to City all work product, licenses, equipment, materials, plant, tools, and property furnished by Service Provider or provided by City for performance of the terminated Services; (iii) promptly obtain cancellation, upon terms satisfactory to City, of all purchase orders, subcontracts, rentals or any other agreements existing for performance of the terminated Services, or assign those agreements, as directed by City; (iv) comply with all other reasonable requests from City regarding the terminated Services; and (v) continue to perform in accordance with all of the terms and conditions of this Agreement any portion of the Services that are not terminated.

19. Dispute Resolution.

19.1 All disputes under the Contract Documents or concerning Services shall be resolved under this Section and **Exhibit H**. Both Parties shall continue performing under this Agreement while the Parties are seeking to resolve any such dispute unless, during that time, this Agreement or any Task Order in dispute is terminated or expires. A dispute over payment will not be deemed to preclude performance by Service Provider.

19.2 Applicable Law. The Contract Documents shall be governed by and construed in accordance with the substantive laws of the State of Georgia without regard to its choice of law principles.

19.3 Jurisdiction and Venue. The Parties hereby submit and consent to the exclusive jurisdiction of the state courts of Fulton County, Georgia or in the United States District Court for the Northern District of Georgia and irrevocably agree that all actions or proceedings relating to this Agreement will be litigated in such courts, and each of the Parties waives any objection which it may have based on improper venue or forum non conveniens to the conduct of any such action or proceeding in such court.

20. General.

20.1 Notices. Any notice under this Agreement shall be in writing and sent to the respective Party at the address on page 1 of this Agreement, or, if applicable, to the City's Department of Procurement at 55 Trinity Avenue, Suite 1790, Atlanta, Georgia, 30303, and shall be deemed delivered: (a) when delivered by hand or courier or by overnight delivery with signature receipt required; (b) when sent by confirmed facsimile with a copy sent by another means specified in this Section; or (c) three (3) days after the date of mailing by United States certified mail, return receipt requested, postage prepaid. Any Party may change its address for communications by notice in accordance with this Section.

20.2 Waiver. Any waiver by the Parties or failure to enforce their rights under this Agreement shall be deemed applicable only to the specific matter and shall not be deemed a waiver or failure to enforce any other rights under this Agreement, and this Agreement shall continue in full force and effect as though such previous waiver or failure to enforce any rights had not occurred. No supplement, modification, amendment or waiver of this Agreement will be binding on City unless executed in writing by the City Authorized Representative.

20.3 Assignment. Neither this Agreement, nor any rights or obligations under it, are assignable in any manner without the prior written consent of the other Party and any attempt to do so without such written consent shall be void ab initio.

20.4 Amendment of City Security Policies. City may amend or replace **Exhibit D** from time to time upon thirty (30) days prior written notice to Service Provider.

20.5 Publicity. Service Provider shall not make any public announcement, communication to the media, take any photographs or release any information concerning City, the Services or this Agreement without the prior written consent of City.

20.6 Severability. In the event that any provision of this Agreement is declared invalid, unenforceable or unlawful, such provision shall be deemed omitted and shall not affect the validity of other provisions of this Agreement.

20.7 Further Assurances. Each Party shall provide such further documents or instruments required by the other Party as may be reasonably necessary to give effect to this Agreement.

20.8 No Drafting Presumption. No presumption of any Applicable Law relating to the interpretation of contracts against the drafter shall apply to this Agreement.

20.9 Survival. Any provision of this Agreement which contemplates performance subsequent to any termination or expiration of this Agreement or which must survive in order to give effect to its meaning, shall survive the expiration or termination of this Agreement.

20.10 Independent Contractor. Service Provider is an independent contractor of City and nothing in this Agreement shall be deemed to constitute Service Provider and City as partners, joint venturers, or principal and agent, or be construed as requiring or permitting the sharing of profits or losses. Neither Party has the authority to represent or bind or create any legal obligations for or on behalf of the other Party.

20.11 Third Party Beneficiaries. This Agreement is not intended, expressly or implicitly, to confer on any other Person any rights, benefits, remedies, obligations or liabilities.

20.12 Cumulative Remedies. Except as otherwise provided herein, all rights and remedies under this Agreement are cumulative and are in addition to and not in lieu of any other remedies available under Applicable Law, in equity or otherwise.

20.13 Entire Agreement. The Contract Documents contain the entire Agreement of the Parties relating to their subject matter and supersede all previous communications, representations or agreements, oral or written, between the Parties with respect to such subject matter. This Agreement may only be amended or modified by a writing executed by each Party's authorized representative and each such writing shall be deemed to incorporate the Contract Documents, except to the extent that City is authorized under Applicable Law to issue Unilateral Change Documents. SERVICE PROVIDER MAY NOT UNILATERALLY AMEND OR MODIFY THIS AGREEMENT BY INCLUDING PROVISIONS IN ITS INVOICES, OR OTHER BUSINESS FORMS, WHICH SHALL BE DEEMED OBJECTED TO BY CITY AND OF NO FORCE OR EFFECT.

20.14 Unauthorized Goods or Services. Service Provider acknowledges that this Agreement and any changes to it by amendment, modification, change order or other similar document may have required or may require the legislative authorization of the City's Council and approval of the Mayor. Under Georgia law, Service Provider is deemed to possess knowledge concerning the City's ability to assume contractual obligations and the consequences of Service Provider's provision of goods or services to the City under an unauthorized contract, amendment, modification, change order or other similar document, including the possibility that the Service Provider may be precluded from recovering payment for such unauthorized goods or services. Accordingly, Service Provider agrees that if it provides goods or services to the City under a contract that has not received proper legislative authorization or if Service Provider provides goods or services to the City in excess of the any contractually authorized goods or services, as required by the City's Charter and Code, the City may withhold payment for any unauthorized goods or services provided by Service Provider. Service Provider assumes all risk of non-payment for the provision of any unauthorized goods or services to the City, and it waives all claims to payment or to other remedies for the provision of any unauthorized goods or services to the City, however characterized, including, without limitation, all remedies at law or equity.

The Parties hereto by authorized representatives have executed this Agreement as of the Effective Date.

City of Atlanta **[Service Provider]**

Mayor

Municipal Clerk (Seal)

Approved:

[Using Agency]

Chief Procurement Officer

Approved as to form:

City Attorney

Signature Block Options for Service Provider:

Corporate signature:

[Insert Corporate Name]

_____

By:_____

Name:_____

Title:_____

_____

Corporate Secretary/Assistant Secretary (Seal)

Limited Liability Company:

[Insert LLC Name]

_____

By:_____

Name:_____

Title:_____

_____

Notary Public (Seal)

My Commission Expires:_____

EXHIBIT A

SCOPE OF SERVICES/WORK

SCOPE OF WORK

Emergency On-Call Repair and Maintenance Services for the Atlanta Streetcar Traction Power Substations

A. Emergency On-Call Repair Services for the Atlanta Streetcar Traction Power Substation and Overhead Contact System

1. System Overview

The power required to operate electric rail vehicles over Atlanta Streetcar (ASC) system is delivered through a network of electrical distribution lines and facilities. ASC's traction power distribution system uses various protective devices to ensure high level of reliability, and includes many safeguards and controls to ensure that operations and maintenance employees can work safely and confidently in its vicinity. The ASC running vehicle power is provided by a network of overhead contact system poles and wires.

1.1 Rail System Stations and Services

The Atlanta Streetcar System consists of four (4) Siemens S-70 light rail vehicles, twelve (12) stops, and 2.7 miles of imbedded track comprised solely of at-grade rail sections. The Streetcar's alignment is located in the roadway Right-of-Way and share travel space with automotive and pedestrian traffic. Powered by an overhead contact system, Streetcar vehicles will operate at speeds of up to 35 miles per hour on standard fifteen-minute headways. Additional service may also be provided where chartered or in response to special events.

Each of the twelve stops consists of a raised platform located in the sidewalk area and one in the median of Edgewood Avenue. Streetcar stops are low, concrete platforms that allow for level boarding of the streetcar vehicles. Stops are configured with a simple railing and modern amenities, including a shelter, bench, fare collection equipment, lighting and signage.

The City of Atlanta is the sole owner of all stops and right-of way on which the Streetcar operates, and does not share track with any other passenger or freight rail system.

1.2 Vehicle Maintenance Facility

The Atlanta Streetcar's Vehicle Maintenance Facility (VMF) is located on Auburn Avenue under the I-75/85 overpass. From this location, the City of Atlanta stores all four streetcars. The VMF support streetcar periodic safety inspection, routine and heavy maintenance, and repair service.

1.3 Traction Power System Elements

The Traction Power System is comprised of two functional subsystems; the Traction Power Substations (TPSS) and the Overhead Contact System (OCS). The TPSS contains all of the necessary equipment to receive electric power from utilities and deliver it in usable form to the OCS. The major elements of the TPSS include high-voltage AC switchgear, transformers, rectifiers, DC switchgear, and DC feeders and auxiliary equipment.

The OCS contains all of the elements required for the delivery of power from the TPSS to the vehicles along the alignment. These major elements include the messenger and trolley wires, hangers, and jumpers, all in span-components, supporting structures, poles, and grounding system.

2. Training

Persons assigned to manage, supervise, inspect, maintain, calibrate and/or test Atlanta Streetcar electrical power distribution equipment must be qualified personnel trained on the equipment they will be required to maintain as defined under the guidelines of APTA RT-FS-S-006-03 rev-1 as shown in Appendix A, and OSHA 1910.269.

3. Responsibilities

3.1 Contractor's Responsibilities

Managers, Supervisors and System Maintainers will be responsible for knowing and implementing applicable industry safety rules and regulations and taking action to provide for the safety of the personnel and operations they supervise. This includes taking positive action to identify and reduce hazards; instructing all employees in safe work methods and associated safety requirements; and allowing only qualified employees to perform work. They will be responsible for the safety of all employees under their supervision and shall enforce all rules designed to mitigate hazards or hazardous conditions.

Managers and Supervisors will be responsible to ensure employees receive instruction in emergency response techniques, such as CPR, first aid, pole top rescue, and confined space rescue.

3.2 Atlanta Streetcar Responsibilities

City of Atlanta Streetcar will ensure the implementation of applicable industry safety rules and regulations and taking action to provide for the safety of the personnel and operations. They shall ensure that all employees and contractors work in safe environment allowing only those employees that are qualified to perform work. They will enforce all rules designed to mitigate hazards or hazardous conditions.

Atlanta Streetcar shall provide maintenance personnel to accompany the Contractor at all time to assist at a minimum with:

- Lock-Out Tag-Out
- Authorize Work
- Project Management
- Work Coordination

4. Electric Traction System

Electrical power for the Atlanta Streetcar traction power system is provided by Georgia Power. Power is distributed to three ASC substations, where it is transformed and rectified to 750 VDC output. Cables from the substations feed a system of overhead contact wires to supply power to the streetcar. A negative return system utilizes the running rail and negative return cables to bring current back to the substation, thus completing the circuit.

The strategy of maintaining the electric traction power distribution system is focused on conducting preventive maintenance to avoid failures that could interrupt ASC service. Reaching this goal requires an effective program of inspection, the anticipation of failures caused by age and wear, and preemptive corrective action.

All ASC maintenance practices for traction power distribution equipment are in accordance with APTA and OSHA standards, original equipment manufacturers recommendations, and City of Atlanta electrical code provisions.

5. Documentation Control

All traction power substations and overhead contact system preventive maintenance, inspection, repair, testing calibration, adjustment and corrective action will be documented in hard copy and electronic digital format. All records will be made available to ASC at any time for maintenance and inspection verification and transmitted to ASC system managers on a monthly basis.

B. Scope of Services To Be Provided

1. Traction Power Substations

1.1 Emergency On-Call Repair

The Contractor shall respond by phone within two hours of being notified. The Contractor will be onsite within 36 hours of being notified. They will be ready to perform emergency repairs on the City's traction power substations. The Contractor shall furnish labor, tools and equipment, at its sole expense, required in performing the services under this Contract. All of the services required hereunder shall be performed by Contractor and under the Contractor's supervision and all personnel engaged in the services shall be fully qualified. The Contractor shall supply the Contract Administrator telephone numbers where emergency personnel can be contacted after normal hours, nights, holidays and week-ends.

Maintenance practices for traction power distribution equipment will be within accordance with APTA and OSHA standards, original equipment manufacturers recommendations and the City of Atlanta Electrical code. The Contractor shall be required to perform Annual TPSS maintenance according to Annual frequencies as describe below.

1.1.1 On-Call Service Repair

The Contractor shall be onsite within seventy-two (72) hours of being notified, seven days per week, 24 hours per day, and be ready to perform repairs on the City's traction power substations. The Contractor shall furnish labor, tools and equipment, at its sole expense, required in performing the services under this Contract. All of the services required hereunder shall be performed by Contractor and under the Contractor's supervision and all personnel engaged in the services shall be fully qualified. The Contractor shall supply the Contract Administrator

telephone numbers where emergency personnel can be contacted after normal hours, nights, holidays and week-ends.

Maintenance practices for traction power distribution equipment will be within accordance with APTA and OSHA standards, original equipment manufacturers recommendations and the City of Atlanta Electrical code. The Contractor shall be required to perform Annual TPSS maintenance according to Annual frequencies as describe below.

The operating hours of the Streetcar will be as illustrated below:

REFERENCE CHART FOR NIGHTLY ALLOWABLE RANGE OF A STREETCAR OCS OUTAGE

DAY OF OPERATION	RECOMMENDED STREETCAR HOURS	PRE-OP & POST OP BUFFER	RANGE ALLOWED FOR OCS OUTAGE
MONDAY	6:00 AM until 11:00 PM	4:30 AM to 6:00 AM and 11:00 PM to 12:30 AM	12:30 AM Tue – 4:30 AM Tue
TUESDAY	6:00 AM until 11:00 PM	4:30 AM to 6:00 AM and 11:00 PM to 12:30 AM	12:30 AM Wed – 4:30 AM Wed
WEDNESDAY	6:00 AM until 11:00 PM	4:30 AM to 6:00 AM and 11:00 PM to 12:30 AM	12:30 AM Thu – 4:30 AM Thu
THURSDAY	6:00 AM until 11:00 PM	4:30 AM to 6:00 AM and 11:00 PM to 12:30 AM	12:30 AM Fri – 4:30 AM Fri
FRIDAY	6:00 AM until 1:00 AM	4:30 AM to 6:00 AM and 1:00 AM to 2:30 AM	2:30 AM Sat – 7:00 AM Sat
SATURDAY	8:30 AM until 1:00 AM	7:00 AM to 8:30 AM and 1:00 AM to 2:30 AM	2:30 AM Sun – 7:30 AM Sun
SUNDAY	9:00 AM until 11:00 PM	7:30 AM to 9:00 AM and 11:00 PM to 12:30 AM	12:30 AM Mon – 4:30 AM Mon

HOLIDAY SCHED* PRECEDING MON-FRI	9:00 AM until 11:00 PM	7:30 AM to 9:00 AM and 11:00 PM to 12:30 AM	12:30 AM Holiday – 4:30 AM Mon-Fri

1.2 Annual Inspection

The Contractor shall be required to perform two (2) annual Traction Power Substation (TPSS) maintenance inspections (Initial and 12-Month) according to frequencies as describe below. The completion of scheduled maintenance will be completed within a variance of + / - 10% of the set date. The required maintenance practices for traction power distribution equipment will be in accordance with APTA and OSHA standards, original equipment manufacturers recommendations and the City of Atlanta Electrical code.

Upon the completion of the inspections of TPSS, the Contractor shall provide the Contract Administrator or designee with a list of all items that need repair. The Contract Administrator or designee and the Contractor shall jointly deliberate and decide corrective actions to be taken for each item that need repair.

As part of the inspection, the Contractor shall submit the following:

A. Recommendation and Deficiency Reports.
B. Recommended Repair List.
C. Summary of work for the recommended repairs.
D. Itemized repairs cost estimate.

Twice per year each TPSS will undergo a comprehensive program of tests and procedures to thoroughly check the condition of all major equipment. During the annual PMCS the substation will be thoroughly cleaned throughout. Prior to any test being performed, all insulators shall be cleaned and inspected. Check all buss bar insulators for cracks, overheating, corrosion, voltage tracking and other abnormal conditions, replace as needed.

Any component found to have discoloration due to overheating or arc marks, shall be Hi-Pot tested. Complete function tests of all alarms must be performed, including the fire alarm system. An analysis of the fault logs shall be performed annually. A comprehensive parts list will be provided by the contractor. Recertification must be issued on all substations after inspection and testing are completed. The Annual Inspection will focus on the following components:

- Transformers
- High Voltage Switchgear
- Power Rectifier
- DC Switchgear

SCOPE OF WORK

Emergency On-Call Repair and Maintenance Services for the Atlanta Streetcar Traction Power Substations

The transformer testing will consist of the following:

- Hi-Pot testing of the primary windings according to manufacturer specification and industry standard 1st year test, every subsequent five (5) years
- Meg all the secondary windings
- Vacuum the transformer coils and blow the coils out with nitrogen gas.

The high voltage switchgear annual testing:

- Inspect all control devices such as control switches, meters, lights, and relays for any damage
- Inspect all terminal strips for secure wiring
- Inspect all protective devices for proper current ratings
- Re-torque the power buss, inspect the buss insulators, hardware, and bushings for damage
- Inspect breaker for any damage or malfunction
- Mechanically operate the breaker
- Check for proper racking operation
- Check for correct operation of kirk keying
- Check the insulation properties of the AC breaker (meg, hi-pot), 1st year test, every subsequent five (5) years
- Check the insulation properties of the buss insulators, bushings, and cables from the transformer secondary to the rectifier(meg, hi-pot) , 1st year test, every subsequent five (5) years
- Meg/hi-pot the auxiliary transformer primary and secondary circuits according the manufacturer specifications and industry standards, 1st year test, every subsequent five (5) years
- Verify the remote control of the AC breaker (only on TPSS-3)
- Check and clean breaker fingers as necessary
- Insure that the heating system is operational

The Power Rectifier annual testing:

- Inspect and clean buss insulators
- Verify and torque all heat sinks in the rectifier enclosure
- Inspect and torque all power connections and buss splices
- Inspect all internal, external, and site installed wiring
- Test the thermal switches associated protective devices
- Meg the AC buss, DC buss, and rectifier enclosure
- Check the operation of the negative disconnect switch, clean and lubricate

The DC Switchgear annual testing will:

- Inspect the DC breaker
- Inspect all buss insulators for condition
- Inspect and torque all buss splices, connections, and insulators
- Inspect internal, external, and site connections

- Meg the main DC buss, 1st year test, every subsequent five (5) years
- Meg the DC feeder buss, 1st year test, every subsequent five (5) years
- Meg the DC feeder breakers, 1st year test, every subsequent five (5) years
- Meg the DC switchgear enclosure, 1st year test, every subsequent five (5) years
- Test the associated protective devices: DC ammeters, load measuring relays etc.
- Verify the control sequence of the DC feeder breakers and the related cell controls
- Verify remote control of all DC breakers
- Inspect arc chutes
- Measure contact width
- Meg the insulated floor (1st year test, subsequent test every 5 years)
- Check integrity of the K0 K1 and K2 relay
- Check main contacts for damage, and repair or replace if necessary.

Upon completion of the annual PMCS the substation will be brought back on-line to regular service.

1.3 Substation Locations and Characteristics

There are three substations in the ASC system:

Traction Power Substation	Location	Support
TPSS No. 1 - VMF	Vehicle Maintenance Facility	Main Shop and Yard
TPSS No. 2 - EDG	Vehicle Maintenance Facility	East Alignment
TPSS No. 3 - PCH	Peachtree Center	West Alignment

All interior substation equipment will be cleaned, lubricated, inspected, repaired, and adjusted to original equipment manufacturers.

There are three line breakers and main transformer breakers inside the AC switchgear. These devices protect ASC equipment and cables from any surges or overloads originating from Georgia Power or from internal substation equipment failures. Every two years, these breakers will be inspected, cleaned, calibrated and repaired as needed. All arc chutes will be cleaned, the main and secondary contacts will be checked for wear or deterioration, and necessary breaker adjustments will be performed.

The breaker cubicles and controls will be inspected, cleaned and repaired on the same timeframes described above, including any secondary disconnects, shutters, truck interlocks, wiring, and control relays. Also, every two years overcurrent relays will be calibrated.

EXHIBIT A.1

BID FORM

BID FORM
FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations

In witness whereof, the Bidder(s) hereto has (have) executed this Bid Form this _____day of _____, 2015

Company Name:
_____

Street Address:
_____

City: _____ State:_____ Zip Code:_____

Telephone: _____ Fax: _____

Name of Person Signing:
_____

Title:
_____

Signature:
_____

BID FORM
FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations

Line Item	Description	Unit	Estimated Quantity (See note 2)		Estimated Unit Price		Estimated Extended Price
1	Mobilization & Equipment Staging	Month	2	X		=	
2	TPSS Annual Preventive Maintenance Inspection	Each	2	X		=	
3	Labor Rate Per Hour for Inspection Repairs Authorized by the Contract Coordinator for TPSS	Hours	80	X		=	
4	Labor Rate per Hour for On-Call Emergency TPSS Repairs	Hours	360	X		=	
						Annual Total:	

Annual Total in Words:

_____

_____

Note:

1. Bids must be on ALL line items in order to be considered for award.
2. Estimated quantities are not fixed and serves only for purposes of comparing Bids

EXHIBIT B

DEFINITIONS

DEFINITIONS

When used in the Contract Documents, the following capitalized terms have the following meanings:

"Applicable Law(s)" means all federal, state or local statutes, laws ordinances, codes, rules, regulations, policies, standards, executive orders, consent orders, orders and guidance from regulatory agencies, judicial decrees, decisions and judgments, permits, licenses, reporting or other governmental requirements or policies of any kind by which a Party may be bound, then in effect or which come into effect during the time the Services are being performed, and any present or future amendments to those Applicable Laws, including those which specifically relate to: (a) the business of City; (b) the business of Service Provider or Service Provider's subcontractors; (c) the Agreement and the Contract Documents; or (d) the performance of the Services under this Agreement.

"Charges" means the amounts payable by City to Service Provider under this Agreement.

"City Security Policies" means the policies set forth in **Exhibit D**.

"Code" means the Code of Ordinances for the City of Atlanta, Georgia, as amended.

"Contract Documents" include this Agreement and the exhibits and other documents attached or referenced herein as well as any authorized changes or addenda hereto.

"Facility" or "Facilities" means the physical premises, locations and operations owned or leased by a Party and from or through which Service Provider will provide any Services.

"Force Majeure Event(s)" means acts of war, domestic and/or international terrorism, civil riots or rebellions, quarantines, embargoes and other similar unusual governmental actions, extraordinary elements of nature or acts of God.

"Party" or "Parties" means City and/or Service Provider.

"Person" means individuals, partnerships, agents, associations, corporations, limited liability companies, firms or other forms of business enterprises, trustees, executors, administrators, successors, permitted assigns, legal representatives and/or other recognized legal entities.

"Service Provider Personnel" means and refers to Service Provider employees or subcontractors hired and maintained to perform Services hereunder.

"Third Party" means a Person other than the Parties.

EXHIBIT C

AUTHORIZING LEGISLATION

(to be inserted upon contract execution)

EXHIBIT D

CITY SECURITY POLICIES

SECTION 00001

PART 1 – GENERAL

SCOPE

A. The Contractor shall be responsible for conducting all work in a safe manner and shall take reasonable precautions to ensure the safety and protection of workers, property and the general public.

B. All Construction shall be conducted in accordance with the latest applicable requirements for part 1926 of the Occupational Safety and Health Regulations for Construction, as well as any other local, state or federal safety codes and regulations.

C. The Contractor shall designate a trained and qualified employee who is to be responsible for ensuring that the work is performed safely and in conformance with all applicable regulations.

D. The Contractor shall determine the safety hazards involved in prosecuting the work and the precautions necessary to conduct the work safely. If the Contractor is unsure as to any special hazards which may be unique to the various processes and facilities at the treatment plant or jobsite, it shall be the Contractor's responsibility to determine such information prior to beginning the work.

SPECIAL REQUIREMENTS – Not Used

SECTION 00002

JOB SITE SECURITY

PART 1 – GENERAL

BARRICADES, LIGHTS AND SIGNALS

A. The Contractor shall furnish and erect such barricades, fences, lights and danger signals and shall provide such other precautionary measures for the protection of persons or property and of the work as necessary. Barricades shall be painted in a color that will be visible at night. From sunset to sunrise, the Contractor shall furnish and maintain at least one light at each barricade and sufficient numbers of barricades shall be erected to keep vehicles from being driven on or into any work under construction. All barricades must the Manual of Uniform Traffic Control Devices (MUTCD) Standards.

B. The Contractor will be held responsible for all damage to the work due to failure of barricades, signs and lights and whenever evidence is found of such damage. The Contractor shall immediately remove the damaged portion and replace it at Contractor's cost and expense. The Contractor's responsibility for the maintenance of barricades, signs and lights shall no cease until the project has been accepted by the owner.

SECTION 00003

STORAGE AND PROTECTION

PART 1 – GENERAL

1.01 SCOPE

The work under this section includes, but is not necessarily limited to the furnishing of all labor, tools and materials necessary to properly store and protect all materials, equipment, products and the like, as necessary for the proper and complete performance of the work.

1.02 STORAGE AND PROTECTION

A. STORAGE

1. Maintain ample way for foot traffic at all times, except as otherwise approved by the city representative.

2. All property damaged by reason of storing of material shall be properly replaced at no additional cost to the city.

3. Packaged material shall be delivered in original unopened containers and so stored until ready for use.

4. All material shall meet the requirements of these specifications at the time that they are used in the work.

5. Store products in accordance with manufacturer's instructions.

B. PROTECTION

1. Use all means necessary to protect the materials, equipment and products of every section before, during and after installation and to protect the installed foreign material and damage by water, breakage, vandalism or other causes.

2. Substantially constructed weather tight storage sheds, with raised floors, shall be provided and maintained as may be required to adequately protect those materials and products stored on the site which may require protection from damage by the elements.

3. Replacements: In the event of damage, immediately make all repairs and replacements necessary for the approval of the city representative and at no additional cost to the owner.

4. Equipment and products stored outdoors shall be supported above the ground on suitable wooden blocks or braces arranged to prevent excessive deflection or bending shall be stored with one end elevated to facilitate drainage.

5. Tarps and other coverings shall be supported above the stored equipment or materials on wooden strips to provide ventilation under the cover and minimize condensation. Tarps and covers shall be arranged to prevent ponding of water.

1.03 EXTENDED STORAGE

In the event that certain items of major equipment such as air compressors, pumps, e.g., have to be stored for an extended period of time, the Contractor shall provide satisfactory long-term storage facilities which are acceptable to the Owner.

FC-7019, STANDARD OPERATING PROCEDURES DEVELOPMENT

SECTION 00004

PART 1 – GENERAL

1.01 PROTECTION OF THE ENVIRONMENT

A. The Contractor shall be responsible for taking all measures required to minimize all types of pollution associated with the undertaking of the proposed work, and shall abide by the requirements of all governmental agencies having jurisdiction over the work or Contractor's project operations.

B. The Contractor shall protect all work including but not limited to excavation and trenches, from rain water, surface water and back-up of drains and sewers. The Contractor shall furnish all labor, pumps, shoring, enclosures and equipment necessary to protect and keep the work free of water. Completed work and stored products shall be suitably protected during unseasonable weather to allow work to proceed in a timely fashion. Work planned, or in progress, should be performed to minimize impact of adverse weather conditions.

C. Any area used or involved in the project that is disturbed by the Contractor, shall be restored to the original or better condition, even though such area is outside the limits of that specified for grading, grassing or landscaping.

SECURITY AND SAFETY

PART 1 – GENERAL

1.01 COMPLIANCE WITH City'S SECURITY REQUIREMENTS

A. Contractor must comply with City's security requirements for all job sites and DPCD facilities. The City shall provide copies to the Contractor.

B. Contractor must cooperate with City on all security matters and must promptly comply with any project security arrangements established by the City.

C. It is the Contractor's obligations to comply with all applicable governmental requirements and regulations and to undertake reasonable actions to establish and maintain secure conditions at any jobsite.

1.02 SECURITY PROGRAM

A. The Contractor shall comply with the site security program at all times on City facilities.

B. The Contractor shall maintain the security program throughout the Contract duration.

C. The Contractor and his subcontractors are wholly responsible for the security of their employees, work areas, and for all their material, equipment and tools at all times.

D. The Contractor shall provide the owner with a list of 24-hour emergency phone numbers including chain of command.

1.03 ENTRY CONTROL

A. The Contractor shall restrict entry of unauthorized personnel and employees and vehicles onto the Project site.

B The Contractor shall allow entry only to authorized persons with proper City-approved identification.

All Contractors/Subcontractors will be required to have their personnel working at these facilities photographed for an I.D. badge before they start work.

C. The Contractor shall maintain a current Employee Log of employees performing work on site and a Visitor Log and make the log available to the City upon request. This log shall be available to the Owner upon request and submitted to

the Owner as necessary.

D. The Contractor shall require all employees performing activities on site to sign the Employee Acknowledgment of Project Site Rules Log included at the end of this Section. All employees, subcontractor employees and lower tier contractor employees will receive a new employee orientation. Signing the Employee Log by the employee is certifying that the orientation training has been received.

E. The City has the right to refuse access to the site or request that a person or vehicle be removed from the site if found violating any of the safety, security, or conduct rules as outlined.

1.04 BARRICADES, LIGHTS AND SIGNALS

A. The Contractor shall furnish and erect such barricades, fences, lights, danger signals and other precautionary measures for the protection of persons or property and of the work as necessary.

B. The Contractor will be held responsible for all damage to the work and any negligence resulting in injuries due to his failure of erecting adequate barricades, signs, lights and safety provisions as required. Whenever evidence is found of such damage, the Contractor shall immediately remove the damaged portion and replace it at the Contractor's cost and expense.

C. The Contractor's responsibility for the maintenance of barricades, signs and lights shall not cease until the City has been accepted in writing the Project.

1.05 RESTRICTIONS

The Contractor shall not allow cameras on site or photographs taken except with approval of the City.

1.06 CONTRACTOR SAFETY/HEALTH AND SECURITY PLAN

Prior to the performance of any work the Contractor will comply with the specified Safety/Health and Security Plan.

1. Basic pre-employment background checks for criminal convictions, veracity of previous employment and education statements, driving record and financial responsibility as applicable to the position. Record of satisfactory drug/alcohol testing for two years will be provided for those contractor employees with CDL. Proof of citizenship or work status will be provided for each contract employee.

2. Security Education and Awareness training applicable to the job.

3. SOPs for safeguarding City equipment, supplies and property.

4. Certification requested under the SAFETY Act, Homeland Security Act of 2002, if applicable. Provide date and result as requested.

5. Established process for identification of employees PFD including location. Emergency notification procedures.

6. If applicable, procedures for entry permits and badges. Procedures for returning badges upon termination of employment.

7. Anti-terrorism training provided to employees including the state of national alert with appropriate procedures.

8. Emergency evacuation procedures including accounting for employees at a safe haven.

9. Procedures for reporting post-contract criminal convictions and traffic accidents to the Contract Officer or DPCD project manager.

10. SOPs for protecting employees when performing required duties off-site including training for reporting accidents, calling for immediate assistance, job reporting procedures and personal duress codes or alarms.

B. It is not the City's responsibility to verify the Contractor's safety plan for the adequacy and compliance of the plan. The plan shall provide:

1. Identify the person(s) responsible for implementation and enforcement of Safety/Health and Security rules and regulations for this contract.

2. Generally address safe work procedures for the activities within the Contractor's scope of work.

3. Included a new employee orientation program, which addresses job and site specific rules, regulations and hazards.

4. Include the Contractor's Drug Free Work Place Policy including substance abuse prevention and testing program.

5. Include provisions to protect all of the Contractor's employees, other persons and organizations that may be affected by the work from injury, damage or loss.

6. Comply with current Fed/OSHA, Safety/Health and Security Plan, facility safety program (when applicable), and locally accepted safety codes, regulations and practices.

7. Include a site-specific emergency action and evacuation plan.

8. Include Hazard Communication/Right To Know Program.

9. Include security procedures for the Contractor's work, tools, and equipment.

10. Include the capability of providing the Engineer with documentation to show compliance with their plan, plus accidents and investigation reports.

11. Address any other contract specific requirement, including the requirements of Section 01011, Unique Requirements of these specifications.

C. Provide a Job Safety Analysis (JSA) for the scope of work, prior to the start of work.

D. Review of the Contractor's Safety Plan by the City shall not impose any duty or responsibility upon the City for the Contractor's performance of the work in a safe manner.

E. The Contractor shall be fully responsible for the safety and health of its employees, its subcontractors and lower tier contractors during performance of its work.

F. The Contractor shall provide the City with all safety reports, training records, competent person list, and accident reports prepared in compliance with Fed/OSHA and the Project Safety/Health and Security Plan as requested.

1.07 PROJECT SAFETY COORDINATOR

A. The Contractor shall be responsible for the safety of the Contractor’s and Engineer’s employees, the City’s personnel and all other personnel at the site of the work caused by their operations.

B. If applicable, the Contractor shall have a Project Safety Coordinator, as required under GC-18, Paragraph F.

C. The Project Safety Coordinator shall ensure compliance with all applicable health and safety requirements of all governing legislation.

1.08 PROJECT SAFETY/SECURITY REQUIREMENTS OF THE CONTRACTOR

A. It is the responsibility of the Contractor to ensure that all articles of possible personal or monetary value found by Contractor's employees are turned in to the appropriate Facilities Manager.

B. The Contractor shall be responsible for maintaining satisfactory standards of employees' competency, conduct, courtesy, appearance, honesty, and integrity, and shall be responsible for taking such disciplinary action with respect to any employee, as may be necessary.

C. Should the Contractor dismiss employees who have been given access to DPCD facilities while the contract is in force, the Contractor will advise the DPCD Security office.

D. The City may request the Contractor to immediately remove from the premises and/or dismiss any employee found unfit to perform duties due to one or more of the following reasons:

1. Neglect of duty, absenteeism, security or safety problems and sleeping on the job.

2. Disorderly conduct, use of abusive or offensive language, quarreling, intimidation by words or actions or fighting.

3. Theft, vandalism, immoral conduct of any other criminal action.

4. Selling, consuming, possessing, or being under the influence of intoxicants, alcohol, or illegal substances, which produce similar effects while on duty.

5. Vehicle accident while on City property or driving City equipment. No employee, Contractor, or Subcontractor will be extended privileges to drive City equipment on City property if driving privileges have been withdrawn by the State of residence.

E. All employees shall be required to sign in and out on a designated log sheet. All employees shall be required to sign in and out on a designated log sheet.

F. All employees shall be required to wear at all times in an observable location, above the waist, on outer clothing, appropriate photo I. D. badges to be furnished by the Contractor and approved by the City.

G. Prior to the beginning of each workday, the Contractor shall file with the Department Security representative a list of all employees to be used at the work site. Employee names will be checked using this list and a State or Contractor issued photo I. D. card at the entry gates. Employees not named on the list or

without appropriate identification will not be allowed entry.

H. No one under age sixteen is permitted on the premises after normal working hours. Contractor's employees are allowed on premises only during the specified hours and only when working on this contract. No Contractor employee will be allowed on the premises when not specifically working on this contract at predetermined times and dates.

1.09 EMPLOYEE ACKNOWLEDGEMENT OF THE PROJECT SITE RULES

A. All employees and agents of the Contractor must adhere to and abide by the contract documents and project rules.

B. By Signing this Employee Log, I acknowledge that I understand and agree to abide by the project rules outlined below.

I further acknowledge that I have been briefed on specific hazards, hazardous substances that are on-site and the site emergency action procedure.

C. PROHIBITED ACTIVITIES:

1. Unauthorized removal or theft of City property
2. Violation of safety or security rules or procedures
3. Possession of firearms or lethal weapons on jobsite
4. Acts of sabotage
5. Destruction or defacing City property
6. Failure to use sanitary facilities
7. Failure to report accidents or job related injuries
8. Being under the apparent influence of drugs, alcohol or other intoxicants or in possession of drugs, alcohol or other intoxicants on the property
9. Wearing shorts or tennis shoes on the jobsite
10. Failure to wear a hardhat/safety glasses as required by law.
11. Gambling at any time on the project
12. Fighting, threatening behavior, or engaging in horseplay on the project
13. Smoking in unauthorized areas on the project
14. Open fire cooking or making unauthorized fires on project property
15. Selling items or raffles without authorization
16. Use of unauthorized cameras on the project
17. Use of radio or television in the construction area
18. Failure to park personal vehicle in authorized parking area
19. Failure to wear designated identification [Site Specific]
20. Failure to use designated gates
21. Use or storage of unauthorized chemicals or substances on site.

I have read, understand and agree to abide by the PROJECT SITE RULES. Furthermore, I understand failure to abide by these rules is grounds for being denied access to the project site. I have received a personal copy for my use and reference.

(END OF SECTION)

EXHIBIT E

DISPUTE RESOLUTION PROCEDURES

DISPUTE RESOLUTION PROCEDURES

1. If Service Provider contends it is entitled to compensation or any other relief from City or if there are any disagreements over the scope of Services or proposed changes to the Services, Service Provider shall, without delay and within three (3) days of being aware of the circumstances giving rise to Service Provider's claim, provide written notice of its claim to City. If Service Provider fails to give timely notice as required by this subsection or if Service Provider commences any alleged additional work without first providing notice, Service Provider shall not be entitled to compensation or adjustment for any such work to the extent timely notice was not provided. Such notice shall include sufficient information to advise City of the circumstances giving rise to the claim, the specific contractual adjustment of relief requested and the basis for such request. Within ten (10) days of the date that Service Provider's written notice to City is required under this subsection, Service Provider shall submit a Proposed Change Document relating to the claim meeting the requirements of Subsection 5.3.2 of this Agreement.

2. The parties are fully committed to working with each other throughout the Project and agree to communicate regularly with each other at all times so as to avoid or minimize disputes or disagreements. If disputes or disagreements do arise, Service Provider and City each commit to resolving such disputes or disagreements in an amicable, professional and expeditious manner so as to avoid unnecessary losses, delays and disruptions to the Services.

3. If a dispute or disagreement cannot be resolved informally Service Provider Authorized Representative and Authorized City Representative, upon the request of either party, shall meet as soon as conveniently possible, but in no case later than thirty (30) days after such a request is made, to attempt to resolve such dispute or disagreement. Prior to any meetings between the Authorized Representatives, the parties will exchange relevant information that will assist the parties in resolving their dispute or disagreement.

4. If City and Service Provider are still unable to resolve their dispute, each agrees to consider submitting such dispute to mediation or other acceptable form of alternate dispute resolution.

APPENDIX A

OFFICE OF CONTRACT COMPLIANCE REQUIREMENTS

CITY OF ATLANTA

Kasim Reed
Mayor

SUITE 1700
55 TRINITY AVENUE, SW
ATLANTA, GA 30303
(404) 330-6010 Fax: (404) 658-7359
Internet Home Page: www.atlantaga.gov

OFFICE OF
CONTRACT COMPLIANCE
Larry Scott
Director
Lscott@atlantaga.gov

July 20, 2015

RE: Project No.: FC- 8366, Emergency On-Call Repair and Maintenance Services for Atlanta Streetcar Traction Power Substations

Dear Prospective City of Atlanta Bidder:

The Office of Contract Compliance information is an integral part of every City of Atlanta bid. All Bidders are required to make efforts to demonstrate compliance with the program requirements at or prior to the time of Bid opening, or upon request by OCC. Bidders are required to ensure that prospective subcontractors, vendors, suppliers and other potential participants are not denied opportunities to compete for work on a City contract and afford all firms, including Small Business Enterprises (SBE) opportunities to participate in the performance of the business of the City to the extent of their availability, capacity and willingness to compete. Please read all of the information very carefully. Pay close attention to the specific SBE goals for this project and the SBE program reminders listed on page 7.

Additionally, as the City of Atlanta is developing its Small Business Enterprise database, bidders will be allowed to submit the names of companies that meet the size standards of the United States Small Business Administration Guidelines. [see 13 C.F.R. § 121.201 (and further explained in 13 C.F.R. §§ 121.104 through 121.107)]. These requirements may be accessed via the internet by visiting: http://ecfr.gpoaccess.gov/ and choosing "Title 33- Power, Distribution, and Specialty Transformer Manufacturing" from the browse-able drop down field.

If you have any questions about the information included in this section of the solicitation, please contact the City of Atlanta Office of Contract Compliance at (404) 330-6010.

The City of Atlanta looks forward to the opportunity to do business with your company.

Table of Contents

CITY OF ATLANTA

SMALL BUSINESS ENTERPRISE

POLICY STATEMENT

It is the policy of the City of Atlanta to promote full and equal business opportunity for all persons doing business with the City. The City must ensure that firms seeking to participate in contracting and procurement activities with the City are not prevented from doing so on the basis of size as it relates to revenue and number of employees. The purpose of the Small Business Enterprise Program is to ensure that the City of Atlanta has a robust race-neutral approach to promoting full and equal business opportunity for all persons doing business with the City of Atlanta, to promote commerce by assisting SBEs to actively participate in the City's procurement process, and ensure that the City of Atlanta utilizes programs that provide it with the best possible resources. SBE Goals for this project are set forth on page 6.

Implementation of SBE Policy

The Office of Contract Compliance will review information submitted by Bidders pertaining to efforts to promote opportunities for small businesses to compete for business as prime contractors, subcontractors and/or Suppliers. A Bidder is eligible for award of a City contract upon a finding by OCC that the Bidder has utilized good faith efforts to attract all businesses regardless of size. To assist prime contractors in this effort, the Office of Contract Compliance has set forth in this solicitation document the SBE goals within the relevant NAICS Codes, for this Project.

For subcontracting, the SBE Project Participation Plan must include all subcontractors to be utilized on the project, detail the services to be performed, the dollar value of the work to be performed by each subcontractor, and the *City of Atlanta* SBE or other acceptable certification number, and supplier id number.

For Suppliers, the Subcontractor Project Plan must include all suppliers to be utilized on the project, the supplies to be provided, including the dollar value of the supplies being provided and the *City of Atlanta* SBE or other acceptable certification number, and supplier id number

Determination of Good Faith Efforts During Bid Process

No Bidder shall be awarded a contract on an Eligible Project unless the Office of Contract Compliance determines that the Bidder has satisfied the requirement of section 2-1372 on such Eligible Project. Accordingly, each Bidder shall submit with each Bid the following:

1. Covenant of Non Discrimination. Each Bidder shall submit with her/his Bid a Covenant of Non-Discrimination which is set forth herein as Exhibit SBE1.

2. Outreach Efforts Documentation. Each Bidder shall submit with her/his Bid written documentation demonstrating the Bidder's outreach efforts to identify, contact, contract with, or utilize businesses, including certified SBEs, as subcontractors or Suppliers on the Eligible Project. This information shall be set forth on Exhibit SBE2, which is included herein.

3. SBE Project Participation Plan. Each Bidder shall submit with her/his Bid a completed and signed SBE Project Participation Plan, which is included herein as Exhibit SBE3, which lists the name, address, telephone number and contact person of each subcontractor or other business to be used during the contract, the NAICS Code and the type of work or service each business will perform, the dollar value of the work and the scope of work, certification number of each business, and any other information requested by the Office of Contract Compliance. In order for the Office of Contract Compliance to officially consider a firm to be an SBE firm, it must be certified by or have a certification application pending with the Office of Contract Compliance at the time of the Bid.

OCC Review of Bidder Submissions

The Office of Contract Compliance shall determine whether a Bidder has satisfied the good faith efforts requirement of section 2-1372 based on its review of the Covenant of Non Discrimination, the Outreach Efforts Documentation, the SBE Project Participation Plan, and its review of other relevant facts and circumstances. In reviewing the documents submitted by a Bidder to determine whether the Bidder has satisfied the good faith outreach practices requirement of this section, the Office of Contract Compliance will consider, among other things, the total project dollars subcontracted to or expended for services performed by other businesses, including certified SBEs, whether such businesses perform Commercially Useful Functions in the work of the contract based upon standard industry trade practices, whether any amounts paid to Supplier businesses are for goods customarily and ordinarily used based upon standard industry trade practices, and the availability of certified SBEs within the relevant NAICS Codes for such Eligible Project.

To determine whether a competitor that has failed to meet SBE goals may be awarded the contract, the city will determine whether the efforts the bidder made to obtain SBE participation were "good faith efforts." Efforts that are merely pro forma are not "good faith efforts" to meet the goals. In order to award a contract to a bidder that has failed to meet SBE contract goals, the Office of Contract Compliance will determine whether the bidder actively and aggressively made efforts to meet the City's SBE goals. A bidder making a good faith effort would consider a number of factors in negotiating with subcontractors, including SBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using SBEs is not in itself sufficient reason for a bidder's failure to meet the contract SBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from SBEs if the price difference is excessive or unreasonable. In determining whether a bidder has made good faith efforts, the Office of Contract Compliance will take into account the performance of other bidders in meeting the contract. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, the Office of Contract Compliance may reasonably raise the question of whether, with additional reasonable efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal but meets or exceeds the average SBE participation obtained by other bidders, the City may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts. Competitors that fail to meet SBE goals and fail to demonstrate "good faith efforts" shall be deemed non-responsive to the city's SBE requirements and shall not be eligible to be awarded the contract.

Small Business Enterprise Program Bid/RFP Submittals

The Covenant of Non Discrimination, the Outreach Efforts Documentation, the SBE Project Participation Plan, and any other information required by OCC in the solicitation document must be completed in their entirety by each Proponent and submitted with the other required Bid/RFP documents in order for the Bid/RFP to be considered responsive. Failure to timely submit these forms, fully completed, will result in the Bid/RFP being considered as non-responsive, and therefore, excluded from consideration.

Monitoring Of SBE Policy

Upon execution of a contract with the City of Atlanta, the successful bidder's SBE Project Participation Plan will become a part of the contract between the bidder and the City of Atlanta. The SBE Project Participation Plan will be monitored by the City of Atlanta's Office of Contract Compliance for adherence with the plan. The successful bidder will be required to provide specific information on a monthly basis that demonstrates the use of subcontractors and suppliers as indicated on the SBE Project Participation Plan. The failure of the successful bidder to provide the specific information by the specified date each month shall be sufficient cause for the City to evoke penalties as set forth in the City of Atlanta Code of Ordinances, Section 2-1373.

Implementation of EEO Policy

The City effectuates its EEO policy by adopting racial and gender work force availability for every contractor performing work for the City of Atlanta. These percentages are derived from the work force demographics set forth in the 2000 Census EEO file prepared by the United States Department of Commerce for the applicable labor pool normally utilized for the contract.

Monitoring of EEO Policy

Upon award of a contract with the City of Atlanta, the successful bidder must submit a Contract Employment Report (CER), describing the racial and gender make-up of the firm's work force. If the CER indicates that the firm's demographic composition does not meet the adopted EEO goals, the firm will be required to submit an affirmative action plan setting forth the steps to be taken to reach the adopted goals. The CER and the affirmative action plan, if necessary, will become a part of the contract between the successful bidder and the City of Atlanta. Compliance with the EEO requirements will be monitored by the Office of Contract Compliance.

First Source Jobs Program Policy Statement

It is the policy of the City of Atlanta to provide job opportunities to the residents of the City of Atlanta, whenever possible. Every contract with the City of Atlanta creates a potential pool of new employment opportunities. The prime contractor is expected to work with the First Source Jobs Program to fill at least 50% of all new entry-level jobs, which arise from this project, with residents of the City of Atlanta. For more specific information about the First Source Jobs Program contact:

Michael Sterling
Interim Executive Director
First Source Jobs Program
Atlanta Workforce Development Agency
818 Pollard Boulevard
Atlanta, GA 30315
(404) 546-3001

Small Business Enterprise Goals for this Project

Project No.: FC-8366, Emergency On-Call Repair and Maintenance Services for Atlanta Streetcar Traction Power Substation

The Small Business Enterprise goals for the trade categories listed in this project are:

35.00% SBE

Please be reminded that no Bidder shall be awarded a contract on an Eligible Project unless the Office of Contract Compliance determines that the Bidder has satisfied the good faith efforts requirement of section 2-1372 on such Eligible Project. Details of the OCC review process for determination of non-discrimination are detailed on pages 2 and 3 of this document.

Small Business Enterprise Program Reminders

1. Subcontractor Certification. It is the prime contractor's responsibility to verify that SBEs included on their SBE Project Participation Plans are certified with the City of Atlanta's Office of Contract Compliance by filing with OCC a self-certification form or a letter or other documentation from the United States Small Business Administration that establishes that the firm qualifies as an 8(a) firm or HUB Zone firm.

2. Reporting. The successful bidder must submit monthly SBE participation reports to the Office of Contract Compliance.

3. Subcontractor Contact Form. It is required that bidders list and submit information on all subcontractors they solicit for quotes, all subcontractors who contact them with regard to the project, and all subcontractors they have discussions with regarding the project. Failure to provide complete information on this form will result in your bid being declared non-responsive.

4. SBE Ordinance. The SBE Program is governed by the provisions of the SBE Ordinance set forth in the City of Atlanta Code Division 9 section 2 - 1356 through 2 -1377. The ordinance can be obtained from the City of Atlanta Clerk's Office at (404) 330-6032.

5. Supplier Participation. In order to receive full SBE credit, suppliers must manufacture or warehouse the materials, supplies, or equipment being supplied for use on the Eligible Project.

COVENANT OF NON-DISCRIMINATION

The undersigned understands that it is the policy of the City of Atlanta to promote full and equal business opportunity for all persons doing business with the City of Atlanta. The undersigned covenants that we have not discriminated, on the basis of a firm's revenue or employee size with regard to prime contracting, subcontracting or partnering opportunities. The undersigned further covenants that we have completed truthfully and fully the required forms SBE-2 and SBE-3. Set forth below is the signature of an officer of the bidding entity with the authority to bind the entity.

_____

Signature of Attesting Party

_____

Title of Attesting Party

On this _____ day of _____, 20___, before me appeared _____, the person who signed the above covenant in my presence.

_____

Notary Public

Seal

FORM SBE-1

OFFICE OF CONTRACT COMPLIANCE

SUBCONTRACTOR CONTACT FORM

List all subcontractors or suppliers(SBE and Non-SBE) that were contacted regarding this project

Name of Sub-Contractor/ Supplier	City Of Atlanta Supplier ID Number	Company Name, Contact Name, Address and Phone Number	City Of Atlanta Business License? *(Yes or No)*	Type of Work Solicited for	Business Ownership *(See Code below)*	Certification No. and Expiration Date	Results of Contact

Name of Sub-contractor/ Supplier	City Of Atlanta Supplier ID Number	Company Name, Contact Name, Address and Phone Number	City Of Atlanta Business License? (Yes or No)	Type of Work Solicited for	Business Ownership (see code below)	Certification No. and Expiration Date	Results of Contact

Proponent's Name: _____ Project Name: _____ FC#: _____

Signature: _____ Contact No: _____ Date:_____

EQUAL BUSINESS OPPORTUNITY SUBCONTRACTOR PROJECT PLAN
SUBCONTRACTOR/SUPPLIER UTILIZATION

List all Majority Owned and Small Business Enterprise (SBE) subcontractors/suppliers, including lower tiers, to be used on this project.

Name of Sub-contractor/ Supplier	Contact Name, Address and Phone Number	City of Atlanta Business License? (yes or no)	NIAC Code	Type of Work to be Performed	Ethnicity of SBE Ownership	SBE Certification No. and Expiration Date	Dollar ($) Value of Work and Scope of Work	Percentage (%) of Total Bid Amount

Total SBE%_____

(***Note... EBO or DBE certification does not qualify for SBE projects. Proponents must provide copies of subcontractors current certification)

Proponent's Co. Name: _____ Project Name: _____ FC#: _____

Proponent's Contact Number:_____ Signature:_____ Date: _____

(Please Print)

First Source Job Information

Company Name: _____

FC No.: _____

Project Name: _____

The following entry level positions will become available as a result of the above referenced contract with the City of Atlanta.

1.

2.

3.

4.

5.

Include a job description and all required qualifications for each position listed above.

Identify a company representative and contact phone number who will be responsible for coordinating with the First Source Jobs Program.

Company Representative: _____

Phone Number: _____

FORM 4

First Source Jobs Agreement

THIS AGREEMENT REGARDING THE USE OF THE FIRST SOURCE JOBS PROGRAM BY CONTRACTORS WITH THE CITY OF ATLANTA TO FILL ENTRY LEVEL JOBS is made and entered into by _____

This_____ day of_____, 201__.

The City of Atlanta requires the immediate beneficiary or primary contractor for every eligible project to enter into a First Source Jobs employment agreement. The contractor agrees to the following terms and conditions:

- The first source for finding employees to fill all entry level jobs Created by the eligible project will be the First Source Program.
- The contractor will make every effort to fill 50% of the entry level jobs created by this eligible project with applicants from the First Source Program.
- The contractor shall make good faith effort to reach the goal of this employment agreement.
- Details as to the number and description of each entry level job must me provided with the bid.
- The contractor shall comply with the spirit of the First Source Jobs Policy beyond the duration of this agreement and continue to make good faith attempts to hire employees of similar backgrounds to those participating in the First Source Program.
- The contractor as a condition of transfer, assignment or otherwise shall require the transferee to agree in writing to the terms of the employment Agreement.

Upon a determination that a beneficiary or contractor has failed to comply with the terms of this Agreement, the City may impose the following penalties based on the severity of the non-compliance:

- The City of Atlanta may withhold payment from the contractor.
- The City of Atlanta may withhold 10 percent of all future payments on the contract until the contractor is in compliance
- The City of Atlanta may refuse all future bids on city projects or applications for financials assistance in any form from the City until the contractor demonstrated that the First Source requirements have been met, or cancellation of the eligible project.
- The City of Atlanta may cancel the eligible project.

All terms stated herein can be found in the City of Atlanta Code of Ordinances Sections 5-8002 through 5-8005.

The undersigned hereby agrees to the terms and conditions set forth in this agreement.

_____

Contractor

APPENDIX B

INSURANCE REQUIREMENTS

APPENDIX B

INSURANCE REQUIREMENTS

FC-8366 Emergency On-Call Repairs and Maintenance for the
Atlanta Streetcar Traction Power Substations

A. Preamble

The following requirements apply to all work under the agreement. Compliance is required by all Contractors/Consultants. **To the extent permitted by applicable law, the City of Atlanta ("City") reserves the right to adjust or waive any insurance requirements contained in this Appendix B and applicable to the agreement.**

1. Evidence of Insurance Required Before Work Begins

No work under the agreement may be commenced until all insurance requirements contained in this Appendix B, or required by applicable law, have been complied with and evidence of such compliance satisfactory to City as to form and content has been filed with City. Contractor/Consultant must provide City with a Certificate of Insurance that clearly and unconditionally indicates that Contractor/Consultant has complied with all insurance requirements set forth in this Appendix B and applicable to the agreement. If the Contractor/Consultant is a joint venture, the insurance certificate should name the joint venture, rather than the joint venture partners individually, as the primary insured**.** In accordance with the solicitation documents applicable to the agreement at the time Contractor/Consultant submits to City its executed agreement, Contractor/Consultant must satisfy all insurance requirements required by this Appendix B and applicable by law, and provide the required written documentation to City evidencing such compliance. In the event that Contractor/Consultant does not comply with such submittal requirements within the time period established by the solicitation documents applicable to the agreement, City may, in addition to any other rights City may have under the solicitation documents applicable to the agreement or under applicable law, make a claim against any bid security provided by Contractor/Consultant.

2. Minimum Financial Security Requirements

All companies providing insurance required by this Appendix B must meet certain minimum financial security requirements. These requirements must conform to the ratings published by A.M. Best & Co. in the current Best's Key Rating Guide - Property-Casualty. The ratings for each company must be indicated on the documentation provided by Contractor/Consultant to City certifying that all insurance requirements set forth in this Appendix B and applicable to the agreement have been unconditionally satisfied.

For all agreements, regardless of size, companies providing insurance or bonds under the agreement must meet the following requirements:

i) Best's Rating not less than A-,
ii) Best's Financial Size Category not less than Class VII, and

iii) Companies must be authorized to conduct and transact insurance contracts by the Insurance Commissioner, State of Georgia.

iv) All bid, performance and payment bonds must be underwritten by a U.S. Treasury Circular 570 listed company.

If the issuing company does not meet these minimum requirements, or for any other reason is or becomes unsatisfactory to City, City will notify Contractor/Consultant in writing. Contractor/Consultant must promptly obtain a new policy or bond issued by an insurer acceptable to City and submit to City evidence of its compliance with these conditions.

Contractor/Consultant's failure to comply with all insurance requirements set forth in this Appendix B and applicable to the agreement will not relieve Contractor/Consultant from any liability under the agreement. Contractor/Consultant's obligations to comply with all insurance requirements set forth in Appendix B and applicable to the agreement will not be construed to conflict with or limit Contractor/Consultant's/Consultant's indemnification obligations under the agreement.

3. Insurance Required for Duration of Contract

All insurance required by this Appendix B must be maintained during the entire term of the agreement, including any renewal or extension terms, and until all work has been completed to the satisfaction of City.

4. Notices of Cancellation & Renewal

Contractor/Consultant must, notify the City of Atlanta in writing at the address listed below by mail, hand-delivery or facsimile transmission, within 2 days of any notices received from any insurance carriers providing insurance coverage under this Agreement and Appendix B that concern the proposed cancellation, or termination of coverage.

Enterprise Risk Management
68 Mitchell St. Suite 9100
Atlanta, GA 30303
Facsimile No. (404) 658-7450

Confirmation of any mailed notices must be evidenced by return receipts of registered or certified mail.

Contractor/Consultant shall provide the City with evidence of required insurance prior to the commencement of this agreement, and, thereafter, with a certificate evidencing renewals or changes to required policies of insurance at least fifteen (15) days prior to the expiration of previously provided certificates.

5. Agent Acting as Authorized Representative

Each and every agent acting as Authorized Representative on behalf of a company affording coverage under this contract shall warrant when signing the Acord Certificate of Insurance that specific authorization has been granted by the

Companies for the Agent to bind coverage as required and to execute the Acord Certificates of Insurance as evidence of such coverage. City of Atlanta coverage requirements may be broader than the original policies; these requirements have been conveyed to the Companies for these terms and conditions.

In addition, each and every agent shall warrant when signing the Acord Certificate of Insurance that the Agent is licensed to do business in the State of Georgia and that the Company or Companies are currently in good standing in the State of Georgia.

6. Certificate Holder

The **City of Atlanta** must be named as certificate holder. All notices must be mailed to the attention of **Enterprise Risk Management** at **68 Mitchell Street, Suite, 9100, Atlanta, Georgia 30303.**

7. Project Number & Name

The project number and name must be referenced in the description section of the insurance certificate.

8. Additional Insured Endorsements Form CG 20 26 07 04 or equivalent

The City must be covered as Additional Insured under all insurance (except worker's compensation and professional liability) required by this Appendix B and such insurance must be primary with respect to the Additional Insured. **Contractor/Consultant must submit to City an Additional Insured Endorsement evidencing City's rights as an Additional Insured for each policy of insurance under which it is required to be an additional insured pursuant to this Appendix B. Endorsement must not exclude the Additional Insured from Products - Completed Operations coverage. The City shall not have liability for any premiums charged for such coverage.**

9. Mandatory Sub-Contractor/Consultant Compliance

Contractor/Consultant must require and ensure that all subContractor/Consultants/subconsultants at all tiers to be sufficiently insured based on the scope of work performed under this agreement.

10. Self Insured Retentions, Deductibles or Similar Obligations

Any self insured retention, deductible or similar obligation will be the sole responsibility of the contractor.

11. Task Order

Evidence of compliance with insurance requirements must be provided on a Task Order basis prior to the issuance of any Notice to Proceed.

B. Workers' Compensation and Employer's Liability Insurance

Contractor/Consultant must procure and maintain Workers' Compensation and Employer's Liability Insurance in the following limits to cover each employee who is or may be engaged in work under the agreement. :

Workers' Compensation. . . . . **Statutory**
Employer's Liability:
Bodily Injury by Accident/Disease **$1,000,000 each accident**
Bodily Injury by Accident/Disease **$1,000,000 each employee**
Bodily Injury by Accident/Disease **$1,000,000 policy limit**

C. Commercial General Liability Insurance

Contractor/Consultant must procure and maintain Commercial General Liability Insurance on form (CG 00 00 01 or equivalent) in an amount not less than **$1,000,000 per occurrence subject to a $2,000,000 aggregate**. The following indicated extensions of coverage must be provided:

☒ Contractual Liability
☒ Broad Form Property Damage
☒ Premises Operations
☒ Personal Injury
☒ Advertising Injury
☒ Fire Legal Liability
☒ Medical Expense
☒ Independent Contractor/Consultants/SubContractor/Consultants
☒ Products – Completed Operations
☒ Explosion, Collapse and Underground (XCU) Liability
☒ Additional Insured Endorsement* (primary& non-contributing in favor of the City of Atlanta)
☒ Waiver of Subrogation in favor of the City of Atlanta

D. Commercial Automobile Liability Insurance

Contractor/Consultant must procure and maintain Automobile Liability Insurance in an amount not less than **$1,000,000** Bodily Injury and Property Damage combined single limit. The following indicated extensions of coverage must be provided:

☒ Owned, Non-owned & Hired Vehicles
☒ Waiver of Subrogation in favor of the City of Atlanta

If Contractor/Consultant does not own any automobiles in the corporate name, non-owned vehicle coverage will apply and must be endorsed on either Contractor/Consultant's personal automobile policy or the Commercial General Liability coverage required under this Appendix B.

E. Professional Liability Insurance

Contractor/Consultant shall procure and maintain during the life of this contract Professional Liability Insurance in an amount of **$1,000,000** per occurrence and annual aggregate. The policy will fully address the Contractor/Consultant's professional services associated with the scope of work contained in this document. The policy will include at least a three year Extended Reporting Provision.

F. Performance Bond and Payment Bond

Contractor/Consultant shall furnish a Payment Bond and a Performance Bond to the City in an amount equal to **100 percent of the total contract value** and for the duration of the entire term.

The person executing the Bonds on behalf of the surety shall file with the Bonds a general power of attorney unlimited as to amount and type of bonds covered by such power of attorney, and certified by an official of said surety. **Be a U.S. Treasury Circular 570 listed company.**

Payment Bond

INSTRUCTIONS

1. This form is required for use in connection with the Agreement identified on its face. There shall be no deviation from this form without approval by the City.

2. The full legal name and business address of the Principal shall be inserted in the space designated "Principal" on the face of the form. The bond shall be signed by an authorized person. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an office of the corporation involved, evidence of this authority must be furnished.

3. Corporation executing the bond as surety must be among those appearing on the U.S. Treasury Department's most current list of approved sureties and must be acting within the amounts and limitations set forth therein.

4. Corporate surety shall be duly authorized by the Commissioner of Insurance of the State of Georgia to transact surety business in the State of Georgia.

5. Do not date this bond. The City will date this bond the same date or later than the date of the Agreement.

6. The Surety shall attach a duly authorized power-of-attorney authorizing signature on its behalf of any attorney-in-fact.

7. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Seal."

8. The name of each person signing this bond shall be typed or printed in the space provided.

Payment Bond

"City" City of Atlanta

"Project" **Emergency On-Call Repairs and Maintenance for Atlanta Streetcar Traction Power Substations**
"FC No." **FC-8366**

"Principal" (Legal Name and Business Address), _____

_____

_____

Type of Organization ("X" one): _____ Individual
_____ Partnership
_____ Joint Venture
_____ Corporation

"Surety:" (Name and Business Address) _____

_____

duly authorized by the Commissioner of Insurance of the State of Georgia to transact surety business in the State of Georgia.

"Agreement:" Agreement between Principal and City, dated _____ day of _____, 20___, regarding performance of Work relative to the Project.

"Penal Sum:" _____ Dollars ($_____).

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety hereto, as named above, are held and firmly bound to the City in the above Penal Sum for the payment of which well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, jointly and severally.

WHEREAS, the Principal and the City entered into the Agreement identified above;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall make payment of all Subcontractors and all persons supplying labor, Materials, machinery and Equipment for the performance of said work, this obligation shall be void; otherwise of full force and effect.

And the Surety to this bond, for value received, agrees that no modification, change, extension of time, alteration or addition to the terms of the Agreement or to the Work to be performed thereunder shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such modification, change, extension of time, alteration or addition to the terms of the Agreement or the Work.

It is agreed that this bond is executed pursuant to and in accordance with the provisions of O.C.G.A. Section 36-91-1 *et seq.* and is intended to be and shall be construed to be a bond in compliance with the requirements thereof, though not restricted thereto.

IN WITNESS WHEREOF, the Principal and the Surety have caused these presents to be duly signed and sealed this _____ day of _____, 20___.

PRINCIPAL:_____

President/Vice President (Sign)

President/Vice President (Type or Print)

Attested to by:

Secretary/Assistant Secretary (Seal)

SURETY: _____

By: _____
Attorney-in-Fact (Sign)

Attorney-in-Fact (Type or Print)

APPROVED AS TO FORM

_____
Associate/Assistant City Attorney

APPROVED

_____
City's Chief Financial Officer

Performance Bond

INSTRUCTIONS

1. This form is required for use in connection with the Agreement identified on its face. There shall be no deviation from this form without approval by the City.

2. The full legal name and business address of the Principal shall be inserted in the space designated "Principal" on the face of the form. The bond shall be signed by an authorized person. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an office of the corporation involved, evidence of this authority must be furnished.

3. Corporation executing the bond as surety must be among those appearing on the U.S. Treasury Department's most current list of approved sureties and must be acting within the amounts and limitations set forth therein.

4. Corporate surety shall be duly authorized by the Commissioner of Insurance of the State of Georgia to transact surety business in the State of Georgia.

5. Do not date this bond. The City will date this bond the same date or later than the date of the Agreement.

6. The Surety shall attach a duly authorized power-of-attorney authorizing signature on its behalf of any attorney-in-fact.

7. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Seal."

8. The name of each person signing this bond shall be typed or printed in the space provided.

Performance Bond

"City" City of Atlanta

"Project" Emergency On-Call Repairs and Maintenance for Atlanta Streetcar Traction Power Substations
"FC No." FC-8366

"Principal" (Legal Name and Business Address) _____

_____

_____

Type of Organization ("X" one): _____ Individual
_____ Partnership
_____ Joint Venture
_____ Corporation

"Surety:" (Name and Business Address) _____

_____

_____,
duly authorized by the Commissioner of Insurance of the State of Georgia to transact surety business in the State of Georgia.

"Agreement:" Agreement between Principal and City, dated _____ day of _____, 20___, regarding performance of Work relative to the Project.

"Penal Sum:" _____.

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety hereto, as named above, are held and firmly bound to the City in the above Penal Sum for the payment of which well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, jointly and severally.

