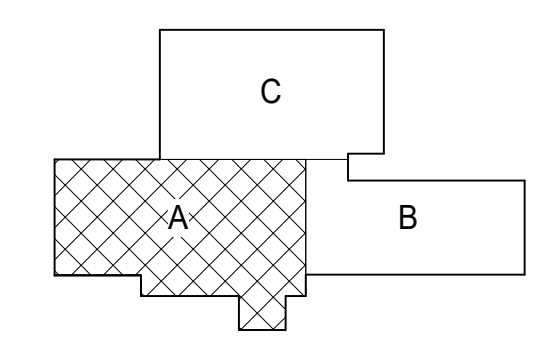


1
A-101.A
1/8" = 1'-0"

MAIN LEVEL FLOOR PLAN - PART A

- GENERAL FLOOR PLAN NOTES:**
- UTILIZE 20GA. COLD FORMED STEEL STUDS AT 16" O.C. AT ALL INTERIOR PARTITIONS, U.N.O. (18GA. WHEN HEIGHT EXCEEDS MANUF. LIMITATIONS). MAINTAIN 6" COLD FORMED STEEL STUDS AT ALL PLUMBING AND CHASE WALLS, U.N.O. (VERIFY WITH PLANS AND WALL TYPE SHEET).
 - ALL DIMENSIONS ARE TO FACE OF FINISH MATERIAL, U.N.O.
 - PROVIDE AND INSTALL SEALANT AT INTERSECTION OF ALL GYPSUM BOARD PARTITIONS AND MASONRY/CONCRETE WALLS, (BOTH SIDES OF PARTITIONS).
 - VERIFY SIZE AND LOCATION OF MECHANICAL AND ELECTRICAL EQUIPMENT, PADS, PENETRATIONS AND SUPPORTS WITH MECHANICAL AND ELECTRICAL DRAWINGS.
 - SLOPE FLOORS TO DRAINS AT 1/8" PER FOOT MINIMUM WHILE KEEPING FLOOR LEVEL AT WALL BASE CONDITION. (DO NOT EXCEED 2% SLOPE IN ANY DIRECTION). REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION.
 - PROVIDE AND INSTALL A FULLY AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS, WITH APPROVED COMPONENTS, DEVICES AND EQUIPMENT TO PROVIDE COMPLETE COVERAGE OF ALL PORTIONS OF THE BUILDING. THE FIRE SUPPRESSION SPRINKLER HEADS MUST BE QUICK RESPONSE SPRINKLER HEADS THROUGHOUT THE LIGHT HAZARD PORTIONS, AND STANDARD RESPONSE AT ALL OTHER LOCATIONS. PROVIDE HIGH TEMPERATURE RATED HEADS PER NFPA 13.
 - PLANS INDICATE MINIMUM REQUIREMENTS FOR FIRE EXTINGUISHERS. PROVIDE ADDITIONAL EXTINGUISHERS IF REQUIRED BY AUTHORITY HAVING JURISDICTION. FIRE EXTINGUISHERS TO COMPLY WITH NFPA 10.
 - COORDINATE ALL METER LOCATIONS WITH CIVIL, PLUMBING AND ELECTRICAL DRAWINGS.
 - COORDINATE TRANSFORMER PAD LOCATION WITH CIVIL AND ELECTRICAL DRAWINGS.
 - TO THE MAXIMUM EXTENT POSSIBLE, FLOOR CLEAN-OUTS ARE TO BE LOCATED IN INCONSPICUOUS LOCATIONS. ALL FLOOR CLEAN-OUTS LOCATED IN AREAS WITH FINISH FLOORING ARE TO BE FITTED WITH FINISH FLOORING INSERTS. ALL CLEAN-OUTS ARE TO BE FLUSH WITH FLOORS/WALLS.
 - WATER CLOSET WASTE LINES ARE TO BE LOCATED IN WALL CHASE, NOT IN EXTERIOR WALLS.
 - REFER TO SHEET A.700'S FOR ROOM FINISH, DOOR & WINDOW SCHEDULES.
 - SEE SHEET A.720'S FOR WALL TYPES AND RATED ASSEMBLIES.
 - SEE SHEET A.800'S FOR REFLECTED CEILING PLANS.
 - REFER TO SHEET A-001 FOR MOUNTING HEIGHTS.
 - REFER TO PROJECT SPECIFICATIONS MANUAL FOR ADDITIONAL INFORMATION.

| WALL LEGEND: | |
|--|--|
| STUD INTERIOR WALL W/ GYP.BD (EXISTING TO REMAIN) | |
| STUD INTERIOR WALL W/ GYP.BD (W/ S.A.B.) | |
| STUD INTERIOR WALL FURRING W/ GYP.BD (ON MASONRY WALL) | |
| MASONRY WALL | |
| MASONRY VENEER OVER AIRSPACE AND CONTINUOUS INSULATION ON W/ WRB OVER MASONRY WALL | |
| CONCRETE WALL | |
| INSULATED METAL PANELS OVER AIRSPACE ON HAT CHANNELS OVER CMU WALL | |
| **NOTE: WALL LEGEND SHOWN FOR GRAPHICAL REFERENCE ONLY. REFER TO WALL TYPES AND SECTIONS FOR ADDITIONAL DETAILS AND INFORMATION. | |



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BEFORE YOU DIG
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PH: (248) 606-8821

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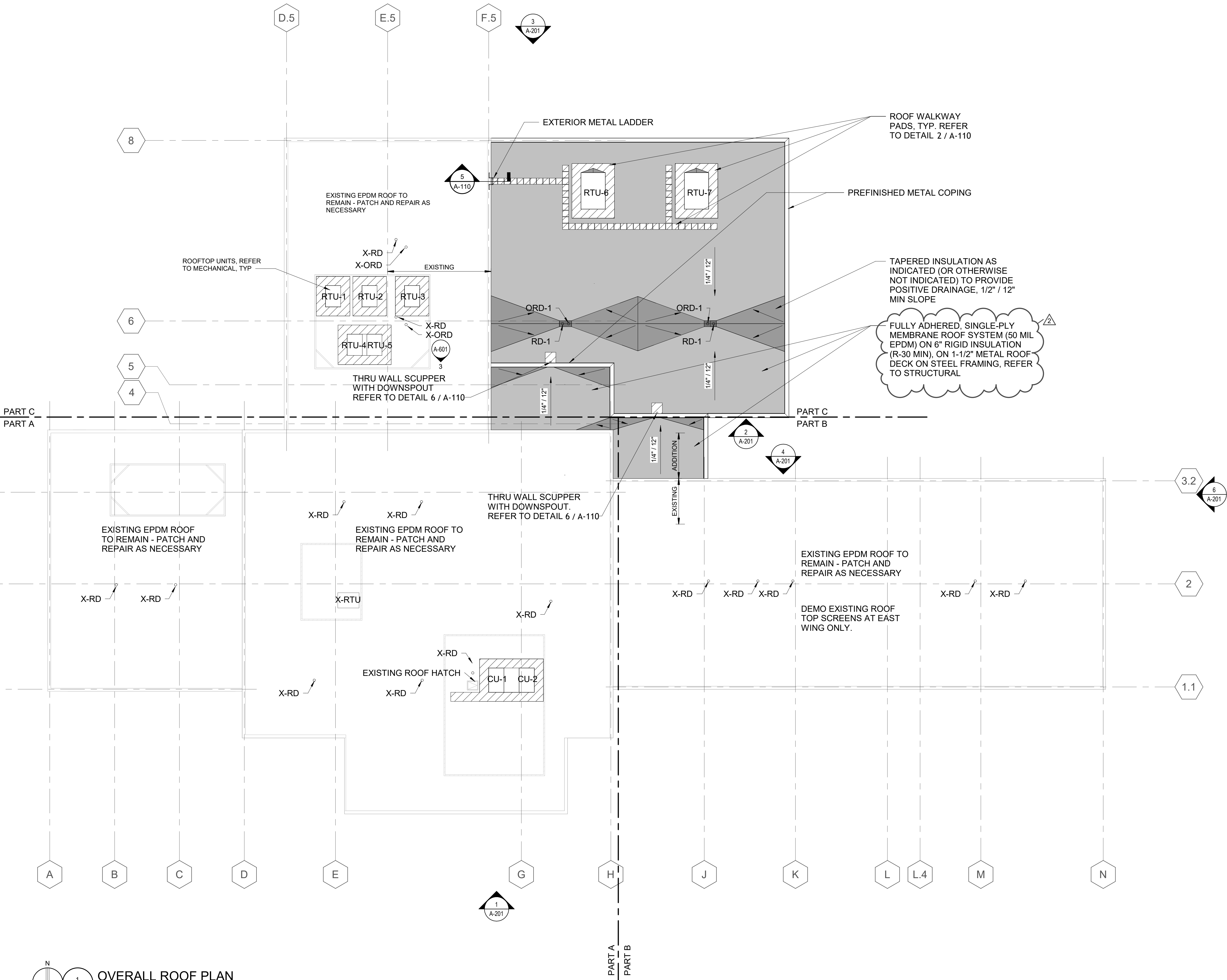
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DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
2700 W ARGYLE ST., JACKSON, MI

SHEET TITLE: MAIN LEVEL FLOOR PLAN - PART A

| DESIGNED | DATE | ISSUED FOR: |
|----------|----------|--------------|
| HL | 02/09/26 | PRELIMINARY |
| DRAWN | | CONSTRUCTION |
| CHECKED | | FINAL RECORD |
| TM | | |
| RMR | | |

IDENTIFICATION NO: PROJECT NO: 25510.A
DIVA: 25225007
FILE NO/INDEX CODE: 51725030.CAK

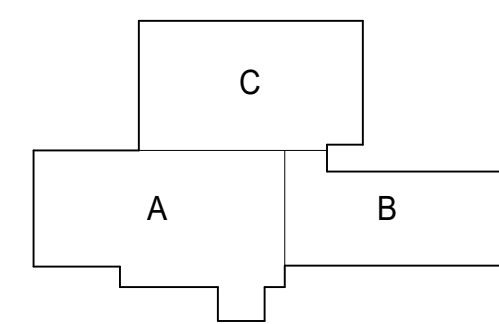
A-101.A



| ROOF PLAN LEGEND | |
|------------------|---|
| | D.S. DOWNSPOUT |
| | ROOF WALKWAY PADS |
| | ROOF ACCESS HATCH |
| | ROOF DRAIN (R.D.) AND ROOF DRAIN OVERFLOW (R.D.O.) |
| | EXHAUST FAN (E.F.) - REFER TO MECHANICAL DRAWINGS |
| | FULLY ADHERED SINGLE-PLY MEMBRANE ROOF SYSTEM (EPDM) ON 1/4" ROOF PROTECTION ON RIGID POLYISO INSULATION (R-30 MIN) |
| | TAPERED ROOF INSULATION |

- ROOF NOTES**
- CONTRACTOR TO COORDINATE LOCATION OF ALL EXHAUST AND INTAKE LOUVERS INCLUDING BATHROOM/TOILET ROOM EXHAUST FANS, ETC. W/MECHANICAL DRAWINGS.
 - ALL ROOFTOP PENETRATIONS INCLUDING PLUMBING VENTS, MECHANICAL CURBS, AND ARCHITECTURAL CURBS, SHALL HAVE FLASHING INSTALLED PER ROOF SYSTEM MANUFACTURER.
A. AIR BARRIER TO BE FLASHED AT ALL PENETRATIONS. ALL EXTERIOR METAL TO BE GALVANIZED, FACTORY PRIMED AND PAINTED PER THE PAINTING SCHEDULE.
 - SNOW/ICE RETENTION AT METAL ROOF AREAS INDICATED FOR GENERAL DESIGN INTENT. CONTRACTOR RESPONSIBLE FOR COORDINATION AND VERIFICATION OF LOCATION AND QUANTITY W/ROOFING MANUFACTURER.
 - PROVIDE AND INSTALL PRESERVATIVE TREATED, SOLID WOOD BLOCKING AT ALL TRANSITIONS AND EDGES TO HEIGHT OF ROOF INSULATION AT MEMBRANE ROOF LOCATIONS. U.N.O., INSTALLED PER ROOF SYSTEM MANUFACTURER.
 - ALL MEMBRANE ROOFING TO BE SLOPED AT 1/4" PER FOOT MINIMUM U.N.O.
 - SADDLES ARE REQUIRED AT ALL LOCATIONS INDICATED OR OTHERWISE NOT INDICATED (I.E. MECHANICAL UNITS, EQUIPMENT CURBS, INSIDE CORNERS AT PARAPET WALLS, ETC.) IN ORDER TO PROVIDE POSITIVE ROOF DRAINAGE. SLOPE ALL SADDLES AT 1/2" PER FOOT MINIMUM U.N.O.
 - DO NOT "BRIDGE" MEMBRANE ROOFING.
 - PROVIDE AND INSTALL A ROOF WALKWAY PAD AT THE ROOF BELOW ALL MECHANICAL UNIT CONDENSATE TERMINATIONS FOR ROOF MEMBRANE PROTECTION. CONTRACTOR TO COORDINATE EXACT LOCATION IN THE FIELD.
 - PROVIDE AND INSTALL ROOF BREATHER VENTS IN MECHANICALLY FASTENED ROOFING. CONTRACTOR TO VERIFY EXACT QUANTITY AND LAYOUT W/ ROOF MANUF.
 - ALL EXTERIOR METAL TO BE GALVANIZED, FACTORY PRIMED AND PAINTED PER THE PAINTING SCHEDULE.

OVERALL ROOF PLAN
1/16" = 1'-0"



MISSDIG811

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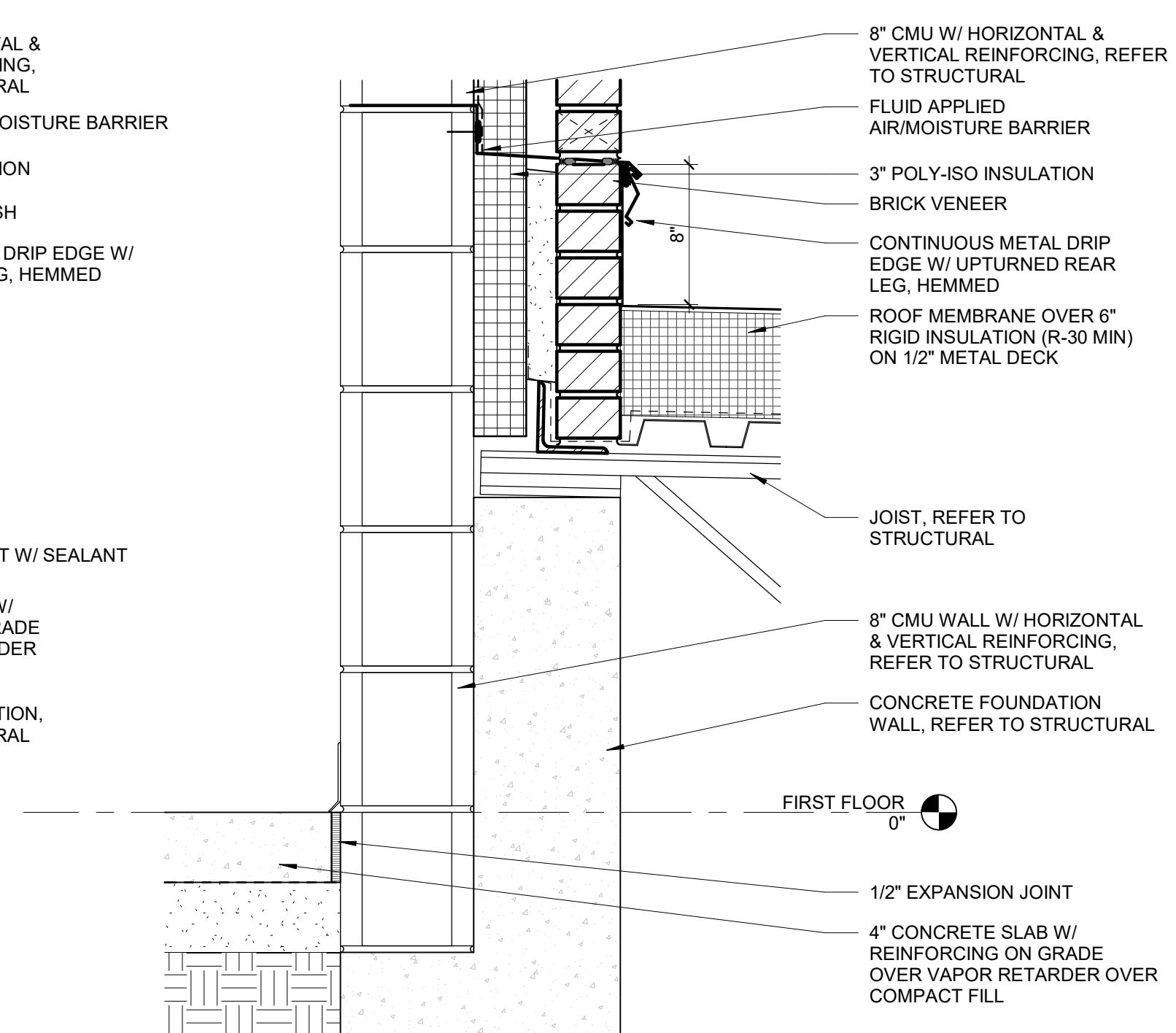
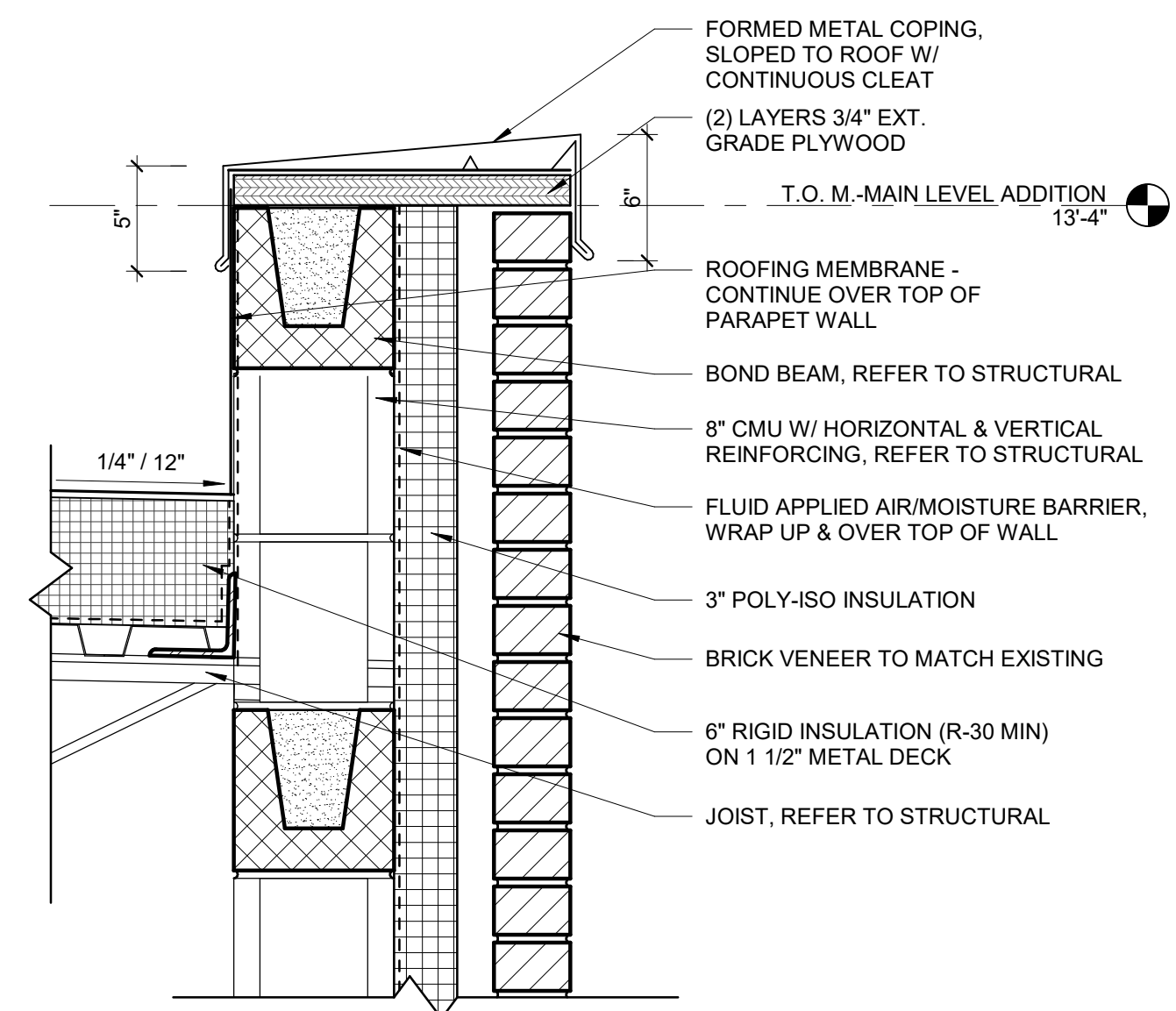
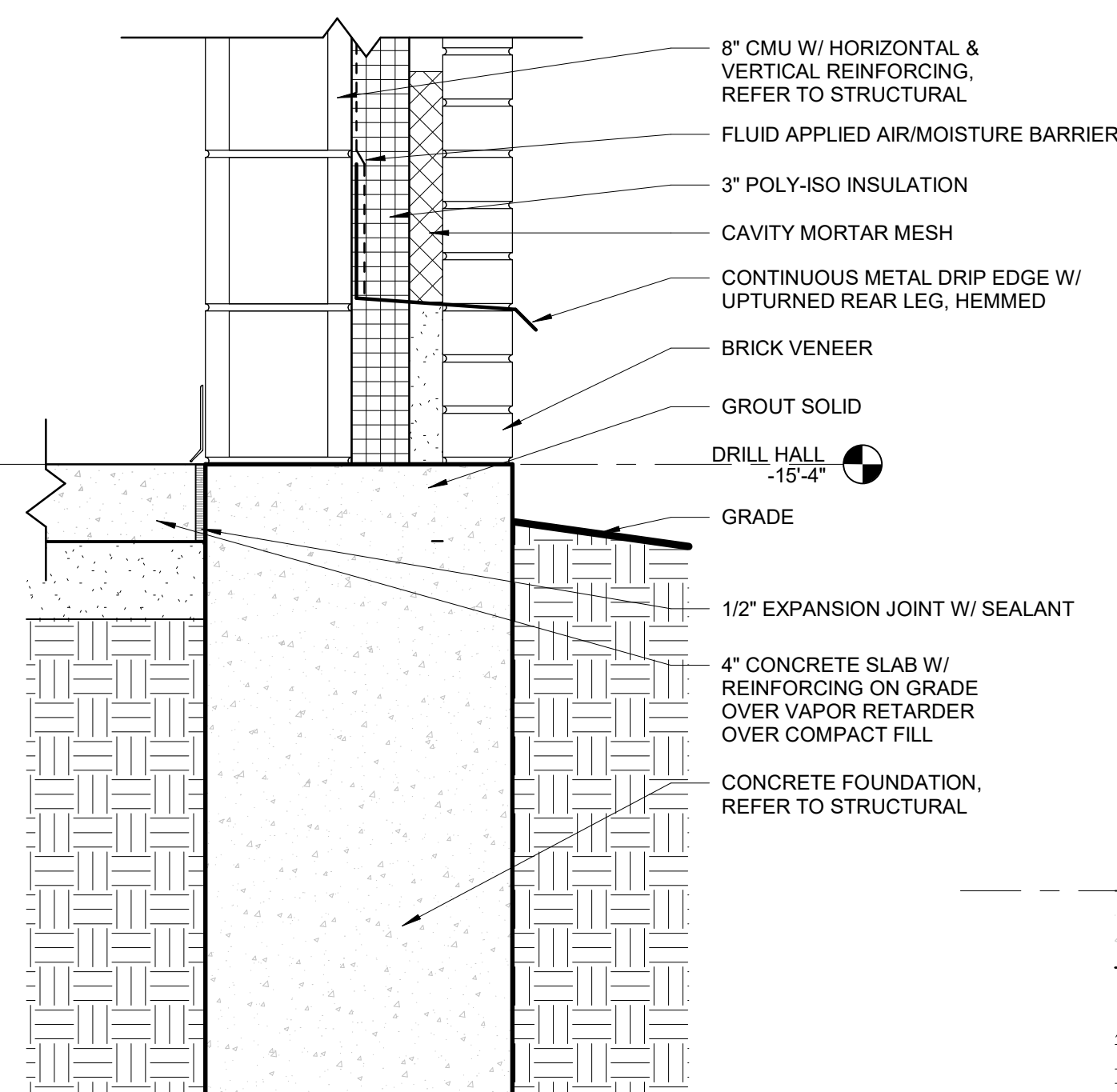
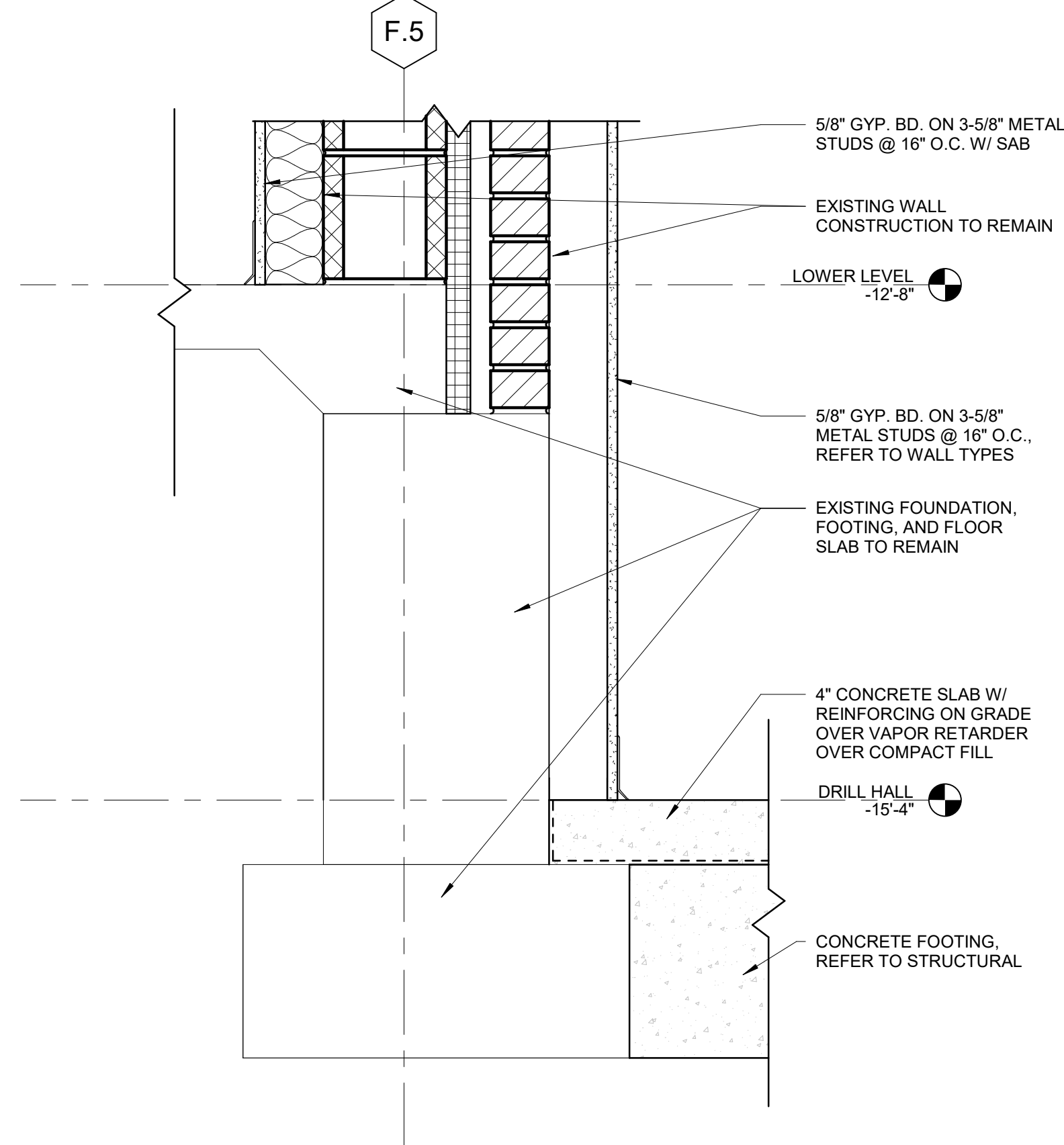
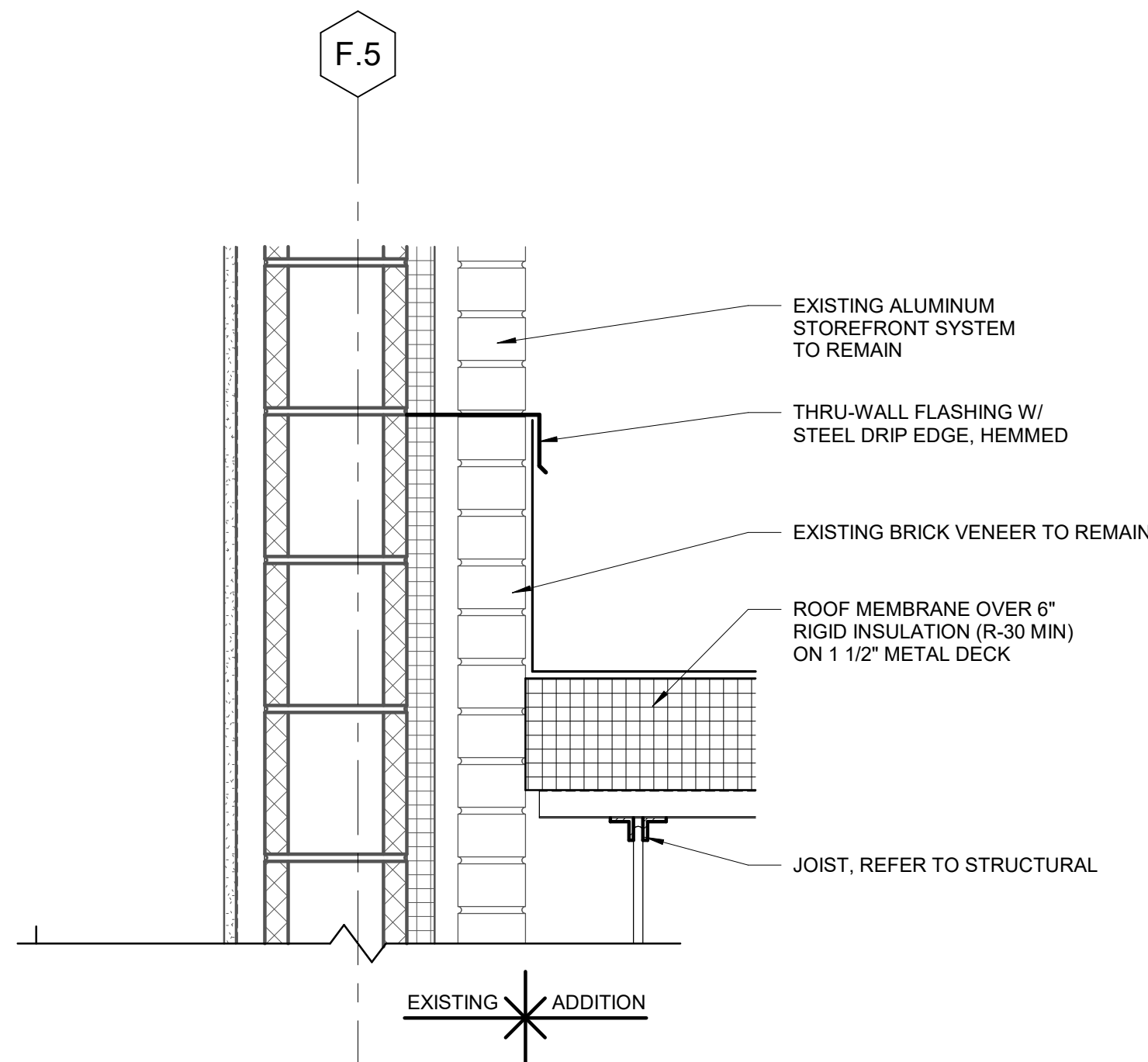
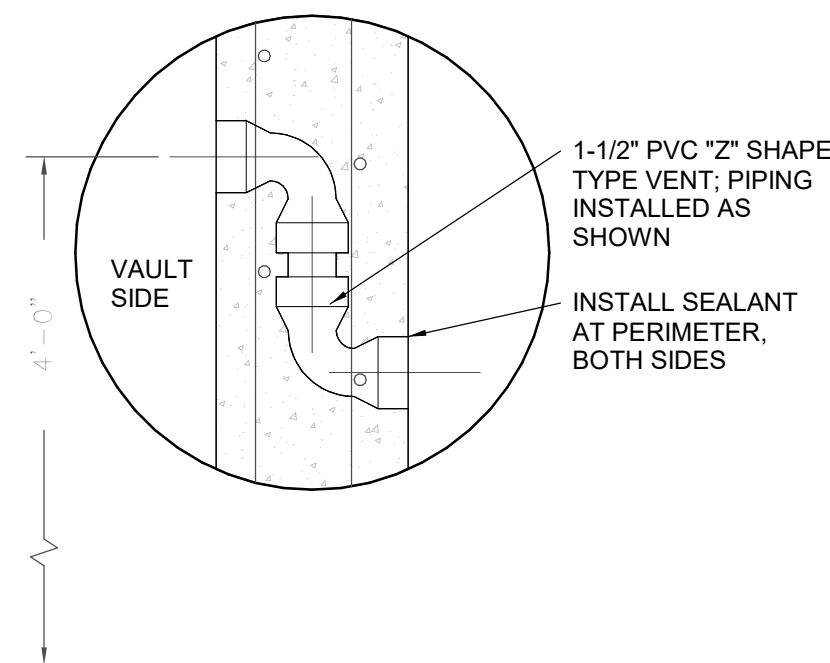
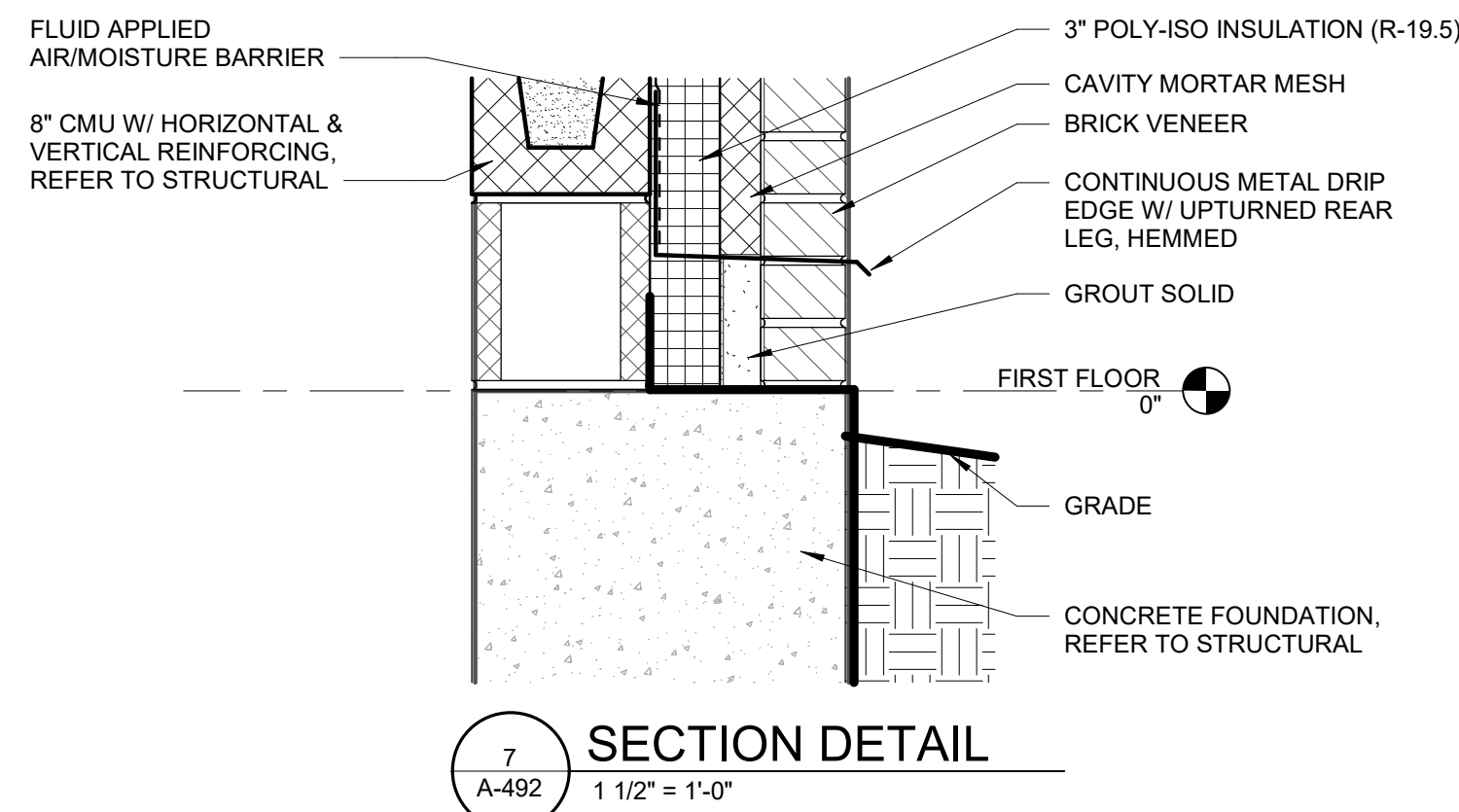
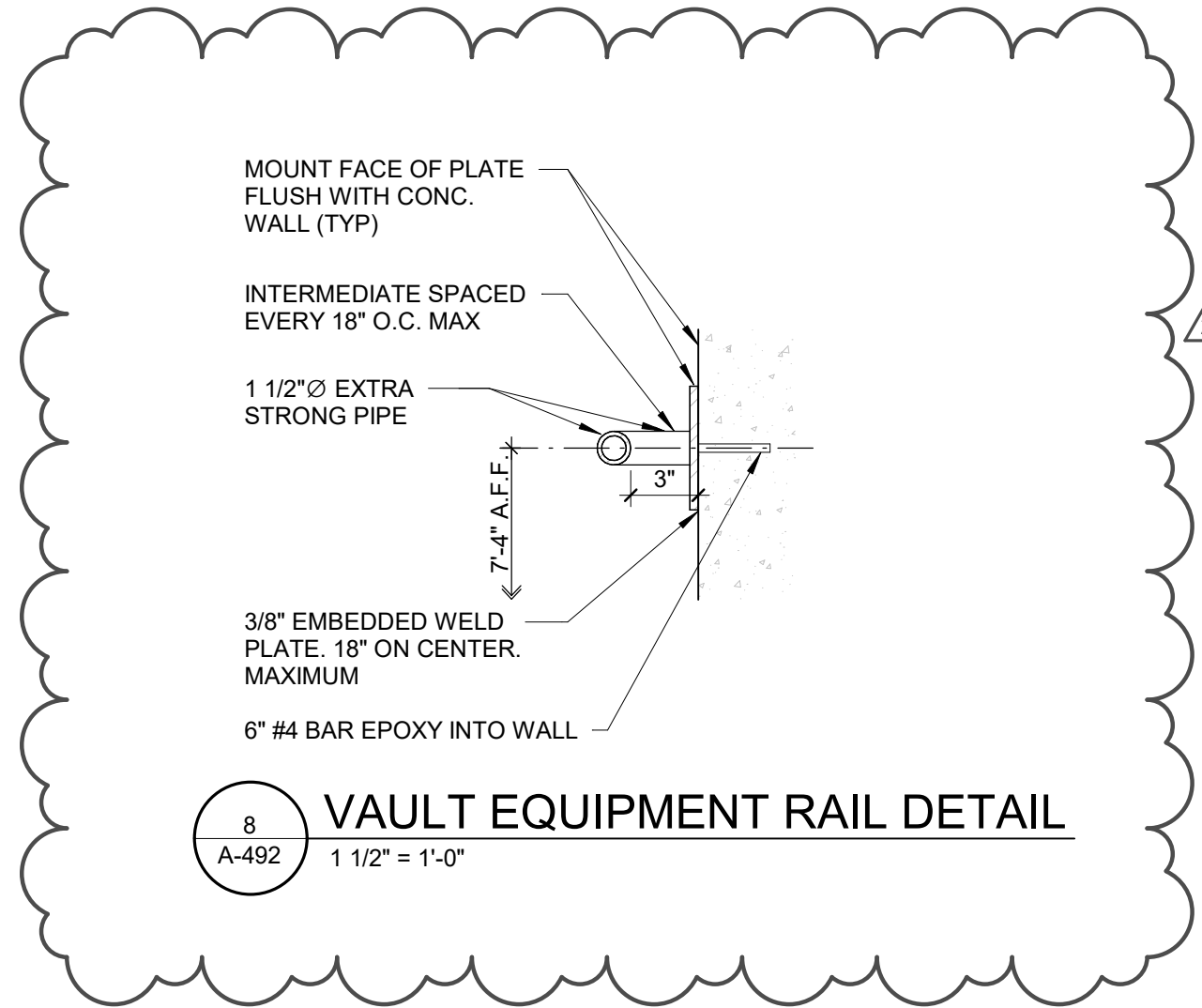
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| SHEET TITLE: OVERALL ROOF PLAN | | ISSUED FOR: | | DATE | |
|--------------------------------|--------------------|---------------------|-------------------------------------|----------|------|
| SHEET | IDENTIFICATION NO: | PRELIMINARY | <input type="checkbox"/> | DESIGNED | NCIL |
| | DWA: 25510.A | CONSTRUCTION | <input checked="" type="checkbox"/> | DRAWN | NCIL |
| | DIVA: 252285007 | FILE NO INDEX CODE: | <input type="checkbox"/> | CHECKED | TM |
| | 51725039.CAK | FINAL RECORD | <input type="checkbox"/> | APPROVED | RMR |
| | A-109 | | | | |



