CONTRACT AND SPECIFICATIONS

FOR

WEC UNIT 1 MCC-1G SWITCHGEAR SUPPLY

CITY OF HASTINGS

HASTINGS, NEBRASKA

Contract No. HU 2026-116

Sealed Proposals Will Be Opened Promptly At
3:00 PM, Wednesday, December 16th, 2026

Bid Submitted By: _____

HASTINGS
UTILITIES

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WEC UNIT 1 MCC1G SWITCHGEAR SUPPLY
FOR
HASTINGS UTILITIES
HASTINGS, NEBRASKA

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ADVERTISEMENT FOR BIDS

Hastings Utilities will receive bids for **Whelan Energy Center Unit 1 MCC1G Switchgear Supply HU2026-116** until 3:00 p.m. Wednesday, December 16th, 2026 at Hastings Utilities, 1228 North Denver Ave., Hastings, Nebraska, on at which time and place all bids will be publicly opened and read aloud. **Brief description of project: Vendor to supply a replacement 480 Volt switchgear for Whelan Energy Center's Unit 1 Cooling Tower.** If you plan on bidding and are not already on our approved bidders list for this project, you are REQUIRED to fill out the Plan Holders Submittal Form that is located on the City website: https://www.cityofhastings.org/bids/.

The Contract Documents, including plans and specifications, are on file at Hastings Utilities, 1228 N Denver Ave., Hastings, Nebraska 68901. Copies of the plans and specifications in electronic (PDF) format may be obtained by visiting the City of Hastings Website: www.cityofhastings.org/bids.

Each bid shall be accompanied by a certified check, drawn on a solvent bank in the State of Nebraska, or a bid bond in an amount of not less than five percent (5%) of the total bid of all contract construction costs, made payable to the City Treasurer of the City of Hastings, Nebraska, as security that the bidder to whom the contract may be awarded will enter into a contract to build all the improvements in accordance with this notice and give bond in the sum hereinafter provided for the construction of improvements.

No bid shall be withdrawn after opening of bids without the consent of the City of Hastings, Nebraska, for a period of sixty (60) days after scheduled time of closing bids.

Time is of the essence in this contract. In evaluating bid(s) received, the Utilities will consider the delivery dates of the equipment and reserves the right to accept the bid which best suits its needs whether the price is the lowest or not, to reject any or all bids, and to waive any informalities.

DATED AT HASTINGS, NEBRASKA, this 18th day of November 2026

_____
Derek Pfeifer, Production Engineer

Publish and Attach two (2) Proofs of Publication:
November 25th, 2026
December 2nd, 2026

INSTRUCTIONS TO BIDDERS

All proposal information, including any unit price fill-in sheets or other required information, shall be submitted on the proposal forms hereto attached. Copies of addenda, if any, shall be signed and attached to the bound volume submitted. Hastings Utilities does NOT accept faxed or emailed bid returns.

Bidders shall inform themselves of all relevant matters, and, if awarded the contract, shall not be allowed any extra compensation by reason of any matter or thing concerning which such Bidder might not have fully informed himself, prior to the bidding.

The Bidder bidding on the Specifications herein, who has exceptions to those called for in the Specifications, must so state in the space provided below and/or attach a letter explaining in detail the exceptions taken to those required in the Specifications. This letter of explanation shall become a part of the bid and shall be attached hereto. Failure by the Bidder to outline his exceptions will require the successful Bidder to comply with these Specifications.

EXCEPTIONS TO SPECIFICATIONS:

_____

_____

_____

_____

_____

_____

_____

_____

The Purchaser will not assume obligations resulting from losses or damages until acceptance of the equipment.

Checks of unsuccessful Bidders will be returned when their bids have been rejected and they will not be retained in excess of sixty (60) days from the date bids are opened. The check of the successful Bidder will be retained until the contract is awarded. Should the successful Bidder fail to perform as the Proposal and Specifications indicate, the City may use the check as liquidated damages within fifteen (15) days after written notice is given to the party who submitted the successful bid.

BID DOCUMENT MUST BE SUBMITTED WITH BID

INSTRUCTIONS TO BIDDERS

If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of any part of the Specifications or other proposed contract documents, he may submit to Purchaser a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by addendum duly issued or delivered to each person receiving a set of such documents. The Purchaser will not be responsible for any other explanation or interpretation of the proposed documents.

All addendums must be signed and attached to bid documents or proposal will not be accepted.

BID DOCUMENT MUST BE SUBMITTED WITH BID

IF YOU HAVE QUESTIONS OR NEED HELP ON THESE SPECIFICATIONS

CONTRACT NO: HU 2026-116

WEC UNIT 1 MCC1G SWITCHGEAR SUPPLY

PLEASE CONTACT ANY OF THE FOLLOWING:

PROJECT QUESTIONS

Derek Pfeifer
Production Engineer
Direct Line: 402-462-3673
Email: dpfeifer@cityofhastings.org

John Fielder
EIC Lead
Direct Line: 402-462-3574
Email: jfielder@cityofhastings.org

GENERAL QUESTIONS OR REQUESTS

Renae Griess
Administrative Assistant – Engineering Dept, City of Hastings
Ph# 402-462-3665
Fax# 402-462-3666
Email: bidquestions@cityofhastings.org

HASTINGS UTILITIES

BIDDER'S CHECKLIST

☐ One signed cover sheet with your company's name filled in

☐ One signed original Proposal

☐ Exceptions listed on Instruction To Bidders sheet

☐ Acknowledgement of Addenda. All addendums received must be acknowledged and signed, if applicable.

☐ Firm unit pricing; or the lump sum pricing as applicable (see Proposal).

☐ A certified check, cashier's check, or bid bond payable to the City of Hastings in an amount no less than five percent (5%) of the bid price included with the sealed bid envelope addressed in accordance with the Mailing or Hand Delivery Instructions.

☐ A recommended spare parts list complete with quantities, costs, and leadtimes

IMPORTANT MAILING (OR HAND DELIVERY) INSTRUCTIONS

Please address your return envelope as shown in the example below. All bids must be sealed in a properly marked envelope.

To hand deliver please drop off between the hours of 8am – noon and 1pm – 5pm Monday-Friday.

Your Return Address

City of Hastings
Attn: Renae Griess
1228 N Denver Avenue
Hastings, NE 68901

This Information MUST BE typed or written in the lower left hand corner of return envelope
OR SIMPLY CUT OUT AND TAPE ON YOUR RETURN ENVELOPE

✂ ✂ ✂ ✂

BID DOCUMENTS ENCLOSED
ATTN: Renae Griess, Administrative Assistant
Contract No: HU 2026-116
WEC Unit 1 MCC1G Switchgear Supply
For Hastings Utilities
Bid Opens: Wednesday, December 16th 2026 @ 3:00 PM

If returning Fed-X or similar carrier, please enclose the bid in an "inner" envelope which is sealed. Please make sure BOTH envelopes are properly marked on the OUTSIDE OF THE ENVELOPE as shown in the example above.

One bid per envelope. Bid submittal via email is not allowed. Bids must be checked in to the City of Hastings prior to 3:00 pm deadline.

PROPOSAL FOR

WEC UNIT 1 MCC1G SWITCHGEAR SUPPLY
Formal Contract No. HU 2026-116

TO: Hastings Utilities
1228 N. Denver Ave
Hastings, NE 68901

Bid Opening: December 16th 2026 (Wednesday)
SEALED BIDS MUST BE RECEIVED BY 3:00 P.M. AND WILL BE OPENED PROMPTLY AT THAT TIME

We, the undersigned, being familiar with all parts of this Proposal including Specifications, Quantities, and all other associated Contract documents, do hereby agree to **furnish and deliver F.O.B. Whelan Energy Center Unit 1, 4520 East South Street, Hastings, NE, a replacement switchgear for Hastings Utilities' WEC Unit 1 MCC-1G** as specified to purchaser for the following firm prices.

BID SECTION I: BASE SCOPE

Item No.	Description	Unit Price	Sales Tax
1	Supply a replacement 480V Switchgear for WEC1 MCC1G, including all parts, documentation, and freight as described in the specifications	$	$
TOTAL PRICE _____ *(Price In Words)*			$_____

BID SECTION II: OPTIONAL ITEMS

Item No.	Description	Unit Price	Sales Tax	Total Price
2	Recommended Spare Parts. See below for clarification.	$	$	$
3	Upgrade MCC to NEMA3 with Space Heaters. See below for clarification	$	$	$

Lead Time of Item #1 – NEMA1 MCC Base Option:_______

Lead Time of Item #3 – NEMA3 MCC with Space Heaters:_____

Delivery Dates will be a factor in evaluating bids.

For optional item #2, spare parts, the bidder shall include an itemized recommended spare parts list including costs, lead times, and quantities of each part.

For optional bid item #3, the Owner is interested in a possible upgrade to the MCC due to the location. Although the gear is inside, there have been multiple water line and valve failures in the room and occasional heating issues. If available, please provide an alternate cost to upgrade to NEMA3 and provide anti-condensation space heaters rated for 120VAC with thermostatic controls and an ammeter for indication of operation.

PROPOSAL FOR
WEC UNIT 1 MCC1G SWITCHGEAR SUPPLY
Formal Contract No. HU 2026-116

The project is OUTSIDE OF CITY LIMITS and is subject to **5.5% sales tax**.

Is Nebraska Sales/Use Tax included in the above prices (must select one)?

Yes _____ No _____

Are you licensed to collect sales tax in the State of Nebraska (must select one)?

Yes _____ No _____

Exceptions: No ☐ Yes ☐ (If yes, list on ***"Instructions to Bidders"*** page)

Any modification of bid proposal will be considered non-conformance of the bid. All exceptions to the proposal shall be noted as an exception to the bid.

In submitting this proposal, it is further understood that Hastings Utilities reserves the right to reject any or all proposals and may waive any informalities and may accept the proposal which best suits its needs. It is further understood that this proposal may not be withdrawn for a period of sixty days (60) days after bids are opened.

All proposals shall have original signatures. Electronic time-stamped signatures will be acceptable. Photocopied or printed versions of bid bonds will be accepted without original signatures, however a hardcopy with original signatures must be received by Hastings Utilities within 5 business days.

OFFICIAL NAME & ADDRESS

Firm Name	Signature
Address	Typed or Printed Name
City, State, Zip	Title
Phone No.	Date
Fax No.	Email Address

ALL BIDS MUST BE CHECKED IN TO HASTINGS UTILITIES PRIOR TO 3:00 PM DEADLINE

HASTINGS UTILITIES SPECIFICATIONS

LOW VOLTAGE MOTOR CONTROL CENTER SPECIFICATION
FOR THE
WHELAN ENERGY CENTER
HASTINGS UTILITIES

ENTRUST SOLUTION GROUP PROJECT NO. 2628884.00

Issue Purpose	Issue Date	Prepared By	Reviewed By	Approved By
Issued for Review	11/11/2026	Julio Cesar Garrido	Robbie Nelson	Matthew Rangen
Issued for Bid	11/17/2026	Julio Cesar Garrido	Robbie Nelson	Matthew Rangen

DIVISION 01 – GENERAL REQUIREMENTS

SECTION 011100

SUMMARY OF WORK

PART 1 – GENERAL

101. PROJECT INFORMATION

101.1. Owner: Hastings Utilities

101.2. Owner's Engineer: EN Engineering (EN)

101.3. Project name: Whelan Energy Center MCC-1G Replacement

101.4. Project Location:

a. Location

Whelan Energy Center
4520 East South Street
Hastings, NE 68901

b. Topography

Latitude: 40.5806 N
Longitude: 98.3112 W

102. SCOPE OF WORK

102.1 The Contractor shall design, manufacture, furnish, test, inspect and deliver to the jobsite the following:

a. Low Voltage Motor Control Center (MCC) for power distribution at Whelan Energy Center (WEC) as specified herein and as shown in the MCC drawings
b. New MCC will replace and re-feed existing loads, and will have spare capacity for future loads
c. Three (3) variable frequency drives/variable speed drives (VFD/VSD) to replace three full voltage reversing starters within the MCC.
d. Updated one-line diagram (ENE_ELEC_1-SHT 01.pdf)

103. PROJECT MANAGEMENT

103.1 Project Meetings

a. Project Kickoff Meeting

1. Owner will conduct a meeting within ten (10) days after the Effective Date of Agreement to review items stated in the agenda and to establish a working understanding of the project scope and execution expectations
2. Meeting Agenda
    i. Projected schedule
    ii. Project coordination
    iii. Procedures
    iv. Substitutions
    v. Submittals
    vi. Change Orders
    vii. Commercial Terms
    viii. Procedure for testing
3. Location of Meeting: Virtual Teams Meeting.
4. Reporting: Within three (3) working days after the meeting, Owners will prepare and distribute minutes of the meeting to each party represented.

b. Engineering Coordination Meetings

1. Owners will schedule and conduct a meeting at least monthly for coordination during Contractors Equipment engineering and design phase of the project. Meeting shall be attended by:
    i. Contractor's Representative(s) including engineering personnel
    ii. Contractor's principal subcontractors and suppliers, at Owner's discretion
    iii. Owner's representative (including lead engineers)
2. Meeting Agenda:
    i. Review of action items.
    ii. Facility design interfaces.
    iii. Equipment and Material procurement status.
    iv. Engineering/fabrication/manufacturing schedules.
    v. Requests for information (RFIs).
3. Location of Meetings: Virtual Teams Meeting.
4. Reporting: Within three (3) working days after the meeting, Owner will prepare and distribute minutes of the meetings to each party represented.

103.2 Schedules and Reports

a. Initial Coordination Submittals: Within ten (10) days after the Effective Date of Purchase Order Agreement, Contractor shall submit to Owner for review and acceptance:

1. A preliminary work progress schedule.
2. A preliminary schedule of Submittals, as stated in sections 103.3 and 103.4.
3. Certification of insurance or copies of policies as required by the GENERAL TERMS AND CONDITIONS.

b. Work Progress Schedule:

1. The schedule shall show the work in a graphic format suitable for displaying scheduled and actual progress.
    i. Prepare schedules as a horizontal bar chart with separate bar for each major portion of the work or operation.
    ii. The schedule shall also show the work broken down into major phases and key items with the dates work is expected to begin and be completed. Sequence of listings shall be in the chronological order of the start of each item of work.
    iii. Scale and spacing shall allow space for notations and revisions.
    iv. Sheet size: Minimum 11 x 17 inches.
2. Submit to Owner an updated schedule at least once monthly. Schedule shall show actual progress and any proposed changes in the schedule of remaining work.

c. Work Progress Reports:

1. Submit a monthly report on actual work progress. More frequent reports may be needed should the work fall behind the accepted schedule.
2. Work progress reports shall consist of marked copies of prints made from the accepted work progress schedule, and a narrative report which shall include but not be limited to the following:
    i. A description of current and anticipated delaying factors, if any.
    ii. Impact of possible delaying factors.
    iii. Proposed corrective actions.
3. Should operations fall behind accepted schedule to an extent that completion of work within the Contract Time appears doubtful, Contractor shall, at no change in Contract Price, take corrective action to get back on schedule.

d. Delivery Schedule:

1. Within thirty (30) days after the Date of Agreement, Owner and Contractor shall agree on a delivery schedule for all Equipment and Materials to be furnished for which the delivery time is not named in the Proposal or specified.
2. Contractor shall notify Owner at least fifteen (15) days in advance of any delivery date and shall not make any shipments without written approval of Owner.
3. No delivery will be approved until proper Submittals pertaining to storage and installation have been received and accepted.
4. Any items delivered without written approval may be returned to the point of origin or unloaded and stored at a place and in a manner determined by Owner, and Contractor will be charged for any additional expense resulting thereof.
5. If written order by Owner delays any shipment for more than thirty (30) days after the time set forth in the Contract Documents or the agreed delivery schedule, Owner will pay Contractor for storage at a rate to be mutually agreed upon at that time. Time of storage will be figured from thirty (30) days after the later of the dates defined above or receipt of Contractor's certified statement of the actual shipping date.