WHEREAS, the Principal and the City entered into the Agreement identified above;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall faithfully and fully comply with, perform and fulfill all of the undertakings, covenants, conditions and all other of the terms and conditions of said Agreement, including any and all duly authorized modifications of such Agreement, within the original term of such Agreement and any extensions thereof, which shall include, but not be limited to any obligations created by way of warranties and/or guarantees for workmanship and materials which warranty and/or guarantee may extend for a period of time of one year beyond completion of said Agreement, this obligation shall be void; otherwise, of full force and effect.

And the Surety to this bond, for value received, agrees that no modification, change, extension of time, alteration or addition to the terms of the Agreement or to the Work to be performed thereunder shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such modification, change, extension of time, alteration or addition to the terms of the Agreement or the Work.

It is agreed that this bond is executed pursuant to and in accordance with the provision of O.C.G.A. Section 13-10-1 and 36-91-1, *et seq.* and is intended to be and shall be construed to be a bond in compliance with the requirements thereof, though not restricted thereto.

IN WITNESS WHEREOF, the Principal and the Surety have caused these presents to be duly signed and sealed this _____ day of _____, 20___.

PRINCIPAL:_____

_____
President/Vice President (Sign)

_____
President/Vice President (Type or Print)

Attested to by:

_____
Secretary/Assistant Secretary (Seal)

SURETY:_____

By: _____
Attorney-in-Fact (Sign)

_____
Attorney-in-Fact (Type or Print)

APPROVED AS TO FORM

_____
Associate/Assistant City Attorney

APPROVED

_____
City's Chief Financial Officer

APPENDIX C

GENERAL CONDITIONS
(Not Applicable)

APPENDIX D

SUPPLEMENTAL CONDITIONS

CONTRACT SUPPLEMENTAL CONDITIONS

FC-8366 Emergency On-Call Repairs and Maintenance for Atlanta Streetcar Traction Power Substation

CONTRACT TERM

The terms of this Agreement shall be for a period of one (1) year with the option to renew for four (4) additional one (1) year periods at the sole discretion of the City. The City shall also have the right to terminate this contract prior to the end of the Base Terms or the Option Term, if exercised, when all Contract funds reserved for this Contract have been expended.

NOTICE TO PROCEED

A Notice to Proceed will be issued by the Contract Administrator, after receipt and approval of the following information:

- Certificates of Insurance
- A list of certifications and accreditations for all personnel performing inspections and repairs under this Contract.
- Contractor's Site Specific Safety Program
- Comprehensive Quality Plan

SAFETY AND HEALTH REQUIREMENT

All work shall comply with all applicable state and federal safety and health regulations and industry standards, and in accordance with the City of Atlanta Streetcar System Safety Program Plan (SSPP) (see attachment A).

TRACK ACCESS PERMIT SYSTEM

All work shall be performed in accordance with the City of Atlanta Streetcar emergency shutdown process. The Contractor shall comply with standard operating procedures (SOPs) pertaining to the work to be done under this contract. At minimum, SOPs shall be applicable for work related to power distribution, removal and restoration, track access & LOTO. Further, the Contractor shall comply with the SSPP and the Security and Emergency Preparedness Plan, which can be reviewed at the City of Atlanta Streetcar Office of Safety.

ATLANTA STREETCAR ROADWAY WORKER PROTECTION TRAINING

All work will be performed in accordance with the Atlanta Streetcar Roadway Worker Protection Procedure, made part of the Supplementary Conditions. All personnel working on track roadway must receive the mandatory Atlanta Streetcar Roadway Worker Protection training before beginning work. Training shall be coordinated with the Contract Administrator or designee and conducted after the award of the Contract.

WORKMANSHIP

All work under the contract shall be performed in a skillful and workmanlike manner. The City shall have the right to direct the Contractor to remove from the work any employee the City considers incompetent or careless or to whom it has other reasonable objection.

PARTS

CONTRACT SUPPLEMENTAL CONDITIONS

FC -8366 Emergency On-Call Repairs and Maintenance for Atlanta Streetcar Traction Power Substation

All parts and materials the Contractor installs shall be new, unless otherwise specified in the Technical Provisions. The Contractor shall maintain at all times a sufficient supply to ensure timely completion of work in accordance with the requirements of the contract.

The Contractor is expected to have spare parts available for emergency repairs and regularly scheduled maintenance. The Contractor must submit an invoice to the Contract Administrator to be reimbursed for miscellaneous spare parts and materials. At a minimum, the Contractor shall have at all times as spare parts of its own the following:

1. Siprotec Protective Relay – 1 each
2. Ground Fault Relay – 1 each
3. Sitras Pro Protective Unit - 1 each
4. Qualitrol Transformer Over-temperature Protection Relay – 1 each

WARRANTY

The Contractor warrants each component and piece of equipment repaired under this contract, and all new parts and components to be delivered hereunder, against failure or malfunction for every cause or reason mutually determined to be the fault of the Contractor. Repairs under warranty shall be warranted for six months or the unexpired balance of the original warranty period, whichever is longer. These periods of warranty shall begin when the component or piece of equipment is redelivered to the City or put back into service.

QUALITY ASSURANCE PROVISIONS

The Contractor shall establish and implement a Quality Assurance Program, which shall be maintained throughout the execution of the contract to ensure the delivery of service.

The Contractor shall establish and maintain written procedures defining the Quality Assurance Program. The procedures shall encompass all phases of the system and shall include, but not be limited to, control of the subcontractor's techniques, process control, including hold points, functional testing, discrepancy control, quality records, measuring and test equipment calibration/certification, drawing/document control, final inspection, shipping inspection, and other quality provisions to meet the requirements of this contract.

Within thirty (30) days after award of the contract, the Contractor shall submit its Quality Assurance Program Manual for City review. The Contractor's Quality Assurance Program shall be subject to City verification and approval at any time.

Verification and approval will include surveillance of operation to determine that practices, methods, and procedures of the program are being properly implemented. Gages and test equipment must be calibrated within the required calibration date.

After Contract Award, the Contractor shall submit, for City approval, a comprehensive Quality Plan that details the quality control requirements that shall be established, implemented and executed throughout this contract, assuring that all aspects of the product

are in conformance with the designs, materials, testing and workmanship requirements. This submittal shall include details of all qualifications, tests, procedures, and process controls.

Contractor personnel performing inspections and tests shall be qualified by evidence of prior experience, training, and/or certification. Records of personnel qualifications shall be maintained and available to the City for review.

The City reserves the right to inspect and reject at the source, any supplies furnished or services rendered under this contract. The City will make unannounced inspections. The Contractor's own Final Acceptance documentation shall be available for review at the source inspection. All drawings, tools, and work area needed for the inspection shall be provided by the Contractor.

When the City elects to source inspect at a subcontractor's facility, such inspection shall not be used by the Contractor as evidence of effective quality control by such subcontractor. City inspection of a subcontractor's facility will be coordinated first with the Contractor.

The City also reserves the right to take photographs and make videotapes of the Contractor's tools, equipment, and methods of performing the work.

MOBILIZATION AND EQUIPMENT STAGING

The proposed price for mobilization and equipment staging shall be expressly for the purpose of reimbursing the Contractor for temporary or long-term expenses which he has incurred, and will incur, by accumulating and staging tools, apparatus, equipment, materials, and supplies, manning the work, and exercising expeditious and extraordinary effort to promote imminent prosecution and completion of emergency work activities should they occur.

For each six (6) month term, the City will reimburse for expenses incurred for accumulating and staging tools, apparatus, equipment, materials, and personnel, and manning the emergency work. Payment will be divided into six (6) equal amounts, each amount being a part of each of the six (6) progress payments. Payment will be subject to the City's opinion that quantities of accumulated tools, apparatus, equipment, materials, and supplies are insufficient to prosecute the emergency work should they occur.

DRUG AND ALCOHOL POLICY

The Federal Transit Administration (FTA) of the U.S. Department of Transportation has published 49 CFR Part 32, "The Drug-Free Workplace Act of 1988," which required the establishment of drug-free workplace policies and the reporting of certain drug-related offences to the FTA. CITY OF ATLANTA maintains compliance with this Act and all personnel conducting business on CITY OF ATLANTA property are subject to CITY OF ATLANTA's drug-free workplace policy guidelines.

CONTRACT SUPPLEMENTAL CONDITIONS

FC -8366 Emergency On-Call Repairs and Maintenance for Atlanta Streetcar Traction Power Substation

NO FEDERAL GOVERNMENT OBLIGATION TO THIRD PARTIES

(1) The Contractor acknowledges and agrees that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to the City, the Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying Contract.

(2) The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

FALSE STATEMENTS OR CLAIMS – CIVIL AND CRIMINAL FRAUD

(1) Civil Fraud. The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. §§ 3801 et seq., and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Contract. Upon execution of the underlying Contract, the Contractor certifies or affirms the truthfulness and accuracy of each statement it has made, it makes, or it may make, or causes to be made, pertaining the underlying Contract or the FTA assigned project for which this Contract work is being performed. In addition to other penalties that may apply, the Contractor furthers acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose penalties of the Program Fraud Civil Remedies Act of 1986, as amended, on the Contractor to the extent the Federal Government deems appropriate.

(2) Criminal Fraud. The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the City under 49 U.S.C. Chapter 53 or any other Federal law, the Federal Government reserves the right to impose the penalties of 49 U.S.C. § 5323(l), 18 U.S.C. § 1001, or other applicable Federal law on the Contractor to the extent the Federal Government deems appropriate.

(3) The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

SUSPENSION AND DEBARMENT

(1) This Contract is a covered transaction for purposes of Executive Orders Nos. 12549 and 12689, "Debarment and Suspension," 31 U.S.C. § 6101 note, and U.S. DOT regulations, "Non-procurement Suspension and Debarment," 2 C.F.R. Part 1200, which adopts and supplements the provisions of U.S. Office of Management and Budget (U.S.

OMB) "Guidelines to Agencies on Government-wide Debarment and Suspension (Non-procurement)," 2 C.F.R. Part 180. As such, the Contractor agrees to provide a debarment and suspension certification containing information about the debarment and suspension status of itself and its principals. The Contractor agrees that it shall refrain from entering into any contract of any amount to a debarred or suspended subcontractor, and to obtain a similar certification from any subcontractors, seeking a contract exceeding $25,000. Contractor agrees to and assures its subcontractors, and other participant at any tier of the underlying Contract will review the "Excluded Parties Listing System" at http://epls.gov/ before entering into any agreement or other arrangement in connection with the underlying Contract.

(2) The certification is a material representation of fact upon which reliance will be placed when this transaction is entered into. If it is later determined that the Contractor knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the City may pursue available remedies, including suspension and/or debarment. The Contractor shall provide immediate written notice to the City if at any time the Contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(3) The Contractor also agrees to include these requirements in each subcontract exceeding $25,000 financed in whole or in part with Federal assistance provided by FTA.

ENERGY CONSERVATION

The Contractor agrees to comply with applicable mandatory energy efficiency standards and policies of applicable state energy conservation plans issued in accordance with the Energy Policy and Conservation Act, as amended, 42 U.S.C. §§ 6321 et seq., except to the extent that the Federal Government determines otherwise in writing. To the extent applicable, the Contractor agrees to perform an energy assessment for any maintenance facility constructed, reconstructed, or modified with FTA assistance, as provided in FTA regulations, "Requirements for Energy Assessments," 49 C.F.R. Part 622, Subpart C.

LOBBYING

The Contractor agrees to comply with the requirements of 31 U.S.C. § 1352(a), the Byrd Anti Lobbying Amendment, which prohibits the use of Federal assistance to pay the costs of influencing any officer or employee of a Federal agency, Member of Congress, officer of Congress or employee of a member of Congress, in connection with making or extending the Grant Agreement or Cooperative Agreement. The Contractor shall file the certification required by U.S. DOT regulations, "New Restrictions on Lobbying," 49 C.F.R. Part 20, modified as necessary by 31 U.S.C. 8 1352. Each tier certifies to the tier above that it will not and has not used Federally appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any public agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U. S. C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contracts on

its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U. S. C. 1352. Such disclosures are forwarded from tier to tier up to the CITY OF ATLANTA.

SUSPENSION OF WORK DURING ALERTS ISSUED BY HOMELAND SECURITY ADVISORY SYSTEM

A. When the Secretary of Homeland Security announces an alert under the National Terrorism Advisory Service (NTAS), whether such alert is issued publically or otherwise, the CITY OF ATLANTA shall have the right to suspend or delay completion of work under this Contract and take additional action as the CITY OF ATLANTA deems necessary to secure the CITY OF ATLANTA's facilities as follows:

B.

1. Elevated Threat Alert:
   the CITY OF ATLANTA shall have the right to delay or suspend work, as determined in its sole discretion, monitor all work areas and Supplier's personnel and equipment entering work areas until such alert expires.

2. Imminent Threat Alert:
   the CITY OF ATLANTA shall have the right to suspend all work, as determined in its sole discretion, and to restrict or deny access to work areas until such alert expires.

C. The CITY OF ATLANTA shall provide notice to the Supplier, as soon as is practicable, of the receipt of a NTAS Alert and the effect such alert will have upon the work of the Supplier.

To facilitate the provision of such notice, the Supplier is required to provide the Program Manager with emergency contact information in the form of cell phone numbers, facsimile numbers and e-mail addresses to which such notices may be forwarded, and to keep said numbers current. Notice or attempted notice given to the most recent points of contact shall be deemed to be sufficient notice to the Supplier that work shall be delayed or suspended in accordance with this paragraph. Any delay or suspension of work required under this paragraph shall not entitle the Supplier to any claims for additional compensation under this contract.

D. Should the Federal Transit Administration (FTA) or the Secretary of Homeland Security adopt a different method of identifying threats to homeland security, or if the FTA or the Secretary of Homeland Security adopt rules binding upon the CITY OF ATLANTA for the suspension of work which differ from those set forth herein, this Contract shall be modified by written agreement of the parties to reflect such changes.

TERMINATION FOR CONVENIENCE

CONTRACT SUPPLEMENTAL CONDITIONS

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In the event that the CITY OF ATLANTA determines that this Contract is no longer in its best interest for any reason, including but not limited to the withdrawal or otherwise unavailability of financial assistance expected to be provided by the FTA (U.S. DOT), The CITY OF ATLANTA may terminate this Contract, in whole or in part, without any liability whatsoever upon the CITY OF ATLANTA, by giving thirty (30) days written notice of its election to do so. If the Contract is terminated by the CITY OF ATLANTA, Contractor will only be paid for the Contract price for goods, equipment and supplies delivered and accepted on or before the effective date of the termination.

ACCESS TO THIRD PARTY CONTRACT RECORDS

(1) The Contractor agrees to maintain all book, records, accounts and reports required under this Contract for a period of not less than three (3) years after the date of termination or expiration of this Contract. In the event of litigation of settlement of claims arising from the performance of this Contract, the Contractor agrees to maintain such records until the City, the FTA Administrator, the Comptroller General, or any of the duly authorized representatives have disposed of all such litigation, appeals, claims or exceptions related thereto. During the course of this Contract and for three (3) years thereafter from the date of transmission of the final expenditure report, the Contractor agrees to maintain intact and readily accessible all data, documents, reports, records, subagreements, leases, third party contracts, and supporting materials related to the this Contract as the Federal Government may require, and;

(2) the Contractor agrees to permit the U.S. Secretary of Transportation, the Comptroller General of the United States, and, to the extent appropriate, the State, or their authorized representatives, upon their request to inspect all work, materials, payrolls, and other data, and to audit the books, records, and accounts of the Contractor pertaining to this Contract, as required by 49 U.S.C. § 5325(g).

CHANGES TO FEDERAL REQUIREMENTS

The Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between the City and FTA, as they may be amended or promulgated from time to time during the term of this Contract. The Contractor's failure to so comply shall constitute a material breach of this Contract.

INCORPORATION OF FTA TERMS

All contractual provisions required by U. S. DOT or FTA, as set forth in FTA Circular 4220.1F, "Third Party Contracting Guidance," November 1, 2008, and any later revision thereto, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Contract. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any the City's requests, which would cause the City to be in violation of the FTA terms and conditions.

CONTRACT SUPPLEMENTAL CONDITIONS

FC -8366 Emergency On-Call Repairs and Maintenance for Atlanta Streetcar Traction Power Substation

CIVIL RIGHTS

The following requirements apply to the underlying Contract:

(1) Nondiscrimination - In accordance with Title **V1** of the Civil Rights Act of1964, as amended, 42 U S.C. §§ 2000d el seq., U.S. DOT regulations, Nondiscrimination in Federally-Assisted Programs of the department of transportation - Effectuation of Title VI of the Civil Rights Act," 49 C.F.R. Part 21, Section 303 of the Age Discrimination Act of' 1975, as amended, 42 U S.C. §6102, Section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. **§** 5332, the Contractor agree that it will not discriminate against any employee or applicant because of race, color, creed, national origin, sex, age, or disability.
In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing regulations FTA may issue.

(2) Equal Employment Opportunity - The following equal employment opportunity requirements apply to the underlying Contract:

(a) Race, Color, Creed, National Origin, Sex - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. **§**2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL.) regulations "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41C.F.R. Parts 60 el seq., (which implement Executive Order- No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect activities undertaken in the course of the Contract.

The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements **FTA** may issue.

(b) Age - In accordance with Section **1** of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. §§ 621 through 634 and with implementing U.S. Equal Employment Opportunity Commission (US. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. Part 1625 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may Issue.

(c) Disabilities - In accordance with Section I02 of the Americans with Disabilities .4cr, as amended, 42 U.S.C. §12112, the Contractor agrees that it will comply with the requirements **U.S.** Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Pan 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(3) The Contractor also agrees to include the requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

FLY AMERICA

To the extent applicable, the Contractor agrees to comply with Section 5 of the international Air Transportation Fair- Competitive Practices Act of 1974, as amended, 49 U.S.C. § 40118, and U.S. GSA regulations, "Use of United States Flag Air Carriers," 41 C.F.R. §§ 301-10.131 through 301-10.143, which provide that recipients and subrecipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S-Government-financed international air travel and transportation of their personal effects and, to the extent such service is available, unless travel by Foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a **U.S,** flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. Further, the Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

DISPUTES, BREACHES, DEFAULTS, OR OTHER LITIGATGION

The City of Atlanta agrees that FTA has a vested interest in the settlement of any dispute, breach,
default, or litigation involving the Project. Accordingly, it agrees that:

a. Notification to FTA. City of Atlanta will notify the FTA Chief Counsel or Regional Counsel immediately of any current or prospective legal matter:

(1) Such as:

(a) A major dispute,
(b) **A** breach,
(c) A default,
(d) Litigation, or
(e) Naming the Federal Government as a party to litigation or a legal disagreement in any forum for any reason,

(2) That may affect the Federal Government's:

(a) Interests in the Project, or

(b) Administration or enforcement of Federal laws or regulations.

b. Federal Interest in Recovery.

(1) General. The Federal Government retains the right to a proportionate share of any proceeds recovered from any third party, based on the percentage of the Federal share for the Project.

(2) Liquidated Damages. However, the City of Atlanta may return all liquidated damages it receives to **its** Project Account rather than return the Federal share of those liquidated damages to the Federal Government.

c. Enforcement. The City of Atlanta will pursue its legal rights and remedies available under any third party agreement or available under Federal, State, or local laws or regulations.

d. FTA Concurrence. FTA reserves the right to concur in any compromise or settlement of any claim involving the Project and the City of Atlanta.

e. Alternative Dispute Resolution. FTA encourages the City of Atlanta to use alternative dispute resolution procedures, as may be appropriate.

AIR QUALITY

The Contractor will, comply with the Clean Air Act, as amended, 42 U.S.C. §§ 7401 - 7671q, and implementing Federal regulations, as provided in Federal directives, except as the Federal Government determines otherwise in writing. Among its responsibilities, the Contractor agrees that:

(1) Public Transportation Operators. It will comply with:

(a) U.S. EPA regulations, "Control of Air Pollution from Mobile Sources," 40 C.F.R. Part 85,

(b) U.S. EPA regulations, "Control of Air Pollution from New and In-Use Motor Vehicles and New and In-Use Motor Vehicle Engines," 40 C.F.R. Part 86, and

(c) U.S. EPA regulations "Fuel Economy OF Motor Vehicles," 40 C.F.R. Part 600, and any revisions to these regulations.

(2) State Implementation Plans. It will support State Implementation Plans (SIP) by:

(a) Implementing each air quality mitigation or control measure incorporated in the documents accompanying the approval of the Project,

(b) Assuring that any Project identified as a Transportation Control Measure in its State's SIP will be wholly consistent with the design concept and scope of the Project described in the SIP,

(c) Complying with:
1 Subsection I76(c) of the Clean Air Act, 42 U.S.C.§ 7506(c), 2 U.S. EPA regulations, "Determining Conformity of Federal Actions to State or Federal Implementation Plans" 40 C.F.R.P art 93, Subpart A, and 3 Other Federal conformity regulations that may be promulgated at a later date.

(3) Violating Facilities. It will:

(a) Comply with the notice of violating facility provisions of section 306 in the Clean Air Act, as amended, 42 U.S.C. 4 7414, and

(b) Facilitate compliance with Executive Order No. 1 1738, "Administration of the Clean Air Act and the Federal Water Pollution Control Act with Respect to Federal Contracts, Grants, or Loans," 42 U.S.C. § 7606 note.

SITE-SPECIFIC SAFETY AND HEALTH PROGRAM

Work at the site shall not begin until the City has accepted the Contractor's Safety and Health Program. Implementation and enforcement of the Safety and Health Program for the forces of the Contractor and subcontractors shall be the responsibility of the Contractor. The following shall be described in detail:

1. Contractor's Management's Commitment and Leadership Policy Statement: This policy statement shall include:
   a. Safety goals for the project.
   b. Commitment of personnel and resources to adequately address safety.
   c. Management's cooperation in working with the Authority to ensure a safe Worksite(s).

2. Safety Responsibilities of Personnel: For each of the responsibilities named below, the Contractor shall list the name and title of the responsible individual, scope of their authority, name of their immediate supervisor, and other duties assigned to them.

3. Safety program promulgation and execution responsibility.
4. Worksite(s) inspections responsibility. (if applicable)
5. Project's first-aid medical treatment responsibility.

6. Employee protective devices:
   a. Personal devices required.
   b. Protective devices available.
7. Accident procedures.
   a) Worksite(s) medical facilities.
   b) Doctor/hospital arrangements:
      i) Emergency.
      ii) Non-emergency.
   c) Worksite(s) accident devices:
      i) First-aid supplies.
      ii) Emergency transport.
   d) Accident investigation.
8. Other safety and health features of the program:
   a) Project substance abuse policy
   b) Site-Specific Safety and Health Program shall not be modified without the approval from a representative of the office of Safety.

APPENDIX E

ADDITIONAL REQUIRED SUBMITTALS

- **Electrical Contractor Class II Unrestricted License Certification**
- **Bidder's Qualifications**

Federal Certifications:

- **Certification of Primary Participant**
- **Certification of Lower-Tier Participant Regarding**
- **Certification Regarding Lobbying**
- **Disclosure of Lobbying Activities**
- **Buy America Certification**

ELECTRICAL CONTRACTOR CLASS II UNRESTRICTED LICENSE CERTIFICATION

Contractor's Name: _____

Electrical Contractor Class II Unrestricted License Number: _____

Expiration Date of License: _____

Project Name: FC-8366 Emergency On-Call Repairs and Maintenance for Atlanta Streetcar Traction Power Substation

****Note: Bidder must attach copy of Electrical Contractor Class II Unrestricted License****

SUPPLEMENTAL INSTRUCTIONS

Emergency On-Call Repair and Maintenance Services for the Atlanta Streetcar Traction Power Substations

1 ELIGIBILITY FOR AWARD.

1) The failure or omission of the BIDDER to receive or examine any instruction or document, or any part of the Contract Document or to become acquainted with the conditions above mentioned, shall in no way relieve the BIDDER from any obligation with respect to their quote. This includes furnishing the materials, labor and equipment necessary to complete the performance of all the provisions of the Contract and the work therein for the consideration set forth in their quote.

2) By submitting a quote, the BIDDER represents and warrants, as an inducement to acceptance, that it has carefully examined the specifications and that from its own investigation it has satisfied itself as to the nature and location of the work, the general location, conditions and all matters which may I n any way affect its performance as a result of such examination, and that it fully understands the intent and purpose thereof and its obligation hereunder.

2 ADDITIONAL PRE-AWARD SURVEY REQUIREMENT.

In addition to the requirements outlined in Article 1, to be considered for award the BIDDER must be experienced in the repair and maintenance of traction power substations and overhead contact systems similar to the types listed in these Contract Documents. Bidders must also have sufficient parts available to initiate work within thirty (30) days of Contract award, and meet the specified delivery schedule. The information listed below in Paragraphs 3 and 4 will be required in support of the Pre-Award Survey. This Pre-Award Survey information will be required prior to the award of the Contract.

3 RESOURCE INFORMATION.

The Contractor shall furnish the following resource information with the Bid Form. A detailed description of the facilities (including floor space), and key equipment. A summary of applicable processes and process controls to be used in the performance of the Contract. Identification of published process procedures to be used on this Contract. A listing of all materials to be used on this Contract. Documented methods of material traceability to be used on this Contract. Documented methods of process traceability to be used on this Contract. Quality Assurance/Quality Control Program Plan to be used on this Contract. A complete listing of industry standards to be used on this Contract. A detailed description of all applicable testing to be used on this Contract.

4 FACILITY AND EQUIPMENT INFORMATION

To be considered qualified, a BIDDER must have all the workshop equipment and special tools required to perform the work or must have binding contractual commitments to obtain such equipment and tools if awarded the Contract, with acceptable delivery.

CERTIFICATION OF PRIMARY PARTICIPANT
REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

The Primary Participant (potential consultant for a major third party contract), _____ _____, certifies to the best of its knowledge and belief, that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

2. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or Local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and

4. Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or Local) terminated for cause or default.

(If the primary participant is unable to certify to any of the statements in this certification, the participant shall attach an explanation to this certification.)

THE PRIMARY PARTICIPANT, (POTENTIAL CONSULTANT FOR A MAJOR THIRD PARTY CONTRACT) _____, CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET SEQ. ARE APPLICABLE THERETO.

_____
Signature and Title of Authorized Official

_____
Date

CERTIFICATION OF LOWER-TIER PARTICIPANT REGARDING DEBARMENT, SUSPENSION, AND OTHER INELIGIBILITY AND VOLUNTARY EXCLUSION

The Lower-Tier Participant (potential subconsultant under a major third party contract), _____ _____, certifies by submission of this proposal that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(If the Lower-Tier participant is unable to certify to any of the statements in this certification, such participant shall attach an explanation to this proposal.)

THE LOWER-TIER PARTICIPANT (POTENTIAL SUBCONSULTANT UNDER A MAJOR THIRD PARTY CONTRACT) _____, CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET SEQ. ARE APPLICABLE THERETO.

_____

Signature and Title of Authorized Official

_____

Date

CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence a member of the Board of Directors, officer, or employee of the Metropolitan Atlanta Rapid Transit Authority, or any elected, appointed, or employed official or employee of the State of Georgia, member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any Federal contract, or the amendment or modification of any Federal contract.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence a member of the Board of Directors, officer, or employee of the Metropolitan Atlanta Rapid Transit Authority, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal Contract, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award of all subcontracts anticipated to be of a value of $100,000 or more and that all subcontractors shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Signature:_____ Date:_____

Title:_____ Telephone No.:_____

Firm or Corporate Name:_____

Address:_____

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

Approved by OMB
0348-0046

1. **Type of Federal Action:**	2. **Status of Federal Action:**	3. **Report Type:**
[ ] a. contract b. grant c. cooperative agreement d. load e. loan guarantee f. loan insurance	[ ] a. bid/offer/application b. initial award c. post-award	[ ] a. initial filing b. material change For Material Change Only: Year _____ quarter _____ Date of last report _____

4. **Name and Address of Reporting Entity:**	5. **If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:**
[ ] Prime [ ] Subawardee tier _____, if known: Congressional District, *if known*	Congressional District, *if known*
5. **Federal Department/Agency:**	7. **Federal Program Name/Description:** CFDA Number *if applicable:* _____
8. **Federal Action Number**, *if known:*	*9.* Award Amount, *if known:*
10. a. **Name and address of Lobbying Entity** *(if individual, last name, first name, MI):* *(Attach Continuation Sheet(s) SF-LLL-A, if necessary*	*b.* **Individuals Performing Services** *(including address if different from No. 10a)* *(Attach Continuation Sheet(s) SF-LLL-A, if necessary*
11. **Amount of Payment** *(check all that apply):* $ _____ *[ ] actual [ ] planned*	*13.* **Type of Payment** *(check all that apply):* *[ ] a. retainer* *[ ] b. one-time fee* *[} c. commission* *[ ] d. contingent fee* *[ ] e. deferred* *[ ] f. other, specify:* _____
12. **Form of Payment** *(check all that apply):* [ ] a. cash [ ] b. in-kind; specify: nature_____ value_____	

14. Brief Description of Services Performed or to be Performed and Date(s) of service, including officer(s), employee(s), or Members contacted, for Payment Indicated in Item 11:

*

(attach Continuation Sheet(s) SF-LLL-A, if necessary)

15. Continuation Sheet(s) SF-LLL-A attached: [ ] Yes [ ] No

16. Information requested through this form is authorized by Title 31 U.S. C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semiannually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____

Federal Use Only:	**Authorized for Local Reproduction Standard Form-LLL**

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal Action, or a material change to a previous filling, pursuant to the fide 31 U. S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence and officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

15. Identify the type of covered Federal action for which lobbying activity is an/or has been secured to influence the outcome of a covered Federal Action.

    2. Identify the status of the covered Federal action.

    3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

    4. Enter the full name, address, city, suite and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

16. If the organization filing the report in item 4 checks *Subawardee," then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.

    6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation., United States Coast Guard.

17. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loan, and loan commitments.

18. Enter the most appropriate Federal Identifying number available for the Federal action identified in Item I (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g.,"RFP-DE-90-001.'

    9. For a covered Federal action where them has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

    10. (a) Enter the fall name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 W influence the covered Federal action.

        (b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).

    11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (Item 10). Indicate whether the payment has been made (actual) or will be made (pleased). Check all boxes that apply. If this is a material change report. Enter the cumulated amount of payment made or planned to be made.

    12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.

19. Check the appropriate box(es) that apply. If other, specify nature.

20. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform. And the date(s) of any services tendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify die Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.

21. Check whether or not a SF-LLL-A Continuation Sheet(s) is attached.

22. The certifying officer shall sign and date the form, print his/her name, title, and telephone number.

DISCLOSURE OF LOBBYING ACTIVITIES CONTINUATION SHEET	Approved by OMB 0348-0046

Page _____ of _____

Reporting
Entity: _____

BUY AMERICA CERTIFICATION

NOTICE TO BIDDERS

Your bid will not be considered unless one of the certifications on this form is completed, signed and returned with your bid. If you submit an incomplete Buy America certificate or an incorrect certificate of non-compliance through inadvertent or clerical error; within 10 days of receipt of bids, you may submit to City of Atlanta, for review by the FTA Chief Counsel, an explanation of the circumstances surrounding the submission of the incomplete or incorrect certification.

COMPLIANCE FORM

CERTIFICATE FOR COMPLIANCE WITH SECTION 165 (a) "Procurement of Steel, Iron or Manufactured Products"

The Bidder hereby certifies that it will comply with the requirements of Section 165 (a) of the Surface Transportation Assistance Act of 1982, as amended, and the applicable regulations in 49 CFR Part 661

Date:	Firm:
Name:	Signature:
Title:	

NON-COMPLIANCE FORM

CERTIFICATE FOR NON-COMPLIANCE WITH SECTION 165 (a) "Procurement of Steel, Iron or Manufactured Products"

The Bidder hereby certifies that it **cannot** comply with the requirements of Section 165 (a) of the Surface Transportation Assistance Act of 1982, as amended, but it may qualify for an exception to the requirement pursuant to Section 165 (b) (2) or (b) (4) of the Surface Transportation Assistance Act of 1982, and its regulations in 49 CFR Part 661.7

Identify items that are not compliant in the space below:

Date:	Firm:
Name:	Signature:
Title:	

APPENDIX F

ADDITIONAL CONTRACT DOCUMENTS

- Atlanta Streetcar System Safety Program Plan
- Standard for Electrification, Maintenance and Testing
- OSHA 1910.269

Atlanta Streetcar System Safety Program Plan

Title:	System Safety Program Plan
SCSC Approval Date:	2014-12-19
Page:	Page 1 of 95

ATLANTA STREETCAR

System Safety Program Plan

December 19, 2014

Approved by:

Reginald A. Mason — 12/22/2014
AGM, Safety and Quality Assurance, MARTA — Date

12/22/2014
Director of Safety, Security and Training, COA — Date

12/22/2014
Executive Director of Atlanta Streetcar, COA — Date

This document has been reviewed and approved by the Atlanta Streetcar Safety Certification and Security Committee.

Document Revisions		
Revision Number	Effective Date	Changes
Original	November 2013	Initial DRAFT to GDOT State Safety Oversight
Version 2	May 2014	Program Update – COA to assume Operations and Maintenance of Atlanta Streetcar. Roles and Responsibilities Identified.
Version 3	October 2014	Revisions throughout per GDOT comments
Version 4	November 21, 2014	Revisions per work session of 11/18/14.
Version 5	December 1, 2014	Revisions per work session of 11/18/14, 11/20/14 and FTA Meeting 12/1/14 discussion regarding the 4.2.1 SSPP Update Process.
Version 6	December 19, 2014	Revisions per the GDOT Comment Matrix dated 12/17/14.

Table of Contents

1 Executive Approval (Policy Statement)

CITY OF ATLANTA STREETCAR POLICY STATEMENT

The primary mission of the Atlanta Streetcar (the Streetcar) is to provide residents and visitors to the City of Atlanta with safe, reliable, and customer friendly public transportation service. Ensuring the highest practical level of safety for both passengers and employees shall be the primary consideration in every stage of all Streetcar activities, including planning, design, construction, testing, operations, and maintenance. The Streetcar shall comply with appropriate local, state, and Federal safety requirements for its transportation infrastructure and related facilities, and will work closely with the Georgia Department of Transportation (GDOT) – designated as the relevant State Safety Oversight (SSO) Agency – to ensure continuous compliance.

To meet the goals of System Safety, three objectives have been established:
1. To avoid loss of life, injury of persons, damage or loss of property,
2. To instill a commitment of safety in all Streetcar employees and contractor personnel,
3. To provide for the identification and elimination or mitigation of safety hazards, the study of safety requirements, the design and fabrication of safe equipment, and the systematic approach to the analysis and surveillance of operational safety for facilities and equipment.

This *System Safety Program Plan* (SSPP) shall be the governing document to implement the Streetcar's safety program objectives. Designed to organize all safety activities into a coordinated and integrated effort, its execution will result in the elimination or mitigation of safety hazards and the reduction of accident rates.

The SSPP shall ensure that safety standards are established and appropriate reviews are carried out for all facets of Streetcar operations. It is the purpose of the Director of Safety, Security and Training to ensure that the activities described in this document are carried out as efficiently and effectively as possible. However, responsibility for safety rests with every Streetcar employee and contractor, and ultimate accountability resides with the Atlanta Streetcar (ASC) Executive Director to produce supplemental system safety policies, in concert with this published SSPP, that provide necessary guidance and direction.

System safety policies published by the ASC Executive Director will define the appropriate levels of authority and responsibility for all employees to ensure they are able to meet the safety requirements of their respective positions. The SSPP shall identify the activities and the responsibilities of all participants who are involved with the design, construction, testing, operation, and maintenance of the transit system.

The ASC Executive Director is the individual entrusted by the City of Atlanta with overall safety management and the development and implementation of the SSPP. The Executive Director performs this duty in concert with the Safety Certification and Security Committee (SCSC) and per the Intergovernmental Agreement for the Operation and Maintenance of the Atlanta Streetcar of September 19, 2014 (hereinafter IGA).

Tim Borchers
ASC Executive Director

Michael Geisler
Interim Chair, Atlanta Streetcar Management Committee

Concurrence By:

Hon. Kasim Reed
Mayor, City of Atlanta

Keith Parker
General Manager and CEO, MARTA

Richard Krisak
Chief Operating Officer, MARTA

Reginald Mason
AGM of Safety, MARTA

1.1 Safety Mission Statement

The primary mission of the Atlanta Streetcar is to provide safe, reliable, and customer friendly public transportation service to the residents and visitors of the City of Atlanta.

1.2 Authority to Establish Supplemental Safety Policies

In concert with the SSPP, any manager of the Streetcar organization may propose supplemental safety policies. These policies will be reviewed and approved by the SCSC.

1.3 Relationship to Applicable Law

The Georgia Department of Transportation (GDOT) is the designated agency overseeing the safety of the Atlanta Streetcar and fulfilling Federal Transit Administration (FTA) requirements for state safety oversight. GDOT has promulgated a *Program Standard for Rail Safety and Security Oversight* (Program Standard) containing procedures the Streetcar must follow to develop and implement the rail transit safety activities detailed in this SSPP. In addition to the *Program Standard*, this document also relies upon FTA regulations and guidance contained in 49 CFR Part 659 – Rail Fixed Guideway Systems State Safety Oversight Final Rule – requiring states to execute a rail transit safety oversight program encompassing twenty-one (21) constituent System Safety Elements.

Likewise, as further implementing regulations for the Moving Ahead for Progress in the 21st Century Act (MAP-21) are promulgated, the Streetcar will adjust its plans, procedures, and operations to ensure on-going compliance.

2 Purpose, Goals, and Objectives

2.1 Purpose

The SSPP establishes a systemic process to maximize passenger, employee, and public safety. To ensure fidelity with applicable state and federal regulatory requirements, it defines the authority, responsibility, and processes for implementing the Streetcar's prevention, compliance, and loss control initiatives. By utilizing best practices and documenting system safety activities performed by employees across the Streetcar organization – particularly those based in operations and maintenance departments – it identifies:

- The functional structure of the safety management organization;
- Implementation of established safety criteria;
- Mechanisms for identifying and assessing safety hazards;
- Methods to eliminate, minimize or control identified unacceptable hazards;
- Methods for conducting investigations of accidents, incidents or unsafe acts;
- Oversight of employee safety training programs;

- Development and implementation of hazardous material and environmental safety programs;
- Dissemination of the SSPP to all relevant departments; and
- The safety-related activities of all departments affecting the delivery of transportation services

The SSPP is monitored and verified under the direction by the Director of Safety, Security and Training through the Internal Safety and Security Audit Program, while primary responsibility for ensuring achievement of the following goals and objectives rests with the ASC Executive Director. This is done in concert with the SCSC and per the provisions of the IGA.

2.2 Goals

The goals of the SSPP include, but are not limited to:

- Ensuring the continual improvement of the Streetcar's safety culture by emphasizing the role of all departments and personnel in developing and deploying a comprehensive safety process;
- Preventing and eliminating fatalities;
- Reducing accidents, particularly those related to Streetcar operations and maintenance;
- Minimizing the number of employee and passenger injuries and associated claims;
- Complying with federal, state, and local safety, health, environmental, fire, and life safety regulations;
- Exceeding industry guidelines for establishing and maintaining safety documentation and record maintenance procedures.

2.3 Objectives

Objectives are the specific activities carried out by the Atlanta Streetcar in concert with the SCSC and per the IGA, to ensure the stated safety goals are achieved. These include, but are not limited to:

- Perform safety audits to access compliance with rules, procedures and safety processes, requirements and standards;
- Perform facility and infrastructure inspections;
- Perform vehicle and equipment inspections;
- Development and proper deployment of safety training sessions;
- Establish and implement committees to monitor safety performance and address safety issues as they arise;
- Establish and implement committees to develop and review safety rules and operating rulebooks;
- Investigate accidents to determine probable and contributory cause and identify appropriate remedial action; and

- Coordinate safety, hazard management, emergency management, and environmental efforts among all departments.

3 System and Management Structure

This section describes the physical and operational components of the Atlanta Streetcar system, as well as the organizational structure agreed to and put in place by the various Project Partners.

3.1 Overview

Connecting the eastern and western sides of downtown Atlanta, otherwise divided by the I-75/85 corridor, the 2.7-mile long first phase of the Atlanta Streetcar will carry an estimated 2,600 passengers per weekday when it begins revenue service. Alongside the Metropolitan Atlanta Rapid Transit Authority (MARTA), the Streetcar will be one of only two rail fixed guideway transit systems operating in the State of Georgia.

3.2 History of the Atlanta Streetcar

A joint project of the City of Atlanta, MARTA, and the Atlanta Downtown Improvement District, the Atlanta Streetcar's value was recognized in 2010 with receipt of a $47.7 million TIGER II Grant from the U.S. Department of Transportation. Since that time, a wide range of planning, procurement, and construction efforts have been underway to bring the first phase of the system to reality. Additional phases, designed to connect downtown with the Buckhead neighborhood and the Atlanta Beltline park system, will be undertaken as resources become available.

3.3 Scope of Transit Services

3.3.1 Safety-Critical Rail System Alignment, Assets, and Services

The Atlanta Streetcar System consists of four Siemens S-70 light rail vehicles, twelve (12) stations, and 2.7 miles of track comprised solely of at-grade rail sections. The Streetcars are double-articulated, six-axle, partial low floor vehicles with four passenger entry doors per side and low floor entry. The vehicles are double-ended, allowing for operations from either end of the Streetcar. The Streetcar's ROW will be located in the center of the street, at times sharing space with automotive and pedestrian traffic. It is composed of 115RE-section rail embedded in concrete, and receives daily and weekly inspections for hazardous conditions or defects. Powered by an overhead catenary system, Streetcar vehicles will operate at speeds of up to 35 miles per hour on standard fifteen-minute headways. Additional service may also be provided in response to special private or public event services. The City of Atlanta is the sole owner of all stations and right-of way on which the Streetcar operates, and does not share track with any other passenger or freight rail system.

Each of the twelve stations consists of a raised platform located in the median. Each platform is sheltered, handicapped accessible, and contains other amenities such as operating schedules, fare media and security lighting.

Bar signals are used to regulate streetcar movement through certain intersections. The City of Atlanta will be responsible for maintenance and inspection all Streetcar traffic signal systems.

Atlanta Streetcar incorporates the Vecom train to wayside communication system. At the wayside and throughout the system there are Vetag / Vecom stations. The Vetag / Vecom wayside station is an electronic unit, located in a housing unit along the wayside, which is connected to a loop antenna between the rails. The loop antenna electromagnetically interrogates the transponder of passing vehicles. The transponder is an electronic devise mounted below the vehicle cab that transmits and receives data when interrogated. For traffic signal interpretation the rail car employs carborne train detection equipment sends a dry-contact type signal to City of Atlanta equipment, which then activates and drives the appropriate City signals and equipment.

Any failure of train detection systems on the Atlanta Streetcar will be repaired by Maintenance Technicians, while the remainder of the signal system is maintained and repaired by City personnel. To the extent that additional, non-highway traffic signals are used to provide train rear-end protection (i.e., to determine track occupancy), the current MARTA standards for testing will be utilized as applicable to the equipment.

Streetcar traction power equipment includes overhead power distribution (overhead contact wire), and three traction power substations. Traction power equipment is inspected, tested, and maintained by Atlanta Streetcar Maintenance Technician. Maintainers will use established substation testing and inspection protocols with adjustments based on OEM recommendations and APTA guidelines.

Atlanta Streetcar Maintenance Technicians will also conduct visual and hands-on inspections of the overhead contact system (OCS) based on OEM manufacturer standards and APTA guidelines.

Figure 1: Atlanta Streetcar System Map

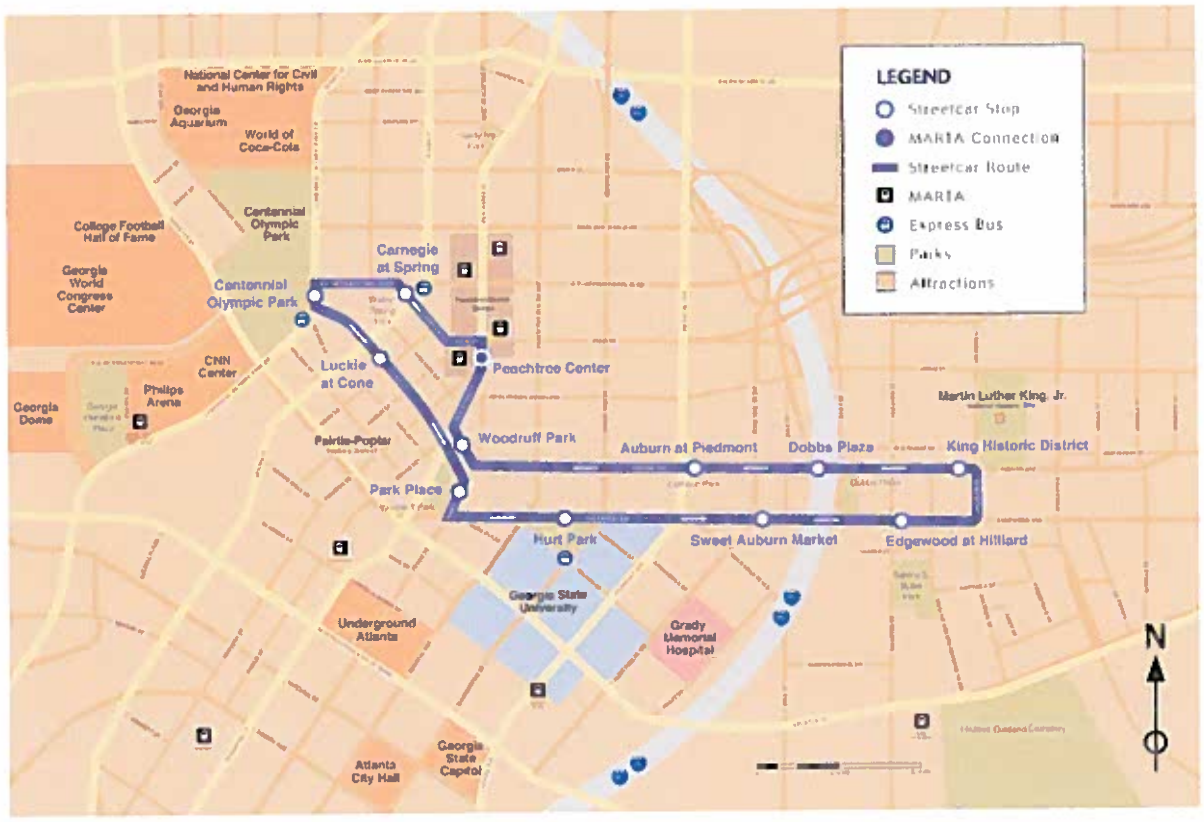


Figure 2: Streetcar System Schedule

Days	Operating Hours	Train Intervals
Monday-Friday	6 a.m. to 11 p.m.	15 minutes
Saturday	6 a.m. to 1 a.m.	15 minutes
Sunday	8:30 a.m. to 1 a.m.	15 minutes
Holidays	9 a.m. to 11 p.m.	15 minutes

3.4 Vehicle Maintenance Facility

The Atlanta Streetcar's Vehicle Maintenance Facility (VMF) will be located on Auburn Avenue under the I-75/85 overpass. From this location, the City of Atlanta will store all four streetcars. The VMF will support streetcar periodic safety inspection and routine and heavy maintenance and repair service.

3.5 Police/Public Safety

The City of Atlanta Police Department will be responsible for enforcement of all public safety and security ordinances, statutes, and regulations related to the Atlanta Streetcar, as well as scene security in the aftermath of an accident or incident. Officers will respond to calls for service from City of Atlanta Emergency Services Department Dispatch Center, and will have 24/7 telephone and radio contact with the Streetcar Supervisor on duty in the event that mechanical or other technical support is required.

3.6 Integration of Safety Function

Safety is the responsibility of all Streetcar personnel. Management of safety programs resides with each director and manager, with oversight from the SCSC, the Executive Director and the Director of Safety, Security and Training, who also provides subject matter expertise, monitors compliance with regulatory requirements, and oversees program development and enhancement. The Organization Chart on Page 16 below provides a graphic representation of the authority and oversight relative to safety at the Streetcar.

Specific reporting relationships for Atlanta Streetcar staff are also described in Table 1 of Section 3.8 of this SSPP. With respect to outside contractors, any system safety or security implications of their work is reviewed for concurrence by the Safety Certification & Security Committee (SCSC) for compliance with this SSPP, Atlanta Streetcar operating rules and SOPs, the IGA, and other relevant guidelines and regulations. The SCSC will provide specific direction and oversight for Atlanta Streetcar contractor personnel in implementing compliance wherever required by the IGA. The SCSC is also fully responsible to ensure the safety function is integrated into the organization through its review and approval activities for all Streetcar operations and documentation.

The SCSC may also designate a specific SCSC-approved supervisor or manager to provide safety oversight of contractors working on the property on a long-term basis. This may include periodic reporting requirements, or including contractor staff as part of rules compliance or other safety-related field checks.

3.7 Lines of Authority for Safety

The IGA and the Atlanta Streetcar System Safety Policy (hereinafter System Safety Policy) laid out in Section 1 of this SSPP defines the lines of authority for safety. This policy supports the Streetcar's System Safety Policy Statement authorizing the Executive Director's authority, and the role of the Director of Safety, Security and Training to develop and maintain this SSPP and any necessary supplemental system safety policies or procedures in concert with the Safety Certification and Security Committee and per the IGA.

3.8 Atlanta Streetcar Leadership

The Organizational Chart for the Atlanta Streetcar, contained on Appendix A attached hereto, is compliant with the IGA, and identifies lines of authority across the three primary functions of Executive Management, Management of Operations, and Service Delivery.

The following table briefly describes the safety-related responsibilities of each function set out in the organizational chart, and identified lines of authority for each corresponding position. Further detail on the system safety responsibilities of primary COA personnel and contractors can be found in Section 5.2 of this SSPP.

Table 1

	Safety-Related Tasks	Reports To:	
Infrastructure Cleaners	• Minimize hazards related to public use of Streetcar facilities	Streetcar Supervisor (COA)	
Streetcar Drivers	• Conduct safe operations • First line of sight for hazards on the alignment • Compliance with ASC rules • Initial incident response and reporting		
Streetcar Technicians	• Address reported hazards on the vehicles or alignment • Compliance with ASC rules • Secondary incident response and reporting		
Streetcar Supervisor (COA)	• Ensure safe day-to-day O&M activities through rule compliance checks, hazard assessments, and personnel management • Supervisors fulfill roles in both operations and maintenance, are cross-trained and report to the appropriate superintendent per the supervisors' assigned duties.	Superintendent of Operations (COA)	Superintendent of Maintenance (COA)
Superintendent of Operations (COA)	• Planning, organizing, and overseeing safe operational functions • Management of rule compliance and hazard management activities • Crosstrained to also perform the duties of the Superintendent of Maintenance.	Manager of Streetcar Services (COA)	

	Safety-Related Tasks	Reports To:
Superintendent of Maintenance (COA)	• Ensure all system assets, including vehicles, the alignment, and all facilities are maintained safely and kept in a state of good repair • Work with contractor maintenance personnel to ensure safety standards and practices are upheld • Crosstrained to also perform the duties of the Superintendent of Operations	
Manager of Streetcar Services (COA)	• Ensures safe and timely operation of the system • Responsible for all plans, procedures, and checklists • Coordinates training for all employees • Oversees efforts of other City of Atlanta Support Services and any 3rd Party maintenance contractors	Director of Streetcar Services (MARTA)
Director of Safety, Security & Training (COA)	• Ensures compliance with the SSPP and overall safety and security of the streetcar system	ASC Executive Director Safety Certification & Security Committee (51% MARTA & MARTA COO), specifically to allow for the exchange of safety, security and training information between the SCSC, COO and Director of Safety, Security & Training.
Deputy Director of Streetcar Services Director of Streetcar Services T&C Oversight Manager Technical Support Chief Operating Officer	• Final approval and oversight of compliance with all safety standards and activities carried out by COA service delivery personnel	Safety Certification & Security Committee (51% MARTA)
Safety Certification & Security Committee	• Monitors, addresses, resolves and decides all issues related to safety and security, including certifications.	Atlanta Streetcar Management Committee Atlanta Streetcar Executive Director (COA) – Indirect

	Safety-Related Tasks	Reports To:
ASC Executive Director	• Responsible for overseeing all daily operations and maintenance activities and ensuring compliance with all safety standards, guidelines, and regulations	Atlanta Streetcar Management Committee
Atlanta Streetcar Management Committee	• Provides overall policy and strategic director for ensuring safe operations and maintenance of the Atlanta Streetcar	Comprised of: COA, MARTA, and ADID (non-voting)

3.9 Safety Committees

Initial Safety Committees include, but are not limited to:

Safety Certification & Security Committee (SCSC)

The Safety Certification & Security Committee shall be responsible for addressing, deciding and resolving all issues related to safety, security and all certification requirements, including but not limited to:

(a) Determining the performance measures to be used in reporting and tracking safety and security data
(b) Setting the standard for and determining the adequacy of training for all personnel subject to the IGA
(c) Determining corrective action measures necessary for safety and security violations
(d) Determining that all necessary safety and security certifications have been attained and are maintained

The SCSC will achieve its duties and responsibilities by conducting regular reviews of documentation, providing oversight of the application of the SSMP through all phases of the ASC development and acting as a conduit informing and assuring the Management Committee of safety and security issues.

SCSC meetings will incorporate all system safety, system security, safety and security certifications, systems integrated tests, risk/hazards, fire/life and operational hazard analyses into one meeting.

The SCSC will address safety and security issues which may arise as a result of the policy, financial or strategic decision of the Management Committee. While the Management/ Executive Committee will determine overall police objectives, the SCSC will vote on and exercise final decision-making authority over policy, strategic or financial decisions which it, or the MARTA COO, find may affect the safety and security of the system.

Should the SCSC veto any Management Committee decisions, the Executive Director shall inform the latter and, along with the DSST, seek to implement mitigation measures to satisfy the SCSC. If according to the SCSC such mitigation measures are not achievable due to safety reasons, the Management Committee must conform their decision to meet the approval of the SCSC, or the decision will not be implemented or employed. ASC safety and security management and leadership is provided by the SCSC for all project phases including, planning, conceptual, Preliminary Engineering, Final Engineering, installation and construction, testing and integration, pre-revenue operations and final commissioning and certification. The SCSC will work closely with the Atlanta Streetcar Corrective Action Plan (CAP) Team to ensure the prompt, effective resolution of hazards or other deficiencies identified during the course of any internal or external audit, review, or investigation of the system.

As described in the SCSC's founding Charter, its membership shall be apportioned as follows:

A. MARTA shall appoint four of the voting members.

B. The City shall appoint the remaining voting members (no less than 3).

C. ADID shall appoint a non-voting member.

D. The Chairperson of the Committee shall be the MARTA AGM of Safety (or his/her designee) for the first year of operations, and until the City assumes full responsibility for the operation and maintenance of the Atlanta Streetcar, as set forth in Section 4.3 of the Atlanta Streetcar O&M IGA.

The City will acquire the right to appoint the Chairperson when it takes on such additional responsibility. If any voting member cannot participate in a meeting of the SCSC, such member must appoint a designee from that member's respective entity to attend that meeting.

Without regard to the number of individuals on the SCSC, MARTA shall have at least 51% of the voting rights on the committee for the first year of operations of the Atlanta Streetcar; provided, however, that MARTA's voting power shall not be reduced until the City assumes all operating and maintenance duties from MARTA, as set forth in Section 4.3 of the Atlanta Streetcar O&M IGA. MARTA's voting interest shall be at least 50% in the first year of operations under full City control. For subsequent years up to at least five (5) years of operation, MARTA's voting interest shall be at least 30%.

The SCSC shall be re-named the Executive Safety Committee (ESC) following the transition to revenue service. However, for the purposes of this initial SSPP, only the SCSC title will be used.

Committee members include:

City of Atlanta	MARTA	ADID
Manager of Streetcar Services	Assistant General Manager of Safety	Vice President (advisory only)
Compliance Manager	Director of Streetcar Services	

Director of Safety, Security & Training	Chief Operating Officer	
Atlanta Police Department (advisory only)	Senior Director of Operations	
Atlanta Fire Rescue Department (advisory only)	Chief of Police (advisory only)	

Atlanta Streetcar Management Committee

The Atlanta Streetcar Management Committee functions as the Board for the Atlanta Streetcar, providing overall policy, strategic direction, and financial planning. Financial partners of the Streetcar project have voting rights, while non-financial partners have advisory rights.

Committee composition is:

City of Atlanta	MARTA	ADID
Chief Operating Officer	One optional, advisory representative	Two representatives appointed by the President
Commissioner of the Department of Public Works		

4 Plan Review and Modification

This section describes the System Safety Program Plan review and update process.

4.1 SSPP Review Schedule

The Atlanta Streetcar will annually review and, if necessary, update this System Safety Program Plan. The Director of Safety, Security and Training initiates and leads this process to begin on September 30th of each year and focus on:

- Reflecting any system modifications or significant changes to the Streetcar's management organization structure;
- Ensuring compliance with the latest revision of the *Program Standard* promulgated by GDOT;
- Ensuring compliance with the latest revision of the FTA final rule contained in 49 CFR 659;
- Striving for alignment with APTA Standards for Rail and Bus Transit Operations, where applicable.

The SCSC is responsible for reviewing and approving all proposed changes resulting from this process. If a proposed change is rejected, the SCSC will also identify any modifications or adjustments required to meet applicable standards.

4.2 SSPP Control and Update Procedures

Responsibility for SSPP document control, updating, and publication resides with the Director of Safety, Security and Training who solicits input and ideas from:

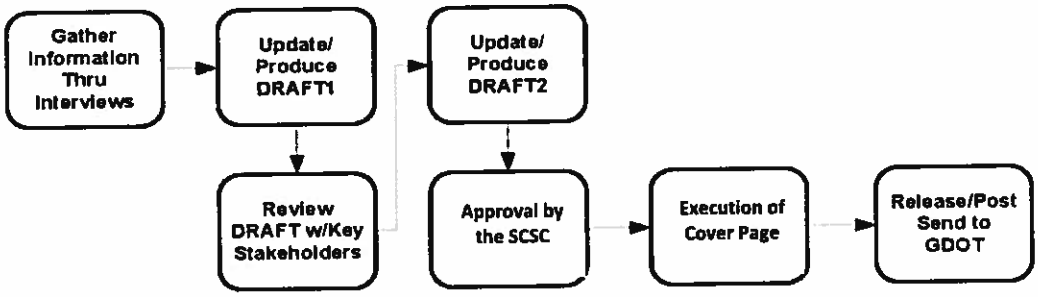
- The SCSC
- All ASC Departments
- ASC consultants as appropriate and necessary
- Other Project Partner offices, agencies, or departments, such as operations, vehicle maintenance and infrastructure systems maintenance.
- GDOT
- MARTA
- Industry safety peers, and
- Other oversight and regulatory agencies.

The current controlled version of the SSPP is posted electronically per ASC's Configuration Management and Document Control Procedures. Persons needing to access the document are informed of the control parameters by the following disclaimer:

"The information contained in this document may change without notice, and may have been altered or changed if you have received it from a source other than the ASC Director of Safety, Security and Training. Any printed copy is obsolete unless verified against the controlled copy provided by the Director of Safety, Security and Training and posted on the COA Network.

4.2.1 SSPP Update Process

The Director of Safety, Security and Training uses the following process to develop revisions of the SSPP:



Process Task	Description
Content Gathering	The Director of Safety, Security and Training will perform data mining for existing policies, procedures, bulletins and presentations. The Director of Safety, Security and Training will meet with stakeholders and subject matter experts, to review the current version of the SSPP and gather any necessary materials.

Process Task	Description
Create First Draft	Based on the information provided during the Content Gathering phase, a revised Draft 1 of the SSPP will be created.
Review First Draft with Content Providers	The Director of Safety, Security and Training will provide portable document files (PDF) to identified reviewers. The Draft1 review serves two (2) purposes. 1. To allow staff to note specific changes on the PDF file, using the commenting features of Acrobat. 2. To identify specific areas requiring interviews and/or drafting of new provisions.
Conduct Interviews	The Director of Safety, Security and Training will meet with ASC stakeholders (at the former's discretion) to conduct interviews, document identified topics and review Draft1.
Create Second Draft	Based on Draft1's review changes and interviews, the Director of Safety, Security and Training will produce Draft2.
Conduct Reviews	The Director of Safety, Security and Training, Manager of Streetcar Services and SCSC will conduct a page-by-page element-specific review of Draft2. All changes and will be documented and action items assigned as needed.
Create Final Draft	The Director of Safety, Security and Training will resolve all issues from the inspections and reviews to date, and edit the document a final time.
Conduct Acceptance Review	The SCSC will review and vote upon the final document. The appropriate parties (at the discretion of the SCSC) will execute the final SSPP, to verify its approval by the SCSC and the ASC Executive Director.
Final Changes and Delivery	The Director of Safety, Security and Training will deliver a final hardcopy to Streetcar safety and management staff, and an electronic copy to GDOT/SSO as required.

Once the internal SSPP review is complete the Director of Safety, Security and Training, Manager of Streetcar Services and SCSC will submit the updated SSPP for review and approval to the ASC Executive Director. At the completion of the review, a signature page will cover the updated SSPP, with signatures of the (Deputy) Director of Streetcar Services, Director of Safety, Security and Training and ASC Executive Director.

4.3 SSPP Review and Approval by GDOT State Safety Oversight

Annual Submission:
Following the initiation of revenue service, the Atlanta Streetcar will conduct the annual review of its SSPP per the requirements herein.

In the event that Atlanta Streetcar conducts its annual SSPP review and determines that an update is not necessary for the year, it must prepare and submit by January 1 formal correspondence notifying the GDOT State Safety Oversight (SSO) point-of-contact of this determination.

In the event that Atlanta Streetcar conducts its annual SSPP review and determines that an update is necessary for the year, it will submit a revised SSPP to the GDOT SSO Manager by January 31. As appropriate, referenced materials affected by the revision(s) must also be submitted with the SSPP.

Each revised SSPP submitted to GDOT SSO will include a textual or tabular summary that identifies and explains proposed changes and includes a time frame for completion of the associated activities.

If GDOT SSO requires any additional changes or clarifications to the SSPP, the GDOT SSO point-of-contact will notify the Director of Safety, Security and Training in writing of these items within **thirty (30) calendar days of its receipt.** Upon receiving this written notification, the Atlanta Streetcar will submit an SSPP revised to address GDOT's changes or clarifications to the GDOT SSO point-of-contact within **thirty (30) calendar days.** This process may continue for as long as required to address all GDOT SSO concerns.

Periodic Submission

At any given time, additional reviews of the ASC SSPP may be required to address specific issues based on implementation and compliance to MAP-21, Section 5329, and / or the GDOT SSO program standard or procedures review, document review or other safety related project information. When ASC initiates updates to their existing SSPP, ASC will submit the modified SSPP and any subsequently modified procedures to GDOT for review and approval within **thirty (30) calendar days** of the effective date of the change.

Upon receipt of a written notification from GDOT for SSPP modifications, ASC will submit a revised SSPP to GDOT within **thirty (30) calendar days.** GDOT will review and approve the revised SSPP, providing a formal approval letter and a completed SSPP review checklist within **thirty (30) calendar days** of receipt of the revised SSPP. If GDOT determines that the SSPP is not acceptable, GDOT will provide a completed SSPP checklist explaining the deficiencies along with a proposed schedule for re-submittal and re-review.

5 SSPP Implementation – Tasks and Activities

5.1. Overview

This section describes the tasks and activities performed and/or supported by all ASC personnel, under the direction of the Executive Director and the SCSC, with the support of the Director of Safety, Security and Training in conjunction with other departments that serve to implement the SSPP, such as inspections, audits, design reviews, observations, investigations, corrective action monitoring, and technical assistance.

5.2. System Safety Function

The ASC Executive Director works closely with the Director of Safety, Security and Training under the guidance of the SCSC to develop, implement, and maintain the SSPP in accordance with applicable federal and state regulations and guidelines. Through these collaboration policies, procedures, and plans are developed to enable ASC to implement the SSPP.

Atlanta Streetcar Employees, Managers and Contractors have the responsibility and authority to direct corrective action when unsafe conditions or practices exist, up to and including the stoppage of work until appropriate corrective measures are taken. This action could include the interruption of revenue service if conditions warrant.

The City of Atlanta and MARTA are staffed with a wide range of specialists as identified by the organizational chart attached in Section 3.8, Atlanta Streetcar leadership. These individuals interact with various ASC departments at all levels of the organization.

5.2.1 Methodology Used by the Director of Safety, Security and Training

The Director of Safety, Security and Training verifies implementation of the SSPP throughout the Atlanta Streetcar organization using the following methods:

- Internal Safety and Security Audit Process
- Accident/Incident Investigations
- Hazard Management activities
- Safety and Security Certification Process (for extensions, major modifications and new projects as described in the Atlanta Streetcar Safety and Security Certification Program Plan)
- Safety Inspections
- Rules/Procedures Reviews
- Safety Data Acquisition and Analysis
- Safety Committee participation
- Training review and oversight

In addition, the Director of Safety, Security and Training is also responsible for ensuring all system safety compliance reporting requirements contained in this SSPP are met, as well as corresponding security reporting requirements contained in the Security and Emergency Preparedness Plan (SEPP).

In the Director of Safety, Security and Training's absence, these roles and responsibilities will be fulfilled by a designee, determined at the discretion of the Executive Director. .

5.2.2 Other Management Roles and Responsibilities

The operation and maintenance of the Atlanta Streetcar requires continual safety activity throughout its operational life cycle, including procurement of new systems, and modification and/or rehabilitation of safety-critical equipment and facilities. This section identifies related responsibilities held by individual members of the Streetcar organization.

Responsibilities of the Chief Operating Officer (COO)

The COO – with such support from MARTA and the other project partners as he/she deems appropriate – is responsible for providing final technical approval for the testing and commissioning of the Atlanta Streetcar system.

In the operational phase, the COO will provide management on operations, with technical support from MARTA experts, the Executive Director, the Director of Streetcar Services, the Deputy Director of Streetcar Services and the Director of Safety, Security and Training. The COO has final decision making authority regarding actual operation and maintenance of the Atlanta Streetcar System, including the ability to reduce or cease service.

