

NO.	DATE	DESCRIPTION

DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_  
DATE: 9-4-2019  
SHEET NUMBER: M-1

KEYED NOTES

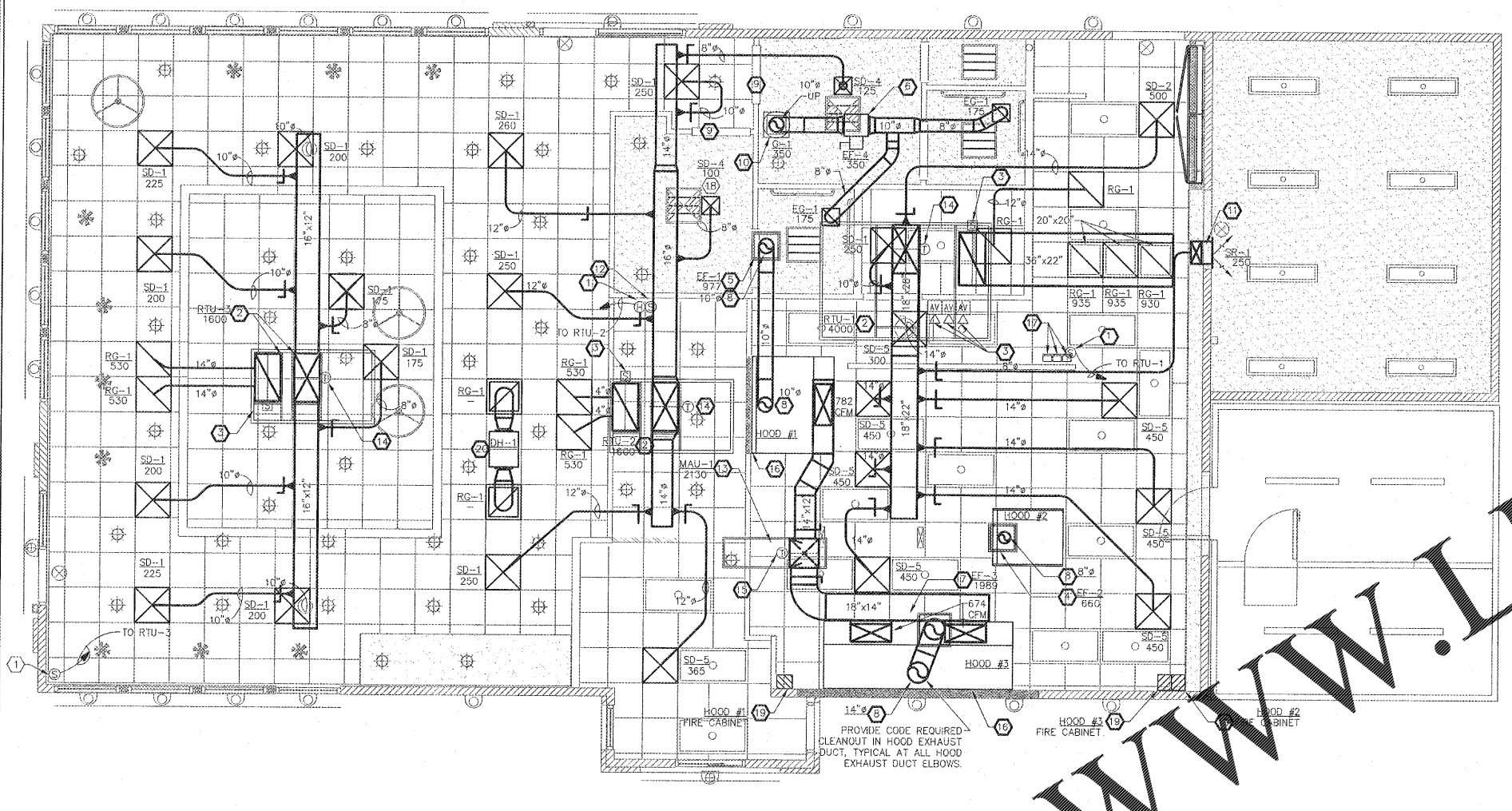
- 1. CONTRACTOR SHALL INSTALL OWNER PROVIDED REMOTE SENSOR AT 5 FT. ABOVE FINISHED FLOOR AS SHOWN ON PLAN. COORDINATE EXACT LOCATIONS WITH INTERIOR ELEVATIONS. SENSOR TO BE WIRED TO OWNER PROVIDED THERMOSTAT IN BUILDING CONTROL PANEL. SENSOR SHALL BE FULLY COMPATIBLE WITH THERMOSTAT AND HVAC UNIT USED FOR PROJECT. FIELD COORDINATE.
- 2. RTU-1, 2, & 3 INSTALL THREE SINGLE PACKAGE ROOF TOP UNITS. SEE SHEET M2 FOR MORE INFORMATION. UNITS FURNISHED BY OWNER, INSTALLED BY E.C.
- 3. PROVIDE AND INSTALL SMOKE DETECTOR IN RETURN AIR DUCT TO DE-ENERGIZE RTU SUPPLY AIR FAN IF ACTIVATED. DETECTOR TO BE WIRED TO CPI PANEL. PROVIDE, INSTALL AND WIRE VISUAL/AUDIBLE ALARM FOR DUCT SMOKE DETECTOR WITH MANUAL RESET. COORDINATE EXACT LOCATION WITH CONSTRUCTION MANAGER. MANUAL EMERGENCY SHUTDOWN SWITCH PREWIRED IN CPI PANEL. INSTALL ONE VISUAL/AUDIBLE TEST STATION ALARM PER RTU. INSTALL SMOKE DETECTOR TEST SWITCH IN MANAGER'S OFFICE.
- 4. EE-2 BROILER EXHAUST FAN - CAPTIVE AIR NCARFA HOOD SUPPLIER SHALL FURNISH AND HVAC CONTRACTOR SHALL INSTALL WHERE SHOWN ON PLANS A ROOF MOUNTED BELT DRIVE EXHAUST FAN. UNIT SHALL HAVE A CAPACITY OF 660 CFM @ 0.75" E.S.P. WITH A 1/2 HP MOTOR, 208V., 3 PH., 60 HZ. UNIT SHALL INCLUDE A PREFABRICATED SOUND ATTENUATING ROOF CURB AND BE FURNISHED WITH SPEED CONTROL. SEE FOOD SERVICE DRAWINGS QF701, QF702.
- 5. EF-1 BLODGETT OVEN EXHAUST FAN - CAPTIVE AIR NCARFA HOOD SUPPLIER SHALL FURNISH AND HVAC CONTRACTOR SHALL INSTALL WHERE SHOWN ON PLANS A ROOF MOUNTED BELT DRIVE EXHAUST FAN. UNIT SHALL HAVE A CAPACITY OF 977 CFM @ 0.75" E.S.P. WITH A 1/2 HP MOTOR, 208V., 3 PH., 60 HZ. UNIT SHALL INCLUDE A PREFABRICATED SOUND ATTENUATING ROOF CURB AND BE FURNISHED WITH SPEED CONTROL. SEE FOOD SERVICE DRAWINGS QF701, QF702.
