### MAJOR ELECTRICAL EQUIPMENT - BASIS OF DESIGN

<table>
<thead>
<tr>
<th>TAG</th>
<th>DESCRIPTION</th>
<th>BIG ITEM</th>
<th>LOCATION</th>
<th>PLAN DWG #</th>
<th>ONE-LINE DWG #</th>
<th>RATINGS</th>
<th>MANUFACTURER / SERIES OR APPROVED EQUAL</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE</td>
<td>AUTO TRANSFORMER PNL</td>
<td>T-362</td>
<td>SUB STATION</td>
<td>15-232</td>
<td>313-232</td>
<td>1.25 MVA</td>
<td>COOPER POWER SYSTEMS / 443-7251</td>
<td></td>
</tr>
</tbody>
</table>
SHEET NOTES:

1. This sheet expects work included in the base bid and active alternate bid.
2. The base bid includes installation of 12.47 kV primary service feeder and conduit. See one-line diagram on sheet E3 for more information.
3. Active alternate bid includes installation of 34.5 kV primary service feeder. See one-line diagram on sheet E2 for more information.
4. Contractor shall locate and dig underground utilities prior to excavation.
5. Line runs of 12.47 kV equipment shall be located a minimum of 10' from fence.
6. Line runs of 34.5 kV equipment shall be located a minimum of 10' from fence.
7. Minimum separation distance between pieces of equipment shown are based on an loss protection data sheet 5-4 for an approved equipment fully with an approved loss prevention load.
8. Adjust equipment layout and fence layout as needed, based on dimensions of actual equipment purchased. Maintain minimum clearance shown.
9. Grounding and bonding of the fence and fence posts shall be in accordance with the NEC and AASHTO. Fence posts, fence rails, and bare copper wires shall be bonded to the ground ring. Bonded to rail for fence details.
10. All yellow ground bonds shall be externally bonded or interdevice bonded.
11. All grounding conductors shown shall be #4/0 and bare copper. All connections shall be externally bonded.
12. See sheet for remodel details.
SHEET NOTES:

1. THIS SHEET DESCRIBES WORK INCLUDED IN THE BASE NO.
   ADDITIVE ALTERNATE #6 AND ADDITIVE ALTERNATE #4.

2. THE BASE NO INCLUDES THE INSTALLATION OF 480V, 3-PH.
   200 AMP SERVICE WIRING AND CONCRETE TO EXISTING CONCRETE.
   ADDITIVE ALTERNATE #6 INCREASES THE CONCRETE TO EXISTING
   CONCRETE. SEE ONE-LINE SHEETS 480V, 480V, AND 480V FOR MORE
   INFORMATION.

3. ADDITIVE ALTERNATE #6 INCLUDES THE INSTALLATION
   OF EXISTING WIRING IN EXISTING CONCRETE FROM P1 TO P7. SEE
   ONE-LINE SHEETS 480V FOR MORE INFORMATION.

4. ADDITIVE ALTERNATE #6 INCLUDES THE INSTALLATION OF
   EXISTING WIRING IN EXISTING CONCRETE FROM P1 TO P7. SEE
   ONE-LINE SHEETS 480V, 480V, 480V, AND 480V FOR MORE
   INFORMATION.

5. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND
   SERVICES PRIOR TO EXCAVATION.

6. PROVIDE PAYMENT SCHEDULE PER OWNERS INSTRUCTION.

7. SEE ONE-LINE SHEET 480V, 480V, AND 480V FOR MORE
   DETAIL.
BASIS OF DESIGN OCPD SETTINGS

<table>
<thead>
<tr>
<th>ITEM/DESCRIPTION</th>
<th>LOCATION</th>
<th>TYPE</th>
<th>RATING/SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>110/240V TRANSFORMER</td>
<td>1200kVA</td>
<td>1200kVA</td>
<td></td>
</tr>
<tr>
<td>240V TRANSFORMER</td>
<td>1200kVA</td>
<td>1200kVA</td>
<td></td>
</tr>
</tbody>
</table>

Note: Final size selection and OCPD setting shall be coordinated with equipment manufacturer and in consultation with equipment selection.

Jul 25, 2018

No. EE12048

LOGAN R. HAINES
BASIS OF DESIGN OCPD SETTINGS

<table>
<thead>
<tr>
<th>ITEM/TAG</th>
<th>DESCRIPTION</th>
<th>LOCATION</th>
<th>TYPE</th>
<th>RATING/SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sheet Notes:
1. All new work shown on this sheet is included in assembly alternate 2.
2. Install switch S4, install control and wiring to connect to switch S3.
3. Install wiring in existing spare conduit from switch S4 to transformer P4.
4. Install wiring in existing spare conduit from transformer P4 to transformer P5.
5. Install transformer P5, install wiring in existing spare conduit from transformer P5 to transformer P7, connect transformer P7 secondary to existing air compressor building switch S1.
6. Install wiring in existing spare conduit from transformer P7 to transformer P7.
7. Install switch S2, install control and wiring to connect to switch S1.

