

GENERAL HVAC NOTES

- ALL WORK SHALL CONFORM AND SHALL COMPLY WITH CITY AND STATE REQUIREMENTS AND THE INTERNATIONAL MECHANICAL CODE (IMC) LATEST EDITION.
- ALL AIR HANDLING UNITS SHALL BE EQUIPPED WITH ACCESSIBLE FILTER RACKS.
- THE MECHANICAL CONTRACTOR (MC) SHALL COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS.
- CONTRACTOR SHALL PROVIDE CONDENSATE DRAIN PANS, PRIMARY DRAIN LINES, AND SECONDARY DRAIN PANS AND LINES PER IMC AND TERMINATE LINES AT NEAREST APPROVED LOCATION.
- EXHAUST FANS ARE TO BE PROVIDED BY THE MC, ALL ELECTRICAL CONNECTIONS ARE TO BE BY THE ELECTRICAL CONTRACTOR (EC). ALL EXHAUST FANS TO BE PROVIDED WITH BACKDRAFT DAMPERS.
- INSTALL FLEXIBLE CONNECTORS ON ALL AIR UNITS SUPPLY AND RETURN SIDES.
- EACH AC UNIT TO BE PROVIDED WITH AN ELECTRONIC PROGRAMMABLE THERMOSTAT OR BUILDING CONTROL SYSTEM. EC TO PROVIDE JUNCTION BOXES AND 1/2" CONDUIT RISER TO APPROX 18" ABOVE CEILING. MC (OR CONTROLS CONTRACTOR) SHALL PROVIDE CONTROL WIRING.
- PROVIDE DUCT LINER IN FIRST 10'-0" OF SUPPLY AND IN FIRST 20'-0" OF ALL RETURN DUCT. PROVIDE LINED 90° ELBOWS AT ALL R/A GRILLES THAT DISCHARGE DIRECTLY TO THE PLENUM.
- THE LOCATION OF ALL DEVICES, EQUIPMENT, PIPING, AND ETC INDICATED ON THE PLANS ARE DIAGRAMMATIC AND ARE SUBJECT TO RELOCATION AS REQUIRED TO ACCOMMODATE FINISH CONDITIONS INDICATED. DEVIATIONS IN ROUTING OR PLACEMENT OF SUCH FROM THE PLANS IS PERMISSABLE PROVIDED CODE COMPLIANCE IS NOT ALTERED.
- PROVIDE BALANCING DAMPERS, SPLITTER DAMPERS, OR AIR EXTRACTORS WITH LOCKING HANDLES IN ALL BRANCH DUCTS AND TAKEOFFS.
- MC SHALL INSTALL UL CLASSIFIED FIRE RATED DIFFUSERS AND DAMPERS AS REQUIRED IN FIRE RATED STRUCTURES. ALL FIRE RESISTIVE FLOOR OR ROOF-CEILING DIFFUSERS ARE TO BE UL CLASSIFIED AND MEET OR EXCEED N.F.P.A. 90A REQUIREMENTS AND SHALL INCLUDE RADIATION DAMPER AND BLANKET.
- MC SHALL PROVIDE UL LISTED FIRE DAMPERS WITH FIRE-RATED ACCESS COVERS AT ALL FIRE WALL PENETRATIONS.
- CONSTRUCT ALL DUCTWORK IN ACCORDANCE WITH SMACNA STANDARDS. ALL DUCTWORK IS TO BE CONSTRUCTED WITH RIGID GALVANIZED SHEET METAL EXCEPT THE LAST 5' TO SUPPLY DIFFUSER, WHICH WILL BE FLEXIBLE DUCT AS DETAILED.
