## OVERALL PROJECT SCOPE

1. **OVERALL SCOPE IS TO REPLACE THE ADMINISTRATION BUILDING'S HEATING HOT WATER BOILER IN-KIND**

2. **DEMOOLISH HOT WATER BOILER, ASSOCIATE PUMPS, EXPANSION TANK, FLUE VENTING, CHEMICAL FEEDER AND AIR SEPARATOR.**

3. **DEMOOLISH GAS REGULATOR AND GAS LINE TO THE (E)BOILER.**

4. **DEMOOLISH ICW SUPPLY LINE TO THE BOILER**

5. **PROVIDE BOILER ON CONCRETE EQUIPMENT PAD.**

6. **PROVIDE HEATING HOT WATER IN-LINE PUMPS.**

7. **PROVIDE IN-LINE AIR SEPARATOR, EXPANSION TANK AND CHEMICAL TREATMENT FEEDER**

8. **PROVIDE GAS REGULATOR AND SUPPLY LINE TO BOILER.**

9. **PROVIDE ELECTRICAL POWER TO BOILER AND PUMPS.**

10. **CONNECT TO ICW AND PROVIDE REGULATOR**

11. **CONNECT EQUIPMENT TO (E)BAS, PROVIDE PROGRAMMING AND NEW DDC SENSORS AND DEVICES AS SHOWN ON PLANS.**

12. **TEST, BALANCE AND ADJUST HEATING HOT WATER SYSTEM.**

13. **PROVIDE CHEMICAL TREATMENT TO HHW SYSTEM.**

### GOVERNING CODES

<table>
<thead>
<tr>
<th>Part</th>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>1.1</td>
<td>2016 California Building Standards Code</td>
<td>Title 24 CCR</td>
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<td>1.3</td>
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<td>1.4</td>
<td>2016 California Mechanical Code</td>
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<td>2016 California Plumbing Code</td>
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<td>2016 California Green Building Standards Code (CALGREEN)</td>
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<tr>
<td>1.7</td>
<td>2016 California Fire Code</td>
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<td>1.8</td>
<td>2016 California Reference Standards</td>
<td>Title 24 CCR</td>
</tr>
<tr>
<td>1.9</td>
<td>Title 19, CCR, Public Safety, State Fire Marshal Regulations</td>
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### LIST OF CALIFORNIA CODE OF REGULATIONS (CCR) APPLICABLE CODES AS OF JANUARY 1, 2017

- PART 1: 2016 California Building Standards Administrative Code, Title 24 CCR
- PART 2: 2016 California Building Code, Title 24 CCR (Based on 2015 International Building Code, with California Amendments)
- PART 3: 2016 California Electrical Code, Title 24 CCR (Based on 2014 National Electrical Code and 2013 California Amendments)
- PART 4: 2016 California Mechanical Code, Title 24 CCR (Based on 2015 Uniform Mechanical Code)
- PART 5: 2016 California Plumbing Code, Title 24 CCR (Based on 2015 Uniform Plumbing Code)
- PART 9: 2016 California Fire Code, Title 24 CCR (Based on 2015 International Fire Code)
- PART 11: 2016 California Green Building Standards Code (CALGREEN), Title 24 CCR
- PART 12: 2016 California Reference Standards, Title 24 CCR

### ADDITIONAL STANDARDS

- NFPA 80: Fire Door and Other Opening Protectives (2016 Edition)

**Reference Code Section for NFPA Standards - 2016 CBC (SFM) Chapter 35.**

**See Chapter 35 for State of California Amendments to NFPA Standards.**
### HOT WATER BOILER

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Location</th>
<th>Type</th>
<th>Size</th>
<th>Pressure</th>
<th>Flow</th>
<th>Efficiency</th>
<th>Notes</th>
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### HEATING HOT WATER PUMP

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<tr>
<th>Model</th>
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### AIR SEPARATORS

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### EXPANSION TANK

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### GAS REGULATORS

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</table>
Provide inline HHW pumps. Mount bottom pump flange higher than top of boiler. Provide expansion tank on concrete equipment pad. Connect to AS-1. Provide HHW boiler on concrete equipment pad. Install boiler per manufacturer’s recommendations for service clearance. Adjust position as needed to maintain 36" clearance in front of (E) electrical panel.

