



As Advertised

TECHNICAL SPECIFICATIONS
for the
MAINTENANCE BUILDING ELECTRIC SERVICE
CITY OF CARLSBAD

August 2014

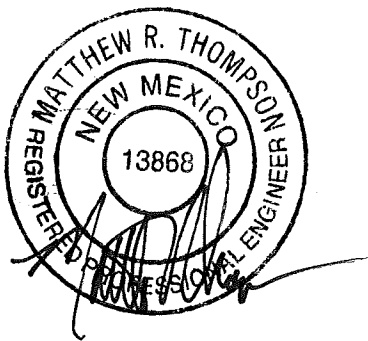
Prepared for
CITY OF CARLSBAD
Bid #2014-53

PROCUREMENT MANAGER:
Steve McCutcheon
City of Carlsbad
P.O. Box 1569
Carlsbad, NM 88221-1569
Phone: (575) 887-1191

ENGINEER OF RECORD:

Bohannon Huston, Inc
425 S. Telshor Blvd., Ste C103
Las Cruces, NM 88011
(575) 532-8670

The technical material and data contained in the specifications were prepared under the supervision and direction of the undersigned, whose seal as a Professional Engineer, licensed to practice in the State of New Mexico, is affixed below.



Matthew R. Thompson, P.E.
Engineer of Record

License No. 13868

All questions about the meaning or intent of these documents shall be submitted only to the Engineer of Record, stated above, in writing.

**CONTRACT DOCUMENTS
FOR CITY OF CARLSBAD, MAINTENANCE BUILDING ELECTRIC SERVICE**

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Advertisement for Bids
Bid #2014-53

City of Carlsbad
Owner

P.O. Box 1569
Carlsbad, NM 88221-1569
Address

Separate sealed Bids for the construction of City of Carlsbad, Maintenance Building Electric Service

will be received by Tom Carlson

at the office of City of Carlsbad – Planning Room 204, 101 N. Halagueno, Carlsbad NM 88221

until 2:30 p.m., (Local Time) October 1, 2014, and then at said office publicly opened and read aloud.

A Pre-Bid Conference non-mandatory will be held at: City of Carlsbad Public Works Dept.
1702 West Fox St., Carlsbad NM 88221 At: 9:00 a.m., September 24, 2014

The Contract Documents may be examined at the following location(s):

Reed Construction Data 30 Technology Parkway S., Ste. 500, Norcross, GA, (800) 876-4045

Construction Reporter 1609 Second St. NW, Albuquerque, NM 87102 (505) 243-9793

Builders News & Plan Room 3435 Princeton NE, Albuquerque, NM 87107 (505) 884-1752

McGraw Hill Construction Dodge 4300 Beltway Place, Suite 180, Arlington, TX 76018 (972) 819-1319

The PlanIt Room 1155 Westmoreland Suite 102, El Paso, TX 79925 (915) 781-2900

Bohannon Huston, Inc. 425 S. Telshor Blvd, Suite C103, Las Cruces, NM 88011 (575) 532-8670

Copies of the Contract Documents may be obtained at the Issuing Office, City of Carlsbad Purchasing Dept., located at 101 N. Halagueno, Carlsbad NM 88221, phone (575) 887-1191, fax (800) 658-2713, upon payment of \$20.00 for each set. The deposit shall equal the full cost of reproduction and delivery of the documents for bid.

The deposit, less delivery charges, shall be refunded if the documents for bid are returned in usable condition within the time limits specified in the documents for bid.

September 11, 2014
Date

Steve McCutcheon

SUGGESTED INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the advertisement or invitation to bid may be obtained from the Issuing Office. The deposit will be refunded to each document holder of record who returns a complete set of Bidding Documents in good condition within 30 days after opening of Bids.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, within five days of Owner's request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below.
- A. *Evidence of Bidder's authority to do business in the state where the Project is located.*
- B. *Bidder's Qualification Statement*
- 3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

- 4.01 *Subsurface and Physical Conditions*
- A. The Supplementary Conditions identify:
1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site.

2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.02 *Underground Facilities*

- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 *Hazardous Environmental Condition*

- A. The Supplementary Conditions identify any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.
- B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Paragraph 4.06 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

- 4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions.
- 4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.
- 4.06 Additional Owner Provided Information:
- A. Reference is made to Article 7 of the General Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.
 - B. Paragraph 6.13.C of the General Conditions indicates that if an Owner safety program exists, it will be noted in the Supplementary Conditions.
- 4.07 It is the responsibility of each Bidder before submitting a Bid to:
- A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;
 - B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
 - C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;
 - D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Paragraph 4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in the Paragraph 4.06 of the Supplementary Conditions as containing reliable "technical data";

- E. consider the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;
- F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

- 4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – PRE-BID CONFERENCE

- 5.01 A pre-Bid conference will be held at 9:00 a.m. local time on September 24, 2014 at City of Carlsbad Public Works Dept. - 1702 West Fox St., Carlsbad NM 88221. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are highly encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 6 – SITE AND OTHER AREAS

- 6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5% percent of Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.
- 8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.
- 8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

- 11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or those substitute or "or-equal" materials and equipment approved by Engineer and identified by Addendum. The materials and equipment described in the Bidding

Documents establish a standard of required type, function and quality to be met by any proposed substitute or “or-equal” item. No item of material or equipment will be considered by Engineer as a substitute or “or-equal” unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each such request shall conform to the requirements of Paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer’s decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS

- 12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, *without an increase in the Bid*.
- 12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.
- 12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.
- 12.04 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 6.06.

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents. Additional copies may be obtained from Engineer.
- 13.02 All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each [section, Bid item, alternative, adjustment unit price item, and unit price item]

listed therein. In the case of optional alternatives the words “No Bid,” “No Change,” or “Not Applicable” may be entered.

- 13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.
- 13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.
- 13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.06 A Bid by an individual shall show the Bidder’s name and official address.
- 13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.08 All names shall be printed in ink below the signatures.
- 13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.11 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 *Lump Sum*

- A. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form.

14.02 *Unit Price*

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.

- B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

14.03 Allowances

- A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 11.02.B of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and all the attachments outlined in Article 7 of the Bid Form.

- 15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to in Article 1.01 of Bid Form.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.
- 16.02 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

- 17.01 Bids will be opened at the time and place indicated in the Advertisement or Invitation to Bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.
- 19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be awarded, Owner will award the Contract to the responsible Bidder whose Bid, conforming with all the material terms and conditions of the Instruction to Bidders, is lowest, price and other factors considered. If detailed in the bid form, factors such as discounts, transportation costs, and life cycle costs may be used to determine which bidder, if any, is to be offered the award.

19.07 When Bids are received from both resident contractors and nonresident contractors and the lowest responsible Bid is from a nonresident contractor, the contract shall be awarded to the resident contractor whose Bid is nearest to the bid price of the otherwise low nonresident contractor if the Bid price of the resident contractor is made lower than the Bid price of the nonresident contractor when multiplied by a factor of ninety-five one-hundredths.

A. No contractor shall be treated as a resident contractor in the awarding of public works contracts by the Owner unless the contractor has qualified with the State Purchasing Agent as a resident contractor pursuant to this section by making application to the State Purchasing Agent and receiving from him a certification number. For the convenience of potential bidders, and without warranty the process is current, the procedure for application and certification is as follows:

1. The contractor seeking to qualify as a resident contractor shall complete the application form and submit it to the State Purchasing Agent prior to the submission of a Bid on which the contractor desires to be given a preference. This application for preference should be acquired from State of NM General Services Department, Purchasing Division telephone (505) 827-0472.
2. The State Purchasing Agent shall examine the application and, if necessary, may seek additional information or proof so as to be assured that the Prospective Contractor is indeed entitled to certification as a resident contractor. If the application is in proper form, the State Purchasing Agent shall issue the contractor a distinctive certifications number, which is valid until revoked and which, when used on Bids and other purchasing documents for State agencies or local public bodies, entitles the contractor to treatment as a resident contractor under paragraph 19.07; and
3. The Certification number issued pursuant to Subparagraph 2 of this section may be revoked by the State Purchasing Agent by making a determination and the contractor no longer meets the requirements of a resident contractor as defined in Section 13-4-2, NMSA 1978.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

- 20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 – SIGNING OF AGREEMENT

- 21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 – SALES AND USE TAXES

- 22.01 Owner is exempt from N/A state sales and use taxes on materials and equipment to be incorporated in the Work. (Exemption No. N/A). Said taxes shall not be included in the Bid. Refer to Paragraph 6.10 of the Supplementary Conditions for additional information.

ARTICLE 23 – RETAINAGE

- 23.01 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Agreement.

ARTICLE 24 – CONTRACTS TO BE ASSIGNED

- 24.01 Owner as "Buyer" [has executed] [will execute] a contract with N/A as "Seller" for the procurement of goods and special services for N/A. The materials and equipment provided for in the procurement contract are to be furnished and delivered to the Site [or other location] for installation by Contractor. The said procurement contract will be assigned by Owner to Contractor as set forth in the Agreement. Contractor will accept the assignment and assume responsibility for the "Seller," who will become a Supplier to Contractor.
- 24.02 Bidders may examine the contract documents used by the Owner for the procurement of goods and special services for N/A at N/A.

ARTICLE 25 – WAGE RATE REQUIREMENTS

- 25.01 The prevailing wage rates of the State of New Mexico apply to this contract as do any requirements of the State of New Mexico associated with the use of these State Prevailing wages.
- 25.02 The prevailing wage rates of the Department of Labor do not apply to this project. Labor Standards Provisions found at 29 CFR 5.5(a) apply to this project if the prevailing wage rates of

BID FORM

Project Identification: City of Carlsbad, Maintenance Building Electric Service

Contract Identification and Number: Bid #2014-53

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Carlsbad, P.O. Box 1569, Carlsbad NM 88221

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.

Addendum Date

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in SC-4.02 as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in SC-4.06 as containing reliable "technical data."

E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings

identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

- F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

BID SCHEDULE

BID ITEM	DESCRIPTION	UNIT	QTY	EXTENSION
1	Electric Service and Feeders: Includes electrical service, panelboard, feeders, ground system, conduit, conductors, mounting and all accessories as indicated on the design plans. Complete in place, installed and all materials. This item shall be paid for on a lump sum price.	LS	1	
2	Testing Laboratory Services Allowance: Testing Laboratory Services for soil and concrete; complete-in-place. All work shall be governed by Specification Section 1410 – Testing Laboratory Services. Contractor shall be reimbursed for all testing laboratory services direct costs under this unit allowance for the entire project.	ALW	1	\$1,000
TOTAL BID (Items 1 and 2)				\$ -

All specified cash allowances are included in the price(s) set forth above, and have been computed in accordance with Paragraph 11.02 of the General Conditions.

Unit Prices have been computed in accordance with Paragraph 11.03.B of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

- A. Required Bid security in the form of Bid Bond (EJCDC No. C-430) or Certified Check (circle type of security provided);
- B. List of Proposed Subcontractors;
- C. List of Proposed Suppliers;
- D. List of Project References;
- E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
- F. Contractor's License No.: _____ [or] Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;
- G. Required Bidder Qualification Statement with Supporting Data; and
- H. *Certification Regarding Debarment, Suspension and Other Responsibility Matters*;
- I. *Non-Collusion Affidavit*;
- J. *Campaign Contribution Disclosure Form*;

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in New Mexico is ____/____/____.

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of second joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

State Contractor License No. _____.

Dept. of Workforce Solutions Minimum Wage Act Registration Number
(DWS#) _____

Resident Contractor's Preference Number: _____

the Department of Labor apply. If the contract cost is in excess of \$100,000, provisions of the Contract Work Hours and Safety Standards Act at 29CRF 5.5(b) also apply.

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name and Address of Principal Place of Business*):

OWNER (*Name and Address*):

City of Carlsbad
P.O. Box 1569
Carlsbad, NM 88331

BID

Bid Due Date:
Description (*Project Name and Include Location*):
City of Carlsbad, Maintenance Building Electric Service

BOND

Bond Number:
Date (*Not earlier than Bid due date*):
Penal sum _____

(Words)

\$ _____

(Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal

(Seal)

Surety's Name and Corporate Seal

(Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SUBCONTRACTORS LISTING AND WSD (DOL) REGISTRATION

Project: City of Carlsbad, Maintenance Building Electric Service Project No. 2014-53

1.0 SUBCONTRACTORS LISTING FOR COMPLIANCE WITH THE SUBCONTRACTORS FAIR PRACTICES ACT AND WSD (DOL) REGISTRATION

1.1 To be fully executed and included with Bid as a condition of the Bid pursuant to §13-4-31 to 13-4-42 NMSA 1978, known as the Subcontractors Fair Practices Act.

1.2 Pursuant to §13-4-34 NMSA 1978 all Subcontractors providing services valued at \$7,500 or more (listing threshold)for this project shall be listed below.

1.3 See §13-4-36 NMSA 1978 for rules regarding changes in this list after bidding.

1.4 Pursuant to §13-4-13.1 NMSA 1978 any contractor or subcontractor that submits a bid valued at more than \$60,000 for a public works project subject to the Public Works Minimum Wage Act shall be registered with the Labor and Industrial Division of the Workforce Solutions Department (WSD) (formerly the Department of Labor (DOL). The Owner shall not accept a bid on a public works project from a Contractor that does not provide proof of required registration for itself. Contractors, prime contractors and subcontractors must be registered with the WSD.

<u>Trade (list by trade)</u>	<u>Firm Name and Address</u>	<u>Workforce Solutions Dept. Registration No.</u>
<hr/>		WSD Registration No. <hr/>
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	WSD Registration No. _____

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	WSD Registration No. _____

	WSD Registration No. _____

	WSD Registration No. _____

	WSD Registration No. _____

	WSD Registration No. _____

	WSD Registration No. _____

	WSD Registration No. _____

[Use Additional Pages If Necessary]

BIDDERS QUALIFICATION STATEMENT

PROJECT TITLE: CITY OF CARLSBAD, MAINTENANCE BUILDING ELECTRIC SERVICE
SUBMITTED BY: _____
(Print or Type Name of Bidder)
ADDRESS: _____

The undersigned certifies the truth and correctness of all statements and of all answers to questions made hereinafter:

1. How many years has your organization been in business as a utilities contractor?

2. How many years has your organization been in business under its present name?

3. If a corporation, answer the following:
 - a. Date of Incorporation: _____
 - b. State of Incorporation: _____
 - c. President's Name: _____
 - d. Vice President's Name: _____
 - e. Secretary or Clerk's Name: _____
 - f. Treasurer's Name: _____
4. If individual or partnership, answer the following:
 - a. Date of Organization: _____
 - b. Name and Address of all Partners: (State if general or limited partnership)

5. If other than corporation or partnership, describe organization and name principals:

6. Do you plan to subcontract any part of this project, if so, give details:

-
-
7. Has any construction contract to which you have been a party been terminated by the owner; have you ever terminated work on a project prior to its completion for any reason; has any surety which issued a performance bond on your behalf ever completed the work in its own name or financed such completion on your behalf; has any surety expended any monies in connection with the contract for which they furnished a bond on your behalf? If the answer to any portion of this question is "yes", please furnish details of all such occurrences including name of owner, architect or engineer, and surety, and name and date of project:
-
-
-

8. Has any officer or partner of your organization ever been an officer or partner of another organization that had any construction contract terminated by the owner; terminated work on a project prior to its completion for any reason; had any surety which issued a performance bond complete the work in its own name or financed such completion; or had any surety expend any monies in connection with a contract for which they furnished a bond? If the answer to any portion of this question is "yes", please furnish details of all such occurrences, including name of owner, architect or engineer, and surety, and name and date of project.
-
-
-

9. List name of project, owner, architect or engineer, contract amount, percent complete and scheduled completion of the major construction projects your organization has in process on this date:
-
-
-

10. List name of project, owner, architect or engineer, contract amount, date of completion and percent of work with own forces of the major projects of the same general nature as this project which your organization has completed in the past five years:
-
-
-

11. List name, address and telephone number of a reference for each project listed under Items 9 and 10 above.
-
-
-

12. List name and construction experience of the principal individual of your organization:

13. List the states and categories of construction in which you organization is legally qualified to do business:

14. List name, address, and telephone number of an individual who represents each of the following and who may be contacted for a financial reference:

- a. A surety:

-
-
- b. A bank:

-
-
- c. A major material supplier:

-
-

Dated this _____ day of _____ 20____

Bidder:

(Print or Type Name of Bidder)

By:

Title:

(Seal of Corporation)

**CERTIFICATION REGARDING
DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS**

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of all had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State Antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification; and
- (d) Have not within a three-year period preceding this application/proposal had one or more public transaction (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be ground for rejection of this proposal or termination of the award. Under 18USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative

Date

NON-COLLUSION AFFIDAVIT

TO BE EXECUTED BY EACH AWARDEE OF A PRINCIPAL CONTRACT

)
)ss
)

_____, being first duly sworn, deposes and says that he is

(sole owner, a partner, president, secretary, etc.)

of _____
the party making the foregoing bid; that such a bid is not made in the interest of or on behalf of any undisclosed person, partnership, company association, organization, or corporation; that such a bid is genuine and not collusive or sham; that said bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirect colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, nor that anyone shall refrain from bidding; that said bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of said bidder or of any other bidder, nor to fix any overhead, profit, or cost element of such bid price, nor of that of any other bidder, nor to secure any advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in such bid are true; and, further, that said bidder has not directly or indirectly, submitted his bid price or any breakdown thereof, nor the contents thereof, nor divulged information or data relative thereto, nor paid and will not pay fee in connection therewith to any corporation, partnership, company, association, organization, bid depository, nor any member or agent thereof, nor any to any other individual except to such person or persons as have a partnership or other financial interest with said bidder in his general business.

Signed:

By _____

Title _____

Subscribed and sworn before me this _____ day of _____, 20

Seal of Notary

NOTARY PUBLIC

CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Pursuant to Chapter 81, Laws of 2006, any prospective contractor seeking to enter into a contract with any state agency or local public body must file this form with that state agency or local public body. The prospective contractor must disclose whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official of the state or a local public body during the two years prior to the date on which the contractor submits a proposal or, in the case of a sole source or small purchase contract, the two years prior to the date the contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds two hundred and fifty dollars (\$250) over the two year period.

THIS FORM MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE.

The following definitions apply:

“Applicable public official” means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

“Campaign Contribution” means a gift, subscription, loan, advance or deposit of money or other thing of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that official’s behalf for the purpose of electing the official to either statewide or local office. “Campaign Contribution” includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or unreimbursed travel or other personal expenses of individuals who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

“Contract” means any agreement for the procurement of items of tangible personal property, services, professional services, or construction.

“Family member” means spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law.

“Pendency of the procurement process” means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

“Person” means any corporation, partnership, individual, joint venture, association or any other private legal entity.

“Prospective contractor” means a person who is subject to the competitive sealed proposal process set forth in the Procurement Code or is not required to submit a competitive sealed proposal because that person qualifies for a sole source or a small purchase contract.

“Representative of a prospective contractor” means an officer or director of a corporation, a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

DISCLOSURE OF CONTRIBUTIONS:

Contribution Made By: _____

Relation to Prospective Contractor: _____

Name of Applicable Public Official: _____

Date Contribution(s) Made: _____

Amount(s) of Contribution(s) _____

Nature of Contribution(s) _____

Purpose of Contribution(s) _____

(The above fields are unlimited in size)

Signature

Date

Title (position)

--OR--

NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS (\$250) WERE MADE to an applicable public official by me, a family member or representative.

Signature

Date

Title (Position)

Notice of Award

Date: _____

Project: City of Carlsbad, Maintenance Building Electric Service

Owner: City of Carlsbad

Owner's Contract No.: 2014-53

Contract: City of Carlsbad, Maintenance Building Electric Service

Engineer's Project No.: 20140301

Bidder: .

Bidder's Address: *[send Notice of Award Certified Mail, Return Receipt Requested]*

You are notified that your Bid dated _____, 2014 for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for the total base bid,

[Indicate total Work, alternates, or sections of Work awarded.]

The Contract Price of your Contract is _____ Dollars (\$0.00).

[Insert appropriate data if unit prices are used. Change language for cost-plus contracts.]

5 copies of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

10 sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Owner [5] fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), General Conditions (Paragraph 5.01), and Supplementary Conditions (Paragraph SC-5.01).
3. Other conditions precedent:

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

City of Carlsbad

Owner

By: _____

Authorized Signature

_____ Title

Copy to Engineer

**SUGGESTED FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between _____ City of Carlsbad _____ (“Owner”) and
_____ (“Contractor”).

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Removal of existing buildings electrical service and installation of new 1200 amp service panelboard and associated conduit to buildings subpanel.

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

City of Carlsbad, Maintenance Building Electric Service, Bid #2014-53

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Bohannon Huston Inc. (Engineer), which is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Days to Achieve Substantial Completion and Final Payment*

- A. The Work will be substantially completed within 60 days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 30 days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500.00 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$500.00 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraph 5.01.A below:

- A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

- 1. Exhibit A – Bid Form C-410

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 25th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be

measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.
 - a. 100 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
 - b. 100 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 – INTEREST

- 7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of interest rate comparable to short term lending rate or State law percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:
 - A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

- B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
- E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to __, inclusive).
 2. Performance bond (pages ____ to ____, inclusive).
 3. Payment bond (pages ____ to ____, inclusive).
 4. Other bonds (pages ____ to ____, inclusive).
 - a. ____ (pages ____ to ____, inclusive).
 - b. ____ (pages ____ to ____, inclusive).
 - c. ____ (pages ____ to ____, inclusive).
 5. General Conditions (pages ____ to ____, inclusive).
 6. Supplementary Conditions (pages ____ to ____, inclusive).
 7. Specifications as listed in the table of contents of the Project Manual.
 8. Drawings consisting of ____ sheets with each sheet bearing the following general title: ____ [or] the Drawings listed on attached sheet index.
 9. Addenda (numbers ____ to ____, inclusive).
 10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages ____ to ____, inclusive).
 - b. Documentation submitted by Contractor prior to Notice of Award (pages ____ to ____, inclusive).
 - c. *[List other required attachments (if any), such as documents required by funding or lending agencies].*
 11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed (pages ____ to ____, inclusive).
 - b. Work Change Directives.
 - c. Change Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.

- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to

establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective on _____ (which is the Effective Date of the Agreement).

OWNER:

City of Carlsbad _____

By: _____

Title: _____

Attest: _____

Title: _____

Address for giving notices:

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

CONTRACTOR

By: _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Title: _____

Address for giving notices:

License No.: _____

(Where applicable)

Agent for service of process:

Notice to Proceed

Date: _____

Project: City of Carlsbad, Maintenance Building Electric Service

Owner: City of Carlsbad

Owner's Contract No.: 2014-53

Contract: City of Carlsbad, Maintenance Building Electric Service

Engineer's Project No.: 20140301

Contractor:

Contractor's Address: *[send Certified Mail, Return Receipt Requested]*

You are notified that the Contract Times under the above Contract will commence to run on _____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the date of Substantial Completion is _____, and the date of readiness for final payment is _____ [(or) the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____].

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

_____ *[add other requirements]*.

Owner

Given by:

Authorized Signature

Title

Date

Copy to Engineer

PERFORMANCE BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

City of Carlsbad

P.O. Box 1569, Carlsbad, NM 88221

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: City of Carlsbad, Maintenance Building Electric Service

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of

the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within

two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*: City of Carlsbad, P.O. Box 1569, Carlsbad, NM 88221

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: City of Carlsbad, Maintenance Building Electric Service

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2 Pay or arrange for payment of any undisputed amounts.
 - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or

(2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond

shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

Contractor's Application for Payment No. _____

Application Period:		Application Date:	
To (Owner): City of Carlsbad, P.O. Box 1569, Carlsbad, NM 88221	From (Contractor):	Via (Engineer): Bohannon Huston Inc.	
Project: City of Carlsbad, Lift Station Renovations	Contract: City of Carlsbad, Maintenance Building Electric Service		
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.: 20140301	

Application For Payment Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
TOTALS		
NET CHANGE BY CHANGE ORDERS		

1. ORIGINAL CONTRACT PRICE.....	\$ _____
2. Net change by Change Orders.....	\$ _____
3. Current Contract Price (Line 1 ± 2).....	\$ _____
4. TOTAL COMPLETED AND STORED TO DATE (Column F on Progress Estimate).....	\$ _____
5. RETAINAGE:	
a. X _____ Work Completed.....	\$ _____
b. X _____ Stored Material.....	\$ _____
c. Total Retainage (Line 5a + Line 5b).....	\$ _____
6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c).....	\$ _____
7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application).....	\$ _____
8. AMOUNT DUE THIS APPLICATION.....	\$ _____
9. BALANCE TO FINISH, PLUS RETAINAGE (Column G on Progress Estimate + Line 5 above).....	\$ _____

Contractor's Certification

The undersigned Contractor certifies that to the best of its knowledge: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

By:

Date:

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is recommended by: _____
(Engineer) (Date)

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is approved by: _____
(Owner) (Date)

Approved by: _____
Funding Agency (if applicable) (Date)

Certificate of Substantial Completion

Project: City of Carlsbad, Maintenance Building Electric Service

Owner: City of Carlsbad

Owner's Contract No.: 2014-53

Contract: City of Carlsbad, Maintenance Building Electric Service

Engineer's Project No.: 20140301

This [tentative] [definitive] Certificate of Substantial Completion applies to:

☐ All Work under the Contract Documents: ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

☐ Amended Responsibilities

☐ Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

<hr/> Executed by Engineer	<hr/> Date
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<hr/> Accepted by Contractor	<hr/> Date
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<hr/> Accepted by Owner	<hr/> Date
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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on

Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;
2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer’s Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner’s obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer’s findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

- c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the

consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also

meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

- a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 - 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 - 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 - 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 - 5. allow for partial utilization of the Work by Owner;
 - 6. include testing and startup; and
 - 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors,

members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's

interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 - 1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
- b. Contractor certifies that, if approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

- c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
 - 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be

required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner,

Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

- 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
- 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
- 3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought

by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and

shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is

required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

- a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
- b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
- c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
- d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 - 1. observations by Engineer;
 - 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. use or occupancy of the Work or any part thereof by Owner;
 - 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
 - 6. any inspection, test, or approval by others; or
 - 7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
1. written notice thereof will be given to Contractor prior to starting any such other work; and
 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 3. the extent of such authority and responsibilities will be provided.

- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or

continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not

exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data

shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of

said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not

limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:*
 1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance:*
 1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to

the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee*: The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or

neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
 2. correct such defective Work; or
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments:

- 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an

Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or

- involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
- b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
- a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 Contractor's Warranty of Title

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before

final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying

documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 - 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 - 3. Contractor's repeated disregard of the authority of Engineer; or
 - 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 - 1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 - 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 - 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when

so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 - 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days

to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC C-700 (2007 Edition). All provisions which are not so amended or supplemented remain in full force and effect.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

SC-4.02 Delete Paragraphs 4.02.A and 4.02.B in their entirety and insert the following:

- SC-4.06 Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:**

- SC-5.04** Add the following new paragraph immediately after Paragraph 5.04.B:

- b. Applicable Federal (e.g., Longshoreman's): Statutory
 - c. Employer's Liability: \$1,000,000
- 2. Contractor's General Liability under Paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:
 - a. General Aggregate \$1,000,000
 - b. Products - Completed Operations Aggregate \$1,000,000
 - c. Personal and Advertising Injury \$1,000,000
 - d. Each Occurrence (Bodily Injury and Property Damage) \$1,000,000
 - e. Property Damage liability insurance will provide Explosion, Collapse, and Under-ground coverages where applicable.
 - f. Excess or Umbrella Liability
 - ☐ General Aggregate \$1,000,000
 - ☐ Each Occurrence \$1,000,000
- 3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:
 - a. Bodily Injury:
 - Each person \$1,000,000
 - Each Accident \$1,000,000
 - b. Property Damage:
 - Each Accident \$1,000,000

[or]

 - a. Combined Single Limit of \$1,000,000
- 4. The Contractual Liability coverage required by Paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

a. Bodily Injury:	
Each person	<u>\$1,000,000</u>
Each Accident	<u>\$1,000,000</u>
b. Property Damage:	
Each Accident	<u>\$1,000,000</u>
Annual Aggregate	<u>\$1,000,000</u>

SC-5.06 *Property Insurance*

SC-5.06.A.1 Add the following new subparagraph after subparagraph GC-5.06.A.1:

- a. In addition to the individuals and entities specified, include as loss payees the following:

City of Carlsbad

SC-5.06.A. Delete Paragraph 5.06.A in its entirety and insert the following in its place:

- A. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. Contractor shall be responsible for any deductible or self-insured retention. This insurance shall:
1. include the interests of Owner, Contractor, Subcontractors, Engineer, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or loss payee;
 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by these Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
5. allow for partial utilization of the Work by Owner;
6. include testing and startup;
7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued; and
8. comply with the requirements of Paragraph 5.06.C of the General Conditions.

SC-5.06 Delete Paragraph 5.06.B and replace with the following:

- B. Contractor shall purchase and maintain equipment breakdown insurance and any other additional property insurance required by Laws and Regulations, which insurance will include the interest of Owner, Contractor, Subcontractors, and Engineer and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

SC-6.05 *Substitutes and "Or-Equals"*

SC-6.05.E Delete Paragraph 6.05.E and replace it with the term [Deleted]

SC-6.06 *Concerning Subcontractors, Suppliers, and Others*

SC-6.06 Add a new paragraph immediately after Paragraph 6.06.G:

- H. The Contractor shall not award work valued at more than fifty (50%) percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

SC-6.19 Contractor's General Warranty and Guarantee

SC-6.19 Delete Paragraph 6.19.A and replace with the following:

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Contractor shall warrant the project for one year following substantial completion and equipment shall be warranted

for 2 years. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.

SC-6.21 *Delegation of Professional Design Services*

SC-6.21 Delete Paragraph 6.21 and replace it with the term [Deleted]

SC-9.03 *Project Representative*

SC-9.03 Add the following new paragraphs immediately after Paragraph 9.03.A:

B. The Resident Project Representative (RPR) will be Owner's employee or agent at the Site, will act as directed by and under the supervision of Owner, and will confer with Owner regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with Owner and Contractor. RPR's dealings with Subcontractors shall be through or with the full knowledge and approval of Contractor. The RPR shall:

- 1. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared by Contractor and consult with Owner concerning acceptability.**
- 2. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.**
- 3. *Liaison:***
 - a. Serve as Owner's liaison with Contractor, working principally through Contractor's authorized representative, assist in providing information regarding the intent of the Contract Documents.**
 - b. Serve as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.**
 - c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.**
- 4. *Interpretation of Contract Documents:* Report to Owner when clarifications and interpretations of the Contract Documents**

are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

5. *Shop Drawings and Samples:*

- a. Record date of receipt of Samples and approved Shop Drawings.**
- b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.**

6. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

7. *Review of Work and Rejection of Defective Work:*

- a. Conduct on-Site observations of Contractor's work in progress to assist Owner and Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.**
- b. Report to Owner whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Owner of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.**

8. *Inspections, Tests, and System Startups:*

- a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.**

- b. Observe, record, and report to Owner and Engineer appropriate details relative to the test procedures and systems start-ups.**

9. *Records:*

- a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.**
- b. Maintain records for use in preparing Project documentation.**

10. *Reports:*

- a. Furnish to Owner and Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.**
- b. Draft and recommend to Owner proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.**
- c. Immediately notify Owner of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.**

11. *Payment Requests:* Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Owner, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

12. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

13. Completion:

- a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.**
- b. Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed and deficiencies to be remedied.**
- c. Observe whether all items on the final list have been completed or corrected and make recommendations to Owner concerning acceptance and issuance of the Notice of Acceptability of the Work.**

C. The RPR shall not:

- 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including “or-equal” items).**
- 2. Exceed limitations of Engineer’s or Owner’s authority as set forth in the Contract Documents.**
- 3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor’s superintendent.**
- 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor’s work unless such advice or directions are specifically required by the Contract Documents.**
- 5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.**
- 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Owner.**
- 7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.**
- 8. Authorize Owner to occupy the Project in whole or in part.**

SC-10.05 *Claims*

SC-10.05. Change any reference from Engineer to Owner in Section 10.05 and subsections.

