SITE LOCATION MAP

N

# BOILER REPLACEMENT and HEATING SYSTEM UPGRADES

## LUCAS COUNTY COURTHOUSE

**700 ADAMS STREET**
**TOLEDO, OHIO 43604**

LUCAS COUNTY

Prepared for:

## LUCAS COUNTY BOARD OF COMMISSIONERS

| | |
|---|---|
| **Carol Contrada** | President |
| **Tina Skeldon Wozniak** | Commissioner |
| **Pete Gerken** | Commissioner |

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mda Project No. **15006**

Issued For:
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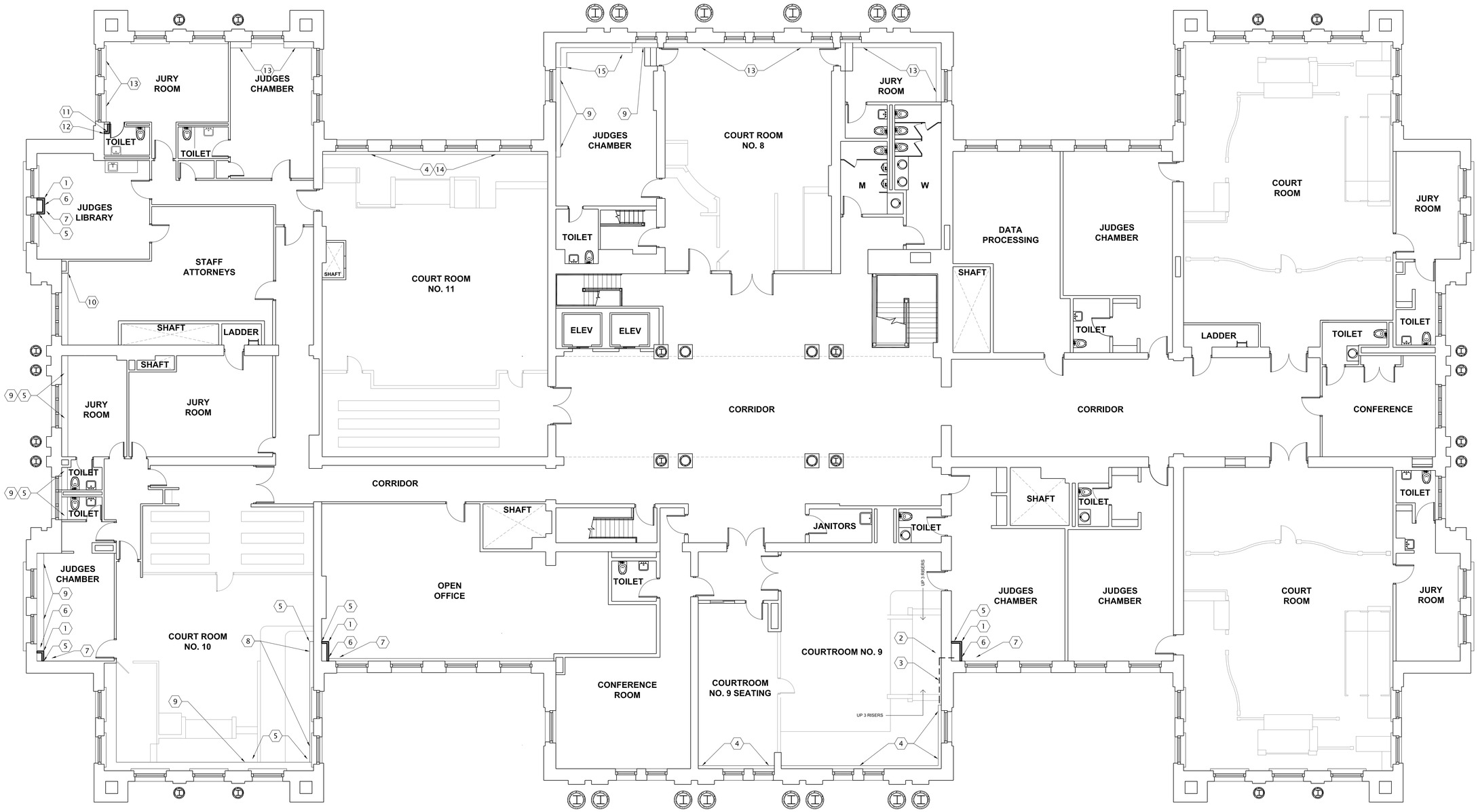


FOURTH FLOOR PLAN

1/8" = 1'-0"

NOTE:
SEE SHEET A1.02 FOR RELATED NOTES AND DETAILS.

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12/31/2015

BOARD OF COUNTY COMMISSIONERS LUCAS COUNTY OHIO

# BOILER REPLACEMENT and HEATING SYSTEM UPGRADES LUCAS COUNTY COURTHOUSE

700 ADAMS STREET
TOLEDO, OHIO 43604

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## 4th Floor Plan

| Drawn By: | Checked By: |
|---|---|
| ED | JV |
| Date: 04-17-15 | Job No: 15012 |

SHEET NO.

A1.01

## GENERAL NOTES

A. COORDINATE FULL SCOPE OF DEMOLITION AND CONSTRUCTION WORK BETWEEN ALL TRADES.

B. SUCCESSFUL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

C. THE DRAWINGS IDENTIFY SIGNIFICANT ITEMS OF DEMOLITION AND CONSTRUCTION. MISCELLANEOUS RELATED ITEMS MUST FURNISHED AS A PART OF THIS CONTRACT IN ORDER TO ACHIEVE THE DESIGN INTENT OF THE DOCUMENTS. VERIFY THE REMOVALS AND CONSTRUCTION OF OTHER TRADES WITH DOCUMENTS OF THOSE TRADES. VERIFY ANY ITEMS OF REMOVAL IN QUESTION.

D. PROTECT ALL EXISTING ADJACENT SURFACES, ELEMENTS AND FIXTURES SCHEDULED TO REMAIN FROM DAMAGE DUE TO DEMOLITION AND CONSTRUCTION. PROCESSES.

E. SALVAGE AND REUSE ITEMS AS IDENTIFIED IN THESE DOCUMENTS.

F. ALL EXISTING STRUCTURAL ELEMENTS OF THIS BUILDING ARE TO REMAIN INTACT EXCEPT AS NOTED. PROTECT AS REQUIRED DURING THE DEMOLITION AND CONSTRUCTION PERIOD. NO STRUCTURAL STEEL MEMBERS, CONCRETE SLABS, OR RELATED STRUCTURAL ELEMENTS WHICH ARE DESIGNATED TO REMAIN SHALL BE CUT OR REMOVED WITHOUT PRIOR WRITTEN APPROVAL OF THE ARCHITECT AND ENGINEER.

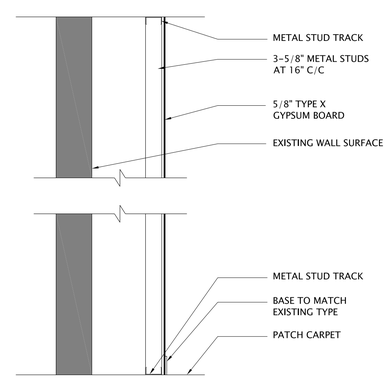
G. GENERALLY, TOUCH UP PAINT AND/OR STAIN TO MATCH COLOR AND FINISH OF EXISTING WHERE WORK HAS BEEN ACCOMPLISHED AND SURFACE FINISHES HAVE BEEN MARRED OR DAMAGED.

H. PAINT NEW WORK TO MATCH EXISTING COLOR AND FINISH.

I. VERIFY WITH OWNER RIGHTS TO SALVAGE FOR ALL ITEMS TO BE REMOVED. TURN OVER TO OWNER AS DIRECTED.

## CODED NOTES

1. FURNISH AND INSTALL NEW METAL STUD AND GYPSUM BOARD CHASE ENCLOSURE. ERECT ENCLOSURE AS TIGHT TO NEW PIPING AS IS PRACTICAL. PAINT GYPSUM BOARD AND ALL RELATED PAINTED AND PAINTABLE ITEMS. SEE DETAIL 1/A1.02.
2. MODIFY EXISTING RAISED PLATFORM TO ACCOMODATE NEW PIPING BELOW. REMOVE EXISTING CARPET AND RESILIENT TREADS AS NEEDED AND REINSTALL OR REPLACE TO ARCHITECT'S SATISFACTION AFTER COMPLETION OF WORK. TAKE SPECIAL CARE NOT TO DAMAGE WOOD PANELING AND RELATED TRIM.
3. SEE MECHANICAL DRAWINGS FOR NEW PIPING UNDER PLATFORM IN THIS LOCATION. MECHANICAL CONTRACTOR TO FURNISH NEW COVER WHERE PIPING IS EXPOSED.
4. REMOVAL AND REPLACEMENT OF EXISTING BASEBOARD ENCLOSURE BY MECHANICAL CONTRACTOR. REMOVE ALL WOOD TRIM ON TOP OF BASEBOARD AND INSTALL NEW TO MATCH AFTER COMPLETION OF WORK. PAINT TO MATCH BASEBOARD ENCLOSURE. TOUCH UP PAINT ON BASEBOARD WHERE DAMAGED DURING CONSTRUCTION.
5. REMOVE EXISTING BASE AS REQUIRED TO COMPLETE NEW WORK. REINSTALL AT NEW CHASE ENCLOSURE WALLS. FURNISH NEW BASE TO MATCH EXISTING MATERIAL AND PROFILE, AND FINISH TO MATCH EXISTING COLOR AND FINISH.
6. MODIFY AND REPAIR EXISTING CEILING TILE AND GRID OR OTHER EXISTING SURFACE AFTER COMPLETION OF WORK. MATCH EXISTING TILE AND GRID IF NEW PIECES ARE REQUIRED.
7. MODIFY AND REPAIR EXISTING CARPET OR OTHER FLOORING AT NEW WORK. REATTACH TO FLOOR SECURELY.
8. REMOVE EXISTING WOOD BASE AS REQUIRED THIS WALL TO CREATE FLUSH CONDITION FOR INSTALLATION OF NEW BASEBOARD ENCLOSURE BY MECHANICAL CONTRACTOR.
9. REMOVE EXISTING ENCLOSURE, TRIM, BASE, GRILLES, AND RELATED ITEMS AS REQUIRED TO COMPLETE NEW WORK. REINSTALL AFTER COMPLETION OF WORK. REPAIR AND/OR REPLACE ANY MATERIALS DAMAGED DURING CONSTRUCTION.
10. REPAIR DAMAGE INCURRED AT NEW PENETRATION IN EXISTING CHASE. PAINT TO MATCH EXISTING COLOR AND FINISH.
11. FURNISH AND INSTALL NEW METAL STUD AND GYPSUM BOARD CHASE ENCLOSURE. ERECT ENCLOSURE AS TIGHT TO NEW PIPING AS IS PRACTICAL. PAINT GYPSUM BOARD AND ALL RELATED PAINTED AND PAINTABLE ITEMS TO MATCH EXISTING SURFACES. REMOVE EXISTING DOOR CASING AND CUT TO FIT NEW CONDITION. SEE DETAIL 1/A1.02.
12. INSTALL NEW BLACK RESILIENT BASE AT NEW CHASE TO MATCH COLOR OF TILE BASE.
13. PAINT ALL EXPOSED SURFACES DAMAGED DURING CONSTRUCTION. PAINT ALL PIPES THAT ARE EXPOSED TO VIEW AFTER COMPLETION OF WORK. PAINT ALL NEW PIPE ENCLOSURES AND COVERS TO MATCH EXISTING WORK.
14. PAINT ALL EXPOSED SURFACES DAMAGED DURING CONSTRUCTION.
15. MODIFY EXISTING CABINETRY AS REQUIRED TO COMPLETE NEW WORK. REPLACE ANY PIECES DAMAGED DURING CONSTRUCTION.




1 / A1.02 TYPICAL CHASE WALL

SCALE 3/4"=1'-0"

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STATE OF OHIO MICHAEL B. DUKET 74852 LICENSED PROFESSIONAL ENGINEER 12/31/2015

BOARD OF STATE REGISTRATION FOR PROFESSIONAL ENGINEERS & SURVEYORS OHIO

# BOILER REPLACEMENT and HEATING SYSTEM UPGRADES LUCAS COUNTY COURTHOUSE

700 ADAMS STREET
TOLEDO, OHIO 43604

| REV. | DATE | DESCRIPTION |
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| | 04-17-15 | FOR BIDS |

## Notes and Details

| Drawn By: ED | Checked By: JV |
|---|---|
| Date: 04-17-15 | Job No: 15012 |

SHEET NO.

A1.02

# WATER-TO-WATER HEAT EXCHANGER SCHEDULE

| TAG | LOCATION DWG | LOCATION AREA | TYPE | BOILER WATER SIDE GPM | EWT | LWT | WPD | DENSITY | VISCOSITY | CONNECTIONS: 1" NPT INLET | OUTLET | DOMESTIC WATER SIDE GPM | EWT | LWT | WPD | DENSITY | VISCOSITY | CONNECTIONS: 1" NPT INLET | OUTLET | CONSTRUCTION QTY. PLATES | PLATES | BRAZING | HEAT REJECT. | LMTD | DESIGN PRESSURE | OPERATING WEIGHT | MAKE | SERIES | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HX-1 | M2.1/M3.2 | BOILER/CHILLER MECH. ROOM | BRAZED PLATE | 6.82 | 180.0°F | 150.0°F | 3.0' | 60.9 Lb./CF | 0.40 CP | F1 (BOILER) | F4 (BOILER) | 2.23 | 50.0°F | 140.0°F | 1.0' | 61.9 Lb./CF | 0.83 CP | F3 (DOMESTIC) | F2 (DOMESTIC) | EIGHTEEN | 316L S.S. | COPPER | 100.0 MBH | 65.48°F | 435 PSI | 30 Lbs. | BELL & GOSSETT | BPX | BPDW410-18 | REFER TO DWG's M2.1 & M3.2 FOR ADDITIONAL REQUIREMENTS |

# GAS-FIRED HOT WATER BOILER SCHEDULE

| TAG | LOCATION DWG | LOCATION AREA | TYPE | CONFIGURATION | MBH IN | MBH OUT | EWT | LWT | GPM | P.G. | OPER. PRESS. | GAS PRESS. | CONTROL TYPE | BURNER | VOLTAGE BLOWER | VOLTAGE CONTROLS | OPERATING WEIGHT | MAKE | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HWB-1 | M3.1 | BOILER/CHILLER MECH. ROOM | FIREBOX (WET-BACK FIRETUBE) | THREE PASS | 2,510.0 | 2,009 | 150°F | 180°F | 135 | N.A. | 60 PSI | 7"wc | GE-GAP | MODULATING | 208-3-60 | 120-1-60 | 10,000 Lbs. | HURST | S100-G-60-60W | * |
| HWB-2 | M3.1 | BOILER/CHILLER MECH. ROOM | FIREBOX (WET-BACK FIRETUBE) | THREE PASS | 2,510.0 | 2,009 | 150°F | 180°F | 135 | N.A. | 60 PSI | 7"wc | GE-GAP | MODULATING | 208-3-60 | 120-1-60 | 10,000 Lbs. | HURST | S100-G-60-60W | * |

* BUILDING GAS PRESSURE IS RATED @ 1.0 PSI: BOILER MANUFACTURER TO PROVIDE REGULATOR. CONTRACTOR TO INSTALL FULL-SIZE VENT AS INDICATED PER DRAWING NOTE No. 4, ON DWG. M3.1.

# PUMP SCHEDULE

| TAG | LOCATION DWG | LOCATION AREA | SERVICE | TYPE | GPM | HEAD (FT.) | EFF. | IMPELLER | SUCTION SIZE | DISCHARGE SIZE | P.G. | MOTOR BHP | HP | RPM | VOLTAGE | FLA | OPERATING WEIGHT | MAKE | SERIES | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BCP-1 | M2.0/M3.1 | BOILER/CHILLER MECH. ROOM | HEATING WATER BOILER 'HWB-1' | IN-LINE CENTRIFUGAL | 135 | 35 | 64.8% | 7" | 2" | 2" | N.A. | 2.34 | 3 | 1750 | 208-3-60 | N.A. | 400 Lbs. | BELL & GOSSETT | 60 (STOCK) | 620 | * |
| BCP-2 | M2.0/M3.1 | BOILER/CHILLER MECH. ROOM | HEATING WATER BOILER 'HWB-2' | IN-LINE CENTRIFUGAL | 135 | 35 | 64.8% | 7" | 2" | 2" | N.A. | 2.34 | 3 | 1750 | 208-3-60 | N.A. | 400 Lbs. | BELL & GOSSETT | 60 (STOCK) | 620 | * |
| P-13 | M2.1/M3.2 | BOILER/CHILLER MECH. ROOM | HEAT EXCHANGER 'HX-1' CIRCULATOR | IN-LINE BOOSTER | 2.23 | 25 | N.A. | N.A. | 1" | 1" | N.A. | N.A. | 1/6 | 3300 | 120-1-60 | 2.1 | 15 Lbs. | BELL & GOSSETT | PL | PL-45 | |
| P-3 | M2.1/M3.2 | BOILER/CHILLER MECH. ROOM | HEATING RADIATION SYSTEM (NORTH) | END-SUCTION CENTRIFUGAL | 45 | 54 | 59.0% | 7" | 1 1/2" | 1 1/4" | N.A. | 1.05 | 2 | 1750 | 208-3-60 | N.A. | 500 Lbs. | BELL & GOSSETT | e-1510 | 1.25 AD | ** |
| P-4 | M2.1/M3.2 | BOILER/CHILLER MECH. ROOM | HEATING RADIATION SYSTEM (SOUTH) | END-SUCTION CENTRIFUGAL | 45 | 54 | 59.0% | 7" | 1 1/2" | 1 1/4" | N.A. | 1.05 | 2 | 1750 | 208-3-60 | N.A. | 500 Lbs. | BELL & GOSSETT | e-1510 | 1.25 AD | ** |
| P-1 | M2.1/M3.2 | BOILER/CHILLER MECH. ROOM | PRIMARY HEATING WATER SYSTEM | END-SUCTION CENTRIFUGAL | 135 | 90 | 62.7% | 9.375" | 2" | 1 1/2" | N.A. | 4.96 | 7.5 | 1750 | 208-3-60 | N.A. | 600 Lbs. | BELL & GOSSETT | e-1510 | 1.5 BC | *** |
| P-2 | M2.1/M3.2 | BOILER/CHILLER MECH. ROOM | PRIMARY HEATING WATER SYSTEM | END-SUCTION CENTRIFUGAL | 135 | 90 | 62.7% | 9.375" | 2" | 1 1/2" | N.A. | 4.96 | 7.5 | 1750 | 208-3-60 | N.A. | 600 Lbs. | BELL & GOSSETT | e-1510 | 1.5 BC | *** |

* PUMP MOUNTED TO CONTRACTOR FABRICATED SUPPORT FRAME MOUNTED TO HOUSEKEEPING PAD. PROVIDE & INSTALL BELL & GOSSETT SUCTION DIFFUSER MODEL No. 'DB-3': 3" SYSTEM-SIDE CONNECTION, 2" PUMP-SIDE CONNECTION; W/ 4" x 3" CONCENTRIC REDUCER.
** PUMP-BASE MOUNTED TO EXISTING HOUSEKEEPING PAD. PROVIDE & INSTALL BELL & GOSSETT SUCTION DIFFUSER MODEL No. 'BA-3': 2" SYSTEM-SIDE CONNECTION, 1 1/2" PUMP-SIDE CONNECTION.
*** PUMP MOUNTED TO CONTRACTOR FABRICATED SUPPORT FRAME MOUNTED TO HOUSEKEEPING PAD. PROVIDE & INSTALL BELL & GOSSETT SUCTION DIFFUSER MODEL No. 'DB-3': 3" SYSTEM-SIDE CONNECTION, 2" PUMP-SIDE CONNECTION; W/ 4" x 3" CONCENTRIC REDUCER.

# HEATING WATER UNIT HEATER SCHEDULE

| TAG | LOCATION DWG | LOCATION AREA | TYPE | MOUNT'G HEIGHT | HEATING SECTION EWT | LWT | MBH | GPM | WPD | P.G. | FAN / MOTOR CFM | HP | RPM | ELECTRICAL VOLTAGE | FLA | OPERATING WEIGHT | MAKE | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WUH-1 | M3.1 | BOILER/CHILLER MECH. ROOM | HORIZONTAL THROW | 8'-0" | 180°F | 160°F | 143.0 | 14.9 | 1.4' | N.A. | 2,900 | 1/3 | 1075 | 120-1-60 | 5.4 | 125 Lbs. | MODINE | HC-193 | PROVIDE UNIT MOUNTED THERMOSTAT, SPRING VIBRATION ISOLATORS, * |

* MOUNT UNIT HEATER AS HIGH AS POSSIBLE ABOVE FINISHED FLOOR AS FIELD DETERMINED BY CONTRACTOR.

