Description of Work: The Henderson Water Utility (Owner) hereby gives notice that sealed bids will be received for furnishing and installing Generators at three locations for the Henderson Water Utility, in Henderson, KY.

BID OPENING: Sealed Bids will be received until 1:30 p.m., Local Time on 16 September 2020, in the offices of the Henderson Water Utility (HWU), 111 Fifth Street, Henderson, Kentucky, 42420. After the official bid closing time, the Bids will be publicly opened and read aloud.

BIDDING DOCUMENTS: Bidding Documents are on file for inspection and may be obtained at the offices of HWU, at the address listed above, during regular business hours, or by accessing the HWU Bids Page at this link: tinyurl.com/hwu-bids

Questions regarding the Bid Documents and Plans should be directed to Tom Williams, General Manager, at the address listed above, during regular business hours. Telephone: 270.826.2421.

LEGAL PROVISIONS: Bids shall include all required submittals as identified in the Bid Documents, including Bid, Performance and Payment Bonds. Federal Davis Bacon wages apply to this project.

FUNDING: This project is partially funded by the Department of Homeland Security (DHS)/Homeland Security Grant Program (HSGP).

NON-DISCRIMINATION: HWU will not discriminate on the grounds of race, color, national origin, sex, age, or disability.

BID REJECTION/ACCEPTANCE/WITHDRAWAL: The Owner reserves the right to reject any and all Bids, waive informalities in bidding, or to accept the Bid or Bids which best serve the interests of the Owner.

Tom Williams, P.E.
General Manager
Henderson Water Utility

Ad to run in Gleaner 26 August 2020
Table of Contents
GENERATOR PROJECT

- Invitation to Bid, Solicitation Instructions and Conditions, Bid Form and List of Required Attachments and Non-Collusive Bid Statement.

- Required Affidavit for Bidders, Offerors and Contractors Claiming Qualified Bidder Status

- Required Affidavit for Bidders, Offerors and Contractors Claiming Resident Bidder Status

- Statement Required Pursuant to KRS 45A.395.

- Technical Specifications

Note: Items shown with Bold Underline in this Table of Contents must be completed in their entirety in the bid submittal.
INVITATION FOR BID

The Henderson Water and Sewer Commission of the City of Henderson, Kentucky will receive sealed competitive bids at its office at 111 Fifth Street, Henderson, Kentucky 42420, until 1:30 p.m. (CDT), on the 16th day of September, 2020, at which time the bids will be opened and considered for the purchase of the following:

GENERATOR PROJECT
FOR THE
HENDERSON WATER UTILITY

REF# 202004 Generator Project

Specifications and Instructions to Bidders, and copies of plan sheets for this project may be obtained from:

HWU website:  http://tinyurl.com/hwu-bids

HWU Bobby Gish Administration Building:  111 Fifth Street, Henderson, KY  42420

The Water and Sewer Commission reserves the right to accept or reject any or all bids in whole or in part and to waive informalities and/or technicalities in the bids. Conflicts of interest, gratuities and kickbacks as defined and provided for in K.R.S. 45A.455 are absolutely prohibited.

Clarifications and Addenda will be posted on the HWU procurement web site as listed above.
This project is partially funded by the Department of Homeland Security (DHS)/Homeland Security Grant Program (HSGP).
Federal Davis Bacon wages apply to this project.
SOLICITATION INSTRUCTIONS AND CONDITIONS

1. DEFINITIONS:
As used herein:

a. The term “solicitation” includes the Invitation for Bid, Solicitation Instructions and Conditions, Bid Form and Technical Specifications, and any Clarifications or Addenda issued by the Owner.

b. The term “offer” means “bid” or “proposal”.

c. The term “Vendor” shall mean the party responsible for furnishing submittals, equipment, accessories, controls, operation and maintenance manuals and training, startup services and warranting the equipment as required in this Request for Proposals. Prior to award of contract, a potential Vendor may be referred to by the terms “Bidder” or “Offeror”.

d. The term “Owner” shall mean the Henderson Water Utility (HWU), 111 Fifth Street, Henderson, Kentucky, 42420.

e. The term “Engineer” refers to an individual employee of the Owner, acting as design engineer or inspector for this project or procurement.

f. The term “Purchase Order” shall mean the document executed by the Vendor and the Owner of which each of the following form a part: the Invitation for Bids; the Vendor’s Proposal; plan and detail drawing prepared by Three I Engineering; and the attached technical specifications for the HWU Generator Project, prepared by Henderson Water Utility.

g. The term “Nonresident bidder” is defined by KRS 45A.494(3).

h. The term “Resident bidder” is defined by KRS 45A.494(2).

i. The term “Qualified bidder” means Kentucky Industries for the Blind, Incorporated; any nonprofit corporation that furthers the purposes of KRS Chapter 163; or a qualified nonprofit agency for individuals with severe disabilities as described in KRS 45A.465(3).

2. PREPARATION OF OFFERS

a. Offerors shall examine the drawings, specifications, schedule, and all instructions. Failure to do so shall be at the offeror’s risk.

b. Offers shall set forth full, accurate, and complete information as required by the solicitation. Offers that contain an offeror’s own special terms and conditions in conflict with the terms of the solicitation or state statutes and regulations may be rejected.

c. Each offeror shall furnish the information required by the solicitation on the bid forms included herein. The offeror shall sign the solicitation in ink and type or print in ink his name, firm, address, telephone number, and date. Erasures or other changes shall be initialed in ink by the person signing the offer. Approved electronic format may also be accepted.

d. Any explanation or statement which the offeror wishes to make concerning the bid shall be written separately and independently of the proposal or bid, attached to the bid form, and placed in the envelope with the bid. Any such statement or explanation must refer to the bid submitted and shall also be signed by the offeror.

e. Unit price for each unit offered shall be shown and such price shall include packing and delivery to HWU unless otherwise specified within the Bid Form, and shall include startup and training services where specified in the Technical Specifications. Fuel Surcharges and any other miscellaneous charges should be included in the unit price. A total shall be entered in
the amount column of the schedule for each item offered. In case of discrepancy between a unit price and extended price, the unit price shall govern.

f. Cash discounts shall not be considered in making the award of the contract.
g. Trade discounts shall be deducted by the vendor in calculating the unit price quoted, unless otherwise stated.
h. Offers for supplies or services other than those specified shall not be considered unless authorized by the solicitation.
i. Proposal shall include guaranteed time schedules for submission of shop drawings after award of the Purchase Order, and for shipment of equipment after receipt of approved shop drawings. The award of the Purchase Order will be based on the quoted price and an acceptable shop drawing and equipment delivery schedule.
j. Time, if stated as a number of days, shall include Saturdays, Sundays, and Holidays. One day is 24 hours; one week is 7 days; one month is 28 days.

3. OFFEROR CLARIFICATION – REQUEST AND RESPONSE
Any explanation desired by an offeror regarding the meaning or interpretation of the solicitation drawings, specifications, etc., shall be requested in writing to the HWU Purchasing Manager, not less than five (5) calendar days prior to the bid opening date. Oral explanations or instructions given before the award of the contract shall not be binding. Any information given to a prospective vendor concerning a solicitation shall be furnished to all prospective vendors as an amendment or clarification of the solicitation, if such information is necessary to vendors in submitting offers on the solicitation, or if the lack of such information would be prejudicial to uninformed vendors.

VENDORS WILL NOT BE NOTIFIED INDIVIDUALLY OF CLARIFICATIONS/AMMENDMENTS TO THE BID.
All information pertaining to corrections, interpretations, or clarifications to the RFP will be posted on the HWU website http://tinyurl.com/hwu-bids.

4. ACKNOWLEDGEMENT OF ADDENDA TO SOLICITATIONS
Receipt of an addendum to a solicitation shall be acknowledged by the offeror. Acknowledgement shall be received prior to the hour and date specified for receipt of offers, or shall be shown in the appropriate place on the Bid Form. Verbal acknowledgement shall not be accepted. Failure to acknowledge addenda may cause the bid to be considered non-responsive.

5. PROTEST PROCEDURES
a. Protests prior to bid opening
Any protests, prior to bid opening must be submitted in writing and received by HWU at least ten (10) calendar days prior to bid opening. This ten (10) calendar day deadline may be waived by the HWU Purchasing Manager for good cause shown. The HWU Purchasing Manager will issue a response to the protest no later than five (5) calendar days after receipt of the protest. The response shall be in writing and set forth the reasons for the response. Upon receipt of a protest, the HWU Purchasing Manager will immediately determine if the bid opening should be postponed. If the bid opening is postponed, HWU will notify all prospective bidders who have been furnished a copy of the specifications that a request for review has been received and that the bid opening is postponed. Upon issuance of its response to the protest, HWU will issue an appropriate addendum rescheduling the bid opening.
b. **Protests after bid opening**

Protests after bid opening will be considered only as to issues which were not apparent before bid opening. After bid opening no protests of specifications will be considered. Any protest after bid opening, including a protest of contract award, must be submitted in writing and received by HWU within five (5) calendar days of the action being protested. No other form of protest will be considered. After the time for protest of contract award has expired, these protest procedures will be considered to be inapplicable, and any disputes will be resolved by HWU under contract provisions or other remedies, if available.

Protests submitted to HWU shall:

(a) Include the name and address of the protestor.

(b) Identify clearly the procurement under which the protest is being submitted.

(c) Identify the action being protested and provide sufficient detailed documentation to support the protest action.

(d) Indicate the action, ruling or relief desired from HWU.

The HWU Purchasing Manager will review the protest and render his or her decision in writing within five (5) calendar days of receipt of the protest, setting forth reasons for his or her decision. HWU is responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of the procurement, including protests, contract defaults, disputes or breaches. The decision of the HWU Purchasing Manager as to protests shall be final and conclusive, unless, within five (5) calendar days of the date a decision was rendered by the HWU Purchasing Manager, a written appeal of the same is submitted by the bidder to the City of Henderson Water and Sewer Commissioners. Any appeal to the Commissioners shall include:

(a) A statement of the grounds for review and any supporting documentation.

(b) A copy of the protest filed with HWU and a copy of the HWU Purchasing Manager’s decision.

If the appeal is submitted prior to award of a contract, HWU will not award until the matter is resolved. If the contract has been awarded prior to the appeal, the contractor shall proceed diligently with the performance of the contract.

6. **SUBMISSION OF OFFERS**

a. Offers and modifications thereof shall be enclosed in sealed envelopes and addressed to the office specified in the solicitation. The offeror shall show the opening hour and date specified in the solicitation, the solicitation number, and the name and address of the offeror on the face of the envelope(s).

b. Telegraphic or facsimile offers shall not be considered unless authorized by the solicitation; however, offers may be modified by telegraphic or facsimile notice, if such notice is received prior to the hour and date specified for receipt. Telegraphic or facsimile modifications shall not mention unit prices or total price; but shall only refer to percentage change or numerical change (i.e., “reduce unit price of item 1 by $1.00”).

c. Samples of items, if required, shall be submitted within the time specified, and not unless otherwise specified, at no expense to HWU. If not destroyed by testing, samples shall be returned at the offeror’s request and expense, unless otherwise specified by the solicitation.
Unless a request for their return is made within thirty (30) days of award of contract, all samples shall become property of HWU.

7. MODIFICATION OR WITHDRAWAL OF OFFERS
Offers may be modified or withdrawn by written notice received prior to the exact hour and date specified for receipt of offers. An offer may also be withdrawn in person by an offeror or his authorized representative, if his identity is made known and he signs a receipt for the offer, but only if the withdrawal is made prior to the exact hour and date set for receipt of offers.

8. LATE OFFERS AND MODIFICATIONS
Offers and modifications of offers received at the office designated in the solicitation after the exact hour and date specified for receipt shall not be considered for an award of contract, UNLESS:
   a. No bids are received other than the late bid; and
   b. The needs of HWU are determined to preclude the re-solicitation of bids.

9. MULTIPLE AND ALTERNATE BIDS
Bidders shall submit one response only to the solicitation and shall not propose more than one price, model, and brand for each bid item. Multiple or alternate bids offering more than one bid price in total (or by line-item) shall be cause for rejection unless specifically called for in special provisions provided elsewhere in the solicitation.

10. AWARD OF CONTRACT
   a. It is the intent of HWU to award this contract to the vendor or vendors offering the lowest evaluated bid price for products which meet the specifications set forth in this document. Any and all anticipated costs for HWU to implement the project will be taken into consideration.
   b. HWU reserves the right to reject any offers and to waive informalities and minor irregularities in offers received. The award of this contract will be contingent upon funds being appropriated for this purchase.
   c. The bidder, if awarded an order or contract, agrees to protect, defend, and save harmless the Henderson Water and Sewer Commission and the Henderson Water Utility against any demand for the use of any patented materials, process, article, or device, that may enter into the manufacture, construction, or form a part of the work covered by either order or contract and he further agrees to indemnify and save harmless the Henderson Water and Sewer Commission and the Henderson Water Utility from suits or actions of every nature and description brought against it, for on account of any injuries or damages received or sustained by any party or parties, by or form any of the acts of the contractor, his servants, or agents.
   d. The awarded contract shall agree to offer the prices and the terms and conditions offered herein to any municipality, county or state government; public utility; non-profit hospital; educational institute; special governmental agency; and non-profit corporation performing governmental functions in Western Kentucky area who wish to participate in a cooperative purchase program with Henderson Water Utility. Other agencies will be responsible for entering into separate agreements with the Contract and for all payments thereunder.
   e. The bidder agrees to hold the proposed pricing for up to 90 days after bid proposal is opened, or for such time as specified on the Bid Form, if different.
f. A written award mailed (or otherwise furnished) to the successful offeror within the time for acceptance specified in the offer shall be deemed to result in a contract without further actions by either party.

11. Method of Award: Best Value - Ranking Approach
The Owner intends to award a Contract to the Contractor whose bid, conforming to the BID FORM, is the most advantageous on the basis of "best value" for all products, services, and requirements contained herein. An evaluation committee or a designated individual will evaluate the information provided by the Contractor in response to the established measurable criteria contained herein.

**Measurable Criteria: Price 100 Points**

**TOTAL POINTS 100 Points**

Each Contractor is responsible for submitting all relevant, factual and correct information with their Bid to enable the evaluator(s) to afford each Contractor the maximum score based on the available data submitted by the Contractor. The Contractor shall explicitly adhere to the BID FORM which contains adequate space for the Contractor's pricing.

**Bid Price (100 Points)**

The bidder with the lowest Bid Price receives the maximum score. The bidder with the next lowest Price receives points by dividing the lowest Price by the next lowest Price and multiplying that percentage by the available points. For Example, 100 points is allocated to the lowest Price criteria for this procurement, Bidder "A" bids $3.00 as the lowest bidder and receives the maximum 100 points ($3.00 / $3.00 = 1.00 X 100 = 100). Assume Bidder "B" is next lowest bidder at $4.00, then "B" receives 75 points ($3.00 / $4.00 = .75 X 100 = 75).

Best Value scoring is subject to Reciprocal preference for Kentucky resident bidders and Preferences for a Qualified Bidder or the Department of Corrections, Division of Prison Industries (KAR 200 5:410).

The Contractor is required to submit a complete copy of the "Required Affidavit for Bidders, Offerors, and Contractors Claiming Resident Bidder Status" attached to the BID FORM.

12. KENTUCKY / INDIANA SALES AND USE TAXES
Sales of tangible personal property or services to HWU are not subject to state sales or use taxes. Henderson Water Utility's Kentucky/Indiana sales tax exemption number will be provided to the successful bidder(s).

Henderson Water Utilities sales tax exemption status may not be used by the Proposer to acquire materials or supplies on a sales-tax-exempt basis. Any sales taxes or other taxes incurred by the Proposer remain the responsibility of the Proposer. It is assumed that all such costs incurred by any Proposer are included in his price.

13. COMPLIANCE WITH FEDERAL, STATE, AND LOCAL LAWS
Any contracts or orders placed as a result of the offer shall be governed by the laws of the Commonwealth of Kentucky. The rights and obligations of the parties thereto shall be determined in accordance with these laws. Any offer conditioned upon governance by the laws of a state other than Kentucky shall not be considered.
Conflicts of interest, gratuities and kickbacks as defined and provided for in KRS 45A.455 are absolutely prohibited. Bidder acknowledges and certifies by submission of his bid that all the provisions of KRS 45A.455 are complied with fully.

Contractor shall comply with all applicable federal, state, and local statutes, regulations, ordinances, or other legal requirements which apply. Contractor must also comply with Department of Homeland Security rules and regulations.

Before commencing with the performance of any work under this bid, the Contractor shall obtain all necessary permits and licenses as may be necessary. Before and during the progress of work under this bid, the bidder shall give all notice and comply with all the laws, ordinances, rules and regulations of every kind and nature now or hereafter in effect promulgated by any Federal, State, County, or other Governmental Authority, relating to the performance of work under this bid. If the bidder performs any work that is contrary to any such law, ordinance, rule, or regulation, he shall bear all the costs arising therefrom.

A City of Henderson business license is required for all vendors servicing accounts within the City of Henderson.

A Henderson County business license is required for all vendors servicing accounts at HWU locations outside the City of Henderson but in Henderson County. Information regarding the business license can be obtained by calling the business license office at 270-831-1200. Vendors will be allowed ten (10) days after award of bid to submit a copy of their current business license(s) to the Purchasing Manager.

14. CONFLICTS OF INTEREST – Gratuities and kickbacks – Use of confidential information (KRS 45A.455)
   a. It shall be a breach of ethical standards for any employee with procurement authority to participate directly in any proceeding or application; request for ruling or other determination; claim or controversy; or other particular matter pertaining to any contract, or subcontract, and any solicitation or proposal therefore, in which to his knowledge:
      i. He, or any member of his immediate family has a financial interest therein; or
      ii. A business or organization in which he or any member of his immediate family has a financial interest as an officer, director, trustee, partner, or employee, is a party; or
      iii. Any other person, business, or organization with whom he or any member of his immediate family is negotiating or has an arrangement concerning prospective employment is a party. Direct or indirect participation shall include but not be limited to involvement through decision, approval, disapproval, recommendation, preparation of any part of a purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing or in any other advisory capacity.
   b. It shall be a breach of ethical standards for any person to offer, give, or agree to give any employee or former employee, or for any employee or former employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment, in connection with any decision, approval, disapproval, recommendation, preparation of any part of a purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling or other determination, claim or controversy, or other particular matter, pertaining to any contract or subcontract and any solicitation or proposal therefore.
c. It is a breach of ethical standards for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

d. The prohibition against conflicts of interest and gratuities and kickbacks shall be conspicuously set forth in every local public agency written contract and solicitation therefore.

e. It shall be a breach of ethical standards for any public employee or former employee knowingly to use confidential information for his actual or anticipated personal gain, or the actual or anticipated personal gain of any other person.

15. CONTRACT MODIFICATIONS

During the period of the contract, no modification shall be permitted in any of its conditions and specifications unless the contractor receives written approval from the Purchasing Manager. If the contractor finds at any time that existing conditions make modification in requirements necessary, he shall promptly report such matter to the Purchasing Manager for consideration and decision. All contract modifications shall be subject to the provisions of 200 KAR 5:311.

16. ADDITIONAL CHARGES/Fees

The bid price of the product is the complete product price. There will be no fuel surcharges, delivery fees, handling fees, container return fees, or any other fees/charges associated with the purchase, installation or delivery of products.

17. WARRANTY – CORRECTIVE WORK

The Contractor shall guarantee all work performed under this contract for a period of one (1) year after the date of Substantial Completion. This provision covers any work performed by the Contractor that is found to be defective, the repair of any damages to the site and adjacent areas that the contractor used during construction. Where defective work has been corrected or removed and replaced, the correction period with respect to that work will be extended for an additional period of one year after correction has been satisfactorily completed.

18. SELLER’S INVOICES

Invoices shall be prepared and transmitted to HWU at the provided address.

HWU is a municipality and invoices are processed for payment not less than once per month. Regardless of any stipulations attached by vendor, HWU terms are net 30 after:

a) Receipt of appropriately documented invoices.

b) The invoice, when received, must have the correct pricing, or have a credit memo issued. HWU will not process any invoices “short-paid”.

19. PRECEDENCE OF PROVISIONS

In the event of an inconsistency between provisions of the solicitation, the inconsistency shall be resolved by giving precedence in the following order: Addenda and Clarifications issued prior to bidding; Solicitation Instructions and Conditions; General Conditions; other provisions of the contract, whether incorporated by reference or otherwise; and the specifications.
20. INSURANCE

Contractors, including all Subcontractors, furnishing labor, and/or equipment under this requirement shall carry the following insurance in addition to all insurance required by law. Valid certificates of insurance shall be furnished to the Owner prior to the Contractor causing any work to begin.

