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GMC # ABHM170022



MO.01
 Sheet of

| DUCTWORK LEGEND | |
|-----------------|---|
| (CFM) S | SUPPLY DIFFUSER |
| (CFM) R | RETURN GRILLE |
| (CFM) E | EXHAUST GRILLE |
| (CFM) T | TRANSFER AIR GRILLE |
| (CFM) SR | SIDEWALL REGISTER |
| Ø | ROUND DUCT SYMBOL |
| W X H | RECTANGULAR DUCT (WIDTH X HEIGHT) |
| [Symbol] | EXISTING DUCTWORK, PIPING, OR EQUIPMENT TO REMAIN |
| [Symbol] | EXISTING DUCTWORK, PIPING, OR EQUIPMENT TO BE REMOVED |
| [Symbol] | RECTANGULAR SUPPLY DUCT FLOOR OR ROOF PENETRATION |
| [Symbol] | RECTANGULAR RETURN AIR OR EXHAUST DUCT FLOOR OR ROOF PENETRATION |
| [Symbol] | RECTANGULAR SUPPLY DUCT TURNING UP |
| [Symbol] | RECTANGULAR SUPPLY AIR DUCT TURNING DOWN |
| [Symbol] | RECTANGULAR RETURN AIR OR EXHAUST DUCT TURNING UP |
| [Symbol] | RECTANGULAR RETURN AIR OR EXHAUST DUCT TURNING DOWN |
| [Symbol] | FLAT OVAL TURNING UP |
| [Symbol] | FLAT OVAL TURNING DOWN |
| [Symbol] | ROUND DUCT TURNING UP |
| [Symbol] | ROUND DUCT TURNING DOWN |
| [Symbol] | MAXIMUM 5' FLEXIBLE DUCT ALL BRANCH DUCTS |
| [Symbol] | RECTANGULAR 90° ELBOW WITH TURNING VANES FOR SUPPLY. FLAT OVAL SQUARE ELBOWS ONLY WHERE REQUIRED AND SHOWN. |
| [Symbol] | ROUND AND FLAT OVAL ELBOWS. DIE CAST THROUGH 5" ROUND, 5 PIECE 6" ROUND AND ABOVE |
| [Symbol] | RISE OR DROP IN DUCT |
| [Symbol] | RECTANGULAR BRANCH OFF OF RECTANGULAR DUCT WITH MANUAL DAMPER |
| [Symbol] | CONICAL SPIN-IN WITH MANUAL DAMPER |
| [Symbol] | MANUAL DAMPER |
| [Symbol] | FIRE DAMPER (PROVIDE ACCESS DOOR) |
| [Symbol] | AUTOMATIC DAMPER |
| [Symbol] | COMBINATION SMOKE/FIRE DAMPER (PROVIDE ACCESS DOOR) |
| [Symbol] | FLEXIBLE CONNECTION |
| [Symbol] | TEMPERATURE SENSOR |
| [Symbol] | HUMIDITY SENSOR |
| [Symbol] | CO2 MONITOR |
| [Symbol] | CONNECT TO EXISTING, FIELD VERIFY EXACT SIZE AND LOCATION |

