

RESOLUTION NO. _____

A RESOLUTION AUTHORIZING THE ADMINISTRATOR FOR THE DEPARTMENT OF PUBLIC WORKS TO ENTER INTO AN AGREEMENT WITH ELECTRICAL & ELECTRONIC CONTROLS, INC. FOR PROFESSIONAL SERVICES RELATIVE TO CONTRACT NO. W-15-016-101, SHORT CIRCUIT STUDY & ARC FLASH HAZARD ANALYSIS FOR PUMP STATIONS AND COMBINED SEWER OVERFLOW (CSO) TREATMENT FACILITIES, FOR AN AMOUNT NOT TO EXCEED TWO HUNDRED FORTY-FIVE THOUSAND EIGHTY HUNDRED EIGHTY-SIX DOLLARS (\$245,886.00).

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CHATTANOOGA, it is hereby authorizing the Administrator for the Department of Public Works to enter into an agreement with Electrical & Electronic Controls, Inc. for professional services relative to Contract No. W-15-016-101, Short Circuit Study & Arc Flash Hazard Analysis for Pump Stations and Combined Sewer Overflow (CSO) Treatment Facilities, for an amount not to exceed \$245,886.00.

ADOPTED: _____, 2016

/mem

City of Chattanooga



Resolution/Ordinance Request Form

Date Prepared: April 8, 2016

Preparer: Dennis Malone

Department: Public Works

Brief Description of Purpose for Resolution/Ordinance:

Res./Ord. # _____ Council District # _____ Various

A Council Action is requested for the Administrator of the Department of Public Works to enter into an agreement with Electrical & Electronic Controls, Inc., for professional services, relative to Contract No. W-15-016-101, Short Circuit Study & Arc Flash Hazard Analysis for Pump Stations and Combined Sewer Overflow (CSO) Treatment Facilities, in an amount not to exceed 245,886.00.

Name of Vendor/Contractor/Grant, etc.	Electrical & Electronic Controls, Inc.	New Contract/Project? (Yes or No)	Yes
Total project cost \$	245,886.00	Funds Budgeted? (YES or NO)	Yes
Total City of Chattanooga Portion \$	245,886.00	Provide Fund	6011
City Amount Funded \$	245,866.00	Provide Cost Center	K40170
New City Funding Required \$	0	Proposed Funding Source if not budgeted	
City's Match Percentage %		Grant Period (if applicable)	

List all other funding sources and amount for each contributor.

Amount(s)	Grantor(s)
\$	

Agency Grant Number

CFDA Number if known

Other comments: (Include contingency amount, contractor, and other information useful in preparing resolution)

Non-Consent Decree Project

Approved by:

DESIGNATED OFFICIAL/ADMINISTRATOR

Reviewed by: FINANCE OFFICE

Please submit completed form to @budget, City Attorney and City Finance Officer

Revised: 1/26/09



CITY OF CHATTANOOGA

SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

THIS AGREEMENT, IS between the City of Chattanooga, Tennessee, a municipal corporation in the state of Tennessee, hereinafter called "Owner", and

Electrical & Electronic Controls, Inc.

hereinafter called "Consultant".

The Owner wishes to employ the Consultant to perform professional services for:

W-15-016-101 – Short Circuit Study & Arc Flash Hazard Analysis for Pump Stations and Combined Sewer Overflow (CSO) Treatment Facilities

hereinafter called Project.

In consideration of the provisions contained in this Agreement, the Owner and Consultant agree to the following:

1. **EFFECTIVE DATE**

The effective date of this Agreement shall be May 1, 2016.

2. **GOVERNING LAW**

This Agreement shall be governed by the laws of the State of Tennessee and the codes of the City of Chattanooga.

3. **SERVICES TO BE PERFORMED BY CONSULTANT**

Consultant shall perform the Services described in Attachment A, Scope of Services, in accordance with applicable sections of the City of Chattanooga Design and Construction Standards in effect on the date of this agreement.

4. **COMPENSATION**

Owner shall pay Consultant in accordance with the Attachment B, Compensation.

5. **OWNER'S RESPONSIBILITIES**

Owner shall be responsible for all matters described in Attachment C, Owner's Responsibilities.

6. **SUPPLEMENTAL AGREEMENTS**

The provisions set forth in Attachment D, Supplemental Agreements, shall be incorporated into this Agreement

7. **PROJECT SCHEDULE**

The provisions set forth in the Attachment E, Project Schedule, shall be incorporated into this Agreement.

8. **RATE SCHEDULE**

The Consultant shall provide a schedule of standard hourly rates for all employees to be used in the performance of all contracts with a cost-not-to-exceed basis. This schedule shall be incorporated into the agreement as Attachment F.



CITY OF CHATTANOOGA

SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

9. INVOICING

The Consultant will use the format established in Attachment G, Standard Invoice, for all invoices submitted for services on the Project.

10. STANDARD OF CARE

Consultant shall exercise the same degree of care, skill, and diligence in the performance of Services as is ordinarily possessed and exercised by a professional engineer under similar circumstances in the same area of practice. Consultant makes no warranty or guarantee, either expressed or implied, as part of this agreement.

11. INDEMNIFICATION

Consultant hereby agrees to fully indemnify and hold harmless Owner and any of its departments, divisions, agencies, officers, employees and elected officials from all loss, damage, cost, or expenses specifically including attorneys' fees and other expenses of litigation incurred by or on behalf of the Owner and any of its officers, employees or elected officials to the extent arising out of Consultant's actual negligent performance of Services under this Agreement, including errors or omissions.

