

PROJECT MANUAL

PUBLIC SAFETY UNINTERRUPTIBLE POWER  
SUPPLY (UPS) EQUIPMENT REPLACEMENT  
PROJECT

City of Riverside, Missouri  
January 11, 2013

**CITY OF RIVERSIDE, MISSOURI  
ADVERTISEMENT FOR BIDS**

Separate sealed bids for the PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT REPLACEMENT

PROJECT will be received by the City Clerk at Riverside City Hall, 2950 NW Vivion Road, Riverside, Missouri until 10:00 A.M., on Tuesday, February 5, 2013, and then publicly opened and read aloud.

The Information for Bidders, Form of Bid, Agreement, Plans, Specifications, and Forms of Bid Bond, Performance and Payment Bond, and other Contract Documents may be examined at the office of the City Engineer at the above city hall address. Copies may be obtained from the city website at [www.riversidemo.com/rfps](http://www.riversidemo.com/rfps).

A non-mandatory Pre-Bid Meeting and walkthrough of the project site will be held at 10:00 AM on Tuesday, January 22, 2013 in the Officer Jefferson Taylor Memorial Training Room, Riverside Department of Public Safety, 2990 NW Vivion Road, Riverside, Missouri.

The City reserves the right to waive any informality or to reject any or all bids. Each bidder must deposit a bid security in the amount, form and subject to the conditions provided in the Information for Bidders. No bidder may withdraw a bid within 90 days after the actual date of the opening thereof.

**CITY OF RIVERSIDE, MISSOURI**  
**INFORMATION FOR BIDDERS**

The City of Riverside, Missouri (the "City") invites sealed bids on the forms contained in the Bid Package and Contract Documents for the

**PUBLIC SAFETY UNINTERRUPTIBLE POWER**  
**SUPPLY (UPS) EQUIPMENT REPLACEMENT**  
**PROJECT**

**1. Receipt and Opening of Bids.** Bids will be received by the City at the office of the City Clerk, Riverside City Hall, 2950 NW Vivion Road, Riverside, MO 64150, until **10:00 a.m.** on Tuesday, February 5, 2013, at which time all sealed bids will be publicly opened and read in the presence of one or more witnesses. The envelope(s) containing the bids must be sealed, clearly marked on the outside of the envelope "**PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT REPLACEMENT PROJECT**" and addressed to the City Clerk at Riverside City Hall.

The City reserves the right to award the contract by sections, to accept or reject any and all bids, to waive any technicalities or irregularities therein, to determine in its sole discretion the lowest responsive and responsible bidder, and to award the contract on such basis. Any bid may be withdrawn at the request of the bidder for return of the bid packet submitted by filing a written request with the City Clerk prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 90 days after the actual date of the opening thereof without forfeiture of the Bid Security.

**2. A NON-MANDATORY Pre-Bid Meeting** and walk-through of the project site will be held on **Tuesday, January 22, 2013**. The meeting will be conducted in the Jefferson Taylor Memorial Training Room, Riverside Department of Public Safety, 2990 NW Vivion Road, Riverside, Missouri. The meeting will begin at **10:00 a.m.** For this Project, this will be the only opportunity for a potential bidder to view the project site. There will be NO individual tours of the project site and floor plans will not be available or disseminated electronically.

**3. Rejection of all Bids.** If the City rejects all Bids, the City may: (1) re-advertise or re-solicit Bids following the City's normal bidding procedure; or (2) use an expedited Bid submission schedule when the City determines that the delay would not be in the best interest of the project or the City.

BIDDER AGREES THAT REJECTION SHALL CREATE NO LIABILITY ON THE PART OF THE CITY BECAUSE OF SUCH REJECTION, AND THE SUBMISSION OF ANY BID IN RESPONSE TO THIS INVITATION SHALL CONSTITUTE AN AGREEMENT OF THE BIDDER TO THESE CONDITIONS.

**4. Preparation and Submission of Bid.** Each bid must be submitted on the prescribed form(s) and accompanied by Qualifications of Bidder, Affidavit of Work Authorization and Bid Security. All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures, and the foregoing Certifications must be fully completed and executed when submitted. On alternate items for which a bid is not submitted, a written indication of "no bid" on the bid form is required. No oral, electronic, facsimile or telephonic bids or alterations will be considered.

A complete set of the bidding documents are on file for examination at the office of the City Engineer at Riverside City Hall and on the City of Riverside website at [www.riversidemo.com/rfps](http://www.riversidemo.com/rfps). With the exception of the Pre-Bid Meeting and walkthrough, there will be NO individual tours of the project site

and floor plans will not be available or disseminated electronically. The successful bidder will receive the engineer's drawing of the project site, including floor plans of the construction area, following execution of a confidentiality agreement.

CONTRACTORS SHOULD READ AND BE FULLY FAMILIAR WITH ALL BIDDING AND CONTRACT DOCUMENTS BEFORE SUBMITTING A BID. IN SUBMITTING A BID, THE BIDDER WARRANTS THAT IT HAS READ THE BIDDING AND CONTRACT DOCUMENTS AND IS FULLY FAMILIAR THEREWITH, THAT CONTRACTOR HAS VISITED THE SITE OF THE WORK TO FULLY INFORM ITSELF AS TO ALL EXISTING CONDITIONS AND LIMITATIONS, AND CONTRACTOR HAS INCLUDED IN THE BID A SUM TO COVER THE COST OF ALL ITEMS OF THE WORK.

The submission of a bid will constitute an incontrovertible representation by the bidder that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the work.

Bids by a corporation must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address shall be shown below the signature.

Bids by a partnership must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

**5. Addenda and Interpretations:** No interpretation of the meaning to the plans, specifications, or other pre-bid documents will be made to any bidder orally. Every request for such interpretation should be in writing addressed to:

Consulting Engineer: Kenneth L. Diehl, TapanAm Associates, Inc., 201 West 135<sup>th</sup> Street,  
Kansas City, MO 64145. Phone (816)941-6100, Fax (816)941-6102.

with a copy to:

Project Manager: Mike Shelton, Operations Support Director, Riverside Department of Public Safety, 2990 NW Vivion Road, Riverside, MO 64150. Phone (816)741-1191, Fax (816)741-0895.

and to be given consideration must be received at least five (5) calendar days prior to the date fixed for the opening of bids. A blank Request for Information (RFI) form is included as Exhibit M in the Project Manual. The RFI form shall be completed by the Bidder and submitted to the Project Manager and Engineer. The RFI form shall be used after the contract has been awarded and also for the entire duration of construction.

Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the Bid Documents which, if issued, will be either hand delivered by a deliverer with receipt of delivery, or mailed by the fastest delivery method available via registered mail or overnight delivery, and may also be mailed electronically or faxed to all prospective bidders recorded as having received the Bid Documents, not later than three (3) calendar days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents. Addenda may also be issued to modify the Bid Documents as deemed advisable by the City.

At the time of Bid submission, each Bidder shall verify that it has considered all written addenda. **No one is authorized to make any clarifications, interpretations or modifications or give any instructions to the bidders during the bidding period except as described in this Section.**

**6. Substitute Material and Equipment:** The contract, if awarded, will be on the basis of material and equipment described in the drawings or specified in the specifications without consideration of possible substitute of "or-equal" items. Whenever it is indicated in the drawings or specified in the specifications that a substitute "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to City, application for such acceptance will not be considered by City until after the "effective date of the Agreement".

**7. Subcontracts:** The bidder shall submit to City with the Bid a list of all proposed sub-contractors to be used on the project. The list shall indicate those portions of the work each sub-contractor will be performing. The Contractor shall also submit a list of suppliers of major materials to be used on the project. The list shall indicate which materials each supplier is furnishing.

The Bidder must be capable of demonstrating to the satisfaction of City that bidder has the capability at the time of submission of the bid to manage or perform all of the Work required to be performed on the project by Contractor under the Agreement.

**8. Qualifications of Bidder:** The City may make such investigations as it deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the City all such information and data for this purpose as the City may request. The City reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the City that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted. At a minimum, each Bidder must submit the following information with the Bid:

**Authority to Do Business in Missouri.** Each bid must contain evidence of bidder's qualification and good standing to do business in the State of Missouri or covenant to obtain such qualification prior to award of the contract.

**Key Personnel.** Identify the following Key Personnel proposed for the Project. (NOTE: Key Personnel must be committed to the Project for its duration, and may not be removed or substituted without the City's prior written consent.)

GC Project Manager  
On-Site Field Superintendent  
QC/QA Manager  
Safety Officer

For each of the Key Personnel, provide the following background information:

- Years of employment with current employer;
- Other projects this person will be involved with concurrently with the project;
- Provide professional registrations, education, certifications and credentials held by the person that are applicable to the Project.

**Quality Assurance/Quality Control Plan.** Provide a summary of Bidder's Quality Assurance/Quality Control Plan for this project

- Describe key issues that might affect the Project schedule and how Bidder proposes to address them

- Provide a statement regarding all work performed two (2) years immediately preceding the date of the Bid that contains either (a) any written notices of violations of any federal or state prevailing wage statute in which prevailing wage penalties were assessed against the Bidder or paid by the Bidder; or (b) a statement that there have been no such written notices of violations or such penalties assessed

**Statement of Assurances.** Provide affirmation of the following items:

- Statement that Bidder is current on payment of Federal and State income tax withholdings and unemployment insurance payments
- Statement that the Bidder has not been rescinded or debarred from any bidding, contractual, procurement or other such programs by federal state or local entities.
- Statement of Bidder’s litigation and/or arbitration history over the past seven (7) years including final ruling. Pending cases must be disclosed with a notation that the matter is still unresolved.
- Statement of Bidder’s bond history over the past seven (7) years including any incidences of failure to perform.
- Provide sworn affidavits as outlined in the Information to Bidders’ concerning Bidder’s participation in the federal work authorization program.
- Statement that there is no collusion or fraud with reference to illegal relationships of bidders and representatives of the City, bid pooling or strawbids

**9. Bid Security:** Each bid must be accompanied by a bid bond payable to the City for five percent (5%) of the total amount of the bid. A certified check made payable to “The Treasurer of the City of Riverside” may be used in lieu of a bid bond. Attorneys-in-fact who sign bid bonds must file with each bond a certified and effectively dated copy of their power of attorney.

As soon as the bid prices have been compared, the City will return the bonds of all except the three (3) lowest responsible bidders. The bid bond of the remaining bidders will be retained by the City until the earlier of (a) the 91<sup>st</sup> day after the bid opening, or (b) execution and delivery of the Agreement together with all bonds, evidence of insurance, work authorization affidavit and other documents required under the Agreement by the bidder to whom Notice of Award is given. The Bid Security shall be forfeited to the City if the bidder to whom an award is made fails to enter into the required contract or fails to deliver the required performance or payment bonds.

**10. Liquidated Damages for Failure to Enter into Agreement:** If the Bidder fails or refuses to execute the Agreement and deliver such additional documentation within twenty (20) days of Notice of Award, any Bid Security shall immediately become due and payable and forfeited to the City as liquidated damages. . Bidders agree that this is a fair and reasonable approximation of the actual damages incurred by the City for the Bidder’s failure to honor its bid and that the liquidated damages in this Section are not penal in nature but rather the parties’ attempt to fairly quantify the actual damages incurred by the City for the Bidder’s refusal to honor its bid.

**11. Time of Completion and Liquidated Damages:** Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the City and to fully complete construction and installation activities under the project within seven (7) consecutive Calendar Days following delivery of

the equipment from the manufacturer and within sixty (60) consecutive Calendar Days after issuance of Notice to Proceed. Bidder must agree also to pay as liquidated damages, the sum of \$1,000 for each consecutive calendar day thereafter as hereinafter provided in the Agreement and Contract Documents. No time extensions will be granted, except in case of additional work requested by the City. **Bidder agrees that the sum of \$1,000 per day is a fair and reasonable approximation of the actual damages incurred by the City for the Bidder's failure to complete the installation portion of the project within the time outlined above and that such liquidated damages in this Section are not penal in nature but rather the parties' attempt to fairly quantify the actual damages incurred by the City for such delays.**

**12. Conditions of Work:** Each bidder must inform itself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of its obligation to furnish all material and labor necessary to carry out the provisions of the contract. Insofar as possible the Contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

**13. 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 contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

**14. Method of Award - Lowest Responsible Bidder:** If at the time this contract is to be awarded, the lowest bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the City as available to finance the contract; the contract will be awarded to the "lowest responsible bidder". If such bid exceeds such amount, the City may reject all bids or may award the contract on such items as identified by and deemed in the best interest of the City, in its sole discretion, as produces a net amount which is within the available funds. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

If the proposal submitted by Bidder includes Bid Alternates, the City, in its sole discretion, may include any, all or none of the Alternates in determining the lowest responsible Bid. The City may include the Alternates in any combination and in any order or priority as deemed in the best interest of the City. The City may make this determination at any time after bid closing and prior to contract award. The City will act in the best interest of the City in determining whether to include any, all or none of the Alternates and the combination and priority of any Alternates selected. If additional funding becomes available after Contract award, the City may add any or all of the Alternates to the Agreement by Change Order.

The City reserves the right to reject any and all bids, to waive any and all informalities, and the right to disregard all nonconforming, non-responsive or conditional bids. In evaluating bids, the City shall consider the qualifications of the bidders, whether or not the bids comply with the prescribed requirements, and alternates and unit prices if requested in the Bid.

City may consider the qualifications and experience of subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for portions of the work. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by the City.

The City may conduct such investigations as he deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications and financial ability of the bidders, proposed subcontractors and other persons and organizations to do the work in accordance with the Contract Documents to the

City's satisfaction within the prescribed time. The City reserves the right to reject the bid of any bidder who does not pass any such evaluation to the City's satisfaction.

If the contract is to be awarded, it will be awarded to the lowest bidder whose evaluation, in the sole determination by the City, indicates to the City that the award will be in the best interests of the project.

**15. Obligation of Bidder:** At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and Contract Documents (including all addenda). The failure or omission of any bidder to examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect to the bid submitted. On request, City will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of his bid.

REJECTION OF BID SHALL CREATE NO LIABILITY ON THE PART OF THE CITY BECAUSE OF SUCH REJECTION, AND THE FILING OF ANY BID IN RESPONSE TO THIS INVITATION SHALL CONSTITUTE AN AGREEMENT OF THE BIDDER TO THIS CONDITION.

**16. Federal Work Authorization Program Participation:** Bidders are informed that pursuant to Section 285.530, RSMo, as a condition of the award of any contract in excess of five thousand dollars (\$5,000), the successful bidder shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection to the contracted services. The affidavit shall further provide that the successful bidder does not knowingly employ any person who is an unauthorized alien in connection to the contracted services.

**17. Proof of Lawful Presence:** RSMo 208.009 requires that contractors provide affirmative proof that the Contractor is a citizen or permanent resident of the United States or is lawfully present in the United States. Affirmative proof can be established through a Missouri drivers license; US Birth Certificate (certified with an embossed, stamped or raised seal issued by a state or local government – hospital certificates are not acceptable); US Passport (valid or expired); US Certificate of Citizenship, Naturalization or Birth Abroad; US Military Identification Card or Discharge Papers accompanied by a copy of US Birth Certificate issued by a state or local government.

**18. Safety Standards and Accident Prevention:** With respect to all work performed under this contract, the Contractor shall:

a. Comply with the safety standards provisions of applicable laws, building and construction codes, and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Section 292.675, RSMo

b. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.

c. Maintain at Contractor's office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees), who may be injured on the job site.

d. Bidders are informed that the Project is subject to the requirements of Section 292.675, RSMo, which requires all contractors or subcontractors doing work on the Project to provide, and require its on-site employees to complete, a ten (10) hour course in construction safety and health



approved by the Occupational Safety and Health Administration (“OSHA”) or a similar program approved by the Missouri Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program. The training must be completed within sixty (60) days of the date of work on the Project commences. On-site employees found on the worksite without documentation of the required training shall have twenty (20) days to produce such documentation.

**19. Prevailing Wage:** Wage rates for the project shall be not less than the prevailing wage rates for Platte County currently in effect as determined by the Division of Labor Standards of the State of Missouri, pursuant to RSMo 290.210 et seq. The Contractor will forfeit a penalty to the City of \$100 per day, or portion thereof, for each worker that is paid less than the prevailing rate for any work done under the contract by the Contractor or any Subcontractor.

**20. Excessive Unemployment:** The Missouri Department of Labor has provided notice that Missouri is now in a period of excessive unemployment as defined by Section 290.550 RSMo. et seq. During periods of excessive unemployment only Missouri laborers and laborers from non-restrictive states may be employed under the contract, except that other laborers may be used when Missouri laborers or laborers from nonrestrictive states are not available or are incapable of performing the particular type of work involved. Use of laborers from restrictive states shall require certification by the Contractor and approval of the contracting officer.

**21. American Products:** Pursuant to RSMo 34.353, any manufactured good or commodities used or supplied in the performance of the contract (or subcontract) shall be manufactured or produced in the United States, unless determined to be exempt as provided in state law.

**22. Transient Employers:** Pursuant to RSMo 285.230, every transient employer (employer not domiciled in Missouri) must post in a prominent and easily accessible place at the work site a clearly legible copy of the following: 1) Notice of registration for employer withholding issued by the Missouri Director of Revenue, 2) Proof of coverage for workers’ compensation insurance or self-insurance verified by the Missouri Department of Revenue through the records of the Division of Workers Compensation; and 3) Notice of registration for unemployment insurance issued to such employer by the Division of Employment Security. Contractor shall be liable for a penalty of \$500.00 per day until such notices required by RSMo 285.230 et seq. are posted.

**23. Current City Occupation License:** The successful bidder, and all subcontractors, shall obtain a current city occupation license prior to beginning construction.

**24. Sales Tax Exemption Certificate:** The City will supply the Contractor with a Project Exemption Certificate for use in purchasing materials and supplies used on the project. The Contractor shall, in preparing its bid, omit from its computed costs all sales and use taxes related to the purchase of materials or other tangible personal property incorporated into or consumed in the construction of the Project.

**25. Non Discrimination and Equal Opportunity:** Contractor shall ensure that all employees are treated equally without regard to their race, color, religion, sex, age, handicap or national origin. The City hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this bid, socially and economically disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, sex, age, ancestry or national origin in consideration for an award. The City of Riverside is an equal opportunity employer and encourages minority, women and disadvantaged contractors to submit bids.

**26. Security for Payment and Faithful Performance:** Simultaneously with delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract. The Bond furnished by bidder shall contain the requirements and conditions set forth in and shall comply in all respects with Section 107.170 RSMo and other applicable legal requirements. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the City, and **shall have a rating of at least “A+” from Best’s or “AA” from Standard and Poor’s** in an amount equal to one hundred percent (100%) of the contract price that does not include the cost of operation, maintenance and money. Attorneys-in-fact who sign contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

**27. Signing of Agreement:** When City gives a Notice of Award to the successful bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement and all other Contract Documents. Within twenty (20) days thereafter Contractor shall sign and deliver at least three (3) counterparts of the Agreement to City with all other Contract Documents attached and signed as required, together with the required bonds, evidence of insurance, city licenses and work authorization affidavit and documentation. Within ten (10) days thereafter City will deliver all fully signed counterparts to Contractor. The City may issue a Notice to Proceed with or at any time after delivery of signed counterparts to Contractor.

## BID FOR LUMP SUM CONTRACT

To: City of Riverside, Missouri

Re: PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT  
REPLACEMENT PROJECT

Date \_\_\_\_\_

Project No. \_\_\_\_\_

Proposal of \_\_\_\_\_ (hereinafter called "Bidder") \* a corporation,  
partnership, or an individual [\* Insert, or strike, corporation, partnership, individual or other entity as applicable. ] doing  
business as \_\_\_\_\_ organized and existing under the laws of  
the State of \_\_\_\_\_.

To the City of Riverside, Missouri (hereinafter called "City")

To Whom it May Concern::

The Bidder, in compliance with your invitation for bids for the construction of the above referenced project having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written "Notice of Proceed" of the Owner and to fully complete the project within consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to pay as liquidated damages, the sum of \$1,000 for each consecutive calendar day as provided in the Contract Documents. Bidder agrees that the sum of \$1,000 per day is a fair and reasonable approximation of the actual damages incurred by the City for the Bidder's failure to complete the project within the time outlined above and that such liquidated damages in this section are not penal in nature but rather the parties' attempt to fairly quantify the actual damages incurred by the City for such delays.

Bidder acknowledges receipt of the following addendum:

\_\_\_\_\_  
\_\_\_\_\_

Bidder agrees to perform all the work described in the specifications and shown on the plans, for the following price (Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern):

Base Contract Bid: \_\_\_\_\_  
\_\_\_\_\_

Fixed Price Option One – Surge protective device in MSB Panel: \_\_\_\_\_  
\_\_\_\_\_

Fixed Price Option Two – Surge protective device in EMDP Panel: \_\_\_\_\_  
\_\_\_\_\_

The lump sum prices above shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for. Changes shall be processed in accordance with Article VII of the Agreement.

Bidder understands that the City reserves the right to reject any or all bids and to waive any informality in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of 90 calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract attached within 20 days and deliver a Surety Bond or Bonds as required by the Agreement.

The bid security attached in the sum of \_\_\_\_\_ dollars (\$ \_\_\_\_\_) is to become the property of the City in the event the Agreement and all Contract Documents, including the Performance and Payment Bonds are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the City caused thereby.

THE UNDERSIGNED BIDDER AGREES THAT REJECTION SHALL CREATE NO LIABILITY ON THE PART OF THE CITY OF RIVERSIDE BECAUSE OF SUCH REJECTION, AND THE FILING OF ANY BID IN RESPONSE TO THIS INVITATION SHALL CONSTITUTE AN AGREEMENT OF THE BIDDER TO ALL CONDITIONS CONTAINED HEREIN.

Respectfully submitted:

(SEAL - if bid is by a corporation)

By \_\_\_\_\_  
Title: \_\_\_\_\_  
Street: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_

**BID BOND**  
(Bid Security)

KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_  
\_\_\_\_\_ as PRINCIPAL and \_\_\_\_\_  
\_\_\_\_\_ as SURETY, are held and firmly bound unto the City of Riverside,  
Missouri, ("City") in the sum of \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_) ("Bid Security"), for the payment of  
which sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs,  
executors, successors, and assigns, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas Principal has  
submitted a bid dated \_\_\_\_\_, 2013, to enter into a contract in writing for the  
PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT REPLACEMENT  
PROJECT;

NOW, THEREFORE,

IF said Bid shall be rejected, or in the alternate,

IF Principal shall not withdraw the bid within the period specified therein after the  
opening of bids, or, if no period be specified, within ninety (90) days after the bid opening, or in  
the alternate,

IF said Bid shall be accepted and the Principal shall execute and deliver a contract in the  
form of contract attached hereto, properly competed with all attachments and requirements  
pertaining thereto, and shall furnish a bond for the faithful performance of said contract, and for  
the payment of all persons performing labor or furnishing materials in connection therewith,  
shall in all other respects perform the agreement created by the acceptance of said Bid within  
twenty (20) days after such Contract Documents are presented to Principal for signature, or in the  
alternate,

In the event of the withdrawal of the Bid within the period specified, or the failure to  
enter into such contract within the time specified, then the Bid Security shall immediately  
become due and payable and forfeited to the City as liquidated damages. Principal and Surety  
agree that this is a fair and reasonable approximation of the actual damages incurred by the City  
for the Principal's failure to honor its bid and that the liquidated damages in this section are not  
penal in nature but rather the parties' attempt to fairly quantify the actual damages incurred by  
the City for the Principal's refusal to honor its bid.

The Surety, for value received, hereby stipulates and agrees that the obligations of said  
Surety and its bond shall be in no way impaired or affected by the extension of the time within  
which the City may accept such Bid; and said Surety does hereby waive notice of any such  
extension.

IN WITNESS WHEREOF, the Principal and Surety have hereunto set their hands and seals, and such of them as or corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year set forth herein.

\_\_\_\_\_  
PRINCIPAL  
By: \_\_\_\_\_  
(Signature)  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A+ or better; (3) Surety is named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring Companies: as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and (4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

\_\_\_\_\_  
SURETY  
By: \_\_\_\_\_  
(Signature)  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

**SURETY POWER OF ATTORNEY MUST BE ATTACHED**

**EXPERIENCE QUESTIONNAIRE**

(To be completed by each Bidder and submitted with Bid)

FAILURE TO COMPLETE THIS FORM WILL RESULT IN THE REJECTION OF THE BID.

Company Name: \_\_\_\_\_

Primary Contact Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email Address: \_\_\_\_\_

Federal ID Number: \_\_\_\_\_ or SSN: \_\_\_\_\_

**For Corporations Only:**

Name of State in which incorporated: \_\_\_\_\_

Date of incorporation: \_\_\_\_\_

Attach **Certificate of Good Standing** for State in which incorporated.

If not incorporated in Missouri, also attach **Certificate of Authority to do Business in Missouri**.

Name of the following officers:

President: \_\_\_\_\_

Vice-President: \_\_\_\_\_

Secretary: \_\_\_\_\_

Treasurer: \_\_\_\_\_

**For Partnerships Only:**

Date of Organization: \_\_\_\_\_

Type of Partnership: \_\_\_ General \_\_\_ Limited \_\_\_ Association

Names and addresses of all partners (use additional sheet if necessary):

\_\_\_\_\_  
(Name) (Address) (City, State, Zip)

\_\_\_\_\_  
(Name) (Address) (City, State, Zip)

\_\_\_\_\_  
(Name) (Address) (City, State, Zip)

**EXPERIENCE QUESTIONNAIRE**

1. How many years has your Company been in business as a contractor under your present business name? \_\_\_\_\_
2. List all other prior business names and locations under which you or any partner, principal or other officer of your company has ever done business:

\_\_\_\_\_  
\_\_\_\_\_

3. How many years' experience in the proposed type and size of construction work has your Company had: (a) as a general contractor \_\_\_; (b) as a subcontractor \_\_\_?
4. List the three most recent projects your Company has completed similar in scope to the proposed work:

**Project Name or City** \_\_\_\_\_

Contact Name \_\_\_\_\_ Phone \_\_\_\_\_

Contract Amount \$ \_\_\_\_\_ When Completed? \_\_\_\_\_

Description of Work \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Project Name or City** \_\_\_\_\_

Contact Name \_\_\_\_\_ Phone \_\_\_\_\_



Contract Amount \$ \_\_\_\_\_ When Completed? \_\_\_\_\_

Description of Work \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Project Name** or City \_\_\_\_\_

Contact Name \_\_\_\_\_ Phone \_\_\_\_\_

Contract Amount \$ \_\_\_\_\_ When Completed? \_\_\_\_\_

Description of Work \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. What other important projects has your Company completed?

**Project Name** or City \_\_\_\_\_

Contact Name \_\_\_\_\_ Phone \_\_\_\_\_

Contract Amount \$ \_\_\_\_\_ When Completed? \_\_\_\_\_

Description of Work \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Project Name** or City \_\_\_\_\_

Contact Name \_\_\_\_\_ Phone \_\_\_\_\_

Contract Amount \$ \_\_\_\_\_ When Completed? \_\_\_\_\_

Description of Work \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Project Name** or City \_\_\_\_\_

Contact Name \_\_\_\_\_ Phone \_\_\_\_\_

Contract Amount \$ \_\_\_\_\_ When Completed? \_\_\_\_\_

Description of Work \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

6. List at least two engineering firms with whom you have worked, and the name of the individual who was your primary point of contact:

\_\_\_\_\_  
\_\_\_\_\_

7. Have you ever failed to complete any work on a project or defaulted on a contract? If so, where and why? (attach additional pages if necessary)

\_\_\_\_\_  
\_\_\_\_\_

8. Name of your Surety Company, and the name and address of your agent you expect to use in the event this contract is awarded to you:

\_\_\_\_\_  
\_\_\_\_\_

9. What is your present bonding capacity?

\_\_\_\_\_  
\_\_\_\_\_

10. List each and every incidence of failure to perform that resulted in a claim under a Performance or Payment Bond:

\_\_\_\_\_  
\_\_\_\_\_

11. The construction experience of the Key Personnel in your Company is required. At a minimum, information regarding experience and qualifications of the following positions must be provided: GC Project Manager, On-Site Field Superintendent, QC/QA Manager, Safety Officer.

**NAME** \_\_\_\_\_ **Position** \_\_\_\_\_

Years of construction experience: \_\_\_\_\_

Magnitude & Type of Work \_\_\_\_\_

In What Capacity? \_\_\_\_\_

Years of Employment with Contractor: \_\_\_\_\_

Other projects this individual will be involved with concurrently with this project:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Education, professional registrations, certifications and credentials held by individual applicable to the Project:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**NAME** \_\_\_\_\_ **Position** \_\_\_\_\_

Years of construction experience: \_\_\_\_\_

Magnitude & Type of Work \_\_\_\_\_

In What Capacity? \_\_\_\_\_

Years of Employment with Contractor: \_\_\_\_\_

Other projects this individual will be involved with concurrently with this project:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Education, professional registrations, certifications and credentials held by individual applicable to the Project:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**NAME** \_\_\_\_\_ **Position** \_\_\_\_\_

Years of construction experience: \_\_\_\_\_

Magnitude & Type of Work \_\_\_\_\_

In What Capacity? \_\_\_\_\_

Years of Employment with Contractor: \_\_\_\_\_

Other projects this individual will be involved with concurrently with this project:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Education, professional registrations, certifications and credentials held by individual applicable to the Project:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**NAME** \_\_\_\_\_ **Position** \_\_\_\_\_

Years of construction experience: \_\_\_\_\_

Magnitude & Type of Work \_\_\_\_\_

In What Capacity? \_\_\_\_\_

Years of Employment with Contractor: \_\_\_\_\_

Other projects this individual will be involved with concurrently with this project:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Education, professional registrations, certifications and credentials held by individual applicable to the Project:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

12. List the major items of equipment which you own or which will be used on the project:

<u>Quantity, Description, &amp; Capacity</u>	<u>Age in Years</u>	<u>Condition</u>
--	-------------------------	------------------

---

---

---

---

---

13. List below the contracts to which your company, any principal in your company, or any prior companies owned by a principal in your company were a party during the previous seven (7) years that involved litigation of any type, arbitration, mechanics lien claim or other claim in an amount over \$10,000 (include pending cases with a notation that the matter is still unresolved):

---

---

---

14. On a typical project, what percent of the work is completed by your own forces? \_\_\_\_\_%  
What percent by subcontract? \_\_\_\_\_%. List subcontractors you propose to use on this project and their responsibility in this contract.

<u>Subcontractor Name</u>	<u>Contract Responsibility</u>	<u>% of Contract</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

15. Is your Company current on payment of Federal and State income tax withholdings and unemployment insurance payments? \_\_\_\_\_.

If the answer is no, please provide detail: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

16. Has your Company, or any principal in your company, been rescinded or debarred from any bidding, contractual, procurement or other such programs by federal, state or local entities?

\_\_\_\_\_.

If the answer is yes, please provide detail: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

17. Has your Company received any written notices of violations of any federal or state prevailing wage statute in which prevailing wage penalties were assessed against your Company or paid by your Company during the last two (2) years? \_\_\_\_\_.

If the answer is yes, please provide the detail of each and every such notice: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City in verification of the recitals comprising this Experience Questionnaire and agrees to hold any such person, firm or corporation harmless for providing any such information to the City of Riverside.

Dated on behalf of said Company this \_\_\_\_ day of \_\_\_\_\_, 2013.

By: \_\_\_\_\_  
Title \_\_\_\_\_

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) ss  
\_\_\_\_\_ )

\_\_\_\_\_ being duly sworn, deposes and says that he or she is the \_\_\_\_\_ of \_\_\_\_\_ Company, that he/she has been authorized by such Company to complete the foregoing statement, and that the answers to the foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn to me before this \_\_\_\_ day of \_\_\_\_\_, 2013.

\_\_\_\_\_  
Notary Public

My commission expires:

**AFFIDAVIT**

(as required by Section 285.530, Revised Statutes of Missouri)

As used in this Affidavit, the following terms shall have the following meanings:

**EMPLOYEE:** Any person performing work or service of any kind or character for hire within the State of Missouri.

**FEDERAL WORK AUTHORIZATION PROGRAM:** Any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, under the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603.

**KNOWINGLY:** A person acts knowingly or with knowledge,  
(a) with respect to the person’s conduct or to attendant circumstances when the person is aware of the nature of the person’s conduct or that those circumstances exist; or  
(b) with respect to a result of the person’s conduct when the person is aware that the person’s conduct is practically certain to cause that result.

**UNAUTHORIZED ALIEN:** An alien who does not have the legal right or authorization under federal law to work in the United States, as defined in 8 U.S.C. 1324a(h)(3).

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) ss:

**BEFORE ME**, the undersigned notary, personally appeared \_\_\_\_\_, who, being duly sworn, states on his/her oath or affirmation as follows:

1. My name is \_\_\_\_\_ and I am currently the \_\_\_\_\_ of \_\_\_\_\_ (hereinafter “Contractor”), whose business address is \_\_\_\_\_, and I am authorized to make this Affidavit.

2. I am of sound mind and capable of making this Affidavit, and am personally acquainted with the facts stated herein.

3. Contractor is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the following services contracted between Contractor and the City of Riverside: PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT REPLACEMENT PROJECT.

4. Contractor does not knowingly employ any person who is an unauthorized alien in connection with the contracted services set forth above.

