

Invitation for Bid

City of Killeen, Texas
Sealed bids will be received for:

Generator Project
Bid No. #22-20

Sealed bids will be received until 2:00 pm
on Thursday, April 21, 2022

Electronically submit bids to Negometrix E-Bidding Site: (<https://app.negometrix.com>)

OR

City of Killeen
Attn: Purchasing Division
802 N. 2nd St.
Building E, 2nd Floor #215
Killeen, Texas 76541

**CITY OF KILLEEN
BID # 22-20 Generator Project**

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I. NOTICE TO BIDDERS

NOTICE TO BIDDERS/PROPOSERS
BID NO. 22-20 Generator Project
CITY OF KILLEEN, TEXAS

Notice is hereby given that the City of Killeen will receive sealed bids for the *Generator Project* through the City's Negometrix e-bidding site *or* addressed to the City of Killeen, Attn: Purchasing Department, 802 N. 2nd Street, Bldg. E, 2nd Floor, #215, Killeen, Texas 76541, until 2:00 p.m. on Thursday, April 21, 2022. Bid submissions shall be plainly marked with the name and address of the bidder and **"BID NO. 22 - 20 Generator Project"**. Submittals received after the closing time will be returned unopened. Vendors may register and submit bids electronically at <https://app.negometrix.com>.

Bids will be opened and read aloud through zoom online video conferencing at 2:15 p.m. CST on April 21, 2022: Zoom access is shown below. The general public will not be allowed inside the facility.

Join Zoom Meeting:

<https://us06web.zoom.us/j/3397887656?pwd=Z0VWU1czOGRpQ245enJWS1hCSnJJUT09>

Meeting ID: 339 788 7656

Passcode: **04142020**

Call: 1- 346 -248- 7799

A mandatory pre-bid conference and site visit will be held at **2:00 p.m. on Tuesday, April 12, 2022**, at Water and Sewer Office, 805 West Jasper, Killeen, Texas 76542. Bid questions will be accepted via email by Lorianne Luciano at SolicitationQuestions@killeentexas.gov *or* via Negometrix e-bidding site, through April 14, 2022 at 2:00pm. Questions will be answered in the form of an addendum and posted to the City's website within 48 hours. It is the bidder's responsibility to obtain and acknowledge all addendums and include with bid submittals.

Complete information regarding this solicitation may be obtained from the City of Killeen website (<https://www.killeentexas.gov/Bids.aspx>), Demand Star (<http://www.demandstar.com/>), ESBD (<http://www.txsmartbuy.com>), and Negometrix E-Bidding site (<https://app.negometrix.com>)

The City of Killeen reserves the right to reject any or all bids and waive any irregularities.

CITY OF KILLEEN, TEXAS

Lorianne Luciano
Director of Procurement & Contract Management

II. INFORMATION AND INSTRUCTIONS TO BIDDERS

INFORMATION AND INSTRUCTIONS TO BIDDERS
BID NO. 22-20 Generator Project
CITY OF KILLEEN, TEXAS

Preparation of Bids:

This is your notice that **sealed bids for Bid #22-20, Generator Project** is subject to the Terms & Conditions of this Invitation for Bids (General Terms and Conditions attached hereto) and such other contract provisions, specifications, or other data as are attached to this Bid (known as the bid packet), will be received electronically through the City's Negometrix e-bidding site **or** at the City of Killeen Purchasing Office, 802 N. 2nd Street, Building E, 2nd Floor, # 215, Killeen, TX, 76541, until the hour of **2:00 p.m. Thursday, April 21, 2022**. Any bid received after the closing time will be returned unopened. No late bids will be accepted. All bids shall be submitted as listed below. Complete bids received by email or fax will not be considered.

All items in this bid are considered part of the bid package. **Submittals must include the required sections submitted per the "Bidder's Checklist"; signed in the appropriate places by an authorized representative of the company with an original signature.** Bids not including all of the requirements will be considered non-responsive. The package must be in the order required. All corrections shall be complete and final before submitting your bid by the stated deadline. Bidders shall submit at least three (3) businesses as references of the proposed item, with addresses, telephone numbers and contact persons.

Bidders are encouraged to submit bids electronically, however, if submitted by mail or hand delivered, one (1) original, signed and initialed, where indicated, in ink (not pencil), and (1) electronic copy on a flash drive of the entire bid packet shall be submitted at the above location prior to the bid deadline. All bidder markings on the bid packet shall be legible. The City of Killeen reserves the right to reject any or all bids and evaluate any or all submittals prior to bid award. Bid documents must be complete and sealed in an envelope when received by the Purchasing Office. Bids must be plainly marked on the outside of the envelope as follows: **Bid No. #22-20, Generator Project**. **All bidder submissions shall also have the bidder's name with contact information marked on the outside of the envelope.**

In the case of inclement weather or any other unforeseen event causing the City to close for business or delay opening, bids will be received and opened the following business day at the designated time stated herein. For example, if bids are due on Wednesday at 2:00 p.m. and the City is closed on Wednesday for bad weather or an unforeseen event, the bids will be accepted until Thursday, 2:00 p.m. or if bids are due at 2:00 p.m. on Wednesday, but the City opened at 10:00 a.m. on Wednesday due to bad weather or an unforeseen event, then bids will be accepted until Thursday, 2:00 p.m.

Any questions or requests for clarification must be submitted to the Purchasing Office, in writing, to SolicitationQuestions@killeentexas.gov **or** via the Negometrix e-bidding site prior to 2:00 p.m. on Thursday April 14, 2022. Please indicate "Bid No. 22-20 Questions" in the subject line of your email. There will be no exceptions. All responses to the questions will be posted on the City website, Negometrix, Demand Star and Electronic State Business Daily. Unauthorized contact regarding this Invitation to Bid with any City of Killeen employees or contractors may result in disqualification. Any oral communications will be considered unofficial and non-binding on the City of Killeen. Bidders should rely only on written statements issued by the individual named above.

Response, Property of the City of Killeen:

All materials submitted in response to this request become the property of the City of Killeen. Selection or

rejection of a response does not affect this right.

No Obligation to Buy:

The City of Killeen reserves the right to refrain from contracting with any bidder. The release of this Invitation for Bids does not compel the City of Killeen to purchase.

Cost of Preparing Bids:

The City of Killeen is not liable for any costs incurred by bidders in the preparation and presentation of bids and demonstrations submitted in response to this Invitation to Bid.

Withdrawal of Bid:

A bidder may withdraw a bid that has been submitted at any time up to the bid opening due date and time. To accomplish this, a written request signed by an authorized representative of the bidder shall be submitted to lluciano@killeentexas.gov. Once the bids are opened, all bids shall be valid for a period of ninety (90) days after the bid opening.

The City reserves the right to withdraw this ITB for any reason.

Bidding Error:

The City of Killeen will not be liable for any errors in any bidder's bid. Bidders will not be allowed to alter bids after the deadline for the submission of bids.

When, after the opening and tabulation of bids, a bidder claims error, and requests to be relieved of award, it will be required to promptly present corrected data in writing signed by an authority figure with the company. **This written response shall be received by the Purchasing Division within two (2) business days after the stated bid open time and date.** The Purchasing Division will review the data and if the City is convinced, by clear and convincing evidence, that an honest, mathematically excusable error or critical omission of costs has been made, and said error is legally excusable, the bidder may be relieved of its bid. **The City will make a determination within ten (10) business days of receipt of the written response and notify the bidder of the outcome.**

Single Bid Response:

A single response to this Invitation for Bids may be deemed a failure of competition and in the best interest of the City of Killeen, the response received may be rejected.

Award of Bid:

An award of a contract to provide the goods or services specified herein will be made using competitive sealed bids in a manner described in section 10 of the General Terms and Conditions. The contract will be awarded to the lowest responsible bidder or to the bidder who is determined to offer the best value and most advantageous bid to the City. During the evaluation process the City may initiate discussions with vendors. Discussions may not be initiated by offerers. These discussions will be limited to issues and topics brought forth by the City. Any attempt by bidder or vendor at deviating from the issues and topics to discuss other issues and topics concerning the bid brought forth by the City of Killeen shall be grounds for disqualification.

The anticipated date of the notice of award is May 24, 2022.

Payment:

The City shall be billed only for the items awarded in this bid. The City of Killeen is exempt from State Sales Tax and Federal Excise Tax. Do not include tax in the ITB. City will furnish Excise Tax Exemption Certificate upon request. The bidder shall have the capability to invoice accurately, making any corrections on the original invoice. Invoices shall be correct when received with the prices shown within your bid submission.

If a discrepancy is found on any invoice, the City department will phone your customer service point of contact for correction. Payment of any corrected invoice will be made in thirty (30) days once the corrected invoice has been received unless the bidder has provided discount payment terms. In no circumstances should any invoice dispute last longer than thirty (30) days.

No down payment or advance payment of any kind shall be made. Payment will be made within 30 days of receipt of an accurate invoice, unless discount payment terms are offered, such as 2% 15 net 30 days.

All invoices shall be submitted to the City of Killeen, Attn: Water and Sewer Office, 805 W. Jasper Drive, Killeen, Texas 76542.

PAYMENT TERMS: Specify other payment options:

- ☐ Check box if you offer a prompt payment discount: % _____. Specify terms: _____
- ☐ Check box if you accept MasterCard for payment (City of Killeen Procurement Card or P-Card).
- ☐ Check here if the prompt payment discount applies to the MasterCard payment.

Point of contact to resolve issues (delivery or invoice):

NAME: Kyle R. Barnes

TITLE: Project Manager

ADDRESS: PO Box 859, Florence, TX 76527

EMAIL ADDRESS: kbarnes@moralescompany.com

PHONE: 254-970-7001

FAX: 254-793-3044

Holidays

Delivery will not be available on regular City holidays. Below is a list of City holidays (please note if holiday falls on a weekend check with the City for the observed date):

- New Year's Day
- Martin Luther King Day
- President's Day
- Good Friday
- Memorial Day
- Juneteenth
- Independence Day
- Labor Day
- Veteran's Day

- Thanksgiving Day
- Day After Thanksgiving
- Christmas Eve
- Christmas Day

Copyright Materials:

Materials listed in your bid submission that are copyrighted shall be listed clearly under a copyrighted materials section within your bid submission.

Non-Endorsement:

As a result of the selection of a bidder to supply products and/or services to the City of Killeen, the City of Killeen is neither endorsing nor suggesting that the bidder's product is the best or only solution. The bidder agrees to make no reference to the City of Killeen in any literature, promotional material, brochures, sales presentation, or the like without the express written consent of the City of Killeen.

Pricing:

The bids shall be valid for a period of ninety (90) days after the bid opening.

TOTAL BID PRICE: **\$ 480,535.00**

Estimated project completion time after award of bid: 480 Calendar Days


Signature of Acceptance:

By the signature hereon affixed, the bidder hereby certifies that neither the bidder nor the entity represented by the bidder, or anyone acting for such entity has violated the antitrust laws of the State of Texas, codified in Section 15.01 et seq., Texas Business and Commerce Code, or the Federal antitrust laws, nor communicated directly or indirectly, prior to the bid opening with any competitor or any other person engaged in such line of business.

Undersigned acknowledges that addendum 1 through 1 have been taken into account as part of this bid.

The bidder agrees to comply with all conditions within this invitation for bids:

Full Legal Name of Company	T. Morales Company Electric & Controls, Ltd.
Address	P.O. Box 859
City, State, Zip	Florence, TX 76527
Phone Number	254-793-4344
Fax Number	254-793-4344
After Hours Phone Number	512-844-5374
Email Address	kbarnes@moralescompany.com

Tax Identification Number	75-3000543
Signature of Authorized Agent	Zachary Eldridge
Printed Name of Authorized Agent	
Title	CFO
Date	April 21, 2022

***PLEASE ATTACH A COPY OF YOUR W-9 FORM FILLED OUT**

W-9 Forms are available online at: <http://www.irs.gov/pub/irs-pdf/fw9.pdf>

Vendor Name:	T. Morales Company Electric & Controls, Ltd.
1099 Name:	
Tax ID #:	75-3000543
List the type of product or service:	Electrical, Instrumentation and Controls

Remit to address (if different from W-9):

Address #1 _____
 Address #2 _____
 City/State/Zip _____
 Phone#: _____
 Fax Number: _____
 Contact Person: _____

Request for Taxpayer Identification Number and Certification

Give Form to the
requester. Do not
send to the IRS.

Print or type See Specific Instructions on page 2.	1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. T. Morales Company Electric & Controls, Ltd.	
	2 Business name/disregarded entity name, if different from above	
	3 Check appropriate box for federal tax classification; check only one of the following seven boxes: <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input checked="" type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner. <input type="checkbox"/> Other (see instructions) ▶ _____	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from FATCA reporting code (if any) _____ <i>(Applies to accounts maintained outside the U.S.)</i>
	5 Address (number, street, and apt. or suite no.) PO Box 859	Requester's name and address (optional)
	6 City, state, and ZIP code Florence, TX 76527	
7 List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.


Social security number									
			-			-			
or									
Employer identification number									
7	5	-	3	0	0	0	5	4	3

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here	Signature of U.S. person ▶ 	Date ▶ 04/21/2022
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General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at www.irs.gov/fw9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)

- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding? on page 2.

By signing the filled-out form, you:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
- Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

III. CITY OF KILLEEN TERMS AND CONDITIONS

GENERAL TERMS AND CONDITIONS

BID NO. 22-20 Generator Project

CITY OF KILLEEN, TEXAS

1. General Conditions

Bidders are required to submit their Bid upon the following express conditions:

- (a) Bidders shall make all investigation necessary to thoroughly inform themselves regarding plant and facilities for delivery of material and equipment as required by the Bid conditions. No plea of ignorance by the bidder of conditions that exist or that may hereafter exist as a result of failure or omission on the part of the bidder to make the necessary examinations and investigations, or failure to fulfill in every detail the requirements of the contract documents, will be accepted as a basis for varying the requirements of the City or the compensation to the bidder.
- (b) Unless specifically stated otherwise in the specifications, only new products or equipment will be acceptable.

2. Preparation of Bid

Bid will be prepared in accordance with the following:

- (a) All information required by the Bid shall be furnished. The bidder shall print or type his/her name and manually or electronically sign the Bid and each continuation sheet on which an entry is made.
- (b) Unit prices shall be shown and where there is an error in extension of the price, the unit price shall govern.
- (c) Alternate Bids will not be considered unless authorized by the City within the specifications.
- (d) Proposed delivery time must be shown and shall include weekends and holidays if requested by the City.
- (e) The City qualifies for exemption from State and Local Sales and Use Taxes pursuant to the provision of Article 20.04(f) of the Texas Limited Sales, Excise and Use Tax Act. Taxes normally levied on the purchase, rental and lease of materials, supplies and equipment used or consumed in performance of the Contract may be exempted by issuing to suppliers an exemption certificate in lieu of tax. Exemption certificates comply with State Comptroller of Public Accounts Ruling No. 95-0.07. Any such exemption certificate issued in lieu of tax shall be subject to State Comptroller of Public Accounts Ruling No. 95-0.09, as amended. Failure by the Bidder or the bidder's Subcontractors to take advantage of the City's exemption and to obtain such exemption certificate shall make him responsible for paying taxes incurred on materials furnished on the Project without additional cost to or reimbursement by the City.

3. Description of Supplies

Any catalog of manufacturer's reference used in describing an item is merely descriptive, and not restrictive, unless otherwise noted, and is used only to indicate type and quality of material. Bidders are required to state exactly what they intend to furnish; otherwise, they will be required to furnish the item as specified.