Provide inline air separator upstream of HHW pumps. Connect to ET-1.

Provide 6"Ø stainless steel gasketed flue vent, AL29-4C direct vent flue or equal. Route up thru roof. Use existing opening and vent cap. Connect 3/4" ICW line to (E) double-check, back-flow preventor device. Provide pressure regulator for make-up water. Pipe by-pass in per detail 5/M601.

Provide gas regulator. Tie into (E) gas service line. Provide 3/4"C - 3#10, 1#10G from (E) switches P-1 and P-2 to new pumps P-1 and P-2.

Provide chemical pot-feeder to suction side of pumps.

Provide 2#12, 1#12G from existing panel C-3 to new boiler. Re-use existing conduit and extend as necessary to new boiler to allow for a complete installation.
Pipe and Instrument Diagram

NOTES:
- Refer to schedule, foundation, and structural drawings
- Drawn and plotted at same scale
- Please consult with project team or construction worker
- Document stamped by qualified design professional
- Provide details for HVAC assembly connections
- Provide POC to BAS for all connections
- Refer to division 23 0993.11 "Sequence of Operations for HVAC DDC"

POC:
- Gas main outside of A163 Mechanical Room
- Building HHWS line
- Building HHWR line
- Start/Stop, Temperature Reset and Status Connection to (E) BAS
- Start/Stop and Status Connection to BAS
- Pressure regulator for make-up water

1-1/2" Gas

NOTES:
- Provide new gas regulator
- Provide start/stop and status connection to BAS
- Provide pressure regulator for make-up water
- Refer to division 23 0993.11 "Sequence of Operations for HVAC DDC"

Sheet Title:
Pipe and Instrument Diagram

Sheet Number:
M501
NOTES

- DEMOLISH AND REMOVE FROM SITE: HHW BOILER, ASSOCIATED HHW PUMPS, EXPANSION TANK, AIR SEPARATOR, POT FEEDER AND PIPE WORK. DEMOLISH HHW PIPE WORK BACK TO POD.
- PROTECT IN PLACE: CHILLED WATER PUMPS AND ASSOCIATED PIPING, FIRE WATER PIPE AND DEVICES, BAS CABINETS, PUMP SAFETY SWITCHES.
- DEMO GAS LINE FEED TO BOILER AND GAS REGULATOR.
- (E) 47" X 40" X 6" CONCRETE BOILER PAD SHALL REMAIN FOR USE WITH NEW EQUIPMENT.
- DEMOLISH MAKE-UP, INDUSTRIAL WATER BACK TO DCBFP DEVICE. DCBFP DEVICE SHALL BE LEFT IN PLACE FOR REUSE WITH NEW BOILER SYSTEM.
- EXISTING SWITCHES P-1, P-2, P-3, AND P-4 FED FROM EXISTING PANEL A-8, 40A, 3P BREAKER.
- EXISTING CONDUIT AND CONDUCTORS FROM EXISTING PANEL A TO EXISTING SWITCHES SHALL REMAIN IN PLACE.
- EXISTING SWITCHES SHALL REMAIN IN PLACE. DEMO EXISTING CONDUIT AND CONDUCTORS FROM SWITCHES P-1 AND P-2 TO EXISTING PUMPS INDICATED BY NOTE 1, THIS SHEET. REFER TO SHEET M201 FOR NEW CONNECTION.
- EXISTING ELECTRICAL GUTTER LOCATED UNDER EXISTING SWITCHES SHALL REMAIN IN PLACE.
- EXISTING BOILER FED FROM EXISTING PANEL C-3, 20A, 1P BREAKER. DISCONNECT AND REMOVE EXISTING CONDUCTORS BACK TO PANEL C. RETAIN EXISTING CONDUIT TO ALLOW FOR RECONNECTION TO NEW BOILER. FIELD VERIFY EXACT BREAKER PRIOR TO DISCONNECTION. REFER TO SHEET M201 FOR NEW CONNECTION.
5. Concrete admixtures shall conform to the following:
   - **ASTM C1582**
   - **ASTM C618** Class C or F
   - **ASTM C33**
   - **ACI 318**
   - WWR shall conform to the following ASTM specifications, unless noted otherwise:
   - **ASTM A-615, GR 60**
   - **ASTM A-706**
   - **Welded Wire Reinforcing (WWR)**
   - **Steel Welded Wire Reinforcing (WWR)**
   - **American Iron and Steel Institute (AISI)**

6. All concrete work shall conform to the standards of the American Concrete Institute (ACI), "ACI Manual of Structural Concrete" Edition.