Owner hereby agrees to fully indemnify and hold harmless Consultant and any of its officers, employees, or designated agents from all loss, damage, cost, or expenses specifically including attorneys' fees and other expenses of litigation incurred by or on behalf of the Consultant and any of its officers, employees or designated agents arising out of Owner's negligence to the extent provided by the Tennessee Governmental Tort Liability Act, T.C.A. 29-20-201 et seq.

12. INSURANCE

Consultant shall purchase and maintain during the life of this Agreement insurance coverage which will satisfactorily insure against claims and liabilities which may arise because of the execution of this Agreement, with the minimum insurance coverages as follows:

1. Workers Compensation Insurance	Statutory
2. Employee's Liability Insurance	\$100,000
3. Comprehensive General Liability Insurance	\$3,000,000
4. Automobile Liability Insurance	\$3,000,000

Prior to issuance of the Notice to Proceed by Owner, Consultant shall have on file with Owner certificates of insurance acceptable to Owner. Said certificates of insurance shall be filed with Owner in January of each year or may be submitted with each agreement. Consultant shall notify City at least thirty (30) days in advance of any cancellation of insurance, changes in insurance carriers or any actions relative to the above insurance requirements. Upon completion of all Services, obligations, and duties provided for in this Agreement, or if this Agreement is terminated for any reason, the terms and conditions of this section shall survive.

Notwithstanding any other provision of the Agreement, Owner waives any claim against Consultant and, to the maximum extent permitted by law, agrees to defend, indemnify, and hold Consultant harmless from any claim, liability, and/or defense costs for injury or loss arising from Consultant's discovery of unanticipated hazardous materials or suspected hazardous materials, including, but not limited to, any costs created by delay of the project and any cost associated with possible reduction of the property value.



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13. LIMITATIONS OF RESPONSIBILITY

Consultant shall not be responsible for: (1) construction means, methods, techniques, sequences, procedures, or safety precautions and programs in connection with the Project, (2) the failure of any consultant, subconsultant, vendor, or other Project participant, not under contract to Consultant, to fulfill contractual responsibilities to the Owner or to comply with federal, state or local laws, regulations, and codes; or (3) procuring permits, certificates, and licenses required for any construction unless such responsibilities are specifically assigned to Consultant in Attachment A, Scope of Services.

14. OPINIONS OF COST AND SCHEDULE

Since Consultant has no control over the cost of labor, materials, or equipment furnished by others, or over the resources provided by others to meet Project construction schedules, Consultant's opinion of probable construction costs and of construction schedules shall be made on the basis of experience and qualifications as a professional engineer. Consultant does not guarantee that costs will not vary from Consultant's cost estimates or that actual construction schedules will not vary from Consultant's projected schedules.

15. REUSE OF DOCUMENTS

All documents, including, but not limited to calculations, drawings, specifications, and computer software prepared by Consultant pursuant to the Agreement are instruments of service in respect to the Project. They are not intended or represented to be suitable for reuse by Owner or others on extensions of the Project or on any other project. Any reuse without prior written verification or adaptation by Consultant for the specific purpose intended will be at Owner's sole risk and without liability or legal exposure to Consultant. Any verification or adaptation requested by Owner shall entitle Consultant to compensation at rates to be agreed upon by Owner and Consultant.

16. OWNERSHIP OF DOCUMENTS AND INTELLECTUAL PROPERTY

Except as otherwise provided herein, engineering documents, calculations, drawings, specifications, and other documents prepared by Consultant as part of the Services shall become and be the sole property of Owner. However, both Owner and Consultant shall have the unrestricted right to their use. Consultant shall retain its rights in its standard drawing details, specifications, databases, computer software, and other proprietary property protected under the copyright laws of the United States. Rights to intellectual property developed, utilized, or modified in the performance of services shall remain the property of Consultant.

17. RECORDS RETENTION AND AUDIT PROVISION

The term "Consultant" is used interchangeably to describe signatories to contracts, grants, and agreements with the City and applies to reflect the relationship with the City (Engineer, Contractor, Licensee, Supplier, Vendor, Consultant, Grant Recipient, etc.).

- a. All records relating in any manner whatsoever to the Project, or any designated portion thereof, which are in the possession of the Consultant or the Consultant's consultants, shall be made available for inspection and copying upon written request to the Owner. Additionally, said records shall be made available, upon request by the Owner, to any state, federal or other regulatory authorities and any such authority may review, inspect and copy such records. Said records include, but are not limited to, all plans, specifications, submittals, correspondence, minutes, memoranda, tape recordings, videos, or other writings or things which document the Project, its design and its construction. Said records expressly include those documents reflecting the time expended by the Consultant and its personnel to perform the obligations of this Agreement and the records of expenses incurred by the Consultant in



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SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

its performance under said Agreement. The Consultant shall maintain and protect these records for no less than seven (7) years after the completion of the Project, or for any longer period of time as may be required by applicable law, good engineering practice, and upon notice during the pendency of any claims or litigation arising from the Project.