4. Submission of Bid

By submitting your Bid, you acknowledge that the City of Killeen will not accept any Bid, or execute any submitted contract in conjunction with a Bid that requires the City to agree to any of the following:

- Governing law other than the law of the State of Texas
 - Venue other than Bell County
 - Mandatory arbitration
 - Artificial limitation of liability
 - Artificial statute of limitation
 - Waiver of trial by jury
 - Indemnify a vendor
- (a) Bid and changes thereto shall be enclosed in a sealed envelope addressed to the Purchasing Office, City of Killeen. The names and address of Bidder, the date and hour of the Bid opening and the Bid number shall be placed on the outside of the envelope.
- (b) Bids must be submitted on the forms furnished. Telegraphic Bids will not be considered. However, Bids may be modified by written notice provided such notice is received prior to the time and date set for the Bid opening.
- (c) All Bid documents shall be sealed and submitted no later than the specified date and hour of the Bid opening to:

Electronically submit bids to Negometrix E-Bidding Site: (<https://app.negometrix.com>)

OR

Delivery Address:
City of Killeen
Attn: Purchasing Division
802 N 2nd Street,
Building E, 2nd Floor #215
Killeen, TX 76541

5. Rejection of Bid

- (a) The City may reject a Bid if:
1. The Bidder mistakes or conceals any material fact in the Bid, or if
 2. The Bid does not strictly conform to law or the requirements of the Bid, or if
 3. The Bid is conditional, except that the Bidder may qualify his Bid for acceptance by the City as an "All or None" basis.
- (b) The City may, however, reject all Bids whenever it is deemed in the best interest of the City to do

so, and may reject any part of a Bid unless the Bid has been qualified as provided in section 5(a) 3 above.

6. Withdrawal of Bid

A bidder may withdraw a bid that has been submitted at any time up to the due date and time. To accomplish this, a written request signed by an authorized representative of the bidder must be submitted to the Director of Procurement and Contract Management at lluciano@killeentexas.gov . All bids shall be valid for a period of ninety (90) days after the bid opening.

7. Late Bid or Modifications

Bid and modifications received after the time set for the Bid opening will not be considered.

8. Clarification or Objection to Bid Specifications

If any person contemplating submitting a Bid for this contract is in doubt as to the true meaning of the specifications, or other Bid documents, or any part thereof, he may submit to Purchasing, a request for clarification by the deadline established in the Bid. All such requests for information shall be made in writing and the person submitting the request will be responsible for its prompt delivery. Any interpretation of the Bid, if made, will be made only by an addendum duly issued. A copy of such addendum will be distributed to all known bidders who have expressed an interest in this bid. The City will not be responsible for any other explanation or interpretation of the proposed Bid made or given prior to the award of the contract. Any objection to the specifications and requirements, as set forth in the Bid documents must be filed in writing with the Purchasing Division by the deadline established in the Bid.

9. Discounts

- (a) Prompt payment discounts will be considered in making the award provided the period of the discount offered is sufficient to permit payment within such period in the regular course of business.
- (b) In connection with any discount offered, time will be computed from the date of receipt of supplies or services or from the date a correct invoice is received, whichever is the later date. Payment is deemed to be made on the date of mailing of the check.

10. Award of the Contract

- (a) The contract will be awarded to the lowest responsible bidder or to the bidder who is determined to offer the best value and most advantageous bid to the City. “Lowest responsible bidder” means the Bidder submitting the lowest bid meeting all requirements of the specifications, instructions, and terms and conditions of the bid and who has the financial and practical ability to fully and reliably perform all obligations of the Contract, taking into consideration qualifications and past performance of the Bidder. The following are considered examples of performance that is not responsible and may lead to a determination that the Bidder is not responsible:
 - * Falsification of information provided in bid response;
 - * Non-observance of safety requirements;

- * Failure to meet requirements of federal, state, or local law, as applicable, including employment;
- * Substantial failure to adhere to contractually agreed-upon schedules; and
- * Poor past performance on City projects such as use of defective materials, refusal to correct defective work not in accordance with contract documents, failure to reasonably resolve disputes, termination for cause, or performance leading to litigation.

Or, if applicable, the responsible bidder who provides goods or services at the most advantageous Bid for the municipality based on, but not limited to, the following factors:

- | | |
|---|---|
| * Unit price | * Bidder's past performance |
| * Total Bid price | * Demurrage charges, freight costs and mileage |
| * Terms and discounts | * Estimated costs of supplies, maintenance, etc. |
| * Delivery date | * Estimated surplus value, life expectancy |
| * Product warranty | * Results of testing samples |
| * Special needs and requirements of City | * Conformity to specifications |
| * Past experience with product/service | * Training requirements, location, etc. |
| * City's evaluation of the bidder's ability, financial, strength, and ethical standards | * Location of maintenance facility/service person; ability to provide for minimum down time |
| * Quality of the bidder's goods or services | * The total long-term cost to the municipality to acquire the bidder's goods or services |
| * The extent to which the goods or services meet the municipality's needs | * Reputation of bidder and of bidder goods and services |

- (b) The City reserves the right to accept any item or group of items of this Bid, unless the Bidder qualifies his Bid by specific limitation. Reference section 5(a) 3 above.
- (c) A written award of acceptance mailed or otherwise furnished to the successful Bidder will then be followed up with a contract/service agreement for review by the City's legal team, if not otherwise specified within.
- (d) Prices must be quoted "F.O.B. Destination (Killeen) with all transportation charges prepaid," unless otherwise specified in the Bid.
- (e) If identical Bids are received from two or more bidders and those Bids are the lowest and best Bid, the tie shall be broken in accordance with provisions in Section 271.901 of the Texas Local Government Code.
- (f) As stated in Section 271.905 of the Texas Local Government Code, "In purchasing under this title any real property or personal property that is not affixed to real property, if a local government receives one or more competitive sealed Bid from a bidder whose principal place of business is in the local government and whose Bid is within three percent of the lowest Bid price received by the local government from a bidder who is not a resident of the municipality, the local government may enter into a contract with: (1) the lowest bidder; or (2) the bidder whose principal place of business is in the local government if the governing body of the local government determines, in writing, that the local bidder offers the local government the best combination of contract price and additional economic development opportunities for the local government created by the

contract award, including the employment of residents of the local government and increased tax revenues to the local government.”

- (g) As stated in Section 271.9051(b) of the Texas Local Government Code, “In purchasing real property or personal property that is not affixed to real property, or services, if a municipality receives one or more competitive sealed Bid from a bidder whose principal place of business is in the municipality and whose Bid is within five percent of the lowest Bid price received by the municipality from a bidder who is not a resident of the municipality, the municipality may enter into a contract for an expenditure of less than \$100,000 or a contract for other purchases in an amount of less than \$500,000 with: (1) the lowest bidder; or (2) the bidder whose principal place of business is in the municipality if the governing body of the local government determines, in writing, that the local bidder offers the municipality the best combination of contract price and additional economic development opportunities for the municipality created by the contract award, including the employment of residents of the municipality and increased tax revenues to the municipality.”

11. Ex Parte Communication

Please note that to ensure the proper and fair evaluation of a proposal, the City prohibits ex parte communication (e.g., unsolicited) initiated by the Proposer to a City Official or employee evaluating or considering the proposal prior to the time a formal decision has been made. Questions and other communication from proposers will be permissible with only the Director of Procurement and Contract Management until the time and the day specified as the deadline for questions. Any communication between Proposer and the City after the deadline for questions will be initiated by the appropriate City Official or employee in order to obtain information or clarification needed to develop a proper and accurate evaluation of the proposals. Participation in any ex parte communication, whether or not initiated by the Proposer, may be grounds for disqualifying the offending proposer from consideration or award of the solicitation then in evaluation, or any future solicitation. Additionally, neither the City of Killeen City Council nor City staff, except in the course of City-Sponsored inquiries, briefings, interviews, or presentations, shall initiate any contact with a Proposer or directly discuss or promote any proposal with any Proposers, including their agents and representatives.

12. Bid Protest

Any bidder wishing to file a protest concerning alleged improprieties with this solicitation must submit the protest in written format to the Purchasing Division within 5 business days after the specified time of the Bid opening. The formal written protest must identify the name of the bidder contesting the solicitation, the project name and number, and the specific grounds for the protest with all supporting documentation. A response to the protest will be prepared by Purchasing within 10 business days of receipt of the protest. All determinations made by the City are final.

13. Termination for Governmental Non-Appropriations

This contract is a commitment of the City’s current revenues only. Should the terms of the Bid require payment of funds over more than the current fiscal year ending September 30, the following shall apply:

- (a) For each lease, City represents and warrants: that it has appropriated and budgeted the necessary fund to make all rent payments required pursuant to such lease for the remainder of the fiscal year in which the payment term commences; and that it currently intends to make rent payments for the full lease term as scheduled in the applicable payment schedule if funds are appropriated for the rent payment in each succeeding fiscal year by its governing body. Without contractually committing itself to do so, City reasonably believes that monies in an amount sufficient to make all rent payments can and will lawfully be appropriated; therefore, City agrees to budget requests to include the rent payments payable during each fiscal year in the budget requests presented to City's governing body for each fiscal year; provided, that City's governing body retains authority to approve or reject any such budget request. All rent payments shall be payable out of the general funds of City or out of other funds legally appropriated therefore. Lessor agrees that no lease will be a general obligation of City and no lease shall constitute a pledge of either the full faith and credit of City or the taxing power of City.
- (b) If City's governing body fails to appropriate sufficient funds in any fiscal year for rent property or other payments due and if other funds are not legally appropriated for such payment, then a non-appropriation event shall be deemed to have occurred. If a non-appropriation event occurs, then: (1) City shall give immediate notice of such non-appropriation event and provide written evidence of such failure by City's governing body; (2) on the return date, City shall return all of the equipment covered by the agreement, at City's sole expense; (3) the affected agreement shall terminate on the return date without penalty to City; (4) return date means the last day of the fiscal year for which appropriations were made for the payments due under an agreement.

14. Termination of Contract

This contract shall remain in effect until the contract expires, delivery/completion and acceptance of products and/or performance of services ordered or until terminated by either party with a thirty (30) day written notice prior to any cancellation. All bidders must state therein the reasons for such cancellation. City reserves the right to award a cancelled contract to next best offeror as it deems to be in the best interest of the City.

15. Assurance of Compliance

For Equal Employment Opportunity and Small and/or Minority Business Enterprise Requirements the bidder agrees that if this Bid is accepted, he/she will not engage in employment practices which have the effect of discriminating against employees or prospective employees because of race, color, religion, national origin, sex, age, handicap, or political belief or affiliation.

16. Conflict of Interest Disclosure Questionnaire

The Bidder agrees that if a member of the City Council a Councilmember's close relative or any officer or employee of the City has a financial interest, direct or indirect, or by reason of ownership of stock in any corporation, in any contract with the City, or be financially interested, directly or indirectly, in the sale to the City any land, materials, supplies or services except on behalf of the City, as an officer or employee, the official shall file before a vote or decision on any matter involving the business entity or the real property, an affidavit stating the nature and extent of the interest and shall abstain from further

participation in the matter if:

- (a) in the case of a substantial interest in a business entity the action on the matter will have a special economic effect on the business entity that is distinguishable from the effect on the public; or
- (b) in the case of a substantial interest in real property, it is reasonably foreseeable that an action on the matter will have a special economic effect on the value of the property, distinguishable from its effect on the public.

Chapter 176 of the Texas Local Government Code mandates the public disclosure of certain information concerning persons doing business or seeking to do business with the City of Killeen, including affiliations and business and financial relationships such persons may have with the City of Killeen. An explanation of the requirements of Chapter 176 and complete text of the new law are available at:

https://www.ethics.state.tx.us/filinginfo/conflict_forms.htm

17. Gratuities

It shall be a breach of ethics to offer, give, or agree to give any employee of the City or for any employee of the City to solicit or accept from another person, a gratuity or an offer of employment in connection with any decision regarding any part of a program requirement, proposal, or purchase request pending before the City.

18. Kickbacks

It shall be a breach of ethics 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 for any contract for the City, or any person associated therewith, as an inducement for the award of a subcontract or order.

19. Venue for Legal Action

This agreement shall be governed and construed according to the laws of the State of Texas. Venue for purposes of any and all lawsuits, causes of actions, claims or disputes shall be in Bell County, Texas.

20. Conflicts in Terms and Conditions for Bids

If any conflicts exist between the Terms and Conditions for Bids and the standard form of agreement between the owner and Bidder, the standard form of agreement between the owner and bidder shall prevail.

21. Insurance

All bidders shall have the appropriate amount of insurance while delivering the items once awarded, this coverage shall be present as to cover all losses up until the City accepts the items in writing.

A. Comprehensive General Liability and Property Damage Insurance.

The bidder shall take out and maintain during the life of this Contract such Comprehensive General Liability and Property Damage Insurance as shall protect the City from claims for damages or personal injury, including accidental death, as well as from claims for property damages which

may arise from delivering the item under this contract, whether such operations be by himself or by an subcontractor or by anyone directly or indirectly employed by either of them, and the minimum amounts of such insurance shall be as follows:

Bodily Injury.

- (1) Each Occurrence - \$1,000,000
- (2) Annual Aggregate - \$2,000,000

Property Damage Insurance.

- (1) Each Occurrence - \$1,000,000
- (2) Annual Aggregate - \$2,000,000

B. Comprehensive Automobile Liability.

Bodily Injury

- (1) Each Person - \$500,000
- (2) Each Accident - \$1,000,000

Property Damage

- (1) Each Occurrence - \$1,000,000

22. Disclosure of Interested Parties

Texas Government Code Section 2252.908 requires that parties contracting with governmental entities submit a disclosure of interest parties form for contracts entered into after January 1, 2016. Successful bidders shall electronically submit the form at the following website: https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm and provide the City with a certified copy prior to Council approval of the Bid award.

23. Acknowledgement – “Boycott Israel”

By signing and submitting this bid the vendor hereby verifies that it does not boycott Israel and will not boycott Israel during the term of this contract. Boycotting Israel is defined in Texas Government Code section 808.001 to mean refusing to deal with, terminating business activities with, or taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.

24. Acknowledgement – ‘Boycott Energy Companies’

By signing and submitting this bid the vendor hereby verifies that it does not boycott energy companies and will not boycott energy companies during the term of the contract. “Boycott energy company” is defined in Texas Government Code section 809.001 to means, without an ordinary business purpose, refusing to deal with terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations with a company because the company:

(A) engages in the exploration, production, utilization, transportation, sale, or manufacturing of fossil

fuel-based energy and does not commit or pledge to meet environmental standards beyond applicable federal and state law; or (B) does business with a company described by Paragraph (A).

25. Acknowledgement – “Prohibition on contracts with companies that discriminate against firearm and ammunition industries”

By signing and submitting this bid the vendor hereby verifies that it does not have a practice, policy, guidance or directive that discriminates against a firearm entity or firearm trade association and will not discriminate during the term of the contract against a firearm entity or firearm trade association. Discriminate against a firearm entity or a firearm trade association are defined in Texas Government Code section 2274.001 as (A) with respect to the entity or association, to (i) refuse to engage in the trade of any goods or services; (ii) refrain from continuing an existing business relationship; (iii) terminate an existing business relationship; or (iv) otherwise express a prejudice against the entity or association; and (B) does not include the established policies of a merchant, retail seller, or platform that restrict or prohibit the listing or selling of ammunition, firearms, or firearm accessories.

26. Community Development Block Grant (CDBG)

Projects may be funded in whole or in part by the U.S. Department of Housing and Urban Development Community Development Block Grant (CDBG) or Home Investment Partnerships Act (HOME Program) and may be subject to submittal of certified payroll documentation as required by HUD funded construction projects to the extent required by Davis-Bacon and Related Acts (DBRA); confirmation of eligibility for participation through the Excluded Parties Listing System (EPLS) - System for Award Management (SAM.gov) or the Texas Debarred Vendor List.

SIGNATURE: _____

DATE: _____

PRINT NAME: _____

IV. ARPA CONTRACT CLAUSES

ARPA CONTRACT CLAUSES
BID NO. 22-20 Generator Project
CITY OF KILLEEN, TEXAS

2 C.F.R. § 200.326 and 2 C.F.R. Part 200

1. Remedies.

- a. Contracts for more than the simplified acquisition threshold (\$150,000) must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms and provide for such sanctions and penalties as appropriate. See 2 C.F.R. Part 200, Appendix II, ¶ A. All remedies are stipulated in the Purchase Order Terms and Conditions.
- b. Applicability: This requirement applies to all FEMA grant, cooperative agreement programs, and City contracts that are funded through federal awards and grants.

2. Termination for Cause and Convenience.

- a. All contracts in excess of \$10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be affected and the basis for settlement. See 2 C.F.R. Part 200, Appendix II, ¶ B.
- b. Applicability. This requirement applies to all FEMA grant, cooperative agreement programs, and City contracts that are funded through federal awards and grants. The Termination for Cause and Convenience is in the City's Purchase Order Terms and Conditions.