Jul 25, 2018
No. EE12048

Logan R. Haines
<table>
<thead>
<tr>
<th>ITEM/TAG</th>
<th>DESCRIPTION</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TRANSFORMER</td>
<td>Location 1</td>
</tr>
<tr>
<td>2</td>
<td>TRANSFORMER</td>
<td>Location 2</td>
</tr>
</tbody>
</table>

**Sheet Notes:**
1. Active alternate #2 includes reaming punch and installation of transformer PT, transformer PT and associated wiring.
2. Refer to sheet E2.2 for reconciliation of existing depth 1 covers and operating shipping.
**Sheet Notes:**

1. All new work detailed on the one sheet is included in narrative references B1 and B2.
2. All wiring is direct, unless noted otherwise.

---

**Machine Shop Switchboard One-Line Diagram (Alt. 1)**

1. Provide feeder conductors, taps, and conduit to connect new transformer to existing switchboards.
2. Reuse existing conduit to the extent practical for new feeds.
3. Adjust tap setting as required.
4. Neutral and ground shall be spliced at only one location, within transformer. Remove any existing bonds, if present.
5. Bond existing grounding electrode system to new grounding electrodes at transformer.

---

**Air Compressor Building One-Line Diagram (Alt. 2)**

1. Provide feeder conductors, taps, and conduit to connect new transformer to existing switchboard.
2. Reuse existing conduit to the extent practical for new feeds.
3. Adjust tap setting as required.
4. Install new circuit breaker and feeder to existing small air compressor disconnect.
5. Neutral and ground shall be spliced at only one location, within transformer. Remove any existing bonds, if present.
6. Bond existing grounding electrode system to new grounding electrodes at transformer.
SHORE POWER STATION #1 ONE-LINE DIAGRAM - DEMOLITION

DETAIL NOTE:
1. Switchgear conduits shown "as drawn" to order.

SHORE POWER STATION #2 ONE-LINE DIAGRAM - DEMOLITION
1. Fence posts may be used to support the fence. The fence post may be used for the fence material. The fence post is shown in the detail of the fence material.

2. Schedule 40 schedule of fencing is shown. The schedule of fencing is shown in the detail of the fence material.

3. The schedule of fencing is shown in the detail of the fence material. The schedule of fencing is shown in the detail of the fence material.
Anchorage, Alaska 99501
800 F Street
AECC249

Jul 25, 2018
No. SE14016
WILL VEELMAN

**Structural Steel**

Structural steel shall conform to AISC and AISI specifications as follows:

- **Angles**: ASTM A36, Gr. 50
- **Flanges**: ASTM A441, Gr. 50

Provide weld certifications with all steel material.

Fabrication and erection shall be in accordance with AISC specifications. All welds shall be inspected by the welder, without exception. Structural steel shall conform with details shown. All connections shall meet detailing plans and codes with corresponding design documents.

Steel shall be clean and free of any foreign substance. Coatings shall be applied and cured smooth. Scale and rust shall be removed. Dust exposure in finished work shall be controlled with the use of a vacuum cleaner on the visible side of the connection.

**Structural Steel Design**

All structural steel welds shall be prequalified and conform to AISC and AISI specifications.

- **Members**: Certified for AISC and AISC Design
- **Fillet Material**: 316 Stainless Steel

Welds shall be free of slag, spatter, and grooves. Sharp edges shall be ground smooth.

Do not allow any carbon steel or ferrous metal contact during fabrication or cleaning.

**Reinforcing Steel**

All reinforcing steel shall conform to AISC and AISI specifications as follows:

- **Bars, Short Length Only**: A542, Grade 60
- **Bars, Field Length**: A615, Grade 60
- **Rebars, Rebars, Rebars**: A615, Grade 60

**Reinforced Concrete**

All reinforced concrete shall be in accordance with AISC and AISI specifications as follows:

**Structural Concrete**

Conduct the following tests when required:

- **Compressive Strength**: ASTM C31, 4000 psi at 28 days
- **Shrinkage**: ASTM C117, 1 inch, 28 days

**Concrete Specifications**

- **Mixing Concrete Delay**: 24 hours
- **Curing Concrete Delay**: 7 days
- **Concrete Mix Design**: Prepared by the architect prior to material purchase.

- **Temperature**: Not to exceed 102°F by average
- **Steel Reinforcement**: ASTM A615, Grade 60
- **Rebars**: A615, Grade 60

Contractor shall submit mix designs for review by the architect prior to material purchase.

- **Concrete Mix Design**: Prepared by the architect prior to material purchase.

**Reinforced Concrete**

- **Mix Design**: Prepared by the architect prior to material purchase.
- **Concrete Mix Design**: Prepared by the architect prior to material purchase.

- **Temperature**: Not to exceed 102°F by average
- **Steel Reinforcement**: ASTM A615, Grade 60
- **Rebars**: A615, Grade 60

Contractor shall submit mix designs for review by the architect prior to material purchase.

- **Concrete Mix Design**: Prepared by the architect prior to material purchase.
- **Concrete Mix Design**: Prepared by the architect prior to material purchase.

- **Temperature**: Not to exceed 102°F by average
- **Steel Reinforcement**: ASTM A615, Grade 60
- **Rebars**: A615, Grade 60

Contractor shall submit mix designs for review by the architect prior to material purchase.

- **Concrete Mix Design**: Prepared by the architect prior to material purchase.
- **Concrete Mix Design**: Prepared by the architect prior to material purchase.

- **Temperature**: Not to exceed 102°F by average
- **Steel Reinforcement**: ASTM A615, Grade 60
- **Rebars**: A615, Grade 60

Contractor shall submit mix designs for review by the architect prior to material purchase.

- **Concrete Mix Design**: Prepared by the architect prior to material purchase.