6 . Items stored by Contractor as provided herein shall be protected by Contractor with fire and extended coverage insurance endorsed to include the so-called "All Risks" coverage endorsement to the full value of the items stored, and a satisfactory certificate proving protection for Owner shall be delivered to Owner. The cost of such insurance shall be included with the rate charged for storage.

103.3 Submittals for review and approval

a. Master drawing list
b. Elevation views (front, side) with general notes.
c. Top and bottom views
d. Floor plan
e. One Line Diagram
f. Unit elementary and wiring diagrams
g. Nameplate schedule
h. Starter and component schedule
i. Conduit entry locations
j. MCC Ratings (short circuit current, voltage, continuous current, bracing)
k. Major component ratings (interrupting ratings, voltage, continuous current)
l. Cable terminal sizes
m. Component data sheets
n. Estimated shipping weights and dimensions
o. Seismic certifications and equipment anchorage details

103.4 Submittals For Construction

a. Final as-built drawings
b. Estimated shipping weights and dimensions
c. Unit wiring diagrams
d. Certified production test reports
e. Installation manual
f. Final Seismic certification and equipment anchorage details

104. MATERIAL AND SERVICES FURNISHED BY OTHERS

104.1 The following work, which does not constitute a part of the Specification, will be performed and/or provided by Others.

a. Unloading of all equipment
b. Storage of all equipment
c. Equipment installation, including mounting and anchoring
d. External electrical cabling and raceway, including all interconnections
e. Checkout and turnover of equipment

105. SPARE PARTS

105.1 Contractor shall include a spare parts list, including current prices and recommended quantities.

105.2 The spare parts list shall indicate the parts that are recommended for Owner to keep in stock to properly maintain the Equipment and minimize its outage time.

106. MATERIAL REQUIREMENTS

106.1 All materials included in Contractor's scope shall be sourced from USA, Western European, Japanese, or South Korean sources. Material sources are subject to review and approval by the Owner. Material sourced from China will not be accepted.

107. QUALIFICATIONS

107.1 The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.

107.2 The manufacturer of this equipment shall have produced similar equipment for a minimum of five (5) years and shall maintain ISO 9001 or ISO 9002 certification.

107.3 The assembly and major components shall be certified by actual seismic testing to meet all requirements of the International Building Code (IBC) currently in effect at the site. The manufacturer shall document the requirements necessary for proper seismic mounting of the equipment.

107.4 The assembly and major components shall be listed by Underwriters Laboratories (UL) and shall comply with UL 845 Safety Standard.

108. SHIPMENT, STORAGE, AND HANDLING

108.1 Delivery of all components is required by March 1st, 2027.

108.2 Delivery will be to Whelan Energy Center.

108.3 Delivery address and instruction will be included in the purchase order.

108.4 Equipment shall be properly packed for shipment, handled at site, and stored in accordance with manufacturer's instructions in the MCC Installation and Maintenance Manual. This manual shall be provided at time of shipment.

108.5 Equipment Operation and Maintenance Manuals shall be provided with each assembly shipped and shall include instruction leaflets, instruction bulletins and renewal parts lists for the complete assembly and each major component.

END OF SECTION 011100

DIVISION 26 – ELECTRICAL

SECTION 260500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 – GENERAL

101. LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

101.1. Power cable ampacities shall be determined using NFPA 70 (National Electrical Code) or shall be calculated using NFPA 70 approved Neher-McGrath methods.

101.2. NFPA 70 TABLE 310-16 corrected to 40° C ambient temperature shall be used for cables smaller than 8.36 mm² (8 AWG).

101.3. Cables shall be rated at a conductor temperature of 90° C. All ampacities shall be based upon maximum continuous loads at a 100 percent load factor.

101.4. Motor feeders shall have an ampacity of not less than 125% of the motor full load current rating as found in the NEC 430 Part XIV tables.

101.5. Asbestos shall not be used in any cable construction.

PART 2 – REFERENCES/STANDARDS

201. HASTINGS DOCUMENTS
   A. MCC1G Drawings Binder

202. CONSTRUCTION

202.1 The MCC enclosure shall be a NEMA Type 1 vented, totally enclosed, dead front, free standing assembly suitable for installation in a climate-controlled building.

202.2 MCC shall have a total number of 8 sections.

202.3 The MCC shall be of arc-resistant design in compliance with IEEE C.37.20.7 testing requirements.

202.4 No rear access shall be required to remove any internal components.

202.5 Adequate space for conduit entry at the top shall be provided without structural interference. A horizontal wireway at the top shall be 15” tall and be isolated from the bus via a metal barrier. The wireway shall be readily accessible via a hinged cover.
   a. Accommodation shall be made for customer’s incoming cable entry at the bottom of the MCC.

202.6 All full voltage starters and circuit breakers shall be of the draw-out type. The draw-out design shall include a positive guide rail system and stab shrouds to ensure alignment of stabs with the vertical bus. Each unit shall have an individual door.

202.7 An operating mechanism shall be mounted on the primary disconnect of each starter unit. It shall be mechanically interlocked with the unit door to prevent access unless the disconnect is in the OFF position. A defeat mechanism shall be provided to bypass the interlock.

202.8 With the door open an interlock shall be provided to prevent closing of the disconnect.

202.9 An interlock shall be provided to prevent insertion or removal of the unit while in the ON position.

202.10 The disconnect shall include provisions for padlocking in the OFF position.

202.11 The exterior of the MCC shall be painted with a powder-coat epoxy ANSI 49 medium light gray. The interior of each starter shall be painted white for improved visibility.

202.12 A unit identification nameplate shall be provided with each unit. Each nameplate shall be acrylic style with black letters on white color, 3-lines of information per nameplate.

202.13 Motor control center assemblies shall be provided with a factory assembled field bus communications network providing direct connectivity between MCC devices and the system controller and HMI if applicable.

202.14 INCOMING FEEDER TERMINATION AND METERING

a. Incoming cable shall terminate within the motor control center on a main breaker termination point. Main lug terminations shall have adequate dedicated space for the specified type and size of cable. A main circuit breaker shall be provided as indicated on the drawings. Main breaker shall have LSI type trip mechanism
b. A separate metering compartment with front hinged door shall be provided where indicated on the drawings.
c. Current transformers shall be wired to shorting terminal blocks.
d. Potential transformers shall include primary and secondary fuses with disconnecting means.
e. A main breaker with built-in metering may be used as a substitute for a separate metering compartment.

202.15 RATINGS

a. Voltage - The MCC(s) shall be 600-volt class suitable for operation on a 480 volt three-phase, 3-wire, 60 Hz system
b. Short circuit withstand rating – the MCC shall be rated for 65,000 amperes RMS symmetrical or greater.

202.16 BUS

a. Each section shall contain a main horizontal tin-plated copper bus with a rated ampacity as indicated on the drawings.
b. Vertical bus feeding unit compartments shall be tin-plated copper and shall be securely bolted to the horizontal main bus. The vertical bus shall be completely insulated with a labyrinth design that prevents any fault-generated gases from passing to adjacent phases.
c. A shutter mechanism that will allow the unit stabs to engage the vertical bus every six (6) inches shall provide complete isolation of the vertical bus when a unit is removed.
d. Buses shall be braced for 65,000 amperes RMS symmetrical or greater.
e. A tin-plated copper ground bus shall extend the entire length of the MCC assembly. Each section shall contain a 300-ampere vertical ground bus connected to the horizontal ground bus. Units shall connect to the vertical ground bus via a tin-plated copper stab.

202.17 MOTOR CONTROLLERS

a. Combination starter units shall be full-voltage, reversing, unless otherwise shown on the drawing.

b. Each combination unit shall utilize a magnetic only or thermal magnetic circuit breaker for short circuit protection. The unit shall be rated at a minimum of 65,000 amperes interrupting current at 480 Volts. The circuit breaker shall have adjustable magnetic protection and be adjustable to at least 1700% of motor nameplate full load amperes. The circuit breaker shall include a transient override feature for motor inrush current.
c. All starter units shall have a "tripped" position on the unit disconnect.
d. Each combination unit shall be equipped with a control power transformer protected by two primary fuses and one secondary fuse to supply 120VAC for control power. The transformer shall be of sufficient size to supply the load of the contactor coil plus all specified auxiliary devices.

202.18 MOTOR STARTERS

a. Starters shall be equipped with silver alloy contacts and shall have straight-through wiring.
b. Provide an adjustable electronic overload relay for protection of motors. The relay shall be self-powered with Class 10, 20, or 30 selectable tripping characteristics.
c. The overload relay shall have a selectable reset (manual or automatic) with an external reset button on the front door for manual reset. A trip indicator and isolated alarm contact shall be included for status indication.
d. Each starter shall be equipped with two (2) indicating lights, two (2) normally open contacts, and a Hand-Off-Auto selector switch unless otherwise specified on the drawings.

202.19 VARIABLE FREQUENCY DRIVES/VARIABLE SPEED DRIVES

a. VFD's/VSD's will meet the specifications identified in **Section 262923**.

END OF SECTION 260500

DIVISION 26 – ELECTRICAL

SECTION 260526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 – EXTENT

101. GENERAL REQUIREMENTS

101.1 Metallic conduit systems between electrical equipment, such as between motors, junction boxes, and so forth, shall be made up with tight connections to establish absolute and adequate electrical conductivity for ground fault current. Suitable bonding jumpers shall be installed around sliding joint pull box fittings, liquid-tight flexible conduits used for power applications and any other devices in metallic conduit runs that do not provide good conductivity for the ground current.

101.2 Two, 2-hole NEMA drilled ground pads shall be furnished on each equipment skid.

PART 2 – PRODUCTS

102. GENERAL

102.1. Connections to motors and equipment will be bolted. Lugs for attaching cables to equipment will be furnished and installed by Others. All ground cable lugs shall be copper compression NEMA 2-hole type.

103. MATERIALS

103.1. Grounding materials shall be as follows:

a. Conductors shall be soft-drawn copper with Class B stranding.
b. Clamps, connectors, and other hardware used with the grounding/bonding system shall be made of copper and supplied by an acceptable supplier.

END OF SECTION 260526

DIVISION 26 – ELECTRICAL

SECTION 262923

LOW-VOLTAGE CONTROLLERS

PART 1 – GENERAL

101. VARIABLE-FREQUENCY MOTOR CONTROLLERS

101.1 Each VFD/VSD will be rated for 480VAC, 186 amps, Frame 6, to supply three (3) 150 HP fan motors.
101.2 Each VFD will be supplied by a thermal magnetic circuit breaker, J6F frame, with a 250-amp trip setting.
101.3 The VFD's/VSD's will be air-cooled by vendor supplied, door mounted, 120VAC fans.
101.4 Control transformers will be supplied for each VFD/VSD with primary and secondary fusing, 480/120VAC, 60 Hz, 250 VA minimum.
101.5 Each VFD/VSD will have an exterior human interface monitor (HIM) with a liquid crystal display (LCD) and a full numeric keypad and will connect directly to the VFD/VSD.

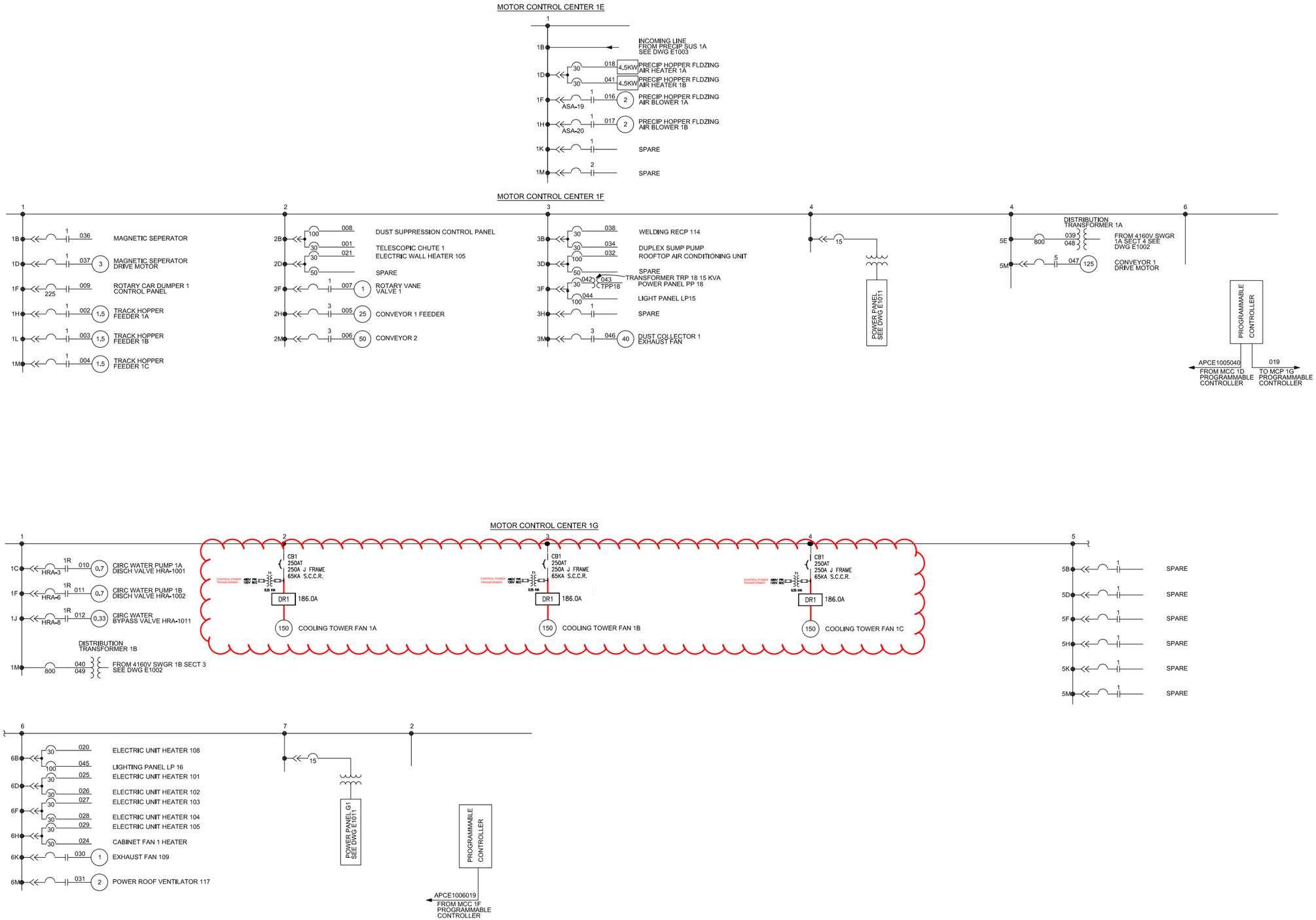
PART 2 – SPECIFICATIONS

201. GENERAL
201.1. Each VFD/VSD will support a minimum of 6 digital inputs, 2 relay outputs (1 NC/1 NO each), 2 analog inputs, and 2 analog outputs.
201.2. Each VFD/VSD will support Ethernet communications with a minimum of two (2) ethernet ports.
201.3. Each VFD will be configured to support NEMA Type B wiring.
201.4. Control wiring for the VFD's/VSD's will be 16 AWG, MTW (TEW), copper conductors.