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STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET
FACILITIES MANAGEMENT
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, P.A., DIRECTOR

RENOVATE ARMORY, JACKSON (WEST) ARMORY
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
2700 W ARGYLE ST., JACKSON, MI

| SHEET | IDENTIFICATION NO: | ISSUED FOR: | DATE | DESIGNED | HL |
|-------|--|--------------|----------|----------|-----|
| | | | | | |
| A-492 | PROJECT NO: 25510.A DWG: 252285007 FILE NO/INDEX CODE: 517/25030.CAK | PRELIMINARY | 02/09/26 | DRAWN | HL |
| | | CONSTRUCTION | | CHECKED | TM |
| | | FINAL RECORD | | APPROVED | RMR |

| ROOM FINISH SCHEDULE | | | | | | | | | |
|----------------------|---------------------------|-------|------|-------|-----------|-------|-----------|---------|---------|
| RM. NO. | RM. NM. | FLOOR | BASE | WALL | | | | CEILING | REMARKS |
| | | | | N | S | E | W | | |
| 010 | EXIST. DRILL HALL | PC | - | CMU-2 | CMU-2 | CMU-2 | P | ACT-1 | |
| 011 | TABLES AND CHAIRS | C | - | CMU-1 | C-1 | CMU-1 | P | STRUC. | 2.13 |
| 012 | STORAGE | C | - | CMU-1 | C-1 | CMU-1 | CMU-1/C-1 | STRUC. | 2.13 |
| 013 | KITCHEN | QT | QT | CMU-2 | CMU-2/C-2 | CMU-2 | CMU-2 | GB-SS | 5 |
| 013A | OFFICE | QT | QT | CMU-2 | CMU-2 | CMU-2 | CMU-2 | GB-SS | |
| 013B | TOILET | PFT | PWT | CMU-2 | CMU-2 | CMU-2 | CMU-2 | GB-SS | |
| 014 | CORRIDOR | PC | VB | CMU-2 | P | P | - | STRUC. | |
| 015 | PES | C | VB | P | P | P | P | STRUC. | 2 |
| 016 | STORAGE | C | VB | P | P | P | P | ACT-1 | 2 |
| 017 | PHYSICAL TRAINING | RF | VB | P | P | P | P | STRUC. | |
| 018 | WOMEN'S | PFT | PWT | PWT | PWT | PWT | PWT | GB-SS | 4.12 |
| 018A | WOMEN'S LOCKER | PFT | PWT | PWT | PWT | PWT | PWT | GB-SS | 4.12 |
| 019 | MEN'S | PFT | PWT | PWT | PWT | PWT | PWT | GB-SS | 4.12 |
| 019A | MEN'S LOCKER | PFT | PWT | PWT | PWT | PWT | PWT | GB-SS | 4.12 |
| 020 | CORRIDOR | C | VB | P | P | P | P | ACT-1 | 2 |
| 021 | MECH | - | - | - | - | - | - | EXIST. | |
| 022 | ELEV. MECH | - | - | - | - | - | - | EXIST. | |
| 100 | VEST. | - | - | - | - | - | - | EXIST. | |
| 101 | LOBBY | LVP | VB | P | - | - | P | ACT-2 | |
| 101A | CORRIDOR | LVP | VB | P | P | - | - | ACT-2 | |
| 102 | COMM | RF | VB | - | - | - | - | EXIST. | |
| 103 | WOMEN'S | PFT | PWT | PWT | PWT | PWT | PWT | GB-SS | 4.12 |
| 104 | MEN'S | PFT | PWT | PWT | PWT | PWT | PWT | GB-SS | 4.12 |
| 105 | CLASSROOM | CPT | VB | P | P | P | P | ACT-2 | |
| 106 | BREAK ROOM | LVP | VB | CMU-2 | P | CMU-2 | CMU-2 | ACT-1 | 8.9 |
| 107 | HHC ADMIN RECRUIT | CPT | VB | P | P | - | - | ACT-1 | |
| 108 | CHAPLAIN FAMILY SUPPORT | CPT | VB | P | - | P | - | ACT-1 | |
| 109 | MED | CPT | VB | P | P | P | P | ACT-1 | |
| 110 | S1 | CPT | VB | P | - | - | P | ACT-1 | |
| 111 | CONF. | CPT | VB | P | P | P | P | ACT-1 | |
| 112 | HHC 1 SGT | CPT | VB | - | - | - | - | EXIST. | |
| 113 | S1 OIC | CPT | VB | - | - | - | - | EXIST. | |
| 114 | JAG | CPT | VB | - | - | - | - | EXIST. | |
| 115 | S6 | CPT | VB | - | - | - | - | EXIST. | |
| 117 | SIPR | CPT | VB | - | - | - | - | EXIST. | |
| 117A | SERVER | CPT | VB | P | - | - | P | ACT-1 | |
| 119 | OFFICE | CPT | VB | - | - | - | - | EXIST. | |
| 120 | CORRIDOR | CPT | VB | P | P | - | P | ACT-1 | |
| 121 | CORRIDOR | CPT | VB | - | - | P | P | ACT-1 | |
| 122 | CONFERENCE | CPT | VB | P | - | P | - | ACT-1 | |
| 123 | OPEN WORK SPACE | CPT | VB | - | P | - | - | ACT-1 | |
| 124 | CSM | CPT | VB | P | - | - | P | ACT-1 | |
| 125 | OIC | CPT | VB | - | - | - | - | EXIST. | |
| 126 | BDE CDR | CPT | VB | - | - | - | - | EXIST. | |
| 127 | TNG OFF | CPT | VB | - | - | - | - | EXIST. | |
| 128 | MDAY S3/DCOM | CPT | VB | - | - | - | - | EXIST. | |
| 129 | OPS SGM | CPT | VB | - | - | - | - | EXIST. | |
| 130 | S6 | CPT | VB | P | - | P | - | ACT-1 | |
| 131 | 117 HHC BDE | CPT | VB | - | - | - | - | ACT-1 | |
| 132 | S4 OIC | CPT | VB | - | - | - | - | EXIST. | |
| 133 | LACTATION | LVP | VB | P | P | P | P | ACT-1 | |
| 134 | MED | CPT | VB | P | P | P | P | ACT-1 | |
| 135 | JAN | C | VB | P | P | P | - | ACT-1 | 2.6 |
| 136 | MVAA | CPT | VB | P | P | P | P | ACT-1 | |
| 137 | CORRIDOR | CPT | VB | - | P | - | - | ACT-1 | |
| 138 | DLC | CPT | VB | P | P | P | P | EXIST. | |
| 139 | STATE MAINTENANCE STORAGE | CPT | VB | - | - | - | - | EXIST. | |
| 140 | STATE MAINTENANCE OFFICE | CPT | VB | - | - | - | - | EXIST. | |
| 141 | CONFERENCE | CPT | VB | - | - | - | - | EXIST. | |
| 142 | HHB 1SG | - | - | - | - | - | - | EXIST. | |
| 143 | HHB CDR | - | - | - | - | - | - | EXIST. | |
| 144 | SIPR | - | - | - | - | - | - | EXIST. | |
| 145 | HHB READINESS | - | - | - | - | - | - | EXIST. | |
| 146 | MED | - | - | - | - | - | - | EXIST. | |
| 147 | MED READINESS | - | - | - | - | - | - | EXIST. | |
| 148 | CONFERENCE | CPT | VB | CMU-2 | - | CMU-2 | - | ACT-1 | |
| 149 | MDAY | - | - | - | - | - | - | EXIST. | |
| 150 | S6-SECTION | - | - | - | - | - | - | EXIST. | |
| 151 | S6 | - | - | - | - | - | - | EXIST. | |
| 152 | S3-SECTION | - | - | - | - | - | - | EXIST. | |
| 153 | S1 | - | - | - | - | - | - | EXIST. | |
| 154 | S4-SECTION | - | - | - | - | - | - | EXIST. | |
| 155 | S3 | - | - | - | - | - | - | EXIST. | |
| 156 | OIC | - | - | - | - | - | - | EXIST. | |
| 157 | S4 | - | - | - | - | - | - | EXIST. | |
| 158 | OPS NCO | - | - | - | - | - | - | EXIST. | |
| 159 | BTN CMDR | - | - | - | - | - | - | EXIST. | |
| 160 | S1-SECTION | - | - | - | - | - | - | EXIST. | |
| 161 | BTN SGM | - | - | - | - | - | - | EXIST. | |
| 162 | S2-SECTION | - | - | - | - | - | - | EXIST. | |
| 163 | S1NCO | - | - | - | - | - | - | EXIST. | |
| 164 | CHAPLAIN | - | - | - | - | - | - | EXIST. | |
| 165 | S2 | - | - | - | - | - | - | EXIST. | |
| 166 | WOMEN | - | - | - | - | - | - | EXIST. | |
| 167 | MDAY | - | - | - | - | - | - | EXIST. | |
| 168 | CORRIDOR | - | - | - | - | - | - | EXIST. | |
| 169 | MEN | - | - | - | - | - | - | EXIST. | |
| 170 | OPEN WORK SPACE | - | - | - | - | - | - | EXIST. | |
| 171 | STORAGE | - | - | - | - | - | - | EXIST. | |
| 172 | CORRIDOR | - | - | - | - | - | - | EXIST. | |
| 173 | SUPPLY | C | VB | - | P/C-1 | P | P | STRUC. | 2 |
| 173A | OFFICE | CPT | VB | P | P | P | P | ACT-1 | |
| 173B | VAULT | C | VB | C-1 | C-1 | C-1 | C-1 | STRUC. | 2.13 |
| 174 | CORRIDOR | PC | VB | - | - | - | P | ACT-1 | |
| 175 | SUPPLY | C | VB | P/C-1 | - | - | P | STRUC. | 2 |
| 175A | OFFICE | CPT | VB | P | P | P | P | ACT-1 | |
| 175B | VAULT | C | VB | C-1 | C-1 | C-1 | C-1 | STRUC. | 2.13 |
| 176 | CORRIDOR | LVP | VB | - | - | PT | - | ACT-1 | |
| 177 | CORRIDOR | LVP | VB | - | - | - | - | ACT-1 | |
| 178 | CORRIDOR | LVP | VB | - | - | - | - | ACT-1 | |
| 179 | MILITARY MAINTENANCE | - | - | - | - | - | - | EXIST. | |
| 180 | CORRIDOR | - | - | - | - | - | - | EXIST. | |
| 181 | MECHANICAL | - | - | - | - | - | - | EXIST. | |
| 181A | ELECTRICAL | - | - | - | - | - | - | EXIST. | |
| A | STAIRS | - | - | - | - | - | - | EXIST. | |
| B | EXIST. STAIRS | - | - | - | - | - | - | EXIST. | |
| C | STAIRS | C | VB | CMU-2 | PT | CMU-2 | CMU-2 | ACT-1 | 2 |

FINISH LEGEND

FLOORS

C CONCRETE - SEALED
PC POLISHED CONCRETE-SEALED (LEVEL C3)
CPT-1 CARPET TILE (SHAW AMPLIFY 64549, COLOR SELECTED BY DMVA)
PFT-1 PORCELAIN FLOOR TILE (MILESTONE, MOOD WOOD, GREY, 6x36)
RF-1 RUBBER TILE FLOORING (JOHNSONITE, REPLAY, COLOR SELECTED BY DMVA)
LVP-1 LUXURY VINYL PLANK FLOORING (ID LATTITUDE WOOD, MILLENNIUM OAK, 6x48)
QT-1 QUARRY TILE (DAL TILE, QUARRY TILE, ARID GRAY, 6x6)

WALL BASE

VB-1 RESILIENT BASE (TARKETT BURNT UMBER 63)
PWT-1 PORCELAIN TILE (FLORIM USA, STRATOS, CORDA, 6x12 COVE)
QT-1 QUARRY TILE

GROUT

GRT-1 TEC POWER-GROUT (COLOR: TEC MOCHA 932)

WALLS

CMU-1 CONCRETE MASONRY UNITS (EXPOSED)
CMU-2 CONCRETE MASONRY UNITS (PAINTED)
C-1 CONCRETE (EXPOSED)
C-2 CONCRETE (PAINTED)
PT PAINT (MAIN COLOR)
P-2 PAINT (ACCENT #1)
PWT-1 PORCELAIN WALL TILE (CROSSVILLE, OWEN STONE, BUNNY OST02, LEATHER, 12x24)
PWT-2 PORCELAIN WALL TILE (CROSSVILLE, SHADES 2, THUNDER, SEMI-POLISHED, 6x24)

CEILING

ACT-1 ACOUSTICAL CEILING TILE (2x4)
ACT-2 ACOUSTICAL CEILING TILE (2x2)
STRUC STRUCTURE/FIRE RATED GYP. BD. (EXPOSED)
GB GYPSUM BOARD CEILING (PAINTED)
GB-SS SUSPENDED GYPSUM BOARD CEILING (PAINTED)
EXIST. EXISTING

ALL EXPOSED CEILINGS, STRUCTURE AND M.E.P. ITEMS TO RECEIVE DRYFALL PAINTED FINISH, COLOR T.B.D.

ROOM FINISH NOTES

1. SEE REFLECTED CEILING PLAN, FLOOR PLAN AND SECTIONS FOR ADDITIONAL INFORMATION

2. EXPOSED CONCRETE FLOOR WITH SEALER / DENSIFIER.

3. EGGSHELL PAINT ON GYPSUM BOARD SOFFITS, NO PAINT ON ACOUSTIC TILE

4. WHERE WALL TILE IS SPECIFIED PROVIDE OVER TILE BACKER BOARD U.N.O.

5. FIBERGLASS REINFORCED PANELS W/ 1/2" P.T. PLYWOOD BACKER BOARD.

6. FIBERGLASS REINFORCED PANELS EITHER SIDE OF MOP SINK, 8'-0" HIGH AND 4'-0" WIDE.

7. WINDOW SHADES AT ALL EXTERIOR OPENINGS (EXCEPT DOORS)

8. PLASTIC LAMINATE STOOLS AT ALL EXTERIOR OPENINGS, U.N.O.

9. PROVIDE CEILING CAVITY ACCESS PANELS FOR ALL MEP ON ROOMS WITH GB-SS

10. PAINT AND REPAIR DAMAGED EXISTING CONSTRUCTION TO MATCH EXISTING FINISHES, V.I.F.

11. PRIMARY STEEL FRAME TO RECEIVE PRIME/PAINT FINISH, TYP., COLOR TO BE SELECTED BY OWNER

12. REFER TO INTERIOR ELEVATIONS FOR TILE PATTERN.

13. ALL EXPOSED CONCRETE WALLS SHALL BE PARGED AND PAINTED.

DTMB

Technology, Management & Budget

STATE OF MICHIGAN

DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET

MICHIGAN

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DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET
PROJECT NO. 25510.A
DMVA 262825007
FILE NO / INDEX CODE:
517/25039.CAK
ADAM P. LARCH, R.A., DIRECTOR

RENOVATE ARMORY, JACKSON (WEST) ARMORY
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
2700 W ARGYLE ST., JACKSON, MI

SHEET TITLE: ROOM FINISH SCHEDULE

DESIGNED HL

DRAWN H/LNC

CHECKED TM

APPROVED RMR

ISSUED FOR:

DATE

PROJECT NO: 25510.A

DMVA 262825007

FILE NO / INDEX CODE: 517/25039.CAK

PRELIMINARY

CONSTRUCTION

FINAL RECORD

A-701

MATRIX

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MATRIX PROJECT NO. 24986.00

GENERAL MECHANICAL NOTES

1.

INSTALL NEW SUPPLY DUCTWORK, RETURN DUCTWORK, EXHAUST DUCTWORK, DIFFUSERS/GRILLES, FITTINGS, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN.
2.

INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
3.

PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
4.

ALL NEW CONTROL WIRING IS TO BE CONCEALED WITHIN WALLS, ABOVE CEILING SPACES, OR MECHANICAL SPACES.