Responsibilities of the Director and Deputy Director of Streetcar Services

The Director and Deputy Director of Streetcar Services will provide active management of the City's Manager of Streetcar Services with respect to staff hired, and/or contractors procured, and all matters that are necessary to fulfill the required daily O&M functions and service delivery. They will coordinate with the City of Atlanta support services such as:

- Traffic Signal System maintenance and repair
- Transit station cleaning and repair
- Human Resources support
- Procurement
- Policing and Security
- Fare Inspection
- Financial management
- Grant management
- Capital asset replacement

The Director and Deputy Director of Streetcar Services will provide active management of the Manager of Streetcar Services, who shall supervise day to day operations and maintenance of the Atlanta Streetcar, including System Maintenance Contractors, and the City of Atlanta management for:

- Vehicle maintenance
- Infrastructure maintenance, including track, power, signals and facilities
- Janitorial
- Contracted Security services

Responsibilities of the Manager of Streetcar Services

Under the Director and Deputy Director of Streetcar Services, the primary safety tasks and responsibilities of the Manager of Streetcar Services include the following:

- Establish and implement procedures for the safe operation of the streetcar, and ensure safety in all aspects of the system.
- Comply with applicable federal, state and local regulations, industry standards, and manufacturer's recommendations.
- Conduct, report on, and otherwise assist in the investigation of accidents, incidents, and injuries as required by relevant SOPs.
- Support, assist and participate in the internal safety audit process and external safety audits.
- Ensure the development of appropriate corrective action as required by internal safety audits, external safety audits, the hazard identification process, and accident/incident investigations.
- Verify that all employees receive training in safety-critical aspects of their expected work performance, including technical and emergency preparedness training.
- Properly implement and maintain change control and document control for their areas of responsibility.
- Verify that all staff adhere to established standard operating procedures, general orders, bulletins, and rules.
- Ensure the provision and maintenance of proper tools and equipment for the support of quality assurance activities.
- Ensure the establishment and maintenance of proper documentation in support of quality assurance and operations support inspection and audit activities.
- Verify proper quality control practices are incorporated in day-to-day maintenance operations.
- Participate in emergency drills and exercises.
- Provide necessary mechanisms for reporting defects and hazardous conditions.
- Coordinate with other departments on system safety requirements and safety certification.
- Monitor procurement practices to verify that safety and quality are not compromised in replacing parts.

- Participate in the development of technical equipment specifications and procedures that address the system safety requirements and s certification.
- Provide requested data for statistical and trend analysis.
- Participate in the system modification review process
- Ensure contractors working with and for the streetcar system provide safe, reliable service in compliance with this SSPP and all other ASC Safety and security requirements
- Manage day to day implementation of the Drug and Alcohol Program and Procedure

Responsibilities of the Superintendent of Operations

The Superintendent of Operations is responsible for:

- Overseeing the day-to-day operations of the Streetcar, including management of the Streetcar Supervisors and contractors working in operational capacities and oversight of their safety-critical responsibilities
- Ensuring proper enforcement of ASC rules and regulations, and implementing disciplinary measures as appropriate
- Developing schedules and ensuring the completion of proper training by front-line operations employees
- Performing rules compliance checks and other safety-related evaluations and inspections

Responsibilities of the Superintendent of Maintenance

The Superintendent of Maintenance is responsible for:

- Day-to-day oversight and coordination with all contractors hired by ASC to maintain any element of the Streetcar system
- Managing the Streetcar Supervisors with respect to maintenance-related activities and responsibilities
- Developing schedules and ensuring the completion of proper training by front-line maintenance employees
- Performing rules compliance checks and other safety-related evaluations and inspections

Responsibilities of Contractors

The Atlanta Streetcar may retain the services of outside contractors to assist with various aspects of the system's operations and maintenance. All such contractors are subject to the requirements of this SSPP and may be required by the SCSC to develop their own Safety Program Plans documenting their processes for compliance with all applicable requirements. These Contractor Safety Program Plans must be reviewed and approved by the SCSC and the Director of Safety, Security and Training. The Director of Safety, Security and Training also conducts periodic reviews of contractor work practices to ensure compliance with their Safety Program Plans and this SSPP.

Contractors are required to conform to and abide by all requirements of this SSPP at all times. Contractors are also required to work solely under the authority and direction of the City of Atlanta and Director of Streetcar Services. Contractors will be monitored and inspected under the authority and direction of the City of Atlanta and Director of Streetcar Services, and their designees as deemed appropriate, through the SCSC and pursuant to the provisions of the IGA.

The Atlanta Streetcar will require each contractor to assign safety and quality assurance functions to its personnel working on the property. Based upon the scope of the project, the SCSC may also require the assignment of a dedicated contract employee to carry out these tasks. Contractor personnel will work in cooperation with the SCSC, the Executive Director, the Director and Deputy Director of Streetcar service, the Manager of Streetcar Services and the Director of Safety, Security and Training and conduct a variety of activities in support of this plan, including:

- Review of supplier or OEM submittals and specifications;
- Developing a safety training program for their contractor personnel;
- Maintaining compliance with occupational safety standards and guidelines; and
- Establishing local safety committees for personnel within a given maintenance function.
- Reporting on any and all activities as required by the SCSC or ASC personnel
- Conduct of any required safety or security activity deemed necessary by the SCSC or ASC personnel

Figure 3. See Appendix B for the Atlanta Streetcar Task Responsibilities Oversight Matrix

5.3 Additional Safety Responsibilities

Streetcar Operations Supervisors

- Ensure the safe transportation of passengers
- Ensure equipment safety and safe work practices
- When required, implement emergency procedures safely
- Conduct operational rule and procedures compliance reviews
- Participate in interdepartmental safety committees
- Document and ensure all employees' operational certification requirements to safely operate streetcar equipment
- Develop safety reports and perform related data-gathering efforts
- Document and investigate any hazards identified or reported

COA Traction Power, Track, and Vehicle Maintenance Managers (and Contractors, if used)

- Perform infrastructure and vehicle preventive maintenance and inspections.
- Ensure equipment safety and safety work practices are employed in maintenance facilities.

- Implement corrective action based on incident investigation findings.
- Ensure facility is clean and hazardous materials are handled, managed and disposed of according industry standards.
- Conduct operational rule and practices compliance audits to ensure safety initiatives.
- Participate in interdepartmental safety committees.
- Enforce proper industrial hygiene and personal protective equipment compliance.
- Develop maintenance reports and perform related data-gathering efforts
- Report any hazards he/she has identified or has been made aware of

COA Department of Public Works: performs the following support functions in line with its own internal SOPs specifically designed to coordinate with the Streetcar's operating needs.

- Traffic signal maintenance
- Right of way clearing and cleaning

5.4. City of Atlanta Police Department and Atlanta Fire Rescue Department

The primary safety tasks and responsibilities of the City of Atlanta's Police Department and Fire Rescue Department are to:

- Respond to all accidents and incidents involving the Atlanta Streetcar.
- Plan, organize, and coordinate emergency management related exercises and training.
- Coordinate with other internal partners to assist in the development of emergency response plans.
- Verify that police officers and firefighters receive appropriate safety training related to Streetcar response.
- Develop and update the Atlanta Streetcar Security and Emergency Preparedness Plan (SEPP) in coordination with the Director of Safety, Security and Training.
    - Ensure that the provisions of the SEPP complement and are fully integrated with those of this SSPP.

6 Hazard Management Process

6.1 Overview

Hazard management is designed to eliminate or mitigate the risk of mishaps through a systematic approach of hazard identification, hazard analysis, risk assessment, and risk management. In connection with this SSPP, the Atlanta Streetcar *Hazard Management Plan* demonstrates the efforts undertaken to comply with FTA and GDOT/SSO standards for hazard management and tracking. All hazard management activities are undertaken with the full participation of the SCSC, pursuant to the requirements of the IGA.

The Hazard Management Plan defines activities performed throughout the life-cycle of any system, upgrade, modification, resolution of deficiencies, or technology development. When properly carried out, these activities ensure the identification and understanding of all hazards

and their associated risks. As a result, mishap risk can be eliminated or reduced to acceptable levels.

The effective and timely resolution of hazards is critical to achieving an optimum level of safety. The hazard identification and risk assessment process, contained in the *Hazard Management Plan,* is based on principles set forth in *MIL-STD-882 Department of Defense Standard Practice for System Safety* (hereinafter "MIL Standard"), and adapted to the Atlanta Streetcar configuration and operating environment.

6.1.1 Definition of Hazard

A hazard is defined as any real or potential condition that can cause injury, illness, or death to personnel, patrons, or the general public; damage to or loss of a system, equipment or property; or damage to the environment. Definitions of other key terms are included below:

Term	Definition
Barrier/Control	Any design or administrative method that prevents a hazard from causing damage or injury.
Hazard	Any real or potential condition that can cause: • injury, illness or death; and/or • damage to or loss of a system, equipment, or property; and/or • damage to the environment.
Hazard Analysis	A formal process for reviewing and documenting hazards for the purpose of their elimination or control.
Hazard Identification	The formal recognition that a hazard exists and the definition of its characteristics.
Mishap	An unexpected, unforeseen, or unintended event that causes death or injury to persons, or loss or damage to equipment, the environment, or personal property.
Risk	The probability that a mishap will occur as a result of a given hazard.
Risk Assessment	The process of using available information to estimate the likely impact of a hazard on individuals, groups, or the environment and evaluating the need for mitigation.
Unacceptable Hazard	Any hazard involving any combination of fatalities, injuries, or property damage to which Streetcar Director of Safety, Security and Training has assigned an Initial Risk Assessment index of 1A, 1B, 1C, 2A, or 2B.

6.2 Hazard Management Process – Activities and Methodologies

The hazard management process is accessible to personnel at all levels of the organization. Identified hazards must be reported by any employee directly to his or her supervisor or to the Director of Safety, Security and Training using the "Report of Unsafe or Hazardous Conditions"

form included in the Atlanta Streetcar Hazard Identification and Reporting Standard Operating Procedure.

Hazard Identification and Risk Assessment (HIRA) is Atlanta Streetcar's formal process of identifying, evaluating, eliminating or mitigating, and tracking hazards associated with Streetcar operations, including all maintenance activities.

1. **Identify the hazard**: if left unattended, would this situation lead to fatality, injury, illness, lost time, or damage to property or the environment? If so, it qualifies as a hazard and should be noted as such.
2. **Provide a brief but complete description of the hazard** (i.e., what would cause the hazard and the likely results if the hazard remained as-is without being addressed?)
3. **Rank the potential severity of the hazard to estimate the consequence of a mishap caused by the hazard.** The following scale is used:

Table 2: Definition of Severity

SEVERITY CATEGORIES		
Description	**Severity Category**	**Mishap Result Criteria**
Catastrophic	1	Could result in one or more of the following: death, permanent total disability, irreversible significant environmental impact, or monetary loss equal to or exceeding $10M.
Critical	2	Could result in one or more of the following: permanent partial disability, injuries or occupational illness that may result in hospitalization of at least three personnel, reversible significant environmental impact, or monetary loss equal to or exceeding $1M but less than $10M.
Marginal	3	Could result in one or more of the following: injury or occupational illness resulting in one or more lost work day(s), reversible moderate environmental impact, or monetary loss equal to or exceeding $100K but less than $1M.
Negligible	4	Could result in one or more of the following: injury or occupational illness not resulting in a lost work day, minimal environmental impact, or monetary loss less than $100K.

Next, rank the potential level of exposure to the hazard to estimate the probability of a mishap occurring due to the hazard. The following scale is used:

Table 3: Definition of Exposure

PROBABILITY LEVELS			
Description	**Level**	**Specific Individual Item**	**Fleet or Inventory**
Frequent	A	Likely to occur often in the life of an item.	Continuously experienced.
Probable	B	Will occur several times in the life of an item.	Will occur frequently.
Occasional	C	Likely to occur sometime in the life of an item.	Will occur several times.

Remote	**D**	Unlikely, but possible to occur in the life of an item.	Unlikely, but can reasonably be expected to occur.
Improbable	**E**	So unlikely, it can be assumed occurrence may not be experienced in the life of an item.	Unlikely to occur, but possible.
Eliminated	**F**	Incapable of occurrence. This level is used when potential hazards are identified and later eliminated.	Incapable of occurrence. This level is used when potential hazards are identified and later eliminated.

Calculate a "risk assessment value" by multiplying the potential severity and exposure (e.g. 1B, 2A, 3D, 4C, etc.). This allows for an initial screening or ranking of priorities.

Table 4: Risk Assessment Value

RISK ASSESSMENT MATRIX				
SEVERITY / PROBABILITY	**Catastrophic (1)**	**Critical (2)**	**Marginal (3)**	**Negligible (4)**
Frequent (A)	High	High	Serious	Medium
Probable (B)	High	High	Serious	Medium
Occasional (C)	High	Serious	Medium	Low
Remote (D)	Serious	Medium	Medium	Low
Improbable (E)	Medium	Medium	Medium	Low
Eliminated (F)	Eliminated			

The determined risk assessment value in turn implicates several levels of decision-making authority, as follows:

- High (Unacceptable) – Risk must be reduced and controlled by design. No one at Atlanta Streetcar is authorized to accept risks in this category.
- Serious – Risk should be reduced or controlled by design or, if not practical, must be reduced by procedures or the use of safety/warning devices. Risks in this category must be referred to the SCSC for final decision, with input and recommendations by the Director of Safety, Security and Training.
- Medium – The Manager of Streetcar Services must periodically and systematically review the effectiveness of safety barriers, including safety/warning devices, procedures, and training. Design solutions are still preferred but not required. Risks in this category

are acceptable provided they are reviewed by the Director of Safety, Security and Training.

- Low – No action is required as long as existing controls are maintained and effective. Risks in this category are acceptable without review.

Other hazard information comes from operations and maintenance reporting, including performance and operation status, incidents and accidents, maintenance status, internal audits, and inspections. GDOT SSO is aware that Atlanta Streetcar operations and maintenance functions are and will be managed through various information management systems. As necessary, to provide timely review of potential hazards, GDOT requires Atlanta Streetcar to provide access to the specific management information systems that provide information, including, but not limited to, the following (where applicable):

- Infrastructure,
- Vehicles,
- Signals / Communications,
- Passenger safety and security,
- Maintenance planning and reporting, and
- Configuration management.

Access to Atlanta Streetcar operations and maintenance information systems will allow GDOT the ability to monitor safety performance and hazard identification, as well as verify the development and implementation of corrective actions.

Additional sources of hazard information include:

- Inspections
- Internal Audits
- Accident/Incident Investigations
- Customer Complaints
- SSO Audits
- Police Reports
- Equipment Failures
- Safety Committee Meetings

6.2.1 Responsibilities for Hazard Management

Under the direction of the Executive Director and with the full participation of the SCSC, the Director of Safety, Security and Training oversees and advises the various hazard management activities of the departments and offices across the Atlanta Streetcar, as well as contractors and suppliers as applicable.

As part of these combined hazard management efforts, the Director of Safety, Security and Training shall:

- Review, evaluate and approve submitted hazard identification and risk assessments;
- Maintain an active inventory of completed assessments;
- Maintain a comprehensive hazard tracking log submitted periodically to GDOT;
- Monitor and evaluate the implementation of barriers and controls;
- Assist other departments with investigation and analysis of hazards;
- Participate in the review of hazard analysis at all levels;
- Review the analysis process and results for new designs, and modification to existing infrastructure and rolling stock.
    - New designs and modifications to existing infrastructure and rolling stock shall have provisions included in the authorizing document [e.g., contracts, Change Control Procedures/ Configuration Management Procedures SOP (CMSOP), etc.] specifying that Failure Modes Effects Critical Analyses be performed.
- Ensure a robust hazard identification and risk assessment element in all training programs;
- Communicate any unacceptable hazard, as defined in the matrix contained in the *Hazard Management Plan*, to required external agencies as soon as possible; and
- Provide investigation status reports to required external agencies according to SSPP reporting requirements.

6.2.2 Accident/Incident Investigations and Hazard Management

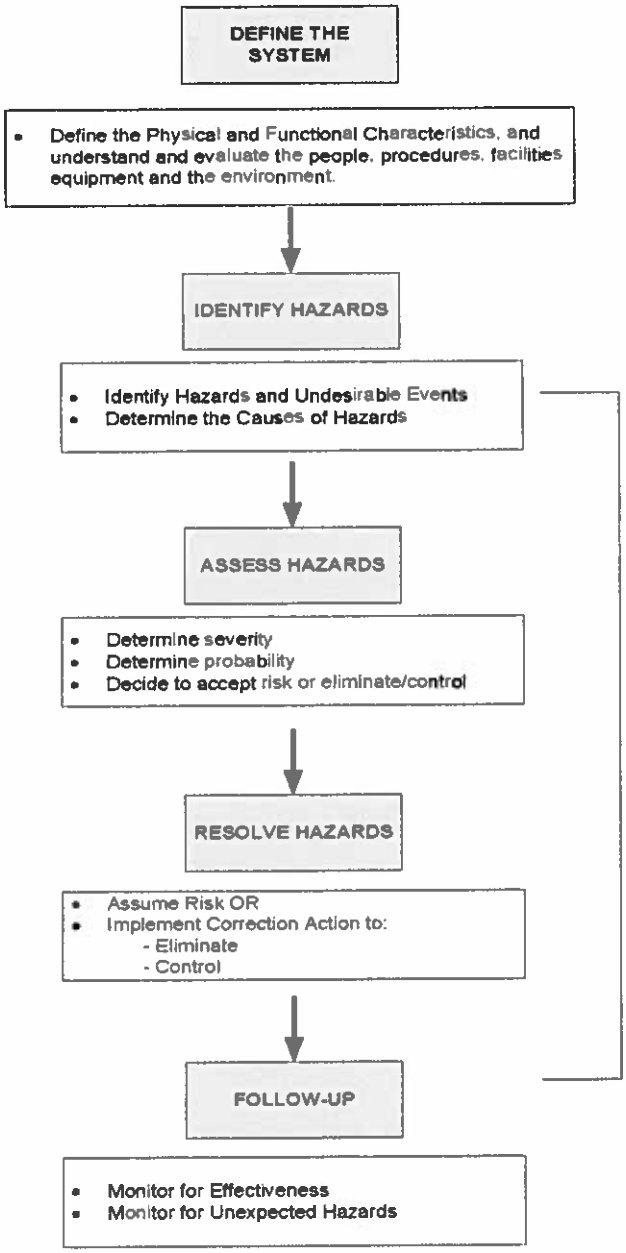
Hazard assessment will be performed in the course of all accidents and incidents as Atlanta Streetcar in accordance with the principles set forth in the *Atlanta Streetcar Hazard Management Plan*. The Director of Safety, Security and Training will ensure that all personnel who perform investigations are properly trained to identify and resolve hazards and will ensure any such hazards identified are documented in the Hazard Tracking Log. As required, any unacceptable hazards will be reported to GDOT following the procedures in the *Atlanta Streetcar Hazard Management Plan*.

Accident/Incident reports shall be provided to the Director of Safety, Security and Training.

6.2.3 Safety Inspections and Hazard Management

The Manager of Streetcar Services, the Superintendent of Maintenance and the Superintendent of Operations shall conduct periodic system safety inspections of facilities and equipment to identify hazards on a proactive basis. Incident reports, injury and illness reports and workers' compensation databases are reviewed by the Director of Safety, Security and Training as part of hazard identification.

Figure 4: Hazard Identification and Resolution Process



6.3 Coordinating with GDOT SSO and Related Bodies

To ensure GDOT has an ongoing role in the oversight of the Streetcar's hazard management process, the Director of Safety, Security and Training will report hazards as required by the GDOT *Program Standard* and ensure the hazard tracking log is available to GDOT as required. GDOT may review the log at any time and direct relevant questions to the Director of Safety, Security and Training in writing, but may not remove any materials from the property. In addition to facilitating on-site review, the Director of Safety, Security and Training will submit the hazard tracking log and other corresponding materials to GDOT quarterly, as specified in the *Atlanta Streetcar Hazard Management Plan.*

As part of the general hazard management process, GDOT will coordinate a proposed date and location for a quarterly meeting and a proposed agenda with Atlanta Streetcar. GDOT will develop and issue the agenda, making any modifications as appropriate, and schedule the quarterly meeting with Atlanta Streetcar. GDOT will prepare meeting minutes from each quarterly meeting, being sure to document any identified action items or required activities.

To the extent possible, GDOT requires Atlanta Streetcar safety and security points-of-contact to identify all regularly occurring safety and security-related meetings where the attendance of the GDOT SSO Program Manager is requested or required. The GDOT SSO Program Manager will work together with Atlanta Streetcar's safety and security points-of-contact to develop an annual meeting calendar and solidify the meeting dates for the following year by December 1 of each year.

The Annual Calendar will be regularly updated and maintained between the GDOT SSO Program Manager and the Atlanta Streetcar and distributed to the safety and security points-of-contact in order to avoid scheduling conflicts for the SSO program.

Additionally, GDOT has the right to request a full briefing at any time on the known circumstances of an investigation, including corrective actions and resulting compliance. GDOT reserves the right to conduct independent investigations of identified unacceptable hazards. A description of the investigation process is provided in *Section 6.6.2 of the 2013 GDOT Program Standard.* Upon determination to conduct an independent investigation, GDOT will inform the Streetcar in writing of its intention to conduct an investigation of a reported hazard no later than **seven (7) calendar days** following receipt of the Streetcar's initial report. GDOT will advise the Streetcar of the following:

- Investigation processes;
- The identity of individual(s) conducting the investigation; and
- A tentative schedule of investigation elements.

The Director of Safety, Security and Training will provide the required information and resources necessary for conducting the investigation. GDOT or its contractor will complete an investigation report that includes a description of activities, findings, identified causal factors, and a corrective action plan (if required). The report will be finished within **thirty (30) calendar**

days after completion of the investigation, and will be delivered to the Director of Safety, Security and Training for review. The Streetcar will have **fifteen (15) days** to prepare a corrective action plan if required, and submit it to the GDOT point-of-contact.

6.3.1 Investigation and Notification of Unacceptable Hazards

Every hazard deemed to be "unacceptable" in accordance with the provisions specified by the SSPP and the *Atlanta Streetcar Hazard Management Plan* must be fully investigated. The Director of Safety, Security and Training shall maintain documentation pertaining to the investigation and elimination of unacceptable hazards, and make these files available to GDOT for review and evaluation.

GDOT must also be notified through its point-of-contact of "unacceptable" hazardous conditions, defined using the criteria and assessment process described in the *Atlanta Streetcar Hazard Management Plan,* as soon as practicable but no later than 5:00 p.m. of the next regular business day. Notification is required even if the "unacceptable" condition has since been corrected. This notification shall be transmitted via e-mail or fax utilizing appropriately completed documentation of the hazard management process in action.

Relevant thresholds for notification are:

1) The hazard is classified as unacceptable pursuant to the risk assessment matrix found in the *Atlanta Streetcar Hazard Management Plan*; and

2) The hazard involves any one or a combination of the following effects: fatality, injury (excluding employee injuries relating to industrial safety), or property damage.

6.3.2 Reporting Mechanisms

To meet its reporting requirements for unacceptable hazards under section 5.6.3 of the *2013 GDOT Program Standard*, the Streetcar will develop and issue the following documents:

1) Initial Report
2) Status Reports
3) Final Report

6.3.2.1 Initial Report

An initial report is due to GDOT within **seven (7) calendar days** of hazard notification. The report may be transmitted via e-mail or hard copy.

Initial reports will contain findings of fact including:

- The investigative procedures to be used;

- A recommendation as to whether convening an ad hoc investigative committee is needed; and
- Plans for conducting interviews, inspections, examinations, or tests to determine the cause of the unacceptable hazard.

6.3.2.2 Status Reports

Monthly status reports shall be provided to GDOT's point-of contact until the investigation is completed. These reports may be transmitted electronically via e-mail or hard copy.

6.3.2.3 Final Report

Upon completing the investigation, the Director of Safety, Security and Training shall submit a final written report for GDOT's review and approval that includes a description of activities, findings, identified causal or contributing factors, and a corrective action plan and corresponding status update. The report may be transmitted electronically via e-mail or hard copy.

Within **thirty (30) calendar** days of receiving a report designated as final, GDOT will review the document and issue a written decision to the Streetcar either approving or disapproving the findings contained within.

In the event that GDOT does not accept the final report, it will communicate any area(s) of disagreement or concern to the Streetcar in writing. The report will not be considered final until all conditions are met and the report is approved by GDOT.

6.3.3 Corrective Action Plans

Corrective Action Plans (CAPs) are developed when reported hazards are identified by internal safety and security audits, accident/incident investigations, GDOT-led reviews and audits, or otherwise required by statute or system documentation. CAPs identify causal or contributing factors and outline solutions and responsibilities that will minimize, control, or correct the issues in a manner that reduces the chance of re-occurrence (reactive) or before an issue manifests as a reportable event (proactive). All Corrective Actions are developed and implemented with the full participation of the SCSC and in conformance with the IGA.

A Corrective Action tracking log and procedure are in place for following the progress of CAPs. To indicate that a CAP has been closed since the last submittal, the log must specify when and how implementation of any recommended actions was verified. Verification may include documentary evidence as well as observations and inspections of corrections. Responsibility for populating, maintaining, and ensuring GDOT receipt of the CAP log rests with the Director of Safety, Security and Training.

All corrective action plans submitted to GDOT will identify:

1) The reported hazard, deficiency or concern;

2) Any agreed-upon action items;
3) The implementation schedule; and
4) The individual stakeholders and department responsible for implementation

The CAP log will be transmitted electronically, by fax, or by postal mail to an established GDOT point-of-contact on a **quarterly** basis. As corrective action plans are closed out, verification must be submitted that the corrective action(s) described in the plan or a proposed alternative has been implemented. This verification must be submitted with the no less than **quarterly** Corrective Action Plan Tracking Log in electronic or hard copy format. In the log, the rail transit agency must also inform GDOT concerning any alternative actions for implementing a corrective action plan.

GDOT will notify the Director of Safety, Security and Training of its approval or rejection of a corrective action plan within **ten (10) calendar days** of receiving the corrective action plan. In the event GDOT rejects a corrective action, GDOT will state its reasons in writing and recommend revisions. The Director of Safety, Security and Training will submit a revised corrective action plan to GDOT no later than **thirty (30) calendar days** following the rejection.

7 Safety Certification

7.1 Overview

Safety and Security Certification demonstrates the efforts undertaken to comply with FTA and GDOT compliance standards for Safety Certification, including the FTA's *Handbook for Transit Safety and Security Certification.*

7.2 Purpose

The purpose of the Safety and Security Certification is to verify that:

- Hazards and security vulnerabilities are identified in the design of a new start or modification/renewal project, and are evaluated and properly controlled or mitigated prior to the commencement of passenger use and service;
- All critical system elements are evaluated for compliance with identified safety and security requirements during the design, construction/installation, testing, and verification phases of a project;
- The Streetcar system is operationally safe and secure for customers, employees, and emergency personnel, both before and after entering revenue service.

Safety and Security Certification establishes a process for contractors and cross-functional project team(s) to perform evaluations, analyzes designs and specifications, and verifies that ongoing inspections and documentation occur over the lifecycle of a project. These activities began with the development of a *System Safety Certification Plan* in the preliminary design phase and culminate in the issuance of a *Safety Certification Verification Report,* prior to placing the new or modified assets into revenue operation.

This document describes the Streetcar's processes for safety certification of capital projects meeting the following criteria:

- receive federal or state funding of any kind; or
- are identified as having a potential safety or security risks to passengers, employees, emergency responders, and/or the general public

Additionally, the SCSC, the Executive Director, the Director of Streetcar Services and the Director of Safety, Security and Training evaluate relevant projects and determine if the Safety and Security Certification process is appropriate depending on the project's impact on system safety.

7.3 Applicability

Safety and Security Certification is applicable to new or modified relevant systems, facilities, equipment, and operational elements that may pose a hazard or security concern to passengers, Streetcar employees, and emergency response personnel. The scope encompasses processes and procedures involving, but not limited to, procurement or development of the following:

Facilities:
- Operations and Maintenance facilities
- Stations
- Right-of-Way
- Traction power system
- Signal and communications systems

System Elements:
- Vehicles
- Voice and data communications
- Traction power substations
- Intrusion detection systems
- Fare vending machines
- Signal and communications system
- AC power distribution system
- Mechanical equipment

7.3.1 Director of Safety, Security and Training

The role of the Director of Safety, Security and Training in Safety and Security Certification is to participate in:

- Determination of safety, quality, and certifiable items as required in conjunction with Streetcar contractors;

- Oversight of sub-contractor activities in safety and security certification activities in compliance with designated standards;
- Oversight of inspections to determine if facilities and equipment have been constructed, manufactured, inspected, installed, and tested, in accordance with safety and security requirements in the design criteria and contract specifications;
- Oversight of reviews to determine that Operations and Maintenance procedures and rules have been developed and implemented to ensure safe and secure operations;
- Oversight of reviews of required Training documents developed for the training of operating personnel, and emergency response personnel;
- Oversight of the process by which Transportation and Maintenance personnel have been trained and qualified/certified;
- Oversight of activities for Emergency response agency personnel to be prepared to respond to emergency situations in or along the right-of-way;
- Oversight of conduct of Safety and security-related system integration tests; and
- Oversight of Security provisions for segments in operation, as well as for yard and shop facilities.

7.3.2 Director of Streetcar Services

The role of the Director of Streetcar Services is to:

- Initiate the project safety analysis in conjunction with the MARTA Office of Rail Systems Engineering's (hereinafter Engineering) Design Process, or with contracted engineering support following the conclusion of MARTA's direct technical involvement with the Streetcar project.
- Create the Certifiable Elements and Certifiable Items Lists;
- Review design & compliance documents provided by Engineering;
- Identify potential hazards related to the project and engages the Hazard Management process for management and resolution.
- Issue temporary safety permits for the project contingent upon progress and inspections.

7.3.3 Safety Certification & Security Committee

In addition to the Director of Streetcar Services' responsibilities above, the Safety Certification and Security Committee advises on, monitors, inspects, ensure the completion of and evaluates certification activities, as well as issues the final certificates. Activities can include:

- Identifying and defining the certifiable elements, items, and safety and security requirements;
- Developing the compliance checklists;
- Reviewing verification documentation for each certifiable element to ensure compliance with the identified safety and security requirements;
- Ensuring that safety and security requirements and safety certification checklists are developed, reviewed, and approved for the design and construction of capital projects;

- Resolving any safety and security issues;
- Ensuring that processes exist to facilitate interdepartmental coordination and concurrence with modifications to equipment, policies, plans, rules, and procedures;
- Tracking, mitigating and/or resolving hazards identified during the Safety and Security Certification Process;
- Determining the hazard severity, probability, and hazard risk index of identified hazards, as applicable.
- Establishing a hazard/threat log to track all identified safety hazards and security vulnerabilities to resolution.
- Providing a final *Safety and Security Certification Report* for each project.
- Issuance of Certificates of Compliance for each certifiable element and the system as a whole.

7.3.3.1 Role of the Executive Director

While the SCSC issues a final safety and security report, the Executive Director has been designated as the person responsible for signing off on the Final Verification Report.

7.3.4 Operational Readiness Review

The Executive Director, with the approval of the SCSC and the input of the Director of Safety, Security and Training will be responsible to verify the operational readiness of new equipment, system expansions, and design reviews on behalf of the Atlanta Streetcar. This process is verified through performing the safety certification activities described above under the direction of the SCSC. GDOT may conduct additional, external verification subject to its current procedures.

7.3.5 Documentation Responsibilities

7.3.5.1 Procurement Documents

The Director of Streetcar Services will review the procurement documents issued from the contractor's plant sites and facilities or other divisions or subsidiaries of the contractor prior to their release. Certification for safety and security is not commensurate with contractual acceptance, and further contractual acceptance likewise does not constitute achievement of safety and security certification.

7.3.5.2 Reporting Responsibilities

Reporting is a key element of the safety certification process. The Director of Streetcar Services gathers reports from key stakeholders throughout the project, and updates the status of the Certifiable Elements List and any identified hazards.

7.3.5.3 Periodic Reports

Periodic reports are prepared and issued by the Director of Streetcar Services. The frequency of the reports is dependent on certification activity levels, but will be quarterly at a minimum. The reports may include the following:

- Safety and Security Certification Program progress,
- Changes to Project Certifiable Items Lists, if any,
- Significant obstacles encountered in the certification effort,
- Safety and Security Certificates of Compliance completed during the reporting period,
- Safety and Security Certificates expected to be issued in the next reporting period, and
- Certification Program audit findings and recommendations for improvement.

The Director of Streetcar Services will also prepare project certification progress reports for the SCSC, GDOT and FTA, as required.

7.3.6 Process Overview

Safety and Security Certification is closely aligned with the *Atlanta Streetcar Hazard Management Plan*, ensuring that proper analysis, evaluation, and satisfactory resolution of any potential safety hazards or security vulnerabilities are addressed. Identified hazards are monitored throughout the lifecycle of the project and resolved or noted as part of the final certification documents prior to acceptance of the project for revenue service operation.
The Director of Streetcar Services completes the following tasks under the guidance and direction of the SCSC in the implementation of the safety certification program:

- Develops a certifiable items list,
- Identifies safety and security requirements for each certifiable element;
- Verifies related compliance requirements,
- Prepares Certificates of Compliance for each certifiable element, and
- Prepares Safety and Security Certificates.

Since project aspects vary, a project-specific Safety Certification Plan is required for every certifiable project.

7.3.7 Certificates Issued for Safety Compliance

Each critical certifiable system element receives a written safety and security certificate of conformance. When all required certifiable system elements are certified, a system safety certification statement is issued along with a *Safety Certification Verification Report*. These documents verify the readiness for revenue service for each operational phase of the system in regards to the safety and security requirements of the system.

The following safety certificates are developed as part of the Director of Streetcar Services' responsibilities:

- Design Criteria Compliance
- Specification and Operations Readiness Compliance
- Construction Compliance
- Training and Exercises Compliance
- Risk Resolution Compliance
- Rules & Procedures Compliance
- Test Inspection Compliance

7.3.8 Design Criteria Certification

Project requirements are taken from Design Criteria and Contract Documents for Capital Projects, the SSPP, and existing Streetcar Rules and Standard Operating Procedures. Further, all applicable Federal, State, and Local safety and security codes and regulations, standards, and industry practices must be identified and included in the design.

7.3.9 Development of Safety and Security Design Criteria

The Director of Streetcar Services is responsible for the managing design, construction / installation, testing and final acceptance process, including all specification and as-built documents. The Director of Streetcar Services performs the following activities:

- Project analysis
- Creates a safety certification plan, based on project-specific requirements
- Reviews the design and compliance documents for safety elements
- Develops the Certifiable Elements List
- Identifies hazards and performs risk assessments
- May issue temporary use permits

7.3.10 Prerevenue Service

With respect to pre-revenue service activities, the SCSC has a number of sub-committees with specific safety responsibilities. These include the Fire Life Safety and Security Committee (FLSCC) and the Startup and Commissioning Committee (SCC). The FLSCC has the same composition as the SCSC, and serves as a liaison between the ASC, the SCSC and the external emergency response agencies. The SCSC will review issues through the FLSCC conduit that are critical to fire and life safety and security, operating plans and procedures, results of after-action reviews following major emergency response incidents or exercises, and training programs for content appropriateness and effectiveness. The FLSSC reviews, analyzes, and directs activities related to the fire/life safety and security aspects of the project which include material selection, egress and access, lighting, signage, vehicles, communications, protective devices, fire detection and suppression. The FLSSC additionally identifies the emergency response needs (such as

training, drills, etc.) that are required to adequately respond to accidents/incidents that may occur during each phase of the project including operations and maintenance. The FLSSC focuses on systemic, high-level, fire/life safety and security issues, including local and state codes or requirements.

The SCC coordinates planning and process development efforts for the operational testing of the system and eventual startup of revenue service. The SCC will be multidisciplinary in scope and will be established during the latter stages of the Construction Phase. The SCC will coordinate the development of an integrated testing program. The SCC will plan for the effective and efficient testing of subsystems, and then the overall system, including ensuring that as testing progresses mitigations are taken to ensure the safety of the tests. The maturity of the various subsystems will be taken into account prior to full development and assurance that the systems are proven safe.

7.3.11 Temporary Use Permits

If certification of the required elements for the test is not complete, under the direction of the SCSC the Director of Streetcar Services may issue a Temporary Use Permit. The permit is forwarded to each engineer responsible for each element. Examples of items placed under a Temporary Use Permit include light rail vehicles for dynamic testing, powered switches, track, and communication equipment. These permits expire upon completion of safety/security certification of the elements involved.

7.4 Certification Preparation and Recommendations

When an element is ready for certification, the SCSC, the Director of Streetcar Services and the Director of Safety, Security and Training will evaluate any evidence, documentation, or restrictions and recommendations received. Once approved, a Certificate of Conformance package is then prepared.

For each certifiable element, a final written certificate is issued and signed by the Chair of the SCSC prior to revenue service. Finally, the ASC Executive Director attests that a project element is in accordance with specified system safety and security requirements.

7.4.1 Failure to Comply

If the Director of Streetcar Services and/or the Director of Safety, Security and Training determine that these requirements have not been met, it is the ASC Executive Directors responsibility and authority to cease operation of the system until the issue is resolved.

7.4.2 Documentation of Records

The Project Safety and Security Certification file contains the following:

- Plan Updates and Corrections

- Certifiable Elements and Items Lists
- A summary sheet showing the certification status for the design, construction, testing, and pre-revenue phases of the project
- Original copies of the completed checklists for each certifiable element
- Supporting documentation that may not be contained within project files, including but not limited to:
  - Visual Inspection Reports
  - Copies of test reports for safety critical systems
  - Copies of integration test reports
  - Originals of the Temporary Use Notices
  - Originals of the Integration Test Permits
  - Originals of the Certificates of Compliance for each certifiable element
  - Originals of the System Safety and Security Certificates for the project

7.4.3 Final Hazard Report

The Director of Streetcar Services will review and approve applicable work, documents, and subsequent changes to determine the adequacy of controls invoked to minimize potential hazards and/or risks. Hazard documentation is critical to the success of the Safety and Security Certification Program.

7.4.4 Final Certification

The Director of Streetcar Services verifies and documents that the highest practical level of operational safety has been achieved for the project. The final safety certification package includes the following items:

- A Certificate of Safety Certification signed by the Director of Streetcar Services and the Director of Streetcar Safety, Security, and Training stating that all hazards identified in the Project's Hazard Analysis have been resolved or being tracked to closure. The certificate documentation will identify all Certifiable Elements and verify that all identified hazards have been mitigated or controlled to an acceptable level.
- Certification that all system, subsystem, and interface testing have been completed satisfactorily
- A final Open Items List identifying all items opened during the life cycle of the project and their current closure status.

7.4.5 Final Verification Report

A final *Safety Certification Verification Report* will be prepared by the Director of Streetcar Services and submitted to the Director of Streetcar Safety and Security for concurrence.

8 Managing Safety in System Modifications

8.1 Overview

This section describes the processes and procedures used for maintenance and construction activities that do not require formal safety certification, as defined in Section 7 of this document, but that do require safety inspections and sign-offs prior to placement into the system.

8.2 Identification of Hazards Associated with System Modifications

The Director of Safety, Security and Training will facilitate the identification, tracking and resolution of hazards as defined in the *Atlanta Streetcar Hazard Identification and Hazard Reporting SOP and the Hazard Management Plan.*

8.3 System Modification Review and Approval Process

System modifications not subject to the Safety Certification Process are reviewed for safety-related issues and approved through a standard process which verifies compliance with individual specifications. This is accomplished through coordinated reviews of contractual documentation and system safety design reviews.

The design verification process also includes technical oversight and direction; development, maintenance and enforcement of system design criteria; and management of design work by manufacturers, contractors, and design professionals.

8.3.1 Change Control Procedures/ Configuration Management Procedures SOP (ECPs)

The Director of Streetcar Services is responsible for ensuring adherence to configuration control and other appropriate management procedures required pursuant to the Change Control Procedures/ Configuration Management Procedures SOP (ECPs).

Other affected departments are included in this review process as appropriate.

8.3.2 Quality Assurance

The Director of Streetcar Services will ensure that quality-related goals and objectives are met and properly administered by confirming that products are designed, engineered, manufactured, installed, and tested in accordance with specified contractual, industry and governmental requirements. This is achieved through contract and operations monitoring, assessments, audits, evaluations, statistical analysis, cross-functional education, process establishment, testing and measures, and best practice implementation.

The Director of Streetcar Services will provide technical assistance to other departments to ensure that facility construction projects, assigned equipment/material procurement contracts, installation contracts, supplies, and other work performed on the transit system are tested and in full compliance with system criteria, contractual requirements, approved drawings, and related codes/standards.

9 Safety Data Acquisition

This section describes the processes used to collect and analyze safety data to support improvements in safety performance and monitor compliance with safety goals and objectives. Sources include daily logs, operator and supervisor reports, maintenance data, vehicle and personnel records, accident/incident reports, and risk management information. Also, as part of the Hazard Management Process, hazard data is used to determine trends and patterns in system operation and employee training.

9.1 Data Acquisition Process

The Director of Safety, Security and Training requests, receives, and analyzes a variety of information from reports and notifications from across the Atlanta Streetcar organization and front – line employees.

Employee injury statistics are also collected. Additionally, ASC staff maintain detailed records of inspections and other safety activities performed in the VMF and on the alignment. Weekly, monthly, and quarterly reports on these items are compiled and approved by the Director of Safety, Security and Training.

For comparative purposes, the Streetcar also uses data from external sources, including:

- National Transit Database
- National Safety Council
- Department of Labor
- National Fire Protection Association

9.1.1 Safety Data Distribution

Streetcar safety data is distributed to internal and external stakeholders. Incident reports (collision, injury, etc.) are distributed to the Director of Safety, Security and Training, the Executive Director and the Director of Streetcar Services, and the SCSC if requested. The Director of Safety, Security and Training reviews these and enters appropriate information into an electronic system developed for this purpose. If the Director of Safety, Security and Training has any findings of concern, they are reported to the SCSC, the Executive Director, the Director of Streetcar Services and the Manager of Streetcar Services to support implementation of a comprehensive safety program.

Additionally, reports meeting National Transit Database (NTD) criteria are submitted via the NTD online reporting system on a monthly basis per ASC SOPs, as required by the FTA.

9.2. Access to Data

9.2.1 Accident/Incident Data

As defined on the *Atlanta Streetcar Accident / Incident Investigation Plan and Procedure,* all Atlanta Streetcar personnel are required to document and report accident/incident information to their supervisor who will document the incident and distribute reports to the Director of Safety, Security and Training on a daily basis.

9.2.2 Hazard Data

Atlanta Streetcar has established a systematic approach recognizing and identifying hazards throughout the Streetcar system to recognize and identify real or potential hazards before they lead to accidents, injury or an interrupted chain of events that could lead an incident.

In order to implement preventative mitigation and safety measures to avoid injury or accident, the Director of Safety, Security and Training must continuously gather hazard data and information to build and maintain a comprehensive database which can be used to a performance baseline, objectives, and to assess trends based on activity and environmental conditions.

To prevent unauthorized or improper changes to the database, access will be controlled by the Director of Safety, Security and Training or designee.

10 Investigation Procedures

This section describes the Atlanta Streetcar's policies and procedures for responding to accidents and incidents that occur on its property and/or involve its assets.

10.1 Overview

The Streetcar's *Accident/Incident Investigation Plan* (A/I Plan) contains policies for reporting, investigating, and documenting all accidents, incidents, near misses, managing all resulting corrective actions; and preventing recurrences. It encompasses any event, series of events, or condition that results in death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment.

With respect to notifying relevant external agencies of accidents and incidents – such as GDOT, the Georgia Department of Labor, the FTA, and the NTSB – a corresponding Accident/Incident SOP has been developed that is fully compliant with all requirements set forth in 49 CFR 659, the *Program Standard*, and 49 CFR Part 840 – Rules Pertaining to Notification of Railroad Accidents.

10.2 Accident/Incident Reporting Criteria

The Director of Safety, Security and Training or designee shall notify GDOT within **two (2) hours** of any accident or incident involving a rail transit vehicle or any incident taking place on Streetcar-controlled property where one or more of the following occurs:

- A fatality at the scene, or where an individual is confirmed dead within **thirty (30) calendar days** as the result of a transit-related incident;
- Injuries requiring immediate medical attention away from the scene for two or more individuals;
- Property damage equal to or exceeding $25,000 to rail transit vehicles, non-rail transit vehicles, other Streetcar property or facilities, and non-Streetcar property;
- An evacuation for life-safety reasons;
- A collision at a grade crossing (street intersection);
- A main-line derailment;
- A collision with an individual on rail right-of-way; or collision between two rail transit vehicles or between one rail transit vehicle and a non-revenue vehicle.
- Any evacuation of passengers to the wayside (i.e., other than a complete and proper train berthing at a rail station).

10.2.1 Accident/Incident Investigation Criteria

Accidents and incidents requiring investigation include, but are not limited to:

- All GDOT- and NTSB-reportable accidents, including those defined above;
- All collisions involving Atlanta Streetcar vehicles, whether with other vehicles, equipment, people, obstacles, or facilities;
- Rail vehicle equipment derailments, split switches, and other similar events whether on the main line, in the yard, or in the shop;
- All thermal events involving Streetcar vehicles or facilities, including fires, explosions, fumes or smoke conditions;
- Any emergency evacuation of passengers or employees from Streetcar vehicles, stations, or other facilities;
- Employee casualties and occupational injuries, incurred on the job, involving Streetcar vehicles or property;
- Passenger, trespasser, or passer-by casualties involving Streetcar vehicles or property;
- Other unusual occurrences, incidents, malfunctions, etc., which may impact the safety of Streetcar property, systems, or equipment; i.e., floods, catastrophic equipment failures.

Accidents and incidents excluded from this procedure include assaults, robberies, or other crimes, which are investigated in accordance with City of Atlanta Police Department procedures.

10.3 Investigation Procedure

The A/I Plan documents the process used by the Atlanta Streetcar to investigate accidents and incidents. Primary responsibility to ensure appropriate investigations are conducted lies with the Director of Safety, Security, and Training. The primary investigation for most accidents will be performed under the direction of the Director of Safety, Security and Training, and will be conducted by the Operations and Maintenance Supervisors. If supervisors are unavailable, the Superintendent of Operations, or Superintendent of Maintenance may be called upon to perform

investigations. Reportable accidents and incidents will be investigated directly by the Director of Safety, Security and Training, or designee.

In all cases, the Director of Safety, Security and Training will decide what type of investigation will be conducted and by whom to ensure a full and complete accounting of the root causes and contributory factors of any accident or incident so that appropriate and effective corrective action may be implemented In the absence of the Director of Safety, Security and Training, the Manager of Streetcar Services will make the decision for accident/incident investigation.

The Executive Director, the Director of Safety, Security and Training and the Safety Certification and Security Committee may decide separately or together to request the assistance of a 3rd party contractor to support investigations. ASC will define the duties of that contractor upon retention of such contractor, and will provide duties to GDOT as requested by GDOT.

Prompt notification, thorough investigation, and comprehensive reporting are necessary to:

- Identify the factors which caused or contributed to the accident, incident or hazardous condition, while minimizing disruptions to service;
- Determine appropriate corrective action(s) to prevent the accident/incident from recurring and/or control the unacceptable hazardous condition;
- Comply with state and federal regulations governing required agency notification.

10.4 Internal Notification Procedure

Employees having direct knowledge of an accident or incident must notify their direct Supervisor. Notification procedures and contact information are detailed in the A/I Plan.

The Director of Safety, Security and Training will ensure the issuance of a written report as required by the A/I Plan. For Level II accidents, the Director of Safety, Security and Training will oversee the investigation and issue a report to the ASC Executive Director, the SCSC, the Chief Operating Officer and the Director of Streetcar Services.

10.5 External Notification Procedure

The Director of Safety, Security and Training or designee will provide initial notification to the cell phone of the GDOT/SSO point-of-contact within **two (2) hours** of a reportable event leaving a detailed message providing as much of the following information as possible:

- Name and job title of person reporting
- Name of the rail transit agency
- Event type (fatality, injuries, property damage, evacuation, derailment or other,)
- Location, date and time of event, and
- Initial assessment of the extent of fatalities or injuries

Within **six (6) hours** of a reportable event, or as soon thereafter as practicable, the Director of Safety, Security and Training will provide via fax to the GDOT/SSO point-of-contact confirmations or updated information of the event and more detail including the following:

- Name and job title of person reporting
- Name of rail transit agency
- Event type (fatality, injuries, property damage, evacuation, derailment or other)
- Location, date and time of event
- Fatalities
- Injuries
- Rail transit vehicle(s) involved (type, number)
- Other vehicles involved (describe)
- Preliminary estimate of property damage
- Whether the event is NTSB reportable and will NTSB investigate
- Rail transit agency primary person (i.e. Chief Investigator) conducting the investigation (name, title, cell, office and fax numbers, e-mail address)
- Description of event
- Implemented and/or planned corrective actions

The Director of Safety, Security and Training or designee will notify the FTA Office of Safety and Security of major accidents, and service disruptions in accordance with its requirements. Current requirements include telephone notification 202-366-2896 (during office hours) or 1-800-424-0201 National Response Center (after normal office hours)] followed by a FAX (202-366-7951) and/or e-mail notification.

The Director of Safety, Security and Training or designee will notify the NTSB (1-800-424-0201, National Response Center) at the earliest practical time following any one of the following accidents:

- No later than **two (2) hours** after an accident that results in:
  - A passenger or employee fatality or injury to two or more crew members or passengers requiring admission to a hospital
  - The evacuation of a passenger train
  - A fatality at a grade crossing
- No later than **four (4) hours** after an accident which does not involve any of the circumstances enumerate in bullet one above, but which results in:
  - Damage (based upon a preliminary gross estimate) of $150,000 or more for repairs, or the current replacement cost, to railroad and non-railroad property
  - Damage of $25,000 or more to a passenger train and railroad and non-railroad property.

10.6 Accident/Incident Reporting and Documentation

For each such accident/incident, the Director of Safety, Security and Training shall ensure the development of reports as defined in greater detail by the A/I SOP, which will then be sent to the Executive Director and the SCSC for review and approval.

10.7 Corrective Action Resulting from Accident Investigation

GDOT requires that Atlanta Streetcar develop a corrective action plan (CAP) with the intent of addressing hazards and deficiencies identified as a result of an internal investigation or investigation conducted by GDOT or NTSB. Atlanta Streetcar will notify GDOT that a CAP will be developed and the date when the CAP will be submitted to GDOT within **thirty (30) calendar days** after the need for the CAP has been identified. Depending on the complexity of the issue requiring corrective action, and at GDOT discretion, additional time may be granted to prepare the CAP.

The CAP will include a discussion of the initiated CAPs that will be implemented. The CAP will be submitted to GDOT for review and approval, and GDOT will notify of acceptance or rejection within **fifteen (15) calendar days** of receiving CAP. In the event that GDOT and the Atlanta Streetcar dispute the need, findings, or enforcement of a CAP, GDOT will allow Atlanta Streetcar **thirty (30) calendar days** to submit its case. GDOT SSO will then issue final direction to Atlanta Streetcar regarding the CAP.

The Director of Safety, Security and Training will manage the overall CAP process. When the need for a CAP has been identified, the Director of Safety, Security and Training will identify and assemble responsible parties for briefing and participation as necessary. The Director of Safety, Security and Training will monitor the status of each CAP, and inform the Executive Director and SCSC of issues or discrepancies requiring their involvement or additional support. The Director of Safety, Security and Training will provide support and assistance as necessary to the Operations and Maintenance Superintendents assigned to implement corrective actions to ensure proper implementation and closing out of the CAP.

10.8 Coordination with GDOT SSO

In its Program Standard, GDOT SSO has formally authorized the Atlanta Streetcar to investigate every reportable event on behalf of the state of Georgia. GDOT SSO's authorization for Atlanta Streetcar to investigate reportable hazards and incidents on its behalf is contingent upon GDOT SSO's review and approval of Atlanta Streetcar's Accident/Incident Investigation Plan and procedures. GDOT SSO nonetheless reserves the right to participate in any Atlanta Streetcar investigation of a reportable event and acknowledges that Atlanta Streetcar has the right to request GDOT SSO to participate in any such investigation.

If GDOT SSO intends to participate in the investigation, it will formally notify Atlanta Streetcar in writing via an email submitted to the Atlanta Streetcar safety point-of-contact. For all investigations conducted by Atlanta Streetcar on behalf of GDOT Atlanta Streetcar must use

investigation procedures that have been approved by GDOT. Subsequent updates and revisions to these procedures must be submitted to GDOT as they are completed and implemented by Atlanta Streetcar, or with the annual update of the SSPP.

In the event that authorization is conferred upon Atlanta Streetcar to conduct the investigation, GDOT may still participate in the investigation process. The terms of participation are specified in the Atlanta Streetcar's SSPP and Investigation Procedures. If the state decides to participate in the investigation, GDOT point-of-contact will notify Atlanta Streetcar's safety or security point-of-contact by telephone or email, and follow up with written notice.

GDOT requires a preliminary and a final report from Atlanta Streetcar for every investigation of a reportable event. In addition, for investigations that take more than 30 calendar days to complete, GDOT requires monthly status reports. All reports may be transmitted to GDOT by email, fax, or regular mail.

Preliminary Report
Within forty-eight (48) hours of a reportable event, Atlanta Streetcar must report initial findings of fact; its investigation plans; NTSB involvement in the investigation; and whether an ad hoc investigation committee will be convened.

Status Report
Until the investigation is completed, Atlanta Streetcar will prepare and submit monthly status investigation reports. The status investigation reports at a minimum will include:

- minutes of any meeting held by a rail transit agency's ad hoc reportable event investigation committee or contractor;
- disclosure of any immediate actions the rail transit agency has taken, planned or completed;
- principal issues or items currently being evaluated; and
- overall progress and status of the investigation.

At its discretion, Atlanta Streetcar may submit a summary report of all ongoing investigation status reports to GDOT in lieu of several individual status reports.

At any time during an investigation, Atlanta Streetcar will be prepared to provide a full briefing on the known circumstances of the event, status of the Atlanta Streetcar or NTSB investigation, and investigation activities.

Final Report
Each Atlanta Streetcar investigation conducted on behalf of GDOT must be documented in a final report that includes a description of investigation activities, findings, identified causal factors, and a corrective action plan (if required). As specified in its Investigation Procedures and as recommended by GDOT, Atlanta Streetcar separates its final investigation report in two parts:

1) description of investigation activities, investigation findings, and determination of the most probable cause and additional contributing causes; and

2) recommendations to prevent recurrence and a corrective action plan, if required.

Atlanta Streetcar may utilize investigations from its safety department or from front line departments such as operations and maintenance; however, identification of cause must be made and report content requirements listed in this Section must be met.

Upon receipt of Atlanta Streetcar's Accident / Incident Investigation Final Report, GDOT SSO will review it in accordance with its Checklist for Reviewing Rail Transit Agency Accident / Incident Investigation Final Reports. In the event that GDOT SSO does not agree with the description of the investigation, the identification of primary and contributing causes, or the findings of the Final Report, GDOT SSO will communicate in writing to the Atlanta Streetcar's safety point-of-contact the area(s) of disagreement or concern.

GDOT SSO will work with Atlanta Streetcar to address these issues in its Final Report. In the event that an agreement cannot be reached on these issues, GDOT SSO will issue its own investigation report, which may be no more than Atlanta Streetcar's Final Report and GDOT SSO's dissent. GDOT SSO will review the Final Report within 30 calendar days of receipt. If the review will take longer than 30 calendar days, GDOT will notify Atlanta Streetcar in writing on or before day 30 and provide a revised date for the completion of the review checklist.

To reduce the potential for conflict, GDOT SSO has encouraged Atlanta Streetcar to submit a draft version of the Final Report to the GDOT SSO point-of-contact so that agreement may be obtained on the most probable cause, additional contributing causes, corrective action plan (if required), and an implementation schedule before the Final Report is finalized and formally issued by Atlanta Streetcar.

Reports and records of accident investigations submitted to GDOT SSO by Atlanta Streetcar, as well as related reports and records produced by both GDOT SSO and Atlanta Streetcar, will be treated as confidential information, and will not be released without concurrence by both GDOT SSO and Atlanta Streetcar. With the exception of Atlanta Streetcar's Accident / Incident Investigation Final Report, all investigation materials provided to the GDOT SSO for review purposes will be considered Atlanta Streetcar property, and will returned to the safety or security point of contact. GDOT SSO will not maintain copies of this material.

Accident/Incident Tracking Log

The Accident / Incident Investigation Program Plan will include the Accident / Incident Tracking Log used by Atlanta Streetcar once the project initiates revenue service. GDOT SSO has required Atlanta Streetcar to establish an Accident / Incident Tracking Log which reflects the consolidation of information in the Investigation Procedures. The Accident / Incident Tracking Log must contain all hazards identified through the various methods applied by Atlanta Streetcar. The Accident / Incident Tracking Log may be organized by the accident number assigned by Atlanta Streetcar, or by type of accident, the source from which it was identified, or the element of Atlanta Streetcar's operation affected by the accident (i.e., facilities, vehicles, track and signal, communications, personnel training and procedures, etc.). The Accident / Incident Tracking Log

is maintained in the Accident/Incident Investigation Program Plan.

In accordance with Section 6.7 of the Program Standard, the Accident/Incident Tracking log will be submitted no less than quarterly to the GDOT SSO point-of-contact in electronic copy via e-mail or in hard copy via mail or fax. The submittal requirements for the Accident Tracking Log are as follows:

Element	Description
ID Number	Refers to the number assigned to the incident
Date of Incident	Refers to the date the incident occurred
Time of Incident	Refers to the time the incident occurred
Time of SSO Notification	Refers to the time the GDOT was notified of the incident
Type of Incident	Refers to the category of reportable incident: 1. Collision (Non-Rail Grade Crossing) 2. Rail Grade Crossing Collision 3. Derailments 4. Fires 5. Service Interruption 6. Other
Details of Collision	If reportable incident is a collision or rail grade crossing collision, refers to details of what the transit vehicle collided with: 1. Person 2. Automobile (Road Vehicle) 3. Object 4. Transit Vehicle
Location of Incident	Refers to location where incident occurred: 1. Trackway 2. Revenue Facility 3. Non-Revenue Facility 4. Yard 5. Other
Fatalities	Refers to persons involved in incidents that are categorized as follows: 1. Passenger
	2. Patron 3. Public 4. Worker
Injuries	Refers to persons involved in incidents that are categorized as follows: 1. Passenger 2. Patron 3. Public 4. Worker
Estimated Property Damage	Refers to whether or not the incident resulted in property damage greater than or equal to $25,000 in estimated damages.
Name of Investigator	Refers to name of individual responsible for the investigation.
Description of Incident	Refers to a brief narrative summary of the incident – what it is; where it is located; what elements it is comprised of element of system operation affected by the incident (i.e., facilities, vehicles, track and signal, personnel training and procedures, etc.).

Probable Cause	Refers to requirements for each final investigation report to identify causal and contributing factors, including following 11 categories: 1. Equipment Failure 2. Poor Maintenance 3. Operating Rule Violation / Human Factor 4. Slips and Falls 5. Imprudent Customer Actions 6. Medically Related 7. Action of Motorist 8. Pedestrian Actions 9. Trespasser 10. Suicide 11. Other
Corrective Action Plan	Refers to whether or not a corrective action plan was developed to address the findings of the final investigation report.
Status	Refers to the status of the investigation. Status may be designed as pending, open, in progress, or closed.

11 Emergency Response Planning/Coordination/Training

Together, this SSPP and applicable parts of the Streetcar Security & Emergency Preparedness Plan (SEPP) comprise the Atlanta Streetcar's Emergency Response Plans.

The SEPP contains the Streetcar's policies and procedures with respect to emergency response planning, coordination, and training, as well as security sensitive information (SSI) related to incident command and other specific duties and function to be carried out during emergencies. For the Atlanta Streetcar, the SEPP constitutes and stands as the Fire Life Safety Plan. These policies and procedures are revised and distributed in accordance with the provisions of the Atlanta Streetcar's Configuration Management Standard Operating Procedure (SOP).

In coordination with the plans and resources of local, state, and federal mutual aid emergency response agencies, the SEPP is designed to prepare the Streetcar to respond to and recover from natural or man-made emergencies which occur on Streetcar property or in any way impact the use of Streetcar equipment or facilities.

As the SEPP contains SSI, access to the document is controlled by the Director of Safety, Security and Training in accordance with the standards of 49 CFR Part 1520.

11.1 Responsibilities for Emergency Preparedness

All Streetcar departments currently employ emergency procedures and/or plans for natural, man-made and terrorist incidents defined as an all-hazards approach in the SEPP. Each department revises, updates and distributes these procedures to its personnel, and ensures their understanding of any included tasks or responsibilities.

The Atlanta Streetcar utilizes the National Incident Management System and its corresponding Incident Command System (ICS) component as an integral tool for the command, control, and

coordination of emergency responses. The ICS structure encapsulates best practices and a system-wide approach to incident management applicable to both Streetcar and local emergency responders. For every incident, the Atlanta Police shall have primary responsibility upon arrival as Incident Commander (IC) unless Unified Command is established to include the Streetcar Safety department and other entities. The IC directs and manages the incident. Command can be transferred among emergency responders as the incident unfolds and priorities change. Unified Command is commonly used to manage incidents on Streetcar properties to verify all responsible agencies are coordinating response efforts. Details on specific job responsibilities under the Streetcar's ICS can be found in the SEPP.

Atlanta Streetcar Supervisor Responsibilities in an Emergency Response

In an emergency, the Streetcar Supervisors are responsible for responding to, evaluating, monitoring, and assessing hazardous and unsafe situations and developing measures to assure personal safety.

Atlanta Streetcar Supervisor Responsibilities shall include, but are not limited to:

- Serving as Atlanta Streetcar Management Representative to the Incident Commander as necessary.
- Monitoring safety-related incident practices and procedures.
- Maintaining awareness of active and developing situations.
- Assisting with evacuations as directed.
- Ensuring first responder awareness of safety issues or concerns
- Performing the required investigation and resolution processes and documentation as defined in the A/I SOP.

11.2 Coordinated Schedule

The Atlanta Streetcar System Director of Safety, Security and Training or his/her designee, will develop a Training Schedule to ensure the safe operation of the Atlanta Streetcar and safe response of personnel and organizations needed to stabilize an incident involving the streetcar during an exercise or a drill.

The current drill and exercise schedule is provided below. In the event of a change or on request, the Atlanta Streetcar will provide an updated version to GDOT SSO.

Type	Year Conducted	Description of Exercise
TTX	June 2014	Operation Ride- The exercise focused on the responses of the public safety partners to a specific, multi-faceted scenario requiring significant coordination across their areas of expertise.
Full-scale drill	November 2014	Operation Response & Recovery-The exercise took local public safety, City of Atlanta, and Atlanta Streetcar personnel through

		an active shooter scenario and the ultimate return to normal operations.
TTX	June 2015	TBD
Full-scale drill	November 2015	TBD
TTX	June 2016	TBD
Full-scale drill	November 2016	TBD

11.3 Emergency Drills and Exercises

11.3.1 Emergency Simulation Testing

The City of Atlanta, which provides fire and emergency protection to the Streetcar, participates in an annual rail emergency simulation. Other emergency preparedness and response exercises occur throughout the year for the purpose of reviewing and testing compliance with current emergency response plans.

Emergency exercises and evaluations for the Atlanta Streetcar shall fall under Homeland Security Exercise and Evaluation Program (HSEEP) standards and must be NIMS compliant.

The Homeland Security Exercise and Evaluation Program (HSEEP) doctrine consists of fundamental principles that frame a common approach to exercises. Applying these principles to both the management of an exercise program and the execution of individual exercises is critical to the effective examination of capabilities.

1. Guided by elected and appointed officials
2. Capability-based, objective driven
3. Progressive planning approach
4. Whole community integration
5. Informed by risk
6. Common methodology

The HSEEP Exercise Cycle follows a continuous model as illustrated below:

The Atlanta Streetcar System will conduct a Table-top exercise and Full-scale drill annually. The following schedule identified the TTX and Full-scale training that was completed in 2014. The Atlanta Streetcar System Director of Safety, Security and Training will ensure that the training is conducted yearly will all relevant emergency responders and stakeholders.

11.4 Emergency Procedures

In addition to the responsibilities set forth in this SSPP, the Director of Safety, Security and Training is responsible for coordinating and overseeing the deployment and implementation of precautionary and response-based procedures set forth in other emergency management plans. In this role, they work with other Streetcar departments and external safety and security agencies to provide appropriate support in the event of an emergency. Examples of these plans, along with a brief description of The Director of Safety, Security and Training's role, are set forth below:

11.5 Familiarization/Emergency Training

In addition to training directly related to drills and exercises, which is planned and coordinated by the APD, the Director of Safety, Security and Training ensures the provision of on-going familiarization and emergency preparedness training to other internal departments and ensures public awareness of important homeland security messages (i.e. Transit Watch). These training programs are fully compliant with Homeland Security Exercise and Evaluation Program (HSEEP) standards to meet certain FTA and Transportation Security Administration (TSA) requirements, and are further described in the SEPP.

The Director of Safety, Security and Training also works closely with APD to coordinate as-needed training to outside first responder partners. More information on this program can be found in the SEPP.

Other departments have also developed emergency procedures for natural and man-made disasters.

11.6 Safety Training for Emergency Management

The Director of Safety, Security and Training is responsible for ensuring employees are trained in certain aspects of fire/life safety and emergency response. This training includes:

- Fire and evacuation drills required by City of Atlanta, State of Georgia, or FTA regulations;
- Spill drills for environmental awareness and incident management;
- Accident/Incident Investigations;
- Industrial safety issues, including Respiratory Fit testing and training, as well as asbestos and hazardous materials awareness.

11.7 Affiliations

The Director of Safety, Security and Training, through cooperation with the Atlanta Police Department and Atlanta Fire Rescue Department, participates in meetings with:

- Emergency Management Area Group (EMAG) Area 7;
- Urban Area Security Initiative (UASI);
- Joint Terrorism Task Force (JTTF);
- All Hazards Council for Emergency Management;
- Regional Transit Security Work Group (RTSWG);
- DeKalb and Atlanta Local Emergency Planning Committee (LEPC);
- Atlanta-Fulton County Emergency Management Agency (AFCEMA); and
- Georgia Emergency Management Agency (GEMA)/Office of Homeland Security.

11.8 Emergency Response Sensitive Security Information (SSI)

To carry out its oversight and compliance activities, GDOT may access Emergency Response-related SSI on-location in the office of the Director of Safety, Security and Training.

12 Internal Safety Audit Process

12.1 Overview

The Director of Safety, Security and Training will utilize Internal Safety and Security Audits (ISSAs) to monitor and evaluate the effectiveness of the SSPP and SEPP. A comprehensive program of ISSAs compels effective compliance with statutory and regulatory requirements set forth by GDOT and the FTA, serves as a primary source of hazard identification, and presents opportunities for management to institute system safety improvements.