5. Attached hereto is documentation affirming Contractor’s enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services.

Further, Affiant saith not.

\_\_\_\_\_  
Signature of Affiant  
Printed Name: \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 2013.

\_\_\_\_\_  
Notary Public

*\*PLEASE NOTE:* Acceptable enrollment and participation documentation consists of the following 2 pages of the E-Verify Memorandum of Understanding: (1) a valid, completed copy of the first page identifying the Contractor; and (2) a valid copy of the signature page completed and signed by the Contractor, and the Department of Homeland Security – Verification.

**AGREEMENT  
BETWEEN  
CITY OF RIVERSIDE AND**

---

**FOR  
COMPLETION OF  
PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS)  
EQUIPMENT REPLACEMENT PROJECT**

**CONTRACTOR:** \_\_\_\_\_

**RESOLUTION NO.:** \_\_\_\_\_

**CONTRACT PRICE:** \$ \_\_\_\_\_



**AGREEMENT BETWEEN CITY OF RIVERSIDE AND CONTRACTOR**

**PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS)  
EQUIPMENT REPLACEMENT PROJECT**

THIS AGREEMENT, made and entered into as of the \_\_\_\_ day of \_\_\_\_\_, 2013, by and between the City of Riverside, Missouri (“City”), and \_\_\_\_\_ (“Contractor”), shall govern all Work to be provided by Contractor for City on the Project.

WHEREAS, City, under the provisions of Resolution No. \_\_\_\_\_, duly approved on the \_\_\_\_ day of \_\_\_\_\_, 2013 and by virtue of the authority vested in City by the general ordinances of City, intends to enter into one or more contracts for the Project; and

WHEREAS, the Mayor is authorized and empowered by City to execute contracts on behalf of City, and the City Administrator (“Administrator”) is authorized to perform Administrator’s functions set forth in this Agreement; and

WHEREAS, Administrator may designate one or more engineers, architects, or other persons to assist Administrator in performing Administrator’s functions under this Agreement; and

WHEREAS, City desires to enter into an agreement with Contractor to obtain labor, services, materials, supplies, tools, equipment, supervision, management, and other items as set forth in this Agreement; and

WHEREAS, Contractor represents that Contractor is equipped, competent, and able to provide all the Work, in accordance with this Agreement;

NOW THEREFORE, in consideration of the mutual covenants and consideration herein contained, IT IS HEREBY AGREED by City and Contractor as follows:

**ARTICLE I  
DEFINITIONS**

As used in this Agreement and the other Contract Documents, the following words and phrases shall mean:

- A. “Contractor” A person, firm, or corporation with whom the contract is made by the City.
- B. “City” The City of Riverside, Missouri.
- C. “City Administrator” That person designated by the City as the City Administrator.

D. “Engineer” The following Consulting Engineer to the City of Riverside, Missouri: Kenneth L. Diehl, TapanAm Associates, Inc., 201 West 135<sup>th</sup> Street, Kansas City, MO 64145. Phone (816)941-6100, Fax (816)941-6102.

E. “Project” The building, facility, and/or other improvements for which Contractor is to provide Work under this Agreement. It may also include construction by City or others.

F. “Project Manager” The following project manager employed by the City of Riverside to manage the project on behalf of the City: Mike Shelton, Operations Support Director, Riverside Department of Public Safety, 2990 NW Vivion Road, Riverside, MO 64150. Phone (816)741-1191, Fax (816)741-0895.

G. “Subcontractor” A person, firm or corporation supplying labor and materials or only labor for the work at the site of the project for, and under separate contract or agreement with the Contractor.

H. “Substantial Completion” The stage in the progress of the Work where the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the City can occupy or utilize the Work for its intended use.

I. “Work” or “Work on the Project” Work to be performed at the location of the project, including the transportation of materials and supplies to or from the location of the project by employees of the Contractor and any Subcontractor. Work shall include all labor, services, materials, supplies, tools, equipment, supervision, management, and anything else necessary to accomplish the results and objectives described in Exhibit D (Scope of Work) and Exhibit E (Technical Specifications) to this Agreement and the other Contract Documents, in full compliance with all requirements set forth in the Contract Documents, subject to additions, deletions, and other changes as provided for in this Agreement. The Work may refer to the whole Project, or only a part of the Project if work on the Project also is being performed by City or others.

J. “Written Notice” Any notice delivered hereunder and the service thereof shall be deemed completed when sent by certified or registered mail to the other party at the address set forth herein, or delivered in person to said party or their authorized representative on the work.

## **ARTICLE II THE PROJECT AND THE WORK**

A. Contractor shall provide and pay for all Work for the Project.

B. Contractor represents that it has evaluated and satisfied itself as to all conditions and limitations under which the Work is to be performed, including, without limitation, (1) the location, condition, layout, and nature of the Project site and surrounding areas, (2) generally prevailing climatic conditions, (3) labor supply and costs, and (4) availability and cost of materials, tools, and equipment. City shall not be required to make any adjustment in either the

Contract Amount or the time for performance of the Work because of Contractor's failure to do so.

C. The Engineer shall act as the City's representative during the construction period, shall decide questions which may arise as the quality and acceptability of materials furnished and work performed, and shall interpret the intent of the contract documents in a fair and unbiased manner. The Engineer may recommend, but cannot approve Change Orders resulting in an increase in time of performance or payments due to Contractor. The Engineer will make visits to the site and determine if the Work is proceeding in accordance with the Contract Documents. The Contractor will be held strictly to the intent of the Contract Documents in regard to the quality of materials, workmanship, and execution of the Work. Inspections may be at the factory or fabrication plant of the source of the material supply. The Engineer will not be responsible for the construction means, controls, techniques, sequences, procedures or construction safety.

D. Contractor may be furnished additional instructions and detail drawings by the Engineer, as necessary to carry out the Work required by the Contract Documents. The additional drawings and instructions thus supplied will become a part of the contract drawings, the Contractor shall carry out the Work in accordance with the additional detail drawings and instructions.

### **ARTICLE III CONTRACT AMOUNT**

A. The parties acknowledge that this is a lump sum project. The lump sum amount shall include, but not be limited to, all costs, permit fees, profit, overhead, supervision, labor, materials, equipment, taxes, permits, utilities, insurance, bonds, expenses, taxes, and compensation of every kind related to the Work, and shall be referred to as the "Contract Amount." The Contractor shall deliver to the City a complete functioning finished product, usable for the purpose intended for all construction areas described in the scope of work for the Contract Amount stated herein.

B. Provided Contractor performs all Work in accordance with the Contract Documents and complies fully with each and every obligation of Contractor under the Contract Documents, City shall pay Contractor the lump sum Contract Amount of \_\_\_\_\_  
\_\_\_\_\_ (\$\_\_\_\_\_).

C. THIS AGREEMENT IS SUBJECT TO THE CITY ORDINANCES, AND PAYMENT SHALL BE LIMITED TO THE AMOUNT OF PARTICULAR APPROPRIATION FOR THE WORK BY THE BOARD OF ALDERMEN. THE TOTAL PAYMENT UNDER THIS AGREEMENT SHALL NOT EXCEED THE APPROPRIATION CONTAINED IN THE APPLICABLE RESOLUTIONS OR ORDINANCES ADOPTED BY THE BOARD OF ALDERMEN AUTHORIZING THE WORK AND CONTRACTOR SHALL NOT SEEK, NOR BE ENTITLED TO, PAYMENT EXCEEDING THIS AMOUNT UNLESS CITY DIRECTS CONTRACTOR TO PERFORM ADDITIONAL WORK IN ACCORDANCE WITH THIS AGREEMENT, AND CITY ENACTS ANOTHER RESOLUTION OR ORDINANCE AUTHORIZING THE AMOUNT CITY AGREES TO PAY UNDER THIS AGREEMENT.

**ARTICLE IV  
PROGRESS OF WORK /SUBMITTALS**

A. **COMMENCEMENT OF WORK.** The date of beginning and the time for completion of the work are essential conditions of the Contract Documents. Contractor shall commence performance of the Work on the date indicated in a written notice (“Notice to Proceed”) that shall be given by City to Contractor.

B. **TIME FOR COMPLETION.** Contractor shall achieve Substantial Completion, as defined in Article I hereof, not later than seven (7) calendar days after delivery of the UPS equipment by the manufacturer. The overall contract completion time from issuance of the Notice to Proceed to Substantial Completion shall be sixty (60) calendar days. The Contractor will proceed with the work at such rate of progress to insure Substantial Completion within the contract time. It is expressly understood and agreed, by and between the Contractor and the City, that the contract time to achieve Substantial Completion of the work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Work. No extensions will be granted, except in case of unusual (unseasonable) weather conditions or additional work requested by the City under Change Order. Following Substantial Completion, Contractor shall proceed to complete all uncompleted Work items as promptly as permitted by any conditions affecting completion of the Work.

C. **LIQUIDATED DAMAGES.** If Contractor fails to achieve Substantial Completion of all the Work as set forth in the Contract Documents within seven (7) calendar days after delivery of the UPS equipment by the manufacturer or within sixty (60) calendar days after issuance of the Notice to Proceed, whichever comes first, Contractor shall pay City \$1,000 per day, as liquidated damages and not as a penalty, for each calendar day after such date, until Substantial Completion of all the Work is achieved. Contractor agrees that the sum of \$1,000 per day is a fair and reasonable approximation of the actual damages incurred by the City for the Contractor’s failure to complete the project within the time outlined above and that such liquidated damages in this section are not penal in nature but rather the parties’ attempt to fairly quantify the actual damages incurred by or the City for such delays. Recovery of liquidated damages is not City’s exclusive remedy for Contractor’s failure to achieve Substantial Completion in accordance with this Agreement. Specifically, but without limitation, City may exercise any of its default or termination rights under this Agreement under all circumstances described herein, including but not limited to Contractor’s failure to achieve Substantial Completion in accordance with Paragraph B above. Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is due to unforeseen causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, or the public enemy, acts of the City, acts of another Contractor in the performance of a contract with the City, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and abnormal and unforeseeable weather provide the Contractor has given written notice of such delay to the City within five (5) days of the event causing such delay.

D. TIME OF THE ESSENCE. Time is of the essence in the performance of the Work and any other Contractor obligations under the Contract Documents. Contractor shall upon commencement of construction work daily to complete the Work except for Saturdays, Sundays, holidays, and days of inclement weather. This Paragraph does not preclude Contractor from working Saturdays, Sundays, holidays, or days of inclement weather. Contractor shall give the City at least 48 hours notice if intending to work on Saturday, Sunday, holidays or days of impending inclement weather.

E. CONSTRUCTION SCHEDULE. Promptly after the execution of this Agreement, and in any event before commencing performance of the Work, Contractor shall submit to City for approval a construction schedule that specifies the dates on which Contractor plans to begin and complete various parts of the Work, including dates on which information and approvals are required from City. Upon City's written approval of the schedule, Contractor shall comply with it unless directed by City to do otherwise. Contractor shall update the schedule on a monthly basis or at more frequent appropriate intervals if required by the conditions of the Work and the Project. With each Application for Payment under Article VI of this Agreement, Contractor shall submit an updated, current schedule. Neither the original schedule nor any update shall exceed time limits for the entire Project under the Contract Documents.

F. PHOTOGRAPHS OF PROJECT. The Contractor shall furnish photographs of the project site in the number, type, and stage as enumerated below:

none.

G. DELAY IN PERFORMANCE. In the event the City determines that performance of the Work is not progressing as required by the Contract Documents or that the Work is being unnecessarily delayed or will not be finished within the prescribed time, the City may, in the City's sole discretion and in addition to any other right or remedy City may have, require Contractor, at Contractor's sole cost, to accelerate Contractor's progress. Such acceleration shall continue until the progress of the Work complies with the Contract Documents and clearly indicates that all Work will be completed within the prescribed time.

H. SUSPENSION OF WORK. The City may suspend the work or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the Contractor, by written notice to the Contractor which shall fix the date on which work shall be resumed. The Contractor will resume that work on the date so fixed. The Contractor will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to any suspension

I. DRAWINGS AND SPECIFICATIONS. The intent of the drawings and specifications is that the Contractor shall furnish all labor, materials, tools, equipment and transportation necessary for the proper execution of the work in accordance with the Contract Documents and all incidental work necessary to complete the project in an acceptable manner, ready for use, occupancy or operation by the City. In case of conflict between the drawings and specification, the specifications shall govern. Any discrepancies found between the drawings and specifications and site conditions or any inconsistencies or ambiguities in the drawings or specifications shall be immediately reported to the Engineer and Project Manager in writing, who

shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk.

J. SHOP DRAWINGS. Contractor shall submit to Engineer for review all shop drawings, samples, product data, and similar submittals required by the Contract Documents. Contractor shall be responsible to City for the accuracy and conformity of its submittals to the Contract Documents. Shop drawings shall bear the Contractor's certification that it has reviewed, checked and approved the shop drawings and that they are in conformance with the requirements of the Contract Documents. Contractor shall prepare and deliver its submittals to City in a manner consistent with the construction schedule and in such time and sequence so as not to delay performance of the Work. Portions of the work requiring a shop drawing or sample submission shall not begin until the shop drawing or submission has been reviewed by the Engineer. Review of any Contractor submittal shall not be deemed to authorize deviations, substitutions, or changes in the requirements of the Contract Documents unless express written approval is obtained from City specifically authorizing such deviation, substitution, or change. When submitted for the Engineer's review, any shop drawing which substantially deviates from the requirement of the Contract Documents shall be evidenced by a Change Order. If the Contract Documents do not contain submittal requirements pertaining to the Work, Contractor agrees upon request to submit in a timely fashion to City for review by Engineer any shop drawings, samples, product data, manufacturers' literature, or similar submittals as may reasonably be required by City. Contractor shall perform all Work strictly in accordance with approved submittals. Engineer's review does not relieve Contractor from responsibility for defective work resulting from errors or omissions of any kind on the reviewed submittals. A copy of each shop drawing and each sample shall be kept in good order by the Contractor at the site and shall be available to the Engineer.

K. MATERIALS, SERVICES AND FACILITIES. It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the work within the specified time. Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection. Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer. Material, supplies and equipment shall be in accordance with samples submitted by the Contractor and approved by the Engineer. Materials, supplies or equipment to be incorporated into the work shall not be purchased by the Contractor or by any Subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

L. INSPECTION AND TESTING OF MATERIALS. All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the Contract Documents. The Contractor shall provide at the Contractor's expense the testing and inspection

services required by the Contract Documents. The City shall provide all inspection and testing services not required by the Contract Documents. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any work to specifically be inspected, tested or approved by someone other than the Contractor, the Contractor will give the Engineer timely notice of readiness. The Contractor will then furnish the Engineer the required certificates of inspection, testing approval. Inspections, tests or approvals by the Engineer or others shall not relieve the Contractor from the obligation to perform the work in accordance with the requirements of the Contract Documents. The Engineer and the City's representatives will at all times have access to the work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records or personnel, invoices of materials and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the work and also for any inspection or testing thereof.

If any work is covered prior to inspection by the Engineer it must, if requested by the Engineer, be uncovered for the Engineer's observation and replaced at the Contractor's expense. If the Engineer considers it necessary or advisable that covered work be inspected or tested by others, the Contractor, at the Engineer's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Engineer may require, that portion of the work in question, furnishing all necessary labor, materials, tools and equipment.

M. CORRECTION OF WORK. The Contractor shall promptly remove from the premises all work rejected by the Engineer for failure to comply with the contract documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the work in accordance with the contract documents and without expense to the owner and shall bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement. All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected work within ten (10) days after receipt of written notice, the City may remove such work and store the materials at the expense of the Contractor.

N. SUBSTITUTIONS. Whenever a material, article, or piece of equipment is identified on the drawings and specifications by referenced to brand name or catalog numbers, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The Contractor may recommend the substitution of material, article or piece of equipment of equal substance and function for those referred to in the Contract Documents by referenced to brand name or catalog number, if, in the opinion of the City, such material, article or piece of equipment is of equal substance function to that specified, the City may approve, in writing, its substitution and use by the Contractor. Any cost differential shall be deductible from the contract price and in such event the Contract Documents shall be modified by Change Order. The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the project will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the contract price or contract time.

O. LANDS & RIGHT OF WAY. Prior to issuance of Notice to Proceed, the City shall

obtain all lands and rights-of-way necessary for the carrying out and completion of Work to be performed pursuant to the Contract Documents, unless otherwise mutually agreed by the Contractor and City, in writing. The City shall provide to Contractor information which delineates and describes the lands owned and right of way acquired.

P. SURVEYS, PERMITS AND REGULATIONS. The City shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the work together with a suitable number of bench marks adjacent to the work as shown in the Contract Documents. From the information provided by the City, unless otherwise specified in the Contract Documents, the Contractor shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pipe locations and other working points, lines, elevations and cut sheets.

The Contractor shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, shall be charged with the resulting expense and shall be responsible for any mistake that may be caused by their unnecessary loss or disturbance.

Permits and licenses of temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor unless otherwise stated in the supplemental general conditions. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the City, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, the Contractor shall promptly notify the City in writing, and any necessary changes shall be adjusted as provided in Article VII changes in the work.

Q. SUBSURFACE CONDITIONS. The Contractor has the responsibility to become familiar with the Project site and the conditions under which work will have to be performed during the construction period prior to bidding. The Contractor shall promptly, and before such conditions are disturbed (excepting an emergency), notify the City by written notice of subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents. Contractor shall also be required to notify City of any unknown physical conditions at the site of unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents at the location of the Project. The City shall investigate the conditions, and if it is found that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the Work, the Contract Documents may be modified by Change Order as provided in Article VII.

R. SUPERVISION BY CONTRACTOR. The Contractor will supervise and direct the work. The Contractor will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor or the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be a binding as if given to



the Contractor. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the work.

## **ARTICLE V CONTRACT DOCUMENTS**

A. The following documents, and any other documents that are attached to, incorporated by reference into, or otherwise included in them, and all Change Orders, form the entire agreement between City and Contractor, and are the Contract Documents:

1. INFORMATION FOR BIDDERS
2. EXPERIENCE QUESTIONNAIRE
3. AFFIDAVIT OF WORK AUTHORIZATION
4. This AGREEMENT BETWEEN CITY OF RIVERSIDE AND CONTRACTOR
5. PERFORMANCE BOND
6. PAYMENT BOND
7. PREVAILING WAGE RATES - STATE OF MISSOURI DIVISION OF LABOR STANDARDS
8. SCOPE OF WORK
9. TECHNICAL SPECIFICATIONS and DRAWINGS
10. BID FOR LUMP SUM CONTRACT

B. Contractor represents that it has examined and become familiar with the Contract Documents in their entirety, that any and all ambiguities, inconsistencies, and conflicts observed by Contractor have been called to City's attention in writing and have been resolved in writing to Contractor's satisfaction. Except for actual conflict between provisions in the Contract Documents, making it impossible for Contractor to comply with all provisions of the Contract Documents, the Contract Documents shall be cumulative, and Contractor shall comply with all provisions of all Contract Documents. In case of actual conflict, Contractor shall notify City of the conflict in writing and then shall comply with such provisions of the Contract Documents as City directs.

## **ARTICLE VI PAYMENTS**

A. Prior to submitting its first application for payment, Contractor shall provide City with a schedule of values dividing the Work, and the Contract Amount, into workable categories in a form acceptable to City. Each application for payment shall be based upon the percentage of actual completion of each category, multiplied by the dollar value of such category.

B. On or about the first day of Contractor's monthly accounting period, Contractor shall submit an Application for Partial Payment to the Engineer. In addition to the amount of

payment requested in the Application for Partial Payment, each application shall list the original Contract Amount, the amount Contractor has invoiced City to date, the amount Contractor has received to date, total additions to and deletions from the Contract Amount pursuant to approved Change Orders, and an itemization of any further additions to or deletions from the Contract Amount that Contractor claims. Contractor shall identify each Subcontractor and supplier whom Contractor intends to pay from the requested payment and shall state the amount Contractor intends to pay each such Subcontractor and supplier. An Application shall not include a request for payment for any portion of the Work that was performed or furnished by a Subcontractor or supplier if Contractor does not intend to pay such Subcontractor or supplier from such payment, nor shall the Application include a request for payment for any Work performed deemed unsatisfactory by City. Contractor shall include with each Application all supporting documentation as City may require. The City shall, within fifteen (15) days, review and approve such Application, or return the Application to the Contractor indicating in writing the reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the Application. Within fifteen (15) days of its receipt of payment from City, Contractor shall pay all subcontractors and suppliers to whom payment is owed from the amount paid to Contractor.

C. All payments under this Agreement shall be made only upon the approval of Engineer and Administrator. Engineer shall review each application for payment and certify for payment such amounts as Engineer determines are due Contractor. From the total amount certified, City shall withhold five percent (5%) as retainage until final completion and acceptance of the Work. The five percent (5%) retainage may be reduced by Change Order if final completion and acceptance of the Work is delayed due to unforeseen circumstances and the Work is usable for its intended purpose by the City. If reduction in the retainage is approved, the remaining retainage shall be an amount equal to or greater than 200% of the estimated amount necessary to complete the Work.

D. The City Treasurer, upon presentation of such certificate, shall prepare a check for the sum certified to be due (exclusive of retainage), payable out of the funds in the City Treasury available for Contractor under the authorizing Resolution or Ordinance approved by the Board of Aldermen. Payment shall be made to Contractor after the Board of Aldermen review and approve the payment and authorize the Mayor and City Treasurer to sign and deliver the check.

E. Neither Administrator or Engineer's approval certificate nor payment made to Contractor shall constitute acceptance of any part of the Work. Contractor shall remain obligated to perform all Work in accordance with the Contract Documents.

F. With each Application, Contractor shall submit a signed certificate of receipt of prior payments and release of claims and rights in connection with prior payments, in a form approved by City. City may, at its option, also require a similar receipt and release of claims and rights from each Subcontractor or supplier performing any Work, prior to making any payment to Contractor. The subcontractors' and suppliers' receipts and releases shall be in a form approved by City and shall indicate that (except for retainage) all debts for work performed or materials supplied included on any previous payment application to City from Contractor have

been satisfied and that the Subcontractor or supplier waives and releases any and all claims or rights in connection therewith.

G. Contractor shall not be entitled to final payment for the Work until Contractor submits an application for final payment, all requirements of the Contract Documents are complied with, and Engineer issues his or her certificate to that effect. The Engineer's Certificate of Acceptance will be on the form attached hereto as Exhibit J. City, within thirty (30) days after the delivery of Engineer's certificate, shall pay Contractor all remaining funds which Contractor is due under this Agreement.

H. Acceptance of final payment by Contractor shall release City from all further obligations to Contractor, except as to such amounts, if any, Contractor has identified in its application for final payment as claimed by Contractor. All claims not identified in the application for final payment are waived. Any payment, however final or otherwise, shall not release the Contractor or its sureties from any obligations under the Contract Documents or the Performance and Payment Bonds.

I. City may withhold final or any other payment to Contractor on any reasonable basis, including but not limited to the following:

1. Unsatisfactory job progress,
2. Defective Work,
3. Failure to make payments to subcontractors or suppliers,
4. Reasonable evidence that all Work cannot be completed for the unpaid balance of the Contract Amount,
5. Damage by Contractor or subcontractors or suppliers to property of City or others,
6. Contractor's breach of this Agreement, or
7. Contractor's failure to provide requested documentation.

J. The Contractor shall, at the request of City, furnish satisfactory evidence that all obligations to subcontractors, laborers, workmen, mechanics, materialmen and furnishers of machinery and parts thereof, equipment, tools and all supplies incurred in the furtherance of the performance of the Work have been paid, discharged or waived. If Contractor does not pay subcontractors or suppliers for labor and/or material properly provided, City may, but shall not be required to, pay subcontractors and suppliers directly. Any payments made to subcontractors and suppliers shall be charged against the Contract Amount. City shall not be liable to Contractor for any such payments made in good faith. This provision shall not confer any right upon any Subcontractor or supplier to seek payment directly from City.

K. Notwithstanding any other provision for payment contained herein, in the event the Missouri Department of Labor and Industrial Relations has determined that a violation of Section 292.675 RSMo has occurred and that a penalty shall be assessed, the City shall withhold and

retain all sums and amounts due and owing when making payments to Contractor under this Contract.

## **ARTICLE VII CHANGES/CLAIMS**

A. City, without invalidating this Agreement, may at any time and without notice to any surety, order additions to, deletions from, or other changes to the Work. Upon receipt of such an order, in writing, Contractor shall proceed as and when directed in the order. Contractor shall not proceed with any addition, deletion, or other change without a written order. No oral direction or order shall constitute authority for Contractor to proceed with any addition, deletion, or other change. If Contractor undertakes any addition, deletion, or other change without a written order from City, Contractor shall not be entitled to any increase in the Contract Amount or the time for performance of the Work, and Contractor shall be solely and completely responsible for the acceptability to City of the addition, deletion, or other change.

B. If a change to the Work causes a net increase or decrease in the cost of Contractor's performance, the Contract Amount shall be increased or decreased as follows:

1. If the Work is covered by unit prices set forth in Contractor's Bid for Lump Sum Contract, by application of such unit prices to the quantities of the items involved;  
or
2. If the Work involved is not covered by unit prices set forth in Contractor's Bid for Lump Sum Contract, by a lump sum as to which Contractor and City mutually agree prior to the commencement of performance of the change.

C. If a change to the Work causes an increase or decrease in the time required for Contractor's performance, an equitable adjustment to the time for performance shall be made.

D. A change in the Contract Amount or the time for performance of the Work shall be accomplished only by written Change Order, which shall state the increase or decrease, if any, in the Contract Amount or the time for performance. No course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, and no claim that City has been unjustly enriched by any alteration or addition to the Work, whether or not there is, in fact, any such enrichment, shall be the basis of any claim to an increase in any amounts due under the Contract Documents or a change in the time for performance of the Work.

E. Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including but not limited to all direct and indirect costs associated with such change and any and all adjustments to the Contract Amount and time for performance of the Work.

F. If Contractor is delayed or interfered with at any time in the commencement or prosecution of the Work by an act or neglect of City, an employee, officer, or agent of City, or an

architect or engineer or separate contractor engaged by or on behalf of City, or by changes ordered in the Work, an act of God, fire, or other cause over which Contractor has no control and that Contractor could not reasonably anticipate, the time for performance of the Work shall be equitably extended, provided that Contractor gives notice as provided for in Paragraph G below.

G. Any claim by Contractor for additional time or money for the performance of the Work, including but not limited to any claim based on or arising out of an addition to, deletion from, or other change to the Work and/or delay to or interference with commencement or prosecution of any of the Work, shall be submitted to City's designated representative within five (5) working days of the beginning of the event for which the claim is made or on which it is based. If any claim is not submitted within the five-day period, it shall be deemed waived.

H. No change or claim, nor any delay or dispute concerning the determination of any increase or decrease in the amount of time and money for the performance of the Work, shall excuse Contractor from proceeding with prosecution of the Work, including any Work as changed.

## **ARTICLE VIII INSURANCE**

A. Contractor shall, at all times during the performance of any of the Work, maintain not less than the following insurance coverages and amounts:

1. **COMMERCIAL GENERAL LIABILITY** - Contractor shall provide coverage for Contractor, City, its employees, officers, and agents, and any architects, engineers, or other design professionals engaged by or on behalf of City against claims for damage to property and/or illness of, injury to, or death of any person or persons related to or arising out of the Work. Such coverage shall name the City, together with its employees and officers, as an additional insured and have not less than the following limits:
  - a. Each occurrence \$2,700,000.00
  - b. General aggregate \$2,700,000.00
  - c. Products/completed operations aggregate \$2,700,000.00
  - d. The following coverage shall be included:
    - Blanket contractual liability
    - Products/completed operations
    - Personal/advertising injury
    - Broad form property damage
    - Independent contractors
    - Explosion, Collapse, and Underground Damage

2. OWNERS PROTECTIVE LIABILITY – Contractor shall purchase, maintain and deliver to the City for operations of the Contractor of any Subcontractor in connection with execution of the agreement Owner’s Protective Liability insurance in the same minimum amounts as required for Commercial General Liability Insurance above.
  
3. AUTOMOBILE LIABILITY - Contractor shall provide coverage for Contractor, City, its employees, officers, and agents, and any architects, engineers, or other design professionals engaged by or on behalf of City against claims for bodily injury and/or property damage arising out of the ownership or use of any owned, hired, and/or non-owned vehicle and shall include protection for any auto, or all owned autos, hired autos, and non-owned autos. The coverage shall have not less than a combined single limit of \$2,700,000.00 for each accident.
  
4. WORKERS’ COMPENSATION AND EMPLOYER’S LIABILITY - This insurance shall protect Contractor against all claims under applicable state workers’ compensation laws. Contractor also shall be protected through employer’s liability coverage against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workers’ compensation law. The limits shall not be less than the following:
  - a. Workers’ Compensation Statutory
  - b. Employer’s Liability:
    - Bodily injury by accident \$1,000,000.00
    - Bodily injury by disease \$500,000.00 each employee

B. All insurance shall be written by an insurer or insurers acceptable to City and with a minimum financial rating not lower than “B+XI” in Best’s Insurance Guide, latest edition. All insurance shall be written on an occurrence basis, and all aggregate limits shall apply in total to the Work only. Each policy providing general liability coverage or automobile liability coverage (including any umbrella or excess policy that provides any required general or automobile liability coverage) shall provide contractual liability coverage for all indemnity obligations of Contractor under the Contract Documents. Each policy providing general liability or automobile liability coverage (including any umbrella or excess policy that provides any required general or automobile liability coverage) shall, in form satisfactory to City, (1) name as additional insureds City, its employees, officers, and agents, and any architects, engineers, or other design professionals engaged by or on behalf of City, and (2) provide that it is primary to any other insurance maintained by any additional insured, which other insurance shall be excess or contingent. The insurance provided to the additional insureds shall apply, without limitation, to injury or damage caused by work included in the products/completed operations hazard.

C. Contractor shall maintain the products and completed operations coverage for not less than ten (10) years after the date of final acceptance by City of all of Contractor’s Work.

D. Contractor shall obtain property insurance upon the entire Work for the full cost of replacement at the time of loss. This insurance shall list as named insureds City, Contractor, subcontractors, and suppliers. This insurance shall be written as a Builder's Risk/Installation Floater "all risk" or equivalent form to cover all risks of physical loss except those specifically excluded by the policy and shall insure at least against the perils of fire, lightning, explosion, wind storm, hail, smoke, aircraft and vehicles, riot and civil commotion, theft, vandalism, malicious mischief, debris removal, flood, earthquake, earth movement, water damage, wind, testing, and collapse. This insurance shall, without limitation, insure portions of the Work stored on or off the Project site or in transit, when at the risk of City, Contractor, or a Subcontractor or supplier. Contractor shall be solely responsible for any deductible amounts. This insurance shall remain in effect until final payment has been made to Contractor or until no person or entity other than City has an insurable interest in the property to be covered by this insurance, whichever is sooner. City and Contractor waive all rights against each other and their respective employees, agents, contractors, subcontractors, and suppliers for damages caused by risks covered by the property insurance provided for in this Paragraph, except such rights as they may have to the proceeds of the insurance.

E. All policies and certificates of insurance shall provide no less than thirty (30) days' prior written notice to City in the event of cancellation, expiration, non-renewal, alteration, or reduction (including but not limited to reduction by paid claims) of coverage or limits contained in the policy or evidenced by the certificate of insurance. Contractor shall furnish City a certificate or certificates and copies of policies, all satisfactory to City, evidencing that Contractor has all the required insurance and is in compliance with this Article. The certificate or certificates and copies of policies shall be delivered to City's designated representative not less than seven (7) days before Contractor first performs any of the Work. All policies except Workers' Compensation and Employer's Liability shall contain a waiver of subrogation in favor of City, its employees, officers, and agents, and architects, engineers, or other design professionals engaged by or on behalf of City.

F. Contractor also shall maintain any additional insurance coverages and any higher limits provided for elsewhere in the Contract Documents and shall furnish City any additional insurance documentation provided for elsewhere in the Contract Documents.

G. If any part of the Work is subcontracted, each Subcontractor, or Contractor on behalf of the Subcontractor, shall maintain liability and worker's compensation insurance coverages and amounts satisfying all the requirements of this Article. Certificates and copies of policies, satisfactory to City, evidencing the required insurance and compliance with this Article shall be delivered to City's designated representative not less than seven (7) days before the Subcontractor first performs any of the Work.

H. If Contractor is a transient employer as defined in Section 285.230 RSMo, Contractor must post in a prominent and easily accessible place at the work site a clearly legible copy of the following: (1) the notice of registration for employer withholding issued to such transient employer by the Director of Revenue; (2) proof of coverage for workers' compensation insurance or self-insurance signed by the transient employer and verified by the Department of Revenue through the records of the Division of Workers' Compensation; and (3) the notice of

registration for unemployment insurance issued to such transient employer by the Division of Employment Security. Any transient employer failing to comply with these requirements shall, under Section 285.234 RSMo be liable for a penalty of \$500 per day until the notice required by this Paragraph are posted as required by law.

## **ARTICLE IX INDEMNITY**

A. To the fullest extent permitted by law, Contractor shall defend, indemnify, and hold harmless City, its employees, officers, and agents, and any architects, engineers, or other design professionals engaged by or on behalf of City, from and against claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the Work, provided that such claim, damage, loss, or expenses is attributable to bodily injury, sickness, disease, or death or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused or allegedly caused by the negligent or willful acts or omissions of Contractor, a Subcontractor or supplier, or anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. This obligation is not intended to, and shall not, negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person as set forth in this Agreement.