3. Equal Employment Opportunity.

- a. Except as otherwise provided under 41 C.F.R. Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 C.F.R. § 60-1.3 must include the equal opportunity clause provided under 41 C.F.R. § 60- 1.4(b), in accordance with Executive Order 11246, Equal Employment Opportunity (30 Fed. Reg. 12319, 12935, 3 C.F.R. Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, Amending Executive Order 11246 Relating to Equal Employment Opportunity, and implementing regulations at 41C.F.R. Part 60 (Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor). See 2 C.F.R. Part 200, Appendix II, ¶C.
- b. Key Definitions.
 - (1) Federally Assisted Construction Contract. The regulation at 41 C.F.R. § 60-1.3 defines a "federally assisted construction contract" as any agreement or modification thereof between any applicant and a person for construction work which is paid for in whole or in part with funds obtained from the Government or borrowed on the credit of the Government pursuant to any Federal program involving a grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or

guarantee, or any application or modification thereof approved by the Government for a grant, contract, loan, insurance, or guarantee under which the applicant itself participates in the construction work.

- (2) Construction Work. The regulation at 41 C.F.R. § 60-1.3 defines "construction work" as the construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways, or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection, and other onsite functions incidental to the actual construction.

Applicability. This requirement applies and the clauses incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- c. . During the performance of this Contract, the Contractor agrees as follows:

- (1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- (2) Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- (3) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.
- (4) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding,

a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

- (5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- (6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions as may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- (8) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

4. Davis Bacon Act and Copeland Anti-Kickback Act.

- a. As amended (40 U.S.C. 3141-3148). When required by Federal Program legislation, all prime construction contracts in excess of \$2,000 awarded by non- Federal entities must include a provision for compliance with the Davis-Bacon Act (40U.S.C. §§ 3141-3144 and 3146-3148) as supplemented by Department of Labor regulations at 29 C.F.R. Part 5 (Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction)). See 2 C.F.R. Part 200, Appendix II, ¶ D.
- b. In accordance with the statute, Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination

made by the Secretary of Labor. In addition, Contractors are required to pay ‘wages not less than once a week.

- c. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding-agency.
- d. In contracts subject to the Davis-Bacon Act, the contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. § 3145), as supplemented by Department of Labor regulations at 29 C.F.R. Part 3 (Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States). The Copeland Anti-Kickback Act provides that each contractor or sub recipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to federal awarding agency.
- e. Compliance with the Davis-Bacon Act
All transactions regarding this Purchase Order hereby incorporates the requirements of compliance with the Davis-Bacon Act (40U.S.C. §§ 3141-3144 and 3146-3148) as supplemented by Department of Labor regulations at 29 C.F.R. Part 5 (Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction)). Contractor shall comply with 40 U.S.C. 3141-3144, and 3146- 3148 and the requirements of 29 C.F.R. pt. 5 as applicable.

Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, Contractors are required to pay ‘wages not less than once a week.

- f. Compliance with the Copeland "Anti-Kickback" Act.
All transactions regarding this Purchase Order hereby incorporates the requirements of compliance with the Copeland “Anti-Kickback” Act:
 - (1) Contractor. The Contractor shall comply with 18 U.S.C. § 874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into this contract.
 - (2) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts the clause above and such other clauses as the FEMA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.

(3) Breach. A breach of the contract clauses above may be grounds for termination of the contract, and for debarment as a contractor and subcontractor as provided in 29 C.F.R. § 5.12.

5. Contract Work Hours and Safety Standards Act.

Applicability: This requirement applies, and the clauses are incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- a. All Contractors awarded by the City of Killeen entity in excess of \$100,000 that involve the employment of mechanics or laborers must comply with 40 U.S.C. §§ 3702 and 3704, as supplemented by Department of Labor regulations at 29 C.F.R. Part 5. See 2 C.F.R. Part 200, Appendix II, ¶E.
- b. Under 40 U.S.C. § 3702, each Contractor is required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week.
- c. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
- d. In accordance with 29 C.F.R. § 5.5(b) the required contract clause concerning compliance with the Contract Work Hours and Safety Standards Act are hereby incorporated:

Compliance with the Contract Work Hours and Safety Standards Act.

- (1) Overtime requirements. No contractor or subcontractor contracting for any pay of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages

shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

- (3) Withholding for unpaid wages and liquidated damages. The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.
- (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section."

6. Rights to Inventions Made Under a Contract or Agreement.

This requirement applies and the clauses are incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- a. If the Federal award and grants meet the definition of "funding agreement" under 37 C.F.R. § 401.2(a) and the City of Killeen or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the City hereby incorporates the requirements of 37 C.F.R. Part 401 (Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements), and any implementing regulations issued by the federal awarding agency into the contract. See 2 C.F.R. Part 200, Appendix II, ¶ F.
 - b. The regulation at 37 C.F.R. § 401.2(a) currently defines "funding agreement" as any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal government. This term also includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as defined in the first sentence of this paragraph.
7. Clean Air Act and the Federal Water Pollution Control Act. Contracts of amounts in excess of \$150,000 must contain a provision that requires the contractor to agree to comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act (42 U.S.C. §§ 7401-7671q) and

the Federal Water Pollution Control Act as amended (33 U.S.C. §§ 1251- 1387). Violations must be reported to FEMA and the Regional Office of the Environmental Protection Agency. See 2 C.F.R. Part 200, Appendix II, ¶ G.

This requirement applies and the clauses are incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

a. Clean Air Act

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

(2) The Contractor agrees to report each violation to the (name of the state agency or local or Indian tribal government) and understands and agrees that the (name of the state agency or local or Indian tribal government) will, in turn, report each violation as required to assure notification to the (name of recipient), Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

(3) The contractor agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by the federal awarding agency.

b. Federal Water Pollution Control Act

(1) The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

(2) The contractor agrees to report each violation to the City of Killeen and understands and agrees that the City of Killeen will, in turn, report each violation as required to assure notification to the (name of recipient), Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

(3) The contractor agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by the awarding agency.

8. Debarment and Suspension.

Applicability: This requirement applies, and the clauses are incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants.

a. (H) Debarment and Suspension (Executive Orders 12549 and 12689)—A contract

award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

9. Byrd Anti-Lobbying Amendment.

Applicability: This requirement applies, and the clauses are incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- a. Contractors that apply or bid for an award of \$100,000 or more must file the required certification. See 2 C.F.R. Part 200, Appendix II, ¶J; 44 C.F.R. Part 18; Chapter IV, 6.c; Appendix C, ¶ 4.
- b. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. § 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal Award. Such disclosures are forwarded from tier to tier, up to the non-Federal award. See Chapter IV, ¶ 6.c and Appendix C, ¶ 4.
- c. Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352 (as amended)

Contractors who apply or bid for an award of \$100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier, up to the recipient.

APPENDIX A, 44 C.F.R. PART 18- CERTIFICATION REGARDING LOBBYING Certification for Contracts, Grants, Loans, and Cooperative Agreements (To be submitted with each bid or offer exceeding \$100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge, 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 an 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 Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Contractor certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. § 3801 et seq.,

10. Procurement of Recovered Materials.

Applicability: This requirement applies, and the clauses are incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- a. A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with Section 6002 of the Solid Waste Disposal Act, Pub. L. No. 89-272 (1965) (codified as amended by the Resource Conservation and Recovery Act at 42 U.S.C. § 6962). See 2 C.F.R. Part 200, Appendix II, ¶ K; 2 C.F.R. § 200.322; Chapter V, ¶7.
- b. The requirements of Section 6002 include procuring only items designated in guidelines of the 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, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired by the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

- c. (1) In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA• designated items unless the product cannot be acquired-

(i) Competitively within a timeframe providing for compliance with the contract performance schedule;

(ii) Meeting contract performance requirements; or

(iii) At a reasonable price.

(2) Information about this requirement is available at EPA's Comprehensive Procurement Guidelines web site, <http://www.epa.gov/cpg/>. The list of EPA-designate items is available at <http://www.epa.gov/cpg/products.htm>.

11. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment.

Applicability: This requirement applies, and the clauses are incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

(a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:

(1) Procure or obtain;

(2) Extend or renew a contract to procure or obtain; or

(3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115–232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

(b) In implementing the prohibition under Public Law 115–232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to

transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

(c) See Public Law 115–232, section 889 for additional information.

(d) See also § 200.471.

12. Domestic Preferences for Procurements.

Applicability: This requirement applies, and the clauses are incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- (a) As appropriate and to the extent consistent with law, the non–Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.
- (b) For purposes of this section:
 - (1) “Produced in the United States” means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
 - (2) “Manufactured products” means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

13. Access to Records.

This requirement applies and the clauses are incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- (1) The Contractor agrees to provide the City of Killeen (insert name of state agency or local or Indian tribal government), (insert name of recipient), the federal awarding agency, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.
- (2) The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.
- (3) The Contractor agrees to provide the federal awarding agency or his authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.

14. DRS Seal, Logo, and Flags.

This requirement applies and the clause is incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- a. The Contractor shall not use the DRS seal(s), logos, crests, or reproductions of flags or likenesses of DRS agency officials without specific federal awarding agency

preapproval.

15. Compliance with Federal Law, Regulations, and Executive Orders.

This requirement applies and the clause is incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- a. This is an acknowledgement that FEMA financial assistance, CARES Funds, or other federal funds will be used to fund the contract only. The contractor will comply with all applicable federal law, regulations, executive orders, federal awarding agency policies, procedures, and directives.

16. No Obligation by Federal Government.

This requirement applies and the clause is incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- a. The Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the non-Federal entity, contractor, or any other party pertaining to any matter resulting from the contract.

17. Program Fraud and False or Fraudulent Statements or Related Acts.

This requirement applies and the clause is incorporated to all FEMA grant, cooperative agreement programs, and City contracts and Purchase Orders that are funded through federal awards and grants:

- a. The Contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the contractor's actions pertaining to this contract.

V. CONFLICT OF INTEREST QUESTIONNAIRE, FORM CIQ

CONFLICT OF INTEREST QUESTIONNAIRE, FORM CIQ
BID NO. 22-20 Generator Project
CITY OF KILLEEN, TEXAS

Chapter 76 of the Texas Local Government Code requires certain persons who wish to conduct business or be considered for business with a city to file a “conflict of interest questionnaire.” The Texas Ethics Commission (TEC) created the conflict of interest questionnaire (FORM CIQ). These laws are codified in Chap. 176 of the Texas Local Government Code.

What vendors/persons are subject to Chapter 176?

The word “person” includes a partnership, corporation or other corporate body, including those performing professional services. Such partnerships or corporations act through individuals, but it is the partnership or corporation that would be seeking to do business with the city.

- Any “person” who contracts or seeks to contract for the sale or purchase of property, goods, or services with a local governmental entity
- An agent of a person who contracts or seeks to contract for the sale or purchase of property, goods, or services with a local governmental entity
- A vendor shall file a completed conflict of interest questionnaire if the person has a business relationship with a local governmental entity and:
 - (1) has an employment or other business relationship with an officer of that local governmental entity, or a family member of the officer that results in taxable income exceeding \$2,500 during the 12 month period preceding the date a contract is executed or a contract is being considered; Local government officer means a member of the governing body, a person designated the executive officer or an agent (including an employee) who exercises discretion in the planning, recommending or contracting of a vendor. or
 - (2) has given an officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value of more than \$100 in the 12 month period preceding the date a contract is executed or a contract is being considered.

What triggers the requirement to file a “conflict of interest questionnaire”?

When a person begins (1) contract discussions or negotiations with the city or (2) submits an application, response to request for proposals or bids, correspondence, or another writing related to a potential agreement, Form CIQ must be completed. Whether the person initiates the discussion or the city initiates the discussions, Form CIQ must be completed. Even if the vendor has no affiliation or business relationship with an officer or employee of the city, Form CIQ must be completed and submitted.

To what type of contracts does the bill apply?

Any written contract and any implied contract, such as purchase orders, procurement card purchases, utility purchases, or any exchange of money or other consideration for some service or property. The monetary amount or value of the contract/purchase does not matter.

When must a vendor file the conflict of interest questionnaire?

No later than seven days after the date the person: (a) begins contract discussions or negotiations with the city, or (b) submits an application or response to a request for proposals or bids, correspondence, or another writing related to a potential agreement with a city, or (c) becomes aware of an employment relationship with a local government officer or family member of the officer, or (d) becomes aware of a qualifying gift.

What has to be revealed?

Section 176.006 requires disclosure of a person's employment or business relationships. This includes each employment or business relationship with a corporation or other business entity with respect to which a local government officer services as an officer or director or holds an ownership interest of 10% or more.

How do I go about filling out the Conflict of Interest Questionnaire form?

Each number below corresponds with the number on FORM CIQ:

1. Fill in the full name of the person who is trying to do business with the City. If the person is a corporation, partnership, etc., then it is the name of that corporation, partnership, etc., that is required on Form CIQ.
2. Check box if the form is an update to a form previously completed. Updates are required by the 7th business day after an event that makes a statement in a previously filed questionnaire incomplete or inaccurate. Updates are also required by September 1 of each year in which the person submits a proposal, bid or response to the City of Killeen or begins contract discussions or negotiations with the City.
3. Complete this Section by listing the name of the local government officer (member of City Council, City Manager or an employee who exercises discretion in the planning, recommending or contracting of a vendor) with whom there is an affiliation to or business relationship and you checked the "Yes" box in Section 3 A, B, or C.

If there is more than one local government officer (City Council, City Manager or an employee who exercises discretion in the planning, recommending or contracting of a vendor) with whom there is an affiliation or business relationship, more than one page two may be needed to provide information on each local government officer.

4. State whether the local government officer named on the form receives or is likely to receive taxable income, other than investment income, from the vendor filing the questionnaire.
5. State whether the filer receives or is likely to receive taxable income, other than investment income, from or at the direction of the local government officer named on the form AND the taxable income is not received from the local governmental entity.
6. State whether the filer is employed by a corporation or other business entity with which the local government officer serves as an officer or director or holds an ownership interest of 10% or more.
7. Describe each employment or business relationship with the local government officer named on the form.
8. Signature box. Person completing form must date and sign the form. If the form is being completed for a corporation, partnership, etc. The person signing should be someone who is authorized to act on behalf of the corporation, partnership, etc.

A signature is required in box #4 regardless of any other entry on the form.

A copy of Chapter 176 of the Texas Local Government Code can be found at:

<http://www.statutes.legis.state.tx.us/SOTWDocs/LG/htm/LG.176.htm>

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

FORM CIQ

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

OFFICE USE ONLY

Date Received

1 Name of vendor who has a business relationship with local governmental entity.

T. Morales Company Electric & Controls, Ltd.

2 ☐ Check this box if you are filing an update to a previously filed questionnaire. (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 Name of local government officer about whom the information is being disclosed.

Name of Officer

4 Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

☐

Yes

☐

No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

☐

Yes

☐

No

5 Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.

6 ☐ Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

7


Signature of vendor doing business with the governmental entity

April 21, 2022
Date

VI. DISCLOSURE OF INTERESTED PARTIES

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

1 of 1

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY CERTIFICATION OF FILING

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

T. Morales Company Electric & Controls, Ltd.
Florence, TX United States

Certificate Number:
2022-875885

Date Filed:
04/20/2022

Date Acknowledged:

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

City of Killeen, TX

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

22-20
Electrical and controls installation and services.

4	Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
			Controlling	Intermediary

5 Check only if there is NO Interested Party.



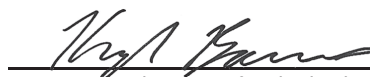
6 UNSWORN DECLARATION

My name is Kyle R. Barnes, and my date of birth is November 6, 1967.

