## VENTILATION CALCULATIONS (VMC 2018, SECT 403): IDU-1.1

| OCCUPANCY CLASSIFICATION | PEOPLE O/A RATE IN BREATHING ZONE (CFM/PERSON) | AREA O/A RATE IN BREATHING ZONE (CFM/SQ. FT.) | DEFAULT OCCUPANCY DENSITY (PEOPLE/1000 SQ. FT.) | EXHAUST AIRFLOW RATE (CFM/SQ. FT.) | AREA (SQ. FT.) | CALCULATED OCCUPANCY (PEOPLE) | CALCULATED PEOPLE O/A (CFM) | CALCULATED AREA O/A (CFM) | CALCULATED AREA E/A (CFM) |
|---|---|---|---|---|---|---|---|---|---|
| OFFICE SPACES | 5 | 0.06 | 5 | 0 | 337 | 2 | 9 | 20 | 0 |
| TOILET | 0 | 0 | 0 | 70 | 2 | 0 | 0 | 0 | 140 |
| STORAGE ROOMS | 0 | 0.12 | 0 | 0 | 146 | 0 | 0 | 18 | 0 |
| CORRIDORS | 0 | 0.06 | 0 | 0 | 266 | 0 | 0 | 16 | 0 |
| | | | | TOTAL OUTSIDE AIR REQ'D (Ez=0.8, CFM) | | | | 79 | |
| | | | | TOTAL OUTSIDE AIR PROVIDED (CFM) | | | | 100 | |
| | | | | | | TOTAL EXHAUST AIR REQUIRED (CFM) | | | 140 |
| | | | | | | TOTAL EXHAUST AIR PROVIDED (CFM) | | | 150 |

## VENTILATION CALCULATIONS (VMC 2018, SECT 403): IDU-1.2

| OCCUPANCY CLASSIFICATION | PEOPLE O/A RATE IN BREATHING ZONE (CFM/PERSON) | AREA O/A RATE IN BREATHING ZONE (CFM/SQ. FT.) | DEFAULT OCCUPANCY DENSITY (PEOPLE/1000 SQ. FT.) | EXHAUST AIRFLOW RATE (CFM/SQ. FT.) | AREA (SQ. FT.) | CALCULATED OCCUPANCY (PEOPLE) | CALCULATED PEOPLE O/A (CFM) | CALCULATED AREA O/A (CFM) | CALCULATED AREA E/A (CFM) |
|---|---|---|---|---|---|---|---|---|---|
| OFFICE SPACES | 5 | 0.06 | 5 | 0 | 622 | 3 | 16 | 37 | 0 |
| MAIN ENTRY LOBBIES | 5 | 0.06 | 10 | 0 | 578 | 6 | 29 | 35 | 0 |
| | | | | TOTAL OUTSIDE AIR REQ'D (Ez=0.8, CFM) | | | | 147 | |
| | | | | TOTAL OUTSIDE AIR PROVIDED (CFM) | | | | 150 | |
| | | | | | | TOTAL EXHAUST AIR REQUIRED (CFM) | | | 0 |
| | | | | | | TOTAL EXHAUST AIR PROVIDED (CFM) | | | 0 |

## VENTILATION CALCULATIONS (VMC 2018, SECT 403): IDU-1.3

| OCCUPANCY CLASSIFICATION | PEOPLE O/A RATE IN BREATHING ZONE (CFM/PERSON) | AREA O/A RATE IN BREATHING ZONE (CFM/SQ. FT.) | DEFAULT OCCUPANCY DENSITY (PEOPLE/1000 SQ. FT.) | EXHAUST AIRFLOW RATE (CFM/SQ. FT.) | AREA (SQ. FT.) | CALCULATED OCCUPANCY (PEOPLE) | CALCULATED PEOPLE O/A (CFM) | CALCULATED AREA O/A (CFM) | CALCULATED AREA E/A (CFM) |
|---|---|---|---|---|---|---|---|---|---|
| OFFICE SPACES | 5 | 0.06 | 5 | 0 | 743 | 4 | 19 | 45 | 0 |
| MAIN ENTRY LOBBIES | 5 | 0.06 | 10 | 0 | 133 | 1 | 7 | 8 | 0 |
| | | | | TOTAL OUTSIDE AIR REQ'D (Ez=0.8, CFM) | | | | 99 | |
| | | | | TOTAL OUTSIDE AIR PROVIDED (CFM) | | | | 100 | |
| | | | | | | TOTAL EXHAUST AIR REQUIRED (CFM) | | | 0 |
| | | | | | | TOTAL EXHAUST AIR PROVIDED (CFM) | | | 0 |

## VENTILATION CALCULATIONS (VMC 2018, SECT 403): IDU-2.1

| OCCUPANCY CLASSIFICATION | PEOPLE O/A RATE IN BREATHING ZONE (CFM/PERSON) | AREA O/A RATE IN BREATHING ZONE (CFM/SQ. FT.) | DEFAULT OCCUPANCY DENSITY (PEOPLE/1000 SQ. FT.) | EXHAUST AIRFLOW RATE (CFM/SQ. FT.) | AREA (SQ. FT.) | CALCULATED OCCUPANCY (PEOPLE) | CALCULATED PEOPLE O/A (CFM) | CALCULATED AREA O/A (CFM) | CALCULATED AREA E/A (CFM) |
|---|---|---|---|---|---|---|---|---|---|
| TOILET | 0 | 0 | 0 | 70 | 4 (FIXTURES) | 0 | 0 | 0 | 280 |
| OFFICE SPACES | 5 | 0.06 | 5 | 0 | 560 | 3 | 15 | 34 | 0 |
| | | | | TOTAL OUTSIDE AIR REQ'D (Ez=0.8, CFM) | | | | 62 | |
| | | | | TOTAL OUTSIDE AIR PROVIDED (CFM) | | | | 100 | |
| | | | | | | TOTAL EXHAUST AIR REQUIRED (CFM) | | | 280 |
| | | | | | | TOTAL EXHAUST AIR PROVIDED (CFM) | | | 300 |

## VENTILATION CALCULATIONS (VMC 2018, SECT 403): IDU-2.2

| OCCUPANCY CLASSIFICATION | PEOPLE O/A RATE IN BREATHING ZONE (CFM/PERSON) | AREA O/A RATE IN BREATHING ZONE (CFM/SQ. FT.) | DEFAULT OCCUPANCY DENSITY (PEOPLE/1000 SQ. FT.) | EXHAUST AIRFLOW RATE (CFM/SQ. FT.) | AREA (SQ. FT.) | CALCULATED OCCUPANCY (PEOPLE) | CALCULATED PEOPLE O/A (CFM) | CALCULATED AREA O/A (CFM) | CALCULATED AREA E/A (CFM) |
|---|---|---|---|---|---|---|---|---|---|
| OFFICE SPACES | 5 | 0.06 | 5 | 0 | 1876 | 10 | 50 | 113 | 0 |
| | | | | TOTAL OUTSIDE AIR REQ'D (Ez=0.8, CFM) | | | | 204 | |
| | | | | TOTAL OUTSIDE AIR PROVIDED (CFM) | | | | 250 | |
| | | | | | | TOTAL EXHAUST AIR REQUIRED (CFM) | | | 0 |
| | | | | | | TOTAL EXHAUST AIR PROVIDED (CFM) | | | 0 |

## VENTILATION CALCULATIONS (VMC 2018, SECT 403): IDU-2.3

| OCCUPANCY CLASSIFICATION | PEOPLE O/A RATE IN BREATHING ZONE (CFM/PERSON) | AREA O/A RATE IN BREATHING ZONE (CFM/SQ. FT.) | DEFAULT OCCUPANCY DENSITY (PEOPLE/1000 SQ. FT.) | EXHAUST AIRFLOW RATE (CFM/SQ. FT.) | AREA (SQ. FT.) | CALCULATED OCCUPANCY (PEOPLE) | CALCULATED PEOPLE O/A (CFM) | CALCULATED AREA O/A (CFM) | CALCULATED AREA E/A (CFM) |
|---|---|---|---|---|---|---|---|---|---|
| CONFERENCE ROOMS | 5 | 0.06 | 50 | 0 | 244 | 13 | 65 | 15 | 0 |
| STORAGE ROOMS | 0 | 0.12 | 0 | 0 | 63 | 0 | 0 | 8 | 0 |
| OFFICE SPACES | 5 | 0.06 | 5 | 0 | 772 | 4 | 20 | 47 | 0 |
| | | | | TOTAL OUTSIDE AIR REQ'D (Ez=0.8, CFM) | | | | 194 | |
| | | | | TOTAL OUTSIDE AIR PROVIDED (CFM) | | | | 200 | |
| | | | | | | TOTAL EXHAUST AIR REQUIRED (CFM) | | | 0 |
| | | | | | | TOTAL EXHAUST AIR PROVIDED (CFM) | | | 0 |

