



Working Together for a
Better Tomorrow. Today.

BID SPECIFICATION PACKAGE

for

CIRCUIT BREAKER REPLACEMENT FOR LOW VOLTAGE SWITCHGEAR

C 131150

Bid Opening Date/Time

Tuesday, January 25, 2022 at 2:15 p.m.
City of Grand Island, City Hall
100 East 1st Street, P.O. Box 1968
Grand Island, NE 68802-1968

Contact Information

Ryan Kruse, Production Engineer
City of Grand Island – Utilities Department
Platte Generating Station
308/385-5496

Date issued: January 5, 2022

**ADVERTISEMENT TO BIDDERS
FOR
CIRCUIT BREAKER REPLACEMENT FOR LOW VOLTAGE SWITCHGEAR
FOR
CITY OF GRAND ISLAND, NEBRASKA**

Sealed bids for Circuit Breaker Replacement for Low Voltage Switchgear will be received at the office of the City Clerk, 100 E. First Street, P.O. Box 1968, Grand Island, Nebraska 68802, until **Tuesday, January 25, 2022 at 2:15 p.m. local time**, FOB the City of Grand Island, freight prepaid. Bids will be publicly opened at this time in the Grand Island City Hall City Clerk's Office located on 1st floor of City Hall. **Submit an original and three copies if submitting by mail.** Bid package and any Addendas are also available on-line at www.grand-island.com under Business-Bids and Request for Proposals-Bid Calendar under the bid opening date. Bidding documents, plans and specifications for use in preparing bids may be downloaded from the QuestCDN website www.QuestCDN.com for a \$30.00 fee. Submitting through QuestCDN requires one original document of the bid to be uploaded. **Bids received after the specified time will not be considered.**

The successful bidder will be required to comply with fair labor standards as required by Nebraska R.R.S.73-102 and comply with Nebraska R.R.S. 48-657 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. Successful bidder shall maintain a drug free workplace policy. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

Each bidder shall submit with the bid a certified check, a cashiers check, or bid bond payable to the City of Grand Island in an amount no less than five percent (5%) of the bid price which shall guarantee good faith on the part of the bidder and the entering into a contract within fifteen (15) days at the bid price if accepted by the City. **Your certified check, cashiers check or bid bond must be submitted in a separate envelope attached to the outside of the envelope containing the bid.** Each envelope must be clearly marked indicating its contents. **Failure to submit the necessary qualifying information and correct number of copies in clearly marked and separate envelopes will result in your bid not being opened or considered.** Only surety companies authorized to do business in the State of Nebraska may issue bid bonds.

Bids will be evaluated by the Purchaser based on price, schedule, quality, adherence to schedule, plan and specifications, economy and efficiency of operation, experience and reputation of the bidder, ability, capacity, and skill of the bidder to perform contract required and adaptability of the particular items to the specific use intended.

The Purchaser reserves the right to reject any or all bids, to waive irregularities therein, and to accept whichever bid that may be in the best interest of the City, at its sole discretion.

No bidder may withdraw his/her bid for a period of thirty (30) days after date of bid opening.

RaNae Edwards, City Clerk

Advertised

(All bids must be submitted on this form)

CIRCUIT BREAKER REPLACEMENT FOR LOW VOLTAGE SWITCHGEAR
BID DATA FORM

CITY OF GRAND ISLAND
GRAND ISLAND, NE

The undersigned Bidder, having examined all specifications and other bidding documents, and all addenda thereto, and being acquainted with and fully understanding all conditions relative to the specified materials and equipment, hereby proposes to replace four (4) GE-AKR style breakers with retrofit alternative units including one (1) spare at the Platte Generating Station, FOB the City of Grand Island, freight prepaid, at the following price:

<u>ITEM DESCRIPTION</u>	<u>EXTENDED COST</u>
Base Bid:	
Materials/Equipment	\$ _____
Installation Services	\$ _____
Labor	\$ _____
Applicable Sales tax*	\$ _____
Total Base Bid	\$ _____

*** All Option 1 bidders shall include sales tax on materials when bidding. If bidder fails to include sales tax in their bid price or takes exception to including sales tax in their bid price, the City will add a 7.5% figure to the bid price for evaluation purposes; however, the City will only pay actual sales tax due.**

Exceptions Noted - Bidder acknowledges there are *Exceptions* and/or *Clarifications* noted to the above bid, and those exceptions are fully explained on a separate sheet, clearly marked, and included with the Bid.

Bidder Company Name Date

Company Address City State Zip

Print Name of Person Completing Bid Signature

Email: _____ Telephone No. _____

***REQUIRED:** According to Nebraska Sales and Use Tax Requirements, Section 1-017, Contractors, check which option you have selected to file with the Nebraska Department of Revenue:

Nebraska law provides a sales and use tax exemption on contractor labor charges for the construction, repair, or annexation of any structure used for the generation, transmission, or distribution of electricity. Separately stated contractor labor would be exempt, all materials are taxable according to the contractor's option.

Option 1 (Section 1-017.05) _____ Option 2 (Section 1-017.06) _____ Option 3 (Section 1-017.07) _____

If the Nebraska sales and use tax election is not filed or noted above, the contractor will be treated as a retailer under Option 1 for sales and use tax purposes.

By checking this box, Bidder acknowledges the specified completion date of the project is **June 30, 2022**.

By checking this box, Bidder acknowledges that Addenda Number(s) _____ were received and considered in Bid preparation.

Note: If Bidder supplies individual unit pricing information as supplemental pricing to the base material and labor cost above, said individual pricing is proprietary information and should not be released under a public records request. The total base bid is not considered proprietary information and will be released pursuant to City Procurement Code.

End of Bid Data Form

CHECKLIST FOR BID SUBMISSION**FOR****CIRCUIT BREAKER REPLACEMENT FOR LOW VOLTAGE SWITCHGEAR**

Bids must be received by the City Clerk before 2:15 p.m. on Tuesday, January 25, 2022.

The following items must be completed for your bid to be considered.

- ❑ Submittal of bid documents:
 - ❑ **Option 1 – Mailing:** A signed original and three (3) copies of the bidding documents. Failure to submit the correct number of copies may result in your bid not being considered.
 - ❑ Note: Your certified check, cashiers check or bid bond should be clearly marked in a separate envelope attached to the signed original bid.
 - ❑ **Option 2 – QuestCDN (online):** Purchase the bid specification through QuestCDN at their \$30.00 fee. Upload the signed original of the Bid Data Form, along with any supporting material required to meet the bid specification through QuestCDN. Upload your bid bond online through QuestCDN. *Bidders using Certified check or Cashiers' Check must mail said check to the office of the City Clerk no later than the scheduled bid opening date and time and clearly marked with the project name.*
- ❑ Bidders must complete and sign the Bid Data Form provided in these Documents. All blank spaces must be filled in. Bidders shall acknowledge receipt of any Addenda information on the Bid Data Form.
- ❑ Selection of Nebraska Sales Tax Option. If the Nebraska sales and use tax election is not filed or noted above, the Contractor will be treated as a retailer under Option 1 for sales and use tax purposes.
- ❑ A reference list of at least three (3) projects of similar scope and complexity.
- ❑ Firm lump sum pricing; firm unit pricing in case adjustments are necessary, and breakout of sales tax pricing. Include hourly rates outside the lump sum for project for reference if additional services are needed.
- ❑ A proposed work schedule.
- ❑ An equipment breakdown list, associated component ratings, equipment drawings and product data sheets proposed.
- ❑ Acknowledgment of Addenda Number(s) _____.

Please check off each item as completed to ensure compliance. If you have any questions, please feel free to contact our office prior to the bid opening date/time.