B. In claims against any person or entity indemnified herein by an employee of Contractor, a Subcontractor or supplier, or anyone directly or indirectly employed by them or for whose acts they may be liable, the indemnification obligation shall not be limited by a limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or a Subcontractor or supplier under workers' compensation acts, disability benefit acts, or other employee benefit acts.

## **ARTICLE X PATENT LIABILITY**

Contractor agrees to defend, indemnify, and hold harmless City, its officers, employees and agents from and against any claim, action or suit that may be brought against them for Contractor's infringement of any Letters Patent in the performance of this Agreement or any breach or violation of trademark or proprietary or trade secret rights of others, as well as against any judgments, decrees, damages, costs and expenses sought, adjudicated, or recovered against any of them, on account of any such actual or alleged infringement.

## **ARTICLE XI COVENANT AGAINST LOBBYING AND UNDUE INFLUENCE**

A. Contractor represents and warrants that it has not employed or retained any company or person, other than a bona fide employee working for Contractor, to solicit or secure this Agreement, and that it has not paid or agreed to pay any company or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gift, or any other consideration contingent upon or resulting from the award or making of this Agreement. For



breach or violation of this warranty, City shall have the right to void this Agreement without liability and, in its discretion, to deduct from the Contract Amount, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.

B. Contractor represents and warrants that no payments have been or shall be made, directly or indirectly, by or on behalf of Contractor to or for the benefit of any officer, employee, or agent of City who may reasonably be expected to influence the decision to requisition issue or take any action with respect to this Agreement. Contractor shall allow a mutually agreeable nationally recognized certified public accounting firm to examine, at City's expense, such of Contractor's books and records as may be necessary, in the accountant's reasonable opinion, to verify Contractor's compliance with this Article.

C. No official of the City who is authorized in such capacity and on behalf of the City to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction, or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part hereof. No officer, employee, architect, attorney, engineer, or inspector of or for the owner who is authorized in such capacity and on behalf of the City to exercise any legislative, executive, supervisory, or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

## **ARTICLE XII RECORDS REGARDING PAYMENT**

For a period of at least two (2) years after final payment to Contractor, Contractor shall maintain, in accordance with generally accepted accounting principles, such records as are necessary to substantiate that all applications for payment hereunder were valid and properly chargeable to City. For lump sum contract Work, the records shall demonstrate that the City was billed at appropriate times for proper percentages of completion and for payments to subcontractors and suppliers. For any Work, including extra Work, not charged on a lump sum basis, the records to be maintained hereunder include but are not limited to all contracts, subcontracts, material bills, correspondence, accounting records, time sheets, payroll records, canceled checks, orders, and invoices pertaining to City's account. City or its representative shall, upon reasonable prior notice to Contractor, be given the opportunity to audit these records at any time during normal business hours to verify the accuracy of Contractor's invoices and charges.

## **ARTICLE XIII NOTICES**

A. The following persons are designated by the respective parties to act on behalf of such party and to receive all written notices and Payment Applications:

For City:

City Administrator  
Riverside City Hall, 2950 NW Vivion Rd., Riverside, MO 64150

with a copy to Project Manager:  
Mike Shelton, Operations Support Director, Riverside Department of Public Safety, 2990 NW Vivion Road, Riverside, MO 64150

and a copy to Engineer:  
Kenneth L. Diehl, TapanAm Associates, Inc., 201 West 135<sup>th</sup> Street, Kansas City, MO 64145

For Contractor:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

B. Any notice required by the Contract Documents to be given in writing or that either City or Contractor wishes to give to the other in writing shall be signed by or on behalf of the party giving notice. The notice shall be deemed to have been completed when sent by certified or registered mail to the other party at the address set forth herein, or delivered in person to said party or their authorized representative.

C. Contractor’s designated representative shall be available to meet with City at any time during the performance of the Work and shall have full authority to act on Contractor’s behalf on any matter related to this Agreement and/or the Work.

**ARTICLE XIV  
DEFAULT AND TERMINATION**

A. If Contractor fails to comply, becomes unable to comply, or with reasonable probability (as determined solely by City) will become unable to comply with any of Contractor’s obligations under the Contract Documents, including but not limited to (1) failure at any time to furnish sufficient labor or supervision, sufficient materials or services (including but not limited to insurance and bonds) complying with the Contract Documents, or sufficient or properly operating tools, equipment, or other items necessary for the performance of the Work, (2) failure in any respect to prosecute the Work with promptness and diligence, (3) causing any stoppage of, delay in, or interference with any work of City or any others on the Project, (4) abandonment by Contractor of all or any part of the Work, or (5) bankruptcy, insolvency or general assignment for the benefit of creditors by Contractor, Contractor shall be in default, and if the default is not corrected to City’s satisfaction within seventy-two (72) hours of delivery of a written notice to Contractor to correct such default, City may, in addition to any other right or remedy City may have, terminate the services of the Contractor and take possession of the project and of all materials, equipment, tools, construction equipment and machinery thereon

owned by the Contractor and finish the work by whatever method the City may deem expedient to correct the default, at Contractor's expense. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished. If such costs exceed the unpaid balance due to Contractor, the Contractor will pay the difference to the City.

B. If City exercises its right to take over and complete any part or all of the Work, City and its designees shall have access to and may take possession of Contractor's materials, tools, equipment, and other items at the Project site, en route to the site, or in storage or being manufactured or fabricated away from the site, as may be necessary to prosecute the Work taken over by City, and may employ Contractor's employees or former employees, all without any liability to Contractor.

C. Contractor shall be liable for and shall pay to City all costs and expenses of whatsoever nature incurred by City as a result of any default by Contractor, including but not limited to the cost of labor, supervision, materials, tools, equipment, services, overhead, travel, and legal and accounting fees. Contractor also shall be liable for and shall pay to City all charges, liabilities, fines, penalties, losses, damages, and claims sustained by or assessed against City as a result of any delay or disruption resulting from any default by Contractor. The total amount of such costs, expenses, charges, liabilities, fines, penalties, losses, damages, and claims may be deducted by City from the amount, if any, otherwise due Contractor, and Contractor shall pay City the full amount of any excess of such total over the amount otherwise due Contractor.

D. No right or remedy conferred upon or reserved to City by the Contract Documents is exclusive of any other right or remedy provided or permitted in the Contract Documents or by law or equity, but each right or remedy is cumulative of every other right or remedy, and every right or remedy may be enforced concurrently or from time to time. No exercise by City of any right or remedy shall relieve Contractor from full and absolute responsibility for all of Contractor's obligations under the Contract Documents.

E. No failure or delay of City to give notice to correct any default of Contractor or to exercise any of City's rights or remedies shall waive or excuse the default, and City shall remain free to pursue all rights and remedies. No failure of City to insist, in any one or more instances, upon the performance of any of Contractor's obligations under the Contract Documents shall be deemed or construed as a waiver or relinquishment of City's right to insist upon strict performance of the obligation in any future instance.

F. If through no act or fault of the Contractor, the Work is suspended for a period of more than ninety (90) days by the City or under an order of court or other public authority, or the City fails to act on any request for payment within thirty (30) days after it is submitted, or the City fails to pay the Contractor substantially the sum approved by the Engineer and Administrator, then the Contractor may after ten (10) days from delivery of written notice to the City terminate the Agreement and recover from the City payment for all work executed.

G. The City, without terminating the service of the Contractor or written notice to the Surety, through the Administrator may withhold, without prejudice to the rights of the City under the terms of the Agreement, or on account of subsequently discovered evidence, nullify the

whole or part of any approved partial payment estimate to such extent as may be necessary to protect the City from loss on account of (1) defective work not remedied, (2) claims filed or reasonable evidence indicating probably filing of claims, (3) failure of Contractor to make payments properly to Subcontractors or for material or labor, (4) a reasonable doubt that the Work can be completed for the balance then unpaid, (5) damages to another contractor, or (6) performance of work in violation of the terms of the Contract Documents.

## **ARTICLE XV TERMINATION FOR CONVENIENCE**

Notwithstanding anything contained herein to the contrary, City may, at any time, for any reason, and without Contractor's being in default, terminate Contractor's performance of any part or all of the Work for City's own convenience by giving written notice to Contractor. Upon receipt of notice of termination for City's convenience, Contractor shall, to the extent directed by City, stop work and turn over to City or City's designee materials and equipment purchased for the Work. City shall pay Contractor, in accordance with the Contract Documents, for only so much of the Work as is actually performed as of the termination for convenience. City shall not be obligated to Contractor for any further payment, including but not limited to prospective overhead or profit on unperformed work. If a termination by City of Contractor's right to proceed on the ground of default by Contractor is determined later to have been improper, the termination automatically shall be converted to a termination for City's convenience, and City's obligation to Contractor shall be limited to payment to Contractor as provided in this Article.

## **ARTICLE XVI COMPLIANCE WITH LAWS**

A. Contractor shall comply strictly with all federal, state, and local laws, ordinances, rules, regulations, orders, and the like applicable to the Work, including, but not limited to any applicable prevailing wage and prompt payment laws and all U.S. Army Corps of Engineers guidelines, rules, regulations, and criteria for work within or adjacent to a flood control project area. Contractor shall secure all permits from public and private sources necessary for the fulfillment of Contractor's obligations under the Contract Documents.

B. With each Application for Payment submitted by Contractor to City, Contractor shall include (a) a signed statement, in form acceptable to City, showing, for each weekly payroll period that ended during the period covered by the Application for Payment, the name, address, social security number, occupation, and craft of each worker employed by Contractor in connection with the Work and, for each such worker, the number of hours worked each day, the total hours worked during the payroll period, the gross amount earned, an itemization of all deductions, and the net wages paid and (b) a corresponding statement from each Subcontractor of any tier that employed any workers in connection with the Work during the period covered by the Application for Payment.

C. This Agreement shall be governed by and construed in accordance with the laws of the State of Missouri.

**ARTICLE XVII**  
**LABOR STANDARDS PROVISIONS**

A. MISSOURI PREVAILING WAGE LAW. Not less than the prevailing hourly rate of wages established by the Missouri Department of Labor and Industrial Relations Division of Labor Standards, as set out in the wage order set forth in Exhibit C attached to and made a part of, shall be paid to all workers performing work under the Agreement. An Affidavit of Compliance with the Prevailing Wage Law as set forth in Exhibit I shall be completed by Contractor and every Subcontractor employed on the Project prior to final payment. The Contractor will forfeit a penalty to the City of \$100 per day (or portion of a day) for each worker that is paid less than the prevailing rate for any work done under the contract by the Contractor or by any Subcontractor.

B. EXCESSIVE UNEMPLOYMENT. During periods of excessive unemployment (any month immediately following two consecutive calendar months during which the level of unemployment in the state has exceeded five percent (5%) as measured by the United States Bureau of Labor Statistics) only Missouri labors (persons who have resided in Missouri for at least thirty days and intend to become or remain Missouri residents) and laborers from non-restrictive states (persons who are residents of a state which has not enacted state laws restricting Missouri laborers from working on public works projects in that state, as determined by the Labor and Industrial Relations Commission), may be employed under the contract, except that other laborers may be used when Missouri laborers or laborers from nonrestrictive states are not available, or are incapable of performing the particular type of work involved, if so certified by the Contractor and approved by the City.

C. UNDERPAYMENT OF WAGES. In case of underpayment of wages by the Contractor or by any subcontractors to laborers or mechanics employed by the Contractor or Subcontractor upon the work covered by this Agreement, the City, in addition to such other rights as may be afforded it under this Agreement shall withhold from the Contractor, out of any payments due the Contractor, so much thereof as the City may consider necessary to pay such laborers or mechanics the full amount of wages required by this Agreement. The amount so withheld may be disbursed by the City, for and on account of the Contractor or the Subcontractor (as may be appropriate), to the respective laborers or mechanics to whom the same is due or on their behalf to plans, funds, or programs for any type of fringe benefit prescribed in the applicable wage determination.

D. LIMITATIONS ON EMPLOYMENT. No person under the age of sixteen (16) years and no person who, at the time, is serving sentence in a penal or correctional institution shall be employed on the work covered by this Agreement.

**ARTICLE XVIII**  
**EQUAL EMPLOYMENT OPPORTUNITY**

The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants and employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to,

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.

**ARTICLE XIX  
SUBCONTRACTS, ASSIGNMENT, OR TRANSFER**

A. Except with the prior written consent of City, Contractor shall not assign this Agreement or any money due or to become due Contractor or issue a subcontract or purchase order to any person or entity for any or all of the Work. City's consent to any assignment, subcontract, or purchase order shall not relieve Contractor from any obligation under the Contract Documents, nor shall it create any obligation from City to any assignee, subcontractor, or vendor.

B. Each subcontract or purchase order issued by Contractor for any of the Work shall be in writing and shall provide that City is an intended third-party beneficiary of the subcontract or purchase order.

C. The Contractor shall be fully responsible to the City for the acts and omissions of its Subcontractors, and of person either directly or indirectly employed by them, as the Contractor is for the acts and omissions of person directly employed by it.

D. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the work of Subcontractors and give the Contractor the same power as regards terminating any Subcontract that the City may exercise over the Contractor under any provision of the Contract Documents. Nothing contained in this contract shall create any contractual relation between any Subcontractor and the City.

E. Each subcontract or purchase order issued by Contractor for any of the Work shall provide that it is freely assignable by Contractor to City. Contractor hereby assigns to City all its interest in any present or future subcontract or purchase order issued by Contractor for any or all of the Work. This assignment shall be effective upon acceptance by City in writing and only as to the specific subcontract(s) and/or purchase order(s) that City designates in the writing. This assignment may be accepted by City at any time, whether before or after final payment to Contractor, and may not be withdrawn by Contractor without City's written consent.

**ARTICLE XX  
SEPARATE CONTRACTS**

A. The City reserves the right to let other contracts in connection with this project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate the work with theirs. If the proper execution or results of any part of the Contractor's work depends upon the work of any other contractor, the Contractor shall inspect and promptly report to the

Administrator any defects in such work that render it unsuitable for such proper execution and results.

B. The City may perform additional work related to the project or the City may let other contracts containing provisions similar to these. The Contractor will afford the other contractors who are parties to such contracts (or the City, if the City is performing the additional work) reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate the work with theirs.

C. If the performance of additional work by other contractors or the City is not noted in the Contract Documents prior to the execution of the contract, written notice thereof shall be given to the Contractor prior to starting any such addition work. If the Contractor believes that the performance of such additional work by the City or others involves it in additional expense or entitles it to any extension of the contract time the Contractor may make a claim thereof as provided in Article VII.

### **ARTICLE XXI ACCESS TO SITE/CLEANING UP**

A. Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, around the site of the Work and all adjacent areas.

B. Representatives of City may inspect or review any Work performed by Contractor, and consult with Contractor, at any time. City's inspections or reviews shall not constitute acceptance or approval of Work unless specifically stated in writing. Contractor shall meet with City at the request of City.

C. Contractor shall at all times during performance of the Work keep the Project site clean and free from debris resulting from the Work. Prior to discontinuing Work in an area, Contractor shall clean the area and remove all rubbish and its construction equipment, tools, machinery, waste, and surplus materials. Contractor shall make provisions to minimize and confine dust and debris resulting from construction activities. If Contractor fails to comply with cleanup duties within twenty-four (24) hours after written notification from City of non-compliance, City may implement cleanup measures without further notice and deduct the cost from any amounts due or to become due Contractor.

### **ARTICLE XXII COMPETENCE**

Contractor represents and warrants that it maintains all necessary licenses, registration, competence, and experience to perform all the Work.

### **ARTICLE XXIII WARRANTY**

A. Contractor shall exercise high professional skill, care, and diligence in the performance of the Work, and shall carry out its responsibilities in accordance with customarily

accepted good professional practices. The Contractor warrants and guarantees for one (1) year from the date of completion and acceptance of the work that the completed work is free from all defects due to faulty materials or workmanship. The date of completion for all scopes of work shall be the last date of acceptance of all work in this contract. Contractor shall promptly make such corrections as may be necessary be reason of such defects including the repair of any other damages that were caused by defects in the work, at its own expense. The City will give notice of observed defects with reasonable promptness. In the event that the Contractor fails to make such repairs, adjustments or other work that may be necessary by such defects, the City may do so and charge the Contractor the cost thereby incurred. In emergency where, in the judgment of the City, delay would cause serious loss or damage, repairs and replacement of defects in the work and damage caused by defects may be made without notice being sent to the Contractor, and the Contractor shall pay the cost thereof. The Performance Bond shall remain in full force and effect through the warranty period. Neither final payment, Engineer's Final Certificate, nor any other provision in the Contract Documents shall affect Contractor's obligation to complete the Work free of defects in workmanship and material.

B. Contractor shall remain solely responsible for the performance of the Work as required by the Contract Documents, notwithstanding any suggestions or observations made by another person or entity with respect to the Work.

C. This Article does not establish a period of limitation with respect to any obligation of Contractor under the Contract Documents, and does not limit the time allowed by law for any action for breach of such obligation.

#### **ARTICLE XXIV STORAGE OF MATERIALS AND EQUIPMENT**

The Contractor shall provide at its own expense and without liability to the City any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials. Only materials and equipment that are to be used directly in the Work shall be brought to and stored at the Project site by Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project site. Protection of construction materials and equipment stored at the Project site from weather, theft, and all other casualty or damage is solely the responsibility of Contractor.

#### **ARTICLE XXV TAXES**

A Missouri Sales Tax Project Exemption Certificate (Missouri Department of Revenue Form 5060) will be provided by the City for the purchase of any materials or personal property incorporated into or consumed in the construction project, pursuant to RSMo 144.062. The Contractor will pay all other sales, consumer, use and other similar taxes required by the State of Missouri or other taxing jurisdiction.



## **ARTICLE XXVI SAFETY**

A. Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with performance of the Work and shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury, or loss to (1) employees and other persons at the Project site or who may be affected by the Work, (2) materials and equipment stored at on-site or off-site locations for use in performance of the Work, and (3) other property at the Project site or in its vicinity, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall give notices required by and comply strictly with applicable laws, ordinances, rules, regulations, orders, and the like bearing on safety of persons or property or their protection from damage, injury, or loss. The Contractor will erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protections. The Contractor will notify owners of adjacent utilities when prosecution of the Work may affect them. The Contractor will remedy all damage, injury or loss to any property caused directly or indirectly, in whole or part, by the Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone whose acts any of them may be liable.

C. The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and construction codes shall be observed and the Contractor shall take or cause to be taken, such additional safety and health measures as the City may determine to be reasonably necessary.

D. Pursuant to Section 292.675 RSMo, Contractor shall provide a ten (10) hour Occupational Safety and Health Administration (OSHA) construction safety program for all employees who will be on-site at the Project. The construction safety program shall include a course in construction safety and health that is approved by OSHA or a similar program approved by the Missouri Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program as required by Section 292.675 RSMo. Contractor shall require its on-site employees to complete a construction safety program within sixty (60) days after the date work on the project commences. Contractor acknowledges and agrees that any of Contractor's employees found on the Project site without documentation of the successful completion of a construction safety program shall be required to produce such documentation within twenty (20) days, or will be subject to removal from the Project. Contractor shall require all of its Subcontractors to comply with the requirements of this Paragraph and Section 292.675 RSMo.

Contractor shall forfeit to the City as a penalty two thousand five hundred dollars (\$2,500.00), plus one hundred dollars (\$100.00) for each on-site employee employed by Contractor or its Subcontractor, for each calendar day, or portion thereof, such on-site employee is employed without the construction safety training required herein. The penalty described in

this Paragraph shall not begin to accrue until the time periods herein have elapsed. Violations of this requirement and imposition of the penalty described in this Paragraph shall be investigated and determined by the Missouri Department of Labor and Industrial Relations.

E. If City deems any part of the Work or the Project site unsafe, City, without assuming responsibility for Contractor's safety program, may require Contractor to stop performance of the Work or take corrective measures satisfactory to City, or both. If Contractor does not adopt corrective measures, City may perform them or have them performed and deduct their cost from the Contract Amount. Contractor shall make no claim for damages, for an increase in the Contract Amount, or for a change in the time for performance of the Work based on Contractor's compliance with City's reasonable request.

#### **ARTICLE XXVII AUTHORIZED EMPLOYEES**

Contractor acknowledges that Section 285.530 RSMo prohibits any business entity or employer from knowingly employing, hiring for employment, or continuing to employ an unauthorized alien to perform work within the State of Missouri. Contractor therefore covenants that it is not knowingly in violation of subsection 1 of Section 285.530 RSMo, and that it will not knowingly employ, hire for employment, or continue to employ any unauthorized aliens to perform work on the Project, and that its employees are lawfully eligible to work in the United States.

#### **ARTICLE XXVIII INDEPENDENT CONTRACTOR**

Contractor is an independent contractor, and neither Contractor or any Subcontractors, suppliers, employees, or agents shall be deemed an employee or agent of City for any purpose.

#### **ARTICLE XXIX CONFLICT**

Contractor shall promptly upon discovery notify City of any conflict, ambiguity or inconsistency in the Contract Documents, or between any Contract Document and actual field conditions, and City shall resolve such conflict, ambiguity or inconsistency in its sole discretion.

#### **ARTICLE XXX PERFORMANCE AND PAYMENT BONDS**

The Contractor shall within ten (10) days after the receipt of the Notice of Award furnish the City with a Performance Bond and Payment Bond in forms set forth in Exhibits A and B in an amount at least equal to one hundred percent (100%) of the contract price, conditioned upon the performance by the Contractor all undertakings, covenants, terms, conditions and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the work provided by the Contract Documents. Such bonds shall be executed by the Contractor and a corporate bonding company licensed to transact such business in the state in which the work is to be performed and named on

the current list of “Surety Companies Acceptable on Federal Bonds” as published in the Treasury Department Circular Number 570 and shall have a rating of at least “A+” from Best’s or “AA” from Standard and Poor’s. The expense of these bonds shall be borne by the Contractor. If at any time a surety on any such bond is declared a bankrupt or loses its right to do business the state in which the work is to be performed or is removed from the list of Surety Companies accepted on Federal Bonds, Contractor shall within ten (10) days after notice from the City to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the City. The premiums on such bond shall be paid by the Contractor. No further payment shall be deemed due nor shall payment be made to Contractor until the new surety or sureties shall have furnished an acceptable bond to the City.

**ARTICLE XXXI  
SEVERABILITY**

Should any specific provision of this Agreement or other Contract Documents be found to be unenforceable, the remaining provisions shall remain in full force and effect.

**ARTICLE XXXII  
NO PRESUMPTION AGAINST THE DRAFTER**

No presumption or inference against the City shall be made because of the City’s preparation of this Agreement or other Contract Documents.

**ARTICLE XXXIII  
DISPUTES/ATTORNEY FEES**

A. If a dispute arises out of or relates to this Agreement or other Contract Documents, or the breach thereof, and if the dispute cannot be resolved through negotiation, City and Contractor shall first try in good faith to resolve the dispute by mediation before resorting to litigation. Unless City and Contractor agree otherwise, the mediation shall be administered by the American Arbitration Association under its Construction Industry Mediation Rules.

B. In the event of litigation between Contractor and City concerning the Project or this Agreement or other Contract Documents, the prevailing party shall be entitled to recover from the other party its reasonable attorney fees, costs, and expenses arising from such litigation.

**ARTICLE XXXIV  
TITLES**

The titles given to the Articles in this Agreement are for ease of reference only and shall not be relied upon or cited for any other purpose. Specifically, but without limitation, the titles shall not define or limit any of the provisions of any of the Articles.

**ARTICLE XXXV  
PROVISIONS REQUIRED BY LAW DEEMED INSERTED**

Each and every provision of law and clause required by law to be inserted in this Agreement shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion or correction. All such laws, orders and regulations are applicable to this Project and are made a part hereof by reference.

**ARTICLE XXXVI  
ENTIRE AGREEMENT**

This Agreement and the other Contract Documents constitute the entire agreement between the parties with respect to their subject matter. Any prior agreements, understandings, or other matters, whether oral or written, are of no further force or effect. Subject to Article VII of this Agreement, this Agreement and any other Contract Document may be amended, changed, or supplemented only by written agreement executed by both of the parties.

THIS AGREEMENT shall be binding on the parties only after it has been duly executed by City and Contractor.

[THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their authorized representatives.

Approved as to form:  
CITY ATTORNEY:

By: \_\_\_\_\_  
Nancy Thompson, City Attorney

CITY OF RIVERSIDE

By: \_\_\_\_\_  
Kathleen L. Rose, Mayor

ATTEST:

\_\_\_\_\_  
Robin Littrell, City Clerk

Countersigned by:  
CITY PURCHASING AGENT:

By: \_\_\_\_\_  
Gregory P. Mills  
Interim City Administrator

CONTRACTOR:

\_\_\_\_\_

By: \_\_\_\_\_  
(Signature)  
Printed  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

ATTEST:

\_\_\_\_\_  
SECRETARY

**EXHIBIT A**  
**PERFORMANCE BOND**

FOR THE FAITHFUL PERFORMANCE of each of the terms and stipulations of the AGREEMENT between the CITY OF RIVERSIDE and CONTRACTOR, for construction of **PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT REPLACEMENT PROJECT**, dated \_\_\_\_\_, 2013, designated Resolution No. \_\_\_\_\_, in every particular, \_\_\_\_\_ [insert name of Company], as Principal, and \_\_\_\_\_ [insert name of surety], as Surety, hereby firmly bind themselves and their respective heirs, executors, administrators, successors, and assigns, jointly and severally, unto the City of Riverside, Missouri, ("City") in the total aggregate penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) lawful money of the United States, by these presents:

THE CONDITION OF THIS OBLIGATION is such that in the event Principal shall faithfully and properly complete the Work required by the Contract Documents described in the Agreement and perform all of its duties, obligations, covenants, and conditions pursuant to the terms of the Contract Documents during the original term thereof, and any extensions thereof which may be granted by the City, including, without limitation, all warranty obligations and duties and if the Principal shall satisfy all claims and demands incurred under such Agreement, and shall fully indemnify and hold harmless the City from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the City for all outlay and expense which the City may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents or to the Work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract Documents or to the Work or to the specifications.

PROVIDED FURTHER, that it is expressly agreed that the bond shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Agreement not increasing the Agreement price more than twenty percent (20%), so as to bind the

Principal and the Surety to the full and faithful performance of the Agreement as so amended. The term “Amendment”, wherever used in this bond, and whether referring to this bond or the Agreement, shall include any alteration, addition, extension, or modification of any character whatsoever.

\_\_\_\_\_  
PRINCIPAL  
By: \_\_\_\_\_  
(Signature)  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A+ or better; (3) Surety is named in the current list of “Companies Holding Certificates of Authority as Acceptable Reinsuring Companies: as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and (4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

\_\_\_\_\_  
SURETY  
By: \_\_\_\_\_  
(Signature)  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

**Note:**

- Date of Bond must not be prior to date of Agreement.
- If Contractor is a partnership, all partners must execute the Bond.

**SURETY POWER OF ATTORNEY MUST BE ATTACHED**

**EXHIBIT B  
PAYMENT BOND**

KNOW ALL PERSONS BY THESE PRESENTS: that \_\_\_\_\_  
\_\_\_\_\_ a \_\_\_\_\_ [insert corporation, partnership or  
individual], hereinafter called Principal, and \_\_\_\_\_  
[insert name of surety], hereinafter called Surety, are held and firmly bound unto the CITY OF  
RIVERSIDE, MISSOURI (“City”), and unto all persons, firms and corporations who or which  
may furnish labor, or who furnish materials to perform as described under the Agreement and  
Contract Documents more fully described below and to their successors and assigns in the total  
aggregate penal sum of \_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which sum  
well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and  
assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that WHEREAS, the Principal  
entered into a certain Agreement with the City, dated the \_\_\_\_\_ day of  
\_\_\_\_\_, 2013, approved by Resolution No. \_\_\_\_\_ for the  
construction of **PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS)  
EQUIPMENT REPLACEMENT PROJECT**;

NOW, THEREFORE, in the event Principal shall pay the prevailing hourly rate of wages  
for each craft or type of worker required to execute the Work required by the Contract  
Documents described in the Agreement in the locality as determined by the Department of Labor  
and Industrial Relations of Missouri or by final judicial determination pursuant to the provisions  
of Sections 290.010 to 290.340 and 290.550 through 290.580, inclusive, of the Revised Statutes  
of Missouri, and shall timely pay to the proper parties all amounts due for material, machinery,  
equipment and tools, consumed or used in connection with the construction of such Work, and  
all insurance premiums, workers’ compensation, and all other kinds of insurance, on such Work,  
and for all labor performed in such Work whether by Principal, Subcontractor, or otherwise, then  
this obligation to be void, otherwise to remain in full force and effect, and the same may be sued  
on at the instance of any Subcontractor, material supplier, laborer, mechanic, or other interested  
party, in the name of the City of Riverside, to the use of such parties, for any breach of the  
considerations hereof.



Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents 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 change, extension of time, alteration or addition to the terms of the Contract Documents or to the Work.

\_\_\_\_\_  
PRINCIPAL  
By: \_\_\_\_\_  
(Signature)  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A+ or better; (3) Surety is named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring Companies: as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and (4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

\_\_\_\_\_  
SURETY  
By: \_\_\_\_\_  
(Signature)  
Printed Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

**Note:**

- Date of Bond must not be prior to date of Agreement.
- If Contractor is a partnership, all partners must execute the Bond.

**SURETY POWER OF ATTORNEY MUST BE ATTACHED**

**EXHIBIT C**  
**PREVAILING WAGE RATES**

Special Wage Determination: Prevailing hourly rates of wages follow, as determined by the Division of Labor Standards, Jefferson City, Missouri.



**DIVISION OF  
LABOR  
STANDARDS**

3315 West Truman Boulevard, Room 205  
P.O. Box 449  
Jefferson City, MO 65102-0449  
Phone: 573-751-3403  
Fax: 573-751-3721  
www.labor.mo.gov/DLS  
E-mail: laborstandards@labor.mo.gov

JEREMIAH W. (JAY) NIXON  
GOVERNOR

LAWRENCE G. REBMAN  
DEPARTMENT DIRECTOR

December 27, 2012

BEFORE THE  
DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS  
DIVISION OF LABOR STANDARDS  
Jefferson City, Missouri

Re: Annual Wage Order No. 19

Annual Incremental Wage Increase to Annual Wage Order No. 19

Missouri's Prevailing Wage Law [Section 290.262.9 RSMo (2000)], provides for Annual Incremental Wage increases in **Adair, Andrew, Atchison, Audrain, Barry, Barton, Bates, Benton, Bollinger, Boone, Buchanan, Butler, Caldwell, Callaway, Camden, Cape Girardeau, Carroll, Carter, Cass, Cedar, Charlton, Christian, Clark, Clay, Clinton, Cole, Cooper, Crawford, Dade, Dallas, Daviess, DeKalb, Dent, Douglas, Dunklin, Franklin, Gasconade, Gentry, Greene, Grundy, Harrison, Henry, Hickory, Holt, Howard, Howell, Iron, Jackson, Jasper, Jefferson, Johnson, Knox, Laclede, Lafayette, Lawrence, Lewis, Lincoln, Linn, Livingston, McDonald, Macon, Madison, Maries, Marion, Mercer, Mississippi, Moniteau, Monroe, Montgomery, Morgan, New Madrid, Newton, Nodaway, Oregon, Osage, Ozark, Pemiscot, Perry, Pettis, Phelps, Pike, Platte, Polk, Pulaski, Putnam, Ralls, Randolph, Ray, Reynolds, Ripley, St. Charles, St. Clair, Ste. Genevieve, St. Francois, the City of St. Louis City, St. Louis County, Saline, Schuyler, Scotland, Scott, Shannon, Shelby, Stoddard, Stone, Sullivan, Taney, Texas, Vernon, Warren, Washington, Wayne, Webster, Worth and Wright Counties.** The effective date of change is shown in the column labeled "**Effective Date of Increase**" by the craft (Occupational Title). These updated files have been posted to the Division's website referenced by the effective date of AWO19 - 12/27/12. The new rates should be included in the contract specifications for all future public works projects.

The rest of Annual Wage Order No. 19 remains in full force and effect.

Given at Jefferson City, Missouri December 27, 2012, by direction of the Division of Labor Standards of Missouri.