# HEATING WATER RADIANT CEILING PANEL SCHEDULE

| TAG | LOCATION DWG | LOCATION AREA | LINEAR PANEL(s) QTY | LENGTH | WIDTH | TUBES | MOUNTING | EWT | LWT | TOTAL BTUH | GPM | CONTROL VALVE | MAKE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCP-1 | M4.1 | 3rd FLOOR OPEN OFFICE | TWO | 24" | 24" | 1/2" COPPER | LAY-IN (T-BAR) | 180°F | 160°F | 1,600 | 0.16 | * | AIRTEX | **, CONTROL VALVE SERVES RP-1, RP-1a, & RP-6, 800 BTUH/PANEL |
| RCP-1a | M4.1 | 3rd FLOOR OPEN OFFICE | ONE | 48" | 24" | 1/2" COPPER | LAY-IN (T-BAR) | 180°F | 160°F | 1,600 | 0.16 | * | AIRTEX | |
| RCP-2 | M4.1 | 3rd FLOOR FILE ROOM | ONE | 48" | 12" | 1/2" COPPER | LAY-IN (T-BAR) | 180°F | 160°F | 1,080 | 0.10 | * | AIRTEX | **, CONTROL VALVE SERVES RP-2 & RP-3 |
| RCP-3 | M4.1 | 3rd FLOOR FILE ROOM | ONE | 72" | 12" | 1/2" COPPER | LAY-IN (T-BAR) | 180°F | 160°F | 1,620 | 0.16 | * | AIRTEX | |
| RCP-4 | M4.1 | 3rd FLOOR OPEN OFFICE | ONE | 72" | 12" | 1/2" COPPER | LAY-IN (T-BAR) | 180°F | 160°F | 1,620 | 0.16 | * | AIRTEX | ** |
| RCP-5 | M4.1 | 3rd FLOOR OFFICE | ONE | 96" | 12" | 1/2" COPPER | LAY-IN (T-BAR) | 180°F | 160°F | 2,160 | 0.21 | * | AIRTEX | ** |
| RCP-6 | M4.1 | 3rd FLOOR OPEN OFFICE | ONE | 192" | 12" | 1/2" COPPER | LAY-IN (T-BAR) | 180°F | 160°F | 4,320 | 0.43 | * | AIRTEX | |

* PROVIDE THERMOSTATIC RADIATOR VALVE WITH CEILING MOUNTED REMOTE DIAL AND SENSOR.
** 12" WIDE (2-PASS) PANEL DESIGN CRITERIA = 270 BTUH PER LINEAL FOOT @ 70°F AIR TEMPERATURE, WITH 1" (3/4 LB) DENSITY FIBERGLASS INSULATION MOUNTED TO TOP OF PANEL. CONTRACTOR TO INSTALL PANEL AS PER MANUFACTURER INSTALLATION REQUIREMENTS.

# HEATING WATER REPLACEMENT FINNED-TUBE RADIATION/CONVECTOR ELEMENT SCHEDULE

| TAG | LOCATION DWG | LOCATION AREA | SERVICE | REPLACEMENT ELEMENT QTY(s) | COIL DEPTH | TUBE | FIN SIZE | FINS/FT. | LENGTH | EAT | EWT | LWT | BTUH/LF | TOTAL BTUH | GPM | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RFT-1 | M4.1 | 3rd FLOOR OPEN OFFICE | EXISTING RADIATION ENCLOSURE | ONE | N.A. | 3/4" COPPER | 4.25" x 4.25" | 40 | 7'-0" | 65°F | 180°F | 160°F | 1,250 | 8,750 | 0.8 | *, ** |
| RFT-2 | M5.1 | 4th FLOOR JUDGES CHAMBERS (CR. No. 8) | EXISTING CONVECTOR | ONE | 5" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 1'-6" | 65°F | 180°F | 160°F | 2,400 | 3,600 | 0.3 | *, ** |
| RFT-3 | M5.1 | 4th FLOOR JUDGES CHAMBERS (CR. No. 8) | EXISTING CONVECTOR | ONE | 5" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 3'-0" | 65°F | 180°F | 160°F | 2,565 | 7695 | 0.7 | *, ** |
| RFT-4 | M5.1 | 4th FLOOR JURY ROOM (CR. No. 8) | EXISTING CONVECTOR | ONE | 6" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 4'-0" | 65°F | 180°F | 160°F | 2,670 | 10,680 | 1.0 | *, ** |
| RFT-5 | M5.1 | 4th FLOOR JUDGES CHAMBERS (CR. No. 11) | EXISTING CONVECTOR | ONE | 6" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 4'-0" | 65°F | 180°F | 160°F | 2,670 | 10,680 | 1.0 | *, ** |
| RFT-6 | M5.1 | 4th FLOOR JURY ROOM (CR. No. 11) | EXISTING CONVECTORS | ONE | 6" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 2'-0" | 65°F | 180°F | 160°F | 2,377 | 4,754 | 0.4 | *, ** |
| RFT-6a | M5.1 | 4th FLOOR JURY ROOM (CR. No. 11) | EXISTING CONVECTORS | ONE | 5" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 3'-6" | 65°F | 180°F | 160°F | 2,565 | 8,977 | 0.9 | *, ** |
| RFT-7 | M5.1 | 4th FLOOR JUDGES LIBRARY (CR. No. 11) | EXISTING CONVECTORS | TWO | 6" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 3'-0" (EA.) | 65°F | 180°F | 160°F | 2,565 | 15,390 | 1.5 | *, ** |
| RFT-8 | M5.1 | 4th FLOOR JURY ROOM (CR. No. 10) | EXISTING CONVECTOR ENCLOSURE | ONE | 6" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 4'-0" | 65°F | 180°F | 160°F | 2,800 | 11,200 | 1.1 | *, ** |
| RFT-9 | M5.1 | 4th FLOOR JUDGES CHAMBERS (CR. No. 10) | EXISTING CONVECTOR ENCLOSURE | TWO | 6" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 4'-0" (EA.) | 65°F | 180°F | 160°F | 2,670 | 21,360 | 2.1 | *, ** |
| RFT-10 | M5.1 | 4th FLOOR JURY ROOM TOILET (CR. No. 10) | EXISTING CONVECTOR ENCLOSURE | ONE | 6" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 2'-0" | 65°F | 180°F | 160°F | 2,377 | 4,754 | 0.4 | *, ** |
| RFT-11 | M5.1 | 4th FLOOR JUDGES TOILET (CR. No. 10) | EXISTING CONVECTOR ENCLOSURE | ONE | 6" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 2'-0" | 65°F | 180°F | 160°F | 2,377 | 4,754 | 0.4 | *, ** |
| RFT-12 | M5.1 | 4th FLOOR COURTROOM No. 8 | EXISTING RADIATION ENCLOSURE | FOUR | N.A. | 3/4" COPPER | 4.25" x 4.25" | 40 | 4'-0" (EA.) | 65°F | 180°F | 160°F | 1,250 | 20,000 | 2.0 | *, ** |
| RFT-13 | M5.1 | 4th FLOOR COURTROOM No. 11 | EXISTING RADIATION ENCLOSURE | FOUR | N.A. | 3/4" COPPER | 4.25" x 4.25" | 40 | 4'-0" (EA.) | 65°F | 180°F | 160°F | 1,250 | 20,000 | 2.0 | *, ** |
| RFT-14 | M5.1 | 4th FLOOR STAFF ATTORNEYS | EXISTING RADIATION ENCLOSURE | ONE | N.A. | 3/4" COPPER | 4.25" x 4.25" | 40 | 6'-0" | 65°F | 180°F | 160°F | 1,250 | 7,500 | 0.7 | *, ** |
| RFT-15 | M5.1 | 4th FLOOR COURTROOM No. 10 | EXISTING CONVECTOR ENCLOSURES | THREE | 6" | 1/2" COPPER | STANDARD ELEMENT | N.A. | 3'-0" (EA.) | 65°F | 180°F | 160°F | 2,565 | 23,085 | 2.3 | *, ** |
| RFT-16 | M5.1 | 4th FLOOR COURTROOM No. 9 SEATING | EXISTING RADIATION ENCLOSURE | ONE | N.A. | 3/4" COPPER | 4.25" x 4.25" | 40 | 8'-0" | 65°F | 180°F | 160°F | 1,250 | 10,000 | 1.0 | *, ** |
| RFT-17 | M5.1 | 4th FLOOR COURTROOM No. 9 | EXISTING RADIATION ENCLOSURE | TWO | N.A. | 3/4" COPPER | 4.25" x 4.25" | 40 | 6'-0" (EA.) | 65°F | 180°F | 160°F | 1,250 | 15,000 | 1.5 | *, ** |

* PROVIDE THERMOSTATIC RADIATOR VALVE WITH ENCLOSURE MOUNTED REMOTE DIAL & SENSOR.
** CONTRACTOR TO FIELD VERIFY (MEASURE) ALL EXISTING ELEMENT LENGTHS FOR EACH BASEBOARD RADIATION, AND CONVECTOR (REPLACING EXISTING STEAM ELEMENTS), PRIOR TO PURCHASE OF NEW REPLACEMENT ELEMENTS.

## LEGEND AND SYMBOLS

| | | | |
|---|---|---|---|
| A.F.F. | ABOVE FINISHED FLOOR | E.C. | ELECTRICAL CONTRACTOR |
| A.H.A.P. | AS HIGH AS POSSIBLE | M.C. | MECHANICAL CONTRACTOR |
| A.R.D. | ABOVE ROOF DECK | T.C.C. | TEMPERATURE CONTROLS CONTRACTOR |
| B.O.P. | BOTTOM OF PIPE | T.A.B. | TEST & BALANCING CONTRACTOR |
| D.D.C. | DIRECT DIGITAL CONTROL | | |
| EX. | EXISTING (PIPING, or DUCTWORK) | | |
| F.D. | FLOOR DRAIN | | |
| N.A. | NOT APPLICABLE | | |
| N.C. | NORMALLY CLOSED | | |
| N.O. | NORMALLY OPEN | | |
| V.F.D. | VARIABLE FREQUENCY DRIVE | | |

MANUAL FLUE DAMPER W/ COMPANION FLANGES (MFD)

DRAFT DAMPER W/ BAROMETRIC OPERATOR (B)

TS TEMPERATURE SENSOR W/ SENSING BULB

CS CURRENT SENSOR

FS FLOW SWITCH (BY BOILER MANUFACTURER)

| | |
|---|---|
| —DCW— | DOMESTIC COLD WATER |
| —DHW— | DOMESTIC HOT WATER |
| —DHWR— | DOMESTIC HOT WATER RETURN |
| —HWS— | HEATING WATER SUPPLY |
| —HWR— | HEATING WATER RETURN |
| —NRS— | NORTH RADIATION SUPPLY |
| —NRR— | NORTH RADIATION RETURN |
| —SRS— | SOUTH RADIATION SUPPLY |
| —SRR— | SOUTH RADIATION RETURN |
| —NG— | NATURAL GAS PIPING |
| —V— | VENT PIPING |

| | |
|---|---|
| GATE VALVE (THREADED OR SOLDERED) & GATE VALVE (FLANGED) | PRESSURE GAUGE W/ BALL VALVE & ADJUSTABLE ANGLE THERMOMETER |
| BALL VALVE (B.V.) W/ HANDLE OPERATOR & LUG-TYPE (FLANGED) BUTTERFLY VALVE (B.F.V.) W/ HANDLE OPERATOR | ECCENTRIC (E.C.R.) REDUCER (THREADED) & CONCENTRIC (C.C.R.) REDUCER (THREADED) |
| CHECK VALVE (THREADED) & (FLANGED) | ECCENTRIC (E.C.R.) REDUCER (FLANGED) & CONCENTRIC (C.C.R.) REDUCER (FLANGED) |
| Y-STRAINER (THREADED) or (FLANGED) W/ BALL DRAIN VALVE & HOSE ADAPTER (ON END OF STRAINER FLANGE) | FLOW ARROWS; INDICATING DIRECTION (WATER) or (AIR) |
| THERMOSTATIC RADIATOR VALVE (ELEVATION or PLAN VIEWS) W/ REMOTE DIAL & SENSOR | UNION (THREADED) & COMPANION FLANGES (WELDED) |
| 3-WAY MIXING VALVE (D.D.C.); (ELEVATION or PLAN VIEWS) | PRESSURE (SAFETY) RELIEF VALVE (P.R.V.) W/ FULL-SIZE DRAIN & AUTOMATIC FLOW VALVE (THREADED or SOLDERED) |
| | FLEXIBLE (BRAIDED-METAL) PIPE CONNECTOR (FLANGED), & FLEXIBLE NEOPRENE/NYLON (NON-METAL) PIPE CONNECTOR (FLANGED) |

## GENERAL NOTES:

1. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS UNDER WHICH WORK MUST BE PERFORMED, AND CHECK ALL ELEVATIONS. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT.
2. CONTRACTOR IS RESPONSIBLE FOR FULLY COORDINATING ALL WORK WITH OTHER TRADES TO ENSURE PROPER CLEARANCES FOR INSTALLATION AND MAINTENANCE. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS. EXACT LOCATION OF EQUIPMENT, MATERIAL AND DEVICES, ETC., MUST BE WORKED OUT IN THE FIELD.
3. CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO FABRICATING AND/OR INSTALLING ANY OF HIS WORK.
4. TEMPERATURE CONTROL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL WIRING AND RACEWAYS REQUIRED FOR THIS PROJECT INCLUDING 120 VOLT INTERLOCKS, AND 120 VOLT POWER SUPPLY TO PANELS UNLESS INDICATED BY OTHERS.
5. ALL WALL MOUNTED DEVICES (IE. THERMOSTATS, SENSORS, ETC.) TO BE MOUNTED PER 'ADA' REQUIREMENTS. COORDINATE FINAL LOCATION AND HEIGHTS OF ALL DEVICES WITH OWNER.
6. INSTALL ALL PIPING AS HIGH AS POSSIBLE (A.H.A.P.) TO 'OVERHEAD' FLOOR STRUCTURE.
7. CONTRACTOR SHALL MAKE EQUIPMENT SELECTIONS AND PROVIDE INSTALLATIONS WHICH MEET OR EXCEED THE ENERGY PERFORMANCE, HEATING/COOLING CAPACITIES, AND NOISE LEVELS NOTED ON THE FLOOR PLANS.
8. REFER TO H.V.A.C. SEQUENCES OF OPERATIONS (DRAWINGS AND/OR SPECIFICATIONS). PROVIDE ALL EQUIPMENT, MATERIALS, ETC. AS REQUIRED TO ACHIEVE THOSE SEQUENCES.
9. INSTALL ALL CABLING AND RACEWAYS PER ELECTRICAL SPECIFICATION SECTIONS.
10. THE ELECTRICAL CONTRACTOR PROVIDES AND WIRES THE STARTER FOR ALL MOTORS (WHERE STARTERS ARE REQUIRED PER ELECTRICAL DRAWINGS). THE T.C.C. PROVIDES THE AUTOMATIC CONTROL WIRING, TEMPERATURE SAFETIES, AND INTERLOCKS REQUIRED BY THE SPECIFICATIONS.

CONTRACTOR BE ADVISED:

THESE NOTES ARE GENERAL IN NATURE. SPECIFIC MEANS, METHODS AND MATERIALS ARE DETAILED THROUGHOUT THE CONSTRUCTION DOCUMENTS AND SPECIFICATIONS. THE CONTRACTOR IS DIRECTED TO THOROUGHLY REVIEW THE FULL SPECIFICATIONS AND CONSTRUCTION DOCUMENTS. THE CONTRACT SPECIFICATIONS SHALL GOVERN IN CASE OF ANY & ALL CONFLICTS.

## SPECIAL NOTES TO CONTRACTOR:

1) CONTRACTOR MUST HAVE THE REPLACEMENT HEATING SYSTEM COMPLETED AND IN FULL OPERATION AS INDICATED IN THE SPECIFICATIONS.

2) REPLACEMENT OF THE DOMESTIC WATER HEATER WITH NEW HEAT EXCHANGER, PUMP AND PIPING MODIFICATIONS: OUTAGE OF DOMESTIC WATER SYSTEM MUST BE MINIMIZED TO ONE OR TWO DAYS DURATION.

3) CONTRACTOR SHALL TAKE PRE-CONSTRUCTION PHOTOGRAPHS: BEFORE START OF ANY DEMOLITIONS. TAKE DIGITAL PHOTOGRAPHS OF PROJECT SITE, INCLUDING FINISHED SPACES ON THIRD AND FOURTH FLOORS, AS WELL AS THE BOILER/CHILLER ROOM. INCLUDE PHOTOGRAPHS OF EXISTING ITEMS THAT SHALL REMAIN DURING THE DEMOLITION AND CONSTRUCTION, FROM DIFFERENT VANTAGE POINTS, AS DIRECTED BY THE PROJECT MANAGER. SUBMIT ALL PHOTOGRAPHS TO THE PROJECT MANAGER AND MDA ENGINEERING, INC., PRIOR TO THE START OF DEMOLITIONS.

4) CONTRACTOR SHALL TAKE FINAL COMPLETION CONSTRUCTION PHOTOGRAPHS: TAKE DIGITAL PHOTOGRAPHS AFTER DATE OF SUBSTANTIAL COMPLETION FOR SUBMISSION AS PROJECT RECORD DOCUMENTS. INCLUDE ALL AREAS WITHIN THE PROJECT WORK SCOPE. PROVIDE COPIES OF ALL DIGITAL PHOTOGRAPHS TO THE PROJECT MANAGER AND MDA ENGINEERING, INC..


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STATE OF OHIO KEVIN P. LAFFERTY E-54634 REGISTERED PROFESSIONAL ENGINEER

# BOILER REPLACEMENT and HEATING SYSTEM UPGRADES
# LUCAS COUNTY COURTHOUSE

700 ADAMS STREET
TOLEDO, OHIO 43604

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## Mechanical Schedules, Gen. Notes, Legend & Symbols

| | |
|---|---|
| Drawn By: JJR | Checked By: KPL |
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# M1.0

## CONTROL POINT LIST

| TAG | DESCRIPTION | ANALOG INPUT | ANALOG OUTPUT | DIGITAL INPUT | DUGITAL OUTPUT | REMARKS |
|---|---|---|---|---|---|---|
| HWB-1 | HEATING WATER BOILER | | BURNER MODULATION | STATUS | ENABLE/DISABLE | ALARM ON FAILURE |
| HWB-1 | HEATING WATER BOILER | | | BOILER ALARM | | ALARM ON FAILURE |
| HWB-1 | HEATING WATER BOILER | | | FLOW SWITCH | | |
| HWB-2 | HEATING WATER BOILER | | BURNER MODULATION | STATUS | ENABLE/DISABLE | ALARM ON FAILURE |
| HWB-2 | HEATING WATER BOILER | | | BOILER ALARM | | ALARM ON FAILURE |
| HWB-2 | HEATING WATER BOILER | | | FLOW SWITCH | | |
| BCP-1 | BOILER HWB-1 CIRCULATING PUMP | | | CURRENT SWITCH | ENABLE/DISABLE | ENABLE BOILER FIRING, DISPLAY STATUS |
| BCP-2 | BOILER HWB-2 CIRCULATING PUMP | | | CURRENT SWITCH | ENABLE/DISABLE | ENABLE BOILER FIRING, DISPLAY STATUS |
| MV-1 | MIXING VALVE, HWB-1 HEATING WATER RETURN | | POSITION | | | MODULATE TO MAINTAIN BOILER RETURN TEMP. ABOVE 140°F |
| MV-2 | MIXING VALVE, HWB-2 HEATING WATER RETURN | | POSITION | | | MODULATE TO MAINTAIN BOILER RETURN TEMP. ABOVE 140°F |
| T-BR1 | TEMPERATURE, HWB-1 HEATING WATER RETURN | X | | | | BOILER RETURN WATER TEMP., ALARM BELOW 140°F |
| T-BR2 | TEMPERATURE, HWB-2 HEATING WATER RETURN | X | | | | BOILER RETURN WATER TEMP., ALARM BELOW 140°F |
| T-HWS | TEMPERATURE, HEATING WATER SUPPLY | X | | | | |
| T-HWR | TEMPERATURE, HEATING WATER RETURN | X | | | | |
| P-1 | PRIMARY HEATING WATER PUMP | | | CURRENT SWITCH | ENABLE/DISABLE | ALARM ON FAILURE |
| P-2 | PRIMARY HEATING WATER PUMP | | | CURRENT SWITCH | ENABLE/DISABLE | ALARM ON FAILURE |
| P-3 | HEATING WATER RADIATION PUMP (NORTH ZONE) | | | CURRENT SWITCH | ENABLE/DISABLE | ALARM ON FAILURE |
| P-4 | HEATING WATER RADIATION PUMP (SOUTH ZONE) | | | CURRENT SWITCH | ENABLE/DISABLE | ALARM ON FAILURE |
| T-SRS | TEMPERATURE, SOUTH ZONE RADIATION LOOP | X | | | | |
| T-NRS | TEMPERATURE, NORTH ZONE RADIATION LOOP | X | | | | |
| MV-3 | MIXING VALVE, NORTH ZONE RADIATION LOOP | | POSITION | | | MODULATE TO MAINTAIN RADIANT LOOP TEMP. |
| MV-4 | MIXING VALVE, SOUTH ZONE RADIATION LOOP | | POSITION | | | MODULATE TO MAINTAIN RADIANT LOOP TEMP. |
| P-13 | DOMESTIC HOT WATER (DHW) TO HX-1 PUMP | | | CURRENT SWITCH | ENABLE/DISABLE | RUN WHEN HWB-1 OR HWB-2 ARE ON, ALARM ON FAILURE |
| CV-1 | CONTROL VALVE, DWH-1/HX-1 | | POSITION | | | MODULATE TO MAINTAIN DWH-1 @ 140°F, FAIL CLOSED |
| T-DHW | TEMPERATURE, DOMESTIC HOT WATER | X | | | | ALARM IF BELOW 100°F (ADJUSTABLE) |
| | | | | | | |
| | | | | | | |

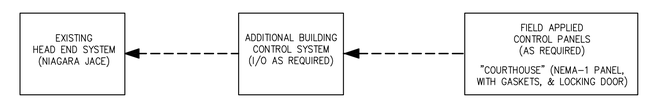
XXX-XXX-XXX

SENSOR TYPE (SD-SMOKE DETECTOR, AP-AIR PRESSURE, AT-AIR TEMPERATURE, ETC.)