INSTRUCTIONS TO BIDDERS

1. GENERAL INFORMATION.

The following instructions outline the procedure for preparing and submitting Bids. Bidders must fulfill all requirements as specified in these Documents.

2. TYPE OF BID.

Bidders shall be required to submit prices for all items listed in the Bid Data Form.

3. PREPARATION OF BIDS.

Bidders shall use only the Bid Data Form provided in these Documents. All blank spaces in the Bid Data Form must be filled in, preferably in BLACK ink, in both words and figures where required. No changes to the wording or content of the forms is permitted. Written amounts shall govern in case of discrepancy between the amounts stated in writing and the amounts stated in figures.

Prices stated shall be f.o.b. with freight and full insurance paid by Bidder, to the job site located in Grand Island, Nebraska.

The Bidder shall acknowledge receipt of all Addenda in the Bid Data Form. Bids received without acknowledgement or without the Addendum enclosed will be considered informal.

Individual unit pricing as listed on the Bid Data Form or supplied as supplemental information may be deemed proprietary information and not be released under a public records request. The total amount of the bid is not considered proprietary information and will be released pursuant to City Procurement Code.

4. SUBMISSION OF BIDS.

All Bids must be submitted intact with the correct number of copies no later than the time prescribed, at the place, and in the manner set forth in the ADVERTISEMENT FOR BIDS. Bids must be made on the Bid Data Form provided herein. Each Bid mailed must be submitted intact in a sealed envelope, so marked as to indicate its contents without being opened, and delivered in person or addressed and mailed in conformance with the instructions in the ADVERTISEMENT FOR BIDS.

5. BID SECURITY.

Bids must be accompanied by cash, a certified check, or cashier's check drawn on a bank which is insured by the Federal Deposit Insurance Corporation, or a bid bond issued by a Surety authorized to issue such bonds in the state where the Work is located, in the amount of 5 percent of the bid amount payable to OWNER. This bid security shall be given as a guarantee that the Bidder will not withdraw their Bid for a period of **thirty (30) days after** bid opening, and that if awarded the Contract, the successful Bidder will execute the attached Contract and furnish a properly executed Performance Bond and Payment Bond, each in the full amount of the Contract price, within the time specified.

The Attorney-in-Fact that executes this bond on behalf of the Surety must attach a notarized copy of his/her power of attorney as evidence of his/her authority to bind the Surety on the date of execution of the bond. Where State Statute requires, certification by a resident agent shall also be provided.

6. RETURN OF BID SECURITY.

Within fifteen (15) days after the award of the Contract, the OWNER will return the bid securities to all Bidders whose Bids are not to be further considered in awarding the Contract. All other retained bid securities will be held until the Contract has been finally executed, after which all bid securities, other than Bidders' bonds and guarantees which have been fortified, will be returned to the respective Bidders whose Bids they accompanied.

7. BASIS OF AWARD.

The award will be made by the OWNER on the basis of the Bid from the lowest responsive, responsible Bidder which, in the OWNER's sole and absolute judgment will best serve the interest of the OWNER. All Bids will be considered on the following basis:

Delivery time	Conformance with the terms of the Bid
Bid price	Documents
Cost of installation	
Suitability to project requirements	Responsibility and qualification of Bidder

The OWNER reserves the right to reject all Bids, or any Bid not in conformance with the intent of the Bid Documents, and to waive any informalities and irregularities in said Bids.

8. EXECUTION OF CONTRACT.

The successful Bidder shall, within fifteen (15) days after receiving notice of award, sign and deliver to the OWNER the Contract hereto attached together with the acceptable bonds as required in these Bid Documents. Within fifteen (15) days after receiving the signed Contract with acceptable bond(s) from the successful Bidder, the OWNER's authorized agent will sign the Contract. Signature by both parties constitutes execution of the Contract.

9. PERFORMANCE AND PAYMENT BONDS.

The successful Bidder shall file with the OWNER Performance and Payment Bonds in the full amount (100 percent) of the Contract price, as security for the faithful performance of the Contract and the payment of all persons supplying labor and materials for the Work under this Contract, and to cover all guarantees against defective workmanship or materials, or both, for a period of one (1) year after the date of final acceptance of the Work by the OWNER. The Surety furnishing these bonds shall have a record of service satisfactory to the OWNER, be authorized to do business in the State where the OWNER's project is located and shall be named on the current list of approved Surety Companies, acceptable on Federal bonds as published by the Audit Staff, Bureau of Accounts, U.S. Treasury Department.

The Attorney-in-Fact (Resident Agent) who executes these bonds on behalf of the Surety must attach a notarized copy of his/her power-of-attorney as evidence of his/her authority to bind the Surety on the date of execution of the bond.

10. TIME OF COMPLETION.

The time of completion of the Work to be performed under this Contract is the essence of the Contract. The time allowed for the completion of the Work is stated in the Bid Data Form.

11. GRATUITIES AND KICKBACKS.

City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefor. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

12. FISCAL YEAR.

The City of Grand Island, Nebraska operates on a fiscal year beginning October 1st and ending on the following September 30th. It is understood and agreed that any portion of this agreement which will be performed in a future fiscal year is contingent upon the City Council adopting budget statements and appropriations sufficient to fund such performance.

CONTRACT AGREEMENT

THIS AGREEMENT made and entered into by and between **[SUCCESSFUL BIDDER]**, hereinafter called the Contractor, and the **CITY OF GRAND ISLAND, NEBRASKA**, hereinafter called the City.

WITNESSETH:

THAT, WHEREAS, in accordance with law, the City has caused contract documents to be prepared and an advertisement calling for bids to be published for *CIRCUIT BREAKER REPLACEMENT FOR LOW VOLTAGE SWITCHGEAR*; and

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined, and canvassed the bids submitted, and has determined the aforesaid Contractor to be the lowest responsive and responsible bidder, and has duly awarded to said Contractor a contract therefore, for the sum or sums named in the Contractor's bid, a copy thereof being attached to and made a part of this Contract;

NOW, THEREFORE, in consideration of the compensation to be paid to the Contractor and of the mutual agreements herein contained, the parties have agreed and hereby agree, the City for itself and its successors, and the Contractor for itself, himself/herself, or themselves, and its, his/her, or their successors, as follows:

ARTICLE I. That the following documents shall comprise the Contract, and shall together be referred to as the "Agreement" or the "Contract Documents";

1. This Contract Agreement.
2. City of Grand Island's Specification for this project.
3. [NAME OF SUCCESSFUL BIDDER] bid signed and dated [DATE OF BID].

In the event of any conflict between the terms of the Contract Documents, the provisions of the document first listed shall prevail.

ARTICLE II. That the Contractor shall (a) furnish all tools, equipment, superintendence, transportation, and other construction materials, services and facilities; (b) furnish, as agent for the City, all materials, supplies and equipment specified and required to be incorporated in and form a permanent part of the completed work; (c) provide and perform all necessary labor; and (d) in a good substantial and workmanlike manner and in accordance with the requirements, stipulations, provisions, and conditions of the Contract documents as listed in the attached General Specifications, said documents forming the Contract and being as fully a part thereof as if repeated verbatim herein, perform, execute, construct and complete all work included in and covered by the City's official award of this Contract to the said Contractor, such award being based on the acceptance by the City of the Contractor's bid;

ARTICLE III. That the City shall pay to the Contractor for the performance of the work embraced in this Contract and the Contractor will accept as full compensation therefore the sum (subject to adjustment as provided by the Contract) of **[DOLLAR AMOUNT] (\$00.00)** for all services, materials, and work covered by and included in the Contract award and designated in the foregoing Article II; payments thereof to be made in cash or its equivalent in the manner provided in the General Specifications.