MECHANICAL KEY NOTES

- 1

INSTALL WALL MOUNTED AC UNIT, EXTERIOR WALL MOUNTED HEAT PUMP, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL WALL MOUNTED AC UNIT AS HIGH AS POSSIBLE IN THE SPACE. NEW HEAT PUMP TO BE MOUNTED 48" ABOVE FINISHED GRADE IN THE LOCATION SHOWN ON MANUFACTURER PROVIDED WALL MOUNT. WALL MOUNTED AC UNIT AND HEAT PUMP ARE TO BE INSTALLED TO ACCOMMODATE ALL MANUFACTURER RECOMMENDED CLEARANCES. CONTRACTOR TO PATCH ALL EXTERIOR WALL PENETRATIONS AS REQUIRED TO MATCH EXISTING AND SEAL WATER TIGHT. CONNECT NEW AC UNIT AND HEAT PUMP TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW AC UNIT AND HEAT PUMP ON BAS FRONT END GRAPHICS.
- 2

INSTALL NEW WALL MOUNTED ELECTRIC CABINET UNIT HEATER AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
- 3

INSTALL NEW ROOF MOUNTED EXHAUST FAN, EXHAUST DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST ON THE BAS FRONT END GRAPHICS.
- 4

INSTALL NEW REMOTE DUCT MOUNTED HEATING COIL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN LOCATION SHOWN. INSTALL NEW HEATING COIL IN VERTICAL SUPPLY AIR DUCTWORK LEAVING ASSOCIATED ROOFTOP UNIT/MAKEUP AIR UNIT. CONNECT NEW DUCT MOUNTED HEATING COIL AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DUCT MOUNTED HEATING COIL ON THE BAS FRONT END GRAPHICS.
- 5

INSTALL NEW ROOF TOP UNIT, SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW ROOF TOP UNIT AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF TOP UNIT ON THE BAS FRONT END GRAPHICS.
- 6

INSTALL NEW ROOF MOUNTED MAKEUP AIR UNIT, SUPPLY AIR DUCTWORK, RETURN AIR DUCTWORK, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW ROOF MOUNTED MAKEUP AIR UNIT AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED MAKEUP AIR UNIT ON THE BAS FRONT END GRAPHICS.
- 7

INSTALL NEW ROOF MOUNTED ENERGY RECOVERY UNIT, SUPPLY AIR DUCTWORK, EXHAUST AIR DUCTWORK, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW ROOF MOUNTED ENERGY RECOVERY UNIT AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED ENERGY RECOVERY UNIT ON THE BAS FRONT END GRAPHICS.
- 8

INSTALL NEW BOILER VENTING, WALL CAP, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO PATCH NEW WALL PENETRATION AS REQUIRED AND SEAL WATER TIGHT.
- 9

INSTALL NEW INLINE EXHAUST FAN, EXHAUST LOUVER, EXHAUST DUCTWORK, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW INLINE EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW INLINE EXHAUST FAN ON THE BAS FRONT END GRAPHICS.
- 10

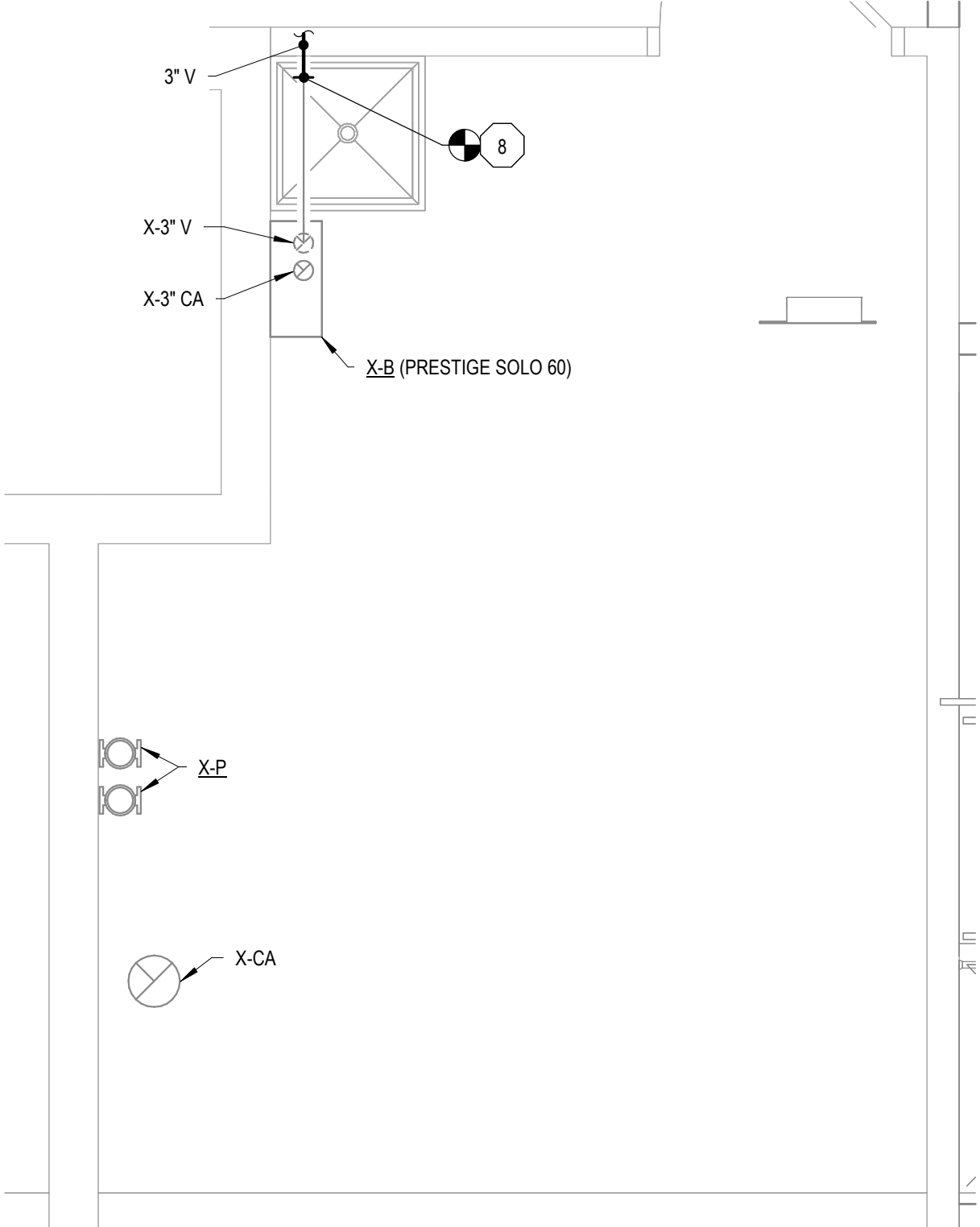
WRAP ABOVE CEILING GREASE DUCT WITH 3M FIRE BARRIER DUCT WRAP 15A OR APPROVED EQUAL FOR A ZERO CLEARANCE TO COMBUSTIBLES PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 11

INSTALL NEW HYDRONIC UNIT HEATER, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW HYDRONIC UNIT HEATER AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW HYDRONIC UNIT HEATER ON THE BAS FRONT END GRAPHICS.
- 12

INSTALL NEW INLINE EXHAUST FAN, BACKDRAFT DAMPER, EXHAUST AIR LOUVER, EXHAUST DUCTWORK, EXHAUST GRILLE, CONTROLS, CONTROL WIRING, TIME DELAY SWITCH, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL NEW INLINE EXHAUST FAN AS HIGH AS POSSIBLE IN SPACE. INSTALL EXHAUST AIR LOUVER AND ALL ASSOCIATED ACCESSORIES AT MINIMUM 8' AFF. COORDINATE EXHAUST AIR LOUVER OPENING WITH ARCHITECTURAL/STRUCTURAL DRAWINGS. CONNECT NEW INLINE EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW INLINE EXHAUST FAN ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE INLINE EXHAUST FAN SEQUENCE OF OPERATIONS.
- 13

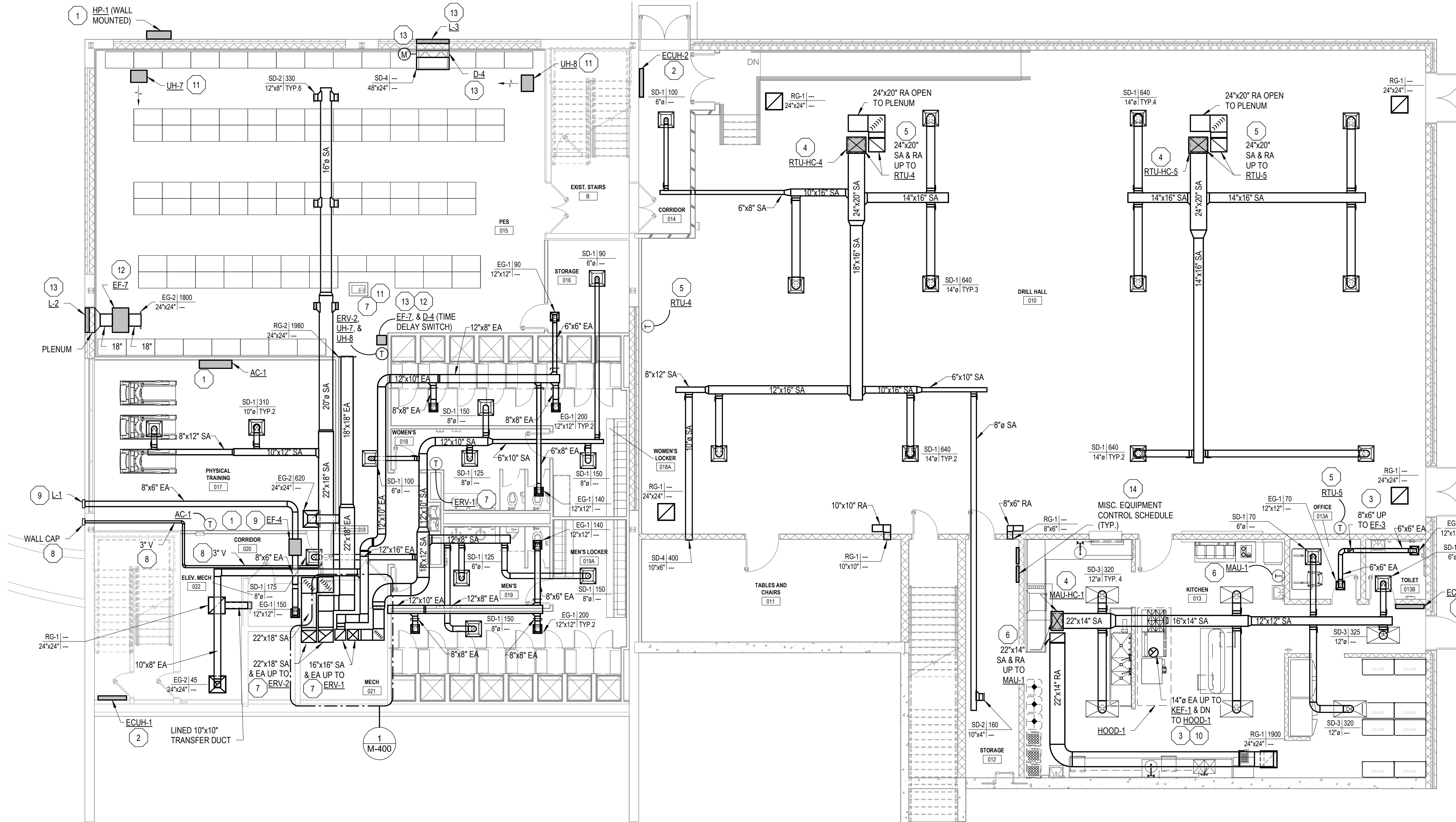
INSTALL NEW LOUVER, DAMPER, DAMPER ACTUATOR, CONTROLS, CONTROL WIRING, TIME DELAY SWITCH, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DAMPER ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE INTAKE HOOD SEQUENCE OF OPERATIONS.
- 14

INSTALL NEW LOWWORKS DDC CONTROL PANEL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO CONNECT THE DDC CONTROL PANEL TO THE BAS. CONTROL PANELS TO HAVE A MAXIMUM OF THREE DDC CONTROLLERS.



NORTH WING - ENLARGED MECH. ROOM - MECHANICAL NEW

SCALE = 1/2" = 1'-0"



NORTH WING - LOWER LEVEL FLOOR PLAN - MECHANICAL NEW

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

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FACILITIES MANAGEMENT DIVISION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, R.A., DIRECTOR

Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

SHEET TITLE: NORTH WING - LOWER LEVEL FLOOR PLAN - MECHANICAL NEW

SHEET

ISSUED FOR: DATE

DESIGNED TAT

DRAWN TAT

CHECKED CAT

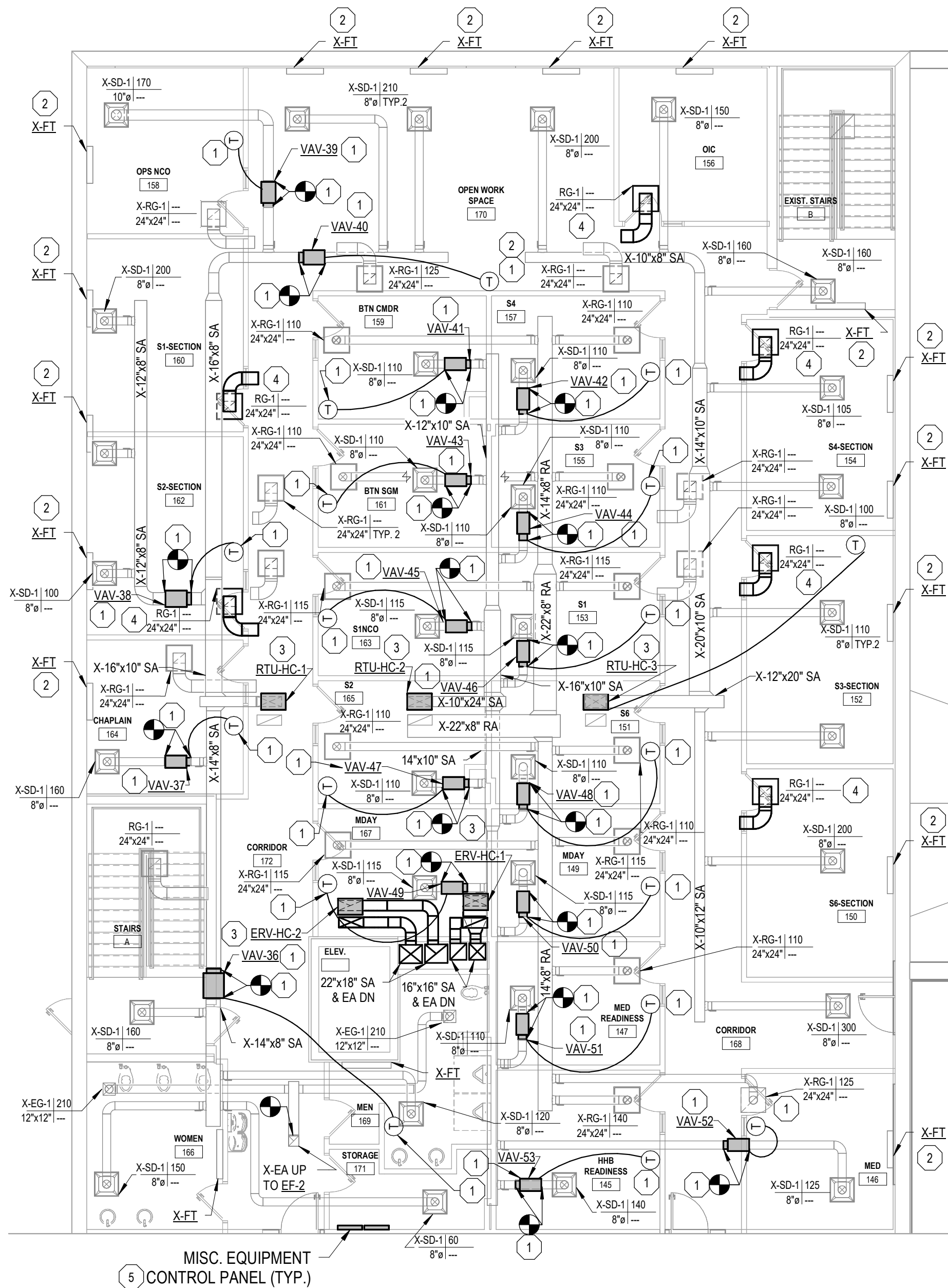
APPROVED CAT

IDENTIFICATION NO:

PROJECT NO. 24986.00

FILE NO. INDEX CODE:

M-400



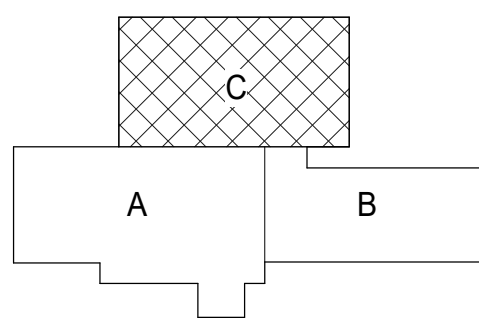
NORTH WING - FIRST FLOOR PLAN - MECHANICAL NEW
SCALE: 1/8" = 1'-0"

GENERAL MECHANICAL NOTES

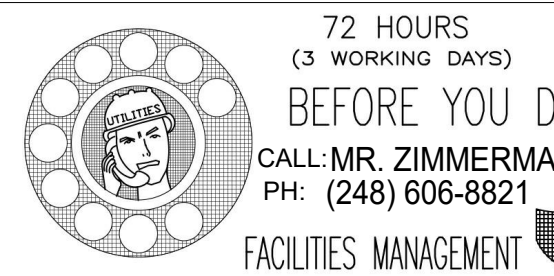
1. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
2. INSTALL NEW VAV BOXES ARE TO BE CONCEALED AND INSTALLED IN THE ABOVE CEILING SPACE. REMOVE AND INSTALL CEILING TILES/CEILING GRID AS REQUIRED TO COMPLETE WORK. CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT OF DAMAGED OR BROKEN TILES.
3. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
4. ALL NEW CONTROL WIRING IS TO BE CONCEALED WITHIN WALLS, ABOVE CEILING SPACES, OR MECHANICAL SPACES.
5. CONTRACTOR TO PATCH AND PAINT EXISTING WALLS/CEILINGS AS NEEDED TO MATCH EXISTING WHERE DEMOLITION AND/OR NEW WORK IS COMPLETED.
6. RE-BALANCE ALL EXISTING DIFFUSERS/GRILLES TO CFM SHOWN.
7. IN THE LOCATION WHERE NEW VAV BOXES ARE INSTALLED, CONTRACTOR TO PROVIDE LABELS AND INDICATOR ARROWS ON CEILING GRID TO INDICATE THE LOCATION OF THE NEW VAV BOXES.

MECHANICAL KEY NOTES

1. INSTALL NEW VAV BOX, DUCTWORK, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW VAV BOX AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW VAV BOX ON THE BAS FRONT END GRAPHICS. MODIFY EXISTING DUCTWORK AS REQUIRED TO INSTALL NEW VAV BOX.
2. EXISTING FIN TUBE TO REMAIN. CONNECT EXISTING FIN TUBE, PUMP, AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE EXISTING FIN TUBE AND PUMP ON THE BAS FRONT END GRAPHICS.
3. INSTALL NEW REMOTE, DUCT MOUNTED HEATING COIL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN LOCATION SHOWN. INSTALL NEW HEATING COIL HORIZONTALLY, IN VERTICAL SUPPLY AIR DUCTWORK LEAVING ASSOCIATED ROOFTOP UNIT/ENERGY RECOVERY UNIT. CONNECT NEW HEATING COIL AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW HEATING COIL ON THE BAS FRONT END GRAPHICS. MODIFY EXISTING DUCTWORK AS REQUIRED TO INSTALL NEW HEATING COIL.
4. INSTALL NEW RETURN GRILLE, RETURN DUCTWORK, FITTINGS, AND ALL ASSOCIATED ACCESSORIES PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS IN THE LOCATION SHOWN.
5. INSTALL NEW LONWORKS DDC CONTROL PANEL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO CONNECT THE DDC CONTROL PANEL TO THE BAS. CONTROL PANELS TO HAVE A MAXIMUM OF THREE DDC CONTROLLERS.



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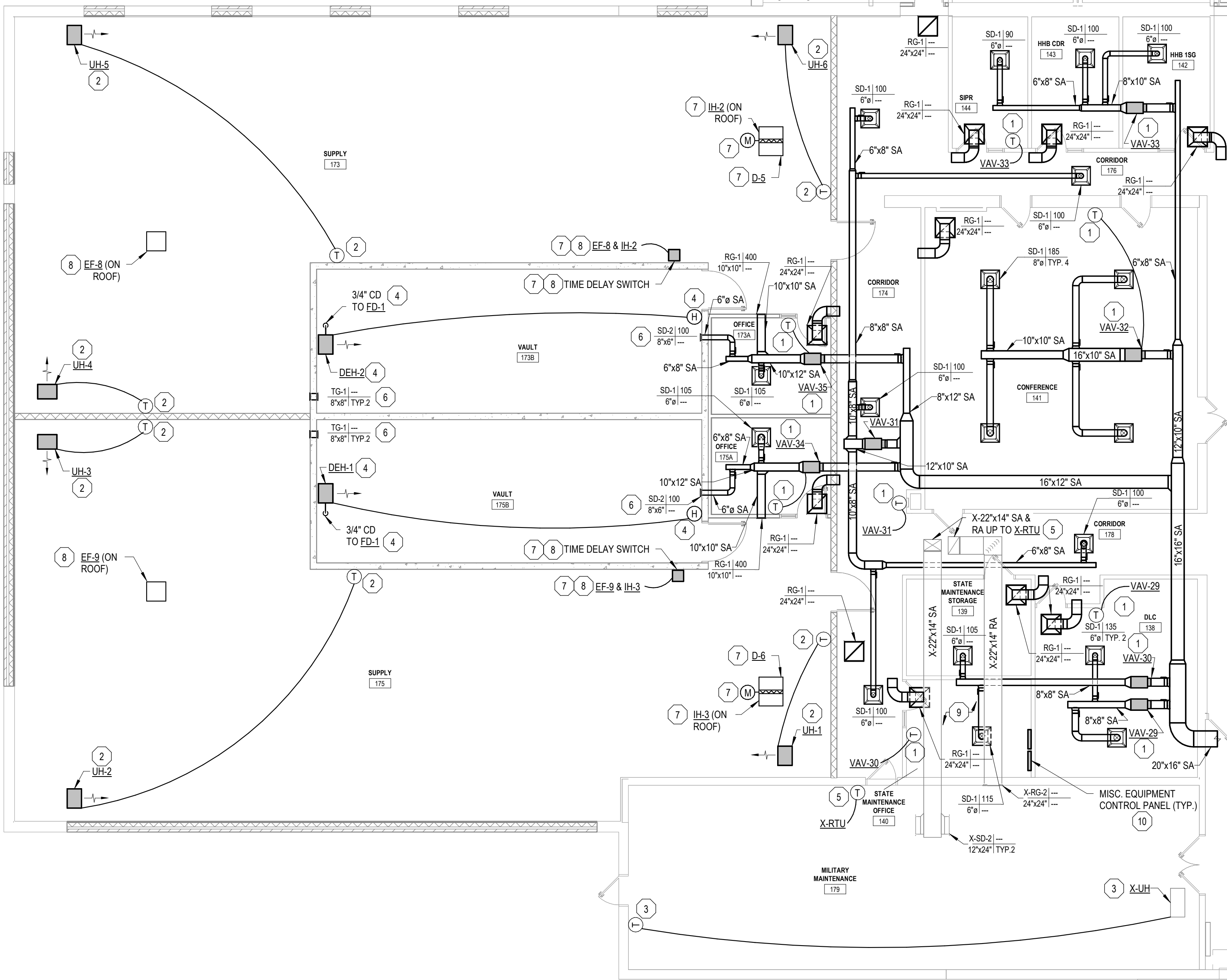
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MATRIX PROJECT NO. 24986.00

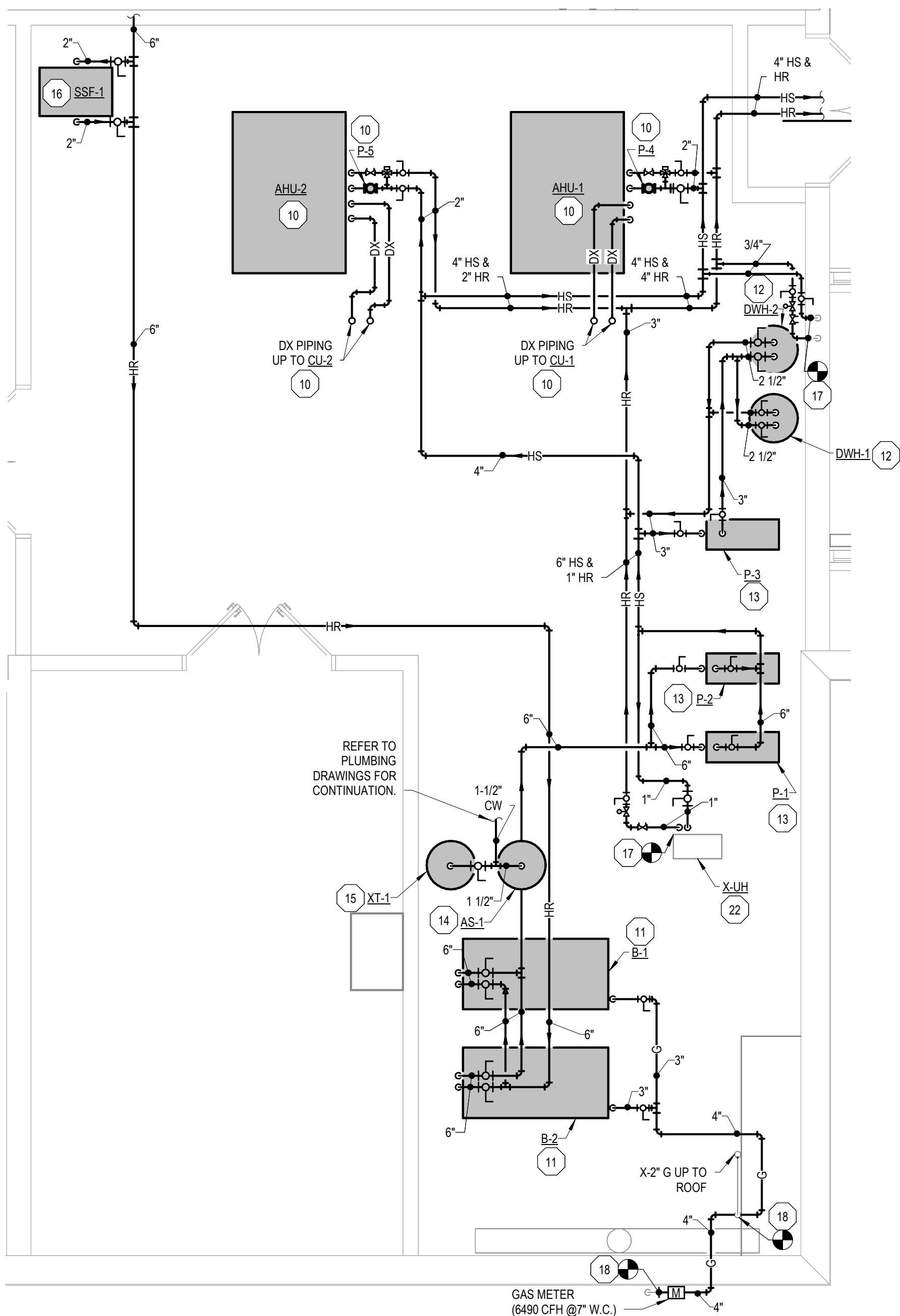
GENERAL MECHANICAL NOTES

1. INSTALL NEW SUPPLY DUCTWORK, RETURN DUCTWORK, EXHAUST DUCTWORK, DIFFUSERS/GRILLES, FITTINGS, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN.
2. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
3. INSTALL NEW VAV BOXES CONCEALED IN THE ABOVE CEILING SPACE.
4. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
5. ALL NEW CONTROL WIRING IS TO BE CONCEALED WITHIN WALLS, ABOVE CEILING SPACES, OR MECHANICAL SPACES.
6. CONTRACTOR TO PATCH EXISTING WALLS/CEILINGS AS NEEDED TO MATCH EXISTING WHERE DEMOLITION AND/OR NEW WORK IS COMPLETED.
7. IN THE LOCATION WHERE NEW VAV BOXES ARE INSTALLED, CONTRACTOR TO PROVIDE LABELS AND INDICATOR ARROWS ON CEILING GRID TO INDICATE THE LOCATION OF THE NEW VAV BOXES.

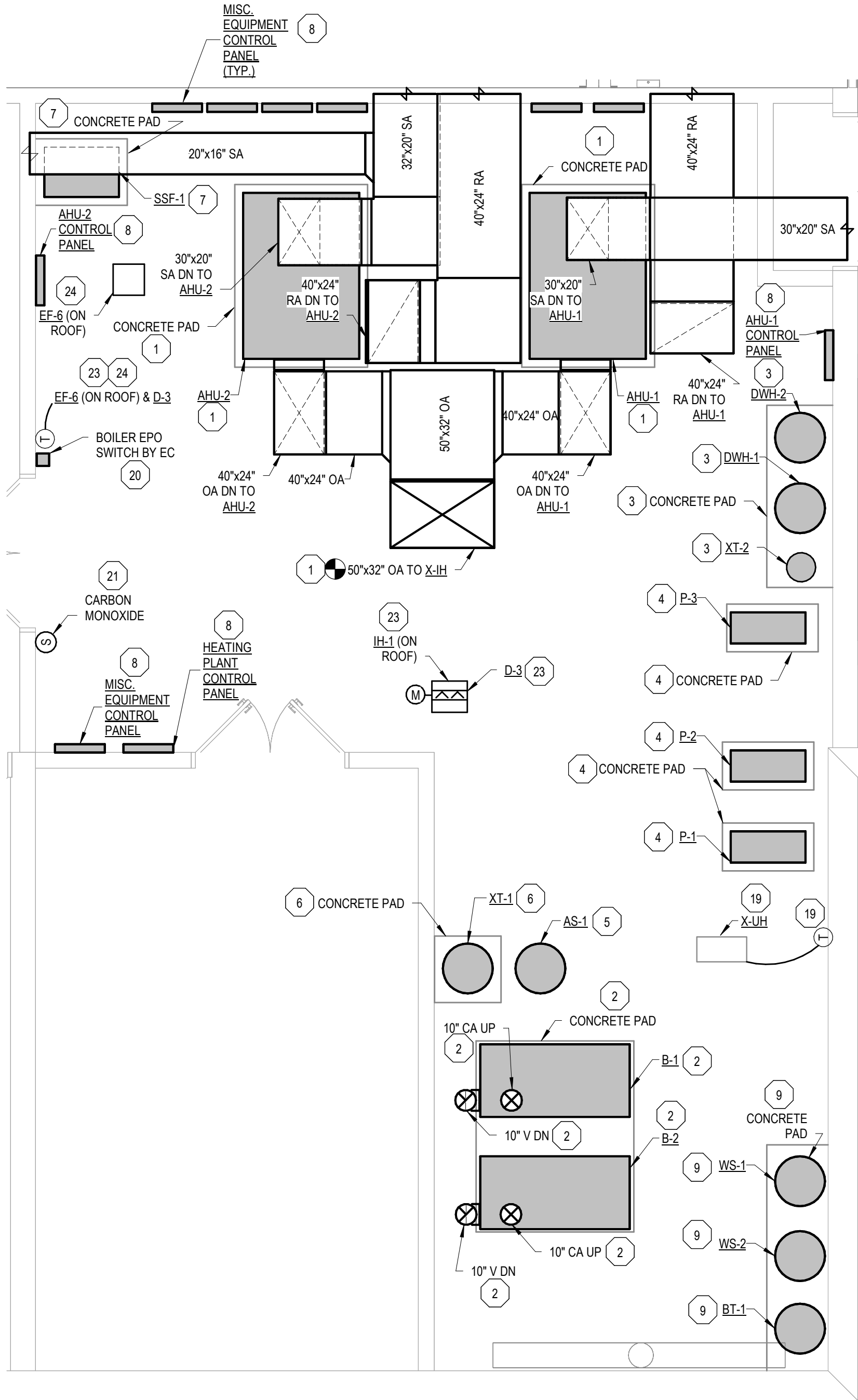
MECHANICAL KEY NOTES

1. INSTALL NEW VAV BOX, DUCTWORK, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW VAV BOX AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW VAV BOX ON THE BAS FRONT END GRAPHICS.
2. INSTALL NEW HYDRONIC UNIT HEATER, THERMOSTAT, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW HYDRONIC UNIT HEATER AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW HYDRONIC UNIT HEATER ON THE BAS FRONT END GRAPHICS.
3. INSTALL NEW UNIT HEATER CONTROLS, CONTROL WIRING, THERMOSTAT, SUPPORTS, HANGERS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN FOR EXISTING UNIT HEATER PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT EXISTING UNIT HEATER AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE UNIT HEATER ON THE BAS FRONT END GRAPHICS.
4. INSTALL NEW DEHUMIDIFIER, HUMIDISTAT, CONTROLS, CONTROL WIRING, SUPPORTS, HANGERS, AND ALL ASSOCIATED ACCESSORIES PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONNECT NEW DEHUMIDIFIER AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DEHUMIDIFIER ON THE BAS FRONT END GRAPHICS.
5. INSTALL NEW ROOF TOP UNIT CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS ON EXISTING ROOF TOP CURB. CONNECT EXISTING ROOF TOP UNIT AND ALL CONTROLS TO NEW LOWWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE THE ROOFTOP UNIT ON THE BAS FRONT END GRAPHICS.
6. INSTALL SECURITY BARS ON ALL SUPPLY AND TRANSFER GRILLES TO VAULT.
7. INSTALL NEW INTAKE HOOD, ROOF CURB, CONTROLS, CONTROL WIRING, TIME DELAY SWITCH, DAMPER, DAMPER ACTUATOR, SECURITY GRILLES, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL BIRD SCREEN ON OPENING IN OCCUPIED SPACE. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DAMPER ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE INTAKE HOOD SEQUENCE OF OPERATIONS.
8. INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, ROOF CURB, CONTROLS, CONTROL WIRING, TIME DELAY SWITCH, SECURITY GRILLES, AND ALL ASSOCIATED ACCESSORIES IN LOCATION SHOWN PER MANUFACTURING INSTRUCTIONS. INSTALL BIRD SCREEN ON OPENING IN OCCUPIED SPACE. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST FAN ON THE BAS FRONT END GRAPHICS. TIME DELAY SWITCH IS TO OVERRIDE ROOF MOUNTED EXHAUST FAN SEQUENCE OF OPERATIONS.
9. CONTRACTOR TO PROVIDE LAPTOP THAT ALLOWS CONNECTION TO THE BAS FRONT END GRAPHICS AND IS TO BE INSTALLED AT THE WORK STATION IN STATE MAINTENANCE OFFICE 140. LAPTOP IS TO BE CAPABLE OF USER TO MONITOR/ADJUST BAS FRONT END GRAPHIC SET POINTS FROM THE WORK STATION IN STATE MAINTENANCE OFFICE 140.
10. INSTALL NEW LOWWORKS DDC CONTROL PANEL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO CONNECT THE DDC CONTROL PANEL TO THE BAS. CONTROL PANELS TO HAVE A MAXIMUM OF THREE DDC CONTROLLERS.