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<thead>
<tr>
<th>A. Workman’s Compensation</th>
<th>Statutory</th>
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<tr>
<td>B. Broad Form Comprehensive General Liability including coverage for Bodily Injury, Personal Injury, Products, Completed Operations, and Broad Form Property Damage, (No deductible clauses are acceptable for these coverages), and Independent Contractors (Subcontractors)</td>
<td>Bodily Injury: $1,000,000 each occurrence $2,000,000 aggregate Property Damage: $1,000,000 each occurrence</td>
</tr>
<tr>
<td>C. Comprehensive Automobile Liability, including Hired Car and Employer’s Non-Ownership Liability Coverage.</td>
<td>$1,000,000 Combined Single Limit</td>
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<tr>
<td>D. Endorsement naming as additional insured “The Henderson Water and Sewer Commission, its elected and appointed officials, employees, agents, boards, consultants, assigns, volunteers and successors in interest.”</td>
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<tr>
<td>E. Endorsement that Contractor’s insurance coverage shall be primary insurance as respects HWU. Any insurance or self-insurance maintained by HWU shall be separate from Contractor’s insurance and shall not contribute with it.</td>
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<tr>
<td>F. Certificates of insurance, issued by companies authorized to do business in the state of Kentucky, satisfactory in form to the HWU and signed by the Bidder’s insurer shall be supplied by Bidder to HWU evidencing that the above insurance is in force and that not less than thirty (30) calendar days written notice will be given to the HWU prior to any cancellation or restrictive modification of the policies. Bidder shall replace any cancelled policy within the thirty (30) day notice period so that there is no lapse in coverage at any time during the period covered by this contract.</td>
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The insurance shall:

a) Include the interests of the Owner, Contractor, Subcontractor, Engineer, Engineer’s consultants and any other individuals, 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 additional insured.

b) Be written on a Builder’s Risk “all-risk” or open peril or special causes of loss 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, and such other perils or causes of loss.

c) Remain in effect for the duration of the contract and warranty period.
21. **INDEMNIFICATION & ASSIGNMENT:**

The Contractor shall defend, indemnify, and hold harmless HWU, its officers, directors, agents and employees from and against all claims, damages, losses, and expenses, including attorneys’ fees, arising out of negligent acts, errors or omissions or willful misconduct in the performance of this project and those of its agents or employees. The Contractor is not obligated to indemnify HWU in any manner whatsoever for HWU’s own negligence.

Any attempt by Contractor to assign or otherwise transfer any interest in this agreement without the prior written consent of HWU shall be void.

22. **NONDISCRIMINATION**

Civil Rights Act of 1964: In accordance with the provisions of Title VI of the Civil Rights Act of 1964 (42 U.S. Code, § 2000d et. seq.), all bidders are hereby notified that HWU will affirmatively ensure that the contract entered into pursuant to this advertisement will be awarded to the responsible bidder with the lowest evaluated bid without discrimination on the grounds of race, color, sex, or national origin. Discrimination of national origin requires reasonable steps to provide meaningful access to persons with limited English proficiency (LEP). DHS implementing regulations for the Act are found at 6 C.F.R. Part 21 and 44 C.F.R. Part 7.

Americans with Disabilities Act: In accordance with the provisions of The Americans with Disabilities Act of 1990 (ADA) which specifically prohibits discrimination against persons with disabilities, all bidders are hereby notified that the contract entered into pursuant to this advertisement shall include a clause that specifically requires compliance with the ADA and prohibits discrimination against persons with disabilities. The ADA further requires that all new construction, reconstruction, and alterations to existing pedestrian facilities be constructed in accordance with Federal accessibility standards.

Age Discrimination Act of 1975: All recipients must comply with the requirements of the Age Discrimination Act of 1975 (Title 42 U.S. Code, § 6101 et. seq.), which prohibits discrimination on the basis of age in any program or activity receiving federal financial assistance.

23. **GOVERNING LAW:**

Should there be any contract/agreement acquired, bidder agrees that it shall be governed by and construed in accordance with the laws of the Commonwealth of Kentucky. No action involving this contract agreement may be brought except in a court of competent jurisdiction located in Henderson County.

24. **MISCELLANEOUS PROVISIONS**

Penalties: In case of default by Contractor, HWU may procure the products and/or services from other sources and may deduct from any unpaid balance due Contractor or collect against the bond, security, or surety for the amount of excess costs so paid.

Intellectual Property and Third-Party Rights: Any drawings, written reports or other works made by Contractor shall be considered works for hire and become the property of HWU. Any such works shall not be stamped with the Contractor’s proprietary markings. This agreement is made for the benefit of HWU and Contractor, not for any outside party.
Non-Endorsement: As a result of the selection of a Contractor to supply services, HWU is neither endorsing nor suggesting that the Contractor’s services are the best or only solution. Contractor agrees to make no reference to HWU in any literature, promotional material, brochures, sales presentations, or the like, without the express written consent of HWU.

Severability: If a competent court or arbitrator holds any of the terms, covenants, provisions and agreements contained herein invalid, illegal or unenforceable, this agreement shall be interpreted as if such invalid terms, covenants, provisions, or agreements were not contained herein and the remaining provisions shall be valid and enforceable.

Required Forms and Certifications: Several forms required to be submitted by the successful Bidder are attached to the end of this document, after the Technical Specifications. These forms need not be submitted with the Bid, but will be required from the Low Bidder, prior to award of a contract.

Copyright: Contractor must affix the applicable copyright notices of 17 U.S. Code § 401 or 402 and an acknowledgement of U.S. Government sponsorship (including the award number) to any work first produced under federal financial assistance awards.

Debarment and Suspension: Contractors are subject to the non-procurement debarment and suspension regulations implementing Executive Orders (E.O.) 12549 and 12689, and 2 C.F.R. Part 180. These regulations restrict federal financial assistance awards, sub-awards, and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participation in federal assistance programs or activities.

Lobbying Prohibitions: All recipients must comply with 31 U.S. Code § 1352, which provides that none of the funds provided under any federal financial assistance award may be expended by the recipient to pay any person to influence, or attempt to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any federal action concerning the award or renewal.

Subcontracts: All provisions above apply equally to any subcontractors hired by the Contractor on this project. Bidders are specifically advised that any person or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner and have current eligibility status for Federal programs, and must submit the Certification by Proposed Subcontractor Regarding Equal Employment Opportunity Form, and Subcontractor Debarment Form, attached. Approval of the proposed subcontract award cannot be given by the Owner unless and until the proposed subcontractor has submitted the Certifications and or other evidence showing that it has fully complied with any reporting requirements to which it is or was subject. Although the bidder is not required to attach such Certifications to his/her bid, the Bidder is hereby advised of this requirement so that appropriate action can be taken to prevent subsequent delay in subcontract awards.

Drug-Free Workplace Regulations: All recipients must comply with the Drug-Free Workplace Act of 1988 (41 U.S.C. § 701 et seq.), which requires all organizations receiving grants from any federal agency agree to maintain a drugfree workplace. DHS has adopted the Act’s implementing regulations at 2 C.F.R Part 3001.
Federal Debt Status: All recipients are required to be non-delinquent in their repayment of any federal debt. Examples of relevant debt include delinquent payroll and other taxes, audit disallowances, and benefit overpayments. (See OMB Circular A-129.)

Federal Leadership on Reducing Text Messaging While Driving: All recipients are encouraged to adopt and enforce policies that ban text messaging while driving as described in E.O. 13513, including conducting initiatives described in Section 3(a) of the Order when on official government business or when performing any work for or on behalf of the federal government.

Patents and Intellectual Property Rights: Unless otherwise provided by law, recipients are subject to the Bayh-Dole Act, Pub. L. No. 96-517, as amended, and codified in 35 U.S.C. § 200 et seq. All recipients are subject to the specific requirements governing the development, reporting, and disposition of rights to inventions and patents resulting from federal financial assistance awards located at 37 C.F.R. Part 401 and the standard patent rights clause located at 37 C.F.R. § 401.14.

Procurement of Recovered Materials: All recipients must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 C.F.R. Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition.

Universal Identifier and System of Award Management (SAM): All recipients are required to comply with the requirements set forth in the government-wide financial assistance award term regarding the System for Award Management and Universal Identifier Requirements located at 2 C.F.R. Part 25, Appendix A, the full text of which is incorporated here by reference in the terms and conditions.

BID FORM

PROJECT IDENTIFICATION: Generator Project
KOHS Project 19-044
Henderson Water Utility
Ref# - 2020 – 04

THIS BID SUBMITTED TO: Henderson Water Utility
111 Fifth Street
Henderson, KY 42420

CONTACT INFORMATION: All questions regarding this bid solicitation should be directed to the
Purchasing Manager as per item #3 in the Solicitation Instructions and Conditions.

DATE REFERENCES:
Last day for bid clarifications: 14 September 2020
Bid Closing: 16 September 2020, 1:30 p.m.
HWU Board Meeting (award): 21 September 2020

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to furnish equipment as
specified or indicated in the Bid Documents and Technical Specifications for the Bid Price(s) and in
accordance with the other terms and conditions of the Bid Documents and Technical Specifications.

2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and the Bid
Documents and Specifications. This bid will remain subject to acceptance for sixty days after the day
of bid closing.

3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement that:

   a. BIDDER has examined copies of all the Bidding Documents and of the following addenda
      (receipt of all which is hereby acknowledged):

      | DATE | NUMBER |
      |------|--------|
      |      |        |
      |      |        |
      |      |        |

   b. BIDDER has familiarized itself with the nature and extent of the Bid Documents and Technical
      Specifications, and all conditions, laws, and regulations that in any manner may affect cost, or
      furnishing the equipment required.

   c. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person,
      firm or corporation and is not submitted in conformity with any agreement or rules of any

Grant Agreement KOHS Project 19-044
group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over the PURCHASER. Bidder acknowledges and certifies by submission of his bid that all the provisions and statutes of KRS 45a.465 are complied with fully.

d. Specify a unit price in figures for each bid item for which a quantity is given and show the products of the respective unit prices and quantities written in figures in the space provided for that purpose. Round the products by dropping all digits past the cent. Write in ink or type all figures. In case of discrepancy between a price written in words and the same item price written in figures, the price in words will be considered the correct price. In case of discrepancy between a unit price and an extended amount, the unit price shall govern.

Bid Form
Furnish and Install Generators, Electrical Components and Accessories
Pricing to be held for 60 days after submittal is opened

ITEM No. 1: Mobilization & Demobilization
Includes Mobilization and Demobilization of personnel and subcontractors to the sites, general conditions, traffic control, permit compliance, Bid Bond, Performance and Payment Bond, etc., and all other costs not included in the other items under this Contract. This item will be paid 75% with the first pay application after the start of construction, and 25% with the last pay application, and includes all costs of any subsequent demobilizations and re-mobilizations as required by the project schedule.

LUMP SUM BID PRICE____________________________________________________

____________________________________________ Dollars ($_______________).

(Use words)       (figures)
ITEM No. 2: Generator at 510 North Water Street – North Water Treatment Plant/Administration Building

Furnish and Install a 125kW, 120/208V, 3 phase, generator; transfer switch; control system; concrete pad; and electrical modifications including conduit, wiring, switches, disconnects, and other materials required for installation as shown on Drawing E1, including connections to the adjacent Water Treatment Plant as shown on Drawing E2; grounding electrode system as shown on Drawing E6; testing; all complete in place and ready for use.

LUMP SUM BID PRICE____________________________________________________

____________________________________________ Dollars ($______________).

(Use words) (figures)

ITEM No. 3: Generator at 205 Drury Lane – North Wastewater Treatment Plant (NWWTP)

Furnish and Install a 50kW, 120/240V, 1 phase, generator; transfer switch; control system; concrete pad; and electrical modifications including conduit, wiring, switches, disconnects, and other materials required for installation as shown on Drawing E3; grounding electrode system as shown on Drawing E6; testing; all complete in place and ready for use.

LUMP SUM BID PRICE____________________________________________________

____________________________________________ Dollars ($______________).

(Use words) (figures)

ITEM No. 4: Generator at 4159 Quinns Landing Road, Robards, KY – South Water/Wastewater Treatment Plant (SWTP/SWWTP)

Furnish and Install a 100kW, 480/277V, 3 phase, generator; transfer switch; control system; concrete pad; and electrical modifications including conduit, wiring, switches, disconnects, and other materials required for installation as shown on Drawing E4; grounding electrode system as shown on Drawing E6; testing; all complete in place and ready for use.

LUMP SUM BID PRICE____________________________________________________

____________________________________________ Dollars ($______________).

(Use words) (figures)
TOTAL BID PRICE

TOTAL BID PRICE______________________________________________________________

____________________________________________ Dollars ($___________).
(Use words) (figures)

Bidders – please attach a “post-it” note or other tag to this page, in your completed bid.
Shop Drawing / Equipment Delivery Schedule:

Number of days from Award of Purchase Order to shop drawings: **30 days**

Number of days from shop drawing approval to substantial completion: **120 days**

Vendor’s taking exceptions to these timeframes, note that below.

**Exceptions Taken to this Proposal:** List all exceptions. (If none, check here). ☐
SIGNATURE PAGE

Non-Collusive Bid Statement: The undersigned bidder, having fully informed himself regarding the accuracy of the statements made herein, certifies that: (1) The bid has been arrived at by the bidder independently and has been submitted without collusion with and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment, or services described in the bid, designed to limit independent bidding or competition, and (2) The contents of the bid have not been communicated by the bidder or its employees or agents to any person not any employee or agent of the bidder or its surety on any bond furnished with the bid, and will not be communicate by any such person prior to the official opening of the bid.

_________________________________
Signature of Authorized Official

_________________________________
Name and Title (printed)

_________________________________
Legal Name of Business

_________________________________
Address

_________________________________
Address

_________________________________
Telephone Number

_________________________________
Date

Affix seal below if bid is by corporation.

This seal was herewith affixed in the presence of:

Signature ____________________________ Title ______________________________
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS
CLAIMING QUALIFIED BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:

I. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding, and all subcontractors therein, meets the requirements to be considered a “qualified bidder” in accordance with 200 KAR 5:410(3); and will continue to comply with such requirements for the duration of any contract awarded. Please identify below the particular “qualified bidder” status claimed by the bidding entity.

________ A nonprofit corporation that furthers the purposes of KRS Chapter 163

_______ Per KRS 45A.465 (3), a “Qualified nonprofit agency for individuals with severe disabilities" means an organization that:

(a) Is organized and operated in the interest of individuals with severe disabilities; and
(b) Complies with any applicable occupational health and safety law of the United States and the Commonwealth; and
(c) In the manufacture or provision of products or services listed or purchased under KRS 45A.470, during the fiscal year employs individuals with severe disabilities for not less than seventy-five percent (75%) of the man hours of direct labor required for the manufacture or provision of the products or services; and
(d) Is registered and in good standing as a nonprofit organization with the Secretary of State.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of qualified bidder status. Failure to provide such documentation upon request may result in disqualification of the bidder or contract termination.

________________________________________   _______________________________________
Signature                          Printed Name

________________________________________   ____________________________
Title                          Date

________________________________________   ____________________________
Company Name                          Address

Subscribed and sworn to before me by ________________ this _____ day of
_______________, 2020.

________________________________________   ____________________________
Notary Public                          My Commission Expires
[Seal of Notary]

Check this box if not claiming Qualified Bidder Status

[ ]
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS CLAIMING RESIDENT BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:

The bidder or offeror hereby swears and affirms under penalty of perjury that, in accordance with KRS 45A.494(2), the entity bidding is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:

1. Is authorized to transact business in the Commonwealth;
2. Has for one year prior to and through the date of advertisement
   a. Filed Kentucky corporate income taxes;
   b. Made payments to the Kentucky unemployment insurance fund established in KRS 341.49; and
   c. Maintained a Kentucky workers’ compensation policy in effect.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

__________________________________________________________________________
Signature

__________________________________________________________________________
Printed Name

__________________________________________________________________________
Title

__________________________________________________________________________
Date

__________________________________________________________________________
Company Name

__________________________________________________________________________
Address

Subscribed and sworn to before me by ___________________________ this _____ day of
_____________________, 2020.

__________________________________________________________________________
Notary Public

__________________________________________________________________________
My Commission Expires

[Seal of Notary]

Check this box if not claiming Resident Bidder Status ☐
NON-COLLUSIVE AFFIDAVIT OF PRIME BIDDER

State of_________________________)

County of_______________________)

________________________________, being first duly sworn, deposes and says that:

1. He or she is the owner, partner, officer, representative, or agent of
   _________________, the Bidder that he or she has submitted the
   attached bid;
2. He or she is fully informed respecting the preparation and contents of the attached
   Bid and of all pertinent circumstances respecting such Bid;
3. Such Bid is genuine and is not a collusive or sham Bid;
4. Neither the said Bidder nor any of its officers, partners, owners, agents,
   representatives, employees or parties in interest, including this affiant, has in any
   way colluded, conspired, connived or agreed, directly or indirectly, with any other
   Bidder, firm or person to submit a collusive or sham Bid in connection with the
   Contract for which the attached bid has been submitted or to refrain from bidding in
   connection with such Contract, or has in any manner, directly or indirectly, sought by
   agreement or collusion or communication or conference with any other Bidder, firm
   or person to fix the price or prices in the attached bid or of any other bidder, or to fix
   any overhead, profit or to secure through any collusion, conspiracy, connivance or
   unlawful agreement any advantage against the Henderson Water Utility, the City of
   Henderson or any person interested in the proposed Contract: and
5. The price or prices quoted in the attached bid are fair and proper and are not tainted
   by any collusion, conspiracy, connivance, or unlawful agreement on the part of the
   Bidder or any of its agents, representatives, owners, employees, or parties in interest,
   including this affiant.

________________________________

Signed

________________________________

Title

Subscribed and sworn to before me this
_____day of _________________, 2020.

________________________________

Title

________________________________

My commission expires ______________

Title
A. GENERAL

1. SCOPE OF WORK – BONDS - PERMITS

This request is for a proposal to furnish and install generators and transfer switches at three locations, for the Henderson Water Utility, Henderson, Kentucky. Work includes forming and placing concrete pads, furnishing and installing generators, transfer switches, and controls, disconnects, conduit and wire, modifications to existing building wiring, and other work as required for a complete and working installation.

Each bid item should include any delivery fees, handling fees, fuel surcharges, or any other fees or charges associated with the purchase, delivery, and installation of the product.

If the total construction contract amount (bid) awarded is an amount more than twenty-five thousand dollars ($25,000), a Performance bond and a Payment bond shall be furnished. Performance and Payment bonds shall be in an amount equal to one hundred percent (100%) of the contract price.

Bid security (bid bond) in an amount equal to five percent (5%) of the amount of the bid shall be furnished for all bids. If the successful low bidder fails or refuses to execute the contract and bonds required within ten (10) days after notice of acceptance of his bid, he shall forfeit to the Owner as liquidated damages the bid security submitted with his bid.

If the work is not completed within the time specified, liquidated damages in the amount of $500 per week shall be deducted from the compensation due the contractor.

HWU has not obtained any permits for this work. Contractor shall furnish all permits required.

2. SUBMITTALS (Shop Drawings)

The Vendor shall submit to the Engineer a minimum of three copies of information describing and depicting the details of the equipment, controls, materials and/or services to be provided, hereinafter referred to as “shop drawings.” After approval, shop drawings will be distributed as follows: two sets to Owner's central files, and one set to the Vendor. If the Vendor requires more copies, specify that at the time of submittal; the Engineer will review up to five sets of each shop drawing submittal.

Shop drawings shall be submitted no later than 30 days after the purchase order date.

Rejection of the same shop drawings on three separate occasions shall constitute grounds for total rejection of the proposed vendor as being unable or unwilling to meet the requirements of the bid.

Shop drawings for the equipment and materials described in this Request for Proposals must show, as a minimum, the following information:

   a. Manufacturer’s cut sheets or other detailed product information.
   b. Detailed dimensional drawings of each valve and fitting.
   c. Detailed description of materials of construction and applicable standards.
3. MATERIAL TO BE OBTAINED FROM THE CONTRACTOR

The Bidder shall provide all items named in this Request for Proposals or so noted on the Purchase Order and such incidental items as may be required for the safe and proper installation and operation of the materials and equipment furnished for the purpose(s) intended.

The Vendor shall provide all gaskets, bolts, and other miscellaneous items required to install the material described in this Request for Proposals.

Equipment or materials offered contrary to the provisions of this Paragraph will be subject to rejection.

4. TRANSPORT AND DELIVERY

Transport and handle items using equipment and methods that prevent damage to the coating. Deliver pipe adequately stored on timbers or pallets. Small parts shall be delivered on pallets, and shall be boxed, shrink-wrapped, or otherwise protected from weather and loss.

Repair minor damage to exterior and interior coatings as the Engineer directs before pipe installation. Significant damage due to improper procedures for packing and handling of pipe and other materials will be reason for rejection.

5. MATERIALS OR EQUIPMENT TO BE FURNISHED ("OR EQUAL" CLAUSES)

Where the specifications state "equal to" followed by a brand name or model, a standard of quality is being set. The naming of a brand or model is a matter of convenience to avoid writing a volume. Other brands or equipment under this category may be submitted. The Engineer will consider other products on the basis of materials of construction, weight, function, size (it must fit the space provided), service history and electrical and mechanical characteristics.

Where the specifications state one or more model numbers and manufacturers followed by the words "or approved equal" the meaning is that the product(s) specified is acceptable and that while there may be other products that are acceptable the only way to be assured is to submit the desired substitution during the BID PROCESS and receive an affirmative answer. The Engineer will consider the factors previously described in making the determination.

Unless otherwise specified, all materials shall be the best of their respective kinds and shall be in all cases fully equal to approved samples. The Engineer shall have the right to require the use of such specifically designated material, article, or process. The Engineer, where practical, may require submission of actual samples of materials or products.

6. PRODUCT DELIVERY, STORAGE AND HANDLING

Care shall be exercised in transporting and handling to avoid damage to pipe and fittings, and all appurtenances. Materials shall be stored in an enclosure or under protective coverings if required by the engineer to prevent damage. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris.

Contractor shall be responsible for all materials furnished and shall replace at his own expense all materials found defective in handling after delivery. Contractor shall report to HWU immediately upon finding defects in any material supplied by HWU. Contractor shall furnish all materials and labor required for replacement of installed materials discovered defective or damaged.
HWU reserves the right to reject any materials that do not comply with these standards.

7. SAFETY

All work shall be carried out in accordance with all applicable rules and regulations of the Kentucky Labor Cabinet, Division of Occupational Safety and Health, and HWU Safety Policies.

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, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

All damage, injury, or loss to any property 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 at its expense (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).

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.