My address is 601 S. Patterson Ave., Florence, Texas, 76527, USA.
(street) (city) (state) (zip code) (country)

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

Executed in Williamson County, State of Texas, on the 20th day of April, 2022.
(month) (year)



Signature of authorized agent of contracting business entity
(Declarant)

VII. REFERENCES

REFERENCES
BID NO. 22-20 Generator Project
CITY OF KILLEEN, TEXAS

Include below three references:

Reference #1

Company Name City of Harker Heights
Address 305 Miller's Crossing, Harker Heights, TX 76548

Type of Business Municipality
Contact Person Mark Hyde
Telephone and Fax #'s 254-953-5641

Reference #2

Company Name JRSA Consulting Electrical Engineers
Address 6101 W. Courtyard Dr., Suite 1-200, Austin, TX 78730

Type of Business Engineering Firm
Contact Person James R. Schultz
Telephone and Fax #'s 512-452-8789

Reference #3

Company Name SSP Industries, L.P.
Address 2749 Chaparral Rd., Killeen, TX 76542

Type of Business Utility Contractor
Contact Person Ron Fournier
Telephone and Fax #'s 254-699-2115

VIII. SCOPE AND SPECIFICATIONS OF WORK

SCOPE AND SPECIFICATIONS
BID NO. 22-20 Generator Project
CITY OF KILLEEN, TEXAS

SCOPE:

The City of Killeen Water and Sewer Division seeks to hire a company who will provide and install a new 900kW diesel standby generator with a Nema 3R, 1,600-amp automatic transfer switch at Pump Station No. 6 and a new 150kW diesel standby generator with a Nema 3R, 250-amp automatic transfer switch at Pump Station No. 7. All necessary concrete pads, duct banks, feeder conductors, wiring, and other appurtenances necessary to interface new equipment with existing equipment is required.

SPECIFICATIONS: (Attachment A)

Section 26 00 10 – General Provisions
Section 26 01 10 – Raceways
Section 26 01 20 – Wire and Cable
Section 26 04 10 – Underground Electrical
Section 26 04 50 – Grounding Systems
Section 16210 - Emergency Generator Set
Section 16524 - Automatic Transfer Switch

PART 1 GENERAL

1.01 GENERAL CONDITIONS

- A. The General Conditions and Requirements, Special Provisions, are hereby made a part of this Section.
- B. The Electrical Drawings and Specifications under this Section shall be made a part of the Contract Documents. The Drawings and Specifications of other sections of this contract, as well as supplements issued thereto, information to bidders and pertinent documents issued by the Owner's Representative are a part of these Drawings and Specifications and shall be complied with in every respect. Failure to examine all documents shall not relieve the responsibility or be used as a basis for additional compensation.
- C. Furnish all work, labor, tools, superintendence, material, equipment and operations necessary to provide for a complete and workable electrical system as defined by the Contract Documents. A licensed journeyman shall be on site at all times while electrical work is being performed and a licensed master electrician shall be in charge of the work. Submit license for master electrician and all journeymen.
- D. Be responsible for visiting the site and checking the existing conditions. Ascertain the conditions to be met for installing the work and adjust bid accordingly. This project shall include electrical work as shown on the Location Map.
- E. It is the intent of the Contract Documents that upon completion of the electrical work, the entire system shall be in a finished, workable condition.
- F. All work that may be called for in the Specifications but not shown on the Drawings, or, all work that may be shown on the Drawings but not called for in the Specifications, shall be performed by the Contractor as if described in both. Should work be required which is not set forth in either document, but which work is nevertheless required for fulfilling of the intent thereof, then the Contractor shall perform all work as fully as if it were specifically set forth in the Contract Documents.
- G. The definition of terms used throughout the Contract Documents shall be as specified by the following agencies:
 - 1. Underwriters Laboratories
 - 2. National Electrical Manufacturers Association
 - 3. American National Standards Institute
 - 4. Insulated Power Cable Engineers Association
 - 5. National Electrical Code
 - 6. National Fire Protection Association
- H. The use of the terms "as (or where) indicated", "as (or where) shown", "as (or where) specified", or "as (or where) scheduled" shall be taken to mean that the reference is made to the Contract Documents, either on the Drawings or in the Specifications, or both documents.
- I. The use of the words "furnish", "provide", or "install" shall be taken to mean that the item or facility is to be both furnished and installed under Division 16, unless stated to the contrary that the item or facility is to be either furnished under another Division or under another Contract,

furnished under this Division and installed under another Division or under another Contract, or furnished and installed under another Division or under another Contract.

1.02 PERMITS AND CODES

- A. Secure all permits, licenses, and inspection as required by all authorities having jurisdiction. Give all notices and comply with all laws, ordinances, rules, regulations and contract requirements bearing on the work.
- B. The minimum requirements of the electrical system installation shall conform to the latest edition of the National Electrical Code, as well as state and local codes.
- C. Codes and ordinances having jurisdiction and specified codes shall serve as minimum requirements, but, if the Contract Documents indicate requirements which are in excess of those minimum requirements, then the requirements of the Contract Documents shall be followed. Should there be any conflicts between the Contract Documents and codes, or any ordinances, report these with bid.

PART 2 PRODUCTS

2.01 STANDARDS

- A. All materials and equipment shall conform to the requirements of the Contract Documents. They shall be new, free from defects, and they shall conform to the following standards where these organizations have set standards:
 - 1. Underwriters Laboratories (UL)
 - 2. National Electrical Manufacturer's Association (NEMA)
 - 3. American National Standards Association (ANSI)
 - 4. Insulated Cable Engineers Association (ICEA)
- B. All material and equipment of the same class shall be supplied by the same manufacturer, unless specified to the contrary.
- C. All products shall bear UL labels where standards have been set for listing. All other products shall be UL labeled. Motor control centers, switchboards, and switchgear shall have UL labels. Custom panels, modified motor starters, control panels, and instrument panels and the like shall be manufactured by a fabricator approved as a UL508A shop and shall bear a UL 508A or UL Industrial Control Panel label.
- D. When the Contractor provides a product for this project he shall be bound by the terms and conditions of the Contract Documents and he shall agree to warrant and to be liable for the merchantability and fitness of his product to the applications to which his product is applied under the Contract Documents.

2.02 SHOP DRAWINGS AND SUBMITTALS

- A. Shop drawings and submittals shall comply with general conditions and as specified herein.

- B. Shop drawings shall be taken to mean detailed drawings with dimensions, schedules, weights, capacities, installation details and pertinent information that will be needed to describe the material or equipment in detail.
- C. Submittals shall be taken to mean catalog cuts, general descriptive information, catalog numbers and manufacturer's name.
- D. Submit for review all shop drawings and submittals as hereinbefore called for.
- E. Review of submittals or shop drawings shall not remove the responsibility for furnishing materials or equipment or proper dimensions, quantity and quality, nor will such review remove the responsibility for error in the shop drawings or submittals.
- F. Failure to process submittals or shop drawings on any item and/or items specified shall make the Contractor responsible for the suitability for the item and/or items, even though the item and/or items installed appear to comply with the Contract Documents.
- G. Assume all costs and liabilities which may result from the ordering of any material or equipment prior to the review of the shop drawings or submittals, and no work shall be done until the shop drawings or submittals have been reviewed. In case of correction or rejection, resubmit until such time as they are accepted by the Owner's Representative, and such procedures will not be cause for delay.
- H. Submittals and shop drawings shall be compiled from the manufacturer's latest product data. Should there be any conflicts between this data and the Contract Documents, report this information for each submittal and/or shop drawing.
- I. Shop drawings and submittals will be returned and unchecked if the specific items proposed are not clearly marked, or if the General Contractor's approval stamp is omitted.
- J. When requested, furnish samples of materials for acceptance review. If a sample has been reviewed and accepted, then that item of material or equipment installed on the job shall be equal to the sample; if it is found that the installed item is not equal, then replace all such items with the accepted sample equivalent.

2.03 ACCEPTANCE AND SUBSTITUTIONS

- A. All manufacturers named are a basis as a standard of quality and substitutions of any equal product will be considered for acceptance. The judgment of equality of product substitution shall be made by the Engineer.
- B. Substitutions after award of Contract shall be made only within sixty (60) days after the notice to proceed. Furnish all required supporting data. The submittal of substitutions for review shall not be cause for time extensions.
- C. Where substitutions are offered, the substituted product shall meet the product performance as set forth in the specified manufacturer's current catalog literature, as well as meeting the details of the Contract Documents.
- D. The details on the drawings and the requirements of the Specifications are based on the first listed material or equipment. If any other than the first listed material or equipment is furnished, then assume responsibility for the correct function, operation, and accommodation of the substituted item. In the event of misfits or changes in work required, either in this section or other sections

of the Contract, or in both, bear all costs in connection with all changes arising out of the use of other than the first listed item specified.

- E. Substitutions of products under other sections may occur. Make necessary adjustments and additions to work under Division 26 to accommodate those substitutions. Such adjustments and additions shall be performed in compliance with Division 26 Specifications at no additional charge.
- F. Energy efficiency of each item of power consuming equipment shall be considered one of the standards for evaluation.

PART 3 EXECUTION

3.01 CUTTING AND PATCHING

- A. Cutting and patching required under this section shall be done in a neat workmanlike manner. Cutting lines shall be uniform and smooth.
- B. Use concrete saws for large cuts in concrete and use core drills for small round cuts in concrete.
- C. Where openings are cut through masonry walls, provide lintel or other structural support to protect the remaining masonry. Adequate support shall be provided during the cutting operation to prevent damage to masonry.
- D. Where large openings are cut through metal surfaces, attach metal angle around the opening.
- E. Patch concrete openings that are to be filled with nonshrinking cementing compound. Finish concrete patching shall be troweled smooth and shall be uniform with surrounding surfaces.

3.02 WATERPROOFING

Provide waterproof flashing for each penetration of exterior walls and roofs.

3.03 CONSTRUCTION REQUIREMENTS

- A. Except where specifically noted or shown, the locations and elevations of equipment are approximate and are subject to small revisions as may prove necessary or desirable at the time the work is installed. Locations changed substantially from that shown on the drawings shall be confirmed with the Engineer in advance of construction.
- B. Where equipment is being furnished under another Division, request from Engineer an accepted drawing that will show exact dimensions of required locations or connections. Install the required facilities to the exact requirements of the accepted drawings.
- C. All work shall be done in the best and most workmanlike manner by qualified, careful electricians who are skilled in their trade. The standards of work required throughout shall be of the first class only.
- D. Unless shown in detail, the Drawings are diagrammatic and do not necessarily give exact details as to elevations and routing of raceways, nor do they show all offsets and fittings; nevertheless,

install the raceway system to conform to the structural and mechanical conditions of the construction.

- E. Holes for raceway penetration into sheet metal cabinets and boxes shall be accurately made with an approved tool. Cutting openings with a torch or other device that produces a jagged, rough cut will not be acceptable.
- F. Cabling inside equipment shall be carefully routed, trained and laced. Cables so placed that they obstruct equipment devices will not be acceptable.
- G. Equipment shall be set level and plumb. Supporting devices installed shall be set and so braced that equipment is held in a rigid, tight-fitting manner.

3.04 EQUIPMENT PROTECTION

- A. Provide suitable protection for all equipment, work and property against damage during construction.
- B. Assume full responsibility for material and equipment stored at the site.
- C. Conduit openings shall be closed with caps or plugs during installation and made watertight. All outlet boxes and cabinets shall be kept free of concrete, plaster, dirt and debris.
- D. Equipment shall be covered and tightly sealed against entrance of dust, dirt and moisture.
- E. All dry-type transformers prior to energization shall be protected against moisture and dirt absorption by a suitable covering. Also, maintain heat inside the covering by means of 100 watt minimum lamps.
- F. Interiors of and motor control centers shall be kept clean and dry prior to energization. Maintain heat inside each unit with one (1) 100 watt lamp located at bottom of each vertical section or energize section space heaters.

3.05 COOPERATION WITH WORK UNDER OTHER DIVISIONS

- A. Cooperate with all other trades so as to facilitate the general progress of their work. Allow all other trades every reasonable opportunity for the installation of their work and the storage of their materials.
- B. The work under this section shall follow the general building construction closely. Set all pipe sleeves, inserts, etc., and see that openings for chases, pipes, etc., are provided before concrete is placed or masonry installed.
- C. Work with other trades in determining exact locations of outlets, conduits, fixtures, and pieces of equipment to avoid interference with lines as required to maintain proper installation of other work.
- D. Make such progress in work that will not delay the work of other trades. Schedule the work so that completion dates as established by the Engineer are met. Furnish sufficient labor or work overtime to accomplish these requirements if directed to do so.

3.06 INSTALLATION OF WORK UNDER ANOTHER DIVISION

- A. Verify the electrical capacities of all motors and electrical equipment furnished under other sections, or furnished by the Owner, and request wiring information from the Engineer if wiring requirements are different from that specified under this Section. Do not make rough-ins until equipment verification has been received.
- B. Install all motors, controllers, terminal boxes, pilot devices, and miscellaneous items of electrical equipment that are not integrally mounted with the equipment furnished under other divisions. All such equipment shall be securely mounted and adequately supported in a neat and workmanlike manner.

3.07 CLEAN-UP

- A. Remove all temporary labels, dirt, paint, grease and stains from all exposed equipment. Upon completion of work, clean equipment and the entire installation so as to present a first class job suitable for occupancy. No loose parts or scraps of equipment shall be left on the premises.
- B. Equipment paint scars shall be repaired with paint kits supplied by the equipment manufacturer or with an approved paint.
- C. Clean interiors of each item of electrical equipment. At completion of work all equipment interiors shall be free from dust, dirt and debris.

3.08 TESTS

- A. Test all systems furnished under Division 26 and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the system.
- B. Make all circuit breaker and protective relay adjustments and settings.
- C. Make the following minimum tests and checks prior to energizing the electrical equipment:
 - 1. Check all wire and cable terminations for tightness.
 - 2. Test all wiring as specified in Section 26 01 20.
 - 3. Test grounding system as specified in Section 26 04 50.
 - 4. Set all transformer taps as required to obtain the proper secondary voltage.
 - 5. Carefully check all interlocking, control and instrument wiring for each system to ascertain that the system will function properly as indicated by schematics, wiring diagrams, or as specified herein.
 - 6. Mechanical inspection of all low voltage circuit breakers, disconnect switches, motor starters, control equipment, etc. for proper operation.
 - 7. Provide all instruments and equipment required for the above tests.

3.09 RECORD DRAWINGS

- A. At the start and during the progress of the job, keep one separate set of blue-line prints for making construction notes and mark-ups.
- B. Show conduit routing and wiring runs as constructed and identify each.

- C. Record all deviations from the Contract Documents.
- D. Submit set of marked-up drawings for review. The final payment will not be made until the review is complete.

3.11 OPERATIONS AND MAINTENANCE MANUALS

- A. Compile an Operations and Maintenance Manual on each item of equipment. These manuals shall include detailed instructions and maintenance as well as spare parts lists.
- B. Submit copies for review as hereinbefore specified.
- C. Preliminary Operations and Maintenance Manuals shall be included with the initial shipments.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE

- A. This section shall include raceways, enclosures, supporting devices ancillary fittings and appurtenances. Furnish and install the complete raceway systems as shown on the Drawings and as specified herein.
- B. Raceway is a broad-scope term that shall be defined by the National Electrical Code under Article 100.

1.02 APPLICATIONS

- A. Except as otherwise shown on the Drawings, or otherwise specified, all underground and in-slab conduit raceways shall be of the following type:
 - 1. Except as otherwise specified, all power and control underground conduit runs shall be made with schedule 40 PVC. Bends to grade shall be made with plastic coated rigid aluminum conduit.
- B. Except as otherwise shown on the Drawings, or otherwise specified, all above grade conduit raceways shall be of the following type:
 - 1. Indoor exposed power and control conduit shall be rigid aluminum conduit. Instrumentation, signal, and communication conduit shall be have 24" separation from power conduits.
 - 2. Outdoor exposed power, control, and instrumentation, signal, and communication conduit shall be rigid aluminum conduit, except where areas are denoted as corrosive or NEMA 4X. In those area furnish plastic coated rigid aluminum conduit, fittings, and boxes.
 - 3. Instrument conduits shall be separated by 18" from power conduits when run in parallel for more than 5'.