SC-11.01 *Cost of the Work*

SC-11.01.A. Delete Paragraph 11.01.A in its entirety and insert the following in its place:

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. Any Claim for additional value of any Work shall be reviewed by Owner and determine if any adjustment is acceptable. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

SC-11.03 *Unit Price Work*

SC-11.03.D.3. Delete Paragraph 11.03.D.3 in its entirety.

SC-12.03 *Delays*

SC-12.03.A. Delete Paragraph 12.03.A in its entirety.

SC-12.03.B. Delete Paragraph 12.03.B in its entirety.

SC-12.03.C. Delete Paragraph 12.03.C in its entirety.

SC-12.03.D. Delete Paragraph 12.03.D in its entirety.

SC-13.03 *Tests and Inspections*

SC-13.03.B. Delete Paragraph 13.03.B in its entirety.

SC-14.02 *Progress Payments*

SC-14.02.B.1. Delete Paragraph 14.02.B.1 in its entirety and insert the following in its place:

1. Engineer will, within 5 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to

recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

SC-14.02.C.1. Delete Paragraph 14.02.C.1 in its entirety and insert the following in its place:

1. Fifteen days total after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

SC-14.07 *Final Payment*

SC-14.07.B.1 Amend the first sentence of Paragraph 14.07.B.1 to read as follows:

If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within five days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment.

SC-14.08 *Final Completion Delayed*

SC-14.08.A. Delete Paragraph 14.08.A in its entirety and insert the following in its place:

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. The written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

SC-15.03 *Owner May Terminate For Convenience*

SC-15.03.A.3. Delete Paragraph 15.03.A.3 in its entirety and insert the following in its place:

- 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and**

SC-16.01 *Methods and Procedures*

SC-16.01. Change any reference from Engineer to Owner in Section 16.01 and subsections.

SC-17.02 *Computation of Times*

SC-17.02.A Amend the first sentence of Paragraph 17.02A to read as follows:

When any period of time is referred to in the Contract Documents by calendar days, it will be computed to exclude the first and include the last day of such period.

Change Order

No. _____

Date of Issuance: _____ Effective Date: _____

Project: City of Carlsbad, Maintenance Bldg Electric Service	Owner: City of Carlsbad	Owner's Contract No.: 2014-53
Contract: City of Carlsbad, Maintenance Building Electric Service		Date of Contract:
Contractor:		Engineer's Project No.: 20140301

The Contract Documents are modified as follows upon execution of this Change Order:

Description:

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIMES:	
Original Contract Price: \$ _____	Original Contract Times: <input type="checkbox"/> Working days <input type="checkbox"/> Calendar days Substantial completion (days or date): _____ Ready for final payment (days or date): _____	
[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____: Substantial completion (days): _____ Ready for final payment (days): _____	
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____	
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial completion (days or date): _____ Ready for final payment (days or date): _____	
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial completion (days or date): _____ Ready for final payment (days or date): _____	
RECOMMENDED: By: _____ Engineer (Authorized Signature)	ACCEPTED: By: _____ Owner (Authorized Signature)	ACCEPTED: By: _____ Contractor (Authorized Signature)
Date: _____	Date: _____	Date: _____
Approved by Funding Agency (if applicable): _____		Date: _____

Change Order

Instructions

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

Field Order

No. _____

Date of Issuance: _____ Effective Date: _____

Project: City of Carlsbad, Maintenance Bldg Electric Service	Owner: City of Carlsbad	Owner's Contract No.: 2014-53
Contract: City of Carlsbad, Maintenance Building Electric Service		Date of Contract:
Contractor:		Engineer's Project No.: 20140301

Attention:

You are hereby directed to promptly execute this Field Order issued in accordance with General Conditions Paragraph 9.04.A, for minor changes in the Work without changes in Contract Price or Contract Times. If you consider that a change in Contract Price or Contract Times is required, please notify the Engineer immediately and before proceeding with this Work.

Reference: _____
(Specification Section(s)) (Drawing(s) / Detail(s))

Description:

Attachments:

	Engineer:
--	-----------

Receipt Acknowledged by Contractor:	Date:
-------------------------------------	-------

Copy to Owner

**SUSANA MARTINEZ
GOVERNOR**



**CELINA BUSSEY
SECRETARY**

**JOHN SANCHEZ
LT. GOVERNOR**

**STATE OF NEW MEXICO
DEPARTMENT OF WORKFORCE SOLUTIONS
121 Tijeras Ave NE Suite 3000
Albuquerque, NM 87102
Telephone (505) 841-4405
Fax (505) 841-4424**

PUBLIC WORKS PROJECT REQUIREMENTS

As a participant in a Public Works project valued at more than \$60,000 in the State of New Mexico, the following list addresses many of the responsibilities that are assigned by statute to each project stakeholder.

Contracting Agency

- Ensure that all contractors/prime contractors wishing to bid on a Public Works project when the project is \$60,000 or more are actively registered with the Labor Relations Division, Labor Enforcement Fund (LEF) prior to bidding.
- Provide completed Notice of Award (NOA) and Sub-Contractor list to Labor Relations Division promptly after the project is awarded.
- Provide updates to the Sub-Contractor list to the Labor Relations Division

General Contractor

- Provide to the Contracting Agency within 3 (Three) days of award a complete sub-contractor list and Statements of Intent (SOI) to pay Prevailing Wages for each contractor.
- Ensure that all sub-contractors wishing to bid on a Public Works project when their portion is over \$60,000 are actively registered with the Labor Relations Division prior to bidding.
- Submit bi-weekly certified payrolls to the owner/contracting agency.
- Make certain NM Apprenticeship and Training Fund payments are to be paid either to an approved Apprenticeship program or to the Labor Relations Division.
- Confirm the Wage Rate poster, provided by the Labor Relations Division, is displayed at the job site in an easily accessible place.
- Make sure, when a project has been completed, the Affidavits of Wages Paid (AWP) is sent to the Contracting Agency.

Sub-Contractor

- Ensure that all sub-contractors wishing to bid on a Public Works project when their portion is over \$60,000 are actively registered with the Labor Relations Division prior to bidding.
- Submit bi-weekly certified payrolls to the General Contractor(s).
- Make certain NM Apprenticeship and Training Fund payments are to be paid either to an approved Apprenticeship program or to the Labor Relations Division.

Additional Information

Reference material and forms for these requirements are available through the following New Mexico Workforce Solutions Web Link.

www.dws.state.nm.us/new/Labor_Relations/publicworks.html.

Additional Information

Additional information, requirements, and documents on these topics can be found through the Public Works web pages.

- Labor Enforcement Fund (LEF)
- Weekly Certified Payroll
- Public Works Apprenticeship and Training Fund (PWAT)
- Forms: Statement of Intent (SOI), Affidavit of Wages Paid (AWP)
- Prevailing Wage Rates (Base Rates, Fringe, and Apprenticeship Contributions)

CONTACT INFORMATION

Contact us for any questions relating to Public Works Projects.

Kim Kew at kim.kew@state.nm.us or 505-841-4405
Otis Caddy LynnO.Caddy@state.nm.us 505-841-4406
Stacey Lowrey Stacey.Lowrey@state.nm.us 505-841-4412

New Mexico Department of Workforce Solutions

Public Works

121 Tijeras Ave. NE, Suite 3000, Albuquerque, NM 87102

Phone: (505)-841-4400 fax to: (505) 841-4424 or Email to: public.works@state.nm.us

Wage Decision # **ED-14-1347 B**

NOTIFICATION OF AWARD (NOA)

THIS WAGE DECISION # EXPIRES FOR BIDS ON 12/25/14

Description and Location of Work: City of Carlsbad, Maintenance Building Electric Service improvements to the maintenance building to include electrical service, panelboard, feeders, ground system, conduit, conductor and mounting and all accessories

City of Carlsbad

County of Eddy

101 N. Halagueno

REMINDER for Agency Conducting BID Process: If bids are NOT submitted before new wage rates go into effect, a NEW wage decision WILL be required.

After the Contracting Agency awards this project the Wage Rate Poster and the Wage Rate Packet, excluding this NOA and Subcontractor List, must be delivered to the **GENERAL/PRIME CONTRACTOR**. The Contracting Agency or its agent must complete this form (including the next page listing all of the subcontractors including all tiers of subcontractors) and fax or mail it to the address above. **If the project is canceled**, this form must be completed by the Contracting agency conducting the bid process and the wording "Cancelled" written on the form and send to the Labor Relations Division. Failure to submit the NOA in a timely manner is a violation of paragraph 11.1.2.9.B (3) of the Public Works Minimum Wage Act Policy Manual.

General/Prime Contractor Company Name: _____ License#: _____

Address: _____ City: _____ State: _____ Zip: _____

Telephone: _____ Fax: _____

Project Contact's name: _____ E-Mail: _____

Approximate Date Work to Start: _____

Estimated Completion Date: _____

Estimated Cost of Project: _____

Bid Opening Date: _____

Note: The General/Prime Contractor **MUST** mail/fax in their Statement of Intent to Pay Prevailing Wages to the Contracting Agency or its agent before beginning work on the project. Each Subcontractor (and all tiers of subcontractors) **MUST** also mail/fax their Statement of Intent to Pay Prevailing Wages to the General/Prime Contractor 3 days after award of project. After work on the project is completed **and before, final payment**, is made to subcontractors and all tiers of subcontractors, the contractor and subcontractors must mail/fax their Affidavit of Wages paid to the Contracting Agency for final payment.

Signature for Contracting Agency (or agent) _____

Printed Name _____

Email address for Contracting Agency (not agent) _____ **Required Field**

Date _____

SUBCONTRACTOR LIST

DO NOT list suppliers or professional services (such as surveyors)
INCLUDE individual subcontractor dollar amount for project

Email to: public.works@state.nm.us or fax to: (505) 841-4424

Please include **2nd & 3rd Tier** subcontractors. Make extra copies of form if necessary.

Wage Decision. # **ED-14-1347 B**

General Contractor:

Company Name: _____
Address: _____ City: _____ State: _____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub _____ 2nd TIER _____ 3rd TIER _____
(To Whom) (To Whom)
Work to be performed: _____ Start Date: _____ Amount (\$): _____

Company Name: _____
Address: _____ City: _____ State: _____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub _____ 2nd TIER _____ 3rd TIER _____
(To Whom) (To Whom)
Work to be performed: _____ Start Date: _____ Amount (\$): _____

Company Name: _____
Address: _____ City: _____ State: _____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub _____ 2nd TIER _____ 3rd TIER _____
(To Whom) (To Whom)
Work to be performed: _____ Start Date: _____ Amount (\$): _____

Company Name: _____
Address: _____ City: _____ State: _____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub _____ 2nd TIER _____ 3rd TIER _____
(To Whom) (To Whom)
Work to be performed: _____ Start Date: _____ Amount (\$): _____

Company Name: _____
Address: _____ City: _____ State: _____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub _____ 2nd TIER _____ 3rd TIER _____
(To Whom) (To Whom)
Work to be performed: _____ Start Date: _____ Amount (\$): _____

Company Name: _____
Address: _____ City: _____ State: _____ Zip: _____
E-Mail Address: _____ License No.: _____
Phone No.: _____ Fax No.: _____ Sub _____ 2nd TIER _____ 3rd TIER _____
(To Whom) (To Whom)
Work to be performed: _____ Start Date: _____ Amount (\$): _____

Type "B" - GENERAL BUILDING

Effective January 1, 2014

Trade Classification	Base Rate	Fringe Rate	Apprenticeship	Subsistence & Incentive Rates
Asbestos Worker - Heat & Frost Insulator	27.35	10.23	\$0.20	
Boilermaker	18.40	3.78	\$0.20	
Bricklayer/Blocklayer/Stonemason	22.85	6.00	\$0.74	
Carpenter/Lather	20.86	6.25	\$0.36	
Cement Mason	17.72	7.45	\$0.34	
Electricians				
Outside Classifications				
Groundman	22.32	8.62	\$0.36	
Equipment Operator	25.14	8.62	\$0.36	
Lineman/Tech	25.73	8.62	\$0.36	
Cable Splicer	26.91	8.62	\$0.36	
Inside Classifications				
Wireman/Technician	27.80	8.06	\$0.37	Refer to Note 1
Cable Splicer	29.53	8.06	\$0.37	
Sound Classifications				
Installer	23.39	8.31	\$0.24	
Technician	24.94	8.31	\$0.24	
Soundman	27.01	8.31	\$0.24	
Elevator Constructor	33.61	14.99	\$0.24	
Elevator Constructor Helper	15.55	3.56	\$0.25	
Glazier	20.15	4.15	\$0.35	
Ironworker	25.00	10.00	\$0.53	Refer to Note 2
Painter (Brush/Roller/Spray)	16.60	3.88	\$0.36	
Paper Hanger	19.71	8.42	\$0.35	
Drywall Finisher/Taper	19.64	3.91	\$0.34	
Plasterer	18.65	7.15	\$0.35	
Plumber/Pipefitter	28.30	11.00	\$0.63	Refer to Note 3
Roofer	15.18	0.50	\$0.54	
Sheetmetal Worker	26.56	13.41	\$0.45	Refer to Note 4
Soft Floor Layer	20.74	4.40	\$0.35	
Sprinkler Fitter	24.41	11.27	\$0.28	
Tile Setter	14.80	1.20	\$0.00	
Tile Setter Helper	13.00	1.02	\$0.00	
Laborers				
Group I	15.04	4.25	\$0.27	
Group II	15.61	4.25	\$0.27	
Group III	15.91	4.25	\$0.27	
Group IV	16.01	4.25	\$0.27	
Group V	16.21	4.25	\$0.27	
Group VI	16.36	4.25	\$0.27	
Operators				
Group I	28.03	5.16	\$0.50	
Group II	29.07	5.16	\$0.50	
Group III	29.15	5.16	\$0.50	
Group IV	29.21	5.16	\$0.50	
Group V	29.27	5.16	\$0.50	
Group VI	29.37	5.16	\$0.50	
Group VII	29.47	5.16	\$0.50	
Group VIII	30.55	5.16	\$0.50	
Truck Drivers				
Group I	20.56	5.34	\$0.55	
Group II	20.68	5.34	\$0.55	
Group III	20.76	5.34	\$0.55	
Group IV	20.88	5.34	\$0.55	
Group V	20.93	5.34	\$0.55	
Group VI	21.03	5.34	\$0.55	
Group VII	21.13	5.34	\$0.55	
Group VIII	21.27	5.34	\$0.55	
Group IX	21.42	5.34	\$0.55	

NOTE: SUBSISTENCE AND INCENTIVE RATES BY TRADE & LOCATION

- #1 - Inside Electricians working at a Los Alamos County job site get \$4.10/hr. subsistence pay plus base/fringe. Inside Electricians working at a Lea Co. job site get \$75.00/day subsistence pay plus base/fringe.
- #2 - Ironworkers working on projects 50+ miles over the most direct regularly traveled route from Albuquerque, or the employee's home, whichever is closer, shall be paid \$5.00/hr. subsistence plus base/fringe. The "Big I" Interchange in Albuquerque, or the employee's home, respectively shall be used as basing points. The current State of New Mexico Official Highway Map shall be the reference for routes and distances. All of Santa Fe County shall be \$5.00/hr subsistence area.
- #3 - Plumbers/Pipefitters working at a Los Alamos County job site get \$.80/hr. incentive pay plus base/fringe.
- #4 - Sheet Metal Workers working at a Los Alamos County job site get \$2.00/hr. incentive pay plus base/fringe.
- #4 - Sheet Metal Workers living 60+ miles from a San Juan County job site get \$3.00/hr. subsistence pay plus base/fringe. Sheet Metal Workers working 90+ miles from Contractors Homebase & employees home get \$50.00/day subsistence pay plus base/fringe regardless of county.

**SUPPLEMENTARY TECHNICAL SPECIFICATIONS INDEX
CITY OF CARLSBAD, MAINTENANCE BUILDING ELECTRIC SERVICE**

NUMBER	TITLE
01010	Reference Standards
01014	Work Sequence
01015	Contractor's Use of Premises
01043	Utility Obstruction
01150	Measurement And Payment
01152	Applications For Payment
01310	Construction Schedules
01340	Shop Drawings, Product Data, And Samples
01700	Contract Closeout
01710	Cleaning
01720	Project Record Documents
01730	Operating And Maintenance Data
02221	Trenching, Backfilling, And Compacting
02500	Paving, Gravel Surfacing and Resurfacing
16010	General Electrical Requirements
16111	Conduit
16123	Wires and Cables
16124	Wire Connectors and Accessories
16190	Supporting Devices
16195	Electrical Identification
16400	Electrical Service
16405	Feeders and Branch Circuits
16450	Grounding
16470	Panelboards
16950	Electrical Testing

SECTION 01010

REFERENCE STANDARDS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Abbreviations and acronyms used in Contract Documents to identify reference standards.

1.02 QUALITY ASSURANCE

- A. Applications: when a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents or applicable codes establish stricter standards.
- B. Publication Date: the publication in effect on the date of bid, except when a different publication date is specified.

1.03 ABBREVIATIONS, NAMES AND ADDRESSES OF ORGANIZATIONS

- A. Obtain copies of referenced standards direct from publication source, when needed for proper performance of Work, or when required for submittal by Contract Documents.

AA Aluminum Association
 818 Connecticut Avenue, NW
 Washington DC 20006

AASHTO American Association of State Highway
 and Transportation Officials
 444 North Capital Street, NW
 Washington DC 20001

ACI American Concrete Institute
 Box 19150
 Redford Station
 Detroit, MI 48219

AI	Asphalt Institute Research Park Drive PO Box 14052 Lexington, KY 40512-4052
AISC	American Institute of Steel Construction 1221 Avenue of the Americas New York, NY 10020
AISI	American Iron and Steel Institute 1000 16th Street, NW Washington DC 20036
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
APWA	American Public Works Association 2345 Grand Boulevard, Suite 700 Kansas City, MO 64108-2625
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 345 East 47th Street New York, NY 10017
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
AWS	American Welding Society 2501 NW 7th Street Miami, FL 33125
CRSI	Concrete Reinforcing Steel Institute 180 North LaSalle Street, Suite 2110 Chicago, IL 60601

FS	Federal Specification General Services Administration Specifications and Consumer Information Distributions Section (WESIS) Washington Navy Yard, Bldg. 197 Washington DC 20407
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
NEMA	National Electrical Manufacturers' Association 2101 L Street, NW Washington DC 20037
NFPA	National Fire Protection Association 470 Atlantic Avenue Boston, MA 02210
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60076
PCI	Prestressed Concrete Institute 20 North Wacker Drive Chicago, IL 60606
PS	Product Standard U.S. Department of Commerce Washington DC 20203
SDI	Steel Door Institute 712 Lakewood Center North Cleveland, OH 44107
SIGMA	Sealed Insulating Glass Manufacturers Association 111 East Wacker Drive Chicago, IL 60601
SJI	Steel Joist Institute 1703 Parham Road, Suite 204 Richmond, VA 23229

UL Underwriters' Laboratories, Inc.
333 Pfingston Road
Northbrook, IL 60062

END OF SECTION

SECTION 01014

WORK SEQUENCE

PART 1 GENERAL

1.01 WORK SEQUENCE

- A. Work can be accomplished in any sequence with the exception of demolition and which shall be performed in a manner acceptable to the Owner to minimize facility outages. Use of temporary disconnect mounting frames with exterior cord sets with appropriate personnel barricades may be necessary to maintain the outage to a window timeframe acceptable to Owner during normal work hours. Maximum anticipated outage during normal working hours is expected to be 2 hours maximum.

END OF SECTION

SECTION 01015

CONTRACTOR'S USE OF PREMISES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. General requirements for the contractor's use of premises.

1.02 RELATED WORK

- A. Section 01710: Cleaning
- B. General conditions of the Contract.

1.03 AVAILABLE SITES

- A. The Contractor shall provide adequate storage areas for materials and equipment during the course of the work. The Contractor shall make arrangements for securing and maintaining storage areas during construction and be fully responsible for those areas while in use, regardless of ownership.

1.04 PROTECTION AND RESTORATION

- A. All existing features and improvements to or within the project area shall be restored by the Contractor equivalent to those existing prior to construction at no additional cost to the Owner.
- B. Compliance with special requirements or considerations indicated on the Drawings for the use of facilities shall be the Contractor's responsibility at no additional cost to the Owner.
- C. Trees and other landscaping within the project area shall be preserved and/or replaced to their original condition, unless specifically indicated on the Drawings.
- D. Contractor is permitted only to access site as shown on the plans. Under no circumstances is the Contractor to operate vehicles outside the access and work area limits.

- E. All existing traffic control shall be kept in tact and be reinstalled as in place prior to construction commencement. Replacement of damaged traffic control shall be done at the Contractor's expense to City standards.

1.05 SPECIAL CONSTRUCTION METHODS

- A. Special and/or hand construction methods may be required to maintain existing conditions.
- B. Such methods shall be used by the Contractor at no additional cost to the Owner.

1.06 CLEANING DURING CONSTRUCTION

- A. Execute periodic cleaning to keep the Work, the site and adjacent properties free from accumulation of waste materials, rubbish, and windblown debris resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish.
- C. Remove waste materials, debris, and rubbish from the site periodically, and dispose of at legal disposal areas away from the site.

1.07 DUST CONTROL

- A. Provide dust control as needed during construction to maintain access road and work area. All local ordinances and requirements shall be adhered to.

1.08 STORM WATER PROTECTION

- A. Contractor shall protect the Work, the site and adjacent properties from storm water during the duration of the project.

END OF SECTION

SECTION 01043

UTILITY OBSTRUCTIONS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Provisions for bracing of transverse utilities to remain in service during trenching and backfilling, and operations shall be considered incidental and no additional payments shall be made.
- B. The Engineer has made a reasonable effort to show the general location of existing underground and overhead utility lines (gas, telephone, electrical, water, sewer) on the Drawings.

1.02 RELATED WORK

- A. Section 02221: Trenching, Excavating and Backfilling

1.03 RELOCATION OF UTILITIES

- A. Water, gas, electric, telephone, and other above and underground utilities: The Contractor shall be responsible for coordinating with the appropriate utility company to remove or relocate the existing utilities that interfere with his construction. Any charges by any utility company for removal or relocation of utilities will be the responsibility of the Contractor.
- B. Additional Work: The work and materials including all fittings required to raise or lower new conduit to effect minor adjustments in alignment shall be at no additional cost to the Owner.

END OF SECTION

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Measurement for payments as herein defined.

1.02 RELATED WORK

- A. Agreement and corresponding bid.
- B. Section 01152: Application for Payment.

1.03 UNIT PRICE ITEMS

- A. Estimated Quantities:
 - 1. Estimated quantities in Bid Form are approximate and used only for:
 - a. Basis for estimating probable cost of Work.
 - b. For comparison of Bids submitted for Work.
 - 2. Actual work done or materials furnished under Unit Price item may differ from estimated quantities.
 - 3. Basis of payment: Actual amount of Work as determined by applying the appropriate unit price as bid.
- B. Other unit price items: Unit complete, in place, and ready for use including all work.

1.04 LUMP SUM ITEMS

- A. Payment for all lump sum bid items includes all work, labor and materials required to provide a complete, ready-to-use installation. Lump sum items are those as indicated in the Bid Schedule.

1.05 ALLOWANCES

- A. Allowances as shown in the Bid Schedule shall be used to reimburse the Contractor the actual invoice cost of those items shown.
- B. No separate payment for administration or handling of allowance pay items will be made.

1.06 MATERIALS

- A. Payment for materials delivered but not fully incorporated into the project will only be made if such materials are included in the Schedule of Values.

1.07 INCIDENTAL WORK

- A. General:
 - 1. All work, labor, materials, appurtenances, activities and requirements to complete the facilities, in place and ready for use, and to comply with all requirements and conditions of the Contract Documents are considered incidental work to the Contract Documents' bid items.
 - 2. Any and all clearing and grubbing required during the construction shall be considered incidental to the Contract Documents Bid Items.
 - 3. No separate, additional or special payment will be due the Contractor for incidental work.
- B. Above, on- or below-ground obstructions, utilities, features or improvements interfering with the work or which must be moved, removed and/or restored to accomplish the Work are considered as incidental work for which separate payment will not be made if separate bid items are not specifically given for such in the Contract Documents.
- C. Construction staking for the project shall be performed by the Contractor and is considered incidental work for no separate payment will be made. The Contractor shall take care to protect existing control points shown on the Drawings.

END OF SECTION

SECTION 01152

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Submit Applications for Payment to Engineer in accordance with the schedule established by conditions of the Contract and Agreement between Owner and Contractor.

1.02 RELATED WORK

- A. Agreement between Owner and Contractor: lump sum prices.
- B. Conditions of the Contract: progress payments, retainages and final payment.
- C. Section 01150: Measurement and Payment
- D. Section 01720: Project Record Documents

1.03 FORMAT AND DATA REQUIRED

- A. Submit applications in the form required by Engineer in accordance with the example to be provided with itemized data typed on 8½" x 11" white paper continuation sheets.
- B. Provide typed itemized data on continuation sheet:
 - 1. Format, schedules, line items and values accepted by Engineer.
 - 2. For unit price contracts, pay items shall be the same as those listed in the Bid Proposal plus executed changes.

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Application Form:
 - 1. Fill in required information, including that for change orders executed prior to date of submittal of application.
 - 2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.

3. Execute certification with signature of a responsible officer of Contract firm.
- B. Continuation Sheets:
 1. Fill in total list of all scheduled component items of work, with item number and scheduled dollar value for each item.
 2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.
 3. List each change order executed, prior to date of submission, at the end of the continuation sheets.
 4. List percent complete.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. Submit with each copy of Application:
 1. Properly identified invoices supporting requests for materials payments.
 2. Properly identified invoices for inspection testing allowance payments, if any.
 3. Wage rate certification in accordance with requirements of the NM Department of Workforce Solutions.
 4. If required by Engineer, certificate of payment of all suppliers and subcontractors for which payment has previously been received from Owner in accordance with example form to be provided by Engineer.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in application form as specified for progress payments.

1.07 SUBMITTAL PROCEDURE

- A. Submit Applications for Payment to Engineer at the times stipulated in the Agreement.
- B. Five copies of each Application required.
- C. When Engineer finds Application properly completed and correct, he will sign and transmit certificate for payment to Owner, with copy to Contractor. Owner will sign and pay approved Applications.

END OF SECTION

SECTION 01310
CONSTRUCTION SCHEDULES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Promptly after award of the Contract, prepare and submit to Engineer estimated construction progress schedules for the Work, with subschedules of related activities essential to its progress.
- B. Submit revised progress schedules.
- C. Schedule subject to approval of Engineer.
- D. Schedule construction working hours.

1.02 RELATED WORK

- A. Conditions of the Contract.
- B. Section 01010: Reference Standards
- C. Section 01152: Applications for Payment
- D. Section 01200: Project Meetings
- E. Section 01340: Shop Drawings, Product Data, Samples

1.03 FORM OF SCHEDULES (A OR B)

- A. Prepare schedules in the form of a horizontal bar chart.
 - 1. Provide separate horizontal bar for each trade or operation.
 - 2. Horizontal time scale: identify the first work day of each week.
 - 3. Scale and spacing: to allow space for notations and future revisions.
- B. Prepare schedules in the form of "Critical.Path.Method."
- C. Format of listings: chronological order of the start of each item of work.

1.04 CONTENT OF SCHEDULES

- A. Construction Progress Schedule:
 - 1. Show the complete sequence of construction by activity.
 - 2. Show projected percentage of completion for each item as of the first day of each month.
- B. Provide subschedules to define critical portions of prime schedules.

1.05 PROGRESS REVISIONS

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedule:
 - 1. Major changes in scope.
 - 2. Activities modified since previous submission.
 - 3. Revised projections of progress and completion.
 - 4. Other identifiable changes.
- C. Provide a narrative report as needed to define:
 - 1. Problem areas, anticipated delays and/or the impact on the schedule.
 - 2. Corrective action to be taken.

1.06 SUBMISSIONS

- A. Submit initial schedules within 15 days after award of Contract.
 - 1. Engineer will review schedules and return review copy within 10 days after receipt.
 - 2. If required, resubmit within seven days after return of review copy.
- B. Submit schedule marked up to show actual progress of Work with each application for payment.
- C. Submit revised progress schedules when requested by Engineer or whenever project is more than 5% behind approved schedule, as determined by monthly request for payment.

1.07 DISTRIBUTION

- A. Distribute copies of the reviewed schedule to:
 - 1. Contractor's project field office (1 copy).
 - 2. Engineer (5 copies).

1.08 CONSTRUCTION WORKING HOURS SCHEDULING

- A. Notify Engineer at least 48 hours in advance of any work to be done outside of usual working hours or any change in usual working hours. The usual working hours are between 7 a.m. to 7 p.m., Monday to Friday.

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Submit Shop Drawings, Product Data, and Samples required by Contract Documents.

1.02 RELATED WORK

- A. Conditions of the Contract: Definitions and Additional Responsibilities of Parties.
- B. Section 01720: Project Record Documents.

1.03 SHOP DRAWINGS

- A. Drawings shall be presented in a clear and thorough manner with sufficient detail to show kind, size, and arrangement and function of component materials and devices.
- B. Minimum sheet size: 8-1/2" x 11"

1.04 PRODUCT DATA

- A. Preparation:
 - 1. Clearly mark each copy to identify pertinent products or models.
 - 2. Show performance characteristics and capacities.
 - 3. Show dimensions and clearances required.
 - 4. Show wiring or piping diagrams and controls.
 - 5. For equipment for which electrical schematic is given in Drawings, statement from manufacturer that equipment operation per schematic is appropriate for equipment.
- B. Installation data for all materials and equipment for which operation and maintenance manuals will not be provided:
 - 1. Manufacturer's installation instructions and recommendations.
 - 2. Referenced standards for installation.

3. Manufacturer's standard schematic drawings and diagrams:
4. Modify drawings and diagrams to delete information which is not applicable to the Work.
5. Supplement standard information to provide information specifically applicable to the Work.

1.05 SAMPLES

- A. Office samples shall be of sufficient size and quantity to clearly illustrate:
 1. Functional characteristics of the project, with integrally related parts and attachment devices.
 2. Full range of color, texture, and pattern.

1.06 CONTRACTOR RESPONSIBILITIES

- A. Review Shop Drawings, Product Data, and Samples prior to submission.
- B. Determine and verify:
 1. Field measurements.
 2. Field construction criteria.
 3. Catalog numbers and similar data.
 4. Conformance with specifications.
 5. Conflicts with other items of construction past or present.
- C. Coordinate each submittal with requirements of the Work and of the Contract Documents.
- D. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.
- E. Begin no fabrication or work which requires submittals until return of submittals with Engineer's final review.

1.07 SUBMISSION REQUIREMENTS

- A. Make submittals promptly and in such sequence as to cause no delay in the Work.
- B. Number of submittals required:
 1. Shop Drawings and Product Data: Submit the number of opaque reproductions which the Contractor requires, plus four copies which will be retained by the Engineer.
 2. Samples: Submit the number stated in each specification section.

- C. Submittals shall contain on the first two pages:
1. The date of submission and the dates of any previous submissions.
 2. The Project title and number.
 3. Contract identification.
 4. The names of:
 - a. Contractor.
 - b. Supplier.
 - c. Manufacturer.
 5. Identification of the product, with the specification section number and Drawing number.
 6. Field dimensions, clearly identified as such.
 7. Relation to adjacent or critical features of the Work or materials.
 8. Applicable standards, such as ASTM or Federal Specification numbers.
 9. Identification of deviations from Contract Documents.
 10. Identification of revisions on resubmittals.
 11. A 3 in. x 3 in. blank space for Engineer's stamp.
 12. Contractor's stamp or statement, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, coordination of the information within the submittal with requirements of the Work and of Contract Documents, and the represented products or materials meet all requirements of the Contract Documents except for any specific deviations specifically stated and requested.