8. NOTIFICATION & ACCESS

The Contractor shall give the Owner or Owner’s representative a minimum of 48-hour notice before starting construction. Where a public roadway must be closed, notify all safety agencies and the general public in accordance with local and state regulations. Where a private driveway must be closed, provide the resident a minimum 48-hours’ notice. Maintain continuous access to residential private driveways to the maximum extent possible. Maintain access for public safety vehicles (police, fire, ambulance) to all properties in the project area.

9. INSPECTION

The Owner’s Engineer shall make periodic observations during construction to provide final certification that the improvements were installed in conformance with HWU standards and the approved construction drawings. In addition to observation by the Engineer, a final inspection will be made prior to putting the facilities in service. Final inspection will be made prior to acceptance of any
facilities and only after all construction is complete. The Contractor shall provide labor and materials as required to complete the punch list developed during final inspection. Access to the construction site and construction records shall be provided to inspectors at all times.

B. MATERIALS - CIVIL

1. CONCRETE

All reinforced concrete shall be Class “AA” as defined by KYTC specifications, unless otherwise shown on the plans, and shall have the following characteristics and proportions of materials:

   a) Minimum cement factor of 620 pounds per cubic yard.
   b) Minimum 4,000 psi 28-day compressive strength.
   c) Slump shall be two to four inches (2” to 4”) in slabs, beams and footings.
   d) Air content minimum of six percent (6%).

Portland Cement shall be of American manufacture and conform to ASTM C150 (Standard specifications for Portland Cement). Use Type II cement. Do not substitute fly ash for Portland cement.

Water used in concrete shall be potable, clear and free from substances such as oil, acid, alkali, sugar, vegetable matter, or silt. Water from public distribution systems will be accepted without testing.

Fine aggregate shall consist of clean, hard, durable sand, free from lumps of clay, soft or flaky material, loam and organic matter. Use only natural river sand or specially approved manufactured sand. Fine aggregate may not contain lumps or frozen material. Conform to ASTM C-33, with gradation as follows:

<table>
<thead>
<tr>
<th>Screen</th>
<th>Percent Passing</th>
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</thead>
<tbody>
<tr>
<td>3/8 inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>90 – 100</td>
</tr>
<tr>
<td>No. 16</td>
<td>45 – 85</td>
</tr>
<tr>
<td>No. 50</td>
<td>5 – 25</td>
</tr>
<tr>
<td>No. 100</td>
<td>0 – 8</td>
</tr>
</tbody>
</table>

Coarse aggregate shall be crushed limestone, composed of clean, hard, durable, uncoated particles free from deleterious matter, meeting KYTC Standard Specification gradations of 57, 67, 68, 78, 8, or 9-M.

Concrete shall be proportioned and mixed in a central “Ready-Mix” plant. Contractor shall submit the name and location of the proposed plant and its source of material for approval. Concrete shall be mixed and handled in accordance with ASTM C-94.

Concrete shall be transported only in approved trucks, mixing the concrete during transport. Concrete reaching the site in a pre-set condition or which fails to meet the slump requirement will be rejected and removed from the job site. Re-tempering with water will not be allowed. The Contractor may add up to one gallon of water per cubic yard at the job site, at his own risk.
2. REINFORCING STEEL

Reinforcing steel shall conform to ASTM A-615 new billet steel, grade 60, with deformations conforming to ASTM A-615. Identify all shipments of steel reinforcement by the producer’s heat or test identification numbers.

C. INSTALLATION - CIVIL

1. DEMOLITION, CLEARING AND GRUBBING, AND EXCAVATION

Demolition - The Contractor shall accomplish demolition of existing materials, clearing and grubbing within the limits designated on the plans or as directed by the Engineer. All debris shall be disposed of off-site in accordance with applicable regulations. Demolition and disposal is not a separate pay item on this project, but is included in applicable items as specified in the bid schedule, or as a general (mob/demob) expense. All demolished materials are the property of the Contractor.

Excavation - This work shall consist of the removal and satisfactory disposal of all materials taken from between the original ground line and the excavation limits required for the installation of the concrete foundation and floor slab.

All materials encountered, of whatever nature, within the limits designated shall be removed and disposed of as directed. During the process of excavation, the grade shall be maintained in such condition that it will be well drained at all times.

Where rock, shale, clay, hardpan or other unsatisfactory subgrade material is encountered, it shall be excavated to a depth of at least 12 inches, or to such greater depth as the Engineer may direct. The portion so excavated shall be refilled and compacted as set out herein or as specified by the Engineer.

Embankment Compaction - Place the soil layers to a uniform density not less than 95 percent of maximum density as determined by the Method of ASTM D1557 Modified Proctor.

Should the subgrade lose its density for any reason, it shall be recompacted or replaced as directed by the Engineer. Any area in the subgrade which has yielding or unsuitable material shall be excavated and backfilled with approved material properly compacted as directed by the Engineer.

2. SUBGRADE PREPARATION

Subgrade Preparation - Shape subgrade to the lines and grades shown on the plans. Where the Engineer directs that areas of the subgrade are to be stabilized, the subgrade surface in such areas shall be left uniformly below grade to provide for the addition of stabilizer aggregate. Geotextile, filter fabric, or similar products may also be installed if shown on the plans or required by the Engineer.

Compaction - The developer shall dry or add moisture to the subgrade to achieve a uniformly compacted and acceptable subgrade and to achieve the specified compaction at or near optimum moisture content as determined by ASTM D 1557 Modified Proctor.

A tolerance of plus or minus 3/4 inch from the established grade will be permitted in the graded, compacted subgrade. No slab or foundation construction shall begin on subgrade which has not been inspected and approved by the Engineer.
3. REINFORCING STEEL

Bar reinforcement and wire mesh reinforcement shall conform to ASTM A 615, Grade 60.

Bars shall be lapped a minimum of thirty (30) diameters at splices. All detailing, fabrication and erection of reinforcing bars shall be in accordance with the ACI “Manual of Standard Practice for Details and Detailing of Concrete Reinforcement, ACI 315.

Furnish five (5) copies of shop drawings for reinforcing bars, and lists or schedules showing all bends and special bars.

Steel reinforcement shall be new, free from rust scale, and shall be stored off the ground on platforms, skids, or other supports, protected from the weather. When placed it shall be free from rust, dirt, scale, paint, oil, or foreign matter which may reduce or destroy bond. A thin coating of red rust resulting from short exposures will not be considered objectionable when bars are placed in the work. Any bars exhibiting rust scale or a thick rust coat shall be thoroughly cleaned to the satisfaction of the Engineer, or shall be rejected and removed from the work.

Reinforcement shall be placed in the position as shown on the Plans and held securely in place during concrete placement. All reinforcement shall be wired together at intersections or as directed by the Engineer. Approved means of support shall be provided for reinforcement in slabs and flat surfaces. When the reinforcement is placed in the work, it shall have a clean surface, free from dirt, scaly rust, mill scale, paint, oil or other foreign substances.

Approval by the Engineer of the placement of all reinforcement is required prior to the placement of concrete. Concrete placed without approval of the reinforcement shall be removed and replaced at the Contractor’s expense.

4. CONCRETE PLACEMENT

Concrete shall be handled in such a manner as to prevent segregation and kept free from mud, soil or any other foreign matter. Concrete shall be placed in daylight conditions. Water and accumulated debris shall be removed from forms prior to placement. Concrete shall be placed continuously to prevent cold joints.

Forms for Concrete – must be substantial and sufficiently tight to prevent leakage of mortar. They shall be properly placed and tied together to maintain position and shape and insure safety to workmen. Concrete shall not be placed in any form until the form and reinforcing steel have been observed by the Engineer. Forms for the outside face of exposed surfaces shall be not less than one and one-half inch (1-1/2”) tongue and grooved lumber or three-fourths inch (3/4”) plywood panels. Forms shall receive an approved form release agent. Forms may not be removed after three (3) days.

Provide a minimum six (6) mil polyethylene vapor barrier meeting ASTM D 2103 over crushed stone base prior to placing concrete for slabs.

Slabs on grade which are not shown to pitch to drain shall be constructed to a uniform plane.

Concrete placement shall not be undertaken or shall be discontinued when any of the following conditions exist:
a) When a descending air temperature in the shade and away from artificial heat reaches 40 degrees F.
b) When the subgrade or base course is frozen.
c) When aggregates to be used in the mix contain frozen particles.

Equipment shall not be operated on any new concrete until at least 10 curing days have elapsed.

SPREADING AND VIBRATING CONCRETE - The concrete shall be spread over the entire area between the forms without segregation. Spreading shall be done with appropriate spreading equipment. If concrete is conveyed by pumps or chutes, they shall be of a size and design to insure continuous flow of the concrete without separation of the ingredients. After the concrete has been placed, it shall be uniformly vibrated by mechanical internal vibrators at 5,000 impulses per minute. Maintain at least one (1) extra vibrator on site in case of emergency.

CONCRETE FINISHING - Finish concrete with approved equipment. Hand finishing will be permitted when the use of mechanical finishing equipment is impractical. The concrete shall be screeded and float finished to the required cross-section and then shall be checked by the use of hand-held, 10 foot straightedges for longitudinal surface uniformity, with an allowable variation of one-eighth inch (1/8”), transversely and longitudinally. Float finish to provide a smooth surface texture, using power floats or troweling machines fitted with float shoes. Finish the outside edges and edges of expansion joints with an edging tool having a radius of 1/8 inch. Exposed edges at doorways shall be chamfered three-fourths inch (3/4”) unless noted otherwise.

JOINTS - Shall be constructed as required to eliminate cracking.

In general, joints shall be spaced no more than twenty feet (20’) apart, although the Engineer may approve larger pours when requested by the Contractor. Keyways or special reinforcement details may be required at joints in slabs. Joints in slabs may be sawed but must be completed within twelve to twenty-four (12 to 24) hours after finishing of concrete surfaces. Isolation joints must separate slabs from column footings, walls, etc. Joint sealant shall conform to ASTM C 151 for cold application type concrete joint sealers.

CURING CONCRETE - Immediately after finishing operations have been completed and surface water has disappeared, all exposed surfaces of the concrete shall be cured by one of the following methods. The total curing period shall be a minimum of five (5) days for all methods.

Liquid Membrane Curing Compounds – Use curing compounds conforming to ASTM C 309, Type I. The minimum rate of application shall be one (1) gallon per 200 square feet when the application equipment is mechanically operated or one (1) gallon per 150 square feet when the application equipment is hand operated.

Polyethylene Film - The sections of the film shall be spread in such a manner which will prevent damage to the finished pavement surface. Lap joints of the sections will be at least 12 inches wide and suitable precaution shall be taken to prevent the circulation of air beneath the film.

PROTECTION FROM COLD OR HOT WEATHER AND RAIN – Concrete which has not attained a strength of 2,500 psi, or less than five day old, which may be subject to damage by freezing shall be adequately protected by insulation or heating until the concrete reaches a strength of 2,500 psi or an age of five days. Provide heating equipment such as vented stoves or salamanders as necessary to keep the
temperature of the air surrounding the concrete from falling below 45 degrees F. Concrete damaged as a result of freezing shall be removed and replaced at the expense of the Contractor.

Protective coverings which will protect the surface of freshly placed concrete from rain shall be readily available at the site of the work. An adequate quantity of other materials shall be stored at the paving train. Concrete damaged as a result of failure on the part of the developer to adequately protect the concrete from rain shall be repaired or removed and replaced at the expense of the developer.

During curing of concrete in hot weather, keep all surfaces moist with burlap sacks or polyethylene for five (5) days after placement. Use extreme care during he first twenty-four (24) hours after placement, or during periods of low humidity or high surface winds.

Defective concrete that is honeycombed, porous or otherwise defective shall be removed or replaced in whole at the expense of the Contractor.

D. OTHER ITEMS OF THE WORK

1. EXISTING UTILITIES

Special precautions shall be taken by the Contractor to avoid damage to existing overhead and underground utilities owned and operated by the City or by public or private utility companies.

Where existing utilities or appurtenant structures, whether underground or aboveground are encountered, they shall not be displaced or disturbed unless necessary, and in such cases shall be replaced in as good or better condition than found as quickly as possible.

The Contractor shall bear the entire responsibility for locating, avoiding or repairing damage to said existing utilities. No work shall be performed prior to contacting Kentucky 811 and existing underground utilities being located and marked. Contractor is responsible for contacting utilities that do not subscribe to Kentucky 811.

2. GRADING, SEEDING AND MULCHING

Grade areas around pads to drain as per the plans. Contractor shall be responsible for filling all low spots in trenched areas for a period of one year from substantial completion.

Unless otherwise specified by the Engineer, all graded areas shall be left smooth and sown with a mixture of grasses at a rate of not less than 100 pounds per acre. Seed mixture shall be as shown below. When final grading has been completed, the area to be seeded shall be fertilized with number 12-12-12 fertilizer at a rate of 1000 lbs. per acre. After the fertilizer has been distributed, the Contractor shall disc or harrow the ground to thoroughly work the fertilizer into the soil. The seed shall then be broadcast either by hand or by approved sowing equipment. After the seed has been distributed, the contractor shall then lightly cover the seed by use of a drag or other approved device. All seed shall be certified. The seeded area shall then be mulched with clean, weed-free straw to a depth of approximately 2 inches. Any necessary reseeding or repairing shall be performed by the contractor prior to final acceptance.

Seed mixture for permanent seeding shall consist of the following:
   a. 30% Kentucky 31 Tall Fescue (Festuca arundinacea)
b. 20% Creeping Red Fescue (Festuca rubra)
c. 35% Hard Fescue (Festuca longifolia)
d. 10% Ryegrass, Perennial (Lolium perenne)
e. 5% White Dutch Clover (Trifolium repens)

3. EROSION CONTROL

Contractor shall control water pollution through use of best management practices that limit eroded sediment leaving the site and shall coordinate these measures with the construction schedule to ensure effective and continuous erosion control throughout the construction and post construction periods. If more than 1 acre is disturbed during construction, Contractor shall apply for and maintain an NOI from the Kentucky Division of Water and from HWU.

Before any disturbance is made, perform an initial site inspection with the Engineer, record what areas are to be disturbed, submit an erosion and sediment control plan showing what BMPs will be used, design BMPs according to good engineering practices, and install the designated BMPs. Before opening or affecting any new areas, repeat this process and ensure all BMPs are installed before starting work.

Erosion control measures shall include the following:

a. Soil stabilization shall be initiated within fourteen (14) days of clearing or inactivity in construction.
b. If seeding or another vegetative erosion control method is used, adequate temporary erosion control shall be provided until permanent cover is established.
c. Techniques shall be employed to prevent the blowing of dust or sediment from the site.

Construction site access requirements shall include:

a. Approved temporary access entrance(s) provided at all sites.
b. Other measures necessary to ensure that sediment is not tracked onto public streets by construction vehicles or washed into storm drains.

Other requirements include:

a. Trash control.
b. Contained washout facility for concrete trucks.

4. TRAFFIC CONTROL

If the Contractor’s operations block any portion of a roadway, flaggers shall be provided for control of traffic in each direction from the blockage.

All workers within the right-of-way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to work vehicles and construction equipment within the temporary traffic control zone shall wear high-visibility safety apparel that meets the Performance Class 3 requirements of the ANSI/ISEA 107–2004 publication entitled “American National Standard for High-Visibility Safety Apparel and Headwear” or equivalent revisions, and labeled as meeting the ANSI 107-2004 standard performance for Class 3 risk exposure.
All traffic control devices and signs shall meet the standards of KYTC and conform to the Manual of Uniform Traffic Control Devices, Chapter 6.

Provide barricades or other protective devices for any excavation or pit that remains open after working hours.

5. FINAL COMPLETION

Final Completion shall be defined as the point when all of the following requirements have been fulfilled:

A. All submittals and documentations have been submitted, reviewed and approved.
B. Operations and Maintenance Manuals have been submitted on all equipment items.
C. The complete system has successfully passed all testing requirements.
D. All fees, permits and reports have been satisfactorily completed.
E. All Owner’s staff personnel training programs have been completed.
F. Beneficial use by the Owner has occurred.

6. CLEAN-UP

After final operation tests, the area shall be cleared of all trash and debris and left in final operating condition. Final grading of the site and restoration of surfaces with grass shall be in strict accordance with the applicable plans.

E. ELECTRICAL COMPONENTS – SEE ATTACHED SECTIONS

- Low-Voltage Electrical Power Conductors and Cables – 26 0519 BSD
- Grounding and Bonding for Electrical Systems – 26 0526 BSD
- Hangers and Supports for Electrical Systems – 26 0529 BSD
- Conduit for Electrical Systems – 26 0533.13 BSD
- Boxes for Electrical Systems – 26 0533.16 BSD
- Identification of Electrical Systems – 26 0553 BSD
- Wiring Connections – 26 0583 BSD
- Panelboards – 26 2416 BSD
- Enclosed Circuit Breakers – 26 2816.13 BSD
- Engine Generators – 26 3213 BSD
- Transfer Switches – 26 3600 BSD
SECTION 26 0519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1  GENERAL

1.01  SECTION INCLUDES
   A.  Single conductor building wire.
   B.  Underground feeder and branch-circuit cable.
   C.  Service entrance cable.
   D.  Wiring connectors.
   E.  Electrical tape.
   F.  Heat shrink tubing.
   G.  Oxide inhibiting compound.
   H.  Wire pulling lubricant.
   I.  Cable ties.

1.02  RELATED REQUIREMENTS
   A.  Section 26 0526 - Grounding and Bonding for Electrical Systems:  Additional requirements for grounding conductors and grounding connectors.
   B.  Section 26 0553 - Identification for Electrical Systems:  Identification products and requirements.

1.03  REFERENCE STANDARDS
   H.  NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
   I.  NECA 121 - Standard for Installing Nonmetallic-Sheathed Cable (Type NM-B) and Underground Feeder and Branch-Circuit Cable (Type UF); 2007.
   L.  NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
   M.  UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
   N.  UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
   P.  UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
S. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate the installation of direct burial cable with other trades to avoid conflicts with piping or other potential conflicts.
   3. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.

1.05 SUBMITTALS
A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
B. Sustainable Design Documentation: Submit manufacturer's product data on conductor and cable showing compliance with specified lead content requirements.
C. Manufactured Wiring System Shop Drawings: Provide plan views indicating proposed system layout with components identified; indicate branch circuit connections.
D. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors. Include proposed modifications to raceways, boxes, wiring gutters, enclosures, etc. to accommodate substituted conductors.
E. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

1.06 QUALITY ASSURANCE
A. Comply with requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS
A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F (-10 degrees C), unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS
2.01 CONDUCTOR AND CABLE APPLICATIONS
A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS
A. Provide products that comply with requirements of NFPA 70.
B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

D. Comply with NEMA WC 70.

E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

G. Conductors for Grounding and Bonding: Also comply with Section 26 0526.

H. Conductors and Cables Installed in Cable Tray: Listed and labeled as suitable for cable tray use.

I. Conductors and Cables Installed Where Exposed to Direct Rays of Sun: Listed and labeled as sunlight resistant.

J. Conductor Material:
   1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
   2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
   3. Tinned Copper Conductors: Comply with ASTM B33.

K. Minimum Conductor Size:
   1. Branch Circuits: 10 AWG.
      a. Exceptions:
         1) 20 A, 120 V circuits longer than 75 feet (23 m): 10 AWG, for voltage drop.
         2) 20 A, 120 V circuits longer than 150 feet (46 m): 8 AWG, for voltage drop.
   2. Control Circuits: 14 AWG.

L. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

M. Conductor Color Coding:
   1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
      a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
   3. Color Code:
      a. 480Y/277 V, 3 Phase, 4 Wire System:
         1) Phase A: Brown.
         2) Phase B: Orange.
         3) Phase C: Yellow.
         4) Neutral/Grounded: Gray.
      b. 208Y/120 V, 3 Phase, 4 Wire System:
         1) Phase A: Black.
         2) Phase B: Red.
         3) Phase C: Blue.
         4) Neutral/Grounded: White.
      c. 240/120 V High-Leg Delta, 3 Phase, 4 Wire System:
         1) Phase A: Black.
         2) Phase B (High-Leg): Orange.
         3) Phase C: Blue.
         4) Neutral/Grounded: White.
      d. 240/120 V, 1 Phase, 3 Wire System:
         1) Phase A: Black.
         2) Phase B: Red.
3) Neutral/Grounded: White.
  e. Equipment Ground, All Systems: Green.
  f. Isolated Ground, All Systems: Green with yellow stripe.
  g. Travelers for 3-Way and 4-Way Switching: Pink.
  h. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.
  i. For control circuits, comply with manufacturer's recommended color code.

2.03 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:
  1. Copper Building Wire:
     c. Substitutions: See Section 01 61 00 - Common Product Requirements.

B. Description: Single conductor insulated wire.

C. Conductor Stranding:
  1. Feeders and Branch Circuits:
     a. Size 10 AWG and Smaller: Stranded.
     b. Size 8 AWG and Larger: Stranded.
  2. Control Circuits: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation:
  1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
     a. Size 4 AWG and Larger: Type THHN/THWN.
     b. Installed Underground: Type THHN/THWN.
     c. Fixture Wiring Within Luminaires: Type TFFN/TFN for luminaires with labeled maximum temperature of 90 degrees C; Approved suitable type for luminaires with labeled maximum temperature greater than 90 degrees C.