The internal safety and security audit process is governed by the following documents:

- The Atlanta Streetcar SSPP and SEPP;
- Atlanta Streetcar Internal Audit Program Plan
- GDOT's *Program Standard*;

- 49 CFR Part 659;

12.2 Scope of Activities

Under the direction of the Executive Director, and in coordination with the SCSC, the Director of Safety, Security and Training will complete internal audits per the audit schedule as found in the Atlanta Streetcar Internal Audit Program Plan, unless the functions/departments fall under the DSST's purview. In that case, the ED or his/her designee (an independent department, MARTA, or a contractor) will audit that department. The SCSC will make determinations as to the suitability of the Executive Director's designee.

The audit process is governed by a standard operating procedure which is compliant with the *Program Standard* and all of its requirements, as well as 49 CFR Part 659.

Internal Safety Audits:

- Policy Statement and Executive Approval
- Purpose, Goals and Objectives
- Management Structure
- Plan Review and Update
- System Safety Tasks and SSPP Implementation
- Hazard Management Process
- System Modifications
- Safety Certification
- Safety Data
- Accidents/Incidents
- Emergency Response
- Rules Compliance/Procedures Review
- Internal Audit Process
- Facilities and Equipment Inspections
- Maintenance Program Audits/Inspection
- Training and Certification
- Configuration Management
- Compliance with Local, State and Federal Safety Requirements
- Hazardous Materials
- Drug and Alcohol Abuse Program
- Procurement

12.3 Audit Process

Internal audits will be planned and scheduled, at a minimum, **thirty (30) days** in advance. The exceptions will be ad hoc audits that are not part of the scheduled regimen. The Director of Safety, Security and Training will likewise notify GDOT in writing **thirty (30) days** in advance

of all audits that are required by the *Program Standard*. The advance notice will indicate the audit's start date, areas, functional units, departments, or offices. The required elements to be audited will be denoted in a checklist provided with the thirty-day advance notification.

12.3.1 Integrity of Audit Process

The Director of Safety, Security and Training will seek the support of Streetcar managers to conduct the internal safety audit process, Auditors conducting an internal audit must be independent, and cannot conduct a review in the direct or functional area to which he or she is assigned, or in his or her manager's area of responsibility.

Any manager may directly participate in an audit or designate a facilitator and escort from the department being audited to act on his or her behalf. The highest-ranking employee of the audited department shall be at the exit meeting to be briefed, to review the results of the preliminary findings (if any), and to receive a preliminary verbal report.

12.3.2 Internal Audit Cycle/Schedule

In addition to the SSPP, the current Atlanta Streetcar Internal Audit Cycle is presented in Attachment A of the IAPP, and contains all audits scheduled for the period of 2015-2017 as follows:

Element	Year	Quarter
1. Policy Statement and Executive Approval	2017	2nd
2. Purpose, Goals and Objectives	2016	2nd
3. Management Structure	2016	1st
4. Plan Review and Update	2017	1st
5. System Safety Tasks and SSPP Implementation	2016	2nd
6. Hazard Management Process	2015	2nd
7. System Modifications	2015	4th
8. Safety Certification	2016	1st

Element	Year	Quarter
9. Safety Data	2016	4th
10. Accidents/Incidents	2015	3rd
11. Emergency Management	2017	2nd
12. Internal Safety and Security Audits	2017	1st
13. Rules Compliance/Procedures Review	2016	1st
14. Facilities and Equipment Inspections	2016	4th
15. Maintenance Program Audits/Inspection	2015	4th
16. Certification and Training	2015	3rd
17. Configuration Management	2017	3rd
18. Compliance with Local, State and Federal Safety Requirements	2016	2nd
19. Hazardous Materials	2016	2nd
20. Drug and Alcohol Abuse Program	2016	3rd
21. Procurement	2016	3rd
22. Transit Asset Management	2017	2nd

Element	Year	Quarter
23. Policies, goals, and objectives for the security program endorsed by the agency's chief executive	2017	4th
24. Process for managing threats and vulnerabilities during operations, and for major projects, extensions, new vehicles and equipment, including integration with the safety certification process	2017	4th
25. Controls in place that address the personal security of passengers and employees	2017	4th
26. Process for conducting internal security reviews to evaluate compliance and measure the effectiveness of the system security plan	2017	4th
27. Process for making its system security plan and accompanying procedures available to the oversight agency for review and approval.	2017	4th

12.3.3 Internal Audit Checklists and Procedures

It is incumbent on all Atlanta Streetcar Managers formally document all required plans, programs, processes, protocols, methodologies and procedures of their organizational responsibilities in order that the documentation can be reviewed for this critical requirement of the internal safety and security audit process and for compliance with the SSPP and SEPP.

A checklist will be developed to ensure Streetcar Department Managers know their responsibilities to the SSPP and SEPP and if all audited elements are performing as intended. Checklists will be developed with sufficient criteria, for each audit, to verify compliance to the requirements of the SSPP and all relevant internal Streetcar plans, policies and procedures.

The Director of Safety, Security and Training will submit the checklist to GDOT for review **thirty (30) days** prior to the start of each audit. The pre-audit checklist is preliminary, and subject to modification as the audit evolves. In addition to the Streetcar approved SSPP and SEPP, the auditor may use internal departmental Standard Operating Procedures and other pertinent process documents as a basis for preparing a checklist before beginning the on-site audit.

Some typical examples of these procedures and other pertinent documents are listed below:

- System operation and maintenance rulebooks, bulletins, notices and procedures
- Maintenance manuals and procedures for vehicles, track and signals, preventative maintenance inspection records, employee training records, environmental compliance procedures, and any other documents found to have significant importance in regard to system safety,
- Previous internal and external audit reports,
- Corrective action plans for accidents and unacceptable hazardous conditions reported to GDOT and,
- NTSB investigation reports and other agency peer review reports.

Utilizing the above listed materials, the auditor shall prepare an audit checklist. The checklist should site the sources that compel compliance to the checklist question. The applicable reference documents that establish the acceptance criteria should be sited in the checklist, when possible.

Checklist audit questions have the following evaluation responses:

1 – Meets Plan Requirement
2 – Meets Plan with Comments
3 – Needs Improvement/Finding
4 – Unable to Audit
5 – Not Applicable (N/A)

12.3.4 Audit Reporting

The Director of Safety, Security and Training and the supporting management auditor will send a final draft report to the responsible department manager and discuss suggested changes. After processing changes, the auditor will issue a final report to the Director of Safety, Security and Training and SCSC for final review and approval. *All final reports will contain an executive*

summary which summarizes primary observations, management responses, the auditor's conclusion and recommendation for corrective action.

Once the final report has been reviewed and approved, it will be provided to the Chief Operating Officer, department manager and other management staff as appropriate.

The Director of Safety, Security and Training will create and manage an Internal Safety and Security Audit Findings Tracking Log to track to all findings, recommendations, and corrective actions developed as a result of the internal safety and security audit process. Should the Director of Safety, Security and Training require a corrective action plan, the Director will follow the guidelines in the *Atlanta Streetcar Corrective Action Plan Program.*

Corrective action plans will be developed when findings of non-compliance or partial compliance from internal safety audit final reports. A description of each CAP will identify:

- Identified hazard or deficiency
- Planned activities or actions to resolve deficiency or hazard
- The department and personnel responsible for implementing corrective action
- Schedule of completion for implementation.

In the event of any dispute arising from the internal audit process, such as whether or not a CAP is required, whether its proposed content is sufficient to address the underlying issue, or whether the CAP has been satisfactorily completed, the disputing party shall present its respective arguments in writing to the SCSC within ten (10) working days. The SCSC may request further presentation of supporting materials or argument, including from those who conducted the audit, as it sees fit. In either case, the SCSC will render a binding decision on the dispute within ten (10) working days after receiving the last materials submitted at its request.

While conducting its review, GDOT staff may request additional information, clarifications or revisions from the Director of Safety, Security and Training. A meeting or teleconference may also be conducted to address any issues identified by GDOT during its review of the annual report. Any additional requirements will be conveyed to the Director of Safety, Security and Training by GDOT point-of-contact.

Audit Findings Log

The Director of Safety, Security and Training will prepare an Internal Safety Audit Findings Log to track all findings and recommendations developed as a result of the internal safety audit process. This log will detail areas noted for improvement, as well as those areas where additional follow up is required. The Internal Audit Tracking Log will reflect the consolidation of information in the internal audit process. The Internal Audit Findings Tracking Log will contain all audits conducted by Atlanta Streetcar for each calendar year. The Audit Findings Tracking Log will consist of:

1. Audit Identification Number

2. Audit Date
3. SSPP Element
4. Description of Audit Finding
5. Description of Corrective Action Plan
6. Corrective Action Plan Status
7. Department and Manager responsible for CAP Implementation
8. Estimated CAP Completion
9. Current Status

The Internal Safety Audit Findings Tracking Log must be submitted by the Director of Safety, Security and Training no less than **quarterly** to GDOT's point of contact in electronic copy via email or in hard copy via mail or fax. GDOT will review the internal Safety Audit Findings Tracking Log and forward any questions or request for information to the Director of Safety, Security and Training. The tracking log can be found in the *Atlanta Streetcar Internal Audit Program Plan.*

12.3.5 Annual Audit Report

GDOT Safety and Security Audit Annual Reports

By **February 1** of each year, GDOT requires the Director of Safety, Security and Training to submit an annual report to the GDOT point-of-contact documenting the internal audits conducted during the previous year. This report may be submitted in electronic copy via email or in hard copy via mail or fax. This annual report must include:

a. a listing of the internal safety and security audits conducted for that year;
b. a discussion of where Streetcar Safety and Security is in meeting its three-year internal audit schedule, including the identification of any obstacles in meeting the schedule and any proposed mitigation measures;
c. an updated schedule for next year's audits;
d. the status of all findings, recommendations and corrective actions resulting from the audits conducted that year;
e. any challenges or issues experienced by the Director of Safety, Security and Training function in obtaining action from and/or compliance; and
f. findings, recommendations and corrective actions during that year.

In addition to the annual report, also by **February 1**, GDOT requires that the Director of Safety, Security and Training submit a formal letter of certification, signed by the ASC Executive Director stating that, based on the evaluation performed during the internal safety and security audit process during the previous year, the Atlanta Streetcar is in compliance with its System Safety Program Plan

If the Director of Safety, Security and Training determines that findings from its internal safety and security audits indicate that Atlanta Streetcar is not in compliance with its SSPP, the ASC Executive Director must then identify the activities that the Atlanta Streetcar will take to achieve compliance using the procedures specified in the *Atlanta Streetcar Corrective Action Plan Program.*

Arrangements will be made with GDOT for on-site review of any security-sensitive materials. GDOT will review and approve – or provide comments to secure approval – within 30 days, or by March 1.

13 Rules Compliance/Procedures Review

The Atlanta Streetcar's policies, procedures, protocols, processes, standards, plans, and guidelines are fully documented, enforced by the Director of Streetcar Services, the Deputy Director of Streetcar Services, and the Manager of Streetcar Services and available to all employees. As documents are updated, a new revision section or other approved document control methodology is added to define its particular revision cycle. All departments are required to review their posted procedures and update as needed to comply with FTA configuration management and document control standards.

Safety-critical rules and procedures include, but are not limited to:

- SSPP
  - HMP
  - IAPP
  - CAPP
  - AIP
- SEPP
- Rulebooks
- Manuals
- Operations and Maintenance SOPs
- Drug and Alcohol Program Plan
- Procurement
- Support Function Plans and Procedures including those associated with the Department of Public Works' Atlanta Streetcar-related tasks

As appropriate, Operations and Maintenance Superintendents develop documentation and provide substantive changes as required to all such documents with input from the Executive Director, the Director of Safety, Security and Training, and other appropriate stakeholders as warranted by the underlying content (such as outside subject matter experts or vendors). In compliance with the Atlanta Streetcar's Configuration Management SOP, the SCSC provides final review and approval.

13.1 Process for Ensuring Rules Compliance

Responsibilities

- ASC Employees and Contractors have a duty to follow established Atlanta Streetcar rules, policies, plans and procedures to ensure their safety. ASC Managers and Supervisors have a duty to keep their employees safe by following established Atlanta Streetcar policies, plans and procedures and shall ensure compliance by employees at all times.

- General Orders may be issued on an as-needed basis to facilitate the revision process. Consisting of temporary rules or instructions designed to bridge the gap between a needed revision and its formal approval and issuance, General Orders must be approved by the Director of Safety, Security and Training to ensure compliance with the SSPP and all other applicable safety requirements.

- Operations employees are tested on their knowledge of the operating or maintenance rules during initial training and refresher training.

- Maintenance Employees and Contractor Managers will have daily discussion of rules and procedures during "Tool Box" meetings. Applicable rules and procedures are also discussed when work is assigned.

- Streetcar Supervisors and Superintendents will ensure compliance through:

    - Conducting Compliance Checks of operators and maintainers to identify the activities and associated rules to be monitored for compliance

    - Ensuring sufficient frequency of compliance monitoring, with increased frequency for rule violations and dangerous activities;

    - Documenting the conduct of the compliance checks; making observations of employees performing their duties;

    - Identifying and evaluating non-compliances that pose greatest risk of injury, service disruption or customer dissatisfaction.

    - Monitoring activities during the same time work is conducted, to include nights, weekends and holidays (locations and times should be varied); and

    - Conducting evaluations safely, without putting evaluators, employees, contractors, customers, or equipment at risk.

13.2 Compliance Techniques: New Employees and Front-Line Personnel

All new employees must participate in right-of-way safety training as part of the New Employee Orientation Program. Employees who fail either the examination or practical are reassigned to

duties that do not require work on the right-of-way, until the employee attains a passing score on the examination and/or practical, respectively.

ASC Supervisors are required to ensure that new employees and front-line personnel perform their assigned duties in compliance with procedures and instructions. As a key part of this process, each Supervisor is required to complete a minimum of two (2) ride checks and/or on-the-job observations per month. Disciplinary procedures consistent with union contracts are used to enforce compliance with established rules and procedures.

13.3 Compliance Techniques: Supervisory Personnel

ASC Supervisors will conduct a minimum of two (2) performance-based operational ride checks of Operators each month. All acquired data can be verified for hazard trends and allows the Director of Safety, Security and Training to review data for purposes of hazard identification. Identified hazards are then entered into the Hazard Management Process.

The ASC Maintenance Superintendent and Contract Managers will evaluate vehicle maintenance and system infrastructure to ensure maintenance employees are following established safety rules for proper tool and equipment utilization. They will review maintenance of way and vehicle maintenance processes to ensure work is conducted as according to manufacture recommendations and industry based occupational and industry standards. They will review work records to ensure employees are qualified to do the work they have been assigned.

ASC Superintendents will also be responsible for ensuring that Supervisors are carrying out their assigned rule compliance checks and completing all required documentation. Superintendents will review supervisor compliance monthly.

13.4 Compliance Techniques - Director of Safety, Security and Training

The Director of Safety, Security and Training will institute and oversee an audit-level rules compliance program to evaluate operations and maintenance compliance with established standards and procedures.

13.5 Documentation of Rule Compliance

The Manager of Streetcar Services and the Superintendents of Operations and Maintenance will maintain rules and procedures compliance check records. Records shall be kept both on observations and on action taken to correct observed deficiencies.

The Director of Streetcar Services will establish a tracking system (i.e., forms, electronic applications) for Supervisors and Contract Managers to document and control compliance checks and corrective action activity.

The Director of Safety, Security and Training will review the tracking system, establish any needed corrective action and forward appropriate information to responsible departments to

support the implementation of corrective action to mitigate discrepancies and ensure future compliance. The Director of Safety, Security and Training will track corrective actions to completion.

The tracking system shall provide status of the activity (e.g., open, closed, in-progress). Observers shall be trained in the method of collection and proper documentation of the observation. Hazards identified during these rule compliance inspections will be entered into the Hazard Management Process by the Supervisor who performed the inspection.

14 Facilities and Equipment Inspections

This section provides information about Facilities and Equipment Inspections. The Director of Streetcar Services, Manager of Streetcar Services, the Maintenance Superintendent and Contractor Maintenance Managers are responsible for the Streetcar facility and equipment inspections. This section includes descriptions of how safety-related equipment and facilities are regularly maintained, inspected and tested.

14.1 Facilities and Equipment Subject to Inspection

Facilities and Equipment subject to inspection include, but are not limited to:

- The Vehicle Maintenance Facility (VMF), inclusive of tools and related equipment as described in the Streetcar O&M Plan;
- Operations Facilities, including stations; and
- Other Operating, Support and Administrative facilities, including the VMF

14.1.1 Governing Standards and Regulations

Inspection requirements are based on standards and regulations promulgated by the following entities or included in the following documents, as applicable to the Atlanta Streetcar operation:

- GDOT
- National Electrical Code
- Underwriters Laboratory (UL)
- National Fire Protection Association (NFPA)
- American National Standards Institute (ANSI)
- American Conference of Governmental Industrial Hygienists (ACGIH)
- APTA
- Specific equipment manufacturers' operating standards

These standards and regulations are incorporated into written checklists which are used to guide the inspection process.

14.2 Regular Inspection and Testing

Atlanta Streetcar facilities depend on preventive maintenance (PM) as the backbone of an effective maintenance management and hazard recognition system. PM reduces the likelihood of failure and provides for safe and efficient operations. All operations and maintenance areas regularly perform inspection and testing of their safety-related tools and equipment as described in the Atlanta Streetcar's Maintenance Plan.

14.2.1 Industrial Safety Inspections

The Director of Safety, Security and Training and/or their properly qualified designee conducts a variety of industrial safety inspections designed to verify that industrial safety procedures and best practices are being followed properly and consistently at maintenance facilities. These include both regular audits and visual inspections during shop and facilities use, pre-inspection of tools and equipment before each use, and regularly-scheduled inspections and preventive maintenance as outlined in the Streetcar Maintenance Plan.

14.2.2 Fire Safety Inspections

All fire safety-related equipment requires regular inspection, maintenance, and testing in accordance with applicable state and local code requirements. Some equipment, such as certain fire detection/suppression equipment, boilers, and certain paint equipment, requires municipal permitting. In addition to visual and functional inspections, fire system equipment inspections include documentation review and monitoring, to verify that all fire safety systems – or systems which could affect fire safety – are properly inspected and permitted. Atlanta Streetcar, City, and contractor insurers may also require insurance carrier or third party fire safety inspections. As these inspections are completed, they will be integrated into the Streetcar's ongoing facilities maintenance and inspection processes. Further details may be found in the Atlanta Streetcar Fire Safety Plan.

14.2.3 Construction Safety Inspections

The Director of Safety, Security and Training and/or their properly qualified designee conduct construction safety inspections to ensure contractor, passengers and employee safety at various construction projects throughout the system through; project design review, participation by safety personnel in project progress and safety meetings, job site inspections, and review and approval of contractor submittals.

14.3 Coordination with Hazard Management Process

The results of facilities and equipment inspections and audits are analyzed after each audit or inspection to determine if any significant hazards or trends in hazards have developed since the last audit or inspection. The Director of Safety, Security and Training (as well as other Atlanta Streetcar and Contractor managers and supervisors with direct safety responsibility) receive these analyses and reports, and examines them for any significant results or emergent hazards. If negative trends arise, it may decide that tracking and remediation through the official hazard

management process are merited, and the hazard handled according to the Streetcar's *Hazard Management* section of this SSPP.

15 Maintenance Audits and Inspections

This section describes the roles, responsibilities, and tasks associated with Atlanta Streetcar system maintenance program audits and inspections. The Manager of Streetcar Services has overall day-to-day oversight for the Atlanta Streetcar's maintenance function, including both in-house and contractor-provided services. As designated by the SCSC, the Manager of Streetcar Services may have other specific project- or contractor-based safety responsibilities.

The streetcar system has plans and procedures in place for ensuring that safety-critical defects are promptly addressed, and that no equipment and vehicles do not re-enter revenue service until they are safe to do so. The Operations and Maintenance Plan and the Atlanta Streetcar Vehicle Maintenance and Inspection Plan as well as operations and maintenance SOPs provide these safeguards.

The Manager of Streetcar Services will be responsible for ensuring that no safety-critical defect goes unaddressed, nor any equipment or vehicle reenters service until safe to do so. The Manager has the authority to take special action, including removing equipment from service, identifying necessary repairs before returning equipment to use, or limiting service until safety-critical defects can be sufficiently addressed, identified through the maintenance inspection or hazard management processes as described below.

The Superintendent of Maintenance is responsible for day-to-day implementation of maintenance programs policies, procedures, processes and tasks by internal Atlanta Streetcar personnel.

Other positions identified in the sub-sections below may have specific responsibilities tied to distinct aspects or elements of the maintenance program.

15.1 Systems and Facilities Subject to Maintenance Program

The Atlanta Streetcar relies on preventive maintenance and inspection processes to proactively keep its assets in safe and working order. Scheduled preventive maintenance and inspection, as described in the Atlanta Streetcar System Maintenance Plan, includes the following elements:

- Vehicles
- Track
- OCS
- Traction Power
- Stations
- Traffic Signals

15.1.1 Vehicle Maintenance

This section outlines the maintenance programs and inspection procedures for streetcar vehicles and related equipment. Maintenance and inspections occur in accordance with relevant provisions of the *Atlanta Streetcar Vehicle Maintenance and Inspection Plan.*

The following activities are performed in support of vehicle audits and inspections:

- Establish and implement procedures to assure that the fleet is properly maintained and available in safe operating condition.
- Establish and implement appropriate maintenance inspections and repair programs.
- Ensure that appropriate technical training and certification is provided to all maintenance mechanics and electronic technicians.
- Provide and maintain proper tools and equipment for the support of maintenance activities.
- Establish and maintain proper maintenance documentation support of maintenance inspection activities.
- Ensure that proper safety and quality control practices are incorporated in day-to-day maintenance operations.
- Ensure that any safety and quality audit findings of the day-to-day maintenance operations are properly addressed and their appropriate corrective actions are implemented in a timely manner.
- Ensure that any safety accident investigations or incidents are properly investigated and appropriate corrective actions plans are developed implemented.
- Monitor the collection and disposal of waste (e.g., gearbox oils, parts washer solvents) to effect safe handling and minimize employee and environmental exposure to potentially hazardous materials.

Any identified defects or areas of concern shall be tracked and monitored through the Streetcar's maintenance information system, and as appropriate, through the hazard management process.

15.1.1.1 Periodic Maintenance and Inspections

Periodic maintenance and inspections occur on rail vehicles as specified by applicable maintenance manuals and industry standards, as detailed in the Atlanta Streetcar Vehicle Maintenance Plan. Maintenance personnel carry out preventive maintenance and inspections (PMI) utilizing a defined procedures and checklist based upon specified time, mileage intervals or based on individual subsystems and components.

The Manager of Streetcar Services and the Superintendent of Maintenance are responsible to ensure that all identified safety-critical discrepancies are corrected before vehicles are permitted to return to revenue service. Additionally, regular safety meetings provide information to front-line employees regarding general shop safety, ad hoc training, and incident debriefing. These include both pre-shift or toolbox-style meetings and more formal, scheduled meetings.

15.1.1.2 Service Requests

Requests for vehicle service outside of regularly scheduled inspections shall be handled through the process described in the *Atlanta Streetcar Vehicle Maintenance and Inspection Plan.* Such service requests may originate from several sources, including reports from Operators, maintenance employees, passengers or other streetcar stakeholders. They may also come from incident or accident reports or other unusual occurrences.

15.1.1.3 Additional Inspections

Other regular inspections made in accordance with industry-accepted procedures and standards are:

- Return-to-service/outbound shop inspections;
- Pre-trip inspections by operators;
- Quality Control inspections by supervisors; and
- Quality Assurance audits.

15.1.2 Track Infrastructure Inspections

The Atlanta Streetcar Track Maintenance and Inspection Plan and Standard Operating Procedures identify periodic inspection, maintenance, and testing of the Atlanta Streetcar track, including switches. This includes periodic physical and mechanical inspection of components that affect safe operation. In-house Streetcar Technicians perform regular visual inspections of the track and right-of-way to identify any hazards or other safety-related issues.

Track maintenance personnel identify and classify defects as using the track standards described in the Atlanta Streetcar Track Inspection and Maintenance Procedure and SOP's. Atlanta Streetcar will procure a qualified contractor to conduct inspections and maintenance for Streetcar track infrastructure. Track maintenance contractor personnel will address minor repairs to track and/or street structure. For larger or more complicated repairs, such as rail replacement, welding, switch replacement, and other large-scale track renewal, the Director of Streetcar **Services** may procure additional support from industry contractors or other resources. Any identified defects or areas of concern shall be tracked and monitored through the Streetcar's maintenance information system, and as appropriate, through the hazard management process.

15.1.3 Stations and Right of Way Inspections

Streetcar supervisors and maintenance personnel conduct regular visual inspections of the system's passenger stations and the right of way, as described in the Atlanta Streetcar System Maintenance Plan. All deficiencies are reported to the Manager of Streetcar Services who will dispatch maintenance personnel from the City Of Atlanta to repair any deficiencies. .

15.1.4 Traction Power

The Traction Power System is comprised of two functional subsystems: the Traction Power Substations (TPSS) and the Overhead Contact System (OCS). The TPSS contain all of the

necessary equipment to receive electric power from utilities and deliver it in usable form to the OCS. The major elements of the TPSS include high-voltage AC switchgear, transformers, rectifiers, DC switchgear, and DC feeders and auxiliary equipment.

The OCS contains all of the elements required for the delivery of power from the TPSS to the vehicles along the alignment. These major elements include the messenger and trolley wires, hangers, jumpers, all in-span components, supporting structures, poles, and grounding system.

ASC's traction power distribution system uses various protective devices to ensure high level of reliability, and includes many safeguards and controls to ensure that operations and maintenance employees can work safely and confidently in its vicinity. All service, inspection, and maintenance activities can be found in the Atlanta Streetcar Traction Power Maintenance Preventive Maintenance Plan and Standard Operating Procedures.

Atlanta Streetcar will procure a qualified contractor to conduct inspections and maintenance for traction power distribution and overhead contact system (OCS).

Any identified defects or areas of concern shall be tracked and monitored through the Streetcar's maintenance information system, and as appropriate, through the hazard management process.

15.1.5 Traffic Signal System Inspection and Maintenance

The responsibility for the Traffic Signal System along the alignment lies with the City of Atlanta's Department of Public Works. All deficiencies along the alignment reported by Atlanta Streetcar employees or contract personnel are reported to the Manager of Streetcar Services who will dispatch maintenance personnel from the City Of Atlanta to repair any deficiencies.

15.2 Resolution of Audit/Inspection Findings

Findings are identified at the departmental level during scheduled audits or inspections, or by audits conducted by the Director of Safety, Security and Training. For normal or routine maintenance issues, repairs and resolution are part of the ongoing maintenance information tracking system, and part of the maintenance management process. More involved or systemic issues are subjected to the Streetcar hazard management process, and to the formal corrective action process as needed. In any case, both the Manager of Streetcar Services and the Director of Safety, Security and Training are responsible for monitoring, identifying and vetting potential safety trends, and processing them appropriately, as noted below.

15.3 Checklists, Maintenance Records and Documentation

Checklists, including both paper and electronic forms, are used across the Streetcar organization to ensure quality of service and compliance with regulation, policies, and procedures. A departmentally-approved checklist must be used for each individual maintenance audit or inspection conducted.

The Manager of Streetcar Services has overall responsibility for structuring and overseeing the use and tracking of records of completed inspections, as well as maintenance logs and histories, and interface with the hazard management process.

15.4 Coordination with Hazard Management Process

The results of maintenance audits and inspections are analyzed after each audit or inspection by maintenance supervisors to determine if any significant hazards or trends in hazards have developed since the last audit or inspection. The supervisor/manager then reports any trends or results to the Superintendent and the Director of Safety, Security and Training. If negative trends arise, it may decide that tracking and remediation through the official hazard management process is warranted.

16 Training and Certification

16.1 Overview

This section describes the Atlanta Streetcar's employee and contractor training and certification requirements (or programs). The Director of Safety, Security and Training has the responsibility to ensure that all Atlanta Streetcar employees are trained and certified to operate or to maintain the system in accordance with the requirements of this SSPP.

Training may consist of a combination of classroom and on-the-job education. It is the responsibility of the Operations and Maintenance Superintendents, respectively, to ensure that on-the-job training is performed properly by designated, appropriately credentialed instructors.

System Operations Training

No employee or person will operate any Atlanta Streetcar rail equipment without having been qualified and certified. Employees will be trained in the operation of a Streetcar including the rules, regulations and procedures for safety operation. All employees operating a Streetcar will require a Commercial Driver's License, Streetcar Operating Card and Medical Certificates as required by Atlanta Streetcar Executive Director of Streetcar Operations.

System Maintenance Training

Managers, supervisors, employees and contractors will be pre-trained and certified by the maintenance contractor for the position they have been assigned. They will also be trained in and familiar with the safety-related work practices, safety and emergency procedures, and other safety hazards that pertain to their respective assigned position.

Accident / Incident Investigation Training

The quality of an accident or incident investigation depends on the capability of the investigation team and the guidance and support it has to carry out the investigation. Atlanta Streetcar Managers and Supervisors are trained based on industry best practice so that the investigation can be conducted comprehensively and consistently for all accident and incidents.

Qualified Maintenance Personnel

All personnel who maintain any traction power, vehicle, or other ASC asset utilizing the OCS system will receive training and be competent in:

- The skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment.
- The skills and techniques necessary to determine the nominal voltage of exposed live parts.
- The skills and techniques necessary to determine the minimum approach distances corresponding to the voltages to which they are exposed.
- The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment.
- Understand the physical properties of mechanical and electro-mechanical equipment and reference proper documentation for to ensure safe operation.

16.2 Contractor Safety Plan

Any Contractor conducting work on the Atlanta Streetcar right–of–way, vehicles or infrastructure must undergo a Roadway Worker Protection safety training program.

Contractors are required to prepare a Safety Plan which complies with the SSPP. Contractors must place special emphasis on describing how their organization assures the identification, elimination, and/or control of potential hazards, which can lead to injury, loss of personnel and/or damage or loss of revenue hardware and continue to support equipment throughout the complete cycle of the program. The project-specific Safety Plan describes the relationships of all safety activities. Existing documents may be referenced and submitted as part of the Safety Plan. The contractor's Industrial Safety/Occupational Health and Safety Plan must be incorporated or attached to the Safety Plan. The Safety Plan should be provided in a matrix form, or some equivalent format, the clear/concise title of the entire specific task to be covered by the plan.

16.3 Record Keeping

Training records are maintained electronically by the Director of Safety, Security and Training.

16.4 Compliance with Training Requirements

Under the direction of the Executive Director, and with the guidance of the SCSC, the Director of Safety, Security and Training will be responsible for monitoring overall employee compliance with safety-related training and certification requirements stipulated by job descriptions and responsibilities. In the event that an employee falls out of compliance or is otherwise identified as requiring re-training, his or her Supervisor will work with the Director of Safety, Security and Training to maintain compliance.

The Director of Safety, Security and Training, under the guidance of the Executive Director, works closely with all departments and contractors to oversee the development of course content. Final sign-off on course syllabi and outlines rests with the SCSC. Current training outlines reviewed and approved by the SCSC are included for reference as Appendix A.

16.4.1 Training Requirements

Current positional training requirements are outlined in the following matrix:

Figure 5: Certification/Re-training/Re-certification Matrix

ATLANTA STREETCAR
Employee Training

Training Programs by Position with Recurring Training

	Operator	Supervisors	Maintenance	Maint. Sup.	Security
Streetcar Operator Training	X	X	X	X	
Streetcar Technician Training			X	X	
Supervisor Training		X	X	X	
Maintenance Inspection Training			X	X	
OCS Training			X	X	
Substation Training			X	X	
Track Training			X	X	
Post-Accident (Unscheduled) Retraining	X	X	X	X	
Operator Extended Absence Training	X				
Communications/Dispatch Training		X			
Rulebook, Standard & Emergency Operating Procedures (SOP/EOP) Training	X	X	X	X	X
Right of Way Safety (Annual) Employees/Contractor	X	X	X	X	X
Jo Specific Safety Training	X	X	X	X	X
Drug & Alcohol	X	X	X	X	X
Reasonable Suspicion		X		X	
CPR/First Aid (2 Years)			X*	X*	
Bloodborne Pathogens (Annual)	X	X	X	X	

*Power Technicians/Supervisors X

Operator Status	Training Requirement
New Operator Training	120 Hours of training
Operator Extended Absence (30 days)	May receive 8 hours retraining (at discretion of the instructor or Director of Safety, Security and Training)
Post-Accident (Unscheduled) Retraining	4 hours of instruction tailored to corrective actions

Maintenance Function	Requirement(s)
Vehicle Maintenance	Required to attend an intensive training program conducted by vendors or in-house staff. Training documentation is maintained and training activities are reviewed and monitored by Maintenance Managers and Supervisors.

Heavy Equipment Maintainer-Operator	Must successfully complete 6 month to 2 year hands-on apprentice training program with experienced individuals, and have appropriate certifications.
Maintenance Inspection Training	Instruction to ensure that the individual performing the inspection has been properly trained.
Streetcar Maintenance/Mainline Special Training	Special training for experienced maintenance personnel who are required to test cars on the main line in a designated area.
Facilities, Grounds	All facilities and grounds employees received equipment training from ASC instructors.
Electrical, Signal, and Substation Maintainers	All electrical, signal, and substation groups receive formal training from vendors or in-house staff, as well as on-the-job training. All training is fully documented by Maintenance Management.

Course	Requirement(s)
Service Supervisor	Required to attend an intensive training program designed specifically for new Service Supervisors before assuming responsibilities for handling incidents and emergencies in field. Accident investigations training will ensure they are thoroughly familiar and capable of implementing Streetcar accident / incident plans and procedures.
Maintenance Supervisors (Track, Vehicle, Power, Facilities)	Must have passed the appropriate aptitude tests and successfully completed an apprentice training program for the position (at the discretion of the Director of Maintenance).

Job Specific Safety & Security Training may consist of the following, depending on the employee's duties and responsibilities:

- System Safety/Hazard Management
- ICS - 100/200
- ICS - 300/400-700/800 (Management)
- Maintenance – Accident Prevention & Moving Equipment Safety
- Maintenance – Hidden Workplace Hazards
- Maintenance – Identifying Shop Hazards & Shop Fire/Life Safety Inspections
- Safety Data Sheets/ Hazard Communication/Hazardous Materials
- Bloodborne Pathogens (annual)
- Roadway Worker Protection-Right of Way Safety (Contractors & Employees)
- General Workplace Safety – housekeeping, ventilation, access, evacuation, spills, storage, slips-trips & falls
- TSI – Effectively Managing Transit Emergencies
- TSI – Rail Incident Investigation
- TSI – Transit Rail System Safety
- TSI – Transit Rail System Safety and Security Audit Course
- TSI – Transit System Security
- TSI – Transit Rail Safety & Security Auditing

16.4.2 Unscheduled Retraining

Unscheduled retraining will be required of operations and maintenance personnel under the following circumstances:

- Long term absence greater than thirty (30) days, prior to returning to duty;
- Resulting from a management-identified knowledge/skill deficiency in an employee;
- Resulting from an accident investigation, safety violation, or other work practice violation.

16.4.3 Grading Methods

Knowledge and skill testing is conducted for all certification and qualification programs. Testing is performed through a combination of written and field-based testing. Passing score standards for written tests vary based on the course content and knowledge retention requirements, and field-based tests are graded based on established necessary skills and the test-taker's mastery of these skills. Grading criteria for each course is modified as necessary based on changes to equipment, industry standards, traffic laws, and best practices.

17 Configuration Management

17.1 Overview

This section describes the roles, responsibilities and processes identifying Configuration Management best practices throughout the Atlanta Streetcar organization. Configuration Management requires that changes to the physical and functional characteristics of an asset be approved by the originating department and engineering personnel. The Director of Safety, Security and Training is responsible for the evaluation of safety critical configuration changes, and provides recommendations to the Safety Certification and Security Committee, which has the authority to approve or reject configuration changes or request re-evaluation by the concerned parties.

17.1.1 Definition of Configuration Management

From a lifecycle perspective of an asset, Configuration Management (CM) can be defined as a process for establishing and maintaining consistency of an asset's performance, functional and physical attributes with its requirements, design and operational environment throughout its life.

CM begins with controlling the design, implementation, manufacturing, and installation of an asset. Once in operation, changes to the asset that impact its form, interface, and/or function are managed via a formal management process to ensure changes are needed, validated, tested, and implemented, and that all supporting documentation is updated to reflect the asset's true and current characteristics. CM impacts training as well as parts inventory. Documentation control standards are used to maintain, revise, distribute and control documents used in support of CM.

Under the direction of the Manager of Streetcar Services, the Atlanta Streetcar's Rail Engineering Consultant (REC) will implement all CM requirements, to be reviewed as appropriate with the Executive Director, Director of Safety, Security and Training, and the SCSC in compliance with Atlanta Streetcar SOPs and the Safety and Security Certification Program Plan.

17.2 Process for Change

17.2.1 Types of Change

Configuration change control is the process of controlling and managing change to any given system asset and thereby ensuring system integrity. The process consists of identifying and classifying a change, evaluating specific component(s) to be changed, and implementing the change on approval. Configuration changes shall be classified as either Class I or Class II. The originating department of the change shall make an initial determination of the class of a proposed change; however, this classification may be amended if deemed necessary.

Class I Changes:

Class I changes are defined as those that directly affect the form, fit or function of an asset, including, but not limited to:

- System performance
- Performance outside of stated tolerances
- System reliability and maintainability
- Physical or functional interchangeability
- Interface characteristics
- Weight or balance (when a factor)
- Volume
- Safety
- Electromagnetic characteristics
- Operational, test, or maintenance computer programs
- Compatibility with support or training equipment
- Previously approved training operation, maintenance, or overhaul manuals or test procedures
- Pre-set adjustments or schedules affecting operating limits to such an extent as to require a new identification
- Sources of repairable items
- Schedules or deliveries
- Spares
- Environment
- Items directly affecting the safety of the transit system
- Items directly affecting the acquisition or support costs of an asset or future spare parts
- Items directly affecting the warranty provisions of the asset

Class I changes are developed as an Engineering Change Proposal (ECP) or other accepted process for each proposed change. The ECP or classification form shall provide sufficient information to support formal change approval.

Class II Changes:

Class II changes are all changes that are not listed as Class I. Generally, Class II changes are those required to amend, update, or add clarification to documents and drawings. All Class II

changes are to be submitted individually on a standardized ECP and/or other accepted change control processes of the Authority form for the description of the proposed change.

Other Types of Change:

Deviations are formal requests, made prior to the manufacture of an item, to depart from a particular design configuration for a specified number of units or for a specified period of time. A deviation differs from an ECP in that an approved ECP requires a corresponding revision of the documentation defining the asset, whereas a deviation does not.

A waiver is a formal request, made during manufacture or installation, to accept an item found to depart from the approved configuration, but which exhibits acceptable form, fit, and function characteristics, as required by approved configuration.

All approved modifications; deviations, waivers, and ECPs must be recorded and used as the basis for documenting changes to a system or facilities. Configuration status reporting shall be a continuous activity. In accordance with the provisions of this document, each ECP or other accepted change control processes shall be submitted by the originating department, then reviewed and approved by the Director of Safety, Security and Training before going to the SCSC for final approval.

17.2.2 Configuration Management of Non-Engineering Documents

Each department is responsible for originating and revising its internal procedures including, but not limited to, Standard Operating Procedures and General Orders. The authority to make changes to these procedures resides within each department, provided they are carried out in accordance with the processes described in the documents listed below. The Director of the department in question is responsible for notifying all relevant personnel of changes to SOPs, General Orders and other internal guidelines, especially those that have safety or security implications. All document approvals must have the concurrence of the Director of Streetcar Services and Director of Safety, Security and Training prior to review and final approval by the SCSC.

17.3 Authority for Change

The Director of Streetcar Services and the Manager of Streetcar are responsible for the Configuration Management control process with authority to approve configuration changes through established processes and procedures. The SCSC has review and approval authority.

The baseline for all infrastructure changes, and particularly for the items listed below, will be the as-built and approved contractor/vendor conformed drawings, specifications, latest revision of drawings for existing infrastructure, and Operations and Maintenance manuals.

- System modifications
- Rehabilitation projects (State of Good Repair)

- Stations
- Facilities
- Infrastructure

- Systems Upgrades

17.3.2 Current Roles and Responsibilities

The following lists the current roles and responsibilities of other departments performed in relation to Configuration Management activities:

The Manager of Streetcar Services will work with the REC in the configuration management process. The Manager of Streetcar Services will have the responsibility to manage controlled storage of records, change control and document control and distribution of the configuration management process. This includes as-builts, specifications, plans, manuals, and procedures. The SCSC will provide final review of all such activities to confirm that the Atlanta Streetcar remains in compliance with its Configuration Management SOP as well as the provisions of this section of the SSPP.

The Director of Streetcar Services will create a database for the configuration management process that will be managed by the Manager of Streetcar Services and the Director of Safety, Security and Training. In conjunction with the REC, the Manager will also assist in the design, installation and testing of or review any recommended changes in the Streetcar System.

The Director of Streetcar Services will be responsible for disseminating approved changes to affected departments and confirming their receipt. Depending on the level of the change, this may also include auditing implementation if so requested by the SCSC.

18 Compliance with Local, State and Federal Requirements

This section describes the programs employed by the Atlanta Streetcar to meet local, state, and federal safety compliance requirements.

The objective of the ASC Construction Safety Program is to:

- Eliminate potential hazards by providing appropriate safeguards, personal protective equipment and safe work tasks.
- Provide necessary personal protective equipment and enforce its use and care.
- Provide effective training, which is required by the "standards," as a minimum for the employees.
- Comply with applicable OSHA standards (29 CFR 1910, General Industry, and 1926, Construction) and make copies of medical records as well as all safety and health programs.
- Review, approve, and execute appropriate action on safety policies developed by safety

committees or safety director.

- Conduct safety performance compliance and hold project management staff accountable. Assign a competent person the authority for the implementation of the safety program at each worksite.

18.1 Safety Committees

The Streetcar's Safety Certification and Security Committee is a key component of its overall Employee Safety Program and has final responsibility for development and implementation of the program. The Committee's membership is identified in Section 3.9 of this SSPP.

18.2 Working On or Near Transit-Controlled Property

Safety requirements that employees and contractors must follow when working on, or in close proximity to, the Atlanta Streetcar right-of-way are described in Atlanta Streetcar Right-of-Way Safety Training Manual. All employees and contractors that work on the Streetcar right-of-way are required to have initial wayside access training and annual recertification.

18.3 Compliance with Required Safety Programs

All contractor work on the Streetcar system will be performed in compliance with the following federal and state laws:

- Williams-Steiger Occupational Safety and Health Act of 1970 (Public Law 91-506)
- Occupational Safety and Health Regulations (OSHA) 29 CFR 1910 and 29 CFR 1926
- American National Standards Institute (ANSI) Z117.1-2003, Safety Requirements for Confined Spaces, Z89.1-2003 Industrial Head Protection, Z87.1-1968, Practice for Occupational and Educational Eye and Face Protection
- Official Code of Georgia Annotated (OCGA)
- Federal Transit Administration (FTA) 49 CFR 655, Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operations
- Manual of Uniform Traffic Control Devices (MUTCD)
- ANSI/ISEA 107-2004 High Visibility Safety Apparel

18.3.1 Construction Site Inspections and Reporting

ASC will require contractors to provide an occupational safety and health program compliant with all regulatory requirements, containing a prevention plan to nullify work related injuries and occupational illnesses, assurance that employees are properly trained and understand all known hazards presented in their work environment and appropriate response to unplanned hazards.

The Director of Safety, Security and Training will ensure regular audits/inspections of all contract construction sites, and documentation of all violations of applicable local, state, and federal regulations and, if applicable, the requirements listed in the Project Safety Specifications.

Any findings are communicated to the Director of Safety, Security and Training, who will notify both the contractor and the Contract Administrator and oversee the Contractor's immediate rectification of violations. Contractor non-compliance shall result in an immediate corrective action plan, including possible suspension of work and/or replacement of the safety supervisor/manager by the Director of Safety, Security and Training based upon the severity of the issue(s).

19 Hazardous Materials

19.1 Hazardous Materials Program

Under the direction of the Executive Director, and with the guidance of the SCSC, the Director of Safety, Security and Training is responsible for ensuring that programs which effectively manage hazardous materials are in place to provide for employee and patron safety, and to protect the environment.

Procedures and policies are in place to protect employees, the general public and Streetcar infrastructure and vehicles. All Streetcar Managers and Superintendents must ensure that the facility and/or equipment under their direction comply with applicable environmental regulations.

19.1.1 Inspection Programs

Management of hazardous and special wastes occurs through standardized programs and inspections. Generated wastes are evaluated to identify those subject to environmental regulatory requirements. At a minimum, facility assessments occur annually to monitor compliance with all applicable industrial wastewater, storm water, and/or air pollution regulations.

The Director of Safety, Security and Training will ensure the performance of these hazardous material and special waste inspections to confirm compliance.

19.1.2 Off-Site Waste Management

All potential reclamation/disposal facilities that manage Atlanta Streetcar generated wastes are evaluated to verify substantive compliance with federal, state, and local environmental requirements. To minimize the liability associated with materials generated and managed at landfills or recycling facilities, potential reclamation/disposal facilities are required to complete a technical questionnaire that is reviewed to verify substantive compliance with applicable federal, state, and local environmental laws and regulations.

19.2 Documentation

The Director of Safety, Security and Training is responsible to ensure environmental compliance, and will monitor and enforce Streetcar written plans, procedures and policies for facilities subject to specific environmental regulations. Examples of environmental compliance plans include:

- Environmental Compliance documentation
- Hazardous Waste Management Plan

19.3 Responsibility

The Director of Safety, Security and Training ensures the Atlanta Streetcar meets all requirements for Environmental Safety for employee safety and regulatory compliance. The Director will also ensure all appropriate Streetcar employees and contractors receive training regarding specific occupational safety concerning hazardous materials and environmental regulatory compliance.

20 Drug and Alcohol Abuse

This section outlines the Atlanta Streetcar's Drug and Alcohol Abuse Program. The Streetcar is a certified drug free workplace and complies with all provisions of 49 CFR Part 655, which mandates urine drug testing and breath alcohol testing for individuals (both employees and contractors) in safety-sensitive positions and prohibits performance of safety-sensitive functions when there is a positive test result.

20.1 Responsibility

The City of Atlanta, Office of Human Resources, will oversee the administrative portion of the Atlanta Streetcar Drug and Alcohol Program and Procedure approved by the SCSC. The Streetcar organization will manage implementation of the program, a copy of which will be provided to the GDOT point-of-contact.

20.2 Program Requirements and Testing

The Streetcar requires a drug and alcohol-free workplace, and assists employees with personal or related problems that could affect job performance through the Employee Assistance Program.

Drug and alcohol testing for employees and contractors is required under the following circumstances:

- Pre-Employment, or placement of an existing employee in a safety sensitive position;
- A reasonable suspicion on the part of supervisory staff that an employee is using or has recently used a prohibited drug or misused alcohol;

- Following certain types of accidents;
- When an employee is selected for random testing;
- When an employee returns to duty following an absence of ninety (90) days or more.

20.3 Policy Requirements

Under FTA rules, laboratory tests on urine specimens will be conducted for the following drugs or their metabolites, per 49 CFR 655 Part 40, as amended. These drugs include:

- Marijuana
- Cocaine
- Opiates (e.g., heroin, morphine, codeine)
- Phencyclidine (PCP)
- Amphetamines (e.g., racemic amphetamine, dextroamphetamine, and methamphetamine); and methylenedioxymethamphetamine (MDMA)

20.4 Testing Violations

The penalty for a verified positive test – or refusal to submit to a test – is job termination or, in the case of a contractor, grounds for termination of the contract. This policy applies to all employees and contractors on Streetcar property, or when performing any transit-related business. This policy applies to off-site lunch periods or breaks when an employee is scheduled to return to work. Visitors, vendors, and contract employees are governed by this policy while on Streetcar premises and will not be permitted to conduct related business if found in violation.

20.5 Training

All employees and contract employees are required to attend statutory training sessions on the Atlanta Streetcar Drug and Alcohol Policy and testing requirements.

21 Procurement

This section describes the measures, controls, and assurances put in place to verify that safety principles, requirements, and input are included in the Streetcar's procurement process.

21.1 Roles and Responsibilities

As facilitated by the Manager of Streetcar Services, a City of Atlanta Procurement Officer works closely with the Director of Streetcar Services under the guidance of the SCSC to act as the Atlanta Streetcar's central procurement arm. The functions carried out by these positions include responsibility for contract development, contract administration, procurement, and related administrative functions, all in accordance with applicable federal and state requirements.

21.2 Acquisition and Disposition of Goods and Services for the Streetcar

Primary departmental roles and responsibilities in the procurement process are as follows:

The Director of Streetcar Services will:

- Ensure the participation of ASC Executive Director, Chief Operating Officer, Manager of Streetcar Services and the Director of Safety, Security and Training participate in the contract development, bid, and review process for bus, rail and infrastructure projects;
- Ensure the participation of the City of Atlanta Police Department and The Director of Safety, Security and Training in pre-planning meetings, so they can determine if the procurement documents are security-clear;
- Ensure that Asset Engineers (currently the City of Atlanta and MARTA) are included in technical specifications, design criteria, and guide specifications and design reviews; and
- Develop and maintain procurement practices to verify compatibility with safety features and standards, designs, and procedures of existing Streetcar Operations and Maintenance procedures.
- Verify that assemblies, structures, systems of vehicles, equipment and facilities are manufactured, installed, and tested in accordance with specified contractual requirements;
- Perform receiving inspections; and
- Reduce the occurrence of non-conformances in materials receiving.

21.3 Procurement Data Provision

In consultation with the REC, the Manager of Streetcar Services provides safety data related to the contract development, bid, and review process for vehicle and infrastructure projects to the Safety Certification and Security Committee on an as-needed or requested basis.

22 Transit Asset Management

In accordance with the requirements of the Moving Ahead for Progress in the 21st Century Act (MAP-21), the Atlanta Streetcar is developing a Transit Asset Management Plan (TAMP) that will be compliant with all related final FTA regulations and guidelines. The TAMP will address the Atlanta Streetcar's capital asset inventory, asset condition assessment, decision support tools, and investment prioritization. It will also outline the internal processes and procedures which ensure asset sustainability and replacement planning, and is intended to be an evolving, dynamic and flexible strategy over time. Finally, the TAMP will provide for reporting mechanisms designed to provide regular updates on the condition of the Atlanta Streetcar system, including explicit references to changes that have occurred since the last report.

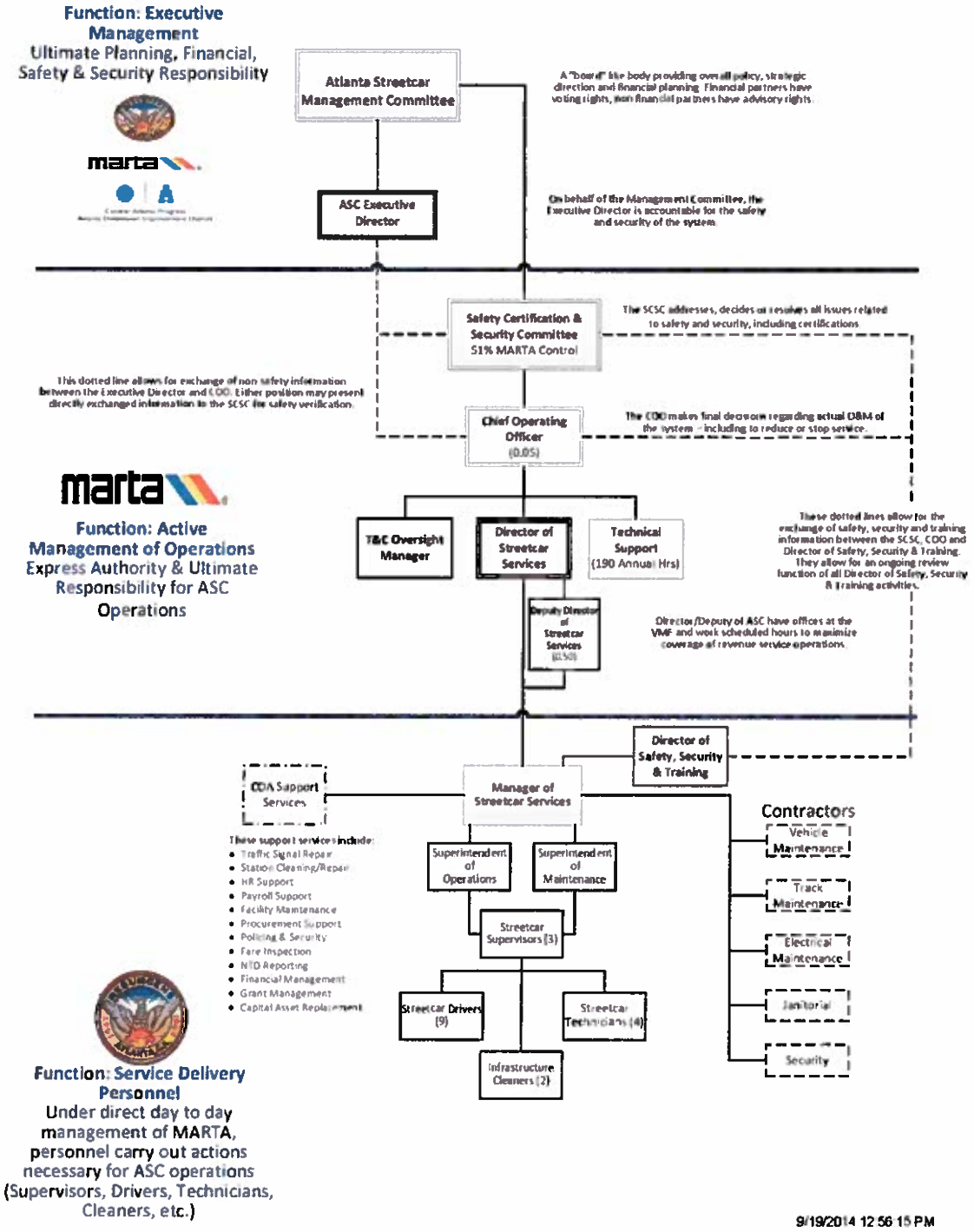
Pending further instruction from FTA, the Atlanta Streetcar currently defines State of Good Repair (SGR) as:

> "The condition of an asset where the asset, at a minimum, is capable of delivering the required performance safely and reliably for a predetermined period of time."

SGR may include short or long-term replacement/rehabilitation depending on the needs of the Atlanta Streetcar. It does not necessarily constitute complete replacement/rehabilitation of an asset.

In conjunction with the technical expertise of the project partners, procurement and implementation processes for a decision support tool in support of these objectives are currently underway.

APPENDIX A


Function: Executive Management
Ultimate Planning, Financial, Safety & Security Responsibility
Atlanta Streetcar Management Committee
A "board" like body providing overall policy, strategic direction and financial planning. Financial partners have voting rights, non financial partners have advisory rights.
ASC Executive Director
On behalf of the Management Committee, the Executive Director is accountable for the safety and security of the system.
Safety Certification & Security Committee
51% MARTA Control
The SCSC addresses, decides or resolves all issues related to safety and security, including certifications.
This dotted line allows for exchange of non safety information between the Executive Director and COO. Either position may present directly exchanged information to the SCSC for safety verification.
Chief Operating Officer
(0.05)
The COO makes final decision regarding actual O&M of the system - including to reduce or stop service.
Function: Active Management of Operations
Express Authority & Ultimate Responsibility for ASC Operations
T&C Oversight Manager
Director of Streetcar Services
Technical Support
(190 Annual Hrs)
These dotted lines allow for the exchange of safety, security and training information between the SCSC, COO and Director of Safety, Security & Training. They allow for an ongoing review function of all Director of Safety, Security & Training activities.
Deputy Director of Streetcar Services
(0.50)
Director/Deputy of ASC have offices at the VMF and work scheduled hours to maximize coverage of revenue service operations.
Director of Safety, Security & Training
CDA Support Services
These support services include:
Traffic Signal Repair
Station Cleaning/Repair
HR Support
Payroll Support
Facility Maintenance
Procurement Support
Policing & Security
Fare Inspection
NTD Reporting
Financial Management
Grant Management
Capital Asset Replacement
Manager of Streetcar Services
Contractors
Vehicle Maintenance
Track Maintenance
Electrical Maintenance
Janitorial
Security
Superintendent of Operations
Superintendent of Maintenance
Streetcar Supervisors (3)
Streetcar Drivers (9)
Streetcar Technicians (4)
Infrastructure Cleaners (2)
Function: Service Delivery Personnel
Under direct day to day management of MARTA, personnel carry out actions necessary for ASC operations (Supervisors, Drivers, Technicians, Cleaners, etc.)
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APPENDIX B

Atlanta Streetcar Task Responsibilities Oversight Matrix

SAFETY TASKS	SCSC	Director of Streetcar Services	Manager of Streetcar Services	Operations Superintendent	Maintenance Superintendent	Executive Director	Management Committee	MARTA COO	MARTA Technical Support	Operators	Supervisors	City of Atlanta Support Services
Internal Safety Audit Process	RA	S	S	S	S	P	S	S	S	S	S	S
Accident/Incident Investigation	RA	S	S	S	S	P	S	S	S	S	S	S
Hazard Management	RA	A	A	S	S	P	S	S	S	S	S	S
Facility Inspections	RA	S	A	A	A	P	S	S	S	S	S	S
Maintenance Program Audits/ Inspections	RA	A	A	S	P	S	S	S	S	S	S	S
Rules/Procedures Review Process	RA	P	S	S	S	P	S	S	S	S	S	S
Training and Certification	RA	RA	S	S	S	P	S	S	S	S	S	S
Configuration Management	RA	P	S	S	S	S	S	S	S	S	S	S
Employee Safety Program	RA	S	S	S	S	P	S	S	S	S	S	S
Safety Data Acquisition and Analysis	RA	S	S	S	S	P	S	S	S	S	S	S
Hazardous Materials Programs	RA	S	S	S	S	P	S	S	S	S	S	S
Contractor Safety Coordination	RA	S	S	S	S	P	S	S	S	S	S	S
Procurement	RA	S	S	S	S	P	S	S	S	S	S	S
Drug and Alcohol Program	RA	S	P	S	S	A	S	S	S	S	S	S
SSPP Update & Review Process	RA	S	S	S	S	P	S	S	S	S	S	S
Emergency Response	RA	S	S	S	S	P	S	S	S		S	S
System Modification	RA	P	S	S	S	S	S	S	S	S	S	S
Policy							P	S				S
General Engineering							S	S	S			S

Key: P = Primary Responsibility, **S** = Secondary or Support Responsibility
RA = Review/Approval, **A** = Audit Responsibility

STANDARD FOR TRACTION ELECTRIFICATION, MAINTENANCE AND TESTING

6. Standard for Traction Electrification Distribution System Inspection, Maintenance and Testing

Revised October 20, 2004
Approved November 22, 2002
APTA Rail Transit Standards Fixed Structures Inspection and Maintenance Committee

Approved May 23, 2003
APTA Rail Transit Standards Task Force

Authorized September 28, 2003
APTA Rail Transit Standards Policy Committee

Abstract: This standard provides minimum requirements for inspecting, maintaining, and testing rail transit system traction electrification distribution systems and subsystems.

Keywords: distribution, inspection, maintenance, rail transit system, substation, traction electrification, training, qualifications

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Introduction

(This introduction is not a part of APTA RT-FS-S-006-03, *Standard for Traction Electrification Distribution System Inspection, Maintenance and Testing*.)

APTA rail transit safety standards represent an industry consensus on safety practices for rail transit systems to help achieve a high level of safety for passengers, employees, and the general public. This document was created by and for those parties concerned with its provisions; namely, rail transit systems (operating agencies), manufacturers, consultants, engineers, and general interest groups. This standard provides procedures for inspecting, maintaining, and testing rail transit traction electrification distribution systems.

APTA recommends this standard for:

- Individuals or organizations that inspect, maintain, and/or operate rail transit systems
- Individuals or organizations that contract with others for the inspection, maintenance, and/or operation of rail transit systems
- Individuals or organizations that influence how rail transit systems are inspected, maintained, and/or operated (including but not limited to consultants, designers, and contractors)

This standard intends to meet the following objectives:

- To ensure special life/safety equipment is operational and reliable
- To help rail transit systems incorporate safety considerations during the inspection and maintenance process
- To identify inspection criteria and maintenance standards that provide a high level of passenger and personnel safety

The application of any standards, practices, or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of how an RTS operates. In such cases, the government regulations override any conflicting practices this document requires or recommends.

Participants

APTA greatly appreciates the contributions of the following members of the Rail Transit Standards Fixed Structures Inspection and Maintenance Committee who provided the primary effort in drafting the *Standard for Traction Electrification Distribution System Inspection, Maintenance and Testing:*

Roger Avery
Steven Bezner, P.E.
Ray Borge
Robert Chappell
Frank Machara
David Rankin
Carol Rose

The following members of the Rail Transit Standards Fixed Structures Inspection and Maintenance Committee contributed to the review and approval process of the *Standard for Traction Electrification Distribution System Inspection, Maintenance and Testing:*

Robert Chappell, *Chair*
Frank Cihak, *Vice Chair*

Anthony Adams
Carlton "Don" Allen, P.E.
Sal Arceo
Roger Avery
Peter Bertozzi
Steven Bezner, P.E.
Raymond Borge
Michael Brown
John Bumanis
Clay Bunting
R. Sean Burgess
David Cappa
Gricelda Cespedes
Robert Chappell
Catherine Cronin
Lenny De Meyer
Tom Devenny
David Dunderdale
James Dunn
William Early
Percy Erves
Michael Esford
Richard Falcon
Ray Favetti
Peter Fedun, P.E.
Steve Feil
Robert Fiore
John Gaito
Ricky Green
Mohammad Irshad
Patrick Lavin
Harry Lupia
Frank Machara
Ruben Madrigal
Michael Monastero
Bill Petit
David Rankin
Pingali Rao
Richard Raschke
James Redding
Stephen Roberts
Charles Slavis, P.E.
Frederick Smith, P.E.
Richard Spatz
Charles Stanford
F. Brian Steets
Paul Swanson, P.E.
Steven Thompson
Fred Tijan
Gary Touryan
Carey Vaughn

APTA Rail Transit Standards Fixed Structures Inspection and Maintenance Committee project consultants:

Peter Gentle, PE., *STV Incorporated*
Carol Rose, *STV Incorporated*

APTA Rail Transit Standards project team:

Gabrielle Bayme, *Standards Development Program Specialist and Project Editor*
Saahir Brewington, *Administrative Assistant and Project Editor*
Antoinette Hankins, *Program Assistant*
Thomas Peacock, *Director-Operations & Technical Services*
David Phelps, *Senior Project Manager - Rail Programs*

Contents

Standard for Traction Electrification Distribution System Inspection, Maintenance and Testing

1. Overview

This document establishes a standard for the periodic inspection, maintenance and testing of alternating current (AC) and direct current (DC) traction electrification distribution systems. This includes periodic visual, electrical, and mechanical inspections of components that affect safe and reliable operation. This standard also identifies the necessary qualifications for rail transit system (RTS) employees or contractors that perform periodic inspection, maintenance, and testing tasks.

1.1 Purpose

The purpose of this standard is to verify that traction electrification distribution systems are operating safely and as designed through periodic inspection, maintenance, and testing, thereby increasing reliability and reducing the risk of hazards and failures.

1.2 Scope

This standard applies to rail transit systems that operate electrified light rail and/or heavy rail systems and applies to normal operating conditions. This standard does not apply to commuter railroads that operate on the general railroad system regulated by the Federal Railroad Administration (FRA).

1.3 Alternate practices

Individual rail transit systems may modify the practices in this standard to accommodate their specific equipment and mode of operation. APTA recognizes that some rail transit systems may have unique operating environments that make strict compliance with every provision of this standard impossible. As a result, certain rail transit systems may need to implement the standards and practices herein in ways that are more or less restrictive than this document prescribes. An individual RTS may develop alternates to the APTA standards so long as the alternates are based on a safe operating history and are described and documented in the system's safety program plan (or another document that is referenced in the system safety program plan).

Documentation of alternate practices shall:

a) Identify the specific APTA rail transit safety standard requirements that cannot be met

b) State why each of these requirements cannot be met

c) Describe the alternate methods used

d) Describe and substantiate how the alternate methods do not compromise safety and provide a level of safety equivalent to the practices in the APTA safety standard (operating histories or hazard analysis findings may be used to substantiate this claim).

2. Definitions and acronyms

For the purposes of this standard, the following definitions and acronyms apply:

2.1 Definitions

2.1.1 aerial inspection: An inspection done on an overhead electrical distribution system where the inspector is at the same level as the overhead equipment being inspected.

2.1.2 auto-tension system: A system tensioned by weight or spring to maintain an overhead contact system wire height and a constant wire tension within a defined temperature range.

2.1.3 contractor: Any individual(s) or entity under contract with the rail transit system (including RTS and subcontractor personnel) to install, inspect, maintain, and/or test RTS vehicles, systems, and components. *Syn:* **consultant.**

2.1.4 fixed termination system: An overhead contact system with a contact wire tension that is fixed at a specific temperature and varies for all other temperatures.

2.1.5 heavy rail system: An electric railway capable of a "heavy volume" of traffic characterized by exclusive rights-of-way, multi-car trains, high speed and rapid acceleration, sophisticated signaling, and high platform passenger loading. *Syn:* **elevated railway, rapid rail, rapid transit, subway.**

2.1.6 light rail system: An electric railway with a lighter volume of train traffic than heavy rail that may use shared or exclusive rights-of-way and may run trains intermingled with street traffic. Light rail systems frequently operate with low platform loading and single car trains. *Syn:* **street car, tram, trolley car.**

2.1.7 original equipment manufacturer (OEM): The enterprise that initially designs and builds a piece of equipment.

2.1.8 personal protective equipment (PPE): All clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, blast shields, hard hats, hearing protectors, gloves, respirators, aprons, and work boots.

2.1.9 rail transit: All forms of non-highway ground transportation that operate on rail including light rail, streetcars, trolley, and rapid rail transit systems.

2.1.10 rail transit system (RTS): The organization or portion of an organization that operates rail transit service and related activities. *Syn:* **operating agency, operating authority, transit agency, transit authority, transit system.**

2.2 Acronyms

AAS	Associate in Applied Science
AC	alternating current
APTA	American Public Transportation Association
DC	direct current
FRA	Federal Railroad Administration
OCS	overhead contact system
OEM	original equipment manufacturer
PPE	personal protective equipment
PM	preventive maintenance
RTS	rail transit system

3. Frequency of tasks

The inspection, maintenance, and testing procedures in this standard shall be performed as specified in Table 1 below as otherwise deemed necessary by the RTS. Since age, type, operating conditions, and environment vary from system to system and OEM maintenance intervals may vary based on operating conditions, the RTS makes the final determination of inspection, maintenance, and testing frequencies based on experience.