1.08 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in the submittals required by the Engineer and resubmit until final review.
- B. Shop Drawings and Product Data:
1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
 2. Indicate any changes which have been made other than those requested by the Engineer.
- C. Samples: Submit new samples as required for initial submittal.

1.09 DISTRIBUTION

- A. Distribute reproductions of Shop Drawings and copies of Product Data which carry the Engineer stamp of final review to:
1. Job site file.

2. Record documents file.
 3. Subcontractors and suppliers as appropriate.
- B. Distribute samples which carry the Engineer stamp of approval as directed by Engineer.

1.10 ENGINEER DUTIES

- A. Review and return submittals within 7 days of receipt of submittal.
- B. Affix stamp and initials or signature, and indicate requirements for resubmittal or review of submittal.
- C. Return submittals to Contractor for distribution or for resubmission.
- D. Engineer's review does not constitute acceptance or responsibility for accuracy or dimensions, nor shall it relieve the Contractor from meeting any requirements of the Contract Documents, nor shall it constitute approval for any deviation from the Contract Documents unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer.
- E. Engineer to return submittals with only cursory review when it becomes apparent the submittal is not acceptable.

1.11 PAYMENT AND TIME FOR REVIEW OF EXCESSIVE SUBMITTALS

- A. Submittals after first resubmittal:
 1. Accompanied by Contractor's purchase order to Engineer for all Engineer's review time and costs at Engineer's standard billing rates.
 2. Be reviewed by Engineer at convenience of the Engineer.

1.12 TIMELINESS

- A. All submittals to be submitted to allow final Engineer's review to be completed within the scheduled number of calendar days of date Contract starts.
 1. If submittals not reviewed within the scheduled time:
 2. Owner may withhold payment if such delay results in a delay in receipt of funding agency funds.
 3. Contractor shall not terminate/suspend work.
 4. No additional costs or contract time shall be claimed by Contractor.

- B. No payments made for materials, equipment or supplies for which Engineer's final review of submittal has not been made.
- C. Materials, equipment or supplies for which Engineer's final review of submittal has not been made shall not be allowed on the job site.

1.13 REQUIRED SUBMITTALS

- A. For Schedule Which Follows:
 - 1. AB = As-built Mylar
 - 2. CE = Certificate
 - 3. CD = Connection diagrams, Electrical
 - 4. CS = Color Selection Chart
 - 5. DM = Design Mix
 - 6. EC = Engineering Computations
 - 7. FI = Field O&M instruction required
 - 8. GU = Guarantee
 - 9. IQ = Installers qualifications
 - 10. LT = Testing Laboratory Test Results
 - 11. MI = Manufacturer's Installation Instructions
 - 12. MR = Manufacturer's Representative at site
 - 13. OR = Other; See section requirements
 - 14. OM = O&M Manual
 - 15. PB = Prebid submittal by equipment manufacturer and written prebid Approval of Engineer required
 - 16. PD = Product Data
 - 17. SA = Sample
 - 18. SC = Manufacturer's certification of control schematic
 - 19. SD = Shop Drawing
 - 20. SE = Schematic drawings, Electrical
 - 21. SL = Spares inventory list
 - 22. WA = Warranty

1.14 PRELIMINARY SCHEDULE OF REQUIRED SUBMITTALS

<u>Section</u>	<u>Name</u>	<u>Required</u>
01310	Construction Schedules	OR
01720	Project Record Documents	OR
01730	Operating and Maintenance Data	OM
02500	Paving, Gravel Surfacing and Resurfacing	DM, CE, SA
16111	Conduit	MI, PD, WA
16123	Wires and Cables	MI, PD, WA
16124	Wire Connectors and Accessories	MI, PD, WA
16190	Supporting Devices	MI, PD, WA

16450	Grounding	MI, PD, WA
16470	Panelboards	MI, PD, WA
16950	Electrical Testing	CE

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Comply with requirements stated in Conditions of the Contract and Specifications for administrative procedures in closing out the Work.

1.02 RELATED WORK

- A. Conditions of the Contract: Fiscal provisions, legal submittals and additional administrative requirements.
- B. Section 01710: Cleaning
- C. Section 01720: Project Record Documents

1.03 SUBSTANTIAL COMPLETION

- A. When Contractor considers the Work is substantially complete, he shall submit to Engineer:
 - 1. A written notice that the Work, or designated portion thereof, is substantially complete.
 - 2. A list of items to be completed or corrected.
- B. Within a reasonable amount of time after receipt of such notice, Engineer will make an inspection to determine the status of completion.
- C. Should Engineer determine that the Work is not substantially complete:
 - 1. Engineer will promptly notify the Contractor in writing, giving the reasons therefor.
 - 2. Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Engineer.
 - 3. Engineer will reinspect the Work.

1.04 FINAL INSPECTION

- A. When Contractor considers the Work is complete, he shall submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Work has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 - 5. Work is completed and ready for final inspection.
- B. Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should Engineer consider that the Work is incomplete or defective:
 - 1. Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Engineer that the Work is complete.
 - 3. Engineer will reinspect the Work.
- D. When the Engineer finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.05 REINSPECTION FEES

- A. Should Engineer perform reinspections due to failure of the Work to comply with the claims of status of completion made by the Contractor:
 - 1. Owner will compensate Engineer for such additional services.
 - 2. Contractor shall submit purchase order to pay Engineer at Engineer's standard billing rate for all costs associated with reinspection.

1.06 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

- A. Evidence of compliance with requirements of governing authorities.
- B. Project Record Documents: Conform to requirements of Section 01720.
- C. Operating and Maintenance Data and Instructions to Owner's personnel.
- D. Warranties and Bonds: Conform to requirements of General Conditions.

- E. Evidence of Payment and Release of Liens: Conform to requirements of General and Supplemental Conditions.
- F. Consent of Surety
- G. Certification of Labor Standards.

1.07 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to Engineer.
- B. Statement shall reflect all adjustments to the Contract Sum:
 - 1. The original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Allowances.
 - c. Unit Prices.
 - d. Deductions from uncorrected Work.
 - e. Deductions for liquidated damages.
 - f. Deductions for reinspection payments.
 - g. Other adjustments.
 - 3. Total Contract Sum, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- C. Engineer will prepare a final Change Order, reflecting approved adjustments to the Contract Sum not previously made by Change Orders.

1.08 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

END OF SECTION

SECTION 01710

CLEANING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Execute cleaning during progress of the Work and at completion of the Work, as required by General Conditions.

1.02 RELATED WORK

- A. Conditions of the Contract
- B. Each Specification Section: Cleaning for specific products or work.

1.03 DISPOSAL REQUIREMENTS

- A. All excess material (suitable or unsuitable) and all vegetation, trash, debris, etc, from the excavation shall be disposed of off-site at a location approved by the Engineer.
- B. The Contractor shall make his own arrangements for disposal subject to submission of proof to the Engineer that the owner(s) of the proposed site(s) have a valid fill permit issued by the appropriate governmental agency.
- C. The Contractor shall provide watertight conveyance of any liquid, semi-liquid, or saturated solids which tend to bleed or leak during transport. No liquid loss from transported materials will be permitted whether being delivered to the construction site or being hauled away for disposal. Fluid materials hauled for disposal must be specifically acceptable at the selected disposal site.
- D. The Contractor shall comply with all necessary permits, licenses and authorizations regarding the removal, transport and disposal of waste as are required by all applicable Federal, State and local laws and regulations.
- E. Trash burning will not be permitted on the construction site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 EXECUTION

3.01 DURING CONSTRUCTION

- A. Execute periodic cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris resulting from construction operations, at no additional cost to the Owner .
- B. Provide on-site containers for the collection of waste materials, debris and rubbish.
- C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.02 DUST CONTROL

- A. Dust shall be minimized by wetting down bare soils during windy periods, or if requested by the Engineer.
- B. The operation of dumping rock and of carrying rock away in trucks shall be so conducted as to cause a minimum of noise and dust.
- C. Vehicles carrying rock, concrete, or other material shall be routed over such streets as will cause the least annoyance to the public.

- D. All unpaved streets, roads, detours, or haul roads used in the construction area shall be given an approved dust-preventative treatment or periodically watered to prevent dust as directed by the Engineer.
- E. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.
- F. Schedule operations so that dust and other contaminants resulting from the cleaning process will not fall on wet or newly coated surfaces.

3.03 FINAL CLEANING

- A. Employ skilled workmen for final cleaning.
- B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels and other foreign materials from sight-exposed interior and exterior surfaces.
- C. Wash and shine glazing and mirrors.
- D. Polish glossy surfaces to a clear shine.
- E. Ventilating Systems:
 - 1. Clean permanent filters and replace disposable filters if units were operated during construction.
 - 2. Clean ducts, blowers and coils if units were operated without filters during construction.
- F. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
- G. Prior to final completion or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire site is clean.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Maintain for the Owner at the site one record copy of:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Engineer field orders or written instructions.
 - 6. Approved shop drawings, product data and samples.
 - 7. Approved Operation and Maintenance data.
 - 8. Field test records.
 - 9. Receipts for delivery of items to Owner.

1.02 RELATED WORK

- A. Section 01152: Applications for Payment
- B. Section 01340: Shop Drawings, Product Data, Samples

1.03 QUALITY ASSURANCE

- A. General: Delegate the responsibility for maintenance of record documents to one person on the Contractor's staff approved in advance by the Engineer.
- B. Accuracy of Records: Thoroughly coordinate all changes within the record documents, making adequate and proper entries on each page of specifications and each sheet of drawings and other documents where such entry is required to properly show the change. Accuracy of records shall be such that future search for items shown in the contract documents may reasonably rely on information obtained from the approved record documents.
- C. Timing of Entries: Make all entries within 24 hours after receipt of information.

1.04 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office separately from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. Provide locked cabinet or secure storage space for storage of samples.
- B. File documents and samples in accordance with specification format.
- C. Maintenance:
 - 1. Maintain documents in a clean, dry, legible condition and in good order.
 - 2. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by Engineer and Owner.

1.05 MARKING DEVICES

- A. Provide felt-tip marking pens for recording information in a color code acceptable to Engineer.

1.06 RECORDING

- A. Label each document "PROJECT RECORD" in neat, large, printed letters.
- B. Record information concurrently with construction progress.
- C. Do not conceal any work until required information is recorded.
- D. Drawings: legibly mark to record actual construction of:
 - 1. Depths of various elements of foundation in relation to established data.
 - 2. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by Field Order or Change Order.
 - 6. Details not on original contract Drawings.
 - 7. Sewer lines:
 - a. Invert elevations at manholes, line and manhole alignment and locations.
 - b. Location of each service line, referenced by distances from downstream manhole and sewer centerline to end of service line.

8. Facility:
 - a. Flow line elevations from the entrance works to the discharge.
 - b. Location of all valves.
 9. Demolished features:
 - a. Locations and inverts of all pipe terminations/plugs
 - b. Locations of all electrical wiring terminations.
- E. Specifications and addenda: legibly mark each section to record:
1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
 2. Changes made by Field Order or Change Order.

1.07 SUBMITTAL

- A. At Contract close-out, deliver Record Documents to Engineer for the Owner.
- B. Accompany submittal with transmittal letter in duplicate, containing:
 1. Date.
 2. Project title and number.
 3. Contractor's name and address.
 4. Title and number of each Record Document.
 5. Signature of Contractor or his authorized representative.

1.08 PAYMENT

- A. Project record documents are incidental to the Work for which no separate payment will be made.
- B. No payment will be made to the Contractor on any portion of the work for which project record documents, including recording, are not complete.

END OF SECTION

SECTION 01730

OPERATING AND MAINTENANCE DATA

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Compile product data and related information appropriate to Contractor's installation and for Owner's maintenance and operation of products furnished under the Contract.
- B. Prepare operating and maintenance data, as specified in this Section and as referenced in other pertinent sections of Specifications.
- C. Instruct Owner's personnel in the maintenance of products and in the operation of equipment and systems.

1.02 RELATED WORK

- A. Section 01340: Shop Drawings, Product Data, Samples
- B. Section 01720: Project Record Documents

1.03 QUALITY ASSURANCE

- A. Preparation of data shall be done by personnel:
 - 1. Trained and experienced in maintenance and operation of the described products.
 - 2. Completely familiar with requirements of this Section.
 - 3. Skilled as technical writers to the extent required to communicate essential data.
 - 4. Skilled as draftsmen competent to prepare required Drawings.
- B. Manuals for equipment and systems shall be prepared by the equipment manufacturer or system supplier.

1.04 SUBMITTALS

- A. Prepare data in the form of an instructional manual for use by Owner's personnel.

- B. Format:
1. Size: 8½" x 11".
 2. Paper: 20 lb minimum, white, for typed pages.
 3. Text:
 - a. Manufacturer's printed data.
 - b. Neatly typewritten.
 4. Drawings:
 - a. Provide reinforced, punched binder tab; bind in with text.
 - b. Reduced to 8½" x 11", or 11" x 17" folded to 8½" x 11".
 - c. Where reduction is impractical, folded and placed in 8½" x 11" envelopes bound in text.
 - d. Suitably identified on Drawings and envelopes.
 5. Provide fly leaf for each separate product or each piece of operating equipment.
 - a. Provide typed description of product and major component parts of equipment.
 - b. Provide indexed tabs.
 6. Cover:
 - a. Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS".
 - b. List:
 - i. Title of Project.
 - ii. Identity of separate structure as applicable.
 - iii. Identity of general subject matter covered in manual.
 7. Assembly:
 - a. Assemble and bind material in the same order as specified in Paragraph 1.04.
 - b. Material grouped in the same manner as the applicable portions of the Contract Documents.
- C. Binders:
1. Preliminary manuals: heavy paper covers.
 2. Final manuals: commercial-quality, substantial, permanent, 3-ring or 3-post binders with durable, cleanable plastic covers of adequate size to easily contain required information.

1.05 CONTENT OF MANUALS

- A. Neatly typewritten table of contents for each volume, arranged in a systematic order.
1. Contractor, name of responsible principal, address and telephone number.
 2. A list of each product required to be included, indexed to the content of the volume.

3. List, with each product, the name, address and telephone number of:
 - a. Subcontractor or installer.
 - b. Maintenance contractor, as appropriate.
 - c. Identify the area of responsibility of each.
 - d. Local source of supply for parts and replacement.
 - e. Manufacturer.
 4. Identify each product by product name and other identifying symbols as set forth in Contract Documents.
- B. Product Data:
1. Include only those sheets which are pertinent to the specific product.
 2. Annotate each sheet to:
 - a. Clearly identify the specific product or part installed.
 - b. Clearly identify the data applicable to the installation.
 - c. Delete references to inapplicable information.
 3. Preventive maintenance information shall be given for each major component of every piece of equipment in the format included in this Section.
- C. Drawings:
1. Supplement product data with Drawings as necessary to clearly illustrate:
 - a. Relations of component parts of equipment and systems.
 - b. Control and flow diagrams.
 2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
 3. Do not use Project Record Documents as maintenance drawings.
- D. Written text as required to supplement product data for the particular installation:
1. Organize in a consistent format under separate headings for different procedures.
 2. Provide a logical sequence of instructions for each procedure.
- E. Copy of each warranty, bond and service contract issued:
1. Provide information sheet for Owner's personnel; give:
 - a. Proper procedures in the event of failure.
 - b. Instances which might affect the validity of warranties or bonds.
- F. Provide an installation, operation and maintenance manual for each item of equipment or system listed in the schedule of manuals, in the quantity listed in the submittal schedule.
- G. Content for each unit of equipment and system, as appropriate.
1. Description of unit and component parts:
 - a. Function, normal operating characteristics and limiting conditions.
 - b. Performance curves, engineering data and tests.

- c. Complete nomenclature and commercial number of all replaceable parts.
 2. Manufacturer's complete installation instructions and recommendations.
 3. Operating procedure:
 - a. Startup, break-in, routine and normal operating instructions.
 - b. Regulation, control, stopping, shutdown and emergency instructions.
 - c. Summer and winter operating instructions, as applicable.
 - d. Special operating instructions.
 4. Maintenance procedures:
 - a. Routine operations.
 - b. Guide to "trouble-shooting".
 - c. Disassembly, repair and reassembly.
 - d. Alignment, adjusting and checking.
 - e. Provide preventive maintenance information for each major component of every piece of equipment as required on the "Preventive Maintenance Information & Equipment Data Sheet" attached at the end of this Section.
 5. Servicing and lubrication schedule:
 - a. List of lubricants required.
 - b. Provide lubrication information for each major component of every piece of equipment as required on the "Preventive Maintenance Information & Equipment Data Sheet" attached at the end of this Section.
 6. Manufacturer's printed operating and maintenance instructions.
 7. Description of sequence of operation.
 8. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
 - a. Predicted life of parts subject to wear.
 - b. List of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.
 9. As-installed control diagrams.
 10. Other data as required under pertinent sections of Specifications.
- H. Content, for each electric and electronic item or system, as appropriate:
1. Description of system and component parts:
 - a. Function, normal operating characteristics and limiting conditions.
 - b. Performance curves, engineering data and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 2. Circuit directories of panelboards:
 - a. Electrical service.
 - b. Controls.
 - c. Communications.
 3. As-installed color coded wiring diagrams.

4. Operating procedures:
 - a. Routine and normal operating instructions.
 - b. Sequences required.
 - c. Special operating instructions.
 5. Maintenance procedures:
 - a. Routine operations.
 - b. Guide to "trouble-shooting".
 - c. Adjustment and checking.
 6. Manufacturer's printed operating and maintenance instructions.
 7. List of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.
 8. Other data as required under pertinent sections of Specifications.
- I. Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel, or as necessary to provide complete operation and maintenance instructions.
- J. Additional requirements for operating and maintenance data: the respective sections of Specifications.

1.06 SUBMITTAL SCHEDULE

- A. Manuals for Equipment and Systems:
1. Submit four preliminary copies prior to the date of shipment of the equipment or system.
 - a. Engineer shall review.
 - b. If acceptable:
 - i. One copy shall be returned to Contractor.
 - ii. One copy sent to Engineer's resident project representative.
 - iii. Two copies retained in Engineer's files.
 - c. If unacceptable:
 - i. Two copies shall be returned to Contractor and Engineer's comments for revision.
 - ii. Two copies retained in Engineer's files.
 - iii. Resubmit four revised preliminary copies for Engineer's review.
 - iv. Once the Engineer has determined that a manual is not acceptable, the remainder of the manual shall not be reviewed in detail.
 - d. No partial payments shall be made for equipment and systems, either on hand or installed, until preliminary manuals are submitted and acceptable to the Engineer.
 - e. Funding:

2. Agency funds may be withheld from Owner if Owner's acceptable operation and maintenance manual is not submitted as required by the agencies.
3. If funds are withheld and such is partially attributable to a delay by the Contractor in submitting the required operation and maintenance materials:
4. Owner may withhold payments from Contractor.
5. Contractor shall not terminate or suspend work.
6. No additional costs or contract time shall be claimed by Contractor if Owner withholds payments.
7. Submit five final copies no less than 30 days prior to putting the equipment or system in service.
 - a. Engineer shall compare with accepted preliminary manual.
 - b. If identical or otherwise acceptable:
 - i. One copy shall be returned to Contractor for project record documents.
 - ii. One copy shall be retained by Engineer.
 - iii. Three copies shall be held for later transmittal to Owner.
 - c. If not acceptable:
 - i. All five copies shall be returned to Contractor for revision or retained by Engineer.
 - ii. The necessary revision data shall be requested from Contractor, at Engineer's option.
 - d. No portion of the Work is substantially complete until final equipment and system manuals relating to that portion of the Work are accepted by Engineer.
 - e. Submit five copies of any revisions found desirable during instruction of Owner's personnel, with instructions for revising copies of manual.
8. If Contractor requires additional copies of the operation and maintenance manuals for the Contractor's, subcontractor's or suppliers' use, such may be submitted and shall be returned upon review by the Engineer.

1.07 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in the operation, adjustment and maintenance of all scheduled products, equipment and systems.
- B. Operating and maintenance manual shall constitute the basis of instruction:
 1. Contents of manual reviewed with Owner's personnel in full detail to explain all aspects of operations and maintenance.
 2. Training of personnel:

- a. In the field, review operation and maintenance, in full detail with Owner's personnel, each scheduled system or equipment.
 - b. Training assistance shall not be considered complete until after equipment is fully operational and checked out and functioning satisfactorily.
 - c. If training is given before equipment is completely operational, representative shall have to repeat training after equipment is fully operational.
- C. Additional requirements for specialized instruction of Owner's personnel are given in the detailed equipment specifications.
- D. Scheduled two weeks in advance in coordination with both the Engineer and Owner's operating personnel.
- E. Instruction to be performed by a qualified, experienced, regular employee of the equipment or system manufacturer, or a full time field service representative (not sales personnel) approved by the equipment or system manufacturer.
- F. If the Engineer judges the instruction to be incomplete, inadequate or inaccurate, additional instruction shall be scheduled and provided at no additional cost to the Owner.

1.08 SCHEDULE

- A. Section 01340: Shop Drawings, Product Data, Samples
- B. See attached "Preventive Maintenance Information & Equipment Data Sheet" at end of this Section.

PREVENTIVE MAINTENANCE INFORMATION
AND
EQUIPMENT DATA SHEET

1. Equipment Name:

2. Equipment Number:

3. Equipment Manufacturer:

Address:

Phone:

4. Equipment Supplier:

Address:

Phone:

5. Nameplate Data:

Drive Unit _____ h. _____ ram, _____ volts, _____ phase

Motor class (drip-proof, TEFC, etc.)

Manufacturer Model No. _____ Serial No. _____

Other _____

Driven Unit: Flow with units _____

Discharge Pressure with units _____

Equipment Type _____

Model No. _____ Serial No. _____

Other _____

6. Method of Power Transmission (direct coupled, V-belt, etc.)

7. Maintenance Requirements (list on next sheet)

Maintenance Operation: List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable.

Frequency: List required frequency of each maintenance operation.

Lubricant (if applicable): Refer by symbol to recommended lubricant from list in Item 8.

Comments: Give other applicable comments concerning maintenance operation.

<u>Maintenance Operation</u>	<u>Frequency</u>	<u>Lubricant</u>	<u>Comments*</u>
------------------------------	------------------	------------------	------------------

A.

B.

C.

*Comments - including any special tools required.

Use additional sheets if necessary.

8. Lubricant List (provide Mobile number in addition to any other recommended manufacturers):

<u>Reference</u> <u>Symbol</u>	<u>Mobile</u>	<u>Standard</u> <u>Oil</u>	<u>Gulf</u>	<u>Arc</u>	<u>or Equal</u>
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List symbols used in
Item 7 above.

List equivalent lubricants, as distributed by
each manufacturer for specific use recommended.

9. This data sheet prepared by:

Firm:

Date:

END OF SECTION

SECTION 02221

TRENCHING, BACKFILLING AND COMPACTING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Trenching, backfilling and compacting for buried conduits.

1.02 RELATED WORK

- A. Section 16010: General Electrical Requirements

1.03 REFERENCES

- A. ATSM D2774, "Underground Installation of Thermoplastic Pressure Piping".
- B. ANSI C150/AWWA A21.50.
- C. ANSI C151/AWWA A21.51.

1.04 SUBMITTALS

- A. Testing laboratory results on bedding materials to demonstrate compliance with Specifications.

1.05 JOB CONDITIONS

- A. All trenching is unclassified.
- B. Protect adjacent structures and surrounding areas.
- C. Work to remain within available easements.
- D. Weather:
 - 1. No backfill placement during freezing weather.
 - 2. No frozen materials, ice or snow in backfill or fill.
 - 3. No backfill or fill on frozen surfaces.

PART 2 PRODUCTS

2.01 MATERIALS

A. Bedding Materials:

1. Bedding materials are those materials located a maximum of 8" below bottom of conduit, depending on bedding class or condition required.
2. Material to be defined and required by applicable ASTM standard for installation for bedding class/type required or scheduled.
3. Those materials requiring Engineer's approval should have prior written approval.

B. Initial Backfill Materials:

1. Initial backfill material is that material placed above the bedding material, around and over the pipe to 12" over the top of the conduit.
2. Material to be defined and required by applicable ASTM standard for installation for bedding class/type required or scheduled.
3. In no case shall initial backfill material contain particles with any dimension greater than ¾".
4. Natural material:
 - a. Use excavated material (natural ground) from the trench unless gradation requirements cannot be met.
 - b. Same as bedding material if natural is unacceptable.

C. Backfill Materials:

1. Backfill materials are those materials placed in the trench between the initial backfill material and the top of the trench.
2. Material to be as defined and required by applicable ASTM standard for installation for bedding class/type required or scheduled.
3. Natural material:
 - a. Use excavated material (natural ground) from the trench unless gradation requirements cannot be met.
 - b. Same as bedding material if natural is unacceptable.

D. Materials Not Allowed:

1. All pipe bedding and backfill material shall be clean and free of any contaminants that could endanger public health.
2. Mine tailings shall not be used for pipe bedding or backfill material.

PART 3 EXECUTION

3.01 INSPECTION

- A. Field-verify location and invert elevation of existing underground utilities and obstructions.

3.02 STABILIZATION

- A. Thoroughly compact and consolidate trench bottoms so they remain firm, dense and intact during required construction activities.
- B. Remove all mud and muck during excavation.
- C. Reinforce trench bottom with crushed rock or gravel if it becomes mucky during construction activities.
- D. Allow no more than ½" depth of mud or muck to remain on trench bottoms when pipe bedding material is placed thereon.
- E. Where trench bottoms out in rock, rock is to be removed to 8" below bottom of pipe and replaced with bedding material.

3.03 TRENCH EXCAVATION

- A. All trenching operations shall be in compliance with OSHA regulations. Trenching over 5 feet deep must have shoring or be benched back before entry.
- B. Do not open more trench in advance of pipe being laid than is necessary to expedite the work (not to exceed 600').
- C. Except where jacking and boring is indicated on the Drawings, or is specified or permitted by Engineer, excavate trenches by open cut from the surface.
- D. Alignment, grade and minimum cover:
 - 1. Establish alignment and grade or elevation from offset stakes.
 - 2. Excavate trenches so conduits can be laid straight at uniform grade.
 - 3. Comply with pipe specification sections regarding vertical and horizontal alignment and max joint deflection.
- E. Limiting trench widths:

1. Excavate to a width able to provide adequate working space and pipe clearances for proper conduit installation, jointing and embedment.
2. If needed to reduce earth loads to prevent sloughing, cut banks back on slopes extending not lower than 1' above the top of the conduit.
3. Minimum trench widths and minimum clearances between installed pipe and trench wall:
 - a. Minimum width:
 - i. Minimum trench width: Conduit O.D. plus 4".

F. Mechanical excavation:

1. Do not use where its operation would damage trees, buildings, culverts or other existing property, structures or utilities above or below ground; only hand excavate in such areas.
2. Use mechanical equipment of a type, design and construction, operated so that:
 - a. Rough trench bottom elevation can be controlled.
 - b. Uniform trench widths and vertical sidewalls are obtained from 1' above the top of the installed conduit to the bottom of the trench.

G. Cuts in Surface Construction:

1. No larger than necessary to provide adequate working space.
2. Cut a clean groove not less than 1½" deep along each side of trench or around perimeter of excavation area.
3. Remove pavement and base pavement to provide shoulder not less than 6" wide between cut edge and top edge of trench.
4. Do not undercut trenches that would result in bottom trench width being greater than top width.
5. Make pavement cuts to and between straight or accurately marked curved lines parallel to trench centerline or limits of excavation.
6. Where the trench crosses drives or other surface construction, remove and replace the surface construction between saw cuts as specified for pavement.

H. Excavation Below Pipe Standards:

1. Except as otherwise required, excavate trenches below the underside of conduits, as indicated on the Drawings, to provide for installation of granular embedment pipe foundation material.
2. Where in earth:
 - a. Trench bottoms for 6" and smaller pipe may be excavated below conduit subgrade and granular embedment provided.

3.04 TRENCH BACKFILL

- A. Material as defined by applicable reference for installation for type of pipe used.
- B. Traveled Areas:
 - 1. Compact to 95% ASTM D-1557.
 - 2. Top 12" below finish grade, 95% ASTM D-1557.
- C. Untraveled Areas:
 - 1. Compacted to at least undisturbed natural density.
 - 2. Not less than 85% ASTM D-1557.
- D. Upper 12" of trench shall contain no particles larger than 6" in any dimension.
- E. Surface Finish:
 - 1. For placement of paving or gravel surfacing, subgrade where applicable.
 - 2. Match existing and surrounding contours.
 - 3. Graded finished appearance.

3.05 FIELD QUALITY CONTROL

- A. One proctor and gradation for each backfill material.
- B. One field density for each 250 linear feet of trench per 10" lift.
- C. Maximum lift thickness: 10" compacted thickness.
- D. One density at each service.

END OF SECTION

SECTION 02500

PAVING, GRAVEL SURFACING AND RESURFACING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Subgrade preparation.
- B. Crushed aggregate base course.
- C. Prime coat.
- D. Asphaltic concrete surface course.
- E. Paving repair and replacement.
- F. Placement of gravel and other surfacing.

1.02 RELATED WORK

- A. Section 01340: Shop Drawings, Product Data, Samples
- B. Section 02221: Trenching, Backfilling, and Compacting

1.03 REFERENCES

- A. New Mexico Department of Transportation (NMDOT) Standard Specifications for Highway and Bridge Construction 2007 Edition – Section 423: Hot Mix Asphalt - Superpave
- B. Asphalt Institute Manuals:
 - 1. MS-2, "Mix Design Methods for Asphalt Concrete".
 - 2. MS-3, "Asphalt Plant Manual".
 - 3. MS-8, "Asphalt Paving Manual".

1.04 SUBMITTALS

- A. Aggregate: material certificates and laboratory analysis.
- B. Prime and tack coats: material certificates for each load.
- C. Asphaltic Concrete:
 - 1. Job mix formula for each type supported by:
 - a. Evidence of mix design procedure.
 - b. Complete aggregate analysis.
 - c. Marshall curves.
 - d. Mixing and placing temperatures.
 - 2. Job mix formula may be one successfully used in the area if supported by recent certified test reports.

1.05 TESTING AND INSPECTION

- A. Testing: representative samples shall be taken from the asphalt plant and the laydown surface for testing in accordance with the following standard test procedures:
 - 1. ASTM D1559-73, "Resistance to Plastic Flow".
 - 2. ASTM D1118 or 2726, "Bulk Specific Gravity of Compacted Bituminous Mixtures".
 - 3. ASTM D2171, "Quantitative Extraction of Bitumen from Bituminous Paving Mixtures".
 - 4. ASTM C136, "Sieve or Screen Analysis of Fine and Coarse Aggregates", (extracted sample).
 - 5. "Density of Bituminous Concrete in Place":
 - a. ASTM D2950-47.
 - b. ASTM D1188.
 - c. ASTM D2726.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Subgrade:
 - 1. Existing in-place soil except that organic materials, solid constructions, muck and other unsuitable materials shall be removed.
 - 2. Filling pockets in the subgrade with base course material or asphalt will generally not be permitted.