The total cost of the Contract includes:

Base Bid:	\$.00
Sales Tax on Materials/Equipment:	\$.00
Sales Tax on Labor:	\$	<u>.00</u>
Total	\$.00

Nebraska Sales Tax Option _____

The City of Grand Island, Nebraska operates on a fiscal year beginning October 1st and ending on the following September 30th. It is understood and agreed that any portion of this agreement which will be performed in a future fiscal year is contingent upon the City Council adopting budget statements and appropriations sufficient to fund such performance.

ARTICLE IV. The Contractor hereby agrees to act as agent for the City in purchasing materials and supplies for the City for this project. The City shall be obligated to the vendor of the materials and supplies for the purchase price, but the Contractor shall handle all payments hereunder on behalf of the City. The vendor shall make demand or claim for payment of the purchase price from the City by submitting an invoice to the Contractor. Title to all materials and supplies purchased hereunder shall vest in the City directly from the vendor. Regardless of the method of payment, title shall vest immediately in the City. The Contractor shall not acquire title to any materials and supplies incorporated into the project. All invoices shall bear the Contractor's name as agent for the City. This paragraph will apply only to these materials and supplies actually incorporated into and becoming a part of the finished product of the CIRCUIT BREAKER REPLACEMENT FOR LOW VOLTAGE SWITCHGEAR.

ARTICLE V. That the Contractor shall start work as soon as possible after the Contract is signed and the required bonds and insurance are approved, and that the Contractor shall deliver the equipment, tools, supplies, and materials F.O.B. Platte Generating Station, on or before **June 30, 2022**.

ARTICLE VI. The Contractor agrees to comply with all applicable State fair labor standards in the execution of this Contract as required by Section 73-102, R.R.S. 1943. The Contractor further agrees to comply with the provisions of Section 48-657, R.R.S. 1943, pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. During the performance of this Contract, the Contractor and all subcontractors agree not to discriminate in hiring or any other employment practice on the basis, of race, color, religion, sex, national origin, age or disability. The Contractor agrees to comply with all applicable Local, State and Federal rules and regulations. The Contractor agrees to maintain a drug-free workplace policy and will provide a copy of the policy to the City upon request. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

ARTICLE VII. Gratuities and kickbacks: City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a

purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefor. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

[SUCCESSFUL BIDDER]

By _____ Date _____

Title _____

CITY OF GRAND ISLAND, NEBRASKA

By _____ Date _____
Mayor

Attest: _____
City Clerk

DRAFT

The Contract is in due form according to law and hereby approved.

Attorney for the City Date _____



*Working Together for a
Better Tomorrow, Today.*

REQUEST FOR BIDS - GENERAL SPECIFICATIONS

The Bid shall be in accordance with the following and with all attached BID DATA and DETAILED SPECIFICATIONS.

All prices are to be furnished and installed FOB, Grand Island, Nebraska. **All prices shall be firm, and shall include all sales and use taxes as lawfully assessed under laws and regulations of the State of Nebraska.** * If bidder fails to include sales tax in their bid price or takes exception to including sales tax in their bid price, the City will add a 7.5% figure to the bid price for evaluation purposes; however, the City will only pay actual sales tax due.

Mailed bids shall include the following on the **outside** of the mailing envelope: **“Circuit Breaker Replacement for Low Voltage Switchgear”**. All bids submitted by mail must include **an original and three copies** of the bid. The bid specification and on-line bidding forms are also available at <http://www.grand-island.com/business/bids-and-request-for-proposals/bid-calendar> under the bid opening date and “Click here for bid document link” through QuestCDN for a \$30.00 fee. If submitting through QuestCDN, **one** original document of the bid is required to be uploaded. No verbal bids will be considered. All sealed bids are due no later than **Tuesday, January 25, 2022 at 215 p.m. local time.** to:

Mailing Address: City Clerk
City Hall
P. O. Box 1968
Grand Island, NE 68802-1968

Street Address: City Clerk
City Hall
100 E. First Street
Grand Island, NE 68801

Bids will be opened at this time in the City Hall City Clerk’s Office located on 1st floor of City Hall. Any bid received after the specified date will not be considered.

Bids will be evaluated by the Purchaser based on price, schedule, quality, adherence to schedule, plan and specifications, economy and efficiency of operation, experience and reputation of the bidder, ability, capacity, and skill of the bidder to perform contract required and adaptability of the particular items to the specific use intended.

The successful bidder will be required to comply with fair labor standards as required by Nebraska R.R.S.73-102 and comply with Nebraska R.R.S. 48-657 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. Contractor shall maintain a drug free workplace policy. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

The equipment and materials must be new, the latest make or model, unless otherwise specified. Prior to approving the invoice for payment, the City reserves the right to thoroughly inspect and test the equipment to confirm compliance with specifications. Any equipment or material which does not meet the City's requirements will be returned at vendor's expense for correction. The invoice will be paid after approval at the next regularly scheduled City Council meeting and occurring after departmental approval of invoice; the City Council typically meets the second and fourth Tuesday of each month. Invoices must be received well in advance of Council date to allow evaluation and processing time.

Each bidder shall submit with the bid a certified check, a cashier's check, or bid bond payable to the City of Grand Island in an amount no less than five percent (5%) of the bid price which shall guarantee good faith on the part of the Bidder and the entering into a contract within fifteen (15) days at the bid price if accepted by the City. **Your certified check, cashier's check or bid bond must be submitted in a separate envelope attached to the outside of the envelope containing the bid.** Each envelope must be clearly marked indicating its contents. **Failure to submit the necessary qualifying information and correct number of copies in clearly marked and separate envelopes will result in your bid not being opened or considered.** Only surety companies authorized to do business in the State of Nebraska may issue bid bonds.

Successful bidder shall comply with the City's insurance requirements; performance and payment bonds are required for this project as outlined in the Detailed Specifications and Instructions to Bidders. All bids shall be valid for at least thirty (30) working days after the bid deadline for evaluation purposes.

All bids must be on the bid form and must be signed and dated to be accepted. If exceptions and/or clarifications are noted to the bid, those exceptions must be fully explained on a separate sheet, clearly marked, and included with the Bid. Any changes that are found made to the original bid specification, other than Owner generated Addendums, would result in your bid not being considered. Please contact Ryan Kruse at 308-385-5495, for questions concerning this specification.

Circuit Breaker Replacement for AKD-6 Low Voltage Switchgear

REQUEST FOR BID

CITY OF GRAND ISLAND – PLATTE GENERATING STATION

I. Table of Contents

I. TABLE OF CONTENTS	0
II. GENERAL INFORMATION	1
A. BRIEF PROJECT DETAILS	1
B. OWNER	1
C. CONTRACTOR	1
D. LOCATION	1
E. CONTACT INFORMATION	1
III. BACKGROUND INFORMATION	1
A. SWITCHGEAR	1
B. BREAKERS	2
1. Breaker Ratings	2
2. Insulation	2
3. Operating Time (Cycles on 60 Hz Base)	2
4. Overcurrent protection	2
5. Controls	2
6. SST Overcurrent Trip Device	3
C. EQUIPMENT SUPPLIED	3
IV. DETAILED SCOPE	3
A. SCOPE OF WORK	3
V. REPLACEMENT REQUIREMENTS	4
A. RETROFIT CONTACTORS AND ASSOCIATED EQUIPMENT	4
B. STANDARDS	5
VI. ADDITIONAL INFORMATION	6
A. QUALIFICATIONS	6
B. CONTRACTOR REQUIREMENTS	6
C. OWNER REQUIREMENTS	6
D. SUBMITTALS	7
1. Supplied With Bid	7
2. Upon Completion	7
E. SITE VISIT	8
F. ATTACHED DRAWINGS	8

II. General Information

A. Brief Project Details

The project regarding this detailed specification consists of replacing four (4) GE-AKR style breakers with retrofit alternative units at the Platte Generating Station. The primary focus of this contract is to replace the four (4) breakers with new retrofit units including one (1) spare.