## 2018 VIRGINIA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - MECHANICAL SUMMARY

C401 METHOD OF COMPLIANCE

- ■ 2018 VECC CHAPTER 4
- ☐ ASHRAE 90.1-2013 PRESCRIPTIVE
- ☐ ASHRAE 90.1-2013 PERFORMANCE
- ☐ N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)
- ☐ COMCHECK PROVIDED (2018 VECC)
- ☐ COMCHECK PROVIDED (90.1-2013)
- ☐ ENERGY MODELING DATA PROVIDED

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- ☐ C406.2 EFFICIENT MECH EQUIPMENT
- ■ C406.3 REDUCED LTG DENSITY
- ☐ C406.4 ENHANCED LTG CONTROLS
- ☐ C406.5 ON-SITE RENEWABLE ENERGY
- ☐ C406.6 DEDICATED OA SYSTEM
- ☐ C406.7 SERVICE WATER HEATING

C301 CLIMATE ZONE

4A - FLOYD COUNTY, VIRGINIA

DESIGN CONDITIONS

EXTERIOR (ASHRAE 90.1-2013 TABLE D-1)

| | |
|---|---|
| winter dry bulb | 19.0° F. |
| summer dry bulb | 89.8° F. |
| summer wet bulb | 72.4° F. |

INTERIOR (2018 NCECC SECTION C302.1)

| | |
|---|---|
| winter dry bulb | 72° F. |
| summer dry bulb | 75° F. |

C403.2 HEATING & COOLING LOADS AND EQUIPMENT & SYSTEM SIZING

| | |
|---|---|
| BUILDING HEATING LOAD | 252,500 BTUH (peak) |
| BUILDING COOLING LOAD | 302,500 BTUH (peak) |
| INSTALLED HEATING CAPACITY | SEE SCHEDULES |
| INSTALLED COOLING CAPACITY | SEE SCHEDULES |

C403.2.3 & C406.2 - REQUIRED & INCREASED HVAC EQUIPMENT PERFORMANCE

SYSTEM DESCRIPTION - DX SPLIT SYSTEM HEAT PUMPS WITH ELECTRIC AUXILIARY HEAT

- ■ MINIMUM HVAC EQUIP EFFICIENCY COMPLIANCE - TABLE C403.2.3
- ☐ INCREASED HVAC EQUIP EFFICIENCY COMPLIANCE - 10% OVER TABLE C403.2.3

| EQUIP TYPE | SIZE CATEGORY (BTUH) | SUBCATEGORY | C403.2.3 MINIMUM EFFICIENCY (a) | 10% INCREASED EFF. (a) | DESIGN EFFIC. |
|---|---|---|---|---|---|
| TABLE C403.2.3(2) - ELECTRICALLY OPERATED UNITARY AND APPLIED HEAT PUMPS | | | | | |
| AIR COND, AIR COOLED | < 65,000 (<= 5 TONS) | SPLIT SYSTEM & SINGLE PACKAGE | 14.0 SEER | 15.4 SEER | SEE SCHEDULE |

C403.4 THRU C403.11

- ■ HVAC SYSTEMS ARE FULLY COMPLIANT WITH THE REQUIREMENTS FOR HVAC SYSTEM CONTROL, VENTILATION, ENERGY RECOVERY, DUCT AND PLENUM INSULATION AND SEALING, PIPING INSULATION, AND SYSTEM COMPLETION.

C403.5 - ECONOMIZERS

- ■ COOLING EQUIPMENT EFFICIENCY EXCEEDS 20% (ZONE 4A). ECONOMIZERS MAY BE EXEMPT FROM PROJECT PER EXCEPTION #5 OF C403.5 OF VECC

C403.8.1 - AIR SYSTEM DESIGN AND CONTROL

- ■ ALL FANS INSTALLED ON THE PROJECT ARE 5 HP OR LESS AND ARE EXEMPT FROM THESE REQUIREMENTS.

C405.8 - ELECTRICAL MOTORS (MANDATORY REQUIREMENTS).

- ■ ELECTRICAL MOTORS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.7, EXCEPT WHERE EXEMPT.
- ☐ NOT APPLICABLE.

C408 - SYSTEM COMMISSIONING

- ■ MECHANICAL SYSTEMS AND SERVICE WATER HEATER SYSTEMS IN THE BUILDIING IS LESS THAN 480,000 BTU/H COOLING CAPACITY AND 600,000 BTU/H HEATING CAPACITY AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.

## MECHANICAL DUCT SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| 16x8 | SQUARE DUCT SIZE TAG (WIDTH x HEIGHT) |
| 16"Ø | ROUND DUCT SIZE TAG (DIAMETER) |
| | SUPPLY AIR DIFFUSER (4-WAY) |
| | RETURN AIR GRILLE |
| | EXHAUST AIR GRILLE |
| M.C. | MECHANICAL CONTRACTOR |
| E.C. | ELECTRICAL CONTRACTOR |
| P.C. | PLUMBING CONTRACTOR |
| AFF | ABOVE FINISHED FLOOR |
| DN | DOWN |
| UP | UP |

## MECHANICAL ACCESSORIES SYMBOL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| T | THERMOSTAT / TEMP SENSOR (4'-0" AFF TO TOP) |
| S | SWITCH (4'-0" AFF TO TOP) |
| DD | RECTANGULAR DUCT MOUNTED DUCT DETECTOR. FURNISHED AND CONNECTED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR. CUTTING OF DUCT, INSTALLATION OF DETECTOR. AND DETERMINATION OF SAMPLING TUBE LENGTH SHALL BE THE MECHANICAL CONTRACTOR. PROVIDE REMOTE INDICATING LIGHT WITH EACH DETECTOR. |
| M | RECTANGULAR DUCT MOUNTED MOTOR OPERATED DAMPER, INTERLOCK WITH FAN AS INDICATED. (DAMPER BY M.C.) |
| UC | UNDERCUT DOOR (BY G.C.) |

## EQUIVALENT MANUFACTURERS LISTING

LISTING OF MANUFACTURER'S NAME DOES NOT GUARANTEE APPROVAL. ALL EQUIPMENT MUST MEET OR EXCEED QUALITY AND CAPACITIES OF SPECIFIED EQUIPMENT. FINAL APPROVAL WILL BE BASED ON EQUIPMENT SUBMITTALS. ANY MANUFACTURER NOT LISTED BUT WISHING TO BID THIS PROJECT SHALL SUBMIT A WRITTEN REQUEST A MINIMUM OF 7 DAYS PRIOR TO BID DATE OR AS INDICATED IN THE SPECIFICATIONS, PRIOR APPROVAL IS REQUIRED FOR ALL MANUFACTURERS NOT LISTED.

(ALPHABETICAL ORDER)
AIR DISTRIBUTION: CARNES, KRUEGER, METAL*AIRE, NAILOR, PRICE, TITUS
DUCTED SPLIT SYSTEMS: CARRIER, DAIKIN, LENNOX, TRANE
DUCTLESS SPLIT SYSTEMS: CARRIER, DAIKIN, MITSUBISHI, TRANE
ELECTRIC WALL/UNIT HEATERS: BERKO, MARKEL, MODINE, QMARK, RAYWALL
FANS: COOK, GREENHECK, PENN, TWIN CITY
LOUVER: GREENHECK, POTTORFF, RUSKIN, SAFE-AIR