B. Crushed Aggregate Base Course:

1. Base course aggregate shall be composed of materials consisting of:
 - a. Crushed stone.
 - b. Crushed or screened gravel.
 - c. Caliche.
 - d. Sand.
 - e. A combination of such materials.
2. Base course aggregate shall be free from vegetable matter and all other deleterious materials.
3. When the stationary plant method is used, base course aggregate will be accepted immediately following mixing based on periodic samples taken from the pugmill output.
4. When road mix method is used, base course aggregate will be tested for acceptance on samples taken from the watered and completely processed windrow.
5. Testing: base course aggregate will be tested in accordance with AASHTO methods provided below or in accordance with other approved methods:
 - a. AASHTO T-27, Mechanical Analysis.
 - b. AASHTO T-11, Passing No. 200 Sieve.
 - c. AASHTO T-89, Liquid Limit.
 - d. AASHTO T-96, Los Angeles Abrasion.
 - e. AASHTO T-14, Soundness (5-cycle Magnesium Sulfate Solution).
 - f. Linear Shrinkage Materials Testing Control Manual.
6. Base course aggregate materials shall be combined in such proportions that the resulting composite blend meets the requirements of one of the following classes:

<u>Sieve Size</u>	<u>Class A</u>	<u>Class B</u>
1"	100	100
¾"	80-100	85-100
No. 4	30-60	40-70
No. 10	20-45	30-55
No. 200	3-10	4-12
Soundness	18 or less	18 or less
L.A. Abrasion	50 or less	50 or less
L.L.	25 or less	25 or less
7. 50% by weight of all + No. 4 materials shall have a minimum of two mechanically fractured faces.

C. Prime and tack coats: emulsified asphalt suitable for the intended use and local soil conditions.

D. Asphaltic concrete: mixture of mineral aggregate and paving asphalt (asphalt cement) mixed at a central mixing plant delivered as specified in Standard Specifications for Highway and Bridge Construction 2007 Edition – Section 423:

Hot Mix Asphalt - Superpave

- E. Open graded friction course: mixture of crushed stone or crushed gravel and bituminous materials mixed at a central mixing plant delivered as specified:
1. Asphalt cement: as recommended in the approved job-mix formula.
 2. Aggregates:
 - a. Shall be crushed stone or crushed gravel, composed of hard durable pebbles or fragments so as to provide a material that will meet the following grading requirements when tested by means of AASHTO T11 and T30.
 - b. At least 75% of the material retained on the No. 4 sieve shall be particles having at least two fractured faces.
 - c. Shall be free from vegetable matter, lumps or balls of clay, adherent films of clear or other material that will prevent thorough coating with asphaltic material.
 - d. Shall have a percentage of wear of 40 or less, and shall have soundness loss of 8 or less.
 - e. Shall be from a single source; blending from multiple sources will not be permitted.
 - f. Gradation Requirements:

<u>Sieve Size</u>	<u>% Passing</u>
1/2"	100
3/8"	90-100
No. 4	25-55
No. 10	0-12
No. 40	0-8
No. 200	0-4

- F. Mine tailings may be incorporated into the work only with the prior specific written approval of the Engineer.

PART 3 EXECUTION

3.01 SUBGRADE PREPARATION

- A. Any underlying soft or otherwise unsuitable material shall be removed and replaced with suitable material from excavation or borrow.
- B. Scarified, watered, and compacted to 95% of modified Proctor density (AASHTO T-99) at optimum moisture content +2%, to depth as shown on the Drawings.
- C. Subgrade:
1. Subgrade upon which pavement, sidewalk, curb-and-gutter, driveways or

other structures are to be directly placed shall not vary more than ¼" from the specified grade and cross section.

2. Subgrade upon which subbase or base material is to be placed shall not vary more than ½" from the specified grade and cross section.
3. Variations within the above specified tolerances shall be compensating so that the average grade and cross section specified are met.

3.02 CRUSHED AGGREGATE BASE COURSE

A. Subgrade:

1. Cleaned of all loose and deleterious materials
2. Free from frozen material
3. Top 6" shall have a moisture content not exceeding optimum $\pm 2\%$ as determined by AASHTO T-180.

B. Mixing and placing:

1. Mixing shall provide a homogenous mixture of unsegregated and uniformly dispersed materials as placed in position for compacting.
2. Plant and equipment shall be adequate in all respects.
3. Spread and compact base course in layers which will permit the required density to be obtained.
4. Density requirements will be determined by AASHTO T-180.
5. Unless otherwise provided, base course compacted to not less than 95% of the laboratory established density.
6. Densities will be determined in compliance with AASHTO T-205, use of nuclear methods in conformity with AASHTO T-238 and T-239, or other approved methods.
7. Top surface of base course shall not deviate in excess of ¼" when tested with a 10' straightedge in any direction.
8. All deviations from this tolerance shall be corrected.

C. Acceptable Mixing and Placing Methods:

1. Stationary plant method:
 - a. Base course material and water mixed in an approved mixer.
 - b. Water added during the mixing operation in the amount necessary to provide the optimum moisture content for placement \pm two percentage points.
 - c. The base course material transported to the job site while it contains the proper moisture content and placed without delay on the roadbed by means of an approved aggregate spreader.
2. Travel plant method:
 - a. Material for each layer of base course placed through an aggregate spreader or window sizing device.
 - b. Base uniformly mixed by a traveling mixing plant.

- c. Water added during mixing sufficient to provide the optimum moisture content \pm two percentage points at the time of placement of material.

3.03 PRIME COAT

A. General:

1. The use of prime coat shall be optional with the Contractor, recognizing that its primary value is in protecting the base course before it is covered with the asphalt surface course.
2. If prime coat is used, it shall be so applied that it will penetrate and seal, but not flood, the base course surface.
3. Any excess prime coat shall be dried up with blotter sand.
4. Prime coat shall be properly cured out before the surface course is placed.

3.04 TACK COAT

- A. The contact surfaces of all cold pavement joints, curbs, gutters, manholes and the like shall be cleaned and painted with tack coat just before the adjoining asphaltic concrete is placed.

B. Multi-Lift Construction:

1. Where multi-lift construction is called for, a light tack coat shall be used between lifts if the underlying surface has become dirty or give other signs that the lifts may not bond together properly without the aid of a tack coat.
2. However, tack coat shall be used as sparingly as possible to achieve the intended purpose.

3.05 ASPHALTIC CONCRETE

A. General:

1. The base course shall be cleaned, inspected, and all deficiencies corrected well in front of the laydown machine.
2. Removing deficient base course material and filling the pocket with asphaltic concrete will not generally be permitted.

- B. Manhole frames and valve covers shall be adjusted prior to placing the surface course.

- C. At the time of delivery to the site of the work, the temperature of mixture shall be not lower than that required to obtain the density specified.

- D. Protection:
1. When hauling time from the mixing plant to the job site exceeds two hours or when inclement weather prevails, bituminous mixtures shall be covered with tarpaulins while being hauled.
 2. The tarpaulins shall completely cover the load and be firmly tied down.
 3. Mixtures shall be delivered to site of the work without segregation of the ingredients.
- E. Weather:
1. Asphalt concrete may be placed when the temperature is 40° F and rising and the weather is favorable as determined by the Engineer.
 2. None may be placed in wet weather or on a wet surface.
- F. The asphalt concrete shall be evenly spread upon the subgrade or base to such a depth that after rolling it will be of the specified cross section and grade of the course being constructed
- G. Spreading Machine:
1. Depositing and spreading of the asphalt concrete shall be accomplished by means of self-propelled mechanical spreading and finishing machine designed especially for that purpose and which permits depositing and spreading in a strip 8'-14' in width.
 2. The machine shall be equipped with a vibrating or tamping screed capable of being accurately regulated and adjusted to distribute a layer of the material to a definite predetermined thickness and template.
 3. The paving machine shall be equipped with an automatic leveling device controlled from an external guide.
 4. The initial pass for each course shall be made using a paver equipped with a 40' minimum external reference, except this shall not apply when asphaltic concrete is placed adjacent to concrete pavement or gutter.
 5. Subsequent passes shall utilize a matching device of 1' minimum length, riding on the adjacent lift.
- H. Placing:
1. Placing, once commenced, must be continued without interruption.
 2. No greater amount of the mixture shall be delivered in any one day than can be properly distributed and rolled during that day during daylight hours.
- I. In narrow, deep or irregular sections, intersections, turnouts, or driveways, where it is impractical to spread and finish the base and level the surface mixtures by machine methods, the Contractor may use spreading equipment or acceptable hand methods approved by the Engineer.

- J. Care shall be exercised in connection with the construction of joints to insure that the surface of the pavement is true to grade and cross section.
- K. Jointing:
1. In making the joint along any adjoining edge such as a curb, gutter, or an adjoining pavement and after the hot mixture is placed by the finishing machine, sufficient hot material shall be carried back to fill any space left open.
 2. This joint shall be properly "set up" with the back of a rake at proper height and level to receive the maximum compression under rolling.
 3. The work of "setting up" this joint shall be performed by competent workmen who are capable of making a correct, clean and neat joint.
 4. Longitudinal and transverse joints shall be made in a careful manner. Well-bonded and sealed joints are required.
 5. Joints between old and new pavements or between successive days' work shall be carefully made in such a manner as to insure a thorough and continuous bond between the old and new surfaces.
 6. In the case of surface course, the edge of the old surface course shall be cut back for its full depth so as to expose a fresh surface and, if necessary to obtain a well-bonded joint, shall be painted with a tack coat after which the hot surface mixture shall be placed against contact surfaces of curbs, gutters, headers, manholes, etc., they shall be painted with a tack coat.
- L. Rolling:
1. Rolling shall be commenced with a steel wheel roller along the lower edge of the area to be rolled and be continued until the edge is thoroughly compacted, after which the roller shall be gradually advanced to the crown point, both sides being rolled in a like manner.
 2. Rolling shall be continued with steel and pneumatic wheel rollers until the layer has become thoroughly compacted throughout and is true to grade and cross section.
 3. Final rolling of the top or finish course shall be accomplished with a steel wheel roller, removing all surface imperfections, including indentures made by pneumatic-tired rollers.
 4. Rolling of any asphaltic concrete course shall be continued until all roller marks are eliminated and density of at least 94% of the maximum theoretical density of the same mixture has been obtained.
 5. In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand operated mechanical tampers.
 6. Any mixture that becomes mixed with foreign materials or in any way is defective shall be removed, replaced with fresh mixture, and compacted to the density of the surrounding pavement.

M. Roller Maintenance:

1. Rollers shall be maintained in good mechanical condition and those that cannot be operated without jerking or driven along a straight path shall not be used.
2. No leakage from any roller shall be allowed to come in contact with the pavement being constructed nor shall any roller be permitted to stand motionless on any portion of the work before it has been properly compacted.
3. Steel roller wheels shall be treated with water or oil to prevent the adherence of the asphalt concrete, and water or oil may be used on pneumatic-tired rollers but the quantity used must not be such as to be detrimental to the surface being rolled.

N. Completion:

1. Upon completion, the pavement shall be true to grade and cross section.
2. Except at intersections or any changes of grade, when a 10' straightedge is laid on the finished surface parallel to the centerline of the roadway, the surface shall not vary from the edge of the straightedge more than 3/16".
3. Areas that are not within this tolerance shall be brought to grade immediately following the initial rolling.
4. After the completion of final rolling, the smoothness of the course shall be checked, and the irregularities that exceed the specified tolerances or that retain water on the surface shall be corrected by removing the defective work and replacing with new material as directed by the Engineer at the expense of the Contractor.

O. Samples:

1. The Contractor shall cut samples as requested by the Engineer for testing the in-place compacted thickness of any asphaltic concrete course.
2. Any area found to be more than 1/4" deficient in thickness shall be removed and satisfactorily replaced by the Contractor.
3. If the average of all the thickness tests indicates that the entire course is deficient in excess of 1/8", the Contractor shall provide a 1" asphaltic concrete surface course overlay at no additional cost to the Owner or other corrective action as approved by the Engineer.

3.06 RESTORATION OF EXISTING SURFACES

A. Roadways, parking areas, other traveled areas not scheduled.

1. Fully restored equivalent to what existing surfacing would have been when new.
2. Materials and installation as appropriate to conform to this Section.
3. Thickness, grades, alignment and materials to match existing.
4. All work performed on NMSHTD right-of-way shall meet the Standard

Specifications for Road and Bridge Construction (Edition 1994) and conform with NMSHTD requirements.

5. All pavement cuts to be by saw or other methods to give straight edges and lines.
6. Asphalt pavement to be placed with laydown machine when practical.
7. Pavement removal and replacement payment limit: pipe outside diameter plus 40" for all non-scheduled surfaces regardless of width actually removed and replaced.

3.07 SCHEDULE OF THICKNESSES AND GRADATION

- A. As indicated on Drawings.

3.08 SCHEDULE OF PAVEMENT MARKINGS

- A. Widths and lengths as indicated on the Drawings.

END OF SECTION

SECTION 16010

GENERAL ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. This Section includes general administrative and procedural requirements of electrical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 1:
 - 1. Submittals
 - 2. Coordination Drawings
 - 3. Record Documents
 - 4. Maintenance Manuals
 - 5. Rough-Ins
 - 6. Electrical Installations
 - 7. Cutting and Patching

1.02 RELATED WORK

- A. Drawings and general provisions of Contract, including General Conditions, Supplementary Conditions, and Division 1 Specification Sections apply to all Sections of Division 16.
- B. The requirements listed under General Conditions and Supplementary Conditions and the General Requirements are applicable to this section and all subsequent sections of Division 16 and form a part of the contract.
- C. Section 02221: Trenching, Backfilling and Compacting.
- D. See Division 1, Coordination for additional requirements.
- E. See Division 1, Cutting and Patching for additional requirements.
- F. Section 01340: Shop Drawings, Product Data and Samples..

1.03 CODES AND PERMITS

- A. Perform electrical work in strict accordance with the applicable provisions of the National Electrical Code, Latest Edition; National Electric Safety Code, Latest Edition; the Uniform Building Code, Latest Edition as adopted and interpreted by the State of New Mexico, and the National Fire Protection Association (NFPA Regulations), current adopted edition. Provide all materials and labor necessary to comply with rules, regulations and ordinances. Where the drawings and/or specifications indicate materials or construction in excess of code requirements, the drawings and/or specifications shall govern. The Contractor shall hold and save the Engineer free and harmless from liability of any nature or kind arising from his failure to comply with codes and ordinances.
- B. Secure and pay for all permits necessary for performance of the work. Pay for all utility connections unless otherwise specified herein.
- C. The following lists applicable codes and standards that, as a minimum, shall be followed.
 - 1. Applicable county and state electrical codes, laws and ordinances.
 - 2. National Electrical Manufacturer's Association Standards.
 - 3. National Electrical Code.
 - 4. National Electrical Safety Code.
 - 5. Underwriters Laboratories, Inc. Standards.
 - 6. American National Standards Institute.
 - 7. American Society for Testing Materials Standards.
 - 8. Standards and requirements of local utility companies.
 - 9. National Fire Protection Association Standards.
 - 10. Institute of Electrical and Electronics Engineers Standards
 - 11. Insulated Cable Engineers Association
 - 12. Occupational Safety and Health Act.
 - 13. Uniform Fire Code.
 - 14. Americans with Disabilities Act
 - 15. Commercial and Industrial Insulation Standards (MICA).

1.04 RECORD DRAWINGS

- A. See Division 1, for requirements associated with Project Record Drawings.
- B. Maintain a complete and accurate set of marked up blue-line prints showing information on the installed location and arrangement of all electrical work, and in particular, where changes were made during construction. Keep record drawings accurate and up-to-date throughout the construction period. Record drawings may be reviewed and checked by the Engineer during the construction and in conjunction with review and approval of monthly pay requests. Include copies of

all addenda, RFI's, bulletins, and change orders neatly taped or attached to record drawing set. Transmit drawings to the Engineer at the conclusion of the project for delivery to the Owner's Representative.

- C. Prepare record documents in accordance with the requirements in Division 1, Section 01700: Contract Closeout. In addition to the requirements specified in Division 1, indicate installed conditions for:
 - 1. Major raceway systems, size and location, for both exterior and interior; locations of control devices; distribution and branch electrical circuitry; and fuse and circuit breaker size and arrangements.
 - 2. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
 - 3. Approved substitutions, Contract Modifications, and actual equipment and materials installed.

1.05 QUALIFICATIONS

- A. All electricians shall be skilled in their respective trade.

1.06 SUBSTITUTIONS

- A. Identification of Division 16 equipment, fixtures, and materials listed within this Specification and in the Equipment Schedules on the drawings, which are identified by manufacturer's name, trade name, and/or model numbers are generally not meant to give preference to any manufacturer, but are provided to establish the design requirements and standards. Additional manufacturers judged to be "equivalent" to the specified product may also be listed.
- B. Equipment submitted for substitution must fit the space conditions leaving adequate room for maintenance around all equipment. A minimum of 36 inches, or more if required by Code, must be maintained clear in front of all electrical panels, starters, gutters, or other electrical apparatus. Submit drawings showing the layout, size and exact method of interconnection of conduit, wiring and controls, which shall conform to the manufacturer's recommendations and these specifications. The scale of these drawings shall be scale of Contract Drawings. The Contractor shall bear the excess costs, by any and all crafts, of fitting the equipment into the space and the system designated. Where additional labor or material is required to permit equipment submitted for substitution to function in an approved manner, this shall be furnished and installed by the Contractor without additional cost to the Owner.
- C. Equipment submitted for substitution shall be approved in writing by the Owner or his representative and shall be accompanied by the following:

1. A sample of each item submitted for substitution shall accompany the submittal.
 2. Provide a unit price quotation with each item intended for substitution. Include a unit price for the specified item and a unit price for the intended substitute item. Provide a total (per item) of the differential payback to the Owner should the intended substitute item be equivalent to that which is specified.
 3. Engineer must make a recommendation to Owner to accept or reject.
- D. Substitutions shall be approved in writing by the Owner or his representatives. The determination of the Owner shall be final.

1.07 PRIOR APPROVAL

- A. Requests for prior approval received after the specified due date may not be considered.
- B. Division 16 prior approval equipment, fixtures, and materials which are submitted as specified herein and accepted will be included in an Addendum. Equipment, fixtures and materials which are accepted under this prior approval process are accepted for bidding purposes only, subject to all requirements, terms, and conditions of the Contract Documents.

1.08 DEFINITIONS

- A. Definitions of terms will be found in the National Electric Code, Electrical Safety Orders.
- B. Whenever a term is used in this Specification which is defined in the Code, the definition given will govern its meaning in this Specification.
- C. Whenever a technical term is used which does not appear in the Code, the definition to govern its meaning in these Specifications will be found in the Standard Dictionary of Electrical and Electronic Terms, published by the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, New Jersey 08855-1331.
- D. "Provide" means furnish, install, connect and test unless otherwise noted.

1.09 SUBMITTALS

- A. The Contractor shall submit to the Engineer submittal brochures of equipment, fixtures and materials to be furnished under Division 16 as indicated in Specification 01340.
- B. Unauthorized Substitutions: If substitute materials, equipment or systems are installed without prior review or are installed in a manner which is not in conformance with the requirement of this Specification and for which the Contractor has not received a written review, removal of the unauthorized materials and installation of those indicated or specified shall be provided at no change in contract amount.
- C. Install equipment in accordance with the manufacturer's recommendations. Provide accessories and components for optimum operation as recommended by the manufacturer.
- D. Costs for the preparation, correction, delivery, and return of the submittals shall be borne by the Contractor.
- E. Complete data must be furnished showing performance, quality and dimensions. No equipment or materials shall be purchased prior to receiving written notification from the Engineer that submittals have been reviewed and marked either "NO EXCEPTIONS TAKEN" or "EXCEPTIONS AS NOTED". Submittals returned marked "EXCEPTIONS AS NOTED" do not require resubmittal provided that the Contractor agrees to comply with all exceptions noted in the submittal, and so states in a letter to the Engineer.
- F. Review of Submittals: Submittals will be reviewed with reasonable promptness, but only for conformance with the design concept of the Project and for conformance with the information indicated on the Drawings and stated in the Specifications. Review of a separate item as such will not indicate review of the assembly in which the item functions. Review of submittals shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents, nor for errors or omissions in the submittals; or for the accuracy of dimensions and quantities, the adequacy of connections, and the proper and acceptable fitting, execution, functioning and completion of the work. Review shall not relieve the Contractor of responsibility for the equipment fitting within the allotted space shown on the drawings with all clearances required for equipment operation, service and maintenance including a minimum of 3 feet clear in front of all electrical equipment and panels as defined by the National Electric Code. Any relocation of mechanical and/or electrical equipment, materials and systems required to comply with minimum clearances shall be provided by the Contractor without additional cost under the Contract.

- G. Shop Drawings: Unless the following information is included, shop drawings will be returned unchecked:
1. Cover sheet for each submittal, listing equipment, products, and materials, and referencing data and sections in Specifications and drawings. Clearly reference project name and provide space for a review stamp.
 2. Cover sheet shall clearly identify deviations from specifications, and justification.
 3. Include all related equipment in a single submittal to allow complete review. Similar equipment may be submitted under a common cover sheet.
 4. Size, dimensions, and weight of equipment.
 5. Equipment performance under specified conditions, not a copy of scheduled data on drawings.
 6. Indicate actual equipment proposed, where data sheets indicate more than one (1) device or equipment.
- H. Use of substitutions reviewed and checked by the Engineer does not relieve the Contractor from compliance with the Contract Documents. Contractor shall bear all extra expense resulting from the use of any substitutions where substitutions affect adjoining or related work required in this Division or other Divisions of this Specification.
- I. If Contractor substitutes equipment for that drawn to scale on the drawings, he shall prepare a 1/4" = 1'-0" installation drawing for each equipment room where a substitution is made, using dimensions of substituted equipment, and including piping, and electrical equipment requirements, to verify that equipment will fit space with adequate clearances for maintenance. This 1/4" = 1'-0" fabrication drawing shall be submitted, for review by the Engineer, with the shop drawing submittals of the substituted. Failure to comply with this requirement will result in the shop drawings being returned unchecked.

1.10 MAINTENANCE MANUALS

- A. Prepare maintenance manuals in accordance with Division 1, Section 01700 Contract Closeout. In addition to the requirements specified in Division 1, include the following information for equipment items:
1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
 2. Servicing instructions and lubrication charts and schedules.

1.11 DRAWINGS AND SPECIFICATIONS

- A. Electrical drawings are diagrammatic, but shall be followed as closely as actual construction and work of the other sections shall permit. Size and location of equipment is drawn to scale wherever possible. Do not scale from electrical drawings.
- B. Drawings and specifications are for the assistance and guidance of the Contractor. Exact locations, distances, and levels will be governed by the building. The Contractor shall make use of data in all the Contract Documents to verify information at the building site.
- C. In any case where there appears to be a conflict between that which is shown on the electrical drawings, and that shown in any other part of the Contract Documents, the Contractor shall notify and secure directions from the Engineer.
- D. Drawings and specifications are intended to complement each other. Where a conflict exists between the requirements of the drawings and/or the specifications, request clarification. Do not proceed with work without direction.
- E. The Engineer shall interpret the drawings and the specifications. The Engineer's interpretation as to the true intent and meaning thereof and the quality, quantity, and sufficiency of the materials and workmanship furnished thereunder shall be accepted as final and conclusive.
- F. Where items are specified in the singular, this division shall provide the quantity as shown on drawings plus any spares or extras indicated on the drawings or in the specifications.
- G. Investigate structural and finish conditions and arrange work accordingly. Provide all fittings, equipment, and accessories required for actual conditions.

1.12 SIMILAR MATERIALS

- A. All items of a similar type shall be products of the same manufacturer.
- B. Contractor shall coordinate among suppliers of various equipment to assure that similar equipment type is product of the same manufacturer.
- C. Examples of similar equipment types include but are not limited to:
 - 1. Power Circuit Breakers
 - 2. Enclosed Case Circuit Breakers
 - 3. Batteries

4. UPS
5. Surge Protection Devices
6. Motor Starters
7. Transformers
8. Panelboards
9. Disconnects
10. Fuses
11. Transfer Switch

1.13 PRODUCT STORAGE, HANDLING AND DELIVERY

- A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.

1.14 WARRANTY

- A. Following guarantee is a part of the specifications and shall be binding on the Contractor:
 1. "The Contractor guarantees that this installation is free from ALL defects. He agrees to replace or repair to the satisfaction of the Owner's Representative any part of the installation which may fall within a period of one year after date established below, provided that such failure is due to defects in the materials or workmanship or to failure to follow the specifications and drawings. Warranty of the Contractor-furnished equipment or systems shall begin on the date the system or equipment is placed in operation for beneficial use of the Owner or occupancy by the Owner, whichever occurs first; such date to be determined in writing by the Owner's Representative by means of issuing a 'Certificate of Substantial Completion'."
- B. The extent of guarantees or warranties by Equipment and/or Materials Manufacturers shall not diminish the requirements of the Contractor's guarantee-warranty to the Owner.
- C. All items of electrical equipment furnished and installed under Division 16 shall be provided with a full two (2) year parts and labor warranty unless extended by other divisions of this specification.

PART 2 PRODUCTS

2.01 QUALITY OF MATERIALS

- A. All equipment and materials shall be new, and shall be the standard product of manufacturers regularly engaged in the production of electrical equipment, and shall be the manufacturer's latest design. Specific equipment, shown in schedules on drawings and specified herein, is to set forth a standard of quality and operation.

2.02 EQUIPMENT REQUIREMENTS

- A. The electrical requirements for equipment specified or indicated on the drawings are based on information available at the time of design. If equipment furnished for installation has electrical requirements other than those indicated on the electrical drawings, make all adjustments to wire and conduit size, controls, over current protection and installation as required to accommodate the equipment supplied. Delineate all adjustments to the drawings reflecting the electrical system in a submittal to the Contract Administrator immediately upon knowledge of the required adjustment.

PART 3 EXECUTION

3.01 COOPERATION WITH OTHER TRADES

- A. Coordinate all work so that the construction operations can proceed without harm to the Owner from interference, delay, or absence of coordination. The Contractor shall be responsible for the size and accuracy of all openings.

3.02 DRAWINGS

- A. The electrical drawings show the general arrangement of all lighting, power, special systems, equipment, etc., and shall be followed as closely as actual building construction and work of other trades will permit. Whenever discrepancies occur between plans and specifications, the most stringent shall govern. All Contract Documents shall be considered as part of the work. Coordinate with architectural, mechanical, and structural drawings. Because of the small scale of the electrical drawings, it is not possible to indicate all offsets,

fittings and accessories, which may be required. Provide all fittings, boxes, and accessories as may be required to meet actual conditions. Should conditions necessitate a rearrangement of equipment, such departures and the reasons therefore, shall be submitted by the Contractor to the Engineer for review in the form of detailed drawings showing the proposed changes. No changes shall be made without the prior written approval of the Engineer. All changes shall be marked on record drawings.

- B. Should any doubt or question arise in respect to the true meaning of the drawings or specifications, the question shall be submitted to the Engineer, whose decision shall be final and conclusive.
- C. Installation of all equipment shall be arranged to provide all clearances required for equipment operation, service, and maintenance, including minimum clearance, as defined by the National Electric Code (NEC).
- D. The installation of all concealed electrical systems shall be carefully arranged to fit within the available space without interference with adjacent structural and mechanical systems.

3.03 ELECTRICAL INSTALLATIONS

- A. General: Sequence, coordinate, and integrate the various elements of electrical system, materials, and equipment. Comply with the following requirements:
 - 1. Coordinate electrical systems, equipment, and materials installation with all other building components.
 - 2. Verify all dimensions by field measurements.
 - 3. Arrange for chases, slots, and openings in all other building components during progress of construction, to allow for electrical installations.
 - 4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components as they are constructed.
 - 5. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
 - 6. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum clearance possible.
 - 7. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.
 - 8. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents,

recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Engineer.

9. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components.
10. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
11. Install access panel or doors where units are concealed behind finished surfaces.
12. Install systems, materials, and equipment giving right-of-way priority to systems requiring installation at a specified slope.

- B. Install items level, plumb and parallel, and perpendicular to the building.

3.04 FIELD MEASUREMENTS

- A. No extra compensation shall be claimed or allowed due to differences between actual dimensions, including dimensions of equipment, fixtures and materials furnished, and those indicated on the drawings. Contractor shall examine adjoining work, and shall submit to Engineer any work which must be corrected. Review of submittal data in accordance with paragraph "Submittals" shall in no manner relieve the Contractor of responsibility for the proper installation of the electrical work within the available space. Installation of equipment and systems within the building space shall be carefully coordinated by the Contractor.

3.05 EQUIPMENT SUPPORT

- A. Provide support for equipment to the building structure. Provide all necessary structures, inserts, sleeves, firestops and hanging devices for installation of equipment. Coordinate installation of devices. Verify with the Engineer that the devices and supports are adequate as intended and do not overload the building's structural components in any way.

3.06 PAINTING

- A. All finish painting of electrical systems and equipment will be under "Painting", unless equipment is hereinafter specified to be painted.
- B. All equipment shall be provided with factory applied standard finish, unless otherwise specified.

- C. Touch-Up: If the factory finish on any equipment is damaged in shipment or during construction of the building, the equipment shall be refinished to the satisfaction of the Engineer.

3.07 PROTECTION OF MATERIALS AND EQUIPMENT

- A. The Contractor shall be responsible for the protection of all work, materials and equipment furnished and installed under this section of the specifications, whether incorporated in the building or not.
- B. All items of electrical equipment shall be stored in a protected weatherproof enclosure prior to installation within the building, or shall be otherwise protected from the weather in a suitable manner approved by the Engineer.
- C. The Contractor shall provide protection for all work and shall be responsible for all damage done to property, equipment and materials. Storage of materials within the building shall be approved by the Engineer prior to such storage.
- D. Conduit openings shall be closed with caps or plugs, or covered to prevent lodgment of dirt or trash during the course of installation. At the completion of the work, fixtures, equipment and materials shall be cleaned and polished thoroughly and delivered in a condition satisfactory to the Engineer.

3.08 EXCAVATION

- A. Provide all excavation, trenching and backfilling required.
- B. Slope sides of excavations to comply with codes and ordinances. Shore and brace as required for stability of excavation.

3.09 ERECTION OF METAL SUPPORTS AND ANCHORAGE

- A. Cut, fit, and place miscellaneous metal fabrications accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- B. Field Welding: Comply with AWS "Structural Welding Code".

3.10 ERECTION OF WOOD SUPPORTS AND ANCHORAGE

- A. Cut, fit, and place wood grounds, nailers, blocking, and anchorage accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- B. Select fastener sizes that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood members.
- C. Attach to substrates as required to support applied loads.

3.11 APPLICATION OF JOINT SEALERS

- A. General: Comply with joint sealer manufacturer's printed application instructions applicable to products and applications indicated, except where more stringent requirements apply.
 - 1. Comply with recommendations of ASTM C 962 for use of elastomeric joint sealants.
 - 2. Comply with recommendations of ASTM C 790 for use of acrylic-emulsion joint sealants.
- B. Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
- C. Firestopping Sealant: Provide sealant, including forming, packing, and other accessory materials, to fill openings around electrical services penetrating floors and walls, to provide fire-stops with fire-resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

3.12 INSTALLATION OF ACCESS DOORS

- A. Set frames accurately in position and securely attached to supports, with face panels plumb and level in relation to adjacent finish surfaces.
- B. Adjust hardware and panels after installation for proper operation.

3.13 CUTTING AND PATCHING

- A. Perform cutting and patching per requirements below:
1. Perform cutting, fitting, and patching of electrical equipment and materials required to:
 - a. Uncover Work to provide for installation of ill-time Work.
 - b. Remove and replace defective Work.
 - c. Remove and replace Work not conforming to requirements of the Contract Documents.
 - d. Remove samples of installed Work as specified for testing.
 - e. Install equipment and materials in existing structures.
 - f. Upon written instructions from the Contracting Officer, uncover and restore Work to provide for Contracting Officer observation of concealed Work.
 2. Cut, remove, and legally dispose of selected electrical equipment, components, and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new Work.
 3. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.
 4. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
 5. During cutting and patching operations, protect adjacent installations.
 6. Patch existing finished surfaces and building components using new materials matching existing materials and experienced installers.

3.14 MANUFACTURER'S INSTRUCTIONS

- A. All equipment shall be installed in strict accordance with recommendations of the manufacturer. If such recommendations conflict with plans and specifications, the Contractor shall submit such conflicts to the Engineer who shall make such compromises as he deems necessary and desirable.