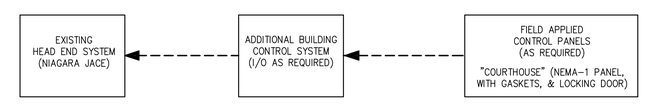
SYSTEM NUMBER (AHU-1, AHU-2, ETC.)

SENSOR NUMBER

CONTROL SYSTEM COMPONENT NUMBER SCHEME




HEATING WATER PLANT – CONTROL SYSTEM ARCHITECTURE




DOMESTIC HOT WATER PLANT – CONTROL SYSTEM ARCHITECTURE

## CONTROL NOTES:

1. ALL CONTROLS TO UTILIZE TRIDIUM PLATFORM WITH UTILIZING NON-PROPRIETARY STANDARD OBJECTS.
2. CONTROL DIAGRAMS ARE GENERAL IN NATURE. COORDINATE REQUIREMENTS WITH WRITTEN CONTROL SEQUENCE, CONTROL SYSTEM AND EQUIPMENT REQUIREMENTS. WHETHER OR NOT EXPLICITLY SHOWN ON THE DRAWINGS, ALL DEVICES AND ITEMS REQUIRED FOR THE EXECUTION OF THE SEQUENCES ARE THE RESPONSIBILITY OF THE TEMPERATURE CONTROL CONTRACTOR.
3. REFER TO CONTROL AND SEQUENCE OF OPERATIONS SPECIFICATION SECTIONS FOR ADDITIONAL REQUIREMENTS.
4. INTERFACE TO OWNER'S EXISTING BUILDING HEAD END SYSTEM. UPDATE ALL GRAPHICS AND ADD NEW GRAPHICS TO INCORPORATE ALL NEW EQUIPMENT AND CONTROL POINTS. ALL ALARMS AND TRENDING SHALL REPORT TO THE MAIN SERVER IN THE OWNERS DATA CENTER.
5. ALL CONDUIT AND CABLE TO RUN PARALLEL TO BUILDING STEEL.
6. PROVIDE SUFFICIENT SLACK AND FLEXIBLE CONNECTIONS TO ALLOW FOR VIBRATION OF EQUIPMENT.
7. ALL CONTROL AND NETWORK CABLE INSTALLED ABOVE ACCESSIBLE CEILINGS MAY BE INSTALLED WITH J-HOOKS OR IN OPEN CABLE TRAY.
8. ALL CONTROL AND NETWORK CABLE INSTALLED IN EXPOSED LOCATION OR INACCESSIBLE LOCATION TO BE INSTALLED IN CONDUIT. PROVIDE PULL LINE IN ALL CONDUITS FOR FUTURE CABLE INSTALLATION.
9. ALL WIRE MUST BE PLENUM RATED, EVEN WHEN INSTALLING IN CONDUIT.
10. ALL WIRING SHALL BE LABELED AT EACH END. INDICATE WHAT LOCATION/DEVICE WIRE IS COMING FROM AND WHERE IT IS GOING.
11. WIRING SHALL BE CONTINUOUS, WITHOUT SPLICES.
12. DO NOT RUN LOW VOLTAGE WIRE IN THE SAME CONDUIT OR BUNDLES AS LINE VOLTAGE OR POWER WIRING.
13. A TRUE EARTH GROUND MUST BE PROVIDED AT CONTROLLERS AND CONTROL PANELS.
14. NETWORK CONNECTIONS TO BE LAID IN A DAISY CHAIN FASHION. STAR NETWORKS ARE NOT ACCEPTABLE.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REGISTERED PROFESSIONAL ENGINEER

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# LUCAS COUNTY COURTHOUSE

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TOLEDO, OHIO 43604

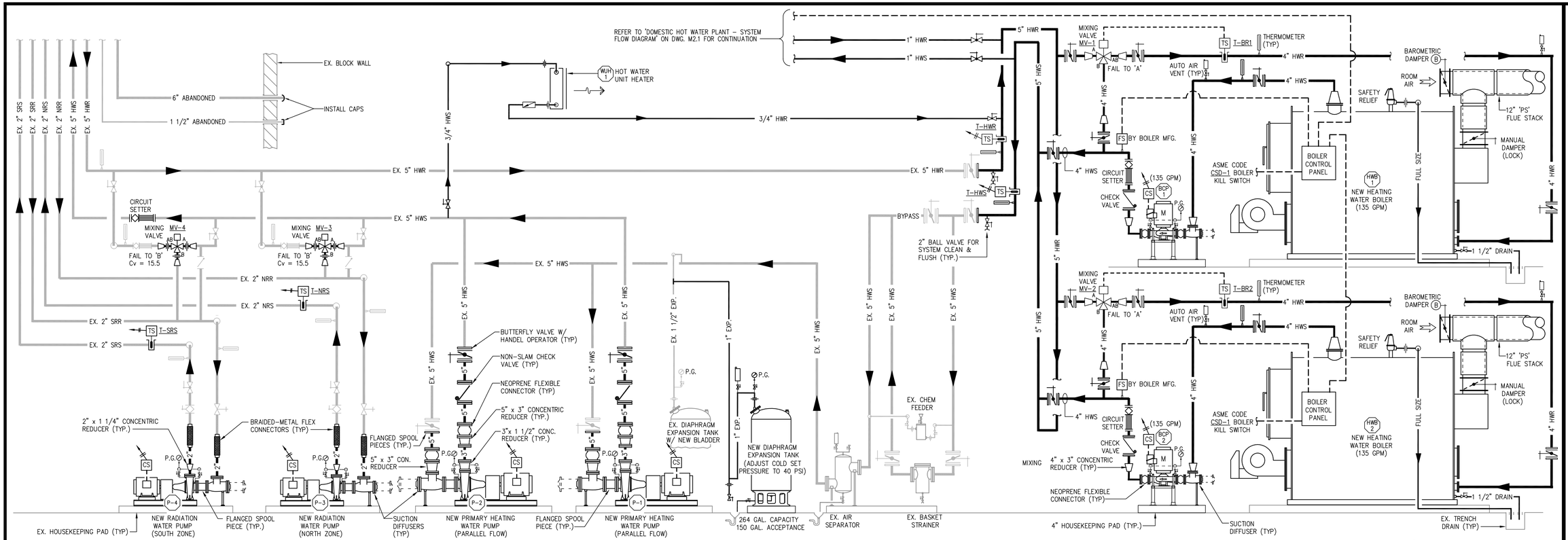
| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## Controls Point List, Control System Arch. & Control Notes

| | |
|---|---|
| Drawn By: JJR | Checked By: KPL |
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

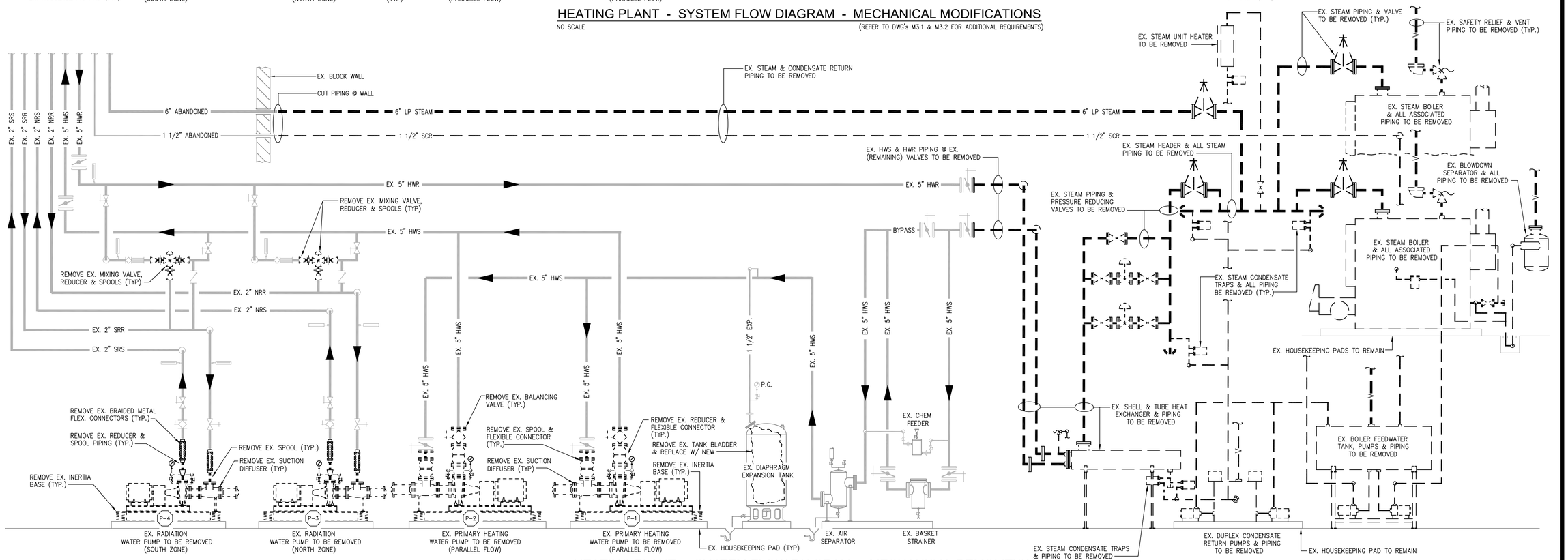
# M1.1




## HEATING PLANT - SYSTEM FLOW DIAGRAM - MECHANICAL MODIFICATIONS

NO SCALE

(REFER TO DWG's M3.1 & M3.2 FOR ADDITIONAL REQUIREMENTS)




## HEATING PLANT - SYSTEM FLOW DIAGRAM - MECHANICAL DEMOLITIONS

NO SCALE

(REFER TO DWG. M3.0 FOR ADDITIONAL REQUIREMENTS)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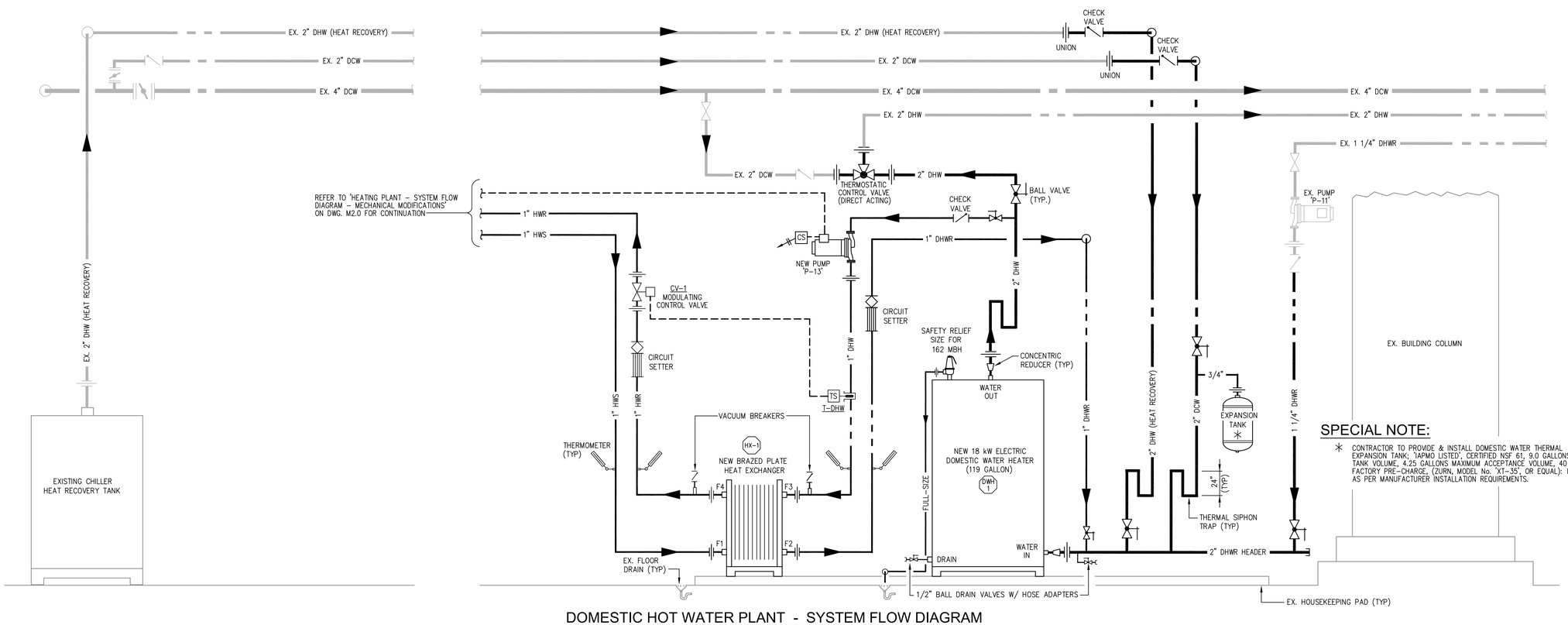
| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## Heating Plant - System Flow Diagram - Demo. & Mech. Modif's

| Drawn By: | Checked By: |
|---|---|
| JJR | KPL |
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# M2.0




## DOMESTIC HOT WATER PLANT - SYSTEM FLOW DIAGRAM

NO SCALE

(REFER TO DWG. M3.2 FOR ADDITIONAL REQUIREMENTS)

### SPECIAL NOTE:

* CONTRACTOR TO PROVIDE & INSTALL DOMESTIC WATER THERMAL EXPANSION TANK; 'IAPMO LISTED', CERTIFIED NSF 61; 9.0 GALLONS TANK VOLUME, 4.25 GALLONS MAXIMUM ACCEPTANCE VOLUME, 40 PSI FACTORY PRE-CHARGE, (ZURN, MODEL No. 'XT-35', OR EQUAL); INSTALL AS PER MANUFACTURER INSTALLATION REQUIREMENTS.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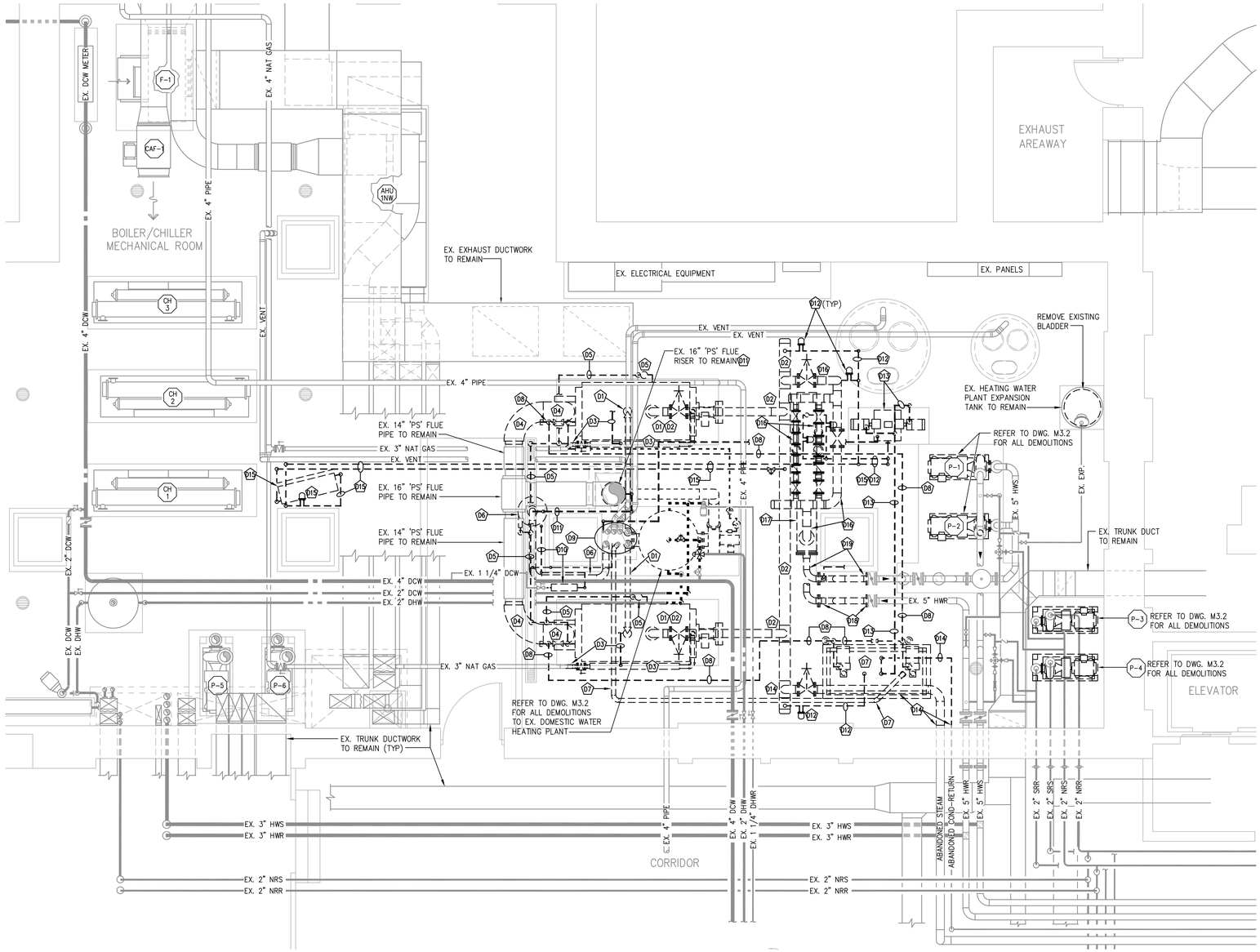
| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## Domestic Hot Water Plant - System Flow Diagram

| Drawn By: JJR | Checked By: KPL |
|---|---|
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# M2.1




## SPECIAL NOTES:

1) CONTRACTOR TO REFER TO 'BASE BID: HEATING PLANT – SYSTEM FLOW DIAGRAM – MECHANICAL DEMOLITIONS' ON DRAWING M2.0, PRIOR TO START OF ANY DEMOLITION WORK WITHIN THIS AREA.

2) CONTRACTOR TO AVOID CAUSING ANY DAMAGES TO ANY EXISTING (REMAINING) EQUIPMENT, PIPING, INSULATION, ETC., WITHIN THIS AREA. AND WILL BE HELD MONETARILY RESPONSIBLE FOR ANY DAMAGES THAT MAY OCCUR DURING DEMOLITIONS.

3) CONTRACTOR TO NOTE: ALL EXISTING ACTIVE SYSTEMS (DOMESTIC WATER, SANITARY, ELECTRICAL, ETC.,) NOT INVOLVED IN THIS WORK SCOPE, SHALL REMAIN IN SERVICE THROUGHOUT THE DEMOLITION PERIOD. FIELD DETERMINE LOCATIONS OF ALL EXISTING ISOLATION VALVES, PRIOR TO DISCONNECTIONS.

## BOILER/CHILLER ROOM - DEMOLITION NOTES

D1 DISCONNECT & REMOVE EXISTING STEAM BOILER, WHERE INDICATED. DISCONNECT & REMOVE ALL DRAIN PIPING & VENT PIPING FROM CONNECTION TO PRESSURE RELIEF VALVE DRIP ELBOW PIPING ASSEMBLY, WHERE INDICATED. CUT VENT PIPING @ BOTTOM OF RISER RUNNING UP THRU EXISTING CEILING OPENING; REFER TO DRAWING NOTE 'D9' FOR ALL REMAINING REQUIREMENTS. FIELD COORDINATE WITH ELECTRICAL CONTRACTOR (E.C.) FOR REMOVAL OF ALL POWER & CONTROL WIRING, DISCONNECT, DEVICES, ETC.. FIELD DETERMINE ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF REMOVALS.

D2 DISCONNECT & REMOVE EXISTING LO–PRESSURE STEAM PIPING FROM CONNECTION AT TOP OF BOILER & CONNECTION WITH EXISTING LO–PRESSURE STEAM HEADER. REMOVE EXISTING LO–PRESSURE STEAM HEADER, REMOVE ALL ASSOCIATED VALVES, PIPE HANGERS, THREADED RODS, CEILING ATTACHMENTS, ETC.. FIELD DETERMINE ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF DEMOLITIONS.

D3 CONTRACTOR TO CUT EXISTING 3" NATURAL GAS (N.G.) PIPING @ CONNECTION WITH EXISTING 3" DROP (@ TEE FITTING, ABOVE DIRT LEG) & REMOVE; FIELD VERIFY LOCATION. DISCONNECT & REMOVE EXISTING GAS TRAIN, AND ALL ASSOCIATED VALVES, FITTINGS, & VENT PIPING; AS FIELD DETERMINED.