NOTE:
ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

## MECHANICAL GENERAL NOTES

1. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC.
2. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THIS INCLUDES ANY MODIFICATIONS TO ANY ASSOCIATED MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS REQUIRED BY THIS SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" THICK DUCT WRAP WITH VAPOR BARRIER. INSULATION (INCLUDING FLEXIBLE DUCT INSULATION) SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 6.0. DUCT DIMENSIONS ON PLANS ARE FREE AREA SIZE.
4. ALL DUCTWORK SHALL BE SEALED PER THE REQUIREMENTS OF THE VIRGINIA MECHANICAL CODE. SEAL LOW PRESSURE SUPPLY, RETURN, OUTSIDE AIR, AND EXHAUST DUCTWORK FOR POSITIVE/NEGATIVE 2" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4.
5. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
6. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
7. THE MECHANICAL CONTRACTOR SHALL BALANCE ALL MECHANICAL SYSTEMS TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS AND PROVIDE THE ENGINEER WITH A DIGITAL COPY OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TESTING AND BALANCING CONTRACTOR TO CONFIRM FILTERS ARE CLEAN, AND FREE OF DEBRIS PRIOR TO BEGINNING WORK. THE MECHANICAL CONTRACTOR SHALL REPLACE ANY DIRTY FILTERS, AS NEEDED. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.
8. UPON PROJECT COMPLETION, THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER INSTALLATION INFORMATION INCLUDING RECORD SUBMITTALS (WITH ANY SUBMITTAL REVIEW COMMENTS ADDRESSED) AND O&M MANUALS FOR EACH PIECE OF EQUIPMENT INCLUDING ALL SELECTED OPTIONS, THE NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY, FULL CONTROL SYSTEM O&M AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, FULL SEQUENCE OF OPERATION, AND PROGRAMMED SETPOINTS.
9. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
10. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL.
11. CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS. DRAINS FROM AIR HANDLING UNITS SHALL BE TRAPPED. CONDENSATE DRAINS SHALL BE INSULATED WITH 1/2" THICK ARMAFLEX INSULATION. MINIMUM DRAIN SIZE SHALL BE 3/4".
12. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE. SIZE, INSULATE, AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS. REFRIGERANT PIPING INSULATION EXPOSED OUTDOORS SHALL BE COVERED WITH AN OUTER ALUMINUM JACKET.
13. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE DRAWINGS OR NOT.
14. INSTALL THE TOP OF ALL THERMOSTATS, SENSORS, AND SWITCHES AT 4'-0" (MAXIMUM) ABOVE FINISH FLOOR. COORDINATE EXACT THERMOSTAT LOCATION WITH OWNER PRIOR TO INSTALLATION. ANY DEVICE ON A PERIMETER WALL SHALL BE MOUNTED ON A FOAM-FILLED ELECTRICAL BOX, WITH ALL GAPS BETWEEN BOX AND WALL SEALED TO PREVENT INFILTRATION.
15. CONTRACTOR SHALL VERIFY LOCATION OF ALL ROOF PENETRATIONS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.
16. ROOF CURBS SHALL ALLOW A MINIMUM OF 8" ABOVE ROOF INSULATION FOR FLASHING, OR AS INDICATED ON THE DRAWINGS, WHICHEVER IS GREATER. IN ADDITION, ALL ROOF CURBS OR EQUIPMENT SUPPORT RAILS THAT SUPPORT EQUIPMENT, PIPING, CONDUIT, ETC. EXPOSED ON THE ROOF SHALL HAVE SUFFICIENT HEIGHT TO MAINTAIN A MINIMUM OF 18" CLEARANCE BELOW SUPPORTED EQUIPMENT FOR ROOF MAINTENANCE.
17. CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE.
18. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
19. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
20. ALL BALANCING DAMPERS, INDOOR UNITS, CONTROLS, ETC. REQUIRING ACCESS AND SERVICE SHALL BE INSTALLED WITHIN 18" OF THE CEILING FOR SERVICE ACCESSIBILITY. LOCATIONS SHALL BE INDICATED ON THE CEILING GRID.
21. DUCTWORK AND PIPING PASSING THROUGH/ABOVE ELECTRICAL ROOMS SHALL BE CLOSELY COORDINATED WITH THE ELECTRICAL CONTRACTOR. DUCTWORK OR PIPING SHALL NOT BE LOCATED ABOVE ELECTRICAL PANELS.
22. EQUIPMENT OPERATED DURING CONSTRUCTION SHALL USE FILTERED MEDIA TO PREVENT CONSTRUCTION DEBRIS FROM ENTERING COILS, DUCTWORK SYSTEMS, AIR TERMINALS ETC. AT COMPLETION OF CONSTRUCTION, MECHANICAL CONTRACTOR SHALL CLEAN ALL SYSTEMS WITH ALL CONTROL DEVICES WIDE OPEN AND REMOVE ANY REMAINING DEBRIS PRIOR TO TEST AND BALANCING. MECHANICAL CONTRACTOR SHALL REPLACE ALL FILTRATION WITH NEW FILTERS AT COMPLETION OF CONSTRUCTION. ANY DUCTWORK, AIR TERMINALS, AND/OR OTHER EQUIPMENT UPSTREAM OF FILTRATION SHALL BE CLEANED THOROUGHLY OF CONSTRUCTION DEBRIS BEFORE HANDING OVER TO OWNER.
23. MECHANICAL CONTRACTOR SHALL PROVIDE PRE-PRINTED COLOR-CODED PIPE LABELS WITH 1-1/2" HIGH LETTERING INDICATING SERVICE AND FLOW DIRECTION. PLASTIC PIPE LABELS UTILIZED IN A RETURN AIR PLENUM SHALL BE LISTED/APPROVED FOR USE IN A RETURN AIR PLENUM. ALL PIPING TO MATCH EXISTING FACILITIES STANDARD (IF APPLICABLE). OTHERWISE, PIPE LABELS SHALL MATCH THE FOLLOWING:
    REFRIGERANT PIPING: YELLOW BACKGROUD, BLACK LETTERING
24. ALL MECHANICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED AS A COMPLETE PACKAGE, NOT THROUGH INDIVIDUAL COMPONENTS OR PARTS. PROVIDE REQUIRED 3RD PARTY FIELD UL LISTING SERVICES AS REQUIRED TO COMPLY.

## MECHANICAL SHEET INDEX




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COMMONWEALTH OF VIRGINIA
RONALD V. ALMOND
Lic. No. 25952
REGISTERED PROFESSIONAL ENGINEER
3/15/24

CONSTRUCTION DOCUMENTS

3.14.2024

| NO. | REASON | DATE |
|---|---|---|

PRINCIPAL IN CHARGE
Brian Thompson, P.E.
PROJECT MANAGER
Benjamin Barrier, P.E.
DESIGN TEAM
Benjamin Barrier, P.E.

Skyline Bank Floyd

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Floyd, VA 24091

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MECHANICAL LEGEND AND NOTES

M001

OPT PROJECT # 23-0063

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## VARIABLE SPEED INDOOR UNIT SCHEDULE

| SYMBOL | NOMINAL TONNAGE | SUPPLY AIR FLOW (CFM) | O.A. CFM | E.S.P. "/WG | COOLING CAPACITY TC (BTUH) | COOLING CAPACITY SHC (BTUH) | HEATING CAPACITY (BTUH) | ELECTRIC AUXILIARY HEAT KW | ELECTRIC AUXILIARY HEAT STAGES | FAN MOTOR FLA | ELECTRICAL DATA MCA | ELECTRICAL DATA FUSE | ELECTRICAL DATA VOLTAGE | ELECTRICAL DATA PHASE | MANUF. | MODEL | WEIGHT | REFRIGERANT TYPE | MATCHING OUTDOOR UNIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDU-1.1 | 2 | 800 | 100 | 0.5 | 23300 | 18100 | 24000 | 9.0 | 2 | 2.8 A | 32.0 | 35.0 | 208 V | 3 | CARRIER | FE4ANF002 | 135 | R-410A | ODU-1.1 |
| IDU-1.2 | 3 | 1200 | 150 | 0.5 | 32400 | 24200 | 35800 | 9.0 | 2 | 4.2 A | 32.0 | 35.0 | 208 V | 3 | CARRIER | FE4ANF003 | 150 | R-410A | ODU-1.2 |
| IDU-1.3 | 3 | 1200 | 100 | 0.5 | 32400 | 24200 | 35800 | 9.0 | 2 | 4.2 A | 32.0 | 35.0 | 208 V | 3 | CARRIER | FE4ANF003 | 150 | R-410A | ODU-1.3 |
| IDU-2.1 | 3 | 1200 | 330 | 0.5 | 32400 | 24200 | 35800 | 9.0 | 2 | 4.2 A | 32.0 | 35.0 | 208 V | 3 | CARRIER | FE4ANF003 | 150 | R-410A | ODU-2.1 |
| IDU-2.2 | 4 | 1600 | 130 | 0.5 | 45800 | 35500 | 46500 | 15.0 | 2 | 4.3 A | 47.7 | 50.0 | 208 V | 3 | CARRIER | FE4ANF005 | 172 | R-410A | ODU-2.2 |
| IDU-2.3 | 4 | 1600 | 160 | 0.5 | 45800 | 35500 | 46500 | 15.0 | 2 | 4.3 A | 47.7 | 50.0 | 208 V | 3 | CARRIER | FE4ANF005 | 172 | R-410A | ODU-2.3 |

INDOOR UNIT NOTES:

1. COOLING CAPACITY BASED ON 80°/67° ENTERING AIR.
2. PROVIDE UNITS WITH: MANUFACTURERS PROGRAMMABLE SMART CONTROLLER, 1" THICK DISPOSABLE FILTER (MERV 8 MINIMUM), FIELD INSTALLED HEATER, U.L. LABEL, SINGLE POINT ELECTRICAL CONNECTION, 1-INCH INSULATION.
3. PROVIDE EACH UNIT WITH A PHOTOELECTRIC TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
4. ELECTRIC AUXILIARY HEAT LISTED FOR ALL UNITS IS NOMINAL KW BASED ON 240V ELECTRICAL POWER.