B. Owner

The City of Grand Island Utilities Department will be known as the 'Owner'.

C. Contractor

The bidder will be known as the 'Contractor'.

D. Location

Platte Generating Station
1035 W. Wildwood Drive
Grand Island, NE 68801

E. Contact Information

Any questions regarding this specification may be directed to:

Ryan Kruse
Platte Generating Station
1035 W. Wildwood Dr.
Grand Island, NE 68801
Phone: (308) 385-5681 ext. 6122
Email: rkruse@giud.com

III. Background Information

A. Switchgear

The City of Grand Island Utilities Department operates and maintains a 100 MW coal fired powerplant located at Platte Generating Station. At this location, there is multiple 480VAC switchgears housing circuit breakers and other auxiliary power circuit protective devices. The switchgear that the breakers are equipped in is a General Electric AKD-6 low voltage switchgear. The switchgear is a self-supporting structure equipped with vertical sections bolted together. Sections consist of power circuit breakers and other auxiliary power circuit protective devices. Each low voltage circuit breaker is mounted in individual compartments equipped with a drawout mechanism. An interlocking system is provided to ensure the circuit breaker is in the open position prior to being able to drawout the breaker.

B. Breakers

The circuit breakers are of type AKR. The breakers include self-coupling primary and secondary disconnecting contacts and incorporate positive and indirect interlocks to insure proper operating sequence. The following tables give a description of the existing circuit breakers.

1. Breaker Ratings

Frame Size (Amperes)	Breaker Type	System Nominal Voltage @60Hz	Three-phase Short-Circuit Current Rating kA Symmetrical	
			With Instantaneous Trip	Without Instantaneous Trip (Short-Time Current Ratings)
800	AKR5A30	600	30	30
		480	30	30
		240	42	30

2. Insulation

Insulation ratings for the breaker at 60 Hertz is 2.2kV. The control wiring at 1.5kV. and the closing motor at 0.9kV.

3. Operating Time (Cycles on 60 Hz Base)

The operating time of the breakers closing electrically, which is the time from energizing closing circuit until contacts close, is 5 cycles.

The operating time of the breakers opening (max clearing time), with instantaneous overcurrent trip is 3 cycles and with shunt trip is 3.5 cycles.

4. Overcurrent protection

The AKR breakers are equipped with solid state trip relays. These relays read the true RMS current through the breakers three poles. To protect from a ground fault the trip unit performs a vector sum of the three phase currents (and Grounded(neutral) if applicable) and determines the fundamental frequency. This is to help mitigate nuisance tripping on multiples of the 3rd harmonic.

5. Controls

The existing breakers are controlled by 125 VDC circuit. The following controls shall be reutilized with the retrofit contactors. Please reference attached drawings to ensure understanding.

- Position switches for the draw-out configuration to indicate the position of the breaker. This allows for safe operation of the breaker. These positions are CONNECTED: Fully inserted and primary and

secondary disconnect contacts are fully engaged. Breaker must be tripped before it can be racked out of this position. TEST: Primary contacts are disconnected but secondary contacts remain engaged. Allows for breaker operation without energizing primary circuit. DISCONNECTED: Both primary and secondary contacts are disengaged.

- A control switch is utilized for remote operation (open and close). There is also a manual pushbutton for manually closing and tripping the breaker.
- Other apparatus associated with the controls circuit is auxiliary switches, light indication on door of open/close, and fuses.

6. SST Overcurrent Trip Device

The existing breakers are equipped with a type SST overcurrent trip device. This device is a solid-state, direct-acting, self-powered trip device system. This device is equipped with trip indicators which indicate the type of trip. There are three trip settings with this device: overload, short circuit, and ground fault. A current transformer on each pole is what powers these devices and gives it the signal inputs. This device has multiple pickup settings, long time, short time, instantaneous time and ground fault pickup.

C. Equipment Supplied

The equipment that the existing AKR breakers are supplying protection and control to are motors. These motors are listed below.

Equipment Name	Phase	Voltage	Current	Frequency	RPM	HP	Ins. Class	Duty	Nema Design	KVA Code	Service Factor	PF
Flushing Ash Sluice Pump 1A	3	460	167	60	1770	150	F	Cont	B	G	1.15	
Flushing Ash Sluice Pump 1B	3	460	174	60	1785	150	B	Cont	B	G	1.15	
Mechanical Exhauster 1A	3	460	112	60	1775	100	F	Cont	B	H	1.25	0.88
Mechanical Exhauster 1B	3	460	119	60	1735	100	B	Cont	B	G	1.0	

IV. Detailed Scope

A. Scope of work

1. The contractor shall supply four (4) retrofit contactors, fuses, and associated tripping devices including one (1) spare assembly.

2. These contactors shall be constructed to fit inside the existing cubicles of the GE AKD-6 switchgear without structural modifications.
3. The contractor shall provide a field technician to oversee the installation of the associated contactors. This technician shall be familiar with the design, construction, and installation of this equipment. The technician shall be a licensed electrician and/or qualified engineer technician.

V. Replacement Requirements

A. Retrofit Contactors and associated equipment

The following list is a requirement for all retrofit contactors and associated equipment.

- The retrofit contactors shall fit into the existing compartment without any structural modifications.
- Built to keep the draw-out configuration.
- Be protected against any effects of short-circuit currents.
- Ratings of contactor and associated equipment shall be sufficient for the application.
- The control of the contactor shall be rated of 125VDC to maintain existing control circuitry.
- Shall be able to withstand the inrush amperage from motor startup, locked rotor, etc. with protection implemented.
- Contactor shall be sized based on the full-load current rating of the motor.
- Shall have an arc mitigation or arc-interrupting structures configured into equipment.
- Shall have minimum and maximum allowable fuse sizing for associated equipment.
- Ratings shall be listed on designated equipment.
- All protection applications currently in place shall be re-implemented.
- All components shall be manufactured and purchased from a major electrical component manufacturer. The manufacturer must be ISO certified
- Circuit must have the ability to operate manually and through the control circuit remotely.
- The front door shall have indication of contactor position.
- The contactor assembly shall have the ability to “rack in” and “rack out” with door closed.
- Shall maintain the “trip-free” operation.
- All terminals, components, conductors (outside of controls and line/load), relays, fuses, and other components to complete the assembly shall be provided by contractor.

- Trip device shall be of SST type.
- Shall be tested to meet load and protection requirements in factory and documentation shall be provided.

B. Standards

The following Standards shall be followed in the consideration of the retrofit contactor replacement.

- ANSI/IEEE C37.20.1 – Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
- ANSI/IEEE C37.20.7 – Guide for Testing Metal-Enclosed Switchgear Rated up to 38kV for Internal Arcing Faults
- IEEE C37.96 – Guide for AC Motor Protection
- IEEE C37.59 – Standard for Requirements for Conversion of Power Switchgear Equipment
- UL 1066 – Standard for Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures
- UL 1558 – Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear
- UL 60947-4-1A – Low-voltage switchgear and controlgear – Part 4-1: Contactors and Motor-starters – Electromechanical contactors and Motor-starters
- UL 60947-5-1 – Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices
- IEC 60947-4-1 - Low-Voltage switchgear and controlgear – Part 4-1: Contactors and motor-starters- Electromechanical contactors and motorstarters.
- IEC 60947-1 – Low-Voltage switchgear and controlgear – Part 1: General Rules
- IEC 60947-5-1 – Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices
- IEC 60947 – 5-4 – Low-voltage switchgear and controlgear – Part 5-4: Control circuit devices and switching elements. Method of assessing the performance of low-energy contacts. Special tests.
- IEC 60947-6-1 – Low-voltage switchgear and controlgear – Part 6-1: Multiple function equipment – Section 1: Automatic transfer switching equipment.
- IEC 60204-1 – Electrical equipment of industrial machines – Part 1: General requirements
- IEC 60715 – Dimensions of low-voltage switchgear and controlgear. Standardized mounting on rails for mechanical support of electrical devices in switchgear and controlgear installations.
- NFPA 70 – National Electric Code Handbook 2020

VI. Additional Information

A. Qualifications

1. Qualified contractor shall have a minimum of 25 years of experience in the maintenance of low voltage switchgear and 10 years of ANSI retrofit experience.
2. Manufacturer of equipment shall be ISO Certified.
3. Manufacturer shall follow the ANSI, IEEE, UL, NEMA standards for electrical equipment and testing procedures.