2.04 UNDERGROUND FEEDER AND BRANCH-CIRCUIT CABLE

A. Manufacturers:
  3. Substitutions: See Section 01 61 00 - Common Product Requirements.

B. Description: NFPA 70, Type UF multiple-conductor cable listed and labeled as complying with UL 493, Type UF-B.

C. Provide equipment grounding conductor unless otherwise indicated.

D. Conductor Stranding:
  1. Size 10 AWG and Smaller: Stranded.
  2. Size 8 AWG and Larger: Stranded.

E. Insulation Voltage Rating: 600 V.

F. Cable Jacket: Listed and labeled as sunlight resistant.

2.05 SERVICE ENTRANCE CABLE

A. Manufacturers:
  1. Copper Service Entrance Cable:
     d. Substitutions: See Section 01 61 00 - Common Product Requirements.
B. Service Entrance Cable for Above-Ground Use: NFPA 70, Type SE multiple-conductor cable listed and labeled as complying with UL 854, Style R.

C. Service Entrance Cable for Underground Use: NFPA 70, Type USE single-conductor cable listed and labeled as complying with UL 854, Type USE-2, and with UL 44, Type RHH/RHW-2.

D. Conductor Stranding: Stranded.

E. Insulation Voltage Rating: 600 V.

2.06 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Connectors for Grounding and Bonding: Comply with Section 26 0526.

C. Wiring Connectors for Splices and Taps:
   1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
   2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.

D. Wiring Connectors for Terminations:
   1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
   2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
   3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
   4. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.
   5. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.

E. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F (105 degrees C) for standard applications and 302 degrees F (150 degrees C) for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      c. Substitutions: See Section 01 61 00 - Common Product Requirements.

F. Push-in Wire Connectors: Rated 600 V, 221 degrees F (105 degrees C).
   1. Manufacturers:
      b. Substitutions: See Section 01 61 00 - Common Product Requirements.

G. Mechanical Connectors: Provide bolted type or set-screw type.

H. Compression Connectors: Provide circumferential type or hex type crimp configuration.

I. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
   1. Manufacturers:

2.07 ACCESSORIES

A. Electrical Tape:
   1. Manufacturers:
2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F (105 degrees C).

3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F (-18 degrees C) and suitable for continuous temperature environment up to 221 degrees F (105 degrees C).

4. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil (0.76 mm); suitable for continuous temperature environment up to 194 degrees F (90 degrees C) and short-term 266 degrees F (130 degrees C) overload service.

5. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil (3.2 mm); suitable for continuous temperature environment up to 176 degrees F (80 degrees C).

6. Varnished Cambric Electrical Tape: Cotton cambric fabric tape, with or without adhesive, oil-primed and coated with high-grade insulating varnish; minimum thickness of 7 mil (0.18 mm); suitable for continuous temperature environment up to 221 degrees F (105 degrees C).

7. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil (2.3 mm).

B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.

1. Manufacturers:
   a. 3M: www.3m.com/#sle.

C. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.

1. Manufacturers:

D. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.

1. Manufacturers:
   a. 3M: www.3m.com/#sle.

E. Cable Ties: Material and tensile strength rating suitable for application.

1. Manufacturers:

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that interior of building has been protected from weather.
B. Verify that work likely to damage wire and cable has been completed.
C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
D. Verify that field measurements are as indicated.
E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.
3.03 INSTALLATION

A. Circuiting Requirements:
   1. Unless dimensioned, circuit routing indicated is diagrammatic.
   2. When circuit destination is indicated without specific routing, determine exact routing required.
   3. Arrange circuiting to minimize splices.
   4. Include circuit lengths required to install connected devices within 10 ft (3.0 m) of location indicated.
   5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
   6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
   7. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.

B. Install products in accordance with manufacturer's instructions.

C. Perform work in accordance with NECA 1 (general workmanship).

D. Install underground feeder and branch-circuit cable (Type UF-B) in accordance with NECA 121.

E. Installation in Raceway:
   1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
   2. Pull all conductors and cables together into raceway at same time.
   3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
   4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
   1. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.

H. Terminate cables using suitable fittings.

I. Install conductors with a minimum of 12 inches (300 mm) of slack at each outlet.

J. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet (1.5 m) of slack.

K. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

L. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.

M. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
   2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
   3. Do not remove conductor strands to facilitate insertion into connector.
   4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
   5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
6. Compression Connectors: Secure connections using manufacturer’s recommended tools and dies.

N. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
   1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
      b. For taped connections likely to require re-entering, including motor leads, first apply varnished cambric electrical tape, followed by adequate amount of rubber splicing electrical tape, followed by outer covering of vinyl insulating electrical tape.
   2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
      b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.

O. Insulate ends of spare conductors using vinyl insulating electrical tape.

P. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.

Q. Identify conductors and cables in accordance with Section 26 0553.

R. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

S. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL
   A. Inspect and test in accordance with NETA ATS, except Section 4.
   B. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
      1. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.
   C. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION
SECTION 26 0526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Grounding and bonding requirements.
B. Conductors for grounding and bonding.
C. Connectors for grounding and bonding.
D. Ground bars.
E. Ground rod electrodes.
F. Chemically-enhanced ground electrodes.
G. Ground plate electrodes.
H. Ground enhancement material.
I. Ground access wells.

1.02 RELATED REQUIREMENTS

A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
   1. Includes oxide inhibiting compound.
B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
G. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify exact locations of underground metal water service pipe entrances to building.
   2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
B. Sequencing:
   1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.05 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.
B. Shop Drawings:
   1. Indicate proposed arrangement for signal reference grids. Include locations of items to be bonded and methods of connection.
C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Field quality control test reports.

E. Project Record Documents: Record actual locations of grounding electrode system components and connections.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Installer Qualifications for Signal Reference Grids: Company with minimum five years documented experience with high frequency grounding systems.

E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Do not use products for applications other than as permitted by NFPA 70 and product listing.

B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

D. Grounding System Resistance:
   1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
   2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
   3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested using "point-to-point" methods.

E. Grounding Electrode System:
   1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
      a. Provide continuous grounding electrode conductors without splice or joint.
      b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
   2. Metal Underground Water Pipe(s):
      a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet (3.0 m) at an accessible location not more than 5 feet (1.5 m) from the point of entrance to the building.
b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.

3. Metal In-Ground Support Structure:
a. Provide connection to metal in-ground support structure that is in direct contact with earth in accordance with NFPA 70.

4. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.

5. Ground Bar: Provide ground bar, separate from service equipment enclosure, for common connection point of grounding electrode system bonding jumpers as permitted in NFPA 70. Connect grounding electrode conductor provided for service-supplied system grounding to this ground bar.
   a. Ground Bar Size: 1/4 by 2 by 12 inches (6 by 50 by 300 mm) unless otherwise indicated or required.
   b. Ground Bar Mounting Height: 18 inches (450 mm) above finished floor unless otherwise indicated.

F. Service-Supplied System Grounding:
1. For each service disconnect, provide grounding electrode conductor to connect neutral (grounded) service conductor to grounding electrode system. Unless otherwise indicated, make connection at neutral (grounded) bus in service disconnect enclosure.
2. For each service disconnect, provide main bonding jumper to connect neutral (grounded) bus to equipment ground bus where not factory-installed. Do not make any other connections between neutral (grounded) conductors and ground on load side of service disconnect.

G. Grounding for Separate Building or Structure Supplied by Feeder(s) or Branch Circuits:
1. Provide grounding electrode system for each separate building or structure.
2. Provide equipment grounding conductor routed with supply conductors.
3. For each disconnecting means, provide grounding electrode conductor to connect equipment ground bus to grounding electrode system.
4. Do not make any connections and remove any factory-installed jumpers between neutral (grounded) conductors and ground.

H. Separately Derived System Grounding:
1. Separately derived systems include, but are not limited to:
   a. Transformers (except autotransformers such as buck-boost transformers).
2. Provide grounding electrode conductor to connect derived system grounded conductor to nearest effectively grounded metal building frame. Unless otherwise indicated, make connection at neutral (grounded) bus in source enclosure.
3. Provide bonding jumper to connect derived system grounded conductor to nearest metal building frame and nearest metal water piping in the area served by the derived system, where not already used as a grounding electrode for the derived system. Make connection at same location as grounding electrode conductor connection.
4. Where common grounding electrode conductor ground riser is used for tap connections to multiple separately derived systems, provide bonding jumper to connect the metal building frame and metal water piping in the area served by the derived system to the common grounding electrode conductor.
5. Outdoor Source: Where the source of the separately derived system is located outside the building or structure supplied, provide connection to grounding electrode at source in accordance with NFPA 70.
6. Provide system bonding jumper to connect system grounded conductor to equipment ground bus. Make connection at same location as grounding electrode conductor connection. Do not make any other connections between neutral (grounded) conductors and ground on load side of separately derived system disconnect.
7. Where the source and first disconnecting means are in separate enclosures, provide supply-side bonding jumper between source and first disconnecting means.

I. Bonding and Equipment Grounding:
1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
   a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
   b. Metal gas piping.
   c. Metal process piping.
8. Provide bonding for interior metal air ducts.
10. Provide bonding and equipment grounding for pools and fountains and associated equipment in accordance with NFPA 70.

2.02 GROUNDING AND BONDING COMPONENTS
A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.
B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:
1. Use insulated copper conductors unless otherwise indicated.
   a. Exceptions:
      1) Use bare copper conductors where installed underground in direct contact with earth.
      2) Use bare copper conductors where directly encased in concrete (not in raceway).
C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
4. Manufacturers - Mechanical and Compression Connectors:
5. Manufacturers - Exothermic Welded Connections:
c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com/#sle.

D. Ground Bars:
1. Description: Copper rectangular ground bars with mounting brackets and insulators.
2. Size: As indicated.
3. Holes for Connections: As indicated or as required for connections to be made.

E. Chemically-Enhanced Ground Electrodes:
1. Description: Copper tube factory-filled with electrolytic salts designed to provide a low-impedance ground in locations with high soil resistivity; straight (for vertical installations) or L-shaped (for horizontal installations) as indicated or as required.
2. Length: 10 feet (3.0 m).
3. Integral Pigtail: Factory-attached, sized not less than grounding electrode conductor to be attached.
4. Backfill Material: Grounding enhancement material recommended by electrode manufacturer.
5. Manufacturers:

F. Ground Plate Electrodes:
1. Material: Copper.
2. Size: 24 by 24 by 1/4 inches (610 by 610 by 6 mm), unless otherwise indicated.
3. Manufacturers:
   d. Substitutions: See Section 01 61 00 - Common Product Requirements.

G. Ground Enhancement Material:
1. Description: Factory-mixed conductive material designed for permanent and maintenance-free improvement of grounding effectiveness by lowering resistivity.
2. Resistivity: Not more than 20 ohm-cm in final installed form.

H. Ground Access Wells:
1. Description: Open bottom round or rectangular well with access cover for testing and inspection; suitable for the expected load at the installed location.
2. Size: As required to provide adequate access for testing and inspection, but not less than minimum size requirements specified.
3. Depth: As required to extend below frost line to prevent frost upheaval, but not less than 10 inches (250 mm).
4. Cover: Factory-identified by permanent means with word "GROUND".

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that work likely to damage grounding and bonding system components has been completed.
B. Verify that field measurements are as indicated.
C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION
A. Install products in accordance with manufacturer's instructions.
B. Perform work in accordance with NECA 1 (general workmanship).
C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury...
horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.

1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches (150 mm) below finished grade.
2. Indoor Installations: Unless otherwise indicated, install with 4 inches (100 mm) of top of rod exposed.

D. Ground Plate Electrodes: Unless otherwise indicated, install ground plate electrodes at a depth of not less than 30 inches (750 mm).

E. Make grounding and bonding connections using specified connectors.
   1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
   2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
   3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
   4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

F. Identify grounding and bonding system components in accordance with Section 26 0553.

3.03 FIELD QUALITY CONTROL
A. Inspect and test in accordance with NETA ATS except Section 4.
B. Perform inspections and tests listed in NETA ATS, Section 7.13.
C. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.
D. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.
E. Submit detailed reports indicating inspection and testing results and corrective actions taken.

END OF SECTION
SECTION 26 0529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS
A. Section 26 0533.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.
B. Section 26 0533.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.

1.03 REFERENCE STANDARDS
D. MFMA-4 - Metal Framing Standards Publication; 2004.
E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
G. UL 5B - Strut-Type Channel Raceways and Fittings; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
   2. Coordinate the work with other trades to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
   4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
   5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 3000.

1.05 SUBMITTALS
A. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel (strut) framing systems, non-penetrating rooftop supports, and post-installed concrete and masonry anchors.
B. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.
C. Installer's Qualification Statement: Include evidence of compliance with specified requirements.
D. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
1.06 QUALITY ASSURANCE
   A. Comply with NFPA 70.
   B. Comply with applicable building code.

PART 2 PRODUCTS
2.01 SUPPORT AND ATTACHMENT COMPONENTS
   A. General Requirements:
      1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
      2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
      3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 2. Include consideration for vibration, equipment operation, and shock loads where applicable.
      4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
      5. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
         a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
         b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
         c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
         d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
   B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
      1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
      2. Conduit Clamps: Bolted type unless otherwise indicated.
      3. Manufacturers:
   C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
      1. Manufacturers:
         c. Substitutions: See Section 01 61 00 - Common Product Requirements.
   D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
      2. Channel (Strut) Used as Raceway (only where specifically indicated): Listed and labeled as complying with UL 5B.
      3. Channel Material:
         a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
         b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
      4. Minimum Channel Thickness: Steel sheet, 12 gage, 0.1046 inch (2.66 mm).
      5. Minimum Channel Dimensions: 1-5/8 inch (41 mm) width by 13/16 inch (21 mm) height.
      6. Manufacturers:

E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.

F. Non-Penetrating Rooftop Supports for Low-Slope Roofs: Steel pedestals with thermoplastic or rubber bases that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified.
1. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
2. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports.
3. Mounting Height: Provide minimum clearance of 6 inches (150 mm) under supported component to top of roofing.
4. Manufacturers:
   d. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.

G. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
7. Sheet Metal: Use sheet metal screws.
8. Wood: Use wood screws.
9. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
   b. Channel Material: Use galvanized steel.
   c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that field measurements are as indicated.
B. Verify that mounting surfaces are ready to receive support and attachment components.
C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION
A. Install products in accordance with manufacturer’s instructions.
B. Perform work in accordance with NECA 1 (general workmanship).
C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
G. Equipment Support and Attachment:
   1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

H. Conduit Support and Attachment: Also comply with Section 26 0533.13.
I. Box Support and Attachment: Also comply with Section 26 0533.16.
J. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.
K. Secure fasteners according to manufacturer's recommended torque settings.
L. Remove temporary supports.
M. Identify independent electrical component support wires above accessible ceilings (only where specifically indicated or permitted) with color distinguishable from ceiling support wires in accordance with NFPA 70.

3.03 FIELD QUALITY CONTROL
A. Inspect support and attachment components for damage and defects.
B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
C. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION
SECTION 26 0533.13 - CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Galvanized steel rigid metal conduit (RMC).
   B. Aluminum rigid metal conduit (RMC).
   C. Rigid polyvinyl chloride (PVC) conduit.
   D. Conduit fittings.
   E. Accessories.

1.02 RELATED REQUIREMENTS
   A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Metal clad cable (Type MC), armored cable (Type AC), and manufactured wiring systems, including uses permitted.
   B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
      1. Includes additional requirements for fittings for grounding and bonding.
   C. Section 26 0529 - Hangers and Supports for Electrical Systems.
   D. Section 26 0533.16 - Boxes for Electrical Systems.
   E. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS
   A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2015.
   B. ANSI C80.5 - American National Standard for Electrical Rigid Metal Conduit -- Aluminum (ERMC-A); 2015.
   C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
   D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2013.
   F. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2003.
   G. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
   H. NEMA RN 1 - Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit; 2005 (R2013).
   I. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2013.
   J. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2015.
   K. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
   L. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
   N. UL 360 - Liquid-Tight Flexible Steel Conduit; Current Edition, Including All Revisions.
   O. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
   P. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.
1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
   3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
   4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
   5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.05 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

B. Shop Drawings:
   1. Indicate proposed arrangement for conduits to be installed within structural concrete slabs, where permitted.
   2. Include proposed locations of roof penetrations and proposed methods for sealing.

C. Project Record Documents: Record actual routing for conduits installed underground, conduits embedded within concrete slabs, and conduits 2 inch (53 mm) trade size and larger.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, aluminum rigid metal conduit.

C. Underground:
   1. Under Slab on Grade: Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.
   2. Exterior, Direct-Buried: Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.
   3. Exterior, Embedded Within Concrete: Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.
4. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit where emerging from underground.
5. Where rigid polyvinyl (PVC) conduit larger than 2 inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit elbows for bends.
6. Where steel conduit is installed in direct contact with earth where soil has a resistivity of less than 2000 ohm-centimeters or is characterized as severely corrosive based on soils report or local experience, use corrosion protection tape to provide supplementary corrosion protection or use PVC-coated galvanized steel rigid metal conduit.
7. Where steel conduit emerges from concrete into soil, use corrosion protection tape to provide supplementary corrosion protection for a minimum of 4 inches (100 mm) on either side of where conduit emerges or use PVC-coated galvanized steel rigid metal conduit.

D. Embedded Within Concrete:
   1. Within Slab on Grade (within structural slabs only where approved by Structural Engineer): Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.
   2. Within Slab Above Ground (within structural slabs only where approved by Structural Engineer): Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.

E. Interior, Damp or Wet Locations: Use aluminum rigid metal conduit.

F. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit or aluminum rigid metal conduit.
   1. Locations subject to physical damage include, but are not limited to:
      a. Where exposed below 8 feet (2.4 m), except within electrical and communication rooms or closets.
      b. Where exposed below 20 feet (6.1 m) in warehouse areas.

G. Exposed, Exterior: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or PVC-coated galvanized steel rigid metal conduit.

H. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit.

I. Corrosive Locations Above Ground: Use aluminum rigid metal conduit.

2.02 CONDUIT REQUIREMENTS

A. Fittings for Grounding and Bonding: Also comply with Section 26 0526.

B. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.

C. Provide products listed, classified, and labeled as suitable for the purpose intended.

D. Minimum Conduit Size, Unless Otherwise Indicated:
   1. Branch Circuits: 3/4 inch (21 mm) trade size.
   2. Branch Circuit Homersuns: 3/4 inch (21 mm) trade size.
   3. Control Circuits: 3/4 inch (21 mm) trade size.
   4. Flexible Connections to Luminaires: 3/4 inch (21 mm) trade size.
   5. Underground, Interior: 3/4 inch (21 mm) trade size.
   6. Underground, Exterior: 1 inch (27 mm) trade size.

E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Manufacturers:
   3. Wheatland Tube, a Division of Zekelman Industries: www.wheatland.com/#sle.
   4. Substitutions: See Section 01 61 00 - Common Product Requirements.

B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

C. Fittings:
1. Manufacturers:
   c. Substitutions: See Section 01 61 00 - Common Product Requirements.
2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 ALUMINUM RIGID METAL CONDUIT (RMC)

A. Manufacturers:
   3. Wheatland Tube, a Division of Zekelman Industries: www.wheatland.com/#sle.
   4. Substitutions: See Section 01 61 00 - Common Product Requirements.
B. Description: NFPA 70, Type RMC aluminum rigid metal conduit complying with ANSI C80.5 and listed and labeled as complying with UL 6A.
C. Fittings:
   1. Manufacturers:
      c. Substitutions: See Section 01 61 00 - Common Product Requirements.
   2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   3. Hazardous ( Classified) Locations: Use fittings listed and labeled as complying with UL 1203 for the classification of the installed location.
   5. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.05 PVC-COATED GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit with external polyvinyl chloride (PVC) coating complying with NEMA RN 1 and listed and labeled as complying with UL 6.
B. Exterior Coating: Polyvinyl chloride (PVC), nominal thickness of 40 mil (1.02 mm).
C. PVC-Coated Fittings:
   1. Manufacturer: Same as manufacturer of PVC-coated conduit to be installed.
   2. Non-Hazardous Locations: Use fittings listed and labeled as complying with UL 514B.
   3. Material: Use steel or malleable iron.
   4. Exterior Coating: Polyvinyl chloride (PVC), minimum thickness of 40 mil (1.02 mm).
D. PVC-Coated Supports: Furnish with exterior coating of polyvinyl chloride (PVC), minimum thickness of 15 mil (0.38 mm).

2.06 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.
B. Fittings:
   1. Manufacturer: Same as manufacturer of conduit to be connected.
   2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.
2.07 ACCESSORIES
   A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil (0.51 mm).
   B. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.
   C. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.
   D. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force (890 N).
   E. Sealing Compound for Sealing Fittings: Listed for use with the particular fittings to be installed.
   F. Modular Seals for Conduit Penetrations: Rated for minimum of 40 psig; Suitable for the conduits to be installed.
      1. Substitutions: See Section 01 61 00 - Common Product Requirements.

PART 3 EXECUTION
3.01 INSTALLATION
   A. Install products in accordance with manufacturer's instructions.
   B. Perform work in accordance with NECA 1 (general workmanship).
   C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
   D. Install aluminum rigid metal conduit (RMC) in accordance with NECA 102.
   E. Install PVC-coated galvanized steel rigid metal conduit (RMC) using only tools approved by the manufacturer.
   F. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.
   G. Conduit Routing:
      1. Unless dimensioned, conduit routing indicated is diagrammatic.
      2. When conduit destination is indicated without specific routing, determine exact routing required.
      3. Conduits in the following areas may be exposed, unless otherwise indicated:
         a. Electrical rooms.
         b. Mechanical equipment rooms.
      4. Arrange conduit to maintain adequate headroom, clearances, and access.
      5. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
      6. Arrange conduit to provide no more than 150 feet (46 m) between pull points.
      7. Route conduits above water and drain piping where possible.
      8. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
      9. Maintain minimum clearance of 6 inches (150 mm) between conduits and piping for other systems.
     10. Maintain minimum clearance of 12 inches (300 mm) between conduits and hot surfaces. This includes, but is not limited to:
         a. Heaters.
         b. Hot water piping.
         c. Flues.
      11. Group parallel conduits in the same area together on a common rack.
   H. Conduit Support:
      1. Secure and support conduits in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
      2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.