## VARIABLE SPEED HEAT PUMP SCHEDULE (AIR COOLED)

| ID | NOMINAL TONNAGE | COOLING COIL TC (BTUH) | COOLING COIL SHC (BTUH) | EFFICIENCY EER2 | EFFICIENCY SEER2 | HEATNG CAPACITY (BTUH) | EFFICIENCY HSPF | COMPRESSOR RLA | FAN FLA | ELECTRICAL DATA MCA | ELECTRICAL DATA FUSE | ELECTRICAL DATA VOLTAGE | ELECTRICAL DATA PH | REFRIG. TYPE | MANUFACTURER | MANUFACTURER | WEIGHT | MATCHING INDOOR UNIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP-1.1 | 2 | 23300 | 18100 | 13.5 | 21 | 24000 | 10.5 | 12.4 | 0.9 | 16.4 | 25.0 | 208 V | 1 | R-410A | CARRIER | 25VNA424 | 300 lb | IDU-1.1 |
| HP-1.2 | 3 | 32400 | 24200 | 12 | 19.5 | 35800 | 8 | 13.7 | 0.9 | 18.0 | 30.0 | 208 V | 1 | R-410A | CARRIER | 25VNA436 | 370 lb | IDU-1.2 |
| HP-1.3 | 3 | 32400 | 24200 | 12 | 19.5 | 35800 | 8 | 13.7 | 0.9 | 18.0 | 30.0 | 208 V | 1 | R-410A | CARRIER | 25VNA436 | 370 lb | IDU-1.3 |
| HP-2.1 | 3 | 32400 | 24200 | 12 | 19.5 | 35800 | 8 | 13.7 | 0.9 | 18.0 | 30.0 | 208 V | 1 | R-410A | CARRIER | 25VNA436 | 370 lb | IDU-2.1 |
| HP-2.2 | 4 | 45800 | 35500 | 12.3 | 22 | 46500 | 8.5 | 21.8 | 1.2 | 27.4 | 40.0 | 208 V | 1 | R-410A | CARRIER | 25VNA448 | 400 lb | IDU-2.2 |
| HP-2.3 | 4 | 45800 | 35500 | 12.3 | 22 | 46500 | 8.5 | 21.8 | 1.2 | 27.4 | 40.0 | 208 V | 1 | R-410A | CARRIER | 25VNA448 | 400 lb | IDU-2.3 |

NOTES:

1. COOLING CAPACITY @ 95 AMBIENT.
2. ALL UNITS SHALL BE U.L. LISTED AND HAVE A MINIMUM SEER2 OF 14.3.
3. HEAT PUMP SUPPLEMENTARY ELECTRIC RESISTANCE HEAT SHALL BE PROVIDED WITH CONTROLS TO PREVENT OPERATION WHEN THE REVERSE CYCLE HEAT CAN MEET HEATING LOAD. SUPPLEMENTAL ELECTRIC HEAT SHALL BE ALLOWED TO OPERATE DURING HEAT PUMP DEFROST CYCLE. SUPPLEMENTAL ELECTRIC HEAT SHALL BE LOCKED OUT WHEN THE OUTDOOR TEMPERATURE IS BETWEEN 35°F AND 40°F AND THE INDOOR TEMPERATURE SETPOINT IS INCREASED.
4. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND UNITS.
5. PROVIDE UNITS WITH CONDENSER COIL HAIL GUARDS AND LOW AMBIENT CONTROLS.
6. FOR REFRIGERANT LINE APPLICATIONS CONTRACTOR SHALL PROVIDE ALL ADDITIONAL DEVICES REQUIRED BY MANUFACTURE TO ACHIEVE LONG LENGTH INSTALLATION.
   - MECHANICAL CONTRACTOR & UNIT MANUFACTURER ARE TO REVIEW INSTALLATION, AND FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR LONG REFRIGERANT LINE APPLICATIONS (AS DEFINED BY UNIT MFGR).
   - LONG REFRIGERANT LINESETS SHALL BE SIZED TO LIMIT CAPACITY REDUCTION OF HEAT PUMP BY LESS THAN 5%.

## ELECTRIC WALL HEATER SCHEDULE

| ID | LOCATION | CFM | BTUH | KW | MOTOR VOLT | MOTOR PH | MANUFACTURER (MARKEL) | ACCESSORIES |
|---|---|---|---|---|---|---|---|---|
| EWH-1 | STAIRS 103 | 175 | 5120 | 1.5 | 120 V | 1 | E3323TD-RP | A,B,G,H |
| EWH-2 | STAIRS 104 | 175 | 5120 | 1.5 | 120 V | 1 | E3323TD-RP | A,B,G,H |

NOTES:

1. HEATING CAPACITY BASED ON 65° F E.A.T.
2. SEE PLANS FOR TYPE OF THERMOSTAT REQUIRED (WALL MOUNTED OR UNIT MOUNTED). UNIT HEATERS SHOWN WITHOUT THERMOSTAT INDICATED SHALL BE PROVIDED WITH A UNIT MOUNTED THERMOSTAT.
3. SET TO MAINTAIN 45°F.

ELECTRIC UNIT HEATER ACCESSORIES:

A. DISCONNECT SWITCH
B. BUILT IN THERMOSTAT
C. WALL MOUNTED THERMOSTAT
D. WALL MOUNTING BRACKETS
E. CEILING MOUNTED BRACKETS
F. RADIAL DISCHARGE LOUVER
G. PENCIL PROOF LOUVERS
H. CABINET FOR SURFACE MOUNTING

## DUCTLESS SPLIT CONDENSING UNIT SCHEDULE

| ID | TOTAL COOLING CAPACITY (BTUH) | HEATING CAPACITY (BTUH) | COMPRESSOR RLA | ELECTRICAL DATA MCA | ELECTRICAL DATA MOCP | ELECTRICAL DATA VOLTAGE | ELECTRICAL DATA PHASE | MANUFACTURER | MODEL NO. | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|
| ODU-1 | 10900 | 13500 | 8.5 | 8.7 | 15 | 208 V | 1 | DAIKIN | RX12AXVJU | 64 lb |
| ODU-2 | 10900 | 13500 | 8.5 | 8.7 | 15 | 208 V | 1 | DAIKIN | RX12AXVJU | 64 lb |

NOTES:

1. ALL UNITS SHALL BE U.L. LISTED AND HAVE A MINIMUM SEER OF 17.
2. COOLING CAPACITIES ARE BASED ON 95° AMBIENT, 80° ENTERING AIR DRY BULB, 67° ENTERING AIR WET BULB. AIRFLOWS INDICATED ARE AT 'HIGH' SPEED.
3. MOUNT UNITS ON ROOF ON EQUIPMENT SUPPORT RAILS AS MFG. BY ROOF PRODUCTS AND SERVICE CORP. (OR EQUAL).
4. PROVIDE MANUFACTURER'S SUGGESTED CLEARANCES AROUND UNIT.
5. PROVIDE UNITS WITH MANUFACTURER'S WIND BAFFLES OR LOW AMBIENT CONTROLS FOR OPERATION DOWN TO 0° F, CONDENSATE PUMP, INVERTER COMPRESSOR, 7-DAY PROGRAMMABLE HARD WIRED THERMOSTAT, NON-LOCKING DISCONNECT FOR INDOOR UNIT.
6. PROVIDE OUTDOOR UNITS WITH 6 YEAR EXTENDED COMPRESSOR WARRANTY.
7. SEE MANUFACTURER'S RECOMMENDATIONS FOR REQUIRED ADDITIONAL REFRIGERANT CHARGE AND RECOMMENDED LINE-SET LENGTHS.
8. THE POWER SUPPLY TO CONDENSING UNIT IS A SINGLE POINT ELECTRICAL CONNECTION FOR THE SYSTEM (A/C UNIT AND CONDENSING UNIT). THE ELECTRICAL CONTRACTOR SHALL PROVIDE POWER TO THE CONDENSING UNIT AND FROM THE CONDENSING UNIT TO THE A/C UNIT INCLUDING CODE REQUIRED DISCONNECT SWITCHES.
9. REFRIGERANT PIPING AND WIRING FOR WALL-MOUNTED INDOOR UNITS SHALL BE ROUTED IN WALL WHERE POSSIBLE. ANY EXPOSED PIPING SHALL BE PAINTED TO MATCH WALL-FINISH.