B. Contractor Requirements

1. The contractor is responsible for compliance with all of the detailed requirements listed within. The contractor shall be responsible for determining any differences in the Standards listed and shall bring them to the Owners attention via writing. No deviations from this specification, its attachments, and references shall be permitted without a written request and subsequent written approval from the Owner.
2. The Contractor is responsible for following all applicable OSHA regulations and plant safety regulations. Required PPE includes:
 - a. Hard Hats
 - b. Safety Glasses
 - c. All-Leather, Steel-Toe or Composite-Toe Boots.
 - d. Hearing protection (where required)
 - e. FR clothing and PPE where required.

NOTE: All personnel working on-site will be required to view the plant's safety presentation before commencing any work.

C. Owner Requirements

1. Provide construction power. Contractor will be required to provide their own tools, test equipment, consumables and all other equipment and material necessary to complete the project.
2. All shipment shall be sent to Platte Generating Station. The Contractor shall prepare all materials and articles for shipment in such a manner as to facilitate handling and to protect them from damage in transit and shall be responsible for and make good any and all damages due to improper preparation for loading and shipment. Boxes and crates shall have a packing list enclosed showing parts contained therein. Before shipment, all surfaces shall be coated or otherwise protected with an approved rust preventative. Parts requiring manual lubrication shall be lubricated before shipment.

3. Access to the plant will be available, at all times, and the Contractor may determine working hours. However, the plant staff will only be guaranteed to be available during normal working hours (7:00am - 3:30pm). There is one gate with a card access security system and the Contractor may request to use access cards rather than request entry and exit for each trip. In such a case, Contractors will be granted access cards. There is a \$25.00 charge for each access card that is not returned when job is completed.

D. Submittals

1. Supplied with Bid
 - Project work schedule
 - Equipment breakdown list
 - Associated component ratings
 - Equipment Drawings
 - Product data sheets.
 - References of at least 3 similar projects including reference contact information.
 - Include hourly rates outside the lump sum for project for reference if additional services needed.
 - Provide a time-frame for the pricing basis.
 - Pricing shall include:
 - All applicable material, equipment, licensing, and/or software.
 - Labor
 - Travel Expenses
 - Living expenses
 - Permits required
2. Upon Completion
 - User manual for the full system and detailed operation of equipment.
 - Any third-party components used shall come with a manual.
 - Equipment breakdown list
 - Spare parts list
 - As-built drawings
 - Schematics
 - Certified testing reports
 - Long-time-delay, Short-time-delay, and instantaneous time-current curves
 - Ground Trip Time-current curve
 - An operation and maintenance manual shall be provided with all associated equipment

E. [Site Visit](#)

A site visit is not required. However, it is recommended to assess the existing equipment.

F. [Attached Drawings](#)

The drawings attached to the specification are to be used in the consideration of designing the retrofit assembly.

- 77-8-EL-104 – Flushing Ash Water Sluice Pump 1A & 1B
 - 77-8-EL-121 – Fly Ash Mechanical Exhauster 1A & 1B
 - 183L712R – Connection and Elementary Diagram for AKR breakers
 - 75D703627 – Indoor AKD-6 Low Voltage Switchgear dimensional drawings
- NOTE: Additional drawings can be provided upon request.

MINIMUM INSURANCE REQUIREMENTS
CITY OF GRAND ISLAND, NEBRASKA

The successful bidder shall obtain insurance from companies authorized to do business in Nebraska of such types and in such amounts as may be necessary to protect the Bidder and the interests of the City against hazards or risks of loss as hereinafter specified. This insurance shall cover all aspects of the Bidder's operations and completed operations. Failure to maintain adequate coverage shall not relieve Bidder of any contractual responsibility or obligation. Minimum insurance coverage shall be the amounts stated herein or the amounts required by applicable law, whichever are greater.

1. WORKERS COMPENSATION AND EMPLOYER'S LIABILITY

This insurance shall protect the Bidder against all claims under applicable State workers compensation laws. This insurance shall provide coverage in every state in which work for this project might be conducted. The liability limits shall not be less than the following:

Workers Compensation	Statutory Limits
Employers Liability	\$100,000 each accident
	\$100,000 each employee
	\$500,000 policy limit

2. BUSINESS AUTOMOBILE LIABILITY

This insurance shall be written in comprehensive form and shall protect the Bidder, Bidder's employees, or subcontractors from claims due to the ownership, maintenance, or use of a motor vehicle. The liability limits shall not be less than the following:

Bodily Injury & Property Damage	\$ 500,000 Combined Single Limit
---------------------------------	----------------------------------

3. COMPREHENSIVE GENERAL LIABILITY

The comprehensive general liability coverage shall contain no exclusion relative to explosion, collapse, or underground property. The liability limits shall not be less than the following:

Bodily Injury & Property Damage	\$ 500,000 each occurrence
	\$1,000,000 aggregate

4. UMBRELLA LIABILITY INSURANCE

This insurance shall protect the Bidder against claims in excess of the limits provided under employer's liability, comprehensive automobile liability, and commercial general liability policies. The umbrella policy shall follow the form of the primary insurance, including the application of the primary limits. The liability limits shall not be less than the following:

Bodily Injury & Property Damage	\$1,000,000 each occurrence
	\$1,000,000 general aggregate

5. ADDITIONAL REQUIREMENTS

The City may require insurance covering a Bidder or subcontractor more or less than the standard requirements set forth herein depending upon the character and extent of the work to be performed by such Bidder or subcontractor.

Insurance as herein required shall be maintained in force until the City releases the Bidder of all obligations under the Contract.

The Bidder shall provide and carry any additional insurance as may be required by special provisions of these specifications.

6. CERTIFICATE OF INSURANCE

Satisfactory certificates of insurance shall be filed with the City prior to starting any work on this Contract. **The certificates shall show the City as an additional insured on all coverage except Workers Compensation. The certificate shall state that thirty (30) days written notice shall be given to the City before any policy is cancelled (strike the "endeavor to" wording often shown on certificate forms). If the Bidder cannot have the "endeavor to" language stricken, the Bidder may elect to provide a new certificate of insurance every thirty (30) days during the contract. Bidder shall immediately notify the City if there is any reduction of coverage because of revised limits or claims paid which affect the aggregate of any policy.**