Following OEM-specified maintenance intervals for the equipment is recommended. Inspection frequency should be increased for severe operating conditions.

Table 1 - Inspection and maintenance frequencies

Task	Recommended frequency (minimum)	Section
Cable visual and mechanical inspection	Once every 5 years	8.2.1.1 & 8.2.2.1
Cable electrical tests	Once every 5 years	8.2.1.2 & 8.2.2.2
Contact rail visual and mechanical inspection	As determined by the RTS	8.2.3
Overhead contact system walking inspection	Bi-annually (once every 6 months)	8.2.4.1
Overhead contact system aerial inspection	Annually	8.2.4.2
Bond inspection	As determined by the RTS	8.2.5

The RTS shall determine the need for additional inspection, maintenance, and testing frequencies for traction electrification distribution systems. A review of the following factors may be useful in making this assessment:

- OEM-recommended testing intervals
- Industry experience

- Operating environment/conditions
- Historical data
- Reliability-centered maintenance program development
- Failure analysis
- RTS testing and experience
- Regulatory requirements

The frequency of tasks shall comply with applicable federal, state, and local regulations.

4. Qualifications of maintenance personnel

Due to the nature and hazards associated with electrical work on high voltage AC and DC components, maintenance personnel must meet minimum recommended qualifications to perform many inspection, maintenance and testing tasks. Each system shall determine what their needs and resources are. For example, systems may wish to consider a combination of written and practical experience together with continuing education programs geared toward traction and electrification systems maintenance.

4.1 Skills and knowledge

Each RTS shall ensure that the employees and/or contractors that perform periodic inspection, maintenance, and testing have the knowledge and skills necessary to safely and effectively perform the tasks assigned to them.

4.1.1 Basic inspection level

Inspectors must have a minimum of two years experience working with electrical systems. All inspectors must be familiar with the installation and repair of the components associated with the electrical systems.

4.1.2 Maintenance level

Maintainers must have three or more years experience working on high voltage power distribution or related traction and electrification systems either by in-house experience or recognized trade school or apprenticeship training program.

4.1.3 Technician level

Technicians must have three or more years experience working on high voltage power distribution or related traction and electrification systems or possess an Associate in Applied Science (AAS) degree in electrical systems or equivalent.

4.2 Continuing education

A RTS should establish a continuing education program for the above positions based upon its specific operation and requirements.

5. Tools

The following tools are required for inspection, maintenance, and testing of traction electrification distribution systems:

- Torque wrench
- Multi-meter*
- Megohm-meter*
- Gage measuring device
- Standard tools carried by electrical maintenance workers

* Calibrate in accordance with OEM and/or RTS requirements.

6. Safety

RTS safety rules, procedures, and practices shall be followed at all times during inspection, maintenance, and testing.

7. Personal protective equipment

Personal protective equipment, as required by the RTS, shall be worn at all times during inspection and testing.

8. Inspection, maintenance, and testing

Rail transit systems shall evaluate their local operating environment and conditions to develop suitable inspection, maintenance, and testing programs.

8.1 Inspection, maintenance, and testing categories

a) *Periodic inspection and maintenance* shall be performed to verify proper system operation and general system upkeep.

b) *Preventative maintenance (PM) and testing* may require removing the equipment from service and performing tests on the equipment or the materials to ensure proper operation. This type of maintenance occurs on a regularly scheduled basis.

8.2 Policies and procedures

Each RTS shall develop specific written policies and procedures that take into account specific equipment designs and local operating conditions to implement the inspection, maintenance, and testing required by this standard. These policies and procedures shall give maintenance staff clear guidance and criteria for performing these activities.

8.2.1 Cables – 600V to 1500V DC

8.2.1.1 Visual and mechanical inspections

The RTS shall perform the following inspections on all positive and negative cables when cable failure occurs in areas such as, conduit, duct bank, or trough.

Annex A contains a sample inspection form for recording the results of cable inspections and tests.

a) Inspect exposed sections of cables for physical damage or evidence of overheating.

b) Inspect fireproofing in common cable area and firewall penetrations, if present.

c) Inspect terminations, jumpers, and splices for evidence of physical damage or overheating.

d) Inspect bolted electrical connections for high resistance using one of the following methods:

- Use calibrated torque-wrench method in accordance with OEM published data to verify tightness of accessible bolted electrical connections.
- Perform a thermographic survey of the equipment under loaded conditions.

e) Inspect the cable support and termination.

8.2.1.2 Electrical tests

a) Perform resistance measurements on bolted connections with a low-resistance ohmmeter capable of reading 2 microhms or with parallel cables use a clamp-on ammeter to verify nearly equal currents on all cables.

b) Perform an insulation-resistance test only when the integrity of a cable is suspect with a megohmmeter using a voltage no greater than the cable insulation rating. Where there is more than one cable in parallel, test each individual cable.

8.2.1.3 Test values

a) Compare bolted connection resistances to values of similar connections.

b) Ensure bolt-torque levels are in accordance with OEM recommendations.

c) Ensure microhm or millivolt drop values do not exceed the high levels of the normal range as indicated in the OEM published data. If OEM data is not available, investigate any values that deviate from similar connections by more than 25 percent of the average value.

d) Compare test results to previously obtained results.

8.2.2 Cables – 600V AC and above

8.2.2.1 Visual and mechanical inspections

The RTS shall perform the following inspections on line neutral and ground cables when cable failure occurs in areas such as, conduit, duct bank, or trough.

a) Inspect exposed sections of cables for physical damage, evidence of overheating or corona.

b) Inspect fireproofing in common cable area and firewall penetrations, if present.

c) Inspect terminations and splices for evidence of physical damage, overheating or corona.

d) Inspect all bolted electrical connections for high resistance using one of the following methods:

- Use calibrated torque-wrench method in accordance with OEM published data to verify tightness of accessible bolted electrical connections.
- Perform a thermographic survey of the equipment under loaded conditions.

e) Inspect the shield ground (if present), cable support and termination.

8.2.2.2 Electrical tests

a) Perform resistance measurements on bolted connections with a low-resistance ohmmeter capable of reading 2 microhms.

b) Perform an insulation-resistance test only when the integrity of a cable is suspect with a megohmmeter using a voltage no greater than the cable rating. Where there is more than one conductor cable in parallel, test each individual conductor.

8.2.2.3 Test values

a) Compare bolted connection resistances to values of similar connections.

b) Ensure bolt-torque levels are in accordance with OEM recommendations.

c) Ensure microhm or millivolt drop values do not exceed the high levels of the normal range as indicated in the OEM published data. If OEM data is not available, investigate any values that deviate from similar connections by more than 25 percent of the average value.

d) Compare test results to previously obtained results.

8.2.3 Contact rail

The RTS shall develop specific inspection criteria for contact rails based on the type of contact rail in service and system requirements. The RTS shall inspect the components listed in Sections 8.2.3.1-8.2.3.8 as a minimum during each inspection interval.

Annex A provides an example of an inspection form that can be used to record the results of contact rail inspections and tests.

8.2.3.1 Contact rail integrity

a) Verify the contact rail has proper horizontal and vertical relation to the adjoining running rail.

b) Inspect the contact rail for wear. Measure the wear on the head/ball of the rail. Compare the amount of contact rail material remaining to the original profile of the head/ball of the rail using some form of gage measuring device. Replace rail in accordance with RTS requirements.

8.2.3.2 Expansion joints/gaps

Expansion joints/gaps are installed at various locations to allow for the thermal expansion and contraction of the contact rail.

Check for proper alignment and signs of movement.

8.2.3.3 Power section gaps

Section gaps provide a means of power isolation. Section gaps are designed to a specific minimum length to prevent energization of adjacent sections through the current collectors of a single rapid transit car.

Check the length of the section gap.

8.2.3.4 Inclines

Inspect inclines (also called approaches) for wear, height, gage, and proper support.

Compare measurements taken to design standards.

8.2.3.5 Contact rail anchors

Inspect contact rail anchors for integrity.

8.2.3.6 Contact rail insulator

Inspect all contact rail insulators for cracked, loose and/or missing contact rail insulators, particularly in curves and at inclines.

8.2.3.7 Contact rail bonds

Inspect the physical condition of all contact rail bonds including welds and mechanical connections.

8.2.3.8 Knife switches

Check the condition of the knife switch for arc burns, insulator integrity and freedom of movement, operating mechanism and connecting cables.

8.2.4 Overhead contact system (OCS)

Although all overhead contact systems consist of similar types of equipment, each type varies greatly depending on age, type, and manufacturer. This standard cannot cover each type of installation, however Section 8.2.4.1-8.2.4.2 contain procedures common to all types of overhead contact systems.

8.2.4.1 Walking Inspection

a) Check foundations for visible cracks, spalling, base details and fasteners, deposits of trash, over growth of vegetation, and concrete condition.

b) Check poles (particularly termination poles) for loose nuts of bonding cables, broken or cracked welds, damaged galvanization, distortion, cracking, or corrosion.

c) Check the integrity of bonding cables.

d) Check the completeness, cleanliness, and proper attachment of warning signs and pole number signs.

e) Check insulators and cable terminations for damage or dirt.

f) Check position of insulators, steady arms, and contact wire clips.

g) Check for broken wires at contact wire supports.

h) Check catenary for broken or displaced hangers,

i) Check the position of contact wire bridges at crossovers and the position of wires at overlaps and crossovers.

j) Check frogs and switches, cantilever assemblies, and for slackened or missing jumpers.

k) Check the balance weight or tension spring assembly for corrosion of steel wire.

l) Check the free movement of the pulley wheel.

m) Check the position of the weight stack depending on the temperature and alignment of the wires on the pulley.

n) Check the condition of the disconnect switch for arc burns, insulator integrity, freedom of movement, and connecting cables.

o) Check section insulator running skids for wear and correct adjustment. Wash off carbon deposits with a mild detergent.

p) Check tension spring assembly (where used) for corrosion of steel wire and free movement of the pulley wheel

q) Check the length of the spring depending on the temperature and alignment of the wires on the pulley.

8.2.4.2 Aerial inspection

Perform the following as required during the high rail inspection:

a) Check the stagger of the contact wire at supports and at mid-span and adjust as necessary.

b) Check the steady arm inclination and adjust as necessary.

c) Check the adjustment of the outrunning wires in overlap sections and at crossovers.

d) Check the contact wire for twists, kinks and spots of arcing. If the cross sectional area is more than 30% worn, replace the contact wire.

e) Check the messenger wires, head-span wires, dropper wires, ground wires and feeder wires for corrosion, damage, broken strands, and evidence of arcing. Wires should be carefully monitored for arcing due to hard spots, particularly near clamps. Make adjustments as necessary.

f) Check the contact blades for dirt and arcing damage. Connecting wires and clamps should be free of cracks and arcing damage.

g) Check all movable parts of the switch assembly, operating link, contact blades, and operating handle for free movement and adjust if necessary.

h) Re-lubricated all movable parts of the switch assembly, operating link, contact blades, and operating handle as required.

i) Check the correct position of the section insulators and the even wear of the runners.

j) Check the contact wire termination for cracks and excessive wear, and for damaged suspension assembly. Adjust as necessary.

k) Check the catenary for:

- Contact wire height above top of rail.
- Contact wire stagger from centerline of track at supports and in center of span.

- Sag of the wire in relation to the temperature if a fixed terminated system is employed.
- The position and condition of hangers, cantilevers, steady arms, clips, and other attachments.
- Cantilever lateral movement according to design, if auto tension system is employed.
- Proper clearance envelope.

8.2.5 Bonds

8.2.5.1 Running rail bonds

Running rail bonds are installed across the running rail joint to supplement the electrical connection for negative traction return currents and can affect signal system reliability.

Inspect the welds and mechanical connections for cracks and corrosion and fraying of the bond.

8.2.5.2 Structure bonds

Elevated structures are sometimes used to supplement the negative traction return current. Structure bonds are typically connected from the running rail to the structure and across a mechanical connection between structural elements.

Inspect the welds and mechanical connections for cracks and corrosion and fraying of the bond.

8.2.5.3 Cross bonds

Cross bonds are installed to supplement the electrical connection for enhanced negative return and reduction of stray current.

Inspect the welds and mechanical connections for cracks and corrosion and fraying of the bond.

8.2.5.4 Impedance bonds

Impedance bonds are installed to maintain the continuity of the traction return currents in signalized territory.

Inspect the welds and mechanical connections (particularly the rail end weld/pin/clamp connection) for cracks, corrosion, and bond fraying.

8.2.5.5 Contact rail and running rail connections

Contact rail and running rail connections provide the electrical connection between the traction power distribution positive and negative cables and their respective rails. Contact rail and running rail connections are typically welded to the base of the rail or mechanically fastened to the rail.

a) Inspect the welds and mechanical connections for cracks and corrosion and fraying of the bond.

b) Inspect all mechanical support systems on elevated tracks.

9. Correction of deficiencies

Deficiencies identified during inspection, maintenance, and testing shall be corrected and documented in accordance with OEM and/or RTS requirements. Some operational equipment may need to be taken out of service immediately until the problem is corrected. Other equipment may be left in service and corrected when parts, tools and /or appropriately skilled manpower are available.

The RTS shall designate a person responsible for deciding whether or not to leave defective equipment in service in order to operate. In the absence of a designated person, the RTS shall take the equipment out of service.

The RTS shall review and develop a corrective action plans for documented system defects monthly.

10. Priority ratings

The RTS shall develop a priority rating system to evaluate and determine the effects that any single defect will have on the system if they choose to operate with a known defect.

Recommended priority ratings are:

- Priority 1: The defect will endanger the safety of patrons and personnel and/or continuation of revenue service. A permanent or temporary repair shall be made immediately.

- Priority 2: The defect may cause disruption of revenue service. The repair shall be made in a predetermined timeframe set by each system.

- Priority 3: The defect will not affect revenue service. The repair shall be made in a predetermined timeframe set by each system.

11. Documentation

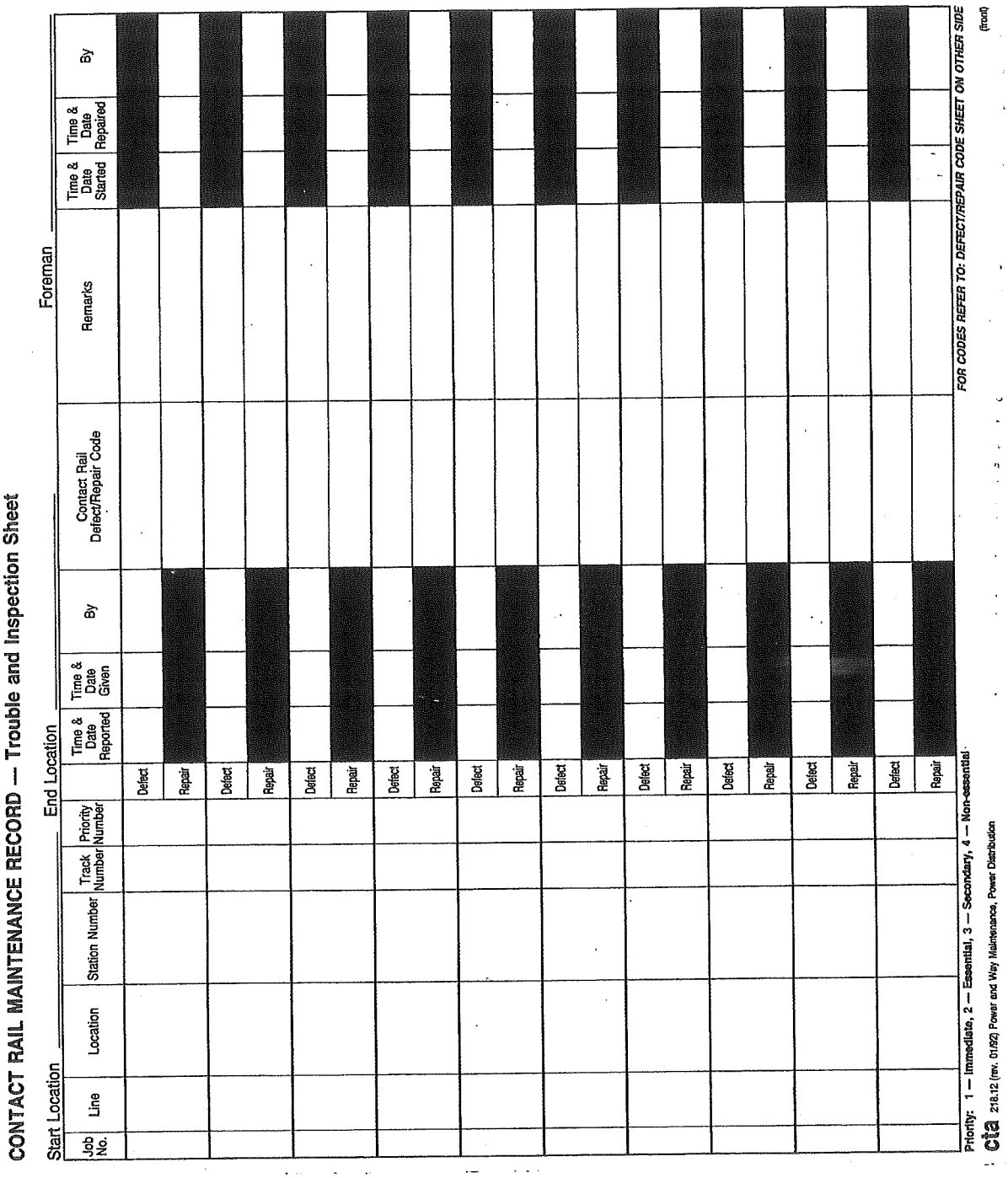
The RTS shall develop and implement a fully auditable process for recording and tracking inspection, maintenance, and testing activities and outstanding system defects. Such documentation shall be documented, reviewed, and filed in accordance with RTS procedures and OEM recommendations. Documentation should be kept for the life of all in-service equipment and be readily available for review.

Annex A contains a sample checklist and recording form that rail transit systems can adapt to their specific equipment and operating environment.

Annex A

(Informative)

Sample checklist/recording form



CONTACT RAIL MAINTENANCE RECORD — Trouble and Inspection Sheet

Start Location _____ End Location _____ Foreman _____

Job No.	Line	Location	Station Number	Track Number	Priority Number		Time & Date Reported	Time & Date Given	By	Contact Rail Defect/Repair Code	Remarks	Time & Date Started	Time & Date Repaired	By
						Defect								
						Repair								
						Defect								
						Repair								
						Defect								
						Repair								
						Defect								
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						Defect								
						Repair								
						Defect								
						Repair								
						Defect								
						Repair								

Priority: 1 — Immediate, 2 — Essential, 3 — Secondary, 4 — Non-essential

FOR CODES REFER TO: DEFECT/REPAIR CODE SHEET ON OTHER SIDE

cta 218.12 (rev. 01/92) Power and Way Maintenance, Power Distribution (front)

Date	Additional Remarks	By

700 DEFECT — REPAIR CODES

Anchors — ANCR

AD — Anchor Defective
ABM — Anchor Bolt Missing
ABL — Anchor Bolt Loose
AW — Anchor (Wood to be replaced)
ANC — Anchor

Chairs — CHRS

CCB — Chair Clip Bad
CM — Chair Missing
CL — Chair Leaning
CB — Chair Broken
CTD — Chair Tie Defective
CLM — Chair Lag Screw Missing
CHR — Chair

Contact Rail — CRAIL

CRC — Contact Rail Cracked
CRF — Contact Rail Floating
CRL — Contact Rail Low
CRH — Contact Rail High
CRW — Contact Rail Worn
CRG — Contact Rail Out of Gauge
CRD — Contact Rail Dished
CRM — Contact Rail Moved
CRA — Contact Rail

Contact Rail Joints — CRJT

JPD — Joint Plates Defective
JBL — Joint Bolts Loose
JBM — Joint Bolts Missing
JHL — Joint Huck Bolts Loose
JHM — Joint Huck Bolts Missing
JH — Joint Hot
JRM — Joint Rail Mismatched

Contact Rails (Tap) — CRTP

TBM — Tap Brass Bolt Missing
TBL — Tap Brass Bolt Loose
TBC — Tap Clamp Broken
TCC — Tap Clamp Cracked
TLH — Tap Lug Hot
TLC — Tap Clamp Bolt Loose
TLD — Tap Legs Defective
TM — Tap Moved
TAP — Tap

Contact Rail Bonds (Positive) — CRBD

BPM — Contact Rail Bond Defective or Missing
BPB — Contact Rail Bond Broken
BPH — Contact Rail Bond Hot
PPH — Positive Pothead Defective or Missing

Inclines — INCL

IC — Incline Cracked
IL — Incline Loose
IW — Incline Worn
IH — Incline High
IOG — Incline Out of Gauge
ICM — Incline Chair Missing
ILH — Incline Length
ID — Incline Dished
INC — Incline

Negative Rail Bonds (Power) — NRBD

BND — Negative Bond Defective or Missing
BNS — Negative Structure Bond Defective of Missing
BNP — Negative Pothead Bond Defective or Missing
BPH — Negative Pothead Defective or Missing
BON — Negative Bond

Negative Rail Bonds (Signal) — SIGBD

SBD — Signal Bond Defective or Missing
SWD — Signal Wee Zee Bond Defective or Missing
SBN — Signal Bond

Rail Gaps — RGAPS

GSC — Gap Section Closed
GEC — Gap Expansion Closed
GAP — Gap

Other Defect — OD

OD — Other Defects

Repair Codes — REPCD

REP — Repaired
RPL — Replaced
REV — Re-evaluated
OOS — Out of Service
CLN — Cleaned
PNT — Painted
REL — Relocate
INS — Install New

OSHA 1910.269

OSHA 1910.269

Side-by-Side Comparison

Prior Standard v. Final Rule Issued April 11, 2014*

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Index of Standard Comparison

1910.269(a)	"General."	(a)	General
(a)(1)	"Application."	(1)	Application.
(a)(1)(i)	This section covers the operation and maintenance of electric power generation, control, transformation, transmission, and distribution lines and equipment. These provisions apply to:	(i)	This section covers the operation and maintenance of electric power generation, control, transformation, transmission, and distribution lines and equipment. These provisions apply to:
(a)(1)(i)(A)	Power generation, transmission, and distribution installations, including related equipment for the purpose of communication or metering, which are accessible only to qualified employees;	(A)	Power generation, transmission, and distribution installations, including related equipment for the purpose of communication or metering that are accessible only to qualified employees;
	Note: The types of installations covered by this paragraph include the generation, transmission, and distribution installations of electric utilities, as well as equivalent installations of industrial establishments. Supplementary electric generating equipment that is used to supply a workplace for emergency, standby, or similar purposes only is covered under Subpart S of this Part. (See paragraph (a)(1)(ii)(B) of this section.)	[◊]	Note to paragraph (a)(1)(i)(A): The types of installations covered by this paragraph include the generation, transmission, and distribution installations of electric utilities, as well as equivalent installations of industrial establishments. Subpart S of this part covers supplementary electric generating equipment that is used to supply a workplace for emergency, standby, or similar purposes only. (See paragraph (a)(1)(i)(B) of this section.)
(a)(1)(i)(B)	Other installations at an electric power generating station, as follows:	(B)	Other installations at an electric power generating station, as follows:
(a)(1)(i)(B)(1)	Fuel and ash handling and processing installations, such as coal conveyors,	(1)	Fuel and ash handling and processing installations, such as coal conveyors,
(a)(1)(i)(B)(2)	Water and steam installations, such as penstocks, pipelines, and tanks, providing a source of energy for electric generators, and	(2)	Water and steam installations, such as penstocks, pipelines, and tanks, providing a source of energy for electric generators, and
(a)(1)(i)(B)(3)	Chlorine and hydrogen systems:	(3)	Chlorine and hydrogen systems;
(a)(1)(i)(C)	Test sites where electrical testing involving temporary measurements associated with electric power generation, transmission, and distribution is performed in laboratories, in the field, in substations, and on lines, as opposed to metering, relaying, and routine line work;	(C)	Test sites where employees perform electrical testing involving temporary measurements associated with electric power generation, transmission, and distribution in laboratories, in the field, in substations, and on lines, as opposed to metering, relaying, and routine line work;
(a)(1)(i)(D)	Work on or directly associated with the installations covered in paragraphs (a)(1)(i)(A) through (a)(1)(i)(C) of this section; and	(D)	Work on, or directly associated with, the installations covered in paragraphs (a)(1)(i)(A) through (a)(1)(i)(C) of this section; and
(a)(1)(i)(E)	Line-clearance tree-trimming operations, as follows:	(E)	Line-clearance tree-trimming operations, as follows:

(a)(1)(i)(E)(1)	Entire of this Part, except paragraph (r)(1) of this section, applies to line-clearance tree-trimming operations performed by qualified employees (those who are knowledgeable in the construction and operation of electric power generation, transmission, or distribution equipment involved, along with the associated hazards).	(a)	(1)	(i)	(E)	(1)	Entire § 1910.269 of this part, except paragraph (r)(1) of this section, applies to line-clearance tree-trimming operations performed by qualified employees (those who are knowledgeable in the construction and operation of the electric power generation, transmission, or distribution equipment involved, along with the associated hazards).
(a)(1)(i)(E)(2)	Paragraphs (a)(2), (b), (c), (g), (k), (p), and (r) of this section apply to line-clearance tree-trimming operations performed by line-clearance tree trimmers who are not qualified employees.					(2)	Paragraphs (a)(2), (a)(3), (b), (c), (g), (k), (p), and (r) of this section apply to line-clearance tree-trimming operations performed by line-clearance tree trimmers who are not qualified employees.
(a)(1)(ii)	Notwithstanding paragraph (A)(1)(i) of this section, of this Part does not apply:			(ii)			Notwithstanding paragraph (a)(1)(i) of this section, § 1910.269 of this part does not apply:
(a)(1)(ii)(A)	To construction work, as defined in 1910.12 of this Part; or				(A)		To construction work, as defined in § 1910.12 of this part, except for line-clearance tree-trimming operations and work involving electric power generation installations as specified in § 1926.950(a)(3) of this chapter; or
(a)(1)(ii)(B)	To electrical installations, electrical safety-related work practices, or electrical maintenance considerations covered by Subpart S of this Part.				(B)		To electrical installations, electrical safety-related work practices, or electrical maintenance considerations covered by Subpart S of this part.
	Note 1: Work practices conforming to 1910.332 through 1910.335 of this Part are considered as complying with the electrical safety-related work practice requirements of this section identified in Table 1 of Appendix A-2 to this section, provided the work is being performed on a generation or distribution installation meeting 1910.303 through 1910.308 of this Part. This table also identifies provisions in this section that apply to work by qualified persons directly on or associated with installations of electric power generation, transmission, and distribution lines or equipment, regardless of compliance with 1910.332 through 1910.335 of this Part.				[◊]		Note 1 to paragraph (a)(1)(ii)(B): The Occupational Safety and Health Administration considers work practices conforming to §§ 1910.332 through 1910.335 as complying with the electrical safety-related work-practice requirements of § 1910.269 identified in Table 1 of Appendix A-2 to this section, provided that employers are performing the work on a generation or distribution installation meeting §§ 1910.303 through 1910.308. This table also identifies provisions in § 1910.269 that apply to work by qualified persons directly on, or associated with, installations of electric power generation, transmission, and distribution lines or equipment, regardless of compliance with §§ 1910.332 through 1910.335.
	Note 2: Work practices performed by qualified persons and conforming to of this Part are considered as complying with 1910.333(c) and 1910.335 of this Part.				[◊]		Note 2 to paragraph (a)(1)(ii)(B): The Occupational Safety and Health Administration considers work practices performed by qualified persons and conforming to § 1910.269 as complying with §§ 1910.333(c) and 1910.335.

1910.269 Prior Standard		1910.269 Final Rule, Published April 11, 2014	
(a)(1)(iii)	This section applies in addition to all other applicable standards contained in this Part 1910. Specific references in this section to other sections of Part 1910 are provided for emphasis only.	(a) (1) (iii)	This section applies in addition to all other applicable standards contained in this Part 1910. Employers covered under this section are not exempt from complying with other applicable provisions in Part 1910 by the operation of § 1910.5(c). Specific references in this section to other sections of Part 1910 are for emphasis only.
(a)(2)	"Training."	(2)	Training.
(a)(2)(i)	Employees shall be trained in and familiar with the safety-related work practices, safety procedures, and other safety requirements in this section that pertain to their respective job assignments. Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole top and manhole rescue), that are not specifically addressed by this section but that are related to their work and are necessary for their safety.	(i)	All employees performing work covered by this section shall be trained as follows:
		(A)	Each employee shall be trained in, and familiar with, the safety-related work practices, safety procedures, and other safety requirements in this section that pertain to his or her job assignments.
		(B)	Each employee shall also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole-top and manhole rescue), that are not specifically addressed by this section but that are related to his or her work and are necessary for his or her safety.
		(C)	The degree of training shall be determined by the risk to the employee for the hazard involved.
(a)(2)(ii)	Qualified employees shall also be trained and competent in:	(ii)	Each qualified employee shall also be trained and competent in:
(a)(2)(ii)(A)	The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,	(A)	The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,
(a)(2)(ii)(B)	The skills and techniques necessary to determine the nominal voltage of exposed live parts,	(B)	The skills and techniques necessary to determine the nominal voltage of exposed live parts,
(a)(2)(ii)(C)	The minimum approach distances specified in this section corresponding to the voltages to which the qualified employee will be exposed, and	(C)	The minimum approach distances specified in this section corresponding to the voltages to which the qualified employee will be exposed and the skills and techniques necessary to maintain those distances,
(a)(2)(ii)(D)	The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment.	(D)	The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment, and
		(E)	The recognition of electrical hazards to which the employee may be exposed and the skills and techniques necessary to control or avoid these hazards.

	Note: For the purposes of this section, a person must have this training in order to be considered a qualified person.	[0]	Note to paragraph (a)(2)(ii): For the purposes of this section, a person must have the training required by paragraph (a)(2)(ii) of this section to be considered a qualified person.
		(a) (2) (iii)	Each line-clearance tree trimmer who is not a qualified employee shall also be trained and competent in:
		(A)	The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,
		(B)	The skills and techniques necessary to determine the nominal voltage of exposed live parts, and
		(C)	The minimum approach distances specified in this section corresponding to the voltages to which the employee will be exposed and the skills and techniques necessary to maintain those distances.
(a)(2)(iii)	The employer shall determine, through regular supervision and through inspections conducted on at least an annual basis, that each employee is complying with the safety-related work practices required by this section.	(iv)	The employer shall determine, through regular supervision and through inspections conducted on at least an annual basis, that each employee is complying with the safety-related work practices required by this section.
(a)(2)(iv)	An employee shall receive additional training (or retraining) under any of the following conditions:	(v)	An employee shall receive additional training (or retraining) under any of the following conditions:
(a)(2)(iv)(A)	If the supervision and annual inspections required by paragraph (a)(2)(iii) of this section indicate that the employee is not complying with the safety-related work practices required by this section, or	(A)	If the supervision or annual inspections required by paragraph (a)(2)(iv) of this section indicate that the employee is not complying with the safety-related work practices required by this section, or
(a)(2)(iv)(B)	If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those which the employee would normally use, or	(B)	If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those which the employee would normally use, or
(a)(2)(iv)(C)	If he or she must employ safety-related work practices that are not normally used during his or her regular job duties.	(C)	If he or she must employ safety-related work practices that are not normally used during his or her regular job duties.
	Note: OSHA would consider tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved.	[0]	Note to paragraph (a)(2)(v)(C): The Occupational Safety and Health Administration considers tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved.
(a)(2)(v)	The training required by paragraph (a)(2) of this section shall be of the classroom or on-the-job type.	(vi)	The training required by paragraph (a)(2) of this section shall be of the classroom or on-the-job type.

1910.269 Proposed Rule		1910.269 Final Rule, Published April 11, 2014	
(a)(2)(vi)	The training shall establish employee proficiency in the work practices required by this section and shall introduce the procedures necessary for compliance with this section.	(a) (2) (vii)	The training shall establish employee proficiency in the work practices required by this section and shall introduce the procedures necessary for compliance with this section.
(a)(2)(vii)	The employer shall certify that each employee has received the training required by paragraph (a)(2) of this section. This certification shall be made when the employee demonstrates proficiency in the work practices involved and shall be maintained for the duration of the employee's employment.	(viii)	The employer shall ensure that each employee has demonstrated proficiency in the work practices involved before that employee is considered as having completed the training required by paragraph (a)(2) of this section.
	Note: Employment records that indicate that an employee has received the required training are an acceptable means of meeting this requirement.	[0]	Note 1 to paragraph (a)(2)(viii): Though they are not required by this paragraph, employment records that indicate that an employee has successfully completed the required training are one way of keeping track of when an employee has demonstrated proficiency.
		[0]	Note 2 to paragraph (a)(2)(viii): For an employee with previous training, an employer may determine that that employee has demonstrated the proficiency required by this paragraph using the following process:
		(1)	Confirm that the employee has the training required by paragraph (a)(2) of this section,
		(2)	Use an examination or interview to make an initial determination that the employee understands the relevant safety-related work practices before he or she performs any work covered by this section, and
		(3)	Supervise the employee closely until that employee has demonstrated proficiency as required by this paragraph.
		(3)	Information transfer.
		(i)	Before work begins, the host employer shall inform contract employers of:
		(A)	The characteristics of the host employer's installation that are related to the safety of the work to be performed and are listed in paragraphs (a)(4)(i) through (a)(4)(v) of this section;

		[0]	Note to paragraph (a)(3)(i)(A): This paragraph requires the host employer to obtain information listed in paragraphs (a)(4)(i) through (a)(4)(v) of this section if it does not have this information in existing records.
		(a) (3) (i) (B)	Conditions that are related to the safety of the work to be performed, that are listed in paragraphs (a)(4)(vi) through (a)(4)(viii) of this section, and that are known to the host employer;
		[0]	Note to paragraph (a)(3)(i)(B): For the purposes of this paragraph, the host employer need only provide information to contract employers that the host employer can obtain from its existing records through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.
		(C)	Information about the design and operation of the host employer's installation that the contract employer needs to make the assessments required by this section; and
		[0]	Note to paragraph (a)(3)(i)(C): This paragraph requires the host employer to obtain information about the design and operation of its installation that contract employers need to make required assessments if it does not have this information in existing records.
		(D)	Any other information about the design and operation of the host employer's installation that is known by the host employer, that the contract employer requests, and that is related to the protection of the contract employer's employees.
		[0]	Note to paragraph (a)(3)(i)(D): For the purposes of this paragraph, the host employer need only provide information to contract employers that the host employer can obtain from its existing records through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.

		(a) (3) (ii)	Contract employers shall comply with the following requirements:
		(A)	The contract employer shall ensure that each of its employees is instructed in the hazardous conditions relevant to the employee's work that the contract employer is aware of as a result of information communicated to the contract employer by the host employer under paragraph (a)(3)(i) of this section.
		(B)	Before work begins, the contract employer shall advise the host employer of any unique hazardous conditions presented by the contract employer's work.
		(C)	The contract employer shall advise the host employer of any unanticipated hazardous conditions found during the contract employer's work that the host employer did not mention under paragraph (a)(3)(i) of this section. The contract employer shall provide this information to the host employer within 2 working days after discovering the hazardous condition.
		(iii)	The contract employer and the host employer shall coordinate their work rules and procedures so that each employee of the contract employer and the host employer is protected as required by this section.
(a)(3)	"Existing conditions." Existing conditions related to the safety of the work to be performed shall be determined before work on or near electric lines or equipment is started. Such conditions include, but are not limited to, the nominal voltages of lines and equipment, the maximum switching transient voltages, the presence of hazardous induced voltages, the presence and condition of protective grounds and equipment grounding conductors, the condition of poles, environmental conditions relative to safety, and the locations of circuits and equipment, including power and communication lines and fire protective signaling circuits.	(4)	Existing characteristics and conditions. Existing characteristics and conditions of electric lines and equipment that are related to the safety of the work to be performed shall be determined before work on or near the lines or equipment is started. Such characteristics and conditions include, but are not limited to:
		(i)	The nominal voltages of lines and equipment,
		(ii)	The maximum switching-transient voltages,
		(iii)	The presence of hazardous induced voltages,
		(iv)	The presence of protective grounds and equipment grounding conductors,
		(v)	The locations of circuits and equipment, including electric supply lines, communication lines, and fire-protective signaling circuits,

		(vi)	The condition of protective grounds and equipment grounding conductors,
		(a) (4) (vii)	The condition of poles, and
		(viii)	Environmental conditions relating to safety.

1910.269(b)	"Medical services and first aid." The employer shall provide medical services and first aid as required in 1910.151 ~~of this Part~~. In addition to the requirements of 1910.151 ~~of this Part~~, the following requirements also apply:	(b)	Medical services and first aid. The employer shall provide medical services and first aid as required in § 1910.151. In addition to the requirements of § 1910.151, the following requirements also apply:
(b)(1)	"~~Cardiopulmonary resuscitation and~~ first aid training." When employees are performing work on or associated with exposed lines or equipment energized at 50 volts or more, persons trained in first ~~aid including cardiopulmonary resuscitation (CPR)~~ shall be available as follows:	(1)	First-aid training. When employees are performing work on, or associated with, exposed lines or equipment energized at 50 volts or more, persons with first-aid training shall be available as follows:
(b)(1)(i)	For field work involving two or more employees at a work location, at least two trained persons shall be available. ~~However, only one trained person need be available if all new employees are trained in first aid, including CPR, within 3 months of their hiring dates.~~	(i)	For field work involving two or more employees at a work location, at least two trained persons shall be available. However, for line-clearance tree trimming operations performed by line-clearance tree trimmers who are not qualified employees, only one trained person need be available if all new employees are trained in first aid within 3 months of their hiring dates.
(b)(1)(ii)	For fixed work locations such as generating stations, the number of trained persons available shall be sufficient to ensure that each employee exposed to electric shock can be reached within 4 minutes by a trained person. However, where the existing number of employees is insufficient to meet this requirement (at a remote substation, for example), all employees at the work location shall be trained.	(ii)	For fixed work locations such as substations, the number of trained persons available shall be sufficient to ensure that each employee exposed to electric shock can be reached within 4 minutes by a trained person. However, where the existing number of employees is insufficient to meet this requirement (at a remote substation, for example), each employee at the work location shall be a trained employee.
(b)(2)	"First aid supplies." First aid supplies required by 1910.151(b) ~~of this Part~~ shall be placed in weatherproof containers if the supplies could be exposed to the weather.	(2)	First-aid supplies. First-aid supplies required by § 1910.151(b) shall be placed in weatherproof containers if the supplies could be exposed to the weather.
(b)(3)	"First aid kits." Each first aid kit shall be maintained, shall be readily available for use, and shall be inspected frequently enough to ensure that expended items are replaced but at least once per year.	(3)	First-aid kits. The employer shall maintain each first-aid kit, shall ensure that it is readily available for use, and shall inspect it frequently enough to ensure that expended items are replaced. The employer also shall inspect each first aid kit at least once per year.

1910.269(c)	"Job briefing." The employer shall ensure that the employee in charge conducts a job briefing with the employees involved before they start each job. The briefing shall cover at least the following subjects: hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements.	(c)	Job briefing.
		(1)	Before each job.
		(i)	In assigning an employee or a group of employees to perform a job, the employer shall provide the employee in charge of the job with all available information that relates to the determination of existing characteristics and conditions required by paragraph (a)(4) of this section.
		(ii)	The employer shall ensure that the employee in charge conducts a job briefing that meets paragraphs (c)(2), (c)(3), and (c)(4) of this section with the employees involved before they start each job.
		(2)	Subjects to be covered. The briefing shall cover at least the following subjects: hazards associated with the job, work procedures involved, special precautions, energy-source controls, and personal protective equipment requirements.
(c)(1)	"Number of briefings." If the work or operations to be performed during the work day or shift are repetitive and similar, at least one job briefing shall be conducted before the start of the first job of each day or shift. Additional job briefings shall be held if significant changes, which might affect the safety of the employees, occur during the course of the work.	(3)	Number of briefings.
		(i)	If the work or operations to be performed during the work day or shift are repetitive and similar, at least one job briefing shall be conducted before the start of the first job of each day or shift.
		(ii)	Additional job briefings shall be held if significant changes, which might affect the safety of the employees, occur during the course of the work.
(c)(2)	"Extent of briefing." A brief discussion is satisfactory if the work involved is routine and if the employee, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job. A more extensive discussion shall be conducted:	(4)	Extent of briefing.
		(i)	A brief discussion is satisfactory if the work involved is routine and if the employees, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job.
		(ii)	A more extensive discussion shall be conducted:
(c)(2)(i)	If the work is complicated or particularly hazardous, or	(A)	If the work is complicated or particularly hazardous, or
(c)(2)(ii)	If the employee cannot be expected to recognize and avoid the hazards involved in the job.	(B)	If the employee cannot be expected to recognize and avoid the hazards involved in the job.
	Note: The briefing is always required to touch on all the subjects listed in the introductory text to paragraph (c) of this section.	[0]	Note to paragraph (c)(4): The briefing must address all the subjects listed in paragraph (c)(2) of this section.

(c)(3)	"Working alone." An employee working alone need not conduct a job briefing. However, the employer shall ensure that the tasks to be performed are planned as if a briefing were required.	(c) (5)	Working alone. An employee working alone need not conduct a job briefing. However, the employer shall ensure that the tasks to be performed are planned as if a briefing were required.

1910.269(d)	"Hazardous energy control (lockout/tagout) procedures."	**(d)**	Hazardous energy control (lockout/tagout) procedures.
(d)(1)	"Application." The provisions of paragraph (d) of this section apply to the use of lockout/tagout procedures for the control of energy sources in installations for the purpose of electric power generation, including related equipment for communication or metering. Locking and tagging procedures for the deenergizing of electric energy sources which are used exclusively for purposes of transmission and distribution are addressed by paragraph (m) of this section.	**(1)**	Application. The provisions of paragraph (d) of this section apply to the use of lockout/tagout procedures for the control of energy sources in installations for the purpose of electric power generation, including related equipment for communication or metering. Locking and tagging procedures for the deenergizing of electric energy sources which are used exclusively for purposes of transmission and distribution are addressed by paragraph (m) of this section.
	Note 1: Installations in electric power generation facilities that are not an integral part of, or inextricably commingled with, power generation processes or equipment are covered under 1910.147 and Subpart S of this Part.	[0]	Note to paragraph (d)(1): Installations in electric power generation facilities that are not an integral part of, or inextricably commingled with, power generation processes or equipment are covered under § 1910.147 and Subpart S of this part.
	Note 2: Lockout and tagging procedures that comply with paragraphs (c) through (f) of 1910.147 of this Part will also be deemed to comply with paragraph of (d) this section if the procedures address the hazards covered by paragraph (d) of this section.		*[Moved to end of (d)]*
(d)(2)	"General."	(2)	General.
(d)(2)(i)	The employer shall establish a program consisting of energy control procedures, employee training, and periodic inspections to ensure that, before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine or equipment is isolated from the energy source and rendered inoperative.	(i)	The employer shall establish a program consisting of energy control procedures, employee training, and periodic inspections to ensure that, before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine or equipment is isolated from the energy source and rendered inoperative.
(d)(2)(ii)	The employer's energy control program under paragraph (d)(2) of this section shall meet the following requirements:	(ii)	The employer's energy control program under paragraph (d)(2) of this section shall meet the following requirements:

(d)(2)(ii)(A)	If an energy isolating device is not capable of being locked out, the employer's program shall use a tagout system.	(d) (2) (ii) (A)		If an energy isolating device is not capable of being locked out, the employer's program shall use a tagout system.
(d)(2)(ii)(B)	If an energy isolating device is capable of being locked out, the employer's program shall use lockout, unless the employer can demonstrate that the use of a tagout system will provide full employee protection as follows:		(B)	If an energy isolating device is capable of being locked out, the employer's program shall use lockout, unless the employer can demonstrate that the use of a tagout system will provide full employee protection as follows:
(d)(2)(ii)(B)(1)	When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by the use of a lockout program.		(1)	When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by the use of a lockout program.
(d)(2)(ii)(B)(2)	In demonstrating that a level of safety is achieved in the tagout program equivalent to the level of safety obtained by the use of a lockout program, the employer shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energizing.		(2)	In demonstrating that a level of safety is achieved in the tagout program equivalent to the level of safety obtained by the use of a lockout program, the employer shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energizing.
(d)(2)(ii)(C)	After November 1, 1994, whenever replacement or major repair, renovation, or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machines or equipment shall be designed to accept a lockout device.		(C)	After November 1, 1994, whenever replacement or major repair, renovation, or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machines or equipment shall be designed to accept a lockout device.
(d)(2)(iii)	Procedures shall be developed, documented, and used for the control of potentially hazardous energy covered by paragraph (d) of this section.		(iii)	Procedures shall be developed, documented, and used for the control of potentially hazardous energy covered by paragraph (d) of this section.

(d)(2)(iv)	The procedure shall clearly and specifically outline the scope, purpose, responsibility, authorization, rules, and techniques to be applied to the control of hazardous energy, and the measures to enforce compliance including, but not limited to, the following:	(d) (2) (iv)	The procedure shall clearly and specifically outline the scope, purpose, responsibility, authorization, rules, and techniques to be applied to the control of hazardous energy, and the measures to enforce compliance including, but not limited to, the following:
(d)(2)(iv)(A)	A specific statement of the intended use of this procedure;	(A)	A specific statement of the intended use of this procedure;
(d)(2)(iv)(B)	Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;	(B)	Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;
(d)(2)(iv)(C)	Specific procedural steps for the placement, removal, and transfer of lockout devices or tagout devices and the responsibility for them; and	(C)	Specific procedural steps for the placement, removal, and transfer of lockout devices or tagout devices and the responsibility for them; and
(d)(2)(iv)(D)	Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.	(D)	Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.
(d)(2)(v)	The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the provisions of paragraph (d) of this section are being followed.	(v)	The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the provisions of paragraph (d) of this section are being followed.
(d)(2)(v)(A)	The periodic inspection shall be performed by an authorized employee who is not using the energy control procedure being inspected.	(A)	The periodic inspection shall be performed by an authorized employee who is not using the energy control procedure being inspected.
(d)(2)(v)(B)	The periodic inspection shall be designed to identify and correct any deviations or inadequacies.	(B)	The periodic inspection shall be designed to identify and correct any deviations or inadequacies.
(d)(2)(v)(C)	If lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.	(C)	If lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.
(d)(2)(v)(D)	Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected, and the elements set forth in paragraph (d)(2)(vii) of this section.	(D)	Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected, and the elements set forth in paragraph (d)(2)(vii) of this section.

(d)(2)(v)(E)	The employer shall certify that the inspections required by paragraph (d)(2)(v) of this section have been accomplished. The certification shall identify the machine or equipment on which the energy control procedure was being used, the date of the inspection, the employees included in the inspection, and the person performing the inspection.	(d) (2) (v) (E)	The employer shall certify that the inspections required by paragraph (d)(2)(v) of this section have been accomplished. The certification shall identify the machine or equipment on which the energy control procedure was being used, the date of the inspection, the employees included in the inspection, and the person performing the inspection.
	Note: If normal work schedule and operation records demonstrate adequate inspection activity and contain the required information, no additional certification is required.	[0]	Note to paragraph (d)(2)(v)(E): If normal work schedule and operation records demonstrate adequate inspection activity and contain the required information, no additional certification is required.
(d)(2)(vi)	The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls are acquired by employees. The training shall include the following:	(vi)	The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls are acquired by employees. The training shall include the following:
(d)(2)(vi)(A)	Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of energy available in the workplace, and in the methods and means necessary for energy isolation and control.	(A)	Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of energy available in the workplace, and in the methods and means necessary for energy isolation and control.
(d)(2)(vi)(B)	Each affected employee shall be instructed in the purpose and use of the energy control procedure.	(B)	Each affected employee shall be instructed in the purpose and use of the energy control procedure.
(d)(2)(vi)(C)	All other employees whose work operations are or may be in an area where energy control procedures may be used shall be instructed about the procedures and about the prohibition relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.	(C)	All other employees whose work operations are or may be in an area where energy control procedures may be used shall be instructed about the procedures and about the prohibition relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.
(d)(2)(vii)	When tagout systems are used, employees shall also be trained in the following limitations of tags:	(vii)	When tagout systems are used, employees shall also be trained in the following limitations of tags:
(d)(2)(vii)(A)	Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock.	(A)	Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock.
(d)(2)(vii)(B)	When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.	(B)	When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.

(d)(2)(vii)(C)	Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.	(d) (2) (vii) (C)	Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.
(d)(2)(vii)(D)	Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.	(D)	Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.
(d)(2)(vii)(E)	Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.	(E)	Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
(d)(2)(vii)(F)	Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.	(F)	Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.
(d)(2)(viii)	Retraining shall be provided by the employer as follows:	(viii)	Retraining shall be provided by the employer as follows:
(d)(2)(viii)(A)	Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment, or processes that present a new hazard or whenever there is a change in the energy control procedures.	(A)	Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment, or processes that present a new hazard or whenever there is a change in the energy control procedures.
(d)(2)(viii)(B)	Retraining shall also be conducted whenever a periodic inspection under paragraph (d)(2)(v) of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in an employee's knowledge or use of the energy control procedures.	(B)	Retraining shall also be conducted whenever a periodic inspection under paragraph (d)(2)(v) of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in an employee's knowledge or use of the energy control procedures.
(d)(2)(viii)(C)	The retraining shall reestablish employee proficiency and shall introduce new or revised control methods and procedures, as necessary.	(C)	The retraining shall reestablish employee proficiency and shall introduce new or revised control methods and procedures, as necessary.
(d)(2)(ix)	The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.	(ix)	The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.
(d)(3)	"Protective materials and hardware."	(3)	Protective materials and hardware.
(d)(3)(i)	Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing, or blocking of machines or equipment from energy sources.	(i)	Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing, or blocking of machines or equipment from energy sources.

(d)(3)(ii)	Lockout devices and tagout devices shall be singularly identified; shall be the only devices used for controlling energy; may not be used for other purposes; and shall meet the following requirements:	(d)	(3) (ii)	Lockout devices and tagout devices shall be singularly identified; shall be the only devices used for controlling energy; may not be used for other purposes; and shall meet the following requirements:
(d)(3)(ii)(A)	Lockout devices and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.		(A)	Lockout devices and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
(d)(3)(ii)(A)(1)	Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.		(1)	Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.
(d)(3)(ii)(A)(2)	Tagout devices shall be so constructed as not to deteriorate when used in corrosive environments.		(2)	Tagout devices shall be so constructed as not to deteriorate when used in corrosive environments.
(d)(3)(ii)(B)	Lockout devices and tagout devices shall be standardized within the facility in at least one of the following criteria: color, shape, size. Additionally, in the case of tagout devices, print and format shall be standardized.		(B)	Lockout devices and tagout devices shall be standardized within the facility in at least one of the following criteria: color, shape, size. Additionally, in the case of tagout devices, print and format shall be standardized.
(d)(3)(ii)(C)	Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or metal cutting tools.		(C)	Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or metal cutting tools.
(d)(3)(ii)(D)	Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and shall have the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.		(D)	Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and nonreleasable with a minimum unlocking strength of no less than 50 pounds and shall have the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.
(d)(3)(ii)(E)	Each lockout device or tagout device shall include provisions for the identification of the employee applying the device.		(E)	Each lockout device or tagout device shall include provisions for the identification of the employee applying the device.
(d)(3)(ii)(F)	Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.		(F)	Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.
	Note: For specific provisions covering accident prevention tags, see 1910.145 of this Part.		[0]	Note to paragraph (d)(3)(ii)(F): For specific provisions covering accident prevention tags, see § 1910.145.

(d)(4)	"Energy isolation." Lockout and tagout device application and removal may only be performed by the authorized employees who are performing the servicing or maintenance.	(d) (4)	Energy isolation. Lockout and tagout device application and removal may only be performed by the authorized employees who are performing the servicing or maintenance.
(d)(5)	"Notification." Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout or tagout devices. Notification shall be given before the controls are applied and after they are removed from the machine or equipment.	(5)	Notification. Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout or tagout devices. Notification shall be given before the controls are applied and after they are removed from the machine or equipment.
	Note: See also paragraph (d)(7) of this section, which requires that the second notification take place before the machine or equipment is reenergized.	[0]	Note to paragraph (d)(5): See also paragraph (d)(7) of this section, which requires that the second notification take place before the machine or equipment is reenergized.
(d)(6)	"Lockout/tagout application." The established procedures for the application of energy control (the lockout or tagout procedures) shall include the following elements and actions, and these procedures shall be performed in the following sequence:	(6)	Lockout/tagout application. The established procedures for the application of energy control (the lockout or tagout procedures) shall include the following elements and actions, and these procedures shall be performed in the following sequence:
(d)(6)(i)	Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.	(i)	Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.
(d)(6)(ii)	The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown shall be used to avoid any additional or increased hazards to employees as a result of the equipment stoppage.	(ii)	The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown shall be used to avoid any additional or increased hazards to employees as a result of the equipment stoppage.
(d)(6)(iii)	All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from energy sources.	(iii)	All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from energy sources.
(d)(6)(iv)	Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.	(iv)	Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.
(d)(6)(iv)(A)	Lockout devices shall be attached in a manner that will hold the energy isolating devices in a "safe" or "off" position.	(A)	Lockout devices shall be attached in a manner that will hold the energy isolating devices in a "safe" or "off" position.

(d)(6)(iv)(B)	Tagout devices shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.	(d) (6) (iv) (B)	Tagout devices shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.
(d)(6)(iv)(B)(1)	Where tagout devices are used with energy isolating devices designed with the capability of being locked out, the tag attachment shall be fastened at the same point at which the lock would have been attached.	(1)	Where tagout devices are used with energy isolating devices designed with the capability of being locked out, the tag attachment shall be fastened at the same point at which the lock would have been attached.
(d)(6)(iv)(B)(2)	Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.	(2)	Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.
(d)(6)(v)	Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe.	(v)	Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe.
(d)(6)(vi)	If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.	(vi)	If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.
(d)(6)(vii)	Before starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and deenergizing of the machine or equipment have been accomplished. If normally energized parts will be exposed to contact by an employee while the machine or equipment is deenergized, a test shall be performed to ensure that these parts are deenergized.	(vii)	Before starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and deenergizing of the machine or equipment have been accomplished. If normally energized parts will be exposed to contact by an employee while the machine or equipment is deenergized, a test shall be performed to ensure that these parts are deenergized.
(d)(7)	"Release from lockout/tagout." Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employees to ensure the following:	(7)	Release from lockout/tagout. Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employees to ensure the following:
(d)(7)(i)	The work area shall be inspected to ensure that nonessential items have been removed and that machine or equipment components are operationally intact.	(i)	The work area shall be inspected to ensure that nonessential items have been removed and that machine or equipment components are operationally intact.
(d)(7)(ii)	The work area shall be checked to ensure that all employees have been safely positioned or removed.	(ii)	The work area shall be checked to ensure that all employees have been safely positioned or removed.

(d)(7)(iii)	After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout devices have been removed.	(d) (7) (iii)	After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout devices have been removed.
(d)(7)(iv)	Each lockout or tagout device shall be removed from each energy isolating device by the authorized employee who applied the lockout or tagout device. However, if that employee is not available to remove it, the device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented, and incorporated into the employer's energy control program. The employer shall demonstrate that the specific procedure provides a degree of safety equivalent to that provided by the removal of the device by the authorized employee who applied it. The specific procedure shall include at least the following elements:	(iv)	Each lockout or tagout device shall be removed from each energy isolating device by the authorized employee who applied the lockout or tagout device. However, if that employee is not available to remove it, the device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented, and incorporated into the employer's energy control program. The employer shall demonstrate that the specific procedure provides a degree of safety equivalent to that provided by the removal of the device by the authorized employee who applied it. The specific procedure shall include at least the following elements:
(d)(7)(iv)(A)	Verification by the employer that the authorized employee who applied the device is not at the facility;	(A)	Verification by the employer that the authorized employee who applied the device is not at the facility;
(d)(7)(iv)(B)	Making all reasonable efforts to contact the authorized employee to inform him or her that his or her lockout or tagout device has been removed; and	(B)	Making all reasonable efforts to contact the authorized employee to inform him or her that his or her lockout or tagout device has been removed; and
(d)(7)(iv)(C)	Ensuring that the authorized employee has this knowledge before he or she resumes work at that facility.	(C)	Ensuring that the authorized employee has this knowledge before he or she resumes work at that facility.
(d)(8)	"Additional requirements."	(8)	Additional requirements.
(d)(8)(i)	If the lockout or tagout devices must be temporarily removed from energy isolating devices and the machine or equipment must be energized to test or position the machine, equipment, or component thereof, the following sequence of actions shall be followed:	(i)	If the lockout or tagout devices must be temporarily removed from energy isolating devices and the machine or equipment must be energized to test or position the machine, equipment, or component thereof, the following sequence of actions shall be followed:
(d)(8)(i)(A)	Clear the machine or equipment of tools and materials in accordance with paragraph (d)(7)(i) of this section;	(A)	Clear the machine or equipment of tools and materials in accordance with paragraph (d)(7)(i) of this section;
(d)(8)(i)(B)	Remove employees from the machine or equipment area in accordance with paragraphs (d)(7)(ii) and (d)(7)(iii) of this section;	(B)	Remove employees from the machine or equipment area in accordance with paragraphs (d)(7)(ii) and (d)(7)(iii) of this section;
(d)(8)(i)(C)	Remove the lockout or tagout devices as specified in paragraph (d)(7)(iv) of this section;	(C)	Remove the lockout or tagout devices as specified in paragraph (d)(7)(iv) of this section;
(d)(8)(i)(D)	Energize and proceed with the testing or positioning; and	(D)	Energize and proceed with the testing or positioning; and

(d)(8)(i)(E)	Deenergize all systems and reapply energy control measures in accordance with paragraph (d)(6) of this section to continue the servicing or maintenance.	(d)	(8) (i) (E)	Deenergize all systems and reapply energy control measures in accordance with paragraph (d)(6) of this section to continue the servicing or maintenance.
(d)(8)(ii)	When servicing or maintenance is performed by a crew, craft, department, or other group, they shall use a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. Group lockout or tagout devices shall be used in accordance with the procedures required by paragraphs (d)(2)(iii) and (d)(2)(iv) of this section including, but not limited to, the following specific requirements:		(ii)	When servicing or maintenance is performed by a crew, craft, department, or other group, they shall use a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. Group lockout or tagout devices shall be used in accordance with the procedures required by paragraphs (d)(2)(iii) and (d)(2)(iv) of this section including, but not limited to, the following specific requirements:
(d)(8)(ii)(A)	Primary responsibility shall be vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock);		(A)	Primary responsibility shall be vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock);
(d)(8)(ii)(B)	Provision shall be made for the authorized employee to ascertain the exposure status of all individual group members with regard to the lockout or tagout of the machine or equipment;		(B)	Provision shall be made for the authorized employee to ascertain the exposure status of all individual group members with regard to the lockout or tagout of the machine or equipment;
(d)(8)(ii)(C)	When more than one crew, craft, department, or other group is involved, assignment of overall job-associated lockout or tagout control responsibility shall be given to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and		(C)	When more than one crew, craft, department, or other group is involved, assignment of overall job-associated lockout or tagout control responsibility shall be given to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and
(d)(8)(ii)(D)	Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.		(D)	Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.
(d)(8)(iii)	Procedures shall be used during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and on-coming employees, to minimize their exposure to hazards from the unexpected energizing or start-up of the machine or equipment or from the release of stored energy.		(iii)	Procedures shall be used during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and on-coming employees, to minimize their exposure to hazards from the unexpected energizing or start-up of the machine or equipment or from the release of stored energy.

(d)(8)(iv)	Whenever outside servicing personnel are to be engaged in activities covered by paragraph (d) of this section, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures, and each employer shall ensure that his or her personnel understand and comply with restrictions and prohibitions of the energy control procedures being used.	(d) (8) (iv)	Whenever outside servicing personnel are to be engaged in activities covered by paragraph (d) of this section, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures, and each employer shall ensure that his or her personnel understand and comply with restrictions and prohibitions of the energy control procedures being used.
(d)(8)(v)	If energy isolating devices are installed in a central location and are under the exclusive control of a system operator, the following requirements apply:	(v)	If energy isolating devices are installed in a central location and are under the exclusive control of a system operator, the following requirements apply:
(d)(8)(v)(A)	The employer shall use a procedure that affords employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.	(A)	The employer shall use a procedure that affords employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.
(d)(8)(v)(B)	The system operator shall place and remove lockout and tagout devices in place of the authorized employee under paragraphs (d)(4), (d)(6)(iv), and (d)(7)(iv) of this section.	(B)	The system operator shall place and remove lockout and tagout devices in place of the authorized employee under paragraphs (d)(4), (d)(6)(iv), and (d)(7)(iv) of this section.
(d)(8)(v)(C)	Provisions shall be made to identify the authorized employee who is responsible for (that is, being protected by) the lockout or tagout device, to transfer responsibility for lockout and tagout devices, and to ensure that an authorized employee requesting removal or transfer of a lockout or tagout device is the one responsible for it before the device is removed or transferred.	(C)	Provisions shall be made to identify the authorized employee who is responsible for (that is, being protected by) the lockout or tagout device, to transfer responsibility for lockout and tagout devices, and to ensure that an authorized employee requesting removal or transfer of a lockout or tagout device is the one responsible for it before the device is removed or transferred.
		[◊]	Note to paragraph (d): Lockout and tagging procedures that comply with paragraphs (c) through (f) of § 1910.147 will also be deemed to comply with paragraph (d) of this section if the procedures address the hazards covered by paragraph (d) of this section.

1910.269(e)	"Enclosed spaces." This paragraph covers enclosed spaces that may be entered by employees. It does not apply to vented vaults if a determination is made that the ventilation system is operating to protect employees before they enter the space. This paragraph applies to routine entry into enclosed spaces in lieu of the permit-space entry requirements contained in paragraphs (d) through (k) of 1910.146 ~~of this Part~~. If, after the precautions given in paragraphs (e) and (t) of this section are taken, the hazards remaining in the enclosed space endanger the life of an entrant or could interfere with escape from the space, then entry into the enclosed space shall meet the permit-space entry requirements of paragraphs (d) through (k) of 1910.146 ~~of this Part.~~	(e)	Enclosed spaces. This paragraph covers enclosed spaces that may be entered by employees. It does not apply to vented vaults if the employer makes a determination that the ventilation system is operating to protect employees before they enter the space. This paragraph applies to routine entry into enclosed spaces in lieu of the permit-space entry requirements contained in paragraphs (d) through (k) of § 1910.146. If, after the employer takes the precautions given in paragraphs (e) and (t) of this section, the hazards remaining in the enclosed space endanger the life of an entrant or could interfere with an entrant's escape from the space, then entry into the enclosed space shall meet the permit-space entry requirements of paragraphs (d) through (k) of § 1910.146.
	Note: Entries into enclosed spaces conducted in accordance with the permit-space entry requirements of paragraphs (d) through (k) of 1910.146 of this Part are considered as complying with paragraph (e) of this section.		*[Moved to end of (e) section]*
(e)(1)	"Safe work practices." The employer shall ensure the use of safe work practices for entry into and work in enclosed spaces and for rescue of employees from such spaces.	(1)	Safe work practices. The employer shall ensure the use of safe work practices for entry into, and work in, enclosed spaces and for rescue of employees from such spaces.
(e)(2)	"Training." Employees who enter enclosed spaces or who serve as attendants shall be trained in the hazards of enclosed space entry, in enclosed space entry procedures, and in enclosed space rescue procedures.	(2)	Training. Each employee who enters an enclosed space or who serves as an attendant shall be trained in the hazards of enclosed-space entry, in enclosed-space entry procedures, and in enclosed-space rescue procedures.
(e)(3)	"Rescue equipment." Employers shall provide equipment to ensure the prompt and safe rescue of employees from the enclosed space.	(3)	Rescue equipment. Employers shall provide equipment to ensure the prompt and safe rescue of employees from the enclosed space.
(e)(4)	"Evaluation of potential hazards." Before any entrance cover to an enclosed space is removed, the employer shall determine whether it is safe to do so by checking for the presence of any atmospheric pressure or temperature differences and by evaluating whether there might be a hazardous atmosphere in the space. Any conditions making it unsafe to remove the cover shall be eliminated before the cover is removed.	(4)	Evaluating potential hazards. Before any entrance cover to an enclosed space is removed, the employer shall determine whether it is safe to do so by checking for the presence of any atmospheric pressure or temperature differences and by evaluating whether there might be a hazardous atmosphere in the space. Any conditions making it unsafe to remove the cover shall be eliminated before the cover is removed.

	Note: The evaluation called for in this paragraph may take the form of a check of the conditions expected to be in the enclosed space. for example, the cover could be checked to see if it is hot and, if it is fastened in place, could be loosened gradually to release any residual pressure. A determination must also be made of whether conditions at the site could cause a hazardous atmosphere, such as an oxygen deficient or flammable atmosphere, to develop within the space.	[0]	Note to paragraph (e)(4): The determination called for in this paragraph may consist of a check of the conditions that might foreseeably be in the enclosed space. For example, the cover could be checked to see if it is hot and, if it is fastened in place, could be loosened gradually to release any residual pressure. An evaluation also needs to be made of whether conditions at the site could cause a hazardous atmosphere, such as an oxygen-deficient or flammable atmosphere, to develop within the space.
(e)(5)	"Removal of covers." When covers are removed from enclosed spaces, the opening shall be promptly guarded by a railing, temporary cover, or other barrier intended to prevent an accidental fall through the opening and to protect employees working in the space from objects entering the space.	(e) (5)	Removing covers. When covers are removed from enclosed spaces, the opening shall be promptly guarded by a railing, temporary cover, or other barrier designed to prevent an accidental fall through the opening and to protect employees working in the space from objects entering the space.
(e)(6)	"Hazardous atmosphere." Employees may not enter any enclosed space while it contains a hazardous atmosphere, unless the entry conforms to the generic permit-required confined spaces standard in 1910.146 of this Part.	(6)	Hazardous atmosphere. Employees may not enter any enclosed space while it contains a hazardous atmosphere, unless the entry conforms to the permit-required confined spaces standard in § 1910.146.
	~~Note: The term "entry" is defined in 1910.146(b) of this Part.~~		*[definition added to .269(x)]*
(e)(7)	"Attendants." While work is being performed in the enclosed space, a person with first aid training ~~meeting paragraph (b) of this section~~ shall be immediately available outside the enclosed space to render emergency assistance if there is reason to believe that a hazard may exist in the space or if a hazard exists because of traffic patterns in the area of the opening used for entry. That person is not precluded from performing other duties outside the enclosed space if these duties do not distract the attendant from monitoring employees within the space.	(7)	Attendants. While work is being performed in the enclosed space, an attendant with first-aid training shall be immediately available outside the enclosed space to provide assistance if a hazard exists because of traffic patterns in the area of the opening used for entry. The attendant is not precluded from performing other duties outside the enclosed space if these duties do not distract the attendant from: monitoring employees within the space or ensuring that it is safe for employees to enter and exit the space.
	Note: See paragraph (t)(3) of this section for additional requirements on attendants for work in manholes.	[0]	Note to paragraph (e)(7): See paragraph (t) of this section for additional requirements on attendants for work in manholes and vaults.
(e)(8)	"Calibration of test instruments." Test instruments used to monitor atmospheres in enclosed spaces shall be kept in calibration, with a minimum accuracy of + or - 10 percent.	(8)	Calibration of test instruments. Test instruments used to monitor atmospheres in enclosed spaces shall be kept in calibration and shall have a minimum accuracy of ±10 percent.