3.15 CONCRETE BASES AND HOUSEKEEPING PADS

- A. Install concrete bases and housekeeping pads under all freestanding electrical equipment unless otherwise noted.
- B. Contractor shall be responsible for the accurate dimensions of all pads and bases and shall furnish and install all anchor bolts, etc. Coordinate weight of concrete bases and housekeeping pads with the structural engineer.

- C. All concrete bases and housekeeping pads shall conform to the requirements specified under Division 3, Concrete, portions of these specifications. Pad foundations shall be 4" high minimum, unless otherwise indicated on the drawings. Chamfer edges shall be 1". Faces shall be free of voids and rubbed smooth with Carborundum block after stripping forms. Tops shall be level. Provide dowel rods or other required material in floor for lateral stability and anchorage.
- D. Equipment anchor bolts shall be set in a galvanized pipe or sheet metal sleeves 1" larger than bolt diameter. Anchor bolts shall be high strength steel J shape. Anchor bolt design shall be arranged and paid for by the Contractor.

3.16 TESTS

- A. All tests shall be conducted in the presence of the designated and authorized Owner's Representative. The Contractor shall notify the Engineer one week in advance of all tests. The Contractor shall furnish all necessary equipment, materials, and labor to perform the required tests.

3.17 OPERATION AND MAINTENANCE INSTRUCTIONS

- A. The Contractor shall furnish the Engineer complete operating and maintenance instructions covering all units of electrical equipment herein specified together with parts lists. Furnish four (4) copies of all the literature; each shall be suitably bound in loose-leaf book form.
- B. Operating and maintenance manuals as required herein shall be submitted to the Engineer for review not less than two (2) weeks prior to the date scheduled for the Contractor to provide Operating and Maintenance Instructions to the Owner as specified herein.
- C. Upon completion of all work and all tests, Contractor shall furnish the necessary skilled labor and helpers for operating the electrical systems and equipment for a period of five (5) days of eight (8) hours each. During this period, the Contractor shall instruct the Owner or his representative in the operations, adjustment and maintenance of all equipment furnished. Contractor shall provide at least two weeks notice to the Engineer in advance of this period, with a written schedule of each training session, the subject of the session, the Contractors' representatives who plan to attend the session, and the time for each session.

3.18 CERTIFICATIONS

- A. Before receiving final payment, certify in writing that all equipment furnished and all work done is in compliance with all applicable codes mentioned in these specifications. Submit certifications and acceptance certificates to the Contracting Officer, including proof of delivery of O&M manuals, spare parts required, and equipment warranties, which shall be bound with O&M manuals.

3.19 INTERRUPTING SERVICES

- A. The Contractor shall coordinate the installation of all work within the facility in order to minimize interference with the operation of existing electrical telephone, fire alarm, and utility systems during construction. Connections to existing systems requiring the interruption of service within the facility shall be carefully coordinated with the Owner to minimize system downtimes. Requests for the interruption of existing services shall be submitted to the Engineer in writing a minimum of two (2) weeks before the scheduled date. Absolutely no interruption of the existing services will be permitted without the written review of the Engineer.

3.20 OPERATION PRIOR TO ACCEPTANCE

- A. Operation of equipment and systems installed by the Contractor for the benefit of the Owner prior to substantial completion will be allowed providing a written agreement between the Owner and the Contractor has established warranty and other responsibilities to the satisfaction of both parties.

3.21 SITE VISITS AND OBSERVATION OF CONSTRUCTION

- A. The Engineer will make periodic visits to the project site at various stages of construction in order to observe the progress and quality of various aspects of the Contractor's work, in order to determine in general if such work is proceeding in accordance with the Contract Documents. This observation by the Engineer, however, shall in no way release the Contractor from his complete responsibility to supervise, direct, and control all construction work and activities, nor shall the Engineer have authority over, or a responsibility to means, methods, techniques, sequences, or procedures of construction provided by the Contractor or for safety precautions and programs, or for failure by the Contractor to comply with all law, regulations, and codes.

3.22 MEASUREMENT AND PAYMENT

- A. Work covered under this section of the specifications, and costs associated therewith, shall be included in the contract price for the item to which the work applies. No separate payment shall be made.

3.23 WARRANTY

- A. Contractor shall warrant all work including workmanship and material for a period of one year following the date of substantial completion. In addition , the contractor will warrant all equipment for a period of 2 years per section 16010-8, 1.14.C

END OF SECTION

SECTION 16111

CONDUIT

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Conduit, conduit couplings, connections, adapters, fittings, clamps, hangers and appurtenant hardware.

1.02 RELATED WORK

- A. See Section 16010.
- B. Manufacturer's standard literature for all materials.
- C. Manufacturer's standard literature for 2.13 if "other conduits" are proposed.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm experienced in manufacturing underground precast concrete utility structures of types and sizes required and similar to those indicated for this Project. Firm must have a record of successful in-service performance.
- B. Comply with NFPA 70 "National Electrical Code" and ANSI C2 "National Electrical Safety Code" for components and installation.
- C. Listing and Labeling: Provide products specified in this Section that are listed and labeled.
 - 1. The Terms "Listed" and "Labeled": As defined in the "National Electrical Code," Article 100.
 - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver conduits to site with ends capped. Store nonmetallic conduits with supports to prevent warping, and deforming.

PART 2 PRODUCTS

2.01 ELECTRICAL NONMETALLIC TUBING (ENMT)

- A. Per NEC 331 and UL 263.
- B. Same manufacturer as conduit supplied for 2.05A.
- C. Fittings and cement: by conduit manufacturer.

2.02 INTERMEDIATE METAL CONDUIT (IMC)

- A. Per NEC 345, and UL 1242.

2.03 RIGID METAL CONDUIT (RMC)

- A. Steel RMC:
 - 1. Per NEC 346, UL 6 and ANSI C80.1.
 - 2. Electrogalvanized on outside, inside and on threads.
- B. Aluminum RMC: per NEC 346, UL 6 and ANSI C80.5.

2.04 POLYVINYL-CHLORIDE COATED RIGID METAL CONDUIT (PVC RMC)

- A. The PVC coated galvanized rigid conduit must be UL Listed. The PVC coating must have been investigated by UL as providing the primary corrosion protection for the rigid metal conduit. Ferrous fittings for general service locations must be UL Listed with PVC as the primary corrosion protection. Hazardous location fittings, prior to plastic coating must be UL listed. All conduit and fittings must be new, unused material. Applicable UL standards may include: UL 6 Standard for Safety, Rigid Metal Conduit, UL514B Standard for Safety, Fittings for Conduit and Outlet Boxes.

- B. The PVC coated galvanized rigid conduit must be ETL Verified to the Intertek ETL SEMKO High Temperature H2O PVC Coating Adhesion Test Procedure for 200 hours. The PVC coated galvanized rigid conduit must bear the ETL Verified PVC-001 label to signify compliance to the adhesion performance standard.
- C. The conduit shall be hot dip galvanized inside and out with hot galvanized threads.
- D. A PVC sleeve extending one pipe diameter or two inches, whichever is less, shall be formed at every female fitting opening except unions. The inside sleeve diameter shall be matched to the outside diameter of the conduit.
- E. The PVC coating on the outside of conduit couplings shall have a series of longitudinal ribs 40 mils in thickness to protect the coating from tool damage during installation.
- F. Form 8 Condulets, 1/2" through 2" diameters, shall have a tongue-in-groove gasket to effectively seal against the elements. The design shall be equipped with a positive placement feature to ease and assure proper installation. Certified results confirming seal performance at 15 psig (positive) and 25 in. of mercury (vacuum) for 72 hours shall be available.
- G. Form 8 Condulets shall be supplied with plastic encapsulated stainless steel cover screws.
- H. A urethane coating shall be uniformly and consistently applied to the interior of all conduit and fittings. This internal coating shall be a nominal 2 mil thickness. Conduit or fittings having areas with thin or no coating shall be unacceptable.
- I. The PVC exterior and urethane interior coatings applied to the conduit shall afford sufficient flexibility to permit field bending without cracking or flaking at temperatures above 30°F (-1°C).
- J. All male threads on conduit, elbows and nipples shall be protected by application of a urethane coating.
- K. All female threads on fittings or conduit couplings shall be protected by application of a urethane coating.
- L. Independent certified test results shall be available to confirm coating adhesion under the following conditions
 1. Conduit and conduit exposure to 150°F (65°C) and 95% relative humidity with a minimum mean time to failure of 30 days. (ASTM D1151)
 2. The interior coating bond shall be confirmed using the Standard Method of Adhesion by Tape Test (ASTM D3359).
 3. No trace of the internal coating shall be visible on a white cloth following six wipes over the coating which has been wetted with acetone (ASTM D1308).

4. The exterior coating bond shall be confirmed using the methods described in Section 3.8, NEMA RN1. After these tests the physical properties of the exterior coating shall exceed the minimum requirements specified in Table 3.1, NEMA RN1.
- M. Right angle beam clamps and U bolts shall be specially formed and sized to snugly fit the outside diameter of the coated conduit. All U bolts will be supplied with plastic encapsulated nuts that cover the exposed portions of the threads.
- N. Installation of the PVC Coated Conduit System shall be performed in accordance with the Manufacturer's Installation Manual. To assure correct installation, the installer shall be certified by Manufacturer to install coated conduit.
- O. Manufacturer / Product:
 1. Plasti-Bond Red.
 2. or equal.

2.05 RIGID NONMETALLIC CONDUIT (RNMCM)

- A. RNMCM of polyvinyl chloride:
 1. Per NEC 347, UL 651 and NEMA TC2 for EPC-40.
 2. UL-listed for use with 90 degree Celsius conductors.
 3. Ultraviolet resistant, Schedule 40 polyvinyl chloride (except Schedule 80 where called for on Drawings).
 4. Joints: glued, except provide bell-and-spigot expansion joint with "O" rings where required for expansion/contraction.
 5. Fittings and cement: by conduit manufacturer.
 6. Manufacturer / Product:
 - a. Carlon Plus 40/Plus 80.
 - b. or equal.
- B. RNMCM of Fiberglass-Reinforced Epoxy:
 1. Per NEMA TC-14 2002 and ASTM D-2105.
 2. UL-listed for use with 90 degree Celsius conductors.
 3. Ultraviolet-resistant, fiberglass-reinforced epoxy.
 4. Minimum trade size allowed: 2".
 5. Wall thickness:
 - a. 0.066 for 2" through 3½" conduit.
 - b. 0.096 for 4" through 6" conduit.
 6. Joints: bell-and-spigot with triple seal method; provide expansion joint where required for expansion/contraction.
 7. Fittings: by conduit manufacturer.
 8. Product:
 - a. United Fiberglass.
 - b. or equal.

- 2.06 DIRECT BURIAL CONDUIT (DB)
- A. Same as 2.05 B.
- 2.07 ENCASED BURIAL CONDUIT (EB)
- A. Same as 2.05 A.
- B. Same as 2.05 B, but in 4" to 6" trade size with minimum 0.055" wall thickness.
- 2.08 ELECTRICAL METALLIC TUBING (EMT)
- A. Per NEC 348 and UL 797.
- 2.09 FLEXIBLE METAL TUBING (FMT)
- A. Per NEC 349.
- 2.10 FLEXIBLE METAL CONDUIT (FMC)
- A. Per NEC 350 and UL 1.
- B. Aluminum.
- 2.11 LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LFMC)
- A. Per NEC 351 and UL 360.
- B. Aluminum with a sheath rated for use with 90 degree Celsius conductors.
- 2.12 FLEXIBLE EXPLOSION-PROOF CONDUIT (XPFC)
- A. Braided steel or copper alloy with inner insulating sleeve.
- B. Fittings: threaded.
- C. Product:
1. Crouse-Hinds Series EC.
 2. or equal.

2.13 OTHER CONDUITS

- A. Per appropriate NEC article and UL standard.
- B. Use only after specific written approval of the Engineer.

2.14 COUPLINGS

- A. ENMT: glued on fitting same as used for coupling RNMC.
- B. EMT:
 - 1. Steel, not die-cast.
 - 2. Concrete-tight and rain-tight compression type.
 - 3. Set screw or indenter type will not be acceptable.
- C. LFMC, FMC: not allowed.
- D. Other conduits: as required by NEC and recommended by manufacturer.

2.15 CONNECTORS

- A. ENMT:
 - 1. Female glue to male thread type.
 - 2. Held to box with a locknut, not snap-on.
- B. EMT:
 - 1. Steel, not die-cast.
 - 2. Concrete-tight and rain-tight compression type.
 - 3. Set screw or indenter type will not be acceptable.
- C. FMC:
 - 1. Steel squeeze type.
 - 2. Appleton 7484.
 - 3. or equal.
- D. LFMC: liquid-tight steel, insulated throat.
 - 1. Steel squeeze type.
 - 2. Appleton ST/STB.
 - 3. or equal.

- E. By Box Type:
 - 1. NEMA 4, NEMA 4X stainless steel, or NEMA 13: watertight hub or threaded inlet on box.
 - 2. NEMA 12: "O-ring" type connector.
 - 3. NEMA 7 or cast boxes: threaded inlet on box.
 - 4. NEMA 1 or galvanized steel: as in 2.15A - D or insulated throat steel for other conduits.

PART 3 EXECUTION

3.01 DRAWINGS

- A. Conduit Runs:
 - 1. Conduit runs are not fully detailed on the Drawings.
 - 2. In addition to conduits shown:
 - a. Install as implied by circuiting, and as required for a complete system.
 - b. Install as called for on the One-Line Diagram.

3.02 INSTALLATION

- A. Conduit bends in all but EMT, and in IMC less than 1":
 - 1. Factory-made or made with a conduit bending machine recommended by the conduit manufacturer.
 - 2. Handmade bends will not be acceptable.
- B. Make bends in EMT or in 1/2" and 3/4" IMC with a hand bender that fully supports the side walls.
- C. Wrench-tighten all threaded joints, couplings and connectors.
- D. Couplings and connectors for EMT: wrench tightened.
- E. Running Conduit:
 - 1. All conduit shall be concealed in finished areas and where indicated on the Drawings.
 - 2. In many places, such as at motors and surface-mounted wiring devices in pump rooms and electrical rooms, the end of a run may be an exposed vertical riser even though the symbol used for the conduit run denotes concealed.

3. For exposed conduit to be installed in unfinished building areas, such as metal buildings with no framed walls, install conduit either parallel with or perpendicular to structural members of the building or structure, except where allowed otherwise by the Engineer.
 4. Roofs:
 - a. The only conduit that may be run on a roof is conduit that serves equipment on that roof.
 - b. Locate roof penetrations so no horizontal runs of conduit are required on the roof.
- F. Installation:
1. Conduit installed above lay-in ceilings will be considered to be concealed, and need not comply with 3.02.E.
 2. It shall be routed to avoid interference with piping, duct work and luminaires, and shall be well above the lay-in ceiling.
 3. Conduit shall not be installed on slabs, decks, sidewalks or floors where it may create a trip hazard.
 4. The Engineer shall be the sole judge as to "trip hazard".
 5. Conduits may be installed on slabs only with written permission from the Engineer.
- G. Location: approximately as shown on the Drawings and as approved by Engineer prior to installation.
- H. Sleeve wall Conduit Penetrations:
1. Sleeve floor penetrations where through intermediate floors of a building and in other places indicated on the Drawings.
 2. Material: steel rigid metal conduit or steel pipe securely fastened in place.
 3. Set sleeves in masonry walls during construction.
 4. Set sleeves in concrete before placement.
 5. Extend floor sleeves 2" up except where shown otherwise on the Drawings.
 6. Waterproof construction sleeves: flanged type.
 7. Exterior building wall sleeves:
 - a. Install conduit in center of sleeve.
 - b. Pack interior and exterior annular space around conduit with plastic backer rod sized to fit annular space in compression as recommended by backing manufacturer.
 - c. Seal interior and exterior of joint with acrylic polymer sealant:
 - i. DAP, subsidiary of Plough, Inc.
 - ii. or equal.
 8. Openings required after footings, walls, floors or ceilings constructed shall be provided and grouted at no additional expense to Owner.

- I. Conduit embedded in structural concrete:
 - 1. Where shown on the Drawings.
 - 2. Set before concrete is poured.
 - 3. Route in direct line, with bends as large a radius as practical.
 - 4. Do not interfere with concrete reinforcing.
- J. Expansion joints: where conduit spans building expansion joints or in long duct runs, use expansion fittings and bonding jumpers.
- K. Drainage:
 - 1. Avoid pockets in conduit runs.
 - 2. Provide suitable drainage fittings in low spots in exposed conduit.
 - 3. Weep holes not permitted.
- L. Field Cuts and Threads:
 - 1. Cut ends of conduit square with hand or power saw and ream to remove burrs and sharp edges.
 - 2. Do not use wheel cutter.
 - 3. Threads cut on job shall have same effective length, thread dimensions and taper as factory-cut threads.
 - 4. Carefully remove burrs from threads and paint conduit threads with one coat of zinc chromate to male threads.
- M. Supports:
 - 1. Hangers, supports or fastenings:
 - a. Provide at each elbow and at end of every straight run terminating in box or cabinet.
 - b. Rigid fastenings spaced maximum of 7' horizontal, 8' vertical.
 - c. Adjustable supports spaced maximum of 7'.
 - 2. Clamps: comply with Section 16190.
 - 3. One-hole straps are to be installed with hole below conduit in horizontal runs.
 - 4. Trapeze hanger:
 - a. Use to support horizontal runs only.
 - b. Install U-bolts at end of each run and at each elbow.
 - c. Install clamps every third intermediate hanger for each conduit.
 - d. Hangers are not detailed but must be adequate to support combined weight of conduit, conductors and hangers.
 - e. Material:
 - i. Aluminum unistrut with stainless steel fittings.
 - ii. As specified in Section 16190.
 - iii. or equal.
- N. Conduit ends:
 - 1. Cap spare conduit.

2. Open conduit ends terminating in trenches, panels or enclosures: plug space around cables with commercial duct-sealing compound.
 3. Cap conduit ends during construction to prevent entrance of foreign material.
- O. Cleaning: clean and swab inside by mechanical means to remove foreign materials and moisture before wires or cables are installed.

3.03 APPLICATION

- A. ENMT:
1. If listed in 3.05 "SCHEDULE", may be used for 120/208 and 120/240V lighting and receptacle branch circuits or thermostat circuits concealed in metal stud hollow walls.
 2. If so used, then the run may also be extended into the cavity above a Tee-bar ceiling with removable tiles (hollow ceiling space).
 3. Do not use for other control or instrumentation circuits.
- B. IMC: not permitted underground; direct buried.
- C. RMC:
1. RMC: not permitted underground; direct buried.
 2. On aluminum handrails, use aluminum RMC supported by aluminum or stainless steel hardware.
 3. IMC and steel RMC may be used interchangeably.
 4. Neither steel RMC nor IMC may be used in place of PVC RMC or aluminum RMC.
 5. Use only PVC RMC or RNMC where embedded in concrete (except see 3.03E).
 6. Do not cast aluminum RMC in concrete or use it for sleeves.
 7. Aluminum RMC: not permitted in contact with earth.
 8. Where conditions of D.2 or D.3 cannot be met, elbows shall be PVC RMC where in earth or concrete, or shall match the run for applications where exposed or where concealed in hollow walls or hollow ceiling spaces.
 9. See 3.03E.
- D. RNMC:
1. RNMC, whether PVC or FRE, may not be used where exposed to direct sunlight, except where RNMC of PVC is specifically called for on the Drawings.
 2. RNMC of PVC may be used for elbows under any of the following conditions:

- a. Conductors are small enough and run is short enough so the inside radius of the elbow will not be significantly grooved during pulling.
 - b. Elbow is:
 - i. In earth or concrete.
 - ii. In a wet well.
 - iii. Beneath a bridge where not exposed to sunlight.
 - iv. Concealed in a wall.
 - v. Specifically called out as RNMC on the Drawings.
 - vi. Where an underground run penetrates a slab to become exposed.
 - vii. Not exposed to sunlight.
 - c. Exposed portion of run is rigidly supported by a wall, strut channel or similar support, such as a riser to control station which is mounted on strut channel near a motor.
- 3. FRE duct may be used for elbows if the three following conditions are met:
 - a. The manufacturer certifies in writing that neither the pulling line or rope nor the conductors will significantly groove the inside radius during pulling operations.
 - b. The adjacent portion of the run is FRE duct, or is an adaptor between FRE duct and another type conduit, such as where an elbow penetrates a slab and the run becomes exposed.
 - c. The elbow is not exposed to sunlight.
- E. Conduit for Duct Banks:
 - 1. DB is allowed only if scheduled below and specifically called for on the Drawings.
 - 2. EB is allowed only if scheduled below and conduit is not identified as PVC RMC on Drawings.
 - 3. RNMC is allowed if conduit is not identified as PVC RMC on Drawings.
 - 4. PVC RMC is allowed for all runs.
 - 5. See 3.03D for all elbows.
- F. EMT: if listed in 3.05 "SCHEDULE" and is shown on the Drawings, EMT may be used in hollow walls and hollow ceiling spaces of finished locations for conductors of lighting and receptacle circuits.
- G. FMC:
 - 1. Use FMC for the final connection to luminaires in lay-in type ceilings.
 - 2. Not all such FMC runs are shown on the Drawings.
 - 3. No other usage of FMC is allowed unless specifically called for on the Drawings.

H. LFMC:

1. Use LFMC for the final connection to:
 - a. Equipment that may vibrate.
 - b. Equipment or instrumentation cases or boxes.
 - c. Industrial type luminaires that might be temporarily moved or disconnected for maintenance or calibration.
 - d. Not all such LFMC runs are shown on the Drawings.

I. Type of Conduit:

1. The Drawings show the type of conduit required for certain runs.
2. Where the type is not shown, any type listed in 3.05 "SCHEDULE" may be used, subject to NEC restrictions and the above requirements.

3.04 SIZE

A. General:

1. The Drawings show the minimum size required for certain conduit runs.
2. Where size is not shown, comply with 3.04C.

B. If a conduit size has to be increased because a motor or other equipment furnished by the Contractor requires more power (and therefore larger wire and conduit than shown) than the specified motor or equipment, the larger conduit shall be installed at no additional cost to the Owner.

C. Minimum size requirements:

1. As required by NEC, but larger if so shown on the Drawings or required below.
2. Lighting circuits except circuit to HID pole lights: 3/4".
3. HID pole lighting circuits: 3/4".
4. 120/208/240V receptacle circuits:
 - a. Last receptacle in run: 1/2".
 - b. Other runs: 3/4".
5. 120/208/240V individual branch circuits: 3/4".
6. 208/240V feeders: 3/4".
7. 480V circuits: 3/4".
8. 120VAC control circuits:
 - a. 1/2" minimum.
 - b. 3/4" for 10 to 20 #14.
 - c. 1" minimum for more than 20 #14.
 - d. Then by NEC.
9. Shielded or coaxial cable: 3/4".
10. Circuits of special systems: as shown on Drawings or as required in the specification section for the respective system.

11. Other circuits: 3/4".

3.05 SCHEDULE

A. Conduits allowed for this project: RMC, PVC RMC, RNMC, FMC, LFMC, EMT.

END OF SECTION

SECTION 16123
WIRE AND CABLE

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Furnish, install, connect and test all wire and cable.
- B. Furnish wire and cable for all systems except:
 - 1. Where supplied as part of an equipment or system.
 - 2. Where specifically stated otherwise in other parts of the specifications or on the Drawings.

1.02 SUBMITTALS

- A. Section 01340: Shop Drawings, Product Data, and Samples
- B. Section 16010: General Electrical Requirements.

PART 2 PRODUCTS

2.01 600V POWER AND GENERAL PURPOSE WIRE

- A. Per NEC 310, UL 83 and the ANSI C8 Series.
- B. Conductor: copper.
- C. NEC Type: THHN/THWN.
- D. Minimum wire size unless specifically noted otherwise on the Drawings:
 - 1. 480V: #10 AWG.
 - 2. 120/208/240V: #12 AWG.
 - 3. Control: #14 AWG, stranded.
 - 4. Grounding/bonding conductors: #12, except #14 for control runs.
- E. Manufacturer:
 - 1. Southwire Inc.

2. or equal.

2.02 SHIELDED CABLE

- A. 90°C operation.
- B. Single pair stranded bare or tinned copper, #16 AWG with 600V insulation per NEC 340 or NEC 725.
- C. Multi-pair: stranded bare or tinned copper, #20 AWG with 300V insulation per NEC 725 and UL 13.
- D. Insulation: extruded PE, PVC, or PVC/nylon.
- E. Conductor identification: colored pairs.
- F. Pair construction: twisted pair, lay 1½" to 2½".
- G. Core tape: polyester with 25% overlap.
- H. Shield: polyester-supported aluminum tape with tinned #18 AWG copper drain wire.
 1. Single pair: single shield and drain wire.
 2. Multi-pair:
 - a. Each pair shielded, overall shield.
 - b. One drain wire.
- I. Jacket: ultraviolet stabilized, flame retardant extruded black PVC with non-hygroscopic rip cord.
- J. Sometimes referred to on Drawings as TWSH.
- K. Manufacturer:
 1. Belden Inc.
 2. or equal.

2.03 TRAY CABLE (TC)

- A. Per NEC 340, 318, 501, 725 and 760.
- B. UL Listed:
 1. Type TC.
 2. Suitable for direct burial in sizes #14 AWG and larger.

- C. Flame, moisture and sunlight resistant; meet IEEE 383 flame test at 210,000 BTU.
- D. Ratings:
 - 1. 600V.
 - 2. 90° C dry locations; 75° C wet locations.
- E. Construction:
 - 1. Conductor: stranded soft annealed copper.
 - 2. Insulation: PVC with 5 mil nylon jacket.
 - 3. Jacket: PVC.
- F. Conductor Identification:
 - 1. #8 AWG and larger: ICEA Method 4.
 - 2. #10 AWG and smaller: ICEA Table K-2, Methods 1 and 4.
- G. Manufacturer:
 - 1. Southwire Inc. "TC"
 - 2. or equal.
- H. Sometimes referred to on Drawings as "TC".

2.04 DIRECT BURIAL SIGNAL CABLE

- A. 12 each: #22 AWG solid copper conductors, each insulated with color-coded, high-molecular-weight polyethylene.
- B. Conductors twisted into six pairs with staggered pair lay.
- C. Core air space filled with PE/PJ compound.
- D. 0.006" alloy 194 copper shield (97.5% copper, 2.35% iron, 0.12% zinc, 0.03% phosphorus).
- E. Black, weather-resistant, extruded polyethylene jacket.
- F. Ratings:
 - 1. Comply with REA PE-39 requirements.
 - 2. -60° C to +80° C.
 - 3. 300 working volts.
 - 4. Resist acid, alkali, moisture and fungus.
 - 5. Suitable for direct burial.

2.05 SPECIAL CABLES

- A. As supplied by equipment suppliers or as required on the Drawings.

2.06 CABLE LUBRICANT

- A. Water-based polymer solution with minimal, non-flammable residue.
- B. Residue shall not hinder future cable removal or pulls such as can happen with certain wax emulsion lubricants.
- C. Guaranteed by the manufacturer to be non-damaging to the physical and electrical properties of the conductor insulation.
- D. Manufacturer:
 - 1. American Polywater Corporation Polywater J.
 - 2. or equal.

PART 3 EXECUTION

3.01 COLOR CODING

- A. 600V Power and General Purpose Wire:
 - 1. Neutral and ground as required by NEC.
 - a. Where two neutrals are run in a conduit, make one white and one grey.
 - b. For three: one white, one grey, and one white that is field-marked with a band of grey tape at each end.
 - 2. 480V phases: brown, orange, yellow (A,B,C, respectively).
 - 3. 120/240V: black and blue.
 - 4. 120/208V: Black, blue, violet (A,B,C, respectively).
 - 5. Motor control leads: red to field devices with white (grey) neutral.
 - 6. 600V large sizes: tape may be used.
 - 7. #14 to #10 AWG: colored insulation.
- B. Wire per 2.02 and 2.03: inherent to cable construction.
- C. Color:
 - 1. Shall be the same from end to end of a run.
 - 2. Do not change conductor color at splices or terminal boards.

3.02 MARKING

- A. Mark all conductors.
- B. Text:
1. 120/208/240V lighting and power circuits: panel number and circuit number, i.e. LA-12.
 2. 277V and 480V lighting circuits: panel number and circuit number, i.e. H1-5.
 3. 480V power and 120V control circuits associated with MCC:
 - a. Power feeders to motors shall be marked with the motor control center number, cubicle number and terminal strip number, i.e. 2-2A-T1 for MCC 2, cubicle 2A, phase A.
 - b. Control conductors shall be marked with motor tag number followed by MCC cubicle terminal point number; i.e. M41-X2.
 - c. Use pump or equipment number in the absence of a tag number.
 4. 480V circuits not associated with MCC as in 3.02B1.
 5. Control circuits not associated with MCC: terminal board number or wire number shown on schematics and/or submittals.
 6. Instrumentation (all ends of complete run of all milliamp signal cables):
 - a. Tag number, i.e. LS01 on pair; "+" on positive conductor.
 - b. Use black for positive polarity and white for negative.
- C. Method:
1. Hot-marked (embossed, not just surface printed), heat shrink tubing of the proper diameter:
 - a. Ray Chem.
 - b. or equal.
 2. If heat shrink tubing as required in 3.02C1 above is not suitable, then use typed, wrap-on, cloth adhesive labels held in place with a length of clear, heat shrinkable tubing.
 3. Direct hot marking of wire is not acceptable.
 4. Labeling methods depending solely on adhesive for attachment are not acceptable.
 5. As submitted and approved.
- D. Location: wire markers to be installed at each and every connection point to terminal boards, control stations, indicators, starters, instruments and similar equipment, and at all splices.

3.03 TAGGING

- A. Tag conductors and cables.
- B. Text:
 - 1. 120/208/240V as in 3.02.B.1.
 - 2. 480V power and 120V control associated with MCC: MCC Number and cubicle, i.e. 2-2B-T1.
 - 3. 480V circuits not associated with MCC: see 3.02.B.1.
 - 4. Control circuits not associated with MCC: name of equipment being controlled.
 - 5. Instrumentation: tag number.
- C. Method:
 - 1. Loosely group conductors of same service.
 - 2. Tag:
 - a. Tie and mark with permanency-marked tag.
 - b. For type of tag, see Section 16075.
- D. Location:
 - 1. In major pull boxes, handholds, manholes and other enclosures where accessible but neither terminated nor spliced.
 - 2. It is not necessary to tag conductors in 4 x 4 or smaller boxes, or in small conduits.

3.04 INSTALLATION

- A. Install all wiring in conduit, except where specifically allowed otherwise on the Drawings.
- B. Bending radii: not less than permitted by ICEA or as recommended by cable manufacturer.
- C. Cable in trenches, (such as under the MCC's) handhold and manholes:
 - 1. Except for individual THWN grounding conductors, all conductors shall be TC or PLTC.
 - 2. Maintain separation between AC and DC cables.
- D. Cable Pulling:
 - 1. Reels: firmly mount on portable stand and secure against displacement.
 - 2. Use pulling grips.
 - 3. Pulling tension shall not exceed manufacturer's recommendations.

4. Lubricate as recommended by the lubricant manufacturer to minimize mechanical stress that may lead to future cable faults.
- E. Splicing:
1. General:
 - a. Permissible only in boxes, enclosures, or similar accessible, protected locations.
 - b. Splicing in conduit bodies not permitted.
 - c. Splicing in underground handholds and manholes not allowed unless specifically allowed in other Sections of this specification or on the Drawings, or proposed by the Contractor and allowed by the Engineer.
 - d. Splices shall be made in strict accordance with manufacturer's instructions.
 2. 480V Circuits:
 - a. Splicing allowed at motors: Section 16124 2.03.
 - b. Other splicing allowed only where specifically shown on Drawings, or by approval of Engineer.
 - c. If allowed: see Section 16124 2.01 and 2.02.
 3. 277V Lighting Circuits:
 - a. If allowed on Drawings: Section 16124 2.01 and 2.02.
 - b. Otherwise, use terminal boards, same as required for control circuits below.
 4. 120/208/240V lighting and power circuits: Section 16124 2.01 and 2.02.
 5. Control circuits:
 - a. No splicing allowed without specific approval of Engineer.
 - b. If splicing approved, provide enclosure as approved by Engineer and terminal blocks (Section 16124).
 - c. Mark wiring as in Section 16123 3.02.
 - d. Mark terminal boards as in Section 16124.
 6. Instrument wiring:
 - a. No splicing allowed without specific approval of Engineer.
 - b. If splicing approved, provide enclosure as approved by Engineer and terminal blocks (Section 16124).
 - c. Mark wiring as in Section 16123 3.02.
 - d. Mark terminal boards as in Section 16124.