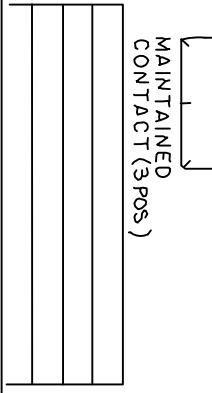
POWER WIRING INTERCONNECTION

CIRCUIT NUMBER	CABLE	COLOR	C O N N E C T I O N		FUNCTION
			FROM	TO	
H 274	2/c #12		480V LC-ID	FLUSHING ASH	FLUSHING ASH
		B	(FLUSHING PMP 1B)	MTR SPACE HTR	
		W	4XN		SPACE HEATER
			9XN		
H 270	2/c #12		480V LC-1C	FLUSHING ASH	
		B	(FLUSHING PMP 1A)	MTR SPACE HTR	
		W	4YN		SPACE HEATER
			9YN		
H 271	2/c #12		480V LC-1C	LTG PNL IU	
			(FLUSH ASH SLUICE		
		B	WTR PMP 1A)	BKR #10	
		W	3YP		MTR SPACE HTR
			9YN		
H 275	2/c #12		480V LC-ID	LTG PNL IU	
			(FLUSH PMP 1B)	BKR #12	
		B	3XP		MOTOR SPACE HTR
		W	9XN		
C141	9/c #12		480V LC-1C	BAHCP	
			(FLUSH ASH SLUICE		
			WTR PMP 1A)		
		B	2YL	TB7-483D	CONTROL
		W	6YL	TB10-1119A	RED LT.
		R	8YL	TB10-1118A	GREEN LT
		G	9YL	TB10-1116	COM LT
		O	12YL	TB10-1119B	TRIP CKT
		BL	12YL	TB10-1119C	
		WB	7YL		INTLK WITH S11 & K2
		RB	SPARE		
		GB	SPARE		
C143	2/c #16		480V LC-1C	ANN	
			(FLUSH ASH SLUICE		
			WTR PMP 1A)		
		B			SPARE
		W			
C142	9/c #12		480V LC-ID	BAHCP	
			(FLUSH ASH SLUICE		
			WTR PMP 1B)		
		B	2XL	TB7-483F	CONTROL
		W	6XL	TB10-1127A	RED LT.
		R	8XL	TB10-1126A	GREEN LT
		G	9XL	TB10-1126	COM LT
		O	12XL	TB10-1124	TRIP CKT.
		BL	12XL	TB10-1127B	
		WB	7XL	TB10-1127C	
		RB	SPARE		INTLK WITH S16 & K2
		GB	SPARE		
C144	2/c #16		480V LC-ID	ANN	
			(FLUSH ASH SLUICE		
			WTR PMP 1B)		
		B			SPARE
		W			

PUMP 1A STARTS ON AUTO WHEN DISCHARGE VALVE CV-29 TO SETTLING TANK IS OPEN
 PUMP 1B STARTS ON AUTO WHEN DISCHARGE VALVE CV-30 TO SURGE TANK IS OPEN

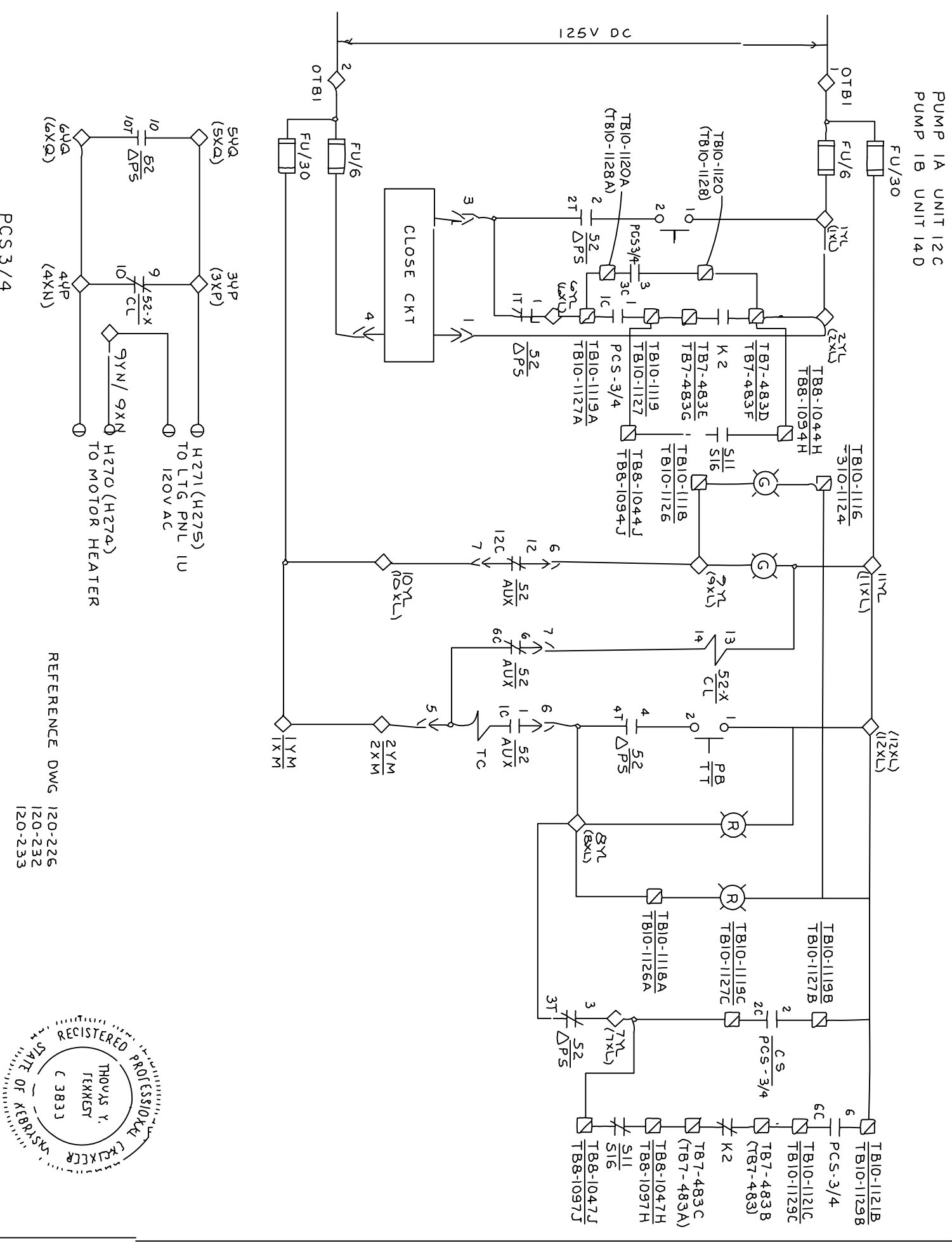
SIG	FLUSHING ASH WATER SLUICE PUMP START-STOP	BAHCP (PUMP 1B)	120-232
S11	FLUSHING ASH WATER SLUICE PUMP START-STOP	BAHCP (PUMP 1A)	120-232
K 2	LOCK IN RELAY IN START CKT	BAHCP	120-226

CONTACTS	HANDLE	END	1	2	3	4	5	6	7	8	9	10	11	12
000	010	010												
010	010	010												
010	010	010												
010	010	010												
010	010	010												
010	010	010												
010	010	010												
010	010	010												
010	010	010												
010	010	010												

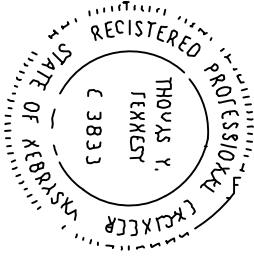


NOTE THIS DRAWING CONFORMS TO CONSTRUCTION RECORDS DATE 1-28-83

UTILITY SYSTEM IMPROVEMENTS
 GRAND ISLAND, NEBRASKA
 FLUSHING ASH WATER SLUICE PUMP 1A & 1B
 LUTZ, DALLY & BRAIN CONSULTING ENGINEERS
 77-8-EL-104