Mitch Volkart  
Assistant Director  
Wage & Hour

(SEAL)

RECEIVED & FILED

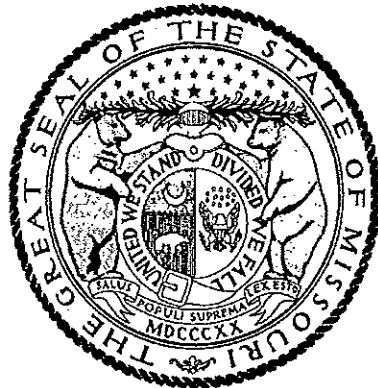
DEC 27 2012

SECRETARY OF STATE  
COMMISSIONS DIVISION

# Missouri

## Division of Labor Standards

WAGE AND HOUR SECTION



JEREMIAH W. (JAY) NIXON, Governor

## Annual Wage Order No. 19

Section 083

**PLATTE COUNTY**

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by \_\_\_\_\_

Carla Buschjost, Director  
Division of Labor Standards

This Is A True And Accurate Copy Which Was Filed With The Secretary of State: March 9, 2012

Last Date Objections May Be Filed: April 9, 2012

Prepared by Missouri Department of Labor and Industrial Relations

Building Construction Rates for  
PLATTE County

REPLACEMENT PAGE

OCCUPATIONAL TITLE	** Date of Increase		Basic Hourly Rates	Over-Time Schedule	Holiday Schedule
Asbestos Worker (H & F) Insulator			\$34.04	52	53
Boilermaker			\$32.31	57	7
Bricklayer and Stone Mason	7/12		\$33.40	58	39
Carpenter	7/12		\$36.05	63	68
Cement Mason	7/12		\$31.08	65	4
Electrician (Inside Wireman)	12/12		\$34.83	13	72
Electrician (Outside-Line Construction\Lineman)			\$38.40	125	65
Lineman Operator			\$35.82	125	65
Groundman			\$25.44	125	65
Communication Technician			\$32.43	47	72
Elevator Constructor		a	\$42.010	26	54
Operating Engineer					
Group I	8/12		\$36.15	85	4
Group II	8/12		\$35.34	85	4
Group III	8/12		\$29.79	85	4
Group III-A	8/12		\$34.00	85	4
Group IV					
Group V	8/12		\$31.39	85	4
Pipe Fitter	11/12		\$40.08	2	33
Glazier	12/12		\$30.47	88	32
Laborer (Building):					
General	7/12		\$25.75	30	4
First Semi-Skilled	7/12		\$26.15	30	4
Second Semi-Skilled	7/12		\$26.55	30	4
Lather			USE CARPENTER RATE		
Linoleum Layer and Cutter	7/12		\$33.82	46	67
Marble Mason	12/12		\$32.42	25	4
Millwright	7/12		\$36.05	63	68
Ironworker	12/12		\$29.00	50	4
Painter	12/12		\$28.31	37	4
Plasterer	7/12		\$25.12	68	4
Plumber	7/12		\$37.45	45	33
Pile Driver	7/12		\$36.05	63	68
Roofer \ Waterproofer	7/12		\$32.25	95	2
Sheet Metal Worker			\$38.39	17	22
Sprinkler Fitter - Fire Protection	7/12		\$33.83	14	4
Terrazzo Worker	12/12		\$32.42	25	4
Tile Setter	12/12		\$32.42	25	4
Truck Driver-Teamster					
Group I			\$30.09	100	4
Group II			\$30.09	100	4
Group III			\$30.29	100	4

Building Construction Rates for  
 PLATTE County Footnotes

OCCUPATIONAL TITLE	** Date of Increase	Basic Hourly Rates	Over-Time Schedule	Holiday Schedule	Total Fringe Benefit

\* Welders receive rate prescribed for the occupational title performing operation to which welding is incidental.

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

a - Vacation: Employees over 5 years - 8%, under 5 years - 6%

**PLATTE COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**FED:** Minimum requirement per Fair Labor Standards Act means time and one-half (1 ½) shall be paid for all work in excess of forty (40) hours per work week.

**NO. 2:** Means the maximum of eight (8) hours shall constitute a day's work beginning at 8:00 a.m. to 12:00 noon, 12:30 p.m. to 4:30 p.m. The maximum work week shall be forty (40) hours beginning Monday at 8:00 a.m. and ending Friday at 4:30 p.m. Because of traffic, parking or other circumstances, the hours of work on any project may be any continuous 8½ hours period (8 hours of work plus 30 minutes for lunch) between 7:00 a.m. and 4:30 p.m. When circumstances warrant and when it is mutually beneficial and agreed to, the Employer may institute a work week consisting of four (4) consecutive ten (10) hour days, between the hours of 7:00 a.m. and 6:00 p.m. Monday through Thursday, with one-half (½) hour allowed for a lunch period each day. Friday may be used as a make-up day. After ten (10) hours in a workday, or forty (40) hours in a workweek, overtime shall be paid at a rate of one and one-half (1½) times the regular rate of pay. Overtime performed Monday through Saturday shall be paid at the rate of one and one-half (1½) times the regular rate of pay. Sundays and recognized holidays shall be paid at the double (2) time rate of pay. Labor Day shall be paid at triple (3) time. Shift work may be performed at the option of the Contractor. However, whenever shift work is performed it must cover a period not less than (5) consecutive working days. The day shift shall work a regular eight (8) hours shift as outlined above. Employees working a second shift shall receive an additional \$0.25 above the regular hourly rate and perform seven and one-half (7½) hours work for eight (8) hours pay. Third shift employees shall be paid an additional \$0.50 above the regular hourly rate and work seven (7) hours for eight (8) hours pay. In the event a first shift is not required, a second and third shift employee shall receive an additional 15% of the base rate and receive pay for actual hours worked.

**NO. 13:** Means a regular workday shall consist of eight (8) hours between 8:00 a.m. and 4:30 p.m. Forty (40) hours, within five (5) days -- Monday through Friday inclusive -- shall constitute the regular workweek. The Employer may alter the above stated hours by two (2) hours for an early starting and quitting time only, not to exceed eight (8) hours of work in any one day. When job conditions dictate and as required by the customer, the Employer shall be allowed to establish a four (4) day, ten (10) hour per day work week. This work week is defined as Monday through Thursday, with a Friday make-up day. The normal work day under a ten (10) hour four (4) day work week shall be from 7:00 a.m. to 6:00 p.m., with a one hour starting variance. The make-up day of Friday shall be instituted for specific reasons such as loss of production due to weather and/or holidays. All hours worked in excess of ten (10) hours per day or forty (40) hours per week or hours worked outside the normal work week shall be paid at the applicable overtime rate. The first four (4) hours of overtime after the normal workday, each day Monday through Friday and the first ten (10) hours of overtime on Saturdays shall be paid for at one and one-half (1½) times the regular straight time rate of pay. All other work performed outside of the regularly scheduled working hours and outside of the first ten (10) hours worked on Saturdays shall be paid for at double (2) the regular straight time rate of pay. Sundays and the recognized holidays shall be paid for at double (2) the regular straight time rate of pay, if worked. When so elected by the contractor, multiple shifts of at least five (5) days duration may be worked. When two (2) or three (3) shifts are worked: The first shift (day shift) shall be worked between the hours of 8:00 a.m. and 4:30 p.m. Workmen on the "day shift" shall receive eight (8) hours pay at the regular hourly rate for eight (8) hours work. The second shift (swing shift) shall be worked between the hours of 4:30 p.m. and 12:30 a.m. Workmen on the "swing shift" shall receive eight (8) hours pay at the regular hourly rate plus 10% for seven and one-half (7 ½) hours work. The third shift (graveyard shift) shall be worked between the hours of 12:30 a.m. and 8:00 a.m. Workmen on the "graveyard shift" shall receive eight (8) hours pay at the regular hourly rate plus 15% for seven (7) hours work. A lunch period of thirty (30) minutes shall be allowed on each shift. All overtime work required after the completion of a regular shift shall be paid at one and one-half (1½) times the "shift" hourly rate.

**NO. 14:** Means eight (8) hours per day shall constitute a day's work. The regular starting time shall be 8:00 a.m., and the regular quitting time shall be 4:30 p.m.; lunch time shall be twelve (12) o'clock noon to 12:30 p.m. The regular starting time may, by mutual consent of employees on the job site, and the employer, be between 7:00 a.m. and 9:00 a.m. with appropriate adjustments made to the regular quitting time and lunch time. All time worked before the regular starting time and after the regular quitting time, Monday through Friday, shall be paid at the rate of time and one-half (1½). All work commencing with the beginning of the established work day on Saturday shall be paid at the rate of time and one-half (1½). All work commencing with the beginning of the established work day on Sundays and/or Holidays shall be paid at the rate of double (2) time.

**PLATTE COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**NO. 17:** Means the regular working day shall consist of eight (8) hours of labor between 7:00 a.m. and 3:30 p.m. and the regular work week shall consist of five (5) consecutive eight (8) hour days of labor beginning on Monday and ending with Friday of each week. All full-time or part-time labor performed during such hours shall be recognized as regular working hours and paid for at the regular hourly rate. Except as otherwise provided, all work performed outside of regular working hours during the regular work week, shall be at double (2) times the regular rate. Working hours may be varied by two (2) hours. When circumstances warrant and when it is mutually beneficial and agreed to by interested parties, the Employer may institute a work week consisting of four (4) consecutive ten (10) hour days, between the hours of five (5) a.m. and six (6) p.m., Monday through Thursday, with one-half (1/2) hour allowed for a lunch period each day. Friday may be used as a make-up day. The make-up day will be voluntary, and a decision not to work may not be held against the employee. When working four (4) ten (10) hour day's overtime will be paid at the time and one-half (1½) rate for the eleventh (11<sup>th</sup>) and twelfth (12<sup>th</sup>) hour, all other work will be paid at the double (2) time rate of pay. The first two (2) hours of overtime, Monday through Friday, and the first eight (8) hours on Saturday shall be at time and one-half (1½) for all work. All other overtime shall be at double (2) time. The first two (2) hours of overtime must be concurrent with the regular work day, two (2) hours prior to or following the regular work day are at time and one-half (1½). The regular workday (as previously defined) on Saturday is paid at time and one-half (1½). Work performed outside of the regular Saturday work day is at double (2) time. All work performed on recognized holidays, or days locally observed as such, and Sundays shall be paid at the double (2) time rate of pay.

**NO. 25:** Means regular working hours of eight (8) hours shall constitute a working day between the hours of 8:00 a.m. to 4:30 p.m. in a forty (40) hour working week of Monday through Friday. Employment on Saturday, Sunday and legal holidays, and employment before or after the regular working hours shall be considered overtime. Employment on Saturday, Sunday and legal holidays shall be paid for at twice (2) the regular hourly rate. Employment from 4:30 p.m. to 12:00 midnight, Monday through Friday, shall be paid for at one and one-half (1½) times the regular hourly rate. From 12:00 midnight until 8:00 a.m. on any day shall be paid for at twice (2) the regular hourly rate.

**NO. 26:** Means that the regular working day shall consist of eight (8) hours worked between 6:00 a.m., and 5:00 p.m., five (5) days per week, Monday to Friday, inclusive. Hours of work at each jobsite shall be those established by the general contractor and worked by the majority of trades. (The above working hours may be changed by mutual agreement). Work performed on Construction Work on Saturdays, Sundays and before and after the regular working day on Monday to Friday, inclusive, shall be classified as overtime, and paid for at double (2) the rate of single time. The employer may establish hours worked on a jobsite for a four (4) ten (10) hour day work week at straight time pay for construction work; the regular working day shall consist of ten (10) hours worked consecutively, between 6:00 a.m. and 6:00 p.m., four (4) days per week, Monday to Thursday, inclusive. Any work performed on Friday, Saturday, Sunday and holidays, and before and after the regular working day on Monday to Thursday where a four (4) ten (10) hour day workweek has been established, will be paid at two times (2) the single time rate of pay. The rate of pay for all work performed on holidays shall be at two times (2) the single time rate of pay.

**NO. 30:** Means Monday through Sunday shall constitute the work week. Regular starting time shall be 8:00 A.M., except when the work week is scheduled as a week with starting time advanced or delayed. Starting time may be advanced or delayed by the employer up to two (2) hours from the regular starting time. Eight (8) hours shall constitute the work day. All work performed prior to or after the regular eight (8) hour work day, as described above, and all work performed on Saturday shall be paid at time and one-half (1½) the regular rate. In the event that a scheduled eight (8) hour work day is missed (not to include holidays) because of events out of the control of the contractor, then that missed work day may be made up at straight time the following Saturday. It is recognized that not all employees working on a Saturday make-up day will have worked the same number of hours during the regular work week. It is further recognized that any work after the forty (40) hours in a week must be paid at time and one-half (1½). Saturday make-up day shall not be used to make up for time lost due to recognized holidays. The employer may establish a 4-10's schedule on projects (4 days with 10 hours per day). If using a 4-10's schedule, a Friday make-up day is allowed. If using a 4 (10) schedule, any work more than ten (10) hours in a day or forty (40) hours in a work week shall be paid at the time and one-half (1½) rate. Friday make-up day shall not be used to make up for time lost due to recognized holidays. All work performed on Sundays or holidays shall be paid at the double (2) time rate.



**PLATTE COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**NO. 37:** The Employer may choose, at his discretion, to work five eight hour days or four ten hour days with a Friday make-up day, Monday through Friday at straight time. Overtime shall be paid after eight (8) hours when working "five eights" and after ten hours when working "four tens". All work performed on Sundays and recognized holidays shall be paid for at the rate of double (2) time. All Saturday work shall be paid for at the rate of time and one-half (1½) the regular wage rate. All night work during the regular work week other than the above-mentioned days shall be paid for at the rate of time and one-half (1½) the regular wage scale until midnight and double (2) time after midnight except make-up time will be allowed under the following condition: In the event of inclement weather on exterior projects which prevents working the full regular eight (8) hour day, forty (40) hour work week schedule, a Saturday make-up day can be granted. Then said work on Saturday shall be paid at the straight time rate of pay up to a maximum total of forty (40) hours per week.

**NO. 45:** Means eight (8) hours shall constitute a day's work, beginning at 8:00 a.m. and ending at 4:30 p.m. The regular work week shall be forty (40) hours, beginning Monday, 8:00 a.m. and ending at 4:30 p.m. Friday. Because of traffic, parking and other circumstances, the hours of work on any project may begin as early as 6:00 a.m. with eight (8) hours worked between 6:00 a.m. and 4:30 p.m. When circumstances warrant and when it is mutually beneficial and agreed to, the employer may institute a work week consisting of four (4) consecutive ten (10) hour days, between the hours of 7:00 a.m. and 6:00 p.m., Monday through Thursday. Friday may be used as a make-up day. After ten (10) hours in a workday, or forty (40) hours in a workweek, overtime shall be paid at a rate of one and one-half (1½) times the regular rate of pay. All overtime Monday through Saturday shall be paid at the rate of time and one-half (1½) the regular rate of pay. Sunday and recognized holidays shall be paid at double (2) time. Labor Day shall be paid at triple (3) time. Shift work may be performed at the option of the Contractor. However, whenever shift work is performed it must cover a period not less than (5) consecutive working days. The day shift shall work a regular eight (8) hours shift as outlined above. The hourly rate for second shift (seven and one-half hours worked for eight hours paid) shall be twenty-five cents (\$0.25) over and above the hourly rate. The hourly rate for third shift (seven hours worked, eight hours paid) shall be fifty cents (\$0.50) above the hourly rate. If no first shift is worked, second and third shift employees shall receive an additional fifteen percent (15%) over and above the hourly rate for actual hours worked.

**NO. 46:** Means the regular work day shall be eight (8) hours from 6:00 a.m. to 6:30 p.m. Starting time may be between 6:00 a.m. and 10:00 a.m. The regular work week shall be forty (40) hours, beginning between 6:00 a.m. and 10:00 a.m. on Monday and ending between 2:30 p.m. and 6:30 p.m. on Friday. All hours in excess of the regular work day and work week shall be considered overtime. Overtime on days recognized as regular work days and on Saturday shall be paid for at the rate of time and one-half (1½) the regular rate. Sunday and recognized holidays shall be paid for at the rate of double time (2) for time worked. The Employer may establish a work week consisting of four (4) days, Monday through Thursday, each day consisting of ten (10) hours at straight time rate of pay. The 4-10's must run for a period of at least four (4) days.

**NO 47:** Means a regular workday shall consist of eight (8) hours between 6:00 a.m. and 6:30 p.m. Forty (40) hours, within five (5) days -- Monday through Friday or Tuesday through Saturday inclusive -- shall constitute the regular workweek. The Employer may alter the above stated hours by two (2) hours for an early starting and quitting time only, not to exceed eight (8) hours of work in any one day. The Employer shall be allowed to establish a four (4) day, ten (10) hour per day work week. This work week is defined as Monday through Thursday, with a Friday make-up day. The normal work day under a ten (10) hour four (4) day work week shall be from 7:00 a.m. to 6:00 p.m. All hours worked in excess of ten (10) hours per day or forty (40) hours per week or hours worked outside the normal work week shall be paid at the applicable overtime rate. The first four (4) hours of overtime after the normal workday, each day Monday through Friday and the first ten (10) hours of overtime on Saturdays shall be paid for at one and one-half (1½) times the regular straight time rate of pay. All other work performed outside of the regularly scheduled working hours and outside of the first ten (10) hours worked on Saturdays shall be paid for at double (2) the regular straight time rate of pay. Sundays and the recognized holidays shall be paid for at double (2) the regular straight time rate of pay, if worked. When so elected by the contractor, multiple shifts of at least five (5) days duration may be worked. When two (2) or three (3) shifts are worked: The first shift (day shift) shall be worked between the hours of 8:00 a.m. and 4:30 p.m. Workmen on the "day shift" shall receive eight (8) hours pay at the regular hourly rate for eight (8) hours work. The second shift (swing shift) shall be worked between the hours of 4:30 p.m. and 12:30 a.m. Workmen on the "swing shift" shall receive eight (8) hours pay at the regular hourly rate plus 10% for seven and one-half (7 ½) hours work. The third shift (graveyard shift) shall be worked between the hours of 12:30 a.m. and 8:00 a.m. Workmen on the "graveyard shift" shall receive eight (8) hours pay at the regular hourly rate plus 15% for seven (7) hours work. A lunch period of thirty (30) minutes shall be allowed on each shift. All overtime work required after the completion of a regular shift shall be paid at one and one-half (1½) times the "shift" hourly rate.

**PLATTE COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**NO. 48:** Means the regularly scheduled work week shall be five (5) consecutive days, Monday through Friday or Tuesday through Saturday. Eight (8) hours shall constitute a day's work. Starting time shall not be earlier than 7:00 a.m. nor later than 10:00 a.m. Forty (40) hours shall constitute a week's work. Overtime at the rate of time and one-half (1½) will be paid for all work in excess of forty (40) hours in any one work week. On the Monday through Friday schedule, all work performed on Saturday will be time and one-half (1½) unless time has been lost during the week, in which case Saturday will be a make-up day to the extent of the lost time. On the Tuesday through Saturday schedule, all work performed on Monday will be time and one-half (1½) unless time has been lost during the week, in which case Monday will be a make-up day to the extent of the lost time. Any work performed on Sunday will be double (2) time. If employees work on any of the recognized holidays, they shall be paid time and one-half (1½) their regular rate of pay for all hours worked.

**NO. 50:** Means eight (8) hours constitute a normal day's work Monday through Friday. Any time worked over eight (8) hours will normally be paid at time and one-half (1½) except for exclusions stated in some following additional sentences. The Employer, at his discretion, may start the work day between 6:00 a.m. and 9:00 a.m. Any schedule chosen shall be started at the beginning of the work week (Monday) and used for at least five days. Work may be scheduled on a four (4) days a week (Monday through Thursday) at ten (10) hours a day schedule. If such a schedule is employed, then Friday may be used as a make-up day when time is lost due to inclement weather. Time and one-half (1½) shall be paid for any work in excess of eight (8) hours in any regular work day Monday through Friday unless working 4-10's, then time and one-half (1½) after ten (10) hours. All work performed on Saturday will be time and one-half (1½). Double (2) time shall be paid for all work on Sundays and recognized holidays.

**NO. 52:** Means the regular workweek shall consist of five (5) eight (8) hour days, Monday through Friday. The regular workday shall consist of an eight (8) hour period, to be worked between the agreed upon starting time, and ending no later than 4:30 p.m. The agreed upon starting time shall be any time between the hours of 6:00 a.m. and 8:00 a.m. The option exists for the employer to use a four (4) day, ten (10) hour work week. Days worked shall be Monday through Thursday or Tuesday through Friday. If the job requires men on duty all five (5) days, then part of the crew may work the first four (4) days and the remainder of the crew may work the last four (4) days. Hours each day shall be from 7:00 a.m. to 5:30 p.m. Interested party's on the project must agree to this clause before it may be used. Once this clause has been put into effect, it shall remain as long as the majority of the Employees on the project and the Employer agree to keep it. The four (4) day clause shall not be used to circumvent a Holiday. Except as otherwise provided, all work performed outside the regular working hours and performed during the regular work week (Monday through Friday) shall be at the following rates of pay:

Holidays-New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, Christmas Day (or days observed as such) shall be recognized as Holidays that shall be paid at two (2) times the regular rate of pay.

Labor Day-No work shall be performed on Labor Day except in special cases of emergency. Rate of pay shall be at three (3) times the regular rate of pay.

Overtime-Work performed outside of the regular work day (the regular work day shall consist of an eight (8) hour period, to be worked between the agreed upon starting time, and ending not later than 4:30 p.m. The agreed upon starting time shall be any time between the hours of 6:00 a.m. and 8:00 a.m., by mutual consent of the interested party's.), shall be:

- A. Hours worked Monday through Friday, the first two (2) hours of overtime will be paid at time and one-half (1½). All other overtime will be paid at the double (2) time rate.
- B. The first ten (10) hours worked on Saturday will be paid at time and one-half (1½), with all other hours to be paid at the double (2) time rate.
- C. Sundays and Holidays (except Labor Day) shall be paid at the double (2) time rate.

**PLATTE COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**NO. 57:** Means eight (8) hours per day shall constitute a day's work and forty (40) hours per week, Monday through Friday, shall constitute a week's work. The regular starting time shall be 8:00 a.m. If a second or third shift is used, the regular starting time of the second shift shall be 4:30 p.m. and the regular starting period for the third shift shall be 12:30 a.m. These times may be adjusted by the employer. The day shift shall work a regular eight (8) hours shift as outlined above. Employees working a second shift shall receive an additional \$0.25 above the regular hourly rate and perform seven and one-half (7½) hours work for eight (8) hours pay. Third shift employees shall be paid an additional \$0.50 above the regular hourly rate and work seven (7) hours for eight (8) hours pay. When circumstances warrant, the Employer may change the regular workweek to four (4) ten-hour days at the regular time rate of pay. All time worked before and after the established workday of eight (8) hours, Monday through Friday, and all time worked on Saturday shall be paid at the rate of time and one-half (1½) except in cases where work is part of an employee's regular Friday shift. All time worked on Sunday and recognized holidays shall be paid at the double (2) time rate of pay except in cases where work is part of an employee's previous day's shift. For all overtime hours worked \$25.77 of the fringe benefits portion of the prevailing wage shall be paid at the same overtime rate at which the cash portion of the prevailing wage is to be paid. The remaining \$1.24 of the fringe benefit portion of the prevailing wage may be paid at straight time.

**NO. 58:** Means eight (8) consecutive hours, between 6:00 a.m. and 5:30 p.m., shall constitute a days work. Five (5) days work, Monday through Friday, shall constitute a normal work week. Work performed in excess of eight (8) hours per day or eight hours beyond normal starting time for that project excluding lunch Monday through Friday, and all work performed on Saturday, shall be paid for the rate of time and one-half (1½). When Sundays and recognized holidays are worked, the worker(s) shall be paid at the rate of double (2) time. Work may be scheduled on a four (4) days a week (Monday through Thursday) at ten (10) hours a day schedule at straight time. A Friday make-up day is available if time is lost due to inclement weather and at least sixteen (16) hours, but not more than thirty (30) hours, were worked during the week.

**NO. 63:** Means eight (8) hours shall constitute the regular work day between time that may be advanced or delayed by two (2) hours on either side of 8:00 AM. The Employer may establish a work week consisting of four (4) days, Monday through Thursday, each day consisting of ten (10) hours straight time. The four (4) tens (10s) must run for a period of at least four (4) days, Monday through Thursday. All work on Friday on a four (4) tens (10) project will be paid at the rate of time and one-half (1½). All work performed on Saturday shall be paid at time and one-half (1½). All work performed on Sundays and recognized holidays must be paid at double (2) time. All work performed prior to or after the regular eight (8) hour work day, or ten (10) hour work day, as described above shall be paid at time and one-half (1½) the regular rate.

**NO. 65:** Means Monday through Sunday shall constitute the work week. Regular starting time shall be 8:00 a.m., with one half hour for lunch between three and one-half (3½) and five (5) hours after starting time. The starting time may be advanced by two (2) hours or delayed one (1) hour by the employer from the regular starting time. All work performed before the advanced starting time and during the half hour lunch shall be paid at the overtime rate of time and one-half (1½). Work performed outside these hours shall be paid at the overtime rate of time and one-half (1½), except as provided otherwise below. All work performed on Sundays or recognized holidays shall be paid at the double (2) time rate. When the start time is delayed past 9:00 a.m., the employee's pay shall start at 9:00 a.m. and all time, after the normal quitting time (5:30 p.m.), shall be paid at the overtime rate. Eight (8) hours shall constitute the work day. All work performed prior to or after the regular eight (8) hour work day, as described above, and all work performed on Saturday shall be paid at time and one-half (1½) the regular rate. In the event that a scheduled eight (8) hour work day is missed (not including recognized holidays) because of inclement weather, then that missed work day may be made up at straight time on the following Saturday. It is recognized that not all employees working on a Saturday make-up day will have worked the same number of hours during the regular work week. It is further recognized that any work after forty (40) hours must be paid at time and one-half (1½). The employer may establish a 4-10's schedule on projects (4 days with 10 hours per day at straight time). In order to use the 4-10's schedule, the employer must schedule the 4-10's for a minimum of one (1) week. If using a 4-10's schedule, a Friday make-up day is allowed.

**PLATTE COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**NO. 68:** Means Monday through Sunday shall constitute the work week. Regular starting time shall be 8:00 a.m., with one half hour for lunch between three and one-half and five hours after starting time. The starting time may be advanced or delayed by the employer up to one hour from the regular starting time. All work performed before the advance starting time and during the half hour lunch shall be paid at the overtime rate of time and one-half (1½). Work performed outside these hours shall be paid at the overtime rate of time and one-half (1½), except as provided otherwise below. All work performed on Sundays or holidays shall be paid at the double (2) time rate. Eight (8) hours shall constitute the work day. All work performed prior to or after the regular eight (8) hour work day, as described above, and all work performed on Saturday shall be paid at time and one-half (1½) the regular rate, except as hereinafter described. In the event that a scheduled eight (8) hour work day is missed (not including recognized holidays) because of inclement weather, then that missed work day may be made up at straight time on the Saturday in the week of the pay period. It is recognized that not all employees working on a Saturday make-up day will have worked the same number of hours during the regular work week. It is further recognized that any work after forty (40) hours must be paid at time and one-half (1½). The employer may establish a 4-10's schedule on projects (4 days with 10 hours per day at straight time). In order to use the 4-10's schedule, the employer must schedule the 4-10's for a minimum of one (1) week. If using a 4-10's schedule, a Friday make-up day is allowed.

**NO. 85:** Means the work week shall be Monday through Sunday. Eight (8) hours shall constitute a day's work to begin between 6:00 a.m. and 9:00 a.m. and end between 2:30 p.m. to 5:30 p.m. Employees required to work during their lunch period shall receive the overtime rate. Employees shall receive time and one-half (1½) for all time they are required to work prior to their normal starting time or after eight (8) hours or normal quitting time Monday through Friday, or all day on Saturday. If an Employer has started the work week on a five day, eight hours a day schedule, and due to inclement weather misses any time, then he may switch to a nine or ten hours a day schedule, at straight time, for the remainder of that work week in order to make up for the lost time (10-hour make-up day). All work over ten (10) hours a day or over forty (40) hours a week must be paid at time & one-half (1½). Sundays and recognized holidays shall be paid at the double (2) time rate of pay. A contractor may alter the regular work week to four (4) ten (10) hour days at straight time rate of pay. To do this the scheduled 4-10's must be worked at least one full week and the regular workweek shall be Monday through Thursday with Friday being a make-up day at straight time for days missed in the regular workweek due to inclement weather. If 5-8's are being worked, Saturday may be used as a make-up day at straight time if inclement weather prevents work during the normal work week.

**NO. 88:** Means the regular work week shall consist of five (5) eight (8) hour days, 8:00 a.m. to 4:30 p.m., Monday through Friday, except when the work week is scheduled as a 4-10's week or as a week with start time advanced or delayed as described below. The starting time may be advanced or delayed by one hour on either side of 8:00 a.m. The advanced or delayed starting time must run for a period of at least five (5) days. The Employer may establish a work week consisting of four (4) days, during the regular work week, each day consisting of ten (10) hours at straight time. The 4-10's must run for a period of at least four (4) days. Time and one-half (1½) shall be paid for any work in excess of eight (8) hours in any regular work day Monday through Friday (or ten hours in a 4-10's week), the first eight (8) hours of a Saturday, and it shall be at time and one-half (1½) for the Friday and Saturday following Thanksgiving. Double (2) time shall be paid for the following time worked on Sunday, New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day, as well as any work in excess of eight (8) hours on a Saturday and the Saturday of a three-day weekend (except the Saturday following Thanksgiving).

**NO. 95:** Means a regular workday shall consist of eight and one-half (8½) hours elapsed time, including one-half hour for lunch. The crew starting times shall be flexible within the period of daylight to 8:00 a.m. Any work performed over ten (10) hours of elapsed time per day including one-half hour for lunch and/or any work performed over forty (40) hours at the straight time rate in one week shall be paid at time and one-half (1½) the straight time rate. Saturday shall be a voluntary make-up day at straight time at the discretion of the contractor and with the consent of the employees. Sunday and recognized holidays shall be paid for at double (2) time.

**PLATTE COUNTY  
OVERTIME SCHEDULE - BUILDING CONSTRUCTION**

**NO. 100:** Means eight (8) hours shall constitute a day's work, and five (5) continuous eight-hour days shall constitute a week's work, Monday through Friday. Time and one-half ( $1\frac{1}{2}$ ) the regular hourly rate shall be paid for all work performed in excess of eight (8) hours in any one day or forty (40) hours in any one week. Starting time shall be between 6:00 a.m. and 9:00 a.m. All work over eight (8) hours in a regular 5-day 8-hour schedule shall be at the appropriate overtime rate. All time worked before the regular scheduled starting time shall be paid for at the rate of time and one-half ( $1\frac{1}{2}$ ) and shall not apply to regular shift. All time worked after eight (8) hours in any one day or after 5:30 p.m., whichever comes first, shall be paid at the time and one-half ( $1\frac{1}{2}$ ) rate. An Employer, at his option, may elect to work four (4) ten (10) hour days, Monday through Thursday, at straight time. All such work must be done at least one week in duration. All work over ten (10) hours in one day or forty (40) hours in a week shall be at the overtime rate. Any employee who is scheduled to work on any regular work day but is prevented from working because of weather conditions, shall be permitted to work on Saturday (Friday if working 4-10's) as a make-up day at the straight time rate of pay. When an employee is required to work on any recognized holiday they shall receive the double (2) time rate for all time that they are required to perform work. All time worked from 12:00 Midnight Saturday to 12:00 Midnight Sunday shall be paid for at the rate of double (2) time on single shift.

**NO. 125:** Eight (8) hours of work between the hours of 8:00 a.m. and 4:30 p.m. shall constitute a work day. Forty (40) hours within the five (5) days, Monday through Friday inclusive, shall constitute the work week. Starting time may be adjusted not to exceed two (2) hours. Work performed outside of the aforementioned will be paid at the applicable overtime rate. When starting time has been adjusted, all other provisions concerning the work day shall be adjusted accordingly. The overtime rate of pay shall be one and one-half ( $1\frac{1}{2}$ ) times the regular rate of wages, other than on Sundays, holidays and from Midnight until 6:00 a.m., which will be paid at double (2) the straight time rate.

**PLATTE COUNTY  
HOLIDAY SCHEDULE – BUILDING CONSTRUCTION**

**NO. 2:** All work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or the days observed as such, shall be paid at the double time rate of pay.

**NO. 4:** All work done on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas Day shall be paid at the double time rate of pay. If any of the above holidays fall on Sunday, Monday will be observed as the recognized holiday. If any of the above holidays fall on Saturday, Friday will be observed as the recognized holiday.

**NO. 7:** The following days are assigned days and are recognized as holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. If a holiday falls on a Saturday, it shall be observed on the preceding Friday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This is applied to protect Labor Day. When a holiday falls during the normal workweek, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week. However, no reimbursement for this eight (8) hours is too paid to the workman unless worked. If workman are required to work the above enumerated holidays or days observed as such, or on Sunday, they shall receive double (2) the regular rate of pay for such work.

**NO. 22:** All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, or days locally observed as such, and Sunday shall be recognized as holidays. If a holiday falls on Saturday, Friday shall be observed; if it falls on Sunday, Monday shall be observed. All work performed on holidays shall be paid at the double (2) time rate of pay.

**NO. 32:** All work performed for the Friday and Saturday following Thanksgiving shall be paid at the time and one-half (1½) rate of pay. All work performed on Sundays, New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day shall be paid at the double (2) time rate of pay. When one of the above holidays falls on Sunday, the following Monday shall be observed and when one of the above holidays falls on Saturday, the preceding Friday shall be observed.

**NO. 33:** All work done on New Year's Day, Memorial Day, Fourth of July, Thanksgiving Day and Christmas Day shall be paid at the double time rate of pay. Labor Day shall be paid at the triple (3) time rate of pay. If the holiday falls on Sunday, the following Monday will be observed; if the holiday falls on Saturday, the preceding Friday will be observed.

**NO. 39:** No work shall be done on the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas. Any of these holidays falling on Sunday, the following Monday shall be a holiday, and any of these holidays falling on Saturday, the preceding Friday shall be a holiday.