3.05 GROUNDING CONDUCTORS

- A. Grounding electrodes/grounding electrode conductors: bare.
- B. Equipment grounding conductors: insulated as required in 2.01C, or as part of a cable.

3.06 SCHEDULE

- A. Wire and cable required under this Section for this project:
1. 2.01 - 2.03.
 2. 2.05:
 - a. Same as 2.02, but shielded triplex for RTD connections.
 - b. As recommended and/or supplied by instrument manufacturers.

END OF SECTION

SECTION 16124

WIRE CONNECTORS AND ACCESSORIES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Wire connectors and splice kits, terminal blocks, wiring duct and cable pedestal.

1.02 SUBMITTALS

- A. Section 16010: General Electrical Requirements.
- B. Complete manufacturer's catalog cuts.

PART 2 PRODUCTS

2.01 600V WIRE NUTS

- A. For splices on conductors #8 AWG and smaller.
- B. Color-coded outer shell; steel inner shell.
- C. Expandable spring type; removable by twisting in reverse.
- D. UL listed and CSA certified for:
 - 1. 600V maximum building wire.
 - 2. 1000V maximum fixture wire.
 - 3. 105° C maximum temperature rating.
- E. PVC insulated.
- F. Manufacturer:
 - 1. Ideal Industries Wing Nuts.
 - 2. or equal.
- G. Use only for wire types and combinations recommended by the manufacturer.
- H. For splices in locations defined in 2.02C below, wire nuts are not acceptable.

2.02 BUTT CONNECTORS

- A. For splices on 120/240/480V circuit conductors #10 AWG and larger (except at motors).
- B. Non-insulated, brazed seam, compression type.
- C. Insulation method for butt splices that may become submerged, such as in manholes, handholes, underground pull boxes, wet wells and in other places noted on the Drawings:
 - 1. Tubular, prestretched EPDM rubber cold shrink insulators which are supplied on a removable, collapsible core for easy installation.
 - 2. Manufacturer:
 - a. 3M PST.
 - b. or equal.
- D. Insulation method for other butt splices.
 - 1. Same as 2.02C.
 - 2. Cover with half lapped Scotch 33+, then with Scotch 5300 Series in-line kit or equal.

2.03 MOTOR LEAD CONNECTORS

- A. Solid wire: 600V wire nuts, paragraph 2.01.
- B. Stranded wire:
 - 1. Install non-insulated ring terminal compression lugs on each conductor, then bolt together.
 - 2. Insulate with Scotch 5300 Series pigtail kits or equal.

2.04 TAP CONNECTORS

- A. For gutter taps.
- B. Use only where called for on Drawings.
- C. Compression type:
 - 1. Hydraulically compressed.
 - 2. Figure C or Figure 3 type.
 - 3. Specifically selected for the proper AWG:
 - a. Brundy "Crimpfit".
 - b. or equal.

- D. Insulation:
 - 1. Scotch 85-XX Multi-Mold splicing kit.
 - 2. or equal.

2.05 DIRECT BURY SPLICE KIT

- A. Use for splices in 24 VAC sprinkler controller conductors located in underground boxes or direct buried, and where called for on the Drawings.
- B. Gel-filled polypropylene insulator tube with locking fingers for wire nuts and strain relief cover.
- C. Manufacturer:
 - 1. 3M DBY.
 - 2. or equal.

2.06 POURED POLYURETHANE SPLICING KIT

- A. Use for:
 - 1. Splicing of direct burial signal cable (Section 16123).
 - 2. Where called for on the Drawings.
 - 3. For other applications where called for on the Drawings.
 - 4. Where proposed in writing by the Contractor and approved by the Engineer.
- B. Snap-together, two-piece translucent plastic mold body.
- C. Connections:
 - 1. Stranded wire: insulated, compression-type butt connectors.
 - 2. Solid wire: solder and heat-shrink sleeves.
- D. Spacer web to keep splice bundle away from mold body and allow a minimum of ¼" of sealing compound to flow readily between the splices and the body.
- E. Jumper wire for shield.
- F. Two-part, low-viscosity polyurethane sealing compounder.
- G. Manufacturer:
 - 1. 3M Scotchcast series 72-N with Scotchcast 2104 compound.
 - 2. or equal.

2.07 RE-ENTERABLE POURED URETHANE SPLICING KITS

- A. Use for:
 - 1. Splicing of direct burial signal cable (Section 16123).
 - 2. Where called for on the Drawings.
 - 3. Other applications where called for on the Drawings.
 - 4. Where proposed in writing by the Contractor and approved by the Engineer.
- B. Two-piece, transparent, PVC-mold body.
- C. End caps with graduated openings for two cables per end.
- D. Connections:
 - 1. Stranded wire:
 - a. Insulated compression-type butt connectors.
 - b. Wye connectors for taps.
 - 2. Solid wire: solder and heat-shrink sleeves.
- E. Spacer web to keep splice bundle away from mold body and allow a minimum of ¼" of sealing compound to flow readily between the splices and the body.
- F. Strain relief bar and shield connector kit.

2.08 HEAVY DUTY TERMINAL BLOCKS

- A. Voltage rating: 600V UL.
- B. Material: nylon with elevated marking strip.
- C. Spacing: ½" center-to-center.
- D. Contacts:
 - 1. Electrical grade copper alloy.
 - 2. Tubular clamp type.
- E. Wire range: #18 to #6 AWG.
- F. Maximum service temperature: 125 degrees Celsius.
- G. Manufacturer:
 - 1. Square D.
 - 2. or equal.

2.09 ULTRA HEAVY-DUTY TERMINAL BLOCKS

- A. Voltage rating: 600V UL.
- B. Material: phenolic with painted marking area.
- C. Spacing: 1.19" center-to-center.
- D. Contacts:
 - 1. Electrical grade copper alloy.
 - 2. Tubular screw type.
 - 3. 270A.
- E. Wire range: #6 AWG to 250 MCM.
- F. Maximum service temperature: 150°C.
- G. Manufacturer:
 - 1. Square D.
 - 2. or equal.

2.10 WIRING DUCT

- A. UL-rated as self-extinguishing with a continuous-use temperature of 55°C.
- B. Rectangular cross-section with rounded returns on tops of fingers.
- C. Cover: easy-on/easy-off, with rounded shoulder to easily grip the duct.
- D. Manufacturer:
 - 1. Panduit Inc.
 - 2. or equal.

2.11 DIN RAIL-MOUNTED CONTROL TERMINAL BLOCKS

- A. General:
 - 1. Thermoplastic insulator housing with marker channels, funnel wire guides and flexible universal mounting foot for DIN1 asymmetrical and DIN3 symmetrical rails.
 - 2. Compression clamp terminal connections with recessed, captive, self-locking screws.
- B. Terminal blocks, 600V rating:

1. DC digital and analog signals: 6mm spacing (0.238") for 22-12 AWG wire.
 - a. DC positive or supply: grey body, Entrelec M4/6, or Engineer approved equal.
 - b. DC negative or return: blue body, Entrelec M4/6N, or Engineer approved equal.
 2. DC shield and drain wire: 6mm spacing.
 - a. Terminals insulated from ground: yellow body, Entrelec M4/6, or Engineer approved equal.
 - b. Terminals grounded to rail: yellow body with green stripe, Entrelec M4/6P, or Engineer approved equal.
 3. AC signal or power: 8mm spacing (0.315"), for 22-8 AWG wire.
 - a. AC hot or switched supply: grey body, Entrelec M6/8, or Engineer approved equal.
 - b. AC neutral or return: blue body, Entrelec M6/8N, or Engineer approved equal.
 4. AC foreign voltage where circuits remain live after opening of control voltage disconnect switch: 8mm spacing (0.315"), orange body, Entrelec M6/8, or Engineer approved equal.
 5. AC equipment ground, terminals grounded to rail: 8mm spacing (0.315"), yellow body with green stripe, Entrelec M6/8P, or Engineer approved equal.
- C. Switch terminal blocks:
1. DC: 6mm spacing (0.238"), short hinged blade, grey body, orange blade, Entrelec M4/6SN, or Engineer approved equal.
 2. AC: 8mm spacing (0.315"), long hinged blade, grey body, grey blade, Entrelec M6/8SNB, or Engineer approved equal.
- D. Fuse-holder terminal blocks:
1. DC or AC: fused switch style, for 6.35mm x 32mm (¼" x 1¼") fuses, 13mm (0.512") spacing, with blown fuse indicator for appropriate voltage per paragraph E2 below, Entrelec M10/13TSFL, or Engineer approved equal.
 2. Blown fuse indicators: one of a, b or c below, as appropriate for the voltage at the terminals.
 - a. For 24 VDC.
 - b. For 48 VDC.
 - c. For 120-277 VAC.
- E. Accessories:
1. Mounting rails: bichromated, zincd steel.
 2. Either a or b below, or as specified on the Drawings.
 - a. DIN1 asymmetrical.
 - b. DIN3 symmetrical.

3. End sections for blocks: required on the open extremity of each size and style of terminal block, Entrelec FEM series, or Engineer approved equal.
 4. Circuit separator: required between blocks of different voltages, power and control, AC and DC, Entrelec SCM series, or Engineer approved equal.
 5. End stops for rails: required at the extremities of each series of terminal blocks, Entrelec BAM series, or Engineer approved equal.
 6. Jumpers: required for jumpering between blocks; either a or b below, or as specified on the Drawings.
 - a. Comb type: Entrelec PC with EIP insulating tips, or Engineer approved equal.
 - b. Bar type: Entrelec BJ series with appropriate parts and insulators, or Engineer approved equal.
 7. Protecting covers: required for AC power circuit terminal blocks, Entrelec EPD61 and VSPD61 screws, or Engineer approved equal.
- F. Markers: required for every terminal block and board.
1. Terminal block:
 - a. Side mount, preprinted vertical or horizontal to match board alignment, Entrelec RC, RB or RS, or Engineer approved equal.
 - b. Coordinate abbreviations of text with Engineer if descriptor exceeds available space.
 2. Terminal board: end stop marker holder, Entrelec PEB series, or Engineer approved equal.
- G. Test devices and plugs: provide during testing and leave with the project spares the following items:
1. Screw head test receptacle for 6mm blocks (if used): four each, Entrelec DCJ (yellow), or Engineer approved equal.
 2. Screw head test receptacle for 8mm blocks (if used): four each, Entrelec DCO (orange) , or Engineer approved equal.
 3. Test plugs for the above receptacles: eight each, Entrelec FC2, or Engineer approved equal.

PART 3 EXECUTION

3.01 MARKING OF TERMINAL BOARDS AND TERMINALS

- A. Terminal Boards:
 - 1. Engraved Micarta nameplate with ½" letters.
 - 2. Adjacent to each row or column of terminals.
 - 3. Text: as shown on Drawings or submittals.
- B. Terminal Points:
 - 1. Mark each terminal to be wired.
 - 2. Mark other terminals if so shown on Drawings.
 - 3. Text: as shown on Drawings or submittals; if not shown, then match wire number.

3.02 INSTALLATION, ORIENTATION AND CONNECTION OF DIN RAIL TERMINALS

- A. Mount switch and fuse-holder terminal blocks so the blades will fall open, with the hinge at the bottom if blocks are mounted vertically (horizontal rail).
- B. Connect switch and fuse-holder terminal blocks so the blade is de-energized, i.e. with voltage on the non-hinged side and return or neutral on the hinged side.
- C. Install DIN rails with empty space for one future block for each 10 installed, except that no rail shall have fewer than four empty spaces for the largest block used.
- D. DIN rails shall be attached every 6".
- E. Other devices such as relays, surge protectors, power terminals and interface modules may occupy the same rail as terminal blocks.

END OF SECTION

SECTION 16190
SUPPORTING DEVICES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Provide all labor, materials and incidentals to install strut systems, supports and anchors.

1.02 SUBMITTALS

- A. Not required.

PART 2 PRODUCTS

2.01 METAL STRUT SYSTEM

- A. Channel:
 - 1. Designed with inturred lips to allow special, spring-loaded nuts to be inserted anywhere along the channel.
 - 2. Material:
 - a. 6063-T6 aluminum.
 - b. 304 stainless steel.
 - 3. Spring-loaded nut and bolt made of stainless steel and designed to provide positive locking in place when tightened.
 - 4. Manufacturer:
 - a. Unistrut.
 - b. or equal.
- B. Hexagon bolts, nuts, braces, brackets, flat washers and structural shapes used in the assembly of metal strut: aluminum or 304 stainless steel.

2.02 FIBERGLASS STRUT SYSTEM

- A. Strut and hanger rod construction: linear glass strands, continuous mat laminates and corrosion-resistant polyester resins simultaneously pulltruded to form a uniform, rigid, thermoset shape.
- B. Fiberglass: self-extinguishing with UL 94 V-O classification.
- C. Hanger rod washers: stamped from pulltruded flat stock.
- D. Hanger rod square nuts: made from pulltruded flat stock.
- E. Hanger rod hex nuts and stout nuts: injection molded.
- F. Hanger rod beam clamps and pipe straps: steel with 15 mil PVC coating and SS bolts.
- G. Single strut: 1.715 x 1.76 x 0.15 wall by length.
- H. Back-to-back strut: 1.715 x 3.52 x 0.15 wall by length.
- I. Manufacturer:
 - a. Allied Electrical Group Cope-Glas Strut Support System.
 - b. or equal.

2.03 CONDUIT AND BOX SUPPORTS

- A. Steel RMC, IMC, RNMC, and EMT:
 - 1. Support with:
 - a. Stainless steel clamps.
 - b. Threaded stainless steel rod and hangers.
 - c. Strut system.
 - d. By pipe hangers of aluminum or stainless steel specifically manufactured for the purpose.
 - 2. Flexible galvanized steel or copper perforated straps (plumber's tape) will not be acceptable.
 - 3. In non-process indoor areas, clamps may be galvanized steel.
- B. Steel pull and junction boxes: support with stainless steel bolts and anchors.
- C. Aluminum conduit and boxes: support with stainless steel bolts and aluminum plates, clamps and hardware and/or aluminum unistrut.
- D. NEMA 4X boxes: support with stainless steel bolts and anchors or strut.

2.04 ANCHORS IN MASONRY

- A. Stainless steel Wejit bolts and hardware.
- B. Stainless steel parabolts or equal expansion bolts.
- C. Conical threaded steel inserts with a lead shield set in place with a drive punch using stainless steel bolts.
- D. Lead shields with lag bolts will not be acceptable.
- E. Toggle bolts may be used in hollow portions of masonry walls in non-process indoor areas.
- F. Manufacturer:
 - a. Hilti Corporation.
 - b. or equal.

2.05 ANCHORS IN CONCRETE

- A. Stainless steel bolts and hardware with chemical adhesive.
- B. Manufacturer:
 - a. Hilti Corporation.
 - b. or equal.

PART 3 EXECUTION

3.01 USAGE OF STRUT

- A. Do not install fiberglass strut where exposed to sunlight.
- B. Do not cast fiberglass or aluminum strut in concrete.
- C. Follow manufacturer's recommendation as to maximum loading.
- D. Do not exceed deflection stated in manufacturer's literature.

END OF SECTION

SECTION 16195
ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes identification of electrical materials, equipment, and installations.

1.03 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of product specified.
- C. Schedule of identification nomenclature to be used for identification signs and labels.
- D. Samples for each color, lettering style, and other graphic representation required for identification materials; samples of labels and signs.
- E. Details of EIA/TIA 606 compliance for labeling.

1.04 QUALITY ASSURANCE

- A. Comply with NFPA 70.
- B. Comply with EIA/TIA 606 for telephone, data, and fiber optic systems.
- C. Comply with ANSI C2.

1.05 SEQUENCING AND SCHEDULING

- A. Coordinate installing electrical identification after completion of finishing where identification is applied to field-finished surfaces.
- B. Coordinate installing electrical identifying devices and markings prior to installing acoustical ceilings and similar finishes that conceal such items.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. American Labelmark Co.; Labelmaster Subsidiary.
 - 2. Brady USA, Inc.; Industrial Products Div.
 - 3. Calpico, Inc.
 - 4. Carlton Industries, Inc.
 - 5. Champion American, Inc.
 - 6. Cole-Flex Corp.
 - 7. D&G Sign and Label.
 - 8. EMED Co., Inc.
 - 9. George-Ingraham Corp. (The).
 - 10. Grimco, Inc.
 - 11. Ideal Industries, Inc.
 - 12. Kraftbilt.
 - 13. LEM Products, Inc.
 - 14. Markal Corp.
 - 15. National Band &, Tag Co.
 - 16. Panduit Corp.
 - 17. Radar Engineers.
 - 18. Ready Made Sign Co.; Cornerstone Direct Corp. Div.
 - 19. Seton Name Plate Co.
 - 20. Standard Signs, Inc.

2.02 RACEWAY AND CABLE LABELS

- A. Manufacturer's Standard Products: Where more than one type is listed for a specified application, selection is Installer's option, but provide single type for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.

- B. Conform to ANSI A 13.1, Table 3, for minimum size of letters for legend and minimum length of color field for each raceway or cable size.
 - 1. Color: Black legend on orange field.
 - 2. Legend: Indicates voltage.
- C. Adhesive Labels: Preprinted, flexible, self-adhesive vinyl. Legend is overlaminated with a clear, weather- and chemical-resistant coating.
- D. Pretensioned, Wraparound Plastic Sleeves: Flexible, preprinted, color-coded, acrylic bands sized to suit the diameter of the line it identifies and arranged to stay in place by pretensioned gripping action when placed in position.
- E. Colored Adhesive Tape: Self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide (0.08 mm thick by 25 to 51 mm wide).
- F. Underground Line Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape with the following features:
 - 1. Size: Not less than 6 inches wide by 4 mils thick (152 mm wide by 0.102 mm thick).
 - 2. Compounded for permanent direct-burial service.
 - 3. Embedded continuous metallic strip or core.
 - 4. Printed Legend: Indicates type of underground line.
- G. Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.
- H. Aluminum, Wraparound Marker Bands: Bands cut from 0.014-inch (0.4-mm) thick aluminum sheet, with stamped or embossed legend, and fitted with slots or ears for permanently securing around wire or cable jacket or around groups of conductors.
 - 1. Plasticized Card-Stock Tags: Vinyl cloth with preprinted and field-printed legends. Orange background, except as otherwise indicated, with eyelet for fastener.
- I. Aluminum-Faced Card-Stock Tags: Weather-resistant, 18-point minimum card stock faced on both sides with embossable aluminum sheet, 0.002 inch (0.05 mm) thick, laminated with moisture resistant acrylic adhesive, and punched for the fastener. Preprinted legends suit each application.
- J. Brass or Aluminum Tags: Metal tags with stamped legend, punched for fastener. Dimensions: 2 by 2 inches (51 by 51 mm) by 0.05 inch (1.3 mm).

2.03 ENGRAVED NAMEPLATES AND SIGNS

- A. Manufacturer's Standard Products: Where more than one type is listed for a specified application, selection is Installer's option, but provide single type for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.
- B. Engraving stock, melamine plastic laminate, 1/16-inch (1.6 mm) minimum thick for signs up to 20 sq. in. (129 sq. cm), 1/8 inch (3.2 mm) thick for larger sizes.
 - 1. Engraved Legend: White letters on black face, unless noted otherwise on drawings.
 - 2. Punched for mechanical fasteners.
- C. Baked-Enamel Signs for Interior Use: Preprinted aluminum signs, punched for fasteners, with colors, legend, and size as indicated or as otherwise required for the application. 1/4-inch (6.4mm) grommets in corners for mounting.
- D. Exterior, Metal-Backed, Butyrate Signs: Weather-resistant, nonfading, preprinted, cellulose acetate butyrate signs with 0.0396-inch (1 mm), galvanized steel backing, with colors, legend, and size appropriate to the application. 1/4-inch (6.4 mm) grommets in corners for mounting.
- E. Fasteners for Plastic-Laminated and Metal Signs: Self-tapping stainless-steel screws or No.1 0/32 stainless-steel machine screws with nuts and flat and lock washers.

2.04 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Cable Ties: Fungus-inert, self-extinguishing, 1-piece, self-locking, Type 6/6 nylon cable ties with the following features:
 - 1. Minimum Width: 3/16 inch (5 mm).
 - 2. Tensile Strength: 50 lb (22.3 kg) minimum.
 - 3. Temperature Range: Minus 40 to 185 deg F (Minus 4 to 85 deg C).
 - 4. Color: As indicated where used for color coding.
- B. Paint: Alkyd-urethane enamel over primer as recommended by enamel manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install identification devices according to manufacturer's written instructions.
- B. Install labels where indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment.
- C. Lettering, Colors, and Graphics: Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations used in the Contract Documents or required by codes and standards. Use consistent designations throughout the Project.
- D. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work.
- E. Self-Adhesive Identification Products: Clean surfaces of dust, loose material, and oily films before applying.
- F. Identify feeders over 600 V with "DANGER--HIGH VOLTAGE" in black letters 2 inches (51 mm) high, stenciled with paint at 10-foot (3-m) intervals over a continuous, painted orange background. Identify the following:
 - 1. Entire floor area directly above conduits running beneath and within 12 inches (305 mm) of a basement or ground floor that is in contact with earth or is framed above unexcavated space.
 - 2. Wall surfaces directly external to conduits concealed within wall.
 - 3. All accessible surfaces of concrete envelope around conduits in vertical shafts, exposed in the building, or concealed above suspended ceilings.
 - 4. Entire surface of exposed conduits.
- G. Install painted identification as follows:
 - 1. Clean surfaces of dust, loose material, and oily films before painting.
 - 2. Prime Surfaces: For galvanized metal, use single-component, acrylic vehicle coating formulated for galvanized surfaces. For concrete masonry units, use heavy-duty, acrylic-resin block filler. For concrete surfaces, use clear, alkali-resistant, alkyd binder-type sealer.
 - 3. Apply one intermediate and one finish coat of silicone alkyd enamel.
 - 4. Apply primer and finish materials according to manufacturer's instructions.
- H. Identify Raceways and Exposed Cables of Certain Systems with Color Banding: Band exposed and accessible raceways of the systems listed below for identification.
 - 1. Bands: Pretensioned, snap-around, colored plastic sleeves; colored adhesive tape; or a combination of both. Make each color band 2 inches

(51 mm) wide, completely encircling conduit, and place adjacent bands of 2-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 40-foot (12.2m) maximum intervals in straight runs, and at 25 feet (7.6 m) in congested areas. Colors As follows:

- a. Fire-Alarm System: Red.
 - b. Fire-Suppression Supervisory and Control System: Red and yellow.
 - c. Combined Fire-Alarm and Security System: Red and blue.
 - d. Security System: Blue and yellow.
 - e. Mechanical and Electrical Supervisory System: Green and blue.
 - f. Telecommunications System: Green and yellow.
- I. Install Caution Signs for Enclosures Over 600 V: Use pressure-sensitive, self-adhesive label indicating system voltage in black, preprinted on orange field. Install on exterior of door or cover.
- J. Install Circuit Identification Labels on Boxes and at all Receptacles: Label externally as follows:
1. Exposed Boxes: Pressure-sensitive, self-adhesive plastic label on cover.
 2. Concealed Boxes: Plasticized card-stock tags.
 3. Receptacles: Pressure-sensitive, self-adhesive plastic label on cover.
 4. Labeling Legend: Permanent, waterproof listing of panel and circuit number or equivalent
- K. Identify Paths of Underground Electrical Lines: During trench backfilling, for exterior underground power, control, signal, and communications lines, install continuous underground plastic line marker located directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Where multiple lines installed in a common trench or concrete envelope do not exceed an overall width of 16 inches (400 mm), use a single line marker.
1. Limit use of line markers to direct-buried cables. Install line marker for underground wiring, both direct buried and in raceway.
- L. Color-Code Conductors: Secondary service, feeder, and branch circuit conductors throughout the secondary electrical system.
1. 208/120-V System: As follows:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - d. Neutral: White.
 - e. Ground: Green.
 2. 480/277-V System: As follows:
 - a. Phase A: Brown
 - b. Phase B: Orange
 - c. Phase C: Yellow
 - d. Neutral: Grey.

- e. Ground: Green.
- 3. Factory-apply color the entire length of the conductors, except the following field applied, color-coding methods may be used in lieu of factory-coded wire for phase conductors sizes larger than No. 10 AWG and grounded conductors and grounding conductors larger than No. 6 AWG.
 - a. Colored, pressure-sensitive plastic tape in half-lapped turns for a distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply the last 2 turns of tape with no tension to prevent possible unwinding. Use 1-inch- (25 mm) wide tape in colors as specified. Adjust tape bands to avoid obscuring cable identification markings.
 - b. Colored cable ties applied in groups of 3 ties of specified color to each wire at each terminal or splice point starting 3 inches (76 mm) from the terminal and spaced 3 inches (76 mm) apart. Apply with a special tool or pliers, tighten to a snug fit, and cut off excess length.
- M. Power Circuit Identification: Use metal tags or aluminum wraparound marker bands for cables, feeders, and power circuits in vaults, pull boxes, junction boxes, manholes, and switchboard rooms.
 - 1. Legend: 1/4-inch (6.4-mm) steel letter and number stamping or embossing with legend corresponding to indicated circuit designations.
 - 2. Fasten tags with nylon cable ties; fasten bands using integral ears.
- N. Apply identification to conductors as follows:
 - 1. Conductors to Be Extended in the Future: Indicate source and circuit numbers.
 - 2. Multiple Power or Lighting Circuits in the Same Enclosure: Identify each conductor with source, voltage, circuit number, and phase. Use color coding for voltage and phase indication of secondary circuit.
 - 3. Multiple Control and Communications Circuits in the Same Enclosure: Identify each conductor by its system and circuit designation. Use a consistent system of tags, color coding, or cable marking tape.
- O. Apply warning, caution, and instruction signs and stencils as follows:
 - 1. Install warning, caution, and instruction signs where indicated or required to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved, plastic-laminated instruction signs with approved legend where instructions or explanations are needed for system or equipment operation. Install butyrate signs with metal backing for outdoor items.
 - 2. Emergency-Operating Signs: Install engraved laminate signs with white legend on red background with minimum 3/8-inch (9-mm) high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

- P. Install identification as follows:
1. Apply equipment identification labels of engraved plastic laminate on each major unit of equipment, including central or master unit of each system. This includes communication, signal, and alarm systems, unless units are specified with their own self explanatory identification. Except as otherwise indicated, provide a single line of text with 1/2-inch (13 mm) high lettering on 1-1/2-inch (38 mm) high label; where 2 lines of text are
 2. required, use lettering 2 inches (51 mm) high. Use white lettering on black field. Apply labels for each unit of the following categories of equipment.
 - a. Panelboards, electrical cabinets, and enclosures.
 - b. Access doors and panels for concealed electrical items.
 - c. Electrical switchgear and switchboards.
 - d. Electrical substations.
 - e. Motor control centers.
 - f. Motor starters.
 - g. Push-button stations.
 - h. Power transfer equipment.
 - i. Contactors.
 - j. Remote-controlled switches.
 - k. Dimmers.
 - l. Control devices.
 - m. Switches and receptacles.
 - n. Transformers.
 - o. Inverters.
 - p. Rectifiers.
 - q. Frequency converters.
 - r. Battery racks.
 - s. Power-generating units.
 - t. Telephone switching equipment.
 - u. Clock/program master equipment.
 - v. Call system master station.
 - w. TV/audio monitoring master station.
 - x. Fire-alarm master station or control panel.
 - y. Security-monitoring master station or control panel.
 3. Apply designation labels of engraved plastic laminate for disconnect switches, breakers, push buttons, pilot lights, motor control centers, and similar items for power distribution and control components above, except panelboards and alarm/signal components where labeling is specified elsewhere. For panelboards, provide framed, typed circuit schedules with explicit description and identification of items controlled by each individual breaker.

END OF SECTION

SECTION 16400

ELECTRICAL SERVICE

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Arrange with Xcel Energy (Xcel) for the abandonment of an existing secondary metered, 240 volt, three-phase, four-wire, wild-leg delta service and installation of a new secondary metered, 120/208, three-phase, four-wire, wye service.
- B. Include in the Bid and provide that portion of the primary feeder which is required by the Specifications, Drawings, or Xcel policy to be provided by the Contractor and/or the Owner.
- C. The Owner will pay Xcel direct charges separately from this contract, which are related to Xcel installed equipment such as the pad-mount transformers, fusing and primary cable extensions.
- D. Include in the Bid and pay to Xcel all charges they require for their participation in outages, or system modifications.
- E. Work on existing and new services is critical to construction phasing and is the sole responsibility of the Contractor for coordination.

1.02 EXISTING SERVICE

- A. Work on existing and new services is critical to construction phasing and is the sole responsibility of the Contractor for coordination.
- B. Contractor is responsible for notification and coordination with Xcel.
- C. Existing service must remain operational throughout project period until new facility is fully operational and accepted.
- D. Contractor shall coordinate and schedule all required temporary power outages.

END OF SECTION

SECTION 16405

FEEDERS AND BRANCH CIRCUITS

PART 1 GENERAL

1.01 SYSTEM DESCRIPTION

- A. Furnish, install, connect and test 120/208V, and 120/240V feeders and branch circuits as specified and as shown on Drawings.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 INSTALLATION

- A. Use type wire or cable specified in Section 16123 or as shown on the Drawings.
- B. Color code and mark as required.
- C. See Section 16124.

3.02 COORDINATION

- A. The quantity, type and AWG of wire and cable called for on the Drawings is for facility equipment as designed.
- B. If equipment is furnished which requires a greater quantity of, different type or larger AWG wire or cable than called for, then furnish the correct quantity, type and AWG plus appropriate conduit at no additional cost to the Owner.
- C. Submit proposed changes for review.
- D. See Section 16123 for restrictions on type and size wire; see Section 16111 for conduit.

END OF SECTION

SECTION 16450
SECONDARY GROUNDING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Circuit and System Grounding
- B. Enclosure and Equipment Grounding System
- C. Overhead Line Grounding
- D. Underground Distribution System Grounding

1.02 SUBMITTALS

- A. Submit the following in accordance with the requirements of Sections 01340 and 01700.
 - 1. Catalog Data: Submit catalog data for grounding conductors, grounding clamps, grounding bushings, exothermic weld materials, and compression grounding connector materials.
 - 2. Shop Drawings: Submit shop drawings for signal reference grid fabrication and installation.
 - 3. Project Record Documents: Submit project record documents to include specified certifications and field test reports of installed grounding systems.

1.03 QUALITY ASSURANCE

- A. Furnish and install grounding systems in accordance with ANSI/NFPA 70 - National Electrical Code and this specification section.

PART 2 PRODUCTS

2.01 GROUND ROD

- A. Provide UL listed ground rod(s) as indicated on the Drawings.

- B. Furnish ground rods with high-strength steel core and electrolytic-grade copper outer sheath, molten welded to core, approximately 10 feet long, 3/4 inches in diameter.
- C. Manufacturers: Blackburn, Thomas & Betts, Harger.

2.02 GROUND ELECTRODE CABLE

- A. Provide bare stranded, soft temper copper cable that conforms to ASTM B8, Standard Specification for Concentric-Lay Stranded Copper Conductors.