END OF SECTION 262923

Appendix A

Drawings



NO	DATE	REVISIONS	DWN	CK	ACC	APP
4	1/22/14	AUTOCAD FORMAT	EK			
3	9/15/81	CONFORMED TO CONSTRUCTION REC.	GB	JJ	JJ	MN

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NEBRASKA.

SIGNED _____

DATE _____ REG. NO. _____

BLACK & VEATCH
CONSULTING ENGINEERS

PROJECT 7677

CITY OF HASTINGS, NEBRASKA
WHELAN ENERGY CENTER UNIT 1

ONE - LINE
480 VOLT MCC 1E, 1F, AND 1G

B&V DWG NO. E1006 REV. 4

PGN-122A

EXISTING MCC SCHEDULE

CUB. NO.	LOAD DESCRIPTION OR N/P	HP	FLA	CIRCUIT DISCONNECT FR.	TRIP	POLE	VOLT	TYPE	MOTOR STARTER SIZE	POLE	VOLT	COIL	No. AUX. SW. N.O.	N.C.	INDICAT. LIGHT R	G	SEL. SW. OR P.B.	T.D. RELAY	CR RELAY	CPT VA	DIAG. NO.	FLASH-ER	
1C	CIRC WATER PUMP 1A DISCH VALVE HRA-1001	0.7	2.3	100	30	3	480	MCP	1R	3	480	120	2 2	3 3						150	B	2	⚠4
1F	CIRC WATER PUMP 1B DISCH VALVE HRA-1002	0.7	2.3	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓						↓	B	2	⚠4
1J	CIRC WATER BYPASS VALVE HRA-1011	0.33	0.7	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓						↓	B	2	⚠4
1M	MAIN BREAKER	/		800	800			BKR.															
2M	COOLING TOWER FAN 1A	150/37.5	177/67.5	1-250 1-100	250 100			MCP	5R 2-SPD			480	2 2 2	2 2 2				CBL CBR CBH CBHX	AX	150	C		
3M	1B	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓				↓	AX	↓	C		
4M	1C	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓				↓	AX	↓	C		
5B	BLANK	SPARE		100	30	3	480	MCP	1			120	4	4						150	A		
5D									1														
5F									1														
5H									1														
5K									1														
5M									1														
⚠5 6B1	ELECTRIC UNIT HEATER 108	/			30			BKR.	/														
⚠5 6B2	LTG. PANEL LP16	/			100				/														
6D1	ELECTRIC UNIT HEATER 101	/			30				/														
6D2	102	/							/														
6F1	103	/							/														
6F2	104	/							/														
6H1	105	/							/														

REV.	DATE			
4	11-9-79	MCC-1G SCHEDULE		
3	8-10-79	CITY OF HASTINGS		
2	5-9-79	RTE-DELTA CORP.		
1	3-20-79	BY J. LEW	DWG. NO. B10292 SHT. 17 OF 18	DATE 1-17-79

EXISTING MCC SCHEDULE

CUB. NO.	LOAD DESCRIPTION OR N/P	HP	FLA	CIRCUIT DISCONNECT					MOTOR STARTER				No. AUX. SW.		INDICAT. LIGHT			SEL. SW. OR P.B.					CPT VA	DIAG. NO.
				FR.	TRIP	POLE	VOLT	TYPE	SIZE	POLE	VOLT	COIL	N.O.	N.C.	R	G								
6H2	CABINET FAN 1 HEATER			100	30	3	480	BKR																
6K	EXHAUST FAN 109	1		100	30	3	480	MCP	1	3	480	120	4	4									150	A
6M	POWER ROOF VENTILATOR 117	2		100	30	3	480	MCP	1	3	480	120	4	4									150	A
7B	SPACE																							
7D1	POWER TRANSF. MAIN			100	15	3	480	HFB																D
7D2	SPACE																							
7F	POWER PANEL G1			50	24-20/1	1	240	BAB																D
7M	POWER TRANSFORMER																							D
8	PROGRAMMABLE CONTROLLER																							

REV.	DATE
2	8-10-79
1	3-20-79

MCC-1G SCHEDULE

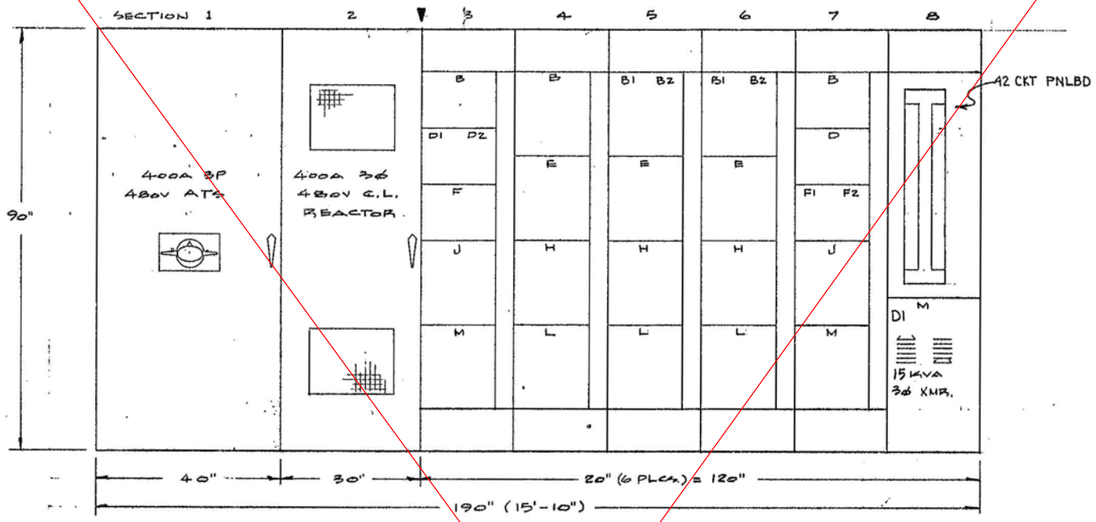
CITY OF HASTINGS

RTE-DELTA CORP.

BY J. LEW | DWG. NO. B10292 SHT. 18 OF 18 | DATE 1-17-79

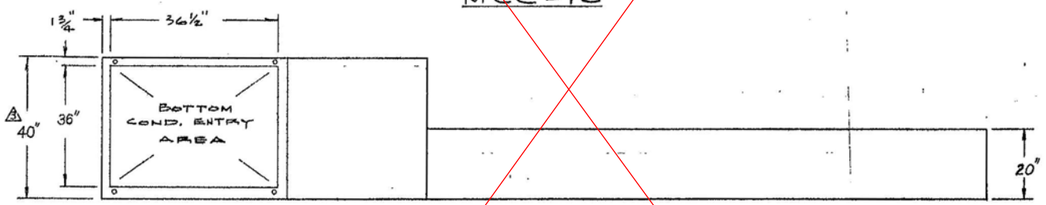
EXISTING MCC LAYOUT

SEE SCHEDULE B10292
SHTS. 9 & 10 FOR DETAILS



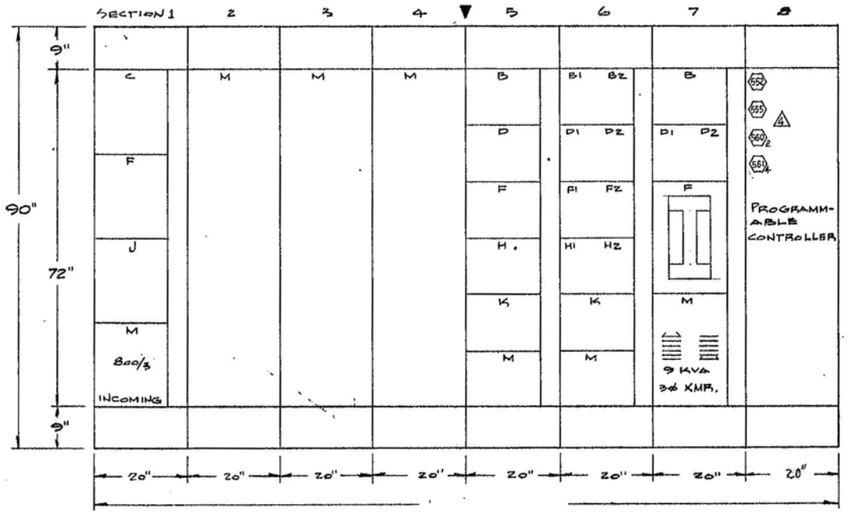
FRONT ELEV.
MCC-1C

600A MAIN BUS
300A VERT. "



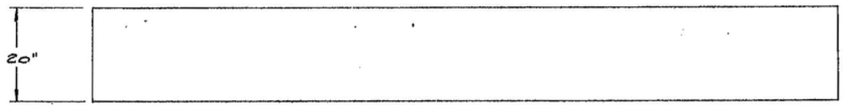
PLAN ⚠4

SEE SCHEDULE B10292
SHTS. 17 & 18 FOR DETAILS

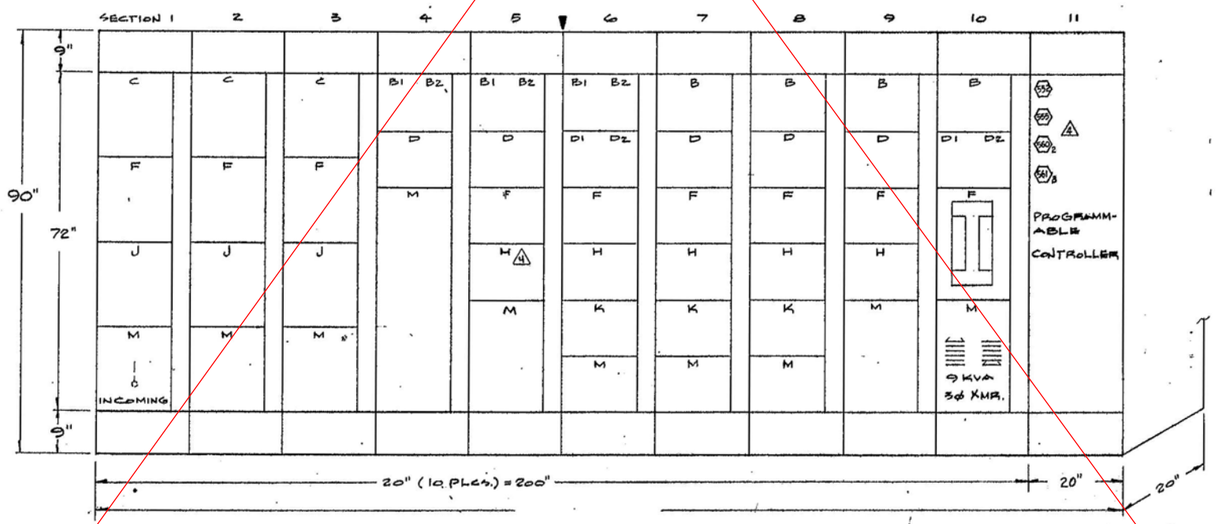


FRONT ELEV.
MCC-1G

800A MAIN BUS
300A VERT. "



PLAN



SEE SCHEDULE B10292
SHTS. 11 THRU 14 FOR DETAILS

FRONT ELEV.
MCC-1D

600A MAIN BUS
300A VERT. "

GENERAL NOTES

1. MOTOR CONTROL CENTERS SHALL BE NEMA 1 CONSTRUCTION (GASKETED DOORS), WITH CLASS-I, TYPE "B" WIRING, RATED 480V 3Ø 3W 60 HZ.
2. CONSTRUCT ENCLOSURES FROM 12 GA. SHT. STL., DOORS & PANELS OF 14 GA. SHEET STEEL.
3. FINISH EXTERIOR WITH 2 COATS OF ANSI-61 LIGHT GRAY ENAMEL. INTERIOR SHALL BE PAINTED WHITE.
4. LIFTING ANGLES SHALL BE PROVIDED ON THE TOP OF EACH SHIPPING SECTION.
5. MCC'S SHALL HAVE PROVISION FOR FUTURE EXTENSION AT EITHER END.
6. BUS SHALL BE COPPER WITH SILVER PLATED JOINTS & CONNECTIONS. EACH M.C.C. SHALL HAVE A ¼" X 1" CU. GROUND BUS W/2-#½-300MCM AT EACH END.
7. CONTROL WIRING SHALL BE #14 "SIS" 600V STRANDED UNLESS OTHERWISE NOTED. TERMINAL CONNECTORS SHALL BE PREINSULATED RING OR LOCKING SPADE TYPE.
8. WIRING IDENTIFICATION SHALL BE BLACK SLEEVE WITH WHITE IMPRINTING, ½" LONG MIN. THE MARKING SLEEVE SHALL BE COATED WITH CLEAR ACRYLIC SPRAY.
9. NAMEPLATES SHALL BE WHITE PHENOLIC WITH BLACK ENGRAVED LETTERS & SCREW MOUNTED.
10. PROVIDE REMOVABLE BARRIERS BETWEEN TOP AND BOTTOM WIRE TROUGHS AND BUS COMPARTMENT.
11. PROVIDE GLASTIC BARRIERS AT REAR OF EACH CELL TO ISOLATE BUS COMPARTMENT WHEN ELEMENT IS REMOVED.