**NO. 49:** The following days shall be observed as legal holidays: New Year's Day, Decoration Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day, Employee's birthday and two (2) personal days. The observance of one (1) of the personal days to be limited to the time between December 1 and March 1 of the following year. If any of these holidays fall on Sunday, the following Monday will be observed as the holiday and if any of these holidays fall on Saturday, the preceding Friday will be observed as the holiday. If employees work on any of these holidays they shall be paid time & one-half (1½) their regular rate of pay for all hours worked.

**NO. 53:** All work done on New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, Christmas Day or days observed as such for these holidays shall be paid at the double (2) time rate of pay. No work shall be performed on Labor Day except in special cases of emergency, and then the rate of pay shall be at three (3) times the regular rate of pay. When a holiday falls on a Sunday, the following Monday shall be observed as the holiday. When a holiday falls on Saturday, the preceding Friday shall be observed as the holiday.

**NO. 54:** All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day shall be paid at the double (2) time rate of pay. When a holiday falls on Saturday, it shall be observed on Friday. When a holiday falls on Sunday, it shall be observed on Monday.

**PLATTE COUNTY  
HOLIDAY SCHEDULE – BUILDING CONSTRUCTION**

**NO. 65:** Work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or days celebrated as such, shall be paid at the double time rate of pay. If the holiday falls on Saturday, it will be observed on Friday; if the holiday falls on Sunday, it will be observed on Monday, and shall be paid for at double (2) the regular straight time rate of pay.

**NO. 67:** All work performed on New Year's Day, Memorial Day, Christmas Day, Fourth of July and Thanksgiving Day, from midnight to midnight, shall be paid for at the rate of double time (2) the basic rate of pay if required to work in addition to any other pay otherwise required hereunder as holiday pay. Positively no work shall be performed on Labor Day. Martin Luther King's Birthday, Veteran's Day, and the day after Thanksgiving Day shall be considered optional holidays, and if the Employer and employees agree that work will be performed on that day, no premium pay will be required. Should any of the above holidays fall on Saturday, the holiday will be observed on Friday. Should any of the above holidays fall on Sunday, the holiday will be observed on Monday.

**NO. 68:** All work performed on New Year's Day, Decoration Day (Memorial Day), Independence Day (Fourth of July), Labor Day, Thanksgiving Day, Christmas Day, or days observed as such, shall be paid at the rate of double (2) time. When a holiday falls on a Saturday, Friday shall be observed. When a holiday falls on a Sunday, Monday shall be observed. No work shall be performed on the Fourth of July or Labor Day except to save life or property. Where one of the holidays specified falls or is observed during the work week, then all work performed over and above thirty-two (32) hours in that week shall be paid at the rate of time and one-half (1½).

**NO. 72:** All work performed on New Year's Day, Memorial Day (last Monday in May), Independence Day, Labor Day, Thanksgiving Day and Christmas Day shall be paid for at double (2) the regular straight time rate of pay. Any one of the above listed holidays falling on Sunday shall be observed on the following Monday and paid for at double (2) the regular straight time rate of pay, if worked. Any one of the above listed holidays falling on Saturday shall be observed on the prior Friday and paid for at double (2) the regular straight time rate of pay, if worked. No work shall be performed on Labor Day except in case of emergency.

OCCUPATIONAL TITLE	* Date of Increase	Basic Hourly Rates	Over-Time Schedule	Holiday Schedule
Carpenter	7/12	\$36.05	1	17
Millwright	7/12	\$36.05	1	17
Pile Driver	7/12	\$36.05	1	17
Electrician (Outside-Line Construction\Lineman)		\$36.53	18	24
Lineman Operator		\$33.76	18	24
Lineman - Tree Trimmer		\$20.70	31	30
Groundman		\$23.54	18	24
Groundman - Tree Trimmer		\$16.73	31	30
Operating Engineer				
Group I	7/12	\$33.13	3	2
Group II	7/12	\$32.09	3	2
Group III	7/12	\$32.09	3	2
Group IV	7/12	\$27.62	3	2
Oiler-Driver	7/12	\$30.97	3	2
Cement Mason	7/12	\$29.24	3	2
Laborer				
General Laborer	7/12	\$27.24	3	2
Skilled Laborer	7/12	\$28.45	3	2
Truck Driver-Teamster				
Group I	7/12	\$29.04	3	2
Group II	7/12	\$29.04	3	2
Group III	7/12	\$29.04	3	2
Group IV	7/12	\$29.04	3	2
Traffic Control Service Driver		\$15.35	27	26

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction R

For additional information regarding the application of the Lineman Tree Trimmer and the Groundman Tree Trin of the occupational title of Electrician (Outside-Line Construction\Lineman), see the Labor and Industrial Relatio Order of June 21, 2012, in the Matter of Objection Nos. 122-237



**REPLACEMENT PAGE  
PLATTE COUNTY  
OVERTIME SCHEDULE – HEAVY CONSTRUCTION**

**FED:** Minimum requirement per Fair Labor Standards Act means time and one-half (1 ½) shall be paid for all work in excess of forty (40) hours per work week.

**NO. 1:** Means (8) hours shall constitute the regular work day between time that may be advanced or delayed by two (2) hours on either side of 8:00 AM. The Employer may establish a work week consisting of four (4) days, Monday through Thursday, each day consisting of ten (10) hours straight time. The four (4) tens (10s) must run for a period of at least four (4) days, Monday through Thursday. All work on Friday on a four (4) tens (10) project will be paid at the rate of time and one-half (1½). All work performed on Saturday shall be paid at time and one-half (1½). All work performed on Sundays and recognized holidays must be paid at double (2) time. All work performed prior to or after the regular eight (8) hour work day, or ten (10) hour work day, as described above shall be paid at time and one-half (1½) the regular rate.

**NO. 3:** Means a regular work week shall consist of not more than forty (40) hours of work and all work performed over and above ten (10) hours per day or forty (40) hours per week shall be paid at the rate of time & one-half (1½). Workers shall receive time and one-half (1½) for all work performed on Sundays and recognized holidays. Double (2) time shall be paid for work performed on Sundays or recognized holidays when and only if any other craft employees of the same employer at work on that same job site are receiving double (2) time pay for that Sunday or Holiday work. A work day is to begin between 6:00 a.m. and 9:00 a.m. at the option of the Employer except when inclement weather or other conditions beyond the reasonable control of the Employer prevents work, in which event, the starting time may be delayed, but not later than 12:00 noon. Where one of the recognized holidays falls or is observed during the work week, then all work performed over and above thirty-two (32) hours in that week shall be paid at the rate of time and one-half (1½).

**NO. 20:** Eight (8) hours of work between the hours of 8:00 a.m. and 4:30 p.m. shall constitute a work day. Forty (40) hours within the five (5) days, Monday through Friday inclusive, shall constitute the work week. Starting time may be adjusted not to exceed two (2) hours. Work performed outside of the aforementioned will be paid at the applicable overtime rate. When starting time has been adjusted, all other provisions concerning the work day shall be adjusted accordingly. The overtime rate of pay shall be one and one-half (1½) times the regular rate of wages, other than on Sundays, holidays and from Midnight until 6:00 a.m., which will be paid at double (2) the straight time rate.

**NO. 27:** Means the regularly scheduled work week shall be five (5) consecutive days, Monday through Friday or Tuesday through Saturday. Eight (8) hours shall constitute a day's work. Starting time shall not be earlier than 7:00 a.m. nor later than 10:00 a.m. Forty (40) hours shall constitute a week's work. Overtime at the rate of time and one-half (1½) will be paid for all work in excess of forty (40) hours in any one work week. On the Monday through Friday schedule, all work performed on Saturday will be time and one-half (1½) unless time has been lost during the week, in which case Saturday will be a make up day to the extent of the lost time. On the Tuesday through Saturday schedule, all work performed on Monday will be time and one-half (1½) unless time has been lost during the week, in which case Monday will be a make-up day to the extent of the lost time. Any work performed on Sunday will be double (2) time. If employees work on any of the recognized holidays, they shall be paid time and one-half (1½) their regular rate of pay for all hours worked.

**NO. 31:** Means the overtime rate shall be time and one-half the regular rate for work over forty (40) hours per week. Sundays and Holidays shall be paid at double the straight time rate. All employees performing work on affected properties during or following emergencies shall receive the applicable rate of pay for the first sixteen (16) consecutive hours and all hours worked in excess of sixteen (16) consecutive hours shall be paid at double time until broken by an eight (8) hour rest period. Should an employee be called back to work within two hours of his normal quitting time, the previous hours worked shall count toward the above sixteen (16) hour provision.

**REPLACEMENT PAGE  
PLATTE COUNTY  
HOLIDAY SCHEDULE – HEAVY CONSTRUCTION**

**NO. 2:** All work performed on New Year's Day, Decoration Day (Memorial Day), Independence Day (Fourth of July), Labor Day, Thanksgiving Day and Christmas Day, or days observed as such, and Sundays shall be paid at the rate of time and one-half (1½). Double (2) time shall be paid for work on Sundays or recognized holidays when and only if other craft employees of the same employer at work on that same job site are receiving double (2) time pay for that Sunday or holiday work. No work shall be performed on Labor Day, except in case of jeopardy of life or property. This rule is applied to protect Labor Day. When one of the above holidays falls on a Saturday, the preceding Friday shall be observed; when the holiday falls on a Sunday, the following Monday shall be observed. Where one of the specified holidays falls or is observed during the work week, then all work performed over and above thirty-two (32) hours in that week shall be paid at the rate of time and one-half (1½).

**NO. 17:** All work performed on New Year's Day, Decoration Day (Memorial Day), Independence Day (Fourth of July), Labor Day, Thanksgiving Day, Christmas Day, or days observed as such, shall be paid at the rate of double (2) time. When a holiday falls on a Saturday, Friday shall be observed. When a holiday falls on a Sunday, Monday shall be observed. No work shall be performed on the Fourth of July or Labor Day except to save life or property. Where one of the holidays specified falls or is observed during the work week, then all work performed over and above thirty-two (32) hours in that week shall be paid at the rate of time and one-half (1½).

**NO. 23:** Work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or days celebrated as such, shall be paid at the double time rate of pay. If the holiday falls on Saturday, it will be observed on Friday; if the holiday falls on Sunday, it will be observed on Monday, and shall be paid for at double (2) the regular straight time rate of pay.

**NO. 26:** The following days shall be observed as legal holidays: New Year's Day, Decoration Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day, Employee's birthday and two (2) personal days. The observance of one (1) of the personal days to be limited to the time between December 1 and March 1 of the following year. If any of these holidays fall on Sunday, the following Monday will be observed as the holiday and if any of these holidays fall on Saturday, the preceding Friday will be observed as the holiday. If employees work on any of these holidays they shall be paid time & one-half (1½) their regular rate of pay for all hours worked.

**NO. 30:** All work performed on New Year's Day, Decoration Day, Fourth of July, Labor Day, Christmas Day, Thanksgiving Day and Day after Thanksgiving or days celebrated for the same.

## **EXHIBIT D SCOPE OF WORK**

Contractor shall perform the following Work as more fully set forth in the Contract Documents and Technical Specifications and Drawings. This summary does not address all details of the work to be completed and the Contractor must refer to the remainder of the project specifications and the project drawings for the complete scope of work.

All Work necessary to construct **PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT REPLACEMENT PROJECT** through the limits of the Project as shown on and in accordance with the Technical Specifications and Drawings referred to in Exhibit E to the Agreement. The Work in the Project shall include all labor, supervision, transportation, equipment and materials and assure effective and economical completion of services specified in the contract, drawings and specifications, including, but not limited to:

Removal of existing 30kVA, GE-brand UPS gear and the associated battery cabinet in the building occupied by the City of Riverside Department of Public Safety at the location indicated on the drawings. The existing UPS equipment including the existing batteries and battery cabinet will be turned over to the City of Riverside for proper disposal. Except for the scheduled downtime period while the temporary connection to regular utility power is being completed, the equipment powered through the existing UPS gear must remain up and running during the entire UPS replacement process using regular utility power that currently has generator backup. This will require that the existing 42-circuit, 208/120V, 100A panel, labeled as the 'EUPS' panel, and the sub-fed, single-phase panel next to it, labeled as the 'EUPS2 panel, must be connected to regular utility power while the new UPS equipment, defined on the drawings, is permanently installed. Connecting this existing 42-circuit panel directly to utility power requires that it be directly connected to the existing 175A circuit breaker that provides power to the existing UPS gear. During the UPS equipment replacement process, the 120V circuits currently fed from the existing sub-fed panel will be re-circuited and permanently powered from the new 42-circuit panel in the new maintenance bypass cabinet to be installed as part of this project. The existing 42-circuit, 208/120V, 100A panel fed from the existing UPS gear shall remain in place, powered by the new UPS equipment.

New UPS equipment to be installed shall be a double-conversion type 30kVA UPS supplied with a maintenance bypass in a separate cabinet that also contains a new, integral 42-circuit, 3-phase, 125A panel board. The new UPS equipment, including the new maintenance bypass cabinet shall be installed as indicated on the drawings. The basis for design was a 30kVA MGE Galaxy 3500 Series UPS system as manufactured by Schneider Electric. The new UPS equipment will basically be located in the same location as the existing GE-brand UPS and battery cabinet and be expected to fit with adequate clearance around as defined by the manufacturer and the National Electrical Code.

The new UPS installation also requires the installation of a new 125A circuit breaker to power the new UPS system as indicated on the drawings.

The cost of reconnecting each meter shall be included in the Contractor's original base contract price provided at the time of bidding.

Contractor shall confirm the effective operation of the existing Siemens-brand surge protection equipment in the incoming service panel, labeled as the 'MSB' panel, and the generator-fed emergency power panel, labeled as the 'EMDP' panel, both of which are located in the basement level of the Department of Public Safety building. If they are not connected or not connected properly, the contractor shall be required to fix the problem. If either surge protective device is not working because of defective component parts, the Contractor shall report on what is wrong and whether the surge protection equipment is repairable or why such equipment must be replaced. The cost of the anticipated repair(s) must be reported to the engineer and the owner for comparison to the total replacement cost in the established option pricing.

Contractor shall provide a fixed option price at the time of bidding for the replacement of the existing surge protective device in the existing 'MSB' panel and a separate fixed option price for the replacement of the existing surge protective device in the existing 'EMDP' panel. The price must be the installed price for each surge protective device. The option price for each must include all costs to fulfill all contract requirements included in these specifications for new equipment installations. These include, but are not limited to, the cost of owner training and an Operations and Maintenance Manual for each. The option pricing shall include a credit for the reconnection work already included in the base contract.

Contractor shall be responsible for scheduling and coordinating all necessary inspections and shall coordinate with all utilities prior to the work starting, including contacting underground locator services, ensuring that all power has been disconnected.

The Work shall include all temporary utility fees and permits including all surveying, layout and field engineering required for the performance of this work.

Contractor shall provide as-built information marked up on a set of contract drawings as well as 2 cds of PDF's for owners records.

Contractor shall provide clean up associated with the Contractors work and shall maintain the site free of debris or hazards during the construction process.

**EXHIBIT E**  
**TECHNICAL SPECIFICATIONS**

The following Specifications govern Contractor's performance of the Work:

**PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT REPLACEMENT PROJECT** Specifications are included in Appendix A of the Project Manual including appendices, addenda, and all other documents and specifications referenced therein and consist of the following:

DRAWINGS:

- T-101 TITLE SHEET
- E-101 LOWER AND FIRST LEVEL ELECTRICAL FLOOR PLANS
- E-102 ELECTRICAL ONE-LINE DIAGRAM AND DETAILS

SPECIFICATIONS:

INTRODUCTORY INFORMATION:

- 00005 CERTIFICATION PAGE
- 00010 TABLE OF CONTENTS

DIVISION 01 – GENERAL REQUIREMENTS:

- 01100 SUMMARY OF WORK
- 01320 – CONSTRUCTION PROGRESS DOCUMENTATION
- 01330 SUBMITTAL PROCEDURES
- 01700 PROJECT CLOSEOUT
- 01781 PROJECT RECORD DOCUMENTS

DIVISION 16 – ELECTRICAL:

- 16050 BASIC ELECTRICAL MATERIALS AND METHODS
- 16060 GROUNDING
- 16070 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
- 16075 IDENTIFICATION FOR ELECTRICAL SYSTEMS
- 16120 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLE
- 16121 CONTROL VOLTAGE ELECTRICAL POWER CABLES
- 16130 CONDUIT
- 16131 BOXES
- 16140 WIRING DEVICES
- 16150 EQUIPMENT WIRING
- 16611 SOLID STATE UNINTERRUPTIBLE POWER SUPPLY



**EXHIBIT F**  
**ENGINEER'S CERTIFICATION**

Engineer's Certification for this Project is included on page 1 of the TapanAm Associates, Inc.  
Bid Documents Technical Specifications dated December 19, 2012.

**EXHIBIT G**  
**CERTIFICATE OF CITY'S ATTORNEY**

I, the undersigned, the duly authorized and acting legal representative of The City of Riverside, Missouri, do hereby certify as follows:

I have examined the attached contract(s) and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have asserted full power and authority to execute said agreements on behalf of the respective parties named thereon; and that if all the information contained herein is true and correct, the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

\_\_\_\_\_  
City Attorney

Date: \_\_\_\_\_

**EXHIBIT H**



**NOTICE TO PROCEED**

DATE: \_\_\_\_\_  
PROJECT: **PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS)  
EQUIPMENT REPLACEMENT PROJECT**  
PROJECT NO.: \_\_\_\_\_  
RESOLUTION: R-\_\_\_\_\_ (approved \_\_\_\_\_)  
TO: Contractor: \_\_\_\_\_  
\_\_\_\_\_ (address)  
\_\_\_\_\_

You are hereby notified to commence work on or after the \_\_\_\_ day of \_\_\_\_\_, 2013 in accordance with the Agreement dated \_\_\_\_\_.

The work shall be substantially completed within seven (7) calendar days after delivery of the UPS equipment by the manufacturer or within sixty (60) calendar days after issuance of the Notice to Proceed, whichever comes first.

**CITY OF RIVERSIDE (Owner)**

BY: \_\_\_\_\_  
City Administrator

Receipt of the above NOTICE TO PROCEED is hereby acknowledged

BY: \_\_\_\_\_  
\_\_\_\_\_  
(Title)

this the \_\_\_\_ day of \_\_\_\_\_, 2013.



**EXHIBIT I**

AIA Application for Payment  
AIA Continuation Sheet for Application for Payment

**APPLICATION AND CERTIFICATION FOR PAYMENT**

TO OWNER:

PROJECT:

APPLICATION NO 0

PAGE ONE OF

PAGES

FROM CONTRACTOR:

VIA ARCHITECT:

PERIOD TO:

PROJECT NOS:

CONTRACT FOR:

CONTRACT DATE:

**CONTRACTOR'S APPLICATION FOR PAYMENT**

Application is made for payment, as shown below, in connection with the Contract Continuation Sheet, AIA Document G703, is attached.

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

1. ORIGINAL CONTRACT SUM \$
2. Net change by Change Orders \$ 0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2) \$ 0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) \$ 0.00
5. RETAINAGE:
  - a. % of Completed Work \$ 0.00  
(Column D + E on G703)
  - b. % of Stored Material \$  
(Column F on G703) Included in above  
Total Retainage (Lines 5a + 5b or Total in Column I of G703) \$ 0.00
6. TOTAL EARNED LESS RETAINAGE \$ 0.00  
(Line 4 Less Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate) \$ 0.00
8. CURRENT PAYMENT DUE \$ 0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE \$ 0.00  
(Line 3 less Line 6)

**ARCHITECT'S CERTIFICATE FOR PAYMENT**

In accordance with the Contract Documents, based on on-site observations and the data comprising the application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED .....\$

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: \_\_\_\_\_ Date: \_\_\_\_\_

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS	\$0.00	\$0.00
NET CHANGES by Change Order	\$0.00	

# Exhibit I - Application for Payment Continuation Sheet

## CONTINUATION SHEET

AIA DOCUMENT G703

PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing

APPLICATION NO:

Contractor's signed certification is attached.

APPLICATION DATE:

In tabulations below, amounts are stated to the nearest dollar.

PERIOD TO:

Use Column I on Contracts where variable retainage for line items may apply.

ARCHITECT'S PROJECT NO:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED (NOT IN D O R E)	G TOTAL COMPLETED AND STORED TO DATE (D+E+F)	H % (G ÷ C)	I BALANCE TO FINISH (C - G)	J RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD						
	<i>(Fill in &amp; break down contract values)</i>									
	<i>(Add any change order(s) descriptions)</i>									
	<b>GRAND TOTALS</b>	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0%	\$0.00	\$0.00

Users may obtain validation of this document by requesting of the license a completed AIA Document D401 - Certification of Document's Authenticity

**EXHIBIT J**  
**AFFIDAVIT OF COMPLIANCE WITH THE PREVAILING WAGE LAW**  
(to be completed at conclusion of project)

I, \_\_\_\_\_, upon being duly sworn upon my oath state that:

(1) I am the \_\_\_\_\_ of \_\_\_\_\_;

(2) all requirements of Section 290.210 to 290.340. RSMo, pertaining to the payment of wages to workers employed on public works projects have been fully satisfied with regard to this Contractor's work on **PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT REPLACEMENT PROJECT**;

(3) I have reviewed and am familiar with the labor standards provisions and prevailing wage rules established by the Missouri Department of Labor and Industrial Relations Division of Labor Standards;

(4) based upon my knowledge of these rules, including all occupational titles set out in the applicable regulations, I have completed full and accurate records clearly indicating:

(a) the names, occupations, and crafts of every worker employed by this Company in connection with this Project together with an accurate record of the number of hours worked by each worker and the actual wages paid for each class or type of work performed,

(b) the payroll deductions that have been made for each worker, and

(c) the amounts paid to provide fringe benefits, if any, for each worker;

(5) the amounts paid to provide fringe benefits, if any, were irrevocable paid to a trustee or to a third party pursuant to a fund, plan, or program on behalf of the workers;

(6) these payroll records are kept and have been provided for inspection to the authorized representative of the City of Riverside and will be available, as often as may be necessary, to such City and such other regulatory agencies as may be deemed necessary;

(7) such records shall not be destroyed or removed from the State of Missouri for one (1) year following the completion of Contractor's work on this Project;

(8) when in effect, the requirements of Sections 290.550 through 290.580 RSMo. Pertaining to excessive unemployment were fully satisfied; and

(9) there has been no exception to the full and complete compliance with the provisions and requirements of the wage orders applicable to the Agreement and Contract Documents.

The matters stated herein are true to the best of my information, knowledge, and belief. I acknowledge that the falsification of any information set out herein may subject me to criminal prosecution.

\_\_\_\_\_  
Contractor Signature

\_\_\_\_\_  
Printed Name

Subscribed and sworn to me this \_\_\_\_ day of \_\_\_\_\_, 2013.

\_\_\_\_\_  
Notary Public

My Commission expires:

**EXHIBIT K  
 CONTRACTOR AFFIDAVIT FOR FINAL PAYMENT  
 PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS)  
 EQUIPMENT REPLACEMENT PROJECT**

STATE OF \_\_\_\_\_ )  
 ) SS:  
 COUNTY OF \_\_\_\_\_ )

The Undersigned, \_\_\_\_\_ of lawful age, being first duly sworn, states under oath as follows:

1. I am the \_\_\_\_\_ of \_\_\_\_\_ who is the general CONTRACTOR on the above referenced project.
2. All payrolls, material bills, use of equipment and other indebtedness connected with the Work for this Project have been paid and all Claims of whatever nature have been satisfied, as required by the Contract.
3.  Prevailing wage does not apply; or  
 All provisions and requirements set forth in Chapter 290, Section 290.210 through and including 290.340, Missouri Revised Statutes, pertaining to the payment of wages to workmen employed on public works projects have been fully satisfied and there has been no exception to the full and complete compliance with these provisions and requirements and the Annual Wage Order contained in the Contract in carrying out the Contract and Work. CONTRACTOR has fully complied with the requirements of the prevailing wage law as required in the Contract and has attached affidavits from all Subcontractors on this Project, regardless of tier, affirming compliance with the prevailing wage law as stipulated in the Contract.
4. CONTRACTOR certifies that each Subcontractor has received full payment for its respective work in connection with the Contract.
5. This affidavit is made in behalf of the CONTRACTOR for the purpose of securing from the City of Riverside, Missouri, the certification of completion of the Project and receiving payment therefore.

CONTRACTOR

By \_\_\_\_\_  
 Title \_\_\_\_\_

On this \_\_\_\_ day of \_\_\_\_\_ before me appeared \_\_\_\_\_  
\_\_\_\_\_, to me personally known to be the \_\_\_\_\_  
of the \_\_\_\_\_, and who executed the foregoing  
instrument and acknowledged that (s)he executed the same on behalf of \_\_\_\_\_  
\_\_\_\_\_ as its free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on the  
day and year first above written.

\_\_\_\_\_  
Notary Public

My commission expires:

**EXHIBIT L**  
**ENGINEER/CONSULTANT'S CERTIFICATION**  
**For Acceptance and Final Payment**

**City of Riverside, Missouri**

**Project Name: PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS)  
EQUIPMENT REPLACEMENT PROJECT**

**Project No:** \_\_\_\_\_

**Contractor:** \_\_\_\_\_

**Engineer:** \_\_\_\_\_

**Contract Date:** \_\_\_\_\_

**Date of Completion and Acceptance:** \_\_\_\_\_

The Contractor has notified me that he has completed all work in accordance with the Contract Documents and that it is functioning properly.

I hereby certify that a final inspection of all work under the Contract Documents was conducted by me and to the best of my knowledge; the work has been completed in accordance with the drawings and specifications and is functioning properly.

I have approved all payment estimates, and prepared and received approval of all change orders. I have received the required certifications; instructions for operating the equipment, manuals, and other documents that are applicable to this project from the Contractor and have delivered them to the City.

The City is now responsible for the security, operation, safety, maintenance, and insurance as applicable to the project. The Contractor will warranty all specified work for a period of one (1) year (or a longer period if governed by Missouri Statutes) from this date of completion. Notification has been given to the proper Government agencies that the work is completed.

I recommend, under the provision of the Contract Documents that the Work be accepted and that final payment be made.

Executed by the Engineer on this \_\_\_\_\_ day of \_\_\_\_\_, 2013.

Signature: \_\_\_\_\_

Typed Name: \_\_\_\_\_

(SEAL)

The work described above accepted by the consultant is hereby acknowledged and final payment authorized.

\_\_\_\_\_  
Kathleen L Rose, Mayor

Date: \_\_\_\_\_

(SEAL)

Attest: \_\_\_\_\_

Robin Littrell, City Clerk

**EXHIBIT M**  
**REQUEST FOR INFORMATION FORM**

**City of Riverside, MO**

**RFI No.** \_\_\_\_\_ (To be completed by Project Manager)

**Bidder or Contractor:** \_\_\_\_\_

**Contract: PUBLIC SAFETY UNINTERRUPTIBLE POWER SUPPLY (UPS) EQUIPMENT  
REPLACEMENT PROJECT**

THIS REQUEST BY: \_\_\_\_\_ (Name of Bidder or Contractor's  
Representative)

Submitted to: Project Manager - Mike Shelton, Operations Support Director, Riverside Department of  
Public Safety, 2990 NW Vivion Road, Riverside, MO 64150

with a copy to: Engineer - Kenneth L. Diehl, TapanAm Associates, Inc., 201 West 135<sup>th</sup> Street, Kansas  
City, MO 64145

REFERENCE: DIVISION \_\_\_\_\_ SECTION \_\_\_\_\_ PLAN SHEET NO. \_\_\_\_\_

REQUEST: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ATTACHMENTS: \_\_\_\_\_  
\_\_\_\_\_

RESPONSE BY: \_\_\_\_\_ Date: \_\_\_\_\_  
(Name of the Engineer's/Project Manager's Representative)

RESPONSE: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ATTACHMENTS: \_\_\_\_\_

**SPECIAL NOTE (AFTER AWARD OF CONTRACT):** IF THE CONTRACTOR BELIEVES THIS INTERPRETATION OR CLARIFICATION JUSTIFIES AN INCREASE IN CONTRACT PRICE OR CONTRACT TIME, THE **CONTRACTOR** SHALL NOTIFY THE **PROJECT MANAGER** IN WRITING BEFORE PROCEEDING WITH THE WORK INVOLVED. FURTHER, IF THE **CONTRACTOR** IS AUTHORIZED BY THE **PROJECT MANAGER** TO PROCEED WITH THE WORK INVOLVED BEFORE FULL AGREEMENT IS REACHED ON WHETHER ANY INCREASES ARE DUE AT ALL, OR IF ANY DETERMINED TO BE DUE, ON THE EXTENT OF ANY SUCH INCREASES, THE **CONTRACTOR** SHALL FURNISH TO THE **PROJECT MANAGER** ACTUAL COST RECORDS ON A DAILY BASIS.



## **APPENDIX A**

See TapanAm Associates, Inc.  
Bid Documents  
Technical Specifications  
Dated December 19, 2012

**City of Riverside, Missouri  
Department of Public Safety**

**2990 NW Vivion Rd.  
Riverside, Missouri 64150**

**Bid Documents  
Technical Specifications**

**December 19, 2012**

**TapanAm Associates, Inc.**

201 West 135<sup>th</sup> Street  
Kansas City, Missouri 64145  
Phone (816) 941-6100  
Fax (816) 941-6102

## CERTIFICATION

I, Kenneth L. Diehl, hereby specify, in accordance with the Missouri Revised Statutes, Chapter 327, Section 327.411, that the documents to be authenticated by my seal are limited to:

### DRAWINGS:

- T-101 TITLE SHEET
- E-101 LOWER AND FIRST LEVEL ELECTRICAL FLOOR PLANS
- E-102 ELECTRICAL ONE-LINE DIAGRAM AND DETAILS

### SPECIFICATIONS:

#### INTRODUCTORY INFORMATION:

- 00005 CERTIFICATION PAGE
- 00010 TABLE OF CONTENTS

#### DIVISION 01 – GENERAL REQUIREMENTS:

- 01100 SUMMARY OF WORK
- 01320 CONSTRUCTION PROGRESS DOCUMENTATION
- 01330 SUBMITTAL PROCEDURES
- 01700 PROJECT CLOSEOUT
- 01781 PROJECT RECORD DOCUMENTS

#### DIVISION 16 – ELECTRICAL:

- 16050 BASIC ELECTRICAL MATERIALS AND METHODS
- 16060 GROUNDING
- 16070 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
- 16075 IDENTIFICATION FOR ELECTRICAL SYSTEMS
- 16120 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLE
- 16121 CONTROL VOLTAGE ELECTRICAL POWER CABLES
- 16130 CONDUIT
- 16131 BOXES
- 16140 WIRING DEVICES
- 16150 EQUIPMENT WIRING
- 16611 SOLID STATE UNINTERRUPTIBLE POWER SUPPLY

By: \_\_\_\_\_

*Kenneth L. Diehl*  
Kenneth L. Diehl



12-19-12

## TABLE OF CONTENTS

Division .....	Section Title.....	Pages
INTRODUCTORY INFORMATION		
00005 .....	CERTIFICATION PAGE .....	1
00010 .....	TABLE OF CONTENTS .....	1
DIVISION 01 – GENERAL REQUIREMENTS		
01100 .....	SUMMARY OF WORK.....	3
01320 .....	CONSTRUCTION PROGRESS DOCUMENTATION.....	3
01330 .....	SUBMITTAL PROCEDURES .....	6
01700 .....	PROJECT CLOSEOUT .....	5
01781 .....	PROJECT RECORD DOCUMENTS .....	3
DIVISION 16 - ELECTRICAL		
16050 .....	BASIC ELECTRICAL MATERIALS AND METHODS.....	5
16060 .....	GROUNDING.....	3
16070 .....	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS.....	2
16075 .....	IDENTIFICATION FOR ELECTRICAL SYSTEMS.....	8
16120 .....	LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLE.....	3
16121 .....	CONTROL VOLTAGE ELECTRICAL POWER CABLES.....	9
16130 .....	CONDUIT .....	4
16131 .....	BOXES.....	3
16140 .....	WIRING DEVICES .....	4
16150 .....	EQUIPMENT WIRING .....	2
16611 .....	SOLID STATE UNINTERRUPTIBLE POWER SUPPLY .....	18

## SECTION 01100

### SUMMARY OF WORK

#### PART 1 - GENERAL

##### 1.1 PROJECT IDENTIFICATION

###### A. Project Name and Location:

Replace Existing Uninterruptible Power Supply(UPS) Equipment  
City of Riverside, Missouri – Department of Public Safety  
2990 NW Vivion Road  
Riverside, Missouri 64150

###### B. Project Summary Description: The project includes but is not limited to the following Work

The contractor shall provide and deliver all labor, supervision, transportation, equipment and materials and assure effective and economical completion of services specified by this contract, drawings and specifications.

A summary of the work included in this contract is as follows. As this summary clearly does not address all details of the work to be completed, the contractor must refer to the remainder of the project specifications and the project drawings for the complete scope of work.