| HVAC ABBREVIATIONS | |
|--------------------|---------------------------------|
| A | AMPS |
| AFF | ABOVE FINISH FLOOR |
| AHU | AIR HANDLING UNIT |
| AMB. | AMBIENT |
| ARCH. | ARCHITECTURAL |
| BHP | BRAKE HORSEPOWER |
| BOD | BOTTOM OF DUCT |
| BTUH | BRITISH THERMAL UNIT PER HOUR |
| CFM | CUBIC FEET PER MINUTE |
| DB | DRY BULB |
| DN. | DOWN |
| F | DEGREES FAHRENHEIT |
| Δ P | CHANGE IN PRESSURE |
| Δ T | CHANGE IN TEMPERATURE |
| DIA. | DIAMETER |
| EA | EXHAUST AIR |
| ENT. | ENTERING |
| EAT | ENTERING AIR TEMPERATURE |
| EMG | EXPANDED METAL GRILLE |
| EWT | ENTERING WATER TEMPERATURE |
| E.S.P. | EXTERNAL STATIC PRESSURE |
| EX. | EXISTING |
| EXT. | EXTERNAL |
| FPM | FEET PER MINUTE |
| FT. | FEET |
| F.V. | FACE VELOCITY |
| GAL. | GALLONS |
| GPM | GALLONS PER MINUTE |
| H | HEIGHT |
| HP | HORSEPOWER |
| IN. | INCHES |
| ID. | INSIDE DIAMETER |
| KW | 1000 WATTS |
| L | LENGTH |
| LBS. | POUNDS |
| LRA | LOCKED ROTOR AMPS |
| LVG. | LEAVING |
| LAT | LEAVING AIR TEMPERATURE |
| LWT | LEAVING WATER TEMPERATURE |
| MAX. | MAXIMUM |
| MAT | MIXED AIR TEMPERATURE |
| MBH | 1000 BTUH |
| MCA | MINIMUM CIRCUIT AMPACITY |
| MIN. | MINIMUM |
| MOCP | MAXIMUM OVER CURRENT PROTECTION |
| NO | NORMALLY OPEN |
| NC | NORMALLY CLOSED |
| NPLV | NON-STANDARD PART LOAD VALUE |
| OSA | OUTSIDE AIR |
| O.D. | OUTSIDE DIAMETER |
| PSI | POUNDS PER SQUARE INCH |
| PSIA | PSI ATMOSPHERIC |
| PSIG | PSI GAGE |
| RA | RETURN AIR |
| RAT | RETURN AIR TEMPERATURE |
| RH | RELATIVE HUMIDITY |
| RLA | RATED LOAD AMPS |
| RPM | REVOLUTIONS PER MINUTE |
| SA | SUPPLY AIR |
| SAT | SUPPLY AIR TEMPERATURE |
| T.S.P. | TOTAL STATIC PRESSURE |
| TD | TRANSFER DUCT |
| TOD | TOP OF DUCT |
| U.N.O. | UNLESS NOTED OTHERWISE |
| V | VOLUME |
| V-φ-Hz | VOLTS/PHASE/HERTZ |
| W.G. | WATER GAGE |
| W | WIDTH |
| WB | WET BULB |