▼ INDICATES SHIPPING BREAK

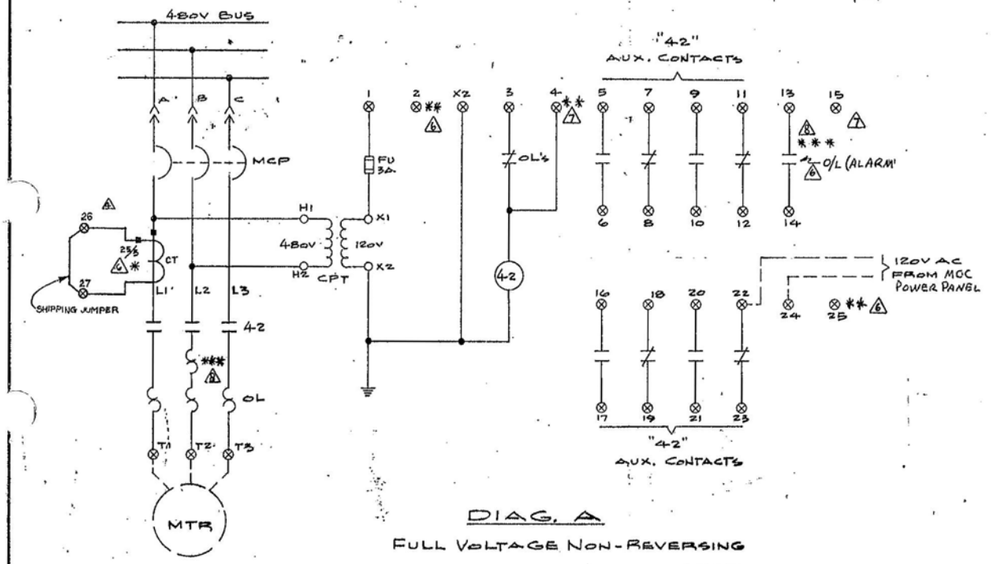
NO.	REVISIONS	BY	DATE
4	REARRANGED COMPT M TO ADD COMPT M IN SECTION 5 OF MCC 1D. ADD ▼ TO MCC 1G	PBH.	9-14-79
3	REDIMENSIONED & REARRANGED MCC-1C	K.P.	8-6-79
2.	DIMENSIONED PC. CUBICLE	DRK	5-10-79
1.	REVISED PER MARKED PRINT DATED 2-27-79	JL	3-20-79

HASTINGS, NEBRASKA
ENERGY CENTER — UNIT 1
ELECTRICAL EQUIPMENT - 65.1000
MOTOR CONTROL CENTERS 1C, 1D, 1G
RTE-DELTA CORP.

CUSTOMER — CITY OF HASTINGS
P.O. NO. — SPEC. 7677-65.1000

Delta Switchboard
Post Office Box 1995
705 N. Carlton
Telephone 466-3621
Stockton, California 95201

DRAWN BY J.LEW
CHKD. BY
DWG. NO. D10292
SHEET MCC 2 OF 10
SCALE ¾"=1'-0"
DATE 1-12-79



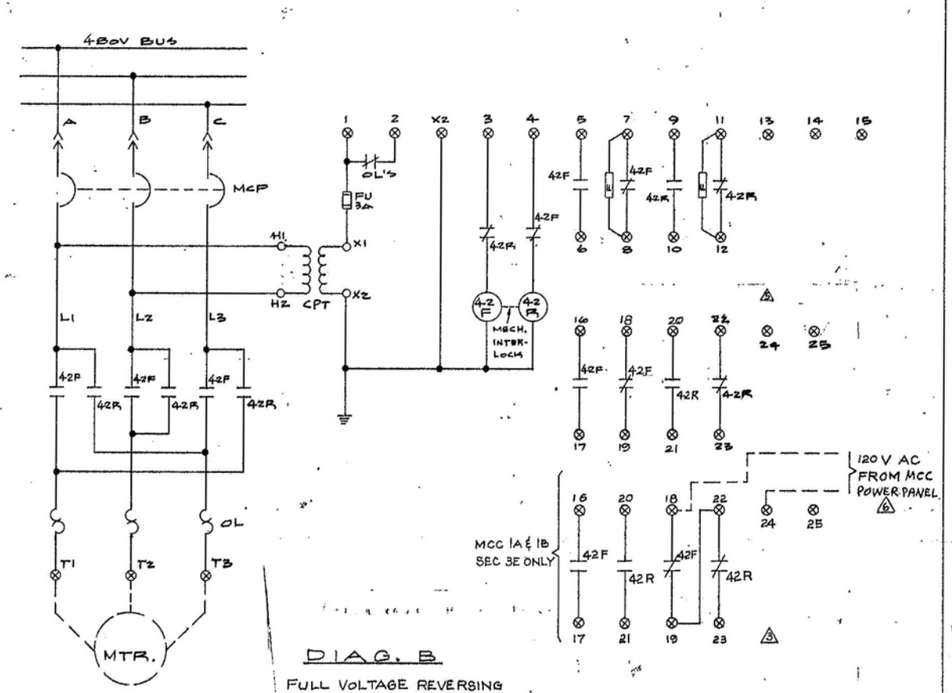
DIAG. A

FULL VOLTAGE NON-REVERSING

* MCC 1D SEC. 5H, MCC 1A SEC 4D, MCC 1B SEC 4D

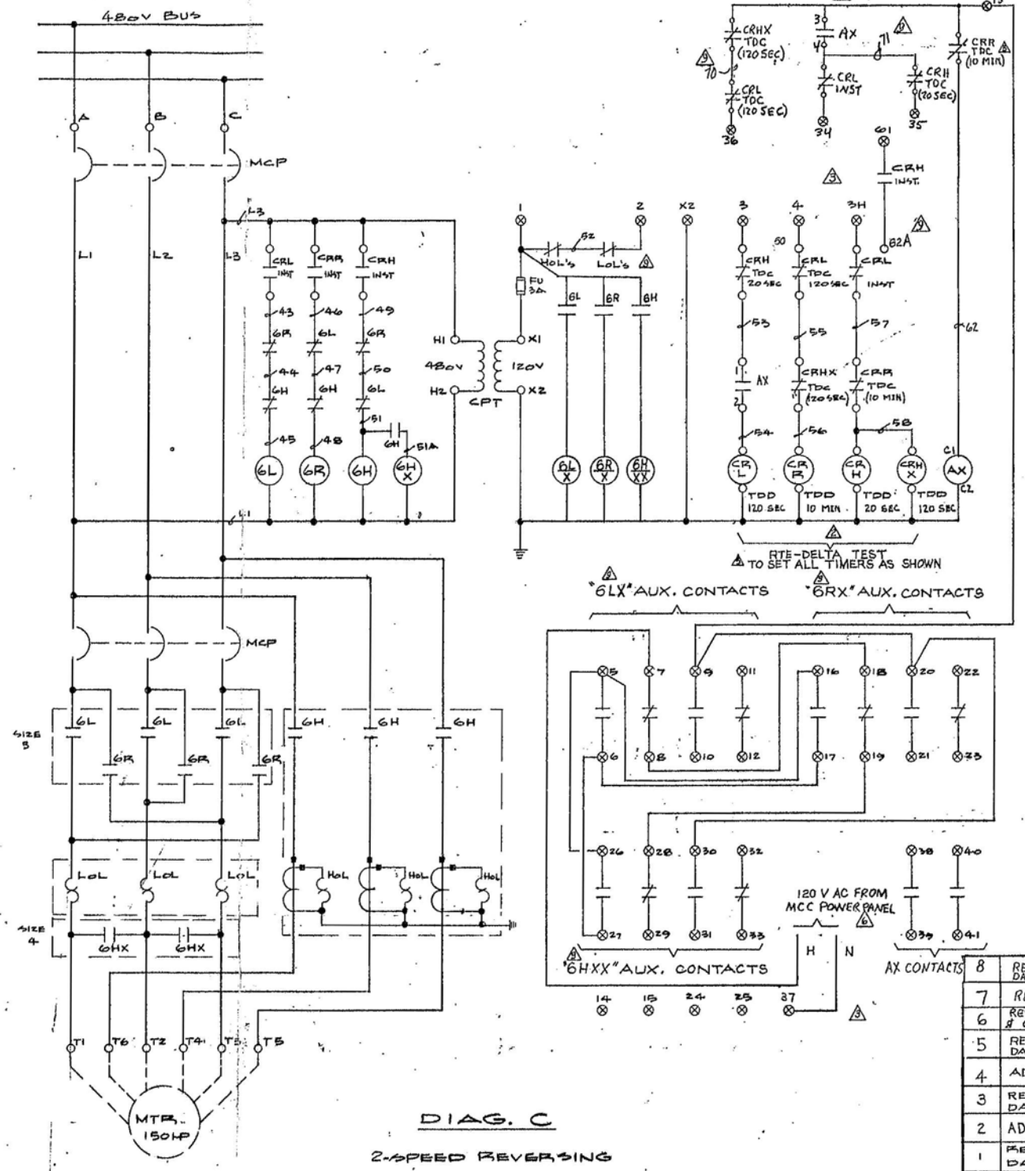
** THESE TERMINALS OMITTED ON MCC 1D SEC 5H.

*** MCC 1D SEC 5H ONLY



DIAG. B

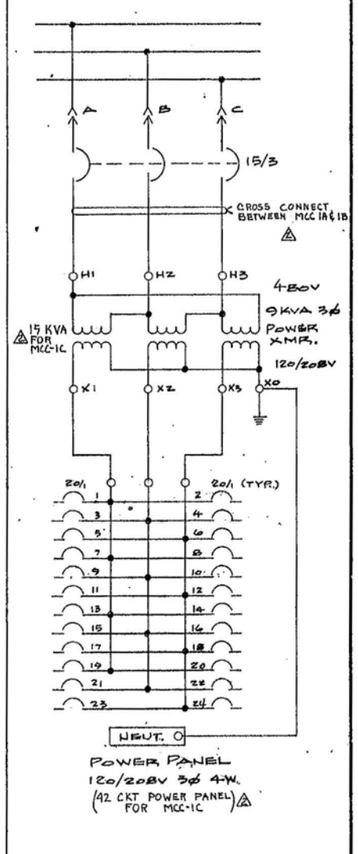
FULL VOLTAGE REVERSING



DIAG. C

2-SPEED REVERSING

RTE-DELTA TEST TO SET ALL TIMERS AS SHOWN



POWER PANEL
120/208V 3φ 4-W.
(42 CKT POWER PANEL FOR MCC-1C)

DIAG. D

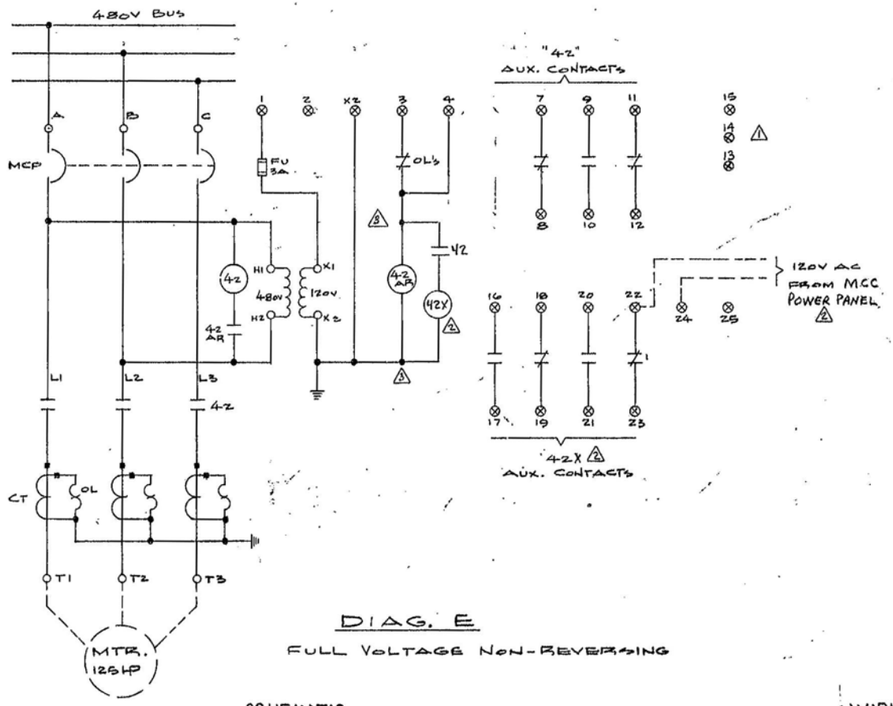
NO.	REVISIONS	BY	DATE
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7	REVISED PER PHONE INSTRUCTION 10-1	N.R.	10-5-79
6	REVISED PER MARKED PRNT DATED 9/6/79 & CLARIFIED # 8 & DIAGRAM A	P.B.W.	9-14-79
5	REVISED PER MARKED PRINT DATED 8-14-79	K.P.	8-29-79
4	ADDED CT TO DIAG. A	K.P.	8-13-79
3	REVISED PER MARKED PRINT DATED 7-2-79	K.P.	8-7-79
2	ADDED 7 INTERLOCK CONTACTS	DRK	7-24-79
1	REVISED PER MARKED PRINT DATED 2-27-79	JL	3-21-79
9	AS BUILT	A.Y.	11.8.79.

HASTINGS, NEBRASKA
ENERGY CENTER - UNIT 1
ELECTRICAL EQUIPMENT - 65,1000
M.C.C. SCHEMATIC DIAGRAMS
RTE - DELTA CORP.