FIRST FLOOR PLAN - ENLARGED MECHANICAL ROOM - PIPING NEW
2
M-406
SCALE = 1/4" = 1'-0"



FIRST FLOOR PLAN - ENLARGED MECHANICAL ROOM - MECHANICAL NEW
1
M-406
SCALE = 1/4" = 1'-0"

GAS LOAD SUMMARY

B-1 - 3000 CFH - GAS PRESSURE 4" TO 14" W.C.
B-2 - 3000 CFH - GAS PRESSURE 4" TO 14" W.C.
X-B - 60 CFH - GAS PRESSURE 4" TO 14" W.C.
KITCHEN RANGE - 310 CFH - GAS PRESSURE 4" TO 14" W.C.
KITCHEN OVEN - 120 CFH - GAS PRESSURE 4" TO 14" W.C.

TOTAL = 6490 CFH @ 7" W.C.

GENERAL MECHANICAL NOTES

1. INSTALL ALL NEW EQUIPMENT PER THE MANUFACTURERS INSTALLATION INSTRUCTIONS. ENSURE ALL MANUFACTURER REQUIRED CLEARANCES ARE MAINTAINED.
2. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS TO CONNECT ALL NEW EQUIPMENT TO NEW DDC CONTROL PANEL AND NEW BAS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT/COMPONENTS NEEDED TO INTEGRATE NEW EQUIPMENT ON TO THE NEW BAS FRONT END GRAPHICS.
3. CONTRACTOR TO SIZE CONTROL VALVES AND BALANCE FLOW RATES TO MATCH THE FLOW RATES CALLED OUT IN THE EQUIPMENT SCHEDULES.
4. CONTROL PANELS FOR MAJOR PIECES OF EQUIPMENT ARE SHOWN ON MECHANICAL ROOM FLOOR PLAN. CONTROL PANEL LAYOUT IS SCHEMATIC. CONTRACTOR TO INSTALL NEW DDC CONTROL PANELS AS REQUIRED TO CONNECT ALL NEW EQUIPMENT AND MEET DMYA CONTROL PANEL REQUIREMENTS.

MECHANICAL KEY NOTES

1. INSTALL NEW AIR HANDLING UNIT, CONCRETE PAD, DUCTWORK, DAMPERS, ACTUATORS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ENSURE ALL REQUIRED CLEARANCES FOR THE NEW AIR HANDLING UNIT ARE MET. CONNECT AIR HANDLING UNIT AND ALL CONTROLS TO NEW DDC LONWORKS CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW CONDENSING UNIT ON THE BAS FRONT END GRAPHICS.
2. INSTALL NEW BOILER, COMBUSTION AIR INLET, VENT, CONTROLS, CONCRETE PAD, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO INSTALL BOILERS ON CONTINUOUS 4" CONCRETE PAD WITH 6" OVERLAP IN ALL DIRECTIONS. INSTALL NEW BOILER COMBUSTION AIR DUCT, VENT, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. ROUTE COMBUSTION AIR DUCT AND VENT UP THROUGH NEW ROOF CURB AND NEW ROOF BOOT. PATCH ROOF PENETRATION TO MATCH EXISTING AND SEAL WATER TIGHT. INSTALL 2-2 ANGLE IRON FRAME AROUND NEW ROOF PENETRATIONS AT LOCATION SHOWN AND WELD TO STRUCTURAL STEEL. END OF VENT AND COMBUSTION AIR INLET TO BE FITTED WITH BIRD SCREEN. CONTRACTOR TO CONNECT NEW BOILERS AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW BOILER ON THE BAS FRONT END GRAPHICS.
3. INSTALL NEW INDIRECT DOMESTIC WATER HEATER, EXPANSION TANK, CONCRETE PAD, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO INSTALL DOMESTIC WATER HEATERS ON CONTINUOUS 4" THICK CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS. CONTRACTOR TO CONNECT NEW INDIRECT DOMESTIC WATER HEATERS AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW INDIRECT DOMESTIC WATER HEATERS ON THE BAS FRONT END GRAPHICS.
4. INSTALL NEW BASE MOUNTED CIRCULATION PUMP, CONCRETE PAD, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL NEW BASE MOUNTED PUMP ON 4" CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS. CONTRACTOR TO CONNECT PUMPS AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW BASE MOUNTED PUMP ON THE BAS FRONT END GRAPHICS.
5. INSTALL NEW AIR SEPARATOR AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6. INSTALL NEW EXPANSION TANK, CONCRETE PAD, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL NEW EXPANSION TANK ON NEW 4" THICK CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS.
7. INSTALL NEW SIDE STREAM FILTER, SKID PACKAGE, CONCRETE PAD, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR TO INSTALL SIDE STREAM FILTER SKID PACKAGE ON 4" THICK CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS. CONTRACTOR TO CONNECT SIDE STREAM FILTER AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW SIDE STREAM FILTER ON THE BAS FRONT END GRAPHICS.
8. INSTALL NEW LONWORKS DDC CONTROL PANEL, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO CONNECT THE DDC CONTROL PANEL TO THE BAS. CONTROL PANELS TO HAVE A MAXIMUM OF THREE DDC CONTROLLERS.
9. INSTALL WATER SOFTENER, BRINE TANK, CONCRETE PAD, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL NEW EQUIPMENT ON NEW 4" THICK CONCRETE PAD WITH 4" OVERLAP IN ALL DIRECTIONS.
10. INSTALL NEW AIR HANDLING UNIT, COIL PUMP, PIPING, VALVES, FITTINGS, DX PIPING, CONDENSATE PIPING, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE NEW CONDENSATE PIPING AND ALL ASSOCIATED ACCESSORIES TO THE NEAREST FLOOR DRAIN. CONNECT AIR HANDLING UNIT, COIL PUMP, AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW AIR HANDLING UNIT ON THE BAS FRONT END GRAPHICS.
11. INSTALL NEW BOILER, HEATING SUPPLY PIPING, HEATING RETURN PIPING, GAS PIPING, CONDENSATE PIPING, DRAIN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
12. INSTALL NEW INDIRECT DOMESTIC WATER HEATER, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
13. INSTALL NEW BASE MOUNTED CIRCULATION PUMP, SUCTION DIFFUSER, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
14. INSTALL NEW AIR SEPARATOR, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
15. INSTALL NEW EXPANSION TANK, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
16. INSTALL NEW SIDE STREAM FILTER, PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
17. INSTALL NEW HEATING SUPPLY PIPING, HEATING RETURN PIPING, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. MODIFY EXISTING UNIT HEATER/FINTUBE AS REQUIRED TO MAKE NEW CONNECTION.
18. INSTALL NEW GAS PIPING, GAS METER, VALVES, FITTINGS, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. MODIFY EXISTING PIPING AS REQUIRED TO MAKE NEW CONNECTION.
19. INSTALL NEW UNIT HEATER CONTROLS, CONTROLS, CONTROL WIRING, AND ALL ASSOCIATED ACCESSORIES FOR EXISTING UNIT HEATER. CONNECT EXISTING UNIT HEATER AND ALL CONTROLS TO NEW LONWORKS DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE UNIT HEATER TO THE BAS GRAPHICS.
20. INSTALL NEW EPO SWITCH AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
21. INSTALL NEW WALL MOUNTED CARBON MONOXIDE SENSOR (VERIS-AG01 OR APPROVED EQUIVALENT), STROBE LIGHT WITH SIREN (SECU-LARM-SL-1301-SAQ), AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN. NEW CARBON MONOXIDE SENSOR TO MEET BOILER INSPECTION REQUIREMENTS.
22. BALANCE EXISTING UNIT HEATER TO HAVE A FLOW RATE OF 4.1 GPM.
23. INSTALL NEW INTAKE HOOD, CONTROLS, CONTROL WIRING, THERMOSTAT, DAMPER, DAMPER ACTUATOR, AND ALL ASSOCIATED ACCESSORIES IN THE LOCATION SHOWN PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW DAMPER ON THE BAS FRONT END GRAPHICS.
24. INSTALL NEW ROOF MOUNTED EXHAUST FAN, DUCTWORK, CURB, CONTROLS, CONTROL WIRING, THERMOSTAT, AND ALL ASSOCIATED ACCESSORIES IN THEIR ENTIRETY. CONNECT NEW ROOF MOUNTED EXHAUST FAN AND ALL CONTROLS TO NEW DDC CONTROL PANEL. PROVIDE ALL REQUIRED CONTROLS EQUIPMENT TO INTEGRATE NEW ROOF MOUNTED EXHAUST FAN ON THE BAS FRONT END GRAPHICS.



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DESIGN AND CONSTRUCTION DIVISION
ADAM P. LARCH, R.A., DIRECTOR



Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

SHEET TITLE: FIRST FLOOR PLAN - ENLARGED MECHANICAL ROOM - MECHANICAL NEW

| DESIGNED | TAT | DATE | ISSUED FOR: | PROJECT NO. | FILE NO/INDEX CODE: |
|----------|-----|----------|--------------|-------------|---------------------|
| DRAWN | TAT | 2/9/2026 | PRELIMINARY | 24986.00 | |
| CHECKED | CAT | | CONSTRUCTION | | |
| APPROVED | CAT | | FINAL RECORD | | |

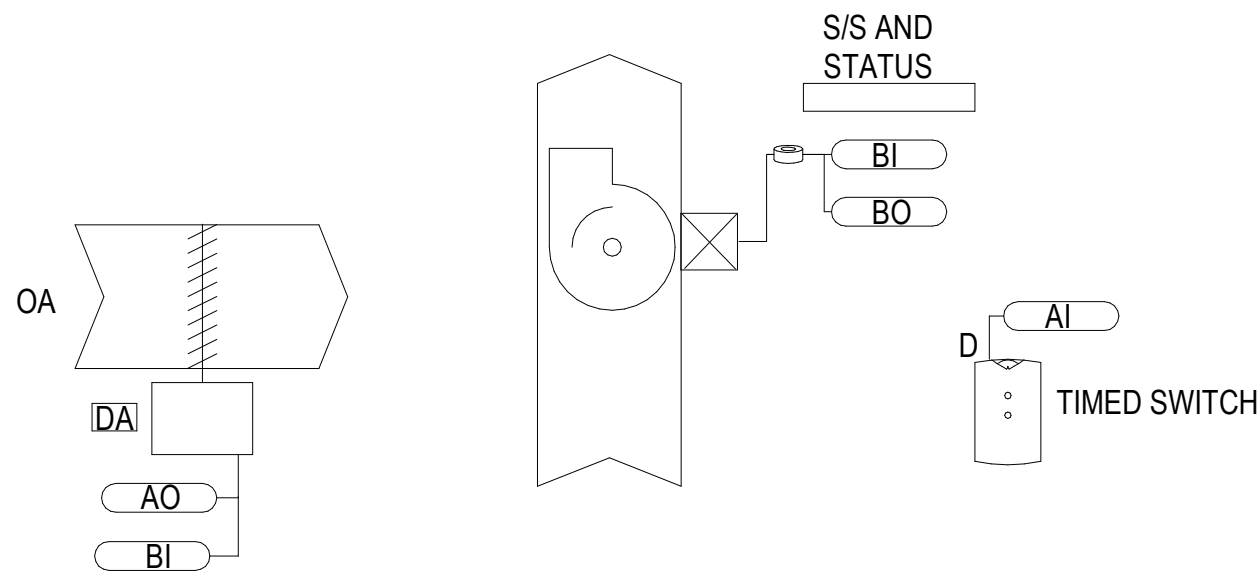
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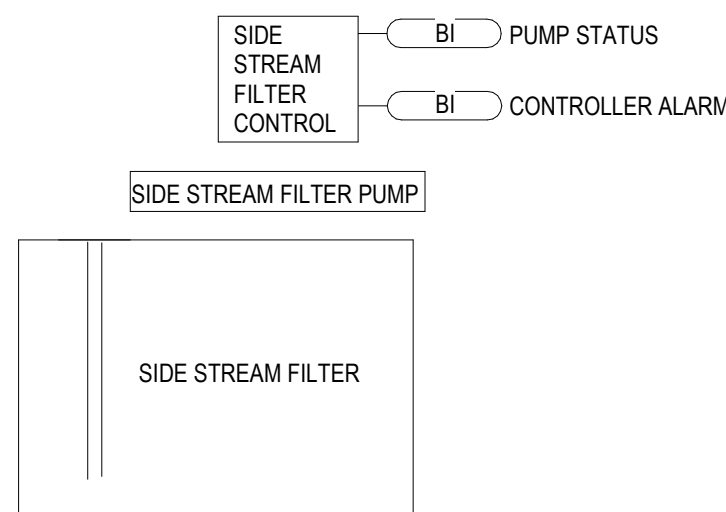
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INTAKE HOOD / LOUVER AND ASSOCIATED EXHAUST FAN CONTROL DIAGRAM

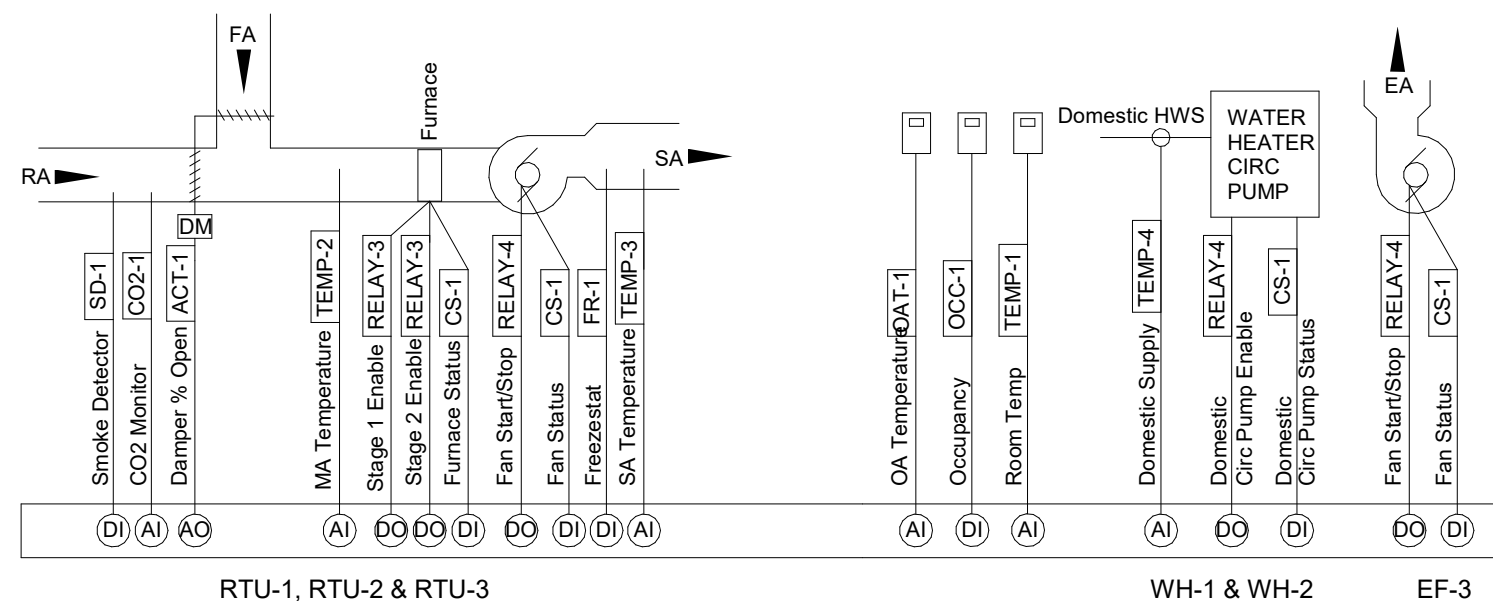
5
M-800 NOT TO SCALE



SIDE STREAM STATUS, SPLIT SYSTEM STATUS, & DEHUMID STATUS CONTROL

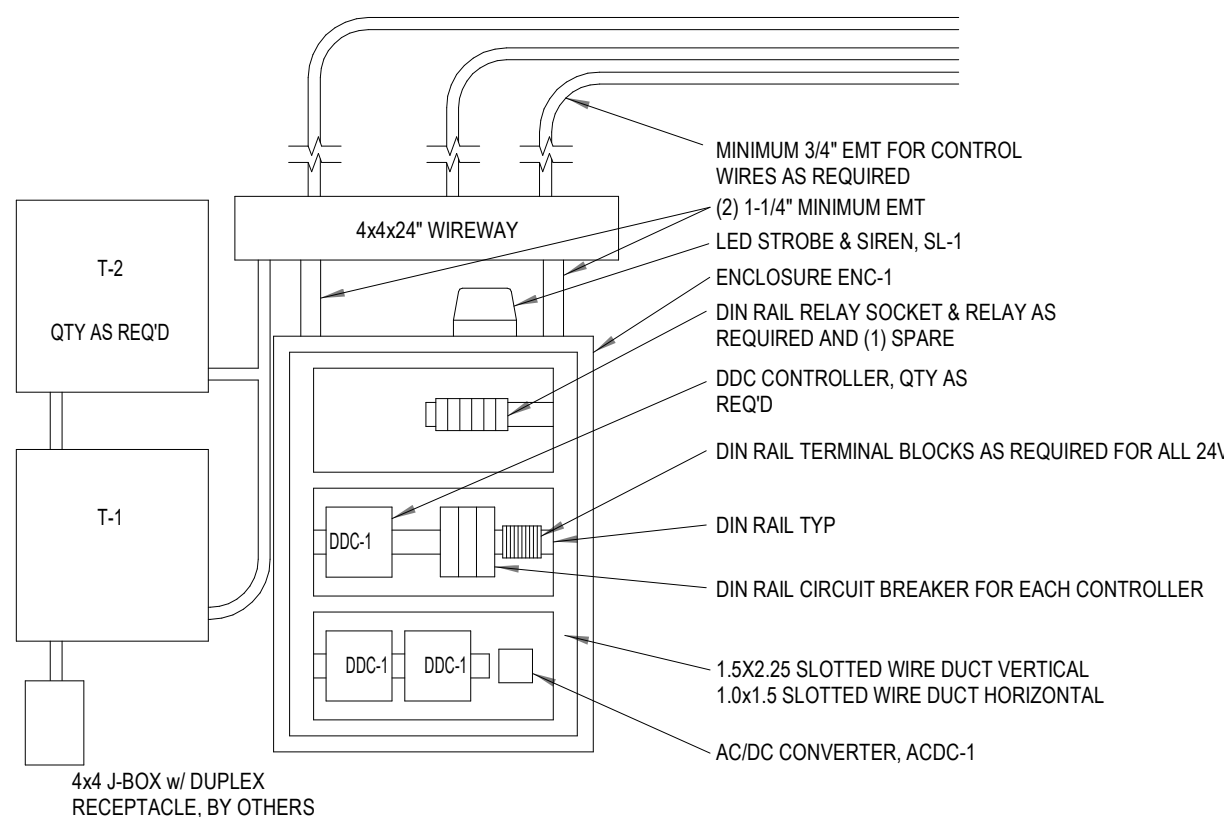
4
M-800 NOT TO SCALE

NOTE: DETAIL IS FOR
SHOP DRAWING.
INFORMATION CONTAINED
IN THIS DETAIL DOES NOT
PERTAIN TO NEW
EQUIPMENT FOR THIS
PROJECT.



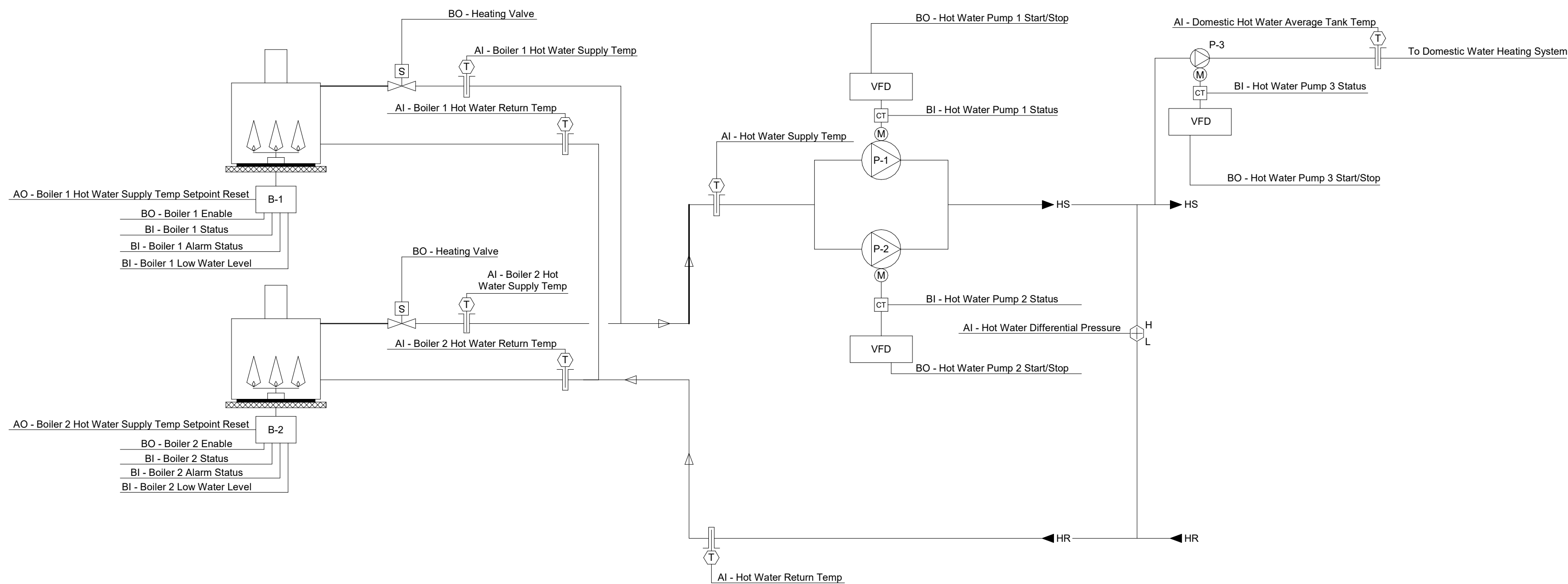
GENERAL DDC CONTROLS SCHEMATIC FOR CONTROLS SUBMITTAL TO DMVA

3
M-800 NOT TO SCALE



DDC CONTROLS DETAILS

2
M-800 NOT TO SCALE



BOILER PLANT CONTROL DIAGRAM

1
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HVAC CONTROLS GENERAL NOTES

- CONTROLS SHALL BE LON CIRCON DDC AND SHALL CONNECT TO THE NEW BUILDING AUTOMATION SYSTEM. MAIN PANEL IS LOCATED IN THE STATE MAINTENANCE OFFICE 140. ADDITIONAL PANEL(S) SHALL BE INSTALLED IN THE BOILER ROOM AND OTHER LOCATIONS SHOWN ON DRAWINGS AS NEEDED.
- THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONTROL PANEL POWER CIRCUITS, AND RACEWAYS FOR HVAC CONTROLS. THE TEMPERATURE CONTROLS CONTRACTOR SHALL PROVIDE WIRING, END DEVICES, AND TERMINATIONS. WIRING AND TERMINATIONS SHALL BE CLEARLY LABELED, AND PROGRAMMING SHALL BE BY THE TEMPERATURE CONTROLS CONTRACTOR. THE HVAC SYSTEM SHALL BE COMPLETE AND OPERABLE PRIOR TO TURNOVER TO THE OWNER.
- ANY REQUIRED SIGNAL REPEATERS, SUB-PANELS, OR MAIN TRUNKLINE ACCESSORIES SHALL BE LOCATED IN ACCESSIBLE LOCATIONS IN MECHANICAL ROOMS OR IT ROOMS. COORDINATE FINAL LOCATIONS WITH OWNER'S REPRESENTATIVE.

DMVA GENERAL NOTES

- PRIOR TO ANY INSTALLATION OF DDC EQUIPMENT OR DDC WIRING, CONTRACTOR SHALL REQUEST A DDC PRECONSTRUCTION MEETING WITH DMVA ENGINEERING TO DISCUSS CONSTRUCTION SCHEDULING, PRECISE DDC EQUIPMENT LOCATIONS, STARTUPS, LABELING PROCEDURES, AND COMMISSIONING.
- CONTRACTOR MUST FOLLOW A DDC WIRE COLOR SCHEDULE FOR ALL DDC WIRING INSTALLED. THIS SCHEDULE WILL BE AGREED UPON DURING THE PRECONSTRUCTION MEETING.
- CONTRACTOR TO INSTALL A MINIMUM 3/4\"/>
- CONTRACTOR SHALL PULL ALL DDC WIRING AS SHOWN ON DDC FLOOR PLAN AND DDC EQUIPMENT SCHEDULE. ALL WIRES SHALL BE LABELED WITH A LABEL MAKER APPROVED BY DMVA ENGINEERING. NO HAND WRITTEN LABELS WILL BE ALLOWED. ALL LABELS LOCATED IN ENCLOSURE ENC-1,2,3 & 4 MUST BE PLACED 6\"/>
- ALL INPUT/OUTPUT CONTROL WIRES TO BE LON RATED, SEE SPECIFICATIONS.
- DDC SEQUENCE AND PROGRAMMING WILL BE COMPLETED BY A DMVA APPROVED CONTROLS SUBCONTRACTOR. SEE SPECIFICATIONS.
- CONTRACTOR TO PURCHASE (1) BUILDING MANAGEMENT WORKSTATION AND TURN OVER TO DMVA ENGINEERING. SEE SPECIFICATIONS FOR FURTHER DETAIL.
- INSTALL TEMPERATURE SENSORS, TEMP-1, 60\"/>
- INSTALL OCCUPANCY SENSORS, OCC-1, 96\"/>
- INSTALL ALL OAT-1 ON NORTH FACING EXTERIOR WALL, MAKE WEATHERTIGHT.
- PRINT COPY OF DDC WIRE COLOR SCHEDULE AND SCHEMATIC AND SECURE TO THE BACK OF THE DOOR IN ENC-1,2,3 & 4.
- LABEL ALL MECHANICAL EQUIPMENT TO CORRESPOND TO DDC SCHEMATIC.
- PROVIDE AND INSTALL ALL END DEVICES SHOWN.
- APPROVED CONTROLS CONTRACTORS ARE AS FOLLOWS (IN NO PARTICULAR ORDER):
A. W.J. O'NEILL
B. CONTROLNET, WEST MICHIGAN BRANCH
C. J.B. ELECTRIC
- SEE SPECIFICATION SECTION 230800 FOR ADDITIONAL INFORMATION. IN THE EVENT OF ANY CONFLICTS BETWEEN THE SEQUENCES/DIAGRAMS AND THE SPECIFICATIONS, THE CONTRACTOR SHALL COMPLY WITH THE SPECIFICATIONS.