(e)(9)	"Testing for oxygen deficiency." Before an employee enters an enclosed space, the internal atmosphere shall be tested for oxygen deficiency with a direct-reading meter or similar instrument, capable of collection and immediate analysis of data samples without the need for off-site evaluation. If continuous forced air ventilation is provided, testing is not required provided that the procedures used ensure that employees are not exposed to the hazards posed by oxygen deficiency.	(e) (9)	Testing for oxygen deficiency. Before an employee enters an enclosed space, the atmosphere in the enclosed space shall be tested for oxygen deficiency with a direct-reading meter or similar instrument, capable of collection and immediate analysis of data samples without the need for off-site evaluation. If continuous forced-air ventilation is provided, testing is not required provided that the procedures used ensure that employees are not exposed to the hazards posed by oxygen deficiency.
(e)(10)	"Testing for flammable gases and vapors." Before an employee enters an enclosed space, the internal atmosphere shall be tested for flammable gases and vapors with a direct-reading meter or similar instrument capable of collection and immediate analysis of data samples without the need for off-site evaluation. This test shall be performed after the oxygen testing and ventilation required by paragraph (e)(9) of this section demonstrate that there is sufficient oxygen to ensure the accuracy of the test for flammability.	(10)	Testing for flammable gases and vapors. Before an employee enters an enclosed space, the internal atmosphere shall be tested for flammable gases and vapors with a direct-reading meter or similar instrument capable of collection and immediate analysis of data samples without the need for off-site evaluation. This test shall be performed after the oxygen testing and ventilation required by paragraph (e)(9) of this section demonstrate that there is sufficient oxygen to ensure the accuracy of the test for flammability.
(e)(11)	"Ventilation and monitoring." If flammable gases or vapors are detected or if an oxygen deficiency is found, forced air ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable gases and vapors from accumulating. A continuous monitoring program to ensure that no increase in flammable gas or vapor concentration occurs may be followed in lieu of ventilation, if flammable gases or vapors are detected at safe levels.	(11)	Ventilation, and monitoring for flammable gases or vapors. If flammable gases or vapors are detected or if an oxygen deficiency is found, forced-air ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable gases and vapors from accumulating. A continuous monitoring program to ensure that no increase in flammable gas or vapor concentration above safe levels occurs may be followed in lieu of ventilation if flammable gases or vapors are initially detected at safe levels.
	Note: See the definition of hazardous atmosphere for guidance in determining whether or not a given concentration of a substance is considered to be hazardous.	[◊]	Note to paragraph (e)(11): See the definition of "hazardous atmosphere" for guidance in determining whether a specific concentration of a substance is hazardous.

(e)(12)	"Specific ventilation requirements." If continuous forced air ventilation is used, it shall begin before entry is made and shall be maintained long enough ~~to ensure~~ that a safe atmosphere exists before employees are allowed to enter the work area. The forced air ventilation shall be so directed as to ventilate the immediate area where employees are present within the enclosed space and shall continue until all employees leave the enclosed space.	(e) (12)	Specific ventilation requirements. If continuous forced-air ventilation is used, it shall begin before entry is made and shall be maintained long enough for the employer to be able to demonstrate that a safe atmosphere exists before employees are allowed to enter the work area. The forced-air ventilation shall be so directed as to ventilate the immediate area where employees are present within the enclosed space and shall continue until all employees leave the enclosed space.
(e)(13)	"Air supply." The air supply for the continuous forced air ventilation shall be from a clean source and may not increase the hazards in the enclosed space.	(13)	Air supply. The air supply for the continuous forced-air ventilation shall be from a clean source and may not increase the hazards in the enclosed space.
(e)(14)	"Open flames." If open flames are used in enclosed spaces, a test for flammable gases and vapors shall be made immediately before the open flame device is used and at least once per hour while the device is used in the space. Testing shall be conducted more frequently if conditions present in the enclosed space indicate that once per hour is insufficient to detect hazardous accumulations of flammable gases or vapors.	(14)	Open flames. If open flames are used in enclosed spaces, a test for flammable gases and vapors shall be made immediately before the open flame device is used and at least once per hour while the device is used in the space. Testing shall be conducted more frequently if conditions present in the enclosed space indicate that once per hour is insufficient to detect hazardous accumulations of flammable gases or vapors.
	Note: See the definition of hazardous atmosphere for guidance in determining whether or not a given concentration of a substance is considered to be hazardous.	[0]	Note to paragraph (e)(14): See the definition of "hazardous atmosphere" for guidance in determining whether a specific concentration of a substance is hazardous.
		[0]	Note to paragraph (e): Entries into enclosed spaces conducted in accordance with the permit-space entry requirements of paragraphs (d) through (k) of § 1910.146 are considered as complying with paragraph (e) of this section.

1910.269(f)	"Excavations." Excavation operations shall comply with Subpart P of Part 1926 of this chapter.	(f)	Excavations. Excavation operations shall comply with Subpart P of Part 1926 of this chapter.

1910.269(g)	"Personal protective equipment."	(g)	Personal protective equipment.
(g)(1)	"General." Personal protective equipment shall meet the requirements of Subpart I of this Part.	(1)	General. Personal protective equipment shall meet the requirements of Subpart I of this part.
		[0]	Note to paragraph (g)(1) of this section: Paragraph (h) of § 1910.132 sets employer payment obligations for the personal protective equipment required by this section, including, but not limited to, the fall protection equipment required by paragraph (g)(2) of this section, the electrical protective equipment required by paragraph (l)(3) of this section, and the flame-resistant and arc-rated clothing and other protective equipment required by paragraph (l)(8) of this section.
(g)(2)	"Fall protection."	(g) (2)	Fall protection.
(g)(2)(i)	Personal fall arrest equipment shall meet the requirements of Subpart M of Part 1926 of this Chapter.	(i)	Personal fall arrest systems shall meet the requirements of Subpart M of Part 1926 of this chapter.
		(ii)	Personal fall arrest equipment used by employees who are exposed to hazards from flames or electric arcs, as determined by the employer under paragraph (l)(8)(i) of this section, shall be capable of passing a drop test equivalent to that required by paragraph (g)(2)(iii)(L) of this section after exposure to an electric arc with a heat energy of 40±5 cal/cm^2.
(g)(2)(ii)	Body belts and safety straps for work positioning shall meet ~~the requirements of 1926.959 of this Chapter.~~	(iii)	Body belts and positioning straps for work-positioning equipment shall meet the following requirements:
		(A)	Hardware for body belts and positioning straps shall meet the following requirements:
		(1)	Hardware shall be made of drop-forged steel, pressed steel, formed steel, or equivalent material.
		(2)	Hardware shall have a corrosion-resistant finish.
		(3)	Hardware surfaces shall be smooth and free of sharp edges.
		(B)	Buckles shall be capable of withstanding an 8.9-kilonewton (2,000-pound-force) tension test with a maximum permanent deformation no greater than 0.4 millimeters (0.0156 inches).
		(g) (2) (iii) (C)	D rings shall be capable of withstanding a 22-kilonewton (5,000-pound-force) tensile test without cracking or breaking.

	(g) (2) (iii) (D)	Snaphooks shall be capable of withstanding a 22-kilonewton (5,000-pound-force) tension test without failure.
	[0]	Note to paragraph (g)(2)(iii)(D): Distortion of the snaphook sufficient to release the keeper is considered to be tensile failure of a snaphook.
	(E)	Top grain leather or leather substitute may be used in the manufacture of body belts and positioning straps; however, leather and leather substitutes may not be used alone as a load-bearing component of the assembly.
	(F)	Plied fabric used in positioning straps and in load-bearing parts of body belts shall be constructed in such a way that no raw edges are exposed and the plies do not separate.
	(G)	Positioning straps shall be capable of withstanding the following tests:
	(1)	A dielectric test of 819.7 volts, AC, per centimeter (25,000 volts per foot) for 3 minutes without visible deterioration;
	(2)	A leakage test of 98.4 volts, AC, per centimeter (3,000 volts per foot) with a leakage current of no more than 1 mA;
	[0]	Note to paragraphs (g)(2)(iii)(G)(1) and (g)(2)(iii)(G)(2): Positioning straps that pass direct-current tests at equivalent voltages are considered as meeting this requirement.
	(3)	Tension tests of 20 kilonewtons (4,500 pounds-force) for sections free of buckle holes and of 15 kilonewtons (3,500 pounds-force) for sections with buckle holes;
	(4)	A buckle-tear test with a load of 4.4 kilonewtons (1,000 pounds-force); and
	(5)	A flammability test in accordance with Table R-2.

	Table R-2—Flammability Test	
	Test method	**Criteria for passing the test**
	Vertically suspend a 500-mm (19.7-inch) length of strapping supporting a 100-kg (220.5-lb) weight. Use a butane or propane burner with a 76-mm (3-inch) flame. Direct the flame to an edge of the strapping at a distance of 25 mm (1 inch). Remove the flame after 5 seconds. Wait for any flames on the positioning strap to stop burning.	Any flames on the positioning strap shall self extinguish. The positioning strap shall continue to support the 100-kg (220.5-lb) mass.

	(g) (2) (iii) (H)	The cushion part of the body belt shall contain no exposed rivets on the inside and shall be at least 76 millimeters (3 inches) in width.
	(I)	Tool loops shall be situated on the body of a body belt so that the 100 millimeters (4 inches) of the body belt that is in the center of the back, measuring from D ring to D ring, is free of tool loops and any other attachments.
	(J)	Copper, steel, or equivalent liners shall be used around the bars of D rings to prevent wear between these members and the leather or fabric enclosing them.
	(K)	Snaphooks shall be of the locking type meeting the following requirements:
	(1)	The locking mechanism shall first be released, or a destructive force shall be placed on the keeper, before the keeper will open.
	(2)	A force in the range of 6.7 N (1.5 lbf) to 17.8 N (4 lbf) shall be required to release the locking mechanism.
	(3)	With the locking mechanism released and with a force applied on the keeper against the face of the nose, the keeper may not begin to open with a force of 11.2 N (2.5 lbf) or less and shall begin to open with a maximum force of 17.8 N (4 lbf).
	(L)	Body belts and positioning straps shall be capable of withstanding a drop test as follows:

		(g) (2) (iii) (L) (1)	The test mass shall be rigidly constructed of steel or equivalent material with a mass of 100 kg (220.5 lbm). For work-positioning equipment used by employees weighing more than 140 kg (310 lbm) fully equipped, the test mass shall be increased proportionately (that is, the test mass must equal the mass of the equipped worker divided by 1.4).
		(2)	For body belts, the body belt shall be fitted snugly around the test mass and shall be attached to the test-structure anchorage point by means of a wire rope.
		(3)	For positioning straps, the strap shall be adjusted to its shortest length possible to accommodate the test and connected to the test-structure anchorage point at one end and to the test mass on the other end.
		(4)	The test mass shall be dropped an unobstructed distance of 1 meter (39.4 inches) from a supporting structure that will sustain minimal deflection during the test.
		(5)	Body belts shall successfully arrest the fall of the test mass and shall be capable of supporting the mass after the test.
		(6)	Positioning straps shall successfully arrest the fall of the test mass without breaking, and the arrest force may not exceed 17.8 kilonewtons (4,000 pounds-force). Additionally, snaphooks on positioning straps may not distort to such an extent that the keeper would release.
		[0]	Note to paragraph (g)(2)(iii) of this section: When used by employees weighing no more than 140 kg (310 lbm) fully equipped, body belts and positioning straps that conform to American Society of Testing and Materials Standard Specifications for Personal Climbing Equipment, ASTM F887-12^{e1}, are deemed to be in compliance with paragraph (g)(2)(iii) of this section.
(g)(2)(iii)	Body belts, safety straps, lanyards, lifelines, and body harnesses shall be inspected before use each day to determine that the equipment is in safe working condition. Defective equipment may not be used.	(iv)	The following requirements apply to the care and use of personal fall protection equipment.
		(A)	Work-positioning equipment shall be inspected before use each day to determine that the equipment is in safe working condition. Work-positioning equipment that is not in safe working condition may not be used.

		[0]	Note to paragraph (g)(2)(iv)(A): Appendix F to this section contains guidelines for inspecting work-positioning equipment.
(g)(2)(iv)	~~Lifelines shall be protected against being cut or abraded.~~		
		(g) (2) (iv) (B)	Personal fall arrest systems shall be used in accordance with § 1926.502(d).
		[0]	Note to paragraph (g)(2)(iv)(B): Fall protection equipment rigged to arrest falls is considered a fall arrest system and must meet the applicable requirements for the design and use of those systems. Fall protection equipment rigged for work positioning is considered work-positioning equipment and must meet the applicable requirements for the design and use of that equipment.
(g)(2)(v)	Fall arrest equipment, work positioning equipment, or travel restricting equipment shall be used by employees working at elevated locations more than 4 feet (1.2 m) above the ground on poles, towers, or similar structures if other fall protection has not been provided. Fall protection equipment is not required to be used by a qualified employee climbing or changing location on poles, towers, or similar structures, unless conditions, such as, but not limited to, ice, high winds, the design of the structure (for example, no provision for holding on with hands), or the presence of contaminants on the structure, could cause the employee to lose his or her grip or footing.	(C)	The employer shall ensure that employees use fall protection systems as follows:
		(1)	Each employee working from an aerial lift shall use a fall restraint system or a personal fall arrest system. Paragraph (c)(2)(v) of § 1910.67 does not apply.
		(2)	Except as provided in paragraph (g)(2)(iv)(C)(3) of this section, each employee in elevated locations more than 1.2 meters (4 feet) above the ground on poles, towers, or similar structures shall use a personal fall arrest system, work-positioning equipment, or fall restraint system, as appropriate, if the employer has not provided other fall protection meeting Subpart D of this part.
		(3)	Until March 31, 2015, a qualified employee climbing or changing location on poles, towers, or similar structures need not use fall protection equipment, unless conditions, such as, but not limited to, ice, high winds, the design of the structure (for example, no provision for holding on with hands), or the presence of contaminants on the structure, could cause the employee to lose his or her grip or footing. On and after April 1, 2015, each qualified employee climbing or changing location on poles, towers, or similar structures must use fall protection equipment unless the employer can demonstrate that climbing or changing location with fall protection is infeasible or creates a greater hazard than climbing or changing location without it.

	Note 1: This paragraph applies to structures that support overhead electric power generation, transmission, and distribution lines and equipment. It does not apply to portions of buildings, such as loading docks, to electric equipment, such as transformers and capacitors, ~~nor to aerial lifts.~~ Requirements for fall protection associated with walking and working surfaces are contained in Subpart D of this Part; ~~requirements for fall protection associated with aerial lifts are contained in 1910.67 of this Part.~~		[◊] Note 1 to paragraphs (g)(2)(iv)(C)(2) and (g)(2)(iv)(C)(3): These paragraphs apply to structures that support overhead electric power transmission and distribution lines and equipment. They do not apply to portions of buildings, such as loading docks, or to electric equipment, such as transformers and capacitors. Subpart D of this part contains the duty to provide fall protection associated with walking and working surfaces.
	Note 2: Employees undergoing training are not considered "qualified employees" for the purposes of this provision. Unqualified employees (including trainees) are required to use fall protection any time they are more than 4 feet (1.2 m) above the ground.		[◊] Note 2 to paragraphs (g)(2)(iv)(C)(2) and (g)(2)(iv)(C)(3): Until the employer ensures that employees are proficient in climbing and the use of fall protection under paragraph (a)(2)(viii) of this section, the employees are not considered "qualified employees" for the purposes of paragraphs (g)(2)(iv)(C)(2) and (g)(2)(iv)(C)(3) of this section. These paragraphs require unqualified employees (including trainees) to use fall protection any time they are more than 1.2 meters (4 feet) above the ground.
(g)(2)(v)	~~The following requirements apply~~ to personal fall arrest systems:		*[Moved to (g)(2)(iv)(B) referencing § 1926.502(d)]*
(g)(2)(vi)(B)	~~When stopping or arresting a fall, personal fall arrest systems shall limit the maximum arresting force on an employee to 1800 pounds (8 kN) if used with a body harness.~~		
(g)(2)(vi)(C)	~~Personal fall arrest systems shall be rigged such that an employee can neither free fall more than 6 feet (1.8 m) nor contact any lower level.~~		
(g)(2)(vii)	~~If vertical lifelines or droplines are used, not more than one employee may be attached to any one lifeline.~~		
		(g) (2) (iv) (D)	On and after April 1, 2015, work-positioning systems shall be rigged so that an employee can free fall no more than 0.6 meters (2 feet).
		(E)	Anchorages for work-positioning equipment shall be capable of supporting at least twice the potential impact load of an employee's fall, or 13.3 kilonewtons (3,000 pounds-force), whichever is greater.

			[9]	Note to paragraph (g)(2)(iv)(E): Wood-pole fall-restriction devices meeting American Society of Testing and Materials Standard Specifications for Personal Climbing Equipment, ASTM F887-12^{e1}, are deemed to meet the anchorage-strength requirement when they are used in accordance with manufacturers' instructions.
(g)(2)(viii) (g)(2)(ix)	Snaphooks may not be connected to loops made in webbing-type lanyards. Snaphooks may not be connected to each other.	(g) (2) (iv) (F)		Unless the snaphook is a locking type and designed specifically for the following connections, snaphooks on work-positioning equipment may not be engaged:
			(1)	Directly to webbing, rope, or wire rope;
			(2)	To each other;
			(3)	To a D ring to which another snaphook or other connector is attached;
			(4)	To a horizontal lifeline; or
			(5)	To any object that is incompatibly shaped or dimensioned in relation to the snaphook such that accidental disengagement could occur should the connected object sufficiently depress the snaphook keeper to allow release of the object.

1910.269(h)	"Ladders, platforms, ~~step bolts, and manhole steps.~~"	(h)	Portable ladders and platforms.
(h)(1)	"General." Requirements for ladders contained in Subpart D of this Part apply, except as specifically noted in paragraph (h)(2) of this section.	(1)	General. Requirements for portable ladders contained in Subpart D of this part apply in addition to the requirements of paragraph (h) of this section, except as specifically noted in paragraph (h)(2) of this section.
(h)(2)	"Special ladders and platforms." Portable ladders ~~and platforms~~ used on structures or conductors in conjunction with overhead line work need not meet paragraphs (d)(2)(i) and (d)(2)(iii) of 1910.25 of this Part or paragraph (c)(3)(iii) of 1910.26 of this Part. However, these ladders and platforms shall meet the following requirements:	(2)	Special ladders and platforms. Portable ladders used on structures or conductors in conjunction with overhead line work need not meet § 1910.25(d)(2)(i) and (d)(2)(iii) or § 1910.26(c)(3)(iii). Portable ladders and platforms used on structures or conductors in conjunction with overhead line work shall meet the following requirements:
*[*Note: In (h)(2), (i)-(iv) order has been revised: OLD = NEW: (i)=(iii), (iii)=(iv), (iv)=(i)]*			
(h)(2)(i)	Ladders and platforms shall be secured to prevent their becoming accidentally dislodged.	(h) (2) (i)	In the configurations in which they are used, portable platforms shall be capable of supporting without failure at least 2.5 times the maximum intended load.
(h)(2)(ii)	Ladders and platforms may not be loaded in excess of the working loads for which they are designed.	(ii)	Portable ladders and platforms may not be loaded in excess of the working loads for which they are designed.
(h)(2)(iii)	Ladders and platforms may be used only in applications for which they were designed.	(iii)	Portable ladders and platforms shall be secured to prevent them from becoming dislodged.
(h)(2)(iv)	In the configurations in which they are used, ladders and platforms shall be capable of supporting without failure at least 2.5 times the maximum intended load.	(iv)	Portable ladders and platforms may be used only in applications for which they are designed.
(h)(3)	"Conductive ladders." Portable metal ladders and other portable conductive ladders may not be used near exposed energized lines or equipment. However, in specialized high-voltage work, conductive ladders shall be used where the employer can demonstrate that nonconductive ladders would present a greater hazard than conductive ladders.	(3)	Conductive ladders. Portable metal ladders and other portable conductive ladders may not be used near exposed energized lines or equipment. However, in specialized high-voltage work, conductive ladders shall be used when the employer demonstrates that nonconductive ladders would present a greater hazard to employees than conductive ladders.

1910.269(i)	"Hand and portable power tools."	(i)	Hand and portable power equipment.
(i)(1)	"General." Paragraph (i)(2) of this section applies to electric equipment connected by cord and plug. Paragraph (i)(3) of this section applies to portable and vehicle-mounted generators used to supply cord-and plug-connected equipment. Paragraph (i)(4) of this section applies to hydraulic and pneumatic tools.	(1)	General. Paragraph (i)(2) of this section applies to electric equipment connected by cord and plug. Paragraph (i)(3) of this section applies to portable and vehicle-mounted generators used to supply cord- and plug-connected equipment. Paragraph (i)(4) of this section applies to hydraulic and pneumatic tools.
(i)(2)	"Cord- and plug-connected equipment."	(i) (2)	Cord- and plug-connected equipment. Cord- and plug-connected equipment not covered by Subpart S of this part shall comply with one of the following instead of § 1910.243(a)(5):
(i)(2)(i)	Cord-and plug-connected equipment supplied by premises wiring is covered by Subpart S of this Part.		
(i)(2)(ii)	Any cord- and plug-connected equipment supplied by other than premises wiring shall comply with one of the following in lieu of 1910.243(a)(5) of this Part:		
(i)(2)(ii)(A)	It shall be equipped with a cord containing an equipment grounding conductor connected to the tool frame and to a means for grounding the other end (however, this option may not be used where the introduction of the ground into the work environment increases the hazard to an employee); or	(i)	The equipment shall be equipped with a cord containing an equipment grounding conductor connected to the equipment frame and to a means for grounding the other end of the conductor (however, this option may not be used where the introduction of the ground into the work environment increases the hazard to an employee); or
(i)(2)(ii)(B)	It shall be of the double-insulated type conforming to Subpart S of this Part; or	(ii)	The equipment shall be of the double-insulated type conforming to Subpart S of this part; or
(i)(2)(ii)(C)	It shall be connected to the power supply through an isolating transformer with an ungrounded secondary.	(iii)	The equipment shall be connected to the power supply through an isolating transformer with an ungrounded secondary of not more than 50 volts.
(i)(3)	"Portable and vehicle-mounted generators." Portable and vehicle-mounted generators used to supply cord- and plug-connected equipment shall meet the following requirements:	(3)	Portable and vehicle-mounted generators. Portable and vehicle-mounted generators used to supply cord- and plug-connected equipment covered by paragraph (i)(2) of this section shall meet the following requirements:
(i)(3)(i)	The generator may only supply equipment located on the generator or the vehicle and cord- and plug-connected equipment through receptacles mounted on the generator or the vehicle.	(i)	The generator may only supply equipment located on the generator or the vehicle and cord- and plug-connected equipment through receptacles mounted on the generator or the vehicle.
(i)(3)(ii)	The non-current-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles shall be bonded to the generator frame.	(ii)	The non-current-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles shall be bonded to the generator frame.
(i)(3)(iii)	~~In the case of~~ vehicle-mounted generators, the frame of the generator shall be bonded to the vehicle frame.	(iii)	For vehicle-mounted generators, the frame of the generator shall be bonded to the vehicle frame.

(i)(3)(iv)	Any neutral conductor shall be bonded to the generator frame.	(i)	(3) (iv)	Any neutral conductor shall be bonded to the generator frame.
(i)(4)	"Hydraulic and pneumatic tools."		(4)	Hydraulic and pneumatic tools.
(i)(4)(i)	Safe operating pressures for hydraulic and pneumatic tools, hoses, valves, pipes, filters, and fittings may not be exceeded.		(i)	Safe operating pressures for hydraulic and pneumatic tools, hoses, valves, pipes, filters, and fittings may not be exceeded.
	Note: If any hazardous defects are present, no operating pressure ~~would be~~ safe, and the hydraulic or pneumatic equipment involved may not be used. In the absence of defects, the maximum rated operating pressure is the maximum safe pressure.		[0]	Note to paragraph (i)(4)(i): If any hazardous defects are present, no operating pressure is safe, and the hydraulic or pneumatic equipment involved may not be used. In the absence of defects, the maximum rated operating pressure is the maximum safe pressure.
(i)(4)(ii)	A hydraulic or pneumatic tool used where it may contact exposed live parts shall be designed and maintained for such use.		(ii)	A hydraulic or pneumatic tool used where it may contact exposed energized parts shall be designed and maintained for such use.
(i)(4)(iii)	The hydraulic system supplying a hydraulic tool used where it may contact exposed live parts shall provide protection against loss of insulating value for the voltage involved due to the formation of a partial vacuum in the hydraulic line.		(iii)	The hydraulic system supplying a hydraulic tool used where it may contact exposed live parts shall provide protection against loss of insulating value, for the voltage involved, due to the formation of a partial vacuum in the hydraulic line.
	Note: Hydraulic lines without check valves having a separation of more than 35 feet (10.7 m) between the oil reservoir and the upper end of the hydraulic system promote the formation of a partial vacuum.		[0]	Note to paragraph (i)(4)(iii): Use of hydraulic lines that do not have check valves and that have a separation of more than 10.7 meters (35 feet) between the oil reservoir and the upper end of the hydraulic system promotes the formation of a partial vacuum.
(i)(4)(iv)	A pneumatic tool used on energized electric lines or equipment or used where it may contact exposed live parts shall provide protection against the accumulation of moisture in the air supply.		(iv)	A pneumatic tool used on energized electric lines or equipment, or used where it may contact exposed live parts, shall provide protection against the accumulation of moisture in the air supply.
(i)(4)(v)	Pressure shall be released before connections are broken, unless quick acting, self-closing connectors are used. Hoses may not be kinked.		(v)	Pressure shall be released before connections are broken, unless quick-acting, self-closing connectors are used.
(i)(4)(vi)	Employees may not use any part of their bodies to locate or attempt to stop a hydraulic leak.		(vi)	Employers must ensure that employees do not use any part of their bodies to locate, or attempt to stop, a hydraulic leak.
			(vii)	Hoses may not be kinked.

1910.269(j)	"Live-line tools."	(j)	Live-line tools.
(j)(1)	"Design of tools." Live-line tool rods, tubes, and poles shall be designed and constructed to withstand the following minimum tests:	(1)	Design of tools. Live-line tool rods, tubes, and poles shall be designed and constructed to withstand the following minimum tests:
(j)(1)(i)	100,000 volts per foot (3281 volts per centimeter) of length for 5 minutes if the tool is made of fiberglass-reinforced plastic (FRP), or	(i)	If the tool is made of fiberglass-reinforced plastic (FRP), it shall withstand 328,100 volts per meter (100,000 volts per foot) of length for 5 minutes, or
		[0]	Note to paragraph (j)(1)(i): Live-line tools using rod and tube that meet ASTM F711-02 (2007), Standard Specification for Fiberglass-Reinforced Plastic (FRP) Rod and Tube Used in Live Line Tools, are deemed to comply with paragraph (j)(1) of this section.
(j)(1)(ii)	75,000 volts per foot (2461 volts per centimeter) of length for 3 minutes if the tool is made of wood, or	(j) (1) (ii)	If the tool is made of wood, it shall withstand 246,100 volts per meter (75,000 volts per foot) of length for 3 minutes, or
(j)(1)(iii)	Other tests that the employer can demonstrate are equivalent.	(iii)	The tool shall withstand other tests that the employer can demonstrate are equivalent.
	Note: Live-line tools using rod and tube that meet ASTM F711-89, Standard Specification for Fiberglass-Reinforced Plastic (FRP) Rod and Tube Used in Live-Line Tools, conform to paragraph (j)(1)(i) of this section.		*[Moved to after (j)(1)(i)]*
(j)(2)	"Condition of tools."	(2)	Condition of tools.
(j)(2)(i)	Each live-line tool shall be wiped clean and visually inspected for defects before use each day.	(i)	Each live-line tool shall be wiped clean and visually inspected for defects before use each day.
(j)(2)(ii)	If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool shall be removed from service and examined and tested according to paragraph (j)(2)(iii) of this section before being returned to service.	(ii)	If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool shall be removed from service and examined and tested according to paragraph (j)(2)(iii) of this section before being returned to service.
(j)(2)(iii)	Live-line tools used for primary employee protection shall be removed from service every 2 years and whenever required under paragraph (j)(2)(ii) of this section for examination, cleaning, repair, and testing as follows:	(iii)	Live-line tools used for primary employee protection shall be removed from service every 2 years, and whenever required under paragraph (j)(2)(ii) of this section, for examination, cleaning, repair, and testing as follows:
(j)(2)(iii)(A)	Each tool shall be thoroughly examined for defects.	(A)	Each tool shall be thoroughly examined for defects.

(j)(2)(iii)(B)	If a defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is found, the tool shall be repaired and refinished or shall be permanently removed from service. If no such defect or contamination is found, the tool shall be cleaned and waxed.	(j) (2) (iii) (B)		If a defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is found, the tool shall be repaired and refinished or shall be permanently removed from service. If no such defect or contamination is found, the tool shall be cleaned and waxed.
(j)(2)(iii)(C)	The tool shall be tested in accordance with paragraphs (j)(2)(iii)(D) and (j)(2)(iii)(E) of this section under the following conditions:		(C)	The tool shall be tested in accordance with paragraphs (j)(2)(iii)(D) and (j)(2)(iii)(E) of this section under the following conditions:
(j)(2)(iii)(C)(1)	After the tool has been repaired or refinished; and		(1)	After the tool has been repaired or refinished; and
(j)(2)(iii)(C)(2)	After the examination if repair or refinishing is not performed, unless the tool is made of FRP rod or foam-filled FRP tube and the employer can demonstrate that the tool has no defects that could cause it to fail in use.		(2)	After the examination if repair or refinishing is not performed, unless the tool is made of FRP rod or foam-filled FRP tube and the employer can demonstrate that the tool has no defects that could cause it to fail during use.
(j)(2)(iii)(D)	The test method used shall be designed to verify the tool's integrity along its entire working length and, if the tool is made of fiberglass-reinforced plastic, its integrity under wet conditions.		(D)	The test method used shall be designed to verify the tool's integrity along its entire working length and, if the tool is made of fiberglass-reinforced plastic, its integrity under wet conditions.
(j)(2)(iii)(E)	The voltage applied during the tests shall be as follows:		(E)	The voltage applied during the tests shall be as follows:
(j)(2)(iii)(E)(1)	75,000 volts per foot (2461 volts per centimeter) of length for 1 minute if the tool is made of fiberglass, or		(1)	246,100 volts per meter (75,000 volts per foot) of length for 1 minute if the tool is made of fiberglass, or
(j)(2)(iii)(E)(2)	50,000 volts per foot (1640 volts per centimeter) of length for 1 minute if the tool is made of wood, or		(2)	164,000 volts per meter (50,000 volts per foot) of length for 1 minute if the tool is made of wood, or
(j)(2)(iii)(E)(3)	Other tests that the employer can demonstrate are equivalent.		(3)	Other tests that the employer can demonstrate are equivalent.
	Note: Guidelines for the examination, cleaning, repairing, and in-service testing of live-line tools are contained in the Institute of Electrical and Electronics Engineers Guide for In-Service Maintenance and Electrical Testing of Live-Line Tools, IEEE Std. 978-1984.	[0]		Note to paragraph (j)(2): Guidelines for the examination, cleaning, repairing, and in-service testing of live-line tools are specified in the Institute of Electrical and Electronics Engineers' IEEE Guide for Maintenance Methods on Energized Power Lines, IEEE Std 516-2009.

1910.269(k)	"Materials handling and storage."	(k)	Materials handling and storage.
(k)(1)	"General." Material handling and storage shall conform to the requirements of Subpart N of this Part.	(1)	General. Materials handling and storage shall comply with applicable material-handling and material-storage requirements in this part, including those in Subpart N of this part.
(k)(2)	"Materials storage near energized lines or equipment."	(2)	Materials storage near energized lines or equipment.
(k)(2)(i)	In areas not restricted to qualified persons only, materials or equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances plus an amount providing for the maximum sag and side swing of all conductors and providing for the height and movement of material handling equipment:	(i)	In areas to which access is not restricted to qualified persons only, materials or equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances, plus a distance that provides for the maximum sag and side swing of all conductors and for the height and movement of material-handling equipment:
(k)(2)(i)(A)	For lines and equipment energized at 50 kV or less, the distance is 10 feet (305 cm).	(A)	For lines and equipment energized at 50 kilovolts or less, the distance is 3.05 meters (10 feet).
(k)(2)(i)(B)	For lines and equipment energized at more than 50 kV, the distance is 10 feet (305 cm) plus 4 inches (10 cm) for every 10 kV over 50 kV.	(B)	For lines and equipment energized at more than 50 kilovolts, the distance is 3.05 meters (10 feet) plus 0.10 meter (4 inches) for every 10 kilovolts over 50 kilovolts.
(k)(2)(ii)	In areas restricted to qualified employees, material may not be stored within the working space about energized lines or equipment.	(ii)	In areas restricted to qualified employees, materials may not be stored within the working space about energized lines or equipment.
	Note: Requirements for the size of the working space are contained in paragraphs (u)(1) and (v)(3) of this section.	[0]	Note to paragraph (k)(2)(ii): Paragraphs (u)(1) and (v)(3) of this section specify the size of the working space.

1910.269(l)	"Working on or near exposed energized parts." This paragraph applies to work on exposed live parts, or near enough to them, to expose the employee to any hazard they present.	**(l)**	Working on or near exposed energized parts. This paragraph applies to work on exposed live parts, or near enough to them to expose the employee to any hazard they present.
(l)(1)	"General." Only qualified employees may work on or with exposed energized lines or parts of equipment. Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more. Electric lines and equipment shall be considered and treated as energized unless the provisions of paragraph (d) or paragraph (m) of this section have been followed.	**(1)**	General.
		(i)	Only qualified employees may work on or with exposed energized lines or parts of equipment.
		(ii)	Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more.
		(iii)	Electric lines and equipment shall be considered and treated as energized unless they have been deenergized in accordance with paragraph (d) or (m) of this section.
(l)(1)(i)	Except as provided in paragraph (l)(1)(ii) of this section, at least two employees shall be present while the following types of work are being performed:	(2)	At least two employees.
		(i)	Except as provided in paragraph (l)(2)(ii) of this section, at least two employees shall be present while any employees perform the following types of work:
(l)(1)(i)(A)	Installation, removal, or repair of lines ~~that are~~ energized at more than 600 volts,	(A)	Installation, removal, or repair of lines energized at more than 600 volts,
(l)(1)(i)(B)	Installation, removal, or repair of deenergized lines if an employee is exposed to contact with other parts energized at more than 600 volts,	(B)	Installation, removal, or repair of deenergized lines if an employee is exposed to contact with other parts energized at more than 600 volts,
(l)(1)(i)(C)	Installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts,	(C)	Installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts,
(l)(1)(i)(D)	Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts, and	(D)	Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts, and
(l)(1)(i)(E)	Other work that exposes an employee to electrical hazards greater than or equal to ~~those~~ posed by operations ~~that are~~ specifically listed in paragraphs (l)(1)(i)(A) through (l)(1)(i)(D) of this section.	(E)	Other work that exposes an employee to electrical hazards greater than, or equal to, the electrical hazards posed by operations listed specifically in paragraphs (l)(2)(i)(A) through (l)(2)(i)(D) of this section.
(l)(1)(ii)	Paragraph (l)(1)(i) of this section does not apply to the following operations:	(ii)	Paragraph (l)(2)(i) of this section does not apply to the following operations:

(l)(1)(ii)(A)	Routine switching of circuits, ~~if~~ the employer can demonstrate that conditions at the site allow this work to be performed safely,	(l) (2) (ii) (A)	Routine circuit switching, when the employer can demonstrate that conditions at the site allow safe performance of this work,
(l)(1)(ii)(B)	Work performed with live-line tools ~~if~~ the employee is positioned so that he or she is neither within reach of nor otherwise exposed to contact with energized parts, and	(l) (2) (ii) (B)	Work performed with live-line tools when the position of the employee is such that he or she is neither within reach of, nor otherwise exposed to contact with, energized parts, and
(l)(1)(ii)(C)	Emergency repairs to the extent necessary to safeguard the general public.	(C)	Emergency repairs to the extent necessary to safeguard the general public.
(l)(2)	"Minimum approach distances." The employer shall ensure that no employee approaches or takes any conductive object closer to exposed energized parts than set forth in Table R-6 through Table R-10, unless:	(3)	Minimum approach distances.
		(i)	The employer shall establish minimum approach distances no less than the distances computed by Table R-3 for ac systems or Table R-8 for dc systems.
		(ii)	No later than April 1, 2015, for voltages over 72.5 kilovolts, the employer shall determine the maximum anticipated per-unit transient overvoltage, phase-to-ground, through an engineering analysis or assume a maximum anticipated per-unit transient overvoltage, phase-to-ground, in accordance with Table R-9. When the employer uses portable protective gaps to control the maximum transient overvoltage, the value of the maximum anticipated per-unit transient overvoltage, phase-to-ground, must provide for five standard deviations between the statistical sparkover voltage of the gap and the statistical withstand voltage corresponding to the electrical component of the minimum approach distance. The employer shall make any engineering analysis conducted to determine maximum anticipated per-unit transient overvoltage available upon request to employees and to the Assistant Secretary or designee for examination and copying.
		[◊]	Note to paragraph (l)(3)(ii): See Appendix B to this section for information on how to calculate the maximum anticipated per-unit transient overvoltage, phase-to-ground, when the employer uses portable protective gaps to reduce maximum transient overvoltages.

		(iii)	The employer shall ensure that no employee approaches or takes any conductive object closer to exposed energized parts than the employer's established minimum approach distance, unless:
(l)(2)(i)	The employee is insulated from the energized part (insulating gloves or insulating gloves and sleeves worn in accordance with paragraph (l)(3) of this section are considered insulation of the employee only with regard to the energized part upon which work is being performed), or	(l) (3) (iii) (A)	The employee is insulated from the energized part (rubber insulating gloves or rubber insulating gloves and sleeves worn in accordance with paragraph (l)(4) of this section constitutes insulation of the employee from the energized part upon which the employee is working provided that the employee has control of the part in a manner sufficient to prevent exposure to uninsulated portions of the employee's body), or
(l)(2)(ii)	The energized part is insulated from the employee and from any other conductive object at a different potential, or	(B)	The energized part is insulated from the employee and from any other conductive object at a different potential, or
(l)(2)(iii)	The employee is insulated from any other exposed conductive object, as during live-line bare-hand work.	(C)	The employee is insulated from any other exposed conductive object in accordance with the requirements for live-line barehand work in paragraph (q)(3) of this section.
	~~Note:~~ ~~Paragraphs (u)(5)(i) and (v)(5)(i) and of this section contain requirements for the guarding and isolation of live parts. Parts of electric circuits that meet these two provisions are not considered as "exposed" unless a guard is removed or an employee enters the space intended to provide isolation from the live parts.~~		
(l)(3)	"Type of insulation." If the employee is to be insulated from energized parts by the use of insulating gloves (under paragraph (l)(2)(i) of this section), insulating sleeves shall also be used. However, insulating sleeves need not be used under the following conditions:	(4)	Type of insulation.
		(i)	When an employee uses rubber insulating gloves as insulation from energized parts (under paragraph (l)(3)(iii)(A) of this section), the employer shall ensure that the employee also uses rubber insulating sleeves. However, an employee need not use rubber insulating sleeves if:
(l)(3)(i)	If exposed energized parts on which work is not being performed are insulated from the employee and	(A)	Exposed energized parts on which the employee is not working are insulated from the employee; and
(l)(3)(ii)	If such insulation is placed from a position not exposing the employee's upper arm to contact with other energized parts.	(B)	When installing insulation for purposes of paragraph (l)(4)(i)(A) of this section, the employee installs the insulation from a position that does not expose his or her upper arm to contact with other energized parts.

		(iii)	When an employee uses rubber insulating gloves or rubber insulating gloves and sleeves as insulation from energized parts (under paragraph (l)(3)(iii)(A) of this section), the employer shall ensure that the employee:
		(l) (4) (ii) (A)	Puts on the rubber insulating gloves and sleeves in a position where he or she cannot reach into the minimum approach distance, established by the employer under paragraph (l)(3)(i) of this section; and
		(B)	Does not remove the rubber insulating gloves and sleeves until he or she is in a position where he or she cannot reach into the minimum approach distance, established by the employer under paragraph (l)(3)(i) of this section.
(l)(4)	"Working position." The employer shall ensure that each employee, to the extent that other safety-related conditions at the worksite permit, works in a position from which a slip or shock will not bring the employee's body into contact with exposed, uninsulated parts energized at a potential different from the employee.	(5)	Working position.
		(i)	The employer shall ensure that each employee, to the extent that other safety-related conditions at the worksite permit, works in a position from which a slip or shock will not bring the employee's body into contact with exposed, uninsulated parts energized at a potential different from the employee's.
		(ii)	When an employee performs work near exposed parts energized at more than 600 volts, but not more than 72.5 kilovolts, and is not wearing rubber insulating gloves, being protected by insulating equipment covering the energized parts, performing work using live-line tools, or performing live-line barehand work under paragraph (q)(3) of this section, the employee shall work from a position where he or she cannot reach into the minimum approach distance, established by the employer under paragraph (l)(3)(i) of this section.
(l)(5)	"Making connections." The employer shall ensure that connections are made as follows:	(6)	Making connections. The employer shall ensure that employees make connections as follows:
(l)(5)(i)	In connecting deenergized equipment or lines to an energized circuit by means of a conducting wire or device, an employee shall first attach the wire to the deenergized part;	(i)	In connecting deenergized equipment or lines to an energized circuit by means of a conducting wire or device, an employee shall first attach the wire to the deenergized part;
(l)(5)(ii)	When disconnecting equipment or lines from an energized circuit by means of a conducting wire or device, an employee shall remove the source end first; and	(ii)	When disconnecting equipment or lines from an energized circuit by means of a conducting wire or device, an employee shall remove the source end first; and

(l)(5)(iii)	When lines or equipment are connected to or disconnected from energized circuits, loose conductors shall be kept away from exposed energized parts.	(6) (iii)	When lines or equipment are connected to or disconnected from energized circuits, an employee shall keep loose conductors away from exposed energized parts.

(l)(6)	"Apparel."	(i) (7)	Conductive articles. When an employee performs work within reaching distance of exposed energized parts of equipment, the employer shall ensure that the employee removes or renders nonconductive all exposed conductive articles, such as keychains or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts.
(l)(6)(i)	When work is performed within reaching distance of exposed energized parts of equipment, the employer shall ensure that each employee removes or renders nonconductive all exposed conductive articles, such as key or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts.		
(l)(6)(ii)	The employer shall train each employee who is exposed to the hazards of flames or electric arcs in the hazards involved.	(8)	Protection from flames and electric arcs.
		(i)	The employer shall assess the workplace to identify employees exposed to hazards from flames or from electric arcs.
		(ii)	For each employee exposed to hazards from electric arcs, the employer shall make a reasonable estimate of the incident heat energy to which the employee would be exposed.
		[0]	Note 1 to paragraph (l)(8)(ii): Appendix E to this section provides guidance on estimating available heat energy. The Occupational Safety and Health Administration will deem employers following the guidance in Appendix E to this section to be in compliance with paragraph (l)(8)(ii) of this section. An employer may choose a method of calculating incident heat energy not included in Appendix E to this section if the chosen method reasonably predicts the incident energy to which the employee would be exposed.
		[0]	Note 2 to paragraph (l)(8)(ii): This paragraph does not require the employer to estimate the incident heat energy exposure for every job task performed by each employee. The employer may make broad estimates that cover multiple system areas provided the employer uses reasonable assumptions about the energy-exposure distribution throughout the system and provided the estimates represent the maximum employee exposure for those areas. For example, the employer could estimate the heat energy just outside a substation feeding a radial distribution system and use that estimate for all jobs performed on that radial system.

(l)(6)(iii)	The employer shall ensure that each employee who is exposed to the hazards ~~of~~ flames or electric arcs does not wear clothing that, when exposed to flames or electric arcs, could increase the extent of injury that would be sustained by the employee.	(l) (8) (iii)	The employer shall ensure that each employee who is exposed to hazards from flames or electric arcs does not wear clothing that could melt onto his or her skin or that could ignite and continue to burn when exposed to flames or the heat energy estimated under paragraph (l)(8)(ii) of this section.
	Note: Clothing made from the following types of fabrics, either alone or in blends, is prohibited by this paragraph, unless the employer can demonstrate that the fabric has been treated to withstand the conditions that may be encountered or that the clothing is worn in such a manner as to eliminate the hazard involved: acetate, nylon, polyester, rayon.	[0]	Note to paragraph (l)(8)(iii) of this section: This paragraph prohibits clothing made from acetate, nylon, polyester, rayon and polypropylene, either alone or in blends, unless the employer demonstrates that the fabric has been treated to withstand the conditions that may be encountered by the employee or that the employee wears the clothing in such a manner as to eliminate the hazard involved.
		(iv)	The employer shall ensure that the outer layer of clothing worn by an employee, except for clothing not required to be arc rated under paragraphs (l)(8)(v)(A) through (l)(8)(v)(E) of this section, is flame resistant under any of the following conditions:
		(A)	The employee is exposed to contact with energized circuit parts operating at more than 600 volts,
		(B)	An electric arc could ignite flammable material in the work area that, in turn, could ignite the employee's clothing,
		(C)	Molten metal or electric arcs from faulted conductors in the work area could ignite the employee's clothing, or
		[0]	Note to paragraph (l)(8)(iv)(C): This paragraph does not apply to conductors that are capable of carrying, without failure, the maximum available fault current for the time the circuit protective devices take to interrupt the fault.
		(iv) (D)	The incident heat energy estimated under paragraph (l)(8)(ii) of this section exceeds 2.0 cal/cm2

	(l) (8) (v)	The employer shall ensure that each employee exposed to hazards from electric arcs wears protective clothing and other protective equipment with an arc rating greater than or equal to the heat energy estimated under paragraph (l)(8)(ii) of this section whenever that estimate exceeds 2.0 cal/cm^2. This protective equipment shall cover the employee's entire body, except as follows:
	(A)	Arc-rated protection is not necessary for the employee's hands when the employee is wearing rubber insulating gloves with protectors or, if the estimated incident energy is no more than 14 cal/cm2, heavy-duty leather work gloves with a weight of at least 407 gm/m2(12 oz/yd2),
	(B)	Arc-rated protection is not necessary for the employee's feet when the employee is wearing heavy-duty work shoes or boots,
	(C)	Arc-rated protection is not necessary for the employee's head when the employee is wearing head protection meeting § 1910.135 if the estimated incident energy is less than 9 cal/cm^2 for exposures involving single-phase arcs in open air or 5 cal/cm^2 for other exposures,
	(D)	The protection for the employee's head may consist of head protection meeting § 1910.135 and a faceshield with a minimum arc rating of 8 cal/cm^2 if the estimated incident-energy exposure is less than 13 cal/cm^2 for exposures involving single-phase arcs in open air or 9 cal/cm^2 for other exposures, and
	(E)	For exposures involving single-phase arcs in open air, the arc rating for the employee's head and face protection may be 4 cal/cm2 less than the estimated incident energy.
	[0]	Note to paragraph (l)(8): See Appendix E to this section for further information on the selection of appropriate protection.
	(l) (8) (vi)	Dates.
	(A)	The obligation in paragraph (l)(8)(ii) of this section for the employer to make reasonable estimates of incident energy commences January 1, 2015.

		(l) (8) (vi) (B)	The obligation in paragraph (l)(8)(iv)(D) of this section for the employer to ensure that the outer layer of clothing worn by an employee is flame-resistant when the estimated incident heat energy exceeds 2.0 cal/cm^2 commences April 1, 2015.
		(C)	The obligation in paragraph (l)(8)(v) of this section for the employer to ensure that each employee exposed to hazards from electric arcs wears the required arc-rated protective equipment commences April 1, 2015.
(l)(7)	"Fuse handling." When fuses must be installed or removed with one or both terminals energized at more than 300 volts or with exposed parts energized at more than 50 volts, the employer shall ensure that tools or gloves rated for the voltage are used. When expulsion-type fuses are installed with one or both terminals energized at more than 300 volts, the employer shall ensure that each employee wears eye protection meeting the requirements of Subpart I of this Part, uses a tool rated for the voltage, and is clear of the exhaust path of the fuse barrel.	(9)	Fuse handling. When an employee must install or remove fuses with one or both terminals energized at more than 300 volts, or with exposed parts energized at more than 50 volts, the employer shall ensure that the employee uses tools or gloves rated for the voltage. When an employee installs or removes expulsion-type fuses with one or both terminals energized at more than 300 volts, the employer shall ensure that the employee wears eye protection meeting the requirements of Subpart I of this part, uses a tool rated for the voltage, and is clear of the exhaust path of the fuse barrel.
(l)(8)	"Covered (noninsulated) conductors." The requirements of this section which pertain to the hazards of exposed live parts also apply ~~when work is performed~~ in the proximity of covered (noninsulated) wires.	(10)	Covered (noninsulated) conductors. The requirements of this section that pertain to the hazards of exposed live parts also apply when an employee performs work in proximity to covered (noninsulated) wires.
(l)(9)	"Noncurrent-carrying metal parts." Noncurrent-carrying metal parts of equipment or devices, such as transformer cases and circuit breaker housings, shall be treated as energized at the highest voltage to which ~~they~~ are exposed, unless the employer inspects the installation and determines that these parts are grounded before work is performed.	(11)	Non-current-carrying metal parts. Non-current-carrying metal parts of equipment or devices, such as transformer cases and circuit-breaker housings, shall be treated as energized at the highest voltage to which these parts are exposed, unless the employer inspects the installation and determines that these parts are grounded before employees begin performing the work.
(l)(10)	"Opening circuits under load." Devices used to open circuits under load conditions shall be designed to interrupt the current involved.	(12)	Opening and closing circuits under load.
		(i)	The employer shall ensure that devices used by employees to open circuits under load conditions are designed to interrupt the current involved.
		(ii)	The employer shall ensure that devices used by employees to close circuits under load conditions are designed to safely carry the current involved.

Table R-3 — AC Live-Line Work Minimum Approach Distance

[The minimum approach distance (MAD; in meters) shall conform to the following equations.]

For phase-to-phase system voltages of 50 V to 300 V:[1]
MAD = avoid contact

For phase-to-phase system voltages of 301 V to 5 kV:[1]
MAD = *M* + *D*, where
D = 0.02 m ..... the electrical component of the minimum approach distance.
M = 0.31 m for voltages up to 750 V and 0.61 m otherwise ..... the inadvertent movement factor.

For phase-to-phase system voltages of 5.1 kV to 72.5 kV:[1,4]
MAD = *M* + *AD*, where
M = 0.61 m ..... the inadvertent movement factor.
A = the applicable value from Table R-5 ..... the altitude correction factor.
D = the value from Table R-4 corresponding to the voltage and exposure or the value of the electrical component the minimum approach distance using the method provided in Appendix B to this section ..... the electrical component of the minimum approach distance.

For phase-to-phase system voltages of more than 72.5 kV, nominal:[2,4]
MAD = 0.3048(*C* +)$V_{L\text{-}G}$TA + M, where
C = 0.01 for phase-to-ground exposures that the employer can demonstrate consist only of air across the approach distance (gap),
0.01 for phase-to-phase exposures if the employer can demonstrate that no insulated tool spans the gap and that no large conductive object is in the gap, or
0.011 otherwise
$V_{L\text{-}G}$ = phase-to-ground rms voltage, in kV
T = maximum anticipated per-unit transient overvoltage; for phase-to-ground exposures, *T* equals $T_{L\text{-}G}$, the maximum per-unit transient overvoltage, phase-to-ground, determined by the employer under paragraph (l)(3)(ii) of this section; for phase-to-phase exposures, *T* equals 1.35$T_{L\text{-}G}$ + 0.45
A = altitude correction factor from Table R-5
M = 0.31 m, the inadvertent movement factor
a = saturation factor, as follows:

Phase-to-Ground Exposures				
$V_{Peak} = T_{L-G}V_{L-G}\sqrt{2}$..... σ.....	635 kV or less 0	635.1 to 915 kV (V_{Peak}-635)/140,000	915.1 to 1,050 kV (V_{Peak}-645)/135,000	More than 1,050 kV (V_{Peak}-675)/125,000

Phase-to-Phase Exposures[3]					
$V_{Peak} = (1.35T_{L-G}+ 0.45)V_{L-G}\sqrt{2}$ ..... σ.....	630 kV or less 0	630.1 to 848 kV (V_{Peak} -630)/ 155,000	848.1 to 1,131 kV (V_{Peak}-633.6)/ 152,207	1,131.1 to 1,485 kV (V_{Peak}-628)/ 153,846	More than 1,485 kV (V_{Peak}-350.5)/ 203,666

[1] Employers may use the minimum approach distances in Table R-6. If the worksite is at an elevation of more than 900 meters (3,000 feet), see footnote 1 to Table R-6.

[2] Employers may use the minimum approach distances in Table R-7, except that the employer may not use the minimum approach distances in Table R-7 for phase-to-phase exposures if an insulated tool spans the gap or if any large conductive object is in the gap. If the worksite is at an elevation of more than 900 meters (3,000 feet), see footnote 1 to Table R-7. Employers may use the minimum approach distances in Table 6 through Table 13 in Appendix B to this section, which calculated MAD for various values of T, provided the employer follows the notes to those tables.

[3] Use the equations for phase-to-ground exposures (with V_{Peak} for phase-to-phase exposures) unless the employer can demonstrate that no insulated tool spans the gap and that no large conductive object is in the gap.

[4] Until March 31, 2015, employers may use the minimum approach distances in Table 6 through Table 13 in Appendix B to this section.

Table R-4 — Electrical Component of the Minimum Approach Distance at 5.1 to 72.5 kV
[D; In meters]

Nominal voltage (kV) phase-to-phase	Phase-to-ground exposure D (m)	Phase-to-phase exposure D (m)
5.1 to 15.0.....	0.04	0.07
15.1 to 36.0.....	0.16	0.28
36.1 to 46.0.....	0.23	0.37
46.1 to 72.5.....	0.39	0.59

[Previously Table 10]

Table R-10- Altitude Correction Factor

Altitude				Correction factor	
~~ft~~	~~ft~~	m	m		
~~3000~~	~~10000~~	900	3000	1.00	1.20
~~4000~~	~~12000~~	1200	3600	1.02	1.25
~~5000~~	~~14000~~	1500	4200	1.05	1.30
~~6000~~	~~16000~~	1800	4800	1.08	1.35
~~7000~~	~~18000~~	2100	5400	1.11	1.39
~~8000~~	~~20000~~	2400	6000	1.14	1.44
~~9000~~		2700		1.17	

~~Note: If the work is performed at elevations greater than 3000 ft (900 m) above mean sea level, the minimum approach distance shall be determined by multiplying the distances in Table R-6 through Table R-9 by the correction factor corresponding to the altitude at which work is performed.~~

Table R-5 — Altitude Correction Factor

Altitude above sea level (m)	A
0 to 900	1.00
901 to 1,200	1.02
1,201 to 1,500	1.05
1,501 to 1,800	1.08
1,801 to 2,100	1.11
2,101 to 2,400	1.14
2,401 to 2,700	1.17
2,701 to 3,000	1.20
3,001 to 3,600	1.25
3,601 to 4,200	1.30
4,201 to 4,800	1.35
4,801 to 5,400	1.39
5,401 to 6,000	1.44

Table R-6- AC Live-Line Work Minimum Approach Distance

Nominal voltage in kilovolts phase to phase	Distance: Phase to ground exposure (ft-in)	Phase to ground exposure (m)	Phase to phase exposure (ft-in)	Phase to phase exposure (m)
0.05 to 1.0	(4)	(4)	(4)	(4)
1.1 to 15.0	2-1	0.64	2-2	0.66
15.1 to 36.0	2-4	0.72	2-7	0.77
36.1 to 46.0	2-7	0.77	2-10	0.85
46.1 to 72.5	3-0	0.90	3-6	1.05
72.6 to 121	3-2	0.95	4-3	1.29
138 to 145	3-7	1.09	4-11	1.50
161 to 169	4-0	1.22	5-8	1.71
230 to 242	5-3	1.59	7-6	2.27
345 to 362	8-6	2.59	12-6	3.80
500 to 550	11-3	3.42	18-1	5.50
765 to 800	14-11	4.53	26-0	7.91

Note 1: These distances take into consideration the highest switching surge an employee will be exposed to on any system with air as the insulating medium and the maximum voltages shown.

Note 2: The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.

Note 3: See Appendix B to this section for information on how the minimum approach distances listed in the tables were derived.

[4] Avoid contact.

Table R-6—Alternative Minimum Approach Distances for Voltages of 72.5 kV and Less[1]
[In meters or feet and inches]

Nominal voltage (kV) phase-to-phase	Distance: Phase-to-ground exposure m	Phase-to-ground exposure ft	Phase-to-phase exposure m	Phase-to-phase exposure ft
0.50 to 0.300[2]	Avoid Contact		Avoid Contact	
0.301 to 0.750[2]	0.33	1.09	0.33	1.09
0.751 to 5.0	0.63	2.07	0.63	2.07
5.1 to 15.0	0.65	2.14	0.68	2.24
15.1 to 36.0	0.77	2.53	0.89	2.92
36.1 to 46.0	0.84	2.76	0.98	3.22
46.1 to 72.5	1.00	3.29	1.20	3.94

[1] Employers may use the minimum approach distances in this table provided the worksite is at an elevation of 900 meters (3,000 feet) or less. If employees will be working at elevations greater than 900 meters (3,000 feet) above mean sea level, the employer shall determine minimum approach distances by multiplying the distances in this table by the correction factor in Table R-5 corresponding to the altitude of the work.

[2] For single-phase systems, use voltage-to-ground.

Table R-7—Alternative Minimum Approach Distances for Voltages of More Than 72.5 kV[1 2 3]
[In meters or feet and inches]

Voltage range phase to phase (kV)	Phase-to-ground exposure m	Phase-to-ground exposure ft	Phase-to-phase exposure m	Phase-to-phase exposure ft
72.6 to 121.0	1.13	3.71	1.42	4.66
121.1 to 145.0	1.30	4.27	1.64	5.38
145.1 to 169.0	1.46	4.79	1.94	6.36
169.1 to 242.0	2.01	6.59	3.08	10.10
242.1 to 362.0	3.41	11.19	5.52	18.11
362.1 to 420.0	4.25	13.94	6.81	22.34
420.1 to 550.0	5.07	16.63	8.24	27.03
550.1 to 800.0	6.88	22.57	11.38	37.34

[1] Employers may use the minimum approach distances in this table provided the worksite is at an elevation of 900 meters (3,000 feet) or less. If employees will be working at elevations greater than 900 meters (3,000 feet) above mean sea level, the employer shall determine minimum approach distances by multiplying the distances in this table by the correction factor in Table R-5 corresponding to the altitude of the work.

[2] Employers may use the phase-to-phase minimum approach distances in this table provided that no insulated tool spans the gap and no large conductive object is in the gap.

[3] The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.

Table R-7- AC Live-Line Work Minimum Approach Distance With Overvoltage Factor Phase-to-Ground Exposure

Maximum anticipated per-unit transient over voltage	Distance in feet-inches: Maximum phase-to-phase voltage in kilovolts						
	121	145	169	242	362	552	800
1.5	.....	.....	.....	.....	.....	6-0	9-8
1.6	.....	.....	.....	.....	.....	6-6	10-8
1.7	.....	.....	.....	.....	.....	7-0	11-8
1.8	.....	.....	.....	.....	.....	7-7	12-8
1.9	.....	.....	.....	.....	.....	8-1	13-9
2.0	2-5	2-9	3-0	3-10	5-3	8-9	14-11
2.1	2-6	2-10	3-2	4-0	5-5	9-4	.....
2.2	2-7	2-11	3-3	4-1	5-9	9-11	.....
2.3	2-8	3-0	3-4	4-3	6-1	10-6	.....
2.4	2-9	3-1	3-5	4-5	6-4	11-3	.....
2.5	2-9	3-2	3-6	4-6	6-8	.....	.....
2.6	2-10	3-3	3-8	4-8	7-1	.....	.....
2.7	2-11	3-4	3-9	4-10	7-5	.....	.....
2.8	3-0	3-5	3-10	4-11	7-9	.....	.....
2.9	3-1	3-6	3-11	5-1	8-2	.....	.....
3.0	3-2	3-7	4-0	5-3	8-6	.....	.....

Note 1: The distance specified in this table may be applied only where the maximum anticipated per-unit transient overvoltage has been determined by engineering analysis and has been supplied by the employer. Table R-6 applies otherwise.
Note 2: The distances specified in this table are the air, bare-hand, and live-line tool distances.
Note 3: See Appendix B to this section for information on how the minimum approach distances listed in the tables were derived and on how to calculate revised minimum approach distances based on the control of transient overvoltages.

Table R-8-AC Live-Line Work Minimum Approach Distance With Overvoltage Factor Phase-to-Phase Exposure

Maximum anticipated per-unit transient over voltage	Distance in feet-inches: Maximum phase-to-phase voltage in kilovolts						
	121	145	169	242	362	552	800
1.5	.....	.....	.....	.....	.....	7-4	12-1
1.6	.....	.....	.....	.....	.....	8-9	14-6
1.7	.....	.....	.....	.....	.....	10-2	17-2
1.8	.....	.....	.....	.....	.....	11-7	19-11
1.9	.....	.....	.....	.....	.....	13-2	22-11
2.0	3-7	4-1	4-8	6-1	8-7	14-10	26-0
2.1	3-7	4-2	4-9	6-3	8-10	15-7	.....
2.2	3-8	4-3	4-10	6-4	9-2	16-4	.....
2.3	3-9	4-4	4-11	6-6	9-6	17-2	.....
2.4	3-10	4-5	5-0	6-7	9-11	18-1	.....
2.5	3-11	4-6	5-2	6-9	10-4	.....	.....
2.6	4-0	4-7	5-3	6-11	10-9	.....	.....
2.7	4-1	4-8	5-4	7-0	11-2	.....	.....
2.8	4-1	4-9	5-5	7-2	11-7	.....	.....
2.9	4-2	4-10	5-6	7-4	12-1	.....	.....
3.0	4-3	4-11	5-8	7-6	12-6	.....	.....

Note 1: The distance specified in this table may be applied only where the maximum anticipated per-unit transient overvoltage has been determined by engineering analysis and has been supplied by the employer. Table R-6 applies otherwise.
Note 2: The distances specified in this table are the air, bare-hand, and live-line tool distances.
Note 3: See Appendix B to this section for information on how the minimum approach distances listed in the tables were derived and on how to calculate revised minimum approach distances based on the control of transient overvoltages.

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Table R-9- DC Live-Line Work Minimum Approach Distance With Overvoltage Factor

~~Distance in feet-inches~~

Maximum anticipated per-unit transient overvoltage	Maximum line-to-ground voltage in kilovolts				
	250	400	500	600	750
1.5 or lower....	3-8	5-3	6-9	8-7	11-10
1.6.....	3-10	5-7	7-4	9-5	13-1
1.7.....	4-1	6-0	7-11	10-3	14-4
1.8.....	4-3	6-5	8-7	11-2	15-9

~~Note 1: The distances specified in this table may be applied only where the maximum anticipated per-unit transient overvoltage has been determined by engineering analysis and has been supplied by the employer. However, if the transient overvoltage factor is not known, a factor of 1.8 shall be assumed.~~

Note 2: The distances specified in this table are the air, bare-hand, and live-line tool distances.

Table R-8—DC Live-Line Minimum Approach Distance with Overvoltage Factor[1] [In meters]

Maximum anticipated per-unit transient overvoltage	Distance (m) maximum line-to-ground voltage (kV)				
	250	400	500	600	750
1.5 or less.....	1.12	1.60	2.06	2.62	3.61
1.6	1.17	1.69	2.24	2.86	3.98
1.7	1.23	1.82	2.42	3.12	4.37
1.8	1.28	1.95	2.62	3.39	4.79

[1] The distances specified in this table are for air, bare-hand, and live-line tool conditions. If employees will be working at elevations greater than 900 meters (3,000 feet) above mean sea level, the employer shall determine minimum approach distances by multiplying the distances in this table by the correction factor in Table R-5 corresponding to the altitude of the work.