- b. The Owner or its assign may audit all financial and related records (including digital) associated with the terms of the contract or agreement including timesheets, reimbursable out of pocket expenses, materials, goods, and equipment claimed by the Consultant. The Owner may further audit any of Consultant's records to conduct performance audits (to identify waste and abuse or to determine efficiency and effectiveness of the contract or agreement) or to identify conflicts of interest.
- c. The Consultant shall at all times during the term of the contract or agreement and for a period of seven years after the end of the contract, keep and maintain records of the work performed pursuant to this Contract or Agreement. This shall include proper records of quotations, contracts, correspondence, invoices, vouchers, timesheets, and other documents that support actions taken by the Consultant. Documents shall be maintained by the Consultant, which are necessary to clearly reflect all work and actions taken. All such records shall be maintained in accordance with generally accepted accounting principles. The Consultant shall at its own expense make such records available for inspection and audit (including copies and extracts of records as required) by the Owner at all reasonable times and without prior notice.
- d. The obligations of this Section shall be explicitly included in any subcontracts or agreements formed between the Consultant and any subconsultants or suppliers of goods or services to the extent that those subcontracts or agreements relate to fulfillment of the Consultant's obligations to the Owner.
- e. Costs of any audits conducted under the authority of this section and not addressed elsewhere will be borne by the Owner unless the audit identifies significant findings that would benefit the Owner. The Consultant shall reimburse the Owner for the total costs of an audit that identifies significant findings that would benefit the Owner.
- f. This Section shall not be construed to limit, revoke, or abridge any other rights, powers, or obligations relating to audit which the Owner may have by Federal, State, or Municipal law, whether those rights, powers, or obligations are express or implied.

18. TERMINATION

This Agreement may be terminated by either party upon written notice in the event of substantial failure by the other party to perform in accordance with the terms of this Agreement. The nonperforming party shall have fifteen calendar days from the date of the termination notice to cure or to submit a plan for cure acceptable to the other party. Owner may terminate or suspend performance of this Agreement for Owner's convenience upon written notice to Consultant. If termination or suspension is for Owner's convenience, Owner shall pay Consultant for all Services performed prior to the date of the termination notice. Upon restart, an adjustment acceptable to Owner and Consultant shall be made to Consultant's compensation.

19. DELAY IN PERFORMANCE

Neither Owner nor Consultant shall be considered in default of the Agreement for delays in performance caused by circumstances beyond the reasonable control of the nonconforming party. For purposes of this Agreement, such circumstances include abnormal weather conditions; floods;



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earthquakes; fire; epidemics; war, riots, or other civil disturbances; sabotage; judicial restraint; discovery of unanticipated hazardous wastes; and inability to procure permits, licenses, or authorizations from any local, state, or federal agency for any of the supplies, materials, accesses, or services required to be provided by either Owner or Consultant under this Agreement. Should such circumstances occur, the nonconforming party shall, within a reasonable time of being prevented from performing, give written notice to the other party describing the circumstances preventing continued performance and the efforts being made to resume performance of the Agreement. If the Consultant is delayed in the performance of the services for more than 365 calendar days, either by the Owner or circumstances beyond his control, an equitable adjustment to the contract amount can be made to compensate for additional costs incurred.

For delays in performance by Consultant, as set forth in Attachment E, Project Schedule, caused by circumstances which are within its control, such delays shall be documented on the Consultant's Project Performance Evaluation form. Said form shall be completed at the conclusion of Project and acknowledged by both Owner and Consultant. Completed form shall be retained by Owner for a period of seven years and reviewed prior to consultant selection for City projects. In the event Consultant is delayed in the performance of Services because of delays caused by Owner, Consultant shall have no claim against Owner for damages or contract adjustment other than an extension of time.

20. HAZARDOUS MATERIALS

Hazardous materials may exist at a site where there is no reason to believe they could or should be present. The Owner and Consultant agree that the discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work or termination of services. Owner and Consultant also agree that the discovery of unanticipated hazardous materials may make it necessary for the Consultant to take immediate measures to protect health and safety. Owner agrees to compensate Consultant for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous materials. Consultant agrees to notify Owner when unanticipated hazardous materials or suspected hazardous materials are encountered. Owner agrees to make any disclosures required by law to the appropriate governing agencies, and agrees to hold Consultant harmless for any and all consequences of disclosures made by Consultant which are required by governing law. In the event the project site is not owned by Owner, the Owner agrees to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials.

21. COMMUNICATIONS

Any communication required by this Agreement shall be made in writing to the address specified below:

Consultant: **Electrical & Electronic Controls, Inc.**
6149 Hunter Road
Ooltewah, TN 37363
(423) 344-7666

Owner: **City of Chattanooga Department of Public Works**
Engineering Division
Suite 2100, Development Resource Center
1250 Market Street
Chattanooga, TN 37402
(423) 643- 6033



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Nothing contained in the Article shall be construed to restrict the transmission of routine communications between representatives of Consultant and Owner.

22. WAIVER

A waiver by either Owner or Consultant of any breach of this Agreement shall be in writing. Such a waiver shall not affect the waiving party's rights with respect to any other or further breach.

23. DISPUTE RESOLUTION

Claims, disputes or other matters in question between the parties to this Agreement arising out of or relating to this Agreement or breach thereof shall be subject to mediation in Chattanooga, Tennessee, in accordance with the following provisions:

- a. The mediation shall be conducted by a mediator mutually acceptable to both parties.
- b. The parties agree to share equally in the expenses of mediations.
- c. Such mediation may include the Consultant or any other person or entity who may be affected by the subject matter of the dispute.
- d. Unless the parties agree otherwise, mediation shall be a condition precedent to the exercise of any legal remedy other than a proceeding seeking an immediate injunction or restraining order to protect the rights of a party pending litigation. Notwithstanding the issuance of an injunction or restraining order or the refusal of a court to issue such an order, the dispute shall continue to be subject to mediation.