REFERENCE DWG 120-226
 120-232
 120-233



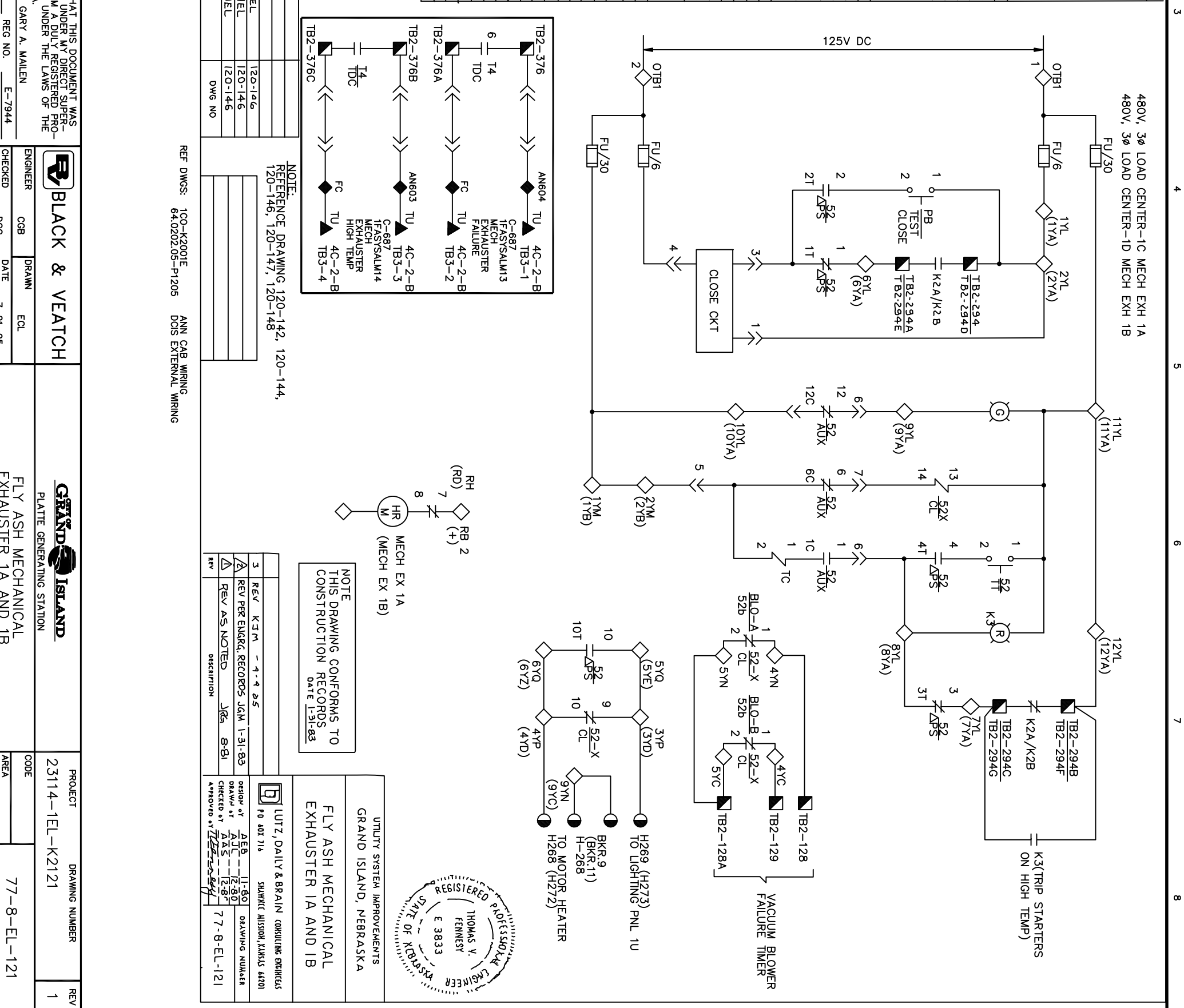
5/11/83 7Y B

POWER WIRING INTERCONNECTION

CIRCUIT NUMBER	CABLE COLOR	FROM	TO	FUNCTION
H-268	Z/C*12	480V LC-1C-MECH EXH 1A	MECH EXH 1A	
		EXH 1A	MOTOR SPACE HTR	
		B	4YN	
		W	9YN	
H-269	Z/C*12	480V LC-1C-MECH EXH 1A	LIGHTING PNL 1U	
		B	3YP	
		W	5YN	
H-272	Z/C*12	480V LC-1D-MECH EXH 1B	MOTOR SPACE HTR	
		B	4YD	
		W	9YD	
H-273	Z/C*12	480V LC-1D-MECH EXH 1B	LIGHTING PNL 1U	
		B	3YD	
		W	5YD	
C-663	7/C*12	480V LC-1C (FLY ASH MECH EXH 1A)	FLY ASH RELAY	
		B	2YL	
		W	6YL	
		R	12YL	
		G	7YL	
		O	4YN	
		BL	5YN	
		WB		
C-664	7/C*12	480V LC-1D (FLY ASH MECH EXH 1B)	FLY ASH RELAY	
		B	2YA	
		W	6YA	
		R	12YA	
		G	7YA	
		O	4YN	
		BL	5YN	
		WB		
C-677	5/C*16	480V LC-1C	ANN(BKR TRIP)	
		B	5YM	
		W	6YM	
		R		
		G		
		O		
C-880	5/C*16	480V LC-1D (BKR 13, 14, 15, 16)	ANN(BKR TRIP)	
		B	5YB	
		W	6YB	
		R		
		G		
		O		

NO	DATE	ISSUED FOR CONSTRUCTION	REVISIONS AND RECORD OF ISSUE	CGS DCG GAM	BY CHK APP FLW	SIGNED	DATE	REG NO.	E-7944
1	01-31-96	CONFORMED TO CONST RECORDS				GARY A. MAILEN	7-18-95		
0	07-28-95	ISSUED FOR CONSTRUCTION							

NOTES:
 LOCATED LOCALLY
 LOCATED ON FLY ASH RELAY PANEL
 LOCATED ON 480V LOAD CENTER
 LOCATED ON ANNUNCIATOR CABINET



NO	DATE	ISSUED FOR CONSTRUCTION	REVISIONS AND RECORD OF ISSUE	CGS DCG GAM	BY CHK APP FLW	SIGNED	DATE	REG NO.	E-7944
1	01-31-96	CONFORMED TO CONST RECORDS				GARY A. MAILEN	7-18-95		
0	07-28-95	ISSUED FOR CONSTRUCTION							