1.03 SUBMITTALS AND SHOP DRAWINGS

- A. Process catalog submittals for the following:
 - 1. Rigid Metallic Aluminum Conduit
 - 2. Plastic Jacketed Rigid Aluminum Conduit
 - 3. Rigid Non-Metallic Conduit
 - 4. Liquid-tight Flexible Conduit
 - 5. Liquid-tight Fittings
 - 6. Conduit Bushings
 - 7. Conduit Bodies
 - 8. Conduit Sealing Fittings
 - 9. Expansion-Deflection Fittings
 - 10. Expansion Fittings
 - 11. Cast Metal Boxes
 - 12. Tape Products
 - 13. Wiring Devices
 - 14. Supporting Devices

- 15. Labels
- 16. Grounding Devices
- 17. Foam Sealant

PART 2 PRODUCTS

2.01 RACEWAYS

- A. Rigid metallic aluminum conduit shall be manufactured of 6063 alloy, T-1 temper, with no more than 0.02% copper content. All conduit couplings shall be threaded aluminum. All such conduit shall be listed with UL and comply with UL-6 and ANSI C80.5. Aluminum conduit shall be New Jersey Aluminum, or equal.
- B. Plastic coated rigid aluminum conduit shall consist of rigid aluminum body that complies with above specifications for rigid aluminum conduit, plus conduit shall have 40 mil thick heat-fused PVC over outside and 2 mil coat of fully catalyzed phenolic inside. The inside coat shall have the chemical resistance of the outer coating and shall not dissolve in lacquer thinner. All couplings shall be equipped with PVC sleeves that extend one pipe diameter or 2", whichever is less, beyond the end of the coupling. All plastic coated conduit shall conform to NEMA Standard #RNI-1974 (Type A) and such conduit shall be manufactured by Robroy, Perma-Cote, or Kor-Kap.
- C. Non-metallic rigid conduit shall be Schedule 40 PVC. Such conduit shall be UL listed for 90 degrees C and shall conform to NEMA TC-2 and UL-651 standards. Furnish Carlon, Sedco, or equal. Furnish manufacturer's approved solvent for joining couplings.
- D. Liquid-tight flexible conduit shall be constructed of non-metallic sunlight resistant PVC with aluminum core. Furnish Anaconda or equal product.

2.02 CONDUIT FITTINGS

- A. Conduit Hubs for rigid metallic conduit shall be constructed of aluminum. Furnish Meyers Hubs.
- B. Conduit field-applied hubs for sheet metal enclosures shall be aluminum body with recessed neoprene sealing ring, threaded NPT insert, and shall be, T&B 370 AL series, or equal products by OZ/Gedney.
- C. Conduit hubs for non-metallic enclosures shall be fiberglass polyester reinforced with galvanized steel core, complete with locknut and grounding bushing. All such hubs shall be Crouse-Hinds Type NHU, or equal.
- D. Rigid metallic conduit chase nipples, split couplings, slip fittings, unions, reducers, and enlargers, shall be aluminum.
- E. Rigid metallic conduit short els and long els shall be rigid aluminum with NPT threaded hubs and male ends. Throats shall be smooth and free from burrs. All such fittings shall be OZ/Gedney Type "9" Series, Appleton, or equal.
- F. Rigid metallic conduit split couplings shall made of aluminum and have threaded body with split tightening shelves with neoprene sandwich. Such fittings shall be OZ type "SSP", or equal.

- G. Rigid metallic conduit grounding bushings shall be aluminum body with threaded hub, bakelite insulated throat, and tin-plated copper ground lug. Furnish OZ/Gedney type ABLG, or equal.
- H. Liquid-tight flexible conduit fittings shall be suitable for the specified flexible conduit and shall be type B. Furnish straight or angle connectors as required. All such connectors shall be OZ/Gedney type 4QP, or equal.
- I. Rigid metallic conduit expansion fittings shall consist of metallic barrel joined to hubs at each end. One hubs shall be threaded to barrel and other hub shall have slip fit to allow up to four (4") inches of conduit lateral movement. Provide external bonding jumper for each expansion joint. Shall have stainless steel clamps and aluminum straps. Furnish OZ Type "EXA", or equal for expansion fitting and OZ Type ABJ for jumper.
- J. Conduit waterstops for sealing inside of conduit runs shall consist of aluminum pressure discs with sandwiched neoprene seal and with 316 stainless steel hardware. Furnish OZ/Gedney type "CS" series products, as indicated.
- K. Conduit sealing bushings for penetrations in exterior walls shall be constructed of neoprene and shall have a stainless steel disk with stainless steel bolts and hardware. Furnish OZ/Gedney "CSM" series products. For existing walls core drill wall to size recommended by manufacturer of sealing bushing. Use two bushings per wall penetration, one each side. For newly constructed walls provide a PVC Schedule 40 sleeve in concrete pour. PVC sleeve shall have water stop and the sleeve size shall be as recommended by the manufacturer of the sealing bushing.

2.03 CONDUIT BODIES AND BOXES

- A. Conduit bodies such as "C", "LB", "T" and the like pulling fittings shall be aluminum. Covers for damp and/or wet location use shall be gasketed cast metal with "wedge-nut" clamps. Covers for dry locations shall be cast aluminum and hardware shall be 316 stainless steel. All covers shall be equipped with clamp type clevises. Furnish Crouse-Hinds Form 7, or Appleton Form "FM7" products.
- B. Conduit bodies for use in corrosive areas shall be as specified above but shall have 40 mil plastic coated PVC jacket and 2 mil interior coating as specified for plastic coated rigid metallic conduit. Furnish Robroy, Perma-Cote, or Kor-Kap
- C. Conduit bodies such as "GUA", "GUAT", "GUAL", and the like pulling/splicing fittings shall be cast aluminum with threaded cast aluminum covers. All such conduit bodies shall be Killark "GE" series, or equal products by Crouse-Hinds or Appleton.
- D. Outlet boxes, pullboxes, and junction boxes whose volume is smaller than 100 cubic inches shall be sand-cast, copper-free aluminum. All boxes shall have threaded hubs and integral cast mounting lugs. Furnish Crouse-Hinds "FD" style condulets, Appleton "FD" style Unilets, or equal.
- E. Covers for cast metal boxes shall be gasketed cast metal covers with 316 stainless steel screws and shall be suitable for use in wet or damp locations.
- F. Conduit and device boxes for use in concealed drywall applications only shall be pressed sheet steel type. Furnish Racor or equal.

2.04 PULL AND JUNCTION BOXES

- A. Pullboxes and junction boxes whose volume is less than 100 cubic inches shall be furnished as specified hereinbefore except where sheet metal types are shown, in which case, furnish such sheet metal enclosures in NEMA 4X 316 stainless steel construction with gasketed covers of same material. Provide 316 SS quick release luggage type latches.
- B. Pullboxes and junction boxes whose volume is 100 cubic inches and greater shall be NEMA 4X 316 grade stainless steel type with gasketed stainless steel covers. Provide print pocket and interior back panel for mounting of terminal strips where terminal strips are called for on the drawings. Sheet metal boxes shall be as manufactured by Hoffman or equal. Provide 316 SS quick release luggage type latches.
- C. Covers for sheetmetal pullboxes and junction boxes over 100 cubic inches (and for smaller sized where shown) shall have hinged doors. All hardware shall be stainless steel.
- D. Cast metal junction boxes shall be cast aluminum type with gasketed, cast metal covers, integral mounting lugs, and with stainless steel cover screws.

2.05 LABELS

- A. Buried conduit marking tape for marking path of secondary buried conduits shall be four (4") inch nominal width strip of polyethylene with highly visible, repetitive marking "BURIED CONDUIT" or similar language, repeated along its length.
- B. Voltage warning labels for cabinets shall be waterproof vinyl strips with adhesive back and shall have "DANGER (VOLTAGE) - DISCONNECT ALL SOURCES OF POWER BEFORE ENTERING". Letters shall be highly visible red color on white background.
- C. Specify stainless steel or non-metallic machine printed conduit tags attached with stainless steel wire or nylon tie wraps.

2.06 SUPPORTING DEVICES

- A. Mounting hardware, nuts, bolts, lockwashers, and washers, shall be Grade 316 stainless steel.
- B. Unless otherwise indicated, channel framing and supporting devices shall be manufactured of ASTM 6063, T6 grade aluminum; 1-5/8" wide x 3-1/4" deep (double opening type). Thickness shall be 0.105". Clamp nuts for use with channels shall be grade 316 stainless steel.
- C. Where indicated, furnish grade 316 stainless steel slotted channel members 1-5/8" wide x 1-5/8" deep or 1 5/8" x 3 1/4" deep, double-faced type, 12 gauge. All hardware and conduit clamps shall be grade 316 stainless steel.
- D. Conduit clamp supports for terminating conduits onto cable trays shall be mechanically galvanized 316 SS or aluminum with adjustable angle clamp. Fittings shall be provided with 316 stainless steel hardware. Furnish OZ/Gedney type CTC products.
- E. All such channel members and fittings shall be B-Line, Unistrut or equal.

- F. Conduit straps, and associated nuts, lockwashers and bolts for use with channels shall be 316 stainless steel with 316 stainless steel hardware. Furnish B-Line products or equal.
- G. After-set concrete inserts (drilled expansion shields "D.E.S.") shall consist of two types. For anchors to accommodate 5/16" diameter bolts and smaller, provide HILTI "HDI" series 316 stainless steel anchors. For anchors to accommodate 3/8" diameter and larger bolts, provide HILTI "HVA" series with 316 stainless steel threaded inserts.
- H. Hanger rod shall be 3/8" minimum diameter Type 316 stainless steel all-thread.
- I. Nest-back or clamp-back conduit supports shall be two-piece type constructed of copper free aluminum. Furnish Thomas & Betts 1976AL Series, or equal.
- J. Conduit beam clamps shall be stainless steel or hardened aluminum and shall be as follows:

TYPE	MANUFACTURER
1. Right Angle	OZ/Gedney Type "UBCG", or equal.
2. Parallel	OZ/Gedney Type "UPCG", or equal.
3. Edge	OZ/Gedney Type "UECG", or equal.

- K. Hanger rod beam clamps shall be clamp type with hardened 316 stainless steel, bolt, Steel City "500" Series, Crouse-Hinds type "MW", or equal. Furnish swivel stud for each rod make-up.
- L. Conduit "J" hangers shall consist of stainless steel straddle with detachable bolt. Furnish Kindorf type "C-149", Unistrut "J-1200" Series, or equal.
- M. Conduit "U" bolts shall be 316 stainless steel with 316 stainless steel hex-head bolts.
- N. Equipment stands for supporting devices such as control stations, device boxes and the like, shall consist of a welded structural aluminum c-channel and plate aluminum floor plate as detailed on the drawings.

2.07 MISCELLANEOUS MATERIAL

- A. Double bushings for insulating wiring through sheet metal panels shall consist of mating male and female threaded phenolic bushings. Phenolic insulation shall be high-impact thermosetting plastic rated 150 degrees C. Furnish OZ Type "ABB", or equal.
- B. Conduit pull-cords for use in empty raceways shall be glass-fiber reinforced tape with foot-marked identification along its length. Furnish Thomas, Greenlee, or equal products.
- C. Conduit thread coating compound shall be conductive, non-galling, and corrosion-inhibiting. Furnish Crouse- Hinds Type "STL", Appleton Type "ST", or equal.
- D. Plastic compound for field-coating of ferrous material products shall be PVC in liquid form that sets-up semi- hard upon curing. Furnish Rob Roy "Rob Kote", Sedco "Patch Coat", or equal.
- E. Foam sealant for waterproofing uses shall be Chase Technologies "Chase Foam", or equal.

PART 3 EXECUTION**3.01 RACEWAYS**

- A. Install the conduit system to provide the facility with the utmost degree of reliability and maintenance free operation. The conduit system shall have the appearance of having been installed by competent workmen. Kinked conduit, conduit inadequately supported or carelessly installed, do not give such reliability and maintenance free operation and will not be accepted.
 - 1. Parallel runs of conduit shall be parallel to each other throughout the entire run. Bends and offsets shall occur at the same point such that all offset angles are the same.
 - 2. Conduits making vertical or horizontal changes in direction such that concentric bends are required are acceptable. All concentric bends shall have radii with the same center point.
 - 3. Conduit installation shall be planned such that conduits crossing each other will be minimized.
 - 4. Conduit installations not meeting these criteria in the sole judgment of the Owner or Engineer shall be removed and reinstalled at no charge in the contract price or schedule.
 - 5. Conduits having conductors installed shall not be a reason to not remove and reinstall unacceptable conduit installations. The installed conductors shall be removed and replaced if present in unacceptable conduit systems.
- B. Raceways shall be installed for all wiring runs, except as otherwise indicated.
- C. Conduit sizes, where not indicated, shall be N.E.C. code-sized to accommodate the number and diameter of wires to be pulled into the conduit. Unless otherwise indicated, 3/4" trade-size shall be minimum size conduit.
- D. Unless otherwise noted, conduit runs shall be installed exposed. Such runs shall be made parallel to the lines of the structure. Conduit shall be installed such that it does not create a tripping hazard or an obstruction for headroom.
- E. All runs of rigid conduit shall be threaded, and all male threads shall be coated with non-galling thread compound prior to assembly.
- F. Plastic coated metallic conduit lengths shall be joined with threaded metallic coupling that shall be each equipped with a 40-mil thickness sleeve that shall extend over the threads of the joined conduit. Each joint shall be watertight.
- G. Field-cut threads in runs of plastic-coated metallic conduit shall be cut with a special die that has rear reamed out oversize so as to slip over plastic coating. Do not attempt to cut threads on plastic coated conduit with regular dies, whereby plastic coating is skinned back to allow the incorrect die to be used. Coat all field-cut threads with cold-galvanizing spray, use two coats to provide 1-mil minimum coating thickness.

- H. Conduit runs made in concrete pours or surface-mounted runs that are attached to the structure, shall be equipped with an expansion/deflection fitting where they cross an expansion joint, or at every 100 feet.
- I. Unless otherwise shown, conduit penetrations through floors located below enclosures, shall be made each with couplings set flush with the outside faces of the concrete pour. Each pair of couplings shall be joined with a threaded spool piece. Use coated aluminum couplings.
- J. Rigid metallic conduit runs shall have their couplings and connections made with screwed fittings and shall be made up wrench-tight. Check all threaded conduit joints prior to wire pull. Coat all male threads with Crouse-Hinds "STL" or equal, conductive lubricant prior to joining.
- K. All conduit runs shall be watertight over their lengths of run, except where drain fittings are indicated. In which cases, install specified drain fittings.
- L. Plastic jacketed flexible steel conduit shall be used to connect wiring to motors, limit switches, bearing thermostats, and other devices that may have to be removed for servicing. Unless otherwise indicated, maximum lengths of flex shall be three (3') feet.
- M. Where plastic jacketed flex is installed, make up terminal ends with liquid-tight flex connectors. In wet locations, install sealing gaskets on each threaded male connector. Each flex connector shall be made-up tightly so that the minimum pull-out resistance is at least 150 lbs. Install external spirally-wrapped ground wire around each run of liquid-tight flex and bond each end to specified grounding-type fittings.
- N. Empty conduits shall have pull-ropes installed. Identify each terminus as to location of other end and trade size of conduit. Use blank plastic waterproof write-on label and write information on each label with waterproof ink. Pull a mandrel through each conduit to check and clear blockage before installing pull-rope. Owner's representative shall witness test. Provide documentation that all conduits are clear and ready for future use. Cap exposed ends of empty conduit with threaded plugs.
- O. Conduit runs into boxes, cabinets and enclosures shall be set in a neat manner. Vertical runs shall be set plumb. Conduits set cocked or out of plumb will not be acceptable.
- P. Conduit entrances into equipment shall be carefully planned. Cutting away of enclosure structure, torching out sill or braces, and removal of enclosure structural members, will not be acceptable. No top entry into NEMA 4X where installed outdoors.
- Q. Use approved hole cutting tools for entrances into sheet metal enclosure. Use of cutting torch or incorrect tools will not be acceptable. Holes shall be cleanly cut and they shall be free from burrs, jagged edges, and torn metal.
- R. All raceways shall be swabbed clean after installation. There shall be no debris left inside. All interior surfaces shall be smooth and free from burrs and defects that would injure wire insulation.
- S. Outdoor aluminum runs of raceways shall be installed with expansion fittings and supports as required to accommodate thermal expansion due to changes in temperature appropriate with the structure from which the conduit is supported. Installation shall not appear to be loose or non-linear with changes in temperature from night to day or from summer to winter. In no case shall a

straight run of conduit be installed over 20' without an expansion fitting. Furnish additional expansion fittings if required by the characteristics of the particular installation.