## DUCTLESS SPLIT INDOOR UNIT SCHEDULE

| ID | CFM | TOTAL COOLING CAPCAITY (BTUH) | HEATING CAPACITY (BTUH) | ELECTRICAL DATA MCA | ELECTRICAL DATA VOLTAGE | ELECTRICAL DATA PHASE | MANUFACTURER | MODEL NO. | UNIT WEIGHT | MAXIMUM PIPING LENGTHS | INTERLOCK ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A/C-1.1 | 430 | 10900 | 13500 | 0.4 | 208 V | 1 | DAIKIN | FTX12AXVJU | 22 lb | 49' VERT. \| 65' TOTAL | ODU-1 |
| A/C-1.2 | 430 | 10900 | 13500 | 0.4 | 208 V | 1 | DAIKIN | FTX12AXVJU | 22 lb | 49' VERT. \| 65' TOTAL | ODU-2 |

## SEQUENCE OF OPERATION

DUCTED SPLIT SYSTEMS:

UNIT SHALL BE CONTROLLED BY ITS ELECTRONIC PROGRAMMABLE THERMOSTAT. UNIT SUPPLY FAN SHALL RUN CONTINUOUSLY DURING OCCUPIED MODE. UPON A RISE IN SPACE TEMPERATURE, UNIT COMPRESSOR AND CONDENSER FAN SHALL ACTIVATE IN STAGES TO SATISFY SPACE. UPON A DROP IN SPACE TEMPERATURE, UNIT COMPRESSOR SHALL ACTIVATE IN REVERSE CYCLE IN STAGES FOR HEATING. UPON A FURTHER DROP IN SPACE TEMPERATURE, ELECTRIC HEAT SHALL BE ENERGIZED IN STAGES TO SATISFY SPACE TEMPERATURE. THERMOSTATS SHALL PROVIDE A DEADBAND OF 5°, WITHIN WHICH THE SUPPLY OF HEATING OR COOLING ENERGY TO THE ZONE CAN BE REDUCED TO THE MINIMUM. THERMOSTATS SHALL BE SET FOR COOLING 75°, HEATING 70° DURING OCCUPIED MODE AND COOLING 85°, HEATING 60° DURING UNOCCUPIED MODE. ALL TEMPERATURE SETPOINTS AND SCHEDULES SHALL BE VERIFIED BY THE OWNER PRIOR TO PROGRAMMING. THERMOSTATS SHALL BE PROGRAMMED BY MECHANICAL CONTRACTOR IN THE PRESENCE OF OWNER'S REPRESENTATIVE PRIOR TO PROJECT COMPLETION.

UNIT SHALL BE PROVIDED WITH COMBINATION THERMOSTAT/DEHUMIDISTAT AND HAVE ABILITY TO PROVIDE DEHUMIDIFICATION SEQUENCE. WHEN SPACE HUMIDITY RISES ABOVE 65% RH (ADJ), UNIT SHALL ENTER DEHUMIDIFICATION MODE. INDOOR UNIT SUPPLY FAN SHALL TURN DOWN TO LOW SPEED AND OUTDOOR UNIT COMPRESSOR AND CONDENSER FAN SHALL OPERATE AT LOW SPEED UNTIL SPACE RH FALLS BELOW 55% RH (ADJ). DEHUMIDIFICATION CONTROLS SHALL BE INTEGRAL TO EQUIPMENT.

UNITS IDU-1.3 AND IDU-2.3 SHALL BE PROVIDED WITH ADDITIONLAL TEMPERATURE SENSOR AS SHOWN ON PLANS. THERMOSTAT AND TEMPERATURE SENSOR READINGS SHALL BE AVERAGED TO DETERMINE SPACE HEATING/COOLING DEMAND CONDITIONS.

DUCTLESS SPLIT SYSTEMS:

UNIT SHALL BE CONTROLLED BY ITS ELECTRONIC PROGRAMMABLE THERMOSTAT. UNIT SUPPLY FAN SHALL RUN CYCLE WITH COMPRESSOR HEATING/COOLING CYCLES. UPON A RISE IN SPACE TEMPERATURE, UNIT COMPRESSOR AND CONDENSER FAN SHALL ACTIVATE TO SATISFY SPACE. UPON A DROP IN SPACE TEMPERATURE, UNIT COMPRESSOR SHALL ACTIVATE IN REVERSE CYCLE FOR HEATING. THERMOSTATS SHALL PROVIDE A DEADBAND OF 5°, WITHIN WHICH THE SUPPLY OF HEATING OR COOLING ENERGY TO THE ZONE CAN BE REDUCED TO THE MINIMUM. THERMOSTATS SHALL BE SET FOR COOLING 75°F, HEATING 70°F. ALL TEMPERATURE SETPOINTS AND SCHEDULES SHALL BE VERIFIED BY THE OWNER PRIOR TO PROGRAMMING. THERMOSTATS SHALL BE PROGRAMMED BY MECHANICAL CONTRACTOR IN THE PRESENCE OF OWNER'S REPRESENTATIVE PRIOR TO PROJECT COMPLETION. UNIT SHALL BE IN OCCUPIED MODE 24/7/365.

VAV DIFFUSERS:

VAV DIFFUSERS SHALL BE PROVIDED IN LOCATIONS AS SHOWN ON PLANS. EACH ROOM SERVED BY VAV DIFFUSERS SHALL BE PROVIDED WITH WALL MOUNTED THERMOSTAT CONTROLLER WITH DIGITAL DISPLAY AND SETPOINT ADJUSTEMENT. ONE DIFFUERSUER IN EACH ROOM WILL BE PROVIDED WITH MASTER CONTROLLER AND ALL OTHER DIFFUSERS IN ROOM WILL BE PROVIDED WITH DRONE CONTROLLER TO MIRROR THE MASTER.

WHEN THE MAIN SYSTEM IS IN COOLING MODE:
UPON A CALL FOR COOLING FROM THE MASTER CONTROLLER, THE VAV DIFFUSER SHALL MODULATE OPEN TO PROVIDE COOLING AIRFLOW TO THE SPACE. WHEN SETPOINT IS MET, VAV DIFFUSER SHALL MODULATE CLOSED. UPON A CALL FOR HEATING MAIN SYSTEM IS IN COOLING MODE, THE VAV DIFFUSER SHALL REMAIN CLOSED.

WHEN THE MAIN SYSTEM IS IN HEATING MODE:
UPON A CALL FOR HEATING FROM THE MASTER CONTROLLER, THE VAV DIFFUSER SHALL MODULATE OPEN TO PROVIDE HEATING AIRFLOW TO THE SPACE. WHEN SETPOINT IS MET, VAV DIFFUSER SHALL MODULATE CLOSED. UPON A CALL FOR COOLING MAIN SYSTEM IS IN HEATING MODE, THE VAV DIFFUSER SHALL REMAIN CLOSED.

EXHAUST FANS:

EXHAUST FANS SHALL OPERATE AS INDICATED ON FAN SCHEDULE.

ELECTRIC WALL HEATERS

ELECTRIC WALL HEATERS SHALL BE PROVIDED WITH INTERNAL THERMOSTATS AND ENERGIZE WHEN SPACE TEMPERATURE DROPS BELOW 45°F (ADJ).

## GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

| ID | SERVICE | CFM RANGE | FACE SIZE | NECK SIZE | TYPE | OBD | PRICE |
|---|---|---|---|---|---|---|---|
| A | SUPPLY | SEE PLANS | SEE PLANS | SEE PLANS | DOUBLE DEFL. | YES | 520 |
| B | SUPPLY | 0 - 125 | 12 x 1 2 | 6 x 6 | LOUVERED | NO | SMD |
| C | SUPPLY | 130 - 285 | 24 x 24 | 9 x 9 | LOUVERED | NO | SMD |
| D | SUPPLY | 290 - 500 | 24 x 24 | 12 x 12 | LOUVERED | NO | SMD |
| E | RETURN | SEE PLANS | SEE PLANS | SEE PLANS | PERF. | NO | 10 |
| F | RETURN | 0 - 175 | 24 x 24 | 8"Ø | PERF. | NO | PDDR |
| G | RETURN | 180 - 275 | 24 x 24 | 10"Ø | PERF. | NO | PDDR |
| H | RETURN | 280 - 400 | 24 x 24 | 12"Ø | PERF. | NO | PDDR |
| TF | SUPPLY | 105 - 210 | 24 x 24 | 8"Ø | VAV DIFFUSER | NO | ACCUTHERM ADV |

## LINEAR SLOT DIFFUSER SCHEDULE

| ID | SERVICE | CFM RANGE | DIFFUSER LENGTH | SLOT QTY | SLOT WIDTH | TYPE | PRICE |
|---|---|---|---|---|---|---|---|
| J | SUPPLY | 0-125 | 2' | 2 | 1" | LINEAR SLOT | SDS |
| K | SUPPLY | 0-200 | 4' | 2 | 1" | LINEAR SLOT | SDS |

1. ALL CEILING AND WALL MOUNTED DEVICES SHALL BE FURNISHED WITH A FINISH SELECTED BY ARCHITECT.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR TYPE INSTALLATION REQUIRED.
3. ALL LINEAR SLOT DIFFUSERS SHALL BE PROVIDED WITH FULL SIZE INSULATED PLENUM EQUAL TO PRICE MODEL "SDB". ALL INLETS TO SUPPLY DIFFUSER PLENUMS SHALL BE PROVIDED WITH CABLED OPERATED DAMPER (PRICE VCRBEC OR EQUAL). CABLE DAMPER OPERATOR SHALL BE ACCESSIBLE FROM DIFFUSER PLENUM (NO ACCESS DOOR REQUIRED)
4. ALL DOUBLE DEFLECTION SUPPLY GRILLES SHALL HAVE DAMPER BLADES ADJUSTED TO PROVIDE AIRFLOW PATTERN INDICATED BY FLOW ARROWS ON PLANS. DAMPERS SHALL BE ADJUSTED TO A 30 DEGREE POSITION UNLESS NOTED OTHERWISE ON PLANS.
5. GRILLES MARKED "TF" SHALL BE SQUARE THERMA-FUSERS (ACUTHERM MODEL ADV MOTORIZED VARIABLE AIR VOLUME DIFFUSERS). BALANCE AIR QUANTITY TO DELIVER LISTED CFM AS A MAXIMUM WHEN GRILLE BLADES ARE WIDE OPEN IN EITHER HEATING OR COOLING MODE. PROVIDE ONE DIFFUSER IN EACH ROOM SERVED BY VAV DIFFUSERS WITH MASTER CONTROLLER AND ALL OTHER DIFFUSERS IN ROOM WITH DRONE CONTROLLER. MASTER THERMOSTAT ON WALL SHALL HAVE SETPOINT ADJUSTMENT WITH DIGITAL DISPLAY.

## EXHAUST FAN SCHEDULE

| ID | LOCATION | TYPE | CFM | APPROX. ESP | DRIVE TYPE | FAN RPM | ELECTRICAL DATA WATTS | ELECTRICAL DATA HP | ELECTRICAL DATA VOLTAGE | ELECTRICAL DATA PH | MANUFACTURER | MODEL | ACCESSORIES | CONTROL TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EF-1.1 | RR112 | EXHAUST | 75 | 0.250 | DIRECT | 880 | 14 | 0 hp | 120 V | 1 | GREENHECK | SP-A90 | A,B,C,D,E | 1 |
| EF-1.2 | RR113 | EXHAUST | 75 | 0.250 | DIRECT | 880 | 14 | 0 hp | 120 V | 1 | GREENHECK | SP-A90 | A,B,C,D,E | 1 |
| EF-1.3 | JANITORS 114 | EXHAUST | 75 | 0.250 | DIRECT | 880 | 14 | 0 hp | 120 V | 1 | GREENHECK | SP-A90 | A,B,C,D,E | 2 |
| EF-2.1 | WOMENS 211 | EXHAUST | 150 | 0.250 | DIRECT | 715 | 26 | 0 hp | 120 V | 1 | GREENHECK | SP-A200 | A,B,C,D,E | 1 |
| EF-2.2 | MENS 212 | EXHAUST | 150 | 0.250 | DIRECT | 715 | 26 | 0 hp | 120 V | 1 | GREENHECK | SP-A200 | A,B,C,D,E | 1 |

EXHAUST FAN SCHEDULE ACCESSORIES:

A. DISCONNECT SWITCH
B. GRAVITY BACKDRAFT DAMPER
C. HANGING BRACKETS WITH VIBRATION ISOLATION
D. EXHAUST GRILLE
E. SPEED CONTROLLER

EXHAUST FAN SCHEDULE CONTROLS:

1. INTERLOCK WITH ROOM LIGHT SWITCH (FAN SHALL OPERATE WHEN LIGHT IS ON IF ANY ROOM IS SERVED BY FAN)
2. WALL MOUNTED ON/OFF SWITCH WITH IDENTIFICATION LABEL

EXHAUST FAN SCHEDULE NOTES:

1. ALL FANS SHALL BE U.L. LISTED AND LABELED AND SHALL BE AMCA CERTIFIED FOR SOUND AND AIR FLOW. ALL FANS INSTALLED INSIDE, ABOVE, OR ADJACENT TO OCCUPIED SPACES SHALL HAVE A MAXIMUM 9.0 INLET SONE LEVEL.
2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. ALL SPEED CONTROLLERS SHALL BE DIAL TYPE AND MOUNTED DIRECTLY ON FAN.

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3/15/24

CONSTRUCTION DOCUMENTS

3.14.2024

| NO. | REASON | DATE |
|---|---|---|

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Benjamin Barrier, P.E.
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Benjamin Barrier, P.E.

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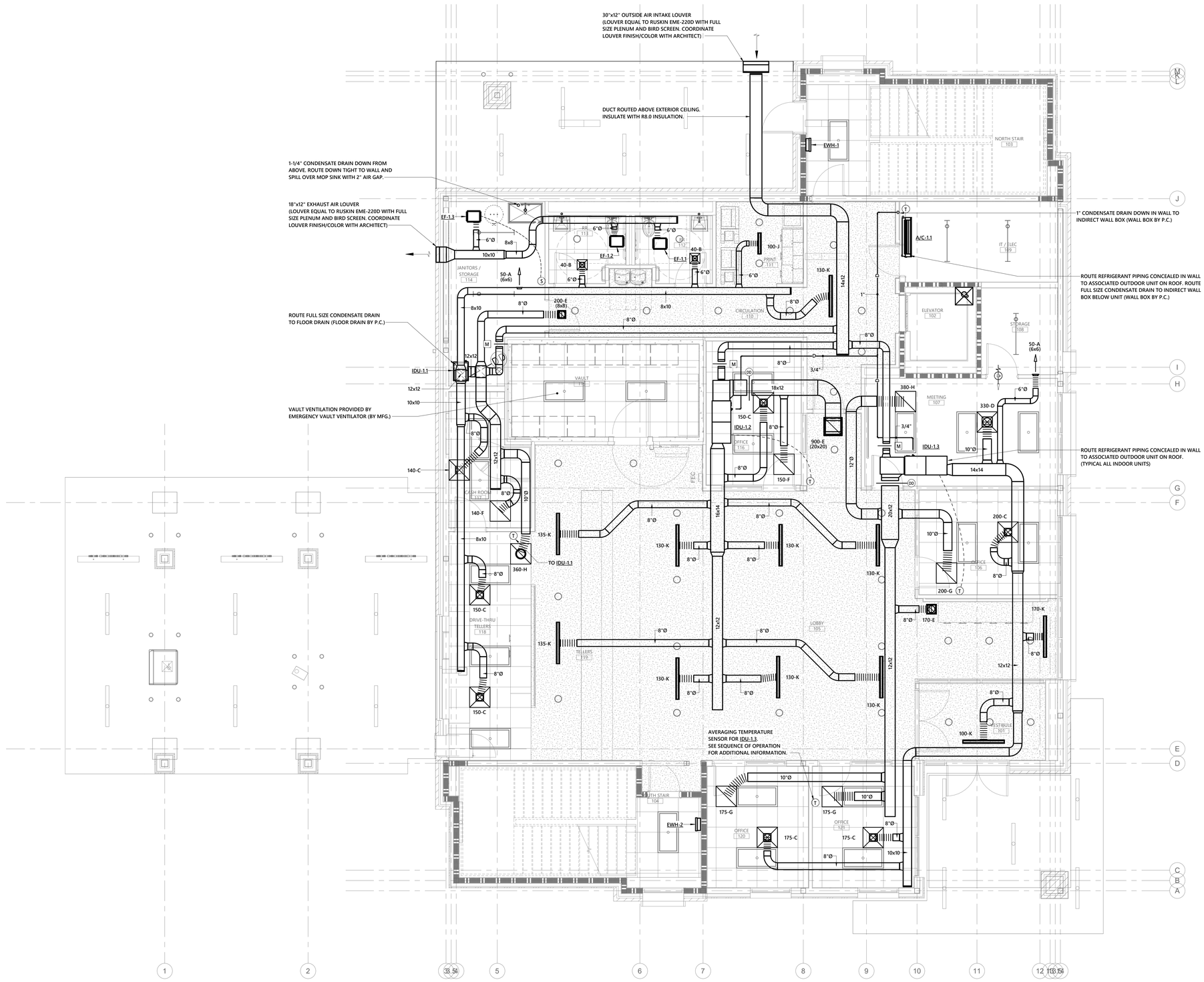
MECHANICAL SCHEDULES