24. SEVERABILITY

The invalidity, illegality, or unenforceability of any provision of this Agreement or the occurrence of any event rendering any portion or provision of this Agreement void shall in no way affect the validity or enforceability of any other portion or provision of this Agreement. Any void provision shall be deemed severed from this Agreement, and the balance of this Agreement shall be construed and enforced as if this Agreement did not contain the particular portion or provision held to be void. The parties further agree to amend this Agreement to replace any stricken provision with a valid provision that comes as close as possible to the intent of the stricken provision. The provisions of this Article shall not prevent this entire Agreement from being void should a provision which is of the essence of this Agreement be determined void.

25. INTEGRATION

This Agreement represents the entire and integrated agreement between Owner and Consultant. All prior and contemporaneous communications, representations, and agreements by Consultant, whether oral or written, relating to the subject matter of this Agreement, as set forth in Attachment D, Supplemental Agreements, are hereby incorporated into and shall become a part of this Agreement.

26. SUCCESSORS AND ASSIGNS

Owner and Consultant each binds itself and its directors, officers, partners, successors, executors, administrators, assigns, and legal representatives to the other party of this Agreement and to the directors, officers, partners, successors, executors, administrators, assigns, and legal representatives of such other party in respect to all provisions of this Agreement.



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27. ASSIGNMENT

Neither Owner nor Consultant shall assign any rights or duties under this Agreement without the prior written consent of the other party. Unless otherwise stated in the written consent to an assignment, no assignment will release or discharge the assignor from any obligation under this Agreement. Nothing contained in this Article shall prevent Consultant from employing independent consultants, associates, and subconsultants to assist in the performance of the Services; however, other agreements to the contrary notwithstanding, in the event Consultant employs independent consultants, associates, and subconsultants to assist in performance of the Services, Consultant shall be solely responsible for the negligent performance of the independent consultants, associates, and subconsultants so employed.

28. THIRD PARTY RIGHTS

Nothing in this Agreement shall be construed to give any rights or benefits to anyone other than Owner and Consultant.

29. RELATIONSHIP OF PARTIES

Nothing contained herein shall be construed to hold or to make the Owner a partner, joint venturer, or associate of Consultant, nor shall either party be deemed the agent of the other, it being expressly understood and agreed that the relationship between the parties is and shall at all times remain contractual as provided by the terms and conditions of this Agreement.

30. NON-DISCLOSURE

Consultant agrees not to disclose or to permit disclosure of any information designated by the Owner as confidential, except to the engineer's employees and subconsultants who require such information to perform the services specified in this agreement.

31. NON-DISCRIMINATION

Consultant agrees to comply with all federal, state, and local non-discrimination laws and regulations. Consultant agrees not to discriminate against any participant in this Agreement on the basis of race, color, religion, sex, age or national origin. Consultant further agrees to comply with all federal, state and local laws regarding treatment and accommodations for individuals with disabilities.

32. DRUG FREE WORKFORCE

Consultant certifies that it will provide a drug-free workplace and agrees to comply with the applicable requirements of the Drug-Free Workplace Act of 1990.

33. FEDERAL OR STATE FUNDING

In the event that the Project is funded in whole or in part by Federal or State grants, Consultant agrees to abide by all applicable Federal and State laws, regulations, grant conditions and procedures.



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SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

ATTACHMENT A

Owner: City of Chattanooga, Tennessee
Consultant: **Electrical & Electronic Controls, Inc.**

Project Number & Name: **W-15-016-101 – Short Circuit Study & Arc Flash Hazard Analysis for Pump Stations and CSO Facilities**

General

It is the City's intention that this project result in the establishment of safety requirements in accordance with NFPA 70E, and will include calculations for each applicable site for the degree of arc flash hazard, identification of correct personal protective equipment (PPE) for employees, identification of appropriate tools for safe working, training for workers on the hazards of arc flash, and placement of appropriate warning labels at each site. Consultant will determine the incident energy potentially present at the City's electrical equipment using IEEE 1584 current standards, the associated Hazard/Risk Category, and the appropriate PPE for workers.

Purpose

The purpose of this Contract is to complete a short circuit study and arc flash hazard analysis, along with associated tasks described in the Scope of Work, in order to upgrade the Waste Resources Division electrical safety program to include requirements of NFPA 70E. This project will complement the short circuit study and arc flash hazard analysis that has already been completed for the wastewater plant and six (6) other sites, will perform the same work for the pump stations and CSO facilities, and will provide for equipment labeling and implementation of the associated requirements. Vendor selected for this project will determine the incident energy potentially present at the City's electrical equipment using IEEE 1584 current standards, the associated Hazard/Risk Category, and the appropriate PPE for workers.