3.02 CONDUIT BODIES AND BOXES

- A. Conduit bodies such as "LB", "T", "GUAT", etc., shall be installed in exposed runs of conduit wherever indicated and where required to overcome obstructions and to provide pulling access to wiring. Covers for such fittings shall be accessible and unobstructed by the adjacent construction. GUA series pulling bodies rather than LB fittings and the like, shall be used for splicing purposes as well as pulling access.
- B. Covers for all conduit bodies shall be installed with gasketed cast metal type where located in damp or wet locations.
- C. All conduit boxes installed whose inside volume is less than 100 cubic inches shall be cast metal type with gasketed cast metal cover, unless otherwise indicated.
- D. All conduit boxes whose inside volume exceeds 100 cubic inches shall be sheet metal type except where gasketed cast metal type, stainless steel or fiberglass reinforced polyester are indicated.
- E. Aluminum boxes and aluminum strut shall be supported ¼" off of concrete surfaces with insulating washers or similar material, or shall be coated with bitumastic.
- F. Use mounting lugs. Drilling through back of boxes is prohibited.

3.03 RACEWAY SUPPORT

- A. All raceway systems shall be adequately and safely supported. Loose, sloppy and inadequately supported raceways will not be acceptable. Supports shall be installed at intervals not greater than those set forth by the NEC, unless shorter intervals are otherwise indicated, or unless conditions require shorter intervals of supports.
- B. Multiple runs of surface mounted conduit on concrete or masonry surfaces shall be supported off the surface by means of aluminum or stainless steel channels. Attach each slotted channel support to concrete surface by means of two (2) 1/4" diameter stainless steel bolts into drilled expansion shields.
- C. Single runs of surface mounted conduit on concrete or masonry surfaces shall be supported with hot-dipped malleable iron conduit clamps and nest-back spacers. Furnish plastic coated malleable iron conduit clamps and nest backs where corrosive areas are called out.
- D. Conduit runs that are installed along metallic structures shall be supported by means of beam clamps as specified herein.
- E. Where Aluminum is used, install neoprene spacers to prevent Aluminum from direct contact with CMU or concrete.

3.04 LABELING

- A. In addition to labeling requirements as specified throughout this and other Sections, install wiring and raceway labeling as follows:
1. Apply identification labels as specified to empty conduits to identify each conduit as to terminus of other end and also to identify trade size of conduit.
 2. Where active conduits terminate into bottoms of motor control centers, install label on each conduit terminus and show number and size of wiring and function of circuitry and trade size of conduit.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE

This section shall include 600 volt and less wire and cable, terminating devices, splice kits, labeling, and appurtenances.

1.02 STANDARDS

- A. ASTM
- B. UL 1277 Electrical Power and Control Tray Cables
- C. UL 1685 Flame Exposure Test for Tray Cables
- D. ICEA T-29-520 Vertical Cable Tray Flame Test
- E. IEEE 1202 Flame Testing of Cables for use in Cable Tray

1.03 SUBMITTALS AND SHOP DRAWINGS

- A. Process catalog submittals for the following:
 - 1. Power and control cable
 - 2. Instrument cable
 - 3. Conductor Connectors
 - 4. Tape Products
 - 5. Labels

PART 2 PRODUCTS

2.01 WIRE AND CABLE

- A. All conductors shall be soft-drawn annealed copper, Class B stranding that meets ASTM B-8. Copper conductors shall be uncoated, except as otherwise specified.
- B. Single conductor cable for power, control, and branch circuits shall have cross-linked polyethylene insulation, rated for 600 volts. Cable shall be NEC type XHHW-2. All such cable shall be rated for wet or dry use. Cable insulation shall be color coded with factory pigmented colors below size #6 awg. Color coding shall be as specified under Part 3 of this section. Cable shall be as manufactured by Southwire or equal.
- C. Instrument cable for analog circuits, shall be # 16 awg, twisted shielded pairs or triads with PVC insulation and overall jacket. Cable assembly shall be rated for 600 volts, wet or dry locations. Furnish Okonite "Okoseal-N Type P-OS" or approved equal.
- D. Single conductor cable for 24 volt dc control shall be minimum size #16. Furnish MTW type insulation for panel wiring and XHHW-2 insulation for field wiring in conduits.

- E. Ground mat and associated upcomers and grounding conductors shall be tin-plated stranded copper.

2.02 CONNECTORS

- A. Mechanical connectors for 600V class wiring shall be tin-plated copper alloy bolted pressure type with bronze tin-plated hardware. Furnish connectors as follows:

<u>TYPE</u>	<u>MANUFACTURER & TYPE</u>
Single conductor to flat-plate connector	Blackburn LH
Multiple conductor to flat-plate connector	Blackburn L2H, L3H, L4H
Split-bolt connector	Blackburn HPS
Two-bolt parallel connector with spacer	Blackburn 2BPW
Cross Connector	Blackburn XT
Splice Connector	Blackburn S

Flush ground connector OZ Type "VG"

- B. Insulated spring wire connectors, "wire-nuts", for small building wire taps and splices shall be plated spring steel with thermoplastic jacket and pre-filled sealant. Connector shall be rated for 600 volts, 75 degrees C continuous. Furnish King Technology, or equal.
- C. Connectors for control conductor connections to screw terminals shall be crimp-type with vinyl insulated barrel and tin-plated copper ring-tongue style connector. Furnish T&B "Sta-Kon", 3M "Scotchlok", or equal.
- D. Terminal strips for miscellaneous field terminations of control and instrumentation circuits shall consist of 12 point box lug terminals with marking surface. Terminal assembly shall accept #18 to #12 awg and shall be rated 600 volts. Furnish Allen-Bradley #1492-HJ812 terminal blocks.

2.03 INSULATING PRODUCTS

- A. Tape products shall be furnished as hereinafter specified and shall be Plymouth, Okonite, 3M, or equal.
- B. General purpose electrical tape shall be 7 mil thick stretchable vinyl plastic, pressure adhesive type, "Slipknot Grey", 3M Scotch 33+, or equal.
- C. Insulating void-filling tape and high voltage bedding tape shall be stretchable ethylene propylene rubber with high-tack and fast fusing surfaces. Tape shall be rated for 90 degrees C continuous,

130 degrees C overload, and shall be moisture-proof. Void filling tape shall be "Plysafe", 3M Scotch 23, or equal.

- D. High temperature protective tape shall be rated 180°C continuous indoor/outdoor, stretchable, self-bonding silicone rubber. High temperature tape shall be Plysil #3455, 3M Scotch 70, or equal.
- E. Insulation putty filler-tape shall be Plymouth #32074, 3M Scotchfill, or equal.
- F. Arc and fireproofing tape shall be Plymouth #3318, 3M Scotch #70 or equal.

2.04 LABELS

- A. Colored banding tape shall be 5 mil stretchable vinyl with permanent solid color. Colors shall be as hereinafter specified. Tape shall be Plymouth "Slipknot 45", 3M Scotch #35, or equal.
- B. Numbered wire marking labels shall be PVC sleeve-type markers, T&B, Brady or equal. Markers using adhesive are not acceptable.
- C. Cable identification ties shall be weather resistant polyester with blank write-on space, T&B, Brady or equal.

2.05 MISCELLANEOUS MATERIAL

- A. Cable grips shall be 316 SS grip-type wire mesh with machined metal support. Furnish Kellems, Appleton, or equal products.
- B. Wire pulling compound shall be non-injurious to insulation and to conduit and shall be lubricating, non-crumbling, and non-combustible. Furnish Gedney "Wire- Quick", Ideal "Yellow" or equal.

PART 3 EXECUTION

3.01 POWER AND CONTROL CABLE

- A. Power and control conductors shall be sized as shown and where no size is indicated, the conductor size shall be #12 awg for power circuits #14 awg for 120 vac control circuits, and #16 awg for instrumentation circuits.
- B. Equipment grounding conductors shall be installed with type XHHW insulated stranded copper conductors and the insulation color shall be green in sizes up to and including #10 awg.
- C. Color coding shall be as follows. Non-factory color coded cables shall be marked with specified color tape. Use the following colors:

CONDUCTOR	120/208V SYSTEMS	480V SYSTEMS
Phase A or L1	Black	Brown
Phase B or L2	Red	Orange
Phase C	Blue	Yellow
Neutral	White	N/A
Ground	Green	Green

- D. Branch circuits may be spliced for receptacle, lighting and small appliance load inside appropriate junction boxes. Feeders, branch circuit, power wiring, control wiring, and signal wiring shall be installed without splice.
- E. Except as otherwise specified, taps and splices with #10 AWG and smaller, shall be made with insulated spring wire connectors. Such connectors in damp or wet locations shall be waterproofed by filling interstices around wires with silicone rubber and further insulating with an envelope of stretched piece of EPR tape around each wire. Then, apply one-half lapped layer of electrical tape over all.
- F. Motor connections made with #10 AWG and smaller wire shall be made up with set-screwed copper lugs with threaded-on insulating jacket. After make-up of each connector, install two (2) layers half-lapped, of high temperature tape over connector barrel and down one (1") inch over wires.
- G. Taps, splices, and connections in #8 AWG and larger wires shall be made with copper alloy bolted pressure connectors. Each such connector shall be insulated by means of applying insulation putty over sharp edges so as to present a smooth bonding surface. Next, apply at least four (4) layers, half-lapped each layer of EPR tape. Then, make final wrapping of at least three (3) layers, half-lapped each layer of electrical tape.
- H. Control wiring connections to stud type and screw type terminals shall be made with ring-tongue type crimp connectors. Label each terminal jacket with wire marking label at each connection.
- I. Each wire connection shall be made up tightly so that resistance of connection is as low as equivalent length of associated conductor resistance.
- J. Numbered marking labels shall be installed to identify circuit numbers from panelboards. Install labels on each wire in each panelboard, junction, pullbox and device connection.
- K. Label each wiring run with write-on waterproof labels inside motor control center. Install write-on label ties around wire group at conduit entrance and write-on label the wire size, conduit size and service.
- L. Install PVC sleeve type numbered marking on each control wire termination at each terminal strip and at each device. Do this in motor control center, terminal cabinets, safety switches, remote

controllers, pilot operators, and instrumentation equipment. Number selected shall correspond to number on terminal strip.

M. All wiring inside equipment enclosures shall be neatly trained and laced with nylon tie-wraps.

3.02 INSTRUMENTATION WIRING

- A. All 4-20mA analog pairs shall have shields grounded at the instrumentation panel and insulated on the field end unless otherwise required by instrument supplier. Single point grounding shall be maintained.

3.03 GROUND WIRING

- A. Each item of equipment shall be adequately and thoroughly grounded. Comply with Article 250 of N.E.C., except where higher standards of grounding have been specified. In addition to requirements as specified under Section 26 04 50, install grounding for general wiring systems as follows.
- B. Equipment grounding conductors (EGC) shall be installed in each run of power and control conduits. These wires shall be green colored in sizes #6 AWG and smaller and green banded in larger sizes. Ground wires shall be type XHHW-2 insulated copper wires.
- C. EGC runs into equipment shall be grounded to equipment bus where available, or to equipment ground lugs.
- D. Where grounding type bushings are installed, bond EGC thereto, and furthermore, ground each bushing lug to equipment ground bus or ground lug, or ground rod.
- E. In each motor terminal box, install equipment ground lug and connect EGC thereto. Bond pump frame to motor frame. Bond motor and pump to grounded electrode conductor.

3.04 LABELING

- A. In addition to labeling requirements as specified throughout this Section, install wiring and raceway labeling as follows:
 - 1. Apply numbered wire marking labels to control wiring terminations for each termination in each item of equipment. Use PVC sleeve type labels.
 - 2. Apply numbered wire marking labels to power and control wiring terminations in motor control centers, panelboards, and at outlets, to identify circuit numbers. Use PVC sleeve type labels.
 - 3. Apply numbered wire marking labels to each signal wire termination in each instrument junction box, and in each item of equipment served by instrumentation circuits. Use PVC sleeve type labels.
 - 4. Apply write-on identification labels to wiring sets in each motor control center, and in each pullbox and junction box. Show wire size, conduit size, and line and load information. Use waterproof plastic write-on labels with nylon tie-wraps.

3.05 TESTING

- A. Each run of 600V class power and control wiring shall be tested prior to connection of line and load. Make tests with 1000V dc hand-crank or motor driven ohmmeter. Each run of wiring shall be tested phase-to-phase and/or phase-to-neutral, and phase-to-ground. Test results for each test shall be equal to or greater than 25,000,000 ohms with 1000V dc applied. All tests shall be made in the presence of the Owners representative or Engineer.
- B. Test all runs of signal wiring with 250V dc megger. Insulation values shall meet or exceed 1,000,000 ohms per 100 feet (cable to shield).
- C. Should any cable or circuit fail to meet the above tests, replace wire and retest.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish and install a system of underground raceways and wiring as shown on the drawings.

1.02 APPLICATIONS

- A. Except as otherwise shown on the Drawings, or otherwise specified, all underground and in-slab conduit raceways shall be of the following type:
1. For small diameter conduits for instrumentation and feeder circuits, conduit runs shall be made with schedule 40 PVC. Bends to grade shall be made with plastic coated rigid aluminum conduit. All conduit coming out of the ground in grass areas shall have concrete mow protection as detailed on the drawings. Plastic coated conduit in all cases shall extend 3" above the concrete.
 2. All instrumentation underground conduit runs shall be made with schedule 40 PVC conduit with plastic coated rigid metallic conduit upturns. A 24" separation shall be maintained from power conduit ductbanks or if in the same ductbank, it shall be plastic coated rigid steel conduit the whole way.

1.03 SUBMITTALS

- A. Process submittals for the following:
1. Non Metallic conduit
 2. Metallic conduit
 3. Grounding Bushings
 4. Buried conduit marker tape
 5. Conduit supporting saddles

1.04 RELATED WORK SPECIFIED UNDER OTHER SECTIONS

- A. Refer to Section 26 01 10 for raceways.
- B. Refer to Section 26 01 20 for wiring.
- C. Refer to Section 26 04 50 for grounding.
- D. Refer to Division 3 for concrete.

PART 2 PRODUCTS

2.01 RACEWAYS

- A. Raceways shall be as specified in Section 26 01 10.

2.02 MISCELLANEOUS

- A. Gravel for underbedding of conduits shall be washed type pea gravel.
- B. Plastic saddles (where allowed) for spacing and supporting conduits shall be interlocking types as manufactured by Cantex.
- C. Plastic marker label tape for buried conduits shall be yellow background with black letters with repetitive marking "ELECTRIC LINE" on yellow background, continuous along its length. Furnish T&B # NA-0608, or equal tape.

PART 3 EXECUTION

3.01 EXCAVATION AND BACKFILLING

- A. Do all excavating and backfilling necessary for the installation of the work. This shall include shoring and pumping in ditches to keep them dry until the work has been installed.
- B. All excavations shall be made to proper depth, with allowances made for floors, forms, beams, piping, finished grades, etc. Ground under conduits shall be undisturbed earth or if disturbed, mechanically compacted to a density ratio of 95% before conduits are installed.
- C. All backfilling shall be made with selected soil, free of rocks and debris, and shall be pneumatically tamped in six (6") inch layers to secure a field density ratio of 95%.
- D. Field check and verify the locations of all underground utilities prior to any excavating. Avoid disturbing these as far as possible. In the event existing utilities are broken into or damaged, they shall be repaired so as to make their operation equal to that before the trenching was started.
- E. All concrete ductbanks shall have a red dye in to indicate electrical ductbank. All ductbanks shall be concrete encased. Concrete shall be 3000 psi with PSI Fiberstrand F microfiber. PSI Fiberstrand F is a product of The Euclid Chemical Company.
- F. All concrete encased ductbanks shall be tied into structure with doweled rebar, on each corner, four places minimum.
- G. Where conduits turn up provide 6" rise of concrete encasement to protect conduit from mowing.

3.02 RACEWAYS

- A. All underground conduits shall be PVC schedule 40 unless otherwise noted. All bends to grade shall be made with plastic coated rigid metallic conduits and shall extend to 6" above grade. Conduits shall be watertight over the entire length of the underground run.
- B. Install all power, control, and signal wiring. Label each single conductor wire at each connection with PVC sleeve type wire labels. Label each signal cable at each end with plastic waterproof write-on type label to identify terminal connection and function and device served.

- C. Where empty conduits terminate into equipment install blank "disc" under grounding bushing and bring specified foot-marked pull tape through disc. Label each end of each pull tape with waterproof plastic label to identify terminus of other end and also show conduit size.