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 MATRIX PROJECT NO. 24986.00

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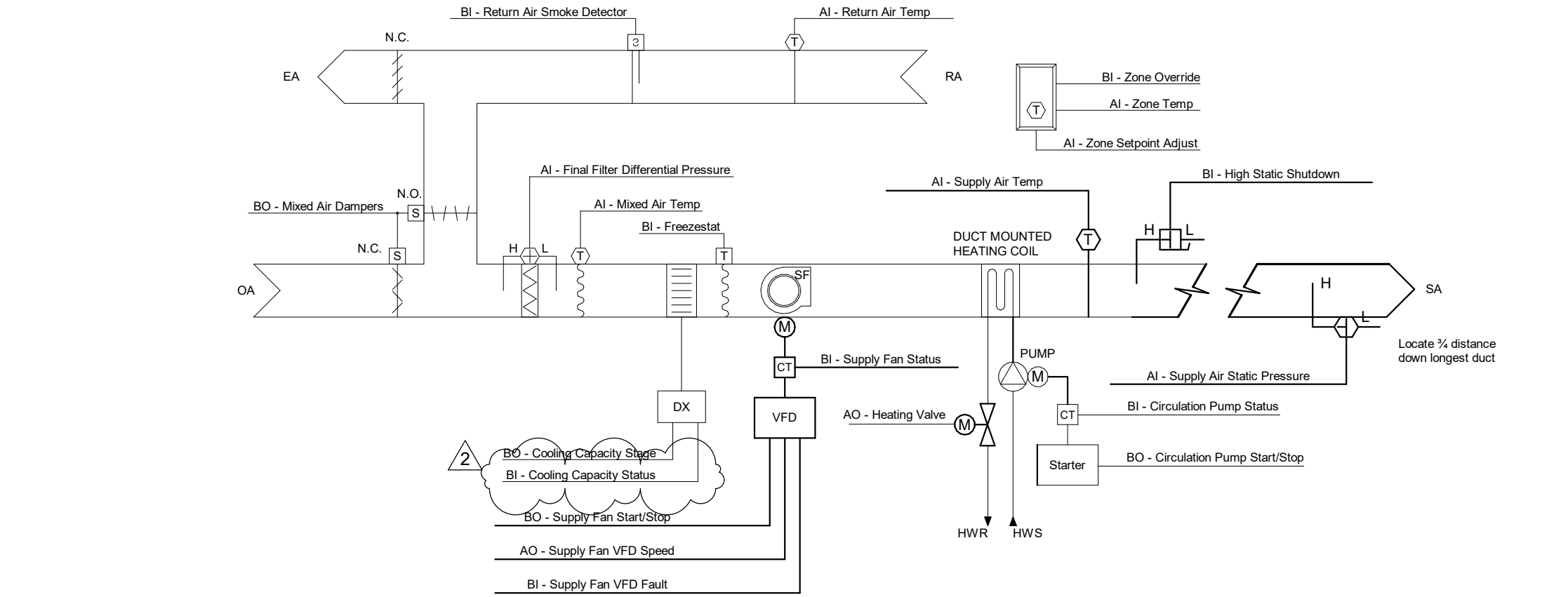
DESIGN AND CONSTRUCTION DIVISION

ADAM P. LARCH, R.A., DIRECTOR

Jackson West Armory Renovations

2700 W. Argyle St., Jackson, MI 49202

| SHEET TITLE: | CONTROLS | | DESIGNED | DATE | ISSUED FOR: | IDENTIFICATION NO: | SHEET |
|--------------|-------------------------------------|-------------------------------------|-------------------------------------|----------|--------------|----------------------|-------|
| | DRAWN | AUTHOR | | | | | |
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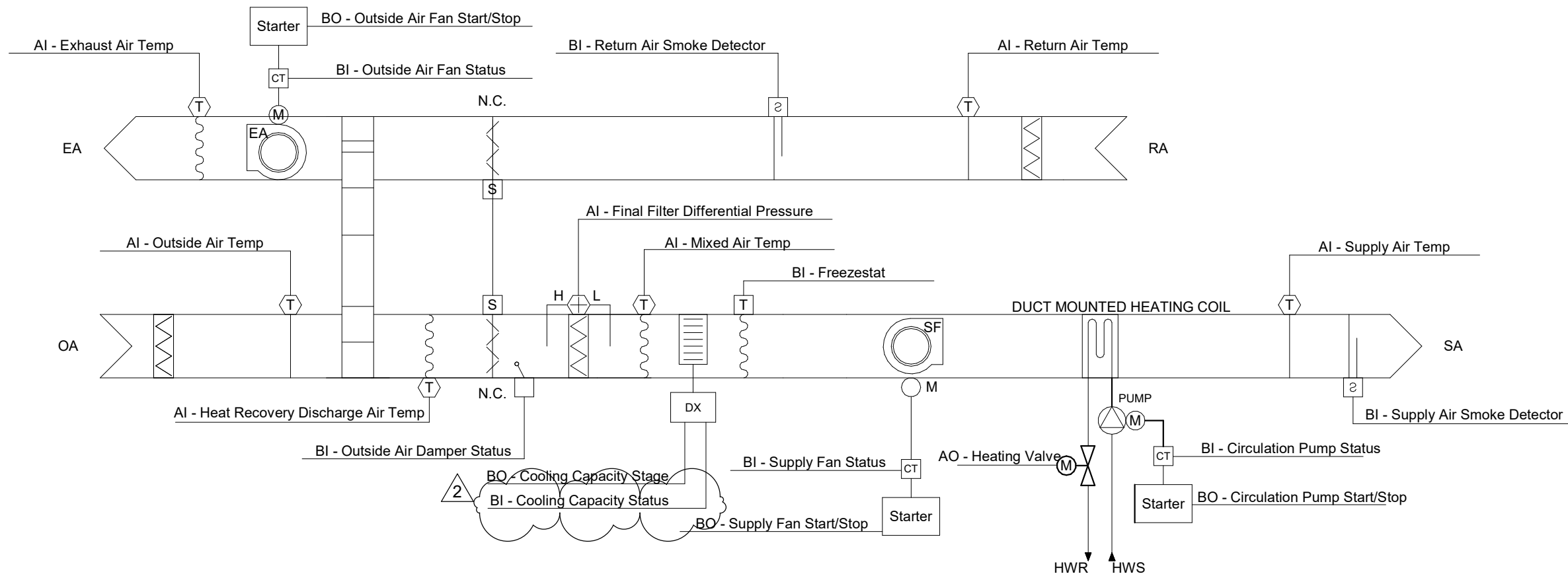


8

M-801

VARIABLE AIR VOLUME ROOFTOP HVAC CONTROL DIAGRAM

NOT TO SCALE

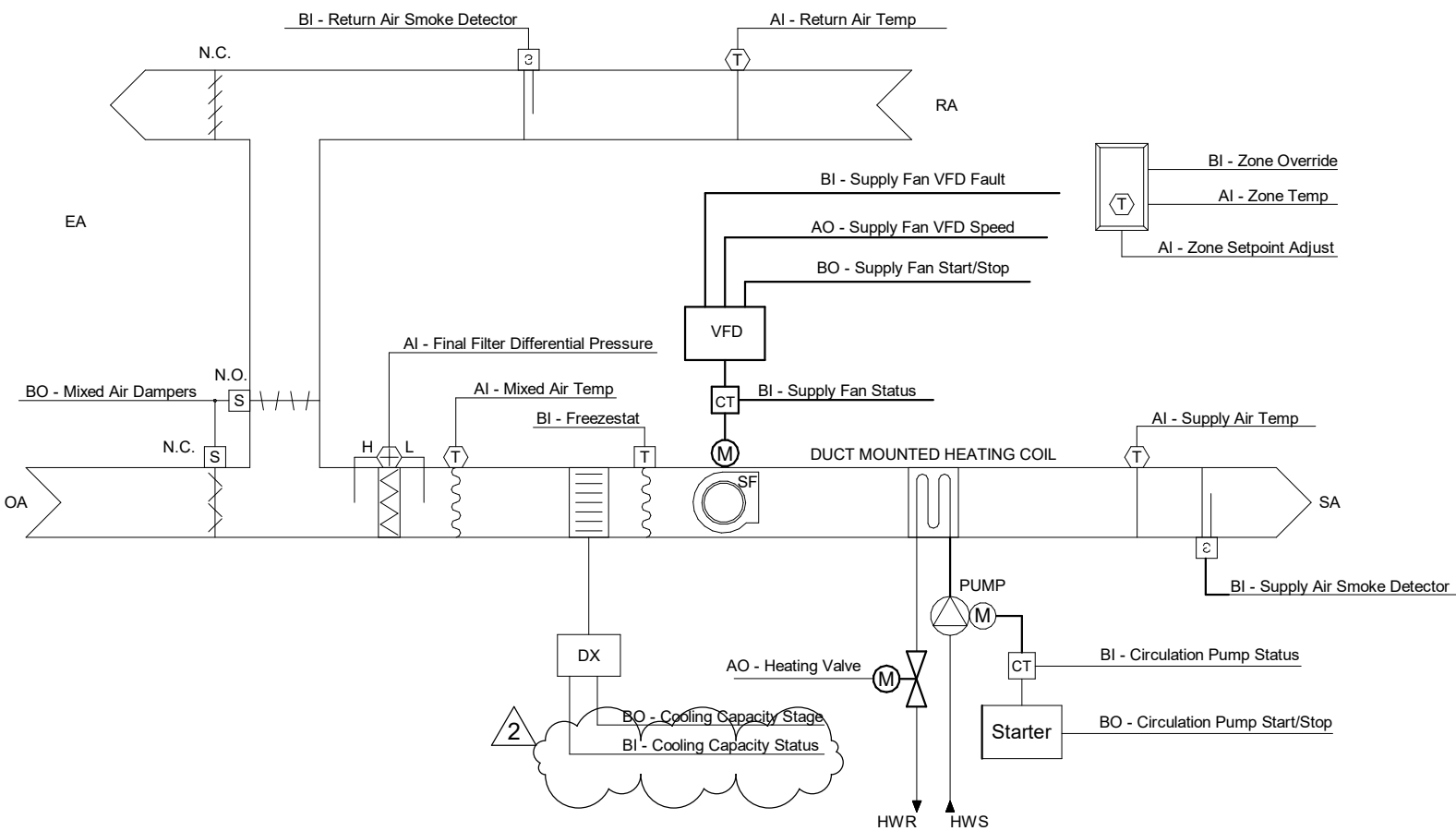


5

M-801

ENERGY RECOVERY ROOFTOP UNIT COMBO CONTROL DIAGRAM

NOT TO SCALE

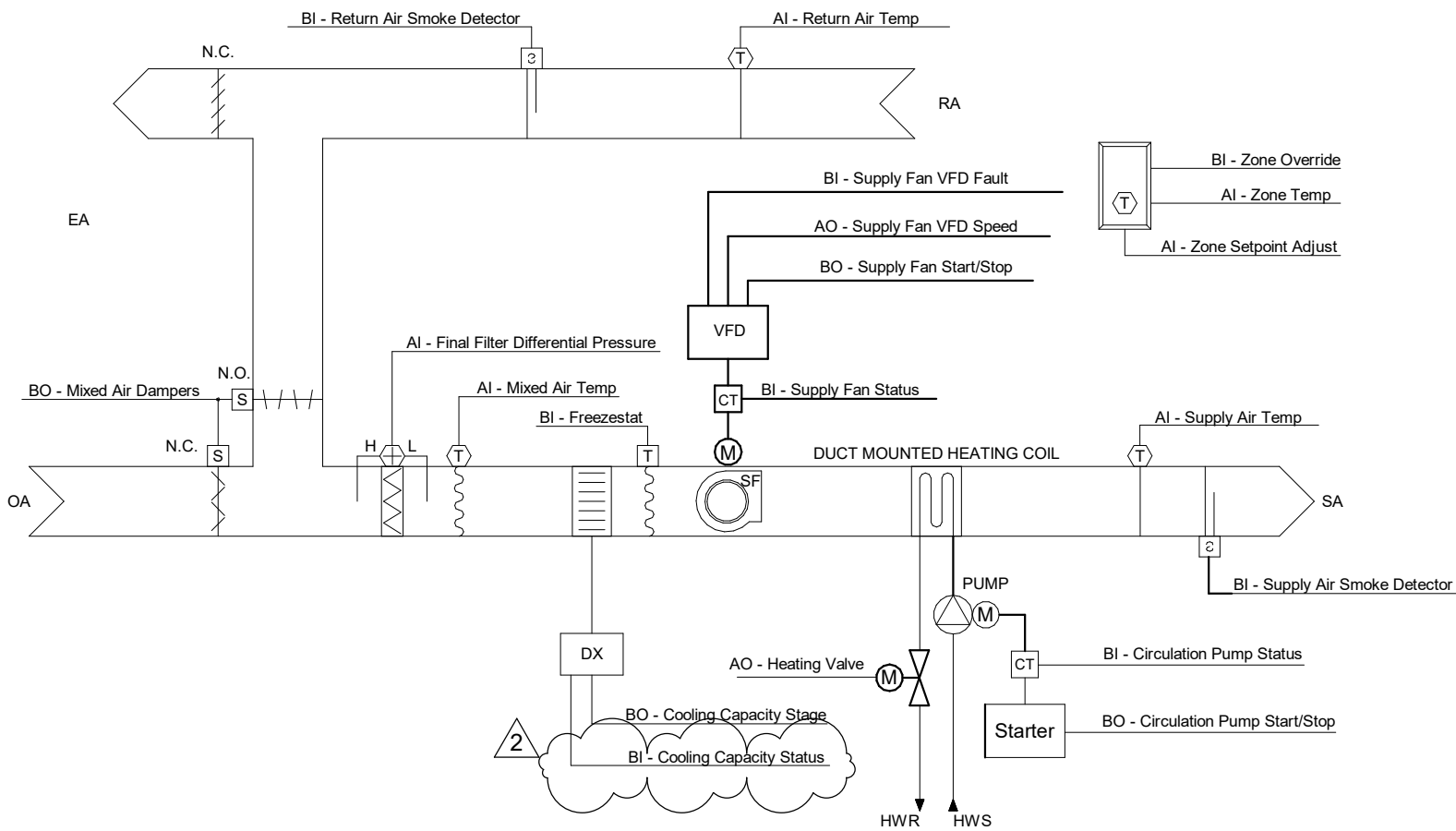


2

M-801

CONSTANT VOLUME ROOFTOP HVAC CONTROL DIAGRAM

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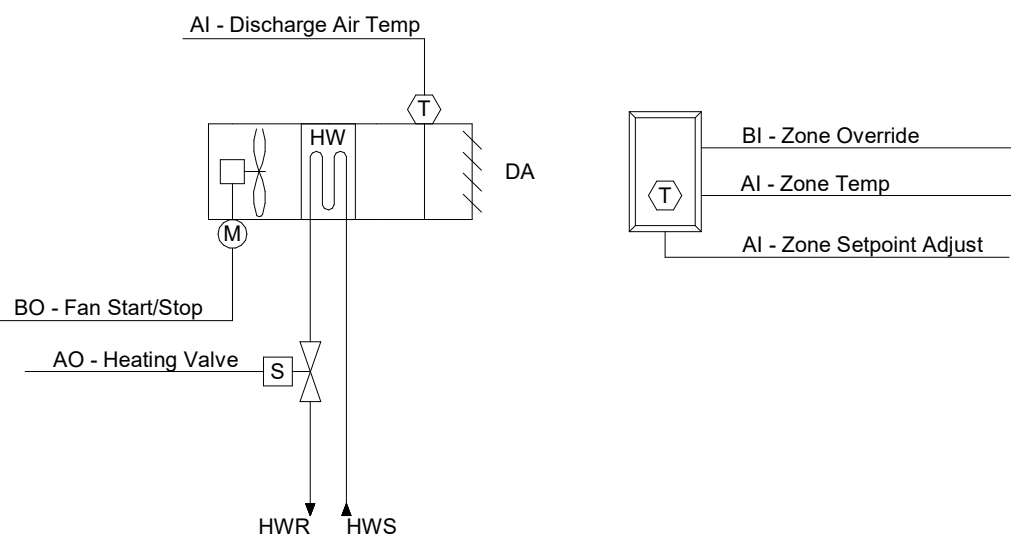


10

M-801

KITCHEN VENTILATION CONTROL DIAGRAM

SCALE = 12" = 1'-0"

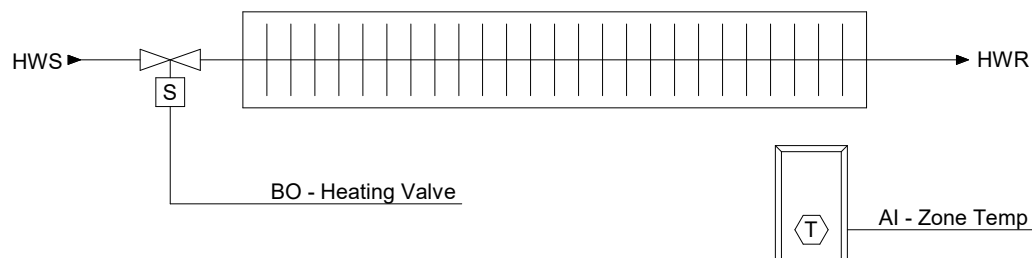


7

M-801

UNIT HEATER 2-WAY CONTROL DIAGRAM

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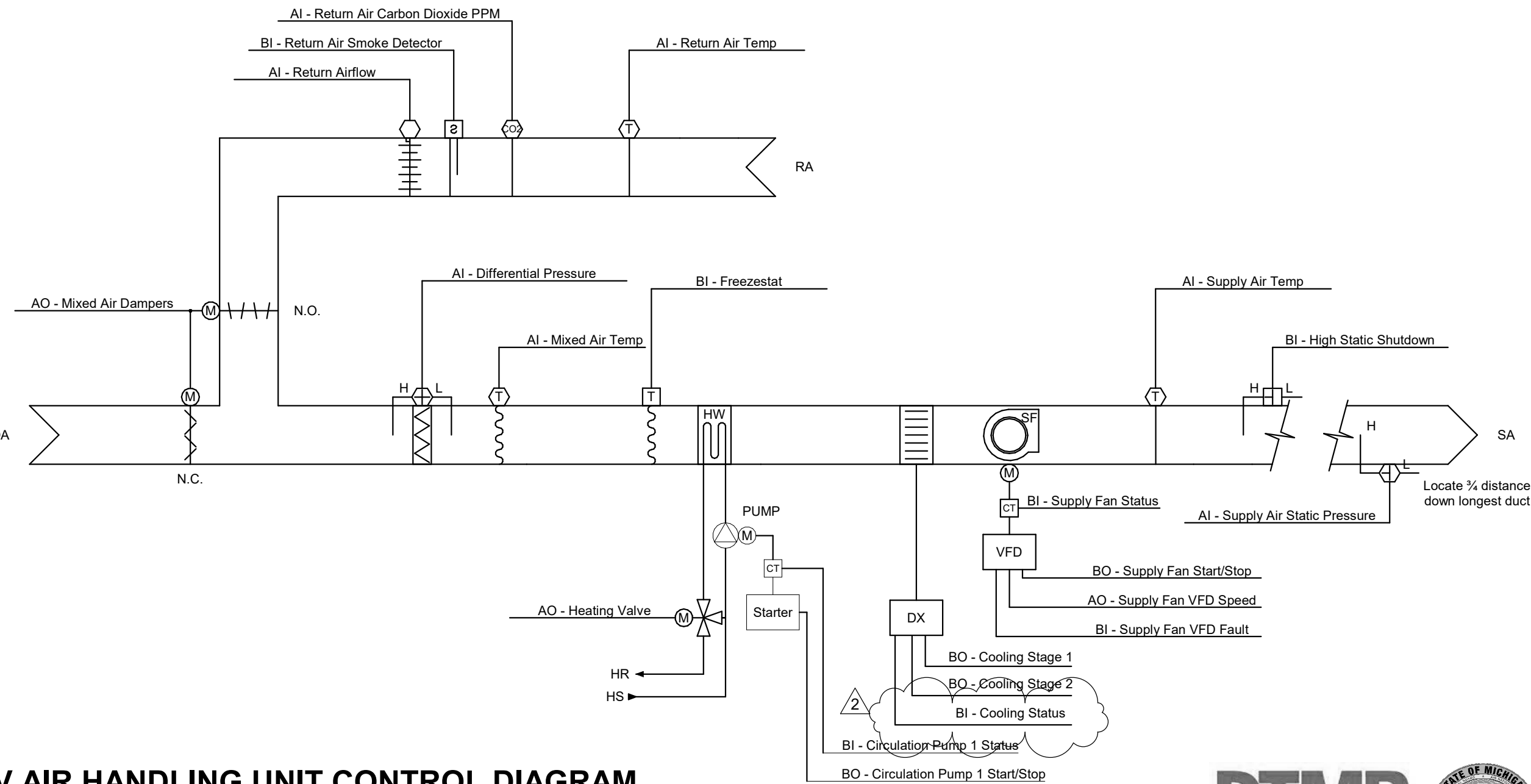


4

M-801

FIN TUBE PERIMETER HEATING CONTROL DIAGRAM

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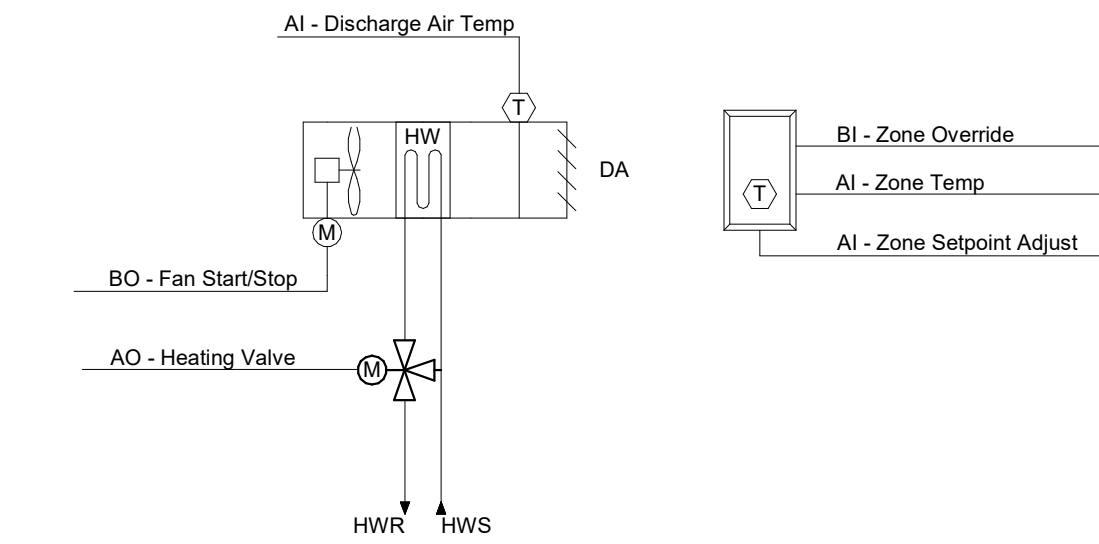


1

M-801

VAV AIR HANDLING UNIT CONTROL DIAGRAM

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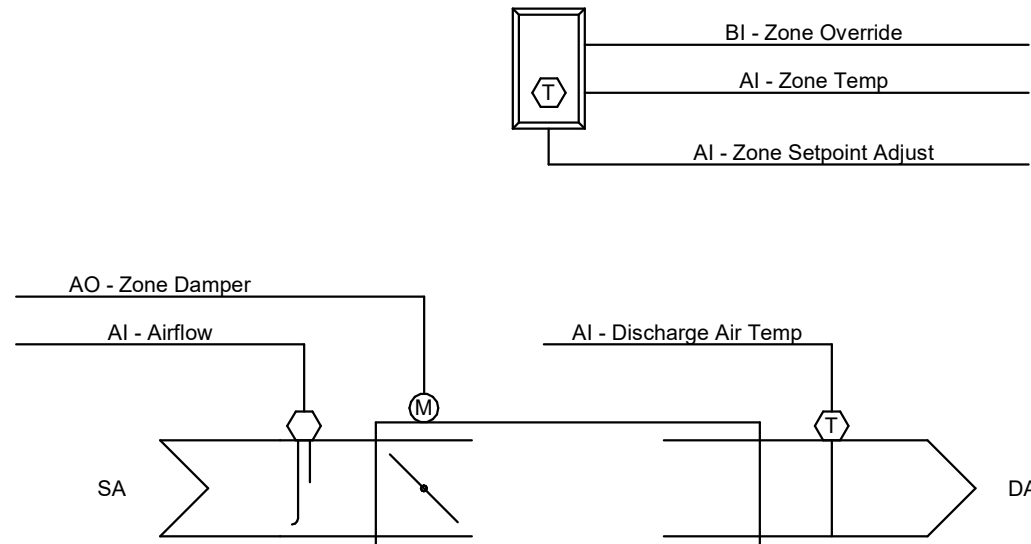


9

M-801

UNIT HEATER 3-WAY CONTROL DIAGRAM

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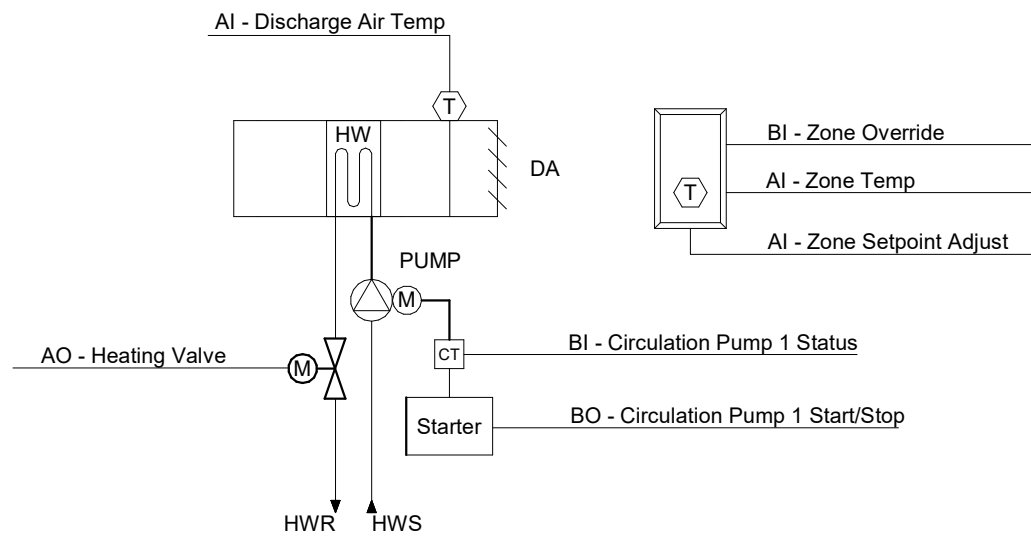


6

M-801

VAV TERMINAL UNIT CONTROL DIAGRAM

NOT TO SCALE



3

M-801

DUCT MOUNTED HEATING COIL CONTROL DIAGRAM

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DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET
FACILITIES AND BUSINESS SERVICES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LANGR, P.E., DIRECTOR