SCOPE OF SERVICES

1. BASIC SERVICES

The project is specifically defined below:

Scope of Work

Consultant will perform short circuit study and arc flash hazard analysis at Pump Stations and Combined Sewer Overflow (CSO) treatment facilities, associated equipment labeling for these facilities, as well as for the Moccasin Bend Wastewater Treatment Plant equipment based on the short circuit study and arc flash hazard analysis already performed for it. Also included in the project scope is the provision of employee training on the arc flash hazard program requirements. The study will extend from the 12.47kV utility interface and downstream to include all low voltage equipment fed from each motor control center. Low voltage equipment will be considered to be all major distribution panels and busways. Motors 25 horsepower and above will be considered as major equipment and the analysis will extend to each motor. Small motor loads less than 25 horsepower will be considered for the calculation of low voltage fault current only, and will be modeled as connected directly to the low voltage busses. Some of the small motor loads may be combined and modeled as a single induction motor.



CITY OF CHATTANOOGA

SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

General Scope of Work

- A. The Consultant shall provide all labor, benefits, equipment, materials, insurance, transportation, and other related services required in connection with the performance of this work.
- B. The Consultant shall obtain all necessary permits required from all applicable federal, state, and local regulatory agencies necessary for the performance of this work.
- C. All of the products and services provided by the Consultant shall be completed in a professional and workmanlike manner. All products and services provided shall be in compliance with all applicable statutes, rules, ordinances and regulations, including, but not limited to International Electrical Testing Association, IEEE, ANSI standards, and NFPA 70E.
- D. The Consultant's personnel shall comply with all City, Waste Resources Division, and Moccasin Bend WWTP work rules, regulations and safety requirements when on site.
- E. The Consultant shall coordinate all access to each site with City representatives and observe safety and security requirements at each site.
- F. The products and services furnished by the Consultant shall be subject to inspection and approval by the City's designated representative, but the manner and method of providing the products and services shall be the responsibility of the Consultant.
- G. The Consultant shall provide a written safety plan for Consultant's personnel prior to the start of the work.

Specific Scope of Work

- A. Consultant will collect electrical component information such as protective device nameplate and settings, cable type, size and length, motor nameplate, etc. directly from each applicable piece of equipment whenever possible. If access to a piece of equipment is not possible (such as it being energized, or cables buried or submerged), assumptions may be made based on the existing drawings and input from plant maintenance personnel.
- B. Consultant will prepare a one-line diagram of the power systems.
- C. Consultant will perform a short circuit study in accordance with ANSI C37.
- D. Consultant will perform a coordination study in accordance with ANSI/IEEE 399.
- E. Consultant will perform an arc flash study in accordance with NFPA 70E. Arc flash study will be performed using SKM Power Tools software designed specifically for this purpose, and all calculations will comply with IEEE 1584.



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- F. Consultant will provide arc flash warning nameplates for each individual equipment item, and will include nameplates for equipment at the Moccasin Bend Wastewater Treatment Plant based on the arc flash hazard analysis completed in August, 2011 and for the analysis completed on six (6) sites in November, 2012.
- G. Consultant will prepare arc flash evaluation report listing incident energy, arc flash boundary and hazard risk category for each bus location. Consultant will also prepare an equipment evaluation report comparing protective device ratings to calculated short circuit current and provide mitigation recommendations to hazard/risk level 3 when feasible.
- H. Consultant will install all arc flash labeling on equipment in accordance with current NFPA 70E standards.
- I. Consultant will provide training of City's employees on the requirements associated with the arc flash hazard categories, labeling standards, and PPE requirements. Training will be provided for employees in electrical maintenance as well as mechanical maintenance and those responsible for routine operation of the equipment. Training shall consist of classroom type as well as field training. Training shall be user friendly and developed and performed at the education level of those being trained. Training shall be coordinated with the Waste Resources Division Occupational Safety Specialist. Training will involve multiple training sessions to ensure that all appropriate personnel on various shifts receive the training and is to be conducted by a Certified NFPA 70E instructor.
- J. Consultant will provide five (5) hard copies and three (3) electronic copies of the final report, including all calculations, spreadsheets, one-line diagrams, and hazard risk category.

The Consultant agrees to provide the following services defined as payables, as per the items stated above in the Scope of Work, General Scope of Work and the Specific Scope of Work, all as defined as Basic Services on Attachment B and more so defined as for all the specified Station Names listed on Attachment E :

1. Equipment Assessment

- a. Visual inspection and data collection for arc flash hazard study at each pumping and CSO facility:

2. Engineering Study

- a. Perform preliminary analysis at each pumping/CSO facility based on the design parameters;
- b. Report within 10 days of data collection at each pumping/CSO facility. Preliminary analysis is to include one line diagram, short circuit study, electrical system coordination assessment and all results and recommendation.



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SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

3. NFPA 70E Compliance

- a. Provide and deploy arc flash labels at each pumping/CSO facility based on resolution of preliminary report(s);
- b. Provide arc flash study final report(s) for each pumping/CSO facility;
- c. Provide and place arc flash labels at MBWWTP facility;
- d. Provide safety training for MBWWTP personnel at 455 Moccasin Bend Road, Chattanooga, TN 37405.

2. SUPPLEMENTAL SERVICES

Any work requested by the Owner that is not included in the Basic Services will be classified as Supplemental Services.

3. REIMBURSABLE EXPENSES:

Project specific reimbursable expenses and charges shall include the following:



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SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

5. The entire amount of each statement shall be due and payable 30 days after receipt by the Owner.
6. The Consultant shall keep records on the basis of generally accepted accounting practice of costs and expenses which records shall be available for inspection at all reasonable times.
7. Invoices shall be submitted using the Standard Invoice form, Attachment G.