- PROVIDE MANUFACTURED TURNING VANES IN ALL MITERED DUCT TURNS.
- ALL DUCT DIMENSIONS STATED ARE CLEAR INSIDE DIMENSIONS. MC TO TAKE COGNIZANCE WHERE LINED DUCTS ARE INDICATED.
- ALL DUCTWORK WITH THE EXCEPTION OF PRE-INSULATED FLEX RUN-OUT TO DIFFUSERS SHALL BE INSULATED.
- PROVIDE DUCT ACCESS PANELS FOR DUCT CLEANING PURPOSES AT 50'-0" MAX INTERVALS. COORDINATE ACCESS PANEL LOCATION WITH MITERED ELBOWS AND TEES, FIRE/SMOKE DAMPERS OR ZONE CONTROL DAMPERS TO ENSURE ACCESS FROM THE SPACE BELOW OR THE PLENUM.
- MECHANICAL EQUIPMENT, SUPPORTS, AIR DUCTS, OR FITTINGS NOT INDICATED ON THE PLANS, BUT IMPLIED FOR PROPER INSTALLATION, OPERATIONS OF SYSTEMS, OR CODE COMPLIANCE SHALL BE CONSIDERED AS PART OF THE MC'S RESPONSIBILITY. THE MC IS RESPONSIBLE TO ENSURE THAT ALL ELECTRICAL EQ REQUIRED FOR PROPER OPERATION OF THE MECHANICAL EQ IS PROVIDED AND PROPERLY CONNECTED BY THE EC.
- INSTALL CONDENSING UNITS ON A 4" MINIMUM RAISED CONCRETE PAD. ENSURE EC FURNISHES DISCONNECT FOR EACH UNIT AND 120V GFCI RECEPTACLE WITHIN 25'-0" OF ALL MECHANICAL EQUIPMENT.
- CONCEALED CONDENSATE PIPING TO BE COPPER, TYPE M, EXPOSED CONDENSATE PIPING TO BE TYPE L.
- THE MC IS RESPONSIBLE TO HAVE THE BUILDING BALANCED BY A CERTIFIED BALANCING CONTRACTOR. THE BALANCING SHALL INCLUDE BUT IS NOT LIMITED TO:
 - ADJUSTING AIR FLOW OF THE AIR DISTRIBUTION DEVICES TO MEET THE REQUIREMENTS LAID OUT ON THE PLANS.
 - BALANCE AIR FLOW THROUGH THE AHU'S, EXHAUST FANS, AND OUTSIDE AIR INTAKES TO ACHIEVE THE FLOW RATES INDICATED ON THE PLANS.
 - SET THE PATTERN ON ALL ADJUSTABLE PATTERN GRILLES AND DIFFUSERS TO ACHIEVE EVEN AIR DISTRIBUTION OVER THE SPACE.
 - ADJUST RELIEF DAMPER ON EACH RTU TO OBTAIN A POSITIVE BUILDING PRESSURIZATION OF 0.04" WC.
 THE BALANCING CONTRACTOR IS RESPONSIBLE FOR REPORTING ANY PROBLEMS FOUND IN THE INSTALLATION OF THE SYSTEM. THE BALANCING CONTRACTOR SHALL RETURN AND REBALANCE THE SYSTEMS AFTER CORRECTIONS HAVE BEEN ACCOMPLISHED. A FORMAL REPORT OF THE BALANCING CONTRACTOR'S FINDINGS SHALL BE PROVIDED TO THE ARCHITECT AND ENGINEER PRIOR TO THE BUILDING BEING OCCUPIED.

BUILDING OUTSIDE AIR CALCULATION SUMMARY:

(BASED UPON MC 2021, SECTION 403 AND TABLE 403.3.1.1)

SYSTEM - 1									SYSTEM - 2								
ROOM	Az AREA (SQ FT)	Pz # OF PEOPLE	Rp O/A CFM/PERSON	Ra O/A CFM/SQ FT	RpPz CFM	RaAz CFM	Vbz CFM		ROOM	Az AREA (SQ FT)	Pz # OF PEOPLE	Rp O/A CFM/PERSON	Ra O/A CFM/SQ FT	RpPz CFM	RaAz CFM	Vbz CFM	
HALL 103 EAST	764	25	7.5	0.06	187.5	45.84	233.34		MECH 105	80	0	0	0.12	0	9.6	9.6	
MECH 105	80	0	0	0.12	0	9.6	9.6		OFFICE 106	140	1	5	0.06	5	8.4	13.4	
OFFICE 106	140	1	5	0.06	5	8.4	13.4		RR 107	135	0	0	0	0	0	0	
RR 107	135	0	0	0	0	0	0										
SYSTEM TOTAL - 1									SYSTEM TOTAL - 2								
256.34									233.34								

CONDENSATE PIPE INSULATION REQUIREMENTS

PIPING	TYPE	THICKNESS IN.	REQUIRED K VALUE BTU"IN/(HR*FT**2* DEG F)	NOTES
CONDENSATE LINES WITHIN BUILDING	ARMAFLEX OR EQUAL	0.5	0.27	1,2,4,5,6,7
CONDENSATE LINES OUTSIDE BUILDING	NONE REQUIRED			3

NOTES:

- ALL JOINTS SHALL BE PROPERLY JOINED WITH ADHESIVE PER MANUFACTURER'S RECOMMENDATION.
- ALL PIPING EXPOSED TO VIEW WITHIN BUILDING SHALL BE PAINTED TO MATCH SURROUNDING FINISHES.
- CONTRACTOR SHALL INSURE ALL EXTERNAL CONDENSATE LINES ARE PROPERLY SLOPED TO PREVENT DAMAGE DUE TO FREEZING.
- INSULATION SHALL BE CONTINUOUS FOR THE ENTIRE PIPE RUN, EXCEPT AS REQUIRED TO SUPPORT VERTICAL PIPES.
- CONTRACTOR SHALL INSTALL SHEET METAL SLEEVES AT ALL SUPPORT TO PREVENT CRUSHING OF INSULATION.
- ALL HORIZONTAL RUNS OF PIPING SHALL BE SUPPORTED ON TRAPEZE SUPPORTS OR ANGLE BRACES SUPPORTING PIPE FROM UNDERNEATH.
- ALL REQUIRED VERTICAL SUPPORT INSULATION SHALL BE FITTED TIGHT TO SUPPORT, AND A TEMPERATURE AND VIBRATION ISOLATOR SHALL BE INSTALLED BETWEEN PIPE AND SUPPORT.

REFRIGERANT PIPE INSULATION REQUIREMENTS

PIPING	TYPE	THICKNESS IN.	REQUIRED K VALUE BTU"IN/(HR*FT**2* DEG F)	NOTES
PIPING 1.5" AND SMALLER	ARMAFLEX OR EQUAL	1	0.27	1,2,3,5,6,7,8,9
PIPING LARGER THAN 1.5"	ARMAFLEX OR EQUAL	1.5	0.27	1,2,3,5,6,7,8,9

NOTES:

- ALL JOINTS SHALL BE PROPERLY JOINED WITH ADHESIVE PER MANUFACTURER'S RECOMMENDATION.
- ALL INSULATION EXPOSED TO SUN LIGHT SHALL HAVE ALUMINUM JACKETING SECURED WITH 1/2" STAINLESS BANDS 9" O.C.
- ALL PIPING EXPOSED TO VIEW WITHIN BUILDING SHALL BE PAINTED TO MATCH SURROUNDING FINISHES.
- CONTRACTOR SHALL INSURE ALL EXTERNAL CONDENSATE LINES ARE PROPERLY SLOPED TO PREVENT DAMAGE DUE TO FREEZING.
- ALL SUCTION AND HOT GAS BYPASS LINES ARE REQUIRED TO BE INSULATED.
- INSULATION SHALL BE CONTINUOUS FOR THE ENTIRE PIPE RUN, EXCEPT AS REQUIRED TO SUPPORT VERTICAL PIPES.
- CONTRACTOR SHALL INSTALL SHEET METAL SLEEVES AT ALL SUPPORT TO PREVENT CRUSHING OF INSULATION.
- ALL HORIZONTAL RUNS OF PIPING SHALL BE SUPPORTED ON TRAPEZE SUPPORTS OR ANGLE BRACES SUPPORTING PIPE FROM UNDERNEATH.
- ALL REQUIRED VERTICAL SUPPORT INSULATION SHALL BE FITTED TIGHT TO SUPPORT, AND A TEMPERATURE AND VIBRATION ISOLATOR SHALL BE INSTALLED BETWEEN PIPE AND SUPPORT.

THERMOSTAT REQUIREMENTS

REQUIRED FEATURES
ELECTRONIC PROGRAMMABLE THERMOSTAT
LCD DISPLAY WITH TIME AND TEMPERATURE
INSTRUCTIONS FOR BASIC OPERATION IN COVER OF THERMOSTAT
MULTISTAGE COOLING CAPABILITY (IF REQUIRED BY EQUIPMENT)
MULTISTAGE HEATING CAPABILITY (IF REQUIRED BY EQUIPMENT)
COOLING SET BACK TO 85°F
HEATING SET BACK TO 55°F
(3) TIME/TEMPERATURE SETTING PERIODS PER DAY
INDEPENDENT HEAT/ COOL SET POINTS
AUTOMATIC OR MANUAL CHANGE OVER
TIMED OVERRIDE
KEYBOARD ADJUSTABLE DIFFERENTIAL AND DEAD BAND SHORT CYCLE PROTECTION
10 HR BACKUP POWER
LOCKING COVER (AT THE OWNER'S REQUEST)

BUILDING PRESSURIZATION SUMMARY

AC UNIT	OUTSIDE AIR (CFM)	EXHAUST FAN	EXHAUST AIR (CFM)
HP-1	260	EF-1	175
HP-2	235	EF-2	175
		EF-3	105
TOTALS	495		455
		% DIFFERENCE	8



Project Information

Energy Code: 2018 IECC
 Project Title: RANGER COLLEGE MULTI-PURPOSE FACILITY
 Location: Ranger, Texas
 Climate Zone: 3a
 Project Type: New Construction

Construction Site: 609 COOPER ST RANGER, Texas 76470
 Owner/Agent: RANGER COLLEGE
 Designer/Contractor: SAMUEL ENGINEERING

Additional Efficiency Package(s)

Credits: 1.0 Required 0.0 Proposed

Mechanical Systems List

Quantity System Type & Description

- HVAC System (Single Zone):
 Split System Heat Pump
 Heating Mode: Capacity = 47 kBtu/h,
 Proposed Efficiency = 12.00 HSPF, Required Efficiency = 8.20 HSPF
 Cooling Mode: Capacity = 41 kBtu/h,
 Proposed Efficiency = 18.30 SEER, Required Efficiency = 14.00 SEER
 Proposed Part Load Efficiency = 0.00, Required Part Load Efficiency = 0.00
- HVAC System (Single Zone):
 Split System Heat Pump
 Heating Mode: Capacity = 47 kBtu/h,
 Proposed Efficiency = 12.00 HSPF, Required Efficiency = 8.20 HSPF
 Cooling Mode: Capacity = 41 kBtu/h,
 Proposed Efficiency = 18.30 SEER, Required Efficiency = 14.00 SEER
 Proposed Part Load Efficiency = 0.00, Required Part Load Efficiency = 0.00

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

Project Title: RANGER COLLEGE MULTI-PURPOSE FACILITY Report date: 01/12/24
 Data filename: _____ Page 1 of 9

DUCT INSULATION REQUIREMENTS

SUPPLY, RETURN, ERV RETURN, AND OUTSIDE AIR DUCT LOCATION	TYPE	DENSITY SBI/CU	THICKNESS	REQUIRED K VALUE	ENERGY CODE REQUIRED OVERALL R VALUE	VAPOR BARRIER (REQUIRED)	ANTIMICROBIAL COATING (REQUIRED)	NOTES
DUCT LOCATED EXTERIOR OF BUILDING	EXTERNAL WRAP	0.75	3	0.27	8 ZONES 1-4 12 ZONES 5-8	YES	NO	6,7,8,9
	INTERNAL LINING	3	2	0.23	8 ZONES 1-4 12 ZONES 5-8	NO	YES	1,2,3,4,5,8,9
DUCT IN UNCONDITIONED SPACE	EXTERNAL WRAP	1	2	0.25	6	YES	NO	6,7,8,9
	INTERNAL LINING	3	1.5	0.24	6	NO	YES	1,2,3,4,5,8,9
INSIDE BUILDING CONCEALED	EXTERNAL WRAP	1	2	0.25	6	YES	NO	6,7,8,9
	INTERNAL LINING	3	1.5	0.24	6	NO	YES	1,2,3,4,5,8,9
INSIDE BUILDING EXPOSED	INTERNAL LINING	3	1.5	0.24	6	NO	YES	1,2,3,4,5,8,9
DUCTS LINERS								
FIRST 10 FT. FROM AHU INSIDE BUILDING	INTERNAL LINING	3	1.5	0.24	6	NO	YES	1,2,3,4,5,8,9
FIRST 10 FT. FROM AHU EXTERIOR OF BUILDING	EXTERNAL WRAP	0.75	3	0.27	8 ZONES 1-4 12 ZONES 5-8	YES	NO	6,7,8,9
	INTERNAL LINING	2	2.5	0.28	8 ZONES 1-4 12 ZONES 5-8	NO	YES	1,2,3,4,5,8,9

NOTES:

- ALL INTERNAL DUCT LINER SHALL HAVE A SOUND ABSORBENT INTERNAL COATING RATED FOR THE AIR VELOCITY WITH IN DUCTWORK.
- ALL INTERNAL DUCT LINING SHALL BE PROPERLY SECURED WITH MECHANICAL FASTENERS AND ADHESIVES.
- PROVIDE METAL NOSING AT ALL TRANSITIONS FROM UNLINED TO LINED DUCT.
- ALL LINED DUCT SHALL HAVE AN EPA REGISTERED ANTIMICROBIAL AGENT APPLIED TO THE LINER BY THE MANUFACTURER IN ACCORDANCE WITH ALL APPLICABLE ASTM AND UL STANDARDS.
- ALL DUCT LINER SHALL MEET APPLICABLE INTERNATIONAL MECHANICAL, INTERNATIONAL BUILDING, UL AND ASTM STANDARDS FOR SMOKE GENERATION AND FLAME SPREAD.
- ALL EXTERNAL DUCT WRAP SHALL HAVE A REINFORCED FOIL JACKET AND VAPOR BARRIER
- ALL SEAMS IN EXTERNAL DUCT INSULATION SHALL BE PROPERLY FASTENED PER MANUFACTURERS RECOMMENDATIONS, AND TAPED TO SEAL VAPOR BARRIER.
- INSTALL ALL INSULATION PER MANUFACTURERS RECOMMENDATIONS.
- CONTRACTOR SHALL INSURE THAT INSTALLED INSULATION IS NOT COMPRESSED BEYOND MANUFACTURES SPECIFICATION.

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PARKER & ASSOCIATES
ARCHITECTS & PLANNERS

HVAC - NOTES
 MULTI-PURPOSE FACILITY FOR
 RANGER COLLEGE
 609 Cooper St. Ranger Tx. 76470

DATE OF REVISIONS:
 REV 0 IFC 01/22/24

JOB NO. 23C09RAN
 DRAWN BY: PL

SHEET NO. M-4

SE PROJECT NUMBER: 23415

PREPARED BY:



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