Jackson West Armory Renovations
2700 W. Argyle St., Jackson, MI 49202

| | | | | | |
|---|--|--|--|--|--|
| SECTION 230993 SEQUENCE OF OPERATIONS FOR HVAC CONTROLS | | | | | |
| PART 1 - GENERAL | | | | | |
| 1.1 RELATED DOCUMENTS | | | | | |
| A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS SECTION. | | | | | |
| 1.2 SUMMARY | | | | | |
| A. THIS SECTION INCLUDES CONTROL SEQUENCES FOR HVAC SYSTEMS, SUBSYSTEMS, AND EQUIPMENT. | | | | | |
| B. THIS SECTION DESCRIBES THE MINIMUM PERFORMANCE REQUIREMENTS FOR THE SYSTEMS AND DOES NOT NECESSARILY INCLUDE ALL ELEMENTS OF CONTROL REQUIRED FOR PROPER AND SAFE OPERATION OF THE SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SAFETIES INTERLOCKS, HIGH LIMITS, LOW LIMITS, TIME DELAYS, AND CONTROL LOGIC FOR A COMPLETE AND OPERABLE SYSTEM. | | | | | |
| C. RELATED SECTIONS INCLUDE THE FOLLOWING: | | | | | |
| 1. DIVISION 23 SECTION "INSTRUMENTATION AND CONTROLS FOR HVAC" FOR CONTROL EQUIPMENT AND DEVICES AND SUBMITTAL REQUIREMENTS. | | | | | |
| D. ALL EQUIPMENT, VALVES, FANS, ETC. SHALL BE CONTROLLED BY THE TEMPERATURE CONTROL CONTRACTOR UNLESS SPECIFIED TO BE CONTROLLED BY ANOTHER METHOD IN THE SPECIFICATIONS OR THE CONSTRUCTION DOCUMENTS. | | | | | |
| 1.3 DEFINITIONS | | | | | |
| A. DDC: DIRECT-DIGITAL CONTROLS. | | | | | |
| B. BAS: BUILDING AUTOMATION SYSTEM. | | | | | |
| 1.4 AIR HANDLING UNIT SEQUENCE (AHU-1 AND AHU-2) | | | | | |
| A. GENERAL: | | | | | |
| 1. FAN CONTROL: BAS STARTS AND STOPS SUPPLY FAN(S) AS REQUIRED FOR THE SEQUENCE OF OPERATION AND OCCUPANCY SCHEDULES. CURRENT SENSING RELAYS ON THE FAN MOTOR MONITORS FAN OPERATION AND ALARMS IF FAN FAILS. FANS RUN CONTINUOUSLY DURING OCCUPANCY AND INTERMITTENTLY DURING UNOCCUPIED CYCLE. SHUT DOWN THE AHU AND ALARM BAS IF UNSAFE OPERATING CONDITIONS OCCUR. | | | | | |
| 2. FREEZE PROTECTION: FREEZE STAT WITH AVERAGING ELEMENT LOCATED DOWNSTREAM OF COOLING COIL MONITORS LEAVING AIR TEMPERATURE AND SHUTS DOWN UNIT FAN IF LEAVING AIR TEMPERATURE FALLS BELOW 37 DEG F. AND ALARMS BAS. | | | | | |
| 3. FANDAMPER INTERLOCK: OUTDOOR AIR DAMPER CLOSES AND RETURN AIR DAMPER OPENS WHENEVER FAN IS OFF. PROVE ANY SYSTEM DAMPERS OPEN BEFORE FANS CAN START. | | | | | |
| 4. SMOKE CONTROL: DUCT SMOKE DETECTOR (SUPPLIED BY DIVISION 28) IS MOUNTED IN THE RETURN AIR AND SUPPLY AIR DUCT FOR EACH UNIT. INTERLOCK DETECTORS WITH AIR HANDLING UNIT FANS SO THAT FANS STOP WHEN SMOKE IS DETECTED. MONITOR REMOTE SMOKE DAMPERS AND INTERLOCK WITH AHU SO THAT AHU DOES NOT OPERATE IF DAMPERS FAIL TO OPEN. | | | | | |
| 5. OUTDOOR AIR/ECONOMIZER CONTROL: INTERLOCK OUTDOOR AND RETURN AIR DAMPERS TO OPERATE IN SEQUENCE. OUTDOOR AIR DAMPER IS CLOSED DURING UNOCCUPIED CYCLE AND OPENS TO SPECIFIED MINIMUM POSITION DURING OCCUPIED HOURS. | | | | | |
| a. DURING OCCUPIED HOURS, BAS TO MONITOR CO2 LEVELS IN THE OCCUPIED SPACE WITH CO2 SENSOR MOUNTED IN THE RETURN AIR DUCT. WHEN THE CO2 LEVELS ARE LESS THAN 800 PPM, THE OUTDOOR AIR DAMPER CAN REDUCE TO 10% OPEN (ADJUSTABLE). IF THE CO2 LEVELS ARE 800 PPM OR GREATER, OUTDOOR AIR DAMPER IS TO OPEN TO SPECIFIED MINIMUM POSITION. | | | | | |
| MONITOR SUPPLY AIR TEMPERATURE, RETURN AIR TEMPERATURE AND HUMIDITY, AND OUTDOOR AIR TEMPERATURE AND HUMIDITY. WHEN OUTDOOR ENTHALPY IS LESS THAN RETURN AIR ENTHALPY, MODULATE OUTDOOR OPEN AND RETURN AIR DAMPERS CLOSED IN SEQUENCE WITH COOLING CONTROL VALVES AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) SUPPLY TEMPERATURE. WHEN OUTDOOR AIR ENTHALPY IS ABOVE RETURN AIR ENTHALPY, OUTDOOR AIR DAMPER RETURNS TO MINIMUM POSITION SETTING. PROVE RELIEF DAMPER (D-1 FOR AHU-1 AND D-2 FOR AHU-2) OPEN BEFORE OUTSIDE AIR EXCEEDS 50% OPEN. | | | | | |
| 6. WARM-UP CONTROL: WHENEVER OUTDOOR TEMPERATURE IS BELOW 55 DEG F (ADJUSTABLE) AND SYSTEM STATUS CHANGES FROM UNOCCUPIED TO OCCUPIED MODE, BAS INITIATES A WARM-UP SEQUENCE. HOLD OUTDOOR AIR DAMPER CLOSED AND RETURN AIR DAMPER OPEN AND ACTIVATE HEATING COIL TO RAISE DISCHARGE AIR TEMPERATURE TO 80 DEG F UNTIL RETURN AIR TEMPERATURE RISES TO WITHIN 3 DEG F (ADJUSTABLE) OF SPACE SETPOINT. | | | | | |
| 7. HIGH DISCHARGE AIR PRESSURE LIMIT CONTROL: MONITOR DISCHARGE AIR PRESSURE IN SUPPLY DUCT/WORK UPSTREAM OF ANY FIRE DAMPERS. STOP SUPPLY FAN IF DUCT PRESSURE RISES 2 INCHES ABOVE NORMAL OPERATING PRESSURE AND ALARM SYSTEM. | | | | | |
| 8. FILTER PRESSURE DROP: MONITOR AIR HANDLING UNIT FILTER PRESSURE DROP GAUGES (REFER TO SECTION 23733 FOR GAUGE SPECIFICATION) AND ALARM SYSTEM WHEN PRESSURE DROP EXCEEDS HIGH OR LOW LIMIT SETTINGS. | | | | | |
| B. VARIABLE AIR VOLUME UNITS: | | | | | |
| 1. EQUIPMENT CONTROLLED: | | | | | |
| a. AHU-1/CU-1 & P-4 | | | | | |
| b. AHU-2/CU-2 & P-5 | | | | | |
| 2. UNIT COMPONENTS: SUPPLY FAN(S) WITH VFDs, COOLING COIL, HEATING COIL, MIXING BOX (OUTSIDE AIR DAMPERS, AND RETURN DAMPERS). SEE DIVISION 26 FOR VFD SPECIFICATIONS. | | | | | |
| 3. OCCUPANCY CONTROL: UNIT FAN IS ON DURING OCCUPIED HOURS AND OFF DURING UNOCCUPIED HOURS. | | | | | |
| 4. SUPPLY AIR PRESSURE CONTROL: BAS MONITORS SUPPLY AIR PRESSURE (2/3 DOWNSTREAM) AND MODULATES SUPPLY FAN SPEED THROUGH VFD TO MAINTAIN DUCT STATIC PRESSURE AT 1.5 INCH WC (ADJUSTABLE). BAS TO ALSO MONITOR BOX POSITIONS AND REDUCE STATIC PRESSURE SETPOINT TO ALLOW FOR AT LEAST ONE BOX TO BE 95% OPEN (STATIC PRESSURE RESET). | | | | | |
| 5. COOLING COIL CONTROL: BAS TO MODULATE THE CONDENSING UNIT COMPRESSORS AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) DISCHARGE TEMPERATURE. | | | | | |
| 6. HEATING COIL CONTROL: HEATING COIL PUMP (P-4 FOR AHU-1 AND P-5 FOR AHU-2) STARTS WHENEVER OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE) OR ON A CALL FOR HEATING. BAS MODULATES 3-WAY CV AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) SUPPLY TEMPERATURE. LOCK OUT ECONOMIZER AND COOLING WHEN HEATING IS ACTIVATED. WHEN THE UNIT IS OFF, MODULATE THE HEATING CV TO MAINTAIN 55 DEG F INSIDE THE AHU. MONITOR COIL PUMP THROUGH CURRENT SENSING RELAYS. IF PUMP FAILS CLOSE OUTDOOR AIR DAMPER AND ALARM BAS. | | | | | |
| 7. OUTSIDE AIR CONTROL: BAS MONITORS AHU OUTSIDE AIR DAMPER FLOW MONITOR DEVISE AND RESETS OARA DAMPERS AS REQUIRED TO MAINTAIN SPECIFIED MINIMUM OUTSIDE AIR FLOW (ADJUSTABLE). | | | | | |
| 8. RELIEF DAMPERS: INTERLOCK OUTSIDE AIR AND RELIEF AIR DAMPER. BAS MONITORS BUILDING PRESSURIZATION. WHEN BUILDING PRESSURE EXCEEDS 0.02 INCH POSITIVE PRESSURE (ADJUSTABLE), OPEN RELIEF DAMPER (D-1 FOR AHU-1 AND D-2 FOR AHU-2). MODULATE RELIEF DAMPER AS REQUIRED TO MAINTAIN 0.02 INCHES WC (ADJUSTABLE) BUILDING PRESSURE. ALARM BAS AND STOP AHU IF BUILDING PRESSURE EXCEEDS 0.2 INCH WC (ADJUSTABLE). | | | | | |
| C. MONITOR AND/OR CONTROL THE FOLLOWING: | | | | | |
| 1. SYSTEM GRAPHIC. | | | | | |
| 2. SUPPLY FAN STATUS. | | | | | |
| 3. SUPPLY FAN FAILURE ALARM STATUS. | | | | | |
| 4. SUPPLY FAN VFD SPEED. | | | | | |
| 5. SUPPLY FAN VFD FAILURE ALARM. | | | | | |
| 6. OCCUPANCY STATUS. | | | | | |
| 7. FREEZE STAT ALARM STATUS. | | | | | |
| 8. OA DAMPER FLOW (CFM). | | | | | |
| 9. OA DAMPER POSITION. | | | | | |
| 10. OA DAMPER MINIMUM SETPOINT. | | | | | |
| 11. OA TEMPERATURE. | | | | | |
| 12. OA RH. | | | | | |
| 13. RETURN AIR DAMPER POSITION. | | | | | |
| 14. RETURN AIR CO2 PPM | | | | | |
| 15. RELIEF AIR DAMPER POSITION. | | | | | |
| 16. ECONOMIZER STATUS. | | | | | |
| 17. DISCHARGE AIR TEMPERATURE. | | | | | |
| 18. DISCHARGE AIR TEMPERATURE SETPOINT. | | | | | |
| 19. SUPPLY AIR PRESSURE. | | | | | |
| 20. SUPPLY AIR PRESSURE SETPOINT. | | | | | |
| 21. HIGH LIMIT SUPPLY AIR PRESSURE ALARM STATUS. | | | | | |
| 22. FILTER HIGH LIMIT STATUS. | | | | | |
| 23. FILTER LOW LIMIT STATUS. | | | | | |
| 24. BUILDING PRESSURE. | | | | | |
| 25. BUILDING PRESSURE SETPOINT. | | | | | |
| 26. BUILDING PRESSURE HIGH LIMIT ALARM. | | | | | |
| 27. HEATING COIL CV POSITION. | | | | | |
| 28. HEATING COIL PUMP STATUS. | | | | | |
| 29. HEATING COIL PUMP ALARM. | | | | | |
| 30. CONDENSING UNIT STATUS | | | | | |
| 31. CONDENSING UNIT STAGE | | | | | |
| 32. CONDENSING UNIT ALARM | | | | | |
| 1.5 ROOF TOP UNIT SEQUENCE | | | | | |
| A. EQUIPMENT CONTROLLED: | | | | | |
| 1. RTU-1, RTU4-HC-1, AND P-6 | | | | | |
| 2. RTU-2, RTU4-HC-2, AND P-7 | | | | | |
| 3. RTU-3, RTU4-HC-3, AND P-8 | | | | | |
| 4. RTU-4, RTU4-HC-4, AND P-10 | | | | | |
| 5. RTU-5, RTU4-HC-5, AND P-11 | | | | | |
| B. PACKAGED ROOF TOP UNIT TO BE EQUIPPED WITH A FACTORY PROVIDED DDC CONTROLS READY PACKAGE/TERMINAL STRIP THAT ALLOWS THE BAS TO MODULATE FANS, MODULATE COMPRESSORS DURING COOLING MODE, AND MODULATE REMOTE MOUNTED HYDRONIC HEATING COIL CONTROL VALVE DURING HEATING MODE. THE BAS WILL BE ABLE TO MODULATE THE HEATING COIL CONTROL VALVE AND OPERATE THE HEATING COIL PUMP. THE BAS WILL CONTROL THE ENTIRE ROOFTOP UNIT SYSTEM. BAS TO MONITOR ALL RTU CONTROL POINTS AND BE CAPABLE OF ADJUSTING TEMPERATURE SETPOINTS AND SCHEDULES. | | | | | |
| C. RTU-1, RTU-2, AND RTU-3: BAS MONITORS DISCHARGE AIR TEMPERATURE. BAS TO MODULATE THE UNIT AND REMOTE MOUNTED HEATING COIL AS REQUIRED TO MAINTAIN 55 DEG F (ADJUSTABLE) DISCHARGE TEMPERATURE. DISCHARGE AIR TEMPERATURE AND SCHEDULES TO BE ADJUSTED THROUGH THE BAS. | | | | | |
| D. RTU-4 AND RTU-5: BAS MONITORS SPACE TEMPERATURE. CONTROLS CONTRACTOR PROVIDED THERMOSTAT THAT IS CONNECTED TO THE BAS. | | | | | |
| 1. ZONE OPTIMAL START: THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD. | | | | | |
| 2. ZONE UNOCCUPIED OVERRIDE: A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE. | | | | | |
| 3. ZONE SETPOINT ADJUSTMENT: THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING SETPOINT AT THE ZONE THERMOSTAT. LIMIT ADJUSTMENT FROM BAS TEMPERATURE SETPOINT TO +/- 3 DEG F. | | | | | |
| D. GENERAL: | | | | | |
| 1. FAN CONTROL: BAS CONTROLS THE START AND STOP OF THE SUPPLY FAN AND EXHAUST FAN AS REQUIRED FOR THE SEQUENCE OF OPERATION AND OCCUPANCY SCHEDULES. CURRENT SENSING RELAYS ON THE FAN MOTOR MONITORS FAN OPERATION AND ALARMS IF FAN FAILS. FANS RUN CONTINUOUSLY DURING OCCUPANCY AND INTERMITTENTLY DURING UNOCCUPIED CYCLE. SHUT DOWN THE ENERGY RECOVERY UNIT AND ALARM BAS IF UNSAFE OPERATING | | | | | |
| PRESSURE DROP GAUGES AND ALARM SYSTEM WHEN PRESSURE DROP EXCEEDS HIGH OR LOW LIMIT SETTINGS. | | | | | |
| 7. COOLING COIL CONTROL: BAS TO MODULATE COMPRESSORS IN SEQUENCE WITH ECONOMIZER CYCLE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE OR DESIRED SUPPLY TEMPERATURE SETPOINT. | | | | | |
| 8. HEATING COIL CONTROL: BAS TO ACTIVATE HEATING COIL PUMP WHENEVER OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE) OR ON A CALL FOR HEATING. ROOFTOP UNIT CONTROL PANEL TO MODULATE HYDRONIC CONTROL VALVE FLOW AS REQUIRED TO MAINTAIN SPACE TEMPERATURE OR DESIRED SUPPLY TEMPERATURE SETPOINT. | | | | | |
| 9. BAS TO LOCK OUT ECONOMIZER AND COOLING WHEN HEATING IS ACTIVATED. | | | | | |
| F. BAS TO DISPLAY AND/OR CONTROL THE FOLLOWING: | | | | | |
| 1. SYSTEM GRAPHIC. | | | | | |
| 2. SUPPLY FAN STATUS. | | | | | |
| 3. SUPPLY FAN FAILURE ALARM STATUS. | | | | | |
| 4. SUPPLY FAN VFD SPEED. | | | | | |
| 5. SUPPLY FAN VFD FAILURE ALARM. | | | | | |
| 6. SUPPLY AIR PRESSURE. | | | | | |
| 7. SUPPLY AIR PRESSURE SETPOINT (RTU-1, RTU-2, AND RTU-3). | | | | | |
| 8. OCCUPANCY STATUS. | | | | | |
| 9. FREEZE STAT ALARM STATUS. | | | | | |
| 10. OA DAMPER FLOW (CFM). | | | | | |
| 11. OA DAMPER POSITION. | | | | | |
| 12. OA DAMPER MINIMUM SETPOINT. | | | | | |
| 13. OA TEMPERATURE. | | | | | |
| 14. OA RH. | | | | | |
| 15. RETURN AIR DAMPER POSITION. | | | | | |
| 16. RETURN AIR CO2 PPM | | | | | |
| 17. RELIEF AIR DAMPER POSITION. | | | | | |
| 18. ECONOMIZER STATUS. | | | | | |
| 19. DISCHARGE AIR SETPOINT (RTU-1, RTU-2, AND RTU-3). | | | | | |
| 20. DISCHARGE AIR TEMPERATURE. | | | | | |
| 21. HIGH LIMIT SUPPLY AIR PRESSURE ALARM STATUS. | | | | | |
| 22. FILTER HIGH LIMIT STATUS. | | | | | |
| 23. FILTER LOW LIMIT STATUS. | | | | | |
| 24. BUILDING PRESSURE. | | | | | |
| 25. BUILDING PRESSURE HIGH LIMIT ALARM. | | | | | |
| 26. HEATING COIL CV POSITION. | | | | | |
| 27. HEATING COIL PUMP STATUS. | | | | | |
| 28. HEATING COIL PUMP ALARM. | | | | | |
| 29. POWERED EXHAUST STATUS | | | | | |
| 30. SPACE TEMPERATURE (RTU-4, AND RTU-5). | | | | | |
| 31. SPACE TEMPERATURE SETPOINT (RTU-4, AND RTU-5). | | | | | |
| 32. HEATING COIL LEAVING AIR TEMPERATURE. | | | | | |
| 33. COOLING STATUS | | | | | |
| 34. COOLING STAGE | | | | | |
| 35. COOLING ALARM | | | | | |
| 1.6 ENERGY RECOVERY UNIT SEQUENCE | | | | | |
| A. EQUIPMENT CONTROLLED: | | | | | |
| 1. ERV-1, ERV-HC-1, AND P-13 | | | | | |
| 2. ERV-2, ERV-HC-2, AND P-9 | | | | | |
| B. PACKAGED ENERGY RECOVERY UNIT TO BE PROVIDED WITH A FACTORY PROVIDED DDC CONTROLS READY PACKAGE/TERMINAL STRIP THAT ALLOWS THE BAS TO MODULATE FANS, MODULATE COMPRESSORS DURING COOLING MODE, AND MODULATE REMOTE MOUNTED HYDRONIC HEATING COIL CONTROL VALVE DURING HEATING MODE. THE BAS MUST ALSO BE ABLE TO MODULATE THE HEATING COIL CONTROL VALVE AND OPERATE THE HEATING COIL PUMP. THE BAS MUST ALSO BE CAPABLE OF CONTROLLING THE ENERGY RECOVERY UNIT SYSTEM. BAS TO MONITOR ALL ERV CONTROL POINTS AND BE CAPABLE OF ADJUSTING TEMPERATURE SETPOINTS AND SCHEDULES. | | | | | |
| C. BAS MONITORS SPACE TEMPERATURE. CONTROLS CONTRACTOR PROVIDED THERMOSTAT THAT IS CONNECTED TO THE BAS. | | | | | |
| 1. ZONE OPTIMAL START: THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD. | | | | | |
| 2. ZONE UNOCCUPIED OVERRIDE: A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE. | | | | | |
| 3. ZONE SETPOINT ADJUSTMENT: THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING SETPOINT AT THE ZONE THERMOSTAT. LIMIT ADJUSTMENT FROM BAS TEMPERATURE SETPOINT TO +/- 3 DEG F. | | | | | |
| D. GENERAL: | | | | | |
| 1. FAN CONTROL: BAS CONTROLS THE START AND STOP OF THE SUPPLY FAN AND EXHAUST FAN AS REQUIRED FOR THE SEQUENCE OF OPERATION AND OCCUPANCY SCHEDULES. CURRENT SENSING RELAYS ON THE FAN MOTOR MONITORS FAN OPERATION AND ALARMS IF A FAN FAILS. FANS RUN CONTINUOUSLY DURING OCCUPANCY AND INTERMITTENTLY DURING UNOCCUPIED CYCLE. SHUT DOWN THE ENERGY RECOVERY UNIT AND ALARM BAS IF UNSAFE OPERATING | | | | | |
| CONDITIONS OCCUR. | | | | | |
| a. DURING COOLING MODE, BAS MODULATES THE CONDENSING UNIT COMPRESSORS AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT. DURING HEATING MODE, THE HEATING COIL PUMP STARTS WHENEVER OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE) OR ON A CALL FOR HEATING. THE CONTROL VALVE MODULATES HYDRONIC FLOW ACROSS TO THE COIL TO MAINTAIN SPACE TEMPERATURE SETPOINT. WHEN THE UNIT IS OFF, MODULATE THE HEATING CV TO MAINTAIN 55 DEG F INSIDE THE SUPPLY DUCT. MONITOR COIL PUMP THROUGH CURRENT SENSING RELAYS. IF HEATING COIL PUMP FAILS CLOSE OUTDOOR AIR DAMPER AND ALARM BAS. | | | | | |
| 2. SMOKE CONTROL: DUCT SMOKE DETECTOR (SUPPLIED BY DIVISION 28) IS MOUNTED IN THE EXHAUST AIR AND SUPPLY AIR DUCT FOR EACH UNIT AS REQUIRED BY CODE. INTERLOCK DETECTORS WITH AIR ENERGY RECOVERY UNIT FANS SO THAT FANS STOP WHEN SMOKE IS DETECTED. MONITOR REMOTE SMOKE DAMPERS AND INTERLOCK WITH ERV SO THAT ERV DOES NOT OPERATE IF DAMPERS FAIL TO OPEN. | | | | | |
| 3. FANDAMPER INTERLOCK: OUTDOOR AIR DAMPER AND EXHAUST AIR DAMPER CLOSE WHENEVER SUPPLY/EXHAUST FANS ARE OFF. PROVE ANY SYSTEM DAMPERS OPEN BEFORE FANS CAN START. OUTDOOR AIR DAMPER AND EXHAUST AIR DAMPER OPEN WHENEVER WHEN SUPPLY/EXHAUST FANS ARE ON. | | | | | |
| 4. FILTER PRESSURE DROP: MONITOR ENERGY RECOVERY UNIT FILTER PRESSURE DROP GAUGES AND ALARM SYSTEM WHEN PRESSURE DROP EXCEEDS HIGH OR LOW LIMIT SETTINGS. | | | | | |
| 5. COOLING COIL CONTROL: BAS TO MODULATE COMPRESSORS AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT. | | | | | |
| 6. HEATING COIL CONTROL: BAS TO ACTIVATE HEATING COIL PUMP WHENEVER OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE) OR ON A CALL FOR HEATING. BAS TO MODULATE HYDRONIC CONTROL VALVE FLOW AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT. | | | | | |
| 7. BAS TO LOCK OUT COOLING WHEN HEATING IS ACTIVATED. | | | | | |
| E. BAS TO DISPLAY AND/OR CONTROL THE FOLLOWING: | | | | | |
| 1. SYSTEM GRAPHIC. | | | | | |
| 2. SUPPLY FAN STATUS. | | | | | |
| 3. SUPPLY FAN FAILURE ALARM STATUS. | | | | | |
| 4. SUPPLY FAN VFD SPEED. | | | | | |
| 5. SUPPLY FAN VFD FAILURE ALARM. | | | | | |
| 6. OCCUPANCY STATUS. | | | | | |
| 7. KITCHEN EXHAUST FAN STATUS. | | | | | |
| 8. FREEZE STAT ALARM STATUS. | | | | | |
| 9. OA DAMPER FLOW (CFM). | | | | | |
| 10. OA DAMPER POSITION. | | | | | |
| 11. OA DAMPER MINIMUM SETPOINT. | | | | | |
| 12. OA TEMPERATURE. | | | | | |
| 13. OA RH. | | | | | |
| 14. RETURN AIR DAMPER POSITION. | | | | | |
| 15. DISCHARGE AIR TEMPERATURE. | | | | | |
| 16. SPACE TEMPERATURE. | | | | | |
| 17. SPACE TEMPERATURE SETPOINT. | | | | | |
| 18. FILTER HIGH LIMIT STATUS. | | | | | |
| 19. FILTER LOW LIMIT STATUS. | | | | | |
| 20. HEATING COIL CV POSITION. | | | | | |
| 21. HEATING COIL PUMP STATUS. | | | | | |
| 22. HEATING COIL PUMP ALARM. | | | | | |
| 23. HEATING COIL LEAVING AIR TEMPERATURE. | | | | | |
| 24. COOLING STATUS | | | | | |
| 25. COOLING STAGE | | | | | |
| 26. COOLING ALARM | | | | | |
| 1.7 MAKE-UP AIR UNIT SEQUENCE | | | | | |
| A. EQUIPMENT CONTROLLED: | | | | | |
| 1. MAU-1, MAU-HC-1, AND P-12 | | | | | |
| B. PACKAGED MAKE-UP AIR UNIT TO BE PROVIDED WITH A FACTORY PROVIDED DDC CONTROLS READY PACKAGE/TERMINAL STRIP THAT ALLOWS THE BAS TO MODULATE FAN(S), MODULATE COMPRESSORS DURING COOLING MODE, AND MODULATE REMOTE MOUNTED HYDRONIC HEATING COIL CONTROL VALVE DURING HEATING MODE. THE BAS WILL BE ABLE TO MODULATE THE HEATING COIL CONTROL VALVE AND OPERATE THE HEATING COIL PUMP. THE BAS WILL CONTROL THE ENTIRE MAKE-UP AIR UNIT SYSTEM. BAS TO MONITOR ALL MAU CONTROL POINTS AND BE CAPABLE OF ADJUSTING TEMPERATURE SETPOINTS AND SCHEDULES. | | | | | |
| C. BAS MONITORS SPACE TEMPERATURE. CONTROLS CONTRACTOR PROVIDED THERMOSTAT THAT IS CONNECTED TO THE BAS. | | | | | |
| 1. ZONE OPTIMAL START: THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD. | | | | | |
| 2. ZONE UNOCCUPIED OVERRIDE: A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE. | | | | | |
| 3. ZONE SETPOINT ADJUSTMENT: THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING SETPOINT AT THE ZONE THERMOSTAT. LIMIT ADJUSTMENT FROM BAS TEMPERATURE SETPOINT TO +/- 3 DEG F. | | | | | |
| D. GENERAL: | | | | | |
| 1. FAN CONTROL: BAS CONTROLS THE START AND STOP OF THE SUPPLY FAN AND EXHAUST FAN AS REQUIRED FOR THE SEQUENCE OF OPERATION AND OCCUPANCY SCHEDULES. CURRENT SENSING RELAYS ON THE FAN MOTOR MONITORS FAN OPERATION AND ALARMS IF FAN FAILS. FAN RUNS CONTINUOUSLY DURING OCCUPANCY AND INTERMITTENTLY DURING UNOCCUPIED CYCLE. MAKE-UP AIR UNIT IS TO BE INTERLOCKED WITH THE KITCHEN HOOD EXHAUST FAN. MAKE-UP AIR UNIT SHALL BE IN OCCUPIED MODE WHENEVER THE KITCHEN HOOD EXHAUST FAN IS OFF. SHUT DOWN THE MAKE-UP AIR UNIT AND ALARM BAS IF UNSAFE OPERATING CONDITIONS OCCUR. | | | | | |
| a. DURING COOLING MODE, BAS MODULATES THE CONDENSING UNIT COMPRESSORS AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT. DURING HEATING MODE, THE HEATING COIL PUMP STARTS WHENEVER OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE) OR ON A CALL FOR HEATING. THE MODULATING CONTROL VALVE MODULATES HYDRONIC FLOW ACROSS TO THE COIL TO MAINTAIN SPACE TEMPERATURE SETPOINT. WHEN THE UNIT IS OFF, MODULATE THE HEATING CV TO MAINTAIN 55 DEG F INSIDE THE SUPPLY DUCT. MONITOR COIL PUMP THROUGH CURRENT SENSING RELAYS. IF HEATING COIL PUMP FAILS CLOSE OUTDOOR AIR DAMPER AND ALARM BAS. | | | | | |
| 2. FIRE ALARM: MAKE-UP AIR UNIT TO BE INTERLOCKED WITH KITCHEN EXHAUST HOOD. IF KITCHEN EXHAUST FOOD FIRE SUPPRESSION SYSTEM IS TRIGGERED, THE MAKE-UP AIR UNIT IS TO SHUT DOWN. | | | | | |
| 3. FANDAMPER INTERLOCK: OUTDOOR AIR DAMPER CLOSES AND RETURN AIR DAMPER OPENS WHEN UNIT IS IN UNOCCUPIED MODE. PROVE ANY SYSTEM DAMPERS OPEN BEFORE FANS CAN START. | | | | | |
| 4. FILTER PRESSURE DROP: MONITOR MAKE-UP AIR UNIT FILTER PRESSURE DROP GAUGES AND ALARM SYSTEM WHEN PRESSURE DROP EXCEEDS HIGH OR LOW LIMIT SETTINGS. | | | | | |
| 5. COOLING COIL CONTROL: BAS MODULATES COMPRESSORS AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT. | | | | | |
| 6. HEATING COIL CONTROL: BAS TO ACTIVATE HEATING COIL PUMP WHENEVER OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE) OR ON A CALL FOR HEATING. BAS TO MODULATE HYDRONIC CONTROL VALVE FLOW AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT. | | | | | |
| 7. BAS TO LOCK OUT COOLING WHEN HEATING IS ACTIVATED. | | | | | |
| E. BAS TO DISPLAY AND/OR CONTROL THE FOLLOWING: | | | | | |
| 1. SYSTEM GRAPHIC. | | | | | |
| 2. SUPPLY FAN STATUS. | | | | | |
| 3. SUPPLY FAN FAILURE ALARM STATUS. | | | | | |
| 4. SUPPLY FAN VFD SPEED. | | | | | |
| 5. SUPPLY FAN VFD FAILURE ALARM. | | | | | |
| 6. OCCUPANCY STATUS. | | | | | |
| 7. KITCHEN EXHAUST FAN STATUS. | | | | | |
| 8. FREEZE STAT ALARM STATUS. | | | | | |
| 9. OA DAMPER FLOW (CFM). | | | | | |
| 10. OA DAMPER POSITION. | | | | | |
| 11. OA DAMPER MINIMUM SETPOINT. | | | | | |
| 12. OA TEMPERATURE. | | | | | |
| 13. OA RH. | | | | | |
| 14. RETURN AIR DAMPER POSITION. | | | | | |
| 15. DISCHARGE AIR TEMPERATURE. | | | | | |
| 16. SPACE TEMPERATURE. | | | | | |
| 17. SPACE TEMPERATURE SETPOINT. | | | | | |
| 18. FILTER HIGH LIMIT STATUS. | | | | | |
| 19. FILTER LOW LIMIT STATUS. | | | | | |
| 20. HEATING COIL CV POSITION. | | | | | |
| 21. HEATING COIL PUMP STATUS. | | | | | |
| 22. HEATING COIL PUMP ALARM. | | | | | |
| 23. HEATING COIL LEAVING AIR TEMPERATURE. | | | | | |
| 24. COOLING STATUS | | | | | |
| 25. COOLING STAGE | | | | | |
| 26. COOLING ALARM | | | | | |

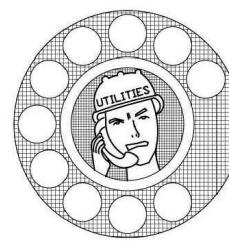
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1.8 VAV BOX SEQUENCE

A. EQUIPMENT CONTROLLED: VAV BOXES (VAV-1 - VAV-53) AND PERIMETER FIN TUBE.

B. COOLING ONLY VAV: BAS MONITORS SPACE TEMPERATURE AND MODULATE BOX DAMPER FROM MINIMUM TO MAXIMUM SETTING AS REQUIRED TO MAINTAIN SPACE SETPOINT. RESET DAMPER POSITION AS REQUIRED TO MAINTAIN REQUIRED AIRFLOW UNDER VARYING SUPPLY PRESSURE. SPACE TEMPERATURE SETPOINT SHALL BE CAPABLE OF BEING CONTROLLED BY BAS.

1. ZONE SETPOINT ADJUSTMENT: THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING SETPOINT AT THE ZONE THERMOSTAT. LIMIT ADJUSTMENT FROM BAS TEMPERATURE SETPOINT TO +/- 3 DEG F.

2. MORNING WARM-UP: OPEN BOX TO MAXIMUM DURING MORNING WARM-UP UNTIL SPACE TEMPERATURE REACHES SETPOINT. CLOSE DAMPER IF SPACE TEMPERATURE REACHES 5 DEG F ABOVE SETPOINT AND COOLING IS UNAVAILABLE.

3. OVERCOOLING CONTROL: DURING OCCUPIED STATUS, RESET BOX MINIMUM TO ZERO IF SPACE TEMPERATURE FALLS MORE THAN 2 DEG F BELOW SETPOINT.

4. WITH PERIMETER HEAT: BAS ACTIVATES 2 WAY, 2 POSITION CV ON REMOTE HEAT (I.E. RADIANT FINE TUBE) WHEN SPACE TEMPERATURE FALLS BELOW HEATING SETPOINT. BAS MODULATES DAMPER AS REQUIRED TO MAINTAIN HEATING SETPOINT. REMOTE HEAT (RTA) CV CLOSSES WHEN SPACE TEMPERATURE RISES 2 DEG F ABOVE SETPOINT (ADJUSTABLE).

C. DISPLAY AND/OR CONTROL THE FOLLOWING:

1. SYSTEM GRAPHIC.

2. BOX OCCUPANCY STATUS.

3. SPACE TEMPERATURE.

4. SPACE HEATING SETPOINT (OCCUPIED AND UNOCCUPIED).

5. SPACE COOLING SETPOINT (OCCUPIED AND UNOCCUPIED).

6. BOX DAMPER POSITION.

7. BOX AIRFLOW CFM.

8. BOX MINIMUM POSITION SETTING.

9. BOX MAXIMUM POSITION SETTING.

10. REMOTE HEAT CONTROL VALVE POSITION (WHERE APPLICABLE)

1.9 FIN TUBE CONTROL

A. RADIANT FIN TUBE CONTROL: FT-1, FT-8

1. BAS MONITORS SPACE TEMPERATURE AND MODULATES 2-WAY, CV AS REQUIRED TO MAINTAIN SPACE TEMPERATURE. SPACE TEMPERATURE SETPOINT SHALL BE CAPABLE OF BEING CONTROLLED BY BAS.

2. ZONE SETPOINT ADJUSTMENT: THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING SETPOINT AT THE ZONE THERMOSTAT. LIMIT ADJUSTMENT FROM BAS TEMPERATURE SETPOINT TO +/- 3 DEG F.

B. DISPLAY AND/OR CONTROL THE FOLLOWING:

1. SPACE TEMPERATURE (OCCUPIED AND UNOCCUPIED).

2. SPACE TEMPERATURE SETPOINT.

3. CV STATUS OR POSITION.

1.10 EXISTING FIN TUBE CONTROL

A. RADIANT FIN TUBE CONTROL: X-FT

1. BAS MONITORS SPACE TEMPERATURE AND MODULATES 2-WAY, CV AS REQUIRED TO MAINTAIN SPACE TEMPERATURE. SPACE TEMPERATURE SETPOINT SHALL BE CAPABLE OF BEING CONTROLLED BY BAS.

2. ZONE SETPOINT ADJUSTMENT: THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING SETPOINT AT THE ZONE THERMOSTAT. LIMIT ADJUSTMENT FROM BAS TEMPERATURE SETPOINT TO +/- 3 DEG F.

B. DISPLAY AND/OR CONTROL THE FOLLOWING:

1. SPACE TEMPERATURE (OCCUPIED AND UNOCCUPIED).

2. SPACE TEMPERATURE SETPOINT.

3. CV STATUS OR POSITION.

1.11 PRIMARY HEATING SYSTEM

A. EQUIPMENT CONTROLLED:

1. BOILERS: B-1 AND B-2.

2. PUMPS: P-1 AND P-2.

B. THE BOILERS ARE TO BE EQUIPPED WITH INTERNAL CONTROLS THAT ALLOWS THE BOILER INTERNAL CONTROL PANELS TO CONTROL SEQUENCING OF ALL BOILERS AND ASSOCIATED BOILER CONTROL VALVES AS REQUIRED TO MAINTAIN LOOP SUPPLY WATER TEMPERATURE (140-DEGREE F, ADJUSTABLE) AT THE OPTIMUM EFFICIENCIES BASED ON OUTDOOR AIR TEMPERATURE RESET SCHEDULE (ADJUSTABLE). THE BOILERS SHALL ALTERNATE ALL BOILERS BEING THE LEAD AND STANDBY BOILERS TO EVEN RUN TIME. BEFORE A BOILER STARTS THE ASSOCIATED BOILER CONTROL VALVE SHALL OPEN. IF THE BOILER INTERNAL CONTROL PANEL TURNS A BOILER OFF, THE BOILERS CONTROL VALVE SHALL CLOSE. IF A BOILER FAILS, START STANDBY BOILER AND ALARM BAS. IF ALL THE BOILERS ARE OFF, BUT THE HEATING SYSTEM IS ACTIVATED THE CONTROL VALVE FOR THE NEXT BOILER TO FIRE ON A CALL FOR HEAT SHALL REMAIN OPEN TO AVOID DEADHEADING THE PUMP.

C. EACH BOILER IS TO HAVE THEIR OWN OUTDOOR AIR SENSOR INSTALLED TO ALLOW BOILERS TO RUN STANDALONE IN A CONTROL PANEL FAILURE EVENT.

D. BAS TO SEND SIGNAL TO BOILER(S) CONTROL PANEL TO ACTIVATE THE HEATING SYSTEM WHENEVER THE OUTDOOR TEMPERATURE IS BELOW 55 DEG F (ADJUSTABLE).

E. HOT WATER SUPPLY LOOP TEMPERATURE SHALL BE CAPABLE OF BEING CHANGED FROM THE BAS AND INCLUDE AN OUTDOOR AIR RESET SCHEDULE (ADJUSTABLE).