- HVAC GENERAL NOTES**
- MECHANICAL DRAWINGS ARE DIAGRAMMATIC AND SUBJECT TO REQUIREMENTS OF ARCHITECTURAL DRAWINGS AND CONDITIONS EXISTING IN THE FIELD. MECHANICAL DRAWINGS INDICATE GENERALLY THE LOCATION OF COMPONENTS AND ARE NOT INTENDED TO SHOW ALL FITTINGS OR ALL DETAILS OF THE WORK TO BE PERFORMED.
 - FOLLOW THE DRAWINGS CLOSELY. COORDINATE DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND FIELD CONDITIONS. DO NOT SCALE MECHANICAL DRAWINGS FOR LOCATIONS OF SYSTEM COMPONENTS.
 - COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
 - MAKE NO CHANGES WITHOUT THE ARCHITECT'S WRITTEN PERMISSION. IN CASE OF DOUBT, OBTAIN ARCHITECT'S DECISION BEFORE PROCEEDING WITH WORK. FAILURE TO FOLLOW THIS INSTRUCTION SHALL MAKE THE CONTRACTOR LIABLE FOR DAMAGE TO OTHER WORK AND RESPONSIBLE FOR REMOVING AND REPAIRING DEFECTIVE OR MISLOCATED WORK IN PROPER MANNER.
 - DO NOT SCALE DRAWINGS TO LOCATE DIFFUSERS AND EQUIPMENT. COORDINATE WITH NEW AND EXISTING LIGHTING, ELECTRICAL CONDUIT, AND ALL EXISTING FIELD CONDITIONS.
 - PRIOR TO PREPARING SUBMITTALS, VERIFY ALL EQUIPMENT VOLTAGES WITH ELECTRICAL DRAWINGS AND ELECTRICAL CONTRACTOR AND REPORT ANY INCONSISTENCIES TO THE ARCHITECT PRIOR TO ORDERING EQUIPMENT. ANY FAILURE TO DO SO WILL MAKE THE MECHANICAL CONTRACTOR RESPONSIBLE FOR ANY EQUIPMENT ORDERED WITH THE INCORRECT VOLTAGE.
 - PROTECT MECHANICAL EQUIPMENT FROM DAMAGE DURING CONSTRUCTION. WHEN INSTALLATION IS COMPLETE, CLEAN EQUIPMENT AS REQUIRED. PROVIDE ALL NEW FILTERS.
 - INSTALL ALL EQUIPMENT TO PROVIDE NEARBY SERVICE ACCESS TO ALL COMPONENTS. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. IF MANUFACTURER'S RECOMMENDATIONS CONFLICT WITH CONTRACT DOCUMENTS, OBTAIN ARCHITECT'S DECISION BEFORE PROCEEDING.
 - FURNISH ACCESS DOORS FOR VALVES, FIRE DAMPERS, DAMPERS, CONTROLS, AIR VENTS, THERMOSTATS, HUMIDITY SENSORS, ETC. PROVIDE NON-LIFTOUT CEILING ACCESS BEHIND PARTITIONS OR WALLS. PROVIDE FIRE DAMPERS IN NETWORK VENTS, AND REGISTERS. FIRE RATING EQUAL TO RATING OF FLOOR OR CEILING. ALL FIRE DAMPERS SHALL BE SHOWN ON MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL FIRE RATED WALL AND CEILING LOCATIONS AND RATINGS WITH ARCHITECTURAL DRAWINGS.
 - ALL WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND STANDARDS (SEE SPECIFICATIONS).
 - MECHANICAL CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR EXACT QUANTITY AND LOCATIONS OF 120 V CONTROLS POWER TO NECESSARY CONTROL PANELS.
 - MECHANICAL CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR EXACT QUANTITY AND LOCATIONS OF 120 V CONTROL POWER FOR VALVE TERMINAL UNIT CONTROLS, AUTOMATIC CONTROL VALVES, AND AUTOMATIC DAMPER ACTUATORS.
 - PROVIDE ALL NECESSARY RELAYS, SWITCHES, SENSORS, LOW VOLTAGE CONTROL WIRING, ACTUATORS, ETC. FOR A COMPLETE AND FUNCTIONAL BAS CONTROLS SYSTEM.
 - COORDINATE EXACT LOCATION OF ALL WALL MOUNTED DEVICES (THERMOSTATS, HUMIDITY SENSORS, ETC.) WITH ARCHITECT PRIOR TO RUGH IN. ALL WALL MOUNTED DEVICES SHALL BE INSTALLED 48" A.F.F. TO THE CENTERLINE OF THE DEVICE.
 - COORDINATE EXACT LOCATION ON WALL OF ALL WALL MOUNTED SUPPLY AND RETURN GRILLES/REGISTERS WITH ARCHITECT. WALL MOUNTED SUPPLY AND RETURN GRILLES/REGISTERS SHALL BE PAINTED BY OTHERS.



CEILING SUPPLY DIFFUSER SCHEDULE

ALL CEILING SUPPLY DIFFUSERS TO HAVE A 24X24 CEILING PANE (EXCEPT WHERE SHOWN AS 12X12) AND ROUND DUCT CONNECTIONS. PROVIDE ROUND RUN-OUTS AS INDICATED BELOW. "S" DIFFUSERS EQUAL TO: TITUS OMNI (THROW INDICATED ON PLANS)

| CFM | RUN OUT SIZE & "S" DIFFUSER NECK SIZE |
|----------|---------------------------------------|
| 0-100 | 6" |
| 101-200 | 8" |
| 201-300 | 10" |
| 301-600 | 12" |
| 601-750 | 14" |
| 751-1000 | 16" |

COORDINATE LOCATIONS WITH LIGHTING DO NOT SCALE FROM MECH. DRAWINGS

CEILING RETURN, EXHAUST AND TRANSFER AIR GRILLE SCHEDULE

ALL CEILING RETURN, EXHAUST, TRANSFER GRILLES TO BE TITUS MODEL TO BE TITUS MODEL. SIZE AS INDICATED BELOW. PROVIDE ROUND RUN-OUTS AS INDICATED BELOW. "S" DIFFUSERS EQUAL TO: TITUS OMNI (THROW INDICATED AS R.E. ON PLANS) (NECK SIZE.)