D4 DISCONNECT & REMOVE EXISTING 'PS' FLUE STACK CONNECTION @ BACK OF BOILER, WHERE INDICATED. DISCONNECT & REMOVE EXISTING 'PS' 90° ELBOWS @ CONNECTION WITH EXISTING (REMAINING) 14" 'PS' FLUE PIPE BREECHING, WHERE INDICATED. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO REMOVALS.

D5 DISCONNECT & REMOVE ALL BOILER BLOW–DOWN PIPING, FROM CONNECTION TO SIDE & BACK OF EXISTING STEAM BOILER; AS FIELD VERIFIED. REMOVE ALL BLOW–DOWN PIPING RUN WITHIN EXISTING (REMAINING) FLOOR TRENCH. REMOVE ALL VALVES, TRAPS, FITTINGS, ETC., AS FIELD DETERMINED, PRIOR TO REMOVALS.

D6 CONTRACTOR TO DISCONNECT & REMOVE EXISTING BLOW–DOWN SEPARATOR, WHERE INDICATED. DISCONNECT & REMOVE EXISTING 5" VENT PIPING (@ TOP OF SEPARATOR), & ALL ASSOCIATED PIPE HANGERS, THREADED RODS, CEILING ATTACHMENTS, ETC.; AS FIELD DETERMINED. CUT & REMOVE VENT PIPING @ BOTTOM OF RISER (RUNNING WITHIN CEILING OPENING); REFER TO DRAWING NOTE 'D9' FOR ALL REMAINING REQUIREMENTS.

D7 DISCONNECT & REMOVE EXISTING STEAM CONDENSATE FEEDWATER UNIT, WHERE INDICATED. DISCONNECT & REMOVE EXISTING 3" VENT PIPING FROM CONNECTION TO TANK, & ALL ASSOCIATED PIPE HANGERS, THREADED RODS, CEILING ATTACHMENTS, ETC., WHERE INDICATED. CUT VENT PIPING @ BOTTOM OF RISER RUNNING UP THRU EXISTING CEILING OPENING; REFER TO DRAWING NOTE 'D9' FOR ALL REMAINING REQUIREMENTS. FIELD COORDINATE WITH E.C. FOR REMOVAL OF ALL POWER & CONTROL WIRING (SERVING EXISTING FEEDWATER PUMPS), DISCONNECT SWITCH, DEVICES, ETC.. FIELD DETERMINE ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF REMOVALS.

D8 DISCONNECT & REMOVE ALL EXISTING FEEDWATER PIPING FROM CONNECTIONS @ PUMPS TO STEAM BOILER PIPING. REMOVE ALL ASSOCIATED PIPE HANGERS, THREADED RODS, CEILING ATTACHMENTS, ETC., WHERE INDICATED. FIELD DETERMINE ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO REMOVALS.

D9 CONTRACTOR TO CUT (1) 5" VENT RISER SERVING BLOWDOWN SEPARATOR, (2) 4" VENT RISERS SERVING BOILER SAFETY RELIEF VALVES, (1) 3" VENT RISER SERVING FEEDWATER TANK, (1) 2" VENT RISER SERVING DUPLEX–PUMP CONDENSATE TANK, & (1) 1" DRAIN LINE SERVING BLOWDOWN VENT @ BOTTOM OF REMAINING PIPING SHAFT OPENING. NOTE: ALL VENT & DRAIN RISERS TO REMAIN WITHIN SHAFT (ABOVE). CONTRACTOR TO INSTALL CAPS TO BOTTOM OF EACH VENT & DRAIN @ SHAFT ENTRANCE. INSTALL CAPS TO ALL VENTS LOCATED ON ROOF; AS FIELD DETERMINED.

D10 DISCONNECT & REMOVE ALL EXISTING DOMESTIC COLD WATER PIPING & BACKFLOW PREVENTER ASSEMBLY. REMOVE PIPING CONNECTED TO BLOWDOWN DRAIN & DRAIN PIPING @ BOTTOM OF CHECK VALVES. REMOVE ALL ASSOCIATED PIPE HANGERS, THREADED RODS, CEILING ATTACHMENTS, ETC., WHERE INDICATED. FIELD DETERMINE ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO REMOVALS.

D11 DISCONNECT & REMOVE ALL EXISTING DRAIN LINE SERVING EXISTING 'PS' STACK RISER & INSTALL PLUG @ STACK TAP; AS FIELD VERIFIED. REMOVE EXISTING BOTTOM PORTION OF 'PS' STACK FROM BENEATH CONNECTION OF EXISTING 8" (REMAINING) TYPE 'B' FLUE STACK SERVING WATER HEATER BURNER. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO START OF WORK.

D12 DISCONNECT & REMOVE ALL EXISTING STEAM CONDENSATE RETURN TRAP ASSEMBLIES, & ALL PIPING, WHERE INDICATED. REMOVE ALL PIPE HANGERS, THREADED RODS, CEILING ATTACHMENTS, ETC.. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

D13 DISCONNECT & REMOVE ALL EXISTING STEAM CONDENSATE DUPLEX–PUMP & TANK, WHERE INDICATED. DISCONNECT & REMOVE ALL PUMPED CONDENSATE PIPING FROM DUPLEX PUMP CONNECTIONS TO FEEDWATER TANK. REMOVE ALL PIPE HANGERS, THREADED RODS, CEILING ATTACHMENTS, ETC.. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

D14 CONTRACTOR TO CUT EXISTING STEAM MAIN & STEAM CONDENSATE RETURN MAIN @ WALL PENETRATION, & REMOVE FROM CONNECTION TO STEAM HEADER & FEEDWATER TANK.

D15 DISCONNECT & REMOVE ALL EXISTING STEAM UNIT HEATER, WHERE INDICATED. DISCONNECT & REMOVE ALL STEAM & STEAM CONDENSATE RETURN PIPING, VALVES, TRAP ASSEMBLIES, ETC.. REMOVE ALL PIPE HANGERS, THREADED RODS, CEILING ATTACHMENTS, ETC.. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

D16 DISCONNECT & REMOVE ALL EXISTING STEAM PIPING SERVING SHELL & TUBE HEAT EXCHANGER. REMOVE ALL VALVE ASSEMBLIES, ALL STEAM CONDENSATE RETURN PIPING, TRAP ASSEMBLIES, ETC.. REMOVE ALL PIPE HANGERS, THREADED RODS, CEILING ATTACHMENTS, ETC.. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

D17 DISCONNECT & REMOVE ALL EXISTING SHELL & TUBE HEAT EXCHANGER, WHERE INDICATED, & ALL FLOOR SUPPORT STANCHIONS. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

D18 DISCONNECT & REMOVE EXISTING 5" HEATING WATER RETURN (HWR) PIPING, WHERE INDICATED. FROM CONNECTION TO HEAT EXCHANGER TO CONNECT FLANGE @ (REMAINING) BUTTERFLY VALVE. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

D19 DISCONNECT & REMOVE EXISTING 5" HEATING WATER SUPPLY (HWS) PIPING, WHERE INDICATED. FROM CONNECTION TO HEAT EXCHANGER TO CONNECT FLANGE @ (REMAINING) BUTTERFLY VALVE. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

N

## PARTIAL BASEMENT FLOOR PLAN - BOILER/CHILLER ROOM - MECHANICAL DEMOLITIONS

0 1 2 3 4 feet

SCALE: 1/4" = 1' - 0"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STATE OF OHIO
KEVIN P. LAFFERTY
E-54634
REGISTERED PROFESSIONAL ENGINEER

# BOILER REPLACEMENT and HEATING SYSTEM UPGRADES
# LUCAS COUNTY COURTHOUSE

700 ADAMS STREET
TOLEDO, OHIO 43604

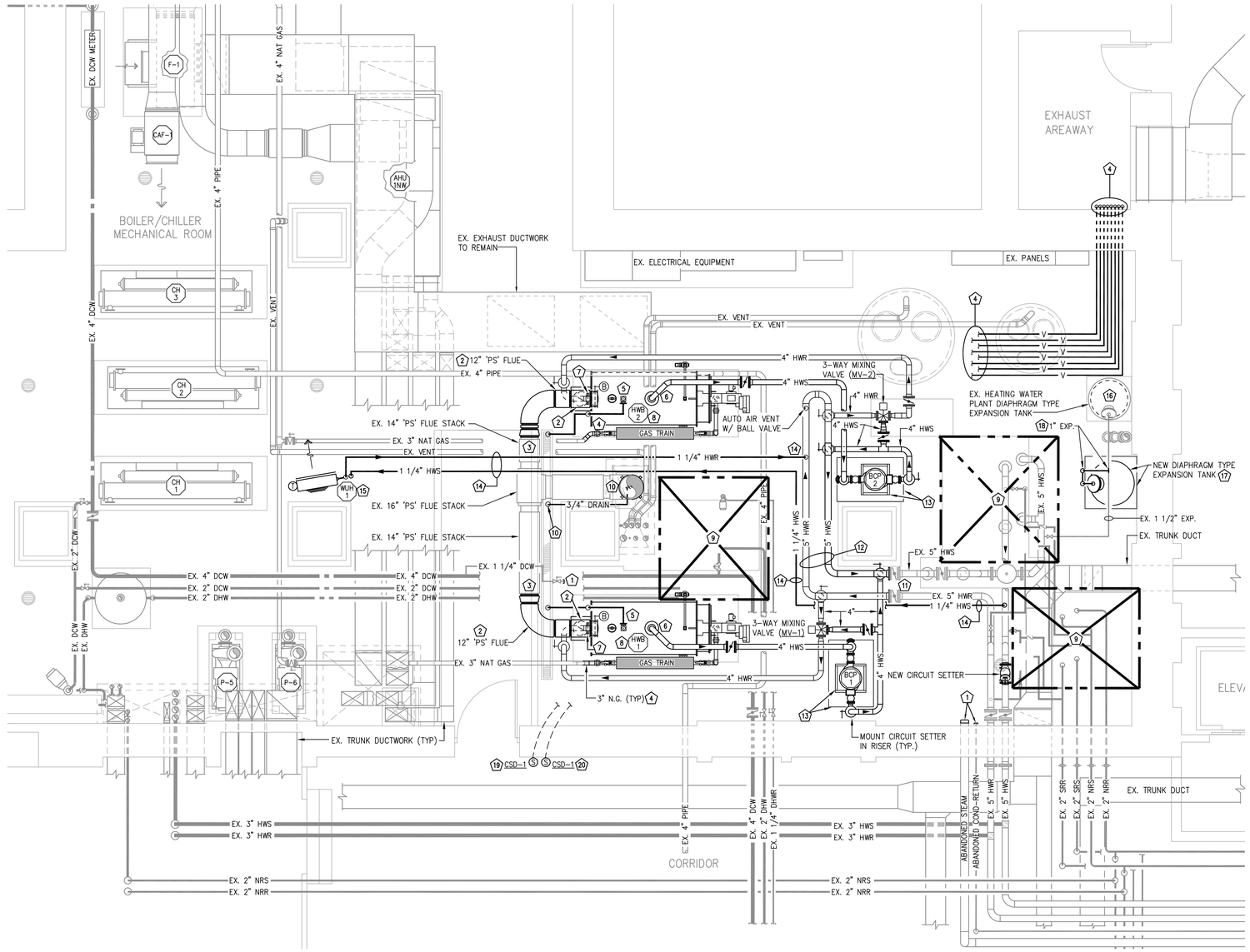
| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## Basement Plan - Boiler/Chiller Room - Mech. Demolitions

| Drawn By: | Checked By: |
|---|---|
| JJR | KPL |
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# M3.0




## PARTIAL BASEMENT BOILER/CHILLER ROOM - MODIFICATION NOTES

1. INSTALL CAPS OVER END OF REMAINING PIPING & PIPE TAPS, WHERE INDICATED. FIELD VERIFY ALL SIZES AND EXISTING CONDITIONS WITHIN THE AREA, PRIOR TO INSTALLATION.

2. INSTALL 12" 'PS' FLUE STACK RISER WITH MANUAL (LOCKING) FLUE DAMPER @ BOILER CONNECTION. INSTALL DRAFT DAMPER WITH BAROMETRIC OPERATOR TO TEE-FITTING, WHERE INDICATED. FIELD DETERMINE ALL EXISTING CONDITIONS WITHIN THIS AREA, & AVOID CONFLICTS WITH ANY EXISTING INFRASTRUCTURE, PRIOR TO INSTALLATION. REFER TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.

3. INSTALL 14" x 12" 'PS' FLUE STACK TRANSITION CONNECTION WITH EXISTING 14" 'PS' FLUE BREECHING, WHERE INDICATED. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA, & AVOID CONFLICTS WITH ANY EXISTING INFRASTRUCTURE, PRIOR TO INSTALLATION.

4. CONTRACTOR TO CONNECT NEW 3" NATURAL GAS (NG) PIPING TO EXISTING DROP (WITH DIRT LEG), WHERE INDICATED, & CONNECT WITH BOILER GAS TRAIN AS FIELD DETERMINED. INSTALL FULL-SIZE (INDIVIDUAL) VENT LINES, AS FIELD DETERMINED TO ALL GAS TRAIN VALVES, DEVICES, ETC., THAT HAVE VENTING REQUIREMENTS. ROUTE NEW VENT LINES AS FIELD DETERMINED THROUGH THIS PORTION OF THE MECHANICAL ROOM TO THE EXISTING EXHAUST AREAWAY, WHERE INDICATED. INSTALL 90° ELBOW VENT CAP (TURNED-DOWNWARD) @ WALL PENETRATION. FIELD DETERMINE ALL EXISTING CONDITIONS, & AVOID CONFLICTS WITH ANY EXISTING INFRASTRUCTURE, PRIOR TO INSTALLATION. REFER TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.

5. CONTRACTOR TO CONNECT FULL-SIZE DRAIN PIPING TO BOILER MANUFACTURER PROVIDED SAFETY RELIEF VALVE, WHERE INDICATED. ROUTE DRAIN PIPING INTO EXISTING TRENCH DRAIN AS FIELD DETERMINED.

6. CONTRACTOR TO PROVIDE & INSTALL 6" x 4" FLANGED CONCENTRIC (WELDED) REDUCER TO BOILER HEATING WATER SUPPLY (HWS) CONNECTION @ TOP OF BOILER, WHERE INDICATED. FIELD VERIFY ALL SIZE REQUIREMENTS, PRIOR TO FABRICATION & INSTALLATION.

7. CONTRACTOR TO PROVIDE & INSTALL 4" FLANGED CONNECTIONS (WELDED) TO BOILER HEATING WATER RETURN CONNECTION (HWR) @ BACK OF BOILER (NEAR FLOOR), WHERE INDICATED. FIELD VERIFY ALL SIZE REQUIREMENTS, PRIOR TO FABRICATION & INSTALLATION.

8. CONTRACTOR TO SET AND ANCHOR NEW BOILER TO EXISTING CONCRETE HOUSEKEEPING PAD AS PER BOILER MANUFACTURER INSTALLATION REQUIREMENTS. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA & AVOID CONFLICTS WITH ANY EXISTING INFRASTRUCTURE, PRIOR TO INSTALLATION.

9. REFER TO DWG. M3.2 FOR ALL REQUIRED WORK CONCERNING NEW DOMESTIC HEATING WATER PLANT & REPLACEMENT OF EXISTING HEATING WATER SYSTEM PUMPS 'P-1', 'P-2', 'P-3' AND 'P-4'.

10. CONTRACTOR TO PROVIDE & INSTALL 16" DOUBLE-WALL 'AL29-4C' STAINLESS STEEL (INNER-WALL) CAP FITTING WITH DRAIN CONNECTION NIPPLE, TO BOTTOM OF EXISTING FLUE STACK RISER (BENEATH CONNECTION OF EXISTING 8" FLUE VENT SERVING DOMESTIC WATER HEATER). CONTRACTOR TO FABRICATE & INSTALL NEW SUPPORT FRAME BASE TO BE SECURELY ATTACHED TO BOTTOM OF CAP FITTING & EXISTING (REMAINING) PEDESTAL BELOW; AS FIELD DETERMINED. INSTALL 3/4" SCH 40 (THREADED) STEEL DRAIN LINE WITH 'P-TRAP, & CONNECT TO DRAIN NIPPLE; ROUTE NEW DRAIN LINE INTO EXISTING TRENCH DRAIN.

11. CONNECT NEW 5" HWS & HWR PIPING MAINS TO EXITING 5" BUTTERFLY VALVES, WHERE INDICATED, WITH NEW WELD-NECK FLANGES. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO INSTALLATION.

12. CONTRACTOR TO MATCH BOTTOM OF PIPE (B.O.P.) ELEVATIONS ABOVE FINISHED FLOOR (A.F.F.) AS EXISTING 5" HWS & HWR MAINS; FIELD VERIFY ALL EXISTING CONDITIONS & CLEARANCES WITHIN THIS AREA, PRIOR TO FABRICATION & INSTALLATION. REFER TO PIPE HANGER DETAIL ON DWG. M6.0, AND TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

13. CONTRACTOR TO FABRICATE & INSTALL 24" HIGH (INLINE-PUMP) SUPPORT FRAME; CONSTRUCTED FROM PRE-ENGINEERED CHANNEL (UNISTRUT, TYPE 'P-1000', OR EQUAL). INSTALL 3/4" THICK VIBRATION ISOLATION PAD (MASON INDUSTRIES, TYPE 'SUPER-W', OR EQUAL), FOR PUMP VOLUTE TO REST ON TOP OF SUPPORT FRAME. ANCHOR PUMP ASSEMBLY SECURELY TO FRAME; AS FIELD DETERMINED. ANCHOR FRAME POST BASES SECURELY TO 36" WIDE x 54" LONG x 4" HIGH (NOMINAL) CONCRETE HOUSEKEEPING PAD.

14. FIELD DETERMINE ROUTE & B.O.P. REQUIREMENTS ON NEW HWS & HWR PIPING WITHIN THIS AREA, FIELD VERIFY ALL EXISTING CONDITIONS & CLEARANCES, PRIOR TO FABRICATION & INSTALLATION.

15. MOUNT BOTTOM OF NEW UNIT HEATER AS HIGH AS POSSIBLE; AS FIELD DETERMINED. INSTALL GALVANIZED THREADED HANGER RODS WITH SPRING VIBRATION ISOLATORS. ATTACH HANGER RODS TO EXISTING STRUCTURE; AS FIELD DETERMINED. REFER TO EQUIPMENT SCHEDULE & TO DETAIL ON DWG. M6.0, AND TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.

16. INSTALL NEW BLADDER TO EXISTING DIAPHRAGM EXPANSION TANK; AS FIELD DETERMINED. INSTALL AS PER TANK MANUFACTURER REPLACEMENT INSTRUCTIONS. FILED VERIFY ALL EXISTING CONDITIONS, PRIOR TO PURCHASE, AND INSTALLATION.

17. INSTALL NEW DIAPHRAGM TYPE EXPANSION TANK (AMTROL, MODEL '1000-L', OR EQUAL): 264 GALLON CAPACITY, 150 GALLON ACCEPTANCE. INSTALL TANK AS PER MANUFACTURER INSTALLATION REQUIREMENTS. MOUNT TANK TO 42" x 42" x 4" HIGH (NOMINAL) CONCRETE HOUSEKEEPING PAD, WHERE INDICATED. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO INSTALLATION.

18. CONNECT NEW 1" EXPANSION PIPING TO EXISTING PIPING, WHERE INDICATED. FIELD VERIFY LOCATION & ALL EXISTING CONDITIONS, PRIOR TO INSTALLATION.

19. TEMPERATURE CONTROLS CONTRACTOR (T.C.C.) TO INSTALL CSD-1 HEATING WATER BOILER 'HWB-1' KILL SWITCH ON WALL, WHERE INDICATED. T.C.C. TO INSTALL INTERLOCK WIRING TO BOILER CONTROL PANEL, AS FIELD DETERMINED. REFER TO GENERAL NOTES ON DWG. M1.0, AND TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

20. TEMPERATURE CONTROLS CONTRACTOR (T.C.C.) TO INSTALL CSD-1 HEATING WATER BOILER 'HWB-2' KILL SWITCH ON WALL, WHERE INDICATED. T.C.C. TO INSTALL INTERLOCK WIRING TO BOILER CONTROL PANEL, AS FIELD DETERMINED. REFER TO GENERAL NOTES ON DWG. M1.0, AND TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

## SPECIAL NOTES:

1) MDA ENGINEERING, INC. HAS MADE EVERY EFFORT TO MAKE SURE THAT ANY NEW RADIATION EQUIPMENT, PIPING, THERMOSTATS, ETC., ON THIS DRAWING CAN BE INSTALLED AS SHOWN. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ANY KNOWN INTERFERENCES WITH EXISTING INFRASTRUCTURE; ELECTRICAL RECEPTACLES, CONDUITS, LIGHT FIXTURES, PIPING, DUCTWORK, ETC., AND SHALL BE RESPONSIBLE FOR MOVING, REWORKING, OR MODIFYING ANY OF THESE ITEMS (WHETHER SHOWN OR NOT) THAT MAY CAUSE INTERFERENCES WITH NEW WORK BEING INSTALLED. CONTRACTOR SHALL BE RESPONSIBLE TO ALLOW ANY ITEMS THAT WILL NEED TO BE REMOVED OR REWORKED, TO BE PERFORMED BY THE APPROPRIATE SUB-CONTRACTOR THAT SPECIALIZES FOR ITEMS IN THAT TRADE.