1. RESET SCHEDULE: RESET THE SUPPLY WATER TEMPERATURE FROM 140 DEG F TO 120 DEG F (ADJUSTABLE) AS OUTDOOR TEMPERATURE GOES FROM -10 DEG F TO 55 DEG F (ADJUSTABLE).

2. ALARM SYSTEM IF SUPPLY WATER TEMPERATURE FALLS 20 DEG F BELOW SETPOINT FOR MORE THAN 5 MINUTES.

F. PUMPS P-1 AND P-2 SHALL OPERATE IN A LEADLAG ARRANGEMENT WITH ONE PUMP OPERATING IN LEAD MODE AND THE OTHER PUMP IN STANDBY (LAG) MODE. THE BAS ACTIVATES THE LEAD PUMP WHENEVER THE OUTDOOR TEMPERATURE IS BELOW 55 DEG F (ADJUSTABLE). EACH PUMP IS EQUIPPED WITH A VARIABLE FREQUENCY DRIVE (VFD). THE BAS WILL MODULATE THE VFDS ON THE LEADLAG PUMPS AS REQUIRED TO MAINTAIN THE SYSTEM DIFFERENTIAL PRESSURE SETPOINT. PROVIDE DIFFERENTIAL PRESSURE SENSORS INSTALLED IN THE MECHANICAL ROOM. THE BAS MONITORS CURRENT SENSING RELAYS ON THE PUMP TO VERIFY ITS OPERATING STATUS AND ALARMS IF THE PUMP FAILS. STANDBY PUMP IS ACTIVATED IF THE LEAD PUMP FAILS. PUMP OPERATION ROTATES LEADLAG STATUS TO EVEN PUMP WEAR.

G. ALL BOILERS AND PUMPS ARE TO BE TIED TO THE NEW BAS AND BE INTEGRATED ON TO THE NEW FRONT-END GRAPHICS.

H. OPERATOR STATION: CONTROL AND/OR DISPLAY THE FOLLOWING:

1. SYSTEM GRAPHIC.

2. OUTDOOR TEMPERATURE.

3. EACH BOILER STATUS

4. EACH BOILER CONTROL VALVE POSITION

5. EACH BOILER ALARM STATUS

6. DISCHARGE WATER TEMPERATURE FOR EACH BOILER.

7. ENTERING WATER TEMPERATURE FOR EACH BOILER.

8. HOT WATER LOOP SUPPLY WATER TEMPERATURE

9. HOT WATER LOOP SUPPLY WATER TEMPERATURE SETPOINT

10. HOT WATER LOOP RETURN WATER TEMPERATURE

11. EMERGENCY SHUT DOWN STATUS

12. EACH PUMP STATUS

13. EACH PUMP ALARM

14. EACH PUMP VFD SPEED

15. DIFFERENTIAL PRESSURE OF SYSTEM

16. DIFFERENTIAL PRESSURE SETPOINT OF SYSTEM

1.12 HYDRONIC UNIT HEATER SEQUENCE

A. EQUIPMENT CONTROLLED: UH-1, UH-2, UH-3, UH-4, UH-5, UH-6, UH-7, UH-8, AND X-UH (MILITARY MAINTENANCE 179).

B. UNIT HEATERS ARE TO BE TIED TO MANUFACTURER PROVIDED SPACE THERMOSTAT. BAS TO MONITOR SPACE TEMPERATURE. ON A CALL FOR HEAT THE BAS SHALL OPEN THE TWO-POSITION CONTROL VALVE AND TURN FAN ON AS REQUIRED TO MAINTAIN SPACE HEATING SETPOINT. WHEN SETPOINT IS MET BAS SHALL CLOSE TWO POSITION VALVE AND TURN FAN OFF. LOCK OUT FANS WHEN HEATING SYSTEM IS OFF. SPACE TEMPERATURE SETPOINT SHALL BE CAPABLE OF BEING CONTROLLED BY THE BAS.

C. ZONE SETPOINT ADJUSTMENT: THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING SETPOINT AT THE ZONE THERMOSTAT. LIMIT ADJUSTMENT FROM BAS TEMPERATURE SETPOINT TO +/- 3 DEG F.

D. DISPLAY AND/OR CONTROL THE FOLLOWING:

1. SPACE TEMPERATURE.

2. SPACE TEMPERATURE SETPOINT (OCCUPIED AND UNOCCUPIED).

3. FAN STATUS.

4. HEATING SYSTEM STATUS.

5. CONTROL VALVE POSITION

1.13 ELECTRIC CABINET UNIT HEATER

A. EQUIPMENT CONTROLLED: ECUH-1, ECUH-2, AND ECUH-3

B. CABINET UNIT HEATER SHALL START/STOP THE ELECTRIC RESISTANCE COIL AND UNIT SUPPLY FAN TO MAINTAIN SPACE HEATING SETPOINT. CABINET UNIT HEATER SHALL BE CONTROLLED BY INTERNAL STANDALONE TAMPERPROOF THERMOSTAT.

1.14 EXISTING HYDRONIC CABINET UNIT HEATER

A. EQUIPMENT CONTROLLED: X-CUH

B. CABINET UNIT HEATER SHALL START/STOP UNIT SUPPLY FAN TO MAINTAIN SPACE HEATING SETPOINT. CABINET UNIT HEATER SHALL BE CONTROLLED BY STANDALONE INTERNAL TAMPERPROOF THERMOSTAT.

1.15 SIDE STREAM FILTER SKID PACKAGE

A. EQUIPMENT CONTROLLED: SSF-1

B. THE BAS ACTIVATES PUMP ON THE SIDE STREAM FILTER SKID PACKAGE WHENEVER THE MAIN BUILDING CIRCULATION PUMPS ARE ACTIVATED OR WHENEVER THE OUTDOOR TEMPERATURE IS BELOW 45 DEG F (ADJUSTABLE).

C. FILTER PRESSURE DROP: MONITOR SIDE STREAM FILTER PRESSURE DROP GAUGES AND ALARM SYSTEM WHEN PRESSURE DROP EXCEEDS HIGH OR LOW LIMIT SETTINGS.

D. OPERATOR STATION: CONTROL AND/OR DISPLAY THE FOLLOWING:

1. SYSTEM GRAPHIC.

2. SIDE STREAM FILTER PRESSURE DROP

3. SIDE STREAM FILTER PRESSURE DROP ALARMS (HIGH AND LOW)

4. SIDE STREAM FILTER ALARMS

5. PUMP STATUS

6. PUMP ALARM

1.16 MECHANICAL ROOM UNIT HEATER, EXHAUST FAN, AND INTAKE DAMPER SEQUENCE

A. EQUIPMENT CONTROLLED:

1. UNIT HEATER: X-UH (MECHANICAL ROOM)

2. EXHAUST FAN: EF-6

3. DAMPERS: D-3 (INTAKE).

B. HEATING MODE:

1. BAS MONITORS SPACE TEMPERATURE. WALL MOUNTED BAS THERMOSTAT CYCLES THE UNIT HEATER FANS (ON/OFF) AND OPERATES THE 2-POSITION CONTROL VALVES (2-WAY OR 3-WAY) AS REQUIRED TO MAINTAIN SPACE HEATING SETPOINT (ADJUSTABLE). LOCK OUT UNIT FANS WHEN HEATING SYSTEM IS OFF. EACH UNIT HEATER AND THERMOSTAT ARE TO BE TIED TO THE BAS.

2. LOCK OUT THE EXHAUST FAN (EF-3) AND ASSOCIATED DAMPERS (D-3) WHEN THE HEATING SYSTEM IS ON.

C. COOLING MODE:

1. BAS MONITORS SPACE TEMPERATURE. WHEN SPACE TEMPERATURE RISES ABOVE THE TEMPERATURE SETPOINT (ADJUSTABLE), THE INTAKE DAMPER (D-3) SHALL PROVE OPEN AND THEN START THE EXHAUST FAN (EF-3). IF DAMPER FAILS TO OPEN ALARM BAS AND EF-3 IS TO REMAIN OFF. IF SUPPLY FAN FAILS ALARM BAS AND CLOSE INTAKE DAMPER. EXHAUST FAN (EF-3) TO RUN AS REQUIRED TO MAINTAIN SPACE COOLING SETPOINT. EXHAUST FAN (EF-3) TO RUN FOR A MINIMUM OF 5 MINUTES (ADJUSTABLE). ONCE SPACE TEMPERATURE AND MINIMUM RUN TIME IS MET, THE EXHAUST FAN (EF-3) SHALL TURN OFF AND ASSOCIATED INTAKE DAMPER (D-3) SHALL CLOSE. LOCK OUT SUPPLY FANS AND DAMPER WHEN COOLING SYSTEM IS OFF.

2. BAS TO LOCK OUT UNIT HEATERS WHEN COOLING SYSTEM IS ON.

D. DISPLAY AND/OR CONTROL THE FOLLOWING:

1. SPACE TEMPERATURE.

2. HEATING SPACE TEMPERATURE SETPOINT.

3. COOLING SPACE TEMPERATURE SETPOINT (EXHAUST FAN)

4. UNIT HEATER STATUS.

5. UNIT HEATER ALARM.

6. HEATING SYSTEM STATUS.

7. COOLING SYSTEM STATUS.

8. EXHAUST FAN STATUS.

9. EXHAUST FAN ALARM.

10. INTAKE DAMPER POSITION.

11. INTAKE DAMPER ALARMS.

12. UNIT HEATER CONTROL VALVE POSITION.

1.17 DEHUMIDIFIER SEQUENCE

A. EQUIPMENT CONTROLLED: DEH-1 AND DEH-2

B. DEHUMIDIFIER TO BE CONTROLLED BY STANDALONE UNIT CONTROLS AND REMOTE MOUNTED PROGRAMMABLE HUMIDISTAT. BAS TO MONITOR ALL DEHUMIDIFIER CONTROLLER POINTS AND CAPABLE OF ADJUSTING HUMIDITY SETPOINTS AND SCHEDULES.

C. DEHUMIDIFIER CONTROLLER TO CONTROL SPACE HUMIDITY SETPOINTS AND SPACE SCHEDULE (OCCUPIED AND UNOCCUPIED). BAS TO ALARM IF ROOM EXCEEDS HIGH LIMIT RELATIVE HUMIDITY SETPOINT (ADJUSTABLE) FOR 5 MINUTES.

D. DISPLAY AND/OR CONTROL THE FOLLOWING:

1. SYSTEM GRAPHIC.

2. HUMIDIFIER STATUS.

3. HUMIDIFIER ALARM.

4. SPACE TEMPERATURE.

5. SPACE RH.

6. SPACE RH SETPOINT.

7. HIGH LIMIT RH ALARM STATUS (ADJUSTABLE).

1.18 DOMESTIC WATER HEATER CONTROL

A. EQUIPMENT CONTROLLED: DWH-1, DWH-2, & P-3

B. DOMESTIC WATER HEATER(S) AND PUMP CONTROL: CONTRACTOR TO CONNECT NEW DOMESTIC WATER HEATER(S) AND PUMP TO BOILER INTERNAL DOMESTIC WATER HEATER PRIORITIZATION CONTROLS. PUMP IS TO RUN ON A CALL FOR DOMESTIC HOT WATER. MONITOR PUMP THROUGH CURRENT SENSING RELAYS. IF PUMP FAILS ALARM BAS. THE BOILER INTERNAL DOMESTIC WATER HEATER PRIORITIZATION CONTROLS MODULATE THE 2-WAY CV AS REQUIRED TO MAINTAIN DOMESTIC HOT WATER HEATER STORAGE TANK WATER TEMPERATURE SETPOINT 140 DEG F (ADJUSTABLE).

C. ALL PUMPS AND DOMESTIC WATER HEATERS CONTROL POINTS ARE TO BE TIED TO THE BAS AND BE INTEGRATED ON TO THE FRONT-END GRAPHICS. ALL SETPOINTS ARE TO BE ADJUSTABLE FROM THE BAS.

D. OPERATOR STATION: CONTROL AND/OR DISPLAY THE FOLLOWING:

1. SYSTEM GRAPHIC.

2. PUMP STATUS

3. PUMP ALARM

4. DOMESTIC HOT WATER STORAGE TEMPERATURE

5. DOMESTIC HOT WATER STORAGE TEMPERATURE SETPOINT

6. HEATING HOT WATER SUPPLY TEMPERATURE

7. HEATING HOT WATER RETURN TEMPERATURE

8. DOMESTIC HOT WATER SUPPLY TEMPERATURE

9. DOMESTIC HOT WATER RETURN TEMPERATURE

10. CONTROL VALVE POSITION

11. EMERGENCY SHUT DOWN STATUS

1.19 TOILET EXHAUST FANS

A. EQUIPMENT CONTROLLED: EF-1, EF-2, AND EF-3

1.20 MISCELLANEOUS EXHAUST FANS

A. EQUIPMENT CONTROLLED: EF-4 & EF-5

B. EXHAUST FAN IS TO RUN CONTINUOUSLY DURING OCCUPIED HOURS. SCHEDULES ARE TO BE SET AND CONTROLLED BY BAS.

C. MONITOR FAN STATUS WITH CURRENT SENSING RELAY AND ALARM BAS IF UNIT FAILS.

D. DISPLAY AND/OR CONTROL THE FOLLOWING:

1. EACH FAN STATUS.

2. EACH FAN FAILURE ALARM.

3. OCCUPIED/UNOCCUPIED SCHEDULE

1.21 ODOR PURGE FANS

A. EQUIPMENT CONTROLLED: EF-7/D-4, EF-8/D-5, & EF-9/D-6.

B. EXHAUST FAN IS TO BE LOCALLY CONTROLLED BY MANUFACTURER PROVIDED TIME DELAY SWITCH. EXHAUST FAN CAN ALSO BE MANUALLY ENABLED/DISABLED FROM THE BAS FRONT-END GRAPHICS. THE INTAKE DAMPER SHALL PROVE OPEN PRIOR TO STARTING THE EXHAUST FAN.

C. MONITOR FAN STATUS WITH CURRENT SENSING RELAY AND ALARM BAS IF UNIT FAILS.

D. DISPLAY AND/OR CONTROL THE FOLLOWING:

1. EXHAUST FAN STATUS.

2. EXHAUST FAN ALARM.

3. EXHAUST FAN ENABLE/DISABLE.

4. INTAKE DAMPER POSITION.

5. INTAKE DAMPER ALARMS.

1.22 DIGITAL MIXING VALVE

A. EQUIPMENT CONTROLLED: MV-1

B. MIXING VALVE IS TO BE LOCALLY CONTROLLED BY MANUFACTURER PROVIDED TIME DELAY SWITCH. EXHAUST FAN CAN ALSO BE MANUALLY ENABLED/DISABLED FROM THE BAS FRONT-END GRAPHICS. THE INTAKE DAMPER SHALL PROVE OPEN PRIOR TO STARTING THE EXHAUST FAN.

C. MONITOR FAN STATUS WITH CURRENT SENSING RELAY AND ALARM BAS IF UNIT FAILS.

D. DISPLAY AND/OR CONTROL THE FOLLOWING:

1. SYSTEM GRAPHIC.

2. DOMESTIC HOT WATER TEMPERATURE

3. DOMESTIC HOT WATER TEMPERATURE SETPOINT

4. MIXING VALVE POSITION

5. ALARMS

1.23 NEW SPLIT SYSTEM HEAT PUMP

A. EQUIPMENT CONTROLLED: HP-1/AC-1

B. HEAT PUMP SPLIT SYSTEM TO BE CONTROLLED BY MANUFACTURER PROVIDED THERMOSTAT/CONTROLLER AS NEEDED TO MAINTAIN SPACE TEMPERATURE SETPOINT. HEAT PUMP SPLIT SYSTEM TO PROVIDE HEATING/COOLING AS NEEDED TO MAINTAIN SPACE TEMPERATURE SETPOINT.

C. BAS TO CONNECT TO HEAT PUMP SPLIT SYSTEM TO MONITOR AND ADJUST OCCUPIED/UNOCCUPIED SPACE TEMPERATURE SETPOINTS.

D. MONITOR AND/OR CONTROL THE FOLLOWING:

1. SYSTEM GRAPHIC.

2. SPACE TEMPERATURE SETPOINT

3. SPACE TEMPERATURE

4. SPLIT SYSTEM ALARMS

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 230993

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| GAS MONITERING EQUIPMENT SCHEDULE | | | | |
|---|---------------------------|-------------------------------|-------------------|--|
| MARK | DESCRIPTION | BASIS OF DESIGN | MOUNTING LOCATION | NOTES |
| CO-1 | CO SENSOR & BASE | VERIS - AG01 CO SENSOR | HYDRONIC SYSTEM | WALL MOUNT, SEE NOTES 1 & 2 |
| SL-1 | LED STROBE LIGHT W/ SIREN | SECO-LARM - SL-1301-SAQ (RED) | HYDRONIC SYSTEM | MOUNT ON TOP OF GAS MONITERING ENCLOSURE |
| NOTES: 1. INCLUDE (2) ADDITIONAL CO SENSORS 2. INSTALL 2 CONDUCTOR / 18 GA. SHIELD, 2 CONDUCTOR TO EACH BASE SENSOR UNIT FROM GAS CONTROLLER | | | | |

| AIR SEPARATOR SCHEDULE | | | | | | |
|---|-------|-----------------|----------|---------|--------------------------------------|----------|
| TAG | MODEL | LOCATION | TYPE | MAX GPM | CONNECTION SIZE (FLANGED OR GROOVED) | COMMENTS |
| AS-1 | R-6 | MECHANICAL ROOM | HYDRONIC | 700 | 6" | 1,2 |
| NOTES: 1. BASED ON BELL & GASSETT 2. CONTAINS STRAINER | | | | | | |

| DEHUMIDIFIER SCHEDULE | | | | | | | | | |
|----------------------------------|--------------------------|-----------|--|-----|---------------------------------|------------|------------------------|-------|-------------------|
| TAG | SERVES | MODEL | CFM | ESP | WATER REMOVAL (PINTS/DAY) | ELECTRICAL | | | COMMENTS |
| | | | | | | AMPS | VOLTAGE | PHASE | |
| DEH-1 | 119TH HHG BTN STORAGE | QUEST 100 | 280 | 0.1 | 100.0 | 5 | 120 | 1 | 1,2,3,4,5,6,7,8,9 |
| DEH-2 | 117TH HHG BTN STORAGE | QUEST 100 | 280 | 0.1 | 100.0 | 5 | 120 | 1 | 1,2,3,4,5,6,7,8,9 |
| | | | | | | | | | |
| NOTES: | | | | | | | | | |
| 1. BASED ON QUEST | | | 4. MANU. PROVIDED, REMOTE MOUNTED DIGITAL HUMIDISTAT | | | | 7. DISCONNECT BY EC | | |
| 2. CONDENSATE PUMP KIT | | | 5. LONWORKS CONTROLS INTERFACE CONNECTION | | | | 8. MERV-13 FILTER | | |
| 3. CEILING AND WALL MOUNTING KIT | | | 6. R454B REFRIGERANT | | | | 9. VIBRATION ISOLATORS | | |

| SPLIT SYSTEM HEAT PUMP SCHEDULE | | | | | | | | | | | | | |
|--|----------------------|--------------------------------------|---------------|--------------|-------------------|------------------------|------------------------|-------------------------------|-------------|---------|-------|-----|----------------------------------|
| TAG | CONNECTED EVAPORATOR | CONDENSING UNIT / HEAT PUMP LOCATION | OUTDOOR MODEL | INDOOR MODEL | SERVES | COOLING CAPACITY (MBH) | HEATING CAPACITY (MBH) | COOLING EFFICIENCY (IEER/EER) | HEATING COP | VOLTAGE | PHASE | MCA | COMMENTS |
| HP-1 | AC-1 | | PUZ-AH24NL | PKA-AK24NL | PHYSICAL TRAINING | 24.0 | 28.0 | 12.0 | 3.4 | 208 | 1 | 22 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14 |
| NOTES: 1. BASED ON MITSUBISHI ELECTRIC 2. R-454B REFRIGERANT 3. MANUFACTURER PROVIDED OUTDOOR WALL MOUNTING KIT 4. MANU. PROVIDED CONDENSATE PUMP 5. LOW AMBIANT COOLING KIT (100% COOLING AT 0 DEG F) 6. OUTDOOR UNIT POWERS INDOOR UNIT 7. COOLING DESIGN BASED ON 80°F DB AND 67°F WB, OUTDOOR 95°F DB 8. HEATING DESIGN BASED ON 70°F DB AND 60°F WB, OUTDOOR 47°F DB 9. EC SHALL PROVIDE DISCONNECT SWITCH FOR OUTDOOR UNIT 10. MANU. PROVIDED REMOTE MOUNTED THERMOSTAT 11. MANU. PROVIDED WIND BAFFLES 12. MANU. PROVIDED DEFROST HEATER 13. HEATING CAPACITY DOWN TO -4°F 14. LONWORKS INTERFACE CARD | | | | | | | | | | | | | |

| INDIRECT DOMESTIC WATER HEATER SCHEDULE | | | | | | | | | | | | |
|--|-----------|-----------------|-----------------|------------------|-----------------------------|----------------|-------------------------|--------|--------|-----|-------------|-----------|
| TAG | MODEL | LOCATION | GALLON CAPACITY | GPH @ 100°F RISE | DOMESTIC INLET / OUTLET (") | HYDRONIC COIL | | | | | | COMMENTS |
| | | | | | | CAPACITY (MBH) | COIL INLET / OUTLET (") | EWT °F | LWT °F | GPM | WPD FT. HD. | |
| DWH-1 | GVG0257JR | MECHANICAL ROOM | 257 | 500 | 2" / 2" | 425.0 | 3" / 3" | 165 | 145 | 43 | 1.5' | 1,2,3,4,5 |
| DWH-2 | GVG0257JR | MECHANICAL ROOM | 257 | 500 | 2" / 2" | 425.0 | 3" / 3" | 165 | 145 | 43 | 1.5' | 1,2,3,4,5 |
| | | | | | | | | | | | | |
| NOTES: 1. BASED ON: LOCHINVAR 2. 91" TALL x 34" DIA 3. VERTICAL ORIENTATION 4. GROUND MOUNTED 5. PRESSURE/TEMPERATURE RELIEF VALVE | | | | | | | | | | | | |

| CONDENSING UNIT SCHEDULE | | | | | | | | | | |
|--|--------|---------|--|--------------|------|------------|----------------------------|-----|----------|-------------------|
| TAG | SERVES | MODEL | NOMINAL TONS | CAPACITY MBH | EER | ELECTRICAL | | | | COMMENTS |
| | | | | | | VOLTAGE | PHASE | MCA | DISC. BY | |
| CJ-1 | AHU-1 | CFA-025 | 25 | 290.0 | 14.8 | 480 | 3 | 50 | EC | 1,2,3,4,5,6,7,8,9 |
| CJ-2 | AHU-2 | CFA-025 | 25 | 290.0 | 14.8 | 480 | 3 | 50 | EC | 1,2,3,4,5,6,7,8,9 |
| | | | | | | | | | | |
| NOTES: | | | | | | | | | | |
| 1. BASED ON AAOB | | | 9. INCLUDE THE FOLLOWING ACCESSORIES: | | | | ELECTRICAL NOTES: | | | |
| 2. VARIABLE SCROLL COMPRESSORS | | | EVAPORATOR FREEZE/STAT, TXV VALVE, | | | | EC - ELECTRICAL CONTRACTOR | | | |
| 3. VIBRATION ISOLATORS | | | FAN CYCLING KIT, COMPRESSOR SHORT CYCLE CONTROL, | | | | NR - NOT REQUIRED | | | |
| 4. R-454B REFRIGERANT | | | AND REFRIGERANT FILTER/DRIER | | | | MC - MECHANICAL CONTRACTOR | | | |
| | | | | | | | | | | |
| 5. TWO COMPRESSORS, DUAL CIRCUIT SERVING INTERLACED COIL | | | | | | | | | | |
| 6. CRANKCASE HEATER | | | | | | | | | | |
| 7. DIGITAL MODULATING LEAD SCROLL COMPRESSOR | | | | | | | | | | |
| 8. SECONDARY TWO STAGE COMPRESSOR | | | | | | | | | | |

| EXHAUST FAN SCHEDULE | | | | | | | | | | | | | | |
|---|-------------|-------------------|------|--------|--------|-------------|---------|-------|------------|---------|-------|----------|------------|---------------|
| TAG | MODEL | SERVICE/ LOCATION | CFM | TYPE | DRIVE | ESP (IN WC) | FAN RPM | SONES | ELECTRICAL | | | | | COMMENTS |
| | | | | | | | | | FAN HP | VOLTAGE | PHASE | DISC. BY | STARTER BY | |
| EF-1 | G-095-VG | SOUTH BATHROOM | 700 | ROOF | DIRECT | 0.7 | 1637 | 9.8 | 1/6 | 120 | 1 | EC | EC | 1,2,3,4,5 |
| EF-2 | G-090-D | NORTH BATHROOM | 420 | ROOF | DIRECT | 0.5 | 1550 | 7.4 | 1/15 | 120 | 1 | EC | EC | 1,2,3,4,5 |
| EF-3 | G-070-VG | KITCHEN BATHROOM | 170 | ROOF | DIRECT | 0.5 | 1352 | 3.1 | 1/15 | 120 | 1 | EC | EC | 1,2,4,5,6 |
| EF-4 | CSP-A390-VG | ELEVATOR ROOM | 150 | INLINE | DIRECT | 0.5 | 989 | 1.2 | 1/15 | 120 | 1 | EC | EC | 1,2,4,5,7 |
| EF-5 | G-060-VG | JANITOR CLOSET | 100 | ROOF | DIRECT | 0.3 | 1596 | 3.8 | 1/15 | 120 | 1 | EC | EC | 1,2,4,5,6 |
| EF-6 | G-140-VG | MECH. ROOM | 1500 | ROOF | DIRECT | 0.3 | 978 | 7.9 | 1/2 | 120 | 1 | EC | EC | 1,2,4,5,6 |
| EF-7 | DQ-160-VG | PES 015 | 1800 | INLINE | DIRECT | 0.4 | 852 | 5.1 | 3/4 | 120 | 1 | EC | EC | 1,2,5,7,9 |
| EF-8 | GB-180-VG | SUPPLY 173 | 3300 | ROOF | DIRECT | 0.3 | 935 | 11.7 | 1 | 120 | 1 | EC | EC | 1,2,4,5,6,8,9 |
| EF-9 | GB-180-VG | SUPPLY 175 | 3300 | ROOF | DIRECT | 0.3 | 935 | 11.7 | 1 | 120 | 1 | EC | EC | 1,2,4,5,6,8,9 |
| NOTES: 1. BASED ON GREENHECK 2. GRAVITY BACKDRAFT DAMPER 3. ROOF CURB ADAPTOR 4. CONTROLLED BY LONWORKS BAS 5. ELECTRICAL EC - ELECTRICAL CONTRACTOR MC - MECHANICAL CONTRACTOR NR - NOT REQUIRED 6. ROOF CURB 7. MANU. PROVIDED MOUNTING KIT 8. SECURITY BARS IN CURB 9. MANU. TO PROVIDE TIME DELAY SWITCH | | | | | | | | | | | | | | |

| ROOFTOP UNIT SCHEDULE | | | | | | | | | | | | | | | | | | | | |
|--|--------|-------------------|-------|--------|---------|-------|---------|------|-----------|-----------|----------|--------------------------------------|---|-------|-----|------------------|----------|--|--|--|
| TAG | MODEL | SERVES | CFM | FAN HP | MIN. OA | E.S.P | COOLING | | | | TAG | HYDRONIC HEATING COIL (DUCT MOUNTED) | ELECTRICAL | | | RTU WEIGHT (LBS) | COMMENTS | | | |
| | | | | | CFM | | MBH | TONS | EDB / EWB | LDB / LWB | | | VOLTS | PHASE | FLA | | | | | |
| RTU-1 | RQ-004 | NORTH UPPER LEVEL | 1,640 | 2.0 | 150 | 1.0 | 48.5 | 4 | 80 / 67 | 55 / 55 | RTU-HC-1 | | | 480 | 3 | 12 | 862 | 1,2,4,5,6,7,8,9,10,11,12,13,15,16,17,19 | | |
| RTU-2 | RQ-004 | NORTH UPPER LEVEL | 1,495 | 2.0 | 200 | 1.3 | 48.2 | 4 | 80 / 67 | 55 / 55 | RTU-HC-2 | | REFER TO DUCT MOUNTED HEATING COIL SCHEDULE | 480 | 3 | 12 | 854 | 1,2,4,5,6,7,8,9,10,11,12,13,15,16,17,19 | | |
| RTU-3 | RQ-004 | NORTH UPPER LEVEL | 1,435 | 2.0 | 125 | 1.0 | 47.4 | 4 | 80 / 67 | 55 / 55 | RTU-HC-3 | | | 480 | 3 | 12 | 854 | 1,2,4,5,6,7,8,9,10,11,12,13,15,16,17,19 | | |
| RTU-4 | RN-013 | DRILL HALL | 3,810 | 3.0 | 2080 | 1.1 | 165.3 | 13 | 80 / 67 | 55 / 55 | RTU-HC-4 | | | 480 | 3 | 31 | 1,738 | 1,3,4,5,6,7,9,10,11,12,13,15,16,17,18,19 | | |
| RTU-5 | RN-013 | DRILL HALL | 3,840 | 3.0 | 2010 | 1.1 | 165.3 | 13 | 80 / 67 | 55 / 55 | RTU-HC-5 | | | 480 | 3 | 31 | 1,738 | 1,3,4,5,6,7,9,10,11,12,13,15,16,17,18,19 | | |
| | | | | | | | | | | | | | | | | | | | | |
| <div>NOTES:</div> <div><div>1. BASED ON AAOB</div><div>2. VAV SYSTEM. VFD FOR SUPPLY FAN(S) SINGLE ZONE VAV. VFD FOR SUPPLY FAN(S) DUCT MOUNTED HEATING COIL CONTROLLED BY RTU CONTROLLER</div><div>5. UNPOWERED 120V CONVENIENCE BY MANU. WIRED BY EC</div></div> <div><div>6. DDC READY</div><div>7. FIELD MOUNTED ENTHALPY ECONOMIZER</div><div>8. MANU. PROVIDED CURB ADAPTER</div><div>9. 7-DAY, 24-VOLT PROGRAMMABLE THERMOSTAT 10. CONNECT TO CIRCON CONTROLLER</div></div> <div><div>11. POWERED EXHAUST</div><div>12. R-454B REFRIGERANT</div><div>13. MODULATING COOLING</div><div>14. HOT GAS REHEAT</div><div>15. DOWNFLOW CONFIGURATION</div></div> <div><div>16. SCHEDULED ESP IS TO BE AFTER AUXILIARY HEATING COIL.</div><div>17. MERV-8 PLEATED FILTERS</div><div>18. ROOF CURB</div><div>19. CO2 SENSOR MOUNTED IN RETURN AIR DUCT</div></div> | | | | | | | | | | | | | | | | | | | | |