2.03 GROUNDING CONDUCTORS

- A. Provide UL Listed THHN/THWN insulated copper wire.
- B. Use stranded grounding conductors for No. 8 AWG and larger.
- C. Color code grounding conductors as follows:
 - 1. Equipment ground:
 - a. Conductors No. 6 AWG and smaller: Green colored insulation.
 - b. Conductors No. 4 AWG and larger: Black colored insulation with 3/4 inch wide band of water and oil-resistant green plastic adhesive tape.

2.04 GROUND CONNECTORS

- A. Provide UL listed copper alloy connectors with silicon bronze hardware for making cable to pipe connections.
- B. Manufacturers: Burndy, O.Z.

2.05 CONDUIT GROUNDING BUSHINGS

- A. Provide UL listed, galvanized malleable iron, 150 C rated insulated throat grounding bushings with lay-in type ground cable lugs.
- B. Manufacturers: O.Z., Thomas & Betts

2.06 EXOTHERMIC WELD GROUNDING CONNECTIONS

- A. Provide molds and welding material for making exothermic weld connections.

- B. In interior locations and in vaults, use low smoke emission type welding material.
- C. Match mold and weld material to material types, shapes and sizes to be joined.
- D. Manufacturer: ERICO Cadweld

2.07 COMPRESSION GROUNDING CONNECTIONS

- A. Provide UL listed wrought copper connectors, terminals and splices for making compression grounding connections.
- B. Furnish connectors that have been tested successfully according to the requirements of IEEE Std. 837 - IEEE Standard for qualifying Permanent Connections Used in Substation Grounding.
- C. Provide hydraulic compression tools and dies that match the connectors.
- D. Match connector and die size to material shapes and sizes to be joined.
- E. Manufacturer: Burndy

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with the requirements of ANSI/NFPA 70, this Section and the Drawings.
- B. Clean contact surfaces to which ground connections are to be made. Remove non-conductive coatings such as paint, enamel, oxidation and oil film.
- C. Use the following connection methods unless otherwise specified or indicated on the Drawings:
 - 1. Use exothermic weld grounding connections for underground or concealed connections of dissimilar materials.
 - 2. Use exothermic weld grounding connections for underground or concealed connections of like materials.
 - 3. Use exothermic weld, connections for accessible connections.
- D. 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.

- E. Install exothermic welds in accordance with manufacturer's instructions and recommendations. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- F. Make connections with clean bare metal at points of contact.

3.02 ENCLOSURE AND EQUIPMENT GROUNDING

- A. General: Provide permanent and effective equipment, enclosure, and raceway grounding in accordance with ANSI/NFPA 70, and as further specified or shown on the Drawings.
- B. Provide an equipment ground bar, separate from any neutral bar, in all switchgear, switchboards, panelboards, transformers, motor control centers, starters, disconnect switches, cabinets, etc., for grounding the enclosure and for connecting other equipment and raceway ground conductors. Make connections to the ground bar using mechanical lugs or compression lugs.
- C. Make connections and couplings on metallic conduit systems wrench tight.
- D. Grounding Bushings:
 - 1. Install grounding bushings on metallic conduit containing circuits rated 100 amperes and higher.
 - 2. Install grounding bushings on metallic conduits entering enclosures through concentric, eccentric or oversize knockouts.
 - 3. Install grounding bushings on metallic conduits that terminate to a metallic enclosure without effective electrical connection such as locknuts or threaded bushings.
 - 4. Bond conduit grounding bushing lug to the equipment ground bar or ground lug in switchgear, switchboards, panelboards, transformers, motor control centers, starters, disconnect switches, cabinets, etc. Size bonding jumpers in accordance with ANSI/NFPA 70, Table 250-95.
- E. Provide an insulated equipment grounding conductor for each feeder and branch circuit.
 - 1. Install the grounding conductor within the common conduit or raceway with the related phase and neutral conductors and connect to the box or cabinet grounding terminal or grounding bus.
 - 2. Size equipment ground conductor in accordance with ANSI/NFPA 70, Table 250-122 or as shown on the Drawings.

- F. In each 15 or 20 ampere branch circuit outlet box and junction box, install a green colored washer head grounding screw with a minimum No. 12 equipment grounding conductor pigtail.
- G. Connect receptacle grounding terminals to the equipment ground system using minimum No. 12 AWG equipment grounding conductor. Do not use a "self-grounding" receptacle strap as the only equipment grounding path.
- H. Connect ground lead of low voltage surge arrestor or transient voltage surge suppressor to the equipment ground bar of the protected switchgear, switchboard or panelboard. Make connections as short and straight as practical; follow manufacturer's instructions.
- I. Bond raceways served from cable tray using conduit clamps or grounding bushings that are UL approved for the purpose.
- J. Install an equipment grounding conductor in each cable tray; size conductor per ANSI/NFPA 70, Table 250-122, but not smaller than #6 AWG. Bond grounding conductor to each cable tray section using UL Listed cable tray ground clamps. Connect grounding conductor to ground bus of each enclosure or equipment item served by the cable tray.

3.03 OVERHEAD LINE GROUNDING

- A. General: Comply with ANSI C2, "National Electrical Safety Code" for "Single-Grounded Systems," using two electrodes in parallel if a single electrode resistance to ground exceeds 25 ohms.
- B. Separate lightning arrester grounds from other ground conductors.
- C. Interconnect secondary neutral and tank of transformer and connect to ground.
- D. Protect grounding conductors running on the surface of wood poles with molding of a type manufactured for this purpose. Extend from grade level up to and through communications and transformer spaces.

3.04 UNDERGROUND DISTRIBUTION SYSTEM GROUNDING

- A. Install a #4/0 AWG bare copper ground cable within the concrete envelope of each power and communications ductbank; connect to ground cable in manholes.
- B. Ground metallic conduit exposed to contact in accordance with the requirements of NFPA 70. Use exothermic welded connections for concealed grounding connections.

- C. Install continuous loop of #4/0 AWG bare copper ground cable around inside walls of each handhole or manhole at floor level.
 - 1. Attach to walls using copper or cast bronze cable holder and masonry anchor.
 - 2. Connect to duct bank ground cable using exothermic welds or approved non-reversible compression fittings.
 - 3. Ground exposed metal parts, such as inserts, cable racks, pulling irons, ladders, cable shields, metallic conduits or duct bell ends to ground cable loop using No. 4 AWG stranded copper wire with exothermic welds or approved non-reversible compression fittings. Train conductors plumb or level around corners and fasten to manhole walls.
- D. Ground non-current-carrying metallic items associated with manholes, substations, and pad-mounted equipment by connecting them to ground cable and grounding electrodes arranged as indicated on the Drawings.

3.05 FIELD QUALITY CONTROL

- A. General: Perform on-site verification, certification and acceptance testing of the grounding installation during construction.
- B. Notify the Engineer ten (10) working days in advance of the expected completion of a grounding system installation. Verification and testing can be scheduled in parts or by area depending on the system and construction schedule.
- C. Acceptance Testing: Perform acceptance testing and submit written reports to the Engineer in accordance with the requirements of Section 16950.
 - 1. Perform ground-impedance measurements using the "fall-of-potential" method in accordance with IEEE 81, Guide for Measuring Earth Resistivity, Ground Impedance and Earth Surface Potentials of a Grounding System. Use instrumentation specifically designed for ground impedance testing as defined in Section 12 of the above guide. Provide sufficient spacing of test electrodes so that the plotted curves flatten in the 62% area of the distance between the item under test and the current electrode. When sufficient spacing of electrodes is impractical for the "fall-of-potential" method, perform ground-impedance measurements using either the "intersecting curves method" or the "slope method", references 40 and 41 in IEEE Std. 81.
 - 2. Ground-impedance maximum values shall be as follows:
 - a. Equipment rated 2500 kVA and less: 5 Ohms
 - b. Equipment rated over 2500 kVA: 1 Ohm
 - c. Unfenced substations and pad-mounted equipment: 5 Ohms
 - d. Manhole grounds: 10 Ohms

3. Test equipment ground resistances for the following items. Measure resistance between the equipment item and the Main Ground Electrode Ground Bar. Use the "two-point method" of IEEE Std. 81.
 - a. Transformers
 - b. Switchgear and Switchboards
 - c. Panelboards
 - d. Generators
 - e. Motor Control Centers
 - f. Motors larger than 1 HP
 - g. UPS Systems
- D. Where ground-impedances or equipment ground resistances exceed specified values, and if directed by the Engineer, modify the grounding system to reduce resistance values.
- E. Prepare test reports, certified by the testing organization, of the ground resistance at each test location. Include observations of weather and other phenomena that may affect test results. Describe any measures taken to improve test results.

END OF SECTION

SECTION 16470

PANELBOARDS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Lighting and power panelboards and associated auxiliary equipment rated 600 V and less.

1.02 RELATED WORK

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections.
- B. Section 16010: General Electrical Requirements

1.03 SUBMITTALS

- A. Product Data: For each type of panelboard, accessory item, and component specified.
- B. Shop Drawings: For panelboards. Include dimensioned plans, sections, and elevations. Show tabulations of installed devices, major features, and voltage rating. Include the following:
 - 1. Enclosure type with details for types other than NEMA 250, Type 1.
 - 2. Bus configuration and current ratings.
 - 3. Short-circuit current rating of panelboard.
- C. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing.

1.04 QUALITY ASSURANCE

- A. Listing and Labeling: Provide products specified in this Section that are listed and labeled.
- B. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.

- C. Comply with NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. Panelboards:
 - a. Eaton - Cutler-Hammer Products.
 - b. Schneider - Electric
 - c. Or Engineer approved equal

2.02 PANELBOARD FABRICATION

- A. Square D model QO only, no substitutes.
- B. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors. Bonded to box.
- C. Service Equipment Approval: Listed for use as service equipment for panelboards with main service disconnect.
- D. Special Features: Include the following features for panelboards as indicated:
 - 1. Hinged Front Cover: Entire front trim hinged to box with standard door within hinged trim cover. Required for NEMA 1 panelboards.
 - 2. Feed-through Lugs: Sized to accommodate feeders indicated.

2.03 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- B. Doors: In panelboard front, with concealed hinges. Secure with flush catch and tumbler lock, all keyed alike.

2.04 DISTRIBUTION PANELBOARDS

- A. Doors: In panelboard front, except omit in fusible-switch panelboard, unless otherwise indicated. Secure door with vault-type latch with tumbler lock, all keyed alike.
- B. Branch-Circuit Breakers: Where overcurrent protective devices are indicated to be circuit breakers, use bolt-on circuit breakers, except circuit breakers 225-A frame size and greater may be plug-in type where individual positive-locking device requires mechanical release for removal.

2.05 OVERCURRENT PROTECTIVE DEVICES

- A. Molded-Case Circuit Breaker: NEMA AB 1, handle lockable.
 - 1. Characteristics: Frame size, trip rating, number of poles, and auxiliary devices as indicated and interrupting capacity rating to meet available fault current.
 - 2. Application Listing: Appropriate for application, including Type SWD for switching fluorescent lighting loads and Type HACR for heating, air-conditioning, and refrigerating equipment.
 - 3. Circuit Breakers, 200 A and Larger: Trip units interchangeable within frame size.
 - 4. Circuit Breakers, 400 A and Larger: Field-adjustable short-time and continuous current settings.
 - 5. Lugs: Mechanical lugs and power-distribution connectors for number, size, and material of conductors indicated.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install panelboards and accessory items according to NEMA PB 1.1.
- B. Mounting Heights: Top of trim 74 inches above finished floor, unless otherwise indicated.
- C. Mounting: Plumb and rigid without distortion of box. Mount flush panelboards uniformly flush with wall finish.
- D. Circuit Directory: Type directory to indicate installed circuit loads after balancing panelboard loads. Obtain approval before installing.

- E. Install filler plates in unused spaces.
- F. Wiring in Panelboard Gutters: Arrange conductors into groups, and bundle and wrap with wire ties after completing load balancing.

3.02 IDENTIFICATION

- A. Identify field-installed wiring and components and provide warning signs as specified in Section 16010 – General Requirements.
- B. Panelboard Nameplates: Label each panelboard with engraved laminated-plastic or metal nameplates mounted with corrosion-resistant screws.

3.03 GROUNDING

- A. Make equipment grounding connections for panelboards as indicated.
- B. Provide ground continuity to main electrical ground bus as indicated.

3.04 CONNECTIONS

- A. Tighten electrical connectors and terminals, including grounding connections, according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.05 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
 - 1. Make insulation-resistance tests of each panelboard bus, component, and connecting supply, feeder, and control circuits.
 - 2. Make continuity tests of each circuit.
- B. Testing: After installing panelboards and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
 - 1. Procedures: Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, remove and replace with new units, and retest.

- C. Balancing Loads: After Substantial Completion, but not more than 2 months after Final Acceptance, conduct load-balancing measurements and make circuit changes as follows:
1. Perform measurements during period of normal working load as advised by Owner.
 2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility. Make special arrangements with Owner.

3.06 CLEANING

- A. On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots, dirt, and debris. Touch up scratches and mars of finish to match original finish.

END OF SECTION

SECTION 16950

ELECTRICAL TESTING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Perform tests on megger feeder and branch circuits which will operate at greater than 250V to ground with a 600V megger.
- B. Record test results between phases:
 - 1. Phase to neutral.
 - 2. Phase to ground.
 - 3. Neutral to ground.
- C. Provide three copies of these tests to the Engineer.
- D. Tests deemed unsatisfactory by the Engineer shall be retested after the defect is located and repaired.

1.02 PERFORMANCE TEST

- A. Demonstrate to the Engineer satisfactory performance of all electrical equipment moved, modified or provided under this Contract, including but not limited to demonstrating that all equipment works properly in hand and that hardware-type automatic control components and systems work properly.
- B. Calibrate equipment as required for proper operation.

1.03 WITNESS

- A. Perform tests in the presence of the Engineer unless this requirement is waived in writing by the Engineer.

1.04 TEST EQUIPMENT

- A. Provide necessary equipment to perform the tests.

1.05 OTHER TESTS

- A. As required in specific Sections.

PART 2 PRODUCTS (NOT USED)

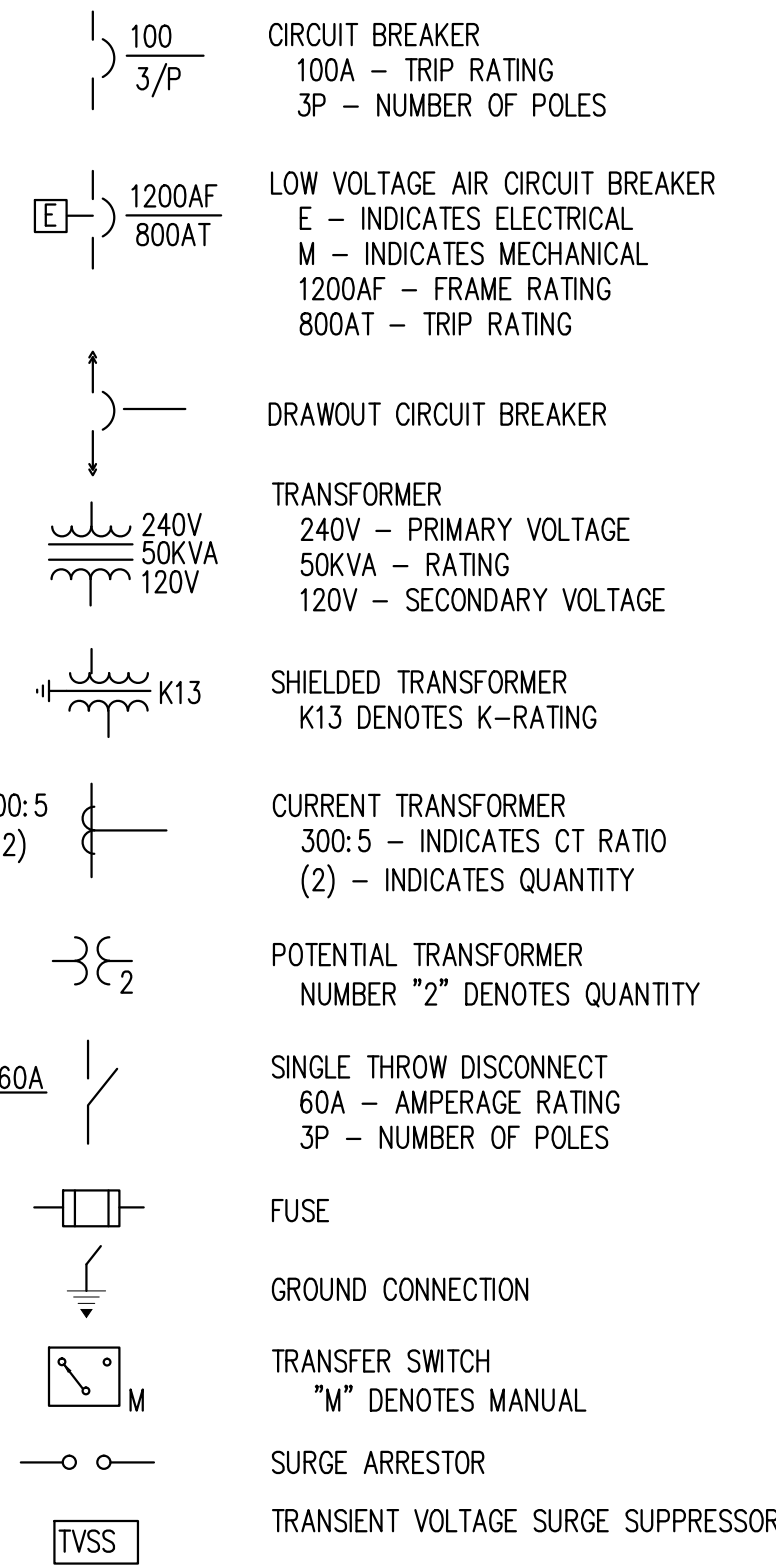
PART 3 EXECUTION (NOT USED)

END OF SECTION

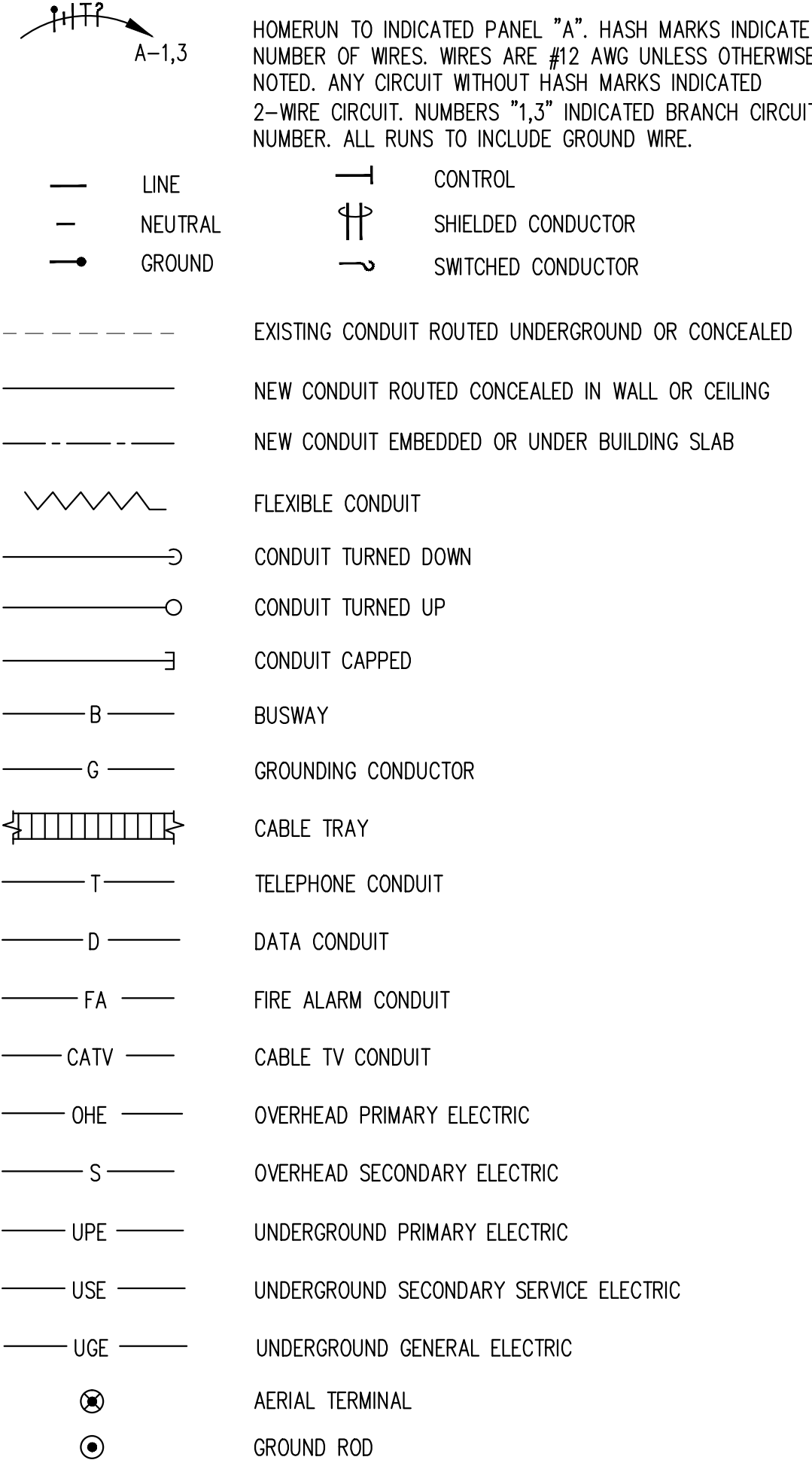
GENERAL ELECTRICAL NOTES:

- IF ANY UTILITY LINES, PIPELINES OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH LINES ARE SHOWN, THE LOCATION IS BASED ON INFORMATION PROVIDED BY THE UTILITY OR PIPELINE COMPANY, THE OWNER OR OTHERS, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES.
- ELECTRICAL CONTRACTOR IS RESPONSIBLE TO VERIFY AND CONFIRM THAT EQUIPMENT SUBMITTED SHALL FIT WITHIN THE ALLOTTED SPACE REQUIREMENTS SHOWN ON THE PLANS. IF ANY SPACE OR SIZE DISCREPANCIES ARE ANTICIPATED IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER PRIOR TO SUBMITTAL. ONCE THE SUBMITTALS HAVE BEEN APPROVED IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO INSTALL THE EQUIPMENT WITHIN THE ALLOTTED SPACE AT NO ADDITIONAL COST TO THE OWNER.
- CONDUIT INSTALLATIONS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BEAMS AND WALLS.
- CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTIONS TO ENCLOSURES AND OTHER EQUIPMENT.
- NO CONDUIT SMALLER THAN 3/4" PIPE NOR WIRE SMALLER THAN NO. 12 A.W.G. SHALL BE USED UNLESS OTHERWISE NOTED.
- THE WIRING DIAGRAMS, BLOCK DIAGRAMS, QUANTITY, SIZE OF WIRES, AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFIED.
- LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS. THE MOUNTING HEIGHT SHALL BE MEASURED FROM THE BOTTOM OF THE LIGHTING TO FINISHED GRADE.
- ALL CONDUIT INSTALLATIONS TO HAVE 24" MIN. BURY. CONDUIT ROAD CROSSINGS TO HAVE CONCRETE ENCASEMENT WHERE SHOWN ON THE PLAN LAYOUTS. ALL CONDUITS TO HAVE 6" METALLIC ELECTRIC WARNING TAPE INSTALLED 12" BELOW FINISHED GRADE.
- ALL CONDUCTORS AND DEVICES TO HAVE A PROPER GROUNDING SYSTEM INSTALLED PER NEC 250. ALL FEEDER AND BRANCH CONDUITS ARE TO BE CONSTRUCTED WITH A PROPERLY COORDINATED GROUND CONDUCTOR SIZE FOR EACH BRANCH CIRCUIT.
- CONDUCTORS IN DIRECT SOLAR EXPOSURE MUST BE DERATED USING A 140 DEGREE AMBIENT TEMPERATURE. THE CONTRACTOR IS RESPONSIBLE FOR REVISING CONDUCTOR SIZE BASED ON ACTUAL CONDUIT ROUTING.
- EXTERIOR LIGHTING SHALL COMPLY WITH THE LAS CRUCES NIGHT SKY PROTECTION ACT OUTDOOR LIGHTING ORDINANCE IN THAT ALL FIXTURES WILL BE FULL CUT-OFF AND HAVE LESS THAN SEVENTY (70) LUMENS PER SQUARE FOOT AT GROUND LEVEL.
- ALL 90 DEGREE ELBOWS IN DIRECT BURIED OR CONCRETE ENCASED UNDERGROUND CONDUIT DUCTBANK SYSTEM SHALL BE PVC COATED GALVANIZED RIGID STEEL. ALL PVC SCH. 80 CONDUIT SHALL END APPROXIMATELY 10'-0" FROM ALL PULLBOXES, EQUIPMENT OR HANDHOLES AND BE COMPLETED WITH PVC COATED GALVANIZED RIGID STEEL CONDUIT TO THE RESPECTIVE PIECE OF EQUIPMENT.
- ALL CONDUIT AND FITTINGS IN NEMA 4X HAZARDOUS AREAS INDICATED ON THE DRAWINGS SHALL BE PVC JACKETED RIGID METALLIC TYPE.
- ALL SHIELDED CABLES SHALL BE INSTALLED IN RIGID STEEL CONDUIT OR PVC COATED RIGID STEEL CONDUIT BASED ON THE NEMA RATING OF THE AREA.
- ALL CONDUITS ENTERING NEMA 4X BOXES, CONTROL STATIONS OR OTHER EQUIPMENT RATED NEMA 4X SHALL BE TERMINATED AT THE BOX WITH A MEYERS HUB OR EQUAL.
- PRIOR TO SUBMITTING A BID FOR ELECTRICAL WORK, THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE OF THE PROPOSED CONSTRUCTION AND SHALL THOROUGHLY ACQUAINT HIMSELF WITH EXISTING UTILITIES AND WORKING CONDITIONS TO BE ENCOUNTERED, ETC. ALLOWANCE WILL NOT BE MADE FOR NON-COMPLIANCE WITH THIS CONDITION AFTER BIDDING.
- ELECTRICAL DRAWINGS IDENTIFY UTILITY SERVICE REQUIREMENTS FOR POWER WITHIN AND UP TO FIVE FEET OUTSIDE THE STRUCTURE. UTILITY CONDUIT SYSTEMS PULL BOXES, AND OTHER STRUCTURES, WHERE SHOWN ON THE SITE PLAN INDICATE THE PREFERRED ROUTING. THE ELECTRICAL CONTRACTOR SHALL REFER TO UTILITY SERVICE DRAWINGS FOR ACTUAL UTILITY SERVICE REQUIREMENTS FOR THIS PROJECT. UTILITY SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED UTILITY COMPANY SERVICE DRAWINGS.
- THE DRAWINGS INDICATE THE GENERAL ARRANGEMENT AND LOCATIONS OF THE ELECTRICAL WORK. INFORMATION PRESENTED ON THESE DRAWINGS ARE AS ACCURATE AS PLANNING CAN DETERMINE, BUT FIELD VERIFICATION OF ALL DIMENSIONS, LOCATIONS, LEVELS, ETC., TO SUIT FIELD CONDITIONS IS REQUIRED. REVIEW ALL ARCHITECTURAL AND STRUCTURAL DRAWINGS AND ADJUST ALL WORK TO MEET THE REQUIREMENTS OF CONDITIONS SHOWN. THE ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER ALL OTHER DRAWINGS. DISCREPANCIES BETWEEN DIFFERENT PLANS, OR BETWEEN DRAWINGS AND SPECIFICATIONS, OR REGULATIONS AND CODES GOVERNING THE INSTALLATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING BEFORE THE DATE OF BID OPENING. WHERE DISCREPANCIES OR CONFLICTS OCCUR, THE BID SHALL REFLECT THE MOST STRINGENT REQUIREMENTS. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO FIELD MEASURE AND CONFIRM MOUNTING HEIGHTS AND LOCATION OF ELECTRICAL EQUIPMENT. DO NOT SCALE DISTANCES OFF THE ELECTRICAL DRAWINGS. USE ACTUAL DIMENSIONS.
- UPON COMPLETION OF THE WORK UNDER THESE DRAWINGS AND SPECIFICATIONS, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE OWNER WITH A COMPLETE SET OF MARKED-UP ELECTRICAL DRAWINGS SHOWING THE "AS-BUILT" CONDITION OF THE WORK. BOND PRINTS OF THE DRAWINGS REQUIRED WILL BE FURNISHED BY THE OWNER, FOR THIS PURPOSE.
- PERFORM THE EXCAVATION, CUTTING, FITTING, REPAIRING AND FINISHING OF THE WORK NECESSARY FOR THE INSTALLATION OF ELECTRICAL EQUIPMENT HOWEVER, NO CUTTING OF THE WORK OF OTHER TRADES OR OF ANY STRUCTURAL MEMBER SHALL BE DONE WITHOUT THE CONSENT OF THE ENGINEER.
- PERFORM ALL EXCAVATION AND BACKFILLING REQUIRED FOR WORK PERFORMED UNDER THIS DIVISION OF THE SPECIFICATIONS. TRENCH BOTTOMS SHALL BE GRADED TRUE AND FREE FROM STONES OR SOFT SPOTS. USE EXCAVATED MATERIALS FOR BACKFILL UNLESS OFF SITE MATERIALS ARE DEEMED NECESSARY BY THE ENGINEER. TRENCHING AND BACKFILLING FOR ELECTRICAL AND TELEPHONE UTILITY SERVICES TO BUILDING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS. PROVIDE MINIMUM 95% COMPACTION FOR BACKFILL.
- COVER METALLIC CONDUIT IN CONTACT WITH EARTH OR FILL, WITH POLYETHYLENE TAPE SPIRAL WRAPPED, 1/2" LAPPED TO PROVIDE DOUBLE THICKNESS. TAPE SHALL BE SCOTCH NO. 50 TAPE. CONDUIT AND DUCTS NOT UNDER BUILDINGS AND FEEDER DUCTS SHALL BE INSTALLED PER NEC 300.5, EXCEPT THAT THE BENDS IN CONDUIT LARGER THAN 1" IN DIAMETER SHALL BE MADE WITH GALVANIZED STEEL CONDUIT TREATED AS NOTED ABOVE. MAKE JOINTS WITH COMPOUND TO BE WATERTIGHT.
- ALL EMPTY CONDUIT SYSTEMS SHALL HAVE A 210 POUND TEST PULL CORD INSTALLED TO FACILITATE INSTALLATION OF FUTURE WIRE.
- PENETRATION THROUGH FLOOR SLABS WHERE SUBJECT TO DAMAGE SHALL BE IN WRAPPED RIGID STEEL. SCHEDULE 40 PVC ELBOWS AND PENETRATIONS MAY BE USED IN SLAB ON GRADE WHERE PENETRATIONS OCCUR IN PROTECTED AREAS (WALLS, ELECTRICAL ROOMS, ETC.).
- FLEXIBLE METALLIC AND NON-METALLIC CONDUIT SYSTEMS SHALL HAVE A CODE SIZED COPPER GROUND CONDUCTOR. INCREASE CONDUIT SIZE AS REQUIRED.
- ALL RECEPTACLE AND LIGHTING CONDUITS SHALL BE INSTALLED WITHIN BUILDING CMU WALLS. ALL RECEPTACLE AND LIGHT SWITCH BOXES SHALL BE RECESSED INTO WALL SPACE AND FLUSH MOUNTED WITH WALL PLATES.
- ALL CONDUIT INFRASTRUCTURE AND FOUNDATIONS TO BE INSTALLED FOR ELECTRIC UTILITY COMPANY EQUIPMENT SHALL BE INSPECTED AND APPROVED BY UTILITY CONSTRUCTION PERSONNEL PRIOR TO BACKFILL OF ANY MATERIALS.

