

DIFFUSER, REGISTER AND GRILLE SCHEDULE

MARK	DESCRIPTION	MANUFAC	MODEL #	MATERIAL	FRAME	FACE	DAMPER	FINISH
CD-1	CEILING DIFFUSER	TITUS	TMS	STEEL	LAY-IN	SQUARE BLADE	NO	WHITE
CD-2	CEILING DIFFUSER	TITUS	TDC	STEEL	SURFACE	SQUARE BLADE	DBD	WHITE
CD-3	ROUND CEILING DIFFUSER	TITUS	TMR	STEEL	SURFACE	ROUND BLADE	NO	WHITE
SR-1	SUPPLY REGISTER	TITUS	300RS	STEEL	SURFACE	DBL DEFLECT	DBD	WHITE
RG-1	RETURN GRILLE	TITUS	350RL	STEEL	LAY-IN	BAR TYPE	NO	WHITE

NOTES: 1) ALL BLDG PATTERN ARE FOUR WAY UNLESS NOTED OTHERWISE.
 2) CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR COORDINATION OF ALL CEILING FRAMES.
 3) COORDINATE PAINTING OF AIR DISTRIBUTION WITH ARCHITECT AND GENERAL CONTRACTOR.

MECHANICAL EQUIPMENT SCHEDULE

MECHANICAL CONTRACTOR SHALL COORDINATE AMPERAGE, VOLTAGE AND PHASE OF ALL EQUIPMENT WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING ANY EQUIPMENT.

A/C SYSTEM - ROOFTOP PACKAGE HEAT PUMP

S TDN: NDM 2000 CFM @ 0.5" ESP; 41.29 MBH SENS COOL @ 80/67/115; 17.5 RLA COMP; 1.3 FLA IDP; 9.2 FLA IDP; 208V-3PH; 33 MCA; 45 MDCP; CARRIER 500QJ06; MINIMUM 16.0 SEER2; 7.5 HSPF2 HEIGHT: 41'-3/8" + 8" CURB = 49'-3/8" / 696 LBS.

- NOTES:
- PROVIDE 8" HIGH FACTORY CURB.
 - PROVIDE 25% MANUAL OSA INTAKE, ECD BLUE VANE AXIAL FAN WITH DIRECT DRIVE ECM MOTOR.
 - PROVIDE 2" FILTER RACK FOR ALL UNITS.

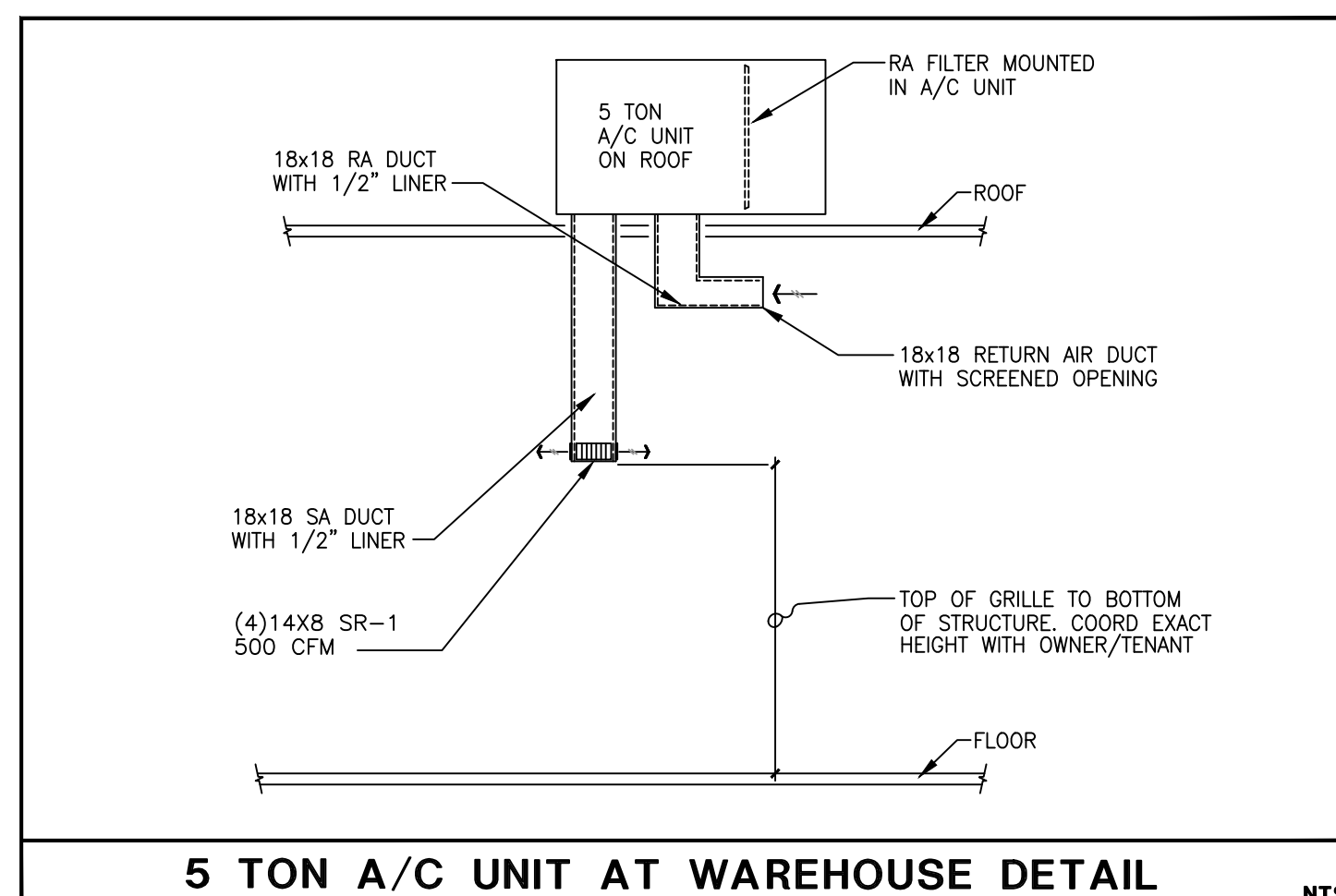
EXHAUST FANS

EF-1 CEILING MOUNTED CENTRIFUGAL/100 CFM @ .25" ESP/0.62 AMP MOTOR/120V SINGLE PHASE/GREENCHECK HSP-A125 w/ 6" DUCT & BDD THRU ROOF TO CAP.

- NOTES: 1. EF-1 SHALL BE TIED INTO RESTROOM LIGHTING - COORD. W/ELECTRICAL

UNIT HEATER

UH-1 ELECTRIC HEATER/3.0 KW/1/100 HP/208/240V SINGLE PHASE/DAYTON #804T10/PROVIDE w/ LINE VOLTAGE T-STAT/77 LBS.



5 TON A/C UNIT AT WAREHOUSE DETAIL

OUTSIDE AIR CALCULATION

PER 2021 I.M.C. SECTION 403.3 AND TABLE 403.3.1

OFFICE/BREAK AREA:
 $R_p = 5 \text{ CFM/PERSON}$
 $P_z = 5 \text{ PEOPLE/1000 SQ. FT.} = 1 \text{ PEOPLE}$
 $R_o = 0.06 \text{ CFM/SQ. FT.}$
 $A_z = 204 \text{ SQ. FT.}$
 $V = R_p \times P_z + R_o \times A_z = 17 \text{ CFM OSA IS REQUIRED.}$

STORAGE ROOMS:
 $R_p = N/A$
 $P_z = N/A$
 $R_o = 0.12 \text{ CFM/SQ. FT.}$
 $A_z = 2196 \text{ SQ. FT.}$
 $V = 0.12 \times 2196 = 264 \text{ CFM OSA IS REQUIRED.}$

SALES:
 $R_p = 7.5 \text{ CFM/PERSON}$
 $P_z = 15 \text{ PEOPLE/1000 SQ. FT.} = 84 \text{ PEOPLE}$
 $R_o = 0.12 \text{ CFM/SQ. FT.}$
 $A_z = 5611 \text{ SQ. FT.}$
 $V = R_p \times P_z + R_o \times A_z = 1305 \text{ CFM OSA IS REQUIRED.}$

1586 TOTAL CFM OF OUTSIDE AIR IS REQUIRED.

1625 CFM OF OUTSIDE AIR IS PROVIDED.

SEE FLOOR PLAN FOR OSA VALUES OF EACH UNIT.

2021 IECC COMPLIANCE REPORT - MECHANICAL

MECHANICAL SYSTEMS LIST AND REQUIREMENTS

ROOFTOP PACKAGE HEAT PUMP - NO ECONOMIZER PER EXCEPTION FOR HIGH EFFICIENCY EQUIPMENT	TONNAGE	QUANTITY	COOLING CAPACITY	HEATING CAPACITY	ECONOMIZER?	COOLING EFFICIENCY REQ/PROV	HEATING EFFICIENCY REQ/PROV
	5.0	8	54 KBTU/HR	54 KBTU/HR	NO	13.4 SEER2 REQ/16.0 SEER2 PROV	6.1 HSPF2 REQ/7.5 HSPF2 PROV

GENERIC REQUIREMENTS

- PLANT EQUIPMENT AND SYSTEM CAPACITY NO GREATER THAN NEEDED TO MEET LOADS
 EXCEPTION(S):
 STANDBY EQUIPMENT AUTOMATICALLY OFF WHEN PRIMARY SYSTEM IS OPERATING
 MULTIPLE UNITS CONTROLLED TO SEQUENCE OPERATION AS A FUNCTION OF LOAD
- MINIMUM ONE TEMPERATURE CONTROL DEVICE PER SYSTEM
- MINIMUM ONE HUMIDITY CONTROL DEVICE PER INSTALLED HUMIDIFICATION/DEHUMIDIFICATION SYSTEM
- LOAD CALCULATIONS PER ASHRAE/ACCA STANDARD 183
- AUTOMATIC CONTROLS: SETBACK TO 55°F (HEAT) AND 85°F (COOL)/7-DAY CLOCK/2-HR OCCUPANT OVERRIDE/10-HR BACKUP
 EXCEPTION(S):
 CONTINUOUSLY OPERATING ZONES
 2 KW DEMAND OR LESS (SUBMIT CALCULATIONS)
- AUTOMATIC START CONTROLS THAT CAN AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM ARE PROVIDED FOR EACH SYSTEM
- OUTSIDE AIR SOURCE FOR VENTILATION; SYSTEM CAPABLE OF REDUCING OSA TO REQUIRED MINIMUM
- R-6 SUPPLY/RETURN AIR DUCT INSULATION IN UNCONDITIONED SPACES
 R-8 SUPPLY/RETURN DUCT INSULATION OUTSIDE THE BUILDING
 R-8 INSULATION BETWEEN DUCTS AND THE BUILDING EXTERIOR WHERE DUCTS ARE PART OF THE BUILDING ASSEMBLY
 EXCEPTION(S):
 DUCTS LOCATED WITHIN EQUIPMENT
 DUCTS WITH INTERIOR AND EXTERIOR TEMPERATURE DIFFERENCE NOT EXCEEDING 15°F (I.E. EXPOSED DUCTWORK)
- DUCTS SEALED - LONGITUDINAL SEAMS ON RIGID DUCTS/TRANSVERSE SEAMS ON ALL DUCTS/UL 181A OR 181B TAPES AND MASTICS
- OPERATION AND MAINTENANCE MANUAL PROVIDED TO BUILDING OWNER (WILL BE PROVIDED BY CONTRACTOR)
- DEMAND CONTROL VENTILATION (DCV) PRESENT FOR HIGH DESIGN OCCUPANCY AREAS (>25 PERSON PER 1000 SQ.FT. IN SPACES >500 SQ.FT.) AND SERVED BY SYSTEMS WITH ANY ONE OF:
 1) AN AIR SIDE ECONOMIZER
 2) AUTOMATIC MODULATING CONTROL OF THE OUTDOOR AIR DAMPER
 3) A DESIGN OUTDOOR AIRFLOW GREATER THAN 3000 CFM
 EXCEPTION(S):
 SYSTEMS WITH HEAT RECOVERY
 MULTIPLE-ZONE SYSTEMS WITHOUT DDC OF INDIVIDUAL ZONES COMMUNICATING WITH A CENTRAL CONTROL PANEL
 SYSTEMS WITH A DESIGN OUTDOOR AIRFLOW LESS THAN 1200 CFM
 SPACES WHERE THE SUPPLY AIRFLOW RATE MINUS ANY MAKEUP OR OUTGOING TRANSFER AIR REQUIREMENT IS LESS THAN 1200 CFM
 VENTILATION FOR PROCESS LOADS ONLY
- AUTOMATIC CONTROLS FOR FREEZE PROTECTION SYSTEMS PRESENT
- EACH FAN SYSTEM HAS AN ENERGY RECOVERY SYSTEM WHEN ONE OF THE FOLLOWING CONDITIONS ARE MET:
 50% ≥ POA < 60% AND DAF ≥ 26000 CFM
 60% ≥ POA < 60% AND DAF ≥ 12000 CFM
 70% ≥ POA AND DAF ≥ 5000 CFM
 WHERE POA = PERCENT OUTDOOR AIR AT FULL DESIGN AIRFLOW RATE AND DAF = DESIGN SUPPLY AIRFLOW RATE
 EXCEPTION(S):
 LABORATORY FUME HOOD SYSTEMS WITH A TOTAL EXHAUST RATE ≤ 5000 CFM
 SYSTEMS SERVING SPACES THAT ARE NOT COOLED AND HEATED TO < 60°F
 SYSTEMS WITH MORE THAN 60% OF THE OUTDOOR HEATING ENERGY PROVIDED FROM SITE-RECOVERED OR SITE SOLAR ENERGY
 SYSTEMS EXHAUSTING TOXIC, FLAMMABLE, PAINT OR CORROSIVE FUMES OR DUST
 SYSTEMS REQUIRING DEHUMIDIFICATION WITH COOLING COIL ENERGY RECOVERY IN SERIES WITH THE COOLING COIL
 SYSTEMS EXPECTED TO OPERATE < 20 HOURS PER WEEK WHEN OUTDOOR AIR PERCENTAGE ≥ 30%
 WHERE THE LARGEST EXHAUST SOURCE IS LESS THAN 75% OF THE DESIGN OUTDOOR AIRFLOW
- MECHANICAL SYSTEMS SHALL MEET COMMISSIONING AND COMPLETION REQUIREMENTS IN SECTION C408.2

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 2021 IECC, CHAPTER 8 AND TO COMPLY WITH THE MANDATORY REQUIREMENTS IN THE REQUIREMENTS CHECKLIST.

MATT MOERTL *Max Moertl* **6/26/2024**
 NAME - TITLE SIGNATURE DATE

POST CONSTRUCTION COMPLIANCE STATEMENT

- HVAC RECORD DRAWINGS OF THE ACTUAL INSTALLATION, SYSTEM CAPACITIES, CALIBRATION INFORMATION AND PERFORMANCE DATA FOR EACH PIECE OF EQUIPMENT PROVIDED TO THE OWNER
- HVAC OPERATION AND MAINTENANCE DOCUMENTS FOR ALL MECHANICAL EQUIPMENT AND SYSTEM PROVIDED TO THE OWNER BY THE MECHANICAL CONTRACTOR
- WRITTEN HVAC BALANCING AND OPERATIONS REPORT PROVIDED TO THE OWNER

THE ABOVE POST CONSTRUCTION REQUIREMENTS HAVE BEEN COMPLETED

PRINCIPAL MECHANICAL DESIGNER SIGNATURE DATE

MECHANICAL NOTES

(ALL WORK DONE TO BE IN COMPLIANCE WITH 2021 INTERNATIONAL MECHANICAL CODE, 2021 IECC AND LOCAL AMENDMENTS).

GENERAL

- NEW BUILDING IS SINGLE STORY.
- FURNISH ALL LABOR, MATERIALS, TOOLS EQUIPMENT, FEES, PERMITS, CERTIFICATE OF INSPECTION, ETC. NECESSARY OR REASONABLY REQUIRED FOR THE COMPLETE INSTALLATION OF ALL AIR CONDITIONING WORK. THE WORK SHALL BE IN STRICT ACCORDANCE WITH THE ASHRAE GUIDE, AND ALL LOCAL AND STATE CODES, ORDINANCES AND REGULATIONS.
- COORDINATE ALL MECHANICAL WORK WITH ARCHITECT AND OTHER TRADES PRIOR TO WORK.
- ALL OUTSIDE AIR INTAKES SHALL BE MINIMUM 10 FEET FROM ANY EXHAUST OR PLUMBING VENTS - COORDINATE WITH PLUMBING CONTRACTOR.
- EXHAUST DUCTS MUST TERMINATE 10 FEET HORIZONTALLY FROM DR 3 FEET ABOVE ALL AIR INTAKES.
- SUBMITTALS SHALL BE PROVIDED FOR ALL MECHANICAL EQUIPMENT.
- CONTRACTOR SHALL VERIFY SCALE OF DRAWINGS WITH ARCHITECTURAL DRAWINGS BEFORE SUBMITTING ANY BID.

EQUIPMENT

- MECHANICAL CONTRACTOR TO VERIFY AND COORDINATE AVAILABLE VOLTAGE WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.
- ALL MECHANICAL EQUIPMENT LOCATION TO COMPLY WITH THE 2021 I.M.C.
- SET A/C UNITS TO OUTSIDE AIR QUANTITIES AS SPECIFIED ON FLOOR PLAN.
- ALL HVAC EQUIPMENT (A/C UNITS, EXHAUST FANS, ETC.) SHALL BE U.L. LISTED.
- ALL MOTORS SHALL BE INHERENTLY THERMALLY PROTECTED.
- CONTRACTOR SHALL MOUNT ALL MECHANICAL EQUIPMENT LEVEL IN CONFORMANCE WITH MANUFACTURER'S INSTRUCTIONS, MAINTAINING ALL MINIMUM RECOMMENDED CLEARANCES.
- PROVIDE ONE SET OF FARR 30-30 THROWAWAY FILTERS AND ONE SET OF FINAL FILTERS, FRAMES, MOUNTING HARDWARE AND ACCESSORIES. PROVIDE ONE SET OF THROWAWAY FILTERS FOR USE DURING THE CONSTRUCTION PERIOD. REMOVE THE FIRST SET OF THROWAWAY FILTERS AFTER THE CONSTRUCTION PERIOD AND INSTALL THE SECOND SET OF FINAL FILTERS (PRIOR TO BALANCING THE SYSTEM).

DUCTWORK

- PROVIDE SPIN-IN BALANCING DAMPERS AT ALL BRANCH CONNECTIONS.
- THE MAXIMUM LENGTH OF ANY FLEX DUCT SHALL NOT EXCEED 8 FEET.
- ALL BRANCH CONNECTIONS SHALL BE A MINIMUM OF 2 FEET AWAY FROM ANY ELBOW.
- ALL DUCTS SHALL BE GALVANIZED SHEET METAL. ALL NEW DUCTWORK TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE GUIDELINES, THE LATEST SMACNA STANDARDS, THE 2021 I.E.C.C. AND CHAPTER 6 OF THE 2021 INTERNATIONAL MECHANICAL CODE FOR LOW PRESSURE DESIGN.
- ALL FLEX DUCTS SHALL BE THERMAFLEX TYPE KM MIN R-6 VALUE OR APPROVED EQUAL CONFORMING TO UL 181, NFPA 90A AND 90B.
- MECHANICAL CONTRACTOR SHALL VERIFY THAT ALL DUCTWORK WILL FIT WHERE INDICATED WITHOUT INTERFERENCES.
- DUCTS SHALL CONFORM TO DIMENSIONS ON THE DRAWINGS UNLESS LOCATION OF STRUCTURAL MEMBERS PROHIBIT. IN CASE OF A CHANGE IN DIMENSIONS, CROSS SECTIONAL AREAS SHALL BE MAINTAINED.
- ALL DUCTS SHALL BE SUBSTANTIALLY SUPPORTED WITH HANGERS TO THE STRUCTURE. PLACING SUPPORTS NOT OVER 8 FEET APART ALONG THE LENGTH OF THE DUCT. SHEET METAL SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:
 UP TO 12" WIDTH 26 GAUGE STEEL
 13" TO 30" WIDTH 24 GAUGE STEEL
- EXHAUST DUCTS SHALL BE MINIMUM 26 GAUGE GALVANIZED STEEL - SEE MECH EQUIPMENT SCHEDULE OR FLOOR PLAN FOR SIZE & TERMINATION POINT.
- ALL 'FACTORY MADE' DUCT MUST BE CLASS '0' OR CLASS '1'.
- PROVIDE FULL RADIUS ELBOWS, TURNING VANES, AND SPLITTER DAMPERS IN BRANCHES AND EXTRACTORS WHERE APPLICABLE.
- DUCT SIZES SHOWN ARE 'CLEAR INSIDE' DIMENSIONS.
- ALL SUPPLY AND RETURN DUCTS LOCATED IN UNCONDITIONED SPACES SHALL HAVE A MINIMUM OF R-8 INSULATION. ALL SUPPLY AND RETURN DUCTS LOCATED OUTSIDE THE BUILDING SHALL HAVE A MINIMUM OF R-8 INSULATION IN ACCORDANCE WITH THE 2021 IECC, C408.2**
- ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS AND CONNECTIONS IN DUCTWORK, SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES), MASTIC-ALL-EMBED-FABRIC SYSTEMS OR TAPES. TAPES AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A AND SHALL BE MARKED 181A-P FOR PRESSURE SENSITIVE TAPE. TAPES AND MASTICS USED TO SEAL FLEXIBLE AIR AIR DUCT AND FLEXIBLE CONNECTORS SHALL COMPLY WITH UL 181B AND SHALL BE MARKED 181B-FX FOR PRESSURE SENSITIVE TAPE OR 181M FOR MASTIC. DUCT CONNECTION TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. UNLISTED DUCT TAPE IS NOT PERMITTED AS SEALANT ON ANY METAL DUCTS.

OUTLETS

- THE MECHANICAL CONTRACTOR SHALL COORDINATE EXACT DIFFUSER AND GRILLE LOCATIONS WITH ELECTRICAL CONTRACTOR AND ALL OTHER TRADES AND ALSO COORDINATE SPACE AVAILABILITY FOR DUCTWORK ABOVE RECESSED LIGHTING TO AVOID RELOCATING DUCTWORK AT THE MECHANICAL CONTRACTORS EXPENSE.
- ALL AIR DISTRIBUTION DEVICES IN LAY-IN CEILINGS SHALL BE SUPPORTED IN COMPLIANCE WITH SECTION 2.3.1.3 OF NFPA 90A & 2021 INTERNATIONAL BUILDING CODE.

CONTROLS

- THERMOSTATS SHALL BE AUTOMATIC SETBACK TO 55°(HEAT) AND 85°(COOL); 7-DAY PROGRAMMABLE, 2-HOUR OCCUPANT OVERRIDE, 10 HOUR BACKUP.
- ARCHITECT, CONTRACTOR AND TENANT TO COORDINATE EXACT T-STAT LOCATIONS.

PIPING

- HANGERS AND SUPPORTS:
 CLEVIS HANGERS ADJUSTABLE HEIGHT, MAXIMUM 10' C., 3/8" ROD UP TO 5" PIPE, 5/8" ROD FOR 6" AND LARGER. WHERE EXTRA HANGER SUPPORTS ARE REQUIRED, THEY SHALL BE PROVIDED BY CONTRACTOR. TRAPEZE HANGERS WITH ROLLERS MAY BE USED FOR MULTIPLE LINES OR WHERE SPACE IS LIMITED.
- DRAINS:
 1) FURNISH AND INSTALL ALL CONDENSATE DRAINS. DRAINS SHALL BE TYPE M, COPPER WITH WROUGHT COPPER FITTINGS AND 95-5 SILVER SOLDER.
 2) SLOPE CONDENSATE DRAINS AT 1/8" PER FOOT TOWARDS DISCHARGE LOCATION.

INSULATION

- ALL INSULATION, MATERIAL, COVERINGS, ADHESIVES, VAPOR-BARRIERS AND TAPES SHALL CONFORM TO NFPA '90A, FLAME SPREAD CLASSIFICATION NOT TO EXCEED 25 AND SMOKE DEVELOPMENT NOT TO EXCEED 50.
- PROVIDE 1/2" LINER IN SUPPLY AND RETURN DUCTWORK OF AIR CONDITIONING SYSTEMS WITHIN 15 FEET OF A/C UNIT.
- INSULATE ALL SHEET METAL DUCTWORK FOR AIR CONDITIONING SYSTEMS WITH A MINIMUM VALUE OF R-6, 3/4 LB. DENSITY EXTERIOR INSULATION, WITH FSK JACKET AND VAPOR BARRIER WITHIN THE BUILDING ENVELOPE AND R-8 OUTSIDE OF BUILDING ENVELOPE.

TESTING

- TEST AND BALANCE ALL AIR SYSTEMS PER AABC OR NEBB LATEST STANDARDS. SUBMIT REPORT TO ENGINEER WITHIN 10 DAYS OF COMPLETING TEST AND BALANCE.
- COPY OF THE AIR BALANCE REPORT SHALL BE PROVIDED TO THE MECHANICAL INSPECTOR FOR FINAL APPROVAL. REPORT SHALL BE SEALED AND WET SIGNED.



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DATE : 08-22-24
 MECHANICAL NOTES & SCHEDULES

08-22-24 OWNER CHANGES
 09-18-24 CITY COMMENTS

NOTICE OF ALTERNATE BILLING OR PAYMENT CYCLE:
 THIS CONTRACT MAY ALLOW THE OWNER TO REQUIRE THE COMPLETION OF BILLING OR ESTIMATE IN BILLING CYCLES OTHER THAN THIRTY DAYS. THIS CONTRACT MAY REQUIRE THE OWNER TO MAKE PAYMENT IN 15 DAY CYCLES. THE OWNER SHALL BE RESPONSIBLE FOR CERTIFICATION AND APPROVAL OF BILLING AND ESTIMATES. A WRITTEN RECOGNITION OF PAYMENT BILLING CYCLE APPLICABLE TO THE PROJECT IS AVAILABLE FROM OWNER OR DESIGNATED AGENT.
 MAIL ADDRESS:
 CONTACT NAME:
 PHONE:

NEW COMMERCIAL PAD
 PAD 58 AT PASEO UNDO SHOPPING CENTER
 NEC OF ARIZONA AVE AND OCCOTILLO RD.
 CHANDLER, AZ
CONSTRUCTION SET_11-12-24

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