NOTES:
 LOCATED LOCALLY
 LOCATED ON FLY ASH RELAY PANEL
 LOCATED ON 480V LOAD CENTER
 LOCATED ON ANNUNCIATOR CABINET

BLACK & VEATCH

GRAND ISLAND PLATE GENERATING STATION

UTILITY SYSTEM IMPROVEMENTS
 GRAND ISLAND, NEBRASKA

FLY ASH MECHANICAL EXHAUSTER 1A AND 1B

UTLZ, DAILY & BRAIN CONSULTING ENGINEERS
 SIAWNEE MISSION, KANSAS 66201

DESIGNED BY AEB 11-80
 DRAWN BY AAS 12-80
 CHECKED BY JRS 8-81
 APPROVED BY [Signature] 7-7-8-EL-121

PROJECT: 23114-1EL-K2121
 DRAWING NUMBER: 77-8-EL-121
 REV: 1

REGISTERED PROFESSIONAL ENGINEER
 THOMAS V. FENNESSY
 STATE OF NEBRASKA
 E 3833

DRAWOUT-BKR

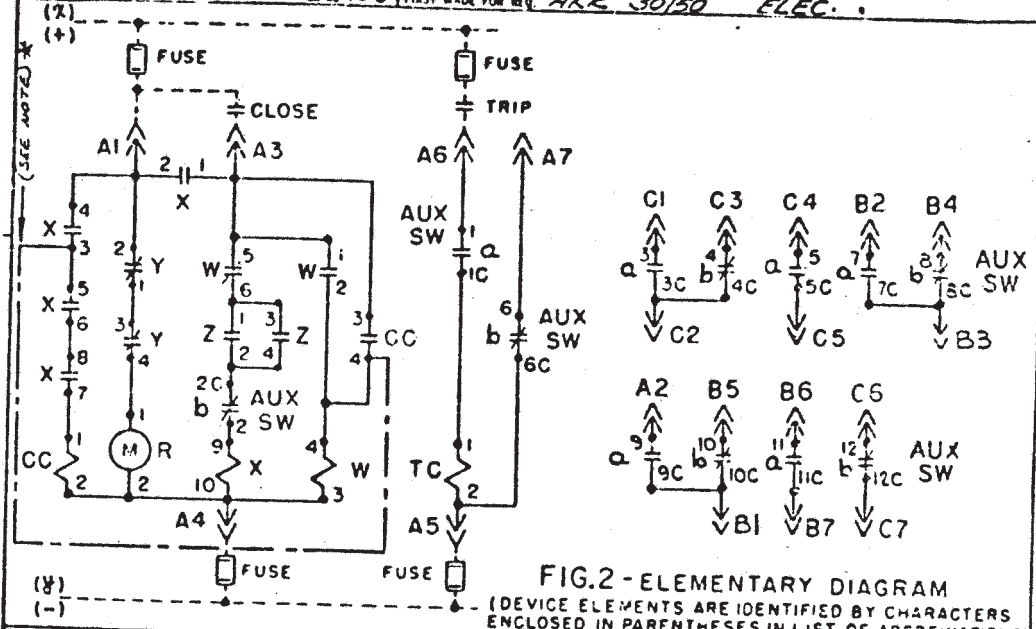
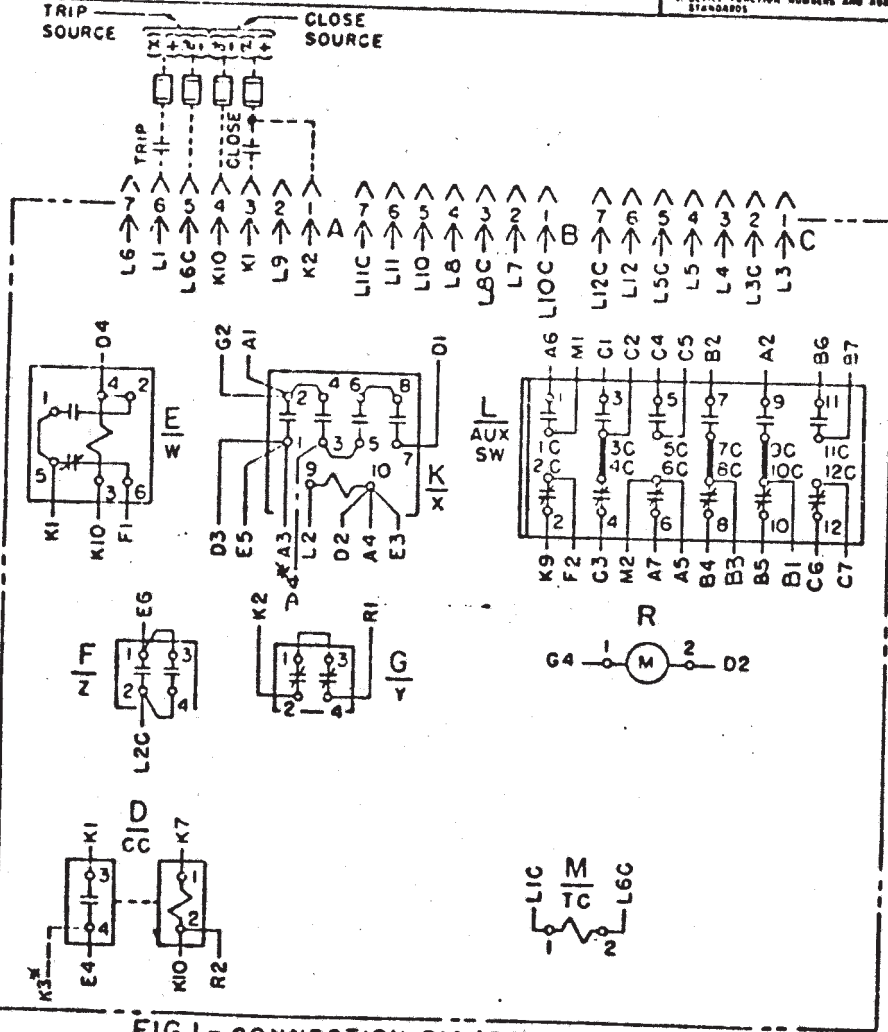
NOTE - BKR SHOWN IN OPEN POSITION WITH SPRING DISCHARGED

1 THIS DRAWING SHOWS ELECTRICAL CONNECTIONS ONLY. THE EXACT LOCATION OF APERTURES MUST BE OBTAINED FROM THE DRAWING OF THE CABINET. 2 NUMBERED CIRCLES ARE MERELY CONVENIENT EQUIVALENTS OF LETTERS, AND DO NOT NECESSARILY REPRESENT CONTACTS OF DEVICES. 3 INTERNAL CONNECTIONS OF DEVICES ARE INCLUDED WITH THE INTERNAL WIRING DIAGRAM. 4 DEVICE FUNCTION NUMBERS AND ABBREVIATIONS ARE AS PER STANDARDS.

183L712R
CONT. ON SHEET NO. 105

CONN & ELEM DIAGRAM (QUICK CLOSE)

FIRST MADE FOR REQ. *AKR 30/50 ELEC.*



- STANDARDIZED LIST OF ABBREVIATIONS (SOME DEVICES MAY NOT BE INCLUDED IN DIAGRAMS)**
- (A) - SEC. DISC. LOCATED TOP LEFT, FRONT VIEW
 - (B) - SEC. DISC. LOCATED TOP CENTER, FRONT VIEW
 - (C) - SEC. DISC. LOCATED TOP RIGHT, FRONT VIEW
 - F-(Z) CUT-OFF SWITCH
 - G-(Y) CUT-OFF SWITCH
 - H-(BA) BELL ALARM OR LOCKOUT DEVICE OPERATED WHEN BKR IS TRIPPED BY ANY MEANS OTHER THAN SHUNT OR MANUAL TRIP. CONTACTS SHOWN IN RESET POSITION. CONNECTIONS ARE AS SHOWN WHETHER SWITCHES ARE BOTH NORMALLY OPEN, BOTH NORMALLY CLOSED, OR ONE OF EACH TYPE.
 - J-(UV) UNDERVOLTAGE TRIP DEVICE. TIME DELAY OR INSTANTANEOUS
 - K-(X) CLOSING RELAY
 - L-(AUX SW) "a" CONTACTS TAKE POSITION OF BKR CONTACTS, "b" CONTACTS OPPOSITE TO BKR CONTACTS
 - M-(TC) SHUNT TRIP DEVICE
 - R-(M) CLOSING SPRING CHARGING MOTOR
 - P-(FB) PUSH BUTTON CLOSING SWITCH ON BKR
 - D-(CC) CLOSING RELAY
 - E-(W) ANTI-PUMP RELAY

* NOTE: THIS CONNECTION USED ON SOME CONTROL VOLTAGE RATINGS

CONNECTIONS
 NOTE: PARTS OF WIRE ARE REFERENCED TO DESTINATION BY LETTERS AND FIGURES. CONNECTIONS FROM DEVICES TO BOARD OR TERMINALS.

177L272R

10-15-77 P104

DESIGNED BY *J. H. ...*
 DRAWN BY *J. H. ...*
 CHECKED BY *J. H. ...*
 DATE *4-25-77*

LOW VOLTAGE SWITCHGEAR DEPARTMENT PHILADELPHIA

183L712R
PRINTED ON RECYCLED PAPER