4. Use conduit strap to support single surface-mounted conduit.
   a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.

5. Use metal channel (strut) with accessory conduit clamps to support multiple parallel surface-mounted conduits.

6. Use conduit clamp to support single conduit from beam clamp or threaded rod.

7. Use trapeze hangers assembled from threaded rods and metal channel (strut) with accessory conduit clamps to support multiple parallel suspended conduits.

8. Use non-penetrating rooftop supports to support conduits routed across rooftops (only where approved).

9. Where conduit support intervals specified in NFPA 70 and NECA standards differ, comply with the most stringent requirements.

I. Connections and Terminations:
   1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
   2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
   3. Use suitable adapters where required to transition from one type of conduit to another.
   4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
   5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
   6. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
   7. Secure joints and connections to provide maximum mechanical strength and electrical continuity.

J. Penetrations:
   1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
   2. Make penetrations perpendicular to surfaces unless otherwise indicated.
   3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
   4. Conceal bends for conduit risers emerging above ground.
   5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
   6. Provide suitable modular seal where conduits penetrate exterior wall below grade.
   7. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
   8. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
   9. Provide metal escutcheon plates for conduit penetrations exposed to public view.
   10. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

K. Underground Installation:
   1. Provide trenching and backfilling in accordance with Section 31 2316.13.
   2. Minimum Cover, Unless Otherwise Indicated or Required:
      b. Under Slab on Grade: 12 inches (300 mm) to bottom of slab.
3. Provide underground warning tape in accordance with Section 26 0553 along entire conduit length for service entrance where not concrete-encased.

L. Embedment Within Structural Concrete Slabs (only where approved by Structural Engineer):
   1. Include proposed conduit arrangement with submittals.
   2. Secure conduits to prevent floating or movement during pouring of concrete.

M. Concrete Encasement: Where conduits not otherwise embedded within concrete are indicated to be concrete-encased, provide concrete in accordance with Section 03 3000 with minimum concrete cover of 3 inches (76 mm) on all sides unless otherwise indicated.

N. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
   1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
   2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
   3. Where conduits are subject to earth movement by settlement or frost.

O. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
   1. Where conduits pass from outdoors into conditioned interior spaces.
   2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

P. Provide pull string in all empty conduits and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches (300 mm) at each end.

Q. Provide grounding and bonding in accordance with Section 26 0526.

R. Identify conduits in accordance with Section 26 0553.

3.02 FIELD QUALITY CONTROL
   A. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
   B. Correct deficiencies and replace damaged or defective conduits.

3.03 CLEANING
   A. Clean interior of conduits to remove moisture and foreign matter.

3.04 PROTECTION
   A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION
SECTION 26 0533.16 - BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches (1,650 cu cm).
B. Underground boxes/enclosures.

1.02 RELATED REQUIREMENTS

A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
B. Section 26 0529 - Hangers and Supports for Electrical Systems.
C. Section 26 0533.13 - Conduit for Electrical Systems:
   1. Conduit bodies and other fittings.
   2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
D. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013.
E. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; 2013.
F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
L. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.
N. UL 1203 - Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
   4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS
A. Product Data: Provide manufacturer’s standard catalog pages and data sheets for cabinets and enclosures, boxes for hazardous (classified) locations, floor boxes, and underground boxes/enclosures.
   1. Underground Boxes/Enclosures: Include reports for load testing in accordance with SCTE 77 certified by a professional engineer or an independent testing agency upon request.

B. Samples:
   1. Floor Boxes: Provide one sample(s) of each floor box proposed for substitution upon request.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
D. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, floor boxes, and underground boxes/enclosures.
E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1.06 QUALITY ASSURANCE
A. Comply with requirements of NFPA 70.
B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS
2.01 BOXES
A. General Requirements:
   1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
   2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
   3. Provide products listed, classified, and labeled as suitable for the purpose intended.
   4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
   5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
B. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
   1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
   2. NEMA 250 Environment Type, Unless Otherwise Indicated:
      a. Indoor Clean, Dry Locations: Type 12, painted steel.
      b. Outdoor Locations: Type 3R, painted steel.
3. Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
   a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
   b. Boxes 6 square feet (0.56 sq m) and Larger: Provide sectionalized screw-cover or hinged-cover enclosures.

4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
   a. Provide lockable hinged covers, all locks keyed alike unless otherwise indicated.
   c. Terminal Blocks: Provide voltage/current ratings and terminal quantity suitable for purpose indicated, with 25 percent spare terminal capacity.

5. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.

6. Manufacturers:

C. Underground Boxes/Enclosures:
   1. Description: In-ground, open bottom boxes furnished with flush, non-skid covers with legend indicating type of service and stainless steel tamper resistant cover bolts.
   2. Size: As indicated on drawings.
   3. Depth: As required to extend below frost line to prevent frost upheaval, but not less than 12 inches (300 mm).
   4. Applications:
      a. Do not use polymer concrete enclosures in areas subject to deliberate vehicular traffic.

PART 3 EXECUTION
3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.

E. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.

F. Box Locations:
   1. Unless dimensioned, box locations indicated are approximate.
   2. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches (150 mm) horizontal separation unless otherwise indicated.
   3. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 0533.13.
   4. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
      c. Near equipment.

G. Box Supports:
   1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in
accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.

H. Install boxes plumb and level.

I. Flush-Mounted Boxes:
   1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch (6 mm) or does not project beyond finished surface.
   2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
   3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch (3 mm) at the edge of the box.

J. Install boxes as required to preserve insulation integrity.

K. Underground Boxes/Enclosures:
   1. Install enclosure on gravel base, minimum 6 inches (150 mm) deep.
   2. Install additional bracing inside enclosures in accordance with manufacturer’s instructions to minimize box sidewall deflections during backfilling. Backfill with cover bolted in place.

L. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

M. Close unused box openings.

N. Provide grounding and bonding in accordance with Section 26 0526.

O. Identify boxes in accordance with Section 26 0553.

3.02 CLEANING
   A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.03 PROTECTION
   A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION
SECTION 26 0553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1  GENERAL

1.01  SECTION INCLUDES

A. Electrical identification requirements.
B. Identification nameplates and labels.
C. Wire and cable markers.
D. Voltage markers.
E. Underground warning tape.
F. Floor marking tape.
G. Warning signs and labels.

1.02  RELATED REQUIREMENTS

A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

1.03  REFERENCE STANDARDS

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04  ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.

B. Sequencing:
   1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
   2. Do not install identification products until final surface finishes and painting are complete.

1.05  SUBMITTALS

A. Samples:
   1. Identification Nameplates: One of each type and color specified.

1.06  QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2  PRODUCTS

2.01  IDENTIFICATION REQUIREMENTS

A. Identification for Equipment:
   1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
      a. Panelboards:
         1) Identify ampere rating.
         2) Identify voltage and phase.
         3) Identify power source and circuit number. Include location when not within sight of equipment.
         4) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
         5) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
b. Enclosed switches, circuit breakers, and motor controllers:
   1) Identify voltage and phase.
   2) Identify power source and circuit number. Include location when not within sight of equipment.
   3) Identify load(s) served. Include location when not within sight of equipment.

c. Enclosed Contactors:
   1) Identify ampere rating.
   2) Identify voltage and phase.

d. Transfer Switches:
   1) Identify voltage and phase.
   2) Identify power source and circuit number for both normal power source and standby power source. Include location when not within sight of equipment.
   3) Identify load(s) served. Include location when not within sight of equipment.
   4) Identify short circuit current rating based on the specific overcurrent protective device type and settings protecting the transfer switch.

B. Identification for Conductors and Cables:
   1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
   2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

C. Identification for Raceways:
   1. Use voltage markers or color-coded bands to identify systems other than normal power system for accessible conduits at maximum intervals of 20 feet (6.1 m).
   2. Use underground warning tape to identify underground raceways.

D. Identification for Boxes:
   1. Use voltage markers to identify highest voltage present.

E. Identification for Devices:
   1. Identification for Communications Devices: Comply with Section 27 1000.
   2. Wiring Device and Wallplate Finishes: Comply with Section 26 2726.
   3. Use identification label to identify fire alarm system devices.
   4. Use identification label to identify devices in control panels.
      a. For devices concealed above suspended ceilings, provide additional identification on ceiling tile below device location.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:
   1. Materials:
      a. Indoor Clean, Dry Locations: Use plastic nameplates.
      b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
   2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch (1.6 mm); engraved text.
      a. Exception: Provide minimum thickness of 1/8 inch (3 mm) when any dimension is greater than 4 inches (100 mm).
   3. Stainless Steel Nameplates: Minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
   4. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
   5. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch (25 mm) high; Four, located at corners for larger sizes.

B. Identification Labels:
1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
   a. Use only for indoor locations.
2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

C. Format for Equipment Identification:
   1. Minimum Size: 1 inch (25 mm) by 2.5 inches (64 mm).
   2. Legend:
      a. Equipment designation or other approved description.
   3. Text: All capitalized unless otherwise indicated.
   4. Minimum Text Height:
      a. Equipment Designation: 1/2 inch (13 mm).
   5. Color:

2.03 VOLTAGE MARKERS
A. Markers for Conduits: Use factory pre-printed self-adhesive vinyl, self-adhesive vinyl cloth, or vinyl snap-around type markers.
B. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.
C. Minimum Size:
   1. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
   2. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches (29 by 110 mm).
   3. Markers for Junction Boxes: 1/2 by 2 1/4 inches (13 by 57 mm).
D. Legend:
   1. Markers for Voltage Identification: Highest voltage present.
   2. Markers for System Identification:
E. Color: Black text on orange background unless otherwise indicated.

2.04 UNDERGROUND WARNING TAPE
A. Materials: Use non-detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
B. Non-detectable Type Tape: 6 inches (152 mm) wide, with minimum thickness of 4 mil (0.1 mm).
C. Legend: Type of service, continuously repeated over full length of tape.
D. Color:

2.05 WARNING SIGNS AND LABELS
A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
B. Warning Signs:
   1. Materials:
      a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs.
      b. Outdoor Locations: Use factory pre-printed rigid aluminum signs.
   2. Rigid Signs: Provide four mounting holes at corners for mechanical fasteners.
   3. Minimum Size: 7 by 10 inches (178 by 254 mm) unless otherwise indicated.
C. Warning Labels:
   1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
      a. Do not use labels designed to be completed using handwritten text.
3. Minimum Size: 2 by 4 inches (51 mm by 102 mm) unless otherwise indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
   3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
   4. Elevated Equipment: Legible from the floor or working platform.
   5. Branch Devices: Adjacent to device.
   6. Interior Components: Legible from the point of access.
   7. Conduits: Legible from the floor.
   8. Boxes: Outside face of cover.
   9. Conductors and Cables: Legible from the point of access.
   10. Devices: Outside face of cover.

C. Install identification products centered, level, and parallel with lines of item being identified.

D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.

E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

F. Install underground warning tape above buried lines with one tape per trench at 3 inches (75 mm) below finished grade.

G. Secure rigid signs using stainless steel screws.

H. Mark all handwritten text, where permitted, to be neat and legible.

END OF SECTION
SECTION 26 0583 - WIRING CONNECTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Electrical connections to equipment.

1.02 RELATED REQUIREMENTS
A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables.
B. Section 26 0533.13 - Conduit for Electrical Systems.
C. Section 26 0533.16 - Boxes for Electrical Systems.
D. Section 26 2913 - Enclosed Controllers.

1.03 REFERENCE STANDARDS
A. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (R2015).
B. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2016.
C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
   2. Determine connection locations and requirements.
B. Sequencing:
   1. Install rough-in of electrical connections before installation of equipment is required.
   2. Make electrical connections before required start-up of equipment.

1.05 SUBMITTALS
A. Product Data: Provide wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.

1.06 QUALITY ASSURANCE
A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 MATERIALS
A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
   2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
   3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
B. Wire and Cable: As specified in Section 26 0519.
C. Boxes: As specified in Section 26 0533.16.

2.02 EQUIPMENT CONNECTIONS

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS
A. Make electrical connections in accordance with equipment manufacturer's instructions.
B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
D. Provide receptacle outlet to accommodate connection with attachment plug.
E. Provide cord and cap where field-supplied attachment plug is required.
F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
H. Install terminal block jumpers to complete equipment wiring requirements.
I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   
   A. Power distribution panelboards.
   B. Load centers.

1.02 RELATED REQUIREMENTS
   
   A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
   B. Section 26 0529 - Hangers and Supports for Electrical Systems.
   C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS
   
   A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; Revision E with Supplement 1, 2013.
   B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
   D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
   F. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum); 2013.
   G. NEMA PB 1 - Panelboards; 2011.
   H. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; 2013.
   J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
   M. UL 67 - Panelboards; Current Edition, Including All Revisions.
   N. UL 98 - Enclosed and Dead-Front Switches; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS
   
   A. Coordination:
      
      1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
   1. Include characteristic trip curves for each type and rating of overcurrent protective device upon request.

B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
   1. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.
   2. Include wiring diagrams showing all factory and field connections.
   3. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
   4. Include documentation of listed series ratings upon request.

C. Source Quality Control Test Reports: Include reports for tests designated in NEMA PB 1 as routine tests.

D. Field Quality Control Test Reports.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Panelboard Keys: Two of each different key.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.

B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.
1.08 FIELD CONDITIONS
   A. Maintain ambient temperature within the following limits during and after installation of panelboards:
      1. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).

PART 2 PRODUCTS
2.01 MANUFACTURERS
   B. Schneider Electric; Square D Products: www.schneider-electric.us.
   D. Source Limitations: Furnish panelboards and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.02 PANELBOARDS - GENERAL REQUIREMENTS
   A. Provide products listed, classified, and labeled as suitable for the purpose intended.
   B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
      1. Altitude: Less than 6,600 feet (2,000 m).
      2. Ambient Temperature:
         a. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
   C. Short Circuit Current Rating:
      1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
      2. Listed series ratings are acceptable, except where not permitted by motor contribution according to NFPA 70.
      3. Label equipment utilizing series ratings as required by NFPA 70.
   D. Panelboards Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.
   E. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
   F. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
   G. Bussing: Sized in accordance with UL 67 temperature rise requirements.
      1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
      2. Provide 200 percent rated neutral bus and lugs where indicated, where oversized neutral conductors are provided, or where panelboards are fed from K-rated transformers.
      3. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
   H. Conductor Terminations: Suitable for use with the conductors to be installed.
   I. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
      1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
         a. Indoor Clean, Dry Locations: Type 1.
         b. Outdoor Locations: Type 3R.
      2. Boxes: Galvanized steel unless otherwise indicated.
         a. Provide wiring gutters sized to accommodate the conductors to be installed.
         b. Increase gutter space as required where sub-feed lugs, feed-through lugs, gutter taps, or oversized lugs are provided.
         c. Provide removable end walls for NEMA Type 12 enclosures.
d. Provide painted steel boxes for surface-mounted panelboards where indicated, finish to match fronts.

3. Fronts:
   a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
   b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
   c. Finish for Painted Steel Fronts: Manufacturer’s standard grey unless otherwise indicated.

4. Lockable Doors: All locks keyed alike unless otherwise indicated.

J. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

K. Surge Protective Devices: Where factory-installed, internally mounted surge protective devices are provided in accordance with Section 26 4300, list and label panelboards as a complete assembly including surge protective device.

L. Ground Fault Protection: Where ground-fault protection is indicated, provide system listed and labeled as complying with UL 1053.
   1. Where electronic circuit breakers equipped with integral ground fault protection are used, provide separate neutral current sensor where applicable.
   2. Where accessory ground fault sensing and relaying equipment is used, equip companion overcurrent protective devices with ground-fault shunt trips.
      a. Use zero sequence ground fault detection method unless otherwise indicated.
      b. Provide test panel and field-adjustable ground fault pick-up and delay settings.
      c. Provide zone selective interlocking capability where indicated, capable of communicating with other electronic trip circuit breakers and external ground fault sensing systems to control ground fault delay functions for system coordination purposes.

M. Selectivity: Where the requirement for selectivity is indicated, furnish products as required to achieve selective coordination.

N. Multi-Section Panelboards: Provide enclosures of the same height, with feed-through lugs or sub-feed lugs and feeders as indicated or as required to interconnect sections.

O. Provide the following features and accessories where indicated or where required to complete installation:

2.03 POWER DISTRIBUTION PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Conductor Terminations:
   1. Main and Neutral Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
   2. Main and Neutral Lug Type: Mechanical.

C. Bussing:
   1. Phase and Neutral Bus Material: Copper.
   2. Ground Bus Material: Copper.

D. Circuit Breakers:
   1. Provide bolt-on type or plug-in type secured with locking mechanical restraints.
   2. Provide thermal magnetic circuit breakers unless otherwise indicated.
   3. Provide electronic trip circuit breakers where indicated.

E. Enclosures:
   1. Provide surface-mounted enclosures unless otherwise indicated.
   2. Fronts: Provide lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
3. Provide clear plastic circuit directory holder mounted on inside of door.

2.04 OVERCURRENT PROTECTIVE DEVICES

A. Molded Case Circuit Breakers:
   1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
   2. Interrupting Capacity:
      a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
         1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
         2) 14,000 rms symmetrical amperes at 480 VAC.
      b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated from the short circuit study.
      c. Series Rated Systems: Provide circuit breakers listed in combination with upstream devices to provide interrupting rating not less than the short circuit current rating indicated from the short circuit study.
   3. Conductor Terminations:
      a. Provide mechanical lugs unless otherwise indicated.
      b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
   4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
      a. Provide field-adjustable magnetic instantaneous trip setting for circuit breaker frame sizes 225 amperes and larger.
      b. Provide interchangeable trip units where indicated.
   5. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true rms sensing trip units.
      a. Provide the following field-adjustable trip response settings:
         1) Short time pickup and delay.
         2) Instantaneous pickup.
         3) Ground fault pickup and delay where ground fault protection is indicated.
   7. Provide multi-pole circuit breakers for multi-wire branch circuits as required by NFPA 70.
   8. Provide the following features and accessories where indicated or where required to complete installation:
      a. Shunt Trip: Provide coil voltage as required for connection to indicated trip actuator.

2.05 SOURCE QUALITY CONTROL

A. Factory test panelboards according to NEMA PB 1.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.
B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
C. Verify that mounting surfaces are ready to receive panelboards.
D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Perform work in accordance with NECA 1 (general workmanship).
B. Install products in accordance with manufacturer's instructions.
C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
D. Arrange equipment to provide minimum clearances in accordance with manufacturer's 
instructions and NFPA 70.
E. Install panelboards plumb.
F. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and 
rough opening completely covered.
G. Mount panelboards such that the highest position of any operating handle for circuit breakers or 
switches does not exceed 79 inches (2000 mm) above the floor or working platform.
H. Provide minimum of six spare 1 inch (27 mm) trade size conduits out of each flush-mounted 
panelboard stubbed into accessible space above ceiling and below floor.
I. Provide grounding and bonding in accordance with Section 26 0526.
   1. Terminate branch circuit equipment grounding conductors on solidly bonded equipment 
ground bus only. Do not terminate on isolated/insulated ground bus.
   2. Terminate branch circuit isolated grounding conductors on isolated/insulated ground bus 
only. Do not terminate on solidly bonded equipment ground bus.
J. Install all field-installed branch devices, components, and accessories.
K. Where accessories are not self-powered, provide control power source as indicated or as 
required to complete installation.
L. Multi-Wire Branch Circuits: Group grounded and ungrounded conductors together in the 
panelboard as required by NFPA 70.
M. Set field-adjustable ground fault protection pickup and time delay settings as indicated.
N. Provide filler plates to cover unused spaces in panelboards.
O. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing 
essential loads where indicated. Also provide for the following:
   1. Emergency and night lighting circuits.
   2. Fire detection and alarm circuits.

3.03 FIELD QUALITY CONTROL
   A. Inspect and test in accordance with NETA ATS, except Section 4.
   B. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 
7.6.1.1 for all main circuit breakers. Tests listed as optional are not required.
   C. Ground Fault Protection Systems: Test in accordance with manufacturer's instructions as 
required by NFPA 70.
   D. Test shunt trips to verify proper operation.
   E. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 ADJUSTING
   A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended 
torque settings.
   B. Adjust alignment of panelboard fronts.
   C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each 
measured steady state phase load does not exceed 20 percent and adjust circuit directories 
accordingly. Maintain proper phasing for multi-wire branch circuits.

3.05 CLEANING
   A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's 
instructions.
   B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
A. Enclosed circuit breakers.

1.02 RELATED REQUIREMENTS
A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
B. Section 26 0529 - Hangers and Supports for Electrical Systems.
C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS
A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; Revision E with Supplement 1, 2013.
B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
E. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Coordinate work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within dedicated equipment spaces and within working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.

1.05 QUALITY ASSURANCE
A. Comply with requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed circuit breaker internal components, enclosure, and finish.

1.07 FIELD CONDITIONS
A. Maintain ambient temperature between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C) during and after installation of enclosed circuit breakers.

PART 2 PRODUCTS

2.01 MANUFACTURERS
C. Schneider Electric; Square D Products:  www.schneider-electric.us/#sle.

2.02 ENCLOSED CIRCUIT BREAKERS
A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.
B. Provide products listed, classified, and labeled as suitable for the purpose intended.
C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet (2,000 m).
   2. Ambient Temperature: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
D. Short Circuit Current Rating:
   1. Provide enclosed circuit breakers with listed short circuit current rating not less than the available fault current at the installed location indicated on the drawings.
   2. Listed series ratings are acceptable, except where not permitted by motor contribution according to NFPA 70.
   3. Label equipment utilizing series ratings as required by NFPA 70.
E. Conductor Terminations: Suitable for use with the conductors to be installed.
F. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.
G. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
   1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
      a. Indoor Clean, Dry Locations: Type 1.
      b. Outdoor Locations: Type 3R.
H. Provide externally operable handle with means for locking in the OFF position.