CUSTOMER — CITY OF HASTINGS
P.O. NO. — SPEC. 7677-65.1000

Adams Switchboard Company
Post Office Box 1995
705 N. Carlton
Telephone 466-3621
Stockton, California 95201

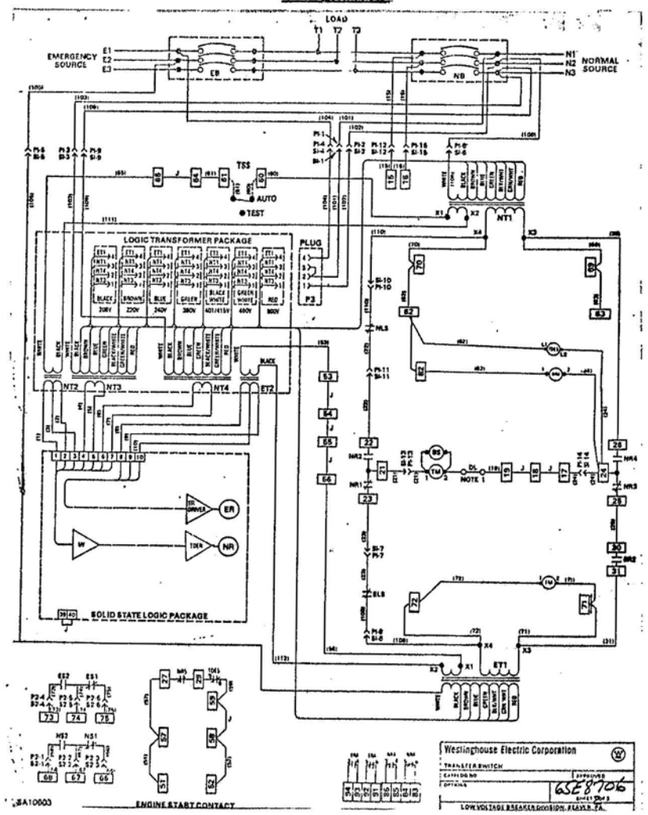
DRAWN BY U. LEW
CHKD. BY
DWG. NO. D102B2
SHEET MCC 2 OF 5
SCALE NONE
DATE 1-19-79



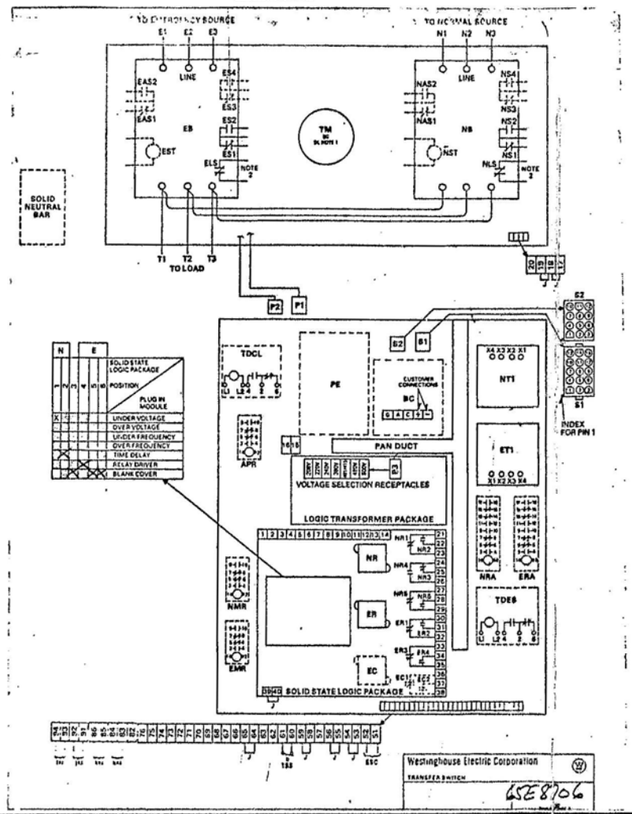
DIAG. E

FULL VOLTAGE NON-REVERSING

SCHEMATIC



WIRING



LEGEND

Symbol	Option Number	Description
ACBR	11G	Automatic Circuit Breaker Reset
AL	31	Audible Alarm
AM	18F	Ammeter
AP	—	Area Protection Contact (Furnished By User)
APR	26D	Area Protection Relay
BC	24	Battery Charger
BS	—	Brake Solenoid
CT	18F	Current Transformer
DL	—	Disconnect Link
E	—	Emergency
EAS1	11F	Emergency Circuit Breaker Lockout
EAS2	15D	Emergency Bell Alarm Contact
EB	—	Emergency Circuit Breaker
EC	4	Engine Cool Off Relay
EL	12B,D	Switch Position Emergency Source Pilot Light
ELS	—	Emergency Limit Switch
EMO	18D	Emergency Motor Operator
EMPB	29B,D,F,G	Emergency Manual Pushbutton
EMR	29B,D,F,G	Emergency Manual Relay
ER	—	Emergency Relay
ERA	14B,D	Emergency Relay Auxiliary
ERTM	18H	Elapsed Running Time Meter
ESC	13A	Engine Start Contact
ES	16B	Emergency Source Breaker Auxiliary Contact
EST	32	Emergency Shunt Trip
ET	—	Emergency Transformer
F	28	Fuse
FM	18G	Frequency Meter
FPSS	7	Four Position Selector Switch
J	—	Jumper Wire (Unnumbered)
MO	—	Motor Operator
MOR	18D	Motor Operator Relay
N	—	Normal
NAS1	11F	Normal Circuit Breaker Lockout
NAS2	15C	Normal Bell Alarm Contact
NB	—	Normal Breaker
NEUT	18	Neutral
NL	12A,C	Switch Position Normal Source Pilot Light
NLS	—	Normal Limit Switch
NMPB	29B-J	Normal Manual Pushbutton
NMO	18D	Normal Motor Operator
NMR	29B-J	Normal Manual Relay
NR	—	Normal Relay
NRA	14A,C	Normal Relay Auxiliary
NST	—	Normal Shunt Trip
NT	—	Normal Transformer
NS	15A	Normal Source Breaker Auxiliary Contact
OF	5C	Over Frequency
OFF	7	Off Position White Pilot Light
OV	—	Over Voltage
P	5E	If In Emergency Source Slot
	26C	If In Normal Source Slot
P	—	Plug
P1,P2	9C	Intelligence Panel Disconnect
PBEN	8A,C	Emergency To Normal Time Delay Bypass Pushbutton
PBNE	8B,D	Normal To Emergency Time Delay Bypass Pushbutton
PE	23C	Plant Exercisor Without Source Interruption
PETPSS	23G	Plant Exercisor TPSS
PE	23D	Plant Exercisor Simulate Power Failure
RD	—	Relay Driver
RPE	11C,E	Emergency Breaker Reset Pushbutton
RPN	11B,D	Normal Breaker Reset Pushbutton
S	—	Socket
SE	12F,H	Source Condition Emergency Source Pilot Light
SN	12E,G	Source Condition Normal Source Pilot Light
SS1	29F,G	Auto/Manual Selector Switch Manual Both Ways
SS2	29H,J	Auto/Manual Selector Switch Manual Emergency To Normal
SS3	31A,B	Audible Alarm Silencing Switch
SS4	31C,D	Audible Alarm Silencing Switch
SS5	18D	ON/OFF Selector Switch
SW1	18E	Voltmeter Selector Switch
SW2	18F	Ammeter Selector Switch
T	—	Load
TDCL	30	Time Delay Cranking Limiter
TDEC	4	Time Delay Engine Cool Off
TDEN	3	Time Delay Emergency To Normal
TDES	2	Time Delay Engine Start
TDNC	32	Time Delay Neutral
TDNE	1	Time Delay Normal To Emergency
TE	12K,M	Tripped Condition Emergency Source Pilot Light
TM	—	Transfer Motor
TN	12J,L	Tripped Condition Normal Source Pilot Light
TPB	6A,B	Test Switch Momentary Contact
TPSS	10	Two Position Selector Switch
TSS	6C,D	Test Switch Maintain Contact
UF	5A	Under Frequency
UV	—	Under Voltage
	5D	If In Emergency Source Slot
	26A	If In Normal Source Slot
VM	18E	Voltmeter
X	18D	Motor Operator Relay
X1-4	—	Terminal Block
Y	18D	Motor Operator Relay

DIAG. F AUTOMATIC TRANSFER SWITCH MCCIC ⚠3

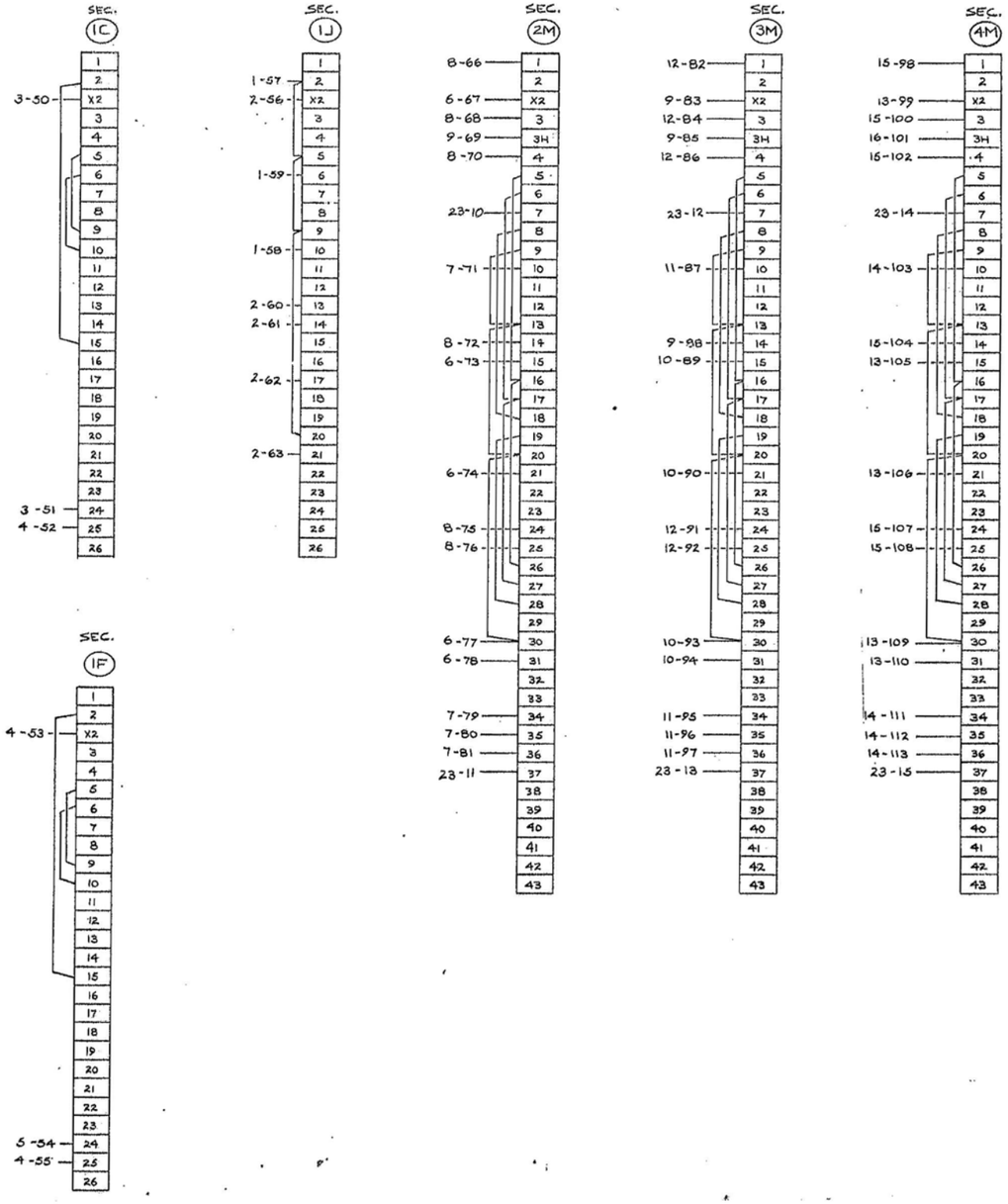
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2	ADDED RELAY 42X	PBW.	9-14-79
⚠1	ADD TB's 13 & 14	DAO	5-25-79

HASTINGS, NEBRASKA
ENERGY CENTER - UNIT 1
ELECTRICAL EQUIPMENT - 65,1000
M. C. C. SCHEMATIC DIAGRAMS
RTE - DELTA CORP.

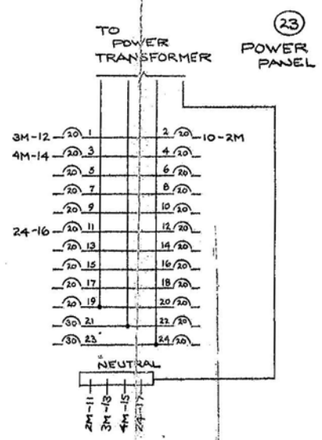
CUSTOMER - CITY OF HASTINGS
P.O. NO. — SPEC. 7677-65.1000

Modesto Switchboard Company
Post Office Box 1995
705 N. Carlton
Telephone 466-3621
Stockton, California 95201

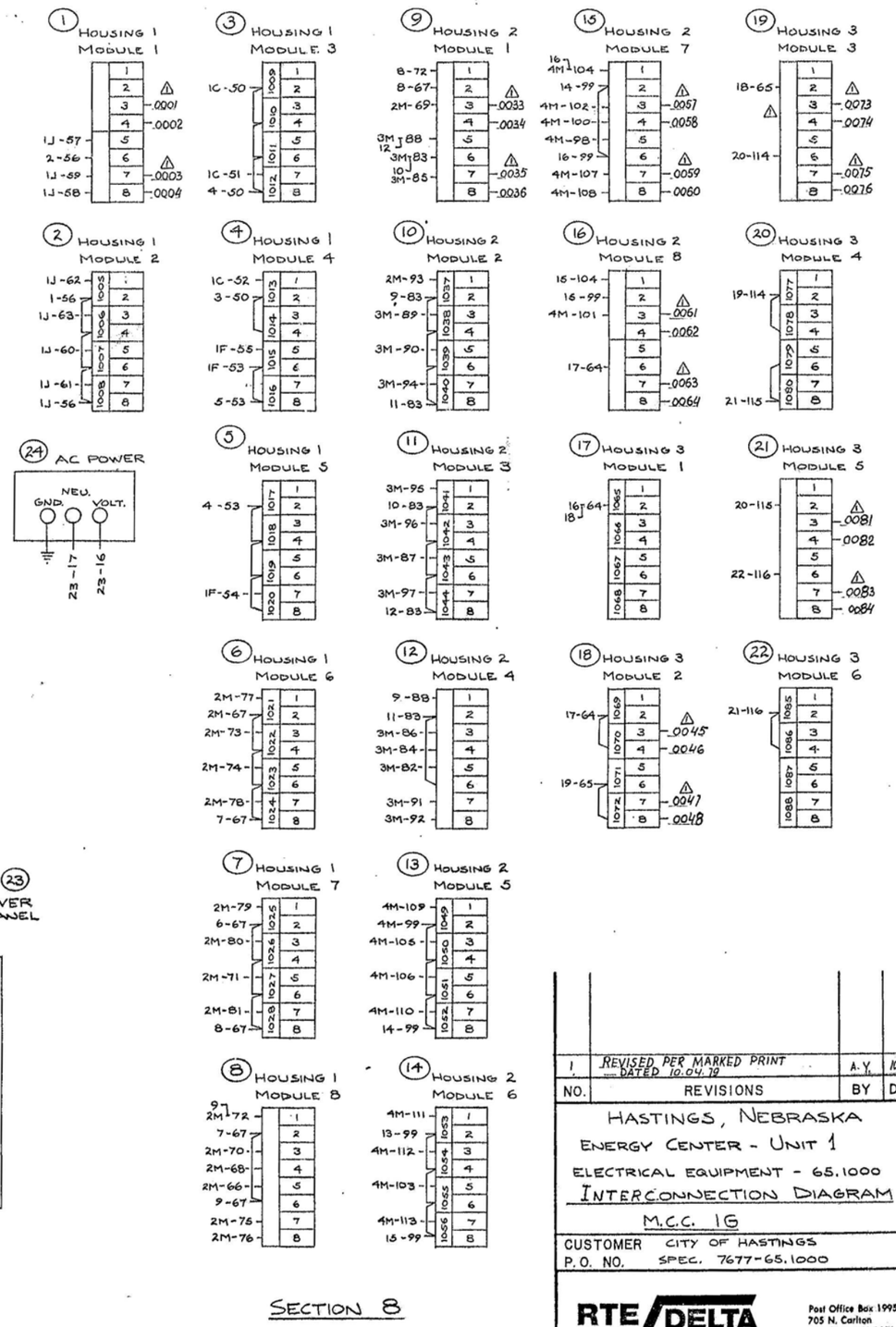
DRAWN BY J. LEW
CHKD. BY
DWG. NO. D10292
SHEET MCC 1E OF 2B
SCALE NONE
DATE 3-26-79