The contractor must remove the existing 30kVA, GE-brand UPS gear and the associated battery cabinet in the building occupied by the City of Riverside Department of Public Safety at the location indicated on the drawings. The existing UPS equipment including the existing batteries and battery cabinet will be turned over to the City of Riverside for proper disposal. Except for the scheduled downtime period while the temporary connection to regular utility power is being completed, the equipment powered through the existing UPS gear must remain up and running during the entire UPS replacement process using regular utility power that currently has generator backup. This will require that the existing 42-circuit, 208/120V, 100A panel, labeled as the 'EUPS' panel, and the sub-fed, single-phase panel next to it, labeled as the 'EUPS2 panel, must be connected to regular utility power while the new UPS equipment, defined on the drawings, is permanently installed. Connecting this existing 42-circuit panel directly to utility power requires that it be directly connected to the existing 175A circuit breaker that provides power to the existing UPS gear. During the UPS equipment replacement process, the 120V circuits currently fed from the existing sub-fed panel will be re-circuited and permanently powered from the new 42-circuit panel in the new maintenance bypass cabinet to be installed as part of this project. The existing 42-circuit, 208/120V, 100A panel fed from the existing UPS gear shall remain in place, powered by the new UPS equipment.

The new UPS equipment to be installed will be a double-conversion type 30kVA UPS supplied with a maintenance bypass in a separate cabinet that also contains a new, integral 42-circuit, 3-phase, 125A panelboard. The new UPS equipment, including the new maintenance bypass cabinet shall be installed as indicated on the drawings. The basis for design was a 30kVA MGE Gal-

axy 3500 Series UPS system as manufactured by Schneider Electric. The new UPS equipment will basically be located in the same location as the existing GE-brand UPS and battery cabinet and be expected to fit with adequate clearance around as defined by the manufacturer and the National Electrical Code. The new UPS installation also requires the installation of a new 125A circuit breaker to power the new UPS system as indicated on the drawings.

The scope of work also includes instructions to the electrical contractor to confirm the operation of the existing Siemens-brand surge protection equipment in the incoming service panel, labeled as the 'MSB' panel, and the generator-fed emergency power panel, labeled as the 'EMDP' panel, both of which are located in the basement level of the Department of Public Safety building. If they are not connected or connected properly, the contractor will be required to fix the problem. The cost of reconnecting each meter must be included in the contractor's original base contract price provided at the time of bidding.

If either surge protective device is not working because of defective component parts, the electrical contractor will be required to report on what is wrong and whether the surge protection equipment is repairable or why he/she feels either must simply be replaced. The cost of the anticipated repair(s) must be reported to the engineer and the owner for comparison to the total replacement cost in the established option pricing.

The contractor must provide a fixed option price at the time of bidding for the replacement of the existing surge protective device in the existing 'MSB' panel and a separate fixed option price for the replacement of the existing surge protective device in the existing 'EMDP' panel. The price must be the installed price for each surge protective device. The option price for each must include all costs to fulfill all contract requirements included in these specifications for new equipment installations. These include but are not limited to the cost of owner training and an Operations and Maintenance Manual for each. The option pricing must also include a credit for the reconnection work already included in the base contract.

Contractor bids will be evaluated based on total price submitted for the base contract work plus the value of both option prices.

C. The project was designed by:

TapanAm Associates, Inc.  
201 West 135<sup>th</sup> Street  
Kansas City, Missouri 64145  
816-941-6100 general office

The TapanAm representatives are:

Ken Diehl, Director of Mechanical and Electrical Engineering  
816-595-7104  
816-255-6992 cell  
816-941-6102 fax  
[kdiehl@tapanam.com](mailto:kdiehl@tapanam.com)

Jeremy Rogers, Senior Electrical Engineer  
816-595-7112  
816-941-6102 fax

[jrogers@tapanam.com](mailto:jrogers@tapanam.com)

1.2 SCHEDULE OF OWNER-FURNISHED PROPERTY OR EQUIPMENT

- A. There will be no owner-furnished property or equipment.

1.3 MISCELLANEOUS PROVISIONS

- A. Work under this contract that requires the extension of existing conditions shall correspond in all respects with the existing conditions to which it connects, or to similar existing conditions, in materials, workmanship and finish.
- B. Alterations to Existing Conditions: Existing conditions shall be cut, drilled, removed, temporarily removed, or removed and replaced, as necessary for performance of work under the contract.
1. Replacements of existing conditions that are removed shall match similar existing conditions.
  2. Unless otherwise indicated, existing structural members shall not be cut or altered
- C. Existing structures will remain in place. See drawings for specific areas of demolition.
- D. Conditions remaining in place, which are damaged or defaced during the performance of the work, shall be restored to the condition existing at the time of the award of contract.
- E. Discolored or unfinished surfaces exposed by the removal of existing conditions that will be final exposed surfaces shall be refinished or replaced as necessary to produce uniform and harmonious contiguous surfaces. Work out of alignment where exposed by removal of existing work shall be called to the engineer's and owner's attention. Necessary corrective work directed by the owner and engineer will be subject to an adjustment of the contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01100

## SECTION 01320

### CONSTRUCTION PROGRESS DOCUMENTATION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This section defines the requirements for a construction progress schedule to be completed and submitted to the owner and engineer for approval prior to the start of construction. The schedule will include entries for shop drawing and product data submittal preparation and review, lead times for equipment and material deliveries as well as discrete construction tasks.

##### 1.2 CONSTRUCTION PROGRESS SCHEDULING

- b.A. Construction Schedule: Prepare and submit for approval, a CPM construction schedule that includes entries for discrete, individual shop drawing and product submittal preparation and review by the project engineer, lead times for equipment and material deliveries as well as discrete construction tasks. Submit the required construction schedule to the project engineer for review within 7 calendar days after the date established for commencement of the contract.
- B. Provide a separate construction activity entry for each significant construction activity.
  - 1. Coordinate each element on the schedule with other construction activities. Schedule each construction activity in proper sequence.
  - 2. Within each construction activity's time bar, indicate estimated completion percentages in not more than 10 percent increments and, as work progresses, place marks in the bars to indicate actual completion percentages.
  - 3. Schedule shall be time-scaled in not more than weekly increments, with the dates of the first day of each week indicated.
  - 4. Identify the cost, or value, of each schedule entry identifying a demolition task, an installation task or material/equipment delivery to the project site that significantly precedes the installation of that material or equipment. As work progresses, show dollar volume of work performed or completed as of the dates used for applications for progress payment.
  - 5. Include the date of the Notice to Proceed and Contract Award and the estimated completion date based on the performance time stated in the contract.
  - 6. The construction schedule shall always include the date on which the schedule is submitted or re-submitted and must always be historically correct up to the date on the schedule.
  - 7. Updating: Revise the schedule after each event or activity that causes a significant change in the planned progress of the work. Highlight or otherwise emphasize revisions for ease of identification.



8. Distribution: Following the approval of the construction schedule by the owner and engineer, make any required corrections and distribute electronically, using a color .pdf file, to the designated owner's representative and project engineer. Distribute any revisions of the schedule in the same manner.
9. Phasing: Arrange schedule to show how sequence of work is affected by requirements for, continued occupancy and operation, non-interruptible services, site restrictions, seasonal variations, environmental control, and similar provisions of the project.
10. Individual Work Stages: Show significant stages for each category or unit of work, including where applicable, but not necessarily limited to, submittals, purchases, fabrication, deliveries, installation, testing, adjusting, curing, start-up and placement into final use and operation.

### 1.3 WEEKLY CONSTRUCTION PROGRESS SCHEDULE UPDATES

- A. Contractor shall update the construction progress schedule in one (1) week increments throughout the entire construction period. The schedule updates shall be made historically correct each time. Tasks, or entries, shall be added to the schedule when applicable such as to address unforeseen conditions, modifications to the scope of work by the owner, etc. Copies shall be forwarded electronically in a .pdf format to the owner and engineer.

### 1.4 NOT USED

### 1.5 NOT USED

### 1.6 SCHEDULE OF INSPECTIONS AND TESTS

- A. Prepare and submit a schedule of inspections, tests and similar services required by the contract documents within seven(7) calendar days after the date established for commencement of the contract.
- B. Coordinate the schedule of inspections and tests with the construction progress schedule and other related documents as well as the owner's schedule and operational requirements.
- C. Distribution: Submit copies of the schedule of inspection and tests to the owner and engineer for acceptance and approval.

### 1.7 REPORTS

- A. Field Correction Reports: When the need to take corrective action requires a departure from the contract document requirements, prepare a detailed report. Include a statement describing the problem and recommended changes. Indicate the reasons why the contract documents cannot be followed. Submit a copy to the owner and engineer for approval.
- B. Unusual Event Reports: When an event of an unusual and significant nature occurs at the site, prepare a detailed report. List the chain of events, persons participating, response of the

contractor personnel, evaluation of the results or effects, and other pertinent information. Submit a copy to the owner and engineer immediately.

B. PRODUCTS (Not applicable)

C. EXECUTION (Not applicable)

END OF SECTION 01320

## SECTION 01330

### SUBMITTAL PROCEDURES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This section includes certain administrative and procedural requirements for shop drawings, product data, coordination drawings, schedules, samples and certain other quality assurance submittals.
- B. This section does not include requirements for the following submittals:
  - 1. As-built and record documents.
  - 2. Operation, maintenance and instruction manuals.
  - 3. Construction progress schedules.
- C. For clarity purposes, shop drawings, coordination drawings and schedules are further categorized as follows:
  - 1. Shop drawings include drawings and schedules specifically prepared for the project, except for coordination drawings.
  - 2. Coordination drawings.
  - 3. Product data includes manufacturer's standard catalogs, pamphlets and other printed materials that includes, but is not limited to, the following:
    - a. Product specifications.
    - b. Installation instructions.
    - c. Color charts.
    - d. Catalog cuts.
    - e. Rough-in diagrams and templates.
    - f. Wiring diagrams.
    - g. Performance curves.
    - h. Operational range diagrams.
    - i. Mill reports.
- D. Samples may include samples of such scale to allow delivery for review, as well as field samples or mock-ups of full-size physical examples erected on-site or elsewhere, or establish a true-scale standard by which the corresponding work will be judged or a standard for compliance testing.
- E. Other quality assurance submittals include materials specifically prepared for the project, except drawings and schedules, and include but are not limited to the following:
  - 1. Design data and calculations.
  - 2. Certifications of compliance or conformance.
  - 3. Manufacturer's instructions and field reports.

## 1.2 GENERAL SUBMITTAL REQUIREMENTS

- A. The review, by the engineer, of shop drawings, product data, coordination drawings, samples and certain other quality assurance submittals will take up to ten(10) working days following the receipt of the submittal. The contractor must allocate ten(10) working days in their schedule following the engineer's receipt of a submittal for the review and return of it.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities in accordance with the construction progress schedule. Submittals shall be transmitted to the project engineer in a timely manner consistent with the construction progress schedule. Transmit each submittal sufficiently in advance of the scheduled performance of related construction activities to avoid delaying the work, allowing time for the engineer's review.
  - 1. Coordinate each submittal with other submittals and related activities that require sequential scheduling, to allow for testing, purchase, fabrication and product delivery in a timely manner.
  - 2. Schedule transmittal of different categories of submittals for the same element of work and for different elements of related parts of the work at the same time.
  - 3. Allow sufficient time for a submittal review, possible corrections following the initial review and the re-submittal review before activities are scheduled that involve the work or products addressed in the submittal.
  - 4. Any resubmission required after the initial review shall be made within seven(7) calendar days after return of the initial submittal.
  - 5. The general contractor is responsible for reviewing each shop drawing, product data submittal, coordination drawing, sample and certain other quality assurance submittals to confirm, prior to submitting it to the engineer, that it is relevant to the work defined in the project documents; that it appears to conform to the drawing and specification requirements; that the model number of what is to be supplied is clearly identified; that the size and capacity of what is to be supplied is clearly marked; that the materials of construction, when a choice is possible, are clearly marked; and that all voltages, when applicable, for the product to be supplied are clearly identified. The general contractor must stamp each submittal, prior to forwarding it to the engineer, to indicate that this preliminary review has occurred.
  - 6. Submittals which are determined to be incomplete or otherwise substandard will be returned to the contractor with no further review. Delays due to incomplete or rejected submittals will not be excused.
  - 7. Construction on any particular portion of the project will not be allowed to proceed if the submittals for the work, materials or equipment involved are not approved by the engineer in advance.
  - 8. The contractor is completely responsible for any costs, including that for additional manpower or expedited delivery, that result from his or her failure to forward the required submittals to the engineer for the project or any portion of the project in a timely manner.
  - 9. Maintain at least one(1) copy of each approved submittal data the project site, available for reference.
- C. Submittal Preparation: Identify and prepare drawings and samples as specified below. Each submittal, including samples, must be labeled with the following information:
  - 1. Project name and project number, if applicable.
  - 2. The date of the submittal.
  - 3. Name, address and telephone number of firm or entity that prepared the submittal.

4. Name and address of the general contractor.
  5. Name of the manufacturer.
  6. Number and title of appropriate specification section.
  7. Drawing number and detail references, as appropriate.
- D. Each submittal must include the blank space on paper necessary to allow the engineer space for their approval stamp. The space required is approximately 4 by 5 inches.
- E. Submittal Transmittal: Package each submittal for transmission and handling. Transmit each submittal from the contractor to the engineer by use of a transmittal form. Minimally include the following information on the transmittal form.
1. Project name and project number, if applicable.
  2. The date of the submittal.
  3. Destination (To:).
  4. Source (From:).
  5. Names of subcontractors, manufacturers and suppliers, involved, as applicable.
  6. Category of submittal.
  7. Description of submittal
  8. Number and title of appropriate specification section.
  9. Submittal number, including means to separately identify initial submittal and each resubmittal.
  10. Certification by general contractor stating that submittal complies with the contract documents, or statement of deviations from the requirements of the contract documents including minor variations and limitations. Deviations may be listed on an attached sheet referenced on the transmittal form. The reason for any deviations must be identified.
  11. Signature of transmitter.
- D. Submittal Register: Contractor shall maintain a submittals log for all submittals made throughout the entire project. Contractor shall review the submittals log at each weekly progress meeting.

### 1.3 SHOP DRAWINGS AND COORDINATION DRAWINGS

- A. Submit originally prepared information, drawn accurately to scale. Do not reproduce contract documents as the basis for shop drawings and coordination drawings.
- B. Minimally include the following information on shop drawings and coordination drawings:
1. Dimensions.
  2. Identification of products and materials.
  3. Compliance with specified standards.
  4. Notation of coordination requirements.
  5. Notation of dimensions established by field measurements, if any.
  6. Highlighted or encircled deviations from the contract documents, if any.
- C. Sheet size: Except for templates, patterns and similar full-size drawings, submit shop drawings and coordination drawings on sheets of at least 8-1/2 by 11 inches.

- D. Submittals: Unless otherwise indicated, submit one correctable, translucent, reproducible print and four(4) blue-line or black-line prints of each drawing submittal. The reproducible print and three(3) copies of the blue-line or black-line prints will be marked with action taken and returned
- E. All approved shop drawings and coordination drawings shall be included in the final record document submittal at project closeout.

#### 1.4 PRODUCT DATA

- A. Collect product data into a single submittal for each system or element of construction. Mark each copy to show specific product choices and options applicable to the project. Product data submittals shall include the following information, where applicable:
  - 1. Manufacturer's printed recommendations.
  - 2. Compliance with recognized trade association standards.
  - 3. Compliance with recognized testing standards.
  - 4. Applicability of testing agency labels and seals.
  - 5. Notation of dimensions verified for fit by field measurements.
  - 6. Notation of coordination requirements.
- B. Submittals: Unless otherwise indicated, submit five(5) copies of each product data submittal. Submittals will be marked with action taken and four(4) copies will be returned to the contractor.
- C. All approved product data submittals shall be included in the final record document submittal at project closeout.

#### 1.5 SAMPLES

- A. Submit full-size, fully fabricated samples, cured and finished in the manner specified. Samples shall be physically identical to the material or product proposed for use.
- B. Mount, display, or package samples to facilitate review of kind, color, pattern, texture and other qualities indicated, as a final check of these characteristics with other elements and for comparison of these characteristics with those of the actual component delivered and installed.
- C. Where variation in color, pattern, texture or other characteristic is inherent in the material or product, submit at least three(3) multiple units that show approximate limits of the variations.
- D. Refer to other specification sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operations and similar construction characteristics.
- E. Refer to other specification sections for samples to be returned to the contractor for incorporation in the work. Such samples must be in undamaged condition at time of use.
- F. Submittals: Unless otherwise indicated and except for field samples or mock-ups of full-size physical examples erected on-site or elsewhere, submit not less than 3 sets of each sample

submittal. One copy will be marked with action taken and returned. Comply with requirements in the individual specification section for field samples and mockups.

#### 1.6 OTHER QUALITY ASSURANCE SUBMITTALS

- A. Submit other quality assurance submittals in compliance with requirements in the individual specification sections.
- B. Certifications: Submit certifications from the party certifying compliance with specified requirements. Certifications shall be signed by an officer or other individual authorized to sign documents on behalf of the company certifying compliance.
  - 1. Where feasible, and/or where required by other sections of specification indicate compliance with the specified standard by means of a label on the container, or on an inconspicuous place on the product.

#### 1.7 REVIEW ACTION ON SUBMITTALS

- A. Except for submittals for the record or for information or for another purpose where no action and return is required, the engineer will review submittals and mark returned copies to indicate action taken or action required..
- B. No matter what review action is taken or indicated on a submittal by the engineer, final acceptance of the project will depend on full compliance with the contract documents.
- C. Submittals that do not contain an appropriate marking of approval by the engineer shall not be used for construction.
- D. Action Stamp: Each submittal will be stamped with a uniform action stamp. The stamp shall be marked to indicate one of the following actions taken:
  - 1. Final Unrestricted Release: Where marked "Approved," the work covered by the submittal may proceed, provided it complies with the requirements of the contract documents, unless specifically noted otherwise.
  - 2. Final But Restricted Release: Where marked "Approved-As-Noted," the work covered by the submittal may proceed, provided it complies with the notations or corrections on the submittal and with the requirements of the contract documents.
  - 3. Return for Resubmittal: Where marked "Not Approved, Revise and Resubmit", do not proceed with the work covered by the submittal, including purchasing, fabrication, delivery or any other activity. Revise or prepare a new submittal according to the notations on the submittal or on the return transmittal. Resubmit without delay, repeating as necessary to obtain a final release action mark.
  - 4. No Action: Where a submittal is for the record or for information or for another purpose not requiring review action, the submittal may not be returned or may be returned and marked "Action Not Required."

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01330



## SECTION 01700

### PROJECT CLOSEOUT

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This section includes administrative and procedural requirements for the contract closeout including, but not limited to, the following:
  - 1. Inspection procedures.
  - 2. Substantial completion
  - 3. Final Cleaning
  - 4. Final acceptance.
- B. Closeout requirements for specific construction activities are included in the individual sections in Divisions 2 through 16.
- C. Substantial completion is defined as that state when the contractor has complied with the contract requirements, except for minor deviations, and the project is sufficiently complete and capable of being occupied and used by the owner for the intended purpose.

##### 1.2 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting an inspection to confirm substantial completion, the contractor must have completed or be in compliance with the following items:
  - 1. Provide supporting documentation for completion, as indicated elsewhere in the contract documents.
  - 2. Work items in the contract can only be incomplete at substantial completion if they do not prevent the owner from occupying and using the space and equipment provided for in the contract for the intended purpose. At substantial completion, submit a list of work items that are incomplete to the owner and engineer, provide a complete explanation of the reasons why this work is incomplete, the reasons why any incomplete portion of the project that exists will not keep the owner from their full use of the space and a list of all equipment involved and the value of incomplete construction.
  - 3. Obtain and submit releases enabling the owner unrestricted use of the work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 4. Submit Operation and Maintenance Manuals in accordance with this specification section to the engineer for review and approval. Provide three complete, identical copies.
  - 5. Make final changeover of any permanent locks and transmit all keys and security codes to the owner.
  - 6. Complete startup testing of systems and provide detailed instructions in person to the owner's representative on how to operate and maintain all equipment as well as maintain all materials furnished and installed in this contract. The written instructions on how to operate and

maintain all equipment as well as maintain all materials shall be provided in the required Operation and Maintenance Manuals as defined in this specification section. Once approved by the engineer, two(2) complete copies of the approved Operation and Maintenance Manuals shall be furnished to the City of Riverside personnel.

7. At substantial completion, discontinue use of and remove temporary facilities from the site, along with mockups, construction tools and similar elements.

B. Inspection Procedures: On receipt of the contractor's request for an inspection to confirm substantial completion, the engineer and owner's representative will either proceed with the inspection or advise the contractor that substantial completion has not been achieved, as defined in this specification section, because of incomplete construction or equipment not provided. The engineer and owner will notify the contractor in writing of their substantial completion following the final inspection or advise the contractor of construction that must be completed or corrected to be in compliance with the requirements for substantial completion. If the contractor is determined to be substantially complete, a list of defects and omissions in the completed construction, in the form of a written punch list, will be provided to the contractor. Correcting and completing all defects and omissions in the punch list is required for final completion of the contract work. The contractor must advise the owner and engineer when it is believed that the work associated with all punch list items has been completed. A final inspection by the engineer and owner's representative, with the contractor's representative present, will determine if the work associated with all punch list items has been properly and completely addressed and therefore no defects or omissions are known to remain. Final acceptance will be granted to the contractor once all construction is believed, by all parties involved, to have been completed and no defects and omissions are known to exist.

1. The engineer and owner will repeat the final inspection when requested and when assured that the work is believed to be complete and any and all remaining punch list items are believed to have been fully addressed.
2. Results of the completed final inspection will form the basis of the requirements for final acceptance.
3. Items that are not included on the punch list will not relieve the contractor from performing all work required in accordance with the contract documents.

### 1.3 FINAL ACCEPTANCE

A. Upon Final Acceptance by the owner and engineer, submit the following:

1. The final payment request with a release of claims and all supporting documentation not previously submitted and accepted.
2. An updated final statement, accounting for final additional changes to the contract price.
3. A certified copy of the list of defects and omissions, the punch list, on which the engineer and owner formally recognize that the contractor has completed or corrected to their satisfaction. The certified copy of the list shall be that copy on which the engineer has initialed each item with the date that the engineer and owner observed that the contractor had completed or otherwise resolved each punch list item to their satisfaction. The certified copy shall include the endorsement of the contractor.
4. Specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
5. As-built documents and similar final record information.

6. Deliver any tools, spare parts, extra stock and similar items purchased under the contract by the owner to the owner and store as directed by the owner's representative.
  7. Complete final clean-up requirements including touch-up painting of marred surfaces.
- B. Re-inspection Procedure: The engineer will re-inspect the work upon receipt of notice from the contractor that the work that punch list items from earlier inspections, have been completed or corrected.
1. Upon completion of re-inspection, the engineer will notify the contractor of final acceptance or will advise the contractor of work that is incomplete or of obligations that have not been fulfilled.
  2. If necessary, the re-inspection process will be repeated.
- C. Contractor's Responsibility for Re-Inspection Following Substantial Completion: If the final completion or acceptance is delayed for more than thirty(30) calendar days following substantial completion through no fault of the owner or the engineer, the contractor shall be responsible for any additional costs associated with re-inspections.

#### 1.4 OPERATION AND MAINTENANCE MANUALS

- A. Organize operation and maintenance data in suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 2-inch to 4-inch, 3-ring, D-ring vinyl-covered binders, with pocket folders for folded sheet information. Manuals shall have a table of contents and be assembled to conform to the table of contents with tab sheets identifying each subject. The words "Operation and Maintenance Manual", the project name, name and location of the building, and contract number shall be marked on front and spine of each binder. Include the following types of information.
1. Emergency instructions.
  2. Emergency contact names and telephone numbers.
  3. Name, address, and telephone number of each subcontractor who installed systems, and local representative for each system.
  4. Spare parts lists.
  5. Copies of warranties(two originals minimum, remainder may be copies).
  6. Wiring and control diagrams with data to explain detailed operation and control of each component.
  7. Copies of approved certifications and laboratory test reports.
  8. Inspection and testing procedures.
  9. Shop drawings and product data.
  10. Operation, maintenance, and patching instructions.
  11. Fixture lamping schedule.
  12. Other pertinent data applicable to the operation and maintenance of particular systems and other data specified in the technical sections of the specifications.
- B. Submittal: Provide owner with **two(2)** copies of the Operation & Maintenance manuals prior to the time of requesting inspection for substantial completion.

#### PART 2 - PRODUCTS (Not Applicable)

## PART 3 - EXECUTION

### 3.1 CLOSEOUT PROCEDURES

- A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the City of Riverside's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following:
1. Maintenance manuals.
  2. As-built documents.
  3. Spare parts and materials.
  4. Tools.
  5. Lubricants.
  6. Fuels.
  7. Identification systems.
  8. Control sequences.
  9. Cleaning.
  10. Warranties and bonds.
  11. Maintenance agreements and similar continuing commitments.
- B. As part of instruction for operating equipment, demonstrate the following procedures:
1. Startup.
  2. Shutdown.
  3. Emergency operations.
  4. Noise and vibration adjustments.
  5. Safety procedures.
  6. Economy and efficiency adjustments.
  7. Effective energy utilization.
- C. Upon completion of the instruction, obtain written acknowledgment from all attendees that the required instruction was completed, and forward one(1) copy to the engineer.

### 3.2 FINAL CLEANING

- A. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial cleaning and maintenance program. Comply with manufacturer's instructions.
1. Complete the following cleaning operations before requesting inspection for Final Acceptance.
    - a. Remove labels that are not permanent labels.
    - b. Clean transparent materials, including mirrors and glass in doors and windows. Removing glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

- c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Clean hard surfaced floors with broom and wet mop. Vacuum carpeted surfaces and similar soft surfaces.
  - d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
  - e. Clean the site/construction area, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean, and remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.
  - f. Remove debris and surface dust from limited-access spaces including roofs, plenums, shafts, equipment vaults, and similar spaces.
- B. Removal of Protection: Remove temporary protection and facilities installed for the protection of the Work during construction.
- C. Compliance: Comply with the regulations of authorities having jurisdiction and with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Government property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of it lawfully.

END OF SECTION 01700

## SECTION 01781

### PROJECT RECORD DOCUMENTS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This section includes administrative and procedural requirements for the project record documents. The required project record documents include the following:
1. Marked-up copies of contract drawings clearly identifying the as-built condition.
  2. Marked-up copies of Shop Drawings identifying the as-built condition.
  3. Additional drawings and sketches necessary to indicate and explain the extent of as-built condition.
  4. Marked-up copies of specifications, addenda and change order documentation as required to indicate and explain the as-built condition.
  5. Marked-up product data submittals.
  6. Record samples.
  7. Field records for variable and concealed conditions.
  8. Record information on work that is recorded only schematically.
- B. Maintenance of Documents and Samples: Update the sets of record documents with as-built conditions as changes occur throughout the project. Maintain record documents in good order and in a clean, dry and legible condition. Make documents and samples available at all times for the engineer and owner to inspect and review.

##### 1.2 RECORD DRAWINGS

- A. Markup Procedure: During construction, maintain a set of black-line prints of the contract drawings, shop drawings and coordination drawings for project record document purposes.
1. Mark these drawings to show the actual installation where the installation varies from the installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include, but are not limited to, the following:
    - a. Dimensional changes to the drawings.
    - b. Revisions to details shown on the drawings.
    - c. Depths of foundations below the first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduit.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Duct size and routing.
    - i. Locations of concealed internal utilities.
    - j. Changes made by change order or construction change directives.

- k. Changes made following the engineer's written orders.
    - 1. Details not on original contract drawings.
  - 2. Mark record prints of contract drawings, shop drawings and coordination drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where shop drawings are marked, show cross-reference to them on the contract drawings, as applicable.
  - 3. Mark record sets with red erasable colored pencil. Use other colors to distinguish between changes for different categories of the work at the same location.
  - 4. Mark important additional information that was either shown schematically or omitted from original drawings.
  - 5. Note alternate numbers, change order numbers, and similar identifications.
- B. Responsibility for Markup: The individual, installer, subcontractor or other entity who obtained the record data shall prepare the markup on record drawings.
- 1. Accurately record information in an understandable drawing technique.
  - 2. Record data as soon as possible after obtaining it. Record and check the markup prior to enclosing concealed installations.
- C. Copies and Distribution: Prior to final acceptance, review completed marked-up record drawings with the engineer. Include appropriate identification, including titles, dates, and other information on the cover sheets.
- 1. Organize and bind original marked-up set of prints that were maintained during the construction period.
  - 2. Organize original record documents into sets matching the print sets.
  - 3. Submit the marked-up record set, and copies sets to the engineer..

### 1.3 RECORD PRODUCT DATA

- A. During the construction period, maintain one copy of each product data submittal for project record document purposes.
- 1. Mark product data to indicate the actual product installation where the installation varies from that indicated in product data submitted. Include significant changes in the product delivered to the site and changes in manufacturer's instructions and recommendations for installation.
  - 2. Give particular attention to information about concealed products and installations that cannot be readily identified and recorded later.
  - 3. Note related change orders and markup of record drawings, where applicable.
  - 4. Upon completion of markup, submit a complete set of record product data to the engineer.
  - 5. Where record product data is required as part of maintenance manuals, submit marked-up product data as an insert in the manual instead of submittal as record product data.

### 1.4 RECORD SAMPLE SUBMITTAL

- A. Immediately prior to substantial completion, the contractor shall meet with the engineer at the site to determine which of the samples maintained during the construction period shall be transmitted to the owner for record purposes.

## 1.5 MISCELLANEOUS RECORD SUBMITTALS

- A. Refer to other specification sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Prior to final acceptance, complete miscellaneous records and place in good order, properly identified and bound or otherwise organized to allow for use and reference.
- B. Submit to the engineer.
- C. Miscellaneous records include, but are not limited to, the following:
  - 1. Field records on excavations and foundations.
  - 2. Field records on underground construction and similar work.
  - 3. Survey showing locations and elevations of underground lines.
  - 4. Invert elevations of drainage piping.
  - 5. Surveys establishing building lines and levels.
  - 6. Authorized measurements utilizing unit prices or allowances.
  - 7. Ambient and substrate condition tests.
  - 8. Certifications received in lieu of labels on bulk products.
  - 9. Batch mixing and bulk delivery records.
  - 10. Electrical and electronic circuiting details dependent upon actual equipment used.
  - 11. Testing and qualification of tradespersons.
  - 12. Load and performance testing.
  - 13. Inspections and certifications by governing authorities.
  - 14. Leakage and water-penetration tests.
  - 15. Fire-resistance and flame-spread test results.
  - 16. Final inspection and correction procedures.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01781



## SECTION 16050

### BASIC ELECTRICAL MATERIALS AND METHODS

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Electrical equipment coordination and installation
- B. Sleeves for raceways and cables.
- C. Sleeve seals.
- D. Common electrical installation requirements.

##### 1.2 REFERENCES

- A. NFPA 70 - National Electrical Code; National Fire Protection Association.
- B. Documents referenced in the specifications are intended to refer the latest edition of the standard or document in force at the time of design completion.

##### 1.3 SUBMITTALS

- A. Product data for each type of product indicated.

##### 1.4 QUALITY ASSURANCE

- A. Test Equipment Suitability and Calibration: Comply with NETA ATS, "Suitability of Test Equipment" and "Test Instrument Calibration."

##### 1.5 COORDINATION

- A. Coordinate arrangement mounting, and support of electrical equipment:
  - 1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
  - 2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
  - 3. To allow right of way for piping and conduit installed at required slope.
  - 4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.
- B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

- C. Coordinate location of access panels and doors for electrical items that are behind
- D. Coordinate electrical testing of electrical, mechanical, and architectural items so equipment systems

## 1.6 DEFINITIONS

- A. ATS: Acceptance Testing Specifications
- B. EPDM: Ethylene-propylene-diene terpolymer rubber.
- C. NBR: Acrylonitrile-butadiene rubber.

## PART 2 - PRODUCTS

### 2.1 SLEEVES FOR RACEWAYS AND CABLES

- A. Steele Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40 Galvanized steel, plain ends.
- B. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.0785 (14-gauge) or 0.1382 (10-gauge) inch thickness as indicated and of length to suit application.
- C. Coordinate sleeve selection and application with selection and application of firestopping.

### 2.2 SLEEVE SEALS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
  - 1. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of cable or conduit. Include type required based on the fire rating of the wall or floor being penetrated.
  - 2. Pressure plates: Stainless steel, two for each sealing element.
  - 3. Connecting Bolts and Nuts: Stainless Steel of length required to provide pressure to sealing elements.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Contractor is responsible to verify existing conditions prior to beginning work.

### 3.2 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION.

- A. Comply with NECA National Electrical Installation Standards (NEISs).
- B. Measure indicated mounting heights to bottom of unit for suspended items and to enter of unit for wall-mounting items.
- C. Headroom Maintenance: If mounting heights or other location criteria are not Indicated,

arrange and install components and equipment to provide maximum possible headroom consistent with the requirements of the project.

- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to raceways and piping systems installed at a required slope.
- F. Seismic Reinforcement. Install electrical equipment with seismic reinforcement for seismic zone 2A.