DISTRIBUTION



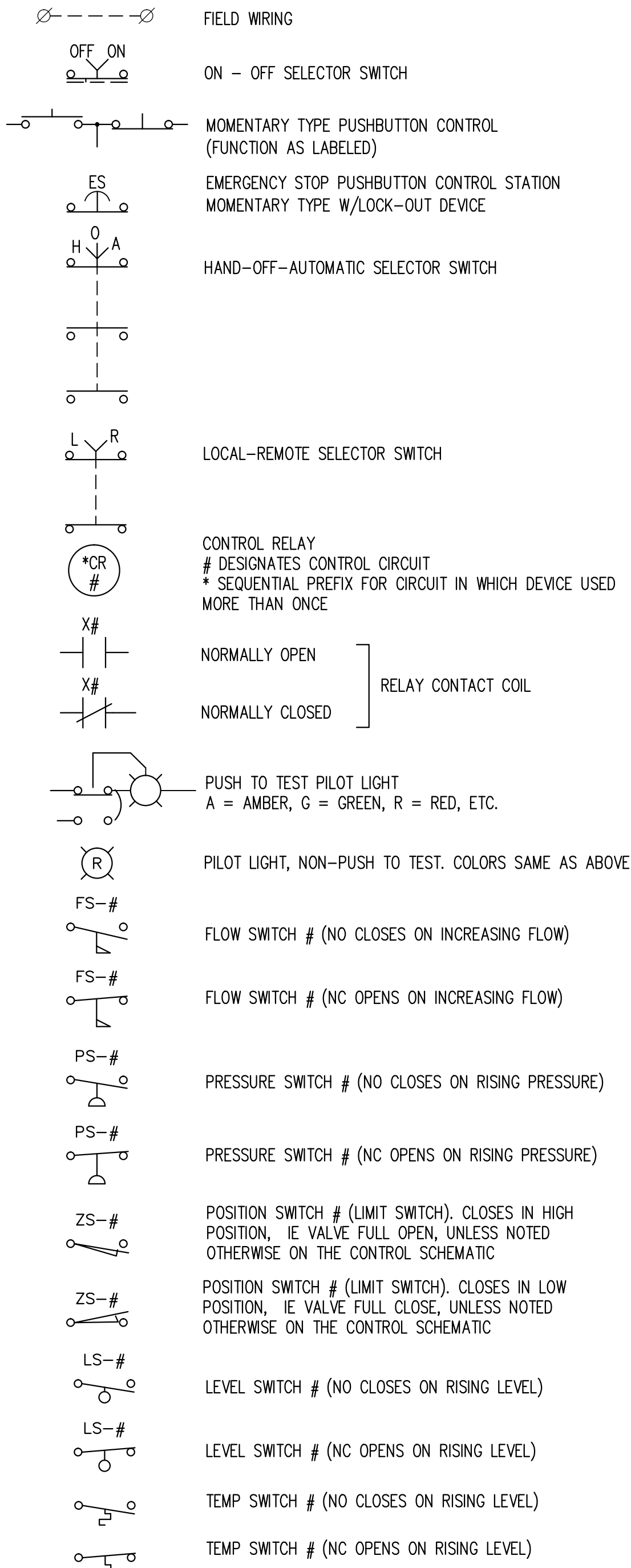
CONDUIT AND CONDUCTORS



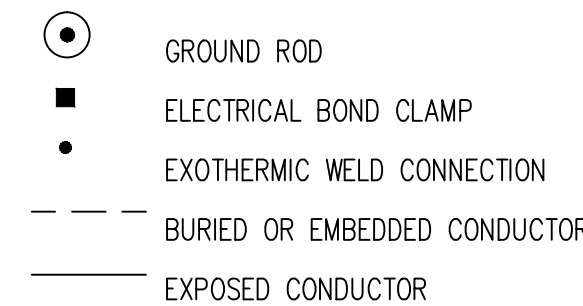
SYMBOLS LEGEND

NOTE: SOME SYMBOLS/ ABBREVIATIONS MAY NOT BE USED.

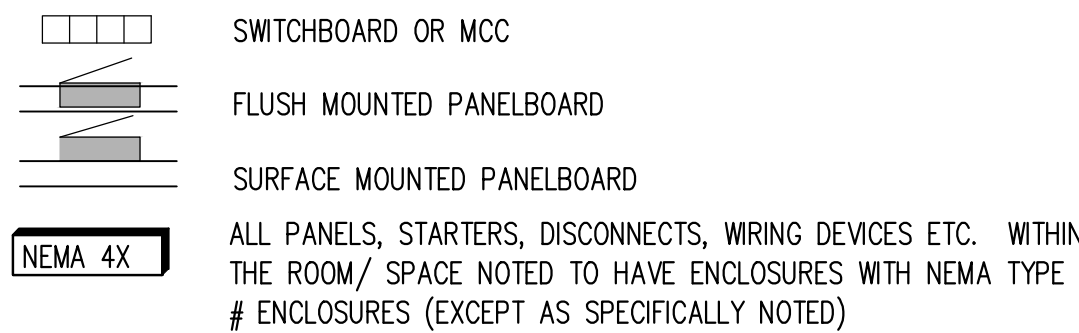
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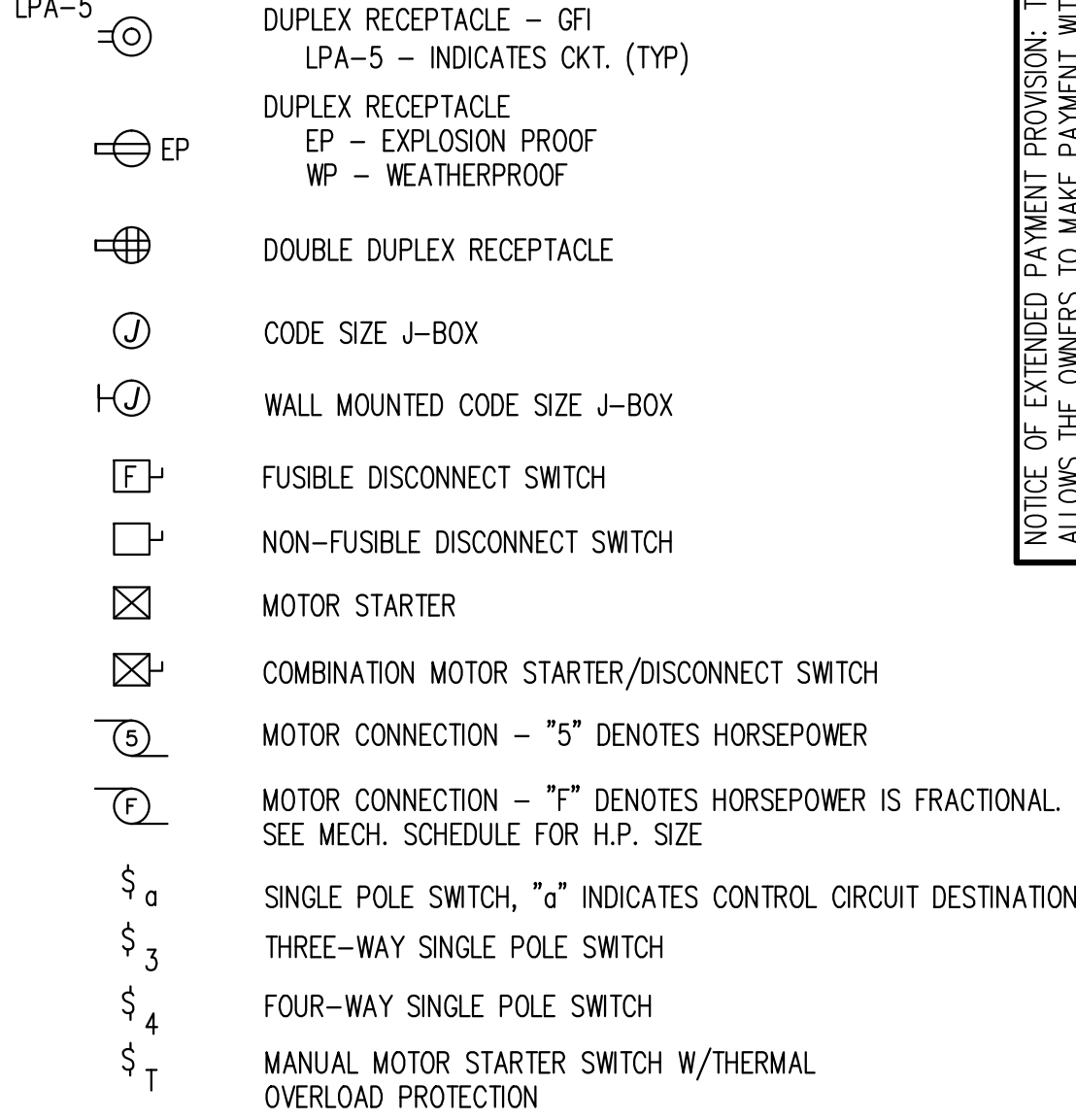
GROUNDING



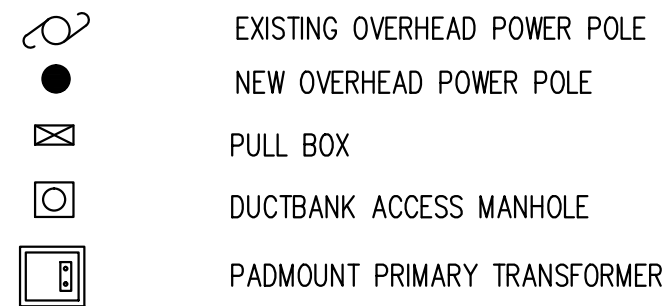
EQUIPMENT



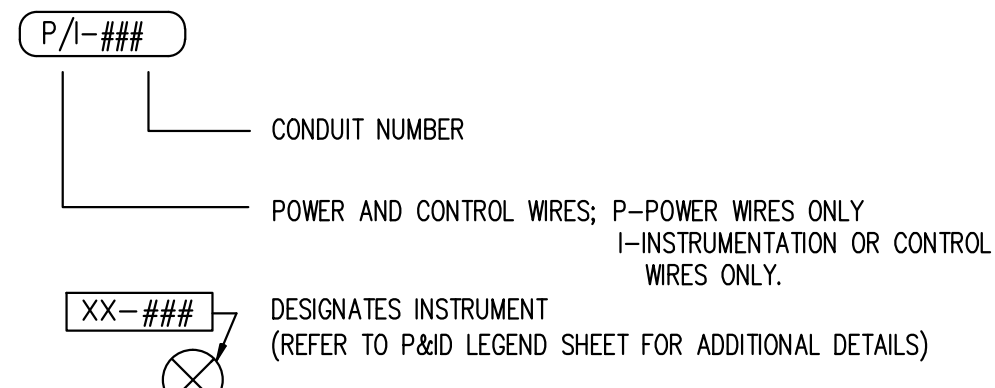
DEVICES



SITE DISTRIBUTION EQUIPMENT



CONDUIT TAGS AND DESCRIPTIONS



NOTICE OF EXTENDED PAYMENT PROVISION: THIS CONTRACT ALLOWS THE OWNERS TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT

REVISIONS

DATE: X COMMENT

DRAWN BY: LLM

REVIEWED BY: MRT

SCALE: AS NOTED

DATE: Jul 22, 2014

PROJECT NO: 20140301

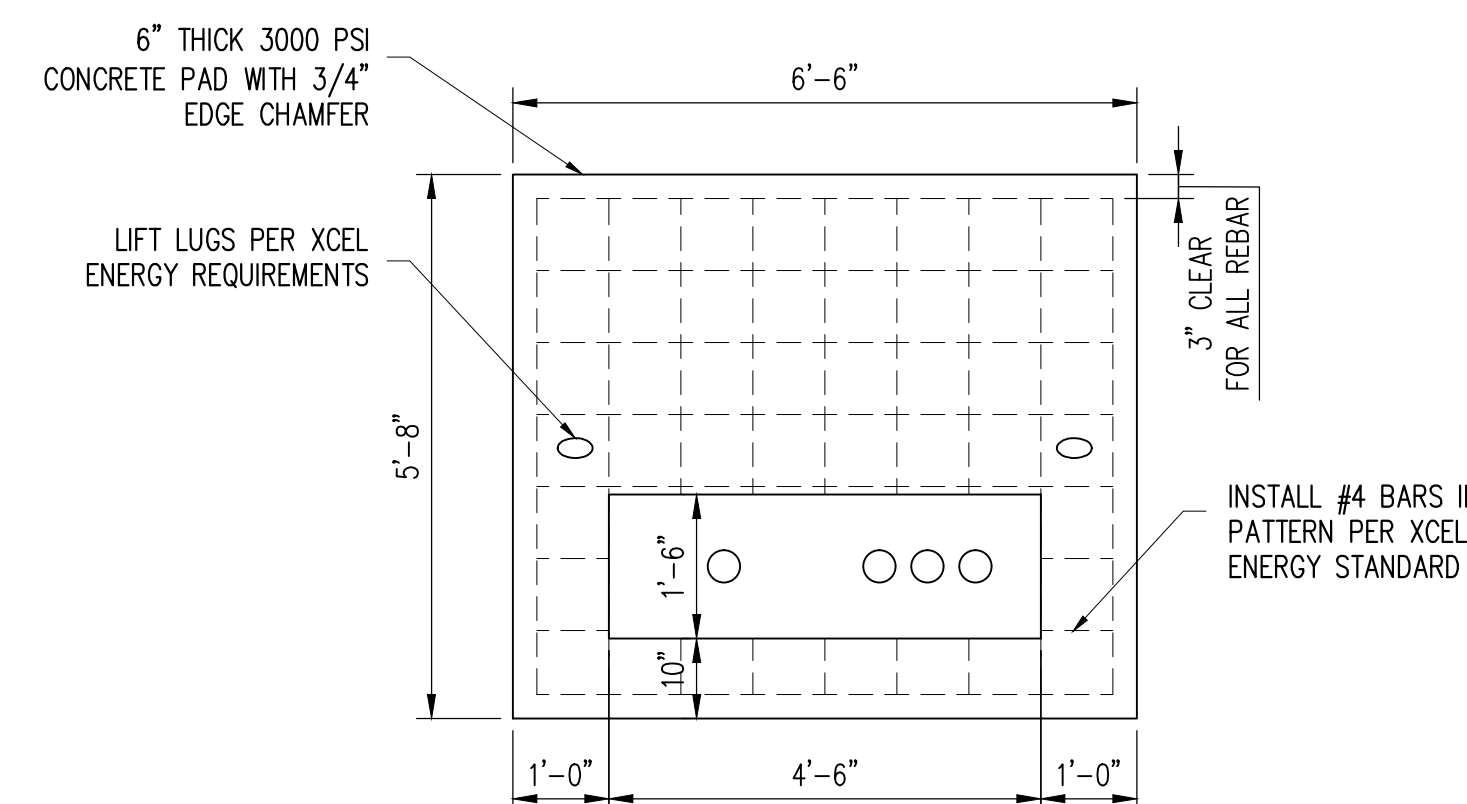
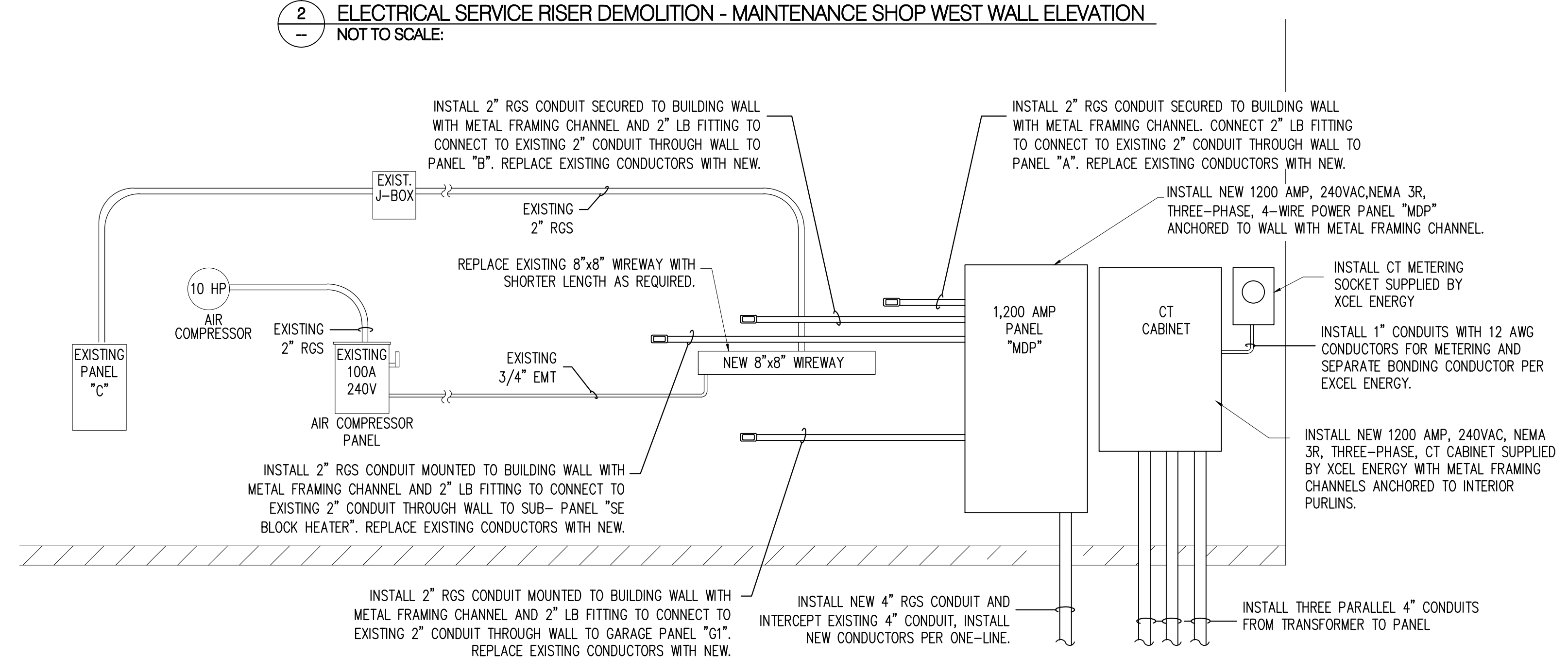
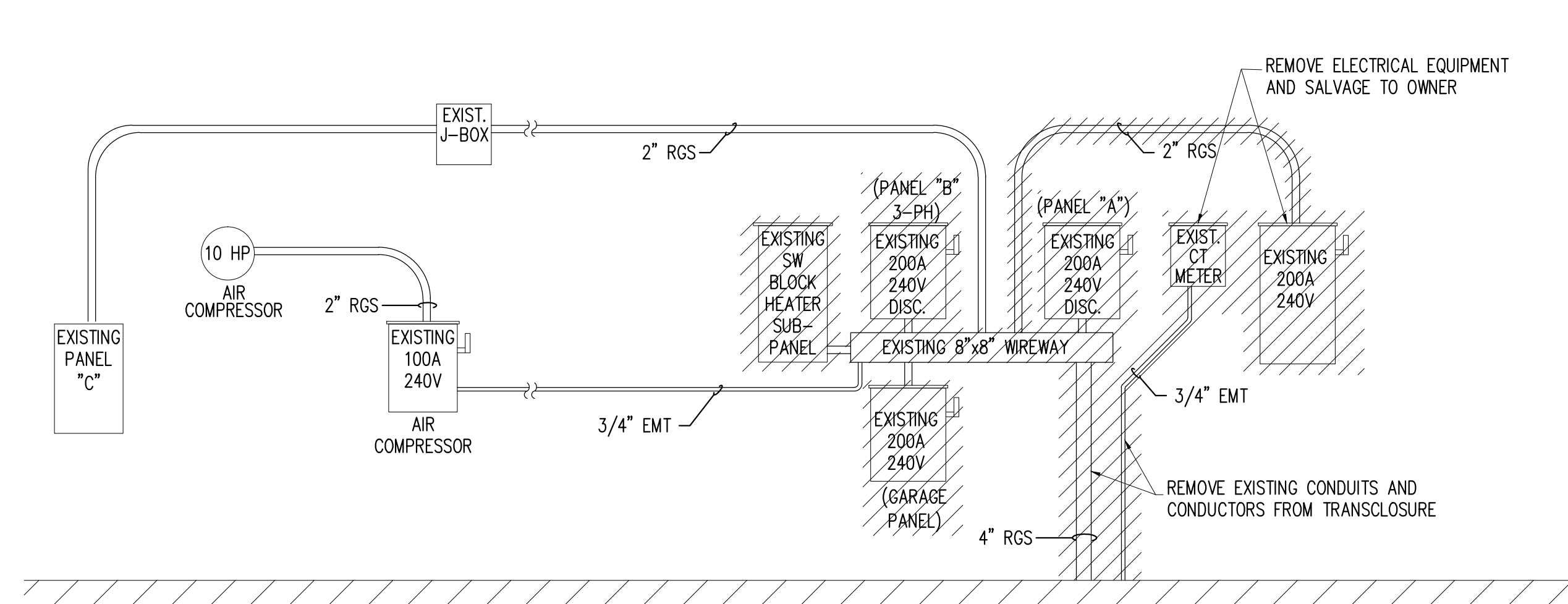
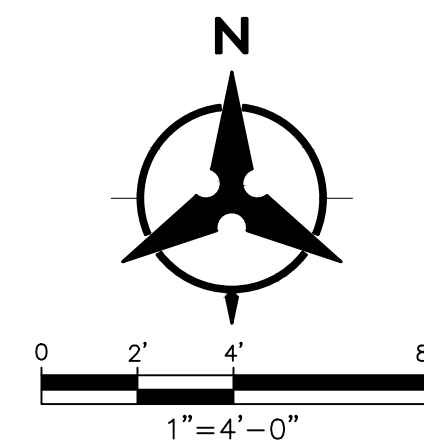
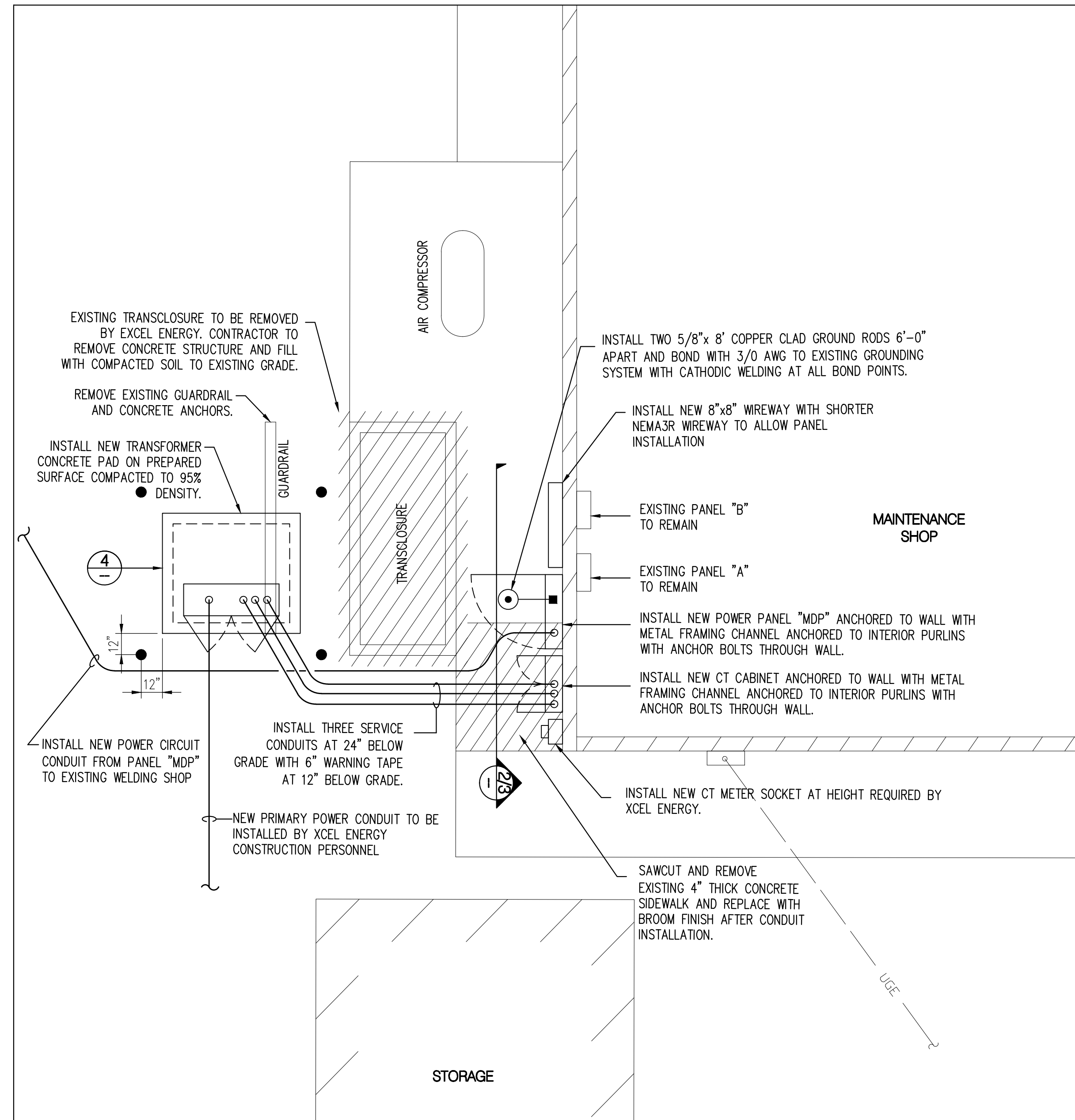
CITY OF CARLSBAD MAINTENANCE SHOP
ELECTRIC SERVICE MODIFICATIONS


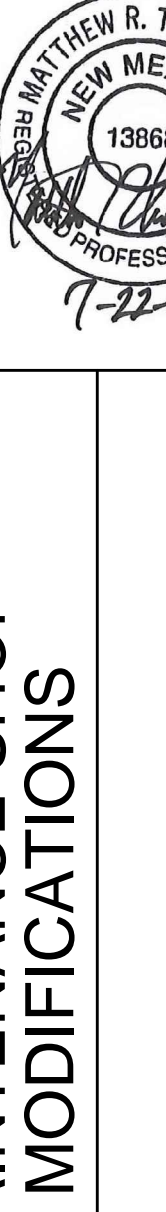

ELECTRICAL GENERAL NOTES
AND LEGEND

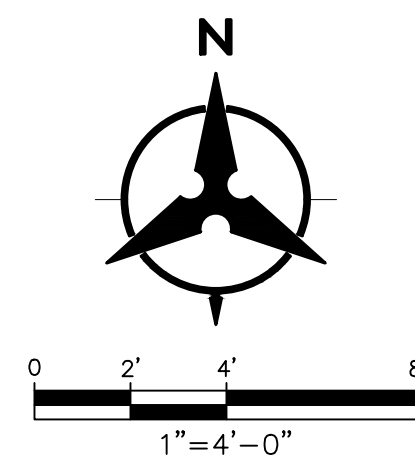
www.bhinc.com
800.877.5332

DRAWING: E1

SHEET: 2



NOTICE OF EXTENDED PAYMENT PROVISION: THIS CONTRACT ALLOWS THE OWNERS TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT	REVISIONS		<div>CALL BEFORE YOU DIG FOR UTILITY LOCATES 1-800-321-ALERT</div>
	DATE: X	COMMENT	
	<div>New Mexico One Call, Inc.  Professional Services for Design Projects</div>		
	DRAWN BY: LLM		
	REVIEWED BY: MRT		
	SCALE: AS NOTED		
	DATE: Jul 22, 2014		
PROJECT NO: 20140301			
<div></div>			
CITY OF CARLSBAD MAINTENANCE SHOP ELECTRIC SERVICE MODIFICATIONS		MAINTENANCE BUILDING PLAN AND DETAILS	
<div> www.bhinc.com 800.877.5332</div>			
DRAWING		SHEET	
E 3		4	



DRAWING	SHEET
E 4	5



Panel H1		Location: EXTERIOR WELDING SHOP						
Ratings: 120/208 VAC, 3 phase, 4 Wire, 400A RATED, 400 AMP MCB, NEMA 3R, Surface Mount, Copper Neutral and Ground Bus, 35 KAIC RATED, Door-In-Door								
CCT No.	DESCRIPTION	BKR SIZE	Phase A	Phase B	Phase C	BKR SIZE	DESCRIPTION	CCT No.
1	Surge Protection Device	30/3P				200/2P	Subpanel "D"	2
3		***				***		4
5		***				100A/2P		6
7		100A/3P				***		8
9	Subpanel "E"	***				-		10
11		***				-		12
13		30A/3P				-		14
15	Air Compressor 2	***				-	Spaces	16
17		***				-		18
19		-				-		20
21		-				-		22
23	Spaces	-				-		24
25		-				-		26
27		-				-		28
28		-				-		29
29		-				-		30

FAULT CURRENT SUMMARY CALCULATIONS			
Project ID :		Date = 07/08/14	
Carlisbad Maintenance Building (Assumes infinite primary fault current available)		Three Phase System	
Power Co. Transformer (T1) >>		Transformer KVA >>	3-Phase Transformer
		500	
Transformer Impedance (%Z) >>		4.500	
Voltage (line to line) >>		208	
Transformer full load amps >>		1,388	
Calculated Available Fault current from system >>		30,841	
Motor Contribution >>		160	*Assumed 40 FLA
Known Available Fault Current at transformer lugs >>			Miscellaneous units
Available Fault Current =		31,001	
Fault Point 1		Point 1 >>	Main Disconnect
Distance from Transformer T1 to Point No. 1 >>		15	
Conductor size >>		500	
No. of conductors per phase >>		3	
(C)(u or (A)) wire + (M)agnetic or (N)on-magnetic conduct >>		CM	Copper Conductors, Magnetic Conduit
Available Fault Current at Point No. 1 =		29,314	MINIMUM EQUIPMENT RATING 35 KAIC

POWER CONDUIT AND CONDUCTOR SCHEDULE							
CONDUIT	SIZE	CIRCUIT	LINE	NEUTRAL	GROUND	SOURCE	DESTINATION
P100	4"	1 (3 Parallel)	3 - 600 AWG	1 - 600 AWG		T-1	Power Panel "MDP"
	4"	1 (3 Parallel)	3 - 600 AWG	1 - 600 AWG			
	4"	1 (3 Parallel)	3 - 600 AWG	1 - 600 AWG			
P101	4"	1	3 - 600 AWG	1 - 600 AWG	1 - 3 AWG	Power Panel "MDP"	Power Panel "H1"
P102	2"	1	2 - 3/0 AWG	1 - 3/0 AWG	1 - 6 AWG	Power Panel "MDP"	Lighting Panel "A"
P103	2"	1	3 - 3/0 AWG	1 - 3/0 AWG	1 - 6 AWG	Power Panel "MDP"	Power Panel "B"
P104	2"	1	2 - 3/0 AWG	1 - 3/0 AWG	1 - 6 AWG	Power Panel "MDP"	Lighting Panel "#3"
P105	1-1/2"	1	2 - 1 AWG	1 - 1 AWG	1 - 6 AWG	Power Panel "MDP"	Power Panel "Block Heater"
P106	2"	1	3 - 3/0 AWG	1 - 3/0 AWG	1 - 6 AWG	Power Panel "MDP"	Power Panel "G-1"
P107	1-1/4"	1	3 - 4 AWG		1 - 8 AWG	Power Panel "MDP"	Air Compressor #1 Starter
P108	2"	1	2 - 3/0 AWG	1 - 3/0 AWG	1 - 6 AWG	Power Panel "H1"	Power Panel "D"
P109	1-1/4"	1	3 - 3 AWG	1 - 3 AWG	1 - 8 AWG	Power Panel "H1"	Power Panel "E"
P110	1-1/4"	1	2 - 3 AWG	1 - 3 AWG	1 - 8 AWG	Power Panel "H1"	Power Panel "F"
P111	3/4"	1	3 - 10 AWG		1 - 10 AWG	Power Panel "H1"	Air Compressor #2 Starter

DRAWING	SHEET
E5	6