3.03 WIRING

- A. All underground wiring runs shall be installed from line to load without splice.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE

- A. Furnish and install complete grounding systems in accordance with Article 250 of the National Electrical Code as shown on the Drawings and as specified herein.
- B. Provide ground mat grounding electrode system as shown on the drawings and as specified herein.

1.02 SUBMITTALS

- A. Submit manufacturers' catalog sheets with catalog numbers marked for the items furnished, which shall include:
 - 1. Ground well casings
 - 2. Ground rods
 - 3. Terminal lugs and clamps
 - 4. Exothermal welding materials
 - 5. Ground cable
 - 6. Ground connection hardware

PART 2 PRODUCTS

2.01 GROUNDING ELECTRODES

- A. All ground mat grounding electrodes and grounding electrode conductors shall consist of tin plated stranded copper.
- B. All ground rods shall be copper clad steel products, 3/4" diameter x 10 foot long, unless otherwise indicated. Ground rods shall be Blackburn #6258, or equal. Provide heavy duty ground rod clamps, exothermic welds where concealed or below grade. Equal to Blackburn #GG58 where vertical connections are installed and #GUV where U-bolt connectors are installed to serve horizontal connections.

2.02 GROUNDING DEVICES

- A. Connectors shall be furnished as specified under Section 26 01 20.
- B. Conduit grounding bushings shall be furnished as specified under Section 26 01 10.
- C. Equipment grounding conductors shall be furnished as specified under Section 26 01 20.
- D. Flush cast metal grounding plates shall consist of bronze body with flat plate on top and bolted clamp connector on bottom. Furnish OZ type "VG", or equal flush connectors. Each such connector shall be furnished with silicon bronze connector bolts for installation of top-mounted grounding connectors.

- E. Exothermal welding kits shall be "Cadweld" products as manufactured by Erico. Molds, cartridges, powder, and accessories shall be as recommended by the manufacturer.

2.03 GROUND TEST WELLS

- A. Ground test wells shall be furnished each ground rod for the purpose of field testing the ground mat system.
- B. Ground test wells shall each consist of ground rod with connector attached to a #4 upcomer from the ground mat and contained within an access well with labeled top.
- C. Ground test well enclosures shall be Brooks product #3RT series, or equal. Enclosures shall be 10 1/4" diameter and shall include cast iron cover with integrally cut "GROUND TEST WELL" in top of cover.

PART 3 EXECUTION

3.01 GROUND MATS AND GROUND WELLS

- A. Install ground mat around the perimeter and under the new foundations as shown. Use #4/0 AWG tin-plated copper stranded conductor for the ground mat. Install upcomer with indicated wire sizes of tin plated copper conductors. Exothermally weld all connections.
- B. Unless other larger sizes are indicated on the drawings, install #2 upcomers from ground mat to PLC, and other equipment indicated on the drawings. Install "VG" flush floor connector to serve each upcomers and run #2 stingers from top side of each "VG" to ground bus in equipment. Bond VG to rebar in concrete.
- C. Install ground rods in test wells where indicated on the drawings.
- D. Install chemical grounding kits where called for. Drill holes as required and install kit per manufacturer's instructions. Exothermic weld all concealed, imbedded in concrete or buried connections.

3.02 TRANSFORMER

- A. Bond transformer neutral to cabinet.
- B. Install grounding electrode conductor from each transformer neutral to system ground and to local electrodes as shown. Run #2 ground wire to ground mat.

3.03 WIRING SYSTEMS GROUNDING

- A. All equipment enclosures, motor and transformer frames, metallic conduit systems and exposed structural steel systems shall be grounded.
- B. Equipment grounding conductors shall be run with all wiring. Sizes of equipment grounding conductors shall be based on Article 250 of the N.E.C. except where larger sizes may be shown.

Bond each equipment grounding conductor to the equipment grounds at each end of each run. Run 4/0 ground full length of tray, bond to each section and every enclosure where conductors originate or terminate. Protect grounded equipment conductor in conduit where it leaves the tray.

- C. Liquid tight flexible metal conduit in sizes 1" and larger shall be equipped with external bonding jumpers. Use liquid tight connectors integrally equipped with suitable grounding lugs.
- D. Where conduits enter into equipment free of the metal enclosure, install grounding bushing on each conduit and bond bushing lug to equipment ground bus.
- E. Where conduits enter equipment enclosures, equip each penetration inside with grounding bushing. Install bonding jumper from each grounding bushing to ground bus.
- F. Equipment enclosures that do not come furnished with a ground bus, install ground lug in each enclosure that shall be bonded to the metal cabinet or backpan of the enclosure.
- G. Separately derived systems shall be each grounded as shown and shall comply with Article 250 of the NEC except where higher standards are shown.

3.04 TESTING

- A. All exothermic weld connections shall successfully resist moderate hammer blows. Any connection which fails such test or if upon inspection, weld indicates a porous or deformed connection, the weld shall be remade.
- B. All exothermic welds shall encompass 100 percent of the ends of the materials being welded. Welds which do not meet this requirement shall be remade.
- C. Test the ground resistance of the system. All test equipment shall be furnished by Contractor and be approved by Engineer. Test equipment shall be as manufactured by Biddle or approved equal. Dry season resistance of the system shall not exceed five ohms. If such resistance cannot be obtained with the system as shown, provide additional grounding as directed by Engineer.

END OF SECTION

PART I - GENERAL

1.01 SUMMARY

Furnish emergency generator set(s) for providing backup electrical power at 277/480V, 3 phase, 60 Hz, or as required on drawings, to service designated loads complete with automatic transfer switch, fuel storage tank, battery and charger, control panel and/or other applicable accessories and appurtenances as specified herein and/or shown on the drawings. All emergency generator sets and related accessories shall be furnished by a single supplier who is the emergency generator set manufacturer's authorized dealer or distributor.

1.02 RELATED REQUIREMENTS

- A. 16524 480 V Automatic Transfer Switch
- B. 01300 Submittals
- C. 01670 Training
- D. 01730 Operation and Maintenance Manuals

1.03 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

- A. NFPA 70 National Electrical Code (NEC)
- B. NFPA 70E Standard for Electrical Safety in the Workplace
- C. NFPA 110 Standard for Emergency and Standby Power Systems
- D. UL Underwriters Laboratory
- E. NEMA MG-1 Motors and Generators.
- F. IEEE 115 Test Procedures for Synchronous Machines Part I-
Acceptance and Performance Testing Part II-Test
Procedures and Parameter Determination for Dynamic
Analysis
- G. MIL-STD-705 Military Standard Generator Sets, Engine Driven,
Methods of Test and Instructions
- H. OSHA Occupational Safety and Health Administration

1.04 - 1.05 (NOT USED)

1.06 SUBMITTALS

- A. Submittals shall be made in accordance with the requirements of Section 01300.
- B. Operations and Maintenance (O&M) Manuals shall be made in accordance with the requirements of Section 01730.
- C. Submittal data shall be sufficient to determine compliance with, meeting or exceeding, the specifications. Submit the following data, minimum, for emergency generator sets in the BID PROPOSAL:
 - 1. Manufacturer(s) model number(s) and complete catalog data including auxiliary equipment and accessories.
 - 2. The following data in tabulated form:
 - a. Make and type of engine including manufacturer, model, and capacity.
 - b. Number of cylinders and cylinders configuration.
 - c. Bore, liners (inches).
 - d. Stroke, liters (inches).
 - e. Piston displacement, liters (cubic inches).
 - f. Piston speed, liters per minute (feet/min.) at rated RPM.
 - g. BMEP at rate KW output.
 - h. Generator make, type, model, manufacturer.
 - i. Generator electrical rating, KVA or kW @ 0.8 power factor.
 - j. Exciter type.
 - k. Generator insulation class and temperature rise.
 - l. Number and type of bearings.
 - m. Manufacturer's certified engine BHP curve and certified generator set fuel consumption curve.
 - n. Total weight(s) of assembled set, components, accessories, etc.
 - 3. Certified engine horsepower curves showing the manufacturer's approval of the engine rating for emergency generator set and power plant application.
 - 4. Complete data for automatic transfer switch and its accessories.

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5. Manufacturer's PARTS AND SERVICE SUPPORT contact information.
6. Manufacturer's recommendation for special tools, spare parts, replacement parts, related accessories.
7. Data and ratings for other accessories and appurtenances furnished where applicable.
8. Warranty information.

1.07 QUALITY ASSURANCE

A. Workmanship and Materials

1. Emergency generator sets shall be designed, fabricated and/or assembled in accordance with the best modern engineering and shop practices, so as to produce a high quality reliable source of backup electrical power.
2. All materials and/or equipment shall be new. Remanufactured or re-use of existing equipment is NOT ACCEPTABLE.

1.08 – 1.09 (not used)

1.10 WARRANTY

- A. Manufacturer shall guarantee for a period of 12 months from date of final acceptance against the following:
1. Faulty or inadequate design.
 2. Assembly or fabrication.
 3. Defective workmanship or materials.
- B. Manufacturer shall furnish a written manufacturer's warranty which states they will correct and/or replace all faulty items.
- C. FOB DESTINATION (on purchase order) shall be at no cost to the OWNER.

1.11 OPERATION AND MAINTENANCE MANUALS

Furnish quantity of copies as specified for contract deliverables for O&M Manuals complete with delivery of each size and rating emergency generator set. As a minimum O&M Manual shall provide the following:

1. All data per SUBMITTALS
2. Complete generator and transfer switch electrical power, control and instrumentation wiring schematics; generator output wiring diagram; enclosure(s) dimensions, layouts, and ratings, etc.

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3. Complete bill of materials with complete description of all parts, components, accessories, etc. to be easily identified for replacement and/or service.
4. Operation & Maintenance Instructions
 - a. Technical/service manual including functional descriptions, settings and adjustments, and calibrations.
 - b. Complete description of the operational characteristics of the generator set and its major components.
 - c. Complete parts listing, routine or standard maintenance checks, renewal parts, etc.
5. Parts and Service Support
 - a. Bidder shall furnish authorized generator set manufacturer parts and service on a 24 hour basis for both the engine and generator.

PART II - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Qualifications

1. Manufacturer shall be an Original Equipment Manufacturer proven in the fabrication of emergency generator sets and shall produce their own prime mover. Prior to BID award, bidder may be requested to furnish customer data base to substantiate proven manufacturer. This may include, but is not limited to the following:
 - a. Minimum of five (5) years in this business
 - b. Customer company name.
 - c. Contact person name and telephone number.

B. Acceptable Manufacturers

1. Caterpillar/Holt
2. Cummins/Onan
3. Kohler

2.02 MATERIALS/CONSTRUCTION

- A. Emergency generator sets shall comply with industry standard of the type for furnishing remote location generation of polyphase, alternating current electrical power at 480/277 V, 3-phase, 3-wire or 4-wire, 60 Hz as driven by a diesel engine of required capacity meeting the specifications herein. Emergency generator set shall work in conjunction with an automatic

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transfer switch and/or other requirements applicable as designated per the contract documents.

- B. Generator shall be sized to provide power to loads as shown on contract drawing allowing a maximum 5% voltage drop.
- C. Emergency generator set shall be a skid base mounted power plant unit of required capacity diesel engine driver and generator unit for output of normally 480/277 V, 3-phase, 3-wire or 4-wire, 60 Hz electrical power. Verify with contract drawings for each site.

D. Type

- 1. The engine shall be an internal compression combination ignition engine. It shall be a four stroke cycle, water cooled, and solid injection engine of either a vertical in-line or V-type cylinder configuration or as designated per the contract documents.

E. Horsepower

- 1. Special ratings or maximum ratings will NOT BE ACCEPTABLE.
- 2. Engine speed shall not exceed 1800 RPM at normal full load operation. Speed shall be regulated and limited by speed governor controls specified elsewhere herein.

F. Fuel

- 1. The engine shall be capable of satisfactory performance on No. 2 diesel fuel.

G. Governor

- 1. The engine speed shall be controlled by an electronic or hydraulic governor to maintain constant speed from no load to full load. The frequency at any constant load, including no load, shall remain a steady state band width of +/- 0.4% of rated frequency.

H. Fuel System

- 1. The fuel system shall be that which is normally used by the diesel engine manufacturer. It shall include a replaceable element fuel filter conveniently located for easy servicing.
- 2. A ready supply double wall fuel tank with leak detection shall be base mounted below the generator set to provide an immediate fuel supply upon engine startup and shall have minimum capacity for 24 hours operation at 95% fuel capacity.
- 3. Wire reinforced flexible fuel lines shall be furnished for each fuel connection to the engine.

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I. Lubrication

1. The engine shall have a gear type lubricating oil pump for supplying oil under pressure to main bearings, crank pin bearings, piston, piston pins, timing gears, camshaft bearings, and valve rocker mechanism.
2. Thread spin-on full flow lubrication oil filters, conveniently located for servicing, shall be provided. Filters shall be equipped with a spring loaded by-pass valve to ensure oil circulation if filters are clogged.

J. Cylinder Liners

1. The engine shall be provided with removable cylinder liners of close-grained alloy iron.

K. After cooler

1. Only engine jacket water cooled and engine manufacturer designed and furnished after cooler may be furnished.

L. Air Cleaners

1. The engine shall be provided with dry type, replaceable element air cleaners.

M. Starting

1. The engine shall be equipped with a 12V or 24V electric starting system of sufficient capacity to crank the engine at a speed which will allow full diesel starting of the engine.
2. Full sized lead acid batteries shall be furnished having sufficient capacity for cranking the engine for at least 40 seconds at firing speed in ambient temperature. A battery rack with necessary cables and clamps shall be provided.
3. A suitable battery charging alternator shall be provided with sufficient capacity to recharge the batteries back to normal starting requirements quickly.
4. An automatic 5A battery charger shall be provided to maintain the batteries at full capacity. The charger shall have an automatic complete shutoff when the battery is fully charged.
5. Batteries and battery charger shall be mounted on the engine. Batteries shall be Group 31 type. Smaller, low profile batteries shall not be used.

N. Starting Aid

1. An engine mounted, thermostatically controlled immersion type engine coolant heater shall be provided to ensure maintaining engine block coolant temperature in the range of 50° to 60° C (120° to 140° F). The

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heater shall be sized by the manufacturer and suitable for operation on 120 VAC, 60 Hz. The engine heater shall have a lube oil pressure switch for automatic cut-out on engine startup.

O. Engine Instruments

1. Generator set mounted instrument panel shall contain the following indicators for engine visual inspection and maintenance:
 - a. Coolant temperature (Fahrenheit).
 - b. Lube oil pressure (PSI).
 - c. Lube oil temperature (Fahrenheit).
 - d. Speed (RPM).
 - e. Run time meter (hours).
 - f. Battery charging indicator.
 - g. Engine fault indicator lights for oil pressure, oil temperature, coolant temperature, and engine over speed.

P. Cooling

1. The engine shall be furnished with a cooling system having sufficient capacity for cooling the engine for full load operations at ambient temperature up to a maximum of 43° C.
2. The engine shall be equipped with an engine driven, centrifugal type water circulating pump and thermostatic valve to maintain the engine at recommended operating temperature levels.
3. The engine cooling system shall include spin-on type engine water filters which shall treat the coolant and prevent corrosion and scale deposits inside the cooling system.
4. The engine cooling system shall adhere to manufacturer's specifications.
5. The engine shall be equipped with a radiator, blower fan, and closed fitting venturi shroud of a type and capacity designed and furnished by the engine manufacturer. A rigid guard shall enclose both top and sides of all moving parts between the engine and radiator.

Q. Exhaust System

1. A suitable silencer shall be furnished with the engine. The silencer shall be of the critical grade, 30 DbA attenuation minimum, unless otherwise designated per the contract documents. The unit shall be equipped with a "Drop-In" exhaust that is contained within the sound enclosure, unless noted otherwise in the contract documents.

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R. Sound Attenuating Enclosure

1. Sound attenuated enclosure: The engine-generator set shall be factory enclosed in a 14 gauge steel enclosure with stamped air intake, with integral air directional sound baffles, 90 degree discharge turn duct with screen. Provide access doors with padlock hasps, handles, and piano type hinge to allow access to engine and generator. Upper control panel access door provided with Plexiglas viewing window. Extend oil and water drains with shut-off valves to exterior of enclosure. Sound performance maximum of 72 dba attenuation no load at seven (7) meters. Factory prime and paint with an enamel finish with a City of Austin selected color.