CUSTOMER TB'S



SECTION 7F



SECTION 8

NO.	REVISIONS	BY	DATE
1	REVISED PER MARKED PRINT DATED 10.04.79	A.Y.	10.11.79

HASTINGS, NEBRASKA
ENERGY CENTER - UNIT 1
ELECTRICAL EQUIPMENT - 65.1000
INTERCONNECTION DIAGRAM
M.C.C. 16

CUSTOMER CITY OF HASTINGS
P.O. NO. SPEC. 7677-65.1000

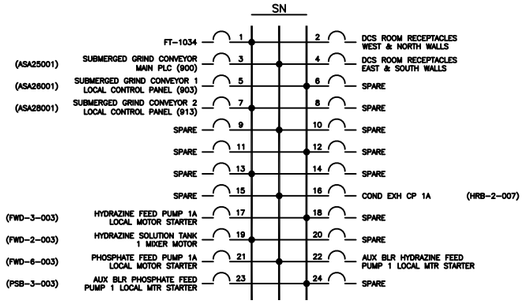
RTE/DELTA
STOCKTON, CALIFORNIA
Post Office Box 1995
705 N. Carlton
Telephone 466-3621
Stockton, California 95201

DRAWN BY JDM
CHKD. BY
DWG. NO. D102533 SHEET 7 OF 8
DATE 9-18-79

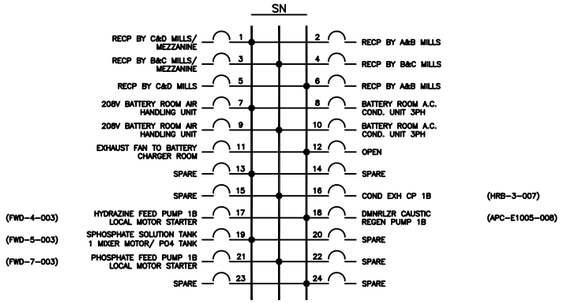
Klingler K-Vell 8 3/79

NOTE:
DRAWINGS REVISED FOR BLACK & VEATCH PROJECT 148579 PHASE 2.
THE SEAL BELOW CERTIFIES ONLY THE WORK INDICATED FOR THIS PROJECT

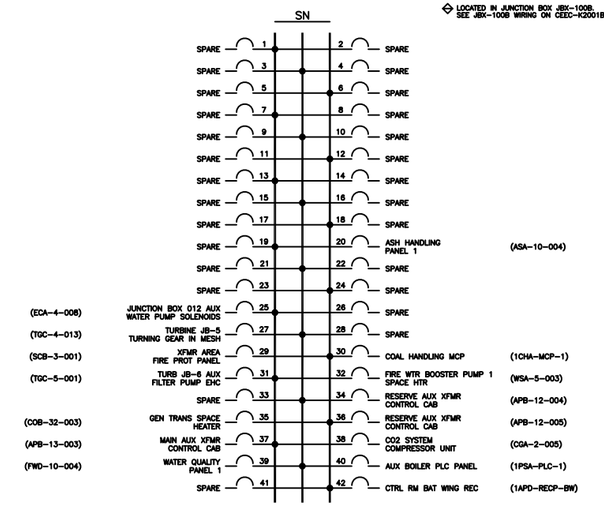
◇ LOCATED IN JUNCTION BOX JBX-100B.
SEE JBX-100B WIRING ON CEEC-K2001B.



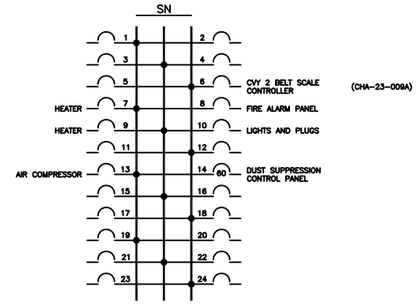
POWER PANEL 1A
(FURNISHED IN MCC 1A)



POWER PANEL 1B
(FURNISHED IN MCC 1B)

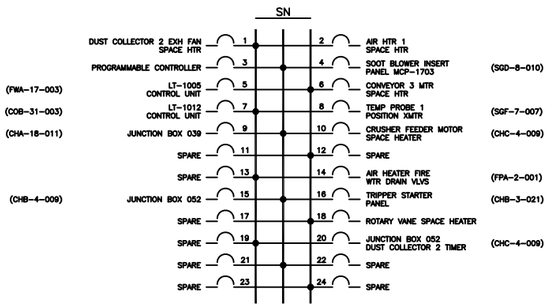


POWER PANEL 1C
(FURNISHED IN MCC 1C)

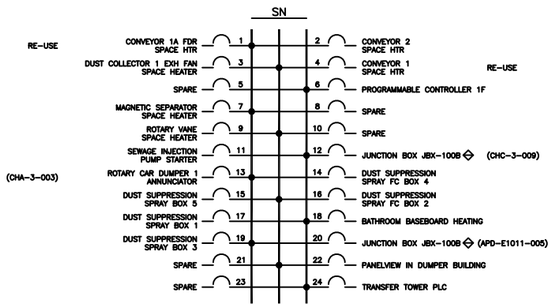


POWER PANEL 29

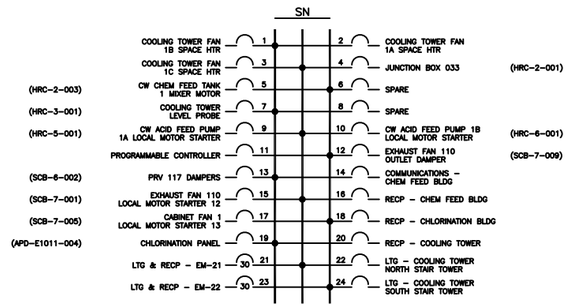
(FED FROM TPP-29
TPP-29 FED FROM PP28 BKR 2,4,6
PP28 FED FROM MCC1D SECT9M)



POWER PANEL 1D
(FURNISHED IN MCC 1D)



POWER PANEL 1F
(FURNISHED IN MCC 1F)



POWER PANEL 1G
(FURNISHED IN MCC 1G)

ROBERTA PEREZ E-18161 REGISTERED PROFESSIONAL ENGINEER STATE OF NEBRASKA

APPROVED FOR CONSTRUCTION

REVISIONS FOR BLACK & VEATCH PROJECT 414010							
NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
0	31/MAR/23	ISSUED FOR BIDS	PVJ	PAT	RAP	TFM	RMK
1	22/MAY/23	APPROVED FOR CONSTRUCTION	PVJ	PAT	DN	TFM	RMK

DRAWING REVISED FOR BLACK & VEATCH PROJECT 414010
WORK UNDER THIS PROJECT INDICATED BY DOT DASHED LINES.
THE SEAL BELOW CERTIFIES ONLY THE WORK INDICATED FOR THIS PROJECT. THIS IS AN ELECTRONIC COPY OF THE FINAL DOCUMENT. SEALED ORIGINAL IS WITH BLACK & VEATCH.
FILE OF THIS DRAWING IS UNCONTROLLED. THE USER SHALL VERIFY TRACEABILITY OF THIS DRAWING TO THE LATEST CONTROLLED VERSION.

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NEBRASKA
STATE OF NEBRASKA
SIGNED ROBERT A PEREZ
DATE 22/MAY/23 REG NO. E-18161

NO	DATE	REVISIONS	DWN	CK	ACC	APP
11	03/23/2018	ACAD VERSION	NJB			
10	04/17/2013	AS BUILT	DRB		KL	
9	08/04/2008	ISSUED FOR 73.0404 PH2 CONSTRUCTION	JEB	JGG	DGC	CGB
8	08/17/2007	ISSUED FOR 73.0404 CONSTRUCTION	DPM	CGB	CGB	CGB
7	06/05/2007	73.0404 BID ISSUE	ASM	CGB	CGB	CGB
6A	08/10/2007	74.0202 PHASE 2 CONSTRUCTION	SCG	MWN	CGB	CGB

NO	DATE	REVISIONS	DWN	CK	ACC	APP
6	09/15/1981	CONFORMED TO CONSTRUCTION RECORDS	GB	GB	JJ	MN
5	09/22/1980	REVISED AS CIRCLED	GB			MN
4	05/28/1980	GENERAL REVISIONS	AZ	JJ	MN	
14	05/30/2024	REVISED PP1A FOR SGC MAIN PLC AND LOCAL CONTROL PANELS	BM	RR		
13	04/26/2024	AS-BUILT FOR PROJECT #414010, MERGED FROM DWG. #E1027	BM	RR		
12	01/2/2019	PPL 1C UPDATE	EK	TT		

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SIGNED _____
DATE _____ REG. NO. _____

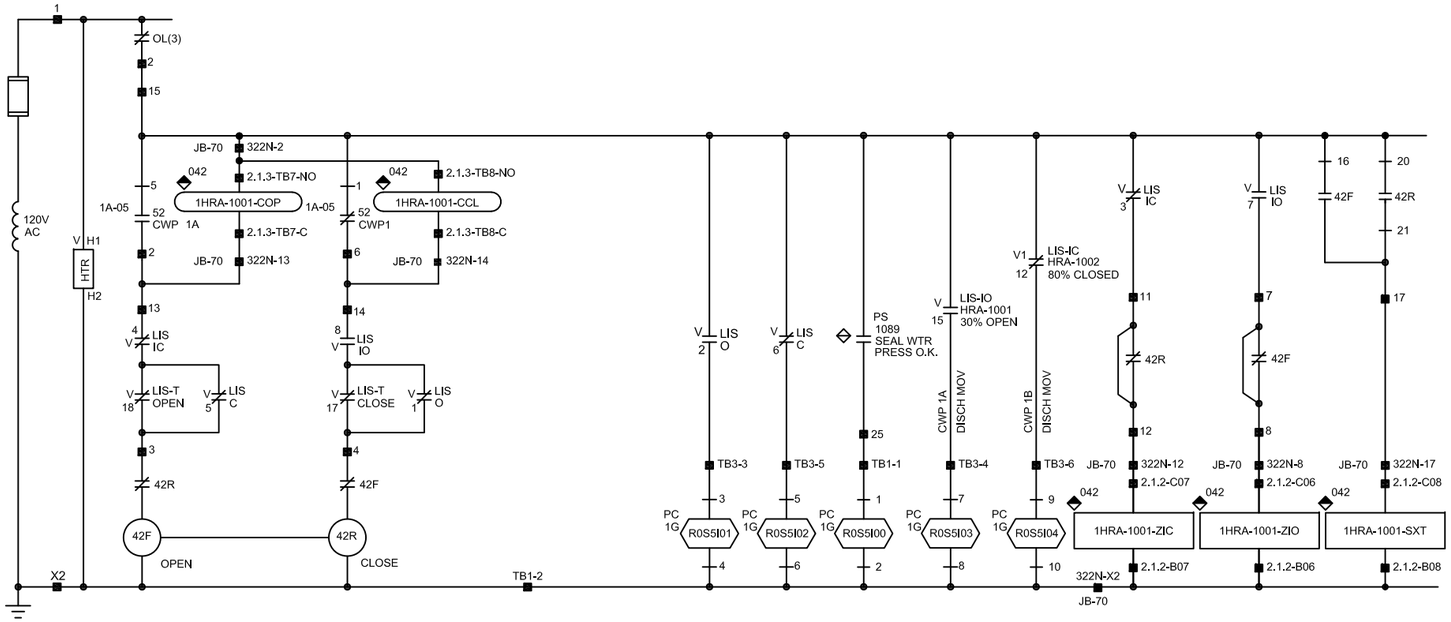
BLACK & VEATCH
CONSULTING ENGINEERS
PROJECT 7677

CITY OF HASTINGS, NEBRASKA
WHELAN ENERGY CENTER UNIT 1

ONE - LINE
120/208 POWER PANELS

B&V DWG NO. E1011
REV. 14

PGN-122A



NOTE: ALL DEVICES SHOWN ARE LOCATED ON MCC 1G SECT 1C EXCEPT AS NOTED

X — LOCATED ON DCS CABINET X

JB-70 — LOCATED IN MCP MARSHALLING BOX 70

V — LOCATED ON VALVE HRA-1001

V1 — LOCATED ON VALVE HRA-1002 (CWP 1B DISCH VALVE)

1A-05 — LOCATED ON 4160V SWGR CELL B SECT 05.

52 CWP 1A — BREAKER AUXILIARY CONTACT (CIRC WTR PUMP 1A RUNNING) SEE SH.2

INPUT TO PROGRAMMABLE CONTROLLER

PC 1G — PROGRAMMABLE CONTROLLER LOCATED IN MCC 1G

LS 1039 — LEVEL SW CONTACT (COOLING TOWER LEVEL > MIN)

PS 1089 — PRESS SW CONTACT (CWP 1A SEAL WTR PRESS O.K.)