M002

OPT PROJECT # 23-0063




1 MECHANICAL FLOOR PLAN - LEVEL 01
1/4" = 1'-0"

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MECHANICAL FLOOR PLANS - LEVEL 01

M101

OPT PROJECT # 23-0063

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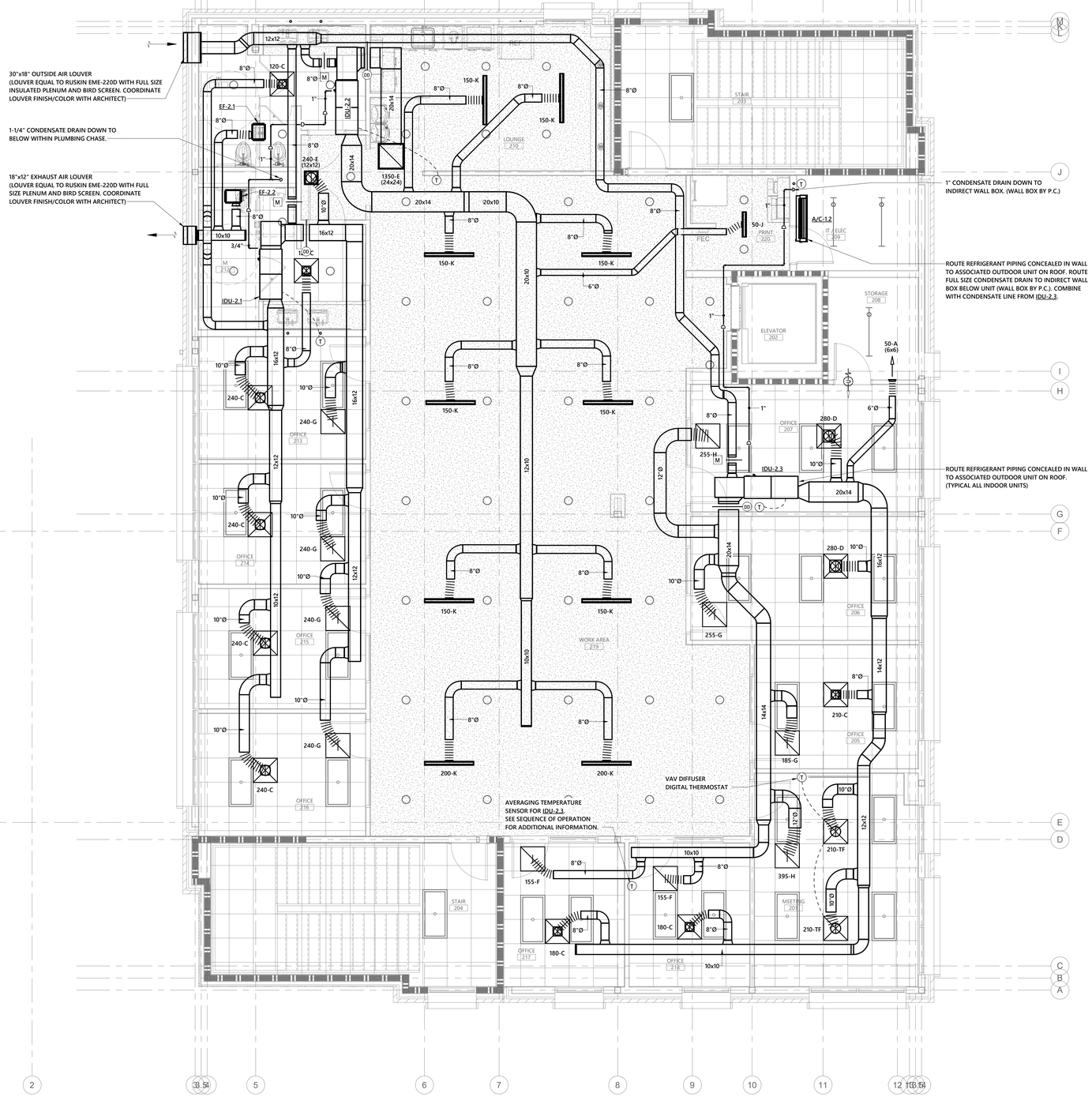


1 **MECHANICAL FLOOR PLAN - LEVEL 02**
1/4" = 1'-0"

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MECHANICAL FLOOR PLANS - LEVEL 02

M102

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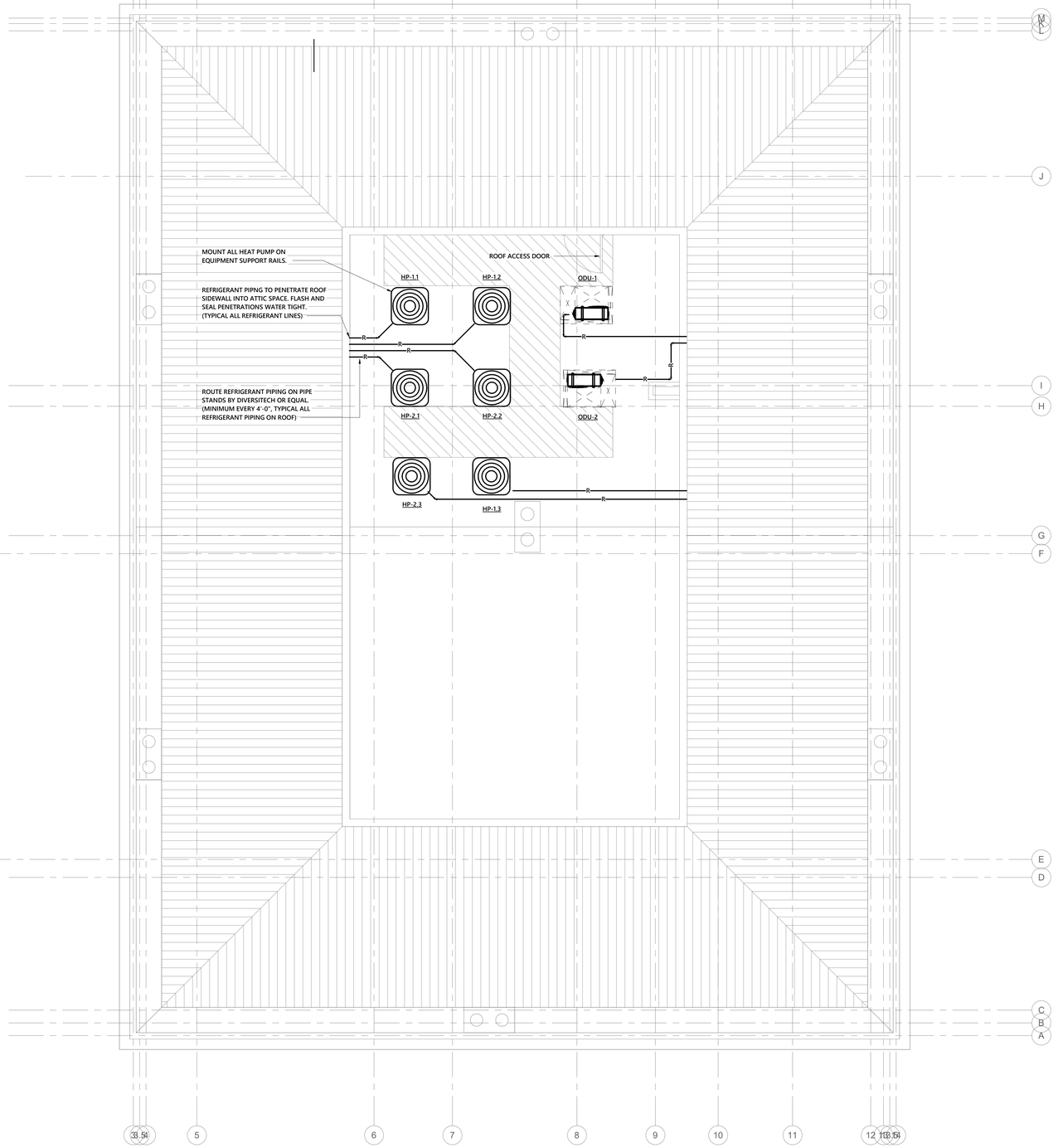
NOTES:

