UNIVERSITY OF COLORADO AT BOULDER
ECEE
2B80 REMODEL

PR 005329
CONSTRUCTION DOCUMENTS

CONTACT INFORMATION

ARCHITECT

MECHANICAL ENGINEERING

ELECTRICAL ENGINEERING

DRAWING LIST

GENERAL

ARCHITECTURAL

MECHANICAL

ELECTRICAL

PROJECT LOCATION IN BUILDING

VICINITY MAP/BUILDING LOCATION MAP
**SEQUENCE OF CONTROL**

**EXISTING CHW LOOP:**
- Existing control shall remain in operation when system is not in use for the purpose of maintaining the system and the equipment in a safe condition.

**COMPRESSOR COOLING:**
- Existing control shall remain in operation when compressor operates.

**HIGH TEMP. CONTROL:**
- High temperature shall be set to a maximum constant value of 100°F.

**CONTROLS GENERAL NOTES:**
1. Controls shall be capable of integration with the building's HVAC system.
2. Controls shall be compatible with the building's automatic fire alarm system.
3. Controls shall be designed to maintain the system pressure at a maximum of 100 psi.
4. Controls shall be capable of providing remote access to the system.

**CONTROL POINTS LIST**

<table>
<thead>
<tr>
<th>NO</th>
<th>SYSTEM</th>
<th>POINT FUNCTION</th>
<th>TYPE</th>
<th>RELAY SIZE</th>
<th>TAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHW</td>
<td>Flow Switch</td>
<td>2</td>
<td>20E18</td>
<td>CHW1</td>
</tr>
</tbody>
</table>

*Communication connection to MDCB to be provided in future, not included in this contract.*
**WIRING SCHEDULE - COPPER**

**AMPS**

- 2WG (2Ø, 2 WIRE, GROUND)
- 3WG (3Ø, 3 WIRE, GROUND)
- 4WG (3Ø, 4 WIRE, GROUND)
- 5WG (3Ø, 5 WIRE, GROUND)