2) CONTRACTOR TO NOTE: ALL EXISTING ACTIVE SYSTEMS (PLUMBING, ELECTRICAL, ETC.) NOT INVOLVED IN THIS WORK SCOPE SHALL REMAIN IN SERVICE THROUGHOUT THE CONSTRUCTION PERIOD. CONTRACTOR SHALL FIELD COORDINATE WITH OWNER FOR ANY NEEDED INTERRUPTIONS OF ANY EXISTING SYSTEMS, ONE WEEK PRIOR TO PERFORMING ANY NEW TIE-INS.

3) CONTRACTOR TO REFER TO 'BASE BID: HEATING PLANT – SYSTEM FLOW DIAGRAM – MECHANICAL MODIFICATIONS' ON DRAWING M2.0, PRIOR TO START OF ANY NEW WORK WITHIN THIS AREA.

4) CONTRACTOR TO AVOID CAUSING ANY DAMAGES TO ANY EXISTING (REMAINING) PIPING EQUIPMENT, INSULATION, DUCTWORK, ELECTRICAL CONDUITS, ETC., WITHIN THIS AREA. CONTRACTOR WILL BE HELD MONETARILY RESPONSIBLE FOR ANY DAMAGES THAT MAY OCCUR DURING INSTALLATION OF NEW WORK.

N

## PARTIAL BASEMENT FLOOR PLAN - BOILER/CHILLER ROOM - MECHANICAL MODIFICATION

0 1 2 3 4 feet

SCALE: 1/4" – 1' – 0"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STATE OF OHIO
KEVIN R. LAFFERTY
E-54634
REGISTERED PROFESSIONAL ENGINEER

# BOILER REPLACEMENT and HEATING SYSTEM UPGRADES
# LUCAS COUNTY COURTHOUSE

700 ADAMS STREET
TOLEDO, OHIO 43604

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## Basement Plan - Boiler/Chiller Room - Mech. Modifications

| Drawn By: | Checked By: |
|---|---|
| JJR | KPL |
| Date: 04-17-15 | Job No: 15006 |

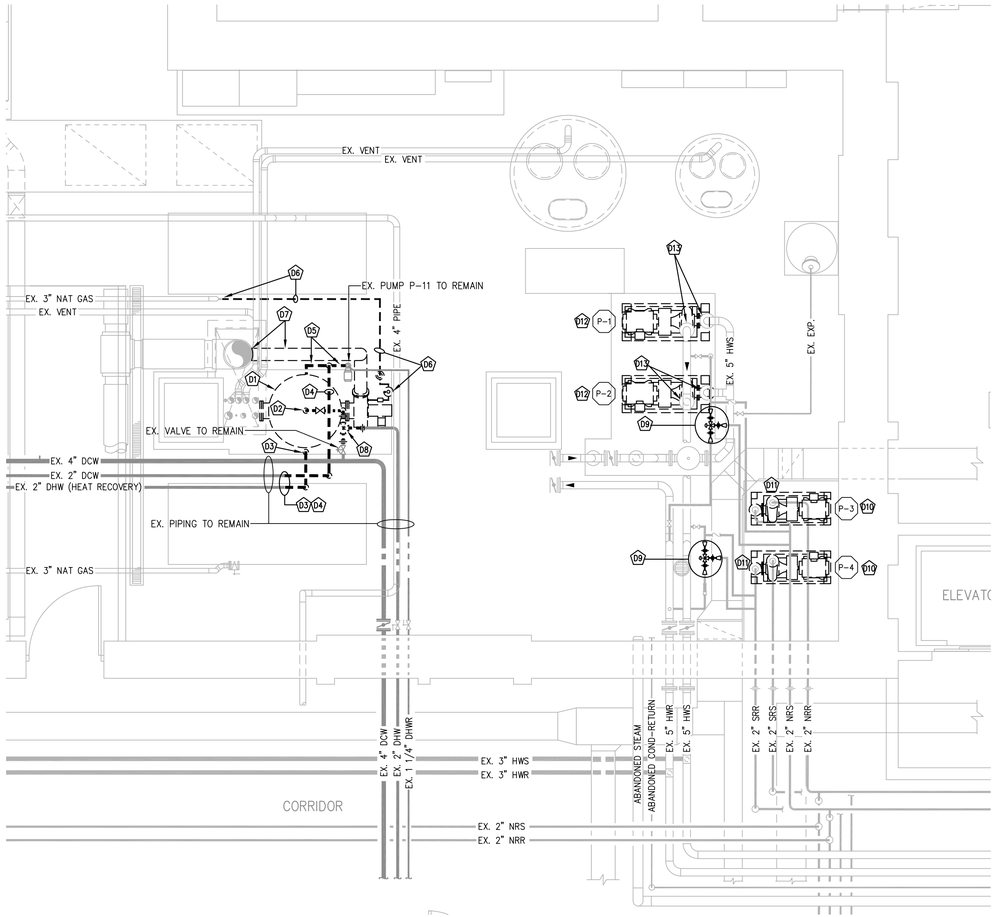
SHEET NO.

# M3.1

## SPECIAL NOTES:

1) CONTRACTOR TO REFER TO 'BASE BID: HEATING PLANT – SYSTEM FLOW DIAGRAM – MECHANICAL MODIFICATIONS' ON DWG. M2.0 & TO REFER TO 'BASE BID: DOMESTIC HOT WATER PLANT – SYSTEM FLOW DIAGRAM' ON DWG. M2.1, PRIOR TO START OF ANY DEMOLITIONS OR NEW WORK WITHIN THIS AREA.

2) CONTRACTOR TO AVOID CAUSING ANY DAMAGES TO ANY EXISTING (REMAINING) EQUIPMENT, PIPING, INSULATION, ETC., WITHIN THIS AREA. AND WILL BE HELD MONETARILY RESPONSIBLE FOR ANY DAMAGES THAT MAY OCCUR DURING DEMOLITIONS & INSTALLATIONS.




## BOILER/CHILLER ROOM DOMESTIC WATER & PUMP - DEMOLITION NOTES

**D1** DISCONNECT & REMOVE EXISTING ('PVI') DOMESTIC WATER HEATER, WHERE INDICATED, AND ALL ASSOCIATED CONTROL & POWER WIRING. FIELD COORDINATE WITH E.C., PRIOR TO START OF ANY DEMOLITIONS.

**D2** DISCONNECT & REMOVE EXISTING 2" DOMESTIC HOT WATER (DHW) PIPING FROM CONNECTION @ TOP OF WATER HEATER TO EXISTING DOMESTIC MIXING VALVE, WHERE INDICATED. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF DEMOLITIONS.

**D3** CUT EXISTING 2" DHW (HEAT RECOVERY) WHERE INDICATED & REMOVE ALL PIPING TO CONNECTION WITH DOMESTIC WATER HEATER. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF DEMOLITIONS.

**D4** CUT EXISTING 2" DOMESTIC COLD WATER (DCW) PIPING WHERE INDICATED & REMOVE ALL PIPING TO CONNECTION WITH DHWR HEADER. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF DEMOLITIONS.

**D5** DISCONNECT & REMOVE EXISTING 1 1/4" DOMESTIC HOT WATER RETURN (DHWR) PIPING BENEATH EXISTING (REMAINING) RETURN WATER PUMP 'P-11' @ (REMAINING) CHECK VALVE. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF DEMOLITIONS.

**D6** CUT EXISTING 1 1/4" NATURAL GAS (NG) PIPING @ CONNECTION TO EXISTING (REMAINING) 3" DROP, WHERE INDICATED & REMOVE ALL PIPING TO CONNECTION WITH DOMESTIC WATER HEATER BURNER. REMOVE REGULATOR, & ALL ASSOCIATED VALVES, DEVICES, ETC.. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF DEMOLITIONS.

**D7** DISCONNECT & REMOVE EXISTING 8" FLUE PIPE SERVING DOMESTIC WATER HEATER BURNER, WHERE INDICATED, & REMOVE @ CONNECTION WITH EXISTING 16" (REMAINING) 'PS' FLUE STACK. INSTALL 'AL29-4C' CAP @ CONNECTION WITH FLUE STACK; FIELD DETERMINE ALL INSTALLATION REQUIREMENTS, PRIOR TO FLUE PIPE REMOVAL & INSTALLATION OF CAP.

**D8** DISCONNECT & REMOVE EXISTING DOMESTIC WATER CONTROL VALVE, ALL ASSOCIATED PIPING NIPPLES, & UNIONS, WHERE INDICATED; AS FIELD DETERMINED.

**D9** DISCONNECT & REMOVE EXISTING 3-WAY MIXING VALVES (PNEUMATIC), & ASSOCIATED PIPING WITH REDUCERS, WHERE INDICATED. REMOVE ALL PNEUMATIC TUBING; AS FIELD DETERMINED.

**D10** DISCONNECT & REMOVE EXISTING (NORTH ZONE) RADIATION HEATING WATER PUMP 'P-3', & (SOUTH ZONE) RADIATION HEATING WATER PUMP 'P-4', WHERE INDICATED. REMOVE EXISTING INERTIA BASE & SUCTION DIFFUSERS; AS FIELD DETERMINED.

**D11** DISCONNECT & REMOVE EXISTING PIPING CONNECTIONS FROM EXISTING (REMAINING) BRAIDED-METAL FLEXIBLE CONNECTORS TO SUCTION DIFFUSER FLANGE & PUMP DISCHARGE FLANGE WITH REDUCER; AS FIELD DETERMINED.

**D12** DISCONNECT & REMOVE EXISTING PRIMARY HEATING WATER PUMPS 'P-1', & 'P-2', WHERE INDICATED. REMOVE EXISTING INERTIA BASE & SUCTION DIFFUSERS; AS FIELD DETERMINED.

**D13** DISCONNECT & REMOVE EXISTING PIPING CONNECTIONS FROM EXISTING (REMAINING) 5" BUTTERFLY VALVE ABOVE SUCTION DIFFUSER FLANGE. REMOVE EXISTING 5" BALANCING VALVE, FLEXIBLE CONNECTORS, & REDUCER @ PUMP CONNECTION; AS FIELD DETERMINED.

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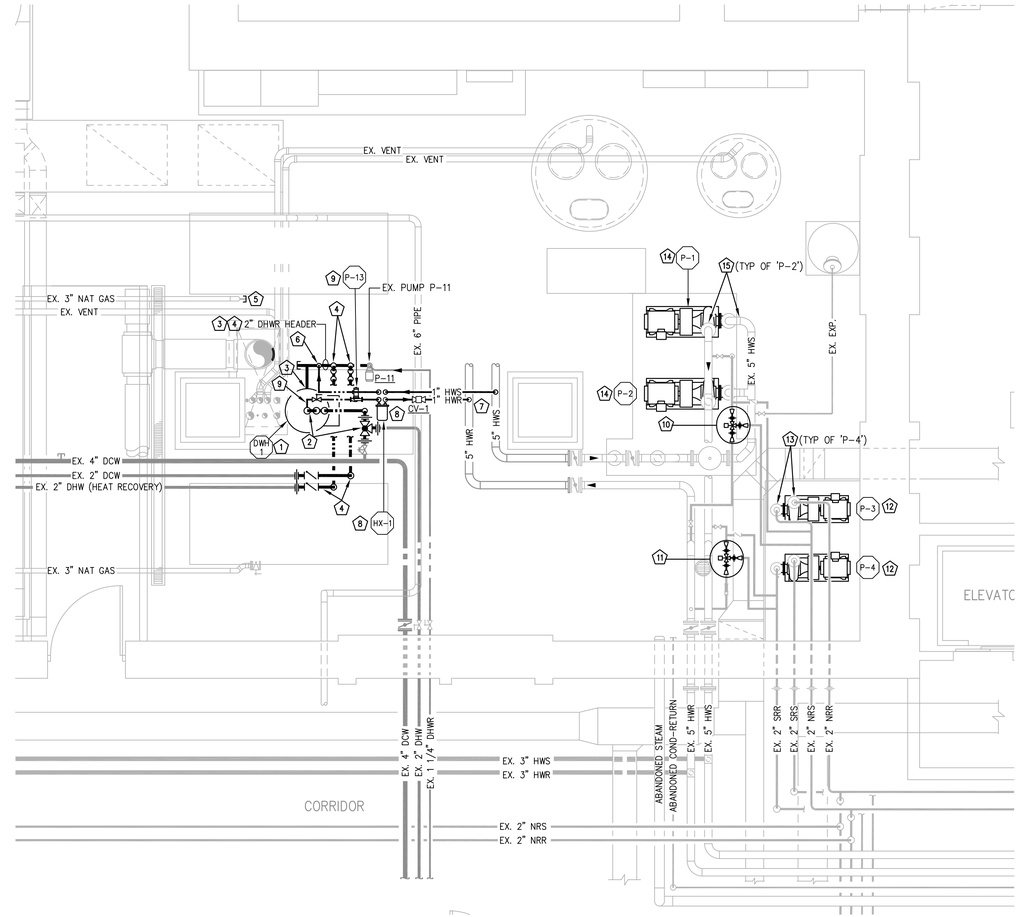
## PARTIAL BOILER/CHILLER ROOM FLOOR PLAN - DOMESTIC WATER & PUMP DEMOLITIONS

0 1 2 3 4 feet

SCALE: 1/4" = 1' - 0"




## BOILER/CHILLER ROOM - DOMESTIC WATER & PUMP MODIFICATION NOTES

**1** DWH 1 — AO SMITH, MODEL 'DRE-120-18', 18 kW ELECTRIC WATER HEATER, 480-3-60 VOLTS, 21.7 FLA, THREE ELEMENTS @ 6000 WATTS (EACH), 119 GALLON CAPACITY, 400 Lbs. OPERATING WEIGHT, 30" DIA. (NOMINAL) x 62" HIGH, MOUNTED ON EXISTING HOUSEKEEPING PAD.

**2** CONNECT 2" DOMESTIC HOT WATER (DHW) PIPING RISER (WITH THERMAL SIPHON TRAP @ BOTTOM) TO 1 1/4" OUTLET (TOP-TANK) CONNECTION WITH REDUCER; FIELD VERIFY CONNECTION SIZE & REQUIREMENTS, PRIOR TO INSTALLATION. INSTALL NEW DOMESTIC WATER THERMOSTATIC CONTROL VALVE WITH NEW PIPE NIPPLES & UNIONS; AS FIELD DETERMINED.

**3** CONNECT 2" DOMESTIC HOT WATER RETURN (DHWR) PIPING TO 1 1/4" INLET (BOTTOM-TANK) CONNECTION WITH REDUCER; FIELD VERIFY CONNECTION SIZE & REQUIREMENTS, PRIOR TO INSTALLATION.

**4** CONNECT 2" DOMESTIC COLD WATER (DCW) & 2" DHW (HEAT RECOVERY) PIPING TO EXISTING MAINS, WHERE INDICATED. INSTALL CHECK VALVES & ROUTE PIPING DROPS (WITH THERMAL SIPHON TRAPS) TO CONNECT WITH NEW 2" DHWR HEADER; AS FIELD DETERMINED.

**5** INSTALL CAP TO EXISTING (REMAINING) 1 1/4" NG TAP ON EXISTING 3" NG DROP; AS FIELD VERIFIED.

**6** CONNECT 1" DHWR DROP INTO 2" DHWR HEADER, WHERE INDICATED. INSTALL 1" FULL-PORT BALL VALVE, & ROUTE PIPING 'OVERHEAD' WITH RISER FROM 'HX-1' OUTLET CONNECTION 'F2'; AS FIELD DETERMINED.

**7** CONNECT 1" HEATING WATER SUPPLY (HWS) & HEATING WATER RETURN RETURN (HWR) TO NEW 5" (BASE BID) HEADERS, WHERE INDICATED. INSTALL 1" FULL-PORT BALL VALVES @ HEADERS, & ROUTE PIPING 'OVERHEAD' WITH HWS DROP TO 'HX-1' INLET CONNECTION 'F1', & HWR RISER TO CONNECT WITH 'HX-1' OUTLET CONNECTION 'F4'; AS FIELD DETERMINED.

**8** INSTALL NEW BRAZED PLATE HEATING EXCHANGER 'HX'1', WHERE INDICATED; AS FIELD DETERMINED. SECURELY ANCHOR 'HX-1' TO EXISTING HOUSEKEEPING PAD.

**9** CONNECT 1" DHW TO 2" DHW RISER, WHERE INDICATED. INSTALL 1" FULL-PORT BALL VALVE, ROUTE PIPING 'OVERHEAD' TO NEW INLINE PUMP 'P-13', & DROP PIPING TO 'HX-1' INLET CONNECTION 'F3'; AS FIELD DETERMINED.

**10** INSTALL NEW MIXING VALVE 'MV-3' (D.D.C.), SERVING RADIATION HEATING WATER PUMP (NORTH ZONE) 'P-3'. INSTALL NEW PIPING NIPPLES & REDUCERS; AS FIELD DETERMINED.

**11** INSTALL NEW MIXING VALVE 'MV-4' (D.D.C.), SERVING RADIATION HEATING WATER PUMP (SOUTH ZONE) 'P-4'. INSTALL NEW PIPING NIPPLES & REDUCERS; AS FIELD DETERMINED.

**12** INSTALL NEW END-SUCTION, BASE MOUNT CENTRIFUGAL PUMPS, WITH SUCTION DIFFUSERS, WHERE INDICATED. ANCHOR SECURELY TO EXISTING HOUSEKEEPING PAD.

**13** INSTALL NEW PIPING CONNECTIONS WITH CONCENTRIC REDUCERS & FLANGES; AS FIELD DETERMINED. CONTRACTOR MAY NEED TO MODIFY EXISTING PIPING DROPS TO ACCOMMODATE INSTALLATION OF NEW PUMPS. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO INSTALLATION.

**14** INSTALL NEW END-SUCTION, BASE MOUNT CENTRIFUGAL PUMPS, WITH SUCTION DIFFUSERS, WHERE INDICATED. ANCHOR SECURELY TO EXISTING HOUSEKEEPING PAD.

**15** INSTALL NEW PIPING CONNECTIONS WITH CONCENTRIC REDUCERS, FLANGED NEOPRENE FLEXIBLE CONNECTORS, BUTTERFLY VALVES, AS FIELD DETERMINED. CONTRACTOR MAY NEED TO MODIFY EXISTING PIPING DROPS TO ACCOMMODATE INSTALLATION OF NEW PUMPS. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO INSTALLATION.

N

## PARTIAL BOILER/CHILLER ROOM FLOOR PLAN - DOMESTIC WATER & PUMP MODIFICATIONS

0 1 2 3 4 feet

SCALE: 1/4" = 1' - 0"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STATE OF OHIO — KEVIN P. LAFFERTY — E-54634 — REGISTERED PROFESSIONAL ENGINEER

# BOILER REPLACEMENT and HEATING SYSTEM UPGRADES
# LUCAS COUNTY COURTHOUSE

700 ADAMS STREET
TOLEDO, OHIO 43604

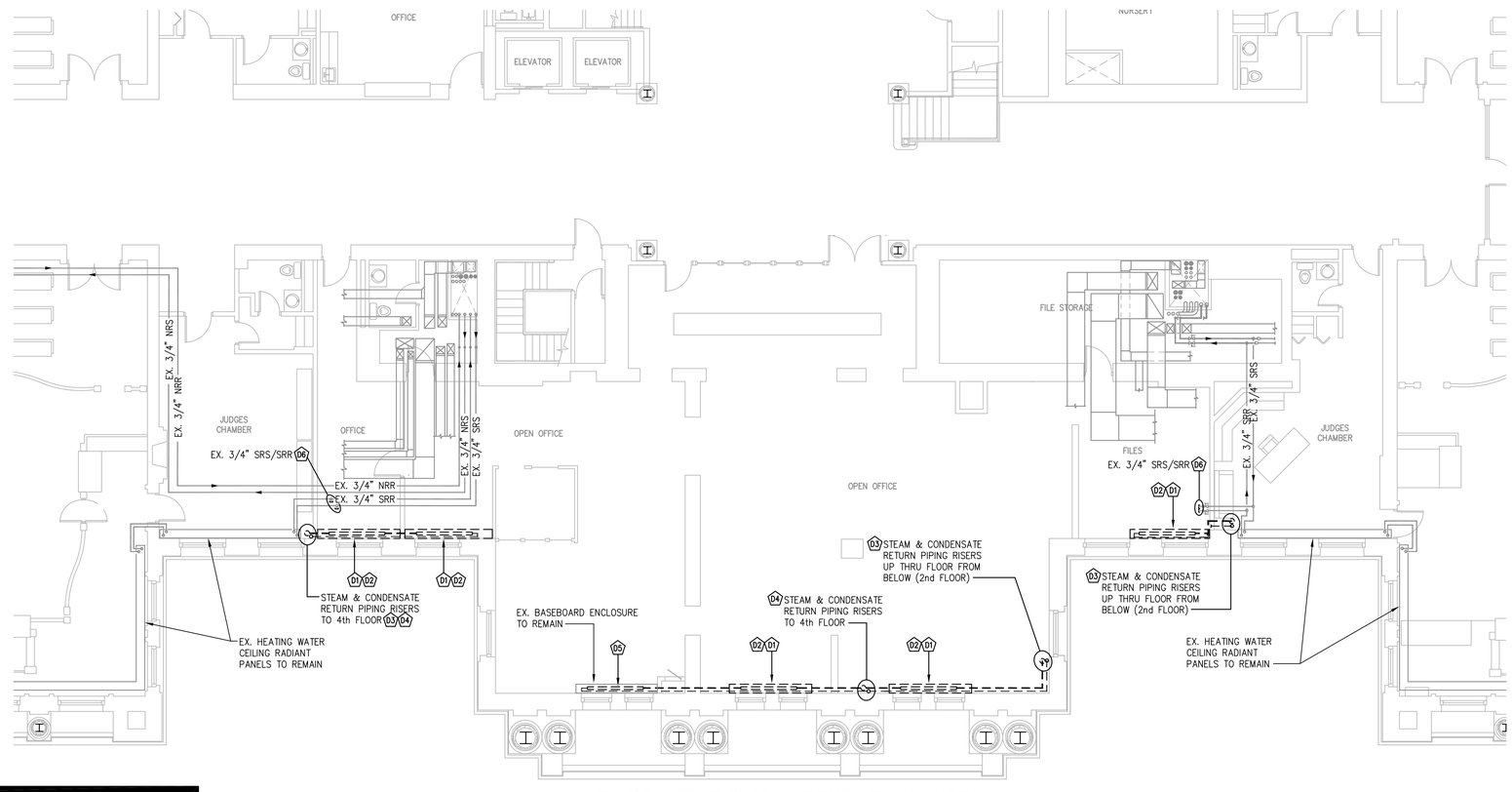
| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## Domestic Water Plant & Heating Water Pumps - Demo. & Modif's

| Drawn By: | Checked By: |
|---|---|
| JJR | KPL |
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# M3.2




## SPECIAL NOTES:

1) CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR AND PATCH ANY EXISTING WALL SURFACES THAT HAVE HAD PIPING, WALL ANCHORS, WALL HANGERS, ETC., REMOVED. CONTRACTOR SHALL PAINT ALL PATCHED AND REPAIRED WALL SURFACES WITH SIMILAR PAINT TYPE AND COLOR OF ADJACENT WALLS, OR AS DIRECTED BY PROJECT MANAGER.

2) CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE, OR MODIFY ANY EXISTING LAY-IN ACOUSTICAL CEILING TILES, T-BAR FRAMES, SUPPORT STRAPS, ETC., AS A RESULT OF DEMOLITIONS AND REMOVALS OF CEILING TILES WHERE NEW RADIANT PANELS WILL BE INSTALLED.

3) CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR AND PATCH ANY EXISTING WALL SURFACE THAT WILL BE AFFECTED WHERE NEW RADIANT PANELS WILL BE INSTALLED. CONTRACTOR SHALL PAINT ALL PATCHED AND REPAIRED WALL SURFACES WITH SIMILAR PAINT TYPE AND COLOR OF ADJACENT WALLS, OR AS DIRECTED BY PROJECT MANAGER.

## THIRD FLOOR PLAN - DEMOLITION NOTES

D1 DISCONNECT AND REMOVE EXISTING WALL MOUNTED RADIATION CABINET ENCLOSURE, FIN-TUBE RADIATION ELEMENT, ALL ASSOCIATED WALL MOUNTING HARDWARE, ETC. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

D2 DISCONNECT AND REMOVE ALL EXISTING STEAM, AND CONDENSATE RETURN PIPING SERVING EXISTING FIN-TUBE RADIATION. REMOVE ALL ASSOCIATED WALL MOUNTING HARDWARE, ALL VALVES, DEVICES, ETC.. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

D3 DISCONNECT AND REMOVE ALL EXISTING STEAM, AND CONDENSATE RETURN PIPING RISERS OF THRU EXISTING FLOOR FROM 2nd FLOOR (BELOW), WHERE INDICATED. CONTRACTOR TO PATCH ALL FLOOR PENETRATIONS WITH NON-SHRINK GROUT, AS FIELD DETERMINED.

D4 CONTRACTOR TO REMOVE EXISTING STEAM AND STEAM CONDENSATE RETURN RISERS UP TO 4th FLOOR (ABOVE), WHERE INDICATED. REMOVE ALL PIPE ATTACHMENTS, FLOOR CLAMPS, ETC., AS FIELD DETERMINED. CONTRACTOR TO PATCH ALL FLOOR PENETRATIONS WITH NON-SHRINK GROUT, AS FIELD DETERMINED.

D5 CONTRACTOR TO CAREFULLY REMOVE EXISTING FIN-TUBE RADIATION ELEMENT, ALL STEAM AND STEAM CONDENSATE RETURN PIPING FROM WITHIN EXISTING (REMAINING) RADIATION ENCLOSURE. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF DEMOLITIONS.

D6 REMOVE EXISTING CAPS @ VALVE TAPS FROM EXISTING SOUTH ZONE RADIATION SUPPLY (SRS) & SOUTH ZONE RADIATION RETURN (SRR) PIPING, WHERE INDICATED. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA.

N

## PARTIAL THIRD FLOOR PLAN - MECHANICAL DEMOLITIONS

0 1 2 3 4 6 8 feet

SCALE: 1/8" = 1' - 0"

mda engineering, inc.
Mechanical and Electrical Engineers
1415 Holland Road
Maumee, Ohio 43537
Phone: (419) 893-3141
Fax: (419) 893-0687

STATE OF OHIO
KEVIN P. LAFFERTY
E-54634
REGISTERED
PROFESSIONAL ENGINEER

# BOILER REPLACEMENT and HEATING SYSTEM UPGRADES
# LUCAS COUNTY COURTHOUSE

700 ADAMS STREET
TOLEDO, OHIO 43604

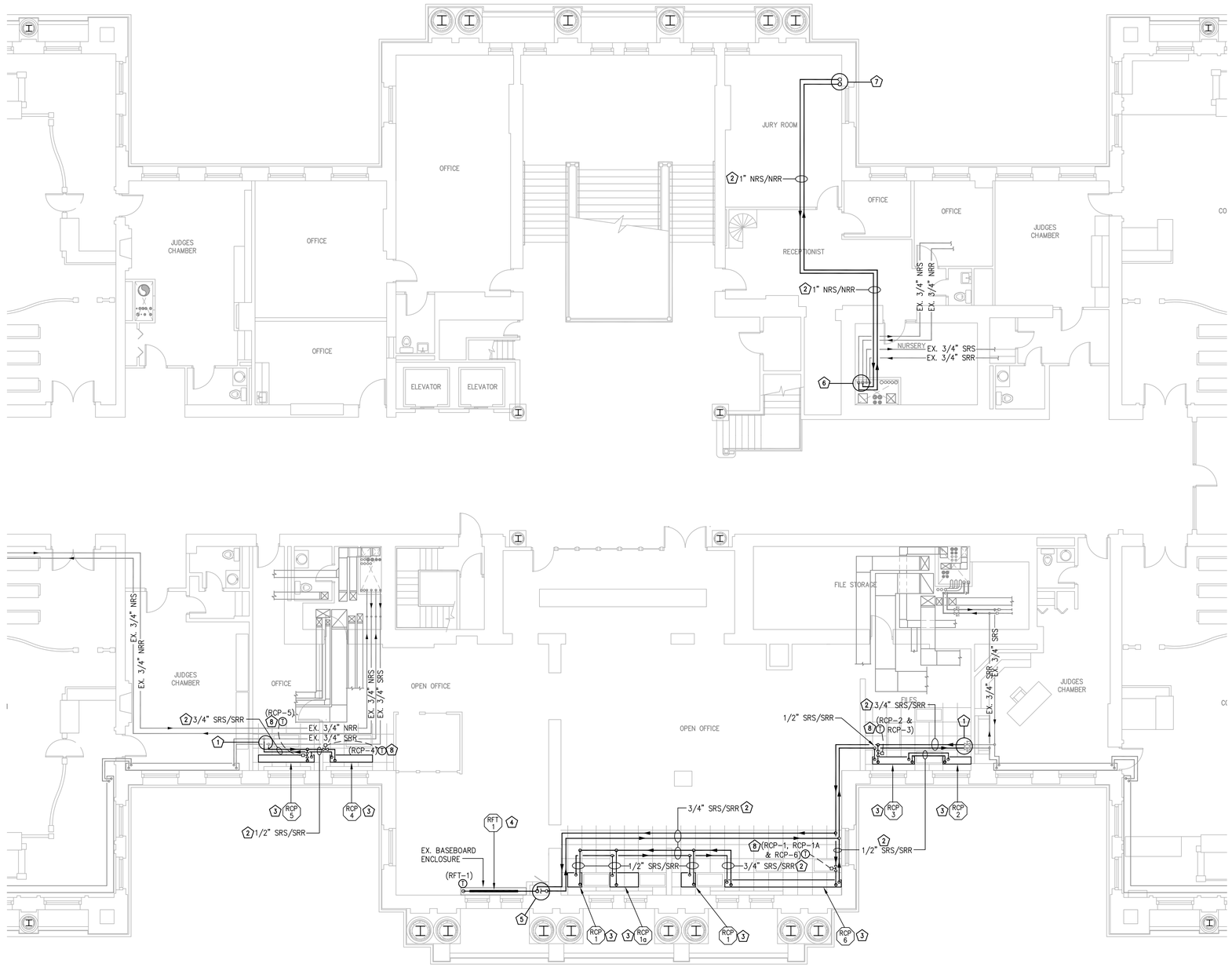
| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## Partial Third Floor Plans - Mechanical Demolitions

| Drawn By: JJR | Checked By: KPL |
|---|---|
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# M4.0




## SPECIAL NOTES:

1) MDA ENGINEERING, INC. HAS MADE EVERY EFFORT TO MAKE SURE THAT ANY NEW RADIATION EQUIPMENT, PIPING, THERMOSTATS, ETC., ON THIS DRAWING CAN BE INSTALLED AS SHOWN. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ANY KNOWN INTERFERENCES WITH EXISTING INFRASTRUCTURE; ELECTRICAL RECEPTACLES, CONDUITS, LIGHT FIXTURES, PIPING, DUCTWORK, ETC., AND SHALL BE RESPONSIBLE FOR MOVING, REWORKING, OR MODIFYING ANY OF THESE ITEMS (WHETHER SHOWN OR NOT) THAT MAY CAUSE INTERFERENCES WITH NEW WORK BEING INSTALLED. CONTRACTOR SHALL BE RESPONSIBLE TO ALLOW ANY ITEMS THAT WILL NEED TO BE REMOVED OR REWORKED, TO BE PERFORMED BY THE APPROPRIATE SUB-CONTRACTOR THAT SPECIALIZES FOR ITEMS IN THAT TRADE.

2) CONTRACTOR TO NOTE: ALL EXISTING ACTIVE SYSTEMS (PLUMBING, ELECTRICAL, ETC.) NOT INVOLVED IN THIS WORK SCOPE SHALL REMAIN IN SERVICE THROUGHOUT THE CONSTRUCTION PERIOD. CONTRACTOR SHALL FIELD COORDINATE WITH OWNER FOR ANY NEEDED INTERRUPTIONS OF ANY EXISTING SYSTEMS, ONE WEEK PRIOR TO PERFORMING ANY NEW CONNECTIONS OR TIE-INS.

3) CONTRACTOR TO AVOID CAUSING ANY DAMAGES TO ANY EXISTING (REMAINING) FINISHES, CASEWORK, PIPING, INSULATION, DUCTWORK, ELECTRICAL CONDUITS, ETC., WITHIN THIS AREA. CONTRACTOR WILL BE HELD MONETARILY RESPONSIBLE FOR ANY DAMAGES THAT MAY OCCUR DURING DEMOLITIONS AND INSTALLATION OF NEW WORK.

4) CONTRACTOR SHALL BE RESPONSIBLE TO PATCH AND REPAIR ANY FINISHED SURFACES WITH THE SAME QUALITY OF MATERIALS AND WORKMANSHIP AS EXISTING. CONTRACTOR SHALL REFER TO 'SPECIAL NOTES TO CONTRACTOR' ON DRAWING M1.0 FOR ADDITIONAL REQUIREMENTS.

5) CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR ALL REQUIREMENTS CONCERNING NEW PIPE CHASE INSTALLATIONS.

## THIRD FLOOR PLAN - MODIFICATION NOTES

1. CONTRACTOR TO CONNECT SOUTH ZONE HEATING WATER SUPPLY (SRS) & HEATING WATER RETURN (SRR) PIPING TO EXISTING TAPS, WHERE INDICATED; AS FIELD VERIFIED.
2. CONTRACTOR TO ROUTE PIPING WITHIN CEILING PLENUM AS HIGH AS POSSIBLE (A.H.A.P.); AS FIELD DETERMINED. AVOID CONFLICTS WITH ANY EXISTING INFRASTRUCTURE WITHIN THIS AREA. REFER TO PIPE HANGER DETAIL ON DWG. M6.0, & TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.
3. INSTALL CEILING MOUNTED RADIANT PANEL, WHERE INDICATED; AS PER MANUFACTURER INSTALLATION REQUIREMENTS. FIELD DETERMINE ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO INSTALLATION. REFER TO DETAIL ON DWG. M6.0, AND TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.
4. INSTALL REPLACEMENT FIN-TUBE RADIATION ELEMENT IN EXISTING (REMAINING) ENCLOSURE, WHERE INDICATED. FIELD DETERMINE ALL INSTALLATION REQUIREMENTS; PROVIDE ADDITIONAL OR NEW HANGER HARDWARE, BRACKETS, ETC.. REFER TO DETAIL ON DWG. M6.0, AND TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.
5. INSTALL 3/4" SRS & SRR DROPS IN EXISTING WALL CHASE, WHERE INDICATED; FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO INSTALLATION. ANCHOR PIPING DROPS TO EXISTING WALL @ MINIMUM TWO (2) LOCATIONS; EQUALLY SPACED, AS FIELD DETERMINED.
6. CONTRACTOR TO CONNECT 1" NORTH ZONE HEATING WATER SUPPLY (NRS) & HEATING WATER RETURN (NRR) PIPING TO EXISTING NORTH ZONE PIPE RISERS WITHIN EXISTING PIPE CHASE; AS FIELD DETERMINED. ROUTE PIPING WITHIN THIS AREA & AVOID CONFLICTS WITH ANY EXISTING (REMAINING) INFRASTRUCTURE.
7. INSTALL 1" NRS & NRR PIPE RISERS UP THROUGH EXISTING FLOOR PENETRATIONS (FORMERLY SERVING STEAM & CONDENSATE RETURN PIPING); AS FIELD VERIFIED. CONTRACTOR TO MODIFY EXISTING FLOOR PENETRATION AS FIELD DETERMINED. INSTALL PIPING RISERS AS PER DETAIL ON DWG. M6.0, & REFER TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.
8. CONTRACTOR TO FIELD DETERMINE LOCATION TO INSTALL CEILING MOUNTED REMOTE DIAL & SENSOR, SERVING HEATING WATER RADIANT CEILING PANELS. REFER TO DETAIL ON DWG. M6.0 & TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.

N

## PARTIAL THIRD FLOOR PLAN - MECHANICAL MODIFICATIONS

0 1 2 3 4 6 8 feet

SCALE: 1/8" = 1' - 0"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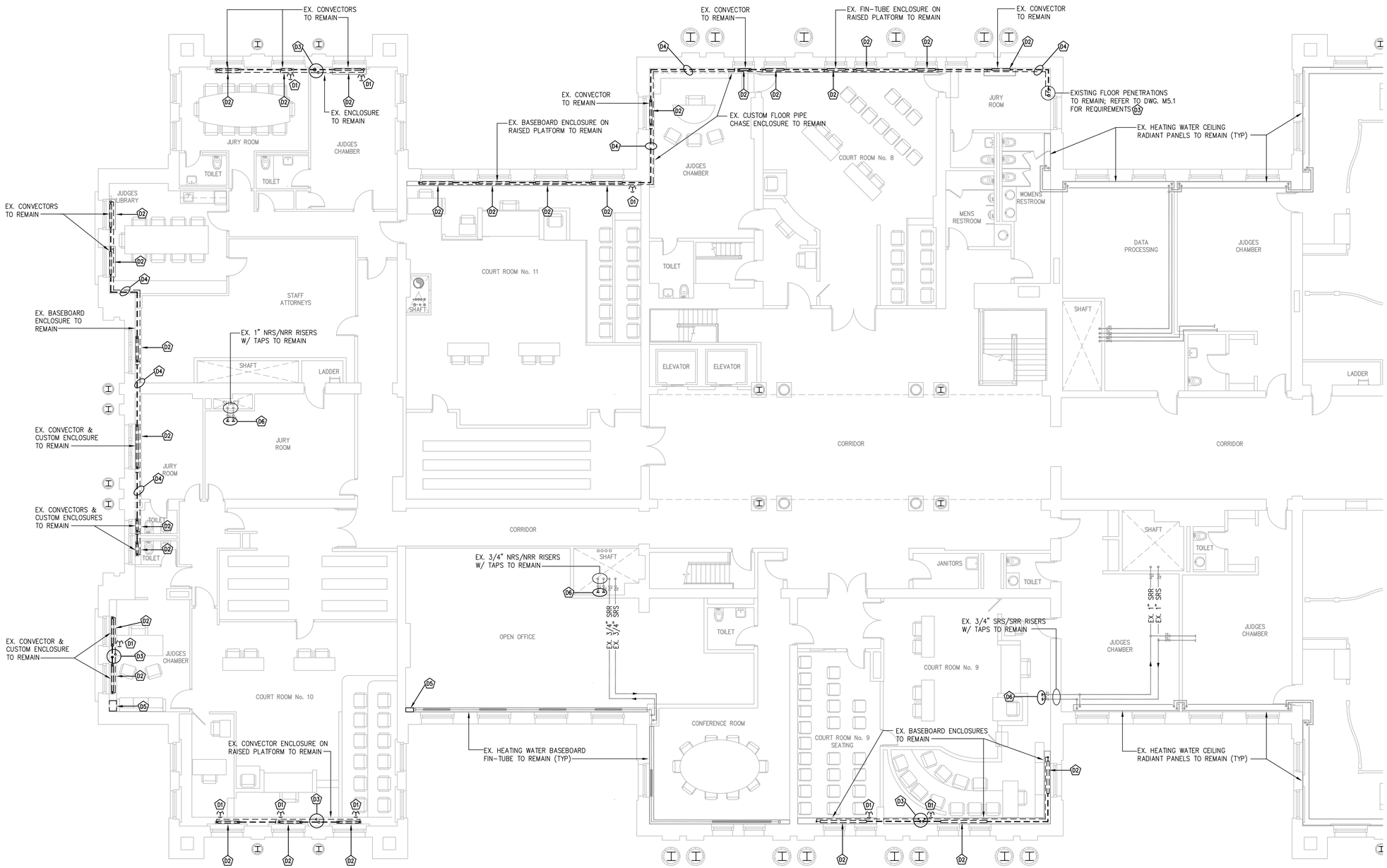
| | 04-17-15 | FOR BIDS |

## Partial Third Floor Plans - Mechanical Modifications

| Drawn By: JJR | Checked By: KPL |
|---|---|
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# M4.1




## THIRD FLOOR PLAN - DEMOLITION NOTES

**D1** DISCONNECT AND REMOVE EXISTING THERMOSTATIC VALVE SERVING EXISTING BASEBOARD FIN-TUBE RADIATION & CONVECTORS, WHERE INDICATED. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS.

**D2** CAREFULLY DISCONNECT AND REMOVE ALL EXISTING STEAM, AND CONDENSATE RETURN PIPING & ELEMENT; SERVING EXISTING FIN-TUBE RADIATION & EXISTING CONVECTORS. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS. NOTE; ALL ENCLOSURE (RADIATION & CONVECTORS) TO REMAIN.

**D3** DISCONNECT AND REMOVE ALL EXISTING STEAM, AND CONDENSATE RETURN PIPING RISERS OF THRU EXISTING FLOOR FROM 3rd FLOOR (BELOW), WHERE INDICATED. CONTRACTOR TO PATCH ALL FLOOR PENETRATIONS WITH NON-SHRINK GROUT, AS FIELD DETERMINED, UNLESS NOTED OTHERWISE.

**D4** CONTRACTOR TO REMOVE EXISTING STEAM AND STEAM CONDENSATE RETURN PIPING RUNNING ALONG EXISTING FLOOR & WALLS, WHERE INDICATED. FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO START OF DEMOLITIONS. REMOVE ALL WALL SUPPORT ATTACHMENTS, FLOOR STRAPS, ETC., AS FIELD VERIFIED.

**D5** CONTRACTOR TO CAREFULLY CUT EXISTING CUSTOM, & BASEBOARD ENCLOSURES, WHERE INDICATED, & REMOVE PORTION OF ENCLOSURE EXTENDING TO EXISTING WALL. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO START OF WORK.

**D6** REMOVE EXISTING CAPS FROM EXISTING SOUTH ZONE RADIATION SUPPLY (SRS) & SOUTH ZONE RADIATION RETURN (SRR) PIPING, WHERE INDICATED. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA.