Table R-10- Altitude Correction Factor | *[See NEW Table R-5 location, changes highlighted]*

Table R-9 — Assumed Maximum Per-Unit Transient Overvoltage

Voltage range (kV)	Type of current (ac or dc)	Assumed maximum per-unit transient overvoltage
72.6 to 420.0.....	ac	3.5
420.1 to 550.0.....	ac	3.0
550.1 to 800.0.....	ac	2.5
250 to 750	dc	1.8

1910.269(m)	"Deenergizing lines and equipment for employee protection."	**(m)**	Deenergizing lines and equipment for employee protection.
(m)(1)	"Application." Paragraph (m) of this section applies to the deenergizing of transmission and distribution lines and equipment for the purpose of protecting employees. Control of hazardous energy sources used in the generation of electric energy is covered in paragraph (d) of this section. Conductors and parts of electric equipment that have been deenergized under procedures other than those required by paragraph (d) or (m) of this section, as applicable, shall be treated as energized.	**(1)**	Application. Paragraph (m) of this section applies to the deenergizing of transmission and distribution lines and equipment for the purpose of protecting employees. See paragraph (d) of this section for requirements on the control of hazardous energy sources used in the generation of electric energy. Conductors and parts of electric equipment that have been deenergized under procedures other than those required by paragraph (d) or (m) of this section, as applicable, shall be treated as energized.
(m)(2)	"General."	**(2)**	General.
(m)(2)(i)	If a system operator is in charge of the lines or equipment and their means of disconnection, all of the requirements of paragraph (m)(3) of this section shall be observed, in the order given.	**(i)**	If a system operator is in charge of the lines or equipment and their means of disconnection, the employer shall designate one employee in the crew to be in charge of the clearance and shall comply with all of the requirements of paragraph (m)(3) of this section in the order specified.
(m)(2)(ii)	If no system operator is in charge of the lines or equipment and their means of disconnection, one employee in the crew shall be designated as being in charge of the clearance. All of the requirements of paragraph (m)(3) of this section apply, in the order given, except as provided in paragraph (m)(2)(iii) of this section. The employee in charge of the clearance shall take the place of the system operator, as necessary.	**(ii)**	If no system operator is in charge of the lines or equipment and their means of disconnection, the employer shall designate one employee in the crew to be in charge of the clearance and to perform the functions that the system operator would otherwise perform under paragraph (m) of this section. All of the requirements of paragraph (m)(3) of this section apply, in the order specified, except as provided in paragraph (m)(2)(iii) of this section.
(m)(2)(iii)	If only one crew will be working on the lines or equipment and if the means of disconnection is accessible and visible to and under the sole control of the employee in charge of the clearance, paragraphs (m)(3)(i), (m)(3)(iii), (m)(3)(iv), (m)(3)(viii), and (m)(3)(xii) of this section do not apply. Additionally, tags required by the remaining provisions of paragraph (m)(3) of this section need not be used.	**(iii)**	If only one crew will be working on the lines or equipment and if the means of disconnection is accessible and visible to, and under the sole control of, the employee in charge of the clearance, paragraphs (m)(3)(i), (m)(3)(iii), and (m)(3)(v) of this section do not apply. Additionally, the employer does not need to use the tags required by the remaining provisions of paragraph (m)(3) of this section.
		(iv)	If two or more crews will be working on the same lines or equipment, then:

		(m) (2) (iv) (A)	The crews shall coordinate their activities under paragraph (m) of this section with a single employee in charge of the clearance for all of the crews and follow the requirements of paragraph (m) of this section as if all of the employees formed a single crew, or
		(B)	Each crew shall independently comply with paragraph (m) of this section and, if there is no system operator in charge of the lines or equipment, shall have separate tags and coordinate deenergizing and reenergizing the lines and equipment with the other crews.
(m)(2)(iv)	Any disconnecting means that are accessible to persons outside the employer's control (for example, the general public) shall be rendered inoperable while they are open for the purpose of protecting employees.	(v)	The employer shall render any disconnecting means that are accessible to individuals outside the employer's control (for example, the general public) inoperable while the disconnecting means are open for the purpose of protecting employees.
(m)(3)	"Deenergizing lines and equipment."	(3)	Deenergizing lines and equipment.
(m)(3)(i)	A designated employee shall make a request of the system operator to have the particular section of line or equipment deenergized. The designated employee becomes the employee in charge (as this term is used in paragraph (m)(3) of this section) and is responsible for the clearance.	(i)	The employee that the employer designates pursuant to paragraph (m)(2) of this section as being in charge of the clearance shall make a request of the system operator to deenergize the particular section of line or equipment. The designated employee becomes the employee in charge (as this term is used in paragraph (m)(3) of this section) and is responsible for the clearance.
(m)(3)(ii)	All switches, disconnectors, jumpers, taps, and other means through which known sources of electric energy may be supplied to the particular lines and equipment to be deenergized shall be opened. Such means shall be rendered inoperable, unless its design does not so permit, and tagged to indicate that employees are at work.	(ii)	The employer shall ensure that all switches, disconnectors, jumpers, taps, and other means through which known sources of electric energy may be supplied to the particular lines and equipment to be deenergized are open. The employer shall render such means inoperable, unless its design does not so permit, and then ensure that such means are tagged to indicate that employees are at work.
(m)(3)(iii)	Automatically and remotely controlled switches that could cause the opened disconnecting means to close shall also be tagged at the point of control. The automatic or remote control feature shall be rendered inoperable, unless its design does not so permit.	(iii)	The employer shall ensure that automatically and remotely controlled switches that could cause the opened disconnecting means to close are also tagged at the points of control. The employer shall render the automatic or remote control feature inoperable, unless its design does not so permit.

		(m) (3) (iv)	The employer need not use the tags mentioned in paragraphs (m)(3)(ii) and (m)(3)(iii) of this section on a network protector for work on the primary feeder for the network protector's associated network transformer when the employer can demonstrate all of the following conditions:
			(A) Every network protector is maintained so that it will immediately trip open if closed when a primary conductor is deenergized;
			(B) Employees cannot manually place any network protector in a closed position without the use of tools, and any manual override position is blocked, locked, or otherwise disabled; and
			(C) The employer has procedures for manually overriding any network protector that incorporate provisions for determining, before anyone places a network protector in a closed position, that: The line connected to the network protector is not deenergized for the protection of any employee working on the line; and (if the line connected to the network protector is not deenergized for the protection of any employee working on the line) the primary conductors for the network protector are energized.
(m)(3)(iv)	Tags shall prohibit operation of the disconnecting means and shall indicate that employees are at work.	(iv)	Tags shall prohibit operation of the disconnecting means and shall indicate that employees are at work.
(m)(3)(v)	After the applicable requirements in paragraphs (m)(3)(i) through (m)(3)(iv) of this section have been followed and the employee in charge of the work has been given a clearance by the system operator, the lines and equipment to be worked shall be tested to ensure that they are deenergized.	(vi)	After the applicable requirements in paragraphs (m)(3)(i) through (m)(3)(v) of this section have been followed and the system operator gives a clearance to the employee in charge, the employer shall ensure that the lines and equipment are deenergized by testing the lines and equipment to be worked with a device designed to detect voltage.
(m)(3)(vi)	Protective grounds shall be installed as required by paragraph (n) of this section.	(vii)	The employer shall ensure the installation of protective grounds as required by paragraph (n) of this section.
(m)(3)(vii)	After the applicable requirements of paragraphs (m)(3)(i) through (m)(3)(vi) of this section have been followed, the lines and equipment involved may be worked as deenergized.	(viii)	After the applicable requirements of paragraphs (m)(3)(i) through (m)(3)(vii) of this section have been followed, the lines and equipment involved may be considered deenergized.

(m)(3)(viii)	~~If two or more independent crews will be working on the same lines or equipment, each crew shall independently comply with the requirements in paragraph (m)(3) of this section.~~		*[see (m)(2)(iv)]*
(m)(3)(ix)	To transfer the clearance, the employee in charge (or, if the employee in charge is forced to leave the worksite due to illness or other emergency, the employee's supervisor) shall inform the system operator; employees in the crew shall be informed of the transfer; and the new employee in charge shall be responsible for the clearance.	(m) (3) (ix)	To transfer the clearance, the employee in charge (or the employee's supervisor if the employee in charge must leave the worksite due to illness or other emergency) shall inform the system operator and employees in the crew; and the new employee in charge shall be responsible for the clearance.
(m)(3)(x)	To release a clearance, the employee in charge shall:	(x)	To release a clearance, the employee in charge shall:
(m)(3)(x)(A)	Notify employees under his or her direction that the clearance is to be released;	(A)	Notify each employee under that clearance of the pending release of the clearance;
(m)(3)(x)(B)	~~Determine~~ that all employees in the crew are clear of the lines and equipment;	(B)	Ensure that all employees under that clearance are clear of the lines and equipment;
(m)(3)(x)(C)	~~Determine~~ that all protective grounds installed by the crew have been removed; and	(C)	Ensure that all protective grounds protecting employees under that clearance have been removed; and
(m)(3)(x)(D)	Report this information to the system operator and release the clearance.	(D)	Report this information to the system operator and then release the clearance.
(m)(3)(xi)	The person releasing a clearance shall be the same person that requested the clearance, unless responsibility has been transferred under paragraph (m)(3)(ix) of this section.	(xi)	Only the employee in charge who requested the clearance may release the clearance, unless the employer transfers responsibility under paragraph (m)(3)(ix) of this section.
(m)(3)(xii)	Tags may not be removed unless the associated clearance has been released under paragraph (m)(3)(x) of this section.	(xii)	No one may remove tags without the release of the associated clearance as specified under paragraphs (m)(3)(x) and (m)(3)(xi) of this section.
(m)(3)(xiii)	Only after all protective grounds have been removed, after all crews working on the lines or equipment have released their clearances, after all employees are clear of the lines and equipment, and after all protective tags have been removed from a given point of disconnection, may action be initiated to reenergize the lines or equipment at that point of disconnection.	(xiii)	The employer shall ensure that no one initiates action to reenergize the lines or equipment at a point of disconnection until all protective grounds have been removed, all crews working on the lines or equipment release their clearances, all employees are clear of the lines and equipment, and all protective tags are removed from that point of disconnection.

1910.269(n)	"Grounding for the protection of employees."	(n)	Grounding for the protection of employees.
(n)(1)	"Application." Paragraph (n) of this section applies to the grounding of transmission and distribution lines and equipment for the purpose of protecting employees. Paragraph (n)(4) of this section also applies to the protective grounding of other equipment as required elsewhere in this section.	(1)	Application. Paragraph (n) of this section applies to grounding of generation, transmission, and distribution lines and equipment for the purpose of protecting employees. Paragraph (n)(4) of this section also applies to protective grounding of other equipment as required elsewhere in this section.
		[◊]	Note to paragraph (n)(1): This paragraph covers grounding of generation, transmission, and distribution lines and equipment when this section requires protective grounding and whenever the employer chooses to ground such lines and equipment for the protection of employees.
(n)(2)	"General." For ~~the~~ employee to work lines or equipment as deenergized, the lines or equipment shall be deenergized under the provisions of paragraph (m) of this section and shall ~~be grounded~~ as specified in paragraphs (n)(3) through (n)(9) of this section. However, if the employer can demonstrate that installation of a ground is impracticable or that the conditions resulting from the installation of a ground would present greater hazards than working without grounds, the lines and equipment may be treated as deenergized provided all of the following conditions are met:	(2)	General. For any employee to work transmission and distribution lines or equipment as deenergized, the employer shall ensure that the lines or equipment are deenergized under the provisions of paragraph (m) of this section and shall ensure proper grounding of the lines or equipment as specified in paragraphs (n)(3) through (n)(8) of this section. However, if the employer can demonstrate that installation of a ground is impracticable or that the conditions resulting from the installation of a ground would present greater hazards to employees than working without grounds, the lines and equipment may be treated as deenergized provided that the employer establishes that all of the following conditions apply:
(n)(2)(i)	The lines and equipment have been deenergized under the provisions of paragraph (m) of this section.	(i)	The employer ensures that the lines and equipment are deenergized under the provisions of paragraph (m) of this section.
(n)(2)(ii)	There is no possibility of contact with another energized source.	(ii)	There is no possibility of contact with another energized source.
(n)(2)(iii)	The hazard of induced voltage is not present.	(iii)	The hazard of induced voltage is not present.
(n)(3)	"Equipotential zone." Temporary protective grounds shall be placed at such locations and arranged in such a manner ~~as to prevent~~ each employee from being exposed to hazardous differences in electrical potential.	(3)	Equipotential zone. Temporary protective grounds shall be placed at such locations and arranged in such a manner that the employer can demonstrate will prevent each employee from being exposed to hazardous differences in electric potential.

		[0]	Note to paragraph (n)(3): Appendix C to this section contains guidelines for establishing the equipotential zone required by this paragraph. The Occupational Safety and Health Administration will deem grounding practices meeting these guidelines as complying with paragraph (n)(3) of this section.
(n)(4)	"Protective grounding equipment."	**(n) (4)**	Protective grounding equipment.
(n)(4)(i)	Protective grounding equipment shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault. This equipment shall have an ampacity greater than or equal to that of No. 2 AWG copper.	(i)	Protective grounding equipment shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault.
		(ii)	Protective grounding equipment shall have an ampacity greater than or equal to that of No. 2 AWG copper.
	Note: Guidelines for protective grounding equipment are contained in American Society for Testing and Materials Standard Specifications for Temporary Grounding Systems to be Used on De-Energized Electric Power Lines and Equipment, ASTM F855-1990.		*[Moved to end of (n)(4)]*
(n)(4)(ii)	Protective grounds shall have an impedance low enough to cause immediate operation of protective devices in case of accidental energizing of the lines or equipment.	(iii)	Protective grounds shall have an impedance low enough so that they do not delay the operation of protective devices in case of accidental energizing of the lines or equipment.
		[0]	Note to paragraph (n)(4): American Society for Testing and Materials Standard Specifications for Temporary Protective Grounds to Be Used on De-Energized Electric Power Lines and Equipment, ASTM F855-09, contains guidelines for protective grounding equipment. The Institute of Electrical Engineers Guide for Protective Grounding of Power Lines, IEEE Std 1048-2003, contains guidelines for selecting and installing protective grounding equipment.
(n)(5)	"Testing." Before any ground is installed, lines and equipment shall be tested and found absent of nominal voltage, unless a previously installed ground is present.	**(5)**	Testing. The employer shall ensure that, unless a previously installed ground is present, employees test lines and equipment and verify the absence of nominal voltage before employees install any ground on those lines or that equipment.

(n)(6)	"Order of connection." When a ground is to be attached to a line or to equipment, the ground-end connection shall be attached first, and then the other end shall be attached by means of a live-line tool.	(n) (6)	Connecting and removing grounds.
		(6) (i)	The employer shall ensure that, when an employee attaches a ground to a line or to equipment, the employee attaches the ground-end connection first and then attaches the other end by means of a live-line tool. For lines or equipment operating at 600 volts or less, the employer may permit the employee to use insulating equipment other than a live-line tool if the employer ensures that the line or equipment is not energized at the time the ground is connected or if the employer can demonstrate that each employee is protected from hazards that may develop if the line or equipment is energized.
(n)(7)	"Order of removal." When a ground is to be removed, the grounding device shall be removed from the line or equipment using a live-line tool before the ground-end connection is removed.	(ii)	The employer shall ensure that, when an employee removes a ground, the employee removes the grounding device from the line or equipment using a live-line tool before he or she removes the ground-end connection. For lines or equipment operating at 600 volts or less, the employer may permit the employee to use insulating equipment other than a live-line tool if the employer ensures that the line or equipment is not energized at the time the ground is disconnected or if the employer can demonstrate that each employee is protected from hazards that may develop if the line or equipment is energized.
(n)(8)	"Additional precautions." When work is performed on a cable at a location remote from the cable terminal, the cable may not be grounded at the cable terminal if there is a possibility of hazardous transfer of potential should a fault occur.	(7)	Additional precautions. The employer shall ensure that, when an employee performs work on a cable at a location remote from the cable terminal, the cable is not grounded at the cable terminal if there is a possibility of hazardous transfer of potential should a fault occur.
(n)(9)	"Removal of grounds for test." Grounds may be removed temporarily during tests. During the test procedure, the employer shall ensure that each employee uses insulating equipment and is isolated from any hazards involved, and the employer shall institute any additional measures as may be necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.	(8)	Removal of grounds for test. The employer may permit employees to remove grounds temporarily during tests. During the test procedure, the employer shall ensure that each employee uses insulating equipment, shall isolate each employee from any hazards involved, and shall implement any additional measures necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.

1910.269(o)	"Testing and test facilities."	(o)	Testing and test facilities.
(o)(1)	"Application." Paragraph (o) of this section provides for safe work practices for high-voltage and high-power testing performed in laboratories, shops, and substations, and in the field and on electric transmission and distribution lines and equipment. It applies only to testing involving interim measurements utilizing high voltage, high power, or combinations ~~of both~~, and not to testing involving continuous measurements as in routine metering, relaying, and normal line work.	(1)	Application. Paragraph (o) of this section provides for safe work practices for high-voltage and high-power testing performed in laboratories, shops, and substations, and in the field and on electric transmission and distribution lines and equipment. It applies only to testing involving interim measurements using high voltage, high power, or combinations of high voltage and high power, and not to testing involving continuous measurements as in routine metering, relaying, and normal line work.
	Note: Routine inspection and maintenance measurements made by qualified employees are considered to be routine line work and are not included in the scope of paragraph (o) of this section, as long as the hazards related to the use of intrinsic high-voltage or high-power sources require only the normal precautions associated with routine operation and maintenance work required in the other paragraphs of this section. Two typical examples of such excluded test work procedures are "phasing-out" testing and testing for a "no-voltage" condition.	[0]	Note to paragraph (o)(1): OSHA considers routine inspection and maintenance measurements made by qualified employees to be routine line work not included in the scope of paragraph (o) of this section, provided that the hazards related to the use of intrinsic high-voltage or high-power sources require only the normal precautions associated with routine work specified in the other paragraphs of this section. Two typical examples of such excluded test work procedures are "phasing-out" testing and testing for a "no-voltage" condition.
(o)(2)	"General requirements."	(2)	General requirements.
(o)(2)(i)	The employer shall establish and enforce work practices for the protection of each worker from the hazards of high-voltage or high-power testing at all test areas, temporary and permanent. Such work practices shall include, as a minimum, test area guarding, grounding, and the safe use of measuring and control circuits. A means providing for periodic safety checks of field test areas ~~shall also be included. (See paragraph (o)(6) of this section.)~~	(i)	The employer shall establish and enforce work practices for the protection of each worker from the hazards of high-voltage or high-power testing at all test areas, temporary and permanent. Such work practices shall include, as a minimum, test area safeguarding, grounding, the safe use of measuring and control circuits, and a means providing for periodic safety checks of field test areas.
(o)(2)(ii)	Employees shall be trained in safe work practices upon their initial assignment to the test area, with periodic reviews and updates provided as required by paragraph (a)(2) of this section.	(ii)	The employer shall ensure that each employee, upon initial assignment to the test area, receives training in safe work practices, with retraining provided as required by paragraph (a)(2) of this section.
(o)(3)	"Guarding of test areas."	(3)	Safeguarding of test areas.

		(o) (3) (i)	The employer shall provide safeguarding within test areas to control access to test equipment or to apparatus under test that could become energized as part of the testing by either direct or inductive coupling and to prevent accidental employee contact with energized parts.
(o)(3)(i)	Permanent test areas shall be guarded by walls, fences, or barriers designed to keep employees out of the test areas.	(ii)	The employer shall guard permanent test areas with walls, fences, or other barriers designed to keep employees out of the test areas.
(o)(3)(ii)	In field testing, or at a temporary test site where permanent fences and gates are not provided, one of the following means shall be used to prevent unauthorized employees from entering:	(iii)	In field testing, or at a temporary test site not guarded by permanent fences and gates, the employer shall ensure the use of one of the following means to prevent employees without authorization from entering:
(o)(3)(ii)(A)	~~The test area shall be guarded by the use of~~ distinctively colored safety tape that is supported approximately waist high and to which safety signs are attached,	(A)	Distinctively colored safety tape supported approximately waist high with safety signs attached to it,
(o)(3)(ii)(B)	~~The test area shall be guarded by~~ a barrier or barricade that limits access to the test area to a degree equivalent, physically and visually, to the barricade specified in paragraph (o)(3)(ii)(A) of this section, or	(B)	A barrier or barricade that limits access to the test area to a degree equivalent, physically and visually, to the barricade specified in paragraph (o)(3)(iii)(A) of this section, or
(o)(3)(ii)(C)	~~The test area shall be guarded by~~ one or more test observers stationed so that the entire area can be monitored.	(C)	One or more test observers stationed so that they can monitor the entire area.
(o)(3)(iii)	The barriers required by paragraph (o)(3)(ii) of this section shall be removed when the protection they provide is no longer needed.	(iv)	The employer shall ensure the removal of the safeguards required by paragraph (o)(3)(iii) of this section when employees no longer need the protection afforded by the safeguards.
~~(o)(3)(iv)~~	~~Guarding shall be provided within test areas to control access to test equipment or to apparatus under test that may become energized as part of the testing by either direct or inductive coupling, in order to prevent accidental employee contact with energized parts.~~		
(o)(4)	"Grounding practices."	(4)	Grounding practices.
(o)(4)(i)	The employer shall establish and implement safe grounding practices for the test facility.	(i)	The employer shall establish and implement safe grounding practices for the test facility.
(o)(4)(i)(A)	All conductive parts accessible to the test operator during the time the equipment is operating at high voltage shall be maintained at ground potential ~~except for portions of the equipment that are isolated from the test operator by guarding.~~	(A)	The employer shall maintain at ground potential all conductive parts accessible to the test operator while the equipment is operating at high voltage.

(o)(4)(i)(B)	Wherever ungrounded terminals of test equipment or apparatus under test may be present, they shall be treated as energized until determined by tests to be deenergized.	(o) (4) (i) (B)		Wherever ungrounded terminals of test equipment or apparatus under test may be present, they shall be treated as energized until tests demonstrate that they are deenergized.
(o)(4)(ii)	Visible grounds shall be applied, either automatically or manually with properly insulated tools, to the high-voltage circuits after they are deenergized and before work is performed on the circuit or item or apparatus under test. Common ground connections shall be solidly connected to the test equipment and the apparatus under test.		(ii)	The employer shall ensure either that visible grounds are applied automatically, or that employees using properly insulated tools manually apply visible grounds, to the high-voltage circuits after they are deenergized and before any employee performs work on the circuit or on the item or apparatus under test. Common ground connections shall be solidly connected to the test equipment and the apparatus under test.
(o)(4)(iii)	In high-power testing, an isolated ground-return conductor system shall be provided so that no intentional passage of current, with its attendant voltage rise, can occur in the ground grid or in the earth. However, an isolated ground-return conductor need not be provided if the employer can demonstrate that both the following conditions are met:		(iii)	In high-power testing, the employer shall provide an isolated ground-return conductor system designed to prevent the intentional passage of current, with its attendant voltage rise, from occurring in the ground grid or in the earth. However, the employer need not provide an isolated ground-return conductor if the employer can demonstrate that both of the following conditions exist:
(o)(4)(iii)(A)	An isolated ground-return conductor cannot be provided due to the distance of the test site from the electric energy source, and		(A)	The employer cannot provide an isolated ground-return conductor due to the distance of the test site from the electric energy source, and
(o)(4)(iii)(B)	Employees are protected from any hazardous step and touch potentials that may develop during the test.		(B)	The employer protects employees from any hazardous step and touch potentials that may develop during the test.
	Note: See Appendix C to this section for information on measures ~~that can be taken~~ to protect employees from hazardous step and touch potentials.		[◊]	Note to paragraph (o)(4)(iii)(B): See Appendix C to this section for information on measures that employers can take to protect employees from hazardous step and touch potentials.
(o)(4)(iv)	~~In~~ tests in which grounding of test equipment by means of the equipment grounding conductor located in the equipment power cord cannot be used due to increased hazards to test personnel or the prevention of satisfactory measurements, a ground that the employer can demonstrate affords equivalent safety shall be provided, and the safety ground shall be clearly indicated in the test set-up.		(iv)	For tests in which using the equipment grounding conductor in the equipment power cord to ground the test equipment would result in greater hazards to test personnel or prevent the taking of satisfactory measurements, the employer may use a ground clearly indicated in the test set-up if the employer can demonstrate that this ground affords protection for employees equivalent to the protection afforded by an equipment grounding conductor in the power supply cord.

(o)(4)(v)	When the test area is entered after equipment is deenergized, a ground shall be placed on the high-voltage terminal and any other exposed terminals.	(o) (4) (v)	The employer shall ensure that, when any employee enters the test area after equipment is deenergized, a ground is placed on the high-voltage terminal and any other exposed terminals.
(o)(4)(v)(A)	High capacitance equipment or apparatus shall be discharged through a resistor rated for the available energy.	(A)	Before any employee applies a direct ground, the employer shall discharge high capacitance equipment through a resistor rated for the available energy.
(o)(4)(v)(B)	A direct ground shall be applied to the exposed terminals when the stored energy drops to a level at which it is safe to do so.	(B)	A direct ground shall be applied to the exposed terminals after the stored energy drops to a level at which it is safe to do so.
(o)(4)(vi)	If a test trailer or test vehicle is used in field testing, its chassis shall be grounded. Protection against hazardous touch potentials with respect to the vehicle, instrument panels, and other conductive parts accessible to employees shall be provided by bonding, insulation, or isolation.	(vi)	If the employer uses a test trailer or test vehicle in field testing, its chassis shall be grounded. The employer shall protect each employee against hazardous touch potentials with respect to the vehicle, instrument panels, and other conductive parts accessible to employees with bonding, insulation, or isolation.
(o)(5)	"Control and measuring circuits."	(5)	Control and measuring circuits.
(o)(5)(i)	Control wiring, meter connections, test leads and cables may not be run from a test area unless they are contained in a grounded metallic sheath and terminated in a grounded metallic enclosure or unless other precautions are taken that the employer can demonstrate as ensuring equivalent safety.	(i)	The employer may not run control wiring, meter connections, test leads, or cables from a test area unless contained in a grounded metallic sheath and terminated in a grounded metallic enclosure or unless the employer takes other precautions that it can demonstrate will provide employees with equivalent safety.
(o)(5)(ii)	Meters and other instruments with accessible terminals or parts shall be isolated from test personnel to protect against hazards arising from such terminals and parts becoming energized during testing. If this isolation is provided by locating test equipment in metal compartments with viewing windows, interlocks shall be provided to interrupt the power supply if the compartment cover is opened.	(ii)	The employer shall isolate meters and other instruments with accessible terminals or parts from test personnel to protect against hazards that could arise should such terminals and parts become energized during testing. If the employer provides this isolation by locating test equipment in metal compartments with viewing windows, the employer shall provide interlocks to interrupt the power supply when someone opens the compartment cover.
(o)(5)(iii)	The routing and connections of temporary wiring shall be made secure against damage, accidental interruptions and other hazards. To the maximum extent possible, signal, control, ground, and power cables shall be kept separate.	(iii)	The employer shall protect temporary wiring and its connections against damage, accidental interruptions, and other hazards. To the maximum extent possible, the employer shall keep signal, control, ground, and power cables separate from each other.

(o)(5)(iv)	If employees will be present in the test area during testing, a test observer shall be present. The test observer shall be capable of implementing the immediate deenergizing of test circuits for safety purposes.	(o) (5) (iv)	If any employee will be present in the test area during testing, a test observer shall be capable of implementing the immediate deenergizing of test circuits for safety purposes.
(o)(6)	"Safety check."	(6)	Safety check.
(o)(6)(i)	Safety practices governing employee work at temporary or field test areas shall provide for a routine check of such test areas for safety at the beginning of each series of tests.	(i)	Safety practices governing employee work at temporary or field test areas shall provide, at the beginning of each series of tests, for a routine safety check of such test areas.
(o)(6)(ii)	The test operator in charge shall conduct these routine safety checks before each series of tests and shall verify at least the following conditions:	(ii)	The test operator in charge shall conduct these routine safety checks before each series of tests and shall verify at least the following conditions:
(o)(6)(ii)(A)	That barriers and guards are in workable condition and are properly placed to isolate hazardous areas;	(A)	Barriers and safeguards are in workable condition and placed properly to isolate hazardous areas;
(o)(6)(ii)(B)	~~That~~ system test status signals, if used, are in operable condition;	(B)	System test status signals, if used, are in operable condition;
(o)(6)(ii)(C)	That test power disconnects are clearly marked and readily available in an emergency;	(C)	Clearly marked test-power disconnects are readily available in an emergency;
(o)(6)(ii)(D)	That ground connections are clearly identifiable;	(D)	Ground connections are clearly identifiable;
(o)(6)(ii)(E)	~~That~~ personal protective equipment is provided and used as required by Subpart I of this Part and by this section; and	(E)	Personal protective equipment is provided and used as required by Subpart I of this part and by this section; and
(o)(6)(ii)(F)	That signal, ground, and power cables are properly separated.	(F)	Proper separation between signal, ground, and power cables.

1910.269(p)	"Mechanical equipment."	(p)	Mechanical equipment.
(p)(1)	"General requirements."	(1)	General requirements.
(p)(1)(i)	The critical safety components of mechanical elevating and rotating equipment shall receive a thorough visual inspection before use on each shift.	(i)	The critical safety components of mechanical elevating and rotating equipment shall receive a thorough visual inspection before use on each shift.
	Note: Critical safety components of mechanical elevating and rotating equipment are components whose failure would result in a free fall or free rotation of the boom.	[0]	Note to paragraph (p)(1)(i): Critical safety components of mechanical elevating and rotating equipment are components for which failure would result in free fall or free rotation of the boom.
(p)(1)(ii)	No vehicular equipment having an obstructed view to the rear may be operated on off-highway jobsites where any employee is exposed to the hazards created by the moving vehicle, unless:	(ii)	No motor vehicle or earthmoving or compacting equipment having an obstructed view to the rear may be operated on off-highway jobsites where any employee is exposed to the hazards created by the moving vehicle, unless:
(p)(1)(ii)(A)	The vehicle has a reverse signal alarm audible above the surrounding noise level, or	(A)	The vehicle has a reverse signal alarm audible above the surrounding noise level, or
(p)(1)(ii)(B)	The vehicle is backed up only when a designated employee signals that it is safe to do so.	(B)	The vehicle is backed up only when a designated employee signals that it is safe to do so.
(p)(1)(iii)	The operator of an electric line truck may not leave his or her position at the controls while a load is suspended, unless the employer can demonstrate that no employee (including the operator) might be endangered.	(iii)	Rubber-tired self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler-type tractors, crawler-type loaders, and motor graders, with or without attachments, shall have rollover protective structures that meet the requirements of Subpart W of Part 1926 of this chapter.
(p)(1)(iv)	Rubber-tired, self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler-type tractors, crawler-type loaders, and motor graders, with or without attachments, shall have roll-over protective structures that meet the requirements of Subpart W of Part 1926 of this chapter.	(iv)	The operator of an electric line truck may not leave his or her position at the controls while a load is suspended, unless the employer can demonstrate that no employee (including the operator) is endangered.
(p)(2)	"Outriggers."	(2)	Outriggers.
(p)(2)(i)	Vehicular equipment, if provided with outriggers, shall be operated with the outriggers extended and firmly set ~~as necessary for the stability of the specific configuration of the equipment.~~ Outriggers may not be extended or retracted outside of clear view of the operator unless all employees are outside the range of possible equipment motion.	(i)	Mobile equipment, if provided with outriggers, shall be operated with the outriggers extended and firmly set, except as provided in paragraph (p)(2)(iii) of this section.
		(ii)	Outriggers may not be extended or retracted outside of the clear view of the operator unless all employees are outside the range of possible equipment motion.

(p)(2)(ii)	If the work area or the terrain precludes the use of outriggers, the equipment may be operated only within its maximum load ratings for the particular configuration of the equipment without outriggers.	(p) (2) (iii)	If the work area or the terrain precludes the use of outriggers, the equipment may be operated only within its maximum load ratings specified by the equipment manufacturer for the particular configuration of the equipment without outriggers.
(p)(3)	"Applied loads." Mechanical equipment used to lift or move lines or other material shall be used within its maximum load rating and other design limitations for the conditions under which the work is being performed.	(3)	Applied loads. Mechanical equipment used to lift or move lines or other material shall be used within its maximum load rating and other design limitations for the conditions under which the mechanical equipment is being used.
(p)(4)	"Operations near energized lines or equipment."	(4)	Operations near energized lines or equipment.
(p)(4)(i)	Mechanical equipment shall be operated so that the minimum approach distances of Table R-6 through Table R-10 are maintained from exposed energized lines and equipment. However, the insulated portion of an aerial lift operated by a qualified employee in the lift is exempt from this requirement.	(i)	Mechanical equipment shall be operated so that the minimum approach distances, established by the employer under paragraph (l)(3)(i) of this section, are maintained from exposed energized lines and equipment. However, the insulated portion of an aerial lift operated by a qualified employee in the lift is exempt from this requirement if the applicable minimum approach distance is maintained between the uninsulated portions of the aerial lift and exposed objects having a different electrical potential.
(p)(4)(ii)	A designated employee other than the equipment operator shall observe the approach distance to exposed lines and equipment and give timely warnings before the minimum approach distance required by paragraph (p)(4)(i) is reached, unless the employer can demonstrate that the operator can accurately determine that the minimum approach distance is being maintained.	(ii)	A designated employee other than the equipment operator shall observe the approach distance to exposed lines and equipment and provide timely warnings before the minimum approach distance required by paragraph (p)(4)(i) of this section is reached, unless the employer can demonstrate that the operator can accurately determine that the minimum approach distance is being maintained.
(p)(4)(iii)	If, during operation of the mechanical equipment, the equipment could become energized, the operation shall also comply with at least one of paragraphs (p)(4)(iii)(A) through (p)(4)(iii)(C) of this section.	(iii)	If, during operation of the mechanical equipment, that equipment could become energized, the operation also shall comply with at least one of paragraphs (p)(4)(iii)(A) through (p)(4)(iii)(C) of this section.
(p)(4)(iii)(A)	The energized lines exposed to contact shall be covered with insulating protective material that will withstand the type of contact that might be made during the operation.	(A)	The energized lines or equipment exposed to contact shall be covered with insulating protective material that will withstand the type of contact that could be made during the operation.

(p)(4)(iii)(B)	The equipment shall be insulated for the voltage involved. The equipment shall be positioned so that its uninsulated portions cannot approach the lines or equipment any closer than the minimum approach distances specified in Table R-6 through Table R-10.	(p) (4) (iii) (B)	The mechanical equipment shall be insulated for the voltage involved. The mechanical equipment shall be positioned so that its uninsulated portions cannot approach the energized lines or equipment any closer than the minimum approach distances, established by the employer under paragraph (l)(3)(i) of this section.
(p)(4)(iii)(C)	Each employee shall be protected from hazards that might arise from equipment contact with the energized lines. The measures used shall ensure that employees will not be exposed to hazardous differences in potential. Unless the employer can demonstrate that the methods in use protect each employee from the hazards that might arise if the equipment contacts the energized line, the measures used shall include all of the following techniques:	(C)	Each employee shall be protected from hazards that could arise from mechanical equipment contact with energized lines or equipment. The measures used shall ensure that employees will not be exposed to hazardous differences in electric potential. Unless the employer can demonstrate that the methods in use protect each employee from the hazards that could arise if the mechanical equipment contacts the energized line or equipment, the measures used shall include all of the following techniques:
(p)(4)(iii)(C)(1)	Using the best available ground to minimize the time the lines remain energized,	(1)	Using the best available ground to minimize the time the lines or electric equipment remain energized,
(p)(4)(iii)(C)(2)	Bonding equipment together to minimize potential differences,	(2)	Bonding mechanical equipment together to minimize potential differences,
(p)(4)(iii)(C)(3)	Providing ground mats to extend areas of equipotential, and	(3)	Providing ground mats to extend areas of equipotential, and
(p)(4)(iii)(C)(4)	Employing insulating protective equipment or barricades to guard against any remaining hazardous potential differences.	(4)	Employing insulating protective equipment or barricades to guard against any remaining hazardous electrical potential differences.
	Note: Appendix C to this section contains information on hazardous step and touch potentials and on methods of protecting employees from hazards resulting from such potentials.	[◊]	Note to paragraph (p)(4)(iii)(C): Appendix C to this section contains information on hazardous step and touch potentials and on methods of protecting employees from hazards resulting from such potentials.

1910.269(q)	"Overhead lines." This paragraph provides additional requirements for work performed on or near overhead lines and equipment.	(q)	Overhead lines and live-line barehand work.
		(1)	This paragraph provides additional requirements for work performed on or near overhead lines and equipment and for live-line barehand work.
(q)(1)	"General."		General.
(q)(1)(i)	Before elevated structures, such as poles or towers, are subjected to such stresses as climbing or the installation or removal of equipment may impose, the employer shall ascertain that the structures are capable of sustaining the additional or unbalanced stresses. If the pole or other structure cannot withstand the loads which will be imposed, it shall be braced or otherwise supported so as to prevent failure.	(i)	Before allowing employees to subject elevated structures, such as poles or towers, to such stresses as climbing or the installation or removal of equipment may impose, the employer shall ascertain that the structures are capable of sustaining the additional or unbalanced stresses. If the pole or other structure cannot withstand the expected loads, the employer shall brace or otherwise support the pole or structure so as to prevent failure.
	Note: Appendix D to this section contains test methods that can be used in ascertaining whether a wood pole is capable of sustaining the forces that would be imposed by an employee climbing the pole. This paragraph also requires the employer to ascertain that the pole can sustain all other forces that will be imposed by the work to be performed.	[0]	Note to paragraph (q)(1)(i): Appendix D to this section contains test methods that employers can use in ascertaining whether a wood pole is capable of sustaining the forces imposed by an employee climbing the pole. This paragraph also requires the employer to ascertain that the pole can sustain all other forces imposed by the work employees will perform.
(q)(1)(ii)	When poles are set, moved, or removed near exposed energized overhead conductors, the pole may not contact the conductors.	(ii)	When a pole is set, moved, or removed near an exposed energized overhead conductor, the pole may not contact the conductor.
(q)(1)(iii)	When a pole is set, moved, or removed near an exposed energized overhead conductor, the employer shall ensure that each employee wears electrical protective equipment or uses insulated devices when handling the pole and that no employee contacts the pole with uninsulated parts of his or her body.	(iii)	When a pole is set, moved, or removed near an exposed energized overhead conductor, the employer shall ensure that each employee wears electrical protective equipment or uses insulated devices when handling the pole and that no employee contacts the pole with uninsulated parts of his or her body.
(q)(1)(iv)	To protect employees from falling into holes into which poles are to be placed, the holes shall be attended by employees or physically guarded whenever anyone is working nearby.	(iv)	To protect employees from falling into holes used for placing poles, the employer shall physically guard the holes, or ensure that employees attend the holes, whenever anyone is working nearby.
(q)(2)	"Installing and removing overhead lines." The following provisions apply to the installation and removal of overhead conductors or cable.	(2)	Installing and removing overhead lines. The following provisions apply to the installation and removal of overhead conductors or cable (overhead lines).

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(q)(2)(i)	The employer shall use the tension stringing method, barriers, or other equivalent measures to minimize the possibility that conductors and cables being installed or removed will contact energized power lines or equipment.	(q) (2) (i)	When lines that employees are installing or removing can contact energized parts, the employer shall use the tension-stringing method, barriers, or other equivalent measures to minimize the possibility that conductors and cables the employees are installing or removing will contact energized power lines or equipment.
(q)(2)(ii)	The protective measures required by paragraph (p)(4)(iii) of this section for mechanical equipment shall also be provided for conductors, cables, and pulling and tensioning equipment when the conductor or cable is being installed or removed close enough to energized conductors that any of the following failures could energize the pulling or tensioning equipment or the wire or cable being installed or removed:	(ii)	For conductors, cables, and pulling and tensioning equipment, the employer shall provide the protective measures required by paragraph (p)(4)(iii) of this section when employees are installing or removing a conductor or cable close enough to energized conductors that any of the following failures could energize the pulling or tensioning equipment or the conductor or cable being installed or removed:
(q)(2)(ii)(A)	Failure of the pulling or tensioning equipment,	(A)	Failure of the pulling or tensioning equipment,
(q)(2)(ii)(B)	Failure of the wire or cable being pulled, or	(B)	Failure of the conductor or cable being pulled, or
(q)(2)(ii)(C)	Failure of the previously installed lines or equipment.	(C)	Failure of the previously installed lines or equipment.
(q)(2)(iii)	If the conductors being installed or removed cross over energized conductors in excess of 600 volts and if the design of the circuit-interrupting devices protecting the lines so permits, the automatic-reclosing feature of these devices shall be made inoperative.	(iii)	If the conductors that employees are installing or removing cross over energized conductors in excess of 600 volts and if the design of the circuit-interrupting devices protecting the lines so permits, the employer shall render inoperable the automatic-reclosing feature of these devices.
(q)(2)(iv)	Before lines are installed parallel to existing energized lines, the employer shall make a determination of the approximate voltage to be induced in the new lines, or work shall proceed on the assumption that the induced voltage is hazardous. Unless the employer can demonstrate that the lines being installed are not subject to the induction of a hazardous voltage or unless the lines are treated as energized, the following requirements also apply:	(iv)	Before employees install lines parallel to existing energized lines, the employer shall make a determination of the approximate voltage to be induced in the new lines, or work shall proceed on the assumption that the induced voltage is hazardous. Unless the employer can demonstrate that the lines that employees are installing are not subject to the induction of a hazardous voltage or unless the lines are treated as energized, temporary protective grounds shall be placed at such locations and arranged in such a manner that the employer can demonstrate will prevent exposure of each employee to hazardous differences in electric potential.
(q)(2)(iv)(A)	~~Each bare conductor shall be grounded in increments so that no point along the conductor is more than 2 miles (3.22 km) from a ground.~~		

(q)(2)(iv)(B)	~~The grounds required in paragraph (q)(2)(iv)(A) of this section shall be left in place until the conductor installation is completed between dead ends.~~		
(q)(2)(iv)(C)	~~The grounds required in paragraph (q)(2)(iv)(A) of this section shall be removed as the last phase of aerial cleanup.~~		
(q)(2)(iv)(D)	~~If employees are working on bare conductors, grounds shall also be installed at each location where these employees are working, and grounds shall be installed at all open dead-end or catch-off points or the next adjacent structure.~~		
(q)(2)(iv)(E)	~~If two bare conductors are to be spliced, the conductors shall be bonded and grounded before being spliced.~~		
		[◊]	Note 1 to paragraph (q)(2)(iv): If the employer takes no precautions to protect employees from hazards associated with involuntary reactions from electric shock, a hazard exists if the induced voltage is sufficient to pass a current of 1 milliampere through a 500-ohm resistor. If the employer protects employees from injury due to involuntary reactions from electric shock, a hazard exists if the resultant current would be more than 6 milliamperes.
		[◊]	Note 2 to paragraph (q)(2)(iv): Appendix C to this section contains guidelines for protecting employees from hazardous differences in electric potential as required by this paragraph.
(q)(2)(v)	Reel handling equipment, including pulling and tensioning devices, shall be in safe operating condition and shall be leveled and aligned.	**(q) (2) (v)**	Reel-handling equipment, including pulling and tensioning devices, shall be in safe operating condition and shall be leveled and aligned.
(q)(2)(vi)	Load ratings of stringing lines, pulling lines, conductor grips, load-bearing hardware and accessories, rigging, and hoists may not be exceeded.	**(vi)**	The employer shall ensure that employees do not exceed load ratings of stringing lines, pulling lines, conductor grips, load-bearing hardware and accessories, rigging, and hoists.
(q)(2)(vii)	Pulling lines and accessories shall be repaired or replaced when defective.	**(vii)**	The employer shall repair or replace defective pulling lines and accessories.
(q)(2)(viii)	Conductor grips may not be used on wire rope, unless the grip is specifically designed for this application.	**(viii)**	The employer shall ensure that employees do not use conductor grips on wire rope unless the manufacturer specifically designed the grip for this application.

(q)(2)(ix)	Reliable communications, through two-way radios or other equivalent means, shall be maintained between the reel tender and the pulling rig operator.	(q) (2)	(ix)	The employer shall ensure that employees maintain reliable communications, through two-way radios or other equivalent means, between the reel tender and the pulling-rig operator.
(q)(2)(x)	The pulling rig may only be operated when it is safe to do so.		(x)	Employees may operate the pulling rig only when it is safe to do so.
	Note: Examples of unsafe conditions include employees in locations prohibited by paragraph (q)(2)(xi) of this section, conductor and pulling line hang-ups, and slipping of the conductor grip.		[0]	Note to paragraph (q)(2)(x): Examples of unsafe conditions include: employees in locations prohibited by paragraph (q)(2)(xi) of this section, conductor and pulling line hang-ups, and slipping of the conductor grip.
(q)(2)(xi)	While the conductor or pulling line is being pulled (in motion) with a power-driven device, employees are not permitted directly under overhead operations or on the cross arm, except as necessary to guide the stringing sock or board over or through the stringing sheave.		(xi)	While a power-driven device is pulling the conductor or pulling line and the conductor or pulling line is in motion, the employer shall ensure that employees are not directly under overhead operations or on the crossarm, except as necessary for the employees to guide the stringing sock or board over or through the stringing sheave.
(q)(3)	"Live-line bare-hand work." In addition to other applicable provisions contained in this section, the following requirements apply to live-line bare-hand work:	(3)		Live-line barehand work. In addition to other applicable provisions contained in this section, the following requirements apply to live-line barehand work:
(q)(3)(i)	Before using or supervising the use of the live-line bare-hand technique on energized circuits, employees shall be trained in the technique and in the safety requirements of paragraph (q)(3) of this section. Employees shall receive refresher training as required by paragraph (a)(2) of this section.		(i)	Before an employee uses or supervises the use of the live-line barehand technique on energized circuits, the employer shall ensure that the employee completes training conforming to paragraph (a)(2) of this section in the technique and in the safety requirements of paragraph (q)(3) of this section.
(q)(3)(ii)	Before any employee uses the live-line bare-hand technique on energized high-voltage conductors or parts, the following information shall be ascertained:		(ii)	Before any employee uses the live-line barehand technique on energized high-voltage conductors or parts, the employer shall ascertain the following information in addition to information about other existing conditions required by paragraph (a)(4) of this section:
(q)(3)(ii)(A)	The nominal voltage rating of the circuit on which the work is to be performed,		(A)	The nominal voltage rating of the circuit on which employees will perform the work,
(q)(3)(ii)(B)	The minimum approach distances to ground of lines and other energized parts on which work is to be performed, and		(B)	The clearances to ground of lines and other energized parts on which employees will perform the work, and
(q)(3)(ii)(C)	The voltage limitations of equipment to be used.		(C)	The voltage limitations of equipment employees will use.

(q)(3)(iii)	The insulated equipment, insulated tools, and aerial devices and platforms used shall be designed, tested, and intended for live-line bare-hand work. Tools and equipment shall be kept clean and dry while they are in use.	**(q) (3)**	(iii)	The employer shall ensure that the insulated equipment, insulated tools, and aerial devices and platforms used by employees are designed, tested, and made for live-line barehand work.
			(iv)	The employer shall ensure that employees keep tools and equipment clean and dry while they are in use.
(q)(3)(iv)	The automatic-reclosing feature of circuit-interrupting devices protecting the lines shall be made inoperative, if the design of the devices permits.		(v)	The employer shall render inoperable the automatic-reclosing feature of circuit-interrupting devices protecting the lines if the design of the devices permits.
(q)(3)(v)	Work may not be performed when adverse weather conditions would make the work hazardous even after the work practices required by this section are employed. Additionally, work may not be performed when winds reduce the phase-to-phase or phase-to-ground minimum approach distances at the work location below that specified in paragraph (q)(3)(xiii) of this section, unless the grounded objects and other lines and equipment are covered by insulating guards.		(vi)	The employer shall ensure that employees do not perform work when adverse weather conditions would make the work hazardous even after the employer implements the work practices required by this section. Additionally, employees may not perform work when winds reduce the phase-to-phase or phase-to-ground clearances at the work location below the minimum approach distances specified in paragraph (q)(3)(xiv) of this section, unless insulating guards cover the grounded objects and other lines and equipment.
	Note: Thunderstorms in the ~~immediate~~ vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make live-line bare-hand work too hazardous to perform safely.		**[0]**	Note to paragraph (q)(3)(vi): Thunderstorms in the vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that make live-line barehand work too hazardous to perform safely even after the employer implements the work practices required by this section.
(q)(3)(vi)	A conductive bucket liner or other conductive device shall be provided for bonding the insulated aerial device to the energized line or equipment.		(vii)	The employer shall provide and ensure that employees use a conductive bucket liner or other conductive device for bonding the insulated aerial device to the energized line or equipment.
(q)(3)(vi)(A)	The employee shall be connected to the bucket liner or other conductive device by the use of conductive shoes, leg clips, or other means.		(A)	The employee shall be connected to the bucket liner or other conductive device by the use of conductive shoes, leg clips, or other means.
(q)(3)(vi)(B)	Where differences in potentials at the worksite pose a hazard to employees, electrostatic shielding designed for the voltage being worked shall be provided.		(B)	Where differences in potentials at the worksite pose a hazard to employees, the employer shall provide electrostatic shielding designed for the voltage being worked.

(q)(3)(vii)	Before the employee contacts the energized part, the conductive bucket liner or other conductive device shall be bonded to the energized conductor by means of a positive connection. This connection shall remain attached to the energized conductor until the work on the energized circuit is completed.	**(q) (3)** (viii)	The employer shall ensure that, before the employee contacts the energized part, the employee bonds the conductive bucket liner or other conductive device to the energized conductor by means of a positive connection. This connection shall remain attached to the energized conductor until the employee completes the work on the energized circuit.
(q)(3)(viii)	Aerial lifts to be used for live-line bare-hand work shall have dual controls (lower and upper) as follows:	(ix)	Aerial lifts used for live-line barehand work shall have dual controls (lower and upper) as follows:
(q)(3)(viii)(A)	The upper controls shall be within easy reach of the employee in the bucket. On a two-bucket-type lift, access to the controls shall be within easy reach from either bucket.	(A)	The upper controls shall be within easy reach of the employee in the bucket. On a two-bucket-type lift, access to the controls shall be within easy reach of both buckets.
(q)(3)(viii)(B)	The lower set of controls shall be ~~located near~~ the base of the boom, and ~~they~~ shall be so designed that they can override operation of the equipment at any time.	(B)	The lower set of controls shall be near the base of the boom and shall be designed so that they can override operation of the equipment at any time.
(q)(3)(ix)	Lower (ground-level) lift controls may not be operated with an employee in the lift, except in case of emergency.	(x)	Lower (ground-level) lift controls may not be operated with an employee in the lift except in case of emergency.
(q)(3)(x)	Before employees are elevated into the work position, all controls (ground level and bucket) shall be checked to determine that they are in proper working condition.	(xi)	The employer shall ensure that, before employees elevate an aerial lift into the work position, the employees check all controls (ground level and bucket) to determine that they are in proper working condition.
(q)(3)(xi)	Before the boom of an aerial lift is elevated, the body of the truck shall be grounded, or the body of the truck shall be barricaded and treated as energized.	(xii)	The employer shall ensure that, before employees elevate the boom of an aerial lift, the employees ground the body of the truck or barricade the body of the truck and treat it as energized.
(q)(3)(xii)	A boom-current test shall be made before work is started each day, each time during the day when higher voltage is encountered, and when changed conditions indicate a need for an additional test.This test shall consist of placing the bucket in contact with an energized source equal to the voltage to be encountered for a minimum of 3 minutes. The leakage current may not exceed 1 microampere per kilovolt of nominal phase-to-ground voltage. Work from the aerial lift shall be immediately suspended upon indication of a malfunction in the equipment.	(xiii)	The employer shall ensure that employees perform a boom-current test before starting work each day, each time during the day when they encounter a higher voltage, and when changed conditions indicate a need for an additional test.
		(A)	This test shall consist of placing the bucket in contact with an energized source equal to the voltage to be encountered for a minimum of 3 minutes.
		(B)	The leakage current may not exceed 1 microampere per kilovolt of nominal phase-to-ground voltage.
		(C)	The employer shall immediately suspend work from the aerial lift when there is any indication of a malfunction in the equipment.

(q)(3)(xiii)	The minimum approach distances specified in Table R-6 through Table R-10 shall be maintained from all grounded objects and from lines and equipment at a potential different from that to which the live-line bare-hand equipment is bonded, unless such grounded objects and other lines and equipment are covered by insulating guards.	**(q) (3)** (xiv)	The employer shall ensure that employees maintain the minimum approach distances, established by the employer under paragraph (l)(3)(i) of this section, from all grounded objects and from lines and equipment at a potential different from that to which the live-line barehand equipment is bonded, unless insulating guards cover such grounded objects and other lines and equipment.
(q)(3)(xiv)	While an employee is approaching, leaving, or bonding to an energized circuit, the minimum approach distances in Table R-6 through Table R-10 shall be maintained between the employee and any grounded parts, including the lower boom and portions of the truck.	(xv)	The employer shall ensure that, while an employee is approaching, leaving, or bonding to an energized circuit, the employee maintains the minimum approach distances, established by the employer under paragraph (l)(3)(i) of this section, between the employee and any grounded parts, including the lower boom and portions of the truck and between the employee and conductive objects energized at different potentials.
(q)(3)(xv)	While the bucket is ~~positioned~~ alongside an energized bushing or insulator string, the phase-to-ground minimum approach distances of Table R-6 through Table R-10 shall be maintained between all parts of the bucket and the grounded end of the bushing or insulator string or any other grounded surface.	(xvi)	While the bucket is alongside an energized bushing or insulator string, the employer shall ensure that employees maintain the phase-to-ground minimum approach distances, established by the employer under paragraph (l)(3)(i) of this section, between all parts of the bucket and the grounded end of the bushing or insulator string or any other grounded surface.
(q)(3)(xvi)	Hand lines may not be used between the bucket and the boom or between the bucket and the ground. However, non-conductive-type hand lines may be used from conductor to ground if not supported from the bucket. Ropes used for live-line bare-hand work may not be used for other purposes.	(xvii)	The employer shall ensure that employees do not use handlines between the bucket and the boom or between the bucket and the ground. However, employees may use nonconductive-type handlines from conductor to ground if not supported from the bucket. The employer shall ensure that no one uses ropes used for live-line barehand work for other purposes.
(q)(3)(xvii)	Uninsulated equipment or material may not be passed between a pole or structure and an aerial lift while an employee working from the bucket is bonded to an energized part.	(xviii)	The employer shall ensure that employees do not pass uninsulated equipment or material between a pole or structure and an aerial lift while an employee working from the bucket is bonded to an energized part.
(q)(3)(xviii)	~~A minimum approach distance table reflecting the minimum approach distances listed in Table R-6 through Table R-10 shall be printed on a plate of durable non-conductive material. This table shall be mounted so as to be visible to the operator of the boom.~~		

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(q)(3)(xix)	A non-conductive measuring device shall be readily accessible to assist employees in maintaining the required minimum approach distance.	(q) (3) (xix)	A nonconductive measuring device shall be readily accessible to employees performing live-line barehand work to assist them in maintaining the required minimum approach distance.
(q)(4)	"Towers and structures." The following requirements apply to work performed on towers or other structures which support overhead lines.	(4)	Towers and structures. The following requirements apply to work performed on towers or other structures that support overhead lines.
(q)(4)(i)	The employer shall ensure that no employee is under a tower or structure while work is in progress, except where the employer can demonstrate that such a working position is necessary to assist employees working above.	(i)	The employer shall ensure that no employee is under a tower or structure while work is in progress, except when the employer can demonstrate that such a working position is necessary to assist employees working above.
(q)(4)(ii)	Tag lines or other similar devices shall be used to maintain control of tower sections being raised or positioned, unless the employer can demonstrate that the use of such devices would create a greater hazard.	(ii)	The employer shall ensure that employees use tag lines or other similar devices to maintain control of tower sections being raised or positioned, unless the employer can demonstrate that the use of such devices would create a greater hazard to employees.
(q)(4)(iii)	The loadline may not be detached from a member or section until the load is safely secured.	(iii)	The employer shall ensure that employees do not detach the loadline from a member or section until they safely secure the load.
(q)(4)(iv)	Except during emergency restoration procedures, work shall be discontinued when adverse weather conditions would make the work hazardous in spite of the work practices required by this section.	(iv)	The employer shall ensure that, except during emergency restoration procedures, employees discontinue work when adverse weather conditions would make the work hazardous in spite of the work practices required by this section.
	Note: Thunderstorms in the ~~immediate~~ vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make this work too hazardous to perform, except under emergency conditions.	[◊]	Note to paragraph (q)(4)(iv): Thunderstorms in the vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that make this work too hazardous to perform even after the employer implements the work practices required by this section.

1910.269(r)	"Line-clearance tree trimming operations." This paragraph provides additional requirements for line-clearance tree-trimming operations and for equipment used in these operations.	(r)	Line-clearance tree trimming operations. This paragraph provides additional requirements for line-clearance tree-trimming operations and for equipment used in these operations.
(r)(1)	"Electrical hazards." This paragraph does not apply to qualified employees.	(1)	Electrical hazards. This paragraph does not apply to qualified employees.
(r)(1)(i)	Before an employee climbs, enters, or works around any tree, a determination shall be made of the nominal voltage of electric power lines posing a hazard to employees. However, a determination of the maximum nominal voltage to which an employee will be exposed may be made instead, if all lines are considered as energized at this maximum voltage.	(i)	Before an employee climbs, enters, or works around any tree, a determination shall be made of the nominal voltage of electric power lines posing a hazard to employees. However, a determination of the maximum nominal voltage to which an employee will be exposed may be made instead, if all lines are considered as energized at this maximum voltage.
(r)(1)(ii)	There shall be a second line-clearance tree trimmer within normal (that is, unassisted) voice communication under any of the following conditions:	(ii)	There shall be a second line-clearance tree trimmer within normal (that is, unassisted) voice communication under any of the following conditions:
(r)(1)(ii)(A)	If a line-clearance tree trimmer is to approach more closely than 10 feet (305 cm) any conductor or electric apparatus energized at more than 750 volts or	(A)	If a line-clearance tree trimmer is to approach more closely than 3.05 meters (10 feet) to any conductor or electric apparatus energized at more than 750 volts or
(r)(1)(ii)(B)	If branches or limbs being removed are closer to lines energized at more than 750 volts than the distances listed in Table R-6, Table R-9, and Table R-10 or	(B)	If branches or limbs being removed are closer to lines energized at more than 750 volts than the distances listed in Table R-5, Table R-6, Table R-7, and Table R-8 or
(r)(1)(ii)(C)	If roping is necessary to remove branches or limbs from such conductors or apparatus.	(C)	If roping is necessary to remove branches or limbs from such conductors or apparatus.
(r)(1)(iii)	Line-clearance tree trimmers shall maintain the minimum approach distances from energized conductors given in Table R-6, Table R-9, and Table R-10.	(iii)	Line-clearance tree trimmers shall maintain the minimum approach distances from energized conductors given in Table R-5, Table R-6, Table R-7, and Table R-8.
(r)(1)(iv)	Branches that are contacting exposed energized conductors or equipment or that are within the distances specified in Table R-6, Table R-9, and Table R-10 may be removed only through the use of insulating equipment.	(iv)	Branches that are contacting exposed energized conductors or equipment or that are within the distances specified in Table R-5, Table R-6, Table R-7, and Table R-8 may be removed only through the use of insulating equipment.
	Note: A tool constructed of a material that the employer can demonstrate has insulating qualities meeting paragraph (j)(1) of this section is considered as insulated under this paragraph if the tool is clean and dry.	[0]	Note to paragraph (r)(1)(iv): A tool constructed of a material that the employer can demonstrate has insulating qualities meeting paragraph (j)(1) of this section is considered as insulated under paragraph (r)(1)(iv) of this section if the tool is clean and dry.

(r)(1)(v)	Ladders, platforms, and aerial devices may not be brought closer to an energized part than the distances listed in Table R-6, Table R-9, and Table R-10.	(r) (1) (v)	Ladders, platforms, and aerial devices may not be brought closer to an energized part than the distances listed in Table R-5, Table R-6, Table R-7, and Table R-8.
(r)(1)(vi)	Line-clearance tree-trimming work may not be performed when adverse weather conditions make the work hazardous in spite of the work practices required by this section. Each employee performing line-clearance tree trimming work in the aftermath of a storm or under similar emergency conditions shall be trained in the special hazards related to this type of work.	(vi)	Line-clearance tree-trimming work may not be performed when adverse weather conditions make the work hazardous in spite of the work practices required by this section. Each employee performing line-clearance tree trimming work in the aftermath of a storm or under similar emergency conditions shall be trained in the special hazards related to this type of work.
	Note: Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make line-clearance tree trimming work too hazardous to perform safely.	[◊]	Note to paragraph (r)(1)(vi): Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make line-clearance tree trimming work too hazardous to perform safely.
(r)(2)	"Brush chippers."	(2)	Brush chippers.
(r)(2)(i)	Brush chippers shall be equipped with a locking device in the ignition system.	(i)	Brush chippers shall be equipped with a locking device in the ignition system.
(r)(2)(ii)	Access panels for maintenance and adjustment of the chipper blades and associated drive train shall be in place and secure during operation of the equipment.	(ii)	Access panels for maintenance and adjustment of the chipper blades and associated drive train shall be in place and secure during operation of the equipment.
(r)(2)(iii)	Brush chippers not equipped with a mechanical infeed system shall be equipped with an infeed hopper of length sufficient to prevent employees from contacting the blades or knives of the machine during operation.	(iii)	Brush chippers not equipped with a mechanical infeed system shall be equipped with an infeed hopper of length sufficient to prevent employees from contacting the blades or knives of the machine during operation.
(r)(2)(iv)	Trailer chippers detached from trucks shall be chocked or otherwise secured.	(iv)	Trailer chippers detached from trucks shall be chocked or otherwise secured.
(r)(2)(v)	Each employee in the immediate area of an operating chipper feed table shall wear personal protective equipment as required by Subpart I of this Part.	(v)	Each employee in the immediate area of an operating chipper feed table shall wear personal protective equipment as required by Subpart I of this part.
(r)(3)	"Sprayers and related equipment."	(3)	Sprayers and related equipment.
(r)(3)(i)	Walking and working surfaces of sprayers and related equipment shall be covered with slip-resistant material. If slipping hazards cannot be eliminated, slip-resistant footwear or handrails and stair rails meeting the requirements of Subpart D may be used instead of slip-resistant material.	(i)	Walking and working surfaces of sprayers and related equipment shall be covered with slip-resistant material. If slipping hazards cannot be eliminated, slip-resistant footwear or handrails and stair rails meeting the requirements of Subpart D of this part may be used instead of slip-resistant material.

(r)(3)(ii)	Equipment on which employees stand to spray while the vehicle is in motion shall be equipped with guardrails around the working area. The guardrail shall be constructed in accordance with Subpart D of this Part.	(r) (3) (ii)	Equipment on which employees stand to spray while the vehicle is in motion shall be equipped with guardrails around the working area. The guardrail shall be constructed in accordance with Subpart D of this part.
(r)(4)	"Stump cutters."	(4)	Stump cutters.
(r)(4)(i)	Stump cutters shall be equipped with enclosures or guards to protect employees.	(i)	Stump cutters shall be equipped with enclosures or guards to protect employees.
(r)(4)(ii)	Each employee in the immediate area of stump grinding operations (including the stump cutter operator) shall wear personal protective equipment as required by Subpart I of this Part.	(ii)	Each employee in the immediate area of stump grinding operations (including the stump cutter operator) shall wear personal protective equipment as required by Subpart I of this part.
(r)(5)	"Gasoline-engine power saws." Gasoline-engine power saw operations shall meet the requirements of 1910.266(e) and the following:	(5)	Gasoline-engine power saws. Gasoline-engine power saw operations shall meet the requirements of § 1910.266(e) and the following:
(r)(5)(i)	Each power saw weighing more than 15 pounds (6.8 kilograms, service weight) that is used in trees shall be supported by a separate line, except when work is performed from an aerial lift and except during topping or removing operations where no supporting limb will be available.	(i)	Each power saw weighing more than 6.8 kilograms (15 pounds, service weight) that is used in trees shall be supported by a separate line, except when work is performed from an aerial lift and except during topping or removing operations where no supporting limb will be available.
(r)(5)(ii)	Each power saw shall be equipped with a control that will return the saw to idling speed when released.	(ii)	Each power saw shall be equipped with a control that will return the saw to idling speed when released.
(r)(5)(iii)	Each power saw shall be equipped with a clutch and shall be so adjusted that the clutch will not engage the chain drive at idling speed.	(iii)	Each power saw shall be equipped with a clutch and shall be so adjusted that the clutch will not engage the chain drive at idling speed.
(r)(5)(iv)	A power saw shall be started on the ground or where it is otherwise firmly supported. Drop starting of saws over 15 pounds (6.8 kg) is permitted outside of the bucket of an aerial lift only if the area below the lift is clear of personnel.	(iv)	A power saw shall be started on the ground or where it is otherwise firmly supported. Drop starting of saws over 6.8 kilograms (15 pounds), other than chain saws, is permitted outside of the bucket of an aerial lift only if the area below the lift is clear of personnel.
		[0]	Note to paragraph (r)(5)(iv): Paragraph (e)(2)(vi) of § 1910.266 prohibits drop starting of chain saws.
(r)(5)(v)	A power saw engine may be started and operated only when all employees other than the operator are clear of the saw.	(v)	A power saw engine may be started and operated only when all employees other than the operator are clear of the saw.
(r)(5)(vi)	A power saw may not be running when the saw is being carried up into a tree by an employee.	(vi)	A power saw may not be running when the saw is being carried up into a tree by an employee.

(r)(5)(vii)	Power saw engines shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.	(r) (5) (vii)	Power saw engines shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.
(r)(6)	"Backpack power units for use in pruning and clearing."	(6)	Backpack power units for use in pruning and clearing.
(r)(6)(i)	While a backpack power unit is running, no one other than the operator may be within 10 feet (305 cm) of the cutting head of a brush saw.	(i)	While a backpack power unit is running, no one other than the operator may be within 3.05 meters (10 feet) of the cutting head of a brush saw.
(r)(6)(ii)	A backpack power unit shall be equipped with a quick shutoff switch readily accessible to the operator.	(ii)	A backpack power unit shall be equipped with a quick shutoff switch readily accessible to the operator.
(r)(6)(iii)	Backpack power unit engines shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.	(iii)	Backpack power unit engines shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.
(r)(7)	"Rope."	(7)	Rope.
(r)(7)(i)	Climbing ropes shall be used by employees working aloft in trees. These ropes shall have a minimum diameter of 0.5 inch (1.2 cm) with a minimum breaking strength of 2300 pounds (10.2 kN). Synthetic rope shall have elasticity of not more than 7 percent.	(i)	Climbing ropes shall be used by employees working aloft in trees. These ropes shall have a minimum diameter of 12 millimeters (0.5 inch) with a minimum breaking strength of 10.2 kilonewtons (2,300 pounds). Synthetic rope shall have elasticity of not more than 7 percent.
(r)(7)(ii)	Rope shall be inspected before each use and, if unsafe (for example, because of damage or defect), may not be used.	(ii)	Rope shall be inspected before each use and, if unsafe (for example, because of damage or defect), may not be used.
(r)(7)(iii)	Rope shall be stored away from cutting edges and sharp tools. Rope contact with corrosive chemicals, gas, and oil shall be avoided.	(iii)	Rope shall be stored away from cutting edges and sharp tools. Rope contact with corrosive chemicals, gas, and oil shall be avoided.
(r)(7)(iv)	When stored, rope shall be coiled and piled, or shall be suspended, so that air can circulate through the coils.	(iv)	When stored, rope shall be coiled and piled, or shall be suspended, so that air can circulate through the coils.
(r)(7)(v)	Rope ends shall be secured to prevent their unraveling.	(v)	Rope ends shall be secured to prevent their unraveling.
(r)(7)(vi)	Climbing rope may not be spliced to effect repair.	(vi)	Climbing rope may not be spliced to effect repair.
(r)(7)(vii)	A rope that is wet, that is contaminated to the extent that its insulating capacity is impaired, or that is otherwise not considered to be insulated for the voltage involved may not be used near exposed energized lines.	(vii)	A rope that is wet, that is contaminated to the extent that its insulating capacity is impaired, or that is otherwise not considered to be insulated for the voltage involved may not be used near exposed energized lines.
(r)(8)	"Fall protection." Each employee shall be tied in with a climbing rope and safety saddle when the employee is working above the ground in a tree, unless he or she is ascending into the tree.	(8)	Fall protection. Each employee shall be tied in with a climbing rope and safety saddle when the employee is working above the ground in a tree, unless he or she is ascending into the tree.