CITY OF CHATTANOOGA

SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

ATTACHMENT C

Owner: City of Chattanooga, Tennessee
Consultant: **Electrical & Electronic Controls, Inc.**

Project Number & Name: **W-15-016-101 – Short Circuit Study & Arc Flash Hazard Analysis for Pump Stations and CSO Facilities**

OWNER'S RESPONSIBILITIES

The Owner will furnish, as required by the work and not at the expense of the Consultant, the following:

1. Make available to the Consultant the current City of Chattanooga Design and Construction Standards, all records, reports, maps, and other data pertinent to provision of the services required under this contract.
2. Examine all plans, specifications and other documents submitted by the Consultant and render decisions promptly to prevent delay to the Consultant.
3. Designate one City of Chattanooga employee as the Owner representative with respect to all services to be rendered under this agreement. This individual shall have the authority to transmit instructions, receive information and to interpret and define the Owner's policies and decisions pertinent to the Consultant's services.
4. Issue Notice(s) to Proceed to the Consultant for each phase of the design services.
5. Owner will grant or obtain free access to the project site for all equipment and personnel necessary for the Consultant to perform the work set forth in this Agreement. Owner will notify any and all possessors of the project site that Consultant has been granted free access to the site. Consultant will take reasonable precautions to minimize damage to the site.
6. Owner will acquire all lands, rights-of-way, and easements necessary for the construction of the project.
7. Owner will make a reasonable effort to evaluate if hazardous materials are on or near the project site, and will inform Consultant of findings relative to the possible presence of such materials.

8. City-Supplied Services

The City will provide the following as required to complete the project:

- A. The City will provide access to its electrical equipment at each applicable pump station and CSO facility, as well as at the wastewater treatment plant. Where possible, City personnel will assist in accessing information from motors, cables, nameplates, etc.
- B. The City will provide existing drawings on any applicable equipment as well as any other requested information in the City's possession on the equipment.



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- C. The City will provide a copy of the arc flash hazard analysis already completed for the Moccasin Bend Wastewater Treatment Plant, dated August 23, 2011, and for six (6) of the pump stations/CSO sites dated November 16, 2012.
- D. The City will provide space onsite for Consultant to perform work and training sessions.
- E. The City will designate a person to coordinate this work with the Consultant.
- F. The City will provide copies of all related reports for the remote telemetry system for pump stations and CSO facilities.



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ATTACHMENT D

Owner: City of Chattanooga, Tennessee
Consultant: **Electrical & Electronic Controls, Inc.**

Project Number & Name: **W-15-016-101 – Short Circuit Study & Arc Flash Hazard Analysis for Pump Stations and CSO Facilities**

SUPPLEMENTAL AGREEMENTS

Owner and Consultant agree that the following communications, representations, and agreements by Consultant relating to the subject matter of the Agreement are hereby incorporated into and shall become a part of the Agreement.



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ATTACHMENT E

Owner: City of Chattanooga, Tennessee
Consultant: **Electrical & Electronic Controls, Inc.**

Project Number & Name: **W-15-016-101 – Short Circuit Study & Arc Flash Hazard Analysis for Pump Stations and CSO Facilities**

PROJECT SCHEDULE

Owner and Consultant recognize that time is of the essence of the Agreement and that Owner will suffer financial loss if the work is not completed within the times stipulated herein, plus any extensions thereof. Accordingly, Consultant has established time intervals, in calendar days, for submittals at various stages of the project as detailed below. As each actual submittal date occurs, Consultant shall meet with Owner to discuss the progress of the work and the actual submittal date shall be documented. If project is behind schedule, the reason shall be recorded. Consultant shall not be responsible for the time required by Owner's representative to review Consultant's submittal. When review is complete, Owner shall, in writing, authorize Consultant to proceed to the next submittal date. After final submittal date, Consultant and Owner shall meet to evaluate Consultant's performance with regard to design schedule. An Consultant's Project Performance Evaluation form shall be completed and acknowledged by both Owner and Consultant. Completed form shall be retained by Owner for a period of seven years and reviewed prior to consultant selection for City projects. Past performance shall be accounted for on the evaluation sheet used to rank consultants during the interview process.

The project is estimated to last for one year. Project milestones are listed below.

Week 1 through 32:

- Perform on-site equipment assessment and engineering study of up to three CSO / Pumping Facilities per week.
- Perform preliminary findings review and resolution.

See attached Station Location Information Sheet. Station availability will be at the discretion of City of Chattanooga, Waste Resources Division.

Weeks 33 through 42:

- Perform update of equipment assessment and engineering study of Moccasin Bend Wastewater Treatment Plant.
- Perform preliminary findings review and resolution.

Completion date may be impacted by duration of ongoing upgrade projects.

Weeks 43 through 52:

- Prepare final report and label deployment for all CSO / Pumping Facilities and Moccasin Bend Wastewater Treatment Plant.
- Provide training of personnel.