2.03 MOLDED CASE CIRCUIT BREAKERS
A. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
B. Interrupting Capacity:
   1. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
      a. 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
      b. 14,000 rms symmetrical amperes at 480 VAC.
   2. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated in the short circuit power study.
   3. Series Rated Systems: Provide circuit breakers listed in combination with upstream devices to provide interrupting rating not less than the short circuit current rating indicated in the short circuit power study.
C. Conductor Terminations:
   1. Provide mechanical lugs unless otherwise indicated.
   2. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
D. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
E. Provide the following circuit breaker types where indicated:
   1. Current Limiting Circuit Breakers: Without using fusible elements, designed to limit the let-through energy to a value less than the energy of a one-half cycle wave of the symmetrical prospective current when operating within its current limiting range.
PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that field measurements are as indicated.
   B. Verify that the ratings of the enclosed circuit breakers are consistent with the indicated requirements.
   C. Verify that mounting surfaces are ready to receive enclosed circuit breakers.
   D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION
   A. Install products in accordance with manufacturer's instructions.
   B. Perform work in accordance with NECA 1 (general workmanship).
   C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
   D. Provide required support and attachment in accordance with Section 26 0529.
   E. Install enclosed circuit breakers plumb.
   F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed circuit breakers such that the highest position of the operating handle does not exceed 79 inches (2000 mm) above the floor or working platform.
   G. Provide grounding and bonding in accordance with Section 26 0526.

3.03 CLEANING
   A. Clean dirt and debris from circuit breaker enclosures and components according to manufacturer's instructions.
   B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION
SECTION 26 3213 - ENGINE GENERATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Packaged engine generator system and associated components and accessories:
   1. Generator set enclosure.

1.02 RELATED REQUIREMENTS

A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
B. Section 26 0529 - Hangers and Supports for Electrical Systems.
C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
D. Section 26 3600 - Transfer Switches.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
B. NECA/EGSA 404 - Standard for Installing Generator Sets; 2014.
C. NEMA MG 1 - Motors and Generators; 2017.
E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
G. UL 2200 - Stationary Engine Generator Assemblies; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate compatibility of generator sets to be installed with work provided under other sections or by others.
      a. Transfer Switches: See Section 26 3600.
   2. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment or other potential obstructions within the spaces dedicated for engine generator system.
   3. Coordinate arrangement of equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   4. Coordinate the work to provide electrical circuits suitable for the power requirements of the actual auxiliary equipment and accessories to be installed.
   5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Preinstallation Meeting: Convene one week before starting work of this section; require attendance of all affected installers.

1.05 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product, including ratings, configurations, dimensions, finishes, weights, service condition requirements, and installed features. Include alternator starting capabilities, engine fuel consumption rates, and cooling, combustion air, and exhaust requirements.
   1. Include generator set sound level test data.

B. Shop Drawings: Include dimensioned plan views and sections indicating locations of system components, required clearances, and field connection locations. Include system interconnection schematic diagrams showing all factory and field connections.
   1. Identify mounting conditions required for equipment seismic qualification.

C. Evidence of qualifications for installer.
D. Evidence of qualifications for maintenance contractor (if different entity from installer).
E. Manufacturer’s Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.
F. Manufacturer's factory emissions certification.
G. Provide NFPA 110 required documentation from manufacturer where requested by authorities having jurisdiction, including but not limited to:
   1. Certified prototype tests.
   2. Torsional vibration compatibility certification.
   3. NFPA 110 compliance certification.
   4. Certified rated load test at rated power factor.
H. Manufacturer’s detailed field testing procedures.
I. Executed Warranty: Submit documentation of final executed warranty completed in Owner’s name and registered with manufacturer.
J. Maintenance contracts.

1.06 QUALITY ASSURANCE
A. Comply with the following:
   1. NFPA 70 (National Electrical Code).
   2. NFPA 37 (Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines).
B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience with engine generator systems of similar size, type, and complexity; manufacturer's authorized installer.
C. Maintenance Contractor Qualifications: Same entity as installer or different entity with specified qualifications.
   1. Contract maintenance office located within 50 miles (80 km) of project site.
D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Receive, inspect, handle, and store generator sets in accordance with manufacturer's instructions and NECA/EGSA 404.
B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
C. Handle carefully in accordance with manufacturer's instructions to avoid damage to generator set components, enclosure, and finish.

1.08 FIELD CONDITIONS
A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY
A. Provide minimum two year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Packaged Engine Generator Set:

B. Products other than basis of design are subject to compliance with specified requirements and prior approval of Engineer. By using products other than basis of design, Contractor accepts responsibility for costs associated with any necessary modifications to related work, including any design fees.

C. Source Limitations: Furnish engine generator sets and associated components and accessories produced by a single manufacturer and obtained from a single supplier.

2.02 PACKAGED ENGINE GENERATOR SYSTEM

A. Provide new engine generator system consisting of all required equipment, sensors, conduit, boxes, wiring, piping, supports, accessories, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. System Description:
   3. Where design is based on single generator set, use of multiple, smaller unit(s) operated in parallel to obtain equivalent total system power rating is not permitted.

D. Packaged Engine Generator Set:
   1. Type: Gaseous (spark ignition).
   2. Power Rating: As indicated on drawings, standby.
   3. Voltage: As indicated on drawings.
   4. Main Line Circuit Breaker:
      a. Type: Thermal magnetic.
      b. Trip Rating: Select according to generator set rating.

E. Generator Set General Requirements:
   1. Prototype tested in accordance with NFPA 110 for Level 1 systems.
   2. Factory-assembled, with components mounted on suitable base.
   3. List and label engine generator assembly as complying with UL 2200.
   4. Power Factor: Unless otherwise indicated, specified power ratings are at 0.8 power factor for three phase voltages and 1.0 power factor for single phase voltages.
   5. Provide suitable guards to protect personnel from accidental contact with rotating parts, hot piping, and other potential sources of injury.

F. Service Conditions: Provide engine generator system and associated components suitable for operation under the service conditions at the installed location.

G. Starting and Load Acceptance Requirements:
   1. Cranking Method: Cycle cranking complying with NFPA 110 (15 second crank period, followed by 15 second rest period, with cranking limiter time-out after 3 cycles), unless otherwise required.
   2. Cranking Limiter Time-Out: If generator set fails to start after specified cranking period, indicate overcrank alarm condition and lock-out generator set from further cranking until manually reset.
   3. Start Time: Capable of starting and achieving conditions necessary for load acceptance within 10 seconds (NFPA 110, Type 10).
   4. Maximum Load Step: Supports 100 percent of rated load in one step.

H. Exhaust Emissions Requirements:
   1. Comply with federal (EPA), state, and local regulations applicable at the time of commissioning; include factory emissions certification with submittals.
2. Do not make modifications affecting generator set factory emissions certification without approval of manufacturer and Engineer. Where such modifications are made, provide field emissions testing as necessary for certification.

I. Sound Level Requirements:
   1. Do not exceed 80 dBA when measured at 23 feet (7 m) from generator set in free field (no sound barriers) while operating at full load; include manufacturer's sound data with submittals.

2.03 ENGINE AND ENGINE ACCESSORY EQUIPMENT

A. Provide engine with adequate horsepower to achieve specified power output at rated speed, accounting for alternator efficiency and parasitic loads.

B. Engine Fuel System - Gaseous (Spark Ignition):
   1. Fuel Source: Natural gas.
   2. Engine Fuel Connections: Provide suitable, approved flexible fuel lines for coupling engine to fuel source.
   3. Provide components/features indicated and as necessary for operation and/or required by applicable codes, including but not limited to:
      a. Carburetor.
      b. Gas pressure regulators.
      c. Fuel shutoff control valves.
      d. Low gas pressure switches.

C. Engine Starting System:
   1. System Type: Electric, with DC solenoid-activated starting motor(s).
   2. Battery(s):
      a. Battery Type: Lead-acid.
      b. Battery Capacity: Size according to manufacturer's recommendations for achieving starting and load acceptance requirements under worst case ambient temperature; capable of providing cranking through two complete periods of cranking limiter time-outs without recharging.
      c. Provide battery rack, cables, and connectors suitable for the supplied battery(s); size battery cables according to manufacturer's recommendations for cable length to be installed.

D. Engine Speed Control System (Governor):
   2. Frequency Regulation, Electronic Isochronous Governors: No change in frequency from no load to full load; plus/minus 0.25 percent at steady state.

E. Engine Lubrication System:
   1. System Type: Full pressure, with engine-driven, positive displacement lubrication oil pump, replaceable full-flow oil filter(s), and dip-stick for oil level indication. Provide oil cooler where recommended by manufacturer.

F. Engine Cooling System:
   1. System Type: Closed-loop, liquid-cooled, with unit-mounted radiator/fan and engine-driven coolant pump; suitable for providing adequate cooling while operating at full load under worst case ambient temperature.
   2. Fan Guard: Provide suitable guard to protect personnel from accidental contact with fan.

G. Engine Air Intake and Exhaust System:
   1. Air Intake Filtration: Provide engine-mounted, replaceable, dry element filter.
   2. Engine Exhaust Connection: Provide suitable, approved flexible connector for coupling engine to exhaust system.
2.04 ALTERNATOR (GENERATOR)

A. Alternator: 4-pole, 1800 rpm (60 Hz output) revolving field, synchronous generator complying with NEMA MG 1; connected to engine with flexible coupling; voltage output configuration as indicated, with reconnectable leads for 3 phase alternators.

B. Exciter:
   1. Exciter Type: Brushless; provide permanent magnet generator (PMG) excitation system; self-excited (shunt) systems are not permitted.
   2. PMG Excitation Short-Circuit Current Support: Capable of sustaining 300 percent of rated output current for 10 seconds.
   3. Voltage Regulation (with PMG excitation): Plus/minus 0.5 percent for any constant load from no load to full load.

C. Temperature Rise: Comply with UL 2200.

D. Insulation System: NEMA MG 1, Class H; suitable for alternator temperature rise.

E. Enclosure: NEMA MG 1, drip-proof.

F. Total Harmonic Distortion: Not greater than five percent.

2.05 GENERATOR SET CONTROL SYSTEM

A. Provide microprocessor-based control system for automatic control, monitoring, and protection of generator set. Include sensors, wiring, and connections necessary for functions/indications specified.

B. Control Panel:
   1. Control Panel Mounting: Unit-mounted unless otherwise indicated; vibration isolated.
   2. Generator Set Control Functions:
      a. Automatic Mode: Initiates generator set start/shutdown upon receiving corresponding signal from remote device (e.g. automatic transfer switch).
      c. Reset Mode: Clears all faults, allowing generator set restart after a shutdown.
      d. Emergency Stop: Immediately shuts down generator set (without time delay) and prevents automatic restarting until manually reset.
      e. Cycle Cranking: Programmable crank time, rest time, and number of cycles.
      f. Time Delay: Programmable for shutdown (engine cooldown) and start (engine warmup).
      g. Voltage Adjustment: Adjustable through range of plus/minus 5 percent.
   3. Generator Set Status Indications:
      a. Voltage (Volts AC): Line-to-line, line-to-neutral for each phase.
      b. Current (Amps): For each phase.
      c. Frequency (Hz).
      d. Real power (W/kW).
      e. Reactive power (VAR/kVAR).
      f. Apparent power (VA/kVA).
      g. Power factor.
      h. Duty Level: Actual load as percentage of rated power.
      i. Engine speed (RPM).
      j. Battery voltage (Volts DC).
      k. Engine oil pressure.
      l. Engine coolant temperature.
      m. Engine run time.
      n. Generator powering load (position signal from transfer switch).
   4. Generator Set Protection and Warning/Shutdown Indications:
      a. Comply with NFPA 110; configurable for NFPA 110 Level 1 or Level 2, or NFPA 99 systems including but not limited to the following protections/indications:
         1) Overcrank (shutdown).
2) Low coolant temperature (warning).
3) High coolant temperature (warning).
4) High coolant temperature (shutdown).
5) Low oil pressure (shutdown).
6) Overspeed (shutdown).
7) Low fuel level (warning).
8) Low coolant level (warning/shutdown).
9) Generator control not in automatic mode (warning).
10) High battery voltage (warning).
11) Low cranking voltage (warning).
12) Low battery voltage (warning).
13) Battery charger failure (warning).

b. In addition to NFPA 110 requirements, provide the following protections/indications:
   1) High AC voltage (shutdown).
   2) Low AC voltage (shutdown).
   3) High frequency (shutdown).
   4) Low frequency (shutdown).
   5) Overcurrent (shutdown).

c. Provide contacts for local and remote common alarm.
d. Provide lamp test function that illuminates all indicator lamps.

5. Other Control Panel Features:
   a. Event log.

2.06 GENERATOR SET ENCLOSURE
   A. Enclosure Type: Sound attenuating, weather protective.
   B. Enclosure Material: Steel or aluminum.
   C. Hardware Material: Stainless steel.
   D. Color: Manufacturer's standard.
   E. Access Doors: Lockable, with all locks keyed alike.
   F. Openings: Designed to prevent bird/rodent entry.
   G. External Drains: Extend oil and coolant drain lines to exterior of enclosure for maintenance service.
   H. Sound Attenuating Enclosures: Line enclosure with non-hydroscopic, self-extinguishing sound-attenuating material.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify that field measurements are as indicated.
   B. Verify that the ratings and configurations of generator sets and auxiliary equipment are consistent with the indicated requirements.
   C. Verify that rough-ins for field connections are in the proper locations.
   D. Verify that mounting surfaces are ready to receive equipment.
   E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION
   A. Perform work in accordance with NECA 1 (general workmanship).
   B. Install products in accordance with manufacturer's instructions.
   C. Install generator sets and associated accessories in accordance with NECA/EGSA 404.
   D. Arrange equipment to provide minimum clearances and required maintenance access.
   E. Unless otherwise indicated, mount generator set on properly sized, minimum 6 inch (150 mm) high concrete pad constructed in accordance with Section 03 3000.
F. Provide required support and attachment in accordance with Section 26 0529.
G. Use manufacturer's recommended oil and coolant, suitable for the worst case ambient temperatures.

3.03 FIELD QUALITY CONTROL
A. Provide services of a manufacturer's authorized representative to prepare and start systems and perform inspection and testing. Include manufacturer's detailed testing procedures and field reports with submittals.
B. Notify Owner and Architect at least two weeks prior to scheduled inspections and tests.
C. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
D. Provide all equipment, tools, and supplies required to accomplish inspection and testing, including load bank and fuel.
E. Preliminary inspection and testing to include, at a minimum:
   1. Inspect each system component for damage and defects.
   2. Verify tightness of mechanical and electrical connections are according to manufacturer's recommended torque settings.
   3. Check for proper oil and coolant levels.
F. Prepare and start system in accordance with manufacturer's instructions.
G. Provide field emissions testing where necessary for certification.
H. Sound Level Tests: Measure sound levels for compliance with specified requirements. Identify and report ambient noise conditions.
I. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

3.04 CLEANING
A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.05 CLOSEOUT ACTIVITIES
A. Demonstration: Demonstrate proper operation of system to Owner, and correct deficiencies or make adjustments as directed.
B. Training: Train Owner's personnel on operation, adjustment, and maintenance of system.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

3.06 PROTECTION
A. Protect installed engine generator system from subsequent construction operations.

3.07 MAINTENANCE
A. Provide to Owner a proposal as an alternate to the base bid, a separate maintenance contract for the service and maintenance of engine generator system for two years from date of Substantial Completion; Include a complete description of preventive maintenance, systematic examination, adjustment, inspection, and testing, with a detailed schedule.
B. Conduct site visit at least once every three months to perform inspection, testing, and preventive maintenance. Submit report to Owner indicating maintenance performed along with evaluations and recommendations.
C. Provide trouble call-back service upon notification by Owner:
   1. Provide on-site response within 4 hours of notification.
   2. Include allowance for call-back service during normal working hours at no extra cost to Owner.
3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.

D. Maintain an on-site log listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced.

END OF SECTION
SECTION 26 3600 - TRANSFER SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Transfer switches for low-voltage (600 V and less) applications and associated accessories:
   1. Automatic transfer switches.
   2. Includes service entrance rated transfer switches.
   3. Includes bypass/isolation transfer switches.

1.02 RELATED REQUIREMENTS

A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
B. Section 26 0529 - Hangers and Supports for Electrical Systems.
C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
D. Section 26 3213 - Engine Generators: For interface with transfer switches.
   1. Includes code requirements applicable to work of this section.
   2. Includes additional testing requirements.
   3. Includes related demonstration and training requirements.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
G. UL 1008 - Transfer Switch Equipment; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate compatibility of transfer switches to be installed with work provided under other sections or by others.
   2. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances required by NFPA 70.
   3. Coordinate arrangement of equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   4. Coordinate the work with placement of supports, anchors, etc. required for mounting.
   5. Closed Transition Transfer Switches:
      a. Coordinate source interconnection requirements with Utility Company.
      b. Where applicable, coordinate the work to provide engine generators with isochronous governors suitable for closed transition transfer.
      c. Coordinate the work to provide shunt trip breakers necessary for protection from source interconnection for longer than specified maximum interconnection time.
      d. Arrange for inspections necessary to obtain Utility Company approval of installation.

B. Preinstallation Meeting: Convene one week before starting work of this section; require attendance of all affected installers.
C. Where work of this section involves interruption of existing electrical service, arrange service interruption with Owner.

1.05 SUBMITTALS
A. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product, including ratings, configurations, dimensions, finishes, weights, service condition requirements, and installed features.
   1. Where applicable, include characteristic trip curves for overcurrent protective devices upon request.
B. Shop Drawings: Include dimensioned plan views and sections indicating locations of system components, required clearances, and field connection locations. Include system interconnection schematic diagrams showing all factory and field connections.
   1. Clearly indicate whether proposed short circuit current ratings are based on testing with specific overcurrent protective devices or time durations; indicate short-time ratings where applicable.
   2. Identify mounting conditions required for equipment seismic qualification.
C. Evidence of qualifications for installer.
D. Evidence of qualifications for maintenance contractor (if different entity from installer).
E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.
F. Source quality control test reports.
G. Manufacturer's detailed field testing procedures.
H. Field quality control test reports.
I. Executed Warranty: Submit documentation of final executed warranty completed in Owner's name and registered with manufacturer.
J. Maintenance contracts.

1.06 QUALITY ASSURANCE
A. Comply with the following:
   1. NFPA 70 (National Electrical Code).
B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
   1. Authorized service facilities located within 50 miles (80 km) of project site.
D. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience with power transfer systems of similar size, type, and complexity; manufacturer's authorized installer.
E. Maintenance Contractor Qualifications: Same entity as installer or different entity with specified qualifications.
F. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Receive, inspect, handle, and store transfer switches in accordance with manufacturer's instructions.
B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
C. Handle carefully in accordance with manufacturer's instructions to avoid damage to transfer switch components, enclosure, and finish.

1.08 FIELD CONDITIONS
   A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY
   A. Provide minimum two year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURERS
   A. Transfer Switches:
   B. Products other than basis of design are subject to compliance with specified requirements and prior approval of Engineer. By using products other than basis of design, Contractor accepts responsibility for costs associated with any necessary modifications to related work, including any design fees.
   C. Source Limitations: Furnish transfer switches and accessories produced by a single manufacturer and obtained from a single supplier.

2.02 TRANSFER SWITCHES
   A. Provide complete power transfer system consisting of all required equipment, conduit, boxes, wiring, supports, accessories, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.
   B. Provide products listed, classified, and labeled as suitable for the purpose intended.
   C. Applications:
   D. Construction Type: Either "contactor type" (open contact) or "breaker type" (enclosed contact) transfer switches complying with specified requirements are acceptable.
   E. Automatic Transfer Switch:
      1. Transfer Switch Type: Service entrance rated bypass/isolation automatic transfer switch.
      2. Voltage: As indicated on the drawings.
      3. Ampere Rating: As indicated on the drawings.
      4. Neutral Configuration: Solid neutral (unswitched), except as indicated.
      5. Load Served: As indicated on the drawings.
   F. Comply with NEMA ICS 10 Part 1, and list and label as complying with UL 1008 for the classification of the intended application (e.g. emergency, optional standby).
   G. Do not use double throw safety switches or other equipment not specifically designed for power transfer applications and listed as transfer switch equipment.
   H. Load Classification: Classified for total system load (any combination of motor, electric discharge lamp, resistive, and tungsten lamp loads with tungsten lamp loads not exceeding 30 percent of the continuous current rating) unless otherwise indicated or required.
   I. Switching Methods:
      1. Closed Transition:
         a. When both sources are available and synchronized, provide make-before-break transfer without interruption of power to the load and with momentary interconnection
of both sources for not more than 100 ms, unless otherwise approved by Utility Company.

b. Provide synchronization/in-phase monitor to initiate transfer when voltage and phase angle difference between sources are within predetermined requirements for synchronization.

c. Source Synchronization Requirements: Phase angle differential within five degrees; voltage differential within five volts.

d. When sources fail to synchronize within a predetermined time period, remain connected to current source and initiate an alarm.

e. When sources remain interconnected for longer than specified maximum interconnection time, provide contact closure signal to shunt trip designated circuit breaker and initiate an alarm.

f. Provide additional protective relaying where required by Utility Company.

g. When only one source is available, automatically utilizes open transition (break-before-make) transfer.