TRAVEL FAILURE (TROUBLE) ALARM SEE SH 13

V

		LIMIT SWITCHES			REFERENCE DRAWING
		FULL OPEN	INTER	FULL CLOSE	
ROTOR 1	1	X			*
	2	X			*
ROTOR 2	3		X	X	*
	4		X	X	*
	5			X	*
	6			X	*
ROTOR 3	7	X	X		*
	8	X	X		*
	9	X			
	10	X			
ROTOR 4	11		X	X	SH.2
	12		X	X	SH.6
	13			X	
	14			X	
	15	X	X		*
	16	X	X		
	17	CLOSE TORQUE			*
	18	OPEN TORQUE			*

FIELD SET ROTOR TO ACTUATE WHEN VALVE REACHES 80% CLOSED POSITION

FIELD SET ROTOR TO ACTUATE WHEN VALVE REACHES 30% OPEN POSITION

VALVE LIMIT SW DEVELOPMENT
VALVE SHOWN FULL CLOSED

42F–42R

STARTER AUX CONTACTS		REFERENCE DRAWINGS
5–6	a–F	
7–8	b–F	*
9–10	a–R	
11–12	b–R	*
16–17	a–F	*
18–19	b–F	
20–21	a–R	*
22–23	b–R	

* SEE THIS DWG

REF DWG
P&ID: M1008
LOGIC: HR-A1-7
ALARM: SH 13
65.1020-503: STARTER DIAGRAM
1COA-K2101 MCP MARSHALLING BOX JB-70

PROFESSIONAL ELECTRICAL ENGINEER
CURTIS G. BROWN
E–15797
STATE OF NABRASKA

NO	DATE	REVISIONS	DWN	CK	ACC	APP
8	08/14/18	70.1000 CONFORMED TO CONSTR	SSE	SAK	MA	CGB
7	02/14/18	70.1000 CONSTRUCTION	TAN	SAK	MA	CGB

NO	DATE	REVISIONS	DWN	CK	ACC	APP
6	3/7/14	REVISED	EK	DH		
5	1/7/14	AUTOCAD FORMAT	EK	LV		
4	12/28/07	74.0202 CONF TO CONSTR REC-NIC	RSN	MWN	CGB	CGB
3A	8/10/07	74.0202 PHASE 2 CONSTRUCTION	PPG	MWN	CGB	CGB

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SIGNED CURTIS G. BROWN
DATE 02/14/18 REG. NO. 15797

BLACK & VEATCH
CONSULTING ENGINEERS

PROJECT
194294

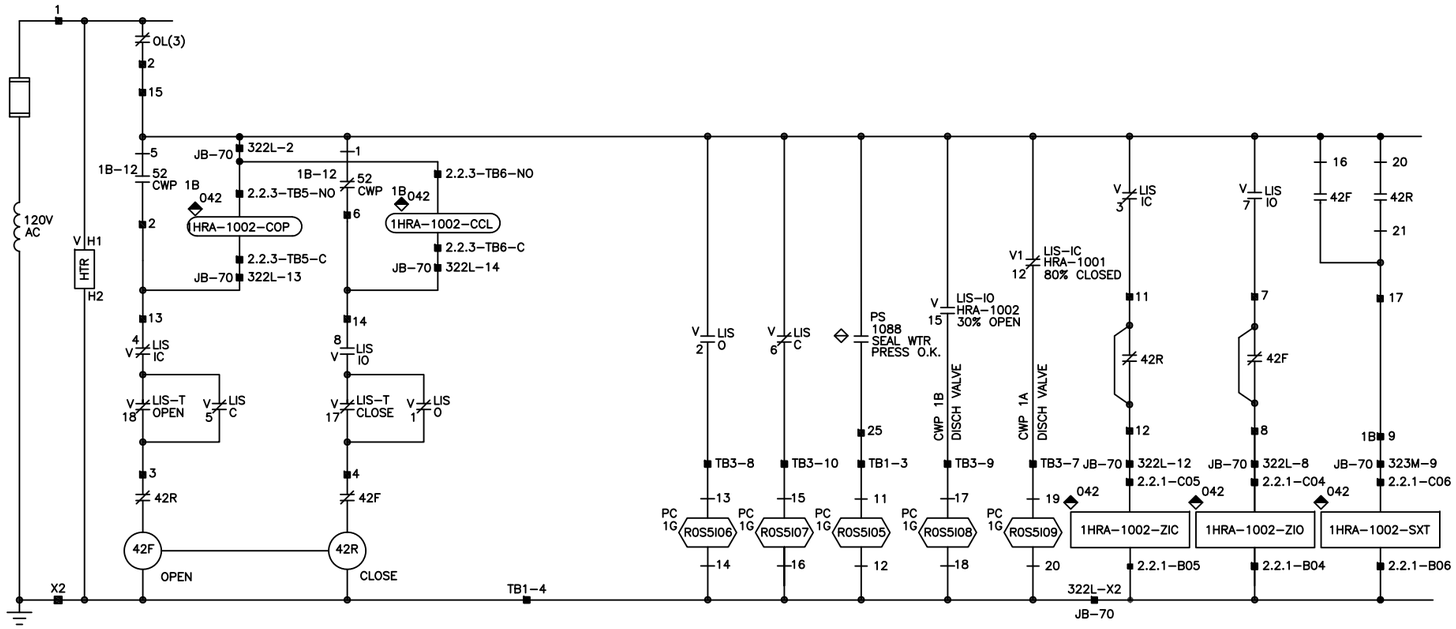
CITY OF HASTINGS, NEBRASKA
WHELAN ENERGY CENTER UNIT 1

CIRCULATING WATER SYSTEM-SCHEMATIC DIAGRAMS
CIRCULATING WATER PUMP 1A DISCHARGE VALVE HRA-1001

B&V DWG NO. HRA-3

REV. 8

A-G NO. AL302G



NOTES: ALL DEVICES SHOWN ARE LOCATED ON MCC 1G SECT 1F EXCEPT AS NOTED

◆ X	LOCATED ON DCS CABINET X
JB–70	LOCATED IN MCP MARSHALLING BOX 70
V	LOCATED ON VALVE HRA–1002
V1	LOCATED ON VALVE HRA–1001 (CWP 1A DISCH VALVE)
1B–12	LOCATED ON 416OV SWGR CELL B SECT 12.
52 CWP 1B	BREAKER AUXILIARY CONTACT (CIRC WTR PUMP 1B RUNNING) SEE SH.5
1B	LOCATED ON MCC 1B SECT 10.
⬡	INPUT TO PROGRAMMABLE CONTROLLER
PC 1G	PROGRAMMABLE CONTROLLER 1G (LOCATED IN MCC 1G)
LS 1040	LEVEL SW CONTACT (COOLING TOWER BASIN LEVEL > MIN)
PS 1088	PRESS SW CONTACT (CWP 1B SEAL WTR PRESS O.K.)
	TRAVEL FAILURE (TROUBLE) ALARM SEE SH. 13

V

		LIMIT SWITCHES			REFERENCE DRAWING
		FULL OPEN	INTER	FULL CLOSE	
ROTOR 1	1	X			*
	2	X			*
ROTOR 2	3		X	X	*
	4		X	X	*
	5			X	*
	6			X	*
ROTOR 3	7	X	X		*
	8	X	X		*
	9	X			
	10	X			
ROTOR 4	11			X	SH.5
	12			X	SH.3
	13			X	
	14			X	
	15	X	X		*
	16	X	X		
	17	CLOSE TORQUE			*
	18	OPEN TORQUE			*

FIELD SET ROTOR TO ACTUATE WHEN VALVE REACHES 80% CLOSED POSITION

FIELD SET ROTOR TO ACTUATE WHEN VALVE REACHES 30% OPEN POSITION

VALVE LIMIT SW DEVELOPMENT
VALVE SHOWN FULL CLOSED

42F–42R

STARTER AUX CONTACTS		REFERENCE DRAWINGS
5–6	a–F	
7–8	b–F	*
9–10	a–R	
11–12	b–R	*
16–17	a–F	*
18–19	b–F	
20–21	a–R	*
22–23	b–R	

*SEE THIS DWG

REF DWG
P&ID: M1008
LOGIC: HR–A1
ALARM: SH. 13
65.1020–503: STARTER DIAGRAM
1COA–K2101 MCP MARSHALLING BOX JB–70

PROFESSIONAL ELECTRICAL ENGINEER
CURTIS G. BROWN
E–15797
STATE OF NABRASKA

NO	DATE	REVISIONS	DWN	CK	ACC	APP
8	08/14/18	70.1000 CONFORMED TO CONSTR	SSE	SAK	MA	CGB
7	02/14/18	70.1000 CONSTRUCTION	TAN	SAK	MA	CGB
6	3/11/14	REVISED	EK	DH		
5	1/7/14	AUTOCAD FORMAT	EK	LV		
4	12/28/07	74.0202 CONF TO CONSTR REC-NIC	RSN	MWN	CGB	CGB
3A	8/10/07	74.0202 PHASE 2 CONSTRUCTION	SSE	MWN	CGB	CGB

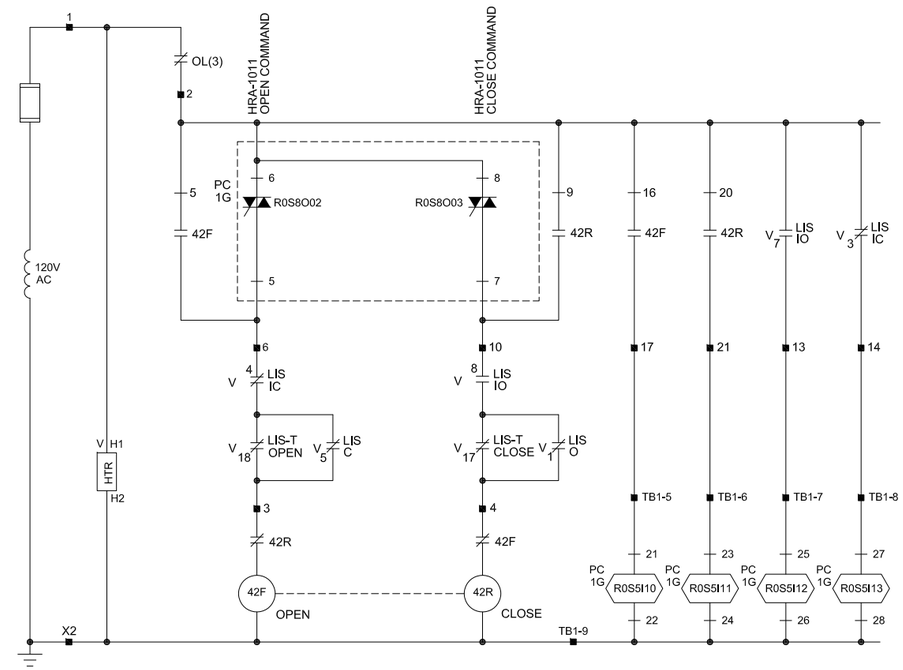
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SIGNED CURTIS G. BROWN
DATE 02/14/18 REG. NO. 15797

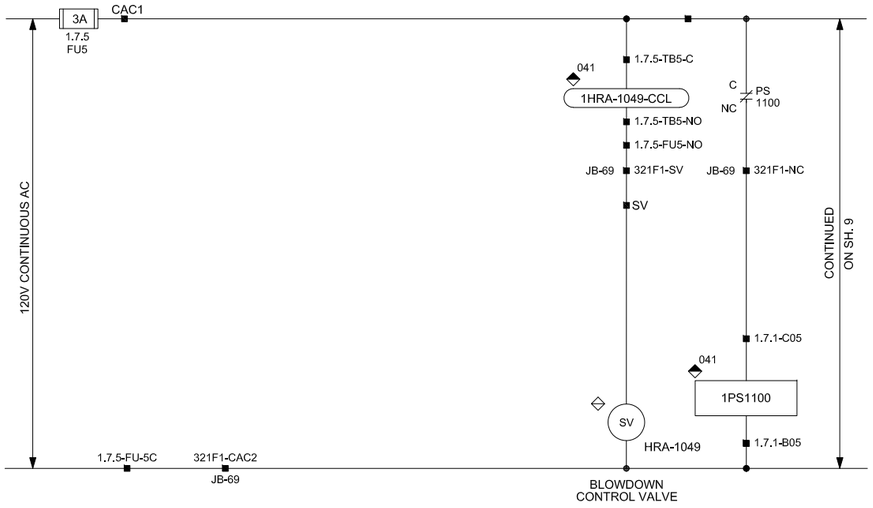
BLACK & VEATCH CONSULTING ENGINEERS
PROJECT 194294

CITY OF HASTINGS, NEBRASKA
WHELAN ENERGY CENTER UNIT 1
CIRCULATING WATER SYSTEM-SCHEMATIC DIAGRAMS
CIRCULATING WATER PUMP 1B DISCHARGE VALVE HRA-1002

B&V DWG NO. HRA-6
REV. 8

A-G NO. AL313G





NOTES:

	ALL DEVICE SHOWN ARE LOCATED ON MCC 1G SECT 1J EXCEPT AS NOTED
X	LOCATED ON DCS CABINET X
JB-69	LOCATED IN MCP MARSHALLING BOX 69
V	LOCATED ON VALVE HRA-1011
	LOCATED LOCALLY
PC 1G	LOCATED ON PROGRAMMABLE CONTROLLER 1G (LOCATED IN MCC 1G)
PS 1100	PRESS SW CONTACT CLOSES WHEN CIRCULATING WATER PRESSURE < 10PSI
SV	SOLENOID OPERATED VALVE, ENERGIZE TO CLOSE VALVE HRA-1049, DE-ENERGIZE TO RETURN HRA-1049 CONTROL TO DCS
	INPUT TO PROGRAMMABLE CONTROLLER
	AC OUTPUT FROM PROGRAMMABLE CONTROLLER

DRAWINGS REVISED FOR BLACK & VEATCH PROJECT 140592.
THE SEAL BELOW CERTIFIES ONLY THE WORK INDICATED FOR THIS PROJECT

V

		LIMIT SWITCHES			REFERENCE DRAWING
		FULL OPEN	INTER	FULL CLOSE	
ROTOR 1	1	X			*
	2	X			
	3		X	X	*
	4		X	X	*
ROTOR 2	5			X	*
	6			X	
	7	X	X		*
	8	X	X		*
ROTOR 3	9	X			
	10	X			
	11		X	X	
	12		X	X	
ROTOR 4	13			X	
	14			X	
	15	X	X		
	16	X	X		
	17	CLOSE TORQUE			*
	18	OPEN TORQUE			*

VALVE LIMIT SW DEVELOPMENT
VALVE SHOWN FULL CLOSED

42F/42R

STARTER AUX CONTACTS		REFERENCE DRAWINGS
5-6	a-F	*
7-8	b-F	
9-10	a-R	*
11-12	b-R	
16-17	a-F	*
18-19	b-F	
20-21	a-R	*
22-23	b-R	

*SEE THIS DWG

REF DWG:
P&ID: M1008
LOGIC: HR-A1-9,10
65.1020-503: STARTER DIAGRAM
1COA-K2078 MCP MARSHALLING BOX JB-69

NO	DATE	REVISIONS	DWN	CK	ACC	APP
5	3/11/14	REVISED	EK	DH		
4	1/8/14	AUTOCAD FORMAT	EK	DZ		
3	12/28/07	74.0202 CONFORMED TO CONSTR REC	RSN	MWN	CGB	CGB
2A	8/10/07	74.0202 PHASE 2 CONSTRUCTION	SSE	MWN	CGB	CGB