CITY OF CHATTANOOGA

SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

Station Name	Station Approximate Location
17TH ST. Water Tower	3 W. Main St Chatt, TN
19TH ST.	1032 West 19th Street, Chattanooga
19TH ST. CSO	1504 Riverfront Pky Chatt,TN
23RD ST.	257 E 25th Street, Chattanooga
26TH ST.	50 W 26th St Chatt,TN
AIRPORT #1	965 Airport Rd
AIRPORT #2	1053 Jubilee Dr Chatt,TN
ALTAMONT	808 Altamont Rd Chatt,TN
ALTON PARK	3390 Hughes Ave Chatt,TN
ARBOR CK.	2543 Arbor Creek Way Hixson TN
BATTERY PLACE	501 Battery Place Chatt,TN
BIG RIDGE 1	4790 Gann Store Rd Hixson,TN
BIG RIDGE 2	4602 Gann Store Rd Hixson,TN
BIG RIDGE 3	4714 Privateer Hixson,TN
BIG RIDGE 4	4720 Privateer Hixson,TN
BIG RIDGE 5	4800 Woodland Cir Hixson,TN
BIG RIDGE 6	1908 Wisteria Dr Hixson,TN
BIG RIDGE 7	2220 Rambler Lane Hixson,TN
BIG RIDGE 8	2204 Wisteria Dr Hixson TN
BIG RIDGE 9	6406 Lake Shadows Cir Hix,TN
BIG RIDGE 10	4029 Breakwater Dr Hixson,TN
BIG RIDGE 11	5733 Lake Resort Terrace Hixson,TN
BIG RIDGE 12	5866 Lake Resort Ter Hix, TN
BIG RIDGE 13	4110 Lake Shore Ln Hixson,TN
BIG RIDGE 14	1965 Hix Marina Rd Hixson,TN
BOY SCOUT	811 Boyscout Rd Hixson,TN
BRAIN GOLF	409 Tacoa Chatt, TN
BRAIN. MAN.	4610 Rickey Dr Chatt,TN
CARTER ST. CSO	550 W. 20th St Chatt, TN
CARTER ST. REG.	2701 Chestnut St Chatt, TN
CENTRAL AV. CSO	294 E. 2nd St Chatt, TN
CITICO	929 Riverside Dr Chatt, TN
CITICO CSO	201 Riverside Pky Chatt,TN
COLLEGEDALE	5151 Ooltewah Ringgold Rd
CSO ANTENNA	1815 Riverfront Pky, Chattanooga, TN
DADE COUNTY	23 Belk Rd. Dade Cty, GA
DAVIDSON PLACE	1075 Dodie Dr Chatt,TN
DUPONT IND PK	4460 Pinnacle Hixson,TN
DUPONT METERING	4320 N. Access Rd Chatt, TN



CITY OF CHATTANOOGA

SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

Station Name	Station Approximate Location
DUPONT PKWY PS	1590 Elm St Hixson, TN
EARL LANE SS	804 Lower Mill Rd Hixson, TN
EAST BRAINERD	3 Frawley Rd East Ridge, TN
EASTGATE #1	51 Eastgate Loop Chatt, TN
EASTGATE #2	6045 Cornelison Rd Chatt, TN
ENGLE STADIUM	506 O'Neal St Chatt, TN
ENTERPRISE (ESIP)	7141 Discovery Dr Chatt, TN
FAGAN ST.	3820 Fagan St Chatt, TN
FRIAR BRANCH	3910 Juandale Trail Chatt, TN
HERITAGE GREEN	653 Calloway Court Chatt, TN
HIGHLAND PK	2331 S Holtzclaw Chatt, TN
HIXSON NO.1	4677 Adams Rd Hixson, TN
HIXSON NO.2	5401 Old Hixson Pike Rd Hixson, TN
HIXSON NO.3	5234 Cassandra Smith Rd Hix, TN
KOMATSU	400 Runyan Dr Chatt, TN
LAKE VISTA	4537 Peckingspaugh Dr Chatt, TN
LATTA ST.	1424 Latta St Chatt, TN
LOOKOUT MOUNTAIN	1413 Wood Nymph Trail
MANKAR PATTON	100 Douglas St. Chatt, TN
MEAD. TR.	4905 Meadow Trace Ln Hix, TN
MLK CSO	1015 Riverfront Pky Chatt, TN
MT CREEK	115 Baylor School Rd Chatt, TN
MURRAY HILLS 1	4550 Webb Rd Chatt, TN
MURRAY HILLS 2	4951 Bal Harbor Chatt, TN
MURRAY HILLS 3	4924 Bal Harbor Chatt, TN
MURRAY HILLS 4	3707 Kings Rd Chatt, TN
MURRAY HILLS 5	3820 Kings Rd Chatt, TN
NORTH TER	312 Howell St. Chatt, TN
ORC. KNOB SS	808 North Holtzclaw Chatt, TN
ORCH KNOB WW	1108 North Holtzclaw Chatt, TN
PINE. RD.	1138 Pineville Rd Chatt, TN
RINGGOLD	75 Christian Rd Ringgold, GA
RIVER PARK 1	4301 Amnicola Hwy. Chatt, TN
RIVER PARK 2	4301 Amnicola Hwy. Chatt, TN
ROSS LNDG CSO	201 Riverfront Pky Chatt, TN
SIDNEY ST REG.	2801 Sidney Street
SOMERVILLE	110 Somerville Ave Chattanooga, TN
SOUTH CHICK	4090 North Hawthorne Chatt, TN
SPRING CREEK	250 Vero Beach North, GA