1910.269(s)	"Communication facilities."	(s)	Communication facilities.
(s)(1)	"Microwave transmission."	(1)	Microwave transmission.
(s)(1)(i)	The employer shall ensure that no employee looks into an open waveguide or antenna ~~that is~~ connected to an energized microwave source.	(i)	The employer shall ensure that no employee looks into an open waveguide or antenna connected to an energized microwave source.
(s)(1)(ii)	If the electromagnetic radiation level within an accessible area associated with microwave communications systems exceeds the radiation protection guide given in 1910.97(a)(2) of this Part, the area shall be posted with the warning symbol described in 1910.97(a)(3) of this Part. The lower half of the warning symbol shall include the following statements or ones that the employer can demonstrate are equivalent: Radiation in this area may exceed hazard limitations and special precautions are required. Obtain specific instruction before entering.	(ii)	If the electromagnetic-radiation level within an accessible area associated with microwave communications systems exceeds the radiation-protection guide specified by § 1910.97(a)(2), the employer shall post the area with warning signs containing the warning symbol described in § 1910.97(a)(3). The lower half of the warning symbol shall include the following statements, or ones that the employer can demonstrate are equivalent: "Radiation in this area may exceed hazard limitations and special precautions are required. Obtain specific instruction before entering."
(s)(1)(iii)	When an employee works in an area where the electromagnetic radiation could exceed the radiation protection guide, the employer shall institute measures that ensure that the employee's exposure is not greater than that permitted by that guide. Such measures may include administrative and engineering controls and personal protective equipment.	(iii)	When an employee works in an area where the electromagnetic radiation could exceed the radiation-protection guide, the employer shall institute measures that ensure that the employee's exposure is not greater than that permitted by that guide. Such measures may include administrative and engineering controls and personal protective equipment.
(s)(2)	"Power line carrier." Power line carrier work, including work on equipment used for coupling carrier current to power line conductors~~, shall be performed~~ in accordance with the requirements of this section pertaining to work on energized lines.	(2)	Power-line carrier. The employer shall ensure that employees perform power-line carrier work, including work on equipment used for coupling carrier current to power line conductors, in accordance with the requirements of this section pertaining to work on energized lines.

1910.269(t)	"Underground electrical installations." This paragraph provides additional requirements for work on underground electrical installations.	(t)	Underground electrical installations. This paragraph provides additional requirements for work on underground electrical installations.
(t)(1)	"Access." A ladder or other climbing device shall be used to enter and exit a manhole or subsurface vault exceeding 4 feet (122 cm) in depth. No employee may climb into or out of a manhole or vault by stepping on cables or hangers.	(1)	Access. The employer shall ensure that employees use a ladder or other climbing device to enter and exit a manhole or subsurface vault exceeding 1.22 meters (4 feet) in depth. No employee may climb into or out of a manhole or vault by stepping on cables or hangers.
(t)(2)	"Lowering equipment into manholes." Equipment used to lower materials and tools into manholes or vaults shall be capable of supporting the weight to be lowered and shall be checked for defects before use. Before tools or material are lowered into the opening for a manhole or vault, each employee working in the manhole or vault shall be clear of the area directly under the opening.	(2)	Lowering equipment into manholes.
		(i)	Equipment used to lower materials and tools into manholes or vaults shall be capable of supporting the weight to be lowered and shall be checked for defects before use.
		(ii)	Before anyone lowers tools or material into the opening for a manhole or vault, each employee working in the manhole or vault shall be clear of the area directly under the opening.
(t)(3)	"Attendants for manholes."	(3)	Attendants for manholes and vaults.
(t)(3)(i)	While work is being performed in a manhole containing energized electric equipment, an employee with first aid ~~and CPR training meeting paragraph (b)(1) of this section~~ shall be available on the surface in the immediate vicinity to render emergency assistance.	(i)	While work is being performed in a manhole or vault containing energized electric equipment, an employee with first-aid training shall be available on the surface in the immediate vicinity of the manhole or vault entrance to render emergency assistance.
(t)(3)(ii)	Occasionally, the employee on the surface may briefly enter a manhole to provide assistance, other than emergency.	(ii)	Occasionally, the employee on the surface may briefly enter a manhole or vault to provide nonemergency assistance.
	Note 1: An attendant may also be required under paragraph (e)(7) of this section. One person may serve to fulfill both requirements. However, attendants required under paragraph (e)(7) of this section are not permitted to enter the manhole.	[◊]	Note 1 to paragraph (t)(3)(ii): Paragraph (e)(7) of this section may also require an attendant and does not permit this attendant to enter the manhole or vault.
	Note 2: Employees entering manholes containing unguarded, uninsulated energized lines or parts of electric equipment operating at 50 volts or more are required to be qualified under paragraph (l)(1) of this section.	[◊]	Note 2 to paragraph (t)(3)(ii): Paragraph (l)(1)(ii) of this section requires employees entering manholes or vaults containing unguarded, uninsulated energized lines or parts of electric equipment operating at 50 volts or more to be qualified.

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(t)(3)(iii)	For the purpose of inspection, housekeeping, taking readings, or similar work, an employee working alone may enter, for brief periods of time, a manhole where energized cables or equipment are in service, if the employer can demonstrate that the employee will be protected from all electrical hazards.	(t) (3) (iii)	For the purpose of inspection, housekeeping, taking readings, or similar work, an employee working alone may enter, for brief periods of time, a manhole or vault where energized cables or equipment are in service if the employer can demonstrate that the employee will be protected from all electrical hazards.
(t)(3)(iv)	Reliable communications, through two-way radios or other equivalent means, shall be maintained among all employees involved in the job.	(iv)	The employer shall ensure that employees maintain reliable communications, through two-way radios or other equivalent means, among all employees involved in the job.
(t)(4)	"Duct rods." If duct rods are used, they shall be installed in the direction presenting the least hazard to employees. An employee shall be stationed at the far end of the duct line being rodded to ensure that the required minimum approach distances are maintained.	(4)	Duct rods. The employer shall ensure that, if employees use duct rods, the employees install the duct rods in the direction presenting the least hazard to employees. The employer shall station an employee at the far end of the duct line being rodded to ensure that the employees maintain the required minimum approach distances.
(t)(5)	"Multiple cables." When multiple cables are present in a work area, the cable to be worked shall be identified by electrical means, unless its identity is obvious by reason of distinctive appearance or location or by other readily apparent means of identification. Cables other than the one being worked shall be protected from damage.	(5)	Multiple cables. When multiple cables are present in a work area, the employer shall identify the cable to be worked by electrical means, unless its identity is obvious by reason of distinctive appearance or location or by other readily apparent means of identification. The employer shall protect cables other than the one being worked from damage.
(t)(6)	"Moving cables." Energized cables that are to be moved shall be inspected for defects.	(6)	Moving cables. Except when paragraph (t)(7)(ii) of this section permits employees to perform work that could cause a fault in an energized cable in a manhole or vault, the employer shall ensure that employees inspect energized cables to be moved for abnormalities.

(t)(7)	"Defective cables." Where a cable in a manhole has one or more abnormalities that could lead to or be an indication of an impending fault, the defective cable shall be deenergized before any employee may work in the manhole, except when service load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole provided they are protected from the possible effects of a failure by shields or other devices that are capable of containing the adverse effects of a fault in the joint.	(c) (7)	Protection against faults.
	Note: Abnormalities such as oil or compound leaking from cable or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints that are swollen beyond normal tolerance are presumed to lead to or be an indication of an impending fault.	(i)	Where a cable in a manhole or vault has one or more abnormalities that could lead to a fault or be an indication of an impending fault, the employer shall deenergize the cable with the abnormality before any employee may work in the manhole or vault, except when service-load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole or vault provided the employer protects them from the possible effects of a failure using shields or other devices that are capable of containing the adverse effects of a fault. The employer shall treat the following abnormalities as indications of impending faults unless the employer can demonstrate that the conditions could not lead to a fault: Oil or compound leaking from cable or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints swollen beyond normal tolerance.
		(ii)	If the work employees will perform in a manhole or vault could cause a fault in a cable, the employer shall deenergize that cable before any employee works in the manhole or vault, except when service-load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole or vault provided the employer protects them from the possible effects of a failure using shields or other devices that are capable of containing the adverse effects of a fault.
(t)(8)	"Sheath continuity." When work is performed on buried cable or on cable in manholes, metallic sheath continuity shall be maintained or the cable sheath shall be treated as energized.	(8)	Sheath continuity. When employees perform work on buried cable or on cable in a manhole or vault, the employer shall maintain metallic-sheath continuity, or the cable sheath shall be treated as energized.

1910.269(u)	"Substations." This paragraph provides additional requirements for substations and for work performed in them.	(u)	Substations. This paragraph provides additional requirements for substations and for work performed in them.
(u)(1)	"Access and working space." Sufficient access and working space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment.	(1)	Access and working space. The employer shall provide and maintain sufficient access and working space about electric equipment to permit ready and safe operation and maintenance of such equipment by employees.
	Note: Guidelines for the dimensions of access and working space about electric equipment in substations are contained in American National Standard - National Electrical Safety Code, ANSI C2-1987. Installations meeting the ANSI provisions comply with paragraph (u)(1) of this section. An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with paragraph (u)(1) of this section if the employer can demonstrate that the installation provides ready and safe access based on the following evidence:	[0]	Note to paragraph (u)(1): American National Standard National Electrical Safety Code, ANSI/IEEE C2-2012 contains guidelines for the dimensions of access and working space about electric equipment in substations. Installations meeting the ANSI provisions comply with paragraph (u)(1) of this section. The Occupational Safety and Health Administration will determine whether an installation that does not conform to this ANSI standard complies with paragraph (u)(1) of this section based on the following criteria:
	[1] That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made,	(1)	Whether the installation conforms to the edition of ANSI C2 that was in effect when the installation was made,
	[2] That the configuration of the installation enables employees to maintain the minimum approach distances required by paragraph (l)(2) of this section while they are working on exposed, energized parts, and	(2)	Whether the configuration of the installation enables employees to maintain the minimum approach distances, established by the employer under paragraph (l)(3)(i) of this section, while the employees are working on exposed, energized parts, and
	[3] That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by access and working space meeting ANSI C2-1987.	(3)	Whether the precautions taken when employees perform work on the installation provide protection equivalent to the protection provided by access and working space meeting ANSI/IEEE C2-2012.
(u)(2)	"Draw-out-type circuit breakers." When draw-out-type circuit breakers are removed or inserted, the breaker shall be in the open position. The control circuit shall also be rendered inoperative, if the design of the equipment permits.	(2)	Draw-out-type circuit breakers. The employer shall ensure that, when employees remove or insert draw-out-type circuit breakers, the breaker is in the open position. The employer shall also render the control circuit inoperable if the design of the equipment permits.

(u)(3)	"Substation fences." Conductive fences around substations shall be grounded. When a substation fence is expanded or a section is removed, fence grounding continuity shall be maintained, and bonding shall be used to prevent electrical discontinuity.	(u) (3)	Substation fences. Conductive fences around substations shall be grounded. When a substation fence is expanded or a section is removed, fence sections shall be isolated, grounded, or bonded as necessary to protect employees from hazardous differences in electric potential.
		[0]	Note to paragraph (u)(3): IEEE Std 80-2000, IEEE Guide for Safety in AC Substation Grounding, contains guidelines for protection against hazardous differences in electric potential.
(u)(4)	"Guarding of rooms containing electric supply equipment."	(4)	Guarding of rooms and other spaces containing electric supply equipment.
(u)(4)(i)	Rooms and spaces in which electric supply lines or equipment are installed shall meet the requirements of paragraphs (u)(4)(ii) through (u)(4)(v) of this section under the following conditions:	(i)	Rooms and other spaces in which electric supply lines or equipment are installed shall meet the requirements of paragraphs (u)(4)(ii) through (u)(4)(v) of this section under the following conditions:
(u)(4)(i)(A)	If exposed live parts operating at 50 to 150 volts to ground are located within 8 feet of the ground or other working surface inside the room or space,	(A)	If exposed live parts operating at 50 to 150 volts to ground are within 2.4 meters (8 feet) of the ground or other working surface inside the room or other space,
(u)(4)(i)(B)	If live parts operating at 151 to 600 volts and located within 8 feet of the ground or other working surface inside the room or space are guarded only by location, as permitted under paragraph (u)(5)(i) of this section, or	(B)	If live parts operating at 151 to 600 volts to ground and located within 2.4 meters (8 feet) of the ground or other working surface inside the room or other space are guarded only by location, as permitted under paragraph (u)(5)(i) of this section, or
(u)(4)(i)(C)	If live parts operating at more than 600 volts are ~~located~~ within the room or space, unless:	(C)	If live parts operating at more than 600 volts to ground are within the room or other space, unless:
(u)(4)(i)(C)(1)	The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts, or	(1)	The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts, or
(u)(4)(i)(C)(2)	The live parts are installed at a height above ground and any other working surface that provides protection at the voltage to which they are energized corresponding to the protection provided by an 8-foot height at 50 volts.	(2)	The live parts are installed at a height, above ground and any other working surface, that provides protection at the voltage on the live parts corresponding to the protection provided by a 2.4-meter (8-foot) height at 50 volts.
(u)(4)(ii)	The rooms and spaces shall be so enclosed within fences, screens, partitions, or walls as to minimize the possibility that unqualified persons will enter.	(ii)	Fences, screens, partitions, or walls shall enclose the rooms and other spaces so as to minimize the possibility that unqualified persons will enter.

[*Note: in (u)(4), (iii)-(v) order has been revised: OLD = NEW: (iii)=(iv), (iv)=(v), (v)=(iii)]

(u)(4)(iii)	Signs warning unqualified persons to keep out shall be displayed at entrances to the rooms and spaces.	(u) (4) (iii)	Unqualified persons may not enter the rooms or other spaces while the electric supply lines or equipment are energized.
(u)(4)(iv)	Entrances to rooms and spaces that are not under the observation of an attendant shall be kept locked.	(iv)	The employer shall display signs at entrances to the rooms and other spaces warning unqualified persons to keep out.
(u)(4)(v)	Unqualified persons may not enter the rooms or spaces while the electric supply lines or equipment are energized.	(v)	The employer shall keep each entrance to a room or other space locked, unless the entrance is under the observation of a person who is attending the room or other space for the purpose of preventing unqualified employees from entering.
(u)(5)	"Guarding of energized parts."	(5)	Guarding of energized parts.
(u)(5)(i)	Guards shall be provided around all live parts operating at more than 150 volts to ground without an insulating covering, unless the location of the live parts gives sufficient horizontal or vertical or a combination of these clearances to minimize the possibility of accidental employee contact.	(i)	The employer shall provide guards around all live parts operating at more than 150 volts to ground without an insulating covering unless the location of the live parts gives sufficient clearance (horizontal, vertical, or both) to minimize the possibility of accidental employee contact.
	Note: Guidelines for the dimensions of clearance distances about electric equipment in substations are contained in American National Standard - National Electrical Safety Code, ANSI C2-1987. Installations meeting the ANSI provisions comply with paragraph (u)(5)(i) of this section. An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with paragraph (u)(5)(i) of this section if the employer can demonstrate that the installation provides sufficient clearance based on the following evidence:	[0]	Note to paragraph (u)(5)(i): American National Standard National Electrical Safety Code, ANSI/IEEE C2-2002 contains guidelines for the dimensions of clearance distances about electric equipment in substations. Installations meeting the ANSI provisions comply with paragraph (u)(5)(i) of this section. The Occupational Safety and Health Administration will determine whether an installation that does not conform to this ANSI standard complies with paragraph (u)(5)(i) of this section based on the following criteria:
	[1] That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made,	(1)	Whether the installation conforms to the edition of ANSI C2 that was in effect when the installation was made,
	[2] That each employee is isolated from energized parts at the point of closest approach, and	(2)	Whether each employee is isolated from energized parts at the point of closest approach; and
	[3] That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by horizontal and vertical clearances meeting ANSI C2-1987.	(3)	Whether the precautions taken when employees perform work on the installation provide protection equivalent to the protection provided by horizontal and vertical clearances meeting ANSI/IEEE C2-2002.

(u)(5)(ii)	Except for fuse replacement and other necessary access by qualified persons, the guarding of energized parts within a compartment shall be maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from ~~being dropped on~~ energized parts.	**(u) (5) (ii)**	Except for fuse replacement and other necessary access by qualified persons, the employer shall maintain guarding of energized parts within a compartment during operation and maintenance functions to prevent accidental contact with energized parts and to prevent dropped tools or other equipment from contacting energized parts.
(u)(5)(iii)	When guards are removed from energized equipment, barriers shall be installed around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.	**(iii)**	Before guards are removed from energized equipment, the employer shall install barriers around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.
(u)(6)	"Substation entry."	**(6)**	Substation entry.
(u)(6)(i)	Upon entering an attended substation, each employee other than those regularly working in the station shall report his or her presence to the employee in charge in order to receive information on special system conditions affecting employee safety.	**(i)**	Upon entering an attended substation, each employee, other than employees regularly working in the station, shall report his or her presence to the employee in charge of substation activities to receive information on special system conditions affecting employee safety.
(u)(6)(ii)	The job briefing required by paragraph (c) of this section shall cover such additional subjects as the location of energized equipment in or adjacent to the work area and the limits of any deenergized work area.	**(ii)**	The job briefing required by paragraph (c) of this section shall cover information on special system conditions affecting employee safety, including the location of energized equipment in or adjacent to the work area and the limits of any deenergized work area.

1910.269(v)	"Power generation." This paragraph provides additional requirements and related work practices for power generating plants.	(v)	Power generation. This paragraph provides additional requirements and related work practices for power generating plants.
(v)(1)	"Interlocks and other safety devices."	(1)	Interlocks and other safety devices.
(v)(1)(i)	Interlocks and other safety devices shall be maintained in a safe, operable condition.	(i)	Interlocks and other safety devices shall be maintained in a safe, operable condition.
(v)(1)(ii)	No interlock or other safety device may be modified to defeat its function, except for test, repair, or adjustment of the device.	(ii)	No interlock or other safety device may be modified to defeat its function, except for test, repair, or adjustment of the device.
(v)(2)	"Changing brushes." Before exciter or generator brushes are changed while the generator is in service, the exciter or generator field shall be checked to determine whether a ground condition exists. The brushes may not be changed while the generator is energized if a ground condition exists.	(2)	Changing brushes. Before exciter or generator brushes are changed while the generator is in service, the exciter or generator field shall be checked to determine whether a ground condition exists. The brushes may not be changed while the generator is energized if a ground condition exists.
(v)(3)	"Access and working space." Sufficient access and working space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment.	(v) (3)	Access and working space. The employer shall provide and maintain sufficient access and working space about electric equipment to permit ready and safe operation and maintenance of such equipment by employees.
	Note: Guidelines for the dimensions of access and working space about electric equipment in generating stations are contained in American National Standard - National Electrical Safety Code, ANSI C2-1987. Installations meeting the ANSI provisions comply with paragraph (v)(3) of this section. An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with paragraph (v)(3) of this section if the employer can demonstrate that the installation provides ready and safe access based on the following evidence:	[0]	Note to paragraph (v)(3) of this section: American National Standard National Electrical Safety Code, ANSI/IEEE C2-2012 contains guidelines for the dimensions of access and working space about electric equipment in substations. Installations meeting the ANSI provisions comply with paragraph (v)(3) of this section. The Occupational Safety and Health Administration will determine whether an installation that does not conform to this ANSI standard complies with paragraph (v)(3) of this section based on the following criteria:
	[1] That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made,	(1)	Whether the installation conforms to the edition of ANSI C2 that was in effect when the installation was made;
	[2] That the configuration of the installation enables employees to maintain the minimum approach distances required by paragraph (l)(2) of this section while they are working on exposed, energized parts, and	(2)	Whether the configuration of the installation enables employees to maintain the minimum approach distances, established by the employer under paragraph (l)(3)(i) of this section, while the employees are working on exposed, energized parts, and;

	[3] That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by access and working space meeting ANSI C2-1987.	(3)	Whether the precautions taken when employees perform work on the installation provide protection equivalent to the protection provided by access and working space meeting ANSI/IEEE C2-2012.
(v)(4)	"Guarding of rooms containing electric supply equipment."	(v) (4)	Guarding of rooms and other spaces containing electric supply equipment.
(v)(4)(i)	Rooms and spaces in which electric supply lines or equipment are installed shall meet the requirements of paragraphs (v)(4)(ii) through (v)(4)(v) of this section under the following conditions:	(i)	Rooms and other spaces in which electric supply lines or equipment are installed shall meet the requirements of paragraphs (v)(4)(ii) through (v)(4)(v) of this section under the following conditions:
(v)(4)(i)(A)	If exposed live parts operating at 50 to 150 volts to ground are located within 8 feet of the ground or other working surface inside the room or space,	(A)	If exposed live parts operating at 50 to 150 volts to ground are within 2.4 meters (8 feet) of the ground or other working surface inside the room or other space,
(v)(4)(i)(B)	If live parts operating at 151 to 600 volts and located within 8 feet of the ground or other working surface inside the room or space are guarded only by location, as permitted under paragraph (v)(5)(i) of this section, or	(B)	If live parts operating at 151 to 600 volts to ground and located within 2.4 meters (8 feet) of the ground or other working surface inside the room or other space are guarded only by location, as permitted under paragraph (v)(5)(i) of this section, or
(v)(4)(i)(C)	If live parts operating at more than 600 volts are located within the room or space, unless:	(C)	If live parts operating at more than 600 volts to ground are within the room or other space, unless:
(v)(4)(i)(C)(1)	The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts, or	(1)	The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts, or
(v)(4)(i)(C)(2)	The live parts are installed at a height above ground and any other working surface that provides protection at the voltage to which they are energized corresponding to the protection provided by an 8-foot height at 50 volts.	(2)	The live parts are installed at a height, above ground and any other working surface, that provides protection at the voltage on the live parts corresponding to the protection provided by a 2.4-meter (8-foot) height at 50 volts.
(v)(4)(ii)	The rooms and spaces shall be so enclosed within fences, screens, partitions, or walls as to minimize the possibility that unqualified persons will enter.	(ii)	Fences, screens, partitions, or walls shall enclose the rooms and other spaces so as to minimize the possibility that unqualified persons will enter.

*[*Note: In (v)(4), (iii)-(v) order has been revised: OLD = NEW: (iii)=(iv), (iv)=(v), (v)=(iii)]*

(v)(4)(iii)	Signs warning unqualified persons to keep out shall be displayed at entrances to the rooms and spaces.	(iii)	Unqualified persons may not enter the rooms or other spaces while the electric supply lines or equipment are energized.
(v)(4)(iv)	Entrances to rooms and spaces that are not under the observation of an attendant shall be kept locked.	(iv)	The employer shall display signs at entrances to the rooms and other spaces warning unqualified persons to keep out.

(v)(4)(v)	Unqualified persons may not enter the rooms or spaces while the electric supply lines or equipment are energized.	(v) (4) (v)	The employer shall keep each entrance to a room or other space locked, unless the entrance is under the observation of a person who is attending the room or other space for the purpose of preventing unqualified employees from entering.
(v)(5)	"Guarding of energized parts."	(5)	Guarding of energized parts.
(v)(5)(i)	Guards shall be provided around all live parts operating at more than 150 volts to ground without an insulating covering, unless the location of the live parts gives sufficient horizontal or vertical or a combination of these clearances to minimize the possibility of accidental employee contact.	(i)	The employer shall provide guards around all live parts operating at more than 150 volts to ground without an insulating covering unless the location of the live parts gives sufficient clearance (horizontal, vertical, or both) to minimize the possibility of accidental employee contact.
	Note: Guidelines for the dimensions of clearance distances about electric equipment in generating stations are contained in American National Standard - National Electrical Safety Code, ANSI C2-1987. Installations meeting the ANSI provisions comply with paragraph (v)(5)(i) of this section. An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with paragraph (v)(5)(i) of this section if the employer can demonstrate that the installation provides sufficient clearance based on the following evidence:	[0]	Note to paragraph (v)(5)(i): American National Standard National Electrical Safety Code, ANSI/IEEE C2-2002 contains guidelines for the dimensions of clearance distances about electric equipment in substations. Installations meeting the ANSI provisions comply with paragraph (v)(5)(i) of this section. The Occupational Safety and Health Administration will determine whether an installation that does not conform to this ANSI standard complies with paragraph (v)(5)(i) of this section based on the following criteria:
	[1] That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made,	(1)	Whether the installation conforms to the edition of ANSI C2 that was in effect when the installation was made;
	[2] That each employee is isolated from energized parts at the point of closest approach, and	(2)	Whether each employee is isolated from energized parts at the point of closest approach; and
	[3] That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by horizontal and vertical clearances meeting ANSI C2-1987.	(3)	Whether the precautions taken when employees perform work on the installation provide protection equivalent to the protection provided by horizontal and vertical clearances meeting ANSI/IEEE C2-2002.
(v)(5)(ii)	Except for fuse replacement or other necessary access by qualified persons, the guarding of energized parts within a compartment shall be maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.	(ii)	Except for fuse replacement and other necessary access by qualified persons, the employer shall maintain guarding of energized parts within a compartment during operation and maintenance functions to prevent accidental contact with energized parts and to prevent dropped tools or other equipment from contacting energized parts.

(v)(5)(iii)	When guards are removed from energized equipment, barriers shall be installed around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.	(v)	(5) (iii)	Before guards are removed from energized equipment, the employer shall install barriers around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.
(v)(6)	"Water or steam spaces." The following requirements apply to work in water and steam spaces associated with boilers:		(6)	Water or steam spaces. The following requirements apply to work in water and steam spaces associated with boilers:
(v)(6)(i)	A designated employee shall inspect conditions before work is permitted and after its completion. Eye protection, or full face protection if necessary, shall be worn at all times when condenser, heater, or boiler tubes are being cleaned.		(i)	A designated employee shall inspect conditions before work is permitted and after its completion. Eye protection, or full face protection if necessary, shall be worn at all times when condenser, heater, or boiler tubes are being cleaned.
(v)(6)(ii)	Where it is necessary for employees to work near tube ends during cleaning, shielding shall be installed at the tube ends.		(ii)	Where it is necessary for employees to work near tube ends during cleaning, shielding shall be installed at the tube ends.
(v)(7)	"Chemical cleaning of boilers and pressure vessels." The following requirements apply to chemical cleaning of boilers and pressure vessels:		(7)	Chemical cleaning of boilers and pressure vessels. The following requirements apply to chemical cleaning of boilers and pressure vessels:
(v)(7)(i)	Areas where chemical cleaning is in progress shall be cordoned off to restrict access during cleaning. If flammable liquids, gases, or vapors or combustible materials will be used or might be produced during the cleaning process, the following requirements also apply:		(i)	Areas where chemical cleaning is in progress shall be cordoned off to restrict access during cleaning. If flammable liquids, gases, or vapors or combustible materials will be used or might be produced during the cleaning process, the following requirements also apply:
(v)(7)(i)(A)	The area shall be posted with signs restricting entry and warning of the hazards of fire and explosion; and		(A)	The area shall be posted with signs restricting entry and warning of the hazards of fire and explosion; and
(v)(7)(i)(B)	Smoking, welding, and other possible ignition sources are prohibited in these restricted areas.		(B)	Smoking, welding, and other possible ignition sources are prohibited in these restricted areas.
(v)(7)(ii)	The number of personnel in the restricted area shall be limited to those necessary to accomplish the task safely.		(ii)	The number of personnel in the restricted area shall be limited to those necessary to accomplish the task safely.
(v)(7)(iii)	There shall be ready access to water or showers for emergency use.		(iii)	There shall be ready access to water or showers for emergency use.
	Note: See 1910.141 of this Part for requirements that apply to the water supply and to washing facilities.		[◊]	Note to paragraph (v)(7)(iii): See § 1910.141 for requirements that apply to the water supply and to washing facilities.
(v)(7)(iv)	Employees in restricted areas shall wear protective equipment meeting the requirements of Subpart I of this Part and including, but not limited to, protective clothing, boots, goggles, and gloves.		(iv)	Employees in restricted areas shall wear protective equipment meeting the requirements of Subpart I of this part and including, but not limited to, protective clothing, boots, goggles, and gloves.
(v)(8)	"Chlorine systems."		(8)	Chlorine systems.

(v)(8)(i)	Chlorine system enclosures shall be posted with signs restricting entry and warning of the hazard to health and the hazards of fire and explosion.	(v) (8) (i)	Chlorine system enclosures shall be posted with signs restricting entry and warning of the hazard to health and the hazards of fire and explosion.
	Note: See Subpart Z of this Part for requirements necessary to protect the health of employees from the effects of chlorine.	[0]	Note to paragraph (v)(8)(i): See Subpart Z of this part for requirements necessary to protect the health of employees from the effects of chlorine.
(v)(8)(ii)	Only designated employees may enter the restricted area. Additionally, the number of personnel shall be limited to those necessary to accomplish the task safely.	(ii)	Only designated employees may enter the restricted area. Additionally, the number of personnel shall be limited to those necessary to accomplish the task safely.
(v)(8)(iii)	Emergency repair kits shall be available near the shelter or enclosure to allow for the prompt repair of leaks in chlorine lines, equipment, or containers.	(iii)	Emergency repair kits shall be available near the shelter or enclosure to allow for the prompt repair of leaks in chlorine lines, equipment, or containers.
(v)(8)(iv)	Before repair procedures are started, chlorine tanks, pipes, and equipment shall be purged with dry air and isolated from other sources of chlorine.	(iv)	Before repair procedures are started, chlorine tanks, pipes, and equipment shall be purged with dry air and isolated from other sources of chlorine.
(v)(8)(v)	The employer shall ensure that chlorine is not mixed with materials that would react with the chlorine in a dangerously exothermic or other hazardous manner.	(v)	The employer shall ensure that chlorine is not mixed with materials that would react with the chlorine in a dangerously exothermic or other hazardous manner.
(v)(9)	"Boilers."	(9)	Boilers.
(v)(9)(i)	Before internal furnace or ash hopper repair work is started, overhead areas shall be inspected for possible falling objects. If the hazard of falling objects exists, overhead protection such as planking or nets shall be provided.	(i)	Before internal furnace or ash hopper repair work is started, overhead areas shall be inspected for possible falling objects. If the hazard of falling objects exists, overhead protection such as planking or nets shall be provided.
(v)(9)(ii)	When opening an operating boiler door, employees shall stand clear of the opening of the door to avoid the heat blast and gases which may escape from the boiler.	(ii)	When opening an operating boiler door, employees shall stand clear of the opening of the door to avoid the heat blast and gases which may escape from the boiler.
(v)(10)	"Turbine generators."	(10)	Turbine generators.
(v)(10)(i)	Smoking and other ignition sources are prohibited near hydrogen or hydrogen sealing systems, and signs warning of the danger of explosion and fire shall be posted.	(i)	Smoking and other ignition sources are prohibited near hydrogen or hydrogen sealing systems, and signs warning of the danger of explosion and fire shall be posted.
(v)(10)(ii)	Excessive hydrogen makeup or abnormal loss of pressure shall be considered as an emergency and shall be corrected immediately.	(ii)	Excessive hydrogen makeup or abnormal loss of pressure shall be considered as an emergency and shall be corrected immediately.
(v)(10)(iii)	A sufficient quantity of inert gas shall be available to purge the hydrogen from the largest generator.	(iii)	A sufficient quantity of inert gas shall be available to purge the hydrogen from the largest generator.
(v)(11)	"Coal and ash handling."	(11)	Coal and ash handling.
(v)(11)(i)	Only designated persons may operate railroad equipment.	(i)	Only designated persons may operate railroad equipment.

(v)(11)(ii)	Before a locomotive or locomotive crane is moved, a warning shall be given to employees in the area.	**(v) (11) (ii)**	Before a locomotive or locomotive crane is moved, a warning shall be given to employees in the area.
(v)(11)(iii)	Employees engaged in switching or dumping cars may not use their feet to line up drawheads.	**(iii)**	Employees engaged in switching or dumping cars may not use their feet to line up drawheads.
(v)(11)(iv)	Drawheads and knuckles may not be shifted while locomotives or cars are in motion.	**(iv)**	Drawheads and knuckles may not be shifted while locomotives or cars are in motion.
(v)(11)(v)	When a railroad car is stopped for unloading, the car shall be secured from displacement that could endanger employees.	**(v)**	When a railroad car is stopped for unloading, the car shall be secured from displacement that could endanger employees.
(v)(11)(vi)	An emergency means of stopping dump operations shall be provided at railcar dumps.	**(vi)**	An emergency means of stopping dump operations shall be provided at railcar dumps.
(v)(11)(vii)	The employer shall ensure that employees who work in coal- or ash-handling conveyor areas are trained and knowledgeable in conveyor operation and in the requirements of paragraphs (v)(11)(viii) through (v)(11)(xii) of this section.	**(vii)**	The employer shall ensure that employees who work in coal- or ash-handling conveyor areas are trained and knowledgeable in conveyor operation and in the requirements of paragraphs (v)(11)(viii) through (v)(11)(xii) of this section.
(v)(11)(viii)	Employees may not ride a coal- or ash-handling conveyor belt at any time. Employees may not cross over the conveyor belt, except at walkways, unless the conveyor's energy source has been deenergized and has been locked out or tagged in accordance with paragraph (d) of this section.	**(viii)**	Employees may not ride a coal- or ash-handling conveyor belt at any time. Employees may not cross over the conveyor belt, except at walkways, unless the conveyor's energy source has been deenergized and has been locked out or tagged in accordance with paragraph (d) of this section.
(v)(11)(ix)	A conveyor that could cause injury when started may not be started until personnel in the area are alerted by a signal or by a designated person that the conveyor is about to start.	**(ix)**	A conveyor that could cause injury when started may not be started until personnel in the area are alerted by a signal or by a designated person that the conveyor is about to start.

(v)(11)(x)	If a conveyor that could cause injury when started is automatically controlled or is controlled from a remote location, an audible device shall be provided that sounds an alarm that will be recognized by each employee as a warning that the conveyor will start and that can be clearly heard at all points along the conveyor where personnel may be present. The warning device shall be actuated by the device starting the conveyor and shall continue for a period of time before the conveyor starts that is long enough to allow employees to move clear of the conveyor system. A visual warning may be used in place of the audible device if the employer can demonstrate that it will provide an equally effective warning in the particular circumstances involved. Exception: If the employer can demonstrate that the system's function would be seriously hindered by the required time delay, warning signs may be provided in place of the audible warning device. If the system was installed before January 31, 1995, warning signs may be provided in place of the audible warning device until such time as the conveyor or its control system is rebuilt or rewired. These warning signs shall be clear, concise, and legible and shall indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. These warning signs shall be provided along the conveyor at areas not guarded by position or location.	**(v) (11) (x)**	If a conveyor that could cause injury when started is automatically controlled or is controlled from a remote location, an audible device shall be provided that sounds an alarm that will be recognized by each employee as a warning that the conveyor will start and that can be clearly heard at all points along the conveyor where personnel may be present. The warning device shall be actuated by the device starting the conveyor and shall continue for a period of time before the conveyor starts that is long enough to allow employees to move clear of the conveyor system. A visual warning may be used in place of the audible device if the employer can demonstrate that it will provide an equally effective warning in the particular circumstances involved. However if the employer can demonstrate that the system's function would be seriously hindered by the required time delay, warning signs may be provided in place of the audible warning device. If the system was installed before January 31, 1995, warning signs may be provided in place of the audible warning device until such time as the conveyor or its control system is rebuilt or rewired. These warning signs shall be clear, concise, and legible and shall indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. These warning signs shall be provided along the conveyor at areas not guarded by position or location.
(v)(11)(xi)	Remotely and automatically controlled conveyors, and conveyors that have operating stations which are not manned or which are beyond voice and visual contact from drive areas, loading areas, transfer points, and other locations on the conveyor path not guarded by location, position, or guards shall be furnished with emergency stop buttons, pull cords, limit switches, or similar emergency stop devices. However, if the employer can demonstrate that the design, function, and operation of the conveyor do not expose an employee to hazards, an emergency stop device is not required.	**(xi)**	Remotely and automatically controlled conveyors, and conveyors that have operating stations which are not manned or which are beyond voice and visual contact from drive areas, loading areas, transfer points, and other locations on the conveyor path not guarded by location, position, or guards shall be furnished with emergency stop buttons, pull cords, limit switches, or similar emergency stop devices. However, if the employer can demonstrate that the design, function, and operation of the conveyor do not expose an employee to hazards, an emergency stop device is not required.

(v)(11)(xi)(A)	Emergency stop devices shall be easily identifiable in the immediate vicinity of such locations.	(v) (11) (xi) (A)	Emergency stop devices shall be easily identifiable in the immediate vicinity of such locations.
(v)(11)(xi)(B)	An emergency stop device shall act directly on the control of the conveyor involved and may not depend on the stopping of any other equipment.	(B)	An emergency stop device shall act directly on the control of the conveyor involved and may not depend on the stopping of any other equipment.
(v)(11)(xi)(C)	Emergency stop devices shall be installed so that they cannot be overridden from other locations.	(C)	Emergency stop devices shall be installed so that they cannot be overridden from other locations.
(v)(11)(xii)	Where coal-handling operations may produce a combustible atmosphere from fuel sources or from flammable gases or dust, sources of ignition shall be eliminated or safely controlled to prevent ignition of the combustible atmosphere.	(xii)	Where coal-handling operations may produce a combustible atmosphere from fuel sources or from flammable gases or dust, sources of ignition shall be eliminated or safely controlled to prevent ignition of the combustible atmosphere.
	Note: Locations that are hazardous because of the presence of combustible dust are classified as Class II hazardous locations. See 1910.307 of this Part.	[◊]	Note to paragraph (v)(11)(xii): Locations that are hazardous because of the presence of combustible dust are classified as Class II hazardous locations. See § 1910.307.
(v)(11)(xiii)	An employee may not work on or beneath overhanging coal in coal bunkers, coal silos, or coal storage areas, unless the employee is protected from all hazards posed by shifting coal.	(xiii)	An employee may not work on or beneath overhanging coal in coal bunkers, coal silos, or coal storage areas, unless the employee is protected from all hazards posed by shifting coal.
(v)(11)(xiv)	An employee entering a bunker or silo to dislodge the contents shall wear a body harness with lifeline attached. The lifeline shall be secured to a fixed support outside the bunker and shall be attended at all times by an employee located outside the bunker or facility.	(xiv)	An employee entering a bunker or silo to dislodge the contents shall wear a body harness with lifeline attached. The lifeline shall be secured to a fixed support outside the bunker and shall be attended at all times by an employee located outside the bunker or facility.
(v)(12)	"Hydroplants and equipment." Employees working on or close to water gates, valves, intakes, forebays, flumes, or other locations where increased or decreased water flow or levels may pose a significant hazard shall be warned and shall vacate such dangerous areas before water flow changes are made.	(12)	Hydroplants and equipment. Employees working on or close to water gates, valves, intakes, forebays, flumes, or other locations where increased or decreased water flow or levels may pose a significant hazard shall be warned and shall vacate such dangerous areas before water flow changes are made.

1910.269(w)	"Special conditions."	(w)	Special conditions.
(w)(1)	"Capacitors." The following additional requirements apply to work on capacitors and on lines connected to capacitors.	(1)	Capacitors. The following additional requirements apply to work on capacitors and on lines connected to capacitors.
	Note: See paragraphs (m) and (n) of this section for requirements pertaining to the deenergizing and grounding of capacitor installations.	[◊]	Note to paragraph (w)(1): See paragraphs (m) and (n) of this section for requirements pertaining to the deenergizing and grounding of capacitor installations.
(w)(1)(i)	Before employees work on capacitors, the capacitors shall be disconnected from energized sources and, after a wait of at least 5 minutes from the time of disconnection, short-circuited.	(i)	Before employees work on capacitors, the employer shall disconnect the capacitors from energized sources and short circuit the capacitors. The employer shall ensure that the employee short circuiting the capacitors waits at least 5 minutes from the time of disconnection before applying the short circuit,
(w)(1)(ii)	Before the units are handled, each unit in series-parallel capacitor banks shall be short-circuited between all terminals and the capacitor case or its rack. If the cases of capacitors are on ungrounded substation racks, the racks shall be bonded to ground.	(ii)	Before employees handle the units, the employer shall short circuit each unit in series-parallel capacitor banks between all terminals and the capacitor case or its rack. If the cases of capacitors are on ungrounded substation racks, the employer shall bond the racks to ground.
(w)(1)(iii)	Any line to which capacitors are connected shall be short-circuited before it is considered deenergized.	(iii)	The employer shall short circuit any line connected to capacitors before the line is treated as deenergized.
(w)(2)	"Current transformer secondaries." The secondary of a current transformer may not be opened while the transformer is energized. If the primary of the current transformer cannot be deenergized before work is performed on an instrument, a relay, or other section of a current transformer secondary circuit, the circuit shall be bridged so that the current transformer secondary will not be opened.	(2)	Current transformer secondaries. The employer shall ensure that employees do not open the secondary of a current transformer while the transformer is energized. If the employer cannot deenergize the primary of the current transformer before employees perform work on an instrument, a relay, or other section of a current transformer secondary circuit, the employer shall bridge the circuit so that the current transformer secondary does not experience an open-circuit condition.
(w)(3)	"Series streetlighting."	(3)	Series streetlighting.
(w)(3)(i)	If the open-circuit voltage exceeds 600 volts, the series streetlighting circuit shall be worked in accordance with paragraph (q) or (t) of this section, as appropriate.	(w) (3) (i)	If the open-circuit voltage exceeds 600 volts, the employer shall ensure that employees work on series streetlighting circuits in accordance with paragraph (q) or (t) of this section, as appropriate.

(w)(3)(ii)	A series loop may only be opened after the streetlighting transformer has been deenergized and isolated from the source of supply or after the loop is bridged to avoid an open-circuit condition.	(w) (3) (ii)	Before any employee opens a series loop, the employer shall deenergize the streetlighting transformer and isolate it from the source of supply or shall bridge the loop to avoid an open-circuit condition.
(w)(4)	"Illumination." Sufficient illumination shall be provided to enable the employee to perform the work safely.	(4)	Illumination. The employer shall provide sufficient illumination to enable the employee to perform the work safely.
(w)(5)	"Protection against drowning."	(5)	Protection against drowning.
(w)(5)(i)	Whenever an employee may be pulled or pushed or may fall into water where the danger of drowning exists, the employee shall be provided with and shall use U.S. Coast Guard approved personal flotation devices.	(i)	Whenever an employee may be pulled or pushed, or might fall, into water where the danger of drowning exists, the employer shall provide the employee with, and shall ensure that the employee uses, a U.S. Coast Guard-approved personal flotation device.
(w)(5)(ii)	Each personal flotation device shall be maintained in safe condition and shall be inspected frequently enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use.	(ii)	The employer shall maintain each personal flotation device in safe condition and shall inspect each personal flotation device frequently enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use.
(w)(5)(iii)	An employee may cross streams or other bodies of water only if a safe means of passage, such as a bridge, ~~is provided~~.	(iii)	An employee may cross streams or other bodies of water only if a safe means of passage, such as a bridge, is available.
(w)(6)	"Employee protection in public work areas."	(6)	Employee protection in public work areas.
(w)(6)(i)	Traffic control signs and traffic control devices used for the protection of employees shall meet the requirements of 1926.200(g)(2) of this Chapter.	(i)	Traffic-control signs and traffic-control devices used for the protection of employees shall meet § 1926.200(g)(2) of this chapter.
(w)(6)(ii)	Before work is begun in the vicinity of vehicular or pedestrian traffic that may endanger employees, warning signs or flags and other traffic control devices shall be placed in conspicuous locations to alert and channel approaching traffic.	(ii)	Before employees begin work in the vicinity of vehicular or pedestrian traffic that may endanger them, the employer shall place warning signs or flags and other traffic-control devices in conspicuous locations to alert and channel approaching traffic.
(w)(6)(iii)	Where additional employee protection is necessary, barricades shall be used.	(iii)	The employer shall use barricades where additional employee protection is necessary.
(w)(6)(iv)	Excavated areas shall be protected with barricades.	(iv)	The employer shall protect excavated areas with barricades.
(w)(6)(v)	At night, warning lights shall be prominently displayed.	(v)	The employer shall display warning lights prominently at night.

(w)(7)	"Backfeed." If there is a possibility of voltage backfeed from sources of cogeneration or from the secondary system (for example, backfeed from more than one energized phase feeding a common load), the requirements of paragraph (l) of this section apply if the lines or equipment are to be worked as energized, and the requirements of paragraphs (m) and (n) of this section apply if the lines or equipment are to be worked as deenergized.	(w) (7)	Backfeed. When there is a possibility of voltage backfeed from sources of cogeneration or from the secondary system (for example, backfeed from more than one energized phase feeding a common load), the requirements of paragraph (l) of this section apply if employees will work the lines or equipment as energized, and the requirements of paragraphs (m) and (n) of this section apply if employees will work the lines or equipment as deenergized.
(w)(8)	"Lasers." Laser equipment shall be installed, adjusted, and operated in accordance with 1926.54 of this Chapter.	(8)	Lasers. The employer shall install, adjust, and operate laser equipment in accordance with § 1926.54 of this chapter.
(w)(9)	"Hydraulic fluids." Hydraulic fluids used for the insulated sections of equipment shall provide insulation for the voltage involved.	(9)	Hydraulic fluids. Hydraulic fluids used for the insulated sections of equipment shall provide insulation for the voltage involved.

1910.269(x) "Definitions."	(x)	Definitions.
"Affected employee."		Affected employee.
An employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.		An employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.
"Attendant."		Attendant.
An employee assigned to remain immediately outside the entrance to an enclosed or other space to render assistance as needed to employees inside the space.		An employee assigned to remain immediately outside the entrance to an enclosed or other space to render assistance as needed to employees inside the space.
"Authorized employee."		Authorized employee.
An employee who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.		An employee who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.
"Automatic circuit recloser."		Automatic circuit recloser.
A self-controlled device for interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing followed by resetting, hold-closed, or lockout operation.		A self-controlled device for automatically interrupting and reclosing an alternating-current circuit, with a predetermined sequence of opening and reclosing followed by resetting, hold closed, or lockout.
"Barricade."		Barricade.
A physical obstruction such as tapes, cones, or A-frame type wood or metal structures ~~intended to provide~~ a warning about and to limit access to a hazardous area.		A physical obstruction such as tapes, cones, or A-frame type wood or metal structures that provides a warning about, and limits access to, a hazardous area.
"Barrier."		Barrier.
A physical obstruction ~~which is intended to prevent~~ contact with energized lines or equipment or to prevent unauthorized access to a work area.		A physical obstruction that prevents contact with energized lines or equipment or prevents unauthorized access to a work area.
"Bond."		Bond.
The electrical interconnection of conductive parts designed to maintain a common electrical potential.		The electrical interconnection of conductive parts designed to maintain a common electric potential.
"Bus."		Bus.
A conductor or a group of conductors that serve as a common connection for two or more circuits.		A conductor or a group of conductors that serve as a common connection for two or more circuits.

	"Bushing."	(x)	Bushing.
	An insulating structure, including a through conductor or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purposes of insulating the conductor from the barrier and conducting current from one side of the barrier to the other.		An insulating structure that includes a through conductor or that provides a passageway for such a conductor, and that, when mounted on a barrier, insulates the conductor from the barrier for the purpose of conducting current from one side of the barrier to the other.
	"Cable."		Cable.
	A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors insulated from one another (multiple-conductor cable).		A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors insulated from one another (multiple-conductor cable).
	"Cable sheath."		Cable sheath.
	A conductive protective covering applied to cables.		A conductive protective covering applied to cables.
	Note: A cable sheath may consist of multiple layers of which one or more is conductive.		[0] Note to the definition of "cable sheath": A cable sheath may consist of multiple layers one or more of which is conductive.
	"Circuit."		Circuit.
	A conductor or system of conductors through which an electric current is intended to flow.		A conductor or system of conductors through which an electric current is intended to flow.
	"Clearance (between objects)."		Clearance (between objects).
	The clear distance between two objects measured surface to surface.		The clear distance between two objects measured surface to surface.
	"Clearance (for work)."		Clearance (for work).
	Authorization to perform specified work or permission to enter a restricted area.		Authorization to perform specified work or permission to enter a restricted area.
	"Communication lines. (See Lines, communication.)"		Communication lines. (See Lines; Communication lines.)
	"Conductor."		Conductor.
	A material, usually in the form of a wire, cable, or bus bar, used for carrying an electric current.		A material, usually in the form of a wire, cable, or bus bar, used for carrying an electric current.
			Contract employer.
			An employer, other than a host employer, that performs work covered by this section under contract.
	"Covered conductor."		Covered conductor.
	A conductor covered with a dielectric having no rated insulating strength or having a rated insulating strength less than the voltage of the circuit in which the conductor is used.		A conductor covered with a dielectric having no rated insulating strength or having a rated insulating strength less than the voltage of the circuit in which the conductor is used.

	"Current-carrying part."	(x)	Current-carrying part.
	A conducting part intended to be connected in an electric circuit to a source of voltage. Non-current-carrying parts are those not intended to be so connected.		A conducting part intended to be connected in an electric circuit to a source of voltage. Non-current-carrying parts are those not intended to be so connected.
	"Deenergized."		Deenergized.
	Free from any electrical connection to a source of potential difference and from electric charge; not having a potential different from that of the earth.		Free from any electrical connection to a source of potential difference and from electric charge; not having a potential that is different from the potential of the earth.
	Note: The term is used only with reference to current-carrying parts, which are sometimes energized (alive).		[0] Note to the definition of "deenergized": The term applies only to current-carrying parts, which are sometimes energized (alive).
	"Designated employee (designated person)."		Designated employee (designated person).
	An employee (or person) who is designated by the employer to perform specific duties under the terms of this section and who is knowledgeable in the construction and operation of the equipment and the hazards involved.		An employee (or person) who is assigned by the employer to perform specific duties under the terms of this section and who has sufficient knowledge of the construction and operation of the equipment, and the hazards involved, to perform his or her duties safely.
	"Electric line truck."		Electric line truck.
	A truck used to transport personnel, tools, and material for electric supply line work.		A truck used to transport personnel, tools, and material for electric supply line work.
	"Electric supply equipment."		Electric supply equipment.
	Equipment that produces, modifies, regulates, controls, or safeguards a supply of electric energy.		Equipment that produces, modifies, regulates, controls, or safeguards a supply of electric energy.
	"Electric supply lines. (See Lines, electric supply.)"		Electric supply lines. (See Lines; Electric supply lines.)
	"Electric utility."		Electric utility.
	An organization responsible for the installation, operation, or maintenance of an electric supply system.		An organization responsible for the installation, operation, or maintenance of an electric supply system.
	"Enclosed space."		Enclosed space.
	A working space, such as a manhole, vault, tunnel, or shaft, that has a limited means of egress or entry, that is designed for periodic employee entry under normal operating conditions, and that under normal conditions does not contain a hazardous atmosphere, but that may contain a hazardous atmosphere under abnormal conditions.		A working space, such as a manhole, vault, tunnel, or shaft, that has a limited means of egress or entry, that is designed for periodic employee entry under normal operating conditions, and that, under normal conditions, does not contain a hazardous atmosphere, but may contain a hazardous atmosphere under abnormal conditions.

Note: Spaces that are enclosed but not designed for employee entry under normal operating conditions are not considered to be enclosed spaces for the purposes of this section. Similarly, spaces that are enclosed and that are expected to contain a hazardous atmosphere are not considered to be enclosed spaces for the purposes of this section. Such spaces meet the definition of permit spaces in 1910.146 of this Part, and entry into them must be performed in accordance with that standard.		[0] Note to the definition of "enclosed space": The Occupational Safety and Health Administration does not consider spaces that are enclosed but not designed for employee entry under normal operating conditions to be enclosed spaces for the purposes of this section. Similarly, the Occupational Safety and Health Administration does not consider spaces that are enclosed and that are expected to contain a hazardous atmosphere to be enclosed spaces for the purposes of this section. Such spaces meet the definition of permit spaces in § 1910.146, and entry into them must conform to that standard.
"Energized (alive, live)."	(x)	Energized (alive, live).
Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of earth in the vicinity.		Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of earth in the vicinity.
"Energy isolating device."		Energy isolating device.
A physical device that prevents the transmission or release of energy, including, but not limited to, the following: a manually operated electric circuit breaker, a disconnect switch, a manually operated switch, a slide gate, a slip blind, a line valve, blocks, and any similar device with a visible indication of the position of the device. (Push buttons, selector switches, and other control-circuit-type devices are not energy isolating devices.)		A physical device that prevents the transmission or release of energy, including, but not limited to, the following: a manually operated electric circuit breaker, a disconnect switch, a manually operated switch, a slide gate, a slip blind, a line valve, blocks, and any similar device with a visible indication of the position of the device. (Push buttons, selector switches, and other control-circuit-type devices are not energy isolating devices.)
"Energy source."		Energy source.
Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, or other energy source that could cause injury to personnel.		Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, or other energy source that could cause injury to employees.
		Entry (as used in paragraph (e) of this section).
		The action by which a person passes through an opening into an enclosed space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.
"Equipment (electric)."		Equipment (electric).
A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like used as part of or in connection with an electrical installation.		A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like used as part of or in connection with an electrical installation.

	"Exposed."	(x)	Exposed, Exposed to contact (as applied to energized parts).
	Not isolated or guarded.		Not isolated or guarded.
			Fall restraint system.
			A fall protection system that prevents the user from falling any distance.
			First-aid training.
			Training in the initial care, including cardiopulmonary resuscitation (which includes chest compressions, rescue breathing, and, as appropriate, other heart and lung resuscitation techniques), performed by a person who is not a medical practitioner, of a sick or injured person until definitive medical treatment can be administered.
	"Ground."		Ground.
	A conducting connection, whether intentional or accidental, between an electric circuit or equipment and the earth, or to some conducting body that serves in place of the earth.		A conducting connection, whether planned or unplanned, between an electric circuit or equipment and the earth, or to some conducting body that serves in place of the earth.
	"Grounded."		Grounded.
	Connected to earth or to some conducting body that serves in place of the earth.		Connected to earth or to some conducting body that serves in place of the earth.
	"Guarded."		Guarded.
	Covered, fenced, enclosed, or otherwise protected, by means of suitable covers or casings, barrier rails or screens, mats, or platforms, designed to minimize the possibility, under normal conditions, of dangerous approach or accidental contact by persons or objects.		Covered, fenced, enclosed, or otherwise protected, by means of suitable covers or casings, barrier rails or screens, mats, or platforms, designed to minimize the possibility, under normal conditions, of dangerous approach or inadvertent contact by persons or objects.
	Note: Wires which are insulated, but not otherwise protected, are not ~~considered~~ as guarded.		[0] Note to the definition of "guarded": Wires that are insulated, but not otherwise protected, are not guarded.
	"Hazardous atmosphere"		Hazardous atmosphere.
	~~means~~ an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from an enclosed space), injury, or acute illness from one or more of the following causes:		An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from an enclosed space), injury, or acute illness from one or more of the following causes:
(x)(1)	Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);		(1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
(x)(2)	Airborne combustible dust at a concentration that meets or exceeds its LFL;		(2) Airborne combustible dust at a concentration that meets or exceeds its LFL;

	Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.	[0] Note to the definition of "hazardous atmosphere" (2): This concentration may be approximated as a condition in which the dust obscures vision at a distance of 1.52 meters (5 feet) or less.
(x)(3)	Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;	(3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
(x)(4)	Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, "Occupational Health and Environmental Control", or in Subpart Z, "Toxic and Hazardous Substances," of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit;	(4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this part and which could result in employee exposure in excess of its dose or permissible exposure limit;
	Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.	[0] Note to the definition of "hazardous atmosphere" (4): An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.
(x)(5)	Any other atmospheric condition that is immediately dangerous to life or health.	(5) Any other atmospheric condition that is immediately dangerous to life or health.
	Note: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, 1910.1200 of this Part, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.	[0] Note to the definition of "hazardous atmosphere" (5): For air contaminants for which the Occupational Safety and Health Administration has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, § 1910.1200, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.
	"High-power tests."	High-power tests.
	Tests in which fault currents, load currents, magnetizing currents, and line-dropping currents are used to test equipment, either at the equipment's rated voltage or at lower voltages.	Tests in which the employer uses fault currents, load currents, magnetizing currents, and line-dropping currents to test equipment, either at the equipment's rated voltage or at lower voltages.
	"High-voltage tests."	High-voltage tests.
	Tests in which voltages of approximately 1000 volts are used as a practical minimum and in which the voltage source has sufficient energy to cause injury.	Tests in which the employer uses voltages of approximately 1,000 volts as a practical minimum and in which the voltage source has sufficient energy to cause injury.

	"High wind."	(x)	High wind.
	A wind of such velocity that the following hazards would be present:		A wind of such velocity that one or more of the following hazards would be present:
	[1] An employee would be exposed to being blown from elevated locations, or		(1) The wind could blow an employee from an elevated location,
	[2] An employee or material handling equipment could lose control of material being handled, or		(2) The wind could cause an employee or equipment handling material to lose control of the material, or
	[3] An employee would be exposed to other hazards not controlled by the standard involved.		(3) The wind would expose an employee to other hazards not controlled by the standard involved.
	Note: Winds exceeding 40 miles per hour (64.4 kilometers per hour), or 30 miles per hour (48.3 kilometers per hour) if material handling is involved, are normally considered as meeting this criteria unless precautions are taken to protect employees from the hazardous effects of the wind.		[0] Note to the definition of "high wind": The Occupational Safety and Health Administration normally considers winds exceeding 64.4 kilometers per hour (40 miles per hour), or 48.3 kilometers per hour (30 miles per hour) if the work involves material handling, as meeting this criteria, unless the employer takes precautions to protect employees from the hazardous effects of the wind.
			Host employer.
			An employer that operates, or that controls the operating procedures for, an electric power generation, transmission, or distribution installation on which a contract employer is performing work covered by this section.
			[0] Note to the definition of "host employer": The Occupational Safety and Health Administration will treat the electric utility or the owner of the installation as the host employer if it operates or controls operating procedures for the installation. If the electric utility or installation owner neither operates nor controls operating procedures for the installation, the Occupational Safety and Health Administration will treat the employer that the utility or owner has contracted with to operate or control the operating procedures for the installation as the host employer. In no case will there be more than one host employer.
	"Immediately dangerous to life or health (IDLH)"		Immediately dangerous to life or health (IDLH).
	means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.		Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Note: Some materials - hydrogen fluoride gas and cadmium vapor, for example - may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "Ffirstimmediately" dangerous to life or health.		[◊] Note to the definition of "immediately dangerous to life or health": Some materials—hydrogen fluoride gas and cadmium vapor, for example—may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.
"Insulated."	(x)	Insulated.
Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of current.		Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of current.
Note: When any object is said to be insulated, it is understood to be insulated for the conditions to which it is normally subjected. Otherwise, it is, within the purpose of this section, uninsulated.		[◊] Note to the definition of "insulated": When any object is said to be insulated, it is understood to be insulated for the conditions to which it normally is subjected. Otherwise, it is, for the purpose of this section, uninsulated.
"Insulation (cable)."		Insulation (cable).
~~That which~~ is relied upon to insulate the conductor from other conductors or conducting parts or from ground.		Material relied upon to insulate the conductor from other conductors or conducting parts or from ground.
		Isolated.
		Not readily accessible to persons unless special means for access are used.
"Line-clearance tree trimmer."		Line-clearance tree trimmer.
An employee who, through related training or on-the-job experience or both, is familiar with the special techniques and hazards involved in line-clearance tree trimming.		An employee who, through related training or on-the-job experience or both, is familiar with the special techniques and hazards involved in line-clearance tree trimming.
Note 1: An employee who is regularly assigned to a line-clearance tree-trimming crew and who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a line-clearance tree trimmer is considered to be a line-clearance tree trimmer for the performance of those duties.		[◊] Note 1 to the definition of "line-clearance tree trimmer": An employee who is regularly assigned to a line-clearance tree-trimming crew and who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a line-clearance tree trimmer is considered to be a line-clearance tree trimmer for the performance of those duties.

	Note 2: A line-clearance tree trimmer is not considered to be a "qualified employee" under this section unless he or she has the training required for a qualified employee under paragraph (a)(2)(ii) of this section. However, under the electrical safety-related work practices standard in Subpart S of this Part, a line-clearance tree trimmer is considered to be a "qualified employee". Tree trimming performed by such "qualified employees" is not subject to the electrical safety-related work practice requirements contained in 1910.331 through 1910.335 of this Part. (See also the note following 1910.332(b)(3) of this Part for information regarding the training an employee must have to be considered a qualified employee under 1910.331 through 1910.335 of this part.)		[0] Note 2 to the definition of "line-clearance tree trimmer": A line-clearance tree trimmer is not considered to be a "qualified employee" under this section unless he or she has the training required for a qualified employee under paragraph (a)(2)(ii) of this section. However, under the electrical safety-related work practices standard in Subpart S of this part, a line-clearance tree trimmer is considered to be a "qualified employee". Tree trimming performed by such "qualified employees" is not subject to the electrical safety-related work practice requirements contained in §§ 1910.331 through 1910.335 of this part. (See also the note following § 1910.332(b)(3) of this part for information regarding the training an employee must have to be considered a qualified employee under §§ 1910.331 through 1910.335 of this part.)
	"Line-clearance tree trimming."	(x)	Line-clearance tree trimming.
	The pruning, trimming, repairing, maintaining, removing, or clearing of trees or the cutting of brush that is within ~~10 feet (305 cm)~~ of electric supply lines and equipment.		The pruning, trimming, repairing, maintaining, removing, or clearing of trees, or the cutting of brush, that is within the following distance of electric supply lines and equipment:
			(1) For voltages to ground of 50 kilovolts or less—3.05 meters (10 feet);
			(2) For voltages to ground of more than 50 kilovolts—3.05 meters (10 feet) plus 0.10 meters (4 inches) for every 10 kilovolts over 50 kilovolts.
	"Lines.		Lines.
[1]	Communication lines."	(1)	Communication lines.
	The conductors and their supporting or containing structures which are used for public or private signal or communication service, and which operate at potentials not exceeding 400 volts to ground or 750 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. If the lines are operating at less than 150 volts, no limit is placed on the transmitted power of the system. Under certain conditions, communication cables may include communication circuits exceeding these limitations where such circuits are also used to supply power solely to communication equipment.		The conductors and their supporting or containing structures which are used for public or private signal or communication service, and which operate at potentials not exceeding 400 volts to ground or 750 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. If the lines are operating at less than 150 volts, no limit is placed on the transmitted power of the system. Under certain conditions, communication cables may include communication circuits exceeding these limitations where such circuits are also used to supply power solely to communication equipment.

	Note: Telephone, telegraph, railroad signal, data, clock, fire, police alarm, cable television, and other systems conforming to this definition are included. Lines used for signaling purposes, but not included under this definition, are considered as electric supply lines of the same voltage.	[◊]	Note to the definition of "communication lines": Telephone, telegraph, railroad signal, data, clock, fire, police alarm, cable television, and other systems conforming to this definition are included. Lines used for signaling purposes, but not included under this definition, are considered as electric supply lines of the same voltage.
[2]	"Electric supply lines".	(x) (2)	Electric supply lines.
	Conductors used to transmit electric energy and their necessary supporting or containing structures. Signal lines of more than 400 volts are always supply lines within this section, and those of less than 400 volts are considered as supply lines, if so run and operated throughout.		Conductors used to transmit electric energy and their necessary supporting or containing structures. Signal lines of more than 400 volts are always supply lines within this section, and those of less than 400 volts are considered as supply lines, if so run and operated throughout.
	"Manhole.".		Manhole.
	A subsurface enclosure which personnel may enter and which is used for the purpose of installing, operating, and maintaining submersible equipment or cable		A subsurface enclosure that personnel may enter and that is used for installing, operating, and maintaining submersible equipment or cable.
	~~"Manhole steps."~~		
	~~A series of steps individually attached to or set into the walls of a manhole structure.~~		
	"Minimum approach distance."		Minimum approach distance.
	The closest distance an employee ~~is permitted to~~ approach an energized or a grounded object.		The closest distance an employee may approach an energized or a grounded object.
		[◊]	Note to the definition of "minimum approach distance": Paragraph (l)(3)(i) of this section requires employers to establish minimum approach distances.
			Personal fall arrest system.
			A system used to arrest an employee in a fall from a working level.
	"Qualified employee (qualified person)."		Qualified employee (qualified person).
	One knowledgeable in the construction and operation of the electric power generation, transmission, and distribution equipment involved, along with the associated hazards.		An employee (person) knowledgeable in the construction and operation of the electric power generation, transmission, and distribution equipment involved, along with the associated hazards.
	Note 1: An employee must have the training required by paragraph (a)(2)(ii) of this ~~section in order to be considered~~ a qualified employee.	[◊]	Note 1 to the definition of "qualified employee (qualified person)": An employee must have the training required by (a)(2)(ii) of this section to be a qualified employee.

	Note 2: Except under paragraph (g)(2)(v) of this section, an employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.		[◊] Note 2 to the definition of "qualified employee (qualified person)": Except under (g)(2)(iv)(C)(2) and (g)(2)(iv)(C)(3) of this section, an employee who is undergoing on-the-job training and who has demonstrated, in the course of such training, an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is a qualified person for the performance of those duties.
		(x)	Statistical sparkover voltage.
			A transient overvoltage level that produces a 97.72-percent probability of sparkover (that is, two standard deviations above the voltage at which there is a 50-percent probability of sparkover).
			Statistical withstand voltage.
			A transient overvoltage level that produces a 0.14-percent probability of sparkover (that is, three standard deviations below the voltage at which there is a 50-percent probability of sparkover).
	~~"Step bolt."~~		
	~~A bolt or rung attached at intervals along a structural member and used for foot placement during climbing or standing.~~		
	"Switch."		Switch.
	A device for opening and closing or for changing the connection of a circuit. In this section, a switch is ~~understood to be~~ manually operable, unless otherwise stated.		A device for opening and closing or for changing the connection of a circuit. In this section, a switch is manually operable, unless otherwise stated.
	"System operator."		System operator.
	A qualified person designated to operate the system or its parts.		A qualified person designated to operate the system or its parts.
	"Vault."		Vault.
	An enclosure, above or below ground, which personnel may enter and which is used for the purpose of installing, operating, or maintaining equipment or cable.		An enclosure, above or below ground, that personnel may enter and that is used for installing, operating, or maintaining equipment or cable.
	"Vented vault."		Vented vault.

FC-8366, Emergency On-Call Repairs & Maintenance for the Atlanta Streetcar Traction Power Substations

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