| CFM | NECK SIZE |
|-----------|-----------|
| 0-100 | 6x6 |
| 101-200 | 8x8 |
| 201-300 | 10x10 |
| 301-600 | 12x12 |
| 601-750 | 14x14 |
| 751-950 | 16x16 |
| 951-1200 | 18x18 |
| 1201-1500 | 20x20 |
| 1501-2000 | 24x24 |

COORDINATE LOCATIONS WITH LIGHTING DO NOT SCALE FROM MECH. DRAWINGS

INDOOR AIR HANDLING UNIT SCHEDULE

AIR HANDLER UNIT TYPE:
 1. SPLIT SYSTEM AC UNIT. HORIZONTAL INDOOR AIR HANDLER WITH DX COIL, ELECTRIC HEAT, SUPPLY FAN, & MATCHING OUTDOOR UNIT.

- NOTES:**
 1. COOLING CAPACITY IS NET CAPACITY @ 95°F AMBIENT.
 2. UL LISTED. AHRI CERTIFIED.
 3. SEE PLANS FOR AIRFLOW CONFIGURATION.
 4. FOR ALL "MINI-SPLIT" UNITS, AIRFLOW RATED AT HIGH FAN SPEED.
 5. FOR ALL "MINI-SPLIT" UNITS, POWER FOR INDOOR UNIT IS FED FROM OUTDOOR UNIT.
- ACCESSORIES:**
 1. SINGLE POINT POWER CONNECTION.
 2. FILTER RACK WITH 2" THICK - 30% EFF. FILTERS.
 3. INTERNALLY ISOLATED SUPPLY FAN - UNITS ≤ 5T, DIRECT DRIVE; UNITS > 5T, BELT DRIVE.
 4. DX COOLING COIL - MATCHED TO OUTDOOR HEAT PUMP.
 5. ELECTRIC HEAT.
 6. 3-POLE DISCONNECT SWITCH.
 7. HARD WIRED UNIT CONTROLLER
 8. FULL PORT BALL VALVES & SCHRAEDER VALVES WITH FLARED CONNECTIONS.

| MARK | TYPE | SUPPLY FAN | | | MAX OUTSIDE AIR | DX COOLING COIL CAPACITY | | | NOMINAL TONS | DX HEATING CAPACITY | | | ELEC HEAT | | | ELECTRICAL | | | BASIS OF DESIGN | | | |
|-------|------|------------|------------|-------|-----------------|--------------------------|-------------|-----------------|--------------|---------------------|----------|--------------|-----------|--------|---------|------------|----|------|-----------------|-------|------|-------|
| | | AIRFLOW | E.S.P. | MOTOR | | TOTAL | SENSIBLE | EAT (DB/WB) | | TOTAL | EAT (DB) | AMBIENT (DB) | KW | STAGES | VOLTAGE | PH | HZ | MCA | | MOC | SEER | HSPF |
| IHP-1 | 1 | 1600 | 0.5 " w.g. | 1.0 | 260 CFM | 47,060 Btuh | 35,900 Btuh | 78.3°F / 65.4°F | 4 | 37,352 Btuh | 68°F | 40°F | 7.2 | 2 | 208 V | 1 | 60 | 18 A | 30 A | 14 | 8.5 | Trane |
| IHP-2 | 1 | 1600 | 0.5 " w.g. | 1.0 | 260 CFM | 47,060 Btuh | 35,900 Btuh | 78.3°F / 65.4°F | 4 | 37,352 Btuh | 68°F | 40°F | 7.2 | 2 | 208 V | 1 | 60 | 18 A | 30 A | 14 | 8.5 | Trane |
| IHP-3 | 1 | 1600 | 0.5 " w.g. | 1.0 | 260 CFM | 47,060 Btuh | 35,900 Btuh | 78.3°F / 65.4°F | 4 | 37,352 Btuh | 68°F | 40°F | 7.2 | 2 | 208 V | 1 | 60 | 18 A | 30 A | 14 | 8.5 | Trane |
| IHP-4 | 1 | 1200 | 0.5 " w.g. | 0.5 | 100 CFM | 34,175 Btuh | 26,425 Btuh | 76.7°F / 64.2°F | 3 | 27,460 Btuh | 68°F | 40°F | 10.8 | 1 | 208 V | 3 | 60 | 13 A | 20 A | 14.75 | 8.2 | Trane |
| IHP-5 | 1 | 1200 | 0.5 " w.g. | 0.5 | 160 CFM | 34,175 Btuh | 26,425 Btuh | 76.7°F / 64.2°F | 3 | 27,460 Btuh | 68°F | 40°F | 10.8 | 1 | 208 V | 3 | 60 | 13 A | 20 A | 14.75 | 8.2 | Trane |