| GAS BOILER SCHEDULE | | | | | | | | | | | | | | | | |
|---|----------|-----------------|-----------|---|--------------|---------------|-------------|-------------|---|--|------------|-------|-----|-------|---------|-------------------------|
| TAG | MODEL | LOCATION | TYPE | FLUE/ INTAKE SIZE | INPUT MBH | OUTPUT MBH | EWT (°F) | LWT (°F) | FLOW RATE (GPM) | FLUID PRESSURE DROP (FT. OF HEAD) | ELECTRICAL | | | | | COMMENTS |
| | | | | | | | | | | | VOLTS | PHASE | FLA | DISC. | STARTER | |
| B-1 | FBN-3001 | MECHANICAL ROOM | HOT WATER | 10" / 10" | 3000.0 | 2883.0 | 110 | 140 | 216 | 7.0 | 208 | 3 | 6.5 | EC | EC | 1,2,3,4,5,6,7,8,9,10,11 |
| B-2 | FBN-3001 | MECHANICAL ROOM | HOT WATER | 10" / 10" | 3000.0 | 2883.0 | 110 | 140 | 216 | 7.0 | 208 | 3 | 6.5 | EC | EC | 1,2,3,4,5,6,7,8,9,10,11 |
| | | | | | | | | | | | | | | | | |
| 1. BASED ON LOCHINVAR | | | | 5. INTERNAL CASCADING SEQUENCER | | | | | 9. STAINLESS STEEL FIRE TUBE HEAT EXCHANGER | | | | | | | |
| 2. CONDENSATE NEUTRALIZER KIT | | | | 6. 2-WAY BOILER CONTROL VALVE | | | | | 10. 160 PSI WORKING PRESSURE | | | | | | | |
| 3. NATURAL GAS MODULATING CONDENSING BOILER | | | | 7. LONWORKS CONTROLS INTERFACE CONNECTION | | | | | 11. ABBREVIATIONS | | | | | | | |
| 4. OUTDOOR AIR SENSOR | | | | 8. DOMESTIC WATER HEATER PRIORITIZATION | | | | | EC - ELECTRICAL CONTRACTOR | | | | | | | |

| PUMP SCHEDULE | | | | | | | | | | | | | | | |
|---|--------------|---------------------|--------------------|--------------|---------------|-----|----------------------|------------|-------|-----|----------|--|--|--|--|
| TAG | MODEL | LOCATION | SERVES | TYPE | INLET/ OUTLET | GPM | TOTAL HEAD (FT. H2O) | ELECTRICAL | | | COMMENTS | | | | |
| | | | | | | | | VOLTS | PHASE | HP | | | | | |
| P-1 | E-1510 2.5BB | MECHANICAL ROOM | HYDRONIC SYSTEM | BASE MOUNTED | 3.00" / 2.50" | 300 | 75 | 480 | 3 | 10 | 1,2,3,5 | | | | |
| P-2 | E-1510 2.5BB | MECHANICAL ROOM | HYDRONIC SYSTEM | BASE MOUNTED | 3.00" / 2.50" | 300 | 75 | 480 | 3 | 10 | 1,2,3,5 | | | | |
| P-3 | E-1510 2ADES | MECHANICAL ROOM | DOMESTIC HW SYSTEM | BASE MOUNTED | 2.50" / 2.00" | 86 | 20 | 120 | 1 | 3/4 | 1,2,3,5 | | | | |
| P-4 | PL-100 | MECHANICAL ROOM | AHU-1 | INLINE | 1.50" / 1.50" | 25 | 20 | 120 | 1 | 2/5 | 1,4,5 | | | | |
| P-5 | PL-100 | MECHANICAL ROOM | AHU-2 | INLINE | 1.50" / 1.50" | 31 | 20 | 120 | 1 | 2/5 | 1,4,5 | | | | |
| P-6 | PL-36 | NORTH WING CEILING | RTU-HC-1 | INLINE | 1.25" / 1.25" | 4 | 15 | 120 | 1 | 1/6 | 1,4,5 | | | | |
| P-7 | PL-36 | NORTH WING CEILING | RTU-HC-2 | INLINE | 1.25" / 1.25" | 4 | 15 | 120 | 1 | 1/6 | 1,4,5 | | | | |
| P-8 | PL-36 | NORTH WING CEILING | RTU-HC-3 | INLINE | 1.25" / 1.25" | 4 | 15 | 120 | 1 | 1/6 | 1,4,5 | | | | |
| P-9 | PL-45 | NORTH WING CEILING | ERV-HC-2 | INLINE | 1.50" / 1.50" | 13 | 15 | 120 | 1 | 1/6 | 1,4,5 | | | | |
| P-10 | PL-100 | DINING HALL CEILING | RTU-HC-4 | INLINE | 1.50" / 1.50" | 21 | 15 | 120 | 1 | 2/5 | 1,4,5 | | | | |
| P-11 | PL-100 | DINING HALL CEILING | RTU-HC-5 | INLINE | 1.50" / 1.50" | 21 | 15 | 120 | 1 | 2/5 | 1,4,5 | | | | |
| P-12 | PL-45 | KITCHEN CEILING | MAU-HC-1 | INLINE | 1.50" / 1.50" | 15 | 20 | 120 | 1 | 1/6 | 1,4,5 | | | | |
| P-13 | PL-36 | NORTH WING CEILING | ERV-HC-1 | INLINE | 1.25" / 1.25" | 7 | 15 | 120 | 1 | 1/6 | 1,4,5 | | | | |
| NOTES: 1. BASED ON BELL & GASSETT 2. VFD BY MANU (REFER TO DIVISION 26 VFD SPECIFICATION) 3. SUCTION DIFFUSER WITH STRAINER 4. DISCONNECT/STARTER PROVIDED BY ELECTRICAL CONTRACTOR 5. LONWORKS CONTROLS INTERFACE CONNECTION | | | | | | | | | | | | | | | |

| AIR HANDLING UNIT SCHEDULE | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|----------|-----------------|------------|-------------|-------------|---|------------------------|------|------|----------|----------|---|----------|-----------------|-----------|------|----------|---|---------|-------|----------|---|--|----------------------------------|--|--|--|
| TAG | MODEL | SUPPLY FAN DATA | | | | | HOT WATER HEATING COIL | | | | | | | DX COOLING COIL | | | | ELECTRICAL | | | COMMENTS | | | | | | |
| | | SUPPLY CFM | MIN OA CFM | ESP (IN-WC) | TSP (IN-WC) | SUPPLY FAN (QTY @ HP) | MBH | ROWS | GPM | EAT (°F) | LAT (°F) | EWT (°F) | LWT (°F) | WPD | TOTAL MBH | ROWS | EAT (°F) | LAT (°F) | VOLTAGE | PHASE | | FLA | | | | | |
| I-1 | V3 - ERB | 8,825 | 1375 | 2 | 3.7 | 2 @ 5 HP | 359.0 | 2 | 25.0 | 57 | 95 | 140 | 110.8 | 2.5' | 287.8 | 6 | 80 | 55 | 480 | 3 | 10 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18 | | | | | |
| I-2 | V3 - ERB | 8,755 | 2080 | 1.5 | 3.1 | 2 @ 5 HP | 407.6 | 2 | 31.0 | 51 | 95 | 140 | 113.3 | 3.4' | 293.1 | 6 | 80 | 55 | 480 | 3 | 10 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,16,17,18 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NOTES: | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. BASED ON AAOB | | | | | | 6. DIRTY FILTER SWITCH | | | | | | 11. AIR HANDLING UNIT TO CONSIST OF THE FOLLOWING MODULES: | | | | | | 13. ENTHALPY ECONOMIZER | | | | | | 17. MODULATING COOLING | | | |
| 2. MOUNT ON 6" CONCRETE PAD | | | | | | 7. FREEZE/ST | | | | | | AIR MIXING SECTION (BACK OA INLET AND SIDE RA INTET) WITH ACCESS | | | | | | 14. SIDE RETURN AIR INLET WITH DAMPER,BACK OUTSIDE AIR WITH DAMPER, | | | | | | 18. CO2 SENSOR MOUNTED IN RETURN | | | |
| 3. DIRECT DRIVE PLENUM FAN WITH FACTORY INSTALLED VFD | | | | | | 8. FAN STATUS CONTROL | | | | | | DOOR FILTER RACK (MERV-13) HEATING COIL AND COOLING COIL SECTION WITH | | | | | | AND TOP SUPPLY AIR DISCHARGE | | | | | | AIR DUCT | | | |
| 4. CONNECT TO NEW LOWWORKS BAS | | | | | | 9. GALVANIZED DRAIN PAN | | | | | | ACCESS DOOR, AND SUPPLY FAN SECTION (TOP DISCHARGE) WITH ACCESS DOOR | | | | | | 15. 214" LONG x 68.5" WIDE x 41.5" TALL | | | | | | | | | |
| 5. THREE-WAY MODULATING HEATING COIL CONTROL VALVE | | | | | | 10. AHU MUST FIT THROUGH 84" TALL x 72" DOORWAY | | | | | | 12. SMOKE DETECTORS INSTALLED IN SUPPLY AND RETURN AIR STREAM | | | | | | 16. 80.0" LONG x 57.5" WIDE x 95" TALL | | | | | | | | | |

| EXPANSION TANK SCHEDULE | | | | | | |
|---|-------|-----------------|----------|--------------------|--------------------------|----------|
| TAG | MODEL | LOCATION | TYPE | TANK VOLUME (GAL.) | ACCEPTABLE VOLUME (GAL.) | COMMENTS |
| XT-1 | B-300 | MECHANICAL ROOM | HYDRONIC | 80 | 80 | 1,2,3 |
| NOTES: 1. BASED ON BELL & GASSETT 2. BLADDER TYPE PRESSURE VESSEL 3. GROUND MOUNTED | | | | | | |

| INTAKE HOOD SCHEDULE | | | | | | | | | | |
|---|----------|---------|-------|-------------|--------|---------------------------|------|-----------------------|--------|----------|
| TAG | FUNCTION | SERVICE | MODEL | THROAT SIZE | HEIGHT | INLET FREE AREA (SQ. FT.) | CFM | PRESSURE DROP (IN WC) | SCREEN | COMMENTS |
| IH-1 | INTAKE | EF-6 | FGI | 24x24 | 19" | 4.00 | 1800 | 0.03 | BIRD | 1,2,3 |
| IH-2 | INTAKE | EF-8 | FGI | 30x36 | 19" | 7.50 | 3300 | 0.03 | BIRD | 1,3,4,5 |
| IH-3 | INTAKE | EF-9 | FGI | 30x36 | 19" | 7.50 | 3300 | 0.03 | BIRD | 1,3,4,5 |
| NOTES: 1. BASED ON GREENHECK 2. CURB ADAPTER 3. CONTROL DAMPER WITH DDC ACTUATOR 4. SECURITY BARS IN CURB 5. MANU. PROVIDED ROOF CURB | | | | | | | | | | |

| SIDE STREAM FILTER SCHEDULE | | | | | | | | | |
|---|----------|------------------|---------------|---------|---------------|------------|-------|----------|----------------------------------|
| TAG | MODEL | LOCATION | PARTICLE SIZE | MAX GPM | INLET/ OUTLET | ELECTRICAL | | COMMENTS | |
| | | | | | | VOLTS | PHASE | | |
| SSF-1 | TBX-0030 | SOUTH MECH. ROOM | 44 MICRON | 30 | 1-1/2" I" | 480 | 3 | 2.1 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14 |
| NOTES: 1. BASED ON LAKOS 2. UL LISTED/NEMA 4X MOTOR STARTER AND CONTROLS WITH HOA SWITCH. 3. SOLIDS RECOVERY VESSEL (SRV) 4. SRV 44 MICRON REPLACABLE BAG FILTER DIRTY FILTER INDICATOR 5. 19.5" TALL x 13" DIA 6. INLET/OUTLET VALVE KIT 7. 150 PSI MAXIMUM PRESSURE 8. STAINLESS STEEL STANDPIPE 9. HIGH TEMPERATURE RATED CARTIDGE FILTERS 10. CONTRACTOR TO PROVIDE 5 REPLACABLE CARTIDGE FILTERS 11. SIDE STREAM ASSEMBLY TO BE FULLY ASSEMBLED AND PRE PIPED ON SKID 12. INLET/OUTLET PRESSURE GUAGES (0-100 PSI SLYCERIN-FILLED) 13. INLET/OUTLET VALVE KIT 14. 1" NUNNBERG'S INTERFACE PLADN | | | | | | | | | |

| LOUVER SCHEDULE | | | | | | | | | | | |
|---|----------|--------|----------------|-----------|--------|-------|-----------------------------|-------|-------------------------|--------|----------|
| TAG | FUNCTION | SERVES | MAKE/ MODEL | NECK SIZE | | DEPTH | INLET FREE AREA (SQ FT) | CFM | PRESSURE DROP (" WC) | SCREEN | COMMENTS |
| | | | | WIDTH | HEIGHT | | | | | | |
| L-1 | EXHAUST | EF-4 | L637SD | 12" | 12" | 6" | 0.25 | 150 | 0.08 | BIRD | 1,2 |
| L-2 | EXHAUST | EF-7 | L637SD | 36" | 24" | 6" | 2.72 | 1,815 | 0.08 | BIRD | 1,2 |
| L-3 | SUPPLY | D-4 | L637SD | 48" | 24" | 6" | 3.69 | 1,815 | 0.08 | BIRD | 1,2 |
| | | | | | | | | | | | |
| NOTES: 1. BASED ON RUSKIN 2. ARCHITECT TO SELECT COLOR | | | | | | | | | | | |

| DAMPER SCHEDULE | | | | | | | | | | | | |
|---|------------|----------------|---------------|--------------|---------|-------|-------|------------|---------|--|------------|---------|
| TAG | FUNCTION | LOUVER SERVICE | # OF SECTIONS | SECTION SIZE | | DEPTH | CFM | ELECTRICAL | | | | NOTES |
| | | | | WIDTH | HT OR L | | | WATTS | VOLTAGE | DISC. BY | STARTER BY | |
| D-1 | RELIEF AIR | AHU-1 | 1 | 40 | 24 | 6" | 8,825 | -- | 24 | NR | | 1,2,3,4 |
| D-2 | RELIEF AIR | AHU-2 | 1 | 40 | 24 | 6" | 8,755 | -- | 24 | NR | NR | 1,2,3,4 |
| D-3 | INTAKE AIR | IH-1 | 1 | 24 | 24 | 6" | 1,800 | -- | 24 | NR | NR | 1,2 |
| D-4 | INTAKE AIR | L-3 | 1 | 48 | 24 | 6" | 1,815 | -- | 24 | NR | NR | 1,2 |
| D-5 | INTAKE AIR | IH-2 | 1 | 36 | 30 | 6" | 3,300 | -- | 24 | NR | NR | 1,2 |
| D-6 | INTAKE AIR | IH-3 | 1 | 36 | 30 | 6" | 3,300 | -- | 24 | NR | NR | 1,2 |
| NOTES: 1. BASED ON RUSKIN 2. LOW LEAKAGE AND LOW PRESSURE 3. DAMPER TO BE INSTALLED ON EXISTING HOOD 4. CONTRACTOR TO FIELD VERIFY REQUIRED DAMPER SIZE NEEDED FOR EXISTING HOOD | | | | | | | | | | ELECTRICAL NOTES: EC - ELECTRICAL CONTRACTOR MC - MECHANICAL CONTRACTOR NR - NOT REQUIRED | | |

| DUCT MOUNTED HEATING COIL | | | | | | | | |
|---|----------|----------|----------|------|-----|-------|-------------------|------------|
| TAG | HTG. MBH | EAT (DB) | LAT (DB) | CFM | EWT | LWT | CONTROL VALVE GPM | COMMENTS |
| RTU-HC-1 | 59.3 | 62 | 95 | 1640 | 140 | 110 | 4.0 | 1,2,4,5,8 |
| RTU-HC-2 | 59.3 | 59 | 95 | 1495 | 140 | 110 | 4.0 | 1,2,4,5,8 |
| RTU-HC-3 | 51.9 | 63 | 95 | 1435 | 140 | 110 | 3.5 | 1,2,4,5,8 |
| RTU-HC-4 | 315.1 | 26 | 102 | 3810 | 140 | 110 | 21.0 | 1,2,4,6,9 |
| RTU-HC-5 | 315.1 | 28 | 104 | 3840 | 140 | 110 | 21.0 | 1,2,4,6,9 |
| ERV-HC-1 | 98.3 | 31 | 104 | 1215 | 140 | 110 | 6.5 | 1,2,4,7,8 |
| ERV-HC-2 | 192.7 | 29 | 98 | 2600 | 140 | 110 | 13.0 | 1,2,4,7,10 |
| MAU-HC-1 | 234.7 | -10 | 95 | 2070 | 140 | 108.3 | 15.0 | 1,2,4,6,11 |
| NOTES: 1. BASED ON AAOEN 2. 2-WAY MODULATING CONTROL VALVE 3. 3-WAY MODUALTING CONTROL VALVE 4. REFER TO PIPE SIZE INDICATED ON DRAWINGS 5. 2-ROW COPPER COIL WITH ALUMINUM FINS 6. 4-ROW COPPER COIL WITH ALUMINUM FINS 7. 3-ROW COPPER COIL WITH ALUMINUM FINS 8. 24" WIDE x 17.5" TALL WITH 168 FINS PER FOOT 9. 36" WIDE x 28.5" TALL WITH 168 FINS PER FOOT 10. 32" WIDE x 22.5" TALL WITH 168 FINS PER FOOT 11. 24" WIDE x 23.75" TALL WITH 168 FINS PER FOOT | | | | | | | | |

| FINNED TUBE RADIATION SCHEDULE | | | | | | | | | |
|--|------------------|-------------|-----------|-----------------|--------|--------|-----|---------------------|---------------|
| TAG | TYPE | LENGTH, FT. | | CAPACITY BTU/HR | EWT °F | LWT °F | GPM | DIMENSIONS (WIDTH x | COMMENTS |
| | | FIN TUBE | ENCLOSURE | | | | | | |
| FT-1 | LT-SERIES S-TYPE | 46" | 76" | 2790 | 140 | 120 | 0.5 | 6" x 14" | 1,2,3,4,5,6,7 |
| FT-2 | LT-SERIES S-TYPE | 46" | 76" | 2790 | 140 | 120 | 0.5 | 6" x 14" | 1,2,3,4,5,6,7 |
| FT-3 | LT-SERIES S-TYPE | 46" | 76" | 2790 | 140 | 120 | 0.5 | 6" x 14" | 1,2,3,4,5,6,7 |
| FT-4 | LT-SERIES S-TYPE | 46" | 76" | 2790 | 140 | 120 | 0.5 | 6" x 14" | 1,2,3,4,5,6,7 |
| FT-5 | LT-SERIES S-TYPE | 34" | 80" | 2067 | 140 | 120 | 0.5 | 6" x 14" | 1,2,3,4,5,6,7 |
| FT-6 | LT-SERIES S-TYPE | 34" | 80" | 2067 | 140 | 120 | 0.5 | 6" x 14" | 1,2,3,4,5,6,7 |
| FT-7 | LT-SERIES S-TYPE | 34" | 80" | 2067 | 140 | 120 | 0.5 | 6" x 14" | 1,2,3,4,5,6,7 |
| FT-8 | LT-SERIES S-TYPE | 34" | 80" | 2067 | 140 | 120 | 0.5 | 6" x 14" | 1,2,3,4,5,6,7 |
| NOTES: 1. BASED ON STERLING 2. MANUFACTURER SHALL PROVIDE END CAP, CORNER, AND ALL SLEEVE ACCESSORIES FOR CONTINUOUS ENCLOSURE 3. FIN TUBE SHALL BE CENTERED UNDER WINDOW (CONTRACTOR TO VERIFY IN FIELD) 4. SLOPE TOP ENCLOSURE 5. 2-WAY, 2-POSITION CONTROL VALVE 6. MOUNT ON WALL BELOW WINDOW 7. FIN TUBE TUBE SIZE TO MATCH BRANCH PIPING SIZE 8. 3-WAY MODULATING CONTROL VALVE | | | | | | | | | |

| DIFFUSER, REGISTER, & GRILLE SCHEDULE | | | | | | | | | | | |
|---|--------|-----------|-----------|----------------------|-------------------|------------------|-------------|-------|---------------|-----------|--|
| TAG | MODEL | NECK SIZE | FACE SIZE | CFM RANGE (MIN-MAX.) | PATTERN | MOUNT | MATERIAL | COLOR | 100 FPM THROW | COMMENTS | |
| SD-1 | TMS | 6" | 24x24 | 50-135 | 3 CONE / 4-WAY | LAY-IN / SURFACE | STEEL | WHITE | 3' | 1,2,3,4 | |
| SD-1 | TMS | 8" | 24x24 | 140-245 | 3 CONE / 4-WAY | LAY-IN / SURFACE | STEEL | WHITE | 5' | 1,2,3,4 | |
| SD-1 | TMS | 10" | 24x24 | 250-380 | 3 CONE / 4-WAY | LAY-IN / SURFACE | STEEL | WHITE | 6' | 1,2,3,4 | |
| SD-1 | TMS | 14" | 24x24 | 600-1275 | 3 CONE / 4-WAY | LAY-IN / SURFACE | STEEL | WHITE | 10' | 1,2,3,4 | |
| SD-2 | S300FL | 10x4 | 12x6 | 50-160 | ADJ DBL DEFL | DUCT | ALUMINUM | WHITE | 6'-11' | 1,2,3,4,5 | |
| SD-2 | S300FL | 12x8 | 14x10 | 180-430 | ADJ DBL DEFL | DUCT | ALUMINUM | WHITE | 11'-21' | 1,2,3,4,5 | |
| SD-3 | TLF | 12" | 48x24 | 265-400 | LAMINAR | LAY-IN | STEEL | WHITE | - | 1,2,3,4 | |
| SD-4 | 272RL | 10x10 | 10x10 | 215-430 | ADJ DBL DEFL | SURFACE | EXT AL BLDs | WHITE | 11'-21' | 1,2,3,4 | |
| SD-4 | 272RL | 48x24 | 48x24 | 1,800-4,500 | ADJ DBL DEFL | SURFACE | EXT AL BLDs | WHITE | 13'-40' | 1,2,3,4 | |
| RG-1 | 50F | 24x24 | 24x24 | 2,000 | 1/2x1/2x1/2 GRID | LAY-IN / SURFACE | ALUMINUM | WHITE | - | 1,2,3,4 | |
| TG-1 | 23RL | 8x8 | 8x8 | 100-200 | 3/4 SPC - 45° DFL | SURFACE | STEEL | WHITE | - | 1,2,3,4 | |
| EG-1 | 50F | 12x12 | 12x12 | 500 | 1/2x1/2x1/2 GRID | LAY-IN / SURFACE | ALUMINUM | WHITE | - | 1,2,3,4 | |
| EG-2 | 50F | 24x24 | 24x24 | 2,000 | 1/2x1/2x1/2 GRID | LAY-IN / SURFACE | ALUMINUM | WHITE | - | 1,2,3,4 | |
| NOTES: 1. BASED ON TITUS 2. MAX NC = 30 3. MAX APD - 0.10 INCHES 4. SELECT BORDER TO MATCH ROOM FINISH SCHEDULE 5. INTENGRAAL DAMPER | | | | | | | | | | | |

| ENERGY RECOVERY UNIT SCHEDULE | | | | | | | | | | | | | | | | | | |
|--|--------|--------------|--------|--------|-----------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|----------|----------|------------|---------|-------|-------------------------------------|
| TAG | MODEL | LOCATION | EA CFM | OA CFM | SA ESP (IN. WC) | EA ESP (IN. WC) | OUTDOOR AIR | | EXHAUST AIR | | SUPPLY AIR | | FAN QTY | | ELECTRICAL | | | COMMENTS |
| | | | | | | | SUMMER (°F) | WINTER (°F) | SUMMER (°F) | WINTER (°F) | SUMMER (°F) | WINTER (°F) | SA | EA | FLA | VOLTAGE | PHASE | |
| ERV-1 | RQ-005 | ROOF MOUNTED | 1215 | 1215 | 0.8 | 0.7 | 90 | -10 | 72 | 72 | 55 | NOTE 15 | 1 (2 HP) | 1 (1 HP) | 15 | 480 | 3 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15 |
| ERV-2 | RN-008 | ROOF MOUNTED | 2600 | 2600 | 0.9 | 0.8 | 90 | -10 | 72 | 72 | 55 | NOTE 15 | 1 (3 HP) | 1 (2 HP) | 23 | 480 | 3 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15 |
| <div>NOTES:</div> <div><div>1. BASED ON AAOEN</div><div>2. BACKDRAFT DAMPER KIT</div><div>3. ENERGY RECOVERY CUBE</div><div>4. MOTORIZED DAMPER KIT</div><div>5. MERV-8 FILTERS</div><div>6. DIRECT DRIVE VARIABLE SPEED FANS</div><div>7. DISCONNECT BY EC</div><div>8. HOT GAS REHEAT</div><div>9. ROOF CURB ADAPTORS</div><div>10. MODULATING COOLING</div><div>11. VFD(S) PROVIDED BY MANU.</div><div>12. DOWNFLOW CONFIGURATION</div><div>13. DDC READY/CONNECT TO CIRCON CONTROLLER</div><div>14. REMOTE DUCT MOUNTED HEATING COIL CONTROLLED BY UNIT CONTROLS</div><div>15. REFER TO DUCT MOUNTED HEATING COIL SCHEDULE</div></div> | | | | | | | | | | | | | | | | | | |



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| VAV BOX SCHEDULE | | | | | | |
|---|--------------|--------|---------------|-----------|---------|----------|
| TAG | MODEL NUMBER | SYSTEM | AIRFLOW (CFM) | | | COMMENTS |
| | | | SA (MAX.) | MIN. FLOW | APD "WG | |
| VAV-1 | DESV | AHU-1 | 340 | 100 | NOTE 2 | 1,2 |
| VAV-2 | DESV | AHU-1 | 750 | 225 | NOTE 2 | 1,2 |
| VAV-3 | DESV | AHU-1 | 200 | 60 | NOTE 2 | 1,2 |
| VAV-4 | DESV | AHU-1 | 735 | 220 | NOTE 2 | 1,2 |
| VAV-5 | DESV | AHU-1 | 1470 | 440 | NOTE 2 | 1,2 |
| VAV-6 | DESV | AHU-1 | 420 | 125 | NOTE 2 | 1,2 |
| VAV-7 | DESV | AHU-1 | 105 | 30 | NOTE 2 | 1,2 |
| VAV-8 | DESV | AHU-1 | 105 | 30 | NOTE 2 | 1,2 |
| VAV-9 | DESV | AHU-1 | 335 | 100 | NOTE 2 | 1,2 |
| VAV-10 | DESV | AHU-1 | 285 | 85 | NOTE 2 | 1,2 |
| VAV-11 | DESV | AHU-1 | 400 | 120 | NOTE 2 | 1,2 |
| VAV-12 | DESV | AHU-1 | 400 | 120 | NOTE 2 | 1,2 |
| VAV-13 | DESV | AHU-1 | 315 | 95 | NOTE 2 | 1,2 |
| VAV-14 | DESV | AHU-1 | 315 | 95 | NOTE 2 | 1,2 |
| VAV-15 | DESV | AHU-1 | 840 | 250 | NOTE 2 | 1,2 |
| VAV-16 | DESV | AHU-1 | 1140 | 340 | NOTE 2 | 1,2 |
| VAV-17 | DESV | AHU-1 | 360 | 115 | NOTE 2 | 1,2 |
| VAV-18 | DESV | AHU-2 | 600 | 180 | NOTE 2 | 1,2 |
| VAV-19 | DESV | AHU-2 | 155 | 45 | NOTE 2 | 1,2 |
| VAV-20 | DESV | AHU-2 | 270 | 80 | NOTE 2 | 1,2 |
| VAV-21 | DESV | AHU-2 | 270 | 80 | NOTE 2 | 1,2 |
| VAV-22 | DESV | AHU-1 | 280 | 85 | NOTE 2 | 1,2 |
| VAV-23 | DESV | AHU-2 | 725 | 220 | NOTE 2 | 1,2 |
| VAV-24 | DESV | AHU-2 | 1500 | 450 | NOTE 2 | 1,2 |
| VAV-25 | DESV | AHU-2 | 705 | 210 | NOTE 2 | 1,2 |
| VAV-26 | DESV | AHU-2 | 600 | 180 | NOTE 2 | 1,2 |
| VAV-27 | DESV | AHU-2 | 200 | 60 | NOTE 2 | 1,2 |
| VAV-28 | DESV | AHU-2 | 500 | 150 | NOTE 2 | 1,2 |
| VAV-29 | DESV | AHU-2 | 270 | 80 | NOTE 2 | 1,2 |
| VAV-30 | DESV | AHU-2 | 220 | 65 | NOTE 2 | 1,2 |
| VAV-31 | DESV | AHU-2 | 500 | 150 | NOTE 2 | 1,2 |
| VAV-32 | DESV | AHU-2 | 740 | 220 | NOTE 2 | 1,2 |
| VAV-33 | DESV | AHU-2 | 290 | 85 | NOTE 2 | 1,2 |
| VAV-34 | DESV | AHU-2 | 605 | 180 | NOTE 2 | 1,2 |
| VAV-35 | DESV | AHU-2 | 605 | 180 | NOTE 2 | 1,2 |
| VAV-36 | DESV | RTU-1 | 490 | 145 | NOTE 2 | 1,2 |
| VAV-37 | DESV | RTU-1 | 160 | 50 | NOTE 2 | 1,2 |
| VAV-38 | DESV | RTU-1 | 400 | 120 | NOTE 2 | 1,2 |
| VAV-39 | DESV | RTU-1 | 170 | 50 | NOTE 2 | 1,2 |
| VAV-40 | DESV | RTU-1 | 420 | 125 | NOTE 2 | 1,2 |
| VAV-41 | DESV | RTU-2 | 110 | 35 | NOTE 2 | 1,2 |
| VAV-42 | DESV | RTU-2 | 110 | 35 | NOTE 2 | 1,2 |
| VAV-43 | DESV | RTU-2 | 110 | 35 | NOTE 2 | 1,2 |
| VAV-44 | DESV | RTU-2 | 110 | 35 | NOTE 2 | 1,2 |
| VAV-45 | DESV | RTU-2 | 115 | 35 | NOTE 2 | 1,2 |
| VAV-46 | DESV | RTU-2 | 115 | 35 | NOTE 2 | 1,2 |
| VAV-47 | DESV | RTU-2 | 110 | 35 | NOTE 2 | 1,2 |
| VAV-48 | DESV | RTU-2 | 110 | 35 | NOTE 2 | 1,2 |
| VAV-49 | DESV | RTU-2 | 115 | 35 | NOTE 2 | 1,2 |
| VAV-50 | DESV | RTU-2 | 115 | 35 | NOTE 2 | 1,2 |
| VAV-51 | DESV | RTU-2 | 110 | 35 | NOTE 2 | 1,2 |
| VAV-52 | DESV | RTU-2 | 125 | 40 | NOTE 2 | 1,2 |
| VAV-53 | DESV | RTU-2 | 140 | 40 | NOTE 2 | 1,2 |
| NOTES: | | | | | | |
| 1. BASED ON ITUS | | | | | | |
| 2. THE TOTAL MAXIMUM PRESSURE DROP ACROSS THE BOX AND REHEAT COIL SHALL NOT EXCEED 0.3" | | | | | | |