### 3.3 EQUIPMENT HOUSEKEEPING PADS

- A. Install concrete equipment housekeeping pads flat and level in accordance with drawings, specifications, and electrical equipment manufacturer recommendations.
- B. Provide 4" high concrete housekeeping pads for all floor-mounted electrical equipment. Housekeeping pads shall extend 4" beyond the footprint of equipment unless equipment is mounted with one or more sides flush to a wall.
- C. Install conduits stubbed up in concrete prior to placing concrete. Stub up conduits a maximum of 1 inch above the level of the bottom floor of the equipment. Ensure that there is no mechanical interference with conduits and equipment floor steel.
- D. Scarify existing concrete slabs to receive new housekeeping pads. Provide dowels in existing concrete slabs and provide bonding agent for new concrete to adhere to existing concrete. Provide 45-degree chamfer edge for exposed edges of housekeeping pads.
- E. Where required, install base channels in the locations recommended by the manufacturer. Ensure that the channels lie in a flat, level plane in accordance with the manufacturer's instructions to ensure proper alignment and to prevent distortion of the switchgear cubicles and skeleton. Ensure that non-supporting areas of the foundation are lower than the tops of the steel channels.
- F. Sweep concrete housekeeping pads and remove debris before installing any equipment.
- G. Line up bolt holes in equipment bases with the bolt holes embedded in steel channels in the foundation. Loosely install anchor bolts but do not tighten. Verify that the back of the equipment is perpendicular to the concrete pad and has proper clearance. Draw a base line along the length of the intended location of the equipment in the front of the line-up to keep the shipping sections parallel when installing subsequent sections.
- H. Where base channels are not installed, provide concrete anchors and anchor electrical equipment to concrete housekeeping pads.
- I. Upon completion, completely seal between concrete pad and steel structure to prevent entry of rodents, water, etc.

### 3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

- B. Coordinate sleeve selection and application with election and application of firestopping.
- C. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used.
- D. Use pipe sleeves unless penetrations arrangement requires rectangular sleeved openings.
- E. Rectangular Sleeve Minimum Metal Thickness:
  - 1. For sleeve cross-section rectangle perimeter less than 50 inches and no side greater than 16 inches, thickness shall be 0.0785-inch(14-gauge).
  - 2. For sleeve cross section rectangle perimeter equal to or greater than 50 inches and 1 or more sides equal to or greater than 16 inches, thickness shall be 0.1382-inch(10-gauge).
- F. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of the floor or wall.
- G. Cut sleeves to length for mounting flush with both surfaces of walls.
- H. Extend sleeves installed in floors to a height 2 inches above the finished floor level.
- I. Size pipe sleeves to provide ¼ inch annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed.
- J. Seal space outside of sleeves with grout for penetrations of concrete and masonry, and with suitable joint compound for gypsum board assemblies.
- K. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable using joint sealant appropriate for size, depth and location of the joint.
- L. Fire-Rated Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetrations sleeves with firestop materials.
- M. Above ground exterior wall penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1 inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- N. Underground, exterior wall penetrations: Install cast iron wall pipes for sleeves. Size to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

### 3.4 SLEEVE SEAL INSTALLATION

- A. Install waterproof seals where raceways are exposed to different temperatures in accordance with NEC article 300.7.
- B. Install to seal underground, exterior wall penetrations in accordance with NEC article 300.5(G).
- C. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in the center of the sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates to make watertight seal.

### 3.5 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of the floor or wall.

### 3.6 FIELD QUALITY CONTROL

- A. Inspect installed sleeve and sleeve-seal installations and associated firestopping for damage and faulty work.

### 3.7 TESTING AND COMMISSIONING

- A. Test and commission individual equipment and components as a system in accordance with manufacturer recommended start-up procedures and in indicated in individual specification sections for equipment.

**END OF SECTION 16050**

SECTION 16060  
GROUNDING

PART 1. GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes solid grounding of electrical systems and equipment. It includes basic requirements for grounding for protection of life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other sections of these Specifications.
- B. Related Sections: Other Division 16 Sections may contain requirements that relate to this Section.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for ground connectors and connection materials, and grounding fittings.
- C. Field-testing organization certificate, signed by the Contractor, certifying that the organization performing field tests complies with the requirements specified in Quality Assurance below.

1.4 QUALITY ASSURANCE

- A. Listing and Labeling: Provide products specified in this Section that are listed and labeled. The terms "listed" and "labeled" shall be defined as they are in the National Electrical Code, Article 100.
  - 1) Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.
- B. Electrical Component Standard: Components and installation shall comply with NFPA 70, "National Electrical Code" (NEC).
- C. UL Standard 467 - Grounding and Bonding Equipment
- D. IEEE Standard 1100 - Powering and Grounding Sensitive Electronic Equipment
- E. NFPA 70, Article 250 - Grounding

## PART 2. PRODUCTS

### 2.1 GROUNDING AND BONDING PRODUCTS

- A. Products: Of types indicated and of sizes and ratings to comply with NEC. Where types, sizes, ratings, and quantities indicated are in excess of NEC requirements, the more stringent requirements and the greater size, rating, and quantity indications govern.
- B. Conductor Materials: Copper

### 2.2 WIRE AND CABLE CONDUCTORS

- A. General: Comply with other Division 16 Sections for wires, cables and conductors. Conform to NEC Table 8, except as otherwise indicated, for conductor properties, including stranding.
- B. Equipment Grounding Conductor: Green insulated.
- C. Grounding grid conductors: Bare copper. #6 AWG and smaller, solid. Larger than #6 AWG, stranded.
- D. Bare Copper Conductors: Conform to the following:
  - 1) Solid Conductors: ASTM B 3.
  - 2) Assembly of Stranded Conductors: ASTM B 8.
  - 3) Tinned Conductors: ASTM B 33.

### 2.3 CONNECTOR PRODUCTS

- A. General: Listed and labeled as grounding connectors for the materials used.
- B. Pressure Connectors: High-conductivity-plated units.
- C. Bolted Clamps: Heavy-duty units listed for the application.

## PART 3. EXECUTION

### 3.1 APPLICATION

- A. Equipment Grounding Conductor Application: Comply with NEC Article 250 for sizes and quantities of equipment grounding conductors, except where larger sizes or more conductors are indicated. Install a separate insulated equipment grounding conductor with circuit conductors for all feeder and branch circuits.

### 3.2 INSTALLATION

- A. General: Ground electrical systems and equipment in accordance with NEC requirements except where the Drawings or Specifications exceed NEC requirements.
- B. Route grounding conductors along the shortest and straightest paths possible without obstructing access or placing conductors where they may be subjected to strain, impact, or damage, except as indicated.

### 3.3 CONNECTIONS

- A. General: Make connections in such a manner as to minimize possibility of galvanic action or electrolysis. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
  - 1) Use electroplated or hot-tin-coated materials to assure high conductivity and make contact points closer in order of galvanic series.
  - 2) Make connections with clean bare metal at points of contact.
- B. Terminate insulated equipment grounding conductors for feeders and branch circuits with pressure-type grounding lugs. Where metallic raceways terminate at metallic housings without mechanical and electrical connection to the housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to the ground bus in the housing. Bond electrically noncontinuous conduits at both entrances and exits with grounding bushings and bare grounding conductors.
- C. Tighten grounding and bonding connectors and terminals, including screws and bolts, in accordance with manufacturer's published torque tightening values for connectors and bolts. Where manufacturer's torquing requirements are not indicated, tighten connections to comply with torque tightening values specified in UL 486A.
- D. Compression-Type Connections: Use hydraulic compression tools to provide the correct circumferential pressure for compression connectors. Use tools and dies recommended by the manufacturer of the connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on the ground conductor.

END OF SECTION 16060



SECTION 16070  
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Conduit and equipment supports.
- B. Anchors and fasteners.

1.2 REFERENCES

- A. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2000.
- B. NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.

1.3 SUBMITTALS

- A. Product Data: Provide manufacturer's catalog data for fastening systems.

1.4 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Hangers, Supports, Anchors, and Fasteners - General: Aluminum or stainless steel of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.
- B. Supports: Fabricated of structural steel or formed steel members; galvanized with corrosion-resistant coating.
- C. Anchors and Fasteners:
  - 1. Concrete Structural Elements: Use precast inserts, stainless steel expansion anchors, powder-actuated anchors, or preset inserts.

2. Steel Structural Elements: Use corrosion-resistant coated beam clamps, steel spring clips, steel ramset fasteners, or welded fasteners.
3. Concrete Surfaces: Use self-drilling anchors or expansion anchors of stainless steel.
4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
5. Solid Masonry Walls: Use expansion anchors or preset inserts of stainless steel.
6. Sheet Metal: Use sheet metal screws.
7. Wood Elements: Use wood or sheet metal screws.
8. Aluminum – Use aluminum straps and fasteners.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install hangers and supports as required to adequately and securely support electrical system components, in a neat and workmanlike manner, as specified in NECA 1.
  1. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
  2. Do not drill or cut structural members.
- B. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- C. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1 inch off wall.
- D. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

END OF SECTION 16070

SECTION 16075  
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Identification for raceways.
  - 2. Identification of power and control cables.
  - 3. Identification for conductors.
  - 4. Underground-line warning tape.
  - 5. Warning labels and signs.
  - 6. Instruction signs.
  - 7. Equipment identification labels.
  - 8. Miscellaneous identification products.

1.3 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.
- B. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.
- C. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.4 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

## 1.5 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

## PART 2 - PRODUCTS

### 2.1 POWER RACEWAY IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.
- B. Colors for Raceways Carrying Circuits at 600 V or Less:
  - 1. Black letters on an orange field.
  - 2. Legend: Indicate voltage and system or service type.
- C. Colors for Raceways Carrying Circuits at More Than 600 V:
  - 1. Black letters on an orange field.
  - 2. Legend: "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch- high letters on 20-inch centers.
- D. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

### 2.2 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

### 2.3 CONDUCTOR IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

#### 2.4 FLOOR MARKING TAPE

- A. 2-inch- wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

#### 2.5 UNDERGROUND-LINE WARNING TAPE

- A. Tape:
  1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical utility lines.
  2. Printing on tape shall be permanent and shall not be damaged by burial operations.
  3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.
- B. Color and Printing:
  1. Comply with ANSI Z535.1 through ANSI Z535.5.
  2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.

#### 2.6 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.
  1. Engraved legend with white letters on red face.
  2. Punched or drilled for mechanical fasteners.
  3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.
- C. Warning label and sign shall include, but are not limited to, the following legends:
  1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."

2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

## 2.7 INSTRUCTION SIGNS

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.
  1. Engraved legend with black letters on white face.
  2. Punched or drilled for mechanical fasteners.
  3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.
- B. Provide engraved instruction signs for operating UPSs, including manufacturer's recommended operating procedure for switching from UPS to maintenance bypass, and for switching from bypass to UPS.
- C. Provide engraved instruction signs for operating main-tie-main switchboards automatically and manually, including manufacturer's recommended operating procedure for manually switching from one source to the other source, and for manually switching from one source to split-bus.

## 2.8 EQUIPMENT IDENTIFICATION LABELS

- A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

## 2.9 CABLE TIES

- A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.
  1. Minimum Width: 3/16 inch.
  2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  3. Temperature Range: Minus 40 to plus 185 deg F.
  4. Color: Black except where used for color-coding.
- B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.
  1. Minimum Width: 3/16 inch.
  2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  3. Temperature Range: Minus 40 to plus 185 deg F.
  4. Color: Black.
- C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.
  1. Minimum Width: 3/16 inch.

2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

## 2.10 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in Division 9 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Attach signs and plastic labels with mechanical fasteners appropriate to the location and substrate.
- E. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas. Comply with owner's established color coding for the facility.
- F. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:
  1. Outdoors: UV-stabilized nylon.
  2. In Spaces Handling Environmental Air: Plenum rated.
- G. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.
- H. Painted Identification: Comply with requirements in Division 9 painting Sections for surface preparation and paint application.

### 3.2 IDENTIFICATION SCHEDULE

- A. Accessible Raceways, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A, and 120 V to ground: Identify with self-adhesive vinyl label self-adhesive vinyl tape applied in bands. Install labels at 10-foot maximum intervals.
- B. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:
  - 1. Emergency Power.
  - 2. Power.
  - 3. UPS.
  - 4. Batteries.
- C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
  - 1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.
    - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
    - b. Colors for 208/120-V Circuits:
      - 1) Phase A: Black.
      - 2) Phase B: Red.
      - 3) Phase C: Blue.
    - c. Colors for 480/277-V Circuits:
      - 1) Phase A: Brown.
      - 2) Phase B: Orange.
      - 3) Phase C: Yellow.
    - d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- D. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- E. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
  - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
  - 2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.



3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
- F. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- G. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
- H. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.
1. Engraved legend with black letters on white face.
  2. Punched or drilled for mechanical fasteners.
  3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.
- I. Comply with 29 CFR 1910.145.
1. Identify system voltage with black letters on an orange background.
  2. Apply to exterior of door, cover, or other access.
  3. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:
    - a. Power transfer switches.
    - b. Controls with external control power connections.
- J. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
- K. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- high letters for emergency instructions at equipment used for power transfer load shedding.
- L. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:
    - a. Indoor Equipment: Mechanically fastened, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-

inch- high letters on 1-1/2-inch- high label; where two lines of text are required, use labels 2 inches high.

- b. Outdoor Equipment: Mechanically fastened Engraved, laminated acrylic or melamine label.
- c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
- d. Fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

2. Equipment to Be Labeled:

- a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be self-adhesive, engraved, laminated acrylic or melamine label.
- b. Enclosures and electrical cabinets.
- c. Access doors and panels for concealed electrical items.
- d. Switchboards.
- e. Transformers: Label that includes tag designation shown on Drawings for the transformer, feeder, and panelboards or equipment supplied by the secondary.
- f. Substations.
- g. Enclosed switches.
- h. Enclosed circuit breakers.
- i. Enclosed controllers.
- j. Variable-speed controllers.
- k. Push-button stations.
- l. Power transfer equipment.
- m. Contactors.
- n. Remote-controlled switches, dimmer modules, and control devices.
- o. Power-generating units.
- p. Monitoring and control equipment.
- q. Conduits and ductbanks installed for future use.

END OF SECTION 16075

SECTION 16120  
LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wire and cable for 600 volts and less for power and controls.
- B. Wiring connectors and connections.

1.2 REFERENCES

- A. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- B. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association.
- C. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.3 SUBMITTALS

- A. Product Data: Provide for each cable assembly type.

1.4 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Furnish products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 - PRODUCTS

2.1 WIRING REQUIREMENTS

- A. Concealed Dry Interior Locations: Use only building wire in raceway, building wire with Type THWN insulation in raceway.
- B. Exposed Dry Interior Locations: Use only building wire in raceway, building wire with Type THWN or XHHW insulation in raceway.
- C. Above Accessible Ceilings: Use only building wire in raceway, building wire with Type THHN/THWN or XHHW insulation in raceway.
- D. Wet or Damp Interior Locations: Use only building wire in raceway, building wire with Listed for wet or damp locations.

E. Flexible Battery Connections: Use diesel locomotive cable as indicated on drawings.

## 2.2 BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: NFPA 70, Type THHN/THWN or XHHW.

## 2.3 WIRING CONNECTORS

- A. Split Bolt Connectors:
- B. Solderless Pressure Connectors:

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.
- C. Verify that raceway installation is complete and supported.

### 3.2 INSTALLATION

- A. Install wire and cable securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Route wire and cable as required to meet project conditions.
  - 1. Wire and cable routing indicated is approximate unless dimensioned.
  - 2. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
- C. Use wiring methods indicated.
- D. Pull all conductors into raceway at same time.
- E. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- F. Neatly train and lace wiring inside boxes, equipment, panelboards and switchboards.

- G. Clean conductor surfaces before installing lugs and connectors.
- H. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise. Taped splices shall be made in a neat and workmanlike manner, and shall be arranged so as to not press on grounded metal enclosures.

END OF SECTION 16120

SECTION 16121  
CONTROL-VOLTAGE ELECTRICAL POWER CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. UTP cabling.
  - 2. RS-232 cabling.
  - 3. RS-485 cabling.
  - 4. Low-voltage control cabling.
  - 5. Control-circuit conductors.
  - 6. Identification products.

1.3 DEFINITIONS

- A. Basket Cable Tray: A fabricated structure consisting of wire mesh bottom and side rails.
- B. Channel Cable Tray: A fabricated structure consisting of a one-piece, ventilated-bottom or solid-bottom channel section.
- C. EMI: Electromagnetic interference.
- D. IDC: Insulation displacement connector.
- E. Ladder Cable Tray: A fabricated structure consisting of two longitudinal side rails connected by individual transverse members (rungs).
- F. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.
- G. Open Cabling: Passing telecommunications cabling through open space (e.g., between the studs of a wall cavity).
- H. RCDD: Registered Communications Distribution Designer.
- I. Solid-Bottom or Nonventilated Cable Tray: A fabricated structure consisting of integral or separate longitudinal side rails, and a bottom without ventilation openings.

- J. Trough or Ventilated Cable Tray: A fabricated structure consisting of integral or separate longitudinal rails and a bottom having openings sufficient for the passage of air and using 75 percent or less of the plan area of the surface to support cables.
- K. UTP: Unshielded twisted pair.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For cable tray layout, showing cable tray route to scale, with relationship between the tray and adjacent structural, electrical, and mechanical elements. Include the following:
  - 1. Vertical and horizontal offsets and transitions.
  - 2. Clearances for access above and to side of cable trays.
  - 3. Vertical elevation of cable trays above the floor or bottom of ceiling structure.
  - 4. Load calculations to show dead and live loads as not exceeding manufacturer's rating for tray and its support elements.
- C. Source quality-control reports.
- D. Field quality-control reports.
- E. Maintenance Data: For wire and cable to include in maintenance manuals.

#### 1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of an NRTL.
  - 1. Testing Agency's Field Supervisor: Currently certified by BICSI as an RCDD to supervise on-site testing.
- B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Flame-Spread Index: 25 or less.
  - 2. Smoke-Developed Index: 50 or less.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Test cables upon receipt at Project site.
  - 1. Test each pair of UTP cable for open and short circuits.

## 1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install UTP and optical fiber cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

## PART 2 - PRODUCTS

### 2.1 PATHWAYS

- A. Support of Open Cabling: NRTL labeled for support of Category 5e and Category 6 cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.
  - 1. Support brackets with cable tie slots for fastening cable ties to brackets.
  - 2. Lacing bars, spools, J-hooks, and D-rings.
  - 3. Straps and other devices.
- B. Conduit and Boxes: Comply with requirements in Division 16 Section "Raceways and Boxes." Flexible metal conduit shall not be used.
  - 1. Outlet boxes shall be no smaller than 2 inches wide, 3 inches high, and 2-1/2 inches deep.

### 2.2 UTP CABLE

- A. Description: 100-ohm, four-pair UTP, formed into 25-pair binder groups covered with a blue thermoplastic jacket.
  - 1. Comply with ICEA S-90-661 for mechanical properties.
  - 2. Comply with TIA/EIA-568-B.1 for performance specifications.
  - 3. Comply with TIA/EIA-568-B.2, Category 5e Category 6.
  - 4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:
    - a. Communications, Plenum Rated: Type CMP or Type MPP, complying with NFPA 262.
    - b. Communications, Riser Rated: Type CMR; or Type MPP, Type CMP, or Type MPR; complying with UL 1666.
    - c. Communications, Limited Purpose: Type CMX; or Type MPP, Type CMP, Type MPR, Type CMR, Type MP, Type MPG, Type CM, or Type CMG.
    - d. Multipurpose, Plenum Rated: Type MPP, complying with NFPA 262.
    - e. Multipurpose, Riser Rated: Type MPR or Type MPP, complying with UL 1666.

### 2.3 UTP CABLE HARDWARE

- A. UTP Cable Connecting Hardware: IDC type, using modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of the same category or higher.



- B. Connecting Blocks: 110 style for Category 5e 110 style for Category 6 66 style for Category 5e. Provide blocks for the number of cables terminated on the block, plus 25 percent spare; integral with connector bodies, including plugs and jacks where indicated.

## 2.4 RS-232 CABLE

- A. Plenum-Rated Cable: NFPA 70, Type CMP.

1. Paired, two pairs, No. 22 AWG, stranded (7x30) tinned-copper conductors.
2. Plastic insulation.
3. Individual aluminum foil-polyester tape shielded pairs with 100 percent shield coverage.
4. Plastic jacket.
5. Pairs are cabled on common axis with No. 24 AWG, stranded (7x32) tinned-copper drain wire.
6. Flame Resistance: Comply with NFPA 262.

## 2.5 RS-485 CABLE

- A. Plenum-Rated Cable: NFPA 70, Type CMP.

1. Paired, two pairs, No. 22 AWG, stranded (7x30) tinned-copper conductors.
2. Fluorinated ethylene propylene insulation.
3. Unshielded.
4. Fluorinated ethylene propylene jacket.
5. Flame Resistance: NFPA 262, Flame Test.

## 2.6 LOW-VOLTAGE CONTROL CABLE

- A. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.

1. One pair, twisted, No. 16 AWG, stranded (19x29) tinned-copper conductors.
2. PVC insulation.
3. Unshielded.
4. PVC jacket.
5. Flame Resistance: Comply with NFPA 262.

## 2.7 CONTROL-CIRCUIT CONDUCTORS

- A. Class 1 Control Circuits: Stranded copper, Type XHHN, in raceway, complying with UL 83 UL 44.
- B. Class 2 Control Circuits: Stranded copper, Type XHHN, in raceway, complying with UL 83 UL 44.
- C. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type TW or Type TF, complying with UL 83.

## 2.8 IDENTIFICATION PRODUCTS

- A. Comply with UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.
- B. Comply with requirements in Division 16 Section "Electrical Identification."

## 2.9 SOURCE QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to evaluate cables.
- B. Factory test UTP cables according to TIA/EIA-568-B.2.
- C. Factory test multimode optical fiber cables according to TIA/EIA-526-14-A and TIA/EIA-568-B.3.
- D. Cable will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

## PART 3 - EXECUTION

### 3.1 INSTALLATION OF PATHWAYS

- A. Comply with TIA/EIA-569-A for pull-box sizing and length of conduit and number of bends between pull points.
- B. Comply with requirements in Division 16 Section "Raceways and Boxes" for installation of conduits and wireways.
- C. Install manufactured conduit sweeps and long-radius elbows if possible.
- D. Pathway Installation in Equipment Rooms:
  - 1. Position conduit ends adjacent to a corner on backboard if a single piece of plywood is installed or in the corner of room if multiple sheets of plywood are installed around perimeter walls of room.
  - 2. Install cable trays to route cables if conduits cannot be located in these positions.
  - 3. Secure conduits to backboard if entering room from overhead.
  - 4. Extend conduits 3 inches above finished floor.
  - 5. Install metal conduits with grounding bushings and connect with grounding conductor to grounding system.
- E. Backboards: Where required, install backboards with 96-inch dimension vertical. Butt adjacent sheets tightly and form smooth gap-free corners and joints.

### 3.2 INSTALLATION OF CONDUCTORS AND CABLES

A. Comply with NECA 1.

B. General Requirements for Cabling:

1. Comply with TIA/EIA-568-B.1.
2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."
3. Terminate all conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
4. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches and not more than 6 inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
5. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.
6. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
7. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
8. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.

C. UTP Cable Installation:

1. Comply with TIA/EIA-568-B.2.
2. Install 110-style IDC termination hardware unless otherwise indicated.
3. Do not untwist UTP cables more than 1/2 inch from the point of termination to maintain cable geometry.

D. Installation of Control-Circuit Conductors:

1. Install wiring in raceways. Comply with requirements specified in Division 16 Section "Raceways and Boxes."

E. Optical Fiber Cable Installation:

1. Comply with TIA/EIA-568-B.3.
2. Cable shall be terminated on connecting hardware that is rack or cabinet mounted.

F. Open-Cable Installation:

1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
2. Suspend copper cable not in a wireway or pathway a minimum of 8 inches above ceilings by cable supports not more than 60 inches apart.
3. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.

G. Installation of Cable Routed Exposed under Raised Floors:

1. Install plenum-rated cable only.
2. Install cabling after the flooring system has been installed in raised floor areas.
3. Coil cable 72 inches long shall be neatly coiled not less than 12 inches in diameter below each feed point.

H. Separation from EMI Sources:

1. Comply with BICSI TDMM and TIA/EIA-569-A recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.
2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:
  - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches.
  - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches.
  - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches.
3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:
  - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches.
  - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches.
  - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches.
4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:
  - a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
  - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches.
  - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches.
5. Separation between Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches.
6. Separation between Cables and Fluorescent Fixtures: A minimum of 5 inches.

3.3 REMOVAL OF CONDUCTORS AND CABLES

- A. Remove abandoned conductors and cables.

3.4 CONTROL-CIRCUIT CONDUCTORS

- A. Minimum Conductor Sizes:

1. Class 1 remote-control and signal circuits, No 14 AWG.
2. Class 2 low-energy, remote-control, and signal circuits, No. 16 AWG.

3. Class 3 low-energy, remote-control, alarm, and signal circuits, No 12 AWG.

### 3.5 FIRESTOPPING

- A. Comply with requirements in Division 7 Section "Through-Penetration Firestop Systems."
- B. Comply with TIA/EIA-569-A, Annex A, "Firestopping."
- C. Comply with BICSI TDMM, "Firestopping Systems" Article.

### 3.6 GROUNDING

- A. For data communication wiring, comply with ANSI-J-STD-607-A and with BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.

### 3.7 IDENTIFICATION

- A. Identify system components, wiring, and cabling according to TIA/EIA-606-A. Comply with requirements for identification specified in Division 16 Section "Electrical Identification."

### 3.8 FIELD QUALITY CONTROL

- A. Tests and Inspections:
  1. Visually inspect UTP and optical fiber cable jacket materials for UL or third-party certification markings. Inspect cabling terminations to confirm color-coding for pin assignments, and inspect cabling connections to confirm compliance with TIA/EIA-568-B.1.
  2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
  3. Test UTP cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not after cross connection.
    - a. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-B.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
- B. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.
- C. End-to-end cabling will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION 16121

SECTION 16130  
CONDUIT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Conduit, fittings and conduit bodies.

1.2 REFERENCES

- A. ANSI C80.1 - American National Standard Specification for Rigid Steel Conduit -- Zinc Coated.
- B. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- C. NECA 101 - Standard for Installing Steel Conduit (Rigid, IMC, EMT); National Electrical Contractors Association.
- D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, and Cable; National Electrical Manufacturers Association.
- E. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit; National Electrical Manufacturers Association.
- F. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing; National Electrical Manufacturers Association.
- G. NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.

1.3 SUBMITTALS

- A. Product Data: Provide for metallic conduit, liquidtight flexible metal conduit and fittings, nonmetallic conduit, fittings, and conduit bodies, manufacturers product data.
- B. Provide complete shop drawings in accordance with Division 1 specifications for submittals.

1.4 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Accept conduit on site. Inspect for damage.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

## PART 2 - PRODUCTS

### 2.1 CONDUIT REQUIREMENTS

- A. Conduit Size: Comply with NFPA 70 for conductor fill.
  - 1. Minimum Size: 3/4 inch unless otherwise specified.
- B. Outdoor Locations/Above Grade/Indoors: Use rigid aluminum conduit.
- C. Underground Locations: Use nonmetallic conduit with vinyl plastic covered rigid steel conduit long sweep elbows for conduit up.
- D. Wet and Damp or Dry Locations Concealed or Exposed above grade: Use rigid aluminum conduit, and liquid tight flexible metal conduit in compliance with NFPA 70.
- E. Where in Contact with Concrete: Use PVC-coated rigid steel conduit.

### 2.2 METAL CONDUIT

- A. Rigid Galvanized Steel and Aluminum Conduit: ANSI C80.1.
- B. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit with threaded openings.
- C. Steel conduit shall be zinc coated, inside and outside.

### 2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Description: Interlocked steel construction with PVC jacket.
- B. Fittings: NEMA FB 1.
- C. Color: Gray.

### 2.4 NONMETALLIC CONDUIT

- A. Description: Plastic conduit, PVC, polyvinyl chloride compound rated for direct burial, ultraviolet resistant, and conforming to UL Standard 651, Schedule 40. (Use vinyl covered long sweep RGS for elbows up.)
- B. Type EB: Encased Burial Duct. PVC, polyvinyl chloride compound conforming to NEMA Standard TC-6, UL Standard 651A and designed for encased burial use. Use Schedule 40 long sweep elbows below grade.



- C. Fittings: Same material as conduit and installed with watertight joint compound recommended by manufacturer. Provide gasketed fittings with threaded hubs (meyer hubs) for cabinet connections.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that field measurements are as shown on drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Route conduit as required to complete wiring system.

### 3.2 CONDUIT INSTALLATION

- A. Install conduit securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Install conduit as specified in NECA 101.
- C. Install nonmetallic conduit below grade only in accordance with manufacturer's instructions.
- D. Install concrete encased duct banks in accordance with NECA 605. Install manufactured spacers to maintain separation of conduits in concrete encased duct banks.
- E. Arrange supports to prevent misalignment during wiring installation.
- F. Support conduit using coated steel, malleable iron, or aluminum straps.
- G. Group related conduits; support using conduit rack. Construct rack using steel channel.
- H. Fasten conduit supports to building structure and surfaces under provisions of Section 261529.
- I. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- J. Do not attach conduit to ceiling support wires.
- K. Arrange conduit to maintain headroom and present neat appearance.
- L. Route exposed conduit parallel and perpendicular to walls.
- M. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- N. Maintain adequate clearance between conduit and piping.
- O. Maintain 12-inch clearance between conduit and surfaces with temperatures exceeding 104

degrees F.

- P. Cut conduit square using saw or pipecutter; de-burr cut ends.
- Q. Bring conduit to shoulder of fittings and fasten securely.
- R. Use gasketed and threaded conduit hubs to fasten conduit to sheet metal boxes in all locations.
- S. Install no more than equivalent of three (3) 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2-inch size.
- T. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic joints.
- U. Provide suitable pull wire in each empty conduit except sleeves and nipples.
- V. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- W. Provide an insulated equipment grounding conductor sized per NFPA 70 in all conduits with phase conductors.
- X. Provide a grounding lug for all circuits entering a box, cabinet, equipment enclosure, etc.

END OF SECTION 16130

SECTION 16131  
BOXES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wall and ceiling outlet and device boxes.
- B. Pull and junction boxes.

1.3 REFERENCES

- A. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- B. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association.
- C. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association.
- D. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; National Electrical Manufacturers Association.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association.
- F. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.4 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Provide products listed and classified by Underwriters Laboratories, Inc., as suitable for the purpose specified and indicated.

PART 2 – PRODUCTS

2.1 OUTLET AND DEVICE BOXES

- A. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.

- B. Provide weatherproof-in-use boxes outdoors, in wet and damp locations, and where GFCI receptacles are used.

## 2.2 PULL AND JUNCTION BOXES

- A. Provide NEMA 4X boxes in all locations.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify locations of floor boxes and outlets in offices and work areas prior to rough-in.
- B. Size boxes in accordance with NFPA 70.

### 3.2 INSTALLATION

- A. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1. Support boxes from structure, independently of conduits, equipment, cabinets, etc.
- B. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.
- C. Coordinate installation of outlet boxes for equipment connected.
- D. Set wall mounted boxes at elevations to accommodate mounting heights as shown on drawings. Coordinate with architectural elevation drawings.
- E. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.
  - 1. Adjust box locations up to 10 feet if required to accommodate intended purpose.
- F. Maintain headroom and present neat mechanical appearance.
- G. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only, unless otherwise noted.
- H. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- I. Install boxes to preserve fire resistance rating of partitions and other elements.
- J. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- K. Use flush mounting outlet boxes in finished areas.
- L. Do not fasten boxes to ceiling support wires.

M. Support boxes independently of conduit.

N. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

### 3.3 ADJUSTING

A. Adjust flush-mounting outlets to make front flush with finished wall material.

B. Install weather tight stainless steel closures in unused openings.

### 3.4 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.

B. Clean exposed surfaces and restore finish.

END OF SECTION 16131

SECTION 16140  
WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
  - 1. Receptacles, receptacles with integral GFCI, and associated device plates.
  - 2. Snap switches.
  - 3. Communications outlets.
  - 4. Meltric Decontactors.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 STRAIGHT BLADE RECEPTACLES

- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498. Provide gray devices with stainless steel coverplates.

## 2.2 GFCI RECEPTACLES

- A. General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
- C. Provide gray devices with stainless steel coverplates.

## 2.3 SNAP SWITCHES

- A. Comply with NEMA WD 1 and UL 20.
- B. Switches, 120/277 V, 20 A:
- C. Provide gray devices with stainless steel cover plates.

## 2.5 MELTRIC DECONNECTS

- A. Comply with UL switch ratings for horsepower connected. Coordinate plug configuration, number of contacts, voltage, horsepower and ampacity requirements with pump supplier. Include interlock contact to de-energize VFDs when connector is unplugged.
- B. Provide minimum 65kAIC (MIN) interrupting rating in fused circuit.
- C. Provide spring loaded butt contacts in number and configuration for either load carrying conductors or for control circuits as required.
- D. Provide silver-nickel contact materials.
- E. Provide Dead Front construction with enclosed arc chambers.
- F. Provide NEMA 4x watertight construction of fiberglass reinforced thermoplastic polyester material for plugs and receptacles.
- G. Provide matching male and female plug and receptacles, refer to one-line diagram for rating information.

## 2.4 WALL PLATES

- A. Single and combination types to match corresponding wiring devices. Provide malleable iron or stainless steel cover plates with gaskets.
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.