N

## PARTIAL THIRD FLOOR PLAN - MECHANICAL DEMOLITIONS

0 1 2 3 4 6 8 feet

SCALE: 1/8" = 1' - 0"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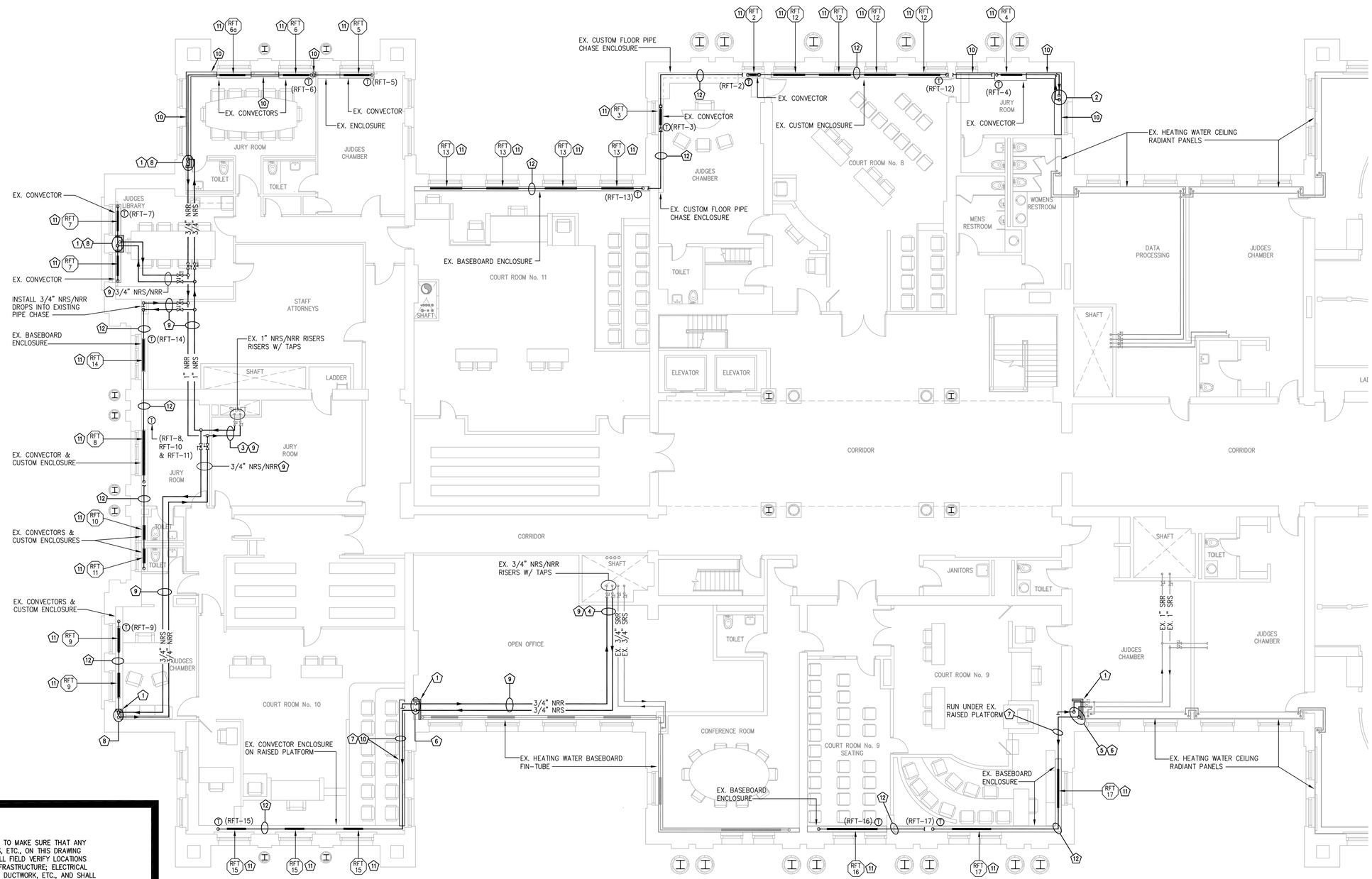
| | 04-17-15 | FOR BIDS |

## Partial Fourth Floor Plans - Mechanical Demolitions

| Drawn By: | Checked By: |
|---|---|
| JJR | KPL |
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# M5.0




## SPECIAL NOTES:

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5) CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR ALL REQUIREMENTS CONCERNING NEW PIPE CHASE INSTALLATIONS.

## FOURTH FLOOR PLAN - MODIFICATION NOTES

1. CONTRACTOR TO PROVIDE & INSTALL NEW PIPE CHASE (FLOOR TO CEILING), WHERE INDICATED. FIELD DETERMINE ALL SIZE REQUIREMENTS & MATERIALS. PAINT CHASE WALLS TO MATCH EXISTING WALL COLOR.
2. RUN 1" NORTH ZONE HEATING WATER SUPPLY (NRS) & HEATING WATER RETURN (NRR) PIPING UP THROUGH EXISTING FLOOR PENETRATIONS. FIELD VERIFY LOCATION, & REFER TO DWG. M6.0 FOR ALL REMAINING REQUIREMENTS.
3. CONNECT 1" NRS & 1" NRR PIPING TO EXISTING TAPS, WHERE INDICATE. FIELD VERIFY LOCATION, & ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO INSTALLATION.
4. CONNECT 3/4" NRS & 3/4" NRR PIPING TO EXISTING TAPS, WHERE INDICATE. FIELD VERIFY LOCATION, & ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO INSTALLATION.
5. CONNECT 3/4" SOUTH ZONE HEATING WATER SUPPLY (SRS) & HEATING WATER RETURN (SRR) PIPING TO EXISTING SOUTH ZONE PIPE TAPS, WHERE INDICATED. FIELD VERIFY VERIFY LOCATION, & ALL EXISTING CONDITIONS WITHIN THIS AREA, PRIOR TO INSTALLATION.
6. INSTALL 3/4" SRS & SRR PIPING DROPS WITHIN NEW PIPE CHASE, WHERE INDICATED. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA & AVOID CONFLICTS WITH ANY EXISTING INFRASTRUCTURE.
7. RACK PIPING ALONG EXISTING WALL, WHERE INDICATED. FIELD DETERMINE ALL EXISTING CONDITIONS WITHIN THIS AREA & AVOID CONFLICTS WITH ANY EXISTING INFRASTRUCTURE. REFER TO DETAIL ON DWG. M6.0, & TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.
8. INSTALL 3/4" NRS & NRR PIPING DROPS WITHIN NEW PIPE CHASE, WHERE INDICATED. FIELD VERIFY ALL EXISTING CONDITIONS WITHIN THIS AREA & AVOID CONFLICTS WITH ANY EXISTING INFRASTRUCTURE.
9. CONTRACTOR TO ROUTE PIPING WITHIN EXISTING LAY-IN CEILING PLENUM AS HIGH AS POSSIBLE (A.H.A.P.); AS FIELD DETERMINED. AVOID CONFLICTS WITH ANY EXISTING INFRASTRUCTURE WITHIN THIS AREA. REFER TO PIPE HANGER DETAIL ON DWG. M6.0, & TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.
10. CONTRACTOR TO RACK PIPING ALONG EXISTING WALL, WHERE INDICATED. FABRICATE & INSTALL NEW 6" WIDE x 19" DEEP x 16 Ga. ALUMINUM COVER OVER TOP OF NEW PIPING @ 4" A.F.F.; PAINT TO MATCH EXISTING CONVECTORS, OR BASEBOARD RADIATION ENCLOSURE. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO START OF INSTALLATION. REFER TO PIPING DETAILS ON DWG. M6.0, & TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.
11. INSTALL REPLACEMENT FIN-TUBE RADIATION ELEMENT WITHIN EXISTING (REMAINING) BASEBOARD ENCLOSURES, & CONVECTORS, WHERE INDICATED. CAREFULLY DISMANTLE EXISTING ENCLOSURES & CONVECTORS AS FIELD DETERMINED, FOR INSTALLATION OF NEW WORK. REFER TO REPLACEMENT ELEMENT SCHEDULE ON DWG. M1.0 & PIPING DETAILS ON DWG. M6.0, AND TO SPECIFICATIONS FOR ALL REMAINING REQUIREMENTS.
12. ROUTE HEATING WATER SUPPLY & RETURN PIPING THROUGH EXISTING ENCLOSURES (BASEBOARD, CUSTOM FLOOR MOUNTED CHASE, ETC.), WHERE INDICATED. CAREFULLY DISMANTLE EXISTING (REMAINING) ENCLOSURES AS FIELD DETERMINED, FOR INSTALLATION OF NEW WORK.

N

## PARTIAL FOURTH FLOOR PLAN - MECHANICAL MODIFICATIONS

0 1 2 3 4 6 8 feet

SCALE: 1/8" – 1' – 0"


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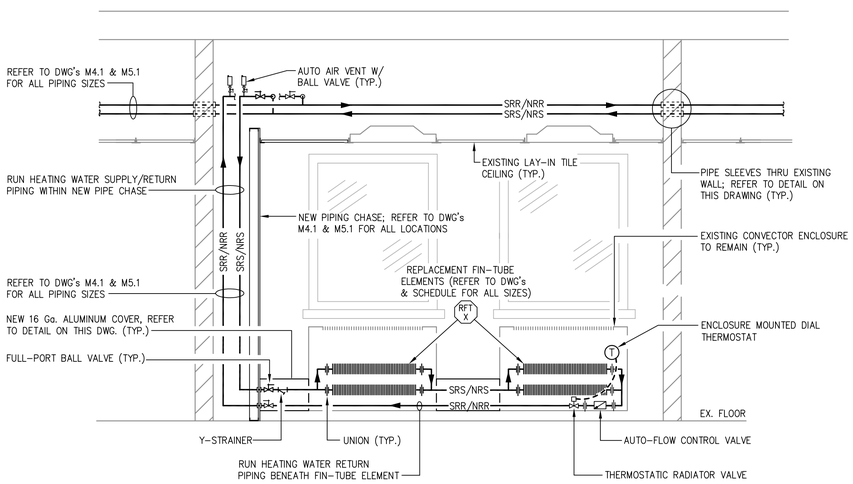
## Partial Fourth Floor Plans - Mechanical Modifications

| Drawn By: JJR | Checked By: KPL |
|---|---|
| Date: 04-17-15 | Job No: 15006 |

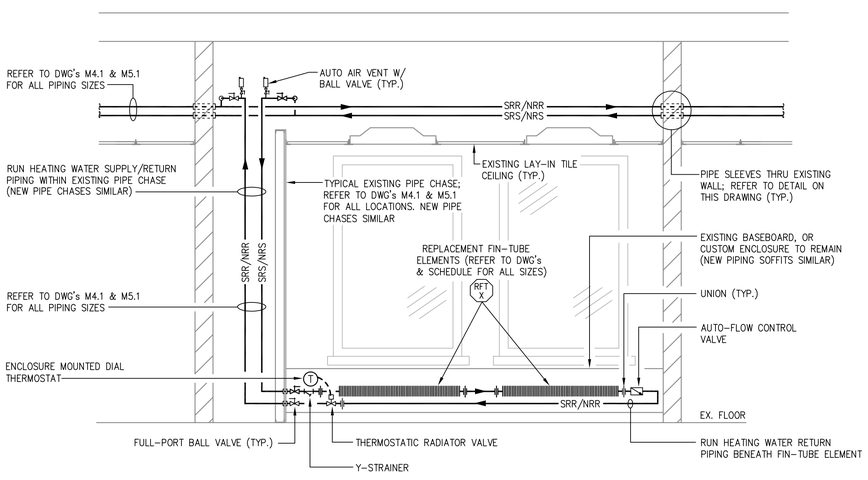
SHEET NO.

# M5.1



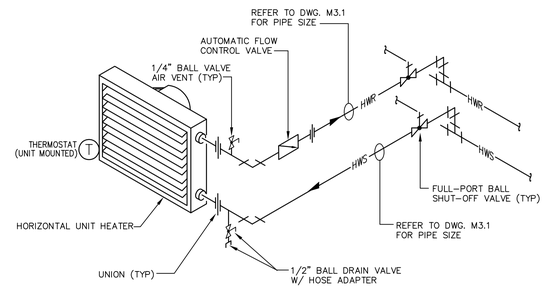

DETAIL OF REPLACEMENT RADIATION ELEMENT PIPING TO EXISTING CONVECTORS

NO SCALE (CONTRACTOR TO FIELD DETERMINE QUANTITY OF ELEMENTS REQUIRED)



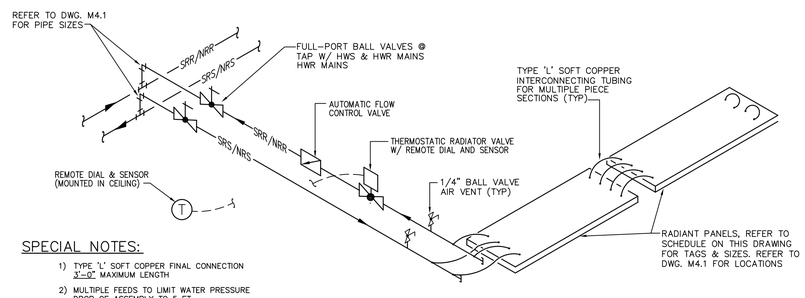

DETAIL OF REPLACEMENT RADIATION ELEMENT PIPING TO EXISTING BASEBOARD

NO SCALE (CONTRACTOR TO FIELD DETERMINE ALL EXISTING CONDITIONS, PRIOR TO INSTALLATION)




DETAIL OF HEATING WATER UNIT HEATER

NO SCALE (SIDE CONNECTIONS)

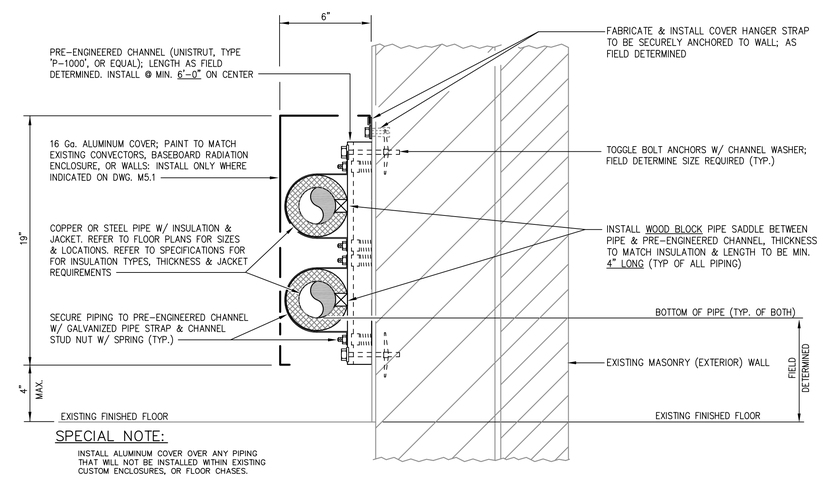



SPECIAL NOTES:

1) TYPE 'L' SOFT COPPER FINAL CONNECTION 3'-0" MAXIMUM LENGTH
2) MULTIPLE FEEDS TO LIMIT WATER PRESSURE DROP OF ASSEMBLY TO 5 FT.

TYPICAL DETAIL OF CEILING MOUNTED HOT WATER RADIANT PANEL PIPING

NO SCALE

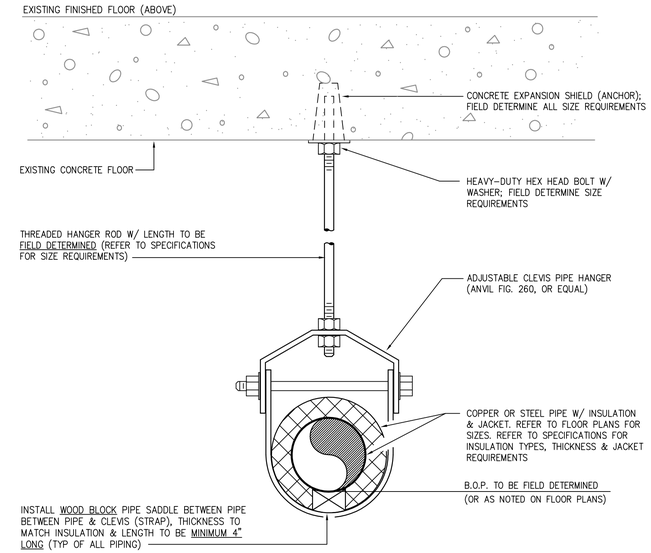



SPECIAL NOTE:

INSTALL ALUMINUM COVER OVER ANY PIPING THAT WILL NOT BE INSTALLED WITHIN EXISTING CUSTOM ENCLOSURES, OR FLOOR CHASES.

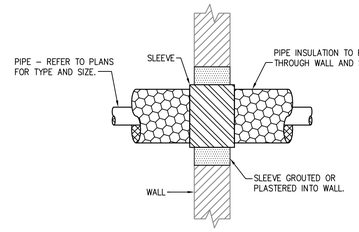
DETAIL OF PIPE RACK MOUNTED TO EXTERIOR WALL

NO SCALE (SERVING NRS/SRS & NRR/SRR HEATING WATER PIPING)



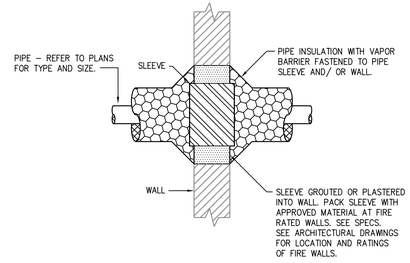

DETAIL OF ADJUSTABLE CLEVIS PIPE HANGER INSTALLATION

NO SCALE (USE FOR ALL INSULATED PIPING APPLICATIONS)



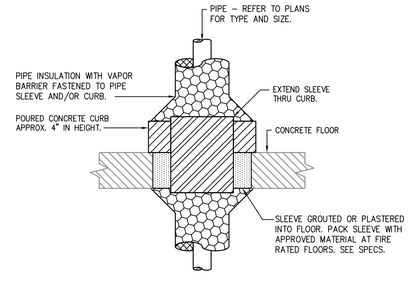

DETAIL OF INSULATED PIPE THRU WALL

NO SCALE




DETAIL OF INSULATED PIPE THRU FIRE RATED WALL

NO SCALE




DETAIL OF INSULATED PIPE THRU FIRE RATED FLOOR

NO SCALE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## Piping Details

| Drawn By: | Checked By: |
|---|---|
| JJR | KPL |
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# M6.0

## PLAN SYMBOL LEGEND

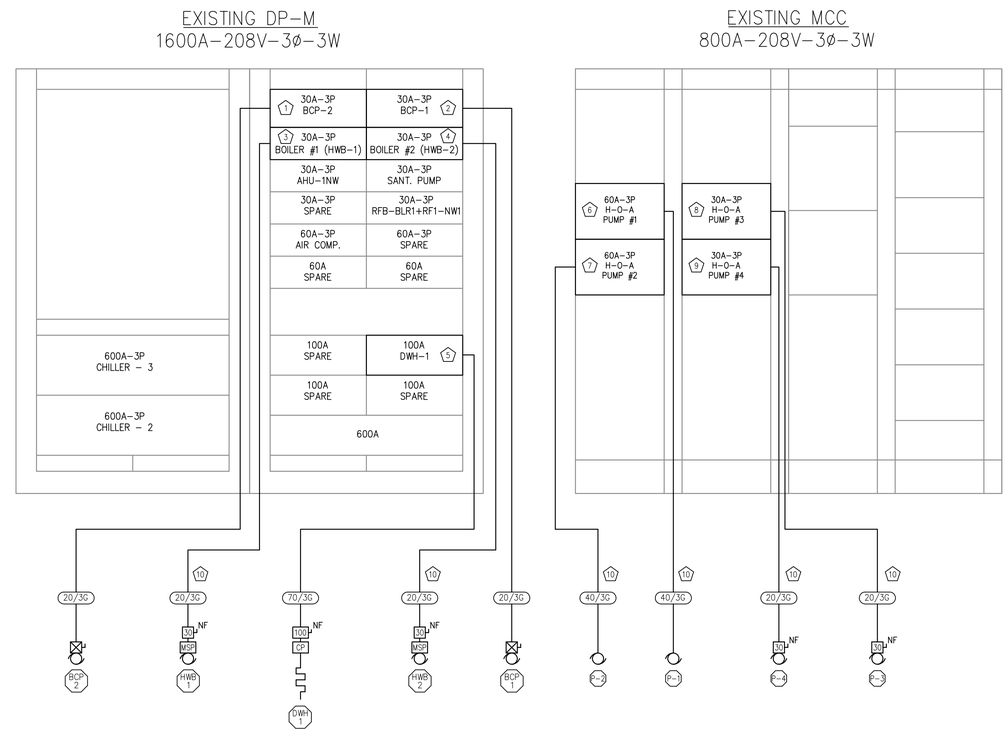
| SYMBOL | DESCRIPTION |
|---|---|
| | INDICATES CONDUIT ABOVE GRADE, SURFACE MOUNTED OR CONCEALED INSIDE THE BUILDING SURFACE. EXPOSED CONDUIT ON THE BUILDING EXTERIOR WILL NOT BE ACCEPTED. |
| | INDICATES CONDUCTOR IN CONDUIT, QUANTITY AS SHOWN. |
| | INDICATES PHASE, NEUTRAL AND GROUND CONDUCTORS IN CONDUIT. |
| | INDICATES (2) PHASE, NEUTRAL AND GROUND CONDUCTORS IN CONDUIT. |
| | INDICATES (3) PHASE, NEUTRAL AND GROUND CONDUCTORS IN CONDUIT. |
| | HOME RUN TO SOURCE PANELBOARD OR CONTROL PANEL. |
| J | JUNCTION BOX BLANK COVER. |
| CP CP | EQUIPMENT CONTROL PANEL. WIRING TO LINE TERMINALS BY E.C. |
| MSP | PACKAGED MOTOR STARTER PANEL FURNISHED WITH EQUIPMENT. WIRING TO LINE TERMINALS BY E.C. |
| MSP | PACKAGED MOTOR STARTER PANEL FURNISHED WITH EQUIPMENT, BUILT-IN SAFETY DISCONNECT. WIRING TO LINE TERMINALS BY E.C. |
| | MOTOR, HORSEPOWER AND VOLTAGE AS SCHEDULED. |
| | MANUAL MOTOR SAFETY DISCONNECT SWITCH, HORSEPOWER RATED; LOCKING PROVISIONS. |
| | MANUAL MOTOR STARTER SWITCH, HORSEPOWER RATED WITH OVERLOADS, LOCKING PROVISIONS, PILOT LIGHTED, ENGRAVED NAMEPLATE, FLUSH MOUNTED FINISHED SPACE, SURFACE MOUNTED UNFINISHED SPACE; 48" A.F.F. U.N.O. |
| SZ | INDOOR FUSIBLE SAFETY DISCONNECT SWITCH WITH SIZE AS INDICATED, NEMA 12 ENCLOSURE, NON-FUSED UNLESS NOTED OTHERWISE. FUSED UNITS WILL SHOW FUSE SIZE AS INDICATED WITH REJECTION STYLE FUSE CLIPS |
| | COMBINATION MAGNETIC MOTOR STARTER, FVNR, NEMA 12 ENCLOSURE, FUSIBLE, HORSEPOWER RATED NEMA SIZE TO MATCH MOTOR NAMEPLATE, FUSED CONTROL POWER TRANSFORMER, H-O-A MAINTAINED SELECTOR SWITCH, P.T.T. PILOT LIGHT. |
| R | MAGNETIC MOTOR STARTING RELAY, HORSEPOWER RATED, NEMA SIZE TO MATCH MOTOR HORSEPOWER, NEMA 12 ENCLOSURE IN ACCESSIBLE LOCATION; COORDINATE COIL WITH CONTROL REQUIREMENTS. |