OUTDOOR HEAT PUMP SCHEDULE

TYPE:
 1. OUTDOOR HEAT PUMP

NOTES:
 1. CAPACITY TO BALANCE INDOOR AC UNIT.
 2. COOLING CAPACITY RATED AT 95°F.
 3. HEATING CAPACITY RATED AT 47°F.
 4. REFRIGERANT CIRCUIT ACCESS PORTS LOCATED OUTDOORS SHALL BE FITTED WITH LOCKING TYPE TAMPER-RESISTANT CAP. ANY ACCESS DEVICE REQUIRED SHALL BE LEFT ON SITE WITH THE OWNER AT PROJECT CLOSE OUT.

| MARK | TYPE | COOLING CAPACITY | HEATING CAPACITY | ELECTRICAL | | | EFFICIENCY | | BASIS OF DESIGN | | |
|-------|------|------------------|------------------|------------|----|----|------------|------|-----------------|-----|-------|
| | | | | VOLTAGE | PH | HZ | SEER | HSPF | | | |
| OHP-1 | 1 | 47,060 Btuh | 37,352 Btuh | 208 V | 3 | 60 | 18 A | 30 A | 14 | 8.5 | Trane |
| OHP-2 | 1 | 47,060 Btuh | 37,352 Btuh | 208 V | 3 | 60 | 18 A | 30 A | 14 | 8.5 | Trane |
| OHP-3 | 1 | 47,060 Btuh | 37,352 Btuh | 208 V | 3 | 60 | 18 A | 30 A | 14 | 8.5 | Trane |
| OHP-4 | 1 | 34,175 Btuh | 27,460 Btuh | 208 V | 3 | 60 | 13 A | 20 A | 14.75 | 8.2 | Trane |
| OHP-5 | 1 | 34,175 Btuh | 27,460 Btuh | 208 V | 3 | 60 | 13 A | 20 A | 14.75 | 8.2 | Trane |

FAN SCHEDULE

FAN TYPE:
 1. CEILING MOUNTED EXHAUST FAN

FAN ACCESSORIES:
 1. BACKDRAFT DAMPER.
 2. DISCONNECT SWITCH.
 3. ALUMINUM CEILING GRILLE.
 4. 5A-120V FAN SPEED CONTROLLER.
 5. INTERLOCK WITH LIGHT SWITCH.
 6. INTERLOCK WITH SEPERATE SWITCH.

| MARK | FAN TYPE | AIRFLOW (CFM) | E.S.P. (in-wg) | WHEEL SIZE | RPM | MOTOR (HP / W) | ELECTRICAL | | | BASIS OF DESIGN | |
|-------|----------|---------------|----------------|------------|------|----------------|------------|----|----|-----------------|-----------------------|
| | | | | | | | V | PH | HZ | MANUFACTURER | MODEL |
| CEF-1 | 1 | 140 | 0.33 | N/A | 1014 | 70 W | 120 V | 1 | 60 | 1,2,3,4,5 | Loren Cook Company GC |
| CEF-2 | 1 | 140 | 0.33 | N/A | 1014 | 70 W | 120 V | 1 | 60 | 1,2,3,4,5 | Loren Cook Company GC |
| CEF-3 | 1 | 50 | 0.33 | N/A | 730 | 27 W | 120 V | 1 | 60 | 1,2,3,4,6 | Loren Cook Company GC |