S. Safety Controls

1. The engine shall be equipped with automatic safety controls which will shut down the engine in the event of lubricating oil low pressure, high coolant temperature, engine over speed, engine over crank and make electrical contacts for alarm lights on the control panel.

T. Remote Alarm Relay

1. Provide relay(s) which shall operate when any of the safety controls operate. Relay(s) shall also operate when the fuel tank supply drops below a level which would keep the generator running for less than 12 hours. Relay shall have a minimum double pole double throw, 10A, and 125 VAC rated contacts.

U. Auxiliary Run Contacts

1. Provide a relay which will operate when the generator is running. Relay shall have a minimum of two (2) double pole double throw 10A, and 125 VAC rated contacts.

V. Mounting

1. The engine and generator shall be equipped with suitable full length steel construction sub-base for mounting the engine-generator unit on a concrete foundation. Sub-base shall be primed and painted epoxy enamel for rust and corrosion resistance. The engine shall be equipped with vibration isolators between the engine and tank. Provide galvanized (minimum) mounting hardware and fittings.
2. The unit shall be bolted to slab with 316SS anchor bolts.

W. Electric Generator

1. Type

- a. The generator shall be a brushless, revolving field type, coupled directly to the engine power plant flywheel through a flexible driving disk.

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- b. The generator shall be of single bearing design with a rotor support bearing designed for a minimum life of 40,000 hours. The rotor shall be dynamically balanced for up to 35% overspeed operation.
 - c. The rotor shall be constructed using techniques such that shaft currents are negligible and an insulated bearing is not needed.
2. Stator
- a. The stator winding shall be copper conductor materials of construction form or random wound. The winding shall be of 2/3 pitch design to eliminate the third harmonic waveform distortion. The stator shall be given a minimum of three dips and bakes of epoxy resin plus a final coat of epoxy for moisture and abrasion resistance. The output voltage waveform distortion shall not exceed 5% total RMS at rated full load, measured line to line.
3. Rotor
- a. The rotor shall be layer wound with a trickle epoxy resin or VIP insulation treatment plus a final coat of epoxy for moisture and abrasion resistance. Amortisseur windings shall be integral with the rotor coil support and receive the same insulation treatment.
4. Exciter
- a. Generator's excitation shall be a rotating brushless exciter incorporating a full wave, three phase rotating rectifier with hermetically sealed, metallic type, silicon diodes to supply main field excitation. A surge suppresser shall be connected across the diode network to protect it against transient conditions.
5. Voltage Regulator
- a. The generator shall also have a permanent magnet pilot exciter to supply power to a solid state voltage regulator. The voltage regulator shall be designed around the engine/generator combination for optimal load pick up capabilities to maintain full load performance to compensate for voltage drop, motor start up inrush current and short circuit current conditions. The generator shall be capable of supplying 300% short circuit and motor startup inrush current conditions.
 - b. Voltage regulation adjustment within +/-10% nominal output voltage.
 - c. An adjustment for maximum voltage drop.
6. Internal protection for under frequency and over excitation conditions.
7. Over voltage protection.

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X. Temperature/Insulation Rating

1. The generator shall comply with NEMA MG-1 standards. Temperature rating shall be 130° C over a 40° C ambient temperature rise as measured by the resistance method. Insulation system shall be a minimum of Class H with a Class F rise.

Y. Output

1. The generator shall be fully guarded and drip proof per NEMA MG-1. The generator shall be furnished with side or top mounted power terminal box capable of 360-degree (90-degree increments) to accommodate either top, bottom, or side entry of load cables conduit (routed to load circuit breaker specific elsewhere herein). Power terminal box shall have dedicated grounding terminal.

Z. Control Panel

1. The generator set control panel shall be mounted on the generator by means of vibration isolators. The control panel shall be in a dead front NEMA 1 rated enclosure inside the sound enclosure (visible through the Plexiglas window) with pad lock provision. The control panel shall provide, at a minimum the following:
 - a. Voltmeter, volts.
 - b. Ammeter, amperes.
 - c. Combination voltmeter/ammeter phase selector switch; A,B,C.
 - d. Frequency meter, Hz.
 - e. Alarm annunciation panel.
 - f. Specified engine instrumentation.
 - g. Start/stop.
 - h. Overload Protection Load Circuit Breaker
2. Provide a 3-pole load circuit breaker to provide load circuit interruption and protection. The circuit breaker shall be molded case, thermal magnetic type with adjustable trip setting and ratings to comply with the generator's rated output voltage and current load capacity.
3. The adjustable trip unit shall provide inverse time delay for overload protection and instantaneous magnetic tripping for short circuit current protection.
4. The circuit breaker shall comply with NEMA and UL standards and the NEC. The circuit breaker shall be in a dead front NEMA 1 rated enclosure mounted on the generator set skid/sub-base inside the sound enclosure.

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AA. Automatic Controls

1. The generator set control panel shall also provide controls for automatic cycle cranking for a minimum of four cranking and three reset periods daily. Provide panel mounted controls and indicator lights for "AUTOMATIC," "OFF," AND "TEST" for generator starting operation.
 - a. AUTOMATIC
 - 1) Normal Transfer Conditions: Operation shall be initiated by contact from the automatic transfer switch control schematic.
 - 2) Normal Cycle Cranking: Operation shall be initiated by contact from the automatic cycle cranking schematic and no operation of the transfer switch. The AUTOMATIC position indicator light shall be red.
 - b. OFF
 - 1) All controls for starting the generator set are disabled. The OFF position indicator light shall be green.
 - c. TEST
 - 1) With dedicated start/stop control switches, test switch shall allow manual starting and stopping of the generator set with no operation of the transfer switch. The TEST position shall also enable the performance of the automatic cycle cranking schematic with inspection and coordination of the status of the timer sequence for this circuits operation the TEST indicator light shall be amber.

BB. Automatic Transfer Switch

1. Automatic Transfer Switch to be provided by the same supplier as the generator. Furnish according to Section 16524.

2.03 (NOT USED)

2.04 TOOLS, SPARE PARTS AND ACCESSORIES

A. Spare Parts

1. Spare Parts shall be furnished per manufacturer's recommendation and per the minimum spare parts listed, but not limited to:
 - a. Oil filter.
 - b. Water filter.
 - c. Control relays.

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- d. Pilot lights.
- e. Fuses.
- f. Other items as may be designated elsewhere herein.

B. Tools

- 1. Tools shall be furnished per manufacturer's recommendation.

PART III - EXECUTION

3.01 GENERAL

3.02 PREPARATION

3.03 ERECTION, INSTALLATION, AND APPLICATION INSTRUCTIONS

- A. Furnish services of authorized manufacture's technical representative(s) to assist in the supervision of the complete installation, alignment, check out and startup of the emergency generator set, and place in service.

3.04 (Not Used)

3.05 FACTORY AND FIELD QUALITY CONTROL

A. Factory Calibration and Testing

- 1. Furnish a certified Factory Testing Report, in triplicate, for each emergency generator set furnished.
- 2. Factory Testing shall be in compliance with NEMA, OSHA, and the NFPA, and include but not be limited to the following:
 - a. Each generator shall have a performance and temperature rise data report.
 - b. Temperature rise data shall be for full load at 0.8 power factor at rated voltage and frequency specified herein.
 - c. Run time performance testing showing a minimum of one (4) hour running with ½ hour continuous 100% rated full load at 0.8 power factor.
 - d. Run time performance testing for voltage and frequency stability and transient response at ¼, ½ and full loads.
- 3. Normal preliminary engine and generator tests and checks shall have been performed before performing certified factory testing.

3.08 TESTING AND INSPECTION

- ### 3.09 STORAGE, HANDLING AND PROTECTION

- ### 3.10 (Not Used)

A. Furnish services of authorized manufacture's technical representative(s) to instruct OWNER'S personnel in the operation and maintenance.

B. Training shall be scheduled at least two weeks in advance.

PART I - GENERAL

1.01 SUMMARY

Automatic Transfer Switch shall be 3 phase, 480 volt, and capable of transferring the full rating of the service supplied. The transfer switch shall automatically sense the loss of voltage, initiate a generator start and supply power to the entire station.

1.02 RELATED REQUIREMENTS

A. Work as called for on PLANS, or in this or other Specification Sections.

1.03 (NOT USED)

1.04 DEFINITIONS

A. ATS – Automatic Transfer Switch

1.05 (NOT USED)

1.06 SUBMITTALS

A. Submittals shall be made in accordance with the requirements of Section 01300.

B. Operations and Maintenance (O&M) Manuals shall be made in accordance with the requirements of Section 01730.

1.07 (NOT USED)

1.08 DELIVERY STORAGE AND HANDLING

A. As specified in Section 16010.

1.09 – 1.11 (NOT USED)

PART II - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. ATS manufacturer:

1. ATS shall be as manufactured by Automatic Switch Company- ASCO, Model 300 Series meeting these specifications and all the additional options required herein or equal as manufactured by generator manufacturer. The ATS meeting these specifications is to be supplied by the generator manufacturer.

2.02 MATERIALS/CONSTRUCTION

A. Transfer switch requirements and unit description:

1. Transfer switch mechanism shall be of the electrically operated, double throw mechanically held type, actuated by a single solenoid operator momentarily energized to assure quiet operation.
2. Transfer switch is to be inherently interlocked, mechanically in either normal or emergency position with no "OFF" position possible. Gravity or spring operated switches will not be acceptable.
3. All main contacts shall be provided with silver alloy material for high conductivity under all conditions of service. Main contacts which require auxiliary arcing contacts will not be acceptable. Arc quenchers shall be of the de-ionizing principle which remove the heat generated by the arc from vicinity of the contacts. The main contacts shall be of the high pressure quick-make and quick-break butt type. The transfer switch shall be suitable for all classes of loads.
4. Power failure relays shall be provided to sense when the voltage of any phase drops below 70% of normal and cause transfer of the load to the emergency source and to sense when all normal source phase voltages are 90% of rated voltage and retransfer to normal source at the point.
5. Failure of any control relay coil shall initiate transfer to the backup source.
6. The operating transfer time of the contacts in either direction (energy or normal power mode) shall not exceed one-sixth ($1/6$) of a second.
7. The automatic transfer switch shall be furnished complete with the control panel. Both the ATS and the control panel to be mounted in one NEMA 1A enclosure if mounted indoors or NEMA 3R if mounted outdoors.
8. The control panel shall be supplied with a protective cover and mounted separately from the transfer switch for ease of maintenance. The interconnecting wiring harness shall include a disconnecting wiring harness with a disconnect plug to disconnect all wires including both sources of control power for routine maintenance. Sensing and control logic shall be solid state and mounted on plug in printed circuit boards. Printed circuit boards shall be keyed to prevent incorrect installation. Interfacing relays shall be industrial control grade plug-in type with dust covers.
9. Inspection of all contacts (movable and stationary) shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. A manual operating handle shall be provided for maintenance purposes. The handle shall permit the operator to stop the contacts at any point throughout the

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entire travel to properly inspect and service the contacts when required.

10. The ATS shall conform to the requirement of NEMA standard ICS 2-447 and U.L. 1008 and shall be U.L. listed for:

- a. Use in emergency and standby systems in accordance with articles 517, 700, 701 and 702 of the National Electrical Code (NEC).
- b. Rated in amperes for total system transfer including inductive loads, resistive loads, control loads, and electrical discharge and tungsten-filament loads.

11. The ATS shall be rated to withstand the RMS symmetrical short circuit current of 42,000 amperes (minimum) at 480 volts.

12. Transfer from normal power to backup power shall not take place until backup power is available at the proper operating voltage and frequency levels (i.e., 90% of rated voltage and 60 hertz).

13. ATS contacts rating and number of poles shall be as shown on the PLANS.

B. Transfer switch control panel requirements:

1. Voltage and frequency session:

- a. Normal power source closed differential voltage session on all phases of normal power source. Pickup voltage to be field adjustable from 90% of 100% nominal, and the dropout to be adjustable from 70% to 90% of the pickup value. Unit to be shipped with the following initial factory settings:

- 1) Voltage pickup @ 90%
- 2) Voltage dropout @ 85%

2. Transfer time delays:

- a. Time delay to override momentary normal power source outages to delay transfer switch. Field adjustable from 1 to 3 seconds. Unit to be shipped with the following initial factory settings:
 - 1) Time delay to initiate loss of normal power alarm set at 3 seconds.
 - 2) Time delay to retransfer to normal power source: Time delay to be provided for retransfer from backup to normal power source if restored and within present acceptable operating parameters. This time delay is to be automatically bypassed in the event the backup source fails and normal power source is available. Retransfer time delay to be field adjustable from 0 to

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30 minutes. Unit to be shipped with the following initial factory setting:

- I. Transfer to normal power source time delay set at 15 minutes.
3. Manual transfer switch controls:
 - a. Normal power source simulation test switch:
 - 1) A test push-button switch to momentarily simulate normal power source failure. Switch to be installed and connected on the front of the enclosure.
4. Indicating lights:
 - a. System connected to normal power source light:
 - 1) Green signal light to indicate automatic transfer switch is connected to normal power source. Indicator light is to be mounted on the face of the enclosure and visible without opening any covers or doors.
 - b. System connected to backup power source light:
 - 1) Red signal light to indicate automatic transfer switch is connected to backup power source. Indicator light is to be mounted on the face of the enclosure and visible without opening any covers or doors.
5. Additional spare auxiliary contacts:
 - a. Furnish unit with the following additional spare contacts over the number of contacts required to meet the requirements of this specification and the number of contacts required by the automatic transfer switch control schematics:
 - 1) Two auxiliary normally open dry contacts. Contacts are to change state to closed-position when the automatic transfer switch is connected to backup power source. Contacts to be rated 10 amps at 120VAC. Each contact is to clearly be marked as spare.
 - 2) Two auxiliary normally open dry contacts. Contacts are to change state to closed-position when the automatic transfer switch is connected to normal power source. Contacts to be rated 10 amps at 120VAC. Each contact is to clearly be marked as spare.
6. Automatic exerciser (option 11CD)
 - a. Unit to simulate a normal source failure. The ATS shall transfer the load to the backup source.

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- 1) Unit shall have selectable day and time to operate. The unit shall also be configurable on length of run time.
7. ATS shall have an in-phase monitor to allow transfer and re-transfer of motor loads so that inrush currents do not exceed normal starting currents and cause nuisance breaker trips.

"General Decision Number: TX20220023 02/25/2022

Superseded General Decision Number: TX20210023

State: Texas

Construction Types: Heavy (Sewer/Water Treating Plant and Sewer/Incid. to Hwy.)

Counties: Bell, Bosque, Coryell, Falls, Freestone, Hamilton, Hill, Lampasas, Leon, Limestone, McLennan, Milam, Mills, Navarro, Robertson and Williamson Counties in Texas.

WATER & SEWAGE TREATMENT PLANTS AND LIFT PUMP STATIONS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$15.00 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 2022.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Modification Number	Publication Date
0	01/07/2022
1	02/25/2022

* SUTX1990-003 02/09/1990

	Rates	Fringes
CARPENTER.....	\$ 9.00 **	
CEMENT MASON/CONCRETE FINISHER...	\$ 8.00 **	
ELECTRICIAN.....	\$ 13.45 **	.80+8 1/2%
Form Builder.....	\$ 7.25 **	
Form Setter.....	\$ 7.25 **	
LABORER.....	\$ 7.25 **	
Pipelayer.....	\$ 7.50 **	
Power equipment operators:		
Bulldozers.....	\$ 7.25 **	
Cranes, Clamshells,		
Backhoes, Derricks,		
Dragline, Shovels.....	\$ 7.25 **	
Front End Loaders.....	\$ 10.00 **	
Scrapers.....	\$ 7.25 **	
Steel Setter.....	\$ 9.50 **	
Steel Worker.....	\$ 7.25 **	
Truck drivers:		
Tandem Axles.....	\$ 7.25 **	
Transit Mix.....	\$ 7.25 **	
Utility Laborer.....	\$ 7.25 **	

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

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

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$15.00) or 13658 (\$11.25). Please see the Note at the top of the wage determination for more information.

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 <https://www.dol.gov/agencies/whd/government-contracts>.

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 (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the 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: PLUM0198-005 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 National Office because National Office has 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.

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END OF GENERAL DECISIO"