CITY OF CHATTANOOGA

SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

Station Name	Station Approximate Location
STORM STATION 1	5847 Brainerd Rd
STORM STATION 2	5700 Cornelison Rd Chatt, TN
STORM STATION 3	5502 Miller Dr. Chatt, TN
SUMMIT #1	4238 Old Woodland Dr Chatt, TN
SUMMIT #2	4238 Old Woodland Dr Chatt, TN
TIFTONIA 1	1006 Brown Ferry Rd Chatt, TN
TIFTONIA 2	141 Brown Ferry Rd Chatt, TN
TIFTONIA 3	248 Aster Ave Chatt, TN
TIFTONIA 4	1305 Brown Ferry Rd Chatt, TN
TIFTONIA 5	1339 Burgess Rd Chatt, TN
TREMONT CSO	20 Tremont Street Chatt, TN
VAAP	5480 Highway 58 Chatt, TN
VALLEY BROOK	109 Valley Brook Circle Hixson, TN
WALKER VAL. METERING	5700 Tennessee Ave, Chatt, TN
WARNER PARK SS#1	1254 E 3rd St Chatt, TN
WARNER PARK SS#2	1254 E 3rd St Chatt, TN
WARNER PK CSO	1254 E. 3rd St. Chatt, TN
WEST CHICKAMAUGA	241 Lillian Dr Fort Oglethorpe, GA
WILLIAMS ST. CSO	2705 Williams Street
WILLOW BEND	1646 Eucalyptus Dr Chatt, TN

Total Days to Completion 365 calendar days.

It is understood and agreed that the Consultant shall start the performance of Services within 10 days of receipt of a written Notice to Proceed and shall complete the work in accordance with the contract times set forth herein.



CITY OF CHATTANOOGA

SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

ATTACHMENT F

Owner: City of Chattanooga, Tennessee
 Consultant: **Electrical & Electronic Controls, Inc.**

Project Number & Name: **W-15-016-101 – Short Circuit Study & Arc Flash Hazard Analysis for Pump Stations and CSO Facilities**

RATE SCHEDULE

2016 LABOR RATES

(effective January 1, 2016 - December 31, 2016)

<u>TESTING & REPAIR WORK</u>	<u>ENGINEERING</u>
MONDAY THRU FRIDAY / 8 AM-5 PM.....\$103.86 PER HR	\$114.22 PER HR
5 PM-8 AM AND SATURDAYS\$137.34 PER HR	\$ 147.68 PER HR
SUNDAYS.....\$170.85 PER HR	\$ 181.17 PER HR
NEW YEARS DAY, EASTER, MEMORIAL DAY, 4 th OF JULY, LABOR DAY, THANKSGIVING (Thursday & Friday), CHRISTMAS EVE & CHRISTMAS DAY.....\$197.76 PER HR	
	\$ 214.63 PER HR

EQUIPMENT CHARGES WILL BE BASED UPON WHAT IS REQUIRED.

MILEAGE: \$0.75 PER MILE

TRAVEL TIME FROM CHATTANOOGA BOTH WAYS, ON JOBS REQUIRING MEN TO STAY OVERNIGHT. FOOD AND LODGING ARE CHARGED TO CUSTOMER ACCORDING TO OUR COST.

ANY CALL AFTER NORMAL BUSINESS HOURS-WEEKEND AND HOLIDAYS
 MINIMUM CHARGE IS (4) FOUR HOURS PER MAN AT APPLIED RATE.



CITY OF CHATTANOOGA

SHORT CIRCUIT STUDY AND ARC FLASH HAZARD ANALYSIS AGREEMENT

ATTACHMENT G

Owner: City of Chattanooga, Tennessee
 Consultant: **Electrical & Electronic Controls, Inc.**

Project Number & Name:

W-15-016-101 – Short Circuit Study & Arc Flash Hazard Analysis for Pump Stations and CSO Facilities

STANDARD INVOICE

Indicates MANDATORY Item

CONSULTANT LETTERHEAD

ATTN: City Project Manager
 REF: Project Name Provided by City
 CODE: Consultant Project Number
 PO: City Project Number in format S-02-001-101

 INVOICE

TERMS: Net 25 days
 DUE: 08/01/03

Must be Sequential Number

Invoice Number 5
Dated 07/07/03

City Project Manager
City Project Manager Title
City of Chattanooga
Engineering Division/DRC
1250 Market Street, Suite 2100
Chattanooga TN 37402

Invoice Must show Billing Period.

For Professional Services from May 31 to June 27, 2003

This Breakdown must list each item of the contract.

Consultant Project No.	Description	Fee Base	LS/CP	Percent Work to Date	Amount Billed	Previous Billed	This Invoice Billed
C03009-01	01 - Design	\$51,500.00	LS	55%	\$28,325.00	\$18,540.00	\$9,785.00
	02 - Survey	\$15,700.00	LS	0%	\$0.00	\$0.00	\$0.00
C03009-02	Barton Avenue and Brown Acres Golf Course Design	\$20,000.00	CP	12%	\$2,391.02	\$2,033.00	\$358.02
C03009-03	Permitting/Easement Assistance	\$5,000.00	CP	6%	\$291.08	\$0.00	\$291.08
C03009-04	Bidding/Construction Assistance	\$10,000.00	CP	0%	\$0.00	\$0.00	\$0.00
C03009-05	Misc. As-Requested Services	\$5,000.00	CP	7%	\$363.85	\$0.00	\$363.85
	Total Contract Amount	\$107,200.00			\$31,370.95	\$20,573.00	
	TOTAL THIS INVOICE						\$10,797.95

Must Match Contract Amount

Prior Invoices	\$20,573.00
This Invoice	\$10,797.95
Payments	-\$20,573.00
Balance on Account	\$10,797.95

NOTE:

- There shall be only one invoice per contract per billing period
- Any necessary details should be attached as backup