7. The maximum slump for concrete mixes shall be 5" typically and 4" for all flatwork, whether on grade or above grade.

8. Foundation expansion anchors shall be used to secure structural connections to the ground. Expansion anchors shall be located by the trades/sub-contractors involved, and shall be reviewed by the SEOR prior to required installation.

9. Concrete shall be placed in accordance with the construction drawn. Concrete shall be cured in accordance with ASTM C1028 for 7 days.

10. Concrete shall be placed in accordance with the construction drawn. Concrete shall be cured in accordance with ASTM C1028 for 7 days.

11. All concrete work shall be inspected by a qualified inspector who shall demonstrate his competence, to the satisfaction of the LIC.

12. The project inspector shall be a qualified person who shall demonstrate his competence, to the satisfaction of the LIC.

13. They shall be reported to the SEOR so that the proper revision may be made. Modifications or changes to the working drawings shall be brought to the immediate attention of the contractor for resolution prior to proceeding with the work.

14. The project inspector shall be a qualified person who shall demonstrate his competence, to the satisfaction of the LIC.

15. The contractor shall be responsible for the quality of workmanship and the integrity of the structural system.

16. Post-installed anchors shall be installed in accordance with the manufacturer's instructions and the applicable evaluation report, unless noted otherwise.

17. Concrete reinforcing is placed in two or more layers, bars in the upper layers shall be placed directly above the lower layer, unless otherwise noted. Restrictions noted must be met in order to maintain the integrity of the structural system.

18. The project inspector shall be a qualified person who shall demonstrate his competence, to the satisfaction of the LIC.

19. The project inspector shall be a qualified person who shall demonstrate his competence, to the satisfaction of the LIC.

20. The project inspector shall be a qualified person who shall demonstrate his competence, to the satisfaction of the LIC.

21. The project inspector shall be a qualified person who shall demonstrate his competence, to the satisfaction of the LIC.
**ANCHOR BRACKET**

- **EQ**: A
- **NONE**: 5.

- **3/4" = 1'-0"**

---

**PARTIAL FOUNDATION PLAN**

- **A**: 1/2" = 1'-0"
- **BOILER ANCHORAGE**: R

---

**ANCHORAGE DETAILS**

- **6" MIN TYP**
- **ANCHORAGE PER EQUIP**
- **EQUIP PER PLAN**

---

**BOILER**

- **ANCHORAGE**

---

**SLAB-ON-GRADE, VIF**

- **TYP**: 6"

---

**BASE SUPPORTS & GAP BTWN TRIANGULAR SUPPORTS**

- **L3x AS OCCURS**
- **BASE SUPPORTS**
- **TRIANGULAR SUPPORTS**

---

**ANCHORAGE**

- **MAX OP**
- **E**
- **CONC HK PAD**
- **BOILER, MAX**

---

**BASE SUPPORT**

- **CORNER**
- **EMBED**
- **EA**

---

**BASE SUPPORTS**

- **TRIANGULAR**
- **BASE SUPPORT**
- **L1 1/2 x 1 1/2 x 1/4**, TYP

---

**Slab-on-Grade, VIF**

- **6" MIN**
- **TYP**
- **BASE SUPPORTS**
- **GAP BTWN TRIANGULAR SUPPORTS**

---

**Bid and Construction Issue**

- **TO FILE**
- **SUBMITTAL**
- **CONTRACTOR**
- **TO BACK OF END OF ANGLE**

---

**Partial Foundation Plan and Anchorage Details**

- **Sheet Number**: 3
- **Title**: Partial Foundation Plan and Anchorage Details