2. Obtain control power for transfer operation from line side of source to which the load is to be transferred.

J. Service Conditions: Provide transfer switches suitable for continuous operation at indicated ratings under the service conditions at the installed location.

K. Enclosures:
   1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
      a. Outdoor Locations: Type 3R or Type 4.
   2. Provide lockable door(s) for outdoor locations.
   3. Finish: Manufacturer's standard unless otherwise indicated.

L. Short Circuit Current Rating:
   1. Withstand and Closing Rating: Provide transfer switches, when protected by the supply side overcurrent protective devices to be installed, with listed withstand and closing rating not less than the available fault current at the installed location as indicated on the drawings.
   2. Short Time Rating: Where the requirement for selectivity is indicated, provide transfer switches with short time ratings suitable for the maximum short time delay setting of the supply side overcurrent protective device.

M. Automatic Transfer Switches:
   1. Description: Transfer switches with automatically initiated transfer between sources; electrically operated and mechanically held.
   2. Control Functions:
      a. Automatic mode.
      b. Test Mode: Simulates failure of primary/normal source.
      c. Voltage and Frequency Sensing:
         1) Undervoltage sensing for each phase of primary/normal source; adjustable dropout/pickup settings.
         2) Undervoltage sensing for alternate/emergency source; adjustable dropout/pickup settings.
         3) Underfrequency sensing for alternate/emergency source; adjustable dropout/pickup settings.
      d. Outputs:
         1) Contacts for engine start/shutdown (except where direct generator communication interface is provided).
         2) Auxiliary contacts; one set(s) for each switch position.
      e. Adjustable Time Delays:
         1) Engine generator start time delay; delays engine start signal to override momentary primary/normal source failures.
         2) Transfer to alternate/emergency source time delay.
3) Retransfer to primary/normal source time delay.
4) Engine generator cooldown time delay; delays engine shutdown following retransfer to primary/normal source to permit generator to run unloaded for cooldown period.

f. Synchronization/In-Phase Monitor (Closed Transition Transfer Switches): Monitors voltage and phase angle difference between sources for initiating synchronized transfer.
g. Engine Exerciser: Provides programmable scheduled exercising of engine generator selectable with or without transfer to load; provides memory retention during power outage.

3. Status Indications:
a. Connected to alternate/emergency source.
b. Connected to primary/normal source.
c. Alternate/emergency source available.

4. Alarm Indications for Closed Transition Transfer Switches:
a. Failure to synchronize.
b. Extended source interconnection/transfer switch locked out.

5. Automatic Sequence of Operations:
a. Upon failure of primary/normal source for a programmable time period (engine generator start time delay), initiate starting of engine generator where applicable.
b. When alternate/emergency source is available, transfer load to alternate/emergency source after programmable time delay.
c. When primary/normal source has been restored, retransfer to primary/normal source after a programmable time delay. Bypass time delay if alternate/emergency source fails and primary/normal source is available.
d. Where applicable, initiate shutdown of engine generator after programmable engine cooldown time delay.

N. Service Entrance Rated Transfer Switches:
1. Furnished with integral disconnecting and overcurrent protective device on the primary/normal source and with ground-fault protection where indicated.
2. Listed and labeled as suitable for use as service equipment according to UL 869A.

O. Bypass/Isolation Transfer Switches:
1. Description: Factory-assembled units consisting of interconnected transfer switch and bypass/isolation switch that permits manual bypass and isolation of the transfer switch with connection of the load to either source.
2. Bypass/Isolation Switch Type: Provide overlapping (make-before-break) switches with no interruption of power to load. Load break (break-before-make) switches that interrupt power to load are not acceptable.
3. Bypass/Isolation Operation:
a. Operable from exterior of enclosure.
b. Normal Mode: Provides for normal operation of transfer switch.
c. Test Mode: Provides for operational testing of bypassed transfer switch without affecting power to load.
d. Isolate Mode: Provides for complete isolation of transfer switch from all power sources, permitting removal from unit.

2.03 SOURCE QUALITY CONTROL
A. Perform production tests on transfer switches at factory to verify operation and performance characteristics prior to shipment. Include certified test report with submittals.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that field measurements are as indicated.
B. Verify that the ratings and configurations of transfer switches are consistent with the indicated requirements.
C. Verify that rough-ins for field connections are in the proper locations.
D. Verify that mounting surfaces are ready to receive transfer switches.
E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION
A. Perform work in accordance with NECA 1 (general workmanship).
B. Install products in accordance with manufacturer's instructions.
C. Arrange equipment to provide minimum clearances and required maintenance access.
D. Install transfer switches plumb and level.
E. Unless otherwise indicated, mount floor-mounted transfer switches on properly sized 3 inch (80 mm) high concrete pad constructed in accordance with Section 03 3000.

3.03 FIELD QUALITY CONTROL
A. Provide services of a manufacturer's authorized representative to observe installation and assist in inspection and testing. Include manufacturer's detailed testing procedures and field reports with submittals.
B. Prepare and start system in accordance with manufacturer's instructions.
C. Automatic Transfer Switches:
   1. Inspect and test in accordance with NETA ATS, except Section 4.
   2. Perform inspections and tests listed in NETA ATS, Section 7.22.3. The insulation-resistance tests listed as optional are not required.
D. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.
E. Submit detailed reports indicating inspection and testing results and corrective actions taken.

3.04 CLEANING
A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.05 CLOSEOUT ACTIVITIES
A. Demonstration: Demonstrate proper operation of transfer switches to Owner, and correct deficiencies or make adjustments as directed.
B. Training: Train Owner's personnel on operation, adjustment, and maintenance of transfer switches.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

3.06 PROTECTION
A. Protect installed transfer switches from subsequent construction operations.

3.07 MAINTENANCE
A. Provide to Owner a proposal as an alternate to the base bid, a separate maintenance contract for the service and maintenance of transfer switches for two years from date of Substantial Completion; Include a complete description of preventive maintenance, systematic examination, adjustment, inspection, and testing, with a detailed schedule.
B. Conduct site visit at least once every three months to perform inspection, testing, and preventive maintenance. Submit report to Owner indicating maintenance performed along with evaluations and recommendations.
C. Provide trouble call-back service upon notification by Owner:
   1. Provide on-site response within 4 hours of notification.
2. Include allowance for call-back service during normal working hours at no extra cost to Owner.

3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.

D. Maintain an on-site log listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced.

END OF SECTION
DHS Required Forms

Not to be submitted with Bids, but will be required from successful Bidder, prior to Award of the Contract
CONTRACTOR’S CERTIFICATION CONCERNING
LABOR STANDARDS AND PREVAILING WAGE REQUIREMENTS

TO (Appropriate Recipient): ___________________________ DATE: ________________

C/O: ___________________________________________ PROJECT NUMBER: ______________

__________________________________________ PROJECT NAME: ______________________

________________________________________________________________________ NAME: ____________________________

1. The undersigned, having executed a contract with the owner, for the construction of the above identified project, acknowledges that:
   (a) The Labor Standards provisions are included in the aforesaid contract;
   (b) Correction of any infractions of the aforesaid conditions, including infractions by any of his subcontractors and any lower tier subcontractors, is his responsibility.

2. Contractor certifies that:
   (a) Neither he nor any firm, partnership or association in which he has substantial interest is designated as an ineligible contractor by the Comptroller General of the United States pursuant to Section 5.6(b) of the Regulations of the Secretary of Labor, Part 5 (29 CFR, Part 5) or pursuant to Section 3(a) of the Davis-Bacon Act, as amended (40 U.S.C. 276a-2(a)).
   (b) No part of the aforementioned contract has been or will be subcontracted to any subcontractor if such subcontractor or any firm, corporation, partnership or association in which such subcontractor has a substantial interest is designated as an ineligible contractor pursuant to any of the aforementioned regulatory or statutory provisions.

3. Contractor agrees to obtain and forward to the aforementioned recipient within ten days after the execution of any subcontract, including those executed by his subcontractors and any lower tier subcontractors, a Subcontractors Certification Concerning Labor Standards and Prevailing Wage Requirements executed by the subcontractors.

4. Contractor certifies that:
   (a) The legal name and the business address of the undersigned are:
       ____________________________________________________________________________
       ____________________________________________________________________________
   (b) The undersigned is:
       ____________________________________________________________________________

Check Category Which Applies & Fill In Requested Information

☐ (1) A SINGLE PROPRIETORSHIP ☐ (3) A CORPORATION ORGANIZED IN THE STATE OF:

☐ (2) A PARTNERSHIP ☐ (4) OTHER ORGANIZATION (Describe):
(c) The name, title and address of the owners, partners or officers of the undersigned are:

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(d) The names and addresses of all other persons, both natural and corporate, having a substantial interest in the undersigned, and the nature of the interest are (if none, so state):

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(e) The names, addresses and trade classification(s) of all other building construction contractors in which the undersigned has a substantial interest are (if none, so state):

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<th>TRADE CLASSIFICATION</th>
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Name and Title of Signer (please print)

Signature: ____________________________ Date: ____________________________

WARNING

U.S. Criminal Code, Section 1010, Title 18, U.S.C. provides in part: "Whoever...makes, passes, utters or publishes any statement, knowing the same to be false,...shall be fined not more than $5,000.00 or imprisoned not more than two years or both."

NOTE: Davis Bacon wage determination can be found at the end of this project booklet.
CONTRACTOR ELIGIBILITY CERTIFICATION
REGARDING DEBARMENT, SUSPENSION AND
OTHER RESPONSIBILITY MATTERS

1. I hereby certify, to the best of my knowledge and belief, that I and my principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, sentenced to a denial of Federal benefits by a State or Federal court, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this certification been convicted of a or had a civil judgment rendered 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 governmental 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 certification had one or more public transactions (Federal, State or local) terminated for cause or default.

2. I am unable to certify to any of the statements in this certification and an explanation is hereby attached.

____________________________________________________
Business Name

____________________________________________________
Name and Title of Authorized Representative

____________________________________________________
Signature of Authorized Representative

____________________________________________________
Date
SUB-CONTRACTOR ELIGIBILITY CERTIFICATION
REGARDING DEBARMET, SUSPENSION AND
OTHER RESPONSIBILITY MATTERS

1. I hereby certify, to the best of my knowledge and belief, that I and my principals:

   (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, sentenced to a denial of Federal benefits by a State or Federal court, or voluntarily excluded from covered transactions by any Federal department or agency;

   (b) Have not within a three-year period preceding this certification been convicted of a or had a civil judgment rendered 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 governmental 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 certification had one or more public transactions (Federal, State or local) terminated for cause or default.

2. I am unable to certify to any of the statements in this certification and an explanation is hereby attached.

____________________________________________________
Business Name

____________________________________________________
Name and Title of Authorized Representative

____________________________________________________
Signature of Authorized Representative

_____________________________________
Date
CERTIFICATION REGARDING LOBBYING
(This certification is required pursuant to 31 U.S.C. 1352)

Certification for Contracts, Grants, Loans and Cooperative Agreements

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

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form LLL, “Disclosure of Lobbying Activities,” in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including sub-contracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed under Section 1352, Title 31, U. S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $11,000 and not more than $110,000 for each such failure.

Please check appropriate box:

☐ No nonfederal funds have been used or are planned to be used for lobbying in connection with this application/award/contract.

☐ Attached is Standard Form LLL, “Disclosure of Lobbying Activities,” which describes the use (past or planned) of nonfederal funds for lobbying in connection with this application/award/contract.

____________________________________________________________________
Organization Name       Award Number or Project Name

____________________________________________________________________
Printed Name and Title of Authorized Representative

____________________________________________________________________
Signature       Date
CONTRACT CLAUSE
NEW RESTRICTIONS ON LOBBYING

This contract, sub-contract, or sub-grant is subject to Section 319 of Public Law 101-121, which added Section 1352, regarding lobbying restrictions, to Chapter 13 of Title 31 of the United States Code. The new section is explained in the common rule, 15 CFR Part 28 (55 FR 6736-6748, 2/26/90). Each bidder/applicant/recipient of this contract, sub-contract, or sub-grant and sub-recipients are generally prohibited from using Federal funds for lobbying the Executive or Legislative Branches of the Federal Government in connection with this Award.

Contract Clause Threshold
This contract clause regarding lobbying must be included in each application for a sub-grant and in each bid for a contract or sub-contract exceeding $100,000 of Federal funds at any tier under the Federal Award.

Certification and Disclosure
Each applicant/recipient of a sub-grant and each bidder/applicant/recipient of a contract or sub-contract exceeding $100,000 of Federal funds at any tier under the Federal Award must file a Certification Regarding Lobbying and, if applicable, Standard Form-LLL, “Disclosure of Lobbying Activities,” regarding the use of any nonfederal funds for lobbying. Certifications shall be retained by the next higher tier. All disclosure forms, however, shall be forwarded from tier to tier until received by the Recipient of the Federal Award (grant) who shall forward all disclosure forms to the Federal agency.

Continuing Disclosure Requirement
Each sub-grantee, contractor, or sub-contractor that is subject to the Certification and Disclosure provision of this Contract Clause is required to file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure forms previously filed by such person. Disclosure forms shall be forwarded from tier to tier until received by the Recipient of the Federal Award (grant) who shall forward all disclosure forms to the Federal agency.

Indian Tribes, Tribal Organizations, or Other Indian Organizations
Indian tribes, tribal organizations, or any other Indian organizations, including the Alaskan Native organizations, are excluded from the above lobbying restrictions and reporting requirements, but only with respect to expenditures that are by such tribes or organizations for lobbying activities permitted by other Federal law. An Indian tribe or organization that is seeking an exclusion from Certification and Disclosure requirements must provide (preferably in an attorney’s opinion) EDA with the citation of the provision or provisions of Federal law upon which it relies to conduct lobbying activities that would otherwise be subject to the prohibitions in and to the Certification and Disclosure requirements of Section 319 of Public Law No. 101-121. Note, also, that a non-Indian sub-grantee, contractor, or sub-contractor under an award (grant) to an Indian tribe, for example, is subject to the restrictions and reporting requirements.
CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY

Instructions

This certification is required pursuant to Executive Order 11246 (30 F.R. 12319-25). The implementing rules and regulations provide that any bidder or prospective contractor, or any of their proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause, and if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the bidder has not filed a compliance report due under applicable instructions, such bidder shall be required to submit a compliance report within seven calendar days after the bid opening. No contract shall be awarded unless such report is submitted.

Certification by Bidder

Name and Address of Bidder (include zip code)

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<td>2. Compliance reports were required to be filed in connection with such contract or subcontract.</td>
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<td>3. Bidder has filed all compliance reports due under applicable instructions, including Monthly Employment Utilization Report (257).</td>
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<tr>
<td>Yes _________ No _________</td>
<td></td>
</tr>
<tr>
<td>4. Have you ever been or are you being considered for sanction due to violation of Executive Order 11246, as amended?</td>
<td></td>
</tr>
<tr>
<td>Yes _________ No _________</td>
<td></td>
</tr>
<tr>
<td>5. Bidder certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained.</td>
<td></td>
</tr>
</tbody>
</table>

Name and Title of Signer (please type)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature</td>
<td>Date</td>
</tr>
</tbody>
</table>
CERTIFICATION BY PROPOSED SUBCONTRACTOR REGARDING EQUAL EMPLOYMENT OPPORTUNITY

<table>
<thead>
<tr>
<th>Name of Prime Contractor:</th>
<th>Project No.</th>
</tr>
</thead>
</table>

This certification is required pursuant to Executive Order 11246 (30 F.R. 12319-25). The implementing rules and regulations provide that any bidder or prospective contractor, or any of their proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause, and if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the subcontractor has not filed a compliance report due under applicable instructions, such subcontractor shall be required to submit a compliance report before the owner approves the subcontract or permits work to begin under the subcontract.

For subcontracts over $10,000, the subcontractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. “Segregated facilities,” as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes. The subcontractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract. The subcontractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

Subcontractor’s Certification

<table>
<thead>
<tr>
<th>Name and Address of Subcontractor (include zip code)</th>
</tr>
</thead>
</table>

1. Subcontractor has participated in a previous contract or subcontract subject to the Equal Opportunity Clause. Yes ________ No ________

2. Compliance reports were required to be filed in connection with such contract or subcontract. Yes ________ No ________

3. Subcontractor has filed all compliance reports due under applicable instructions, including Monthly Employment Utilization Report (257). Yes ________ No ________

4. Have you ever been or are you being considered for sanction due to violation of Executive Order 11246, as amended? Yes ________ No ________

5. Subcontractor certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained.

Name and Title of Signer (please type)

Signature | Date
NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION
TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY
(EXECUTIVE ORDER 11246)

The following Notice shall be included in, and shall be a part of all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts in excess of $10,000.

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

<table>
<thead>
<tr>
<th>GOALS FOR MINORITY</th>
<th>GOALS FOR FEMALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARTICIPATION FOR EACH TRADE</td>
<td>PARTICIPATION FOR EACH TRADE</td>
</tr>
<tr>
<td>4.8%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of the Federal Contract Compliance Programs within ten (10) working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is: City of: Henderson, County of: Henderson, State of: Kentucky.
Participation Goals for Minorities and Females

For federal and federally assisted construction contractors, goals for minorities and females are established as a percentage participation rate. The percentage goal established for minority participation must be at least equal to the percentage established for that "economic area" as outlined in the list below.\(^6\)

Contractors may establish higher goals if they desire. Although a contractor is required to make good faith efforts to meet their goals, the goals are not quotas and no sanctions are imposed solely for failure to meet them. The following factors explain the difference between permissible goals, on the one hand, and unlawful preferences, on the other:

- Participation rate goals are not designed to be, nor may they properly or lawfully be interpreted as, permitting unlawful preferential treatment and quotas with respect to persons of any race, color, religion, sex, sexual orientation, gender identity or national origin.
- Goals are neither quotas, set-asides, nor a device to achieve proportional representation or equal results. Rather, the goal-setting process is used to target and measure the effectiveness of affirmative action efforts to eradicate and prevent barriers to equal employment opportunity.
- Goals under Executive Order 11246, as amended, do not require that any specific position be filled by a person of a particular gender, race, or ethnicity. Instead, the requirement is that contractors engage in outreach and other efforts to broaden the pool of qualified candidates to include minorities and women.
- The use of goals is consistent with principles of merit, because goals do not require an employer to hire a person who does not have the qualifications needed to perform the job successfully, hire an unqualified person in preference to another applicant who is qualified, or hire a less qualified person in preference to a more qualified person.
- Goals may not be treated as a ceiling or a floor for the employment of members of particular groups.
- A contractor's compliance is measured by whether it has made good faith efforts to meet its goals, and failure to meet goals, by itself, is not a violation of the Executive Order.

These goals are applicable to all of a contractor's construction work sites (whether or not these sites are also the result of a federal contract or are federally assisted). The goals are applicable to...

---

\(^6\) For more information about the development of the goals, see Federal Register, Vol. 45, No. 194, at 65976-65991 (October 3, 1980) (minorities) and Federal Register, Vol. 45, No. 251 at 85750-85751 (December 30, 1980) (females). The text of these Federal Register notices can be found:

- Federal Register Notice: Vol. 45, No. 194, at 65976-65991 (October 3, 1980) [HTML] | [PDF]
- Federal Register Notice: Vol. 45, No. 251, at 85750-85751 (December 30, 1980) [HTML] | [PDF]
each nonexempt contractor's total onsite construction workforce, regardless of whether or not part of that workforce is performing work on a federal, federally assisted or non-federally related project contract or subcontract. Contractors should apply to each work site the goal for the geographical area that each particular work site is located in.

The contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 will be assessed based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor must make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals is a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

Until further notice, the following goals for female and minority utilization in each construction craft and trade must be included in all Federal or federally assisted construction contracts and subcontracts in excess of $10,000.

Construction contractors that are participating in an approved Hometown Plan (see 41 CFR 60-4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply with the applicable SMSA or EA goal contained in the list below.