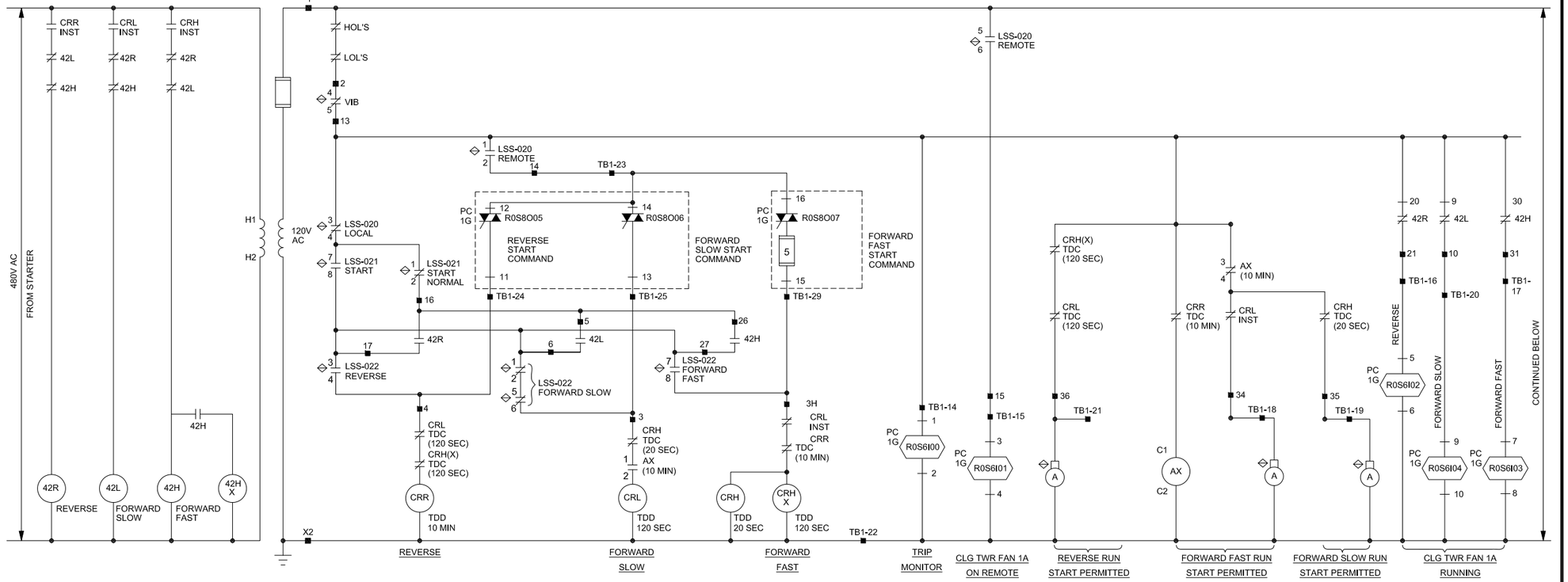
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SIGNED THOMAS E. KALIN
DATE 04-25-80 REG. NO. E-4898

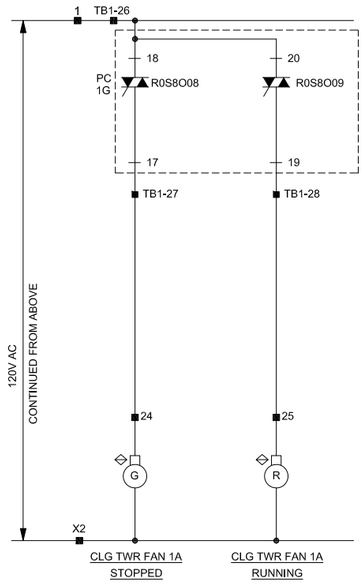
BLACK & VEATCH
CONSULTING ENGINEERS
PROJECT 7677

CITY OF HASTINGS, NEBRASKA
WHELAN ENERGY CENTER UNIT 1
CIRCULATING WATER SYSTEM-SCHEMATIC DIAGRAMS
COOLING TOWER BYPASS VALVE HRA-1011
& BLOWDOWN CONTROL VALVE HRA-1049

B&V DWG NO. HRA-8
REV. 5

A-G NO. AL304G





Instead of starters for reverse, forward slow, and forward fast, we want to transition to a VFD for this operation. Please see specifications.

NOTE:
DRAWINGS REVISED FOR BLACK & VEATCH PROJECT 140592.
THE SEAL BELOW CERTIFIES ONLY THE WORK INDICATED FOR THIS PROJECT

REF DWG:
LEGEND: SH 10A
P&ID M1008
LOGIC: HR-A1-1
62.0600-1: SUGGESTED CONDUIT LOCATION
ALARM:

NO	DATE	REVISIONS	DWN	CK	ACC	APP
5	3/11/14	REVISED	EK	DH		
4	1/9/14	AUTOCAD FORMAT	EK	LV		
3	12/28/07	74.0202 CONF TO CONSTR REC-NIC	RSN	MWN	CGB	CGB
2A	8/10/07	74.0202 PHASE 2 CONSTRUCTION	SSE	MWN	CGB	CGB

A-G NO. AL307G

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DATE 04-25-80 REG. NO. E-4898

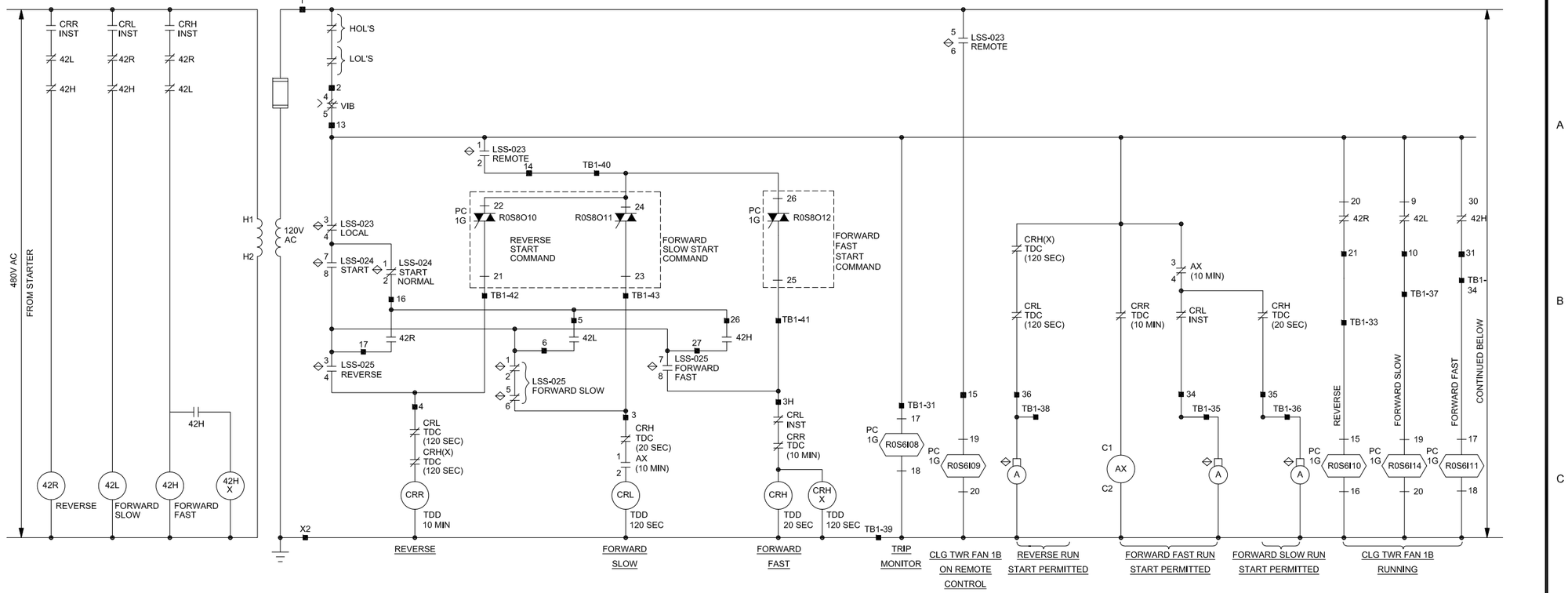
BLACK & VEATCH
CONSULTING ENGINEERS
PROJECT 7677

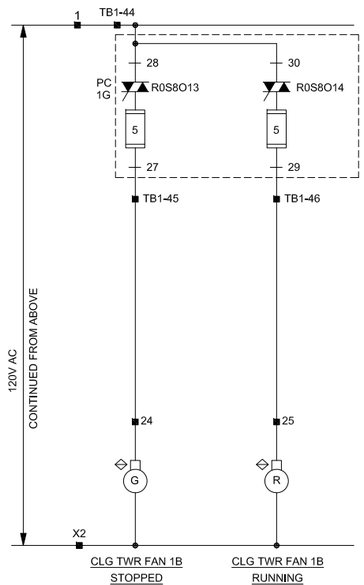
CITY OF HASTINGS, NEBRASKA
WHELAN ENERGY CENTER UNIT 1

CIRCULATING WATER SYSTEM-SCHEMATIC DIAGRAMS
COOLING TOWER FAN 1A

B&V DWG NO. HRA-10

REV. 5





Instead of starters for reverse, forward slow, and forward fast, we want to transition to a VFD for this operation. Please see specifications.

NOTE:
DRAWINGS REVISED FOR BLACK & VEATCH PROJECT 140592.
THE SEAL BELOW CERTIFIES ONLY THE WORK INDICATED FOR THIS PROJECT

REF DWG:
LEGEND: SH 11A
P&ID M1008
LOGIC: HR-A1
62.0600-1: SUGGESTED CONDUIT LOCATION
ALARM: SH. 13

A-G NO. AL315G

NO	DATE	REVISIONS	DWN	CK	ACC	APP
5	3/11/14	REVISED	EK	DH		
4	1/9/14	AUTOCAD FORMAT	EK	LV		
3	12/28/07	74.0202 CONF TO CONSTR REC-NIC	RSN	MWN	CGB	CGB
2A	8/10/07	74.0202 PHASE 2 CONSTRUCTION	SSE	MWN	CGB	CGB

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DATE 04-25-80 REG. NO. E-4898

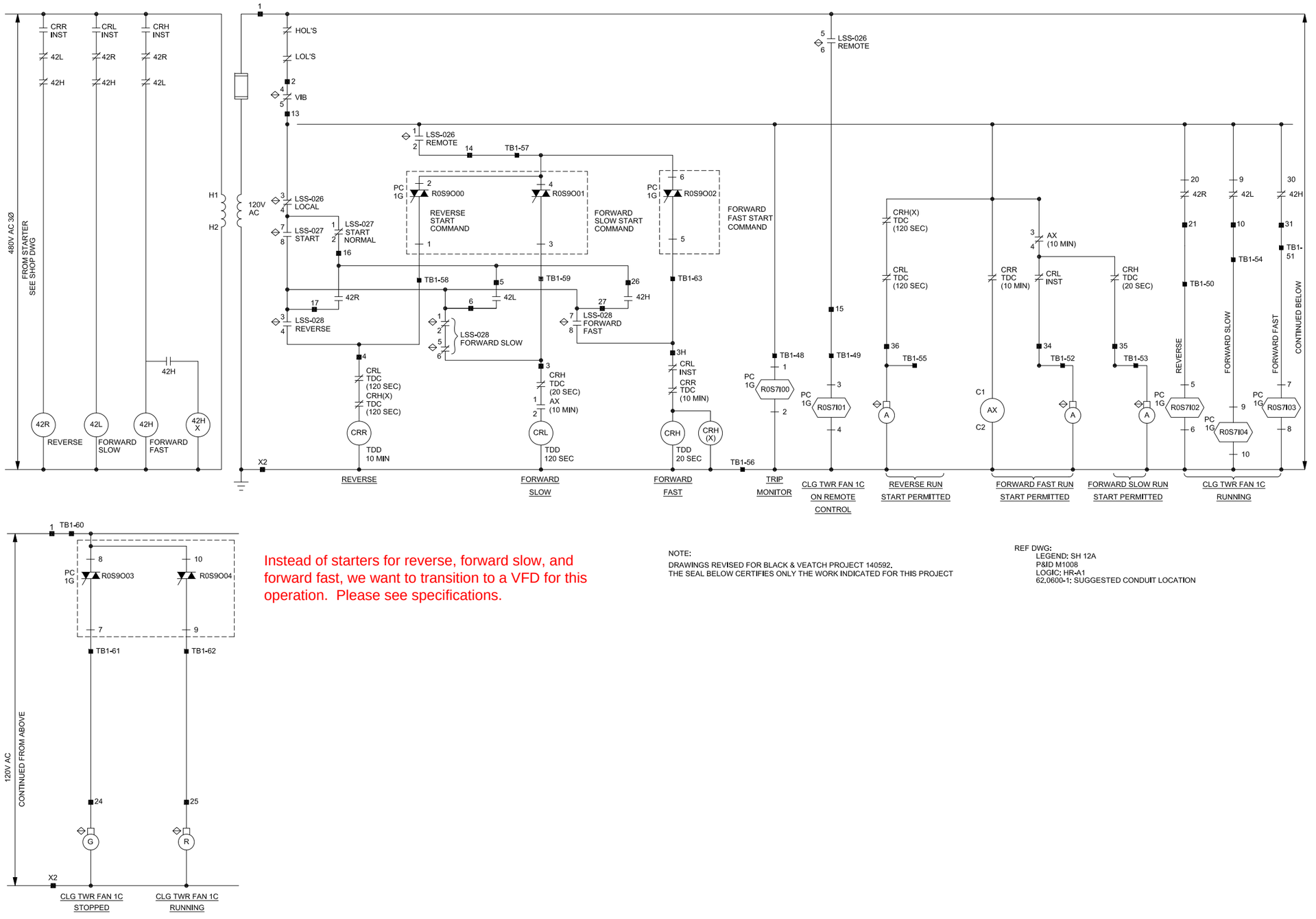
BLACK & VEATCH CONSULTING ENGINEERS
PROJECT 7677

CITY OF HASTINGS, NEBRASKA
WHELAN ENERGY CENTER UNIT 1

CIRCULATING WATER SYSTEM-SCHEMATIC DIAGRAMS
COOLING TOWER FAN 1B

B&V DWG NO. HRA-11

REV. 5



Instead of starters for reverse, forward slow, and forward fast, we want to transition to a VFD for this operation. Please see specifications.

NOTE:
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THE SEAL BELOW CERTIFIES ONLY THE WORK INDICATED FOR THIS PROJECT

REF DWG:
LEGEND: SH 12A
P&ID M1008
LOGIC: HR-A1
62.0600-1: SUGGESTED CONDUIT LOCATION

NO	DATE	REVISIONS	DWN	CK	ACC	APP
5	2/7/14	REVISED	EK	DH		
4	1/9/14	AUTOCAD FORMAT	EK	LV		
3	12/28/07	74.0202 CONFORMED TO CONSTR REC	RSN	MWN	CGB	CGB
2A	8/10/07	74.0202 PHASE 2 CONSTRUCTION	SSE	MWN	CGB	CGB

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BLACK & VEATCH
CONSULTING ENGINEERS
PROJECT 7677

CITY OF HASTINGS, NEBRASKA
WHELAN ENERGY CENTER UNIT 1
CIRCULATING WATER SYSTEM-SCHEMATIC DIAGRAMS
COOLING TOWER FAN 1C

B&V DWG NO. HRA-12
REV. 5

A-G NO. AL318G


SWITCHGEAR SECTIONS NEED DELIVERED SO THEY'LL FIT THROUGH A 36" DOOR
3
0
2
W
SULFURIC ACID
CAUTION
PPE required

MCC1G ARRANGEMENT





EXISTING PANEL IS ALL 20AMP, EXCEPT SPACE 21 WHICH IS 30AMP.


WE WILL UTILIZE THE RIGHT ENCLOSURE FOR THE FIBER, PLC, AND COMMS, EXACTLY LIKE WE HAVE NOW.
BLACK BOX
Fiber Wallmount Cabinet
Allen-Bradley
Allen-Bradley