## EXECUTION

### INSTALLATION

- A. Comply with NECA 1 and NECA 130, including the mounting heights listed in that standard, unless otherwise noted.
- B. Coordination with Other Trades:
  - 1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
  - 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
  - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
  - 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
  - 1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
  - 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
  - 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
  - 4. Existing Conductors:
    - a. Cut back and pigtail, or replace all damaged conductors.
    - b. Straighten conductors that remain and remove corrosion and foreign matter.
    - c. Pigtail existing conductors is permitted provided the outlet box is large enough.
- D. Device Installation:
  - 1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
  - 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
  - 3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
  - 4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
  - 5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
  - 6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
  - 7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
  - 8. Tighten unused terminal screws on the device.
  - 9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.



- E. Receptacle Orientation:
  - 1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.
- F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

#### IDENTIFICATION

- A. Comply with Division 16 Section "Electrical Identification."
  - 1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

#### FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
  - 1. Test Instruments: Use instruments that comply with UL 1436.
  - 2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.
- B. Tests for Convenience Receptacles:
  - 1. Line Voltage: Acceptable range is 105 to 132 V.
  - 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
  - 3. Ground Impedance: Values of up to 2 ohms are acceptable.
  - 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
  - 5. Using the test plug, verify that the device and its outlet box are securely mounted.
  - 6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new, and retest as specified above.

END OF SECTION 16140

SECTION 16150  
EQUIPMENT WIRING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Electrical connections to equipment.

1.2 REFERENCES

- A. NEMA WD 1 - General Color Requirements for Wiring Devices; National Electrical Manufacturers Association; 1999.
- B. NEMA WD 6 - Wiring Devices - Dimensional Requirements; National Electrical Manufacturers Association; 2002.
- C. NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.

1.3 SUBMITTALS

- A. Product Data: Provide wiring device manufacturer's catalog information showing dimensions, configurations, and construction.

1.4 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

1.5 COORDINATION

- A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
- B. Determine connection locations and requirements.
- C. Sequence rough-in of electrical connections to coordinate with installation of equipment.
- D. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
  - 1. Colors: Conform to NEMA WD 1.
  - 2. Cord Construction: NFPA 70, Type SO multi-conductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
  - 3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit over current protection

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

### 3.2 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions. Install manufacturer-recommended bus bars, lugs, terminations, etc., that are compatible with wire types, insulation, sizes, and wiring methods.
- B. Make conduit connections to equipment using flexible conduit. Use liquid tight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat-producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.
- J. Provide liquid tight flexible metal conduit and fittings for all motor connections.

END OF SECTION 16150

## SECTION 16611

### SOLID STATE UNINTERRUPTIBLE POWER SUPPLY

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract that apply to the work specified in this Section.

##### 1.2 SUMMARY

- A. Scope: Provide design and engineering, labor, material, equipment, related services, and supervision required, including, but not limited to, manufacturing, fabrication, erection, and installation for a solid state uninterruptible power supply (UPS) as required for the complete performance of the work, and as shown on the drawings and as herein specified.
- B. Section Includes: The work specified in this section includes, but shall not be limited to, a three-phase, continuous duty, solid state UPS. The UPS shall contain a full rated input rectifier/boost converter (hereafter referred to as input converter), output inverter, and 10 percent battery charging circuit. The system shall also contain a continuous duty bypass static switch, internal mechanical bypass, removable hot swap battery plant, and LCD interface display. All of the above system components shall be housed in a single enclosure.
  - 1. In addition, this section describes the performance, functionality, and design of the UPS maintenance bypass cabinet (MBC), the extended run (XR) battery system, connectivity solutions, and paralleling operation.
  - 2. The UPS and associated equipment shall operate in conjunction with a primary power supply and an output distribution system to provide quality uninterrupted power for mission critical, electronic equipment load.
  - 3. All programming and miscellaneous components for a fully operational system as described in this Section shall be available as part of the UPS.

##### 1.3 REFERENCES

- A. General: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. The edition/revision of the referenced publications shall be the latest date as of the date of the contract documents, unless otherwise specified.
- B. Institute of Electrical and Electronics Engineers, Inc. (IEEE):

1. ANSI/IEEE 519, "Guide for Harmonic Control and Reactive Compensation of Static Power Converters" (copyrighted by IEEE, ANSI approved).

C. International Organization for Standardization (ISO):

1. ISO 9001, "Quality Management Systems - Requirements."
2. ISO 14001, "Environmental Management Systems - Requirements with Guidance for Use."

D. Underwriters Laboratories, Inc. (UL):

1. UL 1778, "Standard for Uninterruptible Power Supply Equipment" (copyrighted by UL, ANSI approved).

#### 1.4 SYSTEM DESCRIPTION

A. Design Requirements:

1. The UPS shall be sized for 30 kVA and 24 kW load.
2. The UPS battery shall be sized for the full load at a power factor of 0.80 for ten(10) minutes.

B. System Characteristics:

1. System Capacity: The system shall be rated in the following sizes:
  - a. 30 kVA/24 kW.
2. Input:
  - a. AC Input Nominal Voltage: 208 volt, three-phase, 4 wires plus ground, 60 hertz.
  - b. AC Input Voltage Window: +15 percent, -20 percent of nominal (while providing nominal charging to the battery system)
  - c. Short Circuit Withstand Rating: 30,000 symmetrical amperes.
  - d. Maximum Frequency Range: 40 to 70 hertz.
  - e. Input Power Factor:
    - 1) 0.98 for loads greater than 50 percent.
    - 2) 0.95 for loads greater than 15 percent.
  - f. Input Current Distortion With No Additional Filters: Less than 5 percent at 100 percent load.
  - g. Soft-Start: Shall be linear from 0 percent to 100 percent input current and shall not exhibit inrush. This shall take place over a 15 second time period when transferring from battery operation to mains operation.

3. UPS Output:
  - a. AC Output Nominal Output: 208/120 volt, three-phase, 4 wires plus ground, 60 hertz.
  - b. AC Output Voltage Regulation:  $\pm 1$  percent for 100 percent linear or non-linear load.
  - c. Voltage Transient Response:  $\pm 0.5$  percent maximum for 100 percent linear load step.
  - d. Voltage Transient Recovery: Within less than 60 milliseconds.
  - e. Output Voltage Harmonic Distortion:
    - 1) Less than 2 percent THD maximum and 1 percent single harmonic for a 100 percent linear load.
    - 2) Less than 5 percent THD maximum for a 100 percent non-linear load.
  - f. Phase Angle Displacement:
    - 1) 120 degrees  $\pm 0.1$  degree for balanced load.
    - 2) 120 degrees  $\pm 0.1$  degree for 50 percent imbalanced load.
    - 3) 120 degrees  $\pm 0.3$  degrees for 100 percent imbalanced load.
  - g. Overload Rating:
    - 1) Normal Operation:
      - a) 150 percent for 1 minute.
      - b) 125 percent for 10 minutes.
      - c) 100 percent continuous.
    - 2) Bypass Operation:
      - a) 100 percent continuous.
      - b) 800 percent for 500 milliseconds.
  - h. System AC-AC Efficiency: Greater than 93 percent at full load with 208 volt supply.
  - i. Output Power Factor Rating: 0.8 at full load.
  - j. Slew Rate: 0.25 to 1 hertz/second.

## 1.5 SUBMITTALS

- A. General: See Section 01330 – Submittal Procedures.
- B. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the drawings and specifications. Product data shall include, but shall not be limited to, the following:
  - 1. As bid system bill of materials.
  - 2. Product catalog sheets or equipment brochures.
  - 3. Product guide specifications.
- C. Shop Drawings: Submit shop drawings for each product and accessory required. Include information not fully detailed in manufacturer’s standard product data, including, but not limited to, the following:
  - 1. Installation information, including, but not limited to, weights and dimensions.
  - 2. Information about terminal locations for power and control connections.
  - 3. Drawings for requested optional accessories.
- D. Wiring Diagrams: Submit wiring diagrams detailing power, signal, and control systems, clearly differentiating between manufacturer-installed wiring and field-installed wiring, and between components provided by the manufacturer and those provided by others.
  - 1. Submit system single-line operation diagram.
- E. Operation and Maintenance Data: Submit operation and maintenance data to include in operation and maintenance manuals, including, but not limited to, safe and correct operation of UPS functions.
  - 1. Submit an installation manual, which shall include, but shall not be limited to, instructions for storage, handling, examination, preparation, installation, and start-up of UPS.
  - 2. Submit a user manual, which shall include, but shall not be limited to, operating instructions.

## 1.6 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Manufacturer Qualifications: Manufacturer shall be a firm engaged in the manufacture of solid state UPS of types and sizes required, and whose products have been in satisfactory use in similar service for a minimum of 20 years.
    - a. The manufacturer shall be ISO 9001 certified and shall be designed to internationally accepted standards.
  - 2. Installer Qualifications: Installer shall be a firm that shall have a minimum of five years of successful installation experience with projects utilizing solid state UPS similar in type and scope to that required for this Project.

- B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction. Obtain necessary approvals from such authorities.
  - 1. Where applicable, the UPS shall also be designed in accordance with publications from the following organizations and committees:
    - a. National Fire Protection Association (NFPA).
    - b. National Electrical Manufacturers Association (NEMA).
    - c. Occupational Safety and Health Administration (OSHA).
    - d. Institute of Electrical and Electronics Engineers, Inc. (IEEE); ANSI/IEEE 519.
    - e. ISO 9001.
    - f. ISO 14001.
- C. Pre-Installation Conference: Conduct pre-installation conference. Prior to commencing the installation, meet at the Project site to review the material selections, installation procedures, and coordination with other trades. Pre-installation conference shall include, but shall not be limited to, the contractor, the installer, and any trade that requires coordination with the work. Date and time of the pre-installation conference shall be acceptable to the owner and the engineer.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and lot number, if any.
- B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

#### 1.8 PROJECT CONDITIONS

- A. Environmental Requirements: Do not install solid state UPS until space is enclosed and weatherproof, wet work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.
  - 1. The UPS shall be capable of withstanding any combination of the following environmental conditions in which it must operate without mechanical or electrical damage, or degradation of operating characteristics.
    - a. Storage Ambient Temperature: -22 °F (-30 °C) to 158 °F (70 °C) without internal battery; 5 °F (-15 °C) to 113 °F (45 °C) with internal batteries.
    - b. Operating Ambient Temperature: 32 °F (0 °C) to 104 °F (40 °C) (77 °F [25 °C] is ideal for most battery types).



- c. Relative Humidity: 0 percent to 95 percent non-condensing.
- d. Altitude: Maximum installation with no derating of the UPS output shall be 3281 feet (1000 meters) above sea level.
- e. Audible Noise: The UPS shall not produce audible noise at a distance of 39 inches (1 meter) in excess of the following:
  - 1) 10 kVA to 15 kVA: 51 dBA.
  - 2) 20 kVA to 30 kVA: 55 dBA.

## 1.9 WARRANTY

- A. Special Warranty: The contractor shall warrant the work of this section to be in accordance with the contract documents and free from faults and defects in materials and workmanship for period indicated below. This special warranty shall extend the one year period of limitations contained in the General Conditions. The special warranty shall be countersigned by the Installer and the manufacturer.
  - 1. UPS Module: The UPS shall be covered by a full parts and labor warranty from the manufacturer for a period of 12 months from date of installation or acceptance by the owner or 18 months from date of shipment from the manufacturer, whichever occurs first.
  - 2. Battery: The battery manufacturer's warranty shall be passed through to the final owner and shall have a minimum period of one year.
- B. Additional Owner Rights: The warranty shall not deprive the owner of other rights the owner may have under other provisions of the contract documents and shall be in addition to and run concurrent with other warranties made by the contractor under requirements of the contract documents.

## 1.10 MAINTENANCE

- A. A complete offering of preventative and full service maintenance contracts for the UPS system and the battery system shall be available from the manufacturer. Contract work shall be performed by factory-trained service personnel.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis of Design: Product specified is "MGE Galaxy 3500" as manufactured by APC by Schneider Electric. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by other manufacturers are acceptable. The engineer will be the sole judge of the basis of what is equivalent.

### 2.2 MODES OF OPERATION

- A. Normal: The input converter and output inverter shall operate in an on-line manner to continuously regulate power to the critical load. The input and output converters shall be capable of full battery recharge while simultaneously providing regulated power to the load for all line and load conditions within the range of the UPS specifications.
- B. Battery: Upon failure of the AC input source, the critical load shall continue being supplied by the output inverter, which shall derive its power from the battery system. There shall be no interruption in power to the critical load during both transfers to battery operation and retransfers from battery to normal operation.
- C. Recharge: Upon restoration of the AC input source, the UPS shall simultaneously recharge the battery and provide regulated power to the critical load.
- D. Static Bypass: The static bypass shall be used to provide transfer of critical load from the inverter output to the bypass source. This transfer, along with its retransfer, shall take place with no power interruption to the critical load. In the event of an emergency, this transfer shall be an automatic function. The UPS shall be able to recharge the batteries while supplying full power to the load via the static bypass switch.
- E. Internal Mechanical Bypass: As a standard feature, the UPS shall be equipped with an internal, make-before-break, bypass switch. This switch shall mechanically bypass the UPS for times where maintenance is required.
- F. External Maintenance (Wrap-Around) Bypass: As an option for a single UPS unit, the system may be equipped with an external MBC to electrically isolate the UPS during routine maintenance and service of the UPS. The MBC shall completely isolate both the UPS input and output connections. The MBC shall be used for paralleling of multiple UPS units.

### 2.3 INPUT POWER CONVERTER

- A. General: The input power converters of the system shall constantly control the power imported from the mains input of the system, to provide the necessary UPS power for precise regulation of the DC bus voltage, battery charging, and main inverter regulated output power.
- B. Input Current Total Harmonic Distortion: The input current THD shall be held to 5 percent or less at full system load, while providing conditioned power to the critical load bus, and charging the batteries under steady-state operating conditions. This shall be true while supporting loads of both a linear or non-linear type. This shall be accomplished with no additional filters, magnetic devices, or other components.
- C. Soft-Start Operation: As a standard feature, the UPS shall contain soft-start functionality, capable of limiting the input current from 0 percent to 100 percent of the nominal input over a default 15 second period, when returning to the AC utility source from battery operation. The change in current over the change in time shall take place in a linear manner throughout the entire operation ( $di/dt = \text{constant}$ ).
- D. Magnetization Inrush Current: The UPS shall exhibit 0 inrush current as a standard product. If provided with an optional isolation transformer, inrush shall be limited to six times the nominal input current of the transformer.

E. **Input Current Limit:** The system input current limit, shall be designed to provide 100 percent load while fully charging the batteries at 10 percent of the system rating. The system shall be capable of this with up to a +15 percent, -20 percent variation of the nominal input voltage.

F. **Charging:**

1. The battery charging shall keep the DC bus float voltage of  $\pm 220$  volt,  $\pm 1$  percent.
2. The battery charging circuit shall contain a temperature compensation circuit, which shall regulate the battery charging to optimize battery life.
3. The battery charging circuit shall remain active when in static bypass and in normal operation.
4. The UPS shall be capable of limiting the energy sourced from the mains for purposes of battery charging. As a default setting, the battery charge energy shall be set to 100 percent of its nominal value. When signaled by a dry contact, (such as from an emergency generator) the UPS shall be capable of limiting the battery charge energy taken from the mains. This shall take place in owner-selectable increments of 75 percent, 50 percent, 25 percent, 10 percent and 0 percent of the nominal charge power. The selection shall be made from the UPS front panel display/control unit.

G. **Back-Feed Protection:** The logic controlled input contactor shall provide the back-feed protection required by UL 1778.

## 2.4 OUTPUT INVERTER

- A. **General:** The UPS output inverter shall constantly recreate the UPS output voltage waveform by converting the DC bus voltage to AC voltage through a set of IGBT driven power converters. In both normal operation and battery operation, the output inverters shall create an output voltage independent of the mains input voltage. Input voltage anomalies such as brown-outs, spikes, surges, sags, and outages, shall not affect the amplitude or sinusoidal nature of the recreated output voltage sine wave of the output inverters.
- B. **Overload Capability:** Steady-state overload conditions, of up to 150 percent of system capacity, shall be sustained by the inverter for 30 seconds in normal and battery operation. Overloads of 125 percent shall be sustainable by the inverter for up to 60 seconds.
- C. **Output Contactor:** The output inverter shall be provided with an output mechanical contactor to provide physical isolation of the inverter from the critical bus. With this feature a failed inverter shall be removed from the critical bus.
- D. **Battery Protection:** The inverter shall be provided with monitoring and control circuits to limit the level of discharge on the battery system.

## 2.5 STATIC BYPASS

- A. **General:** As part of the UPS, a system static bypass switch shall be provided. The system static bypass shall provide no break transfer of the critical load from the inverter output to the static

bypass input source during times where maintenance is required, or the inverter cannot support the critical bus. Such times may be due to prolonged or severe overloads, or UPS failure.

- B. Design: The design of the static switch power path shall consist of silicon controlled rectifiers (SCR) with a continuous duty rating of 110 percent of the UPS output rating.
- C. Automatic Transfers: An automatic transfer of load to static bypass shall take place whenever the load on the critical bus exceeds the overload rating of the UPS. Automatic transfers of the critical load from static bypass back to normal operation shall take place when the overload condition is removed from the critical bus output of the system. Automatic transfers of load to static bypass shall also take place if for any reason the UPS cannot support the critical bus.
- D. Manual Transfers: Manually initiated transfers to and from static bypass shall be initiated through the UPS display interface.
- E. Overloads: The static bypass shall be rated and capable of handling overloads equal to or less than 110 percent of the rated system output continuously. For instantaneous overloads caused by inrush current from magnetic devices, or short circuit conditions, the static bypass shall be capable of sustaining overloads of 800 percent of system capacity for periods of up to 500 milliseconds.
- F. System Protection: As a requirement of UL 1778, back-feed protection in the static bypass circuit shall also be incorporated in the system design. To achieve back-feed protection, a mechanical contactor in series with the bypass SCR(s) shall be controlled by the UPS/static switch, to open immediately upon sensing a condition where back-feeding of the static switch by any source connected to the critical output bus of the system is occurring. One such condition could be a result of a shorted SCR.
- G. Dual Feed: For purposes of increased reliability, the static bypass shall be capable of being fed from a separate feed from the input power converter.

## 2.6 INTERNAL MECHANICAL BYPASS

- A. The UPS shall be equipped with an internal make-before-break bypass switch to isolate the UPS during times where maintenance is required.

## 2.7 DISPLAY AND CONTROLS

- A. Display Unit: A microprocessor-controlled display unit shall be located on the front of the system. The display shall consist of an alphanumeric display with backlight, an alarm LED, and a keypad consisting of pushbutton switches.
- B. Metered Data: The following metered data shall be available on the alphanumeric display:
  - 1. Year, month, day, hour, minute, second of occurring events.
  - 2. Source input voltage.
  - 3. Output AC voltage.

4. Output AC current.
  5. Input frequency.
  6. Battery voltage.
  7. Highest internal battery temperature.
- C. Event Log: The display unit shall allow the owner to display a time and date stamped log for the 64 most recent status and alarm events.
- D. Alarms: The display unit shall allow the owner to display a log of all active alarms. The following minimum set of alarm conditions shall be available:
1. Static bypass switch on.
  2. EPO active.
  3. Mechanical bypass activated.
  4. External bypass switch (Q3) activated.
  5. Battery discharged.
  6. Return from low battery.
  7. Low battery.
  8. Load not powered from UPS.
  9. UPS in bypass.
  10. Runtime calibration aborted.
  11. Runtime calibration started.
  12. Runtime calibration complete.
  13. Battery self-test aborted.
  14. Battery self-test started.
  15. Battery self-test completed.
  16. Number of battery modules decreased.
  17. Number of battery modules increased.

18. Fan fault.
  19. SBS fault.
  20. System not in sync.
  21. Bypass not available, frequency/voltage out of range.
  22. Mains voltage/frequency out of range.
  23. Site wiring fault.
  24. Low battery voltage shut down.
  25. XR battery breaker or fuse open.
  26. Defective battery detected.
  27. Runtime is below alarm threshold.
  28. Load is above alarm threshold.
  29. Battery over-voltage warning.
  30. Battery over-temperature warning.
  31. Emergency power supply fault.
  32. Output overloaded.
- E. Controls: The following controls or programming functions shall be accomplished by use of the display unit. Pushbutton membrane switches shall facilitate these operations.
1. Silence audible alarm.
  2. Set the alphanumeric display language.
  3. Display or set the date and time.
  4. Enable or disable the automatic restart feature.
  5. Transfer critical load to and from static bypass.
  6. Test battery condition on demand.
  7. Set intervals for automatic battery tests.
  8. Adjust set points for different alarms.
  9. Program the parameters for remote shutdown.

F. Front Panel Interface: The following shall make up the UPS front panel user interface.

1. Indicating LED's:

- a. Load On: When green, this LED shall indicate the load is being supported by the UPS output.
- b. On Battery: When yellow, this LED shall indicate the UPS is running from battery power.
- c. Bypass: When yellow, this LED shall indicate the load is being supported by static bypass/mechanical bypass.
- d. Fault: When red, this LED shall indicate there is a fault condition present in the UPS.

2. Pushbutton User Controls:

- a. Up arrow.
- b. Down arrow.
- c. Help key.
- d. Escape key.
- e. Enter key.

G. Potential Free (Dry) Contacts: The following potential free contacts shall be available on an optional relay interface board (AP9610 or equivalent) (note, this may require the use of an external chassis if used in conjunction with web-based management or other smart-slot type devices):

1. Normal operation.
2. Battery operation.
3. Bypass operation.
4. Common fault.
5. Low battery.
6. UPS off.

H. Communication Interface: For purposes of remote communications with the UPS the following shall be available and contained within the UPS on a removable, hot-swappable smart-slot interface card:

1. RJ-45 interface port for remote communications with a network via web browser or SNMP, or APC InfraStruXure Manager.

2. Environmental monitoring feature, capable of locally monitoring temperature and humidity as well as one additional generic set of Owner-determined dry contacts capable of taking an input signal from any APC or third party on/off signal, such as water detection, smoke detection, motion, or fire detection.

## 2.8 BATTERY

- A. The UPS battery shall be of modular construction made up of owner-replaceable, hot swappable, fused, battery modules. Each battery module shall be monitored to determine the highest battery unit temperature for use by the UPS battery diagnostic, and temperature compensated charger circuitry.
- B. The battery jars housed within each removable battery module shall be of the valve regulated lead acid (VRLA) type.

## 2.9 UPS CABINET

- A. The UPS cabinet shall be of a design that consists of steel cabinet panels mounted to a steel frame. The UPS cabinet shall be equipped with air intake louvers that allow ventilation air to flow over and cool the internal UPS equipment components within the cabinet. Air filter panels shall be placed directly behind the air intake louvers. The air filters to be used shall be rated as 80% filters in accordance with ASHRAE 52.1. The cabinet panel in which the air intake louvers are placed shall either be a hinged door-type panel or a removable panel held in place by screws that allows the air filter sections to be easily replaced by the UPS equipment user.
- B. The UPS cabinet enclosure shall be rated as a NEMA 12 enclosure and have an IP51 level of protection against dust as well as water droplets and condensation dripping/falling vertically from above in accordance with IEC529.
- C. The UPS cabinet shall be equipped with rollers or wheels that allow the UPS equipment to be easily wheeled into place for use and connection. Mounting brackets attached to the cabinet panels on at least two opposite sides shall be furnished so that the UPS cabinet can be firmly anchored to the floor in place. When firmly anchored in place to the floor, the UPS cabinet shall be supported up above the floor so that the UPS cabinet does not make direct contact with the floor using either the furnished wheels or rollers or additional pads provided in the field separately for this purpose.

## 2.10 ACCESSORIES

- A. Extended Runtime (XR) Option:
  1. For purposes of extending the UPS battery runtime, external extended runtime options shall be available. The extended runtime option shall be housed in line-up-and-match type enclosures and shall contain necessary hardware and cables to connect to the UPS, or between XR enclosures. Each XR enclosure shall be equipped with removable, hot swappable, battery units housed in draw-out cartridges.
  2. The extended runtime system shall have a 250 volt DC rated, thermal magnetic trip molded case circuit breaker. Each circuit breaker shall be equipped with shunt trip mechanisms and 1A/1B auxiliary contacts. The circuit breakers shall be equipped as part of a line-up-and-match type battery enclosure.



B. Maintenance Bypass Cabinet (MBC):

1. The MBC shall provide power to the critical load bus from the bypass source, during times where maintenance or service of the UPS is required. The MBC shall provide a mechanical means of complete isolation of the UPS from the electrical wiring of the installation. The MBC shall be constructed in a freestanding or wall-mounted NEMA 1 enclosure unless otherwise stated in this section. The freestanding MBC shall be equipped with rollers or wheels that allow the MBC enclosure to be easily wheeled into place for use and connection. Mounting brackets attached to the freestanding MBC cabinet panels on at least two opposite sides shall be furnished so that the MBC enclosure can be firmly anchored to the floor in place. When firmly anchored in place to the floor, the MBC enclosure shall be supported up above the floor so that the MBC enclosure does not make direct contact with the floor using either the furnished wheels or rollers or additional pads provided separately in the field for this purpose.
2. As a minimum, the MBC shall contain the following features and accessories:
  - a. Circuit breakers of the appropriate size and withstand rating (maximum 25 kAIC rating), for the system.
  - b. Minimum 1A/1B auxiliary contacts for the purpose of relaying status information of the maintenance bypass circuit switch to the UPS.
3. The MBC shall be available in a minimum of two distinct types:
  - a. Wall-mount, three-breaker, NEMA 1 enclosure.
  - b. Line-up-and-match style enclosure. This option shall have pre-formed knock-outs for purposes of top or bottom fed distribution. It shall be available as a standard cabinet, or shall come equipped with a 42 pole distribution panel, or shall be equipped with an input isolation transformer.
4. The MBC shall carry a UL 1778 agency listing.

C. Input Transformer Cabinet (XFM): The input transformer cabinet shall provide isolation or voltage transformation for rectifier input and DC bus for ungrounded DC systems. The input isolation transformers shall be housed in a line-up-and-match type enclosure.

D. Parallel Operation:

1. General: For purposes of load-sharing, the UPS shall contain, as a standard feature, the ability to parallel up to four modules for either increased capacity, redundancy, or both. In this mode of operation the output voltage, output frequency, output phase angle, and output impedance of each module shall operate in uniformity to ensure correct load-sharing. This control function shall not require any additional footprint and shall be an integral function of each UPS.
2. Network: Communication between modules shall be connected in a multi-drop bus network comprising of two parallel redundant buses so that the removal of any single cable shall not jeopardize the integrity of the parallel communication bus.

3. Synchronization Bus: One UPS module shall operate as the master. The master unit shall transmit a signal directly derived from its own phase lock loop (PLL) circuit as the sync clock reference to the slave units to ensure effective synchronization of modules. In the event that the master unit fails, the first slave unit to receive logic power shall assume the role as master.
4. Load-Sharing: A load-sharing circuit shall be incorporated into the parallel control communications to ensure that under no load conditions, no circulating current exists between modules. This feature shall also allow each UPS to share equal amounts of the total critical load bus. A UPS module's influence over load-sharing shall be inhibited in any mode where the UPS inverter is not supporting its output bus. Load-sharing communications shall be galvanically isolated for purposes fault tolerance between UPS modules.

E. Parallel System Maintenance Bypass Cabinet (PSMBC):

1. The PSMBC shall provide power to the critical load bus from the bypass source, during times where maintenance or service of the UPS modules is required. The PSMBC shall provide a mechanical means of complete isolation of the UPS module from the electrical wiring of the installation.
2. As a minimum, the PSMBC shall contain the following features and accessories:
  - a. Circuit breakers of the appropriate size and withstand rating (maximum 25 kAIC rating), for the system and each UPS module.
  - b. Minimum 1A/1B auxiliary contacts for the purpose of relaying status information of all PSMBC circuit breakers to the UPS.
  - c. Sufficient APC CAN bus PCB's to provide adequate communications of the PSMBC status to the UPS system parallel control system.
3. The PSMBC shall be available as a line-up-and-match enclosure, circuit breaker, NEMA 1 enclosure.
4. The PSMBC shall carry a UL 1778 agency listing.

F. Software and Connectivity:

1. Network Adaptor: The ethernet web/SNMP adaptor shall allow one or more network management systems (NMS) to monitor and manage the UPS in TCP/IP network environments. The management information base (MIB) shall be provided in DOS and UNIX "tar" formats. The SNMP interface adaptor shall be connected to the UPS via the RS-232 serial port on the standard communication interface board.
2. Unattended Shutdown: The UPS, in conjunction with a network interface card, shall be capable of gracefully shutting down one or more operating systems during when the UPS is on reserve mode. The UPS shall also be capable of using an RS-232 port to communicate by means of serial communications to gracefully shut down one or more operating systems during an on battery situation.

G. Remote UPS Monitoring: The following three methods of remote UPS monitoring shall be available:

1. Web Monitoring: Remote monitoring shall be available via a web browser such as Internet Explorer.
2. RS-232 Monitoring: Remote UPS monitoring shall be possible via either RS-232 or contact closure signals from the UPS.
3. Simple Network Management Protocol (SNMP): Remote UPS monitoring shall be possible through a standard MIB II compliant platform.

H. Software Compatibility: The UPS manufacturer shall have available software to support graceful shutdown and or remote monitoring for the following systems:

1. Microsoft Windows 95 and Windows 98
2. Microsoft Windows XP
3. Microsoft Windows 7
4. Microsoft Windows NT 4.0 SP6/2000.
5. OS/2
6. Netware 3.2 – 5.1.
7. MAC OS 9.04, 9.22, 10.
8. Digital Unix/True 64.
9. SGI 6.0-6.5.
10. SCO UNIX.
11. SVR4 2.3, 2.41.
12. SCO Unix Ware 7.0 - 7.11.
13. SUN Solaris 2.6-2.8.
14. SUN OS 4.13, 4.14.
15. IBM AIX 4.3x-4.33g, 5.1.
16. HP-UX 9.x-11.i.

## PART 3 – EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which the work is to be installed, and notify the Contractor in writing, with a copy to the Owner and the Architect/Engineer, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

- 1. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Installer.

### 3.2 INSTALLATION

- A. General: Preparation and installation shall be in accordance with reviewed product data, final shop drawings, manufacturer's written recommendations, and as indicated on the drawings.
- B. Factory-Assisted Start-Up: If a factory-assisted UPS start-up is requested, factory-trained service personnel shall perform the following inspections, test procedures, and on-site training:

- 1. Visual Inspection:

- a. Inspect equipment for signs of damage.
    - b. Verify installation per manufacturer's instructions.
    - c. Inspect cabinets for foreign objects.
    - d. Inspect battery units.
    - e. Inspect power modules.

- 2. Mechanical Inspection:

- a. Check UPS and external MBC internal power wiring connections.
    - b. Check UPS and external MBC terminal screws, nuts, and/or spade lugs for tightness.

- 3. Electrical Inspection:

- a. Verify correct input and bypass voltage.
    - b. Verify correct phase rotation of mains connections.
    - c. Verify correct UPS control wiring and terminations.
    - d. Verify voltage of battery modules.
    - e. Verify neutral and ground conductors are properly landed.
    - f. Inspect external maintenance bypass switch for proper terminations and phasing.

- 4. Site Testing:

- a. Ensure proper system start-up.

- b. Verify proper firmware control functions.
  - c. Verify proper firmware bypass operation.
  - d. Verify proper maintenance bypass switch operation.
  - e. Verify system set points.
  - f. Verify proper inverter operation and regulation circuits.
  - g. Simulate utility power failure.
  - h. Verify proper charger operation.
  - i. Document, sign, and date test results.
5. On-Site Operational Training: During the factory-assisted start-up, operational training for site personnel shall include, but shall not be limited to, key pad operation, LED indicators, start-up and shutdown procedures, maintenance bypass and AC disconnect operation, and alarm information.

### 3.3 FIELD QUALITY CONTROL

#### A. Manufacturer Field Service:

- 1. Worldwide Service: The UPS manufacturer shall have a worldwide service organization available, consisting of factory-trained field service personnel to perform start-up, preventative maintenance, and service of the UPS system and power equipment. The service organization shall offer 24 hours a day, 7 days a week, 365 days a year service support.
- 2. Replacement Parts: Parts shall be available through the worldwide service organization 24 hours a day, 7 days a week, 365 days a year. The worldwide service organization shall be capable of shipping parts within four working hours or on the next available flight, so that the parts may be delivered to the customer site within 24 hours.

### 3.4 DEMONSTRATION

#### A. General: Provide the services of a factory-authorized service representative of the manufacturer to provide start-up service and to demonstrate and train the Owner's personnel.

- 1. Test and adjust controls and safeties. Replace damaged or malfunctioning controls and equipment.
- 2. Train the owner's maintenance personnel on procedures and schedules related to start-up and shutdown, troubleshooting, servicing, and preventive maintenance.
- 3. Review data in operation and maintenance manuals with the Owner's personnel.
- 4. Schedule training with the Owner, through the architect/engineer, with at least seven day's advanced notice.

- B. UPS Training Workshop: A UPS training workshop shall be available from the UPS manufacturer. The training workshop shall include, but shall not be limited to, a combination of lecture and practical instruction with hands-on laboratory sessions. The training workshop shall include, but shall not be limited to, instruction about safety procedures, UPS operational theory, sub-assembly identification and operation, system controls, adjustments, preventative maintenance, and troubleshooting.

### 3.5 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to the installer that shall ensure that the solid state UPS shall be without damage at time of substantial completion.

END OF SECTION