## MISCELLANEOUS SYMBOL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| XX X | EQUIPMENT SCHEDULE ITEM, SEE SCHEDULE. |
| X-X | FEEDER SCHEDULE ITEM, SEE SCHEDULE. |
| X | PLAN NOTE ITEM. |
| | EXISTING CONDUCTOR/CABLE TO BE REMOVED. |
| $ | EXISTING DEVICE OR ITEM TO BE REMOVED. |
| $ | EXISTING DEVICE OR ITEM TO REMAIN. |
| $ | FUTURE DEVICE OR ITEM. |

## ABBREVIATIONS

| | |
|---|---|
| E.C. | ELECTRICAL CONTRACTOR |
| F.P. | FIRE PROTECTION CONTRACTOR |
| G.C. | GENERAL CONTRACTOR |
| C.M. | CONSTRUCTION MANAGER |
| M.C. | MECHANICAL CONTRACTOR |
| T.C. | TELECOMMUNICATIONS CONTRACTOR |
| T.C.C. | TEMPERATURE CONTROL CONTRACTOR |
| F.B.X.X. | FURNISHED BY 'XX', INSTALLED BY ELECTRICAL CONTRACTOR |
| D.E.S. | DOOR EQUIPMENT SUPPLIER |
| F.B.O. | FURNISHED BY OWNER, INSTALLED BY ELECTRICAL CONTRACTOR |
| EWC | ELECTRIC WATER COOLER |
| GFI | GROUND FAULT INTERRUPTER |
| L.A.D. | LOCATE AS DIRECTED |
| M.H. | MOUNTING HEIGHT, FLOOR TO BOTTOM OF ITEM |
| A.F.F. | MOUNTING HEIGHT ABOVE FINISHED FLOOR |
| A.F.G. | MOUNTING HEIGHT ABOVE FINISHED GRADE |
| U.G. | BELOW GRADE (UNDERGROUND) |
| NF | NON-FUSED SAFETY DISCONNECT AND/OR COMBINATION STARTER |
| NIC | WORK NOT IN CONTRACT |
| WIC | WORK IN CONTRACT |
| EM | EMERGENCY CIRCUIT FOR CONTINUOUS OPERATION; PROVIDE BREAKER LOCKING STRAP IN 'ON' POSITION |
| NL | NIGHT LIGHT CIRCUIT FOR CONTINUOUS OPERATION; PROVIDE BREAKER LOCKING STRAP IN 'ON' POSITION |
| U.N.O. | UNLESS NOTED OTHERWISE |
| V.L. | VERIFY LOCATION WITH OWNER |
| WP | WEATHERPROOF ITEM OR DEVICE |
| S.T.P. | SHIELDED TWISTED PAIR |
| U.T.P. | UNSHIELDED TWISTED PAIR |
| E.G.C. | EQUIPMENT GROUNDING CONDUCTOR |
| R.G.S. | RIGID GALVANIZED STEEL CONDUIT. |
| E.M.T. | ELECTRICAL METALLIC TUBING. |
| R.N.C. | RIGID NON-METALLIC CONDUIT. |




## RISER DIAGRAM - NOTES

1. USE EXISTING 30A-3P SWITCH FOR BCP-2 CIRCUITING. INSTALL NEW 15AFU, MATCH EXISTING FUSE TYPE/STYLE.
2. USE EXISTING 30A-3P SWITCH FOR BCP-1 CIRCUITING. INSTALL NEW 15AFU, MATCH EXISTING FUSE TYPE/STYLE.
3. USE EXISTING 30A-3P SWITCH FOR HWB-1 CIRCUITING. INSTALL NEW 10AFU, MATCH EXISTING FUSE TYPE/STYLE. COORDINATE FUSE SIZE WITH BOILER PROVIDER.
4. USE EXISTING 30A-3P SWITCH FOR HWB-2 CIRCUITING. INSTALL NEW 10AFU, MATCH EXISTING FUSE TYPE/STYLE. COORDINATE FUSE SIZE WITH BOILER PROVIDER.
5. USE EXISTING 100A-3P SPARE SWITCH FOR DWH-1 CIRCUITING. INSTALL NEW 70AFU, MATCH EXISTING FUSE TYPE/STYLE.
6. USE EXISTING H-O-A COMBO STARTER/DISCONNECT BUCKET IN MCC FOR P-1 CIRCUITING. VERIFY BUCKET SIZE. INSTALL NEW 40AFU, MATCH EXISTING TYPE/STYLE. REPLACE EXISTING MOTOR STARTING OVERLOADS WITH NEW TO MATCH NEW PUMP MOTOR HORSEPOWER.
7. USE EXISTING H-O-A COMBO STARTER/DISCONNECT BUCKET IN MCC FOR P-2 CIRCUITING, VERIFY BUCKET SIZE. INSTALL NEW 40AFU, MATCH EXISTING TYPE/STYLE. REPLACE EXISTING MOTOR STARTING OVERLOADS WITH NEW TO MATCH NEW PUMP MOTOR HORSEPOWER.
8. USE EXISTING H-O-A COMBO STARTER/DISCONNECT BUCKET IN MCC FOR P-3 CIRCUITING. INSTALL NEW 10AFU, MATCH EXISTING TYPE/STYLE. REPLACE EXISTING MOTOR STARTING OVERLOADS WITH NEW TO MATCH NEW PUMP MOTOR HORSEPOWER.
9. USE EXISTING H-O-A COMBO STARTER/DISCONNECT BUCKET IN MCC FOR P-4 CIRCUITING. INSTALL NEW 10AFU, MATCH EXISTING TYPE/STYLE. REPLACE EXISTING MOTOR STARTING OVERLOADS WITH NEW TO MATCH NEW PUMP MOTOR HORSEPOWER.
10. REUSE EXISTING CONDUIT AND WIRING IF POSSIBLE. VERIFY EXISTING CONDUIT AND WIRE SIZE MATCH SPECIFIED. EXTEND WIRE AND CONDUIT AS REQUIRED TO COMPLETE CIRCUITING.

## FEEDER SCHEDULE

| | 3 PHASE - 3W + E.G. | | |
|---|---|---|---|
| 20/3G | 3#12 & 1#12G-3/4"C | | |
| 30/3G | 3#10 & 1#10G-3/4"C | | |
| 40/3G | 3#8 & 1#10G-3/4"C | | |
| 50/3G | 3#6 & 1#10G-3/4"C | | |
| 60/3G | 3#6 & 1#10G-3/4"C | | |
| 70/3G | 3#4 & 1#8G-1"C | | |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STATE OF OHIO
RANDALL J. GARDNER
E-56361
REGISTERED PROFESSIONAL ENGINEER

# BOILER REPLACEMENT and HEATING SYSTEM UPGRADES
# LUCAS COUNTY COURTHOUSE

700 ADAMS STREET
TOLEDO, OHIO 43604

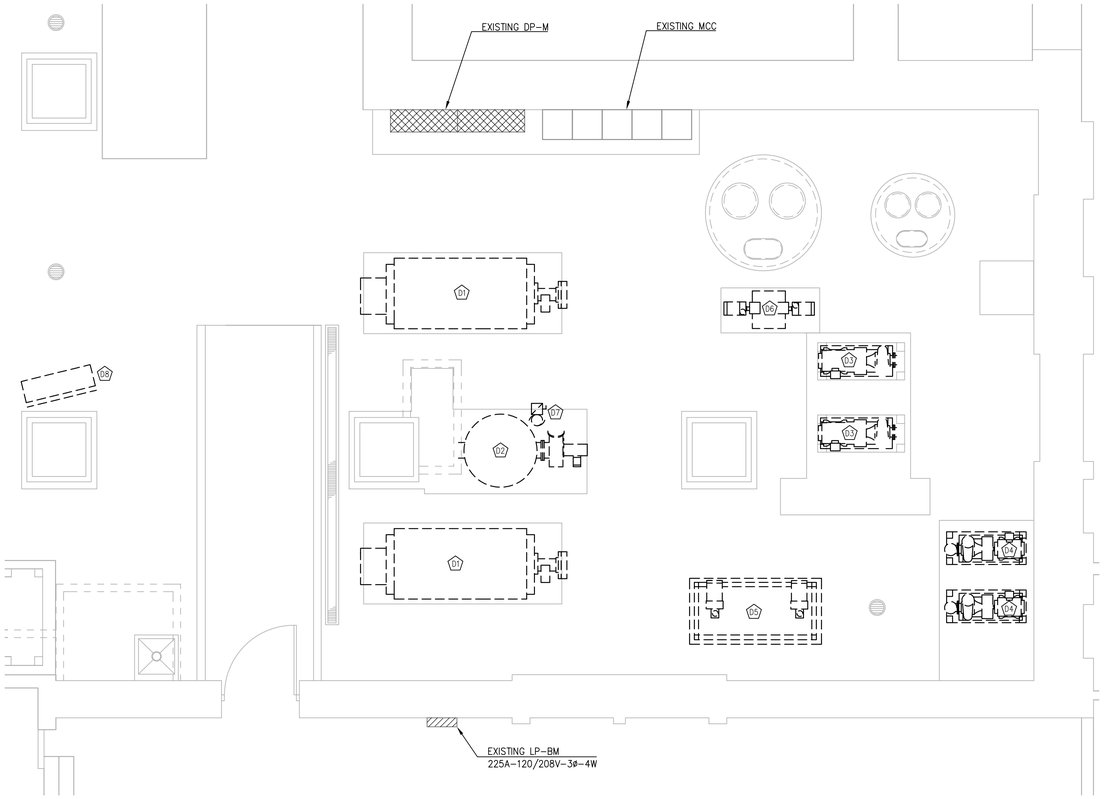
| REV. | DATE | DESCRIPTION |
|---|---|---|
| | 04-17-15 | FOR BIDS |

## ELECTRICAL SYMBOLS AND LEGENDS

| Drawn By: CCD | Checked By: RJG |
|---|---|
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

# E1.0




## PARTIAL BASEMENT FLOOR PLAN - BOILER/CHILLER ROOM - ELECTRICAL DEMOLITION

0 1 2 3 4 feet

SCALE: 1/4" = 1' - 0"

## BOILER/CHILLER ROOM - DEMOLITION NOTES

(D1) EXISTING BOILERS 1 & 2 TO BE DISCONNECTED AND REMOVED; REUSE CONDUIT.

(D2) EXISTING WATER HEATER TO BE DISCONNECTED AND REMOVED.

(D3) EXISTING PUMPS 1 & 2 TO BE DISCONNECTED AND REMOVED; REUSE CONDUIT.

(D4) EXISTING PUMPS 3 & 4 TO BE DISCONNECTED AND REMOVED; REUSE CONDUIT.

(D5) EXISTING BOILER FEED PUMPS (2) AND CONDENSATE TANK TO BE DISCONNECTED AND REMOVED.

(D6) EXISTING CONDENSATE PUMPS (2) TO BE DISCONNECTED AND REMOVED.

(D7) EXISTING WATER HEATER CIRC. PUMP TO BE DISCONNECTED AND REMOVED.

(D8) EXISTING UNIT HEATER TO BE REMOVED

## GENERAL NOTES - DEMOLITION:

1. DISCONNECT AND REMOVE ALL DEVICES, FIXTURES, JUNCTION BOXES, ETC. SHOWN WITH A DARK DASHED LINE WITHIN THE AREA OF PROPOSED DEMOLITION WORK.
2. ITEMS SHOWN ON THIS DRAWING ARE A COMPOSITE FROM SEVERAL DRAWINGS OF PREVIOUS PROJECTS AND FIELD INVESTIGATIONS. IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW EACH AND EVERY ITEM INVOLVED IN THE DEMOLITION. IT HAS BEEN PREPARED TO ASSIST THE CONTRACTOR IN ESTIMATING THE COST OF THE PROJECT.
3. THE INTENT OF THIS PROJECT IS TO REMOVE ALL EQUIPMENT, WIRING, RACEWAY, ETC. NO LONGER IN SERVICE AND NOT REQUIRED FOR THE ULTIMATE INSTALLATION WITHIN THE CONFINES OF THE PROPOSED WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE THE SITE.
4. WHERE DEMOLITION OF EXISTING SYSTEMS OR EQUIPMENT CAUSES RELATED AND ANCILLARY DAMAGE TO OTHER ITEMS INCLUDING THE ADJACENT STRUCTURE, CEILING OR FINISHES, THESE DAMAGED ITEMS SHALL BE FULLY REPAIRED OR REPLACED TO RETURN THE FACILITY TO THE CONDITIONS BEFORE THE DEMOLITION WORK.
5. E.C. TO DISCONNECT AND REMOVE ALL ASSOCIATED RACEWAY, CONDUCTORS, DEVICES, ETC. FOR EQUIPMENT BEING REMOVED BACK TO SOURCE. E.C. MAY REUSE EXISTING RACEWAY FOR NEW LIGHTS, RECEPTACLES, ETC. AS APPROPRIATE AND ALLOWED BY CODE. REMOVE RACEWAY NOT USED.

## BOILER/CHILLER ROOM - MODIFICATION NOTES

(1) NEW ELECTRIC WATER HEATER. CONNECT TO SPARE 100A-3P SWITCH IN EXISTING DP-M, SEE SHEET E1.0 FOR DETAILS. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH M.C./EQUIPMENT SUPPLIER.

(2) NEW WATER HEATER CIRC. PUMP, CIRCUIT AS INDICATED ON PLAN. REUSE EXISTING CONDUIT AND CONDUCTORS FROM REMOVED GAS WATER HEATER, EXTEND AS REQUIRED.

(3) NEW PUMPS 1 & 2 TO REPLACE REMOVED PUMPS. RECONNECT TO EXISTING MCC, SEE SHEET E1.0 FOR DETAILS.

(4) NEW PUMPS 3 & 4 TO REPLACE REMOVED PUMPS. RECONNECT TO EXISTING MCC, SEE SHEET E1.0 FOR DETAILS.

(5) NEW BOILERS SHALL BE RECONNECTED TO EXISTING BOILER SWITCHES IN DP-M, SEE SHEET E1.0 FOR DETAILS.

(6) NEW CONDENSATE PUMP SHALL BE CONNECTED TO EXISTING CONDENSATE PUMP SWITCH IN DP-M, SEE SHEET E1.0 FOR DETAILS.

(7) NEW CONDENSATE PUMP SHALL BE CONNECTED TO EXISTING FEEDER PUMP SWITCH IN DP-M, SEE SHEET E1.0 FOR DETAILS.

(8) MOUNT STARTER/DSICONNECT TO UNISTRUT RACK, COORDINATE MOUNTING/LOCATION.

(9) RECONNECT TO EXISTING BRANCH CIRCUITING FROM REMOVED UNIT HEATER. EXTEND WIRE AND CONDUIT AS REQUIRED.

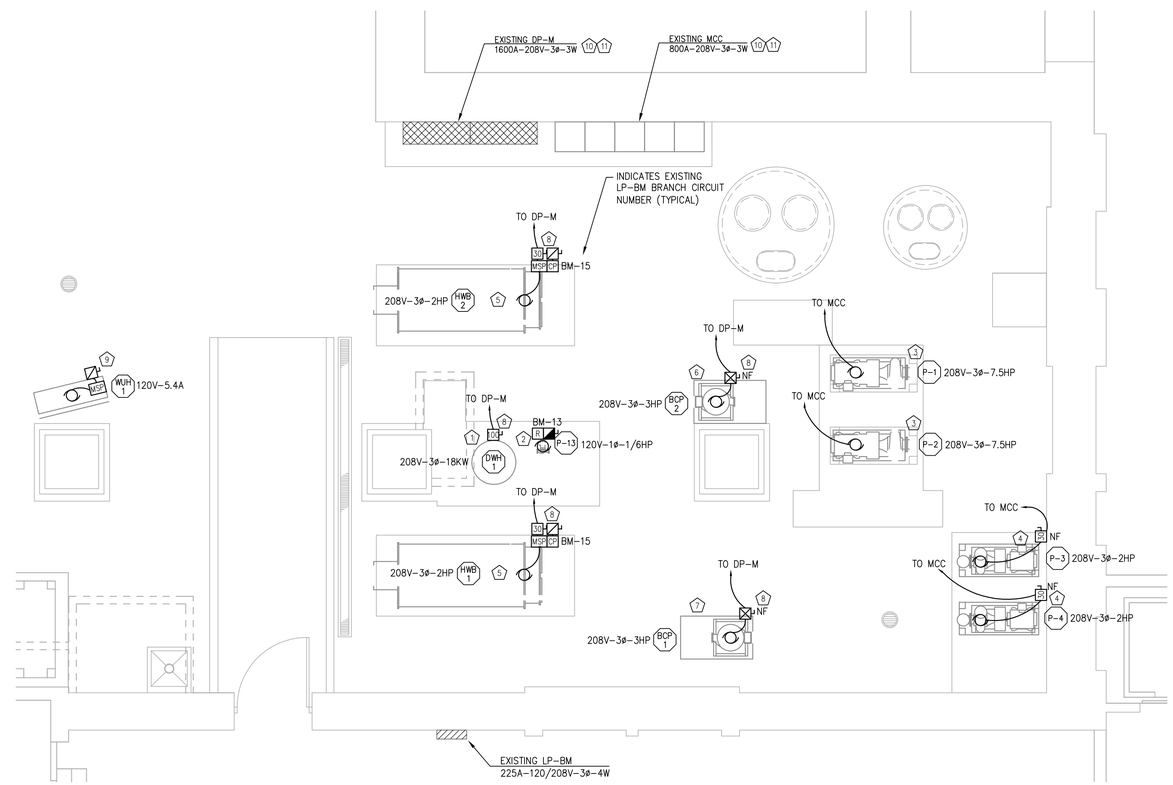
(10) CONTRACTOR TO FIELD VERIFY FUSE CLASS TYPE AND REPORT EXISTING FUSE CLASS TYPE TO ENGINEER.

(11) PERFORM THE FOLLOWING INFRARED (THERMOGRAPHIC) SCAN TESTS AND INSPECTIONS AND PREPARE REPORTS.

a. INITIAL INFRARED SCANNING: AFTER SUBSTANTIAL COMPLETION, BUT NOT MORE THAN 60 DAYS AFTER FINAL ACCEPTANCE, PERFORM AN INFRARED SCAN OF EACH MULTI-POLE ENCLOSED CONTROLLER. REMOVE FRONT PANELS SO JOINTS AND CONNECTIONS ARE ACCESSIBLE TO PORTABLE SCANNER.

b. FOLLOW-UP INFRARED SCANNING: PERFORM AN ADDITIONAL FOLLOW-UP INFRARED SCAN OF EACH MULTI-POLE ENCLOSED CONTROLLER 11 MONTHS AFTER DATE OF SUBSTANTIAL COMPLETION.

c. INSTRUMENTS AND EQUIPMENT: USE AN INFRARED SCANNING DEVICE DESIGNED TO MEASURE TEMPERATURE OR TO DETECT SIGNIFICANT DEVIATIONS FROM NORMAL VALUES. PROVIDE CALIBRATION RECORD FOR DEVICE.




## PARTIAL BASEMENT FLOOR PLAN - BOILER/CHILLER ROOM - ELECTRICAL MODIFICATION

0 1 2 3 4 feet

SCALE: 1/4" = 1' - 0"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## Basement Plan - Boiler/Chiller Room - Elec. Modifications

| Drawn By: | Checked By: |
|---|---|
| CCD | RJG |
| Date: 04-17-15 | Job No: 15006 |

SHEET NO.

E2.0