- 6. EE-3 RESTROOM EXHAUST FAN - CAPTIVE AIR SIFHOOD HOOD SUPPLIER SHALL FURNISH AND HVAC CONTRACTOR SHALL INSTALL WHERE SHOWN ON PLANS AN IN-LINE STYLE EXHAUST FAN. UNIT SHALL HAVE A CAPACITY OF 350 CFM @ 0.75" E.S.P. SEE FOOD SERVICE DRAWINGS QF701, QF702.
- 7. EF-2 GRIDDLE FRYER EXHAUST FAN - CAPTIVE AIR NCARFA HOOD SUPPLIER SHALL FURNISH AND HVAC CONTRACTOR SHALL INSTALL WHERE SHOWN ON PLANS A ROOF MOUNTED BELT DRIVE EXHAUST FAN. UNIT SHALL HAVE A CAPACITY OF 1989 CFM @ 0.80" E.S.P. WITH A 0.75 HP MOTOR, 208V., 3 PH., 60 HZ. UNIT SHALL INCLUDE A PREFABRICATED SOUND ATTENUATING ROOF CURB AND BE FURNISHED WITH SPEED CONTROL. SEE FOOD SERVICE DRAWINGS QF701, QF702.
- 8. PROVIDE AND INSTALL SELKIRK METALBESTOS FACTORY-BUILT GREASE DUCT. DUCT SHALL MEET NFPA96. THE DOUBLE WALL DUCTING SHALL HAVE AN OUTER JACKET OF ALUMINUM STEEL .025" THICK IN 5 INCH THROUGH 24" DIAMETERS AND .034" THICK FOR LARGER DIAMETERS. THE INNER LINER SHALL BE TYPE 304 STAINLESS STEEL WITH A NOMINAL THICKNESS OF .035" FOR ALL SIZES. FIBER INSULATED EXHAUST SYSTEM (MODEL: IPS) SHALL HAVE FIBER INSULATION BETWEEN THE WALLS OF 1 INCH THICK. M.C. SHALL COORDINATE ANY OFFSET REQUIRED BETWEEN HOOD CONNECTION AND FAN.
- 9. GENERAL CONTRACTOR TO UNDERCUT DOOR 3/4" FOR TRANSFER AIR.
- 10. G-1 TOILET EXHAUST VENT CAP - CAPTIVE AIR GV10 ROOF MOUNTED EXHAUST VENT COMPLETE WITH INTEGRAL BAROMETRIC DAMPER AND INSECT SCREEN. UNIT SHALL INCLUDE A PREFABRICATED SOUND ATTENUATING ROOF CURB. SEE FOOD SERVICE DRAWINGS QF701, QF702.

- 11. DUCT TO DROP DOWN IN SOFFIT, EXTEND TO SIDEWALL REGISTER. COORDINATE W/ SOFFIT & WALL STRUCTURE.
- 12. CONTRACTOR SHALL INSTALL OWNER PROVIDED HUMIDITY SENSOR. VERIFY MOUNTING HOHT. W/OWNER & EXACT LOCATION PRIOR TO INSTALLING. SENSOR WIRED TO OWNER PROVIDED CONTROL PANEL. SEE 'CPI' SHEETS FOR ADDITIONAL INFORMATION.
- 13. MAU-1 CAPTIVE AIRE MODEL NO. A1-E-362 - G10 HOOD SUPPLIER SHALL FURNISH AND HVAC CONTRACTOR SHALL INSTALL WHERE SHOWN ON PLANS A ROOF MOUNTED MAKE-UP AIR UNIT WITH 36 KW HEATING INPUT UNIT SHALL HAVE A CAPACITY OF 2133 CFM @ 0.55" E.S.P. W/ A 1.0 HP MOTOR, 208V., 3 PH., 60 HZ. UNIT SHALL INCLUDE A PREFABRICATED SOUND ATTENUATING ROOF CURB & AUTOMATIC BACKDRAFT DAMPER. FAN & HOUSING SHALL BE OF ALUMINUM CONSTRUCTION W/ A NON-OIL DRAINING FAN WHEEL. UNIT SHALL BE BELT DRIVEN. DRIVE SIZED FOR 125% OF RATED CAPACITY. HVAC CONTRACTOR SHALL SEE HOOD DRAWINGS FOR SIZE OF SUPPLY AIR TAKE CONNECTIONS. FABRICATE AND INSTALL DUCTWORK FROM DUCT SHOWN. INSTALL HOOD DUCT TO SHRAK LOW PRESSURE STANDARDS. VERIFY DUCT TO MAINTAIN 10' CLEARANCE FROM OUTDOOR AIR INTAKE EXTENSION TO MAINTAIN A 10'-0" CLEARANCE TO EXHAUST FAN DISCHARGES. EXTENSION SHALL MATCH MAU MAKE-UP AIR UNIT. SEE HOOD SERVICE DRAWINGS QF701, QF702.
- 14. CONTRACTOR SHALL INSTALL CPI PROVIDED DUCT TEMPERATURE SENSORS IN SUPPLY DUCT FOR RTU'S. SENSORS TO BE MOUNTED IN RETURN AIR DUCT AND TIED TO CPI BUILDING CONTROL PANEL. FIELD COORDINATE EXACT REQUIREMENTS BEFORE STARTING WORK.
- 15. MOUNT CPI PROVIDED TEMPERATURE SENSOR IN THE MAU DUCTWORK AS SHOWN. WIRE SENSOR TO CPI PANEL ACCORDING TO THE CPI DRAWINGS PROVIDED WITH THE PANEL AT THE TIME OF DELIVERY. FIELD COORDINATE.
- 16. MECHANICAL/GENERAL CONTRACTORS SHALL PROVIDE AND INSTALL STAINLESS STEEL BEHIND ALL HOODS. STAINLESS STEEL SHALL EXTEND 18" BEYOND HOODS AND SHALL BE FROM FLOOR TO 18" ABOVE EACH HOOD.
- 17. RECESSED MANUAL PULL STATION FOR FIRE SUPPRESSION SYSTEM SHALL BE PROVIDED BY HOOD MANUFACTURER AND INSTALLED BY LOCAL FIRE SUPPRESSION DISTRIBUTOR. PULL STATION SHALL BE INSTALLED AT 48" A.F.F. BETWEEN 10 FEET AND 20 FEET AWAY FROM THE COOKING EQUIPMENT WITHIN THE PATH OF EGRESS. M.C. AND FIRE SYSTEM DISTRIBUTOR SHALL COORDINATE TO ENSURE WORK HAS BEEN COMPLETED.
- 18. M.C. SHALL PROVIDE OBD (OPPOSED BLADE DAMPER) IN THE FACE OF THE DIFFUSER/GRILLE INSTALLED WITHIN THE SHEET ROCK CEILING.
- 19. M.C. SHALL MOUNT ANSUL CABINET TIGHT TO CEILING.
- 20. M.C. SHALL PROVIDE ALTERNATE BID TO PROVIDE AND INSTALL NEW DEHUMIDIFIER. MOUNT DEHUMIDIFIER BETWEEN TRUSS AS HIGH AS POSSIBLE. FIELD VERIFY LOCATION SHOWN. SETTINGS SHALL BE 50% RH. TRANSITION FROM DUCT TO UNIT. SEE PLUMBING SHEETS FOR CONDENSATE DRAIN.

MECHANICAL LEGEND

- NEW DUCTWORK
- CEILING SUPPLY AIR DIFFUSER
- CEILING RETURN AIR GRILLE
- CEILING EXHAUST AIR GRILLE
- TURNING VANE
- BRANCH TAKE-OFF WITH BALANCING DAMPER
- SMOKE DETECTOR
- DUCT TEMPERATURE SENSOR
- THERMOSTAT/SENSOR
- AIR DEVICE TYPE  
XXX CFM AMOUNT
- SUPPLY AIRFLOW
- RETURN AIRFLOW
- OUTSIDE AIR
- SUPPLY AIR
- RETURN AIR
- FIRE DAMPER
- AUDIBLE/VISIBLE ALARM DEVICE

\* ALL SYMBOLS MAY NOT BE USED  
NOTE: SEE SHEETS CPI-1.0 THRU CPI-2.3 FOR CPI INFORMATION RELATED TO WIRING OF CONTROLS & ENERGY MANAGEMENT.



HVAC PLAN

HVAC GENERAL NOTES

- 1. ALL RECTANGULAR AND ROUND OUTSIDE AIR, RETURN AIR, RELIEF AIR AND SUPPLY AIR DUCTWORK SHALL BE EXTERNALLY INSULATED WITH 2" THICK, 2.75 LBS. DENSITY FOIL FACED FIBERGLASS INSULATION. INSTALLED "R" VALUE DIMENSIONS, IN GENERAL, HOLD DUCT TIGHT TO UNDERSIDE OF STRUCTURE UNLESS OTHERWISE NOTED OR REQUIRED BY FIELD CONDITIONS. DUCT SHALL BE HARD DUCT IN ALL CASES EXCEPT THE LAST 10 FEET OF ROUND SUPPLY DUCT.
- 2. CONICAL BELLMOUTH FITTINGS WITH MANUAL BALANCING DAMPER TO BE USED FOR ALL ROUND BRANCH TAPS ABOVE ACCESSIBLE LAY-IN CEILINGS. CONICAL BELLMOUTH FITTINGS WITHOUT MANUAL BALANCING DAMPERS TO BE USED FOR ALL ROUND BRANCH TAPS ABOVE INACCESSIBLE DRYWALL CEILINGS WITH BALANCING REQUIRED WITHIN 2 FT. OF DIFFUSER WITH PLASTER FRAME.
- 3. FLEX CONNECTIONS TO SUPPLY DIFFUSERS ARE INSULATED FLEX WITH A MAXIMUM LENGTH OF 10 FT. ALL RETURN AIR DUCTS SHALL ALL BE RIGID, NO FLEX IS ALLOWED.
- 4. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL TRADES, LANDLORD REQUIREMENTS, CEILING HEIGHTS AND EXISTING STRUCTURAL CONDITIONS PRIOR TO FABRICATION OF ANY DUCTWORK OR ORDERING OF ANY EQUIPMENT.
- 5. THE HVAC CONTRACTOR IS RESPONSIBLE FOR COORDINATING BOX-OUT LOCATIONS FOR ALL DRYWALL MOUNTED AIR DEVICES WITH GENERAL CONTRACTOR AND CEILING FRAMING.
- 6. MECHANICAL CONTRACTOR TO PROVIDE TENANT WITH AS-BUILT DRAWINGS, ALL EQUIPMENT SHOP DRAWINGS, INFORMATION ON THERMOSTATS, CONTROL WIRING DIAGRAMS AND OTHER PERTINENT INFORMATION AT COMPLETION OF PROJECT.
- 7. MECHANICAL CONTRACTOR IS TO PROVIDE AND INSTALL FIRE-RATED PIPE SLEEVES AND SEALS ON ALL EXISTING OR NEW PIPING THAT PENETRATES A FIRE-RATED PARTITION.
- 8. PERFORM ALL WORK IN ACCORDANCE WITH PROVIDED SPECIFICATIONS DIVISION 23.
- 9. INSTALL VOLUME DAMPERS ON BRANCH SUPPLY DUCTS AS NECESSARY TO BALANCE DIFFUSER AIRFLOW WITHIN 10 % OF VALUES INDICATED (15 % FOR DIFFUSERS LESS THAN 150 CFM).
- 10. BUILDING CONTROL PANEL. PURCHASED BY OWNER AND INSTALLED BY ELECTRICAL CONTRACTOR. THERMOSTAT WIRING AND CONTROL BY HVAC CONTRACTOR.
- 11. RTU, KITCHEN FANS, CURBS AND BOTH FANS SHALL BE PROVIDED BY OWNER AND INSTALLED BY G.C. ALL DUCTWORK, DIFFUSERS, GREASE DUCTWORK, OTHER MATERIALS AND EQUIPMENT SHALL BE PROVIDED AND INSTALLED BY THE M.C.
- 12. PRODUCT HANDLING BY GENERAL CONTRACTOR: EQUIPMENT AND MATERIALS SHALL BE PROPERLY STORED, ADEQUATELY PROTECTED, AND CAREFULLY HANDLED TO PREVENT DAMAGE BEFORE AND DURING INSTALLATION. EQUIPMENT AND MATERIALS SHALL BE HANDLED, STORED, AND PROTECTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. EQUIPMENT INSTALLED WITH A FACTORY FINISH SHALL BE FULLY PROTECTED DURING CONSTRUCTION AND DAMAGED EQUIPMENT SHALL BE REPAIRED OR REPLACED.
- 13. COORDINATION OF WORK: HEATING, VENTILATING, AND CONDITIONING WORK SHALL BE COORDINATED WITH OTHER TRADES. ANY DROPS, RISES, OR OFFSETS NECESSARY FOR THE PROPER INSTALLATION OF THE WORK SHALL BE PROVIDED. DUCTWORK SHALL HAVE 6" OF WAY OVER PLUMBING AND ELECTRICAL WORK.
- 14. EQUIPMENT INSTALLATION: FINAL CONNECTIONS TO EQUIPMENT, INCLUDING DUCTWORK AND TEMPERATURE CONTROLS, SHALL BE PROVIDED BY THE MANUFACTURER.
- 15. PREPARED OPENINGS: SQUARE AND RECTANGULAR DUCT PASSAGES THROUGH ROOF SHALL BE INSTALLED THROUGH PREPARED OPENINGS. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SIZE AND LOCATION OF OPENINGS.
- 16. COMPRESSOR/CONDENSER UNIT: COMPRESSOR/CONDENSER UNIT SHALL BE USED TO PROVIDE COOLING FOR THE FREEZER/COOLER. UNIT SHALL BE FURNISHED BY OWNER, AND THE REFRIGERANT LINES WILL BE INSTALLED BY THE MECHANICAL CONTRACTOR. THE COMPRESSOR/CONDENSER UNIT SHALL BE INSTALLED, WIRED, STARTED AND TESTED BY THE CONTRACTOR. OWNER FURNISHED START-UP REPORT SHALL BE COMPLETED BY THE MECHANICAL CONTRACTOR AT TIME OF START-UP AND SUBMITTED TO OWNER PRIOR TO EQUIPMENT COMPLETE DATE.
- 17. ICE MACHINE CONDENSERS: ICE MACHINE (1) SHALL HAVE AIR COOLED REMOTE CONDENSER UNITS. ICE MACHINES, CONDENSER UNITS AND RECHARGED REFRIGERANT LINE SET SHALL BE FURNISHED BY OWNER. ALL REFRIGERANT LINES WILL BE INSTALLED AND CONNECTED BY THE MECHANICAL CONTRACTOR.

- 18. STARTUP:
  - A. DESCRIPTION OF WORK: THE WORK INCLUDES START-UP AND TESTING OF AIR SYSTEMS PROVIDED UNDER THIS DIVISION TO INSURE THE PROPER OPERATION OF THE SYSTEMS. OWNER SHALL ALSO INCLUDE PERFORMANCE TESTS, TOLERANCES AND PROVISION OF ADDITIONAL DATA AS SPECIFIED HEREIN.
  - B. SCHEDULING OF WORK: THE MECHANICAL CONTRACTOR SHALL PERFORM INITIAL START-UP AND TESTING OF RTU CIRCULATING AIR SYSTEMS. THE WORK SHALL BE DONE AFTER EACH SYSTEM INSTALLATION HAS BEEN COMPLETED. NOTICE SHALL BE GIVEN TO THE OWNER FIVE (5) DAYS PRIOR TO INITIAL START-UP SO PERFORMANCE TESTS MAY BE WITNESSED. CONTRACTOR SHALL COORDINATE THE WORK OF OTHER TRADES AS REQUIRED FOR THE COMPLETION OF START-UP AND TESTING.
  - C. GENERAL PROCEDURES: AFTER COMPLETION OF THE INSTALLATION AND PRIOR TO EQUIPMENT INSTALLATION COMPLETION DATE, REFER TO CONSTRUCTION SCHEDULE IN APPENDIX. ALL MECHANICAL SYSTEMS AND APPURTENANCES APPLICABLE TO THOSE SYSTEMS SHALL BE STARTED-UP AND TESTED. BASIC REQUIREMENTS SHALL BE AS FOLLOWS:
    - a. CHECK FANS FOR PROPER OPERATION.
    - b. VERIFY PROPER HEATING AND COOLING OPERATION FOR EACH RTU SYSTEM.
    - c. VERIFY PROPER ECONOMIZER OR DAMPER OPERATION.
    - d. VERIFY THAT TEMPERATURE CONTROL SYSTEM HAS BEEN INSTALLED AS SPECIFIED AND HAS BEEN TESTED TO ASSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION.
    - e. MARK PERMANENTLY THE LOCATION OF MINIMUM DAMPER OR ECONOMIZER OUTSIDE AIR SETTINGS.
- 19. TESTING AND BALANCING:
  - A. DESCRIPTION OF WORK: THE WORK INCLUDES TESTING, ADJUSTING, AND BALANCING OF AIR SYSTEMS PROVIDED UNDER THIS DIVISION (SEE SPECIFICATIONS) TO DELIVER THE AIR QUANTITIES INDICATED ON THE PLANS. THE WORK ALSO INCLUDES START-UP AND CHECK-OUT OF HVAC CONTROL PANEL, ASSOCIATED SENSORS AND PERFORMANCES OF OTHER TESTS AND PROVISION OF ADDITIONAL DATA AS SPECIFIED HEREIN. AIR BALANCE SHALL BE PERFORMED BY THE OWNERS TESTING REPRESENTATIVE PAID FOR BY THE OWNER.

- 19. TESTING AND BALANCING:
  - B. SCHEDULING OF WORK: THE GENERAL CONTRACTOR SHALL PERFORM FINAL TESTING, BALANCING AND ADJUSTING OF RTU CIRCULATING AIR SYSTEMS WITH OWNER'S AIR BALANCE CONTRACTOR. THE WORK SHALL BE DONE AFTER EACH SYSTEM HAS BEEN STARTED, TESTED AND START-UP REPORTS SUBMITTED BY THE MECHANICAL CONTRACTOR TO THE OWNER. AIR BALANCE SHALL BE COMPLETED AND REPORTS SUBMITTED TO THE OWNER'S PRIOR TO OWNER'S PUNCH LIST DATE. THE GENERAL CONTRACTOR SHALL COORDINATE THE WORK OF OTHER TRADES AS REQUIRED FOR THE COMPLETION OF BALANCING.
- E. REPORTS: THE MECHANICAL CONTRACTOR SHALL SUBMIT TO THE OWNER FOR APPROVAL REPORTS CONTAINING RTU START-UP DATA. PRIOR TO EQUIPMENT INSTALLATION COMPLETION DATE (REFER TO APPENDIX) THE MECHANICAL CONTRACTOR SHALL COMPLETE "START-UP REPORT" ON FORMS FURNISHED BY THE OWNER. THE MECHANICAL CONTRACTOR SHALL PERFORM ALL WORK, TAKE MEASUREMENTS, READINGS, ETC., AS REQUIRED TO FURNISH ALL APPLICABLE INFORMATION REQUESTED ON THE FORM. "START-UP REPORT" SHALL BE CHECKED AND CERTIFIED BY THE MECHANICAL CONTRACTOR. A COPY OF THE REPORT SHALL BE FURNISHED TO THE CODE ENFORCEMENT OFFICIAL.

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