1. ALL REFRIGERANT PIPING SHALL BE ROUTED TO ITS ASSOCIATED INDOOR UNIT CONCEALED IN WALLS OR CEILINGS.
2. ALL REFRIGERANT PIPING ON EXTERIOR OF BUILDING SHALL BE INSULATED IN CLOSED CELL INSULATION AND ENCLOSED IN ALUMINUM JACKET.
3. ALL HEAT PUMPS SHALL BE MOUNTED ON EQUIPMENT SUPPORT RAILS




1 MECHANICAL ROOF PLAN
1/4" = 1'-0"

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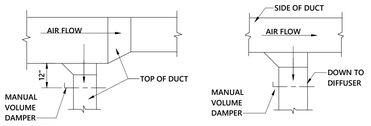
MECHANICAL ROOF PLAN

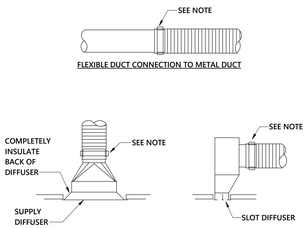
M103

OPT PROJECT # 23-0063



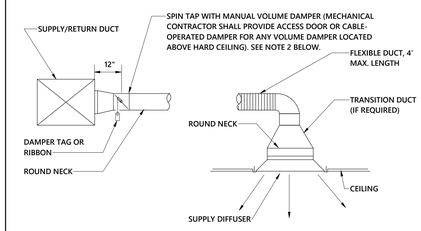

NOTE:
1. USE BRANCH TAKE-OFF ① WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF ② WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS
3. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST SINGLE DROP DUCT RUNS.

## 1 DUCTWORK DETAILS
NOT TO SCALE



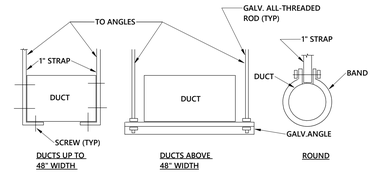

NOTE:
ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH APPROVED STRAP AND SEALANT.

## 2 FLEX CONNECTION DETAIL
NOT TO SCALE




NOTE:
1. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST RUNOUTS.
2. ALL MANUAL VOLUME DAMPERS (FOR INSULATED DUCTWORKS) SHALL BE PROVIDED WITH AN ELEVATED REGULATOR (STAND-OFF) EQUAL TO DURO DYNE SEST SERIES AND FULL-LENGTH SHAFT. STAND SHALL EXTEND A MINIMUM OF 2" BEYOND DUCTWORK WITH EXTENDED TAB/SHAFT.
3. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR DESIRED DAMPER ACCESS STYLE CABLE-OPERATED DAMPER ADJUSTMENT SHALL BE THROUGH AIR TERMINAL FACE OPERATION (CONCEALED MOUNTING) OR THROUGH CEILING-MOUNTED RECESSED PORTS EQUAL TO MAT RT-CCM.

## 3 SPIN TAP TO ROUND NECK DIFFUSER
NOT TO SCALE

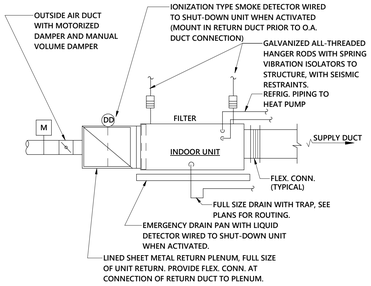



## LOW PRESSURE DUCTWORK

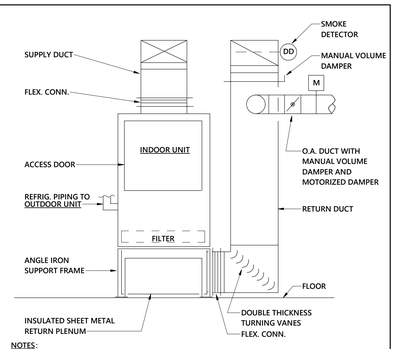
NOTE:
ALL DUCTWORK SHALL BE SUPPORTED PER NCMC 603.10 AND LATEST SMACNA STANDARDS

## 4 DUCTWORK HANGER DETAILS
NO SCALE

NOTE: 1. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF INDOOR UNIT WITH DUCTWORK, PLUMBING, ELECTRICAL, ETC. TO MAINTAIN FILTER AND MAINTENANCE ACCESS CLEARANCES.
2. PROVIDE MANUAL VOLUME DAMPER IN RETURN DUCTWORK AFTER OUTSIDE AIR CONNECTION.

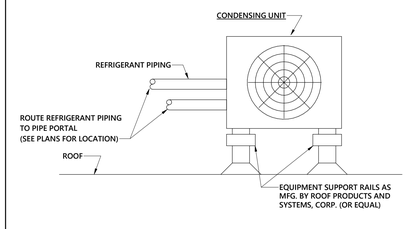



## 5 IDU - HORIZONTAL ELEC. UNIT W/SMOKE DETECTOR
NOT TO SCALE

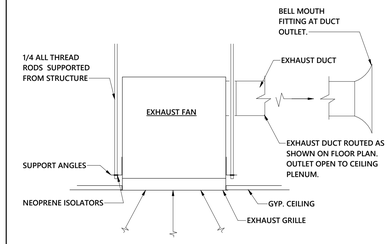



NOTES:
1. PROVIDE FULL SIZE CONDENSATE DRAIN WITH TRAP, SEE PLANS FOR ROUTING.
2. SMOKE DETECTOR SHALL BE PHOTOELECTRIC TYPE WIRED TO SHUT-DOWN UNIT WHEN ACTIVATED.

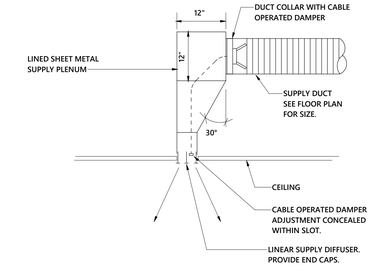
## 6 IDU - VERTICAL ELEC. W/SMOKE DETECTOR
NOT TO SCALE



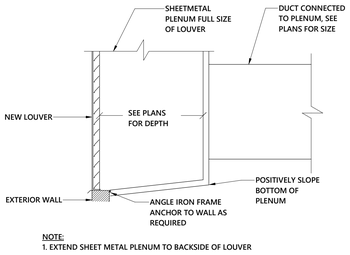

## 7 ROOF - MOUNTED CONDENSING UNIT
NOT TO SCALE




## 8 EXHAUST FAN DETAIL
NOT TO SCALE

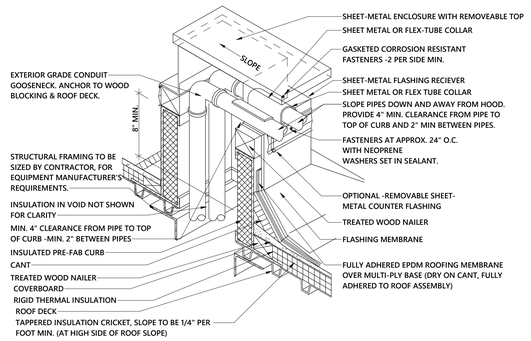



## 9 DIFFUSER PLENUM
NOT TO SCALE




NOTE:
1. EXTEND SHEET METAL PLENUM TO BACKSIDE OF LOUVER

## 10 SHEET METAL PLENUM
NO SCALE




## 11 MULTIPLE PIPE PENETRATION DETAIL - TYPICAL
NO SCALE

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CONSTRUCTION DOCUMENTS

3.14.2024

| NO. | REASON | DATE |
|---|---|---|

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MECHANICAL DETAILS

M501

OPT PROJECT # 23-0063