**IG**

- 1Ø, 2 WIRE, GROUND

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**20**

- (2#12 & 1#12 G) 3/4"C
- (3#12 & 1#12 G) 3/4"C
- (4#12 & 1#12 G) 3/4"C
- (3#10, 1#6 N & 1#12 G) 3/4"C
- 1#12 IG

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**30**

- (2#10 & 1#10 G) 3/4"C
- (3#10 & 1#10 G) 3/4"C
- (4#10 & 1#10 G) 3/4"C
- (3#8, 1#4 N & 1#10 G) 1"C
- 1#10 IG

---

**40**

- (2#8 & 1#10 G) 3/4"C
- (3#8 & 1#10 G) 3/4"C
- (4#8 & 1#10 G) 1"C
- (3#6, 1#3 N & 1#10 G) 1 1/4"C
- 1#10 IG

---

**50**

- (2#6 & 1#10 G) 3/4"C
- (3#6 & 1#10 G) 1"C
- (4#6 & 1#10 G) 1"C
- (3#4, 1#1 N & 1#10 G) 1 1/4"C
- 1#10 IG

---

**60**

- (2#4 & 1#10 G) 1"C
- (3#4 & 1#10 G) 1"C
- (4#4 & 1#10 G) 1 1/4"C
- (3#2, 1#2/0 N & 1#10 G) 1 1/4"C
- 1#10 IG

---

**70**

- (2#4 & 1#8 G) 1"C
- (3#4 & 1#8 G) 1 1/4"C
- (4#4 & 1#8 G) 1 1/4"C
- (3#2, 1#2/0 N & 1#8 G) 1 1/2"C
- 1#8 IG

---

**80**

- (2#2 & 1#8 G) 1"C
- (3#2 & 1#8 G) 1 1/4"C
- (4#2 & 1#8 G) 1 1/2"C
- (3#1, 1#3/0 N & 1#8 G) 2"C
- 1#8 IG

---

**90**

- (2#2 & 1#8 G) 1"C
- (3#2 & 1#8 G) 1 1/4"C
- (4#2 & 1#8 G) 1 1/2"C
- (3#1, 1#3/0 N & 1#8 G) 2"C
- 1#8 IG

---

**100**

- (2#1 & 1#8 G) 1 1/4"C
- (3#1 & 1#8 G) 1 1/2"C
- (4#1 & 1#8 G) 1 1/2"C
- (3#1, 1#3/0 N & 1#8 G) 2"C
- 1#8 IG

---

**110**

- (2#1 & 1#6 G) 1 1/4"C
- (3#1 & 1#6 G) 1 1/2"C
- (4#1 & 1#6 G) 1 1/2"C
- (5#1/0 & 1#6 G) 2"C
- 1#6 IG

---

**125**

- (2#1 & 1#6 G) 1 1/4"C
- (3#1 & 1#6 G) 1 1/2"C
- (4#1 & 1#6 G) 1 1/2"C
- (5#2/0 & 1#6 G) 2 1/2"C
- 1#6 IG

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**150**

- (2#1/0 & 1#6 G) 1 1/4"C
- (3#1/0 & 1#6 G) 1 1/2"C
- (4#1/0 & 1#6 G) 2"C
- (5#3/0 & 1#6 G) 2 1/2"C
- 1#6 IG

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**175**

- (2#2/0 & 1#6 G) 1 1/2"C
- (3#2/0 & 1#6 G) 2"C
- (4#2/0 & 1#6 G) 2"C
- (5#4/0 & 1#6 G) 3"C
- 1#6 IG

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**200**

- (2#3/0 & 1#6 G) 1 1/2"C
- (3#3/0 & 1#6 G) 2"C
- (4#3/0 & 1#6 G) 2"C
- (5#250 KCMIL & 1#6 G) 3"C
- 1#6 IG

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**225**

- (2#4/0 & 1#4 G) 2"C
- (3#4/0 & 1#4 G) 2"C
- (4#4/0 & 1#4 G) 2 1/2"C
- (5#300 KCMIL & 1#4 G) 3"C
- 1#4 IG

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**250**

- (2#350 KCMIL & 1#4 G) 2"C
- (3#350 KCMIL & 1#4 G) 3"C
- (4#350 KCMIL & 1#4 G) 3"C
- (5#500 KCMIL & 1#4 G) 4"C
- 1#4 IG

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**CONDUCTOR SIZES ARE BASED ON 60° TERMINATIONS LESS THAN 100A AND 75° TERMINATIONS GREATER THAN 100A**

**CONDUIT SIZES ARE BASED ON NEC TABLE 4 (RNC) AND TABLE 5 (THHN INSULATION).**

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**SHORT CIRCUIT CALCULATIONS SUMMARY**

<table>
<thead>
<tr>
<th>POINT</th>
<th>EQUIP. LENGTH</th>
<th>VOLT</th>
<th>WIRE SIZE</th>
<th>CONDUCTOR MATERIAL</th>
<th>CONDUIT VOLTAGE</th>
<th>CLASS (V)</th>
<th># OF CABLES</th>
<th>S or T</th>
<th>C VALUE *</th>
<th># OF PARALLEL RUNS</th>
<th>Isc AVAILABLE UPSTREAM f * M * Isc</th>
<th>LET THRU (AIC)</th>
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<tbody>
<tr>
<td>F1</td>
<td>UNIT SUBSTATION</td>
<td>50</td>
<td>480</td>
<td>500</td>
<td>C</td>
<td>N</td>
<td>S</td>
<td>26,706</td>
<td>7</td>
<td>39,450</td>
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<td>38,003</td>
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**AUTOMATICALLY CALCULATED**

**UTILITY TRANSFORMER SIZE: 2000 KVA**

**MAXIMUM AVAILABLE (SYMMETRICAL) FAULT AT THE SECONDARY: 39450 AMPS**

FROM INFINITE BUS METHOD USING 6.1 % TRANSFORMER IMPEDANCE