**GOALS FOR FEMALES**

| Nationwide Goal | 6.9% |

---

7 The percentage goal established for female participation is 6.9% nationwide.
<table>
<thead>
<tr>
<th>City</th>
<th>State</th>
<th>SMSA Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>080 Evansville, IN:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SMSA Counties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2440 Evansville, IN-KY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN Gibson; IN Posey; IN Vanderburgh; IN Warrick; KY Henderson.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5990 Owensboro, KY</td>
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<tr>
<td></td>
<td></td>
<td>KY Daviess.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-SMSA Counties</td>
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<tr>
<td></td>
<td></td>
<td>IL Edwards; IL Gallatin; IL Hamilton; IL Lawrence; IL Saline; IL Wabash;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL White; IN Dubois; IN Knox; IN Perry; IN Pike; IN Spencer; KY Hancock;</td>
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<tr>
<td></td>
<td></td>
<td>KY Hopkins; KY McLean; KY Muhlenberg; KY Ohio; KY Union; KY Webster.</td>
</tr>
<tr>
<td>081 Terre Haute, IN:</td>
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<td></td>
<td></td>
<td>SMSA Counties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8320 Terre Haute, IN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN Clay; IN Sullivan; IN Vermillion; IN Vigo.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-SMSA Counties</td>
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<tr>
<td></td>
<td></td>
<td>IL Clark; IL Crawford; IN Parke.</td>
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<tr>
<td>082 Lafayette, IN:</td>
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<td></td>
<td></td>
<td>SMSA Counties</td>
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<tr>
<td></td>
<td></td>
<td>3920 Lafayette - West Lafayette, IN</td>
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<tr>
<td></td>
<td></td>
<td>IN Tippecanoe.</td>
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<tr>
<td></td>
<td></td>
<td>Non-SMSA Counties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN Benton; IN Carroll; IN Clinton; IN Fountain; IN Montgomery;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN Warren; IN White.</td>
</tr>
</tbody>
</table>

**Illinois:**

<table>
<thead>
<tr>
<th>City</th>
<th>State</th>
<th>SMSA Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>083 Chicago, IL:</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>SMSA Counties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1600 Chicago, IL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL Cook; IL Du Page; IL Kane; IL Lake; IL McHenry; IL Will.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2960 Gary - Hammond - East Chicago, IN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN Lake; IN Porter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3740 Kankakee, IL</td>
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<tr>
<td></td>
<td></td>
<td>IL Kankakee.</td>
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<tr>
<td></td>
<td></td>
<td>3800 Kenosha, WI</td>
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<tr>
<td></td>
<td></td>
<td>WI Kenosha.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-SMSA Counties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL Bureau; IL De Kalb; IL Grundy; IL Iroquois; IL Kendall; IL La Salle;</td>
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<td></td>
<td></td>
<td>IL Livingston; IL Putnam; IL Jasper; IN Laporte; IN Newton; IN Puiaski; IN Starke.</td>
</tr>
<tr>
<td>084 Champaign-Urbana, IL:</td>
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<tr>
<td></td>
<td></td>
<td>SMSA Counties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1400 Champaign - Urbana - Rantoul, IL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL Champaign.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-SMSA Counties</td>
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<tr>
<td></td>
<td></td>
<td>IL Coles; IL Cumberland; IL Douglas; IL Edgar; IL Ford; IL Platt; IL Vermilion.</td>
</tr>
<tr>
<td>085 Springfield-Decatur, IL:</td>
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<tr>
<td></td>
<td></td>
<td>SMSA Counties</td>
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<tr>
<td></td>
<td></td>
<td>2040 Decatur, IL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL Macon.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7880 Springfield, IL</td>
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<tr>
<td></td>
<td></td>
<td>IL Menard; IL Sangamon.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-SMSA Counties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL Cass; IL Christian; IL De Witt; IL Logan; IL Morgan; IL Moultrie;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL Scott; IL Shelby.</td>
</tr>
<tr>
<td>086 Quincy, IL:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-SMSA Counties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IL Adams; IL Brown; IL Pike; MO Lewis; MO Marion; MO Pike; MO Rails.</td>
</tr>
</tbody>
</table>
1. Contractor to install concrete pad in the parking lot. See sheet S1 for pad details.
2. Contractor to install 125KW, 120/208V, three phase generator on the concrete pad in the parking lot.
3. Contractor to install 200A, 120/240V single phase automatic transfer switch (ATS) on a unistrut platform against the side of the building. Support platform from the ground.
4. Contractor to install conduit and wire from the generator to the ATS.
5. Contractor to disconnect and pull back the wiring and conduit, for reuse if available, from the utility pole that was going to the two disconnect switches behind the building.
6. Rework the conduit so that it goes to the ATS. Match existing conduit and wire size.
7. Contractor to install new conduit and wire from the new ATS to the existing two disconnect switches behind the building.
8. Contractor to install new triad grounding system and grounding bus bar on unistrut platform against the side of the building. See grounding electrode system detail on sheet E6.
1. **EXISTING MAIN (IN BASEMENT) 480V PANEL FED FROM UTILITY EXISTING TRANSFORMER IN BASEMENT NOT USED**

2. **CONTRACTOR TO INSTALL 200A, 208V AUTOMATIC TRANSFER SWITCH (ATS) ON A UNISTRUT PLATFORM ON THE SECOND FLOOR OF THE BUILDING. CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE GENERATOR TO THE ATS. CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE ATS TO THE 208V PANEL IN THE BASEMENT. CONTRACTOR TO REWORK THE WIRING TO THE 208V, THREE PHASE PANEL IN THE BASEMENT THAT IS BEING FED FROM THE TRANSFORMER AND 480V PANEL IN THE BASEMENT AND CONNECT TO THE ATS. DISCONNECT AND PULL BACK THE WIRING FOR REUSE IF AVAILABLE, OTHERWISE REPLACE WITH MATCHING SPECS. THE 208V PANEL IN THE BASEMENT FEEDS TWO MORE PANELS, ONE ON THE FIRST FLOOR AND ONE ON THE SECOND FLOOR. THESE PANELS WILL BE EMERGENCY PANELS. COORDINATE WITH CLIENT ON WHAT CIRCUITS IN THE NORTH WATER PLANT NEED TO BE MOVED TO THESE PANELS. EXISTING 480V PANEL AND TRANSFORMER IN THE BASEMENT THAT IS FED FROM THE UTILITY. CONTRACTOR TO INSTALL NEW 1" CONDUIT FROM GENERATOR TO THE CONTROL ROOM IN THE MAIN OFFICE FOR CONTROL MONITORING.**

**GENERAL NOTES:***

1. **SEE SHEET E6 FOR CABLE AND CONDUIT SCHEDULE, GROUNDING DETAIL AND CONDUIT DUCT BANK DETAIL.**

2. **CONTRACTOR TO INSTALL 200A, 208V AUTOMATIC TRANSFER SWITCH (ATS) ON A UNISTRUT PLATFORM ON THE SECOND FLOOR OF THE BUILDING. CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE GENERATOR TO THE ATS. CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE ATS TO THE 208V PANEL IN THE BASEMENT. CONTRACTOR TO REWORK THE WIRING TO THE 208V, THREE PHASE PANEL IN THE BASEMENT THAT IS BEING FED FROM THE TRANSFORMER AND 480V PANEL IN THE BASEMENT AND CONNECT TO THE ATS. DISCONNECT AND PULL BACK THE WIRING FOR REUSE IF AVAILABLE, OTHERWISE REPLACE WITH MATCHING SPECS. THE 208V PANEL IN THE BASEMENT FEEDS TWO MORE PANELS, ONE ON THE FIRST FLOOR AND ONE ON THE SECOND FLOOR. THESE PANELS WILL BE EMERGENCY PANELS. COORDINATE WITH CLIENT ON WHAT CIRCUITS IN THE NORTH WATER PLANT NEED TO BE MOVED TO THESE PANELS. EXISTING 480V PANEL AND TRANSFORMER IN THE BASEMENT THAT IS FED FROM THE UTILITY. CONTRACTOR TO INSTALL NEW 1" CONDUIT FROM GENERATOR TO THE CONTROL ROOM IN THE MAIN OFFICE FOR CONTROL MONITORING.**

**LEGEND:**

- **EXISTING TO REMAIN**
- **TO BE REMOVED**
- **NEW CONDUIT**
- **GROUNDING SYSTEM**

**KEYNOTES:**

1. **EXISTING TO REMAIN**
2. **TO BE REMOVED**
3. **NEW CONDUIT**
4. **GROUNDING SYSTEM**

**CONTRACTOR TO INSTALL 200A, 208V AUTOMATIC TRANSFER SWITCH (ATS) ON A UNISTRUT PLATFORM ON THE SECOND FLOOR OF THE BUILDING. CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE GENERATOR TO THE ATS. CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE ATS TO THE 208V PANEL IN THE BASEMENT. CONTRACTOR TO REWORK THE WIRING TO THE 208V, THREE PHASE PANEL IN THE BASEMENT THAT IS BEING FED FROM THE TRANSFORMER AND 480V PANEL IN THE BASEMENT AND CONNECT TO THE ATS. DISCONNECT AND PULL BACK THE WIRING FOR REUSE IF AVAILABLE, OTHERWISE REPLACE WITH MATCHING SPECS. THE 208V PANEL IN THE BASEMENT FEEDS TWO MORE PANELS, ONE ON THE FIRST FLOOR AND ONE ON THE SECOND FLOOR. THESE PANELS WILL BE EMERGENCY PANELS. COORDINATE WITH CLIENT ON WHAT CIRCUITS IN THE NORTH WATER PLANT NEED TO BE MOVED TO THESE PANELS. EXISTING 480V PANEL AND TRANSFORMER IN THE BASEMENT THAT IS FED FROM THE UTILITY. CONTRACTOR TO INSTALL NEW 1" CONDUIT FROM GENERATOR TO THE CONTROL ROOM IN THE MAIN OFFICE FOR CONTROL MONITORING.**
**GENERAL NOTES:**

1. DRAWING IS FOR INFORMATIONAL PURPOSES ONLY. IT IS NOT FOR CONSTRUCTION.

**KEYNOTES:**

1. CONTRACTOR TO INSTALL CONCRETE PAD AT THE DESIRED LOCATION BEHIND THE MAIN BUILDING. SEE SHEET S1 FOR PAD DETAILS.

2. CONTRACTOR TO INSTALL 50KW, 120/240V, SINGLE PHASE GENERATOR ON THE CONCRETE PAD AT THE DESIRED LOCATION BEHIND THE MAIN BUILDING.

3. CONTRACTOR TO INSTALL 200A, 240V AUTOMATIC TRANSFER SWITCH (ATS) ON A UNISTRUT PLATFORM INSIDE OF THE BUILDING BY THE EXISTING 120V PANEL IN THE BASEMENT.

4. CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE GENERATOR TO THE ATS.

5. CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE ATS TO THE 120V PANEL IN THE BASEMENT.

6. CONTRACTOR TO REWORK THE WIRING FROM THE EXISTING TRANSFORMER IN THE BASEMENT THAT IS BEING FED FROM THE 480V PANEL IN THE BASEMENT AND CONNECT TO THE ATS. DISCONNECT AND PULL BACK THE WIRING FOR REUSE IF AVAILABLE, OTHERWISE REPLACE WITH MATCHING SPECS.

7. THE 120V PANEL IN THE BASEMENT FEEDS ONE MORE PANEL ON THE FIRST FLOOR. THESE PANEL WILL BE EMERGENCY PANELS. ALL EXISTING CIRCUITS ARE TO BE EMERGENCY CIRCUITS AND THERE AREN'T ANY NEW CIRCUITS THAT WILL NEED TO BE ADDED.

8. EXISTING 480V PANEL AND TRANSFORMER IN THE BASEMENT THAT IS FED FROM THE UTILITY.

9. CONTRACTOR TO INSTALL NEW TRIAD GROUNDING SYSTEM AND GROUNDING BUS BAR ON UNISTRUT PLATFORM AGAINST THE SIDE OF THE BUILDING. SEE GROUNDING ELECTRODE SYSTEM DETAIL ON SHEET E6.

10. CONTRACTOR TO INSTALL NEW 1" CONDUIT FROM GENERATOR TO THE CONTROL ROOM IN THE MAIN OFFICE FOR CONTROL MONITORING.

**LEGEND:**

- **EXISTING TO REMAIN**
- **TO BE REMOVED**
- **NEW CONDUIT**
- **GROUNDING SYSTEM**

**ONE-LINE DIAGRAM - NORTH WASTE WATER PLANT**
CONTRACTOR TO INSTALL CONCRETE PAD AT THE DESIRED LOCATION BESIDE THE MAIN BUILDING. SEE SHEET S1 FOR PAD DETAILS.

CONTRACTOR TO INSTALL 100KW, 480/277V, THREE PHASE GENERATOR ON THE CONCRETE PAD AT THE DESIRED LOCATION BESIDE THE MAIN BUILDING.

CONTRACTOR TO INSTALL 200A, 480V AUTOMATIC TRANSFER SWITCH (ATS) ON A UNISTRUT PLATFORM INSIDE OF THE BUILDING BY THE EXISTING 480V PANEL.

CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE GENERATOR TO THE ATS.

CONTRACTOR TO INSTALL NEW 480V EMERGENCY PANEL ON A UNISTRUT PLATFORM INSIDE OF THE BUILDING BY THE ATS.

CONTRACTOR TO INSTALL CONDUIT AND WIRE FROM THE ATS TO THE 480V PANEL IN THE BUILDING.

CONTRACTOR TO REWORK THE WIRING FROM THE EXISTING 480V PANEL TO THE EMERGENCY 480V PANEL IN THE BUILDING. DISCONNECT AND PULL BACK THE WIRING FOR REUSE IF AVAILABLE, OTHERWISE REPLACE WITH MATCHING SPECS. COORDINATE WITH CLIENT ON WHAT CIRCUITS IN THE SOUTH WATER PLANT NEED TO BE MOVED TO THESE PANELS. CIRCUITS WILL INCLUDE THE FEEDS FOR THE MAIN OFFICE PANEL, THE CARBON BUILDING PANEL, AND THE BLENDER BUILDING PANEL.

EXISTING 480V PANEL IN THE BUILDING THAT IS FED FROM THE UTILITY.

CONTRACTOR TO INSTALL NEW TRIAD GROUNDING SYSTEM AND GROUNDING BUS BAR ON UNISTRUT PLATFORM AGAINST THE SIDE OF THE BUILDING. SEE GROUNDING ELECTRODE SYSTEM DETAIL ON SHEET E6.

CONTRACTOR TO INSTALL NEW 1" CONDUIT FROM GENERATOR TO THE CONTROL ROOM IN THE MAIN OFFICE FOR CONTROL MONITORING.

1. SEE SHEET E6 FOR CABLE AND CONDUIT SCHEDULE, GROUNDING DETAIL AND CONDUIT DUCT BANK DETAIL.

2. CONTRACTOR TO INSTALL CONDUIT 36" BELOW GRADE. LAY RED TAPE WITH BLACK LETTERING SAYING "DANGER - ELECTRICAL", 6" ABOVE CONDUIT. COORDINATE CONDUIT PENETRATION LOCATIONS IN BUILDINGS WITH CLIENT AND COORDINATE CONDUIT PENETRATION IN CONCRETE SLAB WITH GENERATOR MANUFACTURER. SEE SHEET E6 FOR CONDUIT AND CABLE SCHEDULE.

GENERAL NOTES:
1. CONTRACTOR TO INSTALL CONDUCTORS TO THE TRANSFORMER, UTILITIY PANEL, 120V PANEL, NEW PANELS, AND ALL LOAD CENTER PANELS.

NOTES:
CONTRACTOR TO INSTALL CONDUCTORS TO ALL LOAD CENTER PANELS.
CONTRACTOR TO INSTALL CONDUCTORS TO 120V PANELS.
CONTRACTOR TO INSTALL CONDUCTORS TO TRANSFORMER.
CONTRACTOR TO INSTALL CONDUCTORS TO UTILITIY PANEL.
CONTRACTOR TO INSTALL CONDUCTORS TO EXISTING PANELS.
CONTRACTOR TO INSTALL CONDUCTORS TO NEW PANELS.

NOTES:
1. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO TRANSFORMER.
2. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO UTILITIY PANEL.
3. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO 120V PANEL.
4. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO NEW PANELS.
5. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO EXISTING PANELS.

NOTES:
1. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO TRANSFORMER.
2. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO UTILITIY PANEL.
3. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO 120V PANEL.
4. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO NEW PANELS.
5. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO EXISTING PANELS.

NOTES:
1. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO TRANSFORMER.
2. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO UTILITIY PANEL.
3. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO 120V PANEL.
4. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO NEW PANELS.
5. CONTRACTOR TO INSTALL 36" O.C. CONDUIT TO EXISTING PANELS.
**Plan View**

**Section View**

**Grounding Electrode System**

**Burdy Grounding Lug Detail**

**Burdy Grounding Buss Bar Detail**

**2 Conduit Duct Bank**

**Cable and Conduit Schedule**

<table>
<thead>
<tr>
<th>Conduit Number</th>
<th>Conduit Size</th>
<th>Conductor Quantity and Size</th>
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<tbody>
<tr>
<td>101</td>
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<td>(3) 4/0 #6 GND</td>
<td>120/240V</td>
</tr>
<tr>
<td>102</td>
<td>2 1/2</td>
<td>(3) 4/0 #6 GND</td>
<td>120/240V</td>
</tr>
<tr>
<td>103</td>
<td>2 1/2</td>
<td>(3) 4/0 #6 GND</td>
<td>120/240V</td>
</tr>
<tr>
<td>111</td>
<td>2 1/2</td>
<td>(4) 4/0 #6 GND</td>
<td>120/208V</td>
</tr>
<tr>
<td>112</td>
<td>2 1/2</td>
<td>(4) 4/0 #6 GND</td>
<td>120/208V</td>
</tr>
<tr>
<td>121</td>
<td>2 1/2</td>
<td>(3) 4/0 #6 GND</td>
<td>120/240V</td>
</tr>
<tr>
<td>122</td>
<td>2 1/2</td>
<td>(3) 4/0 #6 GND</td>
<td>120/240V</td>
</tr>
<tr>
<td>131</td>
<td>2 1/2</td>
<td>(4) 1/0 #6 GND</td>
<td>480V</td>
</tr>
<tr>
<td>132</td>
<td>2 1/2</td>
<td>(4) 1/0 #6 GND</td>
<td>480V</td>
</tr>
<tr>
<td>133</td>
<td>2 1/2</td>
<td>(4) 1/0 #6 GND</td>
<td>480V</td>
</tr>
</tbody>
</table>

**Keynotes:**

- Concrete slab poured and marked with red oxide powder.
- Buried a minimum of 36" below new grade, or as required to clear other buried utilities.
- Continuous longitudinal runs of #4 rebar running the entire length in each corner, with #4 loops connecting to the longitudinal rebars spaced every 48". Coordinate with Spec 33 71 19.

**References:**

- NONE

**Engineer:** www.threeidesign.com  Evansville, In  812-423-6800
General Decision Number: KY20200092 04/17/2020

Superseded General Decision Number: KY20190092

State: Kentucky

Construction Type: Building

County: Henderson County in Kentucky.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date
0 01/03/2020
1 04/17/2020

BOIL0204-001 03/01/2018

<table>
<thead>
<tr>
<th>Rates</th>
<th>Fringes</th>
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<tr>
<td>BOILERMAKER........................ $ 35.10</td>
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<td>CARPENTER (Drywall Hanging and Metal Stud Installation Only)........................ $ 25.50</td>
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https://beta.sam.gov/wage-determination/KY20200092/1?index=wd&is_active=true&date_filter_index=0&date_rad_selection=date&wdType=dbra&con
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<thead>
<tr>
<th>Job Description</th>
<th>Rate</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER EQUIPMENT OPERATOR (Crane)</td>
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<td>16.50</td>
</tr>
<tr>
<td>CRANES WITH BOOM 150 FEET &amp; OVER, INCLUDING JIB, SHALL RECEIVE $.75 ABOVE THE WAGE RATE; 250 FEET AND OVER, INCLUDING JIB, SHALL RECEIVE $1.50 ABOVE THE WAGE RATE. ALL CRANES WITH PILING LEADS WILL RECEIVE $.50 ABOVE THE WAGE, REGARDLESS OF BOOM LENGTH.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job Description</th>
<th>Rate</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER EQUIPMENT OPERATOR (Drill)</td>
<td>$32.45</td>
<td>16.50</td>
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</table>

<table>
<thead>
<tr>
<th>Job Description</th>
<th>Rate</th>
<th>Fringes</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER EQUIPMENT OPERATOR (Loader)</td>
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<td>16.50</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Job Description</th>
<th>Rate</th>
<th>Fringes</th>
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<tbody>
<tr>
<td>POWER EQUIPMENT OPERATOR (Forklift)</td>
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<td>16.50</td>
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<table>
<thead>
<tr>
<th>Job Description</th>
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<td>POWER EQUIPMENT OPERATOR (Oiler)</td>
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<table>
<thead>
<tr>
<th>Job Description</th>
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<tbody>
<tr>
<td>IRONWORKER, ORNAMENTAL</td>
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<table>
<thead>
<tr>
<th>Job Description</th>
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<tr>
<td>LABORER (Common or General)</td>
<td>$23.12</td>
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<table>
<thead>
<tr>
<th>Job Description</th>
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<tr>
<td>LABORER (Mason Tender - Brick, Mason Tender - Cement/Concrete)</td>
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<tr>
<td>Occupation</td>
<td>Rate</td>
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<tr>
<td>-------------------------------------------</td>
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<tr>
<td>LABORER (Power Tool Operator)............</td>
<td>$28.84</td>
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<td>PAIN0156-004 04/01/2018</td>
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<td>PAINTER: Spray............................</td>
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<td>FOOTNOTE A:</td>
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<tr>
<td>All Structures over 40? $0.75/ hour above base wage</td>
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<tr>
<td>All Structures over 75? $1.50/ hour above base wage</td>
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<tr>
<td>All Structures over 100? $2.50/ hour above base wage</td>
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<td>SHEET METAL WORKER (HVAC Duct Installation Only)...........</td>
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<td>SHEE0110-006 06/01/2017</td>
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<td>ASBESTOS WORKER/HEAT &amp; FROST INSULATOR...</td>
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<td>SUK2015-031 06/02/2015</td>
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<td>Fringes</td>
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<tr>
<td>BRICKLAYER................................</td>
<td>$25.09</td>
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</table>
CARPENTER (Excluding Drywall Hanging and Metal Stud Installation) $ 19.86 4.64

CEMENT MASON/CONCRETE FINISHER $ 20.56 9.56

IRONWORKER, REINFORCING $ 27.31 16.86

IRONWORKER, STRUCTURAL $ 25.41 7.63

LABORER: Pipelayer $ 15.00 4.08

OPERATOR: Backhoe/Excavator/Trackhoe $ 26.40 9.60

OPERATOR: Bulldozer $ 24.51 12.72

OPERATOR: Paver (Asphalt, Aggregate, and Concrete) $ 22.52 4.00

OPERATOR: Roller $ 23.60 12.65

PAINTER (Brush and Roller) $ 18.79 5.88

TILE FINISHER $ 15.42 7.24

TILE SETTER $ 20.96 0.00

TRUCK DRIVER: Dump Truck $ 23.60 8.03

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5 (a) (1) (ii)).
cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUMB018-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.
WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION