

Sheet Title: Mechanical Schedules, Notes & Legend. Project: 3/1/2020 4:27 PM by ALEX E. LEVINE. Saved: 2/28/2020 12:44 PM by ALEX E. LEVINE. File: Z:\Projects\4602 South Charlotte Hyundai Redesign\4602M1 MECHANICAL SCHEDULES, NOTES & LEGEND

HVAC GENERAL NOTES

- 1. MECHANICAL CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETE INSTALLATION AND OPERATION OF ALL SYSTEMS IN THIS SECTION OF WORK IN ACCORDANCE WITH RECOMMENDED PRACTICE AND ALL APPLICABLE CODES ADOPTED BY THE AUTHORITY HAVING JURISDICTION.
2. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF WALLS, DOORS, WINDOWS, FURNITURE, LIGHTS, CEILING DIFFUSERS, ETC.
3. ALL MECHANICAL PERMITS AND INSPECTION FEES SHALL BE OBTAINED AND PAID FOR BY THE MECHANICAL CONTRACTOR.
4. MECHANICAL CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR ONE YEAR. REFRIGERANT COMPRESSORS SHALL BE GUARANTEED FOR FIVE YEARS. WARRANTY PERIOD SHALL BE EFFECTIVE THE DAY THE PROJECT IS ACCEPTED BY THE OWNER.
5. DRAWINGS ARE DIAGRAMMATIC AND MAY NOT SHOW ALL REQUIRED FITTINGS. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE TYPE, SIZE AND LOCATION OF ALL AIR DEVICES, DUCTWORK, PIPING AND EQUIPMENT WITH THE CEILING PLAN, LIGHTS, STRUCTURAL ELEMENTS AND OTHER TRADES. MECHANICAL CONTRACTOR TO FURNISH AND INSTALL ALL BONDS, OFFSETS, ELBOWS, ETC. AS REQUIRED. VERIFY ALL CLEARANCES PRIOR TO FABRICATING DUCTWORK, OR ORDERING ANY EQUIPMENT, PIPING, ETC.
6. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING MATERIALS AND INSTALLING THE WORK IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES ADOPTED BY THE AUTHORITY HAVING JURISDICTION.
7. DUCTWORK
A. ALL DUCTWORK IN SERVICE SHOP AND PARTS SHALL BE FABRIC DUCT (SEE SHEET M2 FOR SPECIFICATIONS AND SHEET M7 FOR DETAILS). ALL DUCTWORK IN SERVICE SHOP SHALL BE INSULATED SPINAL DUCT (SEE SHEET M7 FOR DETAILS). ALL OTHER DUCTWORK SHALL BE BALANCED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS WITH A MINIMUM PRESSURE CLASSIFICATION OF 2", SEAL CLASS C, WITH A MAXIMUM LEAKAGE RATE OF 5%.
B. ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.
C. ALL DUCT DIMENSIONS SHOWN ARE INTERNAL CLEAR DIMENSIONS.
D. PROVIDE A MANUAL BALANCING DAMPER AT ALL SUPPLY AND RETURN BRANCH TAKEOFFS, AS WELL AS ALL OUTSIDE AIR MAIN & BRANCH DUCTS.
E. FLEXIBLE DUCT, IF SHOWN ON DRAWINGS, SHALL BE INSULATED ROUND DUCT WITH AN OUTER GLASS REINFORCED SILVER NYLON JACKET ENCLOSING GLASS FIBER INSULATION AROUND A CONTINUOUS INNER LINER AND SHALL CONFORM TO THE REQUIREMENTS OF UL 181 FOR CLASS 1 FLEXIBLE AIR DUCTS. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 6 FEET. NO VALUE TO MECHANIZED ENERGY CODE INDOOR SECTION 403.8.8 DUCT INSULATION IS TO BE MIN R-4 WHEN LOCATED WITHIN THE CONDITIONED BUILDING ENVELOPE, MIN R-3 WHEN LOCATED IN THE ATTIC, OUTSIDE THE BUILDING ENVELOPE OR UNCONDITIONED SPACES.
F. ALL SHEET METAL DUCTWORK WITHIN 10' OF THE AIR HANDLING UNIT SHALL BE PROVIDED WITH ACOUSTICAL DUCT LINER. THIS IS IN ADDITION TO THERMAL INSULATION REQUIREMENTS.
G. ALL DUCT SYSTEMS ARE TO BE PER UL STANDARDS. DUCTS ARE TO BE INSTALLED WITH NO RESTRICTIONS AND AN ABSOLUTE MINIMUM AMOUNT OF AIR LEAKAGE.
H. ALL DUCT INSULATION SHALL BE RUN CONTINUOUSLY THROUGH FLOORS AND PARTITIONS.
8. INSULATION
A. CONDENSATE DRAINS SHALL BE SCHEDULE 40 PIPE OR TYPE 1 COPPER WITH SOLDERED JOINTS WHEN INSTALLED BELOW CEILING LEVEL. DRAINS INSTALLED IN RETURN AIR PLENUM SHALL BE TYPE 1 COPPER WITH SOLDERED JOINTS OR SCHEDULE 40 PIPE.
B. REFRIGERANT PIPING SHALL BE TYPE ACR WROUGHT COPPER WITH WROUGHT COPPER FITTINGS AND BRAZED JOINTS.
C. REFRIGERANT COMPONENTS SHALL BE PRESSURE TESTED IN ACCORDANCE WITH ASHRAE 15.
D. MECHANICAL CONTRACTOR SHALL PROVIDE REFRIGERANT PIPING FOR ALL MECHANICAL SYSTEMS WITHIN THIS SCOPE OF WORK. COORDINATE ROUTING AND INSTALLATION WITH THE GENERAL CONTRACTOR. SIZE REFRIGERANT LINES PER MANUFACTURER'S REQUIREMENTS.
9. DUCT WRAP
A. DUCT LNER - FIBROUS GLASS DUCT LINER WITH COATED SURFACE EXPOSED TO AIR STREAM. APPLY WITH MECHANICAL FASTENERS AND 100% COVERAGE OF ADHESIVE LINER TO BE COATED WITH AN EPA REGISTERED ANTI-MICROBIAL AGENT. DUCT INSULATION VALUE IS TO BE MIN R-4 WHEN LOCATED WITHIN THE CONDITIONED BUILDING ENVELOPE, MIN R-3 WHEN LOCATED IN THE ATTIC, OUTSIDE THE BUILDING ENVELOPE OR UNCONDITIONED SPACES. DUCT LINER USED FOR ACOUSTICAL PURPOSES ONLY SHALL BE P THICK.
B. DUCT WRAP - MINERAL FIBER BLANKET WITH REINFORCED FOIL AND PAPER VAPOR RETARDANT JACKET. APPLY WITH MECHANICAL FASTENERS AND ADHESIVE. DUCT INSULATION IS TO BE MIN R-4 WHEN LOCATED WITHIN THE CONDITIONED BUILDING ENVELOPE, MIN R-3 WHEN LOCATED IN THE ATTIC, OUTSIDE THE BUILDING ENVELOPE OR UNCONDITIONED SPACES.
C. INTERIOR CONDENSATE DRAINS - INSULATE CONDENSATE DRAINS LOCATED IN THE ATTIC, EXTERIOR WALLS OR UNCONDITIONED SPACES WITH 1/2" THICK FLEXIBLE ELASTOMERIC PIPE INSULATION.
D. REFRIGERANT SUCTION LINES - INSULATE WITH P THICK FLEXIBLE ELASTOMERIC PIPE INSULATION PROVIDE ALUMINUM JACKET OVER INSULATION FOR ALL EXTERIOR REFRIGERANT PIPING.
E. AIR DISTRIBUTION - INSULATE THE TOP-SIDE OF ALL AIR DISTRIBUTION DEVICES.
10. ALL PIPING, DUCTS, VENTS, ETC. EXTENDING THROUGH WALLS & ROOF SHALL BE FLASHED & COUNTER-FLASHED IN A WATERPROOF MANNER.
11. EXTEND ALL CONDENSATE DRAINS, FLOOR DRAIN, SPLASH BLOCK OR AS REQUIRED PER CODE. DRAINS FROM MECHANICAL EQUIPMENT SHALL BE PROVIDED W/ A DEEP SEAL TRAP. SLOPE CONDENSATE DRAIN PIPING AT MIN. 1/8" PER FOOT.
12. LOCATE ALL THERMOSTATS, SWITCHES AND OTHER CONTROL DEVICES AT 4'-0" ABOVE FINISHED FLOOR. FURNISH A THERMOSTATIC CONTROL DEVICE FOR EVERY DEVICE REQUIRING ONE WHETHER SHOWN ON DRAWINGS OR NOT.
13. ALL EQUIPMENT SHALL BE INSTALLED PER CODE & MANUFACTURER'S REQUIREMENTS FOR PROPER OPERATION AND SERVICE/ACCESS CLEARANCES.
14. ALL EQUIPMENT SHALL BE UL LISTED.
15. MECHANICAL CONTRACTOR SHALL COMPLETE A CERTIFIED 3RD PARTY TEST & BALANCE COMPANY TO BALANCE ALL MECHANICAL SYSTEMS TO AIR QUANTITIES INDICATED ON PLANS AND PROVIDE A COMPLETE BALANCING REPORT IN ACCORDANCE WITH NEBS OR AABC STANDARDS.
16. CONTROL WIRING FOR ALL MECHANICAL SYSTEMS WITHIN THIS SCOPE OF WORK SHALL BE BY THE MECHANICAL CONTRACTOR.
17. DUCT SMOKE DETECTORS SHALL BE INSTALLED IN THE RETURN AIR DUCT OR PLENUM UPSTREAM OF ANY FILTERS OR DECONTAMINATION EQUIPMENT UPON ACTIVATION THE SMOKE DETECTOR SHALL SHUT DOWN THE AIR HANDLING UNIT.
18. IF THERE IS A FIRE ALARM SYSTEM DETECTORS SHALL BE FURNISHED, WIRED AND WIRED BY THE ELECTRICAL CONTRACTOR. INSTALLED BY THE MECHANICAL CONTRACTOR. ACTIVATION OF THE DUCT SMOKE DETECTOR SHALL INITIATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION.
19. IF THERE IS NOT A FIRE ALARM SYSTEM DETECTORS SHALL BE FURNISHED, WIRED AND INSTALLED BY THE MECHANICAL CONTRACTOR. ACTIVATION OF THE DUCT SMOKE DETECTOR SHALL INITIATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION.
19. PROVIDE A CLEAN SET OF FILTERS FOR ALL AIR HANDLING EQUIPMENT AT SUBSTANTIAL COMPLETION.
20. MAINTAIN A MINIMUM 10'-0" BETWEEN OUTDOOR AIR INTAKES AND EXHAUST FAN DISCHARGE AND PLUMBING VENTS, ETC. FIELD COORDINATE FINAL LOCATIONS.
21. ROOF CURBS SHALL HAVE A BASE THAT FITS SLOPE AND TYPE OF ROOF AS REQUIRED. TOP OF CURB SHALL BE LEVEL. SEE STRUCTURAL PLANS FOR SLOPE INFORMATION AND ARCHITECTURAL PLANS FOR EXACT ROOF TYPE.
22. RUN DUCT UP WITH STRUCTURE OR THROUGH JOIST WEBS WHERE POSSIBLE & WHERE REQUIRED TO MAINTAIN CEILING HEIGHTS. PROVIDE OFFSETS AND/OR TRANSITIONS IN DUCT WHERE REQUIRED WITH MAX. 45 DEG. ELBOWS. MAKE BRANCH TAPS OFF TOP, SIDES OR BOTTOM AS REQUIRED. NO BACK TO BACK 90 DEG. ELBOWS ALLOWED.
23. REFRIGERANT PIPING SHALL BE SIZED & INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION INSTRUCTIONS.
24. ALL EQUIPMENT SHALL BE LABELED ACCORDING TO NUMBERING / IDENTIFICATION SYSTEM PER PLANS. EQUIPMENT LABEL SHALL BE BLACK LAMINATE W/ WHITE LETTERING. LOCATE LABEL ON EQUIPMENT IN AN EASILY READABLE LOCATION.
25. ALL EQUIPMENT SUPPORTS ARE REQUIRED TO MEET ASCE 8.8.
26. MECHANICAL CONTRACTOR SHALL PROVIDE UL LISTED FIRE DAMPERS, RADIATION DAMPERS AND/OR FIRE/smoke DAMPERS WHERE REQUIRED FOR FIRE PROTECTION AS REQUIRED BY LOCAL CODES. M.C. SHALL PROVIDE A MEANS OF ACCESS TO TEST & RESET ALL SUCH DAMPERS AND/OR FILTERS.
27. ON MAKING PIPE CONNECTIONS TO EQUIPMENT, CARE SHOULD BE TAKEN TO ARRANGE PIPES SO AS NOT TO INTERFERE WITH OPENING OF EQUIPMENT DOOR.
28. ELECTRICAL CONTRACTOR TO PROVIDE ALL HIGH VOLTAGE (120V AND GREATER) ELECTRICAL WIRING, CONDUIT, DISCONNECT SWITCHES, FUSES, ETC. TO ALL MECHANICAL EQUIPMENT WITHIN THIS SCOPE OF WORK. ALL FINAL ELECTRICAL CONNECTIONS ARE BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENTS FOR ALL APPROVED MECHANICAL EQUIPMENT WITH THE ELECTRICAL CONTRACTOR.
29. PRIOR TO BEGINNING ANY WORK MECHANICAL CONTRACTOR IS RESPONSIBLE TO NOTIFY THE OWNER'S REPRESENTATIVE ARCHITECT OR ENGINEER IF MECHANICAL DESIGN CONFLICTS WITH EXISTING OR UNFORESEEN FIELD CONDITIONS.
30. MECHANICAL CONTRACTOR SHALL PROVIDE A MIN. OF FOUR COPIES OF SHOP DRAWINGS TO THE ARCHITECT/ENGINEER FOR REVIEW. INSTALLED EQUIPMENT AND MATERIALS NEEDING APPROVAL PRIOR TO PURCHASING. IN ADDITION, M.C. SHALL PROVIDE THE OWNER WITH TWO COPIES OF OPERATION & MAINTENANCE MANUALS FOR ALL INSTALLED EQUIPMENT, MANUFACTURERS & INSTALLERS WARRANTIES AND TRAINING CONTROLS FOR ALL SUCH EQUIPMENT.

MECHANICAL LEGEND

Table with 2 columns: Symbol and Description. Includes items like SUPPLY DIFFUSER, EXH. SUPPLY DIFFUSER, RETURN GRILLE, EXH. RETURN GRILLE, CEILING EXHAUST FAN/GRILLE, EXH. EXHAUST FAN/GRILLE, THERMOSTAT AT 48" AFF, SPACE SENSOR AT 48" AFF, SMOKE DETECTOR, REMOTE FULL STATION, SQUARE DUCT, ROUND METAL DUCT, ROUND FLEX DUCT, EXISTING DUCT/EQUIPMENT, DUCT/QUIP. TO BE DEMO, DUCT ELBOW TURNING VANES, CONNECT TO EXISTING, DOOR LOUVER AT 12" AFF, FIRE DAMPER, CEILING RADIATION DAMPER, AHU AIR HANDLING UNIT, HP HEAT PUMP UNIT, AC AIR CONDITIONING UNIT, SA SUPPLY AIR, RA RETURN AIR, OA OUTSIDE AIR, EA EXHAUST AIR, MP MEDIUM PRESSURE, LP LOW PRESSURE, SP STATIC PRESSURE, REL RELOCATE, VD VOLUME DAMPER, CFM CUBIC FEET PER MINUTE, BDD BACK DRAFT DAMPER, AFF ABOVE FINISHED FLOOR, DDOOR UNDER AT 12" AFF, PIPE UP, PIPE DOWN, TURNING VANES.

ENERGY REQUIREMENTS (SALES & SERVICE):

Table with 2 columns: Description and Value. Includes Thermal Zone (3A), Exterior Design Conditions (Winter Dry Bulb 18, Summer Dry Bulb 75), Interior Design Conditions (Winter Dry Bulb 72, Summer Dry Bulb 75), Building Heating Load (465.7 MBH), Building Cooling Load (796.4 MBH), Mechanical Space Conditioning System (Description of unit, Heating Efficiency, Cooling Efficiency, Heat Output of Unit, Cooling Output of Unit, Total Boiler Output, Chiller, Total Chiller Output, List Equipment Efficiencies, Equipment Schedules with Motors (Mechanical Systems), Number of Phases, Medium Efficiency, Motor Type, Number of Poles).

DIFFUSER SCHEDULE

Table with columns: SYMBOL, CPM, NECK SIZE, MODULE SIZE, FINISH, PATTERN, DAMPER, MATERIAL, SERVICE, FINISH, MANUFACTURER & MODEL NO., ACCESSORIES/NOTES. Includes rows for AS NOTED, PERFORATED, 4-WAY YES STEEL SUPPLY, etc.

GAS RADIANT HEATER SCHEDULE

Table with columns: UNIT DESIGN, AREA SERVED, MANUFACTURER & MODEL NO., TYPE, TUBE INFORMATION, GAS HEAT CAPACITY, ELEC. DATA, WEIGHT (LBS), CONTROL SCHEME, NOTES. Includes rows for GRH-1 DETAIL 219, GRH-2 WASH 216, GRH-3 PHOTO 220, GRH-4 CAR WASH.

Table with 2 columns: Notes and Control Scheme. Notes include suspend from structure, integral disconnect switch, mount heater 14" AFF. Control Scheme includes provide w/ remote thermostat, direct vent combustion/ventilation.

DEDICATED OUTDOOR AIR SYSTEM (100% OUTSIDE AIR)

Table with columns: UNIT DESIGN, NOMINAL COOLING (TONS), AREA SERVED, SERVICE, SUPPLY - FAN DATA, COOLING CAPACITY, HEATING CAPACITY, FILTER DATA, ELECTRICAL DATA, EQUIPMENT EFFICIENCY, CONTROL SCHEME, MANUFACTURER & MODEL NO., WEIGHT (LBS), ACCESSORIES/NOTES. Includes rows for DOAS-1.

PACKAGED DX COOLING / GAS HEATING ROOF TOP UNIT SCHEDULE

Table with columns: UNIT DESIGN, AREA SERVED, MANUFACTURER & MODEL NO., NOM. COOLING (TONS), MIN. O.A. (CFM), MIN. E.S.P. (IN.WG), FAN SPEED (RPM), MOTOR HP, TOTAL MBH, SENSIBLE MBH, INPUT MBH, OUTPUT MBH, GAS HEAT CAPACITY, ELECTRICAL DATA, FILTER DATA, COND. DATA, WEIGHT (LBS), CONTROL SCHEME, NOTES. Includes rows for RTU-1 through RTU-13.

MINI-SPLIT SYSTEM (COOLING ONLY) SCHEDULE

Table with columns: UNIT DESIGN, AREA SERVED, MANUFACTURER & MODEL NO., MAX. AIRFLOW (CFM), MIN. O.A. (CFM), MIN. E.S.P. (IN.WG), FAN SPEED (RPM), FAN TYPE & ARRANGEMENT, ELECTRICAL DATA, COND. DATA, WEIGHT (LBS), MANUFACTURER & MODEL NO., OUTDOOR UNIT DATA, COOLING CAPACITY, WEIGHT (LBS), NOTES, NOM. TONS. Includes rows for IDU-V, IDU-2, IDU-3.

FAN SCHEDULE

Table with columns: UNIT DESIGN, SERVICE, AREA SERVED, MANUFACTURER & MODEL NO., FAN TYPE & ARRANGEMENT, AIRFLOW (CFM), MIN. E.S.P. (IN.WG), FAN SPEED (RPM), MOTOR FLA, DRIVE TYPE, ELECTRICAL DATA, CONTROL SCHEME, ACCESSORIES/NOTES. Includes rows for EF-1 through EF-11.

ELECTRIC UNIT HEATER SCHEDULE

Table with columns: UNIT DESIGN, AREA SERVED, MANUFACTURER & MODEL NO., FAN DATA, ELEC. HEAT CAPACITY, ELEC. DATA, WEIGHT (LBS), CONTROL SCHEME, NOTES. Includes rows for EH-1, EH-2.

MECHANICAL DRAWING INDEX

Table with 2 columns: Item and Description. Includes M1 MECHANICAL SCHEDULES, NOTES, & LEGEND, M2 PARTIAL MECHANICAL FLOOR PLAN - SALES, M3 PARTIAL MECHANICAL FLOOR PLAN - SERVICE, M4 PARTIAL MECHANICAL ROOF PLAN - SALES, M5 PARTIAL MECHANICAL ROOF PLAN - SERVICE, M6 CAR WASH MECHANICAL PLAN, M7 WAREHOUSE MECHANICAL PLAN, M8 MECHANICAL DETAILS.

an Ingra Architecture, PLLC DBA 110 East Kingston Avenue, Ste. 20 Charlotte, NC 28203 704.372.0001 www.in+egra.com



VP ENGINEERING 1100 South Blvd., Suite 180 Charlotte, NC 28203 704.372.1785 www.vps.com

Revisions table with columns: Number, Date, Description.

Project Title: SOUTH CHARLOTTE HYUNDAI

Project No: 4602.00 Drawing Title: MECHANICAL SCHEDULES, NOTES, & LEGEND

SET ISSUE DATE MAR 4, 2020